

PREVENTATIVE BRIDGE MAINTENANCE

INVENTORY MANAGEMENT | PROGRAMMING | IMPLEMENTATION



LABELLA
Associates, P.C.

Engineering
Architecture
Environmental
Planning

PRESENTED BY JOHN PAPPONETTI, PE

SEPTEMBER 29, 2011



- **In Business for 33 Years**
- **190 Employees**
- **Headquartered in Rochester, NY**
- **Seven Office Locations in NY, PA, and NC**
- **Full Service Firm: [Engineering](#) | [Architecture](#) | [Environmental](#) | [Planning](#)**

OFFICE LOCATIONS

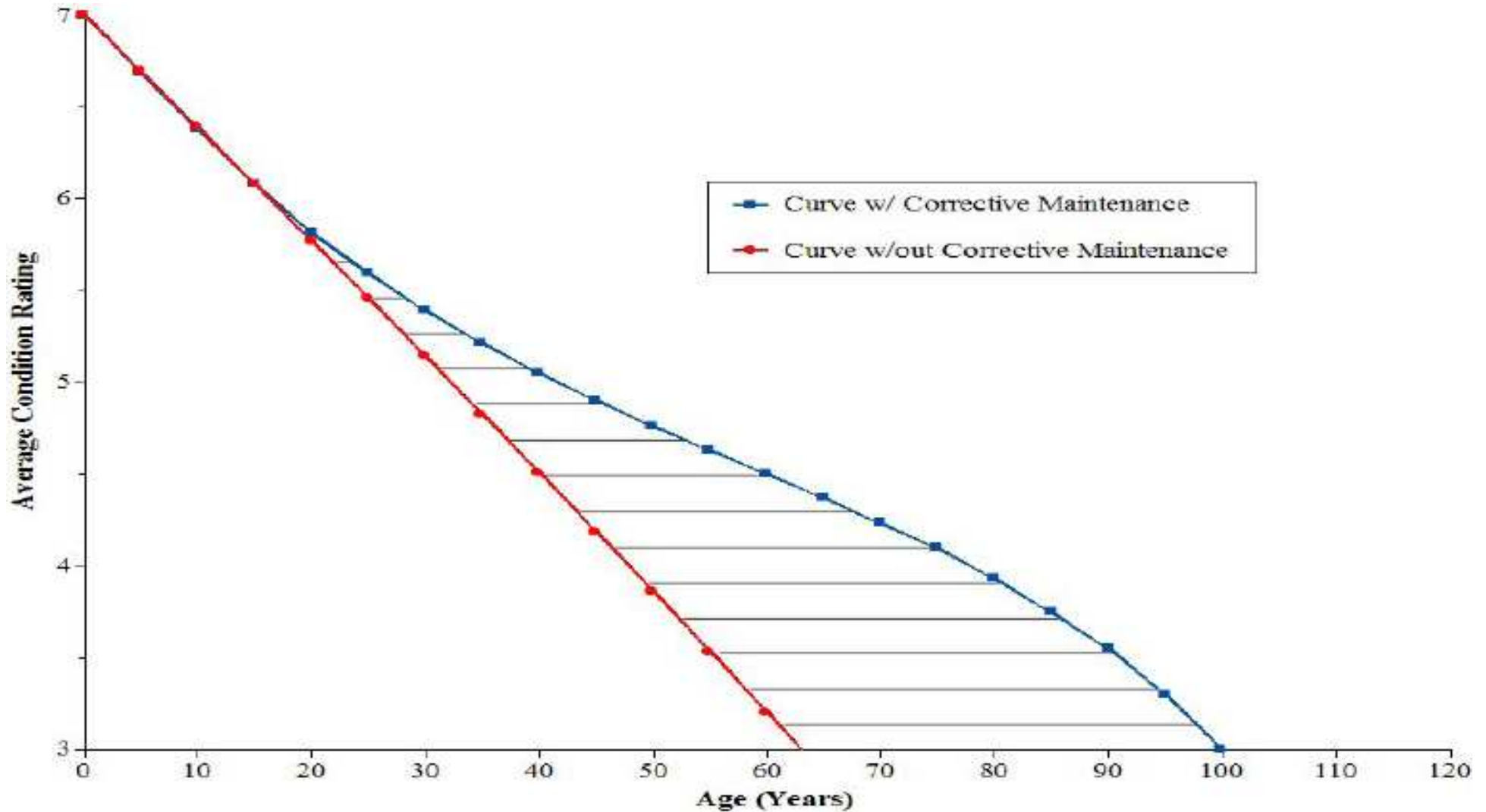
- Rochester, NY (HQ)
- Buffalo, NY
- Ithaca, NY
- Hornell, NY
- Coudersport, PA
- Scranton, PA
- Charlotte, NC



