

SOUTH STAMFORD ACCESSIBILITY & MNRR BRIDGE REPLACEMENT FEASIBILITY STUDY

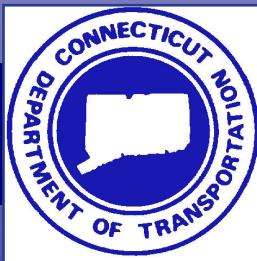
State Project No. 135-301
Stamford, Connecticut

PRELIMINARY ENGINEERING REPORT

Volume 1 of 7

PROJECT OVERVIEW

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State of Connecticut
Department of Transportation

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Executive Summary

Introduction and Purpose of Project

This report summarizes the findings of a preliminary engineering study which examined how the reconstruction of five railroad bridges in the City of Stamford can help reduce congestion and eliminate bottlenecks at these crossings. The five bridges studied include: Greenwich Avenue, Atlantic Street, Canal Street, Elm Street, and U.S. Route 1 (East Main Street). The reconstruction of these bridges will allow for additional travel lanes for through and turning traffic within the Connecticut Department of Transportation's right-of-way, and will accommodate plans for increased bus service and the potential construction of a streetcar transit system. These five locations also compliment operational improvements already being undertaken at adjacent locations under the Stamford Urban Transitway (SUT) project to improve mobility, provide smart growth, and enhance livability in Stamford.



*Overhead View of Construction at Harbor Point
Photo Courtesy of: Harbor Point Development*

Background and Need

Metro-North Railroad's (MNR) New Haven Line runs through the center of Stamford in an east / west direction. It divides the city into north and south sections. With most residents and the downtown area located to the north of the railroad, access to the south is limited to the underpasses beneath the MNR tracks. The Stamford Intermodal Transportation Center (SITC), as well as its parking facilities, is located south of the tracks. In addition, there are developments currently on-going and new development opportunities available to the south. The success of these developments will rely heavily on sufficient access.



*Rendering of a Redeveloped South End – Stamford, CT
Rendering Courtesy of: Harbor Point Development*

Most of the five underpasses were constructed in the late 19th century and were not designed to accommodate current traffic volumes. The roads extending from the underpasses have been widened to accommodate increased traffic capacity for the growing demand, but the underpasses, restricted by the bridges' span lengths, have remained, in some cases, two lanes wide. Bottlenecks occur at these locations. The existing low vertical clearance at these bridges also limits the

passage of legal sized vehicles and hinders the development of Stamford's public transportation system. Low vertical clearance bridges are frequently hit by underpassing trucks and equipment, further aggravating congestion and delay.

Currently, there is limited pedestrian access to the SITC from core pedestrian areas such as downtown Stamford. This is mainly due to poor sidewalk continuity in and around the SITC. Limited pedestrian access encourages the use of vehicles, contributing to the city's congestion problems.

Proposed Improvements

Proposed improvements for this study include the addition of travel lanes at each of the five bridges. These additional lanes will help to improve the flow of traffic under the bridges and through the intersections adjacent to them. Sidewalks are proposed to be included for each underpass on both sides of the roadway to promote walkability. A sidewalk is also proposed along the south side of South State Street to provide pedestrian access from Atlantic Street to the north side of the SITC. Two-foot shoulders will be provided on both sides of each roadway, and bike lanes are proposed for U.S. Route 1 (East Main Street) and Greenwich Avenue. U.S. Route 1 (East Main Street) is a designated emergency route for I-95. The U.S. Route 1 (East Main Street) undergrade bridge has an existing vertical clearance of only 13'-1". Because of this, many trucks must detour around the bridge, traveling on local streets not designed to accommodate such truck loading. At Atlantic Street, two lanes (one in each direction) could potentially be shared-use for a future streetcar system or to facilitate existing bus service. With the reconstruction of these bridges, not only will there be an improvement in capacity with the additional travel lanes, but the proposed bridges and the roadway will be designed to provide an improved vertical clearance of 14'-6". A pedestrian bridge is proposed to cross over Atlantic Street, south of the bridge, providing pedestrians access from the east sidewalk on Atlantic Street directly to the station at the northbound platform.

Summary

The reconstruction of the roadways and the replacement of the associated bridges at the five proposed locations is a feasible transportation system improvement project that will improve traffic flow in the city of Stamford. The total construction cost for the five sites is estimated to be approximately \$232,400,000.

Construction cost estimates have been developed based on the weighted unit prices listed in the Connecticut Department of Transportation's Item Master File (December 2010) and the Department's Preliminary Cost Estimating Guidelines (January 2011). The cost estimates do not include costs associated with environmental studies, environmental remediation, rights-of-way acquisitions, or professional services for survey, design, or construction engineering and inspection.

2011 and 2016 nominal dollars are provided in the following table. 2016 nominal dollars were calculated using a construction cost escalation of 5% per year, per CTDOT Estimating Guidelines, giving a 1.276 escalation factor. 2016 is considered to be the mid-point of construction based on an anticipated 2014 start-date.

Bridge Location	Cost Description	Cost (2011)	Cost (2016)
Greenwich Avenue	Roadway, Drainage, Traffic & Structures	\$ 17,394,000	\$ 22,200,000
	Utilities	\$ 2,191,000	\$ 2,796,000
	Railroad	\$ 3,962,000	\$ 5,057,000
	Incidentals & Contingencies	\$ 5,740,000	\$ 7,326,000
	Total Estimated Construction Costs	\$ 29,300,000	\$ 37,400,000
Atlantic Street	Alternative 2: Basis for Comparison		
	Roadway, Drainage, Traffic & Structures	\$ 36,282,000	\$ 46,306,000
	Utilities	\$ 3,158,000	\$ 4,030,000
	Railroad	\$ 8,598,000	\$ 10,973,000
	Incidentals & Contingencies	\$ 10,159,000	\$ 12,966,000
	Total Estimated Construction Costs	\$ 58,200,000	\$ 74,300,000
	Alternative 1: Total Differential Cost	(\$ 4,600,000)	(\$ 5,900,000)
Alternative 3: Total Differential Cost	(\$12,400,000)	(\$ 15,800,000)	
Canal Street	Roadway, Drainage, Traffic, Structures & Rail Operations	\$ 27,477,000	\$ 35,068,000
	Utilities	\$ 110,000	\$ 140,000
	Railroad	\$ 7,647,000	\$ 9,760,000
	Incidentals & Contingencies	\$ 7,693,000	\$ 9,818,000
	Total Estimated Construction Costs	\$ 43,000,000	\$ 54,800,000
Elm Street	Roadway, Drainage, Traffic, Structures, & Rail Operations	\$ 27,877,000	\$ 35,579,000
	Utilities	\$ 1,564,000	\$ 1,996,000
	Railroad	\$ 10,575,000	\$ 13,497,000
	Incidentals & Contingencies	\$ 7,806,000	\$ 9,963,000
	Total Estimated Construction Costs	\$ 47,800,000	\$ 61,000,000
U.S. Route 1 (East Main St)	Roadway, Drainage, Traffic, Structures & Rail Operations	\$ 30,495,000	\$ 38,920,000
	Utilities	\$ 1,586,000	\$ 2,024,000
	Railroad	\$ 13,502,000	\$ 17,232,000
	Incidentals & Contingencies	\$ 8,538,000	\$ 10,897,000
	Total Estimated Construction Costs	\$ 54,100,000	\$ 69,100,000
Subtotals for 5 Bridges	Roadway, Drainage, Traffic, Structures, & Rail Operations	\$ 139,525,000	\$ 178,073,000
	Utilities	\$ 8,609,000	\$ 10,988,000
	Railroad	\$ 44,284,000	\$ 56,519,000
	Incidentals & Contingencies	\$ 39,936,000	\$ 50,970,000
	Total Estimated Construction Costs	\$ 232,400,000	\$ 296,550,000
¹ Subtotals for Phase 1	Roadway, Drainage, Traffic, Structures, & Rail Operations	\$ 94,654,000	\$ 120,805,000
	Utilities	\$ 6,308,000	\$ 8,051,000
	Railroad	\$ 32,675,000	\$ 41,703,000
	Incidentals (18%) & Contingencies (10%)	\$ 26,503,000	\$ 33,825,000
	Net Savings	(\$ 10,158,000)	(\$ 12,964,000)
	Total Estimated Construction Costs	\$ 150,000,000	\$ 191,400,000

¹ Construction of Atlantic Street, Elm Street and U.S. Route 1 (East Main Street) simultaneously

PURPOSE OF PROJECT

The Problem and the Opportunity

The city of Stamford is one of the largest cities in southwestern Connecticut's Fairfield County. Stamford is an appealing city, attracting New York City commuters who wish to reside in a more suburban setting. Stamford has many cultural, recreational, and retail attractions. The close proximity of Interstate 95 (I-95), the Merritt Parkway, and Metro-North Railroad's (MNR) New Haven Line provides residents and commuters access to a multi-modal transportation network that allows mobility throughout the region. Additionally, recent trends show that businesses are relocating from New York City to sites where operating a business can be more affordable, such as Stamford. Currently, much of Stamford's workforce commutes into Stamford from surrounding communities. With increasing employment opportunities, and new residential and commercial developments to provide for future growth, Stamford has become an even more attractive place in which to live and work.

Many of Stamford's neighborhoods are densely populated but do not have good access to public transportation. The use of personal vehicles is inherently promoted by the limited mobility options that are available. The effect this has on roads within the city is that they are more than likely to experience congestion. The road network in Stamford experiences high levels of congestion, particularly during the AM and PM peak hours as commuters make their way to and from work.



Stamford Intermodal Transportation Center

The Stamford Intermodal Transportation Center (SITC) is located along the New Haven Line between Washington Boulevard and Atlantic Street with drop off locations on both the north and south side of the tracks. The parking garage is located south of the MNR New Haven Line between Washington Boulevard and Atlantic Street. The SITC is a major transportation hub, the busiest station second only to Grand Central Terminal along the New Haven Line. Currently, walkup access from north of the New Haven Line is limited to Washington Boulevard, and transit access from Stamford and the surrounding communities is only provided by the local bus service. The most common means for riders to access the station is by car. Because public transit from the station to surrounding employment locations is limited to the bus system, people commuting into Stamford may find using a personal vehicle to be the most appealing means of transportation.

Stamford faces the unique challenge of being divided by the New Haven Line. With most residents and the downtown area located north of the tracks, access to the south is limited to the underpasses beneath the MNR tracks (referred to as “undergrade bridges”²). Many of these undergrade bridges were constructed in the late 19th century and were not designed to

² An “Undergrade Bridge” refers to a road going under the grade or under the track. In the case of Stamford, the bridges carry the tracks over each of the five roadways resulting in five undergrade bridges.

accommodate the traffic volumes or the vehicle shapes and sizes seen passing beneath them today. Over the years, the roads extending from the underpasses have been widened to accommodate more lanes of traffic for the growing demand, but the underpasses, restricted by the bridges' span lengths, have remained, in some cases, only two lanes wide. Bottlenecks occur at these locations as cars cross north and south beneath the tracks.

I-95 runs parallel to and just to the north of the New Haven Line. Entrance and exit ramps from I-95 are located at major intersections adjacent to the bridges at Greenwich Avenue, Atlantic Street, and Elm Street. These intersections further add to the congestion. The heavy turning movements exacerbate congestion and create safety concerns and queuing conflicts.

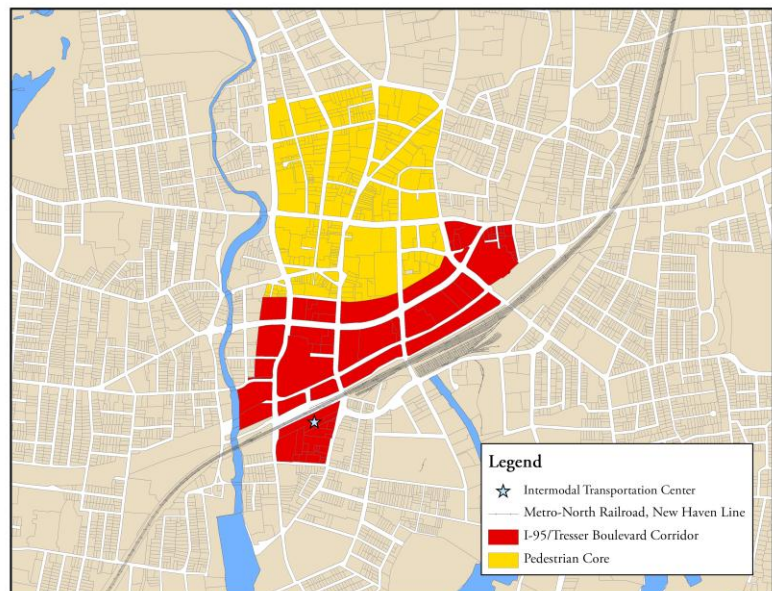
BACKGROUND AND NEED

The Master Plan

The City has devised a Master Plan using smart growth policies to manage the city's growth and address concerns about congestion. This plan integrates commercial development, residential development, and intermodal connectivity, allowing for more people to live and work in the city and simultaneously reduce congestion. Integrated planning will promote a more complete lifestyle including mobility options, housing located closer to employment, and greenspace for social and recreational activities. For a map of the 2002, Stamford Master Plan - General Land Use Plan, please refer to Figure 1 located on page 27.

The growth of the City has gravitated around two core centers; the larger being the business developments along I-95 and Tresser Boulevard, and the other being the more pedestrian-friendly centered around the intersection of Atlantic Street and Broad Street. Stamford will continue to nurture larger business developments and expand these to the new Stamford Urban Transitway (SUT), and will also continue to maintain and foster the growth of the pedestrian core of the downtown area. Within this study is the provision for safe pedestrian access from Atlantic Street to the SITC. A walkup, south of the tracks, from the east side of Atlantic Street to a new walkway extension from the southbound platform is proposed.

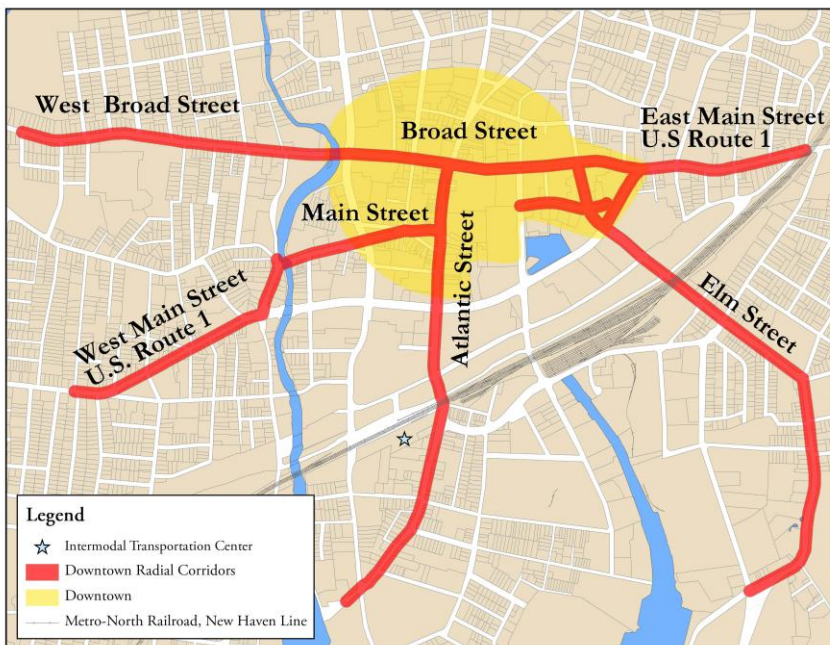
Map of the Downtown Centers of Gravity



The most important vehicle roadways feeding the downtown area are the “radial corridors” which include Elm Street, East and West Main Streets, Broad Street and Atlantic Street. These “radial corridors” link adjacent neighborhoods to the pedestrian core of the downtown area.

Stamford is looking to neighborhoods within the city located south of Interstate 95 and the MNR New Haven Line, particularly the South End and Waterside neighborhoods, for new development opportunities (commercial, residential, and mixed-use). The South End and Waterside neighborhoods are located on a peninsula of land south of Interstate 95 and the MNR tracks. These neighborhoods offer close proximity to the SITC and have a need for neighborhood revitalization. The biggest obstacle in developing land south of the New Haven Line is ensuring that there will be sufficient and easy mobility from this area to other sections of the city. To help accomplish this, the bottleneck effect at the undergrade bridges and lack of mobility options within the city must be addressed.

Map of the Downtown Radial Corridors



The City and Regional Planning Agency have, in previous studies, evaluated the effectiveness of mobility options such as a streetcar system on Atlantic Street, improved bus service along U.S. Route 1 (East Main Street) and an Urban Transitway to reduce congestion in Stamford. By improving access to public transportation and providing more frequent and reliable service, the City can reduce the volume of cars on the road and consequently improve air quality.

The Stamford Intermodal Transportation Center (SITC)

The Stamford Intermodal Transportation Center (SITC) is a major regional transportation hub serving train passengers for Metro-North’s commuter trains and also Amtrak’s regional trains. The SITC is the busiest train station in the Metro-North railroad system after Grand Central Terminal, serving more than 24,000 passengers daily. The SITC is also the primary connection and transfer point for bus and rail users transferring between the rail system and the City’s bus service. The potential of SITC to serve even more rail riders has been hampered by the lack of pedestrian-friendly access, and the capacity restrictions and vertical under-clearance limitations of the existing railroad underpasses.

Development of the South End

Stamford is generally an affluent, white-collar community. However, the South End of Stamford is an economically-distressed area that suffers from high rates of unemployment and low household income. The neighborhood is isolated from the other neighborhoods of Stamford by water and the MNR New Haven Railroad Line. One of the main objectives of the

City's Master Plan is to promote affordable homeowner housing, particularly in this neighborhood. Compared with renters, studies show that homeowners are typically more vested in their neighborhoods and would therefore help to cultivate the neighborhood revitalization effort.

Recently UBS and the Royal Bank of Scotland established their North American headquarters in Stamford. These megabanks were enticed by the City and State to locate to Stamford largely based on the benefits the SITC provides. Improvements to mobility throughout the city, housing, retail, and commercial developments at or near the SITC will further this success and will attract more businesses to Stamford.



Rendering of housing development proposed for the South End.

Photo courtesy of: Harbor Point Development

project will help foster redevelopment, which in turn will create jobs, generate tax revenue for the City, and provide affordable housing. This project will have a significant impact on both the local and regional levels.

Complete Streets and Transit Access Project

A Complete Streets and Transit Access Project has been undertaken (and is currently in the grant application phase) to supplement the City's effort to redevelop the South End. The

The Complete Streets element of the project targets the redevelopment of four urban collectors critical to the success of the urban roadway network in the South End: Washington Boulevard, Pacific Street, Atlantic Street, and Canal Street. Improvements being considered include: roadway widening and resurfacing, landscaping, enhanced lighting, incorporation of bike lanes, sidewalk replacement, and intersection improvements. These improvements are designed to enhance access between the South End and the SITC, improve safety, encourage bicycle and pedestrian use, reduce vehicular congestion, and enhance livability. For a map of the Complete Streets location in the South End, please refer to Figure 2 located on page 28.



