Bridge Replacement Project
P.I.N. 5101.82    BIN:1041590
S Cascade Dr / Miller Rd (Former US 219) over Cattaraugus Creek
Erie and Cattaraugus Counties
Towns of Concord and Ashford

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 is ready to be added to the Regional Capital Program and project scoping can begin.
The IPP was approved by:

Darrell F. Kaminski
Regional Director
7/29/13

B. Scope Approval: The project cost and schedule are consistent with the Regional Capital Program.
The scope was approved by:

Regional Director

C. Public Hearing Certification (23 USC 128): A public hearing was not required.

Project Manager

D. Recommendation for Design Approval: The project cost and schedule are consistent with the Regional Capital Program.

Regional Program Manager

E. Recommendation for Design and 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.

Regional Design Engineer

F. Nonstandard Feature Approval: No nonstandard features have been identified, created, or retained.

Deputy Chief Engineer

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

Deputy Chief Engineer
LIST OF PREPARERS

Group Director Responsible for Production of the Design Approval Document:

Brian R. Miller, P.E., Principal, LaBella Associates, D.P.C.

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

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.

Portions of this report were prepared by the following staff:

Jeanette Koch, P.E., Watts Architecture & Engineering

**Description of Work Performed:** Prepared Chapter 4 – Social, Economic and Environmental Conditions and Consequences for the Design Approval Document in accordance with established standards, policies, regulations and procedures, except as otherwise explained in this document.

Ronald Klinzjar, P.E., Hatch Mott MacDonald

**Description of Work Performed:** Prepared Chapter 2 – Project Context: History, Transportation Plans, Conditions and Needs for the Design Approval Document in accordance with established standards, policies, regulations and procedures, except as otherwise explained in this document.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>COVER</td>
<td>i</td>
</tr>
<tr>
<td>METRIC TO U.S. CUSTOMARY UNIT CONVERSION TABLE (on back of cover)</td>
<td>ii</td>
</tr>
<tr>
<td>PROJECT APPROVAL SHEET</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF PREPARERS</td>
<td>iv</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>v</td>
</tr>
<tr>
<td><strong>CHAPTER 1 – EXECUTIVE SUMMARY</strong></td>
<td>1-1</td>
</tr>
<tr>
<td>1.1. Introduction</td>
<td>1-1</td>
</tr>
<tr>
<td>1.2. Purpose and Need</td>
<td>1-1</td>
</tr>
<tr>
<td>1.2.1. Where is the Project Located?</td>
<td>1-1</td>
</tr>
<tr>
<td>1.2.2. Why is the Project Needed?</td>
<td>1-2</td>
</tr>
<tr>
<td>1.2.3. What are the Objectives / Purposes of the Project?</td>
<td>1-2</td>
</tr>
<tr>
<td>1.3. What Alternative(s) Are Being Considered?</td>
<td>1-2</td>
</tr>
<tr>
<td>1.4. How will the Alternative(s) Affect the Environment?</td>
<td>1-3</td>
</tr>
<tr>
<td>1.5. What are the Costs and Schedules?</td>
<td>1-6</td>
</tr>
<tr>
<td>1.6. Which Alternative is Preferred?</td>
<td>1-7</td>
</tr>
<tr>
<td>1.7. What are the Opportunities for Public Involvement?</td>
<td>1-8</td>
</tr>
<tr>
<td><strong>CHAPTER 2 – PROJECT CONTEXT: HISTORY, TRANSPORTATION PLANS, CONDITIONS AND NEEDS</strong></td>
<td>2-1</td>
</tr>
<tr>
<td>2.1. Project History</td>
<td>2-1</td>
</tr>
<tr>
<td>2.2. Transportation Plans and Land Use</td>
<td>2-1</td>
</tr>
<tr>
<td>2.2.1. Local Plans for the Project Area</td>
<td>2-1</td>
</tr>
<tr>
<td>2.2.2. Transportation Corridor</td>
<td>2-1</td>
</tr>
<tr>
<td>2.3. Transportation Conditions, Deficiencies and Engineering Considerations</td>
<td>2-2</td>
</tr>
<tr>
<td>2.3.1. Operations (Traffic &amp; Safety) &amp; Maintenance</td>
<td>2-2</td>
</tr>
<tr>
<td>2.3.2. Multimodal</td>
<td>2-6</td>
</tr>
<tr>
<td>2.3.3. Infrastructure</td>
<td>2-6</td>
</tr>
<tr>
<td>2.3.4. Potential Enhancement Opportunities</td>
<td>2-11</td>
</tr>
<tr>
<td>2.3.5. Miscellaneous</td>
<td>2-11</td>
</tr>
<tr>
<td><strong>CHAPTER 3 – ALTERNATIVES</strong></td>
<td>3-1</td>
</tr>
<tr>
<td>3.1. Alternatives Considered and Eliminated from Further Study</td>
<td>3-1</td>
</tr>
<tr>
<td>3.2. Feasible Build Alternatives</td>
<td>3-3</td>
</tr>
<tr>
<td>3.2.1. Description of Feasible Alternatives</td>
<td>3-3</td>
</tr>
<tr>
<td>3.2.2. Preferred Alternative</td>
<td>3-4</td>
</tr>
<tr>
<td>3.2.3. Design Criteria for Feasible Alternative(s)</td>
<td>3-4</td>
</tr>
<tr>
<td>3.3. Engineering Considerations</td>
<td>3-6</td>
</tr>
<tr>
<td>3.3.1. Operations (Traffic &amp; Safety) &amp; Maintenance</td>
<td>3-6</td>
</tr>
<tr>
<td>3.3.2. Multimodal</td>
<td>3-8</td>
</tr>
<tr>
<td>3.3.3. Infrastructure</td>
<td>3-8</td>
</tr>
<tr>
<td>3.3.4. Landscape and Environmental Enhancements</td>
<td>3-10</td>
</tr>
<tr>
<td>3.3.5. Miscellaneous</td>
<td>3-10</td>
</tr>
<tr>
<td><strong>CHAPTER 4 – SOCIAL, ECONOMIC AND ENVIRONMENTAL CONDITIONS AND CONSEQUENCES</strong></td>
<td>4-1</td>
</tr>
<tr>
<td>4.1. Introduction</td>
<td>4-1</td>
</tr>
<tr>
<td>4.1.1. Environmental Classification</td>
<td>4-1</td>
</tr>
<tr>
<td>4.1.2. Permits, Certifications and Approvals</td>
<td>4-1</td>
</tr>
<tr>
<td>4.2. Social</td>
<td>4-2</td>
</tr>
<tr>
<td>4.3. Economic</td>
<td>4-2</td>
</tr>
<tr>
<td>4.4. Environmental</td>
<td>4-2</td>
</tr>
<tr>
<td>4.4.1. Wetlands</td>
<td>4-2</td>
</tr>
<tr>
<td>4.4.2. Surface Waterbodies and Watercourses</td>
<td>4-2</td>
</tr>
</tbody>
</table>
4.4.3. Wild, Scenic and Recreational Rivers ................................................................. 4-3
4.4.4. Navigable Waters ................................................................................................. 4-3
4.4.5. Floodplains ........................................................................................................... 4-4
4.4.6. Coastal Resources ............................................................................................... 4-4
4.4.7. Groundwater Resources, Aquifers and Reservoirs ............................................. 4-4
4.4.8. Stormwater Management .................................................................................... 4-5
4.4.9. General Ecology and Wildlife Resources ............................................................ 4-5
4.4.10. Historic and Cultural Resources ...................................................................... 4-7
4.4.11. Parks and Recreational Resources .................................................................. 4-7
4.4.12. Visual Resources ............................................................................................... 4-7
4.4.13. Air Quality ......................................................................................................... 4-7
4.4.14. Asbestos ............................................................................................................. 4-8
4.4.15. Hazardous Waste and Contaminated Materials .................................................. 4-8

<table>
<thead>
<tr>
<th>Appendices</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.  Plans, Profiles, Typical Sections, and Detour Route</td>
</tr>
<tr>
<td>B.  Environmental Information</td>
</tr>
<tr>
<td>C.  Traffic Information</td>
</tr>
<tr>
<td>D.  Structures Information</td>
</tr>
<tr>
<td>E.  Smart Growth Screening Tool</td>
</tr>
<tr>
<td>F.  Public Involvement (PI) Plan and Input from Stakeholders including Public</td>
</tr>
</tbody>
</table>
CHAPTER 1 - EXECUTIVE SUMMARY

1.1. Introduction

This report was prepared in accordance with the NYSDOT Project Development Manual, 17 NYCRR (New York Codes, Rules and Regulations) Part 15, and 23 CFR (Code of Federal Regulations) 771. Transportation needs have been identified (Section 1.2.2), objectives established (1.2.3) to address the needs, and cost-effective alternatives developed (1.3). This project is Federally and State funded.

1.2. Purpose and Need

1.2.1. Where is the Project Located?
1.2.2. Why is the Project Needed?

The work to BIN 1041590 is needed to provide South Cascade Drive and Miller Road (former US Rt. 219) with a bridge over the Cattaraugus Creek that is safe to the traveling public while maintaining a local and regional transportation network that is accessible to all users and supports the business communities of the Village of Springville & Town of Concord (Erie County) and Town of Ashford (Cattaraugus County). The existing bridge was built in 1956 under contract F.A.S.S.H. 54-13, and currently carries two lanes of traffic (one lane in each direction). The bridge is a three span continuous deck truss with spans measuring 175 ft., 300 ft., and 175 ft. in length. In 1969 under contract R.C. 69-123, the bridge was widened from 39 ft. to 46 ft. by extending the truss floorbeams and adding two fascia stringers on both sides of the bridge.

The bridge has deteriorated over the years, requiring repairs that are more extensive. The structure has been rated deficient (5 or less) since 1987 and currently has a 15 ton weight restriction. As time goes on, maintenance costs will increase and there will come a point when the existing bridge will no longer be safe for traffic to use. Refer to section 2.3.3.6. (4) for Inspection Ratings for BIN 1041590.

Note: The project location has two adjacent structures (BINs 1078061 and 1078062) built in 2010.

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

There are two objectives for this project:

1. Eliminate the identified bridge deficiencies identified in Section 2.3.3.6 by providing a structurally sound bridge with minimal maintenance for the next 30 years, and a service life of 75 years.

2. Maintain a local and regional transportation network that is accessible to all users and supports the business communities of the Village of Springville & Town of Concord (Erie County) and Town of Ashford (Cattaraugus County) and greater Erie County and Cattaraugus County region.

1.3. What Alternative(s) Are Being Considered?

The following is a brief description of all alternatives considered. Refer to Section 3.1 for a more in-depth discussion of each alternative and Section 3.2 for a description of the feasible alternative(s).

**Alternative #1 – Null Alternative**

The null alternative includes only the routine maintenance of the structure. This alternative will result in the continued deterioration of the structure, resulting in increased maintenance repairs and motorist safety concerns which will eventually require the structure be closed to traffic.

**Alternative #2 – Bridge Replacement**

The structure replacement alternative would include the complete removal of the existing structurally deficient structure and construction of a new bridge on the same horizontal and vertical alignments with minor approach roadway work. The approach roadway work would include 100’ of pavement reconstruction and 100’ of milling and overlaying on each side of the bridge, as well as guide rail
replacement. Structure replacement would eliminate the existing structurally deficient bridge and provide a non-posted structure for at least 75 years. The replacement bridge will be required to provide two 12'-0" travel lanes with two 8'-0" shoulders and five-rail galvanized steel bridge railing.

The proposed structure could be a steel or concrete bridge. However, the following bridge types are prohibited: thru or deck arches, thru or deck trusses, cable-stayed or suspension systems. The bridge type restrictions are necessary to concur with NYS Historic Preservation Office (SHPO) requirements. The final selection will occur in the Final Design phase.

For reference purposes, only two conceptual bridge plans, elevations and sections have been included in Appendix A. A construction cost of $17.6M has been developed to provide a rough estimate for replacing this structure. However, the actual cost will depend on the final design selected.

Alternative #3 – Bridge Rehabilitation
This alternative would perform a major rehabilitation of the existing structure. As noted in Section 1.2.2, the bridge has deteriorated over the years requiring repairs that are more extensive. The life expectancy of a major rehabilitation of the bridge is expected to only be 10 to 12 years. However due to the complexity of the truss superstructure and ongoing crevice corrosion in the truss chord to gusset plate connections, NYSDOT expects that additional steel repairs to the deck trusses will be required within 4 to 6 years. The estimated cost to rehabilitate this structure is $7.0M.

Alternative 4 – Removal of Bridge and Utilization of Alternate Routes
This alternative would include the complete removal of the existing structure and redirecting traffic utilizing one of three alternate routes, designated as Alternatives 4A, 4B and 4C, to cross Cattaraugus Creek.

