Genesee — Finger Lakes Regional
Diversion Route Plans

GENESEE TRANSPORTATION COUNCIL

FINAL REPORT — September 2015

Contact Information

Genesee Transportation Council:

The offices of GTC are located in downtown Rochester at:

50 West Main Street
Suite 8112
Rochester, New York 14614

Phone: 585-232-6240
Fax: 585-262-3106
E-mail: contactgtc@gtcmpo.org

Please visit our website for transportation resources:

www.gtcmpo.org

Cover Photo Credits: Left and Right Images courtesy of New York State Department of Transportation; Center Image courtesy of Stratus Imaging.

GTC's Commitment to the Public

The Genesee Transportation Council assures that no person shall, on the grounds of race, color, national origin, disability, age, gender, or income status, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity. GTC further assures every effort will be made to ensure nondiscrimination in all of its programs activities, whether those programs and activities are federally funded or not.

En Español

El Consejo Genesee del Transporte asegura completa implementación del Título VI de la Ley de Derechos Civiles de 1964, que prohibe la discriminación por motivo de raza, color de piel, origen nacional edad, género, discapacidad, o estado de ingresos, en la provisión de beneficios y servicios que sean resultado de programas y actividades que reciban asistencia financiera federal.

Financial assistance for the preparation of this report was provided by the Federal Highway Administration and Federal Transit Administration. The Genesee Transportation Council is solely responsible for its content and the views and opinions expressed herein do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

Table of Contents

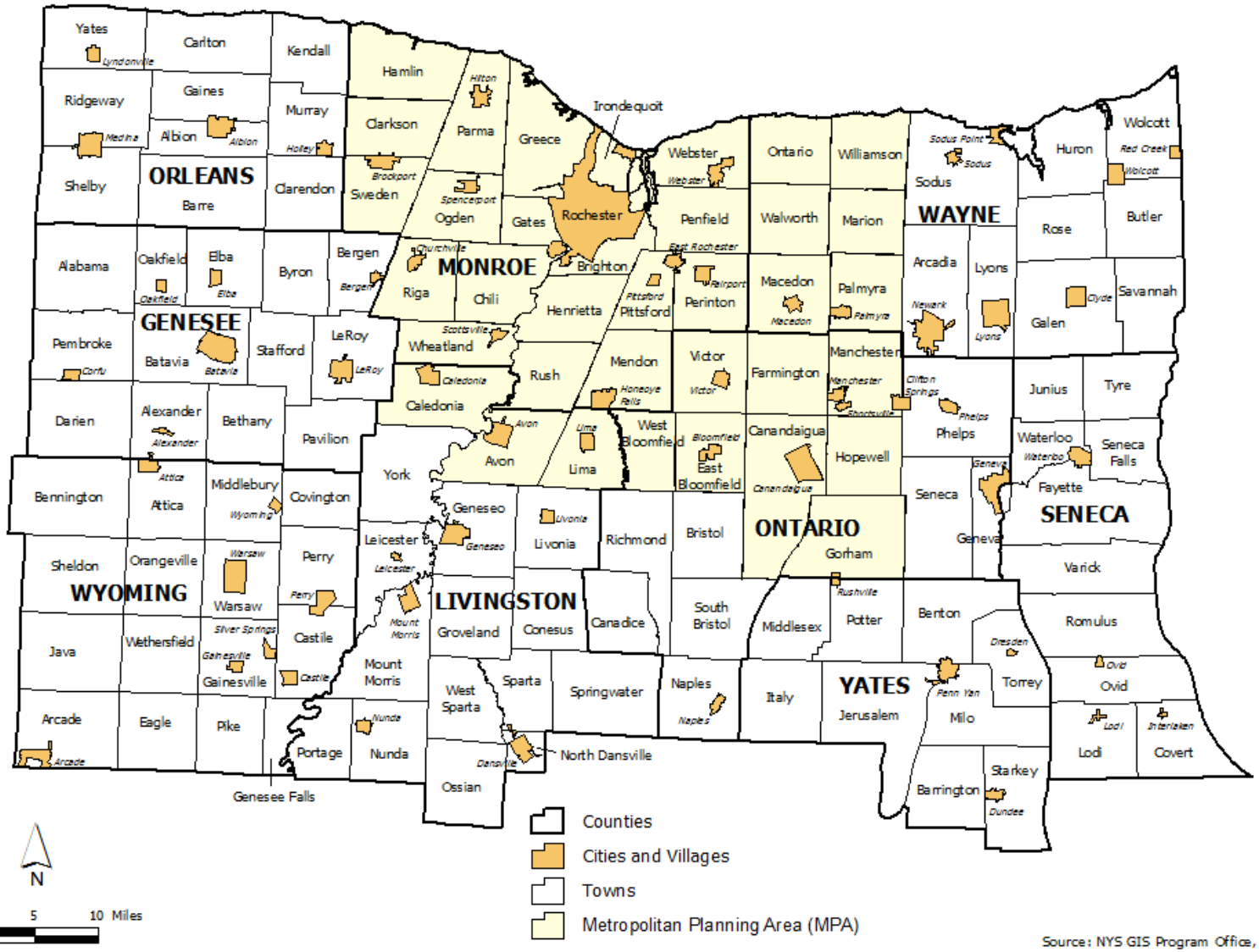
Table of Contents — Diversion Route Maps

