**TTC Module 4**

**Slide 1 Welcome**

Welcome to the Florida Department of Transportation's: Temporary Traffic Control for Designer Training Series. This FDOT Design Manual Part 2 Module is a part of a series of computer-based trainings covering the Department's Policy for the implementation of Transportation Management Plans and development of Temporary Traffic Control Plans.

This informational resource contains audio and interactive elements, so please adjust your speakers accordingly. An alternate version is available on the resources page. To begin, select the start button or press Shift + N on your keyboard.

**Slide 2 Learning Objective**

The learning objective of this module is to cover the different bicycle and pedestrian temporary traffic control criteria in the FDOT Design Manual and review various examples of accommodations through work zones.

**Slide 3 ADA and MUTCD**

Let's first review the requirements that work zone bicycle and pedestrian accommodations must meet. All temporary pedestrian accommodations must meet the ADA and MUTCD minimal requirements shown here. These requirements make sure that all pedestrians can safely use the temporary facility regardless of physical ability.

**Slide 4 Bicycle Accommodations**

The first topic we will cover is bicycle accommodations through work zones. For bicycle accommodations through work zones, bicyclists need to have safe and clear accommodations with minimal impacts to existing bicycle facilities.

**Slide 5 Bicycle Accommodations**

To achieve this is, provide like-for-like bicycle accommodations to the maximum extent feasible. For example, if there is an existing bike lane and a work zone closes a section of the bike lane, provide a temporary bike lane adjacent to the work zone as shown in the Standard Plan 102 series.

**Slide 6 Bicycle Accommodations**

The Standard Plan 102 series contains rudimentary Temporary Traffic Control layouts for bicycle accommodations that provide a good foundation for site-specific Temporary Traffic Control plans.

**Slide 7 Bicycle Accommodations**

These Standard Plans show the minimal required temporary traffic control devices, signs, and geometric requirements for accommodating bicyclists in a work zone, and they may not address the needs of every project.

**Slide 8 Bicycle Accommodations**

Designers should try and provide like-for-like temporary bicycle accommodations through work zones. When like-for-like facilities on the same side of the road cannot be provided for bicyclists, separate them from traffic whenever possible. To provide accommodations for bicyclists on the same side of the road and separate them from traffic, consider closing one lane of traffic as shown in Standard Plan 102 series.

**Slide 9 Bicycle Accommodations**

There may be a scenario where a work zone contains an existing separated bike lane that has to be moved closer to traffic due to construction constraints, a designer should provide a temporary barrier to help separate bicyclists from traffic. If there is no other viable option to accommodate bicyclists through work zones, bicyclists may be directed onto the sidewalk if the sidewalk is at least 8ft wide.

**Slide 10 Bicycle Accommodations**

The least preferred option to accommodate bicyclists is direct them into the travel lane. Bicyclists can be merged into the travel lane only for work zones with a work zone speed of 35 mph or less and the existing bike facility is a bicycle lane, marked shoulder, or a 4ft or greater width paved outside shoulder.

**Slide 11 Bicycle Accommodations**

If bicyclists are directed into the roadway, provide portable changeable message signs letting motorists know bicyclists will be detoured onto the road per Florida Design Manual, Chapter two-forty-three.

**Slide 12 Bicycle Accommodations**

When the bicycle facility must be closed and accommodations cannot be provided on the same side of the roadway, bicyclists can be accommodated by being diverted to the other side of the roadway using standard flagging procedures. However, bicyclists need to be returned to the original side of the roadway as soon as practical.

**Slide 13 Bicycle Accommodations**

The shows an animation of a typical two-lane, two-way flagging operation for accommodation bicyclists. Notice that after bicyclists have crossed, the opposing traffic is released.

**Slide 14 Bicycle Accommodations**

Bicycle detours are not the preferred accommodation. However, if a bicycle detour must be done, keep it as short as practical. Bicycle detours should not be longer than one half of a mile and there should be coordination done with the owner of the facility that the bicyclists will be detoured onto.

**Slide 15 Bicycle Accommodations**

Also, if bicyclists are being detoured into a shared lane condition with motorists, place Portable Changeable Message Signs along the detoured road to notify the motorists of the shared condition per FDOT Design Manual Chapter two-forty-three.

**Slide 16 Bicycle Accommodation Examples**

To illustrate the different accommodation options, let’s review an example work zone. The street in this example is a two-lane, two-way road with a raised median and turn lanes. It is in an urban area with an existing posted speed limit of 35 mph.

**Slide 17 Bicycle Accommodation Examples**

The road also has bike lanes and 12-foot-wide sidewalks on both sides. The construction is on the curb and gutter of the northbound road and the work zone encompasses the sidewalk and bike lane in the corridor. What are some options for bicyclist accommodations through this work zone?

