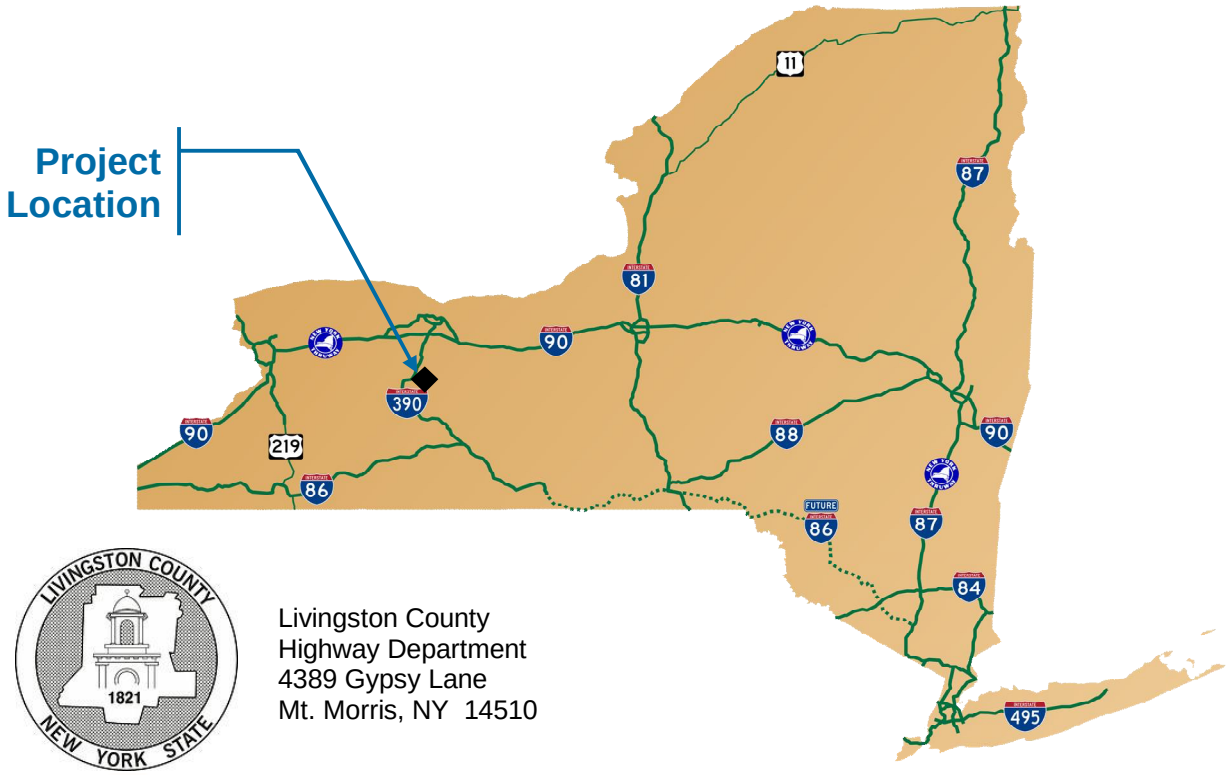
Transportation Project Report

FINAL Project Scoping Report / Final Design Report

July 2020

CR 62 (Bronson Hill Rd) Rehabilitation
PIN 4LV0.02
Towns of Livonia and Avon
Livingston County



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NEW YORK STATE OF OPPORTUNITY. Department of Transportation

U.S. Department of Transportation
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Date: July 31, 2020

To: Jason M. Wolfanger
Livingston County Highway Superintendent

From: Michael T. Croce, P.E. Signature: 

RE: DESIGN APPROVAL REQUEST MEMORANDUM

PIN 4LV0.02
BRONSON HILL ROAD (CR 62) REHABILITATION
TOWNS OF LIVONIA AND AVON
LIVINGSTON COUNTY

1. LOCATION AND COST:

The proposed project would rehabilitate pavement and drainage along 5.2 miles of Bronson Hill Road (CR 62) from its intersection with Big Tree Road (US Route 20A / NYS Route 15) to East Avon – Lima Road (US Route 20 / NYS Route 5) in the Towns of Livonia and Avon, Livingston County. Bronson Hill Road (CR 62) is a two-lane rural collector roadway with no access control. The design context classification is rural. It is not on the National Highway System (NHS). Livingston County would retain maintenance responsibility for Bronson Hill Road upon completion.

The Engineer's Opinion of Probable Construction Cost at the end of preliminary design is $3,297,478 (Please refer to Exhibit 1.6-2 in the Project Scoping Report / Final Design Report). This project is on the Genesee Transportation Council (GTC) Transportation Improvement Plan (TIP) 2020-2024. A total of $2,706,000 is programmed for construction in the TIP. The project is funded by Surface Transportation Block Grant (STBG) program funds. Livingston County will approach the GTC for additional project funding or allocate additional county funding to cover costs in excess of the final TIP value.

2. ALTERNATE DESCRIPTION:

The project area and preferred alternative are described in the Project Scoping Report/Final Design Report (PSR/FDR) (attached). The preferred alternative's proposed scope of work is as follows:

The asphalt surface would be milled (1-inch) where necessary and resurfaced using a true and leveling course and 1 to 1 ½ inches of asphalt top. Deeper repairs would be performed where needed. The cross slope would be improved along tangent sections (3% max desired) along with superelevation in curves to the greatest extent practical and feasible within the existing highway boundaries. The transition between the northern edge of US Route 20A / NYS Route 15 and Bronson Hill Road would be smoothed. Portions of the shoulder would be reconstructed to better accommodate turning trucks and ensure a 4-foot minimum width to accommodate the occasional pedestrian. Shoulder backup would be installed and driveways adjusted to tie into the new edge of pavement where necessary.

Roadway cross culverts would be replaced (i.e., reinforced concrete, heavy wall steel pipes, or precast concrete box culverts as necessary). Poor pavement and drainage conditions in the southwest and southeast corners of Bronson Hill Road's intersection with US Route 20 / NYS Route 5 would be addressed through shoulder reconstruction, extending drainage pipes, ditch cleaning, roadside grading, and the adjustment of existing drainage inlets. Existing driveway pipes and ditches within the existing highway boundaries would be replaced, cleaned, and graded, respectively.

Roadside safety would be enhanced by upgrading existing concrete barrier terminals where Bronson Hill Road passes over Little Conesus Creek. Weak Post G2 W-beam guide rail at the site of the former railroad crossing would be replaced with box beam guide rail. Existing traffic signal loop detectors would be replaced where affected by milling and resurfacing. New pavement markings would be installed on the new asphalt wearing surface and disturbed turf would be reestablished beyond the shoulders.

3. STANDARDS AND DESIGN EXCEPTIONS:

The design is consistent with the standards listed in the NYSDOT *Highway Design Manual* (HDM) Chapters 7, 8, 10, 11, and 17 through 19. It is also consistent with Livingston County's standards. It has been developed in accordance with AASHTO's *A Policy on Geometric Design of Highways and Streets* and complies with the *National Manual on Uniform Traffic Control Devices for Streets and Highways* and *New York State Supplement* (MUTCD).

The surrounding land uses are primarily rural residential and rural agricultural. The posted speed limit is 35 miles per hour between US Route 20A/NYS Route 15 and Stone Hill Road. The posted speed limit is 55 miles per hour north of Stone Hill Road. The project will result in no changes to posted speed limits. The existing and anticipated operating speeds are consistent with those on similar, adjacent facilities within Livingston County.

Non-Standard Features: This project has identified two existing curves with superelevation that cannot feasibly be brought into conformance within the existing highway boundaries and without substantial impacts to adjacent roadways. There are no identified crash patterns associated with these features. Nonstandard Feature Justification forms have been completed and are included in Appendix F of the PSR/FDR. This memorandum requests your approval of the listed non-standard features.

Non-Conforming Features: The slope of turf lined channel slopes, allowable headwater at cross culvert inlets, depth of pipe cover, and minimum pipe sizes are addressed in the Non-Conforming Feature Checklist contained in Appendix F of the PSR/FDR. It is not practical nor feasible to eliminate these features.

4. TRAFFIC CONTROL PLANS:

Conceptual work zone traffic control would allow shoulder closures for work outside the through travel lanes. Most culvert replacements would be staged, closing on-half of the roadway at a time, and requiring alternating one-way traffic. Traffic would be controlled by flaggers when all work can be accomplished within one workday and/or the roadway can be reopened to two-way traffic at the end of the workday. Livingston County requires the use of temporary traffic signals to control alternating one-way traffic if the contractor expects the roadway cannot be reopened to two-way traffic at the end of the workday. A short-term closure of Bronson Hill Road to through traffic would be allowed between US Route 20A/NYS Route 15 and Stone Hill Road for the replacement of two culverts. The roadway south of the culverts would remain open to local traffic at all time. A detour would be posted along NYS Route 20A/NYS Route 15 and Stone Hill Road. The contract documents would contain provisions to limit the number of calendar days that this closure can be kept in place by the contractor.

All work would be completed using temporary lane and shoulder closures. Temporary lane closures on two-lane roadways would utilize flagger control for alternating one-way traffic. Coordination with local emergency service providers, school districts, and local governments would occur during construction.

Access would be maintained for local emergency service providers. Access would also be maintained for local agricultural traffic to the greatest extent practicable. Work zone traffic control would be coordinated with local officials, residents, utility owners, school districts, and local emergency service providers.

5. ENVIRONMENTAL DETERMINATIONS:

This project has been progressed as a SEQR Type II Action and a NEPA Class II Categorical Exclusion. Therefore, the project requires no further SEQR processing.

6. PROCEDURAL PROCESS AND QUALITY CONTROL STATEMENT:

This project has been developed in accordance with the NYSDOT *Local Projects Manual.* All requirements requisite to these actions and approvals have been met, independent quality control reviews have been accomplished, and the work is consistent with established standards, policies, regulations, and procedures, except as otherwise noted and explained in this memorandum.

7. REQUEST FOR APPROVAL:

Please indicate your approval of design by signing this memorandum.

I, THE UNDERSIGNED, APPROVE THE PREFERRED ALTERNATIVE AS DESCRIBED IN THE ATTACHED PROJECT SCOPING REPORT / FINAL DESIGN REPORT.

APPROVED: _____ DATE: 8-6-20
Jason M. Wolfanger, Livingston County Highway Superintendent

Cc: Zac Cracknell, Deputy Highway Superintendent, Livingston County Highway Department
Frank DiCostanzo, P.E., Local Projects Liaison, NYSDOT Region 4
Tom Detrie, P.E., Project Engineer, Bergmann

Project Approval Sheet

Milestones	Signatures	Date
A. IPP Approval	The project cost and schedule are consistent with the Regional Capital Program. The IPP was signed by: **Kevin Bush, P.E.** Regional Director, NYSDOT Region 4	8/9/2019
B. Recommendation for Scoping & Design Approval: Environmental Determination & Federal Aid Process Concurrence:	The project cost and schedule are consistent with the Regional Capital Program. ☒ The NYSDOT on behalf of FHWA (based on the Federal Environmental Approval Worksheet) concurs with the classification of this project as a NEPA Class II, Categorical Exclusion (c list) as described in this document. For Christopher T. Reeve Regional Planning & Program Manager, NYSDOT Region 4	8/5/2020
C. Recommendation for Scoping, Design, & Nonstandard Feature Approval:	Procedurally, this project was progressed using the NYSDOT Local Projects Manual. All requirements requisite to these actions 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. Michael T. Croce, PE Senior Project Manager, Bergmann	7/31/2020
D. Public Hearing Certification (23 USC 128):	☐ A public hearing was held on _____ in accordance with 23 USC 128. ☐ OR, A Notice of Opportunity was published in accordance with 23 CFR 771. A public hearing was not held. ☒ OR, A public hearing was not required. A public information review period was held from July 13, 2020 to July 24, 2020 with information / presentation available on the project website.	
Nonstandard Feature Approval:	☒ The non-standard features have been adequately justified and it is not prudent to eliminate them as part of this project. ☐ OR, No nonstandard features have been identified, created, or retained.	
Scoping & Design Approval:	The required environmental determinations have been made, and the preferred alternative for this project is ready for final design. Jason M. Wolfanger Highway Superintendent, Livingston County Highway Dept.	8-6-20

List of Preparers

Group Director Responsible for Production of this Project Scoping Report/Final Design Report (PSR/FDR):

Michael T. Croce, PE, Senior Project Manager, Bergmann

Description of Work Performed: Directed the preparation of the PSR/FDR 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.*

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F.	Nonstandard Features Justification / Non-Conforming Features Checklist
G.	Public Involvement
H.	Miscellaneous
I.	NYS Smart Growth Checklist

CHAPTER 1 – PROJECT DEVELOPMENT

1.1. Introduction

This report was prepared in accordance with the NYSDOT Project Development Manual, the NYSDOT Local Projects Manual, 6 NYCRR (New York Codes, Rules and Regulations) Part 617, and 23 CFR (Code of Federal Regulations) 771. Transportation needs have been identified (**Section 1.2**), objectives established (**Section 1.2.3**) to address the needs, and cost-effective alternatives developed (**Section 1.3**). This project is federally funded.

1.1.1. Project Location

A Project Location Map is included as **Exhibit 1.1.1, Appendix A**. The following is a project location summary.

