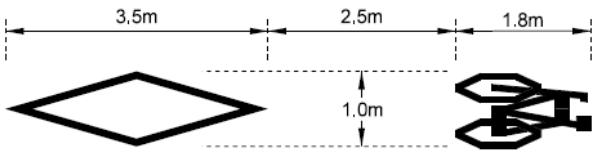
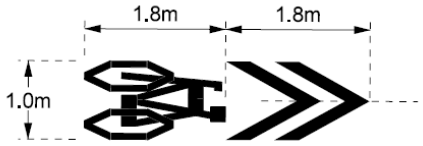
Appendix A – Guiding Principles for Cycling Safety in Work Zones

1. Identify Existing Cycling Facility and Requirements

This step should be part of the permitting/approval processes for construction zones or temporary street closures.

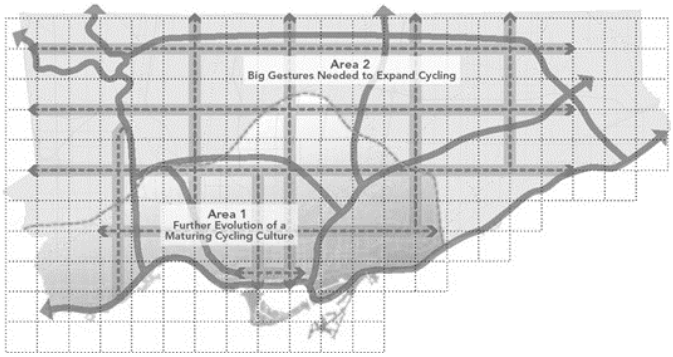
a. Bicycle Lanes and Cycle Tracks	
Bicycle Lanes and Cycle Tracks are designated (bylawed) sections of roadway for cycling. • The bicycle symbol and diamond in the bicycle lane or cycle track signify that the City Council approved that section of roadway exclusively for bicycle travel. • Cycle Tracks typically include a physical separation from traffic lanes with curb separators (for example, at Sherbourne and at Wellesley) or painted buffers with flexi-post bollards (for example, at Richmond and Adelaide). • Reports for term-closures (beyond 30 days outside of capital works) which occupy bicycle lanes and cycle tracks may require reporting to Community Council.	 DETAIL OF BICYCLE SYMBOL AND DIAMOND MARKINGS N. T. S.
b. Shared Lane Pavement Markings	
Shared Lane Pavement Markings (or "sharrows") are a reminder to share the road between cyclists and motorists. • The placement of chevrons and bicycle symbol also mark the intended alignment of cyclists along the shared lane. • There is no diamond, and no bylaws are associated with these pavement markings. • City's guidelines allow adjustments to these markings.	 DETAIL OF SHARROW MARKING N. T. S.

2. Consideration of Context

Requirements for safe cycling within work zones differ from the requirements for other road users and special considerations should be considered as detailed below.

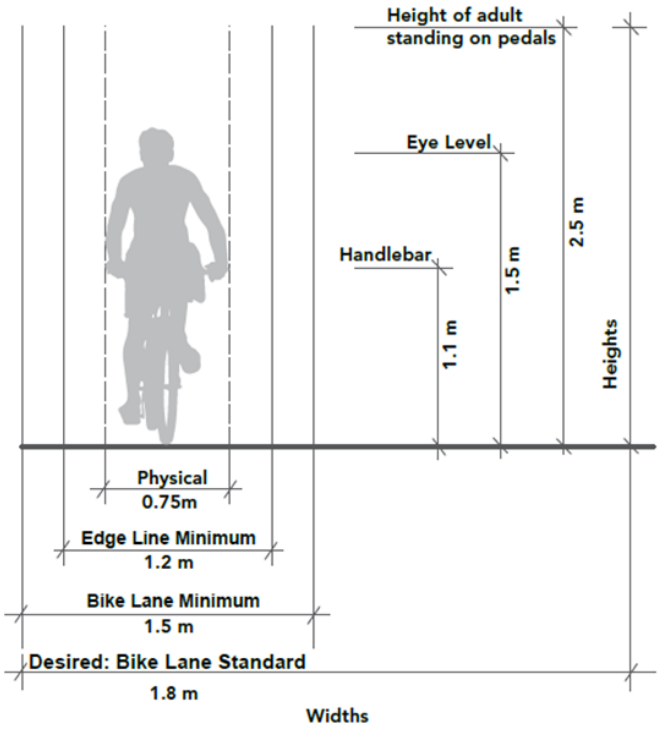
a. Consider Cycling Volumes when balancing trade-offs

