
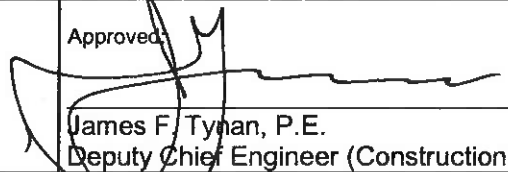


To: SUPERSEDED BY EB 21-057 EFFECTIVE 11/24/21		New York State Department of Transportation ENGINEERING INSTRUCTION	EI 08-030
Title: WORK ZONE SPEED LIMIT REDUCTIONS			
Distribution: <input type="checkbox"/> Manufacturers (18) <input checked="" type="checkbox"/> Local Govt. (31) <input checked="" type="checkbox"/> Agencies (32)		<input type="checkbox"/> Surveyors (33) <input checked="" type="checkbox"/> Consultants (34) <input checked="" type="checkbox"/> Contractors (39) <input type="checkbox"/> _____ ()	Approved:  _____ James F. Tynan, P.E. Deputy Chief Engineer (Construction)

9-9-08
Date

ADMINISTRATIVE INFORMATION:

- This Engineering Instruction (EI) is effective beginning with projects submitted for the letting of 01/08/09.
- This guidance will be incorporated into a future update of Chapter 16 of the Highway Design Manual (HDM).

PURPOSE:

- To issue guidance for speed reductions in work zones to incorporate the intent of the Work Zone Safety Act of 2005 and compliance with the National Manual on Uniform Traffic Control Devices (NMUTCD) and New York State Supplement.

TECHNICAL INFORMATION:

- This EI provides guidance for Traffic, Design, Maintenance, and Construction personnel in establishing requirements for speed reductions in work zone. It also further clarifies EI-06-011 - *Interim Implementation of Work Zone Safety Act of 2005* and Highway Design Manual Chapter 16 - *Maintenance and Protection of Traffic in Highway Work Zones*.
- This guidance supersedes Highway Design Manual Sections Exhibit 16-11 Maximum Speed Reductions; Section 16.4.6.6 Speed Reduction Signing; Section 16.4.6.7 Locations of Fines Doubled for Speeding in Work Zones signs; Exhibit 16-12 Signing Requirements for Reducing 65 mph Speed Limits in Work Zones; Section 16.4.6.8 (B) Education/Awareness Measures and Section 16.4.6.9 Approving and Documenting Reduced Speed Limits.
- This guidance will be incorporated into the Construction Inspection Manual (CIM) at a later date.

IMPLEMENTATION:

- Designers should implement this guidance beginning with projects submitted for the letting of 01/08/09.
- Engineers-in-Charge of ongoing contracts and those submitted for lettings prior to 01/08/09 should provide a copy of this EI to the contractor and file a copy of this EI in the contract records as documentation of any required changes in accordance with the Contract Administration Manual (CAM) §104-02.

TRANSMITTED MATERIALS: This EI transmits *Work Zone Speed Limit Reductions* with Exhibits.

BACKGROUND:

The adoption of the National Manual on Uniform Traffic Control Devices and the NYS Supplement, 23 CFR 635 Subpart J Work Zone Safety and Mobility, and the Work Zone Safety Act of 2005, have shifted the Department's focus from establishing work zones that maximize traffic flow through a work area, to establishing work zones that provide higher levels of safety for workers and the traveling public, by shifting traffic, extensive public relations, controlling speeds with enforcement and by closing facilities. This focus shift necessitated updated guidelines for construction work zone speed limits.

CONTACT:

Questions regarding this EI should be directed to:

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WORK ZONE SPEED LIMIT REDUCTIONS

INTRODUCTION

Vehicle speeds through work zones are an important factor affecting the safety and mobility of road users and highway workers. The intent of speed limit reductions in work zones is to promote safe and efficient traffic flow through work zones, as well as enhance the ability of traffic to safely react to highway work and disruptions in traffic flow. Speed limit reductions in work zones should only be used when necessary and should be relevant to the conditions or restrictive features that are present. This guidance reflects when to include speed limit reductions in work zone traffic control plans, and describes the methods for establishing and implementing them.

DEFINITIONS

Work Zone Component Definitions:

Major Active Work Zone is a stationary work zone having a duration exceeding 4 hours with workers on foot in the work zone and not predominately separated from traffic by positive barrier on a fully controlled access highway with a preconstruction posted speed limit of 55 mph or greater.

A **Work Zone** is the area of a highway with construction, maintenance, or utility work activities. It is typically marked with signs, channelizing devices, barriers, pavement markings, and/or work vehicles and extends from the first warning sign to the END ROAD WORK sign.

An **Activity Area** includes the work space (where workers, equipment and materials are present) and buffer space.

