JAMES J. FIORENTINI
MAYOR

April 27, 2012

CITY OF HAVERHILL
MASSACHUSETTS

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City Council President John Michitson and
Havherhill City Council Members

RE: Capital Plan Request

Dear Mr. President and City Council Members:

Attached are supporting documents related to our capital plan request.

Citizens Center- $638,000- This project is my top priority. We received a federal matching earmark for $237,500 with a match from the city for $237,500 for a total of $475,000. However, this expiring earmark is likely not enough to make the actual repairs needed. In order to make sure we undertake the necessary repairs needed to save the structure, the city is budgeting an additional $400,000 for the project on top of the federal earmark (including the match). We are replacing the outside envelope of the building, which will likely include doors and windows. Thanks to prior grants and energy rebates, we have had two different firms analyze the structure over the past three years (Woodman and Associates and Ameresco). I am including both of their analyses relative to the outer shell of the structure. The total project cost will not be known conclusively until after the construction bids are received. We are attempting to draw down this expiring United States Department of Energy earmark by September 30, 2012-- the end of the Federal Fiscal Year.

Fire Truck- $260,000- We need to replace our 22 year old ladder truck. Repairs to the vehicle to bring it up to safety code would cost $200,000 and added body work would bring the cost closer to $400,000. We are requesting to purchase a used 2006 ladder truck.

Flood Wall Engineering- $280,000- We need to access and repair our floodwall system to maintain our Federal Emergency Management Agency (FEMA) mandated coverage on this U.S. Army Corps built and permitted floodwall system, which includes the Little River Conduit under downtown Haverhill and the Washington Square Pump Station. To maintain our certification, we need to do repairs to these three structures and increase the height of the floodwall (levee) as well. We are applying to the U.S. Department of Commerce's Economic Development Administration for a grant to cover half the costs of the design and hopefully half of the construction costs, estimated at over $2.2 million total. Our design engineers at AECOM have estimated these figures for design and construction. This bonding request only consists of the design costs at this point ($280,000).

East Broadway Bridge Repairs- $400,000- To maintain the safety of the bridge, we need to install precast concrete Jersey barriers that bolt to the deck with a steel guardrail that bolts to the barrier and terminate safely. We need to reconstruct the northwest, northeast and southeast wingwalls. The sinkhole needs to be repaired along with removal of the vegetation growing from the substructure. We need to remove the boulders forming the foot bridge/dam across the channel at both openings at the bridge. The final item needed at this time is to repoint/recheck abutment as necessary.

Dock Improvements- $100,000- This project will provide for additional capacity for private boats and commercial boat tour traffic to dock in downtown Haverhill in a fully permitted and ADA-accessible facility to safely access the river from downtown. There is approximately $130,000 in expiring state PARC (Self-Help) Grant funds that are helping to fund this project. Even with these funds, there is a funding gap of $100,000 largely due to higher than anticipated federal permitting costs for the project.

Traffic Signal Fire Improvements- $20,000- We need to replace a traffic signal at a crosswalk on South Main Street in front of Temple Emanu-El that was damaged by an unknown vehicle and has been non-functional. There was a man hit at his intersection while the light was not functioning. We have secured used equipment for free from MASS DOT from the Route 125 project. Additionally, we need to install a video camera and processor for Webster Street.

SCBA-Fire Department- $79,000- The Federal Emergency Management Agency (FEMA) awarded an Assistance to Firefighters Grant to us for the purchase of 60 new Self Contained Breathing Apparatus (SCBA), a new compressor and fill station to fill the SCBAs and 3 Rapid Intervention Team (RIT) packs. The Self Contained Breathing Apparatus contains compressed air. The SCBA protects the firefighter's respiratory tract and lungs and allows the firefighters to operate in an atmosphere that is immediately dangerous to life and health (IDLH atmosphere). These new state of the art units will provide the best protection available for the firefighter's respiratory tract protection. These units will be placed on all of the City of Haverhill Fire Department trucks. The grant is for $319,584 with an additional share of $79,896 from the City of Haverhill, totaling $399,480.

Very truly yours,

James J. Fiorentini
Mayor

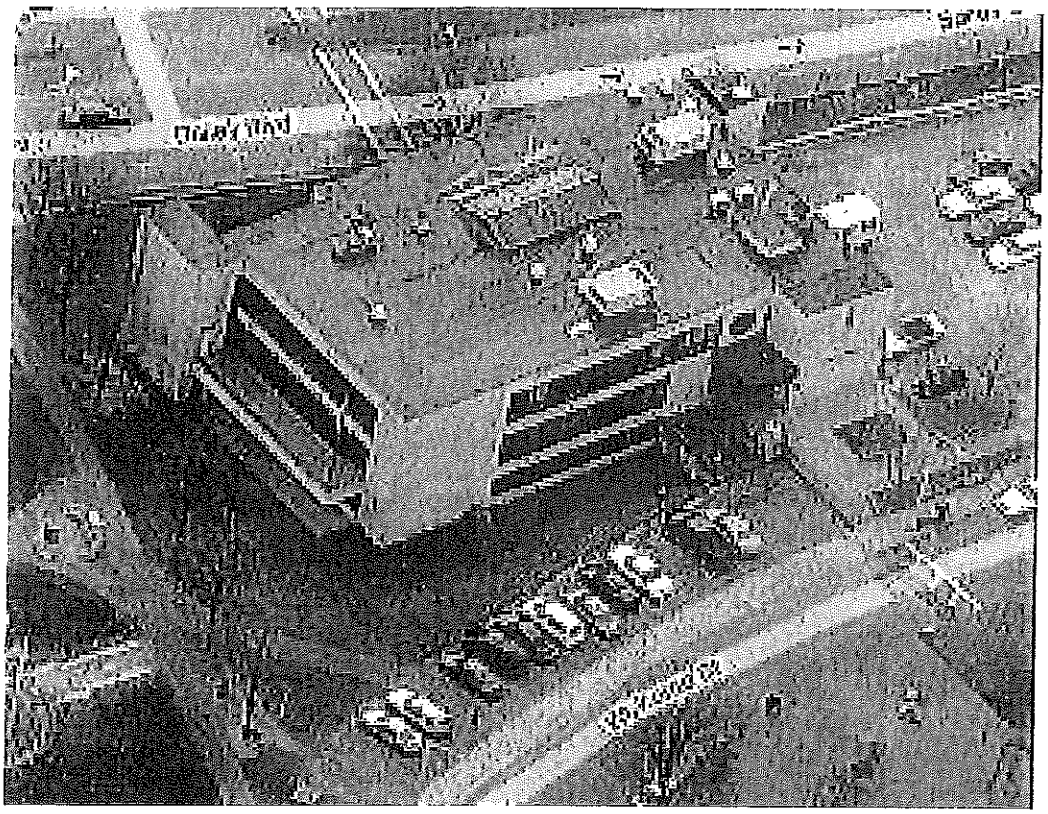
3.3

Backup

Haverhill Citizen Center Study

10 Welcome Street
Haverhill, MA
December 14, 2009

Prepared by
Woodman Associates Architects
Simpson Gumpertz & Heger
BLW Engineers
for
The City of Haverhill, MA



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HAVERHILL CITIZEN CENTER
HAVERHILL, MASSACHUSETTS

Executive Summary

- Built in 1975, the Haverhill Citizen's Center is a 3 story, steel frame building clad with glass-fiber-reinforced concrete (GFRC) panels and aluminum framed windows. The entire building envelop has deteriorated and jeopardizes the habitability of the building. The entire wall system needs to be removed totally and replaced. The reuse of the window system is still questionable. The mechanical and electrical systems (MEP+FP), in most cases have exceeded their life expectancy and are inefficient to operate.

The report describes the following items in detail along with general remedial solutions and their associated costs.

Building Enclosure

1. GFRC Panels

The exterior GFRC panels that enclose the building and protect it from the elements are so severely compromised that the replacement of the entire exterior skin is imperative.

- The panels are distorted and the joints have opened up to allow water and air to infiltrate the building.
- Temporary plywood sheets have replaced numerous GFRC panels.
- Water infiltration has caused the steel-stud tracks that support the panels to corrode.
  - The steel stud framing system requires reinforcing.
- The GFRC panels lack the proper flashing to protect the building from water infiltration.
- Joints between the panels have opened up and allow water to infiltrate the building. The joints are so deformed that recaulking them is not an option.

2. Insulation
   - The existing fiberglass insulation has been compromised and does not meet the current energy code.
3. Windows
   - The windows are not flashed properly and do not appear to have sufficient attachment to the building.
   - Several windows require window sealant strips to be reset.
   - The windows can be reinforced as required during the reworking of the new exterior wall system.
   - The current window system appears to be marginally adequate. A new, energy efficient window wall would cost in the order of $350,000 to install. While it would reduce operating costs the installation of new windows would exceed the funds available at this time.
   -
4. Roofing
   - The roofing on the building is in serviceable condition and needs only minor repairs.
5. Skylight
   - The skylight on the building is energy inefficient and structurally sagging.

Handicap Accessibility

Much of the building is already accessible but there are some areas that do not meet the current code.
The areas of deficiency required by code to be corrected are:

- The entry court and the vestibule slope do not meet code and inhibit wheelchair access.
- Some of the doors lack accessible hardware.
- There is lack of maneuvering space at some doors.
- The building lacks accessible bathrooms.
- The asphalt paving at the base of the ramp leading from the parking lot has deteriorated and settled and inhibits wheelchair access.

- The height of the drinking fountains does not meet the current code.

Fire Protection
The building is equipped with a limited fire protection system. A sprinkler system will be required when the envelope of the building undergoes renovation.

Plumbing
The plumbing system is in generally acceptable condition. The lavatories do not meet the current water conservation requirements and there are no anti-scald devices at the hot water fixtures.

Heating, Ventilating, and Air Conditioning
The building uses natural gas for heating and electricity for air conditioning. In general, the mechanical equipment is original construction, installed in 1975, and has exceeded its anticipated life expectancy.

- At the time of the survey, there was a leak in a boiler valve causing excess energy usage.
- The room temperature controls are antiquated and do not provide adequate temperature control.

Electrical

- The electrical panelboards appear to be original equipment. They have exceeded their life expectancy.
- The emergency generator is not operational.
- The exit lights and emergency lighting are in marginal condition and will have to be brought up to code.
- Many of the lighting fixtures have exceeded their life expectancy and do not have sensor controls which would increase their efficiency.
- The receptacles in the window walls are at the floor and are susceptible to becoming wet from the leaking window and wall system.
- The fire alarm system is functional but antiquated and outlived its life expectancy. If the sprinkler system is brought up to code the fire alarm system will also need to be modified.

Code Analysis
The Chapter 34 Building Code Review affects Accessibility modifications, the envelope reconstruction, and the sprinkler system mentioned throughout the report and in this summary.

Cost Summary

Haverhill Citizen Center Woodman Associates Architects Simpson Gumpertz & Heger BLW Engineers Component		Repair/Replacement costs Priority	Cost	Cost of Imperative Work
Totals-All Work 2010				
Enclosure		Imperative [1]	$363,975	$363,975
Accessibility		Imperative [2]	$46,150	$46,150
HVAC, Conventional		Immediate	$657,792	
HVAC, Geothermal		Immediate		
Electrical		Immediate	$440,634	(Incl. in enclosure estimate)
	Exit Signs	Imperative [2]	$7,500	$7,500
	Fire Alarm Upgrades	Imperative [2]	$15,000	$15,000
Plumbing		Immediate	$107,500	
Fire Protection		Imperative [2]	$137,040	$137,040
SUBTOTALS			$1,775,591	$569,665
Soft Cost Allowance @ 15%		0.15	$266,339	$85,450
PROJECT TOTAL			**$2,041,930**	**$655,114**

[1] Imperative- work that needs to be done as soon as possible to prevent further deterioration
[2] Work required by the Massachusetts Building Code

Action Required

It cannot be stressed enough that the building is compromised because of the condition of the building skin which includes the GFRC panels, the window system and the skylight. They are structurally unsound and leak water and air. Panels have already failed. The skylight is sagging and is energy inefficient.

There are various options that could be explored further in replacing the building skin.

1. Consider replacing the existing windows with new windows. This would increase the energy efficiency of the building.
2. Consider replacing some of the existing windows with steel studs and EIFS. This would increase the energy efficiency of the building.

The condition of the rusted steel studs and the soundness of the window attachments are variables. Until they are exposed by demolition it is difficult to determine with certainty the amount of work required to repair and reinstall. A prudent method of investigation would be to test these recommendations on a sample of the exterior skin that incorporates all of the different elements.

Given the limitation of funds, it is imperative that the building envelope be replaced with whatever funds are available. This component of the work can be done independently of the other systems that also need to be upgraded. If that work is not accomplished as soon as possible, the City of Haverhill stands the impending risk of not being able to occupy the building and ultimately of losing the building to even more rapid deterioration.

In addition to securing a major city asset, the replacement the entire envelope of the building alone will significantly reduce the costs of both operating and maintaining the building.

SIMPSON GUMPERTZ & HEGER
Engineering of Structures
and Building Enclosures

28 October 2009

Mr. Jonathan Woodman
Woodman Associates Architects
20 Inn Street
Newburyport, MA 01950

Project 090726 – Building Envelope Consulting, Haverhill Citizen Center, Haverhill, MA

Dear Mr. Woodman:

As you requested, we visited the Haverhill Citizen Center to review the condition of the building envelope. During our site visit, we made visual observations from the ground, the roofs, and accessible areas inside the building. The following discusses our observations, summarizes our findings, and provides general recommendations for remedial repairs to the building envelope.

1. INTRODUCTION

1.1 Background Information

Built in 1975, the Haverhill Citizen Center is a three-story steel-framed building clad with glass-fiber-reinforced concrete (GFRC) panels and aluminum-framed windows (Photos 1 and 2). The building has a low-sloped roof that is covered with a single-ply adhered EPDM membrane system. In the center of the roof, a sloped skylight is located above a two-story interior space (Photo 3).

1.2 Review of Existing Drawings

We received existing architectural, structural, mechanical, electrical, and plumbing drawings dated 1 August 1975 by Edward J. Tedesco Associates, Inc. We focused our review on the architectural drawings, which show the following pertinent information:

- The exterior wall system is designed using the following materials from exterior to interior:
    - 1 in. thick plaster (stucco) with applied aggregate finish on self-furring galv. metal lath
    - 1/2 in. plywood sheathing
    - 4 in. 20 ga steel studs at 16 in. o.c.
    - 4 in. fiberglass batt insulation with interior vapor barrier
    - 1/2 in. gypsum wall board with veneer plaster
- The roof system is designed using the following materials from top to bottom:
    - Gravel
    - Built-up roofing
    - 2 in. rigid insulation
    - 1-1/2 in. deep metal deck

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- One-half-inch-wide zinc control joints are shown vertically between stucco panels with felt backing strips behind the panel joint. Zinc control joints are also shown horizontally between stucco panels.

- At the second- and third-floor levels, aluminum windows are supported by wood blocking bearing on the concrete floor slabs. Zinc flashing extends up from the steel studs beneath the slab, across the face of the slab then horizontally beneath the blocking toward the interior, where it turns up approximately 1 in.

- At the exterior window perimeters, a bead of surface-applied sealant is shown between the window frame and the stucco panel.

2. FIELD OBSERVATIONS

On 13 October 2009, Jeffry J. Ceruti and Joshua Kelly visited the Haverhill Citizen Center to observe and note any obvious defects or deterioration in the building envelope. At our direction, a City worker removed interior finishes to expose concealed wall construction. The following summarizes our observations.

2.1 Interior Observations

We made the following observations from the interior.

- On all floor levels, we observed damage to interior finishes as evidenced by water staining on ceiling tiles, deteriorated gypsum wallboard and peeling paint (Photos 4 and 5).

- On the floor slab of Levels Two and Three at the east elevation, we observed evidence of water intrusion as evidenced by stains and damage to the rugs.

- On the floor slab of Level Three at the west elevation, we observed evidence of water intrusion as evidenced by missing and damaged composite floor tile.

- At the east elevation windows on Level Three, we observed evidence of water infiltration and deterioration of window gaskets and sealants (Photo 6).

- At the windows on Level Three of the east elevation, we observed screws installed through the interior glazing stops (Photo 7).

2.2 Exterior Observations

We made the following observations from the exterior:

- On all building elevations, we observed 3/4 in. thick glass-fiber-reinforced cement (GFRC) panels installed as the exterior cladding. The GFRC panels are a variance from the original design documents, which show stucco applied over plywood sheathing.

- On all building elevations, we observed displaced GRFC panels with failed sealant joints. In several locations, the panels have moved in excess of 1 in. (Photo 8).
- On all building elevations, we observed curved and distorted GRFC panels with open joints (Photo 9).
- Where sealant between GRFC panels exists, it is cracked, crazed, and hardened (Photo 10).
- At several locations, we observed plywood sheathing installed in place of GFRC panels (Photos 11 and 12).
- At several locations, we observed exposed fasteners installed through GFRC panels as supplemental attachment of the panels (Photo 13).
- At ground-floor level on the south elevation, we observed broken spandrel glass on the west end of the projecting bay (Photo 14).
- At the base of the west elevation, we observed a broken corner of a GFRC panel exposing corroded steel framing behind the panel (Photo 15).
- At the roof level, we observed numerous areas of ponded water (Photo 16). At the south side of the skylight, significant ponded water exists (Photo 17). We did not identify a drainage cricket on this upslope side of the skylight.
- We observed a puncture in the roof membrane near the southwest corner (Photo 18).
- The EPDM roof membrane has supplemental strip flashing over most field seams. The mastic at the strip flashing has failed at several locations, but we did not find any debonding flashing or seams (Photo 19).
- We observed significant deflection of the skylight ridge member (Photo 20).
- At the roof skylight mullions, we observed failed, deteriorated, and missing sealants (Photo 21).

2.3 Sample Wall Openings

With the assistance of a City worker, we removed interior finishes at several locations as follows:

Interior Wall Opening 1 (IWO-1), North Elevation of Northwest Stair at Level Two

At the base of the interior wall, we removed plaster coated gypsum wall board above the foundation wall. We observed the following at this opening:

- The exterior wall system consists of the GFRC panel, 4 in. steel studs with shop primer, and fiberglass batt insulation with Kraft paper facer applied between studs. An

interior galvanized stud wall supports the exterior finishes at the stairwell. We did not observe sheathing behind the GFRC, or any waterproofing backup or flashings.

- The exterior steel-stud track and bottom of the steel studs are corroded (Photo 22). The exterior studs are 4 in. wide with inconsistent spacing measuring 12 in. to 14 in. o.c. Using a micrometer, we measured the stud thickness of approximately 0.060 in.

- No flashing with an upturned leg is present beneath the steel studs, as shown on the design drawings.

- The 3-1/2 in. thick, R-11 paper-faced batt insulation is installed vertically between steel studs and has black discoloration.

- Corroded steel clip angles are fastened to the GFRC panels with bolts, nut, and washers (Photo 23). Further up the cavity, the clip angles are not corroded or painted (Photo 24).

- In this wall opening, the steel clip angles are either not attached to studs or are attached in a varying manner, as follows:

  - At two locations, the steel clip angles are not fastened to the studs (Photos 23, 24).
  - At one location, the steel clip angle is fastened using a bolt with nut and washers (Photo 25)
  - At one location, the steel clip angle is fastened with two self-drilling sheet metal screws (Photo 26).

- Plastic shims are placed between the outside face of the studs and the back of the GRFC panels. The shims are displaced and loose in several locations.

Interior Wall Opening 2 (IWO-2), North Elevation of Northwest Stair at Level Three

At the base of the interior wall, we removed plaster-coated gypsum wallboard above the stair landing. The wall construction is the same as in IWO-1. We observed the following at this opening:

- Corrosion of the steel-stud track, the bottom of the steel studs, and steel clip angles (Photos 27 and 28). Using a micrometer, we measured the metal thickness as approximately 0.060 in.

- No flashing with upturned leg is installed beneath the steel studs, as shown on the design drawings.

- Within this opening, the orientation of the clip angles varies from horizontally placed to vertically placed (Photo 27).

- Similar to IWO-1, attachment of the steel clip angles varies within this opening. It is either not attached to the stud or attached using a self-drilling sheet metal screw (Photo 29). Clips at the base of the wall are turned vertically to bear on the stud track,

but the slotted hole in the clip can allow vertical movement; we could move some of these clips by hand.

- The 3-1/2 in. thick, R-11 paper-faced batt insulation is installed vertically between steel studs, and has black discoloration (Photo 30).

- Plastic shims are placed between the outside face of the studs and the back of the GRFC panels. The shims are displaced and loose in several locations.

Interior Wall Opening 3 (IWO-3), North Elevation of the Southeast Stair at Level Three

At the base of the interior wall, we removed plaster-coated gypsum wallboard above the stair landing. On the exterior, plywood is installed over the GFRC panel. We observed the following at this opening:

- Multiple layers of damaged gypsum board were located within the wall cavity, with water stains and evidence of microbial growth.

- Leaves, dirt, debris, and construction materials were present within the wall cavity.

- Corroded steel-stud track, steel studs, and steel clip angles at the exterior wall assembly and corroded steel studs at the interior (furred) wall assembly (Photos 31 and 32).

- The 3-1/2 in. thick, R-11 paper-faced batt insulation is installed vertically between steel studs, and has black discoloration.

- Plastic shims are placed between the outside face of the studs and the back of the GRFC panels. The shims are displaced and loose in several locations.

- We did not see damage of the GRFC panel within our sample opening.

Interior Wall Opening 4 (IWO-4), North Elevation of Level One

We removed plaster-coated gypsum wallboard between the window sill and the slab-on-grade. We observed the following at this opening:

- Four-inch steel studs installed at 12 in. o.c. with R-11 batt insulation. Using a micrometer, we measured the metal thickness as approximately 0.060 in.

- Steel clip angles anchored to the GFRC panels with bolts, nuts, and washers. In general, the steel studs, clip angles, and fasteners have very little corrosion at this area.

- All clip angles at this opening are secured to a steel stud using self-drilling sheet metal screws (Photo 33). Plastic shims are installed between the GFRC panel and the steel studs.

We removed a GFRC anchor bolt at this location to identify the method of attachment to the panel. A threaded insert is cast within the GFRC panel (Photo 34). Before inserting the bolt into the insert, two washers and a nut are applied to the bolt, possibly for out-of-plane alignment.

Interior Wall Opening 5 (IWO-5), South Elevation of Level Three at Window Head

We removed ceiling tiles above the window head at Level Three on the south elevation. We observed the following at this location:

- Above the window head, wood blocking extends horizontally beneath the steel-stud track of the spandrel panel. The wood blocking is secured to the bottom track of the stud wall with screws installed at 12 in. o.c. On the interior, screws are installed horizontally through the window head into a metal trim piece that covers the blocking; however, these screws are too short to adequately engage the blocking, resulting in little anchorage of the window head at this location. We could easily move the top of the window inward and outward approximately 1/2 in.

- Above the window head, the stud wall is laterally braced to a structural steel wide-flange beam using 4 in. steel studs installed horizontally at 36 in. o.c. At the spandrel panel studs, the horizontal brace is fastened with two or three sheet metal screws (Photo 35). At the steel wide-flange beam, the horizontal brace is notched and folded to form a right angle then fastened to the beam's web with two powder-actuated fasteners (Photo 36).

- We also reviewed the window sill condition, and found that two screws anchor each window unit to a heavy Z-shape and wood blocking below. The screws are approximately 6 in. from the vertical window mullions. We did not find any direct attachment of the window mullions to the structure.

3. CONCLUSIONS

- The GFRC exterior walls panels used on this building provide a single-layer "barrier" wall system that lacks a backup waterproofing system for weather protection. To the extent that the panels crack or joints between panels open, water can infiltrate the system and cause damage to interior finishes and support members.

- GFRC is prone to significant cyclical thermal and moisture movements, which, on panels of this size, often results in bowing and/or cracking of the panels. Some panels on this building are bowed significantly, providing large openings for water entry and air infiltration/exfiltration. In addition, sealant between panels has hardened and split in most locations, leaving the panel joints open. We found damaged interior finishes and moderate corrosion of steel-stud framing that likely resulted from water leakage through the panels.

- The attachment of the GFRC panels to the backup stud wall is highly variable. Steel clips are mounted to the panels, but the attachment of these clips to the stud walls is missing in many areas we reviewed. We did not find any pattern to the location or omission of attachment screws within our sample openings; therefore, we can not

determine whether the attachments are adequate to resist lateral wind load without significant demolition. Further, many attachments lack positive support for the panel weight due to slotted connections; some panels appear to have slipped downward as a result.

- The steel-stud backup wall consists of shop-primed 16 ga members with a typical spacing of 12 in. o.c., though we saw some variability in the spacing. In some areas, the bottom track and the bottom of studs are corroded with moderate section loss.

- The connection of the stud wall to the structure appears marginal. Although we found small anchors attaching tracks to the concrete slabs, the connection of the wall to the spandrel beams consists of two screws every 3 ft o.c. Further investigation and analysis of the stud-wall framing is needed to determine if supplemental attachment is required.

- The typical windows are set on the slab and extend 9 ft high. In the one area we reviewed, the window head is not adequately connected to the steel-stud framing and can be moved inward and outward with little effort. Further review of the window anchorage, the capacity of the window mullions to span 9 ft, and the capacity of the stud wall to deliver wind loads acting on the windows to the structure is needed.

- The windows lack integral sill and head flashing, and rely on surface-applied sealants for protection against leakage. Failure of the exposed sealant can result in a direct leakage path, and leakage through the GFRC panel system can leak into the window heads. Further, openings in the window glazing seals and gaskets can allow leakage through the window sill that bypasses the perimeter sealant joint.

- In addition to lacking a suitable barrier to protect against water infiltration, the exterior wall system lacks a suitable vapor retarder and air barrier. The Kraft paper facer on the interior side of the fiberglass insulation may not be a suitable vapor retarder in this climate. More importantly, the numerous gaps in the insulation and the large gaps and open joints between GFRC panels provide a direct path for air infiltration/exfiltration, which can negate the effectiveness of the thermal insulation. The black staining on the fiberglass insulation is likely due to dirt accumulation from air flow through the insulation.

- The seams in the single-ply 60 mil EPDM synthetic rubber roofing membrane have all been stripped over with additional flashing, indicating previous roof leakage problems. Currently, the roofing system itself appears to be in reasonable condition except for a puncture and some ponding at the skylight; however, we have not made test cuts to review for signs of concealed damage. We understand that the roofing system is approximately 12 yrs old and that no current roof leaks are occurring in the building.

4. RECOMMENDATIONS

Our recommendations for repair work are summarized below. Any repair and replacement program should be performed using complete design documents. We recommend the following repairs to correct the building facade issues that we observed:

- Remove GFRC panels and sealants, batt insulation, and miscellaneous plywood or blocking.

- Remove and replace any corroded steel framing with significant section loss. Tracks can be replaced by shoring the stud wall, replacing the track, and "sistering" in new studs. Areas with light corrosion can be scraped and painted in place.

- Verify that the existing steel framing, connections, and fasteners are suitable for the new exterior wall assembly. Repair existing components and install additional or new components or connections as required to satisfy the engineer's requirements under the new design.

- Provide a new drainable exterior insulation and finish system (EIFS) over sheathing with backup waterproofing, drainage board, and flashing integrated into the surrounding wall construction.

- Remove existing windows, install new metal sill flashings with end dams and perimeter sealants with backer rod and weep holes, and reinstall existing windows. At window perimeters, add panning as required to accommodate the new EIFS wall system.

- At the roof level, remove and replace roof edge flashings as required to accommodate the new EIFS wall system.

Further review is needed to determine if the existing window framing and connections are suitable for lateral and dead load requirements. New connections may be required to satisfy the engineer's requirements under the new design. Additional review of the window systems is also needed to determine their condition, including removal of glass stops, glazing, and sealants. Based on our limited observations, we recommend the following:

- Where window gaskets and sealants have failed, remove and replace with new materials.

- Where screws are installed through interior glazing stops, remove the screws and the stops to evaluate the condition of the frame, gaskets, and glazing, and repair as necessary.

- At all locations, review the condition of the existing wood blocking installed beneath the windows. Remove and replace damage and degraded blocking where required.

Although we have no indication that the roofing system has current problems, further review, including test cuts, is required to evaluate the condition of the roof assembly and estimate the remaining service life. If repairs are deemed necessary after this further review, we recommend the following repairs:

- Provide a cricket on the south side of the skylight to promote proper pitch to drains.

- Open roof areas where ponding exists and correct the insulation pitch to promote positive roof slope toward roof drains.

- At laps and seams, reapply mastic where existing lap sealant has degraded.

We shall be glad to assist you further by providing design documents suitable for bidding, if you so desire. We await your direction.

Sincerely yours,

Joshua Kelly
Staff III – Building Technology

Jeffry J. Ceruti
Principal

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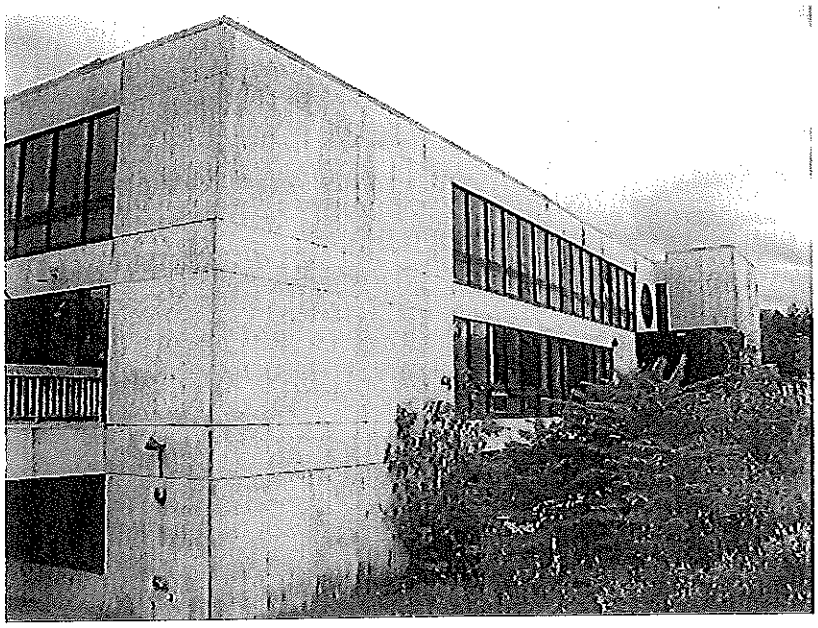

Photo 1

North building elevation facing west.

Photo 2

West building elevation.

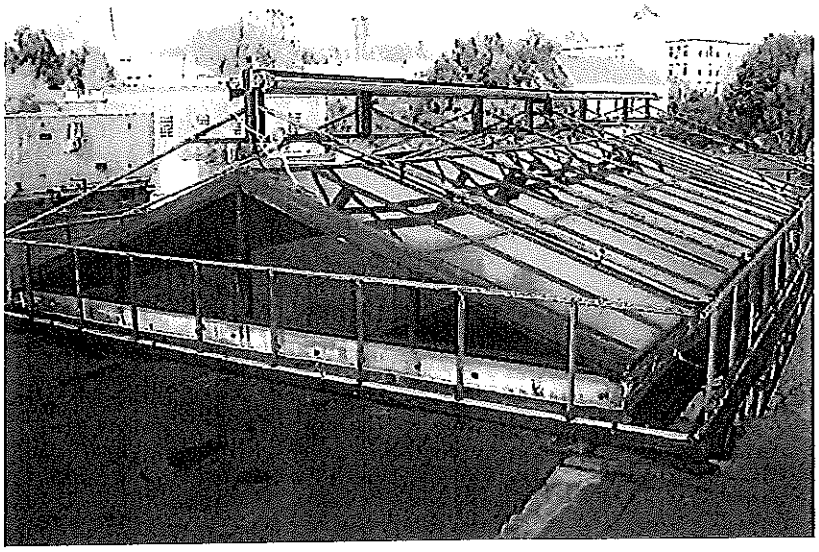

Photo 3

Sloped skylight on the roof facing east.

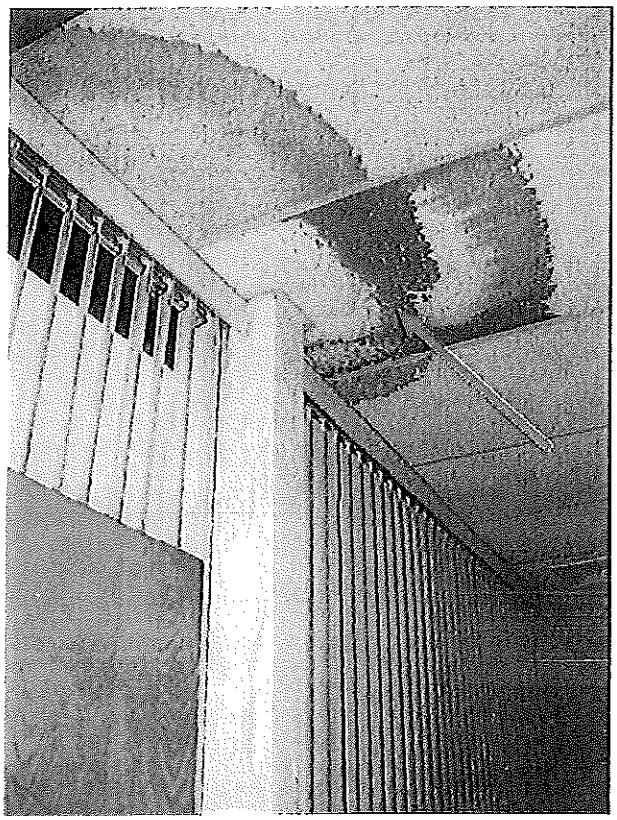

Photo 4

Water stains and damage to interior finishes.

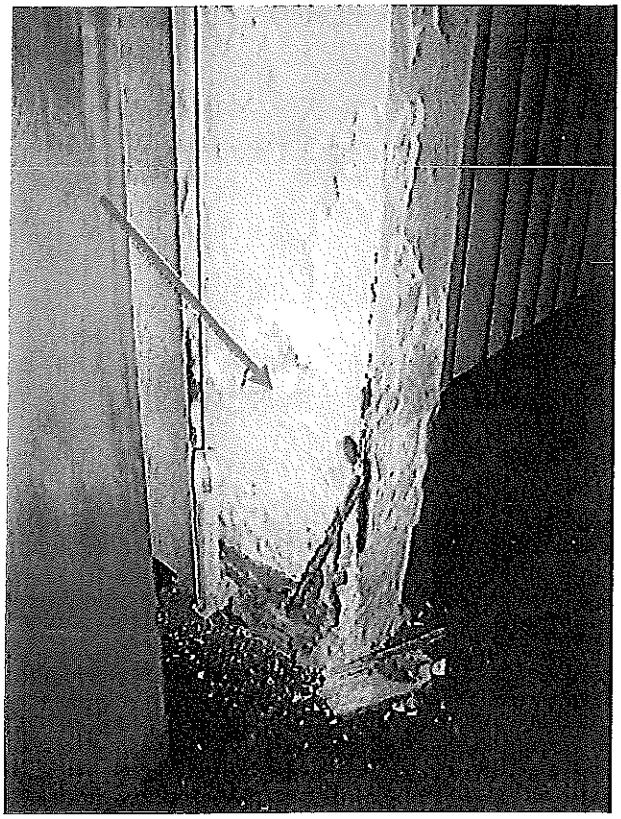

Photo 5

Water stains and damage to interior finishes.

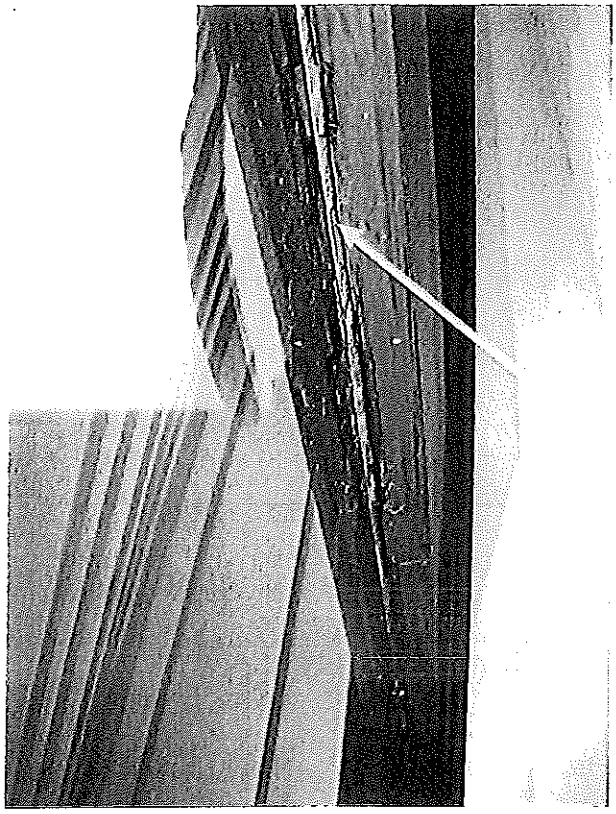

Photo 6

Deterioration of window gaskets and sealants.

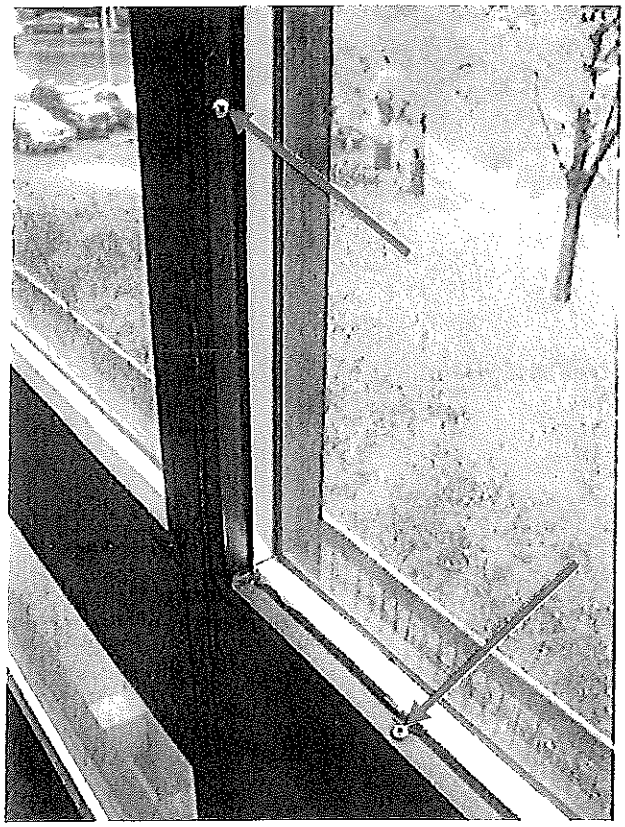

Photo 7

Screws installed through interior glazing stops.

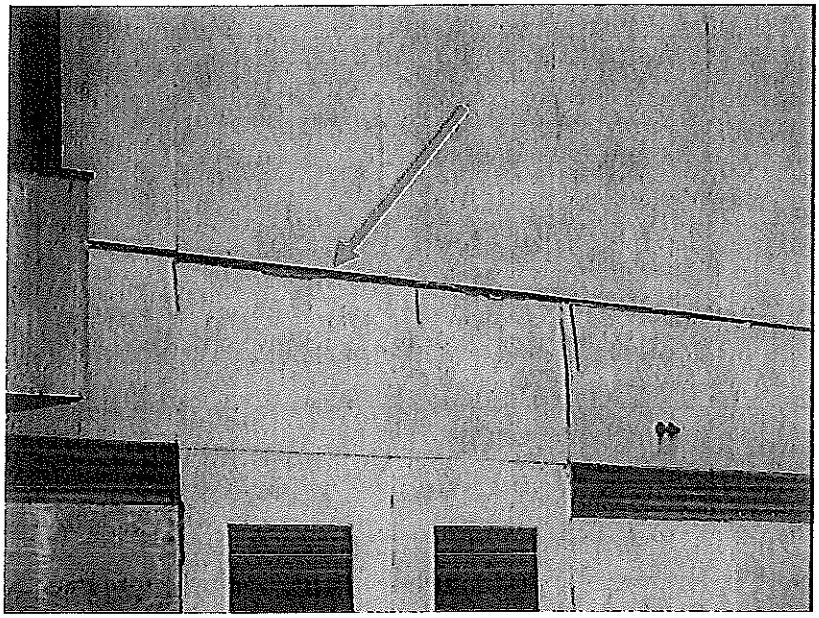

Photo 8

Displaced GFRC panels with failed sealant joints.

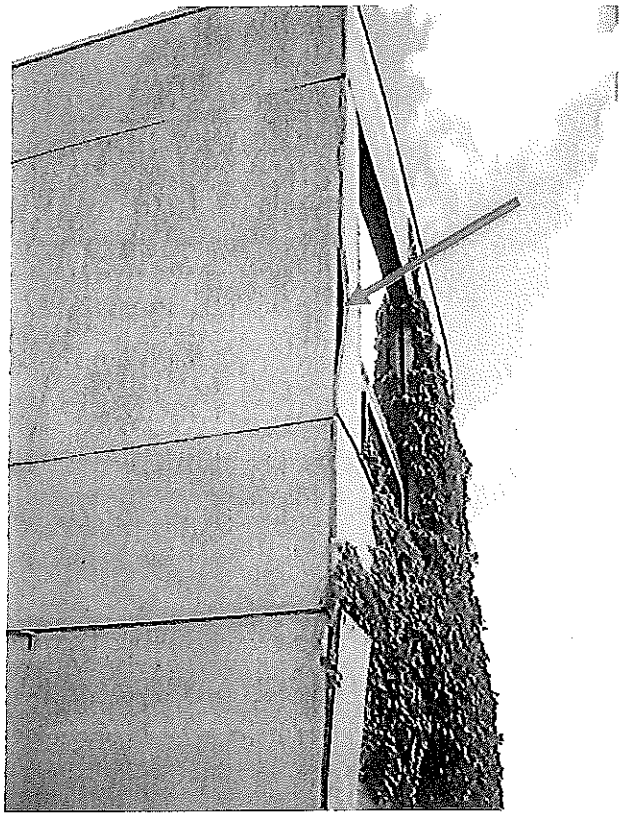

Photo 9

Curved and distorted GFRC panels with open joints.

