

Appendix D: Traffic Assessment Report and Existing Circulation Map





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April 19, 2011

Environmental Design & Research
217 Montgomery Street
Suite 1000
Syracuse, NY 13202

Attn: Ms. Jane Rice

**Re: Traffic Impact Assessment – Niagara Gorge – Robert Moses Parkway Closure
Niagara Falls, NY**

Dear Ms. Rice:

I have completed my review of the potential traffic impacts associated with the removal of approximately 6 miles of the Robert Moses Parkway between Niagara Falls and Lewiston to allow for the ecological restoration and improved use of the Niagara Gorge. This review provides a planning level evaluation of existing traffic operations in the area, a review of alternative travel routes between Niagara Falls and Lewiston, and an evaluation of potential traffic operations assuming this section of the Robert Moses Parkway is closed. The following provides a summary of the work completed in this review as well as my findings and conclusions.

Project Study Area

Based on our review of the roadway system between Niagara Falls and Lewiston, the most logical alternate route of travel would be Route 104 if the Robert Moses Parkway is closed to through traffic. This route runs roughly parallel to the Robert Moses Parkway which would most closely match access to vehicular trip origins and destinations. Given the existing elementary school and neighborhoods along Route 104, secondary available routes were also evaluated and include diversions along Hyde Park Boulevard or Highland Avenue/11th Street to Lockport Street starting and ending at Route 104.

The purpose of this study is to review potential impacts with traffic traveling between Lewiston and Niagara Falls. It is assumed that the traffic using the Robert Moses Parkway today is primarily local traffic. Commuting traffic between Lewiston and other points south of Niagara Falls would be using I-190. Therefore I-190 would not serve as an alternative route for locally based traffic as it does not return motorists to the downtown Niagara Falls area.

Since any diversion route would not impact overall traffic volumes or movements on Center Street in Lewiston, the northern most intersection included in this study was Route 104 @ Military Road. Looking at the critical locations that may be impacted by the closure of the Robert Moses Parkway, this study focuses on operations at the following ten intersections:

- Route 104 @ Rainbow Boulevard / Robert Moses Parkway Southbound
- Route 104 @ 1st Street / Robert Moses Parkway Northbound
- Route 104 @ 3rd Street

**Reference: Traffic Impact Assessment – Niagara Gorge – Robert Moses Parkway Closure
Niagara Falls, NY**

- Route 104 @ Portage Road / Pierce Avenue
- Route 104 @ Lockport Street / Willow Avenue
- Route 104 @ Robert Moses Parkway Northbound Ramps
- Route 104 @ Hyde Park Boulevard / University Drive
- Route 104 @ Military Road
- Lockport Street @ 11th Street
- Lockport Street @ Hyde Park Boulevard

The study evaluates traffic operations through the 10 study area intersections during the typical morning and evening peak commuter periods.

Existing Traffic Operations

Both NYSDOT and the GBNRTC were contacted to obtain all available traffic data for the area. Average Annual Daily Traffic (AADT) volumes by direction were obtained for the Robert Moses Parkway as well as Route 104 through the study area. Additionally, GBNRTC provided traffic intersection counts for the intersections of Route 104 with Robert Moses Parkway/Rainbow Boulevard, 1st Street, 3rd Street, Lockport Street/Willow Avenue, Portage Street/Pierce Avenue, Robert Moses Parkway northbound ramps, Hyde Park Boulevard/University Drive and Military Road. The turning movement counts provided by GBNRTC were collected in August, 2010.

Supplementary turning movement counts were collected at the intersections of Lockport Street with 11th Street and Hyde Park Boulevard during the morning (7-9am) and evening (4-6pm) commuter periods on Thursday, October 14, 2010. In addition to traffic counts, other data needed to evaluate traffic operations such as speed limits, intersection geometry, spacing and control were also collected. Existing signal timing information for intersections under the jurisdiction of NYSDOT was obtained from NYSDOT to ensure that the traffic signals were properly modeled.

Based on the traffic count data, the overall system peak hours occur between 8-9am and 4-5pm on weekdays. Peak hour traffic volumes traveling on the Robert Moses Parkway between these hours were taken from the NYSDOT AADT counts. Existing traffic volume along the Robert Moses Parkway are generally low with less than 250 vehicles in either direction during both peak hours, with the exception of the northbound Robert Moses Parkway, north of the I-190 interchange, which carries approximately 700 vehicles during the evening peak hour. Traffic volumes are also relatively low throughout the study area intersections during both peak periods. The 2010 existing traffic volumes attached in Figure 1 and Figure 2 for the morning and evening peak hours, respectively.

