CHAPTER 3 – ALTERNATIVES

This chapter discusses the alternatives considered and examines the engineering aspects of all feasible alternatives designed to address the Project needs and objectives identified in **Chapter 1** of this document. Also identified in this chapter is the Feasible Build Alternative, also known as the proposed Project, and the characteristics of the No-Build Alternative.

3.1. Alternatives Considered

3.1.1. Description of Alternatives Considered

3.1.1.1. Alternatives Considered During Scoping

Alternatives were initially developed during the public scoping process for the Niagara Gorge Corridor Project (2010 – 2013). This effort encompassed the six-mile RMP corridor between Niagara Falls and Lewiston and involved input gathered during numerous stakeholder meetings, public information meetings and previous planning studies, as well as the development of overall goals and objectives identified for access to/through the corridor (which were carried through for the current phase of the RMP Removal Project) Six (6) "Build Alternatives" were developed and evaluated in broad terms against various feasibility / performance criteria compared to the "No-Build" Alternative (i.e., leaving the current highway system in place).

These initial Build Alternatives were designed at a conceptual level of detail to cover the full range of possibilities suggested during the public/stakeholders input sessions regarding the restoration, retention or removal of the existing RMP between Main Street in the City of Niagara Falls and Center Street in the Village of Lewiston. The alternatives ranged from complete restoration of the four-lane expressway as originally constructed in the early 1960's, to its complete removal. These alternatives, and the process used to assess them during scoping were documented in the *Niagara Gorge Corridor Project: Final Scoping Report* (October 2013).

The evaluation process to determine which of the six alternatives best met the Project purpose and need is fully described in Chapter 3, Section 3.2 of the Final Scoping Report. Based on this evaluation, the following three Build Alternatives were determined to be feasible and would best meet the Project purpose and need:

- Alternative 3 – Partial Re-Use of the RMP
- Alternative 4 – Meandering Partial Park Road
- Alternative 6 – Removal of the RMP

The three Feasible Build Alternatives were "retained" for further study in subsequent design / environmental review phase(s). Although each Feasible Build Alternative that was retained for further study was developed at a corridor-wide scale (i.e., between Main Street in the City of Niagara Falls and

Center Street in the Village of Lewiston), they were all similar with regard to the proposed removal of the RMP and the reconstruction of Whirlpool Street between Main Street and Findlay Drive. A copy of the three retained alternatives is included in **Appendix B.1 -- Initial Retained Alternatives (taken from Final Scoping Report – May 2013).**

This similarity among the retained alternatives, together with the overwhelming support by the Project partner agencies, community stakeholders, and the general public to advance the segment between Main Street and Findlay Drive in the City of Niagara Falls, where broad consensus exists, led to the consideration that the RMP Removal Project could proceed as a discreet, first-phase effort pending a decision on an alignment alternative for the balance of the Niagara Gorge Corridor. Such a first-phase effort would involve a Feasible Build Alternative that includes:

- Demolition / removal of the RMP between Main Street and Findlay Drive;
- Complete reconstruction of Third Street and Whirlpool Street between Main Street and Findlay Drive;
- A new system of multimodal trails along the Gorge rim, which would also connect to the existing trail system within the Gorge and adjoining neighborhoods;
- New and/or improved overlooks at various locations along the Gorge rim; and
- Gateway features at selected locations along the Project corridor that would serve to mark key predominant entranceways into the Gorge area.

Documentation and justification for taking this approach is provided in **Appendix D - White Paper – Appropriateness of Applying NEPA Requirements to the First-Phase Project.** As noted more fully in the white paper, pursuing a RMP Removal Project from Main Street to Findlay Drive as a stand-alone action in this DR/EA, with its own environmental analysis pursuant to NEPA, would be reasonable and appropriate. This is because the Project would meet the three FHWA criteria contained in the agency's environmental impact and related procedures at 23 CFR 777.111(f). Specifically, the proposed Project between Main Street and Findlay Drive would:

- Connect logical termini and is of sufficient length to address environmental matters on a broad scope;
- Have independent utility and independent significance because it would be usable and would be a reasonable expenditure even if no additional transportation improvements in the area are made in the balance of the Niagara Gorge Corridor (i.e., from Findlay Drive in Niagara Falls to Center Street in the Village of Lewiston); and
- Would not restrict consideration of any alternatives for other reasonably foreseeable transportation improvements, such as those feasible alternatives previously proposed and agreed to by the public for the balance of the Niagara Gorge Corridor.

3.1.1.2. Variations / Options in Aspects of the Feasible Build Alternative Considered Since the Public Scoping Process

Concepts A, B and C

Using as a starting point the conceptual components, alignments, and features of the three alternatives retained from the public scoping process (i.e., Alternatives 3, 4 and 6), the Project design team held a number of one-on-one meetings with Project partner agencies and key stakeholders in the Project Study Area. The purpose of these sessions was to identify issues, needs, and desires of these entities related to specific locations along the Project corridor. These included, but were not limited to:

- Discussions with State Parks planning / operations officials on how the Project related to long-term access to the Niagara Gorge Discovery Center and its parking facility along the Gorge rim (which often serves as a staging area for the Niagara Scenic Trolley vehicle and various tour buses traversing from Prospect Point to the Discovery Center), as well as anticipated access for the new State Parks Police Station facility;
- Discussions with officials from the Aquarium of Niagara on how removal of the RMP under the Project would facilitate a visual linkage of the Aquarium to the Niagara Gorge and the Niagara Gorge Discovery Center[1] and the potential for a more robust coordination of activities/programming between the two facilities, including the potential for a future Niagara Scenic Trolley stop at the Aquarium;
- Discussions with City of Niagara Falls officials regarding the Project could relate to and facilitate the City's Comprehensive Plan policies/objectives regarding the establishment of a Cultural District, connecting the north side of the downtown district to the Gorge, implications of the Project on the future of DiFranco Park, and desires for the Project's northern terminus at Findlay Drive; and
- Discussions with USAN officials regarding opportunities of the Project to: significantly reduce the amount of pavement along the Gorge rim only to that absolutely necessary to support access; support upgrades/expansion of the Aquarium of Niagara; open land area for new ecotourism and outdoor recreation programming; and improve the value/potential of private parcels along Main Street, Whirlpool Street, and Third Street by capitalizing of this proximity to the Gorge rim and recreational resources.

Based on input from these early sessions and further meetings that took place in August 2014 with the City, State Parks, USAN, NYSDOT and NYPA, three alignment concepts (Concepts A, B and C) were developed for the Project between Main Street and Findlay Drive. Further refinement of the three concepts was made as a result of meetings held in January 2015 with the Project partner agencies.

[1] The Aquarium of Niagara is included on State Parks' *Niagara USA Discovery Pass*, which provides a single-price pass for the Maid of the Mist ®, Niagara Scenic Trolley, Niagara Adventure Theater, Cave of the Winds Trip, Gorge Discovery Center, and the Aquarium of Niagara. Thus, there is a strong relationship of Aquarium visitorship to that of the Discovery Center and Niagara Falls State Park in general.

Concepts A, B and C are graphically depicted in **Appendix B.2 – Concepts Considered (Presented at February 2015 Public Meeting).** The primary variations between Concepts A, B and C relate to how they would tie into the existing road network at the north and south ends of the Project limits (i.e., Project termini). However, it is important to note that from an overall Project perspective, the various concepts represent localized variations in alignment components that are grouped together for convenience of presentation, rather than discreet Project alternatives. Thus, the components of each concept are generally interchangeable, and their implications with regard to traffic and access are not significant (e.g., they would have no short- or long-term effects to traffic or associated levels of service).

The differences between the three concepts at both the south and north end of the Project limits are presented below:

South End Options:

- Concept A would provide the primary route of access to the Niagara Gorge Discovery Center and the Aquarium of Niagara via Main Street, Third Street and an extended Walnut Avenue.
- Concept B would provide the primary route of access to the Niagara Gorge Discovery Center and the Aquarium of Niagara via Main Street to a new park road within the general vicinity of the current RMP to an extended Walnut Avenue.
- Concept C would provide the primary route of access to the Niagara Gorge Discovery Center and the Aquarium of Niagara similar to Concept B via Main Street to a new park road within the general vicinity of the current RMP to an extended Walnut Avenue, although the new park road would then continue on an alignment similar to the currently closed portion of Whirlpool Street and end at Third Street near Cedar Avenue.

North End Options:

- Concepts A and C would include an alignment of Whirlpool Street that connects directly to the existing RMP just north of Findlay Drive. Findlay Drive would end at Whirlpool Street with a "T" intersection, at which traffic would be controlled by a stop sign on Findlay Drive.
- Concept B would include an alignment of Whirlpool Street that ends with a "T" intersection at Findlay Drive, at which traffic would be controlled by a stop sign on Whirlpool Street. Findlay Drive would be extended westerly and curved northward to tie into the existing RMP just north of Findlay Drive.

Given that all three concepts were determined to be feasible alternatives, further discussion of Concepts A, B and C is provided in **Section 3.2** below.

Public Transit Alternative

Some comments received during public information meetings held to receive feedback on components of Concepts A, B, and C suggested that consideration be given to a separate alternative that would provide light rail and/or some other type of fixed guideway transit facility (e.g., bus rapid transit [BRT]) within the corridor instead of reconstructing Third Street and Whirlpool Street. Other comments even suggested the

elimination/removal of all roads fronting the Niagara Gorge (together with constructing a fixed guiderail transit system); however, because private properties currently front upon, and are provided all access via driveways on Whirlpool Street and Third Street, such an alternative was not considered feasible, as it would render such properties fully inaccessible to public street rights of way (which is required under local regulations).

As noted in Chapters 1 and 2, considering the specific purposes and needs that the Project is intended to address, a Public Transit Alternative would not significantly respond to such purposes and needs. The first and foremost reason is the fact that the Project is not set forth to facilitate a growing number of person trips in a corridor which might be addressed by improvements / growth of facilities in one or more transportation modes (i.e., road, transit, pedestrian, bicycle). As noted in **Chapter 2**, the current RMP and Whirlpool Street experience relatively low volumes of daily traffic and do not contain land uses, dense concentrations of population, or employment centers that warrant NFTA operating daily bus service along the Niagara Gorge. NFTA focuses rather on providing service on Main Street and Lewiston Road. Current transportation demand along the Gorge rim would not be sufficient for a fixed guideway system, even if weekend tourist-season demands are factored in. Similarly, the short length of the Project limits (~2 miles) and the capital-cost feasibility for a light rail or BRT system make it unlikely that such a Transit Alternative is reasonable.

Further, one of the primary needs of the Project is to connect the vast open space resources of the Niagara Gorge and the Gorge rim to City of Niagara Falls neighborhoods, in recognition that the expressway features of the RMP fully currently block such access. While removal of the RMP and replacement with a fixed guideway transit system may indeed reduce a considerable amount of the current obstruction, the need to include various typical transit features (e.g., stations, platforms, safety fencing, etc.) would restore some level of obstruction along the Gorge rim. Therefore, further consideration of light rail, BRT, or other type of fixed guideway public transit facility as a separate alternative, or as a major component of the Build Alternative, has been eliminated.

It should be noted, however, that while a stand-alone Public Transit Alternative is not considered feasible, the proposed reconstruction of Third Street and Whirlpool Street as part of the Build Alternative would enable the ability for future bus transit service and associated improvements along these roadways, if and when such service improvements are warranted. All design standards for reconstruction of streets as part of the Project would use a standard, full-sized public bus as its “design vehicle”, meaning all grades, curves, turning radii, and similar road design features would be able to safely accommodate use by such vehicles. Similarly, the planned public rights-of-way of Third Street and Whirlpool Street could also accommodate future modifications along the reconstructed roadways to facilitate future bus transit service (e.g., shelters, dedicated pull-offs, etc.).