Construction at Harbor Point.

Photo courtesy of: Harbor Point Development

The transit element of the project includes the purchase of new specialty transit vehicles and the establishment of three fixed-schedule routes that will provide access to the SITC. This system will serve 4,000 residences throughout the city. The transit plan was the result of a Bus Rapid Transit study conducted by the Southwest Regional Planning Agency (SWRPA) and is discussed at greater length under the subtitle "Transit Studies".

The Stamford Urban Transitway (SUT)

To improve east-west connectivity in Stamford, the City has developed, and has already completed a portion of, an urban transitway. The SUT is located just south of the New Haven Railroad Line between U.S. Route 1 (East Main Street) and Atlantic Street (intersecting Atlantic Street opposite Station Place, the south access point to the SITC). The addition of the SUT will provide more direct access to the SITC from the East Side. The City of Stamford estimates that transit riders using the SUT from the East Side will experience a 10-20% reduction in travel time due to transit prioritization of traffic signals and dedicated travel lanes. The construction of the initial phase of the SUT project between Atlantic Street and Elm Street has been completed. The second phase, from Elm Street to U.S. Route 1 (East Main Street), is in the design phase and scheduled for completion of construction in the spring of 2014.



Final Layout for the Stamford Urban Transitway (SUT); created by Fuss and O'Neill for the City of Stamford.

Transit Studies

Other modes of transit have also been evaluated to supplement the existing bus service. These include a streetcar system and a Bus Rapid Transit (BRT) system. North-south alignments for a streetcar system were reviewed in a study commissioned by the City of Stamford. The proposed alignment is shown in Figure 3, located on page 29. The conclusions of the study indicate that a streetcar system has the potential to increase development growth above what is already projected, increase total assessed property values within the streetcar corridor, and increase property tax revenues. One of the recommendations in the report, essential to implementing a streetcar system, is to provide adequate horizontal geometry and vertical clearance in the Atlantic Street undergrade bridge design to allow for streetcar use without the disruption of vehicular traffic.

SWRPA conducted a BRT study for the U.S. Route 1 corridor between Greenwich and Norwalk. While there currently is an adequate bus service in the Route 1 corridor, buses are not considered to be competitive with the New Haven Railroad Line service, or the use of personal vehicles. Some conclusions taken from the study are that “travel times are affected by specific bottlenecks in congested areas” and “non-transit users are more likely to consider a new bus service if it is frequent, reliable, and convenient to both work and home.” Improving traffic flow at the U.S. Route 1 (East Main Street) underpass by adding travel lanes, in addition to the construction of the SUT, would greatly reduce travel time for a bus route along U.S.

Route 1 (East Main Street) to the SITC, and greatly improve the attractiveness of transit options for the U.S. Route 1 corridor.

Other Design Considerations

I-95 Operational Lanes

The I-95 highway is a major urban freeway providing interstate access across southern Connecticut and the City of Stamford. Within the city, it provides access to the downtown area and the SITC. As a major transportation facility, it has been evaluated periodically by the Connecticut Department of Transportation (CTDOT) to assess existing operating conditions and to address future needs. The I-95 roadway was constructed during the 1950's and now experiences traffic volumes exceeding the original projections. A recent study conducted by CTDOT identified the implementation of additional operational lanes as a feasible solution for improving traffic operations through the City of Stamford. The construction of these operational lanes has been a long-term goal of the City of Stamford. The geometric design of the proposed improvements at the five railroad crossings under this study will not preclude the implementation of these operational lanes in the future.

MNR Tracks 5 & 7

Track 5 is the most northern track on the New Haven Line and runs from the New Canaan Branch into the SITC. Trains on the New Canaan Branch currently terminate at the SITC on Track 5. Prior to returning to New Canaan, these trains layover on Track 5 for various periods of time, occupying a platform while the train is not being used. Using this track to layover trains reduces the SITC's capacity to serve both Amtrak and Metro-North trains traveling through the station.

Track 7 is north of Track 5 and runs from just west of Elm Street to just east of Atlantic Street. Track 7 is currently used as an overnight storage track, part of the Stamford Rail Yard. Providing for a potential future extension of Track 7 into the SITC would allow for an additional passenger platform track. This additional platform track would increase train capacity and operational flexibility through the Stamford Station area. These improvements are long term goals of MNR. Currently the railroad right-of-way is most restricted at the Atlantic Street overpass. The Atlantic Street overpass could be widened to allow for this future improvement.

TRAFFIC OVERVIEW

The southern portions of the City of Stamford, consisting of the neighborhoods of Cove-East Side, Shippan, South End, Waterside and West Side are all located on peninsulas of land south of the Interstate 95 highway and the New Haven Railroad Line. Access between these neighborhoods and downtown Stamford, or between the neighborhoods and I-95, require crossing the railroad on a



Traffic stopped on the new SUT

north/south street. Between Greenwich Avenue and U.S. Route 1 (East Main Street), there are five north/south crossings under the MNR tracks, one east/west crossing under the tracks, and the I-95 crossing over the tracks. All street crossings except Washington Boulevard (five in total) are included in this report.

As discussed previously, a new corridor, the SUT, is currently under construction just south of, and parallel to the railroad, between Atlantic Street and U.S. Route 1 (East Main Street). Traffic analyses throughout this corridor were completed by a Consultant for the City, and updated in August of 2010. This study points out several severe deficiencies in the roadway network's ability to provide access to the South End and Cove-East Side neighborhoods.

The 2002 Stamford Master Plan identified Atlantic Street and Elm Street as unique links between these neighborhoods and the Stamford downtown area. It also encouraged planning to reinforce these streets' identities as radial corridors to the Interstate and downtown area. The Master Plan calls for the continued growth of these neighborhoods as primary residential areas, with some mixed-use development to enhance their livability. Although the reports include planned expansion of transit opportunities, including potential ferry service to New York, it is recognized that increased development of the neighborhoods will increase the traffic burden on the roadways crossing the railroad.

Geometric improvements at all five bridges have been studied to improve the operating conditions anticipated by increasing capacity, safety, and reducing queuing and congestion. In most cases, this involves adding operational through or turning lanes and modifying the road geometry to better accommodate the alignment with the SUT. In all cases, the improvements also include the addition of sidewalks on both sides of the street to provide better pedestrian routes between the south end neighborhoods, the SITC, and the downtown Stamford area. In addition, bicycle lanes are proposed on U.S. Route 1 (East Main Street) and Greenwich Avenue to enhance bicycle use in the corridor. On the whole, these improvements will provide substantial benefits to existing users of the area's streets, and will promote opportunities for growth as the south end neighborhoods are revitalized in the future.



The Atlantic Street, SUT intersection as seen from the SUT looking west.

SUMMARY OF PROPOSED IMPROVEMENTS

Proposed improvements for this study include:

- The addition of travel lanes at each of the five undergrade bridges to allow for more capacity
- Eight-foot sidewalks on both sides of the roadway to improve walkability
- Two-foot shoulders will be provided on both sides of each direction of traffic

- Two 5-foot bike lanes are proposed for U.S. Route 1 (East Main Street) and Greenwich Avenue to promote safe bike passage
- Of the six travel lanes proposed for Atlantic Street, two lanes (one in each direction) could potentially be shared-use for a future streetcar system or for existing bus service, allowing two lanes of traffic to be maintained while a bus is stopped
- Improved vertical clearance of 14'-6" allowing access by all legal sized vehicles
- Enhanced pedestrian access along the south side of the railroad tracks to the northbound platform of the SITC
- A continuous sidewalk along South State Street connecting Atlantic Street with the north side of the SITC
- Complements the Stamford Complete Streets project

GENERAL DESIGN CRITERIA

- Roadway design based on roadway classification is assumed for all concepts presented in the report
- A design speed of 30 mph was determined to be appropriate
- The City of Stamford requires storm sewer design to accommodate a 25-year event.
- CTDOT Drainage Manual used for all other requirements
- The bridges were designed to provide a minimum vertical clearance of 14'-6"
- Bridge design compliant with AREMA

SUMMARY OF CONSTRUCTION IMPACTS

- MNR tracks will be taken out of service for bridge replacement, one at a time, in either a north to south or south to north progression. Please refer to individual bridge volumes for specific details.
- Traffic will be maintained with reduced lanes at all locations with the exception of Atlantic Street. Atlantic Street will be closed to traffic during construction.
- A Traffic Management Plan will be developed as the project design progresses.
- Pedestrian detours will be developed whenever a sidewalk under a bridge is closed, as the project design progresses.
- There will be critical impacts to MNR service when Track 6 is replaced during the construction of the Canal Street Bridge. This track is the primary route for all revenue service trains originating and terminating in Stamford. It is also used for trains being routed into and out of the MNR Maintenance of Equipment facility.
- During the continuous track outages at Greenwich Avenue and Atlantic Street, the use of the SITC platforms will be impacted and the normal routing of trains into the station will need to be adjusted. The SITC platforms will be accessible with bridge plates.

- The replacement of Track 5 at Elm Street and East Main Street will require a temporary track 3-5 cut-and-throw to be installed just east of each of the appropriate bridges. This will allow MNR to maintain service along the New Canaan Branch.
- During the replacement of Track 8 at Elm Street, the lead tracks into Lower Stamford Yard and Maintenance of Equipment facility will be taken out of service. A cut-and-throw is not an option in this area. This stage of construction will have critical impacts to MNR train operations.

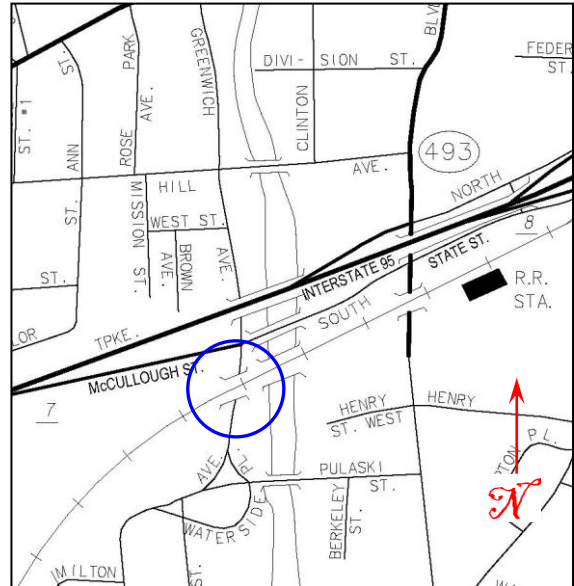
Summary of Beneficial Improvements

Beneficial Improvements	Greenwich Avenue	Atlantic Street	Canal Street	Elm Street	U.S. Rte. 1 (East Main St)
Increases Capacity	X	X	X	X	X
Reduces Queuing and Congestion	X	X	X	X	X
Improves Safety	X	X	X	X	X
Improves Vertical Clearance to Provide for All Legal Vehicles	X	X	X	X	X
Complements the SUT		X	X	X	X
Eliminates a Structurally Deficient Bridge	X	X	X	X	X
Provides Geometric Improvements at Intersecting Streets		X			
Improves Pedestrian Access in and around the SITC		X			
Key Component to a Future Streetcar System		X			
Accommodates a Potential Future Extension of MNR Track 7		X			
Accommodates Potential Future Operational Lanes on I-95		X			
Atlantic Street Alternative 2 Improves I-95 N.B. Interchange 8 Geometry & Capacity		X			
Provides a Safe Route for Bikes with Designated Bike Lanes	X				X
Complements the Stamford Complete Streets Project		X	X		

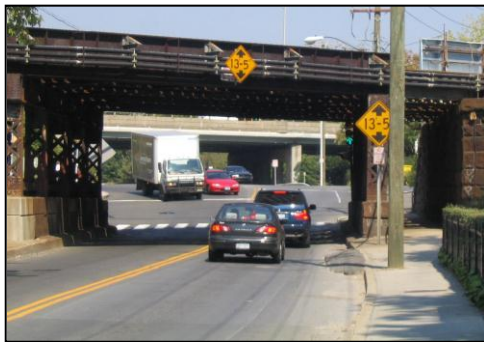
Overview of Greenwich Avenue

Greenwich Avenue is located the furthest west of all the bridges considered in this study, and sits opposite the Rippowam River (known locally as the Mill River). Stamford currently has plans to improve a half-mile portion of Greenwich Avenue, from South State Street (McCullough Street) south to Selleck Avenue. These improvements are considered critical to managing traffic in this area, understanding that Stamford cannot simply build more roads to increase capacity.

Access to the SITC from the Waterside neighborhood requires crossing the Rippowam River. South of I-95 it is possible to cross the river at two locations: Pulaski Drive and South State Street/McCullough Street. Both of these roads intersect with Greenwich Avenue. The intersection of South State Street/McCullough Street and Greenwich



Map of the Greenwich Avenue undergrade bridge and adjacent streets.

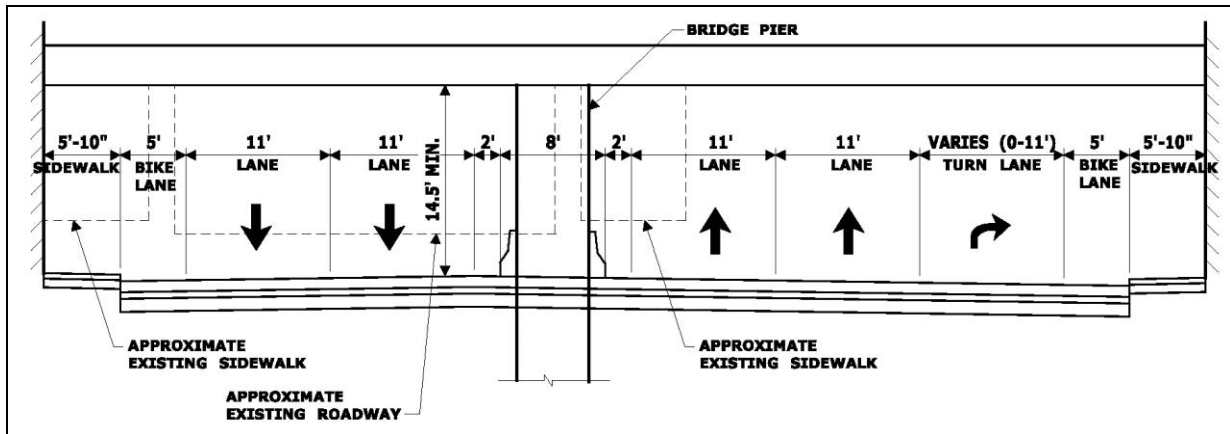


Avenue is also where the I-95 northbound Exit-7 ramp touches down. Here, commuters traveling northbound on I-95 may exit to access the SITC, creating a busy intersection. Current plans to expand the parking at the SITC will attract many more commuters to the station from the surrounding areas.

Although capacity analyses using existing traffic volumes indicate that the Greenwich Avenue corridor operates below capacity, the present lane arrangements produce

queues that exceed available storage, in some cases by twice the available capacity. Continued growth in vehicular use out to the projected design horizon of 2029 will cause severe increases in congestion in this area. Most intersections will exceed their available capacity, and virtually all northbound and southbound queues will exceed the available storage between intersections. The proposed reconstruction will provide additional capacity for cars traveling north/south of the MNR tracks.





Greenwich Avenue – Typical Cross Section
Looking Northbound

Greenwich Avenue:
Minor Arterial Roadway

		Existing	Proposed
No. of Lanes	NB	1	3
	SB	1	2
Lane Width		13'-0"	11'-0"
Shoulder Width		NA	2'-0"
Bike Lanes		NA	5'-0"
Sidewalks		Approx. 5'-0"	5'-10"
Bridge Configuration		3-span	2-span
Controlling Span Length		40'	64'-6"
Vertical Clearance		13'-7"	14'-6"

Exceptions to Geometric Design Criteria		
<i>Design Element</i>	<i>Recommended Design Value</i>	<i>Proposed Design Value</i>
Design Speed	30 – 40 mph	20 mph
Roadside Clearzones	14'	10'
Intersection Sight Distance	355'	265'
Minimum Vertical Clearance under New Bridge	16'-3"	14'-6"

Rights-of-Way Impacts: Partial land acquisitions due to the reconstruction of the bridge include:

- To the south of the bridge and west of Greenwich Avenue, a vacant lot and a commercial property
- To the south of the bridge and to the east of Greenwich Avenue, a housing complex
- To the north of the bridge and west of Greenwich Avenue, First Stamford Place

There are also MNR facilities located at all corners of the existing bridge that will require demolition.

Maintenance and Protection of Traffic: One lane of traffic in each direction will be maintained during construction.

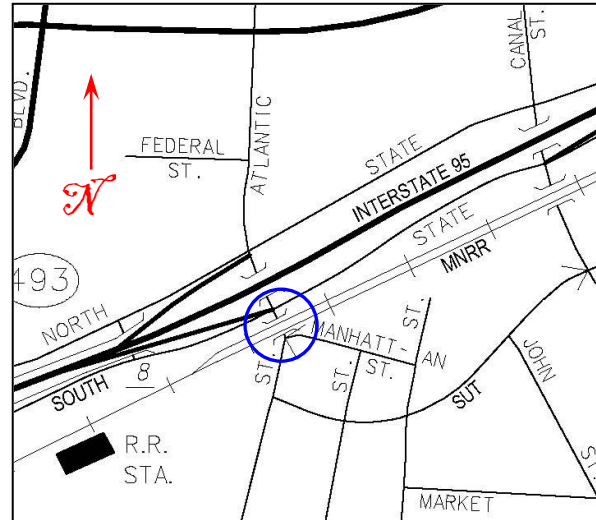
Construction Duration: The estimated construction duration for the Greenwich Avenue Bridge is two years and six months.

Construction Costs: Total estimated construction cost for the Greenwich Avenue Bridge is \$29,300,000. This construction cost includes a replacement undergrade structure consisting of a two-span ballasted deck bridge that supports the four (4) existing railroad tracks. The superstructure consists of precast concrete encased steel girders supported on concrete abutments founded on mini-piles and a pier founded on drilled shafts or on a spread footing on mini-piles.

Overview of Atlantic Street

Atlantic Street is considered to be a gateway between downtown Stamford and the South End linking waterfront developments and revitalized south end neighborhoods to the downtown area. However, the present configuration of the existing bridge imposes many restrictions on the flow of vehicles along Atlantic Street.

As part of their effort to revitalize the city through residential and commercial developments and transportation enhancement projects, Stamford must reconsider the roadway grid in the South End. The City's Master Plan recommends redesigning Atlantic and Pacific Streets to be tree-lined, residential roads with two-way traffic patterns. The Master Plan



Map of the Atlantic Street undergrade bridge and adjacent streets.



brings

special attention to the role that Atlantic Street plays in the city as a radial corridor that links the South End to Downtown.

Capacity analyses of existing traffic volumes indicate that the Atlantic Street corridor operates below capacity. However, the present lane arrangements produce queues that exceed available storage, and compromise the operation of the entire corridor.

