CHAPTER 3
ALTERNATIVES

This chapter presents the development, refinement, and evaluation of the alternatives for this Project, as well as the potential alternatives that were dismissed from further consideration. It also recommends a Preferred Alternative for the Project.

3.1 INTRODUCTION

The National Environmental Policy Act (NEPA) regulations promulgated by the Federal Council on Environmental Quality (CEQ) at 40 CFR Parts 1500-1508 and the Federal Highway Administration's (FHWA) regulations, Environmental Impact and Related Procedures (23 CFR Part 771), require consideration of reasonable alternatives for a proposed project. This chapter describes the reasonable alternatives that were evaluated in the Interstate 81 (I-81) Viaduct Project Draft Environmental Impact Statement (Draft EIS) and the potential alternatives that were considered and dismissed from further consideration. The chapter also recommends the Community Grid Alternative as the Preferred Alternative.

3.2 OVERVIEW OF ALTERNATIVES CONSIDERED

The scoping process, which began with the publication of the Notice of Intent to prepare an Environmental Impact Statement in the Federal Register on August 26, 2013, continued until the publication of this Draft EIS. As part of the scoping process for the EIS, FHWA and the New York State Department of Transportation (NYSDOT) provided opportunities for public input and considered comments from the public on potential alternatives, including several concepts suggested by the public. Based on the evaluation and screening of the potential alternatives during scoping, and in consideration of public input, FHWA and NYSDOT have advanced the Viaduct Alternative, the Community Grid Alternative, and the No Build Alternative, which are described below, for further study in this Draft EIS. Although the No Build Alternative does not meet the Project's purpose, its evaluation—as a baseline to which the other alternatives can be compared—is required by NEPA.

Table 3-1 lists the potential alternatives considered since the start of the scoping process.

The following describes each potential alternative considered for the I-81 Viaduct Project since the start of the scoping phase.

NO BUILD ALTERNATIVE

NEPA requires the evaluation of a No Build Alternative. The No Build Alternative serves as the baseline to which the other alternatives are compared. The No Build Alternative would maintain the highway in its existing configuration. Continual maintenance and repairs would be performed to ensure the safety of the traveling public, and safety measures would be implemented to the extent feasible and practical.

Table 3-1
Potential Alternatives Considered for the I-81 Viaduct Project

Alternatives	Description
NB	No Build
Viaduct (V) Alternatives[1]	
V-1	Rehabilitation
V-2	New Viaduct Fully Improved to Current Standards
V-3	New Viaduct with Substantial Design Improvements
V-4	New Viaduct with Considerable Design Improvements
V-5	New Stacked Viaduct
Community Grid (CG) Alternative (formerly known as the Street-level Alternatives)[2]	
CG-1	Boulevard
CG-2	Almond and Other Local Street(s)
Tunnel (T) Alternatives	
T-1	Tunnel Under Almond Street from Dr. Martin Luther King, Jr. East (MLK Jr. East) to Butternut Street
T-2	Almond Street Tunnel from MLK, Jr. East to Genesee Street
T-3	Townsend Street Tunnel
T-4	Tunnel on an Eastern Alignment (81' Below Syracuse)
T-5	Shallow Tunnel under Almond Street
T-6	Deep Tunnel West of Almond Street
T-7	Deep Tunnel West of Almond Street (Non-Interstate)
Depressed Highway (DH) Alternatives	
DH-1	Depressed Highway from Adams Street to Butternut Street
DH-2	Depressed Highway from Adams Street to Genesee Street
Other (O) Alternatives	
O-1	Western Bypass
O-2	West Street

Notes:

[1] Following the publication of the *Draft Scoping Report*, three of the Viaduct Alternatives (V-2, V-3, and V-4) were combined into one Viaduct Alternative with the following three options: Option V-2, New Viaduct Fully Improved to Current Standards; Option V-3, New Viaduct with Substantial Design Improvements; and Option V-4, New Viaduct with Considerable Design Improvements.

[2] Following the publication of the *Draft Scoping Report*, the three Street-Level Alternatives (SL-1, SL-2, and SL-3) were combined into one alternative and renamed the Community Grid (CG) Alternative with the following two options: Option CG-1, Boulevard; and Option CG-2, Almond Street and Other Local Streets.

POTENTIAL VIADUCT (V) ALTERNATIVES

Alternative V-1 (Rehabilitation) would involve a long-term program, implemented over a multi-year period as funding permits, to address the deterioration of I-81. The dimensions of the viaduct and operation of Almond Street would be primarily the same as today. Alternative V-1 would reconfigure ramps to improve the existing connections between I-81 and Interstate 690 (I-690), but it would not provide a full directional I-81/I-690 interchange. South of the I-690 interchange, Exit 18 (Harrison Street/Adams Street) would be modified with the addition of a southbound exit lane to provide a two-lane off-ramp and a new left-

turn lane from East Adams Street to the southbound I-81 on-ramp. The rehabilitation of I-81 and I-690 in the I-81 priority area [1]would address the existing structural deficiencies and would correct some nonstandard and nonconforming highway features. Alternative V-1 would repair or replace 42 bridges and correct the structural deficiencies on I-81 and I-690 within the priority area. Although it would eliminate some nonstandard and nonconforming features, most would remain. The remaining features would include narrow shoulders, insufficient distance between on- and off-ramps, and sharp curves.

Alternatives V-2, V-3, and V-4 would involve a full reconstruction of I-81 between approximately Colvin Street and Spencer Street, as well as modifications to highway features north of Spencer Street to Hiawatha Boulevard and along I-690. After the publication of the *Draft Scoping Report,* these three alternatives were combined into one alternative ("Viaduct Alternative") with three options due to their similarities:

- Option V-2, New Viaduct Fully Improved to Current Standards, would involve the reconstruction of all highway elements to 60 miles per hour (mph) design standards;
- Option V-3, New Viaduct with Substantial Design Improvements, would involve the reconstruction of all highway elements to meet 60 MPH design standards except for four curves within the I-81/I-690 interchange that would meet 55 MPH design standards and one curve that would meet 50 mph design standards for horizontal stopping sight distance[2]; and
- Option V-4, New Viaduct with Considerable Design Improvements, would involve the reconstruction of all highway elements to meet 60 MPH design standards except for three curves within the I-81/I-690 interchange that would meet 55 MPH design standards and two curves that would meet 50 MPH design standards for horizontal stopping sight distance.

Alternative V-5 (New Stacked Viaduct) would involve removal of the existing viaduct and construction of a new two-level viaduct above Almond Street to East Genesee Street. The top level of the stacked viaduct would carry northbound traffic, and the bottom level would carry southbound traffic. Since northbound and southbound vehicles would travel on stacked decks, the Alternative V-5 viaduct would be approximately 30 feet taller and approximately 11 feet narrower than the existing viaduct. Alternative V-5 would include interchange modifications to provide the missing connections between I-81 and I-690 and to improve traffic circulation and safety. Alternative V-5 also would provide new auxiliary lanes (new lanes between highway interchanges) to improve safety for motorists entering and

[1] The I-81 Viaduct Project will focus on a priority area (I-81 viaduct priority area), which includes the section of I-81 between Dr. Martin Luther King, Jr. East (MLK, Jr. East) and Spencer Street and the portion of I-690 approximately between the West Street interchange and Beech Street.

[2] As defined by FHWA, "stopping sight distance is the distance needed for drivers to see an object on the roadway ahead and bring their vehicles to a safe stop before colliding with the object." "Horizontal stopping sight distance" refers to the distance that a motorist needs to see around horizontal curves at a given speed.

exiting the highway. Alternative V-5 would eliminate east-west access on East Genesee Street beneath the new viaduct.

POTENTIAL COMMUNITY GRID (CG) ALTERNATIVE

The Community Grid (CG) Alternative, previously called the Street-level Alternative and At-grade/Surface Alternative, would remove the I-81 viaduct between the New York, Susquehanna and Western Railway bridge (at Renwick Street) and the I-81/I-690 interchange and replace it with a signalized roadway ("urban arterial") at surface.

- Under Option CG-1 (urban arterial), Almond Street would become an urban arterial and the primary thoroughfare accommodating north-south traffic.
- Option CG-2 (Almond Street and Other Local Streets) would involve reducing the number of travel lanes on Almond Street by making greater use of the local street network.

The former I-81 south segment, between the existing southern Interstate 481 (I-481) interchange (Exit 16A) and MLK, Jr. East, would be re-classified as an urban arterial (non-interstate route). Under both Community Grid Alternative options, Almond Street would be reconstructed, and I-481 would be designated I-81 and improved as needed to accommodate traffic demand. The alternative also would include the reconstruction of I-690 from Leavenworth Avenue to Beech Street, including a full interchange between the former I-81 northern segment and I-690, and other highway modifications.

POTENTIAL TUNNEL (T) ALTERNATIVES

Alternative T-1 (Almond Street Tunnel from MLK, Jr. East to Butternut Street) would involve the demolition of the existing I-81 viaduct, which would be replaced by a two-mile-long tunnel providing two travel lanes in each direction. The tunnel would follow Almond Street from MLK, Jr. East to approximately East Fayette Street and would then curve northwesterly to Butternut Street. At Butternut Street, the tunnel would climb to meet the existing I-81 highway. Almond Street would be reconstructed atop the tunnel to serve local traffic. New ramps would connect the I-81 tunnel and I-690, closing several east-west local streets and severing connectivity. Interchange 18 (Adams Street/Harrison Street) also would be eliminated.

Alternative T-2 (Almond Street Tunnel from MLK, Jr. East to Genesee Street) would involve the demolition of the existing I-81 viaduct, which would be replaced by an approximately one-mile-long tunnel under Almond Street. The tunnel would provide two travel lanes in each direction, and Almond Street would be reconstructed. North of Genesee Street, I-81 would transition from a tunnel to an elevated highway. New ramps would connect I-81 and I-690. Interchange 18 (Adams Street/Harrison Street) would be eliminated.

Alternative T-3 (Townsend Street Tunnel) would involve the removal of the viaduct and its replacement with a surface street along the existing Almond Street right-of-way. A new tunnel providing two travel lanes in each direction would be constructed under Oakwood Avenue and Townsend Street from approximately MLK, Jr. East to Butternut Street. At Butternut Street, the tunnel section would rejoin the existing I-81 alignment. Townsend

Street would be reconstructed atop the tunnel between approximately MLK, Jr. East and East Genesee Street.

Alternative T-4 (Tunnel on an Eastern Alignment [81 feet Below Syracuse]) would involve the removal of the viaduct and would carry I-81 in a tunnel to the east of the existing viaduct. From south to north, the tunnel would begin at I-481 and extend northward below Comstock Avenue, east of Morningside Cemetery, Oakwood Cemetery, and Syracuse University. Separate tubes, each providing two or three travel lanes, would accommodate northbound and southbound traffic. Near Genesee Street, vehicles would exit the tunnel and travel on a highway, which would include a new interchange with I-690 approximately one mile east of the existing interchange, then enter a second tunnel just south of Lincoln Park. Vehicles would exit the second tunnel and rejoin the existing I-81 just south of Bear Street near Destiny USA. The section of I-81 between I-690 and Bear Street would be removed and re-designated as a new highway. Almond Street would be reconstructed as a boulevard.

Alternative T-5 (Shallow Tunnel under Almond Street) would involve the removal of the viaduct and its replacement by an approximately two-mile-long tunnel from approximately East Kennedy Street to Butternut Street. The tunnel would provide two travel lanes in each direction, meet interstate standards, and would carry the I-81 designation. It would have full connectivity with I-690. The segment of Almond Street above the tunnel would be reconstructed to serve local northbound and southbound traffic. Alternative T-5 also would reconstruct I-690, from approximately Leavenworth Avenue to Lodi Street, as well as interchanges along I-81 and I-690.

Alternative T-6 (Deep Tunnel West of Almond Street (Interstate]) would involve the removal of the viaduct and its replacement by an approximately two-mile-long tunnel that would provide two travel lanes in each direction and be designed to meet interstate standards with full connectivity with I-690. The south tunnel portal would be located approximately 1,000 feet south of MLK, Jr. East, follow South Townsend Street, and make a westward turn near East Genesee Street. The tunnel would then continue in a northwestern direction to the north portal at Hickory Street, where it would join the existing I-81 highway. Alternative T-6 also would reconstruct I-690 from approximately Leavenworth Avenue to Lodi Street, as well as interchanges along I-81 and I-690.

Alternative T-7 (Deep Tunnel West of Almond Street [Non-Interstate]) would involve the removal of the viaduct and the construction of a high speed, non-interstate tunnel, with two lanes in each direction, through Downtown Syracuse from MLK, Jr. East to Hickory Street. This alternative also would include all elements of the Community Grid Alternative, including the conversion of I-481 to I-81, a connection to I-690, and interchange modifications such as a new I-690 interchange at Crouse and Irving Avenues.

POTENTIAL DEPRESSED HIGHWAY (DH) ALTERNATIVES

Alternative DH-1 would remove the viaduct and construct a highway in an open trench approximately 25 feet below the existing street level from Adams Street to Butternut Street. The highway would consist of two northbound and two southbound travel lanes. Traveling north, I-81 would cross the New York, Susquehanna and Western Railway on a bridge, and then descend until reaching the depressed highway section at Adams Street. The depressed

highway would rejoin the existing I-81 highway at Butternut Street. Service roads would be constructed on either side of the depressed highway section.

Alternative DH-2 would remove the viaduct and construct a highway in an open trench approximately 25 feet below the existing street level from Adams Street to Genesee Street. The highway would consist of two northbound and two southbound travel lanes. Traveling north, after I-81 crosses over the New York, Susquehanna and Western Railway on a bridge, it would descend to the depressed highway section and continue along Almond Street. At East Genesee Street, it would curve northwesterly and ascend to meet the elevated I-81 at its interchange with I-690. The segments of I-81 north of the depressed highway section would be reconstructed or rehabilitated. Service roads would be constructed on either side of the depressed highway section.

POTENTIAL OTHER (O) ALTERNATIVES

Alternative O-1 (Western Bypass) would reroute I-81 on a new highway from the I-481 south interchange (Exit 16A) to NY 481 or to an intermediate roadway (i.e., I-690 or Route 695). The western bypass, in combination with the existing I-481, would form a partial or full highway loop around the city. Portions of or the entire existing I-81 highway through Syracuse would be removed. The new highway typically would provide two travel lanes in each direction with interchanges constructed at key locations. Alternative O-1 would allow the I-81 right-of-way through Syracuse to be replaced with a surface street that could accommodate pedestrian and bicycle enhancements.

Alternative O-2 (West Street) would demolish the I-81 viaduct and reconstruct Almond Street, from the New York, Susquehanna and Western Railway crossing to about Butternut Street, as a boulevard. A new highway would then be constructed between I-81 near MLK, Jr. East and I-690 at West Street. New ramps would connect the highway to I-690 and to I-81 just north of Butternut Street. The new highway typically would provide two travel lanes in each direction with interchanges constructed at key locations. Alternative O-2 would eliminate all existing access between West Street and adjacent property.

3.3 ALTERNATIVES CONSIDERED AND DISMISSED FROM FURTHER STUDY

To identify the reasonable range of alternatives for this Project, the potential alternatives were evaluated and screened based on their ability to satisfy the Project's need, meet the Project's purpose and objectives, and meet established screening criteria. Those potential alternatives that were determined to be reasonable were further evaluated and assessed for this Draft EIS.

As noted in **Chapter 1, Introduction,** the purpose of the I-81 Viaduct Project is to address the structural deficiencies and non-standard highway features in the I-81 corridor while creating an improved corridor through the City of Syracuse that meets transportation needs and provides the transportation infrastructure to support long-range planning efforts. To meet the Project's purpose, five project objectives were established:

- Address vehicular, pedestrian, and bicycle geometric and operational deficiencies in the I-81 priority area;
- Maintain or enhance vehicle access to the interstate highway network and key destinations (i.e., downtown business district, hospitals, and institutions) within neighborhoods along the I-81 priority area.
- Address structural deficiencies in the I-81 priority area;
- Maintain or enhance the vehicular, pedestrian, and bicycle connections in the local street network within the Project Area to allow for connectivity between neighborhoods, the downtown business district, and other key destinations; and
- Maintain access to existing local bus service and enhance transit amenities[3] within and adjacent to the I-81 priority area.

INITIAL SCREENING OF POTENTIAL ALTERNATIVES

- An initial screening of potential alternatives was conducted and presented in the *Scoping Report* (April 2015). This screening considered whether the potential alternatives were reasonable with respect to the following four categories: Consistency with the Project's **purpose and objectives, and stated needs**;
- **Property needs** as defined by the number of buildings or acres of land that may need to be acquired;
- **Constructability** considerations including difficulty and duration of construction and the ability to maintain adequate traffic flow during construction;
- The **estimated construction cost**. An alternative was considered reasonable if the cost would be less than 2.5 times the estimated cost of Alternative V-1 (Rehabilitation), which was $800 million.

