

Transportation Management Plan
Project No. 82-299
Priority Repairs to the Arrigoni Bridge
Bridge No. 00524
Middletown and Portland

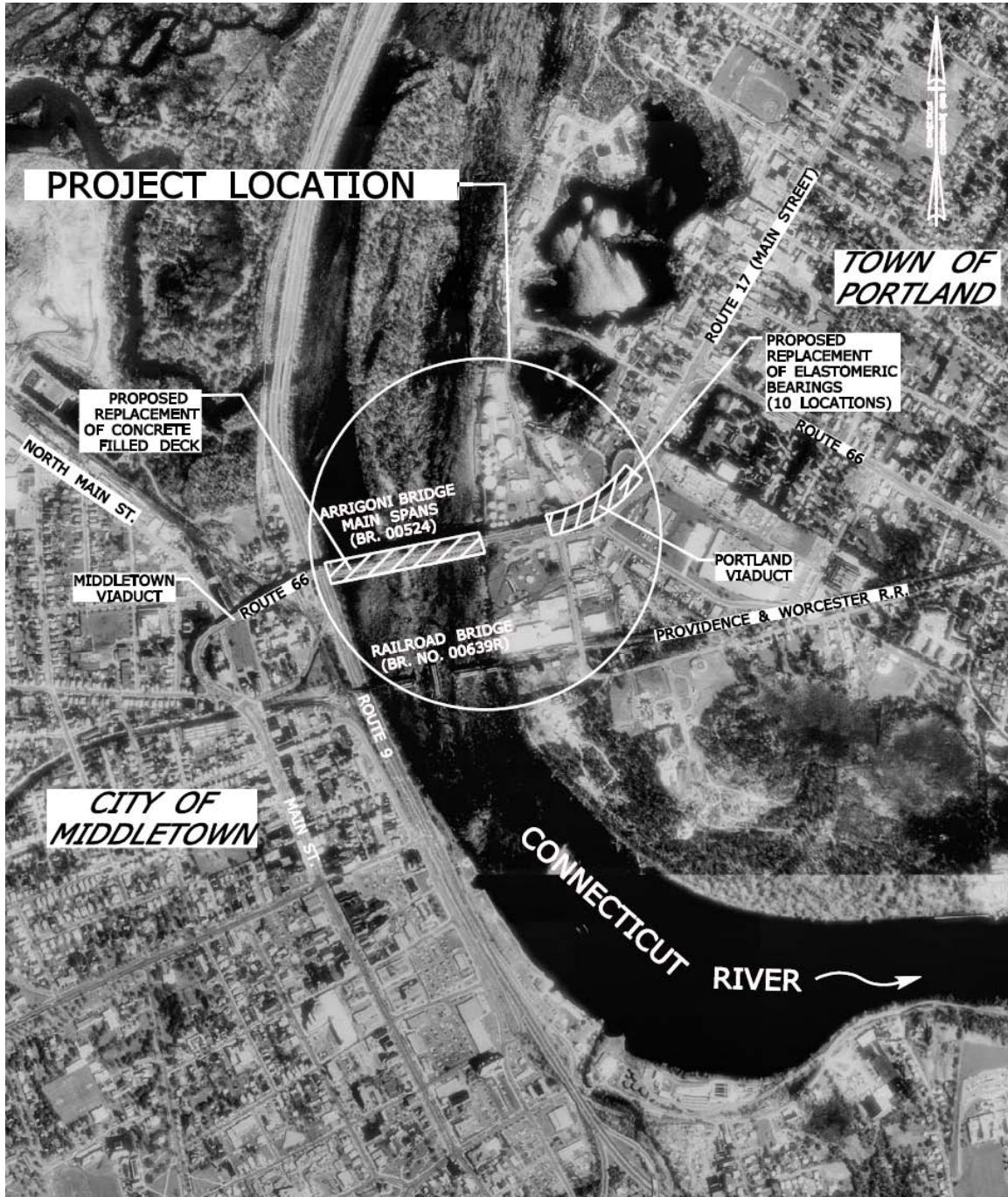
Introduction

In order to serve the safety and mobility needs of the traveling public, construction workers, businesses, and community, a Transportation Management Plan (TMP) has been developed for this bridge project. The bridge is a tied-arch truss with a suspended deck on main spans. The structure carries Connecticut State Routes 17 and 66 across the Connecticut River, and provides four eleven-foot-wide travel lanes (two for each of the east and westbound travel directions) and sidewalks along each outside edge of the structure (see Figure 1 for Location Map).

