DECEMBER 9, 2019
REHABILITATION OF BRIDGE NO. 00980B
I-84 TR 826 OVER CONNECTICUT RIVER
FEDERAL AID PROJECT NO. 0843(241)

STATE PROJECT NO. 0063-0712
CITY OF HARTFORD

ADDENDUM NO.1

SPECIAL PROVISIONS

NEW SPECIAL PROVISIONS

The following Special Provisions are hereby added to the Contract:

- ITEM NO. 0511301A – REMOVAL OF EXISTING BRIDGE DRAINAGE SYSTEM
- ITEM NO. 0512024A – 12" PIPE FOR BRIDGE DRAINAGE – (FIBERGLASS)
- ITEM NO. 0520032A – ELASTOMERIC CONCRETE HEADER
- ITEM NO. 0601756.62A – CLASS PCC05562
- ITEM NO. 0603729A – LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL
- ITEM NO. 0703022A – RESET EXISTING RIPRAP

REVISED SPECIAL PROVISION

The following Special Provision is hereby deleted in their entirety and replaced with the attached like-named Special Provisions:

- NOTICE TO CONTRACTOR – HARTFORD FLOOD PROTECTION SYSTEM

DELETED SPECIAL PROVISION

The following Special Provision is hereby deleted in its entirety:

- ITEM NO. 0512018A – REMOVAL AND REPLACEMENT OF EXISTING BRIDGE DRAINAGE SYSTEM

CONTRACT ITEMS

NEW CONTRACT ITEMS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
0203000	STRUCTURE EXCAVATION – EARTH (COMPLETE)	C.Y.	3
0511301A	REMOVAL OF EXISTING BRIDGE DRAINAGE SYSTEM	L.S.	L.S.
0512024A	12” PIPE FOR BRIDGE DRAINAGE – (FIBERGLASS)	L.F.	108
0520032A	ELASTOMERIC CONCRETE HEADER	C.F.	9
0586620	RESET TYPE “C-L” CATCH BASIN	EA.	1
0601755.62A	CLASS PCC05562	C.Y.	3
0602053	WELDED WIRE FABRIC	LB	61
0603729A	LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL	S.F.	50
0703022A	RESET EXISTING RIPRAP	C.Y.	6

REVISED CONTRACT ITEM

ITEM NO.	DESCRIPTION	ORIGINAL QUANTITY	REVISED QUANTITY
0603768A	STRUCTURAL STEEL	100 LB	200LB

DELETED CONTRACT ITEM

ITEM NO.	DESCRIPTION	ORIGINAL QUANTITY
0512018A	REMOVAL AND REPLACEMENT OF EXISTING BRIDGE DRAINAGE SYSTEM	65 L.F.

PLANS

REVISED PLANS

The following Plan Sheets are hereby deleted and replaced with the like-numbered Plan Sheets:

- 02.01.A1
- 03.02.A1
- 04.02.A1, 04.04.A1, 04.06.A1, 04.09.A1, 04.14.A1, 04.18.A1

The Bid Proposal Form has been revised to reflect these changes.

The Detailed Estimate Sheet does not reflect these changes.

There will be no change in the number of calendar days due to this Addendum.

The foregoing is hereby made a part of the contract.

NOTICE TO CONTRACTOR – HARTFORD FLOOD PROTECTION SYSTEM

The Contractor is hereby notified that the project is located within the existing Hartford Flood Protection System, which is considered a Class C (High Hazard) dam by the CTDEEP. All means and methods for work performed within the flood protection system must be approved by the Greater Hartford Flood Commission (GHFC) and the United States Army Corps of Engineers (USACE) prior to beginning work within the flood protection system.

The Contractor shall submit a Work Plan to the GHFC for approval. The GHFC will coordinate with the USACE for their concurrence. The Work Plan shall be addressed to:

Director
Greater Harford Flood Commission
525 Main Street
Hartford, Connecticut 06103

The Work Plan shall identify the types of equipment to be used and the measures to be taken to protect the levee from damage due to the Contractor's operations. The following elements must be included in the Work Plan, at a minimum:

1. Purpose of the work
2. Scope of Work Narrative including means and methods
    a. Site characteristics including a discussion of utilities, drainage, etc.
    b. Material specifications: concrete, backfill, seed mix, etc.
    c. Excavation, backfill, compaction requirements, specifications, etc.
    d. Erosion control measures to be utilized
    e. Restoration of disturbed areas
3. Necessary permits
4. Site access
5. Coordination activities, Contact data and Notice to City Staff involved in the operation of the System
6. Project Schedule
7. Required inspection and QA / QC Testing
8. Construction plans and details
9. Emergency Action Plan (EAP) that includes the identification of any staging, storage areas, enclosures, equipment and operations located below the water surface elevations for the following two regulatory flood events.
    a. 100-year design storm. Water surface elevation of 30.6 (NAVD88)
    b. City of Hartford design event. Water surface elevation of 42.0 (NAVD88)

    The plan can include separate responses for each event but must include the specific provisions for removing/relocating these facilities and the materials and equipment within them for each flood event. The EAP should follow a five-step process consisting of:

    Step 1: Event Detection

Step 2: Emergency Level Determination
Step 3: Notification and Communication
Step 4: Expected Actions
Step 5: Termination and Follow-up

An example of an EAP is attached, for reference.

10. Emergency contact data

The Contractor is also required to submit a Completion Report, including testing reports and as-builts, to the GHFC. The GHFC will transmit the Completion Report to the USACE.

Emergency Action Plan (EAP) & Contractor Levee Protection Plan (LPP)

Project Name:

Bridge Replacement - Br. No. A-05-002=W-21-014 (Steel) Route 147 (Memorial Avenue) over the Westfield River and Intersection Improvements (Including Signals) at 3 Locations along Route 147 in the Municipalities of AGAWAM-WEST SPRINGFIELD

Federal Aid Project Nos. NHP(BR-ON)-003S(070) & STP(BR-ON)-003S(070)
Contract No. 102272

Issued to:

MassDOT District 2
811 North King St.
Northampton, MA 01060

US Army Corps of Engineers
New England District
696 Virginia Rd.
Concord, MA 01742

City of West Springfield
Department of Public Works
26 Central St.
West Springfield, MA 01089

Prepared by:

Northern Construction Service LLC.
1520 Park Street - 775 Pleasant Street
Palmer, MA 01069 - Weymouth, MA 02189
413-289-1230 - 781-340-9440

October 2018

Contents

[1] Emergency Action Plan [EAP]

(A) Project Description – Scope of Work

- The work to be done under this contract consists of furnishing all necessary labor, materials and equipment required for the complete replacement of Bridge No. A-05-002=W-21-014, which carries Springfield Street/ Memorial Avenue (Rte. 147) over the Westfield River; the reconstruction of 3 signalized intersections; the widening and overlay of portions of Springfield Street, Main Street, Walnut Street, Walnut Street Extension and Suffield Street in Agawam; the widening and overlay of portions of Memorial Avenue and River Street in West Springfield.
- The work also includes the construction of new sidewalks along the roadways and a separated bike lane starting at the project limits on Walnut Street Extension in Agawam and continuing to the project limits on Memorial Avenue in West Springfield as well as to the end of the project along Main Street in Agawam; and as shown on the plans.
- Also included as part of the work is the installation of new water mains, hydrants and other water supply appurtenances; furnishing and installing guardrail; furnishing and installing highway lighting, furnishing and installing loam and seed; maintaining construction safety controls, and other incidental items required to complete the work as shown on the drawings, as listed in the proposal, as specified herein, and as directed by the Engineer.
- All work under this contract shall be done in conformance with the Standard Specifications for Highways and Bridges dated 1988, the Supplemental Specifications dated July 1, 2015, and the Interim Supplemental Specifications contained in this contract; the 2016 Construction Standard Details, the 1990 Standard Drawings for Signs and Supports; the 1996 Construction and Traffic Standard Details (as relates to the Pavement Markings details only); The 2015 Overhead Signal Structure and Foundation Standard Drawings, the 2009 Manual on Uniform Traffic Control Devices (MUTCD) with Massachusetts Amendments and the Standard Municipal Traffic Code; the 1968 Standard Drawings for Traffic Signals and Highway Lighting; the latest edition of American Standard for Nursery Stock; the Plans and these Special Provisions.

(B) Purpose of the Emergency Action Plan

- The Contractor [NCSLLC] shall prepare an Emergency Action Plan (EAP) for review by the Town of West Springfield and the US Army Corps of Engineers (USACE) Levee Safety Office and approval by MassDOT prior to the start of work.
- The EAP shall include the following:
    - Applicable requirements described in the WSOMM attachment to this Contract.
    - Requirements specified in the EAPR attachment to this Contract.
    - Rigorous management of construction operations when work is conducted in or around the West Springfield Levee System and the northern bridge abutment.
    - Furnishing and maintaining an adequate quantity of levee closure materials as recommended
    - in the WSOMM. The Contractor shall include in the EAP specific quantities for all materials required to be on-site, or where otherwise approved by the Engineer, for stand-by use in the event of a flood event emergency.
    - The Contractor's detailed schedule of construction work, as well as an anticipated list of all submittals related to the project in vicinity of the West Springfield Levee System.
    - The Contractor shall show in the EAP how access to the West Springfield Levee System for operations and emergency personnel shall be maintained at all times for the duration of the project.

- Details and/or descriptions describing the installation and continuous maintenance of proper erosion controls to be employed to protect stability of access and work areas in the vicinity of the West Springfield Levee System.

- The Contractor's EAP shall conform to the relevant provisions of the March 2010 Operation and Maintenance Manual for Flood Protection System (2010 WSOMM), and this project specific EAPR (Document A00891). This EAP shall consider the Contractor's work and impacts at or adjacent to the Levee on the north bank of the Westfield River that is required as part of this project.
- March 2010 Operation & Maintenance Manual for Flood Protection System (WSOMM) – Section 6.2.2 as follows:
  - This Emergency Action Plan defines responsibilities and provides procedures designed to notify key personal of unusual and unlikely conditions, which may endanger the WSFPS, in time to take mitigative action. The Emergency Action Plan also is intended to notify the appropriate emergency management officials of possible, impending, or actual failure of the WSFPS.
  - The notification flowchart provided is for purpose of providing quick reference and phone numbers for key contacts and ensuring that those on the flowchart are aware of the conditions at the WSFPS. Communication beyond this flowchart will most likely be required to make decisions and execute actions. It is therefore imperative that those involved clearly understand their role and responsibilities in general and that any specific task is clearly scoped.
- Document A00891 – Emergency Action Plan Requirements (EAPR) as follows:
  - The purpose of this EAP is to reduce the risk of human life and injury and minimize property damage during an unusual or emergency event at the project location. The Contractor shall not commence work at or adjacent to the West Springfield Levee System until MassDOT has granted final approval to the Contractor's EAP.