If an alternative was inconsistent with one or more of these categories, it was not considered reasonable and was not advanced for further consideration. This initial screening included 17 alternatives. Alternatives T-5, T-6, and T-7 were developed after the release of the Scoping Report and were evaluated as part of a separate screening of alternatives. **Table 3-2** presents the results of the initial screening of potential alternatives. Seven alternatives were identified for further study. Ten alternatives were considered unreasonable and were dismissed from further study.

[3] Transit amenities that may be explored could include bus stops and shelters, bus turnouts, and layover and turnaround places.

Table 3-2
Results of the Initial Alternatives Screening

Alternative	Recommended/Pass (✓) or Not Recommended/Fail (X)				
	Purpose and Need	Property	Construct-ability	Cost	Overall
Alternative NB1 No Build	N/A	N/A	N/A	N/A	✓
Alternative V-1 Rehabilitation	X	✓	✓	✓	X
Alternative V-22 New Viaduct Fully Improved to Current Standards	✓	✓	✓	✓	✓
Alternative V-32 New Viaduct with Substantial Design Improvements	✓	✓	✓	✓	✓
Alternative V-42 New Viaduct with Considerable Design Improvements	✓	✓	✓	✓	✓
Alternative V-5 New Stacked Viaduct	X	✓	✓	✓	X
Alternative SL-13 Boulevard	✓	✓	✓	✓	✓
Alternative SL-23 One-way Traffic on Almond Street and Other Local Street(s)	✓	✓	✓	✓	✓
Alternative SL-33 Two-way Traffic on Almond Street and Other Local Street(s)	✓	✓	✓	✓	✓
Alternative T-1 Almond Street Tunnel from MLK, Jr. East to Butternut Street	X	✓	X	X	X
Alternative T-2 Almond Street Tunnel from MLK, Jr. East to Genesee Street	X	✓	X	✓	X
Alternative T-3 Townsend Street Tunnel	X	X	X	X	X
Alternative T-4 Tunnel on Eastern Alignment (81' Below Syracuse)	✓	X	✓	X	X
Alternative DH-1 Depressed Highway from Adams Street to Butternut Street	X	✓	X	✓	X

Table 3-2, cont'd
Results of the Initial Alternatives Screening

Alternative	Recommended/Pass (✓) or Not Recommended/Fail (X)				
	Purpose and Need	Property	Construct-ability	Cost	Overall
Alternative DH-2 Depressed Highway from Adams Street to Genesee Street	X	✓	X	✓	X
Alternative O-1 Western Bypass	✓	X	✓	X	X
Alternative O-2 West Street (Salt City Circuit)	X	X	X	✓	X

Notes:

1. The No Build Alternative does not address the Project's needs or meet the Project's purpose and objectives, but it passes the preliminary screening because NEPA requires an examination of a No Build Alternative in the EIS.
2. After the first screening, Viaduct Alternatives V-2, V-3, and V-4 were combined into one Viaduct Alternative with the following three options: Option V-2, New Viaduct Fully Improved to Current Standards; Option V-3, New Viaduct with Substantial Design Improvements; and Option V-4, New Viaduct with Considerable Design Improvements.
3. After the first screening, the Street-Level Alternatives SL-1, SL-2 and SL-3 were combined into one alternative and renamed the Community Grid (CG) Alternative with the following two options: Option CG-1, Boulevard; and Option CG-2, Almond Street and Other Local Street(s).
4. Refer to **Appendix B-1** for the detailed screening tables for each potential alternative.

The following summarizes the screening results for the potential alternatives.

No Build Alternative

The No Build Alternative was advanced for evaluation in this Draft EIS to serve as a baseline to which the other alternatives can be compared.

Viaduct (V) Alternatives

Three of the five Viaduct Alternatives (Alternatives V-2, V-3, and V-4) passed the initial screening and were further studied.

Alternatives V-1 and V-5 would not address the Project's needs or meet the Project's purpose and objectives. Alternative V-1 would not correct most nonstandard and nonconforming highway features, making it inconsistent with the objective to "address identified geometric and operational deficiencies in the I-81 priority area." Alternative V-5 would eliminate east-west travel on East Genesee Street where it crosses Almond Street. East Genesee Street is an important east-west street between Downtown and University Hill. It is an arterial roadway and a designated New York State Route. East Genesee Street carries bike lanes that are part of the Connective Corridor between University Hill and Downtown, and it is used by Centro Routes 62 and 262. Eliminating east-west access on East Genesee Street would be inconsistent with the objective to "maintain the connections within the local street network within and adjacent to the I-81 priority area." Therefore, Alternative V-5 failed the screening and was dismissed from further consideration.

Street-Level Alternatives (now Community Grid [CG] Alternative)

The Street-Level Alternatives passed the screening and, therefore, were advanced for further study.

Tunnel (T) Alternatives

Alternatives T-1 and T-2 failed to address the Project's needs or meet the Project's purpose and objectives and are considered unreasonable. Both alternatives would eliminate several local street connections between Downtown, Northside, and University Hill. Severing these streets would create about a three-block gap in north-south and east-west vehicular access, which is inconsistent with the objective to "maintain the connections within the local street network within neighborhoods adjacent to the I-81 priority area."

The subsurface conditions along Almond Street, which include a high water table, saline water, and soft and compressible soil, are not favorable for construction of Alternatives T-1 and T-2. Due to these subsurface conditions, cut-and-cover construction would be needed, extending the duration of construction. The estimated construction duration of Alternative T-1 and Alternative T-2 is seven to nine years. Therefore, Alternatives T-1 and T-2 pose difficult constructability considerations. Alternative T-3 was not recommended for further study because it has many of the same deficiencies as Alternatives T-1 and T-2: Alternative T-3 failed to address the Project's needs or meet the Project's purpose and objectives, poses difficult constructability considerations, and has an unreasonable cost. In addition, Alternative T-3 would require acquisition of 55 to 70 buildings, which is considered unreasonable. Therefore, Alternative T-3 was dismissed from further consideration.

Alternative T-4 would address the Project's needs and meet the Project's purpose and objectives and constructability considerations. However, Alternative T-4 would acquire more than 100 buildings, which is not considered reasonable. Alternative T-4 also would cost more than $3 billion, which is unreasonable. Therefore, Alternative T-4 was dismissed from further consideration.

Depressed Highway (DH) Alternatives

Alternatives DH-1 and DH-2 were not recommended for further study. Like Alternatives T-1 and T-2, Alternatives DH-1 and DH-2 would remove local street connections between Downtown and Northside, and it would not be reasonable to provide connections across the highway at every east-west street. Construction of Alternatives DH-1 and DH-2 would face unfavorable subsurface conditions, including a high water table and soft and compressible soil. The water is saline, which requires special disposal methods, and all utilities would need to be relocated. Alternatives DH-1 and DH-2 failed to address the Project's needs and to meet the Project's purpose and objectives, and would pose difficult constructability considerations; thus, these alternatives were dismissed from further consideration.

Other (O) Alternatives

Alternative O-1 would address the Project's needs and meet the Project's purpose, objectives, and constructability considerations, while Alternative O-2 would meet cost considerations. However, both alternatives would require a substantial amount of property acquisition, which is unreasonable. In addition, the cost of Alternative O-1 is not reasonable.

Alternative O-2 would substantially diminish local street connections in the West Street corridor, thereby failing to meet the Project's objective to "maintain the connections within the local street network within or adjacent to the I-81 priority area." For these reasons, Alternatives O-1 and O-2 were dismissed from further consideration.

SCREENING OF POTENTIAL ALTERNATIVES AFTER RELEASE OF *SCOPING REPORT*

Potential Alternatives T-5, T-6, and T-7

In response to public input and as described in the *Tunnel Feasibility Report* (**Appendix B-2**), FHWA and NYSDOT have conducted additional engineering and further analyses to determine whether there is a tunnel alternative that satisfies the Project's needs, meets the Project's purpose and objectives, and meets the following established screening criteria:

- Ability to avoid and minimize property acquisition: This category includes each potential alternative's property needs, based on the number of parcels (building, parking lot, or open space) needed to be acquired to construct the alternative, their occupancy status (occupied or vacant), and associated social and economic conditions (e.g., number of residential units and residents, number of employees, and land assessment and full market value), and effects on historic resources;
- Constructability: This category includes the construction complexity, construction duration, the higher level of risk associated with tunneling, and other construction-related issues, such as the ability to maintain adequate traffic flow during construction; and
- Cost: Estimated construction costs, including preliminary property acquisition costs, were developed for each potential alternative. A potential alternative that costs over $2 billion is considered unreasonable.

Three potential tunnel alternatives (T-5, T-6, and T-7) were developed after the release of the Project's *Scoping Report*. The following summarizes the screening results for these alternatives.

- **Alternative T-5.** Alternative T-5 would eliminate the Colvin Street entrance ramp to northbound I-81; introduce an overpass (East Fayette Street from South Townsend Street to approximately Forman Avenue would need to be elevated); and eliminate the northbound I-81 ramp from Harrison Street, a main access point from University Hill to travel north. Nonetheless, T-5 meets the Project's purpose, need, and objectives.

  However, Alternative T-5 would involve constructability difficulties. Community disruptions, including impacts to vehicular, pedestrian, and bicycle traffic, are likely as a result of cut-and-cover tunneling. In addition to relocation of substantial utilities, Alternative T-5 would require the underpinning of the viaduct, which is nearly 60 years old. This would be a risky operation with some unknowns (such as the risk of potential lateral movements), adding difficulty to the construction and at least two to three years to the construction duration. In addition, Alternative T-5 would temporarily disrupt 15 major road crossings and a railroad crossing.

Alternative T-5 would require the acquisition of 35 properties (34 buildings and one parking lot), and 11 of these buildings are either listed or eligible for listing on the National Register (NR) of Historic Places, 12 are local landmarks, and five are potentially eligible for NR listing. It would displace approximately 714 employees and 175 residents. Based on these adverse impacts to properties, which would result in the acquisition of historic buildings as well as socioeconomic impacts, such as substantial displacement of residences and businesses, Alternative T-5's property needs are deemed unreasonable.

Alternative T-5's estimated cost of $3.1 billion, including preliminary property acquisition costs, also is considered unreasonable.

For these reasons, Alternative T-5 was dismissed from further consideration.

- **Alternative T-6.** Alternative T-6 would eliminate the Colvin Street entrance ramp to northbound I-81 and require the closure of Willow Street. In addition, Alternative T-6 would require the closure of Townsend Street between Genesee Street and Harrison Street to accommodate I-81 ramps to/from the north, and the closure of James Street between Oswego Boulevard and State Street due to insufficient clearance over the interstate-to-interstate ramps. These two closures would substantially sever local street connectivity and are not consistent with the Project's objective to "maintain or enhance the vehicular, pedestrian, and bicycle connections in the local street network within the Project Area to allow for connectivity between neighborhoods, the downtown business district, and other key destinations." Therefore, Alternative T-6 does not meet the Project's objectives.

  The construction of Alternative T-6 largely would be implemented underground using a tunnel-boring machine and sequential excavation method. While there are some risks associated with all underground construction, the use of these conventional and known tunneling methods would allow the alternative to pass on constructability.

  Alternative T-6 would require the acquisition of 17 properties (16 buildings and one open space), including the Verizon Building, a telecommunications hub in the City of Syracuse that also contains a Verizon call center. Four of these buildings are either listed or eligible for listing on the National Register (NR) of Historic Places, six are potentially eligible for NR listing, and four are local landmarks. Alternative T-6 would result in impacts to Firefighter's Memorial Park, a local landmark and Section 4(f)[4] resource.

[4] Section 4(f) refers to the original section within the U.S. Department of Transportation Act of 1966 that established the requirement for consideration of park and recreational lands, wildlife and waterfowl refuges, and historic sites in transportation project development (including publicly owned public parks and any publicly or privately owned historic site listed or eligible for listing on the National Register of Historic Places). Before approving a project that uses Section 4(f) property, FHWA must either (1) determine that the impacts are *de minimis*, or (2) undertake a Section 4(f) Evaluation. If the Section 4(f) Evaluation identifies a feasible and prudent alternative that

Moreover, it would displace approximately 746 employees and 46 residents. Since major fiber optic lines that are part of Verizon's system go through the Verizon Building, with fiber entering and leaving in all directions, the acquisition of this building would be highly disruptive. Therefore, Alternative T-6 would not meet the screening criterion related to property acquisition.

Alternative T-6's estimated cost of $2.6 billion, including preliminary property acquisition costs, is considered unreasonable.

For these reasons, Alternative T-6 was dismissed from further consideration.

- **Alternative T-7.** Alternative T-7 involves the construction of a high-speed, non-interstate tunnel in addition to all of the improvements associated with the Community Grid Alternative.

  Alternative T-7 has many of the same benefits as the Community Grid Alternative, but Alternative T-7 differs from the Community Grid in that it also would include construction of a tunnel. This additional element would involve additional property acquisitions, additional construction (and therefore greater community disruption), and a higher cost than the Community Grid Alternative.

  The construction of Alternative T-7 largely would be implemented underground, using a tunnel-boring machine and sequential excavation method. While there are some risks associated with all underground construction, the use of these conventional and known tunneling methods would allow the alternative to pass on constructability.

  Alternative T-7 would require the acquisition of 11 properties. Two of these buildings are either listed or eligible for listing on the National Register (NR) of Historic Places, three are potentially eligible for NR listing, and one is a local landmark. Alternative T-7 would displace approximately 299 employees and displace 45 residents.

  Alternative T-7's cost of $2.5 billion, including preliminary property acquisition costs, is considered unreasonable. Moreover, Alternative T-7 does not provide added value commensurate with this increased cost (approximately $1.2 billion more than the cost of the Community Grid Alternative).

  For these reasons, Alternative T-7 was dismissed from further consideration.

Thus, none of the potential tunnel alternatives is considered reasonable and each was dismissed from further consideration.

Viaduct Alternative, Potential Options V-2 and V-3

The Project's *Scoping Report* identified three options of the Viaduct Alternative (Options V-2, V-3, and V-4) and two options of the Community Grid Alternative (Options CG-1 and CG-

completely avoids Section 4(f) properties, it must be selected. If there is no feasible and prudent alternative that avoids all Section 4(f) properties, FHWA has some discretion in selecting the alternative that causes the least overall harm. FHWA must also find that all possible planning to minimize harm to the Section 4(f) property has occurred.

2) to be advanced for further study. Subsequent to the publication of the *Scoping Report*, based on additional engineering and further analysis as described below, Options V-2 and V-3 were dismissed.

- Design Considerations. The I-81 Viaduct Project must conform to NYSDOT highway design standards, which generally are based on American Association of State Highway and Transportation Officials (AASHTO) standards and have been approved by the FHWA for use on all Federal-aid projects. AASHTO design standards, developed and approved by a committee of Federal and State transportation officials, are based on decades of research and multinational experience and are tailored to the highway functional class, design speed, terrain, traffic volumes, and other characteristics of the highway. All proposed design exceptions to these standards must be analyzed and the potential impacts identified before they can be approved by FHWA. The process to evaluate and justify design exceptions must be based on an evaluation of the context of the facility (e.g., community values), needs of the various project users, safety, mobility (i.e., traffic performance), environmental impacts, project costs, and other impacts.

  As defined in the NYSDOT Highway Design Manual, non-standard features are those features that do not meet the applicable design criteria for certain critical design elements. The design criteria are based on the functional classification of the highway, traffic volumes, operating speed, terrain, and other factors. There are 17 critical design elements: design speed, lane width, shoulder width, bridge roadway width, maximum grade, minimum radius, superelevation (max.), stopping sight distance, lateral clearance, vertical clearance, pavement cross-slope, rollover, structural capacity, level of service, control of access, pedestrian accommodations, and median width. Non-conforming elements are those features that do not conform to normally accepted engineering practice and are not critical design elements. Examples of non-conforming features include inadequate acceleration and deceleration lane lengths, short weaving sections, inadequate climbing lane lengths, and insufficient distance between successive ramps.

  The existing I-81 viaduct including the I-81/I-690 interchange has 93 non-standard features and 7 non-conforming features. The proposed design for the Viaduct Alternative potential options, which is based on a design speed of 60 miles per hour (mph), would correct all non-standard features, except for horizontal stopping sight distance at five curves between East Genesee Street and Butternut Street under Options V-3 and V-4. As defined by FHWA, "stopping sight distance is the distance needed for drivers to see an object on the roadway ahead and bring their vehicles to a safe stop before colliding with the object." "Horizontal stopping sight distance" refers to the distance that a motorist needs to see around horizontal curves at a given speed. The Viaduct Alternative options differ in their ability to meet design standards for horizontal stopping sight distance as follows.