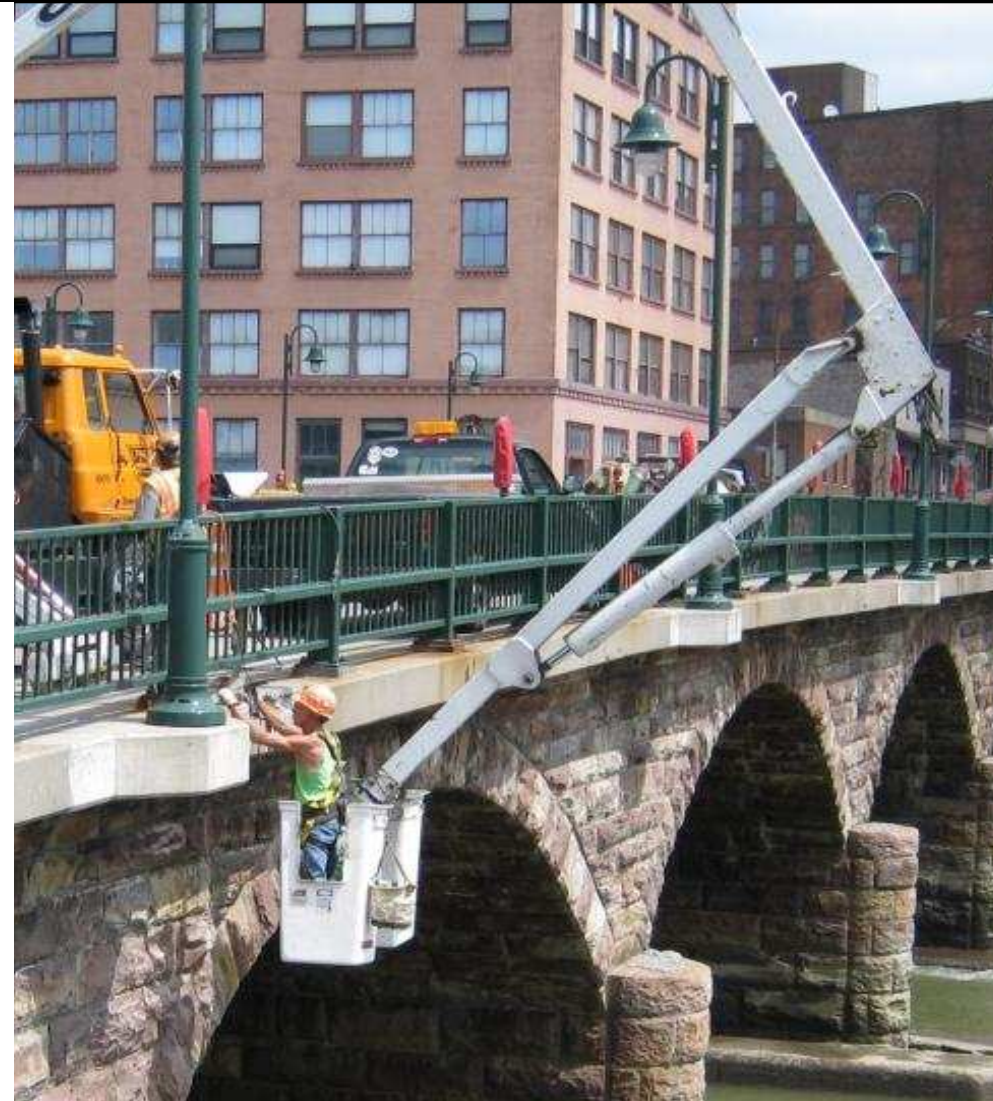
- **14 Years of Experience**
- **Associate and Project Manager**
- **AAS - Alfred State College**
- **BS - Rochester Institute of Technology**
- **PE in NY and PA**
- **Certified through the Structural Engineering Certification Board**