(C) Existing Flood Control Works (Supplementing Section 2.0 and 3.1 of the WSOMM)

- The Westfield River has a Flood Control Dike that runs along the north side of the river which was built by the Army Corps of Engineers in 1939 and is now operated and maintained by the Town of West Springfield and the USACE Levee Safety Office.
- The dike has a line of steel sheeting offset from the dike centerline that extends down to bedrock. The northern abutment of the bridge is incorporated as part of the dike and the sheeting jogs to the centerline of the abutment within the vicinity of the bridge. The existing steel sheeting and piles under the north abutment will remain in place and new piles and new permanent sheeting will be added in the widened abutment areas as required.
- The existing northern abutment of the project bridge is incorporated as part of the existing dike flood protection system. Therefore, all work associated with excavation in and around the northern abutment, and demolition of the abutment itself, shall be in strict conformance to the provisions described in the contract specifications, and as subsequently may be determined by the USACE Levee Safety Office and the Town of West Springfield, based on the Contractor's means and methods detailed in their EAP.

(D) Levee Description (Supplementing Section 2.1.2 and 3.1 of the WSOMM)

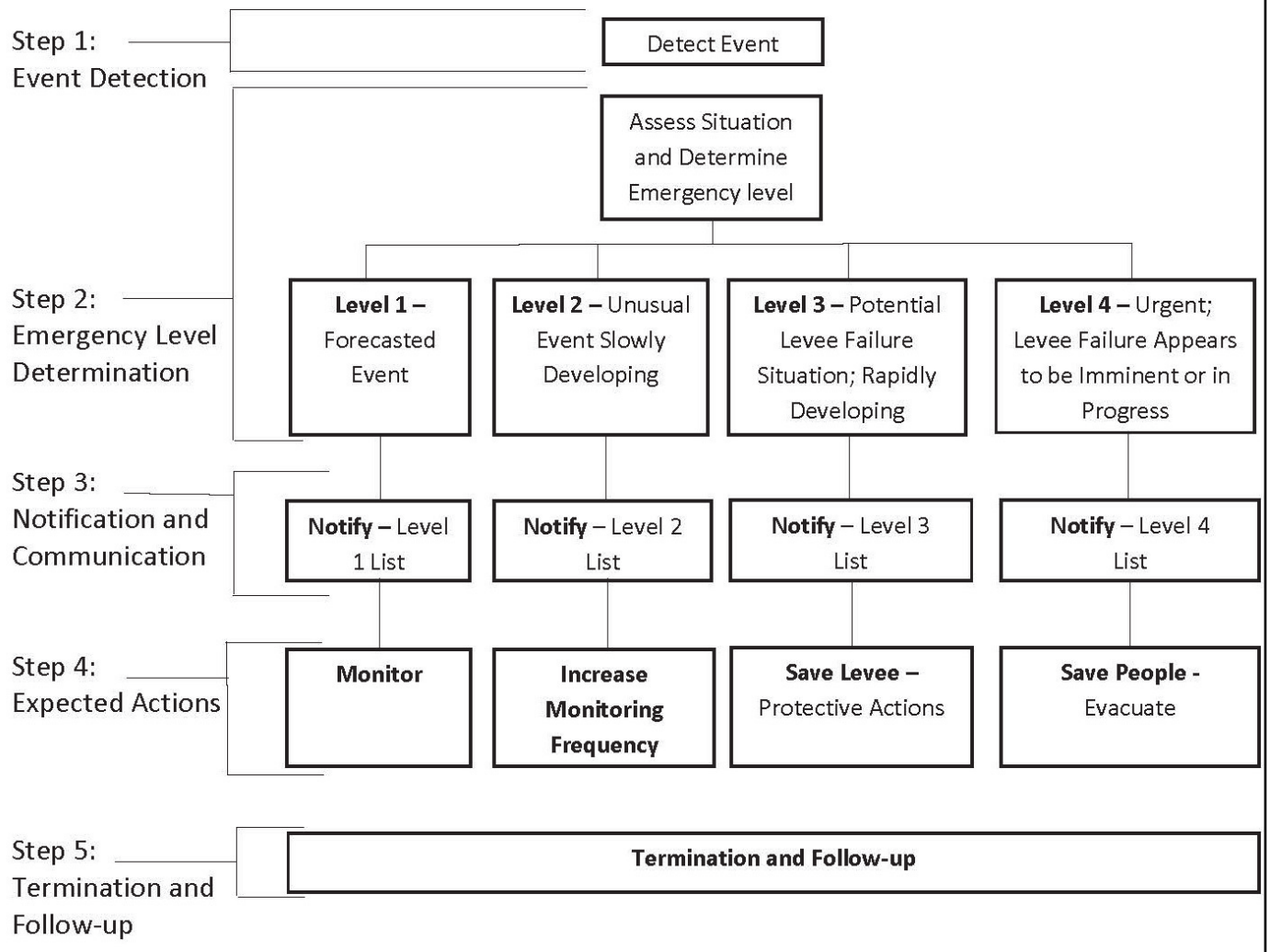
- Pertinent data regarding the levee system is as follows:
  - Year Built: 1939
  - West Springfield Flood Protection System Operator: City of West Springfield DPW
  - Designer: U.S. Engineer Office, Providence, RI

- Record Plans: "West Springfield Dike, West Springfield, Massachusetts Westfield River, Massachusetts General Plan and Profile War Department Corps of Engineers U.S. Army U.S. Engineer Office, Providence, Rhode Island 1938"

(E) Flood Protection During Construction

- In the case of an emergency flood event it will be necessary to provide additional flood protection at the project site. The north abutment was incorporated into an existing ACOE flood control dike that runs along the north side of the Westfield River. Depending on the size of the gaps in the flood control system, the Contractor shall be required to be prepared to immediately close temporary gaps created in the flood protection system.
- The design flood elevation (58.9 ft NAVD 88) determined in the Hydraulics Report was calculated based on the 50-year design flood peak discharge. The elevation of the existing top of levee at the bridge north abutment is approximately Elevation 68.0 ft. The Contractor is responsible for submitting their own means and methods of excavation at the north abutment, and flood protection as well as provide 200 CY of fill material on site, or where otherwise approved by the Engineer, for flood protection purposes.

(F) EAPR Overview – Step 1 – Step 5



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(G) Roles & Responsibilites

- **Massachusetts Department of Transportation (MassDOT):**
  - As soon as an emergency event is observed or reported, immediately determine the emergency level (see section titled Guidance for Determining the Emergency Level.)
    - Level 1: forecasted event
    - Level 2: unusual event, slowly developing
    - Level 3: potential levee failure situation, rapidly developing
    - Level 4: levee failure appears imminent or is in progress
  - The Contractor shall include an updated section entitled "Guidance for Determining the Emergency Level" in their EAP.
  - Immediately notify the personnel in the order shown on the notification chart for the appropriate level (see Notification Chart). The Contractor shall include an updated "Notification Chart" in their EAP.
  - Provide updates of the situation to the local Emergency Services dispatcher to assist them in making timely and accurate decisions regarding warnings and evacuations.
  - Provide leadership to assure the EAP is reviewed and updated as needed and copies of the revised EAP are distributed to all who received copies of the original EAP.
- **State Department of Emergency Management:**
  - Serve as the primary contact person for coordination of all emergency actions.
  - When a Level 3 situation occurs, prepare for possible evacuations if necessary.
  - When a Level 4 situation occurs:
    - Initiate warnings and order evacuation of people at risk in the vicinity of the levee.
    - Carry out the evacuation of people and close roads within the evacuation area.
  - Determine when to terminate the emergency.
- **City of West Springfield Public Works, Police and Fire Departments:**
  - In accordance with the National Incident Management System (NIMS), a Unified Command may be established on the scene but outside of the flood threat area. Unified Command is a management system in which the Command members from different stake holding agencies (i.e. Police, Fire, Local DPW, etc.) make collective decisions on the response and management activities of the incident (i.e. evacuation, road closure, sheltering, etc.)
    - The Operations Section of the Unified Command will ensure that roads that are being flooded are barricaded to safeguard traffic on the flooded areas.
    - The Unified Command will ensure that citizen notifications and escape route public information is conducted to advise the population at risk to prepare for a possible evacuation.
- **Massachusetts Department of Transportation Contractor (Northern Constr Service LLC):**
  - Advise the City of West Springfield Department of Public Works of the emergency level determination, if time permits.
  - Advise the City of West Springfield Department of Public Works of remedial actions to take if Level 3 event occurs, if time permits.
- **Army Corps of Engineers:**
  - Provide assistance in determining the emergency level, if time permits.
  - Provide assistance of remedial actions to be taken, if time permits.

- Provide advice when to terminate the Emergency Action Plan.

- **Five Step EAP Process:**
  - The five step Emergency Action Plan consists of the following:
    - Step 1: Event Detection
    - Step 2: Emergency Level Determination
    - Step 3: Notification and Communication
    - Step 4: Expected Actions
    - Step 5: Termination and Follow-up

(H) Guidance for Determining the Emergency Level (Supplementing Section 5.0 of the WSOMM)

- **Step 1 Event Detection**
  - This step describes the detection of an unusual or emergency event and provides information to assist the Owner in determining the appropriate emergency level for the event.
  - Unusual or emergency events may be detected by:
    - Observations at or near the Levee by government personnel (local, state, or Federal), landowners, visitors to the Project site, or the public
    - Evaluation of instrumentation data – the Westfield River Gauge provides hourly monitoring of the water elevation upstream at an elevation of 1' higher than the project site. It will be used in conjunction with the Springfield Gauge such that if the Springfield Gauge shows an elevation of 8.5 (EL 45 at the project) then the appropriate Emergency Action Level will take effect as outlined below w/ hourly monitoring of both instruments to be documented. Westfield Gauge below:
    - https://water.weather.gov/ahps2/hydrograph.php?wfo=box&gage=spgm3
    - Forewarning of conditions that may cause an unusual event or emergency event at the Levee (for example, a severe weather or flood forecast)

- **Step 2 Emergency Level Determination**
  - After an unusual or emergency event is forecasted, detected, or reported, the MassDOT's Personnel, Technical Representative, or Contractor is responsible for classifying the event into one of the following four emergency levels:
  - **Emergency Level 1** – Forecasted event:
    - **Flood Elevation = N/A**
    - Weather forecasts indicate the likely hood of heavy rain or up-river snowmelt that has the potential to cause flooding or to cause a high river stage, or any time a high river stage is forecasted. This high river stage has a potential to require mobilization for dike inspection, flood observation, and/or flood fighting. The purpose of the alert is to test the notification system, put the affected parties on notice, and mobilize preparedness of crews and prepare supply stockpiles for the potential flood.
  - **Emergency Level 2** - Non-emergency; unusual event, slowly developing:
    - **Flood Elevation = 45.0 ft (NAVD 88)** – The Contractor shall include in their EAP the Emergency Level 2 Flood Elevation based on the WSOMM and in coordination with the Levee Owner and Operator (Town of West Springfield Public Works) and the USACE Levee Safety Office.
    - A flood/high river stage has occurred and inspection of the levee is ongoing. There

may be no apparent threat or signs of distress to the levee. The purpose of the alert is to provide notice of the river stage and ongoing efforts to affected/concerned parties and allow improved management of flood fighting resources and response.