While none of the Project partner agencies are individually sanctioned to establish and/or operate a new transit service, as discussed in **Section 2.3.2.3**, public discussions regarding the establishment of a public tourist-oriented trolley-bus and/or other type of bus shuttle service along the Niagara Gorge have occurred over the last decade. Most recently, a pilot program is currently being considered by the Niagara

Falls National Heritage Area, in cooperation with NYPA, State Parks, USAN, the City, State delegation members, and the Niagara Tourism & Convention Corporation. Depending on the timing to establish/maintain such a tourist-oriented transit service in the Project Study Area, the final design process would consider the incorporation of aforementioned bus transit-related improvements as part of reconstruction of Whirlpool Street and Third Street.

No-Build Alternative

In addition to the alternatives described above, the "No-Build" (a.k.a., the "No-Action" or "Do-Nothing" Alternative) has also been identified. The No-Build Alternative is established as a baseline against which the "Build Alternative" is compared. Under the No-Build Alternative, all built features of the RMP would remain in place between Main Street and Findlay Drive. This would involve continuation of the current use/alignment established under the 2000 "Pilot Project", including:

- Use of the former southbound expressway lanes as the "Robert Moses Parkway Trail" (a multi-use trail for walking, bicycling and rollerblading);
- Use of the former northbound expressway lanes as a single, two-way, 40-MPH highway; and
- Continuations of all other existing expressway features, such as the Whirlpool Bridge overpass, pedestrian bridges, and access prevention from adjoining neighborhoods (e.g., fencing, guiderails, grade separation, etc.).

In turn, the existing four-lane alignments of Whirlpool Street and Third Street would remain directly adjacent to the RMP between Main Street and Findlay Drive.

3.2. Feasible Build Alternatives

Concepts A, B and C, as described in **Section 3.1.1.2** above, were considered as feasible build alternatives and were presented for public comment during a public information meeting held on February 19, 2015 at the Conference Center Niagara Falls in downtown Niagara Falls, NY.

Comments received as a result of public review of Concepts A, B and C included the following with respect to the connections at the south and north ends of the Project:

- Public preference for Concept A with respect to its proposed connection at the south end at Main Street;
- Public preference for Concept A or C with respect to its proposed connection at the north end at Findlay Drive; and
- A request by homeowners along the northern end of Whirlpool Street to consider a cul-de-sac and separate service road in front of their homes (i.e., similar to a conceptual configuration included in the "Alternative 4 – Meandering Partial Park Road" alignment that was retained from the public scoping process).

3.2.1. Evaluation of Feasible Build Alternatives

An evaluation of Concepts A, B and C was completed and included the following:

- An assessment of the public comments;
- An assessment of the net pavement removed;
- An assessment of the net increase in park space made available;
- An assessment on how well the project objectives were met; and
- An assessment on the connectivity between the points of interest within the Project Study Area.

The results of these several assessments are presented below, first for the South End Options and then for the North End Options.

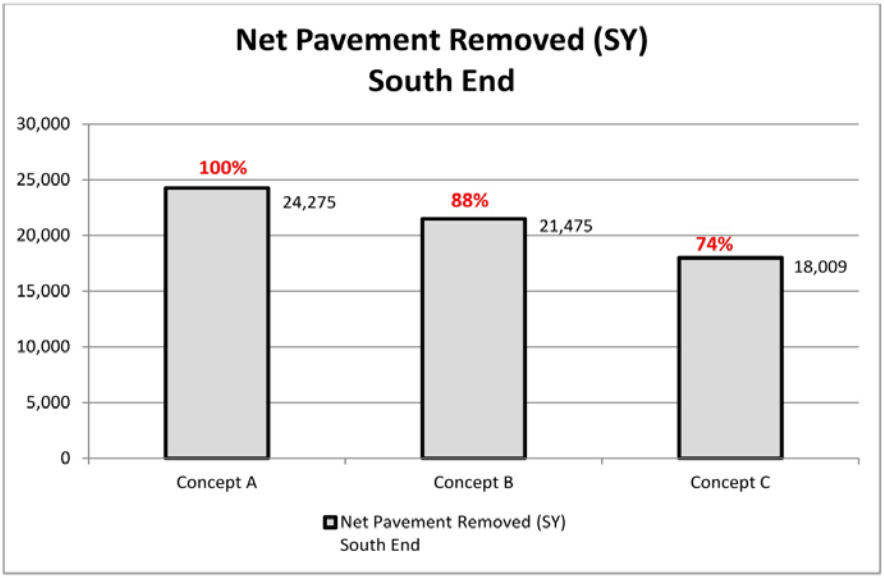
3.2.1.1. South End Options

Measurements were taken of the total area of pavement to be removed and the total pavement to be constructed to come up with the net area to be removed (see **Figure 3-1**).

Concept A recorded the highest total, with over 24,000 net square yards of pavement to be removed. This concept was also most preferred by the attendees at the February 2015 public information meeting.

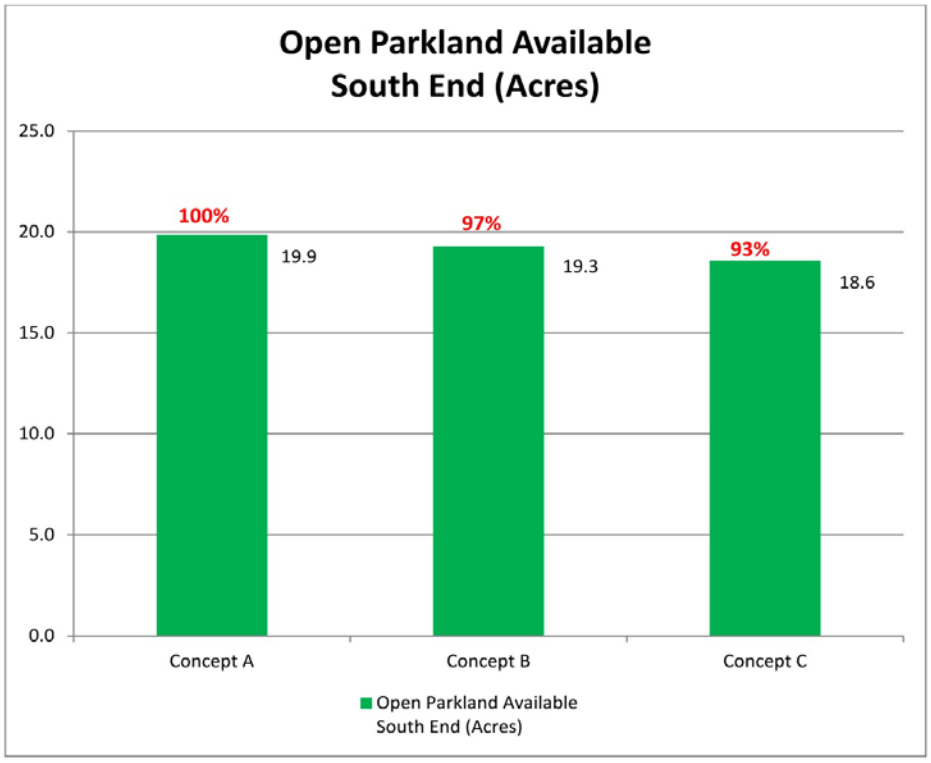
Concept B came in second with 88% of the Concept A total area of pavement to be removed and Concept C ended up with about 74% of what would be realized under Concept A.

Figure 3-1 – Net Pavement Removed



Calculations were made of the area of open parkland that would result with each concept (see **Figure 3-2**)**.** Concept A resulted in 19.9 total acres; Concept B provided 19.3 total acres or about 97% of the total with Concept A, and Concept C resulted in 18.6 acres or about 93% of the total with Concept A.

Figure 3-2 – Parkland Made Available



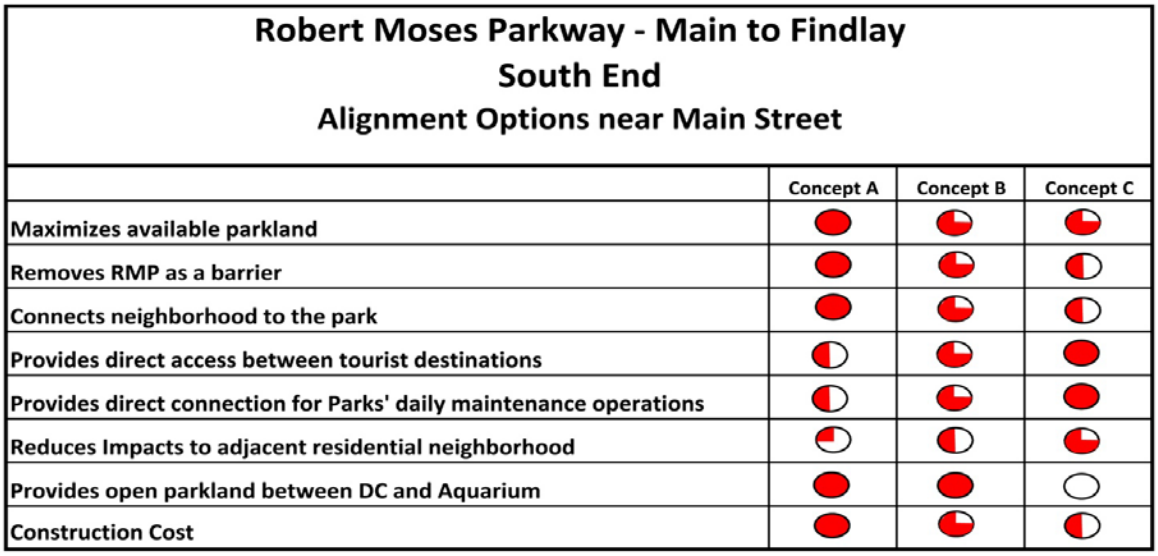
A comparison of the three concepts to the Project objectives and other factors is provided in **Figure 3-3**.

Concept A does a slightly better job in maximizing parkland, removing barriers and providing improved connections to the park; however, Concept B provides a more direct access and reduces impacts on the adjacent neighborhood. Concept A also has the lowest construction cost, followed by Concept B.

Both Concepts A and B provide the free and open parkland between the Niagara Gorge Discovery Center and the Aquarium of Niagara which was favored by most of the public and other stakeholders, including the Aquarium officials.

Concept C results in the least favorable results for all of the factors considered, although it fares better than both Concepts A and B in terms of providing direct access between tourist destinations and reducing impacts on the adjacent neighborhood.

Figure 3-3 – Comparison of Concepts – South End



The results of these assessments and consultation with the affected stakeholders led to a determination that at the south end of the Project there should be a new park road connecting Main Street with the Discovery Center and Walnut Avenue, as included in Concept B. Specifically, the reasons for selection of this concept at the south end include:

- It would provide free and open parkland between the Gorge Discovery Center and the Aquarium that is favored by the public and the Aquarium, and would be included as an initial component and prerequisite of the City's vision to create a Cultural District;
- It would have additional curvilinear pedestrian paths connecting the Gorge Discovery Center with the Aquarium that are favored by the public;
- It would provide a short, direct and familiar route between Prospect Point in Niagara Falls State Park, the Gorge Discovery Center, and the Aquarium that would continue to facilitate State Parks' operational needs;
- It would achieve 88 percent of the net pavement removal;
- It would achieve 97 percent of the open parkland;
- Traffic patterns would remain very similar to those currently established between Prospect Point and the Niagara Gorge;
- It would provide for a better connection for State Parks' daily and routine maintenance operations; and

- It would minimize the number of tour bus, trolley and auto trips that would need to traverse the residential portion of Third Street between Main Street and Walnut Avenue when moving between the center of the downtown district and the Gorge Discovery Center / Aquarium area.

