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THE CITY OF
COLUMBUS
ANDREW J. GINTHER, MAYOR

DEPARTMENT OF
PUBLIC SERVICE

DESIGN MEMO 9.01

To: Designers, Contractors, and City Departments

Date: January 10, 2023

Subject: Maintenance of Traffic

Category: Traffic

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1 Purpose

Maintenance of Traffic (MOT) plans facilitate traffic through a work zone and shall be designed for all roadway users including motorists, bicyclists, pedestrians, and persons with disabilities in accordance with the Americans with Disabilities Act (ADA). It is important for both the designer and contractor to consider constructability and impacts to all roadway users during construction through every phase of the design process.

Standard details exist for common work zone traffic control situations in the City of Columbus and a designer may reference these details as opposed to providing project-specific MOT plans in certain situations. However, in many situations the designer will be required to provide project-specific MOT plans. The purpose of this design memo is to provide guidance on design considerations, to describe plan requirements, and to establish when detailed MOT plans should be included in a plan set.

2 Applicability

Until further notice, this direction will be used for scoping, design, and construction of projects within the City of Columbus right-of-way.

In general, detailed MOT plans shall be included in a plan set when:

1. A Standard Construction Drawing (SCD) is not adequate to illustrate a particular work zone traffic control situation, such as when:
    a. more than one SCD is necessary to illustrate a particular work zone traffic control situation; or
    b. an SCD requires more than minor modifications, such as changes to taper lengths or openings for access to driveways and alleys, to apply to a particular work zone.
2. A work zone occurs within the area of influence of a signalized intersection. The influence area begins at the development of right or left turn lanes on each approach or any lane configuration change that will affect the functionality of the signal and includes the intersection itself, or within 200 feet of the stop line on any approach without a turn lane.
3. Ohio Manual of Uniform Traffic Control Devices (OMUTCD) typical applications TA-28 and TA-29 require more than a minor degree of modification, such as signing two faces of a block for work on a corner, to apply to a particular work zone.
4. The closure of any bicycle facility is being proposed.

If a detailed MOT plan is not expected, the City will specify this in the scope or the consultant project manager shall make the request to the City during scoping to determine the appropriate MOT design approach for the project.

3 Standards and References

The following standards and guidelines are applicable to MOT plans:

- Ohio Manual of Uniform Traffic Control Devices (OMUTCD)
- Public Right-of-Way Accessibility Guidelines (PROWAG)
- City of Columbus Standard Construction Drawings
- City of Columbus Capital Improvement Projects (CIP) General Requirements
- City of Columbus General Design Requirements Section 5

- City of Columbus Capital Improvement (CIP) Plan Checklist
- City of Columbus Capital Improvement (CIP) Sample Plans
- City of Columbus Commercial (Private) Sample Plans
- City of Columbus Subdivision (Private) Sample Plans
- City of Columbus ADA Rules and Regulations
- City of Columbus Traffic Signal Design Manual
- City of Columbus Chapter 903 Rules and Regulations
- City of Columbus Design Memo 6.41: Crosswalks

All City of Columbus documents may also be found in the DPS Document Library.

Refer to Section 5 of the City of Columbus CIP General Design Requirements for specific MOT plan requirements.

The City of Columbus Capital Improvement (CIP) Sample Plans provide an illustrative example of requirements outlined in the CIP General Design Requirements and CIP Plan Review Checklist; however, the sample plans may not include every requirement provided in those documents. The CIP Sample Plans provide designer notes that are intended to assist the designer with plan preparation. The CIP sample plan is intended to show format and order and should not be used for site specific design or current notes. The current MOT notes are available in the DPS Document Library.

Maintenance of Traffic Notes commonly used in City of Columbus projects are provided for the designer's reference. The designer should only select notes that are appropriate for a specific project and determine additional notes that may be relevant to the project. Temporary signal plan sheet notes are included in Traffic Signal Notes and not in the MOT Standard General Notes. Temporary traffic signals shall conform to the Traffic Signal Design Manual (TDSM), Section 3, Temporary Traffic Signals.