  - Option V-2, New Viaduct Fully Improved to Current Standards, would involve the reconstruction of all highway elements to meet 60 mph design standards;
  - Option V-3, New Viaduct with Substantial Design Improvements, would involve the reconstruction of all highway elements to meet 60 mph design standards except for four curves within the I-81/I-690 interchange that would meet 55 mph design

standards and one curve that would meet 50 mph design standards for the horizontal stopping sight distance; and

- Option V-4, New Viaduct with Considerable Design Improvements, would involve the reconstruction of all highway elements to meet 60 mph design standards except for three curves within the I-81/I-690 interchange that would meet 55 mph and two curves that would meet 50 mph design standards for the horizontal stopping sight distance.

The proposed design for the Viaduct Alternative options also would correct most non-conforming features based on a 60 mph design speed. On urban freeways and other facilities that carry high traffic volumes, such as I-81, two or more ramps are often located in close succession. AASHTO provides minimum ramp spacing dimensions for various ramp pair combinations to provide adequate space for signing, adequate gaps for entering motorists, and sufficient weaving lengths. The existing Project Area has a total of 15 non-conforming ramp spacing features, five of which are within the I-81/I-690 interchange area. These features would be retained under the No Build Alternative. The Viaduct Alternative options vary in the degree to which they achieve the minimum ramp spacing. Option V-2 has 11 non-conforming ramp spacing features, five of which are in the viaduct, including the I-81/I-690 interchange area; Options V-3 and V-4 each have nine non-conforming ramp spacing features, one of which is in the viaduct, including the I-81/I-690 interchange area.

Based on the current level of engineering, it is anticipated that Option V-2 would correct all non-standard and most non-conforming highway features on the mainline within the I-81 priority area. Options V-3 and V-4 would correct all non-standard features on the mainline except for the horizontal stopping sight distance associated with five of the horizontal curves in the I-81 priority area, as described above. While horizontal stopping sight distances would not be fully met for these five curves, they would be substantially improved over the existing condition.

The proposed highway would provide two or more travel lanes in each direction, but the horizontal sight distance restriction under Options V-3 and V-4 would apply to only the inside lane of the five curves. Options V-3 and V-4 also would correct most non-conforming features within the I-81 priority area.

Two approaches were evaluated to fully meet standards: 1) additional over-widening of the inner side shoulder of all five curves, which would cost an estimated $26 million, and 2) increasing the proposed curve radii, which would require realignment of the entire interchange area, resulting in a design similar to that of Option V-2 and necessitating additional right-of-way acquisitions (twelve additional buildings, nine of which are on or eligible for listing on the National Register of Historic Places). Thus, in addition to the difference in construction cost to fully meet standards, approximately $20 million in real estate costs would be saved under Option V-4 that would need to be expended under Option V-2.

Under Federal and State guidelines, an interstate in an urban area should be designed for a speed limit between 45 and 65 mph. All three Viaduct Alternative options have been

designed to meet a 60 mph design speed, except as noted, and a 55 mph posted speed limit. While the horizontal stopping sight distance standards would vary under each option (from 60 mph to 55 or 50 mph), the posted speed limit on the viaduct under each option would be the same (55 mph). Warning signs to encourage motorists to reduce speed would be installed ahead of the five curves.

Justification for retention of non-standard features is found in **Appendix A-3** and summarized below.

- **Traffic and Safety Considerations.** The three Viaduct Alternative options would implement similar vehicular, bicycle, and pedestrian operational improvements, which would not be implemented under the No Build Alternative.

  A non-standard/non-conforming features analysis was conducted for the area approaching and through the I-81/I-690 interchange, which comprises I-81 between Reference Marker (RM) 2032 and RM 2166 and I-690 between RM 2014 and RM 2042. This area is known as the "S-curve and slalom area" and includes I-81 from Interchange 17 near Colvin Street (south of Downtown) to Interchange 25 at 7th N. Street (north of Downtown) and I-690 from Interchange 9 in the vicinity of Hiawatha Boulevard (near the fairgrounds) to west of Interchange 15 near Peat Street (northeast of Syracuse University). This area comprises I-81 reference marker (RM) 81I 3303 2029 to RM 81I 3303 3008 in both the northbound and southbound directions and I-690 RM 690I 3301 2009 to RM 690I 3301 2046 in both the eastbound and westbound directions.

  Accident data for the three-year period from July 1, 2010 through June 30, 2013 showed that there were 1,489 accidents (903 along I-81 and 586 along I-690) initially coded to the S-curve and slalom area during the analysis period. Upon review of the accident data for this and other critical I-81 viaduct Project Area locations, 1,354 accidents were found to have actually occurred in the S-curve and slalom area: 817 on I-81 between RM 2029 and RM 3008 and 537 on I-690 between RM 2009 and RM 2046. Of these, 1,299 accidents (776 along I-81 and 523 along I-690) could be located, and 55 accidents (41 along I-81 and 14 along I-690) had unknown reference markers. Based on an examination of the non-standard/non-conforming feature locations and an identification of potential Priority Investigation Locations (PILs), the S-curve and slalom study area was modified to focus on reference markers with non-standard/non-conforming design features and/or relatively high accident numbers. The modified study area includes I-81 between RM 2032 and RM 2166 and I-690 between RM 2014 and RM 2042.

  A non-standard/non-conforming features analysis was conducted for the modified S-curve and slalom area study area. A total of 1,181 accidents (695 along I-81 and 486 along I-690) occurred in this area during the three-year accident analysis period. However, non-standard and non-conforming features may differ by direction, and some combinations of reference markers and directions do not have any non-standard or non-conforming features. Therefore, 1,087 accidents in the S-curve and slalom area were identified to be potentially related to non-standard/non-conforming design features; these included 658 accidents along I-81 (341 in the northbound direction and 317 in the southbound direction) and 429 accidents along I-690 (232 in the eastbound direction and 197 in the westbound direction). The police report for each of these accidents was

examined in detail to determine if the accident could be attributed in any way to a non-standard/non-conforming feature.

Based on a detailed examination of accident reports in the I-81/I-690 interchange area, the proportion of accidents that are related to the non-standard/non-conforming features is relatively small. There were 312 accidents (47 percent) along I-81 between RM 2032 and RM 2166 that were identified to be potentially related to non-standard/non-conforming geometric features, and there were 116 accidents (27 percent) along I-690 between RM 2014 and RM 2042 that were identified to be potentially related to non-standard/non-conforming geometric features. As noted above, Options V-3 and V-4 would reduce the number of property impacts in the I-81 viaduct Project Area. Under these options, all non-standard/non-conforming features other than horizontal stopping sight distance would be eliminated, which would substantially reduce the accidents related to non-standard/non-conforming geometric features in the study area. Only 7 (5 percent) of the accidents on I-81 between RM 2043 and RM 2049 and 10 (25 percent) of the accidents on I-690 between RM 2025 and RM 2028 (i.e., along the curves in the immediate interchange area where non-standard horizontal stopping sight distance would be retained) were identified to be potentially related to horizontal stopping sight distance. None of these accidents involved a fatality. As part of the Options V-3 and V-4 designs, the horizontal stopping sight distance on curves would be improved substantially from existing conditions and would be non-standard only in the inside travel lanes. Therefore, a corresponding reduction in horizontal stopping sight distance accidents through these curves can be anticipated under Options V-3 and V-4.

- **Environmental Considerations.** To meet current design standards, the three Viaduct Alternative options would require the construction of a viaduct and other improvements that would result in a wider footprint than that of the existing viaduct. These improvements, which would include wider shoulders, longer acceleration and deceleration lanes, additional lanes for capacity and weaving, geometric changes to accommodate ramp spacing criteria, and others, would not be implemented under the No Build Alternative. Consequently, Options V-2, V-3, and V-4 would result in the acquisition of properties, including several historic buildings, and the displacement of residents and businesses. **Table 3-3** shows potential building/property impacts for the No Build Alternative and Options V-2, V-3, and V-4.

  As explained earlier, the three options vary in their ability to meet design standards for horizontal stopping sight distance, with Option V-2 fully meeting the standard and occupying a greater footprint than would Options V-3 and V-4. While they would substantially or considerably meet the standard, Options V-3 and V-4 would be designed with slightly sharper curves, which would reduce the horizontal stopping sight distance along the inside lane of five curves in the I-81/I-690 interchange area, but would reduce the number of buildings impacted by the options. Under the No Build Alternative, none of the non-standard or non-conforming features would be eliminated or improved.

  Option V-2 would expand the footprint of I-81 farther north and east into the Northside neighborhood than the current highway's alignment, and therefore, the

Table 3-3
Comparison of Property Impacts for the Viaduct Alternative

	No Build Alternative	Option V-2	Option V-3	Option V-4
Description		New Viaduct Fully Improved to Current Standards	New Viaduct with Substantial Design Improvements	New Viaduct with Considerable Design Improvements
Building/Property Impacts	0	37 (36 full acquisitions of buildings and one partial impact to a building, involving the removal of a smokestack)	30 (29 full acquisitions of buildings and one partial impact to a building, involving the removal of a smokestack)	25 (24 full acquisitions of buildings and one partial impact to a building, involving the removal of a smokestack)
Residents Displaced (approximate)	0	527	48	48
Employees Displaced (approximate)	0	753	695	683
Impacts to Identified and Eligible NR Historic Structures	0	20	16	12
Impacts to Identified Local Landmarks	0	11	10	6
Other Considerations	Not applicable.	Temporary or permanent occupancy of Wilson Park Displaces Snowden Apartments (dwelling for registered sex offenders) and Syracuse Pavilion (reentry center) Displaces Samaritan Center, facility for the hungry located in the former St. John the Evangelist Church Displaces Nettleton Commons, loft conversion with 60 apartments and retail	Temporary or permanent occupancy of Wilson Park Displaces Samaritan Center, a facility for the hungry located in the former St. John the Evangelist Church	Temporary or permanent occupancy of Wilson Park

Notes:
Based on April 2016 design concepts. Property information is subject to change based on refined design.
Some properties are listed or eligible for listing on the National Register and are local landmarks. Such structures are included in both "Identified NR Historic Structures" and "Identified Local Landmarks."

Sources:
New York State Office of Parks, Recreation, and Historic Preservation, Cultural Resources Information System (CRiS)
Manta Small Business Directory (www.manta.com)
Onondaga County Department of Real Property Taxes (www.ongov.net)
City of Syracuse Historic Properties List (www.syracuse.ny.us)

viaduct structure would be constructed over streets and blocks where it does not exist today. Accordingly, Option V-2 would require the acquisition and demolition of several buildings in Northside, and the highway would be located closer to buildings east of State Street and north of Burnet Avenue. In total, Option V-2 would require the acquisition of 37 buildings/parcels (36 buildings and one partial impact to a building involving removal of a smokestack). Option V-3 would result in 30 building/parcel acquisitions (29 buildings and

one partial impact to a building involving removal of a smokestack), and Option V-4 would result in 25 building/parcel acquisitions (24 buildings and one partial impact to a building involving removal of a smokestack).

Option V-2 would displace approximately 527 residents, including residents of the Snowden Apartments, a 199-unit building that is about 80 percent occupied by registered sex offenders; residents of the Syracuse Pavilion, a recently opened reentry facility providing temporary shelter; and residents of Nettleton Commons, a recent residential conversion with 60 apartments. Relocation of the occupants of the Snowden Apartments and Syracuse Pavilion would be subject to strict constraints on relocation.

Options V-3 and V-4 would displace approximately 48 residents, most of whom live in small apartment buildings. Two large apartment buildings (Nettleton Commons and Snowden Apartments) would be avoided. In addition, Options V-3 and V-4 would not displace Syracuse Pavilion.

The No Build Alternative would not result in the displacement of residents or employees. Options V-2, V-3, and V-4 would require the acquisition of multiple businesses, resulting in the displacement of jobs. Option V-2 would displace approximately 753 jobs, Option V-3 would displace approximately 695 jobs, and Option V-4 would displace approximately 683 jobs. Most of these jobs are associated with small businesses with 10 to 15 employees each. However, medium-sized and large businesses (50 or more employees), including offices at VIP Structures, Presidential Towers Medical Office Building, Onondaga Case Workers, Inc., and Avalon Document Services, also would be displaced. In accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), the FHWA and NYSDOT would provide relocation assistance for displaced businesses, with the intent of maintaining as many jobs as possible in the region.

Options V-2 and V-3 would necessitate the acquisition and removal of the former St. John the Evangelist Church, which is now occupied by the Samaritan Center, a community services organization that provides meals to the hungry. The Gothic Revival-style church, which eligible for listing on the National Register of Historic Places and is a local landmark, was built in 1853 and served as the city's first cathedral. The Samaritan Center is not acquired under Option V-4.

The three Viaduct Alternative options are anticipated to adversely affect historic sites that are listed or eligible for listing on the National Register of Historic Places. These options also may impact local landmarks. Option V-2 would result in the acquisition of 20 structures that are listed on or eligible for listing on the National Register of Historic Places (known resources). Option V-3 would result in the acquisition of 16 known resources, and Option V-4 would result in the acquisition of 12 known potential resources.

In addition to Section 106 of the National Historic Preservation Act, Section 4(f) of the Department of Transportation Act of 1966 also provides protection to hhistoric sites (properties that are on or eligible for listing on the National Register of Historic Places). Option V-4 would result in the acquisition of fewer historic resources compared with Options V-2 and V-3 and thus would result in the use of fewer historic sites protected under Section 4(f). The potential impacts on Wilson Park, which involve potential temporary

construction staging at the park or permanent occupancy over the top of a small portion of its basketball court, would be the same among the three options. As currently designed, Options V-2, V-3, and V-4 would not impact other parklands in the area.

Traffic volumes and operations would be consistent among Options V-2, V-3, and V-4. Thus, in terms of air quality and noise, potential impacts would not vary notably among Options V-2, V-3, and V-4. Traffic and safety are discussed earlier; operationally, the options do not vary notably.

The three options would result in inconveniences during construction. There would be changes in traffic circulation, increases in noise levels at receivers near construction equipment, removal of parking beneath the viaduct, and periodic restrictions on local vehicular, pedestrian, and bicycle traffic on streets that cross under or over the highway. The specific impacts during construction would vary by option, but the breadth and severity of construction impacts are not expected to be substantially different among the options.

Based on the adverse impacts to properties, which would result in the acquisition of historic buildings as well as unreasonable socioeconomic impacts, such as substantial displacement of residences and businesses, Options V-2 and V-3 were dismissed from further consideration. Option V-4, which would involve the reconstruction of all highway elements to meet 60 mph design standards except for horizontal stopping sight distance along five curves within the I-81/I-690 interchange, would eliminate the vast majority of non-standard and non-conforming features in the Project Area. Although five non-standard features would be retained (three curves within the I-81/I-690 would meet 55 mph and two curves would meet 50 mph design standards for the horizontal stopping sight distance), the impact to safety of this retention is anticipated to be negligible. In addition, the horizontal stopping sight distance would be substantially improved over the existing condition and the non-standard condition would apply to the inside travel lane only. Moreover, the number of accidents currently attributable to horizontal stopping sight distance is relatively small. As a result, Option V-4 would improve safety and substantially reduce the number of accidents in the I-81/I-690 interchange area. Therefore, Option V-4 was retained for further consideration in this Draft EIS.

Option V-4 is hereafter referred to as the Viaduct Alternative in this document.

Community Grid Alternative, Option CG-1

The *Scoping Report* presented two Community Grid Alternative options: Option CG-1 ("Boulevard"), in which Almond Street would become a boulevard and the primary north-south thoroughfare through the city, and Option CG-2 ("Almond Street and Other Local Streets"), which would disperse traffic onto Almond Street as well as other local streets. The implementation of Option CG-1 would require construction of an overpass along Erie Boulevard from Townsend Street to Forman Street, potentially hindering access to businesses in that area, and would impact local street connectivity by severing McBride, Willow Streets, and Water Streets. Moreover, Option CG-1 would necessitate the acquisition of more property than Option CG-2, including four buildings listed or eligible for listing on the National Register of Historic Places. These acquisitions, which would displace approximately 116 employees and 46 residents, would result in greater socioeconomic

impacts. In addition, Option CG-1 would not enable the creation of the proposed canal-themed district (described in **Section 3.4)**. Finally, because Option CG-1 would concentrate traffic flow along one major thoroughfare, it would require more lanes on Almond Street and not optimize the use of the existing city street network compared with Option CG-2. Thus, it would provide a lesser benefit to pedestrians and would have less potential for urban design treatments. Therefore, Option CG-1 was dismissed from further consideration, and Option CG-2 is hereafter referred to as the Community Grid Alternative.