3.2.1.2. North End Options

Whirlpool Street / Findlay Drive "T" Intersection - Stop Sign Options

As previously discussed, Concepts A and C both include an alignment of Whirlpool Street that connects directly to the existing RMP just north of Findlay Drive, with Findlay Drive ending at Whirlpool Street with a stop sign at a "T" intersection. Concept B, in contrast, would include an alignment of Whirlpool Street that ends with a "T" intersection at Findlay Drive, at which traffic would be controlled by a stop sign on Whirlpool Street. The following factors were taken into consideration when assessing these two options:

- ***Public Comment*** – As previously noted, based on the comments received, there was a preference by the attendees at the February 2015 public information meeting for a "T" intersection at Whirlpool Street and Findlay Drive, with traffic traveling along Findlay Drive required to stop and for Whirlpool Street traffic to continue through to the RMP (i.e., north of Findlay Drive). However, during a subsequent neighborhood meeting held at DeVeaux Woods State Park[2] in July 2015, some residents along Whirlpool Street voiced a preference for a stop sign on Whirlpool Street in order to slow traffic down within their neighborhood. Subsequent to the July 2015 neighborhood meeting, another Public Information Meeting was held in September 2015. During that meeting, additional public comment voiced a preference again for a stop sign on Findlay Drive instead of on Whirlpool Street. The Board of Directors of the Old Fort Niagara Association in Youngstown (north of the Project Study Area) also unanimously passed a resolution urging that the stop sign be placed on Findlay Drive.
- ***Traffic Assessment*** – Further analysis was conducted using the Project's VISSIM traffic model to estimate the number of cars that would typically queue at the intersection under each option during the peak hour. Under the option where traffic stops on Whirlpool Street (Concept B), the average queue would reach 8-9 vehicles. Under the option where traffic stops on Findlay Drive (Concepts A and C), the peak-hour average queue in 2040 would reach 4-5 vehicles, or approximately half that expected along Whirlpool Street with the first option. Regarding traffic capacity, both options provide an acceptable level of service with the projected traffic in 2040.
- ***Noise Impacts*** – Regarding differences in the traffic noise resulting from either option, an assessment was included in the Noise Analysis presented in **Appendix J - Noise Study**. As noted in the Appendix, both options for the Findlay Drive/Whirlpool Street intersection were found to have minimal impact on noise levels. Only noise receptor R1 (located along the multi-use trail

[2] Considering that the residents along the northern portion of Whirlpool Street were the only stakeholders that voiced concerns, though limited, on select aspects of the Project, the Project sponsors felt it important to provide an additional opportunity to present and solicit comment on the localized features of the Project in their neighborhood.

on the existing southbound lanes of the RMP) was determined to experience any difference in the predicted noise levels. The option with the stop sign on Findlay Drive would result in 52 dBA, while the option with the stop sign on Whirlpool Street would result in a slightly higher 53 dBA. However, that difference is actually below the threshold of perceptibility to the human ear.

- ***Possible Future Projects*** – Regarding possible future projects, both options would be compatible with any alternative that may be considered for the RMP north of Findlay Drive.

The result of this assessment, in consultation with the affected stakeholders, indicates that the alignment of Whirlpool Street at the north end of the Project would be somewhat more preferable if it was connected directly to the existing RMP just north of Findlay Drive while Findlay Drive would end at Whirlpool Street at a ”T” intersection that would be controlled by a stop sign on Findlay Drive (Concepts A and C).

Cul-de-sac/Service Road Option

As requested during the February 19, 2015 Public Meeting, consideration was given to the option of providing a cul-de-sac and separate service road at the north end of Whirlpool Street, similar to the conceptual configuration included in ”Alternative 4” that was retained from the public scoping process. A variety of alignments was examined that varied the distance between the new park road and Whirlpool Street from only 10’ wide to 75’ wide to 150’ wide (approximate distance as shown for the prior “Alternative 4”).

Several concerns with this option were noted during the July 2015 neighborhood meeting with residents along the northern portion of Whirlpool Street. The first of these is in regard to the Project objectives. As noted in **Chapter 1**, one of the primary objectives is to Improve Access and Transportation, which includes removing the barriers that impede access between the Niagara Gorge and the adjacent neighborhoods. It also includes improving the link between parks, communities, and attractions adjacent to the Gorge. If an additional roadway is constructed to separate through-traffic from Whirlpool Street, then this option would reintroduce the very barrier that the Project is intended to remove.

Secondly, such a cul-de-sac option would also sever the open park space into two smaller pieces and is counter to the Project objective to promote and conserve the ecology and environment of the corridor.

The third issue relates to the City of Niagara Falls’ concerns regarding on-going maintenance of a road that would dead-end at a cul-de-sac. These involve difficulties of snow and garbage removal operations, as well as the difficulty of routing school buses. The City has indicated that a cul-de-sac design is a very last resort or option for consideration in this area. Therefore the option for a cul-de-sac and separate service road at the north end of Whirlpool Street was not included as part of the Build Alternative.

3.2.1.3. Summary of Feasible Alternatives Carried Forward

Based on the above evaluation of feasible alternatives, the following two alternatives have been carried forward for further assessment as part of this DR/EA:

- No-Build Alternative
- Build Alternative

The No-Build Alternative is as described previously in **Section 3.1.1.2.** The Build Alternative would include the following as a result of the evaluations of the feasible alternatives noted above:

- Removal of the RMP (i.e., all vehicular lanes, lanes used for the Robert Moses Parkway Trail, the Whirlpool Bridge Plaza overpass, and all other RMP interchange/accessory facilities from Main Street (NYS Route 104) to Findlay Drive;
- Reconstruction of Whirlpool Street from Main Street to Walnut Avenue and from Cedar Avenue to Findlay Drive as an at-grade, 30 MPH road to accommodate north-south vehicular/bus access, and removal of Whirlpool Street from Walnut Avenue to Cedar Avenue;
- Reconstruction of Third Street from Main Street to Cedar Avenue in a manner consistent with that of Whirlpool Street;
- Restoration of the landscape / habitat on lands reclaimed along the Niagara Gorge rim from the removal of the RMP with native species;
- Construction of a pedestrian / bicycle trail network along the Gorge rim, connecting to other trail systems and adjoining neighborhoods; and
- Incorporation of amenities / betterments associated with the above improvements.

3.2.1.4. Costs

The cost of the Build Alternative has been estimated based on the preliminary design drawings and limited detail. The Build Alternative will be designed in more detail during the final design phase. Unknowns such as the magnitude of natural restoration, details of the proposed overlooks and gateway features, to name a few, must be studied in further detail before an accurate cost for each item can be determined. Given the level of detail known at this time, the construction cost for the Build Alternative is estimated at approximately $35M, while the estimated cost for maintenance and rehabilitation for the No-Build Alternative is approximately $5 (both in 2015 Dollars), as shown in **Table 3-1.** More detailed cost estimates are included in **Appendix C - Construction Cost Estimates**.

Table 3-1 - Preliminary Cost Estimates

	No Build	Build Alternative
Item Description	TOTAL $ (2015)	TOTAL $ (2015)
Demolition	--	$ 7,741,920
Bridge Rehabilitation	$ 2,277,883	--
Roadway and Ramps	$ 1,338,040	$ 12,302,300
Multi-Use Paths and Sidewalks	--	$ 1,804,800
Bridge Construction	--	--
Landscaping	--	$ 1,731,920
Other Work Items	$ 26,400	$ 2,318,500
Subtotal	**$ 3,642,323**	**$ 25,899,440**
	--	--
Mobilization	$ 145,693	$ 1,294,972
MPT	$ 145,693	$ 2,589,944
Design Contingency	$ 364,232	$ 2,589,944
Construction Contingency	$ 182,116	$ 2,589,944
TOTAL COST	**$ 4,480,057**	**$ 34,964,244**
Rounded Total	**$5,000,000**	**$ 35,000,000**

3.2.2. Preferred Alternative

While the Build Alternative is identified as the Preferred Alternative, both feasible alternatives (No-Build and Build) are under consideration. The selection of the Preferred Alternative will not be finalized until the alternatives' impacts, comments on the Draft DR/EA, and comments from the public hearing have been fully evaluated.

3.2.3. Design Criteria for Feasible Alternative

3.2.3.1. Design Standards

The following design standards were consulted as part of the Critical Design Element and Other Design Element Parameter review:

- NYSDOT *Highway Design Manual* (HDM), Chapter 2
- NYSDOT *Project Development Manual* (PDM)
- NYSDOT *Bridge Manual* (BM)
- American Association of Transportation Engineers (AASHTO) *A Policy on Geometric Design of Highways and Streets* (2004)
- AASHTO *Guide for the Development of Bicycle Facilities* (1999)
- National Park Service *Park Road Standards* (1984)
- City of Niagara Falls – Department of Engineering Standards

As available, NYSDOT standards for highways and bridges were consulted first before selecting design criteria from the AASHTO or National Parks design standards. It should be noted that the NYSDOT HDM does not include a section specific to low speed park roads. For design of the park road to replace the existing RMP, a combination of design standards from AASHTO and the National Park Service is recommended.

3.2.3.2. Critical Design Elements

The following design criteria are recommended for the evaluation and detailed design of the Build Alternative. The criteria are applicable to the highway noted in the criteria table. It is important to note that the new two lane park road that is included in the Build Alternative as the main access to the Niagara Gorge Discovery Center is considered a Principal Park Road. This classification is for roads which constitute the main access route or thoroughfare for park visitors with termini that connect to the local public roads.

The design criteria for the Park Road, Third Street, Whirlpool Street, Walnut Avenue, Findlay Drive and the new multi-use trail are included in **Tables 3-2 through 3-4**.

Table 3-2 - Design Criteria – New Two-Lane Park Access Road

PIN:	5757.91.121	NHS (Y/N):	No
Route No. & Name:	Park Road	Functional Classification:	Local Roads and Streets (Special Purpose Roads)
Project Type:	Reconstruction	Design Classification:	Primary Access Road or Principal Park Road[3]
% Trucks:	0 (Trucks Prohibited)	Terrain:	Rolling
ADT:	4600 (Existing RMP)	Truck Access/Qualifying Hwy.	Within 1.0 mile of Qualifying Highway

	Element	Standard	Existing (RMP) Condition	Proposed Condition
1	Design Speed	40 mph AASHTO Table 5-25	40 mph	30 mph
2	Lane Width	12 ft (des.) w/ prov. for bikes 11 ft (min) w/ prov. for bikes[4] AASHTO Table 5-11	12 ft[4]	12 ft[4]
3	Shoulder Width	1.0 m minimum, 2.4 m Maximum, AASHTO Table 5-11	0 ft	2 ft
4	Bridge Roadway Width	Same as Approach Width NYSDOT Bridge Manual § 2.3.1	N.A.	N.A.
5	Maximum Grade	9.0% AASHTO Table 5-8	Varies	9.0 % (Max.)
6	Horizontal Curvature	444 ft (min.) AASHTO Table 3-10b	> 485 ft	> 485 ft
7	Superelevation Rate	8% (max.) AASHTO Ch. 5 Pg. 5-4	Normal crown	6% (max.)
8	Stopping Sight Distance	310 ft (min.) AASHTO Table 5-9	> 310 ft	> 310 ft
9	Horizontal Clearance	10.0 ft without barrier; Where barrier provided, use shoulder width plus 2.0 ft AASHTO Ch. 5 Pgs. 5-30 and 5-32	>2.0 ft	10.0 ft 6 ft w/barr.
10	Vertical Clearance	14 ft (min.) NYSDOT Bridge Manual § 2.4.1	14 ft (min.)	14 ft (min.)
11	Travel Lane Cross Slope	1.5% to 2.0% AASHTO Ch. 5 Pg. 5-3	2%	2%
12	Rollover	4% between travel lanes; 8% at edge of traveled way; HDM Section 2.7.5.2L	4% / 8% (edge)	4% / 8% (edge)
	Structural Capacity New	NYSDOT LRFD Specifications AASHTO HL-93 Live Load and NYSDOT Design Permit Vehicle NYSDOT BM Section 2.6.1	N.A.	HL - 93
13	Rehabilitation	HS - 20 NYSDOT BM Section 2.6.2	N.A.	HS - 20
14	Pedestrian Accommodation	Complies with HDM Chapter 18	No	Yes

1 All existing condition data was acquired from GIS database mapping or as-builts of the existing Robert Moses Parkway (where available).