A. Route number: County Road (CR) 62
B. Route name: Bronson Hill Road
C. Municipality: Towns of Livonia and Avon
D. County: Livingston
E. Length: 5.2 miles
F. Project Begins: Intersection with US Route 20A/NYS Route 15
G. Project Ends: Intersection with US Route 20/NYS Route 5

1.2. Purpose, Need and Objectives

1.2.1. Project Need

Bronson Hill Road (CR 62) is a two-lane rural collector roadway. It connects US Route 20A/NYS Route 15 and East Lake Road to the south with US Route 20/NYS Route 5 to the north. Development along the road is a mix of agricultural and rural residential. It carries an Average Annual Daily Traffic volume (AADT) of approximately 3,500 vehicles per day including daily commuter traffic. Traffic going to and coming from the east shore of Conesus Lake also uses the roadway on a seasonal basis. In the future, Bronson Hill Road may carry additional passenger cars and trucks going to and from the planned Livonia Gateway Park to be located approximately ¾ of a mile north of Stone Hill Road; however there are no approved plans for that development or its new roadway at this time.

Bronson Hill Road was last paved in 2010 with a NOVA Chip and has undergone crack sealing since 2013. The roadway has a steeper than desired cross slope. The majority of the pavement surface exhibits a low to medium degree of longitudinal, transverse, and alligator cracking. There are isolated areas with a low degree of edge cracking along the shoulder. Transverse corrugations can be felt when driving near the roadway's southern end. Conditions are especially poor, with broken asphalt and rutting, in the southwest and southeast corners of the intersection with US Route 20 and NYS Route 5 due to a lack of positive drainage and perpetually wet conditions. Surface water fails to reach drainage inlets in these corners and areas beyond the pavement are rutted from the rear wheels of turning trucks. Cross culverts are undersized with respect to a 10-year storm event and most are constructed of deteriorating corrugated metal pipe. Some sections of parallel drainage ditch need regrading. Select driveway culverts are undersized and in poor condition. Guide rail at the site of a former railroad bridge and temporary concrete barrier terminals at an existing box culvert do not conform to current standards. Limited portions of the shoulder are narrower than 4 feet and require widening to better accommodate the occasional pedestrian.

1.2.2. Project Purpose

The purpose of this project is to address identified pavement, drainage, and guide rail deficiencies.

1.2.3 Project Objectives

The project objectives are as follows:

(1) Perform corrective maintenance on the existing Bronson Hill Road pavement surface, extending its expected service life by approximately 10 years;

(2) Replace and/or improve undersized drainage culverts beneath Bronson Hill Road, particularly those made of corrugated metal pipe, such that they will be capable of handling at least a 10-year design storm plus a 10% increase for future climate change;

(3) Improve flow in drainage ditches along Bronson Hill Road where needed and practical;

(4) Enhance pedestrian accommodation along the shoulders of Bronson Hill Road;

(5) Enhance positive drainage in the southeast and southwest corners of the intersection of Bronson Hill Road, US Route 20, and NYS Route 5; and

(6) Improve or replace existing guide rail and concrete barrier end terminals to achieve conformance with current standards.

1.3. Project Alternative(s)

The following alternatives were considered:

- Alternative 1: No Action/Maintenance
- Alternative 2: Milling and Resurfacing with Drainage Improvements

Alternative 1, the No Action / Maintenance Alternative or "null"**,** would retain the existing pavement surface and drainage systems along Bronson Hill Road. No activities other than routine maintenance would be carried out. This alternative would not improve pavement surface or drainage conditions. The null is retained only as a baseline for comparison and will not be discarded until a final decision is made regarding the selection of a build alternative.

Alternative 2, Roadway Rehabilitation would consist of the following:

Pavement	• Rehabilitate the existing pavement surface. Cold milling to a depth of 1-inch maximum where necessary and resurfacing with a variable thickness true and leveling course and a 1 to 1 ½-inch of top course HMA. • Regrade the pavement surface on the northern leg of the intersection of US Route 20A/NYS Route 15 and Bronson Hill Road to smooth the transition from the state highway's cross slope to the profile of CR 62 in conjunction with the milling and resurfacing operation. • Spot full depth asphalt pavement reconstruction and shoulder reconstruction where necessary to address poor condition or perform spot widening. • Install an asphalt safety wedge and shoulder backup along the edge of the new pavement. Adjust asphalt and stone driveways to meet the new edge of shoulder elevation where necessary.

Cross slope and Superelevation	• Establish a 3% (maximum) travel lane cross slope. • Establish a 6% (maximum) shoulder cross slope. • Improve superelevation on existing curves to the greatest extent practical and feasible.
Pedestrian & Bicyclist	• Provide a 4-foot wide (minimum) shoulder to accommodate occasional pedestrians and bicyclists. • Continue shared accommodation for bicyclists within the travel lanes.
Drainage	• Increase the capacity of all roadway cross culverts to pass a 10-year frequency storm plus 10% to adjust for future climate change. • Replace all existing corrugated metal pipe cross culverts. • Install new cross culverts (circular reinforced concrete pipe (RCP) or heavy wall steel pipe (HWSP, provided to Livingston County), elliptical reinforced concrete pipe, and precast concrete boxes as necessary. All culvert end treatments would be placed beyond the roadside clear area or shielded with guide rail to enhance roadside safety. • Slip line or plug and abandon (pending further review during detailed design) an existing corrugated metal pipe along the former railroad alignment, eliminating the need to excavate the tall roadway embankment. • Replace existing driveway pipes where necessary to improve flow. • Clean and reshape existing ditches where necessary to improve flow. • Improve positive drainage in the southeast and southwest corners of the intersection of US Route 20/NYS Route 5 and Bronson Hill Road in conjunction with shoulder reconstruction, extended drainage pipes, ditch cleaning, roadside grading, and adjustment of the drainage inlet frames and grates to match final grade.
Guide Rail and Barriers	• Replace two existing runs of W-beam guide rail having inadequate rail height and redirective capacity with box beam guide rail and end assemblies. • Replace existing concrete barrier end terminals with concrete barrier to box beam guide rail transitions and end assemblies. • Install new box beam guide rail and end assemblies at one precast box culvert location where the end would not be located outside the clear area.
Traffic Control Devices	• Install guide signs and speed limit signs where existing signs are missing (work to be done outside of the project by Livingston County forces). • Update a non-conforming warning sign assembly. • Install snowplow markers along runs of guide rail and barrier. • Install new pavement markings in accordance with MUTCD standards. • Extend the yellow full barrier line on all Town roads (toward Bronson Hill Road) and install a stop line at the point of optimum sight distance. Replace existing inductance loop detectors disturbed by milling and resurfacing at both project limits.
Landscaping	• Reestablish turf beyond the shoulders.

Right of Way	• Ten mapped property acquisitions (10 permanent easements (two – one map, PE) and 1 temporary easement (TE)) to provide construction access, to accommodate new drainage features, allow for grading, and long-term maintenance.
Construction Cost and Phasing	• The opinion of probable construction cost for Alternative 2 is $3.298 million. • Traffic would be maintained on Bronson Hill Road during construction.
Project Goals	• These improvements satisfy the project purpose, need, and objectives.

1.4 Project Effects

1.4.1 Environmental Classification

Exhibit 1.4.1
Environmental Classification Summary

NEPA Classification	Type II Categorical Exclusion	BY	NYSDOT
SEQRA Type:	Type II	BY	Livingston County

NEPA: National Environmental Policy Act
SEQR: State Environmental Quality Review

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1.4.2 Comparison of Considered Alternatives

Exhibit 1.4.2 Comparison of Considered Alternatives		
Category	**Alternatives Evaluated**	
	Null	**Alternative 2: Roadway Rehabilitation**
Environmental Impacts		
Wetlands	None	0.198 acres
Cultural Resources (Section 106)	None	No Effect
Section 4(f)	None	None
Endangered/ Threatened Species	None	None
Noise	None	None
Social Impacts		
Property/Relocations	None	0.309 Acres PE 0.422 Acres TE
Mobility (Pedestrian, bicycle, transit, etc.)	No Effect	Consistent shoulder width, improved pavement surface
Environmental Justice	No Effect	No disproportionate high and adverse effects to minority or low-income populations
General Social Groups	No Effect	No Effect
Crash Costs	Low	Low
Economic and/or Operational Impacts		
Economic Impacts	No Effect	No Effect
Temporary Detours	No Effect	Typically one-way alternating traffic, Short-term detour of Bronson Hill Road between US Route 20A/NYS Route 15 and Stone Hill Road for replacement of Culverts 1 and 2
Operation at Design Year	No Change	No Change
Pavement Condition	No Change	Extend service life +/-10 years
Drainage	No Change	Accommodates 10-year frequency storm + 10%
Utilities	None	No Substantial Impacts
Construction Cost	None	$3.3M

Refer to **Chapter 3, Section(s) 3.3.2** for mitigation measures proposed as part of this project.

1.4.3 Anticipated Permits/Coordination/Certifications

Exhibit 1.4.3 Anticipated Permits/Certifications/Coordination
Permits
NYS Department of Environmental Conservation (NYSDEC):
• State Pollutant Discharge Elimination System (SPDES) General Permit
• Blanket Water Quality Certification (Section 401) of the FWPCA
Army Corps of Engineers (USACE):
• Nationwide Permit
New York State Department of Transportation (NYSDOT):
• Highway Work Permit
Coordination
Federal Highway Administration (via NYSDOT)
New York State Historic Preservation Officer (SHPO) (via NYSDOT)
US Fish and Wildlife Service
New York Natural Heritage Program
Municipality(ies) – Towns of Livonia and Avon
Metropolitan Planning Organization – Genesee Transportation Council
Utilities – Livingston County Water and Sewer Authority, RG&E, National Grid, Time Warner Cable, Frontier Telephone, NYSDOT, Tennessee Gas Pipeline

1.5 Preferred Alternative

Only one reasonable build alternative has been identified that meets the project objectives: **Alternative 2, Roadway Rehabilitation.** A decision to enter final design will not be made until after the environmental determination is finalized and an evaluation of public and agency comments on the draft design approval document has been completed.The No Build Alternative will be retained for use as a baseline to measure and evaluate impacts that might accrue from the preferred alternative.

1.6 Project Schedule and Cost

Exhibit 1.6 - 1 Project Schedule	
Activity	**Date Occurred/Tentative**
Draft Design Report	June 2020
Public Outreach Period	July 2020
Design Approval	August 2020
Property Acquisition	Winter 2020
Letting (Bid Opening)	March 2021
Construction Start	May 2021
Construction Complete	October 2021

Exhibit 1.6 - 2 Project Costs – Design Bid Build		
Potential Alternative		**Alternative 2: Roadway Rehabilitation[1]**
Roadway		
Pavement Resurfacing		$1,715,730
Cross Culvert Replacement / Rehabilitation		$542,875
Roadside Drainage Rehabilitation		$295,475
Pavement Markings		$21,500
Subtotal		$2,575,580
Incidentals – WZTC, Survey, Miscellaneous	10%	$257,558
Contingency	5%[2]	$141,657
Subtotal		$2,974,795
Field Change	5%[3]	$149,000
Subtotal		$3,123,795
Mobilization	4%	$124,952
Subtotal		$3,248,747
Inflation/Escalation to Midpoint of Construction	1.5%	$48,731
CONSTRUCTION COST [4,5,6]		**$3,297,478**
Construction Inspection[7]		$217,000
Right-of-Way[8]		$17,000
TOTAL PROJECT COST		**$3,531,478**
ROUNDED TO NEAREST $10,000		**$3,532,000**

Notes:

1. Unit prices are in 2020 dollars.
2. For unforeseen and untabulated items such as test pits, erosion & sediment control, miscellaneous drainage features, culvert safety grates / end sections, invasive species removal, mailboxes, and asphalt/fuel price adjustments.
3. Field Change Order of 5% per the HDM Chapter 21 Section 21.4.3.3.
4. Costs do not include any private utility relocations including overhead electric, cable tv, telephone, fiber optic, underground gas, and underground water. Reimbursable utility costs not anticipated.
5. Costs do not include any wetland mitigation.
6. Construction funding programmed in 2020-2024 GTC TIP at $2,706,000. Livingston County would request additional funding from the GTC and pending the results, may be required to cover project construction costs in excess of the amended GTC TIP value.
7. Construction inspection and support budget given in the GTC TIP is $217,000. Actual cost to be negotiated during scoping for construction phase services agreement.
8. ROW acquisition budget given in the GTC TIP is $17,000. Actual cost pending appraisals.

1.7 Public Involvement

With the intent to improve pavement surface and drainage conditions, an Initial Project Proposal (IPP) was drafted and approved in August 2019 (available in **Appendix H)**. The project was subsequently added to the Genesee Transportation Council (GTC) Transportation Improvement Program (TIP). Livingston County then began coordinating with the Towns of Livonia and Avon. Preliminary design began in February 2020. Coordination with the NYSDOT and other agencies is ongoing.

Public outreach was conducted between Monday July 13, 2020 and Friday, July 24, 2020. An in-person meeting was not held in the interest of public safety given COVID-19 related social distancing requirements. Project information was made available electronically via the world wide web for inspection. Interested persons were given the opportunity to e-mail or write Livingston County directly with questions or suggestions. Comments received have been considered and addressed. Copies of information from the public outreach period and responses to comments are included in **Appendix G**.

