Designing for Pedestrians and Bicycles in Work Zones

Ken E. Johnson

State Work Zone & Pavement Marking Engineer

Fall 2019

DEPARTMENT OF TRANSPORTATION

What we'll answer today

- Why is this necessary?
- What guidance is available?
- What do I need to do?

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Why is this necessary?

Important definitions

- Pedestrian Access Route
  - A continuous and unobstructed walkway within a pedestrian circulation path that provides accessibility.
- Temporary Pedestrian Access Route
  - Temporary PAR (that is fully accessible)
- Alternate Pedestrian Route
  - Temporary pedestrian facility that contains accessibility features consistent with impacted pedestrian facility.

Persons with Hearing Disabilities

- 2010 Census
  - Overall US Population **303.8 million**
  - 15 years and older **241.6 million**
  - Following statistics are for 15 years and older
- Approximately [ ] have a hearing disability

Persons with Visual Disabilities

- Approximately [ ] have difficulty seeing (2010 census, 15 years and older)
- Visual disabilities can range from [ ] to [ ]
- You often can't tell who has a visual disability

PedsInWZs | http://www.dot.state.mn.us/trafficeng/workzone/apr.html

Persons with Ambulatory Disabilities

- Approximately [ ] Americans have ambulatory disabilities
- Approximately [ ] have difficulty walking ¼ mile, including [ ] who can't.
- 2010 census, 15 years and up

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Impairments that affect access

- Physical/orthopedic
  - Requiring the use of wheelchair, walker, cane, or prosthetic device
- Physical/medical
  - Heart/lung conditions, diabetes, etc
- Visual
  - Blind, low vision, lack of depth perception, etc
- Hearing
- Cognitive/neurological
  - Brain injury, etc

Chapter 6A.1 – General (Standard)

The needs and control of all road users (motorists, **bicyclists, and pedestrians** within the highway, or on private roads open to public travel, including persons with disabilities in accordance with the Americans with Disabilities Act of 1990 (ADA), Title II, Paragraph 35.130) through a temporary traffic control zone shall be an essential part of highway construction, utility work, maintenance operations, and the management of traffic incidents.

Chapter 6G.5 – Work Affecting Pedestrian and Bicycle Facilities (Standard)

Where pedestrian routes are closed, alternate pedestrian routes shall be provided.

Chapter 6D.1 – Pedestrian Considerations

Advance notification of sidewalk closures shall be provided by the maintaining agency.

If the Temporary Traffic Control (TTC) 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***.

Chapter 6D.2 – Accessibility Considerations

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.

Chapter 6G.5 – Work Affecting Pedestrian and Bicycle Facilities

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.

From MN MUTCD 6D.1 – Pedestrian Considerations

- Tape, rope, or plastic chain strung between devices are <u>not detectable</u>, do not comply with the design standards in the "…(ADAAG)"…, and **<u>should not</u>** be used as a control for pedestrian movements.

PedsInWZs | http://www.dot.state.mn.us/trafficeng/workzone/apr.html

MnDOT Adoption of PROWAG

Tech Memo 18-04-OP-01: *Americans with Disabilities Act (ADA) Accessibility in MnDOT's Right-of-Way*

- Draft PROWAG of 2005 is primary guidance for accessible facility design on MnDOT projects

Public Rights of Way Accessibility Guidelines

When an existing pedestrian access route is blocked by construction, alteration, maintenance, or other temporary conditions, an alternate pedestrian access route … shall be provided.

Summary of why this is needed…

- MN MUTCD requirement – tort liability
- ADA – civil right issue – lawsuits
- Right thing to do
  - Pedestrians are a user of the transportation system

Valid users of the system

Is it really that bad?