4 Definitions

Definitions of key terms in this memo are provided below. Additional definitions that may be relevant to other design memos are provided in City of Columbus Design Memo 1.00: Introduction.

Temporary Traffic Control Coordinator: The City of Columbus Department of Public Service (DPS) representative responsible for the review and approval of temporary traffic control plans.

Temporary Pedestrian Access Route (TPAR) devices: Pedestrian elements (such as temporary curb ramps, pedestrian channelizers, sidewalk barricades, etc) that meet the parameters defined in the Public Right-of-way Accessibility Guidelines (PROWAG) and the OMUTCD.

Work Zone: An area of a street with construction, maintenance, or utility work activities. It extends from the first warning sign to the last MOT device.

5 Design Guidance

5.1 Signalized Intersection Considerations

Signalized intersection MOT plans shall be prepared per Section 2 Applicability and Section 3 Standards and References.

5.2 Street Closures

A detour plan shall be provided for all non-residential street closures. Roadway classification(s) should stay the same throughout the detour. Traffic on one roadway should not be detoured to a roadway with a lower classification. Consider using signalized intersections with dedicated turn lanes when possible. The detour plan sheet shall be prepared per Section 3 Standards and References. The sample detour plan sheet shows required lane closures and signing. Where the need for street closures are identified, designers should contact the MOT reviewer for a pre-design meeting to discuss the potential closure. Street closures shall be at the City's discretion.

5.3 Work Duration and Preferred Routings

The categories of work duration and their time at a location are defined in **Table 1**.

Table 1: Work Duration

OMUTCD 6G.02		
Work Duration Category	**Period**	**Duration, d**
Mobile	Intermittent	N/A
Short	Daytime	d < 1 hour
Short-Term Stationary	Daytime	1 hour < d < 1 day
Intermediate-Term Stationary	24 hour	1 day < d < 3 days
Long-Term Stationary	24 hour	d > 3 days

The pedestrian and bicyclist routing requirements through work zones specified in Sections 5.5 and 5.6 apply for all stationary work zones (short-term, intermediate-term, and long-term). For long-term duration work zones, site-specific detours and temporary facilities shall be detailed in the plans. For short-term and intermediate-term work zones, the same routing requirements apply; however, plan drawings are not required.

5.4 Parking Impacts

On-street parking may provide space for temporary facilities for pedestrians and bicyclists during construction. The removal of any on-street parking for a project requires coordination with the Division of Mobility and Parking (DMP) and is subject to DMP approval. The appropriate parking-related notes from the MOT Standard General Notes shall be included on the plans.

Payment for on-street parking put out of service by a construction project shall be the responsibility of the contractor. Fees shall not be waived. Refer to the City of Columbus Chapter 903 Rules and Regulations for more information.

See City of Columbus Design Memo 9.09: Parking Requirements for additional information.

5.5 Pedestrian Accommodations

Pedestrian traffic shall be accommodated on all MOT plans consistent with the requirements of OMUTCD Chapter 6D and Figures TA-28 and TA-29.

Whenever construction in or near the right-of-way affects pedestrian movement, alternative pedestrian routes shall be provided and have at least the minimum accessibility and detectability features of the

disturbed route. These pedestrian routes may be along an existing pedestrian facility or a temporary pedestrian facility.

5.5.1 Routing Order of Priority

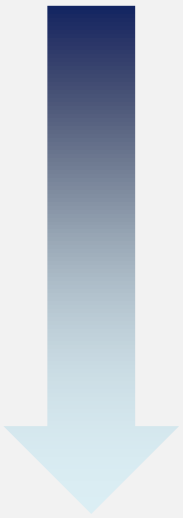
As stated in the OMUTCD, “Pedestrian detours should be avoided since most pedestrians rarely observe them and the cost of providing accessibility and detectability might outweigh the cost of maintaining a continuous route. Whenever possible, work should be done in a manner that does not create a need to detour pedestrians from existing routes or crossings.”