Three alternate route sub-alternatives were evaluated for this alternative:

- **Alternative 4A – Scoby Hill Road**: This alternative would utilize the existing Scoby Hill Road between South Cascade Drive and Cattaraugus Creek, construct a new bridge across Cattaraugus Creek, and utilize the existing Scoby Road and Henrietta Road to connect back to Miller Road. The estimated construction cost for this alternative is $6.4M.

- **Alternative 4B – Mill Street / Edies Road**: This alternative would utilize Route 39 through the Village of Springville, Mill Street / Edies Road, and Schwartz Road to connect back to Miller Road. Cattaraugus Creek would be crossed at Mill Street / Edies Road via BIN 3328370. The estimated construction cost of this alternative is $5.9M.

- **Alternative 4C – US Route 219**: This alternative would re-route traffic to the US Route 219 expressway between Peters Road and Route 39. Northbound traffic on Miller Rd would use Peters Rd to access Route 219, and Cascade Drive traffic would use Route 39 to Route 219. Cattaraugus Creek would be crossed via BINs 1078061 and 1078062. The estimated cost of this alternative is $1.9M.

For a more in-depth discussion of the design criteria for the chosen alternative, see Section 3.2.3. Design Criteria for Feasible Alternative(s).

1.4. How will the Alternative(s) Affect the Environment?

<table>
<thead>
<tr>
<th>Exhibit 1.4-A</th>
<th>Environmental Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEPA Classification</td>
<td>Class II (Categorical Exclusion)</td>
</tr>
<tr>
<td>SEQR Type:</td>
<td>Non-Type II (EA) (Preferred Alternative)</td>
</tr>
</tbody>
</table>
Coordination meetings with the New York State Department of Environmental Conservation (NYSDEC), US Army Corps of Engineers (USACE), State Historic Preservation Office (SHPO) and NYSDOT have taken place. A bridge replacement alternative would be found acceptable, provided the alternative meets two requirements:

- The aesthetic elements of the new bridge will be designed so as to not interfere with the existing aesthetic elements of the gorge as it relates to the National Register Listed (NRL) Scoby Power Plant and Dam Historic District or the character of the new Route 219 expressway Twin Arch bridges (SHPO).

- Impacts to the floodplain as well as the debris, sediment and turbidity in Cattaraugus Creek within the gorge area are minimized during demolition of the existing bridge and construction of the new bridge (USACE/NYSDEC).
### Exhibit 1.4-B
Comparison of Alternatives

<table>
<thead>
<tr>
<th>Category</th>
<th>Alternatives</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Null</td>
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<tr>
<td>Wetland Impacts</td>
<td>None</td>
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<tr>
<td>Surface Water/ Aquatic Resources Impacts</td>
<td>None</td>
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<tr>
<td>Forested Area Impacts</td>
<td>None</td>
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<tr>
<td>Endangered &amp; Threatened Species Effects</td>
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<tr>
<td>100-year Floodplain Impacts</td>
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<td>Navigation</td>
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<tr>
<td>Historic / Archeological Impacts</td>
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<tr>
<td>Groundwater Impacts</td>
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<td>SHPO Requirement</td>
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<tr>
<td>Parks Impacts</td>
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<td>Visual Effects ¹</td>
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<td>Noise Impacts</td>
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</tr>
<tr>
<td>Air Quality Impacts</td>
<td>None</td>
</tr>
<tr>
<td>Property Impacts</td>
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<td>Operation at ETC + 30</td>
<td>LOS “B”</td>
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<td>20 year Crash Costs</td>
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</tr>
<tr>
<td>Construction Cost</td>
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</tr>
</tbody>
</table>

Notes:
1. A Visual Impact Assessment (VIA) was completed for the Preferred Alternative (Alt. 2).
2. Results of the VIA are located in Appendix B.
Anticipated Permits/Certifications/Coordination for preferred alternative:

Permits

NYSDEC
- State Pollutant Discharge Elimination System (SPDES) General Permit
- Clean Water Act, Section 401 Water Quality Certification

USACE
- Clean Water Act, Section 404 Nationwide Permit #3 with a PCN - Maintenance Activities in all Waters of the U.S.

Coordination
- Coordination with NYSDEC pursuant to the “NYSDEC/NYSDOT Memorandum of Understanding” Regarding ECL Article 15 & 24
- Coordination with Federal Highway Administration
- Coordination with the New York State Historic Preservation Office (SHPO)
- Coordination with the US Fish and Wildlife Service
- Coordination with the New York Natural Heritage Program
- Coordination with the National Parks Service

Others
- Local Permits
- Memorandum of Agreement (MOA) with FHWA, SHPO and NYSDOT regarding Section 106

1.5. What Are The Costs & Schedules?

Design Approval is scheduled for November 2014 with construction scheduled to last 21 months beginning in April of 2015.

<table>
<thead>
<tr>
<th>Activity</th>
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<tr>
<td>Scoping Approval</td>
<td>February 2010</td>
</tr>
<tr>
<td>Design Approval</td>
<td>November 2014</td>
</tr>
<tr>
<td>Selection of Best Value</td>
<td>March 2015</td>
</tr>
<tr>
<td>Construction Start</td>
<td>April 2015</td>
</tr>
<tr>
<td>Construction Complete</td>
<td>December 2016</td>
</tr>
</tbody>
</table>
Exhibit 1.5B
Summary of Project Costs – Million Dollars (2014-2016)  

<table>
<thead>
<tr>
<th>Activities</th>
<th>Alternative 2 – Bridge Replacement Design-Build (DB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Costs ²</td>
<td>Bridge $14.160</td>
</tr>
<tr>
<td></td>
<td>Highway $0.130</td>
</tr>
<tr>
<td>Subtotal ($)</td>
<td>$14.290</td>
</tr>
<tr>
<td>Detour Cost</td>
<td>$0.795</td>
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<tr>
<td>Subtotal ($)</td>
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<tr>
<td>Contingency ³ (12% @ Design Approval)</td>
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</tr>
<tr>
<td>Subtotal ($)</td>
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</tr>
<tr>
<td>Field Change Payment</td>
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<tr>
<td>(Per HDM Section 21.4.3.3 &amp; Table 21-8)</td>
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</tr>
<tr>
<td>Subtotal ($)</td>
<td>$16.895</td>
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<tr>
<td>Mobilization (4%)</td>
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<td>Subtotal ($) – Construction Cost</td>
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<tr>
<td>Final Design (7%)</td>
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<tr>
<td>Construction Inspection Costs (8%)</td>
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<tr>
<td>Inflation (3%/yr x 1yr)</td>
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<tr>
<td>Miscellaneous Costs</td>
<td>$5.271</td>
</tr>
<tr>
<td>Total Project Costs</td>
<td>$22.842</td>
</tr>
</tbody>
</table>

Notes:
1. The costs provided reflect the estimated project cost considering a steel multi-girder bridge with composite concrete deck.
2. Assumptions at time of Draft Design Report:
   - Permitting requirements will not require a temporary construction access bridge across Cattaraugus Creek.
   - Controlled demolition of existing bridge steel superstructure will be permitted into gorge and creek
3. NYSDOT recommends standard contingencies: 25% Scoping Stage, 15% Design Approval Stage, 5% Advanced Detail Stage. A contingency of 12%, which also includes incidentals, was used for this report.

1.6. Which Alternative is Preferred?

The alternative that best satisfies the project objectives is Alternative 2 – Bridge Replacement.

The structure replacement alternative would include the complete removal of the existing structurally deficient structure and construction of a new bridge on the same horizontal and vertical alignments with minor approach roadway work. The approach roadway work would include 100’ of pavement reconstruction and 100’ of milling and overlaying on each side of the bridge, as well as guide rail replacement. Structure replacement would eliminate the existing structurally deficient bridge and provide a non-posted structure for at least 75 years. The replacement bridge will be required to provide two 12’-0” travel lanes with two 8-0” shoulders and five-rail galvanized steel bridge railing.

The proposed structure could be a steel or concrete bridge. However, the following bridge types are prohibited: thru or deck arches, thru or deck trusses, cable-stayed or suspension systems. The bridge type restrictions are necessary to concur with NYS Historic Preservation Office (SHPO) requirements. The final selection will occur in the Final Design phase.
For reference purposes, only two conceptual bridge plans, elevations and sections have been included in Appendix A. A construction cost of $17.6M has been developed to provide a rough estimate for replacing this structure. However, the actual cost will depend on the final design selected.

See Section 3.2.2 for a discussion of this alternative.

1.7. **What are the Opportunities for Public Involvement?**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date Occurred/Tentative</th>
</tr>
</thead>
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<tr>
<td>Pre-Scope Environmental findings</td>
<td>11/19/09</td>
</tr>
<tr>
<td>Field Pre-Scoping Meeting (all groups)</td>
<td>12/01/09 (email)</td>
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<tr>
<td>In-house DOT scoping meeting</td>
<td>12/15/09</td>
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<tr>
<td>Stakeholder &amp; Town Reps. Meeting</td>
<td>08/14/14</td>
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<tr>
<td>Public Informational Meeting</td>
<td>9/30/14</td>
</tr>
<tr>
<td>Selection of Best Value</td>
<td>March 2015</td>
</tr>
</tbody>
</table>

Refer to Appendix F for Public Involvement (PI) Plan and Input from Stakeholders including Public.

The public may offer comments in a variety of ways.

- A public meeting was held on September 30, 2014. Comments received at the meeting and within the comment period following the meeting have been considered in this report.

- Contact Regional NYSDOT Staff:

  David J. Hill, P.E. - Project Manager  
  Please include the six digit Project Identification Number (PIN) 5101.82  
  Questions or comments  
  email: Dave.Hill@dot.ny.gov  
  telephone: (716) 847-3214

  Mailing Address:  
  New York State Department of Transportation  
  Region 5 Design  
  100 Seneca Street  
  Buffalo, NY 14203

- Visit the NYSDOT website: https://www.dot.ny.gov

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.

All the project alternatives were reviewed and the preferred design was selected by the region’s Regional Program Committee. Analysis of the technical data of each alternative and comments from the Draft Design Report were used in making the final decision.
CHAPTER 2 - PROJECT CONTEXT: HISTORY, TRANSPORTATION PLANS, CONDITIONS AND NEEDS

This chapter addresses the history and existing context of the project site, including the existing conditions, deficiencies, and needs for this part of South Cascade Drive / Miller Road (formerly U.S. Route 219) corridor.

2.1. Project History

The South Cascade Drive / Miller Road bridge over Cattaraugus Creek was built in 1956 under contract F.A.S.S.H. 54-13, and carries one lane of traffic in each direction. In 1969, under contract R.C. 69-123, the bridge was widened from 39 ft. to 46 ft. Two fascia stringers were added on both sides of the bridge, two interior stringers were relocated, one interior stringer was added three (3) ft. from the centerline of the bridge and floor beams were extended. Structural steel repairs were made in 2008 where the bottom chord gusset plates were repaired due to section loss at sixteen (16) locations based on yellow flags issued during a Special Inspection. The bridge has had load postings added twice. A 20 Ton load posting was added in 2008 and, more recently, a 15 Ton posting was added in 2012. The abutment bearings were replaced in 2012 under an emergency repair bridge closure.

The bridge continues to show signs of significant deterioration. The Department has subsequently determined that further repairs to the bridge are not cost-effective, and that the bridge is a candidate for replacement. This Design Report documents these findings.

This project is on the approved Transportation Improvement Program (TIP) as Project No. 5101.82.

2.2. Transportation Plans and Land Use

2.2.1. Local Plans for the Project Area

2.2.1.1. Local Comprehensive Plans (“Master Plan”)

The Regional Planning Group has reviewed the local comprehensive plans prepared for the Town of Ashford and Town of Concord. This project is consistent with the local comprehensive plans.

2.2.1.2. Local Private Development Plans

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

2.2.2. Transportation Corridor

2.2.2.1. Importance of the Project Route Segment

South Cascade Drive / Miller Road is currently functionally classified as “Rural Principle Arterial”. The Department has requested that the functional classification be changed to “Rural Major Collector” based on the characteristics and nature of the roadway. This section of roadway is currently part of U.S. Route 219 and is on the National Network of Trucks. It is currently designated as part of the National Highway System (NHS); however the Department has submitted a request that this NHS designation be transferred from South Cascade Drive / Miller Road (Old Route 219) to the new Route 219 expressway. South Cascade Drive / Miller Road is not part of the 4.9 m (16 ft.) Vertical Clearance Network in the Highways for National Defense (HND) / STRAHNET system.