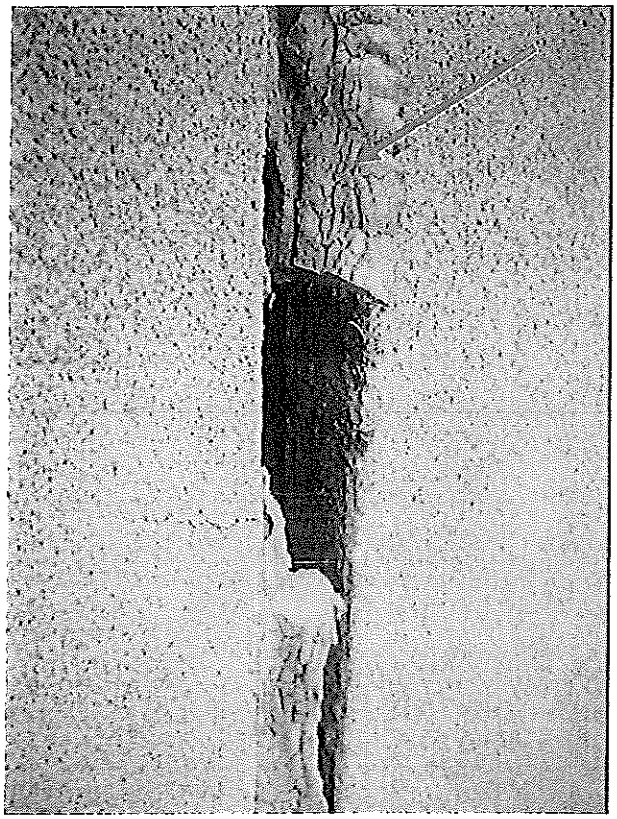

Photo 10

Cracked, crazed, and hardened sealant at GFRC panel joints.

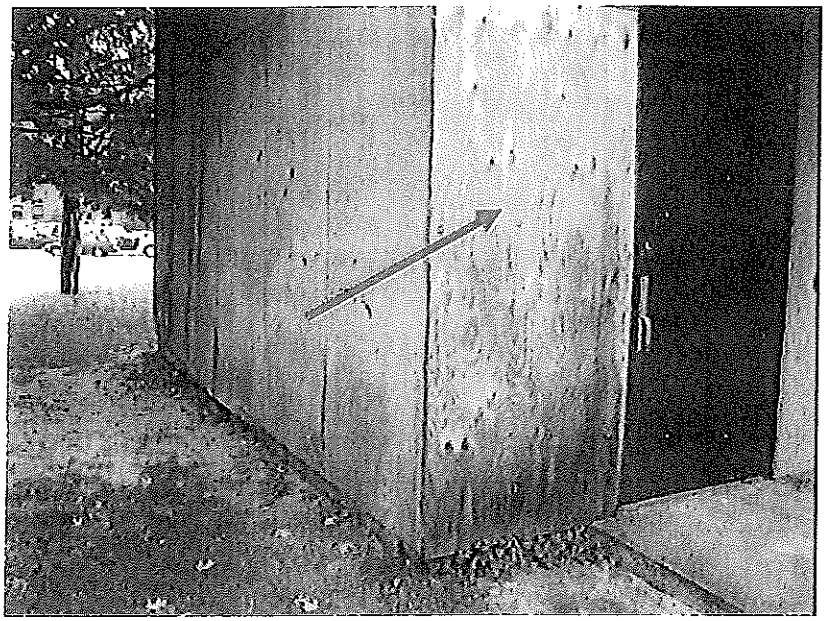

Photo 11

Plywood sheathing installed in lieu of GFRC panels.

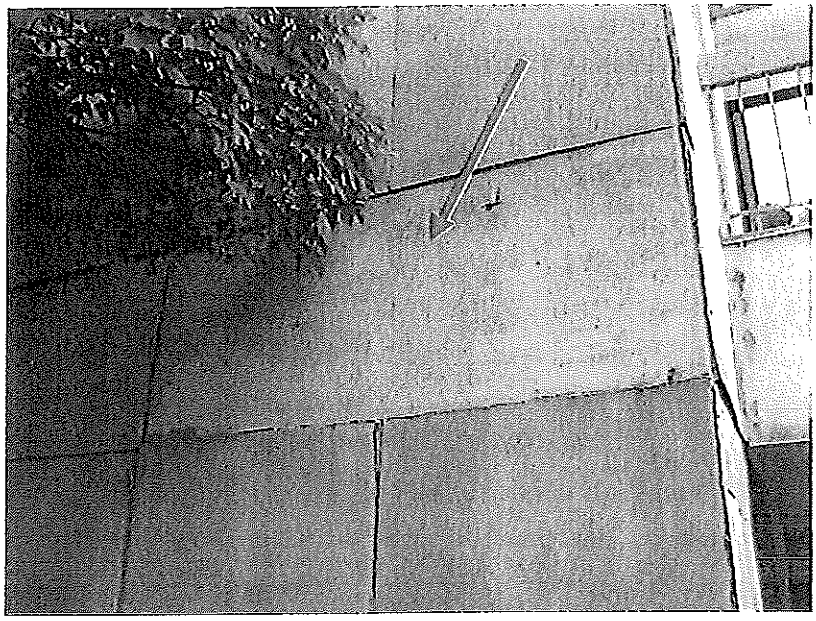

Photo 12

Plywood sheathing installed in lieu of GFRC panels.

Photo 13

Exposed fasteners installed through GFRC panels as supplemental attachment of the panels.

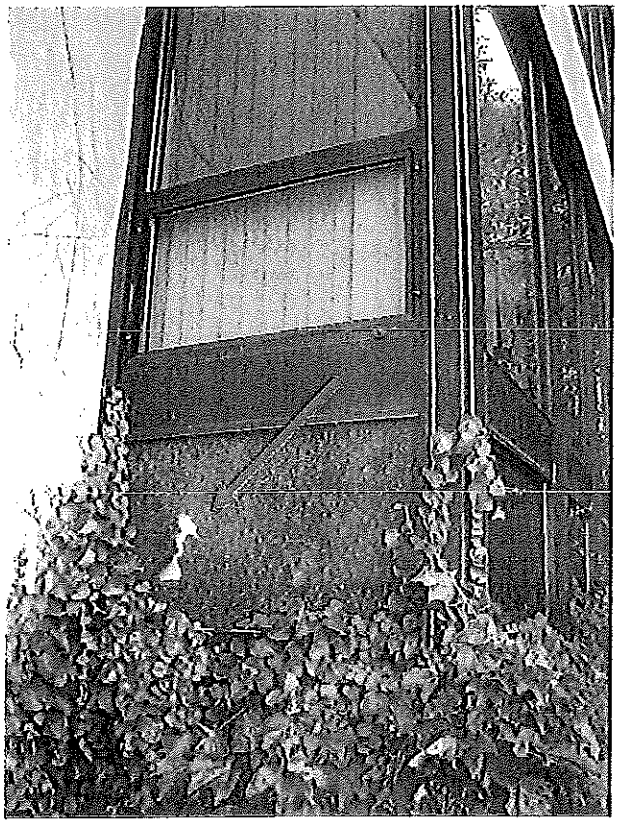

Photo 14

Broken spandrel glass in the projecting window bay on the south elevation.

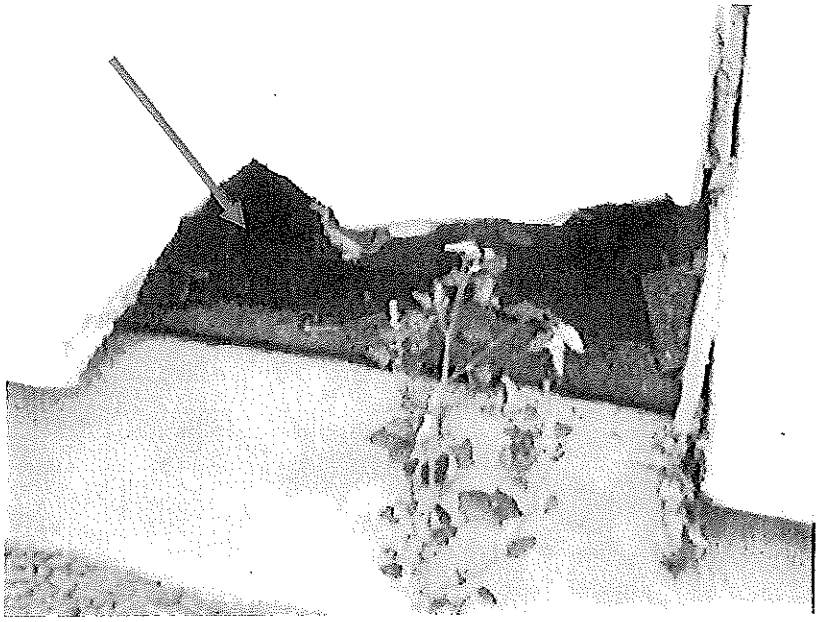

Photo 15

Broken corner of a GFRC panel exposing corroded steel framing behind the panel.

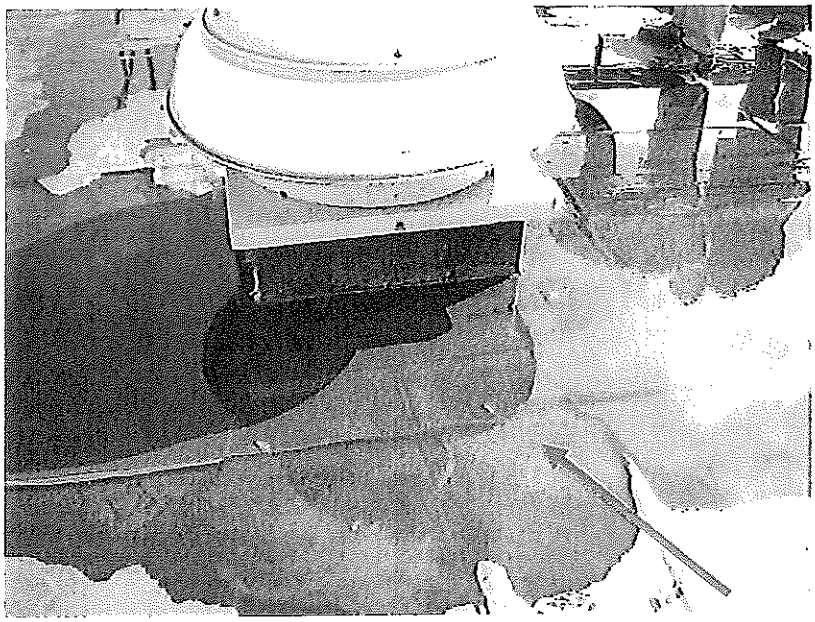

Photo 16

Areas of ponded water on the roof membrane.

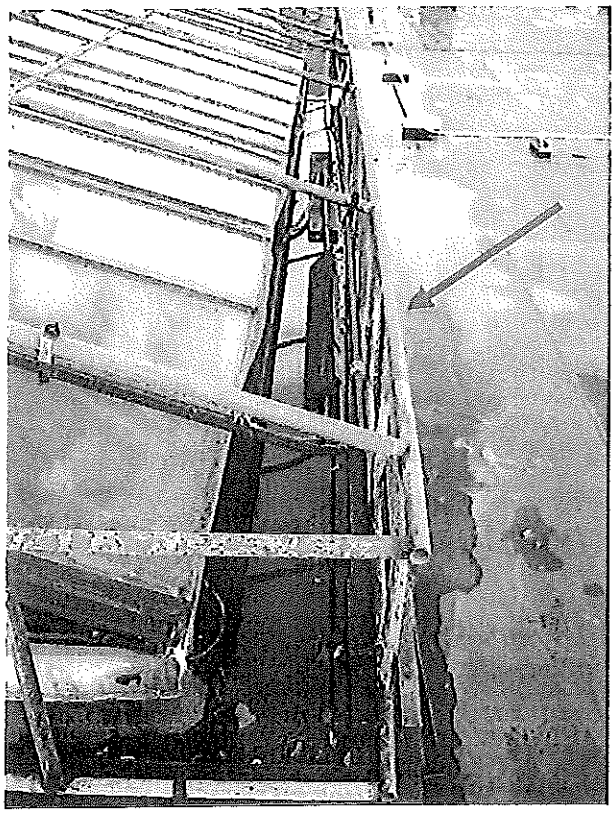

Photo 17

Significant ponded water at the south elevation of the skylight.

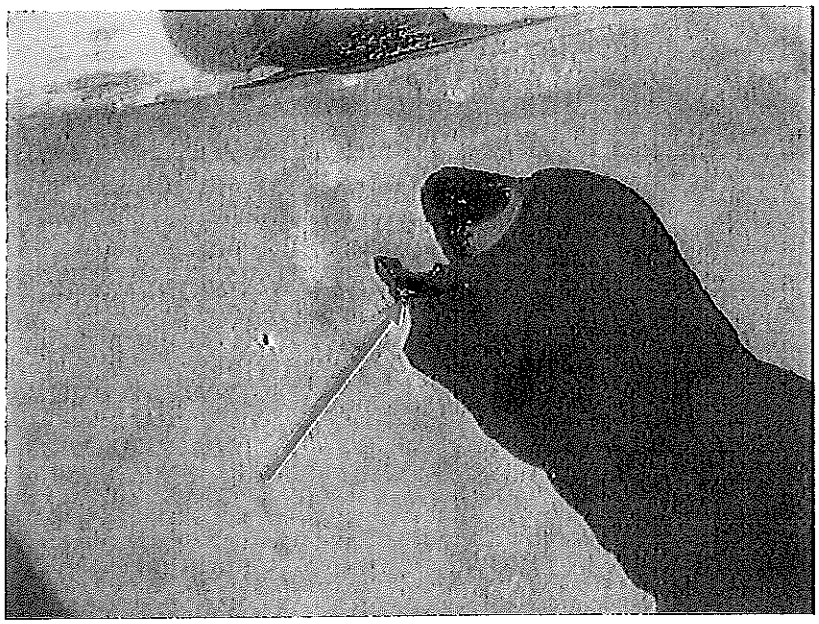

Photo 18

A puncture in the roof membrane.

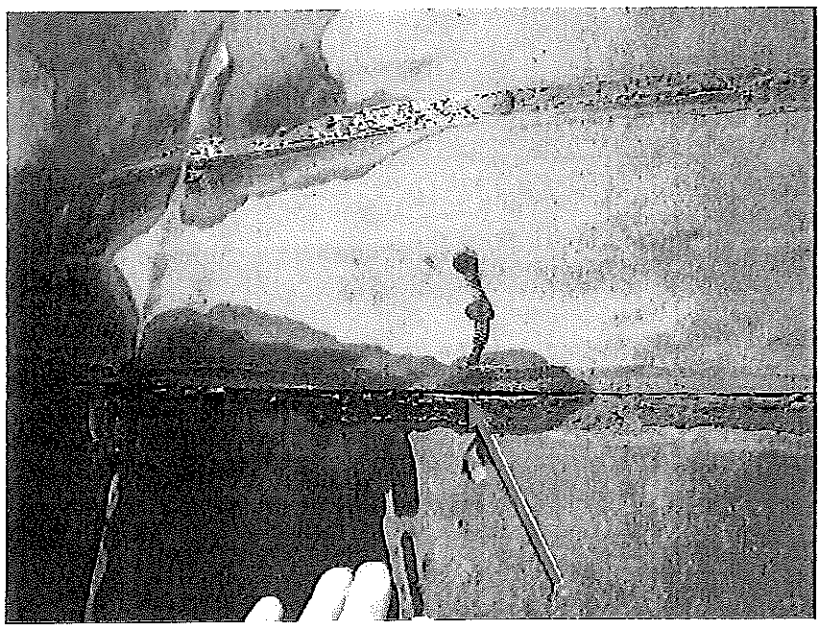

Photo 19

Failed mastic at roof membrane strip-flashings .

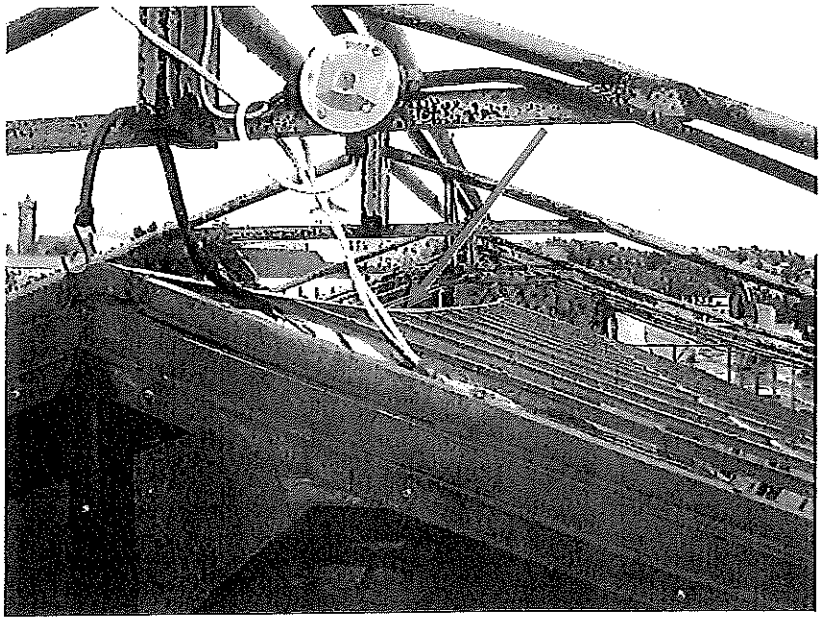

Photo 20

Significant deflection of the skylight ridge member.

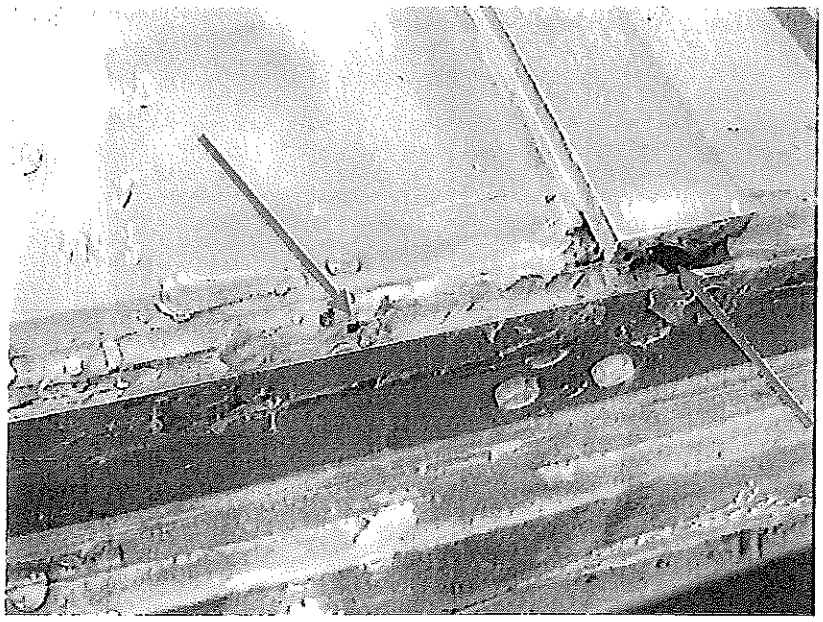

Photo 21

Failed, deteriorated, and missing sealants on the skylight.

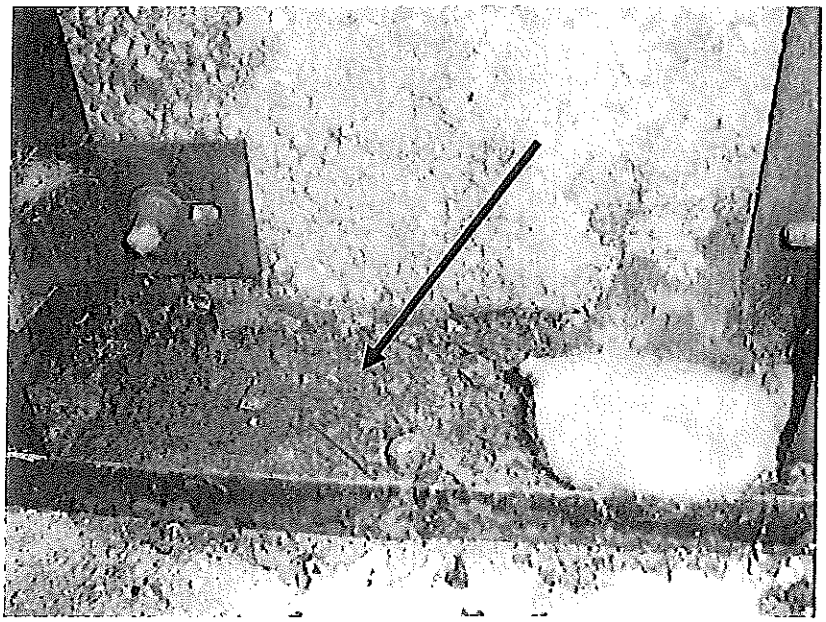

Photo 22

Corroded steel clip angle, stud track, and bottom of steel studs.

Photo 23

Corroded steel clip angle, fasteners, stud track, and bottom of steel studs. The clip angle is oriented horizontal.

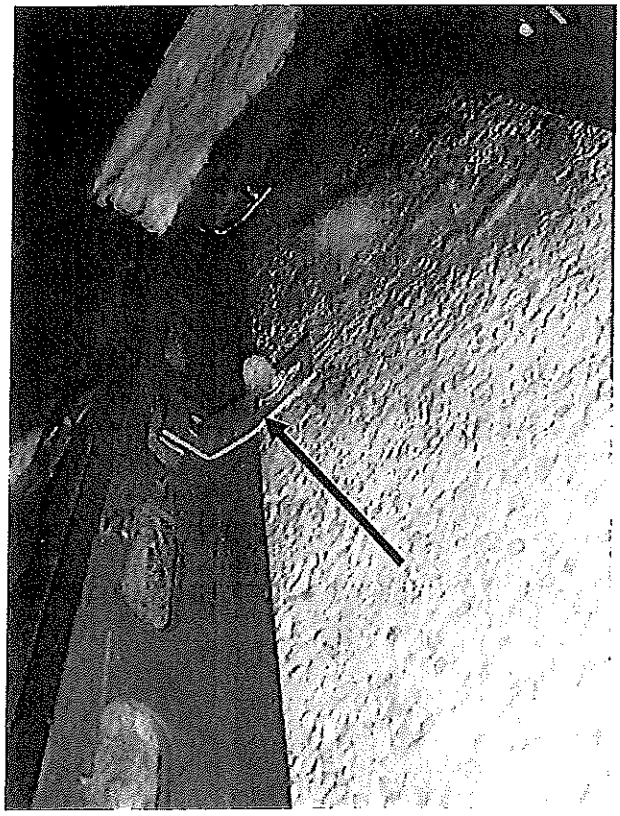

Photo 24

Steel clip angle and bolts within the cavity without corrosion.

Photo 25

Attachment of clip angle to steel stud using a bolt, nut, and washer.

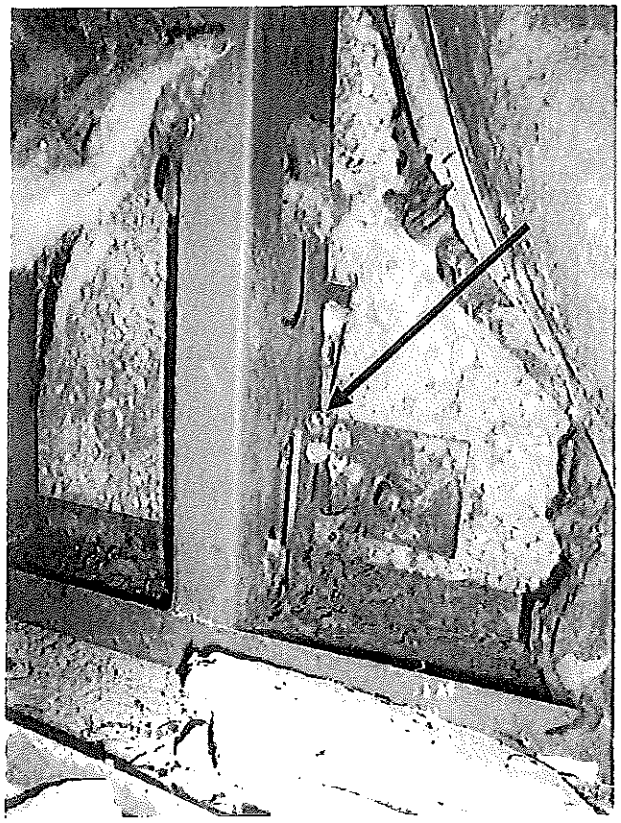

Photo 26

Attachment of clip angle to steel stud using three self-drilling sheet metal screws. The clip angle is oriented horizontal, and plastic shims are installed between the steel studs and the inside face of GFRC panels.

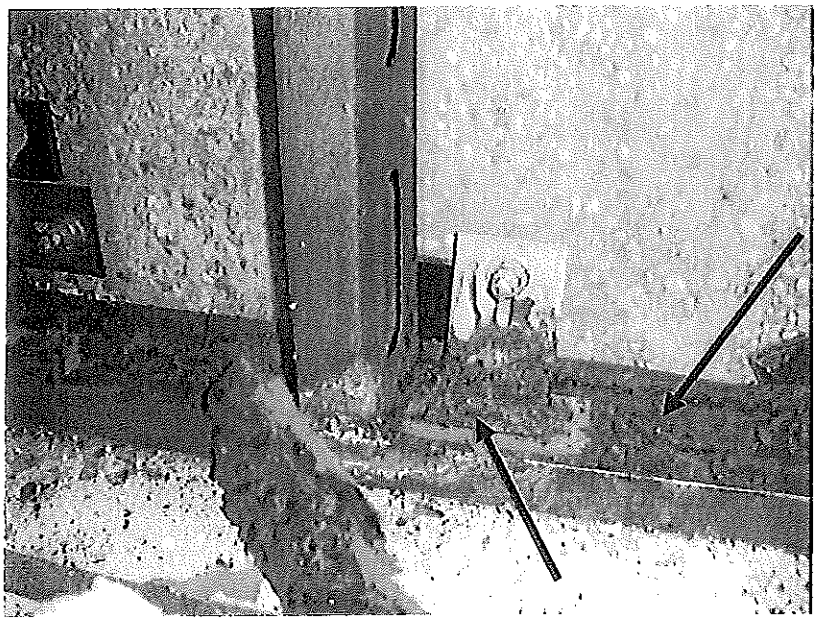

Photo 27

Corroded steel clip angle, stud track, and bottom of steel studs. The clip angle is oriented vertical, and plastic shims are installed between the steel studs and the inside face of GFRC panels.

Photo 28

Corroded steel clip angle, stud track, and bottom of steel studs. The clip angle is oriented vertical.

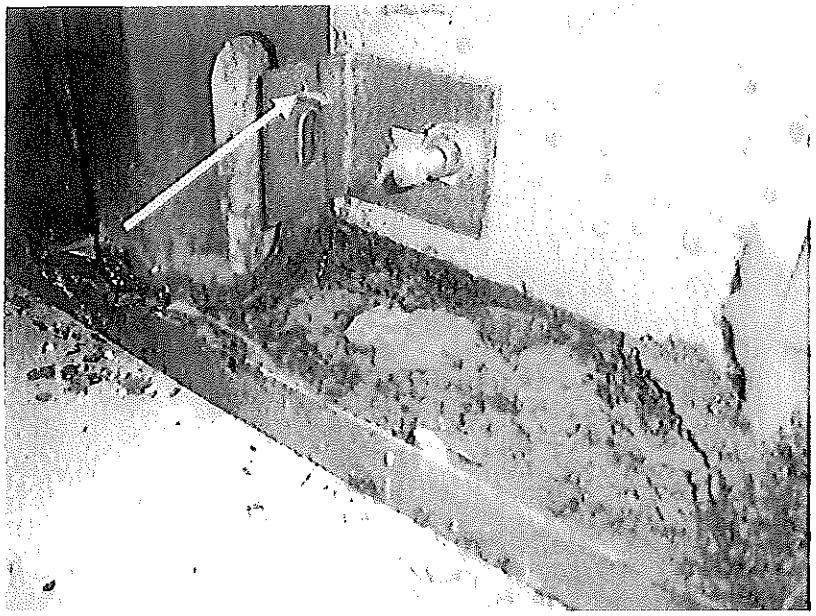

Photo 29

Corroded steel stud track and bottom of steel studs. Clip angle is oriented horizontal and fastened to the stud using a self-drilling sheet metal screw.

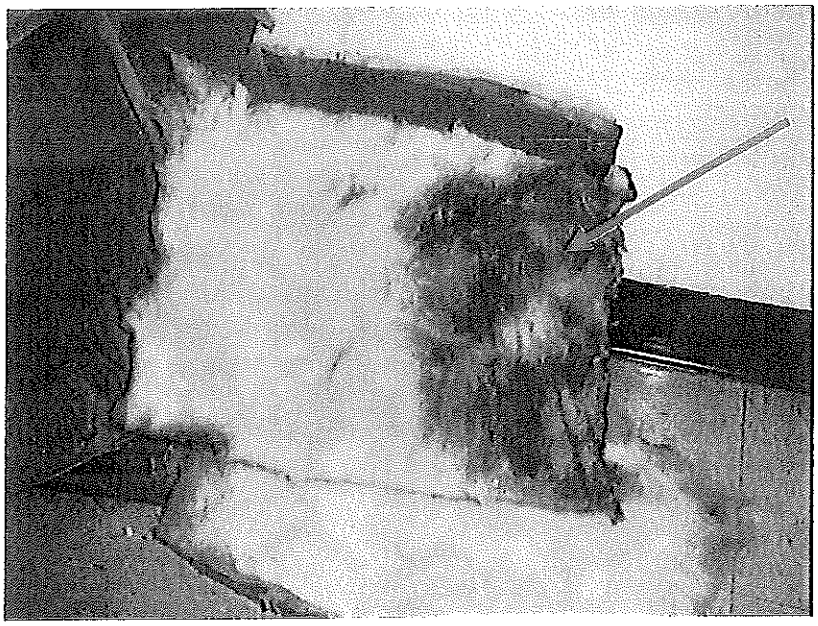

Photo 30

Black discoloration on the 3-1/2 in. thick R-11 paper-faced batt insulation.

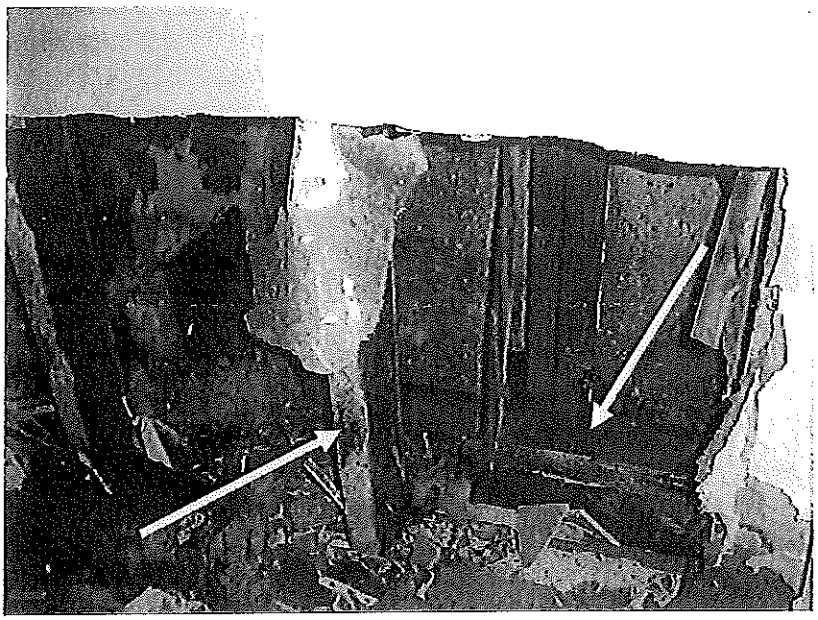

Photo 31

Corroded steel stud track, clip angle, and bottom of steel studs at the exterior wall, and corroded steel studs at the interior wall.

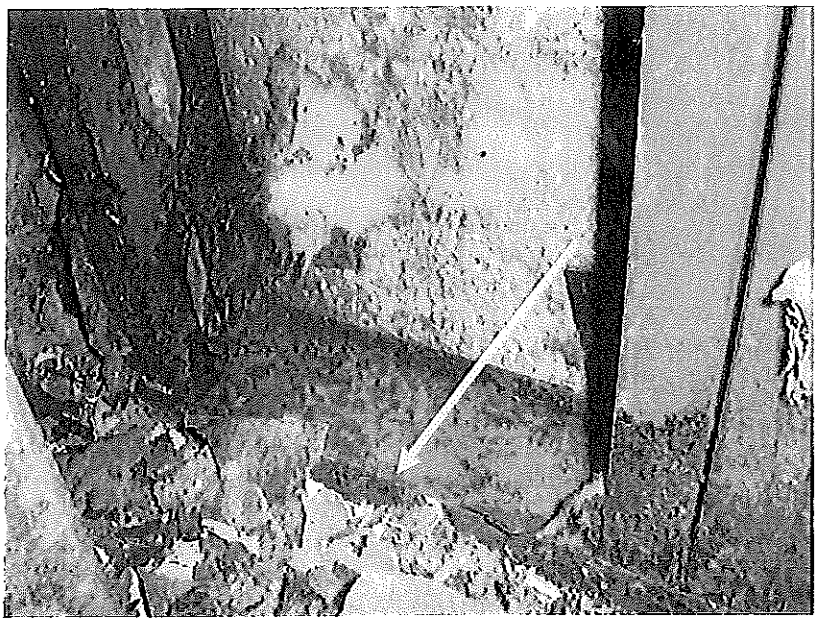

Photo 32

Corroded steel stud track, clip angle, and steel studs. The clip angle is oriented horizontal.

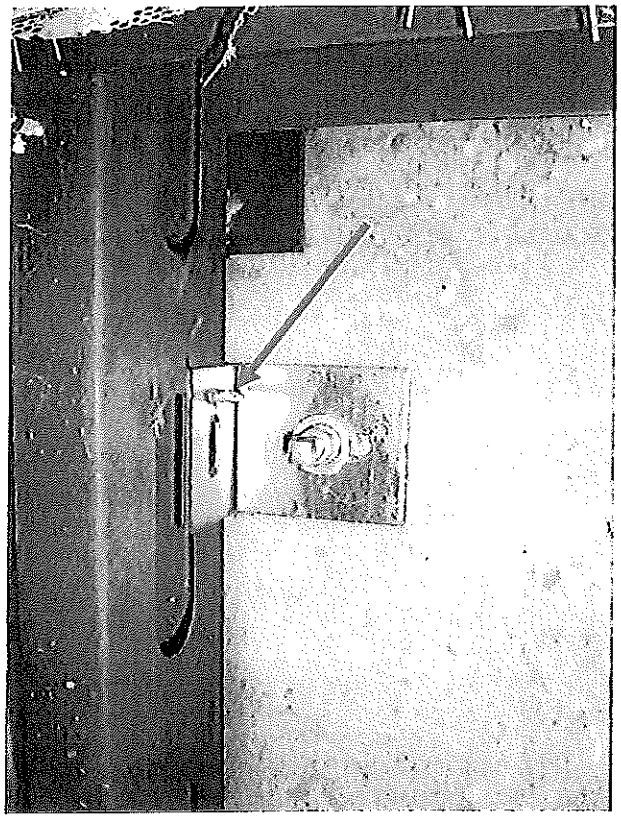

Photo 33

Steel clip angle secured to a steel stud using a self-drilling sheet metal screw. Plastic shims are placed between steel stud and inside face of the GFRC panel.

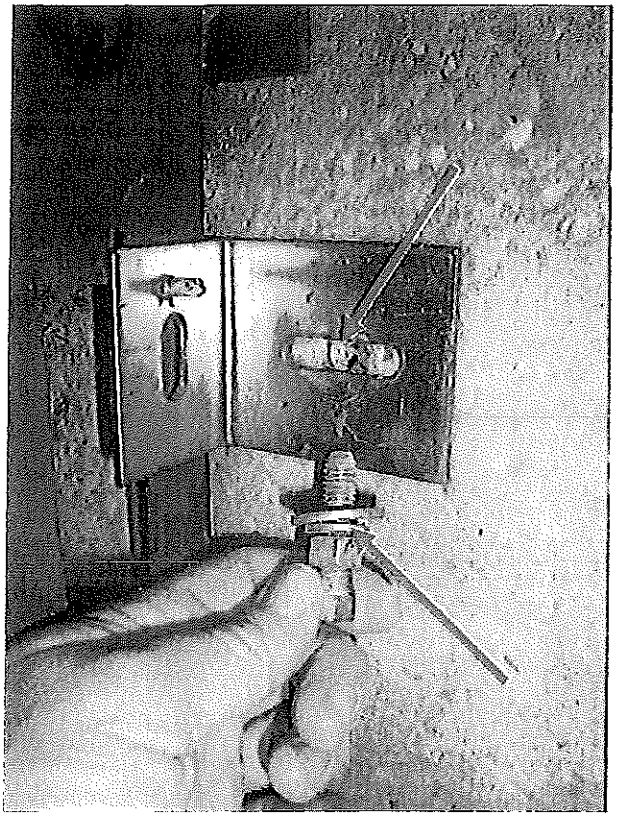

Photo 34

Anchor bolt with nut and washer used to secure the GFRC panel to the clip angle. The anchor bolt is inserted through the clip angle into an insert that is cast within the GFRC panel.

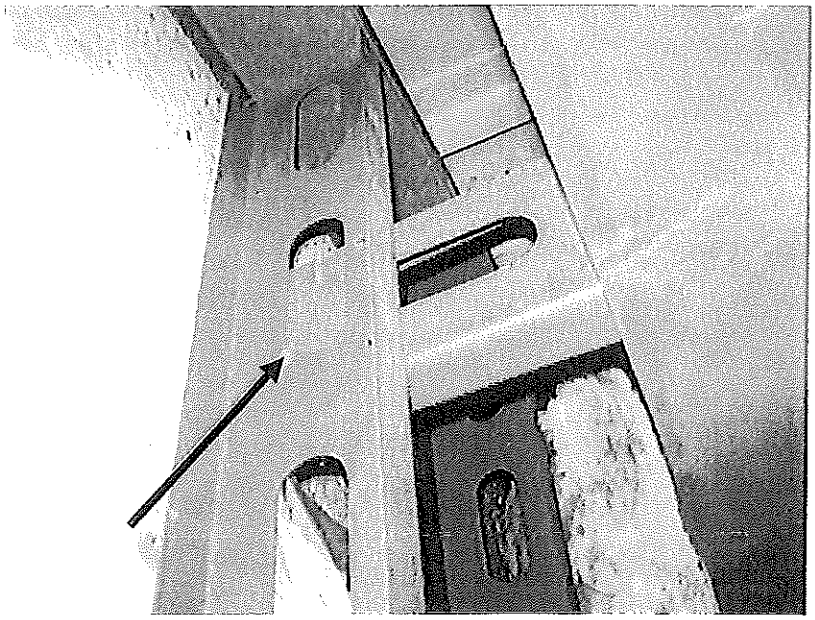

Photo 35

At the south elevation above the window head, the steel-stud backup wall is braced using a steel stud installed horizontally. The bracing is fastened to the stud wall using three sheet metal screws.

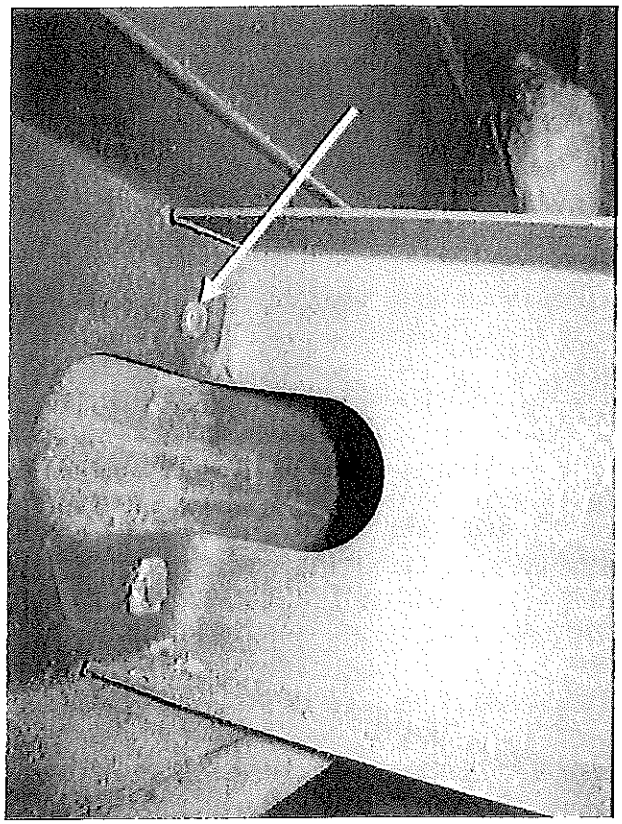

Photo 36

At the south elevation above the window head, the steel-stud backup wall is braced using a steel stud installed horizontally. The stud bracing is notched and folded then fastened to the side flange beam using two powder-actuated fasteners.

HAVERHILL CITIZEN CENTER
HAVERHILL, MASSACHUSETTS

EXISTING CONDITIONS

Accessibility

If the cost of the work done on the building exceeds 30% of the assessed value of the building it will have to be fully accessible according the Massachusetts Accessibility Code 521 CMR. Much of the building is already accessible but there are some areas that will have to be addressed.

The asphalt paving at the base of the ramp leading from the parking has deteriorated and settled and needs to be filled in. The concrete at the exterior of the entry doors slope up to the doors. This area will have to be made level in order to meet the maneuvering clearances specified in the code. This will require a short ramp to get up to the new level area. The vestibule is also not level and will have to be raised to be at the same level as the floor in the inside of the building. This should be done at the same time as the exterior concrete work. There will have to be some modifications made to the exterior vestibule doors in order to work at the new level.

There are some doors in the building that do not have accessible hardware, notably the ones from the lobby to the multipurpose room and from the lobby to the exit stair. This hardware will have to be replaced.

None of the toilet rooms meet the current code for accessibility. They can be modified to make them accessible but because of the amount of work involved it is probably more cost effective to build three unisex toilet rooms in the area of each of the existing toilet rooms. This would negate the need to alter all six of the existing toilet rooms.

Other than the doors to the existing toilet rooms there are 9 doors that do not have the required maneuvering clearances. Four of them can be made accessible by relocating the door, three by reversing the swing, one by modifying the adjacent wall and one by adding a power opener.

The three drinking fountains do not meet the current code because the spouts are higher than 36". They can possibly be reused if they can be lowered.