WHY IS PREVENTATIVE MAINTENANCE IMPORTANT?



- 1. MAINTENANCE PROGRAM HISTORY**
- 2. INVENTORY MANAGEMENT**
- 3. PROGRAMMING**
- 4. IMPLEMENTATION**
- 5. Q & A**



HISTORY OF THE CITY OF ROCHESTER'S BRIDGE MAINTENANCE PROGRAM

- Program first implemented in 1991
- 100% funded by the City of Rochester
- Average annual maintenance contracts are valued at \$250,000.
- Consultant fees average \$65,000/year
 - \$45,000 for Inventory Management | Programming | Implementation
 - \$20,000 for Construction Phase Services
- John has been involved in this program since 1998
- ***GOAL: Prolong the life of the City's bridge infrastructure and reduce the need for large capital improvements***



City of Rochester, NY

- LaBella Associates provides the following services:
 - Coordination & Administration
 - Inventory Database Management
 - Annual Bridge Inspections (Detailed & Cursory)
 - Annual Bridge Maintenance Contract Documents
 - Construction Management & Inspection



City of Rochester, NY

- **Inventory Management** is a process in which one oversees and tracks their assets.
- **Bridge Inventory** is data pertaining to the identification information, classification, type and material, operational condition, geometrics, load rating and posting, and inspections of the bridge.
- There are several ways to track this inventory depending on the owner's needs:
 - Simple Excel Spreadsheet,
 - Microsoft Access Database, or
 - Bridge Management Software Program
- Database provides a central location for bridge data
 - Photos
 - Inspection Reports
 - Flag Reports
 - Work Orders
 - Contract Documents

INVENTORY MANAGEMENT

- Mid-1990's - City utilized MS Access to track bridge inventory
- 2008 – City purchased a Bridge Management Software Program to track bridge inventory
- City of Rochester utilizes Cartegraph's BRIDGEview bridge management software program
- Initial purchase cost (including training and customization) = \$15,000
- Yearly technical support and updates = \$1,100 per license

Cartegraph



Advantages of a Bridge Management Software Program:

- Accurately capture and maintain bridge data
- Proactively monitor overall condition of bridges
- Track current and historical bridge information
- Assists with factoring bridge maintenance into yearly budget.
- Reporting features help track bridge data that helps establish preventative maintenance schedules, and accurately determine replacement needs.

The screenshot displays the LABELLA Bridge Management Software interface. The top section, 'Bridge Information', shows the ID (8) as 4443800. Below this, the 'Features' section includes fields for Local ID (E156), Local Name, Structure Type (43B), Structure Material (43A), Features Crossed (6A), Carries (7), Detour Length (19) set to 2 mi, and Is NBI Structure (112). The 'Location' section includes City (4), Route, Township, Marker, and a Location Description (9) of 'Ford St. over Genesee River'. To the right, the 'Attachments' section shows a photo of a bridge at night. Below these, the 'Details' section has tabs for Inspections, Superstructure, Substructure, Approaches, Waterway, Clearance, and Events. The 'Events' tab is active, showing a table of events with columns for Completed, When Started, Activity, When Ended, Work Order Number, Repeat Interval, Who, and Why. The table lists four events: Safety Flag on 07/07/2011, Safety Flag on 07/22/2009, Maintenance on 12/31/2009, and Cursory Inspe on 04/29/2010. On the right side of the 'Details' section, there are buttons for 'New Bridge', 'Save Bridge', 'E-mail Bridge', 'St & A', and 'View Bridges Report'.