**Slide 18 Bicycle Accommodation Examples**

One option is to close the northbound bike lane and have the bicyclists merge into the travel lane. To make bicyclists aware of the closed bike lane and to give them guidance on what to do, provide the following: “Road Work Ahead” sign, “Bike Lane Closed Ahead” sign, “Bikes May Use Full Lane” sign, and “Bikes Merge” sign along with channelizing devices to guide the bicyclists into the travel lane.

**Slide 19 Bicycle Accommodation Examples**

Another option for bicycle accommodation is to divert bicyclists onto the opposite sidewalk at the midblock crossing, then have them cross back into the bike lane at the next midblock crossing. Since the sidewalk is 12ft, it meets the minimum requirements set by the FDOT Design Manual for bicyclists to be on the same sidewalk as pedestrians.

**Slide 20 Bicycle Accommodation Examples**

The least preferred option would be to detour bicyclist around the work zone as shown here. The total distance of the detour would be less than half a mile which meets the FDOT Design Manual criteria for being less than the maximum distance allowed of one-half mile.

**Slide 21 Pedestrian Accommodations**

Next, let's go over pedestrian accommodations in work zones. Work zone pedestrian accommodations must meet ADA requirements and include provisions for the disabled that are equal to or greater than the existing provisions.

**Slide 22 Pedestrian Accommodations**

Similar to bicycle accommodations, the temporary pedestrian facility should be as like-for-like as possible. That means the temporary facility should look and feel like the existing facility to the maximum extent feasible. If like-for-like facilities cannot be provided, the department has an order of preference for temporary pedestrian accommodations.

**Slide 23 Pedestrian Accommodations**

The most preferred accommodation is keeping the pedestrian facility on the same side of the road as the existing facility. One way to achieve this is to complete a lane closure analysis and see if a lane can be closed in order to provide a separated temporary pedestrian facility.

**Slide 24 Pedestrian Accommodations**

Another preferred pedestrian accommodation is a temporary pedestrian way that is separated from the travel lane by channeling devices or temporary barriers but still on the same side of the roadway as the existing facility. To use channelizing devices as separation, the work zone speed must be 35 mph or less.

**Slide 25 Pedestrian Accommodations**

If the pedestrian facility cannot be maintained on the same side of the roadway, then another preferred accommodation is to divert pedestrians to the other side of the roadway and have them return to the original side as soon as possible. Designers should choose crossing points for pedestrians that have adequate stopping sight distance.

**Slide 26 Pedestrian Accommodations**

If temporary midblock crossings are used, they must meet the permanent midblock crossing criteria contained in the Traffic Engineering Manual. Also, to help motorists be aware of these extra crossings, use Portable Changeable Message Signs in accordance with FDOT Design Manual Chapter two-forty-three.

**Slide 27 Pedestrian Accommodations**

If a sidewalk needs to be closed, use Longitudinal Channelizing Devices across the full width of the sidewalk to provide a continuous detectable surface for the visually impaired.

**Slide 28 Pedestrian Accommodations**

The least preferred accommodation is a pedestrian detour. Detours should not be longer than ¼ mile and need to route pedestrians back to the original facility as soon as practical.

**Slide 29 Pedestrian Accommodation Examples**

To illustrate these accommodations, let's use the same project as we did for the bicycle accommodation. As a reminder, the street is a two-lane, two-way road with a raised median and turn lanes. It is in an urban area with an existing posted speed limit of 35 mph. The road also has bike lanes and 12-foot-wide sidewalks on both sides. The work is on the curb and gutter of the northbound road and the work zone encompasses the sidewalk and bike lane in the corridor.

**Slide 30 Pedestrian Accommodation Examples**

One accommodation we could use would be to divert pedestrians to the other side of the roadway at the midblock crosswalk. Then, have the pedestrians cross back over at the next midblock crosswalk. For this application, close the sidewalk by placing a pedestrian longitudinal channelizing devices completely across the sidewalk displaying the "Sidewalk Closed" sign just after the midblock crossing.

**Slide 31 Pedestrian Accommodation Examples**

Another accommodation strategy is to close the travel lane and bike lane for a pedestrian diversion.

**Slide 32 Pedestrian Accommodation Examples**

Since the work zone speed is 35 mph, channelizing devices can be used instead of temporary barrier. For this option, more planning and analysis is needed, but it does keep pedestrians on the same side of the road and separates them from traffic.

**Slide 33 Pedestrian Accommodation Examples**

For this work zone example, a pedestrian detour is not possible. There are no connecting networks of sidewalk that the pedestrian can be routed onto. If there was a route that had connecting sidewalks that led pedestrians back to the original facility, it would be over half a mile in total distance and the FDOT Design Manual suggests pedestrian detours to be less than a quarter mile long.

