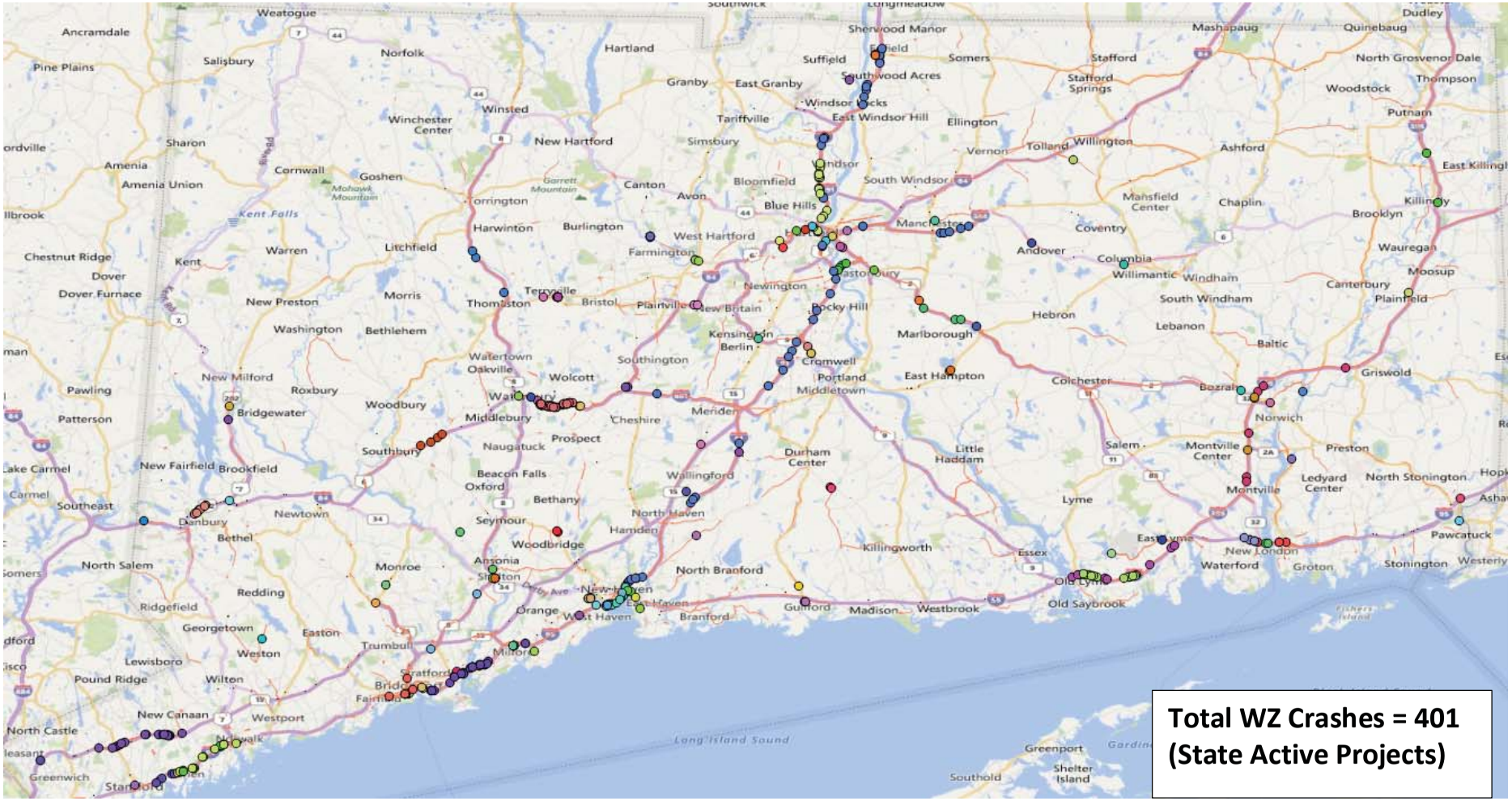
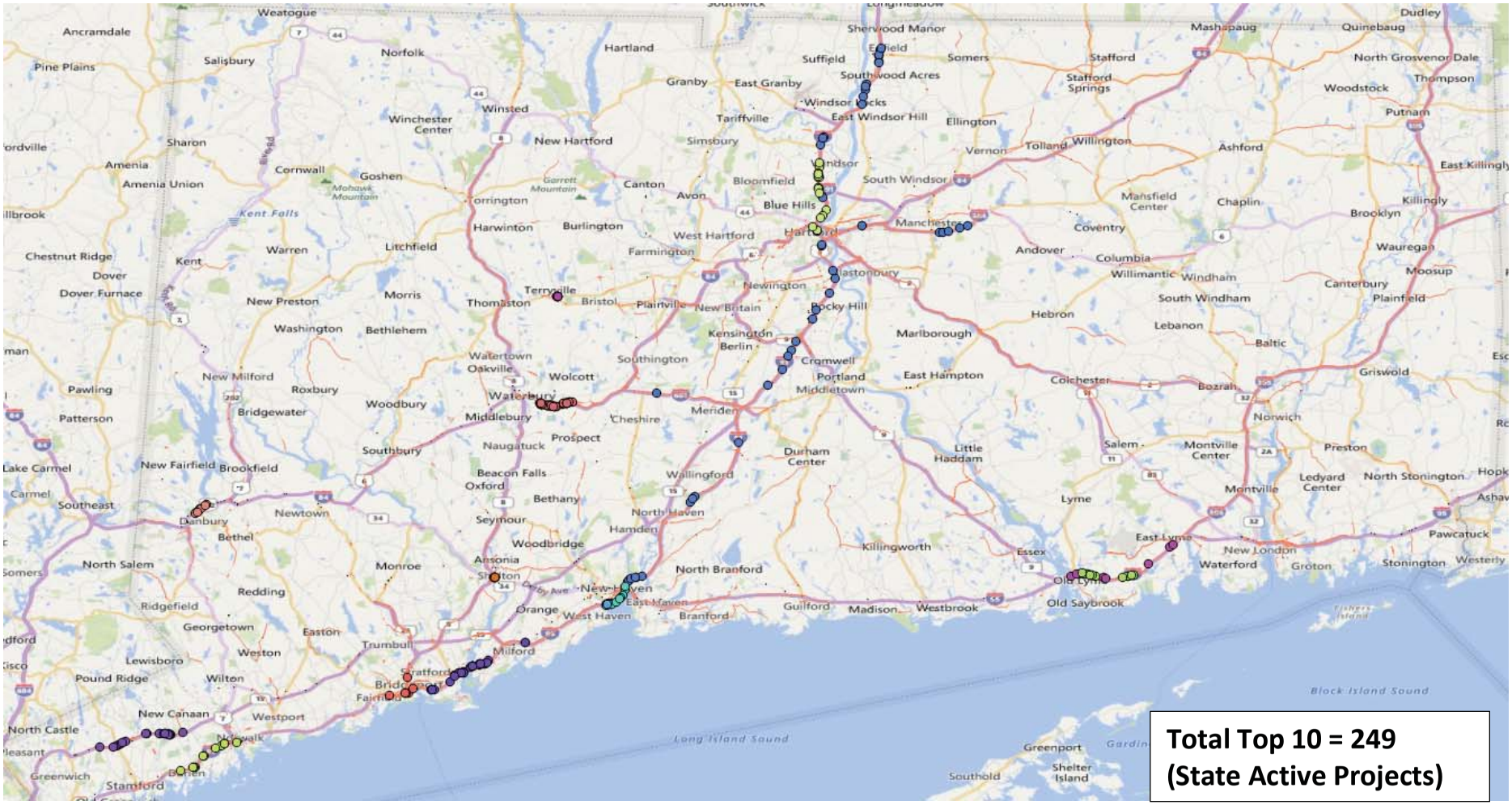
APPENDIX 3: WORK ZONE SAFETY PERFORMANCE MEASURES

Connecticut WZ Crash Map – 2015



Work Zone Safety Performance Measures
Data Collection and Analysis

Top 10 Projects w/ WZ Crashes – 2015



Connecticut WZ Crash Data - 2015

Top Ten Projects with the highest # of crashes for 2015

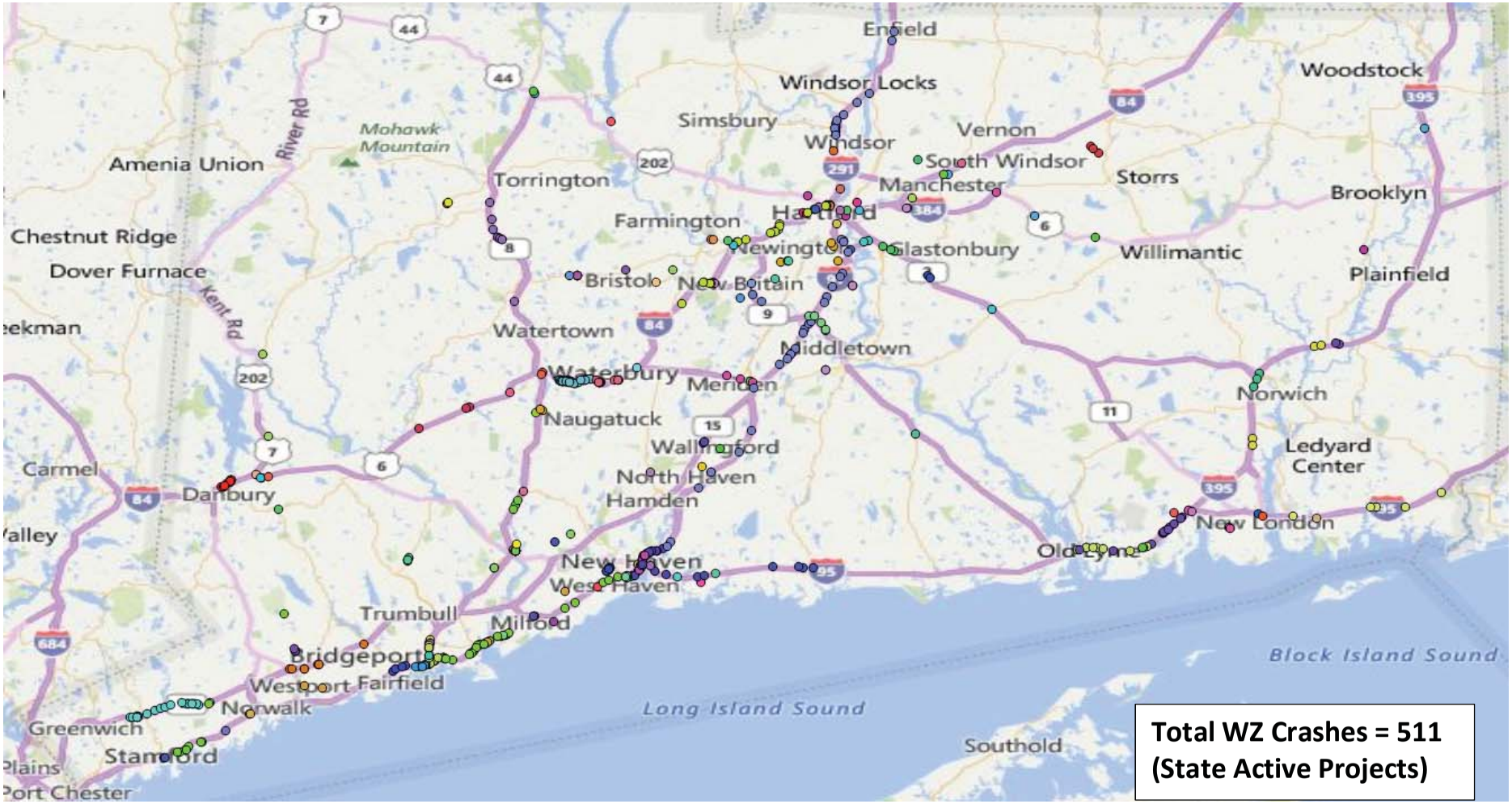
#	Project #	District	Project Description	Town	Route	# of Crashes
1	0151-0273	4	Reconstruction of I-84, Washington St to Pierpoint Rd	Waterbury	I-84	51
2	0170-3310	1	I-91 Reference Markers	Various	I-91	41
3	0173-0351	3	Signs upgrade on CT-25, I-84, and I-95	Various	CT-25, I-84, I-95	28
4	0135-0270	3	Merritt Parkway Safety Improvements	New Canaan, Stamford	CT-15	21
5	0063-0702	1	Pavement Preservation of I-91	Hartford, Windsor	I-91	19
6	0104-0164	2	I-95 Resurfacing and Safety Improvements	East Lyme, Old Lyme	I-95	13
7	0035-0195	3	Pavement Preservation of I-95	Darien, Norwalk	I-95	12
8	0092-0522	3	Reconstruction of I-95 over West River	New Haven	I-95	11
9	0171-0379	1	Interstate Pavement Markings	East Hartford, Manchester	I-384, I-84, I-691	8
	0172-0425	2	Interstate Pavement Markings	East Lyme, Old Lyme	I-95	8
	0034-0313	4	I-84 Interchanges 5, 6 and CT-27 Improvements	Danbury	I-84	8
	0092-0531	3	Reconstruction of I-91, I-95 and CT-34 Interchange	New Haven	CT-34, I-91, I-95	8
10	0110-0130	4	Rehab. Of Bridge #00471, Rte 6 over Pequabuck River	Plymouth	Rte 6	7
	0015-0344	3	IMS Upgrades in Greater Bridgeport	Bridgeport	CT-8, I-95	7
	0036-0182	4	Rehab. Of Bridge #00947, Rte 34 over Naugatuck	Derby	CT-34	7

Total Top 10 WZ Crashes = 249
(State Active Projects)

Total WZ Crashes = 401
(State Active Projects)