2 Standard Criteria are from AASHTO - A Policy on Geometric Design of Highways and Streets (2011). Current NYSDOT Highway Design Manual does not include a section for Special-Purpose Recreational Roads in Parks.

3 All AASHTO Design Standards for Recreational Roads were compared to the National Parks Service *Park Roads Standards* (1984) and all criteria Stopping Sight Distance were nearly the same. (SSD differed due to a revision in the minimum object height).

4 When separate provisions for bicycles (e.g., multi-use trail) are not provided, a wide outside travel lane (12 ft min.) with 0 to 4 ft shoulders must be provided.

5 During preliminary design, concurrence from the Regional Traffic Engineer for the proposed design speed will be requested.

Table 3-3 - Design Criteria – Third Street / Whirlpool Street / Walnut Avenue / Findlay Drive

PIN:	5757.91.121	NHS (Y/N):	No	
Route No. & Name:	Third Street Whirlpool Street Walnut Street Findlay Drive	Functional Classification:	Urban Minor Arterial	
Project Type:	Reconstruction	Design Classification:	Urban Arterial	
% Trucks:	5.00%	Terrain:	Rolling	
ADT:	6720	Truck Access/Qualifying Hwy.	No	

	Element	Standard	Existing Condition	Proposed Condition
1	Design Speed[2,3]	35 mph HDM § 2.7.2.2.A	30 mph	30 mph
2	Lane Width	12 ft (des.), 11 ft (min) w/ prov. for bikes 8 ft (min.), 12 ft (des.) parking lane HDM § 2.7.2.2.B	12 ft 8 ft	12 ft 8 ft
3	Shoulder Width	0.0 ft ,- 4.0 ft minimum w/ multi-use path or wide lane, or 5 ft min. HDM Exhibit 2-4	0 ft	2 ft
4	Bridge Roadway Width	Same as Approach Width NYSDOT Bridge Manual § 2.3.1	N.A.	N.A.
5	Maximum Grade	8.0% HDM Exhibit 2-4	< 8%	< 8%
6	Horizontal Curvature	371 ft (min.) HDM § 2.7.2.2.F	> 371 ft	> 371 ft
7	Superelevation Rate	4% (max.) HDM § 2.7.2.2.G	4% (max.)	4% (max.)
8	Stopping Sight Distance	250 ft (min.) HDM Exhibit 2-4	> 250 ft	> 250 ft
9	Horizontal Clearance	10.0 ft without barrier; Where barrier provided, use shoulder width plus 2.0 ft HDM § 2.7.2.2.I	2.0 ft w/barr	2 ft w/barr (3 ft at intersect.)
10	Vertical Clearance	14 ft (min.) NYSDOT Bridge Manual § 2.4.1	13' - 11"	14 ft
11	Travel Lane Cross Slope	1.5% to 2.0% HDM § 2.7.2.2.K	2%	2%
12	Rollover	4% between travel lanes; 8% at edge of traveled way; HDM Section 2.7.5.2L	4% / 8% (edge)	4% / 8% (edge)
13	Structural Capacity (New & refabilitation)	NYSDOT LRFD Specifications AASHTO HL-93 Live Load and NYSDOT Design Permit Vehicle NYSDOT BM Section 2.6.1	Unknown	Unknown
14	Pedestrian Accommodation	Complies with HDM Chapter 18 HDM § 2.7.2.2.N	5.0 ft sidewalk East Side	5.0 ft Sidewalk East Side

1 All existing condition data was acquired from GIS database mapping or as-builts (where available).
2 During preliminary design, concurrence from the Regional Traffic Engineer for the proposed design speed will be requested.
3 Area Character is Central Business District.

Table 3-4 - Design Criteria – Multi-Use Trail

PIN:	5757.91.121	NHS (Y/N):	No
Route No. & Name:	Multi-Use Trail	Functional Classification:	Bikeway / Multi-Use Trail
Project Type:	Construction	Design Classification:	Bikeway / Multi-Use Trail
% Trucks:	None	Terrain:	Rolling
ADT:	N/A	Truck Access/Qualifying Hwy.	No

	Element	Standard	Existing Condition	Proposed Condition
1	Design Speed	20 mph AASHTO[2]	N/A	20 mph
2	Path Width	13 ft AASHTO[2]	24 ft	13 ft
3	Shoulder Width	2 ft AASHTO[2]	0 ft	2 ft
4	Bridge Path Width	Same as Approach Width (13 ft) NYSDOT Bridge Manual § 2.3.1	24 ft	17 ft
5	Maximum Grade	5.0% AASHTO[2]	Unknown	5.0%
6	Horizontal Curvature	90 ft (min.) AASHTO[2]	> 100 ft	90 ft
7	Superelevation Rate	2.0% (max.) AASHTO[2]	Unknown	Normal crown
8	Stopping Sight Distance	130 ft (min.) AASHTO[2]	Unknown	250 ft
9	Horizontal Clearance	3.0 ft (min.) 6.0 ft (des.) AASHTO[2]	3.0 ft	5.0 ft.
10	Vertical Clearance	8.0 ft (min.) 10.0 ft (des.) AASHTO[2]	> 10 ft	10 ft (min.)
11	Pavement Cross Slope	2% AASHTO[2]	Unknown	2%
13	Structural Capacity (New & refabilitation)	NYSDOT LRFD Specifications AASHTO HL-93 Live Load and NYSDOT Design Permit Vehicle BM Section 2.6.1	N.A.	HL - 93

1 All existing condition data was acquired from GIS database mapping or as-builts of the existing Robert Moses Parkway (where available).
2 AASHTO Guide for the Development of Bicycle Facilities.
3 During preliminary design, concurrence from the Regional Traffic Engineer for the proposed design speed will be requested.
4 5%-6% Allowable up to 780 ft Lengths - AASHTO Guide for the Development of Bicycle Facilities.

3.2.3.3. Other Design Parameters

In addition to the critical design elements described in **Section 3.2.3.2**, other parameters established by NYSDOT or AASHTO that are typically used to design highway and bridge projects include: the size and type of the design vehicle; the Level of Service (LOS) to be provided, which identifies the ease with which traffic can move along the roadways; the intensity of rainfall for design of storm drainage facilities; and the configuration of ramp connections to major expressways. **Table 3-5** lists other highway design parameters used to develop the project design.

Table 3-5 – Other Highway Design Parameters

Element	New Park Access Road		Third Street Whirlpool Street Walnut Avenue Findlay Drive		Multi-Use Trail	
	Standard Criteria	Proposed Design	Standard Criteria	Proposed Design	Standard Criteria	Proposed Design
Level of Service	D/E	D[1]	D/E	D[1]	N/A	N/A
Design Storm Frequency for drainage system Frequency for culvert Frequency for ditch	 5 YR 50 YR 10 YR	 5 YR 50 YR 10 YR	 5 YR 50 YR 10 YR	 5 YR 50 YR 10 YR	 5 YR 50 YR 10 YR	 5 YR 50 YR 10 YR
Design Vehicle	SU[2]	BUS-12 (Motor Coach)	SU[2]	CITY-BUS	Bicycle	Bicycle

NOTES:

1. Intersection Level of Service with mitigation measures will be D or better for all intersections.
2. Single-unit truck.

3.3. Engineering Considerations

3.3.1. Operations (Traffic and Safety) & Maintenance

3.3.1.1. Functional Classification and National Highway System

Under the Build Alternative, the RMP would be removed between Main Street and Findlay Drive. The functional classification of the remaining roads including Third Street, Whirlpool Street, Walnut Avenue and Findlay Drive would not be modified as part of the Project. The functional classification of these roads is identified in **Chapter 2, Section 2.3.1.1**.

3.3.1.2. Control of Access

For the No-Build Alternative, the RMP would continue to operate as a limited-access facility. For the Build Alternative, driveways and side street connections would be reconstructed and new connections would be allowed along Third Street, Whirlpool Street, Walnut Avenue and Findlay Drive in accordance with the City of Niagara Falls regulations. Access along the New Park Road to the Gorge Discovery Center would be uncontrolled and would meet the criteria in NYSDOT's *Highway Design Manual* (HDM) Chapter 2.

3.3.1.3. Traffic Control Devices

3.3.1.3.(1) Traffic Signals

Under the Build Alternative, the three traffic signals listed below are anticipated to remain:

- Main Street at First Street;
- Main Street at Third Street; and
- Third Street at Cedar Avenue, although warrants for the continuation of this signal would be examined during final design in consideration of anticipated traffic and turning movements at this location.

As part of final design, traffic signal timings in the area will also be examined, as needed, and coordinated with local operations of the signals, to ensure optimized capacity and traffic progression. The remaining existing intersections within the Project would be controlled by stop signs.

3.3.1.3.(2) Signs

Existing signs that are appropriate for the Build Alternative design would be replaced and, where needed, new signs would be added for traffic control, parking regulations, and community wayfinding. Design features for replacement and new signs would conform to the latest FHWA *Manual on Uniform Traffic Control Devices (MUTCD)* and New York State MUTCD Supplement. In addition, along multi-use path systems on State Park and NYPA recreation lands along the Gorge, sign systems already being installed along the Upper Niagara River and regionally (e.g., Shoreline Trail markers) would also be incorporated into the final design of the Build Alternative.

3.3.1.4. Intelligent Transportation Systems (ITS)

No ITS measures are proposed as part of the Build Alternative.

3.3.1.5. Traffic Volumes

The 2040 Build Alternative traffic volume estimates are based on the 2040 No-Build traffic volumes and take into consideration the diverted trips that would be caused by the removal of the RMP between Main Street and Findlay Drive. For this Project, diverted traffic mainly relates to vehicles that now normally use

the RMP and would be rerouted to other roadways in the vicinity. This traffic diversion would reflect the behavior of drivers, who would seek to minimize travel time and find quicker routes.

To estimate diverted traffic, a number of north-south alternate routes were identified between Niagara Street and University Drive (i.e., near the City of Niagara Falls boundary with Lewiston). They are:

- Whirlpool Street / Lewiston Road;
- Main Street / Lewiston Road;
- Portage Road / 11th Street / Highland Avenue / Hyde Park Boulevard; and
- Hyde Park Boulevard (from Niagara Street to University Drive/Lewiston Road).

Travel times on these four routes were estimated using the VISSIM model developed under the 2040 No-Build scenario. The diverted traffic was then assigned to the above-listed routes based on the magnitude of their respective travel times, i.e., a diversion route with a longer travel time would have less diversion volume assigned.

Average Annual Daily Traffic (AADT)

The projected 2040 Average Annual Daily Traffic (AADT) volumes for the proposed Build Alternative are included in **Table 3-6**. These volumes are based on the traffic diversion route assignments developed by the VISSIM model.

Using the 2040 AADT volumes for the Future No-Build Condition, **Table 3-7** indicates the 2040 AADT volumes of traffic that would divert onto the local highway network for the Build Alternative. **Table 3-8** provides the percent increase/decrease of AADT on their respective highway segments.

