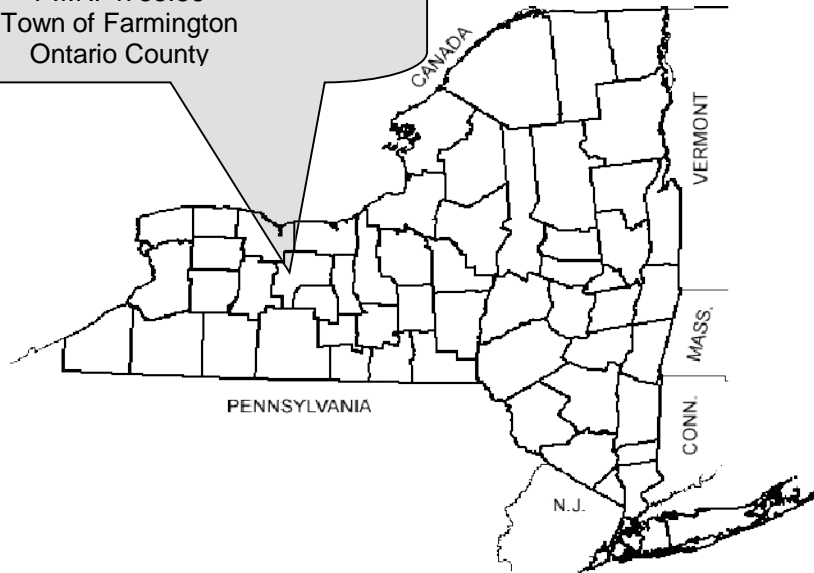


TRANSPORTATION

DRAFT DESIGN REPORT

April 2014

County Road 8 at County Road 41 /
Shortsville Road Intersection Improvement
P.I.N. 4755.86
Town of Farmington
Ontario County



Ontario County Department of Public Works
2962 County Road 48
Canandaigua, New York 14424

U.S. Department of Transportation Federal Highway Administration

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

Prepared By:

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PROJECT APPROVAL SHEET

(Pursuant to SAFETEA-LU Matrix)

A. IPP Approval: The project is ready to be added to the Regional Capital Program and project scoping can begin.

The IPP was approved by:

Robert Traver
Regional Director

7/18/13

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

Regional Planning and Program Manager

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

Project Manager, Bergmann Associates

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

Regional Planning Program Manager

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

Project Manager, Bergmann Associates

F. Nonstandard Feature Approval: The nonstandard features have been adequately justified and it is not prudent to eliminate them as part of this project.

Commissioner, Ontario County Department of Public Works

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

Commissioner, Ontario County Department of Public Works

LIST OF PREPARERS

Group Director Responsible for Production of the Design Approval Document:

Michael T. Croce, P.E., Project Manager, Bergmann Associates

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



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

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CHAPTER 1 - EXECUTIVE SUMMARY

This report identifies the purpose and need for work at the intersection of CR 8 and CR 41 / Shortsville Road along with its objectives and how they will be addressed. It also provides an assessment of the social, economic, and environmental impacts of the proposed action. The proposed project is located in the Town of Farmington, Ontario County, New York. The Project Identification Number (PIN) is 4755.86. This is a locally administered federal aid project.

1.1. Introduction

This report was prepared in accordance with the New York State Department of Transportation (NYSDOT) Procedures for Locally Administered Federal Aid Projects Manual, NYSDOT Project Development Manual, 17 NYCRR Part 15, and 23 CFR 771.

1.2. Purpose and Need

1.2.1. Where is the Project Located?

A Project location map is included in Appendix A (Exhibit 1.2.1). The following is a project location summary.

- (1) Route numbers: County Road (CR) 8 and CR 41
- (2) Route name: CR 8, CR 41, and Shortsville Road
- (3) Municipality: Town of Farmington
- (4) County: Ontario
- (5) Limits: 500 feet from the subject intersection on all approaches

1.2.2. Why is the Project Needed?

The intersection of CR 8 and CR 41 / Shortsville Road is the County's worst performing two-way stop controlled intersection. It has continually experienced the largest number of accidents with a higher than expected crash rate as compared to similar Ontario County intersections. The accident rate is 11 times higher than the New York State average for similar locations statewide. The predominant accident patterns involve right angle and right turn crashes. Typical causative factors include failure to yield the right of way. Contributing factors typically include failure to yield the right of way and failure to stop. As there is ample intersection sight distance along CR 8 and both stop controlled approaches (CR 41 and Shortsville Road), it is possible that poor gap selection is also contributing to the pattern. This, coupled with high operating speeds on CR 8, presents a significant ongoing safety concern.

Additional transportation deficiencies include:

- Steep drop-offs at concrete headwalls located adjacent to CR 8 and Shortsville Road
- Ineffective roadside drainage

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

The purpose of this project is to enhance safety performance at the CR 8 and CR 41 / Shortsville Road intersection.

The objectives of the project are as follows:

- (1) Develop a design that incorporates effective crash reduction measures capable of addressing identified collision patterns and reducing the average annual accident rate to a level at or below the expected rate for similar locations throughout Ontario County and New York State.
- (2) Develop a design capable of encouraging lower speeds on approach to the intersection in order to decrease the severity of crashes.
- (3) Improve the roadside environment around the intersection by addressing identified non-traversable roadside drainage elements.
- (4) Improve the effectiveness of the roadside drainage system.

Project constraints include:

- (1) An available construction budget of \$1,063,500 funded by the Highway Safety Improvement Program.
- (2) Construction funding must be obligated no later than September 30, 2015.

1.3. What Alternative(s) Are Being Considered?

The following alternatives were considered:

Alternative 1: No Action/Maintenance
Alternative 2: Shortsville Road Re-alignment
Alternative 3: FHWA Low Cost Safety Enhancements
Alternative 4: Multi-Way Stop Intersection Control
Alternative 5: Signalized Intersection Control
Alternative 6: Modern Roundabout

Alternative 1, The No Action / Maintenance Alternative or “null”, would retain the existing two-way stop control conditions at the intersection of CR 8 and CR 41 / Shortsville Road. No activities other than routine maintenance would be carried out. This alternative would not improve safety at the intersection. 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.

Alternatives 2 through 5 were considered but eliminated from further study because they would not fully satisfy the project's purpose and need nor meet the project objectives. Refer to Section 3.1 for a discussion of these alternatives.

The feasible alternative is Alternative 6, which would convert the existing, four-legged, two-way stop controlled intersection of CR 8 and CR 41 / Shortsville Road into a modern roundabout. The roundabout would feature an 18 ft wide circulatory roadway (striped to 16 ft wide) with an inscribed circle diameter of 130 ft. The roundabout would also feature a truck apron (for off-tracking by the rear wheels of turning tractor trailers) and a landscaped central island. Each approach would feature an elongated splitter island with a set of curves, each successively smaller as one approaches the circle. The purpose of the curvature would be to reduce vehicle speeds as they approach the roundabout from free flow conditions (higher than 55 mph) to approximately 20 mph or less by the time they reach the entry.

The roundabout would physically eliminate left turns and crossing maneuvers, therefore mitigating documented accident patterns. A reduction in intersection approach speeds would also reduce the severity of any collisions that continue to occur. The design would provide adequate capacity to meet projected traffic demand throughout the year 2035 while also accommodating tractor trailer movements, buses, passenger cars, bicyclists, pedestrians, and crossing snowmobiles.

Drainage patterns around the intersection would remain consistent with those found today, however improvements would be made to encourage more efficient flow. All pavement within the roundabout and its approaches would be fully reconstructed. All signs and markings would be upgraded to meet current standards. Several permanent easements would be required to construct and maintain the new intersection. A seasonal produce stand in the northeast quadrant of the intersection would be impacted by Alternative 6 and require relocation.

Refer to Section 1.5 of this document for additional information on the anticipated cost and schedule. For a more in-depth discussion of the proposed improvements and detailed design criteria see Section 3.2. See Section 3.3.3.2 (1) for a summary of critical design elements that would not meet standards.

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

Exhibit 1.4.-1 Environmental Summary

NEPA Classification	Class II Programmatic	BY	NYSDOT
SEQR Type:	Type II	BY	Ontario County

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

Exhibit 1.4.-2 Comparison of Alternatives

Category	Alternatives	
	Null	Alternative 6: Modern Roundabout
Wetland impacts	None	0.13 Acres
100 year Floodplain Impact	None	None
Archeological Sites Impacted	None	None
Section 106/Section 4(f) Impacts	None	None
Property Impacts	None	0.66 Acres PE, seasonal produce stand relocation
Visual Impacts	None	Negligible
Noise Impacts	None	None
Safety – Benefit/Cost Ratio	0	6.7
Intersection Control	Two-Way Stop	Modern Roundabout
Intersection Capacity	LOS A or B (all approaches)	LOS A (all approaches)
Pavement Condition	No Change	20 Year Surface Life 50 Year Overall Life
Drainage	No Change	Improved Flow
Traffic Control Devices	No Change	MUTCD Compliant
Construction Cost	None	\$1.846 Million

Refer to Chapter 4 Section(s) 4.2.1.4 for mitigation measures that are proposed for this project.

Anticipated Permits/Certifications/Coordination:

NYSDOT

- Highway Work Permit (for detour)

NYSDEC

- State Pollutant Discharge Elimination System (SPDES) General Permit
- Blanket Water Quality Certification (Sec 401) of the FWPCA

USACOE

- U.S. Army Corps of Engineers, Section 404 Nationwide Permit #3 - Maintenance Activities in all Waters of the U.S.

Coordination

- Coordination with NYSDEC
- Coordination with Federal Highway Administration (FHWA) (via NYSDOT)
- Coordination with New York State Historic Preservation Officer (SHPO) (via NYSDOT)
- Coordination with the US Fish and Wildlife Service (via NYSDOT)
- Coordination with the New York Natural Heritage Program
- Coordination with the Town of Farmington

1.5. What Are The Costs & Schedules?

It is anticipated that Design Approval will be granted in the summer of 2014, detailed design will occur over the remainder of 2014, and letting (bid opening) will occur in the spring of 2015. Construction is expected to begin in the spring of 2015 and be completed in fall 2015.

Exhibit 1.5.-1 Project Schedule	
Activity	Date Occurred/Tentative
Scope Approval	July 2013
Design Approval	Anticipated July 2014
ROW Acquisition	Anticipated January 2015
Construction Start	Anticipated May 2015
Construction Complete	Anticipated October 2015

Exhibit 1.5.-2 Comparison of Alternative Project Costs (2014 Dollars)		
Activities	Null Costs	Alternative 6 Costs
Intersection Improvements	0	1,205,000
Incidentals ¹ (5%)	0	60,250
Subtotal 1	0	1,265,250
Contingencies ² (10%)	0	126,525
Subtotal 2	0	1,391,775
Field Change Order ³ (0%)	0	0
Subtotal 3	0	1,391,775
Mobilization (4%)	0	55,671
Subtotal 4	0	1,447,446
Expected Award Amount – Inflated ⁴ @ 3%/yr to midpoint of construction (2015)	0	1,490,870
Reimbursable Utility Costs ⁶	0	0
Wetland Mitigation	0	30,000
Stormwater Pollutant Discharge Elimination System (SPDES)	0	10,000
Property Acquisition Costs ⁷	0	35,000
Construction Support and Inspection ⁸	0	280,000
Total Costs	0	1,845,870

Notes:

1. The potential cost increase due to unknown or un-tabulated items.
2. NYSDOT recommends a standard contingency of 15% at Design Approval stage. However, given the current level of detail, a lower contingency was used.
3. FCO would be 5% per HDM Chapter 21 Section 21.4.3.3. NYSDOT Region 4 does not allow use on LAFA projects.
4. An escalation rate of 3% has been included to account for potential future increases in labor, material, equipment and other costs.
5. Construction budget in the NYSDOT STIP for Region 4.
6. Reimbursable utility costs not anticipated for this project.
7. ROW acquisition to be paid for with HSIP Funds. A+I figure is estimate from GTC TIP. Pending appraisals
8. Construction inspection and support budget given in the STIP is \$148,890. Estimated cost shown in table. Actual cost to be negotiated during scoping for construction phase services agreement.

1.6. Which Alternative is Preferred?

The feasible alternative that best meets the project objectives is Alternative 6: Modern Roundabout. The decision to enter final design will not be made until after the environmental determination is finalized and a thorough evaluation of public and agency comments on the draft design approval document has been completed.

1.7. What are the Opportunities for Public Involvement?

Based on a review of accident records, the intersection of CR 8 and CR 41 / Shortsville Road has been a safety concern since at least 2008. The intersection was identified as a safety concern by Ontario County during a routine screening of all intersections countywide. With the intent to improve safety at the intersection, an Initial Project Proposal (IPP) was drafted and approved in July 2013. The project was subsequently added to the Genesee Transportation Council (GTC) Transportation Improvement Program (TIP). Ontario County then began coordination with the Town of Farmington, who participated in the selection of a design team. Preliminary design began in late fall 2013. Utility coordination also began at that time and will continue throughout design. Coordination with the NYSDOT and other agencies is ongoing.

A series of one-on-one stakeholder outreach meetings are planned for May 2014. Ontario County and representatives of the design team plan to reach out to local elected officials, affected property owners, emergency services, schools, and/or business owners to discuss the feasible alternative and gather input. A public information meeting is tentatively scheduled for June 2014. Project information will be available for inspection by the public at that meeting and project representatives will be present to listen to comments and record additional input. The meeting will be followed by a 2 week public comment period during which individuals may provide additional comments to Ontario County in writing. All comments received will be reviewed and considered prior the issuance of design approval. Information related to the public meeting and comments received will be added to Appendix G as they are received.

Exhibit 1.7. Public Involvement Plan (Schedule of Milestone Dates)	
Activity	Date Occurred/Tentative
One-On-One Stakeholder Meetings	May 2014
Public Informational Meeting	June 2014
Current Project Letting date	March 2015

There are a variety of ways you can obtain information and provide your thoughts:

- You can contact:

Mr. Timothy McElligott, P.E.
Professional Engineer
Ontario County Department of Public Works
2962 County Road 48
Canandaigua, New York 14424

Please include the six-digit Project Identification Number (PIN) 4755.86

Questions or comments Email: Timothy.McElligott@co.ontario.ny.us
Telephone: (585) 396-4000

The deadline for submitting comments on this report circulation is tentatively scheduled for May 23, 2014.

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

CHAPTER 2 - PROJECT CONTEXT: HISTORY, TRANSPORTATION PLANS, CONDITIONS AND NEEDS

This chapter addresses the history and existing context of the project site, including the existing conditions, deficiencies, and needs at the intersection of County Road (CR) 8 and CR 41 / Shortsville Road.

2.1. Project History

In 2013, the Ontario County Department of Public Works completed a network screening of the County's unsignalized, two-way stop-controlled intersections using the methods described in the American Association of State Highway and Transportation Officials (AASHTO) Highway Safety Manual (HSM). The data utilized covered a period from January 2008 to December 2010. During that time, the CR 8 and CR 41 / Shortsville Road intersection experienced the largest number of crashes with a rate well beyond the expected crash frequency for similar facilities. It ranked as the County's worst performing two-way stop controlled intersection. The same analysis yielded an accident rate 11 times higher than the New York State average rate for similar intersections. This experience is despite tangent approaches, generous intersection sight triangles, appropriate signs, and markings. Drivers reportedly fail to yield the right of way at the skewed four-way intersection. Whether stopped motorists are misjudging the relatively high speed of approaching traffic or the length of available gaps, the end result is often a serious injury crash.

