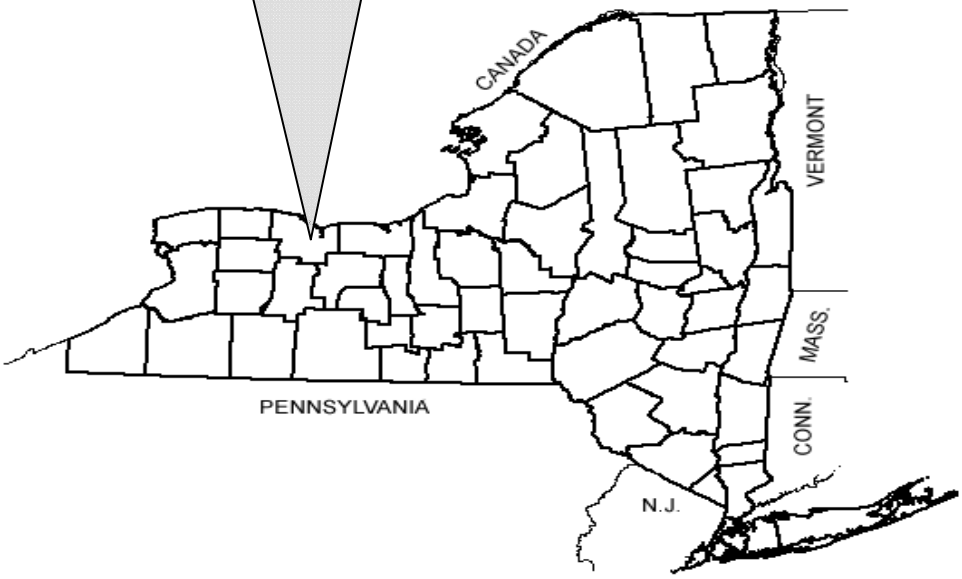
TRANSPORTATION

PROJECT REPORT

DRAFT
PROJECT SCOPING REPORT/
FINAL DESIGN REPORT

October 2011

Bridge Project
P.I.N. 4754.78 BIN: 3317400
Edgewood Avenue over Allen Creek
Monroe County
Town of Brighton



U.S. Department of Transportation Federal Highway Administration

NEW YORK STATE DEPARTMENT OF TRANSPORTATION
ANDREW M. CUOMO, Governor **JOAN MCDONALD, Commissioner**

PROJECT APPROVAL SHEET

(Pursuant to SAFETEA-LU Matrix)

A. IPP Approval:

The project cost and schedule are consistent with the Regional Capital Program.

The IPP was signed by: Robert Traver, P.E.

NYSDOT R4, Regional Director (Acting)

B. Recommendation for Scoping & Design Approval:

The project cost and schedule are consistent with the Regional Capital Program.

Environmental Determination & Federal Aid Process Concurrence:

The NYSDOT concurs with the classification of this project as a NEPA Class II, Programmatic Categorical Exclusion with Documentation as described in this document.

Daniel Hallowell

NYSDOT R4, Regional Program Manager

C. Recommendation for Scoping, Design, & Nonstandard Feature Approval:

All requirements requisite to these actions and approvals have been met, the required independent quality control reviews separate from the functional group reviews have been accomplished, and the work is consistent with established standards, policies, regulations and procedures, except as otherwise noted and explained.

Gregory D. Hutter, P.E.

Project Manager, Popli Design Group

D. Nonstandard Feature Approval:

No nonstandard features have been identified, created, or retained.

The required environmental determinations have been made and the preferred alternative for this project is ready for final design.

Terence Rice, P.E.

Director of Transportation, Monroe County DOT

LIST OF PREPARERS

Group Director Responsible for Production of the Design Approval Document:

Gregory D. Hutter, P.E., Popli Design Group.

Description of Work Performed by Firm: Directed the preparation of the Design Approval Document in accordance with established standards, policies, regulations and procedures, except as otherwise explained in this document.

PLACE P.E. STAMP

Note: *It is a violation of law for any person, unless they are acting under the direction of a licensed professional engineer, architect, landscape architect, or land surveyor, to alter an item in any way. If an item bearing the stamp of a licensed professional is altered, the altering engineer, architect, landscape architect, or land surveyor shall stamp the document and include the notation "altered by" followed by their signature, the date of such alteration, and a specific description of the alteration.*

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CHAPTER 1 - EXECUTIVE SUMMARY

1.1. Introduction

The purpose of this document is to summarize the scope of the subject bridge project and provide all necessary information toward future project development.

This project includes the replacement or rehabilitation of the existing structure carrying Edgewood Avenue over Allen Creek in the Town of Brighton, Monroe County, BIN 3317400. This report will summarize the conditions and needs of the existing structure and recommend a preferred alternative for design approval.

This report was prepared in accordance with the NYSDOT Project Development Manual, 17 NYCRR Part 15, and 23 CFR 771.

1.2. Purpose and Need

1.2.1. Where is the Project Located?

A. County Route 102
B. Edgewood Avenue
C. BIN: 3317400 over Allen Creek
D. Town of Brighton
E. Monroe County
F. 200' +/-

A project location map is located in Appendix A

1.2.2. Why is the Project Needed?

An Initial Project Proposal (IPP) was developed in July 2010 by the Monroe County Department of Transportation and the New York State Department of Transportation (NYSDOT). The IPP documented the need for the project based on the condition of the bridge, the increasingly difficult and expensive maintenance efforts and increased pedestrian mobility. The IPP is located in Appendix G. The project was approved by NYSDOT and programmed by the Genesee Transportation Council (GTC).

1.2.3. What are the Objectives/Purposes of the Project?

(1) Restore the bridge to a non-deficient condition using cost effective techniques to minimize the life cycle cost of maintenance and repair.
(2) Improve pedestrian mobility between the residential and commercial area.

1.3. What Alternative is Being Considered?

Alternative 1 – Null Alternative

This alternative involves performing no construction work on the existing bridge at this time. Monroe County personnel would continue providing periodic maintenance on the bridge. This

alternative cannot be considered a feasible alternative based on the project objectives. The structural condition and future maintenance costs would be undesirable. In addition, pedestrian mobility would not be improved. This alternative will not satisfy the project objectives, therefore will not be considered further.

Alternative 2 – Bridge Rehabilitation

This alternative would investigate repairing or replacing all existing elements that are in poor condition. Any element that was rated **4** or worse would be evaluated for repair or replacement. Primary tasks would include repairing the steel girders, replacing the steel grate deck with a concrete deck, and repairing the concrete abutments.

The repairs would include adding steel cover plates to the girders to increase their strength to be capable of carrying an HS-20 live load. A concrete deck meeting current design standards would replace the steel grate deck. Concrete repairs would be required for the abutments to rehabilitate them for long-term use.

A cost estimate was prepared for the rehabilitation alternative. The estimated cost is $448,377, an itemized breakdown is provided in Appendix F. The cost is over 75% of the replacement cost, this falls into the range where a rehabilitation alternative must be considered further. The additional consideration is that the rehabilitation alternative does not provide a sidewalk over the bridge. The additional cost for widening the bridge to accommodate a sidewalk exceeds the 85% threshold, therefore the rehabilitation alternative will not be considered further based on the Bridge Rehabilitation vs. Bridge Replacement worksheet analysis included in Appendix E.

Alternative 3 - Bridge Replacement

This alternative would replace the existing bridge in its entirety. Three bridge types were evaluated; a. Precast Concrete Frame, b. Prestressed Concrete Voided Slabs, c. Steel Multi-Girder. The existing superstructure and substructure will be replaced with all three bridge types. The proposed profile is raised 5” at the bridge location to provide a vertical curve at the bridge and increase the freeboard. The increase in the profile will not significantly impact the adjacent driveways. The bridge structure will be widened to accommodate wider shoulders and a sidewalk on the east side of the bridge. The proposed span length is 28’-0”. Heavy stone filling will be placed around the wingwalls and abutments to protect against erosion and scour.

a. Precast Concrete Frame: A precast concrete frame will be supported on a concrete footing, precast wingwalls will also be used. An asphalt pavement section will be used above the structure with bridge railing attached to a headwall. The estimated cost for the precast frame replacement is $596,338

b. Prestressed Concrete Voided Slabs: A prestressed concrete voided slab superstructure will be supported by a conventional concrete abutment. Cast-in-place concrete wingwalls would be used. A 6” concrete deck will be placed on the slabs with bridge railing. The estimated cost for the prestressed voided slab replacement is $802,972.

c. Steel Multi-Girder: A steel multi-girder superstructure will be supported by a conventional concrete abutment. Cast-in-place concrete wingwalls would be used. A 9.5”” concrete deck will be placed on the slabs with bridge railing. The estimated cost for the steel multi-girder replacement is $844,224.

This alternative meets all project objectives. Refer to Appendix A for a plan, profile and typical sections of the preferred bridge replacement type.

1.4 Environmental Review

NEPA (National Environmental Policy Act):

The proposed project meets the criteria established for a NEPA Class II, Programmatic Categorical Exclusion in accordance with 23 CFR 771.117d. Class II actions that do not individually or cumulatively have a significant environmental effect are excluded from the requirement to prepare an Environmental Impact Statement (EIS) or an Environmental Assessment (EA). The NEPA checklist will be included with the final design documents. Programmatic Categorical Exclusions do not require FHWA's concurrence.

SEQRA (State Environmental Quality Review Act):

The proposed project meets the criteria established for a SEQRA Type II Action in accordance with 17 NYCRR, Part 15. No further SEQRA processing is required. The project has been identified as a Type II action, per 17 NYCRR Section 15.14, Subdivision (e), Item 37, Paragraph (iv) replacement, reconstruction or rehabilitation, at present sites or immediately adjacent thereto, of existing bridges, culverts or other transportation structures, including railroad crossing structures, not involving substantial expansion of the structure. This permits the project to be classified as Type II since the project does not violate any of the criteria contained in subdivision (d) of Section 15.14. No further review under SEQR is required.

1.5 How will the Alternatives Affect the Environment?

Exhibit 1.1
Comparison of Alternatives

Category	Alternatives				
	Null	Rehabilitation	Replacement Precast Frame	Replacement Voided Slabs	Replacement Steel Multi-Girder
Wetland impacts	None	None	None	None	None
100 year floodplain impact	None	None	None	None	None
Archeological Sites Impacted	None	None	None	None	None
Section 106/Section 4(f) impacts	None	None	None	None	None
Noise	None	None	None	None	None
Impact to forested areas	None	None	None	None	None
Noise Impacts	None	None	None	None	None
Property impacts	None	0.07 acres 2 residences 1 business	0.07 acres 2 residences 1 business	0.07 acres 2 residences 1 business	0.07 acres 2 residences 1 business
Construction Cost	None	$448,377	$596,338	$802,972	$844,224

Anticipated Permits/Certifications/Coordination:

- USACOE Section 404 Permit, Nationwide Permit #3 Maintenance;
- NYSDEC Section 401 Water Quality Certification (Blanket expected);
- Article 15 Protection of Waters Permit (navigability)

Further investigation of the following is recommended:

- Potential asbestos containing materials (ACMs) associated with impacted underground utilities
- Asbestos Assessment – sampling and analysis of suspect ACM's.
- Site Investigation for suitable habitat for Endangered Species, [redacted].

1.6 What are the Costs & Schedules?

Design Approval is scheduled for December of 2011 with Construction scheduled to last 6 months beginning in May of 2013.

Exhibit 1.2 - Project Schedule	
Activity	**Date Occurred/Tentative**
Scope Approval	May 2011
Design Approval	December 2011
ROW Acquisition	August 2012
Construction Start	May 2013
Construction Complete	December 2013

Exhibit 1.3 – Comparison of Alternatives' Project Costs (in millions)					
Activities		**Alternative 2 Rehabilitation**	**Alternative 3a Replacement - Precast Frame**	**Alternative 3b Replacement - Voided Slab**	**Alternative 3c Replacement – Steel Multi-girder**
Construction Costs	Bridge	$252,115	$268,014	$419,635	$457,915
	Highway	$56,000	$142,000	$133,000	$133,000
Incidentals (5%)		$15,406	$20,501	$27,632	$29,546
Subtotal 1		$323,521	$430,515	$580,267	$609,813
Contingency (15% @ Design Approval)		$48,528	$64,577	$87,040	$91,472
Subtotal 2		$372,049	$495,092	$667,307	$701,285
Field Change Payment		$19,000	$25,000	$33,000	$35,000

Subtotal 3	$391,049	$520,092	$700,307	$736,285
Mobilization (4%)	$15,642	$20,804	$28,012	$29,451
Subtotal 4	$406,691	$540,896	$728,319	$765,736
Expected Award Amount (Inflated at 5%/yr. to midpoint of construction)	$448,377	$596,338	$802,972	$844,224
Construction Inspection (9%)	$40,354	$53,670	$72,267	$75,980
ROW Costs	$10,000	$10,000	$10,000	$10,000
Total Alternative Costs	$498,731	$660,008	$885,239	$930,204

1.7 Which Alternative is Preferred?

Only one feasible build alternative, Alternative 3 Bridge Replacement, has been identified that meets the project objectives. A preferred bridge type will be verified after all comments are received.

1.8 Who will decide Which Alternative is Chosen And How Can I Be Involved In This Decision?

Exhibit 1.4
Public Involvement Plan Schedule of Milestone Dates

Activity	Date Occurred/Tentative
Initial Environmental Findings	September 2011
Public Informational Meeting	October 25, 2011
Current Project Letting date	December 5, 2012

A public informational meeting is scheduled for October 25, 2011. A presentation will be made describing the project and opportunities will be available for the public to interact with and ask questions to the Monroe County Department of Transportation and design consultant staff.

- You can contact:

Karen Cox, P.E., Project Manager
Please include the six digit Project Identification Number (PIN) 4758.78
Questions or comments email: kcox@monroecounty.gov
Telephone: (585) 753-7742

Mailing Address
Monroe County Department of Transportation
City Place, Suite 6100
50 West Main Street
Rochester, NY 14614

A decision by Monroe County to enter final design will not be made until after the environmental determination and evaluation of the comments on the draft design approval document and comments received from the public informational meeting.

The remainder of this report is a detailed technical evaluation of the existing conditions, the proposed alternatives, the impacts of the alternatives, copies of technical reports and plans and other supporting information.

CHAPTER 2 – PROJECT INFORMATION

2.1 Local Plans for the Project Area

This project is on the approved Transportation Improvement Program (TIP) as project No. 4754.78.

The Town of Brighton Comprehensive Plan 2000 and Monroe Avenue Corridor Community Vision Plan was reviewed. This project is consistent with the local master plan.

There are no approved developments planned within the project area that will impact traffic operations.

2.2. Abutting Highway Segments and Future Plans for Abutting Highway Segments

The bridge is located 275 ft. from the Monroe Avenue intersection and 575 ft. from the Westfall Road intersection. The project will not impact either of these intersections because the limits of work will be 100 ft. or less from the bridge. The roadway reconstruction work involved with this project will be limited to transitioning the profile over the road with the profile of the existing highway and transitioning the proposed shoulder width on the bridge to meet with the existing shoulder width of the roadway. The intersection of Edgewood Avenue and Stonybrook Drive is in the area of the project. The reconstruction of the roadway will stop short of the intersection, a milling area may extend into the intersection.

An interview with a resident of Stonybrook during a site visit revealed a periodic sight distance problem for vehicles exiting Stonybrook and looking north on Edgewood Avenue. The resident stated that they need to trim the brush on the west side of the bridge to have a clear view. The project will remove this brush and trees adjacent to the bridge. The bridge rail will also be moved back two feet providing additional sight distance.

The posted speed limit on Edgewood Avenue is 35 mph.

Monroe County has reported that there are no plans for future work on Edgewood Avenue or in the vicinity of the project.

2.3 Transportation Conditions, Deficiencies and Engineering Considerations

2.3.1 Traffic and Safety and Maintenance Operations

2.3.1.1 Functional Classification and National Highway System (NHS) –

Exhibit 2.1 Classification Data	
Route(s)	County Road 102
Functional Classification	Urban Collector
National Highway System (NHS)	No
Designated Truck Access Route	No
Qualifying Highway	No
Within 1.0 m of a Qualifying Highway	Yes
Within the 16 ft vertical clearance network	No

2.3.1.2 Control of Access

There are no access controls on Edgewood Avenue.

2.3.1.3 Traffic Control Devices

Traffic from Stonybrook Road is controlled with a stop sign. The intersections of Edgewood Avenue/Monroe Avenue and Edgewood Avenue/Westfall Road are controlled by traffic signals.

2.3.1.4 Traffic Volumes

Exhibit 2.2 Existing and Future Traffic Volumes		
	Edgewood Avenue	
Year	ADT	DHV
Existing (2008)	3800	462
ETC (2013)	3838	467
ETC+30 (2043)	4075	495

Note: ETC is the Estimated Time of Completion

The Estimated Time of Completion (ETC) + 30 design year was selected per PDM Appendix 5. A 0.2% growth rate was used for future growth based on population growth projections in Brighton. Traffic data is included in Appendix C.

2.3.1.5 Level of Service

The project is a bridge project only and is not a capacity improvement project; therefore, a level of service analysis was not performed.

2.3.1.6 Work Zone Safety & Mobility

A. Work Zone Traffic Control Plan

The IPP indicates that NYSDOT has determined that the project is not significant per 23 CFR 630.1010. A Transportation Management Plan consisting of a temporary work zone traffic control plan will be prepared. Coordination with the Regional Transportation Operations Center and public information activities will be required.

An off-site detour is the recommended method of traffic control for the project. A short detour is available with Westfall Road connecting Edgewood Avenue and Monroe Avenue. Refer to Appendix A for the proposed detour plan. The details for the work zone traffic control will be prepared and evaluated during final design.

Coordination will occur with the local emergency responders to ensure the response times will be acceptable during construction. The Brighton Central School District, postal service, and local residents will all be contacted to coordinate bus routes, postal delivery, and residential access during the bridge closure.

2.3.1.7 Safety Considerations, Accident History and Analysis

Monroe County provided the most recent three years of accident reports for the project vicinity. The bridge and the immediate project area did not contribute to any accidents within this time frame. No further analysis was performed.

2.3.1.8 Ownership and Maintenance Jurisdiction

The structure and approaches are owned and maintained by the Monroe County Department of Transportation. Ownership and maintenance jurisdiction will remain unchanged as a result of this project.

2.3.2 Multimodal

2.3.2.1 Pedestrians

There is not a sidewalk on the existing bridge. A sidewalk does exist along the east side of Edgewood Avenue to the north and south of the bridge. The existing sidewalk ends at the bridge and directs pedestrians to the shoulder.

The area to the south of the bridge is residential and the area to the north on Monroe Avenue is commercial. The residences around the bridge are within the walking distance for the Brighton Central School District. A pedestrian generator checklist is included in Appendix C.

A 5'-0" sidewalk on the east side of the bridge to connect the existing sidewalk along Edgewood Avenue is proposed for the project.

2.3.2.2 Bicyclists

The proposed shoulders on the bridge are 5.5 ft. wide. If plans develop to designate Edgewood Avenue as a bicycle route and increase the shoulder width along the roadway, the proposed paved shoulder on the bridge may legally be used by bicyclists.

2.3.3 Infrastructure

2.3.3.1 Design Standards -

2.3.3.2 Critical Design Elements

Exhibit 2.6
Critical Design Elements for Edgewood Avenue

PIN:	4754.78	NHS (Y/N):	No
Route No. & Name:	Edgewood Avenue	Functional Classification:	Urban - Collector
Project Type:	Bridge Replacement	Design Classification:	Urban - Collector
% Trucks:	4	Terrain:	Level
ADT:	6840 (2010)	Truck Access/Qualifying Hwy.	No

	Element	Standard	Existing Condition	Proposed Condition
1	Design Speed	30-60 mph Highway Design Manual (HDM) 2.7.3.2.A	35 mph	35 mph
2	Lane Width	10.0' Minimum, 12.0' Maximum HDM 2.7.3.2.A	11.0'	11.0'
3	Shoulder Width	4.0' - Min., 8.0' - Max. HDM 2.7.3.2.B Bridge Manual 2.3.1	Varies 2.0'-4.0'	5.5'
4	Bridge Roadway Width	Total Roadway = 28.0' - 40.0' Lane = 10.0' - 12.0' Shoulder =4.0'- 8.0' HDM 2.7.3.2.d Bridge Manual 2.3.1	30.0' 11.0' 4.0'	38'9" 11.0' 5.5'
5	Maximum Grade	9% Max HDM Section 2.7.3.2 E	1.77%	1.98%
6	Horizontal Curvature	250' Min. HDM Section 2.7.3.2 F	NA	NA
7	Superelevation Rate	4% Max HDM Section 2.7.3.2 G	NA	NA
8	Stopping Sight Distance	200' Min. (Horizontal & Vertical) HDM Section 2.7.3.2 H	NA	864'
9	Horizontal Clearance	0' w/Barrier 1.5' w/o Barrier HDM Section 2.7.3.2 I	1.5'	1.5'
10	Vertical Clearance (above traveled way)	14' Min. HDM 2.7.3.2.J Bridge Manual 2.4.1	NA	NA
11	Travel Lane Cross Slope	3.0% MCDOT	0.7%	3.0%
12	Rollover	Between Lanes = 6% Max MCDOT @ Edge of Travel Way = 8% Max HDM 2.7.3.2.L	1.3% 2.0%	6.0% 0.0%
13	Structural Capacity	Replace = HL-93 Min. HDM 2.7.3.2.M Bridge Manual 2.6.1	H20 - 11 T Inv. 19 T Oper.	HL-93
14	Level of Service	Min. “B” HDM-Section 2.7.5.2.N	NA	NA
15	Control of Access	Fully controlled HDM-Section 2.7.5.2.O	NA	NA

16	Pedestrian Accommodation	ADA Standards if possible HDM Chapter 18	NA	ADA Accessible Sidewalk
17	Median Width	1.2 m minimum w/o left turn 3.6 m minimum HDM-Section 2.7.2.1.O	NA	NA

2.3.3.3 Existing and Proposed Highway/Bridge Plan and Section

The existing roadway is approximately 30' in width, with 11' lanes and varying shoulder widths ranging from 2' to 4'. The travel lanes have a cross slope of 0.7%.

The proposed roadway will be expanded slightly due to the increased shoulder width and the addition of a sidewalk. The travel lanes will remain 11' in width, but the shoulders on the bridge will be increased to 5.5'. The proposed shoulder width was derived from the available width on the structure when the required number of precast units were determined. The proposed width of the structure provides the 5.5' shoulders, just short of a desired 6', while not leaving any unused space outside of the headwalls. If the structure was widened another unit there would be unused space outside of the headwalls and a greater expense. The sidewalk will be 5'-5" in width including the width of the granite curb. The travel lane cross slope will be increased to 3%. The overall width of the new cross section will be 38'-9".

The proposed bridge section will be transitioned to the existing highway section. The sidewalk will tie into the existing sidewalks, and the proposed shoulder width will be transitioned back to the appropriate existing shoulder width at each quadrant.

2.3.3.4 Non Standard/Non Conforming Features

There are no nonstandard or nonconforming features proposed to be retained within the project limits.

2.3.3.5 Pavement and Shoulder Conditions

Pavement and shoulder reconstruction will be limited to the length necessary to provide a smooth transition between the existing pavement and the proposed bridge. The existing pavement of the roadway is in good condition and the project is not a pavement improvement project.

2.3.3.6 Drainage Systems

There is an existing closed drainage system along Edgewood Avenue to the south of the bridge. The system outlets to Allen Creek in the southeast quadrant of the bridge. Monroe County has recently performed work on the outlet of the system. Erosion control is required at the outlet which will be improved with proposed stone filling.

There is an asphalt curb on the west side of Edgewood Avenue just to the north of the bridge. It appears the curb is directing runoff from the road towards the creek and away from the residence. A small swale is proposed to drain the runoff from the road to the creek.

2.3.3.7 Geotechnical

The existing bridge is supported on bedrock according to available record plans. Borings were extracted on each end of the bridge to determine the soil characteristics in the area. The borings reached refusal approximately fourteen feet below the pavement surface. The depth to bedrock confirms that the proposed bridge can be supported with a shallow foundation on sound bedrock. A geotechnical report is attached as Appendix D.

2.3.3.8 Structures

The existing bridge is described below. The project proposes to replace the existing deteriorated structure and provide a sidewalk across the bridge to provide a linkage between the existing sidewalks and the residential and commercial areas.

Structure Data		
DATA	EXISTING STRUCTURE	PROPOSED STRUCTURE
BIN	3317400	3317400
Feature Carried/Crossed	Allen Creek	Allen Creek
Type of Bridge	Steel - Multi-Beam/Girder	Concrete Arch
Number and Length of Spans	1 Span @ 27'	1 Span @ 28'
Lane Width(s)	11.0'	11.0'
Shoulder Width(s)	4.0'	5.5'
Sidewalk(s)	NA	5.5' Sidewalk (East Side)
Utilities Carried	4" Gas	None
Horizontal Clearance(s)	10.0'	10.0'
Vertical Clearance(s)	NA	NA
Federal Sufficiency Rating	45.5	NA
State Condition Rating	4.552	NA

History & Deficiencies – The existing bridge was built in 1953 with the last rehab (joints, headers) in 2005. Repairs have been made on the steel grate deck where the main steel bars of the deck have deteriorated. Concrete has been placed in the open steel grate to compensate for the loss of the steel bars.

The main steel primary members, the steel grate deck, and the condition of the abutments are the primary deficiencies of the existing bridge. The primary members are deteriorating which has caused the bridge to be posted for 20 tons restricting traffic on the road. There is up to 37% flange section loss. The steel deck grate has required repairs in the past and there are additional broken bars that in the future will also require repairs. The concrete abutments are deteriorated with spalls up to 3" deep. The remaining concrete in the spalled areas is hollow sounding in addition to the surrounding areas of the spalls. The begin abutment is estimated to require concrete removal and repair to 50% of the face of the abutment. The end abutment is estimated to require concrete removal and repair to 100% of the face of the abutment.

Inspection - Popli Design Group performed a site visit on September 19, 2011 to verify and supplement the conditions reported in the previous biennial inspection. The June 2010 biennial inspection is included in Appendix E.

Restrictions – The bridge was posted for a 20 ton load limit in 2010. The existing girders are the controlling primary members.

Waterway – The stream alignment with the bridge is good. There is limited bank protection on the stream banks and around the existing structure. There is some erosion and scour on the banks with exposed roots in locations. A tree had previously fallen into the creek near the downstream end of the bridge. The tree has been removed. Stone filling will be proposed to stabilize the stream banks and protect the structure from erosion and scour.

2.3.3.9 Hydraulics of Bridges and Culverts

A preliminary comparison of the existing hydraulic conditions and the proposed hydraulic conditions has been performed for the replacement of the Edgewood Avenue Bridge over Allen Creek. The hydraulic report will be included in the appendix for the final design report and a summary of the results is presented here.

Drainage studies and calculations were performed using the "Regionalization of Flood Discharges for Rural, Unregulated Streams in New York, Excluding Long Island," U.S. Geological Survey-Water Resources Investigations Report 90-4197 to determine the peak discharges for this study. The drainage area was measured from the United States Geological Survey's (USGS) quad maps and calculated to be 9.96 square miles. The Federal Emergency Management Agency (FEMA) has recently performed a detailed flood insurance study (FIS) at this bridge location. The results for peak discharges obtained from the regression analysis were much less than the FEMA results. To be conservative and to confirm with FEMA results, the peak discharges from the FEMA analysis are used in the hydraulic analysis. The 50-year storm and 100-year storm discharges are listed in Table 1 below.

COMPARISON OF PEAK DISCHARGES FOR EDGEWOOD AVENUE BRIDGE OVER ALLEN CREEK (BIN 3317400)		
Return Period (Years)	FEMA FIS (cfs)	Regression Analysis (cfs)
50	1040	508
100	1190	554

Table 1

The Army Corps of Engineers (ACOE) River Analysis System (HEC-RAS), version 4.1.0, developed by the Hydrologic Engineering Center was used to perform the hydraulic analysis for this project.

The existing hydraulic opening is approximately 206 square feet with a span of 26 ft. The existing water surfaces, as calculated by HEC-RAS, are 465.11 feet and 465.64 feet for the 50-year storm 100-year storm respectively. The low chord elevation of the existing bridge is 466.29 feet. Therefore, the existing freeboard is 1.18 feet.

A number of variables were investigated to improve the freeboard including increasing the span length, minimizing the proposed superstructure depth and raising the profile.

The hydraulic analysis was run assuming a precast concrete frame as the preferred alternative. The precast frame provides the smallest superstructure depth of the three replacement alternatives. A span length of 28 feet was used in the hydraulic analysis. A span of 32 feet was also attempted and the results indicated minimal improvement of design high water and at this span the height of the leg may cause conflicts with the rock elevation.

Various profile improvements were also investigated as a solution to the existing freeboard. A profile raising the roadway by approximately 5 inches in the vicinity of the bridge was chosen. The total length of pavement work to raise the profile is 198 ft., which includes 121 ft of full depth reconstruction and 77 ft of milling and paving.

The proposed hydraulic opening for the assumed superstructure is approximately 213 square feet. The proposed water surfaces, as calculated by HEC-RAS, are 465.01 feet and 465.46 feet for the 50-year storm 100-year storm respectively. The low chord elevation of the proposed bridge is 467.03 feet resulting in a proposed freeboard of 2.02 feet. The proposed freeboard meets the recommended minimum in the NYSDOT Bridge Manual and is an improvement from existing conditions. The hydraulic analysis will be further evaluated prior to the final report.

The hydraulic summary table below lists the peak discharge, velocity, water surface elevation and freeboard for five design storms.

HYDRAULIC SUMMARY				
Recurrence Interval	Peak Discharge	Proposed Opening (Low Beam Elev. = 467.03 ft)		
		Average Velocity	Water Surf. El.	Freeboard
10 year	710 cfs	5.21 ft/s	463.87 ft	3.16 ft
25 year	850 cfs	5.69 ft/s	464.38 ft	2.65 ft
50 year	1040 cfs	6.28 ft/s	465.01 ft	2.02 ft
100 year	1190 cfs	6.72 ft/s	465.46 ft	1.57 ft
500 year	1520 cfs	7.53 ft/s	466.41 ft	0.62 ft

Table 2

Both the existing and proposed evaluations indicated there was no overtopping of the roadway for all return periods. Table 3 compares the existing and proposed backwater elevations as calculated by HEC-RAS.

BACKWATER ELEVATIONS FOR EDGEWOOD AVENUE BRIDGE OVER ALLEN CREEK (BIN 3317400)		
Return Period (Years)	Exist. Bridge	Prop. Bridge
2	462.94 ft	462.84 ft
10	464.21 ft	464.12 ft
25	464.79 ft	464.69 ft
50	465.53 ft	465.44 ft
100	466.07 ft	465.98 ft
500	467.16 ft	467.15 ft

Table 3

Pursuant to 6 NYCRR Part 502, for a location with a flood insurance study designating flood hazard boundaries, no increase in base flood elevation is allowed. The values for the existing and proposed flood elevations show there is no increase in the base flood elevation (100-year storm) for this location. The upstream water elevation will decrease slightly and the downstream water elevation showed no change between the existing and proposed conditions.