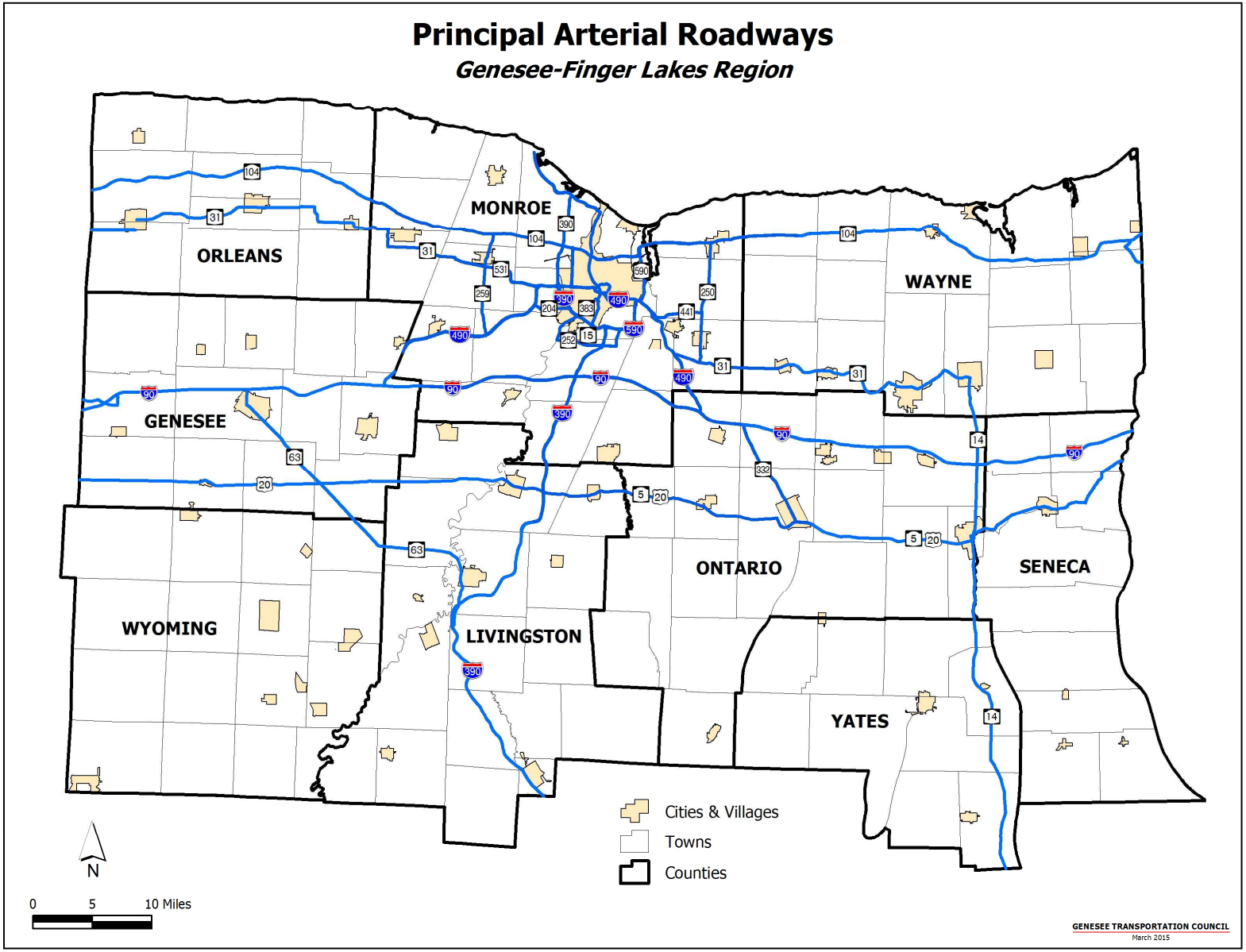
Table 4.1 (Continued): Genesee-Finger Lakes Diversion Route Plans					
Segment:	**Map:**	**Arterial Road:**	**From:**	**To:**	**Pages:**
8	8.1	NYS Route 104	NYS Route 63	NYS Route 98	65
	8.2	NYS Route 104	NYS Route 98	NYS Route 237	67
	8.3	NYS Route 104	NYS Route 237	NYS Route 260	69
	8.4	NYS Route 104	NYS Route 260	NYS Route 386	71
	8.5	NYS Route 104	NYS Route 386	Mt. Read Boulevard	73
	8.6	NYS Route 104	Mt. Read Boulevard	North Clinton Avenue	75
	8.7	NYS Route 104	North Clinton Avenue	Culver Road	77
	8.8	NYS Route 104	Culver Road	NYS Route 590	79
	8.9	NYS Route 104	NYS Route 590	Bay Road	81
	8.10	NYS Route 104	Bay Road	NYS Route 250	83
	8.11	NYS Route 104	NYS Route 250	County Line Road	85
	8.12	NYS Route 104	County Line Road	NYS Route 350	87
	8.13	NYS Route 104	NYS Route 350	Salmon Creek Road	89
	8.14	NYS Route 104	Salmon Creek Road	North Centenary Road	91
	8.15	NYS Route 104	North Centenary Road	North Geneva Road	93
	8.16	NYS Route 104	North Geneva Road	Lake Bluff Road	95
	8.17	NYS Route 104	Lake Bluff Road	New Hartford Street	97
	8.18	NYS Route 104	New Hartford Street	NYS Route 104A	99
9	9	NYS Route 204	I-490 (Exit 6)	I-390 (Exit 18)	101
10	10.1	NYS Route 250	NYS Route 104	NYS Route 441	103
	10.2	NYS Route 250	NYS Route 441	NYS Route 31	105

Table 4.1 (Continued): Genesee-Finger Lakes Diversion Route Plans					
Segment:	**Map:**	**Arterial Road:**	**From:**	**To:**	**Pages:**
11	11	NYS Route 252	NYS Route 38	Winton Road	107
12	12	NYS Route 259	NYS Route 104	I-490	109
13	13	NYS Route 332	I-90 (Thruway)	Routes 5 & 20	111
14	14.1	NYS Route 383	West Main Street	Elmwood Avenue	113
	14.2	NYS Route 383	Elmwood Avenue	NYS Route 252	115
15	15.1	I-390	NYS Route 390 (Exit 20)	NYS Route 33A (Exit 19)	117
	15.2	I-390	NYS Route 33A (Exit 19)	NYS Route 383 (Exit 17)	119
	15.3	I-390	NYS Route 383 (Exit 17)	NYS Route 15A (Exit 16)	121
	15.4	I-390	NYS Route 15A (Exit 16)	I-590 (Exit 15)	123
	15.5	I-390	I-590 (Exit 15)	NYS Route 252 (Exits 14 A & B)	125
	15.6	I-390	NYS Route 252 (Exits 14 A & B)	NYS Route 253 (Exit 12)	127
	15.7	I-390	NYS Route 253 (Exit 12)	NYS Route 251 (Exit 11)	129
	15.8	I-390	NYS Route 251 (Exit 11)	Routes 5 & 20 (Exit 10)	131
	15.9	I-390	Routes 5 & 20 (Exit 10)	US Route 20A (Exit 8)	133
	15.10	I-390	US Route 20A (Exit 8)	NYS Route 408 (Exit 7)	135
	15.11	I-390	NYS Route 408 (Exit 7)	NYS Route 36 (Exit 6)	137
	15.12	I-390	NYS Route 36 (Exit 6)	NYS Route 36 (Exit 5)	139
	15.13	I-390	NYS Route 36 (Exit 5)	NYS Route 36 (Exit 4)	141
16	16.1	NYS Route 390	Lake Ontario State Parkway	NYS Route 104	143
	16.2	NYS Route 390	NYS Route 104	I-390	145
17	17	NYS Route 441	I-490	NYS Route 250	147

Table of Contents — Diversion Route Maps

Genesee-Finger Lakes Region




Principal Arterial Roadways
Genesee-Finger Lakes Region
MONROE
ORLEANS
WAYNE
GENESEE
WYOMING
LIVINGSTON
ONTARIO
SENECA
YATES
Cities & Villages
Towns
Counties
N
0
5
10 Miles
GENESEE TRANSPORTATION COUNCIL
March 2015

Executive Summary

Overview

The Genesee-Finger Lakes Diversion Route Initiative identifies the most suitable diversion routes for Principal Arterial roads in the nine-county Genesee-Finger Lakes Region. These diversion routes will minimize disruptions to and improve safety for the traveling public when isolated events result in temporary road or bridge closures. This project identified diversion routes that could be used by truck traffic and motorists who may not be familiar with this region.