The needs of all users must be balanced in selecting the appropriate routing, and a pedestrian route may be given priority over parking, bicycle, and travel lanes. Temporarily closing a travel lane to provide a sidewalk bypass in the street may be more desirable than requiring pedestrians to cross the street. Requiring pedestrians to cross the street increases the number of conflicts between pedestrians and vehicles compared to keeping them on the same side of the street, even if crossings are made at signalized intersections. Additionally, high vehicle speeds or volumes make it more difficult for pedestrians to safely cross the street at uncontrolled crosswalk locations.

For local streets, the Pedestrian Access Route (PAR) may be detoured to the opposite side of the street from the existing PAR.

For non-local streets, the order of preference for accommodating pedestrians through work zones is shown in **Table 2**.

Table 2: Preferred Pedestrian Routing

Preferred  **Not Preferred**	1. **Maintain the PAR along the existing route**, providing necessary protections for pedestrians from the work zone and related hazards.
	2. **Reroute the PAR on the same side of the street.** a. Close a parking lane or travel lane to reroute the PAR onto the street, providing a crashworthy barrier to separate pedestrians from adjacent traffic. b. Provide a shared use path (8-foot minimum width) in an existing travel lane, bike lane, and/or parking lane with positive protection for pedestrians and bicyclists from adjacent traffic. c. Within the right-of-way, bypass the sidewalk along the existing route in a tree lawn/utility strip with temporary surface materials.
	3. **Detour the PAR.** If a pedestrian detour is necessary, the preference is for it to be on the opposite side of the street from the existing PAR. See Section 5.5.4 for crossing requirements where the PAR is detoured to the opposite side of the street. Detours should be as short as possible. Detours required by bridge closures for all modes of travel may need to be longer, though maintaining pedestrian access on the closed bridge throughout construction should be assessed.

5.5.2 Pedestrian Access Route Requirements

The pedestrian access route (PAR) shall meet the requirements of the City of Columbus *ADA Rules and Regulations*. The PAR shall be maintained with a continuous smooth and hard surface. The surface shall be stable, firm, and slip resistant, and shall be level with no abrupt changes in grade/terrain with a maximum 2% cross slope. The PAR shall be at least 5 feet wide. If a 5-foot width is not feasible for the entire length, then the PAR may be reduced to 4 feet with a 5-foot by 5-foot passing space at least every 200 feet. Additional width may be required in areas with higher pedestrian activity.

Devices and signs shall be utilized so that the passageway for pedestrians is wheelchair accessible, safe, and well defined for pedestrians with low vision. Pedestrian walkways across excavations shall be provided with ADA compliant handrails. Footbridges shall be safe, strong, free of bounce and sway, and free of cracks, holes, and irregularities that could cause tripping. Wheelchair accessible ramps shall be provided at the entrances and exits of all raised footbridges.

To prevent pedestrians with low vision from inadvertently entering a closed area, physical barricades shall be installed to prevent passage (as described in OMUTCD Section 6D.02). Devices that channelize pedestrians to a defined path shall have a rail within 2 inches of the path surface for cane detection and shall be spaced closely enough to maintain cane detection. All pedestrian walks shall be wheelchair accessible at all times. Pedestrian access shall be maintained to all properties adjacent to the construction site.

Temporary signage shall be placed so that it does not obstruct the PAR.

Whether overhead protection is required for an accessible route is determined based on Ohio Building Code Section 3306.1. Where covered walkways are used to provide overhead protection from adjacent construction, they shall follow Ohio Building Code Section 3306.7 and OSHA Standard 1926.502(j).