2.3.3.10 Utilities –

Upon further investigation of the location of existing utilities across Edgewood Avenue Bridge, the following information has been obtained:

1) Gas and Electric

- There is a four (4) inch steel gas line that is located on the western side of the bridge. The gas line is incased in a 6" steel casing. Rochester Gas and Electric will be contacted to discuss the relocation of this gas line. The existing line will need to be removed from the bridge and then re-routed under the bridge through Allen Creek.

- There is no underground electric located along the bridge. All electric is overhead along the east side of the bridge. Rochester Gas and Electric will be contacted to discuss the relocation of one of the existing light poles located on the southeast side of the bridge. The relocation will be necessary to allow for the widening of the shoulders and the installation of a 5' sidewalk.

2) Water

- An eight (8) inch cast iron water line is located on the east side, off of the bridge. A portion of the water line will need to be abandoned and re-routed to allow for the installation of new wing walls and footings. Monroe County Water Authority will be contacted to discuss the proposed location of the new 8" water line.

3) Sanitary

- The sanitary sewer is a 12" main that does not cross the bridge. The inverts are deep enough to suggest that the sewer is within the creek along the west side of the bridge. One of the sanitary manholes will potentially need to be raised to meet the final grade after the bridge replacement is complete.

2.3.3.11 Right of Way

There would be impacts to right of way for both the rehabilitation and replacement alternatives.

The rehabilitation alternative would require four permanent easements for access to place stone filling and to build the wingwall. The permanent easements are detailed in the table below.

Table of Anticipated Temporary and Permanent Right of Way Acquisitions Alternative 2 – Bridge Rehabilitation

No.	Reputed Owner	Map & Parcel #	Acqus. Type	Purpose	Parcel Size (±)		Acquisition Size (±)	
					sq.ft	ac	sq.ft	ac
1	Stonybrook Track Association	L. 4917 P. 5 TM 137.18-2-69	PE	Highway Infrastruct	8722.04	0.20	682.74	0.0156
2	Nanavti, Jyoyi M.	L. 8334 P. 691 TM 137.18-2-68	PE	Highway Infrastruct	22776.0	0.52	1538.14	0.035
3	Sherwin – Williams Development Corporation	L. 6339 P. 88 TM 137.19-1-1	PE	Highway Infrastruct	24664	0.56	993.73	0.022

The replacement alternatives would require three permanent easements as above and in addition the fourth permanent easement would need to be a fee acquisition because the wingwall for the structure is proposed to cross the highway boundary. The acquisitions are detailed below.

Table of Anticipated Temporary and Permanent Right of Way Acquisitions Alternative 3a, 3b, 3c – Bridge Replacement

No.	Reputed Owner	Map & Parcel #	Acqus. Type	Purpose	Parcel Size (±)		Acquisition Size (±)	
					sq.ft	ac	sq.ft	ac
1	Stonybrook Track Association	L. 4917 P. 5 TM 137.18-2-69	PE	Highway Infrastruct.	8722.04	0.20	682.74	0.0156
2	Nanavti, Jyoyi M.	L. 8334 P. 691 TM 137.18-2-68	PE	Highway Infrastruct.	22776.0	0.52	1538.14	0.035
3	Sherwin – Williams Development Corporation	L. 6339 P. 88 TM 137.19-1-1	PE	Highway Infrastruct.	24664	0.56	534.03	0.012
4	Sherwin – Williams Development Corporation	L. 6339 P. 88 TM 137.19-1-1	FEE	Highway Infrastruct.			459.70	0.010

2.3.3.12 Landscaping/Environmental Enhancement

There is existing landscaping at the northwest quadrant close to the bridge. The landscaping borders the highway boundary line. The proposed work is not expected to directly impact this landscaping and efforts will be made to not indirectly impact the landscaping.

There will be some trees (6+/-) and brush removed immediately adjacent to the existing bridge for construction. The removal of the trees and shrubs on the west side will improve sight distance for drivers exiting Stonybrook Drive.

There are no planned landscaping as part of this project.

A proposed enhancement is aesthetic stone facing on the outside face of the precast frame unit and wingwalls. The bridge is set in a residential area, there are four private bridges crossing Allen Creek upstream that provide access to residences that have stone walls. The Evans Road bridge over Allen Creek replaced in 2002 used aesthetic stone facing.

2.4 Miscellaneous

There is street lighting within the highway limits attached to the utility poles. The lighting will remain after the project is complete.

Chapter 3 – Social, Economic and Environmental Considerations

3.0 Introduction

This chapter discusses the environmental issues associated with the replacement/rehabilitation of the Edgewood Avenue Bridge over Allen Creek (BIN 3317400) in the Town of Brighton, Monroe County, New York. This project will involve the replacement/rehabilitation of the existing single span steel structure supported by concrete abutments. Refer to the Environmental Checklist included in Appendix B for information on all environmental issues for which this project was screened.

3.1 National Environmental Policy Act (NEPA):

The proposed project meets the criteria established for a NEPA Class II, Programmatic Categorical Exclusion in accordance with 23 CFR 771.117d. Class II actions that do not individually or cumulatively have a significant environmental effect are excluded from the requirement to prepare an Environmental Impact Statement (EIS) or an Environmental Assessment (EA). The NEPA checklist will be included with the final design documents. Programmatic Categorical Exclusions do not require FHWA's concurrence.

3.2 State Environmental Quality Review Act (SEQRA)

The proposed project meets the criteria established for a SEQRA Type II Action in accordance with 17 NYCRR, Part 15. No further SEQRA processing is required. The project has been identified as a Type II action, per 17 NYCRR Section 15.14, Subdivision (e), Item 37, Paragraph (iv) replacement, reconstruction or rehabilitation, at present sites or immediately adjacent thereto, of existing bridges, culverts or other transportation structures, including railroad crossing structures, not involving substantial expansion of the structure. This permits the project to be classified as Type II since the project does not violate any of the criteria contained in subdivision (d) of Section 15.14. No further review under SEQR is required.

Specifically, the project **does not** include or result in:

1. The acquisition of an occupied dwelling or business structure;
2. Significant changes in passenger or vehicle traffic volumes, vehicle mix, local travel patterns or access;
3. More than minor social, economic or environmental effects upon occupied dwelling units, businesses, abutting properties or other established human activities;
4. Significant inconsistency with current plans or goals that have been adopted by local government bodies;
5. Physical alteration of more than 1 ha (2.5 ac) of publicly owned or operated park land, recreational area or designated open space;
6. An effect on a district, building, structure or site eligible for, or listed on, the National Register of Historic Places;
7. More than minor alteration of, or adverse effect upon, any property, protected area, or natural or man-made resource of national, State or local significance, including but not limited to:
   (i) Wetlands and associated areas;
   (ii) Floodplains;
   (iii) Prime or unique agricultural land;
   (iv) Agricultural districts, when more than one acre may be affected;

(v) Water resources, including lakes, reservoirs, rivers and streams;

(vi) Water supply sources;

(vii) Designated wild, scenic and recreational rivers;

(viii) Unique ecological, natural wooded or scenic areas;

(ix) Rare, threatened or endangered species;

(x) Any area designated as a critical environmental area;

8. Requirement for an indirect air source quality permit.

3.3 Additional Environmental Information –

3.3.1 General Ecology and Endangered Species

The National Oceanic and Atmospheric Administration (NOAA) division of National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (USFWS) share the responsibility for managing federally listed threatened and endangered species. NOAA division of NMFS manages marine and anadromous species while the USFWS typically manages land and freshwater species. The NOAA, NMFS list of endangered, threatened and candidate species was reviewed. There are no marine or anadromous species listed as being present within the project area. No further coordination with the NOAA, NMFS is necessary.

The USFWS "Federally Listed Endangered and Threatened Species and Candidate Species in New York (By County)" list was reviewed. The USFWS lists the following species for Monroe County:

- [redacted],

The USFWS lists the [redacted] as a threatened species with known or likely occurrences within Monroe County in the Riga and Sweden Townships. The project is not in Sweden or Riga, therefore, no further review is required.

State Listed Threatened or Endangered Species

The New York State Department of Environmental Conservation (NYSDEC) was contacted for information regarding the presence of state listed threatened, endangered or special concern species that may be impacted by the proposed project. A response from the NYSDEC, New York National Heritage Program (NYNHP) was received on September 14, 2011 stating that there have been occurrences of the [redacted] in Allen Creek. A site investigation will be necessary to determine if the project has a suitable habitat. A copy of all applicable correspondence is included in the Appendix of this report.

3.3.2 Ground Water

Sole Source Aquifer

A review of the EPA designated Sole Source Aquifer map for Region 2 indicated that Monroe County is not located within a Sole Source Aquifer System. No further review is required.

Unconfined Aquifer

The USGS Numbered Series map from the Water-Resources Investigations Report entitled "Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York, Finger Lakes Sheet," dated 1988, indicated there are no designated confined or unconfined aquifers within the project area.

3.3.3 Surface Water

Discharges of fill (i.e. riprap, heavy stone fill) or other materials below the Ordinary High Water elevation of the on-site stream will require authorization under a U.S. Army Corps of Engineers (USACOE) Section 404 permit. The proposed project includes the replacement of a currently serviceable structure; therefore the project will likely be covered under the USACOE General Permit 3, for Maintenance. A preconstruction notification, in accordance with general condition 27 of the 2007 USACOE Nationwide Permits, will be required, if fill material (i.e. riprap, heavy stone fill) is placed below the ordinary high water level.

A Section 401 Water Quality Certification will be required for in-water work associated with the rehabilitation/replacement of the bridge. A Blanket Water Quality Certification has been issued by the New York State Department of Environmental Conservation (NYSDEC) for projects covered under Nationwide Permit #3. The following limitations have been placed on the Blanket Water Quality Certification:

a. No alterations are permitted to water levels of waters of the United States.
b. Authorized dewatering is limited to immediate work areas that are coffer-dammed or isolated from the larger water body or water of the United States. Dewatering must be localized and not reduce the water level of a water body such that fish and other aquatic vertebrates are killed or their eggs and nests exposed to freezing, desiccation or depredation in the immediate area of the work site.
c. Coffer dams or diversions shall not be constructed in a manner that causes or exacerbates erosion or sedimentation.
d. This certification does not authorize replacement of existing bulkheads or vertical retaining walls that extend waterward from the existing footprint of the structure.

The proposed bridge project meets the NYSDEC established limitations; therefore it is expected that this project will be covered under the Blanket Section 401 Water Quality Certification.

Allen Creek, (at the project location) is a NYSDEC Class B water body. A NYSDEC Article 15 Protection of Waters Permit is required for disturbing the bed or banks of a stream with a classification of C(t) or higher. Therefore, with regards to stream classification and standard, a NYSDEC Article 15 permit is required.

It is expected that the project will not result in changes to the overall surface water drainage patterns and will not significantly increase pavement surface area. Therefore, increases in surface water runoff rates and volumes are not expected as a result of the proposed project.

During construction, storm water runoff from exposed soil surfaces may flow into the existing surface conveyance system and subsequently into adjacent surface water systems. These flows will be managed in accordance with an erosion and sediment control plan which will be developed prior to construction.

It is not expected that the proposed project will result in a total area of disturbance that will exceed the designated disturbance threshold of 1-acre. Therefore, a Stormwater Pollution Prevention Plan (SWPPP) will not be required. No adverse impact to surface water is expected as a result of the project.

3.3.4 State Wetlands

This project does not have any land classification as a state wetland.

3.3.5 Federal Jurisdictional Wetlands

The National Wetlands Inventory (NWI) online mapper accessed from the USFWS indicated that there is not a federally regulated wetlands at the project location.

A field visit was performed by a certified wetland delineator to verify if there were wetlands within the project area and to delineate the limits of any wetlands found. The field visit found wetlands along both shorelines west of the existing bridge. These wetlands were delineated and then surveyed by a licensed survey team. The total area delineated along both shorelines west of the existing bridge is approximately 400 square feet. Both strips are approximately 10 feet west of the existing western wing walls and should not be impacted by the proposed bridge design.

The information gathered during the wetland observation visit will be utilized to complete the preconstruction notification, in accordance with general condition 27 of the 2007 USACOE Nationwide Permits, which will be required for coverage under the Nationwide Permit as described in the section on Surface Water.

3.3.6 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) were reviewed to determine the presence of floodplains within the project limits. The proposed project is located within a FEMA zone AE (shaded). Areas within a shaded Zone AE are within the floodway. This is the stream channel plus any adjacent flood plain areas that must be kept free of encroachment so that the 1% annual chance of flood can be carried without substantial increases in flood heights. Design considerations will be taken to ensure that the floodplain is kept free of encroachment and will not be altered in any way. Pre and post construction will be consistent with the current FEMA study.

3.3.7 Coastal Zone Management

The project corridor is not within a coastal zone and is not covered by either the Coastal Zone Management Act or the Waterfront Revitalization and Coastal Resources Act.

3.3.8 Navigable Waterways

Allen Creek is not considered navigable as defined by the United States Army Corps of Engineers (USACOE) or the United States Coast Guard (USCG), therefore, neither a Section 10 nor a Section 9 permit will be required.

Allen Creek is considered navigable by NYSDEC. Therefore, an Article 15 Protection of Waters Permit for the excavation or placement of fill in navigable waters will be required.

3.3.9 Cultural Resource Investigation

Records from the New York State Historic Preservation Office (SHPO) and National Register of Historic Places were reviewed for listed historic properties that may be impacted by the proposed project. There are no listed historic sites within the project limits.

Per the internet map prepared by the New York State Park, Office of Parks, Recreations and Historic Preservation, the proposed project is not located within an archeologically sensitive area.

A project review request has been prepared and submitted to the NYSDOT Region 4 SHPO liaison for determination that project activities will have no effect on historic properties and that further Section 106 compliance is not required. Upon receiving a response, applicable documentation will be included in the Appendix.

3.3.10 Parks

There are no parklands within the project corridor or within the immediate vicinity. No further review is required.

3.3.11 Hazardous Waste/Contaminated Materials

Introduction

A Hazardous Waste/Contaminated Materials (HW/CM) Screening was conducted within the project vicinity. This screening included a review of available records and a project corridor site walkover conducted on 9/1/11. The purpose of this assessment is to identify potential areas of environmental concern that may be disturbed during construction of the proposed project.

Environmental Data Resources (EDR)

A review of local, State and Federal environmental databases was conducted. EDR inc. was contracted to provide a comprehensive review of Federal, State and local listed data on potential hazardous waste sites within the project vicinity. This data search was performed in accordance with ASTM E-1527-05 standards. The use of the EDR resource allows for a comprehensive listing of sites of potential concern. The following table summarizes the information available through the EDR report and the subsequent findings of this search.

Table 3-1: Environmental Records Review

STANDARD Environmental Record Sources	Minimum Search Distance: ASTM Standard- Miles	No. of Listed Properties[1] (summarized from the EDR Report)
Federal NPL Site List	1.0	0
Federal Delisted NPL Site List	1.0	0
Federal CERCLIS List	0.5	0
Federal CERCLIS NFRAP Site List	0.5	0
Federal RCRA CORRACTS Facilities List	1.0	0
Federal RCRA non-CORRACTS TSD Facilities List	0.5	0
Federal RCRA Generators List	0.25	1
Federal Institutional Control/ Engineering Control Registries	0.5	0
Federal ERNS List	Site only	0
State and Tribal Hazardous Waste Sites – equivalent NPL	1.0	0
State and Tribal Hazardous Waste Sites – equivalent CERCLIS	1.0	2
State and Tribal Landfill and/or Solid Waste Disposal Site Lists	0.5	0
State and Tribal Leaking Storage Tank Lists	0.5	7
State and Tribal Registered Storage Tank Lists	Site and adjoining properties	5
State and Tribal Institutional Control/Engineering Control Registries	0.5	0
State and Tribal Voluntary Cleanup Sites	0.5	0
State and Tribal Brownfield Sites	0.5	0
Additional Environmental Records		
Local Lists of Registered Storage Tanks	0.25	2
Records of Emergency Release Reports- NY Spills	0.125	6

Table 3-1: Environmental Records Review

STANDARD Environmental Record Sources	Minimum Search Distance: ASTM Standard- Miles	No. of Listed Properties[1] (summarized from the EDR Report)
Other Ascertainable Records		
RCRA-Non Gen	0.250	1
Drycleaners	0.250	1
State Manifest Records (MANIFEST)	0.250	1

[1] Sites may be listed in more than one database.

EDR Findings Overview

Nine sites/clusters were identified in the EDR report within a 1 mile radius. In most cases, the majority of sites can be eliminated from further review due to one or more of the following:

- Project components are minor and it is likely that contamination will not be present
- Distance of the site in relation to the project corridor
- The direction of groundwater flow
- The contaminant of concern is non-persistent or a gas. An example is a release of chlorine gas inadvertently released in the past and contamination has been diluted
- The issue/spill was minor in nature and cleaned up immediately. An example is antifreeze from a car accident
- The site is in EDR due to legal disposal records where no violation was reported.

EDR Findings Conclusion

Jiffy Lube located at 2472 Monroe Avenue is one of the sites identified in the EDR report. Reportedly, there has been several spills and remediation of contaminated soils at this site. The subject property is located approximately 350 feet east of the Edgewood Avenue bridge; in addition, it is at a higher elevation than the bridge. It is not likely that residual contamination is present at the bridge, however, due to proximity and elevation there is a potential for contamination. It is recommended that if contamination is discovered during construction that work stop for the screening, segregating, sampling and potential disposal of petroleum contaminated soil.

Aerial Photography Review

Aerial photos of the project location were reviewed from the following years: 2008, 2006, 1994, 1985, 1980, 1971, 1966 and 1958. No items of environmental concern were identified with regards to the proposed project.

Historical Sanborn Map Review

Sanborn Maps are utilized as part of the HW/CM Screening since they serve as an historical reference to prior land use. Sanborn fire insurance maps were reviewed from years 1971, 1950 and 1938. No items of environmental concern were identified.

Record Mapping Review

Available as-built records drawings were reviewed. As-built drawing of Edgewood Avenue Bridge, Sheet No. 1 dated May 16, 1953, as provided by Popli, indicates that the bridge is painted with a shop coat of red lead paint.

Project Site Walkover

The HW/CM Screening included a walkover of the project corridor, conducted on 9/1/11. The current color of the bridge is green. The red paint identified on the record drawings exists under the green paint. No other items of concern were observed.

HW/CM Screening Conclusion/Recommendations

The HW/CM Screening included a review of information within the EDR report, aerial photography, historical topographic maps, as-built bridge drawings as well as a walkover of the project corridor.

During construction, if petroleum contamination is discovered, it is likely that the origin is the Jiffy Lube located at 2472 Monroe Avenue. If this scenario plays out, it is recommended that that work stop for the screening, segregating, sampling and potential disposal of petroleum contaminated soil.

As-built drawing of Edgewood Avenue Bridge Replacement, Sheet No. 1 dated May 16, 1953, as provided by Popli, indicates that the bridge is painted with a shop coat of red lead paint. Currently, the bridge is painted green with an unknown concentration of lead. It was observed during the site walkover that the green paint is over the red lead paint. It is recommended that it be assumed that the bridge paint is lead containing. The appropriate specification section for the handling and disposal of lead paint and the protection of workers involved in lead paint activities are required to be included with contract documents.

As with any environmental assessment in areas where subsurface testing was not completed, the possibility of unknown subsurface contamination exists. Should suspect materials be encountered during the course of project execution, appropriate measures should be taken to report such contamination, determine the nature and extent of any possible hazardous materials, and for proper management of such materials. Provisions will be included within the construction documents that will require the contractor to properly dispose of any contaminated materials during construction.

3.3.12 Asbestos

The gas line that is attached to the bridge will be relocated. Information provided by Popli of correspondence with RG&E indicates that the gas line was installed in 1988. Due to the date of installation it is unlikely that asbestos containing materials are present.

The water line that is located east of the bridge will be relocated. It is unknown at this time if asbestos containing materials (ACMs) are present. Record drawings of this utility will be reviewed once received.

Available as-built records were reviewed. The drawing entitled Bridge on Edgewood Ave., Brighton 21-E, County of Monroe 1953, as provided by Popli, indicates that an expansion material was used. This material is a suspect ACM.

Due to the nature of the proposed project it is recommended that an Asbestos Assessment be conducted by NYSDOL certified inspectors.

3.3.13 Noise

No noise impact is expected due to project implementation. This project involves the rehabilitation or replacement of an existing bridge with no significant change in alignment, no increase in the number of through travel lanes and no increase in traffic volume. This is not a Type I project, and no noise study is required.

3.3.14 Air Quality

An Air Quality Analysis is not necessary since the project will not increase traffic volumes, reduce source-receptor distances, or change other existing conditions to such a degree as to jeopardize attainment of the National Ambient Air Quality Standards.

During construction, air quality is most affected by the increase of airborne particulates (dust). This increase is sporadic and temporary in nature and would be most noticeable in the area immediately adjacent to construction. The impacts can be minimized by the use of dust control provisions found in the NYSDOT Standard Specifications for Construction.

3.3.15 Energy

The proposed project will not have an impact on energy usage.

3.3.16 Farmlands

The majority of soils within and around the project corridor are designated as Urban Land. The proposed project will not convert any prime farmland or require the acquisition of actively farmed land. No further coordination regarding farmland is required.

3.3.17 Visual Impacts

The implementation of this project will result in a minor positive visual impact to the immediate environment.

3.3.18 Critical Environmental Areas

There are no critical environmental areas located within or adjacent to the project limits, per NYSDEC data.

3.3.19 Anticipated Environmental Permits/Certifications

The following permits/approvals are anticipated prior to project construction:

- *USACOE Section 404 Permit, Nationwide Permit #3 Maintenance;*
- NYSDEC Section 401 Water Quality Certification (Blanket expected);
- Article 15 Protection of Waters Permit (navigability)

Further investigation of the following is recommended:

- Potential asbestos containing materials (ACMs) associated with impacted underground utilities (Popli to verify if any utilities will be impacted)
- Asbestos Assessment- sampling and analysis of suspect ACM's
- Site Investigation for suitable habitat for Endangered Species, [redacted].

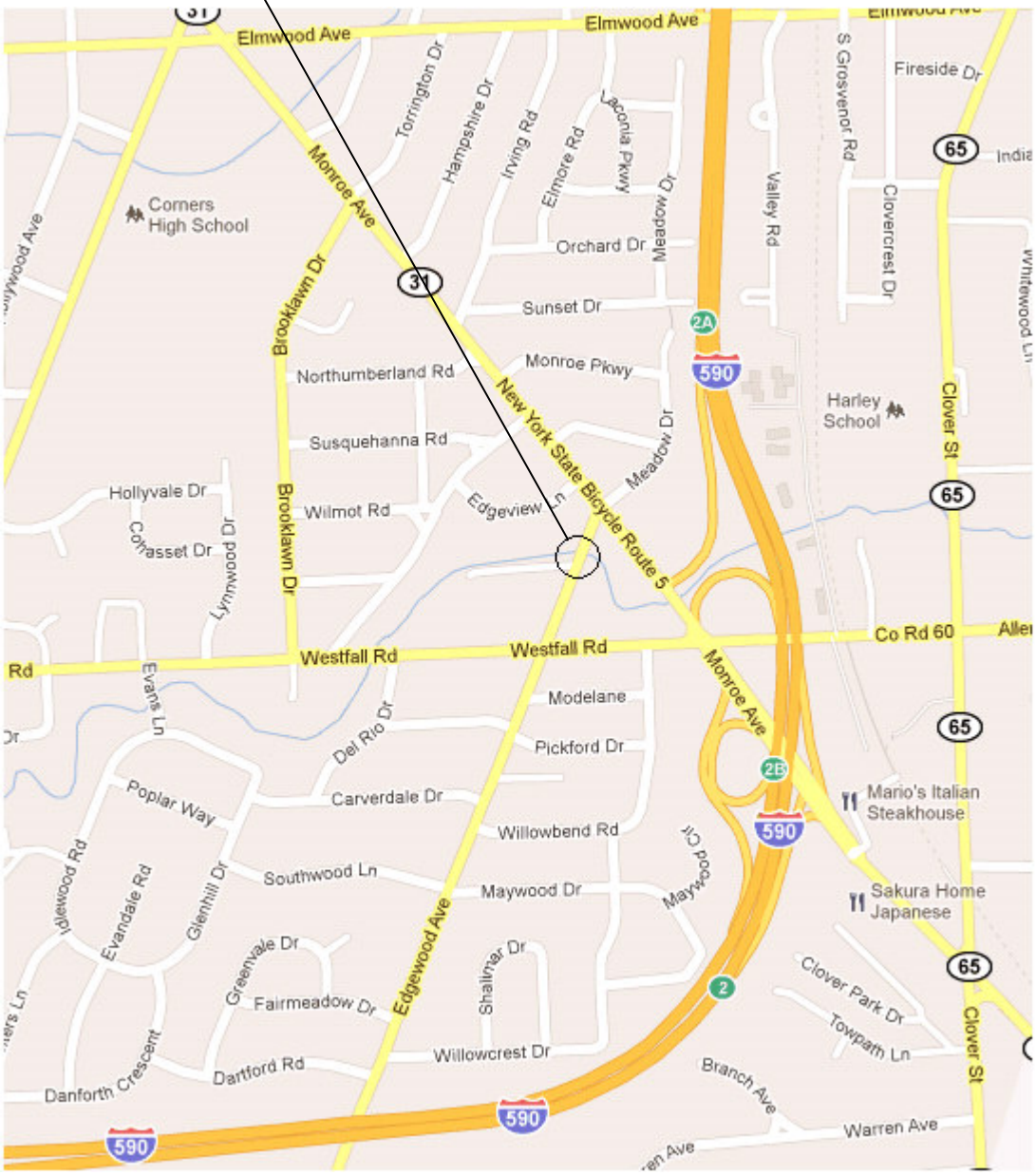
APPENDICES

Appendix A

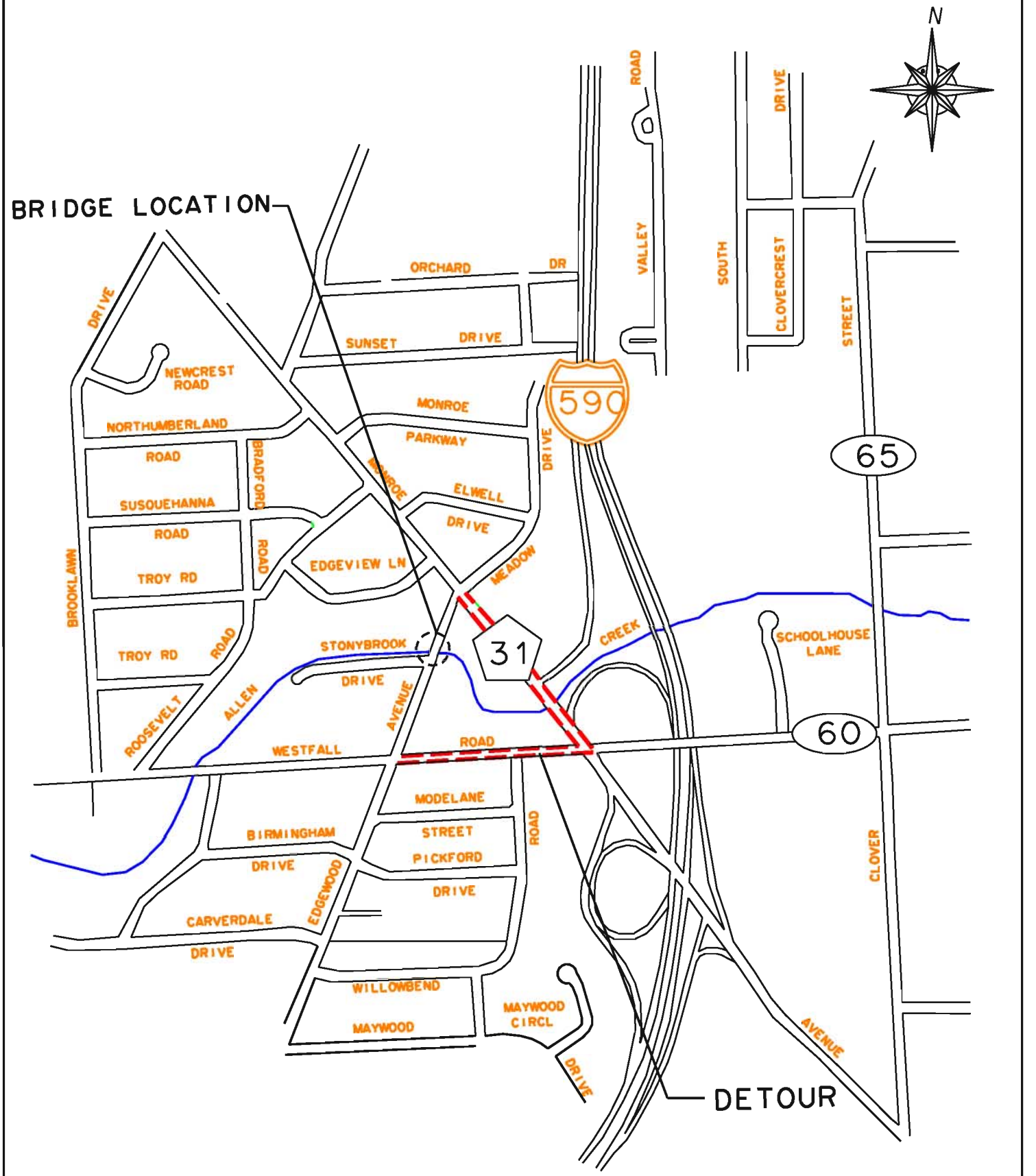
Maps, Plan, Profiles, & Typical Sections

Project Location Map
Detour Plan
Plan & Elevation
Profile
Typical Sections

BRIDGE LOCATION

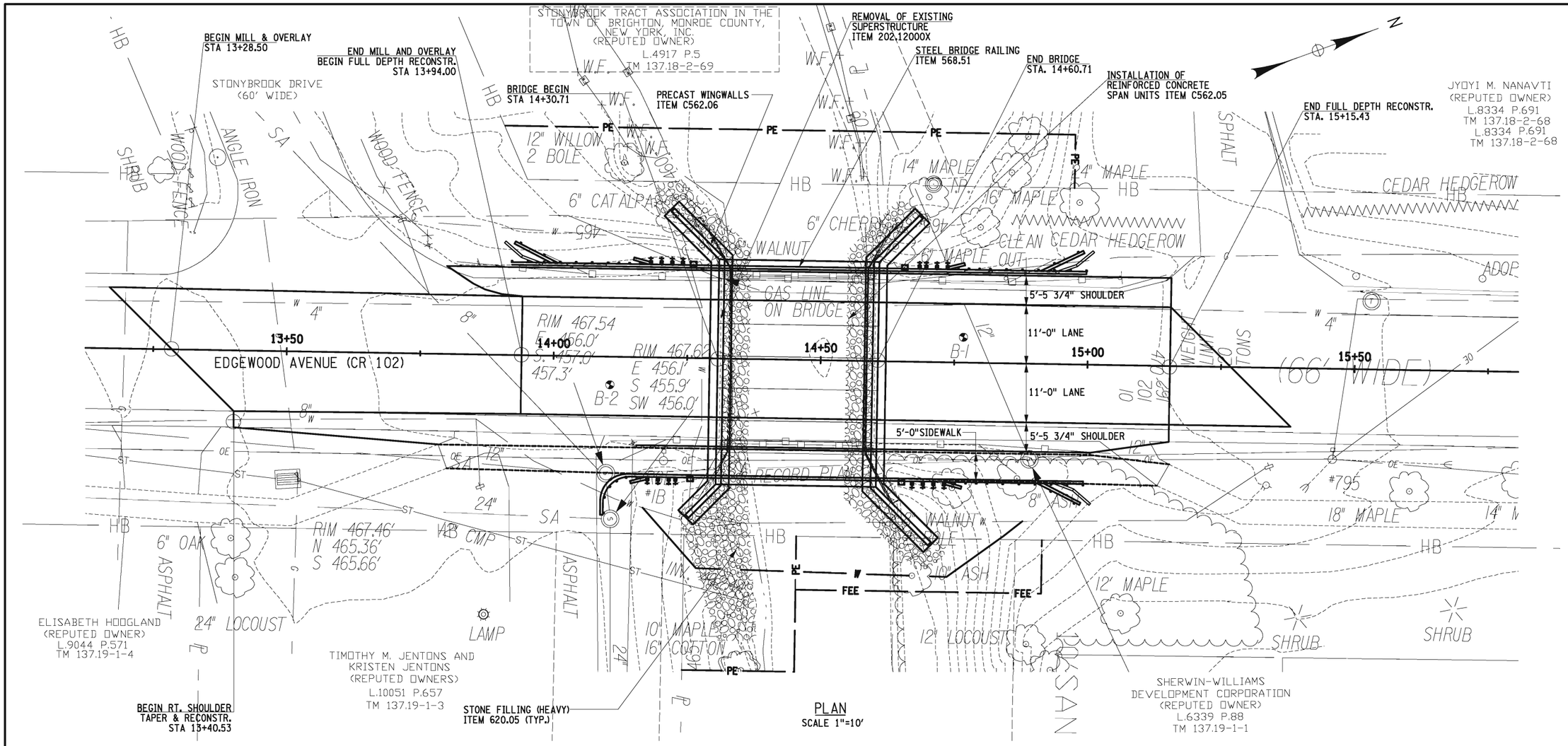


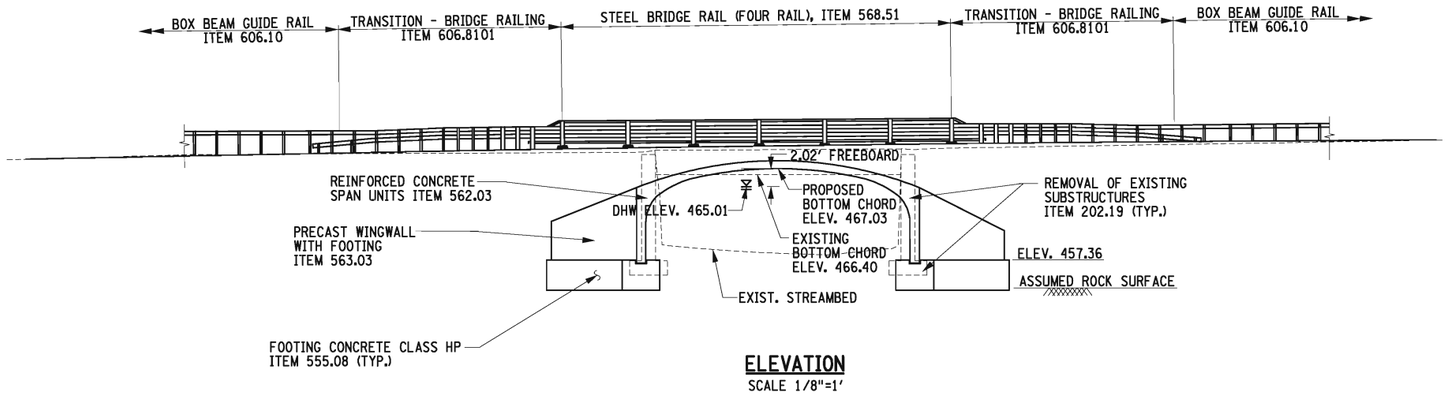
EDGEWOOD AVENUE PROJECT LOCATION MAP: BIN 3317400



EDGEWOOD AVENUE DETOUR PLAN
BIN 3317400

S.I.N. 01-102-162





ELEVATION
SCALE 1/8"=1'

LOAD RATING (LOAD FACTOR)		
INVENTORY	HS _____	_____ TONS
OPERATING	HS _____	_____ TONS

(TABLE TO BE FILLED IN BY E.I.C.)