With a desire to improve safety by reducing the number and severity of crashes at the CR 8 and CR 41 / Shortsville Road intersection, Ontario County sought and secured Highway Safety Improvement Program (HSIP) funding. The project is on the Genesee Transportation Council (GTC) 2014-2017 Transportation Improvement Plan (TIP). Design Phase Authorization was issued in October 2013 and preliminary design activities began shortly after.

2.2. Transportation Plans and Land Use

2.2.1. Local Plans for the Project Area

2.2.1.1. Local Comprehensive Plans ("Master Plan") - The Town of Farmington, long one of Ontario County's fastest growing communities, published the Town of Farmington Comprehensive Plan in July 2011. That document supports continued development in the vicinity of the CR 8 and CR 41 / Shortsville Road intersection. The plan also promotes the Finger Lakes Casino and Race Track, less than two miles from the project site, as a tourist destination. As additional gaming operations come online there is an expectation that the area will also experience an increased demand for support services such as restaurants, hotels and perhaps a large conference or convention center. These types of facilities could become generators of additional traffic.

2.2.1.2. Local Private Development Plans – There is a vacant site, formerly known as the Blackwood Office Park, located along the north side of CR 41 and the west side of CR 8. The site has been identified by the State of New York as having the potential to support a large industrial park under the "Build New York Now Program." However, at this time there are no known development plans in place.

There are no other proposed or approved developments within the project area that would impact traffic operations at the subject intersection.

2.2.2. Transportation Corridor

2.2.2.1. Importance of the Project Route Segment – CR 8 runs north-south, generally parallel with NYS Route 332, and serves as a bypass for local traffic as it directly connects the Town of Farmington to the City of Canandaigua. CR 41 runs east-west from west of NYS Route 332 to the subject intersection. Shortsville Road begins at the intersection and extends east of CR 8. This corridor serves as an alternative to NYS Route 96 for motorists who are traveling from Victor to Manchester or Shortsville. Approach roadways to the intersection are often used by farm vehicles and tractor trailers due to the dense agricultural and growing industrial nature of the area. During the winter months, the Lehigh Valley Snow Riders, Inc. maintain a designated snowmobile trail called “The Racino Trail,” which runs along CR 41 and Shortsville Road.

2.2.2.2. Alternate Routes – Payne Road (0.8 miles to the east) and NYS Route 332 (1½ miles west) are potential alternate routes for CR 8. They can be accessed by NYS Route 96 to the north and Canandaigua-Farmington Town Line Road to the south. NYS Route 96 (0.6 miles to the north) and Canandaigua-Farmington Town Line Road (1¼ miles south) are potential alternate routes for CR 41. Both can be accessed from NYS Route 332 and Payne Road.

2.2.2.3. Corridor Deficiencies and Needs – Intersection safety improvements are necessary in order to reduce the number and severity of crashes as outlined in Section 2.3.1.8.

2.2.2.4. Transportation Plans - This project is on the approved GTC TIP under PIN 4755.86. It is described as the reconstruction of the CR 8 and CR 41 / Shortsville Rd intersection in the Town of Farmington. Highway Safety Improvement Program funds have been programmed for design, construction, and property acquisition activities.

2.2.2.5. Abutting Highway Segments and Future Plans for Abutting Highway Segments -

CR 8 extends from NYS Route 332 in the south to Allen Padgham Road in the north. It is a two-way, two-lane urban major collector roadway. The New York State statutory speed limit of 55 miles per hour applies. CR 8 is owned and maintained by Ontario County. Travel lane and paved shoulder widths are typically 11 feet and 4 feet, respectively. In the vicinity of the intersection, there is a 2 to 4 foot strip of shoulder back-up material on the east side of CR 8 south of CR 41 and on both sides of CR 8 north of CR 41. The asphalt pavement surface is in good condition based on field observation.

CR 41 extends from the Monroe County line (to the west) to the subject intersection. It is classified as an Urban Major Collector. The New York State statutory speed limit of 55 miles per hour applies. CR 41 is owned and maintained by Ontario County. Travel lane and shoulder widths are typically 11 feet and 4 feet, respectively. Within the project limits, there is a 2 to 3 foot strip of shoulder back-up material on the north and south sides of CR 41 beyond the paved shoulders. The asphalt pavement surface is in good condition based on field observation.

Shortsville Road extends easterly from CR 8 and continues east to County Road 21 in the Village of Shortsville. Shortsville Road is a two-way, two-lane, rural local roadway with combination asphalt and gravel shoulders and a posted speed limit of 55 miles per hour. Lane and shoulder widths are typically 11 feet and 2 feet, respectively. Within the project limits, there is a 2 to 3 foot strip of shoulder back-up material on the north and south sides of Shortsville Road beyond the paved shoulders. CR 8 and Shortsville Road intersect at a skewed angle. Shortsville Road's pavement surface is in good condition based on field observation. It is owned and maintained by the Town of Farmington.

2.3. Transportation Conditions, Deficiencies and Engineering Considerations

2.3.1. Operations (Traffic and Safety) & Maintenance

2.3.1.1. Functional Classification and National Highway System (NHS) – Classification data for the roadways approaching the subject intersection are summarized in Exhibit 2.3.1.1.

Exhibit 2.3.1.1. CR 8 and CR 41 / Shortsville Road Classification Data			
Street Name	CR 8	CR 41	Shortsville Road
Functional Classification	Urban Major Collector	Urban Major Collector	Rural Local Road
National Highway System (NHS)	No	No	No
Designated Truck Access Route	No	No	No
Qualifying Highway	No	No	No
Within 1 mile of a Qualifying Highway	No	No	No
Within the 16 foot vertical clearance network	No	No	No

2.3.1.2. Control of Access - There is no control of access along any of the approach roadways. There are driveways to residential and agricultural parcels within the project limits. The driveways are generally in conformance with the written requirements specified in the NYSDOT Policy and Standards for the Design of Entrances to State Highways.

2.3.1.3. Traffic Control Devices – The intersection of CR 8 and CR 41 / Shortsville Road operates as a two way stop. Stop signs (R1-1) are posted on the CR 41 and Shortsville Road approaches. Symbolic stop ahead (W3-1a) signs are also present on both approaches. There are cross road (W2-1) signs posted on each CR 8 approach. A non-vehicular (cattle) sign (W11-4) followed by a curve sign (W1-2) with a 45 mile per hour advisory speed panel (W13-1) are posted for eastbound traffic, immediately beyond the intersection.

Signs within the project limits are generally in fair to good condition based upon field inspection. The signs are generally compliant with the National Manual on Uniform Traffic Control Devices, New York State Supplement, and applicable revisions (MUTCD). Sign post conditions are generally good throughout the project limits.

Pavement markings on CR 8 are in good condition based on field inspection. A double yellow full barrier line separates traffic on the north approach and a yellow partial barrier line separates two-way traffic on the south CR 8 approach. This allows traffic headed southbound, away from the intersection to pass. White edge lines are present between the lanes and shoulders.

Pavement markings on CR 41 and Shortsville Road are in good condition based on field inspection. A double yellow full barrier line separates two-way traffic on each approach. White edge lines are present between the lanes and shoulders. Stop lines are also present on the eastbound and westbound approaches.

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

2.3.1.5. Speeds and Delay – A regulatory speed limit of 55 mph applies to all approach roadways within the project area as shown in Exhibit 2.3.1.5, however there are no speed limit signs within the project limits. Speed studies were conducted by Ontario County for CR 8 and CR 41 (in 2012) and Shortsville Road (in 2013). The raw data are available in Appendix C. The 85th percentile speed is that speed at which or below 85 percent of all vehicles travel. On all roadways, the measured 85th percentile speed exceeds the posted speed limit of 55 mph. The results are summarized in Exhibit 2.3.1.5.

Exhibit - 2.3.1.5. Speed Data				
Roadway (Approach)	CR 8 (North)	CR 8 (South)	CR 41 (West)	Shortsville Road (East)
Existing Speed Limit	55 mph	55 mph	55 mph	55 mph
85 th Percentile Speed	60 mph	67 mph	57 mph	57 mph

2.3.1.6. Traffic Volumes –

2.3.1.6 (1) Existing Traffic Volumes - Continuous 24-hour traffic volume counts were collected by Ontario County in September 2012. Annual Daily Traffic (ADT) volumes were calculated from the data. Existing ADT volumes appear below in Exhibits 2.3.1.6 (1)-1. Additional statistics are provided in Exhibit 2.3.1.6 (1)-2. Based upon field observation, no significant delays are currently experienced within the project limits. Therefore, travel delay studies were not performed.

Exhibit 2.3.1.6.(1)-1 CR 8 and CR 41 / Shortsville Road Existing and Future Traffic Volumes				
Roadway (Approach)	CR 8 (North)	CR 8 (South)	CR 41 (West)	Shortsville Road (East)
Year	ADT	ADT	ADT	ADT
Existing (2012)	2728	2010	3368	1706
ETC (2015)	2811	2071	3471	1758
ETC+20 (2035)	3430	2527	4234	2145

Notes: 1. Refer to Section 2.3.1.4 (2) for growth rates.
2. ETC is the Estimated Time of Completion

Exhibit - 2.3.1.6.(1)-2 Traffic Composition Data				
Roadway (Approach)	CR 8 (North)	CR 8 (South)	CR 41 (West)	Shortsville Road (East)
Directional Split	52/48	48/52	50/50	50/50
% Trucks	12	14	10	9

Additionally, Ontario County conducted manual turning movement counts at the intersection of CR 8 and CR 41 / Shortsville Road in 2013. The traffic counts were collected on Thursday October 31, 2013 from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM and on Saturday November 2, 2013 between 11:00 AM and 2:00 PM. The intersection weekday AM, PM, and Saturday mid-day peak hours at the intersection occurred from 7:15 AM to 8:15 AM, 4:45 PM to 5:45 PM, and 11:45 AM to 12:45 PM, respectively. Detailed count data and peak hour volume diagrams are contained in Appendix C.

2.3.1.6 (2) Future Design Year Traffic Volume Forecasts - The Estimated Time of Completion (ETC) is 2015. A design year of 2035 (ETC+20) was selected per Appendix 5 of the NYSDOT Project Development Manual. Traffic volume projections were completed for ETC (2015) and the design year ETC+20 (2035). A growth rate of 1.0% was calculated based on historic count information. This growth factor (annually compounded) was used to forecast ADT volumes for years 2015 and 2035 which appear in Exhibit 2.3.1.6 (1)-1. ETC+30 year projections were not required as this project is not near a bridge or large culvert.

The growth rate described above was also applied to the weekday AM, PM, and Saturday mid-day peak hour volumes for ETC (2015) and ETC+20 (2035). The peak hour volume diagrams for ETC and ETC+20 year projections are contained in Appendix C.

2.3.1.7. Level of Service and Mobility –

2.3.1.7. (1) Existing Level of Service and Capacity Analysis – Level of Service (LOS) is a qualitative measure describing motorist satisfaction with various factors influencing the degree of traffic congestion including travel time, speed, maneuverability, and delay. The methodology for performing capacity analyses and determining level of service is documented in the Highway Capacity Manual (HCM) (Transportation Research Board, Washington D.C., 2010.) Levels of service range from A to F. LOS A describes traffic operations with little or no delay while LOS F describes highly congested conditions with substantial delays. LOS D or better is generally considered acceptable during peak traffic hours in urban areas. LOS C or better is desirable within Ontario County. Analyses based on the HCM methodology were generated using Synchro traffic analysis software for the unsignalized intersection of CR 8 and CR 41 / Shortsville Road. Copies of the analysis reports are contained in Appendix C.

The results of the level of service analysis for existing conditions during the weekday AM, PM, and Saturday mid-day peak hour periods are summarized in Exhibit 2.3.1.7-1. The CR 41 eastbound and Shortsville Road westbound (stop controlled) approaches operate at LOS B. The intersection is currently operating acceptably and has adequate capacity to serve all peak hour demand.

Exhibit – 2.3.1.7.-1 Peak Hour Level of Service and Delay Existing Conditions								
Intersection	Approach		Weekday AM		Weekday PM		Saturday Midday	
			LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
CR 8 and CR 41 / Shortsville Road	Eastbound	LTR	B	11.8	B	12.9	B	10.5
	Westbound	LTR	B	11.2	B	12.5	B	10.3

2.3.1.7. (2) Future No-Build Design Year Level of Service – Level of service analyses were also completed for future no-action conditions at ETC (2015) and ETC+20 (2035). They are summarized in Exhibit 2.3.1.7-2 and Exhibit 2.3.1.7-3.

According to the projected future no-action analyses, the CR 41 and Shortsville Road stop-controlled approaches would experience minor increases in delay of less than 3 seconds per vehicle. The CR 8 free-flow approaches would experience virtually no change in delay. Overall, the CR 8 and CR 41 / Shortsville Road intersection is projected to have adequate capacity to meet the anticipated demand with acceptable levels of service throughout the design year (2035).

Exhibit – 2.3.1.7.-2								
Peak Hour Level of Service and Delay								
2015 Future No Build Conditions								
Intersection	Approach		Weekday AM		Weekday PM		Saturday Midday	
			LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
CR 8 and CR 41 / Shortsville Road	Eastbound	LTR	B	11.9	B	13.0	B	10.6
	Westbound	LTR	B	11.2	B	12.6	B	10.3

Exhibit – 2.3.1.7.-3								
Peak Hour Level of Service and Delay								
2035 Future No Build Conditions								
Intersection	Approach		Weekday AM		Weekday PM		Saturday Midday	
			LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
CR 8 and CR 41 / Shortsville Road	Eastbound	LTR	B	13.3	C	15.2	B	11.2
	Westbound	LTR	B	12.1	B	14.3	B	10.8

2.3.1.8. Safety Considerations, Accident History and Analysis – An accident analysis was performed in accordance with the NYSDOT Highway Design Manual Chapter 5, Section 5.3. For this project, accident reports were compiled from New York State Accident Location Information System (ALIS) data. New York State Department of Motor Vehicles (NYSDMV) Police Accident Reports (MV104-A forms) were also obtained from Ontario County covering a three-year period from January 1, 2008 to December 31, 2010. There are no high accident locations (HALs), no Priority Investigation Locations (PILs), Safety Deficient Locations (SDLs), or Priority Investigation Intersections (PIIs) within the study area as those designations are made by the NYSDOT for state highways.

A total of 13 intersection-related collisions occurred over the three-year period from January 2008 to December 2010. Injuries resulted from 10 of the 13 accidents. None resulted in a fatality. The predominant collision pattern (10 of 13) involved right angle or right turn type crashes. The calculated average annual (injury) accident rate per million entering vehicles (ACC/MEV) is 2.48 ACC/MEV, which is 11 times higher than the regional 0.25 ACC/MEV threshold. Non-reportable accidents were not included in the accident rate calculation. A table summarizing the 13 intersection accidents is included in Appendix C. A collision diagram is also included in Appendix C.

