Highway Design Manual (HDM) Changes of Significance contained in the Update dated 05-07-2012

May 22, 2012

HDM Section	Topic	Revised Guidance in Text/Figure [Commentary in blue text]	Previous Guidance in Text/Figure [Commentary in blue text]
105.2	Sidewalks and Walkways	The minimum width of a sidewalk should be 8 feet between a curb and a building when in urban and rural main street place types. For all other locations the minimum width of sidewalk should be 6 feet when contiguous to a curb or 5 feet when separated by a planting strip. Sidewalk width does not include curbs.	The minimum width of a sidewalk should be 5 feet.
202.2 (2)	Standards for Superelevation	*Bikeways*. Table 202.2 also applies to Class II and III bikeways. See Index 1003.1 for Class I guidance.	New advisory standard was created as a result of the decision to distribute the design guidance related to Class II bikeways (bike lanes) into this chapter.
Figure 202.2	Maximum Comfortable Speed On Horizontal Curves	Figure was corrected to better represent the maximum comfort speeds that would be obtained from the equation provided with the figure.	
204.8 (5)	Falsework	The normal width of traffic openings and required falsework spans are shown in Table 204	The normal minimum width of traffic openings and required falsework spans for various lane and shoulders combinations should be as shown in Table 204.8.
204.8 (5)	Falsework	Changed decision to District and DES; Headquarters Design Coordinator concurrence requirement eliminated.	In special cases, where existing constraints make it impractical to comply with the minimum widths of traffic openings set forth in Table 204.8. a lesser width may be approved by the District Director with concurrence from the Headquarters Design Coordinator
206.3 (3)	Lane Reduction	At any location where lane widths are being reduced, the minimum length over which to accomplish the transition should be equal to WV.	At any location where lane widths are being reduced, the minimum length over which to accomplish the transition should be equal to WV.
208.4	Bridge Sidewalks	**The minimum width of a bridge sidewalk shall be 6 feet.**	Bridge sidewalks should be provided where justified by pedestrian traffic.
208.6	Bicycle and Pedestrian Overcrossings and Undercrossings	The minimum vertical clearance of a pedestrian undercrossing should be 10 feet. Skewed crossings should be avoided.	New advisory standard and guidance created to provide height for bicyclists and minimize crossing distance.
208.6	Bicycle and Pedestrian Overcrossings and Undercrossings	Class I bikeways are designed for the exclusive use of bicyclists and pedestrians; equestrian access is prohibited. See Chapter 1000 for Class I bikeway design guidance and Index 208.7 for equestrian undercrossing guidance. For additional information about the need to separate bicyclists from equestrian trails, see Index 1003.4.	Index 1003.1 (1) . . . . . When equestrians are expected, a separate facility should be provided.

Highway Design Manual (HDM) Changes of Significance contained in the Update dated 05-07-2012

May 22, 2012

HDM Section	Topic	Revised Guidance in Text/Figure [Commentary in blue text]	Previous Guidance in Text/Figure [Commentary in blue text]
210.6	Safety Railing, Fences, and Concrete Barriers	Cable railing should be installed for employee protection in areas where employees may work adjacent to and above vertical faces of retaining walls, wingwalls, abutments, etc. where the vertical fall is 4 feet or more.	**Cable railing shall be installed for employee protection in areas where employees may work adjacent to and above vertical faces of retaining walls, wingwalls, abutments, etc. where the vertical fall is 4 feet or more.**
301.1	Lane Width	**The minimum lane width, excluding local facilities, on two-lane and multilane highways, ramps, collector roads, and other appurtenant roadways shall be 12 feet, except as follows:** **• For conventional State highways with posted speeds less than or equal to 40 miles per hour and AADTT (truck volume) less than 250 per lane that are in urban, city or town centers (rural main streets), the minimum lane width shall be 11 feet.** The preferred lane width should be 12 feet. See Index 81.3 for place type definitions. **Where a 2-Lane conventional State Highway connects to a freeway within an interchange, the lane width shall be 12 feet.** **Where a multilane State highway connects to a freeway within an interchange, the outer most lane of the highway in each direction of travel shall be 12 feet.**	**The basic lane width for new construction on two-lane and multilane highways, ramps, collector roads, and other appurtenant roadways shall be 12 feet.**
301.2 (1)	Class II Bikeway (Bike Lane) Lane Width	**Class II bikeways (bike lanes), for the preferential use of bicycles, may be established within the roadbed and shall be located immediately adjacent to a traffic lane as allowed in this manual.**	Class II bikeways (bike lanes), for the preferential use of bicycles, may be established within the paved area of Highway.
301.2 (1)	Class II Bikeway (Bike Lane) Lane Width	**The minimum Class II bike lane width shall be 4 feet, except where:** • Adjacent to on-street parking, the minimum bike lane should be 5 feet. • Posted speeds are greater than 40 miles per hour, the minimum bike lane should be 6 feet, or • **On highways with concrete curb and gutter, a minimum width of 3 feet measured from the bike lane stripe to the joint between the shoulder pavement and the gutter shall be provided.**	Index 1003.2 (1) (a) **- As indicated, 5 feet shall be the minimum width of bike lane where parking stalls are marked.** Index 1003.2 (1) (b) **– As indicated, 11 feet or 12 feet (depending on the type of curb) shall be the minimum width of the bike lane where parking is permitted.** Index 1003.2 (1) (c**) – As indicated, if no gutter exists, the minimum bike lane width shall be 4 feet. With a normal 2-foot gutter, the minim bike lane width shall be 5 feet.**