Continued growth in vehicular use out to the projected design horizon of 2029 will cause severe increases in congestion on both sides of the New Haven Railroad Line. Most intersections will exceed their available capacity, and virtually all northbound and southbound queues will exceed the available storage between intersections. The MNR bridge presents a choke point due to its span length which restricts the roadway width.

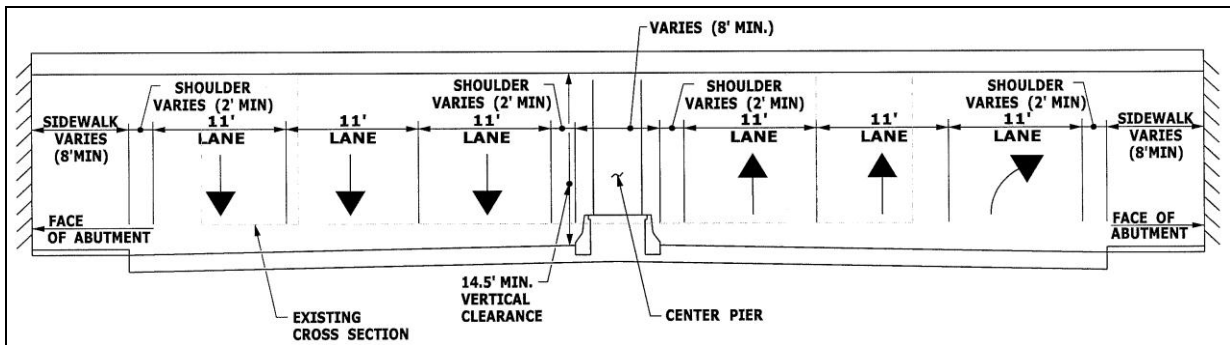
The proposed geometry and lane arrangements for Atlantic Street were chosen to accommodate the proposed Stamford Urban Transitway (six lane cross-section). This will result in a re-alignment of the Atlantic Street, Manhattan Street and Station Place intersection. There will be a provision for two through lanes and an exclusive right turn lane northbound as well as three through travel lanes southbound under the structure. An exclusive



left turn lane will start just south of the bridge in the southbound direction. These lanes will provide additional capacity and lane continuity with the proposed SUT, reduce queues and improve operations on Atlantic Street.



In addition to the horizontal chokepoint that occurs at Atlantic Street, some of the City’s emergency vehicles (including a HazMat truck and the police department’s command vehicle, both of which are 12’-6” high) are unable to use this underpass, restricted by the low vertical clearance. The City is unable to consider Atlantic Street for future public transit alignments without considering the reconstruction of the bridge. The low vertical clearance of the existing structure precludes any type of streetcar system.



***Atlantic Street – Typical Cross Section
Looking Northbound***

Atlantic Street Alternatives:

1. Alternative 1 proposes that Atlantic Street be lowered to obtain a vertical clearance of 14’-6”. The I-95 northbound Exit-8 ramp will continue to touch down at Atlantic Street, north of the New Haven Railroad Line. Re-grading of the exit ramp will be necessary, resulting in a steeper grade.
2. Alternative 2 proposes that Atlantic Street be lowered to obtain a vertical clearance of 14’-6”. It is also proposed that a fly-over bridge be constructed to divert the I-95 northbound Exit-8 ramp traffic, from Atlantic Street further east on South State Street. Under this scenario, ramp traffic will flow to Canal Street, rather than Atlantic Street.
3. Alternative 3 proposes that Atlantic Street be lowered to provide a vertical clearance of 13’-9” rather than 14’-6”. The I-95 northbound Exit-8 ramp will still touch down at Atlantic Street, but re-grading of the ramp will result in a shallower grade than Alternative 1. It is important to note that a vertical clearance of 13’-9” is not high enough to accommodate a future streetcar system and may compromise clearance for legal height trucks.

Atlantic Street:

Minor Urban Arterial north of the underpass.

Urban Collector south of the underpass.

		Existing	Proposed
No. of Lanes	NB	1	3
	SB	1	3
Lane Width		23' to 33'	11'-0"
Shoulder Width		NA	2'-0"
Bike Lanes		NA	NA
Sidewalks		8'-10"	8'-0"
Bridge Configuration		3-span	2-span
Controlling Span Length		64.5'	62'-10"
Vertical Clearance		12'-7"	14'-6"

Exceptions to Geometric Design Criteria				
<i>Design Element</i>	<i>Recommended Design Value</i>	<i>Proposed Design Value</i>		
		Alternative 1	Alternative 2	Alternative 3
Design Speed	30 – 40 mph	25 mph	25 mph	25 mph
Roadside Clearzones	14'	10'	10'	10'
Shoulder Width (Right)	4'-8'	2'	2'	2'
Minimum Vertical Clearance under New Bridge	16'-3"	14'-6"	14'-6"	13'-9"

Rights-of-Way Impacts: None.

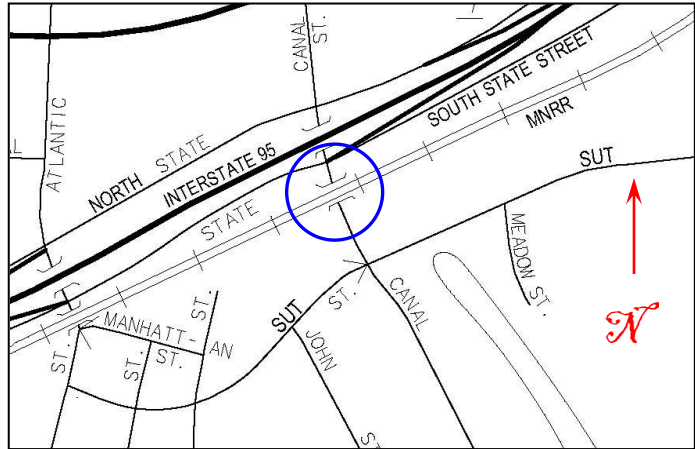
Maintenance and Protection of Traffic: It is not possible to construct the proposed pier and keep Atlantic Street open to traffic; therefore, Atlantic Street will be closed during construction.

Construction Duration: The estimated construction duration for the Atlantic Street Bridge is two years and eleven months.

Construction Costs: The total estimated construction cost for the preferred Atlantic Street alternative (Alternative 2) is \$58,200,000. This construction cost includes a replacement undergrade structure consisting of a two-span ballasted deck bridge that supports the five (5) existing railroad tracks and an I-95 off-ramp single span fly-over bridge. The undergrade bridge superstructure consists of precast concrete encased steel girders supported on concrete abutments and a pier founded on mini-piles.

Overview of Canal Street

Canal Street runs parallel to Atlantic Street and is one of three roads that provide north/south access from downtown Stamford to the South End. Canal Street will intersect with the SUT as shown on the map, on the right. Part of the City's plan to redevelop the South End includes implementing the ideas of the proposed Streetscape Manual and create Preservation and Design Districts for several corridors including Atlantic and Canal Streets.



Map of the Canal Street undergrade bridge and adjacent streets.

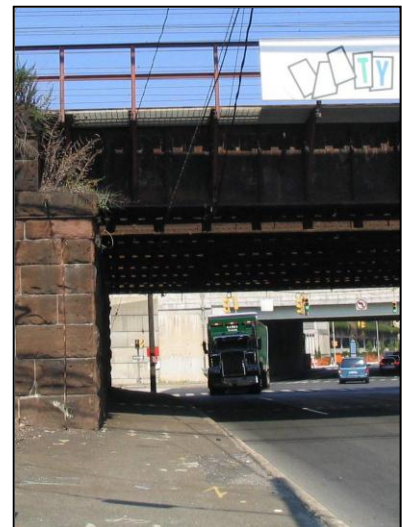
In addition to Stamford's effort to beautify the city, the City also aims to rationalize the roadway grid in the South End. The South End experiences high volumes of truck traffic. The SUT will assist with alleviating some of this traffic on the narrow residential streets, but the neighborhood needs

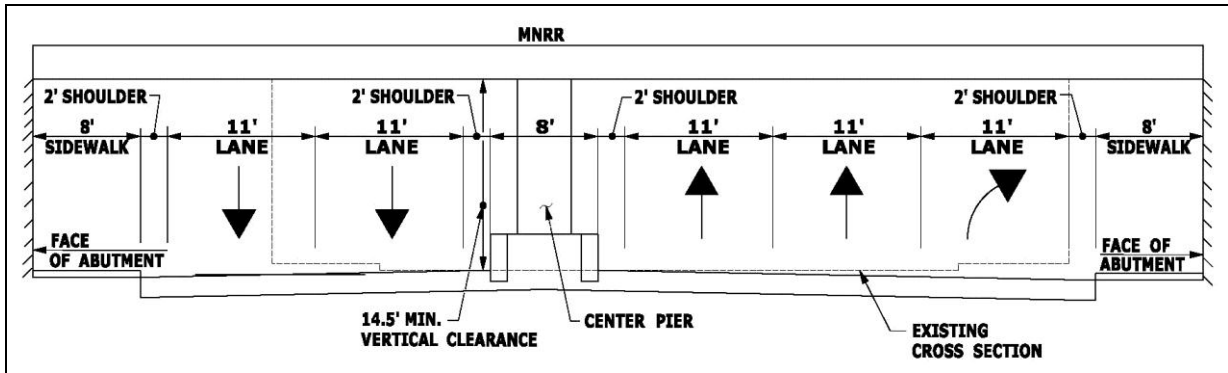


designated north/south "truck routes". The City is considering Canal Street and Washington Boulevard as possible truck route options. This would require widening Canal Street and making the proposed improvements at the MNR undergrade bridge. By creating designated truck routes in the South End, traffic will be directed away from residential streets, truck access will be enhanced and congestion will be reduced.

Capacity analyses of the existing traffic volumes and the existing roadway geometry show that the adjacent intersections are at capacity during the peak hours of commuter traffic. Queue lengths, in many cases, exceed the available storage distances between intersections, adding to the congestion levels in the corridor.

The cross section proposed under the Canal Street Bridge will provide better alignment geometry, improved lane widths, and an additional northbound exclusive right turn lane approaching the North State Street intersection. This will provide an overall improvement to the levels of service, reduce queuing substantially and improve the levels of service in the corridor.





Canal Street – Typical Cross Section
Looking Northbound

Canal Street:
Urban Collector

		Existing	Proposed
No. of Lanes	NB	2	3
	SB	2	2
Lane Width		10'-0"	11'-0"
Shoulder Width		NA	2'-0"
Bike Lanes		NA	NA
Sidewalks		6' to 8'	8'-0"
Bridge Configuration		1-span	2-span
Controlling Span Length		65'	55'-10"
Vertical Clearance		14'-2"	14'-6"

Exceptions to Geometric Design Criteria		
<i>Design Element</i>	<i>Recommended Design Value</i>	<i>Proposed Design Value</i>
Roadside Clearzones	14'	10'
Intersection Sight Distance	355'	260'

Rights-of-Way Impacts: Partial property acquisitions include a parking lot south of the underpass and a catenary tower.

Maintenance and Protection of Traffic: One lane of traffic will be maintained during construction.

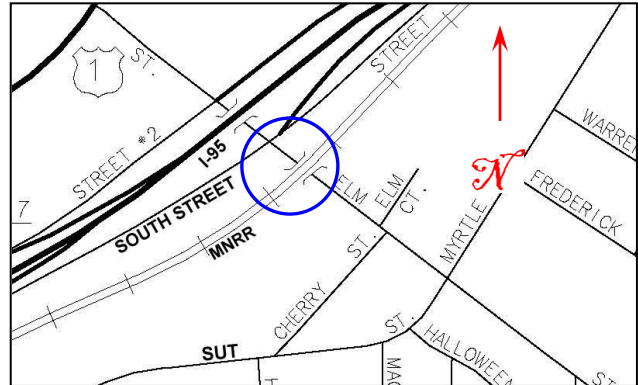
Construction Duration: The estimated construction duration for the Canal Street Bridge is three years and ten months.

Construction Costs: Total estimated construction cost for the Canal Street Bridge is \$43,000,000. This construction cost includes a replacement undergrade structure consisting of a two-span ballasted deck bridge that supports the seven (7) existing railroad tracks. The undergrade bridge superstructure consists of precast concrete encased steel girders supported on concrete abutments and pier founded on mini-piles.

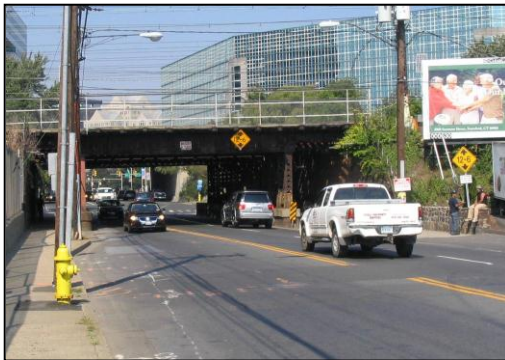
Overview of Elm Street

The north/south access provided by Elm Street is the furthest east between Stamford's downtown area and the neighborhoods south of the New Haven Railroad Line. Elm Street will intersect with the proposed SUT at Myrtle Street.

Elm Street is considered to be a main line to downtown Stamford from the predominantly residential Cove-East Side and Shippan neighborhoods. Surveys have shown that the 18,000 residents that live in these two neighborhoods feel disconnected from the rest of the city. Residents feel confined by the limited number of roads providing access to and from downtown Stamford and also by the fact that these corridors are usually choked with traffic. There are also neighborhood parks and other city-wide destinations located within Cove-East Side and Shippan that attract people from outside of these neighborhoods, increasing congestion and causing use and traffic conflicts.

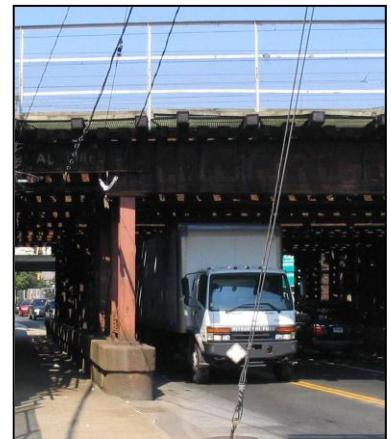


Area map of the Elm Street undergrade bridge and adjacent streets.

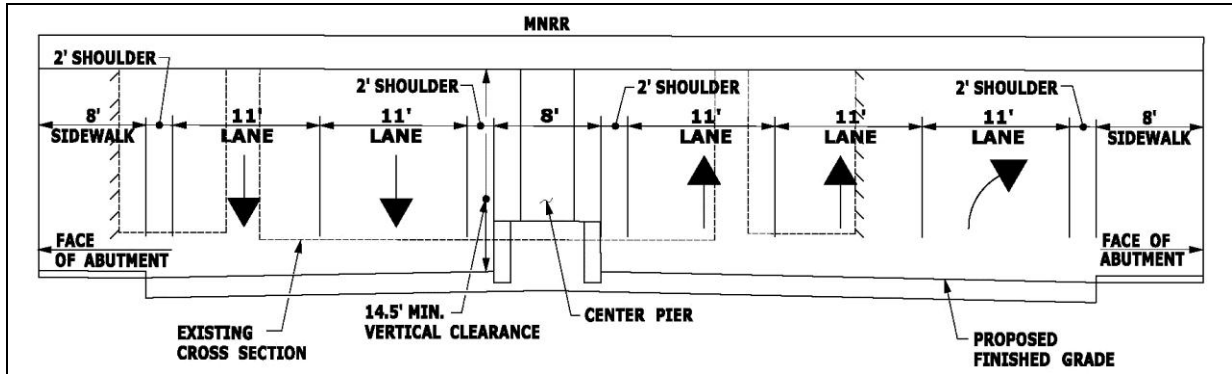


Capacity analyses show that the intersections along Elm Street are currently operating close to capacity, and will continue to do so. In some cases, they will exceed capacity through the 2029 design year. Queuing is problematic in the corridor, with several northbound and southbound queue lengths exceeding the available distance between intersections due to individual lane groups and approaches exceeding capacity during the peak hours.

The roadway cross section proposed under the bridge will provide better alignment geometry and will increase vehicular capacity for Elm Street. There will be an added second southbound through lane and a third northbound lane for right turning traffic. In addition, shoulders will be provided in both directions. These lane arrangements are designed to accommodate the SUT improvements at the Cherry Street/Elm Court intersection, which include the widening and realignment of the north/south legs, the elimination of the east/west dog leg, and the provision for signal control at the



intersection. These additional lanes will provide overall better levels of service, increased safety, reduced queuing, and reduced levels of congestion along the Elm Street corridor.



*Elm Street – Typical Cross Section
Looking Northbound*

Elm Street:
Minor Urban Arterial

		Existing	Proposed
No. of Lanes	NB	2	3
	SB	1	2
Lane Width		12'-0"	11'-0"
Shoulder Width		NA	2'-0"
Bike Lanes		NA	NA
Sidewalks		8' to 10'	8'-0"
Bridge Configuration		3-span	2-span
Controlling Span Length		37'	57'-0"
Vertical Clearance		12'-9"	14'-6"

Exceptions to Geometric Design Criteria			
<i>Design Element</i>		<i>Recommended Design Value</i>	<i>Proposed Design Value</i>
Shoulder Width	Right	4' – 8'	2'
	Left	2' – 4'	2'
Roadside Clearzones		14'	10'
Intersection Sight Distance		355'	250'
Minimum Vertical Clearance under New Bridge		16'-3"	14'-6"

Rights-of-Way Impacts: Partial and full property acquisitions include:

- Three small buildings south of the underpass (part of MNR facility)
- A commercial property at the southeast corner of the underpass

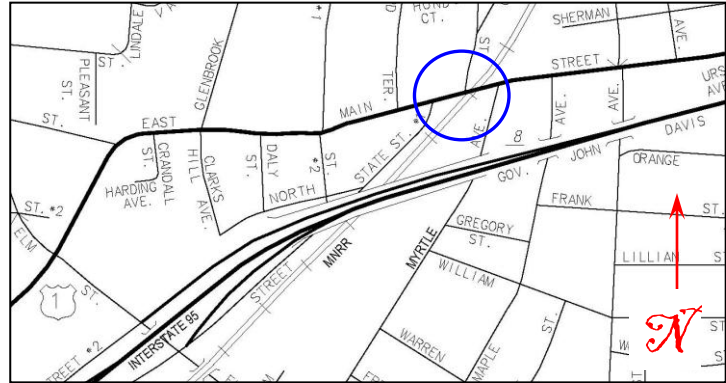
Maintenance and Protection of Traffic: One lane of traffic will be maintained during construction. This lane may be one directional or alternating directions (by time of day).

Construction Duration: The estimated construction duration for the Elm Street Bridge is three years and ten months.

Construction Costs: Total estimated construction cost for the Elm Street Bridge is \$47,800,000. This construction cost includes a replacement undergrade structure consisting of a two-span ballasted deck bridge that supports the seven (7) existing railroad tracks. The undergrade bridge superstructure consists of precast concrete encased steel girders supported on concrete abutments and pier founded on mini-piles.