Over the same study period, a predictive model analysis of all Ontario County rural unsignalized two-way stop control intersections was performed using methodologies presented in the American Association of State Highway and Transportation Officials (AASHTO) Highway Safety Manual, 1st Edition, Vol. 2, Chapter 10. This manual is a useful tool to measure and predict the expected crash frequency of existing and future transportation facilities. According to the model, this intersection is predicted to have the highest expected average crash frequency of all similar intersections in the county, at about 3 per year.

As stated above, a large majority of the intersection accidents were right angle or right turn collisions. Contributing factors typically included failure to yield the right of way and failure to stop. It should be noted that time of day and roadway surface conditions did not appear to be a contributing factor. Field observations confirm there is ample intersection sight distance along CR 8 from both stop controlled approaches. As a result, it is possible that poor gap selection coupled with high operating speeds on CR 8 present a safety concern for eastbound and westbound drivers.

More recent accident data covering a two-year period from January 1, 2011 to December 31, 2012 were also obtained from Ontario County. During this period, a total of 9 reportable intersection-related collisions occurred with 2 resulting injury. Again, the reports show collision patterns (8 of 9) involving right angle crashes with the main contributing factor being driver failure to yield the right of way. This validates the

earlier study and suggests there has been no change to the recurring type of accident or contributing factors.

2.3.1.9. Existing Police, Fire Protection and Ambulance Access - The Ontario County Sheriff's Department routinely uses the project area roadways. Their nearest office is in Canandaigua, which is approximately 6 miles south of the project area. The New York State Police, Troop E, also use the project area roadways with their nearest office located approximately 2 miles west of the project on NYS Route 332.

The Town of Farmington Fire Department generally responds to local calls west of the subject intersection. Their building is located on NYS Route 96 approximately 2.3 miles northwest of the intersection. Shortsville Fire Department & EMS generally responds to local calls east of the subject intersection and is located approximately 5 miles east. Victor-Farmington Ambulance, which is on East Victor Road approximately 4 miles northwest of the site, also passes through the intersection.

2.3.1.10. Parking Regulations and Parking Related Conditions – There are no areas regulated by parking restrictions within the project limits.

2.3.1.11. Lighting – There is no street lighting within the project limits.

2.3.1.12. Ownership and Maintenance Jurisdiction – Ontario County owns and maintains CR 8 and CR 41. The County has a contract with the Town of Farmington for snow and ice control services. The 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. Shortsville Road is owned and maintained by the Town of Farmington. The existing maintenance jurisdiction in the vicinity of the project limits is summarized in Exhibit 2.3.1.12.

Exhibit - 2.3.1.12 Existing Maintenance Jurisdiction							
Part No.	Highway	Limits	Feature(s) being Maintained	Centerline (mile)	Lane (mile)	Agency	Authority
1	CR 8	800 feet north and south of CR 41	Pavement, drainage, landscaping, signs and pavement markings	0.303	0.606	Ontario County	Highway Law Section 129
2	CR 41	800 feet west of CR 8	Pavement, drainage, landscaping, signs and pavement markings	0.152	0.303	Ontario County	Highway Law Section 129
3	Shortsville Road	800 feet east of CR 8	Pavement, drainage, landscaping, signs and pavement markings	0.152	0.303	Town of Farmington	Highway Law Section 10 Subdivision 25

2.3.2. Multimodal

2.3.2.1. Pedestrians – The nearest sidewalk lies 450 ft west of the intersection and exists solely along the CR 41 frontage of a housing development. There are currently no plans to extend this sidewalk. There are no separate pedestrian facilities or provisions within the project limits and no signs of frequent pedestrian activity. There are no future plans for significant generators of pedestrian traffic within or adjacent to the project limits. The occasional pedestrian may legally use the paved shoulder. A complete Pedestrian Generator Checklist is contained in Appendix C.

2.3.2.2. Bicyclists – There are no separate provisions for bicyclists along any of the roadways within the project limits. Bicyclists share the road with motor vehicles or may legally use the paved shoulder where available.

2.3.2.3. Transit – There are no transit providers operating within the project limits.

2.3.2.4. Airports, Railroad Stations, and Ports – There are no airports, railroad stations, or port entrances within or in the vicinity of the project limits. No conflicts exist with the flight paths of aircraft.

2.3.2.5. Access to Recreation Areas (Parks, Trails, Waterways, State Lands) – There are no entrances to recreation areas within the project limits.

2.3.3. Infrastructure

2.3.3.1. Existing Highway Section – Existing features within the project corridor appear on the typical sections, plan and profile sheets contained in Appendix A.

2.3.3.1. (1) Lane Width – The existing travel lane width on all roadways within the project limits is 11 feet.

2.3.3.1. (2) Shoulder – A paved shoulder is provided along both sides of CR 8, CR 41, and Shortsville Road throughout the project limits. The paved shoulder is 4 feet wide along CR 8 and CR 41 and 2 feet wide along Shortsville Road. Beyond the paved shoulders, there are strips of shoulder back-up material ranging from 2 to 4 feet in width.

2.3.3.1. (3) Horizontal Alignment – Intersection approach roadways are generally tangent throughout the project limits. At the intersection, Shortsville Road intersects CR 8 at a skewed (approximately 67°) angle. There is a series of horizontal and vertical curves on Shortsville Road beginning approximately 1000 ft east of the subject intersection.

2.3.3.1. (4) Vertical Profile – The vertical profiles of the intersection approach roadways generally follow the level terrain within the project limits. All grades are typically less than 0.5%.

2.3.3.1. (5) Intersection Geometry – All intersection approaches within the project limits consist of a single inbound lane and a single departure lane. There are no exclusive turn lanes.

2.3.3.1. (6) Roadside Elements – Roadside elements include wooden utility poles and drainage ditches. The existing horizontal clearance from the edge of travel lane to the face of utility poles is generally 15 feet or more. The locations of utility poles are shown on the plans in Appendix A. There is a water pressure equalization vault in the northwest corner of the intersection. Above ground features include a meter pedestal, control box, and vent pipe. This feature is located approximately 25 ft west of the edge of the travel lane on CR 8. There are concrete culvert headwalls, located approximately 12 to 15 ft from the edge of traveled way on either side of CR 8, approximately 155 ft south of the intersection. There is another concrete headwall located approximately 15 ft south of Shortsville Road's eastbound travel lane, approximately 145 ft east of the intersection. There are mature trees and (pasture) fencing located just outside the highway boundaries. The accident analysis summarized in Section 2.3.1.8 revealed no pattern of accidents involving fixed objects along the roadside.

2.3.3.1. (7) Driveways – There are several driveways within the project limits. These include one (1) paved asphalt driveway to the residential property on the west side of CR 8 and north of CR 41; one (1) paved asphalt driveway to the residential property on the north side of Shortsville Road; and two (2) gravel access pads to the agricultural properties on the north and south sides of CR 41. The existing gravel area within the right-of-way in the northeast corner of the intersection is currently being used as a driveway and parking area for a seasonal produce stand.

2.3.3.2. Geometric Design Elements Not Meeting Minimum Standards – Existing geometric elements were compared with the minimum standards used by the NYSDOT to make capital infrastructure improvements. This review helps ensure that project objectives and feasible alternatives consider key deficiencies. The relationship of features not meeting standards are noted in Section 2.3.3.2 (1).

2.3.3.2. (1) Critical Design Elements – The following non-standard features were identified based on the maximum allowable design speed for the roadway's functional class. This is supported by studies summarized in Section 2.3.1.5 which show that current operating speeds exceed the speed limit.

CR 8 and CR 41, Design Speed 60 mph

Shoulder Width: The paved and marked shoulder is 4 ft wide, which is less than the minimum requirement of 8 ft.

Shortsville Road, Design Speed 55 mph

Shoulder Width: The paved and marked shoulder is 2 ft wide, which is less than the minimum requirement of 8 ft.

2.3.3.2. (2) Other Design Parameters - There are no existing non-conforming features within the project limits.

2.3.3.3. Pavement and Shoulder – Pavement history maintenance reports from Ontario County indicate that CR 8 was chip sealed in 2008 and CR 41 in 2005.

The pavement condition assessment was determined via field observation and a series of eight test borings taken throughout the project limits. Based on field observation, the pavement surface appears to be in good condition. Five of the eight borings were taken in the roadway to examine the existing pavement structure and the remaining three were completed beyond the shoulders of the intersection. A Pavement Evaluation and Treatment Selection Report (PETSRS) is included in Appendix D.

Core samples revealed that the existing pavement structure appears to be in relatively good condition, with good bonding between the individual asphalt courses. The total thickness of the various asphaltic concrete samples taken ranged from 3 ¾ inches to 8 ¼ inches, but had an average thickness of at least 6 inches. The pavement section generally contained a base course, binder course, and top course, of varying thicknesses. There was 13 inches to 30 inches of sand and gravel subbase material underneath the pavement.

2.3.3.4. Drainage Systems - The existing roadway drainage system consists mainly of sheet flow that drains into open roadside ditches and underground pipes of varying sizes and materials. Based upon visual inspection, the existing ditches and pipes are in fair to good condition. Flow in open ditches is typically impeded by the relatively flat grades.

West of CR 8, runoff is collected by drainage ditches along CR 41 that drain toward the intersection. The north side ditch on CR 41 is transmitted under the roadway by a 12 inch reinforced concrete pipe (RCP) to the south side where an open ditch carries flow to the west side of CR 8. This water passes beneath CR 8 and goes to the southeast quadrant of the intersection via a 30 inch RCP with concrete head walls

beyond the roadbed. Runoff south of the intersection along CR 8 is transmitted to the north by open roadside ditches and eventually converges at the same 30 inch RCP.

In the northeast quadrant of the intersection, runoff is collected from the west side of CR 8 and the north side of Shortsville Road and transmitted to the southeast quadrant via a 15 inch corrugated metal pipe (CMP) that runs underneath Shortsville Road.

CR 8 runoff north of CR 41 and Shortsville Road drains to the south toward the intersection via open roadside ditches. This flow is carried to the 12 inch RCP in the northwest quadrant and the 15 inch CMP in the northeast quadrant of the intersection. From there it follows the drainage path described above.

Eventually, all drainage from the intersection is transmitted from the southeast quadrant to the east along the south side of Shortsville Road via an underground 24 inch high-density polyethylene (HDPE) pipe continuing approximately 700 feet before eventually being outlet to a creek.

Pipes beneath driveways include a 12 inch CMP pipe under the asphalt paved driveway on the west side of CR 8 and north of CR 41, a 15 inch HDPE pipe underneath the gravel access driveway on the north side of CR 41 with galvanized steel end sections, and a 12 inch HDPE pipe underneath the gravel access driveway on the south side of CR 41 with HDPE end sections.

2.3.3.5. Geotechnical – The subgrade soils for CR 8 consist of indigenous cohesive clays and silts. The subgrade soils for CR 41 and Shortsville Road consist of gravelly materials. There are no special geotechnical concerns within the project area and the underlying soils are suitable for roadway construction. The full geotechnical report is included in Appendix E.

2.3.3.6. Structure –There are no bridges within the project limits.

2.3.3.7. Hydraulics of Bridges and Culverts – There are no bridges or culverts over waterways within the project limits.

2.3.3.8. Guide Railing, Median Barriers and Impact Attenuators – There are no guide rails, median barriers, or impact attenuators within the project limits.

2.3.3.9. Utilities – Utilities within the project limits include underground gas, water mains, sanitary sewer, and telephone. There are also overhead electric lines suspended from utility poles. The existing utilities in the vicinity of the project limits are described in Exhibit 2.3.3.9.

Exhibit - 2.3.3.9 Existing Utilities		
Owner	Type	Location & Side
RG&E	Gas	South side of CR41 and west side of CR 8 from CR 41 extending north
RG&E	Electric	Overhead. West side of CR 8, north side of CR 41 and South side of Shortsville Road.
Frontier	Telephone ¹	Buried. West side of CR 8 from NW corner of the intersection to SW corner. South side of Shortsville Road.
Farmington Water & Sewer Dept	Water	West side of CR 8. North side of Shortsville Road starting at NW quadrant of the intersection. South side of CR 41 and ends in SE quadrant of intersection.

Exhibit - 2.3.3.9 Existing Utilities		
Owner	Type	Location & Side
Farmington Water & Sewer Dept.	Sanitary	West of CR 8 on the north side of CR 41 extending west.

1. Buried cable is approximately 18 inches below surface of existing roadway according to Frontier records.

2.3.3.10. Railroad Facilities – There are no railroads within the project limits and no at-grade crossings within ½ mile that could impact traffic operations.

2.3.4. Potential Enhancement Opportunities

This section focuses on existing areas to begin the identification of potential enhancement opportunities related to the project and to help avoid and minimize impacts. Chapter 4 focuses on the potential impacts, enhancements, and mitigation.

2.3.4.1. Landscape -

2.3.4.1. (1) Terrain - The terrain within the project limits is classified as level per Section 2.5.2 of the NYS DOT Highway Design Manual.

2.3.4.1. (2) Unusual Weather Conditions- There are no unusual weather conditions within the project area that would affect the design and construction of this project. Snow and ice events experienced within the project limits during the winter months are typical of New York State.

2.3.4.1. (3) Visual Resources - Land uses within and around the project limits range from agricultural to residential and industrial. There is a residential housing development approximately 0.1 mile west of the intersection on the south side of CR 41. There are also industrial buildings on CR 41 (Service Steel), and CR 8 (Blackwood Office Park) to the west and north of the project area, respectively. The northeast quadrant is home to a seasonal produce stand. The northwest quadrant is occupied by a residential property. The southwest quadrant is occupied by an open field and drainage detention basin for the neighboring housing development. The southeast quadrant has an open field. The surrounding terrain is primarily level, therefore sight lines are open between all surrounding land uses.

2.3.4.2. Opportunities for Environmental Enhancements – Practical opportunities for environmental initiative actions that could be considered in conjunction with this project are limited to landscape enhancement.

2.3.5. Miscellaneous - None

CHAPTER 3 – ALTERNATIVES

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

3.1. Alternatives Considered and Eliminated from Further Study

Alternative 1: No Action/Maintenance

The No Action/Maintenance or “null” alternative would retain the existing conditions at the CR 8 and CR 41 / Shortsville Road intersection with no improvements other than routine maintenance activities. This would not improve vehicular safety at the intersection. This alternative does not satisfy the purpose and need of the project, however it has been retained as a baseline for comparison to the feasible alternative(s).

Alternative 2: Shortsville Road Re-alignment

This alternative would re-align and reconstruct Shortsville Road to intersect CR 8 at a right angle while retaining two-way stop control on CR 41 and Shortsville Road. A series of horizontal curves would be introduced immediately east of the intersection to eliminate the existing 67° skew. The proposed curvature would encourage speed reduction for vehicles approaching the stop sign on Shortsville Road but would not address high-speeds on CR 8 or make it easier for vehicles at the stop sign on CR 41 or Shortsville Road to select an adequate gap in high speed CR 8 traffic. The accident history does not suggest skew as a causal factor in the crash experience, therefore realigning Shortsville Road to intersect CR 8 at a right angle would not improve overall safety at the intersection. Therefore, this alternative was dismissed.

Alternative 3: FHWA Low-Cost Safety Enhancements

The Federal Highway Administration (FHWA) report “Two Low-Cost Safety Concepts for Two-Way Stop-Controlled, Rural Intersections on High-Speed Two-Lane, Two-Way Roadways,” identifies the following concepts that were considered for the subject intersection: (1) install rumble strips on outside shoulders and in a painted yellow median island on the major road approaches and (2) install channelizing separator islands on side road approaches with supplemental stop signs.

