



Making Great Strides

A guide to accommodating pedestrians in active work zones



raleighnc.gov





Contact Information:

Right-of-Way Services
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All pictures used in this document are examples of key elements to consider when planning methods to accommodate pedestrians. The Manual on Uniform Traffic Control Devices, Americans with Disability Act Guidelines, and Public Right-of-Way Accessibility Guidelines are the governing documents to be considered as design standards. This document shows best practices. Accommodations and practices may differ from those shown in pictures as code changes occur and project specific conditions are identified.



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Overview

The City of Raleigh has received multiple honors, including being named one of the best places to live, work, and play. With such recognition comes an overall increase in development as residents and companies seek Raleigh as a place to live and grow.

www.raleighnc.gov/government/content/PubAffairs/Articles/AccoladesRaleigh.html

With the increase in construction projects and overall population growth, especially in downtown Raleigh, it is imperative that work sites comply with local, state, and federal guidelines to allow for pedestrian mobility, especially older people and people with disabilities.

This document is a compilation of best practices for pedestrian accommodations in work zones. It serves as a translation from technical documents Manual on Uniform Traffic Control Devices (MUTCD) and Americans with Disabilities Act (ADA) to real world applications for engineers, contractors, and citizens.

The document lays out the planning and approval process, provides design examples and resources, and provides examples for the safety and convenience of pedestrians. It is a guide to make the project successful for all stakeholders involved.



Definitions and Terminology

ADA – The Americans with Disabilities Act of 1990 (ADA) prohibits discrimination and ensures equal opportunity for persons with disabilities in employment, state and local government services, public accommodations, commercial facilities, and transportation.

www.ada.gov/regs2010/2010ADASTandards/2010ADASTandards_prt.pdf

FHWA – The Federal Highway Administration (FHWA) provides stewardship over the construction, maintenance and preservation of the nation's highways, bridges, and tunnels. FHWA also conducts research and provides technical assistance to state and local agencies in an effort to improve safety, mobility, and livability, and to encourage innovation.

www.fhwa.dot.gov/

MUTCD – The Manual on Uniform Traffic Control Devices, or MUTCD, defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public travel. The MUTCD is published by the Federal Highway Administration (FHWA) under 23 Code of Federal Regulations (CFR), Part 655, Sub-part F.

The MUTCD, which has been administered by the FHWA since 1971, is a compilation of national standards for all traffic control devices, including road markings, highway signs, and traffic signals. It is updated periodically to accommodate the nation's changing transportation needs and address new safety technologies, traffic control tools, and traffic management techniques.

mutcd.fhwa.dot.gov/pdfs/2009r1r2/mutcd2009r1r2edition.pdf

PROWAG – Public Rights-of-Way Accessibility Guidelines. The U.S. Access Board is developing new guidelines for public rights-of-way that will address various issues, including access for pedestrians with blindness at street crossings, wheelchair access to on-street parking, and various constraints posed by space limitations, roadway design practices, slope, and terrain. The new guidelines will cover pedestrian access to sidewalks and streets, including crosswalks, curb ramps, street furnishings, pedestrian signals, parking, and other components of public rights-of-way. The Board's aim in developing these guidelines is to ensure that access for people with disabilities is provided wherever a pedestrian way is newly built or altered, and that the same degree of convenience, connection, and safety afforded the public generally is available to pedestrians with disabilities.

www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way

TTC – Temporary Traffic Control. Part 6 of the MUTCD mentioned above outlines the use of various Temporary Traffic Control measures.

mutcd.fhwa.dot.gov/pdfs/2009/part6.pdf

Right-of-Way Services Coordinator – Permitting – The Coordinator administers the review, approval and permitting of any construction related work in the City of Raleigh right-of-way. The position is the first point of contact for anyone seeking to do work within the right-of-way.

Right-of-Way Services Coordinator – Inspections – The Coordinator supervises the Inspectors and handles any issues in the field for any construction related work in the City of Raleigh right-of-way.

Right-of-Way Services – The program created in Transportation Field Services that administers permitting and inspections of construction and street, lane, and sidewalk closures in the city's right-of-way.



Planning & Design

All projects requiring the use of the public right-of-way for construction or maintenance must be reviewed and approved by city staff. This includes closing the sidewalk for repairs and building maintenance, small projects like a downtown storefront alteration which is adjacent to a public right-of-way, or a major construction project requiring the closure of lanes or sidewalks.

During the planning phase, all ADA and MUTCD requirements must be reviewed and taken into account. It is important to plan for the safety and convenience of pedestrians in any work zone area. This means creating a travel path that reasonably accommodates all pedestrians throughout any project.





To achieve this, consider the following:

- Determine the level of accessibility needed for pedestrians in the TTC zone through observing existing pedestrian travel patterns, and make accommodations prior to the start of work.
- Determine the TTC impact on pedestrians, including significant generators such as schools, community centers, transit stops, and shopping areas.
- Consider meeting with local community organizations (i.e., National Federation of the Blind, city ADA coordinator, etc.) through open houses to address specific concerns and needs.
- Avoid creating pedestrian paths that lead pedestrians into direct conflicts with work site vehicles, equipment, operations, and vehicular traffic moving through or around the work zone.
- Provide a safe, convenient travel path for pedestrians, that replicates the most desirable characteristics of the existing sidewalks or footpaths throughout all phases of construction.
- Ensure that the temporary footpath meets all accessibility features and reasonably accommodates all pedestrians.
- Develop outreach materials that are appropriate for those with special needs.
- Provide notifications to adjacent property owners and businesses.
- Assess the TTC impact on existing pedestrian flow, and make changes as needed in the field.



