



Pedestrian Accommodation in Work Zones: A Field Guide



February 2018

***Work Zone Safety
Consortium***

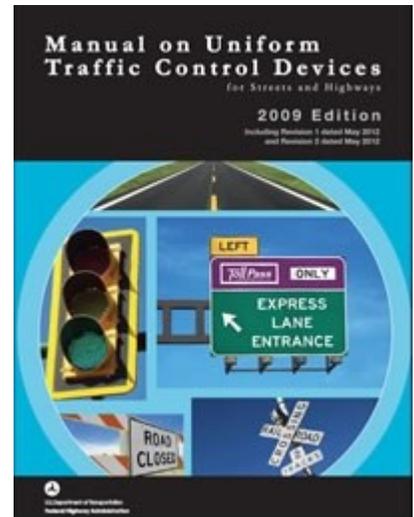
*This material is based
upon work supported by the
Federal Highway Administration
Grant Agreement DTFH61-13-H-00025*

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Pedestrian Accommodation in Work Zones: The Basics

Whenever you are working on or near a sidewalk or walking path as part of a temporary traffic control (TTC) zone, you must accommodate pedestrians who use that sidewalk or path, including individuals with disabilities. This is a federal standard defined in Section 6D.02 (03) of the *Manual on Uniform Traffic Control Devices (MUTCD)*:



When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Where pedestrians with visual disabilities normally use the closed sidewalk, a barrier that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.

This requirement applies to all TTC zones by state and local transportation agencies, construction and maintenance contractors (both road and vertical construction), utility companies, landscaping companies, as well as any sidewalk, lane, or road closures for vertical construction activities.

The way in which you must accommodate pedestrians is further described in Sections 6D.01 and 6D.02 of the *MUTCD*, and depends on factors such as:

- the type of work being performed,
- the duration of the work, and
- the hazards and impediments the work will create for pedestrians and bicyclists.

For TTC zones where work crews are present and will last only a few hours or less, the accommodation may be as simple as:

1. determining how pedestrians might be affected by the work activity,
2. establishing a plan about how the crew will assist any pedestrians (especially individuals with vision or mobility disabilities) in negotiating the work zone, and
3. identifying someone to watch for pedestrians and initiate the plan if the need arises.

On the other hand, TTC zones left in place over several days that do not have workers present at all times will require more extensive efforts to accommodate pedestrians. Pedestrians will need to be accommodated throughout the entire TTC zone. The TTC zone begins with the initial advance warning sign (e.g. ROAD WORK AHEAD) and ends at the END ROAD WORK sign, the last TTC device, or where traffic resumes normal operations.

This guide identifies common issues adversely affecting pedestrians that field personnel should be regularly checking for and correcting when working on or near sidewalks or walking paths. These issues are categorized according to the type of pedestrian accommodation that the work activity requires:

- Working Near the Sidewalk or Walking Path, but the Sidewalk/Path Remains Open
- Diversion of Sidewalk or Path around the Work Space
- Sidewalk or Path is Temporarily Closed, Pedestrians Detoured to an Alternate Existing Sidewalk or Path

A number of resources are available that describe how to properly design and implement these accommodations, and referenced at the end of this guide.

Working near the Sidewalk or Walking Path, but the Sidewalk/Path Remains Open

One of the more common situations that occurs is when work takes place in the roadway or on property immediately adjacent to a sidewalk or walking path. The sidewalk or path itself is not worked on or formally closed, but work activities can create hazards and impediments to pedestrians. When doing this type of work, field personnel should be vigilant in identifying and minimizing these issues.

Ensure that Pedestrians Are Protected from Trenches and Holes Adjacent to the Sidewalk/Path

Protection must be detectable and continuous in order to be safely negotiated by pedestrians with a vision disability. Drums, cones, orange mesh fencing, tape, or fall protection wires do not provide sufficient guidance or protection. Longitudinal channelizers and properly-constructed pedestrian barricades can safely separate pedestrians from work spaces and provide positive path guidance.