HAVERHILL CITIZENS CENTER
COST ESTIMATE

Component	Priority	Quantity	Unit	Unit Cost	Repair/Replacement costs			
					Immediate (2010)	Essential (2012)	Mid Range (2015)	Long Range (2020)
Enclosure								
Staging	Immediate	1	EA	$ 35,000.00	$ 35,000	$ 36,750	$ 38,588	$ 44,669
Demo	Immediate	1	EA	$ 45,000.00	$ 45,000	$ 47,250	$ 49,613	$ 57,431
Stud Repair	Immediate	1,380	SF	$ 15.00	$ 20,700	$ 21,735	$ 22,822	$ 26,418
Glazing and Gasket Repair	Immediate	5,325	SF	$ 5.00	$ 26,625	$ 27,956	$ 29,354	$ 33,980
Flashing/Panning at Window Sills	Immediate	643	LF	$ 25.00	$ 16,075	$ 16,879	$ 17,723	$ 20,516
Skylight	Immediate	520	SF	$ 30.00	$ 15,600	$ 16,380	$ 17,199	$ 19,910
Flashing at Skylight	Immediate	94	LF	$ 25.00	$ 2,350	$ 2,468	$ 2,591	$ 2,999
Flashing at Roof	Immediate	513	LF	$ 25.00	$ 12,825	$ 13,466	$ 14,140	$ 16,368
Densglas Sheathing	Immediate	9200	SF	$ 2.00	$ 18,400	$ 19,320	$ 20,286	$ 23,483
EIFS w/2" rigid ins., Grooved bd. Troweled on air and vapor barrier	Immediate	9,200	SF	$ 17.00	$ 156,400	$ 164,220	$ 172,431	$ 199,606
Electrical Misc.		1	EA	$ 15,000	$ 15,000			
SUBTOTALS					$ 363,975.00	$ 366,423.75	$ 384,744.94	$ 445,380.74
ANNUAL PROJECT SUBTOTAL					$ 363,975.00	$ -	$ -	$ -

AMERESCO
Green • Clean • Sustainable

Preliminary Energy Audit Report: Haverhill Citizens Center

Prepared for:

Merrimack Valley Planning Commission

October 21, 2010

Presented by
Ameresco, Inc.
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Framingham, MA 01701

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Preliminary Energy Audit Report: Haverhill Citizens Center

Prepared for:

Merrimack Valley Planning Commission

October 21, 2010

ECM 21: Replace Exterior Siding

The exterior wall of the Citizens Center building consists of masonry panel board with a stucco finish, vapor barrier, metal studs, and batt insulations, and interior gypsum board. The exterior panel system is failing at the joints thereby allowing rain water to penetrate the interior. As a result of the rain penetration, the metal framing is deteriorating and the panels are breaking away from the structure.

Ameresco recommends the replacement of the entire exterior wall with a new architectural metal system. The new system would include new exterior board with vapor barrier which will receive the 2" insulated metal panels. The metal panels are received into new channels that are designed to shed water and integrate into the existing window system. The new system is maintenance free and doesn't require caulking and painting. Also as part of the scope, a large majority of the framing with be replaced, which will include interior drywall due to anticipated structural issues with the existing infrastructure.

The following table contains the total wall area to be replaced at each building.

Building	Wall Area (SF)
Citizens Center	10,875

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The following table contains the total wall area to be replaced at each building.

Building	Wall Area (SF)
Citizens Center	10,875

Project Financials

Based upon the information provided for purposes of this report and Ameresco's initial site visit on October 18, 2010, Ameresco has estimated implementation cost and savings for each identified improvement as follows.:

Measure Number	Building	ECM Description	Measure Costs	Savings	Estimated Incentives	Simple Payback (years)
1	CitizensCntr	Lighting System Improvements - Base	$ 17,059	$ 2,268	$ 3,885	5.81
1	CitizensCntr	Lighting System Improvements - Added Scope	$ 13,197	$ 909	$ 2,535	11.72
2	CitizensCntr	Lighting Controls - Occupancy Sensors	$ 2,376	$ 202	$ 400	9.76
2	CitizensCntr	Lighting Controls - Day Light Harvesting	$ 3,175	$ 140	$ 150	21.62
3A	CitizensCntr	New Energy Management Systems - Base	$ 57,577	$ 10,490	$ 4,500	5.06
3B	CitizensCntr	New Energy Management Systems - Extended	$ 147,541	$ 12,894	$ 4,500	11.09
4	CitizensCntr	Economizer Control on Rooftop Units	$ 8,097	$ 712		11.37
5	CitizensCntr	Demand Control Ventilation on Rooftop Units	$ 17,393	$ 1,765		9.85
6	CitizensCntr	Energy Efficient Motors	$ 6,206	$ 797		7.78
7	CitizensCntr	Vending Machine Controllers	$ 373	$ 196	$ 75	1.52
8	CitizensCntr	Variable Frequency Drives on Rooftop Units	$ 13,495	$ 2,255	$ 3,800	4.30
9	CitizensCntr	PC Load Management Software	$ 1,201	$ 294		4.09
10	CitizensCntr	Window Film on Atrium Roof Windows	$ 2,249	$ 214		10.53
11	CitizensCntr	Thermostat Radiator Valves (TRV)	$ 9,715	$ 1,148	$ 750	7.81
~~12~~	~~CitizensCntr~~	~~Rooftop Unit Replacement~~	~~$ 153,560~~	~~$ 7,556~~		~~20.32~~
13	CitizensCntr	Boiler Replacement - Condensing	$ 81,806	$ 5,128	$ 10,000	14.00
14	CitizensCntr	Water Conservation	$ 9,789	$ 254		38.51
15	CitizensCntr	Exterior Siding Replacement	$ 847,872	$ 3,463		244.80
16	CitizensCntr	Door Weather Stripping	$ 3,793	$ 974		3.89
17	CitizensCntr	Exterior Door Replacement	$ 59,690	$ 1,599		37.34
18	CitizensCntr	Recommission VAV Boxes	$ 18,850	$ 1,490		12.65
19	CitizensCntr	Install Generator for Demand Response	$ 29,988	$ 2,366		12.68

EEC BG

To arrive at the above figures, Ameresco developed an facility wide analysis model which predicted performance before and after implementation of each improvement. Project costs are currently based upon a combination of in-house estimates from previous projects and discussions with local controls on the specific installations recommended herein. Final implementation project costs would be developed with our open book pricing approach, whereby competitive pricing is received from local subcontractors on each defined scope and any reduction in implementation costs are passed through to the City.

The Citizens Center has significant needs, the most expensive of which is replacement of the exterior siding across the entire building. While many improvements could be recognized from

ECM 14: Water Conservation

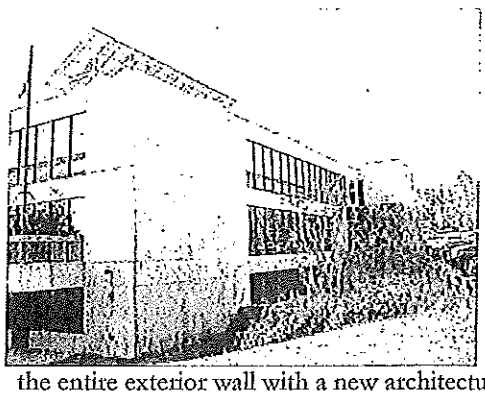
The majority of the existing water fixture at the Citizens Center are standard efficient. Water closets consist of wall mounted toilets with Sloan Royal flush valves with a flow rating of 3.5 gallons per flush (gpf). Urinals are equipped with similar flush valves with a flow rating of 1.5 gpf. Ktichen and bathroom sinks have aerators with flow rate of 2.0 gallon per minute (gpm).

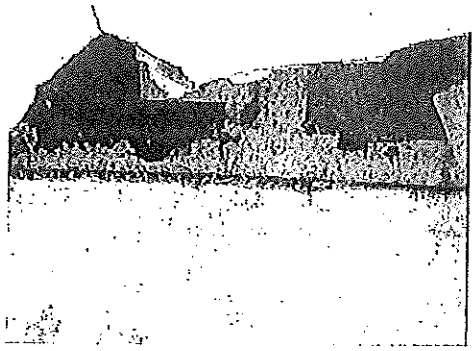
Ameresco evaluated the replacement of these fixtures with low-consumption equivalents. The existing toilets will be replaced with HET toilets that will have a rating of 1.28 gpf. The flush valves on the urinals will be replaced with new valve that have a rating of 1.0 gpf. Kitchen and bathroom sinks with have new aerators with a flow rating of 1.0 gpm.

Water consumption data was not available, but based on observed occupancy and discussions with facility personnel an assumed, conservative usage pattern was developed. These low usage estimate limits the payback, but additional information on usage patterns of the site will allow for refinement and likely improvement in presented economics.

ECM 15: Exterior Siding Replacement

The exterior wall of the Citizens Center building consists of masonry panel board with a stucco finish, vapor barrier, metal studs, and batt insulations, and interior gypsum board. The exterior panel system is failing at the joints thereby allowing rain water to penetrate the interior. As a result of the rain penetration, the metal framing is deteriorating and the panels are breaking away from the structure.





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City of Haverhill, MA

Self-Funding - Citizens Center Only

Project Selection Sheet

Measure Number	Building	ECM Description	Measure Costs	kW	kWh	Therms	kGals (water)	kGals (Sewer)	O&M Savings	Savings	Estimated Incentives	Simple Payback (years)	Include? (1=yes)
1	CitizensCntr	Lighting System Improvements - Base	$ 17,059	70	14,700	(214)	-	-	$ 349	$ 2,268	$ 3,865	5.81	1
1	CitizensCntr	Lighting System Improvements - Added Scope	$ 13,197	53	3,034	(44)	-	-	$ 264	$ 909	$ 2,535	11.72	1
2	CitizensCntr	Lighting Controls - Occupancy Sensors	$ 2,376	-	2,228	(46)	-	-	$ -	$ 202	$ 400	9.76	1
2	CitizensCntr	Lighting Controls - Day Light Harvesting	$ 3,175	-	1,540	(32)	-	-	$ -	$ 140	$ 150	21.62	1
3A	CitizensCntr	New Energy Management Systems - Base	$ 57,577	-	29,580	4,930	-	-	$ -	$ 10,490	$ 4,500	5.06	0
3B	CitizensCntr	New Energy Management Systems - Extended	$ 147,541	-	34,144	6,249	-	-	$ -	$ 12,894	$ 4,500	11.09	1
4	CitizensCntr	Economizer Control on Rooftop Units	$ 8,097	-	5,933	-	-	-	$ -	$ 712		11.37	1
5	CitizensCntr	Demand Control Ventilation on Rooftop Units	$ 17,393	2	1,529	1,108	-	-	$ -	$ 1,765		9.85	1
6	CitizensCntr	Energy Efficient Motors	$ 6,206	14	5,908	-	-	-	$ -	$ 797		7.78	1
7	CitizensCntr	Vending Machine Controllers	$ 373	-	1,933	-	-	-	$ -	$ 196	$ 75	1.52	1
8	CitizensCntr	Variable Frequency Drives on Rooftop Units	$ 13,495	-	18,791	-	-	-	$ -	$ 2,255	$ 3,800	4.30	1
9	CitizensCntr	PC Load Management Software	$ 1,201	-	3,498	(89)	-	-	$ -	$ 294		4.09	1
10	CitizensCntr	Window Film on Atrium Roof Windows	$ 2,249	4	1,560	-	-	-	$ -	$ 214		10.53	1
11	CitizensCntr	Thermostat Radiator Valves (TRV)	$ 9,715	-	-	815	-	-	$ -	$ 1,148	$ 750	7.81	1
12	CitizensCntr	Rooftop Unit Replacement	$ 153,560	9	16,966	326	-	-	$ 5,000	$ 7,556		20.32	1
13	CitizensCntr	Boiler Replacement - Condensing	$ 81,806	-	-	1,867	-	-	$ 2,500	$ 5,128	$ 10,000	14.00	1
14	CitizensCntr	Water Conservation	$ 9,789	-	-	22	22	22	$ -	$ 254		38.51	1
15	CitizensCntr	Exterior Siding Replacement	$ 847,872	-	488	2,419	-	-	$ -	$ 3,463		244.80	
16	CitizensCntr	Door Weather Stripping	$ 3,793	-	-	592	-	-	$ -	$ 974		3.89	
17	CitizensCntr	Exterior Door Replacement	$ 59,690	-	-	1,136	-	-	$ -	$ 1,599		37.34	1
18	CitizensCntr	Recommission VAV Boxes	$ 18,850	-	237	1,038	-	-	$ -	$ 1,490		12.65	1
19	CitizensCntr	Install Generator for Demand Response	$ 29,988	-	-	-	-	-	$ -	$ 2,366		12.68	1
X	City Wide Work	Lighting System Improvements	$ 750,000							$ 85,000		8.82	
X	City Wide Work	New Energy Management Systems	$ 500,000							$ 65,000		7.69	
X	City Wide Work	Weatherization, Motors, Plug Load Controls	$ 250,000							$ 37,500		6.67	
Total Selected			$ 595,759	151	111,800	12,136	22	22	$ 8,113	$ 42,186	$ 26,095	13.50	19 measures
Base Usage				845	255,360	22,554				$ 74,849			
% Saved				17.88%	43.78%	53.81%				56.4%			

Project Term (years)	20	(enter an integer between 10 and 20)
Estimated rebates	$ 26,095	
Upfront Capital Contribution an	$ 26,095	

Annual Contribution	$ -

Run Scenario	(push button after selecting deal in column E)

Output	
Synchronized?	OK
Selected deal work?	Yes
Year 1 Net Cash Flow	$7,369
Total Financed Amount (Includin	$622,584
Total Project Size	$ 595,759
Assumed Finance Rate	4.25%
Assumed Construction Period	4.25%
Other Escalation	3.00%

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AMERESCO
Green • Clean • Sustainable

City of Haverhill, MA

Self-Funding - Citizens Center Only

Project Selection Sheet

Measure Number	Building	ECM Description	Measure Costs	kW	kWh	Therms	kGals (water)	kGals (Sewer)	O&M Savings	Savings	Estimated Incentives	Simple Payback (years)	Include? (1=yes)
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7	CitizensCntr	Vending Machine Controllers	$ 373	-	1,633	-	-	-	$ -	$ 196	$ 75	1.52	1
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Other Escalation	3.00%
Preliminary - Subject to Audit	

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NATIONAL ENERGY TECHNOLOGY LABORATORY
Albany, OR • Morgantown, WV • Pittsburgh, PA

U.S. DEPARTMENT OF ENERGY

August 25, 2011

City of Haverhill
Attn: Andrew Herlihy, Mayor's Chief of Staff
City Hall, Room 305
4 Summer Street
Haverhill, MA 01830

Subject: Financial Assistance Award No. DE-EE0002377 titled "Energy Efficiency of the Haverhill Citizens Center"

Dear Mr. Herlihy:

On September 22, 2009, the National Energy Technology Laboratory (NETL) provided your organization with a provisional award, which limited the release of DOE funds until all award conditions have been satisfied. This Provisional Award language indicates that if the parties are not able to resolve the definitization prior to January 31, 2010, the DOE may terminate this provisional award. Your organization's failure to provide NETL with the detailed level of documentation necessary to definitize the award has resulted in substantial delays to this project.

It is imperative that your organization submit a corrective action plan detailing measures that will be taken to satisfactorily remove the conditions on the award. The corrective action plan must be submitted no later than thirty (30) calendar days from the date of this letter. NETL will review your corrective action plan and determine if the steps taken by your organization have successfully implemented the necessary processes to continue with this award.

Failure to provide an application with supporting documentation acceptable to the Contracting Officer, or failure to finalize negotiations, will be deemed noncompliance pursuant to 10 CFR 600.24. Based on such noncompliance, the Contracting Officer may unilaterally terminate or suspend this award and deobligate the amounts obligated.

I hope the City of Haverhill will provide NETL with an acceptable corrective action plan within the timeframe stated in this letter. If, however, it is not your intention to continue with this award, please provide a letter stating so within thirty (30) calendar days from the date of this letter. If you have any comments or concerns pertaining to this letter, please feel free to contact the DOE Project Officer, Paul Giles, at 412-386-4811, or the DOE Contract Specialist, Bonnie Dowdell, at 412-386-5879. Thank you in advance for your time and effort to resolve this important matter.

Sincerely,

Juliana L. Heynes
Contracting Officer
Acquisition and Assistance Division

CC: Paul Giles, NETL

CITY OF HAVERHILL
COMMUNITY DEVELOPMENT

WILLIAM PILLSBURY, JR., DIRECTOR
TELEPHONE: 978-374-2344 V/TDD
FAX: 978-374-2332

CITY HALL, ROOM 309
FOUR SUMMER STREET
HAVERHILL, MA 01830-5843

September 25, 2011

Ms. Juliana L. Heynes
Contracting Officer
Acquisition and Assistance Division
National Energy Technology Laboratory
626 Cochrans Mill Road
P.O. Box 10940
Pittsburgh, PA 15236-0940

RE: Corrective Action Plan for Financial Assistance Award No. DE-EE0002377 titled "Energy Efficiency of the Haverhill Citizens Center"

This letter is in response to your correspondence of August 25, received August 29, concerning a congressionally-approved earmark for energy efficiency measures for the Haverhill Citizens Center, located at 10 Welcome Street in Haverhill, MA.

BACKGROUND

As you may be aware, this earmark was originally established for the purposes of funding the installation of solar panels atop the Haverhill Citizens Center. However, there was a need to re-program and re-purpose the earmark to address other energy needs at this early 1970s-era facility. This was due to the fact that a separate and distinct State grant (from the Massachusetts Renewable Energy Trust) provided the means to install solar panels atop the facility, prior to the passage of the Omnibus Budget Act in 2008-9 that funded this federal earmark. This state-funded solar panel installation was completed in 2009. In 2011, replacement of rooftop HVAC units (estimated at $153,560) is being undertaken through use of the City's Energy Efficiency and Conservation Block Grant (EECBG) funding.

ENERGY AUDIT

As a part of other energy-savings and conservation initiatives, the City of Haverhill joined several neighboring municipalities in procuring an "ESCO," an Energy Services Company, through our regional Merrimack Valley Planning Commission. The firm selected, Ameresco, has been conducting energy audits of various municipal buildings in each of the cities and towns participating in the regional ESCO. In Haverhill, Ameresco has conducted an investment-grade energy audit of the Haverhill Citizens Center, as part of a strategy to determine the best use of these congressionally-earmarked funds. This audit is attached.

CORRECTIVE ACTION PLAN:

From this audit is derived a list of recommended energy measures. Our corrective action plan features undertaking several worthwhile energy efficiency measures as recommended by this investment grade audit. These activities are also supported by previous energy analyses undertaken by National Grid and Woodman and Associates on behalf of the City.

Our corrective action plan consists of either of these two sets of activities:

A) The federal award supports $237,500 worth of 'Exterior Siding Replacement' (Activity Measure #15), towards a total Activity Measure cost of **$847,872.** The remainder of this cost (**$610,372**) is a match assumed by the City.

B) The federal award supports $237,500 worth of Activity Measures (as found on the attached Project Selection Sheet):

1.	Lighting System Improvements- Base	$17,059
1b.	Lighting System Improvements- Added Scope	$13,197
2.	Lighting Controls- Occupancy Sensors	$ 2,376
2b.	Lighting Controls- Day Light Harvesting	$ 3,175
3b.	New Energy Management Systems- Extended	$147,541
4.	Economizer Control on new Rooftop Units	$ 8,097
5.	Demand Control Ventilation on Rooftop Units	$17,393
6.	Energy Efficient Motors	$6,206
7.	Vending Machine Controllers	$ 373
8.	Variable Frequency Drives on Rooftop Units	$13,495
9.	PC Load Management Software	$ 1,201
10.	Window Film on Atrium Roof Windows	$ 2,249
11.	Thermostat Radiator Valves	$ 9,715
13.	Boiler Replacement- Condensing	$81,806
14.	Water Conservation	$ 9,789
16.	Door Weather Stripping	$ 3,793
17.	Exterior Door Replacement	$59,960
18.	Re-commission VAV Boxes	$18,850
19.	Install Generator for Demand Response	$29,988
	Program Administration—Owner's Agent	$29,008
	TOTAL:	**$475,000***

* = 1:1 match of $237,500 between City and Federal Award

FUNDING PROPOSAL:

Our corrective action plan consists of either of these two possible funding scenarios:

A) *Our preferred scenario would be to fund the city's share of the Federal Award (matching or exceeding $237,500) through a value of that amount through the energy services performance contract.*

NOTE: The City is currently developing and will be signing a legally-binding performance contract with Ameresco for various energy measures to be undertaken at the Haverhill Citizens Center and other municipal facilities. The energy savings figures in this contract, which will be negotiated and agreed to by both the City, acting through its owner's agent, and Ameresco, represent a real value. These energy savings figures proposed by the ESCO are guaranteed under Massachusetts Law. The City will pay no upfront cash for the various energy efficiency measures and upgrades to be undertaken by the contractor (Ameresco). The City will ultimately pay for its share of the

costs for these energy measures and upgrades by directing a portion of these energy savings back to the ESCO over a number of years predetermined by the payback periods specified in the ESCO agreement (performance contract).

The City of Haverhill, which is coping with the lingering fiscal impacts of the largest municipal debt load in the history of the Commonwealth of Massachusetts (through the sale and transfer of the former city-owned Hale Hospital), is requesting permission to utilize this innovative and legal funding option in order to meet its required match share.

B.) Another funding option would be for the City to offer a cash match of $237,500 to the Federal Award. These funds would need to be borrowed by the City, which would require approval from the Massachusetts Department of Revenue under the terms of the aforementioned Hale Hospital legislation (Massachusetts General Law Chapter 397 of the Acts of 2004).
NOTE: The City has not had a capital budget of more than $100,000 over the last few fiscal years.
The other variation on this option would be for Ameresco to pay the upfront cash necessary to match this Federal Award, and for the City to reimburse Ameresco separately through the performance contract (ESCO agreement) cited above.

The City of Haverhill looks forward to working with the United States Department of Energy to reprogram and utilize this Federal Award in an innovative manner that will produce significant energy savings, as well as corresponding financial savings, in keeping with the spirit and intent of the Federal Award and national priorities.

If you have any further questions, please do not hesitate to contact me or Mayor James J. Fiorentini at 978-374-2300.

Sincerely,

Andrew K. Herlihy

Andrew K. Herlihy
Community Development Division Director
City of Haverhill, MA

CC: Paul Giles, NETL
Bonnie Dowdell, NETL

the standard in safety

Underwriters Laboratories

October 31, 2011

Haverhill Fire Department
Master Mechanic Ted Mazzotta /
Chief Alan DeNaro
4 Summer Street, Room 113
Haverhill, MA 01830

Our Reference: File: FS988821; Project: 11FES13892

Subject: Aerial Examination; 2005 Grumman Emergency Products 102 ft. Steel Elevating Platform, Client Vehicle No. - Tower 4

Dear Master Mechanic Ted Mazzotta /
Chief Alan DeNaro:
The examinations and tests of the subject aerial device covered under our Reference No. 11FES13892 were conducted on 08/31/11. The test program conducted follows the intent of Chapter 19 of the National Fire Protection Association (NFPA) Standard No. 1911, "Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus" 2007.

The enclosed Report outlines the tests conducted, the methods used, and the results of such tests. The Conclusion Page of the Report summarizes the areas of noncompliance found during the inspection of your aerial device.

Although a certificate of compliance is not required by NFPA 1911, this service is provided by UL. If you wish to receive a certificate of compliance please contact UL customer service at 877-854-3577, prompt 2, to schedule a reinspection after the items of noncompliance have been repaired. During the reinspection we will verify that all noncompliant items found during our original investigation have been repaired. Upon successful completion of the reinspection, we will issue a Certificate stating the units compliance with Chapter 19 of NFPA 1911, 2007 Edition.

If you should have any questions or comments concerning this investigation, please do not hesitate to contact UL.

Very Truly Yours,

Telvis Dixon

Telvis Dixon
Fire Equipment Services
Phone No. (877)UL-HELPS (Option 2)

Underwriters Laboratories Inc.
333 Pfingsten Road, Northbrook, IL 60062-2096 USA
T:: 847.272.8800 / F:: 847.272.8129 / W:: ul.com

PRODUCT COVERED:

Client - Haverhill Fire Department

Telephone - 978-373-8459

Address - 4 Summer Street, Room 113

City - Haverhill

State - MA

Zip - 01830

Client Vehicle No. - Tower 4

Test Date - 08/31/11

Inspection Type - Annual with NDT

Unit Mfr. - Grumman Emergency Products

Model - AC 102

Serial No. - 18484

Year - 2005

Chassis Manufacturer - Grumman Emergency Products

Vehicle Identification No. (VIN) - 1G9ACHDT5LR088144

Aerial Manufacturer - Grumman Emergency Products

Refurbished - No

Ladder Type and Material - Steel Elevating Platform

Maximum Recommended Extended Length - 102 ft.

No. of Sections - 3

Mileage - 69,045

Engine Hours - 9320.0

Examination and Tests by - Telvis Dixon

T E S T R E C O R D N O. 1

Turntable

UPPER ROTATION BEARING MOUNTING BOLTS:

Upper bearing bolts were identified by the UL Field representative as 7/8 in., Grade 8, with a torque specification of 590 ft-lb.

Number of bolt(s)less than the specified torque: Four
These results are noncompliant. All bolts must be properly torqued.

Number of bolt(s) inaccessible to torque verification: None

Ultrasonic inspection of the upper rotation bearing bolts revealed no detectable internal flaws.

All bolts were present.

LOWER ROTATION BEARING MOUNTING BOLTS:

Lower rotation bearing bolts were identified by the UL Field Representative as 7/8 in., Grade 8, with a torque specification of 590 ft-lb.

Number of bolt(s) less than the specified torque: None

Number of bolt(s) inaccessible to torque verification: None

Ultrasonic inspection of the lower rotation bearing bolts revealed no detectable internal flaws.

All bolts were present.

TORQUE BOX MOUNTING TO FRAME:

Torque box to frame mounting bolts were identified by the UL Field Representative as 3/4 in., Grade 8, with a torque specification of 370 ft-lb.

Number of bolt(s) less than the specified torque: None

Number of bolt(s) inaccessible to torque verification: None

Ultrasonic inspection of the torque box to frame mounting bolts revealed no detectable internal flaws.

All bolts were present.

Inspection of the torque box to frame mounting plate weldments was conducted. No defects were found.

ROTATION GEAR REDUCTION BOX MOUNTING:

Rotation gear reduction box mounting bolts were identified by the UL Field Representative as 7/8 in., Grade 8, with a torque specification of 300 ft-lb.

Number of bolt(s) less than the specified torque: None

Number of bolt(s) inaccessible to torque verification: None

Ultrasonic inspection of the rotation gear reduction box mounting bolts revealed no detectable internal flaws.

All bolts were present.

Inspection of the rotation gear reduction box mounting weldments was conducted. No defects were found.

TURNTABLE STRUCTURAL COMPONENTS:

Inspection of the turntable structural weldments was conducted. The following defects were found. These results are noncompliant.

One weld was found with a Delamination and corrosion

ROTATION HYDRAULIC SWIVEL:

No hydraulic fluid leakage was detected.

The rotation hydraulic swivel was securely mounted.

HYDRAULIC LINES AND HOSES IN CHASSIS AND TORQUE BOX:

All hydraulic lines, valves, fittings and other components were undamaged.

All hydraulic lines exhibited no signs of hydraulic fluid leakage.

HYDRAULIC LINES AND HOSES IN TURNTABLE:

All hydraulic lines, valves, fittings and other components were undamaged.

All hydraulic lines exhibited no signs of hydraulic fluid leakage.

HYDRAULIC PUMP:

The hydraulic pump showed no signs of external hydraulic fluid leakage.

HOLDING VALVES ON ELEVATION CYLINDER(S):

The holding valve(s) on both cylinders showed signs of external hydraulic fluid leakage. These results are noncompliant.

EXTENSION CYLINDER ANCHOR EARS AND PLATES

Extension cylinder anchor ears and plates mounting bolts were identified by the UL Field Representative as 1/2 in., Grade 8, with a torque specification of 60 ft-lb.

Number of bolt(s) less than the specified torque: None

Number of bolt(s) inaccessible to torque verification: None

Ultrasonic inspection of the extension cylinder anchor ears and plates mounting bolts revealed no detectable internal flaws.

All bolts were present.

Inspection of the extension cylinder anchor ear mounting plate weldments was conducted. No defects were found.

EXTENSION CYLINDER PINS:

The extension cylinder pins were properly installed.

The extension cylinder pins were properly retained.

Ultrasonic inspection of all accessible extension cylinder pins revealed no detectable internal flaws.

EXTENSION CYLINDER(S):

The cylinder rod(s) were undamaged.

Both cylinder rod to barrel seal(s) leaked hydraulic fluid. These results are noncompliant.

The extension cylinders were then subjected to a drift test. The aerial device was properly leveled, fully elevated and extended 10 ft. The second section was marked and the device was allowed to stand for 1 hr. Cylinder drift was then determined by observing second section movement in relation to the base section.

The left extension cylinder drift was recorded at 0.000 in. in 1 hour.

The right extension cylinder drift was recorded at 0.000 in. in 1 hour.

COMMUNICATION SYSTEM:

The communication system components were properly installed.

The communication system operated properly.

RELIEF HYDRAULIC PRESSURE:

Main pump relief pressure was recorded at 2800 psig.

This does not exceed the manufacturer's maximum recommended relief pressure.

UNIT MAIN FRAME:

Inspection of the unit main frame weldments was conducted. The following defects were found. These results are noncompliant.

Delaminating corrosion located on the right side.

UNIT MAIN FRAME SUSPENSION:

Unit main frame suspension mounting bolts were identified by the UL Field Representative as 5/8 & 3/4 in., Grade 8, wrench-tight.

Number of bolt(s) less than the specified torque: None

Number of bolt(s) inaccessible to torque verification: None

Ultrasonic inspection of the unit main frame suspension mounting bolts revealed no detectable internal flaws.

All bolts were present.

Inspection of the unit main frame suspension weldments was conducted. No defects were found.

TRANSMISSION/AERIAL INTERLOCKS:

The vehicle was provided with a transmission/aerial interlock.

The stabilizers did not deploy.

The aerial device did not elevate from the bedded position.

ENGINE SPEED INTERLOCK:

The vehicle was provided with an engine speed interlock.

With the vehicle in travel mode, the engine high idle did not engage.

Stabilizer Examination and Test

STABILIZER STRUCTURAL COMPONENTS:

Inspection of the stabilizer structural component weldments was conducted. No defects were found.

STABILIZER PLATES:

Stabilizer plates were present and of proper construction.

STABILIZER MOUNTING TO TORQUE BOX:

Inspection of the stabilizer mounting to torque box weldments was conducted. No defects were found.

STABILIZER JACK BOX MOUNTING:

Stabilizer jack box mounting bolts were identified by the UL Field Representative as 5/8 in., Grade 8, with torque specifications of 120 ft-lb.

Number of bolt(s) less than the specified torque: None

Number of bolt(s) inaccessible to torque verification: None

Ultrasonic inspection of the stabilizer jack box mounting bolts revealed no detectable internal flaws.

All bolts were present.

HYDRAULIC LINES AND HOSES IN STABILIZER SYSTEM:

All hydraulic lines were undamaged.

All hydraulic lines exhibited no signs of external hydraulic fluid leakage.

STABILIZER INTERLOCK AND/OR WARNING DEVICE:

The stabilizer interlock performed properly.

STABILIZER EXTENSION CYLINDER PINS:

All accessible stabilizer cylinder pins were properly aligned.

The stabilizer extension cylinder pins were properly installed.

The stabilizer extension cylinder pins were properly lubricated.

The stabilizer extension cylinder pins were properly retained.

Ultrasonic inspection of the accessible stabilizer cylinder pins revealed no detectable internal flaws.

Aerial Ladder/Telescoping Boom Examination and Test

AERIAL LADDER WELDMENTS:

Inspection of the aerial ladder weldments was conducted. No defects were found.

MODIFICATIONS OR UNAUTHORIZED REPAIRS:

No factory unauthorized modifications or repairs were detected.

HANDRAILS:

Inspection of the handrails revealed no defects.

VERTICAL AND/OR DIAGONAL BRACES:

The vertical and diagonal braces were straight and contained no defects.

BASERAILS:

The baserails were straight and contained no defects.

The underside of the cradle pad(s) showed no signs of delaminating corrosion.

RUNGS:

The rung covers were found to contain no damage and all rung covers were present and properly secured.

Inspection of the rungs revealed no defects.

SLIDE BLOCKS:

All accessible slide blocks exhibited no signs of wear and were properly secured.

EXTENSION SHEAVES:

All accessible extension sheaves exhibited no signs of wear.

EXTENSION CABLES:

All accessible cables were found to be undamaged.

The extension cables did not have excessive slack.

EXTENSION INDICATOR:

The extension indicator was found to be accurate.

The water system has one pressure gauge.

The water system pressure gauges were tested for accuracy at three settings.

For the first reading the test gauge at the top of the waterway read 150 psig. The water system pressure gauges read as follows:

		Location
Pressure Gauge No. 1:	150.000 psig	Tailboard
Pressure Gauge No. 2:	150.000 psig	Tailboard

For the second reading the Test Gauge read 200 psig. The water system pressure gauges read:

		Location
Pressure Gauge No. 1:	200.000 psig	Tailboard
Pressure Gauge No. 2:	200.000 psig	Tailboard

For the third reading the Test Gauge read 250 psig. The water system pressure gauges read:

		Location
Pressure Gauge No. 1:	250.000 psig	Tailboard
Pressure Gauge No. 2:	250.000 psig	Tailboard

The water system was fully extended at 0° elevation and hydrostatically pressurized to 200 psig. It was also fully elevated while fully retracted and rotated 360° while hydrostatically pressurized to 200 psig.
Leakage was observed at the turntable swivel. These results are noncompliant.

The flow meter(s) was/were not installed/provided.

The waterway flow meter(s)read as follows:

		Location
Flow Meter No. 1	1,040 gpm	Platform
Flow Meter No. 2	1,040 gpm	Operators Station

The flow meter(s) met the test requirements.

WATERWAY MOUNTING BRACKETS:

Inspection of the accessible waterway mounting brackets revealed no defects.

Telescoping Boom Platform and Platform Operating Controls

PLATFORM MOUNTING BRACKETS:

Inspection of the platform mounting bracket weldments was conducted. No defects were found.

PLATFORM:

Inspection of the platform revealed no defects.

The platform was properly aligned with the boom.

HYDRAULIC, PNEUMATIC, AND ELECTRICAL LINES IN PLATFORM:

All hydraulic, pneumatic, and electrical lines were undamaged.

All hydraulic lines exhibited no signs of hydraulic fluid leakage.

PLATFORM LOAD CAPACITY IDENTIFICATION:

The platform exhibited the proper load capacity identification of 800 lb.

PLATFORM GATE LATCHES AND HINGE POINTS:

The platform gate latches operated smoothly, were undamaged, and exhibited proper alignment with the platform.

PLATFORM HINGE PINS:

All hinge pins were properly aligned.

Ultrasonic inspection of the platform hinge pins revealed no detectable internal flaws.

The platform hinge pins were properly installed.

The platform hinge pins were properly lubricated.

The platform hinge pins were operating properly.

The platform hinge pins were properly retained.

Operational Tests

LOAD TEST:

Load Capacity: 800 lb.

The stabilizers showed no signs of instability. All boom movements exhibited no abnormal noise, vibration, or deflection. The platform leveled properly.

Stabilizers were lifted off of the ground as ladder was rotating. Both stabilizers on left side of truck was lifted as ladder was rotating to the right side of the truck.

LADDER SECTION ALIGNMENT:

With the ladder fully cradled, the unit was properly leveled. The ladder was then aligned with the longitudinal axis of the truck by rotating the ladder off the rear of the truck. The ladder sections were then properly leveled by leveling the ladder hinge pin at the turntable and then bringing the ladder to level along the length of the handrails. The ladder sections were then visually inspected for signs of excessive twist or bow. No signs of excessive twist or bow were noted.

The ladder sections were tested for proper alignment by leveling the aerial turntable, fully extending the aerial at 0° elevation, and placing a level on the handrails of the aerial at the butt and tip of each section. Any twist in the ladder sections was then determined by measuring the distance between the bottom of the level and the low handrail, in inches.

With the ladder fully cradled, the unit was properly leveled. The ladder was then aligned with the longitudinal axis of the truck by rotating the ladder off the rear of the truck. The ladder sections were then properly leveled by leveling the ladder hinge pin at the turntable and then bringing the ladder to level along the length of the handrails. The ladder sections were then visually inspected for signs of excessive twist or bow. No signs of excessive twist or bow were noted.

The ladder sections were tested for proper alignment by leveling the aerial turntable, fully extending the aerial at 0° elevation, and placing a level on the baserails of the aerial at the tip of each section. Any twist in the ladder sections was then determined by measuring the distance between the top of the level and the high baserail.

Ladder Section Alignment (After Load Tests - measured in inches):

Base Section Twist - 0.000, Level
Second Section Twist - 0.000, Level

C O N C L U S I O N

The aerial device covered by this Report has been evaluated for compliance with the Standard NFPA 1911, 2007 Edition. Issuance of an Underwriters Laboratories Inc. Certificate Of Aerial Lift Device Examination And Test is contingent upon correction in accordance with the manufacturer's recommendations of those items found not to be in accordance with the Standard and meeting the requirements of all test work not yet completed, if any.

Specifically, Certification of the subject aerial device is contingent upon:

Repair of the unit main frame defects.

Delaminating corrosion was/were found on the right side.

Repair of torque box weldment defects.

Repair or replacement of all torque box members with delaminating corrosion.

Repair of all turntable structural component weldment defects.

One weld was found with a Delamination and corrosion

Repair of elevation cylinder rod to barrel seal hydraulic oil leakage.

Repair of elevation cylinder holding valve hydraulic oil leakage.

Repair of extension cylinder rod to barrel seal hydraulic oil leakage.

Repair of the throttle control.

Repair of diverter valve hydraulic oil leakage.

Repair of the platform controls.

Repair of all leakage in the water system.

Meeting the requirements of the stabilizer operations timing test.

Bulldog Fire Apparatus
17 Winter Street
Woodville, Ma. 01784
508-435-4200

Customer	Haverhill Fire Department	**Estimate**	
City	Haverhill, Ma.		
Address	4 Summer Street Room 113	Estimate Number	EN11-10-26
Contact	Chief Rick Borden		
Phone / Fax	978-373-8460	Date	10/26/2011

Year	Color	GSO Number	Make / Model / Body
1990	Red		Grumman / 102' Aerial Platform

Start Date	Discription	Prepared By	Authorized
	Misc Repairs - Hi-idle, Bucket leveling, Generator		

Line	Repair	Replace	Discription	Paint Labor	Labor Hrs.	Material	Sublet
1	X		Hi-Idle doesn't work. Remove and replace power supply board and the connections at the power supply control board.		14	$5,238.00	
2	X		Bucket load leveling system doesn't work. Repair connections and replace load leveling control switches.		24	$6,894.00	
3	X		Remove existing Onan generator and replace electrical connection to main power supply unit. Install new Onan generator and replace power outlets.		22	$15,866.00	
			Totals	0.0	60.0	$27,998.00	$0.00

N.E.T. 10 *$95.00 Per Hour*

The above Estimate does not include any unforeseen damaged or worn areas or items found during the repairs. Quotations on material is subject to change.

Auth _____

Labor	$5,700.00
Material	$27,998.00
Sublet	$0.00
TOTAL	$33,698.00

Bulldog Fire Apparatus
17 Winter Street
Woodville, Ma. 01784
508-435-4200

Customer	Haverhill Fire Department	**Estimate**	
City	Haverhill, Ma.		
Address	4 Summer Street Room 113	Estimate Number	EN11-10-26
Contact	Chief Rick Borden		
Phone / Fax	978-373-8460	Date	10/26/2011

Year	Color	GSO Number	Make / Model / Body
1990	Red		Grumman / 102' Aerial Platform

Start Date	Discription	Prepared By	Authorized
	Corrosion		

Line	Repair	Replace	Discription	Paint Labor	Labor Hrs.	Material	Sublet
1	X		Repair of the unit main frame defects. Steam clean undercarriage and disassemble brackets needin to be replace/fabricated. Sandblast corrosion areas on frame & braces. Repair delaminating corrosion found on both left and right sides along the rear tandem axle and frame rails. The cleaned and repaired areas will need to be prepped and have a durable epoxy coating applied.	12	88	$5,218.00	
	X		Repair all torque box members showing delaminating corrosion. Disassemble to gain access to the torque box area and steam clean area unable to access from chassis cleaning. Sandblast areas of corrosion and delamination. Replace/fabricate brackets with excessive corrosion. Some areas will need to be be cleaned with a needle gun to properly remove the flaking and delaminated sections. Excessive corrosion could be found and areas of the tourque box frame may need to be patched or replaced. The cleaned and repaired areas will need to be prepped and have a durable epoxy coating applied. Due to limited access the torque box may need to be sprayed twice.	16	104	$6,731.00	
	X		Repair all turntable structural component defects. The upper section will need to be disassembled to gain access. The upper section will need to be pressure washed to remove grease and flaking. Sandblast the areas showing corrosion. Repair structural comp - nent defects around turntable.	10	56	$1,628.00	

Bulldog Fire Apparatus
17 Winter Street
Woodville, Ma. 01784
508-435-4200

Customer	Haverhill Fire Department	**Estimate**	
City	Haverhill, Ma.		
Address	4 Summer Street Room 113	Estimate Number	EN11-10-26
Contact	Chief Rick Borden		
Phone / Fax	978-373-8460	Date	10/26/2011

Year	Color	GSO Number	Make / Model / Body
1990	Red		Grumman / 102' Aerial Platform

Start Date	Discription	Prepared By	Authorized
	Hydraulic repairs		

Line	Repair	Replace	Discription	Paint Labor	Labor Hrs.	Material	Sublet
1	X		Replacement of all hydraulic lines/ hoses and fittings for stabilizer system. Also replacing the valves banks in line. Due to metal filings found in the system the hydraulic pump should also be replaced. Multiple valves would need to be replaced such as deverter, flow, control, counterbalance, relief and check valves. This would be approximately 20 different valves. Some two, three or four duplicate valves. All filters and fluids will need to be changed during the repair process. during the work being performed.		160	$23,590.00	
			The hydraulic cylinders will be removed and bench tested. If metal filings are found in the hydraulic system fluid it could be due to the cylinders needing to be replaced. Cylinders will include jack cylinders, outrigger extension, Master cylinder, basket leveling, lift cylinders and extension cylinders.		100	$46,856.00	
			Totals	0.0	260.0	$70,446.00	$0.00

N.E.T. 10 ***$95.00 Per Hour***

The above Estimate does not include any unforeseen damaged or worn areas or items found during the repairs. Quotations on material is subject to change.