As outlined in the FHWA report, this alternative would install new centerline (double yellow and hatch line) pavement markings to create a median island separating northbound and southbound traffic on CR 8 where it approaches CR 41 and Shortsville Road. Refer to Appendix A for a graphic illustrating the proposed treatment. The new markings would effectively narrow the northbound and southbound travel lanes with the intent of enhancing intersection conspicuity and reducing travel speeds on CR 8. Milled in audible roadway delineator strips (MIARDS) would also be installed on CR 8 within the limits of the proposed treatment to discourage drivers from violating the painted median. The second treatment would install new separator islands with supplemental stop signs on the CR 41 and Shortsville Road approaches. The objective of this treatment would be to improve the conspicuity of the stop signs and increase driver compliance and awareness.

Under this alternative, MIARDS on the CR 8 approaches could result in nuisance noise and vibration concerns for adjacent residents. In addition, separator islands with stop signs on CR 41 and Shortsville Road would hinder turning movements for tractor trailers and local farming equipment. Vehicles at the stop sign would still need to select adequate gaps in CR 8 traffic to complete a crossing or turning maneuver. While initial studies of the FHWA concepts have demonstrated some reduction in speed and crash rates, long term effectiveness remains unknown and further analysis is needed. Ontario County is interested in implementing a proven long term safety improvement solution that will address the pattern of

right angle and right turn collisions using currently available funding. Therefore, this alternative was dismissed.

Alternative 4: Multi-Way Stop Intersection Control

Multi-way stop control is typically used where the volume of traffic on intersecting roads is approximately equal. The Multi-Way Stop Intersection Control alternative would install stop signs on the CR 8 approaches resulting in a four way stop. Under this alternative, all vehicles approaching the intersection would be required to stop. Assuming all vehicles obey the traffic control, it would eliminate the need for drivers at the stop signs on CR 41 and Shortsville Road to identify adequate gaps to complete a crossing or turning maneuver.

A detailed engineering study regarding the possibility of multi-way stop control at CR 8 and CR 41 / Shortsville Road is provided in Appendix C. That analysis shows that the accident experience warrant would be met. Despite that result, a multi-way stop could potentially lead to new high speed rear-end accidents on CR 8. In addition, the accident history suggests the predominant contributing factor to the crashes is failure to yield right-of-way. Failing to yield the right of way or stop at an intersection with high speed approaches when there is an expectation that conflicting vehicles will stop could result in a serious accident.

Even though the accident experience warrant would be satisfied, MUTCD minimum volume criteria for the installation of a multi-way stop would not be met throughout the design year, 2035. Other potential negative effects from the installation of a multi-way stop could include additional air pollution, noise impacts, and fuel consumption associated with vehicles stopping, idling, and accelerating. This would apply in particular to tractor trailer traffic on CR 8. After consideration of these issues, the multi-way stop alternative was dismissed from further consideration.

Alternative 5: Signalized Intersection Control

The Signalized Intersection Control alternative would install a fully actuated two-phase traffic signal. Applicable traffic signal warrants in accordance with the MUTCD were analyzed. Copies of the analyses are included in Appendix C. The crash experience warrant (Warrant 7) is met, however criteria related to volume (Warrants 1 thru 3) would not be satisfied throughout the design year, 2035. The installation of a traffic signal would present similar safety and environmental concerns to Alternative 4. In addition, an increase in the probability of rear end accidents would also be expected. This would be of particular concern on the high speed CR 8 approaches. Therefore, this alternative was dismissed from further consideration.

3.2. Feasible Build Alternatives

3.2.1. Description of Feasible Alternatives

Alternative 6: Modern Roundabout

This alternative would reconstruct the intersection of CR 8 and CR 41 / Shortsville Road as a modern roundabout. A roundabout would physically eliminate the potential for high-speed, right angle collisions by prohibiting left turns and crossing movements. Crashes at modern roundabouts are less likely to result in a serious injury as they typically involve low speeds and low angles of impact. A summary of probable construction costs appears in Exhibit 3.2.1.-1. Key elements of Alternative 6 are as follows:

- | | |
|----------|--|
| Geometry | <ul style="list-style-type: none">• Reconfigure the existing four-legged, two-way stop controlled intersection of CR 8 and CR 41 / Shortsville Road into a modern roundabout.• Construct extended splitter islands with successive entry curves on each approach to “step down” vehicular speeds prior to reaching the yield line.• Ensure tractor trailers and farm equipment are accommodated by design. |
|----------|--|

- | | |
|-------------------------------|---|
| Operational | <ul style="list-style-type: none">• Require entering vehicles to yield to traffic within the circulating roadway as typical of modern roundabout control.• Provide adequate capacity to meet the projected traffic demand throughout the design year, 2035. |
| Pavement | <ul style="list-style-type: none">• Full-depth asphalt pavement reconstruction at the CR 8 and CR 41 / Shortsville Road intersection and on its immediate approaches. |
| Curb | <ul style="list-style-type: none">• Install mountable and/or traversable curb, where appropriate, along the proposed roundabout's central island, truck apron, and splitter islands. Shoulders would remain uncurbed. |
| Pedestrian & Bicyclist | <ul style="list-style-type: none">• Continue to accommodate occasional pedestrians on paved shoulders.• Construct 10 ft wide crossings through the splitter island on each approach to the roundabout to accommodate the occasional pedestrian crossing. This would facilitate future sidewalk and crosswalk installation. The crossing on the north leg would also accommodate snowmobiles on "The Racino Trail."• Continue shared accommodation for bicyclists within the travel lanes. Bicyclists may also choose to dismount and walk their bicycle across the roundabout using the accessible crossings. |
| Drainage | <ul style="list-style-type: none">• Replace existing storm sewer headwalls and pipe crossings where in poor condition or alterations are needed to drain the proposed design. Tie into the existing storm sewer along the south side of Shortsville Road. |
| Signing and Pavement Marking | <ul style="list-style-type: none">• Install new signage and pavement markings in accordance with MUTCD standards. |
| Landscaping and Enhancements | <ul style="list-style-type: none">• Reestablish turf beyond the shoulders.• Install new roadway lighting at the modern roundabout• Install appropriately scaled landscaping in the modern roundabout's central island and strategically placed landscaping at its edges to promote proper sight lines and improve aesthetics. |
| Right of Way | <ul style="list-style-type: none">• Six property acquisitions (2 permanent easements (PE) and 4 temporary easements (TE)) to accommodate the realignment of Shortsville Road, modern roundabout, and associated drainage improvements on its approaches. |
| Construction Cost and Phasing | <ul style="list-style-type: none">• The opinion of probable construction cost for Alternative 6 is \$1.846 million (M). Refer to Exhibit 3.2.1.-1 for a breakdown of costs and design level contingencies. |
| Project Goals | <ul style="list-style-type: none">• These improvements satisfy the purpose, need, and objectives stated in Chapter 1 of this document. |

Exhibit 3.2.1 Summary of Alternative Costs - (2014 Dollars)	
Activities	Alternative 6 Modern Roundabout
Intersection Improvements	1,205,000
Incidentals ¹ (5%)	60,250
Subtotal 1	1,265,250
Contingencies ² (10%)	126,525
Subtotal 2	1,391,775
Field Change Order ³ (0%)	0
Subtotal 3	1,391,775
Mobilization (4%)	55,671
Subtotal 4	1,447,446
Expected Award Amount – Inflated ⁴ @ 3%/yr to midpoint of construction (2015)	1,490,870
Reimbursable Utility Costs ⁶	0
Wetland Mitigation	30,000
Stormwater Pollutant Discharge Elimination System (SPDES)	10,000
Property Acquisition Costs ⁷	35,000
Construction Support and Inspection ⁸	280,000
Total Costs	1,845,870

Notes:

1. The potential cost increase due to unknown or un-tabulated items.
2. NYSDOT recommends a standard contingency of 15% at Design Approval stage. However, given the current level of detail, a lower contingency was used.
3. FCO would be 5% per HDM Chapter 21 Section 21.4.3.3. NYSDOT Region 4 does not allow use on LAFA projects.
4. An escalation rate of 3% has been included to account for potential future increases in labor, material, equipment and other costs.
5. Construction budget in the NYSDOT STIP for Region 4.
6. Reimbursable utility costs not anticipated for this project.
7. ROW acquisition to be paid for with HSIP Funds. A+I figure is estimate from GTC TIP. Pending appraisals
8. Construction inspection and support budget given in the STIP is \$148,890. Estimated cost shown in table. Actual cost to be negotiated during scoping for construction phase services agreement.

3.2.2. Preferred Alternative

Alternative 6 has been identified as the preferred alternative because it best satisfies the project's purpose and need and objectives. Selection of the preferred alternative will not be finalized until the alternatives' impacts, comments on the draft design approval document, and comments from the public have been fully evaluated.

3.2.3. Design Criteria for Feasible Alternative(s)

3.2.3.1. Design Standards - The design standards for this intersection safety improvement project are as follows:

- AASHTO A Policy on Geometric Design of Highways and Streets (Green Book) 2011
- NYSDOT Highway Design Manual (HDM)
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities

- AASHTO Guide for the Development of Bicycle Facilities
- National Manual on Uniform Traffic Control Devices for Streets and Highways and the New York State Supplement (MUTCD)
- NCHRP Report 672 Roundabouts: An Informational Guide, Second Edition

3.2.3.2. Critical Design Elements - Exhibits 3.2.3.2-1 and 2.3.3.2-2 summarize the critical design elements for CR 8, CR 41, and Shortsville Road beyond the approaches to the proposed roundabout. Exhibit 2.3.3.2-3 summarizes critical design elements for the proposed modern roundabout at the intersection of these three roadways.

Exhibit 3.2.3.2-1 Critical Design Elements for CR 8 / CR 41				
PIN:		4755.86	NHS (Y/N): No	
Route No. & Name:		CR 8 / CR 41	Functional Classification: Urban Collector	
Project Type:		Safety Improvement	Design Classification: Rural Collector	
% Trucks (Max):		14% (CR 8) 10% (CR 41)	Terrain: Level	
AADT (2035):		3430 (CR 8) 4234 (CR 41)	Truck Access/Qualifying Hwy. No / No	
Element		Standard	Existing Condition	Proposed Condition
1	Design Speed	60 mph <i>HDM Section 2.7.3.1 A</i>	Posted 55 mph	Posted 55 mph
2	Lane Width	12 ft. <i>HDM Section 2.7.3.1 B, Exhibit 2-5</i>	11 ft.	11 ft. ¹
3	Shoulder Width (Minimum)	8 ft. <i>HDM Section 2.7.3.1 C, Exhibit 2-5</i>	4 ft.	4 ft.
4	Maximum Grade	5% <i>HDM Section 2.7.3.1 E, Exhibit 2-5</i>	0.5% (max)	1.5% (max)
5	Horizontal Curvature (Minimum)	1200 ft. (@ e = 8.0%) <i>HDM Section 2.7.3.1 F, Exhibit 2-5</i>	None	None
6	Superelevation Rate (Maximum)	8% <i>HDM Section 2.7.3.1 G</i>	8%	8%
7	Stopping Sight Distance (Minimum)	570 ft. <i>HDM Section 2.7.3.1 H, Exhibit 2-5</i>	>570 ft.	>570 ft.
8	Horizontal Clearance (from EOT)	10 ft. without rail Along rail, use larger of 4 ft. or actual shoulder width <i>HDM Section 2.7.3.1 I</i>	10 ft. (min)	10 ft. (min)
9	Vertical Clearance (Minimum)	14 ft Minimum 14 ft - 6 in Desirable <i>HDM Section 2.7.3.1 J & BM Section 2.4.1 Table 2-2</i>	14 ft (min) (to utilities)	14 ft (min) (to utilities)
10	Travel Lane Cross Slope	1.5% Min. to 2% Max. <i>HDM Section 2.7.3.1 K</i>	2% (max)	2% (max)
11	Rollover	4% between travel lanes; 8% at edge of traveled way; 10% when e > 6.0% <i>HDM Section 2.7.3.1 L & 3.2.5.1</i>	4% & 8%	4% & 8%
12	Pedestrian Accommodation	Shoulder	Shoulder	Shoulder
1. 11 ft, lanes may remain where accident history is acceptable. Per section 2.3.1.8, the concentration of accidents occurred at the intersection and lane width was not a contributing factor. A non-standard feature justification is not necessary.				

Exhibit 3.2.3.2.-2 Critical Design Elements for Shortsville Road				
PIN:		4755.86	NHS (Y/N): No	
Route No. & Name:		Shortsville Road	Functional Classification: Rural Local	
Project Type:		Safety Improvement	Design Classification: Rural Local	
% Trucks (Max.):		9%	Terrain: Level	
AADT (2035):		2145	Truck Access/Qualifying Hwy. No / No	
Element		Standard	Existing Condition	Proposed Condition
1	Design Speed	60 mph <i>HDM Section 2.7.4.1 A</i>	Posted 55 mph	Posted 55 mph
2	Lane Width	12 ft. <i>HDM Section 2.7.4.1 B, Exhibit 2-7</i>	11 ft.	11 ft ¹
3	Shoulder Width (Minimum)	8 ft. <i>HDM Section 2.7.4.1 C, Exhibit 2-7</i>	2 ft. (min)	4 ft.
4	Maximum Grade	5% <i>HDM Section 2.7.4.1 E, Exhibit 2-7</i>	0.5% (max)	1.0% (max)
5	Horizontal Curvature (Minimum)	1200 ft. (@ e = 8.0%) <i>HDM Section 2.7.4.1 F, Exhibit 2-7</i>	None	None
6	Superelevation Rate (Maximum)	8% <i>HDM Section 2.7.4.1 G</i>	8%	8%
7	Stopping Sight Distance (Minimum)	570 ft. <i>HDM Section 2.7.4.1 H, Exhibit 2-7</i>	>570 ft.	>570 ft.
8	Horizontal Clearance (from EOT)	10 ft. without rail Along rail, use larger of 4 ft. or actual shoulder width <i>HDM Section 2.7.4.1 I</i>	10 ft. (min)	10 ft. (min)
9	Vertical Clearance (Minimum)	14 ft Minimum 14 ft - 6 in Desirable <i>HDM Section 2.7.4.1 J & BM Section 2.4.1 Table 2-2</i>	14 ft (min) (to utilities)	14 ft (min) (to utilities)
10	Travel Lane Cross Slope	1.5% Min. to 2% Max. <i>HDM Section 2.7.4.1 K</i>	2% (max)	2% (max)
11	Rollover	4% between travel lanes; 8% at edge of traveled way; 10% when e > 6.0% <i>HDM Section 2.7.4.1 L & BM Section 3.2.5.1</i>	4% & 8%	4% & 8%
12	Pedestrian Accommodation	Shoulder	Shoulder	Shoulder
1. 11 ft, lanes remain where accident history is acceptable. Per section 2.3.1.8, the concentration of accidents occurred at the intersection and lane width was not a contributing factor. No non-standard feature justification is necessary.				