Capacity analysis of the existing operations at the study area intersections was completed using Synchro7, an industry accepted standard for the analysis of both signalized and unsignalized intersections that is based on methodologies developed in the Highway Capacity Manual. Intersection and individual movement operations are graded in terms of Level of Service ranging from A to F, as

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Niagara Falls, NY**

described in the HCM. For example, a signalized intersection movement with an average delay of 5 seconds per vehicle is considered a Level of Service A while an average delay per vehicle of 40 seconds is considered a D. A Level of Service D or better is generally considered acceptable for a signalized intersection while a Level of Service E or better is generally considered acceptable for an unsignalized intersection.

The results of the analysis show that all of the study area intersections are operating extremely well during both the morning and evening peak hours. All of the study area intersections in the City of Niagara Falls are operating at overall Levels of Service B or better with all individual movements operating at Levels of Service C or better during both peak hours. The two northern intersections of Route 104 with Hyde Park Boulevard/University Drive and Military Road are operating at overall Levels of Service C or better during both peaks with all individual movements operating at Levels of Service D or better.

These operations are consistent with observations made on site during the data collection effort. There were no significant congestions issues observed and all intersections appear to operating with excess capacity available.

The detailed Level of Service summary and capacity analysis printouts have been attached.

Travel Time Evaluations

The potential closure of the Robert Moses Parkway between Niagara Falls and Lewiston would divert existing traffic onto adjacent roadways. Based on a review of the area, the most logical alternative route of travel would be Route 104 with possible derivations along Hyde Park Boulevard or Highland Avenue to avoid some of the signals on Route 104 in the northern portions of the City as well as the elementary school. In typical suburban settings, over time, the majority of motorists will migrate toward using the fastest route in order to minimize travel times.

Floating car travel time runs were completed in order to evaluate travel times between Lewiston and Niagara Falls on both the Robert Moses Parkway and Route 104. Additionally, travel times between the Irving Drive intersection and the Route 104/Portage Road intersection were evaluated using either Route 104, Highland Drive or Hyde Park Boulevard. Three travel runs were taken in each direction on the following routes during both the morning and evening peak travel periods:

- Robert Moses Parkway – Between Route 104 @ Rainbow Blvd. and Center Street (Lewiston)
- Route 104 – Between Rainbow Boulevard and Center Street (Lewiston)
- Highland Dr./11th St./Lockport St./Route 104 – Between Irving Drive and Portage Road
- Hyde Park Boulevard/Lockport Street/Route 104 – Between Irving Drive and Portage Road



Ms. Rice
April 19, 2011
Page 4 of 8

**Reference: Traffic Impact Assessment – Niagara Gorge – Robert Moses Parkway Closure
Niagara Falls, NY**

A schematic of the travel routes evaluated is attached as Figure 3. It is noted that Route 104 between College Drive and Ontario Street was closed in the northbound direction for construction during the travel runs. Travel times for this northbound link were estimated based on southbound times which were still in operating normally.

The travel runs were videotaped and then reduced to identify travel times and delay times between each traffic signal or stop sign on the specific travel routes. From this data, travel time, running time, delay time, running speed and travel speed were calculated. A detailed summary for each travel run has been attached. Based on the travel runs completed, the following average travel times and speeds were identified for each alternative route if the Robert Moses Parkway is closed.

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Niagara Falls, NY**

Travel Runs Summary

Robert Moses Parkway – Between Route 104 @ Rainbow Boulevard and Center Street

	Northbound		Southbound	
	Morning Peak	Evening Peak	Morning Peak	Evening Peak
Run #1	9 min 47 sec	9 min 20 sec	9 min 15 sec	8 min 59 sec
Run #2	9 min 34 sec	8 min 58 sec	8 min 59 sec	8 min 10 sec
Run #3	9 min 37 sec	9 min 16 sec	8 min 22 sec	9 min 14 sec
Average	9 min 39 sec	9 min 11 sec	8 min 52 sec	8 min 48 sec