Overview of U.S. Route 1 (East Main Street)

U.S. Route 1 (East Main Street) is the only roadway evaluated in our study located north of I-95. It travels in a basically east/west direction, and does not provide primary access between the north and south areas of the city. The U.S. Route 1 (East Main Street) undergrade bridge is considered to be the city's eastern gateway to the downtown area.



Map of the U.S. Route 1 (East Main Street) undergrade bridge and adjacent streets.

U. S. Route 1 (East Main Street) is a Principal Urban Arterial. It provides parallel through movements to I-95

across the entire state of Connecticut, and is an important arterial route in the city of Stamford. U.S. Route 1 (East Main Street) serves as an alternative emergency route to I-95 and is considered to be one of the radial corridors that link adjacent neighborhoods to Downtown, connecting the Hope Street and Glenbrook Road neighborhoods to the downtown area.



Capacity analyses of existing conditions show that the intersections along Route 1 are generally operating below capacity, although the existing queues interfere with operations at adjacent intersections. As traffic grows through the 2029 design year, queuing is anticipated to get worse, and operations will continue to suffer. Several turning movements may be blocked by queues from adjoining intersections.

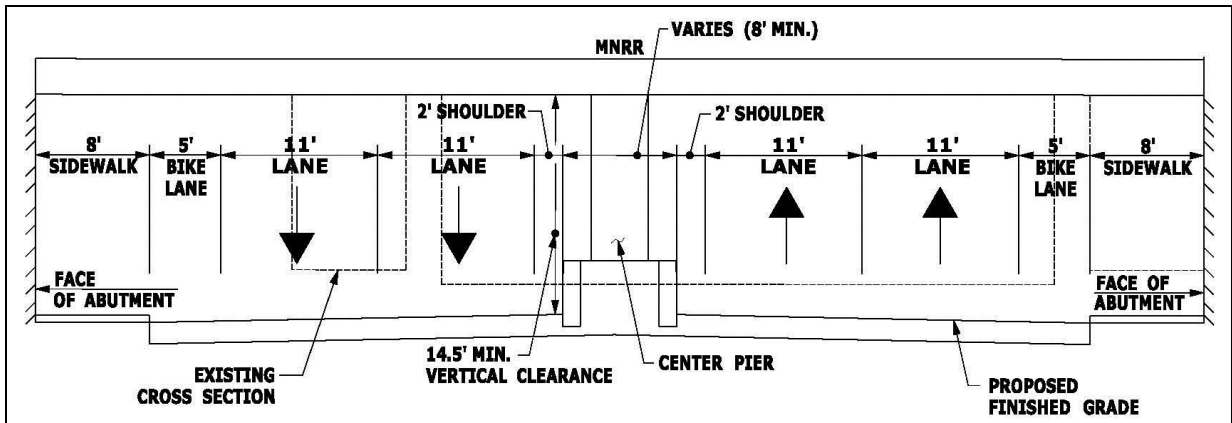
As traffic grows through the 2029 design year, queuing is anticipated to get worse, and operations will continue to suffer. Several turning movements may be blocked by queues from adjoining intersections.



U.S. Route 1 (East Main Street) currently provides two wide lanes with shoulders as it passes under the bridge, one designated for each direction. The proposed cross section will provide increased capacity for the Route 1 corridor by adding a second lane and shoulders in each direction. In addition, widening is proposed to accommodate



a dedicated bicycle lane in each direction. These lane arrangements are designed to align with the SUT improvements, including the reconstruction and signalization of the Maple Street intersection. These additional lanes will provide better levels of service, increased safety, multi-modal capability, reduced queuing, and reduced congestion levels on the Route 1 corridor.



U.S. Route 1 (East Main Street) – Typical Cross Section
Looking Westbound

U.S. Route 1 (East Main Street):
Principal Urban Arterial

		Existing	Proposed
No. of Lanes	NB	1	2
	SB	1	2
Lane Width		21'-0"	11'-0"
Shoulder Width		NA	2'-0"
Bike Lanes		NA	5'-0"
Sidewalks		8'-0"	8'-0"
Bridge Configuration		3-span	2-span
Controlling Span Length		71'	74'-0"
Vertical Clearance		13'-3"	14'-6"

Exceptions to Geometric Design Criteria		
<i>Design Element</i>	<i>Recommended Design Value</i>	<i>Proposed Design Value</i>
Roadside Clearzones	14'	13'
Intersection Sight Distance	355'	270'
Minimum Vertical Clearance under New Bridge	16'-3"	14'-6"

Rights-of-Way Impacts: Partial property acquisitions include:

- The parking lot and driveways of the plaza located west of Crystal Street and east of Myrtle Street
- A partial take of 876 East Main Street on the west side of Crystal Street

Maintenance and Protection of Traffic: One lane of traffic will be maintained in each direction during construction.

Construction Duration: The estimated construction duration for the U.S. Route 1 (East Main Street) bridge is two years and eleven months.

Construction Costs: Total estimated construction cost for the U.S. Route 1 (East Main Street) bridge is \$54,100,000 for the preferred alternative (Alternative 1). This construction cost includes a replacement undergrade structure consisting of a two-span ballasted deck bridge that supports the five (5) existing railroad tracks. The undergrade bridge superstructure consists of precast concrete encased steel girders supported on concrete abutments and pier founded on mini-piles.

CONCLUSIONS

With the reconstruction of these five bridges: Greenwich Avenue, Atlantic Street, Canal Street, Elm Street, and U.S. Route 1 (East Main Street), the City of Stamford will increase vehicular mobility and allow for better traffic flow between the northern and southern neighborhoods. This project will relieve heavy congestion by opening up bottle necks. It is also critical to the success of other transit projects the City is currently undertaking. Completion of these improvements will allow the City to better focus on how to increase inner-city mobility without the concerns or limitations imposed by the existing substandard underpasses.

Reconstruction of these bridges will also add sidewalks and bike lanes to allow safer access around the city by foot or by bicycle. These features will allow workers and residents to move safely to mobility hubs (particularly the SITC) without requiring the use of personal vehicles.

Construction Cost Estimates

Construction cost estimates have been developed based on the weighted unit prices listed in the Connecticut Department of Transportation's Item Master File (December 2010) and the Department's Preliminary Cost Estimating Guidelines (January 2011). The unit prices have been adjusted to reflect construction costs at the mid-point of construction in the year 2016. The cost estimates do not include costs associated with environmental studies, environmental remediation, rights-of-way acquisitions, or professional services for survey, design, or construction engineering and inspection. The 2011 construction costs for the five individual bridges, inclusive of roadway work, utility relocation, structures, railroad force account work, and drainage work, are summarized as follows:

Greenwich Avenue	\$ 29,300,000
Atlantic Street	\$ 58,200,000
Canal Street	\$ 43,000,000
Elm Street	\$ 47,800,000
U.S. Route 1 (East Main Street)	\$ 54,100,000
Totals	<u>\$ 232,400,000</u>

To minimize impacts to rail operations, this study developed a proposed phased construction schedule. The development of this schedule included an analysis of the concurrent reconstruction of three bridges: Atlantic Street, Elm Street, and U.S. Route 1 (East Main Street) and includes considerations to rail operations. A savings of approximately \$10,100,000 is realized by an elimination of overlapping work, in a reduction of the railroad force account work, and efficiencies gained by packaging the three bridges together. The 2011 construction costs for the proposed phased sites are summarized as follows:

Atlantic Street	\$ 58,200,000
Elm Street	\$ 47,800,000
U.S. Route 1 (East Main Street)	\$ 54,100,000
Net Savings (by constructing 3 at once)	<u>\$ (10,100,000)</u>
Totals	<u>\$ 150,000,000</u>

APPENDIX A – FIGURES

List of Figures:

1. Master Plan 2002 – General Land Use Plan.....Page 27
2. Harbor Point Improvement District.....Page 28
3. Proposed Streetcar Alignment (from a separate study).....Page 29

Figure 1:

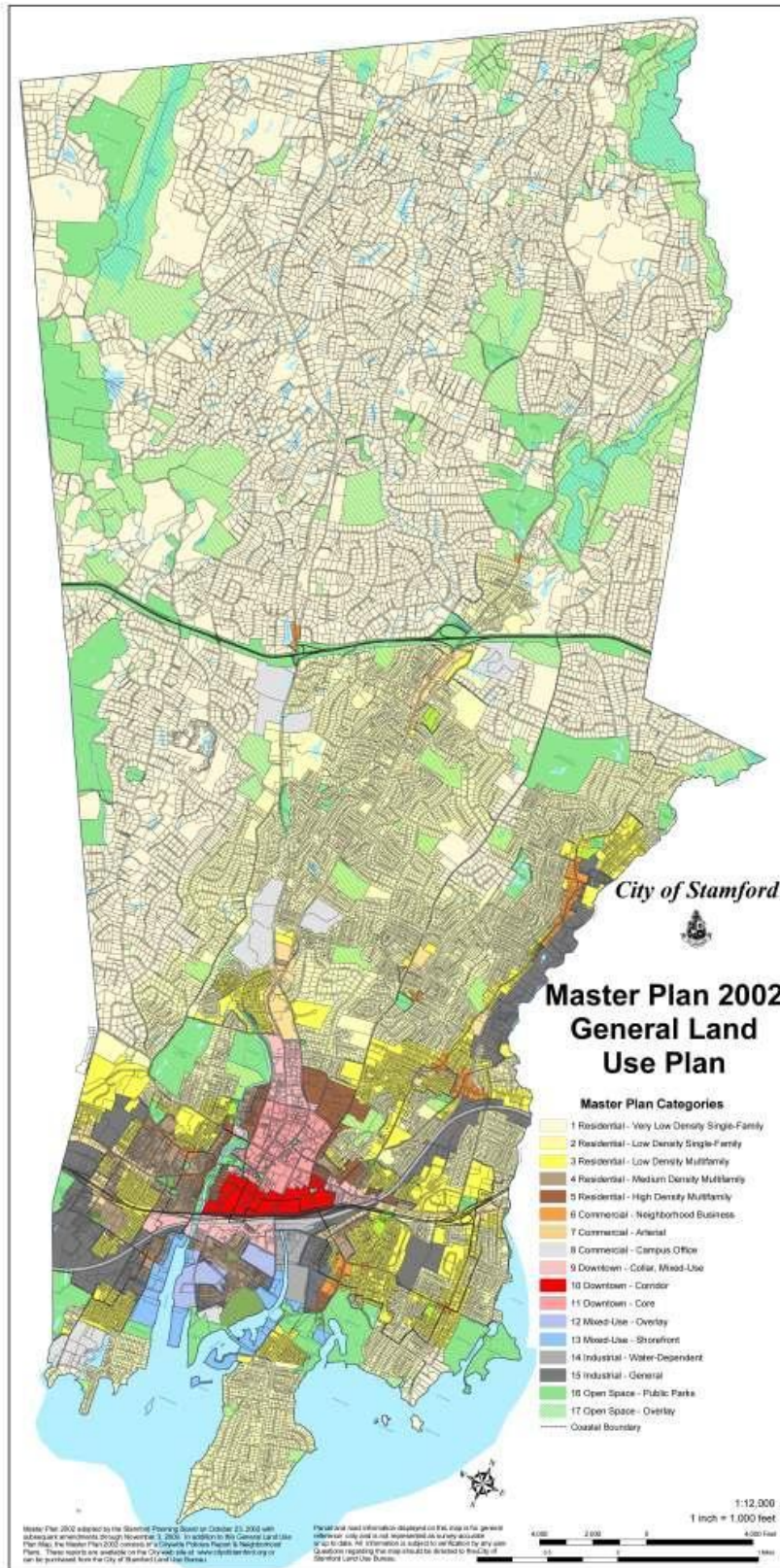


Figure 2:

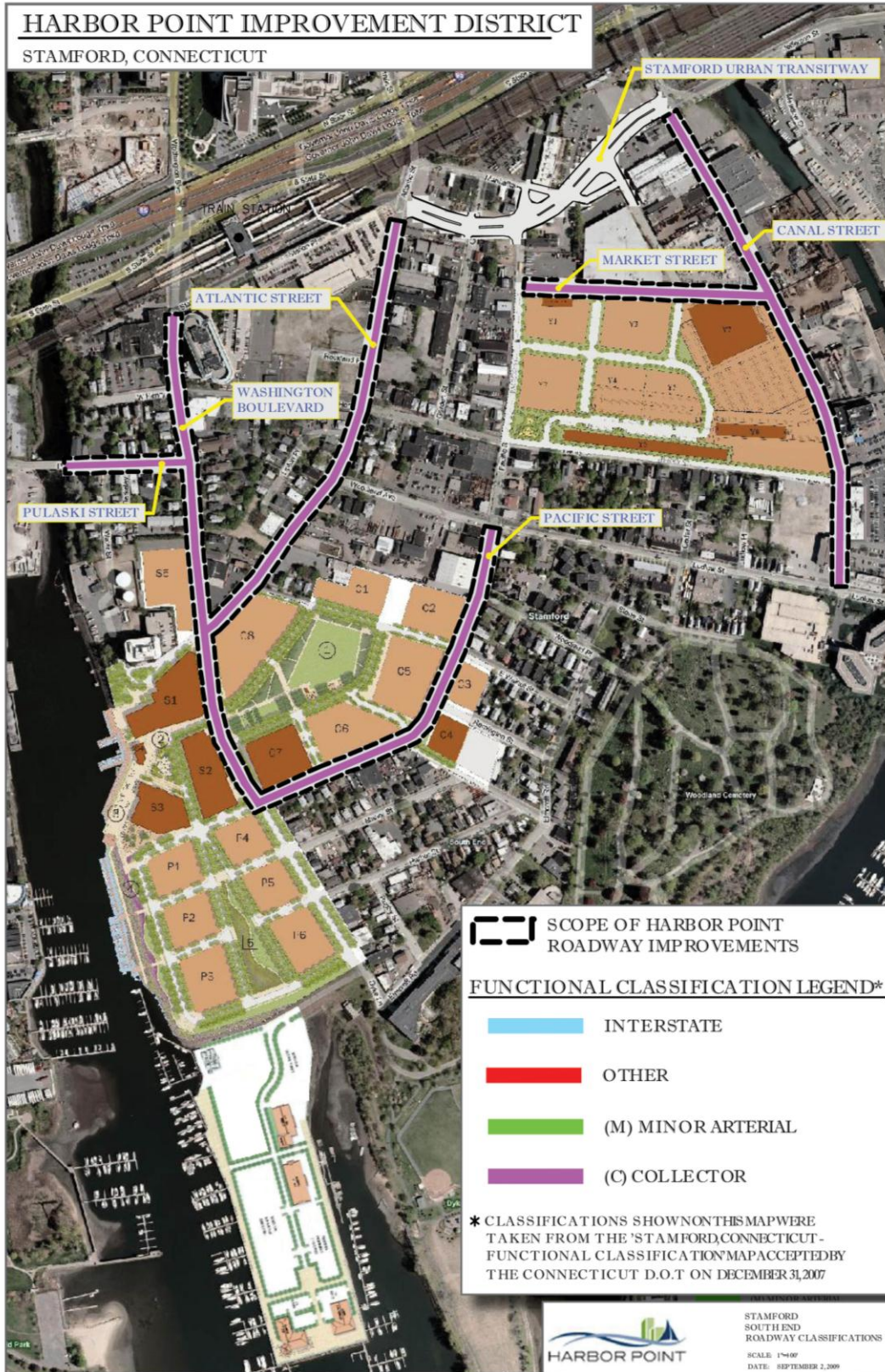


Figure 3:



APPENDIX B – CONSTRUCTION COST ESTIMATES



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
GREENWICH AVENUE**

Item No.	Description	Unit	Unit Price	Alternative 1		Alternative 2	
				Quantity	Price	Quantity	Price
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Top Down Multi Steel Girders	
Highway & Traffic Items							
1.	Earth Excavation	CY	\$26.00	7,953	\$206,778.00	7,953	\$206,778.00
2.	Rock Excavation	CY	\$50.00	884	\$44,200.00	884	\$44,200.00
3.	Drainage; Pipe (15")	LF	\$60.00	290	\$17,400.00	290	\$17,400.00
4.	Drainage; Pipe (30")	LF	\$90.00	90	\$8,100.00	90	\$8,100.00
5.	Drainage; Pipe (48")	LF	\$185.00	80	\$14,800.00	80	\$14,800.00
6.	Drainage; Catch Basins	EA	\$2,800.00	6	\$16,800.00	6	\$16,800.00
7.	Manhole	EA	\$4,500.00	3	\$13,500.00	3	\$13,500.00
8.	Bit. Driveway / Parking Lot	SY	\$40.00	1,111	\$44,440.00	1,111	\$44,440.00
9.	HMA - Superpave	T	\$105.00	2,261	\$237,405.00	2,261	\$237,405.00
10.	Processed Aggregate Base	T	\$35.00	2,261	\$79,135.00	2,261	\$79,135.00
11.	Subbase	T	\$35.00	2,574	\$90,090.00	2,574	\$90,090.00
12.	Formation of Subgrade	SY	\$5.00	7,721	\$38,605.00	7,721	\$38,605.00
13.	Temporary PCBC	LF	\$42.00	370	\$15,540.00	370	\$15,540.00
14.	Impact Attenuators	EA	\$25,000.00	2	\$50,000.00	2	\$50,000.00
15.	Curbing; Concrete	LF	\$30.00	2,672	\$80,160.00	2,672	\$80,160.00
16.	Concrete Sidewalk	SF	\$15.00	14,712	\$220,680.00	14,712	\$220,680.00
17.	Trafficperson (City/State Police Officer)	HR	\$75.00	15,360	\$1,152,000.00	15,360	\$1,152,000.00
18.	Roadway Lighting	LF	\$40.00	100	\$4,000.00	100	\$4,000.00
19.	Traffic Signals; New	EA	\$200,000.00	1	\$200,000.00	1	\$200,000.00
20.	Traffic Signals; Minor Modification	EA	\$30,000.00	1	\$30,000.00	1	\$30,000.00
Section Sub-Total				\$2,563,633.00		\$2,563,633.00	
Structures Items - Undergrade Bridge							
21.	Structure Excavation - Earth (Complete)	CY	\$90.00	4,500	\$405,000.00	4,500	\$405,000.00
22.	Ballast	CY	\$175.00	390	\$68,250.00	460	\$80,500.00
23.	Ballast Mat	SF	\$15.00	7,360	\$110,400.00	8,640	\$129,600.00
24.	Pervious Structure Backfill	CY	\$105.00	1,100	\$115,500.00	1,100	\$115,500.00
25.	Granular Fill	CY	\$40.00	110	\$4,400.00	110	\$4,400.00
26.	Removal of Superstructure	LS	\$200,000.00	1	\$200,000.00	1	\$200,000.00
27.	Removal of Substructure	LS	\$150,000.00	1	\$150,000.00	1	\$150,000.00
28.	Steel-Laminated Elastomeric Bearings	CI	\$3.00	87,400	\$262,200.00	62,100	\$186,300.00
29.	Class "A" Concrete	CY	\$850.00	670	\$569,500.00	640	\$544,000.00
30.	Class "F" Concrete	CY	\$1,250.00	290	\$362,500.00	250	\$312,500.00
31.	Architectural Formliner	SY	\$400.00	120	\$48,000.00	120	\$48,000.00
32.	Deformed Steel Bars	LBS	\$1.60	83,800	\$134,080.00	80,000	\$128,000.00
33.	Deformed Steel Bars (Epoxy Coated)	LBS	\$1.65	60,000	\$99,000.00	75,000	\$123,750.00
34.	Structural Steel	LBS	\$3.25	0	\$0.00	1,665,000	\$5,411,250.00
35.	Precast Concrete Encased Steel Girders	LF	\$2,100.00	2,280	\$4,788,000.00	0	\$0.00
36.	Drilled Mini-Piles	EA	\$10,000.00	60	\$600,000.00	50	\$500,000.00
37.	Drilled Shaft	LF	\$2,000.00	80	\$160,000.00	80	\$160,000.00
38.	Temporary Earth Retaining System (RR)	SF	\$160.00	10,800	\$1,728,000.00	10,800	\$1,728,000.00
39.	Lead Health Protection Program	LS	\$100,000.00	1	\$100,000.00	1	\$100,000.00
Section Sub-Total				\$9,904,830.00		\$10,326,800.00	
Project Sub-Total				\$12,468,463.00		\$12,890,433.00	
Highway & Traffic + Structure				\$12,468,463.00		\$12,890,433.00	



