CHAPTER 3: ALTERNATIVES

This chapter outlines alternatives considered to address the project needs, goals, and objectives presented in Chapter 2, including the Null, Transportation System Management (TSM), and Build Alternatives. These alternatives grow out of project components presented in NYSDOT's February 2001 *Statement of Purpose* and subsequently presented as part of the 2001/2002 Public Scoping process, including:

- A new arterial road through the former LTV/Republic Steel site connecting I-190 (at an improved interchange in the Seneca/Elk/Bailey area) to Tifft Street, aligned east of the existing CSX railroad corridor (hereinafter referred to as the "**I-190/Tifft Street Arterial**");
- Reconfiguring the Route 5/Fuhrmann Boulevard complex along the Buffalo Outer Harbor into a system designed to be more compatible with the proposed land uses included in local plans, consisting of either:
  - Improvements to the existing road system to improve local access, (hereinafter referred to as the "**Modified Improvement Alternative**" (Preferred Alternative));
  - Reconstruction/consolidation of Route 5/Fuhrmann Boulevard into a single, at-grade boulevard (hereinafter referred to as the "**Boulevard Alternative**"); or
  - Reconstruction into a combination system of Improvement and Boulevard components (hereinafter referred to as the "**Hybrid Alternative**");
- Reconstruction of Ohio Street as a landscaped riverfront arterial; and
- Improved facilities for other modes of transportation, such as bus service, bicycle, and pedestrian facilities, including an Industrial Heritage Trail.

3.1 Design Criteria

The design criteria used for Build Alternatives are based on the 2001 American Association of State Highway and Transportation Officials (AASHTO) *Policy on Geometric Design of Highways and Streets*; the NYSDOT *Highway Design Manual*; and the 2002 NYSDOT *Geometric Design Policy for Bridges*. The project area is considered level terrain, and the maximum super-elevation rate of 4% is standard for urban arterials and 8% is standard for other freeways.

The design speed is a selected speed used to determine the various geometric design features of a roadway, which is typically consistent with or greater than the anticipated off-peak 85th percentile speed once the improvements are completed. The design speed for the Modified Improvement Alternative from the Skyway Bridge touchdown to Ridge Road is 100 kph (62

mph), 90 kph (56 mph) from Ridge Road to Lincoln Avenue, 80 kph (50 mph) from Lincoln Avenue to Hawley Road/7th Street, and 100 kph (62 mph) from Hawley Road/7th Street to Route 179 (Milestrip Road). The Boulevard Alternative was designed using a 100 kph (62 mph) design speed from the Skyway Bridge to Ridge Road, 90 kph (56 mph) from Ridge Road to Lincoln Avenue, 80 kph (50 mph) from Lincoln Avenue to Hawley Road/7th Street, and 100 kph (62 mph) from Hawley Road/7th Street to Route 179 (Milestrip Road). For the Hybrid Alternative, a design speed of 100 kph (62 mph) was used from the Skyway Bridge to Ridge Road, 90 kph (56 mph) from Ridge Road to Lincoln Avenue, 80 kph (50 mph) from Lincoln Avenue to Hawley Road/7th Street, and 100 kph (62 mph) from Hawley Road/7th Street to Route 179 (Milestrip Road). Fuhrmann Boulevard, Ohio Street, and the new I-190/Tifft Street Arterial were designed using a 80 kph (50 mph) design speed.

Table 3.1-1 lists roadway classifications for major roadways in the project area, listing definitions for each classification. **Table 3.1-2** lists design criteria for each roadway classification.

Table 3.1-1 Roadway Classifications, Design Speeds, and Proposed Speed Limits

Roadway	Segment	Existing Posted Speed Limit		Design Speed	Proposed Posted Speed Limit	Roadway Class[1]
		mph	kph	kph	mph	
NYS Route 5 Modified Improvement	Skyway – Ridge Road	55	88	100	55	OF-1
NYS Route 5 Boulevard	Skyway – Ohio St.	55	88	100	40	UA-1
NYS Route 5 Hybrid	Skyway -- Ohio St.	55	88	100	55	OF-1
NYS Route 5 Boulevard/Hybrid	Ohio St. – Ridge Road	55	88	100	40	UA-1
NYS Route 5 All Alternatives	Ridge Rd. – Lincoln Ave.	40	64	90	40	UA-2
	Lincoln Ave. – Hawley Rd./7th St.	40	64	80	40	UA-3
	Hawley Rd./7th St. – Route 179	55	88	100	55	UA-1
Ohio Street	Michigan St. – Route 5	30	48	80	30	UA-3
Fuhrmann Boulevard	Coast Guard – Tifft St.	30	48	80	30	UA-3
I-190/Tifft Street Arterial	I-190 – Tifft St.	---	---	80	30	UA-3
Off Ramps	New Interchange Ramps A & D, "OB", "TA", I-190/Tifft Arterial Ramp A	---	---	80	N/A	R-1
On Ramps	New Interchange Ramps B & C, "OA", "TB", "TC", I-190/Tifft Arterial Ramp B	---	---	60	N/A	R-2

Notes:
[1] Key to Classifications:

Classification	Roadway Type	Design Speed
OF-1	Other Freeway	100 kph
UA-1	Urban Arterial	100 kph
UA-2	Urban Arterial	90 kph
UA-3	Urban Arterial	80 kph
R-1	Off Ramps	80 kph
R-2	On Ramps	60 kph

Table 3.1-2 Design Criteria

Design Criteria	Roadway Classification					
	OF-1	**UA-1**	**UA-2**	**UA-3**	**R-1**	**R-2**
1. Design speed	100 kph	100 kph	90 kph	80 kph	80 kph	60 kph
2. Minimum lane width	3.6 m	3.6 m	3.6 m	3.6 m	4.2 m[c]	4.2 m[c]
3. Minimum turning lane width	N/A	3.3 m	3.3 m	3.3 m	N/A	N/A
4. Minimum parking lane width	N/A	N/A	N/A	N/A	N/A	N/A
5. Minimum shoulder width	3.0 m R 1.2 m L	0 m[g]	0 m[g]	0 m[g]	2 m R 1 m L	2 m R 1 m L
6. Minimum bridge roadway width. A=Full approach roadway/ B=Traveled way	A	A	A	A	A	A
7. Maximum grade	3%	5%	5%	6%	5%	6%
8. Minimum radius of curve	394 m	492 m	375 m	280 m	252 m	123 m
Maximum superelevation rate	8%	4%	4%	4%	6%	6%
9. Minimum stopping sight distance	185 m	185 m	160 m	130 m	130 m	85 m
10. Minimum horizontal clearance[a]	1.2 m [i]	0.5 m[b]	0.5 m[b]	0.5 m[b]	1.8 m R 1.0 m L [j]	1.8 m R 1.0 m L [j]
11. Minimum vertical clearance						
over roadways	4.9 m[d]	4.9 m[d]	4.9 m[d]	4.9 m[d]	4.9 m	4.9 m
over railroads	6.71 m	6.71 m	6.71 m	6.71 m	6.71 m	6.71 m
over streams (50-year design flood)	0.6 m	0.6 m	0.6 m	0.6 m	0.6 m	0.6 m
12. Pavement cross slope (min/max)	1.5%/2.0%	1.5%/2.0%	1.5%/2.0%	1.5%/2.0%	1.5%/2.0%	1.5%/2.0%
Rollover (between lanes/at edge of pavement)	4% / 8%	4% / 8%	4% / 8%	4% / 8%	4% / 8%	4% / 8%
13. Minimum level of service (LOS)	N/A	N/A	N/A	N/A	C	C
14. Minimum distance between successive ramp terminals on Interstate Highways (gore to gore)[h]	N/A	N/A	N/A	N/A	122 m	122 m
15. Minimum structural capacity	MS23	MS23	MS23	MS23	MS23	MS23
Reconstruction/Rehabilitation	MS18	MS18	MS18	MS18	MS18	MS18
16. Pedestrian accommodations	HDM[e] Ch.18 & ADA[f]	HDM[e] Ch.18 & ADA[f]	HDM[e] Ch.18 & ADA[f]	HDM[e] Ch.18 & ADA[f]	HDM[e] Ch.18 & ADA[f]	HDM[e] Ch.18 & ADA[f]
17. Pedestrian Bridges	A 90 kN (H10) vehicle load to be used; 18 kN front axle and 72 kN total for rear axles.					
18. Railroad Bridges	All structures carrying railroads will be designed for Cooper E-80 loading.					

Notes:

[a] Not less than shoulder width.

[b] From face of curb to the vertical elements.

[c] For Case II, Traffic Condition C, see NYSDOT *Highway Design Manual*, Table 2-9.

[d] For arterials on the National Highway System, minimum vertical clearance shall be 5.05 m.

[e] NYSDOT *Highway Design Manual*.

[f] Americans with Disabilities Act.

[g] If a shoulder is provided with a non-mountable curb at the back of shoulder, the shoulder equals 1.8 meters minimum.

[h] NYSDOT *Highway Design Manual*, Chapter 6, Figure 6-P, Case "D".

[i] 4.6 m if barrier is not provided.

[j] Where ramps pass under structures, there should be an additional 1.2 m clearance beyond the outside of shoulders to bridge piers or abutments.

3.2 Alternatives Considered

3.2.1 Null Alternative

Consideration of the Null Alternative is required under federal regulations to serve as a baseline against which Build Alternatives are compared. The Null Alternative would involve only currently programmed transportation improvements in the project area, as listed on the GBNRTC's TIP (i.e., projects involving federal transportation funds) and other programmed projects being advanced entirely with state, county, or local funds. These involve the following (see Sections 2.3.1.6 and 2.3.1.23):

- **Roadway Improvements:**
  - Internal access road for the Union Ship Canal Redevelopment Area, extending north from Commerce Drive in the City of Lackawanna;
  - In-kind replacement of the Ridge Road Bridge passing over the CSX rail corridor in the City of Lackawanna; and
  - A new truck access road in the Town of Hamburg extending south from Lake Avenue to Milestrip Road (Route 179).
- **Bicycle/Pedestrian Improvements:**
  - A new "Tifft Street Greenway" extending from the Tifft Nature Preserve ball fields to Fuhrmann Boulevard, connecting to Gallagher Beach facilities;
  - Pedestrian and recreational improvements immediately around the Union Ship Canal as part of the brownfields redevelopment plan for that site;
  - A new "Outer Harbor Greenbelt" along the Lake Erie shoreline on the NFTA's Outer Harbor Lands; and
  - A new "Outer Harbor Greenway" system, involving both short- and long-term pedestrian/bicycle trails and lanes along Fuhrmann Boulevard and Ohio Street.

In addition, the Null Alternative assumes certain improvements to the regional highway system that would indirectly affect mobility in the project area. These include the addition of a fourth travel lane to I-90 Eastbound and Westbound between the I-190 and Route 400 interchanges (completed in 2002) and the addition of three lanes of roadway capacity at the Peace Bridge, regardless of its ultimate design as a single six-lane span or companion span (currently in preliminary engineering).

3.2.2 Transportation System Management

TSM involves relatively low- to moderate-cost measures that typically do not involve large capital improvements to address traffic capacity issues. FHWA and NYSDOT regulations/guidance require consideration of the implementation of TSM measures as part of the

planning and environmental review for major projects. These requirements are intended to assess the potential for such measures to limit the need for large transportation investments.

TSM measures are typically targeted at getting maximum performance out of the components of the existing transportation system, prior to investing in higher cost capital projects. Such improvements would include:

- Synchronizing and/or re-timing traffic signals along major roads;
- Adding left-hand turn and/or acceleration/deceleration lanes to improve traffic flows in key locations;
- Implementation of Intelligent Transportation System (ITS) improvements, such as incident surveillance equipment and variable message signs to inform motorists of alternative routes during congested periods; and
- Improved wayfinding systems along the regional and local roadway network.

The potential for TSM measures to reasonably address the goals and objectives of the STC/BOH Project presented in Chapter 2 must be assessed in the context of the existing needs in the corridor. The major needs exhibited in the project corridor involve improving physical road access to target redevelopment sites, and redefining the Route 5 corridor to accommodate multi-modal access for emerging recreational uses along Lake Erie. From purely a traffic capacity perspective, Route 5 essentially accommodates through access between the Southtowns and Downtown Buffalo. However, the road's current elevated alignment and relationship to the local road network impedes access to both redevelopment and recreational areas along Lake Erie.

Thus, implementation of typical TSM measures noted above is not considered feasible to address the project goals and objectives. However, TSM components are included as part of each of the Build Alternatives to facilitate reasonable access for commuter/goods movement, through:

- The implementation of coordinated traffic signalization along at-grade portions of the Route 5 corridor, tied to the regional traffic operations center administered by the Niagara International Transportation Technology Coalition (NITTEC);
- The incorporation of incident management facilities (surveillance cameras and variable message signs), also tied to NITTEC facilities, such as systems associated with re-routing during weather emergencies; and
- Implementation of wayfinding improvements that better match emerging uses along the Lake Erie waterfront.

3.2.3 Build Alternatives – Conceptual Road Alignments

The initial step to identifying the components of potential Build Alternatives involved the examination of conceptual road alignments, particularly at key transition points (i.e., interchanges or intersections) along the project corridor. This involved a process of developing various alignments for each of the Build Alternatives at key locations within Project Area. These were assessed in conjunction with the Project Steering Committee and Citizens Advisory Committee, as well as presented at public information meetings and individual meetings with various project stakeholders (e.g., various City of Buffalo agencies, City of Lackawanna, and Erie County agencies).

The conceptual alignments were reviewed against broad screening criteria based upon the project goals and objectives. These included:

- Ability to improve physical access to target redevelopment sites;
- Ability to enhance waterfront access along the local road system;
- Use of a design that allows for efficient and clear vehicular movements;
- Ability to improve multi-modal access, including facilitating safe bicycle, pedestrian and transit movements;
- Use of a design that is reasonable to construct; and
- Use of a design that would be compatible with the development character in adjoining areas, in terms of community, natural environment, and visual effects.

A summary of conceptual road alignments considered and selected for further development as part of developing feasible alternatives is presented in **Table 3.2-1**. Full descriptions and drawings of each conceptual alignment are presented in **Appendix M: Alternative Screening**.

Table 3.2-1 Summary of Conceptual Road Alignments Considered		
Component	**Description**	**Action**
I-190/Tifft Street Arterial		
Overall Alignment	Four overall alignments considered during 1998 STC/BOH Project Major Investment Study: • LTV Site/Abandoned Rail Corridor to Seneca Street • North Tifft Nature Preserve/CSX Rail Corridor • Concrete Peninsula/CSX Rail Corridor • Smith Street/ CSX Rail Corridor	**Retained LTV Site/Abandoned Rail Corridor alignment** to Seneca Street; would permit a fixed bridge and would not be impeded by existing rail operations.
I-190 Seneca Street Interchange	Three alignments considered: • **Alignment 1**: New I-190 NB Off Ramp, I-190 SB On Ramp, and Improvements to Keating Street • **Alignment 2**: New I-190 NB Off Ramp, Grade Separated I-190 SB On Ramp • **Alignment 3**: Terminate arterial at Bailey Ave., New I-190 On Ramp from Bailey and New I-190 NB Off Ramp	Retained **Alignment 1**; would have least physical effect to neighborhood and provide better access than other two alignments.
Route 5 – Modified Improvement Alternative (Preferred Alternative)		
Buffalo Outer Harbor and Tifft Street Interchanges	One alignment type considered at each location – use of simplified diamond interchange.	Retained.
Ohio Street Interchange	Four alignments considered: • **Alignment 1**: Full Diamond with Complete Route 5/Fuhrmann/Ohio Access • **Alignment 2**: Full Diamond & Eliminate Fuhrmann Boulevard North • **Alignment 3**: Limited Route 5/Fuhrmann Access & Direct Ohio/Fuhrmann Connection • **Alignment 4**: Route 5/Ohio Access Only	Retained **Alignment 3**; would provide clear local road access to Fuhrmann Boulevard from Ohio Street and would provide similar Route 5/Ohio Street access as exists now.
Union Ship Canal/Ridge Road	Two alignments considered: • **Alignment 1**: Realign Route 5 to West; Maintain Grade Separation at Ridge Road. • **Alignment 2**: Realign Rte 5 to West; Eliminate Ridge Road Overpass & Create Intersections at Ridge Road and Commerce Drive	Retained **Alignment 2**; would open up visibility and development opportunities in vicinity of Ridge Road.
Route 5 – Boulevard Alternative		
All Intersection Alignments – Buffalo Outer Harbor, Tifft Street, and Union Ship Canal/Ridge Road	Two intersection types considered: • Conventional Signalized Intersections • Use of Modern Roundabouts	**Use of coordinated, signalized intersections retained**. Modern roundabouts not retained due to traffic volumes, geometry, and need to facilitate truck movements.
Route 5 – Hybrid Alternative		
Ohio Street Intersection	One alignment considered that would transition features of the Improvement Alternative (north) and Boulevard alternative (south)	Retained.
Ohio Street Reconstruction		
Ohio/Louisiana/St. Clair Street Intersection	Four alignments considered: • **Alignment 1**: Limited Changes to Existing Alignment • **Alignment 2**: Truncate St. Clair Street • **Alignment 3**: Truncate Louisiana and Improve South Street • **Alignment 4**: Loop Louisiana and St. Clair Streets; Improve South Street	Retained **Alignment 4**; would segregate local traffic movements from residential areas along St. Clair and Louisiana Street from through movements along the Ohio Street corridor.

3.2.4 Build Alternatives – Multi-Modal Components

Given that the overall project objectives involve improving multi-modal access along the Lake Erie waterfront, a series of project components associated with pedestrian, bicycle, and transit access were considered as part of the Build Alternatives. Several of these project components were suggested as part of Public Scoping, Steering/Citizen Advisory Group meetings, and through public information meetings. Each of these components were assessed based upon their ability to be included as part of anticipated road alignments under each of the build alternatives; the appropriateness of NYSDOT to advance such a project given their mission/jurisdiction; and whether road alignments would need to be altered/refined in order to include a particular component.

A summary of multi-modal features considered and whether they would be reasonable to advances to each of the feasible Build Alternatives is presented in **Table 3.2-2**. Full descriptions and discussions of each component are presented in **Appendix M: Alternative Screening**.

Table 3.2-2 Multi-Modal Improvements Considered

Component	Description/Discussion	Action
Pedestrian/Bicycle Improvements		
Route 5/Lake Erie Multi-Purpose Trail: Times Beach to Woodlawn	Would establish a "spine" for a waterfront trail network that builds upon existing/planned facilities.	Include in all Build Alternatives
Pedestrian/Bicycle Bridge Connecting Tifft Nature Preserve and Gallagher Beach	Would create a new connection to expand the existing nature preserve open space network to the water's edge.	Include in all Build Alternatives as bridge or underpass
Woodlawn Bicycle and Pedestrian Safety Improvements	Would improve sidewalks and crossings and establish dedicated bike lanes linking to Woodlawn Beach State Park.	Include in all Build Alternatives
Industrial Heritage Trail Improvements within STC/BOH Project Area	Would create a dedicated interpretive trail along Ohio Street from Michigan Avenue to the NFTA Boat Harbor.	Include in all Build Alternatives
I-190/Tifft Street Arterial Multi-Purpose Trail: Elk to Tifft Street	Would establish new link from Seneca/Babcock neighborhood to Buffalo River and Tifft Street/Lake Erie (via existing/planned trails)	Include in all Build Alternatives
Transit Improvements		
Route 5 Bus Access/Safety Improvements	Would involve establishment of bus pull off locations and/or passenger staging areas along west side Route 5 WB between Ridge Road and South Buffalo Railroad Bridge to address NFTA safety issues in this segment.	Include in all Build Alternatives; actual locations would be coordinated during final design to address NFTA stops at that time.
Park and Ride Facilities	Would involve establishing a new NFTA park and ride between the current Athol Springs facility and Downtown Buffalo.	Based upon existing use at Athol Springs, not feasible at this time.
Union Ship Canal Minor Transit Center/Hub	Would involve establishing a location along an existing/planned road in the redevelopment area for a dedicated stop with enhanced passenger shelters/information to serve as a focal point for fixed-route service and as a staging area for future local circulator bus service along the entire Route 5 corridor.	Include in all Build Alternatives; actual location would be coordinated during final design.
"Snow Bus" Service	Would establish modified bus service in conjunction with snowfall emergencies that result in the closing of Route 5, and would include a route linking with outlying parking areas (e.g., Hamburg Fairgrounds, Erie Community College South, etc.) along designated roads such as US Route 62 (South Park Avenue).	Would not require road improvements under STC/BOH Project Alternatives; could be advanced separately.
Southtowns Light Rail Extension	Would involve extension of fixed guide rail (light rail or dedicated busway) from Downtown Buffalo to Southtowns. Was eliminated from consideration as part of this project in NYSDOT February 2001 *Statement of Purpose*.	Not feasible in the context of the current STC/BOH Project Objectives; could be advanced separately.
Water Taxi Service	Would establish water taxi service along the Lake Erie waterfront, linking with Downtown Buffalo.	Would not require road improvements under STC/BOH Project Alternatives; could be advanced separately.

3.2.5 Removal of the Buffalo Skyway Bridge as Part of Conceptual Road Alignments

During the Public Scoping Process, several comments from elected officials, stakeholders and the general public included a desire to examine removal of the Skyway Bridge. One of the major objectives of NYSDOT's February 2001 *Statement of Purpose* involved reformulating the STC/BOH project to focus on "do-able" improvements along the Route 5 to make the corridor more compatible with emerging and planned land uses along the Buffalo Outer Harbor.

Major construction projects evaluated in the 1998 MIS for the STC/BOH Project, such as a new tunnel between the Outer Harbor and Downtown Buffalo to replace the Skyway, were considered not feasible at this time, particularly in the context of regional prioritization of federally-funded transportation projects to support economic development objectives. The MIS estimated that the construction costs of a new tunnel to replace the Skyway (with the same level of connectivity between the Outer Harbor and I-190) would range from $200 and $250 Million, with annual maintenance costs totaling roughly $3 Million. In addition, the MIS outlined that the design of such a facility would present significant engineering challenges to achieving connections with the interstate system in Downtown Buffalo. This is because of horizontal constraints in identifying a reasonable right-of-way given the presence of underground rail facilities passing through Downtown, as well as vertical constraints to transitioning a tunnel facility to I-190, which is on an elevated alignment.

The cost and design challenges of a new tunnel should be compared with costs already expended to construct and maintain the Skyway, as well as projected costs over its useful life. This included an original cost of $140 Million (converted to 2003 dollars) to construct and maintain the structure, with rehabilitation costs over the next 35 to 45 years projected to be $60 Million, or total annualized cost of $1.5 to 1.7 Million per year over the bridge's useful life. Thus, it was considered imprudent to attempt to advance a tunnel alternative at that time, given other access issues that could be reasonably addressed in the Route 5 corridor in the foreseeable future.

Other comments received during the course of the project's public involvement activities indicated that the existing highway and local road system could adequately absorb the removal of the Skyway Bridge without replacement. In order to assess this issue, the elements of the Boulevard alignment were modeled without the Skyway as a transportation link using the GBNRTC's regional travel demand model (see Section 3.2.7). This analysis indicated that removal of the Skyway would significantly reduce the number of daily trips along Route 5 because north of Ohio Street it would provide only local land access. Conversely, daily traffic would significantly increase along Ohio Street and interstate corridors (I-90 and I-190). This would result in congested conditions along Ohio Street as well as on every segment of I-90 and I-190 in the project area. Thus it was determined that removal of the Skyway without in-kind replacement of a high-volume connection over or under the Buffalo River was not feasible.

In response to comments received concerning the operational characteristics and future costs associated with maintaining the Skyway, the Department of Transportation will undertake a study of the Skyway operations and anticipated future costs for the remaining expected useful

life of this bridge and include an assessment of the structural condition of the bridge. The study upon completion will be used as a tool for Long Term Planning and resource allocation.

3.2.6 Inner/Outer Harbor Local Bridge Connection as Part of Conceptual Road Alignments

Several comments received during the Public Scoping Process indicated a desire to construct a new local bridge connection between the Buffalo Outer and Inner Harbor areas as part of the STC/BOH Project. Potential alignments for such a connection were considered as part of the early screening of the 1998 MIS for the project. It was determined that such a connection, while providing a useful connection between Downtown Buffalo and the Outer Harbor, would not provide net new regional transportation benefits because it would replicate access already provided as part of both the regional highway and local road network. Therefore, the MIS recommended that such a bridge connection would be better advanced by the City of Buffalo as a separate project.

NYSDOT programmed funds in 1999 for the City to conduct a feasibility study for a new moveable bridge connecting Downtown Buffalo with the Outer Harbor (City of Buffalo 1999). The study evaluated four locations for such a bridge connections:

- Between the foot of Erie Street and Fuhrmann Boulevard;
- Between the foot of Commercial (Pearl) Street and Fuhrmann Boulevard;
- Between the foot of Main Street and Fuhrmann Boulevard (i.e., passing under the Buffalo Skyway); and
- Through the reconstruction of the Michigan Avenue Bridge passing over the City Ship Canal in the vicinity of the General Mills Plant.

Each of the alignments presented significant issues in construction and anticipated impacts. The Commercial Street and Main Street alignments were essentially eliminated from consideration because of the planned development of the Erie Canal Harbor and complexities associated with the interface of a new bridge with the NFTA light rail system along Main Street. The Erie Street alignment was considered most reasonable to construct; however faced public opposition because it was perceived to potentially impede recreational boating (i.e., sailboat) access for marinas along the Buffalo River. Similar issues exist to a lesser degree at the Michigan Avenue site. In addition, the re-establishment of a bridge in this location would potentially affect operations at the General Mills Plant, given adjustments made in their production and shipping procedures that have evolved since the 1960s when the former bridge in this location was demolished. Currently, the project is on indefinite hold pending resolution of these issues.

In the context of the STC/BOH Project, while a new bridge connection could enhance local road access across the Buffalo River, it would have independent utility from project components

currently being advanced into preliminary engineering. Thus, while not included in the project, it was determined that all of the proposed Build Alternatives would be formulated to preserve existing access for such a connection.

3.2.7 Traffic Analysis of Conceptual Road Alignments

Traffic analyses for the 2030 design year were conducted for each of the conceptual alignments using the GBNRTC travel demand model. These forecasts were then used for level of service (LOS) analyses in accordance with procedures set forth in the Transportation Research Board's *Highway Capacity Manual* (see also **Appendix C**). Initially, five scenarios were analyzed:

- **Scenario 1**: Implementation of the new I-190/Tifft Street Arterial only with limited improvements at the Seneca Street Interchange;
- **Scenario 2**: Implementation of the new I-190/Tifft Street Arterial with a new free-flow interchange at Seneca Street (note: this was eliminated from consideration as discussed in Section 3.2.3);
- **Scenario 3**: Replacement of Route 5 and Fuhrmann Boulevard with a single, six-lane boulevard configuration with at-grade signalized intersections;
- **Scenario 4**: Implementation of a hybrid configuration with Route 5 and Fuhrmann Boulevard (i.e., two-way on the west side of Route 5) as separate facilities north of Ohio Street, then transitioning to a boulevard configuration; and
- **Scenario 5**: Implementation of an improvement configuration – maintaining Route 5 and a two-way Fuhrmann Boulevard (on the west side of Route 5) and as separate facilities with consolidation of interchanges at key locations along the corridor.

These analyses indicated that Scenario 1 (New Arterial Only) resulted in no significantly different traffic impacts than the 2030 Null Alternative, while Scenario 5 (Modified Improvement Alternative) results were found to be generally consistent with the Null Alternative (some segments exhibiting minor decreases or increases). In order to determine the relationship of constructing the new arterial with other Route 5 configurations being considered, two other scenarios were modeled and analyzed:

- **Scenario 6**: Implementation of a boulevard configuration (Scenario 3) together with a new I-190/Tifft Street Arterial; and
- **Scenario 7:** Implementation of a hybrid configuration (Scenario 4) together with a new I-190/Tifft Street Arterial.

These analyses indicated a similar lack of relationship between the new arterial and Route 5 configurations; although there were slight variations in projected 2030 traffic levels on roadways

in the project area. Thus from purely a traffic perspective, it was demonstrated that the effects of the I-190/Tifft Street Arterial would essentially be independent from changes to the Route 5 corridor under each of the conceptual alignments. However, while this analysis demonstrated the independent utility of the new arterial, several local agency stakeholders indicated a desire to include the new roadway under each of the feasible Build Alternatives, given its ability to both open access for redevelopment of the LTV/Republic Steel site and to serve as a local road alternate to access the I-90 corridor (i.e., via I-190) for goods movement in the Route 5 corridor. Further, the new arterial could serve as an alternate relief route during snow emergencies when the Skyway is closed.

Finally, a traffic analysis was also conducted for a **Scenario 8**, which involved the same components of Scenario 3, with the elimination of the Buffalo Skyway Bridge connection to Downtown Buffalo and I-190. This was conducted to analyze the future traffic implications of removal of the Skyway without replacement of a similar high-volume crossing with equal connectivity to the interstate system (e.g., bridge connecting to I-190 in a different location, tunnel in the Skyway location, etc.). This indicated that significant congestion issues on both local road and highway segments would result from implementing such an action.

Tables 3.2-3 and 3.2-4 present summaries of the 2030 traffic scenarios modeled, with the former presenting general AADT implications compared to the Null, and the latter identifying projected congested intersections and segments.