A **Work Space** is the portion of the highway closed to road users and set aside for workers, equipment, and material, and a shadow vehicle if one is used upstream. Work spaces are usually delineated by channelizing devices or temporary barriers to exclude vehicles and pedestrians.

A **Delineated Work Space** is a work space delineated by channelizing devices that does not provide positive protection from traffic.

A **Protected Work Space** is a work space delineated by concrete barrier or other devices providing workers with positive protection from traffic.

Work Duration Definitions:

Long-term Stationary Work Zone is a work zone that occupies a location more than 3 consecutive days.

Intermediate-term Stationary Work Zone is a work zone that occupies a location more than 1 daylight period up to 3 consecutive days, or a nighttime work zone lasting more than 1 hour.

Short-term Stationary Work Zone is a daytime work zone that occupies a location for more than 1 hour within a single daylight period.

Short Duration Work Zone is work that occupies a location up to 1 hour.

Mobile Work Zone is a work zone that moves intermittently or continuously.

WORK ZONE SPEED LIMIT REDUCTIONS

Speed Definitions:

Preconstruction Posted Speed limit is the speed limit, prior to commencing construction, established by official order and shown on Speed Limit signs.

Recommended Speed is the speed, under optimal conditions, considered appropriate for safely operating vehicles on a section of highway within a work zone, based on geometrics, sight distance, and other prevailing conditions.

Advisory Speed is a recommended speed for vehicles operating on a section of highway within a work zone, based on the design, operating characteristics, and conditions of the work zone.

Regulatory Speed Limit in a Work Zone is the speed limit applicable to a section of highway within a work zone as established by official order.

SPEED CONTROL METHODS

Speed limit reductions in work zones are most effective when drivers perceive the need to slow down, (whether through noticeable geometric or work-related constraints on traffic flow) and when there is regular active police enforcement of the work zone speed limit. Arbitrary speed limit reductions erode motorist's confidence in the need for reducing speed within a work zone. Traffic speed in work zones are generally lower, regardless of posted speed limit, when work zone conditions such as flagging, variable message signs, lane shifts, lane-width reduction, radar, and enforcement exist. Engineering, education/awareness, and enforcement measures are to be used to influence motorists, promote work zone awareness, and achieve safe work zone traffic speeds.

Engineering Measures

Incorporating engineering measures into work zone designs will encourage drivers to safely negotiate work zones. Warning signs, advisory speeds, positive guidance, width restrictions, channelizing chicanes, and use of intelligent transportation system technologies are examples of engineering measures that can be used to slow traffic traveling through a work zone. Other engineering measures, such as shifting traffic, median cross-over diversions and road closures with off site detours can help to maintain mobility of the traveling public, as well as remove potential conflicts between the traveling public and road work.

Education/Awareness Measures

The news media and internet are resources available to inform the public of impending and/or existing work zones. Newspapers, radio announcements, and television reports, as well as the Department's www.TravelInfoNY.com web page provide the public with useful information.

Portable Variable Message Signs

Portable Variable Message Signs (PVMS) with built-in radar detectors can be used to alert drivers that they are exceeding the speed limit with the message:

YOUR SPEED IS XX MPH 1 st panel	SLOW DOWN 2 nd panel	YOU ARE SPEEDING 3 rd Panel
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WORK ZONE SPEED LIMIT REDUCTIONS

PVMS equipped with trigger panels should be programmed using a "Trigger Speed" of 10 mph above a posted speed limit of 45 mph or higher and a "Trigger Speed" of 5 mph above a posted speed limit of 30 mph to 40 mph. PVMS should be utilized to alert drivers that they are exceeding the speed limit. PVMS should be de-activated during periods of traffic congestion, and regularly moved to enhance effectiveness. Overuse may desensitize the motoring public to their use and reduce their effectiveness.

Speed Display Trailers

Speed Display Trailers with built-in radar detectors can be used to alert drivers that they are exceeding the speed limit by displaying approaching vehicle speeds. Speed Display Trailers are to be supplied, positioned, maintained, and removed by the Department. Speed Display Trailers should be de-activated during periods of traffic congestion, and regularly moved to enhance effectiveness.

Enforcement Measures

Engineering and education/awareness measures can help reduce speeds. However, active police enforcement is the most effective measure to encourage motorist's compliance with posted regulatory speed limits and other traffic regulations within work zones. Under the 2005 Work Zone Safety Act Regulation, police services will be provided to the extent practicable within major active work zones. The need for police presence and/or enforcement should be determined as early as possible during the project design phase. Police enforcement needed for maintenance type work zones will be coordinated as early as possible with the police agency and the Regional Traffic and Maintenance Groups. All effected parties should meet prior to any active enforcement within a work zone.