Table 3-6 - Traffic Volumes - AADT

Roadway	From	To	2040 No Build ALT	2040 Build ALT
Robert Moses Parkway	Main Street Findlay Drive	Findlay Drive Lewiston Road	3590 5370	0 4610
Main Street	Rainbow Boulevard 3rd Street Pine Avenue Portage Road Lockport Road Ontario Avenue	3rd Street Pine Avenue Portage Road Lockport Road Ontario Avenue Findlay Drive	6100 6100 6040 11500 7270 7250	6680 6720 6680 12410 8060 7960
Whirlpool Street	3rd Street Ontario Avenue	Ontario Avenue Findlay Drive	4340 2830	6720 4860
Lewiston Road	Findlay Drive	College Avenue	4120	4250
Portage Road	Buffalo Avenue 11th Street	11th Street Main Street	9920 5340	10240 5340
11th Street	Portage Road Lockport Road	Lockport Road Ontario Avenue	7150 6690	7430 6970
Highland Avenue	Ontario Avenue	College Avenue	4670	4990

Table 3-7 – AADT Diversions

Roadway	From	To	2040 Build ALT
Robert Moses Parkway	Main Street Findlay Drive	Findlay Drive Lewiston Road	-3590 -760
Main Street	Rainbow Boulevard 3rd Street Pine Avenue Portage Road Lockport Road Ontario Avenue	3rd Street Pine Avenue Portage Road Lockport Road Ontario Avenue Findlay Drive	580 620 640 910 790 710
Whirlpool Street	3rd Street Ontario Avenue	Ontario Avenue Findlay Drive	2380 2030
Lewiston Road	Findlay Drive	College Avenue	130
Portage Road	Buffalo Avenue 11th Street	11th Street Main Street	320 0
11th Street	Portage Road Lockport Road	Lockport Road Ontario Avenue	280 280
Highland Avenue	Ontario Avenue	College Avenue	320

Table 3-8 – AADT - Percent Diversions

Roadway	From	To	2010 Existing Conditions	2040 No Build ALT	2040 Build ALT
Robert Moses Parkway	Main Street Findlay Drive	Findlay Drive Lewiston Road	3090 4620	3590 5370	-100% -14%
Main Street	Rainbow Boulevard 3rd Street Pine Avenue Portage Road Lockport Road Ontario Avenue	3rd Street Pine Avenue Portage Road Lockport Road Ontario Avenue Findlay Drive	5250 5250 5200 9900 6262 6240	6100 6100 6040 11500 7270 7250	10% 10% 11% 8% 11% 10%
Whirlpool Street	3rd Street Ontario Avenue	Ontario Avenue Findlay Drive	3740 2440	4340 2830	55% 72%
Lewiston Road	Findlay Drive	College Avenue	3550	4120	3%
Portage Road	Buffalo Avenue 11th Street	11th Street Main Street	8540 4600	9920 5340	3% 0%
11th Street	Portage Road Lockport Road	Lockport Road Ontario Avenue	6160 5760	7150 6690	4% 4%
Highland Avenue	Ontario Avenue	College Avenue	4020	4670	7%

The 2040 Build hourly traffic volumes for AM and PM peak hours for the Build Alternative are included in **Table 3-9** and are illustrated in **Figures 3-4** and **3-5, respectively**. Turning movement volumes at key intersections within the traffic study area for the Existing, No-Build and Build conditions are included in **Appendix E.1 – Traffic Flow Diagrams - 2010**.

Tables 3-10 and **3-11** indicate individual volumes of traffic that would divert onto the local highway network under the Build Alternative.

Table 3-9 – 2040 Build Alternative: Peak Hour Traffic Volumes

Roadway	From	To	2040 Build Alt			
			NB		SB	
			AM	PM	AM	PM
Robert Moses Parkway	Main Street Findlay Drive	Findlay Drive Lewiston Road	0 88	0 238	0 320	0 110
Main Street	Rainbow Boulevard 3rd Street Pine Avenue Portage Road Lockport Road Ontario Avenue	3rd Street Pine Avenue Portage Road Lockport Road Ontario Avenue Findlay Drive	137 76 264 256 125 130	453 140 315 423 277 375	182 325 168 339 253 290	246 407 177 188 242 186
Whirlpool Street	3rd Street Ontario Avenue	Ontario Avenue Findlay Drive	204 192	291 171	374 349	159 159
Lewiston Road	Findlay Drive	College Avenue	151	311	366	188
Portage Road	Buffalo Avenue 11th Street	11th Street Main Street	288 228	396 158	407 154	323 60
11th Street	Portage Road Lockport Road	Lockport Road Ontario Avenue	204 259	291 327	372 250	315 273
Highland Avenue	Ontario Avenue	College Avenue	57	330	142	158