Exhibit 3.2.3.2-3 Roundabout Critical Design Elements			
PIN:	4755.86	NHS (Y/N):	No
Route No. & Name:	CR 8 / CR 41 / Shortsville Road	Functional Class:	N/A
Project Type:	Safety Improvement	Design Class:	Roundabout
% Trucks:	14% (CR 8) 10% (CR 41) 9% (Shortsville Road)	Terrain:	Level
ADT (2035):	3430 (CR 8) 4234 (CR 41) 2145 (Shortsville Road)	Truck Access/Qualifying	No / No
Element	Design Guideline		Proposed Condition
1	Maximum Entry Speed	30 mph NYSDOT EI 00-021 3.1.2.a	21 mph
2	Maximum Circulating Speed	25 mph NYSDOT EI 00-021 3.1.2.a & NCHRP 672	15 mph
3	Maximum Entry Superelevation	5% NYSDOT EI 00-021 3.1.2.b	2%
4	Horizontal Clearance (Splitter Islands)	Left (curbed): 0 ft minimum 1 ft to 2 ft desirable <i>HDM Section 2.7.3.2 I</i> Right (uncurbed): 10 ft. without rail Along rail, use larger of 4 ft. or actual shoulder width <i>HDM Section 2.7.3.1 I</i>	1 ft (left) 10 ft (right, without rail)
5	Effective Flare Length	65 ft minimum, 328 ft maximum 100 ft desirable NYSDOT EI 00-021 3.1.2.c	N/A (Flares on entry do not develop an extra lane)
6	Minimum Entry Lane Width	10 ft NYSDOT EI 00-021 3.1.2.d	15 ft
7	Maximum Entry Lane Width	14 ft to 18 ft typical 35 ft Single Lane Approach NCHRP 672 & NYSDOT EI 00-021 3.1.2.e	18 ft
8	Entry Radius	33 ft minimum, 328 ft maximum 65 ft desirable NYSDOT EI 00-021 3.1.2.f and NYSDOT Intersection Design Unit Guidance	100 ft to 120 ft
9	Entry Angle	20° minimum, 60° maximum 30° to 40° desirable NYSDOT EI 00-021 3.1.2.g	21° to 42°
10	Approach Alignment	Radial Acceptable, Offset Left Desirable NYSDOT Intersection Design Unit Guidance	Radial / Offset Left
11	Approach Stopping Sight Distance	112.4 ft @ 20 mph 302.7 ft @ 40 mph 427.2 ft @ 50 mph 496.7 ft @ 55 mph NCHRP 672 6.2.6 & 6.7.3.1	>112.4 ft >302.7 ft >427.2 ft >496.7 ft
12	Intersection Sight Distance	146.8 ft @ 20 mph Conflicting Approach Speed NCHRP 672 6.2.6 & 6.7.3.4	146.8 ft minimum
13	Inscribed Circle Diameter	50 ft minimum, 328 ft maximum 130 ft to 150 ft typ, single lane, WB-67 NYSDOT EI 00-021 3.1.2.k & NCHRP 672	130 ft
14	Circulating Roadway Cross Slope	0.5% minimum, 2.5% maximum NYSDOT EI 00-021 3.1.2.l	2%
15	Circulating Roadway Width	≥ Maximum Entry Width ≤ Maximum Entry Width x 1.2 Design Vehicle + 3 ft Horizontal Clearance NYSDOT EI 00-021 3.1.2.m	18 ft
16	Control of Access	No Access within 80 ft of Yield Line Desirable NYSDOT EI 00-021 3.1.2.n	100 ft minimum
17	Minimum Circulating Sight Distance	77.0 ft @ 15 mph NCHRP 672 6.2.6	77.0 ft minimum
18	Minimum Exit Radius	65 ft minimum, 328 ft to 394 ft typical 656 ft desirable	125 ft

Exhibit 3.2.3.2.-3 Roundabout Critical Design Elements			
		NYSDOT EI 00-021 3.1.2.p and NYSDOT Intersection Design Unit Guidance	
19	Pedestrian Accommodation	Meet ADAAG NYSDOT EI 00-021 3.1.2.q, NYSDOT HDM Chapter 18, and ADAAG	Shoulder
20	Design Vehicle	Largest Expected Vehicle NYSDOT EI 00-021 3.1.2.r	Refer to Exhibit 3.2.3.3-2
21	Rollover	4% max Between Travel Lanes NYSDOT EI 00-021 3.1.2.s	4% max between travel lanes

3.2.3.3. Other Design Parameters –

Exhibit 3.2.3.3.-1 Other Controlling Parameters: General		
Parameter	Standard Criteria	Proposed Condition
Design Storm	10 Year Storm	10 Year Storm
Level of Service	LOS D minimum LOS C desirable	LOS D minimum LOS C desirable

Vehicle Turning Paths at Intersections (i.e. Design Vehicle) - Vehicle turning paths were analyzed for the proposed modern roundabout. All turning movements would accommodate the design turning paths as indicated in Exhibit 3.2.3.3-2.

Exhibit 3.2.3.3.-2 Other Controlling Parameters: Design Vehicle			
Location	Turning Movement	Design Vehicle	Vehicle Accommodated
Roundabout	Northbound right	WB-67	See Note
	Northbound through	WB-67	WB-67
	Northbound left	WB-67	WB-67
	Southbound right	WB-67	WB-67
	Southbound through	WB-67	WB-67
	Southbound left	WB-67	WB-67
	Eastbound right	WB-67	WB-67
	Eastbound through	WB-67	WB-67
	Eastbound left	WB-67	WB-67
	Westbound right	WB-67	WB-67
	Westbound through	WB-67	WB-67
	Westbound left	WB-67	WB-67

Note: WB-67 vehicles do not typically make the northbound right turn. In order to accommodate the design vehicle while minimizing excess pavement in the shoulder area, Ontario County has elected to provide additional shoulder back-up in this quadrant with the expectation that the infrequent WB-67 will utilize that material to complete its (rear wheel tracking) movement.

3.3. Engineering Considerations

3.3.1. Operations (Traffic and Safety) & Maintenance

3.3.1.1. Functional Classification and National Highway System - This project would not change the functional classification of any approach roadways.

3.3.1.2. Control of Access - All highway boundaries would remain “with access”.

3.3.1.3. Traffic Control Devices –

3.3.1.3. (1) Traffic Signals - No new traffic signals are proposed.

3.3.1.3. (2) Signs - Existing signs including but not limited to stop, warning, and street name signs would be removed and replaced with new signs meeting current MUTCD standards. Appropriate signage would be installed on each approach and within the modern roundabout.

3.3.1.3. (3) Pavement Markings - New pavement markings would be installed throughout the project limits in accordance with current MUTCD standards.

3.3.1.4. Intelligent Transportation Systems (ITS) – No ITS measures are proposed.

3.3.1.5. Speeds and Delay -

3.3.1.5. (1) Proposed Speed Limit - The existing speed limit of 55 mph would be retained on CR 8, CR 41, and Shortsville Road upon completion of the project. An advisory speed for negotiating the roundabout would be posted in advance of the reconfigured intersection.

3.3.1.5. (2) Travel Time Estimates – The feasible alternative would not significantly impact alignment or capacity, therefore travel time estimates were not calculated.

3.3.1.6. Traffic Volumes – The projected traffic volumes for Alternative 6 would be the same as those experienced under no-build conditions. Refer to Section 2.3.1.6. for a discussion of the no-build volumes at ETC (2015) and the design year ETC+20 (2035). Turning movement diagrams are presented in Appendix C.

3.3.1.7. Level of Service and Mobility –

3.3.1.7 (1) At Project Completion & Design Year – Level of service analyses were completed using SIDRA modeling software for future build conditions at ETC (2015) and the design year ETC+20 (2035) for the proposed modern roundabout at the intersection of CR 8 and CR 41 / Shortsville Road. SIDRA implements the methods of the HCM 2010 roundabout capacity model for roundabout analysis. Exhibits 3.3.1.7. (1)-1, 3.3.1.7. (1)-2, and 3.3.1.7. (1)-3 summarize the results of SIDRA analyses for this location. As shown, all approaches would operate with an acceptable level of service during the morning, evening, and weekend peaks.

Exhibit – 3.3.1.7. (1)-1 Morning Peak Hour Level of Service and Delay Build Conditions						
Intersection	Approach		2015 Build		2035 Build	
			LOS	Delay (s/veh)	LOS	Delay (s/veh)
CR 8 and CR 41 / Shortsville Road	Northbound	LTR	A	4.3	A	5.0
	Southbound	LTR	A	5.6	A	7.0
	Eastbound	LTR	A	5.5	A	6.6
	Westbound	LTR	A	5.2	A	5.7
	Overall		A	5.3	A	6.3

Exhibit – 3.3.1.7. (1)-2 Evening Peak Hour Level of Service and Delay Build Conditions						
Intersection	Approach		2015 Build		2035 Build	
			LOS	Delay (s/veh)	LOS	Delay (s/veh)
CR 8 and CR 41 / Shortsville Road	Northbound	LTR	A	4.5	A	4.9
	Southbound	LTR	A	5.8	A	6.5
	Eastbound	LTR	A	5.5	A	6.1
	Westbound	LTR	A	5.3	A	5.9
	Overall		A	5.3	A	5.9

Exhibit – 3.3.1.7. (1)-3 Saturday Peak Hour Level of Service and Delay Build Conditions						
Intersection	Approach		2015 Build		2035 Build	
			LOS	Delay (s/veh)	LOS	Delay (s/veh)
CR 8 and CR 41 / Shortsville Road	Northbound	LTR	A	3.9	A	4.1
	Southbound	LTR	A	5.1	A	5.5
	Eastbound	LTR	A	4.5	A	4.8
	Westbound	LTR	A	4.4	A	4.6
	Overall		A	4.6	A	4.9

There would be no modifications to overall traffic patterns (i.e. movements allowed at the intersection) under Alternative 6. The levels of service provided on CR 8 would nearly match those experienced under no action conditions while those on CR 41 and Shortsville Road are projected to improve. Overall, the intersection would have adequate capacity to meet the projected demand with an acceptable level of service throughout the design year, ETC+20 (2035).

3.3.1.7 (2) – Work Zone Safety & Mobility –

A. Work Zone Traffic Control Plan - All work zones and detours would be set up in conformance with the MUTCD. 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 intersection. Flaggers would be utilized to direct traffic where required. Access to affected residential properties would be maintained throughout construction or alternate accommodations provided. Access for emergency vehicles and local deliveries would also be maintained when the intersection is open to traffic.

Conceptual work zone traffic control schemes would allow the contractor to initially utilize one-way alternating traffic with flagging control while maintaining vehicular traffic through the intersection to accomplish underground utility and drainage work along with the initial stages of approach reconstruction. Following the underground and approach work, the intersection would be fully closed to all traffic allowing for construction of the modern roundabout. This approach would minimize the overall construction schedule (reducing the duration of disturbance to the traveling public) and improve the quality of the finished product. An offsite detour would be posted and maintained for up to 3 months along NYS Route 96, NYS Route 332, Canandaigua-Farmington Town Line Road, and Payne Road. This would allow traffic to get from one side of the closed intersection to the other. Refer to detour routing diagrams in Appendix C. The detours would be approximately 5 miles long or less and have the necessary geometry, width, and condition (based upon field inspection) to safely accommodate detoured traffic. Upon completion of the roundabout, its truck apron, and approaches up to the asphalt top course, the intersection would be reopened to traffic. The contractor would be required to have pavement markings, signing, and lighting (permanent or temporary) in place prior to opening. Remaining finish activities including any remaining signing, final grading, landscaping, and turf establishment would be completed using short term temporary shoulder closures.

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 use the posted detour routes.

B. 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.

C. Significant Projects (per 23 CFR 630.1010) - 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.

3.3.1.8. Safety Considerations, Accident History and Analysis – The proposed modern roundabout at the intersection of CR 8 and CR 41 / Shortsville Road would improve safety by reducing the number of total conflict points from 32 to 8 and eliminating the potential for high speed, right-angle collisions. The use of successive curvature on entry would also mitigate the potential for high speed, rear-end collisions at the yield line. Roundabouts are proven to reduce the rate of all accidents, but particularly injuries and fatalities. As documented in NCHRP Report 672, past experience in the United States has shown that where modern roundabouts have replaced a rural two-way stop controlled intersection, the rate of all accidents has declined by 72%. The combined rate of injury and fatal accidents has declined by 87%.

Ontario County performed a safety and economic appraisal for the conversion of the CR 8 and CR 41 / Shortsville Road intersection to a modern roundabout using methodologies presented in the AASHTO Highway Safety Manual, 1st Edition. The details of this analysis are available in Appendix C. When comparing the expected crash frequency at the intersection with and without a roundabout and applying NYSDOT average crash costs, the results suggest a benefit-cost ratio of 6.7 from converting this intersection to a modern roundabout. Therefore a clear safety benefit is anticipated.

3.3.1.9. Impacts on Police, Fire Protection and Ambulance Access – Refer to Section 3.3.1.7.(2) for a discussion of anticipated impacts during construction. Alternative 6 would have no significant long term impacts on police, fire protection, and ambulance access. Any full-size (40 ft.) busses or fire service apparatuses (48 ft.) passing through the roundabout would be accommodated on the circulatory roadway (i.e. they would not need to mount the truck apron).

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

3.3.1.11. Lighting – New overhead lighting would be installed at the proposed modern roundabout. At this time it is anticipated that lighting would be placed around the perimeter of the circle, however final locations would be determined during detailed design. The poles and lights would be chosen in accordance with Ontario County standards. Lighting levels would be consistent with guidelines from the illuminating Engineering Society's (IES) Design Guide for Roundabout Lighting.

3.3.1.12. Ownership and Maintenance Jurisdiction – Ownership and Maintenance Jurisdiction would not be altered by Alternative 6. Refer to Section 2.3.1.12. for discussion of Ownership and Maintenance Jurisdiction.

3.3.1.13. Constructability Review – There are no unique circumstances or design features that would negatively impact the constructability of Alternative 6. The anticipated level of complexity would be considered routine. Closing the intersection to all traffic during construction of the roundabout would accelerate that portion of the schedule (given a lack of interference with the contractor's operations). The lack of interference with construction activities is also anticipated to enhance the quality of the final product.

3.3.2. Multimodal

3.3.2.1. Pedestrians – No separate pedestrian facilities are planned. The occasional pedestrian may legally use the shoulder. Crossings would be constructed at each splitter island to accommodate the occasional pedestrian. Each crossing would be longer than 6 ft to function as a refuge.

3.3.2.2. Bicyclists – No special provisions are proposed to accommodate bicyclists. Bicyclists would share the travel lanes with motor vehicles and should ride along the outer edge of the circulatory roadway. Typical on-road bicycle speeds are between 12 and 20 mph. The geometry of the proposed roundabout would constrain motor vehicle speeds to 15 to 20 mph, therefore relative speed differences

would be kept to a minimum which would thereby improve safety and usability for bicyclists. Bicyclists that choose not to ride through the roundabout would have the option of dismounting and navigating the approaches on foot using the splitter island crossings.

3.3.2.3. Transit – There are no transit providers operating within the project limits, therefore the proposed alternative would not affect their operations.

3.3.2.4. Airports, Railroad Stations, and Ports – No changes are proposed that would affect airports, railroad stations, or port entrances.

3.3.2.5. Access to Recreation Areas (Parks, Trails, Waterways, and State Lands) – No changes are proposed that would affect access to recreation areas.

3.3.3. Infrastructure

3.3.3.1. Proposed Highway Section – Refer to Appendix A for a typical sections illustrating the approach roadways and the circulatory roadway. Additional details regarding the proposed sections under Alternative 6 are summarized in the following sections.