Examples that need improvement

Examples that need improvement

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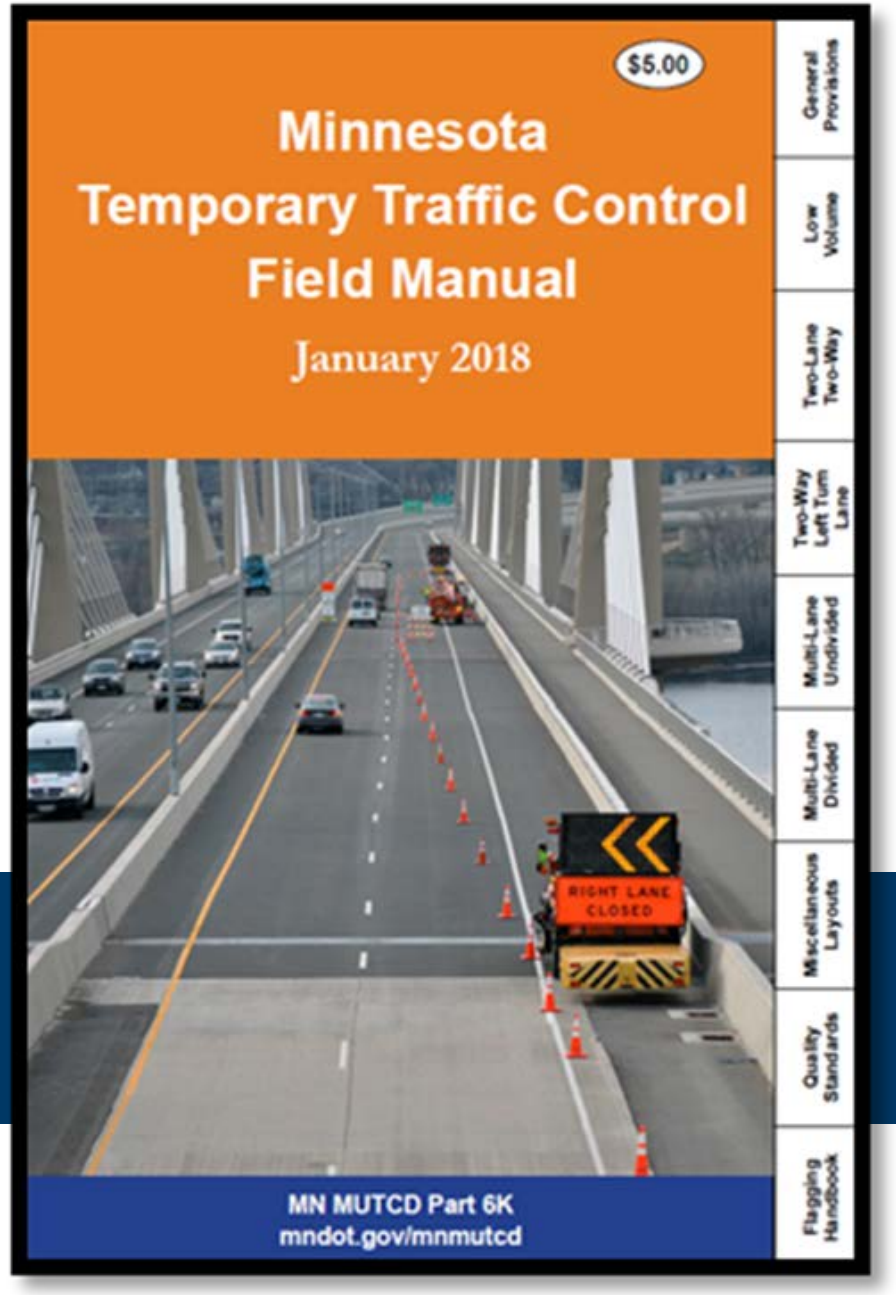
PedsInWZs | http://www.dot.state.mn.us/trafficeng/workzone/apr.html

Examples that need improvement



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Available guidance

Design Guidance

Pedestrian Accommodations through Work Zones Design Guidance

Guidance for accommodating pedestrians when existing pedestrian routes are impacted by maintenance or construction.
January 2020

- Draft
- Expected completion – early 2020
- Sign up for email updates
  - Websearch mndot work zones

PedsInWZs | http://www.dot.state.mn.us/trafficeng/workzone/apr.html

Design Guidance

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Pedestrian Accommodations through Work Zones Design Guidance

Guidance for accommodating pedestrians when existing pedestrian routes are impacted by maintenance or construction.
January 2020

- Includes:
  - Why
  - Guidance documents
  - Project documentation
  - TPAR design parameters
  - Scoping & pre-design considerations
  - Design of APRs