Table 3.2-3 2030 Volume Impact Summary[1]

Road		Null Alternative: 2030 AADT and Projected Annual Increase from 2001	Relationship of Scenario Impacts to 2030 Null Conditions						
			Scenario 1: New I-190/Tifft Street Arterial Only	Scenario 3: Route 5 Boulevard	Scenario 4: Route 5 Hybrid	Scenario 5: Route 5 Modified Improvement	Scenario 6: Route 5 Boulevard with New Arterial	Scenario 7: Route 5 Hybrid with New Arterial	Scenario 8: Route 5 Boulevard, New Arterial, Removal of Skyway
Route 5		53,000 = 1.0%/year	Same as Null	11,000 decrease = 42,000	7,000 decrease = 46,000	2,000 decrease = 51,000	11,000 decrease = 42,000	5,000 decrease = 48,000	20,000 to 27,000 decrease = 33,000 to 26,000
Ohio Street		10,000 = 1.0%/year	Same as Null	1,000 increase = 11,000	4,000 increase = 14,000	4,000 increase = 14,000	1,000 increase = 11,000	4,000 increase = 14,000	15,000 increase = 25,000
South Park Avenue		6,000 – 8,000 = 0.3%/year	Same as Null	Same as Null	Same as Null	Same as Null	Same as Null	Same as Null	Range: 8,000-9,000
I-190	I-90 to Bailey/Seneca	77,000 = 0.6%/year	Same as Null	9,000 increase = 86,000	5,000 increase = 82,000	2,000 increase = 79,000	10,000 increase = 87,000	6,000 increase = 83,000	20,000 increase = 97,000
	Bailey/Seneca to Hamburg Street	86,000 = 0.4%/yr	Same as Null	10,000 increase = 96,000	6,000 increase = 92,000	2,000 increase = 88,000	10,000 increase = 96,000	5,000 increase = 91,000	19,000 increase = 105,000

Table 3.2-3 2030 Volume Impact Summary[1]

Road		Null Alternative: 2030 AADT and Projected Annual Increase from 2001	Relationship of Scenario Impacts to 2030 Null Conditions						
			Scenario 1: New I-190/Tifft Street Arterial Only	Scenario 3: Route 5 Boulevard	Scenario 4: Route 5 Hybrid	Scenario 5: Route 5 Modified Improvement	Scenario 6: Route 5 Boulevard with New Arterial	Scenario 7: Route 5 Hybrid with New Arterial	Scenario 8: Route 5 Boulevard, New Arterial, Removal of Skyway
I-90	I-190 to Route 400	153,000 = 1.3%/year	Same as Null	10,000 increase = 163,000	5,000 increase = 158,000	Same as Null	7,000 increase = 160,000	3,000 increase = 156,000	18,000 increase = 171,000
	Route 400 to Ridge Road	123,000 = 1.1%/year	Same as Null	11,000 increase = 134,000	6,000 increase = 129,000	1,000 increase = 124,000	9,000 increase = 132,000	4,000 increase = 127,000	19,000 increase = 142,000
	Ridge Road to Route 179	65,000 = 1.1%/year	Same as Null	9,000 increase = 74,000	5,000 increase = 70,000	Same as Null	7,000 increase = 72,000	3,000 increase = 68,000	13,000 increase = 78,000
	Route 179 to Route 75	55,000 = 1.4%/year	Same as Null	2,000 increase = 57,000	Same as Null	Same as Null	2,000 increase = 57,000	Same as Null	7,000 increase = 62,000
Milestrip Road (Route 179)	Abbott to McKinley	21,000 = 0.7%/year	Same as Null	3,000 decrease = 18,000	1,000 decrease = 20,000		3,000 decrease = 18,000	1,000 decrease = 20,000	4,000 decrease = 17,000
	I-90 to South Park	37,000 = 1.4%/year	Same as Null	10,000 decrease = 27,000	7,000 decrease = 30,000	3,000 decrease = 34,000	10,000 decrease = 27,000	8,000 decrease = 29,000	13,000 decrease = 24,000
	Railroad to Route 5	27,000 = 1.0%/year	Same as Null	10,000 decrease = 19,000	7,000 decrease = 22,000	3,000 decrease = 24,000	10,000 decrease = 19,000	7,000 decrease = 22,000	10,000 decrease = 19,000
I-190/Tifft Street Arterial		N/A	Range: 5,000-12,000	N/A	N/A	N/A	Range: 6,000-11,000	Range: 5,000-11,000	Range: 7,000-13,000

Notes:
[1] AADT Estimates rounded to nearest thousand to present overall implications of each scenario. Detailed projections presented in **Appendix C**.

Table 3.2-4 2030 Level of Service (LOS) Summary

Intersection/Road Segment		Null	Scenario 1: New I-190/Tifft Street Arterial Only	Scenario 3: Route 5 Boulevard	Scenario 4: Route 5 Hybrid	Scenario 5: Route 5 Modified Improvement	Scenario 6: Route 5 Boulevard with New Arterial	Scenario 7: Route 5 Hybrid with New Arterial	Scenario 8: Route 5 Boulevard, New Arterial, Removal of Skyway
2030 Projection of Congested Intersections (LOS E or F)									
Route 5/Lake Street		●	●						
Route 5/Madison Street		●	●						
Route 5/Dona Street		●	●						
Route 5/O'Dell Street		●	●						
Route 5/Ridge Road						●			
South Park Avenue/Michigan Avenue		●	●	●	●	●	●	●	●
Michigan Avenue/Ohio Street		●	●	●	●	●	●	●	●
2030 Projection of Congested Expressway Segments (LOS D, E or F)									
Route 5	Tifft Street to Ohio Street					●			
	Ohio to I-190	●	●			●			
I-190	I-90 to Ogden Street	●	●	●	●	●	●	●	●
	Ogden Street to Clinton Street	●	●	●	●	●	●	●	●
	Clinton Street to Bailey Avenue	●	●	●	●	●	●	●	●
	Bailey Avenue to Smith Street	●	●	●	●	●	●	●	●
	Smith Street to Hamburg Street/Louisiana	●	●	●	●	●	●	●	●
	Hamburg Street/Louisiana to Elm/Oak	●	●	●	●	●	●	●	●
	Elm/Oak to Route 5	●		●	●	●	●	●	●
I-90	Ridge Road to Route 400	●	●	●	●	●	●	●	●
	Route 400 to I-190	●	●	●	●	●	●	●	●

Denotes LOS D or better

3.3 Feasible Alternatives

This section presents feasible alternatives identified for the STC/BOH Project. These are based upon conceptual alternatives summarized in Section 3.2 and fully presented in **Appendix M: Alternative Screening**. These were assessed and further refined as part of public involvement activities, including workshops with the project steering committee and citizen's advisory committee, as well as through general public information meetings. It should be noted that figures depicting elements of each feasible alternative are diagrammatic in nature; full preliminary engineering drawings of the proposed alignments for each of the Build Alternatives are presented in **Appendix A: Plans and Profiles**.

3.3.1 Description of Feasible Alternatives

3.3.1.1 Null Alternative

The Null Alternative would involve implementing only currently planned and committed transportation projects within the project area. For purposes of this FR/FEIS, the Null Alternative would include only those improvements currently on the regional TIP and other programmed projects being advanced entirely with state, county, or local funds (see Section 3.2.1).

3.3.1.2 Modified Improvement Alternative (Preferred Alternative)

This alternative would involve making improvements to the existing Route 5/Fuhrmann Boulevard complex while maintaining the two roads as separate facilities. Under the Modified Improvement Alternative, Route 5 would remain as a four-lane highway to serve commuter- and through-traffic (see **Figures 3.3-1 and 3.3-2**)[2]. This alternative reconfigures the NY Route 5/Fuhrmann Boulevard complex along the Buffalo Outer Harbor into a system designed to be more compatible with the proposed land uses included in local plans. The Modified Improvement Alternative consists of:

- A new diamond interchange constructed just south of the southern terminus of BIN 1001579 (Skyway) to improve local access to a reconstructed Fuhrmann Boulevard and the NFTA Outer Harbor lands.
- Replacement of BIN's 1001559, 1001549, 1001539, with more aesthetically sensitive structures and the removal of BIN's 1001569 and 1074270 on NY Route 5 and the removal of BIN 2260780 on Fuhrmann Boulevard.
- The original proposal to lower the elevation of NY Route 5 will not be included in the preferred alternative. Public comments related to the NY Route 5 elevation indicated a desire to retain the embankment section to lessen the effects of snow drifting on NY Route 5, reduce the frequency of vehicular/animal accidents and to reduce project costs. The NY

[2] Typical sections and profiles for the Modified Improvement Alternative are presented in **Appendix A: Plans and Profiles**

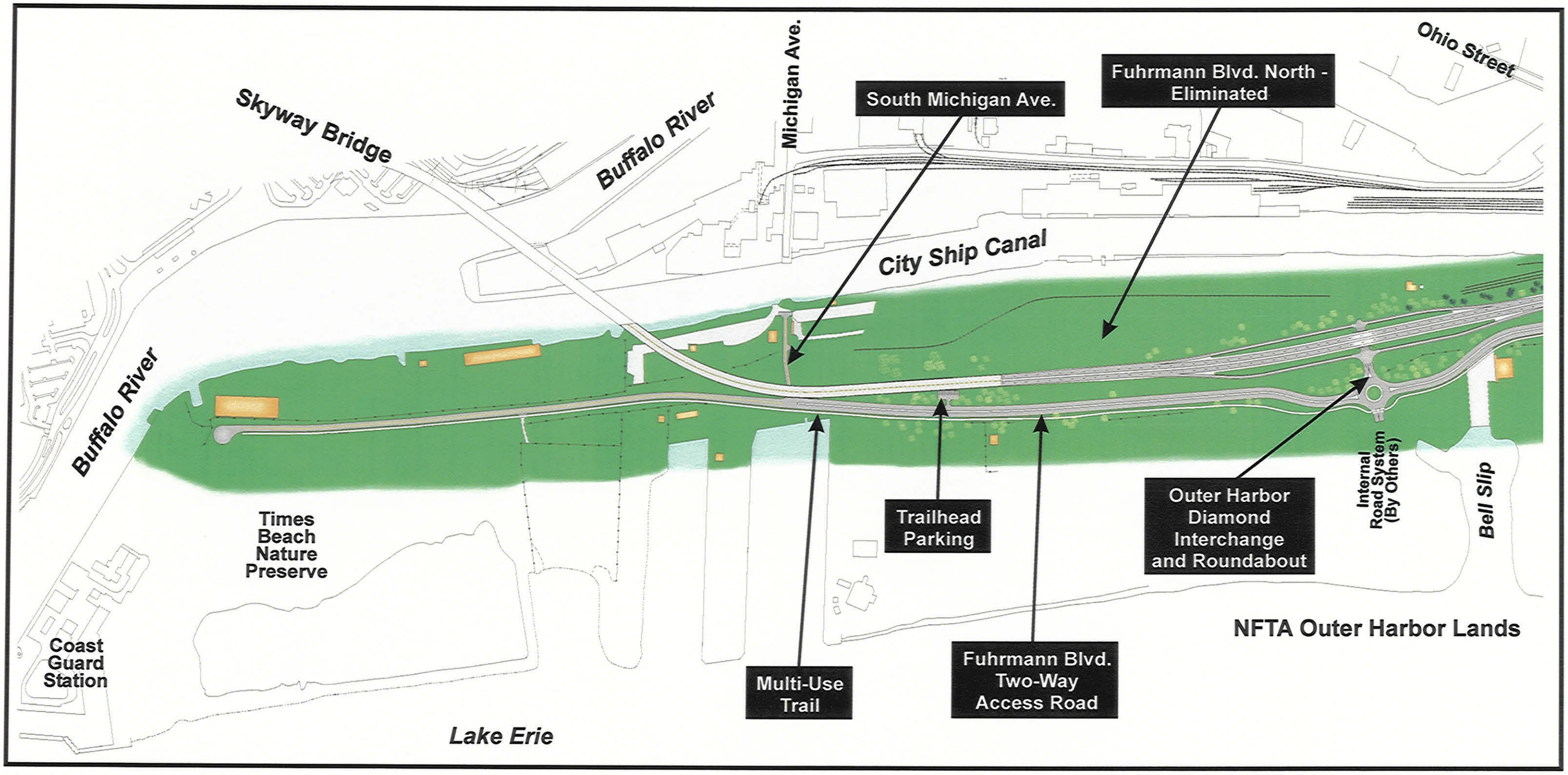

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Figure 3.3-1
Modified Improvement Alternative - North of Ohio Street

Southtowns Connector/Buffalo Outer Harbor Project

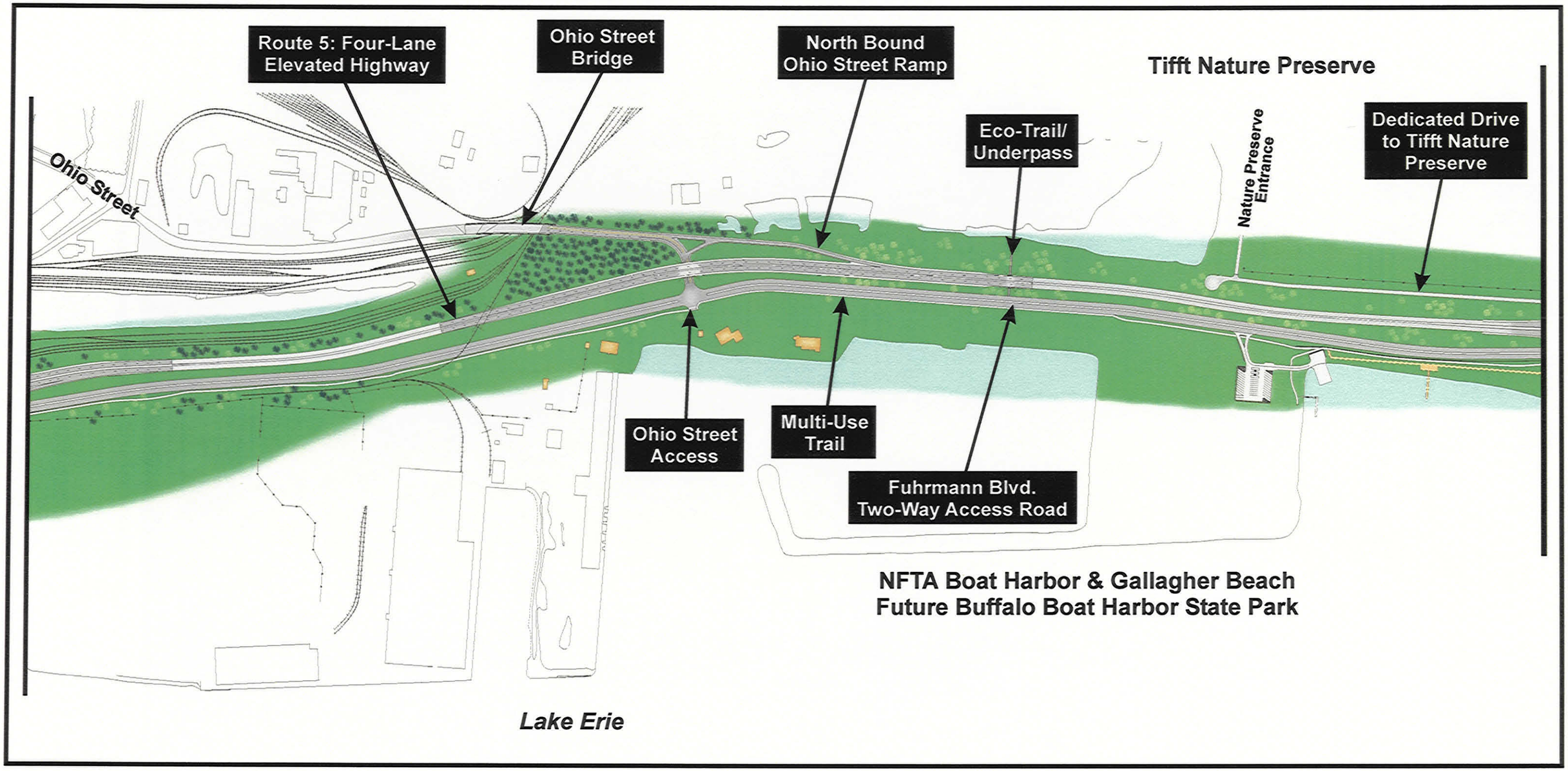

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Figure 3.3-1 (continued)
Modified Improvement Alternative - North of Tifft Street

Southtowns Connector/Buffalo Outer Harbor Project

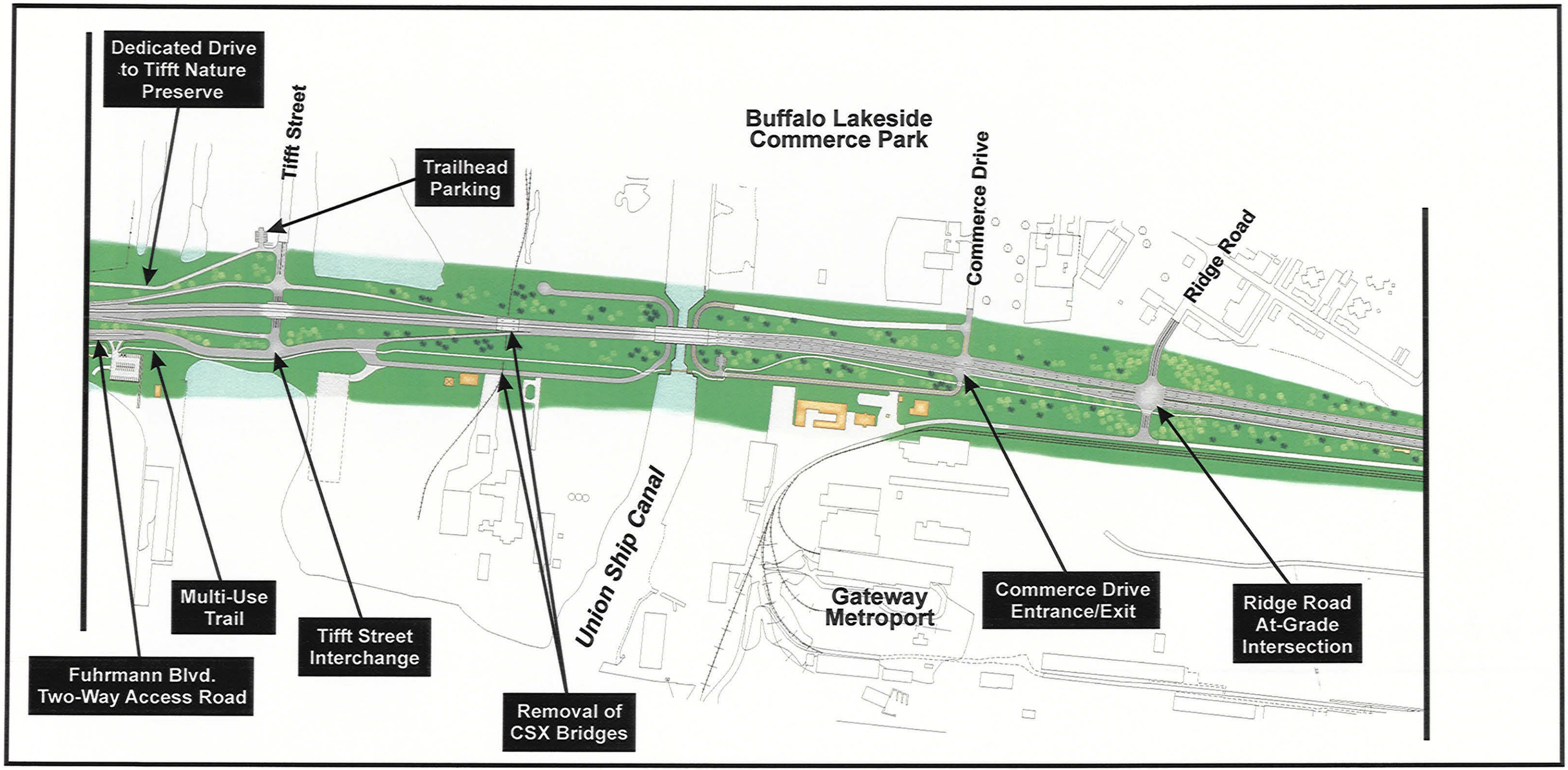

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Figure 3.3-1 (continued)
Modified Improvement Alternative - North of Ridge Road

Southtowns Connector/Buffalo Outer Harbor Project

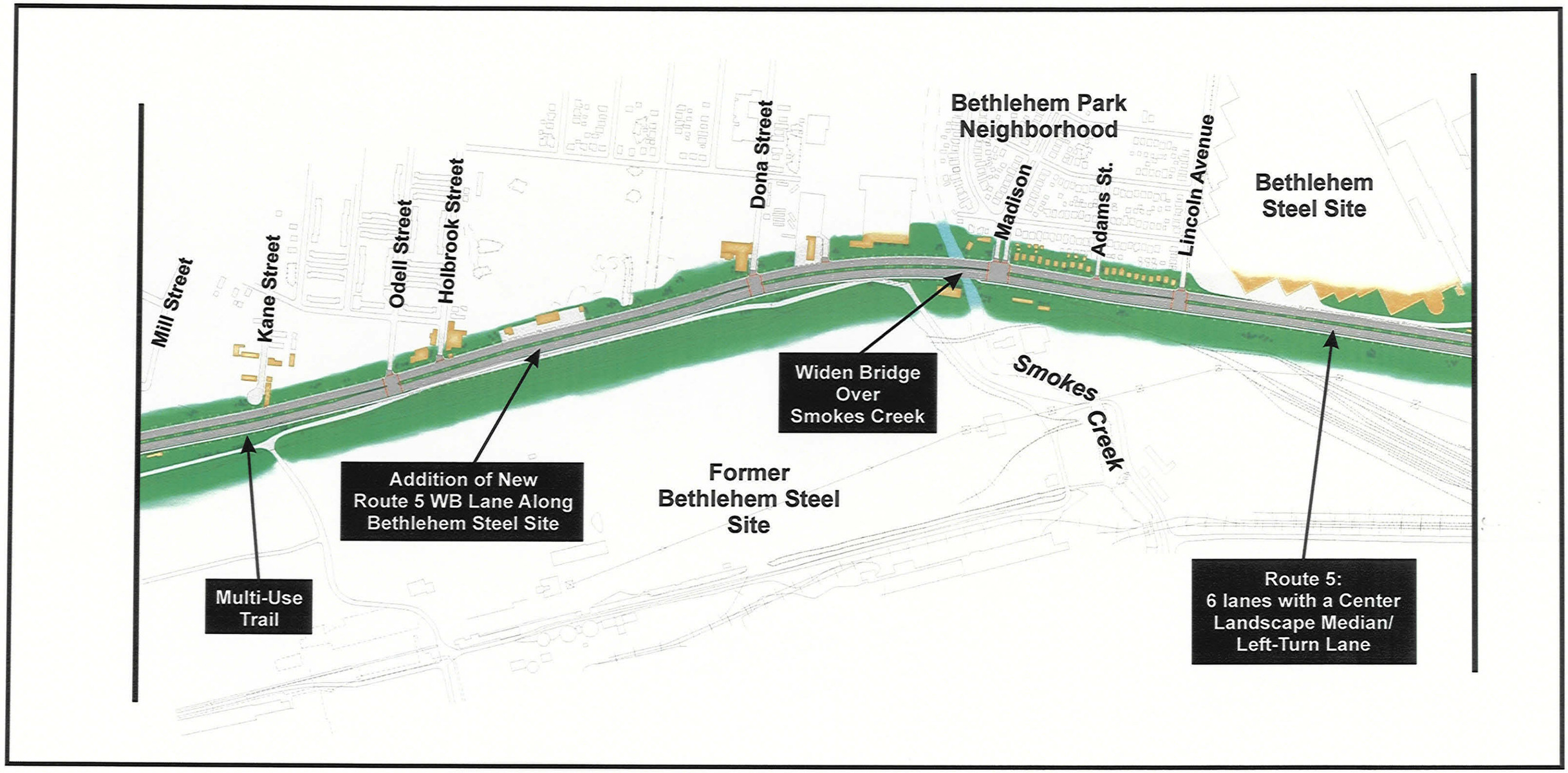

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Figure 3.3-1 (continued)
Modified Improvement Alternative - North of Town of Hamburg Line

Southtowns Connector/Buffalo Outer Harbor Project

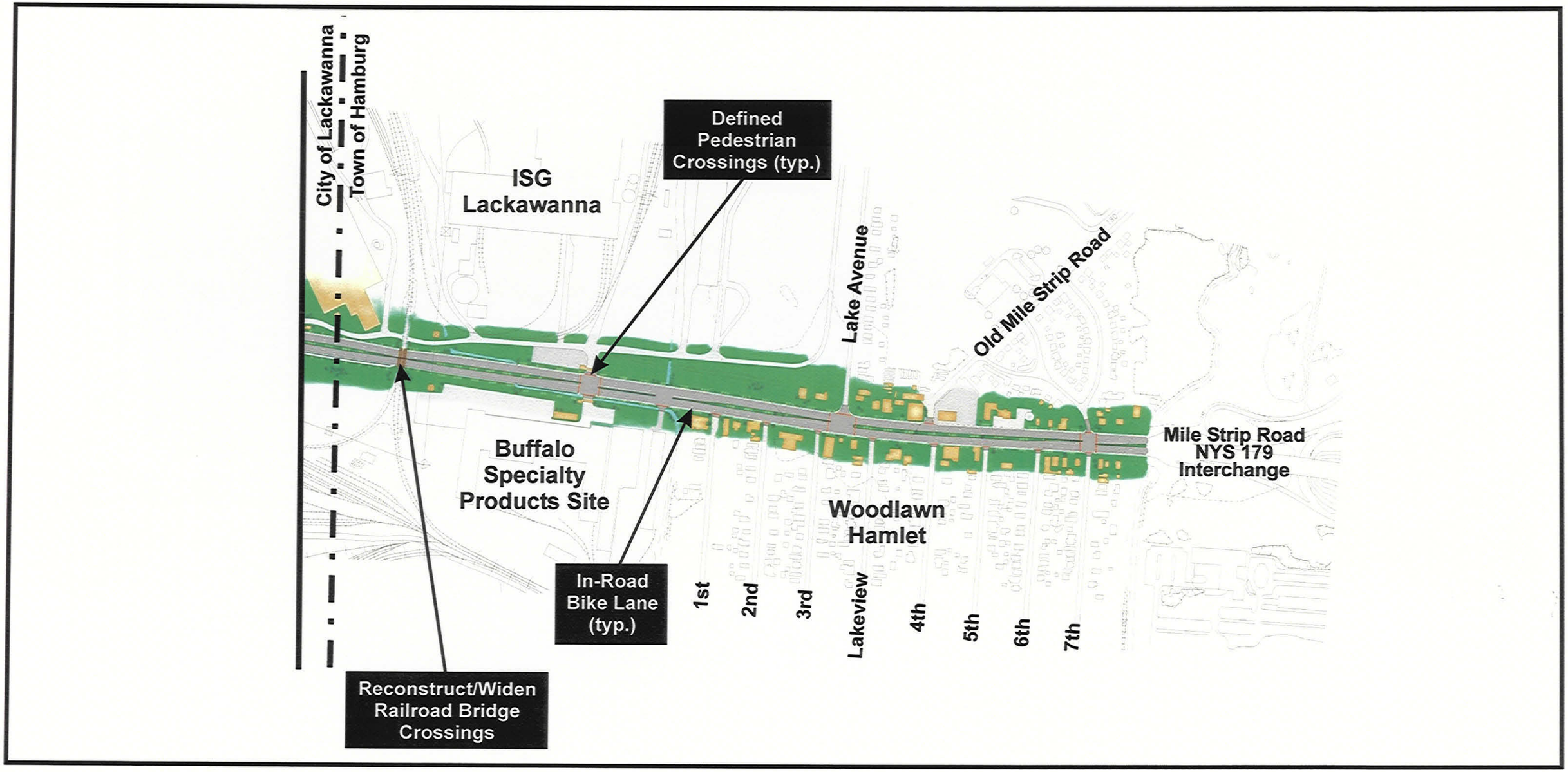

Figure 3.3-1 (continued)
Modified Improvement Alternative - North of NYS 179

Southtowns Connector/Buffalo Outer Harbor Project

Figure 3.3-2a. Modified Improvement Alternative Aerial

EXISTING CONDITION Route 5 Corridor just north of Ohio Street looking north -
Modified Improvement Alternative

Consolidation of slip ramps into a new diamond interchange along Route 5 would eliminate Furhmann northbound and Service Road 'D'. Furhmann Boulevard is upgraded to provide 2-way traffic via a four-lane roadway with a dividing median.

PROPOSED IMPROVEMENT - MODIFIED IMPROVEMENT ALTERNATIVE

Figure 3.3-2b. Modified Improvement Alternative
Outer Harbor Diamond Interchange

Route 5 embankment that currently exists shall remain from BIN 1001559 ("Beachline") to BIN 1001579 (Tifft Street) as currently exists.

- The original proposal to construct a pedestrian structure over NY Route 5 has not been included in the preferred alternative. The proposed pedestrian structure has been replaced with a more cost effective pedestrian/eco-sensitive underpass. This structure will be aesthetically sensitive and allow for direct access to Tifft Nature Preserve from the Small Boat Harbor and connect the Multi-use paths that exist now or those that will be constructed. This structure, along with BIN 1001579 (Tifft Street) and BIN 1001549 (Ohio Street) shall also provide a means of travel for small and median size animals to limit vehicle-animal collisions.
- Reconstruction of Fuhrmann Boulevard into a two way roadway on the western side of NY Route 5 from the Union Ship Canal to the U.S. Coast Guard Station.

The reconstructed Fuhrmann Boulevard will include the installation of sidewalks and/or multi-use paths along with architectural lighting, a new closed drainage system, landscaping, signage and striping from the Union Ship Canal to the U.S. Coast Guard Station.

The recommended roadway section of Fuhrman Boulevard shall consist of:

- Union Ship Canal to Tifft Street

  2 – 3.30 m (11 ft.) lanes (one lane in each direction)

- Tifft Street to Michigan Street

  4 – 3.30 m (11 ft.) lanes (two lanes in each direction) with a 2.40 m (8 ft.) median. A new roundabout at the new interchange cross road and Fuhrmann Boulevard is also proposed.

- Michigan Street to the U.S. Coast Guard Station

  3 – 3.30 m (11 ft.) lanes (one lane in each direction with a continuous two-way center left turn lane).

A new northbound slip exit ramp will be constructed from NY Route 5 to Ohio Street. Ohio Street will terminate at a "T" intersection with Fuhrmann Boulevard (on the western side of NY Route 5). The section of Fuhrmann Boulevard presently located to the east of NY Route 5 between Tifft Street and Ohio Street will be removed. A new entrance drive is will be constructed from Tifft Street to access the Tifft Nature Preserve. The Tifft Street Greenway will be reconstructed to compliment roadway reconstruction.

The existing Tifft Street ramp (Ramp "H") to southbound NY Route 5 is removed and replaced by a new slip ramp constructed south of Tifft to link Furhmann Boulevard southbound to NY Route 5 southbound. In addition, two ramps will be constructed north of Tifft Street to complete the Tifft Street/NY Route 5 interchange.