Exhibit 1.7 Public Involvement Plan Schedule of Milestone Dates	
Activity	**Date Occurred/Tentative**
Initial Environmental Findings	August 9, 2019
In-house Pre-Scoping Meeting	October 31, 2019
Meeting with Towns of Livonia and Avon	Coordination Ongoing
Public Outreach Period	July 2020
Current Project Letting Date	March 2021

For additional information or to provide comments, please contact.

Mailing Address: Mr. Zac Cracknell
Deputy Highway Superintendent
Livingston County Highway Department
4389 Gypsy Lane
Mount Morris, NY 14510

Email Address: zcracknell@co.livingston.ny.us

Telephone: (585) 243-6738

Please include the six-digit Project Identification Number (PIN) 4LV0.02 in any correspondence.

The deadline for submitting comments was July 24, 2020.

The remainder of this report is a detailed technical evaluation of existing conditions, anticipated impacts of the one reasonable/preferred alternative and comparison to the null alternative, copies of technical reports and plans and other supporting information.

CHAPTER 2 – EXISTING AND PROPOSED CONDITIONS AND CONSIDERATIONS

This chapter addresses the existing conditions, deficiencies, and needs along Bronson Hill Road from US Route 20A/NYS Route 15 to US Route 20/NYS Route 5. It also discusses proposed actions under the Bronson Hill Road (CR 62) Rehabilitation project (hereafter "the project") and examines the engineering aspects for alternatives that were determined to be feasible and practical to address the project objectives stated in **Chapter 1** of this report.

2.1 Functional Classification/National Highway System/Truck Access

Exhibit 2.1
Classification Data

Route(s)	Bronson Hill Road (CR 62)
Functional Classification	Rural Major Collector
Context Classification	Rural
National Highway System (NHS)	No
Designated Truck Access Route	No
Qualifying Highway	No
Within 1 mile of a Qualifying Highway	No
Within the 16 ft vertical clearance network	No

2.2 Planning Considerations

2.2.1 Abutting Highway Segments and Future Plans

Abutting highway segments include East Lake Road (CR 6), US Route 20A/NYS Route 15, and US Route 20/NYS Route 5.

East Lake Road (CR 6) is the southern extension of Bronson Hill Road at the southern project limit. It is a two-lane, two-way rural minor collector owned by Livingston County. Maintenance is under the jurisdiction of Livingston County and snow removal is completed by contract with local municipalities. The lane widths, shoulder widths, and posted speed limit just south of US Route 20A/NYS Route 15 (11-foot wide lanes, 4-foot wide shoulders, and a 35 mile per hour posted speed limit) are the same as those found on the south end of Bronson Hill Road.

US Route 20A/NYS Route 15 (Big Tree Road) intersects East Lake Road and Bronson Hill Road at the southern project limit. It is a two-lane, two-way, urban minor arterial owned and maintained by the New York State Department of Transportation (NYSDOT). It is an Access Highway according to the August 2019 Official Description of Designated Qualifying and Access Highways in New York State. It is not on the National Highway System. Travel lanes are 12 feet wide. Shoulders are 6 feet wide. The posted speed limit on either side of the intersection is 35 miles per hour. The intersection is controlled by a three-color, semi-actuated traffic signal. The northbound and southbound approaches operate using split signal phases because of the skewed intersection approaches, grade to the east, and limited intersection sight distance. The angle between the north and west legs, as well as the south and east legs, is approximately 20º to 25º. Tractor trailers have a difficult time making turns from south to west and east to north because of the intersection geometry. There are no dedicated turn lanes at the intersection. The intersection has adequate capacity to handle the current and anticipated motor vehicle traffic demand based on peak hour observations.

US Route 20/NYS Route 5 (East Avon – Lima Road) intersects Bronson Hill Road at the northern project limit. It is a two-lane, two-way, rural principal arterial owned and maintained by the NYSDOT. It is an Access Highway according to the August 2019 Official Description of Designated Qualifying and Access Highways in New York State. It is a National Highway System Route. Travel lanes are 12 feet wide. Shoulders are 8 feet wide. The speed limit is 55 miles per hour. The intersection is controlled by a three-color, semi-actuated traffic signal. The signal operates in two phases. There are no dedicated turn lanes at the intersection. The intersection has adequate capacity to handle the current and anticipated motor vehicle traffic demand based on peak hour observations.

The NYSDOT has confirmed that there are no plans to reconstruct or widen the intersecting highway segments under its jurisdiction or to upgrade the existing intersections and traffic signals within the current capital program cycle (through 2024). Livingston County has confirmed there are no plans to reconstruct or widen East Lake Road.

2.2.2 Local Plans for the Project Area

This project is on the approved Genesee Transportation Council (GTC) Transportation 2020-2024 Transportation Improvement Program (TIP) as TIP Number H20-08-LV2. The Project Identification Number (PIN) is 4LV0.02. Project funding has been fully allocated on the TIP through the construction phase. Local master plans were reviewed during project development and Livingston County has determined that this project is consistent with those plans as described below. In addition, while conceptual plans have been discussed, there are no approved developments planned within the project area that would affect traffic operations at this time.

The Town of Livonia Comprehensive Master Plan Update cites the intersection of East Lake Road, Bronson Hill Road, and US Route 20A/NYS Route 15 as a location with “non-standard alignments, lack of pedestrian accommodations, and lack of clearly defined lanes or turning movements.” The Town would like the NYSDOT to conduct further studies of safety, access, and pedestrian activity to identify appropriate improvements for this location. There is also interest in exploring the feasibility of sidewalks along the north side of US Route 20A/NYS Route 15 from Bronson Hill Road west to NYS Route 256. Livingston County agreed to develop one conceptual solution that could improve southbound to westbound and eastbound to northbound truck turns, as well as to enhance pedestrian accommodation at the intersection, as part of this project. **Exhibit 2.2.2** in **Appendix A** illustrates a concept.

The suggested concept would widen the pavement in the northwest corner of the intersection to accommodate the swept path of a WB-62 design vehicle as it turns from southbound to westbound. The northbound shoulder would also be widened from 5 feet to 10 feet for a distance of approximately 50 feet at a point approximately 90 feet north of the intersection to provide enough room for the WB-62 to complete an eastbound to northbound movement. The stop line on the southbound approach would be moved north approximately 35 feet to accommodate the swept path of that same vehicle. Southbound right turns on red may need to be prohibited pending further investigation of available intersection sight distance.

Widening the roadway would necessitate the extension or replacement of the existing culvert running parallel and north of US Route 20A/NYS Route 15. The existing ditch along the east side of Bronson Hill Road from the last driveway south to the culvert could also be enclosed to limit regrading on the hillside and impacts to mature trees that provide screening for the residential property in that corner. The widening in the northwest corner would impact the existing traffic signal system and an adjacent utility pole. The existing traffic signal system could be upgraded to include new mast arms, new signal heads with backplates for enhanced visibility, and pedestrian accommodations. Should it be desirable and compatible with local plans for pedestrian connectivity, landings are envisioned in the southeast, northeast, and northwest corners connected by crosswalks. This would enhance the accommodation of persons wishing to cross the intersection and could connect with the Town of Livonia’s envisioned sidewalk to the east if determined feasible. Construction and future maintenance would require private property acquisitions in at least the northeast and northwest corners of the intersection. The actual size and limits of those acquisitions would be determined during a future design stage.

These conceptual changes would be substantial and beyond the scope of PIN 4LV0.02. This project would not preclude them from future consideration, study, design, and implementation by the NYSDOT pending need and the availability of funding.

Livonia's Comprehensive Master Plan Update also discusses a future Gateway Park Road. That facility would pull truck traffic off NYS Route 15 and US Route 20A through the Hamlet of Lakeville at the north end of Conesus Lake. It would also open new portions of the Town to industrial, commercial, and residential development. In concept, the roadway would begin near NYS Routes 15 and 256 and extend east, crossing Bronson Hill Road south of the existing Purdue Agribusiness plant, and continue southeast, ending just west of the Village of Livonia. The portion between NYS Routes 15 and 256 and Bronson Hill Road could help divert heavy truck and passenger car traffic away from residential areas (to the south) on Bronson Hill Road and Stone Hill Road. The roadway concept was deemed consistent with the Long-Range Transportation Plan for the Genesee-Finger Lakes Region 2035 by the GTC in 2002. As of the date of this report there are no planned or approved developments within Livonia Gateway Park that would affect traffic volumes or operations on Bronson Hill Road. Furthermore, there are, as of yet, there are no specific plans for the construction of any portion of Gateway Park Road. The improvements proposed under PIN 4LV0.02 would not preclude future development or the construction of Gateway Park Road.

The Town of Avon's Comprehensive Plan Update seeks to minimize the adverse impacts of development on agricultural land and preserve the Town's environmental features including wetlands and scenic viewsheds. The Town also desires to communicate with the Livingston County Highway Department and the NYSDOT to promote local priorities and to coordinate highway improvement activities. The plan promotes the continued development of rural residential land uses along the segment of Bronson Hill Road within the Town of Avon. The proposed actions under PIN 4LV0.02 are consistent with that plan.

The Livingston County Water and Sewer Authority (LCWSA) has proposed a water main extension from the current end of its system at Stone Hill Road, north along Bronson Hill Road, connecting the Purdue Agribusiness plant, and eventually turning west along South Lima Road to make a connection with an existing line on Pennsylvania Avenue. No plans for this system are available to date.

2.2.3. Access Control

Access is unrestricted along Bronson Hill Road. Four commercial and numerous residential driveways connect to the roadway within the project limits. The driveways meet the spirit and intent of the most recent NYSDOT Policy and Standards for the Design of Entrances to State Highways. This project would not change the existing access control.

2.3. Traffic Considerations

2.3.1 Traffic Volumes

Continuous 24-hour traffic volume counts were conducted on Bronson Hill Road by Livingston County in October 2019. New data for the southern segment in the Town of Livonia were compared with counts from 2016 and the larger of the two were used based on engineering judgement. An equipment issue rendered 2019 data taken to the north, within the Town of Avon, unusable. A replacement count was planned but could not be taken in the spring of 2020 given the effects of COVID-19 on local and regional traffic. Data from 2016 were projected forward to 2020 using an annually compounded growth rate of 0.5% per year. Two-way Average Annual Daily Traffic (AADT) volumes for an average weekday (Tuesday through Thursday) on Bronson Hill Road in 2020 are summarized in **Exhibit 2.3.1-1.**

The Estimated Time of Completion (ETC) is 2021. A design year of 2031 (ETC+10) was selected per Appendix 5 of the NYSDOT Project Development Manual. Traffic volume projections were completed for ETC (2021) and the design year ETC+10 (2031). The 0.5% per year growth factor (annually compounded) was used to forecast AADT volumes to the years 2021 and 2031, which also appear in

Exhibit 2.3.1-1. In general, the projected daily traffic volumes on Bronson Hill Road are anticipated to remain below 4,000 vehicles per day (vpd) with modest growth.

Exhibit 2.3.1-1
Existing and Forecast Traffic Volumes

Bronson Hill Road	**US Route 20A/NYS Route 15 to South Lima Road**	**South Lima Road to US Route 20/NYS Route 5**
Year	**AADT** (vpd)	**AADT** (vpd)
Existing (2020)	3490	3320
ETC (2021)	3510	3340
ETC+10 (2031)	3690	3510

Exhibit 2.3.1-2
Traffic Composition Data

Bronson Hill Road	**US Route 20A/NYS Route 15 to South Lima Road**	**South Lima Road to US Route 20/NYS Route 5**
Directional Split (NB/SB)	51/49	51/49
% Trucks	4	4

2.3.2 Speed Studies

The posted speed limit is 35 miles per hour (mph) between US Route 20A/NYS Route 15 and Stone Hill Road. The posted speed limit is 55 mph north of Stone Hill Road to US Route 20/NYS Route 5. Based upon field observation, no substantial delays are experienced within the project limits; therefore, travel time and delay studies were not performed. The 85th percentile speed is that speed at which or below 85 percent of all vehicles travel. The measured 85th percentile speed between Stone Hill Road and South Lima Road is between 57 mph and 59 mph. The measured 85th percentile speed between South Lima Road and US Route 20/NYS Route 5 is between 64 mph and 66 mph. No speed measurements are available for the 35-mph zone between US Route 20A/NYS Route 15 and Stone Hill Road; however, 85th percentile speeds are estimated to be around 40 mph: 5 mph above the posted limit.

2.3.3 Level of Service Analysis

The project is not a capacity improvement project. The signalized intersections at the southern and northern project limits are under the jurisdiction of the NYSDOT. NYSDOT Region 4 has confirmed there are no projects planned for either intersection on the current capital program which runs through 2024. Both locations appear to have adequate capacity to handle motor vehicle demand based on peak hour field observations.

2.3.4 Safety and Crash History Analysis

A crash analysis was performed in accordance with the NYSDOT Highway Design Manual Chapter 5, Section 5.3. A copy of the full analysis is available in **Appendix C**. The crash study covered an area within and up to 0.1 miles outside the project limits. A total of 148 crashes occurred during the five-year study period from August 1, 2014 to July 31, 2019. Intersection crashes accounted for 45 of the 148 while the remaining 103 occurred along segments of Bronson Hill Road. There are no High Accident Locations (HALs), Priority Investigation Locations (PILs), Safety Deficient Locations (SDLs), or Priority Investigation Intersections (PILs) within the study area. Information summarizing specific crash types is provided in **Exhibit 2.3.4-1**.