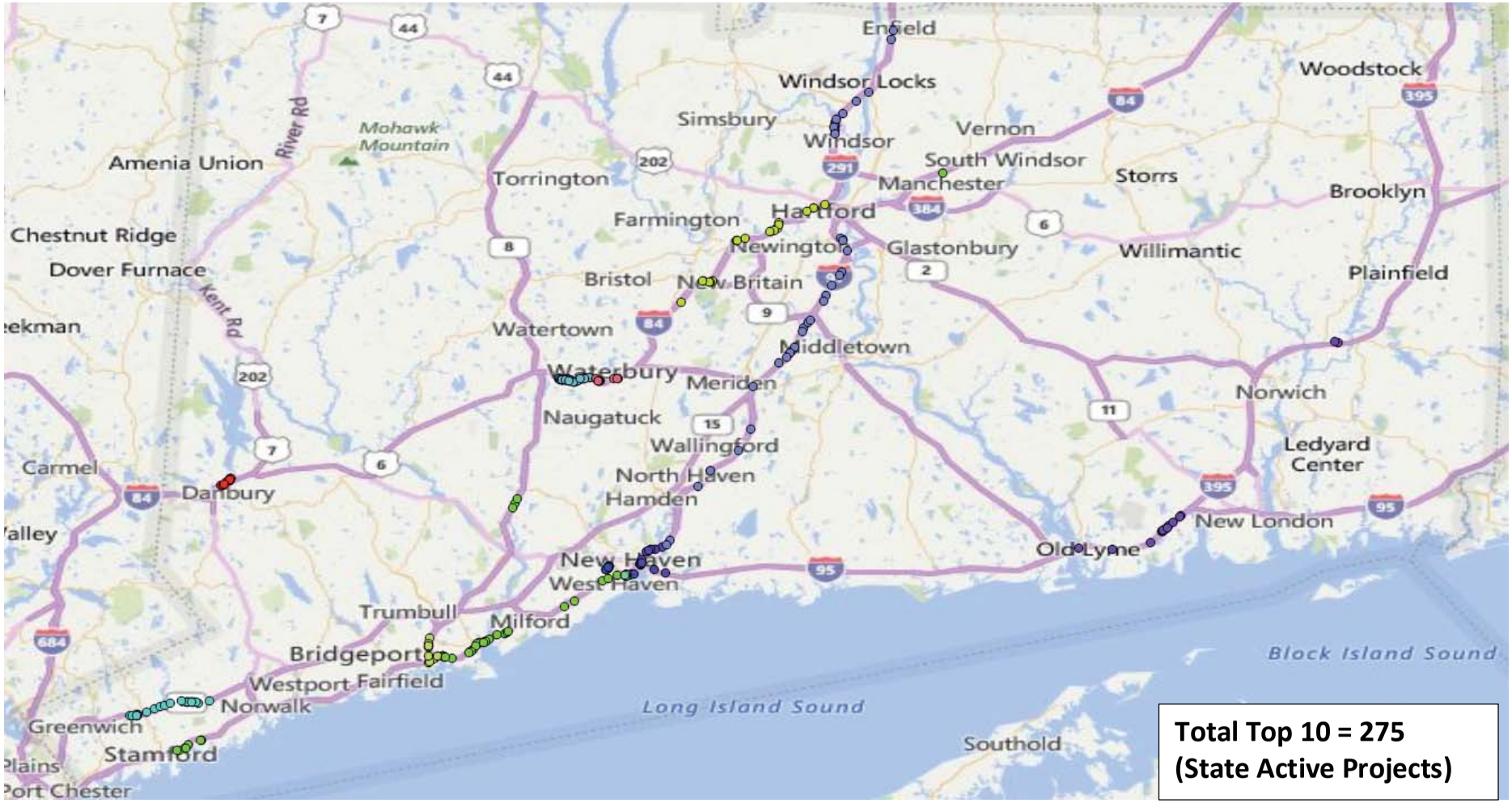
Total WZ Crashes = 666
(State, Muni., Utilities)

Connecticut WZ Crash Map – 2016



Work Zone Safety Performance Measures
Data Collection and Analysis

Top 10 Projects w/ WZ Crashes – 2016



WZ Crash Data - 2016

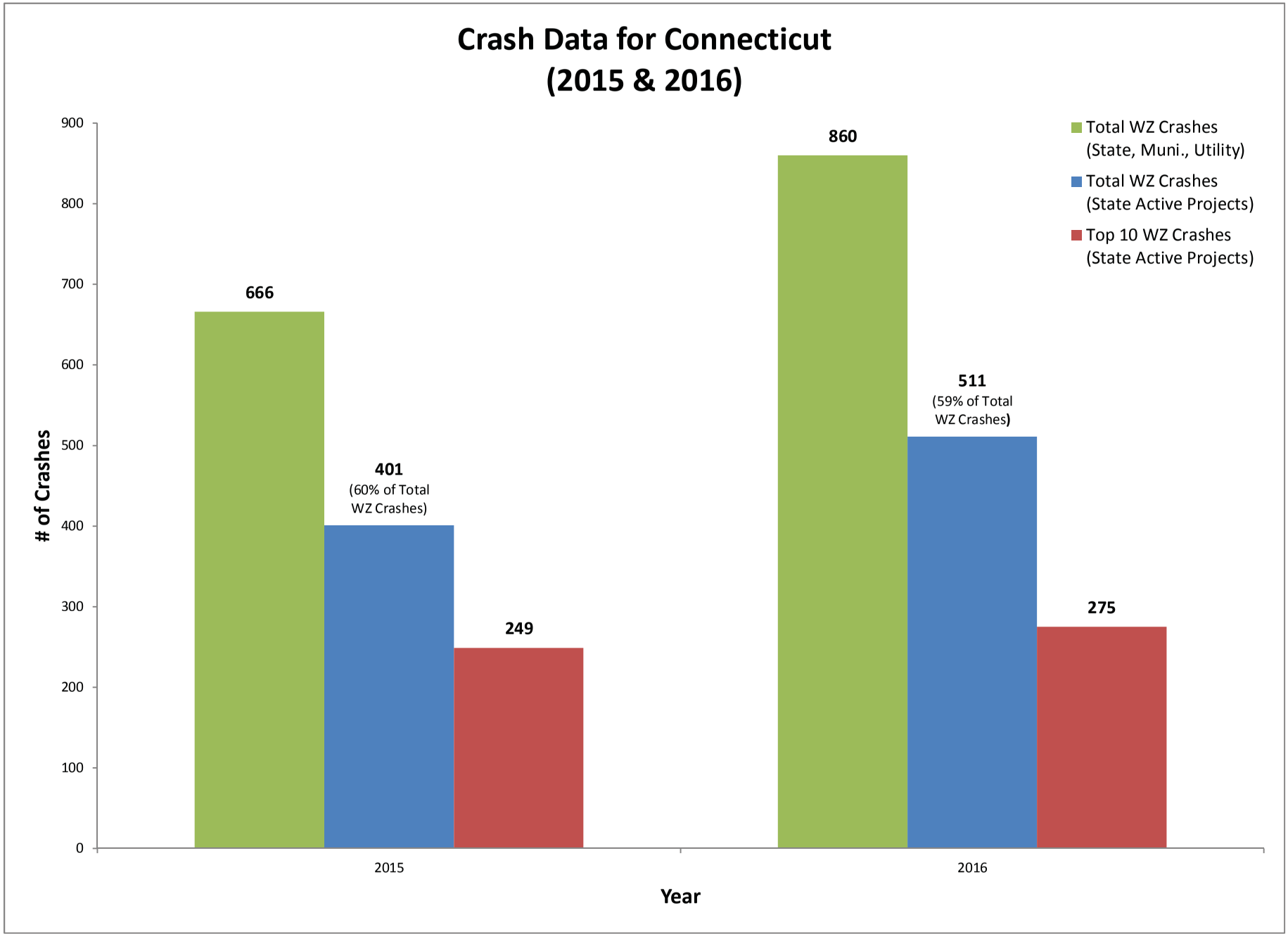
Top Ten Projects with the highest # of crashes for 2016

#	Project #	District	Project Description	Town	Route	# of Crashes
1	0151-0273	4	Reconstruction of I-84, Washington St to Pierpoint Rd	Waterbury	I-84	54
2	0170-3310	1	I-91 Reference Markers	Various	I-91	39
3	0173-0351	3	Signs upgrade on CT-25, I-84, and I-95	Various	CT-25, I-84, I-95	30
4	0135-0270	3	Merritt Parkway Safety Improvements	New Canaan, Stamford	CT-15	22
5	0171-0304	1	Replacement of Highway Signing on I-84	Various	I-84	20
6	0092-0646	3	Upgrade of IMS, Greater New Haven	New Haven	I-91, I-95	17
7	0172-0425	2	Interstate Pavement Markings	East Lyme, Old Lyme	I-95	16
	0156-0170	3	Intersection Improvements, US-1 and CT-122	West Haven	CT-122, US-1	16
8	0034-0313	4	I-84 Interchanges 5, 6 and CT-27 Improvements	Danbury	I-84	14
9	0015-0344	3	IMS Upgrades in Greater Bridgeport	Bridgeport	CT-8, I-95	12
	0092-0522	3	Reconstruction of I-95 over West River	New Haven	I-95	12
	0025-0146	4	Pavement Preservation of I-84	Waterbury, Cheshire, Southington	I-84	12
10	0170-3260	1	Installation of Rumble Strips	Various	Statewide	11

Total Top 10 WZ Crashes = 275
(State Active Projects)

Total WZ Crashes = 511
(State Active Projects)

Total WZ Crashes = 860
(State, Muni., Utilities)



Work Zone Safety Performance Measures
Data Collection and Analysis

Work Zone Related Crash Data
Project #0151-0273 Waterbury I-84, b/w Milepost 33.68 and 36.42

Data		Location						Types							Severity			Lighting						Surface						Weather						Time			
Year	Total WZ Related Crashes	Before First Warning Sign	Advance Warning Area	Transition Area	Activity Area	Termination Area	Unknown	Angle	Front to front	Front to rear	Rear to rear	Rear to side	Sideswipe	Unknown	Property Damage Only	Injury of Any Type	Fatal (Kill)	Daylight	Dusk	Dark-Lighted	Dark-Not Lighted	Dawn	Unknown	Dry	Ice/Frost	Slush	Snow	Wet	Clear	Cloudy	Snow	Rain	Other	Unknown	6:00 AM to Noon	Noon to 6:00 PM	6:00 PM to Midnight	Midnight to 6:00 AM
2015	**51**	3	3	4	38	2	1	4	1	29	0	1	11	5	41	10	0	33	0	10	8	0	0	44	0	0	0	7	44	1	0	6	0	0	19	9	14	9
2016	**54**	1	4	2	35	3	9	2	0	33	0	0	14	1	47	7	0	39	0	12	2	1	0	48	2	0	0	4	50	2	0	2	0	0	27	13	9	5