The existing bike/pedestrian path is reconstructed/maintained along Fuhrmann Boulevard (on western side of NY Route 5) to compliment roadway reconstruction.

3.3.1.3 Boulevard Alternative

This alternative would involve full reconstruction of the Route 5/Fuhrmann Boulevard complex to convert it into a single, six-lane boulevard to serve both through traffic and local access from the Skyway touchdown to Ridge Road (see **Figures 3.3-3 and 3.3-4**)[3]. This alignment would involve the use of a wide landscaped median to separate northbound/southbound lanes and lowering of the roadway's elevation to grade level. North of the Skyway, the road would connect to the remaining portion of Fuhrmann Boulevard; improvements would be implemented along this segment to provide access to Times Beach and the US Coast Guard Station.

Vehicular access to properties would be provided through curb cuts along the new boulevard, while bicycle/pedestrian access would be incorporated along the lakeside of the roadway. All grade separation at east-west roads would be eliminated and replaced with signalized intersections at:

- A single location along the NFTA Outer Harbor Lands, tying to an internal roadway accessing the interior of the property;
- Route 5 and Ohio Street;
- Route 5 and Tifft Street, accessing the NFTA Boat Harbor/Gallagher Beach area;
- Route 5 and Commerce Drive, accessing the Union Ship Canal Redevelopment Area; and
- Route 5 and Ridge Road.

Like the Modified Improvement Alternative, the Boulevard Alternative would include installations of various ITS improvements, including traffic signal coordination, surveillance cameras, and variable message signs along Route 5, Ohio Street, and the I-190/Tifft Street Arterial. It would also include a system of multi-purpose trails and a new pedestrian/bicycle bridge between Tifft Nature Preserve and the NFTA Boat Harbor/Gallagher Beach area.

The Boulevard Alternative would also involve reconstruction and/or widening of the Father Baker Bridge over the Union Ship Canal to accommodate six lanes and pedestrian/bicycle access, as well as reconstruction/widening of bridges crossing over existing rail lines in the corridor. A portion of Fuhrmann Boulevard from Tifft Street to Union Ship Canal would be maintained to facilitate access to Independent Cement property (which would be impeded from access given the location of the Father Baker Bridge).

From Ridge Road to Milestrip Road, improvements under the Boulevard Alternative would be the same as described for the Improvement Alternative. The Boulevard Alternative would also include a new transit center at the Union Ship Canal Redevelopment Area, as described under the Modified Improvement Alternative.

[3] Typical sections and profiles for the Boulevard Alternative are presented in **Appendix A: Plans and Profiles**

3.3.1.4 Hybrid Alternative

This Hybrid Alternative would involve a combination of approaches used in the Improvement and Boulevard Alternatives, with a transition point at Ohio Street (see **Figures 3.3-5 and 3.3-6**)[4]. From the Skyway Bridge to Ohio Street, the Hybrid Alternative would include an alignment similar to the Improvement Alternative – maintaining Route 5 and Fuhrmann Boulevard as separate facilities and converting Fuhrmann Boulevard to a continuous, two-way, two-lane roadway on the west side of Route 5 between the US Coast Guard Station and Ohio Street.

At Ohio Street, Fuhrman Boulevard and Route 5 would be consolidated to a six-lane, at-grade boulevard as described in Section 3.3.1.3, divided along a wide center landscape median with a continuous bicycle/pedestrian path and signalized intersections at:

- Route 5 and Tifft Street, accessing the NFTA Boat Harbor/Gallagher Beach area;
- Route 5 and Commerce Drive, accessing the Union Ship Canal Redevelopment Area; and
- Route 5 and Ridge Road.

From Ridge Road to Milestrip Road, improvements under the Hybrid Alternative would be the same as described for the Improvement Alternative. The Hybrid Alternative would also include a new transit center at the Union Ship Canal Redevelopment Area, the implementation of ITS features, and pedestrian/bicycle improvements as described under the Improvement and Boulevard Alternatives.

3.3.2 Project Components in All Build Alternatives

All three of the Build Alternatives identified above would all involve the following other road improvements in key locations within the STC/BOH project area.

The three build alternatives identified above involve a series of other road improvements in key locations within the STC/BOH Study Area, including the following.

- **NY Route 5 – Ridge Road to South Buffalo Railroad Bridge**. Passing through the Bethlehem Park section of the City of Lackawanna, this project component adds a new southbound lane to NY Route 5 along the former Bethlehem Steel site frontage to create a total of six travel lanes in this segment. The South Buffalo Railroad Bridge is reconstructed and widened to allow for this improvement. In addition, the existing center turn lane along this segment is converted to a landscaped median (with left turn lanes at key intersections) and streetscape improvements implemented to provide safe bicycle, pedestrian, and transit access (e.g., bicycle trail, sidewalks, transit shelters, bus curb cuts, etc.) (**see Figure 3.3-7**).
- **NY Route 5 - South Buffalo Railroad Bridge to NY Route 179 (Milestrip Road)** This project component incorporates streetscape and safety improvements along NY Route 5 as it passes through a community business district in the Woodlawn section of the Town of Hamburg. These improvements are similar to those proposed along NY Route 5

[4] Typical sections and profiles for the Hybrid Alternative are presented in **Appendix A: Plans and Profiles**

between Ridge Road and the South Buffalo Railroad Bridge with the exception of any road widening, given that this segment currently contains six travel lanes.

- **Ohio Street Improvements.** From Michigan Avenue to NY Route 5 through Buffalo's First Ward neighborhood, this project component reconstructs Ohio Street so that it provides better local access between downtown Buffalo and the Lake Erie waterfront (see **Figure 3.3-8**). The alignment includes three lanes (two travel lanes and a center turn lane) within the existing curb-to-curb width of the roadway and streetscape improvements to provide safe pedestrian, bicycle, and transit access. In addition, this project component includes construction of a segment of the Industrial Heritage Trail along the west side of Ohio Street and the east side of Ganson Street, including a sidewalk marked with commemorative medallions with locations for interpretive stations.
- **New I-190/Tifft Street Arterial.** This project component consists of construction of a new four-lane (or two-lane expandable to four-lane) arterial road connecting I-190 to Tifft Street, with signalized intersections at Seneca Street, Elk Street, and South Park Avenue (see **Figures 3.3-9 and 3.3-10**). The alignment of the new road consists of construction of new on/off ramps at the existing Seneca Street interchange on I-190 and it follows a former railroad right-of-way to a new fixed bridge over the Buffalo River beyond the river's navigable portion for commercial vessels. The alignment passes through the eastern portion of the former LTV/Republic Steel site. In addition, a new bicycle/pedestrian trail is constructed along the full length of the alignment.

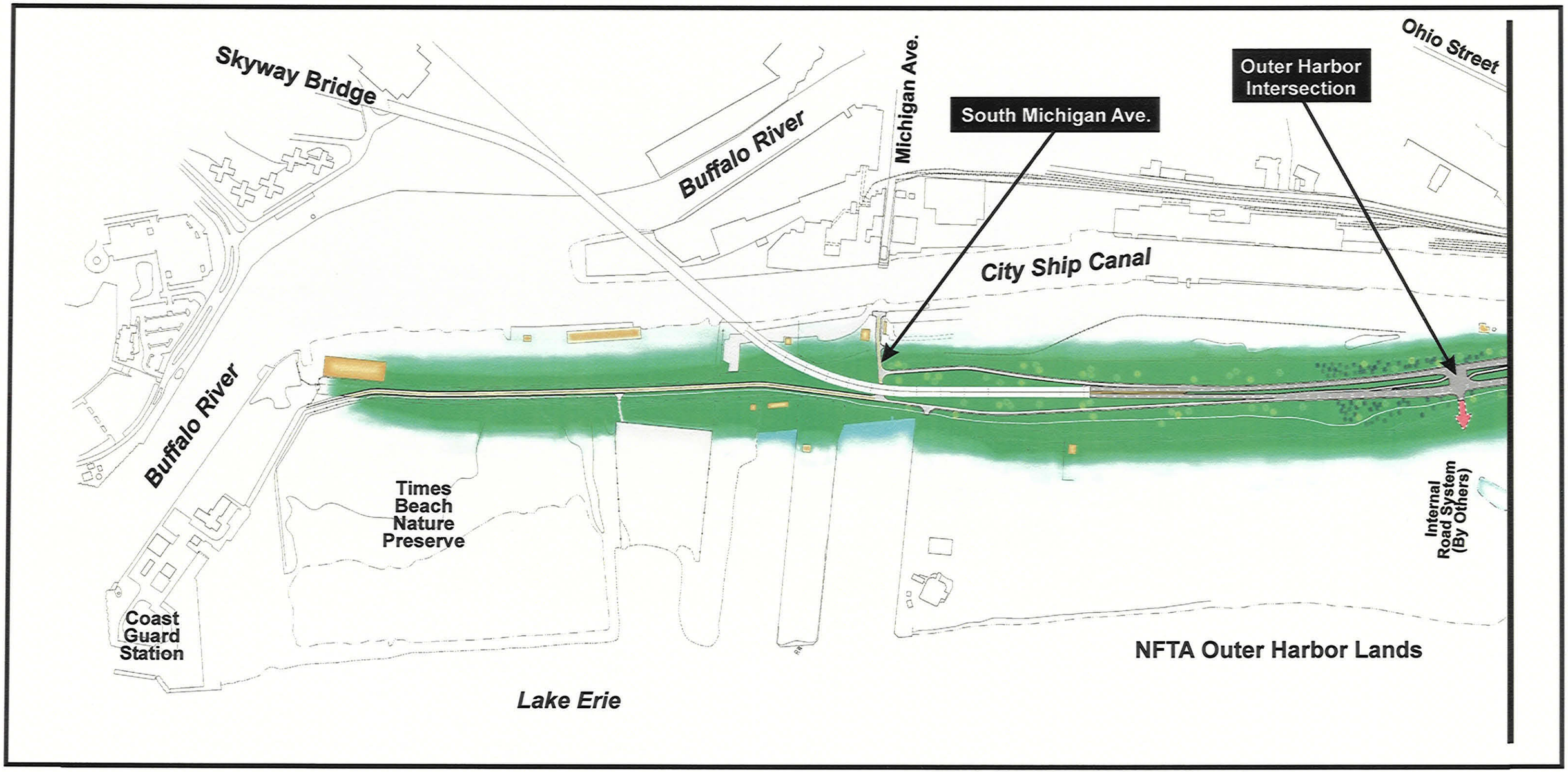

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Figure 3.3-3
Boulevard Alternative -
North of Ohio Street

Southtowns Connector/Buffalo Outer Harbor Project

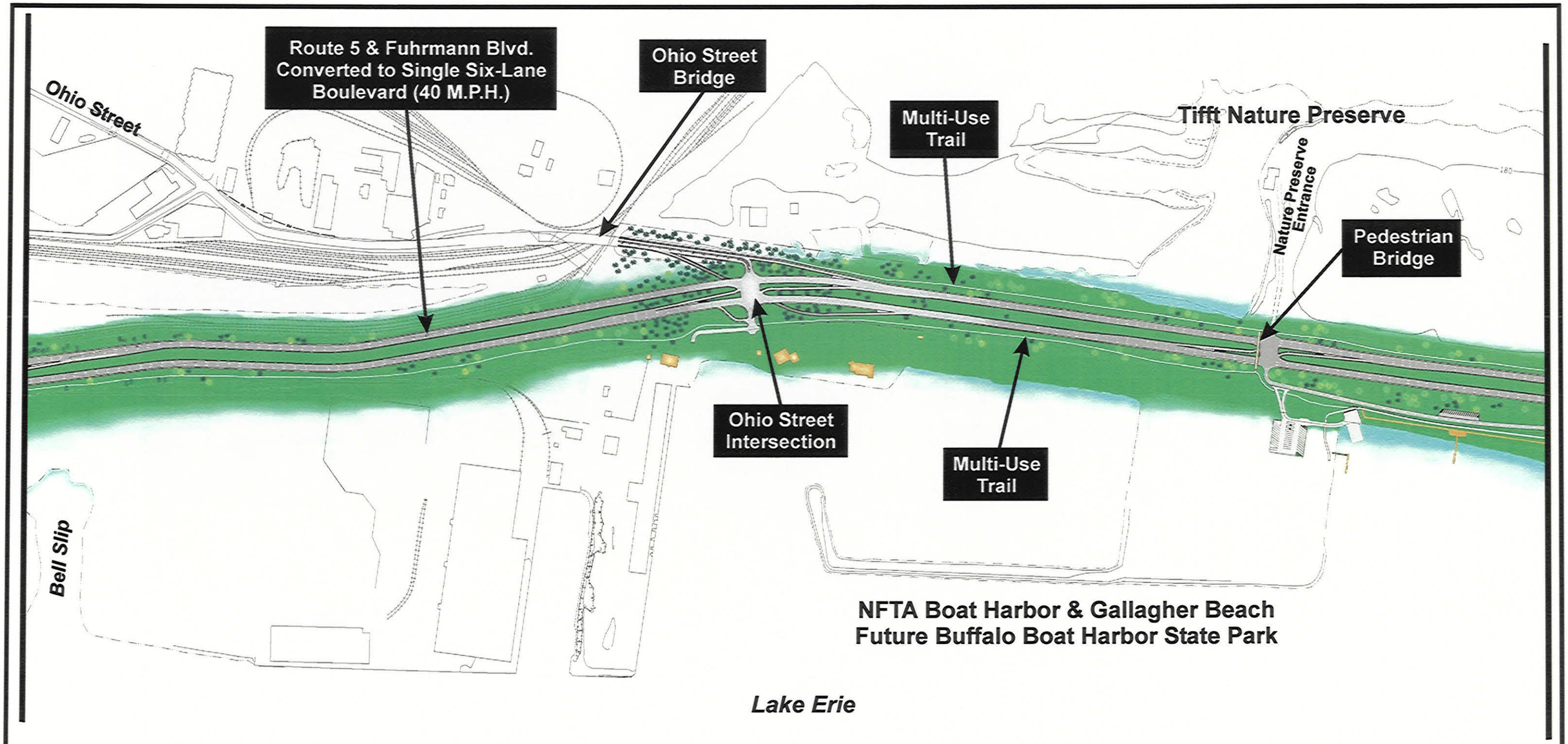

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Figure 3.3-3 (continued)
Boulevard Alternative -
North of Tifft Street

Southtowns Connector/Buffalo Outer Harbor Project

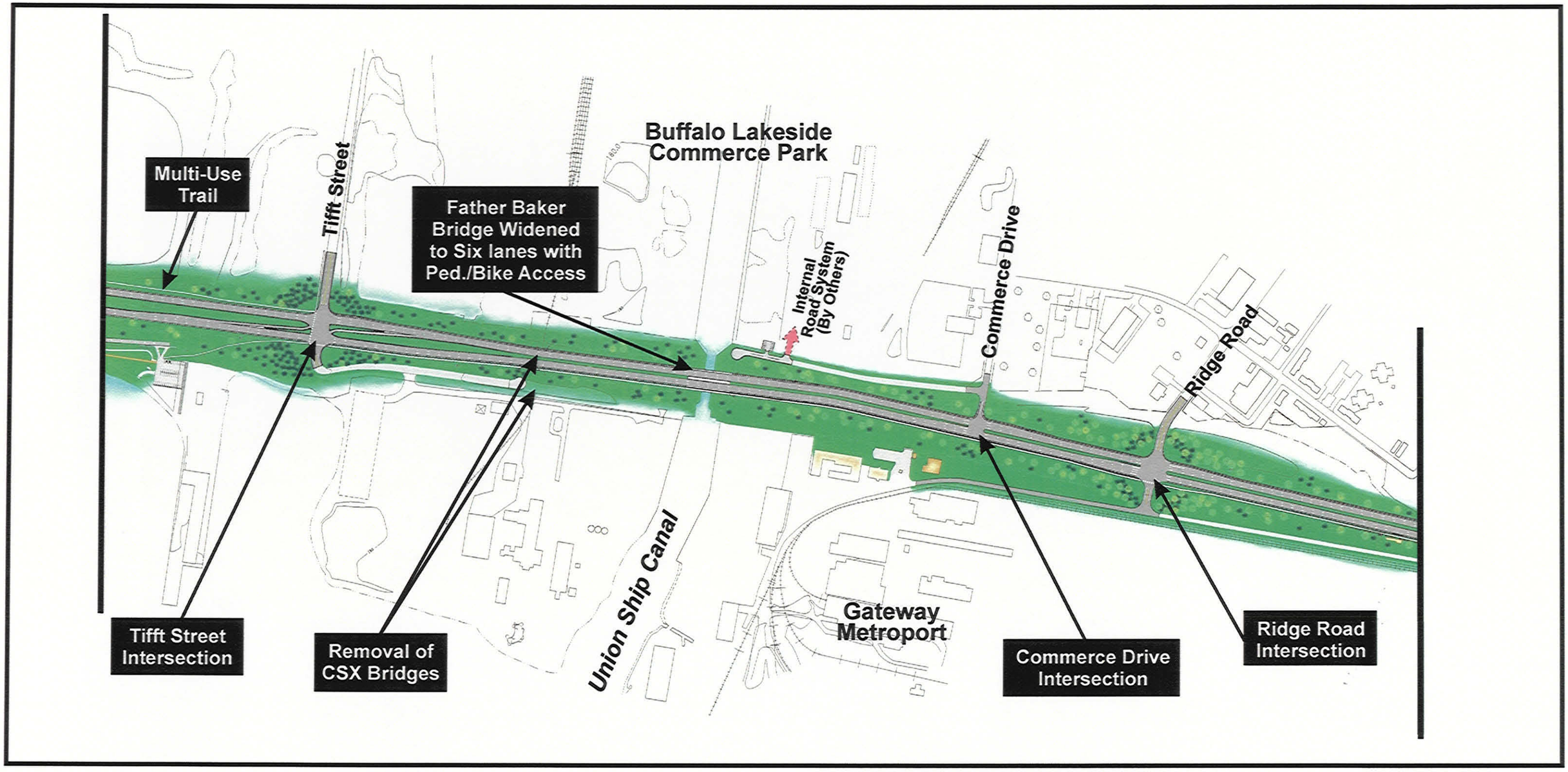

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Figure 3.3-3 (continued)
Boulevard Alternative -
North of Ridge Road

Southtowns Connector/Buffalo Outer Harbor Project

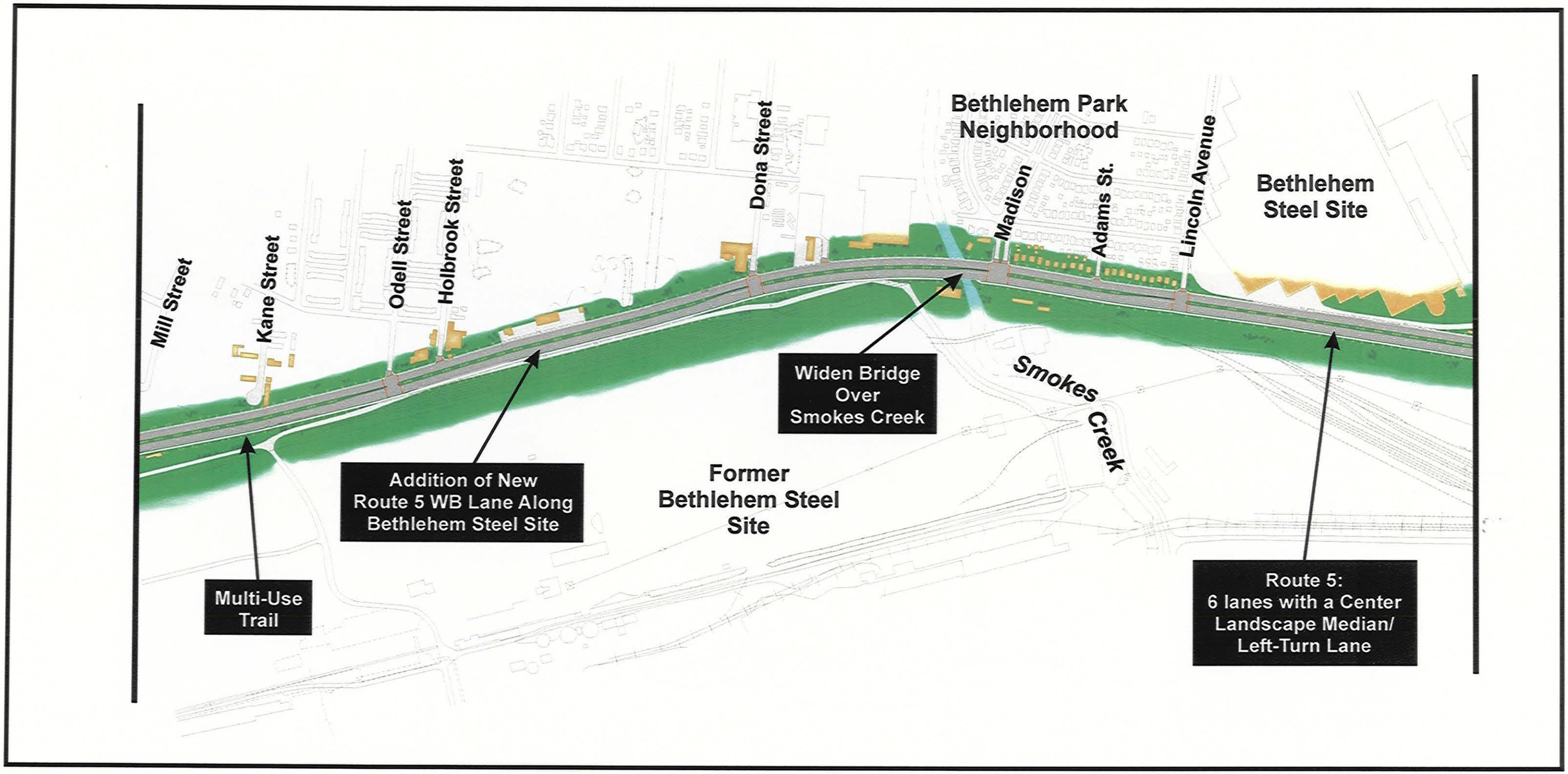

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Figure 3.3-3 (continued)
Boulevard Alternative -
North of Town of Hamburg Line

Southtowns Connector/Buffalo Outer Harbor Project

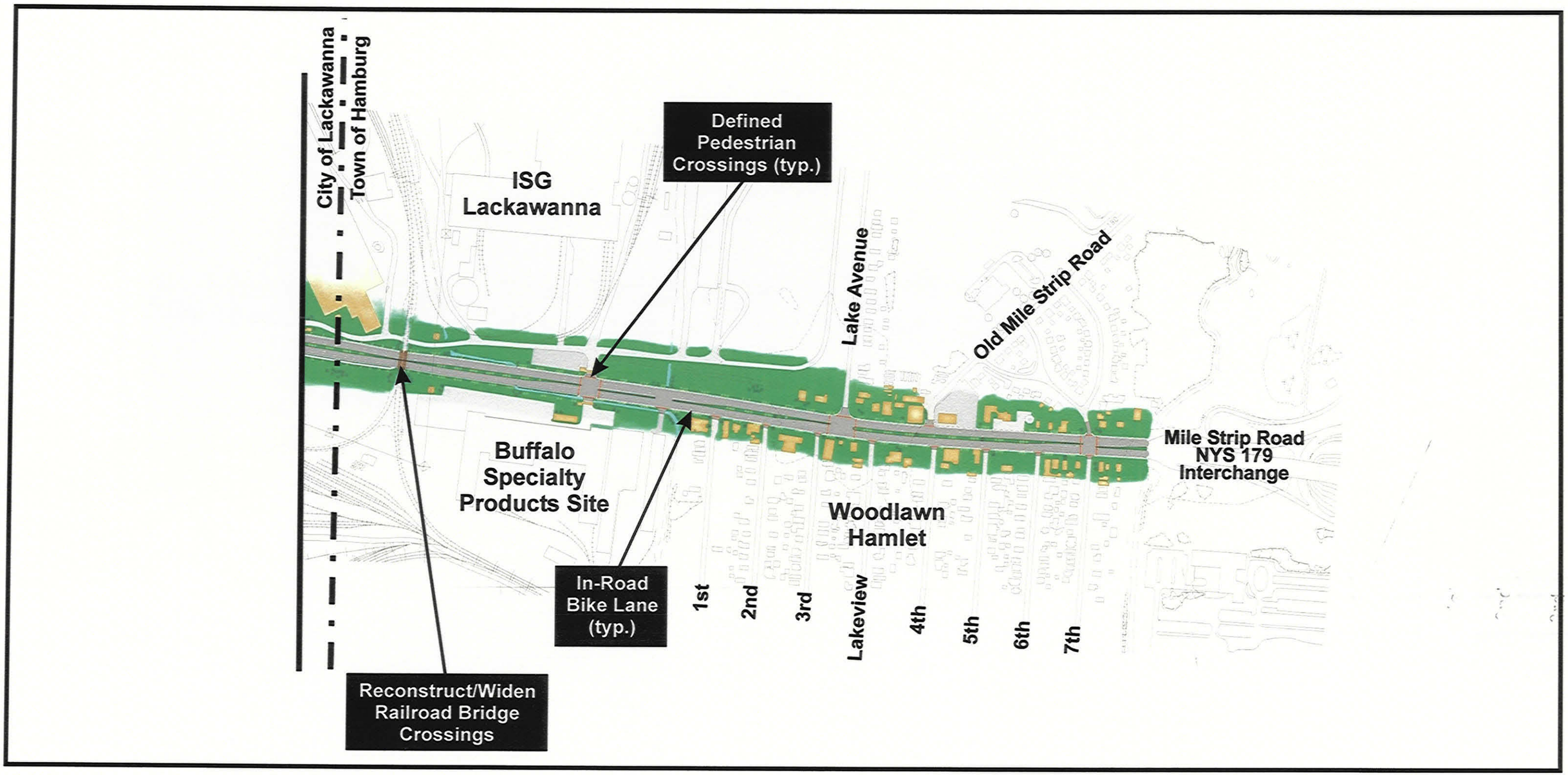

Figure 3.3-3 (continued)
Boulevard Alternative -
North of NYS 179

Southtowns Connector/Buffalo Outer Harbor Project

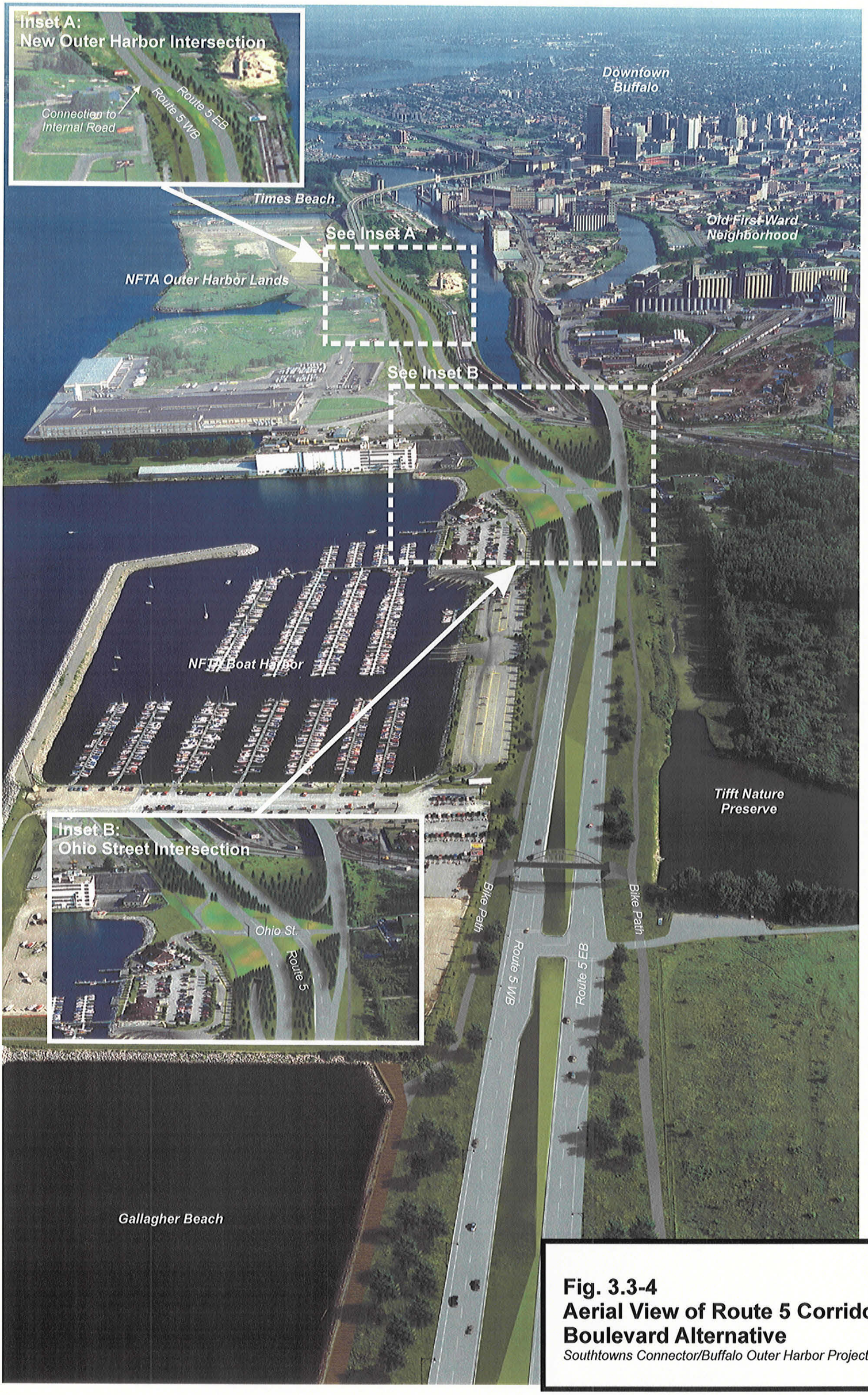

Fig. 3.3-4
Aerial View of Route 5 Corridor Boulevard Alternative
Southtowns Connector/Buffalo Outer Harbor Project