3.4 DESCRIPTION OF REASONABLE ALTERNATIVES

The I-81 Viaduct Project alternatives development focused on a priority area (I-81 priority area), which includes the section of I-81 approximately between Colvin Street and Spencer Street and the portion of I-690 approximately between the West Street interchange and Beech Street. In addition, NYSDOT investigated interchange and safety improvements on I-81 between Spencer Street and Hiawatha Boulevard. Thus, the project limits have been defined to include an approximately 3.75-mile section of I-81 from approximately Colvin Street to Hiawatha Boulevard and the 2.5-mile section of I-690 from approximately the West Street interchange (which extends to Leavenworth Avenue) to Beech Street. The Community Grid Alternative also would result in improvements along I-481, including its interchanges with I-81. The project limits are shown on **Figure 1-2**.

Alternatives that were advanced for further evaluation and analysis in this Draft EIS are described below.

NO BUILD ALTERNATIVE

NEPA requires the evaluation of a No Build Alternative. The No Build Alternative serves as the baseline to which the other alternatives are compared. As described in **Chapter 1, Introduction**, I-81 is in need of repairs, and current traffic safety issues are a key consideration for the I-81 Viaduct Project. The No Build Alternative would maintain the highway in its existing configuration. Continual maintenance and repairs would be performed to ensure the safety of the traveling public, and safety measures would be implemented to the extent feasible and practical.

Structural deficiencies and safety considerations would be addressed as part of NYSDOT's ongoing maintenance program. In addition to routine maintenance efforts (such as filling pavement cracks, patching holes in bridge decks, cleaning drainage systems) and operational considerations (e.g., signage and other low-cost improvements), the facility has required an increasing number of emergency repairs of greater magnitude to keep it serviceable. Over time, these repairs would become increasingly costly as the highway continues to deteriorate. At the time when NYSDOT determines that a maintenance and repair program is too costly or that conditions result in an increased safety risk to the public, the facility would be closed to traffic.

Under the No Build Alternative, large-scale replacement and rehabilitation efforts would not be undertaken, nonstandard highway features would not be corrected, and existing interchanges would not be modified.

The No Build Alternative would not involve changes in right-of-way (property line). Any maintenance or safety repairs would include upgrades to the existing highway or operational modifications, such as changes in the posted speed limit, safety signage, restrictions on vehicle weights, or adjustments to traffic signals at intersections leading to and from the highway.

There would be costs associated with the No Build Alternative in each year that repairs are undertaken. As the facility continues to deteriorate, the level of effort and associated costs would increase. Over time, the maintenance may be costlier than NYSDOT's budgets can tolerate, making continued operation unreasonable.

VIADUCT ALTERNATIVE

The Viaduct Alternative (formerly known as Option V-4) would involve a full reconstruction of I-81 between approximately Colvin Street and Spencer Street, as well as modifications to highway features north of Spencer Street to Hiawatha Boulevard and along I-690 (see **Figures 3-1 and 3-2**). Under the Viaduct Alternative, the new viaduct would provide four 12-foot travel lanes (a minimum of two in each direction), as well as inside shoulders (a minimum of four feet in each direction) and outside shoulders (a minimum of 10 feet in each direction). From the south, the Viaduct Alternative alignment would begin as I-81 approaches the city in the vicinity of Colvin Street. Near Van Buren Street, the interstate would go over the bridge carrying the New York, Susquehanna and Western Railway, at approximately the same elevation as the existing I-81 viaduct, and begin to climb until nearby Adams Street, where it would be approximately 10 to 15 feet higher than the existing viaduct, which is approximately 20 feet tall. This increased height generally would be maintained throughout the length of the viaduct. The height would be increased to allow more room for construction operations; to meet vertical clearance requirements for several intersecting local streets; and to accommodate a more conventional bridge design that would eliminate a substantial number of joints in the bridge deck, thereby making the structure easier to maintain. South of Harrison Street, the new viaduct generally would be approximately 10 to 20 feet wider, depending on the section, than the 66-foot-wide existing viaduct. Between Harrison and East Genesee Streets, the viaduct would begin to split into two separate bridges, with the bridge on the west carrying two southbound I-81 through lanes, as well as additional lanes for ramp connections, and the bridge on the east carrying a similar number of lanes for northbound I-81. As a result of these connections, the separate bridges, wider shoulders, and other improvements, the transportation footprint above Almond Street would be substantially wider than the existing transportation footprint, ranging from approximately 84 feet south of Harrison Street (20 feet wider than existing) to 280 feet north of East Genesee Street (150 feet wider than the existing). (**Figures 3-3** and **3-4** illustrate typical widths of the new viaduct above Almond Street, south of Harrison Street and between Cedar and East Genesee Streets, respectively. **Figure 3-5** depicts the transportation footprint between East Genesee Street and East Fayette Street. **Figure 3-6** shows a view of the existing viaduct over Almond Street at East Adams Street and a simulation of the new viaduct in the same location. **Figure 3-7** shows a view of the existing viaduct over Almond Street from Harrison Street and a simulation of the new viaduct in the same location.) From East Genesee Street to the I-690 interchange, I-81 would continue on separate bridges, which would join and end around Salina Street (for comparison, the

Viaduct Alternative: Overview

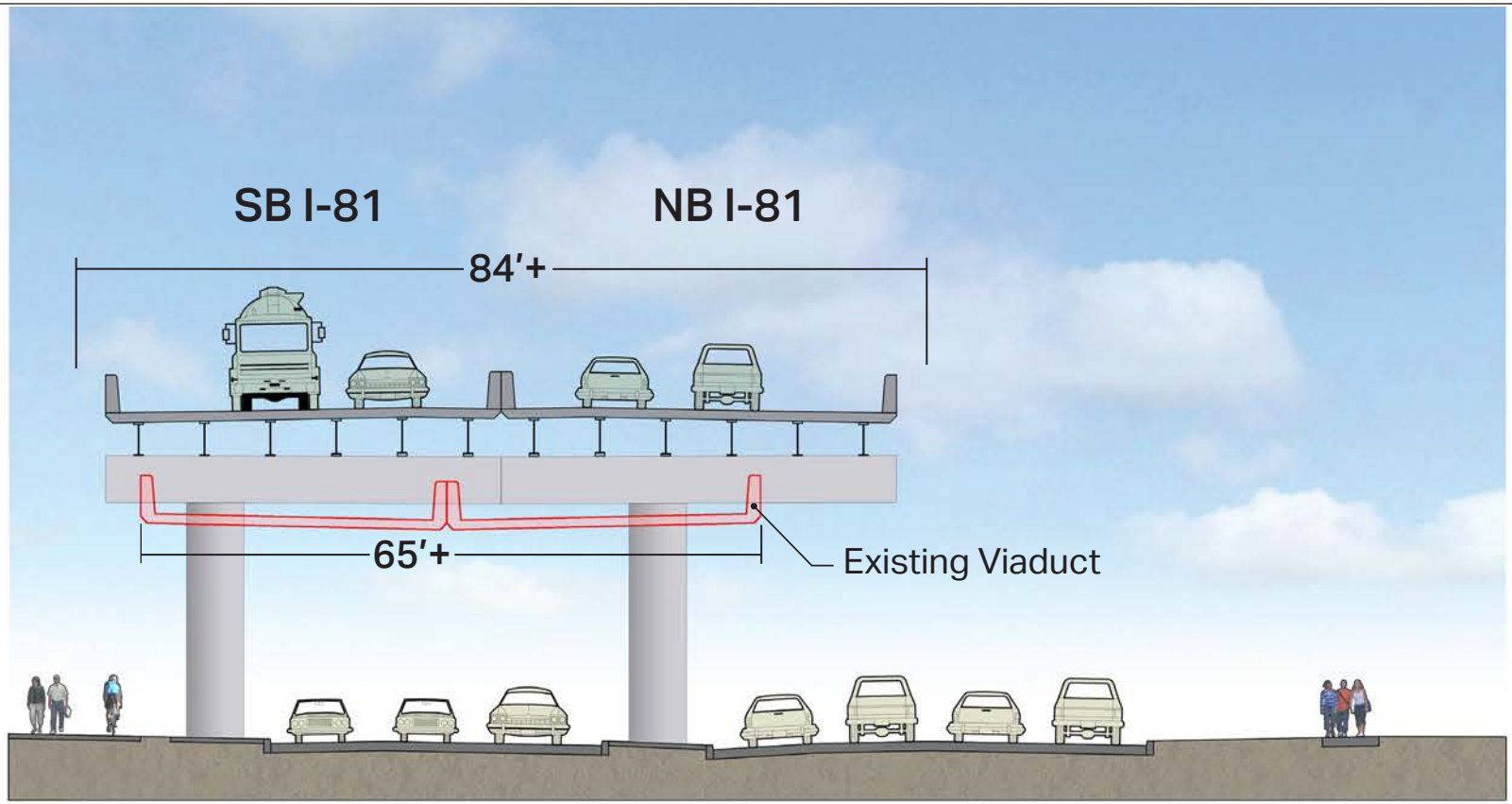
I-81 Viaduct Project

Figure 3-1

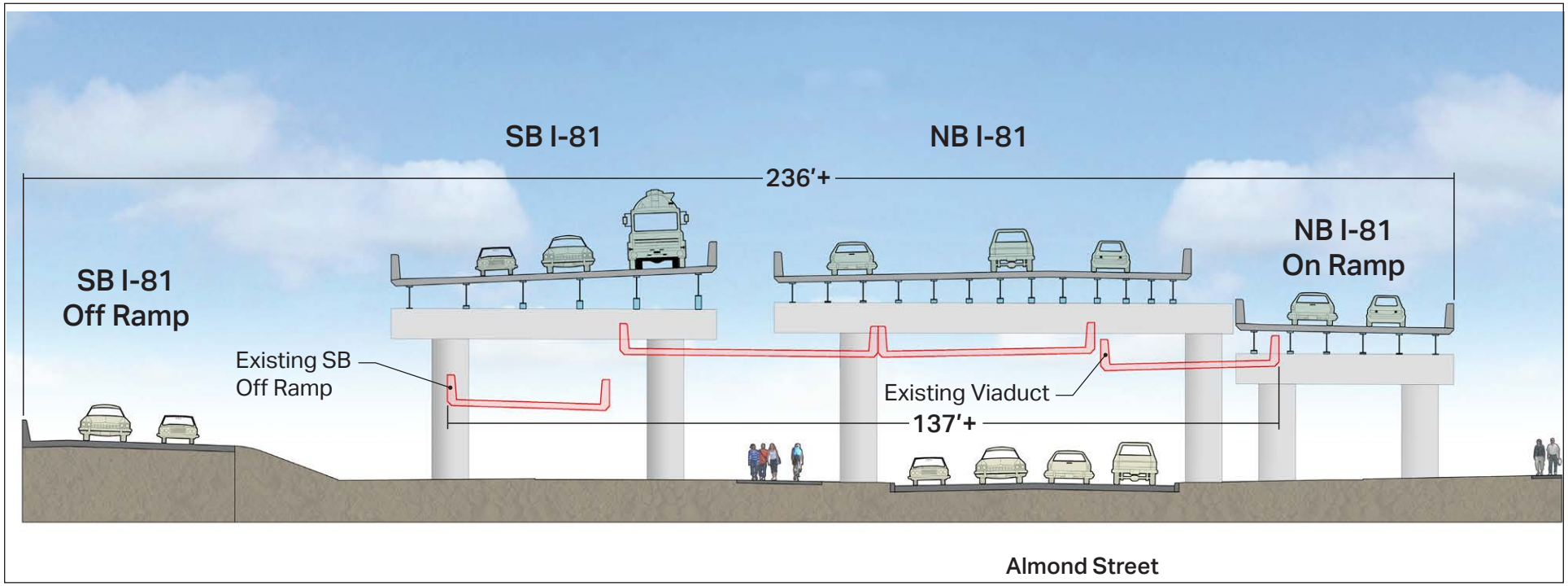
Viaduct and Community Grid Alternatives: Northern Segment Overview

I-81 Viaduct Project

Figure 3-2

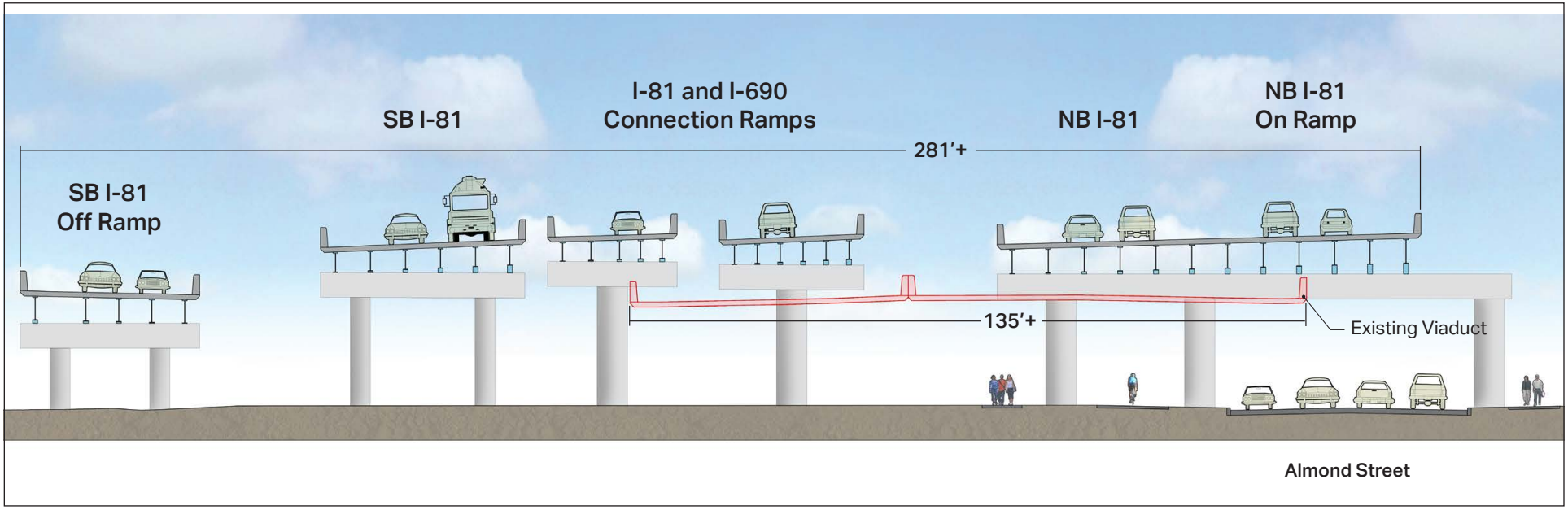


Viaduct Alternative:
Cross-section of Almond Street south of Harrison Street



Viaduct Alternative:
Cross-section of Almond Street between Cedar and Genesee Streets

12.19.16



Viaduct Alternative:
Cross-section of Almond Street between Genesee and Fayette Streets

Existing

Viaduct Alternative: Visual Simulation

Note: These visualizations are representative of design intent and the preliminary layout of site elements. These elements will be further refined as the design progresses. The final selection of site elements, such as lighting, planting, and paving, as well as materials, colors, and finishes, will be determined during final design. Trees and plantings are shown in an established and mature state.

Almond Street at East Adams Street: Existing Conditions and Viaduct Alternative Simulation

Existing

Viaduct Alternative: Visual Simulation

Note: These visualizations are representative of design intent and the preliminary layout of site elements. These elements will be further refined as the design progresses. The final selection of site elements, such as lighting, planting, and paving, as well as materials, colors, and finishes, will be determined during final design. Trees and plantings are shown in an established and mature state.

Harrison Street at Almond Street : Existing Conditions and Viaduct Alternative Simulation

existing I-81 viaduct rejoins at approximately State Street). From Salina Street northward, the interstate would be carried on an embankment. Elevations would match those of the existing interstate near existing Butternut Street.

The Viaduct Alternative would correct most non-standard and non-conforming highway features within the I-81 priority area. It would meet 60 mph design standards except for horizontal stopping sight distance[5] at five curves. Three curves would meet 55 mph design standards and two curves would meet 50 mph design standards. The sight distance restriction would apply to only the inside lane of the five curves. The posted speed limit on the viaduct would be 55 mph, but warning signs to encourage motorists to reduce speed would be installed at the five curves.

Any exceptions to design standards for highway improvement projects on the Interstate System funded with Federal aid requires FHWA approval, and design exceptions must be justified following Federal guidelines. Under Federal and State guidelines, an interstate in an urban area should be designed for a speed limit between 45 and 65 mph. The Viaduct Alternative would meet this standard. Based on the current design, it is estimated that approximately 24 buildings would need to be acquired for the construction of the Viaduct Alternative; in addition, there would be one partial impact to a building, involving the removal of its smokestack (see Section **6.3.1, Land Acquisition, Displacement, and Relocation,** for detailed information on potential property impacts). Major elements of the Viaduct Alternative, including interchange modifications, bridge replacements, and other features, are described below.