5.5.3 Alternate Pedestrian Routes

If the existing pedestrian route cannot be maintained, information about alternate pedestrian routes shall be provided. This shall include access to temporary bus stops, reasonably safe travel across intersections based on Section 5.5.4, and other site-specific routing issues. When used, barriers and channelizing devices shall be detectable by people with low vision. Curb ramps and detectable warnings shall be implemented where applicable. Temporary Pedestrian Access Route (TPAR) devices may be used when the pedestrian route is relocated from the sidewalk to the street. The following items should be considered to facilitate an accessible pedestrian route through or around work zones in addition to the features mentioned above:

- Additional advanced warning and guidance signs
- Adequate illumination
- Use of a crashworthy barrier to separate pedestrians from traffic
- Adequate barricading to prevent a person with low vision from entering the work zone
- Adjusted pedestrian crossing times for modified crosswalk lengths
- Careful review of walking surfaces, including, but not limited to, temporary surface materials to traverse tree lawns, catch basin/inlet grates when the PAR is diverted on street, cross slopes (including gutters along curbs)

Where alternate pedestrian routes are provided at signalized intersections that feature accessible pedestrian signals, temporary audible information devices should be considered to provide information regarding the alternate pedestrian route to people with low vision.

5.5.4 Crossing Requirements

When the PAR must be detoured to the opposite side of the street, the needs of all users should be addressed for the crossing. A warning shall be provided at the nearest accessible crossing location so that pedestrians are not required to “backtrack” to cross safely.

If pedestrians would be required to cross the street at an intersection with an existing uncontrolled crosswalk, additional measures or interim treatments may be necessary to provide a safe crossing at the location of the closure, particularly in areas with higher speeds or heavy traffic. These treatments may include temporary pavement markings, signs, RRFBs, etc. See City of Columbus Design Memo 6.41: Crosswalks for enhancements that should be provided based on roadway characteristics.

Mid-block crossings are discouraged and require Department of Public Service approval. Parking shall be prohibited at least 30 feet prior to and after a mid-block marked crosswalk. Mid-block crosswalks shall be marked to legally establish the crosswalk. See City of Columbus Design Memo 6.41: Crosswalks for additional enhancements that should be provided based on roadway characteristics.

Curbs present a significant barrier to the mobility of wheelchair or stroller users. Temporary curb ramps shall be provided if they do not exist at a location where a pedestrian is expected to cross. If a temporary curb ramp is required, provide another on the opposite side of the road and on any intervening pedestrian refuges. Portable temporary curb ramps may be used when a lane closure is available in lieu of constructing a temporary curb ramp at the back of the curb.

5.5.5 Transit Requirements

The designer shall ensure that pedestrian access to existing transit stops located within or near the work zone is maintained unless a temporary transit stop or reroute is established by COTA in accordance with the COTA *Transit Stop Design Guide*. It is preferred that COTA’s transit stops remain operational throughout construction. To ensure the affected transit routes and stops are serviceable by COTA vehicles and that pedestrians are able to access the transit stops, COTA staff should be contacted as early as possible in the design process. Plans shall include any applicable COTA coordination notes when there is work along a transit route. COTA Senior Service Planner shall be contacted 30 days prior to any planned closure.

5.6 Bicycle Accommodations

When work encroaches upon an existing bike lane, separated bike lane, or shared use path, an accessible, safe, and clearly defined bicycle route shall be provided. If bicyclists cannot be accommodated through the work zone with facilities comparable to pre-construction conditions, an alternative bicycle facility should be implemented using temporary striping, traffic control devices, and/or a detour. Bicyclists shall not be routed onto sidewalks or onto unpaved shoulders.

Bicyclists can experience difficulties when traveling through work zones, particularly when lanes are closed or narrowed and when pavement conditions are uneven. Bicyclists have a low tolerance for surface grade changes and sudden pavement changes can represent a severe hazard to bicyclists, so excessive bumps should be avoided. Bike lanes and shared use paths shall be kept free of obstructions, including warning signs. Bicyclists shall not be led into direct conflict with opposing traffic, work site vehicles, or equipment moving through or around the work zone. Bicyclists shall not be led into physical obstacles that may pose a hazard such as catch basin grates, debris, potholes, gravel, unacceptable pavement conditions, or an abrupt stop within travel lanes.