PedsInWZs | http://www.dot.state.mn.us/trafficeng/workzone/apr.html

Primary guidance resources

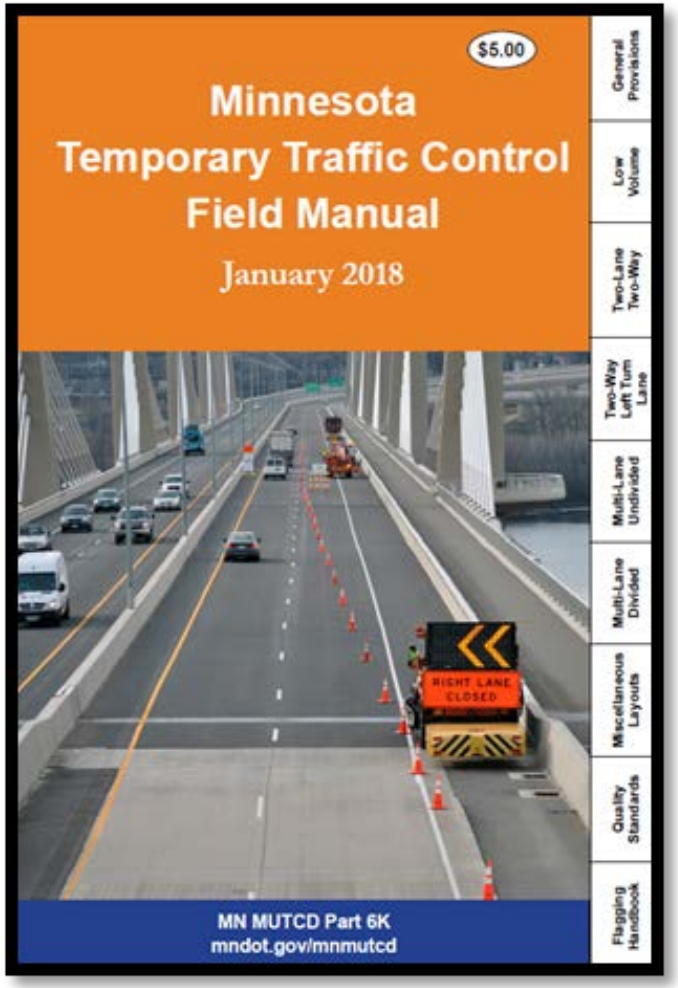
- MnDOT Work Zone – Overview
  - www.dot.state.mn.us/trafficeng/workzone
    - Or websearch mndot work zone
  - Link to MnDOT Pedestrians in WZs Guidance
    - Contains links to PROWAG, MUTCD, Field Manual Layouts
  - Link to Typical Details
    - APR Layouts
    - TPAR Devices
- Boilerplate Special Provisions & Pay Items (2563)

Additional guidance sources

Field Manual Layouts and Figures

- Pictorial representation of PROWAG
- Up to 3 days – but very similar to Long Term Layouts

- MN MUTCD Long Term Work Zone Layouts
  - 6J-24a&b and 6J-25a&b
- MnDOT long-term typical details
  - TPAR Devices & APR Layouts (see handouts)
  - Goal – standard plans



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

Project Number_____ Project Location_____

Date_____ Reviewer_____

Consider the following and document on the following worksheets:

- 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 – where, presence of lighting, Accessible Pedestrian Signal (APS) systems present
  - 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:
  - Types of pedestrians 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

Project documentation

- Scoping and pre-design worksheet
  - Feeds into the environmental document
  - Feeds into the TMP
  - Assists with the design
- We'll come back to this

PedsInWZs | http://www.dot.state.mn.us/trafficeng/workzone/apr.html

Scoping & pre-design considerations

- Broad considerations for a PAR (accessible)
  - Widths – 5 foot desirable, 4 foot allowed with passing spaces at intervals of 200 foot maximum
  - Cross-slope – 2% maximum
  - Grade – not exceed the general grade of adjacent roadway facility
  - Walkway surface – firm, stable, free-draining, slip-resistant
    - Allows the normal use of wheelchairs, strollers, walkers, and other mobility devices
  - Walkway joints – openings a maximum of ½ inch
  - Surface discontinuities – not exceed ½ inch
    - Vertical discontinuities between ¼” and ½” beveled at 1:2 maximum
  - Curb ramps and detectable surfaces present
  - Signals have APS