Exhibit 2.3.4-1 Crash Type Summary		
Type of Collision	**Number**	**Percentage**
Animal	2	1%
Bicyclist	1	1%
Deer	52	35%
Earth Element / Rock Cut / Ditch	21	14%
Guide Rail	1	1%
Light Support / Utility Pole	7	5%
Snow Embankment	1	1%
Tree	1	1%
Other Fixed Object	3	2%
Left Turn	2	1%
Overtaking	3	2%
Pedestrian	1	1%
Rear End	31	21%
Right Angle	17	11%
Right Turn (With Other Vehicle)	2	1%
Sideswipe (Opposite Direction)	2	1%
Other	1	1%
Total	**148**	**100%**

Collisions with deer and other types of animals were the most prevalent during the study period (36%). The second most common type of crash was a collision with a fixed object (24%). Both types of collisions are common in a rural environment with 11-foot wide travel lanes and 4-foot wide shoulders lined by ditches, utility poles, and trees. Rear end crashes also accounted for 27% of the data. Approximately ¾ of the rear end crashes occurred at intersections which is also reasonable.

The relative severity of collisions along Bronson Hill Road was low. Of the 148 crashes there were 27 (18%) involving at least one personal injury, 98 (66%) resulted in property damage, and 23 (16%) were classified as non-reportable. There were no fatal crashes reported. Neither weather nor lighting conditions appear to have played a major factor in the crashes.

The published crash rate for segments of roadway similar to Bronson Hill Road statewide during the study period is 2.12 crashes per million vehicle miles of travel (c/mvm). As illustrated in **Exhibit 2.3.4-2**, while the crash rate including animal and deer collisions exceeds the rate for four of five segments, when those collisions not correctable by engineering measures are removed from the calculation, the resulting crash rates are below the statewide average in all cases. In no case do the crash rates exceed 1.5 times the statewide average for similar facilities. The analysis suggests no clear crash patterns on Bronson Hill Road, clusters, or unique geometric features that are contributing factors.

Exhibit 2.3.4-2 Bronson Hill Road Segment Crash Rates					
From	To	Crash Rate (including animal & deer) in c/mvm	Above or Below Statewide Average	Crash Rate (excluding animal & deer) in c/mvm	Above or Below statewide Average
US Route 20A/NYS Route 15	Stone Hill Road	1.60	Below	0.00	Below
Stone Hill Road	South Lima Road	3.08	Above	1.11	Below
South Lima Road	Marshall Road / Dutch Hollow Road	2.62	Above	1.31	Below
Marshall Road / Dutch Hollow Road	Sutton Road	2.81	Above	1.12	Below
Sutton Road	US Route 20/NYS Route 5	2.33	Above	0.52	Below

A Resurfacing ADA and Safety Assessment Form was completed for the project area and is contained in **Appendix C** as **Exhibit 2.3.4-3**. The following safety-related issues were identified and would be addressed by the project. Refer to the assessment form for additional detail.

- A small number of missing and non-conforming signs was identified. New signs would be installed outside the project by Livingston County forces where missing and non-conforming assemblies are necessary to improve positive guidance.

- Travel lane and shoulder widths vary. New pavement markings would be applied subsequent to resurfacing and establish 11-foot wide travel lanes and 4-foot wide shoulders (minimum) to benefit vehicle recovery, bicycle accommodation, and accommodation of the occasional pedestrian.

- There are no snowplow markers along existing runs of guide rail and barrier. Snowplow markers would be added to all existing and new runs of guide rail and end terminals to help both motorists and snowplow operators locate these features during adverse weather events and at night.

- There is a line of mature trees along the east side of Bronson Hill Road, just south of Marshall Road, that interferes with a driver's view of northbound vehicles from the position of the stop sign. A stop line would be placed on the Marshall Road approach to Bronson Hill Road, along with a short extension of the yellow full barrier line, to help guide drivers to a location providing optimum intersection sight distance. Similar sight obstructions occur along the west side of Bronson Hill Road, just north of Stone Hill Road and just north of Sutton Road. In both cases, a similar striping treatment would be applied.

- There are two runs of existing G2 W-Beam guide rail with a rail height less than 29 inches. Both runs would be replaced with box beam guide rail to improve the potential to safely redirect an errant vehicle back toward the roadway.

- There are three concrete barrier end sections within the clear zone at the existing box culvert north of Sutton Road (C-13, C62023150). They do not adequately cover the point of need for shielding vehicles from the creek which is considered a non-bypassable water hazard. The concrete end sections would be replaced with concrete barrier to box beam transitions and box

beam end terminals would be installed in the northeast, northwest, and southwest quadrants of the culvert. This would reduce the chances of a vehicle hitting one of the concrete barrier end sections and becoming destabilized or passing behind the end section and landing in the creek.

- Only a few locations were identified with a shoulder edge drop-off of greater than 2 inches. These areas would be corrected in conjunction with the paving operation (asphalt safety wedge) and the installation of shoulder backup material. This would make it easier for a vehicle to recover from a roadway departure if one or two of its tires have left the pavement.

- Existing travel lane cross slopes generally vary from 3% to 4%. The cross slope would be adjusted to 3% maximum in conjunction with the resurfacing work. This would continue to promote positive drainage from the pavement while incrementally improving the ability for vehicles to stay on the pavement under wet or icy conditions.

- There are at least two curves lacking proper superelevation for the combination of radius and posted regulatory or advisory speed. The superelevation would be improved to the greatest extent feasible and practical within the available right-of-way. This would assist vehicles in staying on the roadway when traveling around the curves.

Other safety related elements in the project would include placing the ends of proposed box culverts beyond the effective clear zone with traversable side slope grading or shielding them with guide rail, the extension of drainage culverts, and the elimination of drainage headwalls and drop-offs within the clear zone.

2.3.5 Pedestrians, Bicyclists and Transit (Complete Streets)

Pedestrians

There are no separate provisions for pedestrians within the project limits. In general, there is low-density rural residential development throughout the project area that generates infrequent pedestrian travel. The density of residential development is slightly higher at the southern end of the corridor, between US Route 20A/NYS Route 15 and Stone Hill Road. Pedestrians have been observed to use the shoulders in this area for running or walking. Regardless, pedestrian trips are primarily recreational without a specific destination along with some residence to residence travel. Pedestrians may legally use the paved shoulder per the NYS Vehicle and Traffic Law Section 1156(b). The existing shoulder width varies from 2 to 5 feet. The shoulder width would be standardized at 4 feet (minimum) throughout the corridor in conjunction with resurfacing and the application of new pavement markings to enhance pedestrian accommodation. No other pedestrian-specific accommodations are warranted. This is consistent with the NYSDOT Highway Design Manual Chapter 18 and the Capital Projects Complete Streets Checklist included in **Appendix C**.

Bicyclists

The existing level of and potential for bicycling is characterized as low given the rural nature of the project area. There are generators of infrequent bicycle traffic within and near the project limits including rural residential homes and commercial businesses at the southern end of the corridor. Bicyclists may also occasionally travel to and from Conesus Lake to the south. Bronson Hill Road is not a designated bicycle route.

Bicyclists may legally use the paved shoulder and roadway consistent with the NYS Vehicle and Traffic Law Section 1234. The existing shoulder width varies from 2 to 5 feet. The shoulder width would be standardized at 4 feet (minimum) throughout the corridor in conjunction with resurfacing and the application of new pavement markings to enhance bicycle accommodation. The proposed shoulder width would be standard for a non-NHS rural collector with a design year average daily traffic volume below 5,000 vehicles per day. No other bicycle-specific accommodations are warranted. This is consistent with the NYSDOT Highway Design Manual Chapter 17 and the Capital Projects Complete Streets Checklist included in **Appendix C**.

Transit
There are no transit routes or stops along Bronson Hill Road. No transit related improvements would be included in the project.

2.4 Structures

There are no bridges within the project limits.

2.5 Design Standards

The following design standards and resources were consulted to develop the critical design element and other design element parameters for this project:

- NYSDOT Highway Design Manual (HDM)
- National Manual on Uniform Traffic Control Devices for Streets and Highways, Current Edition (MUTCD)
- New York State Supplement to the National Manual on Uniform Traffic Control Devices for Streets and Highways, *2009 Edition* (2011)
- AASHTO A Policy on Geometric Design of Highways and *Streets* (Green Book) 2018

2.5.1 Critical Design Elements

The design criteria applicable to this project consist of critical elements as described in the NYSDOT HDM (Chapter 2). Other design parameters, such as design vehicle, are found either in the NYSDOT HDM, the AASHTO Green Book, or other references. A list of the typical critical design elements that apply to this project is included in **Exhibit 2.5.1-1**.

Exhibit 2.5.1-1
Critical Design Elements Summary

1. Design Speed	9. Vertical Clearance
2. Lane Width	10. Structural Capacity
3. Shoulder Width	11. ADA Compliance
4. Horizontal Curve Radius	
5. Superelevation	
6. Stopping Sight Distance	
7. Maximum Grade	
8. Cross Slope	

Notes:
1. Rollover is the change of grade between the cross slope of adjacent lanes or between travel lanes and the shoulder.

Exhibit 2.5.1-2 and **Exhibit 2.5.1-3** summarize the critical design elements for two segments of Bronson Hill Road based on the posted speed limit.

Exhibit 2.5.1-2 Critical Design Elements for Bronson Hill Road (CR 62) - 35 Mile Per Hour Segment					
PIN:		4LV0.02	**NHS/Non-NHS**	Non-NHS	
Route No. & Name:		CR 62 Bronson Hill Road	**Functional Classification:**	Rural Major Collector	
Project Type:		2R - Resurfacing, Restoration, and Rehabilitation	**Design Classification/Character:**	Rural Collector	
% Trucks (Max)[1]:		4%	**Terrain:**	Rolling	
ADT (2031)[1]:		3690	**Truck Access/Qualifying Hwy.**	Access-No; Qualifying-No	
Element		**Standard**		**Existing Condition**	**Proposed Condition**
1	Design Speed	40 mph[1] *HDM Section 7.5.2.1.A. in accordance with HDM Section 2.6.1*		40 mph	40 mph
2	Lane Width	9 ft[2] *HDM Section 7.5.2.1.B. Exhibit 7-4*		Varies 10 ft to 12 ft	11 ft
3	Shoulder Width	4 ft[2] *HDM Section 7.5.2.1.B. Exhibit 7-4 in accordance with HDM Section 2.7.3.1.C.*		Varies 2 ft to 5 ft	4 ft
4	Horizontal Curve Radius	134 ft Min (at e_{max}=8%) *HDM Section 7.5.2.1.D. Exhibit 7-6*		1350 ft	1350 ft
5	Superelevation	8% Max. *HDM Section 7.5.2.1.E.*		None	None**
6	Stopping Sight Distance (Horizontal and Vertical)	271 ft Min. (Horizontal) 115 ft Min. (Vertical) *HDM Section 7.5.2.1.F. Exhibit 7-7*		>271 ft Min. (Horizontal) >115 ft Min. (Vertical)	>271 ft Min. (Horizontal) >115 ft Min. (Vertical)
7	Maximum Grade	None *HDM Section 7.5.2.1.G.*		2.2% max	2.2% max
8	Cross Slope	1.5% Min. to 3% Max. (Travel Lanes) 2% Min. to 8% Max. (Shoulders) *HDM Section 7.5.2.1.H.*		6.5% Max. (Travel Lanes) 11% Max. (Shoulders)	3% Max. (Travel Lanes) 6% Max. (Shoulders)
9	Vertical Clearance	14 ft Min. 14 ft – 6 in Desirable *HDM Section 7.5.2.1.I. & BM Section 2.3.1*		14 ft Min. (to utilities)	14 ft Min. (to utilities)
10	Design Loading Structural Capacity	<u>New and Replacement Bridges</u> NYSDOT LRFD Specifications AASHTO HL-93 Live Load and NYSDOT Design Permit Vehicle <u>Buried Structures</u> <u>(Box Culverts, 3-sided Frames and Pipes)</u> NYSDOT LRFD Specifications AASHTO HL-93 Live Load and NYSDOT Design Permit Vehicle *BM Section 1.3, HDM 19.5.3*		Existing Concrete Box Culvert: HS-25	NYSDOT LRFD, AASHTO HL-93 Live Load, Permit Vehicle
11	ADA Compliance[3]	Shoulder *HDM Section 7.5.2.1.K., HDM Chapter 18, and PROWAG*		Shoulder[3]	Shoulder[3]

Exhibit 2.5.1-2 Critical Design Elements for Bronson Hill Road (CR 62) - 35 Mile Per Hour Segment				
PIN:	4LV0.02	**NHS/Non-NHS**	Non-NHS	
Route No. & Name:	CR 62 Bronson Hill Road	**Functional Classification:**	Rural Major Collector	
Project Type:	2R - Resurfacing, Restoration, and Rehabilitation	**Design Classification/Character:**	Rural Collector	
% Trucks (Max)[1]:	4%	**Terrain:**	Rolling	
ADT (2031)[1]:	3690	**Truck Access/Qualifying Hwy.**	Access-No; Qualifying-No	
Element	**Standard**		**Existing Condition**	**Proposed Condition**

(1) Livingston County has concurred that the use of a Design Speed of 40 mph is consistent with the anticipated off-peak 85th percentile speed within the range of functional class speeds for the terrain and volume in this segment.