Design

Any client that proposes work that affects the sidewalk for longer than 48 hours must provide a Pedestrian Routing Plan. Such a plan can be hand drawn, but must be legible and contain all information requested.

Larger construction projects that affect the sidewalk, parking lanes, and travel lanes will require a Traffic Control Plan that shows all items and accommodations throughout the phasing of the project. An engineered plan is preferred for such projects.

A Traffic Control and Detour Plan per MUTCD Standards must show the following information at a minimum:

- Location of on-street parking (if applicable).
- Direction of travel lanes.
- Lane markings.
- Location of transit stops.
- Type and location of barricades.
- Location of traffic merge cones.
- Timeframe for project.
- Any items that will be affected by the closure.
- Logistics from the contractor.

A Pedestrian Routing Plan in accordance with all Americans with Disabilities Act, Public Right-of-Way Accessibility Guidelines, and Manual on Uniform Traffic Control Devices must show the following information at a minimum:

- Location of the building or job area.
- Location of the sidewalk.
- Location of on-street parking.
- Location of any transit facilities.
- Direction of travel lanes.
- Location of any streetscape feature (utilities, street furniture, trees, signs, etc.)
- Location of transit stops.
- Description of same improvements 100 feet on either side of the site.
- Location fencing.
- Location of overhead protection.
- Site accessibility/ADA requirements.
- Type and location of barricades.
- Location of traffic merge cones.
- Location of businesses affected by barricades and/or fences.
- Estimated timeframe for project.
- Any items that will be affected by the closure.
- Logistics and construction phasing from the contractor.
- Traffic Control Plan and Pedestrian Notes.

2

3

4

MARKET PL.

SC

2'-0"