2.2.2.2. Alternate Routes

In the mid 2000’s, the Department undertook the project to extend the US 219 expressway past Springville to Peters Road and built two adjacent structures (BINs 1078061 and 1078062), opened in 2010. This resulted in South Cascade Drive / Miller Road no longer being the primary transportation route in the area. The presence of the US 219 expressway creates a bypass of the project bridge and affords
opportunities to allow closure of the bridge for replacement. The road still has local significance as it is the primary connector between the Village of Springville commercial area and Cattaraugus County. Other county and local roads service the area but are not as direct of routes nor are they as substantial in nature as South Cascade Drive / Miller Road. Most of the county and local roads in the vicinity of the bridge do not have bridge crossings over Cattaraugus Creek themselves, specifically Scoby Hill Road, or are too small to handle the increase in traffic volume if needed, such as Edies Road.

2.2.2.3. Corridor Deficiencies and Needs
There are no identified mobility or system deficiencies within the project area. There are no identified social demands or known economic development which would be affected by this project.

2.2.2.4. Transportation Plans
This project is on the approved Transportation Improvement Program (TIP) as project No.5101.82. The project is also on the Statewide Transportation Improvement Program (STIP).

2.2.2.5. Abutting Highway Segments and Future Plans for Abutting Highway Segments
Adjacent to the project limits, South Cascade Drive / Miller Road consists of one travel lane in each direction, with asphalt pavement and shoulders. North and south of the bridge, the lane widths are approximately 12 ft., with 8 ft. wide shoulders that transition to 9.5 ft. wide on the bridge. There are no separate pedestrian facilities within the project limits or on highway segments in the vicinity of the project limits. There are no vertical or horizontal curves within the project limits. The posted speed limit for this highway section is 55 mph.

Roadways in the vicinity of South Cascade Drive / Miller Road are classified as Rural Local roadways with the majority being under the jurisdiction of Erie and Cattaraugus Counties. Mill Street qualifies as a Rural Local Road which Erie County maintains. Scoby Hill Road is another Rural Local Road that is in the vicinity of the project and is under the jurisdiction of the Town of Concord. Henrietta Road and Edies Road qualify as Rural Local Roads that Cattaraugus County maintains. Schwartz Road, which runs east-west and intersects Miller Road approximately a quarter mile south of the bridge, is a Rural Minor Collector that is also under Cattaraugus County’s jurisdiction.

The Regional Planning Group has confirmed that there are no plans to reconstruct or widen this highway segment, or the adjoining segments, within the next 20 years.

2.3. Transportation Conditions, Deficiencies and Engineering Considerations

2.3.1. Operations (Traffic and Safety) & Maintenance

2.3.1.1. Functional Classification and National Highway System (NHS)

<table>
<thead>
<tr>
<th>Route(s)</th>
<th>South Cascade Drive / Miller Road (formerly U.S. Route 219)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional Classification</td>
<td>Rural Major Collector (Refer to Section 2.2.2.1)</td>
</tr>
<tr>
<td>National Highway System (NHS)</td>
<td>No (See Section 2.2.2.1)</td>
</tr>
<tr>
<td>Designated Truck Access Route</td>
<td>Yes</td>
</tr>
<tr>
<td>Qualifying Highway</td>
<td>No</td>
</tr>
<tr>
<td>Within 1.0 mi. of a Qualifying Highway</td>
<td>No</td>
</tr>
<tr>
<td>Within the 16 ft. vertical clearance network</td>
<td>No</td>
</tr>
</tbody>
</table>

2.3.1.2. Control of Access
South Cascade Drive / Miller Road is without access control. Driveways adjacent to the roadway provide access to private properties.
2.3.1.3. Traffic Control Devices
There are no traffic signals located in the vicinity of the project. Traffic control signs, delineators, route markers and pavement markings are found throughout the project area.

2.3.1.4. Intelligent Transportation Systems (ITS)
There are no ITS systems in operation or planned for the project area.

2.3.1.5. Speeds and Delay

<table>
<thead>
<tr>
<th>Exhibit - 2.3.1.5 Speed Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route</td>
</tr>
<tr>
<td>Existing Speed Limit</td>
</tr>
<tr>
<td>Operating Speed and Method Used for Measurement</td>
</tr>
</tbody>
</table>

The bridge over Cattaraugus Creek is south of the Village of Springville. Traffic in this area is free flowing and without delay. Local truck traffic serving area businesses between Springville and Ellicottville may reduce operating speeds at times due to the rolling nature of the roadway and side roads and driveways that they may turn on to, but their volume is not enough to cause delay to the route.

2.3.1.6. Traffic Volumes
Refer to Appendix C of this report for traffic flow diagrams and traffic counts. The traffic data was obtained from pneumatic tube counts placed north and south of the existing bridge.

2.3.1.6. (1) Existing traffic volumes
Refer to Exhibits 2.3.1.6-1 through 2.3.1.6-2 for a summary of traffic data. A discussion of the traffic count methodology, peak hour, and major traffic generator driveways/entrances is included in Appendix C.

<table>
<thead>
<tr>
<th>Exhibit - 2.3.1.6-1 Traffic Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route</td>
</tr>
<tr>
<td>Directional Distribution</td>
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<tr>
<td>Peak Hour Factor</td>
</tr>
<tr>
<td>% Peak Hour Trucks</td>
</tr>
<tr>
<td>% Daily Trucks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exhibit - 2.3.1.6-2 Existing and Forecast Traffic Volumes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route</td>
</tr>
<tr>
<td>Year</td>
</tr>
<tr>
<td>Existing (2011)</td>
</tr>
<tr>
<td>ETC (2016)</td>
</tr>
<tr>
<td>ETC+10 (2026)</td>
</tr>
</tbody>
</table>
2.3.1.6. (2) Future no-build design year traffic volume forecasts – The Design Year of 2046 is appropriate per the NYSDOT Project Development Manual (PDM) Appendix 5. An ETC+30 year projection has been completed, since as the project involves the replacement of an existing bridge. The growth rate used for this section of South Cascade Drive / Miller Road is 0.5% (linear) per year. The growth rate is based on the Rural Forecasting Model results.

The 2-Way Design Hour Volumes (DHV) are 9.0% of the two-way annual average daily traffic (AADT).

2.3.1.7. Level of Service and Mobility

A Level of Service “A” indicates free flow traffic, and a level of service “F” indicates that volume exceeds capacity and has unacceptable delays. Levels of service between “A” and “F” are shades of these conditions. An HCS2000 (Highway Capacity Software 2000) model calculation was run to find the level of service for the corridor given the 2011 traffic data.

2.3.1.7. (1) Existing Level of Service and Capacity Analysis

Exhibit 2.3.1.7-1 shows the Level of Service based on the traffic volumes shown in Exhibit 2.3.1.6-2.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>LOS</th>
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<tbody>
<tr>
<td>Existing (2011)</td>
<td>B</td>
</tr>
<tr>
<td>ETC (2016)</td>
<td>B</td>
</tr>
<tr>
<td>ETC+20 (2036)</td>
<td>B</td>
</tr>
<tr>
<td>ETC+30 (2046)</td>
<td>B</td>
</tr>
</tbody>
</table>

2.3.1.7. (2) Future No-build Design Year Level of Service

The corridor in the project area is projected to operate at a Level of Service B. There are no anticipated capacity improvements to South Cascade Drive / Miller Road roadway necessary to accommodate future traffic in the next 30 years.

2.3.1.8. Safety Considerations, Accident History and Analysis

A search was done for accidents within 0.3 miles in either direction of the bridge, for the period of March 1, 2010 to February 28, 2013. This section of highway had eight (8) accidents reported in this time period in this RM range. The computed accident rate for this section is 2.00 acc/MVMT (accidents per million vehicle miles traveled). The comparable statewide average for a roadway of this functional classification is 2.60 Acc/MVMT. Three of the accidents were the result of animals (two deer, one bear) being in or crossing the road. One accident was the result of a police chase which resulted in a tree collision. Only one of the accidents occurred at the bridge and was the result of mechanical failure in a towed trailer and not a result of any defects with the bridge. None of the accidents resulted in a fatality, but two caused an injury that required paramedic attention. A summary of the accidents is included in Appendix C.
The accident types are:

<table>
<thead>
<tr>
<th>Type of Collision</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run off the Road</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Animal</td>
<td>3</td>
<td>38</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>50</td>
</tr>
</tbody>
</table>

This segment of roadway is on a horizontal tangent and has no vertical curves. Sight distances meet the design criteria standards. The accident rate is below the statewide average and the bridge is not a contributing factor in the accidents that have occurred. The proposed bridge will be designed to current standards, but would not be anticipated to effect, or would provide a small positive effect, on the future accident rate. No special safety considerations are required to be incorporated as part of this project.

2.3.1.9. Existing Police, Fire Protection and Ambulance Access
There are no emergency service facilities located within the project limits. Emergency response vehicles including the Village of Springville Police and Volunteer Fire Departments, Erie County Sheriff, Cattaraugus County Sheriff as well as ambulances transporting patients to the Bertrand Chaffee Hospital use this section of South Cascade Drive / Miller Road regularly for response calls and emergencies.

2.3.1.10. Parking Regulations and Parking Related Conditions
Parking is restricted by law within the project limits. No Parking signs are located facing both northbound and southbound on the bridge.

2.3.1.11. Lighting
There is no street lighting within the highway limits or on the bridge and no plans for the municipality to install lighting.

2.3.1.12. Ownership and Maintenance Jurisdiction
NYSDOT owns and maintains the South Cascade / Miller Road (formerly U.S. Route 219) bridge (BIN 1041590). South Cascade Drive is under the maintenance jurisdiction of Erie County and Miller Road is under the maintenance jurisdiction of Cattaraugus County.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Highway</th>
<th>Limits</th>
<th>Feature(s) being Maintained</th>
<th>Centerline (mile)</th>
<th>Lane (mi.)</th>
<th>Agency</th>
<th>Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>South Cascade Bridge over Cattaraugus Creek</td>
<td>287+73.5 to 294+30.5</td>
<td>BIN 1041590</td>
<td>0.25</td>
<td>0.50</td>
<td>NYSDOT</td>
<td>Highway Law Section 349-c &amp; Section 10, Subdiv. 25</td>
</tr>
<tr>
<td>2</td>
<td>South Cascade Drive</td>
<td>Scoby Hill Access Road to Bridge</td>
<td>Pavement, shoulders, ditches</td>
<td>0.02</td>
<td>0.04</td>
<td>Erie County</td>
<td>Sect. 129 Highway Law</td>
</tr>
<tr>
<td>3</td>
<td>Miller Road</td>
<td>Schwartz Road to Bridge</td>
<td>Pavement, shoulders, ditches</td>
<td>0.02</td>
<td>0.04</td>
<td>Cattaraugus County</td>
<td>Sect. 129 Highway Law</td>
</tr>
</tbody>
</table>
2.3.2. Multimodal

2.3.2.1. Pedestrians
There are no separate provisions for pedestrians. The highway shoulder width is eight (8) ft. with the shoulder on the bridge increasing to a width of 9.5 ft. The occasional pedestrian may legally use the paved shoulder. There are no plans for a pedestrian route within the project limits. A pedestrian generator checklist is included in Appendix C.

2.3.2.2. Bicyclists
There are no separate provisions for bicyclists. The highway shoulder width is eight (8) ft. with the shoulder on the bridge increasing to a width of 9.5 ft. There are no plans for a bicycle route within the project limits. The occasional bicyclist may legally use the paved shoulder.

2.3.2.3. Transit
Greyhound Bus Services has a daily run that serves the Villages of Springville and Ellicottville with service into and out of Buffalo each day. In addition, tour and charter buses use South Cascade Drive / Miller Road heading towards Ellicottville.

These services would need to be accommodated by any proposed detour.

2.3.2.4. Airports, Railroad Stations, and Ports
There are no airports, railroad stations or port entrances within or in the vicinity of the project limits.

2.3.2.5. Access to Recreation Areas (Parks, Trails, Waterways, State Lands)
Scoby Dam Park is located along the north side of Cattaraugus Creek approximately 0.60 mi. west of the project site. There is an entrance to the park off of Scoby Hill Road approximately 1 mile from the project site. The park was created in 2001 and is maintained by Erie County. Access to the park is such that bridge construction would not be expected to have any impact on park access.

Scoby Dam Park runs underneath the existing bridge. Continued discussion with Erie County regarding temporary closure of the path under the bridge will be conducted throughout the course of the design. The pathway will be reestablished upon completion of the bridge replacement.

2.3.3. Infrastructure

2.3.3.1. Existing Highway Section
The existing highway lanes on South Cascade Drive / Miller Road are striped at 12'-0" ft. wide with 8'-0" wide shoulders, for a nominal 40' wide pavement section. The shoulders widen to a width of 9'-6" across the bridge.

2.3.3.2. Geometric Design Elements Not Meeting Minimum Standards

2.3.3.2.(1) Critical Design Elements
There are no existing nonstandard features. The existing bridge is on a tangent section of South Cascade Drive / Miller Road with no vertical curves present.

2.3.3.2.(2) Other Design Parameters
There are no existing nonconforming features.

