



Pedestrian Accommodations through Work Zones Design Guidance

Guidance for accommodating pedestrians when existing pedestrian routes are impacted by maintenance or construction.

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1. Introduction – Accommodating Pedestrians in Work Zones

When pedestrian facilities are impacted due to maintenance or construction, pedestrian routes **shall be provided** and have at least the **minimum accessibility attributes of the disturbed route**. Signage and devices, as necessary, should be provided to direct pedestrians safely through or around the work zone. This guidance does not apply to the final pedestrian route, only the pedestrian accommodations during maintenance or construction. If establishing or maintaining a pedestrian route is not feasible during the project, an alternate means of providing for pedestrians may be used, such as adding free bus service around the project or assigning someone the responsibility to assist pedestrians with disabilities through the project limits.

The intent of this document is to provide guidance to road designers on factors to consider when designing a project that impacts pedestrians during construction. The goal is to create a work zone which allows access and movement for all people regardless of mobility impairment through public work zones.

The need to create an inclusive environment for pedestrian facilities is required by the Americans with Disabilities Act of 1990 (particularly in Title II and Title III). In order to accomplish this, MnDOT has chosen to adopt the guidelines published under the [“Public Right-Of-Way Accessibility Guidelines \(PROWAG\)”](#) (first published in November 2005).

According to PROWAG, some general things to keep in mind when providing routes for all pedestrians through a work zone include:

- Pedestrians must be warned prior to coming upon a change in conditions, including options for alternate routes;
- when pedestrians approach the work area, they must be given guidance on any changes from the normal route such as shifts in the walkway alignment;
- as pedestrians pass by the work area, their route must be clearly marked, be provided with a suitable surface, and they must be protected from traffic and work operations (including drop-offs); and
- upon exiting the work area, pedestrians must be guided back to their original route and/or given information on how to proceed.

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In addition, the Minnesota Manual on Traffic Control Devices (MN MUTCD) is very clear that pedestrians need to be accommodated when existing facilities are impacted by construction or maintenance, as well as including accessibility requirements when appropriate:

MN MUTCD Part 6D.1 – Pedestrian Considerations

Standard: If the TTC (temporary traffic control) zone affects the movement of pedestrians, adequate pedestrian access and walkways shall be provided. If the TTC zone affects an accessible and detectable pedestrian facility, the accessibility and detectability shall be maintained along the alternate pedestrian route.

MN MUTCD Part 6D.2 – Accessibility Considerations

Standard: 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.

MN MUTCD Part 6G.5 – Work affecting Pedestrian and Bicycle Facilities

Standard: Where pedestrian routes are closed, alternate pedestrian routes shall be provided. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the pedestrian facility.

Regardless, providing adequate temporary pedestrian facilities is just the right thing to do. If a route that pedestrians use is impacted by a work zone, the route needs to be perpetuated so pedestrians can get to their destinations.

1.1 Terms and concepts used in this document:

Facility: All or any portion of buildings, structures, improvements, elements, and pedestrian or vehicular routes located in a public right-of-way.

Accessible: A facility in the public right-of-way that is fully PROWAG compliant.

Pedestrian Access Route (PAR): A continuous and unobstructed walkway within a pedestrian circulation route that provides accessibility.

Temporary Pedestrian Access Route (TPAR): Temporary PAR (fully accessible). See [Section 6 for TPAR Design Parameters](#).

Alternate Pedestrian Route (APR): A temporary pedestrian facility created to replace a pedestrian facility impacted by a TTC zone. The Alternate Pedestrian Route must contain accessibility features consistent with the features present in the impacted pedestrian facility. This may differ from a TPAR in that a TPAR must be fully accessible.

Attended work zone: Construction personnel are on-site to assist pedestrians through the work zone or move equipment to facilitate passage. This work zone attendee is expected to use good judgment in delineating the

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work zone and in providing assistance to pedestrians. Generally, an acceptable level of delay is 5 minutes. When pedestrian assistance is on site, an APR may not be necessary.

Unattended work zone: Work zone in which personnel are not on-site. An APR is required if the existing pedestrian route is impacted by the work zone.

This document includes standards and guidance for evaluating existing pedestrian facilities and planning APRs. Existing facilities may have features which make them accessible to some, but possibly not for persons with disabilities. It is important that the designer be familiar with the types of impairments and the aids required for each impairment to navigate. This will lead to an informed evaluation of the existing conditions and what features and devices are required in the APR.

[PROWAG](#) and [MN MUTCD Chapter 6D \(Pedestrian and Worker Safety\)](#) standards should be followed when designing an APR to ensure that uniform features and conditions are encountered by pedestrians with disabilities.