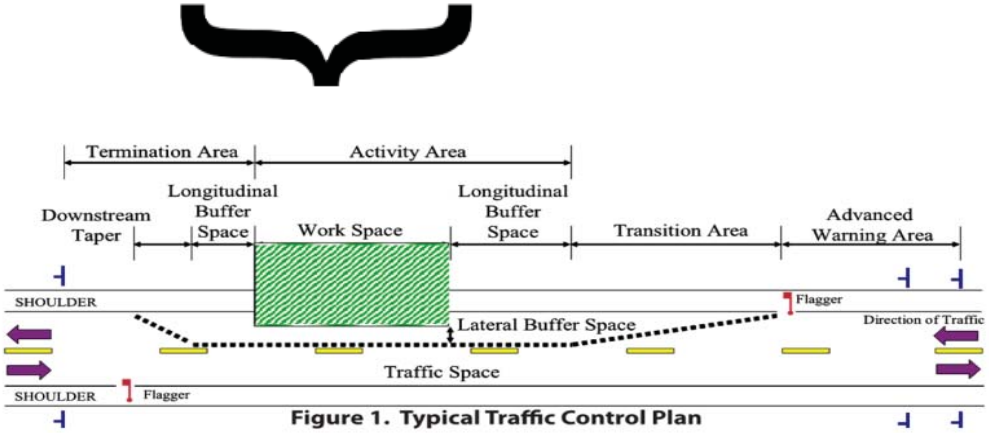


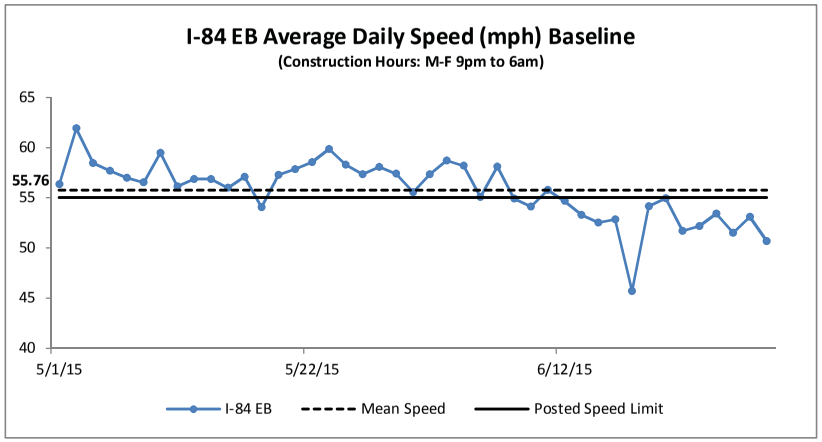
Figure 1. Typical Traffic Control Plan

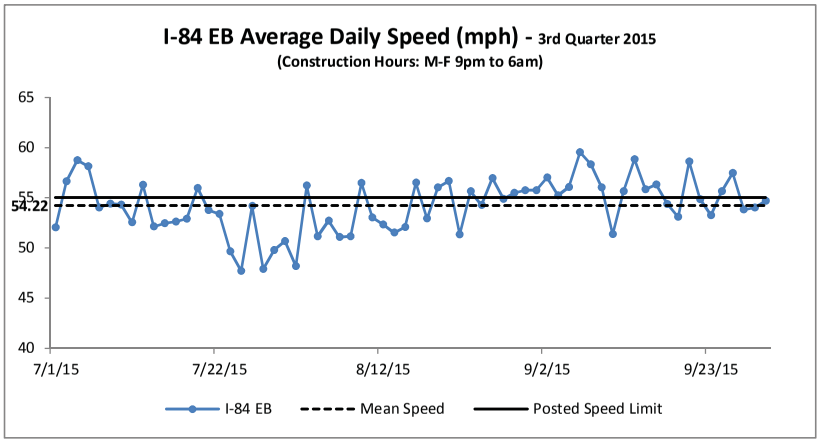
Table 1. Traffic Control Plan Elements

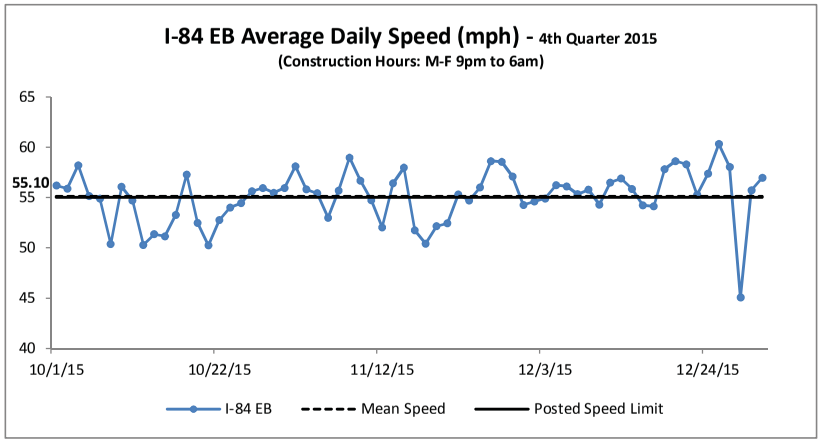
Traffic Control Plan Element	Traffic Control Plan Element Definition
Activity Area	Section of the highway where the work activity takes place, comprised of the work space, traffic space, and buffer space.
Advanced Warning Area	Area consisting of signage used to provide warning to motorists of what to expect as a part of an upcoming utility activity.
Buffer Space	Optional lateral and/or longitudinal work area that separates traffic from the work space. The buffer space must be free of any work vehicles, workers, equipment, or materials.
Tapers	Gradual transitions, created by a series of channelizing devices and/or pavement markings, which direct traffic from normal paths to zone-specific paths, used in both the transition and termination areas.
Termination Area	Area which may include buffer space and a downstream taper, allowing motorists to return to their normal path and extending to the END ROAD WORK signs, if posted.
Traffic Space	The portion of the highway in which road users are routed through the activity area.
Transition Area	Area utilized to move motorists from their normal path. The transition area must be free of any work vehicles, workers, equipment, or materials
Work Space	Portion of highway closed to road users and occupied by utility workers, equipment and vehicles; usually delineated for road users by channelizing devices or, to exclude vehicles and pedestrians, by temporary barriers.

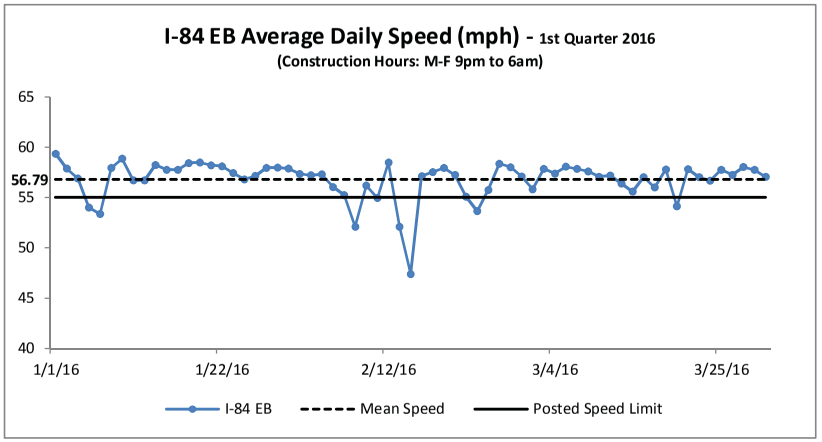
APPENDIX 4: WORK ZONE OPERATIONAL PERFORMANCE MEASURES

I-84 EB Average Speed Data

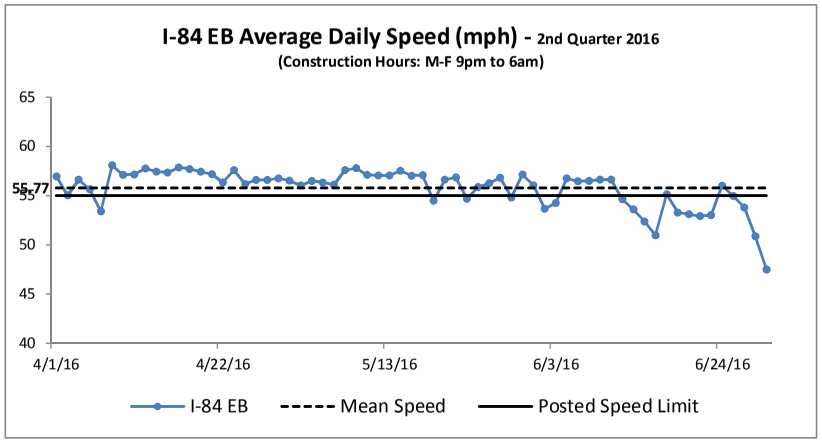


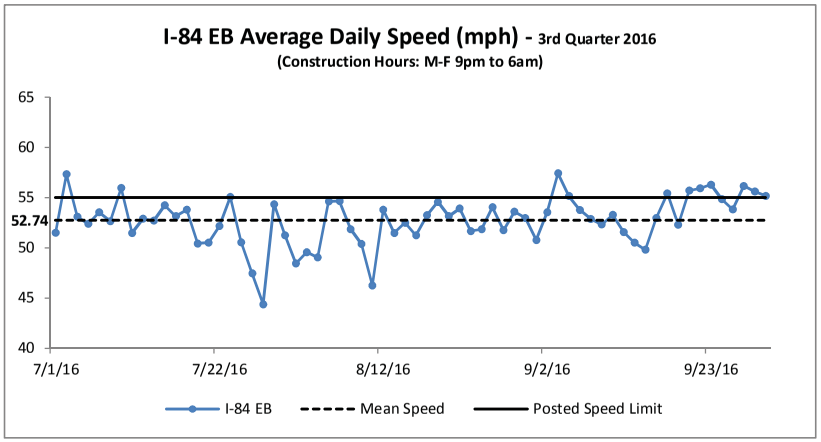


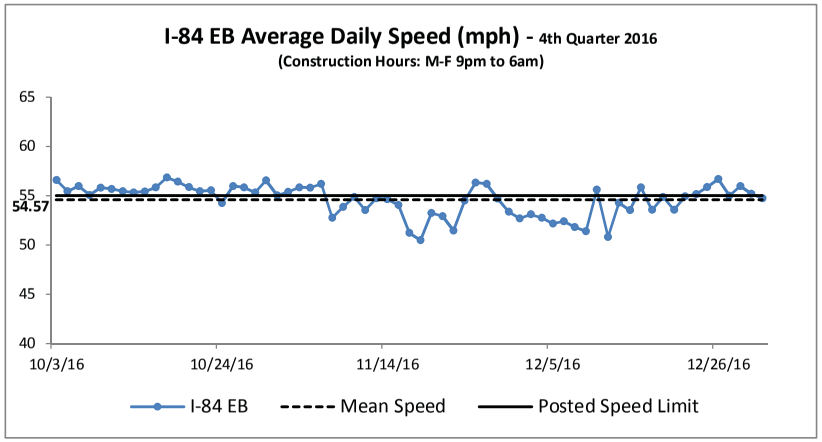




I-84 EB Average Speed Data



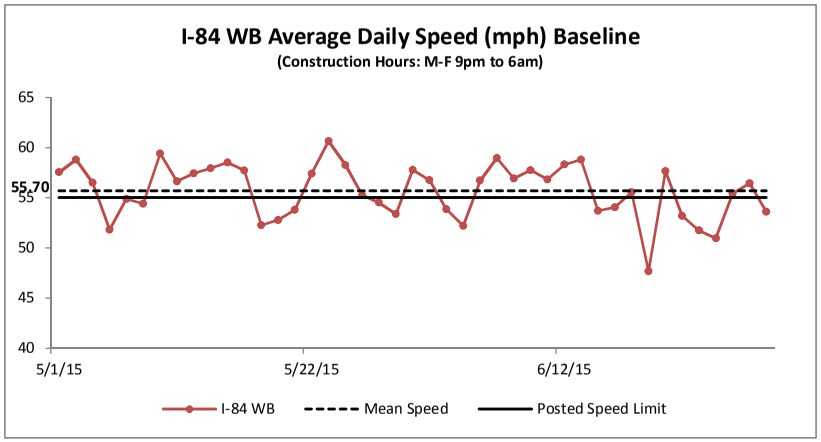


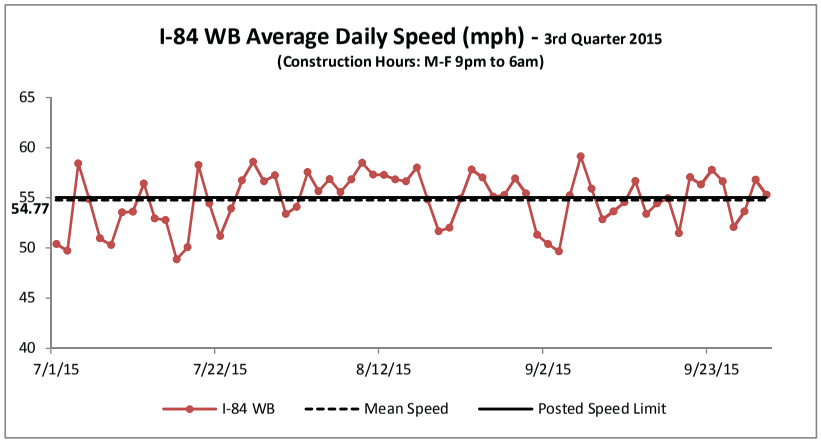


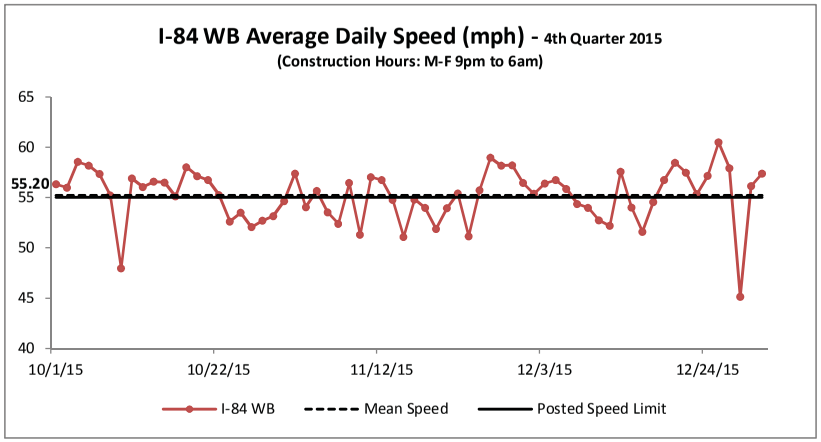
I-84 EB			
Quarter	Baseline	Quarterly Mean	Difference
Jul - Sep 15	55.76	54.22	-1.53
Oct - Dec 15	55.76	55.10	-0.66
Jan - Mar 16	55.76	56.79	1.03
Apr - Jun 16	55.76	55.77	0.02
Jul - Sep 16	55.76	52.74	-3.01
Oct - Dec 16	55.76	54.57	-1.19

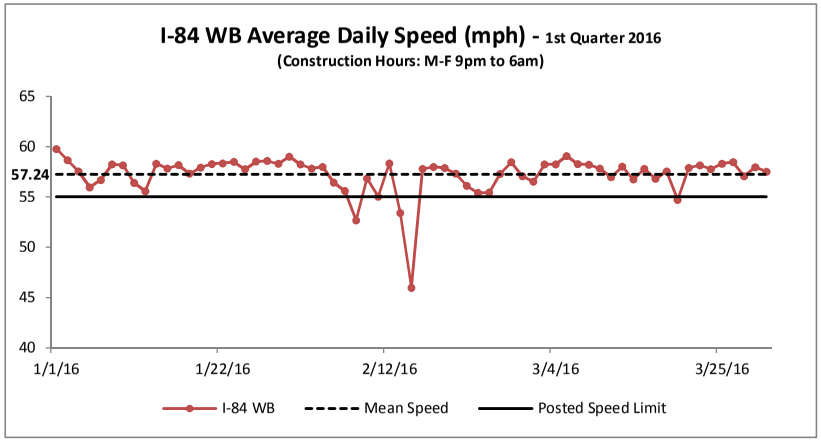
Legend: faster traffic thru wz; slower traffic thru wz