- **Emergency Level 3** - Emergency; Potential Levee failure situation, rapidly developing:
  - **Flood Elevation = 55.0 ft (NAVD 88)** – The Contractor shall include in their EAP the Emergency Level 3 Flood Elevation based on the WSOMM and in coordination with the Levee Owner and Operator (Town of West Springfield Public Works) and the USACE Levee Safety Office.
  - This situation may eventually lead to Levee failure, but there is not an immediate threat of Levee failure. Developing conditions may include signs of excess seepage, boils, excess backwater at pump stations, floodwaters coming above design freeboard, or any other indication of distress on the system. The State Department of Emergency Management should be notified of this emergency situation and placed on alert. The Levee owner and/or its authorized representative should closely monitor the condition of the Levee and periodically report the status of the situation to the State Department of Emergency Management.
  - If the Levee condition worsens and failure becomes imminent, the State Department of Emergency Management must be notified immediately of the change in the emergency level to evacuate the people at risk in the nearby neighborhoods. The purpose of the alert is to warn affected parties, allow for further mobilization of supplies and crews if needed, and provide lead-time for actions that may be needed if the conditions worsen.
  - If time permits, the Levee owner and Army Corps of Engineers should be contacted to evaluate the situation and recommend remedial actions to prevent Levee failure. The Levee owner or its authorized representative should initiate remedial repairs. Time available to employ remedial actions may be hours or days.
- **Emergency Level 4** - Urgent; Levee failure appears to be imminent or is in progress:
  - **Flood Elevation = 60.0 ft (NAVD 88)** – The Contractor shall include in their EAP the Emergency Level 4 Flood Elevation based on the WSOMM and in coordination with the Levee Owner and Operator (Town of West Springfield Public Works) and the USACE Levee Safety Office.
  - This is an extremely urgent situation when a Levee failure is occurring or obviously is about to occur and cannot be prevented. Flooding over the Levee will occur. The State Department of Emergency Management should be contacted immediately so emergency services can begin evacuations of all at risk people and close roads as needed.

- **Step 3 Notification and Communication**
  - **Notification**
    - After the emergency level has been determined, the people on the following notification charts for the appropriate emergency level shall be notified immediately.
  - **Communication:**
  - **Emergency Level 1 - Forecasted event:**
    - The individual designated by the Superintendent for monitoring the reported river stage and weather forecast shall inform the Town DPW Sewer and Flood Control

Supervisor on a daily basis.

- In the case of a forecasted event that has potential to threaten the operation or integrity of the levee the District Highway Director at the Massachusetts Highway Department District 2 shall be contacted and informed of the potential event. This allows ample time for MassDOT to contact the Contractor on site in order to ensure all necessary flood fighting materials are on-hand and the crew is ready to enable the project specific EAP when directed.

- **Emergency Level 2** - Non-emergency; unusual event, slowly developing:
  - The Levee owner should contact their designated engineer and the Army Corps of Engineers. Describe the situation and request technical assistance on the next steps to take.
- **Emergency Level 3** - Emergency; Potential Levee failure situation, rapidly developing:
  - The following message may be used to help describe the emergency situation to the State Department of Emergency Management or the City of West Springfield's Emergency Services personnel:
  - "This is (Identify yourself: name, position and company/agency) We have an emergency condition at the Westfield River Levee at the Sullivan Bridge, Memorial Avenue in West Springfield. We have activated the Emergency Action Plan for this section of the Levee and are currently under Emergency Level 3."
  - "We are implementing predetermined actions to respond to a rapidly developing situation that could result in Levee failure. Please prepare to evacuate the neighborhood. Reference the evacuation map in your copy of the Emergency Action Plan."
  - "We will advise you when the situation is resolved or if the situation gets worse. I can be contacted at the following number_____. If you cannot reach me, please call the following alternative number_____ "
- **Emergency Level 4** – Urgent; Levee failure appears to be imminent or is in progress:
  - The State Department of Emergency Management should be contacted immediately and the area evacuated. The following actions should be taken:
  - Call the State Department of Emergency Management dispatch center. Be sure to say, "This is an emergency". They will call other authorities and the media and begin evacuation. The following message may be used to help describe the emergency situation to the State Department of Emergency Management or to the West Springfield Emergency Services personnel:
  - "This is an emergency. This is (identify yourself.' Name. Position and company/agency). The Westfield River Levee at Sullivan Bridge, Memorial Avenue in West Springfield is failing."
  - "The neighborhood must be evacuated immediately. Repeat, the Westfield River Levee at Sullivan Bridge, Memorial Avenue in West Springfield is failing; evacuate the neighborhood."
  - "We have activated the Emergency Action Plan for this section of the Levee and are currently under Emergency Level 4. I can be contacted at the following number _____. If you cannot reach me, please call the following alternative number _____ "
  - Do whatever is necessary to bring people in immediate danger to safety.

- Keep in frequent contact with the State Department of Emergency Management and the West Springfield Emergency Services personnel to keep them up-to-date on the condition of the Levee. They will tell you how to respond to the emergency.

- The following prescript message may be used as a guide for the State Department of Emergency Management or West Springfield Emergency Services personnel to communicate the status of the emergency with the public.
  - "Attention: This is an emergency message from the Massachusetts Department of Emergency Management. Listen carefully."
  - "The Levee at Sullivan Bridge, Memorial Avenue in West Springfield is failing. The neighborhood must be evacuated immediately. Repeat, the Levee at Sullivan Bridge, Memorial Avenue in West Springfield is failing."
  - If you are in or near this neighborhood, proceed immediately to high ground away from the area. Do not travel on Springfield Street North of Front Street or return home to recover your possessions. Proceed immediately to high ground away from the area."

- **Step 4 Expected Actions (Supplementing Section 6.0 of the WSOMM)**
  - If the Police or emergency service staff receive a 911 call regarding observations of an unusual or emergency event at the Levee, they should immediately contact MassDOT and the Levee owner (West Springfield Department of Public Works). After the Levee owner or their authorized representative determines the emergency level, the following actions should be taken. If time permits the technical representative and the Army Corps of Engineers should be contacted for technical consultation.
  - **Emergency Level 1** - Forecasted event:
    - The Contractor shall account for on-hand materials and be prepared to enable the project specific EAP as directed.
    - The levee should be inspected at a minimum of **daily** intervals when the river stage elevation is above **45.0 ft (NAVD 88)**.
  - **Emergency Level 2** – Non-emergency; unusual event, slowly developing:
    - The levee shall be inspected at a minimum of **(4) hour** intervals to ensure that there are no indications of unusual wetness or other developing situations that threaten the integrity of the levee. **EL 45** as noted above.
    - The Contractor shall request that the Levee Owner or his authorized representative shall inspect the Levee. At a minimum, the Town of West Springfield and/or the USACE Levee Safety Office shall inspect the full length of the Levee within the work zone. Also check the Westfield River for signs of changing conditions. If increased scour, slides, or sloughs are observed, they shall immediately report the observed conditions to the Army Corps of Engineers; refer to the emergency level table for guidance in determining the appropriate event level for the new condition and recommend actions.
    - The Contractor shall record all of the contacts that were made on the Contact Checklist. Record all information, observations, and actions taken on the Event Log Form. Note the time of changing conditions. Document the situation with photographs and video if possible. The Contractor's EAP shall include an updated Contact Checklist based in Section 6.4 of the WSOMM.
    - The Levee owner or their authorized representative should contact the Army Corps

of Engineers and request technical staff to investigate the situation and recommend corrective actions.

- **Emergency Level 3** - Emergency; Potential Levee failure situation, rapidly developing:
  - **EL. 55** as noted above – all construction materials, equipment, & personnel shall be removed from the interior of the levee via the access haul road. The Levee shall be restored equal to or better to its pre-construction existing condition with enough freeboard for anticipated flood level, if rising.
  - The Contractor shall place levee protection materials (as detailed in the approved Contractor EAP) to ensure all gaps in flood protection are filled. The materials shall remain in place until either instructed by MassDOT or the ACOE.
  - During this flood stage the levee shall be patrolled continuously to locate possible sand boils or unusual wetness on the landward slope and to be sure that:
    - There are no indications of slides or sloughs developing;
    - Wave wash or scour action is not occurring;
    - No low reaches of levee exist which may be over topped;
    - No other conditions exist which may endanger the levee.
  - The levee shall be inspected at a minimum of **(1) hour** intervals maximum to ensure that there are no indications of unusual wetness or other developing situations that threaten the integrity of the levee.
  - The Levee Owner or his authorized representative should contact the Army Corps of Engineers to report the situation and, if time permits, request technical staff to investigate the situation and recommend corrective actions.
  - The Levee Owner or his authorized representative should contact the State Department of Emergency Management, and the Army Corps of Engineers to inform them that the Emergency Action Plan has been activated and if current conditions get worse, an emergency situation may require evacuation. Preparations should be made for possible road closures and evacuations.
  - Provide updates to the State Department of Emergency Management and West Springfield Emergency Services personnel to assist them in making timely decisions concerning the need for warnings, road closures, and evacuations.
  - If time permits, the Levee Owner or his authorized representative should inspect the Levee. At a minimum, inspect the full length of the Levee within the work zone. Also check the Westfield River for signs of changing conditions. If increased scour, slides, or sloughs are observed, immediately report the observed conditions to the Army Corps of Engineers; refer to the emergency level table for guidance in determining the appropriate event level for the new condition and recommend actions.
  - Record all of the contacts that were made on the Contact Checklist. Record all information, observations, and actions taken on the Event Log Form. Note the time of changing conditions. Document the situation with photographs and video if possible.
  - If time permits, the following remedial action should be taken as appropriate.
- **Emergency Remedial Actions**:
  - If time permits, the following emergency remedial action should be considered for Emergency Level 3 conditions. Immediate implementation of these remedial

actions may delay, moderate, or prevent failure of the Levee.