- New partial interchange on I-81 at MLK, Jr. East: To improve access to Outer Comstock, Southside, and University Hill from the south, a new partial interchange with a northbound exit ramp and a southbound entrance ramp would be constructed at MLK, Jr. East. The northbound exit ramp would end at the junction of MLK, Jr. East and Renwick Avenue, and traffic could continue on Renwick Avenue and proceed beneath the existing New York, Susquehanna and Western Railway bridge, which would not be affected by the alignment. The new southbound entrance ramp would require closure of a driveway to the adjacent parking lot of Dr. King Elementary School, but the school's other driveway at East Raynor Avenue would remain open. To accommodate the entrance ramp, MLK, Jr. East would be restriped and repaved, and new sidewalks would be installed from Leon Street to Renwick Avenue. A new crosswalk would be provided at MLK, Jr. East and Renwick Avenue.

  The new partial interchange would provide direct access to the Southside and to University Hill via Renwick Avenue; alleviate congestion at the Almond Street intersections with Harrison Street and Adams Streets; reduce the number of lanes needed at those intersections; and improve conditions for pedestrians by reducing crossing distances and allowing for fewer lanes at the Almond Street intersections with

[5] As defined by FHWA, "stopping sight distance is the distance needed for drivers to see an object on the roadway ahead and bring their vehicles to a safe stop before colliding with the object." "Horizontal stopping sight distance" refers to the distance that a motorist needs to see around horizontal curves at a given speed.

Harrison and Adams Streets. FHWA's "Interstate System Access Informational Guide" (August 2010) states, "Not providing for all movements violates driver expectation and may lead to 'wrong-way' movements on ramps. Therefore, alternatives for the construction of partial interchanges should generally be avoided. If partial interchanges are being considered, clear and detailed analysis must be conducted and documented as justification for their construction or retention." Consistent with this guidance, two options to provide a full interchange at MLK, Jr. East were explored and each was found unreasonable: in one option, the additional ramps (a northbound entrance ramp and a southbound exit ramp) would be too close to the ramps at Adams Street; the second option, which considered a collector-distributor road, would necessitate closure of the Colvin Street entrance ramp. Burt Street also was explored as a potential location for this new interchange but was dismissed from further consideration because it would not be physically possible to provide clearance over the railway and have the ramps meet grade at Burt Street. Moreover, Burt Street does not connect to Renwick Avenue or Van Buren Street, which provide access to University Hill, and initial traffic studies showed higher usage of MLK, Jr. East over Burt Street during the PM peak period.

- I-81 Interchange 18 (Harrison/Adams Streets): To improve traffic flow at Interchange 18, a second exit lane to Harrison Street from southbound I-81 would be added. This exit lane would lead to a signalized intersection at Almond Street. The weaving section between the northbound I-81 entrance ramp from Harrison Street and the I-81 exit ramp to eastbound I-690 would be eliminated by relocating the northbound I-81 exit ramp to eastbound I-690, improving traffic flow and safety in the area.

- Reconstruction of I-690 and Existing I-81/I-690 Interchange and Provision of Missing I-81/I-690 Connections: I-690 would be reconstructed from Leavenworth Avenue (west of the West Street interchange) to Lodi Street. The existing ramps between the two interstates would be reconstructed. The existing ramp connecting northbound I-81 to eastbound I-690 includes a non-conforming weave section, which would be eliminated with the new interchange. This ramp would be relocated from the east side of northbound I-81 to the west side of northbound I-81, and it would be changed from a right-side ramp to a left-side ramp (see **Figure 3-8**).

  In addition, new ramps would be built to provide direct connections, which are unavailable today, between eastbound I-690 and northbound I-81 and between southbound I-81 and westbound I-690 (see **Figure 3-9)**. These new direct connections to facilitate interstate-to-interstate movement would be consistent with AASHTO's "A Policy on Design Standards Interstate System" (January 2005), which states that interchanges shall be provided between all interstate routes and all interchanges shall provide for all traffic movements. In 2050 (the Project's design year), approximately 1,700 and 2,300 vehicles would use the missing connector ramps during the AM and PM peak hours, respectively. (Approximately 1,095 vehicles in the AM peak hours, and approximately 1,439 in the PM peak hours, would use the eastbound I-690 to northbound I-81 ramp; approximately 763 vehicles in the AM peak hours, and approximately 134 vehicles in the PM peak hours, would use the southbound I-81 to westbound I-690 ramp.)

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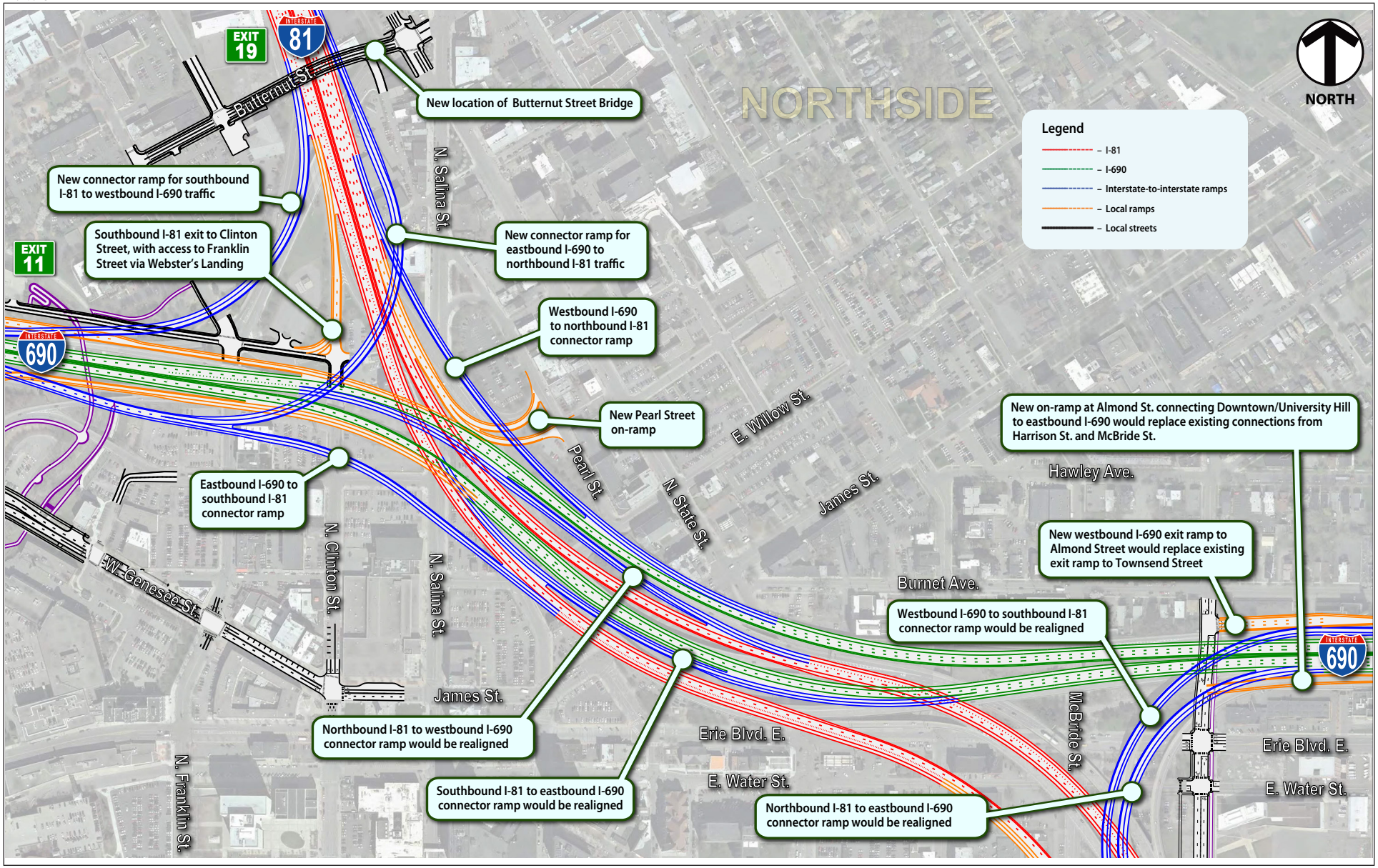

Viaduct Alternative:
I-81 / I-690 Interchange Improvements

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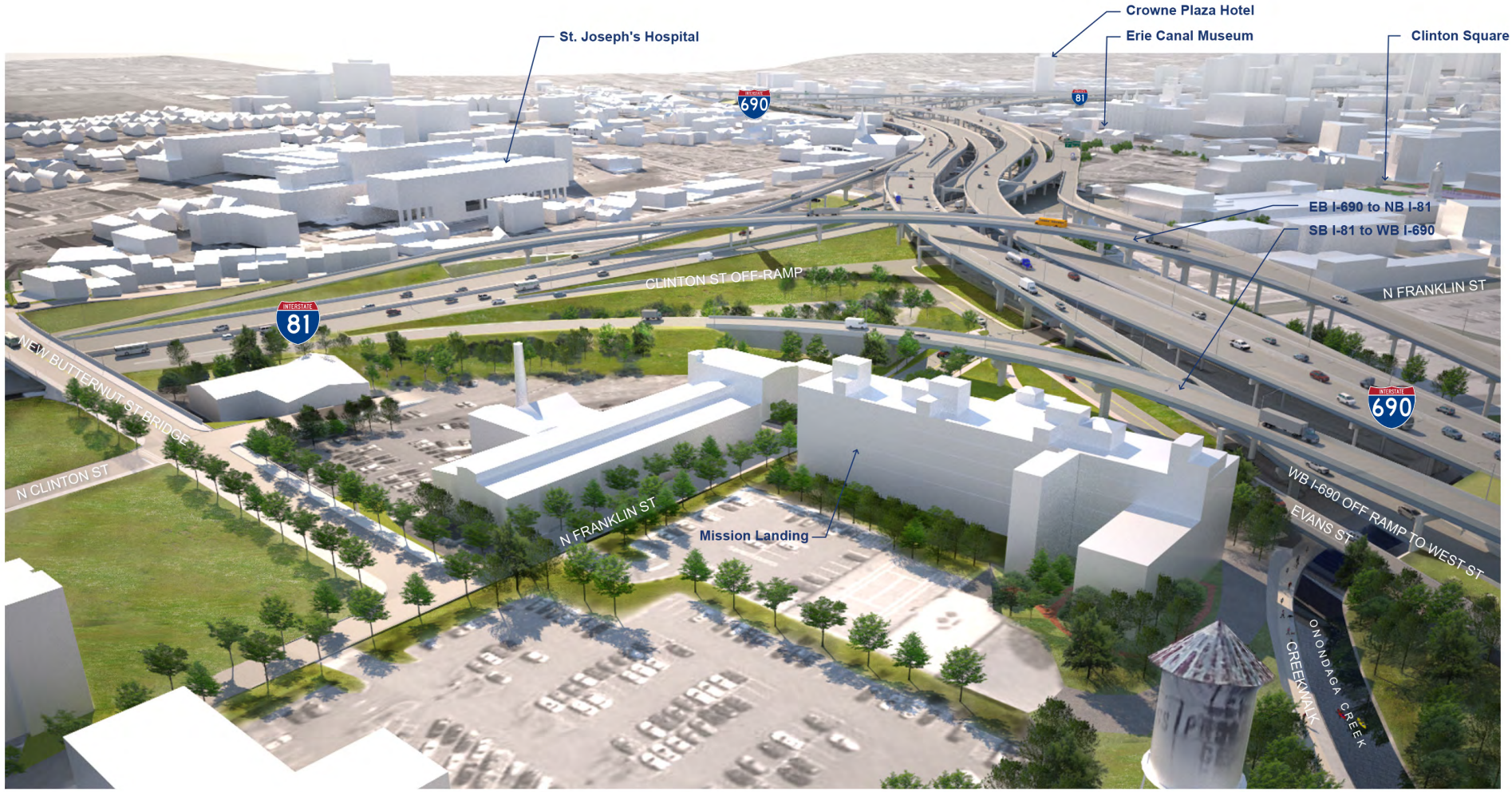

Viaduct Alternative:
New Connecting Ramps between I-81 and I-690

I-81 Viaduct Project

Figure 3-9

All of the new and reconstructed ramps would include adequate shoulders, longer acceleration and deceleration lanes, and improved stopping sight distance. Overall, the new interchange would be approximately 20 feet higher than the existing interchange to accommodate vertical clearance requirements of the intersecting ramps and mainline. Three buildings (901, 909, and 915 North State Street) would need to be acquired to construct the I-81/I-690 interchange missing connections. Overall, a total of 11 buildings would need to be acquired for the reconstruction of the interchange and the provision of the missing connectors under the Viaduct Alternative (see **Chapter 6.3.4, Land Acquisition, Displacement, and Relocation** for further details on property impacts). Efforts to avoid or minimize these property impacts will continue as the Project advances to the Final EIS. ((Similar improvements, with differing property impacts, are proposed under the Community Grid Alternative; see below.)

- I-81 Interchange 19 (Clinton Street/Salina Street) and Interchange 20 (Franklin Street/West Street): Interchanges 19 and 20 would be combined into one partial interchange to accommodate the new connections between I-81 and I-690 described above. This interchange consolidation would involve replacing the existing off-ramps from southbound I-81 to West Street/Franklin Street (Interchange 20) and to Clinton Street/Salina Street (Interchange 19) with a single ramp that serves Clinton Street. Access to Franklin Street would continue to be available via Webster's Landing. In addition, the existing on-ramps from Pearl Street (Interchange 19) and State Street (Interchange 20) would be reconfigured as a single, two-lane ramp at Pearl Street. These improvements also are proposed under the Community Grid Alternative; see below.)

- Butternut Street Bridge: The Butternut Street overpass must be rebuilt because of the reconstruction of the I-81/I-690 interchange, which would shift interstate and ramp locations. Placement of the Butternut Street bridge in a new location would allow the ramp carrying traffic from eastbound I-690 to northbound I-81 to be constructed beneath the Butternut Street overpass. The new bridge would be built over existing Genant Drive to connect to Clinton and Franklin Streets in the Franklin Square neighborhood, and the existing bridge would be demolished. Existing Butternut Street would be removed from State to Franklin Streets. The new bridge would be narrower than the existing bridge, with one lane (rather than two lanes in the existing) in each direction. The new bridge would include wider sidewalks on both sides as well as one on-road bike lane in each direction. (This improvement also is proposed under the Community Grid Alternative; see below.)

- I-81 from Interchange 20 to Interchange 24: From I-690 to Hiawatha Boulevard, I-81 has three lanes in each direction. To improve capacity and traffic operations, this segment of the highway would be widened to provide four through lanes in each direction. Several non-standard highway features, such as narrow shoulders, tight curves, and reduced sight distance, would be corrected to improve safety. To accommodate this wider interstate and correct the non-standard and non-conforming features, Genant Drive would be closed from just north of Spencer Street to Clinton Street. The Court Street interchange (Interchange 21) would be reconstructed with longer entrance ramps and improved merge sections. The Route 370 (Onondaga Lake Parkway) on-ramp

(Interchange 24A) and Old Liverpool Road on-ramp (Interchange 24B) to southbound I-81 would be consolidated into a single ramp, and the on-ramp to southbound I-81 from Genant Drive between Spencer and Clinton Streets (Interchange 21) would be closed to accommodate the wider interstate and ramp consolidation. The southbound frontage road on the southwest side of I-81 would be reconstructed to allow for the realignment of the interstate.

Additionally, the existing Bear Street, Court Street, and Spencer Street bridges would be replaced with new structures to accommodate the improvements in this section of I-81.

(These improvements also are proposed under the Community Grid Alternative; see below.)

- I-690 Interchange 11 (West Street) and Removal of the West Street Overpass: NYSDOT would replace the existing, free-flow Interchange 11 with a new interchange, controlled by a traffic signal on West Street. Just south of the new interchange, West Street would be lowered to meet Genesee Street, creating an at surface intersection. The intersection would have traffic signals and pedestrian crossings, thereby calming traffic and improving vehicular, pedestrian, and bicycle connectivity. Genesee Street in this area would be reconstructed, with continuous sidewalks on both sides. In addition, the ramp from West Street to Herald Place and the ramp from Franklin Street to West Street would be removed. The removal of the Franklin-West Street ramp would allow Evans Street to be realigned to connect with Webster's Landing.

  The new West Street-Genesee Street intersection would improve interstate access to and from Genesee Street. Additionally, the removal of the West Street overpass would remove a barrier between the West Side and Downtown, creating a new gateway to Downtown and opening up views of the City that are now obstructed. Connections between the Park Avenue and Leavenworth Park neighborhoods and Armory Square and Downtown would be enhanced.

  Parking spaces along the southern side of Genesee Street between Franklin and Clinton Streets may need to be removed to provide a vehicular travel lane. Similarly, parking along the eastern side of Clinton Street between Genesee and Willow Streets may need to be removed to provide a vehicular travel lane. However, reclaimed open space on the east side of West Street could be used for parallel parking and a new sidewalk.