I-84 WB Average Speed Data

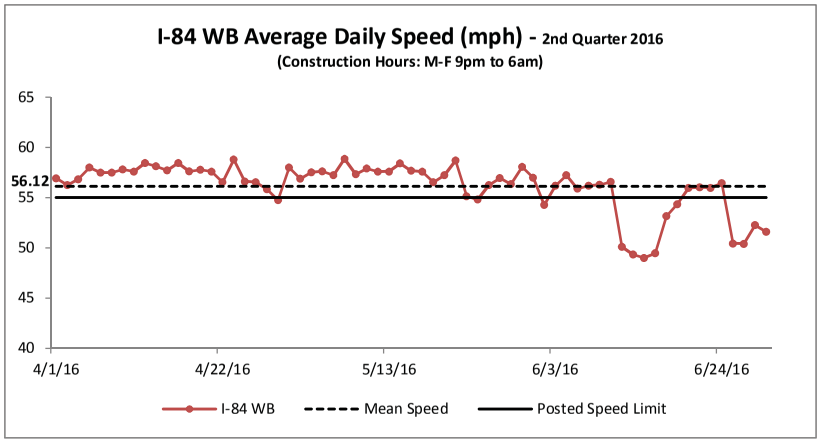


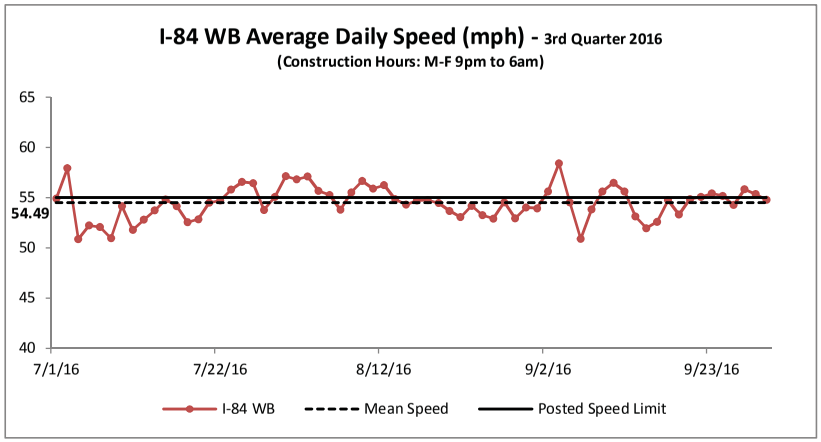


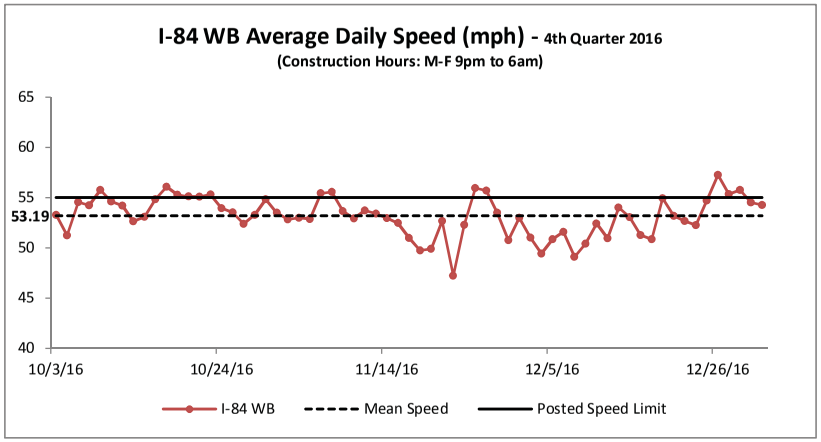




I-84 WB Average Speed Data



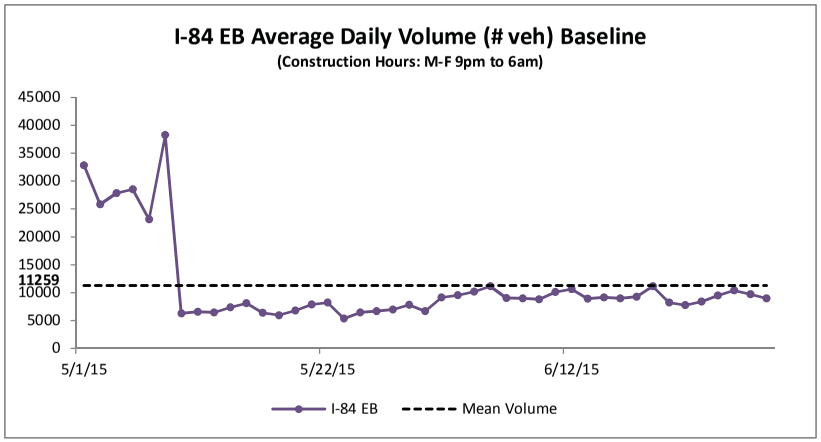


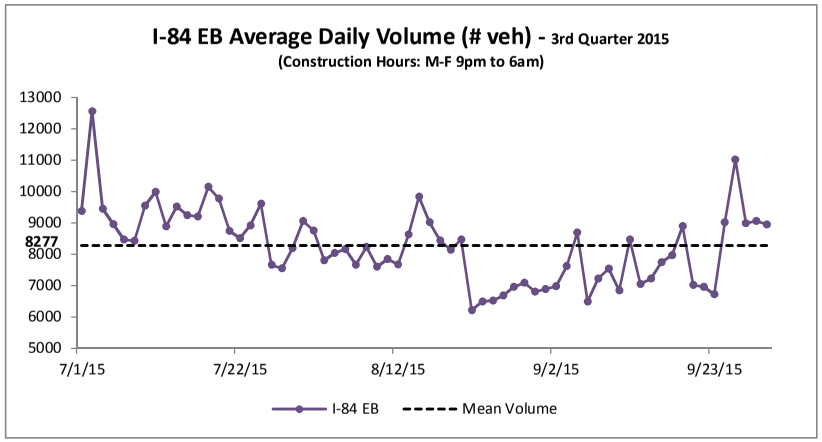


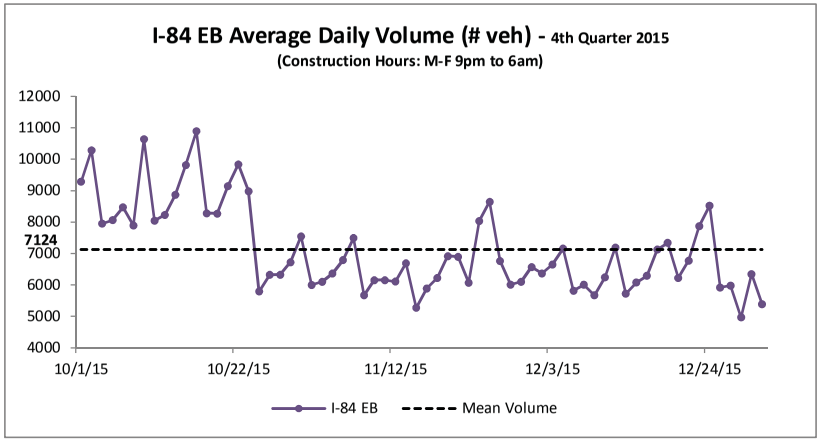
I-84 WB			
Quarter	Baseline	Quarterly Mean	Difference
Jul - Sep 15	55.70	54.77	-0.93
Oct - Dec 15	55.70	55.20	-0.50
Jan - Mar 16	55.70	57.24	1.54
Apr - Jun 16	55.70	56.12	0.42
Jul - Sep 16	55.70	54.49	-1.21
Oct - Dec 16	55.70	53.19	-2.51

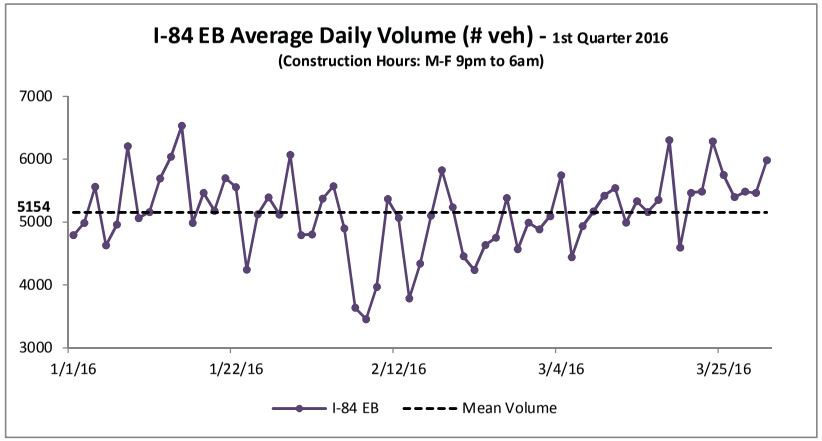
Legend: faster traffic thru wz; slower traffic thru wz