Existing ped facilities inventory

- Review document

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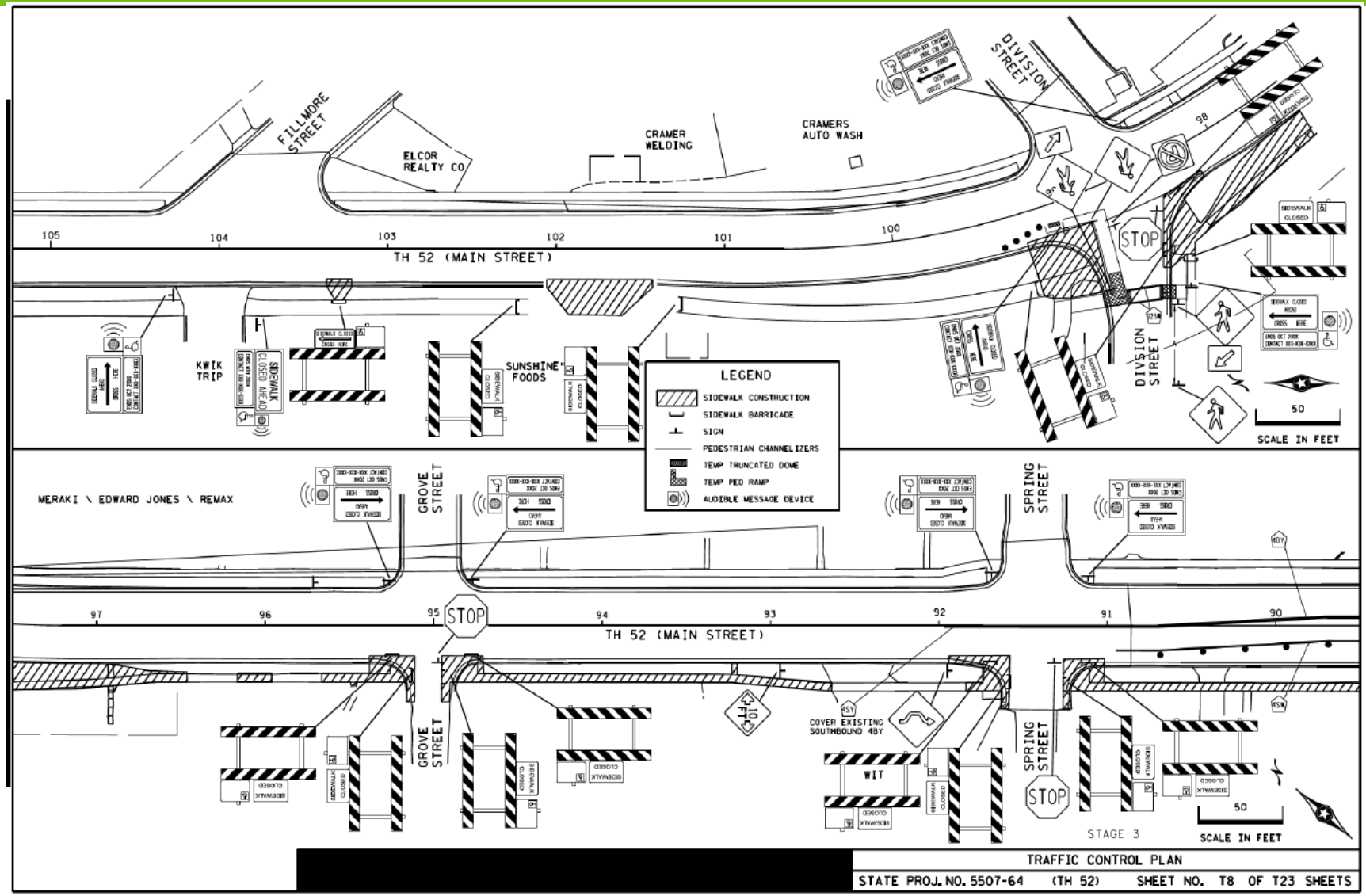
Design of Alternate Pedestrian Routes