HYDRAULIC SUMMARY				
RECURRENCE INTERVAL	PEAK DISCHARGE	PROPOSED OPENING (LOW BEAM ELEV. = 467.03 ft)		
		AVERAGE VELOCITY	WATER SURF. EL.	FREE BOARD
10 YEAR	710 cfs	5.21 (ft/s)	463.87 ft	3.16 ft
25 YEAR	850 cfs	5.69 (ft/s)	464.38 ft	2.65 ft
50 YEAR	1040 cfs	6.28 (ft/s)	465.01 ft	2.02 ft
100 YEAR	1190 cfs	6.72 (ft/s)	465.46 ft	1.57 ft
500 YEAR	1520 cfs	7.53 (ft/s)	466.41 ft	0.62 ft

REVISION | NO. | DATE | BY:

POPLI DESIGN GROUP
555 Penbrooke Drive
Penfield NY 14526
585 388 2060 [tel]
[fax] 585 388 2070

DRAWN BY: R. PRASAIN
PROJECT MANAGER: G. HUTTER

DEPARTMENT OF TRANSPORTATION
50 WEST MAIN STREET, SUITE 6100
ROCHESTER, NEW YORK 14614-1231
UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW ARTICLE 145, SECTION 7209

COUNTY ROAD	102
PROJECT NAME	EDGEWOOD AVENUE BRIDGE REPLACEMENT
OVER	ALLEN CREEK
TOWN	BRIGHTON
CAPITAL PROJECT NO.	0000.00.00
NYSDOT P.I.N.	4754.78

PRELIMINARY PLAN AND ELEVATION

BIN 3317400

SCALE:

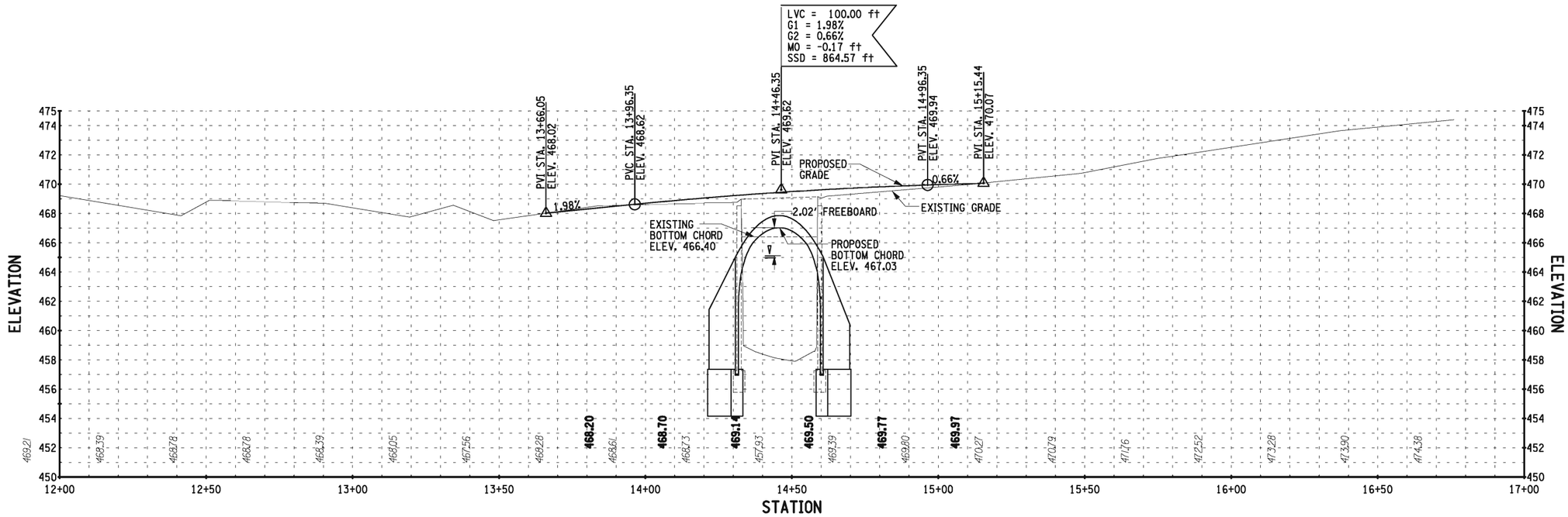
DATE ISSUED: 10/2011

DRAWING NO.

SHEET OF 00

S.I.N. 010-102-162

S.I.N. 01-102-162



EDGEWOOD AVENUE PROFILE

NO.	DATE	BY:	REVISION

POPLI DESIGN GROUP
555 Penbrooke Drive
Penfield NY 14526
585 388 2060 [tel]
[fax] 585 388 2070

DRAWN BY: R. PRASAIN

PROJECT MANAGER: G. HUTTER

DEPARTMENT OF TRANSPORTATION
50 WEST MAIN STREET, SUITE 6100
ROCHESTER, NEW YORK 14614-1231

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW ARTICLE 145, SECTION 7209

PROJECT NAME	EDGEWOOD AVENUE BRIDGE REPLACEMENT
COUNTY ROAD	102
OVER	ALLEN CREEK
TOWN	BRIGHTON
CAPITAL PROJECT NO.	0000.00.00
NYSDOT P.I.N.	4754.78

PRELIMINARY PROFILE

BIN 3317400

SCALE:

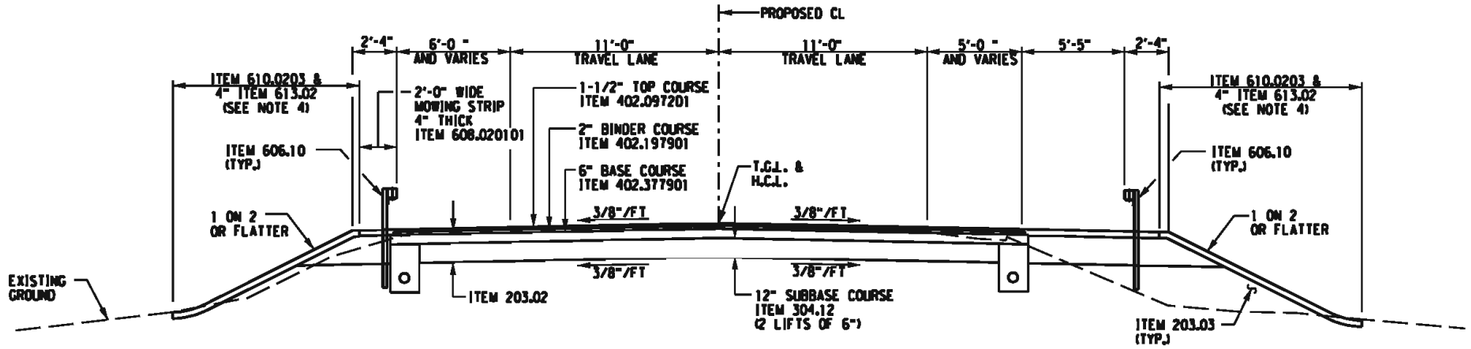
DATE ISSUED: 10/2011

DRAWING NO.

SHEET OF 00

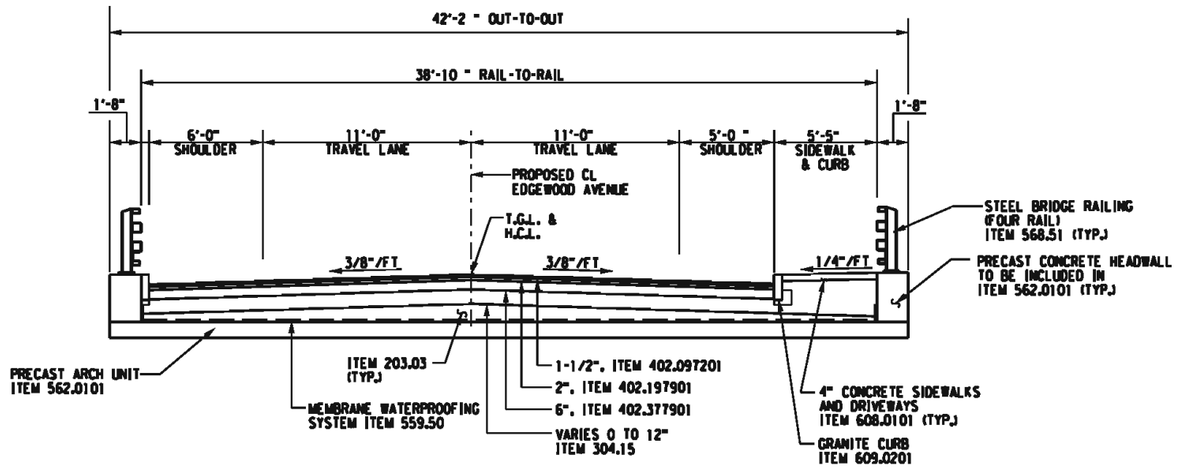
S.I.N. 010-102-162

S.I.N. 01-102-162



TYPICAL HIGHWAY RECONSTRUCTION SECTION
STA. 13+66.06 TO STA. 14+30.71
STA. 14+60.71 TO STA. 15+15.43

SCALE: 1/4"=1'



TYPICAL BRIDGE REPLACEMENT SECTION
STA. 14+30.71 TO STA. 14+60.71

SCALE: 1/4"=1'

ITEM	DESCRIPTION	UNIT
203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	CY
203.03	EMBANKMENT IN PLACE	CY
206.02	TRENCH AND CULVERT EXCAVATION	CY
304.12	SUBBASE COURSE, TYPE 2	CY
402.097201	9.5 F2 TOP COURSE HMA, 70 SERIES COMPACTION	TON
402.197901	19 F9 BINDER COURSE HMA, 70 SERIES COMPACTION	TON
402.377901	37.5 F9 BASE COURSE HMA, 70 SERIES COMPACTION	TON
407.0101	TACK COAT	GAL
490.30	MISCELLANEOUS COLD MILLING OF BITUMINOUS CONCRETE	SY

ITEM	DESCRIPTION	UNIT
605.0901	UNDERDRAIN FILTER, TYPE 1	CY
605.1502	PERFORATED CORRUGATED POLYETHYLENE UNDERDRAIN TUBING, 6" DIA.	LF
608.020101	ASPHALT CONCRETE SIDEWALKS, DRIVEWAYS, AND BICYCLE PATHS	TON
610.0203	ESTABLISHING TURF	SY
613.02	PLACING TOPSOIL - TYPE A	CY

NOTES
1. TACK COAT - ITEM 407.0101 SHALL BE APPLIED BETWEEN EACH LIFT OF ASPHALT.
2. MATERIAL FOR SUBBASE COURSES (NYSDOT SECTION 304-2.02) SHALL CONSIST OF STONE WHICH IS THE PRODUCT OF CRUSHED LEDGE ROCK.
3. THE PLACEMENT OF ITEM 402.377901 - 37.5 F9 BASE COURSE HMA SHALL BE PLACED IN TWO (2) 3" LIFTS.
4. TOPSOIL SHALL ONLY BE PLACED IN LAWN AREAS A.O.B.E.

NO.	DATE	BY:	REVISION

POPLI DESIGN GROUP
555 Penbrooke Drive
Penfield NY 14526
585 388 2060 [tel]
[fax] 585 388 2070

PROJECT MANAGER: G.HUTTER
DRAWN BY: R.PRASAIN

DEPARTMENT OF TRANSPORTATION
50 WEST MAIN STREET, SUITE 6100
ROCHESTER, NEW YORK 14614-1231

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DRAWING IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW ARTICLE 145, SECTION 7209

PROJECT NAME: EDGEWOOD AVENUE BRIDGE REPLACEMENT OVER ALLEN CREEK
COUNTY ROAD 102
TOWN: BRIGHTON
CAPITAL PROJECT NO. 0000.00.00
NYSDOT P.I.N. 4754.78

TYPICAL SECTIONS

BIN 3317400

SCALE:
DATE ISSUED: 10/2011
DRAWING NO.

SHEET OF 00

S.I.N. 010-102-162

Appendix B

Environmental Information

Environmental Checklist
NYSDEC Correspondence
Natural Heritage Report on Rare Species and Ecological Communities

Contents of Appendix B removed at the request of the New York Natural Heritage Program due to sensitive information related to threatened or endangered species.

Appendix C

Traffic Information

Traffic Volumes
Pedestrian Generator Checklist

POPLI DESIGN GROUP
ARCHITECTURE + ENGINEERING

Project Name EDGEWOOD AVENUE

Project Number BD 4023.01

Date 10/6/11

POPULATION TRENDS IN BRIGHTON:

YEAR	POPULATION	10-year % change
1970	35,776	–
1980	34,455	-3.7%
1990	35,588	+3.3%
2000	35,805 (proj.)	+0.6%
2010	35,959 (proj.)	+0.4%
2020	36,089 (proj.)	+0.4%
2030	36,157 (proj.)	+0.2%

SOURCE: GENESEE TRANSPORTATION COUNCIL
REGIONAL POPULATION FORECASTS
DECEMBER 2003

SUMMARY: POPULATION GROWTH IN THE TOWN OF BRIGHTON IS PROJECTED TO BE 0.2% - 0.4% PER DECADE IN THE FORESEEABLE FUTURE

CONCLUSION: CONSERVATIVELY ASSUME TRAFFIC GROWTH WILL OUTPACE POPULATION GROWTH, AT 0.2%/yr OVER THE NEXT 30 YEARS.

Historical and Projected Population for Monroe County
1960 - 2040

Population & Projections	Historical					Projected			
	1960	1970	1980	1990	2000	2010	2020	2030	2040
Monroe County	**586,387**	**711,917**	**702,238**	**713,968**	**735,343**	**749,878**	**758,290**	**766,274**	**772,421**
Brockport (V all)	*5,256*	*7,878*	*9,776*	*8,849*	*8,103*	*7,895*	*7,833*	*7,773*	*7,746*
Town of Brighton	27,849	35,065	35,776	34,455	35,588	35,805	35,959	36,089	36,157
Town of Chili	11,237	19,609	23,676	25,178	27,638	28,452	29,094	29,635	30,067
Town of Clarkson	2,339	3,642	4,016	4,417	5,928	6,546	6,747	6,836	6,860
Brockport (V part)	0	0	0	100	144	151	157	161	165
T/V of East Rochester	8,152	8,347	7,596	6,932	6,650	6,451	6,284	6,144	6,016
Town of Gates	13,755	26,442	29,756	28,583	29,275	29,688	30,003	30,269	30,462
Town of Greece	48,670	75,136	81,367	90,106	94,141	98,023	101,116	103,719	105,841
Town of Hamlin	2,755	4,167	7,675	9,203	9,355	9,523	9,653	9,762	9,845
Town of Henrietta	11,598	33,017	36,134	36,376	39,028	40,477	41,629	42,598	43,384
Town of Irondequoit	55,337	63,675	57,648	52,377	52,354	51,740	51,241	50,757	50,310
Town of Mendon	1,759	2,293	3,024	4,505	5,775	6,549	7,176	7,702	8,123
Honeoye Falls (V)	2,143	2,248	2,410	2,340	2,595	2,605	2,612	2,618	2,619
Town of Ogden	4,801	8,807	11,269	13,306	14,933	15,830	16,190	16,659	17,043
Spencerport (V)	2,461	2,929	3,424	3,606	3,559	3,587	3,608	3,624	3,635
Town of Parma	4,943	8,308	8,434	8,657	8,966	9,257	9,488	9,681	9,838
Hilton (V)	1,334	2,440	4,151	5,216	5,856	6,005	6,123	6,223	6,301
Town of Penfield	12,601	23,782	27,201	30,219	34,645	37,030	38,044	39,316	40,366
Town of Perinton	7,593	21,609	32,359	37,072	40,350	41,690	42,753	43,647	44,367
Fairport (V)	5,507	6,474	5,970	5,943	5,740	5,737	5,730	5,724	5,712
Town of Pittsford	8,469	18,441	21,052	23,009	25,801	26,959	27,341	27,914	28,375
Pittsford (V)	1,749	1,755	1,568	1,488	1,418	1,395	1,375	1,357	1,342
Town of Riga	1,797	2,681	2,910	3,383	3,550	3,634	3,700	3,756	3,799
Churchville (V)	1,003	1,065	1,399	1,731	1,887	1,915	1,936	1,954	1,968
City of Rochester	318,611	296,233	241,741	231,636	219,773	216,556	213,794	211,467	209,260
Town of Rush	2,555	3,287	3,001	3,217	3,603	3,715	3,777	3,827	3,858
Town of Sweden	1,968	3,583	5,083	5,432	5,757	5,957	6,115	6,249	6,357
Brockport (V part)	5,256	7,878	9,776	8,749	7,959	7,744	7,676	7,612	7,581
Town of Webster	13,374	19,702	23,426	26,175	32,710	36,459	38,551	40,541	42,335
Webster (V)	3,060	5,037	5,499	5,464	5,216	5,158	5,107	5,064	5,021
Town of Wheatland	1,848	2,298	3,108	3,181	3,021	3,088	3,141	3,184	3,218
Scottsville (V)	1,863	1,967	1,789	1,912	2,128	2,152	2,170	2,185	2,196

* NOTE - Town figures DO NOT include village (V) population. They are calculated as separate entities.

Source: 1960 - 2000 US Census Bureau

Daily Vehicle Volume Report

Location: 211453: Edgewood Ave - S of Monroe Ave
Unit ID: FA20C
Study Date: Monday - October 20, 2008

T, W o/c

Time	South Bound Volume	North Bound Volume	Total Volume
00:00 - 00:59	0	0	0
01:00 - 01:59	0	0	0
02:00 - 02:59	0	0	0
03:00 - 03:59	0	0	0
04:00 - 04:59	0	0	0
05:00 - 05:59	0	0	0
06:00 - 06:59	0	0	0
07:00 - 07:59	0	0	0
08:00 - 08:59	0	0	0
09:00 - 09:59	0	0	0
10:00 - 10:59	0	0	0
11:00 - 11:59	0	0	0
12:00 - 12:59	0	0	0
13:00 - 13:59	0	0	0
14:00 - 14:59	0	0	0
15:00 - 15:59	0	0	0
16:00 - 16:59	0	0	0
17:00 - 17:59	140	132	272
18:00 - 18:59	180	113	293
19:00 - 19:59	130	58	188
20:00 - 20:59	81	59	140
21:00 - 21:59	66	34	100
22:00 - 22:59	24	10	34
23:00 - 23:59	11	7	18
ADT	632	413	1045
AM Peak Time	00:00 - 00:59	00:00 - 00:59	00:00 - 00:59
AM Peak Volume	0	0	0
PM Peak Time	17:30 - 18:29	17:15 - 18:14	17:30 - 18:29
PM Peak Volume	226	159	380

Daily Vehicle Volume Report

Location: 211453: Edgewood Ave - S of Monroe Ave
Unit ID: FA20C
Study Date: Tuesday - October 21, 2008

Time	South Bound Volume	North Bound Volume	Total Volume
00:00 - 00:59	11	2	13
01:00 - 01:59	3	1	4
02:00 - 02:59	4	1	5
03:00 - 03:59	1	2	3
04:00 - 04:59	3	3	6
05:00 - 05:59	3	7	10
06:00 - 06:59	38	37	75
07:00 - 07:59	132	170	302
08:00 - 08:59	148	135	283
09:00 - 09:59	94	111	205
10:00 - 10:59	73	87	160
11:00 - 11:59	115	97	212
12:00 - 12:59	127	66	193
13:00 - 13:59	99	95	194
14:00 - 14:59	154	95	249
15:00 - 15:59	163	108	271
16:00 - 16:59	187	136	323
17:00 - 17:59	257	145	402
18:00 - 18:59	177	122	299
19:00 - 19:59	111	84	195
20:00 - 20:59	78	56	134
21:00 - 21:59	56	42	98
22:00 - 22:59	41	10	51
23:00 - 23:59	36	3	39
ADT	2111	1615	3726
AM Peak Time	07:30 - 08:29	07:15 - 08:14	07:30 - 08:29
AM Peak Volume	166	182	332
PM Peak Time	16:45 - 17:44	17:15 - 18:14	16:45 - 17:44
PM Peak Volume	261	168	415

Daily Vehicle Volume Report

Location: 211453: Edgewood Ave - S of Monroe Ave
Unit ID: FA20C
Study Date: Wednesday - October 22, 2008

Time	South Bound Volume	North Bound Volume	Total Volume
00:00 - 00:59	8	4	12
01:00 - 01:59	5	2	7
02:00 - 02:59	1	3	4
03:00 - 03:59	3	4	7
04:00 - 04:59	3	0	3
05:00 - 05:59	4	13	17
06:00 - 06:59	34	36	70
07:00 - 07:59	143	152	295
08:00 - 08:59	133	148	281
09:00 - 09:59	104	109	213
10:00 - 10:59	80	73	153
11:00 - 11:59	130	86	216
12:00 - 12:59	117	85	202
13:00 - 13:59	108	91	199
14:00 - 14:59	137	89	226
15:00 - 15:59	165	104	269
16:00 - 16:59	223	114	337
17:00 - 17:59	274	185	459
18:00 - 18:59	191	132	323
19:00 - 19:59	129	88	217
20:00 - 20:59	106	69	175
21:00 - 21:59	58	33	91
22:00 - 22:59	44	19	63
23:00 - 23:59	23	17	40
ADT	2223	1656	3879
AM Peak Time	07:30 - 08:29	08:15 - 09:14	07:30 - 08:29
AM Peak Volume	164	164	322
PM Peak Time	16:45 - 17:44	17:00 - 17:59	16:45 - 17:44
PM Peak Volume	291	185	462

Daily Vehicle Volume Report

Location: 211453: Edgewood Ave - S of Monroe Ave
Unit ID: FA20C
Study Date: Thursday - October 23, 2008

Time	South Bound Volume	North Bound Volume	Total Volume
00:00 - 00:59	11	6	17
01:00 - 01:59	5	5	10
02:00 - 02:59	2	1	3
03:00 - 03:59	1	4	5
04:00 - 04:59	7	2	9
05:00 - 05:59	21	10	31
06:00 - 06:59	49	52	101
07:00 - 07:59	167	160	327
08:00 - 08:59	177	177	354
09:00 - 09:59	131	132	263
10:00 - 10:59	106	89	195
11:00 - 11:59	120	115	235
12:00 - 12:59	114	91	205
13:00 - 13:59	0	0	0
14:00 - 14:59	0	0	0
15:00 - 15:59	-	-	-
16:00 - 16:59	-	-	-
17:00 - 17:59	-	-	-
18:00 - 18:59	-	-	-
19:00 - 19:59	-	-	-
20:00 - 20:59	-	-	-
21:00 - 21:59	-	-	-
22:00 - 22:59	-	-	-
23:00 - 23:59	-	-	-
ADT	911	844	1755
AM Peak Time	07:30 - 08:29	07:15 - 08:14	07:45 - 08:44
AM Peak Volume	214	180	384
PM Peak Time	12:00 - 12:59	12:00 - 12:59	12:00 - 12:59
PM Peak Volume	114	91	205

Exhibit 18-1 Pedestrian Generator Checklist

P.I.N.: 4754.78 Project Location: Edgewood Avenue over Allen Creek

PEDESTRIAN GENERATOR CHECKLIST

Note: The term "generator" in this document refers to both p3destrian generators (where pedestrians originate) and destinations (where pedestrians travel to).
A check of "yes" indicates a potential need to accommodate pedestrians and coordination with the Regional Bicycle and Pedestrian Coordinator is necessary during project scoping. Answers to the following questions should be checked with the local municipality to ensure accuracy.

1.	Is there an existing or planned sidewalk, trail, or pedestrian-crossing facility?	**YES**☒ **NO**☐
2.	Are there bus stops, transit stations or depots/terminals located in or within 800 m of the project area?	**YES**☒ **NO**☐
3.	Is there more than occasional pedestrian activity? Evidence of pedestrian activity may include a worn path.	**YES**☒ **NO**☐
4.	Are there existing or approved plans for generators of pedestrian activity in or within 800 m of the project that promote or have the potential to promote pedestrian traffic in the project area, such as schools, parks, playgrounds, places of employment, places of worship, post offices, municipal buildings, restaurants, shopping centers, or other commercial areas, or shared-use paths?	**YES**☒ **NO**☐
5.	Are there existing or approved plans for seasonal generators of pedestrian activity in or within 800 m of the project that promote or have the potential to promote pedestrian traffic in the project area, such as ski resorts, state parks, camps, amusement parks?	**YES**☐ **NO**☒
6.	Is the project located in a residential area within 800 m of existing or planned pedestrian generators such as those listed in 4 above?	**YES**☒ **NO**☐
7.	From record plans, were pedestrian facilities removed during a previous highway reconstruction project?	**YES**☐ **NO**☒
8.	Did a study of secondary impacts indicate that the project promotes or is likely to promote commercial and/or residential development within the intended life cycle of the project?	**YES**☐ **NO**☒
9.	Does the community's comprehensive plan call for development of pedestrian facilities in the area?	**YES**☒ **NO**☐
10.	Based on the ability of students to walk and bicycle to school, would the project benefit from engineering measures under the Safe-Routes-To-School program? Eligible infrastructure-related improvements must be within a 3.2 km radius of the project.	**YES**☒ **NO**☐

Note: This checklist should be revisited due to a project delay or if site conditions or local planning changes during the project development process.

Comments: There is an existing sidewalk leading up to the bridge at both ends but it does not cross the existing bridge. The Brighton Comprehensive Plan 2000 provides a goal and recommendation of providing safe pedestrian links between residential and commercial areas.

Regional Bicycle and Pedestrian Coordinator:

Project Designer: POPLI DESIGN GROUP

Appendix D

Geotechnical Information

Geotechnical Engineering Report for Proposed Bridge Replacement by Empire Geo-Services, Inc.

EMPIRE GEO SERVICES, INC.
A SUBSIDIARY OF SJB SERVICES, INC.

☒ CORPORATE/ BUFFALO OFFICE
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

☐ ALBANY OFFICE
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☐ CORTLAND OFFICE
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Cortland, NY 13045
Phone: (607) 758-7182
Fax: (607) 758-7188

☐ ROCHESTER OFFICE
535 Summit Point Drive
Henrietta, NY 14467
Phone: (585) 359-2730
Fax: (585) 359-9668

MEMBER
ACEC New York

October 5, 2011
Project No. RE-11-029

Mr. Greg Hutter, P.E.
Popli Design Group
555 Penbrooke Drive
Penfield, New York
14526

Re: Geotechnical Engineering Report for Proposed Bridge Replacement
Edgewood Avenue Over Allen Creek
BIN 3317400
Town of Brighton
Monroe County, New York

Mr. Hutter:

Empire Geo-Services, Inc. is pleased to submit two copies of the enclosed Geotechnical Engineering Report for the above referenced project. An electronic pdf file copy of the report has also been e-mailed to you for your use and distribution as appropriate.

Please contact the undersigned should you have any questions or wish to discuss this report. Thank you for considering Empire for this work and we look forward to working with you in the future.

Sincerely,

EMPIRE GEO-SERVICES, INC.

Thomas R. Seider, P.E.
Senior Geotechnical Engineer

Enc.: Geotechnical Engineering Report (2 copies)

EMPIRE GEO SERVICES, INC.
A SUBSIDIARY OF SJB SERVICES, INC.