Route 104 – Between Rainbow Boulevard and Center Street

	Northbound		Southbound	
	Morning Peak	Evening Peak	Morning Peak	Evening Peak
Run #1	12 min 21 sec	13 min 36 sec	11 min 54 sec	13 min 44 sec
Run #2	12 min 37 sec	12 min 55 sec	12 min 56 sec	12 min 17 sec
Run #3	13 min 29 sec	11 min 18 sec	13 min 39 sec	12 min 51 sec
Average	12 min 49 sec	12 min 36 sec	12 min 50 sec	12 min 57 sec

Route 104 – Between Irving Drive and Portage Road

	Northbound		Southbound	
	Morning Peak	Evening Peak	Morning Peak	Evening Peak
Run #1	6 min 34 sec	6 min 45 sec	6 min 32 sec	8 min 34 sec
Run #2	6 min 42 sec	7 min 10 sec	7 min 46 sec	6 min 47 sec
Run #3	7 min 24 sec	6 min 16 sec	7 min 37 sec	6 min 54 sec
Average	6 min 53 sec	6 min 44 sec	7 min 18 sec	7 min 25 sec

Hyde Park Boulevard/Lockport Street/Route 104 – Between Irving Drive and Portage Road

	Northbound		Southbound	
	Morning Peak	Evening Peak	Morning Peak	Evening Peak
Run #1	7 min 28 sec	6 min 50 sec	8 min 13 sec	7 min 59 sec
Run #2	6 min 53 sec	7 min 32 sec	8 min 43 sec	7 min 59 sec
Run #3	8 min 7 sec	7 min 00 sec	7 min 33 sec	8 min 7 sec
Average	7 min 29 sec	7 min 7 sec	8 min 10 sec	8 min 2 sec

Highland Avenue/Lockport Street/Route 104 – Between Irving Drive and Portage Road

	Northbound		Southbound	
	Morning Peak	Evening Peak	Morning Peak	Evening Peak
Run #1	7 min 9 sec	7 min 5 sec	7 min 29 sec	7 min 38 sec
Run #2	6 min 44 sec	7 min 32 sec	6 min 59 sec	6 min 59 sec
Run #3	6 min 30 sec	7 min 33 sec	7 min 29 sec	8 min 30 sec
Average	6 min 48 sec	7 min 23 sec	7 min 19 sec	7 min 42 sec

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Niagara Falls, NY**

Based on the travel runs completed, the average trip between Niagara Falls and Lewiston takes about 9-10 minutes when traveling on the Robert Moses Parkway. With the closure of this route, travel times will increase by approximately 3 minutes and take about 12-13 minutes using Route 104 or alternative routes. Travel times between Irving Drive and Portage Road on the Route 104, Hyde Park Boulevard or Highland Avenue routes are all generally consistent between 7-8 minutes.

Using the data collected, it is estimated that the majority of the diverted traffic will use Route 104 for the entire trip between Lewiston and Niagara Falls given that it is the shortest route in terms of both distance and travel time. Personal interpretation of travel speed and delay will also have some impact on the routes chosen. The higher travel speeds on Highland Avenue will draw some of the diverted trips since the increased distance does not significantly increase the overall travel time. Use of Hyde Park Boulevard to Lockport Street would be expected to be minimal given the poor road conditions along Lockport Street as well as the three consecutive stop signs at Niagara Avenue, Cleveland Avenue and South Avenue which create a feeling of longer travel time.

Based on these conclusions, it is anticipated that approximately 70% of the Robert Moses Parkway traffic will divert to Route 104 and 30% will divert to Highland Avenue. This split in traffic re-distribution provides a worst case capacity analysis since the majority of traffic is assumed to take one route. It is feasible that traffic could more evenly distribute between alternative routes, however this study provides the worst case potential traffic impacts associated with closure of the Robert Moses Parkway.

Traffic Re-Distribution

Traffic volumes were re-distributed to the Route 104 and Highland Avenue alternative travel routes assuming the Robert Moses Parkway is closed to through traffic based on the 70%/30% split identified from the travel run data. Even with the assumption that most of the diverted traffic would use Route 104, the closure of the parkway will not significantly increase traffic volumes on adjacent roadways in the area given that the existing usage of the Robert Moses Parkway is very low during both the morning and evening peak hours. The increases will generally not be noticeable to existing motorists in the area.