Pedestrian Traffic Control Plan



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Design of Alternate Pedestrian Routes

- When used in an APR, devices should be TPAR compliant (see typical detail)
  - Sidewalk barricades block entire walkway path/sidewalk
  - Temporary walkway surfaces cover segments of rough, soft, or uneven ground
    - Concrete, bituminous, steel, rubber, wood (3/4” or thicker), and plastic are acceptable
    - Shall be firm, stable, slip resistant **and** allows normal usage of mobility devices
  - Pedestrian channelizers/railing systems used where appropriate
  - Temporary barriers used when appropriate
  - Communication devices provided
    - Information signs
    - Detour – AMDs required
  - Temporary curb ramps – required when along existing route, may be desirable on new route depending on length of impact
  - Detectable warning surfaces – same comment

Pay items and boilerplate special provisions

Item Number	Item	Unit Name	Plan Unit	Spec Year
2563.601/00100	ALTERNATE PEDESTRIAN ROUTE	LS	Lump Sum	18
2563.602/00600	TEMPORARY PEDESTRIAN RAMP	EACH	Each	18
2563.603/00010	LONGITUDINAL CHANNELIZING CURB	LF	Lin Ft	18
2563.603/00020	TEMPORARY TRUNCATED DOMES	LF	Lin Ft	18
2563.603/00030	PEDESTRIAN CHANNELIZER	LF	Lin Ft	18
2563.613/01150	AUDIBLE MESSAGE DEVICE	UDAY	UNIT DAY	18
2563.613/01160	AUD MESS DEV W PUSHBUTTON & LOCATOR TONE	UDAY	UNIT DAY	18
2563.618/00100	TEMPORARY WALKWAY SURFACE	SF	SQ Ft	18

See SP2018 for boilerplate special provisions

APR – Where to put pedestrians?

Depends on type of work, but should follow this order of preference…

- **Along same route**
- **Sidewalk bypass**
  - In right of way – perhaps boulevard or shoulder
  - Take parking lane or lane of traffic – discuss with city or town – a good reason to start early
- **Detour (least preferred)**
  - *"Pedestrian detours should be avoided since pedestrians rarely observe them…"*
  - Difficult for elderly and those with health conditions
  - You'll likely have to deal with pedestrians anyway as able-bodied ones will cut through the work zone
- **Discuss and decide with Project Engineer**

APR – Where to put pedestrians?

Thoughts on detours

- **Reasonableness can vary**
- **Reasonable**
  - Other side of street is reasonable
  - 1 block parallel may be reasonable (business/residence access)
  - Is 2-3 blocks parallel reasonable???
- **Discuss and decide with Project Engineer**

Routing considerations

Maintain access to existing destinations/facilities

If this is not possible, alternate access

If this is not possible, restrict time and duration of work

Routing considerations

Destination considerations

- Transit – maintain or relocate transit stops
- Parking –
  - Relocate disabled parking (**required by PROWAG**)
  - Relocate on-street parking
- Building and business entrances
- Schools – stage work around classes and facility usage times
- Shared-use facilities – redirect as necessary
- Recreational facilities -
  - Longer detours may be suitable. Coordinate with recreational facility agency.

