

# **2020 Connecticut Work Zone Reviews**

## **Annual Report**



State of Connecticut

Department of Transportation

Office of Construction

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\* Individual Review Reports can be obtained by sending a request to the Office of Construction's Work Zone Safety Team

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# Introduction

The Connecticut Department of Transportation (CTDOT) Office of Construction (OOC) conducts work zone safety field reviews in compliance with 23 CFR 630 Subpart J to evaluate the effectiveness of work zone safety mobility practices and procedures in the field. The reviews were conducted for randomly selected active highway Construction and Maintenance projects administered by CTDOT.

During the field reviews, the review team inspects the quality of traffic control devices, construction sign pattern installation and removal, sign recognition and visibility, and opportunities to enhance safety for motorists. A work zone safety pre-meeting is held after the field review to complete to get the inspector's input about work zone safety and discussed what was found in the field. The focus areas that are inspected include temporary lane closure, temporary signalization, pedestrian/bicycle access, stage construction, detour, and night work. The review also notes if it is a regular or in depth for both Construction and Maintenance projects. This is to assist if there is a difference in the findings based on the type of project.

During a regular field review, personnel from the OOC, the Office of Maintenance, and the Division of Traffic Engineering (Traffic) are accompanied by the project staff from the District to tour the project's work zone. The review team evaluates what is being implemented and uses best practices and lessons learned as a teaching tool for the project staff, as well as, other Construction inspection staff in subsequent training sessions. The OOC has set a goal to conduct a minimum of ten (10) regular field reviews a year.

For in-depth reviews, the review team may include personnel from the OOC, Traffic, and Federal Highway Administration (FHWA). The team will tour the work zone with the project staff to review what is being implemented and note FHWA's point of view in comparison to the federal standard. The OOC has set a goal to conduct at least four (4) in-depth field reviews a year.

For both types of review, reports noting findings with corresponding recommendations for improvements and/or best practices, photographs of field conditions, and answers to the questionnaire are compiled and then distributed to all participants. The reports either help identify issues that need immediate action, identify possible systemic issues that need addressing on a statewide level, or find the best practices that could improve Connecticut's Work Zone Safety practices.

For the 2020 construction season, the OOC completed ten (10) regular reviews, four (4) in-depth reviews, five (5) Vendor-in-Place reviews, and seven (7) informal reviews. Informal reviews are regular field reviews without the meeting with the staff. These reviews may be conducted to verify compliance based on project requests, complaints or adjustments to contract provisions to name a few.

Findings of the work zone field reviews will be added to the action item list of the Work Zone Safety and Mobility Process Review for resolution by the appropriate Department unit. The Process Review is an evaluation tool used for the Department's work zone program. The Process Review team is comprised of personnel from the OOC, Traffic, Office of Highway Maintenance Operations, Office of Policy and Planning, and FHWA Division Office. Opportunities for improvement, successful practices, and implementation of new technologies can be efficiently proposed and managed between these units to develop a holistic work zone safety program the Department can benefit from.

## Findings and Recommendations by Category

<u>Category</u>	<u>Project</u>	<u>Finding</u>	<u>Recommendation</u>
Best Practices	0092-0675	There was a speed display mounted on the back of a Truck-Mounted Attenuator to calm speeds during the rolling road block.	Having traffic calming devices for the work zone is a good practice.
Best Practices	0155-0171	The Rolling Road Block went from 8:04 pm to 8:15 pm (11 minutes).	The Rolling Road Block was compliant with the Construction Directive CD-2016-2.
Best Practices	0156-0180	The Rolling Road Block for I-95 SB took place from 8:01 pm to 8:12 pm and on the I-95 NB it took from 8:40 pm to 8:52 pm.	The Rolling Road Block was done within the allowed 15 minutes.
Best Practices	0172-0483	Pilot car work zone enhancement was a great technique to improve movement.	Pilot car through work zone should continue to be utilized wherever possible.
Best Practices	0174-0439 G	It was said that equipment is stored 20 feet off the roadway.	According to the clear zone table from the Highway Design Manual for the roadway speed on this road, objects need to be stored 24 feet off the roadway.
Clear Zone Enforcement	0018-0134	Equipment was stored in the clear zone according to project staff for punchlist work.	Objects need to be stored outside of the clear zone or be positively protected.
Clear Zone Enforcement	0083-0264	Equipment was stored in the clear zone.	If equipment or materials cannot be stored outside the clear zone, they need to be positively protected.
Clear Zone Enforcement	0120-0093	Equipment was parked next to the roadway unprotected.	Blunt ends need to be stored outside the clear zone or needs to be positively protected.
Conflicting Markings	0120-0093	Pavement markings conflicted with previous markings.	Conflicting pavement markings to be removed or covered.
Enforcement of the Plans	0015-0248	The limited liability sign was posted after other warning signs.	The limited liability sign should be the first sign within the advance warning area.