SPEED LIMIT REDUCTIONS IN WORK ZONES

The NMUTCD states: "*Reduced speed limits should be used only in the specific portion of the work zone traffic control where conditions or restrictive features are present.*" Advisory speeds that warn motorists of potential hazardous conditions are a preferred alternative to regulatory speed reductions. Studies show that drivers will reduce their speed only when they feel the need to do so regardless of posted limits and that the greater the speed differential or variance, the greater the potential for crashes. The NMUTCD further states: "*Reduced regulatory speed limits should be avoided as much as practicable because drivers will reduce their speeds only if they clearly perceive a need to do so.*"

A work zone traffic control plan should be designed to provide work zone geometric transition(s), sight distance, lane width, and superelevation that result in a recommended speed for the work zone that meets or exceeds the design speed or the preconstruction posted speed limit plus 5 mph. Where an advisory speed or a reduction in the regulatory speed limit is warranted within a work zone, the speed limit should not be reduced more than 10 mph below the preconstruction posted speed limit, unless an engineering study shows that the geometric conditions warrant a greater speed limit reduction. The Regional Traffic Engineer or their designee will be responsible for approving all work zone advisory speeds and reduced regulatory speed limits.

Advisory or regulatory speed limit reductions in work zones are to be established consistent with changes in the physical character of the work area. Advisory or regulatory speed limit reductions in work zones shall be in effect only where conditions warrant the speed reduction within the work zone. In long work zones with several intermittent activity areas, where it has been determined that a regulatory speed limit reduction is necessary at each activity area, the preconstruction posted speed limit shall be restored between activity areas where they are separated by 3 km (2 miles) or greater.

WORK ZONE SPEED LIMIT REDUCTIONS

SELECTING AND APPROVING SPEED LIMIT REDUCTIONS IN WORK ZONES

Speed reductions in work zones may be selected by the designer during the development of the Work Zone Traffic Control Plan or by Construction Inspection Staff during construction. Speed reductions in work zones should be recommended by the Regional Design Engineer and/or Regional Construction Engineer, but require the approval of the Regional Traffic Engineer.

The flowchart shown in Exhibit 1 should be used to assist in determining the need for work zone advisory speed limits.

The flowchart shown in Exhibit 2 should be used to assist in determining the need for work zone regulatory speed limit reductions.

AUTHORIZATION FOR REGULATORY SPEED LIMIT REDUCTIONS IN WORK ZONES

Speed limits shall be legally established and posted to permit their enforcement. Methods to authorize reduced speed limits in work zones in accordance with New York State Vehicle and Traffic Law are by **designated restricted highway** (Section 1625), **regulation of traffic on highways under the jurisdiction of certain public authorities and commissions** (Section 1630) and **work area speed limit** (Section 1180(f)).

A. Designated Restricted Highway

NYS Vehicle and Traffic Law Section 1625 authorizes the Department to impose certain traffic regulations by official order necessary for the completion of the construction work, including speed limits. A "Notice of Restricted Highway" that includes the contract limits must be filed. This permits the Department to post a reduced regulatory speed limit as necessary to fit changing conditions without filing separate orders for each change. Restricted highway designation is intended primarily for capital construction contracts.

Most major construction contracts due to the complexity and duration of the traffic control plans are designated restricted highway stages, unless otherwise specified.

B. Regulations Under Jurisdiction of Certain Authorities and Commissions

NYS Vehicle and Traffic Law Section 1630(5) authorizes certain public authorities and commissions to establish maximum and minimum speed limits at which vehicles may proceed on or along such highways.

C. 1180(f) Work Area Speed Limit

NYS Vehicle and Traffic Law Section 1180(f) permits some municipalities not otherwise authorized to establish a reduced regulatory speed limit by ordinance, order, rule or regulation for construction or maintenance work areas.

AUTHORIZATION FOR ADVISORY SPEED POSTINGS IN WORK ZONES

Advisory speeds are not enforceable by law, but are intended to give the motorist warning of a hazardous or unexpected condition in which they should reduce their speed to safely navigate the work zone. The New York State Supplement to the NMUTCD Section 2C.46 provides the authorization for advisory speed plaques.

WORK ZONE SPEED LIMIT REDUCTIONS

REGULATORY SPEED LIMIT REDUCTION SIGNS IN WORK ZONES

Speed limits in work zones are enforceable in court, when they are placed pursuant to traffic control powers granted, by law, to state and local authorities and in accordance with sign design and placement requirements of the National Manual of Uniform Traffic Control Devices. All reduced speed limits in work zones shall be posted with black/white regulatory speed limit signs (R2-1) with black/orange WORK ZONE panels (NYW8-45) mounted above speed limit signs, to call attention to the reduced speed limits in work zones. A WORK ZONE panel shall not be mounted above preconstruction speed limit signs within a work zone. Existing regulatory speed limit signs or advisory speed plaques that conflict with a reduced speed limit in a work area must be completely covered or removed when a reduced speed limit is in effect. Conversely, reduced work zone speed limit signs must be completely covered/removed and preconstruction posted speed limit signs are to be uncovered/replaced, after a work zone activity area is removed.