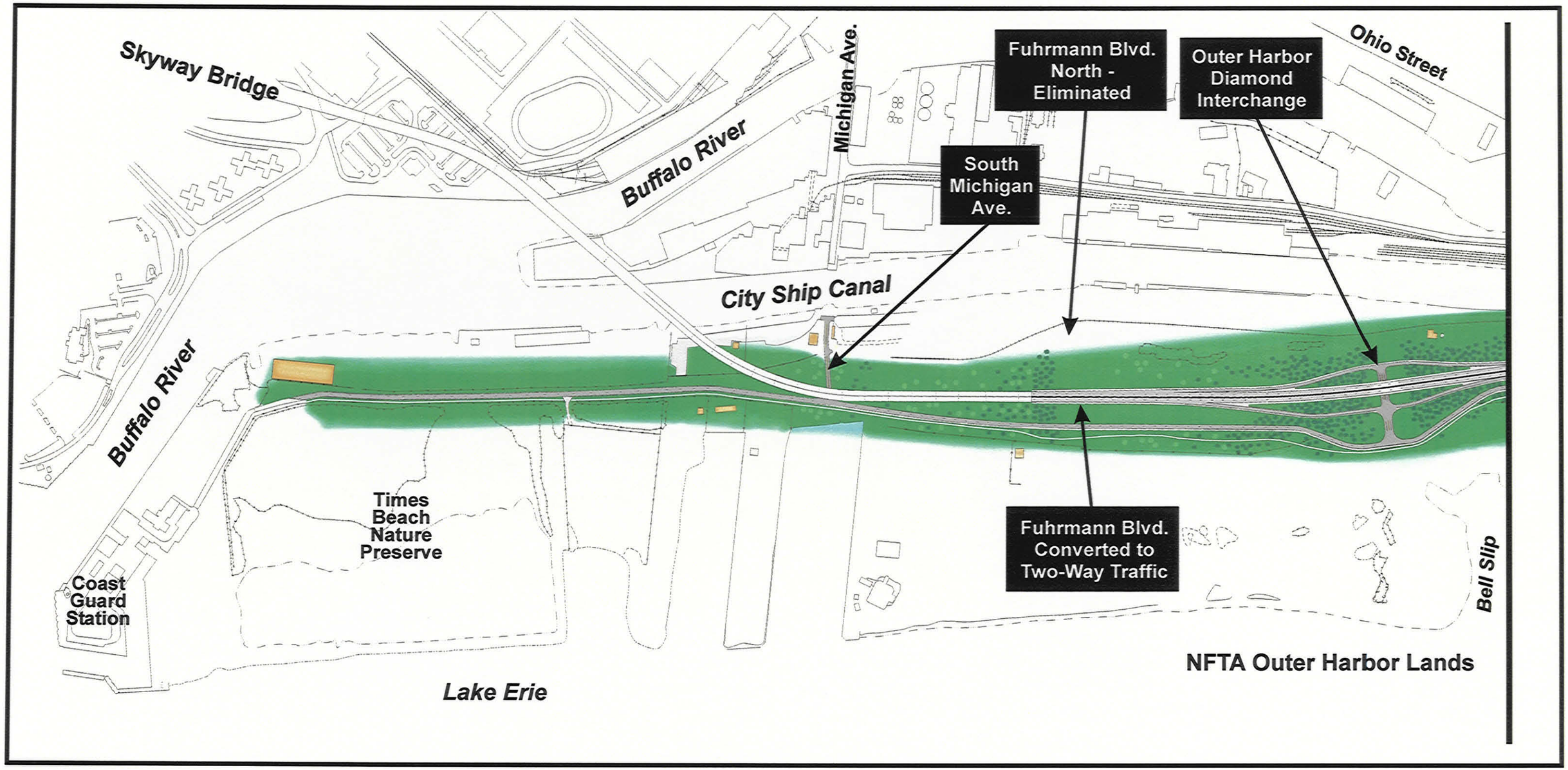

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Figure 3.3-5
Hybrid Alternative -
North of Ohio Street

Southtowns Connector/Buffalo Outer Harbor Project

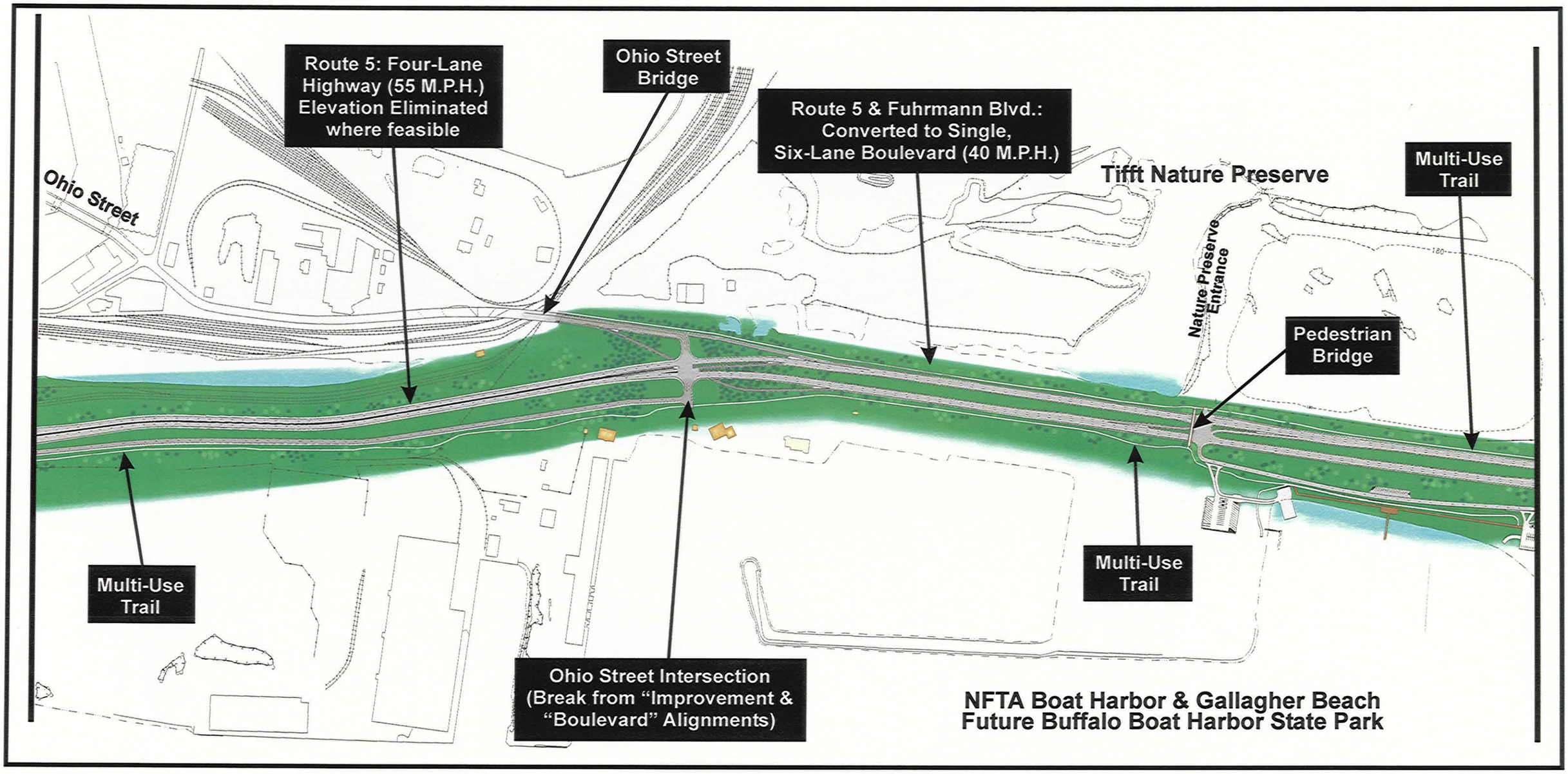

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Figure 3.3-5 (continued)
Hybrid Alternative -
North of Tifft Street

Southtowns Connector/Buffalo Outer Harbor Project

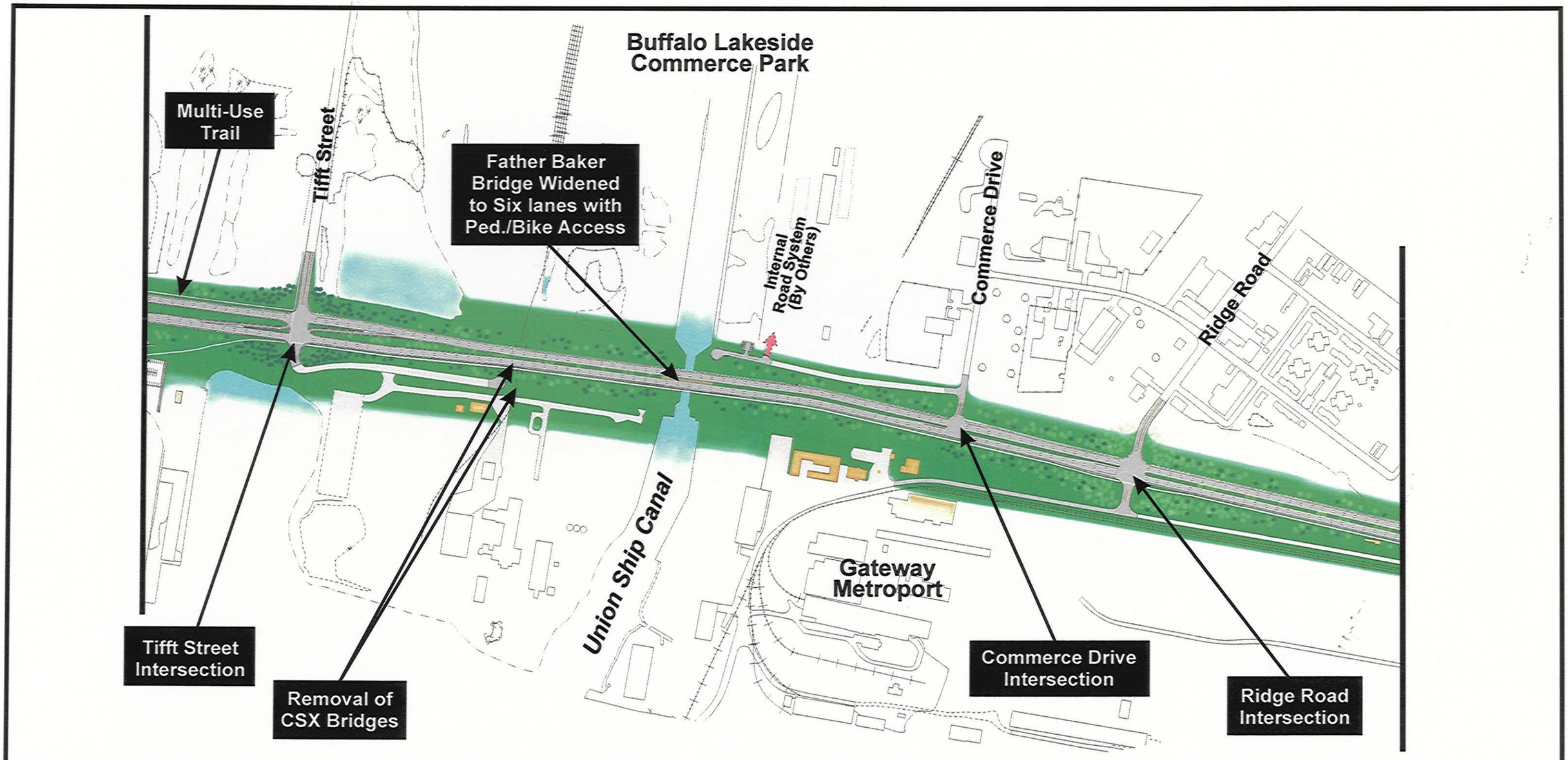

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Figure 3.3-5 (continued)
Hybrid Alternative -
North of Ridge Road

Southtowns Connector/Buffalo Outer Harbor Project

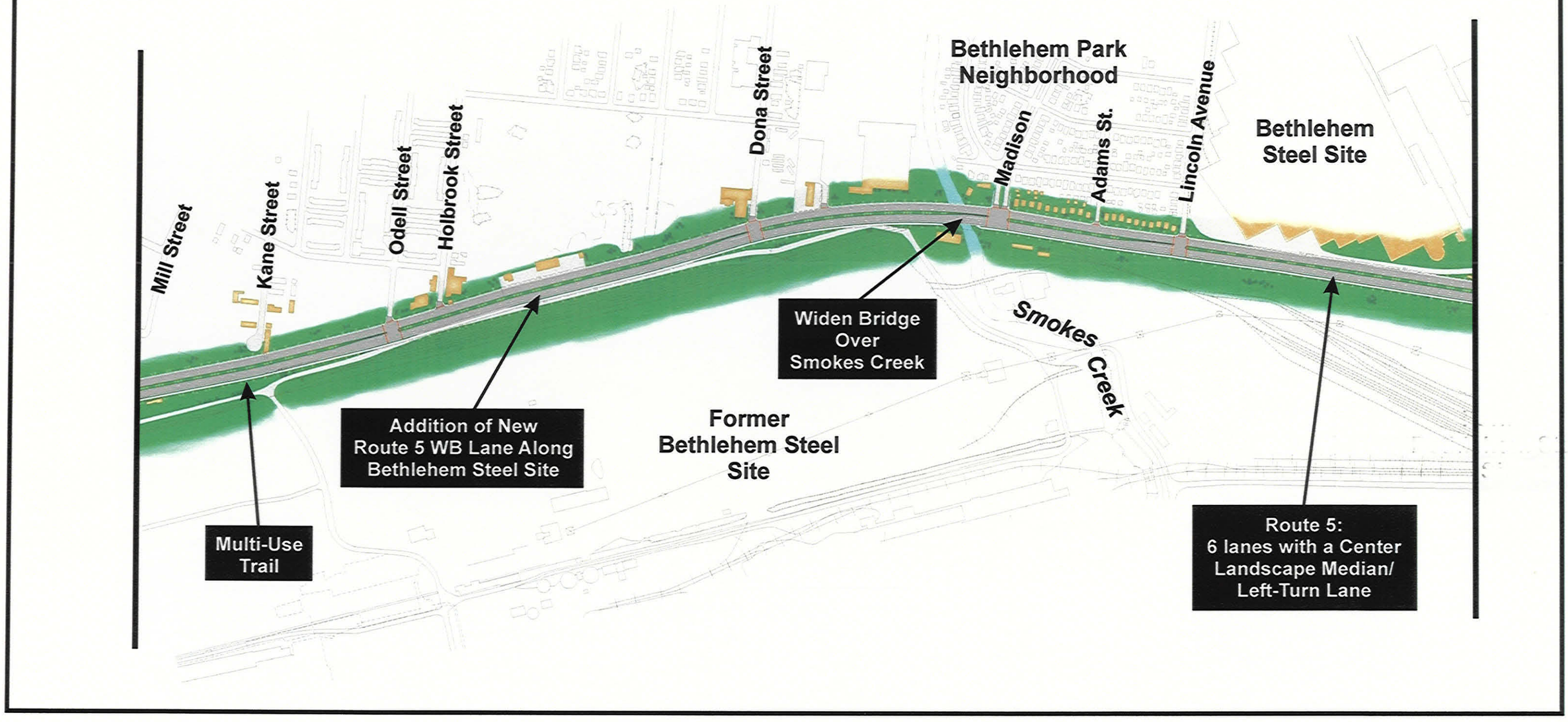

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Figure 3.3-5 (continued)
Hybrid Alternative -
North of Town of Hamburg Line

Southtowns Connector/Buffalo Outer Harbor Project

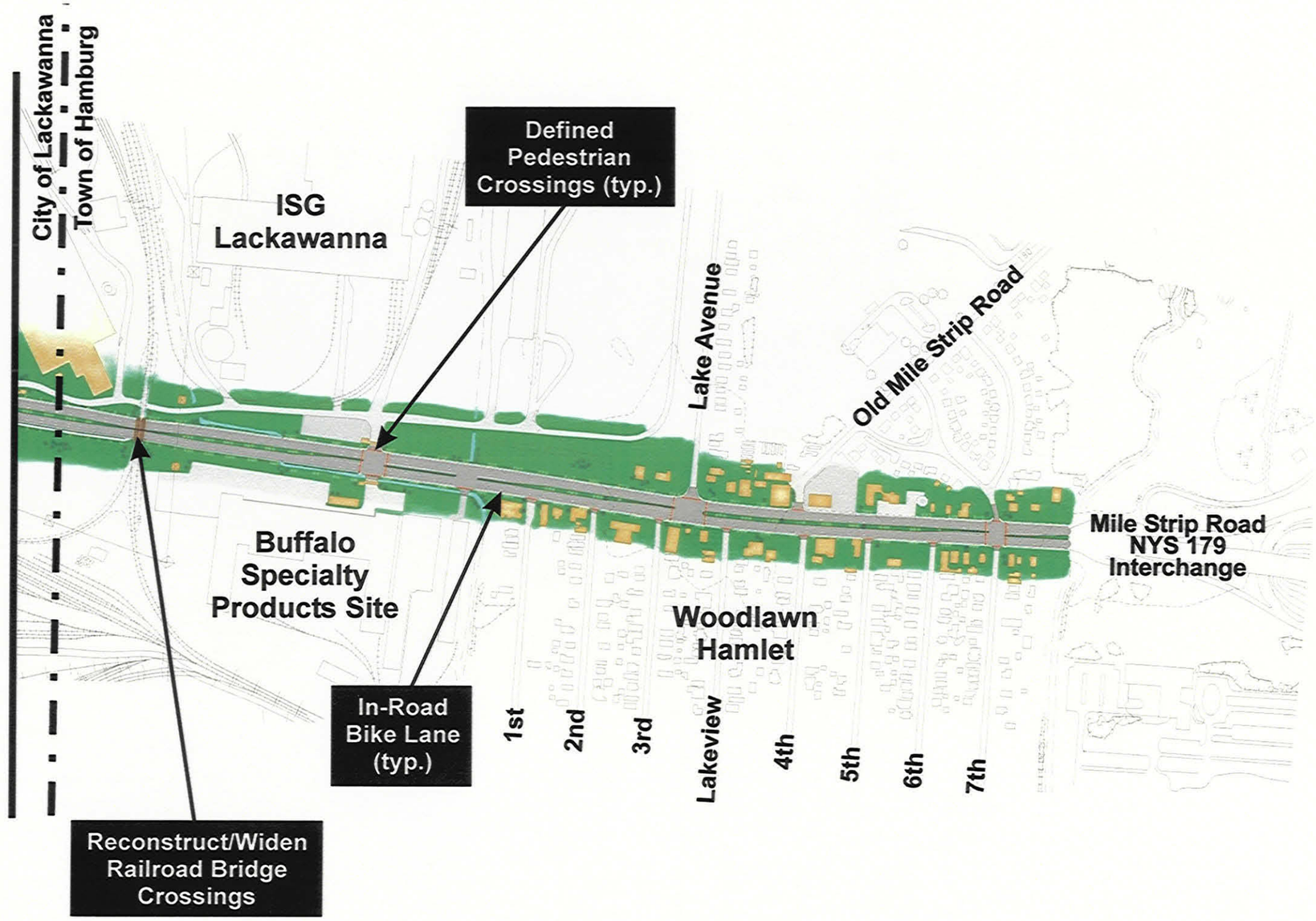

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Figure 3.3-5 (continued)
Hybrid Alternative -
North of NYS 179

Southtowns Connector/Buffalo Outer Harbor Project

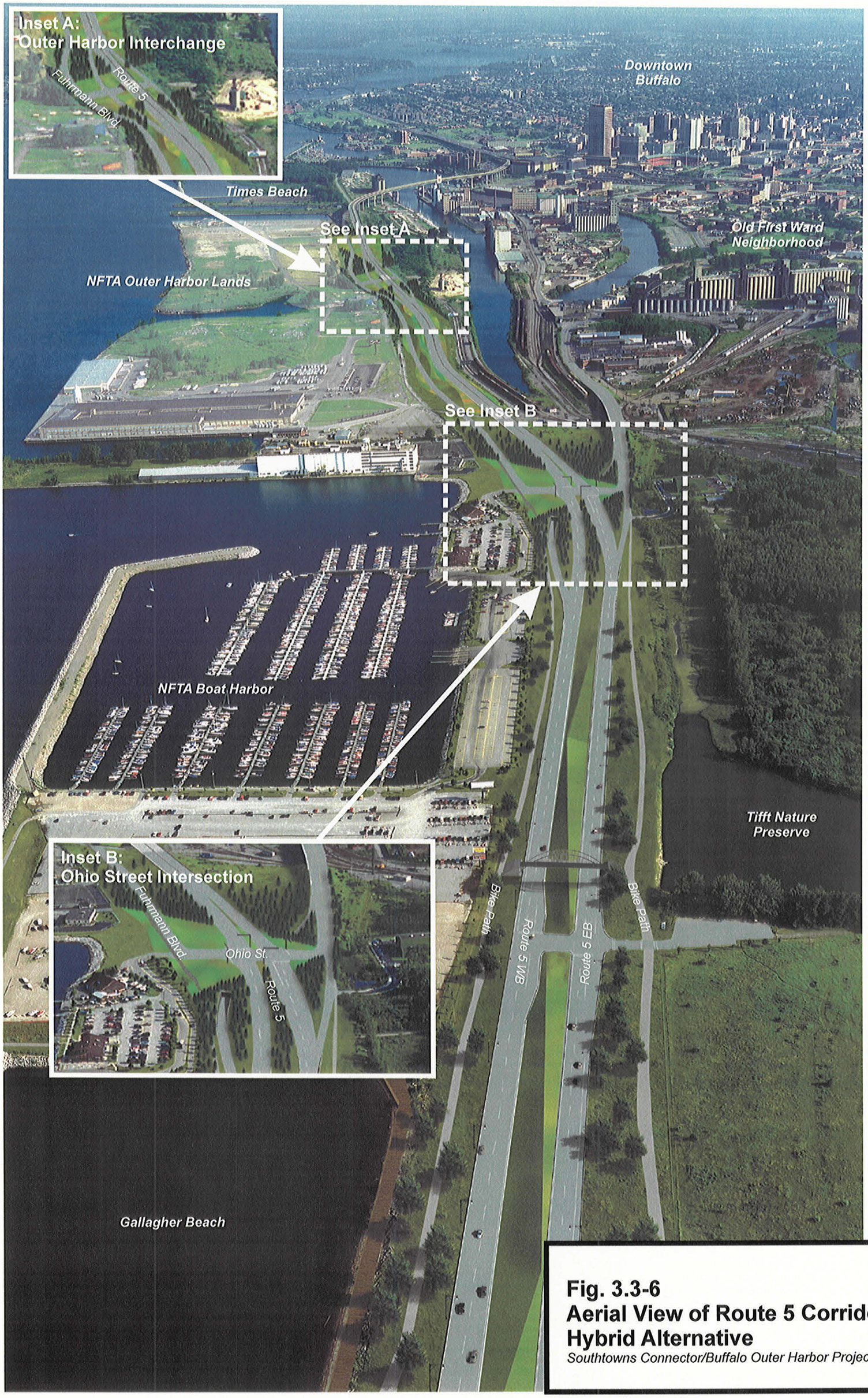

Fig. 3.3-6
Aerial View of Route 5 Corridor Hybrid Alternative
Southtowns Connector/Buffalo Outer Harbor Project

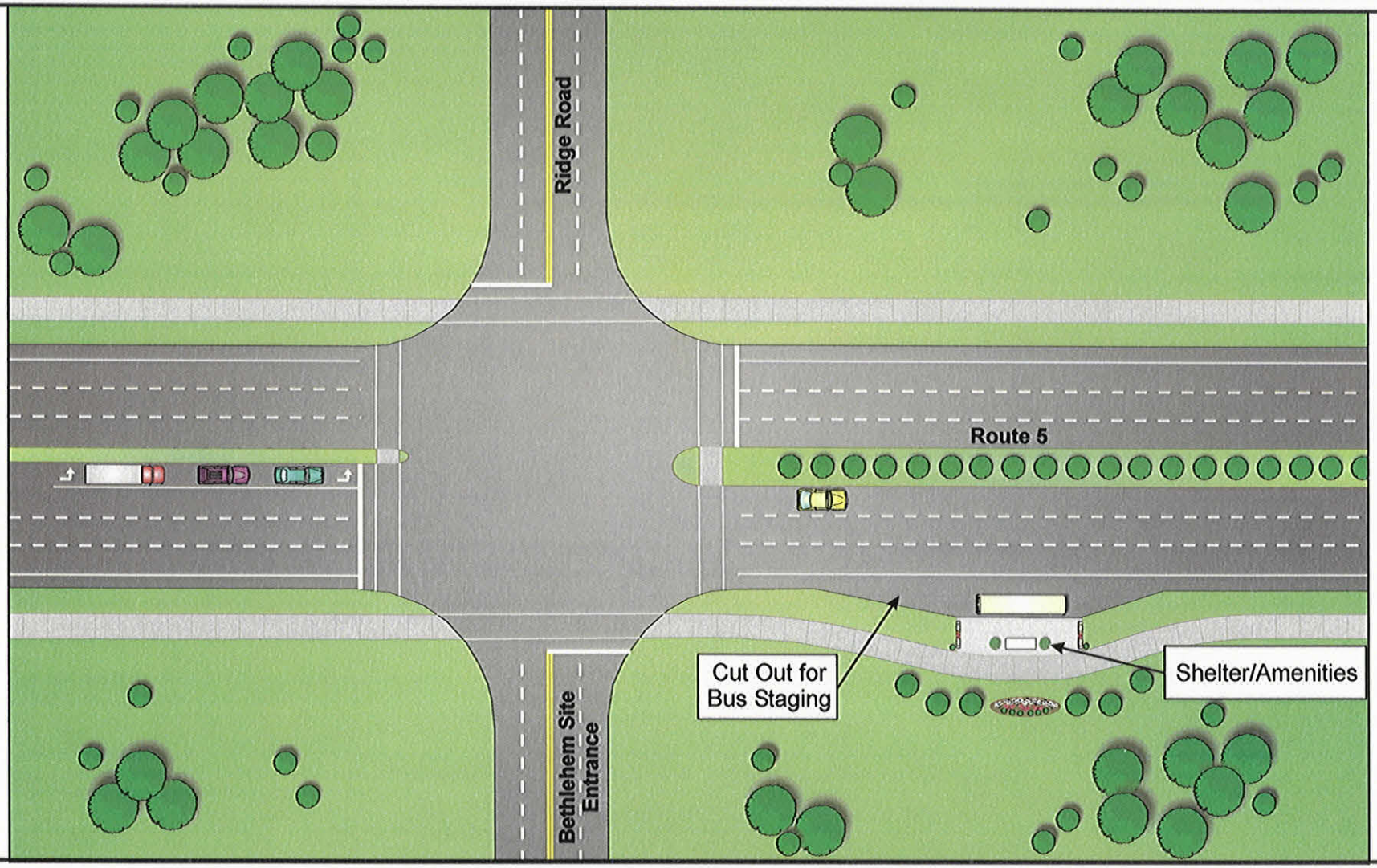

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FIGURE 3.3-7
Conceptual Layout (Typical)
NFTA Metro Bus Stop
(All Alternatives)
Southtowns Connector/Buffalo Outer Harbor Project

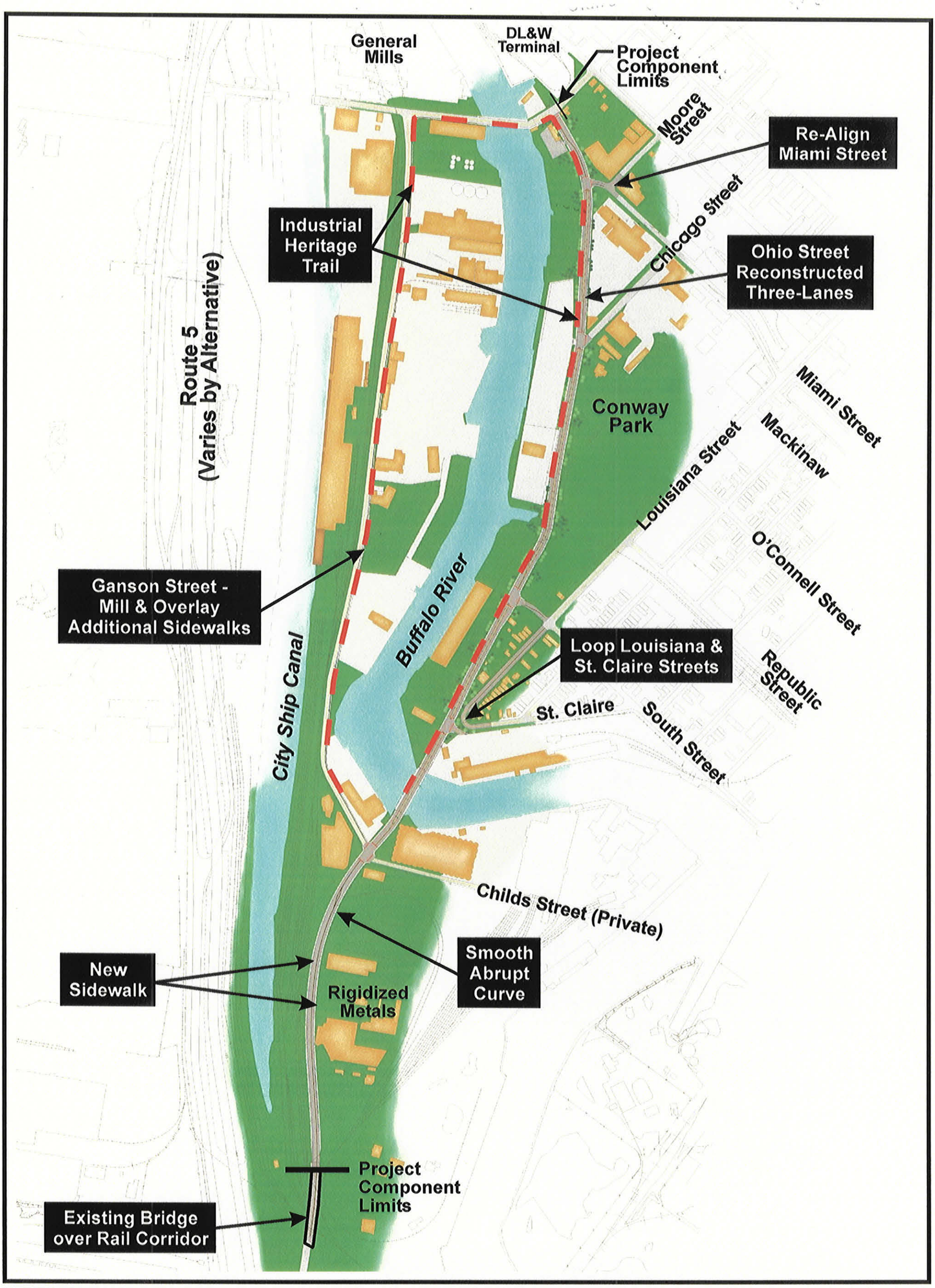

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Figure 3.3-8
Ohio Street Reconstruction
(All Alternatives)
Southtowns Connector/Buffalo Outer Harbor Project