EXCHANGE

17

SIDE DOOR

ENTRY DOOR

8 FT. TALL CHAIN LINK FENCE

EXISTING TREE

CH

CONT. CURB

TRUCK ACCESS GATE

KING LANE

DUMPSTER

DUMPSTER

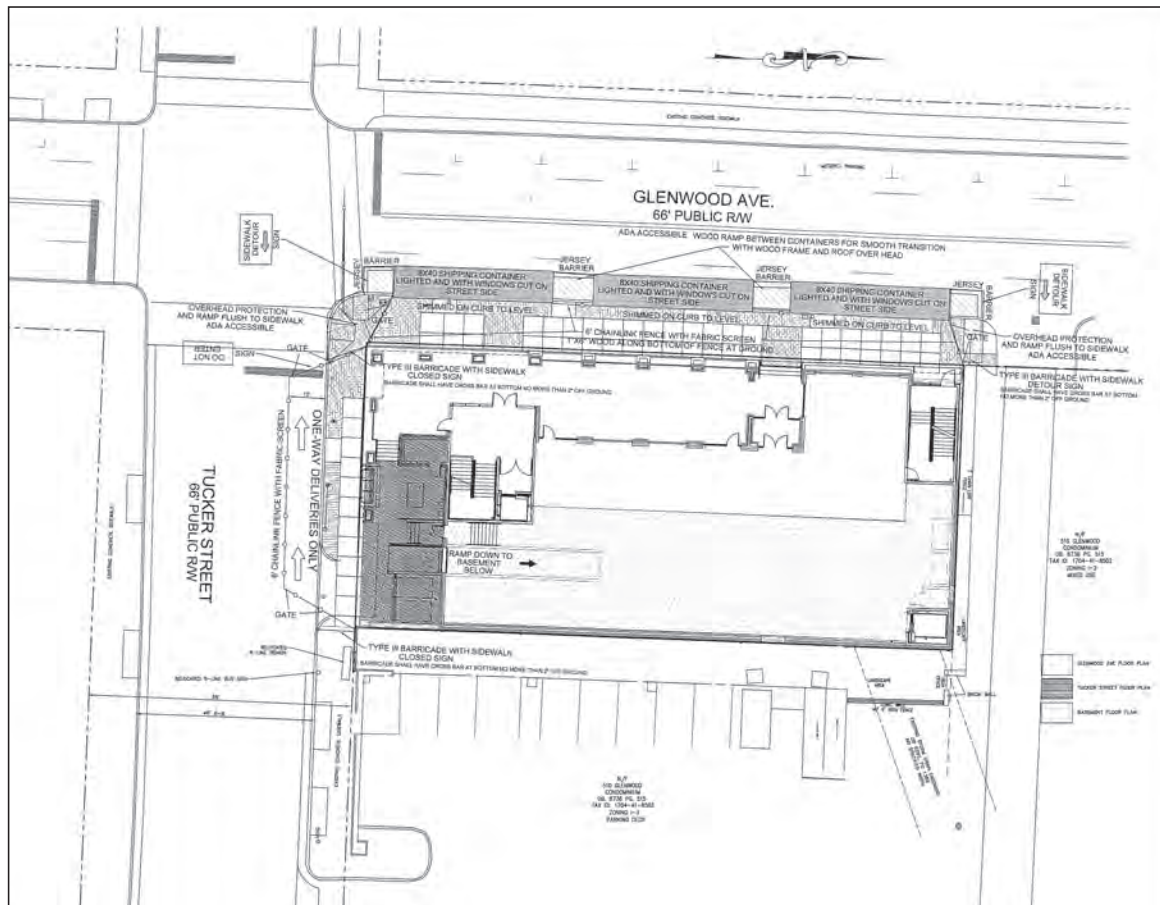
PEDESTRIAN TUNNEL

LOADING ZONE

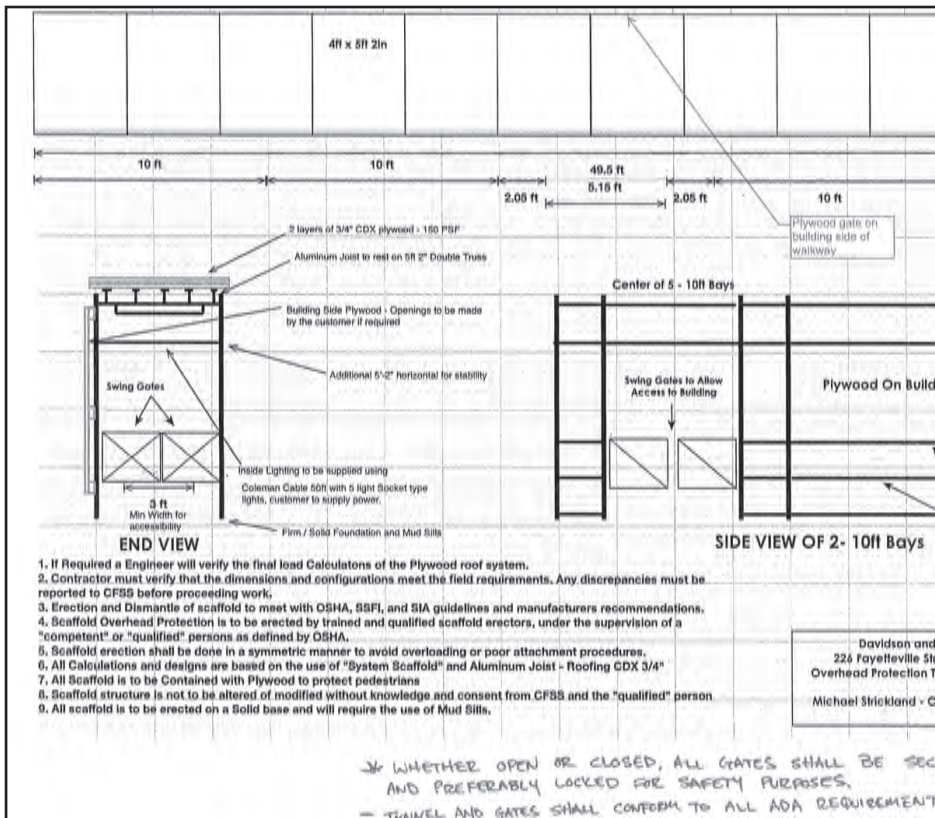
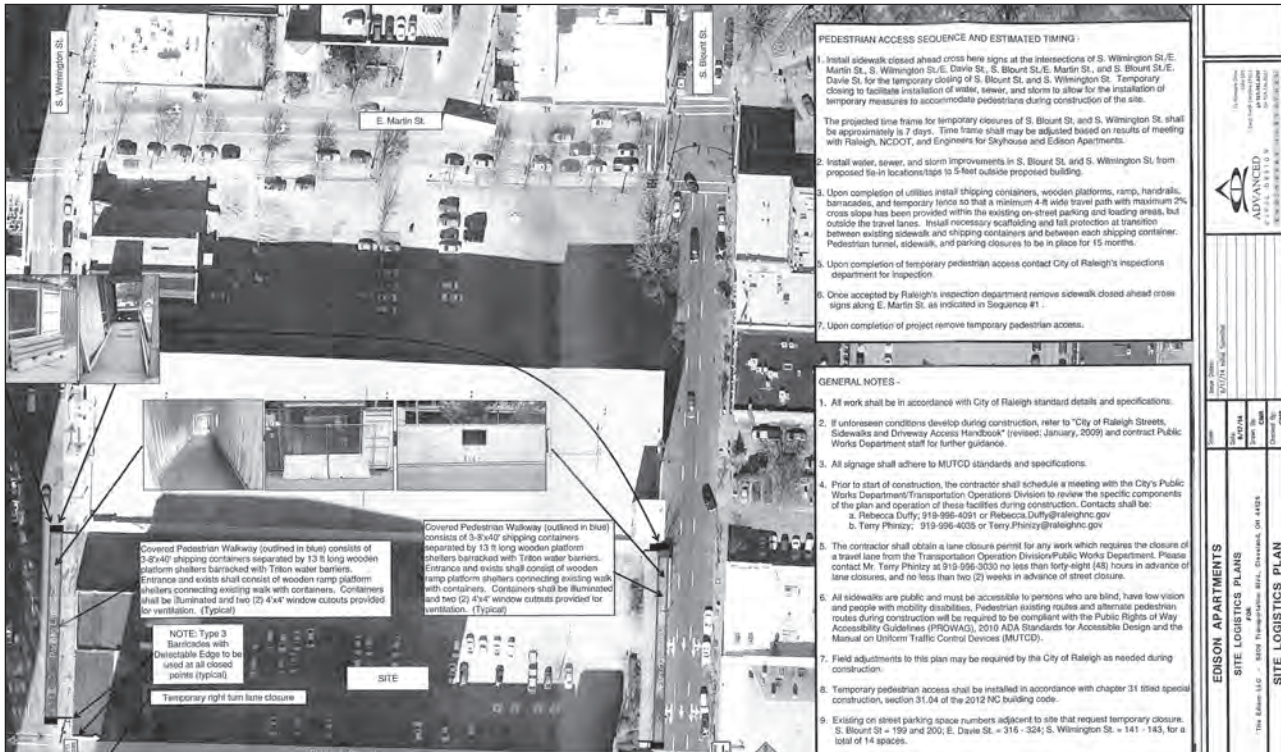
DIRECTION OF TRAVEL