Diversion Routes

Diversion routes are a traffic management technique used to mitigate the impacts of road closures on traffic operations. A diversion route provides a designated path for traffic to follow in the event of a road closure. They begin at a specific point, typically at an interchange or intersection, on a certain road and end at another specific point on the same road. They allow traffic to bypass the road closure with minimum disruption to travel times. Diversion routes may be implemented in response to traffic incidents, non-traffic incidents, emergencies, planned special events, and road work activities. Diversion routes are one means of providing temporary relief to the traveling public, including freight carriers, from travel delays resulting from one or more of the aforementioned events. They help maintain reliable travel times and safeguard lives and property.

Detour routes are related to but different from diversion routes. Detour routes includes signs at every decision point to guide motorists along the entire route until they return to the original road. Because of their short term nature and the variety of possible combinations, diversion routes are not signed in this manner.

Diversion Route Identification Process

A Steering Committee consisting of representatives from the New York State Department of Transportation, New York State Thruway Authority, New York State Police, Monroe County Department of Transportation, Monroe County Sheriff, and the City of Rochester was established to oversee the diversion route identification process. The Steering Committee met to discuss the diversion route identification methodology, provide input on issues and concerns regarding potential diversion routes, and review and comment on draft and final diversion route maps.

The following considerations were used to identify the regional diversion routes mapped in this report:

- Roads running parallel to and with similar operating characteristics as the closed road were preferred for designation as diversion routes. Nearby parallel routes help minimize the additional time and distance that motorists have to travel as a result of a road closure.

- Ease of access to and from the diversion route.

- Principal and/or minor arterials were preferred for use as diversion routes because these roads typically have the closest operating characteristics to other principal arterials. If no principal or minor arterials were available, collectors were selected.

- The use of local roads for diversions was avoided whenever possible; however, in some locations, local roads were used to link different sections of a diversion route where an arterial or collector was not available.

- Bridge height and weight limits were considered when selecting diversion routes that can accommodate truck traffic.

- Roads equipped with Intelligent Transportation System (ITS) field devices such as synchronized traffic signals, traffic cameras and Dynamic Message Signs were preferred for diversion routes because ITS deployments can be used to monitor and manage traffic operations when the diversion is in effect.

- Unique operational characteristics of specific roadways that would either prohibit or encourage their use as diversions.

- The NYS Thruway (I-90) is the only toll road in the region. As such, it was not designated as a diversion route because not all motorists may be willing or prepared to pay the required tolls.

- The role of expressway frontage roads was given special consideration when identifying diversion routes. Frontage roads often make the optimum choice for diversion routes because of their proximity and access to the expressway mainline. However, given this proximity and the potential exposure of frontage roads to the impacts of a major incident with an extensive debris field, using them for diversion routes may not always be possible. In such situations other roads running parallel to the expressway mainline should be used.

Diversion Route Maps

This report includes 79 maps that depict the region's diversion routes. Using the above considerations as a guide, draft diversion routes were identified and a set of draft maps were prepared for Steering Committee review and comment. The draft maps were revised based on Steering Committee input to produce the final set of maps included in this report.

Due to their length, several principal arterials were divided into multiple segments for clarity of mapping. For example, NYS Route 104 crosses the entire region from west to east. It was split into eighteen segments and each segment was mapped separately. However, the diversion routes for each segment are designed to link together so that if the need arises for a continuous diversion, one can be implemented that covers multiple segments.

A sample diversion route table and map are shown on the following pages. Each diversion route table provides key information about the diversion routes, such as the roads used for the diversion route, the diversion length, and driving directions. The maps are designed for clarity and ease of use. In addition to identifying the diversion route, they identify access routes which can be used for limited diversions, critical interchanges and intersections where motorists have to be guided through the diversion, the location of height- and weight-restricted bridges that could impact the diversion route, and traffic cameras that can be used to monitor conditions on the diversion route.

Diversion Route Map Review and Update

This report is intended to be periodically reviewed and updated to ensure the continued viability of the regional diversion routes. Changes to the design or condition of transportation infrastructure, such as modifications to bridge height, weight restrictions, or intersection reconfigurations that eliminate certain turning movements, could impact the diversion routes identified in this report. Certain changes may necessitate the alteration of diversion routes and revision of the maps to reflect new routes.

Example Diversion Route Table

Key information about each diversion route is provided in a table, such as the one below, that accompanies each diversion route map. The table is intended to provide a readily accessible profile of the diversion route with key information that transportation and emergency management agencies can use when implementing and managing a diversion route.

The length (in miles) of both the closed road and the diversion route are provided.

The roads that the planned diversion route follows are listed out for quick reference.

Segment 9
Arterial: NYS Route 204 (I-490 to I-390)
Segment Length: 3.3 miles
Start Point: I-490 (Exit 6)
End Point: I-390 (Exit 18)
Diversion Route Description: I-490, I-390.
Diversion Route Length: 6.3 miles
Driving Directions:
Eastbound: From I-490 East at Exit 6, continue on I-490 East to I-390 South, enter I-390 South (Exit 9), exit I-390 South at Brooks Avenue (Exit 18).
Westbound: From NYS Route 204 (Brooks Avenue) West at I-390 (Exit 18), enter I-390 North, enter I-490 West (Exit 20), exit I-490 at NYS Route 204 (Exit 6).
Access Routes: NYS Route 33 (Buffalo Road), Howard Road, NYS Route 33A (Chili Avenue).
Notes: • I-390 and I-490 are classified as principal arterials.

Driving directions are provided for both directions (northbound and southbound or eastbound and westbound) of the diversion route.

The "Notes" section identifies the Functional Class of the roads that the diversion route follows and where necessary provides additional details about the diversion route.