Enforcement of the Plans	0095-0254	There were no detour signs on smaller detour.	If a route is being used as a detour, directional signs along that detour is needed.
Enforcement of the Plans	0102-0285	The END ROAD WORK sign on the northbound side was placed right before a limited liability sign.	Traffic signs should be coordinated where a motorist is told that work ends and begins at the same point.
Enforcement of the Plans	0103-0272	There was inconsistency with the mounting of the signs. Some were post-mounted and others on tripods.	Refer to traffic plans to mount signs properly and in the proper locations.
Enforcement of the Plans	0120-0093	The lane and shoulder widths were not per plan for that stage.	Please refer to the temporary signal plans (pre-stage, stage 1, and stage 2) for lane and shoulder widths called for each stage.
Enforcement of the Plans	0155-0171	Some post-mounted diamond-shaped construction signs were still covered.	While the traffic pattern is being set up, construction signs should be uncovered if they are in use for construction activity. If not, they should stay covered.
Enforcement of the Plans	0156-0180	The spacing of the cones on the tangential were 4 skips apart or 110 feet apart.	The spacing between devices should be at most 80 feet apart.
Enforcement of the Plans	0156-0180	There was NO END ROAD WORK sign placed at the end of the pattern and pattern looked like it was not finished.	The END ROAD WORK signs are needed to inform motorists when they are through the work zone.
Enforcement of the Plans	0156-0180	When closing two lanes, there was no tangential on the first closed lane from one transition to the transition of the second closed lane.	A long transition from the should across two lanes does not help the motorists transition well between lanes. There needs to be tangential between transitions.
Enforcement of the Plans	0171-0414	End of construction sign was missing.	“End work zone” sign should be place at the end of the work zone – Review Maintenance and Protection of Traffic specifications for signage compliance.
Enforcement of the Plans	0171-0456 D	The travel lane was narrowed because traffic cones used for the closed lane were pushed out in the travel lane.	Traffic cones can be moved out to allow equipment through closed lane but cones should be placed back to allow motorists through.

Enforcement of the Plans	0171-0456 D	There was no END ROAD WORK sign.	An END ROAD WORK sign should be placed so motorists know when they have proceeded through the work zone and can resume normal speeds.
Enforcement of the Plans	0171-0457 E&F	Signs were placed on the left side of the roadway.	It is a good practice to place construction signs should be placed on both sides of the roadway or at least on the right side so they can be easily seen by motorists.
Enforcement of the Plans	0172-0483	Liability, Road Work Ahead and One Lane Closed Ahead signs are too closed together.	Signs should be place to a distance no less than 500 ft in rural environment for the Advance Warning Area referred to the MUTCD Chapter 6C.
Enforcement of the Plans	0172-0483	Road work ahead fines doubled was placed in the work area.	"Road work ahead fines doubled" should be place in the advanced warning area.
Enforcement of the Plans	0172-0483	Another Road Work Ahead Fines Doubled was placed before the Liability Construction sign.	Reference the MUTCD for concurrence of signs and in the different areas throughout the work zone.
Enforcement of the Plans	0172-0483	End work zone sign was missing.	"End work zone" sign should be place at the end of the work zone.
Enforcement of the Plans	0173-0441	A ROAD WORK AHEAD sign was on the mainline of roadway.	Signs should be installed on ramp to provide proper notice of shoulder closure.
Enforcement of the Plans	0174-0440 I	A lot of the construction signs were mounted too low.	The signs need to be mounted higher to be easily seen and read by motorists.
Enforcement of the Specifications	0015-0365	The cones were short 36-inch cones.	The cones should be 48 inches to delineate the work zone better.
Message Confusion	0079-0229	There were construction signs placed too close together and can be confusing to motorists.	Signs should be spaced out more.
Message Confusion	0092-0672	Some signs are too close together to read the message.	Signs need to be spaced apart so motorists can read the messages.
Message Obstruction	0102-0285	Warning lights are mounted where they are partially blocking messaging on construction signs.	Construction signs should not have their messages obstructed so motorists can read them clearly.



Pedestrian / ADA Issues	0015-0365	There was no pedestrian detoured signed at the work zone.	When a pedestrian path is disturbed a new pathway needs to be provided.
Pedestrian / ADA Issues	0044-0154	The sidewalk was closed when approaching the work zone.	If a pathway is disturbed by construction, then another needs to be provided and needs to be ADA compliant.
Pedestrian / ADA Issues	0083-0264	There was no temporary walkway for pedestrians to walk through the work zone.	There was no temporary walkway for pedestrians to walk through the work zone.
Pedestrian / ADA Issues	0102-0285	The Contractor's equipment was stored on a crosswalk unprotected.	The Contractor's equipment needs to be positively protected and stored where it's not blocking pedestrian pathways.
Protection of the Work Zone	0160-0150	Workers were working next to live traffic.	We recommend workers be provided appropriate protection or notification of should closed while working around active traffic.
Protection of the Work Zone	0163-0203	All workers need to wear high-visibility personal protective equipment when in the work zone.	Workers can wear reflective vests or shirts to make motorists aware of their presence in the work zone.
Protection of the Work Zone	0171-0414	Cones used to delineate work zone were not extended far enough to encapsulate all vehicles onsite.	Cone Should be extended the length of the work zone to delineate and protect the workers.
Quality of Devices	0063-0703	The exits from the lane closure used traffic cones.	Traffic cones on a transition or merge may not delineate the closure well causing motorists to enter the closure instead of staying in the open lane
Quality of Devices	0092-0672	Some traffic cones are in poor condition and signs falling down.	Devices in poor quality should be replaced.
Quality of Devices	0092-0672	Some traffic cones are in poor condition and signs falling down.	Devices in poor quality should be replaced.
Quality of Devices	0120-0093	The FINES DOUBLED sign was faded.	Construction signs with faded messaging needs replacing.
Quality of Devices	0156-0180	The devices were marginal to unacceptable.	Devices in poor condition need to be replaced.