Highway Design Manual (HDM) Changes of Significance contained in the Update dated 05-07-2012

May 22, 2012

HDM Section	Topic	Revised Guidance in Text/Figure [Commentary in blue text]	Previous Guidance in Text/Figure [Commentary in blue text]
302.1	Shoulder Width	**Where rumble strips are placed in the shoulder, the shoulder shall be a minimum of 4 feet width to the right of the grooved rumble strip when a vertical element, such as curb or guardrail is present or a minimum of 3 feet width when a vertical element is not present.**	New mandatory design standard.
Table 302.1	Mandatory Standards for Paved Shoulder Widths on Highways	Various revisions made to mandatory design standards provided in the table and notes.	
Figure 301.2A	Typical Class II Bikeway (Bike Lane) Cross Sections	New figure provided.	
303.1	Curbs, Dikes, and Side Gutters	The use of curb should be avoided on facilities with posted speeds greater than or equal to 40 miles per hour, except as noted in Table 303.1. For projects where the use of curb is appropriate, it should be the type shown in Table 303.1. The speed environment related to using these curb types has changed from an operating speed to posted speed.	The use of curb should be avoided on facilities with operating speeds greater than 45 miles per hour, except as noted in Table 303.1. For projects where the use of curb is appropriate, it should be the type shown in Table 303.1.
Table 303.1	Selection of Curb Type	The speed environment related to using these curb types has changed from an operating speed to posted speed.	
303.4 (1)	Curb Extensions	Bulbouts should conform to Figure 303.4, other design elements are not shown.	New figure and discussion provided for this new topic. New advisory design standard.
303.4	Curb Extensions	**The curb face of the bulbout shall be setback from the edge of traveled way such that there is a minimum of 3 feet measured from the edge of traveled way to the joint between the shoulder pavement and the gutter pan or 3 feet to curb face without gutter pan.**	New mandatory design standard.
305.1	Median Standards - width	Where pedestrians are allowed to cross 4 or more lanes at a marked or unmarked crosswalk, a pedestrian refuge island should be provided.	New advisory design standard.
305.1 (1)	Median Standard – width, Suburban Area	Advisory design standard removed because suburban areas are not defined; use urban or rural place types.	The minimum median width for freeways and expressways in suburban areas should be 62 feet.
305.1 (2)	Median Standard – width, Conventional Highways	In Urban and Rural Main Street areas, the minimum median width for multilane conventional highways should be 18 feet. For two lane conventional highways, the minimum median width should be 12 feet.	In city street conditions the minimum median width for multilane conventional highways should be 12 feet.
307.1	Two-lane Cross Sections for New Construction	Mandatory design standard deleted.	**In order to provide structural support, the minimum paved width of each shoulder shall be 2 feet.**

Highway Design Manual (HDM) Changes of Significance contained in the Update dated 05-07-2012