2.3.3.3. Pavement and Shoulder
The asphalt pavement at the approaches exhibits widespread random cracking, uneven old patches, minor wheel path rutting, and small potholes that are beginning to develop. The concrete approach slabs at begin and end each have several longitudinal cracks.
The existing pavement is in fair condition. Since this is a bridge replacement project, a pavement evaluation was not performed.

The existing pavement within the project will be reconstructed using asphalt concrete pavement meeting the current standards. The limits of pavement work will be from Scoby Hill Access Road to Schwartz Road.

2.3.3.4. Drainage Systems
On all four quadrants bordering the bridge the drainage is an open drainage system that flows towards the creek in well-defined ditches. The project will maintain drainage patterns.

The bridge has scuppers on both sides of the structure that are functioning as intended per the bridge inspection report.

2.3.3.5. Geotechnical
There are no special geotechnical concerns with the soils or rock slopes within the project area. Soil and foundation conditions are not unusual, allowing standard construction methods to be employed. The structure spans over 100 ft. above the streambed and piers are located above the normal flow levels. The abutments are located high on rock ledges and are not exposed to high flows. Soil borings indicate the existing piers are located on shale and that bedrock is roughly 18 ft. below the top of the stream bank. The rock slopes are covered with loose shale which would need to be removed prior to the construction of new piers in this area.

There is a landslide area roughly 0.5 miles north of the bridge. This area is far enough away so it will not affect the bridge construction. However, the landslide area shall be avoided when building the temporary detour that utilizes US Route 219 Expressway.

2.3.3.6. Structure
2.3.3.6. (1) Description:
   (a) BIN - 1041590
   (b) Feature carried and crossed – South Cascade Drive / Miller Road over Cattaraugus Creek
   (c) Type of bridge, number and length of spans, etc. – 657 ft. long, 3 span, steel deck truss, two-175 ft. ends spans and one-300 ft. mid-span.
   (d) Width of travel lanes, parking lanes, and shoulders – Two 12 ft. travel lanes (one in each direction) with 9.5 ft. shoulders on each side. There are no parking lanes.
   (e) Sidewalks – There are no sidewalks on the existing structure.
   (f) Utilities carried – Verizon Fiber Optic Cable

2.3.3.6.(2) Clearances (Horizontal/Vertical)
The existing horizontal clearance is 9.5 ft.; vertical clearance exceeds the 14 foot minimum standard.

2.3.3.6.(3) History & Deficiencies
The subject bridge, BIN 1041590, was originally constructed in 1956 under contract F.A.S.S.H. 54-13 and currently carries one lane of traffic in each direction. The existing structure is a steel truss superstructure supported on two (2) steel bent piers that are spaced 300 feet apart. This results in a three (3) span bridge with the two exterior spans measuring 175ft each and the interior span measuring 300 ft. In 1969, under contract R.C. 69-123, the bridge was widened from 39 ft. to 46 ft. Two fascia stringers were added on both sides of the bridge, two interior stringers were relocated, one interior stringer was added three (3) ft. from the centerline of the bridge and floor beams were extended. Structural steel repairs were made in 2008 where the bottom chord gusset plates were repaired due to section loss at sixteen (16) locations based on yellow flags issued during a Special Inspection. A 20 Ton load posting was added to the bridge on May 15, 2008. Additional structural steel repairs were made in 2011 as a result of further yellow flags that were issued during the 2010 Bridge Inspection. In 2011 a bridge rehabilitation project was conducted to repair deficiencies that had been flagged in a 2010 bridge report. These repairs involved steel plates being bolted to lower chords L05 and L21 (spans 1 and 3 respectively) and steel plates being welded to
lower chords L06 and L20 (spans 1 and 3 respectively). The bridge was closed from January 5, 2012 to the end of March 2012 for the emergency replacement of bearings on the bridge abutment. Most recently, a 15 ton load posting was added to the bridge. Overall the bridge is generally in marginal condition, with a general recommendation of 4. The bridge is approaching the end of its service life.

2.3.3.6.(4) Inspection
BIN 1041590 has a Federal Sufficiency Rating of 66.5 and a State Condition Rating of 3.813 (2013). The General Recommendation for the bridge is listed as 4.

The 2013 Bridge Inspection Report is included in Appendix D, and a summary of the Report regarding condition is as follows:

The wingwalls and abutment backwalls are rated 4 (minor to serious deterioration). The primary and secondary members, as well as the overall superstructure are rated 3 (serious deterioration). The fascias are rated 3 due to the extensive amount of spalling and cracking. See Exhibit 2.3.3.6.4 for a table summarizing the 2013 Bridge Inspection report.
<table>
<thead>
<tr>
<th>Overall Ratings</th>
<th>Deck Element</th>
<th>Ratings</th>
<th>Span 1</th>
<th>Span 2</th>
<th>Span 3</th>
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</thead>
<tbody>
<tr>
<td>State Condition Rating</td>
<td>Wearing Surface</td>
<td>5</td>
<td>5</td>
<td>5</td>
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</tr>
<tr>
<td>Federal Sufficiency Rating</td>
<td>Curbs</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>General Recommendation</td>
<td>Sidewalk, Fascias</td>
<td>3</td>
<td>3</td>
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</table>

**Abutment**

<table>
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<tr>
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<tbody>
<tr>
<td>Joint with Deck</td>
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<td>Scuppers</td>
</tr>
<tr>
<td>Bearing, Bolts, Pads</td>
<td>7</td>
<td>Gratings</td>
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<tr>
<td>Seats and Pedestals</td>
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<td>Median</td>
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<tr>
<td>Backwall</td>
<td>5</td>
<td>Mono Deck Surface</td>
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**Stem (Breastwall)**

<table>
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<tr>
<th>Begin Ratings</th>
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<tbody>
<tr>
<td>Erosion or Scour</td>
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<td>Structural Deck</td>
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<tr>
<td>Footing</td>
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<td>Primary Members</td>
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<td>Piles</td>
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<td>Secondary Members</td>
</tr>
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<td>Recommendation</td>
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<td>Paint</td>
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**Wingwall**

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<tr>
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<td>Pier</td>
</tr>
<tr>
<td>Erosion or Scour</td>
<td>5</td>
<td>Bearings, Bolts, Pads</td>
</tr>
<tr>
<td>Piles</td>
<td>8</td>
<td>Pedestals</td>
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**Channel**

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<td>Stream Alignment</td>
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<td>Stem Solid Pier</td>
</tr>
<tr>
<td>Erosion and Scour</td>
<td>6</td>
<td>Cap Beam</td>
</tr>
<tr>
<td>Water Opening</td>
<td>7</td>
<td>Pier Columns</td>
</tr>
<tr>
<td>Bank Protection</td>
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<td>Footing</td>
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**Approach**

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<td>Drainage</td>
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<tr>
<td>Embankment</td>
<td>6</td>
<td>Recommendations</td>
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**Settlement**

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<tr>
<th>Begin Ratings</th>
<th>End Ratings</th>
<th>Deck Element</th>
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</thead>
<tbody>
<tr>
<td>Erosion</td>
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<td>Lighting</td>
</tr>
<tr>
<td>Pavement</td>
<td>5</td>
<td>Sign Structure</td>
</tr>
<tr>
<td>Guide Railing</td>
<td>6</td>
<td>Utilities and Support</td>
</tr>
</tbody>
</table>

**Note:**

(1) The following is the general rating scale for bridge inspections:

1 – Totally deteriorated or failed condition. 3 – Serious deterioration, or not functioning as originally designed. 5 – Minor deterioration, but functioning as originally designed. 7 – New condition. No deterioration. 8 – Not applicable. 9 – Condition and/or existence unknown.

Six yellow flags were issued from the 2013 inspection and a summary of them is listed below.

1. Flag 56130031 was issued for a possible misalignment of the lower truss chord in Span 3 on the left truss at panel point L25.

2. Flag 56130032 was issued for section loss on Left Truss Gusset or Connection Plates at connection to the bottom chord, diagonal or vertical members in all three spans.
3. Flag 56130033 was issued for section loss on Left Truss Gusset Plates at connection to top chord (U26, Span 3) or vertical members (L18, Span 2 and L26, Span 3).
4. Flag 56130034 was issued for section loss on Right Truss Gusset or Connection Plates at connection to the bottom chord, top chord, diagonal or vertical members in all three spans.
5. Flag 56130035 was issued for section loss on Right Truss Gusset Plates at connection to the vertical members in Spans 2 and 3.
6. Flag 56130036 was issued for frozen rocker bearings at Pier 2 and restricted thermal expansion at the end abutment.

2.3.3.6.(5) Restrictions
There is currently a 15 Ton Weight Limit restriction on the bridge with signs posted at both approaches.

2.3.3.6.(6) Future Conditions
The work required to correct the existing structural deficiencies is beyond the scope of normal maintenance procedures. According to the 2012 Level One Load Rating, the Operating level of the bridge is 15 tons. Postponing work on this bridge will result in the continued deterioration of the structure which will lead to further weight limit postings of the structure.

2.3.3.6.(7) Waterway
The waterway is non-navigable per Coast Guard Standards. A Coast Guard Jurisdiction Checklist/Section 9 Permit is not required. Cattaraugus Creek is a state-regulated navigable waterway in the project area.

2.3.3.7. Hydraulics of Bridges and Culverts
The proposed bridge replacement project will not change the flow or configuration of Cattaraugus Creek. However, should any piers fall within the floodway of the creek, a hydraulic analysis will be completed to confirm that the flow characteristics remain unchanged. The base flood elevation at this structure is 1105 ft.

2.3.3.8. Guide Railing, Median Barriers and Impact Attenuators
Box beam guide railing is currently located along both approaches to the bridge where it transitions into two-rail bridge railing. The existing bridge railing is outdated and approaching the end of its service life. The box beam guide railing on both approaches to the bridge is in fair condition.

<table>
<thead>
<tr>
<th>Type</th>
<th>Location/Side</th>
<th>Length</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box Beam Guide Railing</td>
<td>NW approach</td>
<td>285</td>
<td>Fair</td>
</tr>
<tr>
<td>Box Beam Guide Railing</td>
<td>NE approach</td>
<td>350</td>
<td>Fair</td>
</tr>
<tr>
<td>Box Beam Guide Railing</td>
<td>SW approach</td>
<td>165</td>
<td>Fair</td>
</tr>
<tr>
<td>Box Beam Guide Railing</td>
<td>SE approach</td>
<td>600</td>
<td>Fair</td>
</tr>
<tr>
<td>Two-Rail Bridge Rail</td>
<td>E &amp; W on bridge</td>
<td>1315</td>
<td>Outdated and worn</td>
</tr>
</tbody>
</table>

2.3.3.9. Utilities
Continuity of all utility services will be maintained throughout the project’s construction duration. The following utilities have been identified within the project area based on a UFPO design ticket submitted to DigSafelyNY and contacted:

National Fuel Gas – Natural Gas, no conflict found
National Grid – Electric, no conflict
Village of Springville – Water Line, no conflict found
Village of Springville – Electric, last pole on west side of S. Cascade Drive might be in conflict with one of the potential detours. Relocation / removal may be necessary.
Verizon – Telecommunication, Temporary Relocation of fiber optic cable required
There is one existing public utility within the project limits, Village of Springville Electric Systems. The utility owner has indicated that this pole is not needed and can be removed. The utility owner indicated they will remove the pole prior to the beginning of construction.

Private utilities include fiber optic cable. The existing 3.5 inch conduit runs along the west side of BIN 1041590 and will likely need to be permanently relocated to the new bridge. The same line runs beneath the west shoulder of S. Cascade Drive where there may be a temporary intersection installed as part of a detour. The utility is deep enough in the pavement that it will not be affected by a small mill and overlay needed for a temporary intersection. Coordination with the private utility companies is necessary to ensure there are no conflicts during construction.

<table>
<thead>
<tr>
<th>Owner</th>
<th>Type</th>
<th>Location/Side</th>
<th>Length</th>
<th>Condition/Conflict</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Fuel</td>
<td>Gas Main</td>
<td>N/A</td>
<td>N/A</td>
<td>No utility conflict</td>
</tr>
<tr>
<td>National Grid</td>
<td>Overhead Electric Line</td>
<td>N/A</td>
<td>N/A</td>
<td>No utility conflict</td>
</tr>
<tr>
<td>Verizon</td>
<td>Fiber Optic</td>
<td>West Side</td>
<td>650 ft</td>
<td>Utility is connected to bridge, major conflict exists</td>
</tr>
<tr>
<td>Village of Springville</td>
<td>Overhead Electric Line</td>
<td>North Side / West</td>
<td></td>
<td>Utility pole may be in conflict with temporary ramp associated with possible detour; owner indicated pole can be permanently removed.</td>
</tr>
<tr>
<td>Village of Springville</td>
<td>Water Line</td>
<td>N/A</td>
<td>N/A</td>
<td>No utility conflict</td>
</tr>
</tbody>
</table>

2.3.4. Potential Enhancement Opportunities
The adjacent US 219 expressway bridges are considered aesthetic structures. This bridge will not attempt to compete with the primary bridges aesthetically.