Speed limit signs shall be posted as illustrated in Exhibits 3A, 3B, and 3C. Exhibit 3A provides signing for cases where a regulatory speed reduction is implemented at a merging taper. Exhibit 3B provides signing where workers on foot within in the work space more than 800 m (½ mile) beyond the merging taper. Exhibit 3C provides signing for cases where a regulatory speed reduction is implemented in association with transition geometry.

All reduced work zone speed limit signs in work zones shall be installed on both sides of a multi-lane highway. When traffic is reduced to a single lane, work zone speed limit signs are to be installed only on the right side of the highway. Supplemental work zone speed limit signs shall be interspersed within the work zone activity area with a maximum spacing of 0.8 km (½ mile). A preconstruction posted speed limit sign or END SPEED ZONE (NYR2-11) sign is to be posted 30 m (100 ft) beyond the end of the work zone activity area having a reduced speed limit.

ADVISORY SPEED LIMIT SIGNS IN WORK ZONES

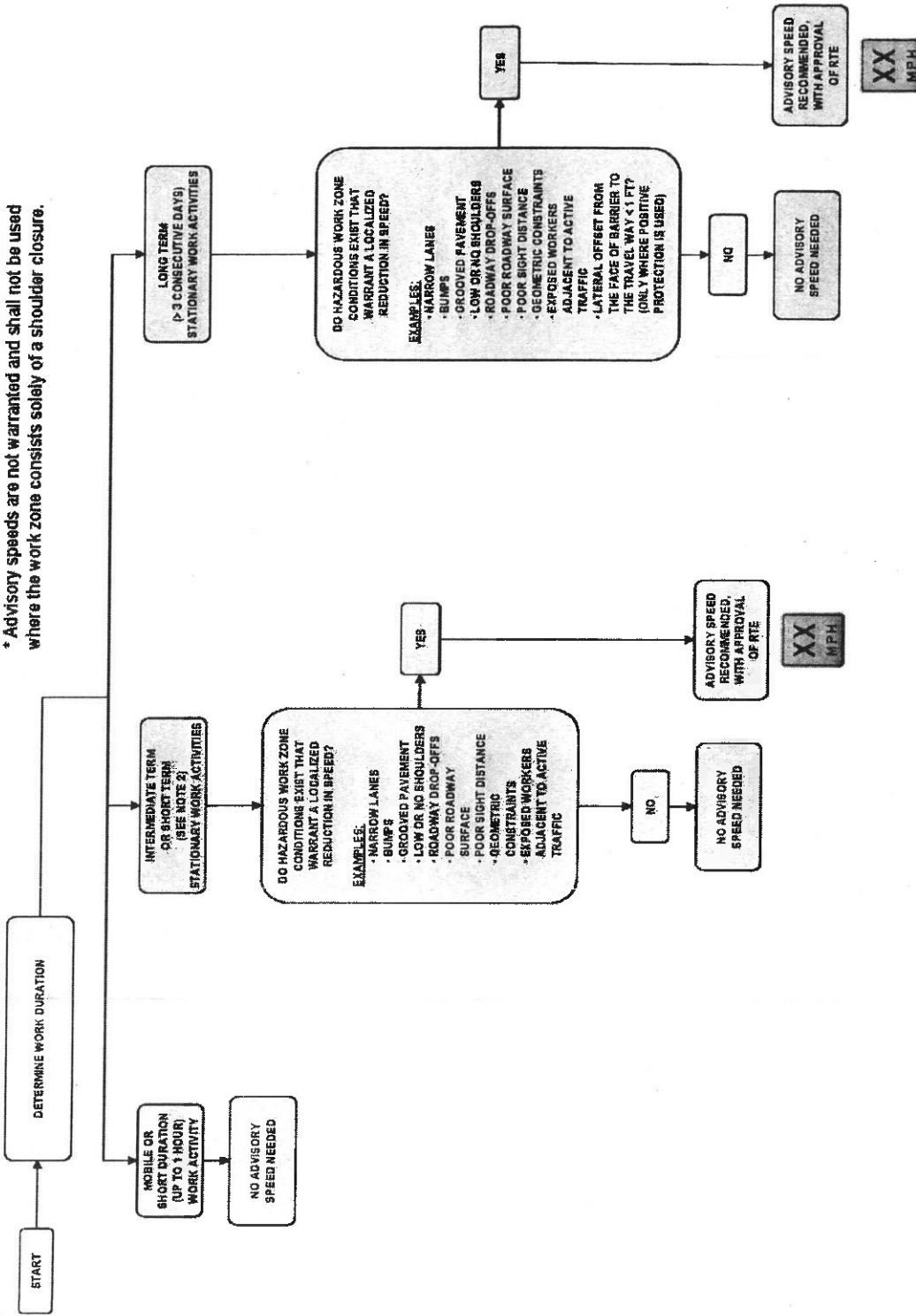
All advisory speed limits shall be posted with black/orange Advisory Speed Plaque (W13-1) below the appropriate warning sign, on the same post. Advisory Speed Plaques shall not be used in conjunction with any sign other than a warning sign, nor shall it be used alone.