The proposed construction would replace the arch spans deteriorated deck, sidewalk, and joints to ensure that the integrity of the deck can be maintained for a minimum of 20 years. This rehabilitation would require the closure of two of the four travel lanes for the duration of the project, which is estimated to be completed within two construction seasons.

The reduction in the number of traffic lanes from four to two would reduce the vehicle capacity of the bridge, and based on existing traffic volume data, would likely result in local peak period congestion within Middletown and Portland. The Connecticut Department of Transportation (ConnDOT) determined that due to the significance of this project and the potential for mobility impacts, a TMP should be developed and implemented in consultation with appropriate stakeholders including municipalities, business communities, emergency responders, and law enforcement. The goals of this plan are to reduce the traffic and mobility impacts, improve safety, and to promote coordination within and around the work zone. ConnDOT will continue to monitor and manage the work zone impacts (traffic queues and incidents) during construction. Field

Figure 1 – Arrigoni Bridge Location Map



observations and operational information will be used to adjust transportation management strategies if needed. The use of a “smart” work zone management system for secondary roadways in conjunction with the ITS infrastructure (cameras, changeable

message signs [CMS]) already in place along Routes 9, and I-91, and on the Arrigoni Bridge will provide ConnDOT access to traffic movements through the area and a means to alert motorists of potential delays. Supplemental portable systems may be added or removed as conditions warrant. Further discussion on this system is provided in Transportation Operations narrative.

Temporary Traffic Control Plan

A Temporary Traffic Control Plan has been developed to manage the work zone safety and mobility impacts of this project. A partial bridge closure will be implemented during the rehabilitation that will reduce the total number of travel lanes from four to two. A systematic consideration of the constructability was performed by ConnDOT. The study determined that, due to safety concerns, and the overall increase in the project cost and duration, it would not be feasible to perform the work during off-peak travel hours only or within a smaller construction zone.

ConnDOT's plan is to start construction in May 2011, and to complete the work within two construction seasons, predicated on the procurement time for materials, availability of funding, and permitting.

Transportation Operations

The Transportation Operations of the work zone impacts will be managed by Changeable Message Signs (CMSs) that will be used to warn travelers about delays through the work zone. ConnDOT's strategy to reduce peak-period delays is to inform motorists with real-time information regarding traffic congestion (i.e., traffic queue lengths) to encourage motorists to use alternate bridge crossings or to use the Arrigoni Bridge during off-peak travel periods. Specifically, peak period construction-related congestion is expected to be limited to westbound traffic during the weekday 7-10 AM period and eastbound traffic during the weekday 3-7 PM period (see Table 1 and Figure 2). Alternate routes to the north over the Connecticut River include Route 3 Putnam Bridge, about ten miles to the