2.3.4.1. Landscape

2.3.4.1. (1) Terrain
The existing area is rural in character. Views of Cattaraugus Creek and the steep, surrounding gorge area are readily visible.

2.3.4.1. (2) Unusual Weather Conditions
There are no unusual weather conditions within the project area.

2.3.4.1. (3) Visual Resources
The new US Route 219 Expressway Twin Arch Bridges (BINs 1078061 and 1078062) built in 2010 are immediately seen above and just to the east of the bridge. A wooded area exists to the southeast side of the bridge.

2.3.4.2. Opportunities for Environmental Enhancements
There are no practical opportunities for environmental enhancements in the project limits.

2.3.5. Miscellaneous
The use of the gorge will not be permanently impacted by the proposed action.
CHAPTER 3 – ALTERNATIVES

This chapter discusses the alternatives considered and examines the engineering aspects for all feasible alternatives to address project objectives in Chapter 1 of this report.

3.1. Alternatives Considered and Eliminated from Further Study

**Alternative #1 – Null Alternative – Routine Maintenance of Structure**

The null alternative will result in the continued deterioration of the structure, resulting in increased maintenance and eventually requiring the structure to be closed to traffic. This alternative will not satisfy the project objective or the programming goal and therefore will not be considered further.

**Alternative 3 – Bridge Rehabilitation**

This alternative would perform a major rehabilitation of the existing structure. As noted in Section 1.2.2, the bridge has deteriorated over the years requiring repairs that are more extensive. The life expectancy of a major rehabilitation of the bridge is expected to only be 10 to 12 years. However due to the complexity of the truss superstructure and ongoing crevice corrosion in the truss chord to gusset plate connections, NYSDOT expects that additional steel repairs to the deck trusses will be required within 4 to 6 years. The estimated construction cost to rehabilitate this structure is $7.0M.

In 2011, bridge rehabilitation plans were developed to address bridge deterioration and deficiencies, and to achieve two objectives:

1. Restore the bridge condition rating to 5, or greater, for at least 10 years using cost effective techniques to minimize the life cycle cost of maintenance and repair.
2. Correct safety deficiencies using cost effective accident reduction measures such that accident reduction benefits equal or exceed project costs attributable to safety work.

These project objectives were used to develop plans and specifications for Contract D261942, where the proposed work consisted of replacing the concrete bridge deck fascia, bridge rail, joints, approach slabs and bridge bearing restoration (cleaning and lubricating); repairs of structural steel members; bridge painting, and minor concrete substructure repairs.

On March 22, 2012 Contract D261942 was let. The NYSDOT Engineer’s Estimate was $3.5 million and the low bid received was for $6 million, 71% higher than the Engineer’s Estimate. In April 2012 the NYSDOT Statewide Structures Management Team was asked to re-evaluate the feasible repair options available to address all the issues with the bridge. The team reviewed a number of factors such as:

- the cost to paint the bridge, and the required successive repainting necessary every 12 to 15 years;
- Additional structural steel repairs necessary to stop and repair ongoing crevice corrosion in the truss chord to gusset plate connections, and at the deck, railing, and finger joints;
- Address concrete fascia spalling, and embankment sloughing;
- Stabilizing and repairing the frozen North Pier bearing, a condition which needed to be repaired immediately.

Based on the Structures Management Team re-evaluation of project D2621942 bids and feasible repair options, the Structures Management Team recommended the full replacement of the bridge within five years and Contract D261942 was withdrawn. The decision was made to replace BIN 1041590 with a new bridge.

Due to the continued need for anticipated steel repairs and painting cycle every 10 to 12 years, this alternative will not satisfy the objectives set forth herein this project and has been eliminated from further study and therefore will not be considered further.
Alternative 4 – Removal of Bridge and Utilize Alternate Routes
The alternative would include the complete removal of the existing structure and redirecting traffic to one of three alternate routes, designated as Alternatives 4A, 4B, and 4C, to cross Cattaraugus Creek.

Three alternate routes were evaluated for this alternative:

- **Alternative 4A – Scoby Hill Road:** This alternative would utilize the existing Scoby Hill Road between South Cascade Drive and Cattaraugus Creek, construct a new bridge across Cattaraugus Creek, and utilize the existing Scoby Road and Henrietta Road to connect back to Miller Road. The estimated cost is $6.4 million, which includes demolition of the existing South Cascade Drive / Miller Road bridge, a new bridge across Cattaraugus Creek between Scoby Rd and Scoby Hill Rd, and reconstruction / rehabilitation along the alternate route.

  Alternative 4A was removed from consideration for several reasons. First, the route is circuitous and would add approximately 1.7 miles of travel distance for through traffic, pedestrians and bicyclists, including 0.75 mile in the opposite direction of through travel along Scoby Hill Road. The route also utilizes local roads that do not have the same character or cross section as South Cascade Drive / Miller Road through the project limits, including sharp curves, steep grades and little to no paved shoulders. Scoby Rd in particular is currently little more than a paved driveway. Full reconstruction would likely be required along the majority of the route. Even if reconstructed, much of the route is very rural in nature and would not be suitable to handle trucks and other heavy vehicles that are currently accommodated on South Cascade Drive / Miller Road. This alternative does not meet Project Objective 2 as described in Section 1.2.3.

- **Alternative 4B – Mill Street / Edies Road:** This alternative would utilize Route 39 through the Village of Springville, Mill Street / Edies Road, and Schwartz Road to connect back to Miller Road. Cattaraugus Creek would be crossed at Mill Street / Edies Road via BIN 3328370. The estimated cost is $5.9 million, which includes demolition of the existing South Cascade Drive / Miller Road Bridge and rehabilitation along the route, but does not include any work at BIN 3328370.

  Alternative 4B was removed from consideration due to several factors. This route would add approximately 2.9 miles of travel distance for traffic, including pedestrians and bicyclists between Schwartz Road and Route 39 (2.8 miles along South Cascade Drive versus 5.7 miles along the alternative route). Mill Street and Edies Road do not have the same character or cross section as Cascade Drive / Miller Road through the project area. These local roads have sharp curves and steep grades (particularly near the crossing of Cattaraugus Creek) and little to no paved shoulders in some areas. Widening and other highway improvements would likely be required along the route. BIN 3328370 currently has weight restrictions and recent inspection data indicates that this bridge has deteriorated to the point where replacement should be considered. Another significant factor is the opposition of local officials to having additional traffic, particularly heavy vehicles, along Mill Street and Route 39 through the Village of Springville. This alternative does not meet Project Objective 2 as described in Section 1.2.3.

- **Alternative 4C – US Route 219:** This alternative would re-route traffic to the US Route 219 expressway between Peters Road and Route 39. Northbound traffic on Miller Rd would use Peters Rd to access Route 219, and Cascade Drive traffic would use Route 39 to Route 219. The estimated cost of this alternative is $1.9M which includes demolition of the existing South Cascade Drive / Miller Road Bridge.

  Alternative 4C was removed from consideration because it does not meet the project objectives – primarily Project Objective #2 as described in Section 1.2.3. Although the infrastructure is in place along US Route 219 to handle vehicular traffic detoured from Miller Rd / Cascade Drive, this alternative would not accommodate pedestrians, bicyclists and other users that would be excluded from using the Route 219 expressway. It also would sever the connection that BIN 1041590 currently provides between the businesses along S. Cascade Drive and Cattaraugus County.
3.2. Feasible Build Alternatives

3.2.1. Description of Feasible Alternative(s)

Alternative 2 – Bridge Replacement: This alternative consists of replacing the existing bridge structure within the previously disturbed area and ROW. Key elements of this alternative include:

Geometry:
- Providing design standard minimums for a design speed of at least 60 mph.
- Providing two 12'-0" travel lanes and two 8'-0" shoulders

Operational:
- This alternative does not affect operations.

Control of Access:
- This alternative does not affect the control of access.

Right of Way:
- This alternative can be built without the acquisition of ROW.

Environmental:
- Only minor wetland impacts, if any, would be expected during construction. An evaluation should be performed during Final Design. It is not anticipated that mitigation will be required.
- Meets bridge type restrictions provided by NYS Historic Preservation Office (SHPO)
- There are no other significant environmental impacts.

Cost:
- Total estimated project construction cost of this alternative is: $17.6 M

Project Goals:
- The design meets the project objective for this project.

The structure replacement alternative would include the complete removal of the existing structurally deficient structure and construction of a new bridge on the same horizontal and vertical alignments with minor approach roadway work. The approach roadway work would include 100’ of pavement reconstruction and 100’ of milling and overlaying on each side of the bridge, as well as guide rail replacement. Structure replacement would eliminate the existing structurally deficient bridge and provide a non-posted structure for at least 75 years. The replacement bridge will be required to provide two 12'-0” travel lanes with two 8'-0” shoulders and five-rail galvanized steel bridge railing.

The proposed structure could be a steel or concrete bridge. However, the following bridge types are prohibited: thru or deck arches, thru or deck trusses, cable-stayed or suspension systems. The bridge type restrictions are necessary to concur with NYS Historic Preservation Office (SHPO) requirements. The final selection will occur in the Final Design phase.

For reference purposes, only two conceptual bridge plans, elevations and sections have been included in Appendix A. A construction cost of $17.6 M has been developed to provide a rough estimate for replacing this structure. However, the actual cost will depend on the final design selected.
Exhibit 3.2.1
Summary of Project Costs – Million Dollars (2014-2016)

<table>
<thead>
<tr>
<th>Activities</th>
<th>Alternative 2 – Bridge Replacement Design-Build (DB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Costs (^2)</td>
<td>Bridge $14.160</td>
</tr>
<tr>
<td></td>
<td>Highway $0.130</td>
</tr>
<tr>
<td>Subtotal ($)</td>
<td>$14.290</td>
</tr>
<tr>
<td>Detour Cost</td>
<td>$0.795</td>
</tr>
<tr>
<td>Subtotal ($)</td>
<td>$15.085</td>
</tr>
<tr>
<td>Contingency (^3) (12% @ Design Approval)</td>
<td>$1.810</td>
</tr>
<tr>
<td>Subtotal ($)</td>
<td>$16.895</td>
</tr>
<tr>
<td>Field Change Payment</td>
<td>(Per HDM Section 21.4.3.3 &amp; Table 21-8) N/A</td>
</tr>
<tr>
<td>Subtotal ($)</td>
<td>$16.895</td>
</tr>
<tr>
<td>Mobilization (4%)</td>
<td>$0.676</td>
</tr>
<tr>
<td>Subtotal ($) – Construction Cost</td>
<td>$17.571</td>
</tr>
<tr>
<td>Final Design (7%)</td>
<td>N/A</td>
</tr>
<tr>
<td>Construction Inspection Costs (8%)</td>
<td>N/A</td>
</tr>
<tr>
<td>Inflation (3%/yr x 1yr)</td>
<td>N/A</td>
</tr>
<tr>
<td>Miscellaneous Costs</td>
<td>$5.271</td>
</tr>
<tr>
<td><strong>Total Project Costs</strong></td>
<td><strong>$22.842</strong></td>
</tr>
</tbody>
</table>

Notes:
1. The costs provided reflect the estimated project cost considering a steel multi-girder bridge with composite concrete deck.
2. Assumptions at time of Draft Design Report:
   - Permitting requirements will not require a temporary construction access bridge across Cattaraugus Creek.
   - Controlled demolition of existing bridge steel superstructure will be permitted into gorge and creek
3. NYSDOT recommends standard contingencies: 25% Scoping Stage, 15% Design Approval Stage, 5% Advanced Detail Stage. A contingency of 12%, which also includes incidentals, was used for this report.

3.2.2. Preferred Alternative(s)

Alternatives 2 – Bridge Replacement is identified as the preferred alternative. The type of bridge will be determined in Final Design. It will be a steel of concrete multiple span bridge. However, the following bridge types are prohibited: thru or deck arches, thru or deck trusses, cable-stayed or suspension systems. The bridge type restrictions are necessary to concur with NYS Historic Preservation Office (SHPO) requirements.