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Fax: (585) 359-9668

MEMBER
ACEC New York

Geotechnical Engineering Report
for
Proposed Bridge Replacement
Edgewood Avenue Over Allen Creek
BIN 3317400
Town of Brighton
Monroe County, New York

Prepared For:

Popli Design Group
555 Penbrooke Drive
Penfield, New York
14526

Prepared By:

Empire Geo-Services, Inc.
5167 South Park Avenue
Hamburg, New York
14075

Project No. RE-11-029
October 2011

TABLE OF CONTENTS

1.00 INTRODUCTION

1.10 GENERAL

This report presents the results of a subsurface exploration program and geotechnical engineering evaluation completed by Empire Geo-Services, Inc. (Empire) for the proposed replacement of the Edgewood Avenue Bridge over Allen Creek (BIN 3317400). As shown on Figure 1, the bridge is located between Westfall Road and Monroe Avenue, just north of the Edgewood Avenue intersection with Stonybrook Drive, within the Town of Brighton, Monroe County, New York.

Popli Design Group (Popli) retained Empire to complete the subsurface exploration program and provide geotechnical engineering recommendations for the proposed project. SJB Services, Inc. (SJB), our affiliated subsurface exploration company, completed two test borings at the project and completed laboratory testing on collected samples of the bedrock. On this basis, Empire prepared this report which summarizes the subsurface conditions encountered by the test borings and presents geotechnical recommendations for design and construction of the replacement bridge foundations and the associated site preparation work. The subsurface exploration and geotechnical evaluation were completed in general accordance with our July 29th, 2011 proposal.

1.20 SITE AND PROJECT DESCRIPTION

The existing bridge carries Edgewood Avenue in a southwest to northeast direction over Allen Creek. The existing two lane bridge consists of an approximate 28 feet long, steel multi-girder structure, with concrete abutments and a steel grating deck. The road surface is relatively level on either side of the bridge, with surface elevations at the test borings of 468.4 feet and 469.3 feet, based on the benchmark datum described below. The water surface within the creek is about 8.8 feet below the bridge deck.

The replacement bridge will be located along the same general alignment as the existing bridge and is expected to consist of an approximate 28 feet long, Con-Span type, concrete arch structure. It is our understanding that the superstructure and the substructure for the replacement bridge are required to be designed using the *AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specifications.* Factored design loads were not available at the time of this report.

2.00 SUBSURFACE EXPLORATION

The subsurface exploration program consisted of two test borings, designated as B-1 and B-2, drilled by SJB on August 10th, and August 11th, 2011. The test borings were located in the field by SJB using tape measurements referenced to the existing bridge structure. As shown on Figure 2, test boring B-1 was completed within the south bound lane on the north side of the bridge and test boring B-2 was completed within the north bound lane on the south side of the bridge. Optical survey level techniques were used to determine the existing ground surface elevations at the test boring locations. The ground surface elevations were referenced to rim of an existing manhole located southeast of the existing bridge. The approximate benchmark location is shown on Figure 2, and has a reported elevation of 467.54 feet.

The test borings were made using a Central Mine Equipment (CME) model 85, truck mounted drill rig, using hollow stem auger and split spoon sampling techniques. Split spoon samples and Standard Penetration Tests (SPT) were taken continuously to a depth of 12 feet in test boring B-1 and then at a depth of 15 feet. Split spoon samples and SPT were taken continuously throughout the full depth of test boring B-2. The Split spoon samples and SPT were completed in general accordance with *ASTM D1586 – "Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils"*. The SPT "N" values reported on the test boring logs were obtained using an automatic trip hammer. These SPT "N" values have not been corrected for the hammer efficiency or the overburden pressure.

Both test borings were drilled and sampled through the overburden until encountering auger refusal conditions (apparent bedrock refusal), at a depth of 15.0 feet at test boring B-1 and at a depth of 14.2 feet at test boring B-2. The refusal material was then cored 10 feet at both test boring locations in general accordance with *ASTM D 2113 – "Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation"* using a "NQ 2" size core barrel.

A Geologist prepared the test boring logs based on visual observations of the recovered soil samples and bedrock cores, along with a review of the driller's field notes. The soil samples were described based on a visual/manual estimation of the grain size distribution, along with characteristics such as color, relative density, consistency, moisture, etc. The recovered rock cores were also described, including characteristics such as color, rock type, hardness, weathering, bedding thickness, core recovery, and rock quality designation (RQD). The test boring logs are

presented in Appendix A, along with general information and a key of terms and symbols used to prepare the logs.

3.00 SUBSURFACE CONDITIONS

3.10 GENERAL

The general subsurface stratigraphy encountered by the test borings consisted of asphalt pavement and crushed stone subbase at the surface followed by fill soils to a depth of about 3 to 5 feet. Beneath the fill, indigenous clay, silt, and sand soils were encountered, extending to the top of Dolostone bedrock at a depth of about 15 feet. The soil stratigraphy encountered and the groundwater conditions observed are described in more detail in the following sections and on the test boring logs in Appendix A.

3.20 FILL SOILS

Approximately 6 to 8 inches of asphalt pavement followed by 5 to 6 inches of subbase stone was encountered at the surface of the test borings. These measurements were made within the test boring hole, and should therefore be considered approximate. These thicknesses should not be relied on for construction quantity estimates.

Beneath the subbase stone, fill soils were encountered which extended to a depth of about 3 feet at test boring B-1 and to a depth of about 5 feet at test boring B-2. It should be expected that the depth of the fill will increase near the existing bridge abutments and will extend to at least the bottom of these structures, or the excavations made to construct these structures.

The fill soils at test boring B-1 to a depth of about 3 feet and the fill soils at test boring B-2 to a depth of about 2 feet, consisted of gravel and sand. The remaining fill soils at test boring B-2, from about 2 feet to 5 feet, consisted of a silty clay soil with trace amounts of brick fragments. The Standard Penetration Test (SPT) “N” values obtained within all the fill soils ranged from 11 to 15 indicating the non-cohesive gravel and sand fill soils have a “firm” relative density and the cohesive clay fill soils have a “stiff” consistency.

3.30 INDIGENOUS SOILS

Within test boring B-1, an upper stratum of silt was encountered which extended to a depth of about 8 feet, followed a stratum of silty clay to the top of bedrock at 15 feet. These soils are classified as a ML and CL group soil using the Unified Soil Classification System (USCS). The SPT "N" values obtained within these soils ranged from "weight of hammer" (i.e. only the weight of the hammer and rods required to advance the sample spoon) to 6, indicting the non-cohesive silt soils are "very loose" to "loose" and the cohesive clay soils are "very soft" to "soft".

Within test boring B-2, an upper stratum of silty clay (CL) was encountered which extended to a depth of about 10 feet, followed a stratum of silty sand and gravel (SM) to the top of bedrock at 14 feet. The SPT "N" values obtained within the upper clay soils ranged from 6 to 8, indicating these soils have a "medium" consistency. The SPT "N" values obtained within the silty sand and gravel ranged from 45 to greater than 50, indicating these deeper soils are "compact" to "very compact".

3.40 BEDROCK

Auger refusal conditions were encountered within test boring B-1 at a depth of 15 feet (approximate elevation 454.3 feet) and within test boring B-2 at a depth of 14.2 feet (approximate elevation 454.2 feet). After encountering auger refusal, 10 feet of bedrock coring was performed at both test boring locations. The recovered rock core is described as gray, hard, slightly weathered to sound, laminated to thickly bedded, Dolostone bedrock. The core recoveries ranged from 94% to 100%. The rock quality designation (RQD) values ranged from 34% to 94% with an average of about 59%, indicating the recovered bedrock core has a "poor" to "excellent" rock mass quality.

Two samples of the recovered bedrock core from test boring B-2 were tested in SJB's geotechnical testing laboratory for unconfined compressive strength. The testing was completed in accordance with *ASTM D2938 – "Standard Test Method for Unconfined Compressive Strength of Intact Rock Core Specimens"*. The laboratory results are included in Appendix B and indicate the samples of Dolostone bedrock tested have an unconfined compressive strength ranging from 10,013 psi to 11,073 psi.

3.50 GROUNDWATER CONDITIONS

Water level measurements were made in the test borings at the completion of overburden drilling and following completion of rock coring. These measurements are noted on the test boring logs included in Appendix A. Following auger refusal at 15 feet within test boring B-1, free standing water was measured at a depth of 14.2 feet. Following auger refusal within test boring B-2, no free standing water was encountered. It is possible that sufficient time for the groundwater to accumulate and/or stabilize within the test borings did not elapse prior to these measurements.

Following bedrock coring, free standing water was measured at a depth of 13.7 feet within test boring B-1 and 8.5 feet within test boring B-2. We note, however, water was added to the test holes to facilitate rock coring, and therefore, these measurements are not indicative of the actual groundwater conditions present at the site.

The water level within Allen Creek was at approximate elevation 460 feet on October 5th, 2011, or about 6 feet above the top of bedrock. A general groundwater condition is expected near the water level within Allen Creek. It should be expected that groundwater conditions will vary with location and depth, and with changes in soil conditions, surface water elevations within the creek, precipitation and seasonal conditions.

4.00 GEOTECHNICAL CONSIDERATIONS AND RECOMMENDATIONS

4.10 GENERAL GEOTECHNICAL CONSIDERATIONS

The following general considerations and recommendations are provided to assist with planning the design and construction of the foundations to support the proposed replacement bridge. More detailed recommendations are presented in the subsequent sections of this report.

Based on our analysis of the conditions encountered in the test borings, it is Empire's opinion that a pre-cast concrete arched span type bridge structure, as proposed to replace the existing bridge, can be supported with spread foundations bearing on the competent Dolostone bedrock, which was encountered at approximate elevation 454 feet, or deeper.

If it is necessary to extend the foundations deeper into the bedrock, it may be necessary to loosen the bedrock prior to excavation, using a hydraulic/pneumatic breaker or rock grinder. The use of drilling and blasting methods to loosen the rock, beneath the proposed foundation bearing grades is not recommended because it is possible that some uncontrolled rock heave or over-breakage may occur that could impact the integrity of the foundation bearing grades.

4.20 SPREAD FOUNDATIONS

The spread foundations supporting the replacement bridge structure should be designed to bear on the competent Dolostone bedrock, as described above. It should be expected that the depth/elevation of the competent bedrock, between and away from the test boring locations, may vary and may require adjustments in the bearing elevation based on actual conditions encountered at the time of construction. Accordingly, close inspection of the foundation bearing grades, by qualified geotechnical personnel, is recommended at the time of construction.

In all cases the bearing grade surfaces should be free of fill and overburden soil material, decomposed/weathered bedrock and loose or fractured rock particles. Some undulations in the competent bedrock surface are expected to occur across the site. As such, the surface could drop or rise in an abrupt manner at some locations. Accordingly, a lean concrete fill (f'c >2,000 psi) could be placed over the exposed bedrock to level the bearing grade, and the foundations then constructed on the lean concrete fill.

Spread foundations constructed on suitable Dolostone bedrock, can sized in accordance with AASHTO Load and Resistance Factor Design (LRFD) Bridge Design criteria using the following parameters:

- Nominal Resistance = 45 kips per square (ksf)
- Resistance Factor = 0.45
- Factored Bearing Resistance = 20 ksf

In all cases, continuous foundations should be at least 4 feet in width and should have a minimum embedment of 4 feet for frost protection. Foundations, which are sized and constructed in accordance with our recommendations, should undergo a total settlement of less than ¼ inch. Scour protection should be provided, as appropriate.

4.30 LATERAL EARTH PRESSURES AND WALL DESIGN

The design of abutment and wing walls should be based on lateral earth pressures caused by the load of backfill against the wall and the surcharge effects from permanent or temporary loads. Abutment and wing walls, which are designed for restrained or non-yielding conditions, should be designed using "at rest" lateral earth pressures. Wing walls, which are allowed to yield, can be designed on the basis of "active" lateral earth pressures.

The lateral earth pressures can be computed using the following soil parameters where the wall backfill is Suitable Granular Fill, as described in Appendix C, and contains a proper foundation drain(s) as discussed below. Water must not be allowed to collect against the backside of the exposed wall section unless the wall is designed for the additional hydrostatic pressure.

Recommended Soil Parameters for Abutment and Wing Wall Design:

Coefficient of At-Rest Lateral Earth Pressure – 0.50

Coefficient of Active Lateral Earth Pressure – 0.33

Coefficient of Passive Lateral Earth Pressure – 3.00

Angle of Internal Friction – 30 Degrees

Total Unit Weight of Soil – 130 pcf

Surcharge Load Coefficient – 0.50

4.40 ABUTMENT AND WING WALL DRAINAGE

The abutment and wing walls should be constructed with foundation drains to intercept any groundwater that may tend to collect against the walls. The drainage system must be properly designed, installed and maintained for long-term performance. The design should include such features as clean-outs to properly maintain the system. The abutment wall drain system should extend to the bottom of the exposed section of the wall.

The foundation drainage system should include a geotextile, selected considering drainage and filtration, installed around drainage stone surrounding a slotted under-drain pipe. The drainage stone should be sized in accordance with the pipe slotting or perforations. A crushed aggregate conforming to NYSDOT Standard Specifications Section 703-02, Size Designation No. 2 (1 inch washed gravel or stone) is generally acceptable. The foundation drainage stone and surrounding geotextile should extend above the drainpipe a minimum of 2 feet.

A pervious granular backfill or a suitable geosynthetic drainage composite (i.e. Miradrain 5000) should be placed against the abutments and wing walls to intercept groundwater and allow drainage to the under-drain system. If a soil material is used it should have a minimum width of 2 feet. Concrete Sand, which meets the minimum requirements of NYSDOT Standard Specifications Section 703-07 (100 percent passing 3/8 inch sieve to maximum of 3 percent passing a No. 200 sieve), is generally acceptable. It is recommended that the backfill placed behind the abutment walls beyond the drainage system be a Suitable Granular Fill or a Structural Fill as described in Appendix C.

4.50 SEISMIC DESIGN CONSIDERATIONS

Based on the subsurface conditions encountered in the test borings, it is Empire's opinion the upper 100 feet of the site should be classified as Seismic Site Class "C". The peak ground acceleration coefficient (PGA), the short period spectral acceleration coefficient (S_s), and the long period spectral acceleration coefficient (S_1), for Seismic Site Class "B", were determined using Figures 3.10.2.1-1, 3.10.2.1-2, and 3.10.2.1-3, within the *AASHTO LRFD Bridge Design Specifications*. These values include the following for the project site.

- PGA = 0.052
- S_s = 0.110
- S_1 = 0.036

For design purposes, these mapped coefficient values must be modified for Seismic Site Class "C" using site factors F_{pga}, F_a, and F_v. These site factors are dependent on the Seismic Site Class and the mapped coefficient values of PGA, S_s, and S_1, and include the following

- F_{pga} = 1.2
- F_a = 1.2
- F_v = 1.7

The modified PGA, S_s, and S_1 , based on the above Site Factors include the following.

- A_S = PGA x F_{pga} = 0.052 x 1.2 = 0.062.
- S_{DS} = S_s x F_a = 0.110 x 1.2 = 0.132
- S_{D1} = S_1 x F_v = 0.036 x 1.7 = 0.061

4.60 SITE PREPARATION AND CONSTRUCTION RECOMMENDATIONS

4.60.1 Construction Dewatering

It is anticipated that excavations to construct the spread foundations will encounter groundwater near the surface water elevation within the creek. The amount of groundwater that could be encountered will depend on the excavation location, depth, the permeability of the soils encountered and the actual creek and groundwater conditions at the time of construction. The groundwater levels should be expected to fluctuate with seasonal and precipitation events.

Dewatering should be implemented prior to excavation and maintained below the proposed excavation bottom. It is anticipated that sump and pump methods of dewatering, along with cofferdams and by-pass channels could be used, as a minimum, to control surface water and groundwater conditions for the abutment structure construction. More substantial dewatering methods may be required depending on the actual conditions at the time of construction. Surface water drainage and groundwater dewatering plans should include implementation of measures to control erosion, sedimentation and the migration of soil fines.

4.60.2 Excavation and Subgrade Preparation for Spread Foundation Construction

Existing foundations and structures, which are present at the locations of the new abutment and wing wall structures, should be removed in their entirety. Excavation of the bedrock, if necessary to establish foundation bearing grades, should be performed using a pneumatic or hydraulic breaker or rock grinder, to loosen the bedrock for excavation. The use of drilling and blasting methods to loosen the rock is not recommended because it is possible that some uncontrolled rock heave or over-breakage may occur that could impact the integrity of the foundation bearing grades.

All loose, disturbed or otherwise deleterious soil or bedrock material, beneath the proposed foundation bearing grades, should be removed. Any voids or fractures, which may be present at the bearing grade/subgrade surface, should be filled with grout. Following excavation, preparation and cleaning of the bedrock surface, the prepared bearing grades should be observed and evaluated by a representative of Empire. Placement of a lean concrete ($f'c > 2{,}000$ psi) fill or “mud mat”, following observation of the bearing grade may be desirable to level the bedrock bearing grade for the foundation construction.

After completion of the foundation construction, the excavations should be backfilled as soon as possible and prior to construction of the superstructure. The backfill behind the structure walls, head walls and wing walls, beyond the drainage system components, should consist of Structural Fill or Suitable Granular Fill, as recommended in Appendix C.

5.00 CONCLUDING REMARKS

This report was prepared to assist in planning the design and construction for the proposed replacement of the Edgewood Avenue Bridge over Allen Creek (BIN 3317400), within the Town of Brighton, Monroe County, New York. The report has been prepared for the exclusive use of Popli Design Group, and other members of the design team, for specific application to this site and this project only.

The recommendations were prepared based on Empire Geo-Services, Inc.'s understanding of the proposed project, as described herein, and through the application of generally accepted soils and foundation engineering practices. No warranties, expressed or inferred, are made by the conclusions, opinions, recommendations or services provided.

Empire Geo-Services, Inc. should be informed of any changes to the planned construction so that it may be determined if any changes to the recommendations presented in this report are necessary. Empire Geo-Services, Inc. should also review final plans and specifications to verify that the recommendations were properly interpreted and implemented.

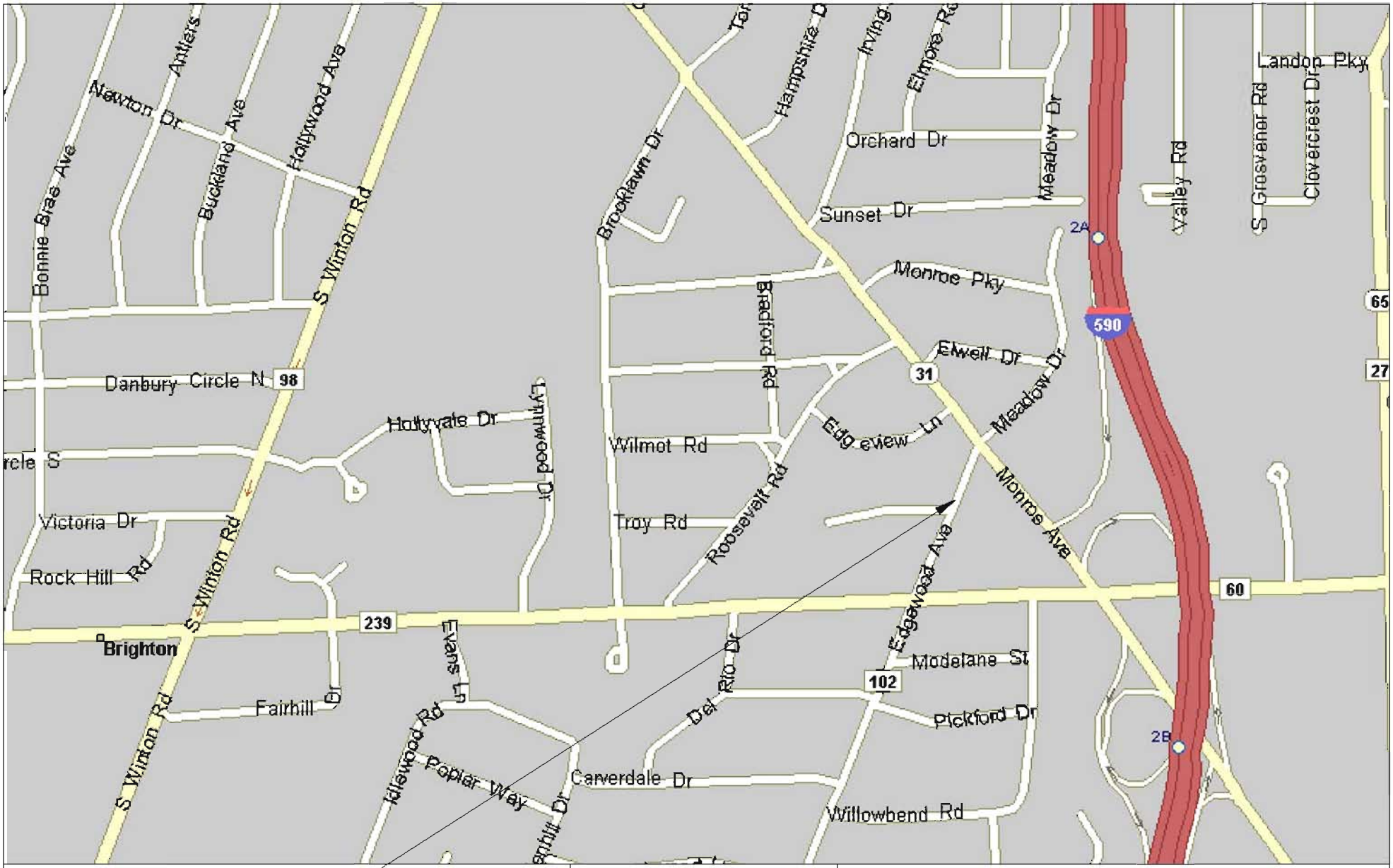
Important information regarding the use and interpretation of this report is presented in Appendix D.

Respectfully Submitted:

EMPIRE GEO-SERVICES, INC.

Thomas R. Seider, P.E.
Senior Geotechnical Engineer

FIGURES



APPROXIMATE LOCATION OF PROJECT

N

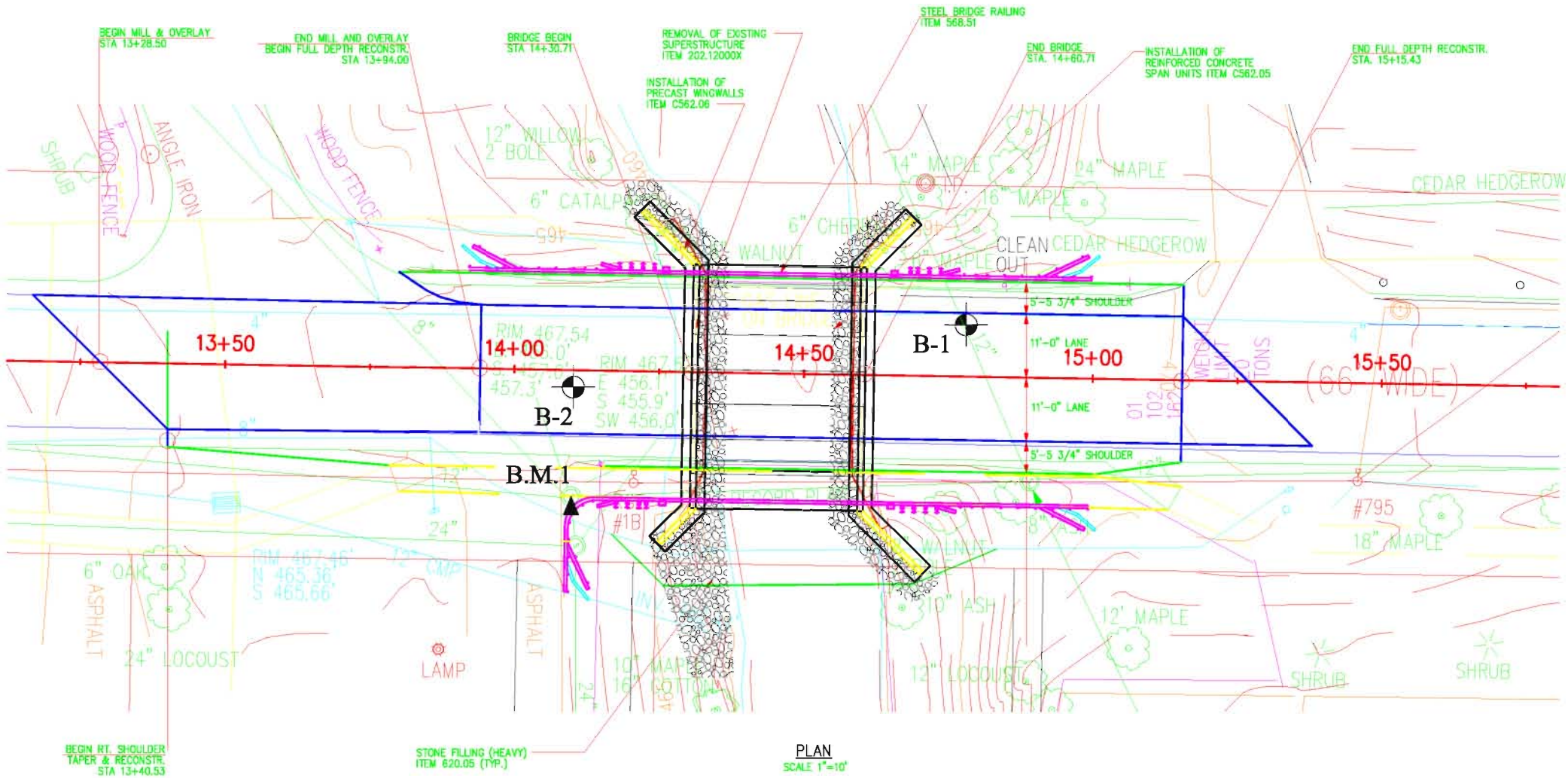
NOTE:
SITE LOCATION PLAN DEVELOPED
FROM MICROSOFT STREETS & TRIPS 2006

EMPIRE GEO SERVICES INC
a subsidiary of SJB Services, Inc.

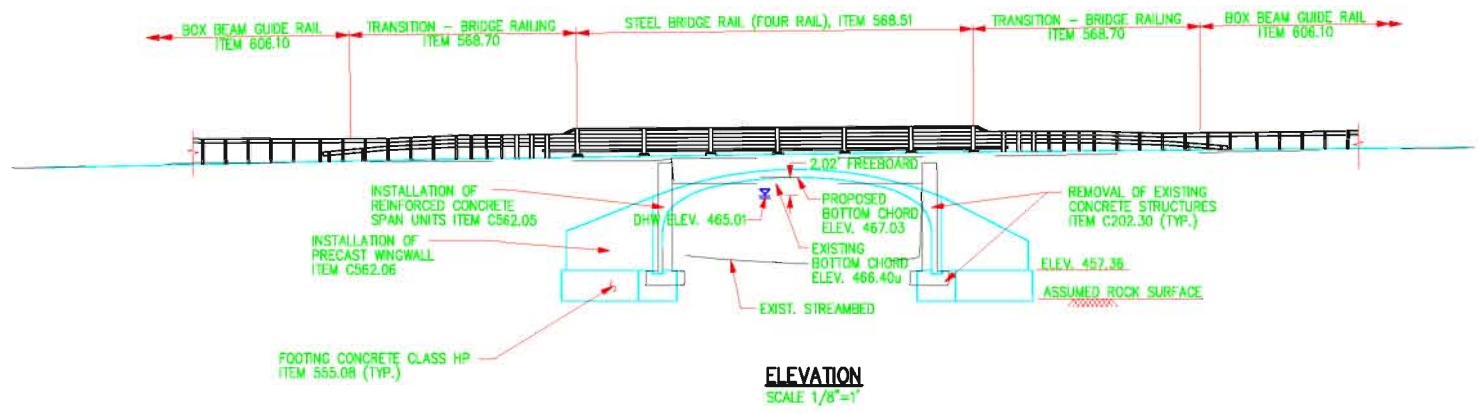
SITE LOCATION PLAN

PROPOSED BRIDGE REPLACEMENT
EDGEWOOD AVENUE OVER ALLEN CREEK
BIN 3317400
TOWN OF BRIGHTON
MONROE COUNTY, NEW YORK

DR BY: BFS	SCALE: NTS	PROJ NO.: RE-11-029
CHKD BY: TRS	DATE: 10/04/11	FIGURE NO: 1



PLAN
SCALE 1"=10'



ELEVATION
SCALE 1/8"=1'

25 0 25 50
SCALE FEET

LEGEND:

B-1 ⊕ INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING.

B.M.1 ▲ BENCHMARK: RIM OF MANHOLE. REPORTED ELEVATION: 467.54 FEET.

NOTE:

SUBSURFACE EXPLORATION PLAN DEVELOPED FROM "SITE LAYOUT" PREPARED BY POPLI DESIGN GROUP.

N

EMPIRE GEO SERVICES INC
a subsidiary of SJB Services, Inc.

PROPOSED BRIDGE REPLACEMENT
EDGEWOOD AVENUE OVER ALLEN CREEK
BIN 3317400
TOWN OF BRIGHTON
MONROE COUNTY, NEW YORK

SUBSURFACE EXPLORATION PLAN	DR BY: BFS	SCALE: NTS	PROJ NO.: RE-11-029
	CHKD BY: TRS	DATE: 10/04/11	FIGURE NO: 2

APPENDIX A

SUBSURFACE EXPLORATION LOGS

DATE

STARTED _____

FINISHED _____

SHEET _____ OF _____

SJB SERVICES, INC.
SUBSURFACE LOG

PROJ. No. _____

HOLE No. _____

SURF. ELEV. _____

G.W. DEPTH _____

PROJECT _____ LOCATION _____

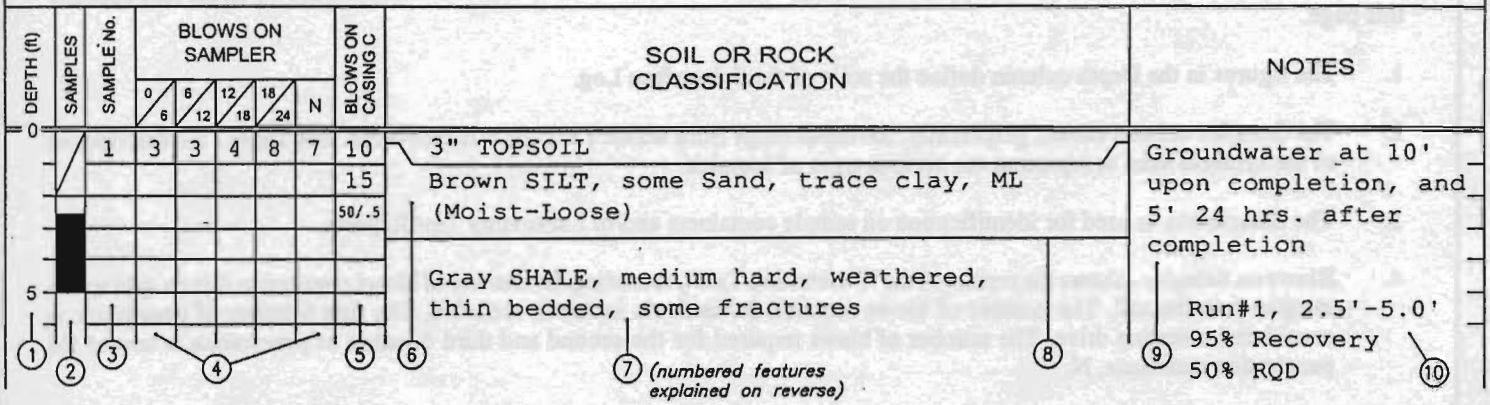


TABLE I

- Split Spoon Sample
- Shelby Tube Sample
- Geoprobe Macro-Core
- Auger or Test Pit Sample
- Rock Core

TABLE II

Identification of soil type is made on basis of an estimate of particle sizes, and in the case of fine grained soils also on basis of plasticity.