Figure 1. Open holes and trenches on or near pedestrian routes must be protected (Source: TTI)



Figure 2. Mesh fencing is not sufficient to protect a pedestrian from falling into a trench or hole (Source: TTI)

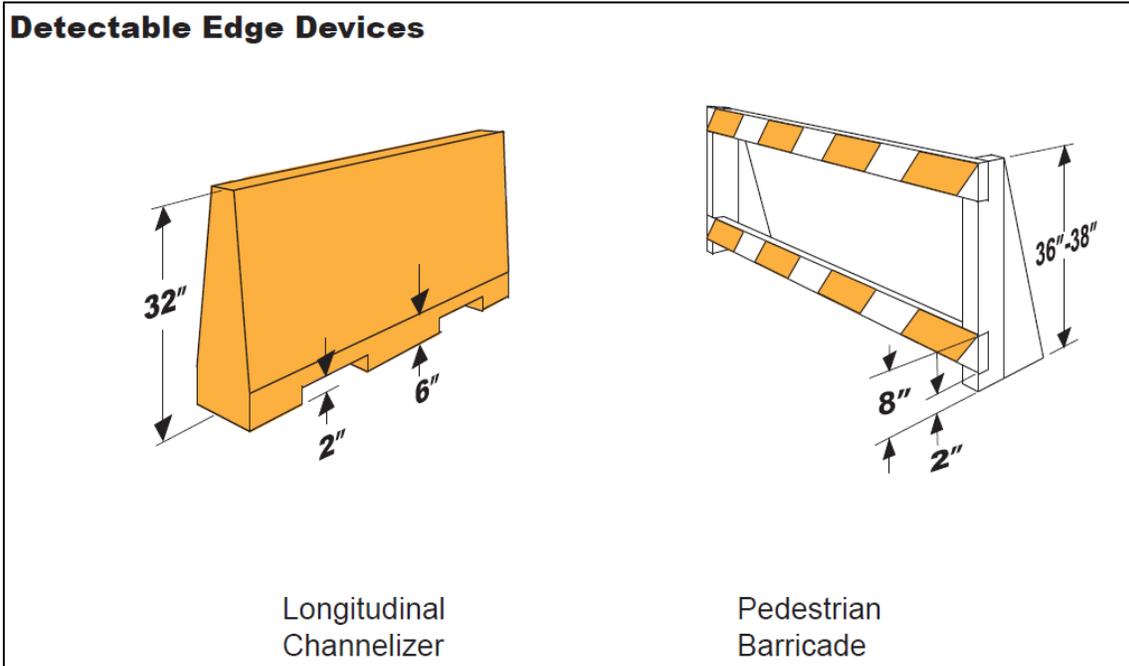


Figure 3. Longitudinal channelizers and properly-constructed pedestrian barricades can separate pedestrians from work activities and provide positive path guidance (source: Virginia Department of Transportation Work Zone Pedestrian and Bicycle Guidance)

Ensure that Pedestrians Cannot Walk into the Work Space if It Is Not Safe for Them to Do So

If hazards exist within the work space that require safety precautions for workers (trenches, fall protection, hard hats, crane operations, etc.), it is important to positively prohibit pedestrians from accidentally or purposely walking into and across the work space. Concrete barriers, plastic longitudinal channelizing devices, wooden enclosed walkways, and even cyclone fencing (as long as a continuous, smooth edge is provided at the bottom) can be used for this purpose.



Figure 4. Sidewalks should not lead directly into unprotected work spaces (source: TTI)



Figure 5. Example of longitudinal channelizers used to separate pedestrians from work spaces (source: TTI)

Ensure that Good Sight Lines Are Maintained for Pedestrians and Motorists at Intersections and Crossings

If not designed or installed properly, devices used to prohibit pedestrian access or provide protection from hazards can actually impede pedestrians and motorists from seeing each other or important traffic control devices. Similarly, improper positioning of temporary traffic control devices for motorists may also impede their ability to see pedestrians, and should be moved. The location of work vehicles, equipment, and materials should also be checked to make sure sight lines are always maintained.