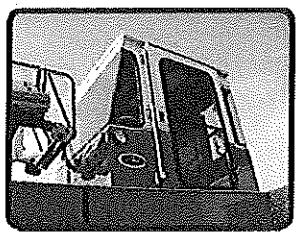
Auth _____

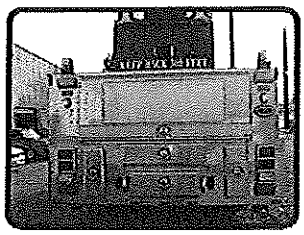
Labor	$24,700.00
Material	$70,446.00
Sublet	$0.00
TOTAL	$95,146.00

TRACTOR DRAWN AERIALCAT

AVAILABLE FOR IMMEDIATE DELIVERY

MANEUVERABILITY





- 2005 Predator MFD w/ 6" Raised Roof Cab
- 31,546 Miles - 2,561 Hours
- Detroit Series 60, 515 HP Engine
- Allison EVSR-4000 Transmission
- Code 3 Warning Lights
- Aluminum TDA AerialCat Body
- Harrison PTO 8kw Generator
- Unrestricted 500 lb. Rated Tip Load
- -5 to +80 Degree Elevation Range
- IQAN Motion Control System
- 16' Outrigger Spread
- 80,000 PSI Steel Ladder
- Two (2) Electric Cord Reels
- Various Shelves and Trays

- 55'-11" Overall Length
  138" Overall Height
  141" Tractor Wheelbase
  330" Trailer Wheelbase
- 1 yr. KME Bumper to Bumper Warrany to include lettering and delivery.
- Many More Options

PRICE – $394,000

BULLDOG FIRE APPARATUS
17 Winter Street
Woodville, MA 01784-0058
877.644.7707
www.bulldogfireapparatus.com

KME WORLD HEADQUARTERS
One Industrial Complex
Nesquehoning, PA 18240
1-800-235-3928 | www.kovatch.com

KME KOVATCH

HAVERHILL FLOOD PROTECTION SYSTEM IMPROVEMENTS: ECONOMIC BENEFITS AND FUNDING OPPORTUNITIES

Downtown Haverhill is protected by a flood protection system comprised of three distinct parts: a flood wall, a pump station, and the Little River Conduit. Upgrades to the system are required to meet Federal Emergency Management Agency (FEMA) and U.S. Army Corps of Engineers (USACE) requirements and to provide improved flood protection to the City's critical downtown area, which is undergoing revitalization efforts. The recommended upgrades have planning level costs of up to $4.4 million. While this is a substantial cost, implementation of the upgrades would result in significant benefits and avoided damages as detailed below and would encourage continued reinvestment and economic development in the downtown area. Potential funding opportunities are also identified below.

PROJECT BENEFITS

$220,000 in Avoided Insurance Premiums Annually

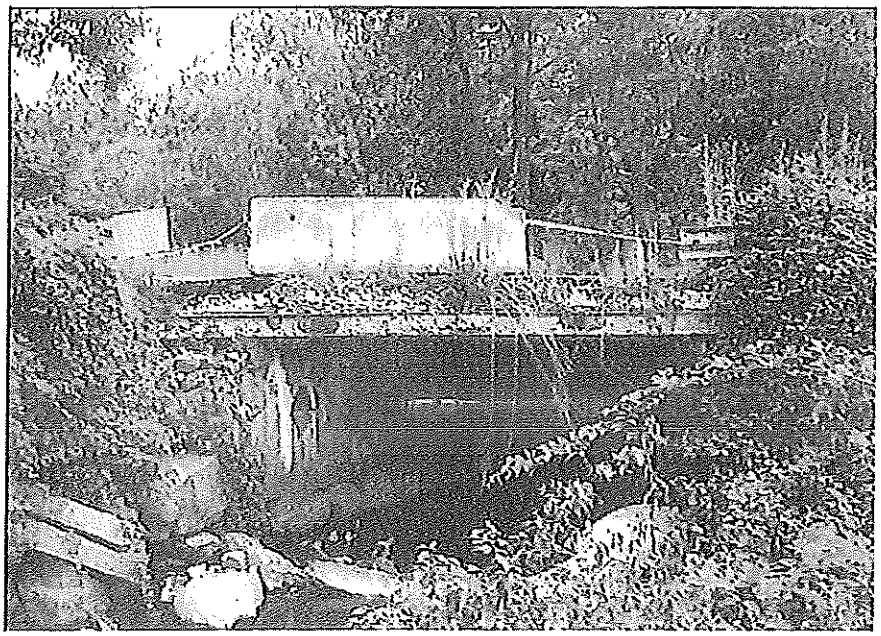
The existing flood control system requires a number of repairs and improvements to meet FEMA's certification requirements. Without FEMA's certification of the flood wall and associated flood control elements, properties behind the flood wall in the downtown area would not be considered to be protected from the 100-year flood event. Flood insurance would be mandatory for those downtown properties with federally backed mortgages (most properties). If FEMA re-maps the area as unprotected, total mandatory annual insurance premiums would approximate $220,000 for the affected property owners. If the flood control system is improved to meet FEMA's certification requirements, this insurance is non-mandatory and insurance costs to property owners would be reduced by approximately $220,000 annually.

$100,000 in Reduced Average Annualized Loss / Damages

A Risk Analysis was conducted to quantify the financial consequences and benefits of improving the flood protection system. As part of this analysis, an average annualized loss was calculated for various conditions using FEMA's Benefit-Cost Analysis (BCA) software and methodologies. The analysis demonstrates that the proposed improvements would reduce expected annual damages to the protected area by an additional $100,000. This potential cost reduction of damages to the downtown area contributes to sound economic justification for flood control system repairs.

CITY OF HAVERHILL

BRIDGE INSPECTION



EAST BROADWAY OVER MILLVALE BROOK

BRIDGE NO. H-12-013

BIN NO. 8A5

STRUCTURE NO. H12013-8A5-MUN-BRI

PREPARED BY:

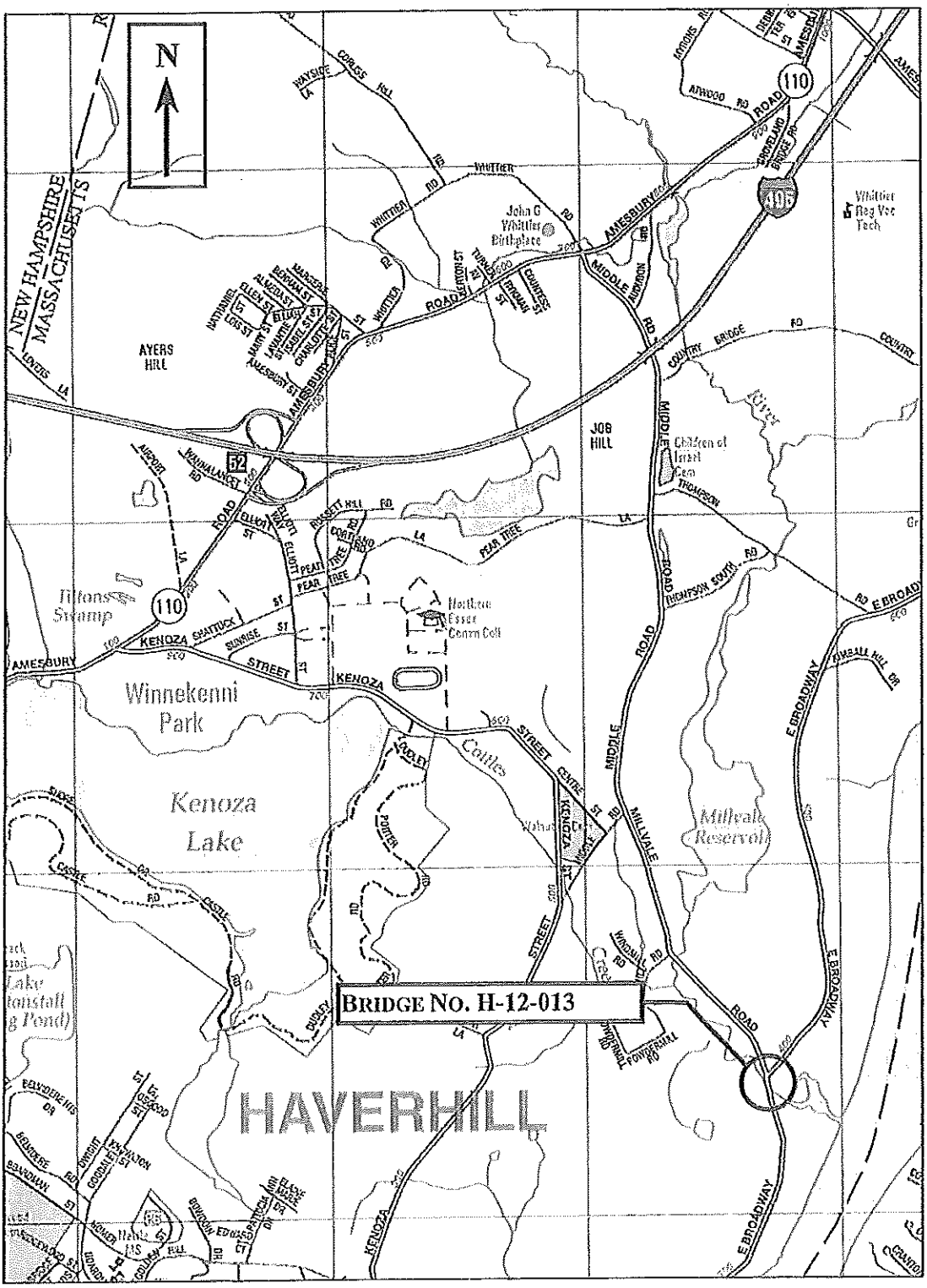
BAYSIDE ENGINEERING, INC.
600 Unicorn Park Drive
Woburn, MA 01801

8/2/2010

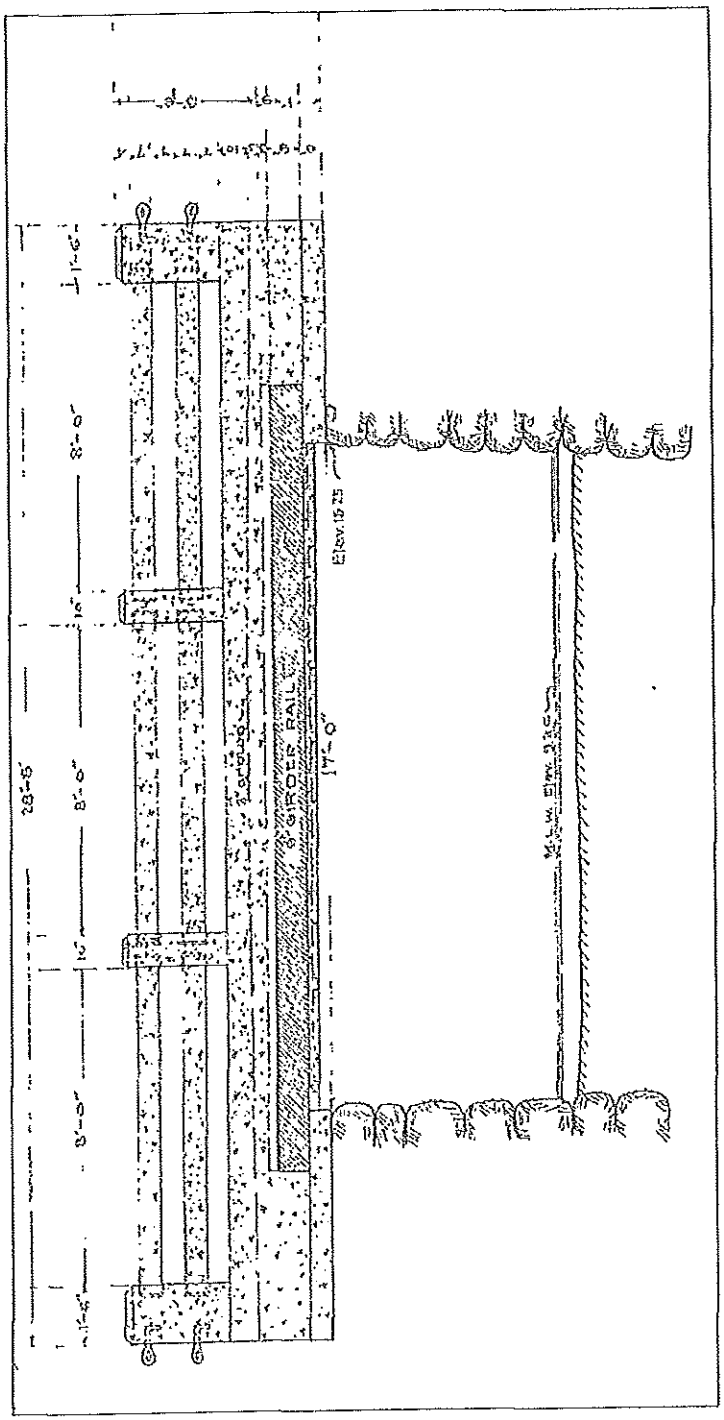
COMMONWEALTH OF MASSACHUSETTS
BRIAN A. BOUCHER
CIVIL
No. 40690
REGISTERED PROFESSIONAL ENGINEER

JULY 2010

LOCATION MAP



TYPICAL BRIDGE ELEVATION



APPENDIX A – FIELD NOTES AND INSPECTION FORMS

CITY OF HAVERHILL

STRUCTURES INSPECTION FIELD REPORT

ROUTINE INSPECTION

2-DIST	B.I.N.	BR. DEPT. NO.
04	8A5	H-12-013

4-CITY/TOWN	8-STRUCTURE NO.	11-KILO. POINT	41-STATUS	INSPECTION DATE
Haverhill	H12013-8A5-MUN-BRI		Open	July 20, 2010

7-FACILITY CARRIED	MEMORIAL NAME/LOCAL NAME	27-YR BUILT	106-YR REBUILT	YR REHAB'D (NON 106)
East Broadway		Unknown	1932	

06-FEATURES INTERSECTED	26-FUNCTIONAL CLASS.	QUALITY CONTROL ENGINEER
Millvale Brook	Urban Collector	Brian A. Boucher, P.E.

43-STRUCTURE TYPE	22-OWNER	21-MAINTAINER	TEAM LEADER
Concrete Encased Steel Stringer	Mun	Mun	John J. Kelleher,P.E.

107-DECK TYPE	WEATHER	TEMP. (air)	TEAM MEMBERS
Cast in Place Concrete	Sunny	85 F	David Packard

ITEM 58 DECK: 4

		DEF
1. Wearing Surface	6	M/P
2. Deck Condition	4	S/A
3. Stay-in-place Forms	N	
4. Curbs	N	
5. Medians	N	
6. Sidewalks	N	
7. Parapets	N	
8. Railings	0	C-H/I
9. Anti-Missile Fence	N	
10. Drainage System	N	
11. Lighting Standards	N	
12. Utilities	7	
13. Deck Joints	N	
14.		
15.		
16.		

CURB REVEAL (In millimeters)	N/E	S/W
	127	127

APPROACHES

		DEF
a. Appr. pavement condition	4	C-H/I
b. Appr. Roadway Settlement	4	C-H/I
c. Appr. Sidewalk Settlement	N	
d.		

OVERHEAD SIGNS (Attached to bridge): (Y/N) N

		DEF
a. Condition of Welds	N	
b. Condition of Bolts	N	
c. Condition of Signs	N	

ITEM 59 SUPERSTRUCTURE: 6

		DEF
1. Stringers	5	M/P
2. Floorbeams	N	
3. Floor System Bracing	N	
4. Girders or Beams	N	
5. Trusses-General	N	
a. Upper Chords	N	
b. Lower Chords	N	
c. Web Members	N	
d. Lateral Bracings	N	
e. Sway Bracings	N	
f. Portals	N	
g. End Posts	N	
6. Pins/Hangers	N	
7. Conn Pl's, Gussets Angles	N	
8. Cover Plates	N	
9. Bearing Devices	N	
10. Diaphragms/Cross Frames	N	
11. Rivets & Bolts	N	
12. Welds	N	
13. Member Alignment	7	
14. Paint/Coating	N	
15.		
Year Painted:	N	

COLLISION DAMAGE: None ☒ Minor ○ Moderate ○ Severe ○

LOAD DEFLECTION: None ☒ Minor ○ Moderate ○ Severe ○

LOAD VIBRATION: None ☒ Minor ○ Moderate ○ Severe ○

Any Fracture Critical Member : (Y/N) N

Any Cracks : (Y/N) Y

ITEM 60 SUBSTRUCTURE: 5

	Dive Rpt.	This Rpt.		DEF
1. Abutments			5	
a. Pedestals	N	N		
b. Bridge Seats	N	5		M/P
c. Backwalls	N	N		
d. Breastwalls	N	4		C-S/A
e. Wingwalls	N	2		C-S/I
f. Slope Paving/Rip-Rap	N	N		
g. Pointing	N	4		M/P
h. Footings	N	N		
i. Piles	N	N		
j. Scour	N	7		
k. Settlement	N	N		
l.				
m.				
2. Piers or Bents			N	
a. Pedestals	N	N		
b. Caps	N	N		
c. Columns	N	N		
d. Stems/Webs/Pierwalls	N	N		
e. Pointing	N	N		
f. Footing	N	N		
g. Piles	N	N		
h. Scour	N	N		
i. Settlement	N	N		
j.				
k.				
3. Pile Bents			N	
a. Pile Caps	N	N		
b. Piles	N	N		
c. Diagonal Bracing	N	N		
d. Horizontal Bracing	N	N		
e. Fasteners	N	N		

UNDERMINING (Y/N) *If YES please explain* Y

COLLISION DAMAGE: None ☒ Minor ○ Moderate ○ Severe ○

I-60 (Dive Report): N *I-60 (This Report):* 5

93b-UIW (DIVE) INSP DATE:

X=UNKNOWN N=NOT APPLICABLE H=HIDDEN/INACCESSIBLE R=REMOVED

RTN-P1(V4)-2/98

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8-STRUCTURE NO.	INSPECTION DATE
Haverhill	8A5	H-12-013	H12013-8A5-MUN-BRI	July 20, 2010

REMARKS & PHOTOS

GENERAL

For this inspection the approaches are north and south and the elevations are east and west. The structure is a single span concrete deck with encased steel stringers. The stringers are numbered from west to east.

ITEM 36 - TRAFFIC SAFETY FEATURES

36.1 **Bridge Railing** – The bridge rail consists of reinforced concrete posts and rails. The west bridge rail is in serious condition with minor exterior spalling and severe undermining the full length of the span (Refer to photo 33). The east bridge rail is completely missing and a jersey barrier has been put in its place (Refer to photo 12). The Jersey barrier is not connected to the approach guardrails and poses a safety issue with a blunt end facing oncoming traffic (Refer to photo 3).

36.2 **Transitions** – The west guardrail transition is in good condition. The east guardrail is in serious condition. The bridge rail is missing and a Jersey barrier has been put in its place. There is no mechanical connected between the approach guardrails and the Jersey barrier. The Jersey barrier has been placed in the roadway way posing a safety concern with a blunt end facing both directions of traffic (Refer to photo 37).

36.3 **Approach Guardrail** – The approach guardrails consist of steel W-shape rails. The northwest and northeast guardrails are in good condition. The southwest guardrail is missing and the southeast guardrail is in poor condition with multiple bent posts leading up to the bridge (Refer to photo 6).

ITEM 58 - DECK

58.1 **Wearing Surface** – The wearing surface is in fair condition. There are transverse cracks in the wearing surface in the northbound lane over both the north and south abutments (Refer to photos 15 & 16). These cracks indicated possible settlement of the east ends of the north and south abutments.

58.2 **Deck Condition** – The deck consists of concrete encased stringers and is in poor condition. The exterior stringers are exposed at both the west and east elevations. The west fascia has a full span spall and the east exterior stringer is completely exposed with all the concrete missing exposing the last interior stringer (refer to photos 25 & 26). The underside of the slab has heavy efflorescence with hairline cracks throughout (Refer to photo 19). There is a 3.5 foot wide by 9 foot long spall at the south abutment over the utility pipe 8 feet in from the east fascia (Refer to photo 35). The concrete is hollow sounding and delaminated 12 feet in from the east fascia. There is a full span crack parallel to the stringers 12 feet in from the east fascia (Refer to photo 20). This crack varies in width from 1/8 inch to 1/4 inch wide. There is a second full span crack located 14 feet west of the utility pipe (Refer to photo 21). The crack runs parallel to the stringers and varies in width from 1/8 inch to 1/4 inch wide. There is a third full span hairline crack that runs parallel to the stringers 15 feet west of the utility pipe (Refer to photo 22). There is a fourth full span crack 17 feet west of the utility pipe (Refer to photo 23). The crack runs parallel to the stringers and continues down into the beam seat at the north abutment. The crack is 1/8 inch wide. There is a fifth full span crack 19 feet west of the utility pipe (Refer to photo 24). The crack runs parallel to the stringers and is 1/8 inch wide.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8-STRUCTURE NO.	INSPECTION DATE
Haverhill	8A5	H-12-013	H12013-8A5-MUN-BRI	July 20, 2010

REMARKS & PHOTOS

ITEM 60 – SUBSTRUCTURE Cont.

60.1e Abutment Wingwalls Cont.
with the remaining wall overturning (Refer to photo 29). The overturning wall is undermining the roadway and a sink hole has developed at the wingwall resulting in a safety concern for vehicles traveling over the structure.

60.1g Abutment Pointing – The abutment pointing is in poor condition with mortar missing on 80% of the joints in both abutments.

ITEM 61 – CHANNEL & CHANNEL PROTECTION

61.4 Vegetation – The vegetation is in poor condition with large brush growing out of the wingwalls on both sides of the structure.

RECOMMENDATIONS:

1. Install precast concrete Jersey barriers that bolt to the deck with steel guardrail that bolt to the barrier and terminate safely.
2. Reconstruct the northwest, northeast, and southeast wingwalls.
3. Repair sinkhole.
4. Remove vegetation growing from substructure.
5. Remove the boulders forming foot bridge/dam across channel at both openings of the bridge.
6. Repoint/rechink abutment as necessary.