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
GREENWICH AVENUE**

Item No.	Description	Unit	Unit Price	Alternative 1		Alternative 2	
				Quantity	Price	Quantity	Price
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Top Down Multi Steel Girders	
Percentage Based Items (applied to Project Sub-Total)							
1.	Clearing and Grubbing Roadway	@		2%	\$249,369.26	2%	\$257,808.66
2.	M & P of Traffic	@		4%	\$498,738.52	4%	\$515,617.32
3.	Mobilization	@		7.5%	\$935,134.73	7.5%	\$966,782.48
4.	Construction Staking	@		1%	\$124,684.63	1%	\$128,904.33
5.	Minor Items	@		25%	\$3,117,115.75	25%	\$3,222,608.25
Section Sub-Total					\$4,925,042.89		\$5,091,721.04

Project Total							
Project Sub-Total + Percentage Based Items					\$17,393,505.89		\$17,982,154.04

Utility Relocation Costs							
1.	Utility Relocation	Est.	\$2,191,000.00	1	\$2,191,000.00	1	\$2,191,000.00
Section Sub-Total					\$2,191,000.00		\$2,191,000.00

Railroad Costs							
1.	RR Force Account Work ^{1&2}	@		40%	\$3,961,932.00	40%	\$4,130,720.00
Section Sub-Total					\$3,961,932.00		\$4,130,720.00

Incidentals and Contingencies (applied to Project Total)							
1.	Incidentals	@		23%	\$4,000,506.35	23%	\$4,135,895.43
2.	Contingencies	@		10%	\$1,739,350.59	10%	\$1,798,215.40
Section Sub-Total					\$5,739,856.94		\$5,934,110.83

Cost of Bridge Replacement (2012)		\$29,286,294.83	\$30,237,984.87
	SAY	\$29,300,000.00	\$30,200,000.00

Inflation to Mid-Point of Construction							
Price Adjustment (adjust to 2017)	5 years	@	5%		\$8,091,263.29	5%	\$8,354,197.71

Cost of Bridge Replacement (2017)		\$37,377,558.12	\$38,592,182.57
	SAY	\$37,400,000.00	\$38,600,000.00

Project Cost Escalation Footnotes:

1. Estimated construction cost shown above is based on 2011 prices.
2. Rate of construction cost escalation is estimated at 5% per year, per CTDOT Estimating Guidelines, calculated to the mid-point of construction, which is anticipated to be 2016 based on an anticipated 2014 start of construction. Accordingly, the cost escalation factor is 1.28.

NOTES:

1. MNRR Force Account value is based on 40% of the sum of the total structure work for the Undergrade Bridge + 25% minor items applied to the total structure work.
2. MNRR Force Account includes the cost of Metro North personnel and railroad work associated with the removal of the existing bridge and construction of the proposed bridge, including removal & replacement of railroad tracks, communications & signals, and catenary pole relocation where applicable.
3. Items NOT included in this estimate:
 - Building Demolition / ROW acquisitions
 - Environmental Remediation
 - Environmental Studies (20% of Environmental Remediation Costs)



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
ATLANTIC STREET**

Item No.	Description	Unit	Unit Price	Alternative 1					
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Conventional Concrete-Encased Steel Beams		Four Span Top Down Concrete-Encased Steel Beams	
				Quant.	Price	Quant.	Price	Quant.	Price
Highway & Traffic Items									
1.	Earth Excavation	CY	\$26.00	11,434	\$297,284.00	11,434	\$297,284.00	11,434	\$297,284.00
2.	Rock Excavation	CY	\$50.00	1,270	\$63,522.22	1,270	\$63,522.22	1,270	\$63,522.22
3.	Borrow	CY	\$20.00	1,067	\$21,340.00	1,067	\$21,340.00	1,067	\$21,340.00
4.	Drainage; Pipe (12")	LF	\$55.00	128	\$7,040.00	128	\$7,040.00	128	\$7,040.00
5.	Drainage; Pipe (15")	LF	\$60.00	244	\$14,640.00	244	\$14,640.00	244	\$14,640.00
6.	Drainage; Catch Basins	EA	\$2,800.00	6	\$16,800.00	6	\$16,800.00	6	\$16,800.00
7.	Manhole	EA	\$3,500.00	1	\$3,500.00	1	\$3,500.00	1	\$3,500.00
8.	Milling of Bituminous Concrete 0"-4"	SY	\$8.00	978	\$7,822.22	978	\$7,822.22	978	\$7,822.22
9.	HMA - Superpave	T	\$105.00	2,661	\$279,375.25	2,661	\$279,375.25	2,661	\$279,375.25
10.	Processed Aggregate Base	T	\$45.00	2,480	\$111,600.72	2,480	\$111,600.72	2,480	\$111,600.72
11.	Subbase	T	\$35.00	2,823	\$98,816.67	2,823	\$98,816.67	2,823	\$98,816.67
12.	Temporary PCBC	LF	\$42.00	1,620	\$68,040.00	1,620	\$68,040.00	1,620	\$68,040.00
13.	Relocate TPCBC	LF	\$17.00	1,620	\$27,540.00	1,620	\$27,540.00	1,620	\$27,540.00
14.	Impact Attenuators	EA.	\$25,000.00	2	\$50,000.00	2	\$50,000.00	2	\$50,000.00
15.	Curbing; Concrete	LF	\$30.00	2,110	\$63,300.00	2,110	\$63,300.00	2,110	\$63,300.00
16.	Concrete Sidewalk	SF	\$15.00	9,200	\$138,000.00	9,200	\$138,000.00	9,200	\$138,000.00
17.	Trafficperson (City/State Police)	HR	\$75.00	5,100	\$382,500.00	5,100	\$382,500.00	5,100	\$382,500.00
18.	Roadway Lighting	LF	\$40.00	1,675	\$67,000.00	1,675	\$67,000.00	1,675	\$67,000.00
19.	Traffic Signals; New	EA	\$200,000.00	1	\$200,000.00	1	\$200,000.00	1	\$200,000.00
20.	Traffic Signals; Minor Modification	EA	\$30,000.00	1	\$30,000.00	1	\$30,000.00	1	\$30,000.00
21.	Retaining Walls (Roadway)	SF	\$70.00	31,655	\$2,215,850.00	31,655	\$2,215,850.00	31,655	\$2,215,850.00
22.	Retaining Walls (Railroad)	SF	\$110.00	18,950	\$2,084,500.00	18,950	\$2,084,500.00	18,950	\$2,084,500.00
Section Sub-Total					\$6,248,471.08		\$6,248,471.08		\$6,248,471.08

Structures Items - Undergrade Bridge									
23.	Structure Excavation - Earth	CY	\$90.00	7,000	\$630,000.00	10,000	\$900,000.00	7,800	\$702,000.00
24.	Ballast	CY	\$175.00	500	\$87,500.00	500	\$87,500.00	500	\$87,500.00
25.	Ballast Mat	SF	\$15.00	9,400	\$141,000.00	9,400	\$141,000.00	9,400	\$141,000.00
26.	Pervious Structure Backfill	CY	\$105.00	500	\$52,500.00	1,600	\$168,000.00	600	\$63,000.00
27.	Removal of Superstructure	LS	\$250,000.00	1	\$250,000.00	1	\$250,000.00	1	\$250,000.00
28.	Removal of Substructure	LS	\$670,000.00	1	\$670,000.00	1	\$670,000.00	1	\$670,000.00
29.	Temporary Support	LS	\$200,000.00	1	\$200,000.00	1	\$200,000.00	1	\$200,000.00
30.	Tie-Back Wall	SF	\$400.00	5,050	\$2,020,000.00	5,050	\$2,020,000.00	5,050	\$2,020,000.00
31.	Steel-Laminated Elastomeric Brgs.	CI	\$3.00	40,000	\$120,000.00	40,000	\$120,000.00	40,000	\$120,000.00
32.	Class "A" Concrete	CY	\$850.00	900	\$765,000.00	1,600	\$1,360,000.00	1,100	\$935,000.00
33.	Class "F" Concrete	CY	\$1,250.00	200	\$250,000.00	200	\$250,000.00	400	\$500,000.00
34.	Architectural Formliner	SY	\$400.00	200	\$80,000.00	200	\$80,000.00	200	\$80,000.00
35.	Deformed Steel Bars	LBS	\$1.60	110,000	\$176,000.00	180,000	\$288,000.00	150,000	\$240,000.00
36.	P/C Conc. Enc. Steel Grdrs (33"D)	LF	\$1,560.00	5,100	\$7,956,000.00	0	\$0.00	0	\$0.00
37.	P/C Conc. Enc. Steel Grdrs (30"D)	LBS	\$1,530.00	0	\$0.00	4,600	\$7,038,000.00	0	\$0.00
38.	P/C Conc. Enc. Steel Grdrs (26"D)	LBS	\$1,500.00	0	\$0.00	0	\$0.00	6,200	\$9,300,000.00
39.	Drilled Mini-Piles	EA	\$5,500.00	250	\$1,375,000.00	250	\$1,375,000.00	420	\$2,310,000.00
40.	Temp. Earth Retaining System	SF	\$50.00	1,970	\$98,500.00	1,970	\$98,500.00	5,900	\$295,000.00
41.	Temp. Earth Retaining System (RR)	SF	\$160.00	6,130	\$980,800.00	23,500	\$3,760,000.00	6,130	\$980,800.00
42.	Lead Health Protection Program	LS	\$100,000.00	1	\$100,000.00	1	\$100,000.00	1	\$100,000.00
Section Sub-Total					\$15,952,300.00		\$18,906,000.00		\$18,994,300.00

Structures Items - South Platform Extension									
43.	South Platform Extension	LS	\$100,000.00	1	\$100,000.00	1	\$100,000.00	1	\$100,000.00
44.	Stair Structure	LS	\$120,000.00	1	\$120,000.00	1	\$120,000.00	1	\$120,000.00
45.	Pedestrian Bridge	LS	\$120,000.00	1	\$120,000.00	1	\$120,000.00	1	\$120,000.00
Section Sub-Total					\$340,000.00		\$340,000.00		\$340,000.00



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
ATLANTIC STREET**

				Alternative 1					
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Conventional Concrete-Encased Steel Beams		Four Span Top Down Concrete-Encased Steel Beams	
Item No.	Description	Unit	Unit Price	Quant.	Price	Quant.	Price	Quant.	Price
Rail Operations									
46.	Temporary Platform ³ (Stamford Sta.)	LF	\$350.00	2,000	\$700,000.00	2,000	\$700,000.00	2,000	\$700,000.00
47.	Bridge Plates	EA	\$9,000.00	20	\$180,000.00	20	\$180,000.00	20	\$180,000.00
48.	Removal & Erection - Bridge Plates	EA	\$1,200.00	20	\$24,000.00	20	\$24,000.00	20	\$24,000.00
Section Sub-Total					\$904,000.00	\$904,000.00	\$904,000.00		
Project Sub-Total									
Highway & Traffic + Structure + Rail Operations					\$23,444,771.08	\$26,398,471.08	\$26,486,771.08		
Percentage Based Items (applied to Project Sub-Total)									
1.	Clearing and Grubbing Roadway	@	2%	\$468,895.42	2%	\$527,969.42	2%	\$529,735.42	
2.	M & P of Traffic	@	4%	\$937,790.84	4%	\$1,055,938.84	4%	\$1,059,470.84	
3.	Mobilization	@	7.5%	\$1,758,357.83	7.5%	\$1,979,885.33	7.5%	\$1,986,507.83	
4.	Construction Staking	@	1%	\$234,447.71	1%	\$263,984.71	1%	\$264,867.71	
5.	Minor Items	@	25%	\$5,861,192.77	25%	\$6,599,617.77	25%	\$6,621,692.77	
Section Sub-Total					\$9,260,684.58	\$10,427,396.08	\$10,462,274.58		
Project Total									
Project Sub-Total + Percentage Based Items					\$32,705,455.66	\$36,825,867.16	\$36,949,045.66		
Utility Relocation Costs									
1.	Utility Relocation	Est.	\$3,157,500.00	1	\$3,157,500.00	1	\$3,157,500.00	1	\$3,157,500.00
Section Sub-Total					\$3,157,500.00	\$3,157,500.00	\$3,157,500.00		
Railroad Costs									
1.	RR Force Account Work ^{1&2}	@	40%	\$8,598,150.00	40%	\$10,075,000.00	40%	\$10,119,150.00	
Section Sub-Total					\$8,598,150.00	\$10,075,000.00	\$10,119,150.00		
Incidentals and Contingencies (applied to Project Total)									
1.	Incidentals	@	18%	\$5,886,982.02	18%	\$6,628,656.09	18%	\$6,650,828.22	
2.	Contingencies	@	10%	\$3,270,545.57	10%	\$3,682,586.72	10%	\$3,694,904.57	
Section Sub-Total					\$9,157,527.58	\$10,311,242.80	\$10,345,732.78		
Cost of Bridge Replacement (2012)					\$53,618,633.24	\$60,369,609.96	\$60,571,428.44		
SAY					\$53,600,000.00	\$60,400,000.00	\$60,600,000.00		
Inflation to Mid-Point of Construction									
Price Adjustment (adj. to 2017) 5 years @				5%	\$14,813,839.77	5%	\$16,679,010.17	5%	\$16,734,768.89
Cost of Bridge Replacement (2017)					\$68,432,473.01	\$77,048,620.13	\$77,306,197.34		
SAY					\$68,400,000.00	\$77,000,000.00	\$77,300,000.00		



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut

State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
ATLANTIC STREET**

Alternative 1

Project Cost Escalation Footnotes:

1. *Estimated construction cost shown above is based on 2011 prices.*
2. *Rate of construction cost escalation is estimated at 5% per year, per CTDOT Estimating Guidelines, calculated to the mid-point of construction, which is anticipated to be 2016 based on an anticipated 2014 start of construction. Accordingly, the cost escalation factor is 1.28.*

NOTES:

1. MNRR Force Account value is based on 40% of the sum of the total structure and rail operations work for the Undergrade Bridge and Platform Extension + 25% minor items applied to the total structure work.
2. MNRR Force Account includes the cost of Metro North personnel and railroad work associated with the removal of the existing bridge and construction of the proposed bridge, including removal & replacement of railroad tracks, communications & signals, and catenary pole relocation where applicable.
3. Temporary Platform includes 1000-ft of installation and 1000-ft of removal.
4. Items NOT included in this estimate:
 - Building Demolition / ROW acquisitions
 - Environmental Remediation
 - Environmental Studies (20% of Environmental Remediation Costs)



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
ATLANTIC STREET**

Item No.	Description	Unit	Unit Price	Alternative 2			
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Conventional Concrete-Encased Steel Beams	
				Quantity	Price	Quantity	Price
Highway & Traffic Items							
1.	Earth Excavation	CY	\$26.00	12,484	\$324,581.11	12,484	\$324,581.11
2.	Rock Excavation	CY	\$50.00	909	\$45,435.19	909	\$45,435.19
3.	Borrow	CY	\$20.00	2,205	\$44,100.00	2,205	\$44,100.00
4.	Drainage; Pipe (12")	LF	\$55.00	128	\$7,040.00	128	\$7,040.00
5.	Drainage; Pipe (15")	LF	\$60.00	244	\$14,640.00	244	\$14,640.00
6.	Drainage; Catch Basins	EA	\$2,800.00	6	\$16,800.00	6	\$16,800.00
7.	Manhole	EA	\$3,500.00	1	\$3,500.00	1	\$3,500.00
8.	Milling of Bituminous Concrete 0" - 4"	SY	\$8.00	3,911	\$31,288.89	3,911	\$31,288.89
9.	HMA - Superpave	T	\$105.00	5,861	\$615,355.42	5,861	\$615,355.42
10.	Processed Aggregate Base	T	\$45.00	2,867	\$129,022.32	2,867	\$129,022.32
11.	Subbase	T	\$35.00	3,264	\$114,242.59	3,264	\$114,242.59
12.	Temporary PCBC	LF	\$42.00	2,140	\$89,880.00	2,140	\$89,880.00
13.	Relocate TPCBC	LF	\$17.00	2,140	\$36,380.00	2,140	\$36,380.00
14.	Impact Attenuators	EA.	\$25,000.00	2	\$50,000.00	2	\$50,000.00
15.	Curbing; Concrete	LF	\$30.00	3,180	\$95,400.00	3,180	\$95,400.00
16.	Concrete Sidewalk	SF	\$15.00	9,200	\$138,000.00	9,200	\$138,000.00
17.	Trafficperson (City/State Police Officer)	HR	\$75.00	8,100	\$607,500.00	8,100	\$607,500.00
18.	Roadway Lighting	LF	\$40.00	2,930	\$117,200.00	2,930	\$117,200.00
19.	Traffic Signals; New	EA	\$200,000.00	3	\$600,000.00	3	\$600,000.00
20.	Traffic Signals; Minor Modification	EA	\$30,000.00	2	\$60,000.00	2	\$60,000.00
21.	Retaining Walls (Roadway)	SF	\$70.00	51,350	\$3,594,500.00	51,350	\$3,594,500.00
22.	Retaining Walls (Railroad)	SF	\$110.00	6,480	\$712,800.00	6,480	\$712,800.00
Section Sub-Total					\$7,447,665.51		\$7,447,665.51