Completed	When Started	Activity	When Ended	Work Order Number	Repeat Interval	Who	Why
<input type="checkbox"/>	07/07/2011	Safety Flag	07/31/2011			NYSDOT	
<input checked="" type="checkbox"/>	07/22/2009	Safety Flag	08/24/2009			NYSDOT	
<input checked="" type="checkbox"/>	12/31/2009	Maintenance	03/03/2011			CP Ward	
<input checked="" type="checkbox"/>	04/29/2010	Cursory Inspe	04/29/2010			LaBella	

- Utilizing the Cartegraph Software Program, generate reports listing bridges with:
 - Element specific deficiencies (condition ratings ≤ 4)
 - Safety concerns
 - Cyclical maintenance needs
- Based on this information, maintenance needs are prioritized
- Estimate cost to eliminate deficiencies or perform the cyclical maintenance needs
- Evaluate and compare needs, associated cost, and available funds
- Develop a list of maintenance repairs to be performed over a 5-year period
 - Priority is placed on bridges with safety concerns and bridge elements with condition ratings ≤ 4
- 5-year Maintenance Program is a working document that is updated year-to-year based on current condition and needs of existing bridge inventory.

- Typical Cyclical Maintenance Items include:
 - Bridge Washing & Bridge Painting
 - Deck Sealing & Overlays
 - Concrete Substructure Sealing
 - Crack Sealing
 - Bearing Lubrication
- Element Specific Deficiency Repairs or Replacement include:
 - Superstructure and Substructure Concrete Repairs
 - Steel Girder Repairs
 - Joint Replacement
 - Bearing Replacement
 - Curb Repairs & Replacement
 - Scour Protection
 - Railing Repairs & Upgrades
 - Drainage Improvements

