1.0 Introduction

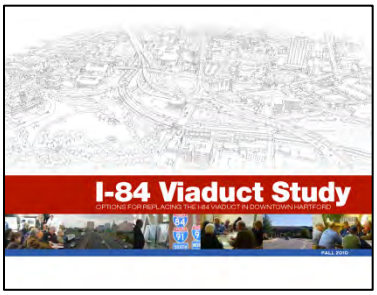
The *I-84 Hartford Project* (the Project) was initiated by the Connecticut Department of Transportation (CTDOT) to address structural deficiencies on Interstate 84 (I-84) and its interchanges between Flatbush Avenue and Interstate 91 (I-91) in the City of Hartford. This report presents the data collection and analysis used to define the needs and deficiencies within the study area and to help guide the development of alternatives.

1.1 Project Background

Construction for I-84 through Hartford began in 1959 and was completed in October of 1969. The final layout of the highway was determined after a long planning effort that started as early as the 1930's. Much of the interstate consists of a series of viaducts (long, multi-span bridge structures) carrying I-84 over what is now Amtrak's Hartford Line (formerly known as the New Haven-Hartford-Springfield line) railroad and several city streets. Several interchanges also consist of bridge structures. The bridges are now reaching the end of their service lives (the period of time a bridge is expected to be in operation) and are in need of major rehabilitation or replacement. The deterioration of these bridges is mainly due to leaky joints and, as a result, they require costly maintenance and rehabilitation efforts by CTDOT to keep them in a "state of good repair."

I-84 Viaduct Structures near Broad Street; Source: Skycomp, 2013

The Project is preceded by multiple reports, evaluations and studies for potential rehabilitation and/or replacement. Most recently, *The I-84 Viaduct Study*, published in 2010 by the Capitol Region Council of Governments (CRCOG), evaluated several concepts for replacing the viaduct structures. The concepts focused on the environs surrounding the highway and had an emphasis on improved aesthetics, neighborhood connectivity and reducing the highway's footprint to provide for economic development (see Section 1.4 for a discussion on prior studies and reports).



The I-84 Viaduct Study: Source: CRCOG, 2010

1.2 Study Areas

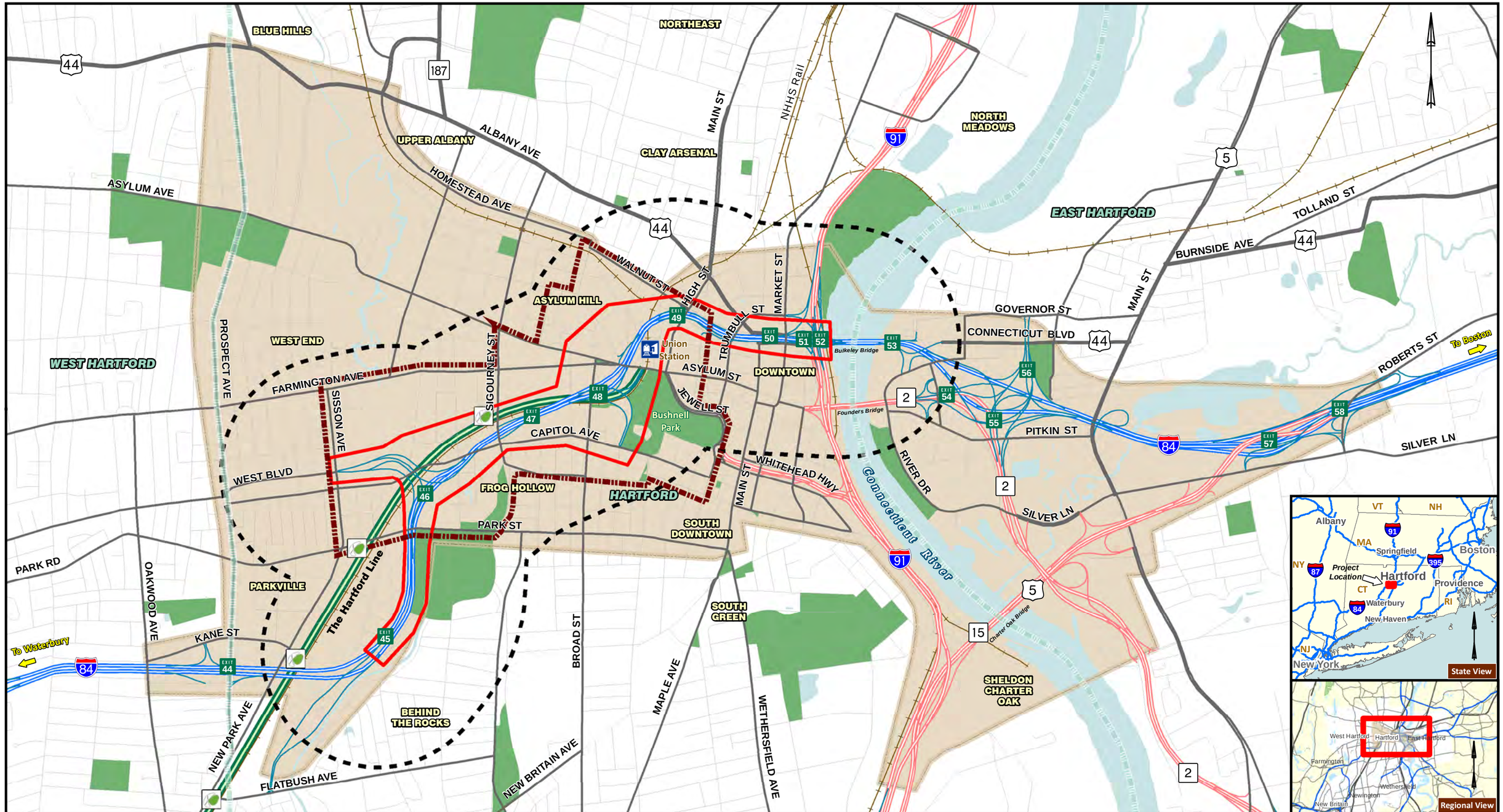
The City of Hartford is the capital of Connecticut, and the largest employment center in the State. Known as the "Insurance Capital of the World", three of the top five employers in Hartford are in the insurance industry. Downtown Hartford is home to approximately 110,000 jobs with employment concentrated in the insurance, financial, legal, and government sectors[1].