Structures Items - Undergrade Bridge							
23.	Structure Excavation - Earth (Complete)	CY	\$90.00	7,000	\$630,000.00	10,000	\$900,000.00
24.	Ballast	CY	\$175.00	500	\$87,500.00	500	\$87,500.00
25.	Ballast Mat	SF	\$15.00	9,400	\$141,000.00	9,400	\$141,000.00
26.	Pervious Structure Backfill	CY	\$105.00	500	\$52,500.00	1,600	\$168,000.00
27.	Removal of Superstructure	LS	\$250,000.00	1	\$250,000.00	1	\$250,000.00
28.	Removal of Substructure	LS	\$670,000.00	1	\$670,000.00	1	\$670,000.00
29.	Temporary Support	LS	\$200,000.00	1	\$200,000.00	1	\$200,000.00
30.	Tie-Back Wall	SF	\$400.00	5,050	\$2,020,000.00	5,050	\$2,020,000.00
31.	Steel-Laminated Elastomeric Bearings	CI	\$3.00	40,000	\$120,000.00	40,000	\$120,000.00
32.	Class "A" Concrete	CY	\$850.00	900	\$765,000.00	1,600	\$1,360,000.00
33.	Class "F" Concrete	CY	\$1,250.00	200	\$250,000.00	200	\$250,000.00
34.	Architectural Formliner	SY	\$400.00	200	\$80,000.00	200	\$80,000.00
35.	Deformed Steel Bars	LBS	\$1.60	110,000	\$176,000.00	180,000	\$288,000.00
36.	P/C Conc. Encased Steel Girders (33"D)	LF	\$1,560.00	5,100	\$7,956,000.00	0	\$0.00
37.	P/C Conc. Encased Steel Girders (30"D)	LBS	\$1,530.00	0	\$0.00	4,600	\$7,038,000.00
38.	Drilled Mini-Piles	EA	\$5,500.00	250	\$1,375,000.00	250	\$1,375,000.00
39.	Temporary Earth Retaining System	SF	\$50.00	1,970	\$98,500.00	1,970	\$98,500.00
40.	Temporary Earth Retaining System (RR)	SF	\$160.00	6,130	\$980,800.00	23,500	\$3,760,000.00
41.	Lead Health Protection Program	LS	\$100,000.00	1	\$100,000.00	1	\$100,000.00
Section Sub-Total					\$15,952,300.00		\$18,906,000.00

Structures Items - South Platform Extension							
42.	South Platform Extension	LS	\$100,000.00	1	\$100,000.00	1	\$100,000.00
43.	Stair Structure	LS	\$120,000.00	1	\$120,000.00	1	\$120,000.00
44.	Pedestrian Bridge	LS	\$120,000.00	1	\$120,000.00	1	\$120,000.00
Section Sub-Total					\$340,000.00		\$340,000.00



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
ATLANTIC STREET**

Item No.	Description	Unit	Unit Price	Alternative 2			
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Conventional Concrete-Encased Steel Beams	
				Quantity	Price	Quantity	Price
Structures Items - Ramp Fly-Over Bridge							
45.	Structure Excavation - Earth (Complete)	CY	\$90.00	3,700	\$333,000.00	3,700	\$333,000.00
46.	Pervious Structure Backfill	CY	\$105.00	1,500	\$157,500.00	1,500	\$157,500.00
47.	Steel-Laminated Elastomeric Bearings	CI	\$3.00	5,300	\$15,900.00	5,300	\$15,900.00
48.	Class "A" Concrete	CY	\$850.00	460	\$391,000.00	460	\$391,000.00
49.	Class "F" Concrete	CY	\$1,250.00	140	\$175,000.00	140	\$175,000.00
50.	Deformed Steel Bars	LBS	\$1.60	46,000	\$73,600.00	46,000	\$73,600.00
51.	Deformed Steel Bars Epoxy Coated	LBS	\$1.70	16,800	\$28,560.00	16,800	\$28,560.00
52.	Structural Steel	LBS	\$3.25	54,800	\$178,100.00	54,800	\$178,100.00
53.	Temporary Sheet Piling	SF	\$50.00	240	\$12,000.00	240	\$12,000.00
Section Sub-Total					\$1,364,660.00		\$1,364,660.00

Rail Operations							
54.	Temporary Platform ³ (Stamford Station)	LF	\$350.00	2,000	\$700,000.00	2,000	\$700,000.00
55.	Bridge Plates	EA	\$9,000.00	20	\$180,000.00	20	\$180,000.00
56.	Removal & Erection Cycle - Bridge Plates	EA	\$1,200.00	20	\$24,000.00	20	\$24,000.00
Section Sub-Total					\$904,000.00		\$904,000.00

Project Sub-Total							
Highway & Traffic + Structure + Rail Operations					\$26,008,625.51		\$28,962,325.51

Percentage Based Items (applied to Project Sub-Total)							
1.	Clearing and Grubbing Roadway	@		2%	\$520,172.51	2%	\$579,246.51
2.	M & P of Traffic	@		4%	\$1,040,345.02	4%	\$1,158,493.02
3.	Mobilization	@		7.5%	\$1,950,646.91	7.5%	\$2,172,174.41
4.	Construction Staking	@		1%	\$260,086.26	1%	\$289,623.26
5.	Minor Items	@		25%	\$6,502,156.38	25%	\$7,240,581.38
Section Sub-Total					\$10,273,407.08		\$11,440,118.58

Project Total							
Project Sub-Total + Percentage Based Items					\$36,282,032.59		\$40,402,444.09

Utility Relocation Costs							
1.	Utility Relocation	Est.	\$3,157,500.00	1	\$3,157,500.00	1	\$3,157,500.00
Section Sub-Total					\$3,157,500.00		\$3,157,500.00

Railroad Costs							
1.	RR Force Account Work ^{1&2}	@		40%	\$8,598,150.00	40%	\$10,075,000.00
Section Sub-Total					\$8,598,150.00		\$10,075,000.00

Incidentals and Contingencies (applied to Project Total)							
1.	Incidentals	@		18%	\$6,530,765.87	18%	\$7,272,439.94
2.	Contingencies	@		10%	\$3,628,203.26	10%	\$4,040,244.41
Section Sub-Total					\$10,158,969.13		\$11,312,684.35

Cost of Bridge Replacement (2012)		\$58,196,651.72	\$64,947,628.44
SAY		\$58,200,000.00	\$64,900,000.00

Inflation to Mid-Point of Construction							
Price Adjustment (adjust to 2017)	5 years	@	5%	\$16,078,661.87	5%	\$17,943,832.27	
Cost of Bridge Replacement (2017)				\$74,275,313.59		\$82,891,460.70	
SAY				\$74,300,000.00		\$82,900,000.00	



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
ATLANTIC STREET**

Alternative 2

Project Cost Escalation Footnotes:

1. *Estimated construction cost shown above is based on 2011 prices.*
2. *Rate of construction cost escalation is estimated at 5% per year, per CTDOT Estimating Guidelines, calculated to the mid-point of construction, which is anticipated to be 2016 based on an anticipated 2014 start of construction. Accordingly, the cost escalation factor is 1.28.*

NOTES:

1. MNRR Force Account value is based on 40% of the sum of the total structure and rail operations work for the Undergrade Bridge and Platform Extension + 25% minor items applied to the total structure work.
2. MNRR Force Account includes the cost of Metro North personnel and railroad work associated with the removal of the existing bridge and construction of the proposed bridge, including removal & replacement of railroad tracks, communications & signals, and catenary pole relocation where applicable.
3. Temporary Platform includes 1000-ft of installation and 1000-ft of removal.
4. Items NOT included in this estimate:
 - Building Demolition / ROW acquisitions
 - Environmental Remediation
 - Environmental Studies (20% of Environmental Remediation Costs)



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
ATLANTIC STREET**

Item No.	Description	Unit	Unit Price	Alternative 3			
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Conventional Concrete-Encased Steel Beams	
				Quantity	Price	Quantity	Price
Highway & Traffic Items							
1.	Earth Excavation	CY	\$26.00	9,775	\$254,137.00	9,775	\$254,137.00
2.	Rock Excavation	CY	\$50.00	1,086	\$54,302.78	1,086	\$54,302.78
3.	Borrow	CY	\$20.00	900	\$18,000.00	900	\$18,000.00
4.	Drainage; Pipe (12")	LF	\$55.00	128	\$7,040.00	128	\$7,040.00
5.	Drainage; Pipe (15")	LF	\$60.00	244	\$14,640.00	244	\$14,640.00
6.	Drainage; Catch Basins	EA	\$2,800.00	6	\$16,800.00	6	\$16,800.00
7.	Manhole	EA	\$3,500.00	1	\$3,500.00	1	\$3,500.00
8.	Milling of Bituminous Concrete 0" - 4"	SY	\$8.00	1,350	\$10,800.00	1,350	\$10,800.00
9.	HMA - Superpave	T	\$105.00	1,661	\$174,386.80	1,661	\$174,386.80
10.	Processed Aggregate Base	T	\$45.00	1,891	\$85,083.33	1,891	\$85,083.33
11.	Subbase	T	\$35.00	2,159	\$75,558.19	2,159	\$75,558.19
12.	Impact Attenuators	EA.	\$25,000.00	6	\$150,000.00	6	\$150,000.00
13.	Curbing; Concrete	LF	\$30.00	705	\$21,150.00	705	\$21,150.00
14.	Concrete Sidewalk	SF	\$15.00	12,880	\$193,200.00	12,880	\$193,200.00
15.	Trafficperson (City/State Police Officer)	HR	\$75.00	3,200	\$240,000.00	3,200	\$240,000.00
16.	Roadway Lighting	LF	\$40.00	1,355	\$54,200.00	1,355	\$54,200.00
17.	Traffic Signals; New	EA	\$200,000.00	1	\$200,000.00	1	\$200,000.00
18.	Retaining Walls (Roadway)	SF	\$70.00	14,385	\$1,006,950.00	14,385	\$1,006,950.00
19.	Under-Pin Railroad Retaining Walls	LF	\$450.00	320	\$144,000.00	320	\$144,000.00
Section Sub-Total				\$2,723,748.11		\$2,723,748.11	

Structures Items - Undergrade Bridge							
20.	Structure Excavation - Earth (Complete)	CY	\$90.00	5,100	\$459,000.00	7,300	\$657,000.00
21.	Ballast	CY	\$175.00	500	\$87,500.00	500	\$87,500.00
22.	Ballast Mat	SF	\$15.00	9,400	\$141,000.00	9,400	\$141,000.00
23.	Pervious Structure Backfill	CY	\$105.00	400	\$42,000.00	1,500	\$157,500.00
24.	Removal of Superstructure	LS	\$250,000.00	1	\$250,000.00	1	\$250,000.00
25.	Removal of Substructure	LS	\$670,000.00	1	\$670,000.00	1	\$670,000.00
26.	Temporary Support	LS	\$200,000.00	1	\$200,000.00	1	\$200,000.00
27.	Tie-Back Wall	SF	\$400.00	4,460	\$1,784,000.00	4,460	\$1,784,000.00
28.	Steel-Laminated Elastomeric Bearings	CI	\$3.00	40,000	\$120,000.00	40,000	\$120,000.00
29.	Class "A" Concrete	CY	\$850.00	700	\$595,000.00	1,200	\$1,020,000.00
30.	Class "F" Concrete	CY	\$1,250.00	200	\$250,000.00	200	\$250,000.00
31.	Architectural Formliner	SY	\$400.00	170	\$68,000.00	170	\$68,000.00
32.	Deformed Steel Bars	LBS	\$1.60	90,000	\$144,000.00	140,000	\$224,000.00
33.	P/C Conc. Encased Steel Girders (33"D)	LF	\$1,560.00	5,100	\$7,956,000.00	0	\$0.00
34.	P/C Conc. Encased Steel Girders (30"D)	LBS	\$1,530.00	0	\$0.00	4,600	\$7,038,000.00
35.	Drilled Mini-Piles	EA	\$5,500.00	250	\$1,375,000.00	250	\$1,375,000.00
36.	Temporary Earth Retaining System	SF	\$50.00	1,630	\$81,500.00	1,630	\$81,500.00
37.	Temporary Earth Retaining System (RR)	SF	\$160.00	6,130	\$980,800.00	23,500	\$3,760,000.00
38.	Lead Health Protection Program	LS	\$100,000.00	1	\$100,000.00	1	\$100,000.00
Section Sub-Total				\$15,303,800.00		\$17,983,500.00	

Structures Items - South Platform Extension							
39.	South Platform Extension	LS	\$100,000.00	1	\$100,000.00	1	\$100,000.00
40.	Stair Structure	LS	\$120,000.00	1	\$120,000.00	1	\$120,000.00
41.	Pedestrian Bridge	LS	\$120,000.00	1	\$120,000.00	1	\$120,000.00
Section Sub-Total				\$340,000.00		\$340,000.00	



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
ATLANTIC STREET**

				Alternative 3			
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Conventional Concrete-Encased Steel Beams	
Item No.	Description	Unit	Unit Price	Quantity	Price	Quantity	Price
Rail Operations							
42.	Temporary Platform ³ (Stamford Station)	LF	\$350.00	2,000	\$700,000.00	2,000	\$700,000.00
43.	Bridge Plates	EA	\$9,000.00	20	\$180,000.00	20	\$180,000.00
44.	Removal & Erection Cycle - Bridge Plates	EA	\$1,200.00	20	\$24,000.00	20	\$24,000.00
Section Sub-Total					\$904,000.00		\$904,000.00
Project Sub-Total							
Highway & Traffic + Structure + Rail Operations					\$19,271,548.11		\$21,951,248.11
Percentage Based Items (applied to Project Sub-Total)							
1.	Clearing and Grubbing Roadway	@		2%	\$385,430.96	2%	\$439,024.96
2.	M & P of Traffic	@		4%	\$770,861.92	4%	\$878,049.92
3.	Mobilization	@		7.5%	\$1,445,366.11	7.5%	\$1,646,343.61
4.	Construction Staking	@		1%	\$192,715.48	1%	\$219,512.48
5.	Minor Items	@		25%	\$4,817,887.03	25%	\$5,487,812.03
Section Sub-Total					\$7,612,261.50		\$8,670,743.00
Project Total							
Project Sub-Total + Percentage Based Items					\$26,883,809.61		\$30,621,991.11
Utility Relocation Costs							
1.	Utility Relocation	Est.	\$3,157,500.00	1	\$3,157,500.00	1	\$3,157,500.00
Section Sub-Total					\$3,157,500.00		\$3,157,500.00
Railroad Costs							
1.	RR Force Account Work ^{1&2}	@		40%	\$8,273,900.00	40%	\$9,613,750.00
Section Sub-Total					\$8,273,900.00		\$9,613,750.00
Incidentals and Contingencies (applied to Project Total)							
1.	Incidentals	@		18%	\$4,839,085.73	18%	\$5,511,958.40
2.	Contingencies	@		10%	\$2,688,380.96	10%	\$3,062,199.11
Section Sub-Total					\$7,527,466.69		\$8,574,157.51
Cost of Bridge Replacement (2012)					\$45,842,676.30		\$51,967,398.62
SAY					\$45,800,000.00		\$52,000,000.00
Inflation to Mid-Point of Construction							
Price Adjustment (adjust to 2017)		5 years @	5%		\$12,665,486.24	5%	\$14,357,634.09
Cost of Bridge Replacement (2017)					\$58,508,162.53		\$66,325,032.71
SAY					\$58,500,000.00		\$66,300,000.00



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
ATLANTIC STREET**

Alternative 3

Project Cost Escalation Footnotes:

1. *Estimated construction cost shown above is based on 2011 prices.*
2. *Rate of construction cost escalation is estimated at 5% per year, per CTDOT Estimating Guidelines, calculated to the mid-point of construction, which is anticipated to be 2016 based on an anticipated 2014 start of construction. Accordingly, the cost escalation factor is 1.28.*

NOTES:

1. MNRR Force Account value is based on 40% of the sum of the total structure and rail operations work for the Undergrade Bridge and Platform Extension + 25% minor items applied to the total structure work.
2. MNRR Force Account includes the cost of Metro North personnel and railroad work associated with the removal of the existing bridge and construction of the proposed bridge, including removal & replacement of railroad tracks, communications & signals, and catenary pole relocation where applicable.
3. Temporary Platform includes 1000-ft of installation and 1000-ft of removal.
4. Items NOT included in this estimate:
 - Building Demolition / ROW acquisitions
 - Environmental Remediation
 - Environmental Studies (20% of Environmental Remediation Costs)



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
 State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
 CANAL STREET**

Item No.	Description	Unit	Unit Price	Alternative 1		Alternative 2	
				Quantity	Price	Quantity	Price
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Top Down Multi Steel Girders	
Highway & Traffic Items							
1.	Earth Excavation	CY	\$26.00	1,009	\$26,234.00	1,009	\$26,234.00
2.	Rock Excavation	CY	\$50.00	112	\$5,600.00	112	\$5,600.00
3.	Drainage; Pipe (15")	LF	\$60.00	504	\$30,240.00	504	\$30,240.00
4.	Drainage; Catch Basins	EA	\$2,800.00	3	\$8,400.00	3	\$8,400.00
5.	Manhole	EA	\$3,500.00	1	\$3,500.00	1	\$3,500.00
6.	Milling of Bituminous Concrete 0" - 4"	SY	\$8.00	183	\$1,464.00	183	\$1,464.00
7.	HMA - Superpave	T	\$105.00	447	\$46,935.00	447	\$46,935.00
8.	Processed Aggregate Base	T	\$45.00	447	\$20,115.00	447	\$20,115.00
9.	Subbase	T	\$35.00	509	\$17,815.00	509	\$17,815.00
10.	Temporary PCBC	LF	\$42.00	430	\$18,060.00	430	\$18,060.00
11.	Relocate TPCBC	LF	\$17.00	430	\$7,310.00	430	\$7,310.00
12.	PCBC (Vertical and "F" Shape)	LF	\$100.00	210	\$21,000.00	210	\$21,000.00
13.	Impact Attenuators	EA	\$25,000.00	2	\$50,000.00	2	\$50,000.00
14.	Curbing; Concrete	LF	\$30.00	230	\$6,900.00	230	\$6,900.00
15.	Concrete Sidewalk	SF	\$15.00	3,600	\$54,000.00	3,600	\$54,000.00
16.	Trafficperson (City/State Police Officer)	HR	\$75.00	700	\$52,500.00	700	\$52,500.00
17.	Roadway Lighting	LF	\$40.00	225	\$9,000.00	225	\$9,000.00
18.	Traffic Signals; New	EA	\$200,000.00	1	\$200,000.00	1	\$200,000.00
Section Sub-Total					\$579,073.00		\$579,073.00
Structures Items - Undergrade Bridge							
19.	Structure Excavation - Earth (Complete)	CY	\$90.00	8,300	\$747,000.00	8,300	\$747,000.00
20.	Ballast	CY	\$175.00	550	\$96,250.00	550	\$96,250.00
21.	Ballast Mat	SF	\$15.00	10,400	\$156,000.00	10,400	\$156,000.00
22.	Pervious Structure Backfill	CY	\$105.00	1,800	\$189,000.00	1,800	\$189,000.00
23.	Removal of Superstructure	LS	\$350,000.00	1	\$350,000.00	1	\$350,000.00
24.	Removal of Substructure	LS	\$440,000.00	1	\$440,000.00	1	\$440,000.00
25.	Tie-Back Wall	SF	\$400.00	6,220	\$2,488,000.00	6,220	\$2,488,000.00
26.	Steel-Laminated Elastomeric Bearings	CI	\$3.00	56,400	\$169,200.00	58,000	\$174,000.00
27.	Class "A" Concrete	CY	\$850.00	1,100	\$935,000.00	1,100	\$935,000.00
28.	Class "F" Concrete	CY	\$1,250.00	200	\$250,000.00	200	\$250,000.00
29.	Architectural Formliner	SY	\$400.00	280	\$112,000.00	280	\$112,000.00
30.	Deformed Steel Bars	LBS	\$1.60	130,000	\$208,000.00	130,000	\$208,000.00
31.	Structural Steel (Site No. 1)	LBS	\$3.25	0	\$0.00	1,705,700	\$5,543,525.00
32.	Precast Concrete Encased Steel Girders	LF	\$1,270.00	6,720	\$8,534,400.00	0	\$0.00
33.	Drilled Mini-Piles	EA	\$10,000.00	320	\$3,200,000.00	320	\$3,200,000.00
34.	Temporary Earth Retaining System	SF	\$50.00	1,380	\$69,000.00	1,380	\$69,000.00
35.	Temporary Earth Retaining System (RR)	SF	\$160.00	6,710	\$1,073,600.00	6,710	\$1,073,600.00
36.	Lead Health Protection Program	LS	\$100,000.00	1	\$100,000.00	1	\$100,000.00
Section Sub-Total					\$19,117,450.00		\$16,131,375.00
Project Sub-Total							
Highway & Traffic + Structure					\$19,696,523.00		\$16,710,448.00