  An option to maintain the existing ramp configuration and slightly raise the elevation of West Street was considered but dismissed from further consideration because bringing the existing interchange to current design standards would enlarge its footprint, potentially requiring acquisition of property.

  (These improvements also are proposed under the Community Grid Alternative; see below.)

- Onondaga Creekwalk Improvements. The removal of infrastructure in the West Street area described above would allow the creation of a new path along the west bank of Onondaga Creek between Erie Boulevard and Evans Street, providing access to natural and historic resources and to views, which are now obstructed, of the historic Erie Canal

aqueduct over the Creek. Two ramps between northbound West Street and an elevated portion of Erie Boulevard would be replaced with a single connector roadway, which would open up the space to provide a shared use (bicycle/pedestrian) path. A new sidewalk would be built along the east side of West Street from Erie Boulevard to West Genesee Street where none currently exists. Connectivity would be enhanced in this area because of the links between the new shared use (bicycle/pedestrian) path on the west bank of the creek, the existing Creekwalk on the east bank, and the sidewalks along West Street. (These improvements also are proposed under the Community Grid Alternative; see below. **Figure 3-10** depicts the existing Onondaga Creekwalk and the proposed shared use paths under both the Viaduct and Community Grid Alternatives.)

- I-690 Interchange 13 (Townsend Street/Downtown Syracuse): To allow for the reconstruction of the I-81/I-690 interchange, the westbound exit ramp from I-690 to Townsend Street would be relocated to Catherine Street. The existing on-ramp to eastbound I-690 from McBride Street would be relocated to Catherine Street. This ramp also would serve motorists currently using the existing on-ramp from Harrison Street to access eastbound I-690, a movement that would not be possible if the ramp from northbound I-81 to eastbound I-690 were to become a left-side ramp.

Bicycle, Pedestrian, and Other Improvements to Local Streets

The Viaduct Alternative would include new bicycle and pedestrian facilities to improve connectivity between existing and proposed facilities within the project limits (**Figure 3-11** depicts existing and proposed City bicycle facilities, as well as bicycle facilities proposed under the Viaduct Alternative.) Bicycle facilities would be designed to be consistent with the AASHTO *Guide for the Development of Bicycle Facilities, 2012*. Streets would be designed to incorporate ADA needs and requirements and to be in compliance with New York State complete streets requirements. Efforts would be made to create a distinctive identity through the use of an aesthetically unified design and measures to improve safety. Special pavements, planting areas, medians, pedestrian refuge areas, site furnishings, and green infrastructure would be considered. As illustrated in **Figure 3-12,** local street improvements would include pedestrian and bicycle safety and connectivity enhancements in the priority area, such as:

- Distinctive pavement markings, materials, and/or color to define space for bicyclists and pedestrians and promote driver awareness;
- Signals to facilitate pedestrian crossings while encouraging bicycle use;
- Bollards and traffic islands to provide safe refuge for pedestrians; and
- "Bump-outs," or extensions, of the sidewalk corners, to narrow roadway crossing distance for pedestrians.

Newly created bicycle facilities along Almond Street would connect to existing bicycle facilities at Water Street (Erie Canalway Trail) and East Genesee Street (Connective Corridor) and allow future connections to bicycle facilities identified in the *Syracuse Bicycle Plan: A Component of the Syracuse Comprehensive Plan* at Burnet Avenue, Fayette Street, Burt Street, Fineview Place, and Raynor Avenue. A connection to the City-proposed bicycle facility on MLK, Jr. East is not possible because of the constrained space beneath the

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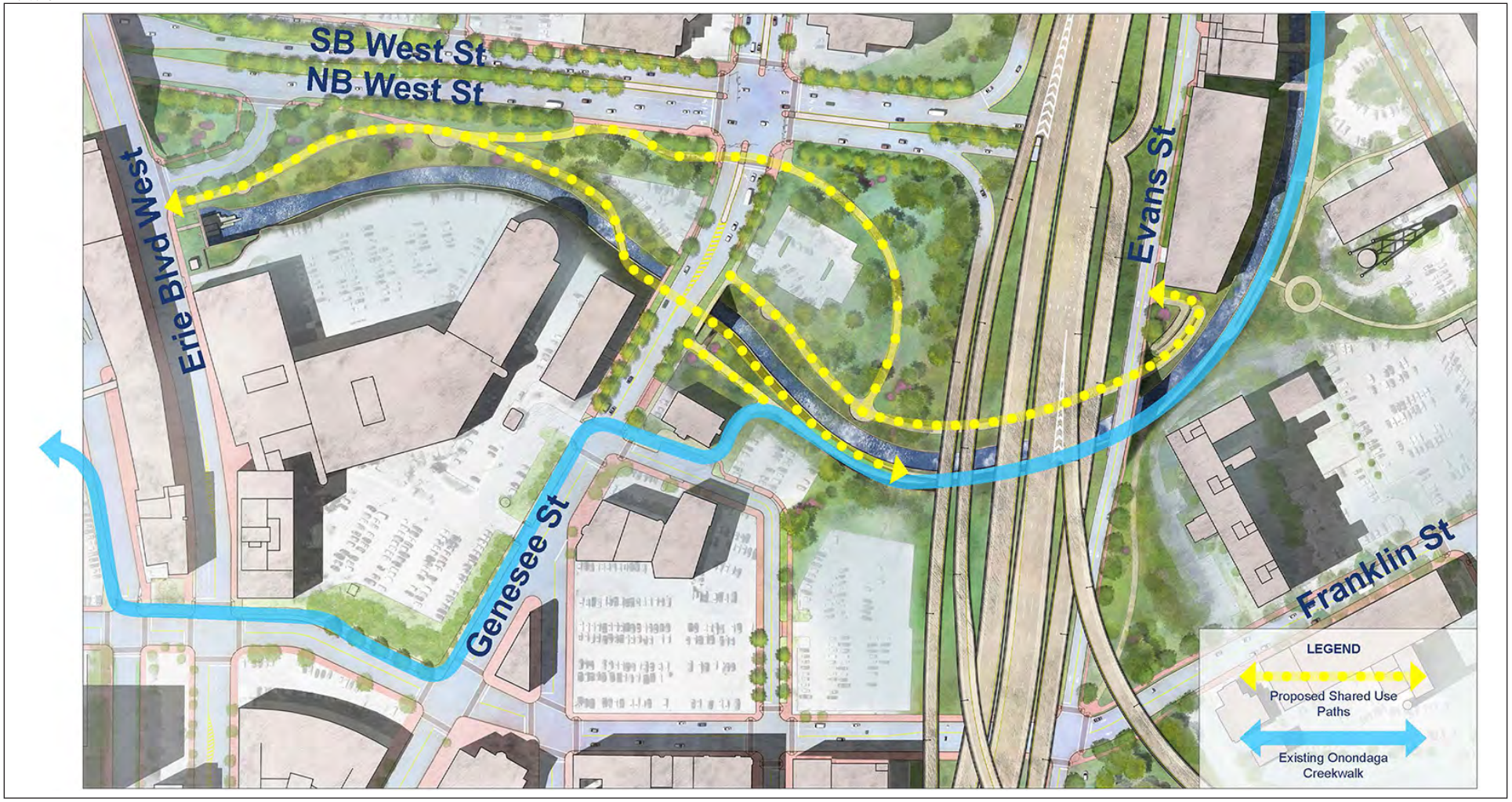
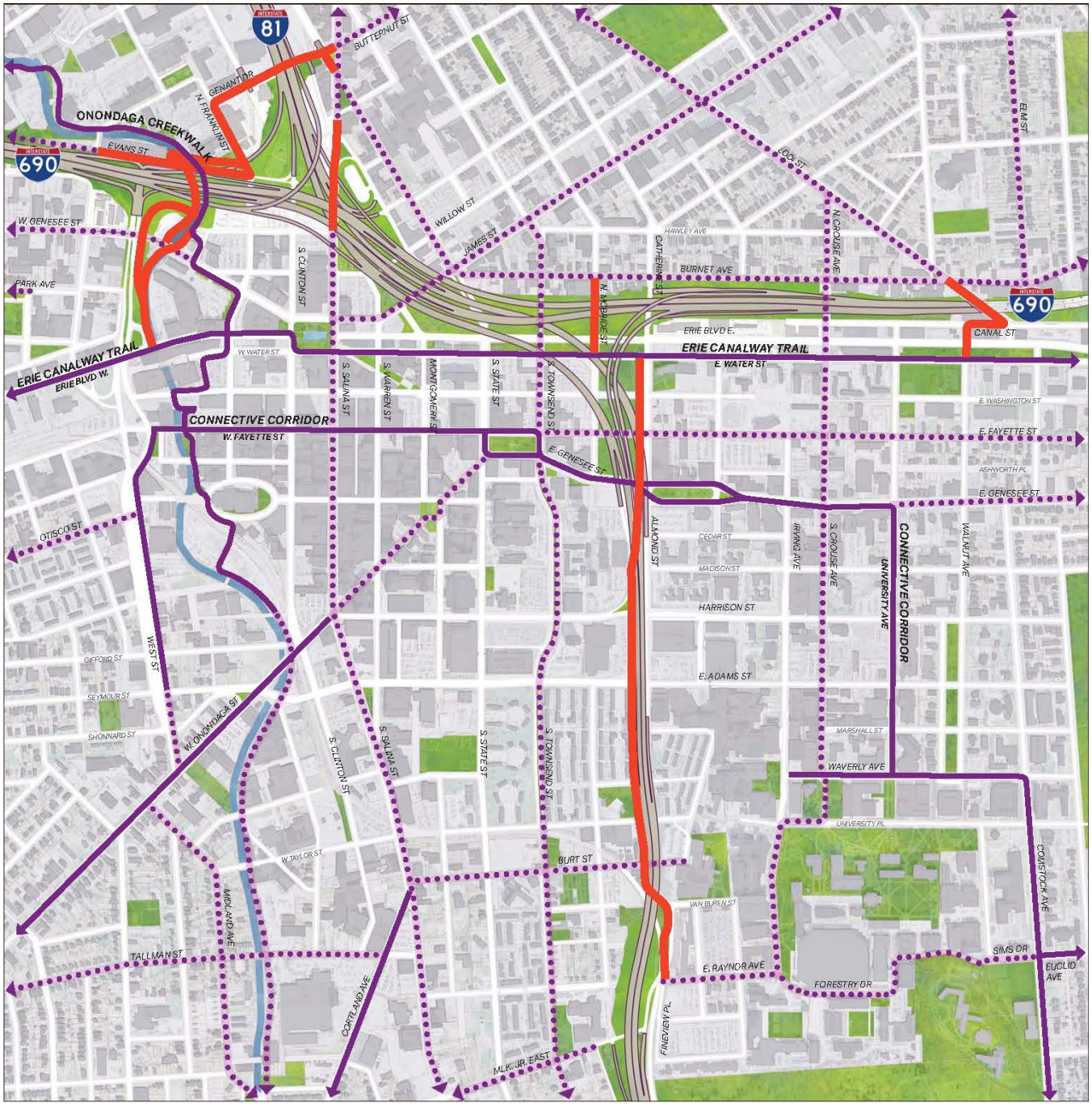


Viaduct and Community Grid Alternatives:
Onondaga Creekwalk, Existing and Proposed Shared-use Paths



Viaduct Alternative:
Existing and Proposed Bicycle Facilities

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Viaduct Alternative:
Proposed Pedestrian / Bicycle Enhancements

I-81 Viaduct Project

Figure 3-12

existing railroad bridge at Renwick Avenue. Specific local streets improvements would include the following.

- Almond Street would be reconstructed, continuing to serve as a primary north-south corridor with ramps connecting it to and from the interstate. Between Burnet Avenue and MLK, Jr. East, Almond Street would essentially follow its existing alignment, though some portions would shift to accommodate the new viaduct's support columns and the modifications to interstate ramp configurations. From Van Buren to Adams Street, Almond Street would have one 16-foot vehicular lane in each direction.

  A shared use (bicycle/pedestrian) path would extend along the west side of Almond Street from Fineview Place to Genesee Street. Generally the shared use (bicycle/pedestrian) path would be 14 feet wide, but between Jackson Street and Adams Street it would narrow to 12 feet. Between Genesee Street and Water Street, a raised cycle track and adjacent pedestrian sidewalk would be located on the west side of Almond Street. Bicyclists would connect to existing bicycle facilities on Water Street. Between Genesee Street and Burnet Avenue, a pedestrian sidewalk would be located on the west side of Almond Street. On the east side of Almond Street, a pedestrian sidewalk would be provided from MLK, Jr. East to the north side of Erie Boulevard. Between Erie Boulevard and Burnet Avenue, a sidewalk would be provided on the west side only because of the need to accommodate the intersections with the new eastbound I-690 entrance ramp and the new westbound I-690 exit ramp. The bicycle facilities on Almond Street would connect to existing bicycle facilities on Water Street, the statewide Erie Canalway Trail, and to the Connective Corridor on Genesee Street.

  Intersections would be designed to incorporate pedestrian and bicycle best practices, including "bump-outs," or extensions of sidewalk corners, to narrow roadway crossing distances for pedestrians. Raised center medians, which would serve as protected areas for pedestrians, would be provided along Almond Street from south of Adams Street to north of Harrison Street. At the west end of Forman Park on East Genesee Street, a segment of roadway that allows U-turn movements would be eliminated and reclaimed as open space and sidewalk to improve pedestrian connectivity (this segment is a public roadway and is not part of the park itself).

  Traffic signal modifications would be implemented on Almond Street and cross streets to improve traffic flow. From Adams to Harrison Streets, northbound Almond Street would provide three travel lanes with an additional left turn bay at the intersection with Harrison Street; southbound Almond Street would provide one through lane and two left-turn lanes. One of these lanes would become a single southbound lane at the Adams Street intersection, and two lanes would become left-turn lanes at Adams Street. North of Harrison Street, northbound motorists heading to northbound I-81 would continue straight, onto the two-lane Interchange 18 on-ramp; others would veer to the left, prior to the ramp entrance, continuing on Almond Street on one lane. The single lane on Almond Street would become two lanes approaching Genesee Street, and this two-lane configuration would continue until Burnet Avenue. South of Genesee Street, southbound Almond Street would provide two travel lanes until it would become a three-lane street at the intersection with the southbound I-81 ramp to Almond Street

near Cedar Street. The existing southbound ramp would be rebuilt as a two-lane ramp. To accommodate the reconstruction of the exit ramp from northbound I-81 to Adams Street and the entrance ramp from Harrison Street to I-81, Monroe Street, Madison Street, and Cedar Street would become dead-end streets; there would no longer be vehicular access between these streets and Almond Street. Access to Almond Street would be maintained at all other existing intersections.

- **Fineview Place:** Shared lane markings[6] would be provided on Fineview Place between the terminus of the shared use (bicycle/pedestrian) path on Almond Street and Raynor Avenue.
- **Erie Boulevard:** Erie Boulevard would be rehabilitated between Almond Street on the east and Oswego Boulevard on the west. The rehabilitated street would include sidewalks on both sides, and driveway curb cuts would be consolidated wherever possible to manage access and improve pedestrian, bicycle, and vehicular safety.
- **Lodi Street:** A minor rehabilitation of Lodi Street where it passes beneath I-690 may include pavement resurfacing, as well as sidewalk and curb repair/replacement. Bike lanes would be installed on Lodi Street between Burnet Avenue and Canal Street. Shared-lane markings would be installed on Canal Street between Lodi Street and Walnut Street, as well as on Walnut Street between Canal Street and Water Street (the latter would connect the Lodi Street bicycle facility with the Erie Canalway Trail).
- **McBride Street:** Bicycle lanes would be installed on McBride Street between the Erie Canalway Trail on Water Street and Burnet Avenue. This bicycle facility would avoid the new eastbound I-690 entrance ramp and the new westbound I-690 exit ramp.
- **Butternut Street Bridge:** The new Butternut Street Bridge would include bicycle lanes that would extend east on Butternut Street to State Street and west on Genant Drive to Franklin Street. Between State Street and Salina Street, shared-lane markings would be provided.
- **State Street:** Shared-lane markings would be provided on State Street between Butternut Street and Salina Street.
- **Franklin Street:** Shared-lane markings would be provided on Franklin Street between Genant Drive and Evans Street.
- **Evans Street:** Shared-lane markings would be provided on Evans Street between Franklin Street and Plum Street.
- **Salina Street:** A minor rehabilitation of Salina Street, where it passes beneath I-81 and I-690, may include pavement resurfacing, as well as sidewalk and curb repair/replacement. A two-way raised cycle track with an adjacent pedestrian sidewalk would be provided on the west side of Salina Street between Herald Place and East Laurel Street.

[6] According to the National Association of City Transportation Engineers, "shared lane markings" are road markings used to indicate a shared lane environment for bicycles and automobiles.