DIRECTION OF TRAVEL

EXISTING CROSSWALK S. WILMINGTON STREET

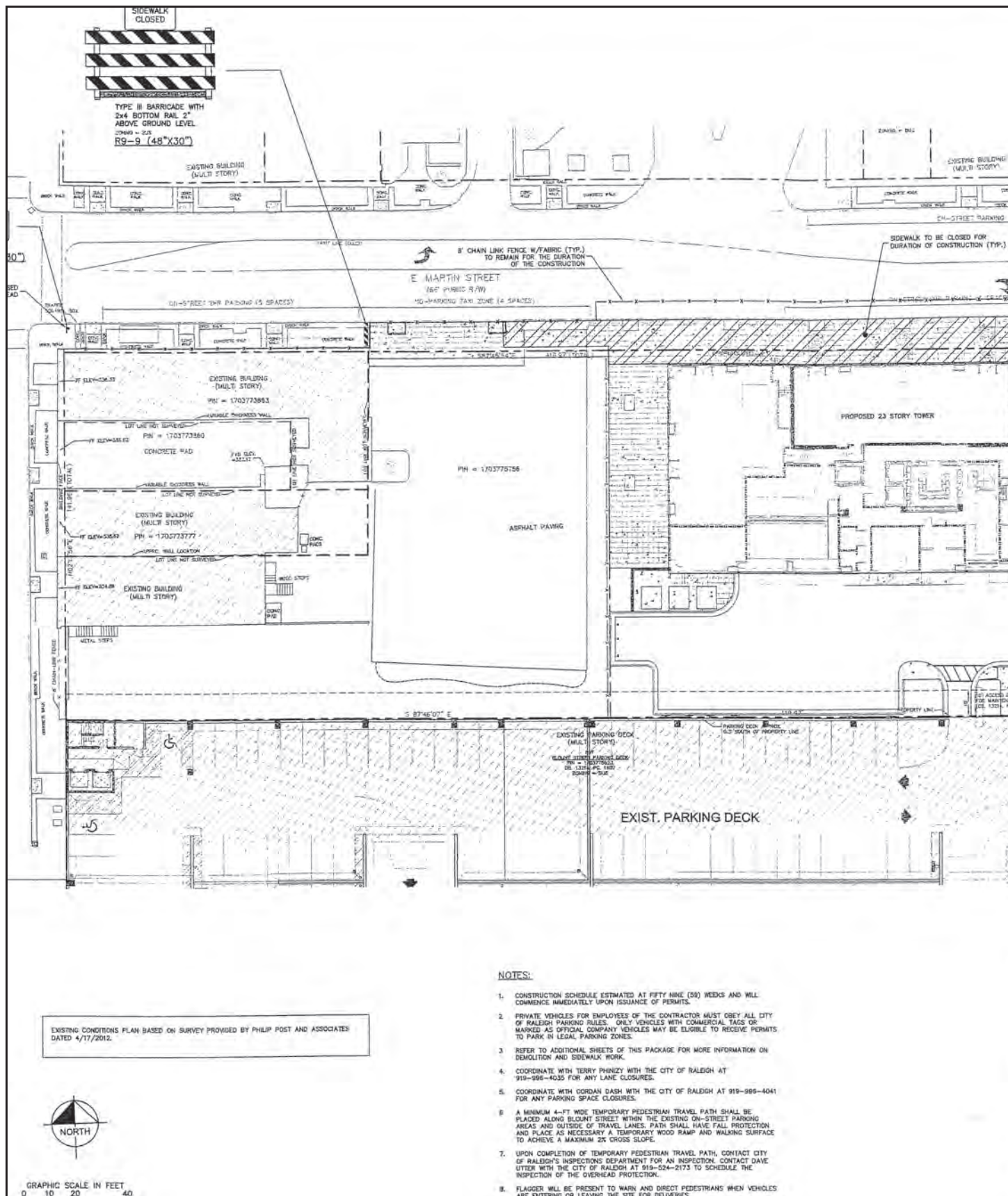


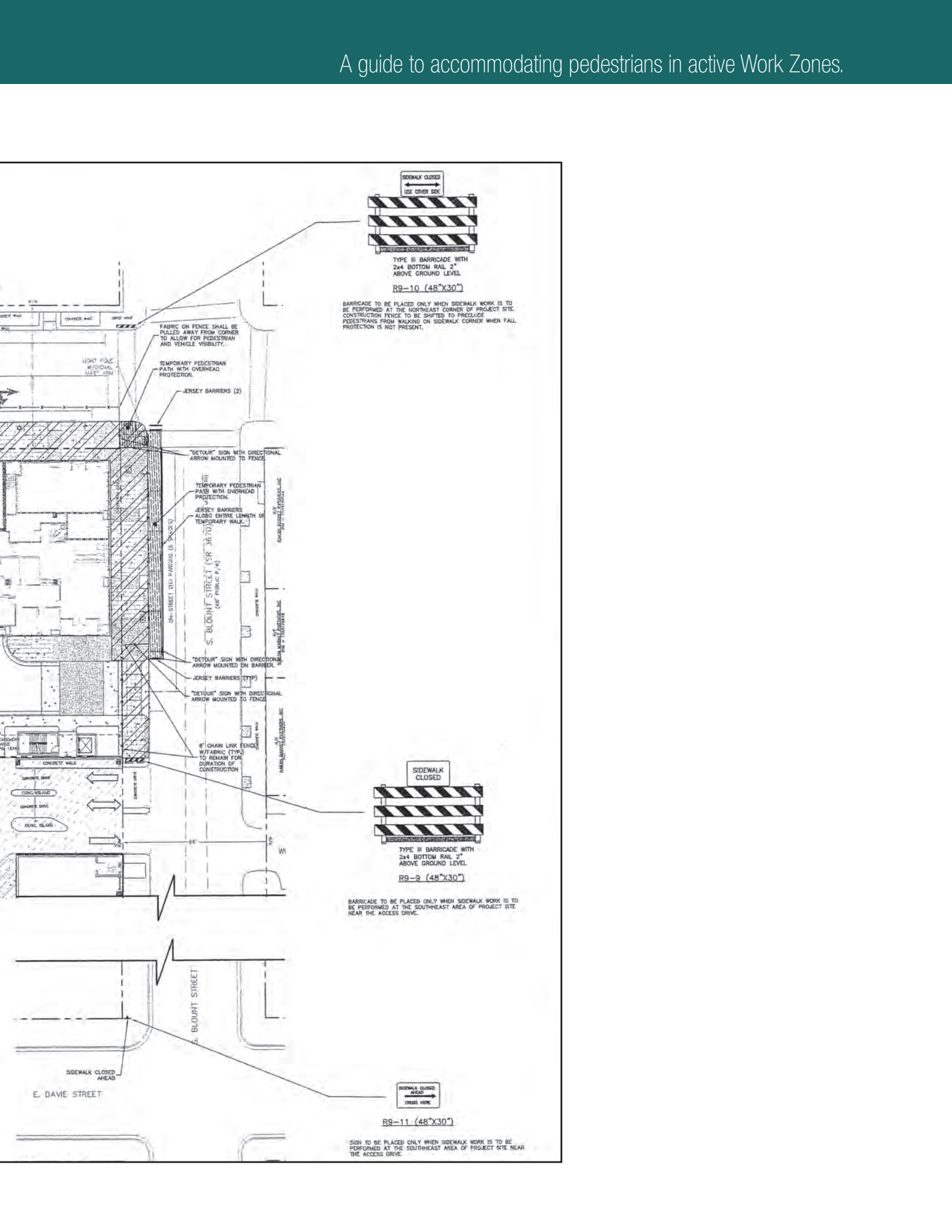
A guide to accommodating pedestrians in active Work Zones.





Design Examples







Design Considerations

Any TTC pedestrian accommodations that utilize a temporary route should clearly define detoured routes and provide advanced signage at intersections rather than mid-block locations. It also separates pedestrians from vehicular traffic and avoids mid-block crossings.

Temporary routes should be about the same as the original route and provide clear language to delineate the temporary route. They should also provide continuous access to transit stops and/or relocate transit stops.

By maintaining a continuous, accessible path of travel around or through the construction site during all phases of construction, pedestrians are ensured access to businesses, residences, and transit stops. It will also help ensure compliance with the Americans with Disabilities Act.

Some additional methods of doing so are as follows:

- Provide an alternate route when existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone. Temporary facilities should replicate the features present in the existing pedestrian facility.

- Ensure a minimum sidewalk width of 36" (a 48" width is desirable), erect curb ramps, and provide passing space (minimum 5 foot by 5 foot space every 200 feet).
- Maintain a minimum width and smooth surface to avoid a tripping hazard and to minimize barriers to wheelchair use. This includes providing ADA compliant accommodations.
- Make all barriers and channelizing devices detectable for pedestrians that are visually impaired. Note that the use of caution tape stretched between traffic control devices is not adequate.
- Consider using additional devices for pedestrians with visual impairments, such as audible information devices or accessible pedestrian signals.