Figure 3-4 – 2040 Build Alternative AM Traffic Flows by Link

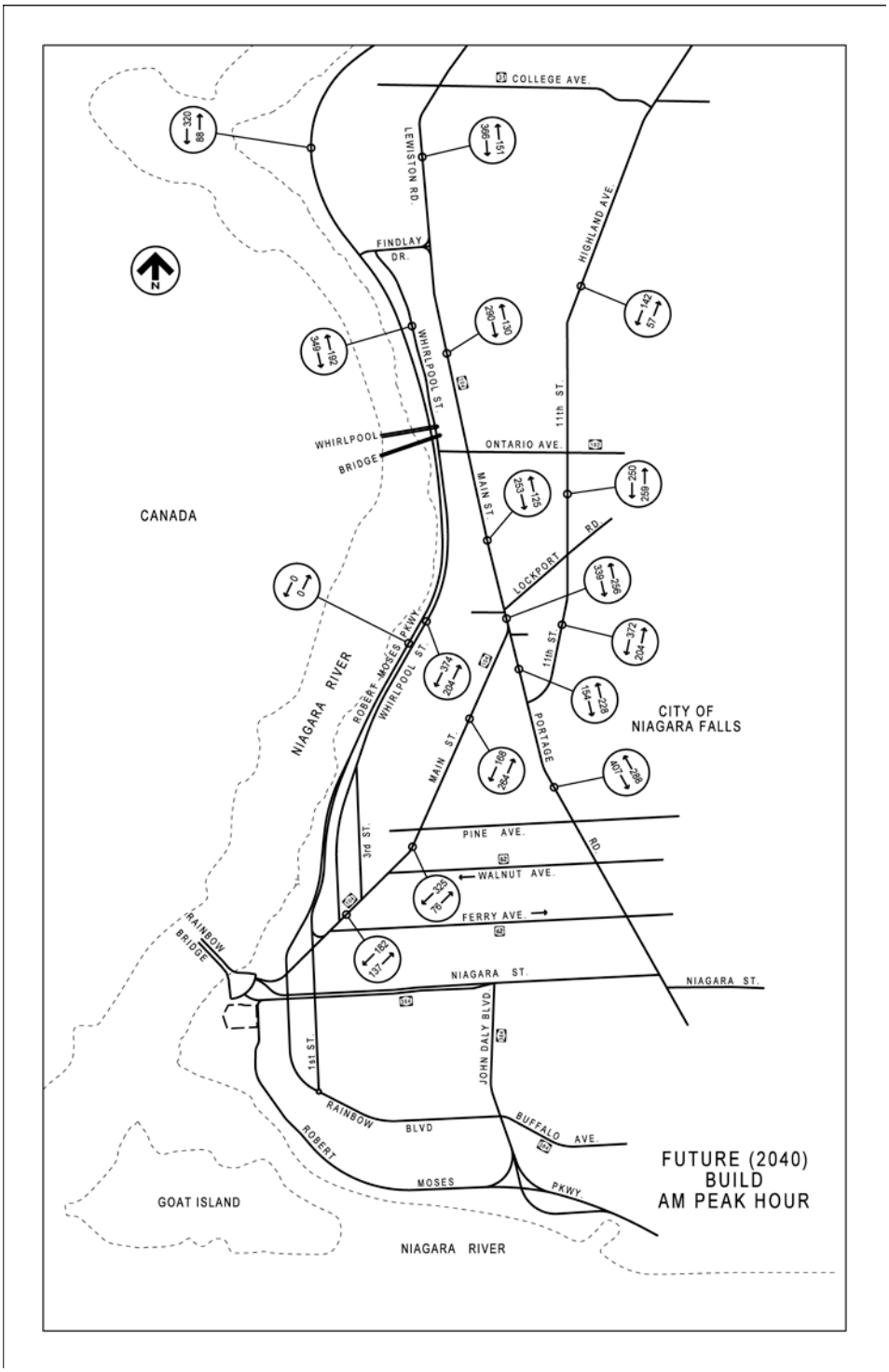


Figure 3-5 – 2040 Build Alternative PM Traffic Flows by Link

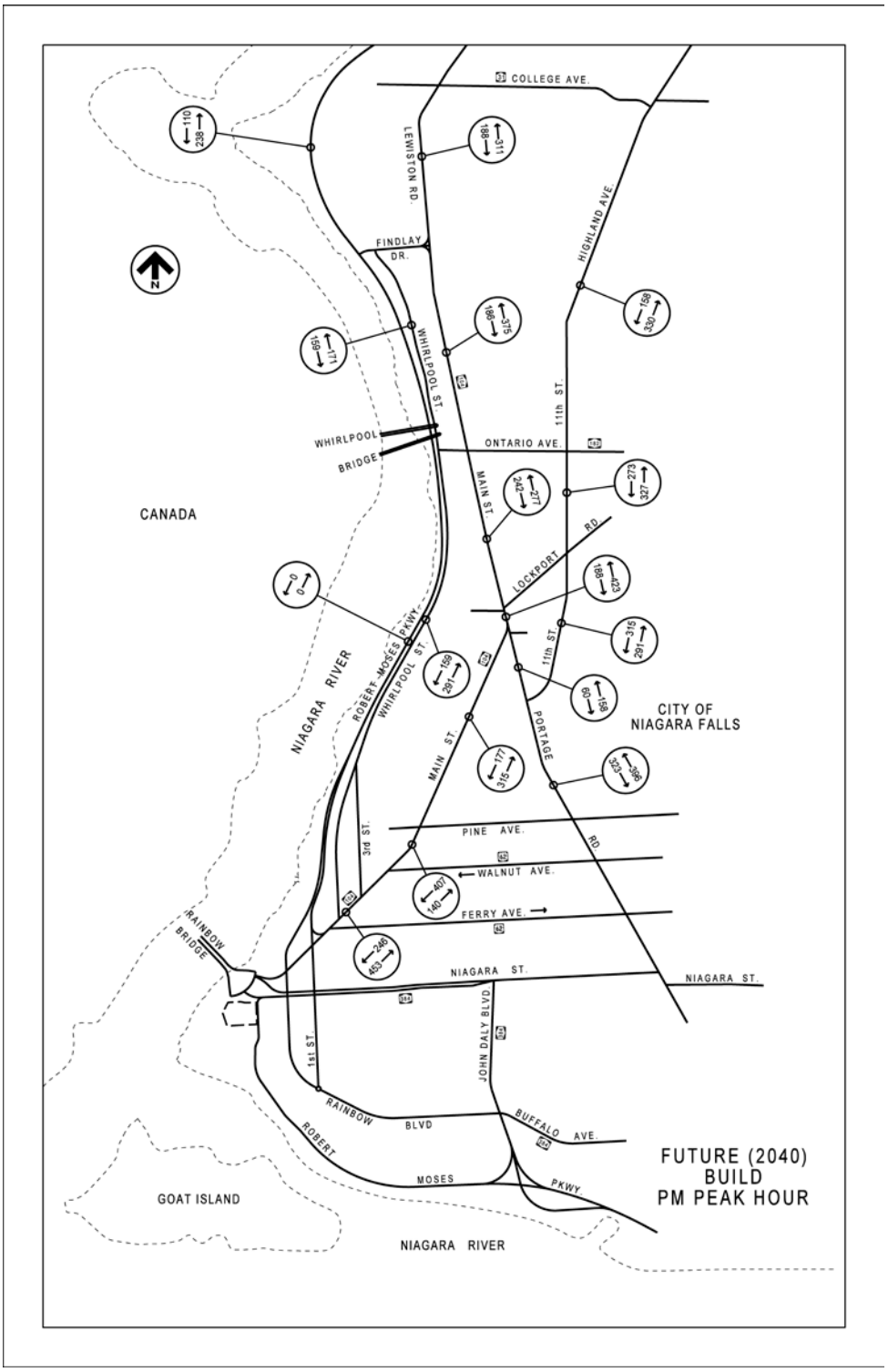


Table 3-10 – 2040 Build Alternative: Traffic Diversion in the Peak Hour

Roadway	From	To	2040 Build Alt			
			NB		SB	
			AM	PM	AM	PM
Robert Moses Parkway	Main Street Findlay Drive	Findlay Drive Lewiston Road	-89 -19	-197 -47	-147 -25	-110 -33
Main Street	Rainbow Boulevard 3rd Street Pine Avenue Portage Road Lockport Road Ontario Avenue	3rd Street Pine Avenue Portage Road Lockport Road Ontario Avenue Findlay Drive	12 12 12 12 12 12	44 44 44 44 44 44	14 14 14 14 14 14	18 18 18 18 18 18
Whirlpool Street	3rd Street Ontario Avenue	Ontario Avenue Findlay Drive	58 58	106 106	123 123	77 77
Lewiston Road	Findlay Drive	College Avenue	0	0	14	18
Portage Road	Buffalo Avenue 11th Street	11th Street Main Street	12 0	19 0	6 0	7 0
11th Street	Portage Road Lockport Road	Lockport Road Ontario Avenue	12 12	19 19	6 6	7 7
Highland Avenue	Ontario Avenue	College Avenue	12	19	6	7

Table 3-11 – Traffic Diversion – Per Minute of the Peak Hour

Roadway	From	To	2040 Build Alt			
			NB		SB	
			AM	PM	AM	PM
Robert Moses Parkway	Main Street Findlay Drive	Findlay Drive Lewiston Road	-1.5 -0.3	-3.3 -.08	-2.5 -0.4	-1.8 -0.6
Main Street	Rainbow Boulevard 3rd Street Pine Avenue Portage Road Lockport Road Ontario Avenue	3rd Street Pine Avenue Portage Road Lockport Road Ontario Avenue Findlay Drive	0.2 0.2 0.2 0.2 0.2 0.2	0.7 0.7 0.7 0.7 0.7 0.7	0.2 0.2 0.2 0.2 0.2 0.2	0.3 0.3 0.3 0.3 0.3 0.3
Whirlpool Street	3rd Street Ontario Avenue	Ontario Avenue Findlay Drive	1.0 1.0	1.8 1.8	2.1 2.1	1.3 1.3
Lewiston Road	Findlay Drive	College Avenue	0.0	0.0	0.2	0.3
Portage Road	Buffalo Avenue 11th Street	11th Street Main Street	0.2 0.0	0.3 0.0	0.1 0.0	0.1 0.0
11th Street	Portage Road Lockport Road	Lockport Road Ontario Avenue	0.2 0.2	0.3 0.3	0.1 0.1	0.1 0.1
Highland Avenue	Ontario Avenue	College Avenue	0.2	0.3	0.1	0.1

3.3.1.6. Speeds and Delay

3.3.1.6.(1) Travel Time and Speeds

Travel time and travel speed projections for the 2040 Build Alternative conditions were performed using the VISSIM models. **Tables 3-12** and **3-13** present, respectively, the estimated travel times and travel speeds for each travel route by direction during the AM and PM peak hours. For the Build Alternative, travel speeds throughout the traffic study area for the proposed Project would range, respectively, from 15 to 32 MPH during the AM peak hours, and from 14 to 28 MPH during the PM peak hours. Compared to the No-Build (2040) travel speeds, the Build Alternative travel speeds on most routes would typically decrease by about 1 or 2 MPH.

Table 3-12 – 2040 Build Alternative: Travel Times

No.	Route	Direction	Travel Time (sec)	
			AM	PM
1	Whirlpool Street from Ashland Avenue to Findlay Drive	NB SB	160 170	220 162
2	Main Street from Niagara Street to Ontario Avenue	NB SB	281 286	354 339
3	Portage Road from Main Street to Buffalo Avenue	NB SB	313 359	340 380
4	Lewiston Road from College Avenue to Bellevue Avenue	NB SB	140 110	120 134
5	11th Street/Highland Avenue/Hyde Park Boulevard Corridor from Portage Road to Lewiston Road	NB SB	306 354	600 428

Table 3-13 – 2040 Build Alternative: Travel Speed

No.	Route	Direction	Travel Time (sec)	
			AM	PM
1	Whirlpool Street from Ashland Avenue to Findlay Drive	NB SB	28 27	20 28
2	Main Street from Niagara Street to Ontario Avenue	NB SB	19 19	15 16
3	Portage Road from Main Street to Buffalo Avenue	NB SB	17 15	16 14
4	Lewiston Road from College Avenue to Bellevue Avenue	NB SB	19 24	22 20
5	11th Street/Highland Avenue/Hyde Park Boulevard Corridor from Portage Road to Lewiston Road	NB SB	32 27	16 22

In order to thoroughly evaluate the RMP corridor, the origin-destination (O-D) travel times from Niagara Street to Findlay Drive under the Build Alternative (together with the existing condition and the No-Build Alternative) are estimated and shown in **Table 3-14**. Note that only peak direction travel times are presented for AM and PM peak hours, respectively. For the existing condition and the No-Build Alternative, the O-D travel times represent the travel times entirely spent on the RMP. For the Build Alternative, the O-D travel times represent the travel times on the shortest paths connecting Niagara Street and Findlay Drive. These shortest paths would include portions of the RMP and local streets.

Table 3-14 – Corridor Travel Time

Alternative	AM - Southbound		PM - Northbound	
	From Findlay Drive to Niagara Street		From Niagara Street to Findlay Drive	
	Travel Time (min)	% Increase Over Existing	Travel Time (min)	% Increase Over Existing
Existing (2010)	3	0%	5	0%
No-Build Alternative (2040)	3	2%	5	1%
Build Alternative (2040)	4	18%	6	38%

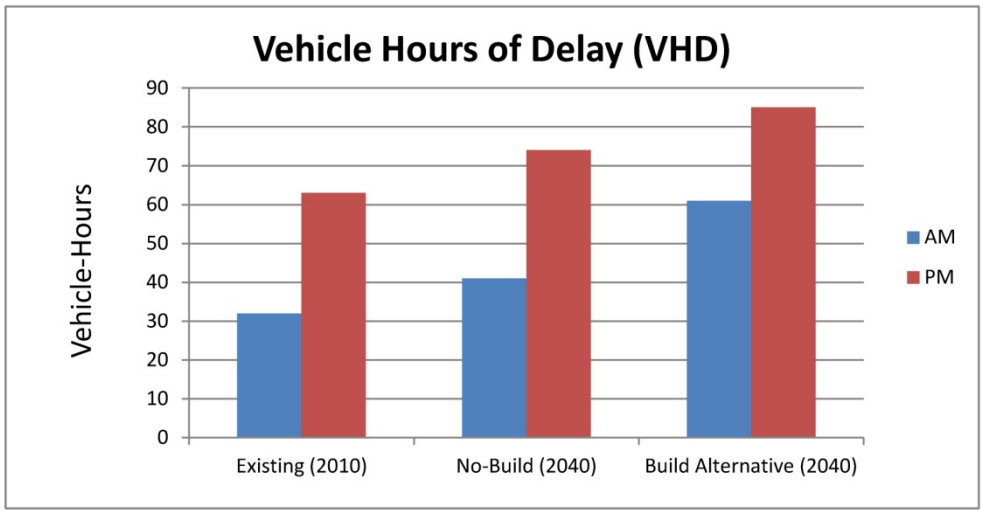
3.3.1.6.(2) Vehicle Hours for Delay (VHD)

Using the VISSIM simulation model, the total vehicle hours of delay (VHD) for the roadway system in the traffic study area for the proposed Project were estimated for the Build Alternative. The model results are shown in **Table 3-15** and **Figure 3-6.** As indicated, the Build Alternative VHD in 2040 would be 61 vehicle-hours in the AM peak hour and 85 vehicle-hours in the PM peak hour. VHD in the PM peak hour is generally greater than that in the AM peak hour. Compared to the No-Build Alternative, the Build Alternative would result in a VHD increase of 48.8 percent for the AM peak hour and 14.9 percent for the PM peak hour.

Table 3-15 – Vehicle Hours of Delay

Alternative	Peak Hour	
	AM	PM
Existing (2010)	32	63
No-Build Alternative (2040)	41	74
Build Alternative (2040)	61	85

Figure 3-6 – Vehicle Hours of Delay



3.3.1.7. Level of Service and Mobility

3.3.1.7.(1) At Design Year

Tables 3-16 and **3-17** summarize the LOS for the 2040 Build and No-Build Alternative scenarios for the signalized and unsignalized intersections during the weekday AM and PM peak hours, respectively. The LOS results show that the operational performance of most study intersections in the Build condition would not significantly differ from the No-Build conditions, implying that diverted traffic from removal of the RMP would not have a significant impact on the traffic operations of the local street system. Under both the No-Build and Build Alternatives, all the intersections would operate at LOS D or better during the AM and PM peak hours. Therefore, diverted traffic from the removal of the RMP from Main Street to Findlay Drive under the Build Alternative would not decrease traffic flow efficiency and service quality within the traffic study area for this Project.

