



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 16-33 Technical Advisory

September 19, 2016

TO: All Design, Operations, and District Personnel, and Consultants

FROM: /s/Elizabeth W. Phillips
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Bridges Division

SUBJECT: Sidewalk Width on Bridges

REVISES: *Indiana Design Manual* (IDM) 45-1.06(02), 51-1.03(02), 402-6.02(01), Figure 402-6P (Added), Figure 404-4D

EFFECTIVE: Immediately

A sidewalk is part of a pedestrian access route and must be in accordance with the *Public Rights-of-Way Accessibility Guidelines* (PROWAG). The PROWAG requires that sidewalk width be measured exclusive of the curb, i.e. measured from the back face of the curb. The sidewalk on a bridge is often poured monolithically with the curb and the width dimensioned from the front face of the curb. Guidance provided by the U.S. Access Board indicates that when there is no defined back face of curb, a 6-in curb width should be assumed. The U.S. Access Board is an independent federal agency charged with developing and maintaining ADA standards.

The PROWAG sidewalk width criteria also includes a requirement for passing spaces. Where the sidewalk width is less than 5 ft., measured from the back of curb or assumed 6-in. curb width, a passing space must be provided at no more than 200-ft intervals. The passing space must be a minimum of 5 ft. by 5 ft.

The referenced IDM sections have been revised to reflect the U.S Access Board guidance.

5. Funding and Maintenance Considerations. Sidewalk funding and maintenance considerations are dependent upon project location. The following will apply:
 - a. City Limits. For a sidewalk constructed within city limits, the city will be responsible for the costs of constructing the sidewalk unless Federal-aid funds are used. The State may then participate. If totally funded by the city, a reimbursement agreement will be required between the Department and the city prior to the project letting. The State will be responsible for the cost of right-of-way acquisition and grading required specifically for the sidewalk.
 - b. Town or Rural Area. A new sidewalk constructed in a town or rural area outside of city limits may be funded with State or Federal-aid funds. This includes all costs for right-of-way acquisition, grading, and construction.
 - c. Bridge. Regardless of location, the total cost for a sidewalk on a bridge may be funded with State or Federal-aid funds.

45-1.06(02) Sidewalk Design Criteria [Rev. Mar. 2016, Sep. 2016]

A sidewalk within the public right of way must be in accordance with the Public Right of Way Accessibility Guidelines (PROWAG). See Section 51-1.03 for sidewalk accessibility requirements. Designers should also consider the following:

1. Width. The sidewalk width is measured exclusive of the curb, i.e. measured from the back face of curb. A typical sidewalk is 5 ft wide with a 5-ft buffer area between the roadway and sidewalk. If there is no buffer area provided, the sidewalk width should be 6 ft to accommodate any appurtenances which may be included in the sidewalk (see Item 4 below).

A high pedestrian volume may warrant a greater width in, for example, a commercial area or school zone. The designer may conduct a detailed capacity analysis to determine the sidewalk width. *Highway Capacity Manual* Chapter 13 should be reviewed for this analysis.

2. Urban Area. In a central business district, the entire area between a curb and a building is used as a paved sidewalk.
3. Appurtenance. The designer should consider the impacts of a roadside appurtenance within the sidewalk, e.g., street furniture, fire hydrant, parking meter, utility pole, signs. These elements reduce the clear width and may interfere with pedestrian activity. If such an

appurtenance is placed within the sidewalk, the sidewalk clear width must be at least 4 feet or the sidewalk should be widened accordingly.

4. Cross Slope. The maximum cross slope is 2.00%. For design purposes the cross slope should be set at 1.5% to reduce the likelihood of the maximum being exceeded during construction.
5. Buffer Area. If the available right of way is sufficient, a buffer area between the curb and sidewalk is desirable. This area provides space for snow storage and allows for a greater separation between vehicle and pedestrian. The buffer area should be at least 5 ft wide to be effective and should desirably be wider. Although occasionally unavoidable, placing roadside appurtenances within the buffer area is undesirable. The proximity to the traveled way increases the likelihood of a vehicle/fixed-object crash.
6. Sidewalk on Bridge. The sidewalk width is measured from the back of an assumed 6" curb. See section 402-6.02(01). Section 404-4.02(03) provides criteria for the selection and location of bridge and pedestrian railing where a sidewalk is present. Section 49-9.02 provides information for shielding the end of a bridge railing.