Figure 6. Work zone devices and materials can obscure pedestrian signals can make it difficult for pedestrians and right-turning vehicles to see each other (Source: FHWA)

Ensure that Access from the Sidewalk/Path to Transit Stops and Businesses Is Being Accommodated

If work activities displace transit stops and other pedestrian access points, some way of accommodating how pedestrians access those points must be established. For instance, flaggers may be used to safely assist pedestrians. However, if the situation will exist during times when workers are not present, the project engineer or supervisor will need to establish a proper diversion path to the transit stop, or relocate the transit stop to a more pedestrian-accessible location and provide sufficient signing/wayfinding information to the new location. This will require that agencies and contractors work with the transit agency to relocate the stop. Pedestrians should not be forced to cross active work spaces to reach bus stops or access points.



Figure 7. Transit users should not be forced to walk through active work spaces to reach transit stops (Source: TTI)

Ensure that Obstacles on the Sidewalk or Path Are Removed When Workers Are Not Present, and Are Moved if Pedestrians Attempt to Use the Sidewalk/Path while Work Is Occurring

The existing pedestrian sidewalk or path must be left clear of mud or dirt, poles, temporary signs, hoses, barriers, construction materials, vehicles, equipment, and other protruding objects such as tree limbs at the end of each work shift.

During hours of work activity, someone must be designated to watch for approaching pedestrians, and be able to move obstacles from the sidewalk/path or otherwise assist the pedestrian in negotiating the obstacles.



Figure 8. Pedestrian sidewalks and paths that are left open for use must be kept clear (source: TTI)

Diversion of the Sidewalk or Path around the Work Space

Some work activities block a sidewalk or path for several days. Unless workers are stationed to assist pedestrians around the blockage day and night, a temporary diversion path may need to be created around the blockage. Guidance for the design of those diversion paths can be found in the documents mentioned at the end of this guide. Field personnel charged with installing and maintaining those walkways should regularly check the following items.

Ensure that the Diversion Path Is Clearly Marked and Detectable by Pedestrians with a Vision Disability

A pedestrian with a vision disability can find it difficult to understand that a sidewalk or path they normally use is being diverted around a work space. Detectable edging must be provided beginning at the normal pedestrian sidewalk or path and continue along the diversion path to the point where it rejoins the normal pedestrian facility. Drums, cones, and barricades themselves do not provide sufficient guidance to pedestrians with vision disabilities. Ideally, plastic or metal is used for the top railing to reduce the chance of splinters. In areas of high pedestrian activity, a pedestrian information and outreach campaign may be needed to inform users of the facility that a diversion path will be in place.



Figure 9. Pedestrian diversion paths must be clearly marked and detectable by individuals with vision disabilities (Source: FHWA; Source: Washington State DOT Design Manual, Chapter 1510.17)

If an audible warning system to inform pedestrians about the diversion path is to be installed and maintained, ensure that the message specified by the project engineer or supervisor has been properly recorded. Messages should be carefully worded and follow good message design principles, such as:

- Describe the diversion path in terms of the number of blocks to be traversed or landmarks to be passed
- Describe whether the diversion path will traverse major parking garage or retail driveways, as these could be otherwise counted as intersections by an individual with a vision disability
- If the diversion path takes the pedestrian into the street (protected by a longitudinal channelizer or other device providing continuous detectable edging), the message should describe the configuration in order to reassure pedestrians with visual disabilities that they are correctly following the intended path

Information recorded on these devices should be brief and to the point, and incorporate directions that do not require visual recognition (i.e., “sidewalk closed, turn left and cross Main Street, turn right and proceed one block, turn right and cross Main Street again”).