(2) Refer to **Section 2.3.4** for the Crash History and Analysis. Value shown based on determination that crash rate for incidents correctable by engineering measures does not exceed the statewide average for similar facilities and the crash rate including deer and animal collisions does not exceed 1.5 times the statewide average for similar facilities.

(3) Given the project's surrounding area has a low population and there are no significant pedestrian generators, the occasional pedestrian may legally use the shoulder. See **Section 2.3.5** for more information.

**Denotes non-standard feature

NA – Not Applicable

Exhibit 2.5.1-3 Critical Design Elements for Bronson Hill Road (CR 62) - 55 Mile Per Hour Segment					
PIN:		4LV0.02	**NHS/Non-NHS**	Non-NHS	
Route No. & Name:		CR 62 Bronson Hill Road	**Functional Classification:**	Rural Major Collector	
Project Type:		2R - Resurfacing, Restoration, and Rehabilitation	**Design Classification/Character:**	Rural Collector	
% Trucks (Max)[1]:		4%	**Terrain:**	Rolling	
ADT (2031)[1]:		3510	**Truck Access/Qualifying Hwy.**	Access-No; Qualifying-No	
Element		**Standard**		**Existing Condition**	**Proposed Condition**
1	Design Speed	60 mph[1] *HDM Section 7.5.2.1.A. in accordance with HDM Section 2.6.1*		60 mph	60 mph
2	Lane Width	11 ft *HDM Section 7.5.2.1.B. Exhibit 7-4*		Varies 10 ft to 12 ft	11 ft
3	Shoulder Width	4 ft[2] *HDM Section 7.5.2.1.B. Exhibit 7-4 in accordance with HDM Section 2.7.3.1.C.*		Varies 2 ft to 5 ft	4 ft
4	Horizontal Curve Radius	587 ft Min (at e_{max}=8%) *HDM Section 7.5.2.1.D. Exhibit 7-6*		2500 ft Min.	2500 ft Min.
5	Superelevation	8% Max. *HDM Section 7.5.2.1.E.*		None to 2.75%	5.5% Max.

Exhibit 2.5.1-3 Critical Design Elements for Bronson Hill Road (CR 62) - 55 Mile Per Hour Segment					
PIN:		4LV0.02	**NHS/Non-NHS**	Non-NHS	
Route No. & Name:		CR 62 Bronson Hill Road	**Functional Classification:**	Rural Major Collector	
Project Type:		2R - Resurfacing, Restoration, and Rehabilitation	**Design Classification/Character:**	Rural Collector	
% Trucks (Max)[1]:		4%	**Terrain:**	Rolling	
ADT (2031)[1]:		3510	**Truck Access/Qualifying Hwy.**	Access-No; Qualifying-No	
Element		**Standard**		**Existing Condition**	**Proposed Condition**
6	Stopping Sight Distance (Horizontal and Vertical)	522 ft Min. (Horizontal) 305 ft Min. (Vertical) *HDM Section 7.5.2.1.F. Exhibit 7-7*		>522 ft Min. (Horizontal) >305 ft Min. (Vertical)	>522 ft Min. (Horizontal) >305 ft Min. (Vertical)
7	Maximum Grade	None *HDM Section 7.5.2.1.G.*		7.9% Max.	7.9% Max.
8	Cross Slope	1.5% Min. to 3% Max. (Travel Lanes) 2% Min. to 8% Max. (Shoulders) *HDM Section 7.5.2.1.H.*		6.5% Max. (Travel Lanes) 11% Max. (Shoulders)	3% Max. (Travel Lanes) 6% Max. (Shoulders)
9	Vertical Clearance	14 ft Min. 14 ft – 6 in Desirable *HDM Section 7.5.2.1.I. &* *BM Section 2.3.1*		14 ft Min. (to utilities)	14 ft Min. (to utilities)
10	Design Loading Structural Capacity	<u>New and Replacement Bridges</u> NYSDOT LRFD Specifications AASHTO HL-93 Live Load and NYSDOT Design Permit Vehicle <u>Buried Structures</u> <u>(Box Culverts, 3-sided Frames and Pipes)</u> NYSDOT LRFD Specifications AASHTO HL-93 Live Load and NYSDOT Design Permit Vehicle *BM Section 1.3, HDM 19.5.3*		Existing Concrete Box Culvert: HS-25	NYSDOT LRFD, AASHTO HL-93 Live Load, Permit Vehicle
11	ADA Compliance[3]	Shoulder *HDM Section 7.5.2.1.K., HDM Chapter 18, and PROWAG*		Shoulder[3]	Shoulder[3]

(1) Livingston County 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 in this segment.

(2) Refer to **Section 2.3.4** for the Crash History and Analysis. Value shown based on determination that crash rate for incidents correctable by engineering measures does not exceed the statewide average for similar facilities and the crash rate including deer and animal collisions does not exceed 1.5 times the statewide average for similar facilities.

(3) Given the project's surrounding area has a low population and there are no significant pedestrian generators, the occasional pedestrian may legally use the shoulder. See **Section 2.3.5** for more information.

**Denotes non-standard feature

NA – Not Applicable

2.5.2 Other Design Parameters

In addition to the critical design elements described in **Section 2.5.1**, other design parameters established by the NYSDOT and AASHTO that are typically used to design roadway projects include design vehicles, rainfall amounts for drainage facilities, and others.

Exhibit 2.5.2-1
Other Design Parameters: General

	Element	Standard Criteria	Proposed Condition
1	Level of Service (intersections)	LOS D Minimum LOS C Desirable	LOS C or better
2	Drainage Design Storm	10 Year Storm[1]	10 Year Storm + 10% for climate change

Notes: 1. Refer to **Section 2.6.6** for discussion and justification of design storm selection.

Exhibit 2.5.2-2
Other Design Parameters: Design Vehicle

Location (Intersection)	Design Vehicle	Vehicle Accommodated
US Route 20A/NYS Route 15[1]	SB Right: SU NB Right: P EB Left: SU EB Right: EB-62 WB Left: SU WB Right: WB-62 Remaining: WB-67	No Change
Stone Hill Road	WB-40	No Change
South Lima Road	WB-40	No Change
Marshall Road / Dutch Hollow Road	WB-40 with exception of northbound left: SU	No Change
Sutton Road	WB-50 with exception of northbound left: WB-40	No Change
US Route 20/NYS Route 5	NB Right: WB-50 NB Left: WB-40 EB Right: WB-40 WB Left: WB-40	NB Right: Day Cab + 48 ft Trailer[2] NB Left: WB-40 EB Right: Day Cab + 48 ft Trailer[2] WB Left: WB-40

Notes:

1. Refer to **Section 2.2.2** for additional information on a concept design that could improve specific turning movements at this intersection in the future.
2. Refer to **Section 2.6.6** for additional information related to proposed pavement and drainage changes that would also accommodate the larger design vehicle.

2.5.3 Existing and Proposed Highway Plan and Section

Refer to **Appendix A** for plans and typical sections illustrating the proposed alternative.

Existing lane widths vary between 10 feet and 12 feet. Existing travel lane cross slopes vary between 1.5% and 6.5%. Existing shoulder widths vary between 2.5 feet and 5 feet. Existing shoulder cross slopes vary between 1.5% and 11%. There are no edge drop-offs between the traveled way and shoulders. Shoulder edge drop-off conditions in excess of 2 inches exist only at a few locations throughout the project limits. Travel lane cross slopes would be improved to a uniform 3% (maximum) in conjunction

with pavement milling and resurfacing. Shoulder cross slopes would be improved to a uniform 6% (maximum). Shoulder backup material would be installed along the pavement edges.

There are three horizontal curves within the project limits:

- Curve No. 1 (Station B 26+41) has a radius of 1,350 feet. It is located at the transition between the 35 mile per hour and 55 mile per hour speed zones. It includes the intersection of Bronson Hill Road and Stone Hill Road. It has curve warning signs (W1-2) with 35 mile per hour advisory speed panels (W13-1P). The curve has no superelevation based on available mapping. The superelevation rate for a design speed of 40 miles per hour would be 5%. There is no adverse crash history associated with this curve. Increasing the superelevation to meet standards would require the east (high) side of Bronson Hill Road to be raised approximately 1 foot where it meets Stone Hill Road. It would also affect adjacent ditches, utilities, and highway boundaries which is beyond the scope of the project. This project proposes to retain the existing superelevation as a non-standard feature. This would not preclude a future reconstruction project from improving the superelevation to meet standards.

- Curve No. 2 (Station B 90+29) has a radius of 2,500 feet. The curve is within the 55 mile per hour speed zone. It has a curve warning signs (W1-2) in the northbound direction without advisory speed panels. Available (LIDAR) mapping suggests that the curve has adequate superelevation (5.5%) for a design speed of 60 miles per hour. There is no adverse crash history associated with this curve. Supplemental survey would be obtained during detailed design to confirm and/or assess the need for changes or a non-standard feature justification.

- Curve No. 3 (Station B 186+70) has a radius of 7,500 feet. The curve is within the 55 mile per hour speed zone and located just south of the intersection with Marshall Road and Dutch Hollow Road. This curve has no advance warning signs. The southbound lane has adequate superelevation (2.5%) for a design speed of 60 miles per hour but the northbound lane does not based on available mapping. There is no adverse crash history associated with this curve; however, preliminary design investigations suggest it can be improved to meet standards without impacting adjacent utility poles or private properties. It is assumed the project would correct the substandard superelevation in conjunction with milling and resurfacing of the pavement surface at this location.

- Curve No. 4 (Station B 201+43) has a radius of 5,000 feet. The curve is within the 55 mile per hour speed zone and includes the intersection with Sutton Road. The curve has no advance warning signs. Neither the northbound nor southbound travel lane have adequate superelevation (3.5%) for a design speed of 60 miles per hour based on available mapping. There is no adverse crash history associated with this curve. Improving the southbound travel lane would affect the Sutton Road intersection and adjacent private property. The project would enhance superelevation to the extent feasible without substantial impacts to adjacent roadside, utilities, and private property to as determined practical during detailed design; however, it is unlikely that the design superelevation can be reached. Therefore, the project would retain superelevation along this curve as a non-standard feature. This would not preclude a future reconstruction project from improving the superelevation to meet standards.

2.5.4 Nonstandard/Nonconforming Features

2.5.4.1 Nonstandard Features - Nonstandard features are critical design elements that would not comply with the geometric features and cross section elements listed in **Section 2.5.1**. A nonstandard superelevation would be retained on Curve No. 1 and in the southbound direction on Curve No. 4 (at minimum). Refer to the discussion in **Section 2.5.3** for additional detail. Nonstandard feature justification forms are included in **Appendix F**. No other nonstandard features are proposed.

2.5.4.2 Nonconforming Features – Other design features were taken into consideration in addition to the critical design elements contained in Chapter 7 of the NYSDOT HDM. Non-critical design elements

within the project limits are presented in **Section 2.5.2.** Refer to the Non-Conforming Features Checklist in **Appendix F** for a summary of additional design elements of interest.

2.6 Other Infrastructure Considerations

2.6.1 Pavement and Shoulder Conditions

Livingston County's pavement history indicates that underdrains were installed along the edges of the roadway prior to 1996. The pavement was later recycled and topped with hot mix asphalt (HMA). The roadway received a crack seal in 2005, shimming with a true and leveling (T&L) course in 2008, a non-structural NOVAChip treatment in 2010, and regular crack sealing again since 2013.

Pavement surface observations were conducted in the spring of 2020. Most of the pavement surface exhibits a low to medium degree of longitudinal, transverse, and alligator cracking. There are areas where the surface wearing course is raveling and limited areas with edge cracking along the shoulder. Transverse corrugations can be felt when driving near the roadway's southern end. Livingston County has attributed that condition to shoving of the NOVAChip overlay during winter snow and ice removal operations. Pavement conditions are especially poor, with broken asphalt and rutting, in the southwest and southeast corners of the intersection with US Route 20 and NYS Route 5 due to a lack of positive drainage and perpetually wet conditions. The 2019 Initial Project Proposal (IPP) for PIN 4LV0.02 issued a pavement surface condition rating of 5 which is consistent with recent field observations.

A series of 18 pavement cores were taken throughout the project limits in the spring of 2020. Pavement core logs are included in the Geotechnical Engineering Report contained in **Appendix D**. The pavement core results were consistent with the details of the pavement history. On average, Bronson Hill Road's existing pavement structure can be characterized as follows:

- ½ inch NOVAChip overlay;
- 1 ¾ inches of HMA top;
- 4 ¼ inches of recycled binder mix;
- 8 ½ inches of subbase; and
- 6 ½ inches asphalt, total.

There are locations with lesser amounts of asphalt and lesser amounts of subbase as recorded in the Geotechnical Engineering Report. The pavement core results suggest the non-structural overlay is subject to stripping and the recycled binder mix often came apart in the process of core extraction.

A Pavement Evaluation and Treatment Selection Report (PETSR) is included in **Appendix D**. Pavement rehabilitation is recommended to address identified surface cracking, improve ride quality, and correct travel lane and shoulder cross slope deficiencies. Spot full-depth pavement repairs and full-depth shoulder reconstruction would be done in locations of need. The extent of the reconstruction areas would be specifically identified during detailed design. The pavement surface would undergo 1-inch cold milling where necessary (i.e. not necessarily the entire length and width of the pavement), removing the ½ inch non-structural NOVAChip overlay but retaining at least 1-inch of HMA on top of the recycled binder material to provide a measure of protection while traffic is allowed to run on the milled surface.

