July 22, 2014

CEDAR RAPIDS METRO DESIGN STANDARDS CHAPTER 5 – ROADWAY DESIGN

ALSO REPLACES CEDAR RAPIDS METRO DESIGN STANDARDS CHAPTER 8 – SIDEWALK DESIGN CRITERIA EXCEPT CHAPTER 8 DETAILS WHICH ARE INCLUDED HEREIN BY REFERENCE.

Supplemental to SUDAS Chapter 12

Chapter 12 – Sidewalks and Bicycle Facilities

Supplement SUDAS Chapter 12A with this section

CHAPTER 12A-1 GENERAL SIDEWALK REQUIREMENTS

B. Sidewalk Classes

The offset of Class B sidewalk to the right-of-way is 2', not 1'.

Figure 12A-1.01 – Strike the minimum sidewalk width shown. Refer to the table in 12A-2 of this document.

D. Construction Requirements

1. Sidewalk Thickness: Sidewalks should be constructed of PCC with a minimum thickness of 4 inches. Where sidewalks cross driveways, the minimum thickness if 5 inches, or the thickness of the driveway, whichever is greater. Sidewalks through lanes/alleys shall be a minimum 7 inches thick.
2. Obstructions: Revise the minimum taper to 5:1. Add "Curved sidewalk alignments are preferred over angle breaks for tapers."

CHAPTER 12A-2 ACCESSIBLE SIDEWALK REQUIREMENTS

E.2.c Sidewalk Width

In all areas, 5' wide sidewalks are the minimum width for new construction. Special design of the sidewalk width may be necessary at locations of high pedestrian traffic (college campus, downtown core areas, along arterial streets, etc.). During street resurfacing or rehabilitation projects, sidewalk gaps along the rehabilitation project should be constructed to 5' width. Street resurfacing and rehabilitation projects that have existing sidewalks that are less than 5 feet wide do not need to be widened if the sidewalks are in good condition.

In general, minimum sidewalk widths are as follow:

MINIMUM SIDEWALK WIDTHS			
	Roadway Type		
Zoning	Local	Collector	Arterial
Residential/Industrial	5'	5'	5'
Commercial	5'	6'	6'

* Note: Intense pedestrian use may require special design.

E.4.a Curb Ramps

It is preferred that curb ramps are not installed for driveway crossings. The sidewalk should be the dominant feature and the driveway subordinate to the sidewalk crossing.

CHAPTER 12B-1 BICYCLE AND PEDESTRIAN FACILITIES

B. Definitions

Add the following:

Paved Shoulder (Urban or Rural): In rural areas, paved shoulders may be used as a bicycle facility. Minimum shoulder width should be 5 feet, with 6 feet preferred as measure from the edge of the vehicle travel lane.

In urban areas, shoulder space can be created by re-striping existing roadway width to provide a 5 foot to 8 foot wide bicycle facility separated from the vehicle travel lane by a 6" wide broken white line consisting of a 27 foot long solid line followed by a 3 foot long gap. Candidates for paved shoulders to accommodate bicycle use should have limited or no on-street parking allowed on both sides of the Thoroughfare. Bike route and share the Road signage shall be installed with Paved Urban Shoulders.

Buffered Bike Lane: A buffered bike lane shall be 6 feet to 8 feet wide with an additional 1.5 foot to 3 foot wide painted buffer space between the bike lane and the adjacent vehicle travel lane or adjacent parking lane. Buffered bike lanes can be used on high speed streets (>35 mph).

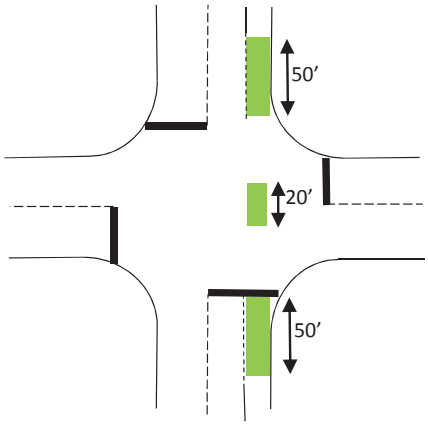
Cycle Tracks (One-way and Two-way): Cycle tracks are bicycle facilities located between parking lanes, or a physical barrier such as flexible delineators, and the curb. One-way Cycle Tracks are 5 feet to 8 feet wide, not including the curb width. If parking is not present, a physical barrier 1.5 feet to 3 feet wide of plantings, flexible delineators, or some other physical barrier is required. Two-way Cycle Tracks are 10 feet to 14 feet wide with a centerline separating two 5 foot to 7 foot wide bicycle lanes. Similar to a one-way Cycle Track, the two-way track must be separated from vehicles lanes by either parked cars or a barrier as described above.

C.5 Replace the list of bicycle facility types with the following:

- Shared lanes
- Paved Shoulders (Urban and Rural)
- Bike Lanes
- Bike Boulevards
- Shared Use Path
- Buffered Bike Lane
- Cycle Tracks (One-way and Two-way)

CHAPTER 12B-3 ON-STREET BICYCLE FACILITIES

C. Facilities



Modify the following:

Figure 12B-3.03: The solid white line between the bike lane and the parking lane is 4" wide and is not optional.