Table 1 – 2007 Arrigoni Bridge Traffic Volumes

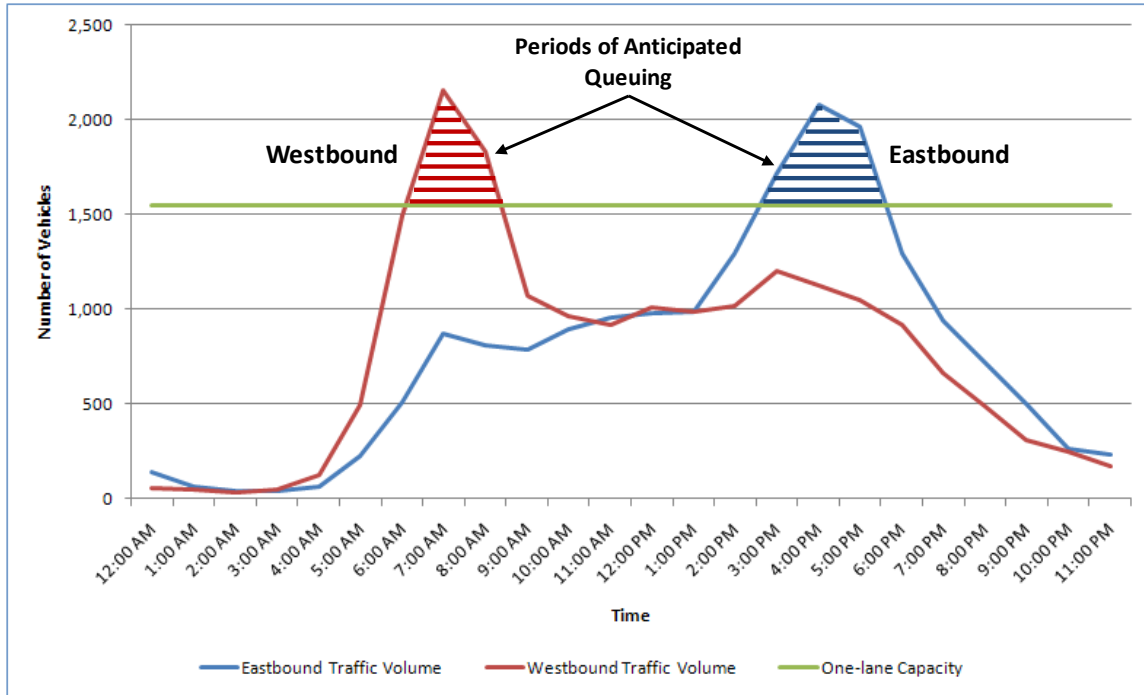
| Begin Hour | Eastbound | | | Westbound | | |
|------------|-----------------------|---|----------------|-----------------------|------------------------------------|----------------|
| | Traffic Volume (vehs) | Estimated One-lane Capacity ¹ (vehs) | Traffic Queues | Traffic Volume (vehs) | Estimated One-lane Capacity (vehs) | Traffic Queues |
| 12 AM | 141 | 1,550 | - | 55 | 1,550 | - |
| 1 AM | 63 | | - | 45 | | - |
| 2 AM | 43 | | - | 35 | | - |
| 3 AM | 41 | | - | 51 | | - |
| 4 AM | 61 | | - | 128 | | - |
| 5 AM | 226 | | - | 491 | | - |
| 6 AM | 511 | | - | 1,493 | | - |
| 7 AM | 874 | | - | 2,156 | | Yes |
| 8 AM | 811 | | - | 1,835 | | Yes |
| 9 AM | 784 | | - | 1,072 | | Yes * |
| 10 AM | 891 | | - | 967 | | - |
| 11 AM | 958 | | - | 918 | | - |
| 12 PM | 981 | | - | 1,010 | | - |
| 1 PM | 986 | | - | 985 | | - |
| 2 PM | 1,292 | | - | 1,019 | | - |
| 3 PM | 1,714 | | - | 1,199 | | Yes |
| 4 PM | 2,079 | | - | 1,124 | | Yes |
| 5 PM | 1,962 | | - | 1,046 | | Yes |
| 6 PM | 1,298 | | - | 915 | | Yes * |
| 7 PM | 937 | | - | 665 | | Yes * |
| 8 PM | 714 | | - | 487 | | - |
| 9 PM | 506 | | - | 308 | | - |
| 10 PM | 266 | | - | 245 | | - |
| 11 PM | 234 | | - | 168 | | - |

Notes:

1. Capacity value for long-term construction zones (*Highway Capacity Manual 2000*, pp. 22-8)
2. “*” indicates that traffic queue buildup will dissipate during this hour.

Source: 2007 ConnDOT Traffic Recorder Data

Figure 2 – 2007 Arrigoni Bridge Traffic Volumes



north, and 12-14 miles north in the Hartford area are the Routes 5 and 15 Charter Oak Bridge, Route 2 Founders Bridge, and the Route 6 and I-84 Bulkeley Bridge. Access south of the Arrigoni Bridge would be the Route 82 East Haddam Bridge, about 13 miles away. Ferry access is limited to the Rocky Hill-Glastonbury Ferry to the north and the Hadlyme-Chester Ferry south of Route 82 Bridge. Although these ferries are considered a viable alternate means of travel, their vehicle capacities will not noticeably reduce traffic volumes on the Arrigoni Bridge.