Figure 10. Audible pedestrian warning devices should be carefully positioned and use good message design principles
(source: Virginia Department of Transportation)

Ensure that the Installed Diversion Path Is Wide Enough

Pedestrians with wheelchairs and other mobility assistance devices need diversion paths to be at least 60 inches wide so that they can pass by each other if they meet head on. If a 60-inch path cannot be created over the entire length, a 48-inch walkway with a 60-by-60 inch pad every 200 feet should be provided.



Figure 11. Diversion paths should be at least 60 inches wide to allow two wheelchairs to pass each other side-by-side
(Sources: J. Barlow, *Accessible Design for the Blind*)

Ensure that the Diversion Walkway Surface Is Smooth, Solid, and Non-slip

The diversion path should be able to support a wheelchair under all conditions (dry, rain, snow, etc.) and not have traversable edges more than ½ inch high. The diversion path should also drain well and should be checked for any standing water or mud after a rain.



Figure 12. Diversion paths should be smooth, solid, weather resistant, and detectable by visually-impaired pedestrians (Source: TTI)

Ensure that the Diversion Walkways Have Permanent or Temporary Curb Ramps Where Needed

If the diversion path requires pedestrians to traverse a curb, a temporary curb ramp must be provided for pedestrians who have a mobility disability. Ramps should be stable, have a non-slip surface, and be capable of supporting the weight of scooters and pedestrians in wheelchairs without buckling or warping. Ramps should be at least 60 inches wide and have a protective edge to prevent wheelchairs from running off the side and tipping over. If the ramp is located at a pedestrian street crossing, detectable warnings should be used to notify individuals with a vision disability that they are about to enter the street.



Figure 13. Proper temporary curb ramps are required wherever the diversion path traverses a curb (Source: TTI)

Some agencies have established specific requirements for the design of temporary curb ramps to accommodate pedestrians with mobility disabilities, such as that shown below from the Florida Department of Transportation. In addition, some vendors now offer portable curb ramp systems that can be re-used.

Florida DOT – Temporary Curb Ramp - Perpendicular to Curb

1. Ramp Width - 60" Minimum, Non-Slip Protection
2. Protective Edge - 6" Minimum
3. Cross Slope - 2% Maximum
4. Edge Treatment - 1/2" Maximum between surfaces
5. Ramp Slope - 8% Maximum