- Time permitting, any remedial action should be developed through consultation with the Town of West Springfield and the USACE Levee Safety Office and MassDOT.

- **Embankment Movement**:
  - Repair settlement of the embankment by placing sandbags or earth and rock fill materials in the damages area to restore freeboard.
  - Stabilize slides by placing a soil or rock fill buttress against the toe of the slide.
- **Emergency Level 4** - Urgent; Levee failure appears to be imminent or is in progress:
  - **EL. 60** as noted above – **ALL** construction materials, equipment, & personnel shall be removed from the interior of the levee via the access haul road - period. The Levee shall be restored equal to or better to its pre-construction existing condition as a continuance of the expected actions for Emergency Level 3.
  - The Levee owner or his authorized representative shall immediately contact the State Department of Emergency Management and others shown on the notification flow chart.
  - State Department of Emergency Management personnel shall lead the efforts to carry out warnings, close roads, and evacuations of people at risk.
  - West Springfield Emergency Services personnel shall alert the general public and immediately evacuate at-risk people and close roads as necessary.
  - The Levee owner or his authorized representative shall maintain continuous communication and shall provide the State Department of Emergency Management with updates of the situation to assist them in making timely decisions concerning warnings and evacuations.
  - The Contractor shall record all of the contacts that were made on the Contact Checklist. Record all information, observations, and actions taken on the Event Log Form. Note the time of changing conditions. Document the situation with photographs and video if possible.
  - The Contractor shall advise people monitoring the Levee to follow safe procedures. Everyone should stay away from any of the failing structures or slopes and out of the potential breach inundation areas.

- **Step 5 Termination**
  - Whenever the EAP has been activated, an emergency level has been declared, all EAP actions have been completed, and the emergency is over, the EAP operations must eventually be terminated and follow-up procedures completed.
  - **Termination Responsibilities**
    - The Levee owner or their authorized representative is responsible for informing the State Department of Emergency Management and the Army Corps of Engineers that the emergency at the Levee is over. The Director of the State Department of Emergency Management or his designated alternate is responsible for terminating EAP operations and relaying this decision to the Levee owner. It is then the responsibility of each person to notify the same group of contacts that were notified during the original event notification process to inform those people that the event has been terminated.
    - Prior to the termination of an Emergency Level 4 event that has not caused actual

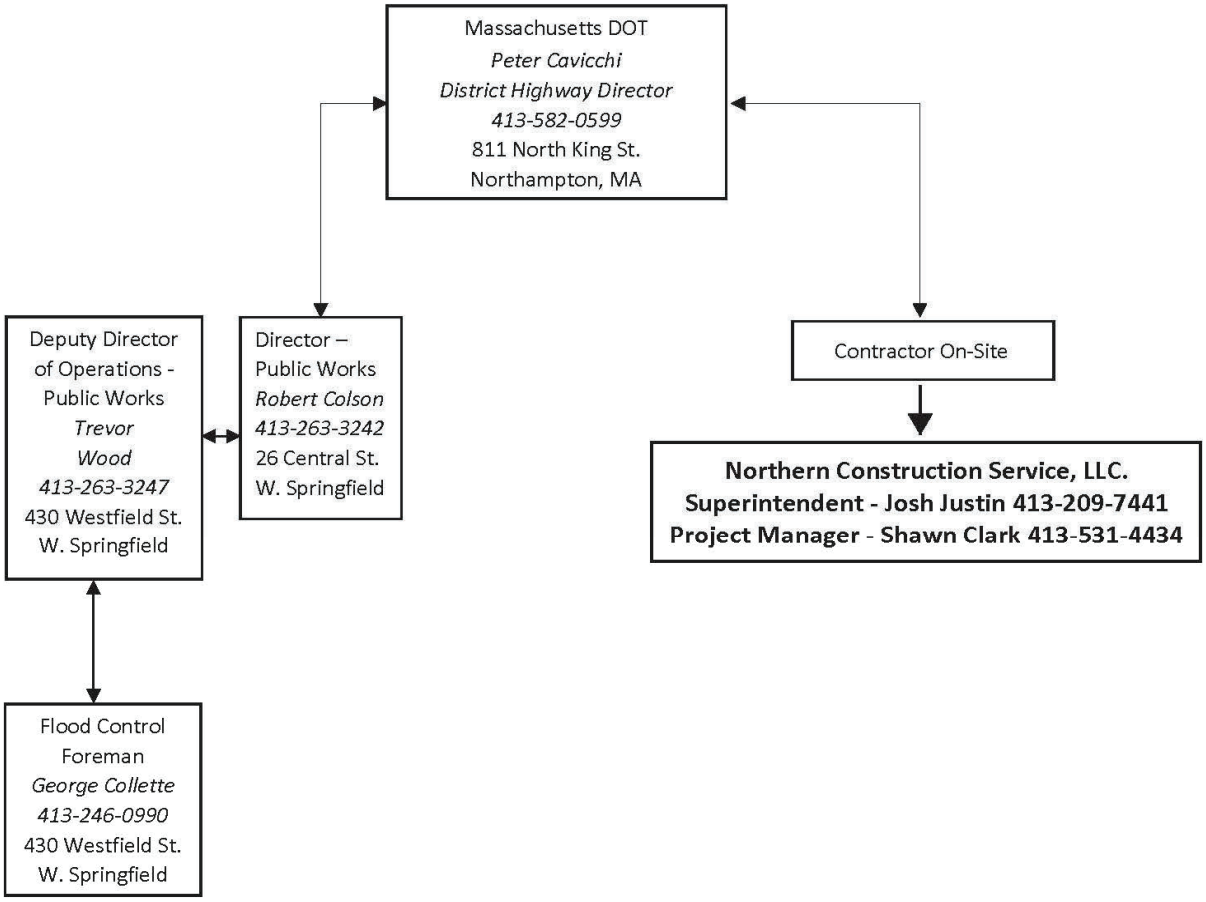
levee failure, the Levee owner's engineer and/or authorized representative will inspect the Levee or require the inspection of the Levee to determine whether any damage has occurred that could potentially result in loss of life, injury, or property damage. If it is determined that conditions do not pose a threat to people or property, the State Department of Emergency Management or their designated alternate will be advised to terminate EAP operations as described above.

- The Levee owner or their authorized representative shall assure that a Levee Safety Emergency Situation Report is completed to document the emergency event and all actions taken. The Levee owner or their authorized representative shall distribute copies of the completed report all parties on the EAP Contact Checklist.