Process

Plans are submitted for review and approval with the City of Raleigh to the Right-of-Way Services Coordinator.

The Right-of-Way Services Coordinator will be the liaison between the client and other city staff for meetings, reviews, coordination, and approvals of any project affecting the right-of-way.

Multiple city departments are involved in the review and approval process for right-of-way permits and each has a different role in the approval process.



Transportation Field Services

The Right-of-Way Services Coordinator for the Right-of-Way Services Program reviews and issues permits for any type of closures that affect the public right-of-way.

- Full street closures.
- Lane closures.
- Construction use of parking lane.
- Sidewalk detours.

Building Division

The Building Division of Development Services Department issues Building and Electrical permits for projects that require pedestrian tunnel construction.

City of Raleigh Park Link

The Right-of-Way Services Coordinator will ensure that a payment has been provided to Park Link for the use of all paid parking spaces for pedestrian detours, contractor vehicle parking, or temporary dumpsters prior to permitting for any construction.

Transportation Operations

The Transit Division is engaged in temporary relocations of bus stops due to construction.

Special Events Office

The Special Events Office provides a single point of contact for event management and compliance, overseeing all aspects of special events that use the public right-of-way.

No closures of any kind will be permitted during any events unless it is considered an emergency.

More information can be found on www.raleighnc.gov, keyword “right-of-way”



Detour Options

Sidewalk

- Existing or adjacent sidewalks may be used to achieve pedestrian accommodation.

Parking Area

- If a sidewalk cannot be utilized, the on-street or off-street parking area may be an option for pedestrian accommodation. The city does require reimbursement for metered parking spaces at a set rate per day per spot.
- Consider a constructed boardwalk, that routes pedestrians from the sidewalk into the existing on-street parking area and then back onto the sidewalk beyond the limit of operation. The city does require reimbursement for parking spaces and boardwalk protected with a suitable barrier.



Staging area used for equipment access and deliveries.

Travel Lane

- If no other option exists, the bus lane or travel lane can be utilized for pedestrian accommodations.
- The path may be shifted or restricted from the existing condition while maintaining a parallel route along the project's limits. This is required where pedestrian activity is heavy and a detour is not a viable option. On-site routing can be accommodated several ways, but is generally operationally driven.
- Routing can be open or structurally covered, on or adjacent to an existing sidewalk, where available.





Auxiliary Location

- A temporary path may be constructed for pedestrian accommodations. The accommodations are for pedestrian use only. Construction logistics will be coordinated to maintain pedestrian travel.
- Another example of a pedestrian routing solution is the temporary path. It allows a safe detour around the work zone during road widening.

Signs and barricades were used but removed for the purposes of this photo. Construction included a new sidewalk, which once completed, the temporary path was removed.

Off-site Detour

- Pedestrians may be rerouted away from work zones using an alternative route; typically at intersections. This accommodation may be considered based on available facilities, short-term duration, and minimum impact to the pedestrian flow of the corridor.





Temporary Construction of Accessible Paths

- Scaffolding, tunnels, and containers can provide a separately constructed walkway for pedestrians to get around a site. This is important when construction occurs midblock or at corners, and access to other businesses will be required.



Protective Barriers

Channelizing Devices

The purpose of channelizing devices is to guide traffic, warn drivers of conditions created by work activities in or near the roadway. Examples of channelizing devices include cones, tubular markers, vertical panels, drums, barricades, and longitudinal devices.

Channelizing devices provide for smooth and gradual vehicular traffic flow from one lane to another, onto a bypass or detour, or into a narrower path. They are also used to channelize vehicular traffic away from the work space, pavement drop-offs, pedestrian or shared-use paths, or opposing directions of vehicular traffic.