I-84 EB Average Volume Data

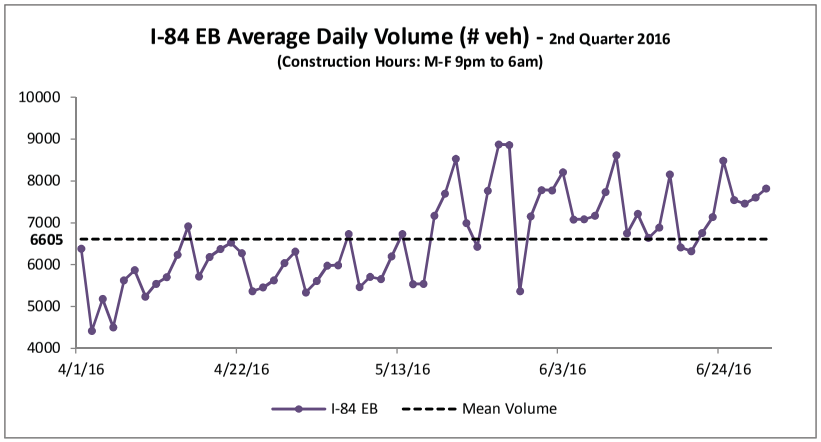


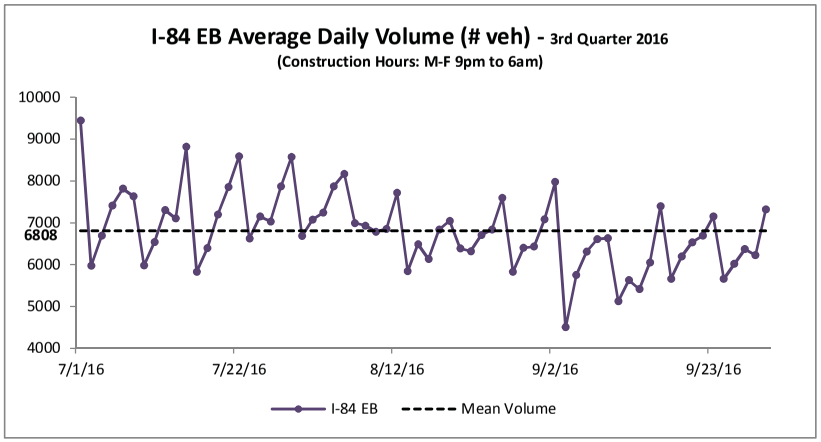


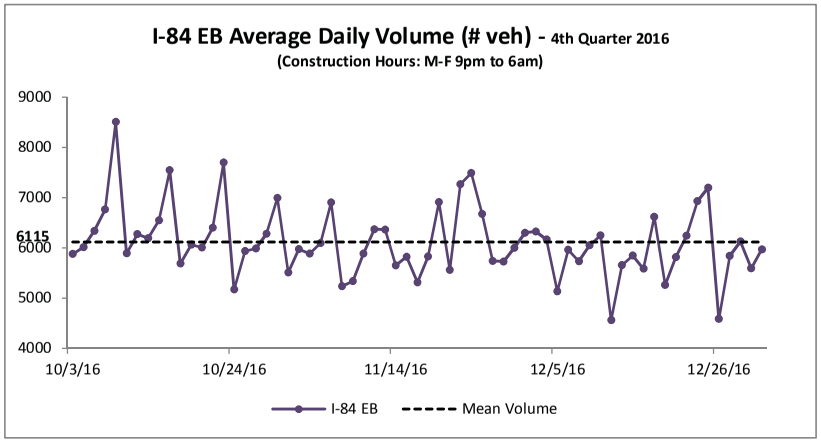




I-84 EB Average Volume Data



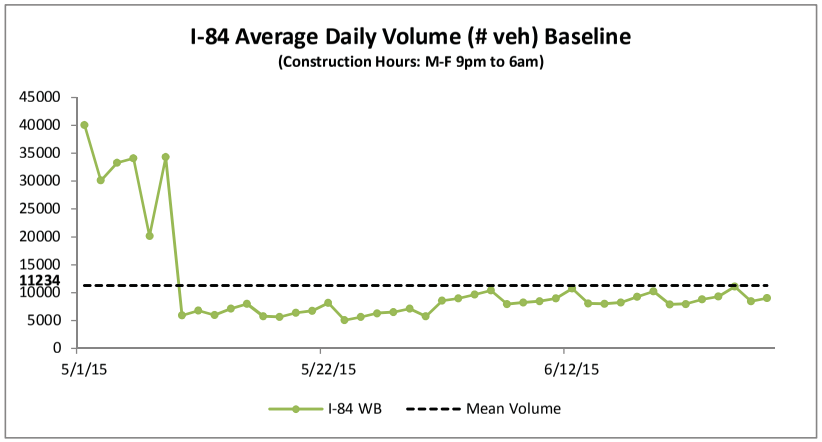


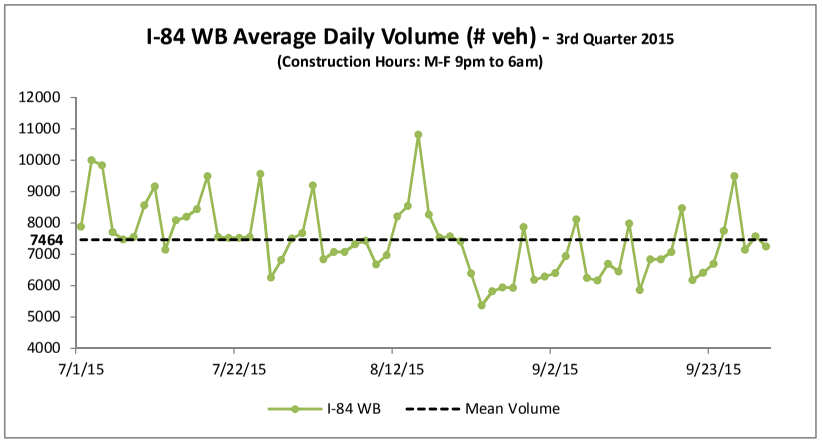


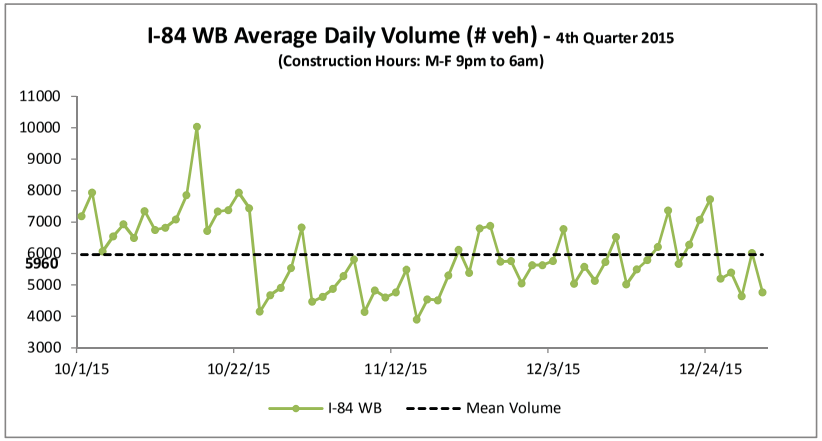
I-84 EB			
Quarter	Baseline	Quarterly Mean	Difference
Jul - Sep 15	11259	8277	-2981
Oct - Dec 15	11259	7124	-4134
Jan - Mar 16	11259	5154	-6105
Apr - Jun 16	11259	6605	-4654
Jul - Sep 16	11259	6808	-4450
Oct - Dec 16	11259	6115	-5144

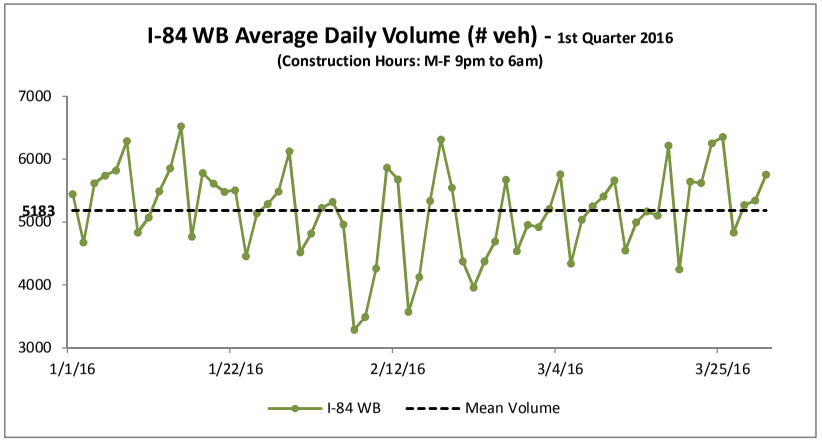
Legend: less congestion/more diversion thru wz; more congestion/less diversion thru wz

I-84 WB Average Volume Data

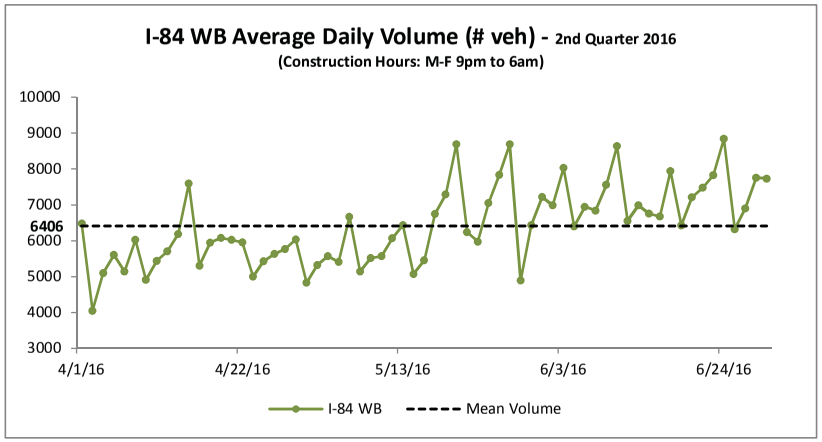


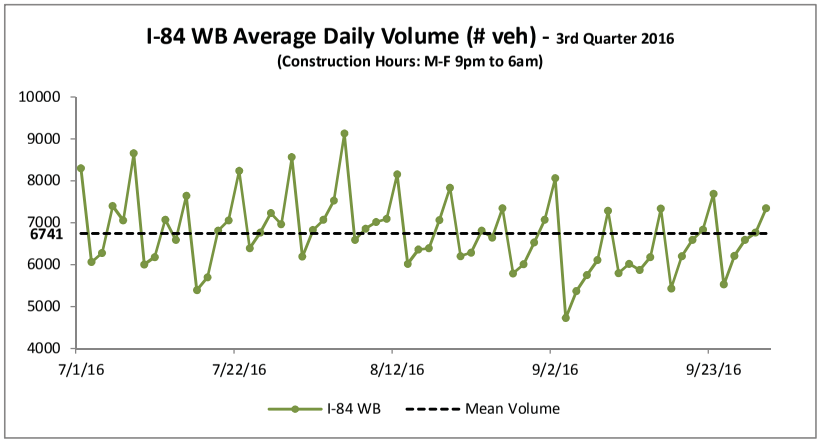


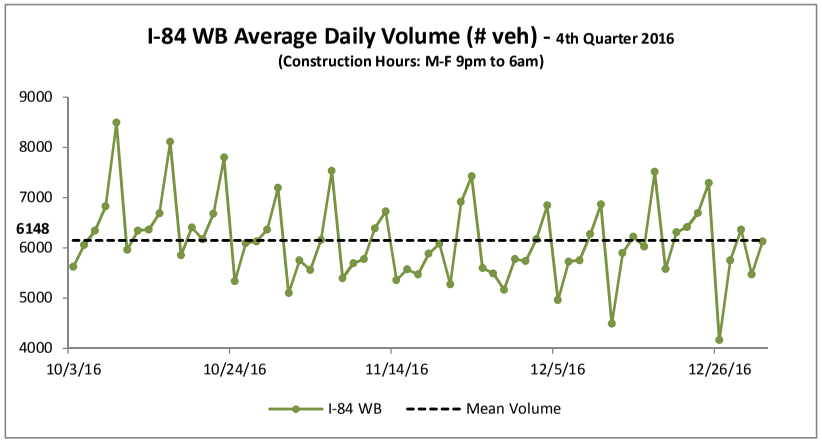




I-84 WB Average Volume Data



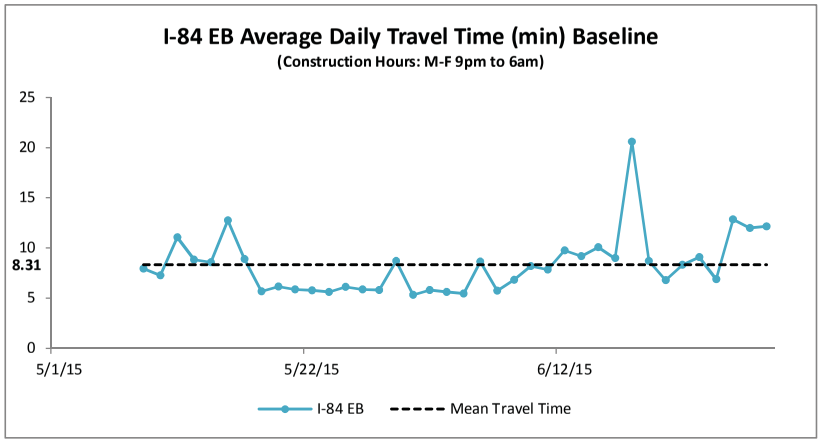


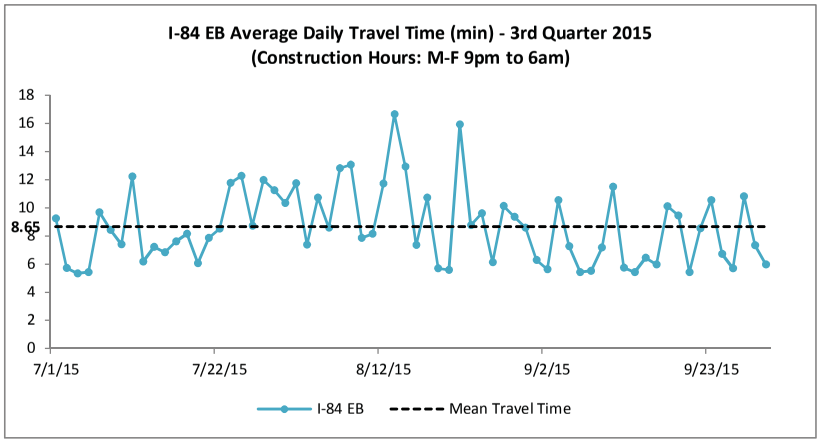


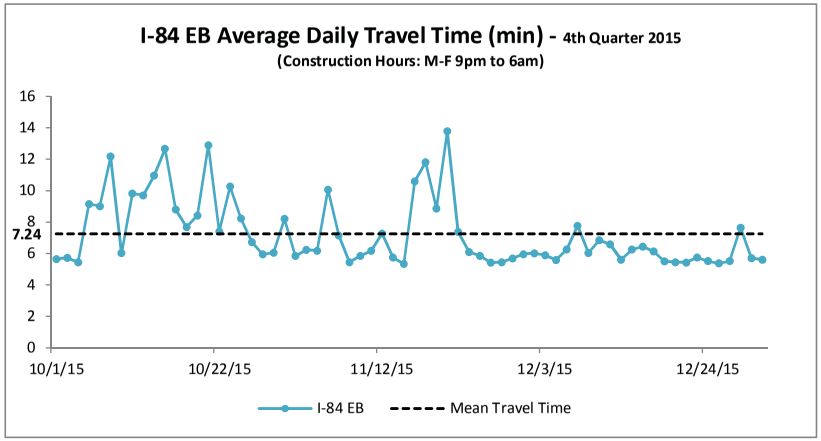
I-84 WB			
Quarter	Baseline	Quarterly Mean	Difference
Jul - Sep 15	11234	7464	-3770
Oct - Dec 15	11234	5960	-5274
Jan - Mar 16	11234	5183	-6052
Apr - Jun 16	11234	6406	-4828
Jul - Sep 16	11234	6741	-4493
Oct - Dec 16	11234	6148	-5086

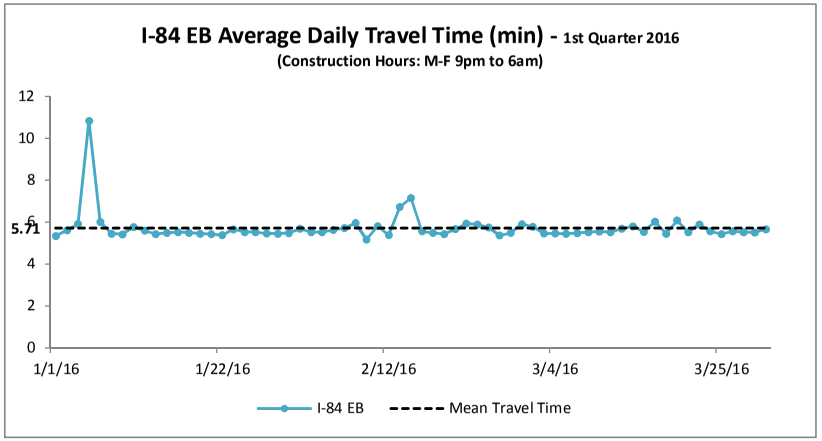
Legend: less congestion/more diversion thru wz; more congestion/less diversion thru wz