Table 3-16 – 2040 Build & No Build Alternatives
AM Peak Hour – Intersection Level of Service

No.	Intersection/Approach	Build Alt		No Build	
		Delay	LOS	Delay	LOS
1	Niagara Street & Rainbow Boulevard				
	Eastbound		C		*C*
	Westbound		A		*A*
	Northbound		C		*C*
	Southbound		B		*B*
	Intersection	*30.9*	*C*	*27.3*	*C*
2	Niagara Street & 1st Street				
	Eastbound		A		*A*
	Westbound		D		*D*
	Northbound		B		*B*
	Southbound		B		*B*
	Intersection	*10.8*	*A*	*9.7*	*A*
3	Pine Avenue & Main Street				
	Eastbound		A		*A*
	Westbound		C		*C*
	Northbound		A		*A*
	Southbound		A		*A*
	Intersection	*11.7*	*B*	*10.2*	*B*
4	Portage Road & 11th Street				
	Eastbound		D		*D*
	Westbound		D		*D*
	Northbound		C		*C*
	Southbound		A		*A*
	Intersection	*28.8*	*C*	*26.7*	*C*
5	Pierce Avenue & Main Street/Portage Road				
	Eastbound		D		*D*
	Westbound		B		*B*
	Northbound		B		*B*
	Southbound		B		*B*
	Intersection	*19.1*	*B*	*19.0*	*B*
6	Lockport Road / Willow Avenue & Main Street				
	Eastbound		C		*C*
	Westbound		D		*D*
	Northbound		B		*B*
	Southbound		B		*B*
	Intersection	*29.6*	*C*	*29.4*	*C*
7	Lockport Road & 11th Street				
	Eastbound		B		*B*
	Westbound		B		*B*
	Northbound		B		*B*
	Southbound		B		*B*
	Intersection	*13.7*	*B*	*13.6*	*B*

No.	Intersection/Approach	Build Alt		No Build	
		Delay	LOS	Delay	LOS
8	Ontario Avenue & Main Street				
	Eastbound		C		*C*
	Westbound		B		*B*
	Northbound		B		*B*
	Southbound		B		*B*
	Intersection	*22.8*	*C*	*22.2*	*C*
9	Findlay Drive & Lewiston Road				
	Eastbound		A		*A*
	Northbound		B		*B*
	Southbound		C		*B*
	Intersection	*17.0*	*B*	*14.1*	*B*

Table 3-17 – 2040 Build & No Build Alternatives
PM Peak Hour – Intersection Level of Service

No.	Intersection/Approach	Build Alt		No Build	
		Delay	LOS	Delay	LOS
1	Niagara Street & Rainbow Boulevard				
	Eastbound		D		*D*
	Westbound		B		*B*
	Northbound		C		*C*
	Southbound		B		*B*
	Intersection	*29.6*	*C*	*29.2*	*C*
2	Niagara Street & 1st Street				
	Eastbound		A		A
	Westbound		B		B
	Northbound		C		C
	Southbound		C		C
	Intersection	*16.8*	*B*	*16.5*	*B*
3	Pine Avenue & Main Street				
	Eastbound		B		*A*
	Westbound		D		*D*
	Northbound		A		*A*
	Southbound		A		*A*
	Intersection	*17.8*	*B*	*17.6*	*B*
4	Portage Road & 11th Street				
	Eastbound		D		*D*
	Westbound		D		*D*
	Northbound		C		*C*
	Southbound		A		*A*
	Intersection	*28.7*	*C*	*28.1*	*C*
5	Pierce Avenue & Main Street/Portage Road				
	Eastbound		D		*D*
	Westbound		B		*B*
	Northbound		C		*C*
	Southbound		B		*B*
	Intersection	*28.4*	*C*	*28.7*	*C*

No.	Intersection/Approach	Build Alt		No Build	
		Delay	LOS	Delay	LOS
6	Lockport Road / Willow Avenue & Main Street				
	Eastbound		B		B
	Westbound		B		B
	Northbound		A		A
	Southbound		B		B
	Intersection	*11.9*	*B*	*11.8*	*B*
7	Lockport Road & 11th Street				
	Eastbound		C		*C*
	Westbound		C		*C*
	Northbound		B		*B*
	Southbound		B		*B*
	Intersection	*20.8*	*C*	*20.9*	*C*
8	Ontario Avenue & Main Street				
	Eastbound		A		*A*
	Westbound		B		*B*
	Northbound		B		*B*
	Southbound		A		*A*
	Intersection	*13.6*	*B*	*13.4*	*B*
9	Findlay Drive & Lewiston Road				
	Eastbound		B		*B*
	Northbound		C		*B*
	Southbound		B		*B*
	Intersection	*13.5*	*B*	*11.2*	*B*

3.3.1.7.(2) Work Zone Safety & Mobility

Work Zone Traffic Control Plan

Construction of the Build Alternative could be completed in three major stages as described below. The construction staging described below shows one possible plan for maintaining traffic during construction. A more formal and detailed plan would be prepared during final design. However, the final plan for traffic control would be as suggested by the Contractor and approved by State Parks, NYSDOT and the City of Niagara Falls prior to implementation. Regardless of the final plan determined, routes for emergency vehicles would be maintained and open during construction.

During Stage 1, the reconstruction of Third Street and Whirlpool Street could be completed under two sub-stages (1A and 1B) whereby one-way traffic would be maintained on one side of the street while the other side of the street is under construction. Traffic traveling in the opposite direction would be re-routed to Main Street. The reconstruction and extension of Walnut Avenue would also be included under this stage. The existing RMP would remain open and provide access to the Niagara Gorge Discovery Center. Access to the Aquarium of Niagara would be maintained at all times.

Stage 2 would include the removal of the RMP between Main Street and the newly extended Walnut Avenue. Construction of the new Park Access Road between Main Street and Walnut Avenue would be completed while access to the Gorge Discovery Center would be provided via Main Street, Third Street and Walnut Avenue.

Stage 3 would include the removal of the remaining sections of the existing RMP between Walnut Avenue and Findlay Drive and the construction of the multi-use trails, overlooks and Gorge rim trail improvements.

Special Provisions

Due to the close proximity to residential homes and the ability to maintain traffic with acceptable delays during the daylight hours, night time construction would not be utilized. Seasonal restrictions to accommodate the summer tourist season will be evaluated during final design. All work zone traffic control will be coordinated with State Parks, NYSDOT, local officials, and residents.

Significant Projects (per 23 CFR 630.1010)

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

3.3.1.8. Safety Considerations, Accident History and Analysis

There are no high-accident locations along the RMP, Third Street or Whirlpool Street. Minimum clear zone distances can generally be obtained along all routes. The existing features, including trees and walls located near the proposed edges of pavement for road reconstruction under the Build Alternative will be evaluated for clear zone encroachment. Design of required safety devices would be developed in accordance with current warrants and design standards as part of the final plans. Safety of the final alignments of the proposed components of the trail system would also be fully evaluated as part of the final design process.

3.3.1.9. Impacts on Police, Fire Protection and Ambulance Access

Access for first responders to the park areas or City of Niagara Falls' neighborhoods would be altered under the Build Alternative; however, these changes would have little to no effect on response time. As described in **Section 3.3.1.7.(2),** anticipated impacts to emergency services during construction are expected to be minor.

3.3.1.10. Parking Regulations and Parking Related Issues

As noted in **Chapter 2**, **Section 2.3.1.10**, parking regulations are set by the City of Niagara Falls along Third Street, Whirlpool Street and Main Street. Parking is not permitted along most sections of Whirlpool Street except in the residential area north of Bellevue Avenue. Under the Build Alternative, a dedicated parking lane is included along most of the east side of Whirlpool Street between Third Street and Findlay Drive. During final design, concurrence with the City will be obtained to identify final locations of permitted on-street parking. Concurrently, the City Council of Niagara Falls will effectuate these final changes by consistent amendment to local parking regulations, which would be made through appropriate public approval processes.

Parking along Third Street is currently permitted on the east side between Main Street and Pine Avenue and along the west side of the street between Pine Avenue and Cedar Avenue. Under the Build Alternative, a dedicated parking lane is included along the east side of Third Street between Main Street and Whirlpool Street. No parking provisions are included along the west side of Third Street. Likewise during final design, concurrence with the City will be reached regarding on-street parking at these locations.

Off–street parking will continue to be available at existing parking lots for the Niagara Gorge Discovery Center and at municipal parking lots located just east of Whirlpool Street. New and renovated parking lots located in the park area at the overlook opposite Pierce Avenue and adjacent to the Whirlpool Bridge is also included in the Build Alternative.

3.3.1.11. Lighting

New street lighting is proposed along the new Park Access Road, Third Street, Walnut Avenue and Whirlpool Street. Lighting would also be provided at park gateways and parking lots. Warrants and safety needs for lighting along the proposed multi-use trail will be determined as part of the final design.

3.3.1.12. Ownership and Maintenance Jurisdiction

In general, State Parks, City of Niagara Falls and NYSDOT would continue maintenance responsibilities for the highways and facilities they currently own. During final design, the facility owners would review the existing maintenance responsibilities to determine if minor changes in some maintenance tasks (such as snow plowing) should be enacted to improve efficiency and safety.

3.3.1.13. Constructability Review

Final design of this Project will receive a full constructability review prior to beginning construction work.

3.3.2. Multimodal

3.3.2.1. Pedestrians

Under the Build Alternative, sidewalks along the entire east side of Third Street and Whirlpool Street would be provided. Sidewalks along the west side of Third Street and Whirlpool Street would also be provided between Main Street and Walnut Avenue. Sidewalks along both sides of the new Park Access Road and Walnut Avenue would also be provided in addition to the south side of Findlay Drive.

Within the park area between Niagara Falls State Park and Findlay Drive, a new trail system would be constructed, anchored by a new 13-foot wide multi-use trail. The alignment of the trail would be curvilinear and include connections to the existing trails to the base of the Gorge, the Gorge Discovery Center, Aquarium of Niagara, and at various locations along Whirlpool Street to provide access to adjoining neighborhoods. Upgrades and reconstruction of the existing Gorge rim trail (i.e., pedestrian-

only trail along the edge of the Gorge) would also be included in the Build Alternative with connections to the new trail network.

Design of these facilities would be in accordance with the requirements of the Americans with Disabilities Act.

3.3.2.2. Bicyclists

The GBNRTC bicycle route plan identifies a multi-use trail from the Niagara Falls State Park to Devil's Hole State Park which follows the existing RMP (i.e., the Robert Moses Parkway Trail). The construction of the new multi-use trail system included in the Build Alternative would replace/improve this bicycle system component. Access to the trail from adjacent neighborhoods would be at controlled locations, such as intersections and/or at signed pedestrian crossings. Design of the trail system would be in accordance with the requirements of the Americans with Disabilities Act.

3.3.2.3. Transit

No changes in the local NFTA transit system are proposed as part of the Build Alternative. However, the reconstruction of Third Street and Whirlpool Street under the Build Alternative would enable the ability for future bus transit service and associated improvements along these roadways, if and when such service improvements are warranted. All design standards for reconstruction of streets as part of the Project (e.g., grades, curves, turning radii, and similar road design features) would be readily able to safely accommodate use by standard public bus vehicles. Similarly, the public rights-of-way of Third Street and Whirlpool Street could also accommodate future modifications along the reconstructed roadways to facilitate transit service (e.g., shelters, dedicated pull-offs, etc.).

3.3.2.4. Airports, Railroad Stations, and Ports

No changes to the existing airports or passenger rail stations are included under the No-Build or Build Alternatives. Although not part of this Project, a new passenger rail station is being constructed by the City of Niagara Falls at Whirlpool and Depot Streets (refer to **Chapter 2, Section 2.2.1.2)**. The Build Alternative would maintain or improve access to this facility. Final design of the reconstruction of Whirlpool Street would include consideration of the impacts it might cause on the new rail station during construction.

3.3.2.5. Access to Recreation Areas (Parks, Paths, Waterways, State Lands)

The No-Build Alternative would retain facilities that currently provide bicycle and pedestrian access to the Niagara Gorge rim from neighborhoods east of the RMP.

The Build Alternative would include 20.1 acres of new and/or contiguous open space from the removal of the RMP and the annexation of isolated parcels east of the RMP, and would provide unlimited and continuous access from adjacent city neighborhoods to the full extent of park and open space/recreation lands along the Niagara Gorge rim and within the Gorge. Park visitors would have new and enhanced

overlook areas from which to enjoy views of the Gorge, as well as properly scaled continuous multi-use trails and other pedestrian pathways to use and enjoy from Main Street to Findlay Drive.

3.3.3. Infrastructure

3.3.3.1. Proposed Highway Section

Refer to **Appendix A** for proposed typical sections and cross sections at various locations.

3.3.3.1.(1) Right-Of-Way

The Build Alternative would not require any right-of-way acquisitions from private property owners. nor would any land transfers between agencies (e.g, State Parks, NYPA, NYSDOT or City of Niagara Falls) be required as a direct result of the Project. However, a temporary or permanent access easement would be required in some cases to accommodate construction.

3.3.3.1.(2) Curbs

The proposed Park Access Road to the Gorge Discovery Center and the proposed reconstruction of Third Street, Whirlpool Street and Walnut Avenue associated with the Build Alternative would include new six-inch vertical faced curb on both sides of the highway. During the final design phase, detailed drainage design would include evaluation of various ecological sustainability features, such as eliminating sections of the curb in selected locations to permit drainage of stormwater into a grass-meadow, bio-swale and/or bio-retention areas to reduce the amount of stormwater into the Gorge and the City's combined sewer system.