Soil Type	Soil Particle Size	
Boulder	>12"	Coarse Grained (Granular)
Cobble	3" - 12"	
Gravel - Coarse	3" - 3/4"	
- Fine	3/4" - #4	
Sand - Coarse	#4 - #10	
- Medium	#10 - #40	
- Fine	#40 - #200	
Silt - Non Plastic (Granular)	<#200	Fine Grained
Clay - Plastic (Cohesive)		

TABLE III

The following terms are used in classifying soils consisting of mixtures of two or more soil types. The estimate is based on weight of total sample.

Term	Percent of Total Sample
"and"	35 - 50
"some"	20 - 35
"little"	10 - 20
"trace"	less than 10

(When sampling gravelly soils with a standard split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter.)

TABLE IV

The relative compactness or consistency is described in accordance with the following terms:

Granular Soils		Cohesive Soils	
Term	Blows per Foot, N	Term	Blows per Foot, N
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Firm	10 - 30	Medium	4 - 8
Compact	30 - 50	Stiff	8 - 15
Very Compact	>50	Very Stiff	15 - 30
		Hard	>30

(Large particles in the soils will often significantly influence the blows per foot recorded during the penetration test)

TABLE V

Varved	Horizontal uniform layers or seams of soil(s).
Layer	Soil deposit more than 6" thick.
Seam	Soil deposit less than 6" thick.
Parting	Soil deposit less than 1/8" thick.
Laminated	Irregular, horizontal and angled seams and partings of soil(s).

TABLE VI

Rock Classification Term		Meaning
Hardness	- Soft	Scratched by fingernail
	- Medium Hard	Scratched easily by penknife
	- Hard	Scratched with difficulty by penknife
	- Very Hard	Cannot be scratched by penknife
Weathering	- Very Weathered	Judged from the relative amounts of disintegration, iron staining, core recovery, clay seams, etc.
	- Weathered	
	- Sound	

Rock Classification Term		Meaning	
Bedding	- Laminated	(<1")	Natural breaks in Rock Layers
	- Thin Bedded	(1" - 4")	
	- Bedded	(4" - 12")	
	- Thick Bedded	(12" - 36")	
	- Massive	(>36")	

(Fracturing refers to natural breaks in the rock oriented at some angle to the rock layers)

GENERAL INFORMATION & KEY TO SUBSURFACE LOGS

The Subsurface Logs attached to this report present the observations and mechanical data collected by the driller at the site, supplemented by classification of the material removed from the borings as determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface conditions between adjacent borings or between the sampled intervals. The data presented on the Subsurface Logs together with the recovered samples provide a basis for evaluating the character of the subsurface conditions relative to the project. The evaluation must consider all the recorded details and their significance relative to each other. Often analyses of standard boring data indicate the need for additional testing or sampling procedures to more accurately evaluate the subsurface conditions. Any evaluation of the contents of this report and recovered samples must be performed by qualified professionals. The following information defines some of the procedures and terms used on the Subsurface Logs to describe the conditions encountered, consistent with the numbered identifiers shown on the Key opposite this page.

1. The figures in the Depth column define the scale of the Subsurface Log.

2. The Samples column shows, graphically, the depth range from which a sample was recovered. See Table I for descriptions of the symbols used to represent the various types of samples.

3. The Sample No. is used for identification on sample containers and/or Laboratory Test Reports.

4. Blows on Sampler - shows the results of the "Penetration Test", recording the number of blows required to drive a split spoon sampler into the soil. The number of blows required for each six inches is recorded. The first 6 inches of penetration is considered a seating drive. The number of blows required for the second and third 6 inches of penetration is termed the penetration resistance, N.

5. Blows on Casing - Shows the number of blows required to advance the casing a distance of 12 inches. The casing size, hammer weight, and length of drop are noted at the bottom of the Subsurface Log. If the casing is advanced by means other than driving, the method of advancement will be indicated in the Notes column or under the Method of Investigation at the bottom of the Subsurface Log. Alternatively, sample recovery may be shown in this column, or other data consistent with the column heading.

6. All recovered soil samples are reviewed in the laboratory by an engineering technician, geologist or geotechnical engineer, unless noted otherwise. Visual descriptions are made on the basis of a combination of the driller's field descriptions and noted observations together with the sample as received in the laboratory. The method of visual classification is based primarily on the Unified Soil Classification System (ASTM D 2487) with regard to the particle size and plasticity (See Table No. II), and the Unified Soil Classification System group symbols for the soil types are sometimes included with the soil classification. Additionally, the relative portion, by weight, of two or more soil types is described for granular soils in accordance with "Suggested Methods of Test for Identification of Soils" by D.M. Burmister, ASTM Special Technical Publication 479, June 1970. (See Table No. III). Description of the relative soil density or consistency is based upon the penetration records as defined in Table No. IV. The description of the soil moisture is based upon the relative wetness of the soil as recovered and is described as dry, moist, wet and saturated. Water introduced into the boring either naturally or during drilling may have affected the moisture condition of the recovered sample. Special terms are used as required to describe soil deposition in greater detail; several such terms are listed in Table V. When sampling gravelly soils with a standard two inch diameter split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders and large gravel is sometimes, but not necessarily, detected by an evaluation of the casing and sampler blows or through the "action" of the drill rig as reported by the driller.

7. Rock description is based on review of the recovered rock core and the driller's notes. Frequently used rock classification terms are included in Table VI.

8. The stratification lines represent the approximate boundary between soil types and the transition may be gradual. Solid stratification lines delineate apparent changes in soil type, based upon review of recovered soil samples and the driller's notes. Dashed lines convey a lesser degree of certainty with respect to either a change in soil type or where such change may occur.

9. Miscellaneous observations and procedures noted by the driller are shown in this column, including water level observations. It is important to realize the reliability of the water level observations depends upon the soil type (water does not readily stabilize in a hole through fine grained soils), and that any drill water used to advance the boring may have influenced the observations. The ground water level will fluctuate seasonally, typically. One or more perched or trapped water levels may exist in the ground seasonally. All the available readings should be evaluated. If definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or groundwater observation wells.

10. The length of core run is defined as the length of penetration of the core barrel. Core recovery is the length of core recovered divided by the core run. The RQD (Rock Quality Designation) is the total length of pieces of NX core exceeding 4 inches divided by the core run. The size core barrel used is also noted in the Method of Investigation at the bottom of the Subsurface Log.

DATE
START 8/10/2011
FINISH 8/10/2011
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-1
SURF. ELEV 469.3'
G.W. DEPTH See Notes

PROJECT: PROPOSED BRIDGE REPLACEMENT LOCATION: EDGEWOOD AVENUE
PROJ. NO.: RE-11-029 BRIGHTON, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	--	--			ASPHALTIC CONCRETE	Driller notes approx. 6" Asphalt and 6" Subbase
		11	7		11	Dark Grey f-c GRAVEL, some f-c Sand, tr.silt (moist, FILL)	
	2	10	9				No Recovery Sample #2
		7	7		16		
5	3	2	2			Brown SILT, tr.sand, tr.clay (moist, loose, ML)	
		3	2		5		
	4	2	3			Contains little f-c Gravel, little f-c Sand (moist-wet)	
		3	2		6		
	5	1	WOH			Brown to Grey Silty CLAY, tr.sand (moist, v.soft, CL)	WOH = Weight of Hammer and Rods
10		WOH	1		WOH		
	6	WOH	WOH			Becomes Grey, occasional f-c Sand seams (soft)	
		3	5		3		
							No Recovery Sample #7
15							NQ '2' Size Rock Core
	7	50/0.0			REF		
						Grey DOLOSTONE, hard, sound, laminated to thickly bedded, occasional horizontal fractures, occasional shale partings, occasional vugs.	RUN #1: 15.0' - 20.0' REC = 100% RQD = 94%
20							
						Becomes laminated to bedded	RUN #2: 20.0' - 25.0' REC = 94% RQD = 34%
25							
						Boring Complete at 25.0'	Free standing water recorded at 14.2' at auger refusal with Augers at 15.0'.
30							Free standing water recorded at 13.7' after coring.
35							REF = Sample Spoon Refusal
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist

DRILLER: S. GORSKI DRILL RIG TYPE : CME-85

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 8/11/2011
FINISH 8/11/2011
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-2
SURF. ELEV 468.4'
G.W. DEPTH See Notes

PROJECT: PROPOSED BRIDGE REPLACEMENT
PROJ. NO.: RE-11-029
LOCATION: EDGEWOOD AVENUE
BRIGHTON, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	--	--			ASPHALTIC CONCRETE	Driller notes approx. 8"
		15	18		15	Dark Grey f-c GRAVEL, some f-c Sand, tr.silt (moist, FILL)	Asphalt and 5" Subbase
	2	10	8				
		6	6		14	Brown Silty CLAY, tr.brick (moist, FILL)	
5	3	5	5				No Recovery Sample #3
		3	3		8		
	4	3	3			Brown Silty CLAY, tr.sand (moist, medium, CL)	
		4	4		7		
	5	3	3			Contains little Fine Sand, occasional Silty Sand	
10		3	9		6	seams (moist-wet)	
	6	10	21			Brown f-c SAND, some f-c Gravel, some Silt	
		24	48		45	(moist, compact, SM)	
	7	37	30				No Recovery Sample #8
		38	50/0.1		68	(v.compact)	NQ '2' Size Rock Core
15	8	50/0.2			REF		
						Grey DOLOSTONE, hard, slightly weathered to sound, laminated to bedded, coccasional horizontal fractures, occasional shale partings, occasional vugs	RUN #1: 14.2' - 19.2' REC = 96% RQD = 47%
20						Becomes sound	RUN #2: 19.2' - 24.2' REC = 96% RQD = 60%
25						Boring Complete at 24.2'	No free standing water encountered prior to coring.
30							Free standing water recorded at 8.5' after coring.
35							REF = Sample Spoon Refusal
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. GORSKI

DRILL RIG TYPE : CME-85

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

APPENDIX B

LABORATORY TEST DATA

SJB SERVICES, INC.

Contract
Drilling
and
Testing

Rochester Office
535 Summit Point Drive
Henrietta, NY 14467
Phone: 585-359-2730
Fax: 585-359-9668

STANDARD TEST METHOD FOR UNCONFINED COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS ASTM D2938

Project: Edgewood Bridge Replacement **Date:** 10-5-2011
Client: Popli Design Group
Project Number: RE-11-029

Lab ID Number	11-722	11-723
Core Identification	B-2	B-2
Depth (feet)	15	20.2
Moisture Condition at Test	Dry	Dry
Orientation of Core Axis in Structure	Vertical	Vertical
Average Diameter (in)	1.95	1.95
Cross-Sectional Area (sq. in.)	2.99	2.99
Length (in.)	3.90	3.90
Maximum Load (lbs.)	29,940	33,110
Ratio of Capped Length to Diameter (L/D)	2.00	2.00
Compressive Strength (psi)	10,013	11,073

SJB Laboratory Technician: William Gilmore

Respectfully submitted:
SJB Services, Inc.

Charles Guzzetta
District Manager

APPENDIX C
FILL MATERIAL AND
EARTHWORK RECOMMENDATIONS

APPENDIX C

FILL MATERIAL AND EARTHWORK RECOMMENDATIONS

I. Material Recommendations

A. Structural Fill

Structural Fill should consist of a crusher run stone, which is free of clay, organics and friable or deleterious particles. As a minimum, the Structural Fill material should meet the requirements of New York State Department of Transportation, Standard Specifications, Item 304.12 – Type 2 Subbase, with the following gradation requirements.

Sieve Size Distribution	Percent Finer by Weight
2 inch	100
¼ inch	30-65
No. 40	5-40
No. 200	0-10

B. Subbase Stone

The subbase stone course placed as the aggregate course beneath pavement construction should conform to the same material requirements as Structural Fill as stated above.

C. Suitable Granular Fill

Suitable, well graded from coarse to fine, soil material classified as GW, GP, GM, SW, SP and SM soils using the Unified Soil Classification System (ASTM D-2487) and having no more than 85 percent by weight material passing the No. 4 sieve, no more than 20 percent by weight material passing the No. 200 sieve and which is generally free of particles greater than 6 inches, will be acceptable as Suitable Granular Fill. It should also be free of topsoil, asphalt, concrete rubble, wood, debris, clay and other deleterious materials. Suitable Granular Fill can be used as foundation backfill and as subgrade fill to raise site grades beneath pavement construction.

Material meeting the requirements of New York State Department of Transportation, Standard Specifications, Item 203.07 – Select Granular Fill is acceptable for use as Suitable Granular Fill.

D. General Fill

General Fill may be used for backfill in non-loaded areas outside of paved areas. General Fill should be free of topsoil, organics, debris and deleterious materials and should be of a moisture content suitable for proper compaction.

II. Placement and Compaction Requirements

All controlled fill placed beneath foundations, pavement construction, and beneath utilities should be compacted to a minimum of 95 percent of the maximum dry density as measured by the modified Proctor test (ASTM D1557). Fill placed in non-loaded grass areas can be compacted to a minimum of 90 percent of the maximum dry density (ASTM D1557).

Placement of fill should not exceed a maximum loose lift thickness of 6 to 9 inches with the exception of subbase courses beneath pavement construction, which can be placed in a single lift not exceeding 12 inches. The loose lift thickness should be reduced in conjunction with the compaction equipment used so that the required density is attained.

Fill should have a moisture content within two percent of the optimum moisture content prior to compaction. Subgrades should be properly drained and protected from moisture and frost. Placement of fill on frozen subgrades is not acceptable. It is recommended that all fill placement and compaction be monitored and tested by a representative of Empire Geo-Services, Inc.

III. Quality Assurance Testing

The following minimum laboratory and field quality assurance testing frequencies are recommended to confirm fill material quality and post placement and compaction conditions. These minimum frequencies are based on generally uniform material properties and placement conditions. Should material properties vary or conditions at the time of placement vary (i.e. moisture content, placement and compaction, procedures or equipment, etc.) then additional testing is recommended. Additional testing, which may be necessary, should be determined by qualified geotechnical personnel, based on evaluation of the actual fill material and construction conditions.

A. Laboratory Testing of Material Properties

- Moisture content (ASTM D-2216) - 1 test per 2,000 cubic yards or no less than 2 tests per each material type.
- Grain Size Analysis (ASTM D-422) - 1 test per 3,000 cubic yards or no less than 2 tests per each material type.

- Liquid and Plastic Limits (ASTM D-4318) 1 test per 3,000 cubic yards or no less than 2 tests per each material type. Liquid and Plastic Limit testing is necessary only if appropriate, based on material composition (i.e. clayey or silty soils).
- Modified Proctor Moisture Density Relationship (ASTM D-1557) 1 test per 4,000 cubic yards or no less than 1 test per each material type. A maximum/minimum density relationship (ASTM D-4253 and ASTM D-4254) may be an appropriate substitute for ASTM D-1557 depending on material gradation.

B. Field In-Place Moisture/Density Testing (ASTM D-3017 and ASTM D-2922)

- Backfilling along trenches and foundation walls - 1 test per 50 lineal feet per lift.
- Backfilling Isolated Excavations (i.e. column foundations, manholes, etc.) 1 test per lift.
- Filling in open areas for pavement construction - 1 test per 2,500 square feet per lift.

APPENDIX D

GEOTECHNICAL REPORT LIMITATIONS

GEOTECHNICAL REPORT LIMITATIONS

Empire Geo-Services, Inc. (Empire) has endeavored to meet the generally accepted standard of care for the services completed, and in doing so is obliged to advise the geotechnical report user of our report limitations. Empire believes that providing information about the report preparation and limitations is essential to help the user reduce geotechnical-related delays, cost over-runs, and other problems that can develop during the design and construction process. Empire would be pleased to answer any questions regarding the following limitations and use of our report to assist the user in assessing risks and planning for site development and construction.

PROJECT SPECIFIC FACTORS: The conclusions and recommendations provided in our geotechnical report were prepared based on project specific factors described in the report, such as size, loading, and intended use of structures; general configuration of structures, roadways, and parking lots; existing and proposed site grading; and any other pertinent project information. Changes to the project details may alter the factors considered in development of the report conclusions and recommendations. *Accordingly, Empire cannot accept responsibility for problems which may develop if we are not consulted regarding any changes to the project specific factors that were assumed during the report preparation.*

SUBSURFACE CONDITIONS: The site exploration investigated subsurface conditions only at discrete test locations. Empire has used judgement to infer subsurface conditions between the discrete test locations, and on this basis the conclusions and recommendations in our geotechnical report were developed. It should be understood that the overall subsurface conditions inferred by Empire may vary from those revealed during construction, and these variations may impact on the assumptions made in developing the report conclusions and recommendations. *For this reason, Empire should be retained during construction to confirm that conditions are as expected, and to refine our conclusions and recommendations in the event that conditions are encountered that were not disclosed during the site exploration program.*

USE OF GEOTECHNICAL REPORT: Unless indicated otherwise, our geotechnical report has been prepared for the use of our client for specific application to the site and project conditions described in the report. *Without consulting with Empire, our geotechnical report should not be applied by any party to other sites or for any uses other than those originally intended.*

CHANGES IN SITE CONDITIONS: Surface and subsurface conditions are subject to change at a project site subsequent to preparation of the geotechnical report. Changes may include, but are not limited to, floods, earthquakes, groundwater fluctuations, and construction activities at the site and/or adjoining properties. *Empire should be informed of any such changes to determine if additional investigative and/or evaluation work is warranted.*

MISINTERPRETATION OF REPORT: The conclusions and recommendations contained in our geotechnical report are subject to misinterpretation. *To limit this possibility, Empire should review project plans and specifications relative to geotechnical issues to confirm that the recommendations contained in our report have been properly interpreted and applied.*

Subsurface exploration logs and other report data are also subject to misinterpretation by others if they are separated from the geotechnical report. This often occurs when copies of logs are given to contractors during the bid preparation process. *To minimize the potential for misinterpretation, the subsurface logs should not be separated from our geotechnical report and the use of excerpted or incomplete portions of the report should be avoided.*

OTHER LIMITATIONS: Geotechnical engineering is less exact than other design disciplines, as it is based partly on judgement and opinion. For this reason, our geotechnical report may include clauses that identify the limits of Empire's responsibility, or that may describe other limitations specific to a project. These clauses are intended to help all parties recognize their responsibilities and to assist them in assessing risks and decision making. Empire would be pleased to discuss these clauses and to answer any questions that may arise.

Appendix E

Structures Information

2010 Inspection Report
Bridge Rehabilitation Vs. Replacement Worksheet
Draft Level I Load Rating

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Bridge Ratings

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Inspection Agency: 13 - Consultant Type of Inspection: 1 - BIENNIAL
GTMS: 302 -- Steel - Stringer/Multi-Beam or Girder
POSTINGS: See Gen Rec Page 1 for Postings at time of inspection.
Further Investigation Needed: No
State Highway Number: 000000 Milepoint: 2.03 AADT/Yr: 3501 / 1996
Orientation: 2 - Northeast Political Unit: 0092 - Town of BRIGHTON Year Built: 1953
Total Spans: 1 Ramp Bridge Attached To Span: NA BIN: NA
General Recommendation: 5 Computed Condition Rating: 4.552

Abutment Ratings:	Beg Abut	End Abut
Joint with Deck	7	7
Bearings, Bolts, Pads	9	9
Seats and Pedestals	5	5
Backwall	5	5
Stem (Breastwall)	5	4
Erosion or Scour	5	5
Footings	9	9
Piles	8	8
Recommendation	5	5

Wingwall Ratings:	Beg Abut	End Abut
Walls	6	6
Footings	9	9
Erosion or Scour	5	5
Piles	8	8

Channel Ratings:	Channel
Stream Alignment	5
Erosion and Scour	3
Waterway Opening	3
Bank Protection	3

Approach Ratings:	Approaches
Drainage	6
Embankment	6
Settlement	7
Erosion	6
Pavement	6
Guide Railing	5

Number of Flags Issued:

RED: 0 Yellow: 0 Safety: 1

Vulnerability Reviews Recommended: 1=Yes, 2=No, 3=NA, X=NotActive

Hydraulic: 2 Overload: X Steel: X
Collision: 3 Concrete: X Seismic: X

Inspector's Signature: CheckValue: 1,749,832,904 Date: 6/21/2010

Andrew P. Thompson,PE () (Inspector ID:4110056)

Signed copy of this inspection report is available in the appropriate NYSDOT Regional Office

Reviewed By: Date: 7/13/2010

Michael J. Peters,PE () (QC ID:4110051)

Signed copy of this inspection report is available in the appropriate NYSDOT Regional Office

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Span Ratings

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Deck Element Ratings:	**001**
Wearing Surface	3
Curbs	6
Sidewalks, Fascias	6
Railings, Parapets	5
Scuppers	8
Gratings	8
Median	8
Mono Deck Surface	8

Superstructure Ratings:	**001**
Structural Deck	3
Primary Members	4
Secondary Members	5
Paint	4
Joints	8
Recommendation	4

Pier Ratings:	**001**
Bearings, Bolts, Pads	8
Pedestals	8
Top of Cap or Beam	8
Stem Solid Pier	8
Cap Beam	8
Pier Columns	8
Footings	8
Erosion or Scour	8
Piles	8
Recommendation	8

Utility Ratings:	**001**
Lighting	8
Sign Structure	8
Utilities and Support	5

Field Notes:

Field Date	Arrival	Departure	Temp (C)	Temp (F)	Weather Conditions
6/17/2010	8:00:00 AM	10:00:00 AM		65	Cloudy
6/21/2010	7:30:00 AM	10:00:00 AM		65	Sunny

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Inspection Notes

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Note ID: 411033174000000

Beg Abut -- Abutment: Bearings, Bolts, Pads -- Rated 9, Was 9
End Abut -- Abutment: Bearings, Bolts, Pads -- Rated 9, Was 9
Referenced Photos:
The begin and end bearings are encased in concrete and not visible. No photo.

Note ID: 411033174000001

Stream Channel: Erosion and Scour -- Rated 3, Was 3
Referenced Photos: "2", "3", "4"
The previously eroded bank below the storm drain discharge pipe in the begin right stream bank has been repaired with stone fill (Photos 3 and 4). The end section of the concrete drain pipe has been replaced. The begin right streambank is raw between the wingwall and the drainage pipe (Photo 2).

A tree is undermined in the end right quadrant .

The left side quadrants rate 5 for stream channel erosion and scour.

Note ID: 411033174000007

Stream Channel: Waterway Opening -- Rated 3, Was 5
Referenced Photos: "4", "5"
A large tree has fallen and is restricting flow in the downstream channel (Photo 4). Additional timber debris is caught on the upstream side of the tree. At this location flow is directed towards the end 1/4 of the channel. There are no trees or debris blocking the upstream channel. No waterborne debris was detected on the girder flanges.

The opening is inadequate according to the Hydraulic Vulnerability Assessment in the BIN folder.

Rating changed from 5 to 3.

Note ID: 411033174000002

Stream Channel: Bank Protection -- Rated 3, Was 3
Referenced Photos: "3", "4", "5"
Bank protection exists near the bridge in the begin left and at the end quadrants (Photo 5). In all 3 of these quadrants, the stone has displaced towards the creek bed slightly.

Stone bank protection has been placed at the begin right bank below the storm pipe end section and for a length of approx. 15' (Photos 3 and 4). This location would rate 5.

Note ID: 411033174000008

Span 001 -- Deck Elements: Wearing Surface -- Rated 3, Was 5
Referenced Photos: "6"
The top surface of the corrugated steel deck has worn smooth reducing friction for passing vehicles. Otherwise, the ride is good and there is no impact when vehicles pass.

Inspection Notes

Carried: EDGEWOOD AVENUE **Crossed: ALLEN CREEK** **CheckValue: 1,749,832,904**

Note ID: 411033174000008 - continued

Rating changed from 5 to 3.

Note ID: 411033174000004

Span 001 -- Superstructure: Structural Deck -- Rated 3, Was 3
Referenced Photos: "6", "7"
There are over 30 holes in the main bars of the steel grating deck which spans 18" between the sleepers. In Girder Bay 6, Sleeper Bay 8 from the end there are 2 full height holes on adjacent deck bars (Photo 7). Other locations of full height or 90% height holes are as follows:

Girder Bay (GB) 2 over G2, Sleeper Bay (SB) 6 - 90% height hole
GB 5, SB 5 - full height hole
GB 5 over G5, SB 2 from end - full height hole
GB 6 over G6, SB 11 - full height hole
GB 6 over G6, SB 5 from end - full height hole

Safety Flag 41100014 has been issued for holes in deck main bars.

Most of the sleepers have welded cover plates along the webs over the connections to the girders. There are isolated areas of flange section loss to the sleepers, but most of the flange loss is adjacent to the girder connections.

The worst case of sleeper loss is on sleeper #2 in bays 4-6. In girder bay #6, the sleeper has a repair sleeper placed next to it (similar in all corners of the bridge). In bays 4 and 5, sleeper #2 has a web hole adjacent to the web cover plate weld (near girder G4 and G5 in bay #4 and near girder G6 and G5 in bay #5).
Since the deck is a steel grate, no deck sketch is required.

Note ID: 411033174000005

Span 001 -- Superstructure: Primary Members -- Rated 4, Was 4
Referenced Photos: "8", "9"
The cancelled section loss readings (from the 2000 biennial inspection) for G4 at mid-span were resumed in 2006. Readings were not taken in 2008 but were taken this inspection (2010). The G4 average flange section loss at midspan has increased and is currently 35% (Photo 9). New readings were taken on G4 at 6' from begin (end of cover plate). Average flange loss at this location was 37%. Web loss at both locations along the span were 5%. Web loss to G4 at the begin has increased considerably and is 29% (Photo 8).

The remaining girders have an estimated 15% - 20% section loss.

See Section Loss Documentation.

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Inspection Notes

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Note ID: 411033174000006

Span 001 -- Superstructure: Paint -- Rated 4, Was 4
Referenced Photos: "8", "9"
All of the girders and secondary members have areas of rust forming near the diaphragm connections and on the top and bottom flanges. Rust is also forming at the base of the web of the interior girders. The paint is peeling and bubbling off in most of these locations. Girder G4 represents the worst case in terms of paint failure with delamination to the bottom flange at mid-span and to the bottom of the web at the begin abutment.

Note ID: 411033174000003

End Abut -- Abutment: Stem (Breastwall) -- Rated 4, Was 4
Referenced Photos: "1"
The end stem has numerous spalls up to 3" deep. The largest spall is at the water line below bay 3 and measures 5' wide x 2' tall x 3" deep with 1 exposed rusted rebar. Below bays 3 and 4, a a 6' x 1' x 2" deep spall exists with an exposed rusted rebar. Below bay 6, spall exists with an exposed rusted rebar. The concrete surrounding the spalled areas is hollow sounding .

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Inspection Photos in Photo Number Order

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

End Abutment

Photo Number: 1 Photo Filename: 1.jpg

Begin Right Bank

Photo Number: 2 Photo Filename: 2.jpg

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Inspection Photos in Photo Number Order

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Begin Right Bank Away From Bridge

Photo Number: 3 Photo Filename: 3.jpg

Downstream (Right) Elevation

Photo Number: 4 Photo Filename: 4.jpg

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Inspection Photos in Photo Number Order

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Upstream (Left) Channel

Photo Number: 5 Photo Filename: 5.jpg

Wearing Surface from End Right

Photo Number: 6 Photo Filename: 6.jpg

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Inspection Photos in Photo Number Order

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Girder Bay 6 - 8th Sleeper Bay from End

Photo Number: 7 Photo Filename: 7.jpg

G4 at Begin

Photo Number: 8 Photo Filename: 8.jpg

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Inspection Photos in Photo Number Order

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

G4 at Midspan

Photo Number: 9 Photo Filename: 9.jpg

No Photo

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

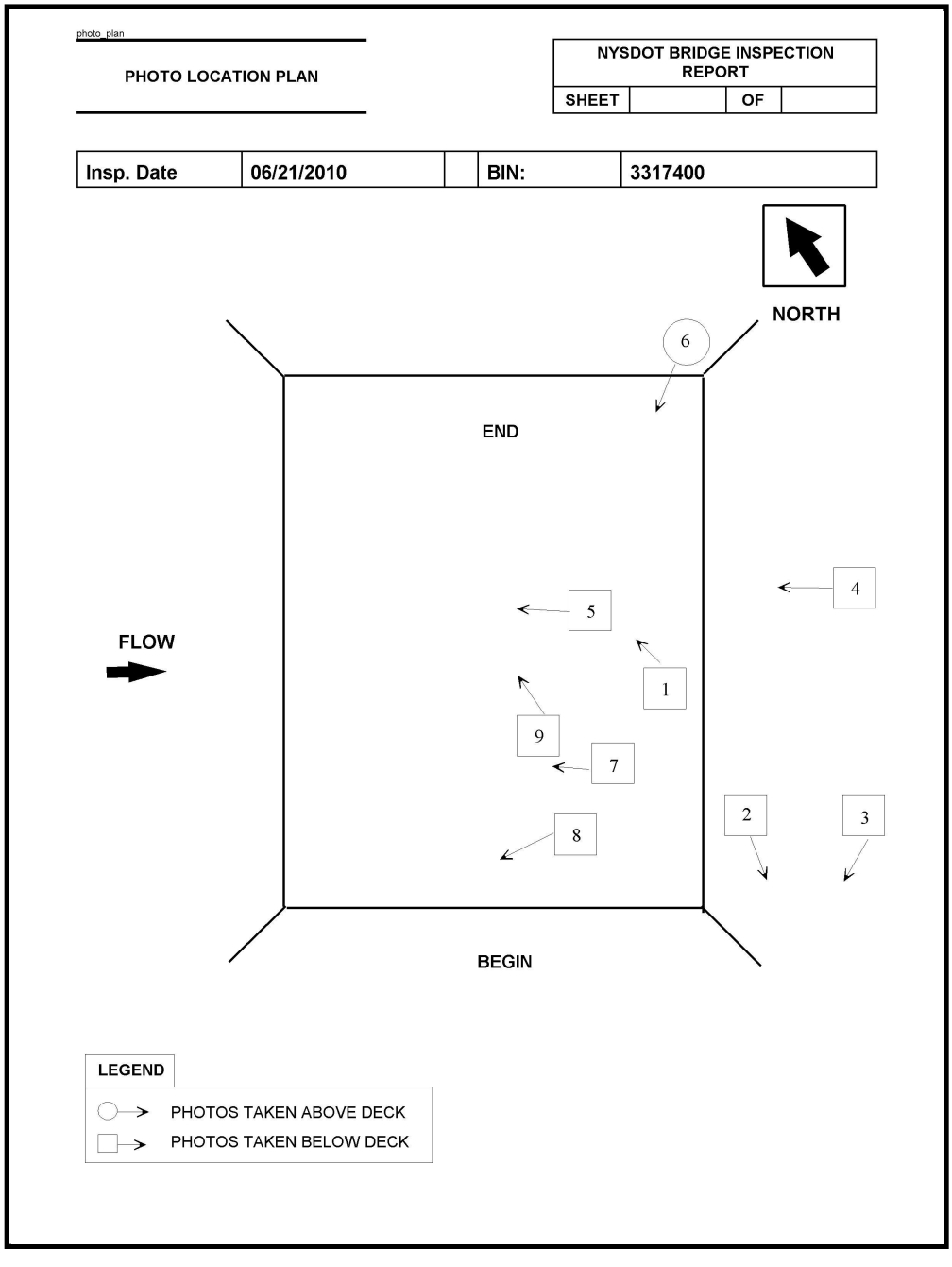
Inspection Sketches in Sketch SysID Order

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Sketch ID: 411033174000000 Sketch Filename: Photo_plan.10

General Sketch for Bridge
Referenced Photos:

Photo Location Plan



Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Inspection Sketches in Sketch SysID Order

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Sketch ID: 411033174000001 Sketch Filename: BD227.10

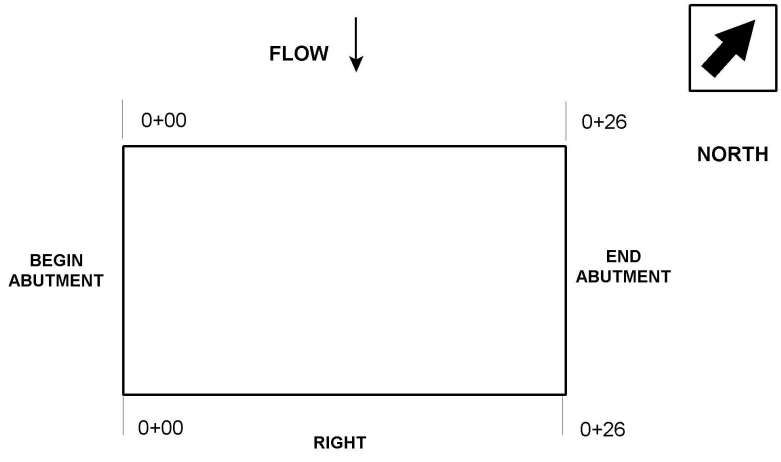
Stream Channel: Erosion and Scour -- Rated 3, Was 3
Referenced Photos: "2", "3", "4"

Channel Cross Sections along Fascias

CHANNEL CROSS-SECTIONS ALONG FASCIAS (FEET)

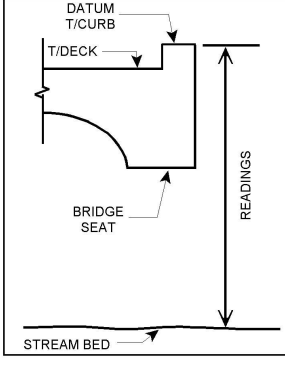
NYSDOT BRIDGE INSPECTION REPORT			
SHEET		OF	

Insp. Date:	06/17/2010		BIN:	3317400



PLAN (NTS)

Plan Notes: Readings taken @ 5' increments up to 25'. Last reading taken at 26'.