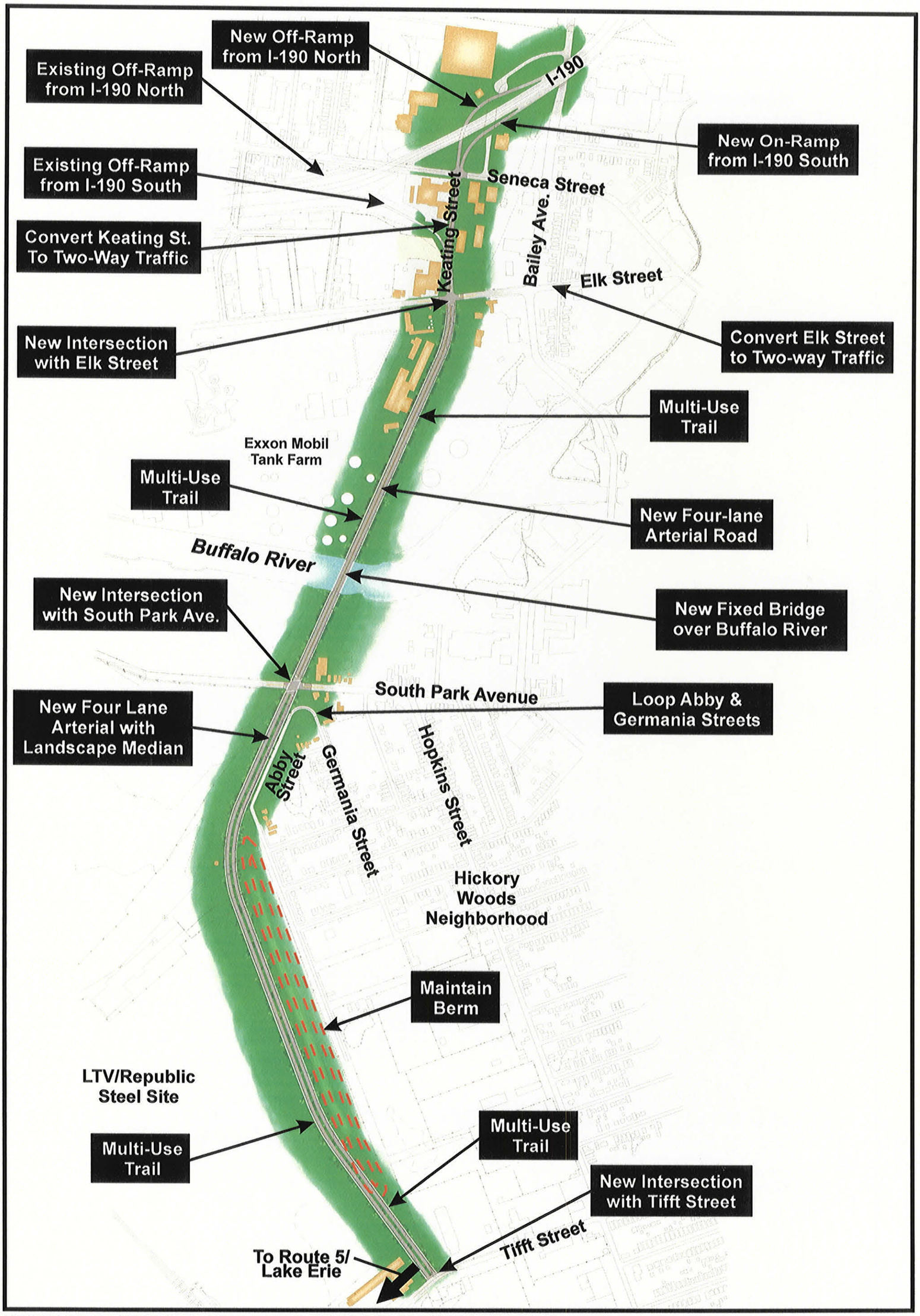


Figure 3.3-9
New I-190/Tifft Street Arterial
(All Alternatives)

Southtowns Connector/Buffalo Outer Harbor Project

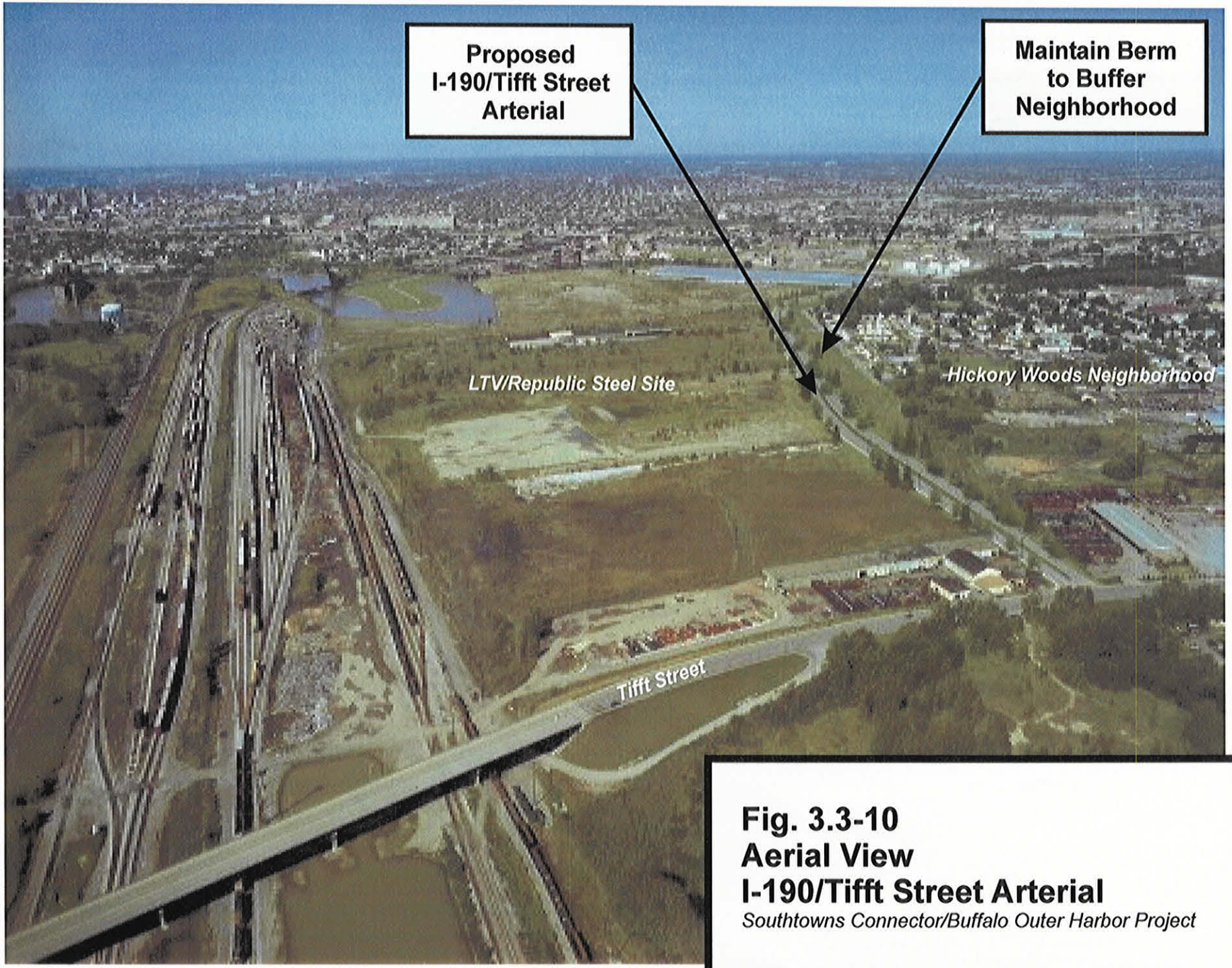


Fig. 3.3-10
Aerial View
I-190/Tifft Street Arterial
Southtowns Connector/Buffalo Outer Harbor Project

3.3.3 Engineering Considerations of Feasible Alternative(s)

3.3.3.1 Special Geometric Features

"Nonstandard" features are features that do not meet minimum design criteria for the project, including lane, shoulder, grades, and horizontal curvatures and stopping sight distances. A "non-conforming" feature, while not violating any design criteria, does not conform to normally accepted design practices and should be avoided. These include short or no tangent distances between curves in the same direction, frontage roads that are too close to the mainline, and other items. For the alternatives discussed below, only non-standard features are presented. All other features within the corridor will follow the geometric features and design criteria as indicated in the previously presented **Table 3.1-2**.

All Build Alternatives

Three non-standard geometric features would be created and one non-standard geometric feature would be retained in all build alternatives. (Note: stationing along each corridor is presented in **Appendix A: Plans and Profiles**).

I-190/Tifft Street Arterial – Ramp A (Off Ramp)

- **Station 1+158 to Station 1+258**
- **Station 1+234 to Station 1+423**

  Non-Standard Feature: 115m and 103 m stopping sight distance, respectively
  Design Criteria: 130 m (minimum)

- **Station 1+108 to Station 1+333**

  Non-Standard Feature: 6% grade
  Design Criteria: 5% grade (maximum)

- **Station 1+224 (PC) to Station 1+358 (PT)**

  Non-Standard Feature: 125m radius (horizontal curve)
  Design Criteria: 252 m radius (minimum)

NYSDOT Non-Standard Feature Justification Forms associated with these features are located on the following pages.

All cross section elements would comply with project design criteria. It is recommended that appropriate warning signage should be installed advising motorists of limited sight distance, grade and sharp horizontal curvature.

Ohio Street

- **Station 3+249(PC) to Station 3+317 (PT)**

  Non-Standard Feature: 50m radius (horizontal curve)
  Design Criteria: 280 m radius (minimum)

A NYSDOT Nonstandard Feature Justification Form associated with this feature is located on the following pages.

All cross section elements would comply with project design criteria. This is an existing non-standard geometric feature that cannot be changed without fully replacing the Ohio Street Bridge (BIN 2-26062-0). As shown, the accident rates exhibited on highway segments in this location do not exceed statewide averages. In turn, review of collision diagrams presented in Appendix C indicates no definitive pattern of accidents in this location that would be attributable to this existing non-standard geometric feature.

In the context of the Modified Improvement Alternative, which involves essentially maintaining the existing system of access in the Route 5 corridor except at key locations, the full replacement of the Ohio Street Bridge (BIN 2-26062-0) would not be justified. It is recommended that appropriate warning signage would be installed advising motorists the sharp horizontal curvature.

Non-Standard Feature Justification Form (HDM §2.8.3)

Main Line Design (in accordance with HDM §2.7)

PIN:	5044.01	NHS (Y/N):	N
Route No. & Name:	I-190/Tifft Street Arterial	Functional Class:	Ramp is feeding Urban Minor Collector
Project Type:	New Construction	Design Classification: (AASHTO Class)	Ramp is feeding Urban Minor Collector
% Trucks:	4.5% (anticipated)	Terrain:	Rolling
ADT:	3360 (anticipated)	Truck Access Rte.:	Y

1.	Description of Nonstandard Feature			
	Type of Feature (e.g., horizontal curve radius):	Maximum Percent Grade		
	Location:	I-190/Tifft Street Arterial Off-Ramp (Ramp 'A')		
	Standard Value:	5%	Design Speed:	80 km/h (50 mph)
	Existing Value:	N/A	Recommended Speed:	N/A
	Proposed Value:	6%	Recommended Speed:	60 km/h (37 mph)
2.	Accident Analysis			
	Current Accident Rate:			
	Statewide Rate (based on similar type highways):			
	Is the nonstandard feature a contributing factor?	__ YES	__ NO	
	Anticipated Accident Rate / Severity / Cost			
3.	Cost Estimates			
	Cost to Fully Meet Standards:	$2,500,000 (construction costs only – doesn't include ROW and relocation costs)		
	Cost(s) For Incremental Improvements:	N/A		
4.	Mitigation (e.g., increased superelevation and curve warning signs for a nonstandard horizontal curve):			
	Place warning signage on the approach to the ramp.			
5.	Compatibility with Adjacent Segments & Future Plans:			
	No conflicts are foreseen with the I-190/Tifft Street Arterial (included in Route 5 - Modified Improvement Alternative.)			
6.	Other Factors (e.g., Social, Economic & Environmental):			
	Oneida (formerly Buffalo China) is located just to the north of the ramp, and any intrusion into the Right-of-Way will have significant impact on their facilities. A significant widening of the I-190/Bailey Avenue structure would also be required to fully meet standards.			
7.	Proposed Treatment (i.e., Recommendation):			
	Install "Caution – Limited Sight Distance" sign on the approach to the ramp, and speed advisory signs (W1-20 or W1-22).			

Non-Standard Feature Justification Form (HDM §2.8.3)

Main Line Design (in accordance with HDM §2.7)

PIN:	5044.01	NHS (Y/N):	N
Route No. & Name:	I-190/Tifft Street Arterial	Functional Class:	Ramp is feeding Urban Minor Collector
Project Type:	New Construction	Design Classification: (AASHTO Class)	Ramp is feeding Urban Minor Collector
% Trucks:	4.5% (anticipated)	Terrain:	Rolling
ADT:	3360 (anticipated)	Truck Access Rte.:	Y

8.	Description of Nonstandard Feature			
	Type of Feature (e.g., horizontal curve radius):	Minimum Horizontal Curvature		
	Location:	I-190/Tifft Street Arterial Off-Ramp (Ramp 'A')		
	Standard Value:	252m	Design Speed:	80 km/h (50 mph)
	Existing Value:	N/A	Recommended Speed:	N/A
	Proposed Value:	125m	Recommended Speed:	60 km/h (37 mph)
9.	Accident Analysis			
	Current Accident Rate:			
	Statewide Rate (based on similar type highways):			
	Is the nonstandard feature a contributing factor?	__ YES	__ NO	
	Anticipated Accident Rate / Severity / Cost			
10.	Cost Estimates			
	Cost to Fully Meet Standards:	$2,500,000 (construction costs only – doesn't include ROW and relocation costs)		
	Cost(s) For Incremental Improvements:	N/A		
11.	Mitigation (e.g., increased superelevation and curve warning signs for a nonstandard horizontal curve):			
	Place warning signage on the ramp.			
12.	Compatibility with Adjacent Segments & Future Plans:			
	No conflicts are foreseen with the I-190/Tifft Street Arterial (included in Route 5 - Modified Improvement Alternative.)			
13.	Other Factors (e.g., Social, Economic & Environmental):			
	Oneida (formerly Buffalo China) is located just to the north of the ramp, and any intrusion into the Right-of-Way will have significant impact on their facilities. A significant widening of the I-190/Bailey Avenue structure would also be required to fully meet standards.			
14.	Proposed Treatment (i.e., Recommendation):			
	Install speed advisory (W1-20 or W1-22), top-heavy vehicle (W1-24 & W1-25), and chevron signs (W1-13) on the ramp.			

Non-Standard Feature Justification Form (HDM §2.8.3)

Main Line Design (in accordance with HDM §2.7)

PIN:	5044.01	NHS (Y/N):	N
Route No. & Name:	I-190/Tifft Street Arterial	Functional Class:	Ramp is feeding Urban Minor Collector
Project Type:	New Construction	Design Classification: (AASHTO Class)	Ramp is feeding Urban Minor Collector
% Trucks:	4.5% (anticipated)	Terrain:	Rolling
ADT:	3360 (anticipated)	Truck Access Rte.:	Y

15.	Description of Nonstandard Feature			
	Type of Feature (e.g., horizontal curve radius):	Stopping Sight Distance		
	Location:	I-190/Tifft Street Arterial Off-Ramp (Ramp 'A')		
	Standard Value:	130m	Design Speed:	80 km/h (50 mph)
	Existing Value:	N/A	Recommended Speed:	N/A
	Proposed Value:	115m & 103m	Recommended Speed:	60 km/h (37 mph)
16.	Accident Analysis			
	Current Accident Rate:			
	Statewide Rate (based on similar type highways):			
	Is the nonstandard feature a contributing factor?		__ YES	__ NO
	Anticipated Accident Rate / Severity / Cost			
17.	Cost Estimates			
	Cost to Fully Meet Standards:		$2,500,000 (construction costs only – doesn't include ROW and relocation costs)	
	Cost(s) For Incremental Improvements:		N/A	
18.	Mitigation (e.g., increased superelevation and curve warning signs for a nonstandard horizontal curve):			
	Place warning signage on the approach to the ramp.			
19.	Compatibility with Adjacent Segments & Future Plans:			
	No conflicts are foreseen with the I-190/Tifft Street Arterial (included in Route 5 - Modified Improvement Alternative.)			
20.	Other Factors (e.g., Social, Economic & Environmental):			
	Oneida (formerly Buffalo China) is located just to the north of the ramp, and any intrusion into the Right-of-Way will have significant impact on their facilities. A significant widening of the I-190/Bailey Avenue structure would also be required to fully meet standards.			
21.	Proposed Treatment (i.e., Recommendation):			
	Install "Caution – Limited Sight Distance" sign on the approach to the ramp, and speed advisory signs (W1-20 or W1-22).			

Non-Standard Feature Justification Form (HDM §2.8.3)

Main Line Design (in accordance with HDM §2.7)

PIN:	5044.01	NHS (Y/N):	N
Route No. & Name:	Ohio Street	Functional Class:	Urban Arterial
Project Type:	Reconstruction	Design Classification: (AASHTO Class)	Urban Arterial
% Trucks:	6.3%	Terrain:	Rolling
ADT:	7,300	Truck Access Rte.:	Y

22.	Description of Nonstandard Feature			
	Type of Feature (e.g., horizontal curve radius):	Minimum Horizontal Curvature		
	Location:	Route 5/Fuhrmann Boulevard		
	Standard Value:	280m	Design Speed:	80 km/h (50 mph)
	Existing Value:	50m	Recommended Speed:	48 km/h (30 mph)
	Proposed Value:	50m	Recommended Speed:	40 km/h (25 mph)
23.	Accident Analysis			
	Current Accident Rate:		Ganson to Fuhrmann – 0.66 acc/mvm	
	Statewide Rate (based on similar type highways):		1.94 acc/mvm	
	Is the nonstandard feature a contributing factor?		__ YES	_X_ NO
	Anticipated Accident Rate / Severity / Cost	N/A – Existing feature. It is assumed that accident rates would remain the same, which would be lower than the statewide average.		
24.	Cost Estimates			
	Cost to Fully Meet Standards:		$3,000,000	
	Cost(s) For Incremental Improvements:		$500,000	
25.	Mitigation (e.g., increased superelevation and curve warning signs for a nonstandard horizontal curve):			
	Place high visibility markings/signage/other traffic calming measures on the approach to the curve.			
26.	Compatibility with Adjacent Segments & Future Plans:			
	No conflicts are foreseen with the Route 5 - Modified Improvement Alternative.			
27.	Other Factors (e.g., Social, Economic & Environmental):			
	In the context of the approach associated with the Improvement Alternative (i.e., maximizing the use of existing structures and features), the benefits of reconstructing the structure would not justify the costs associated with reconstruction of the bridge. This location has not exhibited significantly high accident rates associated with small horizontal curvature. The curve is prior to a "T" intersection at Fuhrmann Boulevard with a stop condition, which would lower anticipated driving speeds.			
28.	Proposed Treatment (i.e., Recommendation):			
	Install rumble strips, rumble strip signs (W4-17), high visibility markings as well as chevron signs (W1-13 & W1-14).			

3.3.3.2 Traffic Forecasts, Level of Service, and Safety Considerations

This section presents traffic a summary of future traffic implications of each of the Feasible Alternatives, developed using the GBNRTC travel demand model and subsequent LOS analyses. **Appendix C – Traffic and Accident Report** includes a complete analysis of the projected traffic conditions.

Estimated Time of Completion (ETC) and Design Year Traffic Volume Projections

Table 3.3-1 presents the projected 2010 (ETC) and 2030 (Design Year) AADTs for the Null Alternative and Build Alternatives at locations along Route 5, Ohio Street, I-190 at Bailey/Seneca/Hamburg, I-90 at Ridge Road/Route 179 and Milestrip Road (Route 179) at the railroad/Route 5. Volumes shown include those projected for the new I-190/Tifft Street Arterial.

These projections are also depicted by segment in **Figures 3.3-11, 3.3-12, and 3.3-13**. Overall, projected daily traffic volumes associated with the Modified Improvement Alternative are generally consistent with future Null conditions, given that the overall configuration of the roadway system along Route 5 would remain essentially the same except in a few locations.

Under the Boulevard Alternative, future daily traffic volumes are projected to remain relatively similar to current (2001) conditions along the Route 5 corridor. However, projected traffic growth in the project area would be primarily diverted to the interstate system (I-90 and I-190).

A similar relationship is projected under the Hybrid Alternative, but to a lesser degree than under the Boulevard Alternative. Some traffic growth would occur along the Route 5 corridor through 2030, but a portion of the projected traffic growth would still divert to the interstate system.

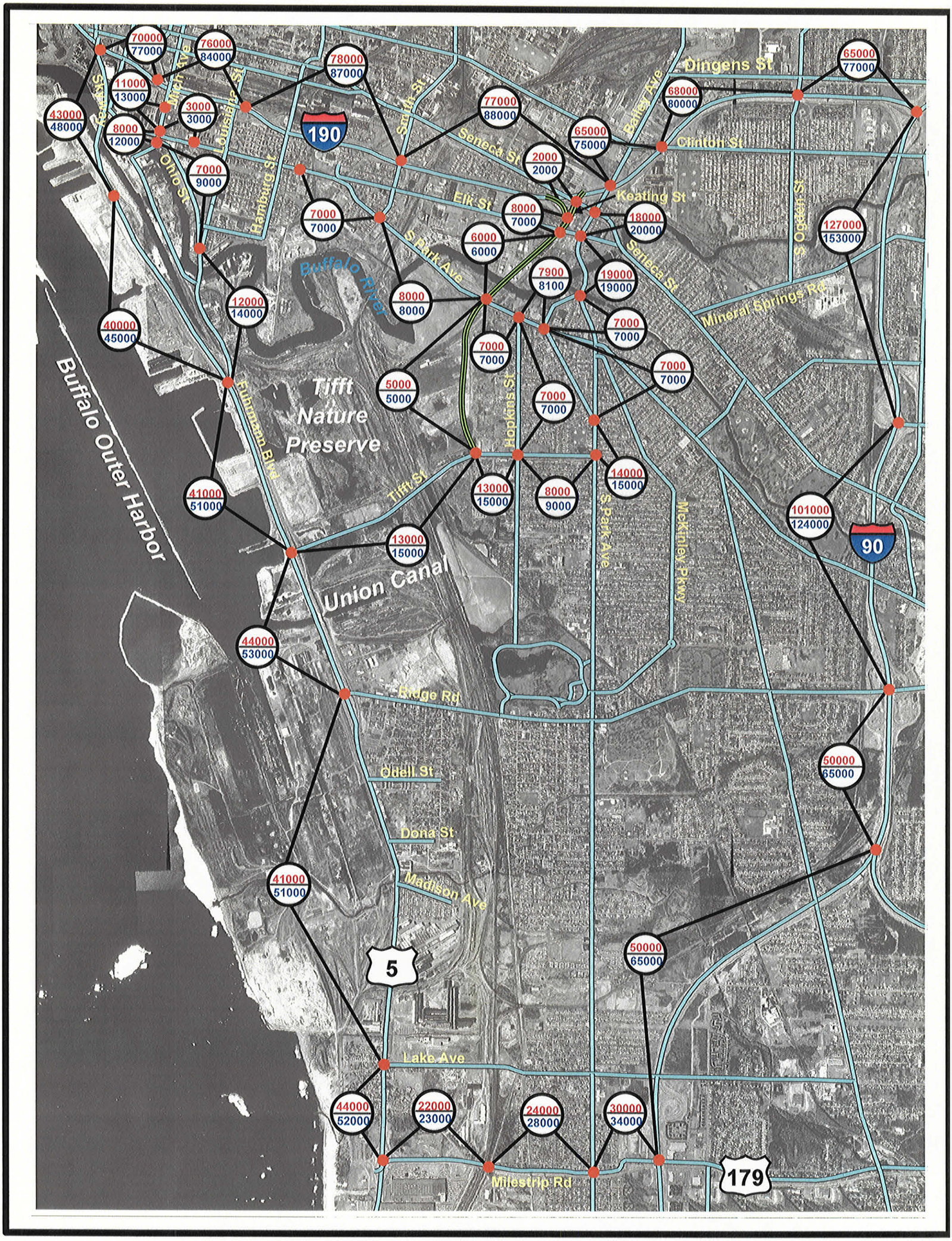
Table 3.3-1 Projected AADTs – Year 2010 and 2030										
Route	Segment	2001 AADT	2010 AADT				2030 AADT			
			Null	Modified Improvement (Scenario 5)	Boulevard (Scenario 6)	Hybrid (Scenario 7)	Null	Modified Improvement (Scenario 5)	Boulevard (Scenario 6)	Hybrid (Scenario 7)
Route 5	Milestrip Road to Lake Ave	41,400	44,400	43,900	40,100	42,600	52,600	51,800	41,400	48,000
	Lake Ave to Ridge Rd	37,800	41,500	41,200	37,600	40,100	51,600	50,700	40,300	47,300
	Ridge Rd to Tifft St	41,600	45,000	44,400	40,800	43,300	54,700	52,900	42,700	49,600
	Tifft St to Ohio St	35,800	41,200	40,500	36,200	38,300	53,000	50,600	38,200	44,000
	Ohio St to Fuhrmann Blvd	37,800	41,800	40,000	27,900	37,300	50,500	45,200	33,700	37,900
	Fuhrmann Blvd to I-190	41,800	45,900	43,400	28,900	40,300	54,900	47,800	34,600	39,700
South Park Ave	Tifft St to Southside	13,300	13,700	13,600	13,700	13,200	14,700	14,600	14,700	13,300
	Southside to Bailey Ave	6,300	6,400	6,600	6,800	6,500	6,700	7,300	7,800	7,000
	Bailey Ave to Hopkins St	8,000	8,100	7,900	7,200	6,700	8,500	8,100	6,300	5,100
	Hopkins St. to New Arterial	6,700	6,900	6,500	7,100	6,700	7,300	6,500	7,800	6,800
	New Arterial to Smith St	7,900	8,100	7,700	8,200	7,800	8,700	7,700	9,000	7,700
	Smith St to Katherine St	6,700	7,100	6,600	7,000	6,800	7,900	6,500	7,600	7,000
	Chicago St to Michigan Ave	3,500	3,500	3,300	3,500	3,500	3,600	3,100	3,400	3,400
Ohio St	Fuhrmann Blvd – NB to Louisiana	7,300	8,100	11,600	9,000	11,400	9,800	10,000	10,900	13,800
	Louisiana St to Michigan Ave	4,300	4,900	6,900	5,400	6,900	6,400	7,000	7,000	9,000

Table 3.3-1 Projected AADTs – Year 2010 and 2030										
Route	Segment	2001 AADT	2010 AADT				2030 AADT			
			Null	Modified Improvement (Scenario 5)	Boulevard (Scenario 6)	Hybrid (Scenario 7)	Null	Modified Improvement (Scenario 5)	Boulevard (Scenario 6)	Hybrid (Scenario 7)
Keating St	I-190 to Seneca Street	NA	NA	NA	7,100	7,000	NA	NA	7,700	7,600
	Seneca St to SB I-190 exit	1,900	1,900	1,900	5,900	5,900	2,100	1,900	6,200	6,200
	SB I-190 exit to Elk St	7,900	7,700	7,600	11,300	11,400	7700	7,400	10,800	11,100
Bailey Ave	South Park Ave to McKinley Pkwy	6,900	6,800	7,000	5,900	6,000	6,900	7,300	4,700	4,900
	McKinley Pkwy to Elk St	18,600	18,600	18,700	17,900	17,600	18,900	19,400	17,500	16,700
	Elk St to Seneca St	18,000	18,000	18,400	16,400	16,400	18,600	19,600	14,600	14,600
Hopkins St	Tifft St to South Park Ave	6,900	6,900	6,800	6,200	6,400	7,200	7,100	5,400	5,800
Michigan Ave	Ohio St to South Park Ave	6,300	7,300	7,900	8,400	8,300	9,300	11,600	13,200	13,200
	South Park Ave to Perry St	9,700	9,900	10,700	10,700	10,600	10,700	12,800	13,000	12,700
Tifft St	Fuhrmann Blvd – NB to New Arterial	12,600	13,000	13,200	12,500	15,800	14,400	14,900	13,800	17,500
	New Arterial to Hopkins St	12,600	13,100	13,200	10,400	11,800	14,600	14,900	11,600	13,100
	Hopkins St to South Park Ave	8,000	8,300	8,200	8,100	7,900	9,300	8,900	8,600	8,300
Camp Rd	Route 5 to Old Big Tree Rd	14,300	18,000	18,000	16,000	17,700	21,700	21,500	16,100	20,800
	Old Big Tree Rd to US 20	14,300	18,500	18,500	17,600	18,600	23,300	23,300	20,500	23,300
	US 20 to I-90	21,300	27,300	27,000	27,100	27,100	31,500	30,700	31,000	31,100