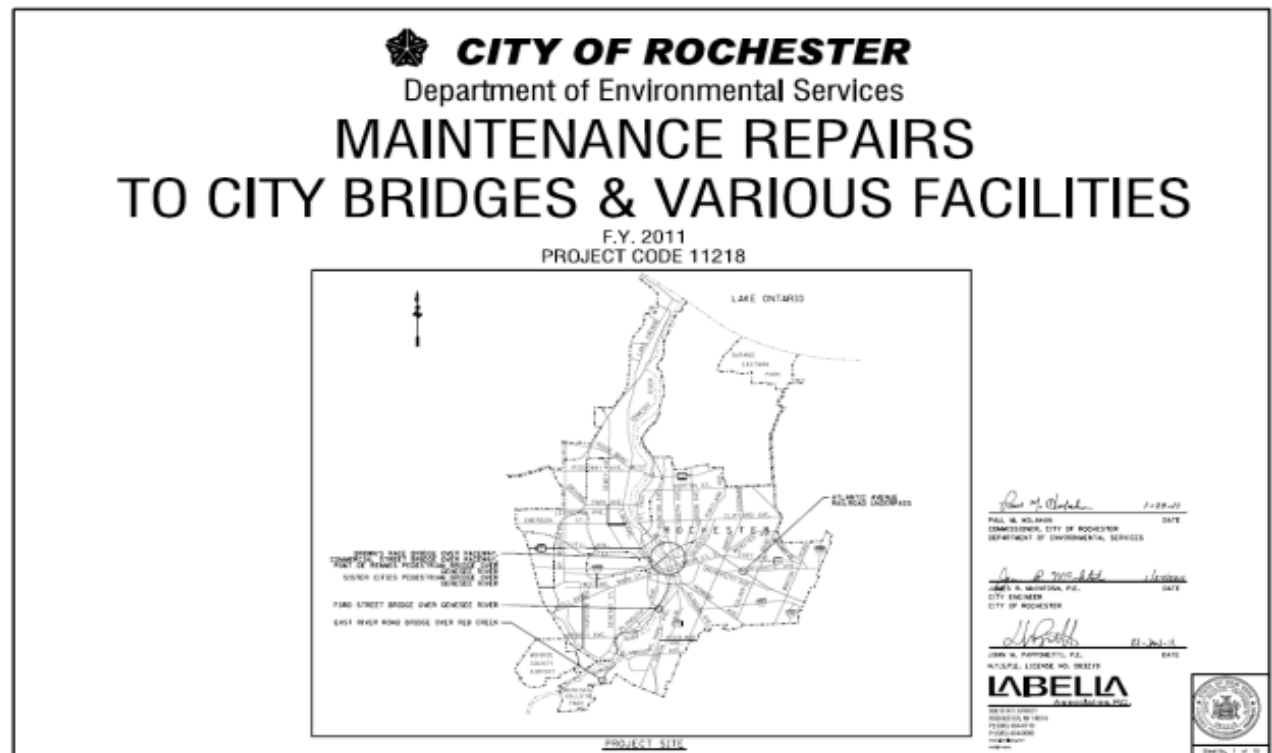


- Construction Documents (Year One of 5-year Plan)

- Plans & Details
- Specifications
- Proposal Book
- Engineer's Estimate

- Bid & Award

- Advertisement
- Pre-bid Meeting
- Bid Opening
- Bid Analysis
- Award Recommendation



- Construction Management & Inspection

- Preconstruction Meeting
- Progress Meetings
- Shop Drawing Review
- Pay Applications
- Change Orders
- Part-time Inspection
- Record Plans

CITY OF ROCHESTER D.E.S. CONSTRUCTION DIVISION
APPLICATION AND CERTIFICATION FOR PAYMENT

PROJECT: Maintenance Repairs to City Bridges and Various Facilities, FY 2010
 P.C. NO.: 08224
 CONTRACTOR: C.P. Ward, Inc., 100 River Road, Scottsville, NY 14546
 OWNER: City of Rochester, D.E.S., 30 Church Street, Rochester, NY 14614

SHARE: Bridge
 CONT. NO.: 115890
 PAYT NO.: Partial-06
 DATE: February 11, 2011

PERIOD FROM: November 4, 2010
 PERIOD TO: February 11, 2011

Application is Made For Payment, As Shown Below in Connection With The Contract Continuation Sheet(s) Attached.

The Present Status Of The Account For This Contract Share is As Follows:

No.	Date	Addition	Deletion
1	13-Aug-10	\$ 18,478.00	
2	27-Aug-10	\$ 4,615.00	
3	10-Dec-10	\$ 40,941.29	
4			
5			
6			
7			
8			
9			
10			
Totals		\$ 64,134.29	
Net Totals		\$ 64,134.29	

Original Share Sum: \$ 158,980.00
 Net Change By Change Order: \$ 64,134.29
 Contract Sum To Date: \$ 223,114.29

Total Completed And Stored To Date: \$ 221,139.29
 Retainage: LS \$ 100.00
 Total Earned Less Retainage: \$ 221,039.29
 Amount Previously Paid (Deduct): \$ 173,001.52
 Current Payment Due: \$ 48,037.77

THE UNDERSIGNED CONTRACTOR CERTIFIES THAT THE WORK COVERED BY THIS APPLICATION FOR PAYMENT HAS BEEN COMPLETED IN ACCORDANCE WITH CONTRACT DOCUMENTS, THAT ALL AMOUNTS HAVE BEEN PAID BY HIM FOR WORK FOR WHICH PREVIOUS CERTIFICATES FOR PAYMENT WERE ISSUED AND PAYMENTS WERE RECEIVED FROM THE OWNER, AND THAT THE CURRENT PAYMENT SHOWN HEREIN IS NOW DUE.