REFERENCE	YEAR	NOTES
	2006	No significant changes.
	2008	No significant changes.
	2010	No significant changes.

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Inspection Sketches in Sketch SysID Order

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Sketch ID: 411033174000002 Sketch Filename: BD226.10

Stream Channel: Erosion and Scour -- Rated 3, Was 3
Referenced Photos: "2", "3", "4"

Channel Cross Sections - Readings

CHANNEL CROSS-SECTION READINGS (Feet)

NYSDOT BRIDGE INSPECTION REPORT			
SHEET		OF	

Insp. Date:	06/17/2010		BIN:	3317400

STA.	LEFT SIDE READINGS:					STA.	RIGHT SIDE READINGS:				
YEAR>	2006	2006	2008	2010		YEAR>	2006	2006	2008	2010	
M/FT	M	FT	FT	FT		M/FT	M	FT	FT	FT	
0/0	3.30	10.8	10.6	10.4		0/0	3.12	10.2	10.2	10.0	
1.5/5	3.30	10.8	11.0	11.2		1.5/5	3.20	10.5	10.6	10.5	
3.0/10	3.35	11.0	11.0	11.1		3.0/10	3.30	10.8	10.9	11.0	
4.5/15	3.35	11.0	11.1	11.2		4.5/15	3.40	11.2	11.2	11.2	
6.0/20	3.37	11.1	11.1	11.2		6.0/20	3.42	11.2	11.3	11.3	
7.5/25	3.35	11.0	11.0	10.9		7.5/25	3.34	11.0	10.9	11.0	
7.9/26	3.30	10.8	10.8	10.8		7.9/26	3.35	11.0	11.0	10.8	
WE	3.30	10.8	10.4	9.7		WE	3.10	10.2	10.4	9.6	
@	1.5	5	5	5		@	4.5	15	15	15	
				GHS						GHS	

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

External Documents Linked to Inspection

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

LINK ID: 411033174000000 Linked Object Filename: 10SL.qpw

Span 001 -- Superstructure: Primary Members -- Rated 4, Was 4
Referenced Photos: "8", "9"

BIN: 3317400
Carried: Edgewood Ave. Crossed: Allen Creek
Location

SAMPLE CALCULATION:
(ORIGINAL AREA - MEASURED AREA) X 100 = %LOSS
ORIGINAL AREA

				By: DVN				Date: 06/08/06	By: GHS				Date: 06/21/10
				Top Flange		Bottom Flange			Top Flange		Bottom Flange		
	Member Size	Flange	WEB	LT.	RT.	LT.	RT.	WEB	LT.	RT.	LT.	RT.	WEB
G4 @ Begin	W21x62	0.615	0.40	-	-	-	-	0.340	-	-	-	-	0.286
				-		-		15%	-		-		29%
G4 @ 6 ft from Begin	W21x62	0.615	0.40	-	-	-	-	-	0.414	0.364	0.386	0.392	0.380
				-		-		-	37%		37%		5%
G4 @ Mid. Span	W21x62	0.615	0.40	0.491	0.502	0.369	0.429	0.378	0.440	0.437	0.298	0.433	0.380
				19%		35%		6%	29%		41%		5%
-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-		-		-	-		-		-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-		-		-	-		-		-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-		-		-	-		-		-

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Gen. Rec., Postings, Federal Ratings, etc.

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Overall Condition:

GENERAL RECOMMENDATION: 5

Computed Condition Rating: 4.552

Problems Requiring Action:

NO Further Investigation Needed

SAFETY Flag(s) Issued

POSTINGS:

Inspector Confirmed existing Posting data as correct.
Posted Vertical Clearance ON the bridge is: No Posting
Posted Vertical Clearance UNDER the bridge is: No Posting
No Load Restriction is posted on this bridge

Overloads Observed:

NO Overload Vehicles were observed on this bridge

FEDERAL RATINGS:

NBI Deck Condition: 4
NBI Superstruct Condition: 5
NBI Substruct Condition: 5
NBI Channel Condition: 6
NBI Culvert Condition: N

Diving Inspection Needs:

Diving Inspection Required? No Date of Last Diving Inspection: No Date

Inventory Problems:

Inventory Problems Exist? No

Miscellaneous:

Time Required to Inspect Bridge: 4.5 Hours

Lane Closure Needs: None Required

No Railroad Flagging Required

No Pedestrian Fence

No Snow Fence

The BIN Plate is in OK condition

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Gen. Rec., Postings, Federal Ratings, etc.

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Special Emphasis Inspection Required:

Non-Redundant/Fracture Critical Members - No
Pin and Hangers - No
Fatigue-Prone Welds - Yes
Non-Categorized Fatigue-Prone Details - No
Other (Specified in Text) - No

Special Emphasis Details:

There are 4 sets of category "E" welds on girder 4 at the ends of the two cover plates.

The welds to the diaphragm between girders 2 and 3 are also 100% hands on.

General Notes To the Next Inspector:

BIN plate is on the begin right stem.

Park on Stonybrook Drive.

Improvements Observed:

2008 - Embankments improved. No change to inventory.

2010 - Storm drain end section replaced and stone fill added at begin right bank.

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Review Progress and Personnel Present at Inspection

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Inspection Submission Status:

Submitted to QC Engineer on: 7/13/2010
QC Submission Number: 10400901

QC Review Completed: 7/13/2010
QC Engineer: Michael J. Peters

Submitted to Liaison Engineer on: 7/19/2010
Liaison Submission Number: 04010

Liaison Review Completed: 8/23/2010
Liaison Engineer: Ikram A. Mohl

Submitted for BIIS Processing on: 8/23/2010
BIIS Submission Number: .kp1

Current Status: Keypunched, Sent to BIIS
Check Value: 1,749,832,904

Personnel Present During Inspection:

Andrew P. Thompson - Team Leader
George Stam - Assistant Team Leader

Discovery Date: 6/21/2010 RC: 43 BIN: 3317400

Safety Flag 41100014

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK

Prompt Interim Action Recommended: No

Inspector: Thompson, Andrew P. Date Discovered: 6/21/2010
Flag Number: 41100014 Supersedes Flag Number: _____

Bridge Description:
BIN: 3317400 Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK

Region: 4 - Rochester County: 3 - Monroe
Political Unit: 0092 - Town of BRIGHTON
Residency Code: - N/A
Primary Owner: 30 - County
Secondary Owner: 99 - One Agency - Listed in first subfield
Primary Maintenance: 30 - County
Secondary Maintenance: 99 - One Agency - Listed in first subfield
Year Built: 1953 Not Posted For Load

Number of Spans by Type:

Num	Type	Description
001	109	Steel - Rolled Beam, Multi-Girder

Description of Flagged Condition:
There are over 30 holes in the main bars of the steel grating deck which spans 18" between the sleepers. In Girder Bay 6, Sleeper Bay 8 from the end there are 2 full height holes on adjacent deck bars (Photo 7). Other locations of full height or 90% height holes are as follows:

Girder Bay (GB) 2 over G2, Sleeper Bay (SB) 6 - 90% height hole
GB 5, SB 5 - full height hole
GB 5 over G5, SB 2 from end - full height hole
GB 6 over G6, SB 11 - full height hole
GB 6 over G6, SB 5 from end - full height hole

Bridge oriented Northeast.

1 Photos/Sketches Attached

Verbal Notifications: (For RED Flags and Safety Flags with PIA only)

To: _____ of Regional Office on _____ at _____

Signature: (a signed copy of this report will be placed in the BIN folder)
Flagged Bridge Report Completed By: Thompson, Andrew P. on 6/21/2010
Flagged Bridge Report Signed By: _____ on _____
Thompson, Andrew P.

(This PDF Report Created: 8/30/2010 3:48:42 PM)

Discovery Date: 6/21/2010 **RC: 43 BIN: 3317400**

Safety Flag 41100014 Attachment

Carried: EDGEWOOD AVENUE **Crossed: ALLEN CREEK**

7.jpg - Attached to Safety Flag 41100014

Girder Bay 6 - 8th Sleeper Bay from End

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Inspection Access Requirements

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Equipment Required for Inspection

No Access Requirement Changes Noted During This Inspection.
This Listing is from the Inventory Database.

ACCESS CATEGORIES FOR ENTIRE BRIDGE
Required: Walking, Step Ladder

ACCESS CATEGORIES FOR SPAN 1
Required: Walking, Step Ladder

Inspection Date: 6/21/2010 RC: 43 BIN: 3317400

Culvert Measurements

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK CheckValue: 1,749,832,904

Culvert Measurements

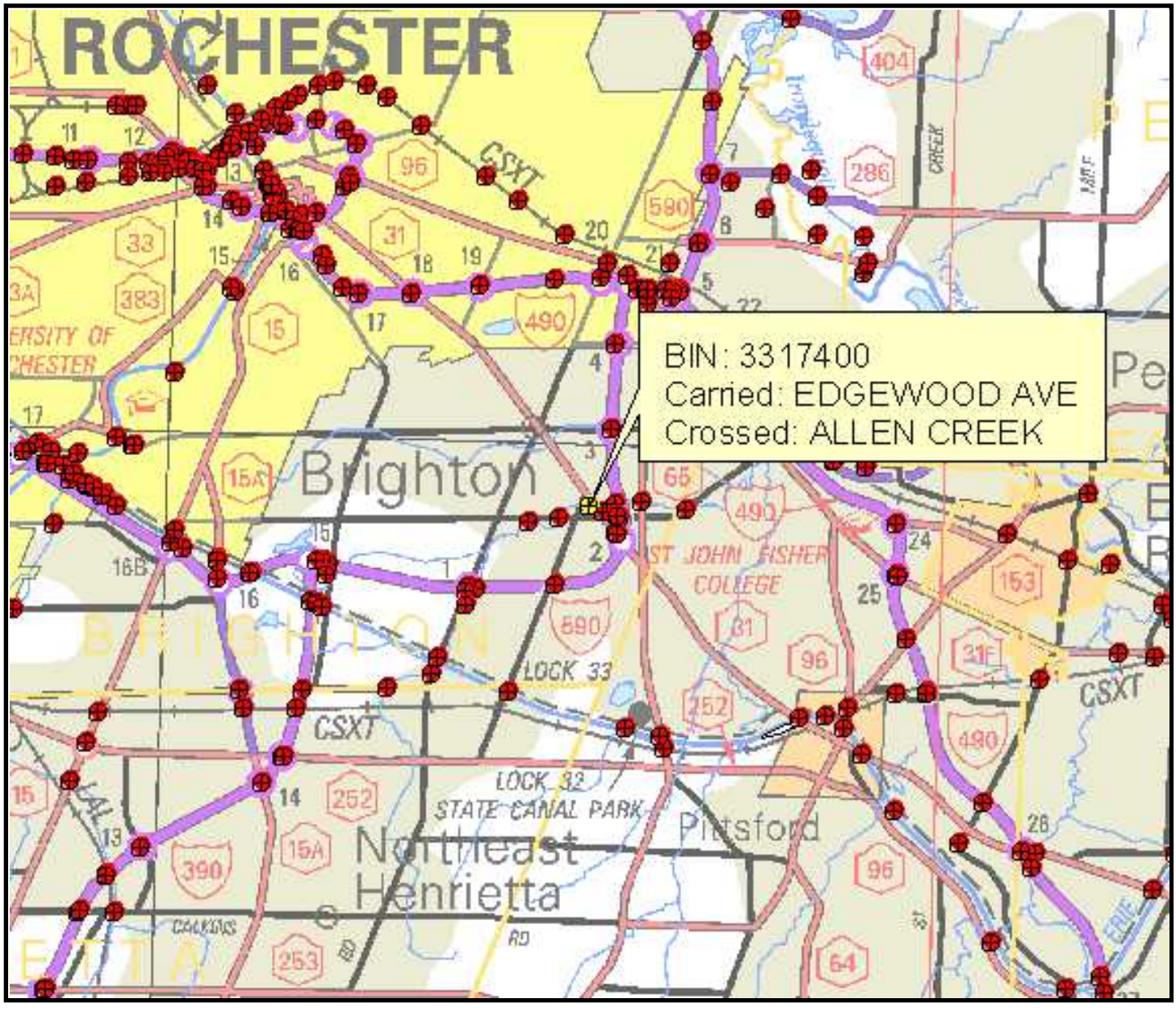
CULVERT DIMENSIONS FOR SPAN 1
LOCATION: L1
Line AF: 0.00 feet
Line FE: 0.00 feet
Line CF: 0.00 feet
Line AD: 0.00 feet
Line BE: 0.00 feet

COMMENTS:
No Comments Provided.

Standard Photos **RC: 43 BIN: 3317400**

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK

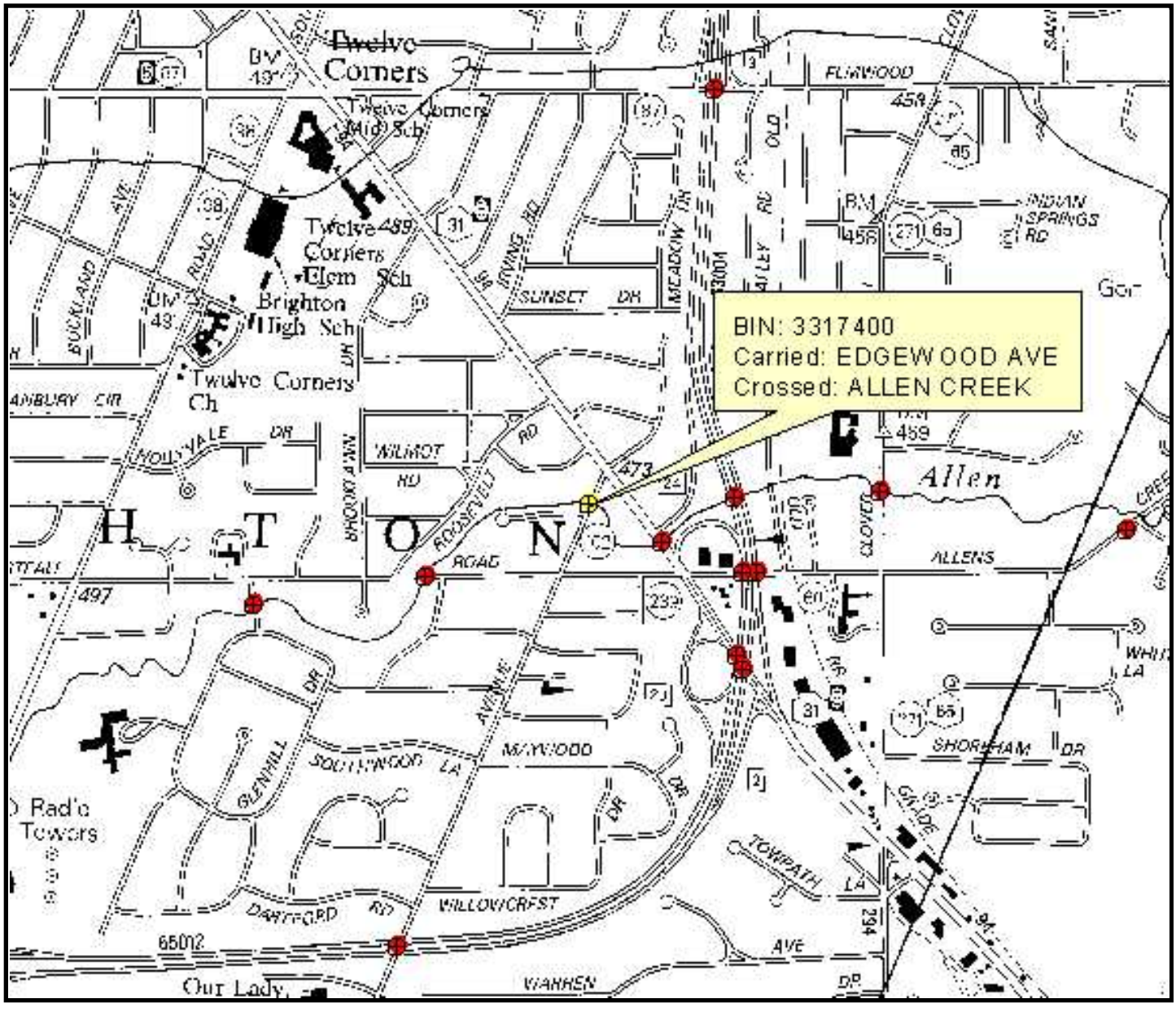
3317400_LOCATION_MAP.JPG



Standard Photos **RC: 43 BIN: 3317400**

Carried: EDGEWOOD AVENUE Crossed: ALLEN CREEK

3317400_QUAD_MAP.JPG



Standard Photos **RC: 43 BIN: 3317400**

Carried: EDGEWOOD AVENUE **Crossed: ALLEN CREEK**

AbutmentBegin.jpg

Standard Photos **RC: 43 BIN: 3317400**

Carried: EDGEWOOD AVENUE **Crossed: ALLEN CREEK**

ApproachBegin.jpg

Standard Photos **RC: 43 BIN: 3317400**

Carried: EDGEWOOD AVENUE **Crossed: ALLEN CREEK**

ApproachEnd.jpg

Standard Photos **RC: 43 BIN: 3317400**

Carried: EDGEWOOD AVENUE **Crossed: ALLEN CREEK**

ElevationRtSpan1.jpg

Standard Photos **RC: 43 BIN: 3317400**

Carried: EDGEWOOD AVENUE **Crossed: ALLEN CREEK**

FeatureCrossedLeft.jpg

Standard Photos **RC: 43 BIN: 3317400**

Carried: EDGEWOOD AVENUE **Crossed: ALLEN CREEK**

FeatureCrossedRight.jpg

FramingSpan1.jpg

BRIDGE REHABILITATION vs. REPLACEMENT WORKSHEET				
Factor			**Review**	**Prelim. RH/RP* Direction (if any)**
I.	Cost	A.	Is the rehabilitation cost ≤ 0.65 of the replacement cost?	Yes .....RH [No] .....Proceed to I.B.
		B.	Is the rehabilitation cost between 0.65 and 0.85 of the replacement cost?	[Yes] ..... Consider other factors No .....Proceed to I.C.
		C.	Is the rehabilitation cost ≥ 0.85 of the replacement cost?	Yes .....RP
II.	Safety	A.	Are there accidents attributable to the bridge geometry or highway approach geometry?	Yes .....Proceed to II.B. [No] ..... RP or RH
		B.	If there were accidents, were there any fatalities or is the number of accidents above the Statewide average?	Yes ..... RP or RH with corrections to the safety problem No ..... RP or RH
		C.	Is there an accident potential? (Highway, waterway, or railroad)	Yes ..... RP or RH with corrections to accident potential problems [No] ..... RP or RH
III.	Bridge Type	A.	Is the bridge nonredundant?	Yes ..... RP or RH including adding redundancy [No] ..... RP or RH
		B.	Does the bridge have fatigue sensitive details?	Yes ..... RP or RH removing or modifying critical details [No] ..... RP or RH
		C.	Is bridge concrete arch, concrete rigid frame, jack arch, etc.?	Yes ..... Bridge usually not RH'd [No] ..... RP or RH
IV.	Standards	A.	Does existing bridge conform to all current standards?	Yes ..... RP or RH [No] ..... Proceed to IV.B.
		B.	Can bridge be rehabilitated and brought up to standards?	[Yes] ..... Bridge may be RH'd No .....Bridge should be RP'd
		C.	Can the nonstandard feature be justified?	Yes ..... Bridge may be RH'd No .....Bridge should be RP'd

V.	Feature Crossed	A.	If existing bridge is over water, have there been hydraulic problems indicating an inadequate opening or poor stream alignment which would require a span adjustment?	Yes..... RP No..... RP or RH
		B.	Does existing bridge span anything that requires special treatment or are special conditions associated with it, such as a railroad, historic feature, environmentally or politically sensitive feature?	Yes..... RP or RH* No..... RP or RH *The sensitive feature must be thoroughly examined and considered in RH/RP analysis with special attention to the cost necessary to accommodate the sensitivity.
VI.	WZTC	A.	Can traffic be detoured off the project site?	Yes..... RP or RH No ..... Proceed to VI.B
		B.	Can traffic be maintained on the existing bridge with a new bridge built alongside?	Yes..... RP No ..... Proceed to VI.C
		C.	Can construction be staged?	Yes..... RP or RH No ..... Proceed to VI.D
		D.	Can a temporary structure be used on the project site?	Yes..... RP or RH No. **STOP**. All traffic strategies have been rejected.

* RH = Rehabilitate
RP = Replace

ONE OBJECTIVE OF THE PROJECT IS TO INCREASE PEDESTRIAN MOBILITY. INCLUDING A SIDEWALK IN THE REHABILITATION OPTION WOULD INCREASE THE COST TO OVER 85% OF REPLACEMENT COST.

Table 19-2
Bridge Rehabilitation vs Replacement Worksheet

19.3 Concrete Rehabilitation

Repair of concrete in rehabilitated structures can be a very complex subject. Only a few topics are discussed in this manual. For information on specific applications and repair techniques, the designer is urged to contact the Materials Bureau. Also, for information on Fiber Reinforced Polymer repair, see Structures Design Advisory 02-002 and Engineering Instruction EI 05-001.

An important factor to keep in mind for a rehabilitation project is that the quantity of concrete repair necessary will almost always increase between the time of inspection and the time the work is performed. The designer needs to exercise judgment in the rate of deterioration when preparing the estimate of quantities.

LEVEL I LOAD RATING

BIN 3317400

Edgewood Avenue over Allen Creek
Monroe County

Prepared by:

POPLI DESIGN GROUP

ELEMENT	INVENTORY	OPERATING
STEEL GRATE DECK W/ CONCRETE REPAIRS Bending (Serviceability)	**HS 12 (22.11 Tons)**	**HS 20 (36.91 Tons)**
	H 12 (12.28 Tons)	**H 20 (20.6 Tons)**
STEEL SLEEPERS Bending (Serviceability)	**HS 29 (52.81 Tons)**	**HS 55 (88.24 Tons)**
	H 29 (29.34 Tons)	**H 49 (49.02 Tons)**
STEEL GIRDERS by Virtis Serviceability-Steel	**HS 11 (19.93 Tons)**	**HS 18 (33.28 Tons)**
	H 12 (12.17 Tons)	**H 20 (20.33 Tons)**

DRAFT

Required Posting: 20 tons - Serviceability Steel Girders

Analysis Method: Load Factor

Gregory D. Hutter
P.E. # 079947

Calculated by: Kundan Kulkarni

Checked by: Roshan Prasain

October 2011

STEEL GRATE DECK RATING

Material Data and Defined Constraints.

$U.W._{steel}$ = 490 lbs/ft^3
Year built: 1953
Assume 33 ksi steel (MCEB Table 6.6.2.1-1)

Bridge Geometric Data

The bridge consists of 7 steel girders (W21 x 62) supporting steel sleepers which carry steel grate deck with concrete repairs.
Girder Spacing: 4'-8" = 4.667' = 56"

Sleeper size: C7 x 9.8
Sleeper spacing: 16.63" = 1.385 ft
Top flange width of sleeper: B_f = 2.09 in

Dead Loads

Self Weight Steel Grating Deck: 15.25 psf 1953 Plans

Total weight of concrete repairs: 5925 lbs (2011 B.I. Update)

Total deck Area: 30' x 28.5' = 855 sq. ft

Weight of Concrete repairs: 7 psf

Steel Plate (3/16" thick x 3.5' on either sides) Weight: 490 pcf * (3/16)/12
: 7.7 psf

Total Dead Load on Deck:

Total = 29.95 psf = say 0.03 k/ft per ft width

Effective Sleeper Spacing = Sleeper Spa. – B_f + B_f/2 = 16.63" –2.09" + 2.09/2 = 15.585" = 1.3 ft

Dead Load Shear:

$$V_{DL} = \frac{\text{Dead Load x Length}}{2} = \frac{0.03 \text{ k/ft x } 1.3\text{ft}}{2} = \textbf{0.0195 kips per ft width}$$

The most severe deterioration occurred between G5 and G6 near sleeper 3 where 5 consecutive bearing bars have section loss. This section is observed approximately at 1/5th of the span between sleepers S3 and S4. Steel grate is assumed to be simply supported between the sleepers for these rating calculations. Refer photos in Appendix.

V_{DL} Shear at 1/5th point = 0.0195 – (1.3/5)(0.03) = **0.0117 kips per ft width**

Dead Load Moment:

$$M_{DL} = \frac{\text{Dead Load x (Length)}^2}{8} = \frac{0.03 \text{ k/ft x } (1.3\text{ft})^2}{8} = \textbf{0.00634 kip-ft per ft width}$$

M_{DL} moment at $1/5^{th}$ point = 0.0195*(1.3/5)-0.03*0.26*0.26/2
= **0.00405 kip-ft per ft width**

Live Loads:

From AASHTO 3.8.2:

$$\text{Impact} = 1 + \frac{50}{125 + \text{Gird. Spa.}} \text{ (max. = 1.3)}$$

$$\text{Impact} = 1 + \frac{50}{125 + 1.3'} = 1.39$$

Impact = 1.3

Center to center of main bars of steel grate: 2.5 in

From AASHTO 3.27.3.1 for 16 ton axle load Rear axle is 16 tons for H20 and HS20 trucks.
Distribute axle load over the following area:

W = 1.25" x 16 tons + 2 x 2.5" = 25" (effective width of deck parallel to traffic)
L = 20" (Length of tire in direction of traffic)

$$w = \frac{32k/2 \text{ x } 1.3}{(25"/12) \text{ x } (20"/12)} = 5.99 \text{ ksf} = 5.99 \text{ k/ft per ft width}$$

Live Load Shear:

$$V_{LL} = \frac{\text{Live Load x Eff. Sleeper Spa.}}{2} = \frac{5.99 \text{ k/ft x } 1.3 \text{ ft}}{2} = 3.9 \textbf{ kips per ft width}$$

V_{LL} at $1/5^{th}$ point = 3.9 – (1.3/5)(5.99) = **2.343 kips per ft width**

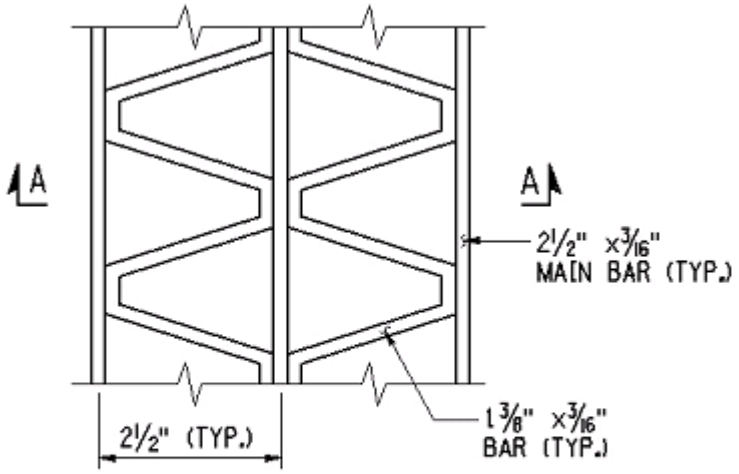
Live Load Moment:

$$M_{LL} = \frac{\text{Lead Load x (Eff. Sleeper Spa.)}^2}{8} = \frac{5.99 \text{ k/ft x } (1.3 \text{ ft})^2}{8} = \textbf{1.27 kip-ft per ft width}$$

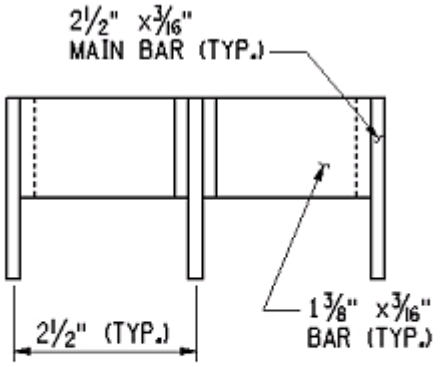
M_{LL} at $1/5^{th}$ point = 3.9*0.26 – 5.99*0.26*0.13 = **0.811 kip-ft per ft width**

Steel Grate Deck Section Properties

- ➔ Deck is 2.5 in thick steel grid, load = 15.25 psf
- ➔ Deterioration /section loss of main grate bars considered while calculating shear and moment capacities
- ➔ Main bars oriented in the direction of traffic and spaced at 2 ½" o.c.
- ➔ Deck Thickness = 2 ½" (main bars are 2 ½" x 3/16")



STEEL GRATE DECK



SECTION A-A

Shear Capacity

Section loss observed at the most deteriorated section.