(l) Contacts & Notification Flow Charts

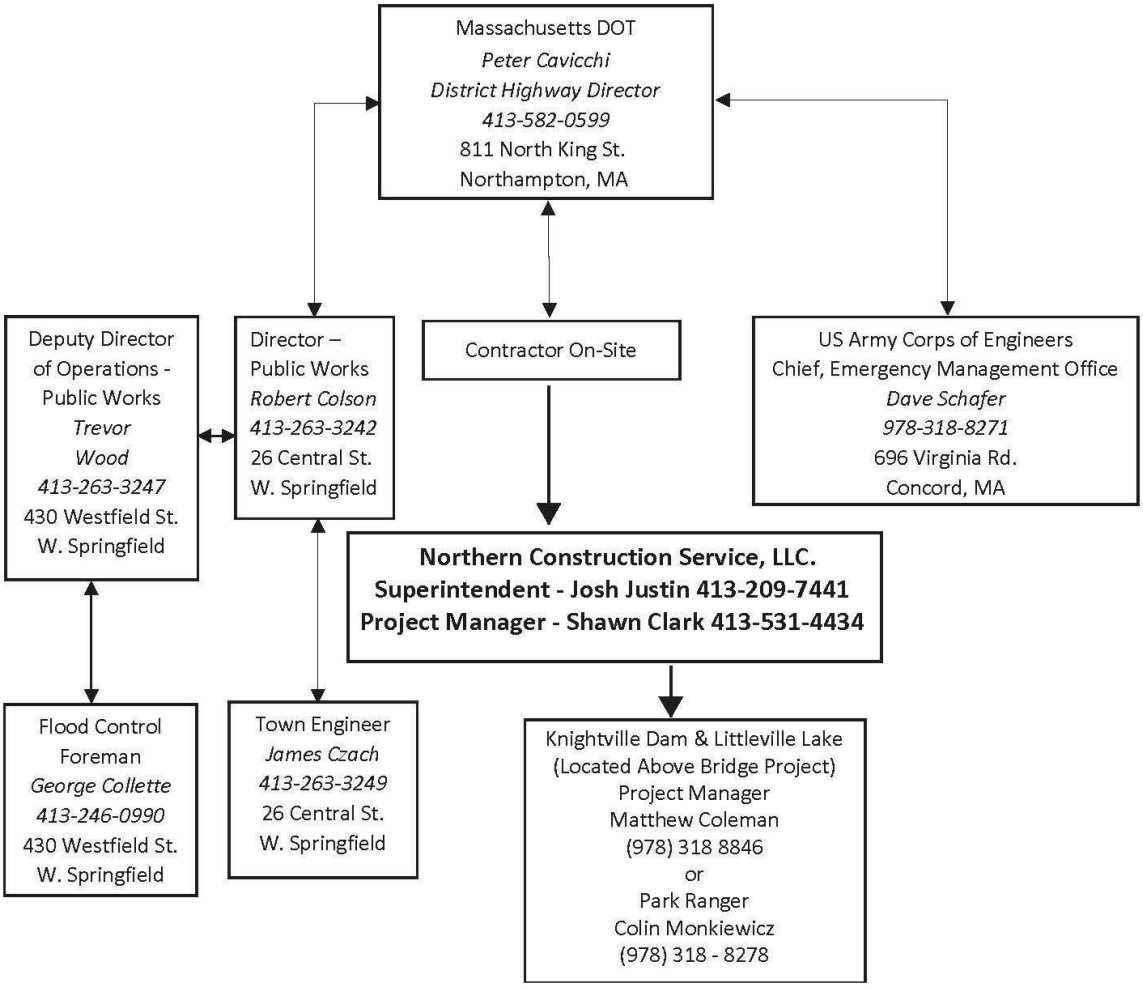
NOTIFICATION CHART

Emergency Level 1 Notifications
Non-Emergency;
Forecasted Event



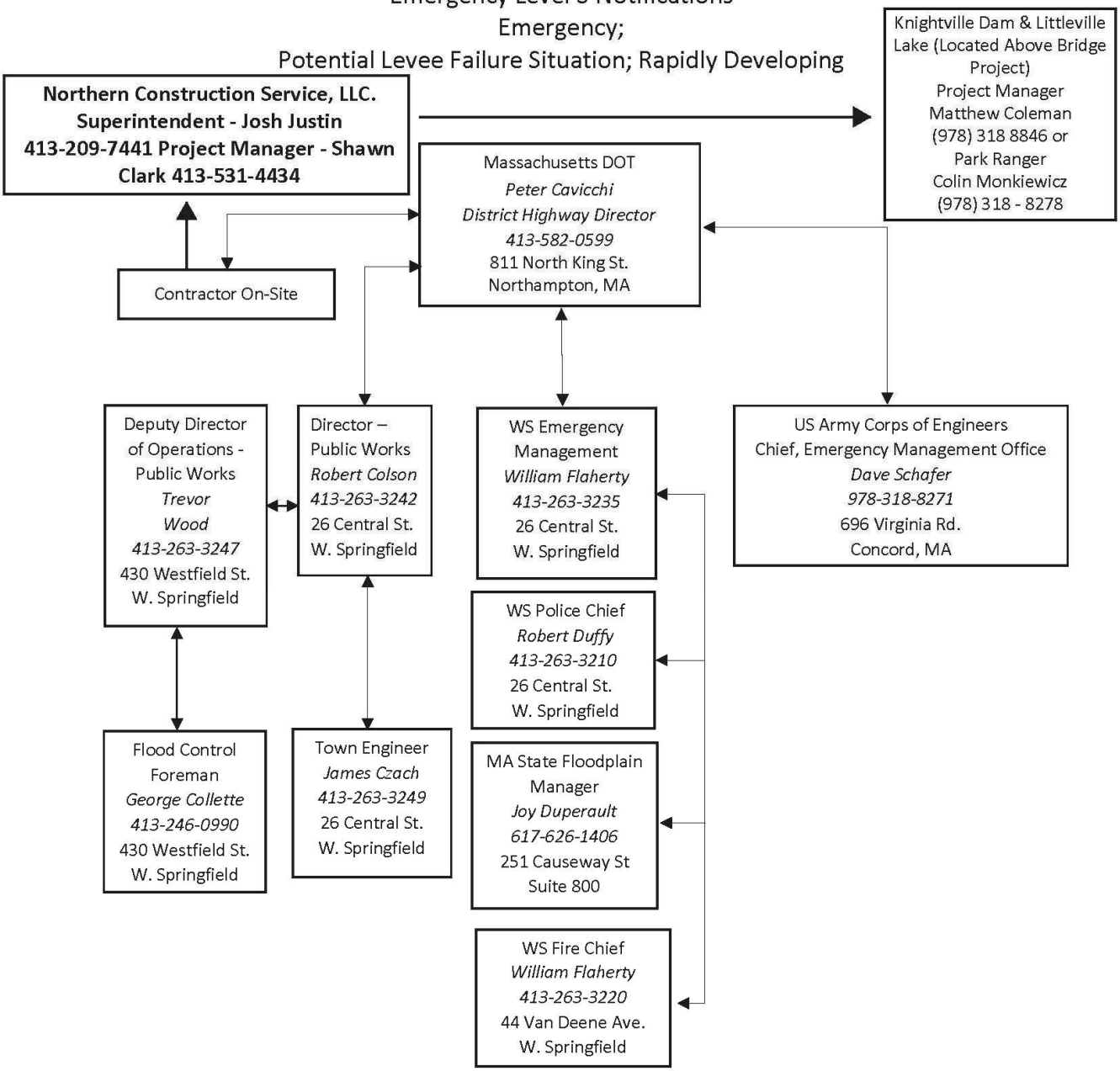
NOTIFICATION CHART

Emergency Level 2 Notifications
Non-Emergency;
Unusual Event; Slowly Developing



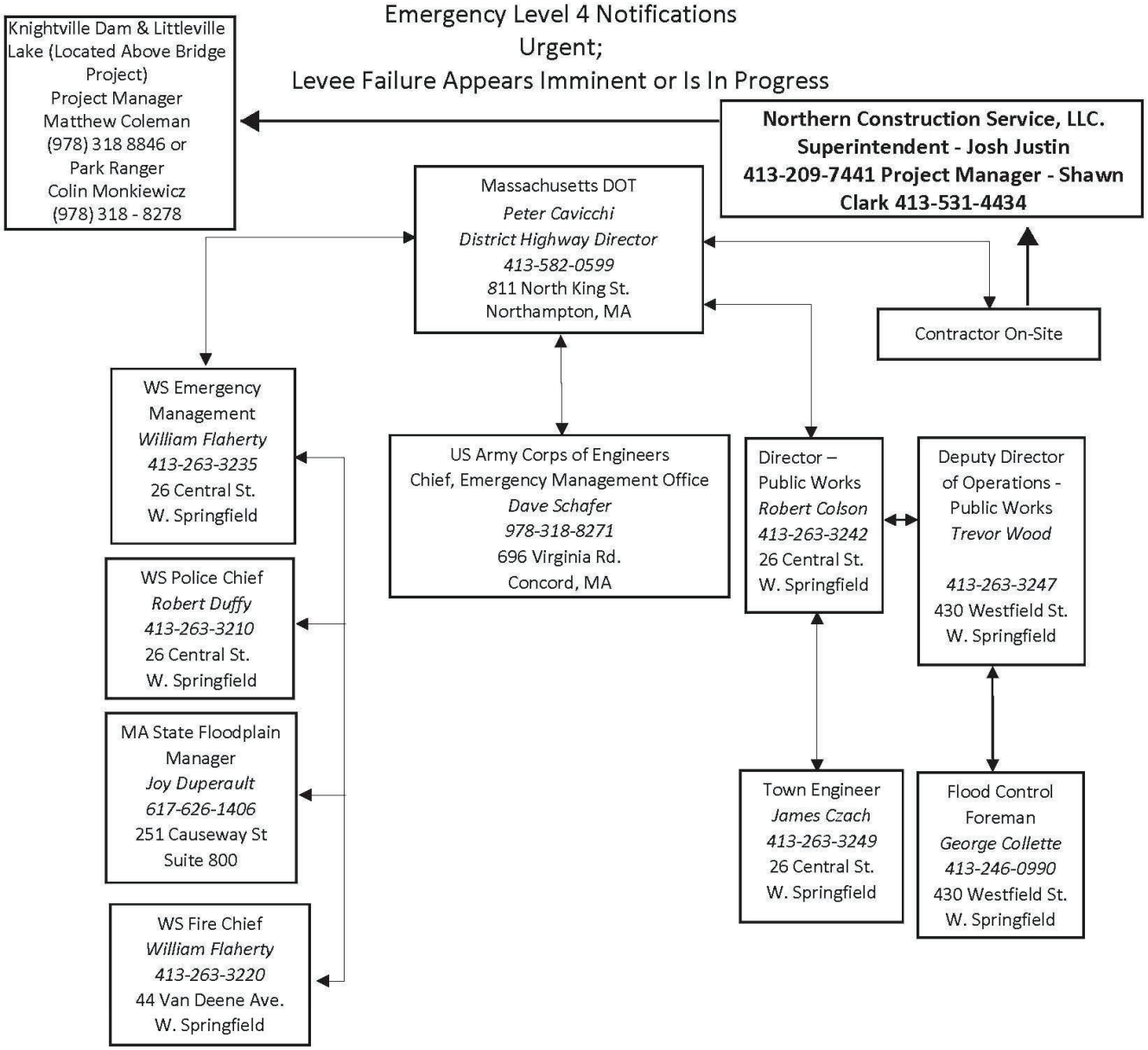
NOTIFICATION CHART

Emergency Level 3 Notifications
Emergency;
Potential Levee Failure Situation; Rapidly Developing



NOTIFICATION CHART

Emergency Level 4 Notifications
Urgent;
Levee Failure Appears Imminent or Is In Progress



ITEM #0511301A – REMOVAL OF EXISTING BRIDGE DRAINAGE SYSTEM

Description:

This work shall consist of removing existing under bridge drain pipes, downspouts and supports at the locations shown on the contract plans and specified herein. Section 5.03 of the Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction applies to all removal work on this project with the following additions and exceptions.

Materials:

None specified.

Construction Methods:

Existing drain pipes, downspouts, and supports as identified on the plans shall be removed. Existing bridge scuppers and their structural steel supports are excluded from this work.

The Contractor shall take care not to damage any existing structural steel or concrete to remain.

Existing pipe supports shall be removed. Eliminate any stress concentrations on existing structural member where existing welded attachments were used to support drain pipe and have been removed as part of this item. Grind smooth all existing structural steel surfaces to remain upon removal of such details. Fill abandoned bolt holes with new high strength bolts.

Method of Measurement:

This work is to be paid for on a Lump Sum basis. No measurements will be taken on materials removed from the structure to perform the work governed by this specification.

Basis of Payment:

The pay item "Removal of Existing Bridge Drainage System" shall include all labor, equipment, hardware, and materials needed to remove the existing drainage pipe, drainage supports, downspout pipes, pipe fittings, and support steel and hardware as shown on the contract plans, directed by the Engineer, and in accordance with the specifications. Elimination of stress concentrations as noted herein is incidental to the work and included for payment as part of this item. Removal of existing paint in areas where welds are being removed and ground smooth and the repainting of these areas shall be paid for under the item "Localized Paint Removal and Field Painting of Existing Steel",

Pay Item	Pay Unit
Removal of Existing Bridge Drainage System	l.s.

ITEM #0512024A - 12” PIPE FOR BRIDGE DRAINAGE – (FIBERGLASS)

Description: This item shall consist of furnishing and installing fiberglass pipe and fittings including reducers, cleanouts, hangers, supports and appurtenances, at the locations and to the lines and grades designated on the plans, or as directed by the Engineer. This item shall also include the furnishing and installation of chemical anchors.

Materials: All fiberglass components of the bridge drainage piping system shall be supplied by a single manufacturer.

The fiberglass pipe shall be reinforced Thermosetting Resin Pipe (RTRP) which shall satisfy the requirements of ASTM Specification D 2996 RTRP-11AA-1111. The pipe shall qualify for a10,000 psi minimum short term rupture strength hoop tensile stress.

Pipe joints shall be straight bell-and-spigot or tapered bell-and-spigot.

Fittings including wyes, cleanouts, reducers, and other types of manufactured elbows shall have a smooth interior with a minimum centerline radius of one and one half (1-1/2) times the pipe diameter. Cleanout end caps shall be fiberglass and shall attach to the cleanout pipe fitting using a flanged connection with a minimum of 4 bolts and a sealing gasket.