5.6.1 Bike Lane Requirements

All existing bike lanes shall be maintained to the extent possible. During construction, temporary bike lanes may be delineated by cones. At no time shall the clear width of a bike lane be less than 5 feet. Any bike lane that is narrowed below 5 feet is considered a bike lane closure. It may be necessary to close parking or vehicular travel lanes to maintain the bike lane(s) through the work zone.

The order of preference for the accommodation of bicyclists along existing bike lanes is shown in **Table 3**.

Table 3: Preferred Bike Lane Routing

Preferred	**1. Maintain the bike lane by shifting it to a location on the same roadway to by-pass the work zone or obstruction.** Options to provide space for a temporary bike lane include: a. Narrowing the adjacent travel lanes to a minimum width of 10 feet to provide space. b. Closing a parking lane. c. Closing a travel lane, maintaining a minimum of one lane of travel in the same direction. The temporary bike lane shall have a minimum clear width of 5 feet. In short-term and intermediate-term conditions, cones may be used to designate the temporary bike lane. In long-term conditions, striping should be provided.
	2. Created a shared travel lane by closing the bike lane and merging it with the adjacent travel lane, installing shared lane markings in the travel lane and installing signs directing bicyclists to merge. This should only be considered if it is not possible to narrow or reduce travel lanes to maintain a temporary bike lane. Merging the bike lane and installing shared lane markings is not appropriate on roadways with speeds that exceed 35 mph (see Design Memo 6.01: On-Street Bike Facilities). If the bike lane is closed, some bicyclists will be unwilling to ride through the work zone in a shared travel lane and will default to dismounting and becoming pedestrians on the sidewalk.
Not Preferred	**3. Detour bicyclists onto an adjacent roadway**, in which case the detour route shall be adequately signed and replicate, as closely as practicable, the level of safety found on the bicycle route being closed.

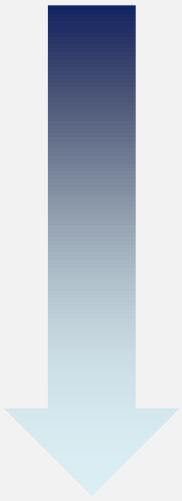
5.6.2 Shared Use Path Requirements

Because shared use paths also accommodate pedestrians, they shall meet the PAR requirements outlined in Section 5.5.2. If the PAR cannot be maintained on the shared use path, pedestrians shall be rerouted in accordance with Section 5.5.1.

A shared use path within the right-of-way should be maintained to a minimum width of 10 feet but may have a minimum width of 8 feet for distances of less than 500 feet. If this width cannot be provided, the

order of preference for the accommodation of pedestrians and bicyclists along existing shared use paths is shown in **Table 4**.

Table 4: Preferred Shared Use Path Routing

Preferred  **Not Preferred**	1. **Transition the shared use path to the street by closing a parking lane or travel lane.** A crashworthy barrier separating bicyclists and pedestrians from adjacent traffic shall be provided. The transition should occur at an intersection where existing ramps are available, if possible, with the transition from the existing shared use path to the temporary street-level shared use path clearly marked. If existing ramps are not available, temporary ADA-compliant ramps shall be provided to transition pedestrians and bicyclists between the shared use path and the street-level detour.
	2. **Construct an alternate smooth continuous hard surfaced path around the work zone.**
	3. **Flagging to maintain two-way bicycle traffic** along a section of shared use path with a width below 10 feet but not less than 5 feet. This option is only appropriate for short-term operations.
	4. **Detour pedestrians and bicyclists away from the work zone**, in which case the detour route shall be adequately signed and replicate, as closely as practicable, the level of safety found on the shared use path being closed.