3.3.3.1.(3) Grades

Under the Build Alternative, the proposed grades along with the allowable maximum grades would be as shown below.

Roadway	Maximum Grade Allowed	Maximum Grade Proposed
Park Access Road	9%	1.7%
Whirlpool Street	8%	4.8%
Third Street	8%	3.8%
Walnut Avenue	8%	6.3%

3.3.3.1.(4) Intersection Geometry and Conditions

There are no unusual geometric alignments or roundabouts proposed under the Build Alternative. Refer to **Appendix A** for proposed intersection geometry.

3.3.3.1.(5) Roadside Elements

The following roadside elements are provided under the Build Alternative:

- *Multi-use Trail* – There would be a 13-foot-wide multi-use trail through the expanded park area from Main Street to Findlay Drive.
- *Sidewalks* - Along Third Street, Whirlpool Street and Walnut Avenue, existing sidewalks would be replaced. Replacement sidewalks would be at least 5 feet wide and would be offset from the edge of the travelway to provide a snow storage area. A new 5-foot wide sidewalk and a snow storage area would also be included along the south side of Findlay Drive.
- *Bus Stops* – No NFTA bus stop would be impacted by the Project.
- *Driveways* – Existing driveways would be maintained and modified if necessary to comply with the current applicable NYSDOT *Policy and Standards for Design of Entrances to State Highways* or City of Niagara Falls standards.
- *Clear Zone* - The clear zone is determined by the design speed and functional classification. The approximate clear zone widths for routes in the Project Study Area are as follows and would be refined during final design to adjust for slopes, roadway curvature, etc.:
    - New Park Access Road: Minimum Clear Zone
    - Whirlpool Street: Minimum Clear Zone
    - Third Street Minimum Clear Zone
    - Walnut Street: Minimum Clear Zone

3.3.3.2. Special Geometric Design Elements

3.3.3.2.(1) Non-Standard Features

All geometric features and cross sectional elements of the Build Alternative would comply with the design criteria in accordance with the NYSDOT *Highway Design Manual*. Justification forms for non-standard features are not required.

3.3.3.2.(2) Non-Conforming Features

There are no existing or proposed non-conforming features included in the Build Alternative.

3.3.3.3. Pavement and Shoulder

Refer to **Appendix A** for proposed typical sections and pavement/shoulder composition. The design for the reconstruction of the streets within the City of Niagara Falls would be coordinated with the City and, would generally be in accordance with the standards maintained by the City.

3.3.3.4. Drainage Systems

As part of the Build Alternative, most of the existing drainage system along the RMP would be removed and the area re-graded between Main Street and Findlay Drive. Stormwater runoff from the multi-use trails proposed to be constructed within the existing parks and recreation areas along the RMP, including those areas of newly landscaped / restored green space where the RMP pavement is currently located, would drain off directly onto the grassed / vegetated surfaces.

All of the new / reconstructed paved areas for roadways (e.g., along Third Street and Whirlpool Street, and along new access roads serving the City of Niagara Falls' sewage pumping station and the Niagara Gorge Discovery Center) would be designed to collect and transport stormwater in a new closed stormwater system, separate from the existing combined sewer system. The stormwater would then be treated via Vortech chambers, or via green infrastructure elements to treat the water before it is outlet into the Niagara River at one or more of the five existing outfalls located along the Niagara River between Main Street and Findlay Drive. Examples of green infrastructure elements to be considered during final design include:

- Stormwater Treatment Chambers
- Rain Gardens
- Planter Boxes
- Bioswales
- Permeable Pavements

These Best Management Practices (BMPs) for handling stormwater would be considered during final design and would be in accordance with the NYSDEC Stormwater Management Design Manual, January 2015. Where possible, due to the higher elevation of Whirlpool Street compared to the new park areas to the west, pavement would be designed to direct stormwater as sheet flow directly off the roadway onto the new landscaped / restored parkland area. Additional information on stormwater management is found in **Section 4.4.8**.

3.3.3.5. Geotechnical

No special techniques or considerations are anticipated under the Build Alternative.

3.3.3.6. Structures

3.3.3.6.(1) Description of Work

The Build Alternative includes the replacement of one bridge and the removal of three others.

The bridge that would be replaced is the existing 85-foot-wide structure (BIN 1068229) carrying the four lanes of the RMP over the access road to the City of Niagara Falls sewage pumping station (i.e., Sewage Plant Road). This bridge would be replaced with a new pedestrian bridge carrying the 13-foot-wide multi-use trail over the access road. The design and architecture of the structure would be of a scale and style commensurate with the new park setting of the area.

The three bridges to be removed are as follows:

- BIN 1068210 - Pedestrian Bridge over the RMP (between the Aquarium of Niagara and the Niagara Gorge Discovery Center)
- BIN 1039539 - RMP over Whirlpool Bridge (1,725-foot long, 45-span viaduct)
- BIN 7090230 – CN Railroad over Whirlpool Street (abandoned railroad bridge with a posted clearance of 12’-10”)

Another structure that may require rehabilitation (or possibly replacement) independent of the Build Alternative is the CSX Railroad Bridge over Whirlpool Street (BIN 7090240). This bridge is located 60 feet north of the abandoned railroad bridge. Posted vertical clearance at this structure is 12’-10” (actual clearance is nearly 14 feet). This bridge carries an active rail line that continues across the Whirlpool Bridge into Canada. Although the rehabilitation of the structure itself is not part of the Build Alternative, profile adjustment would be made as part of the Project during the reconstruction of Whirlpool Street to attain the 14’ minimum vertical clearance.

3.3.3.6.(2) Clearances (Horizontal/Vertical)

The following bridges were identified as having limited vertical clearance:

- RMP over Sewage Plant Road (BIN 1068229) – As noted above, this structure would be replaced with a new pedestrian bridge and would provide the required clearance.
- CN Railroad over Route 182 (BIN 7090230) – The removal of this structure is included in the Build Alternative.
- CSX Railroad over Route 182 (BIN 7090240) - Profile adjustment would be made during the reconstruction of Whirlpool Street to attain the 14’ minimum vertical clearance.

3.3.3.7. Hydraulics of Bridges and Culverts

There are no bridges within the Project Study Area crossing a waterway that would be affected by the Build Alternative. The three active international crossings to Canada are to remain as they are and would not be affected by this Project.

3.3.3.8. Guide Railing, Median Barriers and Impact Attenuators

All guiderails within the Project limits, including bridge railing, will be evaluated during final design for conformance to design standards and removed (e.g., along the west side of Whirlpool Street), replaced, or repaired, if necessary.

3.3.3.9. Utilities

No major utility relocations have been identified as part of the Build Alternative. During the final design phase, investigations will be made to determine if some or all of the overhead power, telephone and cable can be relocated below ground. As part of the process and in consultation with the owners, factors such as age, location, repair history, and cost will be included in the evaluation. A list of existing utility owners was included in **Table 2-22** in **Chapter 2**.

3.3.3.10. Railroad Facilities

The proposed improvements do not include construction of a new railroad or relocation of an existing main line railroad. As part of the Whirlpool Street reconstruction, two existing railroad bridges are located near the Customs House. The northern-most bridge (BIN 7090240) is currently in use and is owned and operated by CSX. There is no planned rehabilitation of this structure as part of the Build Alternative; however, the vertical clearance would be improved by a minor profile adjustment on Whirlpool Street.

The second bridge (BIN 7090230) is no longer in service and the existing tracks have been removed. Complete removal of this structure is included as part of the Build Alternative. However, the need and future use of this bridge will be discussed with the owner during final design for concurrence that its removal is acceptable.

3.3.4. Landscape and Environmental Enhancements

A detailed discussion on the landscape and environmental enhancements associated with the Build Alternative is included in **Chapter 4**. In addition, a complete Visual Impact Assessment (VIA) documenting the visual changes resulting from the Build Alternative is included in **Appendix H**.

3.3.4.1. Landscape Development and Other Aesthetics Improvements

The Build Alternative would eliminate the RMP from Main Street to Findlay Drive. It also would require reconstruction of Whirlpool Street and Third Street as a new road paralleling the Gorge rim made accessible by the removal of the RMP. A new multi-use trail system connecting to the adjacent neighborhoods, the Gorge rim pedestrian trail and other facilities would be constructed as part of the

Build Alternative. The existing Gorge rim pedestrian trail would be expanded and enhanced and include additional overlooks into the Gorge. The elimination of the RMP would have significant beneficial impacts to the landscape and aesthetics.

North of Findlay Drive, Whirlpool Street would reconnect with existing lanes of the RMP. Similarly, the new multi-use trail would connect back to the Robert Moses Parkway Trail north of Findlay Drive. Transitional landscaping to parkland would be provided as a part of the overall enhancement and aesthetic improvement efforts included within the Build Alternative. The focus of the landscaping improvements would be on preserving and enhancing the Gorge rim. Re-naturalizing the areas by reintroducing native species and removing invasive species would strengthen the corridor's ecology, which is an essential component of the Gorge.

3.3.4.2. Environmental Enhancements

A variety of potential landscape enhancements are intended to restore the natural environment, reduce the required maintenance and improve the user's experience within the Project corridor. Consideration is given to re-establishing native species and the elimination of invasive species that are within the plant community found along the corridor. These enhancements, which are listed below, will be further detailed during the final design phase:

- Reduce maintained open lawn areas to specific locations within the corridor and along roadways to allow the regeneration of these areas back to natural habitat. This will reduce the need for continuous maintenance.
- Protect the existing canopies throughout the corridor, including introducing additional native specimens and eliminating non-native and invasive species.
- Convert open lawn areas to meadow and forest habitats, where appropriate. Additional investigation during final design will be necessary to identify the appropriate locations for these habitats to ensure their longevity.
- Enhance the existing top of Gorge ecosystem by protecting existing vegetation, planting additional native specimens and eliminating non-native and invasive species.
- Limit paved paths/areas (or consider use of permeable pavement) to provide effective movement of visitors to and from overlook areas, while limiting stormwater runoff. Provide minimal access to any newly established woodland areas to allow for natural regeneration to occur.
- Incorporate an environmental signage program identifying regeneration and natural habitat areas to inform and educate the public. Include as part of the sign system, markers identifying mow and no mow zones to assist maintenance crews.
- Use, where feasible, "green infrastructure" features, such as bio-swales, rain gardens and/or drainage features to further limit the amount of untreated stormwater runoff from directly entering

the Niagara River or entering the City's combined sewer system (thereby reducing the extent of potential CSO discharges to the river);

- Consider incorporating enhancements or betterments in adjoining areas where feasible, such as:
    - Use of an unimproved parking lot underneath the RMP viaduct to be removed (i.e., passing over the Whirlpool Bridge Plaza) to create an activity and interpretative "node" that both enhances a recently-completed trailhead into the Gorge and celebrates a key Underground Railroad location, relating with the City's Underground Railroad Interpretive Center being constructed as part of the new passenger rail station.
    - Removal of deteriorated pavement and unused facilities in the City's DiFranco Park as part of overall demolition activities, and natural restoration of these areas to contribute to the overall setting of the Project.

In addition to the above enhancements, it is proposed that plans for the proposed Project will continue to be coordinated with agencies and organizations that have an interest in ecological restoration within the Gorge, the Gorge rim and other areas adjacent to the proposed Project areas of disturbance, including those who have prepared prior studies and/or may conduct future ecological restoration studies. Specific continued coordination with the NYSDEC's Division of Fish, Wildlife and Marine Resources is proposed in this regard.