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
 State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
 CANAL STREET**

Item No.	Description	Unit	Unit Price	Alternative 1		Alternative 2	
				Quantity	Price	Quantity	Price
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Top Down Multi Steel Girders	
Percentage Based Items (applied to Project Sub-Total)							
1.	Clearing and Grubbing Roadway	@		2%	\$393,930.46	2%	\$334,208.96
2.	M & P of Traffic	@		4%	\$787,860.92	4%	\$668,417.92
3.	Mobilization	@		7.5%	\$1,477,239.23	7.5%	\$1,253,283.60
4.	Construction Staking	@		1%	\$196,965.23	1%	\$167,104.48
5.	Minor Items	@		25%	\$4,924,130.75	25%	\$4,177,612.00
Section Sub-Total					\$7,780,126.59		\$6,600,626.96
Project Total							
Project Sub-Total + Percentage Based Items					\$27,476,649.59		\$23,311,074.96
Utility Relocation Costs							
1.	Utility Relocation	Est.	\$110,000.00	1	\$110,000.00	1	\$110,000.00
Section Sub-Total					\$110,000.00		\$110,000.00
Railroad Costs							
1.	RR Force Account Work ^{1&2}	@		40%	\$7,646,980.00	40%	\$6,452,550.00
Section Sub-Total					\$7,646,980.00		\$6,452,550.00
Incidentals and Contingencies (applied to Project Total)							
1.	Incidentals	@		18%	\$4,945,796.93	18%	\$4,195,993.49
2.	Contingencies	@		10%	\$2,747,664.96	10%	\$2,331,107.50
Section Sub-Total					\$7,693,461.88		\$6,527,100.99
Cost of Bridge Replacement (2012)					\$42,927,091.47		\$36,400,725.95
SAY					\$43,000,000.00		\$36,400,000.00
Inflation to Mid-Point of Construction							
Price Adjustment (adjust to 2017)		5 years @	5%		\$11,859,963.90	5%	\$10,056,849.44
Cost of Bridge Replacement (2017)					\$54,787,055.37		\$46,457,575.39
SAY					\$54,800,000.00		\$46,500,000.00

Project Cost Escalation Footnotes:

- Estimated construction cost shown above is based on 2011 prices.
- Rate of construction cost escalation is estimated at 5% per year, per CTDOT Estimating Guidelines, calculated to the mid-point of construction, which is anticipated to be 2016 based on an anticipated 2014 start of construction. Accordingly, the cost escalation factor is 1.28.

NOTES:

- MNRR Force Account value is based on 40% of the sum of the total structure work for the Undergrade Bridge + 25% minor items applied to the total structure work.
- MNRR Force Account includes the cost of Metro North personnel and railroad work associated with the removal of the existing bridge and construction of the proposed bridge, including removal & replacement of railroad tracks, communications & signals, and catenary pole relocation where applicable.
- Items NOT included in this estimate:
 - Building Demolition / ROW acquisitions
 - Environmental Remediation
 - Environmental Studies (20% of Environmental Remediation Costs)



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
ELM STREET**

Item No.	Description	Unit	Unit Price	Alternative 1		Alternative 2	
				Quantity	Price	Quantity	Price
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Top Down Multi Steel Girders	
Highway & Traffic Items							
1.	Earth Excavation	CY	\$26.00	3,154	\$82,012.67	3,154	\$82,012.67
2.	Rock Excavation	CY	\$50.00	350	\$17,524.07	350	\$17,524.07
3.	Drainage; Pipe (15")	LF	\$60.00	208	\$12,480.00	208	\$12,480.00
4.	Drainage; Pipe (18")	LF	\$67.00	64	\$4,288.00	64	\$4,288.00
5.	Drainage; Pipe (30")	LF	\$90.00	200	\$18,000.00	200	\$18,000.00
6.	Drainage; Catch Basins	EA	\$2,800.00	6	\$16,800.00	6	\$16,800.00
7.	Drainage; Double Catch Basins	EA	\$4,500.00	1	\$4,500.00	1	\$4,500.00
8.	Manhole	EA	\$3,500.00	2	\$7,000.00	2	\$7,000.00
9.	Milling of Bituminous Concrete 0" - 4"	SY	\$8.00	453	\$3,622.22	453	\$3,622.22
10.	HMA - Superpave	T	\$105.00	1,028	\$107,962.68	1,028	\$107,962.68
11.	Processed Aggregate Base	T	\$45.00	1,028	\$46,269.72	1,028	\$46,269.72
12.	Subbase	T	\$35.00	1,171	\$40,969.44	1,171	\$40,969.44
13.	Temporary PCBC	LF	\$42.00	430	\$18,060.00	430	\$18,060.00
14.	Relocate TPCBC	LF	\$17.00	430	\$7,310.00	430	\$7,310.00
15.	PCBC (Vertical and "F" Shape)	LF	\$100.00	240	\$24,000.00	240	\$24,000.00
16.	Impact Attenuators	EA	\$25,000.00	2	\$50,000.00	2	\$50,000.00
17.	Curbing; Concrete	LF	\$30.00	1,490	\$44,700.00	1,490	\$44,700.00
18.	Concrete Sidewalk	SF	\$15.00	9,920	\$148,800.00	9,920	\$148,800.00
19.	Trafficperson (City/State Police Officer)	HR	\$75.00	1,300	\$97,500.00	1,300	\$97,500.00
20.	Roadway Lighting	LF	\$40.00	745	\$29,800.00	745	\$29,800.00
21.	Traffic Signals; New	EA	\$200,000.00	1	\$200,000.00	1	\$200,000.00
22.	Retaining Walls	SF	\$70.00	923	\$64,575.00	923	\$64,575.00
Section Sub-Total					\$1,046,173.81		\$1,046,173.81
Structures Items - Undergrade Bridge							
23.	Structure Excavation - Earth (Complete)	CY	\$90.00	7,800	\$702,000.00	7,800	\$702,000.00
24.	Ballast	CY	\$175.00	550	\$96,250.00	550	\$96,250.00
25.	Ballast Mat	SF	\$15.00	11,100	\$166,500.00	11,100	\$166,500.00
26.	Pervious Structure Backfill	CY	\$105.00	1,300	\$136,500.00	1,300	\$136,500.00
27.	Removal of Superstructure	LS	\$350,000.00	1	\$350,000.00	1	\$350,000.00
28.	Removal of Substructure	LS	\$730,000.00	1	\$730,000.00	1	\$730,000.00
29.	Tie-Back Wall	SF	\$400.00	7,470	\$2,988,000.00	7,470	\$2,988,000.00
30.	Steel-Laminated Elastomeric Bearings	CI	\$3.00	51,100	\$153,300.00	21,100	\$63,300.00
31.	Class "A" Concrete	CY	\$850.00	1,200	\$1,020,000.00	1,200	\$1,020,000.00
32.	Class "F" Concrete	CY	\$1,250.00	200	\$250,000.00	200	\$250,000.00
33.	Architectural Formliner	SY	\$400.00	300	\$120,000.00	300	\$120,000.00
34.	Deformed Steel Bars	LBS	\$1.60	140,000	\$224,000.00	140,000	\$224,000.00
35.	Structural Steel (Site No. 1)	LBS	\$3.25	0	\$0.00	1,966,900	\$6,392,425.00
36.	P/C Conc. Encased Steel Girders (32"D)	LF	\$1,180.00	6,100	\$7,198,000.00	0	\$0.00
37.	Drilled Mini-Piles	EA	\$10,000.00	330	\$3,300,000.00	330	\$3,300,000.00
38.	Temporary Earth Retaining System	SF	\$50.00	2,030	\$101,500.00	2,030	\$101,500.00
39.	Temporary Earth Retaining System (RR)	SF	\$160.00	6,540	\$1,046,400.00	6,540	\$1,046,400.00
40.	Lead Health Protection Program	LS	\$100,000.00	1	\$100,000.00	1	\$100,000.00
Section Sub-Total					\$18,682,450.00		\$17,786,875.00
Rail Operations							
41.	Bridge Plates	EA	\$9,000.00	25	\$225,000.00	25	\$225,000.00
42.	Removal & Erection Cycle - Bridge Plates	EA	\$1,200.00	25	\$30,000.00	25	\$30,000.00
Section Sub-Total					\$255,000.00		\$255,000.00
Project Sub-Total							
Highway & Traffic + Structure + Rail Operations					\$19,983,623.81		\$19,088,048.81



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
 State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
 ELM STREET**

Item No.	Description	Unit	Unit Price	Alternative 1		Alternative 2	
				Quantity	Price	Quantity	Price
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Top Down Multi Steel Girders	
Percentage Based Items (applied to Project Sub-Total)							
1.	Clearing and Grubbing Roadway	@		2%	\$399,672.48	2%	\$381,760.98
2.	M & P of Traffic	@		4%	\$799,344.95	4%	\$763,521.95
3.	Mobilization	@		7.5%	\$1,498,771.79	7.5%	\$1,431,603.66
4.	Construction Staking	@		1%	\$199,836.24	1%	\$190,880.49
5.	Minor Items	@		25%	\$4,995,905.95	25%	\$4,772,012.20
Section Sub-Total					\$7,893,531.40		\$7,539,779.28

Project Total				
Project Sub-Total + Percentage Based Items			\$27,877,155.21	\$26,627,828.09

Utility Relocation Costs							
1.	Utility Relocation	Est.	\$1,563,500.00	1	\$1,563,500.00	1	\$1,563,500.00
Section Sub-Total					\$1,563,500.00		\$1,563,500.00

Railroad Costs							
1.	RR Force Account Work ^{1&2}	@		40%	\$7,574,980.00	40%	\$7,216,750.00
2.	Temporary Cut and Throw	Est.	\$3,000,000.00	1	\$3,000,000.00	1	\$3,000,000.00
Section Sub-Total					\$10,574,980.00		\$10,216,750.00

Incidentals and Contingencies (applied to Project Total)							
1.	Incidentals	@		18%	\$5,017,887.94	18%	\$4,793,009.06
2.	Contingencies	@		10%	\$2,787,715.52	10%	\$2,662,782.81
Section Sub-Total					\$7,805,603.46		\$7,455,791.86

Cost of Bridge Replacement (2012)		\$47,821,238.67	\$45,863,869.95
	SAY	\$47,800,000.00	\$45,900,000.00

Inflation to Mid-Point of Construction					
Price Adjustment (adjust to 2017)	5 years @	5%	\$13,212,126.54	5%	\$12,671,341.65

Cost of Bridge Replacement (2017)		\$61,033,365.21	\$58,535,211.60
	SAY	\$61,000,000.00	\$58,500,000.00

Project Cost Escalation Footnotes:

- Estimated construction cost shown above is based on 2011 prices.
- Rate of construction cost escalation is estimated at 5% per year, per CTDOT Estimating Guidelines, calculated to the mid-point of construction, which is anticipated to be 2016 based on an anticipated 2014 start of construction. Accordingly, the cost escalation factor is 1.28.

NOTES:

- MNRR Force Account value is based on 40% of the sum of the total structure and rail operations work for the Undergrade Bridge + 25% minor items applied to that total.
- MNRR Force Account includes the cost of Metro North personnel and railroad work associated with the removal of the existing bridge and construction of the proposed bridge, including removal & replacement of railroad tracks, communications & signals, and catenary pole relocation where applicable.
- Items NOT included in this estimate:
 - Building Demolition / ROW acquisitions
 - Environmental Remediation
 - Environmental Studies (20% of Environmental Remediation Costs)



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
U.S. ROUTE 1 (EAST MAIN STREET)**

Item No.	Description	Unit	Unit Price	Alternative 1					
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Conventional Concrete-Encased Steel Beams		Four Span Top Down Concrete-Encased Steel Beams	
				Quant.	Price	Quant.	Price	Quant.	Price
Highway & Traffic Items									
1.	Earth Excavation	CY	\$26.00	3,348	\$87,056.67	3,348	\$87,056.67	2,784	\$72,374.47
2.	Rock Excavation	CY	\$50.00	372	\$18,601.85	372	\$18,601.85	309	\$15,464.63
3.	Drainage; Pipe (12")	LF	\$55.00	96	\$5,280.00	96	\$5,280.00	96	\$5,280.00
4.	Drainage; Pipe (15")	LF	\$60.00	104	\$6,240.00	104	\$6,240.00	104	\$6,240.00
5.	Drainage; Pipe (72")	LF	\$165.00	204	\$33,660.00	204	\$33,660.00	204	\$33,660.00
6.	Drainage; Catch Basins	EA	\$2,800.00	7	\$19,600.00	7	\$19,600.00	7	\$19,600.00
7.	Manhole	EA	\$3,500.00	3	\$10,500.00	3	\$10,500.00	3	\$10,500.00
8.	Milling of Bituminous Concrete 0"-4"	SY	\$8.00	719	\$5,755.56	719	\$5,755.56	628	\$5,022.22
9.	HMA - Superpave	T	\$105.00	1,051	\$110,336.80	1,051	\$110,336.80	1,020	\$107,057.44
10.	Processed Aggregate Base	T	\$45.00	1,051	\$47,287.20	1,051	\$47,287.20	1,020	\$45,881.76
11.	Subbase	T	\$35.00	1,196	\$41,870.37	1,196	\$41,870.37	1,161	\$40,625.93
12.	Temporary PCBC	LF	\$42.00	600	\$25,200.00	600	\$25,200.00	600	\$25,200.00
13.	Relocate TPCBC	LF	\$17.00	600	\$10,200.00	600	\$10,200.00	600	\$10,200.00
14.	PCBC (Vertical and "F" Shape)	LF	\$100.00	270	\$27,000.00	270	\$27,000.00	800	\$80,000.00
15.	Impact Attenuators	EA.	\$25,000.00	2	\$50,000.00	2	\$50,000.00	2	\$50,000.00
16.	Curbing; Concrete	LF	\$30.00	1,100	\$33,000.00	1,100	\$33,000.00	1,050	\$31,500.00
17.	Concrete Sidewalk	SF	\$15.00	8,800	\$132,000.00	8,800	\$132,000.00	8,400	\$126,000.00
18.	Trafficperson (City/State Police)	HR	\$75.00	1,100	\$82,500.00	1,100	\$82,500.00	1,100	\$82,500.00
19.	Roadway Lighting	LF	\$40.00	450	\$18,000.00	450	\$18,000.00	450	\$18,000.00
20.	Traffic Signals; Minor Modification	EA	\$30,000.00	2	\$60,000.00	2	\$60,000.00	2	\$60,000.00
21.	Retaining Walls	SF	\$70.00	450	\$31,500.00	450	\$31,500.00	450	\$31,500.00
Section Sub-Total					\$855,588.44		\$855,588.44		\$876,606.44

Structures Items - Undergrade Bridge									
22.	Structure Excavation - Earth	CY	\$90.00	7,000	\$630,000.00	10,900	\$981,000.00	7,700	\$693,000.00
23.	Ballast	CY	\$175.00	750	\$131,250.00	650	\$113,750.00	810	\$141,750.00
24.	Ballast Mat	SF	\$15.00	10,800	\$162,000.00	10,800	\$162,000.00	10,800	\$162,000.00
25.	Pervious Structure Backfill	CY	\$105.00	800	\$84,000.00	9,900	\$1,039,500.00	900	\$94,500.00
26.	Removal of Superstructure	LS	\$250,000.00	1	\$250,000.00	1	\$250,000.00	1	\$250,000.00
27.	Removal of Substructure (Two Span LS		\$530,000.00	1	\$530,000.00	1	\$530,000.00	0	\$0.00
28.	Removal of Substructure (Four Spar LS		\$750,000.00	0	\$0.00	0	\$0.00	1	\$750,000.00
29.	Temporary Support	LS	\$250,000.00	0	\$0.00	0	\$0.00	0	\$0.00
30.	Tie-Back Wall	SF	\$400.00	6,550	\$2,620,000.00	0	\$0.00	9,240	\$3,696,000.00
31.	Steel-Laminated Elastomeric Brgs.	CI	\$3.00	37,000	\$111,000.00	37,000	\$111,000.00	74,000	\$222,000.00
32.	Class "A" Concrete	CY	\$850.00	1,200	\$1,020,000.00	2,300	\$1,955,000.00	2,200	\$1,870,000.00
33.	Class "F" Concrete	CY	\$1,250.00	200	\$250,000.00	200	\$250,000.00	500	\$625,000.00
34.	Architectural Formliner	SY	\$400.00	250	\$100,000.00	350	\$140,000.00	350	\$140,000.00
35.	Deformed Steel Bars	LBS	\$1.60	140,000	\$224,000.00	250,000	\$400,000.00	270,000	\$432,000.00
36.	Structural Steel	LBS	\$3.25	0	\$0.00	0	\$0.00	0	\$0.00
37.	P/C Conc. Enc. Steel Grdrs (34"D)	LF	\$1,570.00	0	\$0.00	5,700	\$8,949,000.00	0	\$0.00
38.	P/C Conc. Enc. Steel Grdrs (39"D)	LF	\$1,620.00	6,400	\$10,368,000.00	0	\$0.00	0	\$0.00
39.	P/C Conc. Enc. Steel Grdrs (28"D)	LF	\$1,510.00	0	\$0.00	0	\$0.00	7,100	\$10,721,000.00
40.	Drilled Mini-Piles	EA	\$10,000.00	340	\$3,400,000.00	340	\$3,400,000.00	545	\$5,450,000.00
41.	Repointed Masonry	SY	\$80.00	85	\$6,800.00	0	\$0.00	0	\$0.00
42.	Temp. Earth Retaining System	SF	\$50.00	2,030	\$101,500.00	2,030	\$101,500.00	6,090	\$304,500.00
43.	Temp. Earth Retaining System (RR)	SF	\$160.00	4,130	\$660,800.00	18,000	\$2,880,000.00	4,130	\$660,800.00
44.	Lead Health Protection Program	LS	\$100,000.00	1	\$100,000.00	1	\$100,000.00	1	\$100,000.00
Section Sub-Total					\$20,749,350.00		\$21,362,750.00		\$26,312,550.00