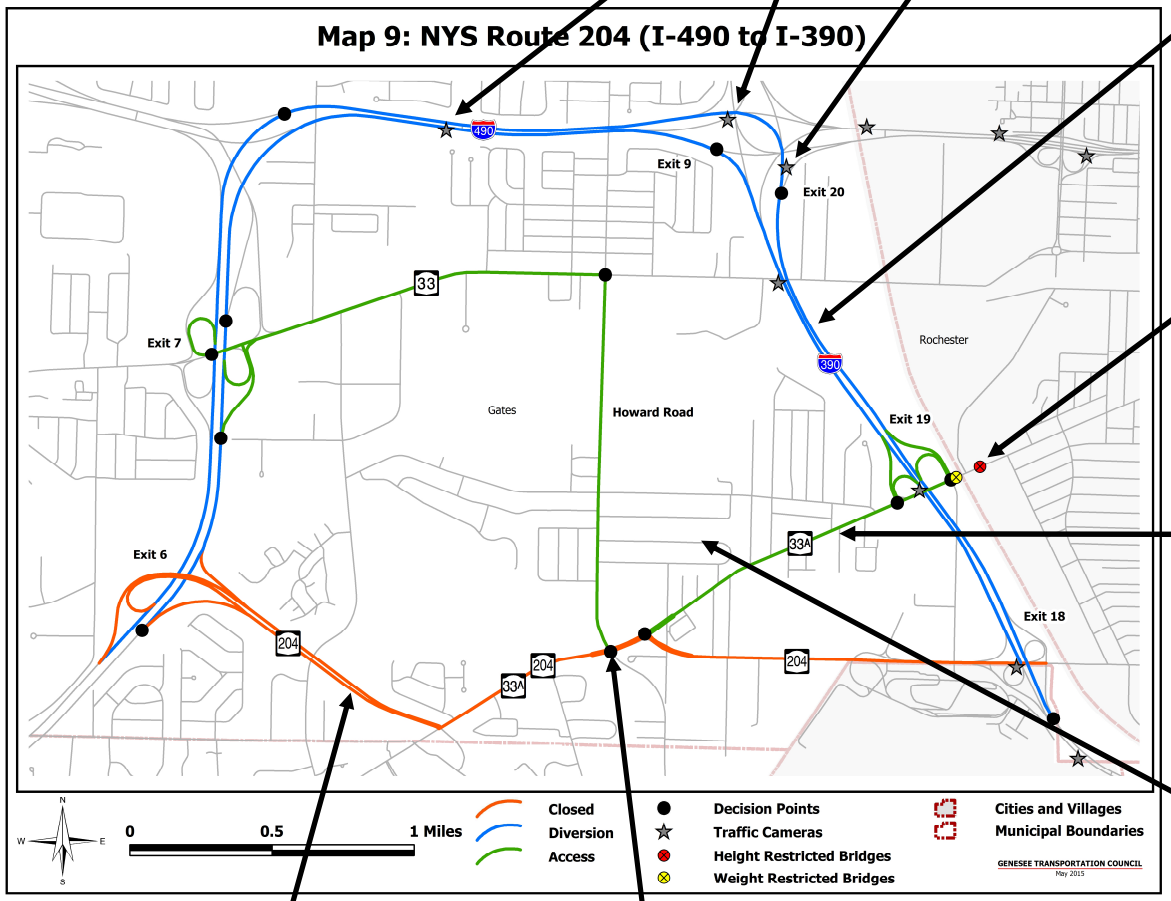
The Access Routes are listed out for quick reference.

Example Diversion Route Map

Regional diversion routes are depicted on maps such as the example on this page.

CCTV Traffic Cameras are shown by the grey stars. These cameras can be used to monitor traffic on the diversion route.

The diversion route is shown in blue. This is the recommended route for traffic that is diverted from the closed section of road to follow.



Height and weight-restricted bridges are shown by the red (Height) and yellow (weight) circles. If these bridges impact the diversion or access routes, a note on the map explains how.

Access routes are shown in green. Access routes may be used for limited diversions when it is not necessary to close an entire road. They provide increased flexibility for implementing and managing diversion routes.

Local streets, shown in light grey, are mapped for reference.

The closed road section is shown in orange.

The black circles identify Decision Points, which are the key interchanges/intersections where motorists require guidance to follow a diversion route.

1.0 Introduction

The Genesee-Finger Lakes Diversion Route Initiative is the first systematic attempt to identify diversion routes for principal arterial roads in the nine-county Genesee-Finger Lakes Region.

1.1 Purpose

The purpose of this project is to identify the most suitable diversion routes for Principal Arterials in the Genesee-Finger Lakes Region. These diversion routes will minimize disruptions to and improve safety for the traveling public when isolated events result in temporary road or bridge closures. This project identified diversion routes that could be used by truck traffic and motorists who may not be familiar with this region.

1.2 Scope

This project identified diversion routes for all principal arterial roads in the Genesee-Finger Lakes Region (see Table 4.1, pages 20-23). This report includes 79 maps depicting the Region's planned diversion routes; each map has an associated table with additional details about the diversion route, including length and driving directions.

1.3 Stakeholders

At the onset of the project a Steering Committee was organized to oversee the process of identifying and analyzing regional diversion routes. Representatives from the following agencies participated on the Steering Committee:

- New York State Department of Transportation
- New York State Thruway Authority, Buffalo and Syracuse Divisions
- New York State Police
- Monroe County Department of Transportation
- Monroe County Sheriff
- City of Rochester

The representatives' responsibilities included attending Steering Committee meetings, reviewing and commenting on materials including draft and final diversion route locations, and providing input on potential issues and concerns regarding diversion route location and management.

1.4 Diversion Routes

Diversion routes are a traffic management technique used to mitigate the impacts of road closures on traffic operations. A diversion route provides a designated path for traffic to follow in the event of a road closure. They begin at a specific point, typically at an interchange or intersection, on a certain road and end at another specific point on the same road. They allow traffic to bypass the road closure with minimum disruption to travel times. Diversion routes may be implemented in response to traffic incidents, non-traffic incidents, emergencies, planned special events, and road work activities (see Section 2 below). Diversion routes are one means of providing temporary relief to the traveling public, including freight carriers, from travel delays resulting from one or more of the aforementioned events. They help maintain reliable travel times and safeguard lives and property.

Detour routes are related to but different from diversion routes. Detour routes includes signs at every decision point to guide motorists along the entire route until they return to the original road. Because of their short term nature and the variety of possible combinations, diversion routes are not signed in this manner.

1.5 Diversion Route Planning in the Genesee-Finger Lakes Region

As noted above, this project is the first systematic region-wide identification of diversion routes undertaken in the Genesee-Finger Lakes Region. However, previous efforts by regional stakeholders have produced diversion routes for specific facilities, such as the NYS Thruway, and specific situations, such as an incident at the R. E. Ginna Nuclear Power Plant that would necessitate the evacuation of the population located within ten mile radius of the plant.

1.5.1: New York State Thruway Authority

The New York State Thruway Authority operates the 570-mile long Governor Thomas E. Dewey Thruway, the principal statewide highway system. The Thruway passes through the Genesee-Finger Lakes Region on an east/west axis, crossing Seneca, Ontario, Monroe and Genesee counties from east to west. Exits 41 (Waterloo-Clyde) through 48A (Pembroke-Medina) are located within the region.

The Thruway Authority developed detour routes that can be implemented during a major road closure, which is defined as an impact to the roadway that is estimated to last more than two hours in duration, or the complete closure of the roadway in either direction. Detour routes were prepared for each section of the Thruway between exits. The Thruway Authority's detour routes typically follow state routes, as well as Interstate highways where available. Please see Appendix A for maps of the Thruway Authority's detour routes.