I-84 EB Average Travel Time Data

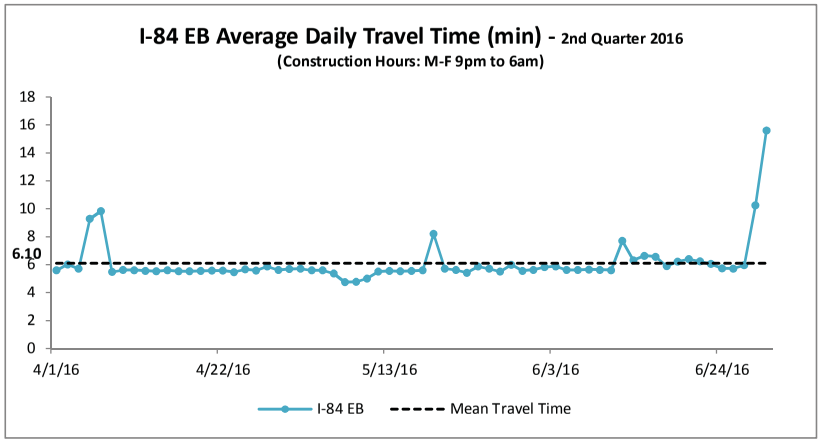


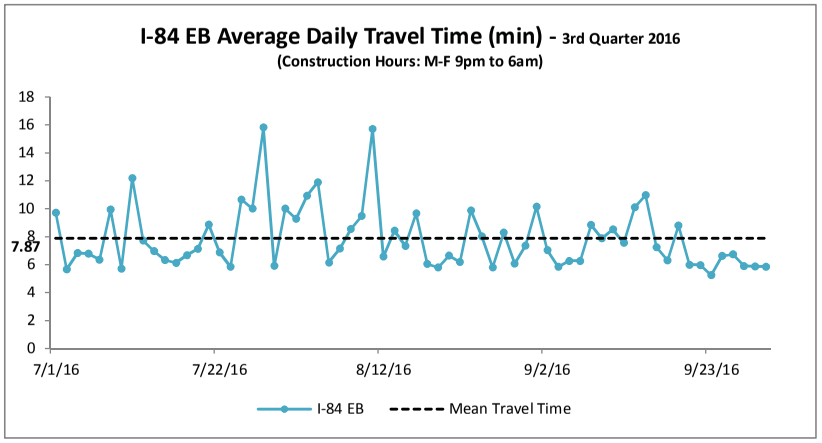


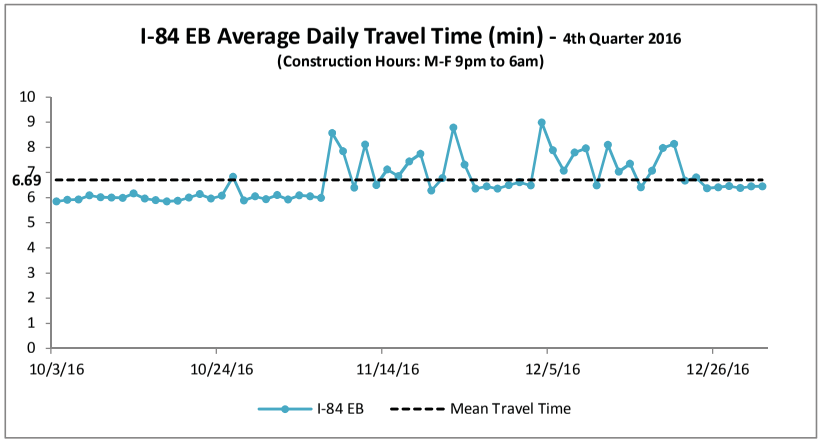




I-84 EB Average Travel Time Data



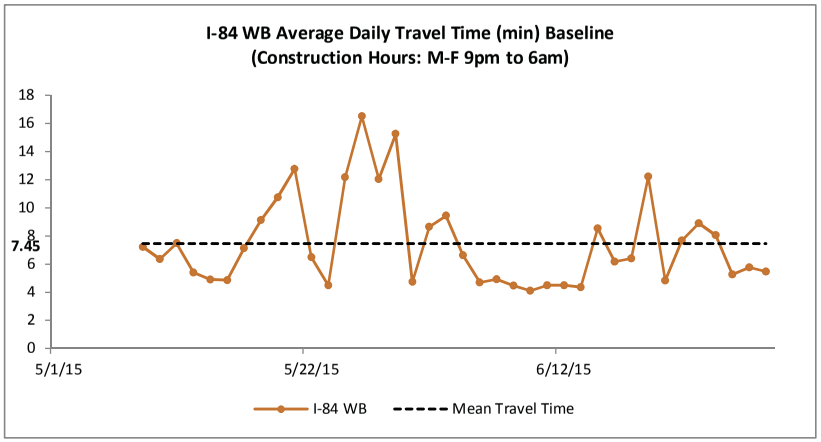


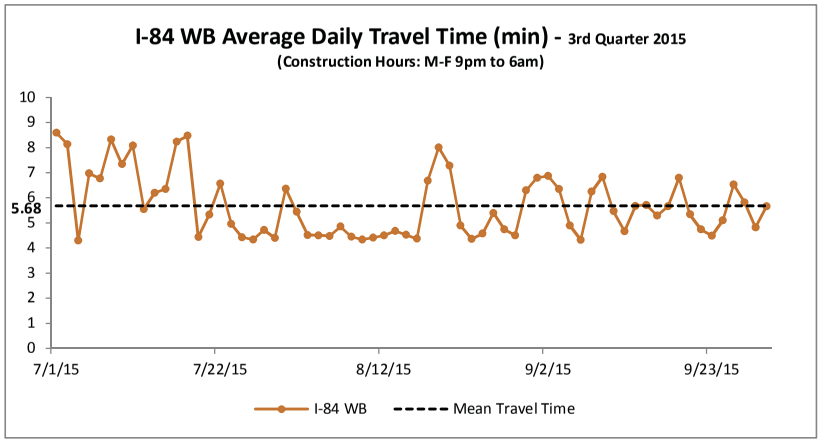


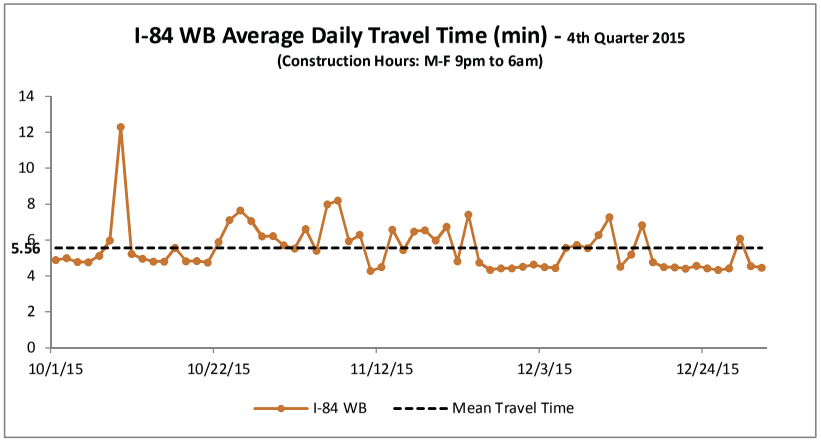
I-84 EB			
Quarter	Baseline	Quarterly Mean	Difference
Jul - Sep 15	8.31	8.65	-0.34
Oct - Dec 15	8.31	7.24	1.07
Jan - Mar 16	8.31	5.71	2.60
Apr - Jun 16	8.31	6.10	2.21
Jul - Sep 16	8.31	7.87	0.44
Oct - Dec 16	8.31	6.69	1.62

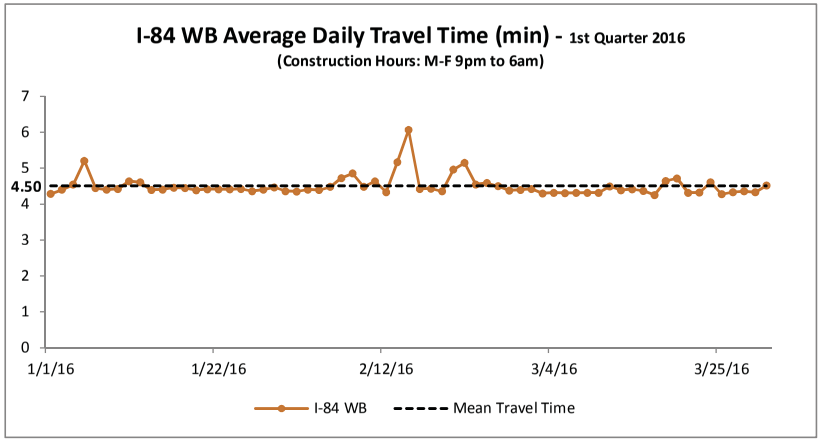
Legend: reduced travel time thru wz; incresed travel time thru wz

I-84 WB Average Travel Time Data

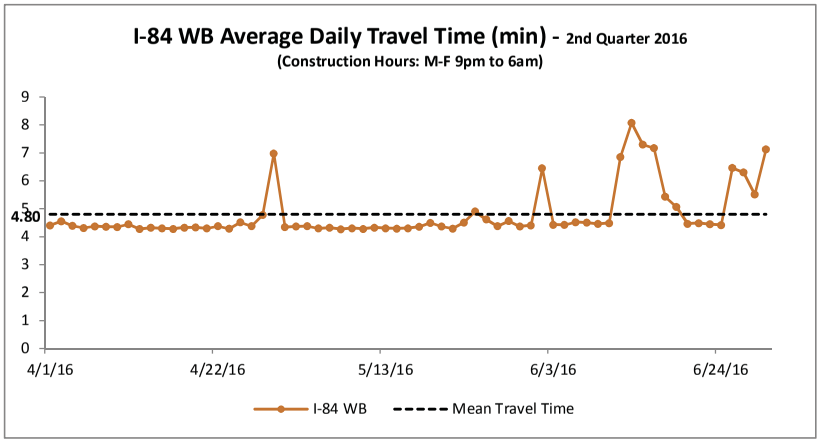


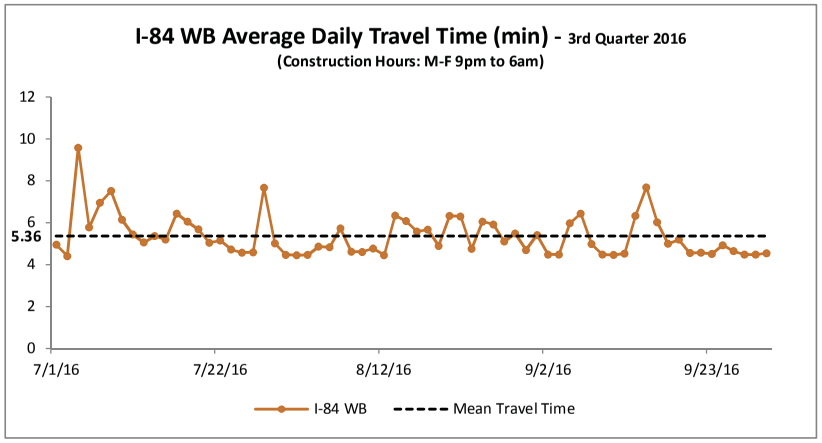


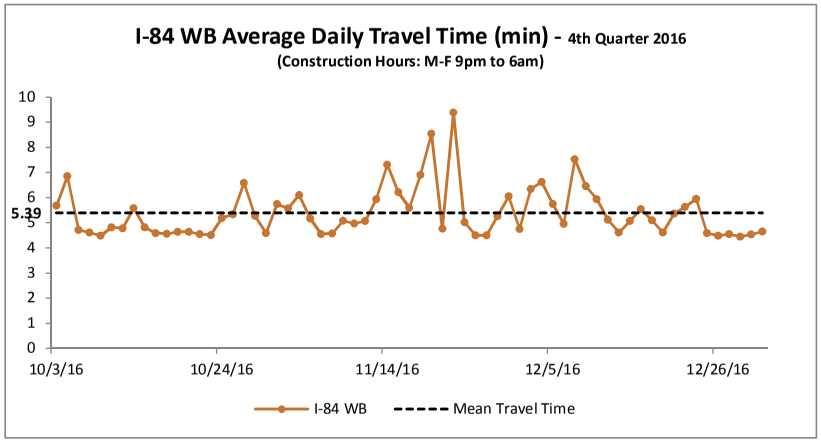




I-84 WB Average Travel Time Data







I-84 WB			
Quarter	Baseline	Quarterly Mean	Difference
Jul - Sep 15	7.45	5.68	1.78
Oct - Dec 15	7.45	5.56	1.89
Jan - Mar 16	7.45	4.50	2.95
Apr - Jun 16	7.45	4.80	2.66
Jul - Sep 16	7.45	5.36	2.09
Oct - Dec 16	7.45	5.39	2.07

Legend: reduced travel time thru wz; incresed travel time thru wz

APPENDIX 5: DEPARTMENT POLICIES AND MEMORANDUMS

CONNECTICUT DEPARTMENT OF TRANSPORTATION

POLICY STATEMENT

POLICY NO. E&C - 5
April 8, 2011

SUBJECT: Municipal Roads and Streets Affected by Construction

The following policy shall be used in meetings with municipal officials relative to the treatment of municipal roads and streets affected by proposed highway construction using federal and/or State funding. Municipal roads or streets as defined in this policy are all roads or streets which are not State-maintained.

When a municipal road or street is to be disturbed by proposed construction, the Department's Highway Design Manual (HDM) shall apply, except when the municipality has design criteria or standards which require something greater. State and federal procedures for granting a design exception will be followed for any controlling criteria in the HDM which cannot be met. If existing municipal criteria cannot be met, written approval from the responsible municipal official will be required.

The designer should consider all criteria in the HDM or any town standards and develop solutions that meet the operational and safety requirements, while preserving the aesthetic, historic, or cultural resources of an area. Designers must exercise good judgement on individual projects and, frequently, they must be imaginative, innovative, and flexible in their approach to highway design.

When a municipal road or street is dead-ended by proposed highway construction, a turnaround or hammerhead is to be constructed, if required by municipal standards. If municipal standards do not exist, a determination of an acceptable treatment will be made in conjunction with municipal officials.

(This Policy Statement abolishes Policy Statement No. E&H.O -5 dated January 1, 1999)

James P. Redeker
Acting Commissioner

CONNECTICUT DEPARTMENT OF TRANSPORTATION

POLICY STATEMENT

POLICY NO. E&C -6
March 31, 2004

SUBJECT: Policy on Trafficpersons on Construction Projects

Trafficpersons should be utilized where appropriate to provide for the safe and efficient flow of traffic through a construction project.

The Department of Transportation is responsible for determining when Tafficpersons are necessary. In administering the Trafficperson item, the following will be adhered to:

- On a weekly basis, the Contractor shall inform the Engineer of their scheduled operation for the following week and the number of Trafficperson requested. The Engineer shall review this schedule and approve the type and number of Trafficpersons required.

- State Police Officers shall be uniformed off-duty sworn Connecticut State Police Officers. State Police (Troopers) are to be utilized only on limited access highways and secondary roadways under their primary jurisdiction.