The Contract includes a smart work zone system that is “a road construction zone in which technology is employed to increase safety and provide information. Smart work zones often use radar guns or other sensors, to detect the presence and speed of vehicles approaching a work zone, in order to display an appropriate message on one or more

variable message signs (VMS)”¹ also referred to as CMS in this document. The system being considered for the Arrigoni Bridge project will consist of strategically located portable sensors, cameras (to the extent that these devices can be located along the bridge approach routes), and CMSs that would provide motorists with real-time information on work-zone traffic queues. East of the Arrigoni Bridge, on the Town of Portland side, the portable work zone management system would include cameras located along the Route 17, 17A, and 66 approaches to monitor traffic queues. Portable CMSs could be positioned near Route 2 on Route 66 in Marlborough and on Route 17 in Glastonbury to provide regional travelers with construction traffic information at locations where alternative bridge crossing routes can easily be accessed. Closer to the bridge, portable CMSs could be located on westbound Route 16 at Route 66, westbound Route 66 at Route 17, and westbound Route 66 at Route 17A for local bridge traffic.

West of the Arrigoni Bridge on the City of Middletown side, portable cameras would be located along the Route 17 and 66 approaches and CMSs could be positioned near the I-691/Route 66 junction in Meriden and Route 17/79 junction in Durham for regional Arrigoni Bridge traffic. CMSs could also be located on northbound Route 17 at South Main Street and eastbound Route 66 between Route 3 and Main Street to inform local motorists, closer to the bridge, about travel times.

The exact location of the CMS will be developed by the Contractor in coordination with ConnDOT and the Design Consultant. The work zone traffic management CMS signs will be portable; therefore, the signs can be relocated to better address construction condition traffic operations as needed.

ConnDot operates a Traffic Operations Center (Newington Highway Operations Center [NOC]) that is staffed 24/7 to monitor the Incident Management System (IMS) for the

¹ Definition for Smart Work Zone from Wikipedia, the free encyclopedia.
http://en.wikipedia.org/wiki/Smart_work_zone

northwestern, central, and eastern portions of Connecticut including the I-84, I-91, I-291, I-384, I-395, and the Routes 2, 3, 9, and 15 corridors. NOC staff monitor fixed camera and traffic flow monitor (TFM) detector stations and disseminate traveler information through the use of fixed-mounted CMS, Highway Advisory Radio, ConnDOT Traveler Information webpage and the Traffic E-Alert system.

In the Middletown/Portland area, ConnDOT's IMS coverage includes the following four CCTV cameras and five CMSs.

Cameras and TFM:

- Middletown, southbound Route 9 at Arrigoni Bridge
- Portland, westbound Route 66 at Arrigoni Bridge
- Middletown, southbound Route 9 at Exit 14 (DeKoven Drive)
- Cromwell, Route 9 at Exit 18 (Route 99)

CMS:

- Middletown, eastbound Route 66 at Arrigoni Bridge
- Portland, westbound Route 66 at Arrigoni Bridge
- Middletown, northbound Route 9 north of Exit 12 (Bow Lane)
- Chester, northbound Route 9 south of Exit 7 (Route 82)
- Berlin, southbound Route 9 south of Exit 21 (Route 372)

The ConnDOT NOC staff requires verification often from CCTV cameras and TFM before traffic conditions are reported to the public through the available CMS, HAR, ConnDOT webpage and E-Alert systems. As part of this project, ConnDOT will install new cameras on Route 9 for NOC staff to better evaluate traffic queues approaching the Arrigoni Bridge, before disseminating travel conditions to the public.

ConnDOT's existing fixed-location camera system and CMS in the vicinity of the Arrigoni Bridge and along Route 9 would be used to continue monitoring traffic conditions and roadway incidents. The existing fixed-location CMSs support regional and corridor movement. There will be occasions, based on other priorities, when fixed-location CMS messages will be used to mitigate work zone impacts. The CMSs will convey information on scheduled events (e.g., lane closures, changes in travel pattern) and current conditions.

The Contract also includes provisions for the use of law enforcement and uniformed flaggers for traffic control. The primary use of law enforcement will be for control of traffic movements at the intersections, signalized and unsignalized, as needed during peak hours and for assistance with emergency services. Flaggers will be used to stop and slow traffic within the construction work areas for delivery of materials, and in support of the contractor's operational movements within the work area.