Desirable pavement thickness was assessed using both the Conventional Pavement Thickness Guide and the Equivalent Single Axle Loading (ESAL) pavement design procedures outlined in the NYSDOT Comprehensive Pavement Design Manual (CPDM). The former recommends a total thickness of 6 ½ inches while the latter recommends a total thickness of 6 ½ to 6 ¾ inches for full depth reconstruction. Placement of a true and leveling course (as needed) along with a 1 to 1 ½-inch lift of top course HMA would result in a total average pavement thickness of 7 inches or more which would satisfy the recommended range. This would also provide an opportunity to correct travel lane and cross slope deficiencies. Intersection grading on the north leg of the intersection of US Route 20A/NYS Route 15 and Bronson Hill Road would be adjusted slightly in conjunction with resurfacing to smooth the transition from the state highway's cross slope to CR 62. Shoulder backup and driveway apron paving would be done where necessary to tie in the new edge of shoulder.

2.6.2 Right of Way

Anticipated property acquisitions are summarized in **Exhibit 2.6.2.** They are also shown on the plans in **Appendix A**. In summary, the project would require 10 mapped easements for construction, grading, and maintenance associated with replacement cross culverts. All takings would be de minimis.

Exhibit 2.6.2
Anticipated Right-of-Way Acquisitions

Map No.	Parcel No.	Address	Reputed Owner Tax Map No.	Type of Take	Estimated Acquisition Area (SF / Acres)	Remarks
1	1	Bronson Hill Road	Just Dirt LLC 65.00-1-65.111	Permanent Easement	2184.00 / 0.051	Grading / Drainage
2	1	6176 Stone Hill Road	Margaratt Schuster 65.00-1-59.000	Permanent Easement	2604.00 / 0.060	Grading / Drainage
2	2			Permanent Easement	1638.00 / 0.038	Grading / Drainage
3	1	6066 Stone Hill Road	Just Dirt LLC 65.00-1-65.127	Permanent Easement	1240.00 / 0.029	Grading / Drainage
3	2			Permanent Easement	375.53 / 0.009	Grading / Drainage
4	1	6069 Stone Hill Road	Gregory Mitrousis 65.00-1-69.310	Permanent Easement	822.45 / 0.019	Grading / Drainage
5	1	3186 Bronson Hill Road	Leslie L. Cole JR Elma S. Cole 65.00-1-16.111	Temporary Easement	18375.14 / 0.422	Construction Access
6	1	Bronson Hill Road	Thomas M. Siegl 55.00-1-16.240	Permanent Easement	350.29 / 0.009	Grading / Drainage
7	1	2575 Bronson Hill Road	Timothy A. Arend 55.00-1-18.100	Permanent Easement	600.33 / 0.014	Grading / Drainage
8	1	2222 Bronson Hill Road	Angela M. Boop Dennis J. Boop 45.00-1-25.110	Permanent Easement	1114.23 / 0.026	Grading / Drainage
9	1	2154 Bronson Hill Road	Association of Muslim Community 45.00-1-24.300	Permanent Easement	1072.28 / 0.025	Grading / Drainage
10	1	2219 Bronson Hill Road	New Horizon Christian Fellowship 45.00-1-32.710	Permanent Easement	1243.16 / 0.029	Grading / Drainage

2.6.3 Geotechnical

Refer to the Geotechnical Engineering Report contained in **Appendix D** for specific information. A series of 5 test borings were advanced to a depth of approximately 10 feet below existing grade at representative locations along the project corridor. The native soils were found to be a mixture of clay, sand, and gravel. Groundwater was not encountered until a depth of 8 feet or greater at the time the borings were taken in the spring of 2020. The subgrade modulus for pavement design was estimated at 6,000 pounds per

square inch (psi). No special geotechnical considerations regarding soils or rock slopes within the project limits are anticipated. Dewatering may be required to perform excavation, install bedding material, and construct cross culverts adjacent to wetland areas. No other special geotechnical construction techniques are anticipated that would affect design or construction.

2.6.4 Access Management

There are no access management considerations associated with this project

2.6.5 Traffic Control Devices

Signs and signposts within the project limits are in good condition based upon field inspection. Signs are also generally compliant with the National Manual on Uniform Traffic Control Devices, New York State Supplement, and applicable revisions (MUTCD), except as follows:

- Street name signs (D3-1) have legends written in all capital letters. These signs would be removed and replaced by Livingston County forces in conjunction in conjunction with the end of their useful life.

- A confirmatory CR 62 (M1-6) guide sign with “Bronson Hill Road” supplementary panel (D3-1) is missing on the southbound departure from the intersection with South Lima Road. Supplementary D3-1 panels are also missing from other CR 62 signs along the roadway. Missing signs would be installed separately by Livingston County forces.

- A motorized vehicle (truck) (W11-10) sign is supplemented with a 35 mile per hour advisory speed panel (W13-1P) below and a custom “Caution” panel above on the northbound approach to the Purdue Agribusiness driveway. The “Caution” panel has fluorescent yellow green sheeting and does not match the sheeting of the remaining sign panels in the assembly. The “Caution” panel would be removed and replaced with two 12-inch by 12-inch sign markers (NYW7-15). This work would be done separately by Livingston County forces.

- Speed limit signs (R2-1 or NYR2-2) signs are missing southbound heading away from US Route 20/NYS Route 5 and northbound heading away from Sutton Road. Missing signs would be installed by Livingston County forces.

- Existing runs of guide rail lack snowplow markers. They would be installed along any new and replacement runs of guide rail as part of the project.

Pavement markings on Bronson Hill Road are in fair condition based on field inspection. The road has 4-inch yellow centerline striping and 4-inch white edge lines in conformance with the MUTCD. There are marked passing and no passing zones. Differences were identified between the existing passing zones and those shown on Livingston County’s pavement marking log. Marked passing and no passing zones were also evaluated per guidance in the NYSDOT HDM, AASHTO Green Book, and MUTCD. Four locations were identified where passing may need to be prohibited based on available sight distance at crest vertical curves. New pavement markings would be installed throughout the project limits, subsequent to resurfacing, in accordance with the current MUTCD. Applicable NYSDOT standard details would be followed. Passing zone revisions would be assessed during detailed design and modifications made to the existing striping plan, where needed.

The intersections of Bronson Hill Road with US Route 20A/NYS Route 15 and US Route 20/NYS Route 5 are controlled by actuated traffic signals. The signal at the southern project limit operates in three phases with split phasing on the northbound and southbound approaches. The signal at the southern project limit operates in two phases. Both are owned and maintained by the NYSDOT. Existing inductance (presence) loops would be disturbed by the milling and resurfacing operations on Bronson Hill Road. The loops would be replaced to meet current NYSDOT Region 4 preferences. No other traffic signal work is proposed under this project.

2.6.6 Drainage Systems

Existing Conditions

The existing drainage system primarily involves sheet flow that drains into open roadside ditches which drain to underground cross culverts of varying sizes and materials. These ditches drain to low points in the topography, utilizing the cross culverts to follow natural flow patterns off site. Driveway culverts span the ditches to provide access to commercial, residential, and agricultural properties.

There are three drainage inlets with rectangular frames and grates within the project limits. All appear in good condition based on field observation.

Existing cross culverts are in generally fair condition and consist of a variety of metal and plastic pipes. Most lack suitable end treatments and have drop offs at the pavement edge. Refer to **Exhibit 2.6.6** in **Appendix E** for a summary of existing cross culvert inventory and conditions.

Based upon visual inspection, the existing ditches are in fair condition. Flow in open ditches is typically impeded by relatively flat grades, poorly sloped driveway culverts, and debris or sediment build up. All ditches and driveway culverts provide sufficient capacity to handle storm runoff by observation with two notable exceptions. The east side ditch from US Route 20A/NYS Route 15 to a point approximately 1,900 ft north has experienced flooding in storm events, likely due to poor conditions and undersized pipes. The west side ditch from Stone Hill Road to a point approximately 2,800 ft north has experienced flooding and capacity concerns as well. Several existing driveway pipes are buried, collapsed, and/or in poor condition based on field observation. Most lack suitable end section treatments and several stone/timber/rock headwalls exist.

Hydraulic Considerations

Peak flows for design were determined using a hydraulic and hydrologic methodology prepared in accordance with the NYSDOT Highway Design Manual (HDM), Chapter 8 – Highway Drainage. The overall drainage area associated with each culvert varied by contributing area. The Rational Method (Q=CiA) was applied in determining peak runoff values for the required storm events given the drainage area size of less than 1 square mile. Each drainage area was calculated using ARC GIS and Livingston County LIDAR mapping. The areas were overlaid with stream layers, land use layers, and the roadway layer to provide data necessary for the Rational Method.

Rainfall Intensity (i) values were obtained from the Northeast Regional Climate Center (NRCC) for the project area. Runoff coefficient (C) values for specific land uses were selected based on HDM Chapter 8, Table 8-3 and based on ground cover identified from aerial imagery and GIS land use data. The coefficient values ranged from 0.4 to 0.98.

Per Table 8-2 of the HDM, rural major collector culvert crossings should be designed to pass the 50-year flood frequency; however, it is acceptable for the design flood to be reduced to the 10- or 25-year flood frequency when the reasoning is presented in the design approval document. It is also noted that a 10- or 25-year frequency should be used for smaller crossings such as driveways. For Bronson Hill Road, the existing and proposed cross culverts were evaluated for the 10-year storm event with a 10% increase to account for climate change based on the stated design procedures. Reasons supporting selection of this storm event are as follows:

- The existing crossings are sized for approximately the 10-year (or less) frequency event;
- All proposed crossings would have increased capacity in comparison to the existing pipes;
- Making the roadway profile changes necessary to install structures capable of passing the 50-year event would be beyond the scope of this rehabilitation project;

- The structures are draining a relatively small area that does not include major waterways; and
- Increasing the capacity of these crossings could have unintended consequences of increased downstream flooding elsewhere.

Therefore, the existing and proposed culverts were analyzed using the Federal Highway Administrations HY-8 Culvert Analysis System based on the hydraulic analysis for the 10-year frequency storm. Sizing was based on the requirement that the 10-year frequency storm event not encroach onto the shoulder. Given the nature of this rural major collector roadway, freeboard was considered sufficient at zero feet.

Proposed Actions

Thirteen culverts were analyzed; 10 would be replaced given a need for increased capacity and one, at the site of the railroad crossing and deep within Bronson Hill Road's embankment, would be slip-lined or plugged and abandoned pending further examination during detailed design. Of the 10 culverts to be replaced, 6 would be replaced with reinforced concrete pipes of the same or similar size. In lieu of reinforced concrete pipe, Livingston County may provide heavy wall steel pipe for installation as this is their standard practice for shallow pipe installations. Three existing corrugated metal pipe crossings would be replaced with precast concrete box culverts and one culvert would be replaced with a reinforced concrete elliptical pipe.

Refer to **Exhibit 2.6.6** in **Appendix E** for a summary of hydraulic parameters and anticipated sizing information at preliminary design. Concrete box heights and spans may be updated slightly during detailed design; however, this is not anticipated to alter the preliminary design level costs or anticipated property acquisition requirements. Box culverts were chosen given permitting requirements to have a clear width of 1.25 times the stream channel width at Ordinary High Water (OHW) and have a natural bottom with a depth of 20% (minimum) of the culvert height (rise). Box culverts would provide the most cost-effective and maintenance friendly solution given the hydraulic and permitting needs for the project.

Culverts 2 and 12 carry minor tributary (Class C) streams that require aquatic species passage. The selected box sizing would provide a natural stream bottom as well as the capacity to pass the design storm. Additionally, Culvert 1 has been identified to carry a stream, would also have a natural stream bottom, and the necessary capacity to pass the design storm. No other crossings require fish passage.

In general, cross culverts would be extended to outside the existing clear area to promote roadside safety. All proposed culvert ends would be installed in accordance with NYSDOT Highway Design Manual, Chapter 7, with traversable side slope grading or shielding with guide rail. Refer to **Section 2.6.8** for more information regarding proposed guide rail. Cross culverts are generally being replaced in kind, maintaining existing line and grade wherever feasible, increasing capacity, and improving roadside safety wherever possible.

Two (2) new drainage structures would be installed in conjunction with the proposed cross culvert replacements to act as junction chambers for converging flows and improve roadside safety. Culvert 3 would involve three converging ditches at a drainage structure with inlet pipes, eliminating a 3-foot +/- deep roadside ditch with a 1:1 foreslope. This would substantially improve roadside safety adjacent to the intersection of Bronson Hill Road and Stone Hill Road. Similarly, Culvert 9 would use a drainage structure to replace a converging roadside ditch with a 1:2 +/- foreslope and a driveway culvert. In this case, the drainage structure would also serve as a drop structure to help limit pipe slope / water velocity prior to reaching the existing downstream channel elevation.