**Slide 34 Phasing Pedestrian Accommodation Examples**

Similar to roadway construction activities, the phasing of pedestrian and bicycle closures should also be considered. Most projects will benefit greatly by phasing sidewalk closures and constructions activities to minimize closure lengths and durations.

**Slide 35 Phasing Pedestrian Accommodation Examples**

Phasing construction into smaller sections or limiting closures durations has multiple benefits. These benefits include:

- Minimalizing the impacts to bicyclists and pedestrians,
- Reducing the time, a pedestrian facility will be closed, and
- Lowering the cost of the TTCP by reducing the amount time devices, like LCDs, are deployed.

**Slide 36 Phasing Pedestrian Accommodation Examples**

An optimal pedestrian accommodation plan should aim to reduce the duration of closures and one of the best ways to accomplish this is through phasing the work.

**Slide 37 Phasing Pedestrian Accommodation Examples**

For example, the corridor here needs to replace all the curb ramps to bring them into ADA compliance.

**Slide 38 Phasing Pedestrian Accommodation Examples**

With all of the bicycle and pedestrian attractors along this corridor, it is not feasible to close both sidewalks to construct all the ramps in one phase. There is no acceptable detour route and the traffic in this area is too high to utilize a lane closure, so parts of the sidewalk have to remain open during construction.

**Slide 39 Phasing Pedestrian Accommodation Examples**

One way to phase this project would be to first close the ramps circled in red while leaving the other ramps open for use. This allows users to still access businesses and bus stops on either side of the roadway by still being able to use the crosswalks at the intersections.

**Slide 40 Phasing Pedestrian Accommodation Examples**

Once the first phase ramps are complete, the next phases of construction could be completely sequentially as shown here. By breaking the larger project of reconstructing all the ramps in the corridor into four smaller phases, the impacts to pedestrians are limited and access to various restaurants and businesses is still available.

**Slide 41 Phasing Pedestrian Accommodation Examples**

As another example, when sidewalk closures are needed along the project corridor, consider phasing the closures as shown here to break up the closures into reduced segment lengths. The more complex the project, the more phases are going to be needed. Also, by utilizing smaller construction phasing, less devices would be needed to close the sidewalks and with less devices needed, the cost of the TTCP is lower too.

**Slide 42 Vehicle Transport Service**

There are some instances where bicycle and pedestrian closures are needed at locations with there is no adjoining or parallel facility, no possible detour, and no phasing options. For these instances, a vehicle transport service should be considered.

**Slide 43 Vehicle Transport Service**

This service acts like a taxi service that is free to bicycle and pedestrian users. The transport service would shuttle the users through the work zone from designated pickup and drop-off locations. The use of transport services should only be done in combination with a robust public information plan and with advance notice to users.

**Slide 44 Bicycle and Pedestrian Accommodations**

There will be occasions where bicycle and pedestrian accommodations for a project are very difficult to provide where closures are unavoidable. This might include projects with constrained right-of-way, no parallel or adjoining facilities, or projects where the cost of the accommodation far outweighs the need.

**Slide 45 Bicycle and Pedestrian Accommodations**

As mentioned in this module, when these conditions exist, all possible options should be considered; including detours, phasing, and transport shuttles.  Other options might include nightwork or short duration closures during times when users are not expected.

**Slide 45 Bicycle and Pedestrian Accommodations**

When occurrences like this happen, designers should coordinate with the District to develop and document the most viable and practical solution.  As mentioned, this should include a robust public information plan to inform users of possible impacts to the existing bicycle and pedestrian facilities.

**Slide 47 Transit Users**

Transit stops that are impacted in the work zone must have temporary access that includes provisions for the disabled at the same level of accessibility as the existing facility or greater. See FDOT’s Accessing Transit Handbook for guidance on transit stops.

**Slide 48 Learning Objectives**

In summary, this module covered the different bicycle and pedestrian accommodation criteria in the FDOT Design Manual and reviewed examples of accommodations through work zones.

**Slide 49 Transportation Management Plan Recap**

Let’s recap what the two modules about Transportation Management Plans have covered.

First, a Transportation Management Plan lays out a set of coordinated transportation management strategies and describes how they will be used to manage the work zone impacts of a road project.

**Slide 50 Transportation Management Plan Recap**

Next, a Transportation Management Plan may include the following three components: 1. Temporary Traffic Control Plan, 2. Transportation Operations Plan, and 3. Public Information Plan.

**Slide 51 Transportation Management Plan Recap**

A Temporary Traffic Control Plan is required for all work zones within, or adjacent to highways, and the Transportation Operations Plan contains strategies to improve mobility, work zone access, and safety.

**Slide 52 Transportation Management Plan Recap**

Lastly, the Public Information Plan, describes how project information will be communicated to the affected parties, traveling public, and project stakeholders prior to and during construction.

**Slide 53 End**

This concludes this module for the Temporary Traffic Control for Designers CBT. Thank you for your time and attention.