- When balancing competing priorities, consider that bicycle lanes or cycle tracks along some corridors may carry larger number of commuting cyclists.
- Ontario Traffic Manual (OTM) Book 7 – Temporary Conditions stipulates that for bicycle lanes with high volumes, it is preferable to maintain the bicycle lane operating through the work zone.
- In the Toronto downtown core, the majority of bicycle lanes/cycle tracks have volumes of 1500+ daily, with highs in the 3500+ daily. For example, major facilities in downtown Toronto along Adelaide, Bloor College, Harbord, and Richmond carry 2500+ cyclists daily.



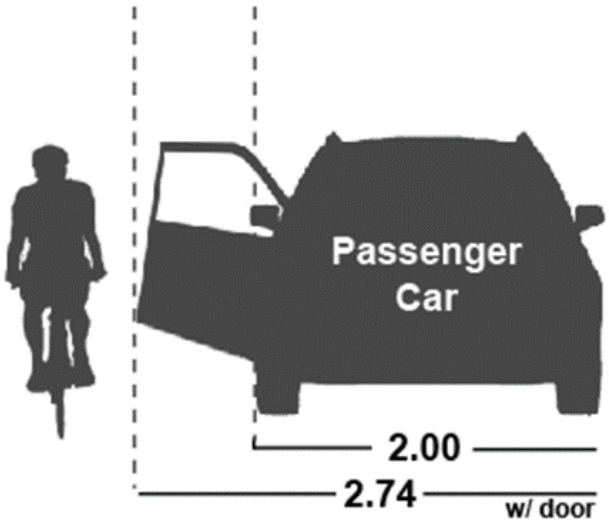
b. Cycling Operating Characteristics

- The average operating speed of cyclists is approximately 20km/h.
- If minimum widths are being applied, be aware of vertical clearance adjacent to cycling area (e.g. ensure no protrusions from sidewalk near handlebars, pedals etc.).
- Please note Ontario Traffic Manual (OTM) Book 7 – Temporary Conditions suggests that in work zones where an alternating one-way traffic flow is controlled by a traffic control person or temporary signals, lower speeds should be considered to enable the cyclists to safely pass through work zone. The timing of any temporary signal should take into account the time required for the cyclists to travel through the work zone.
- Make sure that communication about the presence of cyclists and signage are present in work zones to instruct motorists not to pass.
- If re-alignment of bicycle lane/cycle track is required at work zone, a 6 to 1 taper for a bicycle lane or cycle track within construction zone is recommended. For example, if a bicycle lane is shifted laterally by 3.0 metres within a work zone, the desired longitudinal taper would be 18.0 metres. If short tapers are required due to constraint site, adequate sight lines need to be ensured as the cyclists approach the work zone.