All fittings shall be static rated at 100 psi with a safety factor of three (3) times the static rating, in accordance with ASTM D1599.

The adhesive to be used for joining pipe segments shall consist of epoxy resin and a hardener curing agent having a minimum pot life of 15 minutes at 80F which when fully cured develops the strength capacity of the pipe, in accordance with the manufacturer’s recommendations.

The color of all fiberglass piping components shall match the color of the bridge steel after painting. The Contractor shall submit a color sample to the Engineer for approval. A U.V. inhibitor shall be incorporated in the epoxy resin.

Pipe supports and hangers shall be steel conforming to ASTM A709 Grade 50 and shall be galvanized after fabrication in accordance with ASTM A123.

Neoprene pads, 0.125 inch thick shall be bonded to all surfaces of steel pipe supports or hangers in direct contract with the fiberglass pipe. The neoprene shall conform to the requirements of ASTM D4637, Type II, Class SR. The adhesive bonding agent for attaching the neoprene to the pipe support clamp surface shall be “Quick Gel Instant Adhesive” manufactured by Loctite Corporation, Newington, Connecticut, or an approved equal recommended by the manufacturer of the neoprene.

High strength bolts shall conform to requirements of ASTM A325. Threaded rods and associated nuts and washers shall be Type 304 Stainless Steel.

Hex nuts shall conform to ASTM A563, Grade DH or ASTM A194, Grade 2H. Washers shall conform to ASTM F436.

High strength bolts including hex nuts and washers shall be mechanically galvanized in conformance with ASTM B695, Class 50.

Pipe support anchors and associated nut and washers shall be Type 304 Stainless Steel.

The Contractor shall furnish a Certified Test Report, a Materials Certificate for the pipe joining adhesive, all fiberglass components of the piping system, and the chemical anchors, in conformance with the requirements set forth in 1.06.07.

Construction Methods:

1. Shop Drawings: Before fabricating any materials, the Contractor shall take all field measurements necessary to assure proper fit of the finished work, and shall submit shop drawings to the Engineer for approval in accordance with Article 1.05.02-3. These drawings shall include, but not be limited to the following information:
   a) A layout plan and elevation showing all lengths, fittings, supports, cleanouts, expansion devices if required, appurtenances and material designations.
   b) Commercial items shall be identified by manufacturer, trade name and catalog number and shall indicate sufficient details.
   c) Pipe supports and hangers and all other support devices shall be fully detailed.
   d) All field measurements shall be submitted for reference.
2. Installation: The pipe shall be installed to the lines and grades shown on the plans and shall be securely attached to the structure. The adhesive for joining the pipes shall be mixed and applied in strict accordance with directions included in the adhesive kit, or as directed by the representatives of the manufacturer. The surfaces of the joint shall be coated with the adhesive immediately before joining adjacent lengths of pipe. After properly joining two adjacent sections, the pipe supports and clamps shall be properly tightened to hold the pipe in place.

Method of Measurement:

This work will be measured for payment by the actual number of linear feet of pipe for bridge drainage of the size specified, completed and accepted, measured in place along the axis of the pipe through all fittings.

Basis of Payment:

This work will be paid for at the contract unit price per linear foot of "12" Pipe for Bridge Drainage – (Fiberglass)", complete in place, which price shall include all materials including fiberglass pipe, cleanouts, hangers, supports including hardware, adhesive bonding agent, gaskets, all equipment, tools and labor incidental thereto.

Pay Item	Pay Unit
12" Pipe For Bridge Drainage – (Fiberglass)	L.F.

ITEM #0520032A - ELASTOMERIC CONCRETE HEADER

Description: Work under this item consists of furnishing and installing elastomeric concrete headers as shown on the plans. Work also includes saw-cutting and removal of bituminous concrete; disposal of removed materials and all debris from the header cut-out; abrasive blast cleaning; and, drilling, grouting, furnishing and installing reinforcing bars to anchor the headers to the concrete below.

Materials:

1. **Field-mixed bridge joint header elastomeric concrete material**. The elastomeric concrete material shall be field-mixed and shall consist of two-part polymer, kiln-dried pre-graded aggregate, and bonding agent with the material being supplied as a unit by the Manufacturer.

   A Materials Certificate will be required in accordance with the requirements of Article 1.06.07 certifying the conformance of the elastomeric concrete for bridge expansion joint header components to the requirements set forth in this specification.

   Each container of product furnished shall be delivered to the Site in the Manufacturer's original sealed container. Each container shall be labeled to include the name of the material, Manufacturer's name and contact information, expiration date, mixing instructions and the Manufacturer's lot/batch number. Material safety data sheets shall accompany each shipment. All materials must be stored in accordance with the Manufacturer's written recommendations and as approved by the Engineer. Materials whose shelf-life has expired shall not be used in the Project.

   Provide material that complies with the following minimum requirements at either 14 days or at the end of the specified curing time. In addition to the following requirements, the bridge elastomeric concrete header shall be resistant to water absorption, chemical, UV, ozone exposure and shall be capable of withstanding temperature extremes.

Elastomeric Concrete Properties at 24 hr. Cured Stage	Test Method	Requirement
Compressive Strength, Method B	ASTM C579	Min. 2000 psi
Bond Shear Strength	ASTM C882	Min. 700 psi
Abrasion Resistance Wear Index	ASTM C501	Max. 1
Resilience	ASTM D695	Min. 70%
Durometer Hardness	ASTM D2240	Min. 50

Bond Strength to Concrete	ASTM C882	Min. 450 psi

The following Elastomeric Concrete products are qualified for use under this item:

Manufacturer:	**Qualified Product**
Silicone Specialties Inc. 430 S. Rockford Tulsa, OK 74120 Phone: (918) 587-5567	Silspec 900 Polymer Nosing System
Watson Bowman Acme Corp. 95 Pineview Drive Amherst, NY 14228 Phone: (800) 677-4922	Wabo Crete II
R. J. Watson Inc. 11035 Walden Ave Alden, NY 14004 Phone: (716) 901-7020	Poly-Tron Elastomeric Concrete

2. **Reinforcing Bars**: Reinforcing bars shall be glass fiber-reinforced polymer (GFRP) meeting the requirements of ACI 440.6, "Specification for Carbon and Glass Fiber-Reinforced Polymer Bar Materials for Concrete Reinforcement." All GFRP reinforcement shall be deformed or sand-coated. When hooks or bends are shown on the plans, bars shall be fabricated as shown. Bending of bars in the field will not be allowed. A Materials Certificate will be required for the reinforcing bars in accordance with the requirements of Article 1.06.07.
3. **Chemical Anchor Material**: Chemical anchor material to secure the GRFP reinforcement in drilled holes within the header cut-out shall meet the requirements of M.03.07 Chemical Anchors.

Construction Methods:

Submittals:

The Contractor shall submit the following in accordance with the requirements of Article 1.05.02:

- Product data for the elastomeric concrete header, reinforcing bars and chemical anchor material
- Written installation instructions for the elastomeric concrete headers, including surface preparation, conditions that are unacceptable for installation of the headers, the materials and methods for forming the headers while allowing thermal movement of the bridge, finishing and curing requirements. The instructions shall also address, where applicable, the proper preparation of stage construction joints in the headers.
- Written installation instructions for the chemical anchor material. Include tools and equipment required for the installation, hole diameter and depth, and preparation of the hole before the chemical anchoring material is placed.

An experienced technical representative from the manufacturer, acceptable to the Engineer, shall be present during initial installations of the elastomeric concrete headers to provide the Contractor aid and independent instruction to obtain an installation satisfactory to the Engineer.

Block-outs shall be formed between elastomeric concrete headers as required to accept the subsequent installation of the preformed joint seal.

Work under this item shall consist of installing the bridge elastomeric concrete header at the locations shown on the plans and in stages in accordance with the traffic requirements in the special provisions "Maintenance and Protection of Traffic" and "Prosecution and Progress."

Elastomeric concrete is moisture-sensitive. Therefore, after properly curing new decks and deck ends that have been reconstructed or patched, the Contractor shall measure and document the moisture content of the concrete before installation of elastomeric concrete headers. The Contractor shall not install the elastomeric concrete against the concrete deck if the moisture content exceeds 6% (or lower, if required by the manufacturer's technical representative). Measurement of moisture content shall be conducted on the substrate by the Contractor using a "Sovereign Portable Electronic Moisture Master Meter," a "Tramex CMEXpertII Concrete Moisture Meter" or approved equal. One measurement shall be taken at the gutterline below each proposed header. The minimum frequency shall be one measurement every twelve feet along each proposed header. Additional measurements may be ordered by the Engineer.

Tools, equipment, and techniques used to prepare the bridge elastomeric concrete header shall be supplied by the Contractor and approved by the Engineer and the Manufacturer's technical representative prior to the start of construction.

The Contractor shall provide sufficient material in storage at the Site prior to beginning work on this item, to complete the entire bridge elastomeric concrete header as detailed on the plans or as directed by the Engineer.

The Contractor shall saw cut the overlay full depth in order to delineate the location of the elastomeric concrete headers. At the time of installation of the bridge elastomeric concrete header, all existing material shall be removed from the proposed bridge joint header, including all existing joint systems in the deck, sidewalk, parapet and median.

All surfaces in the bridge headers shall be cleaned of all pavement, membrane, dust, dirt, debris, and other loose materials as recommended by the Manufacturer and shall be free of frost or dew that could affect the bond of the header material to the concrete. Additionally, the concrete to which the header will be bonded shall be blast cleaned as recommended by the Manufacturer. When blast cleaning is performed under this specification the Contractor shall take adequate measures to ensure that the blast cleaning will not cause damage to adjacent traffic or other facilities. Following blast cleaning, the surfaces shall again be cleaned to remove any remaining dust.

Forms shall be used to keep the elastomeric concrete from entering the open joint between the concrete deck slabs. The completed headers shall be parallel and straight within 1/8 inch in 10 feet of length. **The joint gap between the headers may not be formed with polystyrene, polyurethane, polyisocyanurate or any other similar material.** The forms for each pair of headers shall be secured so each can move independently of the other, to allow for thermal movement of the deck. Forms shall be designed so that, upon completion of the headers, the forms can be removed. Form, place and cast the elastomeric concrete headers to smoothly follow the surface of the finished roadway at the depth below the surface detailed on the plans.