Bearing Bar 1 : SL : 45%
Bearing Bar 2 : SL : 20%
Bearing Bar 3 : SL : 90%
Bearing Bar 4 : SL : 50%
Bearing Bar 5 : SL : 70%

However, it is observed that the deteriorated sections are not in a straight line. Therefore, average depth of bars for a 12" wide section is taken as 1.85 in by engineering judgment.

Average d : 1.85 in

Area of 12" section = (1.85") (3/16") (12/2.5) = 1.67 in^2

Net Section area: (See the sketch attached.)

Vu = 33 ksi x 1.67 in^2 = 55.11 k/ft width

Moment Capacity

Find Z for 12" width of deck:

a = 1.25" (Distance in y direction from neutral axis of top portion to neutral axis of bottom portion)

$Z = aA/2 = (1.25") \times (1.67\ in^2)/2 = 1.04\ in^3$

$M_u = F_y \times Z = 33\ ksi \times 1.04\ in^3$

$= 34.32$ in-kips

$= 2.86$ ft-kips

Moment Capacity Ratings at most deteriorated section of steel grate deck

Inventory Rating: $\frac{M_u - 1.3*(M_{DL})}{2.17*(M_{LL})}$

R.F. = $\frac{2.86\ ft\text{-}kips - 1.3 * (0.00405\ ft\text{-}kips)}{2.17 * (0.811\ ft\text{-}kips)} = 1.622$ (H20: 32.4 Tons) (HS20: 58.3 Tons)

Operating Rating: $\frac{M_u - 1.3*(M_{DL})}{1.3*(M_{LL})}$

R.F. = $\frac{2.86\ ft\text{-}kips - 1.3 * (0.00405\ ft\text{-}kips)}{1.3 * (0.811\ ft\text{-}kips)} = 2.707$ (H20: 54.1 Tons) (HS20: 97.4 Tons)

Shear Capacity Ratings at most deteriorated section of steel grate deck

Inventory Rating: $\frac{V_u - 1.3*(V_{DL})}{2.17*(V_{LL})}$

R.F. = $\frac{55.11\ kips - 1.3 * (0.0117\ kips)}{2.17 * (2.343\ kips)} = 10.83$

Operating Rating: $\frac{V_u - 1.3*(V_{DL})}{1.3*(V_{LL})}$

R.F. = $\frac{55.11\ kips - 1.3 * (0.0117\ kips)}{1.3 * (2.343\ kips)} = 18.10$ Does not control

Check Serviceability at most deteriorated section of steel grate deck

Average d : 1.850 in …..for the most deteriorated section

$I = (12"/2.5")(3/16)(1.850)^3/12$

$I = 0.475\ in^4/ft$

$S = I / y = 0.475/1.25 = 0.38\ in^3$

$Smin = 0.38\ in^3/ft$

Serviceability Rating: $\frac{0.8*(F_y)*S_{min} - M_{DL}}{1.67 * (M_{LL})}$

Inv. R.F. = $\frac{0.8*(33\ ksi/12)*(0.38\ in^3) - 0.00405\ ft\text{-}kips}{1.67*(0.811\ ft\text{-}kips)}$ = 0.614 (H20: 12.28 Tons)* (HS20: 22.11 Tons)*

Oper. R.F. = 1.67 * Inventory = 1.03 (H20: 20.6 Tons)* (HS20: 36.91 Tons)*

* Serviceability Governs

CONTROLLING DECK RATING

	HS INVENTORY	HS OPERATING	H INVENTORY	H OPERATING
Load Factor Bending	58.3 Tons HS 32	97.4 Tons HS 54	32.4 Tons H 32	54.1 Tons H 54
Serviceability Bending	22.11 Tons HS 12	36.91 Tons HS 20	12.28 Tons H 12	20.6 Tons H 20

Material Data:

Year built: 1953

$F_{y\_gird} := 33ksi$ MCEB Table 6.6.2.1-1

$F_{y\_deck} := 33ksi$ MCEB Table 6.6.2.1-1

$F_{y\_sleeper} := 33ksi$ MCEB Table 6.6.2.1-1

Bridge Geometric Data:

The bridge consists of 7 steel girders supporting steel sleepers which carry an open grate steel deck. The bridge has no skew.

$S_{spac} := 16.63in$ Sleeper spacing

$S_{cant} := 1.67ft$ Sleeper cantilever spans

$G_{spa} := 56in$ Girder spacing

$S_{length} := 31.33ft$ Total maximum length of sleepers

$Deck_{width} := 30ft$ Width of deck

$Rdwy_{width} := 30ft$ Width of roadway (rail to rail)

$Span := 28.5ft$ Bridge Span length

Typical 7" Deep Sleeper (C7x9.8)

Sleeper Section Properties

$b_f := 2.09in$ Flange width

$t_{tf} := 0.366in$ Top flange thickness

$t_{bf} := 0.366in$ Bottom flange thickness

$d := 7.000in$ Sleeper depth

$D := d - t_{tf} - t_{bf}$ Depth of web $D = 6.268 \cdot in$

$t_w := 0.21in$ Thickness of web

$Z_{x\_new} := 7.12in^3$ Plastic section modulus

$Z_x := Z_{x\_new} \cdot 0.9$ $Z_x = 6.408 \cdot in^3$ Plastic section modulus considering minor section loss

$x_{bar} := 0.541in$ — Distance from left edge to neutral axis of member

$y_{bar} := 3.5in$ — Distance from bottom to neutral axis of member

$y_{top} := d - y_{bar}$ $\quad y_{top} = 3.5 \cdot in$ — Distance from top neutral axis of member

$I_{x\_new} := 21.3in^4$ — Moment of inertia about the X-Axis

$I_{y\_new} := 0.968in^4$ — Moment of inertia about the Y-Axis

$I_x := 0.9 \cdot I_{x\_new}$ — Moment of inertia about the X-Axis considering minor section loss

$I_y := 0.9 \cdot I_{y\_new}$ — Moment of inertia about the Y-Axis considering minor section loss

$S_{x\_ten} := \frac{I_x}{y_{top}}$ $\quad S_{x\_ten} = 5.477 \cdot in^3$ — Tensile elastic section modulus about x-axis (Top flange in tension at girders)

$S_{x\_comp} := \frac{I_x}{y_{bar}}$ $\quad S_{x\_comp} = 5.477 \cdot in^3$ — Compressive elastic section modulus about x-axis (Bottom flange in compression at girders)

$S_{x\_min} := S_{x\_ten}$ $\quad S_{x\_min} = 5.477 \cdot in^3$ — Minimum elastic section modulus about x-axis

$A := 2.87in^2$ — Total area of section

$r_y := \sqrt{\frac{I_y}{A}}$ $\quad r_y = 0.551 \cdot in$ — Radius of gyration about the Y-Axis

$p_{deck} := 29.95 \frac{lb}{ft^2}$ — Weight of open grate steel decking :Steel grate weight (15.25 psf) + concrete repair weight (7 psf) + steel plate weight (7.7 psf)

$s_{main} := 2.5in$ — Center to center spacing of main bars of open grate steel deck

Dead Load Calculation:

$w_{deck} := p_{deck} \cdot S_{spac}$ $\quad w_{deck} = 41.506 \cdot \frac{lb}{ft}$ — Weight of open grate steel deck. Conservatively assume over entire length of sleeper.

$w_{sleeper} := 9.8 \frac{lb}{ft}$ — Weight of sleeper

$w_{tot} := w_{sleeper} + w_{deck}$ $\quad w_{tot} = 51.306 \cdot \frac{lb}{ft}$ — Total uniform dead load on sleeper

Dead Load Moment:

$M_{DL} := 0.10ft \cdot kip$

Dead load moment at over G2 (See Appendix E - Beamax Output; pg. E-1)

Live Load Moment:

For loads in transverse beams where longitudinal stringers are omitted and the floor is supported directly on floorbeams, the beams shall be designed for loads determined in accordance with AASHTO Table 3.23.3.1.

$DF_{moment} := \frac{S_{spac}}{4.5ft}$ $DF_{moment} = 0.308$

Distribution factor for a steel grid floor less than 4" thick on transverse floorbeams - AASHTO Table 3.23.3.1

Impact factor (AASHTO Eq. 3-1)

$I := \frac{50ft}{G_{spa} + 125ft}$ $I = 0.386$

Max. of 0.30, therefore I = 0.30 - AASHTO Eq. 3-1

$I := 0.30$

Maximum moment between G5 and G6 (See Appendix E - Beamax Output; pg. E-2)

$M_{H20LL} := 12.18ft \cdot kip \cdot DF_{moment} \cdot (1 + I)$

$M_{H20LL} = 4.876 \cdot ft \cdot kip$

Maximum moment from H20 Live Load

$M_{HS20LL} := M_{H20LL}$ $M_{HS20LL} = 4.876 \cdot ft \cdot kip$

Maximum moment from HS20 Live Load

Moment Capacity Calculation:

Check for Compactness:

$\frac{b_f}{t_{tf}} = 5.71 < \frac{4110}{\left(F_{y\_sleeper} \cdot \frac{in^2}{lb}\right)^{0.5}} = 22.625$ **O.K.**

AASHTO EQ. 10-93

$\frac{D}{t_w} = 29.848 < \frac{19230}{\left(F_{y\_sleeper} \cdot \frac{in^2}{lb}\right)^{0.5}} = 105.858$ **O.K.**

AASHTO EQ. 10-94

$L_b := s_{main}$ $L_b = 2.5 \cdot in$

Approximate unbraced length of sleepers - Deck welded to top flange - provides adequate bracing against lateral torsional buckling.

$M_1 := 1.3 \cdot M_{DL} + 1.67 \cdot M_{HS20LL}$ $M_1 = 8.273 \cdot kip \cdot ft$

Smaller moment at end of unbraced length - use maximum moment

$M_p := F_{y\_sleeper} \cdot Z_x$ $M_p = 17.622 \cdot kip \cdot ft$

Plastic Moment - AASHTO Eq. 10-92

$$\frac{L_b}{r_y} = 4.538 \quad < \quad \frac{\left[3.6 - 2.2\cdot\left(\frac{M_1}{M_p}\right)\right]\cdot 10^6}{F_{y\_sleeper}\cdot\frac{in^2}{lb}} = 77.791 \quad \textbf{O.K.} \qquad \text{AASHTO EQ. 10-96}$$

Therefore, sleeper meets requirements of AASHTO 10.48.1.1. Section has the ability to reach plastic moment.

$M_u := F_{y\_sleeper}\cdot Z_x \qquad M_u = 17.622\cdot kip\cdot ft$

Load Factor Ratings:

Bending Moment:

H 20-44

$RF_I := \frac{(M_u - 1.3\cdot M_{DL})}{2.17\cdot M_{H20LL}}$ $RF_I = 1.653$ Inventory Rating

$RF_O := \frac{(M_u - 1.3\cdot M_{DL})}{1.3\cdot M_{H20LL}}$ $RF_O = 2.759$ Operating Rating

HS 20-44

$RF_I := \frac{(M_u - 1.3\cdot M_{DL})}{2.17\cdot M_{HS20LL}}$ $RF_I = 1.653$ Inventory Rating

$RF_O := \frac{(M_u - 1.3\cdot M_{DL})}{1.3\cdot M_{HS20LL}}$ $RF_O = 2.759$ Operating Rating

Serviceability:

H 20-44

$RF_I := \frac{(0.80\cdot F_{y\_sleeper}\cdot S_{x\_min} - M_{DL})}{1.67\cdot M_{H20LL}}$ $RF_I = 1.467$ Inventory Rating

$RF_O := 1.67\cdot RF_I$ $RF_O = 2.451$ Operating Rating

HS 20-44

$$RF_I := \frac{\left(0.80 \cdot F_{y\_sleeper} \cdot S_{x\_min} - M_{DL}\right)}{1.67 \cdot M_{HS20LL}}$$

$RF_I = 1.467$ Inventory Rating

$RF_O := 1.67 \cdot RF_I$ $RF_O = 2.451$ Operating Rating

Dead Load Shear:

$V_{DL} := 0.13kip$ Dead load shear at G2 (See Appendix E - Beamax Output; pg. E-1)

Live Load Shear:

Rail-to-rail width is 30.00 feet, therefore, the bridge will be analyzed for two design lanes - MCEB 6.7.2.2. By inspection, the truck loading will control.

Live load distribution for shear at the ends of spans shall be that produced by assuming the flooring to act as a simple span between stringers or beams. (AASHTO 3.23.1.2).

$DF_{shear} := DF_{moment}$ $DF_{shear} = 0.308$ Distribution factor for shear - AASHTO 3.23.1.2

$$I := \frac{50ft}{G_{spa} + 125ft}$$ $I = 0.386$ Impact (AASHTO Eq. 3-1)

$I := 0.30$ Max. of 0.30, therefore I = 0.30 - AASHTO Eq. 3-1

$V_{H20LL} := 13.5kip \cdot DF_{shear} \cdot (1 + I)$ $V_{H20LL} = 5.405 \cdot kip$ Maximum shear from H20 Live Load. Over Girder G4. (See Appendix E - Beamax Output; pg. E-5)

$V_{HS20LL} := V_{H20LL}$ $V_{HS20LL} = 5.405 \cdot kip$ Maximum shear from HS20 Live Load

Shear Capacity Calculation:

$k := 5$ For unstiffened beams and girders - AASHTO 10.48.8.1

$$\frac{D}{t_w} = 29.848 \quad < \quad \frac{6000 \cdot \sqrt{k}}{\left(F_{y\_sleeper} \cdot \frac{in^2}{lb}\right)^{0.5}} = 73.855 \qquad C := 1.0$$ AASHTO 10.48.8.1

$V_p := 0.58 \cdot F_{y\_sleeper} \cdot D \cdot t_w$ $V_p = 25.194 \cdot kip$ Plastic shear capacity - AASHTO Eq. 10-115

$V_u := C \cdot V_p$ $V_u = 25.194 \cdot kip$ Shear capacity of section - AASHTO Eq. 10-113

Load Factor Ratings:

Shear:

H 20-44

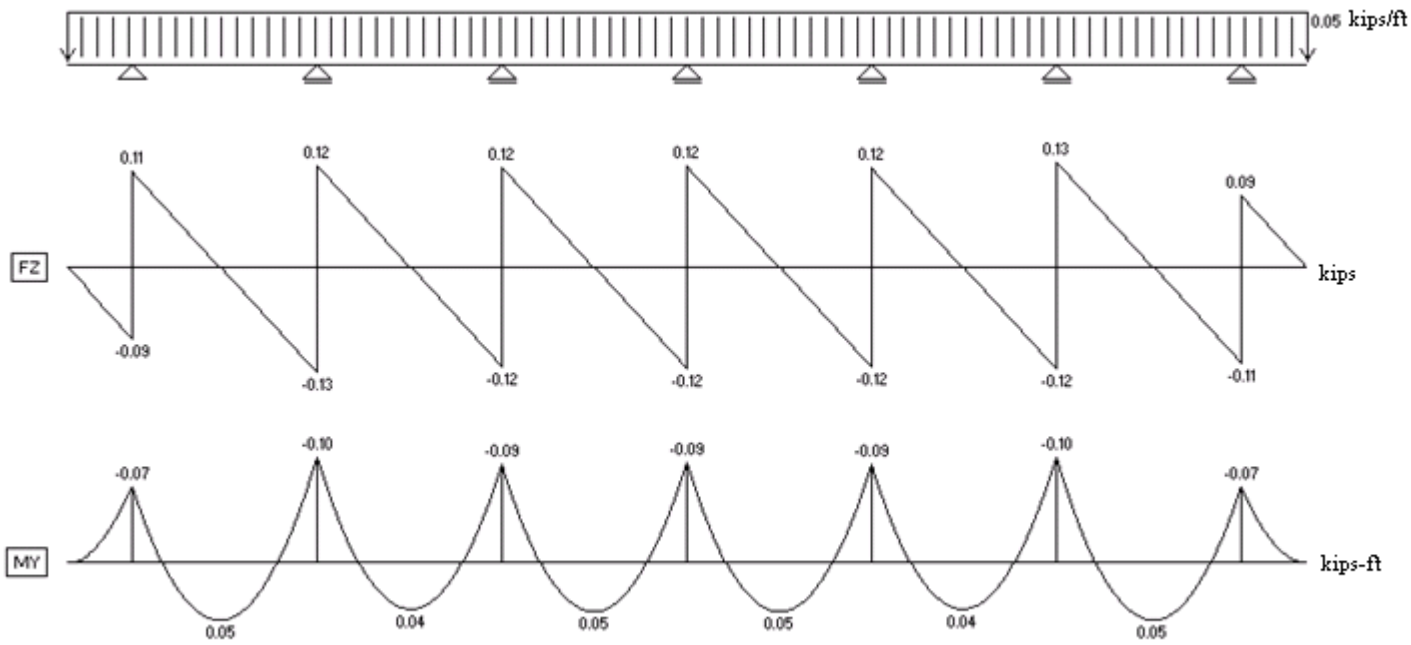
$RF_I := \frac{(V_u - 1.3 \cdot V_{DL})}{2.17 \cdot V_{H20LL}}$ $RF_I = 2.134$ Inventory Rating

$RF_O := \frac{(V_u - 1.3 \cdot V_{DL})}{1.3 \cdot V_{H20LL}}$ $RF_O = 3.562$ Operating Rating

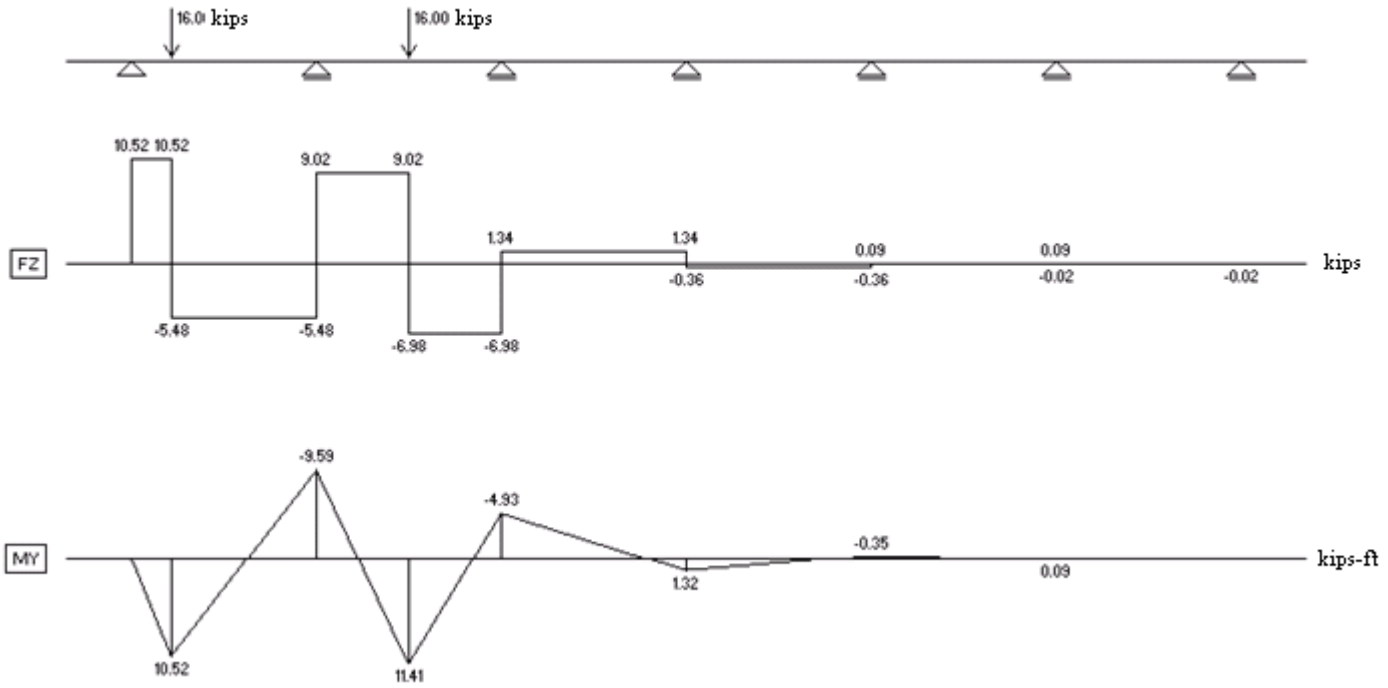
HS 20-44

$RF_I := \frac{(V_u - 1.3 \cdot V_{DL})}{2.17 \cdot V_{HS20LL}}$ $RF_I = 2.134$ Inventory Rating

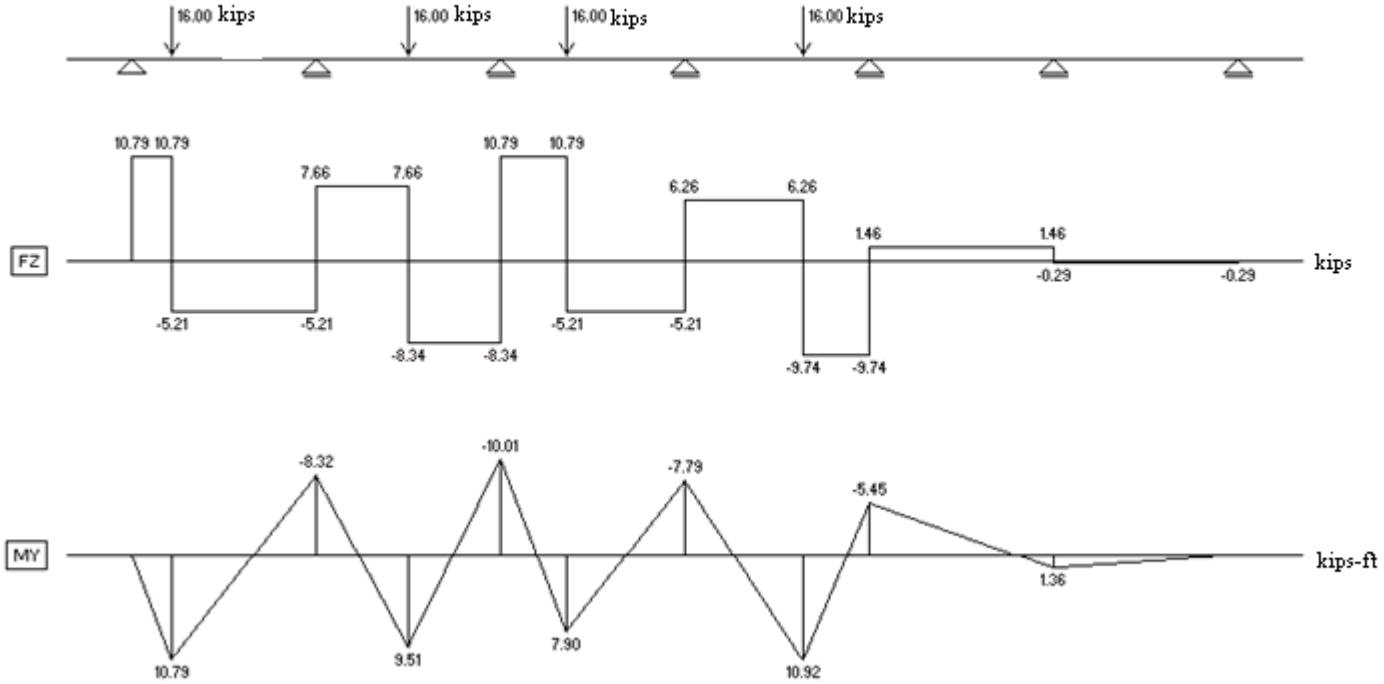
$RF_O := \frac{(V_u - 1.3 \cdot V_{DL})}{1.3 \cdot V_{HS20LL}}$ $RF_O = 3.562$ Operating Rating



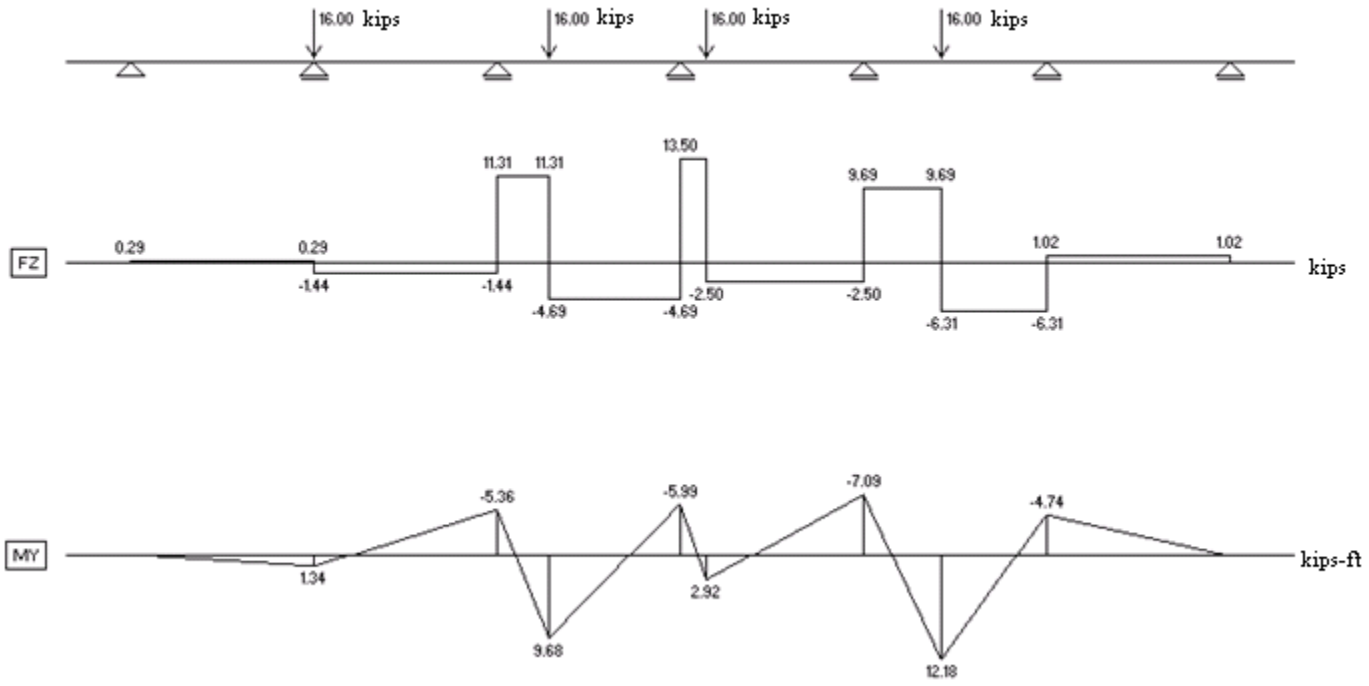
SLEEPER: DEAD LOAD SHAR AND MOMENT



SLEEPER: LIVE LOAD SHAR AND MOMENT- ONE LANE LOADING



SLEEPER: LIVE LOAD SHAR AND MOMENT- TWO LANE LOADING



SLEEPER: LIVE LOAD SHAR AND MOMENT- TWO LANE LOADING

Username: virtis
Date: Wednesday, September 14, 2011 08:58:58

Bridge ID 3317400_11 Edgewood Avenue over Allen Creek

NBI Structure ID (8): 3317400_11
Description: Single span steel multi-girder structure with open grate steel deck

Built in 1953, Contract number unknown.
Rehab in 1971.

Model Notes:
Deck: 2.5 in. thick, steel grate deck with 3" thk concrete repairs at several locations noted by B.I. 2011
Wearing surface: None
Railings: Built-up Comb. Steel Railing and Curb, 0.189 k/ft.
Sidewalk: None

-Inspected by POPLI 6/25/08.
-Virtis input updated by POPLI 7/31/08.
Load posting: None
Level 2 load rating: HS20 24.0 T 40.0 T H20 14.0 T 24.0 T (7/08)
Method: LFD (Virtis 5.6.0 Brass 6.0)
Flag in virtis model: None
-Changes: Concrete load at supports, live load distribution for intermediate girders.

Inspected by POPLI 06/17/10.
Virtis input updated by POPLI 08/17/10.
Load posting: None
Level 2 load rating: H20 12.0 T 20.0 T HS20 20.0 T 34.0 T (08/10)
Method: LFD (virtis 6.1.0, Brass 6.0.0)
Flag in virtis model: None
Changes: Section loss updated

Inspected by POPLI 07/09/11.
Virtis input updated by POPLI 09/13/11.
Load posting: 20 tons
Level 2 load rating: H20 11.0 T 19.0 T HS20 19.0 T 31.0 T (09/11)
Method: LFD (virtis 6.2.0, Brass 6.0.3)
Flag in virtis model: None
Changes: Section Loss Updated.
Concrete repair load added to steel deck.
Span length changed to 27.5.
Diaphragm load added.