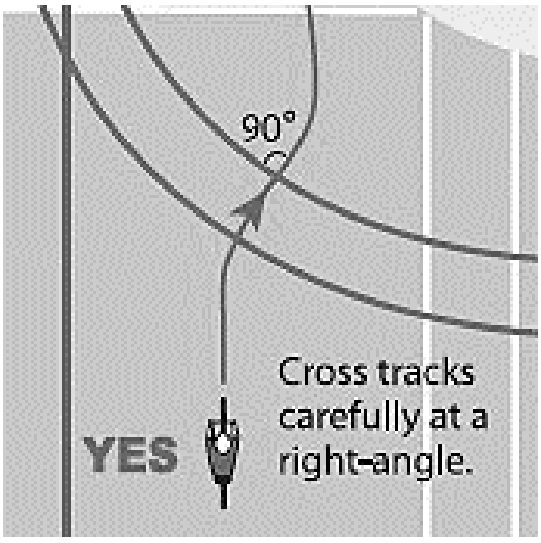
c. Identify Collision Hazards

- Identify the presence of on-street parking beside on-street cycling facilities. High turnover of parking increases the risk of "dooring" for cyclists travelling adjacent to parked cars. Temporary bicycle lanes should be at least 0.74 metres from the open car doors.
- Identify areas where conflicts may occur because of high pedestrian volumes**.**
- Ensure that equipment and materials related to work zone, including cones and signs are kept out of the cyclist's path of travel.
- Ontario Traffic Manual (OTM) Book 7 – Temporary Conditions suggests to minimize vertical discontinuities. Where cycling volumes are high and discontinuities are unavoidable (e.g., at road cuts, raised iron works, steel plates that are not recessed into the pavement), consider mitigating them with temporary asphalt ramps.
- Use reflective pavement markings and proper separation devices (such as barriers, barrels or cones) to direct cyclists away from unramped grade changes.



d. Identify Hazards on Road Surface

- Bicycle wheels may get caught in streetcar tracks and/or catch basins.
- For safety, cyclists should cross streetcar tracks at 90 degree angle.
- If cyclists will be riding adjacent to streetcar tracks, a minimum of 1.0 metre should be maintained unobstructed between the edge of the streetcar track bed and the work zone.
- Ontario Traffic Manual (OTM) Book 7 – Temporary Conditions suggests that when a cyclist is directed through the work zone, consideration must be given to the surface conditions to keep free from any slipping hazard and loose materials. Safe cycling requires a higher standard of travel surface than motor vehicle operation.



3. <u>Consider Temporary Options for Bicycle Lane/Cycle Track in Work Zones</u>

First priority is to Maintain Existing Bicycle Lane or Cycle Track. If this is not possible the following options should be considered.

a. Use Temporary Markings to Channelize Bicycle Lane around Obstacle	• If required, the alignment of the bike lane may be diverted within the right of way. • Bicycle lane standard width: 1.8 metres. • Minimum width: 1.5 metres.
b. Use Temporary Markings to Narrow Bicycle Lane	• Maintain a minimum of 1.5 metre wide bicycle lane. • If maintaining minimum width for bicycle lane is not possible, a 1.2 metre edge line may be used to provide a temporary cycling facility for limited periods. • Use caution with narrowing of cycling facility adjacent to on street parking. • Consider reducing posted speed on roadway if bike lane is narrowed.
c. Close the Bicycle Lane, Use Temporary Markings to Highlight Cycling Path of Travel in a Shared Lane	• In shared traffic lanes which are less than 3.3 metres in width, shared use lane pavement marking "sharrows" may be installed at the middle of the traffic lane to provide a message that the lane is shared for limited periods**.** • Shared use lane pavement markings should not be used on streets with posted speeds greater than 50km/h. • Consider reducing posted speed on roadway to <40 km/h if only a shared use lane can be provided. City of Toronto and other municipalities have delegated authority under OTM to reduce speed limits through work zones.
d. Full Closure of All Traffic Lanes	• If the full roadway is closed to all vehicles, then a detour route for cyclists may be considered. • Detour Routes: Option 1: when one detour route is available for cyclists and detour route is safe and can be easily marked. Please provide appropriate signage plan for detour route. Option 2: If there is more than one choice of detouring around the work zone. In this case only one detour route in the field may not be advantageous. For this condition, provide onsite detour mapping as part of the notification which indicates routes around the work zone. Allow cyclists to plan trip accordingly. • A closure with a small footprint, where the end of closure is visible form either side, may be considered. Cyclist Dismount and Walk sign may be suitable when full closures of all lanes are localized to small footprints. Cyclists may dismount and walk bikes on sidewalk for short footprint closures.

4. Consider Appropriate Communication and Notifications Protocol

a. Protocol for notification of any major construction work	• Ensure that all construction that affects the operation of a bicycle lane is included in the public notification. Planned conditions of the cycling facility within work zone are need to be included in the notice (for example, shared use lane markings, closure/detour route, narrowing of bicycle lane) so that cyclists are informed in advance of the roadway condition and can plan trips accordingly. • Provide details of the notification process (such as delivered by mail and posted on website).
b. Options for detouring cyclists around the work zone	• Please refer to section 3.d above for notification requirements for cyclists' detours around work zones.