APPENDIX B - List of Photographs

Photo No. 1 - North Approach looking north

Photo No. 2 - North Approach looking south

Photo No. 3 - South Approach looking north

Photo No. 4 - South Approach looking south

Photo No. 5 - Northeast Guardrail

Photo No. 6 - Southeast Guardrail

Photo No. 7 - Overgrown Vegetation at Southwest Wingwall

Photo No. 8 - Sinkhole and Overgrown Vegetation at Northwest Wingwall

Photo No. 9 - Looking West off of Bridge Rail

Photo No. 10 - Looking East off of Bridge Rail

Photo No. 11 - Looking at West Bridge Rail

Photo No. 12 - Looking at east barrier

Photo No. 13 - Longitudinal crack in wearing surface at northwest wingwall

Photo No. 14 - Sinkhole at northwest wingwall

Photo No. 15 - Transverse crack in wearing surface over north abutment

Photo No. 16 - Transverse crack in wearing surface over south abutment

Photo No. 17 - West elevation

Photo No. 18 - East elevation

Photo No. 19 - Typical underside of slab

Photo No. 20 - Full span crack in deck 12 ft from east fascia

Photo No. 21 - Full span crack in deck 14 ft west of utility pipe

Photo No. 22 - Full span crack in deck 15 ft west of utility pipe

Photo No. 23 - Full span crack in deck 17 ft west of utility pipe

Photo No. 24 - Full span crack in deck 19 ft west of utility pipe

Photo No. 25 - Exposed exterior stringer, east fascia

Photo No. 26 - Exposed exterior stringer, west fascia

Photo No. 27 - North abutment

Photo No. 28 - South abutment

Photo No. 1 – North Approach looking north

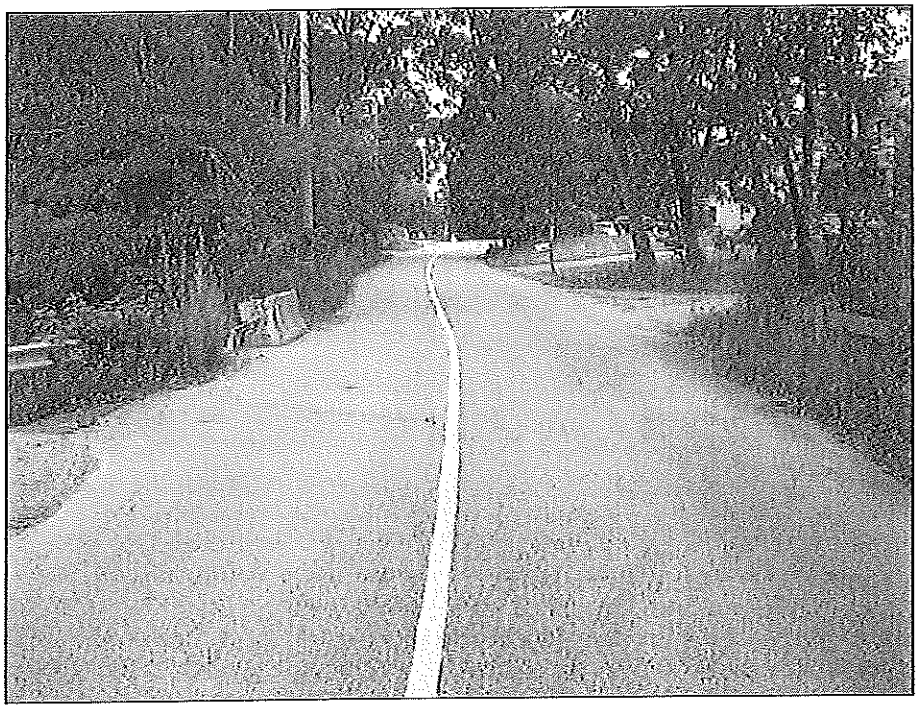


Photo No. 2 – North Approach looking south

Photo No. 5 – Northeast Guardrail

Photo No. 6 – Southeast Guardrail

Photo No. 9 – Looking West off of Bridge Rail

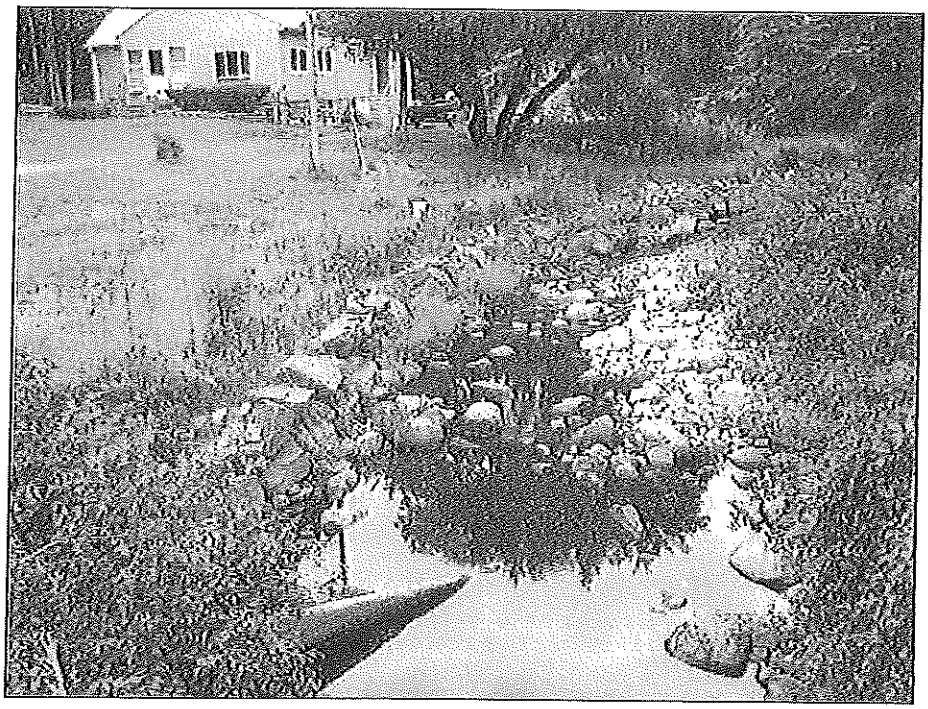


Photo No. 10 – Looking East off of Bridge Rail

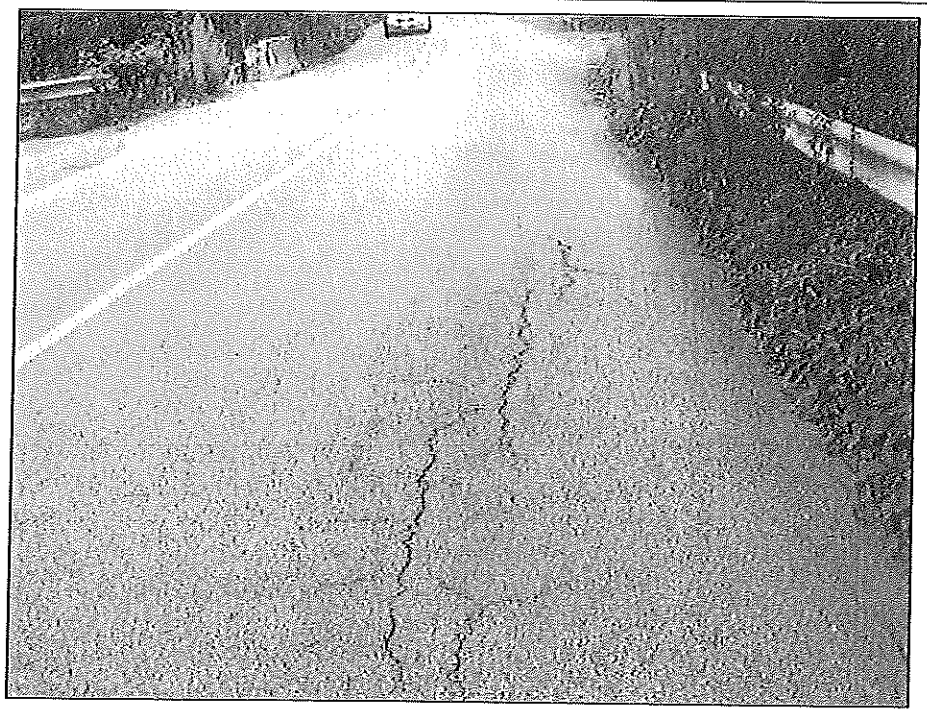


Photo No. 13 – Longitudinal crack in wearing surface at northwest wingwall

Photo No. 14 – Sinkhole at northwest wingwall

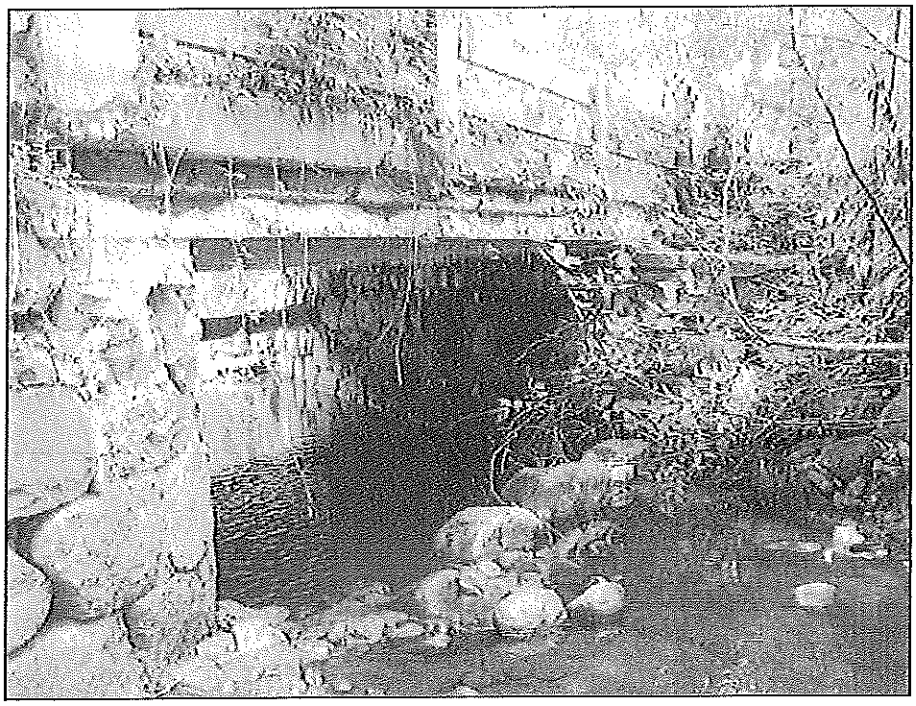


Photo No. 17 – West elevation

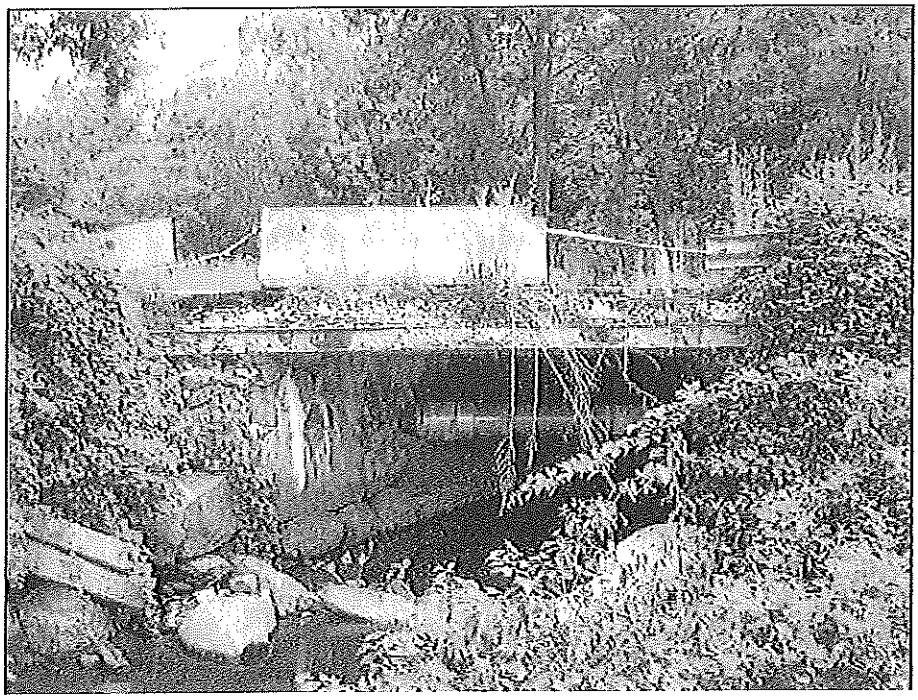


Photo No. 18 – East elevation

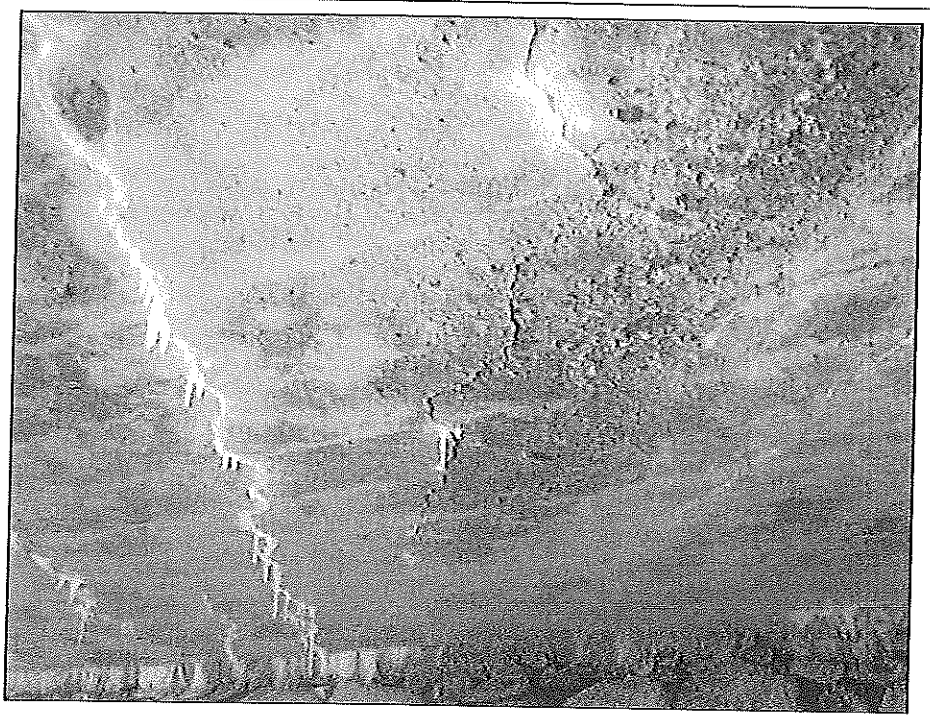


Photo No. 21 – Full span crack in deck 14 ft west of utility pipe

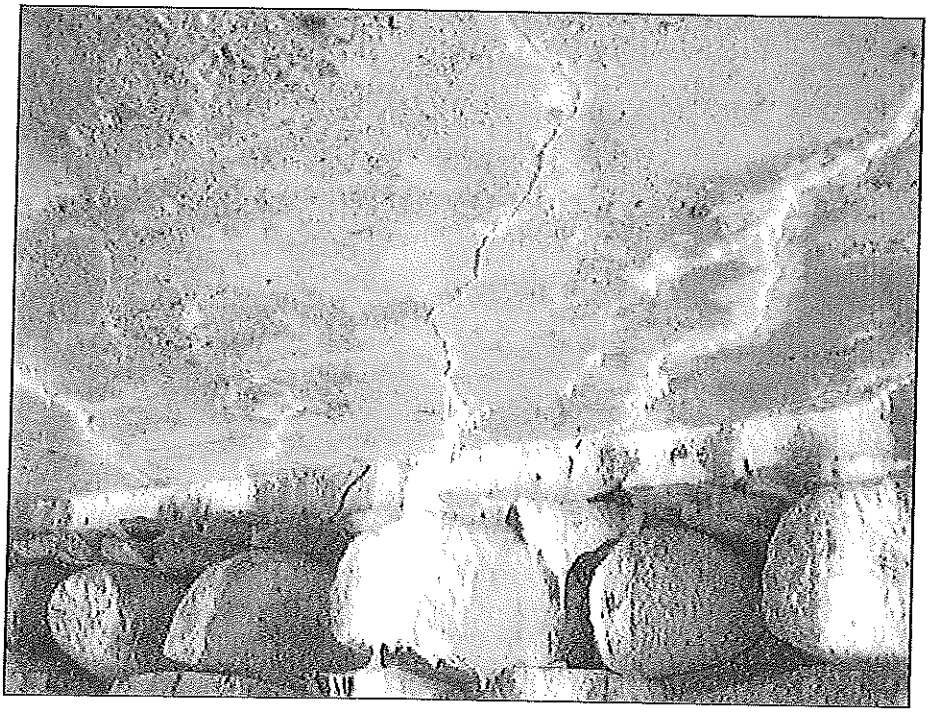


Photo No. 22 – Full length crack in deck 15 ft west of utility pipe

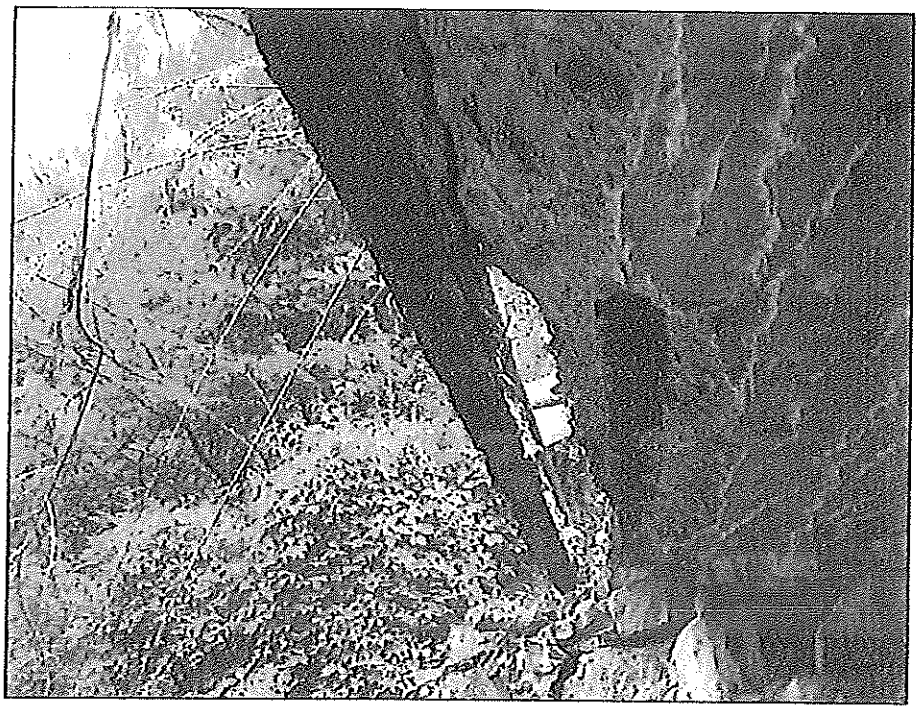


Photo No. 25 – Exposed exterior stringer, east fascia

Photo No. 26 – Exposed exterior stringer, west fascia

Photo No. 29 – Northwest wingwall

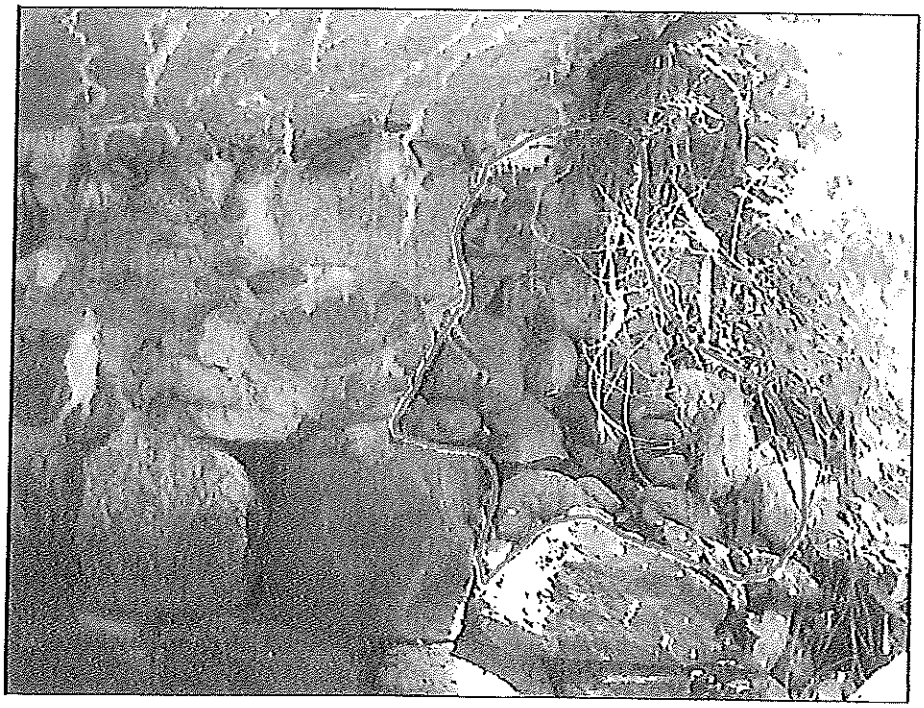


Photo No. 30 – Void in east corner of north abutment

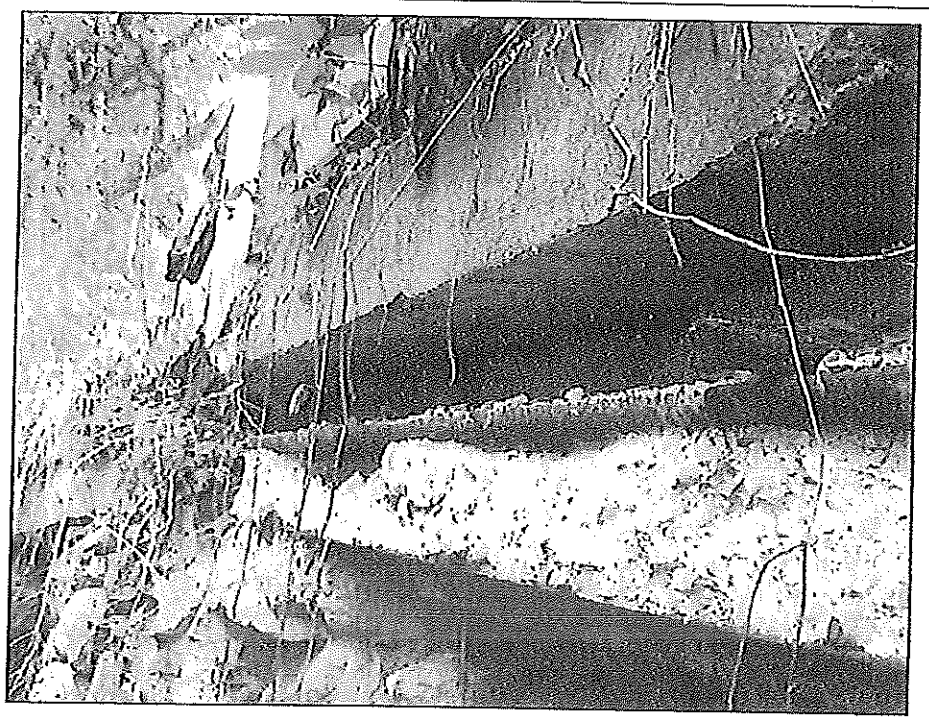


Photo No. 33 – Undermining of west bridge rail

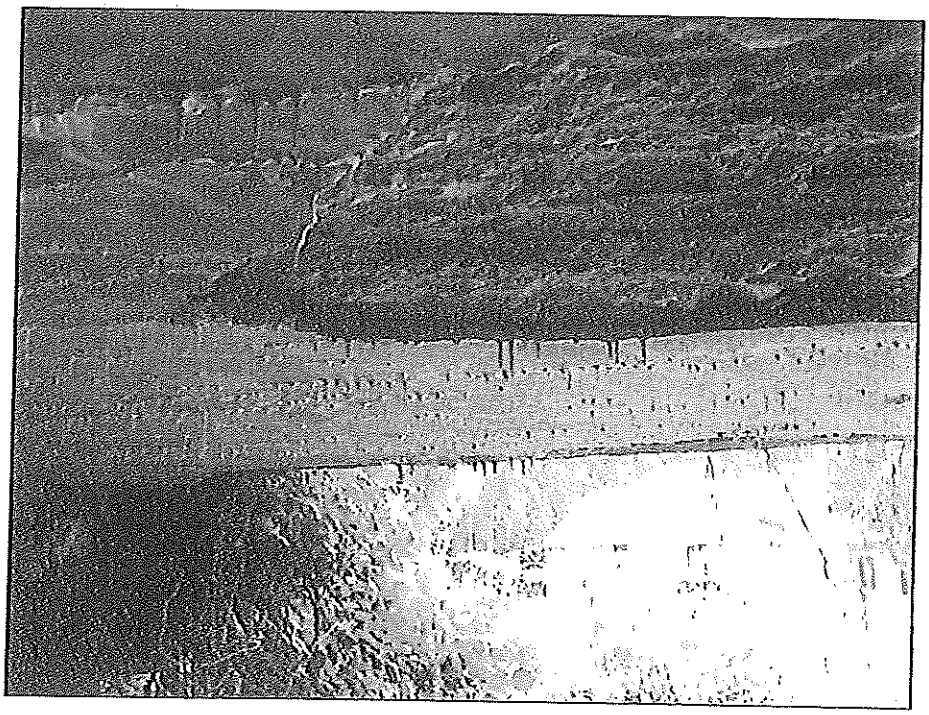


Photo No. 34 – Deck spall

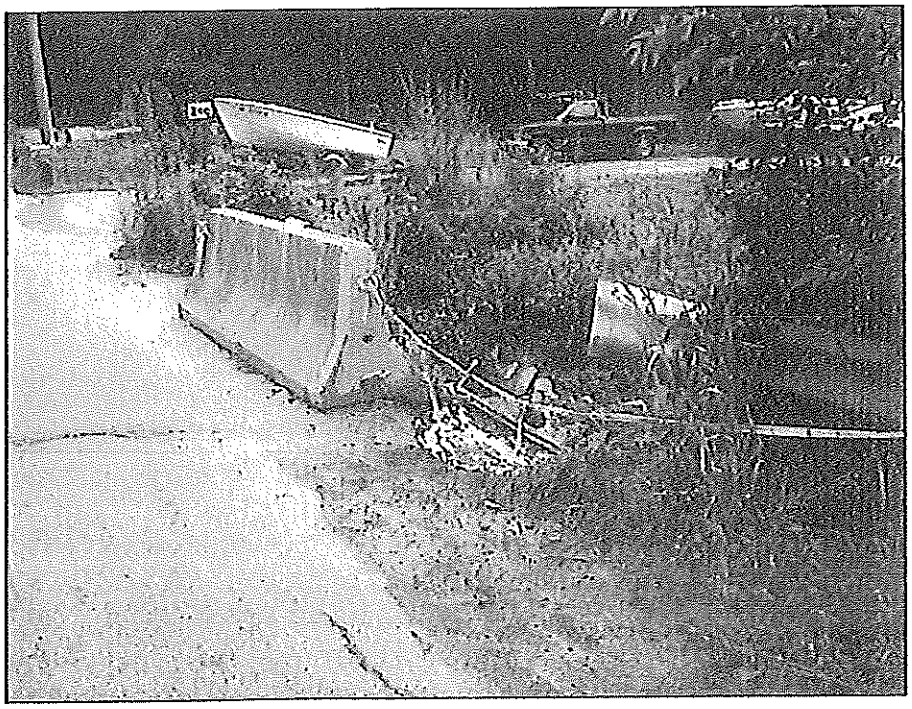


Photo No. 37 – East guardrail transition

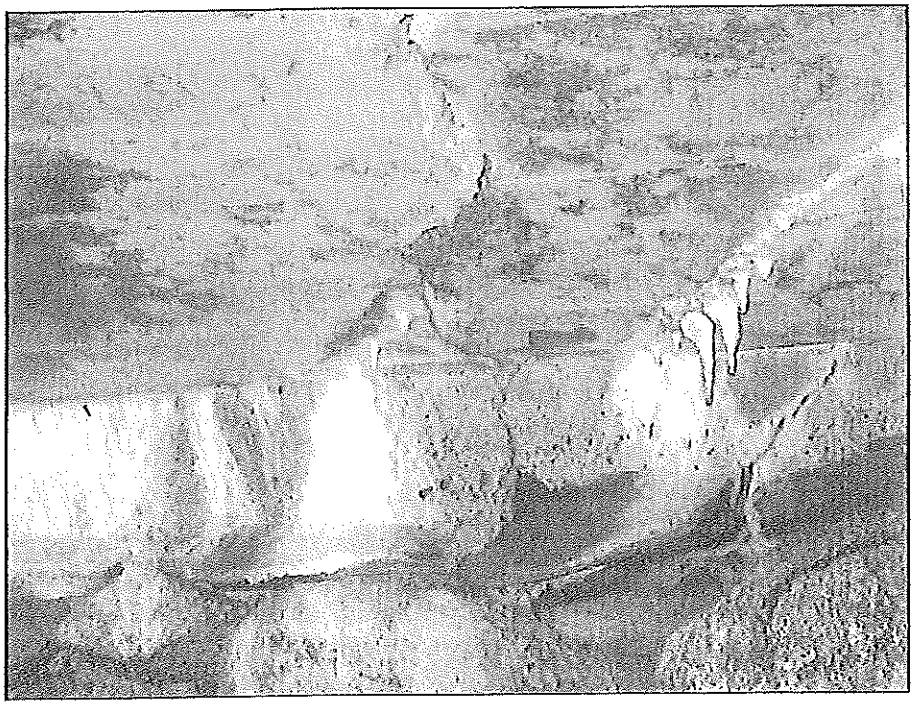
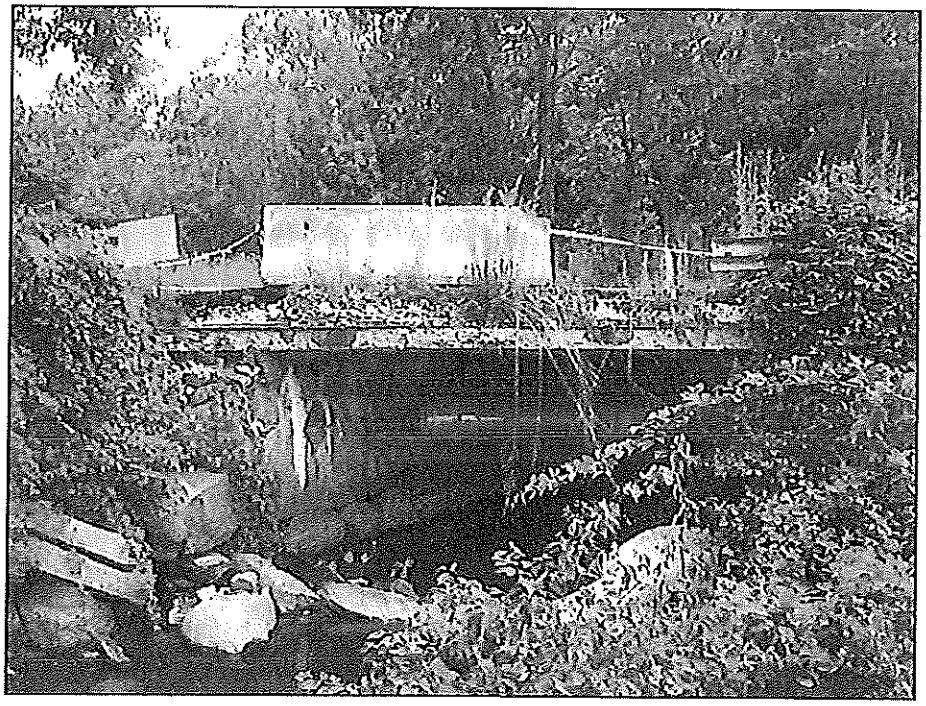


Photo No. 38 – Crack in north beam seat

CITY OF HAVERHILL

BRIDGE RATING



EAST BROADWAY OVER MILLVALE BROOK

BRIDGE NO. H-12-013

BIN 8A5

STRUCTURE NO. H12013-8A5-MUN-BRI

PREPARED BY:

BAYSIDE ENGINEERING, INC.
600 Unicorn Park Drive
Woburn, MA 01801

JULY 2010

8/2/2010

COMMONWEALTH OF MASSACHUSETTS
BRIAN A. BOUCHER
CIVIL
No. 40690
REGISTERED PROFESSIONAL ENGINEER

BREAKDOWN OF BRIDGE RATING

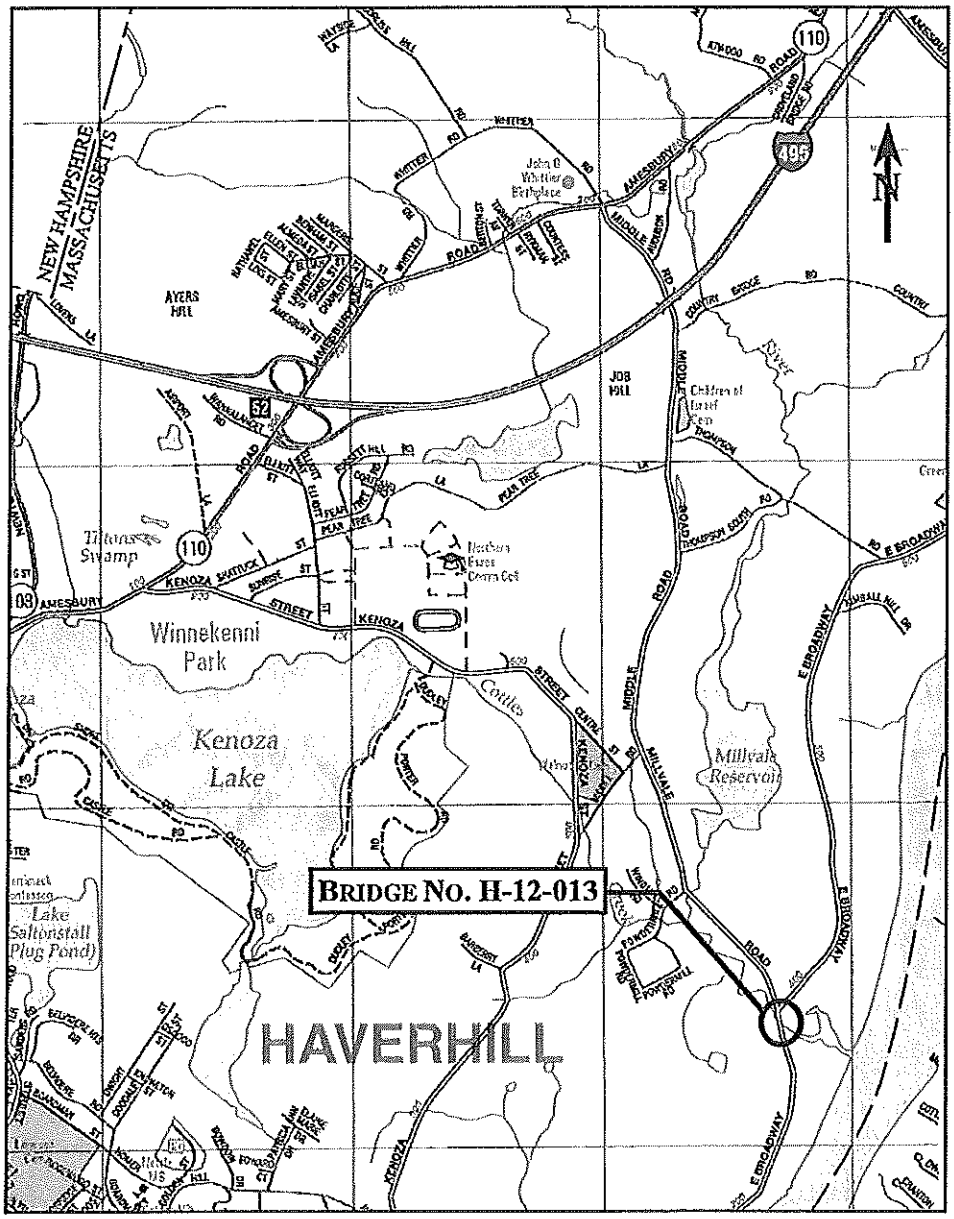
TOWN / CITY: Haverhill BRIDGE NO.: H-12-013

CARRIES: East Broadway OVER: Millvale Brook

STRUCT. NO.: H12013-8A5-MUN-BRI BIN NO.: 8A5

BRIDGE COMPONENT	INVENTORY RATING BY WORKING STRESS METHOD				OPERATING RATING BY WORKING STRESS METHOD			
	H20	TYPE 3	TYPE 3S2		H20	TYPE 3	TYPE 3S2	
TYP. 9" GIRDER RAIL AT MIDSPAN	68.8	101.2	159.9		105.6	155.4	245.4	
TYP. 12" GIRDER RAIL AT MIDSPAN	34.8	51.2	80.8		56.9	83.6	132.1	

LOCATION MAP



RATING ANALYSIS ASSUMPTIONS AND CRITERIA

The rating analysis is based on inspection records and a site visit by Bayside Engineering, Inc. (BAYSIDE) personnel. It has been determined that the bridge is generally in poor condition.

The inventory and operating capacity of the bridge were rated in accordance with the provisions of the 1994 edition of the "Manual for Condition of Evaluation of Bridges" and the 17th edition of the "Standard Specifications for Highway Bridges", both published by the American Association of State Highway and Transportation Officials (AASHTO).

The live loads used in the rating are standard AASHTO Truck H-20 and the Type 3 and Type 3S2 as shown on Figure 7.4.3.1 of the above-referenced AASHTO (1994) manual.

For both inventory and operating analyses of the steel stringers, the live load distribution factor used was that indicated in Article 3.23 of the AASHTO Standard Specifications, for two or more traffic lanes, for interior stringers.

The assumptions used in rating the bridge structure are as follows:

1. The superstructure components to be rated are the steel stringers. The dead load for the analysis will be compiled through the use of tributary width.

2. The allowable unit stresses used are as follows:

   Structural Steel (unknown steel 1905 - 1936):
   Fy = 30,000 psi
   fs = 16,000 psi (Inventory Allowable Stress)
   fs = 22,500 psi (Operating Allowable Stress)

3. The substructure was not rated.

EVALUATION OF RATING AND RECOMMENDATIONS

The steel stringers meet the statutory requirements for the H20, Type 3 and Type 3S2 trucks. The trucks analyzed have the following inventory ratings at the controlling locations:

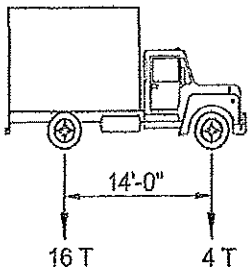
TRUCK	RATING
H20	34.8T
3	51.2T
3S2	80.8T

Bridge weight posting is not recommended for this bridge structure.

All preventive maintenance and inspection procedures should continue on regular and normal frequencies.

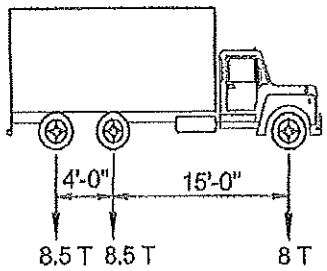
H20 VEHICLE

TOTAL WEIGHT
20 TONS



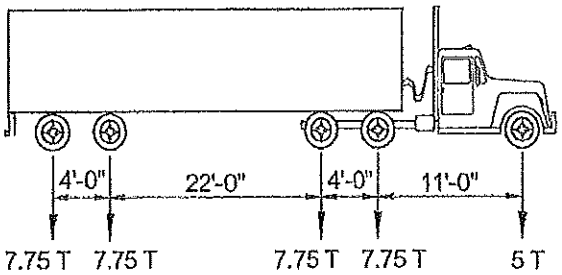
TYPE 3 VEHICLE

TOTAL WEIGHT
25 TONS



TYPE 3S2 VEHICLE

TOTAL WEIGHT
36 TONS

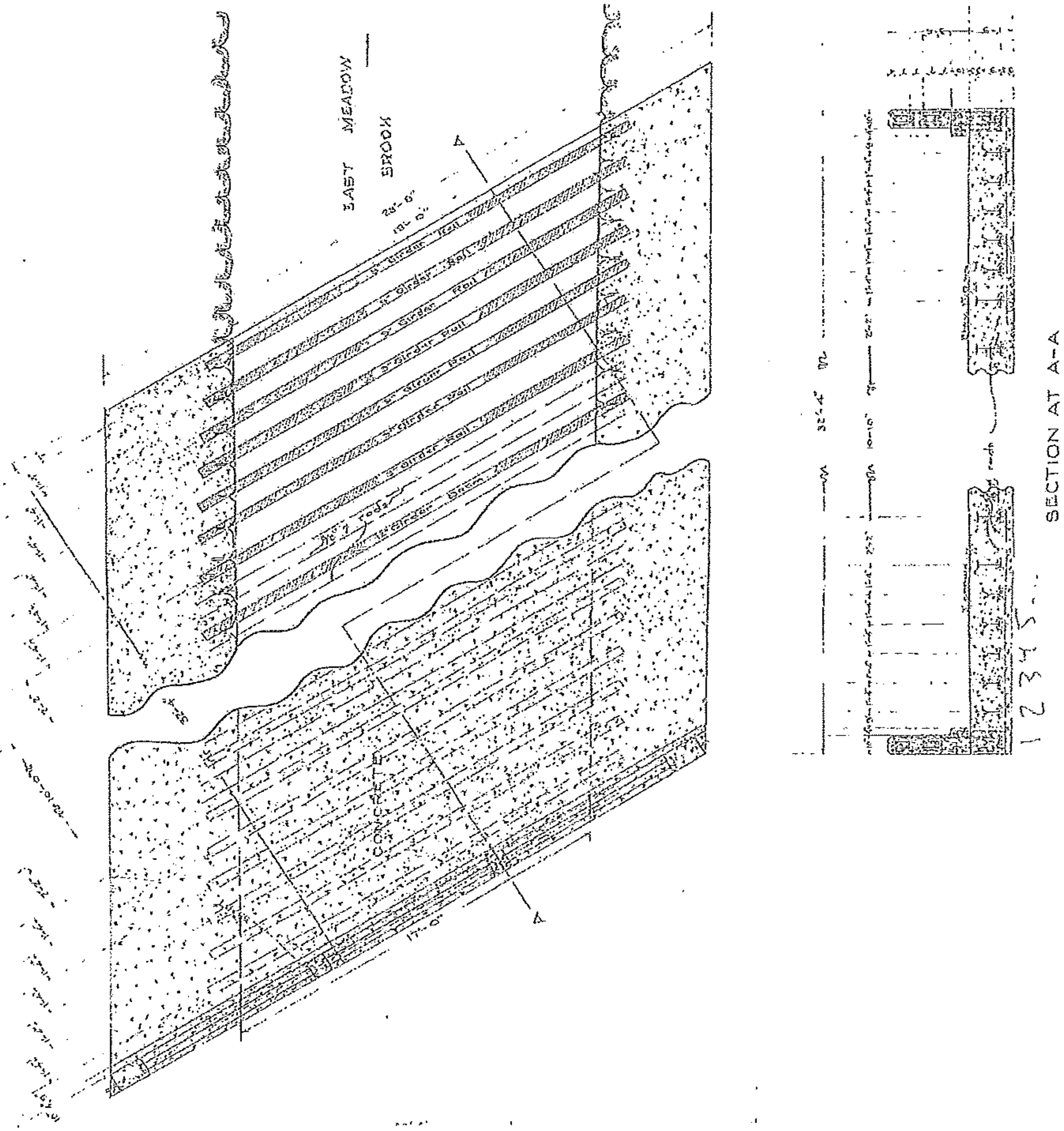


APPENDIX A

COMPUTATIONS

BAYSIDE ENGINEERING
600 Unicorn Park Drive Woburn, MA 01801
Phone: 781.932.3201 Fax: 781.932.3413
www.baysideengineering.com

JOB	H-12-013		
SHEET NO.	/	OF	
CALCULATED BY	DP	DATE	July-10
CHECKED BY		DATE	
SCALE			



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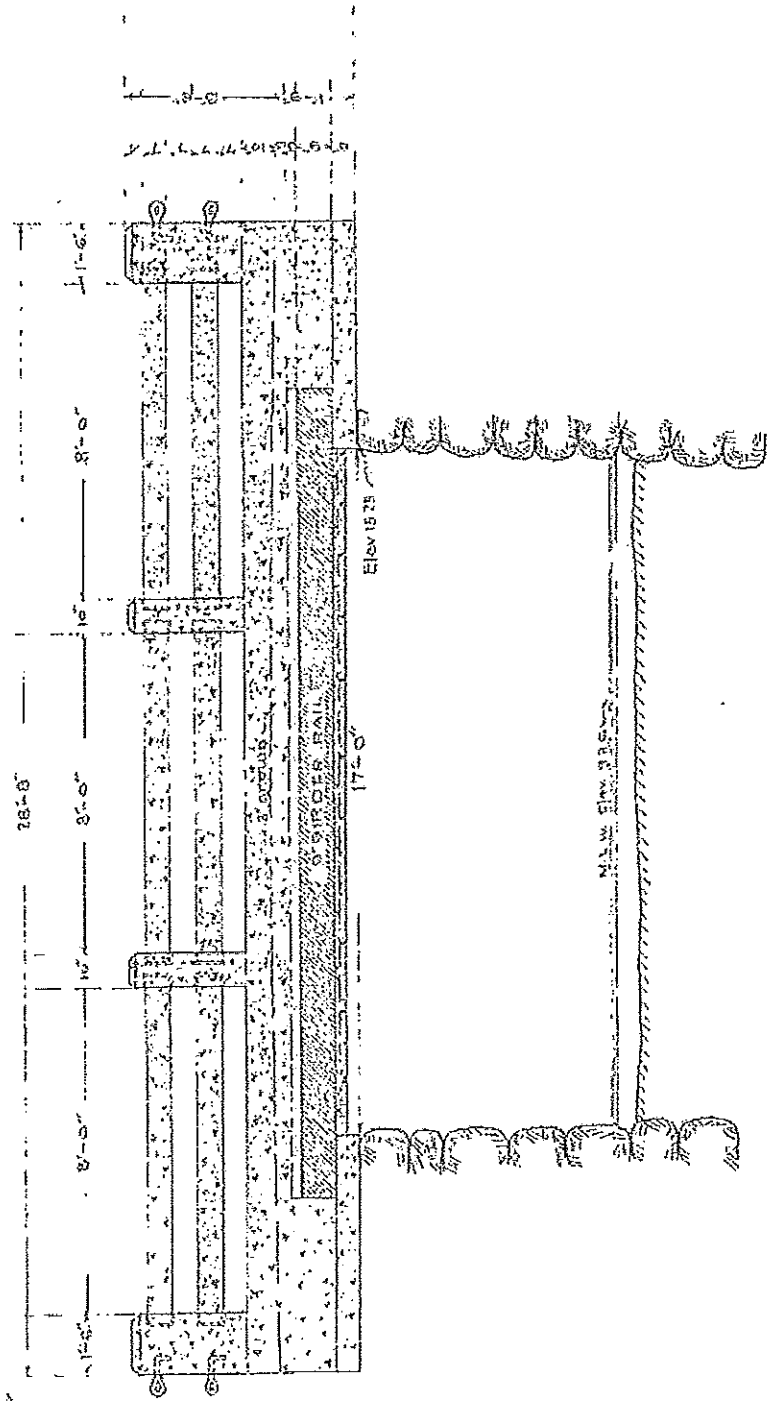
JOB	H-12-013		
SHEET NO.	2	OF	
CALCULATED BY	DP	DATE	July-10
CHECKED BY		DATE	
SCALE			



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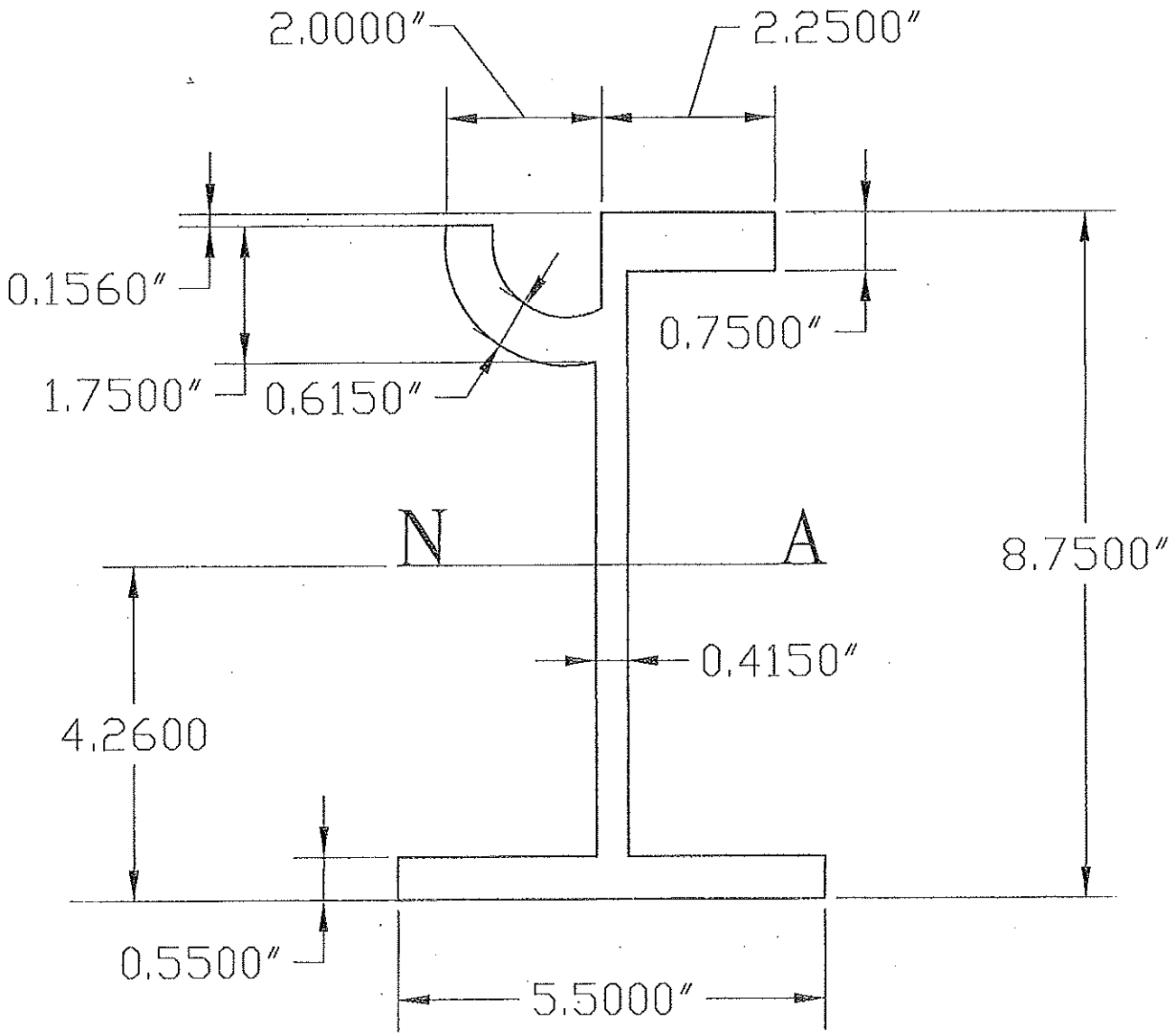
PHONE 781-932-3201 FAX 781-932-3413
www.baysideengineering.com

JOB	H-12-013 (8A5) HAVERHILL		
SHEET NO.	3	OF	
CALCULATED BY	DP	DATE	JULY 2010
CHECKED BY		DATE	
SCALE	NOT TO SCALE		



ALL DIMENSIONS ARE BASED ON FIELD MEASUREMENTS

9 INCH GIRDER RAIL

9 inch girder rail sect prop

```
Select objects: 1 found

Select objects:

 ----------------   REGIONS   ----------------

Area:                      9.35
Perimeter:                 37.42
Bounding box:           X: -2.71  --  2.79
                        Y: -4.26  --  4.49
Centroid:               X: 0.00
                        Y: 0.00
Moments of inertia:     X: 108.32
                        Y: 13.14
Product of inertia:    XY: -0.11
Radii of gyration:      X: 3.40
                        Y: 1.19
Principal moments and X-Y directions about centroid:
                        I: 13.14 along [0.00 -1.00]
                        J: 108.32 along [1.00 0.00]
```

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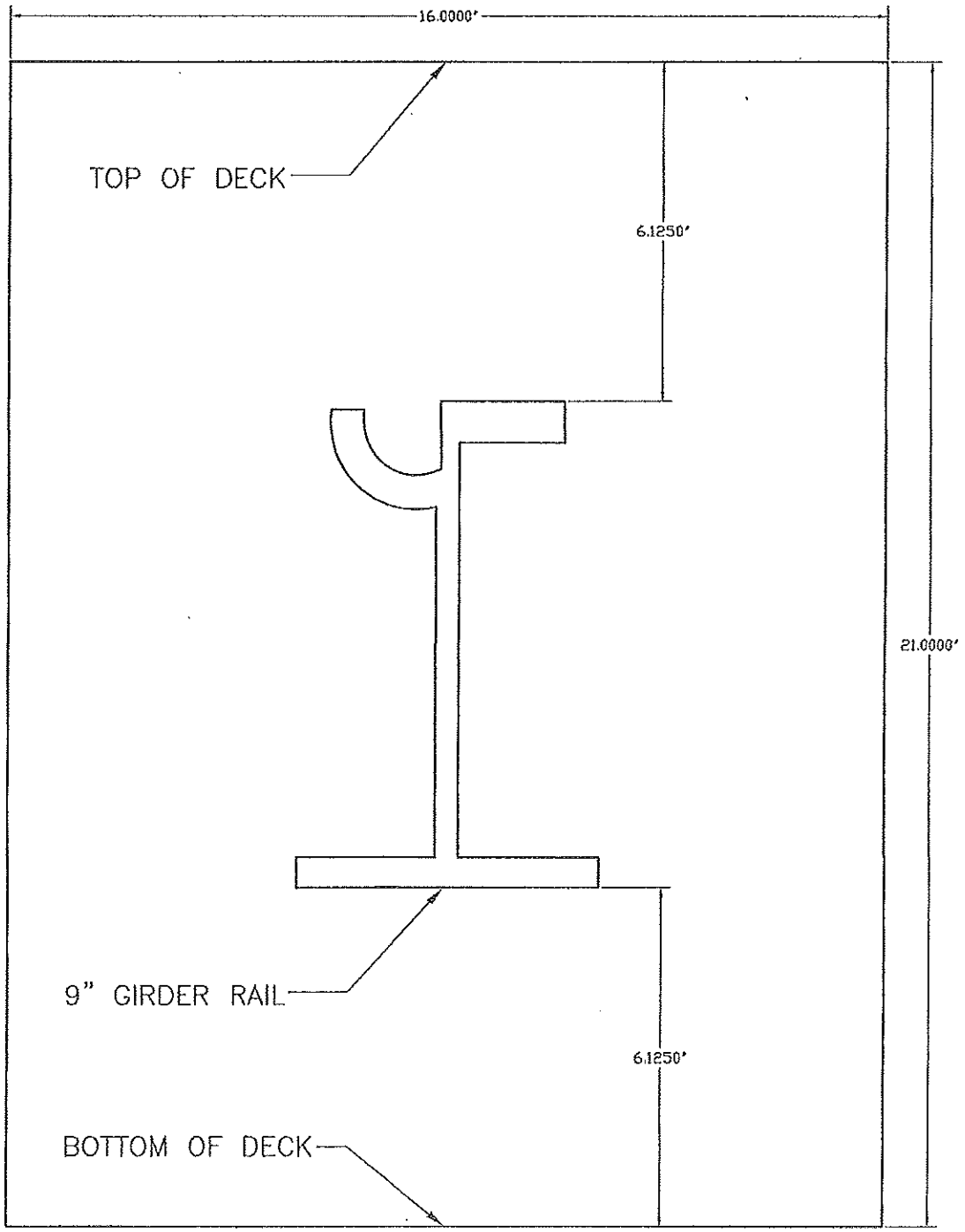
JOB	H-12-013 (8A5) HAVERHILL		
SHEET NO.	5	OF	
CALCULATED BY	DP	DATE	JULY 2010
CHECKED BY		DATE	
SCALE	NOT TO SCALE		



9 INCH GIRDER RAIL SECTION

N.T.S

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JOB H-12-013 (8A5) Hewer Hill
SHEET NO. 6 OF
CALCULATED BY DP DATE 7/10
CHECKED BY DAB DATE 7/2010
SCALE NTS

Section Capacity

Assumptions:
- Simply Supported
- Composite Section
- Top Flange Braced full length
- The grade of Steel is unknown therefore a yield stress of 30 ksi will be used based on AASHTO MCEB with construction between 1905 & 1936
- The grade of concrete is unknown therefore $f'_c = 2$ KSI will be used based on AASHTO MCEB with construction prior to 1959

Beam Span (l_s):
$l_s = 17'$ (clear span) $+ 1.75'/2 + 1.75'/2 = 18.75'$

Allowable Stress:
Inventory (σ_{inv}) = 16 ksi — MCEB Table 6.2.2.1-1
Operating (σ_{op}) = 22.5 ksi — MCEB Table 6.2.2.1-2

9 inch Girder Rail
Beam Spacing (b) = 16 inches
$E_s = 29{,}000$
$w_c = 150$ pcf
$f'_c = 2$ ksi

$n = 15$ (Ref MCEB 6.6.2.4.1)

$b/n = 16''/15 = 1.07$ in

Composite Section
$\bar{y} = 4.355$ in (See 9 inch Composite Section)
$I_{tr} = 354.36$ in^4 (See 9 inch Composite Section)

$$S_{x_{top}} = \frac{I}{d_{beam} - \bar{y}} = \frac{354.36 \text{ in}^4}{8.75'' - 4.355''} = 80.6 \text{ in}^3$$

$$S_{x_{Bottom}} = \frac{I}{\bar{y}} = \frac{354.36 \text{ in}^4}{4.355''} = 81.4 \text{ in}^3$$

$S_{top} < S_{x_{Bottom}} \Rightarrow$ Use $S_x = 80.6$ in^3

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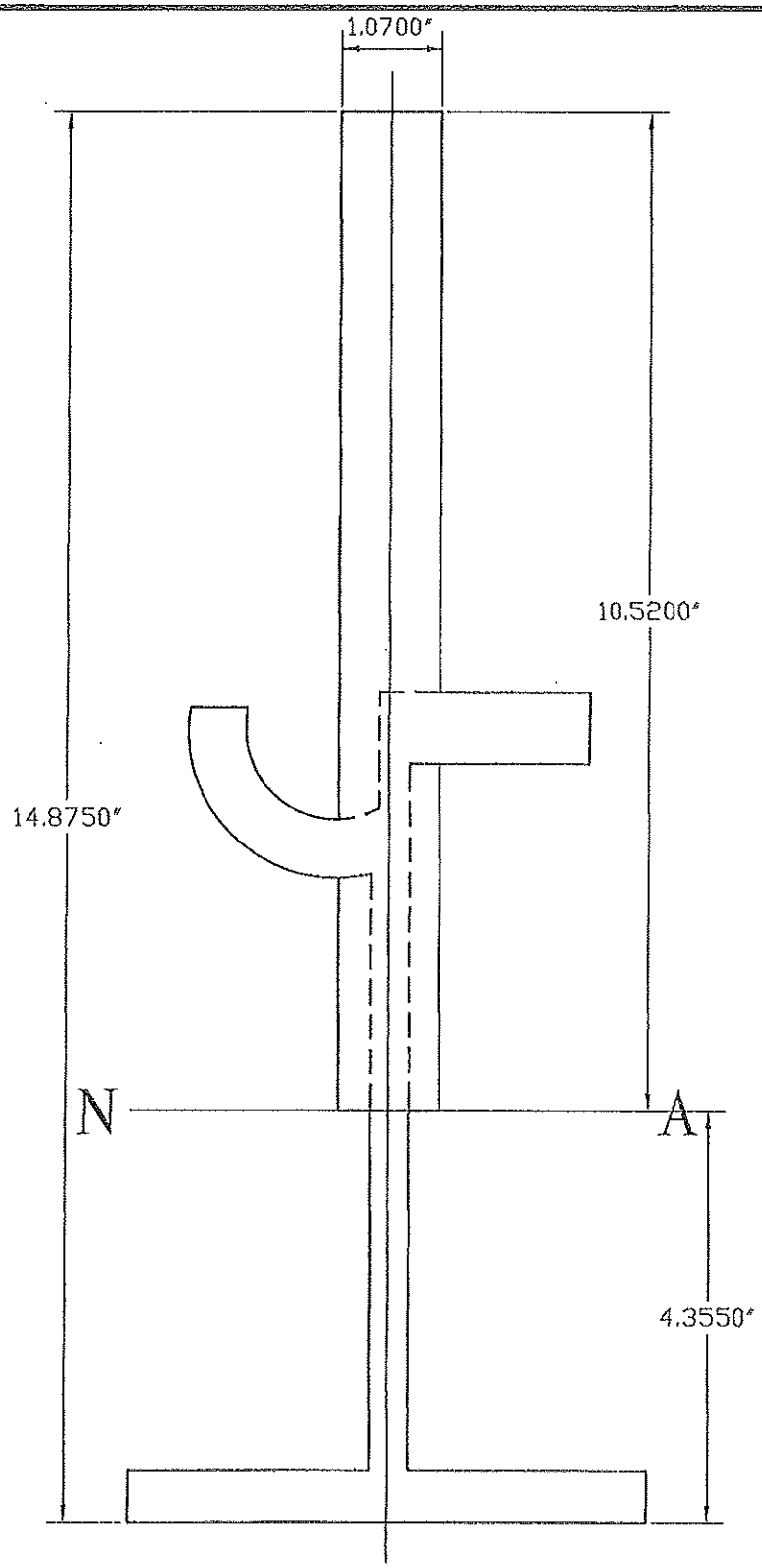
JOB	H-12-013 (8A5) HAVERHILL		
SHEET NO.	7	OF	
CALCULATED BY	DP	DATE	JULY 2010
CHECKED BY		DATE	
SCALE	NOT TO SCALE		



9 INCH COMPOSITE SECTION

N.T.S

9 inch rail composite section

```
Command: MASSPROP

Select objects: 1 found

Select objects:

 ----------------   REGIONS   -----------------

Area:                      18.43
Perimeter:                 49.72
Bounding box:           X: -2.75  --  2.75
                        Y: -4.36  --  10.52
Centroid:               X: -0.02
                        Y: 2.89
Moments of inertia:     X: 507.80
                        Y: 14.14
Product of inertia:    XY: -0.29
Radii of gyration:      X: 5.25
                        Y: 0.88
Principal moments and X-Y directions about centroid:
                        I: 14.13 along [0.00 1.00]
                        J: 354.36 along [-1.00 0.00]
```

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JOB H-12-013 (8A5) Haverhill
SHEET NO. 9 OF
CALCULATED BY DP DATE 7/10
CHECKED BY DMB DATE 7/7/2010
SCALE NTS

Section Capacity Cont.

9 inch Girder Rail Cont.

Moment Capacity:

$$M_c = \sigma S_x$$

Inventory Moment Capacity: $M_{INV} = \sigma_{INV} S_x = (16\ ksi)(80.6\ in^3) = \frac{1290\ k\text{-}in}{12\ in} = \underline{107\ k\text{-}ft}$

Operating Moment Capacity: $M_{oper} = \sigma_{oper} S_x = (22.5\ ksi)(80.6\ in^3) = \frac{1814\ k\text{-}in}{12\ in} = \underline{151\ k\text{-}ft}$

Superimposed Dead Load (SDL) for 9 inch Girder Rail

Above Knife Cut

Composite Section Self Weight (w_c):

$A_{GR} = 9.35\ in^2$

$A_{TOTAL} = (16")(21") = 336\ in^2$

$A_{conc} = 336\ in^2 - 9.35\ in^2 = 326.7\ in^2$

$$w_c = \frac{(9.35\ in^2)}{(144\ in^2)}(490\ pcf) + \frac{(326.7\ in^2)}{(144\ in^2)}(150\ pcf) = 372\ PLF$$

Bit. Conc.