No additional detour routes were identified for the Thruway as part of this project. The Thruway Authority periodically reviews its detour routes and maintains contact information for the appropriate regional officials at the New York State Department of Transportation and the New York State Office of Emergency Management, as well as for emergency management, law enforcement, and highway/public works agencies in the jurisdictions along the Thruway. In the event of an incident that requires the implementation of a detour route, the Thruway Authority will notify the appropriate state and municipal agencies and coordinate with them to manage the detour. In addition, real-time information on Thruway detours can be disseminated to the traveling public via Highway Advisory Radio (HAR) broadcasts; Dynamic Message Signs (DMS) displays; TRANSalert emails, text messages, and Twitter updates; and publications on the Thruway Authority's website.

1.5.2: R. E. Ginna Nuclear Power Plant

Located in the town of Ontario in Wayne County, the Robert Emmett Ginna Nuclear Power Plant is the only nuclear power generating facility in the Genesee-Finger Lakes Region and presents a unique security and public safety concern for emergency management, law enforcement, and transportation management agencies.

The Offices of Emergency Management in Monroe and Wayne Counties have developed Evacuation Time Estimates (ETE) for evacuation routes for locations within a ten-mile radius of the plant. This area is the plant's Emergency Planning Zone (EPZ), which is the area most vulnerable to exposure from radiological materials released from the plant. The EPZ is further divided into Emergency Response Planning Areas (ERPAs). There are nine ERPAs in Monroe County and seven ERPAs in Wayne County.

ETEs are updated every ten years following completion of the United States Census, which allows emergency planners to adjust the evacuation route time estimates to account for population changes. Factors used in determining ETEs include jurisdictional and EPZ boundaries, current and projected demographics, topography, land use, and location and capacity of transportation infrastructure. A transportation analysis that involves scenario modeling and demand estimation, factoring in variables such as time of day, weather conditions, road work, traffic incidents, special events, and other pertinent considerations is used to calculate various ETEs.

ETEs use all available roadways in the EPZ and estimate the amount of time it will take to evacuate the EPZ under specific scenarios. The ETEs do not designate specific evacuation routes, but rather route traffic along routes that will expedite travel from their points of origin to points outside the EPZ, minimize traffic movement towards the plant, disperse traffic demand across multiple routes to avoid concentrating demand on a limited number of routes while leaving others underutilized, and move traffic in directions that are generally outbound relative to the plant's location.

1.5.3: City of Rochester Snow Emergency Routes

The City of Rochester identified a network of Designated Snow Routes in 1966 following a major blizzard. Section 111-73 of the City Code gives the Mayor authority to prohibit parking along these routes and allows the City to remove vehicles parked on them in the event the Mayor declares a snow emergency. This is to facilitate efficient snow removal and keep city streets clear for emergency access. However, discussions with City staff indicate that snow emergency routes have never been used and the City is investigating whether or not to retain them. Therefore, consideration of the City's snow emergency routes did not play a role in the identification of diversion routes for this study.

1.5.4: Work Zone Detour Route Planning

Detour route planning is a routine element of work zone planning and management. Prior to beginning road work, transportation agencies determine the need for detour routes and, if required, identify detour routes designed to minimize travel time delay and safeguard the traveling public while facilitating safe and efficient work zones.

Agencies such as the New York State Department of Transportation, the Monroe County Department of Transportation, and the City of Rochester routinely identify construction-related detour routes and publicize them through newsletters, media releases, and periodic project website updates. These agencies often provide detour route maps with associated directions to help guide motorists through and around work zones. Detour route guidance signs are placed along the detour route to guide motorists back to their original route.

The emphasis of this report is on diversion routes that can be put in place for unplanned events, such as major traffic and hazard incidents. The diversion routes identified in this report could be used as detours around work zones, but identifying work zone detours is not the purpose of this report.

1.6 Diversion Route Review and Update

This report is intended to be periodically reviewed and updated to ensure the continued viability of the regional diversion routes. Changes to the design or condition of transportation infrastructure, such as modifications to bridge height, weight restrictions, or intersection reconfigurations that eliminate certain turning movements, could impact the diversion routes identified in this report. Certain changes may necessitate the alteration of diversion routes and revision of the maps to reflect new routes.

2.0: Application

Nationwide, diversion routes are used to manage traffic during any one of several situations, including traffic incidents, non-traffic incidents, emergencies, planned special events, and major road construction and maintenance activities. All of these events reduce a road's capacity; such reductions may range from minor drops in traffic throughput to full road closures, and may also increase demand for access to nearby routes. Pre-planned diversion routes are a critical tool for managing the impacts of both planned and unplanned events on traffic operations and for identifying where signs may be needed at critical decision points.

2.1: Traffic Incidents

Diversion routes may be necessary in the event of major traffic incidents that necessitate long-term road closures. Severe incidents such as hazardous materials spills and multi-vehicle crashes, especially with one or more fatalities, may cause serious damage to roads, bridges, and tunnels, forcing the closure of these assets until they can be repaired and safely reopened to the traveling public. Even if infrastructure damage is minimal, a large and complex incident scene may require a detailed on-site investigation before the scene can be cleared and the road reopened.

Diversion routes play an important role in minimizing disruption from major traffic incidents. They safeguard lives and property by detouring traffic away from the incident scene. They reduce the exposure of emergency response workers and provide investigators with the space and time needed to determine the cause of a major incident. They minimize travel delay for both people and goods, which limits the economic disruption caused by closed roads.

Different diversion routes may be implemented to handle through traffic and local traffic. In addition, separate truck routes may be designated to facilitate truck detours if there are barriers, such as low bridges or intersections with insufficient space for trucks to turn, on the primary diversion route.

2.2: Non-traffic Incidents

Non-traffic incidents include fires, explosions, structural collapses, and other events that occur in locations adjacent to or nearby a road, bridge, or other transportation asset. These types of incidents can have severe impacts on transportation assets and operations. While they may not cause damage to transportation infrastructure and facilities, they have the potential to seriously disrupt routine traffic operations. For example, a road may be closed to allow emergency responders access to the incident site, or blowing and drifting smoke and debris may cause severe visibility problems, thus requiring a road closure until the hazard clears.

As with closures resulting from traffic incidents, diversion routes can be implemented as a means of handling these situations by detouring traffic around the incident location.

2.3: Emergencies

Diversion route plans are one tool that emergency management, law enforcement, and highway/public works agencies can use to safeguard lives and property before, during, and after emergencies such as natural disasters or an intentional attack on transportation assets.

The Genesee-Finger Lakes Region is fortunate that its exposure to natural hazards such as severe wind storms and tornadoes, storm surges and coastal flooding, and seismic and volcanic activity, is less than most other regions of the United States. However, hazard events such as ice storms, blizzards, and flooding have the potential to cause major disruption to community services, including transportation.