Common Channelizing Devices

Type 3 Barricade

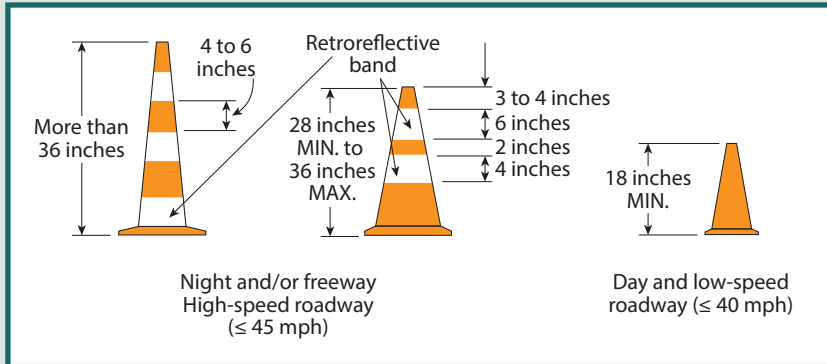


Tap Rail

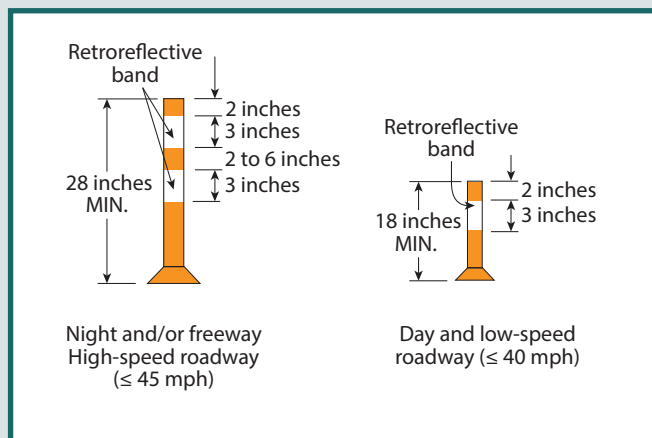
A tap rail is a device used to channelize pedestrians, especially the visually impaired. It is a continuous detectable edge along channelizing devices between 2" and 8" in height.



Traffic Cones



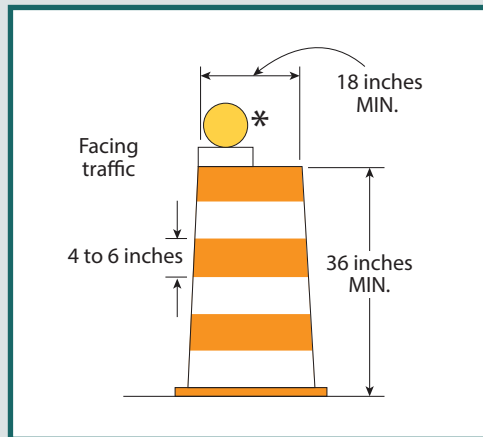
Tubular Markers





Common Channelizing Devices (continued)

Traffic Drums



Water-filled Barriers

Water-filled barriers provide a separation from travel lanes and pedestrians.

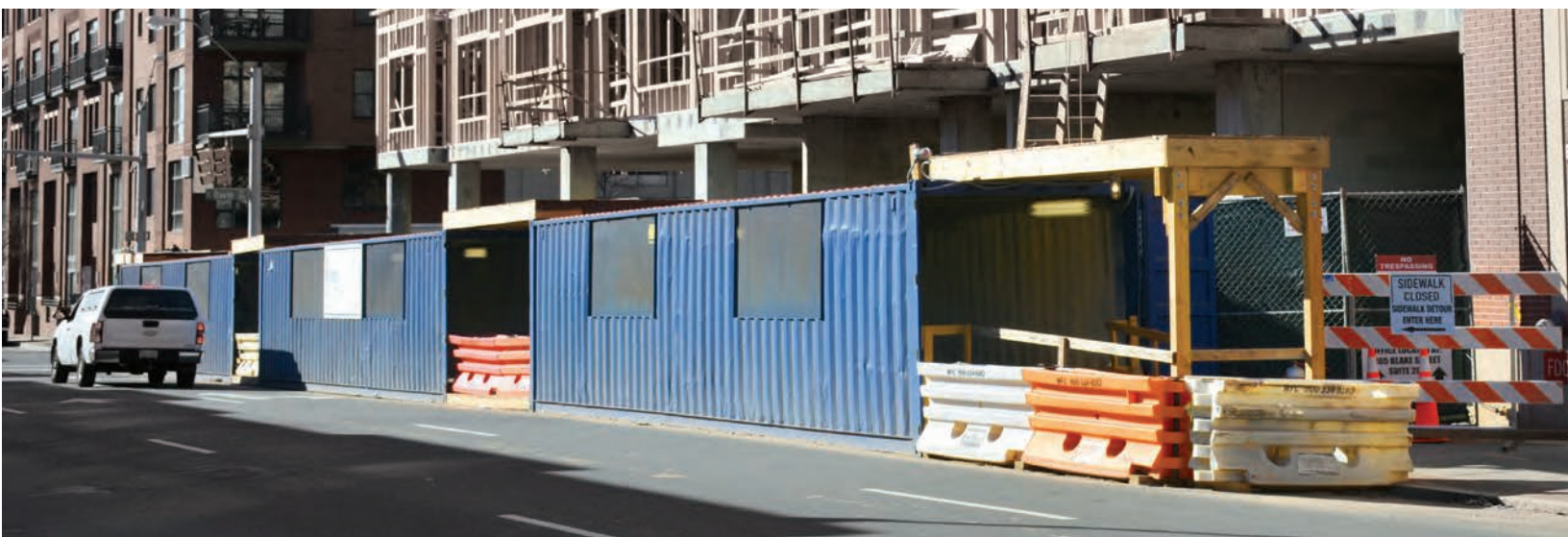


Protective Devices

Shipping Containers

Shipping containers have proven to be a convenient alternative; they provide protection while accommodating longer, continuous sections of routing. Containers can be placed directly on the pavement or behind the curb. Here are some other things to keep in mind:

- Painting the exterior of the container is not required. If desired, it is best done prior to placement in the right-of-way avoiding traffic conflicts and overspray. Be mindful of the neighboring community, businesses, etc., when planning any exterior design.
- Original doors of the containers should be removed or secured as to not restrict openings or become a swinging hazard to pedestrians or adjacent traffic.
- Ramps leading pedestrians into and out of the containers should be well-delineated, treated with a non-slip surface, and well-lit. Edges should be mitered to avoid tripping hazards.
- Entrances to the containers should be inviting and clearly identified.
- Wire screens with protective trim (side screening) should be applied to openings.