Existing corrugated metal driveway culverts would be replaced to the greatest extent feasible with smooth interior corrugated polyethylene pipe (SICPP). Livingston County's preferred minimum driveway culvert pipe size is 12 inches, however, 15-inch culverts provide improved debris passage. In general, existing 12-inch SICPP driveway culverts would be retained given adjacency to roadway high points, a location outside the highway boundary, or within ditches with adequate capacity by observation. 15-inch SICPP driveway culverts would be installed as a minimum for larger runoff locations as required by capacity. Existing driveway culverts would be made safer by extension and the addition of end sections, traversable side slopes, and the elimination of drainage headwalls and drop-offs. Existing roadside ditches that lack positive drainage or need to be cleaned due to a buildup of debris and sediment would

be cleaned, graded, and shaped to improve roadside ditch flow where necessary.
Incremental pavement, drainage, and grading alterations would be made in the southeast and southwest corners of the intersection with US Route 20/NYS Route 5. Refer to Drawing No. GP-12 in the preliminary plans, **Appendix A**, for an illustration. Both shoulders would be reconstructed. The new asphalt would surround the drainage inlets in both corners and be warped to guide runoff into the existing structures. Frames and grates would be adjusted to meet the proposed final grade. Pipe extensions would be installed to pick up drainage from each of the existing ditches. Areas behind the reconstructed shoulders would be regraded to direct runoff toward the pavement and inlets. Together these improvements would address the identified pavement and drainage deficiencies. Adjustments to the shoulder radii would also remedy the broken edges caused by turning trucks as the right turning design vehicle would be incrementally improved from a WB-50 to a day cab with a 48-foot trailer.

2.6.7 Utilities and Lighting

Public and private utility owners include:

- Electric – National Grid
- Communication – Frontier Telephone
- Cable – Time Warner
- Gas – RG&E
- Gas (Other) – Tennessee Gas Pipeline
- Water – Livingston County Water & Sewer Authority
- Traffic Signal - NYSDOT

Additionally, there are service drops / laterals, both underground and overhead, to the numerous residential and commercial properties located throughout the project limits. There are several “double” utility poles within the project limit, where National Grid installed new utility poles and the additional utility companies have yet to relocate their facilities to the new poles.

Anticipated utility relocations or adjustments required to complete the proposed construction are summarized in **Exhibit 2.6.7**.

Exhibit 2.6.7
Location of Potential Utility Impacts

Owner	Type	Location/Side	Condition/Conflict
RG&E	Gas	Underground – Adjacent to Proposed Cross Culverts	Condition unknown; no obvious conflicts. Possible relocation due to construction of precast concrete box culverts with natural stream bottoms, pending test pit(s).
Livingston County Water & Sewer Authority	Water	Underground – US Route 20A/NYS Route 15 to Stone Hill Road, Adjacent to Proposed Cross Culverts	Condition unknown; no obvious conflicts. Possible relocation due to construction of precast concrete box culverts with natural stream bottoms, pending test pit(s).
Frontier Telephone / Time Warner	Communication / Cable	Throughout the Project Limits	“Double” Utility Poles detract from roadside safety and should be eliminated by the pole owner(s).

Roadway lighting fixtures are suspended on arms mounted to wooden utility poles along the west side of Bronson Hill Road for a distance of approximately 1,500 feet north of the intersection with US Route 20A/NYS Route 15 and at all intersections within the project limits. No changes to the existing lighting systems are proposed.

2.6.8 Guide Railing, Median/Roadside Barriers and Impact Attenuators

There are two runs of existing W-Beam (weak post, G2) guide rail within the project limits: one each along either side of Bronson Hill Road (STA B 70+50+/- to STA B 74+50+/- left and right). No segments were found to be non-functioning or severely deteriorated based on field observation. There is no adverse crash history associated with these features. Both rails had a measured height of 25 inches which is less than the minimum requirement of 29 inches. In addition, the weak post G2 w-beam guide rail system does not satisfy NCHRP350 high-speed crash tests at test level 3. Both sections of rail would be replaced with box beam guide rail and Type I end assemblies meeting current NYSDOT standards.

There are three concrete barrier end sections within the clear zone at the existing concrete box culvert (C-13, C62023150) over Little Conesus Creek. These end sections do not adequately shield vehicles from the creek which is considered a nonbypassable water hazard. The posted speed limit is 55 miles per hour and 85th percentile speeds in this area approach 70 miles per hour. While there is no existing adverse crash history associated with the end sections, removing them from the clear zone would reduce the potential for high-speed vehicle contact that could lead to overturning. There is also a custom bridge rail transition in the southeast quadrant that permits access to a private driveway immediately south of the culvert. The project would replace the three existing concrete barrier end sections with concrete barrier to box beam transitions and install standard box beam end assemblies. The existing custom transition would remain.

Existing culvert C-12 (C62022430) would be replaced with a precast concrete box culvert as part of the project. The line of fixed objects along the east side of the roadway is set back near the target clear zone (+/-30 feet). There is also an existing ditch line along the side of Bronson Hill Road and an existing utility pole that would be affected if the culvert were extended 30 feet from the edge of the traveled way. To avoid these impacts, the tapered and flared end section would be kept closer to the roadway resulting in a drop-off and non-traversable (1:2) side slopes. New box beam guide rail with Type IIA end assemblies would be installed to shield this condition.

Exhibit 2.6.8
Proposed Location of Guide Railing, Median Barriers, and Impact Attenuators

Type	Location	Side	Length (ft)	End Assemblies
Box Beam	STA B 69+50 to STA B 74+75 ±	Left	370	Type I (2 each)
Box Beam	STA B 69+90 to STA B 75+25 ±	Right	380	Type I (2 each)
Box Beam	STA B 223+00 to STA B 225+00 ±	Right	150	Type IIA (2 each)
Concrete Barrier to Box Beam Transition	STA B 230+10 to STA B 231+30 ±	Left	75	Type IIA
Concrete Barrier to Box Beam Transition	STA B 231+60 to STA B 233+10 ±	Left	32	Type III
Concrete Barrier to Box Beam Transition	STA B 231+90 to STA B 234+50 ±	Right	160	Type I

2.6.9 Intelligent Transportation Systems (ITS)

There are no existing ITS features within the project limits and none are proposed.

2.6.10 Landscape and Community Enhancement Considerations

Surrounding vegetation (primarily grass) is consistent with rural and rural residential environments. New embankments, cleaned ditches, and other areas disturbed by construction activity would be restored in kind. Field areas would be restored with roadside topsoil and turf establishment. Lawn areas fronting private residences and commercial businesses would be restored with lawn topsoil and turf establishment. Some clearing and grubbing of trees would be necessary immediately adjacent to the ends of new cross culverts (i.e. pipes and concrete box culverts) to allow for construction and the installation of stone aprons. No new tree plantings or other landscaping features are proposed.

2.7 Work Zone Safety and Mobility

2.7.1 Transportation Management Plan

This project is not classified as a Significant Project, therefore its Transportation Management Plan (TMP) would consist of a Temporary Traffic Control (TTC) plan consistent with 23 CFR 630.1012. To satisfy this requirement, the construction documents would include Work Zone Traffic Control notes, plans, and details. The requirements of Section 619 of the New York State Standard Specifications would apply to the contract.

2.7.2 Proposed Work Zone Traffic Control

All work zones would be set up in conformance with the MUTCD and New York State Supplement. A clearly marked travel way would be delineated with temporary pavement markings, traffic signage, barricades, drums, cones, etc. as applicable while traffic is maintained through the project area. Flaggers would be utilized to direct traffic when and where required.

Conceptual work zone traffic control and construction staging schemes involve the following:

- Shoulder closures for work outside the through travel lanes (e.g. shoulder reconstruction, off-roadway cross culvert work, driveway culvert work, ditch grading, driveway paving, signing, utilities, final grading, turf establishment, etc.)

- Staged construction of most cross culverts: closing one-half of the roadway at a time and requiring alternating one-way traffic. Traffic would be controlled by flaggers when all work can be accomplished within one workday and/or the roadway can be reopened to serve two-way traffic at the end of the workday. Livingston County requires the use of temporary traffic signals to control alternating one-way traffic if the contractor expects the roadway cannot be reopened to two-way traffic at the end of the workday. Where feasible, and with the advance approval of Livingston County, the contractor may opt to include two cross culverts within one work zone; however, they would be required to limit the length of the alternating one-way segment (e.g. to ½ mile or less (+/-)) and minimize the number of private properties affected as a condition of approval.

- A short term closure of Bronson Hill Road to through traffic may be allowed between US Route 20A/NYS Route 15 and Stone Hill Road for the replacement of Culverts 1 and 2. The roadway to the south of the culverts would remain open to local traffic at all times. A detour would be posted utilizing US Route 20A/NYS Route 15 and Stone Hill Road as shown in **Exhibit 2.7.2** in **Appendix C**. The Contract documents would contain provisions to limit the number of calendar days this closure could be kept in place by a contractor. Seasonal restrictions would also apply.

- Alternating one-way traffic with flagging control for work affecting active travel lanes (e.g. daytime installation of drainage pipes or box culverts, milling, resurfacing, pavement marking, shoulder backup, loop replacements, valve adjustments, etc.)

No other detours are proposed. The nearest parallel route to the east is NYS Route 15 (Rochester Road) which is between ¾ and 1 ¼ miles away. The nearest parallel route to the west is Poplar Hill Road (CR 47/CR 55) which is 1 ½ to 1 ¾ miles away.

Special Provisions

Nighttime construction is not anticipated. Work zone traffic control would be coordinated with local officials, residents, utility owners, school districts, police, and local emergency service providers. Access to affected residential properties would be maintained throughout construction.

There are no significant generators of pedestrian traffic within the project limits; therefore, special accommodations would not be necessary during construction. Through bicyclists would be expected to follow temporary traffic patterns (e.g. alternating one-way traffic).

Temporary travel lanes could be restricted to less than 14-feet wide with advance public notice, advance signage, and advance notification to regional transportation authorities of planned restrictions affecting over width vehicles.

The duration which traffic can be maintained on a milled roadway surface would be limited by contract and reflected in the suggested construction sequence.

Police, Fire, and Ambulance Access

The Livingston County Sheriff's Office provides public safety and law enforcement services within the project limits.

The Lakeville Volunteer Fire Department provides coverage to the southern portion of Bronson Hill Road from their facility on Stone Hill Road located approximately three quarters of a mile west of the project area. The Livonia Emergency Medical Service provides services to the town of Livonia. Ambulance services in the Town of Livonia are provided by the Livonia Ambulance District #1. Their facility is located on NYS Route 15 (South Livonia Road) approximately 2 miles east of the project area.

The East Avon Fire Department provides coverage to the northern portion of Bronson Hill Road from its facility on NYS Route 15 (Lakeville Road) just under 1 ½ miles to the west of the project area. The Livingston County EMS and Lima Ambulance Service (2 ¾ miles east) both serve the northern end of the project area.

The project would require coordination with the emergency service providers during construction. It would have no significant long-term impacts on police, fire protection, or ambulance access.

School Districts

The Livonia Central School District covers the southern end of the project area while the Avon Central School District covers the north. The project would require coordination with the school districts and their transportation departments during construction. It would have no significant long-term impacts on police, fire protection, or ambulance access.

2.8 Additional Considerations

Stopping Sight Distance

Horizontal and vertical stopping sight distance were reviewed in accordance with the NYSDOT HDM. All horizontal curves along Bronson Hill Road afford more than the horizontal stopping sight distance required by the design speed or posted advisory speed. All crest vertical curves along Bronson Hill Road afford more stopping sight distance than required for the design speeds of 40 mph and 60 mph as referenced in **Exhibit 2.5.1-2** and **Exhibit 2.5.1-3**, respectively. There are no underpasses or overhead trees that substantially block sight lines at sag vertical curves based on field observation.

Roadside Elements

The existing clear zone physically matches the roadside clear area. It is defined by embankments, mature trees, utility poles, adjacent structures, wetlands, and private property. Refer to **Section 2.3.4** for additional information on the crash history. Overall, 16% of the total crashes occurring on mainline segments along Bronson Hill Road (between intersections) were associated with fixed objects and indicative of a roadway departure. The overall severity of the crashes that occurred during the study period was low with no fatalities, 18% injury, and 82% property damage or non-reportable. Providing a wider clear zone would involve substantial cost, roadside grading, and right-of-way acquisition beyond the scope of this rehabilitation project.

2.8.1 Constructability Review

There are no unique circumstances or design features that would negatively impact the constructability of the project.

Elliptical concrete pipe, precast concrete box culverts, and precast concrete box culvert end sections may have long-lead times for fabrication and delivery. The contract would include stipulations that the contractor provide shop drawings for approval by the engineer within a set duration after award to expedite the process. Bidding and award would be scheduled with consideration given to the time it would take to approve, order, fabricate, and install the box culverts prior to milling and resurfacing such that top course asphalt can be placed before the paving season ends.

2.8.2 Ownership and Maintenance Jurisdiction

Livingston County owns and maintains Bronson Hill Road. Livingston County also owns and maintains East Lake Road and South Lima Road. The County has contracts with the Towns of Livonia and Avon for snow and ice control services. Basic services provided under the contract include: snow watch and dispatching; purchase, storage and application of salt and abrasives from Town stockpiles; snow plowing and wingback work; field supervision of salting and plowing activities; and observance of customary practice for correction of snow plow damage

The NYSDOT owns and maintains US Route 20A/NYS Route 15 and US Route 20/NYS Route 5, including the traffic signals at either end of the project limits. The Towns of Livonia and Avon own and maintain the remaining intersecting roadways within the project limits. The existing maintenance jurisdiction within the project limits is summarized in **Exhibit 2.8.2**. Ownership and Maintenance Jurisdiction would not be altered by the project.