Diversion routes may be implemented in the aftermath of a hazard event that damages or destroys a transportation asset. It is not necessary for a transportation asset to be completely closed in order to implement a diversion route; any significant reduction in asset capacity for a sustained period can have negative repercussions on travel times, congestion, and public safety. As with diversion routes implemented in the aftermath of a traffic or other type of incident, diversion routes implemented in response to a natural disaster or intentional attack play a critical role in safeguarding lives and property by limiting the public's exposure to an emergency situation and its aftermath.

A public health emergency may necessitate non-traditional uses of the regional transportation system, such as for evacuation routes or for the distribution of relief supplies and equipment. Non-emergency traffic may be detoured from routes needed for these purposes to designated diversion routes.

In short, diversion routes play a critical role in strengthening the resiliency of a region's transportation system. While diversion routes will not prevent emergencies from happening, they provide an additional tool for agencies to use in responding to and managing the fallout from a hazard event.

2.4: Planned Special Events

Planned special events are scheduled activities that may reduce roadway capacity, either through road closures, lane reductions and turn restrictions, or by increasing the demand for space on roads. Planned special events include concerts, parades, festivals,

block parties, marathons or other walking/running races, sports games, rallies and demonstrations, and other community events that bring together large numbers of people in public spaces, such as streets or parks, or private venues, such as stadiums, arenas, or theatres and concert halls. Some special events, such as parades and marathons, require street closures while others require special traffic management to safely and efficiently move traffic around and through the event venue.

There are several potential applications for diversion routes to help manage special events. Diversion routes may be implemented to redirect traffic away from street and road closures and reduce traffic congestion in and around the event venue. If a special event coincides with planned construction activities in the vicinity of the venue, a diversion route may be implemented to direct through traffic away from the work zone. Diversion routes can also be used to redirect traffic that would otherwise be caught up in the event traffic, which reduces delay for people and goods that are not traveling to the event. Lastly, regardless of how diversion routes are used to manage traffic around special event venues, it is important to provide and promote alternate modes of travel such as transit and shuttle bus services, carpooling, and pedestrian and bicycle access.

If they are required, diversion routes for special events are identified during the event planning process. In the City of Rochester, the City's Office of Special Events handles this function, coordinating among city departments and outside agencies to plan for and manage special events, including the identification and implementation of event-related diversion routes.

2.5: Major Road Construction and Maintenance

A road, bridge, tunnel, or other transportation infrastructure asset may be closed or have lane restrictions put in place to facilitate a major construction or maintenance project. Such closures and restrictions may require a diversion route to handle traffic detoured around the work zone. As discussed above in Section 1.5.4., diversion route planning for work zones is handled as part of the planning process for road construction. The diversion routes identified in this report are not intended for use as construction detours; however, they may provide a starting point for planning construction-related detours.

2.6: Agency Roles and Responsibilities

The diversion routes identified in this report can be used to help manage traffic in the event of a major incident that is expected to last for more than two hours. Chapter 6I of the Manual of Uniform Traffic Control Devices (MUTCD) identifies three incident categories based on duration:

A. Major — Expected duration of more than two hours;
B. Intermediate — Expected duration of 30 minutes to two hours; and
C. Minor — Expected duration under 30 minutes.

In the event of a major incident, transportation management agencies have the option of instituting a diversion route to minimize traffic disruption caused by the incident. However, these diversion routes are not mandatory; i.e., if responders and transportation agency personnel determine that even though a road or bridge closure is likely to last for more than two hours, they do not have to implement a diversion route. These diversion routes are an additional tool that transportation managers and first responders can use as part of the incident response and management process.

A detailed discussion of the diversion route implementation process is beyond the scope of this report. However, to provide general guidance on how the diversion routes are to be implemented, an outline of agency roles and responsibilities of the agencies potentially involved in the diversion route implementation process is outlined below. Please note that these roles and responsibilities are presented at a high level and are intended only as an overview of each agency's role during the diversion route implementation process.

- New York State Department of Transportation
    - Provide staffing resources at the Regional Traffic Operations Center (RTOC) to assist with incident detection, verification, response, and recovery.
    - Monitor conditions on roads in the vicinity of the incident scene and implement procedures, such as traffic signal timing adjustments, to help mitigate traffic disruptions.
    - Coordinate incident response activities with first responders, including law enforcement, fire and rescue, and emergency medical services.
    - Provide resources to respond to incidents as allowed by State policies and existing interagency agreements.
    - Provide traveler information to the media and motorists.
- New York State Thruway Authority
    - Coordinate incident response activities with the Regional Traffic Operations Center.
    - Coordinate incident response activities with first responders, including law enforcement, fire and rescue, and emergency medical services.
    - Provide resources to respond to incidents as allowed by Thruway Authority policies and existing interagency agreements.
    - Provide traveler information to the media and motorists.

- Monroe County Department of Transportation

  - Provide staffing resources at the Regional Traffic Operations Center (RTOC) to assist with incident detection, verification, response, and recovery.
  - Coordinate incident response activities with first responders, including law enforcement, fire and rescue, and emergency medical services.
  - Monitor conditions on roads in the vicinity of the incident scene and implement procedures, such as traffic signal timing adjustments, to help mitigate traffic disruptions.
  - Provide resources to respond to incidents as allowed by Monroe County policies and existing interagency agreements.
  - Provide traveler information to the media and motorists.

- First Responders (Police, Fire and Rescue, Emergency Medical Services)

  - Provide incident scene management.
  - Coordinate incident response activities with the Regional Traffic Operations Center.

- Municipal (City, Town, Village) Highway/Public Works Departments

  - Coordinate incident response activities with the incident scene manager and the Regional Traffic Operations Center.
  - Provide logistical support to incident scene managers on an as-needed basis, including assisting with traffic management at incident scenes and along detour routes.

The decision of whether or not to implement a diversion route should be made by transportation agency personnel in consultation with incident scene managers. When the decision is made to implement a diversion route, all agencies participating in the emergency response will coordinate the deployment of resources required to establish, operate, monitor, and ultimately discontinue the diversion route as routine traffic operations are restored. Implementation of the diversion routes identified in this report is intended to complement, not supersede, an agency's established incident response policies, procedures, and processes.

To ensure that the diversion routes identified in this report are used properly and to maximum effect, regional stakeholders should collaboratively develop a diversion route implementation plan that expands upon the above outline of roles and responsibilities, provides additional details on each agency's capabilities and functions, and outlines a step-by-step process for implementing diversion routes. A diversion route implementation plan will not supersede an agency's established incident response policies, proce-

dures, or processes, but will clarify the interagency coordination activities that are required to successfully implement a diversion route.

The diversion routes identified in this report must be verified each time an agency plans to use them. This will help ensure that construction activities or other temporary events do not interfere with a planned diversion route, and that no changes to the design or condition of transportation infrastructure have occurred that would prohibit a certain diversion route from being used. The process of verifying a diversion route among the agencies responsible for incident management should be a component of the diversion route implementation plan discussed in the above paragraph. Adjustments to the planned diversion routes may be necessary to account for prohibitive conditions in the field.