3.3.3.1. (1) Right of Way - Anticipated property acquisitions are summarized in Exhibit 3.3.3.1. They are also shown on the plans in Appendix A.

Exhibit 3.3.3.1. Right-of-Way Acquisitions				
Label	Tax Map No.	Type of Acquisition	Estimated Acquisition Area	Estimated Property Area
TRN 1	42.00-1-1	Temporary Easement	0.025 acres	54.0 acres
TRN 2	42.05-1-3	Temporary Easement	0.134 acres	13.5 acres
TRN 3	42.00-1-4.1	Temporary Easement	0.012 acres	2.5 acres
TRN 4	42.00-1-10.11	Permanent Easement	0.64 acres	140.8 acres
TRN 5	42.00-1-10.2	Permanent Easement	0.02 acres	0.92 acres
TRN 6	42.00-1-10.2	Temporary Easement	0.008 acres	0.92 acres

Construction of the proposed roundabout and associated drainage features would require the relocation of the existing seasonal produce stand located in the northeast quadrant of the intersection. As noted in section 2.3.3.1.7, the produce stand currently uses the gravel area inside the highway boundary as a driveway and for parking. Ontario County is coordinating directly with the property owner regarding this feature and their future plans. There are no other anticipated structural impacts or relocations.

3.3.3.1. (2) Curb – Granite barrier curb would be installed around the central island of the modern roundabout. Cast in place concrete truck apron curb would be installed at the inside edge of the circulatory roadway. Sloped granite curb would be installed along each splitter island. Shoulders would remain uncurbed.

3.3.3.1. (3) Grades –All maximum grades throughout the project limits would be in accordance with the standards contained in Section 3.2.3.2. Refer to the profiles in Appendix A for detailed grade information.

3.3.3.1. (4) Intersection Geometry and Conditions – Under Alternative 6, the 4-legged two-way stop controlled intersection of CR 8 and CR 41 / Shortsville Road would be replaced with a modern roundabout. The roundabout would have an inscribed circle diameter of 130 feet, 4 elongated splitter islands, a truck apron, and a landscaped central island. The roundabout would have a single approach lane in each direction, single departure lane in each direction, and a single circulating lane. Refer to Exhibit 3.2.3.3.-2 for a list of design vehicles turns that would be accommodated at the roundabout. Refer to the plans contained in Appendix A for the proposed intersection geometry under build conditions.

As noted, each approach to the roundabout would feature an elongated, raised splitter island. Each approach would also feature a set of curves, each successively smaller in radius. The purpose of this feature, designed in accordance with guidance in NCHRP Report 672, would be to reduce vehicle speeds as they approach the roundabout from free flow (higher than 55 mph) to approximately 20 mph or less by the time they reach the roundabout's entry.

3.3.3.1. (5) Roadside Elements:

- A. Sidewalks** – There are no proposed sidewalks or shared use paths within the project limits.
- B. Bikeways** – There are no proposed bikeways or shared use paths within the project limits.
- C. Snow Storage** – Snow storage would be accommodated beyond the paved shoulders on all approach roadways.
- D. Utility Strips** – No new utility strips are anticipated within the project limits.
- E. Bus Stops** – There are no bus stops within the project limits.
- F. Driveways** – All driveways within the project limits would be replaced in kind as necessary to tie into the proposed work. This includes the existing asphalt paved driveway to the residential property on the west side of CR 8, north of CR 41, the existing driveway to the residential property on the north side of Shortsville Road, and all field access drives. Refer to the plans in Appendix A for proposed driveway locations and layout. Driveway culverts would be installed where necessary to facilitate drainage patterns.

Curb for the splitter island on CR 8, north of CR 41, would be depressed in the vicinity of the residential driveway on the west side. Though flush, the same median treatment would be carried through this area. This would maintain full driveway access for the affected property owner while discouraging others from utilizing the physical break in the raised median.

G. Clear Zone – On the south CR 8 leg of the roundabout, the northbound horizontal clearance from the edge of travel way to the line of fixed objects would be reduced to 13 feet, which equals required clear zone width associated with the design speed of the adjacent curvature. The southbound horizontal clearance would be reduced to 16 feet (water vault pipe). This exceeds the required clear zone width associated with the design speed of the adjacent curvature and expected speed of vehicles exiting the roundabout. The remaining horizontal clearances along CR 8 would remain the same as under current conditions.

Horizontal clearances from the edge of travel way to the line of fixed objects along CR 41 eastbound and westbound would be reduced to 20 feet and 15 feet (utility poles), respectively. This exceeds the required clear zone width associated with the design speed of the adjacent curvature. The remaining horizontal clearances along CR 41 would remain the same as under existing conditions. Horizontal clearances along Shortsville Road would increase or remain the same as well. The relocation of a utility pole and removal of a tree on the north side of the Shortsville Road would be necessary to maintain existing clear zone widths.

3.3.3.2. Special Geometric Design Elements -

3.3.3.2. (1) Non-Standard Features – Critical design elements within the study limits that would not comply with the geometric features and cross section elements listed in Section 3.2.3.2 are described below. For the purposes of this project, the modern roundabout design criteria apply from the tips of the splitter islands through the central island on each approach.

Shoulder Width: Right shoulder widths would be 4 ft within the project limits. This is less than the 8 ft standard for both a Rural Collector and Rural Local Road. Widening shoulders to meet the standard would encourage higher speeds on the approach roadways and be counterproductive to the stated safety goals of the project. It would also be inconsistent with adjacent segments of approach roadway. There are no plans to widen the shoulders on the segments of road beyond the proposed roundabout. A non-standard feature justification form is included in Appendix F.

3.3.3.2. (2) Non-Conforming Features – There would be no non-conforming features within the project limits.

3.3.3.3. Pavement and Shoulder – A proposed hot mix asphalt (HMA) pavement section was developed for Alternative 6 and generated per the Equivalent Single Axle Loading (ESAL) pavement design procedure as outlined in the NYSDOT Comprehensive Pavement Design Manual. The expected pavement surface life would be 20 years with an expected total pavement service life of 50 years. The recommended full depth asphalt pavement reconstruction section for the CR 8 and CR 41 / Shortsville Road roundabout is as follows:

- 1.5 inch HMA Top Course
- 2.0 inch HMA Binder Course
- 5.0 inch HMA Base Course
- 12.0 inch Granular Subbase Course

All asphalt shoulders would be constructed to full depth and edges supported with a minimum of 2 ft of shoulder backup material. The backup material would be widened as necessary to accommodate occasional truck tracking in the southeast quadrant of the proposed roundabout.

3.3.3.4. Drainage Systems – Overall, the drainage pattern throughout the project limits would remain unchanged. New low-points on the roundabout approaches would be located at or very close to the existing low points and pipe crossings. As part of the proposed improvements, the reinforced concrete headwalls and pipes beneath CR 8 and CR 41 would be replaced with appropriately sized RCP and end sections. The existing CMP beneath Shortsville road would also be replaced with an appropriately sized RCP and end section. New pipes outside the roadway pavement would be smooth interior corrugated plastic pipe made of high density polyethylene (SICPP, HDPE) and connected by appropriately sized drainage structures and manholes.

Where possible, the roadway subbase would be day lighted to drain the roadbed. Underdrain would be installed in locations where the adjacent ditch bottom could not be made low enough to daylight the subbase. Each underdrain would be run toward the roundabout and outlet at a low point in the approach profile. The truck apron and circulating roadway would both be banked outward toward the edge of the roundabout. The proposed drainage design is summarized in Exhibit 3.3.3.4 and also shown on the plans in Appendix A.

Exhibit 3.3.3.4. Proposed Roundabout Drainage Design Summary						
Leg	Side	Ditch Section?	Foreslope (Typ)	Bottom Width (Typ)	Backslope (Typ)	Comments
North	East	Yes	1:4	2 ft	1:4 or flatter	Ditch would carry surface flow south and outlet at end section in northeast quadrant.
	West	Yes	1:3	1 ft	1:3 or flatter	Flow piped from low point near residential driveway to CR 41.
West	North	Yes	1:2	2 ft	1:2	Tie into existing ditch at work limit.
		Yes ('V'-Swale)	1:3	0 ft	1:3 or flatter	Flow piped from west of field access drive at STA WB 7+60 to structure at low point. Swale at toe of slope would carry surface flow to low point.
	South	Yes	1:4	0 ft	1:4 or flatter	V-ditch swale at toe of slope would carry surface flow east to low point/inlet.
South	West	Yes	1:2	2 ft	1:2	Tie into existing ditch at work limit.
		Yes ('V'-Swale)	1:2 to 1:6 or flatter	0 ft	1:4 or flatter	Ditch would carry surface flow north and outlet at end section. Flow piped from north of end section to structure at low point.
	East	Yes	1:4	2 ft	1:4 or flatter	Ditch would carry surface flow north and outlet at end section in southeast quadrant.
East	South	No	-	-	-	Shoulder slope or flatter side slope. Natural drainage path brings flow to low point. All drainage piped from inlet at STA EB 10+80 to the east in existing 24 in HDPE.
	North	Yes	1:4	2 ft	1:4 or flatter	Flow breaks in each direction at residential driveway. Ditch would carry surface flow west and outlet at end section in northeast quadrant.

3.3.3.5. Geotechnical – No special geotechnical techniques or considerations are anticipated within the project limits that would affect design or construction. A geotextile separation product would be installed between the prepared subgrade and new granular subbase in accordance with recommendations made in the project geotechnical report contained in Appendix E.

3.3.3.6. Structures – There are no proposed bridges within the project limits.

3.3.3.7. Hydraulics of Bridges and Culverts – There are no proposed bridges or culverts within the project limits.

3.3.3.8. Guide Railing, Median Barriers and Impact Attenuators – No guide rail, median barriers, or impact attenuators would be required within the project limits.

3.3.3.9. Utilities – Public utility relocations would be required in order to complete the proposed construction. Potential utility impacts are summarized in Exhibit 3.3.3.9.

Exhibit - 3.3.3.9. Location of Potential Utility Impacts			
Owner	Type	Location & Side	Proposed Modifications
RG&E	Electric	North side of Shortsville Road	Minor service pole relocation at 5484 Shortsville Road to accommodate clear zone requirements and cut/fill work. No other relocations.
Frontier	Telephone ¹	Buried. West side of CR 8 from NW corner of the intersection to SW corner. South side of Shortsville Road.	Abandon and replace with new buried conduit outside limits of proposed roundabout central island.
Farmington Water & Sewer Department	Water	West side of CR 8. North side of Shortsville Road starting at NW quadrant of the intersection. South side of CR 41 and ends in SE quadrant of intersection.	Relocate/replace water main on south side of CR 41 in conflict with proposed drainage pipe and ditch. Relocate/replace water main and valves on west side of CR 8 in conflict with proposed roundabout central island and drainage pipe north of roundabout. Modify existing water pressure vault in the southwest quadrant of intersection to minimize the potential for damage by and to and errant vehicle.

3.3.3.10. Railroad Facilities – There are no railroad facilities within the project limits.

3.3.4. Landscape and Environmental Enhancements

3.3.4.1. Landscape Development and Other Aesthetics Improvements – Low maintenance, salt tolerant landscaping would be provided in the central island of the proposed roundabout to enhance its conspicuity, control sight lines, and enhance aesthetics. Plantings would also be placed in select locations around the perimeter of the roundabout to control intersection sight lines. All plantings would be of a self-sufficient, low maintenance variety. Although the plantings would be considered low-maintenance, there would likely need to be some type of minimal maintenance performed 1 to 2 times a year beyond the period of establishment.

No removals of trees 4 inches in diameter at breast height or larger are anticipated. Any other plantings disturbed by the proposed construction would be replaced in-kind, including those along the field in northeast quadrant. Turf would also be reestablished upon completion of the project.

The surfaces of the splitter islands would be standard concrete. The surface of the truck apron would have an aesthetic treatment to visually offset it from the circulatory roadway pavement. This would both enhance aesthetics and discourage motorists from improperly using the apron.

3.3.4.2. Environmental Enhancements – None anticipated.

3.3.5. Miscellaneous

3.3.5.1 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. The tool was completed by Ontario County's design consultant and reflects the current project scope. A copy of the Smart Growth Screening Checklist is provided in Appendix H.

3.3.5.2 Complete Streets – The New York State “Complete Streets Act” requires all state, county, and local agencies including the NYSDOT to consider the convenience and mobility of all users when developing transportation projects that receive federal and state funding. The improvements proposed under Alternative 6 are consistent with this policy.

3.3.5.3 Snowmobiles – As noted in Section 2.2.2.1, a designated snowmobile trail known as “The Racino Trail” runs along CR 41 and Shortsville Road. Alternative 6 would not affect access for snowmobile users. The 1:4 traversable ditch section on the west side of CR 8, pedestrian crossing through the splitter island on CR 8 north of the roundabout, and buried drainage culvert north of CR 41 would all support continued access for these users at the subject intersection.

CHAPTER 4 - SOCIAL, ECONOMIC and ENVIRONMENTAL CONDITIONS and CONSEQUENCES

4.1. Introduction

4.1.1. Environmental Classification

4.1.1.1 NEPA Classification -

After completion of the NEPA Assessment Checklist (included in Appendix B) it has been determined that the project is a Class II Programmatic Categorical Exclusion. This is because it would not cause a significant environmental impact, either individually or cumulatively. As a Programmatic Categorical Exclusion, the project is exempt under NEPA from the requirement to prepare an Environmental Impact Statement (EIS) or an Environmental Assessment (EA).

4.1.1.2 SEQRA Classification -

Ontario County is the SEQRA Lead Agency. The County has classified the project as a SEQRA Type II Action in accordance with 6 NYCRR 617.5. Projects classified as Type II projects require no further processing or consideration. A SEQRA Type II Determination Form is provided in Appendix B.

4.2. Environmental

4.2.1. Wetlands

4.2.1.1 State Freshwater Wetlands -

There are no New York State Department of Environmental Conservation (NYSDEC) regulated freshwater wetlands or regulated adjacent areas (100 ft) within the project area as per the NYSDEC Freshwater Wetlands Maps. The NYSDEC Wetland Checkzone of State Wetland CG-9 is in excess of 0.5 miles north northeast of the intersection. A site visit was performed to verify this information on October 4, 2013. A NYSDEC Article 24 Freshwater Wetlands Permit is not required. No further investigation is required under Environmental Conservation Law, Article 24.

4.2.1.2 Federal Jurisdiction Wetlands -

The project site has been reviewed for wetlands in accordance with the criteria defined in the 1987 US Army Corps of Engineers Wetland Delineation Manual. Based on a site visit on October 4, 2013, two potential federal jurisdictional wetlands exist on the project site. Field wetland delineation was performed and the resulting Wetland delineation report is included in Appendix B. Wetland boundaries are shown in the Wetland Delineation Report in Appendix B and on the plans in Appendix A. It is assumed that these wetlands are considered to be under the jurisdiction of the U.S. Army Corps of Engineers (USACOE).

It was not feasible to avoid impacts to the wetland areas. A preliminary design of Alternative 6 was developed to minimize impacts to wetlands while maintaining an acceptable level of safety. This included minor adjustments in alignment and steepening of slopes where practicable. After minimization, it was determined that 0.13 acres of the wetlands would be filled by the project.