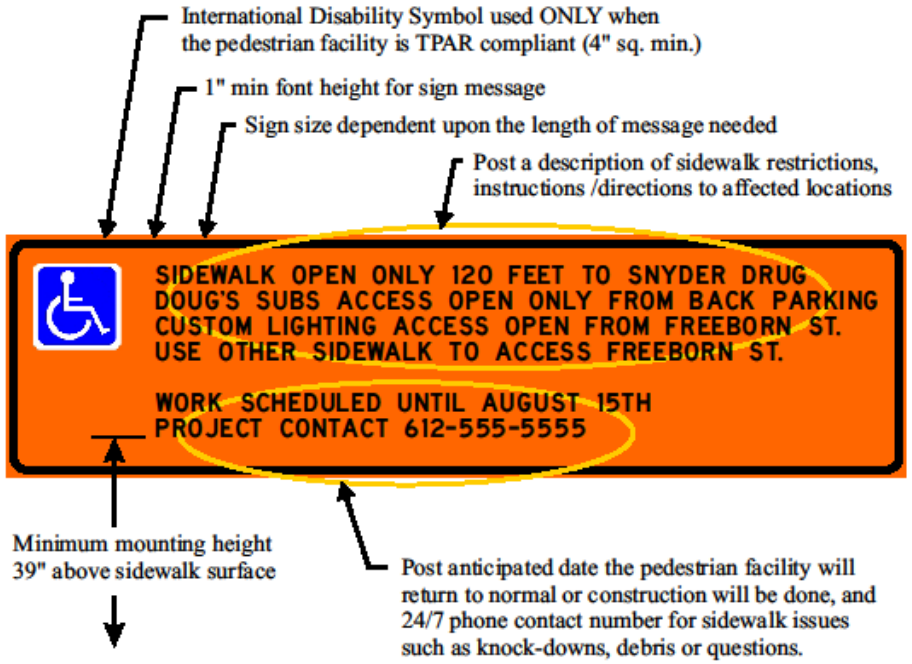
Routing considerations

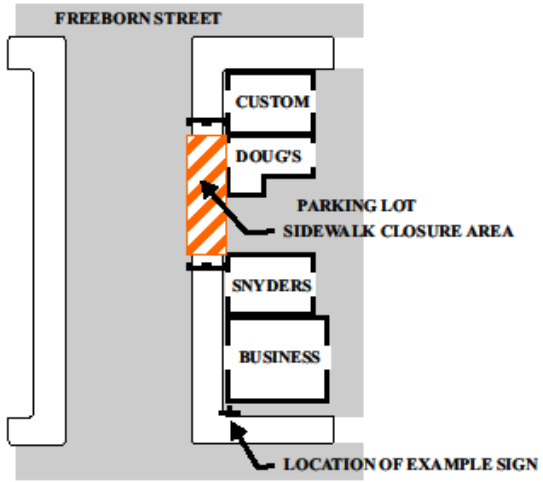
Minimize traffic and work area hazards

- Shield, protect, and/or advise peds when APT increases exposure
- Consider traffic speeds and volumes –
  - Impacts devices used for bypasses
- Direct traffic conflicts and crossings
  - Pedestrian signals
  - Temporary crosswalks
  - Work vehicle access
- Work area separation
- Debris/dust/noise protection

Communication

APR/TPAR Information Sign





PedsInWZs | http://www.dot.state.mn.us/trafficeng/workzone/apr.html

Communication

Audible or Tactile Communication Device

Chapter 6D.2 – Accessibility Considerations

Because printed signs and surface delineation are not usable by pedestrians with disabilities, blocked routes, alternate crossings, and sign and signal information **should** be communicated to pedestrians with visual disabilities by providing audible information devices, accessible pedestrian signals, and barriers and channelizing devices that are detectable to pedestrians traveling with the aid of a long cane or how have low vision.

Audible Message Devices (AMDs)

- Shall be provided with a detour
- May be provided with a bypass
- Pay item, special provision & APL

- Two types
  - Without a pushbutton and locator tone
  - With a pushbutton and locator tone

- Audible Message Content Guidelines
  - Handout

Recap

- Be aware of the need. Keep materials and equipment out of walkways.
- Evaluate pedestrian routes and needs in early stages of project development, beginning in Scoping and Pre-Design. Document in TMP.
- Document conditions that don’t meet recommended standards
- At minimum, provide APR
- Consider if you need to install TPAR
- Include Pedestrian Traffic Control Plan
- Consider staging to minimize impacts to PAR and to implement APR
- **Attended vs. unattended work zones**

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Chatfield observations

Communication

Curb ramps


STOP


SIDEWALK CLOSED AHEAD
CROSS HERE
ENDS JULY 2019
CONTACT 507-951-9068
SIDEWALK CLOSED
WARNINGLITESMN.COM

Curb ramps

Pedestrian Channelizers

Pedestrian Channelizers

Special provision language:
Leave the existing sidewalks in-place until such time that it is required to remove them to accommodate new construction.

Ped access may be provided to businesses and homes through the use of any public access from adjacent parking lots and side streets.

Provide front door access to buildings without alternate public entrances.