3.0: Model Regions

The process of identifying and implementing diversion routes as a means of coping with road, bridge, and tunnel closures is a common traffic management technique across the United States, and in other parts of the world as well. As discussed above in Section 2, there are a number of purposes for implementing diversion routes. However, before they can be implemented, diversion routes have to be identified, and it is worthwhile to consider the processes that other regions have used as a guide to the identification of diversion routes for the Genesee-Finger Lakes Region.

Diversion routes may be implemented in both urban and rural areas, such as in the examples below that discuss diversion routes in metropolitan Philadelphia and in rural parts of Connecticut. Different concerns influence the choice of diversion routes in urban and rural areas. In Philadelphia, traffic exiting expressways is typically diverted to parallel surface arterials in the vicinity of the expressway; this minimizes the extra distance that detoured traffic must travel and ensures that there are numerous interchanges where diverted traffic can re-enter the expressway. In rural areas, such options do not always exist. Diversion routes may be much longer due to a lack of good alternate parallel routes that can accommodate detoured traffic. In addition, in both urban and rural areas, local roads are often problematic when used as diversion routes. They may not be built to the same standards as higher functional class roads, may not have appropriate grades and geometry for handling truck traffic, may not be long enough to serve as effective regional diversion routes, and may have numerous driveways, intersections, and other features that limit their effectiveness as diversion routes.

Diversion routes may also be identified for specific facilities, such as the example of the West Virginia Turnpike (a section of Interstate 77) discussed below. Lastly, diversion routes may be developed for specific purposes, such as to address traffic detours around a section of road that experiences regular and predictable hazard impacts, such as flooding. An example of this is the section of I-70 in Ohio near Buckeye Lake, to the east of Columbus, where a detour route was developed to guide traffic around a section of road that routinely floods.

In reviewing the diversion routes that have been identified in other parts of the country, one of the common themes that emerges is the application of Transportation System Management and Operations (TSMO) techniques to implement and facilitate diversion route operations, including interagency collaboration and coordination initiatives and the use of Intelligent Transportation Systems (ITS) field instrumentation such as traffic cameras, dynamic message signs, and remote-controlled traffic signals, to manage traffic flow.

3.1: Delaware Valley Regional Planning Commission (DVRPC) – Pennsylvania and New Jersey

DVRPC's Interactive Detour Route Mapping (IDRuM) program is one of the best examples of detour route mapping that has been done on a statewide and regional scale. Developed by DVRPC, the Pennsylvania State Department of Transportation (PennDOT), and the New Jersey State Department of Transportation (NJDOT), IDRuM provides an interface for accessing detour route maps. These maps identify detour routes and their associated driving directions for all limited-access roadways in the Southeastern Pennsylvania region, as well as in the State of New Jersey. These maps are made available online in Portable Document File (PDF) format and can be readily accessed by emergency responders in the event of an incident.

When users log into the IDRuM system, they first select one of three regions (PennDOT District 6, NJDOT North, and NJDOT South). Then, they select the county within the region they are concerned with. A map of the county with limited access highways appears. The user can click on a specific road, which calls up a more detailed map showing individual sections of the road for which a diversion route map is available. Clicking on a section of the road brings the user to the diversion route map for that section, which provides detailed directions on the detour route motorists should follow in the event of a road closure.

In addition to road sections, IDRuM identified diversion routes for several individual bridges. This is important because bridges constitute a potential bottleneck in the overall transportation system, and having a diversion route specifically for bridges helps minimize traffic disruption due to an incident at a specific bridge.

The IDRuM program includes a tutorial for users and links to websites of the agencies that developed the detour routes, including PennDOT, NJDOT, the Pennsylvania and New Jersey State Police, and other key stakeholders. IDRuM provides users with a comprehensive overview and readily accessible source of information on detour routes in southeastern Pennsylvania and New Jersey, which makes it a model for other agencies and regions to follow.

3.2: Capitol Region Council of Governments (CRCOG) – Connecticut

The need for diversion routes to help manage major incidents on I-84, US Route 7, and CT Route 8, major expressways in western Connecticut, was identified by a range of stakeholders, including state and local transportation and emergency management agencies, local governments, and law enforcement agencies. These stakeholders partnered to identify diversion routes for the following expressways:

- Interstate 84 from the Connecticut/New York State line to Cheshire (approximately 40 miles in length)
- US Route 7 from the beginning of the divided highway in Danbury to the end of the divided highway in Brookfield

(approximately 10 miles in length)
- CT Route 8 from Exit 23 in Beacons Falls to the end of the divided highway in Winchester (approximately 38 miles in length)

The primary goal of the project was to reduce incident response times and clear travel lanes with the greatest speed, safety, and efficiency. Developing diversion routes to guide traffic away from incident scenes is a critical component of the overall incident management process because it reduces the public's exposure to incident impacts and helps emergency responders quickly and safety clear incidents, thus minimizing the amount of time that travel lanes are closed.

This report identifies two sets of diversion routes for expressways in the project area. The first set is exit-to-exit diversion routes, and the second set is regional diversion routes. Both sets of diversion routes are bi-directional; i.e., they use the same roads for traffic traveling in both directions. Exit-to-exit diversion routes identify alternate routes for traffic in the event of an incident that closes a section of the expressway between two exits. Regional diversion routes were identified for incidents that require the closure of multiple sections of an expressway between exits. These diversion routes were developed mainly for areas around major towns and cities in the project area.

The diversion routes are intended to be implemented in the event of an incident that requires all travel lanes in one or both directions to be closed for two or more hours. The following criteria were used to identify diversion routes:

- Capacity: Higher functional class roads, such as US and State routes, were identified as having more capacity and prioritized as diversion routes over lower functional class roads.
- Roadway Geometry: Proposed diversion routes were reviewed for conformance with state design curve radius and grade standards for both cars and trucks.
- Bridge Clearances: Proposed diversion routes were reviewed to ensure that all bridge clearances were 13.5 feet or higher.
- Movement Prohibitions: One-way movements and turn prohibitions were assessed prior to identifying diversion routes.
- Size Limitations for Trucks: Weight restrictions on bridges were checked to determine whether or not they could accommodate trucks.

In some locations, both primary and secondary diversion routes were identified based on the diversion route selection criteria. Generally, most diversion routes could accommodate both trucks and cars, but in several locations, separate truck diversion routes were identified as a result of insufficient bridge clearance and/or roadway geometry restrictions. One specific concern of a number of stakeholders was hazardous materials spills occurring in the vicinity of a major expressway interchange. As a result, special diversion route were developed to guide traffic around this interchange in the event of a hazardous materials spill.