As mentioned previously, the requirement is to create an APR that contains accessibility features consistent with the features present in the impacted facility; however, the goal should be to create a TPAR whenever possible. If the route is not fully accessible, some pedestrians with disabilities may not follow the APR as they may not be certain that the route is fully traversable.

1.2 Types of Mobility Impairment

There are many types of accessibility needs that should be considered when evaluating an existing pedestrian route. Primary user groups to be considered include:

- People who are blind or low vision, including those using canes or guide dogs
- People using mobility devices, such as canes, crutches, wheelchairs, or mobility scooters
- People that are deaf or hard of hearing
- People with heart/lung conditions, diabetes, or other conditions that impact the distance they can walk
- People with cognitive or neurological disabilities

The list above is not all inclusive; there are many forms of permanent and temporary mobility impairments that can be experienced by people (parents with strollers, shoppers with heavy loads, etc). Impairments may not be evident when walking aids are not used, but may become apparent when a person encounters a barrier to movement or tripping hazard.

Wheelchair and stroller users have difficulties in negotiating changes in levels, cross slopes, and navigating over certain materials such as gravel or uneven pavements. Raised crossing points and dropped curbs provide for easier access across roads. Even a small step can prevent access along the roadway and to buildings, so the provision of ramps has to be considered. A suitable surface is firm, stable, slip-resistant, and allows normal usage of wheelchairs, strollers, walkers, and other mobility devices.

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Visually impaired and blind people need information about where they are and where they need to be so that they will not walk into obstructions or the roadway. This can be achieved by considering the layout and color of obstructions, including the use of strong contrasting colors as well as providing tactile and audible information where appropriate.

Guide dogs will take their owners around objects, but they still require routes that avoid forcing them to weave in and out of obstructions. Guide dogs have difficulty preventing collisions with overhanging obstacles; therefore, clear headroom must be given or a warning/barricade provided.

Cane users use their canes to feel the area directly in front of them so they do not bump into objects. Cane users require a detectable edge which allows them to “feel” their way through a detour.

People with visual impairments who do not use canes or guide dogs rely on color and tonal contrasts to provide information on locations of obstructions. Consideration should be given to providing an audible information device.

People with differing disabilities have differing needs, often in direct conflict with each other. An example is the need for a flush curb for wheelchair or stroller users, which causes problems for visually impaired people who do not know where the curb line is located. The solution is to use tactile paving, which can cause discomfort for some wheelchair users and people with other ailments such as arthritis. Compromises often have to be made to accommodate all users.

2. Guidance Documents for TTC Pedestrian Accommodation

The documents used to develop MnDOT guidance and standards for pedestrian accommodation in work zones include the following. Hyperlinks are included in the electronic version of this document.:

- [“Public Right-Of-Way Accessibility Guidelines \(PROWAG\)”](#) (first published in November 2005)
- [MN MUTCD Part 6A \(General\)](#)
- [MN MUTCD Part 6D \(Pedestrian and Worker Safety\)](#)
- [MN MUTCD Part 6F \(TTC Zone Devices\)](#)
- [MN MUTCD Part 6G \(Type of Temporary Traffic Control Zone Activities\)](#)
- [MnDOT Technical Memorandum 18-04-OP-01 ADA Accessibility in MnDOT’s Right of Way](#)
- [MnDOT Facility Design Guide Chapter 8 – Non-Motorized Facilities](#)
- [Minnesota Walks](#)

3. Project Documentation

The process of evaluating an existing walkway for accessibility and determination of appropriate APR/TPAR for use during a maintenance or construction project shall be documented. Project documentation may include pedestrian usage studies particularly in areas of intense pedestrian activity. Appendix A of this Guidance contains a [Scoping and Pre-Design Pedestrian Inventory of Existing Facility](#) template that could be included as documentation. Questions such as pedestrian origins/destinations, frequency of use, special issues with the walkway, along with anticipated users and mitigations should be asked. This entire document should be reviewed before using the Appendix A for documentation.

The results of the study and process used to determine the APR shall be documented and included within the Transportation Management Plan (TMP). The pedestrian accommodation plan and provisions should be referenced in the TMP. The TMP should also include contact information, informational outlets and an agency assigned responsible party. Once the APR is deployed problems encountered and field changes made from the design shall be noted. Project review should be done to determine best practices found and/or things to avoid in the future.

4. Scoping & Pre-Design Considerations for Pedestrians

During the scoping process and the preliminary design the designer should investigate the pedestrian facilities which will likely be impacted by construction. This investigation should be documented in the project's Transportation Management Plan, as discussed above.

4.1 Broad Considerations for a Pedestrian Access Route

Following are broad considerations for a PAR (by definition – fully accessible), these should be used as a baseline to assess the accessibility of the existing pedestrian facilities. [Section 6 \(Temporary Pedestrian Access Route Design Parameters\)](#) contains additional requirements and should be reviewed.