Exhibit 2.8.2
Existing Maintenance Jurisdiction

Part No.	Highway	Limits	Feature(s) being Maintained	Centerline (mile)	Lane (mile)	Agency	Authority
1	East Lake Road (CR 6)	400 feet south of US Route 20A/NYS Route 15	Pavement, shoulder, drainage, signs, pavement markings, guide rail	0.08	0.16	Livingston County	Highway Law Section 129
2	US Route 20A/NYS Route 15	500 feet east and west of Bronson Hill Road	Pavement, shoulder, drainage, signs, pavement markings, guide rail, traffic signal	0.18	0.36	NYSDOT	Highway Law Section 349C

Exhibit 2.8.2
Existing Maintenance Jurisdiction

Part No.	Highway	Limits	Feature(s) being Maintained	Centerline (mile)	Lane (mile)	Agency	Authority
3	Bronson Hill Road (CR 62)	US Route 20A/NYS Route 15 to US Route 20/NYS Route 5	Pavement, shoulder, drainage, box culvert, signs, pavement markings, guide rail	5.20	10.40	Livingston County	Highway Law Section 129
4	Stone Hill Road	500 feet east and west of Bronson Hill Road	Pavement, shoulder, drainage, signs, pavement markings	0.18	0.36	Town of Livonia	Highway Law Section 10 Subdivision 25
5	South Lima Road (CR 19)	500 feet east and west of Bronson Hill Road	Pavement, shoulder, drainage, signs, pavement markings	0.18	0.36	Livingston County	Highway Law Section 129
6	Marshall Road	500 feet west of Bronson Hill Road	Pavement, shoulder, drainage, signs, pavement markings	0.09	0.18	Town of Avon	Highway Law Section 10 Subdivision 25
7	Dutch Hollow Road	500 feet east of Bronson Hill Road	Pavement, shoulder, drainage, signs, pavement markings	0.09	0.18	Town of Avon	Highway Law Section 10 Subdivision 25
8	Sutton Road	500 feet west of Bronson Hill Road	Pavement, shoulder, drainage, signs, pavement markings	0.09	0.18	Town of Avon	Highway Law Section 10 Subdivision 25
9	US Route 20/NYS Route 5	500 feet east and west of Bronson Hill Road	Pavement, shoulder, drainage, signs, pavement markings, traffic signal	0.18	0.36	NYSDOT	Highway Law Section 349C

2.8.3 NYS Smart Growth Public Infrastructure Policy Act (SGPIPA)

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

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 and the current project scope. A copy of the Smart Growth Screening Checklist is provided in **Appendix I**.

2.8.4 Miscellaneous Information

None.

CHAPTER 3 – SOCIAL, ECONOMIC AND ENVIRONMENTAL CONSIDERATIONS

Refer to the Social, Economic and Environmental Resources Checklist (SEERC) included in **Appendix B** for information on all environmental issues for which the project was screened.

3.1 National Environmental Policy Act (NEPA)

Per the result of the Federal Environmental Approvals Worksheet (FEAW) provided in **Appendix B**, this project is being progressed as a NEPA Class II action (Categorical Exclusion or CE) because it does not individually or cumulatively have a significant environmental impact. As a CE, it is excluded from the requirement for the preparation of an Environmental Impact Statement (EIS) or Environmental Assessment (EA).

Per the Federal Highway Administration's regulations in 23 CFR 771.117, this project qualifies as a Categorical Exclusion (CE). The project is primarily a Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes (including parking, weaving, turning, and climbing lanes (23 CFR 771.117(c)(26)) and does not significantly impact the environment. In accordance with the NYSDOT/FHWA Programmatic Agreement Regarding Categorical Exclusions, the NYSDOT on behalf of FHWA will make the NEPA environmental determination. Refer to the FEAW in **Appendix B** for the details of this determination.

3.2 State Environmental Quality Review Act (SEQRA)

Livingston County is the SEQRA Lead Agency. Livingston County has classified the project as a SEQRA Type II Action in accordance with 6 NYSCRR 617.5. Projects classified as Type II projects require no further processing or consideration under SEQR.

3.3 Additional Environmental Information

3.3.1 School Bus Routes and Emergency Service Response

As noted in **Section 2.7**, no long detours are proposed. The project would require coordination with the Livingston County Sheriff's Office, Lakeville Volunteer Fire Department, East Avon Fire Department, and the Livonia Central School District during construction. The project would have no significant long-term impacts on police, fire protection or ambulance access.

3.3.2 Wetlands

There are no NYSDEC regulated freshwater wetlands or regulated adjacent areas (100 feet) within the project area, as per the NYSDEC Freshwater Wetlands Mapping on the NYSDEC Environmental Resource Mapper. A site visit was performed on March 31, 2020 which verified this. No further investigation is required and Environmental Conservation Law, Article 24 is satisfied.

A field delineation of wetlands to delineate the boundaries of any potentially jurisdictional aquatic resources was performed on March 31, 2020. A follow up field visit was conducted at the project site during growing conditions on June 5, 2020. The study area for the delineation includes those sections along the corridor where improvements may be made that are beyond the paved portion of the road. Four (4) palustrine emergent, two (2) scrub-shrub and three (3) forested wetlands were identified and delineated within the Study Area. In order to document site conditions, a U.S. Army Corps of Engineers

(USACE) Wetland Determination Data Form was completed for each wetland and upland. Additional details are available in the "Wetland Delineation & Site Due Diligence Report" in **Appendix B**.

The wetlands were all associated with streams and drainage areas along the corridor. Anticipated impacts would occur from proposed culvert replacements/repairs. Anticipated impacts are summarized in **Exhibit 3.3.2**.

Placing small amounts of fill in these wetland areas cannot be avoided in areas where culvert work needs to be done. Areas of fill would be minimized by using the steepest slope feasible while maintaining roadside standards. Also, temporary impacts would be avoided during construction by accessing culverts from the road instead of over wetland areas.

Exhibit 3.3.2
Wetland Impacts

Wetland ID	Culvert ID	Location (Station)	Type	Total Size (Acres)	Temp. Impacts (Acres)	Perm. Impacts (Acres)
1	N/A	B 19+70	Forested	0.44	0.0	0.062
2	2,3	B 24+10 B 27+50 LT	Emergent/ Scrub-Shrub	0.61	0.0	0.042
3	6	B 106+40	Forested	0.12	0.0	0.009
4	7	B 146+40	Emergent	0.05	0.0	0.011
5	10	B 169+30	Emergent	0.13	0.0	0.018
6	12	B 224+00	Emergent	0.18	0.0	0.053
7	13	B 231+50	Forested	0.16	0.0	0.003
					0.0	0.198

It is expected that the proposed project would be authorized under a USACE Section 404 Nationwide Permit. Since the work would include fill in wetlands ("special aquatic sites"), a Joint Permit Application/Preconstruction Notification (PCN) would need to be submitted to the USACE. Work would not commence until verification of the applicability of this Nationwide Permit is received from the USACE. Work would adhere to all permit conditions, including those for culvert replacement and rehabilitation. See **Section 3.3.3** Streams with regard to a Section 401 Water Quality Certification.

Compensatory wetland mitigation is anticipated to be required for this project due to the amount of wetland impacts, anticipated at 0.198 acres. All of the impacted wetlands would be emergent wetlands. Mitigation options include the construction of replacement wetlands or use of an In-Lieu Fee program operated by Ducks Unlimited. Further coordination would occur during final design with Livingston County to determine the type of mitigation pursued and the USACE to determine the required mitigation ratio.

3.3.3 Streams

Review of the New York State Water Quality Classification mapping on the NYSDEC Environmental Resource Mapper identified one Class C / Standard C (821-180) Stream and two Class C / Standard C (821-177) Streams within the Study Area (refer to **Exhibit 3.3.3**). Four intermittent streams and two perennial stream segments were identified and delineated within the study area during the field visits on March 31, 2020 and June 5, 2020.

Culvert replacements/rehabilitations are anticipated on 5 of these streams as shown in **Exhibit 3.3.3**. As noted above in **Section 3.3.2**, it is anticipated that the proposed project would be authorized under a Section 404 Nationwide Permit. This permit includes General Regional Conditions G-B.1 and G-B.2 for the replacement and rehabilitation of culverts. Projects that are not able to meet all of the requirements of these conditions require submission of a Joint Permit Application/PCN.

A Blanket Section 401 Water Quality Certification (WQC) applies to this project since the work required would meet the requirements of a Nationwide Permit, and it would comply with the NYSDEC General WQC Conditions.

Exhibit 3.3.3
Stream Impacts

Stream ID	Culvert ID	Location (Station)	Stream Name	Flow Regime	NYSDEC Classification	OHWM Width (feet)	OHWM Depth (inches)
1	1	B 19+70	Unnamed Tributary to Conesus Lake	Intermittent	N/A	7	24
2	2	B 24+10	Unnamed Tributary to Conesus Lake	Perennial	C/C	2.5	8
3*	6	B106+40	Unnamed Tributary to Little Conesus Creek	Intermittent	N/A	2	18
4*	9	B 159+00	Unnamed Tributary to Little Conesus Creek	Intermittent	N/A	4.5	12
5	12	B 224+00	Unnamed Tributary to Little Conesus Creek	Intermittent	C/C	6	18
6	13	B 231+50	Little Conesus Creek	Perennial	C/C	18-20	24

*Stream begins on the outfall side of roadway.

3.3.4 Floodplains

The portion of the proposed project that crosses Tributary No. 4 to Conesus Lake (Culvert 2, STA B 24+13) is located within Zone X of the FEMA Flood Insurance Rate Map for the Town of Livonia in Livingston County, Panel 3603860005C (effective February 1, 1978). Zone X indicates 500-year flood areas, 100-year floods with a depth less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 100-yr flood. This zone is an area of approximate study, no base flood elevations or detailed analysis are provided. FEMA Panel #3603800020C corresponds to the Town of Avon. There is no FEMA data available for the Town of Avon.

The proposed project would not change the roadway surface elevations and would not change the 100-year water surface elevations; therefore, there would be no effect on the mapped floodplain area.

Therefore, the proposed build alternative would (1) not create a significant encroachment on the floodplain; (2) not create a significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles; (3) not significantly increase flood risk; (4) not provide significant impacts on natural and beneficial flood plain value. Therefore, the project meets the requirements of Executive Order 11988.

3.3.5 Threatened and Endangered Species

The Study Area was reviewed using the USFWS's online Information, Planning and Consultation System (IPaC). The IPaC resource list obtained from USFWS on April 20, 2020 indicates that there are no federally listed threatened, endangered or candidate species expected to occur within the Study Area (see **Appendix B**). Therefore, the Endangered Species Act does not apply to this project.

The Study Area was reviewed on April 20, 2020 using the NYSDEC Environmental Resource Mapper. The Study Area is not located within the "Rare Plants and Animals Layer" or the "Significant Natural Communities Layer" as mapped by the New York State Natural Heritage Program, indicating that there are no records of state listed threatened or endangered species expected to occur within the Study Area (see **Appendix B**).

3.3.6 Invasive Species

A review of the existing corridor was conducted as part of the wetland delineation (see **Section 3.3.2**). Invasive species such as Japanese knotweed (*Reynoutria japonica*), common reed (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*) were located within and/or immediately adjacent to the Study Area. Removal or other treatments will be considered for these species in areas that would be disturbed by the project. Precautions will be taken to prevent the introduction of additional invasive species during project design and construction.

3.3.7 Historic and Cultural Resources

The NYSDOT Regional Cultural Resource Coordinator completed a review of the Section 106 Project Submittal Package, located in **Appendix B**.

The project would involve acquisition of minor amounts of new right-of-way and does not result in the disturbance of soils previously undisturbed by recent construction. There would be no impact on any structure or sites protected by Section 106 of the National Preservation Act; and Section 14.09 of the New York State Preservation Act of 1980. No further action is required.

3.3.8 Asbestos

A screening was performed to identify potential sources of asbestos containing materials. The full report is included in **Appendix B**. Black coatings were noted on galvanized metal pipes and corrugated metal pipes in five different locations along Bronson Hill Road; however, Livingston County does not have any history of drainage pipes as asbestos containing materials.

3.3.9 Hazardous Waste and Contaminated Materials

A Hazardous Waste/Contaminated Materials Site Screening was conducted in accordance with NYSDOT's The Environmental Manual, Chapter 5, in order to document the likely presence or absence of hazardous/contaminated environmental conditions. A hazardous/contaminated environmental condition is the presence or likely presence of any hazardous substances or petroleum products (including products currently in compliance with applicable regulations) on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or

petroleum products into structures on the property or into the ground, ground water, or surface water of the property.

The Hazardous Waste/Contaminated Materials Site Screening included a review of NYSDEC regulatory data files and a site 'walkover' on April 3, 2020. PCBs were visually evaluated during the site visit. It is possible that PCBs may be present in pole-mounted electric transformers. Electric utility lines run parallel along the project corridor and mounted transformers were observed; however, the project is not anticipated to require any utility relocations. Furthermore, if private utility relocations were necessary, they would be done by the utility owners' forces and not as part of the County's construction contract. The potential for lead containing materials was also evaluated during the site visit. Pavement markings were cited as a potential source of lead, however the modern epoxy and waterborne pavement marking materials used by Livingston County are extremely unlikely to contain the material. Pavement markings would be removed in conjunction with the milling operation as is typical on municipal and NYSDOT projects.

A Technical Memorandum is provided in **Appendix B**, which includes more details from the HW/CM screening.