Quality of Devices	0171-0456 D	Some signs and devices are in unacceptable condition.	Unacceptable devices need to be replaced so they can be clearly seen and delineate work zone
Quality of Devices	0174-0439 G	Signs are on aluminum substrate which is good for Maintenance.	It's a good practice to use rigid substrate to back construction signs.
Quality of Signs	0130-0180	"End work zone" lost its reflectivity and can't be read easily.	Should be replaced.
Securing Work Zone	0120-0093	Access road open.	Access road to be blocked off when not in use.
Selective Clearing	0015-0248	Some signs were obstructed by tree branches.	Selective clearing should be done to ensure messages on signs can be clearly read.
Selective Clearing	0018-0134	A sign needs selective clearing around it.	To clearly read signs, shrubbery obstructing the messages need to be cleared.
Selective Clearing	0073-0177	Fines Double sign was partially cover by surrounding trees.	Surrounding trees should be trim for better visibility.
Selective Clearing	0095-0254	Shrubs were obstructing signs on Route 67.	Selective clearing is needed to ensure messages on construction signs can be read.
Sightline Obstruction	0120-0093	Construction equipment was blocking sightlines.	Construction equipment should be placed in such a way that they do not restrict sightlines to the driveways, including the signalized driveway as much as feasible.
Sign Obstruction	0172-0497 D	The ROAD WORK AHEAD sign is obstructed by the pedestrian pedestal.	The sign would be better to be mounted in front of the pedestal for the whole message to be seen.
Sign Visibility	0092-0672	Some signs are too close together to read the message.	Signs need to be spaced apart so motorists can read the messages.
Trafficperson Training	0171-0456 D	There were two flaggers but only one was using a paddle and pole. One flagger let traffic through while opposing traffic was still proceeding through alternate one-way pattern.	Both flaggers should have a paddle and pole so motorists can clearly understand direction through work zone. There needs to be better coordination between flaggers so opposing traffic aren't both proceeding through one-way pattern.

Use of Proper Devices	0171-0457 E&F	No confirmation of MASH compliancy for traffic control devices.	Research manufacture date of traffic control devices should be provided to confirm MASH compliancy.
Use of Proper Devices	0172-0483	Substrate signs had been discontinued from the department.	Signs and their portable supports shall conform to the requirements of NCHRP report (TL-3) or the AASHTO MASH for category 2 devices and the latest edition of the MUTCD.

# Summary

Based on the reviews conducted for the 2020 season, findings were broken down into the following categories:

- Best Practices
- Clear Zone Enforcement
- Conflicting Markings
- Enforcement of Plans
- Enforcement of Specifications
- Message Obstruction
- Message Confusion
- Pedestrian/ADA Issues
- Protection of the Work Zone
- Quality of Devices
- Quality of Design
- Securing Work Zone
- Selective Clearing
- Sightline Obstruction
- Sign Obstruction
- Sign Visibility
- Trafficperson Training
- Use of Proper Device

The successful practices and areas that require improvement found during the reviews will be addressed through training the inspection staff and the Biennial Work Zone Safety and Mobility Process Review which is required by federal regulation. The recommendations associated with the findings may be addressed as follows:

- Best practices can be implemented through specification changes, creation of new policies, and inspector training.
- Discrepancies found in the plans and specifications can be addressed through Lessons Learned presentations to the working level engineers or through construction bulletins.
- Modifications to existing policies and procedures for work zone field activities and common practices that pose a potential safety issue to the traveling public should be made.
- New policies can be created to address potential unsafe practices in the field.
- Training is the most effective tool to address systemic issues found in the field, such as specification enforcement and the acceptable quality of safety devices. Inspectors can be made aware of deficiencies verbally in the field, through the review reports, and during the winter

inspectors' training. Another training resource is the use of the Inspectors' Pocket Guide Checklists.

- Timely communication between the Construction field staff and other Department units will yield effective project coordination in getting issues resolved.

The Work Zone Safety Field Reviews are instrumental in identifying how successful safety practices are functioning in the field and for receiving feedback from personnel who use them on a continuous basis. The Department will continue to benefit from implementation of these successful strategies for effective work zone safety and mobility.