5 in of bit. conc.

$$w_{BC} = \left(\frac{5"}{12"}\right)\left(\frac{16"\ spacing}{12"}\right)(150\ pcf) = 83.3\ PLF$$

Fill

13 in of fill from top of steel to top of deck

Depth of fill (D.O.F) = 13 in − 5 in = 8 in

$$w_{fill} = \left(\frac{8"}{12"}\right)\left(\frac{16"\ spacing}{12"}\right)(120\ pcf) = 107\ PLF$$

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JOB H-12-013 (BAS) Haverhill
SHEET NO. 10 OF
CALCULATED BY DP DATE 7/10
CHECKED BY BAB DATE 7/2010
SCALE NTS

Superimposed Dead Load for Ninth Girder Bay (cont.)

$w_{DL} = 372\ PLF + 83.3\ PLF + 107\ PLF = 562\ PLF \approx 0.562\ KLF$

$M_{DL} = \frac{(w_{DL})(L^2)}{8} = \frac{(0.562\ KLF)(18.75^2)}{8} = \underline{24.7\ K\text{-}ft}$

Live Loads (LL)

Span = 18.75 ft ≈ 19 ft

Reference Appendix A3 MCEB

HS20: $M_u = \underline{76.0\ K\text{-}ft}$

Type 3: $M_u = \underline{64.6\ K\text{-}ft}$

Type 3S2: $M_u = \underline{58.9\ K\text{-}ft}$

Impact (I)

$I = \frac{50}{L+125}$ Reference AASHTO 3.8.3.1

$I = \frac{50}{18.75+125} = 0.35 \Rightarrow$ use $I = \underline{0.3}$

Live Load Distribution Factor (DF)

Ref. AASHTO Table 3.23.1

$DF = S/5.5$

$S = 16\ in = 1.33\ ft$

$DF = 1.33\ ft / 5.5 = \underline{0.242}$

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BASED ON WHEEL LOAD W/O IMPACT, D.F.

APPENDIX A3

LIVE LOAD MOMENTS ON LONGITUDINAL STRINGERS OR GIRDERS

Live Load Moments in Foot-Kips Per Wheel Line										
Type of Loading (Without Impact)					Span	Type of Loading (With Impact)				
H-15	HS-20	3	3-S2	3-3	Feet c/c	H-15	HS-20	3	3-S2	3-3
15.0	20.0	10.6	9.7	10.0	5	19.5	26.0	13.8	12.6	13.0
18.0	24.0	12.8	11.6	12.0	6	23.4	31.2	16.6	15.1	15.6
21.0	28.0	15.2	13.8	14.0	7	27.3	36.4	19.7	18.0	18.2
24.0	32.0	19.1	17.4	16.0	8	31.2	41.6	24.9	22.7	20.8
27.0	36.0	23.1	21.1	19.1	9	35.1	46.8	30.1	27.4	24.8
30.0	40.0	27.2	24.8	22.4	10	39.0	52.0	35.4	32.2	29.1
33.0	44.0	31.3	28.5	25.8	11	42.9	57.2	40.7	37.1	33.5
36.0	48.0	35.4	32.2	29.2	12	46.8	62.4	46.0	42.0	37.9
39.0	52.0	39.6	36.1	32.6	13	50.7	67.6	51.4	46.9	42.3
42.0	56.0	43.7	39.9	36.0	14	54.6	72.8	56.8	51.8	46.8
45.0	60.0	47.9	43.7	39.4	15	58.5	78.0	62.2	56.8	51.3
48.0	64.0	52.1	47.5	42.9	16	62.4	83.2	67.7	61.7	55.7
51.0	68.0	56.3	51.3	46.3	17	66.3	88.4	73.1	66.7	60.2
54.0	72.0	60.4	55.1	49.8	18	70.2	93.6	78.6	71.6	64.7
57.0	76.0	64.6	58.9	53.2	19	74.1	98.8	84.0	76.6	69.2
60.0	80.0	68.9	62.8	56.7	20	78.0	104.0	89.5	81.6	73.7
63.0	84.0	73.1	66.6	60.2	21	81.9	109.2	95.0	86.6	78.2
66.0	88.0	77.3	70.5	63.6	22	85.8	114.4	100.5	91.6	82.7
69.0	92.0	81.5	75.2	67.1	23	89.7	119.6	105.9	97.7	87.2
72.0	96.3	85.7	80.3	70.6	24	93.6	125.2	111.4	104.4	91.8
75.0	103.7	89.9	85.4	74.1	25	97.5	134.8	116.9	111.0	96.3
78.0	111.1	94.2	90.5	77.5	26	101.4	144.4	122.4	117.7	100.8
81.3	118.5	98.4	95.6	81.0	27	105.7	154.1	127.9	124.3	105.3
85.1	126.0	102.6	100.7	84.5	28	110.6	163.8	133.4	131.0	109.8
88.8	133.5	106.8	105.9	88.0	29	115.4	173.6	138.9	137.6	114.4
92.5	141.0	112.9	111.0	91.5	30	120.2	183.3	146.8	144.3	118.9
99.8	156.2	125.3	121.2	101.5	32	130.0	203.1	162.9	157.6	132.0
107.4	171.8	137.6	131.5	112.3	34	139.6	223.3	178.9	170.9	146.0
114.8	189.4	150.0	141.7	123.1	36	149.2	246.2	195.0	184.2	160.1
122.3	207.1	162.4	151.9	134.0	38	159.0	269.2	211.1	197.5	174.1
129.7	224.9	174.8	162.2	144.8	40	168.6	292.4	227.3	210.8	188.3
137.2	242.7	187.2	172.4	155.7	42	178.3	315.3	243.3	224.0	202.3
144.7	260.4	199.7	182.7	166.6	44	187.5	337.5	258.7	236.7	215.8
152.1	278.3	212.1	192.9	177.4	46	196.6	359.6	274.1	249.3	229.3
159.6	296.1*	224.5	203.2	188.3	48	205.7	381.7	289.4	261.9	242.8
167.1	314.0	237.0	220.8	199.3	50	214.8	403.8	304.7	283.9	256.2
174.6	331.8	249.4	238.4	214.3	52	223.9	425.5	319.9	305.8	274.8
182.0	349.7	261.8	256.1	231.3	54	232.8	447.3	335.0	327.6	295.9
189.5	367.6	274.3	273.8	248.3	56	241.8	469.1	350.1	349.4	316.9
198.8	385.4	286.8	291.4	265.3	58	253.1	490.6	365.1	371.1	337.7
209.2*	403.3	299.2	309.2	282.3	60	265.8*	512.2	380.1	392.7	358.5
265.1*	492.8	361.5	398.0	372.2	70	333.1*	619.0	454.2	500.1	467.6
327.0*	582.4	423.9	487.1	471.9	80	406.8*	724.5	527.3	605.9	587.0
394.9*	672.2	486.3	576.4	571.7	90	486.7*	828.8	599.4	710.5	704.6
468.8*	762.0	548.7	665.9	671.5	100	572.9*	931.2	670.7	813.9	820.7
634.5*	941.6	673.6	845.1	871.3	120	764.0*	1133.7	811.1	1017.5	1049.1
824.2*	1121.4	798.5	1024.5	1071.1	140	979.8*	1333.3	949.2	1217.8	1273.2
1038.0*	1384.0*	923.5	1204.1	1270.9	160	1220.1*	1626.2*	1085.5	1415.3	1493.9
1275.8*	1701.0*	1048.4	1383.7	1470.8	180	1484.9*	1980.0*	1222.3	1610.6	1712.0
1537.5*	2050.0*	1173.4	1563.5	1670.8	200	1774.0*	2365.7*	1353.9	1804.0	1927.8
2296.9*	3062.5*	1485.8	2013.0	2170.6	250	2603.1*	3469.8*	1683.9	2281.4	2460.0
3206.2*	4275.0*	1798.2	2462.6	2670.5	300	3583.5*	4779.4*	2009.8	2752.4	2984.7

*Based on standard lane loading. All other values based on standard truck loading.

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JOB H-12-013 (BAS) Haverhill
SHEET NO. 12 OF
CALCULATED BY DP DATE 7/10
CHECKED BY BAB DATE 7/2011
SCALE NTS

Rating Calculations for 9 inch Girder Mill

$$\text{Rating} = \left[\frac{M_{cap} - M_{DL}}{(M_{LL})(I+1)(D.F.)}\right](\text{Truck weight})$$

$$H20_{EIN} = \left[\frac{(107^{k\cdot ft} - 24.7^{k\cdot ft})}{(76.0^{k\cdot ft})(1.3)(0.242)}\right](20T) = \underline{68.8T}$$

$$H20_{oper} = \left[\frac{(151^{k\cdot ft} - 24.7^{k\cdot ft})}{(76.0^{k\cdot ft})(1.3)(0.242)}\right](20T) = \underline{105.6T}$$

$$Type\ 3_{EIN} = \left[\frac{(107^{k\cdot ft} - 24.7^{k\cdot ft})}{(64.6^{k\cdot ft})(1.3)(0.242)}\right](25T) = \underline{101.2T}$$

$$Type\ 3_{oper} = \left[\frac{(151^{k\cdot ft} - 24.7^{k\cdot ft})}{(64.6^{k\cdot ft})(1.3)(0.242)}\right](25T) = \underline{155.4T}$$

$$Type\ 3S2_{EIN} = \left[\frac{(107^{k\cdot ft} - 24.7^{k\cdot ft})}{(58.9^{k\cdot ft})(1.3)(0.242)}\right](36T) = \underline{159.9T}$$

$$Type\ 3S2_{oper} = \left[\frac{(151^{k\cdot ft} - 24.7^{k\cdot ft})}{(58.9^{k\cdot ft})(1.3)(0.242)}\right](36T) = \underline{245.4T}$$

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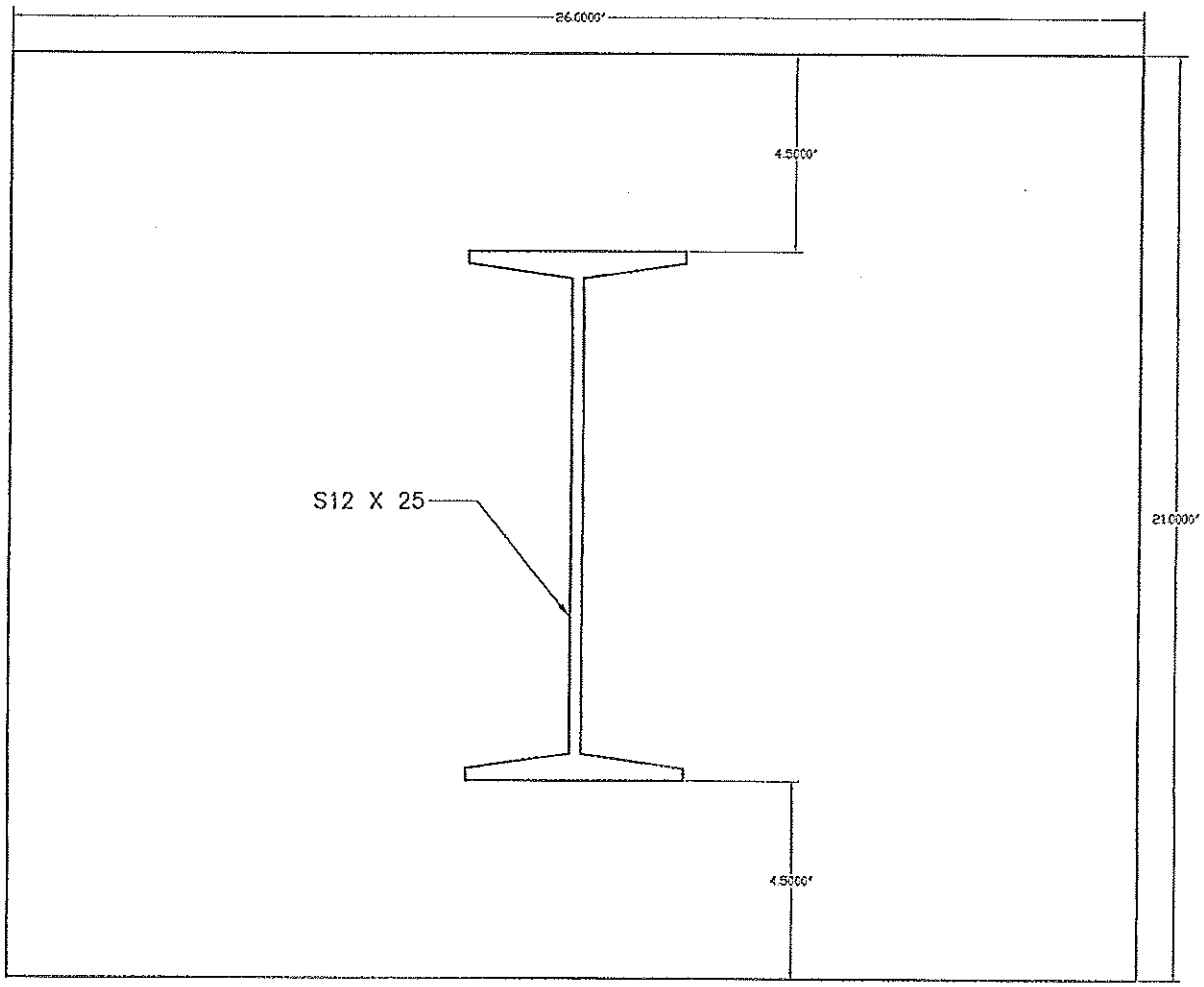
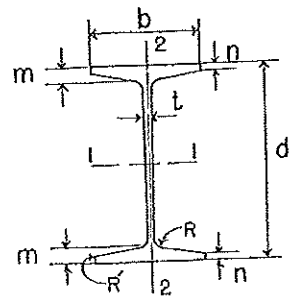
JOB	H-12-013 (8A5) HAVERHILL		
SHEET NO.	13	OF	
CALCULATED BY	DP	DATE	JULY 2010
CHECKED BY		DATE	
SCALE	NOT TO SCALE		



12 INCH GIRDER BEAM SECTION
N.T.S

12" AMERICAN STANDARD BEAMS



*Computed

REFERENCES; SEE COLUMN (1) AND PAGE 4

1	6	29	2,3,4,7,10,11,12,	B66
CP 1889	C 1916	PH 1912	13,14,15,16,17,18,	C 1921
CP 1890	C 1917	PH 1915	19,20,21,[redacted]23,	C 1923
5	C 1919	PH 1923	24,25,26,27,28,	
C 1913	C 1920	31	30,32,33,35	
C 1915	8	PH 1929	See Page 21	
9	IL 1914	PH 1931	22	
CIL 1946	IL 1925	34	NJ 1889	
CIL 1948	IL 1932	K 1950	NJ 1891	
US 1950				

COL. (1)	WEIGHT PER FOOT Lb.	AREA Sq. In.	DEPTH d In.	FLANGE WIDTH b In.	WEB THICK t In.	DIMENSIONS m In.	n In.	R In.	R′ In.	SLOPE INSIDE FLANGE %	AXIS 1—1 I In.⁴	S In.³	r In.	AXIS 2—2 I In.⁴	S In.³	r In.
4,10,13,17,19,21	40.0	11.84	12.0	5.250	.460	.859	.46	.56	.276	16⅔*	268.9	44.8	4.77	13.81	5.3	1.08
23,24	40.0	11.8	12.0	5.50	.39	.88	.50	.50	—	14.9*	281.3	46.9	4.90	16.8	6.11*	1.20
27	40.0	11.77	12.0	5.25	.42	.88	.48	.52	.24	16⅔*	274.68	45.8	4.83	14.26	5.43*	1.10
28	40.0	11.76	12.0	5.250	.460	.859	.46	.56	.276	16⅔*	268.9	44.8	4.77	13.81	5.26*	1.08
13,15	40.0	11.76	12.0	5.215	.558	.738	.35	.45	.21	16⅔*	245.9	41.0	4.57	10.95	4.2*	.96
22	40.0	11.73	12.0	5.50	.39	.91	.50	.50	—	16.0*	281.3	46.9*	4.90*	16.76	6.09*	1.20*
1,2,3,28	40.0	11.7	12.0	5.50	.39	.88	.50	.50	—	14.9*	281.3	46.9	4.90	16.8	6.1*	1.20
26	39.4	11.6	12.0	5.25	.40	.86	.50	—	—	14.8*	268.30	44.72	4.81	14.57	5.55*	1.12
2	39.0	11.5*	12.0	5.425*	.525*	.72	.35	.50	—	15.1*	247.5*	41.3*	4.64*	12.1*	4.5*	1.03*
25	39.0	11.52*	12.0	5.213*	.553*	.672	.344	.50	—	14.1*	235.56*	39.26*	4.52*	10.37*	3.98*	.95*
26	38.4	11.29	12.0	5.19	.53	.68	.33	—	—	15.0*	233.80	38.97	4.55	10.19	3.93*	.95
16	38.0	11.2	12.0	5.468	.343	.844	.469	.50	—	14.6*	265.4	44.2	4.86	15.6	5.71*	1.18
16	37.5	11.4*	12.0	5.414	.508	.703	.328	.50	—	15.3*	238.7*	39.8*	4.58*	11.5*	4.25*	1.00*
25	36.6	10.80*	12.0	5.153*	.493*	.672	.344	.50	—	14.1*	226.92*	37.82*	4.58*	10.07*	3.91*	.97*
3	36.0	10.6*	12.0	5.35*	.45*	.72	.35	.50	—	15.1*	236.7*	39.5*	4.73*	11.53*	4.3*	1.04*
24	35.0	10.3	12.0	5.22	.44	.71	.34	.50	—	15.5*	232.9	38.8	4.77	10.5	4.02*	1.01
4,10,13,19,21,28	35.0	10.29	12.0	5.086	.436	.738	.35	.45	.21	16⅔*	228.3	38.0	4.71	10.07	4.0	.99
17	35.0	10.29	12.0	5.085	.436	.739	.35	.45	—	16⅔*	228.3	38.0	4.71	10.07	3.97*	.99
27	35.0	10.29	12.0	5.07	.42	.74	.35	.45	.21	16⅔*	230.95	38.5	4.74	10.01	3.95*	.99
7,9,11,12,14,20,33,34	35.0	10.20	12.0	5.078	.428	.738	.350	.45	.21	16⅔	227.0	37.8	4.72	10.0	3.9	.99
25	34.1	10.04*	12.0	5.090*	.430*	.672	.344	.50	—	14.1*	217.85*	36.31*	4.66*	9.67*	3.80*	.98*
22	32.0	9.46	12.0	5.25	.32	.78	.38	.50	—	16.2*	229.2	38.2*	4.92*	11.64	4.43*	1.11*
1,2,3,28	32.0	9.4	12.0	5.25	.35	.72	.35	.50	—	15.1*	222.3	37.0	4.85	10.3	3.9*	1.04
32	31.8	9.35	12.0	5.00	.35	.738	.350	.45	.21	16⅔*	217.0	36.2	4.82	9.50	3.80	1.01
7,9,11,12,14,15,20,25,30,33,34,35	31.8	9.26	12.0	5.000	.350	.738	.350	.45	.21	16⅔	215.8	36.0	4.83	9.5	3.8	1.01
25	31⅔	9.31	12.0	5.029*	.369*	.672	.344	.50	—	14.1*	209.07*	34.85*	4.74*	9.17*	3.65*	.99*
27	31.5	9.27	12.0	5.00	.35	.74	.35	.45	.21	16⅔*	218.71	36.5	4.86	9.45	3.78*	1.01
23,24	31.5	9.3	12.0	5.13	.35	.71	.34	.50	—	15.5*	220.5	36.7	4.88	10.3	4.02*	1.04
17,26	31.5	9.3	12.0	5.00	.35	.739	.35	.45	—	16⅔*	215.81	36.0	4.82	9.5	3.8*	1.01
4,10,13,19,21,28	31.5	9.26	12.0	5.000	.350	.738	.35	.45	.21	16⅔*	215.8	36.0	4.83	9.50	3.8	1.01
26	30.6	9.01	12.0	5.00	.34	.68	.33	—	—	15.0*	207.9	34.65	4.80	9.00	3.60*	1.00
25	30.5	8.96	12.0	5.00	.34	.672	.344	.50	—	14.1*	204.89*	34.15*	4.78*	9.04*	3.62*	1.00*
16	30.0	9.1	12.0	5.218	.312	.703	.328	.50	—	15.3*	211.7	35.3	4.82	10.2	3.91*	1.05
33	28.0	8.24	11.88	6.569	.314	.485	.225	.35	—	8⅓*	193.6	32.6	4.85	13.9	4.28	1.30
6	28.0	8.15	12.0	6.000	.284	.540	.280	.26	—	9.1*	199.4	33.2	4.95	12.6	4.2	1.24
B66, 7	27.9	8.15	12.0	6.000	.284	.540	.280	.26	—	9.1*	199.4	33.2	4.95	12.6	4.2	1.24
31	27.5	8.09	12.0	5.061	.301	.662	.265	.40	.16	16⅔*	191.5	31.9	4.88	8.01	3.17*	.99
29	27.5	8.09	12.0	5.00	.255	.710	.315	.40	—	16⅔*	199.6	33.3	4.98	8.70	3.48*	1.04
5	27.5	8.04	12.0	5.000	.255	.710	.315	.40	—	16⅔*	199.6	33.3	4.98	8.7	3.5	1.04
33	25.0	7.35	11.88	6.495	.240	.485	.225	.35	—	8⅓*	182.8	30.8	4.98	13.4	4.12	1.35
8	25.0	7.35	12.0	5.00	.270	.570	.270	.270	—	12.7*	175.5	29.2	4.89	7.30	2.92	1.00
31	25.0	7.35	12.0	5.000	.240	.662	.265	.40	.16	16⅔*	182.7	30.5	4.99	7.60	3.04*	1.02

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JOB 14-12-031 (BAS) Haverhill
SHEET NO. 15 OF
CALCULATED BY DP DATE 7/10
CHECKED BY BAB DATE 7/2010
SCALE NTS

12 inch Girder Beam

Beam Spacing, (b) = 26 in

$E_s = 29{,}000$

$w_c = 150$ pcf

$f'_c = 2$ ksi

$n = 15$ (Ref MCEB 8.6.2.4.1)

$b/n = 26''/15 = 1.73$ in

Composite Section

$\bar{y} = 8.04$ in (See 12 inch Composite Section)

$I_{tr} = 480.10$ in^4 (See 12 inch Composite Section)

$$S_{x_{Top}} = \frac{I}{d_{beam} - \bar{y}} = \frac{480.10 \text{ in}^4}{12'' - 6''} = 80.0 \text{ in}^3$$

$$S_{x_{Bot}} = \frac{I}{\bar{y}} = \frac{480.10 \text{ in}^4}{6''} = 80.0 \text{ in}^3$$

Use $S_x = 80.0$ in^3

Moment Capacity:

$$M_n = \sigma S_x$$

Inventory Moment Capacity: $M_{n_{Inv}} = \sigma_{Inv} S_x = (16 \text{ ksi})(80 \text{ in}^3) = \frac{1280 \text{ k-in}}{12 \text{ in}} = \underline{107 \text{ k-ft}}$

Operating Moment Capacity: $M_{oper} = \sigma_{oper} S_x = (22.5 \text{ ksi})(80 \text{ in}^3) = \frac{1800 \text{ k-in}}{12 \text{ in}} = \underline{150 \text{ k-ft}}$

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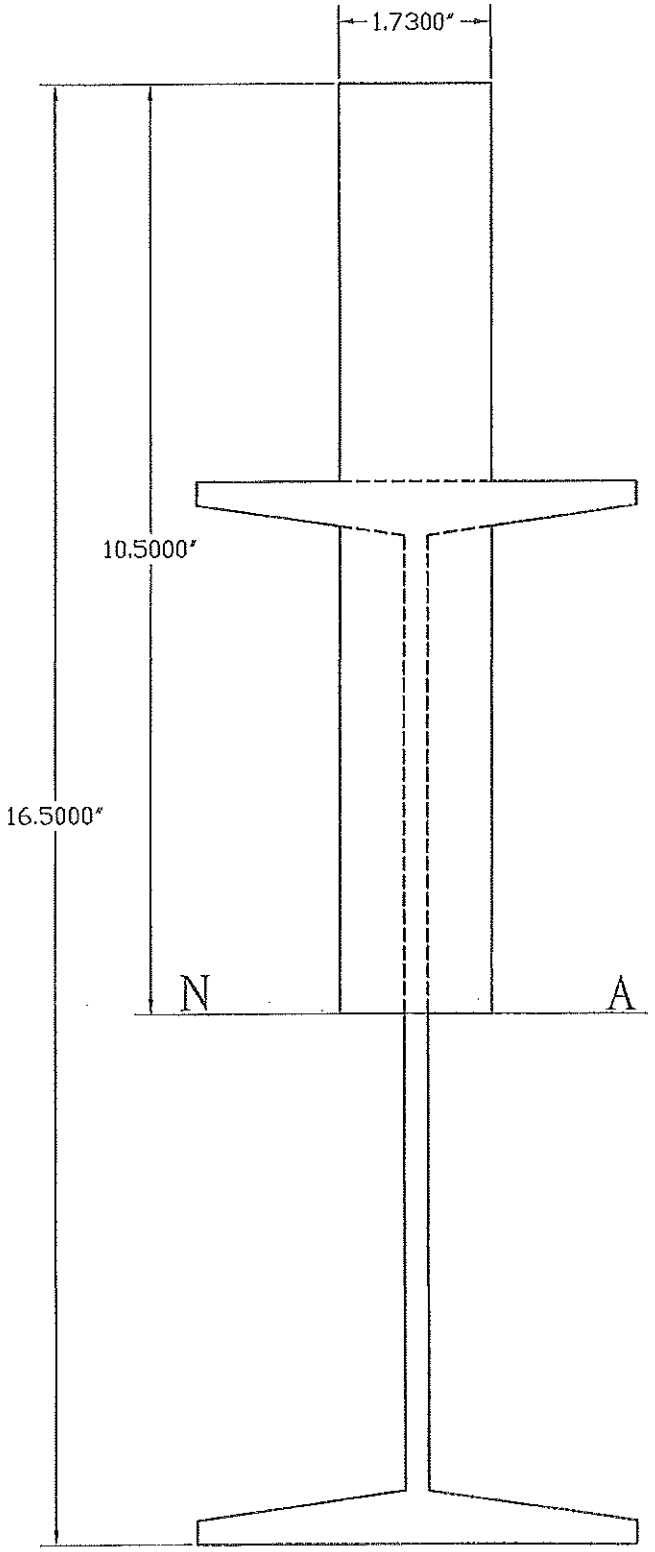
JOB	H-12-013 (8A5) HAVERHILL		
SHEET NO.	16	OF	
CALCULATED BY	DP	DATE	JULY 2010
CHECKED BY		DATE	
SCALE	NOT TO SCALE		



12 INCH COMPOSITE SECTION

N.T.S

12 inch girder beam composite section

```
Command: MASSPROP

Select objects: 1 found

Select objects:

 ----------------   REGIONS   ----------------

Area:                       23.13
Perimeter:                  51.40
Bounding box:            X: -2.50  --  2.50
                         Y: -6.00  --  10.50
Centroid:                X: 0.00
                         Y: 3.71
Moments of inertia:      X: 798.82
                         Y: 11.80
Product of inertia:     XY: 0.00
Radii of gyration:       X: 5.88
                         Y: 0.71
Principal moments and X-Y directions about centroid:
                         I: 11.80 along [0.00 1.00]
                         J: 480.10 along [-1.00 0.00]
```

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JOB H-12-013 (815) Haverhill
SHEET NO. 18 OF
CALCULATED BY DP DATE 7/10
CHECKED BY BAB DATE 7/7/2010
SCALE N/S

Superimposed Dead Load (SDL) for 12 inch Girder Beam

Assume knife edge

Composite Section Self weight (ω_L):

$A_G = 7.35\ in^2$ (See 12" American Standard Beams)

$A_{total} = (26")(21") = 546\ in^2$

$A_{conc.} = 546\ in^2 - 7.35\ in^2 = 539\ in^2$

$$\omega_L = \left(\frac{7.35\ in^2}{144\ in^2}\right)(490\ pcf) + \left(\frac{539\ in^2}{144\ in^2}\right)(150\ pcf) = 586\ PLF$$

Bit. Conc.

5" of Bit. conc.

$$\omega_{BC} = \left(\frac{5"}{12}\right)\left(\frac{26"\ spacing}{12"}\right)(150\ pcf) = 135\ PLF$$

Fill

D.O.F = 8"

$$\omega_F = \left(\frac{8"}{12"}\right)\left(\frac{26"\ spacing}{12"}\right)(120\ pcf) = 173\ PLF$$

$\omega_{DL} = 586\ PLF + 135\ PLF + 173\ PLF = 894\ PLF \approx 0.894\ KLF$

$$M_{DL} = \frac{(\omega_{DL})(L^2)}{8} = \frac{(0.894\ KLF)(18\ ft^2)}{8} = \underline{39.3\ k\text{-}ft}$$

Live Load Distribution Factor (DF)

Ref. AASHTO Table 3.23.1

DF = S/5.5

S = 26 in = 2.17 ft

DF = 2.17/5.5 = 0.394

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JOB H-12-013 (8A5) Haverhill
SHEET NO. 19 OF
CALCULATED BY DIP DATE 7/10
CHECKED BY BMB DATE 7/2010
SCALE N/TS

Rating Calculations for 12 inch Girder Beam

Note: Live loads and impact are the same as used for the 9 inch Girder Roll

$$\text{Rating} = \left[\frac{(M_{cap} - M_{DL})}{(M_{LL})(1+I)(D.F.)}\right](\text{weight of truck})$$

$$H20_{INV} = \left[\frac{(107^{k\text{-}ft} - 39.3^{k\text{-}ft})}{(76.8^{k\text{-}ft})(1.3)(0.394)}\right](20T) = \underline{39.8T}$$

$$H20_{OPR} = \left[\frac{(150^{k\text{-}ft} - 39.3^{k\text{-}ft})}{(76.8^{k\text{-}ft})(1.3)(0.394)}\right](20T) = \underline{56.9T}$$

$$\text{Type 3}_{INV} = \left[\frac{(107^{k\text{-}ft} - 39.3^{k\text{-}ft})}{(64.6^{k\text{-}ft})(1.3)(0.394)}\right](25T) = \underline{51.2T}$$

$$\text{Type 3}_{OPR} = \left[\frac{(150^{k\text{-}ft} - 39.3^{k\text{-}ft})}{(64.6^{k\text{-}ft})(1.3)(0.394)}\right](25T) = \underline{83.6T}$$

$$\text{Type 3S2}_{INV} = \left[\frac{(107^{k\text{-}ft} - 39.3^{k\text{-}ft})}{(58.9^{k\text{-}ft})(1.3)(0.394)}\right](36T) = \underline{80.8T}$$

$$\text{Type 3S2}_{OPR} = \left[\frac{(150^{k\text{-}ft} - 39.3^{k\text{-}ft})}{(58.9^{k\text{-}ft})(1.3)(0.394)}\right](36T) = \underline{132.1T}$$

KINGSBURY PRESS / COEN BUSINESS FORMS 508.359.6626

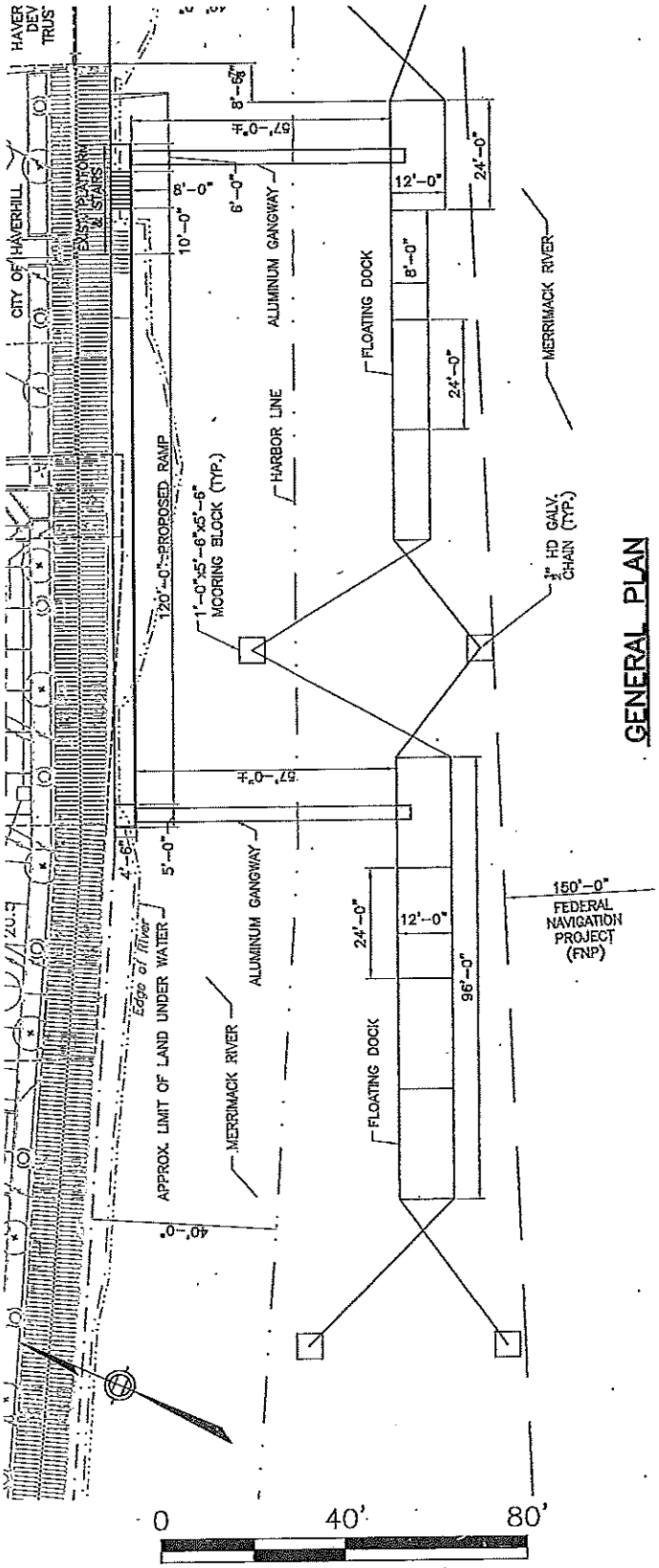
Docks project off Boardwalk

$123,361.86-	Remaining PARC grant State reimbursement
$ 44,500.14	Waterways account
$ 7,763.00	Docks fees account
$ 27,500.00	Remaining CDBG $$
$203,125.00	**Total**
$251,738.00	**Pepperell Cove low bid on RAMP only**
($48,613.00)	**deficit for RAMP only**

Sullivan Flotation Systems, Inc. low bid on:

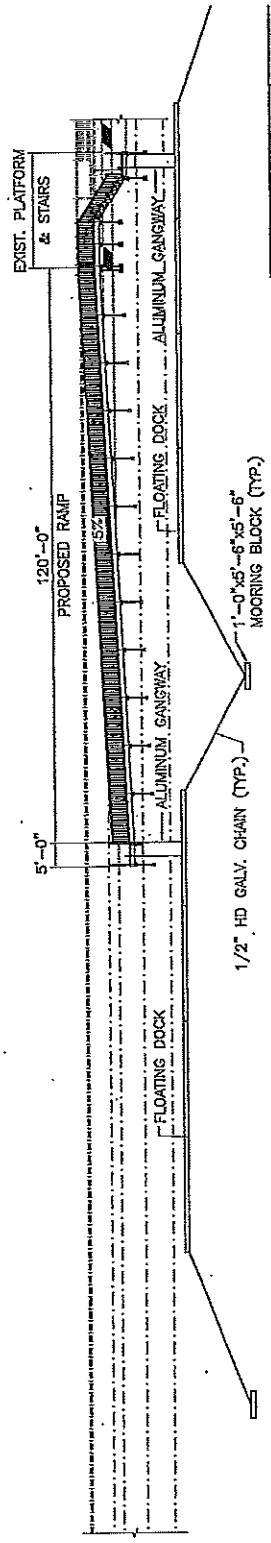
Option A. ($87,244.00) 2 Aluminum Gangways + 8 Timber Docks
Option B. ($43,622.00) 1 Gangway + 4 Docks
Option C. ($32,302.00) 1 Gangway + 2 Docks
Option D. ($20,932.00) 1 Gangway + no docks (use existing)

Option A. ($135,857) = deficit
Option B. ($ 92,235) = deficit
Option C. ($ 80,915) = deficit
Option D. ($ 69,545) = deficit

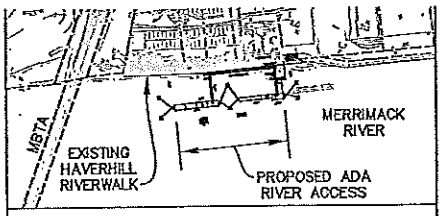


GENERAL PLAN

SCALE: 1"=40'



ELEVATION



LOCUS

SCALE: 1"=400"

NOTE:

THE CITY OF HAVERHILL OWNS THE PROJECT SITE (PLAYGROUND) AND THE PROPERTY TO THE WEST (TAP PARKING LOT), AND THE ADJACENT PROPERTY TO THE EAST IS OWNED BY THE "HAVERHILL REALTY DEVELOPMENT TRUST & OTHERS"

14'x 75'

Vets: many 8'x 30' available in future

PLANS ACCOMPANYING PETITION OF THE CITY OF HAVERHILL, MASSACHUSETTS MERRIMACK RIVER ADA RIVER ACCESS IN HAVERHILL, MA

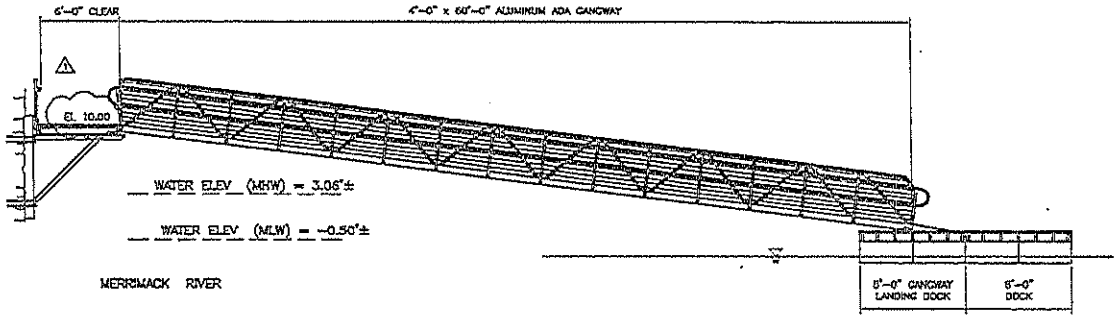
SHEET 1 OF 3

LICENSE PLAN NO. 13104

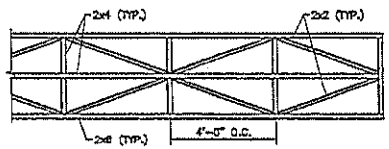
Approved by Department of Environmental Protection of Massachusetts SEP 13 2011

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		6	8

SECTIONS AND DETAILS 2

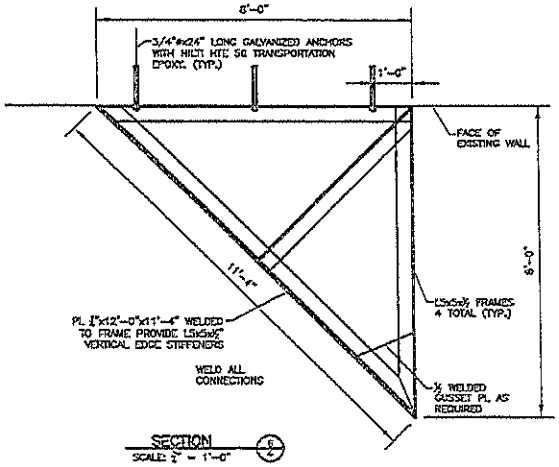


GANGWAY ELEVATION DETAIL
SCALE: 1/4" = 1'-0"

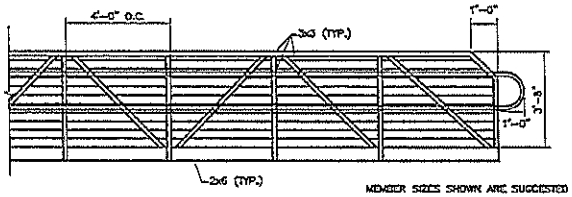


MEMBER SIZES SHOWN ARE SUGGESTED ALUMINUM TUBE SECTIONS

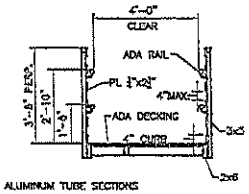
GANGWAY BRACING DETAIL
SCALE: 1/4" = 1'-0"



SECTION 6/2
SCALE: 1/2" = 1'-0"



GANGWAY ELEVATION DETAIL
SCALE: 1/2" = 1'-0"



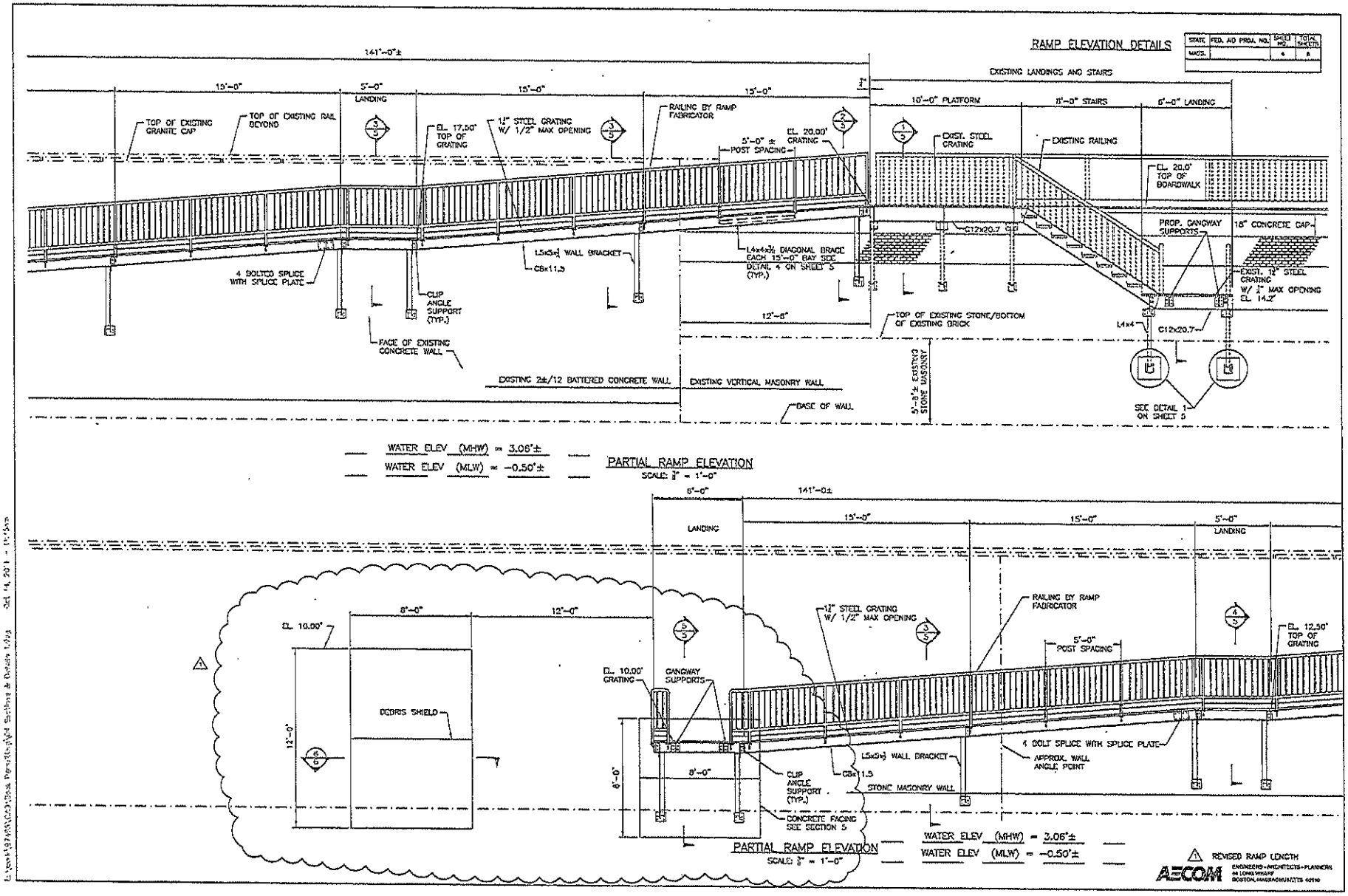
MEMBER SIZES SHOWN ARE SUGGESTED ALUMINUM TUBE SECTIONS