Contractor's Authorized Representative: *[Signature]*
 By: *[Signature]*
 Project Engineer: *[Signature]*
 Owner: *[Signature]*

IN ACCORDANCE WITH THE CONTRACT AND THIS APPLICATION FOR PAYMENT THE CONTRACTOR IS ENTITLED TO PAYMENT IN THE AMOUNT SHOWN ABOVE

THIS CERTIFICATE IS NOT NEGOTIABLE, IT IS PAYABLE ONLY TO THE PAYEE NAMED HEREIN. ISSUANCE, PAYMENT, AND ACCEPTANCE ARE WITHOUT PREJUDICE TO ANY RIGHTS OF THE CONTRACTOR UNDER THEIR CONTRACT.

Date: 2/18/11
 Date: 2/18/11

JOINT REPLACEMENT





POLYMER OVERLAY



CONCRETE SEALING

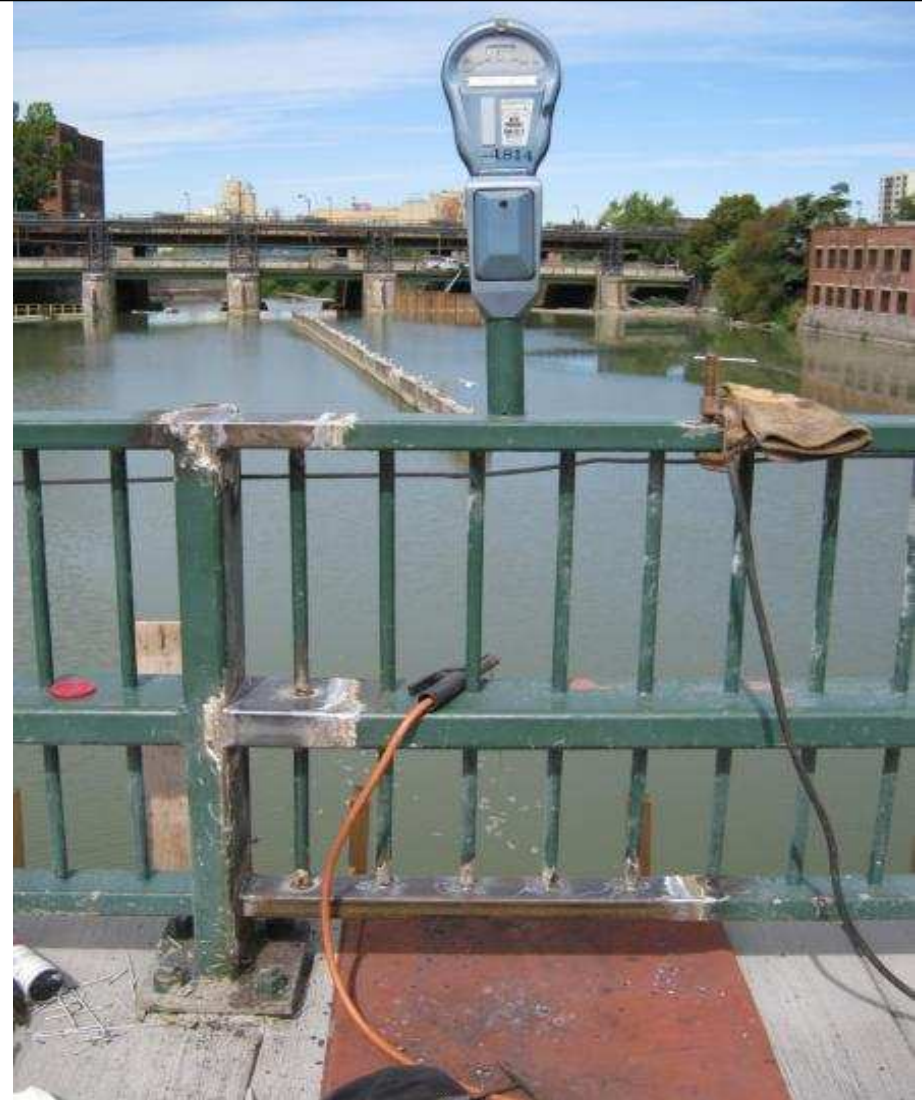




FASCIA REPAIRS



RAILING REPAIRS





SCUPPER CLEANING



CURB REPLACEMENT





REPOINTING



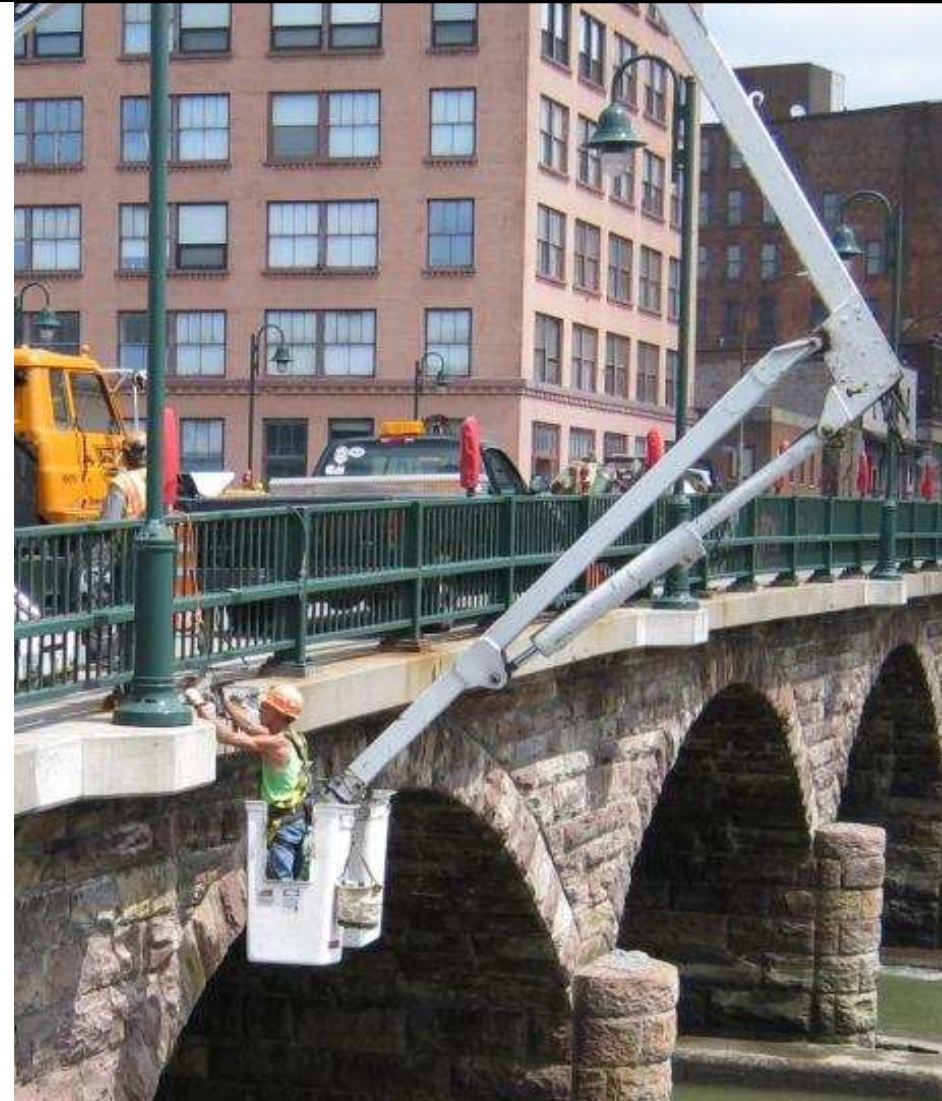
BRIDGE WASHING



CONCRETE SUBSTRUCTURE REPAIRS



- 1. MAINTENANCE PROGRAM HISTORY**
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QUESTION & ANSWER PERIOD



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