May 22, 2012

HDM Section	Topic	Revised Guidance in Text/Figure [Commentary in blue text]	Previous Guidance in Text/Figure [Commentary in blue text]
Table 307.2	Two-lane Cross Sections for New Construction	Mandatory minimum paved width of each shoulder has been increased from 2 feet to 4 feet for two-way ADT less than 400.	
308.1	City Streets and County Roads	**The minimum width of 2-lane overcrossing structures shall not be less than 32 feet face of curb to face of curb.**	**The minimum width of 2-lane overcrossing structures shall not be less than 28 feet curb to curb.**
308.1	City Streets and County Roads	**Where the 2-lane local facility connects to a freeway within an interchange, the lane width of the local facility shall be 12 feet.**	New mandatory design standard.
308.1	City Streets and County Roads	**Where a multi-lane local facility connects to a freeway within an interchange, the outer most lane of the local facility shall be 12 feet.**	New mandatory design standard.
308.1	City Streets and County Roads	**Shoulder width shall not be less than 5 feet when railings or other lateral obstructions are adjacent to the right edge of shoulder.**	New mandatory design standard.
308.1	City Streets and County Roads	**If gutter pans are used, then the minimum shoulder width shall be 3 feet wider than the width of the gutter pan being used.**	(shoulder width should not be less than 5 feet where curbs with 2-foot gutter pan are proposed and bicycle use is expected.)
Table 309.2(a)	Minimum Vertical Clearances	Revised table to include bicycle overcrossings.	
310.1	Frontage Roads – Cross Section	**However, the minimum paved 2-lane cross section width including 4-foot shoulders without curb and gutter shall be:** • **32 feet if 12-foot lanes are to be provided;** • **30 feet if 11-foot lanes are to be provided.** **The minimum paved 2-lane cross section width, including 5-foot shoulders and curb and gutter shall be:** • **34 feet if 12-foot lanes are to be provided;** • **32 feet if 11-foot lanes are to be provided.**	**However, the minimum paved cross section for urban frontage roads shall be two 12-foot lanes with 4-foot outside shoulders.** See Chapter 1000 for shoulder requirements when bicycles are present. **The minimum paved cross section for rural frontage roads shall be 24 feet.**
403.6 (1)	Turning Traffic	Optional right-turn lanes should not be used in combination with right-turn-only lanes on roads where bicycle travel is permitted.	New advisory design standard.
403.6 (1)	Turning Traffic	Locations with right-turn-only lanes should provide a minimum 4-foot width for bicycle use between the right-turn and through lane when bikes are permitted.	New advisory design standard.

Highway Design Manual (HDM) Changes of Significance contained in the Update dated 05-07-2012

May 22, 2012

HDM Section	Topic	Revised Guidance in Text/Figure [Commentary in blue text]	Previous Guidance in Text/Figure [Commentary in blue text]
404.2 (1) (b)	Design Vehicles - General	Along the portion of roadway where there are no turning options, vehicles are required to stay within the lane lines. **The tracking and swept widths lines for the design vehicle shall stay within the lane as defined in Index 301.1 and Table 504.3A.** This includes no encroachment into Class II bike lanes.	New mandatory design standard.
404.2 (6)	Sidewalks	Tracking width and swept width lines must not encroach onto sidewalks or any area where pedestrians are expected.	New design requirement.
404.4 (2) (b)	Design Vehicles and Related Definitions	The California Legal Design Vehicle in Figures 404.5C and D should be used in the design of all non-STAA route interchanges and intersections on California Legal routes and California Legal KPRA Advisory routes for both new construction and rehabilitation projects.	The California Legal Design Vehicle in Figures 404.5D and E should be used in the design of all interchanges and intersections on California Legal routes and California Legal KPRA Advisory routes for both new construction and rehabilitation projects.
405.2 (2)	Left-turn Channelization	**The lane width for both single and double left-turn lanes on State highways shall be 12 feet.** **For conventional State highways with posted speeds less than or equal to 40 miles per hour and AADTT (truck volume) less than 250 per lane that are in urban, city or town centers (rural main streets), the minimum lane width shall be 11 feet.**	**The lane width for both single and double left-turn lanes on State highways shall be 12 feet.**
405.3 (2)	Right-turn Channelization	**Index 301.1 shall be used for right-turn lane width requirements. Shoulder width shall be a minimum of 4 feet.**	**The basic lane width for right-turn lanes shall be 12 feet. Shoulder width shall be a minimum of 4 feet.**
405.4 (3)	Traffic Islands	Traffic islands used as pedestrian refuge should be large enough to provide a minimum of 6 feet in the direction of pedestrian travel.	New advisory design standard.
405.8	City Street Returns and Corner Radii	Encroachment into opposing traffic lanes must be avoided.	New design requirement.
501.3	Spacing	**The minimum interchange spacing shall be one mile in urban areas, two miles in rural areas, and two miles between freeway-to-freeway inter-changes and other interchanges. The minimum interchange spacing on Interstates outside of a Transportation Management Area shall be three miles.**	**The minimum interchange spacing shall be one mile in urban areas, two miles in rural areas, and two miles between freeway-to-freeway inter-changes and local street interchanges.**
502.2	Local Street Interchanges	**Isolated off-ramps or partial interchanges shall not be used because of the potential for wrong-way movements.**	The use of isolated off ramps or partial inter-changes should be avoided because of the potential for wrong-way movements and added driver confusion.