45-2.0 MEDIAN

A median is desirable on a highway with 4 or more lanes. The principal functions of a median are as follows:

1. to provide separation from opposing traffic,
2. to prevent undesirable turning movements,
3. to provide an area for deceleration and storage of left-turning vehicles,
4. to provide an area for storage of a vehicle crossing the mainline at an intersection,
5. to facilitate drainage collection,
6. to provide an area for snow storage,
7. to provide an open green space,
8. to provide a recovery area for an out-of-control vehicle,
9. to provide a refuge area in case of emergency,
10. to minimize headlight glare,
11. to provide an area for pedestrian refuge, or
12. to provide space for future lanes.

51-1.03(02) Sidewalk Design Criteria [Rev. Mar. 2016, Sep. 2016]

This section applies to sidewalks within the public right of way and meets the criteria described in the *Public Rights-of-Way Accessibility Guidelines* (PROWAG), dated July 26, 2011. The applicable PROWAG sections are shown in brackets. A determination of technical infeasibility or technical inquiry must be approved for a sidewalk that does not meet the following criteria. See Section 40-8.04(01) Item 3 for submitting a request for determination of technical infeasibility or technical inquiry.

See INDOT *Standard Drawings* series 604-SWDK for sidewalk and driveway crossing details.

1. **Width [R302.3].** The sidewalk width is measured exclusive of the curb, i.e. measured from the back face of curb. Sidewalks should be wide enough to accommodate the volume and type of pedestrian traffic expected.

Where a sidewalk is used in conjunction with a buffer, the minimum width is 5 ft, exclusive of the curb. See Section 51-1.03(01) item 4, for desirable buffer widths. See [Figure 51-1A](#), Sidewalk Clear Width.

Where a sidewalk is located immediately adjacent the curb, a width of 6 ft should be used to allow additional space for street and highway hardware as well as to provide pedestrian comfort due to the proximity of traffic.

Where the sidewalk serves commercial areas, schools, or other areas with concentrated pedestrian traffic, a width of 8 ft or greater may be appropriate.

Where insufficient space is available, the sidewalk width may be reduced to 4 ft for short distances. Where the clear width is less than 5 ft, a passing space must be provided at no more than 200-ft intervals. The passing space must be a minimum of 5 ft by 5 ft. A taper rate of 6:1 should be used to widen and reduce the sidewalk width at passing spaces. See [Figure 51-1B](#), Sidewalk Passing Space.

2. **Surface [R302.7].** The sidewalk surface must be firm, stable, and slip-resistant. A change in level of up to 1/4 in. may be vertical and without edge treatment. A change in level of 1/4 in. to 1/2 in. must be beveled with a slope not greater than 1V:2H. A change in level of greater than 1/2 in. should be accommodated with a running slope in accordance with the curb ramp criteria.

Where a grating is required within the PAR, the grating opening must not exceed 1/2 in. in the direction of pedestrian travel. Where a grating has elongated openings, the grating

must be placed so that the long dimension is perpendicular to the dominant direction of pedestrian travel.