- **Spencer Street Bridge:** The new Spencer Street bridge would include bicycle lanes that would extend east on Catawba Street to Salina Street, and west to Clinton Street.

As part of the development of the Viaduct Alternative, NYSDOT has and will continue to coordinate with Centro on potential street improvements (transit amenities such as bus stops and shelters, bus turnouts, and layover and turnaround places) in the project limits to enhance and support access to Centro's transit initiatives.

Construction of the Viaduct Alternative would be anticipated to take five years. The estimated cost of the Viaduct Alternative is $1.7 billion.

COMMUNITY GRID ALTERNATIVE

The Community Grid Alternative would involve demolition of the existing viaduct between the New York, Susquehanna and Western Railway bridge and the I-81/I-690 interchange. The section of I-81 between the southern I-81/I-481 interchange and the I-81/I-690 interchange in Downtown Syracuse would be de-designated as an interstate, and existing I-481 would be re-designated as the new I-81. The section of I-81 between the I-81/I-690 interchange and the northern I-81/I-481 interchange would remain an interstate spur but would be re-designated with a different interstate route number. The remaining portion of former I-81 south of MLK, Jr. East to the former I-481 interchange would be reclassified from an interstate to a State route. North of MLK, Jr. East, the State route would transition to a two-way street with signalized intersections ("urban arterial") and become integrated with the city street system.

For purposes of the discussion that follows, the section of existing I-81 between its southern interchange with I-481 (Exit 16A) and MLK, Jr. East, which would be renamed as a New York State Route, is referred to as the "State route." The section of I-81 between Butternut Street and its northern interchange with I-481 (Exit 29), which would be renumbered as another interstate (e.g., I-581, I-781, etc.), is referred to as the "former I-81 northern segment."[7]

The Community Grid Alternative would disperse traffic throughout the city grid by promoting broader use of the existing street network. North-south vehicular traffic would be channeled through Almond Street and along parallel corridors, such as Crouse Avenue, Irving Avenue, State Street, and Townsend Street. East-west traffic routes would include Erie Boulevard, Harrison Street, and Adams Street. The potential impacts on both north-south and east-west movements and on local and interstate traffic operations are discussed in **Chapter 5, Transportation and Engineering Considerations**. By dispersing traffic to these other streets, the reconstructed Almond Street would maintain a narrow vehicular transportation footprint (typically two lanes, as well as turn bays when needed, in each direction). Streets incorporated into the Community Grid Alternative would be designed to meet FHWA, NYSDOT, and local design standards consistent with their anticipated function.

[7] Former I-81 would become an interstate spur at Station R16 13+00, depicted on Drawing No. GP-CG-H10-19 in **Appendix A-1**, Plans, Profiles, and Sections.

Between East Kennedy Street and MLK, Jr. East, the State route would transition from an elevated limited-access highway to a street-level arterial, touching down at its first intersection at MLK, Jr. East (see **Figure 3-13,** Almond Street Cross-Section South of MLK, Jr. East). It would then descend to pass beneath the new bridge carrying the New York, Susquehanna and Western Railway and return to street level at Van Buren Street. Almond Street would provide two 11-foot[8] travel lanes in each direction, turning lanes at intersections (where needed), widened sidewalks, a landscaped median, and bicycle facilities. Bicycle lanes would be provided on both sides of Almond Street from Burnet Avenue to just north of Erie Boulevard. Between Erie Boulevard and Adams Street, a one-way raised cycle track would be provided on both sides of the street. Between Adams Street and MLK, Jr. East, a shared use (bicycle and pedestrian) path would be provided on the west side of Almond Street. There would be a continuous sidewalk on the east side of Almond Street between Burnet Avenue and Van Buren Street. Between Van Buren Street and Raynor Avenue, a shared use (bicycle and pedestrian) path would be provided. Curbside parking lanes would be provided, except in the segment between East Adams Street and MLK, Jr. East.

The new Almond Street would provide vehicular access to all existing intersections. However, only right turns would be possible to and from Madison and Monroe Streets because of the presence of a continuous median on this portion of Almond Street. Therefore, only access to and from northbound Almond Street would be available at these two intersections; access to and from southbound Almond Street would not be provided.

Figures 3-14 and **3-2** provide an overview of the Community Grid Alternative. **Figure 3-15** includes a view of existing Almond Street at East Adams Street and a simulation of the reconstructed Almond Street in the same location under the Community Grid Alternative. **Figure 3-16** consists of a view of existing Harrison Street at Almond Street and a simulation of the same location under the Community Grid Alternative.

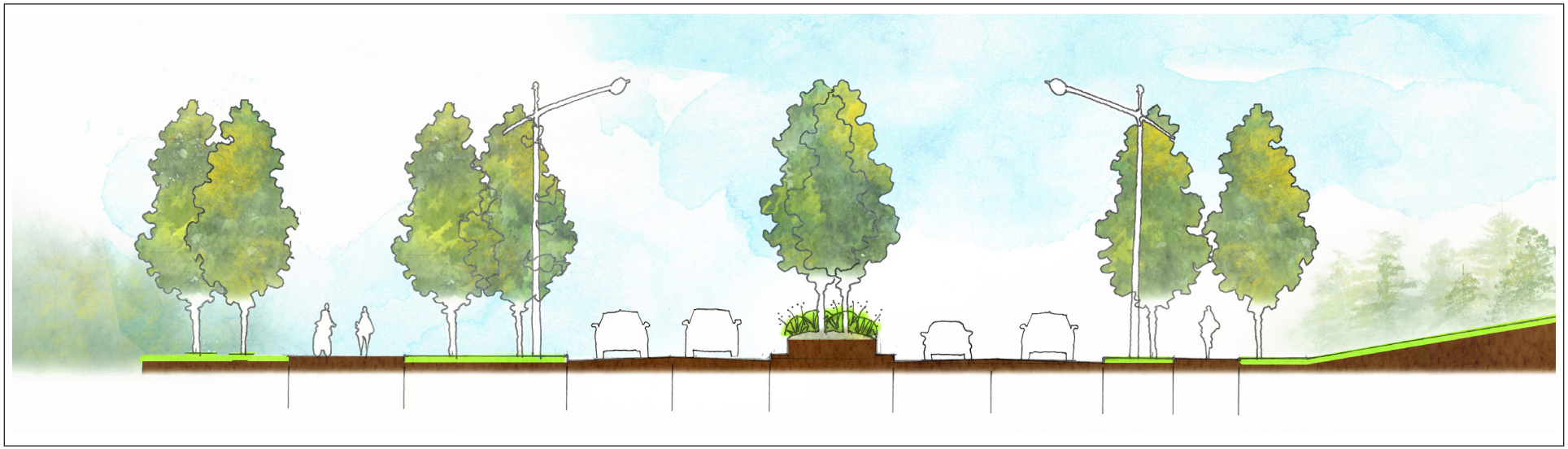
Conversion of I-481 to I-81

Once designated as the new I-81, I-481 would carry a minimum of four travel lanes (two in each direction) of through traffic.

The change in highway designation and associated changes in traffic volumes would require modifications to the new I-81. These modifications, summarized in **Figures 3-17 and 3-18**, would include:

- **I-81/I-481 South Interchange (Interchange 16A):** As shown in **Figure 3-19,** reconstruction of this interchange would involve re-routing existing I-81 to connect with

[8] To clarify, these 11-foot lanes would have a one-foot curb offset, therefore, any lane adjacent to a curb would be 12 feet wide, and "interior lanes" (which would exist where there are two lanes plus turning lanes if needed) would be 11 feet wide.[9] The CGT design, which involves three approaches (the "T"), allows main line through traffic to pass through a signalized intersection without stopping (the top side of the "T") and eliminates conflicting vehicular movement. With a CGT, the through movement on the main line approach to the intersection is denoted by a steady green arrow traffic signal as well as by pavement markings or other lane delineation devices.



Community Grid Alternative:
Cross-section of Almond Street just south of MLK, Jr. East

Community Grid Alternative: Overview

I-81 Viaduct Project

Figure 3-14

Existing

Community Grid Alternative: Visual Simulation

Note: These visualizations are representative of design intent and the preliminary layout of site elements. These elements will be further refined as the design progresses. The final selection of site elements, such as lighting, planting, and paving, as well as materials, colors, and finishes, will be determined during final design. Trees and plantings are shown in an established and mature state.

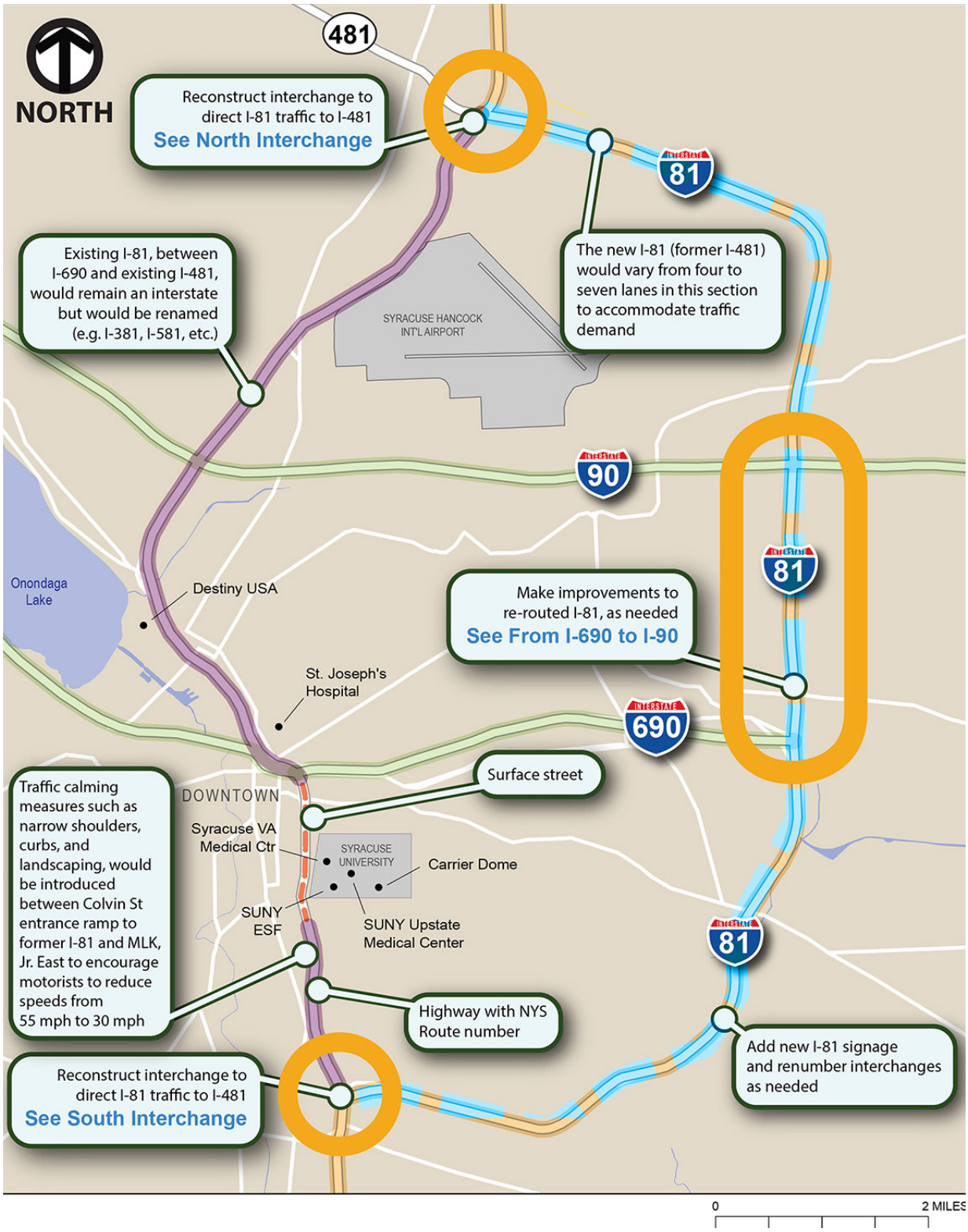
Almond Street at East Adams: Existing Conditions and Community Grid Alternative Simulation

Existing Harrison Street at Almond Street

Community Grid Alternative: Visual Simulation of Harrison Street at Almond Street

Note: These visualizations are representative of design intent and the preliminary layout of site elements. These elements will be further refined as the design progresses. The final selection of site elements, such as lighting, planting, and paving, as well as materials, colors, and finishes, will be determined during final design. Trees and plantings are shown in an established and mature state.

Harrison Street at Almond Street: Existing Conditions and Community Grid Alternative Simulation



Community Grid Alternative:
Re-designation of I-481 to I-81

Legend

- I-81
- Former I-81
- Interstate-to-interstate ramps
- Local ramps
- Local streets

Community Grid Alternative:
New I-81 (former I-481) from I-690 to I-90

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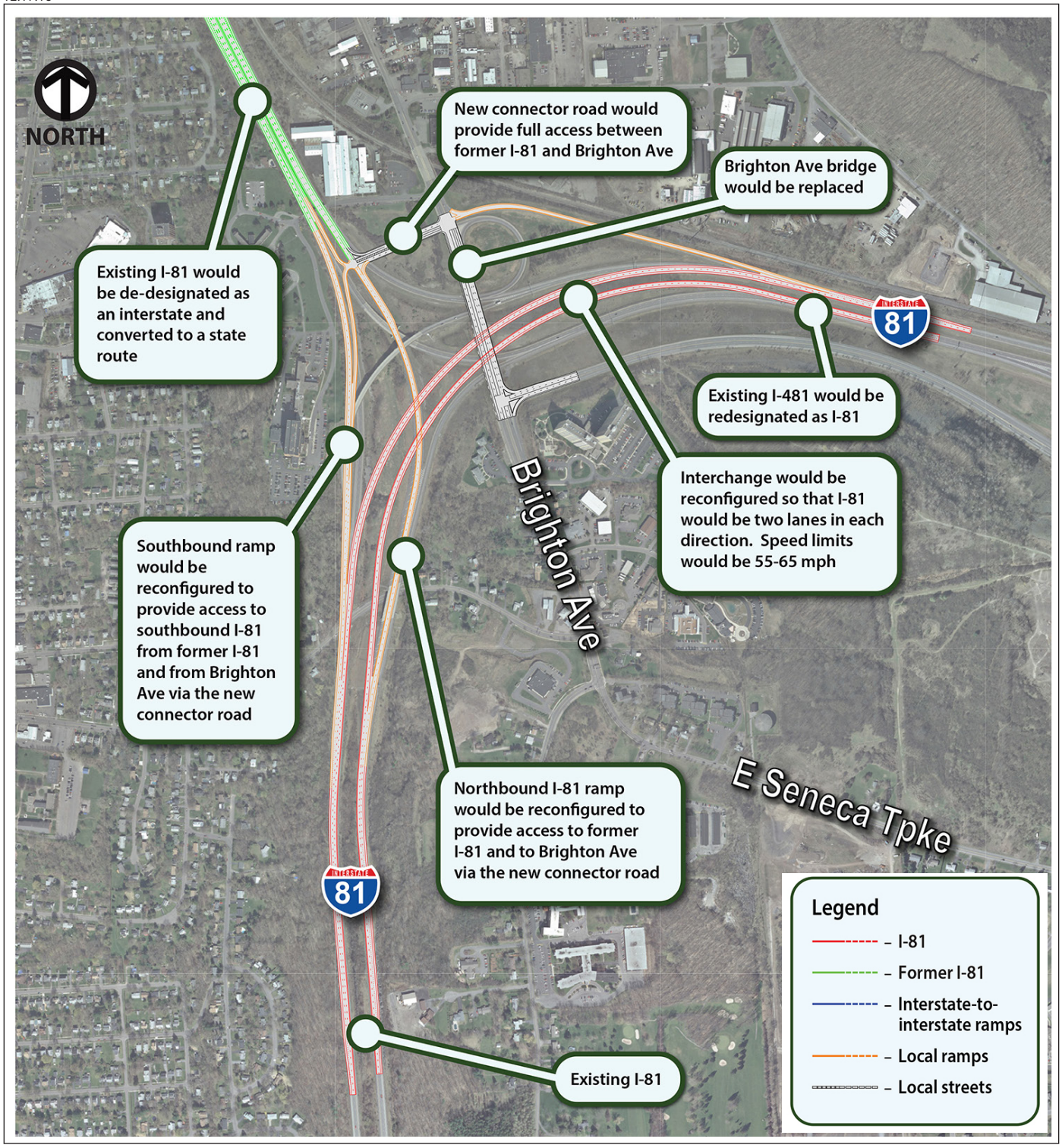

Community Grid Alternative:
South Interchange of the New I-81 (formerly I-481)

existing I-481, which would serve as the new I-81. The new I-81 would meet 70 mph design standards. The existing ramps that connect northbound I-81 to northbound I-481 and southbound I-481 to southbound I-81 would be demolished, and these movements would be made on the main line of re-designated I-81. The East Brighton Avenue bridge over the interchange would be reconstructed, and the intersection of East Brighton Avenue and Rock Cut Road would be maintained.