Highway Design Manual (HDM) Changes of Significance contained in the Update dated 05-07-2012

May 22, 2012

HDM Section	Topic	Revised Guidance in Text/Figure [Commentary in blue text]	Previous Guidance in Text/Figure [Commentary in blue text]
502.2 (f)	Local Street Interchanges - Other	Types of Interchanges--New or experimental interchanges must have the Design Coordinator and Traffic Liaison's concurrence before selection. Concurrence may require additional studies and documentation.	New procedural requirement.
502.3 (1)	Freeway-to-Freeway Interchanges	**Interstate routes shall maintain route continuity. Where both the designated route and heavier traffic volume route are present, the interchange configuration shall keep the designated route to the left through the interchange.**	New mandatory design standard.
503.2	Reviews	The geometric features of all interchanges or modifications to existing interchanges must be approved by the Design Coordinator.	New procedural requirement.
504.3 (1) (d)	Ramps	Depending on approach geometry and speed, the lane drop transition between the limit line and the 6-foot separation point should be accomplished with a taper of between 30:1 and 50:1 (longitudinal to lateral).	the lane should be dropped using a taper of no less than 30 to 1.
504.3 (2) (b)	Ramps	Therefore, depending on approach geometry and speed, the lane drop transition between the limit line and the 6-foot separation point should be accomplished with a taper of between 30:1 and 50:1 (longitudinal to lateral).	New advisory design standard.
504.3 (3)	Ramps	Where a separate right-turn lane is provided at ramp terminals, the turn lane should not continue as a "free" right.	Where a separate right-turn lane is provided at ramp terminals, the turn lane should not continue as a "free" right unless pedestrian volumes are low, the right-turn lane continues as a separate full width lane for at least 200 feet prior to merging and access control is maintained for at least 200 feet past the ramp intersection. Provision of the "free" right should also be precluded if left-turn movements of any kind are allowed within 400 feet of the ramp intersection.
504.3 (3)	Ramps	**The minimum distance (curb return to curb return) between ramp intersections and local road intersections shall be 400 feet.**	**For new construction or major reconstruction of interchanges, the minimum distance (curb return to curb return) between ramp intersections and local road intersections shall be 400 feet.**
504.3 (6)	Ramps	Two-lane Exit Ramps. Where design year estimated volumes exceed 1500 equivalent passenger cars per hour, a 2-lane ramp should be provided.	Two-lane Exit Ramps. Where design year estimated volumes exceed 1500 equivalent passenger cars per hour, a 2-lane width of ramp should be provided initially.

Highway Design Manual (HDM) Changes of Significance contained in the Update dated 05-07-2012