Like the IDRuM diversion routes, the CRCOG diversion routes are designed to move traffic off expressways closed due to incidents and return it to those expressways downstream of the incident site safely and efficiently. They were developed as part of a larger statewide effort to identify diversion routes for expressways in Connecticut. These diversion routes are intended to be implemented in concert with other Traffic Incident Management techniques as a means of reducing incident impacts on traffic operations. Intelligent Transportation System (ITS) deployments are identified as the means of communicating with motorists, and the Connecticut Highway Assistance Monitoring Patrol (CHAMP), the equivalent of New York State's Highway Emergency Local Patrol (HELP) program, is also identified as a resource to help provide emergency services to motorists along designated patrol routes.

3.3: West Virginia Department of Transportation – West Virginia Turnpike

The West Virginia Turnpike (I-77) is an 88-mile long highway that connects Charleston with Princeton, West Virginia. It passes through mountainous terrain that provides limited options for diversions should the Turnpike be closed due to a traffic incident or severe weather. The West Virginia Department of Transportation commissioned the Incident Management Emergency Traffic Control Plan to identify diversion routes and associated traffic control measures for the Turnpike, as well as to establish protocols and procedures for maintaining traffic operations in the event of an incident or severe weather.

The Turnpike's detour routes are designed to direct traffic around an incident scene and provide an alternate route until motorists are able to rejoin the Turnpike. Roads used for detour routes must be paved and have lanes that are at least 11 feet wide or wider. Bridges over detour routes must have a minimum of 14 feet, six inches clearance to accommodate truck traffic. Curves on the road must accommodate tractor trailer combinations that are 73 feet, five inches long and no grades must exceed eight percent. These requirements help ensure safe and efficient vehicle movements through the detour route. In addition, detour routes should have paved shoulders, access to food and lodging, and fuel/service stations, but these considerations are not as important as the basic road geometry and bridge clearance characteristics that facilitate detoured traffic operations.

The report also identifies potential operational and infrastructure improvements to the diversion routes. Examples of operational improvements include interagency communication and coordination between transportation management agencies and first responders, including fire and rescue and law enforcement; traffic signal timing adjustments to accommodate increased traffic on diversion routes, especially at potential bottlenecks such as intersections; temporary suspension of non-emergency road construction activities on diversion routes; prioritization of snow and ice removal during the winter months; and relaxation of parking restrictions along diversion routes. Examples of infrastructure improvements include adding traffic abatement facilities (see below) in strategic locations and improving roadway geometry, especially at interchanges and intersections, to facilitate truck turning movements.

The detour route plan identifies four types of traffic abatement facilities that can be used to manage traffic in the event of an incident that causes a road closure:

- Removable Concrete Median Barrier Gates: Median barrier gates are located on sections of the Turnpike with concrete median barriers used to separate traffic traveling in opposite directions. The median barriers prevent vehicles from crossing over from one direction to the other, thus preventing head-on collisions. Median barrier gates, which are moveable steel guiderails set into openings in the concrete median barriers, provide flexibility in that they allow traffic to be diverted from one direction to the other in the event of an incident that blocks the travel lanes. Traffic can make a U-turn through the gate, using widened lanes that help facilitate truck turning movements. After diverting onto the opposite lane, traffic continues in the opposite direction to a detour route. Safe and efficient operation of the median barrier gates requires road crews to be stationed at the gates to open them, deploy traffic control devices such as cones and barrels, and manage traffic movements. In addition, traffic traveling in the opposition direction of the closure needs to be periodically stopped to allow detoured traffic to safety enter the travel lanes.

- Interchanges: Interchanges allow traffic to exit the Turnpike and then reenter in the opposite direction, from which traffic can proceed to a detour route. For the purposes of managing detours, interchanges function similarly to median barrier gates, but require less time and effort to manage. Traffic control devices need to be deployed to guide traffic off and back onto the Turnpike, but generally the process of managing detoured traffic through interchanges requires fewer personnel than managing median barrier gates. An additional benefit is that traffic traveling in the opposite direction of the closure does not need to be stopped as it does when median barrier gates are used.

- Emergency Cross-Overs: Cross-overs connect opposite lanes of traffic and are typically used by law enforcement and emergency vehicles. They are similar to median barrier gates in that they provide an access point for traffic to switch over from one direction to the other and continue to the nearest detour. Detoured traffic passes through the cross-over and uses the left lane of the opposite direction as an acceleration lane. To be used for detour routes, cross-overs must be paved and be able to accommodate truck turning movements.

- Toll Barriers: The plazas at toll barriers are widened sections of roadway that provide space for additional turning movements. Instead of exiting the Turnpike, traffic can turn around and proceed to the nearest detour.

The limited options for detour routes for the West Virginia Turnpike reflect the limited options for diversion routes available in some of the rural areas in the Genesee-Finger Lakes Region. The emphasis on identifying detour routes that accommodate truck traffic is important because it minimizes delay and disruption to freight shipments, which is a critical reason behind developing diversion routes. Lastly, one of the lessons from the Emergency Traffic Control Plan it its focus on the use of traffic abatement facilities to

help manage traffic during incident events. Optimum locations for these types of facilities can be identified during the planning process and incorporated into a variety of infrastructure projects, ranging from major capital investments to small-scale rehabilitation activities.

3.4: Ohio Department of Transportation – I-70, Ohio

I-70 runs on an east-west axis through central Ohio. East of Columbus, a section of I-70 between State Routes 37 and 79 is susceptible to flooding during heavy rain events. The Ohio Department of Transportation established diversion routes to shift traffic from I-70 onto nearby US and state roads to avoid the flooded sections of I-70 while minimizing delay and adverse impacts on local towns. During flooding events, the eastbound lanes of I-70 typically flood first, while the westbound lanes may not be impacted. However, if the water continues the rise, the westbound lanes may eventually be impacted as well. Accordingly, two diversion route options were identified, the first for eastbound lane closures and the second for both eastbound and westbound lane closures.

In the case of flooding that only closes the eastbound lanes of I-70, separate detours for cars and trucks guide them around the closed expressway on nearby US and State routes. Traffic exits at State Route 37. Cars proceed north to US Route 40 and State Route 13 before re-entering I-70. Trucks proceed south to State Route 79 and follow it to rejoin I-70 east of the flooded section. If both directions of I-70 are closed, all car traffic follows the diversion to the north of I-70 (using State Routes 37 and 79 and US Route 40) and all truck traffic follows the diversion to the south of I-70 (using State Routes 37 and 79).

While this example is not a regional, or even a jurisdictional, diversion route, it is a useful example for the Genesee-Finger Lakes Region because it illustrates how diversion routes can be developed for specific hazards that are known to occur at specific locations on the transportation system. While a regional diversion route may not be required to address hazards with limited geographical extents, targeted diversion routes are a useful means for minimizing travel delay while simultaneously reducing the public's exposure to those hazards. In addition, like the diversion route examples discussed above, the I-70 diversion routes rely on ITS field instrumentation and interagency operations coordination to implement and manage the traffic diversions.