EXHIBITS

- 1 Work Zone Advisory Speed Limit
- 2 Work Zone Regulatory Speed Limit Reduction
- 3A Signing Pattern Relative to Merging Taper
- 3B Signing Pattern Independent of Merging Taper
- 3C Signing Pattern Relative to Transition Geometry

EXHIBIT 1: WORK ZONE ADVISORY SPEED LIMIT FLOW CHART

*Advisory speeds are not warranted and shall not be used where the work zone consists solely of a shoulder closure.

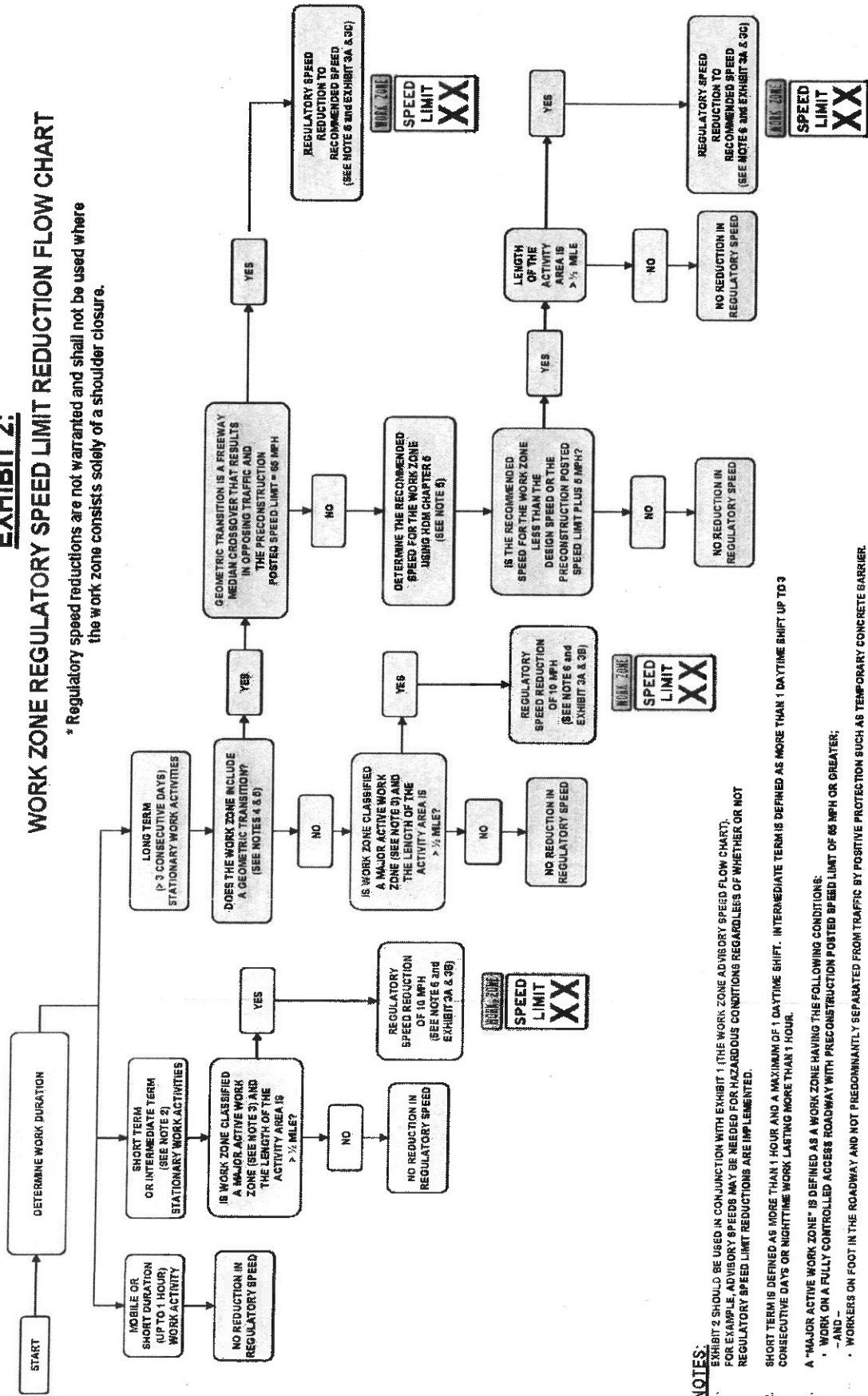


NOTES:

1. THIS FLOW CHART SHOULD BE USED IN CONJUNCTION WITH EXHIBIT 2 (WORK ZONE REGULATORY SPEED LIMIT REDUCTION FLOW CHART). FOR EXAMPLE, SPEEDS MAY BE FURTHER REDUCED FOR HAZARDOUS CONDITIONS USING AN ADVISORY PANEL WITHIN A WORK ZONE HAVING A REGULATORY SPEED LIMIT REDUCTION.
2. SHORT TERM IS DEFINED AS MORE THAN 1 HOUR AND A MAXIMUM OF 1 DAYTIME SHIFT. INTERMEDIATE TERM IS DEFINED AS MORE THAN 1 DAYTIME SHIFT UP TO 3 CONSECUTIVE DAYS OR NIGHTTIME WORK LASTING MORE THAN 1 HOUR.
3. ROUND ALL ADVISORY SPEEDS TO 5 MPH.

EXHIBIT 2: WORK ZONE REGULATORY SPEED LIMIT REDUCTION FLOW CHART

* Regulatory speed reductions are not warranted and shall not be used where the work zone consists solely of a shoulder closure.

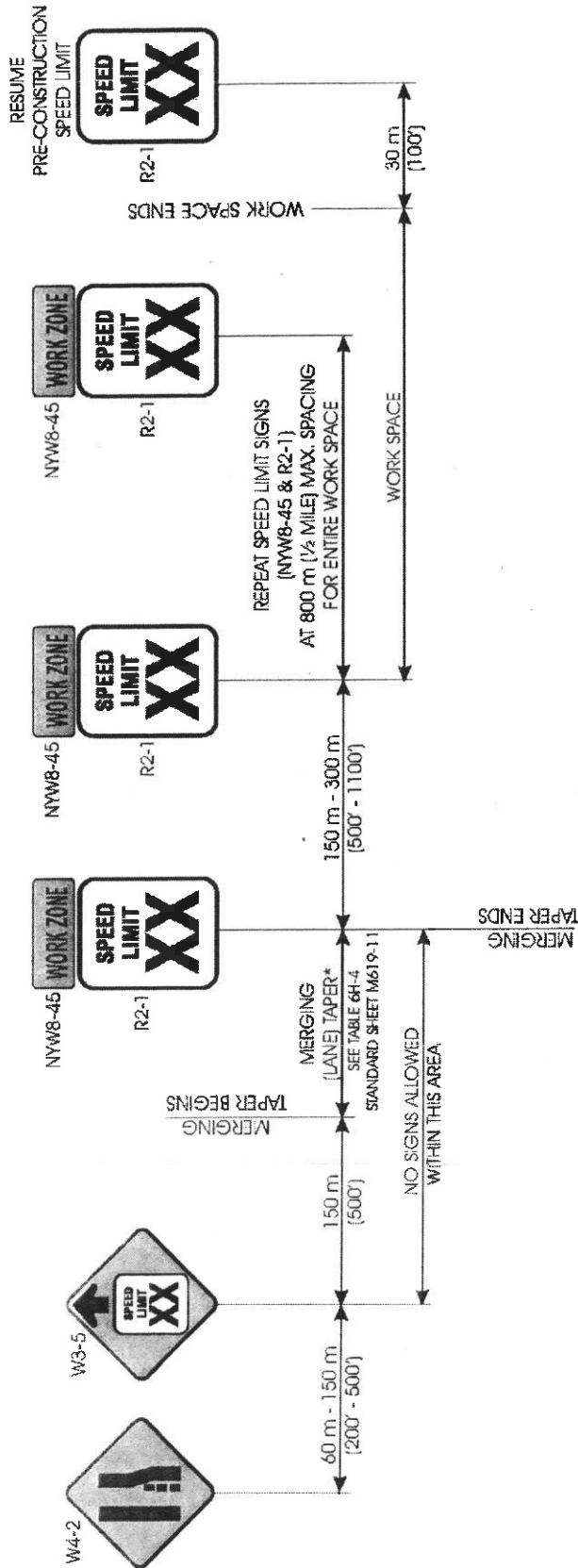


NOTES:

- EXHIBIT 2 SHOULD BE USED IN CONJUNCTION WITH EXHIBIT 1 (THE WORK ZONE ADVISORY SPEED FLOW CHART). FOR EXAMPLE, ADVISORY SPEEDS MAY BE NEEDED FOR HAZARDOUS CONDITIONS REGARDLESS OF WHETHER OR NOT REGULATORY SPEED LIMIT REDUCTIONS ARE IMPLEMENTED.
- SHORT TERM IS DEFINED AS MORE THAN 1 HOUR AND A MAXIMUM OF 1 DAYTIME SHIFT, INTERMEDIATE TERM IS DEFINED AS MORE THAN 1 DAYTIME SHIFT UP TO 3 CONSECUTIVE DAYS OR NIGHTTIME WORK LASTING MORE THAN 1 HOUR.
- A "MAJOR ACTIVE WORK ZONE" IS DEFINED AS A WORK ZONE HAVING THE FOLLOWING CONDITIONS:
 - WORK ON A FULLY CONTROLLED ACCESS ROADWAY WITH PRECONSTRUCTION POSTED SPEED LIMIT OF 65 MPH OR GREATER;
 - AND -
 - WORKERS ON FOOT IN THE ROADWAY AND NOT PREDOMINANTLY SEPARATED FROM TRAFFIC BY POSITIVE PROTECTION SUCH AS TEMPORARY CONCRETE BARRIER.
- A GEOMETRIC TRANSITION IS DEFINED AS A CHANGE IN THE EXISTING HORIZONTAL OR VERTICAL ALIGNMENT OF THE TRAVEL LANE. A LANE SHIFT OR LANE CLOSURE IS NOT CONSIDERED A GEOMETRIC TRANSITION WHEN APPROPRIATE TAPER LENGTHS ARE PROVIDED.
- WORK ZONE GEOMETRIC TRANSITION, SIGHT DISTANCE, LANE WIDTH, AND SUPERELEVATION SHOULD MEET OR EXCEED THE CRITERIA FOR THE DESIGN SPEED OR PRECONSTRUCTION POSTED SPEED PLUS 5 MPH, IN ORDER TO MINIMIZE SPEED DIFFERENTIAL OF VEHICLES ENTERING THE WORK ZONE.
- THE SPEED LIMIT SHOULD NOT BE REDUCED MORE THAN 10 MPH BELOW THE PRECONSTRUCTION POSTED SPEED LIMIT, UNLESS AN ENGINEERING STUDY SHOWS THAT THE GEOMETRIC CONDITIONS WARRANT A GREATER SPEED LIMIT REDUCTION. THE REGIONAL TRAFFIC ENGINEER OR THEIR DESIGNEE WILL BE RESPONSIBLE FOR APPROVING ALL WORK ZONE ADVISORY SPEEDS AND REDUCED REGULATORY SPEED LIMITS.

EXHIBIT 3A: SIGNING PATTERN RELATIVE TO MERGING TAPER

(Continued from EXHIBIT 2)
NOT TO SCALE



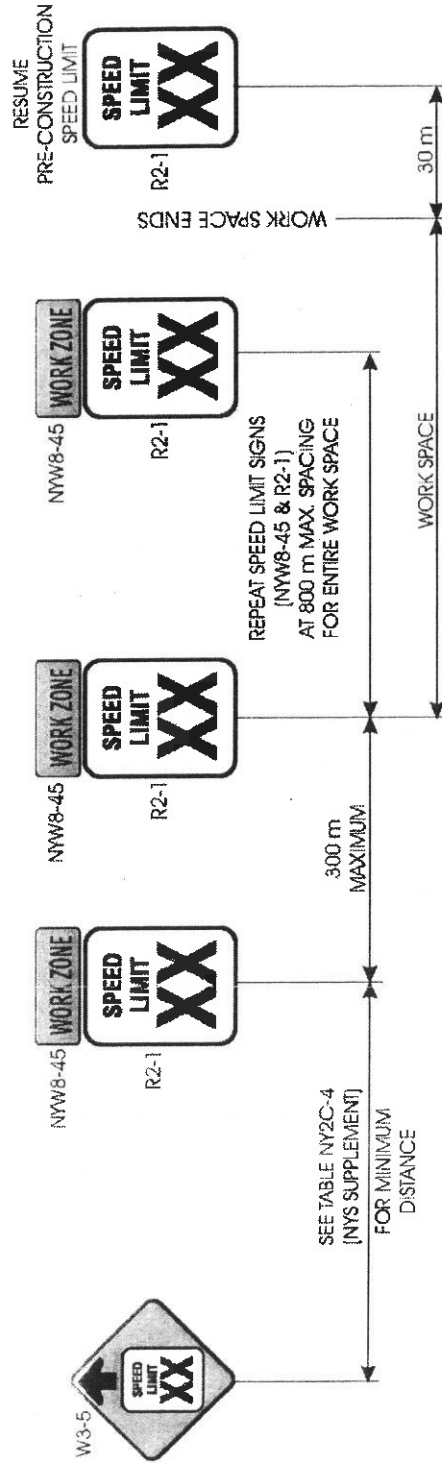
NOTES:
WHEN TRAFFIC IS OPEN TO ONLY A SINGLE LANE OF TRAFFIC THE SPEED LIMIT SIGN SETUP SHALL BE POSTED ON THE RIGHT HAND SIDE OF THE ROADWAY ONLY. FOR MULTIPLE LANES OF TRAFFIC OPEN TO TRAFFIC THE SPEED LIMIT SIGN SETUP SHALL BE POSTED ON BOTH SIDES OF THE ROADWAY.