The Contractor shall drill holes in the concrete and secure with chemical adhesive the hooked reinforcing bars as detailed on the plans. After cleaning any debris and dust from this operation, additional bars shall be placed along the header and secured to the hooked dowels as detailed on the plans.

No elastomeric concrete shall be installed below 45°F. The mixing and installation of the two-part bridge elastomeric concrete header shall be done in strict conformance with the Manufacturer's written recommendations including the use of static mixing devices if so indicated. The elastomeric concrete shall be placed to completely fill the forms, using a trowel to consolidate the material and prevent honeycombing and voids. Finish the surface to a moderately rough texture such as that produced by a wood float.

Traffic must not be allowed on the newly-placed bridge elastomeric concrete header until the material cures properly in accordance with the Manufacturer's specification. During curing time the elastomeric concrete header shall be protected from damage. If recommended by the manufacturer or technical representative, the elastomeric concrete shall be heat-cured with the use of external heat sources. Curing may require that heat be applied for approximately 2 to 3 hours. Traffic shall not be permitted over the joint until proper cooling of the material has occurred and the elastomeric concrete has developed adequate strength in accordance with the manufacturer's recommendations.

Method of Measurement: This work will be measured for payment by the number of cubic feet of elastomeric concrete header installed and accepted into the final work. The volume will be calculated using measured width, length and depth of header. No calculation will be made to deduct the block-out area above the shelf. The width of header will be measured perpendicular to the joint, from the end of the bridge deck, approach slab or face of backwall to the specified pavement sawcut. The length will be measured along the joint side of the header, from face of curb to face of curb. Measurements of header depth shall be taken at sufficient frequency to calculate the average depth of header over its entire length. Elastomeric concrete material in the parapet curb will not be measured for payment.

Basis of Payment:

This work will be paid for at the Contract unit price per cubic foot for "Elastomeric Concrete Header," complete, which price shall include all equipment, tools, labor, and materials, incidental thereto, including preparation of the surface and proper disposal of debris. The cost of the technical representative shall also be included in the cost of this item.

Work associated with the preformed joint seal to be installed in the deck joint gap will be paid for under a separate item.

Pay Item	Pay Unit
Elastomeric Concrete Header	c.f.

ITEM #0601756.62A – CLASS PCC05562

Work under this item shall conform to the requirements of Section 6.01, amended as follows:

6.01.01 – Description: Add the following:

Work under this item shall consist of furnishing and placing concrete used to construct a new drainage swale on top of the existing grouted swale as shown on the plans or as directed by the Engineer. Work under this item shall also include the removal of loose pieces of existing grout and the application of a bonding agent to adhere the new concrete to the existing grout.

6.01.02 – Materials: Add the following:

1. **Concrete Mix:** The concrete mix design shall meet the requirements of Class PCC05562. The slump shall be low enough to facilitate placement on the embankment slope.

2. **Bonding Agent:** The Bonding Agent shall be Sika Armatec – 110 EpoCem or approved equal which conforms to ASTM C-1583 and ASTM C-882.

6.01.03 - Construction Methods: Add the following:

The configuration of the reconstructed swale shall be similar to what is shown on the plans, but shall be adjusted based on actual field conditions. The Contractor shall layout the configuration of the reconstructed swale based on the configuration of the existing grouted swale and the presence of large riprap stones close to the alignment that would be impractical to move. The final configuration shall be approved by the Engineer.

Loose pieces of grout within the existing swale shall be removed and disposed of off-site. The surface of the existing grouted swale shall be cleaned and prepared in accordance with the Manufacture's written recommendations for the selected bonding agent to promote proper adhesion between the existing grouted surface and new concrete. The bonding agent shall be prepared and applied in accordance with the Manufacturer's written recommendations and the new concrete shall be placed within the allowed timeframe given.

A minimum of 2 inches of concrete cover shall be maintained on both side of the Galvanized Welded Wire Reinforcement. Galvanized rebar chairs or other non-corrodible supports shall be used to maintain proper cover. Bricks and wood, or other degradable materials, shall not be used. The welded wire reinforcement shall extend into the swale lips.

Removable formwork shall be used to create the vertical interior faces of the swale lips, shown on the plans. The concrete will be placed in a single continuous pour without joints, unless approved in writing by the Engineer.

6.01.05 – Basis of Payment: Add the following:

Pay Item	Pay Unit
Class PCC05562	c.y.

ITEM #0603729A - LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL

Description: Work under this item shall consist of paint removal and field painting of the existing steel at designated areas. The work shall include containments, paint removal, collection of paint and associated debris, surface preparation and field painting. Designated areas include: areas specifically designated on the plans and those areas where construction activities require the removal of the existing coatings to accomplish other Contract work (such as, but not limited to, arc gouging or welding). The paint removal is required because of the possible presence of hazardous paint containing lead or other hazardous metals. The paint removal is required to comply with OSHA and DEEP regulations.

Privately-owned utilities, bridge rails, stay-in-place forms, fences, elastomeric bearing pads and bronze components shall be protected from damage by surface preparation and painting operations and are not to be painted.

Submittals: A minimum of 20 calendar days before starting any paint removal, surface preparation and coating application work, the painting Contractor shall submit the following to the Engineer for acceptance:

1. A copy of the firm's written Quality Control Program used to control the quality of surface preparation and coating application including, but not limited to, ambient conditions, surface cleanliness and profile, coating mixing, dry film thickness and final film continuity.
2. A copy of the firm's written surface preparation and application procedures. This written program must contain a description of the equipment that will be used for surface preparation, including the remediation of soluble salts, and for paint mixing and application. Coating repair procedures shall be included.
3. A detailed description of the Contractor's enforcement procedures and the authority of personnel.
4. Containment plans (paint removal/collection of debris, surface preparation, coating applications, coating applications with heat, etc.).
5. If the application of heat is proposed for coating application purposes, provide information on the heat containment and procedures that will be used, with data sheets for the equipment. **Note**: If heat is used for coating operations, the heat and containment must be maintained to provide the required temperatures for the duration of the **cure** period.
6. Proof of SSPC-QP1 qualifications, CAS-certification(s) and QP2 qualifications, as applicable.
7. Proof that the finish coat complies with the color and gloss retention performance criteria of SSPC Paint 36, Level 3, for accelerated weathering.
8. Coating product information, including coating manufacturer, product name, application instructions, technical data, MSDS and color chips.

The Contractor shall not begin any paint removal work until the Engineer has accepted the submittals. The Contractor shall not construe Engineer acceptance of the submittals to imply

approval of any particular method or sequence for conducting the Work, or for addressing health and safety concerns. Acceptance of the programs does not relieve the Contractor from the responsibility to conduct the work in strict accordance with the requirements of Federal, State, or local regulations, this specification, or to adequately protect the health and safety of all workers involved in the Project and any members of the public who may be affected by the Project. The Contractor remains solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.

Materials: The paint shall be one of the following **2-coat systems**:

Carbomastic 15	
Carbothane 133 LV, manufactured by:	Carboline 2150 Schuetz Road St. Louis, MO 63146 (800) 848-4645
Epoxy Mastic Aluminum II	
HS Poly 250, manufactured by:	Sherwin Williams 425 Benton Street Stratford, CT 06615 (203) 377-1711 (800) 474-3794
Carbomastic 90	
Carbothane 133 LV, manufactured by:	Carboline 2150 Schuetz Road St. Louis, MO 63146 (800) 848-4645

All materials for the complete coating system shall be furnished by the same coating material manufacturer with no subcontracted manufacturing allowed. Intermixing of materials within and between coating systems will not be permitted. Thinning of paint shall conform to the manufacturer's written recommendations. The coating thickness shall be in accordance with the Manufacturer's printed instructions. All components of the coating system and the mixed paint shall comply with the Volatile Organic Compounds (VOC) Content Limits and Emission Standards stated in the Connecticut Department of Energy and Environmental Protection's Administration Regulation for the Abatement of Air Pollution, Sections 22a-174-41 through 41a and 22a-174-20(s), respectively.

Control of Materials: A Materials Certificate will be required for the selected paint system in accordance with Article 1.06.07, confirming the conformance of the paint to the requirements set forth in these specifications. The selected Topcoat shall conform (as close as possible) in color to the existing topcoat.

Note: If any of the above and/or following stipulated Contract specifications differ from those of the manufacturer's recommended procedures or ranges, the more restrictive of the requirements shall be adhered to unless directed by the Engineer in writing.

Construction Methods:

Contractor - Subcontractor Qualifications: Contractors and subcontractors doing this work are required to be certified by the SSPC Painting Contractor Certification Program (PCCP) to QP 1 entitled "Standard Procedure for Evaluating Qualifications of Painting Contractors ("Field Application to Complex Structures"). When the work involves the disturbance of lead-containing paint, the Contractor and subcontractor are also required to be certified to SSPC-QP 2 "Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint." The certification(s) must be kept current for the duration of the work. If a Contractor's or subcontractor's certification expires, the firm will not be allowed to do any work related to this item until the certification is reissued. Requests for extension of time for delay to the completion of the Project due to an inactive certification will not be considered and liquidated damages will apply. In addition, if any recoat times are exceeded, the affected areas shall be cleaned to SSPC-SP 15 and coatings reapplied in accordance with these specifications at no additional cost to the State.

Contractors and subcontractors are required to have at least one (1) **Coating Application Specialist (CAS) (SSPC ACS/NACE No. 13)-**certified (Level II-Interim Status-Minimal) craft-worker. CAS-certified (Level II-Interim Status-Minimal) craft-worker(s) are required for all crews/craft-workers up to four (4) crew members. For each crew larger than four (4), an additional CAS-certified (Level II-Interim Status-Minimal) craft-worker shall be present on each surface preparation/painting crew during surface preparation cleaning/removal and spray application (Atmospheric and Immersion Service) operations. A crew-member is a person who is on the job performing hand/power tool cleaning and/or spray application of protective coatings on a steel structure. The certification(s) must be kept current for the duration of the Project work. If a Contractor's, subcontractor's or any craft-worker's certification expires, the firm will not be allowed to do any work on this item until the certification is reissued.

All Contractor activities associated with the work described and specified herein shall be conducted in accordance with all applicable Federal, State of Connecticut and local safety regulations and guidelines.