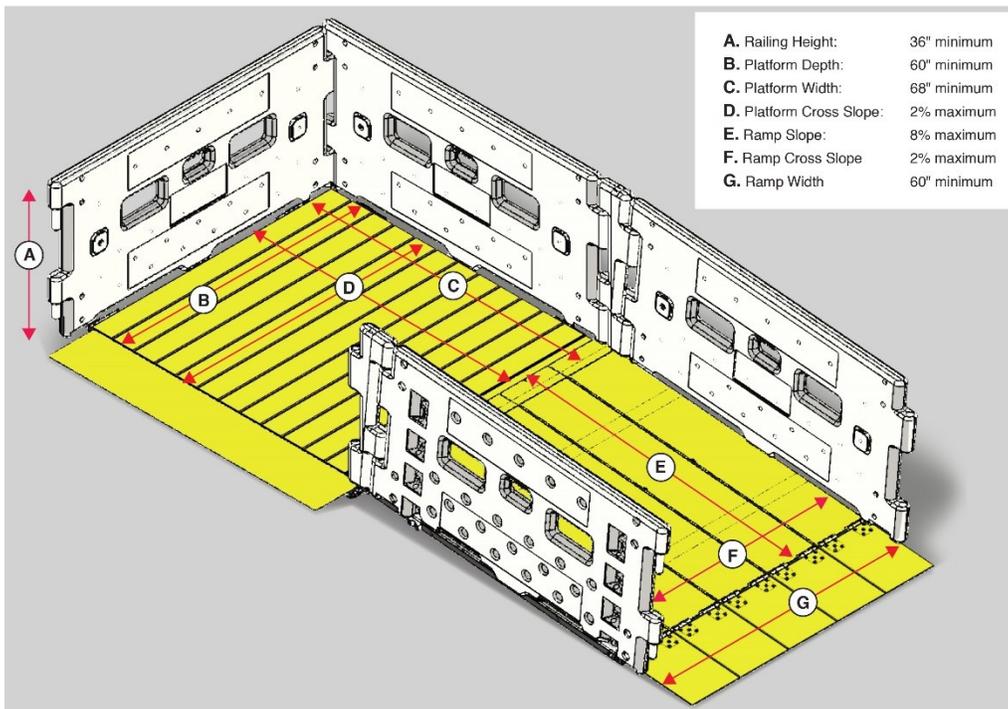
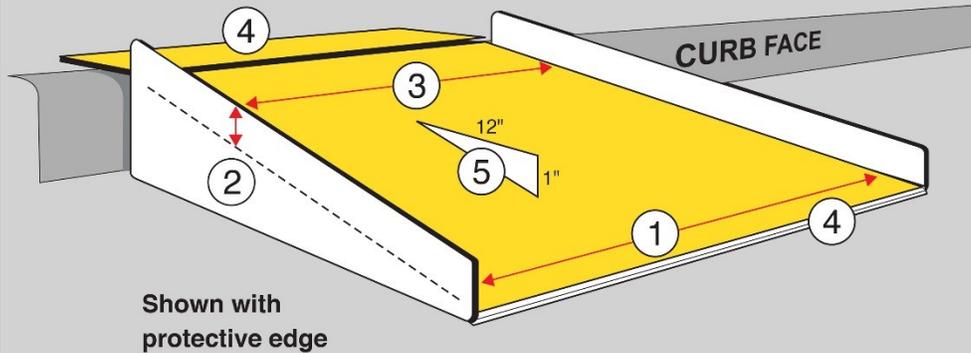


Figure 14. Temporary curb ramp construction requirements established by the Florida Department of Transportation

Ensure that Proper Devices Are Used to Separate the Diversion Pathway from Vehicular Traffic

If the decision is to use a travel, parking, or bicycle lane for the diversion walkway, the project engineer or supervisor should identify the type of positive separation between vehicles and pedestrians that will be used. Generally speaking, diversion walkways placed on higher-volume roadways will require concrete or other positive barriers, whereas longitudinal channelizing devices may be acceptable to the project engineer/supervisor on lower speed and volume roadways. Drums and cones do not provide adequate separation or continuous delineation of the diversion pathway.



Figure 15. Proper separation devices must be used when diverting pedestrians into travel, parking, or bicycle lanes (Source: J. Barlow, *Accessible Design for the Blind; TTI*)

Sidewalk or Pathway Temporarily Closed, Pedestrians Detoured to an Alternate Existing Sidewalk or Path

The third category of pedestrian accommodation involves establishing a detour route for pedestrians onto other sidewalks and paths. In many ways, pedestrian detours are similar to detours established for road closures. The MUTCD provides guidance on signs and barricades needed to detour pedestrians to alternate sidewalks or paths.