3.2.3. Design Criteria for Feasible Alternative(s)

3.2.3.1. Design Standards -
This project will be designed according to AASHTO LRFD Bridge Design Specifications, 6\(^{th}\) Edition, with 2013 Interim Revisions and with June 2012 Errata incorporated; NYSDOT Highway Design Manual Ch. 2, Rev. 76; and, NYSDOT Bridge Manual, April 2014, Addendum #3.
### 3.2.3.2 Critical Design Elements

#### Exhibit 3.2.3.2

**Critical Design Elements for South Cascade Drive / Miller Road over Cattaraugus Creek**

**BIN 1041590**

<table>
<thead>
<tr>
<th>PIN:</th>
<th>5101.82</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHS (Y/N):</td>
<td>No (Refer to Section 2.2.2.1)</td>
</tr>
<tr>
<td>Route No. &amp; Name:</td>
<td>South Cascade Drive / Miller Road (formerly US Route 219)</td>
</tr>
<tr>
<td>Functional Classification:</td>
<td>Rural Major Collector (Refer to Section 2.2.2.1)</td>
</tr>
<tr>
<td>Project Type:</td>
<td>Bridge Replacement</td>
</tr>
<tr>
<td>Design Classification:</td>
<td>Rural Collector</td>
</tr>
<tr>
<td>% Trucks:</td>
<td>8%</td>
</tr>
<tr>
<td>Terrain:</td>
<td>Rolling</td>
</tr>
<tr>
<td>ADT:</td>
<td>6083</td>
</tr>
</tbody>
</table>

#### Critical Design Elements

**Element** | **Standard** | **Existing Condition** | **Proposed Condition** |
--- | --- | --- | --- |
1 | Design Speed | 60 mph¹ | 55 mph posted¹ | 60 mph³ |
2 | Lane Width | 12 ft. | 12 ft. | 12 ft. |
| Approach Lane Width | 12 ft. | 12 ft. | 12 ft. |
3 | Shoulder Width | 8 ft. | 9.5 ft. | 8 ft. |
| Approach Shoulder Width | 8 ft. | 8 ft. | 8 ft. |
4 | Bridge Roadway Width | Full approach width of highway section, min. 8 ft. left shoulder + 2 – 12 ft. lanes + 8 ft. right shoulder = 40ft. (BM 2.3.1, Table N & HDM 2.7.3.1.D) | 43 ft. | 40 ft. |
| Approach Roadway Width | 40 ft. | 40 ft. | 40 ft. |
5 | Maximum Grade | 6% (Rolling Terrain) | 2.1% | 2.1% |
| HDM Section 2.7.3.1.E, Exhibit 2-5 | | | |
6 | Horizontal Curvature | 1200 ft. (@ e=8%) | Tangent | Tangent |
| HDM Section 2.7.3.1.F, Exhibit 2-5 | | | |
7 | Superelevation | 8% Maximum | Normal Crown | Normal Crown |
| HDM Section 2.7.3.1.G | | | |
8 | Stopping Sight Distance | 570 ft. Minimum | 689 ft. | 689 ft. |
| HDM Section 2.7.3.1.H, Exhibit 2-5 | | | |
9 | Horizontal Clearance | 10 ft. without barrier; With barrier, larger of 4 ft. or shoulder width | 9.5 ft. | 8 ft (with barrier). |
| HDM Section 2.7.3.1.I | | | |
10 | Vertical Clearance (above traveled way) | 14 ft. Minimum, 14.5 ft. Desirable | 14.5 ft. Min. (unlimited) | 14.5 ft. Min. (unlimited) |
| HDM Section 2.7.3.1.J; BM Section 2.4 | | | |
11 | Travel Lane Cross Slope | 1.5% Min. to 2% Max. | 2% | 2% |
| HDM Section 2.7.3.1.K | | | |
12 | Rollover | 4% between travel lanes; 8% at edge of traveled way | 4% between lanes; 8% at EOT | 4% between lanes; 8% at EOT |
| HDM Section 2.7.3.1.L | | | |
13 | Structural Capacity | NYS DOT LRFD Specifications AASHTO HL-93 Live Load and NYS DOT Design Permit Vehicle | 15 tons (Posted) | AASHTO HL-93 Live Load and NYS DOT Design Permit Vehicle |
| BM Section 2.6.1 | | | |
16 | Pedestrian Accommodation | Complies with HDM Chapter 18 | 9.5 ft. bridge shoulder | Complies with HDM Chapter 18 |
| HDM Section 2.7.3.1.N | | | |
17 | Median Width | NOT APPLICABLE | N/A | N/A |

¹ The Regional Traffic Engineer has concurred that the use of a Design Speed of 60 mph is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume.
3.2.3.3. Other Design Parameters

<table>
<thead>
<tr>
<th>Element</th>
<th>Standard Criteria</th>
<th>Existing Condition</th>
<th>Proposed Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Service</td>
<td>&quot;D&quot; Min.; &quot;C&quot; Desirable</td>
<td>&quot;B&quot; Min.</td>
<td>“B” Min.</td>
</tr>
<tr>
<td>Freeboard</td>
<td>$Q_{50} + 2$ ft</td>
<td>$Q_{50} + 2$ ft Min.</td>
<td>$Q_{50} + 2$ ft Min.</td>
</tr>
<tr>
<td>Design Vehicle</td>
<td>WB-50</td>
<td>WB-50</td>
<td>WB-50</td>
</tr>
</tbody>
</table>

3.3. Engineering Considerations

3.3.1. Operations (Traffic and Safety) & Maintenance

3.3.1.1. Functional Classification and National Highway System

This project will not change the functional classification of the highway.

3.3.1.2. Control of Access

There is no control of access within the project limits.

3.3.1.3. Traffic Control Devices

3.3.1.3. (1) Traffic Signals

No new traffic signals are proposed.

3.3.1.3. (2) Signs

Existing signs will be evaluated and replaced as necessary.

3.3.1.4. Intelligent Transportation Systems (ITS)

No ITS measures are proposed.

3.3.1.5. Speeds and Delay

3.3.1.5. (1) Proposed Speed Limit - The existing posted speed limit of 55 mph will be retained upon completion of the project.

3.3.1.5. (2) Travel Time Estimates – Travel time estimates are not applicable for a bridge replacement.

3.3.1.6. Traffic Volumes

Changes in traffic volumes (in addition to projected background traffic growth of 0.5% per year) are not anticipated as a result of this project. Refer to Section 2.3.1.6 of this report for existing and future design year traffic volumes.

3.3.1.7. Level of Service and Mobility

3.3.1.7 (1) – At Project Completion & Design Year – Changes in Level of Service are not anticipated as a result of this project. Refer to Section 2.3.1.7 of this report for existing and projected future design year Level of Service.

3.3.1.7 (2) – Work Zone Safety & Mobility

A. Work Zone Traffic Control Plan – The bridge replacement will be completed using full closure of the roadway. South Cascade Drive will be closed between Scoby Hill Rd and the bridge, and Miller Rd will be closed between Schwartz Rd and the bridge. Pedestrian and bicycle traffic would also not be maintained between Schwartz Rd and Scoby Hill Rd during the period of bridge replacement.

The Region has examined the option of detouring traffic around the project site. Possible detour routes were evaluated and discussed with local officials. Detour routes through the Village of Springville, such
as Edies Rd (CR 12) and Mill St (CR 82) to NYS Route 39, were determined to be not desirable due to the possible traffic and safety related impacts within the village.

The preferred method of detouring traffic uses the US Route 219 expressway and BINs 1078061 and 1078062 to cross Cattaraugus Creek. Two-way expressway traffic (one lane in each direction separated with temporary concrete barrier) would be maintained along the southbound portion of US 219, and temporary crossovers would be constructed on US 219 near Peters Road and north of Cascade Drive in order for northbound expressway traffic to cross to and from the southbound side.

Two-way local traffic (one lane in each direction) would be maintained along the northbound portion of US 219 between Schwartz Road and Cascade Drive. Temporary ramps would be constructed at Schwartz Road and Cascade Drive to allow local traffic to enter and exit the expressway. Pedestrian and bicycle traffic would be maintained on the shoulders along the local traffic detour route. The additional distance for local traffic to travel along the detour route is approximately 0.25 mile. This detour shall be designed for at least a design vehicle SU-30. This detour route has been conceptually analyzed (refer to plans in Appendix A), and will be analyzed further during final design.

All legal sized vehicles larger than the SU-30, including tractor trailers (WB-67), shall be accommodated along a separate signed truck detour (most likely utilizing US Route 219 expressway from Peters Road to NY Route 39).

B. Special Provisions – The use of time related provisions will be evaluated during final design in order to minimize the duration of construction.

C. Significant Projects (per 23 CFR 630.1010) – the Region has determined that the subject project is not significant per 23 CFR 630.1010.

A Transportation Management Plan (TMP) will be prepared for the project consistent with 23 CFR 630.1012. The TMP will consist of a Temporary Traffic Control (TTC) plan. Transportation Operations (TO) and Public Information (PI) components of a TMP will be considered during final design.

3.3.1.8. Safety Considerations, Accident History and Analysis
No changes are proposed.

3.3.1.9. Impacts on Police, Fire Protection and Ambulance Access
During construction, emergency vehicles will be detoured using temporary ramps to and from US 219 (see Section 3.3.1.7 (2) A above). The additional distance for emergency vehicles to travel is estimated at 0.25 miles. Coordination with emergency service providers will continue through final design.

3.3.1.10. Parking Regulations and Parking Related Issues
No changes are proposed.

3.3.1.11. Lighting
Lighting is not proposed as part of the project.

3.3.1.12. Ownership and Maintenance Jurisdiction
The ownership and maintenance of the bridge will be determined at a later date.

3.3.1.13. Constructability Review
The project has been reviewed by the Regional Construction Group and concerns have been addressed.
3.3.2. Multimodal

3.3.2.1. Pedestrians
No separate pedestrian facilities are warranted. The occasional pedestrian may legally use the shoulder of this uncontrolled access highway (shoulders of the proposed bridge will be 8 ft wide). A Pedestrian Generator Checklist is included in Appendix C. Pedestrian travel would be maintained along a local traffic detour route utilizing a portion of the Route 219 expressway during construction (refer to Section 3.3.1.7 (2) A above).

3.3.2.2. Bicyclists
No special provisions are proposed to accommodate bicyclists. The occasional bicyclist may legally use the shoulder of this uncontrolled access highway (shoulders on the proposed bridge will be 8 ft wide). Bicycle traffic would be maintained along a local traffic detour route utilizing a portion of the Route 219 expressway during construction (refer to Section 3.3.1.7.(2) A above).

3.3.2.3. Transit
No changes are proposed.

3.3.2.4. Airports, Railroad Stations, and Ports
No changes are proposed; no conflicts are expected.

3.3.2.5. Access to Recreation Areas (Parks, Trails, Waterways, and State Lands)
No changes are proposed.

3.3.3. Infrastructure

3.3.3.1. Proposed Highway Section
The proposed bridge will have one 12 ft travel lane and 8 ft shoulder in each direction. The proposed bridge section matches the approach roadway section.

Refer to Appendix A for a typical section.

3.3.3.1. (1) Right of Way
The existing Right-of-Way width is 160 ft. along the existing bridge. The NYSDOT also owns a permanent easement on the north side of the creek that will allow construction access to the gorge. New acquisitions or releases are not required to perform the work. There are no proposed ROW acquisitions.

3.3.3.1. (2) Curb
Curb will not be provided along the bridge or highway approaches within the project limits.

3.3.3.1. (3) Grades
The proposed maximum grade will not exceed the 5% maximum grade per the design standards. The grade does not warrant a climbing lane.

3.3.3.1. (4) Intersection Geometry and Conditions
There are no intersections within the project limits. The existing geometry at the nearby Miller Rd / Schwartz Rd and South Cascade Drive / Scoby Hill Rd intersections will be retained.

3.3.3.1. (5) Roadside Elements:

(a) Snow Storage, Sidewalks, Utility Strips, Bikeways, Bus Stops – There are no sidewalks, utility strips, bikeways or bus stops present. Snow storage is available along the bridge approaches and along the 8 ft shoulders on the bridge.

(b) Driveways – There are no driveways within the project limits.

(c) Clear Zone – The existing clear zone will be retained.
3.3.3.2. Special Geometric Design Elements

3.3.3.2. (1) Non-Standard Features
No non-standard features will be created or retained as part of the project.

3.3.3.2. (2) Non-Conforming Features
No non-conforming features will be created or retained as part of the project.

3.3.3.3. Pavement and Shoulder
Refer to Appendix A for a typical pavement section. The existing approach highway will be maintained with two (2) 12 ft wide travel lanes, one in each direction. Shoulders on each side will be 8 ft wide.

3.3.3.4. Drainage Systems
The proposed drainage on the bridge will consist of scuppers with downspouts. Existing drainage ditches at the bridge ends will be reconstructed as needed to meet new bridge standards.

3.3.3.5. Geotechnical
No special techniques or considerations are needed.

3.3.3.6. Structures
There is one proposed bridge within the project limits.

3.3.3.6. (1) Description of Work
Work type – Replacement of BIN 1041590, South Cascade Drive / Miller Road over Cattaraugus Creek, and major elements of work:

(a) The proposed structure could be a steel or concrete bridge. However, the following bridge types are prohibited: thru or deck arches, thru or deck trusses, cable-stayed or suspension systems. The bridge type restrictions are necessary to concur with NYS Historic Preservation Office (SHPO) requirements. The final selection will occur in the Final Design phase.