GANGWAY SECTION
SCALE: 1/2" = 1'-0"

1 REVISED RAMP LENGTH

AECOM
ENGINEERS, ARCHITECTS, PLANNERS
45 LONG WHARF
BOSTON, MASSACHUSETTS 02110

L:\work\projects\cos\Dock Permitting\04 Gangway Detail.dwg Oct 18, 2011 - 11:12am


RAMP ELEVATION DETAILS
STATE
FED. AID PROJ. NO.
SHEET NO.
TOTAL SHEETS
MASS.
4
8
141'-0"±
15'-0"
5'-0" LANDING
15'-0"
15'-0"
EXISTING LANDINGS AND STAIRS
10'-0" PLATFORM
8'-0" STAIRS
6'-0" LANDING
TOP OF EXISTING GRANITE CAP
TOP OF EXISTING RAIL BEYOND
EL. 17.50' TOP OF GRATING
12" STEEL GRATING W/ 1/2" MAX OPENING
RAILING BY RAMP FABRICATOR
5'-0" ± POST SPACING
EL. 20.00' GRATING
EXIST. STEEL GRATING
EXISTING RAILING
EL. 20.0' TOP OF BOARDWALK
PROP. GANGWAY SUPPORTS
18" CONCRETE CAP
C12x20.7
L4x4x3/8 DIAGONAL BRACE EACH 15'-0" BAY SIDE DETAIL 4 ON SHEET 5 (TYP.)
L5x5x3/8 WALL BRACKET
C8x11.5
4 BOLTED SPLICE WITH SPLICE PLATE
CLIP ANGLE SUPPORT (TYP.)
EXIST. 12" STEEL GRATING W/ 1" MAX OPENING EL. 14.2'
12'-6"
TOP OF EXISTING STONE/BOTTOM OF EXISTING BRICK
L4x4
C12x20.7
FACE OF EXISTING CONCRETE WALL
EXISTING 2±/12 BATTERED CONCRETE WALL
EXISTING VERTICAL MASONRY WALL
BASE OF WALL
5'-6"± EXISTING STONE MASONRY
SEE DETAIL 1 ON SHEET 5
WATER ELEV (MHW) = 3.06'±
WATER ELEV (MLW) = -0.50'±
PARTIAL RAMP ELEVATION
SCALE: 3/8" = 1'-0"
5'-0"
141'-0±
LANDING
15'-0"
15'-0"
5'-0" LANDING
EL. 10.00'
8'-0"
12'-0"
DEBRIS SHIELD
12'-0"
EL. 10.00' GRATING
GANGWAY SUPPORTS
12" STEEL GRATING W/ 1/2" MAX OPENING
RAILING BY RAMP FABRICATOR
5'-0" POST SPACING
EL. 12.50' TOP OF GRATING
4 BOLT SPLICE WITH SPLICE PLATE
APPROX. WALL ANGLE POINT
L5x5x3/8 WALL BRACKET
C8x11.5
8'-0"
8'-0"
CLIP ANGLE SUPPORT (TYP.)
STONE MASONRY WALL
CONCRETE FACING SEE SECTION 5
WATER ELEV (MHW) = 3.06'±
WATER ELEV (MLW) = -0.50'±
PARTIAL RAMP ELEVATION
SCALE: 3/8" = 1'-0"
1 REVISED RAMP LENGTH
AECOM
ENGINEERS • ARCHITECTS • PLANNERS
10 LONG WHARF
BOSTON, MASSACHUSETTS 02110

IFB029.12
Dock and Gangway at the Haverhill River walk
1-26-12 @ 2PM

Bidder	Total Price
Narragansett Dock Works 14 Gull Road Narragansett, RI 02882	$91,941.00
Sullivan Flotation Systems, Inc 3 Chancellor Lane Warwick, NY 10990	$87,244.00 ✓
Dock Hardware & Marine Fab. LLC P O Box 2295 Conway, SC 29528	$123,978.00
Pepperrell Cove Marine Services, Inc 105 Bartlett St Portsmouth, NH 03801	110,447.00

Witnessess: Robert Hajian Date: 1/26/12

[illegible] Date: 1/26/12

IFB030.12
Ramp System at the Haverhill River walk
1-26-12 @ 2PM

Bidder	Bid Bond	Total Price
New England Infrastructure, Inc. 13 Brent Drive Hudson, MA 01749	✓	327,800.00
Pepperrell Cove Marine Services Inc. 105 Bartlett St. Portsmouth, NH 03801	✓	251,738.00
Brian Bush →		

Witnessess: Robert Hoyer Date: 1/26/12

[illegible] Date: 1/26/12

from the Property; and (c) upon the HHA's obtaining knowledge of the incurring of any expense by any governmental authority in connection with the assessment, containment or removal of any hazardous substances located upon or under the Property or emanating from the Property. The HHA hereby agrees, at its sole cost and expense, to promptly take all remedial action necessary to assess, contain, monitor, remediate and remove all hazardous substances which are located upon or released at the Property in such a manner as to bring the Property in compliance with applicable legal requirements, and to take all actions necessary or appropriate to avoid any liability of or claims against the HHA, the City, or any subsequent owner of the Property, and to avoid the imposition of any liens on the Property as a result of the presence of hazardous substances thereon. The HHA agrees, at its sole cost and expense, to provide to the City all professional environmental assessments prepared with respect to the Property at any time upon request of the City and such other information with respect to hazardous substances at the Property any Participating City from time to time may require. The HHA further agrees to indemnify and hold the City harmless from and against any and all liabilities, damages, losses, obligations, penalties, claims, demands, actions, costs and expenses (including without limitation attorneys and expert fees and costs) of any kind or nature whatsoever arising at any time from or out of the presence or release of any hazardous substance at or from the Property or the violation of any legal requirements with respect to such hazardous substances.

4.13 Debarment. Neither HHA nor any of its officers or directors or any person having a beneficial interest in the Property and/or the Project (i) are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any federal department or agency; (ii) have within the three-year period preceding this Agreement been convicted of, or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property; (iii) are presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with commission of any of the offenses enumerated in subparagraph (ii) above; and (iv) have within the three-year period preceding this Agreement had one or more public transactions (federal, state or local) terminated for cause or default.

4.14 Tenants Eligible for Relocation Assistance. The list of persons (including individuals, businesses, nonprofit organizations, corporations, partnerships and associations) and their addresses included in the approved relocation plan for the Project, if any, is a true and accurate listing of all persons occupying any part of the Property as of the date hereof.

4.15 Use of Proceeds; Representations under NSP Program. HHA represents and warrants that, at the time of the execution of this agreement, the Property was either (a) an Abandoned or Foreclosed-upon Home or Residential Property, or (b) a Vacant Property.

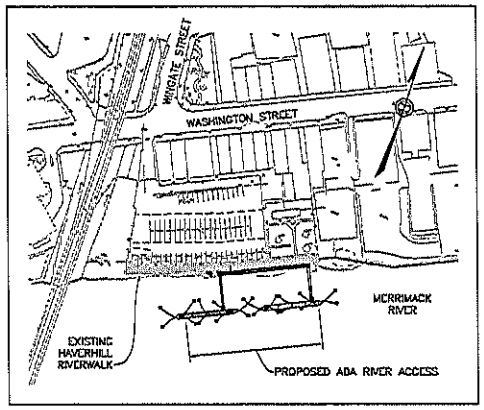
For purposes of this section:

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		1	6

CITY OF HAVERHILL
MASSACHUSETTS

HAVERHILL ADA RIVER ACCESS

ESSEX COUNTY



SCALE: 1"=100'

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	GENERAL NOTES AND LEGEND
3	GENERAL PLAN & ELEVATION
4	RAMP ELEVATION DETAILS
5	SECTIONS & DETAILS 1
6	SECTIONS & DETAILS 2

FENCE LINE
BASE or SURVEY LINE — 103 — S47°-21'-41"E 4336.03'
RIGHT OF WAY LINE
MEAN HIGH WATER
MEAN LOW WATER
HARBOR LINE
FEDERAL NAVIGATION PROJECT

AECOM ENGINEERS • ARCHITECTS • PLANNERS
45 LONG WHARF
BOSTON, MASSACHUSETTS 02110

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STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		2	6

GENERAL NOTES

DESIGN:

IN ACCORDANCE WITH THE MASSACHUSETTS STATE BUILDING CODE SECOND EDITION.

RAMP LIVE LOAD	=	100 PSF
GANGWAY LIVE LOAD	=	100 PSF
GANGWAY DEAD LOAD	=	25 PSF
FLOATING DOCK LIVE LOAD	=	40 PSF

BENCH MARK:

NAIL SET IN UTILITY POLE 795/1, LOCATED NEAR THE CONCRETE PAD AT THE ENTRANCE TO THE PARKING LOT. THE ELEVATION OF THE NAIL IS 26.97'. ALL ELEVATIONS REFER TO N.A.V.D. OF 1988.

SURVEY:

ELECTRONIC FILES WERE COMPILED FROM SURVEY. COPIES OF FILES MAY BE OBTAINED FROM AECOM, CHELMSFORD MA.

SCALES:

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS.

ANCHOR BOLTS:

ALL ANCHOR BOLTS SHALL BE HILTI GALVANIZED UNDERCUT ANCHORS OR GALVANIZED THREADED ROD WITH HILTI HIT 50 TRANSPORTATION EPOXY.

REINFORCEMENT:

REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60 EPOXY COATED (ASTM A615).

UTILITIES

THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE ALL EXISTING UTILITIES.

EXISTING CONDITIONS

DIMENSIONS SHOWN ON EXISTING STRUCTURE ARE TAKEN FROM ORIGINAL DESIGN DRAWINGS AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND EXISTING DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENTS AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF, AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE/SHE HAS MADE THE REQUIRED MEASUREMENTS ON THE ACTUAL STRUCTURE AND EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER. EXISTING STRUCTURE IS SHOWN THUS: —·—·— EXCEPT WHERE NOTED.

AECOM ENGINEERS - ARCHITECTS - PLANNERS
65 LONG WHARF
BOSTON, MASSACHUSETTS 02110

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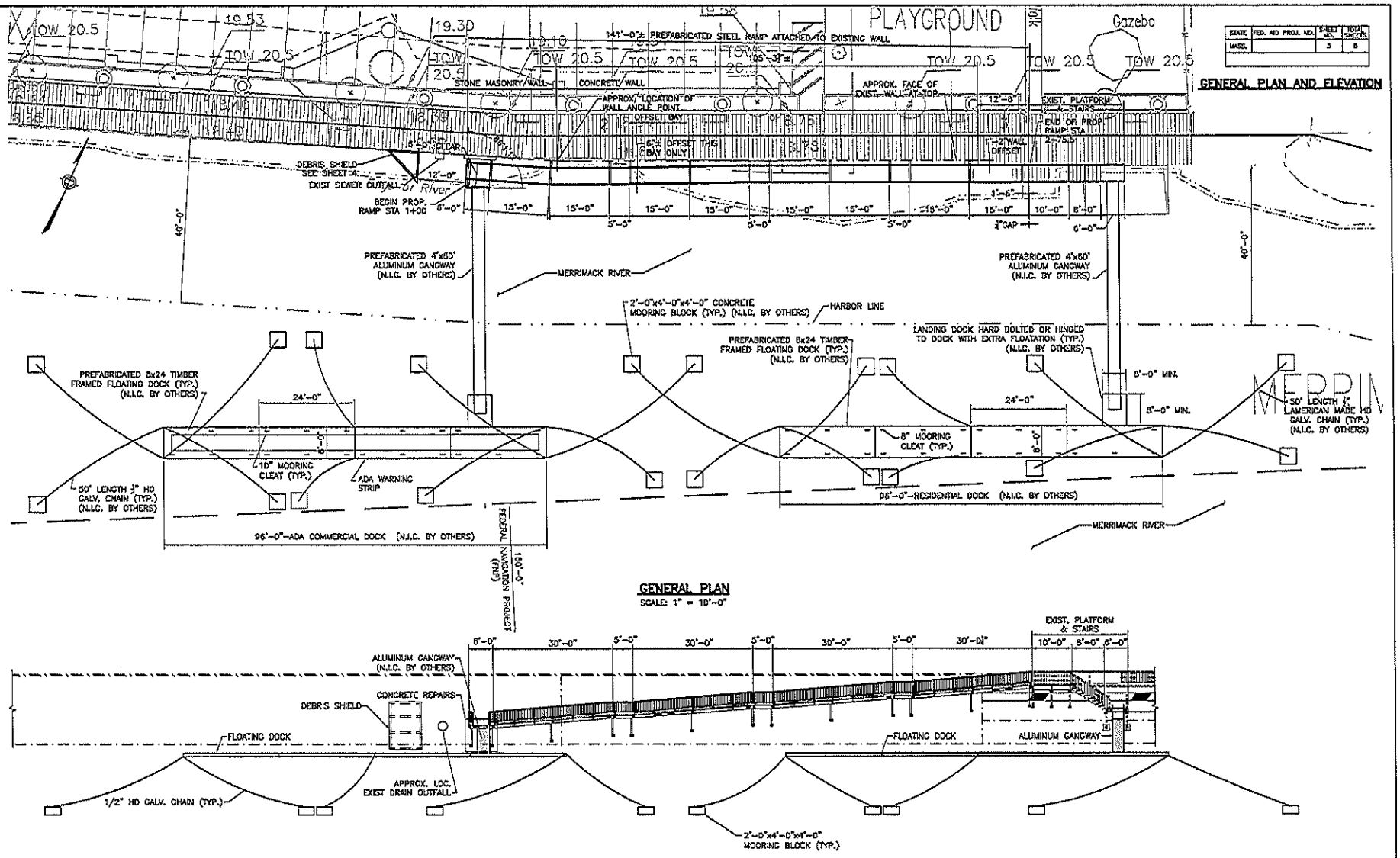

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		3	8

GENERAL PLAN AND ELEVATION

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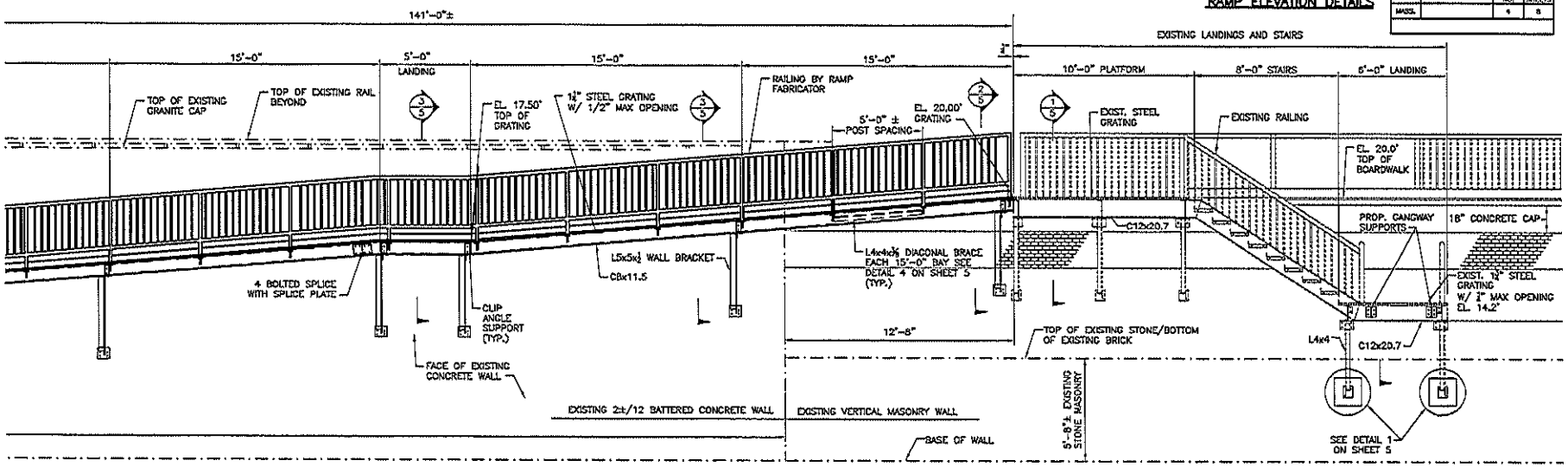
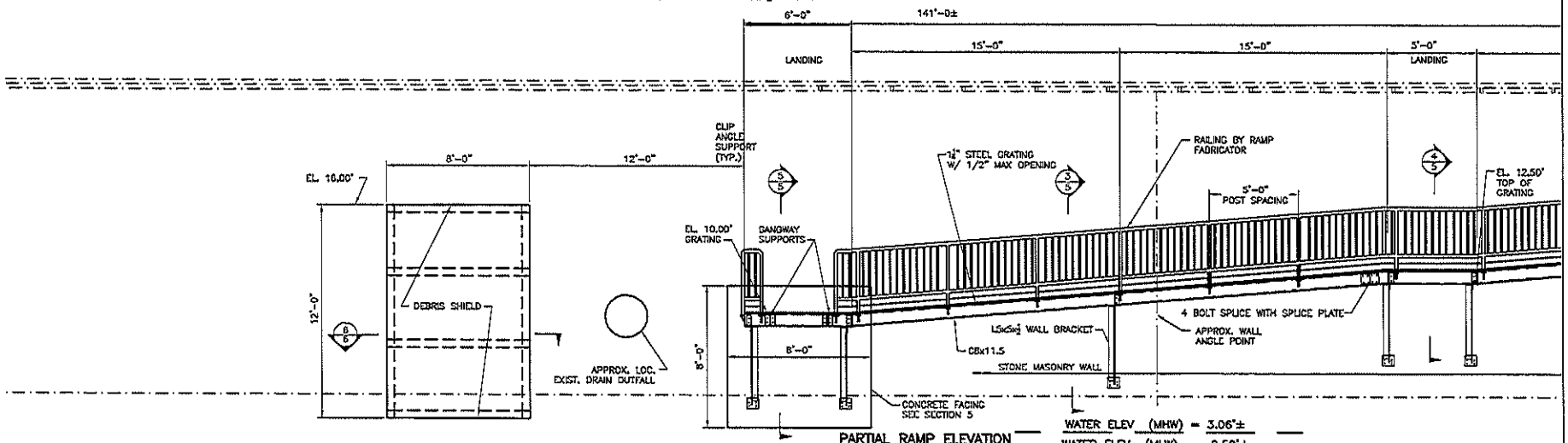
RAMP ELEVATION DETAILS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		4	8



PARTIAL RAMP ELEVATION
SCALE: ⅛" = 1'-0"



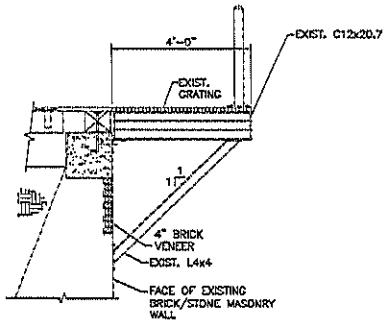
PARTIAL RAMP ELEVATION
SCALE: ⅛" = 1'-0"

AECOM
ENGINEERS • ARCHITECTS • PLANNERS
SAILING WHARF
BOSTON, MASSACHUSETTS 02110

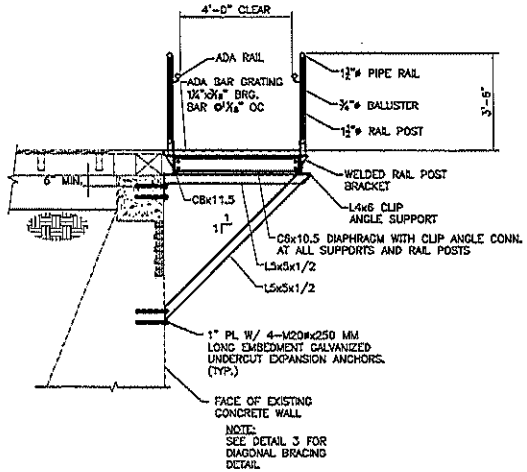
L:\Proj\07425\C201\Dock Permitting\Ramp Structure\04 Sections & Details.dwg Dec 15, 2011 - 2:25pm

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		5	6

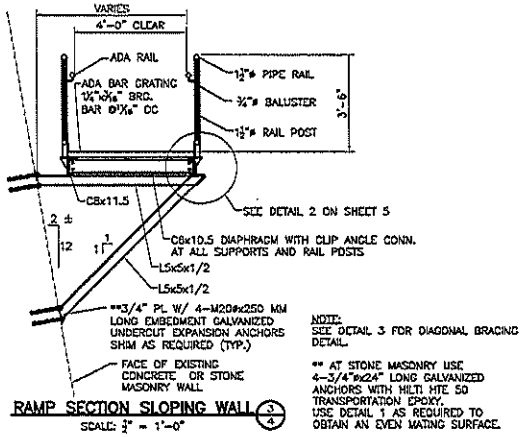
SECTIONS AND DETAILS 1



EXISTING PLATFORM SECTION (1/4)
SCALE: 3/4" = 1'-0"



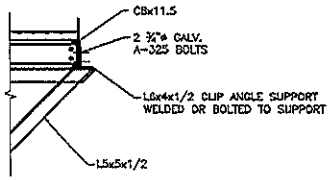
RAMP SECTION VERTICAL WALL (2/4)
SCALE: 3/4" = 1'-0"



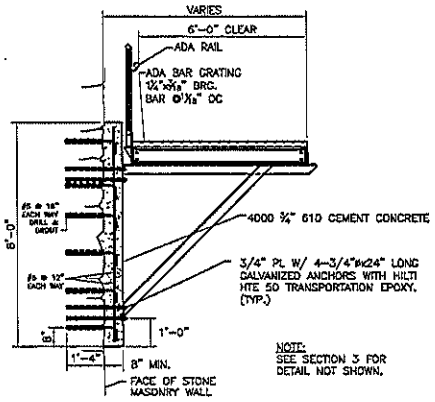
NOTE:
SEE DETAIL 3 FOR DIAGONAL BRACING DETAIL.

** AT STONE MASONRY USE 4-3/4"ø x24" LONG GALVANIZED ANCHORS WITH HILTI HTE 50 TRANSPORTATION EPOXY. USE DETAIL 1 AS REQUIRED TO OBTAIN AN EVEN MATING SURFACE.

RAMP SECTION SLOPING WALL (3/4)
SCALE: 3/4" = 1'-0"

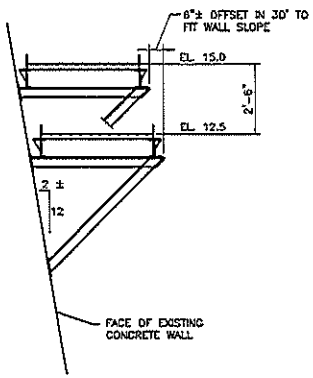


DETAIL (2/4)
SCALE: 3/4" = 1'-0"



NOTE:
SEE SECTION 3 FOR DETAIL NOT SHOWN.

RAMP SECTION MASONRY WALL (5/4)
SCALE: 3/4" = 1'-0"



CONFIGURATION AT BAY OFFSET (4/4)
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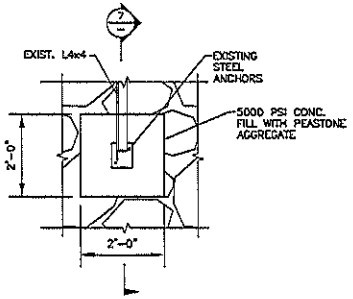
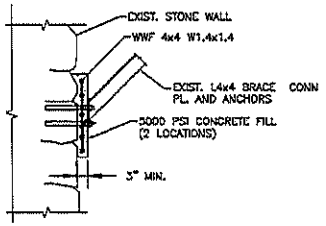
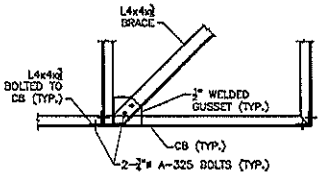


DETAIL (1/4)
SCALE: 3/4" = 1'-0"



SECTION (7/1)
SCALE: 3/4" = 1'-0"



DETAIL (4/3)
SCALE: 3/4" = 1'-0"

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ENGINEERS • ARCHITECTS • PLANNERS
65 LONG WHARF
BOSTON, MASSACHUSETTS 02110

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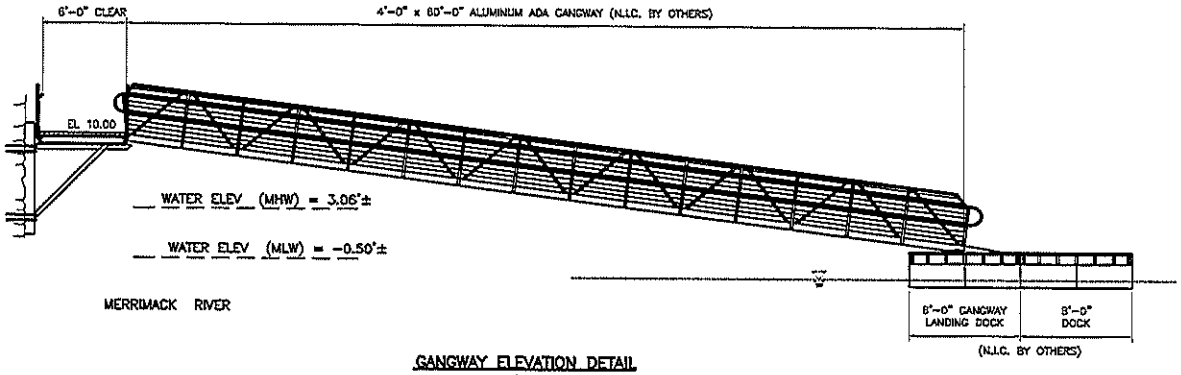
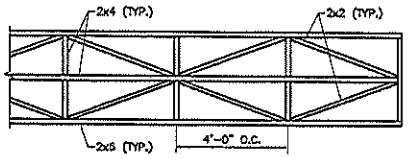
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		5	5

SECTIONS AND DETAILS 2

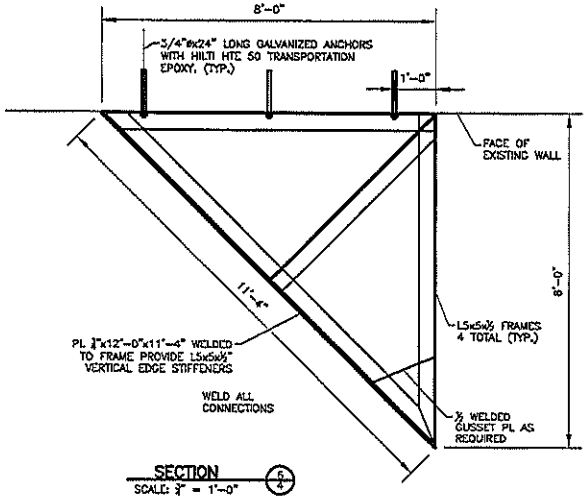


GANGWAY ELEVATION DETAIL
SCALE: ¼" = 1'-0"

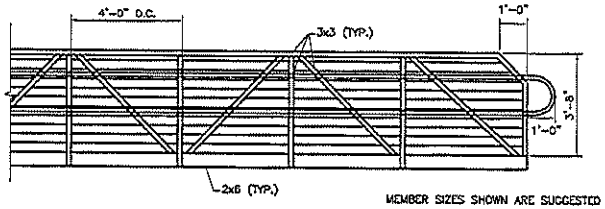


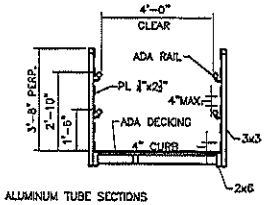
MEMBER SIZES SHOWN ARE SUGGESTED ALUMINUM TUBE SECTIONS

GANGWAY BRACING DETAIL (N.I.C. BY OTHERS)
SCALE: ¼" = 1'-0"



SECTION 4/5
SCALE: ¼" = 1'-0"





MEMBER SIZES SHOWN ARE SUGGESTED ALUMINUM TUBE SECTIONS

GANGWAY ELEVATION DETAIL (N.I.C. BY OTHERS)
SCALE: ¼" = 1'-0"

GANGWAY SECTION (N.I.C. BY OTHERS)
SCALE: ¼" = 1'-0"

AECOM ENGINEERS+ARCHITECTS+PLANNERS
94 LONG WHARF
BOSTON, MASSACHUSETTS 02110

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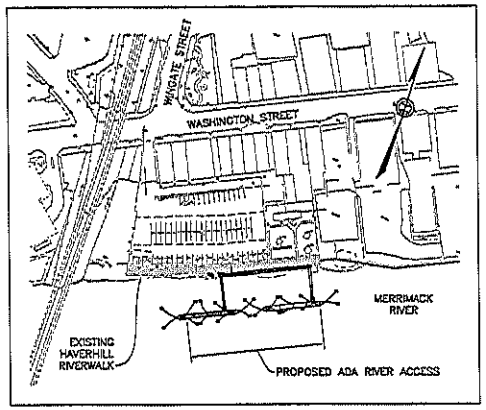
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		1	4

CITY OF HAVERHILL
MASSACHUSETTS

HAVERHILL ADA RIVER ACCESS

ESSEX COUNTY



SCALE: 1"=100'

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	GENERAL NOTES AND LEGEND
3	GENERAL PLAN & ELEVATION
4	SECTIONS & DETAILS 1

FENCE LINE
BASE or SURVEY LINE — 103 — S47°-21'-41"E — 4336.03'
RIGHT OF WAY LINE
MEAN HIGH WATER
MEAN LOW WATER
HARBOR LINE
FEDERAL NAVIGATION PROJECT

AECOM
ENGINEERS • ARCHITECTS • PLANNERS
08 LONG WHARF
BOSTON, MASSACHUSETTS 02110

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STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		2	4

GENERAL NOTES

DESIGN:

IN ACCORDANCE WITH THE MASSACHUSWTTS STATE BUILDING CODE SECOND EDITION.

RAMP LIVE LOAD	= 100 PSF
GANGWAY LIVE LOAD	= 100 PSF
FLOATING DOCK LIVE LOAD	= 40 PSF

BENCH MARK:

NAIL SET IN UTILITY POLE 795/1, LOCATED NEAR THE CONCRETE PAD AT THE ENTRANCE TO THE PARKING LOT. THE ELEVATION OF THE NAIL IS 26.97'. ALL ELEVATIONS REFER TO N.A.V.D. OF 1988.

SURVEY:

ELECTRONIC FILES WERE COMPILED FROM SURVEY. COPIES OF FILES MAY BE OBTAINED FROM AECOM, CHELMSFORD MA.

SCALES:

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS.

UTILITIES

THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE ALL EXISTING UTILITIES.

EXISTING CONDITIONS

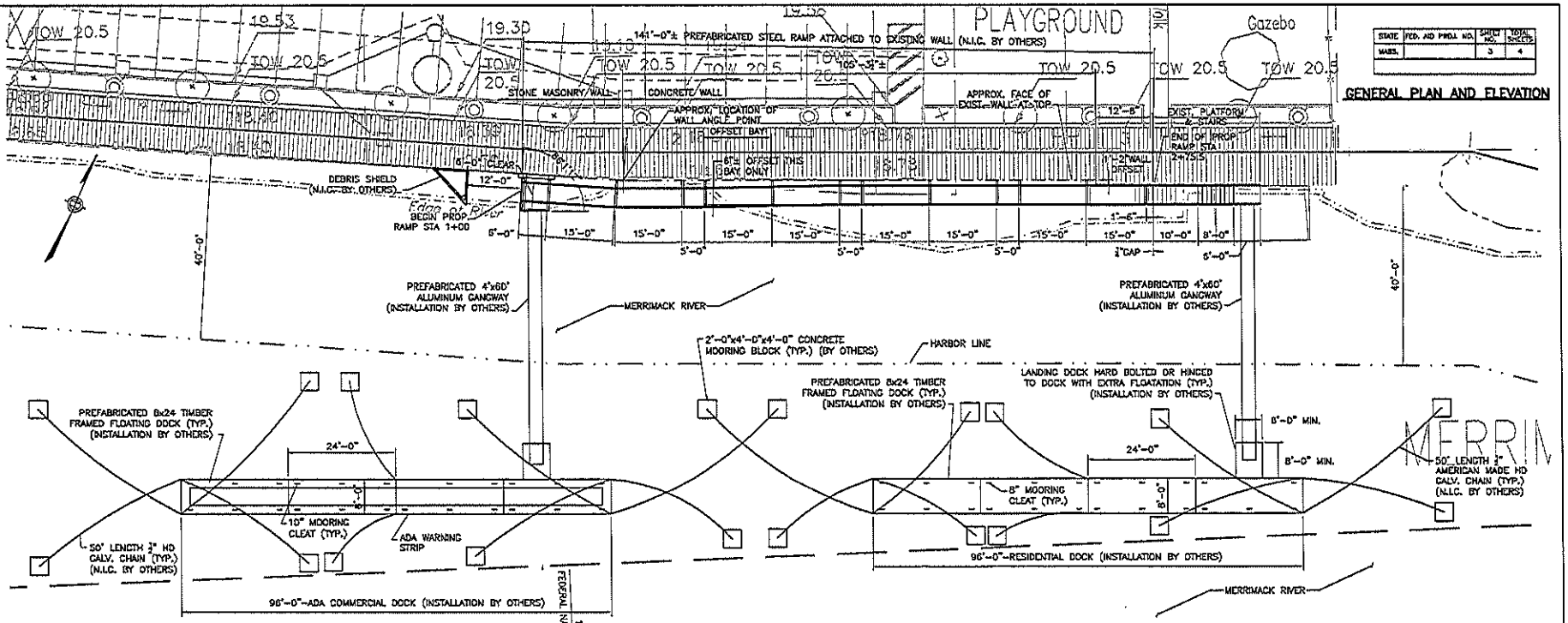
DIMENSIONS SHOWN ON EXISTING STRUCTURE ARE TAKEN FROM ORIGINAL DESIGN DRAWINGS AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND EXISTING DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENTS AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF, AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL HE/SHE HAS MADE THE REQUIRED MEASUREMENTS ON THE ACTUAL STRUCTURE AND EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER. EXISTING STRUCTURE IS SHOWN THUS: EXCEPT WHERE NOTED.

AECOM
ENGINEERS • ARCHITECTS • PLANNERS
69 LONG WHARF
BOSTON, MASSACHUSETTS 02110

L:\Work\07465\CAD\Dock Permitting\Design and Dock\02 General Notes.dwg Dec 15, 2011 - 10:57am

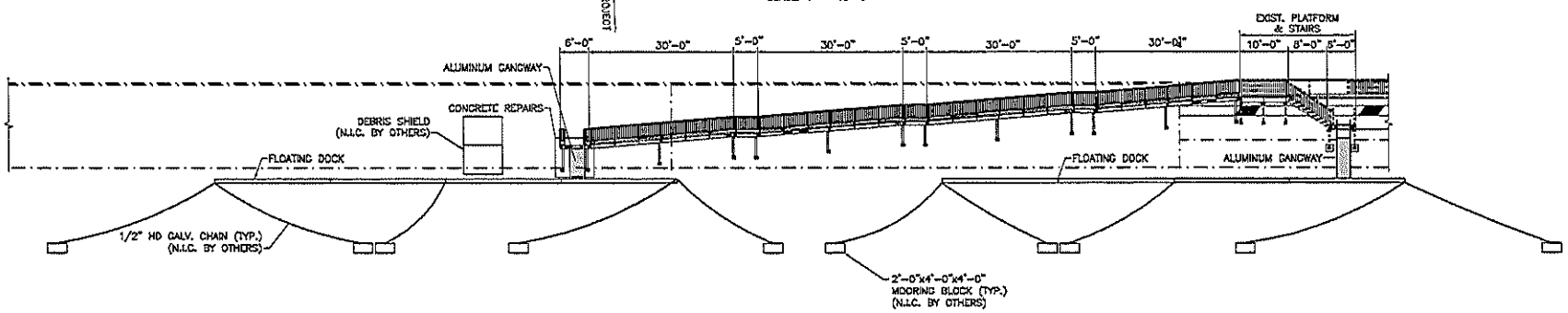
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		3	4

GENERAL PLAN AND ELEVATION



GENERAL PLAN

SCALE: 1" = 10'-0"



ELEVATION

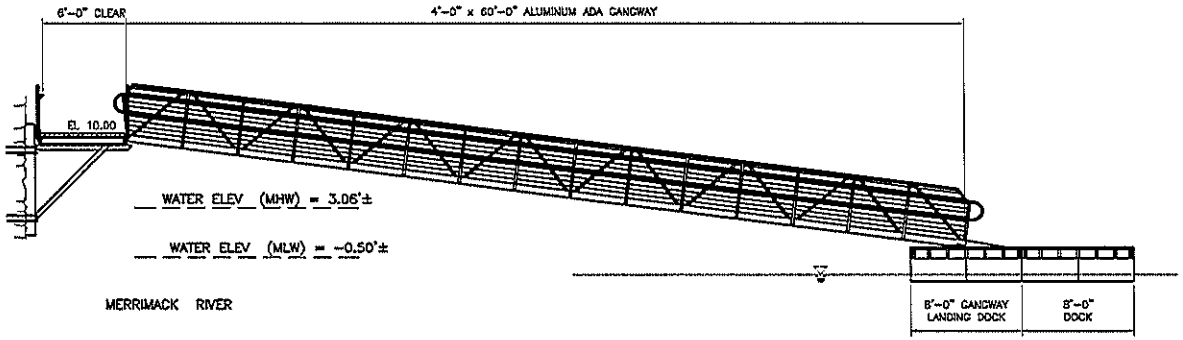
SCALE: 1" = 10'-0"

AECOM ENGINEERS • ARCHITECTS • PLANNERS
99 LONGWHARF
BOSTON, MASSACHUSETTS 02110

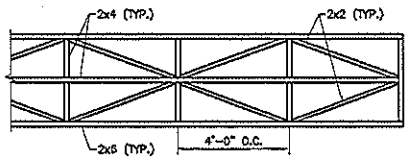
L:\proj\37459\CAD\Dock Permitting\Dongsey and Dock\03 General Plan & Elevation Dec 15, 2011 - 10:59am

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.		4	4

SECTIONS AND DETAILS

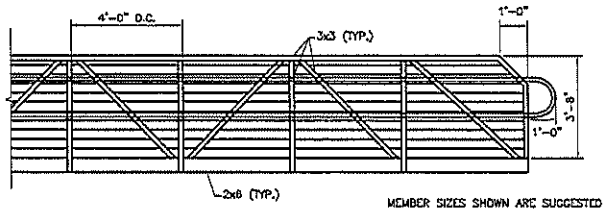


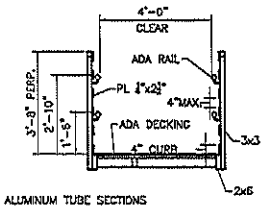
GANGWAY ELEVATION DETAIL
SCALE: 3/8" = 1'-0"



MEMBER SIZES SHOWN ARE SUGGESTED ALUMINUM TUBE SECTIONS

GANGWAY BRACING DETAIL
SCALE: 3/4" = 1'-0"





MEMBER SIZES SHOWN ARE SUGGESTED ALUMINUM TUBE SECTIONS

GANGWAY ELEVATION DETAIL
SCALE: 3/4" = 1'-0"

GANGWAY SECTION
SCALE: 3/4" = 1'-0"

AECOM
ENGINEERS • ARCHITECTS • PLANNERS
101 LONG WHARF
BOSTON, MASSACHUSETTS 02110

L:\proj\37455\000\Dock Permitting\Gangway and Dock\04 Gangway Details.dwg Dec 15, 2011 - 11:00am

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
33-1307
MassDEP File #

eDEP Transaction #

Haverhill
City/Town

A. General Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

1. From: Haverhill
Conservation Commission

2. This issuance is for (check one): a. ☒ Order of Conditions b. ☐ Amended Order of Conditions

3. To: Applicant:

James
a. First Name

Fiorentini
b. Last Name

City of Haverhill
c. Organization

4 Summer Street
d. Mailing Address

Haverhill
e. City/Town

MA
f. State

01830
g. Zip Code

4. Property Owner (if different from applicant):

a. First Name

b. Last Name

c. Organization

d. Mailing Address

e. City/Town

f. State

g. Zip Code

5. Project Location:

Washington Street
a. Street Address

Haverhill
b. City/Town

Parcel IDs: 309-1-9A, 14, 15 and
c. Assessors Map/Plat Number

310-1-15, 19
d. Parcel/Lot Number

Latitude and Longitude, if known:

42d46m19.68s
d. Latitude

71d05m07.42s
e. Longitude

A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):
Essex, South District
a. County
b. Certificate Number (if registered land)
3429
c. Book
485
d. Page

7. Dates: March 17, 2011 (a. Date Notice of Intent Filed) April 21, 2011 (b. Date Public Hearing Closed) May 24, 2011 (c. Date of Issuance)

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):
See Attachment "A", "State and Municipal Conditions", incorporated herein and made part of this Order of Conditions

b. Prepared By
c. Signed and Stamped by
d. Final Revision Date
e. Scale
f. Additional Plan or Document Title
g. Date

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:

a. ☒ Public Water Supply
b. ☒ Land Containing Shellfish
c. ☒ Prevention of Pollution
d. ☒ Private Water Supply
e. ☒ Fisheries
f. ☒ Protection of Wildlife
g. ☒ Groundwater Supply
h. ☒ Storm Damage Prevention
i. ☒ Flood Control

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

a. ☒ the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

B. Findings (cont.)

Denied because:

b. ☐ the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c. ☐ the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

3. ☒ Buffer Zone Impacts: Shortest distance between limit of project disturbance and Bank or Bordering Vegetated Wetland boundary (if available) — 0 a. linear feet

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☐ Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. ☐ Bordering Vegetated Wetland	a. square feet	b. square feet	c. square feet	d. square feet
6. ☒ Land Under Waterbodies and Waterways	182 a. square feet NA e. c/y dredged	182 b. square feet NA f. c/y dredged	0 c. square feet	0 d. square feet
7. ☐ Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. ☐ Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet

B. Findings (cont.)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
9. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. ☐ Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☐ Coastal Beaches	a. square feet	b. square feet	c. nourishment cu yd	d. nourishment cu yd
14. ☐ Coastal Dunes	a. square feet	b. square feet	c. nourishment cu yd	d. nourishment cu yd
15. ☐ Coastal Banks	a. linear feet	b. linear feet		
16. ☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17. ☐ Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. ☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. ☐ Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. ☐ Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	a. c/y dredged	b. c/y dredged		
21. ☐ Land Subject to Coastal Storm Flowage	a. square feet	b. square feet		

B. Findings (cont.)

22. ☐ Restoration/Enhancement:

a. square feet of BVW | b. square feet of salt marsh

23. ☐ Stream Crossing(s):

a. number of new stream crossings | b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. the work is a maintenance dredging project as provided for in the Act; or
   b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on May 24, 2014, unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.

10. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

    "Massachusetts Department of Environmental Protection" [or, "MassDEP"]

    "File Number 33-1307 "

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.

12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.

13. The work shall conform to the plans and special conditions referenced in this order.

14. Any change to the plans identified in Condition #12 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.

15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. **The work associated with this Order (the "Project") is** (1) ☐ **is not** (2) ☒ **subject to the Massachusetts Stormwater Standards. If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:**

a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;
iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;
v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement) for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: *i.*) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and *ii.*) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

See Attachment "A", "State and Municipal Conditions", incorporated herein and made part of this Order of Conditions.

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No
2. The Haverhill Conservation Commission hereby finds (check one that applies):
   a. ☐ that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

      1. Municipal Ordinance or Bylaw — 2. Citation

      Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

   b. ☒ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:
      An Ordinance to Protect the Wetlands, Related Water Resources and Adjoining Land Areas — Chapter 253 (2. Citation)
3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.
   The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):
   See Attachment "A", "State and Municipal Conditions", incorporated herein and made part of this Order of Conditions

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
33-1307
MassDEP File #

eDEP Transaction #
Haverhill
City/Town

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

May 24, 2011
1. Date of Issuance

Please indicate the number of members who will sign this form.
This Order must be signed by a majority of the Conservation Commission.

six
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

Brent A Bracelock
William E Bollman
Carl A Accardi
Shannon S Hurry

☒ by hand delivery on
May 24, 2011
Date

☐ by certified mail, return receipt requested, on
Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request of Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Haverhill
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Haverhill
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

Washington Street
Parcel ID: 309-1-9A, 14, 15 & 310-1-15, 19

33-1307
MassDEP File Number

Has been recorded at the Registry of Deeds of:

Essex, South District
County

Book

Page

for: _____
Property Owner

and has been noted in the chain of title of the affected property in:

Book

Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Haverhill

Economic Development and Planning
Conservation Department
Phone: 978-374-2334 Fax: 978-374-2337
rmoore@cityofhaverhill.com
conservation@cityofhaverhill.com

ATTACHMENT "A"
STATE AND MUNICIPAL CONDITIONS
DEP FILE #33-1307
CITY OF HAVERHILL
WASHINGTON STREET
PARCEL IDs: 309-1-9A, 14, 15 AND 310-1-15, 19

I. GENERAL CONSTRUCTION

1. Work on this project site shall be performed according to the following listed plans and documents. Should any conflicts be found to exist between these plans and documents and the conditions of this Order, the Haverhill Conservation Commission (HCC) shall be contacted for a clarification.
   a) Site Plan "Haverhill ADA River Access" (5 Sheets), site plan prepared by AECOM (66 Long Wharf, Boston, MA 02110), dated printed April 20, 2011, and on file with the HCC (Room 210, City Hall, 4 Summer Street, Haverhill, MA 01830).

2. All pumps, drilling machines, and their surrounding areas, whether used for dewatering or other purposes, shall be properly contained to limit the potential for environmental impacts due to fuel leakage, pump leakage, or other failures.

II. NOTIFICATION TO OTHER PARTIES

1. The applicant shall notify the Haverhill Conservation Commission, in writing, at least 48 hours before any activity commences on site. At this time the applicant shall also supply the HCC with a list of names, addresses, and emergency phone numbers for those parties responsible for compliance with this Order on the site, including the Environmental Monitor.

2. During the life of this Order, should any modifications to the wetland delineations be found to be necessary by the HCC, the applicant shall submit a modified plan reflecting these modifications.

3. The sign required under General Condition #9 of this Order shall not be attached to a live tree.

4. Any changes proposed under General Condition #13 of this Order might require the applicant to file a Request for a Modification to the Order of Conditions with the Commission.

5. While all activities regulated by this Order are being performed and during the construction phase of this project, an on-site foreman, directing engineer, or designated construction manager, shall have a copy of this

permit and its associated plans and documents at the site, familiarize him or herself with the conditions of this permit, and adhere to such conditions. This Order of Conditions shall be made part of all construction-related documents for this project. All contractors working at the site shall be made aware of the provisions contained within this Order of Conditions and adhere to them.

6. The applicant shall secure an Environmental Monitor for this project. This Monitor shall be, at a minimum, a professional with experiences in stormwater management, erosion and siltation control practices, wildlife habitat evaluation, and wetlands protection. This Monitor shall have, at a minimum, a working knowledge of botany, hydrology, and general construction practices.
   a) On the Monday of every week during the life of this project, the Environmental Monitor shall provide the HCC with a status report of the project. This report shall indicate the activities completed the previous week and those planned for the current week. The report shall also mention any deviations from the previous week's report and any environmental mitigation measures that have been undertaken. The frequency of this reporting may be altered as site conditions warrant, upon concurrence between the HCC or its representative and the Environmental Monitor.
   b) In addition to this reporting, the Environmental Monitor shall be responsible for all inspections and reporting as outlined in this Order and the referenced plans and documents pertaining to resource area activities, erosion and siltation controls, and stormwater management. The Monitor shall be on site as necessary to ensure proper implementation of the conditions of this Order and the work outlined in the referenced plans and documents.

III. CONSTRUCTION SEQUENCING

1. **Prior to the commencement of work** on this site, the applicant shall provide a detailed construction sequencing for this project to the HCC and City Engineer. This sequence shall be subject to the prior review and approval of an HCC official and the City Engineer. Should any conflicts arise between this sequencing, the conditions of this Order, and/or the general construction practices of the site contractor, a Conservation Department Official shall be contacted for a clarification.

2. **Prior to the commencement of work,** the applicant and/or contractor shall provide a written plan detailing measures to be employed for the containment of drill cuttings to prevent their deposit in the river. This plan shall be subject to the review and approval of a Conservation Department Official.

3. **Prior to the commencement of work** on this site, the applicant shall provide the HCC with a final, signed and stamped set of 100% Construction Plans to be used for the project.

4. **Prior to the commencement of work** on this site, the applicant shall submit a recorded copy of the 401 Water Quality Certificate and Chapter 91 Waterways License issued by the Department of Environmental Protection for this project (if needed) and an Army Corps of Engineers permit (if needed).

5. **Prior to the commencement of work** regulated by this Order of Conditions, pre-construction meetings shall be conducted with the site contractor, the applicant, the applicant's engineers/consultants, the Environmental Monitor, the Conservation Commission, and all other affected City Officials. The purpose of the pre-construction meetings is to review this Order of Conditions and resolve any outstanding issues at that time.

6. **Immediately following the installation of this dock system**, the applicant shall contact the Haverhill Conservation Department to schedule a site inspection for compliance with these conditions.

IV. LIMITS OF PROJECT

1. Work on this project shall be performed in accordance with Haverhill Municipal Ordinances Chapter 253 – "An Ordinance to Protect the Wetlands, Related Water Resources, and Adjoining Land Areas".

2. All wetland resource areas shall be visibly staked every 25 feet along the resource area boundaries in order to assure that no intrusion into these areas occur.

3. Flagging and staking used to identify wetland resource areas shall be of a color different from any others used on the site. The existing flagging and required staking shall be maintained until the work is complete.

4. Refueling of equipment shall not be done within 100' of a wetland resource area. No fuel, oil, or other potential pollutants shall be stored within 100' of a wetland resource area.

5. Equipment shall not be staged overnight within 100' of a wetland resource area.

6. All vegetation clearing associated with this project, including any pruning that may be necessary for the construction of this project, shall be subject to the prior review and approval of an HCC official. All approved limits of clearing and/or pruning shall be clearly identified on the site by the applicant using staking, flagging, or other appropriate means.

7. In accordance with Haverhill Municipal Ordinance Chapter 253, there shall be no activities allowed within **25'** of the delineated wetland resource areas and no building construction within **50'** of these same areas, except as shown on the approved plans referenced above.

8. No waste products, grubbed stumps, slash, cut timber, construction materials, etc. shall be deposited or accumulated within 100' of a wetland resource area. Covered dumpsters shall be maintained on site for appropriate materials.

9. No storage of debris, fill, or excavated material or the stockpiling of topsoil shall be conducted within 100' of a wetland resource area or within bordering land subject to flooding, unless approved in advance by a Conservation Department Official.

V. EROSION AND SILTATION CONTROLS

1. HCC reserves the right to require erosion control measures, as it deems necessary. The HCC reserves the right to impose additional conditions on portions of this project to mitigate any impacts which could result from site erosion or any noticeable degradation of surface water quality discharging from the site.

2. The areas of construction shall remain in a stable condition at the close of each construction day. Erosion controls should be inspected at this time, and maintained or reinforced if necessary.

3. The Environmental Monitor shall oversee any emergency placement of controls and regular inspection or replacement of erosion and sedimentation control devices. The name and phone number of the Monitor

must be provided to the HCC in the event that this person has to be contacted, due to an emergency at the site, during any 24-hour period, including weekends. This person shall be given authority to stop construction for erosion control purposes. The Environmental Monitor will be required to inspect all such devices and oversee cleaning and the proper disposal of waste products. The Monitor shall immediately correct any erosion problems that may occur on the site.

4. Upon completion of the project all disturbed areas shall be permanently stabilized with rapidly growing cover with sufficient topsoil to assure long term stabilization of disturbed areas.

5. Erosion control devices may be modified based on experience at the site. Approval of the HCC must be obtained prior to any non-emergency modification of the approved erosion and sediment control measures. All such devices shall be inspected, cleaned, or replaced during construction and shall remain in place until such time as the site is stabilized with vegetative cover.

6. Subsequent to seeding, disturbed areas are to be covered with hay mulch or jute netting in order to provide a suitable surface cover until seed germination.

7. During all phases of construction, all disturbed or exposed soil surfaces shall be brought to final finished grade and either a) covered with loam and seeded in accordance with USDA Soil Conservation Services Guidelines for permanent stabilization or b) stabilized in another way approved by the HCC. Bare ground that cannot be permanently stabilized within 30 days shall be stabilized with mulch or any other protective covering and/or method approved by the USDA Soil Conservation Service.

8. No planting of non-native or invasive plants, even if already found on this site, shall occur anywhere on this project site.

9. The locations of long term (greater than 30 days) stockpiles and the locations and construction methods of the temporary construction entrances shall receive the prior approval of an HCC official, City Engineer, and the Environmental Monitor. Any conflicts regarding these matters shall be resolved with the applicant's filing of a proposal in accordance with condition **II.**4.

VI. RESOURCE AREA ACTIVITIES

1. All work proposed within wetland resource areas and the 25'-No Disturbance Zone shall be performed according to the plans and documents submitted as part of the Notice of Intent filing, unless specified otherwise in this Order.

2. The Environmental Monitor shall be on site as needed to supervise this construction.

3. The contractor shall not disturb any area of protected or regulated Federal, State, and/or Local wetland resource area or buffer zone except for that which has been permitted by this Order.

4. The contractor shall restore all temporarily disturbed resource areas and buffer zones to the satisfaction of the HCC and the Environmental Monitor.

5. The contractor shall follow the directions of the Environmental Monitor, whether given prior to, or during, construction. If feasible, the contractor shall propose alternative environmental protection techniques that provide cost or time savings or improved environmental protection, provided (1) they provide equivalent or greater wetland protection than afforded by the methods contained in this Order and NOI and provided by the Environmental Monitor; (2) they receive prior approval by the HCC and the Environmental Monitor; and (3) they meet the Performance Standards of the Massachusetts Wetland Protection Regulations (310 CMR 10.00) and the requirements of Haverhill Municipal Ordinance Chapter 253.

VII. WILDLIFE HABITAT PROTECTION

1. The Natural Heritage and Endangered Species Program has determined that this project occurs within or immediately adjacent to the habitat for the Short-nose Sturgeon (*Acipenser brevirostrum*) and the Bald Eagle (*Haliaeetus leucocephalus*). The Environmental Monitor shall instruct all workers on this site in the identification and habitats of these species.

2. Every effort shall be made to photograph the presence of either of these species encountered within the estimated habitat area. The date, time, weather conditions, and species activity of each encounter shall be documented. This information shall be included in the Environmental Monitor's report. Sightings and documentation shall be promptly reported to the HCC.

3. The applicant shall comply with any and all conditions required by the National Marine Fisheries Service for this project.

VIII. OTHER CONDITIONS

1. If any unforeseen problem occurs during construction, which affects any of the eight statutory interests of the Wetlands Protection Act, M.G.L. Chapter 131, Section 40, upon discovery, the applicant shall notify the HCC and an immediate meeting shall be held between the Commission, the applicant, the engineer, contractor, and other concerned parties to determine the corrective measures to be employed. The applicant shall then act to correct the problems using the corrective measures agreed upon.

2. Upon completion of the project, the applicant shall request a Certificate of Compliance from the Commission and shall submit the following information with the request:
   a) A written statement by a professional engineer or land surveyor registered in the Commonwealth of Massachusetts certifying compliance with the approved plans referenced above and this Order of Conditions and setting forth deviations, if any exist;
   b) A final monitoring report prepared by the Environmental Monitor in accordance with the criteria outlined in Section **VII**.
   c) Two sets of as-built site plans prepared by a registered land surveyor or registered professional engineer showing grades, utilities, drainage systems, building footprint and detailed landscaping (i.e. all wetland resource areas, limits of work, etc.). These plans shall include the date(s) of fieldwork and shall be prepared in accordance with the "Plot Plan Standards" of the HCC Policy - P2000-02 "Occupancy Permit Checklist Endorsement".

IX. ONGOING CONDITIONS

Certain conditions are ongoing and do not expire upon the completion of the project or the issuance of a Certificate of Compliance. These conditions shall remain in effect after the issuance of a Certificate of Compliance for the project and shall be referenced in the chain of title for the property. These conditions are:

1. The Haverhill Conservation Commission reserves the right to enforce any and all restrictions and/or requirements established for this property within this Order of Conditions under the enforcement powers of the City's wetlands protection ordinance, Municipal Ordinance Chapter 253.

2. There shall be no storage of deleterious or hazardous materials on the dock system

3. Prior to the completion of this project, the applicant shall collect and remove all trash, compost, and loose man-made debris from the site. Following the completion of the project, the applicant shall conduct routine litter pick-ups on the site to prevent debris from entering the river.

5. No vegetation pruning shall take place on this site for the installation of the dock system without the prior review and approval of a Conservation Department Official.

6. All floats, ramps, and other seasonal structures shall be removed from the river from October 15th to April 1st and stored in an upland location.

7. No creosote or other chemical coating of the structures shall be allowed.

8. Deck spacing on the docks shall be a minimum of ¾" between boards to allow for light penetration to the land under the dock structures.

9. At no time shall any float sections be positioned over or within 25' of any Special Aquatic Sites (vegetated shallows, mudflats, wetlands, and riffles and pools) along the river. Vessels using the proposed dock shall not be moored over Special Aquatic Sites.

10. Boats shall not be fueled on site.

11. The dock sections shall be constructed with float stops or "feet" on their bottom-side corners to prevent them from lying on the land under the dock during periods of low flow. Floats shall be supported a minimum of 2.5' above the substrate during all tides.

12. Following the installation of this system, the applicant shall contact the Haverhill Conservation Department to schedule a site inspection for compliance with these stipulations.

13. It is suggested that the applicant maintain a minimum offset of 25' from his lines of riparian rights with the proposed dock system. Should less than a 25' offset be desired or necessary, then it is suggested that the applicant consult with the abutting landowner to determine the potential for future dock/boating conflicts.

14. Installation and removal of the floats shall be from the water, not from the land.

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Deval L. Patrick
GOVERNOR

Timothy P. Murray
LIEUTENANT GOVERNOR

Richard K. Sullivan, Jr.
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/envir

April 8, 2011

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
NOTICE OF PROJECT CHANGE

PROJECT NAME	: Haverhill-Merrimack River Walkway
PROJECT MUNICIPALITY	: City of Haverhill
PROJECT WATERSHED	: Merrimack River
EEA NUMBER	: 14097
PROJECT PROPONENT	: City of Haverhill
DATE NOTICED IN MONITOR	: March 9, 2011

Pursuant to the Massachusetts Environmental Policy Act (G. L. c. 30, ss. 61-62I) and Section 11.10 of the MEPA regulations (301 CMR 11.00), I have reviewed the Notice of Project Change (NPC) submitted for this project and hereby determine that this project **does not require** the preparation of an Environmental Impact Report (EIR).

A Certificate on the Environmental Notification Form (ENF) for this project was issued on October 10, 2007. An EIR was not required. The proposed project at that time consisted of development of a 2.5 mile walkway forming a loop that circles the Merrimack River between the Upper County/Joseph C. Comeau Bridge and the Basiliere Bridge (Route 125). The purpose of the project is to increase visual, pedestrian and recreational access to the river, and it was proposed in two phases (Task A and Task B). The proposed project change expands the project to include construction of a new permanent ramp adjacent to an existing staircase, and temporary gangways and floating docks within the Merrimack River in support of a boating facility to be operated by the Proponent, the City of Haverhill. The proposed facility will provide temporary floating docks for commercial, residential and/or transient purposes.

The work for the proposed boating facility will take place on the waterside of the existing flood wall and will not require any material changes to the land-based elements of the project as proposed in the ENF. Task A has been completed recently and includes renovation of an existing

The Notice of Intent (NOI) for the project should clarify impacts to Short-nose Sturgeon habitat (NPC estimates 182 sf of impact on page 5 and 782 sf on page 3-2). The NOI should also describe and quantify impacts to Bank resources.

Rare Species

The proposed project occurs within or immediately adjacent to the habitat for Short-nose Sturgeon (*Acipenser brevirostrum*) and the Bald Eagle (*Halieaectus leucocephalus*), which are state-listed as Endangered species and protected pursuant to the Massachusetts Endangered Species Act (MESA) and its implementing regulations (310 CMR 10.00).

The proposed boating facility will involve work within the Merrimack River in a known Short-nose Sturgeon spawning area. The project may require timing restrictions to avoid interference with this species during its spawning period. Other measures to protect Short-nose Sturgeon during construction may also be required. The City of Haverhill should consult directly with the National Marine Fisheries Service (NMFS) to determine if NMFS will require any timing, construction or use-related restrictions. The City should also consult with NHESP regarding potential impacts and protective measures for the Bald Eagle and provide NMFS with an update on NMFS consultations. NHESP is available for consultation with the City in advance of a formal MESA filing and indicates in its comment letter that it is confident that rare species concerns can be resolved.

Cultural Resources

The Board of Underwater Archaeological Resources (Board) indicates in its comment letter that the project is unlikely to adversely impact submerged cultural resources. I refer the City to the Board's comment letter for guidance if any resources are encountered.

Conclusion

I am satisfied that any remaining environmental issues associated with the proposed boating facility can be adequately addressed during the state and local permit and review processes. The project as proposed in the NPC requires no further review under MEPA.

April 8, 2011
DATE

Richard K. Sullivan Jr.
Secretary

Comments Received:

3/28/2011	Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program
3/28/2011	Massachusetts Board of Underwater Archaeological Resources
3/29/2011	Massachusetts Department of Environmental Protection

RKS/AOS/aos

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

City of Haverhill
c/o AECOM
250 Apollo Drive
Chelmsford, MA 01824
Attn: Thomas Keough

SEP 13 2011

RE: ISSUANCE OF CHAPTER 91 WATERWAYS LICENSE
Waterways License Application No. W11-3337, License No. 13104
Merrimack River, Haverhill, Essex County

Dear Licensee,

The Department of Environmental Protection hereby issues the above-referenced Waterways license, enclosed, authorizing you to perform certain activities pursuant to M.G.L. c. 91, the Public Waterfront Act and its regulations 310 CMR 9.00. Any change in use or alteration of any structure or fill not authorized by this license shall render this license void.

This License is not final until all administrative appeal periods from this License have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed. The appeal period is for twenty-one (21) days. No work shall be undertaken until the License has become final and has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property

RECORDING OF THE LICENSE

This License must be recorded at the County Registry of Deeds or, if registered land, with the Land Registration Office within sixty (60) days from the date of license issuance. In the case of recorded land, the License shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the project is located. In the case of the registered land, the License shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the project is located. **Failure to record this license within sixty (60) days of the date of issuance will render this license void pursuant to 310 CMR 9.18.**

A Waterways License Recordation Notice Form has been enclosed for your use in notifying the Department of the recording information for this License. **Failure to notify the Department of the recording of this license is a violation of 310 CMR 9.00 and is subject to enforcement action by the Department.**

REQUEST CERTIFICATE OF COMPLIANCE

Pursuant to 310 CMR 9.19, once the proposed project is completed you must file a Request for a Certificate of Compliance form, BRP WW05, within sixty (60) days of completion but in no event

later than five (5) years from the License's issuance date. The license for any project for which such a request is not filed and certificate issued may be revoked pursuant to 310 CMR 9.26.

APPEAL RIGHTS AND TIME LIMITS

The following persons shall have the right to an adjudicatory hearing concerning this decision by the Department to grant or deny a license or permit, in accordance with 310 CMR 9.17(1): (a) an applicant who has demonstrated property rights in the lands in question, or which is a public agency; (b) any person aggrieved by the decision of the Department to grant a license or permit who has submitted written comments within the public comment period; (c) ten (10) residents of the Commonwealth who, pursuant to M.G.L. c. 30A, § 10A, have submitted comments within the public comment period with at least 5 of the 10 residents residing in the municipality(s) in which the license or permitted activity is located. The appeal shall clearly and specifically state the facts and grounds for the appeal and the relief sought, and each appealing resident shall file an affidavit stating the intent to be part of the group and to be represented by its authorized representative; (d) the municipal official in the affected municipality who has submitted written comments within the public comment period; and (e) CZM, for any project identified in 310 CMR 9.13(2) (a) for CZM participation or, in an Ocean Sanctuary, if it has filed a notice of participation within the public comment period.

A person requesting an adjudicatory hearing must submit a "Notice of Claim" to the Department, with a copy of the MassDEP Transmittal Form and including the detail specified below, within twenty-one (21) days of the date of issuance of this decision. The MassDEP Fee Transmittal Form is available at the following website: http://www.mass.gov/dep/service/adr/adjherfm.doc. The Notice of Claim must be made in writing and sent by certified mail or hand delivery to:

Case Administrator
MassDEP
One Winter Street, 2nd Floor
Boston, MA 02108

A copy of the complete Notice of Claim must be sent at the same time by certified mail or hand delivery to: (1) the applicant, (2) the municipal official of the city or town where the project is located, and (3) the issuing office of the MassDEP, which in this case is located at:

MassDEP Waterways Regulation Program
One Winter Street, 5th Floor
Boston, MA 02108

The MassDEP Fee Transmittal Form and a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars ($100) must be mailed to:

Mass. Department of Environmental Protection
Commonwealth Master Lockbox
P.O. Box 4062
Boston, Massachusetts 02211

CONTENTS OF APPEAL REQUEST

Pursuant to 310 CMR 9.17(3), any Notice of Claim requesting an adjudicatory hearing must include the following information:

(a) the MassDEP Waterways Application File Number;
(b) the complete name, address, fax number and telephone number of the applicant;
(c) the address of the project;
(d) the complete name, address, fax number, and telephone number of the party filing the request and, if represented by counsel, the name, address, fax number, and phone number of the attorney;

(e) if claiming to be a person aggrieved, the specific facts that demonstrate that the party satisfies the definition of "aggrieved person" found in 310 CMR 9.02;

(f) a clear statement that a formal adjudicatory hearing is being requested;

(g) a clear statement of the facts which are the grounds for the proceedings, the specific objections to the MassDEP's written decision, and the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written decision; and

(h) a statement that a copy of the request has been sent to: the applicant and the municipal official of the city or town where the project is located.

DISMISSAL OF REQUEST

The request for appeal will be dismissed if the filing fee is not paid, unless the appellant is exempt or is granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

Please feel free to contact David B. Slagle of the Waterways Regulation Program, (617) 654-6640, if you have any questions pertaining to the recording of your Waterways license or Certificate of Compliance.

Sincerely,

Ben Lynch
Program Chief
Waterways Regulation Program

cc: Haverhill, Mayor and City Council
Haverhill, Conservation Commission
Haverhill, Planning Board
Haverhill, Harbormaster

Ecc: DEP/NE Wetlands File #
EOEEA, MEPA Unit File #

Enclosure(s) Waterways License # **13104**
Notification of Waterways License Recordation form

Michael Girvan
Waterways Regulation Program
Department of Environmental Protection
1 Winter Street, 5th Floor
Boston, Massachusetts 02108

RE: NOTIFICATION OF RECORDING THE WATERWAYS LICENSE
Waterways License No. 13104
Merrimack River, Haverhill, Essex County

Dear Mr. Girvan:

This is to notify you that the above referenced Waterways license was recorded with the appropriate Registry of Deeds/ Land Court for this project location and to provide your office with the following recordation information.

Date of Recordation: _____
County Registry of Deeds/ Land Court: _____
Book number_____, and page number(s) _____.

We will apply for a Certificate of Compliance with your office when the authorized work or change in use is completed.

Sincerely,

_____, Chapter 91 Waterways Licensee

License is void if not recorded within sixty (60) days of issuance.

The Commonwealth of Massachusetts

No. 13104

Whereas, City of Haverhill

of -- Haverhill --, in the County of -- Essex -- and Commonwealth aforesaid, has applied to the Department of Environmental Protection for license to -- construct and maintain a cantilevered access ramp; and maintain existing platform and stairs -----

and has submitted plans of the same; and whereas due notice of said application has been given, as required by law, to the -- Mayor and City Council -- of the -- City of Haverhill; ---------

NOW, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor, authorizes and licenses the said

-- City of Haverhill --, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to -- construct and maintain a cantilevered access ramp; and maintain existing platform and stairs -----

in and over filled tidelands of -- Merrimack River -- at rear of 130 Washington Street -- in the -- City -- of -- Haverhill -- and in accordance with the locations shown and details indicated on the accompanying DEP License Plan No. 13104, (3 sheets).

PRINTED ON RECYCLED PAPER

The structures hereby authorized shall be limited to the following uses: to provide commercial/noncommercial docking and boating access to navigable waters.

SPECIAL WATERWAYS CONDITIONS

This license shall have an unlimited term.

The seasonal dock system, gangways and bottom anchored floats, are not permitted under this license and these structures will need to obtain an annual Harbormaster's 10A permit, due to the structures being seaward of the State Harbor Line.

All work authorized herein shall be completed within five (5) years of the date of license issuance. Said construction period may be extended by the Department for one or more one year periods without public notice, provided that the Applicant submits to the Department thirty (30) days prior to the end of the construction period, a written request to extend the period and provides adequate justification for said extension.

Within sixty (60) days of completion of the licensed project, the Licensee shall request in writing that the Department issue a Certificate of Compliance in accordance with 310 CMR 9.19. The request shall be accompanied by a certification by a registered professional engineer licensed in the Commonwealth that the project was completed in accordance with the License.

Please see page 3 for additional conditions to this license.

Duplicate of said plan, number 13104 on file in the office of said Department, and original of said plan accompanies this License, and is to be referred to as a part hereof.

STANDARD WATERWAYS LICENSE CONDITIONS

1. Acceptance of this Waterways License shall constitute an agreement by the Licensee to conform to all terms and conditions stated herein.

2. This License is granted upon the express condition that any and all other applicable authorizations necessitated due to the provisions hereof shall be secured by the Licensee prior to the commencement of any activity or use authorized pursuant to this License.

3. Any change in use or any substantial structural alteration of any structure or fill authorized herein shall require the issuance by the Department of a new Waterways License in accordance with the provisions and procedures established in Chapter 91 of the Massachusetts General Laws. Any unauthorized substantial change in use or unauthorized substantial structural alteration of any structure or fill authorized herein shall render this Waterways License void.

4. This Waterways License shall be revocable by the Department for noncompliance with the terms and conditions set forth herein. This license may be revoked after the Department has given written notice of the alleged noncompliance to the Licensee and those persons who have filed a written request for such notice with the Department and afforded them a reasonable opportunity to correct said noncompliance. Failure to correct said noncompliance after the issuance of a written notice by the Department shall render this Waterways License void and the Commonwealth may proceed to remove or cause removal of any structure or fill authorized herein at the expense of the Licensee, its successors and assigns as an unauthorized and unlawful structure and/or fill.

5. The structures and/or fill authorized herein shall be maintained in good repair and in accordance with the terms and conditions stated herein and the details indicated on the accompanying license plans.

6. Nothing in this Waterways License shall be construed as authorizing encroachment in, on or over property not owned or controlled by the Licensee, except with the written consent of the owner or owners thereof.

7. This Waterways License is granted subject to all applicable Federal, State, County, and Municipal laws, ordinances and regulations including but not limited to a valid final Order of Conditions issued pursuant to the Wetlands Protection Act, G.L. Chapter 131, s.40.

8. This Waterways License is granted upon the express condition that the use of the structures and/or fill authorized hereby shall be in strict conformance with all applicable requirements and authorizations of the DEP.

9. This License authorizes structure(s) and/or fill on:

__ Private Tidelands. In accordance with the public easement that exists by law on private tidelands, the licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof.

X Commonwealth Tidelands. The Licensee shall not restrict the public's right to use and to pass freely, for any lawful purpose, upon lands lying seaward of the low water mark. Said lands are held in trust by the Commonwealth for the benefit of the public.

__ a Great Pond of the Commonwealth. The Licensee shall not restrict the public's right to use and to pass freely upon lands lying seaward of the high water mark for any lawful purpose.

__ Navigable River or Stream. The Licensee shall not restrict the public's right to use and to pass freely, for any lawful purpose, in the waterway.

No restriction on the exercise of these public rights shall be imposed unless otherwise expressly provided in this license.

10. Unless otherwise expressly provided by this license, the licensee shall not limit the hours of availability of any areas of the subject property designated for public passage, nor place any gates, fences, or other structures on such areas in a manner that would impede or discourage the free flow of pedestrian movement thereon.

The amount of tidewater displaced by the work hereby authorized has been ascertained by said Department, and compensation thereof has been made by the said -- City of Haverhill -- by paying into the treasury of the Commonwealth -- zero dollars and zero cents ($0.00)-- for each cubic yard so displaced, being the amount hereby assessed by said Department. (0.0 cu. yds. = $0.00)

Nothing in this License shall be so construed as to impair the legal rights of any person. This License shall be void unless the same and the accompanying plan are recorded within 60 days from the date hereof, in the Registry of Deeds for the County of -- Essex -------

IN WITNESS WHEREAS, said Department of Environmental Protection have hereunto set their hands this 13th day of September in the year two thousand and eleven

Commissioner _____ Department of Environmental Protection

Program Chief _____

THE COMMONWEALTH OF MASSACHUSETTS

This license is approved in consideration of the payment into the treasury of the Commonwealth by the said -- City of Haverhill

-- the further sum of -- zero dollars and zero cents ($0.00) --

the amount determined by the Governor as a just and equitable charge for rights and privileges hereby granted in the land of the Commonwealth.

BOSTON,

Approved by the Governor.

_____
Governor

ELECTRIC LIGHT
COMPANY INC.

One Morgan Way Cape Neddick, ME 03902 207-361-1234

October 13, 2011

Michael Lavoie
Haverhill Fire Department
4 Summer Street
Haverhill, MA 01830
FAX 978-373-8464

RE: Traffic signals at Kenoza / Webster

Dear Mike,

We are pleased to quote you on the installation of a video camera and processor for Webster Street. The total cost would be $7,400.00 including a 2 channel processer for a future camera.

This quotation does not include the cost for any police details, or the cost for any permits, fees or taxes required by any State, municipal or utility agency.

Sincerely,
Electric Light Company, Inc

Kenneth Miller
President

Jane

ELECTRIC LIGHT
COMPANY INC.

One Morgan Way Cape Neddick, ME 03902 207-361-1234

October 13, 2011

Michael Lavoie
Haverhill Fire Department
4 Summer Street
Haverhill, MA 01830
FAX 978-373-8464

RE: Traffic Signals at Kenoza / Webster Streets

Dear Mike,

We are pleased to quote you on the complete removal of the traffic signals. Included is the removal of all signal equipment, signal foundations and patching of the sidewalks. The total cost would be $10,500.00

This quotation does not include the cost for any police details, or the cost for any permits, fees or taxes required by any State, municipal or utility agency.

Sincerely,
Electric Light Company, Inc

Kenneth Miller
President

done

Reply

To: richardborden
Date: 03/02/2012
Subject: Award Notification (Application Number: EMW-2011-FO-05818)
From: firegrants@dhs.gov

Congratulations!

Your grant application submitted under the Grant Programs Directorate's (DHS) FY 2011 Assistance to Firefighters Grant Program has been approved for award. Please go to https://portal.fema.gov to accept or decline your award. This will take you to the Assistance to Firefighters eGrants system. Enter your User Name and Password as requested on the login screen. Your User Name and Password are the same as those used to complete the application on-line.

Once you are in the system, the Status page will be the first screen you see. On the right side of the Status screen, you will see a column entitled Action. In this column, please select the View Award Package from the drop down menu. Click Go to view your award package and indicate your acceptance or declination of award. PLEASE NOTE: your period of performance has begun. If you wish to accept your grant, you should do so immediately. When you have finished, we recommend printing your award package for your records.

If you accept your award, you will see a link on the left side of the screen that says Update 1199A in the Action column. Click this link. This link will take you to the SF-1199A, Direct Deposit Sign-up Form. Please complete the SF-1199A on-line if you have not done so already. When you have finished, you must submit the form electronically. Then, using the Print 1199A Button, print a copy and take it to your bank to have the bottom portion completed. Make sure your application number is on the form. After your bank has filled out their portion of the form, you must fax a copy of the form to FEMA's SF-1199 Processing Staff at 301-998-8699. You should keep the original form in your grant files. After the faxed version of your SF 1199A has been reviewed you will receive an email indicating the form is approved. After which you will be able to request payments online. If you have any questions regarding your SF-1199A, please call 1-866-274-0960.

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U.S. Department of Homeland Security
Washington, D.C. 20472

FEMA

Mr. Richard Borden
Haverhill Fire Department
4 Summer Street Rm 113
Haverhill, Massachusetts 01830-5843

Re: Grant No.EMW-2011-FO-05818

Dear Mr. Borden:

On behalf of the Federal Emergency Management Agency (FEMA) and the Department of Homeland Security (DHS), I am pleased to inform you that your grant application submitted under the FY 2011 Assistance to Firefighters Grant has been approved. FEMA's Grant Programs Directorate (GPD), in consultation with the U.S. Fire Administration (USFA), carries out the Federal responsibilities of administering your grant. The approved project costs total to $399,480.00. The Federal share is 80 percent or $319,584.00 of the approved amount and your share of the costs is 20 percent or $79,896.00.

As part of your award package, you will find Grant Agreement Articles. Please make sure you read and understand the Articles as they outline the terms and conditions of your grant award. Maintain a copy of these documents for your official file. **You establish acceptance of the grant and Grant Agreement Articles when you formally receive the award through the AFG online system.** By accepting the grant, you agree not to deviate from the approved scope of work without prior written approval from FEMA.

If your SF 1199A has been reviewed and approved, you will be able to request payments online. Remember, you should request funds when you have an immediate cash need.

If you have any questions or concerns regarding the awards process or how to request your grant funds, please call the helpdesk at 1-866-274-0960.

Elizabeth M. Harman

Elizabeth M. Harman
Assistant Administrator
Grant Programs Directorate

Article III - Period of Performance

The period of performance shall be from **24-FEB-12 to 23-FEB-13.**

Article IV - Amount Awarded

The amount of the award is detailed on the Obligating Document for the Award attached to these articles. Following are the budgeted estimates for each object class of this grant (including Federal share plus grantee match):

Personnel	$0.00
Fringe Benefits	$0.00
Travel	$0.00
Equipment	$398,980.00
Supplies	$0.00
Contractual	$0.00
Construction	$0.00
Other	$500.00
Indirect Charges	$0.00
Total	$399,480.00

NEGOTIATION COMMENTS IF APPLICABLE

If you have any questions pertaining to your award package, please contact your GPD Grants Management Specialist Ramesa Pitts at Ramesa.Pitts@dhs.gov

Article V - Financial Guidelines

The grantee and any subgrantee shall comply with the most recent version of the Administrative Requirements, Cost Principles, and Audit Requirements. A non-exclusive list of regulations commonly applicable to FEMA grants are listed below:

A. *Administrative Requirements*

1. 44 CFR Part 13, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments
2. 2 CFR Part 215, Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations (OMB Circular A-110)

B. *Cost Principles*

1. 2 CFR Part 225, Cost Principles for State, Local, and Indian Tribal Governments (OMB Circular A-87)
2. 2 CFR Part 220, Cost Principles for Educational Institutions (OMB Circular A-21)
3. 2 CFR Part 230, Cost Principles for Nonprofit Organizations (OMB Circular A-122)
4. Federal Acquisition Regulations (FAR), Part 31.2 Contract Cost Principles and Procedures, Contracts with Commercial Organizations

C. *Audit Requirements*

1. OMB Circular A-133, Audits of States, Local Governments, and Nonprofit Organizations

Article VI - Prohibition on Using Federal Funds

Recipient understands and agrees that it cannot use any federal funds, either directly or indirectly, in support of the enactment, repeal, modification or adoption of any law, regulation or policy, at any level of government, without the express prior written approval of FEMA.

Article VII - GPD Allocations

The recipient agrees that all allocations and use of funds under this grant will be in accordance with the FY 2011 Assistance to Firefighters Grant Program guidance and application kit.

Article VIII - Financial Reporting

Recipients of any Assistance to Firefighters Grants will be required to submit a semi-annual Federal Financial Report (FFR) via the automated system on the Standard Form 425. The FFR is intended to provide Federal agencies and grant recipients with a standard format and consistent reporting requirements throughout the government. The FFR, to be submitted using the online e-grant system, will be due semi-annually based on the calendar year beginning with the period after the award is made. Grant recipients will be required to submit a FFR throughout the entire period of performance of the grant.

The reporting periods for the FFR are January 1 through June 30 (Report due by July 31), and July 1 through December 31 (Report due by January 30).

At the end of the grant's period of performance, all grantees are required to produce a final report on how the grant funding was used and the benefits realized from the award. Grantees must submit a final financial report and a final performance report within 90 days after the end of the period of performance.

Article IX - FEMA Officials

Program Officer: Catherine Patterson is the Program Officer for the Assistance to Firefighters Grant Program. The Program Officer is responsible for the technical monitoring of the stages of work and technical performance of the activities described in the approved grant application.

Grants Assistance Officer: Jane Early is the Assistance Officer for this grant program. The Assistance Officer is the Federal official responsible for negotiating, administering, and executing all grant business matters.

Grants Management Division POC: The Grants Management Specialist shall be contacted to address all financial and administrative grant business matters for this award. If you have any questions regarding your grant please call ASK-GMD at 866-927-5646 to be directed to a specialist.

FEDERAL EMERGENCY MANAGEMENT AGENCY
OBLIGATING DOCUMENT FOR AWARD/AMENDMENT

1a. AGREEMENT NO.
EMW-2011-FO-05818

2. AMENDMENT NO.
0

3. RECIPIENT NO.
04-6001392

4. TYPE OF ACTION
AWARD

5. CONTROL NO.
W482946N

6. RECIPIENT NAME AND ADDRESS
Haverhill Fire Department
4 Summer Street Rm 113
Haverhill
Massachusetts, 01830-5843

7. ISSUING OFFICE AND ADDRESS
Grant Programs Directorate
500 C Street, S.W.
Washington DC, 20528-7000
POC: Jane Early

8. PAYMENT OFFICE AND ADDRESS
FEMA, Financial Services Branch
500 C Street, S.W., Room 723
Washington DC, 20472

9. NAME OF RECIPIENT PROJECT OFFICER
Richard Borden

PHONE NO.
9783738460

10. NAME OF PROJECT COORDINATOR
Catherine Patterson

PHONE NO.
1-866-274-0960

11. EFFECTIVE DATE OF THIS ACTION
24-FEB-12

12. METHOD OF PAYMENT
SF-270

13. ASSISTANCE ARRANGEMENT
Cost Sharing

14. PERFORMANCE PERIOD
From:24-FEB-12 To:23-FEB-13

Budget Period
From:31-OCT-11 To:30-SEP-12

15. DESCRIPTION OF ACTION
a. (Indicate funding data for awards or financial changes)

PROGRAM NAME ACRONYM	CFDA NO.	ACCOUNTING DATA (ACCS CODE) XXXX-XXX-XXXXXX-XXXXX-XXXX-XXXX-X	PRIOR TOTAL AWARD	AMOUNT AWARDED THIS ACTION + OR (-)	CURRENT TOTAL AWARD	CUMMULATIVE NON-FEDERAL COMMITMENT
AFG	97.044	2012-M1-3007RG-10000000-4101-D	$0.00	$319,584.00	$319,584.00	$79,896.00
		TOTALS	$0.00	$319,584.00	$319,584.00	$79,896.00

b. To describe changes other than funding data or financial changes, attach schedule and check here.
N/A

16a. FOR NON-DISASTER PROGRAMS: RECIPIENT IS REQUIRED TO SIGN AND RETURN THREE (3) COPIES OF THIS DOCUMENT TO FEMA (See Block 7 for address)

Assistance to Firefighters Grant recipients are not required to sign and return copies of this document. However, recipients should print and keep a copy of this document for their records.

16b. FOR DISASTER PROGRAMS: RECIPIENT IS NOT REQUIRED TO SIGN

This assistance is subject to terms and conditions attached to this award notice or by incorporated reference in program legislation cited above.

17. RECIPIENT SIGNATORY OFFICIAL (Name and Title)
N/A

DATE
N/A

18. FEMA SIGNATORY OFFICIAL (Name and Title)
Jane Early

DATE
23-FEB-12

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