Deterioration Profile
Member- G4
Bottom Flange Deterioration 0.0% Width 42.0% Thickness 0.00 - 27.50 ft
Top Flange Deterioration 0.0% Width 38.0% Thickness 0.00 - 27.50 ft
Web Deterioration 29.0 % Thickness 0.00 - 6.75 ft
5.0 % Thickness 0.00 - 27.5 ft

Bridge Name: Edgewood Avenue over Allen Creek
NBI Structure ID: 3317400_11
Bridge ID: 3317400_11

Analyzed By: Virtis
Analyze Date: Thursday, September 15, 2011 09:52:46
Analysis Engine: BRASS-GIRDER - Version 6.00.03 - Apr. 14, 2010 ** BRASS Export Version 6.2.0.3001

Report By: virtis
Report Date: Thursday, September 15, 2011 09:53:07

Structure Definition Name: As-Built 7 Girder Bridge
Member Name: G4
Member Alternative Name: G4 - Interior Girder w/Repair Plates

Load Factor Rating Summary

Live Load		Rating Factor	Controls	Capacity (Ton)	Location Span	Location (ft)	Location Percent	Impact	Lane
H 20-44	Inventory	0.583	SERVICEABILITY - STEEL	11.67	1	13.75	50.0	As Requested	As Requested
	Operating	0.974	SERVICEABILITY - STEEL	19.49	1	13.75	50.0	As Requested	As Requested
HS 20-44	Inventory	0.531	SERVICEABILITY - STEEL	19.12	1	16.50	60.0	As Requested	As Requested
	Operating	0.887	SERVICEABILITY - STEEL	31.94	1	16.50	60.0	As Requested	As Requested

Note:
"N/A" indicates not applicable
"**" indicates not available

Appendix F

Cost Estimates

Summary: Preliminary Cost Estimates

POPLI DESIGN GROUP
ARCHITECTURE + ENGINEERING

Edgewood Ave. over Allen Creek
Bridge Replacement Project
Preliminary Cost Estimate
Calc'd By: KSK 10/11
Check'd By: RP/GDH 10/11

Preliminary Cost Estimate

				Rehabilitation Alternative		Replacement Alternative Precast Frame		Replacement Alternative Voided Slabs		Replacement Alternative Steel Multi-Girder	
ITEM #	DESCRIPTION	UNIT	PRICE	QUAN.	TOTAL	QUAN.	TOTAL	QUAN.	TOTAL	QUAN.	TOTAL
201.06	CLEARING AND GRUBBING	LS	$5,000.00	0.5	$2,500.00	1	$5,000.00	1	$5,000.00	1	$5,000.00
202.120001	REMOVAL OF EXISTING SUPERSTRUCTURES	LS	$18,000.00	0.5	$9,000.00	1	$18,000.00	1	$18,000.00	1	$18,000.00
202.19	REMOVAL OF SUBSTRUCTURES	CY	$75.00	0	$0.00	185	$13,875.00	185	$13,875.00	185	$13,875.00
203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	CY	$20.00	0	$0.00	265	$5,300.00	265	$5,300.00	265	$5,300.00
203.03	EMBANKMENT IN PLACE	CY	$15.00	200	$3,000.00	420	$6,300.00	420	$6,300.00	420	$6,300.00
203.07	SELECT GRANULAR FILL	CY	$70.00	0	$0.00	28	$1,960.00	28	$1,960.00	28	$1,960.00
203.21	SELECT STRUCTURE FILL	CY	$45.00	0	$0.00	159	$7,155.00	160	$7,200.00	180	$8,100.00
206.01	STRUCTURE EXCAVATION	CY	$30.00	0	$0.00	170	$5,100.00	170	$5,100.00	500	$15,000.00
206.02	TRENCH AND CULVERT EXCAVATION	CY	$25.00	101	$2,525.00	101	$2,525.00	101	$2,525.00	101	$2,525.00
207.20	GEOTEXTILE BEDDING	SY	$4.00	120	$480.00	120	$480.00	120	$480.00	120	$480.00
207.26	PREFABRICATED COMPOSITE STRUCTURAL DRAIN	SY	$10.00	0	$0.00	119	$1,190.00	120	$1,200.00	185	$1,850.00
209.13	SILT FENCE - TEMPORARY	LF	$3.00	160	$480.00	160	$480.00	160	$480.00	160	$480.00
209.1501	TURBIDITY CURTAIN	LF	$12.00	210	$2,520.00	210	$2,520.00	210	$2,520.00	210	$2,520.00
304.15	SUBBASE COURSE - OPTIONAL TYPE	CY	$40.00	0	$0.00	282	$11,280.00	230	$9,200.00	230	$9,200.00
402.377902	37.5mm F9 BASE COURSE HMA, 70 SERIES COMPACTION	T	$110.00	0	$0.00	159	$17,490.00	120	$13,200.00	120	$13,200.00
402.197902	19mm F9 BINDER COURSE HMA, 70 SERIES COMPACTION	T	$110.00	0	$0.00	74	$8,140.00	61	$6,710.00	61	$6,710.00
402.097202	9.5mm F2 TOP COURSE HMA, 70 SERIES COMPACTION	T	$110.00	0	$0.00	56	$6,160.00	45	$4,950.00	45	$4,950.00
407.0101	TACK COAT	GAL	$4.00	0	$0.00	59	$236.00	48	$192.00	48	$192.00
490.30	MISC. COLD MILLING OF BITUMINOUS CONCRETE	SY	$3.00	0	$0.00	189	$567.00	189	$567.00	189	$567.00
553.020001	COFFERDAMS - TYPE 2	EA	$4,000.00	2	$8,000.00	2	$8,000.00	2	$8,000.00	2	$8,000.00
555.08	FOOTING CONCRETE, CLASS HP	CY	$500.00	0	$0.00	32	$16,000.00	150	$75,000.00	160	$80,000.00
555.09	CONCRETE FOR STRUCTURES, CLASS HP	CY	$600.00	0	$0.00	23	$13,800.00	145	$87,000.00	145	$87,000.00
556.0201	UNCOATED BAR REINFORCEMENT FOR CONCRETE STRUCTURES	LB	$1.60	0	$0.00	7000	$11,200.00	0	$0.00	0	$0.00
556.0202	EPOXY COATED BAR REINFORCEMENT FOR STRUCTURES	LB	$1.60	10300	$16,480.00	1200	$1,920.00	20000	$32,000.00	23300	$37,280.00
557.010x	SUPERSTRUCTURE SLAB - BOTTOM FORMWORK REQUIRED	SY	$300.00	136	$40,800.00	0	$0.00	0	$0.00	136	$40,800.00
557.050x	SUPERSTRUCTURE SLAB - BOTTOM FORMWORK NOT REQUIRED	SY	$200.00	0	$0.00	0	$0.00	145	$29,000.00	0	$0.00
557.200X	APPROACH SLAB	SY	$175.00	200	$35,000.00	0	$0.00	200	$35,000.00	190	$33,250.00
558.02	LONGITUDINAL SAWCUT GROOVING OF STRUCTURAL SLAB SURFACE	SY	$5.00	345	$1,725.00	0	$0.00	345	$1,725.00	325	$1,625.00
559.0302	PENETRATING SEALER FOR CONCRETE	SY	$7.00	440	$3,080.00	52	$364.00	440	$3,080.00	440	$3,080.00
559.50	MEMBRANE WATERPROOFING SYSTEM	SY	$15.00	0	$0.00	217	$3,255.00	0	$0.00	0	$0.00
562.0101	REINFORCED CONCRETE SPAN UNITS	SY	$715.00	0	$0.00	140	$100,100.00	0	$0.00	0	$0.00
562.03	WINGWALL WITH FOOTING	SY	$1,500.00	0	$0.00	27	$40,500.00	0	$0.00	0	$0.00
563.03	PRESTRESSED CONCRETE HOLLOW SLAB UNITS	SF	$55.00	0	$0.00	0	$0.00	1300	$71,500.00	0	$0.00
564.0501	STRUCTURAL STEEL, TYPE I	LS	$33,000.00	0.25	$8,250.00	0	$0.00	0	$0.00	1	$33,000.00
565.18XX	EP BEARINGS	EA	$200.00	0	$0.00	0	$0.00	22	$4,400.00	0	$0.00
565.20XX	EB FIXED BEARINGS	EA	$2,500.00	0	$0.00	0	$0.00	0	$0.00	9	$22,500.00
565.20XX	EB EXP. BEARINGS	EA	$3,000.00	0	$0.00	0	$0.00	0	$0.00	9	$27,000.00
568.51	STEEL BRIDGE RAILING (FOUR RAIL)	LF	$170.00	60	$10,200.00	60	$10,200.00	60	$10,200.00	60	$10,200.00
580.01	REMOVAL OF STRUCTURAL CONCRETE	CY	$75.00	8	$600.00	0	$0.00	0	$0.00	0	$0.00
582.05	REMOVAL OF STRUCTURAL CONCRETE - REPLACEMENT WITH CLASS A CONCRETE	CY	$6,000.00	18	$108,000.00	0	$0.00	0	$0.00	0	$0.00
606.10	BOX BEAM GUIDE RAIL	LF	$50.00	100	$5,000.00	100	$5,000.00	100	$5,000.00	100	$5,000.00
606.120102	BOX BEAM GUIDE RAIL END ASSEMBLY, TYPE I	EA	$1,000.00	3	$3,000.00	3	$3,000.00	3	$3,000.00	3	$3,000.00
606.120201	BOX BEAM GUIDE RAIL END ASSEMBLY, TYPE II	EA	$1,000.00	1	$1,000.00	1	$1,000.00	1	$1,000.00	1	$1,000.00
606.63	REMOVE AND STORE BOX BEAM GUIDE RAILING	LF	$5.00	174	$870.00	174	$870.00	174	$870.00	174	$870.00
606.8101	TRANSITION- BRIDGE RAILING TO BOX BEAM GUIDE RAILING	LF	$100.00	100	$10,000.00	100	$10,000.00	100	$10,000.00	100	$10,000.00
608.0101	CONCRETE SIDEWALKS AND DRIVEWAYS	CY	$375.00	0	$0.00	9	$3,375.00	9	$3,375.00	9	$3,375.00
609.0201	GRANITE CURB	LF	$25.00	0	$0.00	120	$3,000.00	120	$3,000.00	120	$3,000.00
610.0203	ESTABLISHING TURF	ACRE	$5,000.00	0.1	$500.00	0.1	$500.00	0.1	$500.00	0.1	$500.00
613.02	PLACING TOPSOIL - TYPE A	CY	$35.00	54	$1,890.00	54	$1,890.00	54	$1,890.00	54	$1,890.00
619.01	WORK ZONE TRAFFIC CONTROL	LS	$10,000.00	1	$10,000.00	1	$10,000.00	1	$10,000.00	1	$10,000.00
620.05	STONE FILLING (HEAVY)	CY	$85.00	100	$8,500.00	100	$8,500.00	100	$8,500.00	100	$8,500.00
625.01	SURVEY OPERATIONS	LS	$8,000.00	1	$8,000.00	1	$8,000.00	1	$8,000.00	1	$8,000.00
637.1X	ENGINEER'S OFFICE - TYPE B	MO	$1,000.00	6	$6,000.00	6	$6,000.00	6	$6,000.00	6	$6,000.00
660.10	WATERMAIN ABANDONMENT	EA	$2,000.00	0	$0.00	1	$2,000.00	1	$2,000.00	1	$2,000.00
660.45	CONNECT NEW WATER MAIN TO EXISTING	EA	$2,000.00	0	$0.00	2	$4,000.00	2	$4,000.00	2	$4,000.00
663.01XX	DUCTILE IRON CEMENT LINED WATER MAIN 8"	LF	$90.00	0	$0.00	80	$7,200.00	80	$7,200.00	80	$7,200.00
663.10XX	RESILIENT WEDGE VALVE AND VALVE BOX, 8"	EA	$8,000.00	0	$0.00	2	$16,000.00	2	$16,000.00	2	$16,000.00
			SUB-TOTAL:		**$307,400**		**$409,432**		**$551,999**		**$590,279**

Appendix G

Initial Project Proposal (IPP)

TRANSPORTATION

PROJECT REPORT

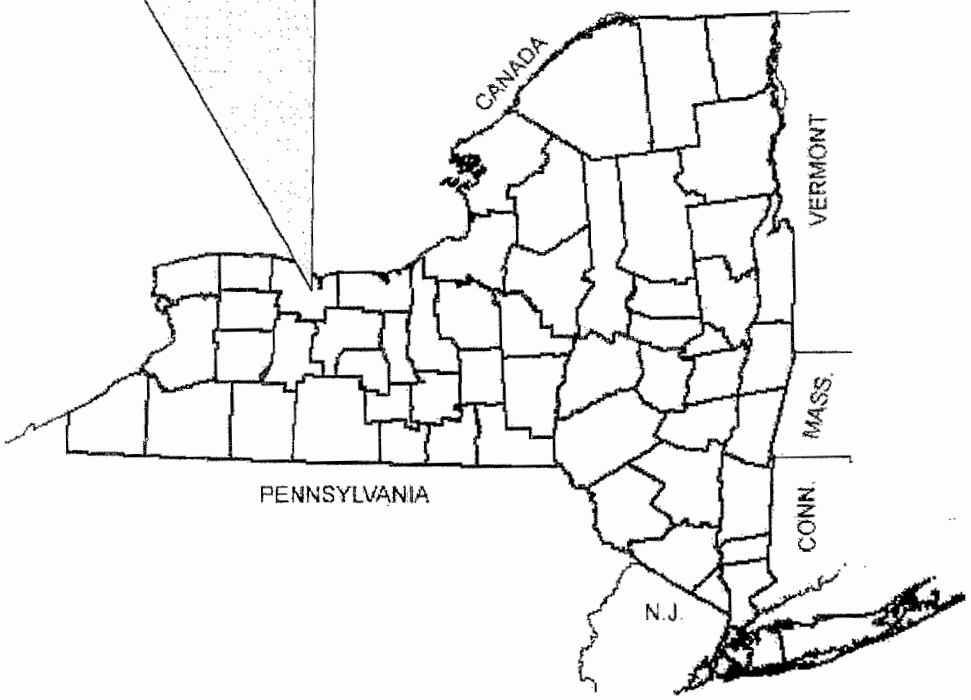
INITIAL PROJECT PROPOSAL

July 2010

PIN 475478

Edgewood Avenue Bridge over Allens Creek
(BIN 3317400)

Town of Brighton
Monroe County



U.S. Department of Transportation Federal Highway Administration

NEW YORK STATE DEPARTMENT OF TRANSPORTATION
DAVID A. PATERSON, Governor ASTRID C. GLYNN, Commissioner

PROJECT APPROVAL SHEET

(Pursuant to SAFETEA-LU Matrix)

Milestones	Signatures	Dates
A. Recommendation for IPP Approval:	The project cost and schedule are consistent with the Regional Capital Program. Regional Program Manager	7/9/2010
B. IPP Approval:	The project is ready to be added to the Regional Capital Program and project scoping can begin. Regional Director	7/13/10

PIN: 475478

PROJECT NAME: Edgewood Avenue Bridge over Allens Creek

MUNICIPALITY: Town of Brighton **COUNTY:** Monroe

ROUTE/STATE HIGHWAY NUMBER: NA

BIN: 3317400

LIMITS: **Milepoints:** NA
Reference Markers: NA

PROJECT LENGTH: NA

FEDERAL AID SYSTEM: non-NHS **FUNCTIONAL CLASS:** Urban Collector

EXISTING AADT: 6,468 (from 2009 count)

PERCENT TRUCKS: 4%

EXISTING CHARACTERISTICS OF CONCERN: This bridge was built in 1953 with the last rehab (joints, headers) in 2005. The age and overall condition of this bridge requires increasingly difficult and expensive maintenance efforts by local forces.

ELEMENT	MEASURE/INDICATOR
BIN 3317400	Condition Rating is 4.690; Sufficiency Rating is 51.1 • Substructure: scored 5 (generally fair condition) • Superstructure: scored 5 (generally fair condition) • Deck: scored 4 (marginally acceptable condition)

PROJECT OBJECTIVE: This project would replace this bridge in order to meet current structural standards to provide 75 years of service life.

PROJECT ELEMENTS TO BE INVESTIGATED:

- ☐ Deck/Minor Bridge Rehabilitation
- ☐ Major Bridge Rehabilitation
- ☐ Highway Resurface
- ☐ Appurtenance
- ☐ Traffic Control
- ☐ Bridge Replacement, New Location
- ☒ Bridge Replacement, Existing Location
- ☐ Highway Reconstruction
- ☐ Large Culvert Rehabilitation/Replacement
- ☐ Other:

PROPOSED WORK DESCRIPTION: The work to be undertaken would be complete replacement.

PRIORITY RESULTS: ☒ Mobility & Reliability ☐ Safety ☐ Security ☐ Economic Competitiveness ☐ Environmental Stewardship

FUNDING SOURCE: ☐ 100% State ☒ Federal (HBP)

ENVIRONMENTAL RECOMMENDED CLASSIFICATION:

PROJECTED ENVIRONMENTAL PROCESS:				
NEPA:	☐ No Federal Funds	☒ Class II, CE ☐ CE/Auto ☒ CE/Prog ☐ CE/Doc	☐ Class III, EA ☐ SAFTEA-LU Applies	☐ Class I, EIS ☐ SAFTEA-LU Applies
SEQR:	☐ Exempt	☒ Type II	☐ Non-Type II ☐ EA -or-	☐ EIS

The following Checklist will be prepared during scoping/preliminary engineering:
☒ NEPA Checklist
☐ Regional Environmental Checklist
☐ Landscape Architectural/ Environmental Services IPP Report

MPO INVOLVEMENT: ☐ No ☒ Yes, TIP Name: Edgewood Avenue Bridge over Allens Creek
TIP Number: B07-02

TIP AMENDMENT REQUIRED: ☒ No ☐ Yes, Needed by:

STIP STATUS: ☒ On STIP ☐ Not on STIP

MOU STATUS: The PIN is not in the 2010/2011 MOU.

NOTES ON SPECIAL CIRCUMSTANCES: Scoping, design and construction are to be administered by the Monroe County Department of Transportation. The sponsor's project manager is Terrence Rice, Director of Transportation (753.7720).

SPECIAL TECHNICAL ACTIVITES REQUIRED: ~~Hydraulic analysis may be required to confirm the feasibility of lining~~. A State-Local agreement will be required to allow for reimbursement of sponsor expenditures consistent with the applicable Federal Aid Program.

PLANNED PUBLIC INVOLVEMENT: A Public Involvement Plan indicating how the public will be made aware of the construction activities will be prepared during preliminary engineering.

WORKZONE SAFETY & MOBILITY: The Region has determined that the subject project is not significant per 23 CFR 630.1010. A Transportation Management Plan consisting of a temporary work zone traffic control plan will be prepared during preliminary engineering. Coordination with the Regional Transportation Operations Center and public information activities will be considered during final design.

PROBABLE SCHEDULE AND COST: Scoping (SLA execution and consultant acquisition) would begin in September 2010. Preliminary engineering would begin in January of 2011. Final design would begin in September 2011. The PS&E would be produced in October 2012 for a bid opening in December 2012. Contract award and construction activities would start in January 2013. The estimated cost of this project is $1,193,000.

DESIRED LETTING: 12/5/12 **DESIRED CONSTRUCTION COMPLETION:** 12/30/13

SCHEDULE QUALIFIERS:

☐	Public Hearing	☐	4(f)/106
☐	Major Permits	☒	Real Estate - 4 maps (?)
☒	Consultant	☒	Other: SLA

PROGRAMMING:

Project Phase	Activity Duration	Estimated Cost ($m)	Fund Source	Obligation Date
Scoping	4 months	0.008	FA (HBP)	9/1/10
Preliminary Engineering	8 months	0.126	FA (HBP)	9/1/10
Final Design	13 months*	0.084	FA (HBP)	9/1/10
ROW Incidentals	21 months*	0.004	FA (HBP)	9/1/10
ROW Acquisitions	12 months*	0.013	FA (HBP)	10/5/11
Construction	12 months**	0.840	FA (HBP)	10/3/12
Construction Inspection	12 months**	0.118	FA (HBP)	10/3/12
TOTAL		1.193		

* to PS&E (10/3/12) ** from award (1/2/13)

BASIS OF ESTIMATE: Sponsor's preliminary engineering and scoping report for its TIP Application (copy attached).

PROJECT CATEGORY: ☐ Simple ☒ Moderate ☐ Complex

STATEWIDE SIGNIFICANCE: ☒ No ☐ Yes
Remarks:

ASSET MANAGEMENT:

AM Team	IPP Initiator	Asset Specific Cost Share	Asset Team Specific Cost/Scope/Schedule/Concurrence
Local Projects	RPPM	$840,000	Rick Papaj

ASSIGNED PROJECT MANAGER: Brian Sherman

FUNCTIONAL AREA: Regional Planning and Program Management

PHONE: 585 272-3466

IPP PREPARED BY: Edwin Welsh **DATE:** 7/8/10

2007-2012 Transportation Improvement Program (TIP)
Project Application Form

Internal Use Only
Prop # 06-57
Mode B

SECTION 1. GENERAL PROJECT INFORMATION *(Required)*

Project Name: Replacement of Edgewood Avenue Bridge (BIN 3317400) over Allen Creek

Applicant: Monroe County Department of Transportation

Project Location & Limits (attach required Map):

Implementing Agency (if different from Applicant):

Contact Person: Terrence J. Rice, P.E. Title Director of Transportation

Organization: Monroe County Department of Transportation

Address: 50 West Main Street, Suite 6100
Rochester, New York 14614

Phone: 753-7720 Fax: 324-1365 E-Mail: trice@monroecounty.gov

Municipality: Monroe County County: Monroe

Is this project in the 2005-2010 TIP? Yes ☐ No ☐

If "Yes", what is the TIP Number?

Project Type (check one): Rehabilitation ☐ Reconstruction ☒ New Construction ☐
Preventive Maintenance ☐ Vehicle Replacement ☐

Project Description (Please limit description to 10 lines):

Replacement of Edgewood Avenue bridge over Allen Creek (BIN 3317400). The structure currently has a condition rating of 4.552, and a sufficiency rating of 59.6. The project objective is to replace this bridge with a new structure meeting current design and geometric standards.

Describe existing versus proposed features and conditions. Highway and Bridge projects must include the number, length, and width of lanes (Please limit description to 6 lines):

The existing bridge consists of a single 26'-2" span, open grating deck/floorbeam superstructure, supported by reinforced concrete abutments. Two 11' travel lanes are on the structure. Monroe County intends to replace this structure with an updated superstructure and substructure system, possibly utilizing a pile foundation.

Explain the need for this project (Please limit justification to 6 lines):

Originally built in 1953, the 53 year old structure is approaching the end of useful life. The structure is old, making it functionally and structurally obsolete.

How does this project address the specific issues that have created this need? (Please limit justification to 6 lines):

The new structure will be designed and constructed utilizing the most up to date geometric and design standards; something the current bridge is lacking.

Primary Mode:	Highway & Bridge	☒	Intelligent Transportation Systems	☐
(check only one)	Bicycle & Pedestrian	☐	Goods Movement	☐
	Public Transportation	☐	Other (Water Transport, TDM, etc.)	☐

Is the project multi-jurisdictional or on another jurisdiction's system? Yes ☐ No ☒

If yes, has the applicant received concurrence from the other jurisdiction(s)? Yes ☐ No ☐

If yes, please provide a copy of a letter of concurrence for the project.

If applicant is proposing multiple projects, what is this project's priority? 4 (e.g., 1 = first priority)

SECTION 2. DETAILED PROJECT INFORMATION (*Required*)

Estimated Project Costs and Schedule:

Project Phase	Total Project Cost ($)	Federal Funds Requested ($)	Desired Obligation Date (Month/Day/Year)
S	$7,500	$6,000	1/28/2011
P	$115,000	$92,000	3/25/2011
D	$76,000	$53,000	7/29/2011
N	$4,000	$3,200	6/28/2011
R	$10,500	$8,400	11/29/2011
C	$760,000	$608,000	7/9/2012
I	$107,000	$85,600	7/9/2012
O	$0	$0	
TOTAL	$1,080,000	$864,000	

S – Scoping P – Preliminary Engineering D – Detailed Design N – Right of Way Incidentals
R – Right of Way Acquisition C – Construction I – Construction Inspection O – Other

a. Estimated Project Costs and Schedule is based on:

Professional Judgment ☒ Scoping Report ☐
Preliminary Engineering Report ☐ PS&E review ☐
Other _____

b. Likely source(s) and amounts of matching funds (assume a 20% local match requirement):

Source	Amount ($)
County Funds	$216,000
–	–
–	–

Note: Applicants cannot presume Marchiselli funds will be available for the project; Marchiselli funds are allocated on an annual basis after the TIP is adopted.

If you are proposing construction before October 1, 2010 (i.e., the end of the current TIP), justify the need for doing so. (see page 3 of the TIP Guidebook)

–

Describe any additional financial or non-financial resources that leverage federal funds (i.e., over and above the 20% local match required).
None

Does the project advance a recommendation(s) of a specific plan or study? Please list (include date):
No

Describe any supportive local policies/regulations in place/pending that support the project's success?
None

Does the project enhance the region's attractiveness to new and/or existing businesses? Please describe the direct and material fashion in which this occurs.

Please provide other information that supports this project for potential inclusion in the TIP.

SECTION 3. MODE-SPECIFIC INFORMATION

HIGHWAY OR BRIDGE PROPOSALS

(Complete only if you checked the "Highway & Bridge" mode category in SECTION 1)

1. What is the Functional Classification?

Principal Arterial	☐	Rural Major Collector	☐
Minor Arterial	☐	Rural Minor Collector	☐
Urban Collector	☒	Local Road	☐

2. What is the nature of the proposed work (e.g., rehabilitation, reconstruction, preventive maintenance, etc.)? Please describe.
   Replacement of a deficient bridge with a new structure meeting current design and geometric standards.

3. What is the Average Daily Traffic (ADT)* of this facility: 7541 Year: 2004

4. What is the Pavement Condition Score* of this facility: ___ Year: _____

5. What is the Bridge Identification Number (BIN)? (required for Bridge projects) 3317400

If you are proposing a Highway Preventive Maintenance project, please answer questions 6, 7, and 9 otherwise, skip to question 10. Note: facilities must be projected to have a Pavement Condition Score of 7 or higher after treatment to be eligible for Preventive Maintenance.

6. What is the proposed treatment (e.g., thin overlay, concrete joint resealing, concrete pavement restoration, etc.)? Please describe.
   _____

7. How many lane miles does this project cover? ___

If you are proposing a Bridge Preventive Maintenance project, please answer questions 8 and 9, otherwise, skip to question 10. Note: in accordance with FHWA requirements, Preventive Maintenance funds cannot be used if the National Bridge Inventory (NBI) Superstructure rating or Substructure rating is less than 5 in the year the funds are programmed.

8. What is the proposed treatment (e.g., joint repair, bearing repair, deck repair, painting, etc.)? Please describe.
   _____

* *See TIP Guidebook Contact Page for sources of supporting information (e.g. Pavement Ratings, Traffic Counts, Regional Trails Initiative, etc.)*

9. How many years will the treatment last before additional treatments are needed? _____

10. Does the project address a PIL, HAL, SDL** or other safety concern identified through an accepted safety priority ranking system? Yes ☐ No ☒

Identify safety ranking system and specific concern: _____

** PIL – Priority Incident Location information available from NYSDOT
HAL – High Accident Location information available from NYSDOT
SDL – Safety Deficiency Location information available from NYSDOT

(See TIP Guidebook Contact Page for NYSDOT contact information)

11. Is the facility currently restricted (e.g., weight, height, etc.)? Yes ☐ No ☒

If yes, what is the restriction? _____

12. Is the project located on or does it intersect with a transit route? Yes ☐ No ☒

If yes, which route(s)?

13. Is the project on a school bus route(s)? Yes ☒ No ☐

14. Does the project add travel lanes (capacity)? Yes ☐ No ☒

15. Does the project include bicycle accommodations? Yes ☒ No ☐

Describe: Monroe County intends to incorporate shoulders into the design to accommodate bicycle usage.

16. Does the project include pedestrian accommodations? Yes ☒ No ☐

Describe: Monroe County intends to incorporate sidewalks into the design to accommodate pedestrian usage.

17. Is the project on a road segment included in the GTC Regional Trails Initiative On-Street Trail Connection Recommendations? * Yes ☐ No ☒

18. Does the project include transit accommodations? Yes ☐ No ☒

Describe: _____

19. Does the project include goods movement accommodations? Yes ☐ No ☒

Describe: _____

20. Does the project involve new construction of a roadway on a new alignment one mile or longer? Yes ☐ No ☒

* *See TIP Guidebook Contact Page for sources of supporting information (e.g. Pavement Ratings, Traffic Counts, Regional Trails Initiative, etc.)*

21. Does the project involve widening a roadway to provide additional through traffic lanes one mile or longer? Yes ☐ No ☒

22. Does the project involve widening a roadway to provide a new continuous turn lane two miles or longer, or affecting five or more signalized intersections? Yes ☐ No ☒

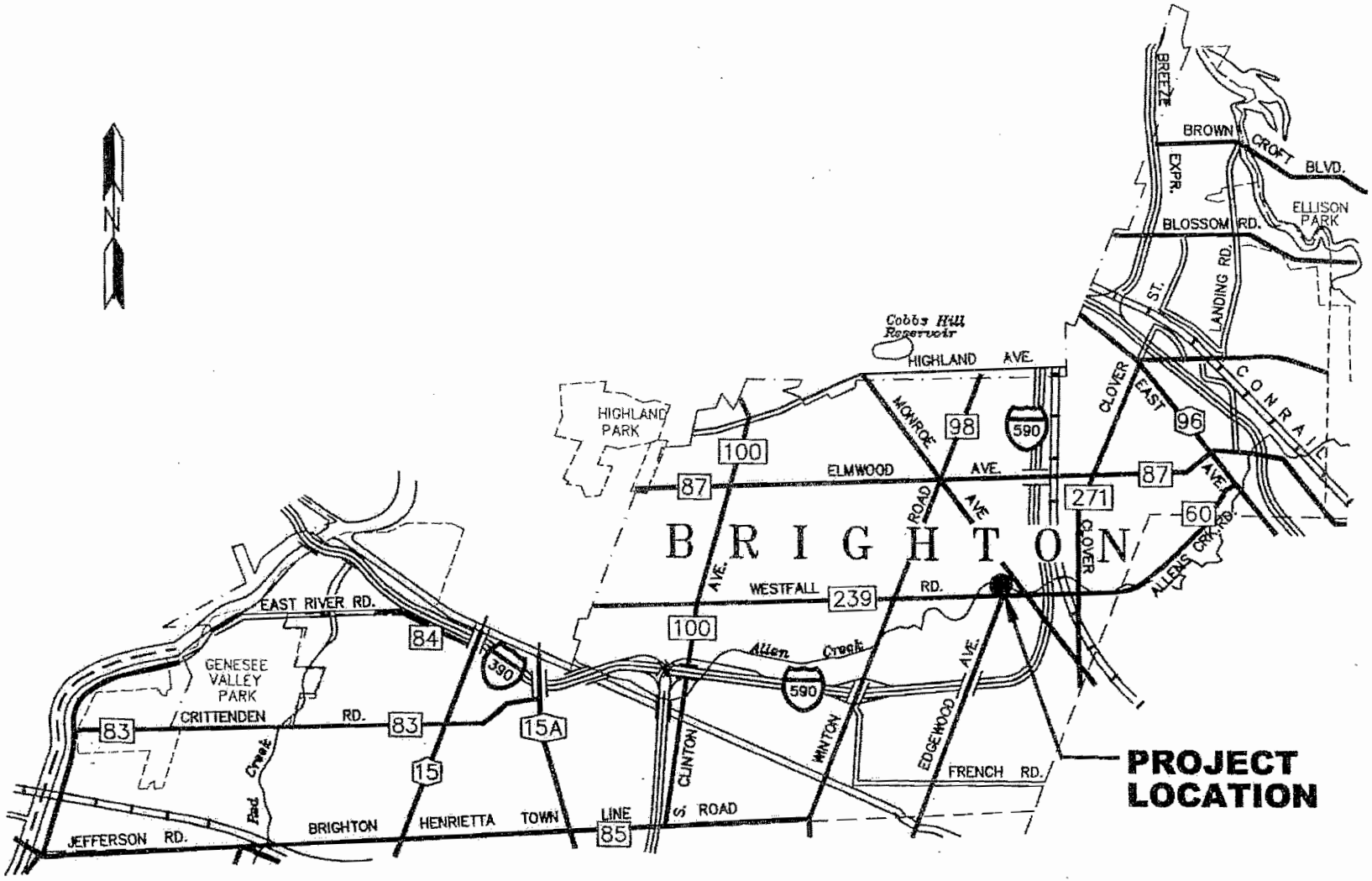
23. Does the project involve widening or reallocation of lane use for or by High Occupancy Vehicles (HOV) one mile or longer? Yes ☐ No ☒

24. Does the project involve adding grade-separated ramps or new interchanges? Yes ☐ No ☒

25. Does the project involve any Break-in-Access, including those privately funded, requiring FHWA approval action? Yes ☐ No ☒

26. Does the project involve coordinating or upgrading signal systems encompassing at least 10 signalized intersections and at least 2.5 miles of roadway? Yes ☐ No ☒

Certain Highway & Bridge projects (e.g. intersection improvements, roadway bottleneck elimination, etc.) may improve air quality. If you would like this project to be considered for Congestion Mitigation and Air Quality (CMAQ) funding, please complete the relevant questions on pages 16, 17, and 18.



BRIGHTON

Scale:1"=1 Mile