For reference purposes, only two conceptual bridge plans, elevations and sections have been included in Appendix A. A construction cost of $17.6M has been developed to provide a rough estimate for replacing this structure. However, the actual cost will depend on the final design selected.

(b) Width of travel lanes, shoulders, and sidewalks – The proposed bridge will provide two 12'-0" lanes with 8'-0" shoulders and no sidewalks. Refer to the typical section included in Appendix A.

3.3.3.6. (2) Clearances (Horizontal/Vertical)
The proposed horizontal clearance is 8 ft (to face of bridge rail); vertical clearance exceeds the 14 foot minimum standard.

3.3.3.6. (3) Live Load
The proposed bridge would be designed for HL-93 Live Load and the NYSDOT Design Permit Vehicle.

3.3.3.6. (4) Associated Work
The existing bridge structure must be removed in a manner that minimizes the debris, sediment, turbidity and duration that the stream and floodplain are affected. Alternative Technical Concepts (ATC) will need to be considered when determining the most appropriate method for removing the bridge. The ATC will need to be reviewed to ensure that the removal plan results in a permit in accordance with USACE and NYSDEC permit requirements.

3.3.3.6. (5) Waterway
The waterway is non-navigable per Coast Guard Standards. A Coast Guard Jurisdiction Checklist/Section 9 Permit is not required. Cattaraugus Creek is a state-regulated navigable waterway in the project area.
3.3.3.7. Hydraulics of Bridges and Culverts
The proposed bridge replacement project will minimally affect the flow or configuration of Cattaraugus Creek. The base flood elevation at this structure is 1105 ft. Should any piers fall within the floodway of the creek, a hydraulic analysis will be completed during final design to confirm that the flow characteristics remain unchanged.

3.3.3.8. Guide Railing, Median Barriers and Impact Attenuators
All guiderail within the project limits including bridge railing will be designed during the final design phase and will meet NYSDOT design standards in relation to Chapter 10 of the Highway Design Manual. Median barrier is not present within the project limits.

3.3.3.9. Utilities
There is one existing 3½” diameter steel conduit under the southbound side of the existing bridge superstructure owned by Verizon. This same Verizon line runs beneath the west shoulder of S. Cascade Drive. There is also one public utility within the project limits, Village of Springville Electric Systems.

The final disposition of the Verizon conduit on the bridge is to have it temporarily relocated before construction begins. A utility agreement will be negotiated to provide accommodations for Verizon’s needs. The Verizon line located beneath the west side shoulder of S. Cascade Drive will not be affected by the temporary intersection for the potential detour option. Regarding the Village of Springville Electric Systems overhead line, the utility owner has indicated that this pole is not needed and will be removed by the owner prior to the beginning of construction.

3.3.3.10. Railroad Facilities
There are no railroads in the project limits.

3.3.4. Landscape and Environmental Enhancements

3.3.4.1. Landscape Development and Other Aesthetics Improvements
Landscaping and other aesthetic improvements are not proposed as part of the project.

3.3.4.2. Environmental Enhancements
Environmental enhancements are not proposed.

3.3.5. Miscellaneous
The project is currently being advanced by NYSDOT as a design build project. Final design and construction of the bridge will be awarded under a single contract.

NYS Smart Growth Public Infrastructure Policy Act (SGIPPA)
Pursuant to ECL Article 6, this project is compliant with the New York State Smart Growth Public Infrastructure Policy Act (SGIPPA).

To the extent practicable this project has met the relevant criteria as described in ECL § 6-0107 The Smart Growth Screening Tool was used to assess the project’s consistency and alignment with relevant Smart Growth criteria; the tool was completed by the Region’s Planning and Program Management group and reflects the current project scope.

The Smart Growth Screening Tool is included in Appendix E.
CHAPTER 4 – SOCIAL, ECONOMIC and ENVIRONMENTAL CONDITIONS and CONSEQUENCES

4.1 Introduction

4.1.1 Environmental Classification

4.1.1.1 NEPA Classification
The Department has determined that this project, South Cascade Drive/Miller Road bridge over Cattaraugus Creek, is a Class II action (Categorical Exclusion) because it does not individually or cumulatively have a significant environmental impact and is excluded from the requirement to prepare an Environmental Impact Statement (EIS) or an Environmental Assessment (EA), as documented in the Federal Environmental Approvals Worksheet (FEAW) and the following discussions in this Chapter. Specifically, in accordance with the Federal Highway Administration’s regulations 23CFR 771.117(d) this project meets the project description of the ‘D’ list as primarily a repair/reconstruction of an existing bridge in the same location with no additional capacity (no added thru lanes) and does not significantly impact the environment.

The FEA is included in Appendix B1 and the Environmental Compliance Checklist is included in Appendix B3. Additional information to document the relevant issues is included in this Chapter.

4.1.1.2 SEQR Classification
The Department has determined that this project is a SEQR Non-Type II Action in accordance with 17 NYCRR Part 15 - Procedures for Implementation of State Environmental Quality Review Act. SEQR Non-Type II projects include actions for which the environmental impacts are not clearly established and require an Environmental Assessment (EA). The project is being progressed as SEQR Non-Type II (EA) because the South Cascade Drive/Miller Road bridge over Cattaraugus Creek has been determined to be National Register Eligible. Under 17 NYCRR Part 15.14(d) (6), a Type II action has “no effect on any district, site, structure or object that is listed, or may be eligible for listing, on the National Register of Historic Places.” This project, with its potential effects to the bridge, does not meet the Type II criteria, and is therefore classified as a Non-Type II (EA) project.

4.1.2 - Permits, Certifications and Approvals
- This project requires a permit from the US Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act for work in the waters of the U.S. (Cattaraugus Creek) below the ordinary high water mark. A Preconstruction Notification requesting authorization under Nationwide Permit #3, Maintenance (NWP-3) will be submitted to USACE.

- Under the provisions of Section 401 of the Clean Water Act, a State Water Quality Certification (WQC) is required. An application for Individual WQC will be submitted to the New York State Department of Environmental Conservation (NYSDEC) for activities authorized by NWP-3 to be sure that project activities comply with applicable New York State water quality standards.

- Since an area larger than one acre is expected to be disturbed during construction, coverage under the NYSDEC SPDES General Permit for Construction Activity will be required. In that case, a Storm Water Pollution Prevention Plan (SWPPP) which addresses erosion and sediment control during construction will be required. In addition, permanent water quality and water quantity measures may be required.

Level II Historic American Engineering Record (HAER) photo documentation of the existing bridge will need to be completed along with a written history and description of the bridge for NYSHPO (for forwarding to the New York State Education Department archives in Albany), the Buffalo and Erie County Historical Society, and the Buffalo and Erie County Library prior to bridge demolition.
4.2 Social

There are no significant adverse social effects expected from this project. Bridge closure during construction will result in a detour which will cause minor delays for drivers and other road users. This impact will only be temporary.

4.3 Economic

There are no significant adverse economic effects expected from this project.

4.4 Environmental

4.4.1 Wetlands

4.4.1.1 State Freshwater Wetlands

There are no NYSDEC regulated freshwater wetlands or regulated adjacent areas (100ft) within the project area, as per the NYSDEC Freshwater Wetlands Maps. A site visit was performed to verify this. No further investigation is required and Environmental Conservation Law, Article 24 is satisfied.

4.4.1.2 Federal Jurisdiction Wetlands

The project site has been reviewed for wetlands in accordance with the criteria defined in the 1987 US Army Corps of Engineers Wetland Delineation Manual. It has been determined the project will not impact areas that meet this criteria.

4.4.1.3 Executive Order 11990

Based on a site visit, there are no wetlands located within the project’s area of potential effect. Executive Order 11990 does not apply to this project.

4.4.2 Surface Waterbodies and Watercourses

4.4.2.1 Surface Waters

The project activities may require temporary fills in Waters of the U.S. for installation of a Bailey bridge to facilitate construction on the south side of Cattaraugus Creek. If needed, it is anticipated that this work could be authorized under the U.S. Army Corps of Engineers (USACE) Section 404 Nationwide Permit #3, Maintenance (NWP-3). Installation of rip rap and removal of accumulated sediment in the vicinity of the structure would require submission of a pre-construction notification (PCN) to the USACE and receive authorization prior to undertaking the proposed activities. Required permits will be obtained once the location and the extent of the impacts are ascertained. Work will not commence until the permit(s) are acquired and will adhere to any conditions set forth by the permit requirements.

A Blanket Section 401 Water Quality Certification (WQC) does not apply to this project; therefore, an individual WQC will need to be obtained from NYSDEC to meet the requirements of NWP-3, including all regional and NYSDEC special conditions.

4.4.2.2 Surface Water Classification and Standards

Based upon a review of the NYSDEC GIS data maps for regulated streams, there is one regulated stream, Cattaraugus Creek, within the project limits. The stream is rated Class B and is not a 303(d) segment.

The best usages for Class/Standard “B” waters are for primary and secondary contact recreation and fishing. The water quality is suitable for fish propagation and survival.
4.4.2.3 Stream Bed and Bank Protection
Based upon a review of the NYSDEC GIS database, and as verified by a site visit, there is a protected stream, Cattaraugus Creek, in the proposed project area.

The NYSDEC’s web-based Environmental Mapper indicates that Cattaraugus Creek is designated as Class B, Standard B Surface Waters as defined by 6 NYCRR 701 of the Water Quality Regulations. Coordination with NYSDEC will continue pursuant to 1997 “DEC/DOT MOU Regarding ECL Articles 15 and 24” regarding proposed disturbance to the bed and banks of a Class B protected stream.

4.4.3 Wild, Scenic, and Recreational Rivers
Cattaraugus Creek within the project limits is a designated River in the Nationwide Rivers Inventory of Wild and Scenic and Recreational Rivers and is protected under Presidential Directive dated August 2, 1979. In accordance with the directive the proposed action will not:

- Affect the Inventory River (Cattaraugus Creek) to such a degree as to require an Environmental Impact Study under NEPA;
- Obstruct the free flow or changing the River to any degree that would have an adverse effect; or deterioration of water quality; or transfer or sale of property adjacent to the River (Cattaraugus Creek) without adequate conditions and Restriction for the protection of the River (Cattaraugus Creek) and the surrounding environment;
- Adversely affect the natural, cultural and recreational values of the Inventory river segment to such a degree as to declassify the River (Cattaraugus Creek) as a Wild and Scenic and Recreational River.

As part of the project, NYSDOT will ensure that all avoidance and minimization actions have been undertaken to the maximum extent reasonable. Therefore, based on the thresholds outlined in the Federal Environmental Approval Worksheet and the 1979 Directive, NYSDOT has determined the proposed project will not adversely affect, alter or preclude the values of the designated study or Inventory River or adversely affect the Nationwide Rivers Inventory or Cattaraugus Creek.

4.4.4 Navigable Waters

4.4.4.1 State Regulated Waters
Cattaraugus Creek is a state-regulated navigable waterway within the project area. The waterway is used for recreational transport both above and below the Scoby Dam (located approximately 3,400 feet downstream from the project site). The project work under Alternative 2 may require placement of fill in these waters; however, this would not affect navigability of the waters. A temporary obstruction to navigation may occur during construction under all the build alternatives if the installation of a Bailey bridge occurred.

Coordination with NYSDEC will continue pursuant to 1997 “DEC/DOT MOU Regarding ECL Articles 15 and 24” regarding the excavation or placement of fill in navigable waters.

4.4.4.2 Rivers and Harbors Act – Section 9
Since the project does not involve the construction or modification of any bridge, dam, dike, or causeway over any navigable water of the United States, Section 9 is not applicable.

4.4.4.3 Rivers and Harbors Act – Section 10
Since the project does not involve the creation of any obstruction to the navigable capacity of any of the waters of the United States, or in any manner alter or modify the course, location, condition, or capacity of any navigable water of the United States, Section 10 is not applicable.
4.4.5 Floodplains

4.4.5.1 State Flood Insurance Compliance Program

The proposed project, in some locations, is within the 100 year floodplain of the Cattaraugus Creek, as indicated by FEMA on the GIS data base. In accordance with the provisions of 6 NYCRR 502 - Flood Plain Management for State Projects, this action has considered and evaluated the practicality of alternatives to any floodplain encroachments. As a result of this evaluation, it is concluded that: (1) a significant encroachment does not exist, (2) there is no significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles, and (3) there are no significant impacts on natural beneficial floodplain values.

The proposed bridge replacement will minimally affect the flow or configuration of Cattaraugus Creek. The base flood elevation at this structure is 1105 ft. Should any piers fall within the floodway of the creek, a hydraulic analysis will be completed during final design to confirm that the flow characteristics remain unchanged.