I-84 bisects the city, and within Connecticut, it serves as a critical east-west transportation link between New York and Massachusetts. It provides connectivity to and from Interstate 91 (I-91) in Hartford, a major north-south section of interstate highway between New Haven and Massachusetts; and Route 2 in East Hartford, a major east-west expressway serving eastern Connecticut. Locally, commuters use I-84 and its interchanges to access Hartford's business districts, State Capitol and downtown areas.

The study areas for the needs and deficiencies analysis are defined on Figure 1-1: Study Areas Map, following. As shown in Figure 1-1, the study areas include the Project Study Corridor; the Traffic Data Collection Area; the Social, Economic and Environmental Study Area; and the Parking, Bicycle and Pedestrian Accessibility Study Area. Each of these is unique in order to evaluate and analyze different resource components of the needs and deficiencies in a comprehensive fashion. The study areas were determined based on the Project's potential to impact the resource component to be evaluated.

The Project Study Corridor, extending along I-84 from the Flatbush Avenue interchange (Interchange 45) to the I-91 interchange (Interchanges 51 and 52), was used for accident data and safety analysis, roadway geometry review, and the existing and future structural conditions assessment. The Parking, Bicycle, and Pedestrian Accessibility Study Area is an expansion of the Project Study Corridor and includes significant employers and developments. The Social, Economic, and Environmental Study Area encompasses a 2,500-foot buffer area around the Project Study Corridor. The Traffic Data Collection Area extends well beyond the Project Study Corridor and serves to gather information to help evaluate potential bypass or diversion routes around Hartford, including Routes 5/15 (the Charter Oak Bridge) over the Connecticut River, and evaluate other roadway connections whose operations may be affected by the Project.

[1]Connecticut Economic Resource Center (CERC), City of Hartford Profile, 2014.