3. Cross Slope [R302.6]. Cross slope is measured perpendicular to the direction of pedestrian travel. The maximum allowable cross slope of a sidewalk is 2.0%. A maximum cross slope of 1.5% is preferred and should be used as a design practice to reduce the likelihood of exceeding the maximum allowable cross slope during construction.
4. Grade [R302.5]. The grade or running slope is defined as the slope parallel to the direction of pedestrian travel. The grade of the sidewalk must not exceed the general grade established for the adjacent roadway.
5. Protruding Object [R210]. Protruding Objects such as street furniture, signal-controller cabinet, light standard, strain pole, utility pole, mailbox, sign support and other objects should not be placed within the width of the sidewalk. Protruding objects can be hazardous for pedestrians, especially pedestrians who are blind or have low vision. Where it is necessary to place a protruding object within the width of the sidewalk, a 4-ft minimum clear width may be provided for a short distance, see [Figure 51-1A](#). For a shared-use path, protruding objects should not overhang into any portion of the shared-use path at or below 8 ft measured from the finished surface. This is to accommodate for bicycle traffic.
6. Curb Ramp [R304]. A curb ramp is used to lower or raise the sidewalk to connect with a public road approach. Each curb ramp must be in accordance with the criteria described in Section 51-1.04.
7. Sidewalk Transition. A sidewalk transition should be used as part of a sidewalk driveway crossing. The sidewalk transition is used to lower or raise the sidewalk to connect with a residential or commercial driveway without yield or stop control. A sidewalk transition has a maximum running slope of 8.33%. A maximum running slope of 8% is preferred as a design practice to reduce the likelihood of exceeding the maximum allowable running slope during construction. Sidewalk transition details are shown on the INDOT *Standard Drawings* series 604-SDWK.
8. Sidewalk Driveway Crossing. A sidewalk driveway crossing is where a sidewalk crosses a driveway with or without a sidewalk transition. Sidewalk driveway crossings should only be used at a residential or commercial driveway intersection without yield or stop control. Sidewalk driveway crossing details are shown on the INDOT *Standard Drawings* series 604-SDWK.

roadway section for the entire project. This process will, of course, require proper communication between the road designer and bridge designer to identify and resolve problems.

The bridge geometrics will be determined in the project scope of work. For a new or reconstructed bridge on a 4R project, the criteria provided in Chapter [53](#) will determine the geometric design of the bridge. For a bridge within the limits of a 3R project, the criteria provided in Chapter [55](#) will determine the bridge geometrics. Chapter [53](#) provides project scope-of-work definitions and a map of the State highway system with designated 3R and 4R routes.

402-6.02(01) Cross Sections [Rev. May 2014, Sep. 2016]

Figures [402-6D](#), [402-6E](#), [402-6F](#), and [402-6G](#) each provide schematics of the bridge cross section for a specific highway type. The following will apply to the bridge cross section.

1. Bridge Clear-Roadway Width. The geometric design criteria figure in Chapter [53](#) for the appropriate functional classification provides this information for a new or reconstructed bridge within the limits of a 4R project. The geometric design criteria figure in Chapter [55](#) for the appropriate functional classification provides this information for a bridge within the limits of a 3R project. Figure [402-6H](#) shows the relationship between the bridge-railing and approach-guardrail offsets.