- Continuous width - The minimum continuous and unobstructed clear width of a PAR shall be 4.0 ft, exclusive of the width of the curb.
- Width at passing spaces - Walkways in PARs that are less than 5.0 ft in clear width shall provide passing spaces at intervals of 200 ft maximum. PARs at passing spaces shall be 5.0 ft wide for a distance of 5.0 ft.
- Walkway grade and cross slope – Where the walkway of a pedestrian access route is contained within a street or highway border, its grade shall not exceed the general grade established for the adjacent street or highway. The cross slope of the walkway of a PAR shall be 2% maximum.
- Walkway surface – The surface of the PAR shall be firm, stable, free draining, slip-resistant (even when wet), and allow normal use of wheelchairs, strollers, walkers, and other mobility devices.
- Walkway joints – Joint openings shall be a maximum of ½ in.

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- Surface discontinuities - Surface discontinuities shall not exceed ½ in maximum. Vertical discontinuities between ½ in and ¾ in maximum shall be beveled at 1:2 minimum. The bevel shall be applied across the entire level change.
- Curb ramps and detectable surfaces (truncated domes) are present.
- Traffic signals include APS (Accessible Pedestrian Signal) features.

4.2 Existing Pedestrian Facilities Inventory

The designer should inventory and document the existing facility, the surrounding environment and determine the type and degree of existing pedestrian usage. (See Appendix A– [Scoping and Pre-Design Pedestrian Inventory of Existing Facility](#))

Elements to consider include:

- Existing Pedestrian Facilities – at a minimum, attributes include:
 - Widths – all along the route, identify pinch points
 - Slopes – of streets, shoulders and walkways
 - Distances – total, between significant points
 - Type and quality of surface – material, texture, surface discontinuities, slip resistance, walkway joints
 - Crosswalks, marked and unmarked – location, presence of lighting, presence of Accessible Pedestrian Signal (APS) systems
 - Curb ramps
 - Detectable devices – truncated domes, edging, conspicuity
 - Shared facilities – bike lanes, transitways, bus stops, parking
 - Accessibility to structures/buildings along facility
 - Lighting
 - Speed limits
- Surrounding Environment:
 - Typical pedestrian origins and destinations – homes, stores, parks, schools, transit, etc. (see [Minnesota Walks](#) for more information)
 - Topography - ditches, gutters, adjacent land use/accessibility

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- Roadway - geometry, alignment and lane assignments
- Alternate routes – distances and information about existing accessibility
- Established “short-cut” routes/paths used (also known as ‘desire lines’)
- Parking facilities
- Transit facilities
- Concurrent road or sidewalk work beyond the project limits that impact pedestrian movements
- Pedestrian Information:
 - Types of pedestrians (ages, abilities, etc.) currently using (or expected to use) the route
 - Typical usage times – consider high vs. low usage times/days/seasons

Mobility ranges vary enormously between individuals and it should be noted that other factors like length of detour, weather, topography and obstacles can affect that range. Sections 5 and 6 give dimensions, which when not met, means that a mobility-impaired person may not be able to negotiate it easily.

5. Design of Alternate Pedestrian Routes

Once the existing pedestrian route has been analyzed for accessibility, the designer should be able to determine if a suitable route is possible through the work zone. This may require phased or staged construction in order to maintain access. This section contains guidance in developing appropriate routes for pedestrians when an existing route is modified or when a new route is utilized.

As the plan for work and TTC for drivers is developed, the designer should develop the plan for accommodating pedestrians to navigate the work zone. The designer should consider staging the work to minimize the impact to the existing pedestrian routes; but if pedestrian routes are impacted, the designer should develop a **pedestrian temporary traffic control plan** following the guidance in this section. [Sample APR plans](#) can be found on the Traffic Engineering website. In the development of the pedestrian temporary traffic control plan, the designer will need to determine where pedestrians need to be routed throughout the project – both in timeline and the physical limits. It is during this phase that the designer should coordinate with construction staff, agencies, and other interested parties regarding the routing of pedestrians. As an example, if it is determined that pedestrians need a bypass in an adjacent parking lane, the designer can coordinate with the city to determine how to close the parking lane, and if the parking needs to be relocated as part of the project.

The pedestrian temporary traffic control plan should clearly show pedestrian diversion routing and necessary traffic control devices (including locations) of sidewalk barricades, pedestrian channelizers, temporary curb ramps, temporary walkway surfaces and communication devices (signing and audible/tactile devices, as needed). If a detour is provided, include signing, and audible message devices for the detour.

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While much of the routing can be dealt with in the proposed temporary traffic control plan, there are situations that require the contractor to develop a plan to perpetuate pedestrian routes through the work zone – the contractor may opt to change the staging of the work.