During the morning peak hour, traffic volumes on Route 104 are expected to increase by approximately 60 vehicles northbound and 170 vehicles southbound in the southern city section between 3rd Street and Lockport Street. Traffic volumes are expected to increase by approximately 50 vehicles northbound and 100 vehicles southbound through the northern residential areas on Route 104 and by approximately 50 vehicles northbound and 240 vehicles southbound in the northern section between University Drive and Military Road. These traffic volume increases are very low in the range of 1-4 vehicles per minute in each direction in the southern and northern sections and approximately 1-2 vehicles per direction per minute in the middle residential section on Route 104.

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Niagara Falls, NY**

During the evening peak hour, traffic volumes on Route 104 are expected to increase in the southern section by approximately 220 vehicles northbound and 130 vehicles southbound, in the middle section by approximately 150 vehicles northbound and 100 vehicles southbound and in the northern section by approximately 150 vehicles northbound and 120 vehicles southbound. These volume increases are in the range of 2-4 vehicles per direction per minute in the southern city section and 2-3 vehicles per direction per minute in the middle residential and northern sections.

On Highland Avenue, traffic volumes increases are expected in the range of 40-70 vehicles in each direction during the two peak hours studied, which only equates to an increase of approximately 1 vehicle or less per minute per direction.

The largest traffic increase will occur on Route 104 near Military Drive during the evening peak hour. With nearly 700 currently using the Robert Moses Parkway northbound from I-190, these vehicles would be expected to evenly split between Military Road northbound and Route 104 northbound.

The re-distributed traffic volumes expected in the area for the morning and evening peak hours have been attached as Figures 4 and 5, respectively.

Future Traffic Operations with Closure of Robert Moses Parkway

The re-distributed traffic volumes were applied to the existing volumes for the resultant 2010 projected traffic volumes with closure of the Robert Moses Parkway, shown in Figures 6 and 7 for the morning and evening peak hours.

An additional capacity analysis was completed to identify the potential impacts that the diverted traffic may have on the existing roadway network. In general, the traffic volume increases have minimal impacts on traffic operations in the area with most Levels of Service being maintained from the existing condition during both the morning and evening peak hours. The intersections in the City of Niagara Falls will continue to operate at overall Levels of Service B or better with all individual movements continuing to operate at Levels of Service C or better during both peak hours. The two northern intersections of Route 104 with Hyde Park Boulevard/University Drive and Military Road will both continue to operate at Level of Service C or better during both peaks with all individual movements operating at Levels of Service D or better.

Given the low existing traffic volumes in the area on both the Robert Moses Parkway and Route 104, there is excess capacity to easily accommodate the traffic volumes on adjacent roadways if the Robert Moses Parkway is closed. The detailed Level of Service Summary and capacity analysis printouts have been attached.



Ms. Rice
April 19, 2011
Page 8 of 8

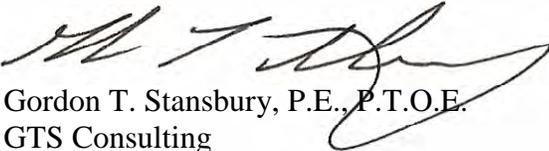
**Reference: Traffic Impact Assessment – Niagara Gorge – Robert Moses Parkway Closure
Niagara Falls, NY**

Conclusions

The removal of approximately 6 miles of the Robert Moses Parkway between Niagara Falls and Lewiston to allow for the ecological restoration and improved use of the Niagara Gorge will result in the closure of the Parkway to through traffic. The closure of the Parkway would result in an increase in travel time of approximately 3 minutes between Niagara Fall and Lewiston however, this time will not be significantly noticeable over a 6 mile travel distance. Traffic volumes on this section of the Parkway are generally less than 250 vehicles in either direction during peak travel periods. With low existing traffic volumes on Route 104 and other local streets in the Niagara Falls area, there is significant excess capacity to easily accommodate the existing Robert Moses Parkway traffic without any notable impact to traffic operations. There are a number of available travel options to avoid vehicular conflicts with residential areas or schools on Route 104.

If you have any questions or need additional information, please call.

Sincerely,



Gordon T. Stansbury, P.E., P.T.O.E.
GTS Consulting

Attachments - Detailed Level of Service Summary
Travel Run Summaries

Traffic Volume Figures 1-7
Capacity Analysis Printouts