- Uniformed Municipal Police Officers shall be sworn Municipal Police Officers or Uniformed Constables who perform criminal law enforcement duties from the Municipality in which the project is located. Uniformed Municipal Police Officers will be used on all non-limited access highways.

- Uniformed Flaggers shall be persons who have successfully completed flagger training by the ATSSA, National Safety Council, or other programs approved by the Engineer. Uniformed Flaggers will only be used on non-limited access highways to stop or slow traffic.

- A contractor who orders a Trafficperson for his own convenience is not to be reimbursed in the payment estimate. Those charges will be his obligation.

(This Policy Statement supersedes Policy Statement No. HWYS-6 dated April 15, 1988)

CONNECTICUT DEPARTMENT OF TRANSPORTATION

POLICY STATEMENT

POLICY NO. E&C -25
April 15, 1988

SUBJECT: Policy on Dissemination of Construction Information to Local Officials

Area Legislators and Town Officials receive numerous inquires from their constituents concerning our construction projects. It is important that these officials be aware of our projects and have a basic knowledge of the undertaking and anticipated schedule. To effectively accomplish this, it may be necessary to vary procedures depending on the type of projects and its impact upon the community. However, these officials will all be notified of and invited to attend all preconstruction meetings. If additional meetings are warranted, the District Engineer will be responsible for arranging them.

CONNECTICUT DEPARTMENT OF TRANSPORTATION

POLICY STATEMENT

POLICY NO. E&C - 32A
April 8, 2011

SUBJECT: Protective Headgear

Department employees performing certain tasks are required to wear protective, high-visibility headgear for personal safety in accordance with the following:

- Department-issued hard hats are required to be worn in compliance with OSHA Safety Standards and during Department-selected work activities as specified and directed by unit supervisors. During all other fieldwork activities, Department-issued soft caps are required to be worn.

- Employees may remove headgear when they are within fully enclosed vehicles normally driven over the road, such as passenger cars and pickup/dump trucks. Headgear must be worn when employees are stationed on vehicular equipment such as tractors, mowers, and payloaders, even if fully enclosed.

- Headgear will be worn in accordance with guidelines as noted in Safety Topic #35 and based on the type of work activities each unit performs. These guidelines must be utilized for this Policy to be effective.

- In areas not addressed by unit guidelines, the responsibility to wear the proper headgear lies with the individual employee. As with any safety-related policy, common sense and good judgement must rule.

Department supervisors will strictly enforce this Policy with noncompliance resulting in progressive disciplinary action.

(This Policy Statement abolishes Policy Statement No. E&H.O -35A dated October 1, 1999)

James P. Redeker
Acting Commissioner

CONNECTICUT DEPARTMENT OF TRANSPORTATION

POLICY STATEMENT

POLICY NO. E&C - 32B
April 8, 2011

SUBJECT: Protective Footwear (Steel Toe Shoes)

The Department, in order to insure the safety of all personnel under its jurisdiction, requires that those persons engaged in construction, surveys, bridge/field inspections, or general maintenance field activities wear protective footwear at all times when on the job (refer to Safety Training Topic #35).

Whenever it becomes necessary for other Department personnel to go into an area where protective footwear is required, such personnel shall also comply with this Policy.

Department supervisors will strictly enforce this Policy with noncompliance resulting in progressive disciplinary action.

(This Policy Statement abolishes Policy Statement No. E&H.O -35B dated March 31, 2004)

James P. Redeker
Acting Commissioner

CONNECTICUT DEPARTMENT OF TRANSPORTATION

POLICY STATEMENT

POLICY NO. E&C - 32C
April 8, 2011

SUBJECT: Protective Clothing

Personal protective devices are designed to safeguard an individual against harmful objects, substances, or actions. Workers should realize that the failure of such a device or failure to use it, exposes one immediately to the hazard in question.

The Department shall provide special protective clothing or safety devices for designated operations. When such protective clothing or safety devices are furnished to the employee, it shall be required that the employee wear or use such clothing or equipment when performing the prescribed operation.

OSHA and ConnDOT regulations require that a Department-issued, high-visibility safety vest be worn at all times when a ConnDOT worker or agent has the potential to be exposed to vehicular traffic, moving equipment, and/or on a railroad right-of-way.

Department supervisors will strictly enforce this Policy with noncompliance resulting in progressive disciplinary action.

Any questions regarding whether a safety vest must be worn should be directed to the employee's supervisor.

(This Policy Statement abolishes Policy Statement No. E&H.O -35C dated October 1, 1999)

James P. Redeker
Acting Commissioner

CONNECTICUT DEPARTMENT OF TRANSPORTATION

POLICY STATEMENT

POLICY NO. E&C - 40
April 8, 2011

SUBJECT: Work Zone Safety and Accessibility

The Department is committed to ensure a safe and accessible highway environment for all users of the roadway (motorist, pedestrian, and bicyclist) traveling through a work zone and to establish a safe and secure area for those who must construct and maintain the highway system.

In order to achieve a safe and accessible highway environment during construction and maintenance periods, a uniform set of vehicular traffic control plans have been developed to establish a consistent application of traffic control patterns. These plans were developed using the principles set forth in the Manual of Uniform Traffic Control Devices (MUTCD), published by the Federal Highway Administration in cooperation with the American Association of State Highway and Transportation Officials. When applicable, these plans shall be utilized by all Department units, contractors, and permittees working within the highway right-of-way.

It is recognized that the development of detailed standards that would be adequate to cover all construction and maintenance applications is not practical. There will be occasions when the typical set of signs or other traffic control devices will not adequately address the field conditions impacting vehicles, pedestrians, or bicyclists for a given project. Such conditions should be anticipated and special traffic control plans, specifications, and/or transportation management plans reflecting the principles set forth in the MUTCD should be developed for the particular project or activity to address the identified concerns. All mobility modes should be considered in the development of project-specific plans. In particular, the level of accessibility for disabled individuals that was experienced prior to the project should be provided during construction and maintenance operations.

(This Policy Statement abolishes Policy Statement No. E&H.O -46 dated February 19, 2009)

James P. Redeker
Acting Commissioner

CONNECTICUT DEPARTMENT OF TRANSPORTATION

POLICY STATEMENT

POLICY NO. E&C - 46
April 8, 2011

SUBJECT: Systematic Consideration and Management of Work Zone Impacts

It is the policy of the Department to systematically consider and manage work zone impacts of significant projects.

In establishing this Work Zone policy, the Department's objectives are to:

1. Provide a high level of safety for both workers and the public.
2. Minimize congestion and community impacts.
3. Provide both maintenance forces and contractors adequate access to the highway to efficiently conduct their work.

In order to meet these objectives, appropriate planning, design, construction, maintenance, and public awareness strategies shall be employed on all significant projects. For the purposes of this policy, a significant project is defined as:

> A stationary highway construction or maintenance activity which causes sustained mobility impacts on I-84, I-91, I-95, I-291, I-384, or I-691 for more than three (3) days with either intermittent or continuous lane closures. In addition, any highway construction or maintenance activity that alone or in combination with other concurrent activities nearby, which is expected based on engineering judgment, to cause sustained mobility impacts that are considered greater than what is considered tolerable relative to typical traffic operations experienced in the area of the work zone, may be declared a significant project.

It is recognized that the Department's emergency operations may not always allow a systematic consideration of work zone impacts. In such situations, the objectives of this policy will be honored as much as practicable.

(This Policy Statement abolishes Policy Statement No. E&H.O -57 dated August 10, 2007)

James P. Redeker
Acting Commissioner

CONNECTICUT DEPARTMENT OF TRANSPORTATION

POLICY STATEMENT

POLICY NO. HO - 11
April 8, 2011

SUBJECT: Wheel Chocks

The Department shall, in order to maximize the safety of all personnel under its jurisdiction as well as the public, require all Department employees responsible for vehicles or equipment operation to deploy wheel chocks anytime the vehicle or equipment is not under the direct control of the operator.

This Policy shall apply to the following vehicles, equipment, and conditions:

- All vehicles with a gross vehicle weight of 10,000 pounds or greater.
- All towed-behind equipment including, but not limited to, compressors, wood chippers, and mixers.
- Any other State vehicles used to transport materials, equipment, or personnel except for pickup trucks, passenger and cargo vans, passenger vehicles, loaders, loader backhoes, rollers, graders, roadside tractor mowers, or other similar types of motorized equipment.
- Wheel chocks shall be of a type and design appropriate for the type of vehicle or equipment being secured.
- Wheel chocks shall be deployed in front of and behind the rear wheel of the vehicle at all times it is not under the direct control of the operator. This includes, but is not limited to, when vehicles are parked at job sites, staging areas, compound areas, parking lots, while inside garages, or at other times when the vehicle must be left and secured.
- Towed equipment must be chocked anytime it is not secured to the tow vehicle.

Violation of this Policy will result in progressive discipline for the operator of the vehicle or the individual responsible for the equipment being used and, in the case of field operations, the on-site supervisor or individual in charge of the operation.

Discipline for a violation of this Policy shall be a minimum of a written warning for an initial violation. More severe discipline shall be issued for repeated violations and/or those involving property, vehicle damage, or personal injury. Such increased discipline may include suspensions, demotions, unsatisfactory service ratings, or termination of employment.

Department supervisors shall strictly enforce this Policy with noncompliance resulting in progressive disciplinary action. Compliance with this Policy will result in a safer operation for Department employees as well as the public.

(This Policy Statement abolishes Policy Statement No. E&H.O -52 dated March 21, 2005)

James P. Redeker
Acting Commissioner

Draft

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

memorandum

subject Work Zone Safety and Mobility Policy and Implementation Plan

date: August 6, 2007

To Mr. Charles Barone
Mr. James H. Norman
Mr. Robert P. Mongillo
Mr. Lewis Cannon

from Michael W. Lonergan
Acting Bureau Chief
Bureau of Engineering
and Highway Operations

In September 2004, the Federal Highway Administration (FHWA) published updates to the Work Zone regulations contained in 23 CFR 630 Subpart J. The updated rule is referred to as the Work Zone Safety and Mobility Rule (Rule) and applies to all State and local governments that received Federal-aid highway funding. Transportation agencies are required to comply with the provisions of the Rule by October 12, 2007.

The Rule requires agencies to develop and implement an agency-level Work Zone Safety and Mobility policy to support systematic consideration and management of work zone impacts across all stages of project development. In order to develop this required policy, as well as prepare an associated implementation plan, a Rule Steering Committee was established by the Department. Members of this multi-disciplinary committee included representatives from the FHWA and Offices of Construction, Maintenance, Engineering, and Intermodal Planning.

The attached draft Department policy entitled "Policy on Systematic Consideration and Management of Work Zone Impacts" is in conformance with the Rule and by copy of this memorandum is being forwarded to Commissioner Carpenter's Office for approval. The policy defines which Department projects are subject to the Rule and allows an exception for unplanned emergency operations.

The attached implementation plan has been developed to provide guidance to your offices in complying with the Rule. The plan identifies several assignments and ongoing responsibilities for the units under your supervision which will be necessary for compliance. It should be noted that your Offices will need to develop more specific project and program level procedures to institutionalize the letter and spirit of the Rule. Your representatives to the Rule Steering Committee should be utilized as resources in this effort.

It has been determined that in Connecticut all "significant" projects, as defined by the policy, that begin their planning, preliminary engineering or preliminary design phase on or after October 1, 2007, or whose design completion date (DCD) is on or after October 1, 2008, shall be in accordance with the Rule. For those "significant" projects with a DCD during Federal Fiscal Year 2008 (October 1, 2007 to September 30, 2008), the FHWA, in coordination with the Department, will approve PS&E following confirmation that the appropriate TMP components have been incorporated in compliance with the Rule. Please take the steps necessary to ensure the Department's compliance with the Rule by these dates.

Attachment(s)
cc: Bradley Keazer (FHWA)
Robert Ramirez (FHWA)

TAN
JFC
JJO
TMW
CC

FROM THE DESK OF
TIMOTHY M. WILSON

AUG 0 8 2007

	F.Y.I.	PLS. DO	PLS. SEE ME
W. BRITNELL			
T. GAFFEY			
H. HAYWARD			
R. ZBROZEK			

John F. Carey:jyk

cc: Comr. Carpenter – Dep. Comr. Boice – Dep. Comr. Curtis – Dep. Comr. Martin
David Crowther – Please process the attached Policy for Commissioner Carpenter's approval.
Arthur W. Gruhn – Michael W. Lonergan - Richard T. Jankovich
James H. Norman, Acting Engineering Administrator
Timothy Wilson
Carmine Trotta
Robert P. Mongillo-Charles A. Drda-Ronald Cormier-David A. Sawicki-John Carey (Maintenance)
Mark Rolfe
John F. Carey

CONSULTING ENGINEERS
GENERAL MEMORANDUM 07-09

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING AHIGHWAY OPERATIONS
OFFICE OF ENGINEERING

Work Zone Safety and Mobility Policy and
Implementation Plan

September 18, 2007

To: CONSULTING ENGINEERS

Enclosed is guidance concerning the Department of Transportation's (Department) Work Zone Safety and Mobility (WZS&M) Implementation Plan in keeping with SAFETEA-LU legislation. In particular, your attention is directed to the implementation date of the WZS&M Plan requirements.

A primary goal of adopting this Plan is to ensure a broad assessment of work zone safety and mobility issues on a statewide or regional level, in addition to the project specific contract controls historically included in project design. Responsibility for documenting that assessment on a project-by-project basis will fall to the Designer with substantial input from the Department.

Much of the specifics for implementing this WZS&M Plan are going to evolve over a period of time, but the initial framework is summarized below.