Table 3.3-1 Projected AADTs – Year 2010 and 2030

Route	Segment	2001 AADT	2010 AADT				2030 AADT			
			Null	Modified Improvement (Scenario 5)	Boulevard (Scenario 6)	Hybrid (Scenario 7)	Null	Modified Improvement (Scenario 5)	Boulevard (Scenario 6)	Hybrid (Scenario 7)
Milestrip	Route 5 to RR Tracks	22,900	22,800	21,700	19,100	20500	25,500	22,700	16,200	19,600
	RR tracks to South Park Blvd	22,900	24,000	23,600	22,300	22,100	29,100	28,000	24,200	23,800
	South Park Blvd to I-90	24,900	31,100	29,900	27,300	28,100	37,000	33,500	26,500	28,600
I-90	Milestrip to Route 219	47,800	49,700	49,400	51,500	50,600	65,300	64,400	71,600	68,400
	Ridge Rd to Route 400	90,400	100,900	100,500	103,800	102,200	123,200	12,2100	132,400	127,300
	Route 400 to I-190	105,800	126,500	126,000	128,900	127,400	152,700	151,100	160,200	155,500
I-190	I-90 to Ogden St	61,000	65,300	64,900	67,000	65,900	77,900	76,900	83,300	79,700
	Ogden St to Clinton St	64,500	67,500	68,100	70,300	69,100	78,000	79,600	86,700	82,900
	Clinton St to Seneca St/Bailey Ave	62,200	65,100	65,100	70,400	69,400	75,300	75,100	92,100	88,600
	Seneca St/ Bailey Ave to Smith St	74,900	76,900	77,400	80,200	78,500	86,200	87,500	95,800	90,700
	Smith St to Hamburg/ Louisiana	75,500	77,000	77,600	80,700	79,200	85,600	87,200	96,300	91,700
	Hamburg/ Louisiana to Elm St	74,300	75,400	75,600	79,000	77,400	83,100	83,500	93,600	88,800
	Elm St to Route 5	69,600	71,300	70,300	73,700	72,500	79,700	76,900	86,600	83,100
Route 219	I-90 to Milestrip	41,600	47,300	47,400	48,400	47,600	57,600	57,800	61,200	58,600
New I-190/ Tifft Street Arterial	Elk St to South Park Ave	NA	NA	NA	5,800	6,200	NA	NA	6,300	6,700
	South Park Ave to Tifft St	NA	NA	NA	5,400	5,700	NA	NA	5,800	6,100

Note: NA=Not Applicable



Legend

Year 2010 / Year 2030

N W E S

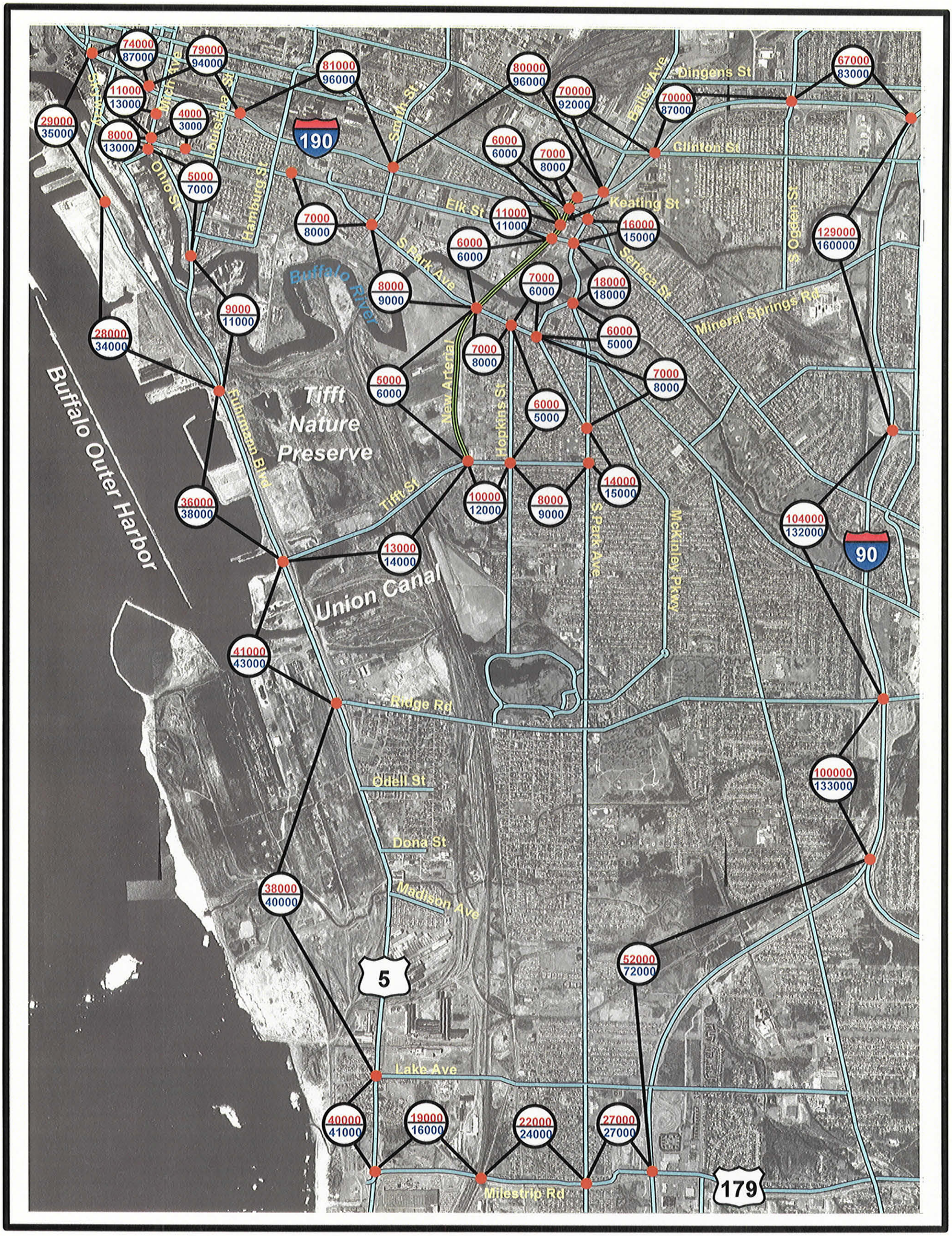
0 0.6 Miles

0 0.6 Kilometers

FIGURE 3.3-11

Traffic Volumes
Modified Improvement Alternative
2010 and 2030

Southtowns Connector/Buffalo Outer Harbor Project



Legend

Year 2010
Year 2030

N
W E
S

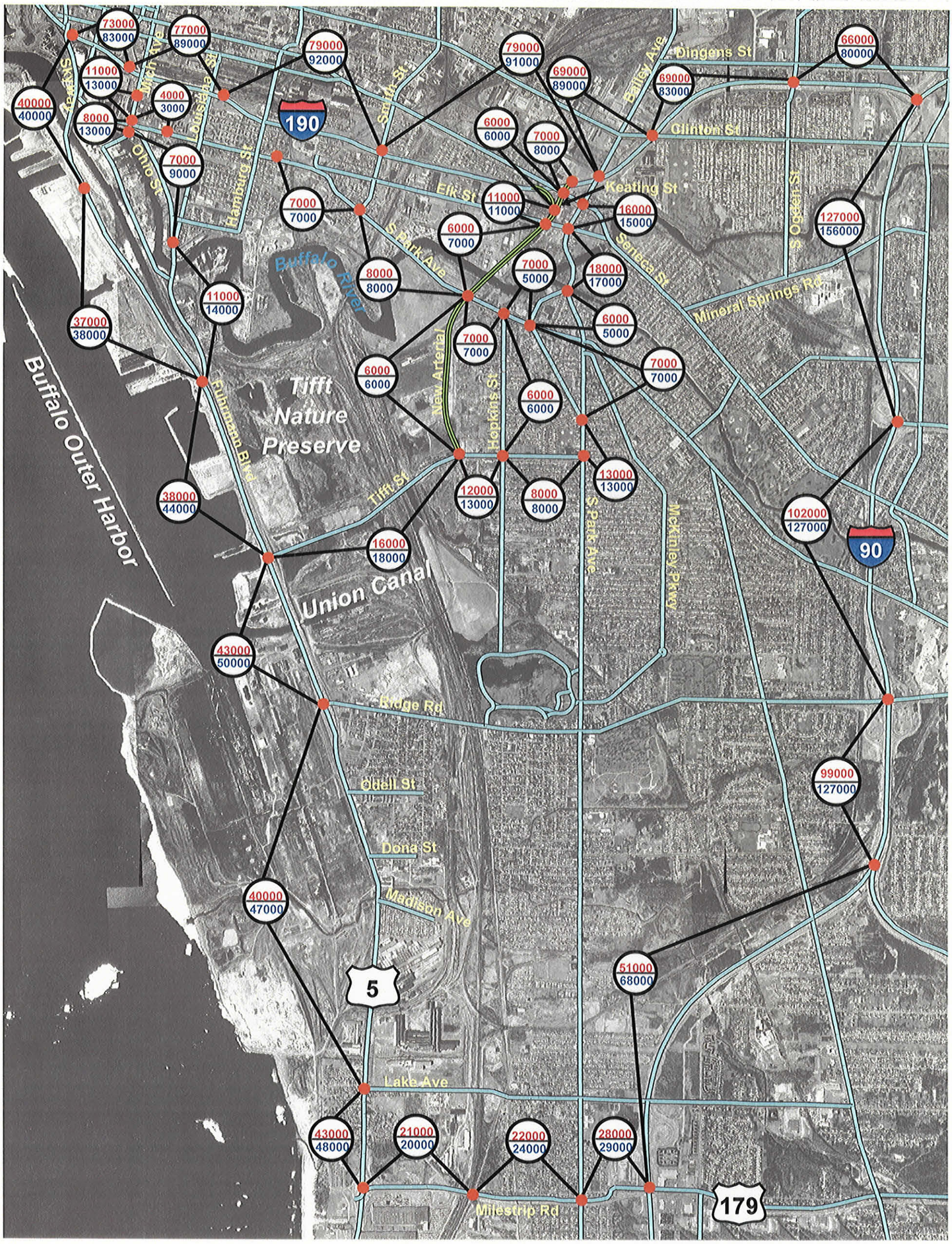
0 0.5 Miles

0 0.5 Kilometers

FIGURE 3.3-12

Traffic Volumes
Boulevard Alternative
2010 and 2030

Southtowns Connector/Buffalo Outer Harbor Project



Legend

Year 2010
Year 2030

N
W E
S

0 0.5 Miles
0 0.5 Kilometers

FIGURE 3.3-13

Traffic Volumes
Hybrid Alternative
2010 and 2030

Southtowns Connector/Buffalo Outer Harbor Project

In addition to projected AADT for highway segments, NYSDOT guidelines for structures require the projections of AADT and design hour vehicles (DHV) for ETC + 30 years, or in this case the year 2040. **Table 3.3-2** presents 2040 AADT for structures in the project area that would be affected by the Build Alternatives, using annual growth factors by segment derived for the 2030 traffic forecasts.

Table 3.3-2 Projected AADT/DHV at Bridge Locations – Year 2040

Route	Segment	Structure (BIN)	2040 AADT & 2040 DHV (Period)			
			Null	Modified Improvement	Boulevard	Hybrid
Route 5	Lake Ave to Ridge Rd	Smokes Creek (1001490)	56,800 5,500 (AM) 5,400 (PM)	56,000 5,400 (AM) 5,400 (PM)	44,300 4,500 (AM) 4,600 (PM)	52,000 4,800 (AM) 5,000 (PM)
	Ridge Rd to Tifft St	Father Baker Bridge/Union Ship Canal (1001520) CSX Spur (1074270)	60,200 4,800 (AM) 4,800 (PM)	58,400 4,600 (AM) 4,800 (PM)	47,000 3,500 (AM) 4,600 (PM)	54,600 3,900 (AM) 5,000 (PM)
	Tifft St to Ohio St	Tifft Street (1074280)[1]	53,100 4,500 (AM) 4,400 (PM)	55,900 5,100 (AM) 4,900 (PM)	42,000 3,600 (AM) 4,100 (PM)	48,400 3,900 (AM) 4,500 (PM)
	Ohio St to Fuhrmann Blvd	Ohio Street (1001549)[1] New Outer Harbor Interchange (No BIN)[2]	55,600 4,400 (AM) 4,500 (PM)	49,900 3,900 (AM) 4,200 (PM)	37,100 2,400 (AM) 3,000 (PM)	41,700 2,800 (AM) 3,000 (PM)
I-190	Seneca St/ Bailey Ave to Smith St	I-190 Structure over Bailey Avenue (5512199) Ramps to/from I-190/Tifft Street Arterial[3]	91,400 6.500 (AM) 7,500 (PM)	97,900 7,200 (AM) 8,000 (PM)	101,500 7,700 (AM) 8,000 (PM)	96,100 7,500 (AM) 8,000 (PM)
New I-190/ Tifft Street Arterial	Elk St to South Park Ave	New Bridge over Buffalo River (No BIN)[3]	N/A N/A N/A	6,100 510 (AM) 510 (PM)	6,600 620 (AM) 620 (PM)	7,000 730 (AM) 620 (PM)

Notes:
[1] Structure would be removed as part of Boulevard and Hybrid Alternatives.
[2] Structure would not be constructed under Boulevard Alternative.
[3] Structure or I-190/Tifft Street Arterial would not be constructed under the Null Alternative.

Future Level of Service

LOS analysis was performed using year 2030 peak hour travel forecasts produced by the travel-forecast model to determine the implications of projected level of diversion to the interstate system under each of the Build Alternatives. Operational analyses were conducted at the intersection and highway segment level for the morning and afternoon peak hour periods because they represent the two critical hours of an average day for traffic.

Under the Modified Improvement Alternative, intersections with forecasted congestion (LOS E or F) are fewer than those projected under future Null Alternative conditions (see **Figure 3.3-14**). Congestion at two intersections on Michigan Avenue is common to the Null and Modified Improvement Alternative. Under the Modified Improvement Alternative, the proposed at-grade intersection at Route 5 and Ridge Road is forecasted to reach congestion in 2030. The at-grade intersection design is a direct response to accommodate City of Lackawanna land use plans. Proposed intersection capacity and design will be re-examined when this phase enters final design.

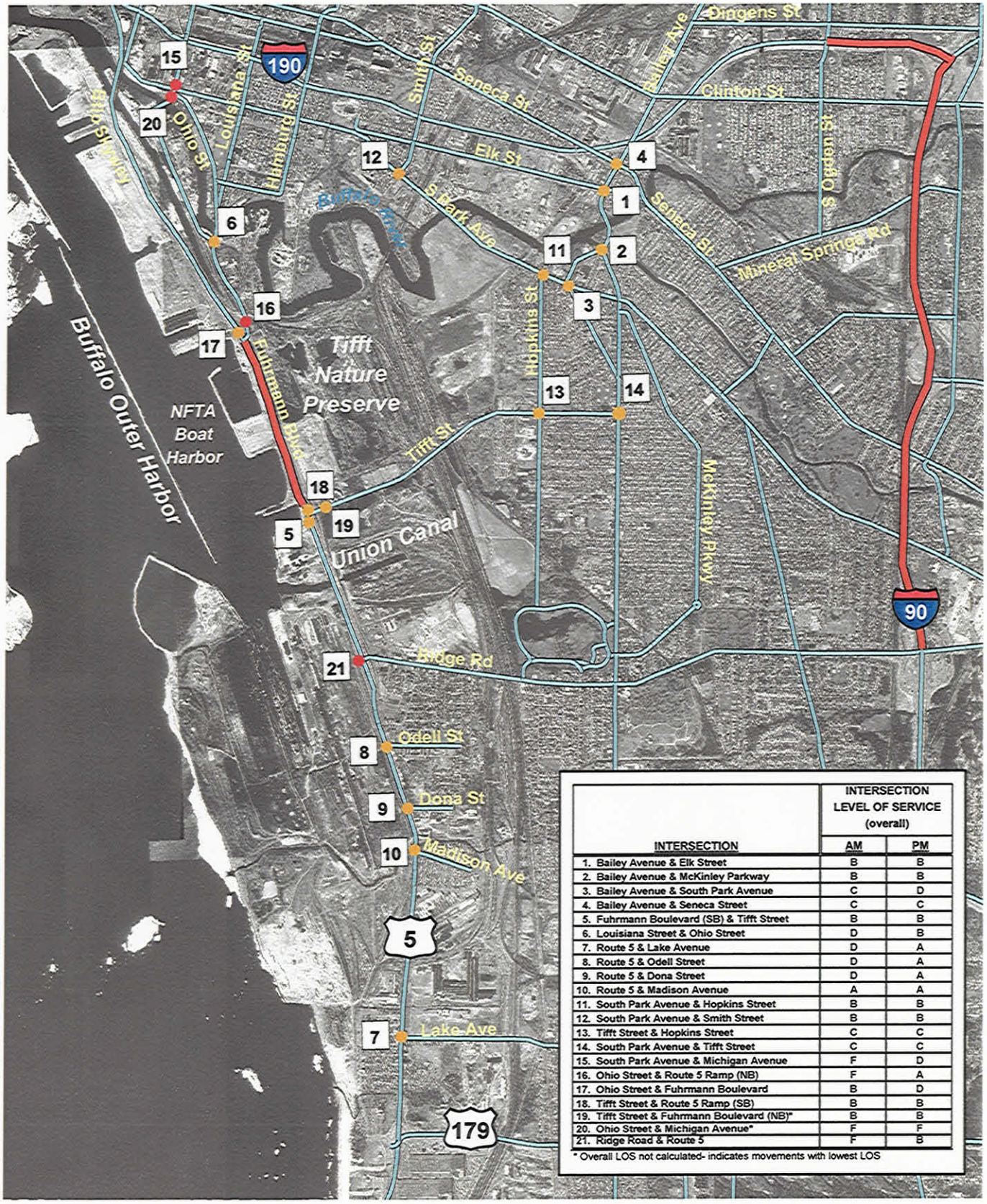
Projected traffic along highway segments under the Modified Improvement Alternative is forecasted to create congested conditions on a segment of Route 5 between Tifft and Ohio Street, as well as on I-90 between Ridge Road and I-190 and on I-190 between the I-90 and Odgen Street.

The Boulevard Alternative would result in slower travel speeds along the Route 5 corridor. The reduction in overall travel speed would cause a diversion of traffic from the Route 5 to I-90 and I-190 (see **Figure 3.3-15**). Thus, intersections along Route 5 are not forecasted to reach congested conditions through 2030, while projected congestion at the two intersections along Michigan Avenue would be similar to the Improvement and Null Alternatives. Conversely, almost all interstate segments abutting the project area are forecasted to reach congested levels by 2030.

The Hybrid Alternative would involve a Route 5 configuration similar to the Boulevard Alternative between Ohio Street and Milestrip Road. The slower speeds associated with the Boulevard portion would cause sufficient diversion of traffic to I-90 and I-190 to provide acceptable traffic operations along Route 5 through the signalized intersections (see **Figure 3.3-16**). However, fewer segments of I-190 would reach congested levels by 2030 under this alternative.

Safety Considerations

The accident analysis summarized in Section 2.3.1.11 (and fully presented in **Appendix C**) indicates higher than average accident rates in selected locations in the project area. With regard to specific road segments affected by the proposed Build alternatives, these primarily coincide with locations along the at-grade portion of Route 5, particularly in the vicinity of the Lake Avenue intersection in Woodlawn. This segment of Route 5, as well as the at-grade segment in the City of Lackawanna, contains numerous driveways and side street intersections. Review of



INTERSECTION	INTERSECTION LEVEL OF SERVICE (overall) AM	PM
1. Bailey Avenue & Elk Street	B	B
2. Bailey Avenue & McKinley Parkway	B	B
3. Bailey Avenue & South Park Avenue	C	D
4. Bailey Avenue & Seneca Street	C	C
5. Fuhrmann Boulevard (SB) & Tifft Street	B	B
6. Louisiana Street & Ohio Street	D	B
7. Route 5 & Lake Avenue	D	A
8. Route 5 & Odell Street	D	A
9. Route 5 & Dona Street	D	A
10. Route 5 & Madison Avenue	A	A
11. South Park Avenue & Hopkins Street	B	B
12. South Park Avenue & Smith Street	B	B
13. Tifft Street & Hopkins Street	C	C
14. South Park Avenue & Tifft Street	C	C
15. South Park Avenue & Michigan Avenue	F	D
16. Ohio Street & Route 5 Ramp (NB)	F	A
17. Ohio Street & Fuhrmann Boulevard	B	D
18. Tifft Street & Route 5 Ramp (SB)	B	B
19. Tifft Street & Fuhrmann Boulevard (NB)*	B	B
20. Ohio Street & Michigan Avenue*	F	F
21. Ridge Road & Route 5	F	B

* Overall LOS not calculated- indicates movements with lowest LOS

Intersection with LOS of E or F

Expressway Segments with LOS of E or F

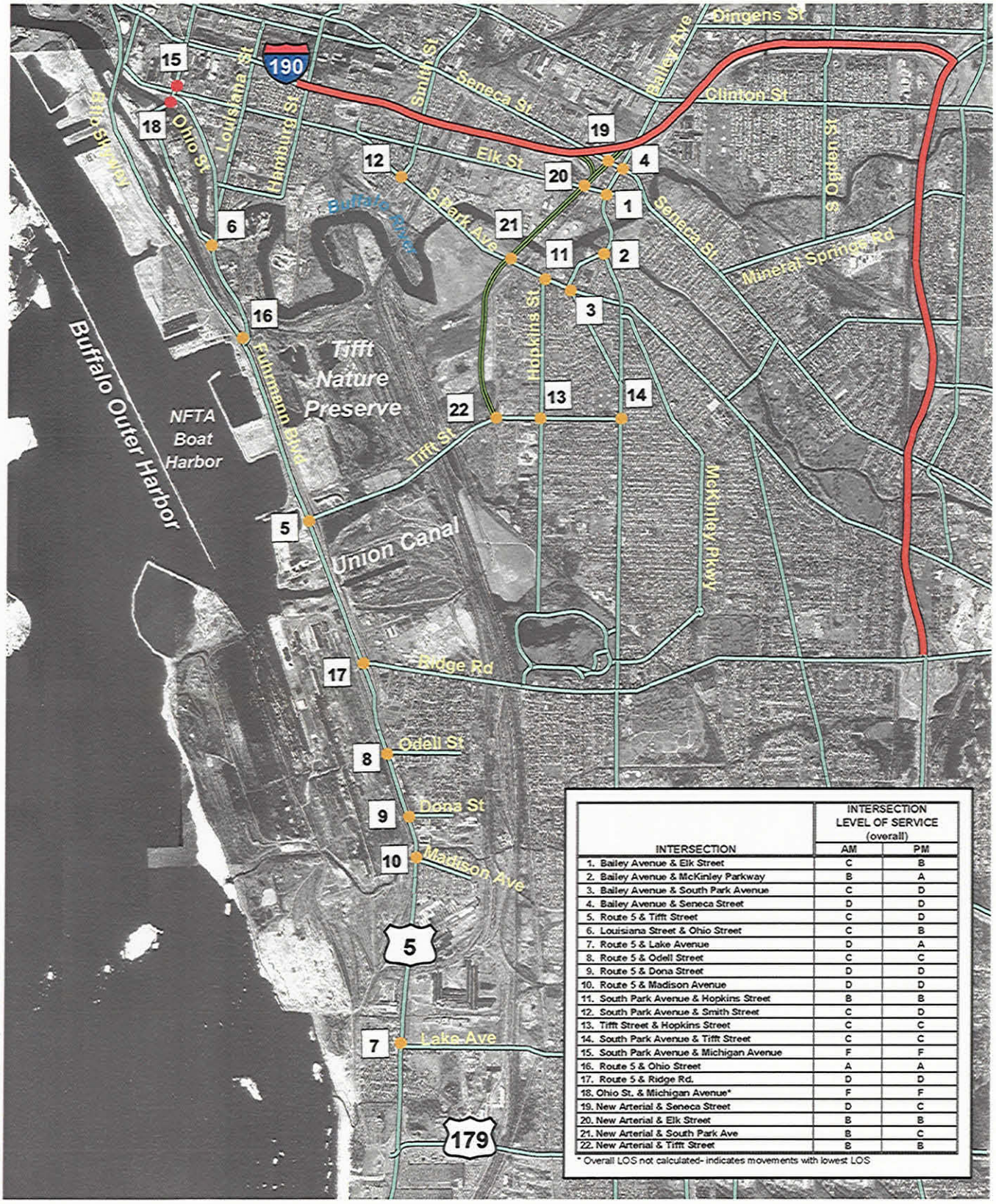
N
W E
S

0 0.5 Miles

0 0.5 Kilometers

FIGURE 3.3-14
Modified Improvement Alternative
Intersection/Segment Level of Service

Southtowns Connector/Buffalo Outer Harbor Project



INTERSECTION	INTERSECTION LEVEL OF SERVICE (overall)	
	AM	PM
1. Bailey Avenue & Elk Street	C	B
2. Bailey Avenue & McKinley Parkway	B	A
3. Bailey Avenue & South Park Avenue	C	D
4. Bailey Avenue & Seneca Street	D	D
5. Route 5 & Tifft Street	C	D
6. Louisiana Street & Ohio Street	C	B
7. Route 5 & Lake Avenue	D	A
8. Route 5 & Odell Street	C	C
9. Route 5 & Dona Street	D	D
10. Route 5 & Madison Avenue	D	D
11. South Park Avenue & Hopkins Street	B	B
12. South Park Avenue & Smith Street	C	D
13. Tifft Street & Hopkins Street	C	C
14. South Park Avenue & Tifft Street	C	C
15. South Park Avenue & Michigan Avenue	F	F
16. Route 5 & Ohio Street	A	A
17. Route 5 & Ridge Rd.	D	D
18. Ohio St. & Michigan Avenue*	F	F
19. New Arterial & Seneca Street	D	C
20. New Arterial & Elk Street	B	B
21. New Arterial & South Park Ave	B	C
22. New Arterial & Tifft Street	B	B

* Overall LOS not calculated- indicates movements with lowest LOS

Intersection with LOS of E or F

Expressway Segments with LOS of E or F

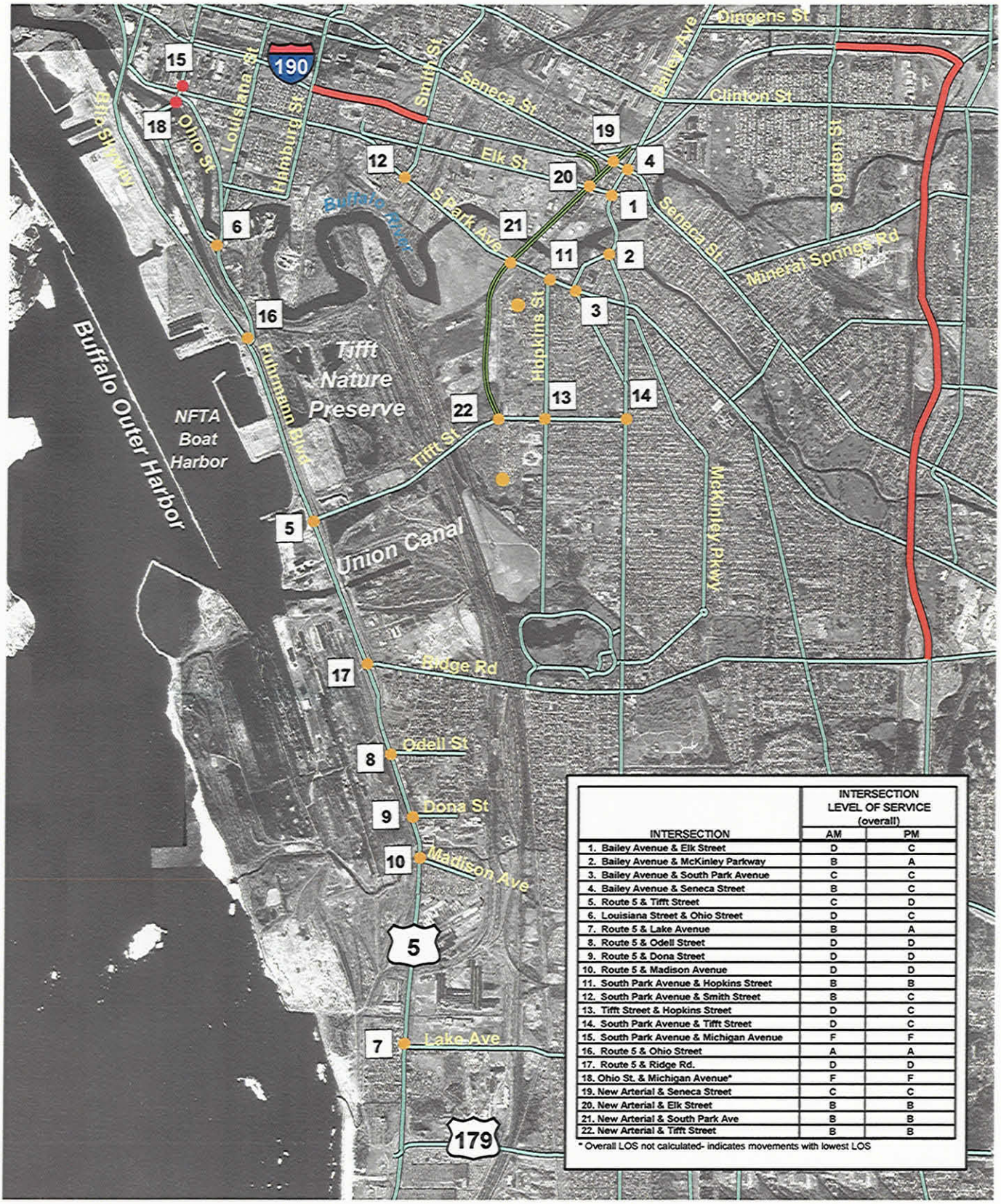
N W E S

0 0.5 Miles

0 0.5 Kilometers

FIGURE 3.3-15
Boulevard Alternative with New Arterial
Intersection/Segment Level of Service

Southtowns Connector/Buffalo Outer Harbor Project



INTERSECTION	INTERSECTION LEVEL OF SERVICE (overall)	
	AM	PM
1. Bailey Avenue & Elk Street	D	C
2. Bailey Avenue & McKinley Parkway	B	A
3. Bailey Avenue & South Park Avenue	C	C
4. Bailey Avenue & Seneca Street	B	C
5. Route 5 & Tifft Street	C	D
6. Louisiana Street & Ohio Street	D	C
7. Route 5 & Lake Avenue	B	A
8. Route 5 & Odell Street	D	D
9. Route 5 & Dona Street	D	D
10. Route 5 & Madison Avenue	D	D
11. South Park Avenue & Hopkins Street	B	B
12. South Park Avenue & Smith Street	B	C
13. Tifft Street & Hopkins Street	D	C
14. South Park Avenue & Tifft Street	D	C
15. South Park Avenue & Michigan Avenue	F	F
16. Route 5 & Ohio Street	A	A
17. Route 5 & Ridge Rd.	D	D
18. Ohio St. & Michigan Avenue*	F	F
19. New Arterial & Seneca Street	C	C
20. New Arterial & Elk Street	B	B
21. New Arterial & South Park Ave	B	B
22. New Arterial & Tifft Street	B	B

* Overall LOS not calculated- indicates movements with lowest LOS

Intersection with LOS of E or F

Expressway Segments with LOS of E or F

N
W E
S
0 0.5 Miles
0 0.5 Kilometers

FIGURE 3.3-16
Hybrid Alternative with New Arterial
Intersection/Segment Level of Service

Southtowns Connector/Buffalo Outer Harbor Project

specific collision diagrams presented in **Attachment D of Appendix C** indicate that a considerable portion of crashes involved conflicting traffic movements originating from such driveways and side streets and associated with left-turns into such streets/driveways. Under all Build Alternatives, a planted median would be constructed on this at-grade segment of Route 5. While providing enhanced refuge for pedestrians and serving as a streetscape amenity in business areas in Woodlawn and Lackawanna, the median would also serve to restrict a portion of unsafe turning movements along these segments of Route 5. In addition, the installation of coordinated traffic signals along Route 5 under all Build Alternatives presents the opportunity for identifying intersections for including advanced left turn signal phases at key intersections, potentially with real-time control through linkage to the regional traffic control center administered by NITTEC.