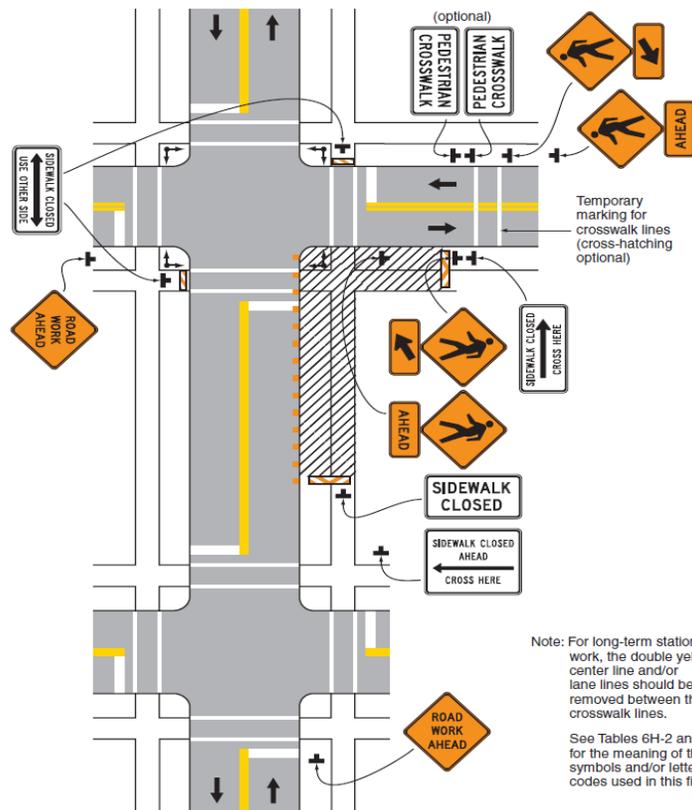


Figure 16. The MUTCD provides guidance on signing and barricades required when sidewalks and crosswalks are closed (Source: MUTCD)

It is important that the pedestrian is informed of the sidewalk/path closure and detour far enough upstream to utilize the detour. It is also important that barricades and barriers used to close the sidewalk/path are properly installed and maintained. In most cases, the project engineer or supervisor should design the detour route and appropriate signing, markings, channelization, and barriers. In addition, the location of needed temporary ramps

and audible pedestrian warning devices to accommodate pedestrians with vision or mobility disabilities should be identified. Field personnel responsible for installing and maintaining the alternative route should regularly check the following items.

Ensure that Pedestrian Detour Signing and Channelization Are Appropriately Designed and Installed

Pedestrian detours should be designed by the project engineer or supervisor. Signing should be installed to warn pedestrians of downstream sidewalk/path closures, and to provide information as to where the detour path is located. In some cases, it is important to inform pedestrians about what businesses are still accessible along the sidewalk or path. Signs should conform to the MUTCD. Hand drawn signs or modifications to signs are not sufficient for guiding pedestrians.



Figure 17. Hand drawn signs or modifications to signs are not appropriate for detouring pedestrians (Source: TTI)

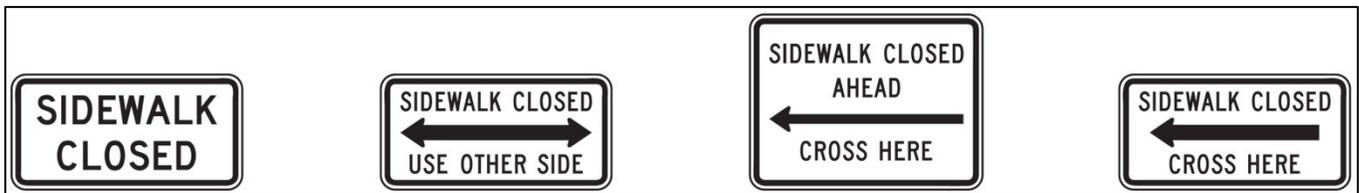


Figure 18. The MUTCD provides several examples of appropriate pedestrian detour signing (Source: FHWA)

Ensure that the Pedestrian Detour Route Accommodates Pedestrians with Disabilities

As the signing and channelization for the pedestrian detour route is installed, the route should be checked to make sure it will accommodate all pedestrians. Items to check include those listed previously when work occurs adjacent to a sidewalk that remains open. The route should have:

- continuity
- protection from trenches and holes
- good sight lines
- no mud or dirt
- no signs, hoses, barriers, materials, vehicles, equipment, or protruding objects that prohibit passage
- curb cuts and ramps

Similarly, the pedestrian detour route should be checked to make sure that pedestrians with visual disabilities will be able to navigate their way through the detour route. Sign heights and overhangs across the pedestrian detour should be checked to make sure that they are at least 80 inches high.