If a work zone is unattended, a pedestrian should be able to maneuver through the work zone unaided using the APR. However, if a work zone is attended with project personnel, an APR may not be necessary. If it is decided to not set up an APR, construction personnel on site should assist pedestrians through work zone or move equipment to facilitate passage. This work zone attendee is expected to use good judgment in delineating the work zone and in providing assistance to pedestrians. Generally, an acceptable level of delay is 5 minutes.

5.1 Routing

Changes to a pedestrian route affect all users and information should be provided to accommodate all types of impairments. The primary concern is to keep pedestrians in the APR and safely separated from the construction activities and motor vehicle traffic. Pedestrians should be given guidance on any changes from the normal route such as shifts in alignment. The route shall be clearly delineated and signed with the international symbol of accessibility if it is a TPAR (fully accessible APR).

When used, devices in APRs should be fully accessible (TPAR compliant). Following is a list of typical **TPAR compliant routing devices** with accompanying description:

- **Pedestrian Channelizers/Railing Systems** have a detectable edge and delineate a route through the work zone. They may also have a hand-trailing edge to assist pedestrians with balance issues.
- **Temporary Barriers** shall be used to separate pedestrians from vehicular traffic where high speeds and/or high traffic volumes are anticipated. If designed and installed properly, they function as a Pedestrian Channelizer.
- **Sidewalk Barricades** are to be used to block/close sidewalks and may be used as a mount for informational signs and/or Audible Message Devices.
- **Temporary Walkway Surfaces** are used to cover segments of rough, soft, or uneven ground. They shall be firm, stable, and slip resistant that allows normal usage of wheelchairs, strollers, walkers, and other mobility devices. Concrete, bituminous, steel, rubber, wood (3/4" or thicker), and plastic are acceptable surface materials. These may be used without Pedestrian Channelizers for short distances when the surface on either side of the Temporary Walkway Surface is contrasting enough to be detected by visually impaired pedestrians.
- **Communication Devices** are used to provide relevant information to pedestrians. Typical information to provide should include notification of sidewalk closures, wayfinding directions for pedestrians, the duration of the walkway restrictions, and a project contact number to report hazards or issues with the APR.
 - **Information Signs**, while not fully accessible, provide information to sighted pedestrians.

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- **Audible Message Devices (AMDs)** should be used when pedestrians are detoured. If bypasses are used, Pedestrian Channelizers usually provide enough positive guidance for pedestrians with visual disabilities that AMDs are not needed. However, project conditions may require their use. See additional [TPAR Audible Message Content](#) which should be used as a tool for designers to assist in planning the appropriate Audible Message Content for the project.
- **Temporary Curb Ramps** shall be used if the disturbed pedestrian route had curb ramps, though they are recommended for use in all applications in which curbs need to be traversed.
- **Temporary Detectable Warning Surfaces** (truncated domes) are used to notify pedestrians when the APR crosses vehicular traffic. Optional at driveways, but should be used for cross streets.

Where the above devices are provided, they shall meet the standards provided in the [MnDOT Field Manual](#), [MN MUTCD Chapter 6F](#), and [PROWAG](#) for form, function and clearances. These standards have been summarized in [Section 6 \(TPAR Design Parameters\)](#) of this document. Where conflicts with dimensions occur, the requirement providing the greatest protection to the pedestrian shall govern.

5.1.1 Pay Items

Table 1 below shows the current pay items available for designers to use with regards to Pedestrian Accommodations through Work Zones. Special Provisions to accompany these pay items can be seen at [Boiler Plate Special Provisions](#).

Table 1 Current Pay Items available to designers

Item Number	Item	Unit Name	Plan Unit	Spec Year
2563.601/00100	ALTERNATE PEDESTRIAN ROUTE	LS	Lump Sum	20
2563.602/00600	TEMPORARY PEDESTRIAN RAMP	EACH	Each	20
2563.603/00010	LONGITUDINAL CHANNELIZING CURB	LF	Lin Ft	20
2563.603/00020	TEMPORARY TRUNCATED DOMES	LF	Lin Ft	20
2563.603/00030	PEDESTRIAN CHANNELIZER	LF	Lin Ft	20
2563.613/01150	AUDIBLE MESSAGE DEVICE	UDAY	UNIT DAY	20
2563.613/01160	AUD MESS DEV W PUSHBUTTON & LOCATOR TONE	UDAY	UNIT DAY	20
2563.618/00100	TEMPORARY WALKWAY SURFACE	SF	Sq Ft	20

5.2 Routing Order of Preference

As stated in the MN MUTCD, “Pedestrians should be provided with a convenient and accessible path that replicates as nearly as practical the most desirable characteristics of the existing sidewalk(s) or footpath(s).”