Screening

Construction fencing provides screening that protects the work site from trespassing, and protects pedestrians from dangerous debris.



Overhead Scaffolding

Overhead protection, such as a scaffolding system, is a common method for routing pedestrians. Customizable and relatively quick to put in place and remove, these are ideal for short sections of protection and operations that are short in duration. They provide for easy maintenance of adjacent street signals, and protection for situations where there is overhead construction.

Temporary overhead lighting may be required with the use of scaffolding or tunnels. The electrical code will dictate further specifications.





Safety Measures

Tap Rails

Tap rails and handrails are an easy attachment and must meet the ADA code. They must be between 2" and 8" in height and help guide the visually impaired along the accessible path.



Non-Slip Surfaces

Ramps leading pedestrians into and out of the containers should be well delineated, treated with a non-slip surface, and well-lit.



Beveled Surfaces

Beveled surfaces are smooth connections between joints or separations. The photos depict best practices for minimizing trip hazards

Guidance Signage

Signs alert pedestrians that adjacent businesses are still open and where they may be located.



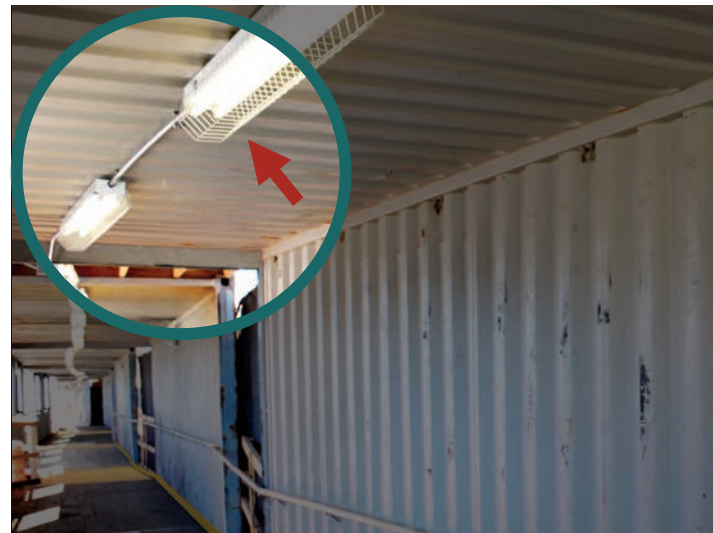
Handrails

Tap rails and handrails are an easy attachment and meet the ADA code.



Lighting

Well lit containers and pedestrian tunnels provide safety. The electrical code specifies when lighting is required with the use of tunnels or scaffolding.





Utility and Pedestrian Considerations

Construction/Maintenance/Utility

Pedestrian accessibility must be achieved during all phases of construction. To ensure this, consider the following methods:

- Provide adequate and safe detour(s) whenever sidewalks are closed or blocked.
 - Use signs at intersections to give advanced notification of closures ahead, and inform pedestrians where to cross.
 - Provide audible signage for pedestrians that are visually impaired.
- Clear the path of debris and other items that may obstruct pedestrian pathways.
- Carefully consider the placement of intersection crosswalks, implement additional signs and markings, add or relocate transit stops, and modify traffic signals (traffic signal timing, pedestrian signals, and push buttons) as necessary.
 - Take into account walking speeds and the distance pedestrians travel when traversing travel lanes to determine minimum green time.
- Inspect pedestrian accommodations during construction to ensure that the Traffic Control Plan (TCP) is followed.
- Ensure traffic control devices are in good and safe condition.
 - Devices should be sturdy, firm to the grip, and smooth to the touch (have no rough edges).
 - Devices should not be potential tripping hazards.
 - Provide a continuous, detectable edging throughout the length of the facility such that pedestrians using a long cane can follow it.
- Make pedestrian routes ADA compliant and available during all phases of construction.

Accessibility to Utilities

Unimpeded accessibility must be maintained with regard to the following:

Pedestrian Signals



Red Light Camera Box





Emergency Access



Public Art

The City of Raleigh believes public art can occur everywhere, and encourages organizations, contractors, and individuals to consider the display of public art as a part of their maintenance or construction project. Pedestrian walkways and fencing, among other things, become non-traditional canvases for murals that add vibrancy and enliven work zones.

Public art that will be used as a part of your work zone which falls into the right-of-way requires that the art design be approved by the City of Raleigh's Arts Commission. Please call 919-996-3610 for more information and for steps on following the simple design approval process.



Blount Street Mural, Artspace, NRP Group, and Peregrine Projects





Resources

U.S. Access Board

www.access-board.gov

Public Rights-of-Way Accessibility Guidelines (PROWAG):

<https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way>

Accessible Design for the Blind

www.accessforblind.org

Manual on Uniform Traffic Control Devices (MUTCD)

<http://mutcd.fhwa.dot.gov/index.htm>

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