May 22, 2012

HDM Section	Topic	Revised Guidance in Text/Figure [Commentary in blue text]	Previous Guidance in Text/Figure [Commentary in blue text]
504.7	Weaving Sections	Weaving sections in urban areas should be designed for LOS C or D. Weaving sections in rural areas should be designed for LOS B or C. Design rates for lane balanced weaving sections where at least one ramp or connector will be two lanes should not result in a LOS lower than the middle of LOS D using Figure 504.7A This design guidance is no longer an advisory design standard.	Weaving sections in urban areas should be designed for LOS C or D. Weaving sections in rural areas should be designed for LOS B or C. Design rates for lane balanced weaving sections where at least one ramp or connector will be two lanes should not result in a LOS lower than the middle of LOS D using Figure 504.7A
504.7	Weaving Sections	Deleted text and advisory design standard.	On main freeway lanes the weaving length measured as shown in Figure 504.2A should not be less than 1,600 feet except where excessive cost or severe environmental constraints would require consideration of a shorter length. One thousand feet of length should be added for each additional lane to be crossed by weaving vehicles.
504.7	Weaving Sections	**The minimum weaving length, measured as shown on Figures 504.2A and 504.2B shall be 2,000 feet in urban areas, 5,000 feet in rural areas, and 5,000 feet between freeway-to-freeway interchanges and other interchanges.**	New mandatory design standard.
504.8	Access Control	**For new construction or major reconstruction, access rights shall be acquired on the opposite side of the local road from ramp terminals to preclude the construction of future driveways or local roads within the ramp intersection.**	For new construction or major reconstruction, access rights should be acquired on the opposite side of the local road from ramp terminals to preclude the construction of future driveways or local roads within the ramp intersection.
1003.1	Class I Bikeways (Bike Paths)	**The minimum paved width of travel way for a two-way bike path shall be 8 feet,** 10-foot preferred. **The minimum paved width for a one-way bike path shall be 5 feet.** **A minimum 2-foot wide shoulder, composed of the same pavement material as the path or all weather surface, free of vegetation, shall be provided adjacent to the traveled way of the path when not on a structure.**	**The minimum paved width for a two-way bike path shall be 8 feet. The minimum paved width for a one-way bike path shall be 5 feet. A minimum 2-foot wide graded area shall be provided adjacent to the pavement**
1003.1 (2)	Class I Bikeways (Bike Paths)	**A minimum 2-foot horizontal clearance from the paved edge of a bike path to obstructions shall be provided.** See Figure 1003.1A. 3 feet should be provided.	**A minimum 2-foot horizontal clearance to obstructions shall be provided adjacent to the pavement (see Figure 1003.1A).** A 3-foot clearance is recommended.
1003.1 (2)	Class I Bikeways (Bike Paths)	**The clear width of a bicycle path on structures between railings shall be not less than 10 feet.**	**The clear width on structures between railings shall be not less than 8 feet.**

Highway Design Manual (HDM) Changes of Significance contained in the Update dated 05-07-2012

May 22, 2012

HDM Section	Topic	Revised Guidance in Text/Figure [Commentary in blue text]	Previous Guidance in Text/Figure [Commentary in blue text]
1003.1 (2)	Class I Bikeways (Bike Paths)	**The vertical clearance to obstructions across the width of a bike path shall be a minimum of 8 feet and 7 feet over shoulder.**	**The vertical clearance to obstructions across the clear width of the path shall be a minimum of 8 feet.**
1003.1 (6)	Class I Bikeways (Bike Paths)	**The minimum separation between the edge of pavement of a one-way or a two-way bicycle path and the edge of travel way of a parallel road or street shall be 5 feet plus the standard shoulder width**	**Bike paths closer than 5 feet from the edge of the shoulder shall include a physical barrier to prevent bicyclists from encroaching onto the highway.**
1003.1 (7)	Class I Bikeways (Bike Paths)	**Bike paths shall not be placed in the medians of State highways or roadways, especially freeways or expressways.**	**Bike paths shall not be designed in the medians of freeways or expressways.**
1003.1 (7)	Class I Bikeways (Bike Paths)	Installation of "speed bumps", gates, obstacles, posts, fences or other similar features intended to cause bicyclists to slow down are not to be used. The existing text has been expanded and is no longer a mandatory design standard.	**Installation of "speed bumps", or other similar features intended to cause bicyclists to slow down in advance of intersections or other geometric constraints, shall not to be used.**
1003.1 (8)	Class I Bikeways (Bike Paths)	**The design speed given in Table 1003.1 shall be the minimum.**	**The minimum design speed for bike paths shall be 25 miles per hour except as noted in Table 1003.1.**
1003.1 (10)	Class I Bikeways (Bike Paths)	**The minimum stopping sight distance based on design speed shall be 125 feet for 20 miles per hour, 175 feet for 25 miles per hour and 230 feet for 30 miles per hour.**	New mandatory design standard. Figures 1003.1D and E for minimum stopping sight distances have been replaced with this text.
1003.1 (16)	Class I Bikeways (Bike Paths)	**Fold-down obstacle posts or bollards shall not be used within the paved area of bicycle paths.**	New mandatory design standard.
1003.2	Class II Bikeway (Bike Lane) Lane Width	This guidance is no longer a mandatory design standard; see Index 301.2 (2) *On-Street Parking Adjacent to Class II Bikeways*. Parking adjacent to bike lanes is discussed in subsection (1) above and addressed in Table 302.1, Note (7). Part-time bike lanes with part-time on-street parking is discouraged. This type of bike lane may only be considered if the majority of bicycle travel occurs during the hours of parking prohibition. When such an installation is being considered refer to the California MUTCD and traffic operations for direction regarding proper signing and marking.	**Striped bike lane next to curbs where parking is prohibited only during certain hours shall be done only in conjunction with special signing to designate the hours bike lane are to be effective**