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This includes keeping the re-routing as short as possible. Also stated in the MN MUTCD “Pedestrian detours should be avoided since pedestrians rarely observe them and the cost of providing accessibility and detectability might outweigh the cost of maintaining a continuous route. Whenever possible, work should be done in a manner that does not create a need to detour pedestrians from existing routes or crossings.”

In addition, as mentioned in [Section 1.2 \(Types of Mobility Impairment\)](#), there are pedestrians with health issues that impact endurance and the distance they can travel without resting. In addition, pedestrians without disabilities may determine that they can “cut-through” the work area instead of following a long detour. Thus the routing should follow the order of preference:

1. Along the existing route.
2. Sidewalk bypass
 - a. Within the right of way, on the same side of the street as the existing route in a boulevard or shoulder, or
 - b. Taking a parking lane or lane of traffic and placing the bypass there. If a parking lane is taken, the designer will need to discuss this with the municipality to determine if an alternative location for the lost parking is necessary. If a lane of traffic is taken, this should be discussed with District Traffic to determine impacts to vehicular traffic.
3. Detour
 - a. On the opposite side of the street from the existing route would be the first preference if a detour is necessary.
 - b. Detours should be as short as possible.
 - c. Detours required by bridge work may be longer.

5.3 Maintaining Access to Existing Destinations/ Facilities

To the maximum extent possible, access should be maintained to the existing destinations/facilities identified in the Scoping and Pre-Design phases. If this is not possible during some stages of the work, alternative access locations should be created. If **this** is not possible, the duration and time of work impacting the access should be restricted as much as possible.

Following are some considerations for typical destinations/facilities:

- Transit – maintain or relocate transit stops; if necessary, coordinate with the transit agency to redirect routes. Relocated stops should be as accessible as the existing stops. Regardless, the designer should coordinate with the transit agency.

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- Parking – relocate accessible parking, curb ramps, or walkways as necessary. At times, it may be necessary to relocate on-street parking to make room for a sidewalk bypass; if this is the case, then the lost parking stalls may need to be moved to another location. The designer will need to coordinate with the local municipality and businesses to address this need.
- Building Entrances – provide temporary access ramps, walkways, improved secondary entrances, loading/unloading access as necessary. As with the routing, at least match the existing level of accessibility.
- Schools – stage work around arrival and dismissal periods. Determine pathways that pedestrians use to access the facility and develop alternatives. The designer should coordinate with the administration of the school to solve access issues.
- Shared-use Facilities – redirect these routes as necessary. Pedestrian routing should follow the guidance in this document. If possible, accommodate bicyclists through the work zone. If not feasible, bicycle routing may need to be accommodated by a detour.
- Recreational/Park Facilities – as these facilities are used for recreation, longer detours may be suitable. The designer should coordinate with the recreational facility agency.

5.4 Minimize Traffic and Work Area Hazards

The designer should strive to shield, protect, and/or advise pedestrians when the APR may increase their exposure to traffic or the work area. Elements to consider while developing the plans for the APR include:

- Traffic Speeds/Volumes:
 - Low Speed – If using a bypass, maintain longitudinal separation with channelizers, curbing, railings, or barricades
 - High Speed/Volume – When routing pedestrians into bypasses next to traffic, provide positive protection with barrier and appropriate crash cushions
- Direct Traffic Conflicts / Crossings
 - Pedestrian signals / temporary crosswalks
 - Work vehicle access
 - Separation using channelizers, fencing, walls, or barriers
- Excessive Debris/Dust/Noise
 - Pedestrians should not be expected to walk through clouds of dust or walk near loud machinery (i.e. jackhammer) where additional personal protective devices are needed for workers (noise

protection, breathing apparatus, etc). For these types of operations, if a pause in activity will not improve the conditions, pedestrian detours may be appropriate.

6. Temporary Pedestrian Access Route Design Parameters

This section includes the criteria for a fully accessible Alternate Pedestrian Route. By definition, this is a Temporary Pedestrian Access Route (TPAR). See the [MnDOT Field Manual](#) or MnDOT TPAR Device [Standard Plans](#) for graphical representations of the dimensions/parameters.

6.1 Walkway Requirements

Walkways should be designed and maintained with:

- An obstruction-free width of **60** inches desired (**48** inch minimum)
 - 60x60 inch square required every 200 feet if walkway is less than 60 inches in width
- A surface that allows normal usage of wheelchairs, walkers, strollers, and other mobility devices; and is firm, stable, free-draining, and non-slip, regardless of weather conditions. Concrete, bituminous, steel, rubber, wood ($\frac{3}{4}$ " or thicker), and plastic are acceptable surface materials. Gravel, millings, or other uneven surfaces are not acceptable surface materials.
- Smooth surface transitions. A change in surface height
 - up to 0.25 inch maximum may be vertical,
 - between 0.25 inch to 0.5 inch the corner maximum shall be beveled 1:2, and
 - transitions greater than or equal to 0.5 inch shall be ramped as per ramp slope restrictions.
- Continuous surface sections (0.5 inch maximum lateral joint gap widths along transverse joints) .
- Longitudinal joints that are closed and flush to prevent tripping and the trapping of canes or small wheels.
- If Pedestrian Channelizers or Sidewalk Barriers are used they shall have detectable edges (6 inch minimum height with 2 inch maximum space above walk surface)

Obstructions and pinch points can pose a problem to visually impaired pedestrians and people using wheelchairs. This includes any permanent or temporary object placed in the walkway (e.g. construction equipment and materials, waste bins, barriers, utilities' boxes, lampposts, mailboxes, and traffic signs).