It is anticipated that this work can be authorized under the USACOE Section 404 Nationwide Permit #3 - *Maintenance Activities in All Waters of the U.S.* Since the project is anticipated to fill more than 0.1 acres of wetland area, a pre-construction notification will need to be submitted to the USACOE.

A Blanket Section 401 Water Quality Certification applies to this project, since the work required will meet the requirements of a Section 404 Nationwide Permit # 3.

4.2.1.3 Executive Order 11990 -

A programmatic Executive Order 11990 applies to this project, based on its classification as a Categorical Exclusion under 23 CFR 771.117 and its qualification for U.S. Army Corps of Engineers Section 404/Section 10 Nationwide Permit(s). Minor impacts to federal jurisdictional wetlands are proposed however there is no practicable alternative to construction in the wetland and all practicable measures to minimize harm to the wetland would be incorporated. The project satisfies the requirements of EO 11990. No further approval from FHWA is required.

4.2.1.4 Mitigation Summary -

Compensatory wetland mitigation is anticipated to be required for this project due to the amount of wetland impacts, anticipated at 0.13 acres. All of the impacted wetlands would be emergent wetlands. Coordination with the USACOE indicates that an in-lieu fee program operated by Ducks Unlimited is available for the project area. Coordination with Ducks Unlimited confirmed that the project is in their Seneca Lakes service area. Further coordination would occur during final design with the USACOE to determine the mitigation ratio to be used.

4.2.2. Surface Waterbodies and Watercourses

No State or Federal jurisdictional streams were found to be present within the project area. Padelford Brook is approximately 0.5 miles ENE from the intersection. No permits under this section are anticipated.

4.2.3. Wild, Scenic, and Recreational Rivers

4.2.3.1 State Wild, Scenic and Recreational Rivers -

There are no NYSDEC Designated, Study or Inventory State Wild, Scenic or Recreational Rivers within or adjacent to the proposed project site. No further review is required.

4.2.3.2 National Wild and Scenic Rivers -

The project does not involve a National Wild and Scenic River as shown by the Nationwide Rivers Inventory List of National Wild and Scenic Rivers. No further review is required.

4.2.3.3 Section 4(f) Involvement -

The proposed project does not involve work in or adjacent to a wildlife or waterfowl refuge. No further consideration is required.

4.2.4. Navigable Waters

There are no state or federal regulated navigable waters located within the project location.

4.2.5. Floodplains

The project location is shown on Community-Panel Number 361299 0020 B of the Flood Insurance Rate Map for the Town of Farmington, New York (effective September 30, 1983). It is not in a mapped floodplain area.

4.2.6. Coastal Resources

The project is not located in a State Coastal Zone Management (CZM) area, according to the Coastal Zone Area Map from the NYS Department of State's Coastal Zone Management Unit.

The project is not located in a Significant Coastal Fish and Wildlife Habitat, as defined by the NYSDOS Division of Coastal Resources and Waterfront Revitalization. No further action is required.

According to NYS DOS "List of Approved Coastal Local Waterfront Revitalization Programs (LWRPs)," dated December 2010, proposed project is not located in a Local Waterfront Revitalization Area. No further action is required.

4.2.7. Groundwater Resources, Aquifers, and Reservoirs

The project location is not located over a NYSDEC primary or principal aquifer as defined by the NYSDEC Technical and Operational Guidance Series (TOGS) 2.1.3. The proposed project is not expected to have any adverse impacts on groundwater or drinking water resources.

A review of the EPA-designated Sole Source Aquifer Areas Federal Register Notices, Maps, and Fact Sheets indicates that the project is not located in a Sole Source Aquifer Project Review Area. No federal review and/or approvals are required pursuant to Section 1424(e) of the Safe Drinking Water Act.

4.2.8. Stormwater Management

Site disturbance for this redevelopment project is calculated to be greater than 1 acre, therefore, a full Stormwater Pollution Prevention Plan (SWPPP) would be required for compliance with the State Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-10-001). Contained in the project SWPPP document would be the following requirements: erosion and sediment control designs (E&SC); review of the reduction in stream channel erosion, application of runoff reduction via green infrastructure techniques, prevention of overbank flooding, and control extreme flood events (water quantity controls); and review of stormwater management practices to provide for pollutant removal (water quality controls).

For this project, E&SC methods would most likely include silt fence, drainage inlet protection, pipe inlet/outlet protection, stone protection, and seeding/soil stabilization operations.

The water quantity control (Channel Protection Volume (Cpv), Overbank Flood (Qp), and Extreme Storm (Qf)) for the project will be waived for this project. Redevelopment criteria in chapter 9 of the NYS Stormwater Design Manual (SMDM 2010) states in section 9.3.2 "Sizing Criteria" that if a redevelopment results in changes to hydrology that do not increase discharge rates then the water quantity control is not required. Discharge rates of stormwater runoff would remain the same (or be slightly reduced by the construction of a water quality control method described below). In addition, the stormwater runoff is discharged to a closed pipe drainage system.

For water quality control, an analysis uses the total disturbed impervious project area to determine the water quality volume. The redevelopment standard has been assigned to this project in accordance with Chapter 9 of the SMDM 2010. Physical constraints such as head and inadequate space for treatment are design difficulties that allow this project to be considered a redevelopment project. Sizing criteria for water quality shall utilize a treatment objective that proposes a 25% Water Quality Volume (WQv) treatment by standard practice for redeveloped impervious area and 100% Water Quality Volume (WQv) treatment by standard practice for new impervious area,

$$WQv = \frac{[(P)(Rv)(A)]}{12}$$

Where:

WQv = water quality volume in (acre-feet)

P = 90% rainfall event number (inches)

Rv = $0.05 + 0.009(I)$, where I % impervious cover

A = contributing area (acres)

The WQv calculation uses only impervious area as the contributing area (A), instead of including the total project disturbance area, which includes pervious surfaces that cannot be fully accounted for at this point in the design. However, it is noted that the WQv calculation would be essentially the same once the full amount of pervious area within the disturbed area is determined. The project WQv = 0.04 ac-ft, based on the following project inputs: P = 0.85; Rv = 0.95; A = 1.2 (redevelopment impervious area) and 0.3 (new impervious area). Based on these calculations, the required water quality volume treatment would be accomplished using "NYSDEC – standard" stormwater management practices. The treatment methods would involve a dry swale open channel treatment area located within the project limits.

The project limits are not adjacent to or discharging runoff to a Total Maximum Daily Load (TMDL) Watershed or a listed 303(d) water body.

4.2.9. General Ecology and Wildlife Resources

4.2.9.1 General Ecology and Vegetative Communities

In a site visit on October 4, 2013, the area was found to be primarily rural with limited agricultural use but with newer suburban development evident. Specific to within the project area, most vegetation was dominated by weedy species. Additionally, areas adjacent to the roadway were regularly mowed and maintained for low ground cover. The northeast quadrant had a small agricultural field and seasonal produce stand with much of the surrounding ground filled and compacted with gravel. The northwest quadrant was occupied with a single residential house with a mowed and maintained yard with ornamental conifers planted facing the road. The maintained yard was surrounded by agricultural fields. The southeast quadrant was occupied by a large agricultural field with the area adjacent to the intersection filled and compacted with gravel. The southwest quadrant was occupied by a large fallow field that appeared to be mowed infrequently and had several areas that exhibited some woody successional plant species and emergent wetlands along the periphery. Further south and west a large manmade pond was present and to the west of the pond was a suburban residential housing development. The surrounding topography is relatively flat with much of it historically tilled for agricultural use. The landscape is typified by agricultural use, low density suburban housing, disturbed open land, and fragmented forest/shrub.

The project would impact some roadside vegetation, including some wetland vegetation (see Section 4.2.1). In addition, approximately 13 small conifer trees planted along the existing right-of-way line would be removed. It is anticipated that landscaping would be included in the project, including planting small conifer trees along the proposed permanent easement lines.

4.2.9.2 Endangered and Threatened Species -

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

The USFWS interactive online application was used to generate a list of threatened and endangered species that may occur in the proposed project location. Documentation can be found in Appendix B. The USFWS lists the following species for the project location:

- **Bog turtle (*Clemmys muhlenbergii*):** The bog turtle is a semi-aquatic species. The bog turtle prefers open, sunny, spring fed wetlands in muck soils with scattered dry areas. The bog turtle is generally found in "mucky" open areas with high amounts of sunlight for basking and nesting. The habitat at the project location is not within a spring fed wetland; in addition, the soils are not classified or exhibit the characteristics of a muck soil. It is not anticipated that the habitat at the project will support the bog turtle. No further review is required.
- **Northern long-eared bat (*Myotis septentrionalis*):** The northern long-eared bat is a small sized *Myotis* that hibernates in caves. During warm months the bat prefers mature, interior forest environments; along hillsides and ridgelines. The habitat at the project location is not forested and does not contain mature trees. It is not anticipated that the habitat at the project location will support the bat. No further review is required.

State Listed Threatened or Endangered Species

The NYSDEC was contacted for information regarding the presence of state listed threatened, endangered or special concern species that may be impacted by the proposed project. A response from the NYSDEC, New York National Heritage Program (NYNHP) dated January 27, 2014 indicates that they have no records of rare or state-listed animals or plants, or significant natural communities, at or in the immediate vicinity of the project. No further review is required. A copy of applicable correspondence can be found in Appendix B.

4.2.10. Critical Environmental Areas

According to information obtained from NYSDEC, the proposed project would not involve work in or near a Critical Environmental Area.

4.2.11. Historic and Cultural Resources

A Project Review Package was prepared for review by the Regional Cultural Resource Coordinator (CRC). In a memorandum dated January 13, 2014, the Regional CRC concluded that "the project activities have no potential to cause effects on historic properties in accordance with 36 CFR 800.3(a)(1) therefore, there are no further obligations for compliance with Section 106 of the National Historic Preservation Act. A copy of the memorandum is included in Appendix B.

Since there are no properties on, or eligible for, the National Register of Historic Places, or properties over 50 years old that may be eligible within the project's area of potential effect, a Section 4(f) evaluation for historical resources is not required.

4.2.12. Parks and Recreational Resources

There are no publically-owned parks in the vicinity of the project.

4.2.12.1 Section 4(f) Involvement -

There are no publicly owned parks or recreational facilities, protected under Section 4(f) of the USDOT Act, in or adjacent to the project area. No further action is required under this section.

4.2.12.2 Section 6(f) Involvement -

The project does not impact parklands or facilities that have been partially or fully federally funded through the Land and Water Conservation Act. No further consideration under Section 6(f) is required.

4.2.13. Visual Resources

In general, the viewshed as perceived from the approaches would only affect drivers with regard to the change in the requirements to navigate the intersection. This would be a temporary impact until the regular travelers for this area adjust to the change. The viewshed change for the surrounding residents would be negligible, with the area of the intersection being converted to highway use being minor. The proposed improvements would not detract from the visual resources in the surrounding area.

4.2.14. Farmlands**4.2.14.1 State Farmland and Agricultural Districts -**

Based on a review of the maps of NYS Agricultural Districts in Ontario County, all of the property adjacent to the intersection is located in NYS Agricultural District # 1 for Ontario County except for the property in the northwest quadrant of the intersection. Of the estimated right-of-way shown on Exhibit 3.3.3.1, only TRN 1, TRN 2, and TRN 3 are located in Agricultural District #1. However, since the proposed project would not acquire more than one acre from an actively operated farm within any of the Agricultural Districts, or more than ten acres within any of the individual Agricultural Districts, the notification requirements of the NYS Agriculture and Markets Law do not apply.

4.2.14.2 Federal Prime and Unique Farmland -

The soil types in the project area include:

- Lakemont silty clay loam, 0 to 3 percent slopes (34A) Farmland of Statewide Importance
- Odessa wilt loam, 0 to 3 percent slopes (35A) – Prime Farmland if drained

While these soils are “Farmland of Statewide Importance” and “Prime Farmland if drained,” those areas to be acquired are along the edge of the existing right-of-way and have previously been converted to a non-agricultural use. Therefore, the proposed project activities would not convert any prime or unique farmland, or farmland of state or local importance, as defined by the USDA Natural Resources Conservation Service, to a nonagricultural use.

4.2.15. Air Quality

Air quality analysis screening was not performed for the project. The project would not increase vehicular traffic volumes, reduce source-receptor distances or change other existing conditions to such a degree as to jeopardize attainment of the National Ambient Air Quality Standards. Further air quality analysis is not necessary for this project.

It should be noted, that conversion of two-way stop intersections to roundabouts generally lowers emissions of many air quality parameters by lowering traffic speeds and through the elimination of idling.

On April 15, 2004 the U.S. Environmental Protection Agency (EPA) designated Genesee, Livingston, Monroe, Ontario, Orleans, and Wayne Counties as being in nonattainment of the National Ambient Air Quality Standard (NAAQS) for ground-level ozone.

This project has been reviewed by the Regional Transportation Committee and is on the TIP.

In accordance with the CAA Amendments of 1990, the proposed project has been assessed to determine if it conforms to the purpose of the State Implementation Plan (SIP). The *Final Conformity Regulations on Transportation Conformity (40 CFR, Parts 51 and 93)* published by USEPA on November 24, 1993 and effective January 31, 1994, has been used to ensure that the project addresses the conformity requirements.

4.2.16. Energy

An energy assessment is not required for the proposed project since it is not expected to:

- a. Increase or decrease VMT;
- b. Generate additional vehicle trips;
- c. Significantly affect land use development patterns;
- d. Result in a shift in travel patterns; or
- e. Significantly increase or decrease vehicle operating speeds.

Therefore, the project would not significantly affect energy consumption.

It should be noted, that conversion of two-way stop intersections to signalized intersections to roundabouts generally lowers energy use by lowering traffic speeds and through the elimination of idling.

4.2.17. Noise

This project does not qualify as a Type I project under the requirements developed by the FHWA as identified in Chapter 1 of Title 23, Code of Federal Regulations, Part 772 (23 CFR 772). A noise study is not required and has not been performed for this project.

Due to the close proximity to residential homes, nighttime construction is not anticipated. The use of time related provisions would be evaluated during final design.

4.2.18. Asbestos

A Preliminary Asbestos Assessment was completed by New York State Department of Labor Certified Asbestos Inspectors in general accordance with the New York State Industrial Code Rule 56 and the New York State Department of Transportation's Environmental Manual, Chapter 4.4.19, Asbestos Management.

The Assessment included a review of available record plans and a visual inspection. A complete copy of the Preliminary Asbestos Assessment can be found in Appendix B.

One type of homogeneous material based on color and texture was identified as part of the Assessment as follows:

- Black, fibrous sidewalk seam material (associated with sidewalk present approximately 450 feet west of the intersection, south of County Road 41)

It is not anticipated that this area would be impacted.

4.2.19. Hazardous Waste and Contaminated Materials

A Hazardous Waste/Contaminated Materials Screening was conducted for the project corridor. This screening included a review of available records and a site inspection. The purpose of this screening is to identify potential areas of environmental concern that may be disturbed during construction of the proposed project. A copy of the Hazardous Waste Screening Technical Memorandum is included in Appendix B.

No sites or items of environmental concern were identified as a result of the Hazardous Waste/Contaminated Materials Screening.