ConnDOT has met with the City of Middletown and Town of Portland local officials, including emergency response personnel during the course of project development and outreach. Prior to construction, ConnDOT Construction, the contractor, and State and local police personnel will meet to discuss traffic management procedures for incidents that occur within the Arrigoni Bridge work zone. Coordination with emergency service providers in Middletown and Portland will continue through completion of construction.

A traffic simulation model will be developed for the Arrigoni Bridge approach roadways in Middletown and Portland to evaluate the extent of peak-period queuing and to evaluate potential traffic mitigation strategies.

Public Information – Public Outreach

ConnDOT has implemented a public information and outreach campaign to mitigate possible negative effects of the road construction work zone. Meetings have been held

with officials from the Middletown and Portland and with area stakeholders, such as the Chamber of Commerce, regarding traffic issues, business impacts, and emergency response. ConnDOT held a Public Information Meeting in December 2010 to receive public input, and met with the Arrigoni Bridge Committee and Transportation Council at the Middlesex County Chamber of Commerce on January 13, 2011, and February 17, 2011. The next meeting is scheduled for March 18, 2011.

Some of the more important tools and strategies that will be used to inform and update constituents, travelers, and stakeholders on project progress and impacts will go beyond the basic information that is normally disseminated for construction projects.

Standard practices include the posting of project information which is accessible from the ConnDOT homepage www.ct.gov/dot Travel Resource page that includes links to “Traffic Incidents,” CT Travel Info Map,” and “Traffic Cams.” “CT Travel Info” is an interactive map displaying icons for ongoing active construction projects, roadway incidents, traffic cameras images, and CMS sign displays by location. Additionally, motorists can sign up for e-mail news and traffic alerts. The E-Traffic Alerts are sent via e-mail when there is a traffic incident that will affect travel in a specified area of the state and the E-News alert sends information on general and construction news (press information) issued by the Department.

Additional press releases may be sent to area newspapers not subscribed to the e-news alert system to further educate the general public about this project, and to notify them of the impending start of construction when traffic impacts are expected. Town and city resources such as municipal websites and information kiosks at municipal office buildings may also be utilized to spread awareness about this project.

The Department will have a project specific web page that will be accessible to the public and will provide project information that includes: the project scope, budget, schedule,

recent activity, outlook, links to camera sites and CMS in area, a project-specific e-mail address to submit comments and questions, links to various travel resources already available on the Department's website, www.ct.gov/dot and also a link to the portable smart zone system display.

The Department may also hold public information meetings during actual construction to go over project details such as work progress, upcoming schedule of activities, and overview of project outreach and traffic management. This has been very successful on high interest projects such as the Route 7 Wilton project, and Route 15 Merritt Parkway Project, I-95 Q Bridge projects, including Howard Avenue Bridge reconstruction in New Haven. .

Implementation Summary and Contact Information

This TMP describes a series of actions, some completed and others planned for the future. The document also identifies primary and supporting roles for ConnDOT units and other organizations. This concluding section summarizes and cross references significant TMP items. Further, primary contact for each unit or organization with a designated TMP role is provided. This information is included in Tables 2 and 3, respectively. The information in this section is intended as a quick reference and management device, rather than a replacement for the more comprehensive activity descriptions.

Within the design review process, ConnDOT Construction staff will ensure that the Plans, Specifications, and Estimates include appropriate pay items to the implement the TMP. The Contractor will designate a Traffic Control Supervisor to properly implement the TMP and manage the automated work zone traffic information system during construction from a temporary work station situated at the project site. In addition to the inspection of Temporary Traffic Control and Transportation Operation components of the TMP, ConnDOT Construction will take the lead in the coordination and implementation

of the Public Information – Public Outreach strategies. ConnDOT Construction will monitor and collect data on work-zone incidents, within the immediate construction work-zone area, for the purpose of identifying problematic trends and implementing appropriate adjustments.