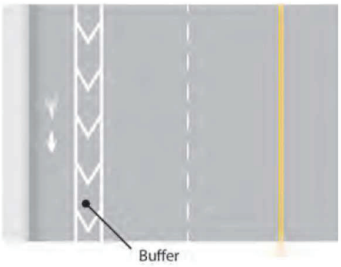
Section 12B-3.C.3.e: Signs and Markings: Specify that all bicycle lane symbols are oriented to the left. Also, the bicycle lane symbol with the helmeted rider is used in bicycle lanes. The bicycle symbol with no rider is used in sharrows.

Conflict points, including the last 50 feet and the first 50 feet of an intersection shall be painted a light color green that contrasts with the road surface, per the latest guidance provided by the Federal Highway Administration. Additionally, a 20' segment in the center of the intersection shall also be painted the same light green color.

Pavement markings for bicycle lanes shall conform to the Manual on Uniform Traffic Control Devices, except that dashed lines are not optional at conflict points.

Add the following:

6. **Buffered Bike Lane:** A buffered bike lane is sheltered from adjacent traffic or parking lanes by a painted buffer area between the bike lane and the vehicles (parked or moving). The buffer area can improve the comfort of cyclists as they don't have to ride as close to motor vehicles. Buffered bike lanes can also be used to slow traffic as they narrow the travel lanes. Next to parking, the buffer provides a zone to protect cyclists from opening doors. Buffered bike lanes are most appropriate on wide, busy streets. They can be used on streets where physically separating the bike lanes with cycle tracks is undesirable for cost, operational, or maintenance reasons. Bike lanes between travel and parking lanes shall be 6 feet to 8 feet wide with a buffer of 1.5 feet to 3 feet wide.



Directional cycle logos shall be placed in each lane on either side of each intersection, typically 30 feet from the edge of the intersecting right-of-way. Additional logos shall be provided as necessary to maintain a maximum on-center spacing of 500 feet. Every new or reconstructed arterial shall include buffered or conventional bike lanes. Streets with high speeds (>35 mph) may have a buffered bike lane.

7. **Cycle Tracks (One-way and Two-way):** Protected cycle tracks may be placed in any arterial street, and are required in all new or reconstructed high speed streets (>35 mph) of more than three travel lanes. They are located between parking lanes and the curb, or directly against the curb if no parking lane exists. One-way Cycle Tracks are 5 feet to 8 feet wide. Two-way Cycle Tracks may be used as a replacement for pairs of one-way tracks, consolidating the two-way bike traffic on one side of a Thoroughfare. Two-way Cycle Tracks are 10 feet to 14 feet wide with a centerline separating it into 5 foot or 7 foot bikeways. Both one-way and two-way Cycle Tracks are separated from the roadway either by parked cars or a 1.5 foot to 3 foot wide buffer of plantings, flexible delineators or some other physical barrier.

   As they approach intersections, Cycle Tracks (including their traffic-side buffer) should follow the latest guidance from the most recent versions of the NACTO Urban Bikeway Design Guide or AASHTO Guide for the Development of Bicycle Facilities. Special care should be given to the design of Two-way Cycle Tracks as they approach intersections.

8. Bicycle Facility Selection: The type of bicycle facility selected for a given roadway must be consistent with the context of the area and is typically selected based on the speed and vehicular traffic volume of the street considered for bicycle facility treatment. Other factors may also come into play such as bicycle volume, available space, anticipated cyclist skill level, continuity with adjacent segments of the bicycle way, etc. Table 12B-3.01 provides some basic guidance for facility selection based on vehicular traffic speed and volume. The on-street bicycle facility types and thresholds are general in nature and the final decision should be based on good engineering judgment considering all relevant factors.

TABLE 12B-3.01
GENERAL GUIDELINE FOR ON-STREET BICYCLE FACILITY SELECTION

	85th Percentile Speed (mph)						
Average Daily Traffic	15	20	25	30	35	40	>40
2,000	Share	Share	Share	Share	Share	Share	Bike Lane
4,000	Share	Share	Share	Sharrow	Sharrow	Sharrow	Bike Lane
6,000	Share	Share	Sharrow	Sharrow	Sharrow	Bike Lane	Bike Lane
8,000	Sharrow	Sharrow	Bike Lane	Bike Lane	Bike Lane	Bike Lane	Bike Lane
10,000	Sharrow	Sharrow	Bike Lane	Bike Lane	Bike Lane	Bike Lane	Bike Lane
12,000	Bike Lane	Bike Lane	Bike Lane	Bike Lane	Bike Lane	Bike Lane	Bike Lane
15,000	Bike Lane	Bike Lane	Bike Lane	Bike Lane	Bike Lane	Bike Lane	Bike Lane
>=20,000	Special Design						

Notes:

1. Share means the bicyclist shares a normal lane with vehicular traffic. No special on-street bicycle facilities required. Sharrow means the normal traffic lane should be widened to accommodate both vehicles and bicycles. Bike Lane means a separated facility such as a bicycle lane, buffered bicycle lane, cycle track, etc. should be considered.
2. Special Design indicates the speed and/or vehicular traffic volumes are such that a more detailed engineering evaluation should be conducted to select the best bicycle accommodation for that particular facility.
3. Thresholds and on-street bicycle facility type taken from "Federal Highway Administration University Course on Bicycle and Pedestrian Transportation, Lesson 13: Selecting Bicycle Facility Types and Evaluating Roadways", July, 2006, US Department of Transportation, Federal Highway Administration.