Quality Control Inspections: The Contractor shall perform first line, in process Quality Control (QC) inspections. The Contractor shall implement a Quality Control Program accepted by the Engineer, including written daily reports, that ensures that the work accomplished complies with these specifications. All Quality Control Reports must be reviewed and signed by either a NACE Coating Inspector Level 2 - Certified (must have completed sessions I, II and III) or SSPC – BCI Level I Inspector (Minimum qualifications). Copies of these reports shall be provided daily to the Engineer. Contractor QC inspections shall include, but not be limited to the

following:

- Suitability of protective coverings and containments
- Ambient conditions
- Surface preparation (solvent cleaning or hand/power tool cleaning)
- Coating application (mixing, thinning, and wet/dry film thickness)
- Recoat times and cleanliness between coats
- Coating continuity (freedom from runs, sags, pinholes, shadow-through, skips, misses, etc.)
- Final film acceptance

Limits of Paint Removal and Field Painting: Prior to applying the heat of welding equipment to localized areas of existing steel superstructures, the existing paint shall be removed to a width of 6 inches from wherever the heat will be applied, or as directed by the Engineer. The locations of the paint removal and field painting shall be reviewed and accepted by the Engineer prior to commencement of the work. Such acceptance by the Engineer does not relieve the Contractor of his responsibility for complying with applicable OSHA and DEEP regulations.

Containment for Paint Removal and Collection of Debris: The containment(s) shall be designed and erected to contain, as well as facilitate the collection of debris from the paint removal operations. Drawings and details of the containment(s) shall be submitted to the Engineer for review and comments prior to any paint removal. Review of the containment by the Engineer shall in no way relieve the Contractor of his responsibility for the containment. The containment shall conform to the requirements found within the SSPC Guide 6. The class of the containment shall be a minimum of Class 3P, modified to include the following:

A. The containment materials shall be air and water impenetrable and fire resistant.
B. With the exception of the entryways, all seams in the containment enclosure shall be lapped a minimum of 24 inches and shall be tied off at intervals not to exceed 18 inches.
C. All attachments to bridge parapets or the underside of the bridge deck shall be sealed to prevent the escape of dust and debris.

The above specified containment must be used for **all** paint removal and collection of debris operations. The containment must remain in place until all associated debris has been collected.

Storage and Disposal of Collected Debris: All of the debris resulting from the paint removal operations shall be contained and collected. Debris within containment enclosures shall be removed by HEPA vacuum collection prior to disassembly of the enclosures. All the debris, rust and paint chips shall be stored in leak-proof storage containers at the Project site. Debris storage shall be in accordance with Connecticut Hazardous Waste Management Regulations. The storage containers and storage locations shall be reviewed by the Engineer and shall be located in areas not subject to ponding. Storage containers shall be placed on pallets and closed and covered with tarps at all times except during placement, sampling, and disposal of the debris.

Prior to generation of any hazardous waste, the Contractor shall notify the Engineer of its selected hazardous waste transporter and disposal facility. The Contractor must submit to the Engineer: (1)

the transporter's current U.S DOT Certificate of Registration and (2) the transporter's current Hazardous Waste Transporter Permits for the State of Connecticut, the hazardous waste destination state and any other applicable states. The Engineer will then obtain an EPA ID number that will be forwarded to the Contractor. Any changes in transporter or facility shall be immediately forwarded to the Engineer for review.

The Contractor shall conform to the latest requirements of the Hazardous Waste Management Regulations prepared by the DEEP's Hazardous Waste Management Section, subject to regulations of Section 22a-449(c) of the Connecticut General Statutes.

Disposal of the debris shall be in strict conformance with all Federal E.P.A. and DEEP regulations for hazardous materials.

All necessary forms, including the "Uniform Hazardous Waste Manifest" obtained from the Hazardous Waste Management Section of DEEP, must be filled out, approved and signed by the Department's Project Engineer (Construction), and appropriate copies returned to the Department's Division of Environmental Compliance.

A licensed hazardous waste transporter and a licensed hazardous waste treatment/disposal facility must be secured from lists available from the DEEP and approved by the Department's Division of Environmental Compliance.

The Contractor is liable for any fines, costs, or remediation costs incurred as a result of their failure to be in compliance with this special provision and all Federal, State and Local laws.

Paint Removal/Surface Preparation: The existing structural steel shall be power tool cleaned according to SSPC-SP 15 "Commercial Grade Power Tool Cleaning." The power tools (needle guns, grinders, etc.) shall be equipped with HEPA vacuum attachments. Before the power tool cleaning, all dissolvable foreign matter, such as oil, grease, and dust shall be removed by wiping or scrubbing the surface with rags or brushes wetted with solvent in accordance with the provisions of SSPC-SP 1 "Solvent Cleaning." Clean solvent and clean rags or brushes shall be used for the final wiping. The cleaned surface shall be accepted by the Engineer. If the surface is determined to meet the requirements of SSPC-SP 15, painting operations can commence.

Note: Chemical stripping and abrasive blast cleaning will not be permitted.

Existing Steel Surfaces to be Painted: After the designated areas have been inspected and accepted according to the surface preparation specification, SSPC SP 15, the steel surfaces which are to receive the field touch-up paint shall be cleaned immediately prior to coating operations by wiping or scrubbing the surface with rags or brushes wetted with solvent. Use clean solvent and clean rags for the final wiping.

- Solvent must be compatible with the specified coatings. Solvent cleaned surfaces shall be primed before any detrimental recontamination or corrosion occurs. Follow manufacturer's safety recommendations when using any solvent.
- All foreign materials such as dirt, dust, loose rust scale, sand, bird droppings, and all materials loosened or deposited on the steel surface by cleaning operations shall also be completely removed by vacuuming before any painting operations commence.
- Failure by the Contractor to properly prepare and clean surfaces to be painted in accordance with the specifications shall be cause for rejection by the Engineer. All surfaces that are rejected shall be cleaned and painted to the satisfaction of the Engineer in accordance with the specifications, at no additional cost to the State.

Application of Field Paint: The method for coating application shall be by brush and roller equipment. The containment for paint application shall consist of drop cloths and a solid platform bottom.

Storage, opening, mixing, thinning and application of the paint shall be accomplished in strict accordance with the specified Contract requirements and procedures published by the paint manufacturer and supplier. The Contractor shall have at the Project site, at all times, the current copies of all technical data, recommendations and procedures published by the paint manufacturer. All coatings shall be supplied in sealed containers bearing the manufacturers name, product designation, batch number and mixing/thinning instructions. Leaking containers shall not be used. Paint shall be furnished in the manufacturer's original sealed and undamaged containers. For multiple component paints, only complete kits shall be mixed and used. Partial mixing is not allowed. The paint shall be applied to produce a uniform smooth coat without runs, streaks sags, wrinkles, or other defects.

The Contractor shall provide a suitable facility for the storage of paint, which is in accordance with the latest Federal and State regulations. This facility must provide protection from the elements and insure that the paint is not subjected to temperatures outside the manufacturer's recommended extremes. Storage for paint must be located in reasonable proximity to the painting locations. The Engineer shall be provided access to the stored paint at any time, for inspection and to witness removal of the materials. The Contractor's facility for the storage of paint is subject to the approval of the Engineer.

Ambient Conditions: Solvent cleaning just prior to coating application or coating application work shall be performed when the conditions are as follows:

- The relative humidity is at or below 80% and when there is no falling rain or dew present, or anticipated, before a prepared surface can be coated.
- The substrate is not damp or covered by frost or ice.
- The surface temperature and air temperature are between 50°F and 100°F.
- The surface temperatures of the steel and air are more than 5°F above the dew point temperature, as determined by a surface temperature thermometer and electric or sling psychrometer.

If the requirements of the coating manufacturer differ from the ranges provided above, comply with the most restrictive requirements unless directed otherwise by the Engineer in writing.

The Contractor is liable for any fines, costs, or remediation costs incurred as a result of his failure to be in compliance with this special provision and all federal, state, and local laws.

Method of Measurement: This work will be measured by the actual square foot of existing steel at designated areas where paint was removed, surfaces cleaned, re-painted and accepted. **Note:** In some instances when **new steel** is being added to the designated areas where the paint was removed, the removal area may not equal the area to be re-painted. Measurement in these cases will be by the actual square foot of existing steel where the paint was removed and accepted.

Basis of Payment: This work will be paid for at the Contract unit price per square foot for "Localized Paint Removal and Field Painting of Existing Steel," complete in place, which price shall include all materials, containments, collection and disposal of non-hazardous debris, containers, equipment, tools, labor, heating devices, services of the technical advisor and for any incidental work. No direct payment will be made for the cost of storage or hauling the paint and other materials, including paint chips and associated debris, to and/or from the bridge site, but the cost thereof shall be included in the Contract unit price.

Pay Item	Pay Unit
Localized Paint Removal and Field Painting Of Existing Steel	s.f.

ITEM #0703022A – RESET EXISTING RIPRAP

Description: Work under this item shall consist of the shifting of existing riprap stones away from areas where they conflict with the reconstruction of the concrete swale and the resetting of existing riprap stones in areas around the reconstructed swale, or as directed by the Engineer. Existing riprap stones that cannot be reset around the work area without impacting the existing flood storage volume shall be removed from the project site, as directed by the Engineer. If the work includes shifting deep stones that are set directly on the bedding material, the existing bedding material will remain in place but shall be reshaped as necessary to accommodate the resetting of the existing riprap stones.

Construction Methods: The Contractor shall layout and clearly mark the limits of the reconstructed swale so that the Engineer can review and approve the layout. The limits of riprap stones that need to be reset in order to accomplish the work shall also be clearly marked and agreed to by the Engineer. Large existing stones near the edges of the swale shall be avoided a much as practical by slight adjustments to the swale layout.

The riprap stones than need to be shifted shall be moved to a location just beyond the reconstruction limits and shall be done with care to avoid damage to the moved stones and the riprap that is to remain in place.

After the concrete swale has been reconstructed and cured, the Contractor shall reset the displaced stones in the areas adjacent to the swale. Each riprap stone shall be oriented to fit tightly with adjacent stones without leaving any large unarmored gaps. The finished surface shall be free from pockets of small stones and clusters of larger stones. In areas where the existing bedding material has been exposed, the top of the bedding material shall be reshaped as necessary so that the reset stones are well seated upon the bedding material. The reset stones shall be placed to create the full course thickness of the existing riprap, or as directed by the Engineer.

Method of Measurement: The agreed upon limits of existing stones to be reset will be used to determine the horizontal pay limits. After the existing riprap stones are removed, the average depth shall be determined by taking as many measurements as deemed necessary by the Engineer. These measurements shall be used to determine the volume in cubic yards for payment.

Basis of Payment: This work will be paid for at the contract unit price per, cubic yard for "Reset Existing Riprap", complete in place, which shall include all materials, equipment, tools and labor incidental thereto. If there are excess stones that cannot be reused and need to be removed from the site, the Contractor shall preform this work without additional payment.

Pay Item	Pay Unit
Reset Existing Riprap	c.y.