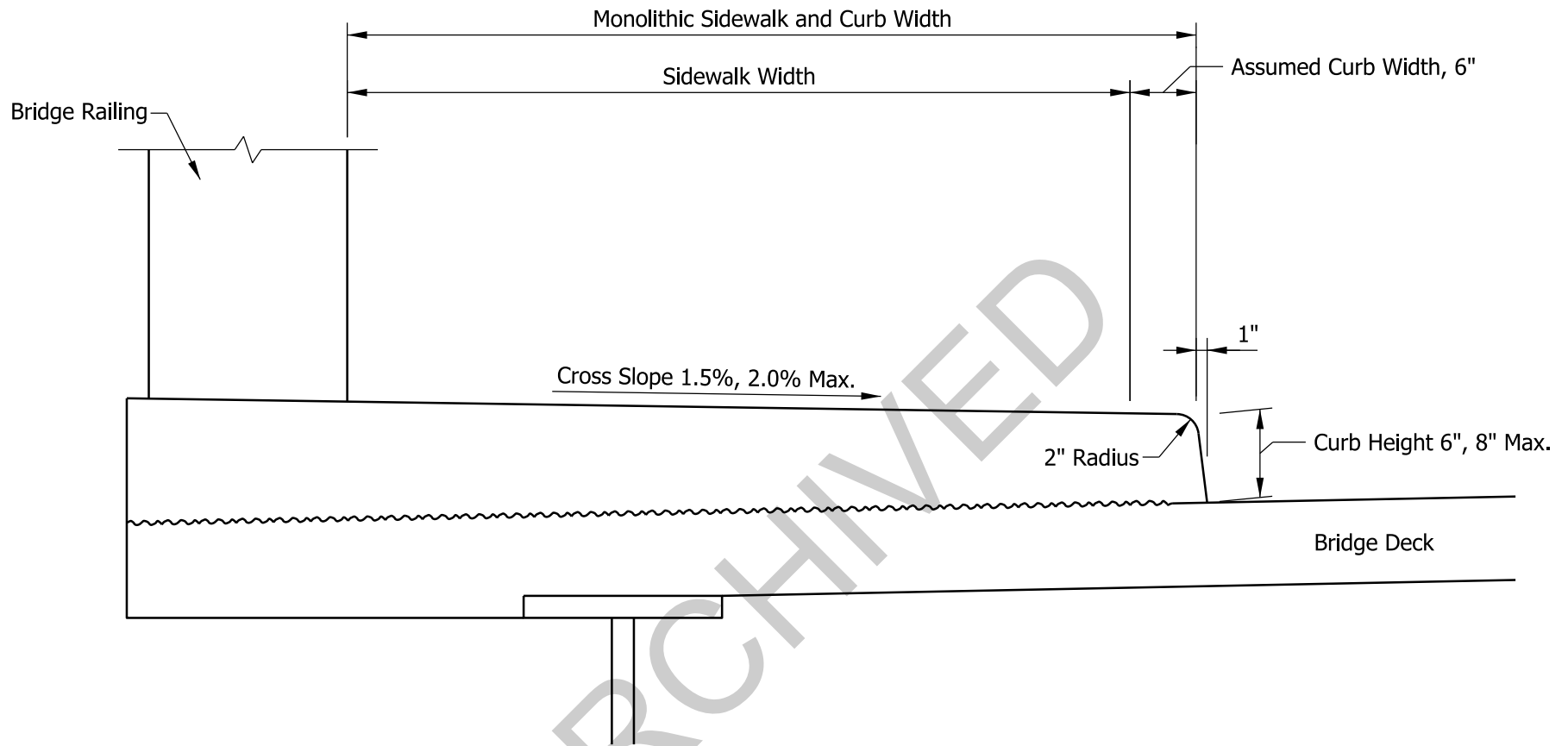
Where a bridge clear-roadway width is permitted to be narrower than the travel lanes plus the usable shoulder width on each side, a guardrail transition, collinear with the bridge railing, shall be provided. Thereafter, the guardrail shall be flared at an appropriate barrier flare rate until the guardrail length satisfies the length-of-need requirement or it intersects the approach guardrail. However, a continuous straight, without flare, run of guardrail is preferred for driving comfort and aesthetics. For this situation, the bridge clear-roadway width will nearly match the face-to-face guardrail width of the approach road section.

Chapter [53](#) discusses the design of a median for a long bridge with a sufficiently narrow median. Increased safety benefits can be realized in construction of a single structure. Depending on site conditions, a single structure shall be used rather than twin structures where the median width is approximately 30 ft or less on a freeway, or 20 ft or less elsewhere. The median width at an overpass shall match the median width on the approach.

For the median shoulders of a divided facility with two or more lanes in each direction, each bridge shall have a 5'-8" median-shoulder width where a type FC, FT, or TF-2 railing is used, or a 6'-0" median-shoulder width where another bridge-railing type is used. An

auxiliary lane may be required across a structure where warranted. See Chapter [53](#) for the requirements.