Table 2 – Summary of TMP Action Plan

| TMP Component | Action Item | Responsible Party |
|---|--|--|
| Temporary Traffic Control (TTC) | Develop construction sequence/staging plans | Consultant, Consultant Design |
| | Develop M&PT Plan and Details | Consultant, Traffic Engineering, Consultant Design |
| | Identify and estimate M&PT items | Consultant, Consultant Design |
| | Fulfill contract requirements, including M&PT | Contractor, Consultant Design |
| | Initiate TTC revisions as determined by monitoring program | ConnDOT Construction, Traffic Engineering, Consultant Design, Consultant |
| Transportation Operations | Coordinate with local officials | Consultant, ConnDOT Construction |
| | Coordinate with emergency response agencies | ConnDOT Construction |
| | Administer and coordinate dedicated police presence | ConnDOT Construction, local and state police |
| | Monitor and document work-zone operational effects | ConnDOT Construction |
| Public Information / Public Involvement | Conduct public information meeting | Consultant, Consultant Design, ConnDOT Construction |
| | Prepare news releases | ConnDOT Communications and Construction |
| | Release, disseminate and post news releases | ConnDOT Communications |

| | | |
|--|---|----------------------|
| | Provide credible and timely information via CMS | ConnDOT Construction |
| | Provide DOT project Webpage and e-mail address for comments | ConnDOT Construction |

Table 3 – Contact Names and Information for TMP-Related Organizations

| Organization | Contact Person and Information | | |
|---|--------------------------------|----------------------------------|--|
| | Person | Phone # | E-mail Address |
| Contractor | TBD | TBD | TBD |
| Consultant (STV Incorporated) | Jim Sherwonit | (203) 383-5120 | Jim.Sherwonit@stvinc.com |
| ConnDOT Consultant Design | Dave Cutler | (860) 594-2776 | David.Cutler@ct.gov |
| ConnDOT Highway Operations Engineering | John Korte | (860) 594-3459 | John.Korte@ct.gov |
| ConnDOT Newington Operations Center | Operations Center Staff | (860) 594-3447 | DOT.HOC@ct.gov |
| ConnDOT Communications | Judd Everhart or Kevin Nursick | (860) 594-3062 | Judd.Everhart@ct.gov or Kevin.Nursick@ct.gov |
| ConnDOT Construction - District | David Lavado | (860) 258-4601 | |
| ConnDOT Construction- Newington Webpage/Mailbox | Lewis Cannon Terri Thompson | (860) 594-2680 (860) 594-2667 | Lewis.Cannon@ct.gov Terri.Thompson@ct.gov |
| City of Middletown Police | | (860) 344-3200 | |
| Town of Portland | | (860) 342-6780 | |

| | | | |
|--------------|--|--|--------------------|
| Police | | | |
| State Police | Troop F- Westbrook Troop H- Hartford Troop K- Colchester | (860) 399-2100 (860) 534-1000 (860) 537-7500 | See info next page |

CONNECTICUT STATE POLICE TROOP AREA

| F | K | H AND W |
|--------------------------------|-----------------------------|-----------------------------------|
| TROOP F - Westbrook | TROOP K - Colchester | TROOP H -Hartford |
| 315 Spencer Plains Road | Old Hartford Road | 100 Washington Street Rear |
| Westbrook, CT 06498 | Colchester, CT 06415 | Hartford, CT 06106 |
| TELEPHONE: | TELEPHONE: | TELEPHONE: |
| (800) 256-5761 | (800) 546-5005 | (800) 968-0664 |
| (860) 399-2100 | (860) 537-7500 | (860) 534-1000 |
| CHESTER * # | ANDOVER # | AVON |
| CLINTON | BOLTON # | BERLIN |
| DEEP RIVER * # | BOZAAR | BLOOMFIELD |
| DURHAM # | COLCHESTER * # | CANTON |
| ESSEX * # | COLUMBIA # | CROMWELL |
| GUILFORD | EAST HADDAM # | EAST GRANBY * # |
| HADDAM # | EAST HAMPTON | EAST HARFORD |
| KILLINGWORTH # | FRANKLIN | EAST WINDSOR |
| LYME | HEBRON # | ENFIELD |
| MADISON | LEBANON # | FARMINGTON |
| MIDDLEFIELD *# | MARLBOROUGH # | GLASTONBURY |
| MIDDLETOWN | PORTLAND | GRANBY |
| NO. BRANFORD | SALEM # | HARTFORD |
| OLD LYME * # | WINDHAM | |
| OLD SAYBROOK | | |
| WESTBROOK * # | | |

Towns marked in yellow are under the jurisdiction of the CSP

Towns marked with an * are towns with labor contracts allowing local officers first refusal of OPA/HCP assignments

Towns marked with an # have resident troopers