* FOR MULTIPLE LANE CLOSURES, THIS IS THE MERGING [LANE] TAPER LOCATED CLOSEST TO THE WORK SPACE.

EXHIBIT 3B:

SIGNING PATTERN INDEPENDENT OF MERGING TAPER

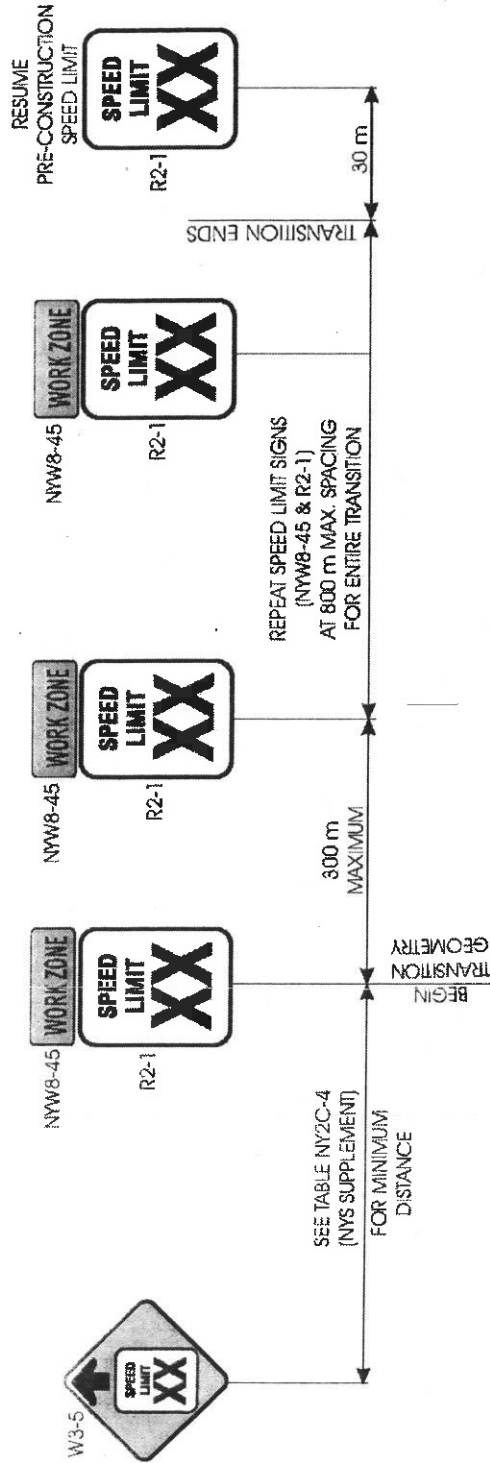
(Continued from EXHIBIT 2)
NOT TO SCALE



NOTE:
WHEN TRAFFIC IS OPEN TO ONLY A SINGLE LANE OF TRAFFIC THE SPEED LIMIT SIGN SETUP SHALL BE POSTED ON THE RIGHT HAND SIDE OF THE ROADWAY ONLY. FOR MULTIPLE LANES OF TRAFFIC OPEN TO TRAFFIC THE SPEED LIMIT SIGN SETUP SHALL BE POSTED ON BOTH SIDES OF THE ROADWAY.

EXHIBIT 3C: SIGNING PATTERN RELATIVE TO TRANSITION GEOMETRY

(Continued from EXHIBIT 2)
NOT TO SCALE



NOTE:
WHEN TRAFFIC IS OPEN TO ONLY A SINGLE LANE OF TRAFFIC THE SPEED LIMIT SIGN SETUP SHALL BE POSTED ON THE RIGHT HAND SIDE OF THE ROADWAY ONLY. FOR MULTIPLE LANES OF TRAFFIC OPEN TO TRAFFIC THE SPEED LIMIT SIGN SETUP SHALL BE POSTED ON BOTH SIDES OF THE ROADWAY.