LEGEND

- CTfastrak Station
- CTfastrak
- Railroad
- Town/City Limit
- Traffic Data Collection Area
- Project Study Corridor
- Social, Economic and Environmental Study Area
- Parking, Bicycle and Pedestrian Accessibility Study Area
- I-84
- I-84 Ramp
- Other Freeway
- U.S. Highway/State Road
- Major Road
- Local Road
- Union Station
- I-84 Exit #
- Local Park or Recreational Area
- Water

0 1,000 2,000 Feet

Sources of Data: City of Hartford, ESRI
http://www.ctfastrak.com/

The I-84 Hartford Project

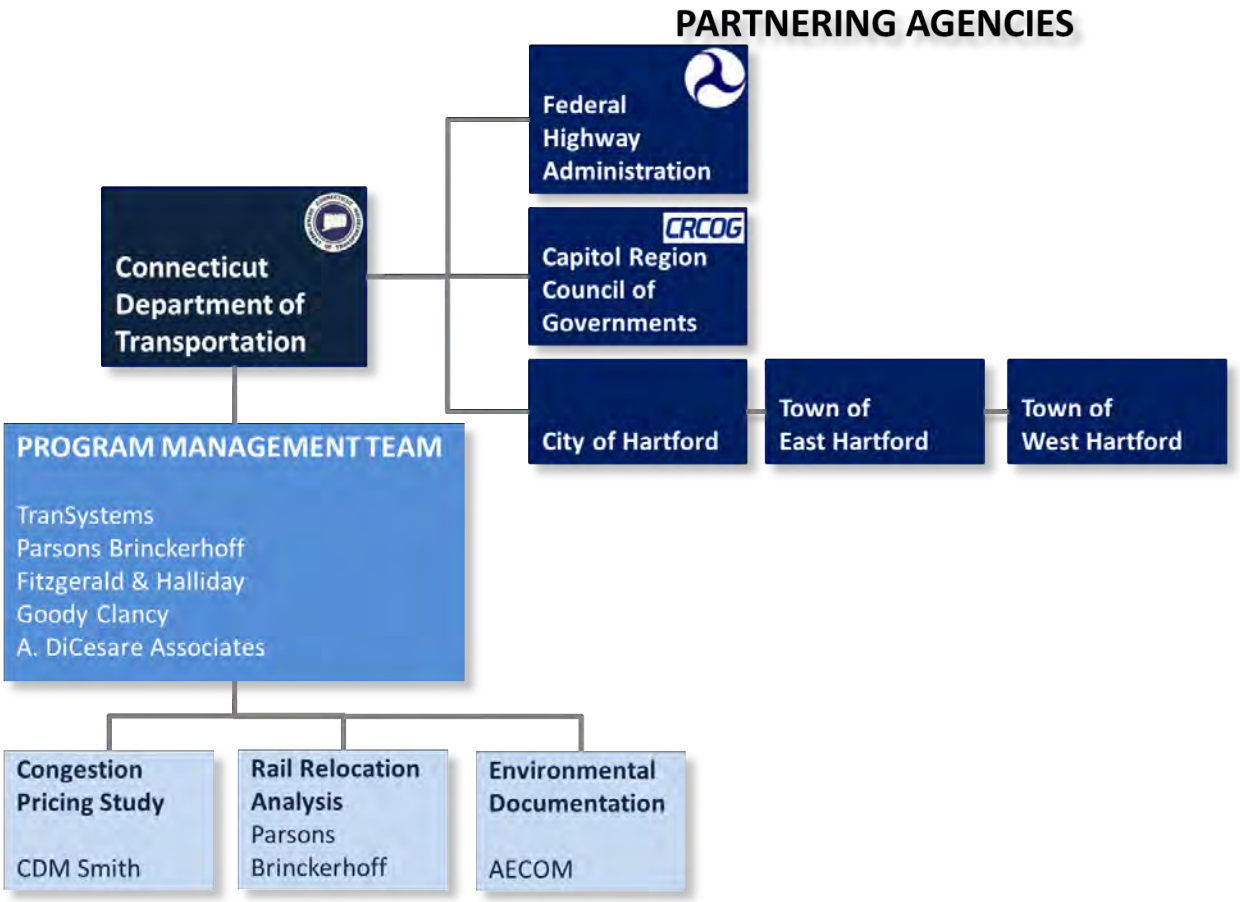
Study Areas Map

Date: 1/12/2015	Drawn By: TranSystems	Figure No: 1-1

1.3 Project Team

The I-84 Hartford Project team consists of several agencies, municipalities and consultants. The Project Team is illustrated in Figure 1-2. CTDOT is the owner of the facility and, with the oversight of the Federal Highway Administration (FHWA), will be the lead decision-maker for the Project. FHWA will provide technical and fiscal oversight to ensure that the Project follows the applicable federal regulations.