As with any environmental assessment in areas where subsurface testing was not completed, the possibility of unknown subsurface contamination exists. Should suspect materials be encountered during the course of project execution, appropriate measures would be taken to report such contamination, determine the nature and extent of any possible hazardous materials, and arrange for proper management of such materials.

Appendix A:
Project Location Map, Alternative 3 Concept, Alternative 6:
Typical Sections, Plans, Profiles

Appendix B:
Environmental Information

Appendix C: Traffic Information

Appendix D:
Pavement Evaluation & Treatment Selection Report (PETSr)

Appendix E:
Geotechnical Information

Appendix F:
Non-Standard Feature Justifications

NON-STANDARD FEATURE JUSTIFICATION (in accordance with HDM §2.7)			
PIN:	4755.86	NHS (Y/N):	No
Route No. & Name:	CR 8 / CR 41	Functional Class:	Urban Collector
Project Type:	Reconstruction	Design Classification: (AASHTO Class)	Rural Collector
% Trucks:	14 (CR 8) 10 (CR 41)	Terrain:	Level
ADT (2035):	3430 (CR 8) 4234 (CR 41)	Truck Access Route:	No / No
1. Description of Nonstandard Feature			
Type of Feature:	Right Shoulder Width		
Location:	Throughout the project limits		
Standard Value:	8 ft (min.)	Design Speed:	60 mph
Existing Value:	4 ft	Advisory Speed:	Not Applicable.
Proposed Value:	4 ft	Advisory Speed:	Not Applicable.
2. Accident Analysis			
Current Accident Rate:	2.48 acc/mev		
Statewide Rate (based on similar type highways):	0.22 acc/mev		
Is the nonstandard feature a contributing factor?	<input type="checkbox"/> Yes		<input checked="" type="checkbox"/> No
Anticipated Accident Rate / Severity / Cost	Not Applicable.		
3. Cost Estimates			
Cost to Fully Meet Standards:	\$75,000		
Cost(s) For Incremental Improvements:	Not Applicable.		
4. Mitigation (e.g., increased superelevation and curve warning signs for a nonstandard horizontal curve):			
	Reconstruction of two-way stop controlled intersection to roundabout control intersection. A roundabout would eliminate high-speed, right angle collisions by prohibiting left turns and crossing movements. Crashes at modern roundabouts are less likely to result in a serious injury as they typically involve low speeds and low angles of impact.		
5. Compatibility with Adjacent Segments & Future Plans:			
	The proposed 4 ft right shoulder width is consistent with adjacent segments. There are no plans to widen or reconstruct the shoulders of CR 8 and CR 41.		
6. Other Factors (e.g., Social, Economic & Environmental):			
	Widening the shoulder would encourage higher speeds on CR 8 and be counterproductive to the stated safety goals of the project. Increasing the shoulder width to standard would also require significant impacts to drainage, existing wetlands, and right-of-way that cannot be addressed within the project constraints as described in the design approval document.		
7. Proposed Treatment (i.e. Recommendation):			
	Maintain existing right shoulder width.		

Appendix G: Public Involvement

Appendix H: Miscellaneous

Smart Growth Screening Tool

PIN 4755.86

Prepared By: Michael T. Croce, PE

Smart Growth Screening Tool (STEP 1)

NYS DOT & Local Sponsors – Fill out the Smart Growth Screening Tool until the directions indicate to **STOP** for the project type under consideration. For all other projects, complete answering the questions. For any questions, refer to [Smart Growth Guidance](#) document.

Title of Proposed Project: County Road 8 at County Road 41 / Shortsville Road Intersection Improvement

Location of Project: Town of Farmington, NY

Brief Description: This project will reconstruct the intersection of CR 8 and CR 41 / Shortsville Road as a modern roundabout.

A. Infrastructure:

Addresses SG Law criterion a. –

(To advance projects for the use, maintenance or improvement of existing infrastructure)

1. Does this project use, maintain, or improve existing infrastructure?

Yes

No

N/A

Explain: (use this space to expand on your answers above – the form has no limitations on the length of your narrative)

This project proposes to improve existing infrastructure. A roundabout would eliminate high-speed, right angle collisions by prohibiting left turns and crossing movements. Crashes at modern roundabouts are less likely to result in a serious injury as they typically involve low speeds and low angles of impact.

Maintenance Projects Only

a. Continue with screening tool for the four (4) types of maintenance projects listed below, as defined in NYS DOT PDM Exhibit 7-1 and described in 7-4:

<https://www.dot.ny.gov/divisions/engineering/design/dqab/pdm>

➡ Shoulder rehabilitation and/or repair;

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- ➔ Upgrade sign(s) and/or traffic signals;
- ➔ Park & ride lot rehabilitation;
- ➔ 1R projects that include single course surfacing (inlay or overlay), per Chapter 7 of the NYSDOT Highway Design Manual.

b. For all other maintenance projects, **STOP here**. Attach this document to the programmatic [Smart Growth Impact Statement and signed Attestation](#) for Maintenance projects.

For all other projects (**other than maintenance**), continue with screening tool.

B. Sustainability:

NYSDOT defines Sustainability as follows: A sustainable society manages resources in a way that fulfills the community/social, economic and environmental needs of the present without compromising the needs and opportunities of future generations. A transportation system that supports a sustainable society is one that:

- ➔ Allows individual and societal transportation needs to be met in a manner consistent with human and ecosystem health and with equity within and between generations.
- ➔ Is safe, affordable, and accessible, operates efficiently, offers choice of transport mode, and supports a vibrant economy.
- ➔ Protects and preserves the environment by limiting transportation emissions and wastes, minimizes the consumption of resources and enhances the existing environment as practicable.

For more information on the Department's Sustainability strategy, refer to Appendix 1 of the Smart Growth Guidance and the NYSDOT web site, www.dot.ny.gov/programs/greenlites/sustainability

(Addresses SG Law criterion j : to promote sustainability by strengthening existing and creating new communities which reduce greenhouse gas emissions and do not compromise the needs of future generations, by among other means encouraging broad based public involvement in developing and implementing a community plan and ensuring the governance structure is adequate to sustain and implement.)

1. Will this project promote sustainability by strengthening existing communities?

Yes No N/A

2. Will the project reduce greenhouse gas emissions?

Yes No N/A

Explain: (use this space to expand on your answers above)

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This project will convert the CR 8 and CR 41/Shortsville Road from a two-way stop controlled intersection to a modern roundabout. Roundabouts create a low speed environment and improve traffic flow by allowing vehicles entering the roundabout to merge and travel safely and efficiently through the intersection. The impacts include significant reductions in vehicle idle time, greenhouse gas emissions, and fuel consumption.

C. Smart Growth Location:

Plans and investments should preserve our communities by promoting its distinct identity through a local vision created by its citizens.

(Addresses SG Law criteria b and c: to advance projects located in municipal centers; to advance projects in developed areas or areas designated for concentrated infill development in a municipally approved comprehensive land use plan, local waterfront revitalization plan and/or brownfield opportunity area plan.)

1. Is this project located in a developed area?

Yes No N/A

2. Is the project located in a municipal center?

Yes No N/A

3. Will this project foster downtown revitalization?

Yes No N/A

4. Is this project located in an area designated for concentrated infill development in a municipally approved comprehensive land use plan, waterfront revitalization plan, or Brownfield Opportunity Area plan?

Yes No N/A

Explain: (use this space to expand on your answers above)

According to the Town of Farmington's Comprehensive Plan, along the north side of County Road 41 and the west side of County Road 8 is a vacant site formerly known as the Blackwood Office Park. This site has been identified by the State of New York to become a large industrial park site under the State's "Build New York Now Program." There are no known plans for development of this site under that State Program.

D. Mixed Use Compact Development:

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Future planning and development should assure the availability of a range of choices in housing and affordability, employment, education transportation and other essential services to encourage a jobs/housing balance and vibrant community-based workforce.

(Addresses SG Law criteria e and i: to foster mixed land uses and compact development, downtown revitalization, brownfield redevelopment, the enhancement of beauty in public spaces, the diversity and affordability of housing in proximity to places of employment, recreation and commercial development and the integration of all income groups; to ensure predictability in building and land use codes.)

1. Will this project foster mixed land uses?
Yes No N/A
2. Will the project foster brownfield redevelopment?
Yes No N/A
3. Will this project foster enhancement of beauty in public spaces?
Yes No N/A
4. Will the project foster a diversity of housing in proximity to places of employment and/or recreation?
Yes No N/A
5. Will the project foster a diversity of housing in proximity to places of commercial development and/or compact development?
Yes No N/A
6. Will this project foster integration of all income groups and/or age groups?
Yes No N/A
7. Will the project ensure predictability in land use codes?
Yes No N/A
8. Will the project ensure predictability in building codes?
Yes No N/A

Explain: (use this space to expand on your answers above)

This project proposes to landscape the central island of the roundabout which enhances the visual quality of the intersection and the community. The landscaping of the roundabout will improve the aesthetics of the area while complementing surrounding environment as much as possible.

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E. Transportation and Access:

NYS DOT recognizes that Smart Growth encourages communities to offer a wide range of transportation options, from walking and biking to transit and automobiles, which increase people's access to jobs, goods, services, and recreation.

(Addresses SG Law criterion f: to provide mobility through transportation choices including improved public transportation and reduced automobile dependency.)

1. Will this project provide public transit?

Yes No N/A

2. Will this project enable reduced automobile dependency?

Yes No N/A

3. Will this project improve bicycle and pedestrian facilities (such as shoulder widening to provide for on-road bike lanes, lane striping, crosswalks, new or expanded sidewalks or new/improved pedestrian signals)?

Yes No N/A

(Note: Question 3 is an expansion on question 2. The recently passed Complete Streets legislation requires that consideration be given to complete street design features in the planning, design, construction, reconstruction and rehabilitation, but not including resurfacing, maintenance, or pavement recycling of such projects.)

Explain: (use this space to expand on your answers above)

The project will include installation of 10 ft wide accessible pedestrian crossings through the splitter islands at the roundabout to accommodate future sidewalk and crosswalk installation. There are no proposed plans for significant generators of pedestrian or bicycle traffic within or adjacent to the project limits. The occasional pedestrian or bicyclist may legally use the paved shoulder beyond the intersection.

F. Coordinated, Community-Based Planning:

Past experience has shown that early and continuing input in the transportation planning process leads to better decisions and more effective use of limited resources. For information on community based planning efforts, the MPO may be a good resource if the project is located within the MPO planning area.

(Addresses SG Law criteria g and h: to coordinate between state and local government and inter-municipal and regional planning; to participate in community based planning and collaboration.)

1. Has there been participation in community-based planning and collaboration on the project?

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Yes No N/A

2. Is the project consistent with local plans?

Yes No N/A

3. Is the project consistent with county, regional, and state plans?

Yes No N/A

4. Has there been coordination between inter-municipal/regional planning and state planning on the project?

Yes No N/A

Explain: (use this space to expand on your answers above)

Public meetings/hearings regarding the intersection reconstruction will be held in the future to provide the public opportunities to make formal statements of position before any final decisions are made.

G. Stewardship of Natural and Cultural Resources:

Clean water, clean air and natural open land are essential elements of public health and quality of life for New York State residents, visitors, and future generations. Restoring and protecting natural assets, and open space, promoting energy efficiency, and green building, should be incorporated into all land use and infrastructure planning decisions.

(Addresses SG Law criterion d :To protect, preserve and enhance the State's resources, including agricultural land, forests surface and ground water, air quality, recreation and open space, scenic areas and significant historic and archeological resources.)

1. Will the project protect, preserve, and/or enhance agricultural land and/or forests?

Yes No N/A

2. Will the project protect, preserve, and/or enhance surface water and/or groundwater?

Yes No N/A

3. Will the project protect, preserve, and/or enhance air quality?

Yes No N/A

4. Will the project protect, preserve, and/or enhance recreation and/or open space?

Yes No N/A

5. Will the project protect, preserve, and/or enhance scenic areas?

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Yes No N/A

6. Will the project protect, preserve, and/or enhance historic and/or archeological resources?

Yes No N/A

Explain: (use this space to expand on your answers above)

This project will protect and preserve adjacent agricultural land and surface water ensuring that neither are adversely impacted. While there will be insignificant impacts to adjacent ditch wetlands, the project will treat stormwater that was previously not treated. Enhancements to air quality will be realized due to reduced vehicle emissions by the proposed roundabout. The project will incorporate appropriate landscaping to enhance aesthetics and complement the surrounding area.

Smart Growth Screening Tool

Smart Growth Impact Statement (STEP 2)

NYS DOT: Complete a Smart Growth Impact Statement (SGIS) below using the information from the Screening Tool.

Local Sponsors: The local sponsors are not responsible for completing a Smart Growth Impact Statement. Proceed to [Step 3](#).

Smart Growth Impact Statement

PIN: 4755.86

Project Name: County Road 8 at County Road 41 / Shortsville Road Intersection Improvement

Pursuant to ECL Article 6, this project is compliant with the New York State Smart Growth Public Infrastructure Policy Act. This project has been determined to meet the relevant criteria, to the extent practicable, described in ECL Sec. 6-0107. Specifically, the project:

- Improves traffic flow and reduces vehicle emissions
- Improves pedestrian and bicycle access with crosswalks, lane striping and signing
- Enhances aesthetics of the surrounding area
-
-
-

This publically supported infrastructure project complies with the state policy of maximizing the social, economic and environmental benefits from public infrastructure development. The project will not contribute to the unnecessary costs of sprawl development, including environmental degradation, disinvestment in urban and suburban communities, or loss of open space induced by sprawl.

Smart Growth Screening Tool

Review & Attestation Instructions (STEP 3)

Local Sponsors: Once the Smart Growth Screening Tool is completed, the next step is to submit the project certification statement (Section A) to Responsible Local Official for signature. After signing the document, the completed Screening Tool and Certification statement should be sent to NYSDOT for review as noted below.

NYSDOT: For state-let projects, the Screening Tool and SGIS is forwarded to Regional Director/ RPPM/Main Office Program Director or designee for review, and upon approval, the attestation is signed (Section B.2). For locally administered projects, the sponsor's submission and certification statement is reviewed by NYSDOT staff, the appropriate box (Section B.1) is checked, and the attestation is signed (Section B.2).

A. CERTIFICATION (LOCAL PROJECT)

I HEREBY CERTIFY, to the best of my knowledge, all of the above to be true and correct.

Preparer of this document:



Signature

Project Engineer

Title

04/07/2014

Date

Robert Schiller, PE

Printed Name

Responsible Local Official (for local projects):

Signature

Title

Date

Printed Name

Smart Growth Screening Tool

B. ATTESTATION (NYSDOT)

1. I HEREBY:

Concur with the above certification, thereby attesting that this project is in compliance with the State Smart Growth Public Infrastructure Policy Act

Concur with the above certification, with the following conditions (information requests, confirming studies, project modifications, etc.):

(Attach additional sheets as needed)

do not concur with the above certification, thereby deeming this project ineligible to be a recipient of State funding or a subrecipient of Federal funding in accordance with the State Smart Growth Public Infrastructure Policy Act.

2. NOW THEREFORE, pursuant to ECL Article 6, this project is compliant with the New York State Smart Growth Public Infrastructure Policy Act, to the extent practicable, as described in the attached Smart Growth Impact Statement.

NYSDOT Commissioner, Regional Director, MO Program Director,
Regional Planning & Programming Manager (or official designee):

Signature

Date

Title

Printed Name