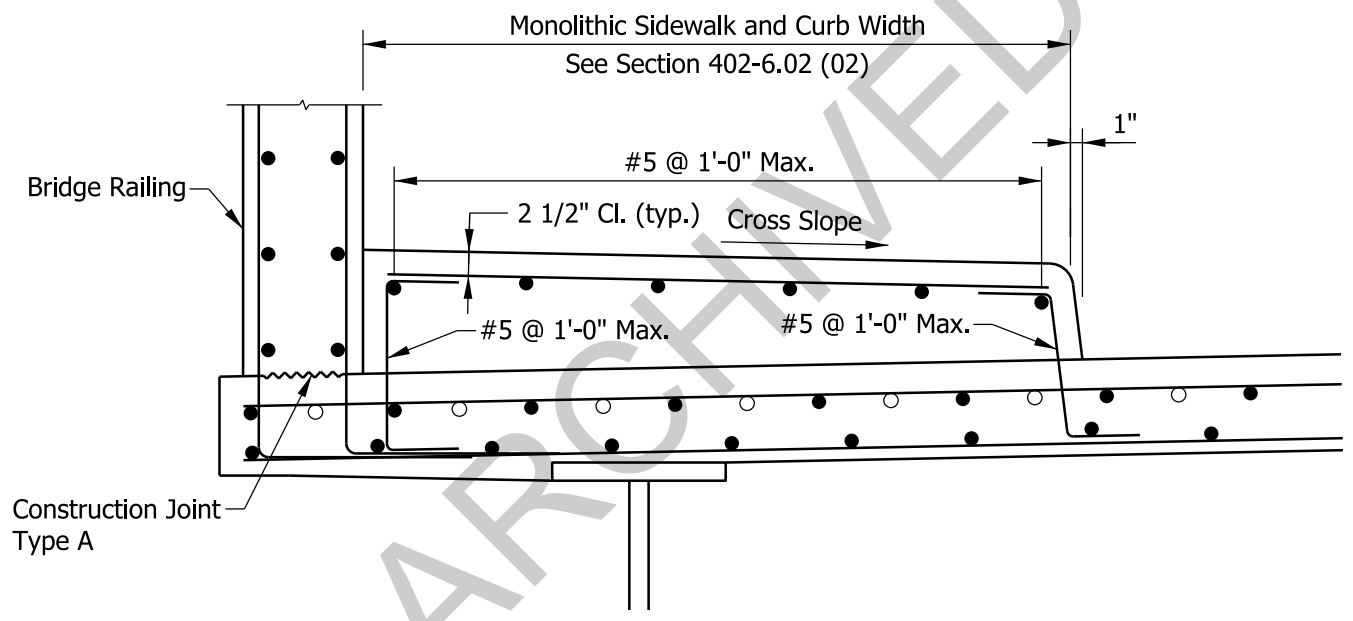
2. Cross Slope. Each new or reconstructed bridge on a tangent section will be constructed with a cross slope of 2% sloping away from the crown. The 2% applies to the entire width from the crown to the face of railing or curb. The crown across the bridge will be in the same location as the approaching roadway crown. A tangent-section cross slope may be increased to 3 to 4%, with only one slope break in the deck, if roadway geometrics require it.
3. Sidewalk. The sidewalk on a bridge is often poured monolithically with the curb and the width dimensioned from the front face of the curb. The sidewalk width is measured exclusive of the curb, i.e. measured from the back face of the curb. Guidance provided by the U.S. Access Board indicates that when there is no defined back face of curb, a 6-in curb width should be assumed. See Figure 402-6P, Bridge Sidewalk Width. Where a bridge includes a sidewalk, the bridge length should be reviewed in accordance with the passing space and sidewalk width criteria in section 51-1.03(02). Section 45-1.06 provides guidelines for sidewalk warrants and sidewalk accessibility criteria. Placement of a sidewalk on a bridge will impact the selection or location of the bridge railing. Section 404-4.02(03) provides criteria for bridge and pedestrian railing.
4. Bridge Width for Traffic Maintenance. The figures in Chapter [53](#) provide criteria for the bridge width. Additional permanent bridge width may be provided solely for the purpose of placing one lane of traffic across the bridge during construction. This can eliminate the need for a detour or runaround, or the use of a local road to re-route traffic during construction. See Chapter [83](#) for more information on maintenance and protection of traffic during construction.
5. Bridge Width on Flat or Short Horizontal Curve. Railings and copings on a bridge within a horizontal curve are built concentric with the roadway centerline. However, where the bridge is on a flat curve, or if the bridge is short, it may be more practical to build the railing and coping parallel to the long chord if the curved roadway plus shoulders and barrier offsets is within the inner faces of the railings, and it is economically feasible to construct a wider tangent bridge deck. It is considered economical if the bridge-deck width is increased by not more than 1 ft. However, it can be increased if it is determined to be more economical. Figure [402-6 I](#) illustrates these criteria.



1. Where a sidewalk and curb are poured monolithically, the sidewalk width for the purpose of determining ADA compliance will be the monolithic sidewalk and curb width minus an assumed curb width of 6 inches.
2. See Section 51-1.03(02) for sidewalk width, sidewalk cross slope and passing space criteria.

BRIDGE SIDEWALK WIDTH

Figure 402-6P



TYPICAL REINFORCEMENT IN BRIDGE SIDEWALK

Figure 404-4D