Figure 19. The pedestrian detour route should be continuous and free of obstacles (Source: TTI)

If the project engineer has required that an audible warning system to guide pedestrians with visual disabilities to the alternate sidewalk or path, the same principles that guide message design for diversion paths also apply. In addition, if the detour requires pedestrians to cross the street and use the sidewalk on the other side, this should be stated explicitly in the message.

For More Information...

Many states and safety organizations have developed tools for accommodating pedestrians in work zones. The following resources are also available on the *Accommodating Pedestrians* Hot Topic webpage available at the National Work Zone Safety Information website:

https://www.workzonesafety.org/work_zone_topics/pedestrian-safety/

Temporary Pedestrian Accommodations in Work Zones. Wisconsin Department of Transportation.

(<https://www.workzonesafety.org/practice/temporary-pedestrian-accommodation-in-work-zones/>)

Work Zone Pedestrian and Bicycle Guidance. Virginia Department of Transportation.

(http://www.virginiadot.org/business/resources/wztc/2016_WZ_Ped_BikeGuide.pdf)

Pedestrian Accommodations through Work Zones. Minnesota Department of Transportation

(<http://www.dot.state.mn.us/trafficeng/workzone/apr.html>)

Checklist for Accommodating Pedestrians in Temporary Traffic Control Areas. Texas A&M Transportation Institute (<http://tti.tamu.edu/documents/0-5237-P1.pdf>)

Applying the Americans with Disabilities Act in Work Zones: A Practitioners Guide. American Traffic Safety Services Association. (https://www.workzonesafety.org/training-resources/fhwa_wz_grant/atssa_ada_guide/)

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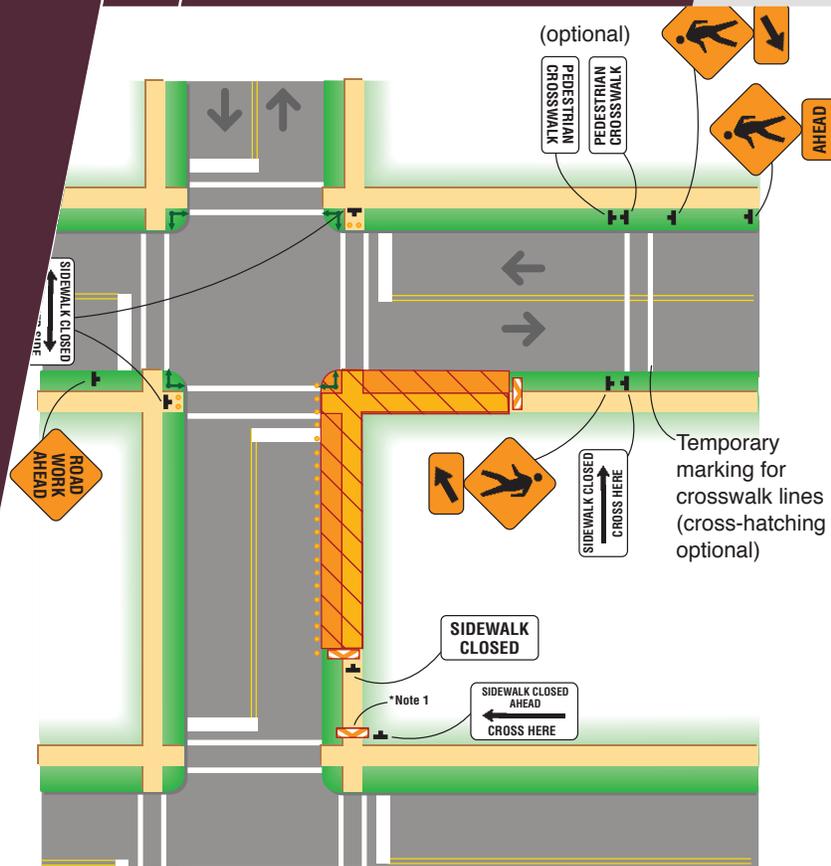
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