Items remaining in pedestrian walkway during construction must be marked and provide sufficient distance for movement around object. In addition the following should be considered:

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- Lights, signs, and other overhead projections should be wall mounted if possible; these, and elements that span the TPAR, such as banners, shall have a minimum clearance of 80 inches above the ground to the lowest point of the element.
- Signs and other devices mounted lower than 7 feet above the temporary pedestrian pathway **should** not project more than 4 inches into accessible pedestrian facilities. Spaces that occur under ramps and stairways should be blocked off, provided with a protective rail, or gated. Framing a detectable edge around a sign base is one possible solution.

6.2 Crossing Considerations

When the APR must be shifted to the other side of the road the needs of all users should be addressed for the crossing.

When the APR is shifted to the other side of the road advance warning should be provided so that pedestrians do not “backtrack” to cross safely. Should a mid-block crossing be utilized, visual and wheelchair users need to be fully accommodated. Providing a notification of the mid-block crossing to drivers is crucial; drivers will not be expecting pedestrians. Prohibit parking at least 20 feet prior to and after a marked crosswalk. Provide high visibility crosswalk pavement markings and prohibit parking at least 20 feet prior to and after the crosswalk.

Curbs present a significant barrier to the mobility of wheelchair or stroller users. If the disturbed route had curb ramps at locations where pedestrians are expected to cross, temporary curb ramps shall be provided. If a temporary curb ramp is provided, provide another on the other side of the road, directly opposite and on any intervening pedestrian refuges. Temporary curb ramps are addressed in section 6.6, below.

6.3 Communication Devices

Signs and information for navigating through the work zone should be in English and in a form that can be used by people with mobility impairments. It is particularly important to take into account the needs of visually and hearing impaired pedestrians and to make information as simple and easy to understand as possible. Sign message and placement should follow guidance provided in the MN MUTCD which includes the MnDOT Field Manual. All devices shall be placed and supported so as not to be an obstruction in the pedestrian walkway. See [TPAR Audible Message Content](#) for additional TPAR Audible Message guidance.

Guidelines:

Typical sign information should include:

- Advanced notice prior to construction
- Duration of walkway restrictions.
- Project contact number for 24/7 questions or reporting hazards.

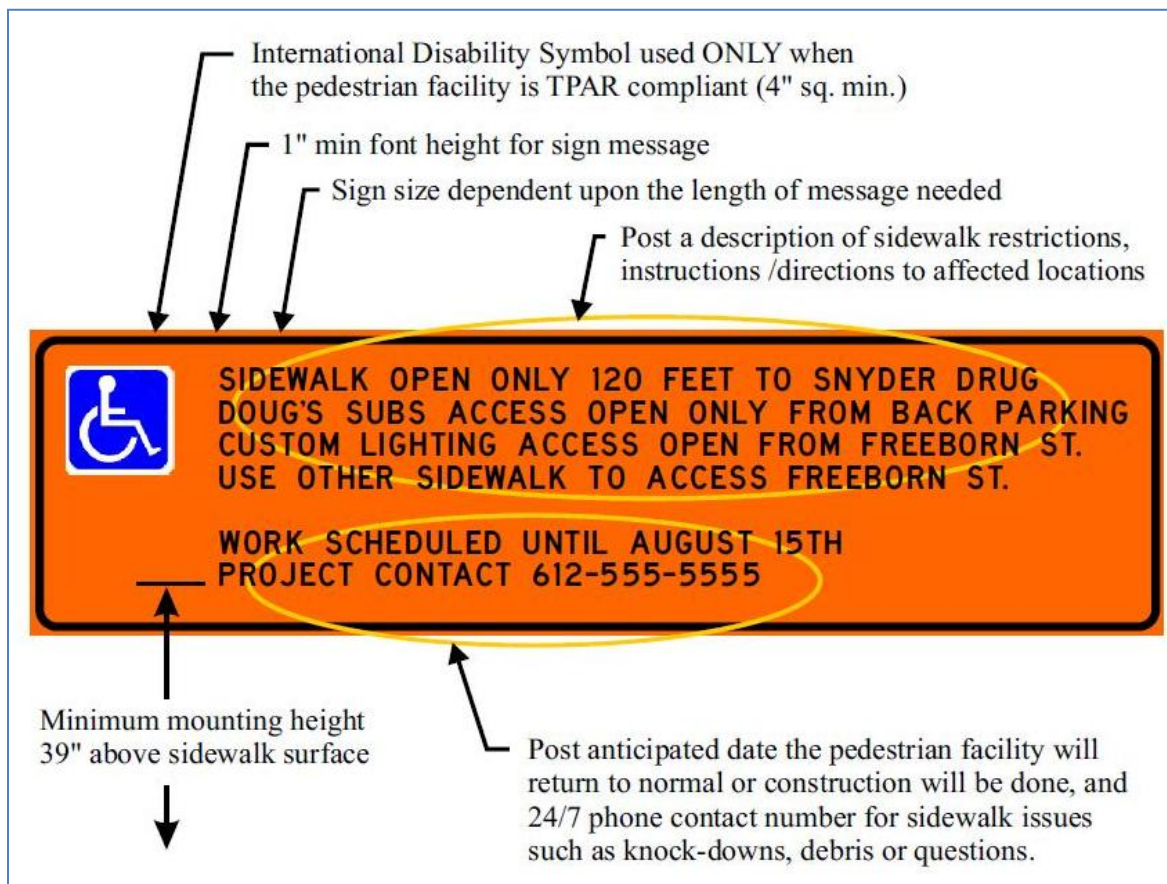
In addition, the audible or tactile message should give the following information:

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- Brief announcement to get pedestrian’s attention
- Current location of the pedestrian
- What is occurring
- Where is the impact (accessible path availability and event duration)
- Advisory action
- Project Information

The International Symbol of Accessibility should be displayed when any walkway through a work zone has been determined to be TPAR compliant. See the example MnDOT construction info sign for pedestrians below.

Figure 1 – MnDOT Construction Info Sign for Pedestrians



The International Symbol of Accessibility shall not be displayed if persons with disabilities should not use the temporary pedestrian detour. The reason for the non-compliance should be posted and an alternate route should be posted when the primary temporary pedestrian detour is non-compliant to TPAR standards.

6.4 Handrailing Edge

Additionally known as a Hand-trailing Edge. When hand guidance is required, the top rail or top surfaces shall meet the following:

- Both upper and lower surfaces shall share a common vertical plane.
- Be in the same vertical plane as the detectable edge (directly above the detectable edge)
- Be continuous at **34-38** inches above the walkway surface, parallel with walkway surface
- Be supported with minimal interference to the pedestrian's hands or fingers
- Shall be smooth and continuous, free of sharp or rough edges or objects which may harm hands, arms or clothing of pedestrians

A handrailing edge is not a handrail. It is designed as a balance assistant for pedestrians with disabilities.

6.5 Changes in Level

In addition to ramps, steps may be provided along the route where there is a significant change in level – greater than what is accommodated with a Temporary Curb Ramp. To some pedestrians, steps are preferable to ramps.

6.6 Temporary Curb Ramps

When pedestrians are diverted to temporary routes in the roadway, suitable temporary curb ramps must be provided to enable people using wheelchairs to negotiate curbs safely.

A temporary curb ramp shall be provided if there is an existing ramp unavailable due to construction. This temporary curb ramp shall meet the standards shown in detail in the [MnDOT Field Manual](#).

Guidelines:

- Provide the full width of the temporary route (60 inch recommended minimum width, or 48 inch absolute minimum).
- Ramp shall be constructed of materials strong enough to support users.
- Ramp shall have a firm, stable and non-slip surface which allows normal usage of wheelchairs, walkers, strollers and other mobility devices. Suitable surface materials are concrete, bituminous, steel, rubber, wood $\frac{3}{4}$ " or thicker, and plastic. Gravel, Millings, or other uneven surfaces are not acceptable surface materials.
- Ramp slopes shall be a maximum of 1:12
- Level clear space required at both ends of all ramps (48 inch min length, 60 inch or greater is recommended)

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- When ramp is installed parallel to curb, a 48 inch by 48 inch minimum platform should be provided at curb level to allow wheelchair users to turn 90 degrees before descending or after ascending the ramp.
- Care should be taken when setting up temporary ramps to prevent them being placed close to drain covers or grilles that could trap the wheels of wheelchairs. Where this is not possible thought should be given to changing the grating, also bearing in mind the needs of cyclists.
- Smooth surface transitions. A change in surface height
 1. Up to 0.25 inch maximum may be vertical,
 2. Between 0.25 inch to 0.5 inch shall be beveled 1:2, and
 3. Transitions greater than or equal to 0.5 inch shall be ramped as per ramp slope restrictions.
- Continuous surface sections (0.5 inch maximum lateral joint gap widths)
- Temporary vertical edge drop-offs require a protective edge (2 inch minimum height), detectable edge, or a railing system (If drop-off is steeper than 1:3, then edge is recommended over 3 inch drop, and required if 6 inch drop or greater)
- Non-restrictive Height (7 foot minimum clearance)
- Visible – contrasting colors, marked edges 2-4 inch wide

6.6.1 Temporary Curb Ramps Exceeding Maximum Gradient

PROWAG Guidance stated above and repeated here, requires an APR in a work zone to be at least as good as the existing.