While Section 2.3.1.10 identifies several nonstandard/nonconforming features along the limited-access segment of Route 5 from Ridge Road to the Buffalo Skyway Bridge, the accident analysis did not bear out segments that exhibited higher than average crash rates. In turn, review of the collision diagrams does not suggest a relationship between these existing features and accident patterns. Nevertheless, in all but one location of an existing nonstandard feature (Route 5 Bridge over Tifft Street – see Section 3.3.3.1), the components of each of the Build Alternatives meet current design criteria associated with safety issues.

3.3.3.3 Pavement

Preliminary pavement sections were designed based on the New York State Pavement Design Requirements, which requires that designs consider anticipated traffic volumes and typical vehicular types. Specific pavement sections under each alternative utilize both NYSDOT standards (for roads under State jurisdiction) and City of Buffalo standards (for roads that are currently or would be maintained by the City).

Route 5 – Modified Improvement, Boulevard, and Hybrid Alternatives

The recommended pavement section for Route 5 from the touchdown of the Skyway Bridge to Ridge Road for all alternatives is a Portland Cement Concrete (PCC) pavement with a total section thickness of 650 mm. This includes 250 mm of PCC over 100 mm of permeable base over 300 mm of subbase course.

From the Skyway Bridge touchdown to Ridge Road, an intermittent mill and overlay pavement section of 105 mm of hot mix asphalt (HMA) is the recommended pavement treatment.

From Ridge Road to the approximate location of Kane Street (Station 6+400, 6+400, and 6+410 for the Modified Improvement, Boulevard, and Hybrid respectively), the recommended pavement section for Route 5 is a total section thickness of 655 mm. This includes 255 mm of HMA over a 100 mm permeable base, over a 300 mm subbase course.

From the approximate location of Kane Street (Station 6+400, 6+400, and 6+410 for the Modified Improvement, Boulevard, and Hybrid respectively) to Route 179 (Milestrip Road), the recommended pavement section for existing portions of Route 5 would include mill and overlay

with 105 mm of HMA. In locations where widening is proposed, the recommended pavement section for Route 5 is a total section thickness of 655 mm, including 255 mm of HMA, over a 100 mm permeable base, over a 300 mm subbase course.

Fuhrmann Boulevard

Full depth reconstruction of Fuhrmann Boulevard is recommended based on City of Buffalo standards with a section thickness of 580 mm. This includes 180 mm of HMA, over 100 mm of permeable asphalt base, over a 300 mm thick subbase course.

I-190/Tifft Street Arterial

The recommended pavement section for the I-190/Tifft Street Arterial is based upon City of Buffalo standards for full-depth concrete roadways, in consideration that the road would serve new light-industrial uses associated with the redevelopment of the LTV site. It would have a total section thickness of 425 mm including 225 mm of PCC, over a 200 mm thick subbase course.

Ohio Street Improvements

The recommended pavement section for the full depth reconstruction of Ohio Street is also based upon City of Buffalo paving standards, involving a composite pavement with a total section thickness of 490 mm. This includes 90 mm of hot mix asphalt, over 200 mm concrete base, over a 200 mm thick subbase course.

3.3.3.4 Structures

The alternatives have been developed to the point necessary to estimate costs and impacts. With regard to bridges or structures, preliminary design efforts have been limited to identifying bridge locations, approximate spans, clearances and costs. Specific details regarding bridge types, final span arrangements, etc. are normally studied during final design (e.g., Structure Design Justification Report, Structure Study Plans, and Preliminary Structure Plans). Therefore, the discussion that follows describes possible demolition, modification, and reconstruction of the structures within the project area under each Alternative. "Partial" bridge demolition would involve removal of existing bridge superstructure and abandonment of all substructures.

Null Alternative

Under the Null Alternative, there would be no changes to structures, other than what is already programmed under the TIP (e.g., Replacement of Ridge Road Bridge over the CSX Rail corridor).

Modified Improvement Alternative (Preferred Alternative)

- **New Interchange (for access to NFTA Outer Harbor Lands).** This would be a new twin span precast overpass designed to carry Route 5 over a new crossroad. The new interchange would be developed to provide Outer Harbor access.

- **Route 5 over Service Road "D" (BIN 1001569).** This structure would be partially demolished, because Fuhrmann Boulevard would no longer exist on the east side of Route 5.
- **Route 5 over CSX ("Beach Line") Railroad Tracks (BIN 1001559).** This structure would be replaced with a single span precast structure.
- **Route 5 over Ohio Street (BIN 1001549).** This structure would be replaced with a new single span precast structure, necessary for the vertical realignment of Route 5 (for Ohio Street Southbound to Route 5 Westbound ramp). Aesthetic enhancements to the faces of the new structure would also be implemented, intended to identify this bridge as a gateway to the Outer Harbor area. This would include sculptural treatments to concrete railings/fascia on either of the bridge, similar to the approach currently being used for the reconstruction of the Grant Street bridge in the City of Buffalo (PIN 5470.19).
- **Route 5 over Service Road "C" (BIN 1001539).** Under this alternative, this structure would be replaced by a single span precast structure for pedestrian access between Tifft Nature Preserve and the NFTA Boat Harbor.
- **Lake Kirsty Outlet to Lake Erie.** This 153 cm (60-inch) outlet extends under Route 5, connecting Lake Kirsty within Tifft Nature Preserve with Lake Erie. It would be maintained under this alternative.
- **Route 5 over CSX Spur to Independent Cement (BIN 1074270).** This structure will be partially demolished since CSX tracks have been removed and rail access is no longer required.
- **Route 5 over Tifft Street (BIN 1074280); Route 5/Father Baker Bridge over Union Ship Canal (BIN 1001520).** These structures would remain in place. The Tifft Street Bridge would be treated with similar aesthetic enhancements as those proposed for the Ohio Street bridge to serve as a gateway feature to the Outer Harbor (see also **Figure 4.4-6, Sheet 2**).
- **Route 5 over Ridge Road (BIN 1074260).** This structure would be demolished. Route 5 would be an at-grade roadway at Ridge Road and therefore the structure would not be needed. The alignment of Route 5 would be shifted to the west to ease structure removal.
- **Route 5 over Smokes Creek (BIN 1001490).** This structure would remain in place and be modified to accommodate a 6-lane boulevard and pedestrian/bicycle trail. The structure was rehabilitated in 2001 as part of a reconstruction of this segment of Route 5. In 2001, it received a NYSDOT rating of "7" and a FHWA rating of "89.6". As it was concluded in 2001, it is reasonable to assume that modification of the existing bridge is feasible.
- **South Buffalo Railroad Spur to Bethlehem Steel over Route 5 (BINs 700146 and 7001462).** This structure would be replaced with a longer structure to span the 6-lane boulevard and pedestrian/bicycle trail.
- **Blasdell Creek Culvert Structure (CIN C540009).** This subsurface structure carries the North and South Branch of Blasdell Creek under Route 5 via two sets of twin 122-cm (48 inch) pipes, south of the South Buffalo Railroad Bridge. Preliminary analysis by NYSDOT

indicates that the culvert may need replacement with a box culvert structure to handle seasonal flows. This segment of Route 5 is proposed for widening to add an addition westbound lane in the vicinity of the South Buffalo Railroad Bridge, requiring either lengthening or replacement of these culverts, which will be determined during final design for this segment. As part of this effort, the potential for raising the profile of Route 5 in the vicinity of the railroad bridge to eliminate periodic flooding problems (which could be constrained by elevation of the railroad bridge and the presence of existing driveways in this segment) will be examined.

Boulevard Alternative

- **Route 5 over Service Road "D" (BIN 1001569).** This structure would be demolished since under this alternative Fuhrmann Boulevard would be completely removed.
- **Route 5 over CSX ("Beach Line") Railroad Tracks (BIN 1001559).** This structure would be demolished.
- **Route 5 over Ohio Street (BIN 1001549).** This structure would be demolished.
- **Ohio Street Southbound to Route 5 Westbound Ramp.** Under this alternative, an underpass would be constructed to carry traffic heading southbound from Ohio Street to the Route 5 southbound ramp. This new ramp would be equipped with appropriate drainage facilities (i.e., pump station).
- **Route 5 over Service Road "C" (BIN 1001539).** This structure would be demolished.
- **Lake Kirsty Outlet to Lake Erie.** This 153 cm (60-inch) outlet extends under Route 5, connecting Lake Kirsty within Tifft Nature Preserve with Lake Erie. It would be maintained under this alternative.
- **Pedestrian Bridge over Route 5, Tifft Nature Preserve to NFTA Boat Harbor/Gallagher Beach Area.** A new bridge for pedestrian and bicycle access would be constructed to connect planned multi-purpose trails east of Route 5 and the entrance to Tifft Nature Preserve to the NFTA Boat Harbor/Gallagher Beach Area (i.e., the location of the new Buffalo Boat Harbor State Park). This would be of similar design as under the Improvement Alternative.
- **Route 5 over Tifft Street (BIN 1074280).** This structure would be demolished.
- **Route 5 over CSX Spur to Independent Cement (BIN 1074270) and Route 5/Father Baker Bridge over Union Ship Canal (BIN 1001520).** These structures would remain in place and be modified to accommodate a six-lane boulevard and bicycle/pedestrian access. Each structure was constructed in 1991 as part of the replacement of the former high-level Father Baker Bridge. In 2001, BIN 1074270 received a NYSDOT rating of "7" and a FHWA rating of "98.3". In 2000, BIN 1001520 received a NYSDOT rating of "7" and a FHWA rating of "82.1". It is reasonable to assume that modification of these existing bridges is feasible.

- **Route 5 over Ridge Road (BIN 1074260).** This structure would be demolished. Route 5 would be an at-grade roadway at Ridge Road and therefore the structure would not be needed. The alignment of Route 5 would be shifted to the west to ease structure removal.
- **Route 5 over Smokes Creek (BIN 1001490).** This structure would remain in place and be modified to accommodate a 6-lane boulevard and pedestrian/bicycle trail. The structure was rehabilitated in 2001 as part of a reconstruction of this segment of Route 5. In 2001, it received a NYSDOT rating of "7" and a FHWA rating of "89.6". As it was concluded in 2001, it is reasonable to assume that modification of the existing bridge is feasible.
- **South Buffalo Railroad Spur to Bethlehem Steel over Route 5 (BINs 700146 and 7001462).** This structure would be replaced with a longer structure to span the 6-lane boulevard and pedestrian/bicycle trail.
- **Blasdell Creek Culvert Structure (CIN C540009).** This subsurface structure carries the North and South Branch of Blasdell Creek under Route 5 via two sets of twin 122-cm (48 inch) pipes, south of the South Buffalo Railroad Bridge. Preliminary analysis by NYSDOT indicates that the culvert may need replacement with a box culvert structure to handle seasonal flows. This segment of Route 5 is proposed for widening to add an addition westbound lane in the vicinity of the South Buffalo Railroad Bridge, requiring either lengthening or replacement of these culverts, which will be determined during final design for this segment. As part of this effort, the potential for raising the profile of Route 5 in the vicinity of the railroad bridge to eliminate periodic flooding problems (which could be constrained by elevation of the railroad bridge and the presence of existing driveways in this segment) will be examined.

Hybrid Alternative

- **New Interchange (for access to NFTA Outer Harbor Lands).** A proposed new structure that would be a single span overpass designed to carry Route 5 over a new crossroad. The new interchange has been developed to provide Outer Harbor access.
- **Route 5 over Service Road "D" (BIN 1001569).** This structure would be partially demolished, because Fuhrmann Boulevard would no longer exist on the east side of Route 5.
- **Route 5 over CSX ("Beach Line") Railroad Tracks (BIN 1001559).** This structure would be demolished.
- **Route 5 over Ohio Street (BIN 1001549).** This structure would be demolished.
- **Ohio Street Southbound to Route 5 Westbound Ramp.** Under this alternative, an underpass would be constructed to carry traffic heading southbound from Ohio Street to the Route 5 southbound ramp. This new ramp would be equipped with appropriate drainage facilities (i.e., pump station).
- **Route 5 over Service Road "C" (BIN 1001539).** This structure would be demolished.

- **Lake Kirsty Outlet to Lake Erie.** This 153 cm (60-inch) outlet extends under Route 5, connecting Lake Kirsty within Tifft Nature Preserve with Lake Erie. It would be maintained under this alternative.
- **Pedestrian Bridge over Route 5, Tifft Nature Preserve to NFTA Boat Harbor/Gallagher Beach Area.** A new bridge for pedestrian and bicycle access would be constructed to connect planned multi-purpose trails east of Route 5 and the entrance to Tifft Nature Preserve to the NFTA Boat Harbor/Gallagher Beach Area (i.e., the location of the new Buffalo Boat Harbor State Park). This would be of similar design as under the Improvement Alternative.
- **Route 5 over Tifft Street (BIN 1074280).** This structure would be demolished.
- **Route 5 over CSX Spur to Independent Cement (BIN 1074270) and Route 5/Father Baker Bridge over Union Ship Canal (BIN 1001520).** These structures would remain in place and be modified to accommodate a six-lane boulevard and bicycle/pedestrian access. Each structure was constructed in 1991 as part of the replacement of the former high-level Father Baker Bridge. In 2001, BIN 1074270 received a NYSDOT rating of "7" and a FHWA rating of "98.3". In 2000, BIN 1001520 received a NYSDOT rating of "7" and a FHWA rating of "82.1". It is reasonable to assume that modification of these existing bridges is feasible.
- **Route 5 over Ridge Road (BIN 1074260).** This structure would be demolished. Route 5 would be an at-grade roadway at Ridge Road and therefore the structure would not be needed. The alignment of Route 5 would be shifted to the west to ease structure removal.
- **Route 5 over Smokes Creek (BIN 1001490).** This structure would remain in place and be modified to accommodate a 6-lane boulevard and pedestrian/bicycle trail. The structure was rehabilitated in 2001 as part of a reconstruction of this segment of Route 5. In 2001, it received a NYSDOT rating of "7" and a FHWA rating of "89.6". As it was concluded in 2001, it is reasonable to assume that modification of the existing bridge is feasible.
- **South Buffalo Railroad Spur to Bethlehem Steel over Route 5 (BINs 700146 and 7001462).** This structure would be replaced with a longer structure to span the 6-lane boulevard and pedestrian/bicycle trail.
- **Blasdell Creek Culvert Structure (CIN C540009).** This subsurface structure carries the North and South Branch of Blasdell Creek under Route 5 via two sets of twin 122-cm (48 inch) pipes, south of the South Buffalo Railroad Bridge. Preliminary analysis by NYSDOT indicates that the culvert may need replacement with a box culvert structure to handle seasonal flows. This segment of Route 5 is proposed for widening to add an addition westbound lane in the vicinity of the South Buffalo Railroad Bridge, requiring either lengthening or replacement of these culverts, which will be determined during final design for this segment. As part of this effort, the potential for raising the profile of Route 5 in the vicinity of the railroad bridge to eliminate periodic flooding problems (which could be constrained by elevation of the railroad bridge and the presence of existing driveways in this segment) will be examined.

All Build Alternatives

- **Fuhrmann Boulevard**
  - **Fuhrmann Boulevard over CSX Spur to Independent Cement (BIN 2260780)**. This structure is currently in poor condition and requires major repair work or removal. This structure would be demolished under all Build Alternatives.
- **I-190/Tifft Street Arterial**
  - **New I-190 Northbound Off-Ramp.** An underpass as part of the off ramp would be constructed to carry traffic heading northbound on I-190 to the intersection of Keating Street and Seneca Street. This underpass would provide for the least amount of disturbance to existing traffic. Modifications to the north side of the I-190 structure (BIN 5512199) in this location would be required to allow for deceleration lanes into the off-ramp.
  - **New I-190 Southbound On-Ramp.** A new on-ramp would be constructed to carry traffic heading southbound on I-190, extending from the intersection of Keating Street and Seneca Street. Modifications to the south side of the I-190 structure (BIN 5512199) in this location would be required to allow for merge lanes into the main travel lanes.
  - **Arterial over Buffalo River.** A new fixed, low-level bridge would be constructed to carry the I-190/Tifft Street Arterial over the Buffalo River at a point beyond the navigable channel of the river. The location is a former railroad crossing where piers and abutments currently exist. These would be removed and a full new structure would be constructed. The bridge would be fully lighted and include sidewalks and concrete railings on either side of the structure. In addition, aesthetic enhancements to the railings/fascia of the new bridge would be implemented, intended to adequately fit into context of the Buffalo River, which is growing in its role as a more recreational waterway. These treatments would be similar to those proposed for the Ohio Street and Tifft Street bridges under the Improvement Alternative (see also **Figure 4.4-6, Sheet 6**).
- **Ohio Street Improvements**
  - **Ohio Street over Buffalo River (BIN 2260430); Ohio Street over CSX Railroad Tracks (BIN 2260620).** These structures would remain.

3.3.3.5 Hydraulics

Null Alternative

This alternative would maintain the existing roadway alignments and bridges thereby having no effect on the current hydraulic capacity.

All Build Alternatives

All Build Alternatives would include a new bridge crossing of the Buffalo River as part of the I-190/Tifft Street Arterial. The structure would be located where a former railroad crossing

existed. Piers and abutments from the former rail bridge exist at this location. Since the structure would be constructed in the same location as a former bridge, it was determined that there would be no significant encroachments, no significant risk, and no significant impacts on natural or beneficial flood plain values.

The final design of waterway openings for all structures will include a "Risk Analysis," in accordance with the provisions of Executive Order 11988 as implemented in 23 CFR 650A: *Location and Hydraulic Design of Encroachments on Flood Plains*. The overtopping flood will be identified if the recurrence interval is less than 100 years. Design guidelines suggest that all structures provide a minimum freeboard of 0.6 m for the 50-year storm, with some freeboard for the 100-year storm.

3.3.3.6 Drainage

Null Alternative

This alternative would primarily maintain the existing roadway alignments thereby having no effect on current drainage.

All Build Alternatives

Drainage systems would be configured in final design to accommodate the following design storms:

- Cross Drainage Structures 50-year storm
- Closed Drainage Structures 10-year storm
- Ditch Depths 25-year storm
- Ditch Velocities 10-year storm

For interchange ramps (with the exception of those on I-190), surface water would drain and be collected by an open drainage system, similar to existing systems. The system would discharge into the nearby watercourses. The design of the system would ensure that discharges into watercourses would not appreciably change. This will prevent any reduction in water flow downstream during dry weather, and avoid increasing high water levels during wet weather. Closed drainage systems consisting of drainage inlets and storm sewer pipes would be used for Route 5, I-190/Tifft Street Arterial, Ohio Street, and Fuhrmann Boulevard.

Drainage for proposed I-190 ramps associated I-190/Tifft Street Arterial would be tied to existing closed drainage systems of this Interstate Highway. In addition, for the new Ohio Street Southbound to Route 5 Westbound ramp to be located in a Route 5 underpass, the cost estimates include provisions for the installation of a pump station to assist in drainage associated with this facility.

3.3.3.7 Maintenance Responsibility

The NYSDOT has ownership and maintenance jurisdiction of Route 5 and Milestrip Road (Route 179). Lake Avenue is owned and maintained by Erie County. The City of Lackawanna owns and maintains Ridge Road. All other roads in the project area are owned and maintained by the City of Buffalo.

Null Alternative

Under the Null Alternative, maintenance responsibility would remain as indicated above.

Modified Improvement Alternative (Preferred Alternative)

Under this alternative, all existing roads in the project area would retain their current ownership and maintenance jurisdictions. The new I-190/Tifft Street Arterial that would be classified as a minor urban arterial. Ownership and maintenance responsibilities would be assigned to the City of Buffalo.

Boulevard Alternative

Under this alternative, Route 5 would become a six-lane divided boulevard, owned and maintained by NYSDOT. Only the northern section of Fuhrmann Boulevard (i.e., north of Michigan Avenue) would be retained as a two-way local road owned and maintained by the City of Buffalo. All other affected roadways (existing and new) within the project area would be the same as for the Modified Improvement Alternative.

Hybrid Alternative

Under this alternative, Route 5 would retain its expressway configuration south of the Skyway Bridge and transition to a six-lane divided boulevard south of Ohio Street. It would continue to be owned and maintained by NYSDOT. Fuhrmann Boulevard would be retained as a two-way local road on the west side of Route 5 from the US Coast Guard Station to Ohio Street and would be owned and maintained by the City of Buffalo. All other affected roadways (existing and new) within the project area would be the same as for the Modified Improvement Alternative.

3.3.3.8 Maintenance and Protection of Traffic

Elements of maintaining traffic flow through construction work zones may include signs, flaggers, temporary signals, paving of shoulders, striping, and sometimes temporary bridges. Maintaining traffic flow involves limiting risks for motorists and workers, as well as minimizing congestion and delays during the construction period.

Null Alternative

There would be no need for maintenance and protection of traffic under this Alternative in that no construction work zones would exist.

Modified Improvement Alternative (Preferred Alternative)

Route 5 is a primary commuting route from Downtown Buffalo and Southtowns communities. Given this, reconstruction activities associated with this alternative would require maintaining a flow of traffic during the construction period. Two-way traffic would be maintained at all times during construction. Staged construction of bridges would be done to enable two-way traffic at all times. Total off-site detours would not be necessary, because the existing improved sections of Fuhrmann Boulevard (North and South) would be retained during construction. Traffic would be detoured off Route 5 to Fuhrmann Boulevard in construction work zones as necessary. In addition, motorists may choose to frequent alternative routes for their commute to and from the city. There are no significant vertical or horizontal alignment changes occurring under this alternative, however, access to Route 5 southbound from Ohio Street via an underpass may require a detour or temporary pavement to facilitate traffic in this area.

Construction of the New I-190/Tifft Street Arterial would require maintenance of traffic along Tifft Street (at the New Arterial's southern terminus); at South Park Avenue (where Abby and Germania Streets would be looped together); at Elk Street (at the New Arterial's northern terminus); and along Seneca Street in the vicinity of Keating Street (associated with I-190 ramp construction). In most circumstances, two-way single lane traffic would be maintained on one side while reconstruction activities take place along the opposite side. Traffic would then be directed to shift to the newly reconstructed side while the other side is completed.

Along Ohio Street, traffic flow will require maintenance along its entire length during reconstruction activities (i.e., through staged construction) and particularly in the location where Louisiana Street and St. Clair meet Ohio Street at a three-way intersection. Likewise in this area, protection of construction workers and motorists would be necessary given its use as a primary route for access to I-190.

Construction vehicles, trucks, heavy equipment, and construction workers would all need access to the various portions of the project area, thereby adding to the current traffic volume and potential for temporary congestion and delays for normal highway users. In many cases, the motorists would choose to use other routes.

Detailed maintenance and protection of traffic plans would be prepared during final design to show the location of all temporary detours (if any), construction staging, and temporary traffic maintenance details. Construction would likely be completed in phases over several years. Maintenance during winter months would be a particular concern given the proximity to Lake Erie and the associated winds and fast-developing snowstorms. Close coordination would be conducted with the NFTA, school districts, police, fire protection and ambulance services to help with planning their operations to account for unavoidable construction related delays.

Boulevard Alternative

Under the Boulevard Alternative, measures for maintenance and protection of traffic would be similar as the Modified Improvement Alternative, with the possible exception of using Fuhrmann

Boulevard as an off-site detour route. The Boulevard Alternative would keep only the northern section of Fuhrmann Boulevard as a two-way access road to the U.S. Coast Guard and Times Beach. Fuhrmann Boulevard would terminate where Route 5 touches down from the Skyway. Although keeping Fuhrmann Boulevard as an access road to the Union Ship Canal is not a component of this alternative, the existing roadway could be utilized as a detour route during construction of Route 5, prior to its eventual removal.

Detailed maintenance and protection plans would be prepared during final design as described above under the Modified Improvement Alternative.

Hybrid Alternative

The Hybrid Alternative combines elements of the Improvement and Boulevard alternatives. For the portion of Route 5 from the Buffalo Skyway Bridge to the Union Ship Canal, maintenance and protection of traffic procedures would follow that which is outlined for the Modified Improvement and Boulevard Alternatives for their respective segments.

Detailed maintenance and protection plans would be prepared during final design as described above under the Modified Improvement Alternative.

3.3.3.9 Soils and Foundation

No comprehensive subsurface investigations have been conducted in specific locations for the STC/BOH Project, although review of soil atlases indicate no areas of exceptional or extraordinary issues with regard to construction. Subsurface investigations would be conducted at various locations during final design to verify preliminary design assumptions and to determine foundation requirements for bridges. The proposed I-190/Tifft Street Arterial alignment passes through the LTV site. The site is currently in the process of site remediation as part of an approved Voluntary Cleanup Agreement.

Excavation and Embankment

The maximum side slope for embankments used in preliminary design for all roadways is 1 (vertical) on 2 (horizontal), with no maximum height. Cut slopes in earth would likewise have a maximum slope of 1 on 2. Cut slopes in rock would have a maximum slope of 1 on 1, but none are anticipated.

Bridge Foundations

Foundations for bridges will be designed after completing all necessary subsurface investigations at the proposed bridge locations. Particular attention will be given to bridge foundations at the Father Baker Bridge (BIN 1001520) where settling has occurred since its replacement with a low-level bridge in 1991. This has resulted in an uneven driving surface on Route 5 (i.e., “the Father Baker bumps”).

3.3.3.10 Utilities

There are several major utility services in the project area, including Niagara Mohawk, National Fuel, City of Buffalo/Erie County combined/separated sewer, City of Buffalo/Erie County water lines, and ExxonMobil pipelines (see Section 2.3.1.20). State Highway Laws give utility companies the right to use highway rights-of-way, provided that their facilities do not interfere with the highway. If a highway requires reconstruction or improvements and utilities within the right-of-way are in conflict, they must be relocated at the owners' expense. If utility facilities are located outside of a highway right-of-way on private property or a private easement and a highway reconstruction or improvement project would require such facilities to be relocated, then the State or the agency building the road improvement must pay for its relocation.

The underground relocation of overhead utilities has been assumed in the various visual displays for each of the Build Alternatives. However, in accordance with provisions of the State Highway Law, financing of the costs associated with such relocation would need to be bourn by sources other than state/federal highway funds (e.g., private utility companies, other dedicated public funds, etc.). The following sections outline utility implications of the Null and Build Alternatives.

Null Alternative

Utility relocations would not be required under this alternative.

All Build Alternatives

Each of the Build Alternatives assumes some level of reconfiguration of overhead utilities (e.g., electric, telephone, cable television) to underground facilities with new service connections along the following roads:

- Fuhrmann Boulevard (or Route 5 as part of the Boulevard and a portion of the Hybrid Alternative);
- Hamburg Turnpike (i.e., Route 5 between Ridge Road and Milestrip Road); and
- Ohio Street.

Utilities to be relocated underground would be located outside the travel lanes of the subject roadway wherever feasible. Preliminary contacts with local water, gas, electric, telephone, cable television and sewer utility companies has occurred and would be continued through final design to determine exact locations of underground utility lines.

The only significant utility facility impacts would be associated with the proposed right-of-way for the I-190/Tifft Street Arterial. Petroleum pipeline facilities currently run along this former rail corridor, associated with the ExxonMobil facility on the Buffalo River. In addition, a localized pipeline connecting internal sections of the ExxonMobil tank farm facilities also crosses the proposed Arterial right-of-way. Preliminary discussions have been made with

ExxonMobil representatives regarding the implications of Project upon these facilities. Coordination of necessary realignment or relocation of such lines would be conducted as part of the final design process.

3.3.3.11 Railroads

Anticipated effects to railroad crossings associated with each of the Build Alternatives are discussed under **Section 3.3.3.4: Structures**.

3.3.3.12 Right-of-Way

Right-of-way is property that is either owned or over which an easement has been established for a roadway. State Highway Laws have established rights and responsibilities of the State, Counties, Cities, Villages and Towns to own and maintain roadways. **Table 3.3-3** summarizes right of way requirements for each feasible Build Alternative. For more detailed information locations of necessary right-of-way, refer to **Appendix A: Plans and Profiles**.