A determination of "significance" will be made for each project and that determination will be revisited periodically during the life of the project. A project determined to be "significant" for work zone concerns will need a Transportation Management Plan (TMP) consisting of Temporary Traffic Control (TTC) Plan(s), a Transportation Operations (TO) Plan, and a Public Involvement/Outreach (PI or PO) Plan. Documentation of the overall TMP will take place in the Design Report which is required with the standard milestone submission (Preliminary, Semi Final, Final Plans for Review, and Final Plans).

Some elements of the TMP will be presented in the contracts plans (such as the TTC Plan(s)) and specifications (Prosecution and Progress, Maintenance and Protection of Traffic). Other elements of the TMP might involve procedures and functions the Department will provide such as outreach efforts, diversionary route signing and other regional traffic control initiatives outside the realm of the Construction Contract.

One particular element of the legislation that you should be aware of is the mandated training (and potential certification). This issue has not been fully resolved; but at a minimum, designers with responsibility for the TMPs will need to be appropriately trained.

Department staff will discuss implementation of this directive with each consulting firm on a project-by-project basis.

Very truly yours,

Thomas A. Harley, P.E.
Manager of Consultant Design
Bureau of Engineering and Highway Operations

Enclosure

APPENDIX 6: ENGINEERING & CONSTRUCTION DIRECTIVES

Connecticut DOT

Bureau of Engineering and Construction

Number: CD-2016-2

Date: April 11, 2016

CONSTRUCTION DIRECTIVE

Construction Administrator

Work Zone Safety
Rolling Road Block Procedure

The procedures for installing and removing temporary lane closures using Rolling Road Blocks have been revised for the 2016 construction season. These new procedures have been coordinated with both the Connecticut Road Builders Association and the Connecticut State Police. The new procedures continue to allow for Rolling Road Blocks, but place limitations on their use as well as providing a pre-warning vehicle in advance of the sign pattern installation.

Please find attached the Rolling Road Block procedure. This procedure should be implemented on all projects which include the installation of temporary lane closures on limited access highways. It is recommended that a coordination meeting be convened by the project staff prior to implementing these procedures for the first time.

Implementing the procedures on individual projects will not require a construction order, as the procedures fall within the parameters of the existing specifications for Maintenance and Protection of Traffic. A construction order will be required for the Pre-warning vehicle – a truck mounted attenuator vehicle with a variable message board mounted to the back, rather than a flashing arrow.

The procedure allows some discretion to District offices, therefore project-specific concerns should be reviewed with District management.

Attachment

WORK ZONE SAFETY
Rolling Road Block Procedure

1. Temporary road closures using Rolling Road Blocks (RRB) will be allowed on limited access highways for operations associated with the installation and removal of temporary lane closures. RRB will be allowed for the installation and removal of lead signs and lane tapers only. The maximum duration of a RRB shall be limited to 15 minutes.

2. RRB may not start prior to the time allowed in the contract Limitations of Operation for sign pattern installation. Sign pattern removal must be complete prior to the time indicated in the Limitations of Operation for restoring the lanes to traffic.

3. On limited access highways with 4 lanes or more, a RRB may not start until the Limitations of Operation Chart allows a 2 lane closure. In areas with good sight lines and full shoulders opposite side lead signs should be installed in a separate operation.

4. Truck-Mounted Attenuators (TMAs) equipped with arrow boards shall be used to slow traffic to implement the RRB. State Police Officers in marked vehicles may be used to support the implementation of the RRB. The RRB will start by having all vehicles (TMAs and police vehicles) leave the shoulder or on-ramp and accelerate to a normal roadway speeds in each lane, then the vehicles will position themselves side by side and decelerate to the RRB speed on the highway.

5. Pre-warning Vehicle (PWV): An additional TMA equipped with a Portable Changeable Message Sign will be utilized to advise the motorists that sign pattern installation / removal is underway. The PWV will be stationed ½ mile ahead of traffic queue.

6. The RRB duration shall not exceed 15 minutes from start of the traffic block until all lanes are opened as designated in the Limitation of Operation chart. If the RRB duration exceeds 15 minutes on 2 successive shifts, no further RRB will be allowed until the Contractor obtains approval for a revised installation procedure from the respective construction District.

7. RRB will not be utilized to expand a lane closure pattern to an additional lane during the shift. The workers and equipment required to implement the additional lane closure should be staged from within the closed lane. Attenuator trucks (and State Police if available) should be used to protect the workers installing the taper in the additional lane.

8. Exceptions to these work procedures may be submitted to the District Office for consideration. A minimum of 2 business days should be allowed for review and approval by the District.

9. The RRB procedures (including any approved exceptions) will be reviewed and discussed by the inspection team and the Contractor in advance of the work. The implementation of

the agreed upon plan will be reviewed with the State Police during the Work Zone Safety meeting held before each shift involving temporary lane closures. If the State Police determine that alternative procedures should be implemented for traffic control during the work shift, the Department and Contractor will attempt to resolve any discrepancies with the duty sergeant at the Troop. If the discrepancies are unable to be resolved prior to the start of the shift, the work will proceed as recommended by the Trooper (within reason). Any unresolved issues will be addressed the following day.

Connecticut DOT

Number: ECD-2017-2

Bureau of Engineering and Construction

Date: June 22, 2017

ENGINEERING & CONSTRUCTION DIRECTIVE

Digitally signed by Mark Rolfe
DN: C=US, E=mark.rolfe@ct.gov, O=Construction, OU=OOC, CN=Mark Rolfe
Date: 2017.06.22 08:43:28-04'00'

Chief Engineer

Implementation of Smart Work Zones Guide

Smart Work Zones (SWZ) are applications of Intelligent Transportation Systems (ITS) technology in work zones, utilized to help increase safety and mobility. Through appropriate use of SWZ, the Department aims to improve safety for roadway users and work zone personnel, increase mobility in work zones, and reduce work zone traffic incidents.

The Smart Work Zones Guide presents the basic guidelines for the consistent and uniform usage of SWZ in the State of Connecticut. The Guide has been developed as a collaborative effort between the Bureau of Highway Operations (Highway Operations) and the Bureau of Engineering and Construction (Division of Traffic Engineering and Office of Construction). It provides an introduction to SWZ concepts, components, goals, and objectives, as well as an overview of different SWZ applications to be used by the Department.

Project designers remain responsible for customizing and adapting this guidance to meet specific project needs, conditions, and context. The project designer is responsible for the initial evaluation for the need for SWZ at the Preliminary Design Phase and to contact the SWZ Feasibility Determination Committee for recommendation. For all projects determined to require SWZ, the designer shall develop a separate SEAFORM submittal specifically for the SWZ applications.

The Smart Work Zones Guide is posted as a searchable pdf on the Department's web site.

APPENDIX 7: PUBLIC INFORMATION & PUBLIC OUTREACH GUIDANCE

Public Information & Public Outreach

Guide for Significant Construction Projects
in conformance with the attached Policy Statement No. E&C - 46

Goal: To proactively communicate project information to the traveling public and all Department stakeholders to minimize mobility inconvenience, and increase community awareness due to Construction work zone impacts.

Purpose: Public Information/Public Outreach (PI/PO) is a Department initiative for achieving a successful project with the primary focus on stakeholders' satisfaction. PI/PO provides the traveling public the opportunity to make informed travel decisions and encourage the use of alternate routes to avoid Construction work zone delays.

A. PROJECT INFORMATION:
- Contract No. XXXX-XXXX
- Project Description
- Location
- Construction NTP
- Anticipated Completion Date
- Contract Value
- Award Date
- Contractor Information
- Major Phases and Key Dates
- Project Oversight (Name, Title, Phone No.)
  - DE
  - ADEC
  - TSE
  - PE
  - CI or RE
  - PI/PO Coordinator

B. STAKEHOLDERS (Ideally, these should be developed/identified in the Design phase):

FIRST TIER

- Federal (FHWA, FTA, ACOE, Coast Guard)
- DEEP
- Office of Engineering
- Office of Communication
- Legislative Liaison
- State Police (DESPP) (If applicable, contact FBI, Homeland Security, DEA, ATF, USS)
- Town Police / Fire Department / EMS / Hospitals / Medical Facilities

SECOND TIER

- Local Public Agencies (MPOs, Town / City)
- Town Engineer / Commission

- School District – Board of Education
- Transit Providers
- Local Businesses
- Community Residents / Advocates
- Bicycle / Pedestrian Associations
- Special Events Organizer (Convention Centers, Concerts, Tournaments)

THIRD TIER

- Elected Officials
- State Representatives
- State Senators
- US Senator
- US Representative

FOURTH TIER

- Commodity Haulers (Trucking Industry, Freight Terminals)
- Ports Authority
- Airports
- Railroads (MNRR, AMTRAK, etc.)

FIFTH TIER

- News Media
  - Local Newspaper
  - TV Stations
  - Radio Stations
  - TRANSCOM

C. <u>PROJECT PHASING IMPACTS ASSESSMENT (The majority of these assessments should be analyzed during the Design phase)</u>:

- Traffic Delays due to TTCP and Staging Plans (Work Zone Impacts)
- Traffic Operations Analysis of Volume Capacity, Queues, and Speeds
- Construction Look Ahead Schedules
- Safety Considerations (Motorists and Workers)
- Adjacent Projects Coordination (Regional TMP)
- Congestion at Intersections, Interchanges, Railroad Crossings, Geometrics
- Planned Detour Routes and Neighborhood Impacts
- Right of Way Issues
- Businesses
- Residences
- Schools
- Emergency (Hospitals, Fire States, EMS Responders)
- Special Events (Travelers PGA golf tournament (provide correct name),Concerts, Arena events, Holiday Parades, etc.)
- Adjacent Projects Coordination (Regional TMP)

- Best Alternate Routes
- Multimodal Transportations (Airports, Railroads, Ports, Buses)
- Trucking Industry
- Pedestrian and Bicycle Access
- Utility Issues

D. COMMUNICATION STRATEGIES :

- Electronic Informational Updates
  - Project Website (Include Project Branding with Logo and Name)
  - DOT Travel Map Webpage
  - E-Mails (Daily Traffic Notifications / Automatic E-Mails
  - TV / Radio Messages
  - FAX (obsolete?)
  - Social Media
  - DOT Webpage – Press Releases
- News Media
  - News Reporters (One-on-One Visits)
  - Newspapers Display Ads
  - Media Kits
  - News Conference
  - News Media Project Site Visits
- Public Notices and Inquiries
  - Neighborhood Announcements
  - Construction News Bulletins
  - Program / Project Announcements
  - Public Inquiries Telephone Line / Website
  - Questions and Answers on Frequently Asked Questions
  - Responses to Inquiries
- Multi-Modal Printed Materials
  - Fact Sheet Handout
  - Project Fliers (Drop in Mailboxes)
  - Information Postcards
  - Project Brochures
  - Event Posters
  - Project Update Newsletters (Schedules, Staging, and Key Dates)
    - Weekly
    - Bi-weekly
    - Monthly
    - Quarterly
    - As Needed
  - Informational Photos and Video
- Public Informational Presentations and Workshops
  - Information Meetings
    - One-on-One Meetings

        - Door-to-Door Delivery
        - Gathering for Presentations and Updating
    - Talking Points / PowerPoint Presentations
    - Project Tours (Public and Private Groups)
    - Question and Answer Sessions
    - Roundtable Sessions
    - Bus Placards
- Scheduled Events
    - Ground Breaking Ceremony
    - Milestone Accomplishments
    - Dedication Ceremony
    - Ribbon Cuttings
    - Opening Ceremony

E. TARGET AUDIENCE INFORMATION SOURCES:

- Pre-Trip Travelers (Project Website, TV Reports)
- En Route Travelers (Radio, CMS / VMS)
- Commuters (Local, Major Employers, Community Outreach
- Non-Commuters (Tourist Facilities, Recreation Parks, Shopping Malls)
- Commercial (Local Businesses; Long Distance Truckers, Intermodal Freights; Transportation Management Associations, e.g. MTAC, RITA, etc.)
- Passenger Terminals (Airports, Ports, Rail Stations, Transit Buses, etc.)
- Oversize / Overweight Loads – Permit Issued

F. CAMPAIGN MESSAGES:

- Project Specific Message Campaigns should cover:
    - Safety precautions for motorists
    - Advisory to minimize delay and frustration if motorist knows what to expect
    - How the Department cares about the disruptions
    - Asking the motorists for cooperation and acceptance of the temporary inconveniences
    - Highlight the project positives and benefits when completed
    - Periodic updates to gain public trust
    - Promoting the Project Positives

CONNECTICUT DEPARTMENT OF TRANSPORTATION
POLICY STATEMENT

POLICY NO. E&C - 46
April 8, 2011

SUBJECT: Systematic Consideration and Management of Work Zone Impacts

It is the policy of the Department to systematically consider and manage work zone impacts of significant projects.

In establishing this Work Zone policy, the Department's objectives are to:

1. Provide a high level of safety for both workers and the public.
2. Minimize congestion and community impacts.
3. Provide both maintenance forces and contractors adequate access to the highway to efficiently conduct their work.

In order to meet these objectives, appropriate planning, design, construction, maintenance, and public awareness strategies shall be employed on all significant projects. For the purposes of this policy, a significant project is defined as:

> A stationary highway construction or maintenance activity which causes sustained mobility impacts on I-84, I-91, I-95, I-291, I-384, or I-691 for more than three (3) days with either intermittent or continuous lane closures. In addition, any highway construction or maintenance activity that alone or in combination with other concurrent activities nearby, which is expected based on engineering judgment, to cause sustained mobility impacts that are considered greater than what is considered tolerable relative to typical traffic operations experienced in the area of the work zone, may be declared a significant project.

It is recognized that the Department's emergency operations may not always allow a systematic consideration of work zone impacts. In such situations, the objectives of this policy will be honored as much as practicable.

(This Policy Statement abolishes Policy Statement No. E&H.O -57 dated August 10, 2007)

James P. Redeker
Acting Commissioner