Part 6D.01 of the MUTCD requires alternate routes to provide the best elements of accessibility provided in the pedestrian circulation route before its disruption.

Should the designer find that the best way to accommodate pedestrian traffic in a work zone replicates ramp inclines which exceed the PROWAG recommended maximums, a handrail should be considered. Handrail should be:

- Graspable,
- 34 inch to 38 inch high,
- 1.25 inch to 2.0 inch thick,
- Able to withstand a 200 pound force in a downward or outward direction anywhere along its length

6.7 Temporary Truncated Domes

Temporary truncated domes shall be used to notify pedestrians when the APR crosses a public road or an access with significant vehicular traffic.

6.8 Temporary Lighting

Good lighting is important from several points of view – navigability of the walkway surface, personal security, safety, and ability to see signs and instructions. In areas where pedestrians are likely to cross the roadway, consider lighting to increase visibility of pedestrians to motorists. If needed, make sure to include adequate detail in the plan.

Many visually impaired pedestrians suffer with increased problems in poor lighting conditions.

Guidelines:

Good lighting should illuminate:

- Any obstructions,
- Changes in level, and
- Changes in surface texture.

Lighting should be situated clear of trees and other obstructions, which would cast shadows and obstruct the light output.

6.9 Overhead Protection

If a covered APR near a construction site is chosen, that route shall comply with all pertinent design conditions for width, surface conditions and clearances as outlined in this guidance. In addition the following should be considered:

- 7 foot vertical clearance required, if not achieved walkway should be diverted.
- Corner poles should be clearly indicated by warning tapes and sleeves.
- When scaffolding is utilized as overhead protection, pedestrian channelizers or detectable edges should be used.
- Warning signs should be provided at ends and external corners.
- Each vertical support adjacent to the walkway should be provided with;
 - Distinctive orange and white banding, or
 - A **3** inch white band **60** inch above ground level

6.11 Temporary Signal or Pedestrian Hybrid Beacon

If the existing signal is an Accessible Pedestrian Signal (APS), then any temporary signal should meet APS requirements.

According to the MnDOT Traffic Engineering Manual 9-4.01.01 Traffic Signal Warrants – Warrant 4, if there are a considerable number of pedestrians a temporary signal or pedestrian hybrid beacon may be installed to facilitate pedestrian crossings.

Appendix A: Scoping and Pre-Design Pedestrian Inventory of Existing Facility

Project Number _____ Project Location _____

Date _____ Reviewer _____

Consider the following and document:

- Consider breaking the project area into different segments with similar characteristics
 - Consider segmenting block by block or by side of roadway
 - This is not required but could be helpful for more complex projects sections
- Existing pedestrian facilities:
 - Widths – averages/maximums/minimums along the route, identify pinch points, passing space available
 - Slopes – of shoulders, streets and walkways
 - Distances – total, between significant points
 - Type of surface – material, texture, surface discontinuities, slip resistant, walkway joints
 - Crosswalks, marked and unmarked – where, presence of lighting, Accessible Pedestrian Signal (APS) systems present
 - Curb ramps
 - Presence of detectable devices – truncated domes, edging, conspicuity
 - Shared use facilities – bike lanes, transitways, bus stops, parking
 - Accessibility to structures/buildings along facility
 - Lighting
 - Speed limits
- Surrounding environment:
 - Typical pedestrian origins and destinations
 - Residential homes and apartments, schools, shopping, community centers, businesses, hospitals, churches
 - Topography - ditches, gutters, adjacent land use/accessibility
 - Roadway - geometry, alignment and lane assignments
 - Established “short-cut” routes/paths used (‘desire lines’)
 - Possible alternate routes – distances and information about existing accessibility
 - Parking facilities
 - Transit facilities
 - Concurrent or planned road/sidewalk work beyond the project limits that impact pedestrian movements
 - Interaction of route with nearby events – festivals, parades, sporting events, school events, etc.
- Pedestrian information:

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- Types of pedestrians (ages, abilities, etc.) currently using (or expected to use) the route
 - Typical usage times – consider high vs. low usage times/days/seasons
- Local businesses:
 - Local business needs for pedestrian access
 - Notify local businesses about possible pedestrian access changes