4.4.5.2 Executive Order 11988

New concrete abutments and piers would be constructed at approximately the same locations as the existing bridge foundation, or would be removed from the floodplain entirely. Therefore, the proposed project will not adversely affect floodplains, and EO 11988 does not apply.

4.4.6 Coastal Resources

The proposed project is not located in a State Coastal Zone Management (CZM area, according to the Coastal Zone Area Map from the NYS Department of State’s Coastal Zone Management Unit. No further action is required with respect to this issue.

4.4.7 Groundwater Resources, Aquifers, and Reservoirs

4.4.7.1 Aquifers

NYSDEC aquifer GIS data files have been reviewed and it has been determined that the proposed project is not located in a mapped Primary Water Supply or Principal Aquifer Area. No further investigation for NYSDEC designated aquifers is required.

However, a review of the EPA-designated Sole Source Aquifer Areas Federal Register Notices, Maps, and Fact Sheets indicates that the project is located the Cattaraugus Creek Basin Aquifer (CCBA), a Sole Source Aquifer. The CCBA is approximately 35 miles long and underlies approximately 325 square miles in the southern most part of the Lake Erie-Niagara River drainage basin.

Projects that include the following categories of work require Federal Sole Source Aquifer Section 1424(e) review by FHWA and EPA pursuant to Executive Order 12372:

1. Construction of additional through-lanes (not including turning lanes), interchanges, or rotaries on existing roadways;
2. Construction of a two or more lane highway on new alignment;
3. Construction of rest areas with on-site sewage disposal facilities; or,
4. Other projects which, in the opinion of FHWA, may have effect on the water quality of the aquifer to the extent that the goal outlined above (protection of Sole Source Aquifer drinking water supplies) would not be achieved.

Since the project is not in one of the four categories listed above, no Federal review and/or approval is required pursuant to Section 1424(e) of the Safe Drinking Water Act.
During the design phase, measures to avoid, minimize or mitigate adverse impacts to the Sole Source Aquifer will be identified. Best Management Practices (BMPs) to protect the aquifer will be employed, including Erosion and Sediment Control, Stormwater Management and Construction Chemical Storage and Handling.

4.4.7.2 Drinking Water Supply Wells (Public and Private Wells) and Reservoirs
There are no municipal drinking water wells, wellhead influence zones, or reservoirs within or near the project area. The nearest drinking water supply wells are located in the Village of Springville, approximately 2.75 miles northeast of the bridge.

4.4.8 Stormwater Management
A SPDES General Permit GP-0-10-001 will be required because the project has more than one acre of soil disturbance. A Stormwater Pollution Prevention Plan (SWPPP) with the appropriate sediment and erosion control measures will be developed. Based on the SWPPP, permanent stormwater management practices may be required depending on the total amount of disturbance and changes in total impervious area.

4.4.9 General Ecology and Wildlife Resources

4.4.9.1 Fish, Wildlife and Waterfowl
The ecological community present at the bridge location is known as a shale cliff and talus slope habitat, as defined in the NY Natural Heritage Program’s Ecological Communities of New York State (Reschke, 1990). This habitat is scattered across western New York in rivers such as the Cattaraugus Creek gorge. This habitat will not be significantly affected by the proposed project. See 4.4.9.3 below for a description of the field inspection that took place in the summer of 2014.

4.4.9.2 Habitat Areas, Wildlife Refuges, and Wildfowl Refuges
The proposed project does not involve work in, or adjacent to, a wildlife or waterfowl refuge. No further consideration is required.

4.4.9.3 Endangered and Threatened Species
The USFWS’s Information, Planning and Conservation (IPAC) System of federally threatened and endangered species (listed and proposed) was reviewed for species that may exist in the project vicinity. The USFWS species list includes the following species in Erie and Cattaraugus Counties: *Myotis septentrionalis* (Northern Long Eared Bat) NLB (potential listing); Rayed Bean (*Villosa fabalis*); and Clubshell (*Pluerobema clava*).

The NYS Natural Heritage Program was contacted regarding State rare, threatened, or endangered species. Their response indicates that no occurrences of endangered or threatened species have been recorded in the immediate vicinity of the site.

The Environmental Resource Mapper on the NYSDEC website was consulted for general information on State ecological resources. The bridge is not located in an area where a historical record of a rare or state-listed animals or plants is identified. No reported occurrences of significant natural communities, or other significant habitat, or in the immediate vicinity of the site.

A discussion of each of these species, their likelihood of being impacted by the project, and NYSDOT’s effect determination for each is summarized below.

**Northern Long-Eared Bat (Myotis septentrionalis):**
The Northern Long-Eared Bat (*Myotis septentrionalis*), whose range encompasses all of New York State, is proposed for inclusion on the USFWS Endangered Species List. At this time, the clearing of trees (3” dbh and greater) is generally considered to have a potential effect on the northern long-eared bat (NLEB). The risk of adverse effects is substantially reduced if the trees are cut during the
winter when the bats are expected to have migrated to winter hibernation roosts in more sheltered areas. In this location, the tree cutting window is from October 31st to March 31st.

The project limits were inspected for the presence of trees greater than 3” dbh within the proposed work area. Approximately thirty-six (36) trees were identified within the proposed work area, primarily on the south bank of the Creek. The species identified include maples, elm, ash, cottonwoods, as well as several dead trees. These trees will be removed during the winter cutting period of October 31 to March 31.

In addition, the area below the elevation of the subject bridge on the north bank consists of an unvegetated cliff with crevices formed by overhanging layers of sedimentary rock. The rock outcrop was inspected via a tripod mounted high magnification spotting scope for caves and crevices that may be potential habitat for the NLE bat. Based on the field inspection, the top twenty-five (25) feet of rock outcrop contains crevices that could support summer habitat for bats. However, the presence of winter habitat is unlikely, as caves and deep crevices (greater than 2 to 3 feet deep) were not found. Work in this area should be performed during the winter period, from October 31 to March 31. Based on the quantity and timing of tree cutting, NYSDOT made a preliminary effect determination of “may affect, but not likely to adversely affect” for this species, and the FHWA concurred with this determination on July 3, 2014.

Clubshell mussel (Pleurobema clava):
Clubshell mussel (Pleurobema clava) is listed by the USFWS and New York State as an endangered species. This species prefers clean, loose sand and gravel in medium to small rivers and streams. This mussel will bury itself in the bottom substrate to depths of up to four inches. Known records of this species are confined to the Chautauqua Lake and Allegany River drainage basins located in the southern portion of Cattaraugus and Chautauqua Counties. While suitable habitat exists within the Cattaraugus Creek watershed, there are no known records of this species existing in the Cattaraugus Creek watershed. Therefore, it is unlikely that any Federally-listed threatened, endangered, or candidate species of mussels exist within the project impact area. NYSDOT made a preliminary effect determination of “no effect” for this species. The FHWA concurred with this determination on November 12, 2014. Additionally, pursuant to 6 NYCRR Part 182, NYSDOT has determined that the proposed activity is not likely to result in the take or taking of the clubshell mussel and is therefore not subject to regulation under this Part.

Rayed bean (Villosa fabalis):
Rayed bean (Villosa fabalis) is listed by the USFWS and New York State as an endangered species. The rayed bean is a freshwater mussel that has been extirpated from Illinois, Kentucky, and Virginia but is still found in Indiana, Michigan, New York, Ohio, Pennsylvania, Tennessee, West Virginia and Ontario, Canada. It is a small mussel, usually less than 1.5 inches long. This species generally lives in smaller, headwater creeks, but is sometimes found in large rivers and wave-washed areas of glacial lakes. The rayed bean prefers gravel or sand substrates, and is often found in and around roots of aquatic vegetation. Known records of these species are confined to the Chautauqua Lake and Allegany River drainage basins located in the southern portion of Cattaraugus and Chautauqua counties. While suitable habitat exists within the Cattaraugus Creek watershed for this species, there are no known records of this species existing in the project impact area. Therefore, it is unlikely that any Federally-listed threatened, endangered, or candidate species of mussels exist within the Cattaraugus Creek watershed. NYSDOT made a preliminary effect determination of “no effect” for this species. The FHWA concurred with this determination on November 12, 2014. Additionally, pursuant to 6 NYCRR Part 182, NYSDOT has determined that the proposed activity is not likely to result in the take or taking of the clubshell mussel and is therefore not subject to regulation under this Part.

Bald Eagle (Haliaeetus leucocephalus):
Bald Eagle (Haliaeetus leucocephalus) is protected under the federal Bald and Golden Eagle Protection Act (BGEPA) and is a New York State listed threatened species. During the site visit, no bald eagle nests were observed within or adjacent to the project area. NYSDOT made a BGEPA
effect determination of “unlikely to disturb nesting bald eagles” for this species. The Federal Highway Administration concurrence with this determination is pending. Additionally, pursuant to 6 NYCRR Part 182, NYSDOT determined that the proposed activity is not likely to result in the take or taking of bald eagle and was therefore not subject to regulation under this Part.

4.4.9.4 Invasive Species
A review of the existing corridor did not indicate any significant presence of known invasive species within the right-of-way. Japanese knotweed and purple loosestrife were noted to be present nearby, downstream along the stream banks. Precautions will be taken to prevent the introduction of invasive species during project design and construction.

4.4.9.5 Roadside Vegetation Management
This project is located within a transportation corridor with maintained roadside and wooded areas above the Cattaraugus Creek gorge. Existing roadside vegetation consists primarily of forested and successional vegetative cover. Efforts will be made to replace wildlife-supporting vegetation that is removed in the course of construction.

4.4.10 Historic and Cultural Resources
The bridge has been evaluated for National Register eligibility and was determined to be eligible. An “Adverse Effect” determination was made and concurrence received from SHPO in an email dated March 18, 2014. FHWA concurred with the “Adverse Effect” determination in a letter dated August 11, 2014. A Memorandum of Agreement regarding the removal of the National Register-Eligible bridge and mitigation measures will be executed by SHPO, FHWA and NYSDOT.

Programmatic 4(f) Evaluation: The FHWA has established a regulatory provision in the form of de minimis findings for Programmatic Section 4(f) Evaluation for Federal-Aided Projects That Necessitate the Use of Historic Bridges. This Section 4(f) approval is required only when a historic bridge, highway, railroad, or other transportation facility is adversely affected by the proposed project; e.g. the historic integrity (for which the facility was determined eligible for the NR) is adversely affected by the proposed project (23 CFR 774.13(a)). Since both SHPO and FHWA have determined that the removal of BIN1041590 would result in an “Adverse Effect” and have developed a Memorandum of Agreement (MOA) for the removal and the proposed mitigation, a Programmatic 4(f) Evaluation was conducted and is located in Appendix B. On October 15, 2014, FHWA concurred that the specific conditions and the criteria for the Programmatic Section 4(f) Evaluation and de minimis findings were met, and that the requirements of 23 Code of Federal Regulations Part 774 have been satisfied for the project.

4.4.11 Parks and Recreational Resources
The proposed project is located adjacent to Scoby Dam Park, a significant publicly-owned park. The existing park road was originally improved to serve as the construction access road for the recent 219 Expressway Twin Bridges construction. This road would be required for construction access for the proposed project; however, the project will not permanently affect the park.

4.4.12 Visual Resources
This bridge crosses over Zoar Valley and Cattaraugus Creek, both significant natural visual resources. Additionally, the Scoby Power Plant and Dam, a National Register Listed property is below the bridge and the twin arches of the new 219 expressway are visible from the bridge. A Visual Impact Assessment has been conducted for this project due to its close proximity to the new 219 twin bridges, Scoby Dam and Zoar Valley.

4.4.13 Air Quality
4.4.13.1 Carbon Monoxide (CO) Microscale Analysis
A microscale air quality analysis is not necessary since this 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.
4.4.13.2 Mesoscale Analysis
The project is exempt from regional conformity procedures; therefore, a mesoscale air quality analysis is not necessary.

4.4.14 Asbestos
An asbestos survey was conducted on July 26 and August 30, 2010. Suspected asbestos containing materials (ACM) included grey/reddish brown paint, grey/red paint, grey epoxy sealer, grey masonry coating and black/orange bearing pads. Samples of all of these materials were collected and sent in for analysis. Asbestos was not found to be present in any of them.

4.4.15 Hazardous Waste and Contaminated Materials
There are no recorded disposal or remediation sites or spill locations present at or within ¼ mile of the existing bridge.

There are no hazardous waste/contaminated materials issues with the exception of remnant lead based paint. The bridge, built in 1956, was last painted in 1999 to the Society for Protective Coatings (SSPC) standard SP-6. The NYSDOT requires paint removal to SSPC standard SP-10 (Near White (Metal) Blast Cleaning), the current (since 2006) NYSDOT standard specification, to ensure total removal of any possible remnant lead based paint. Absent cleaning to this standard, NYSDOT considers there to be the potential for remnant lead based paint and therefore worker and environmental protection from lead would be required during any paint removal operations in furtherance of bridge demolition.