Figure 1-2: Project Team



TranSystems Corporation (TSC) will serve as the lead consultant for the Program Management Team, which consists of Parsons Brinckerhoff (PB), Fitzgerald & Halliday, Inc. (FHI), Goody Clancy (GC) and A. DiCesare Associates (ADA). Program Management Team responsibilities have been broken down as follows:

- TSC – Prime consultant, program management, highway and bridge design, traffic analysis,
- PB – Project controls, highway and rail design, cost estimation, constructability review,
- FHI – Public involvement, transportation planning, environmental/socioeconomic review,
- GC – Urban planning, economic development coordination, and
- ADA – Structural condition review, structural design.

CTDOT retained AECOM to perform environmental data collection, screening analysis, and to develop and lead the NEPA documentation process in coordination with the Program Management Team. CTDOT also retained CDM Smith to conduct the I-84 Viaduct Value Pricing Study. This includes: traffic and toll revenue analysis of six proposed tolling scenarios, toll operational analysis, and financial analysis. This study is funded under the Federal Highway Administration (FHWA) Value Pricing Pilot Program (VPPP) to evaluate whether value pricing using electronic tolling, in combination with other transportation system improvements, can reduce traffic congestion. CDM Smith will be working closely with the Program Management Team throughout the Project. Additionally, the Project Team will be working with PB's Rail Relocation Analysis team for the Hartford Line (formerly New Haven-Hartford Springfield) rail program.

1.4 Prior Studies and Reports

The bridge structures through the Project Study Corridor have a long history of poor condition ratings and have been rehabilitated numerous times since their construction. As such, CTDOT and other organizations have studied replacement and rehabilitation options in prior studies and reports. The rehabilitation report is a 1995 rehabilitation study commissioned by CTDOT which evaluated replacing the viaduct in kind between Laurel Street and Broad Street. The study also included options for improving deficient highway geometry, including shoulder widths and horizontal alignment.

CTDOT in cooperation with CRCOG completed a Major Investment Study (MIS) in 1999 which evaluated transportation alternatives designed to reduce congestion in the I-84 corridor between Hartford and Farmington. The MIS recognized the difficulties in adding through capacity to the I-84 corridor and focused on providing alternate solutions to increase mobility. Key recommendations included:

- Construction of the CT*fastrak* busway from New Britain to Hartford (which began service on March 28, 2015);
- Redesign of the Prospect, Flatbush, Sisson, and Sigourney interchanges;
- Improvements to local bus service;
- Transportation Demand Management; and
- Zoning regulations to support Transit-Oriented Design (TOD).

The interchange redesign recommendations were ultimately programmed for further study, overseen by CTDOT under the *I-84 West Side Access Study (*WSAS*)*, completed and published in 2001. The WSAS recommended a build alternative which included major reconfiguration for the Flatbush and Sisson interchanges. The proposed improvements to these interchanges centered on removing unnecessary elements which were originally intended to carry future, never-constructed highways, and creating more traditional interchanges focused on delivering users to the street network more efficiently. At both interchanges, significant state right-of-way would be returned to the City of Hartford. Following the WSAS, no projects were initiated to reconstruct the Flatbush or Sisson interchanges. The I-84 Hartford Project will evaluate improvements to the Sisson interchange. The Flatbush interchange marks the limits of the Project Study Corridor, and the ramp system is considered outside of the project limits.

Faced with continuing structural deterioration and escalating maintenance expenditures, CTDOT initiated an internal study to evaluate rehabilitation and replacement alternatives for the viaduct

structures between Laurel Street and Broad Street. Completed in 2004, the draft report evaluated three rehabilitation alternatives and one replacement alternative. The replacement alternative consisted of the construction of a new viaduct structure with some geometric improvements, including improved horizontal alignment and widened shoulders. Following the 2004 draft report, a group of local advocates encouraged the undertaking of a broader study, focusing on new alternatives which could address the connectivity and economic development problems the structures create. These local advocates along with the City of Hartford formed the Hub of Hartford Committee (the Hub).

The Hub served as the advisory committee for the *I-84 Viaduct Study* overseen by CRCOG and CTDOT, completed in 2010. The study explored a broad range of possible project alternatives that would improve the I-84 infrastructure, while considering economic development opportunities, neighborhood connectivity, community cohesion, livability, and mobility. The study documented how I-84 is a visual and physical barrier, dividing employment centers, communities, and neighborhoods within Hartford. With the goal to "reduce the visual and environmental impacts of the highway; promote walkable, bikeable environments that support transit use and enhance transit access; and reconnect the City across the highway," the study screened six preliminary concepts down to four potential alternative concepts which were recommended for further study.