Business Access

Business Access

Business Access

Missed

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Accommodating Bicycles

Bikeway continuity

Chapter 6A.1 – General (Standard)

The needs and control of all road users (motorists, **bicyclists, and pedestrians** within the highway, or on private roads open to public travel, including persons with disabilities in accordance with the Americans with Disabilities Act of 1990 (ADA), Title II, Paragraph 35.130) through a temporary traffic control zone shall be an essential part of highway construction, utility work, maintenance operations, and the management of traffic incidents.

Bikeway continuity

Chapter 6G.11

If the TTC zone affects the movement of bicyclists, adequate access to the roadway or shared-use paths shall be provided.

If a designated bicycle route is closed because of the work being done, a signed alternate route should be provided. Bicyclists should not be directed onto the path used by pedestrians.

Bikeway continuity

Signed bike route

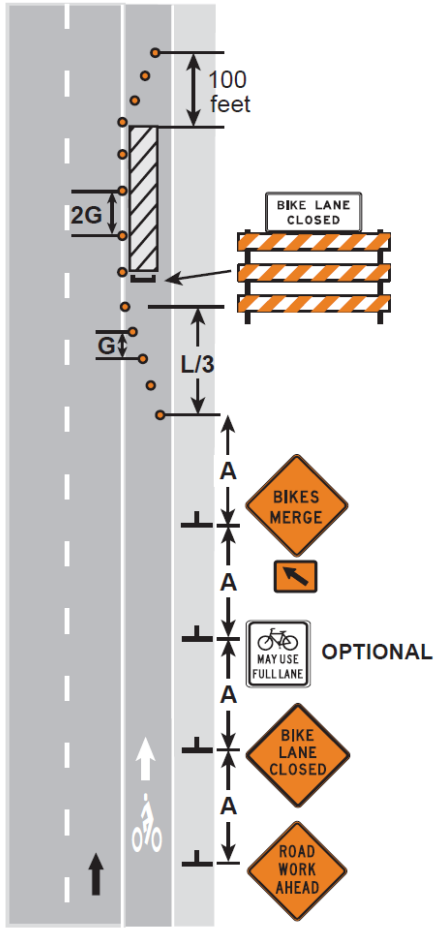
- Maintain continuity
- May need to accommodate in flagging operations

Known bike use

- Include in traffic control
- Consider detour or bike layout
- If closed, notify with signing

NOTES:

1. Use this layout when work is occurring in the bicycle lane or traffic is to be diverted into the bicycle lane downstream.
2. The road authority shall be contacted prior to closure and may provide requirements related to detours and/or additional temporary traffic control.
3. A designated bicycle lane should be maintained through the work zone if possible.
4. On multi-lane roads with bicycle lanes or bikeable shoulders, one or more travel lanes may be closed or narrowed to maintain space for the bicycle lane.
5. On-road bicyclists should not be directed onto a path or sidewalk except where such a path or sidewalk is a shared-use path or there is no practical alternative.
6. Avoid shoulder rumble strips when placing taper (except when continuous rumble strips are present).



BICYCLE LANE CLOSURE

3 DAYS or LESS **LAYOUT 87**

Bicycle Layout

MN Statute (paraphrased)

- Vehicles can only cross a bike lane line when turning right or parking.

If TTC requires moving vehicles into bike lane, then the bike lane needs to be closed.

Questions?

Ken E. Johnson

ken.johnson@state.mn.us

651-234-7386

PedsinWZs | www.dot.state.mn.us/trafficeng/workzone/apr.html

Detectable edge

From MN MUTCD 6D.1 – Pedestrian Considerations

- TTC devices, jersey barriers, and wood or chain link fencing with a continuous detectable edge can satisfactorily delineate a pedestrian path.

PedsInWZs | http://www.dot.state.mn.us/trafficeng/workzone/apr.html

See handouts

Template sheets

- APR Layouts
- TPAR Devices

Boilerplate Special Provisions

- 2563 (Temporary Traffic Management & APR)
- Incidental & Lump Sum

Temporary Walkway Surface

Temporary Walkway Surface

Curb Ramp to Pedestrian Channelizer

Sidewalk Barricade and Temp Walkway Surface

Sign Support with Detectable Edge

Sidewalk Barricade, Ped Channelizer & Temp Curb Ramp