Rail Operations									
48.	Bridge Plates	EA	\$9,000.00	25	\$225,000.00	25	\$225,000.00	25	\$225,000.00
49.	Removal & Erection - Bridge Plates	EA	\$1,200.00	25	\$30,000.00	25	\$30,000.00	25	\$30,000.00
Section Sub-Total					\$255,000.00		\$255,000.00		\$255,000.00



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
U.S. ROUTE 1 (EAST MAIN STREET)**

Item No.	Description	Unit	Unit Price	Alternative 1					
				Two Span Top Down Concrete-Encased Steel Beams		Two Span Conventional Concrete-Encased Steel Beams		Four Span Top Down Concrete-Encased Steel Beams	
				Quant.	Price	Quant.	Price	Quant.	Price

Project Sub-Total									
Highway & Traffic + Structure + Rail Operations				\$21,859,938.44		\$22,473,338.44		\$27,444,156.44	

Percentage Based Items (applied to Project Sub-Total)									
1.	Clearing and Grubbing Roadway	@	2%	\$437,198.77	2%	\$449,466.77	2%	\$548,883.13	
2.	M & P of Traffic	@	4%	\$874,397.54	4%	\$898,933.54	4%	\$1,097,766.26	
3.	Mobilization	@	7.5%	\$1,639,495.38	7.5%	\$1,685,500.38	7.5%	\$2,058,311.73	
4.	Construction Staking	@	1%	\$218,599.38	1%	\$224,733.38	1%	\$274,441.56	
5.	Minor Items	@	25%	\$5,464,984.61	25%	\$5,618,334.61	25%	\$6,861,039.11	
Section Sub-Total				\$8,634,675.69		\$8,876,968.69		\$10,840,441.80	

Project Total									
Project Sub-Total + Percentage Based Items				\$30,494,614.13		\$31,350,307.13		\$38,284,598.24	

Utility Relocation Costs									
1.	Utility Relocation	Est.	\$1,585,500.00	1	\$1,585,500.00	1	\$1,585,500.00	1	\$1,585,500.00
Section Sub-Total				\$1,585,500.00		\$1,585,500.00		\$1,585,500.00	

Railroad Costs									
1.	RR Force Account Work ^{1&2}	@	40%	\$10,502,175.00	40%	\$10,808,875.00	40%	\$13,283,775.00	
2.	Temporary Cut and Throw	Est.	\$3,000,000.00	1	\$3,000,000.00	1	\$3,000,000.00	1	\$3,000,000.00
Section Sub-Total				\$13,502,175.00		\$13,808,875.00		\$16,283,775.00	

Incidentals and Contingencies (applied to Project Total)									
1.	Incidentals	@	18%	\$5,489,030.54	18%	\$5,643,055.28	18%	\$6,891,227.68	
2.	Contingencies	@	10%	\$3,049,461.41	10%	\$3,135,030.71	10%	\$3,828,459.82	
Section Sub-Total				\$8,538,491.96		\$8,778,086.00		\$10,719,687.51	

Cost of Bridge Replacement (2012)	\$54,120,781.09	\$55,522,768.13	\$66,873,560.75
SAY	\$54,100,000.00	\$55,500,000.00	\$66,900,000.00

Inflation to Mid-Point of Construction									
Price Adjustment (adj. to 2017)	5 years	@	5%	\$14,952,573.96	5%	\$15,339,917.13	5%	\$18,475,931.85	
Cost of Bridge Replacement (2017)	\$69,073,355.05	\$70,862,685.26	\$85,349,492.60						
SAY	\$69,100,000.00	\$70,900,000.00	\$85,300,000.00						

Project Cost Escalation Footnotes:

- Estimated construction cost shown above is based on 2011 prices.
- Rate of construction cost escalation is estimated at 5% per year, per CTDOT Estimating Guidelines, calculated to the mid-point of construction, which is anticipated to be 2016 based on an anticipated 2014 start of construction. Accordingly, the cost escalation factor is 1.28.

NOTES:

- MNRR Force Account value is based on 40% of the sum of the total structure and rail operations work for the Undergrade Bridge + 25% minor items applied to the total structure work.
- MNRR Force Account includes the cost of Metro North personnel and railroad work associated with the removal of the existing bridge and construction of the proposed bridge, including removal & replacement of railroad tracks, communications & signals, and catenary pole relocation where applicable.
- Items NOT included in this estimate:
 - Building Demolition / ROW acquisitions
 - Environmental Remediation
 - Environmental Studies (20% of Environmental Remediation Costs)



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
U.S. ROUTE 1 (EAST MAIN STREET)**

				Alternative 2					
				Two Span Top Down Half-Through Girders		Two Span Conventional Half-Through Girders		Four Span Top Down Half-Through Girders	
Item No.	Description	Unit	Unit Price	Quant.	Price	Quant.	Price	Quant.	Price
Highway & Traffic Items									
1.	Earth Excavation	CY	\$26.00	3,348	\$87,056.67	3,348	\$87,056.67	2,784	\$72,374.47
2.	Rock Excavation	CY	\$50.00	372	\$18,601.85	372	\$18,601.85	309	\$15,464.63
3.	Drainage; Pipe (12")	LF	\$55.00	96	\$5,280.00	96	\$5,280.00	96	\$5,280.00
4.	Drainage; Pipe (15")	LF	\$60.00	104	\$6,240.00	104	\$6,240.00	104	\$6,240.00
5.	Drainage; Pipe (72")	LF	\$165.00	204	\$33,660.00	204	\$33,660.00	204	\$33,660.00
6.	Drainage; Catch Basins	EA	\$2,800.00	7	\$19,600.00	7	\$19,600.00	7	\$19,600.00
7.	Manhole	EA	\$3,500.00	3	\$10,500.00	3	\$10,500.00	3	\$10,500.00
8.	Milling of Bituminous Concrete 0"-4"	SY	\$8.00	719	\$5,755.56	719	\$5,755.56	628	\$5,022.22
9.	HMA - Superpave	T	\$105.00	1,051	\$110,336.80	1,051	\$110,336.80	1,020	\$107,057.44
10.	Processed Aggregate Base	T	\$45.00	1,051	\$47,287.20	1,051	\$47,287.20	1,020	\$45,881.76
11.	Subbase	T	\$35.00	1,196	\$41,870.37	1,196	\$41,870.37	1,161	\$40,625.93
12.	Temporary PCBC	LF	\$42.00	600	\$25,200.00	600	\$25,200.00	600	\$25,200.00
13.	Relocate TPCBC	LF	\$17.00	600	\$10,200.00	600	\$10,200.00	600	\$10,200.00
14.	PCBC (Vertical and "F" Shape)	LF	\$100.00	270	\$27,000.00	270	\$27,000.00	800	\$80,000.00
15.	Impact Attenuators	EA.	\$25,000.00	2	\$50,000.00	2	\$50,000.00	2	\$50,000.00
16.	Curbing; Concrete	LF	\$30.00	1,100	\$33,000.00	1,100	\$33,000.00	1,050	\$31,500.00
17.	Concrete Sidewalk	SF	\$15.00	8,800	\$132,000.00	8,800	\$132,000.00	8,400	\$126,000.00
18.	Trafficperson (City/State Police)	HR	\$75.00	1,100	\$82,500.00	1,100	\$82,500.00	1,100	\$82,500.00
19.	Roadway Lighting	LF	\$40.00	450	\$18,000.00	450	\$18,000.00	450	\$18,000.00
20.	Traffic Signals; Minor Modification	EA	\$30,000.00	2	\$60,000.00	2	\$60,000.00	2	\$60,000.00
21.	Retaining Walls	SF	\$70.00	450	\$31,500.00	450	\$31,500.00	450	\$31,500.00
Section Sub-Total					\$855,588.44	\$855,588.44	\$855,588.44	\$876,606.44	

Structures Items - Undergrade Bridge									
22.	Structure Excavation - Earth	CY	\$90.00	7,000	\$630,000.00	10,900	\$981,000.00	7,700	\$693,000.00
23.	Ballast	CY	\$175.00	750	\$131,250.00	650	\$113,750.00	810	\$141,750.00
24.	Ballast Mat	SF	\$15.00	10,800	\$162,000.00	10,800	\$162,000.00	10,800	\$162,000.00
25.	Pervious Structure Backfill	CY	\$105.00	800	\$84,000.00	9,900	\$1,039,500.00	900	\$94,500.00
26.	Removal of Superstructure	LS	\$250,000.00	1	\$250,000.00	1	\$250,000.00	1	\$250,000.00
27.	Removal of Substructure (Two Span LS		\$530,000.00	1	\$530,000.00	1	\$530,000.00	0	\$0.00
28.	Removal of Substructure (Four Spar LS		\$750,000.00	0	\$0.00	0	\$0.00	1	\$750,000.00
29.	Temporary Support	LS	\$200,000.00	1	\$200,000.00	1	\$200,000.00	1	\$200,000.00
30.	Tie-Back Wall	SF	\$400.00	6,550	\$2,620,000.00	0	\$0.00	9,240	\$3,696,000.00
31.	Steel-Laminated Elastomeric Brgs.	CI	\$3.00	21,300	\$63,900.00	21,300	\$63,900.00	21,300	\$63,900.00
32.	Class "A" Concrete	CY	\$850.00	1,200	\$1,020,000.00	2,300	\$1,955,000.00	2,200	\$1,870,000.00
33.	Class "F" Concrete	CY	\$1,250.00	200	\$250,000.00	200	\$250,000.00	500	\$625,000.00
34.	Architectural Formliner	SY	\$400.00	250	\$100,000.00	350	\$140,000.00	350	\$140,000.00
35.	Deformed Steel Bars	LBS	\$1.60	140,000	\$224,000.00	250,000	\$400,000.00	270,000	\$432,000.00
36.	Structural Steel	LBS	\$3.25	3,262,700	\$10,603,775.00	3,009,700	\$9,781,525.00	3,323,000	\$10,799,750.00
37.	P/C Conc. Enc. Steel Grdrs (34"D)	LF	\$1,570.00	0	\$0.00	0	\$0.00	0	\$0.00
38.	P/C Conc. Enc. Steel Grdrs (39"D)	LF	\$1,620.00	0	\$0.00	0	\$0.00	0	\$0.00
39.	P/C Conc. Enc. Steel Grdrs (28"D)	LF	\$1,510.00	0	\$0.00	0	\$0.00	0	\$0.00
40.	Drilled Mini-Piles	EA	\$10,000.00	340	\$3,400,000.00	340	\$3,400,000.00	545	\$5,450,000.00
41.	Repointed Masonry	SY	\$80.00	85	\$6,800.00	0	\$0.00	0	\$0.00
42.	Temp. Earth Retaining System	SF	\$50.00	2,030	\$101,500.00	2,030	\$101,500.00	6,090	\$304,500.00
43.	Temp. Earth Retaining System (RR)	SF	\$160.00	4,130	\$660,800.00	18,000	\$2,880,000.00	4,130	\$660,800.00
44.	Lead Health Protection Program	LS	\$100,000.00	1	\$100,000.00	1	\$100,000.00	1	\$100,000.00
Section Sub-Total					\$21,138,025.00	\$22,348,175.00	\$22,348,175.00	\$26,433,200.00	

Rail Operations									
48.	Bridge Plates	EA	\$9,000.00	25	\$225,000.00	25	\$225,000.00	25	\$225,000.00
49.	Removal & Erection - Bridge Plates	EA	\$1,200.00	25	\$30,000.00	25	\$30,000.00	25	\$30,000.00
Section Sub-Total					\$255,000.00	\$255,000.00	\$255,000.00	\$255,000.00	



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
U.S. ROUTE 1 (EAST MAIN STREET)**

				Alternative 2					
				Two Span Top Down Half-Through Girders		Two Span Conventional Half-Through Girders		Four Span Top Down Half-Through Girders	
Item No.	Description	Unit	Unit Price	Quant.	Price	Quant.	Price	Quant.	Price
Project Sub-Total									
Highway & Traffic + Structure + Rail Operations					\$22,248,613.44		\$23,458,763.44		\$27,564,806.44
Percentage Based Items (applied to Project Sub-Total)									
1.	Clearing and Grubbing Roadway	@	2%		\$444,972.27	2%	\$469,175.27	2%	\$551,296.13
2.	M & P of Traffic	@	4%		\$889,944.54	4%	\$938,350.54	4%	\$1,102,592.26
3.	Mobilization	@	7.5%		\$1,668,646.01	7.5%	\$1,759,407.26	7.5%	\$2,067,360.48
4.	Construction Staking	@	1%		\$222,486.13	1%	\$234,587.63	1%	\$275,648.06
5.	Minor Items	@	25%		\$5,562,153.36	25%	\$5,864,690.86	25%	\$6,891,201.61
Section Sub-Total					\$8,788,202.31		\$9,266,211.56		\$10,888,098.55
Project Total									
Project Sub-Total + Percentage Based Items					\$31,036,815.76		\$32,724,975.01		\$38,452,904.99
Utility Relocation Costs									
1.	Utility Relocation	Est.	\$1,585,500.00	1	\$1,585,500.00	1	\$1,585,500.00	1	\$1,585,500.00
Section Sub-Total					\$1,585,500.00		\$1,585,500.00		\$1,585,500.00
Railroad Costs									
1.	RR Force Account Work ^{1&2}	@	40%		\$10,696,512.50	40%	\$11,301,587.50	40%	\$13,344,100.00
2.	Temporary Cut and Throw	Est.	\$3,000,000.00	1	\$3,000,000.00	1	\$3,000,000.00	1	\$3,000,000.00
Section Sub-Total					\$13,696,512.50		\$14,301,587.50		\$16,344,100.00
Incidentals and Contingencies (applied to Project Total)									
1.	Incidentals	@	18%		\$5,586,626.84	18%	\$5,890,495.50	18%	\$6,921,522.90
2.	Contingencies	@	10%		\$3,103,681.58	10%	\$3,272,497.50	10%	\$3,845,290.50
Section Sub-Total					\$8,690,308.41		\$9,162,993.00		\$10,766,813.40
Cost of Bridge Replacement (2012)					\$55,009,136.67		\$57,775,055.51		\$67,149,318.39
SAY					\$55,000,000.00		\$57,800,000.00		\$67,100,000.00
Inflation to Mid-Point of Construction									
Price Adjustment (adj. to 2017)		5 years @	5%		\$15,198,010.23	5%	\$15,962,182.61	5%	\$18,552,118.60
Cost of Bridge Replacement (2017)					\$70,207,146.90		\$73,737,238.12		\$85,701,436.99
SAY					\$70,200,000.00		\$73,700,000.00		\$85,700,000.00

Project Cost Escalation Footnotes:

1. Estimated construction cost shown above is based on 2011 prices.
2. Rate of construction cost escalation is estimated at 5% per year, per CTDOT Estimating Guidelines, calculated to the mid-point of construction, which is anticipated to be 2016 based on an anticipated 2014 start of construction. Accordingly, the cost escalation factor is 1.28.

NOTES:

1. MNRR Force Account value is based on 40% of the sum of the total structure and rail operations work for the Undergrade Bridge + 25% minor items applied to the total structure work.
2. MNRR Force Account includes the cost of Metro North personnel and railroad work associated with the removal of the existing bridge and construction of the proposed bridge, including removal & replacement of railroad tracks, communications & signals, and catenary pole relocation where applicable.
3. Items NOT included in this estimate:
 - Building Demolition / ROW acquisitions
 - Environmental Remediation
 - Environmental Studies (20% of Environmental Remediation Costs)



South Stamford Accessibility and MNRR Bridge Replacement Feasibility Study

Stamford, Connecticut
State Project No. 135-301

**PRELIMINARY ENGINEERING CONSTRUCTION COST ESTIMATE
PHASE I CONSTRUCTION**

Description	Phase 1 Construction				
	Combined Construction Cost Totals	Individual Bridge Cost Totals			
	Price	Price			
Project Total					
Atlantic Street - Alternate 2	\$36,282,000.00	\$36,282,000.00			
Elm Street	\$27,877,000.00	\$27,877,000.00			
East Main Street - (Alternate 1)	\$30,495,000.00	\$30,495,000.00			
Net Savings in Rail Operation Costs (between Elm and East Main)	-\$255,000.00	\$0.00			
Section Sub-Total	\$94,399,000.00	\$94,654,000.00			
Utility Relocation Costs					
Atlantic Street - Alternate 2	\$3,158,000.00	\$3,158,000.00			
Elm Street	\$1,564,000.00	\$1,564,000.00			
East Main Street	\$1,586,000.00	\$1,586,000.00			
Section Sub-Total	\$6,308,000.00	\$6,308,000.00			
Railroad Costs (incl. Force Account)					
Atlantic Street - Alternate 2	\$8,598,000.00	\$8,598,000.00			
Elm Street	\$10,575,000.00	\$10,575,000.00			
East Main Street	\$13,502,000.00	\$13,502,000.00			
Net Savings by constructing 3 bridges at once	-\$9,903,000.00	\$0.00			
Section Sub-Total	\$22,772,000.00	\$32,675,000.00			
Incidentals and Contingencies (applied to Project Total)					
1. Incidentals @	18%	\$16,992,000.00	18%	\$17,037,720.00	
2. Contingencies @	10%	\$9,440,000.00	10%	\$9,465,400.00	
Section Sub-Total		\$26,432,000.00		\$26,503,120.00	
Cost of Bridge Rehabilitation (2012)		\$149,911,000.00		\$160,140,120.00	
SAY		\$150,000,000.00		\$160,200,000.00	
Inflation to Mid-Point of Construction					
Price Adjustment (adjust to 2017)	5 years @	5%	\$41,417,645.32	5%	\$44,243,762.57
Cost of Bridge Replacement (2017)			\$191,328,645.32		\$204,383,882.57
SAY			\$191,400,000.00		\$204,400,000.00

Project Cost Escalation Footnotes:

1. Estimated construction cost shown above is based on 2011 prices.
2. Rate of construction cost escalation is estimated at 5% per year, per CTDOT Estimating Guidelines, calculated to the mid-point of construction, which is anticipated to be 2016 based on an anticipated 2014 start of construction. Accordingly, the cost escalation factor is 1.276.