Table 3.3-3: Projected Acquisition and Displacement

Road	Modified Improvement Alternative	Boulevard Alternative	Hybrid Alternative
Fuhrmann Boulevard			
Land Acquired – hectares (acres)	2.20 (5.43) Take 0.41 (1.00) Easement	0 (0)	1.38 (3.41)
Commercial Establishments Displaced	0	0	0
Residential Properties Displaced	0	0	0
Route 5			
Land Acquired – hectares (acres)	1.01 (2.51) Take	2.56 (6.33)	2.56 (6.33)
Commercial Establishments Displaced	0	0	0
Residential Properties Displaced	0	0	0
Ohio Street			
Land Acquired – hectares (acres)	0.43 (1.07) Take 0.02 (0.05) Easement	0.35 (0.86)	0.35 (0.86)
Commercial Establishments Displaced[1]	2	2	2
Residential Properties Displaced	0	0	0
I-190/Tifft Street Arterial			
Land Acquired – hectares (acres)[2]	6.07 (14.99) Take	6.26 (15.47)	6.26 (15.47)
Commercial Establishments Displaced	1	1	1
Residential Properties Displaced	3	3	3
Mixed Commercial/Residential Properties Displaced	1	1	1

Table 3.3-3: Projected Acquisition and Displacement			
Road	**Modified Improvement Alternative**	**Boulevard Alternative**	**Hybrid Alternative**
Project Area Totals			
Land Acquired – hectares (acres)	10.14 (25.05) 9.71 (23.99) takes 0.43 (1.06) easements	9.17 (22.66)	10.55 (26.07)
Commercial Establishments Displaced	3	3	3
Residential Properties Displaced	3	3	3
Mixed Commercial/Residential Properties Displaced	1	1	1

Notes: [1] Commercial structures on property to be acquired are currently not in use.
[2] Does not include portions of several dedicated "paper" rights-of-way owned by the City of Buffalo that would be used for portion of the I-190/Tifft Street Arterial alignment.

3.3.3.13 Landscape Development

Landscape development would be included with all Build Alternatives (see **Figure 3.3-17**) to complement and enhance the existing waterfront and open space areas and to mitigate roadway improvements in a natural manner. The use of native and/or low maintenance plant species would be a primary objective for all landscape development in order to fully blend into the existing environment. The proposed landscape development would augment the existing land uses while helping the project double in its goal of being an urban arterial providing easy access to the waterfront and a scenic boulevard providing views of the lakeshore. Landscape plans will also seek to mitigate, where feasible, the periodic effects of snowdrift along waterfront roadways. Because each Build Alternative would consolidate lanes/interchange configurations to varying degrees, all present opportunities for creating "living snow fence" facilities through the landscape design. These are targeted at capturing drifting snow prior to accumulating along roadways.

Conceptual landscape plans are included in **Appendix A: Plans and Profiles**; final plans would be developed during the Final Design Phase of the project. Concepts noted above and in **Appendix D- Visual Impact Assessment** would be incorporated as summarized below.

Null Alternative

This alternative would not include any new landscaping.

Modified Improvement Alternative (Preferred Alternative)

New plantings alongside the northbound lane of Route 5 and southbound lane of Fuhrmann Boulevard and a new pedestrian and bicycle trail lined with new plantings would be implemented under this alternative. Motorists traveling along this corridor would have occasional views of Downtown buildings, industrial facilities, grain elevators, and open water of Lake Erie. Pedestrians and bicyclists would have greatly enhanced access to the lakeside of the

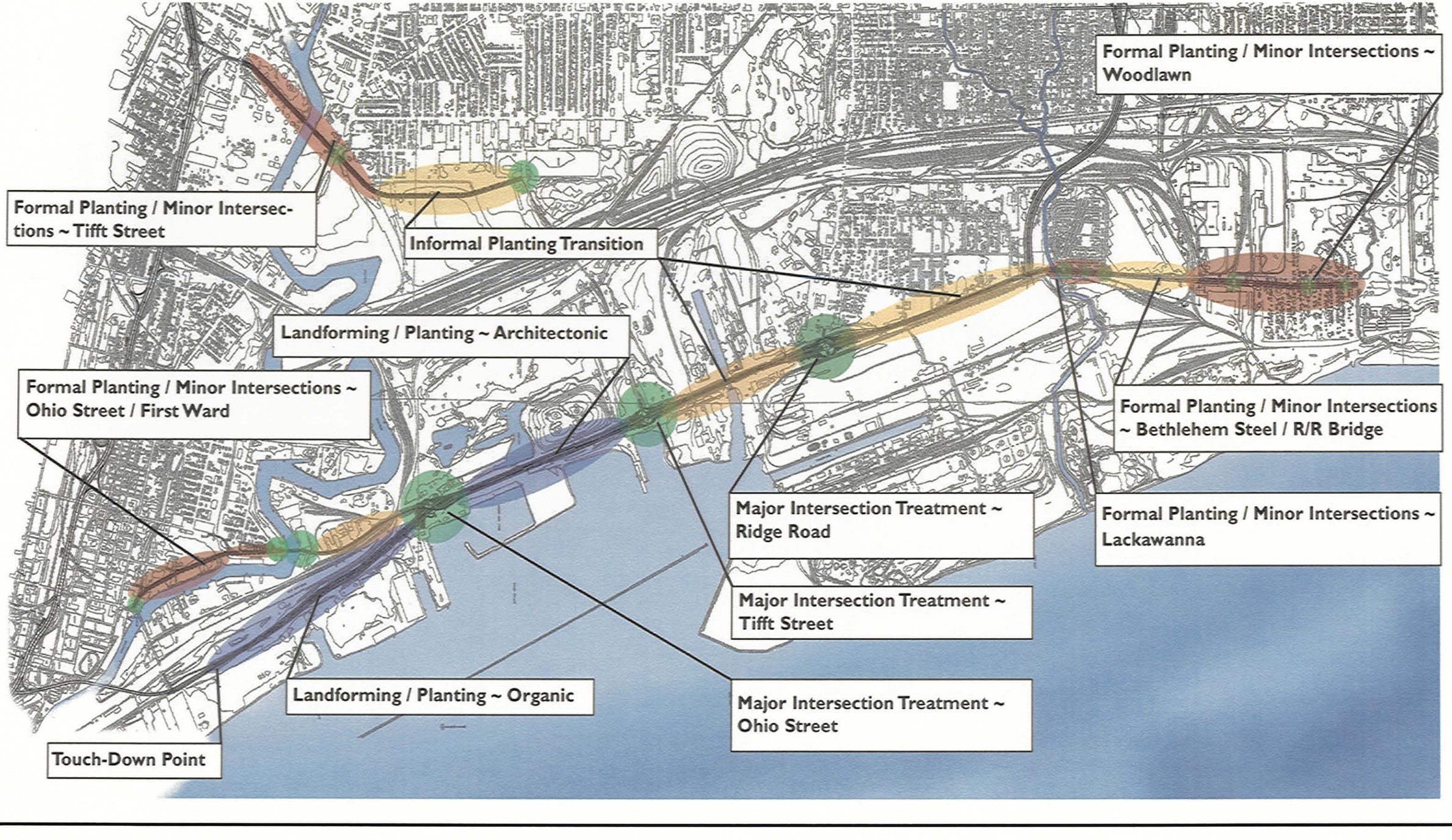


Figure 3.3-17
Landscape Design Concepts

Southtowns Connector/Buffalo Outer Harbor Project

corridor via new walkways and bike trails that would have subtle changes to the roadway edges, including lighting, signing, and new plantings.

The entranceway to Tifft Nature Preserve would be greatly enhanced with extensive plantings to help define the entry point. The installation of plantings between Route 5 and the consolidated Fuhrmann Boulevard and at the lakeside edge of Fuhrmann Boulevard together with new lighting and a pedestrian/bicycle circulation system (including a new eco-trail (underpass) connecting Tifft Nature Preserve with the NFTA Boat Harbor/Gallagher Beach area) would provide a more unified landscaping character to the visual environment.

Further south on Route 5 past Tifft Street, landscaping details would include a planted central median, sidewalks on both sides of the street, and consistent tree plantings on the edges of the roadway, along with new lighting fixtures. Removal of overhead wires and installation of consistent roadway edge treatments would create a more harmonious environment for the mixed commercial and residential areas. Pedestrians would further have their environment enhanced through the plantings of roadside trees that serve as a buffer from vehicular traffic.

Boulevard Alternative

New plantings along the central median that would distinguish a change to Route 5 under this alternative are the main components of the landscape plan. Additionally, new plantings would be placed on both sides of the roadway. The new plantings and lighting along the boulevard would help to create a more consistent visual character to the corridor. Median and roadside plantings and landforms would be designed to not interfere with views of the lake for boulevard drivers.

Similar to the Improvement Alternative, a new pedestrian bridge over Route 5 is proposed that would connect to a new continuous bicycle/pedestrian path; combined with median landscaping and roadside plantings this would create a more unified visual character to this portion of the project area. Further, views of the lakeshore would be enhanced through the intermittent planting of trees and scrub shrubs along both edges of Route 5.

Landscaping treatments for Route 5 south of Tifft Street would include the same elements described above for the Modified Improvement Alternative.

Hybrid Alternative

The Hybrid Alternative would combine the alignment features, and therefore the complimentary landscape treatments, of the Modified Improvement and Boulevard alternatives. Landscaped medians, streetscape improvements, a new pedestrian bridge connecting Tifft Nature Preserve with the NFTA Boat Harbor/Gallagher Beach area, and a continuous bicycle/pedestrian path would lend a sense of visual unity and would improve the quality of the surrounding visual environment. Views of the lakeshore would also be less obstructed.

I-190/Tifft Street Arterial

Through the integration of bicycle trails, sidewalks, new lights, roadside plantings, and a new bridge crossing the Buffalo River, a new visual experience would be achieved and available to the community. This would include opening new access to the Buffalo River corridor from Seneca Babcock neighborhood, as well as opening a new access point from the Buffalo Outer Harbor Area (via Tifft Street). The bridge itself would include pedestrian access and aesthetic treatments such enhanced lighting fixtures and surface treatments (see Section 4.4, Sheet 6 of **Figure 4.4-6**). In addition, on the southern side of the bridge there would be opportunities to provide access points to the river's edge, consistent with other public access points that have been established along the Buffalo River.

Planted median and roadside plantings would serve to define the roadway edge and a new pedestrian/bicycle trail would run the entire length of the new roadway. The cohesive landscape and streetscape treatment would create a unified visual environment for users of the new roadway. These landscape improvements would occur under all of the Build Alternatives.

Ohio Street Improvements

Streetscape improvements to provide safe access for pedestrians, bicyclists and transit users would be implemented under all of the Build Alternatives along Ohio Street. Additionally, a portion of the Industrial Heritage Trail would be constructed along the west side of Ohio Street. New roadway plantings and streetlights would provide a better-defined edge to the roadway and create a more cohesive character for the Old First Ward community than the current scattered light poles and overhead wires.

3.3.3.14 Provisions for Pedestrians, Including Persons with Disabilities

Pedestrians are authorized, by law, to use unlimited access highways and streets. The rights of pedestrians to be on or along highways are addressed in *Section 1156 of the New York State Vehicle and Traffic Law*. Pedestrians and persons with disabilities who wish to travel along a highway are required to use the sidewalks where they exist. In other areas with no sidewalks, non-motorists are accommodated on paved shoulders adjacent to the roadway, where present.

Within the project area, there are no specific provisions (e.g., ramped curbs) for persons with disabilities. Likewise, the sporadic placement and current condition of existing sidewalks does not provide efficient access, most notably along Route 5, for pedestrians and persons with disabilities.

One of the primary goals of the proposed project is to develop a continuous network of sidewalks and pathways for pedestrian use within the inner and outer harbors and continuing along the extensive waterfront south into beachfront areas and parklands. The ability for pedestrians to frequent waterfront areas and Tifft Nature Preserve are virtually non-existent with the current roadway configuration, posted travel speeds, and lack of sidewalks. Each of the Build

Alternatives would provide pedestrian access to the entire project area in a safe, practical, and visually pleasing manner.

Null Alternative

Under this alternative there would be no changes to the current roadways and the presence, or, as the case may be along portions of the roadways, lack of sidewalks in the project area. The current condition of sidewalks and curbs would remain and not be improved for persons with disabilities.

Modified Improvement Alternative (Preferred Alternative)

Sidewalks with provisions for persons with disabilities would be installed along Route 5 south of Ridge Road in Lackawanna and Woodlawn. North of Ridge Road, pedestrian facilities would be installed along Fuhrmann Boulevard; a dedicated trail would serve as access for pedestrian traffic, including those with disabilities, along this segment of Route 5.

Full reconstruction of Ohio Street would include streetscape improvements to provide safe pedestrian, bicycle, and transit access. Sidewalks would be installed along both sides of Ohio Street.

The new arterial along Tifft Street would include a tree-lined sidewalk and grassed median. Dedicated bicycle/pedestrian trails would be constructed along the entire length of the corridor.

Boulevard Alternative

Provisions for pedestrians and disabled persons along Route 5 in the vicinity of the Skyway would be made via the construction of a pedestrian/bicycle trail along the lakeshore parallel to the westbound portion of Route 5. This dedicated trail would continue southbound only up to the proposed pedestrian bridge where it would become parallel to the east- and westbound lanes of Route 5 and continue to the South Buffalo Railroad Bridge.

Sidewalks would be installed along Route 5 where it enters the City of Lackawanna and Woodlawn. Other portions of the corridor would include similar provisions as described under the Modified Improvement Alternative.

Hybrid Alternative

Under this alternative, provisions for pedestrians would include those indicated above for the Modified Improvement and Boulevard alternatives.

3.3.3.15 Provisions for Bicycling

A dedicated and integrated pedestrian/bicycle system would be constructed as part of all Build Alternatives to promote access to the waterfront, garner interest in the community's heritage via an Industrial Heritage Trail, and aid bicyclists in gaining access to the waterfront and interior parcels in a safe manner. Similar to the pedestrian network, the bicycle pathway system would

provide a continuous connection along the Buffalo River, Inner Harbor, Outer Harbor, Ohio and Tifft Streets, and points along the waterfront.

3.3.3.16 Lighting

Street lighting alongside the roadway corridors would be removed for the installation of new lighting under all of the Build Alternatives. Current street lighting exists along Route 5 and is sporadic along Fuhrmann Boulevard and Ohio Street.

Under all Build Alternatives, street lighting would be replaced with new light standards placed in an off-set alternating pattern on opposing sides of Route 5, including the newly aligned two-way Fuhrmann Boulevard along the west side of Route 5. Lighting would also be installed along the new I-190/Tifft Street arterial and as part of the improvements to Ohio Street. Transit stops would be lighted accordingly as well. The style and type of light standard and luminaire would be determined during final design; although preliminary engineering, cost estimates and visual assessments assume use of high-mast "esplanade" style fixtures recently utilized on several reconstruction projects in the vicinity of Buffalo's Olmsted Park System and other areas of Buffalo (e.g., Delaware Avenue, Niagara Street near Riverside Park, Hertel Avenue, etc.).

The pedestrian/bicycle network of walkways and pathways would be lighted accordingly for the entire length in a manner that would provide ample lighting for dusk or nighttime use while not overly altering or obstructing waterfront views. The type of light and style of post would be determined during final design.

3.4 Project Costs and Schedule

3.4.1 Construction Costs

Construction cost estimates for the Build Alternatives are included in **Appendix B** and summarized in **Table 3.4-1.** Costs are presented in 2005 dollars, including estimated acquisition costs and a 10 percent design contingency. Total construction costs for each of the Build Alternatives include:

- Modified Improvement Alternative (Preferred Alternative): $95.1 Million;
- Boulevard Improvement: $124.0 Million; and
- Hybrid Alternative: $131.9 Million.

Table 3.4-1 Construction Cost Estimates	
Modified Improvement Alternative (Preferred Alternative)	
Segment/Node	**Segment Cost**
Ohio Street	$6,831,000
New I-190/Tifft Street Arterial - I-190 to South Park Avenue	$20,296,000
New I-190/Tifft Street Arterial - South Park Avenue to Tifft Street	$11,099,000
Route 5 - Skyway to Ohio Street	$20,402,000
Fuhrmann Blvd.	$8,258,000
Route 5 –Skyway to Ohio Street	$12,145,000
Route 5 - Ohio to Rail Bridge	$12,984,000
Fuhrmann Blvd.	$4,743,000
Route 5 –Ohio Street to Tifft Street	$8,241,000
Route 5 - Tifft Street to Union Ship Canal	$1,635,000
Route 5 – Union Ship Canal to Ridge Road	$4,974,000
Route 5 - Ridge Road to South Buffalo Rail Bridge	$11,505,000
Route 5 – South Buffalo Rail Bridge to Route 179	$2,824,000
Ganson Street Improvements	$198,000
ITS for Route 5/New Arterial/Ohio Street	$2,310,000
Total Construction Cost:	$95,059,000
Boulevard Alternative	
Segment/Node	**Segment Cost**
Ohio Street	$6,831,000
New Arterial - I-190 to South Park Avenue	$20,296,000
New Arterial - South Park Avenue to Tifft Street	$11,099,000
Route 5 - Skyway to Ohio Street	$21,716,000
Route 5 - Ohio to Tifft Street	$34,114,000
Route 5 - Tifft Street to Ridge Road	$13,116,,000
Route 5 - Ridge Road to South Buffalo Rail Bridge	$11,505,000
Route 5 – South Buffalo Rail Bridge to Route 179	$2,824,000
Ganson Street Improvements	$198,000
ITS for Route 5/New Arterial/Ohio Street	$2,310,000
Total Construction Cost:	$124,009,000

Table 3.4-1 Construction Cost Estimates	
Hybrid Alternative	
Segment/Node	**Segment Cost**
Ohio Street	$6,831,000
New Arterial - I-190 to South Park Avenue	$20,296,000
New Arterial - South Park Avenue to Tifft Street	$11,099,000
Route 5 - Skyway to Ohio Street	$29,336,000
Fuhrmann Blvd.	$6,277,000
Route 5 – Skyway to Ohio Street	$23,059,000
Route 5 - Ohio to Tifft Street	$34,360,000
Route 5 - Tifft Street to Ridge Road	$13,116,000
Route 5 - Ridge Road to South Buffalo Rail Bridge	$11,505,000
Route 5 – South Buffalo Rail Bridge to Route 179	$2,824,000
Ganson Street Improvements	$198,000
ITS for Route 5/New Arterial/Ohio Street	$2,310,000
Total Construction Cost:	$131,875,000

Notes:
- Does not include costs for rights-of-way and remediating the "Father Baker bumps" as directed by NYSDOT Region 5
- Design contingency has been reduced to 10 percent as directed by NYSDOT Region 5

3.4.2 Schedule and Phasing

Key milestones associated with the completion of the preliminary design phase include:

- Issuance of DR/DEIS: June 2005
- DR/DEIS Public Hearing: July/August 2005
- End of DR/DEIS Public Comment Period: September/October 2005
- Final FDR/FEIS & Design Recommendation: May/June 2006
- Record of Decision: June/July 2006

The schedule for subsequent actions will largely depend on the programming/allocation of funds for final design, right-of-way acquisition and construction of the preferred alternative.

Given the scale of public expenditures required to implement the project, it is likely that the construction of the individual project components would be phased through 2010 as funds become available. This section presents a potential phasing program for the preferred alternative. This program of implementation could be subject to change based upon refinement/changes in regional priorities as they relate to individual components of the project.

The program is structured so that the costs associated with each phase would total no higher than approximately $65 million. This limit of costs per phase was selected with a goal of identifying a reasonable amount of improvements for each phase in the context of the region's past ability to secure federal and state transportation funds. It was based upon major transportation projects

that have been recently programmed and funded in the Buffalo-Niagara Region (e.g., I-90 capacity improvements between I-190 and NYS Route 400 interchanges ["Fourth Lane Project"], connecting road access improvements at the Peace Bridge Plaza, reconstruction of I-190, first phases of Route 219 improvements, etc.).

In order to select the order of improvements that could be implemented in a phasing program, the various project components were broken into segments between nodes or reasonable locations where improvements could be made while retaining the operations on remaining road segments pending implementation of a subsequent phase.

Table 3.4-2 presents the potential phasing program over three periods and the rationale for each element of the program. The prioritization of project segments that would be implemented under each phase is structured in light of the overall goals and objectives of the STC/BOH Project, and guided in consideration of the following factors:

1. Segments containing improvements for access to target redevelopment projects (i.e., that have been substantially progressed by their respective sponsors) are proposed for implementation in earlier phases;

2. Segments that would enhance multimodal access to redefine the Lake Erie waterfront lands for established recreational uses and other regional/community quality-of-life improvements are proposed for implementation in earlier phases;

3. Segments that meet both Items 1 and 2 above are proposed for implementation earlier than those that meet only one of these respective objectives;

4. Segments that would improve multimodal access to several redevelopment areas and/or established recreational areas are proposed for implementation in earlier phases compared to those that would address access to a single redevelopment and/or recreational area;

5. Segments where multimodal access could be improved via short-term projects to be undertaken by other agencies (e.g., NFTA/Erie County Outer Harbor multi-purpose trail project) pending longer-term improvements under the STC/BOH Project are proposed for implementation later in the program; and

6. Segments where access improvements would result in fewer immediate economic benefits (i.e., based upon the current status of regional economic development priorities expressed during the course of scoping and other public involvement efforts for the STC/BOH Project) and/or would serve mainly to extend or complete the system of access improvements along the Lake Erie waterfront once the core of facilities is realized, are proposed for implementation later in the program.

Overall, the program would focus upon improvements along Route 5/Fuhrmann Boulevard between Ohio Street and the Union Ship Canal in the first phase to establish a core of improved

access to both target redevelopment sites and to better link established recreational facilities along the Lake Erie waterfront (i.e., Tifft Nature Preserve and the planned Buffalo Boat Harbor State Park site comprised of the current NFTA Boat Harbor and Gallagher Beach). If Phase 1 project budget permits, Route 5 will be reconstructed from the Union Ship Canal to Ridge Road. This would provide direct access to public park land and development sites at the Buffalo Lakefront Commerce Park and Steelawanna Industrial Park and former Bethlehem Steel properties.

Phase 2 of the proposed program would involve implementing the new Tifft Arterial from I-190 to Tifft Street. This Phase would provide more direct access to the interstate system to enhance redevelopment of the LTV/Republic Steel site. Reconstruction of Route 5 from the Union Ship Canal to Ridge Road would be undertaken during this Phase, if funding allocations do not allow it to be included as part of Phase 1.

Finally, Phase 3 of the proposed program would include implementing improvements along the remaining segments of the project area including: widening/streetscape improvements along Route 5 between Ridge Road and the South Buffalo Railroad Bridge; streetscape/safety improvements along Route 5 in the Woodlawn section of Hamburg; and the reconstruction along the Ohio Street corridor (including implementation of the Industrial Heritage Trail facilities) to better connect local road access between Lake Erie and Downtown Buffalo (i.e., Erie Canal Harbor and Cobblestone District) and to facilitate smaller-scale redevelopment. Completion of this phase would extend project improvements south to Route 179 in the vicinity of Woodlawn Beach State Park and realize an alternative local road route for goods movement between the Route 5 corridor and the interstate system.

Table 3.4-2 Potential Phasing of Project Components (Example Only)

Segment	Estimated Cost[1]	Social & Economic Effects[2]	Evaluation
Phase 1: Total Expenditure ~ $35.01 Million			
Route 5 – Buffalo Skyway to Ohio Street	$20.40 M	• Would simplify and improve local access and visibility of NFTA Outer Harbor Lands by eliminating one-way circuitous circulation pattern on Fuhrmann Boulevard. • Would build and extend waterfront "spine" of pedestrian/bicycle trail network north to Times Beach (i.e., building upon currently planned NFTA/Erie County multi-purpose trail project).	This segment would improve local access and better facilitate redevelopment of the NFTA Outer Harbor Lands resulting in both economic development and recreational improvements.
Route 5 – Ohio Street to Tifft Street	$12.98 M	• Would remove physical/psychological wall separating Tifft Nature Preserve from Gallagher Beach/NFTA Boat Harbor Areas (i.e., Buffalo Boat Harbor State Park site) to allow use as a single, regional-scale waterfront recreational area. • Would improve and simplify local access to Buffalo Boat Harbor and Tifft Nature Preserve by eliminating one-way circuitous circulation pattern on Fuhrmann Boulevard. • Would create physical new connection for pedestrian/bicycle access between Tifft Nature Preserve and Lake Erie waterfront. • Would create first phase of permanent waterfront "spine" of pedestrian/bicycle trail network next to already-established waterfront recreational areas.	While not providing direct access to targeted redevelopment sites, this component would create the most visible improvement of the project in terms of redefining the project area from a decaying industrial area to 21st century waterfront, focusing on regional recreation and quality-of-life facilities. This component would visually connect Tifft Nature Preserve with the planned Buffalo Harbor State Park site and the rest of the Outer Harbor waterfront.
Route 5 – Tifft Street to Union Ship Canal	$1.63 M	• Would improve direct access from Route 5 to north side of the Buffalo Lakefront Commerce Park.	This component would have an immediate affect on regional economic development and public waterfront access considering ongoing progress at targeted redevelopment sites (i.e., Buffalo Lakefront Commerce Park).

Table 3.4-2 Potential Phasing of Project Components (Example Only)

Segment	Estimated Cost[1]	Social & Economic Effects[2]	Evaluation
Phase 2: Total Expenditure ~ $36.37 Million			
New I-190/Tifft Street Arterial – I-190 to South Park Avenue	$20.30 M	• Would enhance redevelopment opportunities at former LTV/Republic Steel site by creating new physical access to/from the interstate system. • Would open new public access point to Buffalo River shoreline at new bridge.	This component will assist in redevelopment activities at the Steelfields Redevelopment Area (former LTV/Republic Steel site). This may be a lesser priority than Route 5 segments at this time, considering that the City of Buffalo and NFTA are advancing progress on their development sites (Buffalo Lakefront Commerce Park and Outer Harbor Lands) coupled with the distance of this segment from the waterfront. This therefore limits its affect on significantly expanding multi-modal and/or recreational access along the waterfront. Thus, pending changes in this area's prioritization compared to other target redevelopment sites, this segment should be implemented after planned improvements along Route 5 north of Ridge Road.
New I-190/Tifft Street Arterial – South Park to Tifft Street	$11.10 M	• Would complete visible, functional, multi-modal junction between Route 5 corridor and I-190 for alternative access to waterfront recreation areas and new waterfront redevelopment areas. • May reduce through truck movements on existing local roads in Seneca-Babcock and Hickory Woods neighborhoods. • Would improve connection between interstate system, Union Ship Canal site, and former Bethlehem Steel site by providing alternative local road route to I-90 (Mainline Thruway) via I-190 interchange at Seneca Street.	Completion of the new arterial to Tifft Street will prove most valuable after access improvements to key locations and recreational amenities along Lake Erie are implemented, given the regional importance of these project components. In the interim, the Steelfields Redevelopment Area (former LTV/Republic Steel site) would benefit from direct access to I-190. Therefore this project component should be phased after the completion of Route 5 improvements north of Ridge Road.
Route 5 – Union Ship Canal to Ridge Road	$4.97 M	• Would create direct access from Route 5 to Union Ship Canal Redevelopment Area "early-action" parcels. • Would assist redevelopment of former Bethlehem Steel site by providing more visible entrance at Ridge Road intersection for the initial phase associated with planned North American Business Center. • Would enable redevelopment activities in the City of Lackawanna at Route 5 intersection with Ridge Road. • Would remove physical/psychological wall separating City of Lackawanna from Lake Erie waterfront areas.	This component would have a greater immediate affect on regional economic development than any other project component, considering ongoing progress at targeted redevelopment sites (i.e., Buffalo Lakefront Commerce Park and former Bethlehem Steel site). It would also enable the City of Lackawanna to advance its efforts for redevelopment of community retail uses along Route 5 (Skyway to Union Ship Canal) for its Bethlehem Park and 1st Ward communities.

Table 3.4-2 Potential Phasing of Project Components (Example Only)

Segment	Estimated Cost[1]	Social & Economic Effects[2]	Evaluation
Phase 3: Total Expenditure ~ $23.66 Million			
Route 5 – Ridge Road to South Buffalo Railroad Bridge	$11.50 M	• Would eliminate periodic southbound bottleneck in peak PM hour along Route 5 at railroad bridge crossing; standardizes the Route 5 six-lane alignment for its length in Lackawanna and Hamburg. • Would improve southbound access for goods movement, enhancing further redevelopment of former Bethlehem Steel site and industrial park expansion/vacant parcel development in vicinity of Steelawanna Avenue. • Streetscape and trail improvements would encourage further upgrading of Bethlehem Park neighborhood and extend waterfront network.	The segment between Ridge Road and the Rail Bridge will affect the on-going redevelopment at the former Bethlehem Steel site. However, considering the size of the redevelopment site and the time necessary for the regional market to absorb development beyond the initial phase of the planned North American Business Center, this project component could be held to a last phase of project implementation.
Route 5 – South Buffalo Railroad Bridge to Route 179	$2.82 M	• Would improve vehicular and pedestrian safety through Woodlawn community. • Median barrier and traffic signals would limit the number of access points to Route 5, thus increasing safety. • Would reduce traffic volume and congestion in Lackawanna and Hamburg. • Streetscape and bicycle/pedestrian improvements to Woodlawn Beach would foster waterfront boulevard image desired in Hamburg planning policies.	This segment would result in less direct economic benefits as it is located north of the project study area. However, it will have a measurable affect on the image of Woodlawn's community commercial and residential neighborhoods, and complete an integrated waterfront access network south to Woodlawn Beach State Park. If possible, this segment should be constructed concurrently with Route 5 – Ridge Road to South Buffalo Railroad Bridge segment, as the two segments are closely related.
Ohio Street – Michigan Avenue to Route 5 (Including Ganson Street Improvements and ITS Improvements)	$ 9.34 M	• Would improve Ohio Street's function as primary local connector between Downtown Buffalo and waterfront and local road alternative to Buffalo Skyway. • Would likely act as catalyst for renewal of Buffalo River/Old First Ward neighborhood and NFTA Outer Harbor lands. • Would provide streetscape/traffic-calming improvements to foster private development of adjacent vacant and underutilized parcels. • Would realize major portion of Industrial Heritage Trail and highlight access to Buffalo's collection of historic grain elevators to foster development of revitalization/heritage district.	Reconstruction of the Ohio Street corridor would provide a better local connection between the Phase 1 segments on Route 5 with Downtown Buffalo. It would also serve as a natural extension of smaller-scale redevelopment activities in the Erie Canal Harbor/ Cobblestone District area along the Ohio Street corridor. In turn, these linkages could be made at a relatively low cost compared to other project components.

Notes:

[1] Assumes costs of the Modified Improvement Alternative (Preferred Alternative). Totals may not add to detailed cost estimates due to rounding.

[2] See also Chapter 4 of the FDR/FEIS/4(f).

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