Motorists traveling north on I-81 south of Interchange 16A who are headed to Downtown Syracuse would exit the interstate to the State route, while through travelers would continue onto the re-designated I-81. Travelers on the southbound State route headed to the re-designated northbound I-81 would turn left at a new signalized intersection with a new road, which would connect to Brighton Avenue. This new signalized intersection could potentially be a Continuous Green T.[9] From Brighton Avenue, motorists could continue onto the existing Rock Cut Road ramp to northbound I-81. Travelers on the re-designated southbound I-81 would access the State route via the existing exit ramp to Brighton Avenue, continuing straight onto the new road leading to the State route. Finally, southbound travelers on the State route would pass through the new Continuous Green T intersection to access southbound I-81.

- **I-81/I-481 North Interchange (Interchange 29):** As shown in **Figure 3-20**, this interchange would be reconstructed to connect the re-designated I-81, which would meet 70 MPH design standards, with the existing I-81. The existing ramps that connect northbound I-481 to northbound I-81 and southbound I-81 to southbound I-481 would be demolished, and these movements would be made on the main line of re-designated I-81.
- Other Modifications:
  - A third southbound (auxiliary) lane would be provided between Kirkville Road (Interchange 5 southbound on-ramp) and I-690 (Interchange 4 southbound off-ramp).
  - A third northbound (auxiliary) lane would be provided between I-690 (Interchange 4 northbound on-ramp) and Kirkville Road (Interchange 5 northbound off-ramp), requiring a widening of the bridge over the CSX railroad tracks.
  - A third northbound (auxiliary) lane would be added between Kirkville Road and I-90 (Interchange 5 northbound on-ramp) and I-90 (Interchange 6 northbound off-ramp).

[9] The CGT design, which involves three approaches (the "T"), allows main line through traffic to pass through a signalized intersection without stopping (the top side of the "T") and eliminates conflicting vehicular movement. With a CGT, the through movement on the main line approach to the intersection is denoted by a steady green arrow traffic signal as well as by pavement markings or other lane delineation devices.

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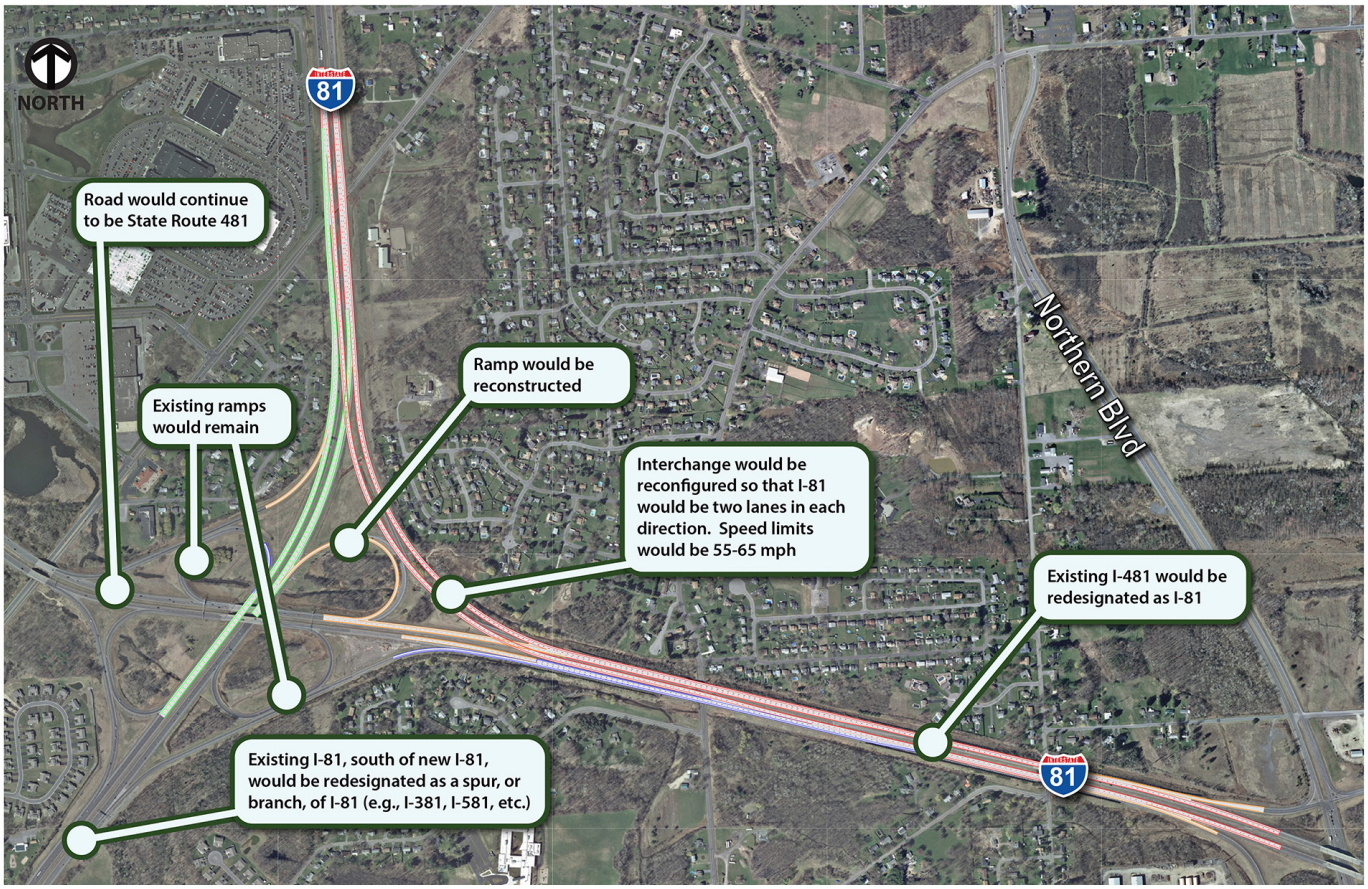


Community Grid Alternative:
North Interchange of the New I-81 (formerly I-481)

- A third southbound (auxiliary) lane would be added between Interchange 9 (I-81/I-481 north interchange) and Northern Boulevard (Interchange 8 southbound off-ramp).
- I-481 signage would be replaced with I-81 signage, and interchanges would be renumbered to correspond to the sequencing of I-81 interchanges south and north of Syracuse.

FHWA and NYSDOT considered other options for the re-designation of the interstate system, including re-designating I-481 from its northern to southern terminus as I-81, and a section of I-690 (between approximately I-81 and I-481) and the former I-81 north segment as I-481. These options were dismissed because they would have caused additional property impacts, including direct impacts to buildings on or eligible for listing on the National Register of Historic Places. Detailed engineering and traffic analyses were undertaken to support the potential de-designation and access modification of the affected interstates. Interstate re-designation and associated numbering must meet American Association of State Highway Transportation Officials (AASHTO) protocols and receive approval from FHWA.

Improvements in the I-81 Viaduct Priority Area

Major elements of the Community Grid Alternative, including interchange modifications, bridge replacements, and other features, are described below.

- **New intersection at MLK, Jr. East:** The Community Grid Alternative (Options CG-1 and CG-2) presented in the Scoping Report identified a new partial interchange between the State route and MLK, Jr. East. However, after the publication of the Scoping Report and in consideration of public input, FHWA and NYSDOT developed a new concept at MLK, Jr. East. Under the new concept, the State route would come to grade at MLK, Jr. East and would shift eastward from its current alignment to pass beneath, rather than above, the New York, Susquehanna and Western Railway. The existing railway bridge would be reconstructed. The new State route would follow a similar path to Renwick Avenue, which would be replaced with an urban arterial. Fineview Place would be closed to vehicular traffic between Raynor Avenue and Van Buren Street.

  Traffic from the south destined for University Hill would travel along the new State route and then turn right at Van Buren Street, which would serve as the main entrance from the south to University Hill. A traditional signalized intersection or roundabout would be installed at MLK, Jr. East, and Van Buren, Burt, Taylor, and Jackson Streets would be signalized. Monroe Street would not be signalized, and pedestrian crossings would not be provided at this location.

  The highway would be approximately 115 to 175 feet farther away from Dr. King Elementary School than it would be with the partial interchange concept. In addition, the embankment between Taylor and Monroe Streets, a feature of the over-the-railroad concept created by the descent of the highway from a higher grade over the railroad to a lower grade at the street surface, would no longer exist. Finally, the shift of the State route eastward to enable it to pass beneath the railway would create a new parcel of approximately four to six acres of land, depending on how much land would be needed

to accommodate the highway, sidewalk, shared use (bicycle and pedestrian) path, and other transportation features.

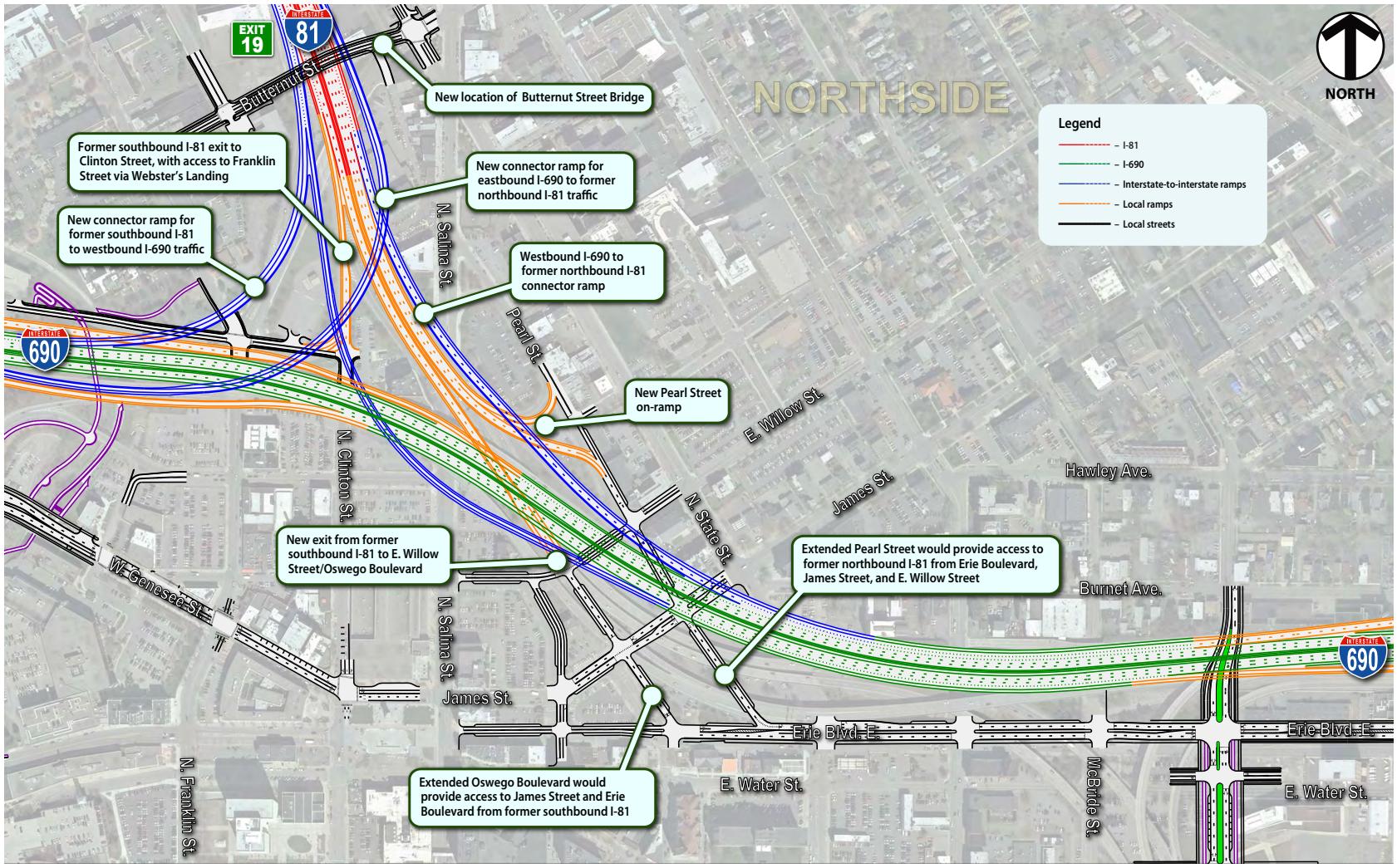
Creation of this new access point at MLK, Jr. East would improve access to the Southside and University Hill from the south; alleviate congestion at Adams, Harrison, and Almond Streets; reduce the number of lanes needed on those streets; and improve conditions for pedestrians and bicyclists.

- **Reconstruction of I-690 and Former I-81/I-690 Interchange and Provision of Missing I-81/I-690 Connections:** As shown in **Figure 3-21**, I-690 would be reconstructed from Leavenworth Avenue (west of West Street interchange) to Beech Street. The existing ramps between I-81 and I-690 would be reconstructed. In addition, new ramps would be built to provide direct connections, which are unavailable today, between eastbound I-690 and northbound I-81 and between southbound I-81 and westbound I-690 (see **Figure 3-22**). These new interstate-to-interstate connections would be consistent with AASHTO's "A Policy on Design Standards: Interstate System" (January 2005), which states that interchanges shall be provided between all interstate routes and all interchanges shall provide for all traffic movements. In the 2050 design year, approximately 1,800 and 2,500 vehicles would use the missing connectors during the AM and PM peak hours, respectively. (Approximately 1,095 vehicles in the AM peak hours, and approximately 1,439 in the PM peak hours, would use the eastbound I-690 to northbound I-81 ramp; approximately 763 vehicles in the AM peak hours, and approximately 1,046 vehicles in the PM peak hours, would use the southbound I-81 to westbound I-690 ramp.)

  All of the new and reconstructed ramps would include adequate shoulders, longer acceleration and deceleration lanes, and improved stopping sight distance. Overall, the new interchange would be approximately 20 feet higher than the existing interchange. One building (329 North Salina Street) would need to be acquired to construct the former I-81/I-690 interchange missing connections. Overall, a total of two buildings would need to be acquired for the reconstruction of the interchange, including the provision of the missing connectors (see **Section 6.3.1** for further details on property impacts). Efforts to avoid or minimize property impacts will continue as the Project advances to the Final EIS. (A similar design, with differing property impacts, is proposed under the Viaduct Alternative; see above.)

- **New I-690 Interchange at North Crouse and Irving Avenues:** To provide a more direct connection to University Hill from I-690 and optimize the use of the city street grid, a full interchange would be constructed at Crouse and Irving Avenues. Westbound I-690traffic destined to University Hill would exit at North Crouse Avenue, then proceed southbound; eastbound I-690 traffic to University Hill would exit at Irving Avenue, then proceed southbound. Traffic from University Hill to eastbound I-690 would travel northbound on South Crouse, and motorists heading to westbound I-690 and the northbound former I-81 northern segment would use either South Crouse or Irving Avenue to access the interstate.

  South Crouse Avenue from East Genesee to East Adams Street would be converted from a one-way northbound street to a two-way street. Irving Avenue would remain a



Community Grid Alternative:
Interchange between Former I-81 North Segment and I-690

Community Grid Alternative:
New Connecting Ramps between I-81 and I-690

two-way street and would be extended from East Fayette Street to I-690. With the exception of some minor widening on South Crouse Avenue between East Fayette and East Genesee Street, which would involve a small reduction of the buffer between the sidewalk and street, no widening would be needed on South Crouse or Irving Avenue. Where needed, traffic signals would be replaced, sidewalk ramps would be reconstructed to meet accessibility standards, and spot repairs would be made to curbs and sidewalks. Parking on Irving Avenue from East Genesee Street to East Fayette Street and South Crouse Avenue between East Adams Street and East Fayette Street would be removed, and the existing parking lanes would be repurposed as vehicular travel lanes.

Interchange 13, which consists of an eastbound I-690 entrance ramp from McBride Street and the existing westbound I-690 exit ramp to Townsend Street, would be removed.

The new interchange would largely serve University Hill, one of the two major destinations for traffic in the viaduct priority area (the other major destination, Downtown, also would be served by direct connections to and from the interstate, as described below). It would provide a new access point to I-690 and to former I-81 (via I-690) to and from the north, east, and west; reduce reliance on Almond Street; and restore the missing street grid on Irving Avenue. In addition, the relocation of the connection eastward, from Almond Street to Crouse and Irving Avenues, would allow for the removal of ramp infrastructure and consequent reclamation of land.

- **Access to and from Former I-81 Northern Segment:** As previously stated, the section of I-81 between Butternut Street and its northern interchange with I-481 (Exit 29), which would be renumbered as an interstate stub (e.g., I-381, I-581, etc.), is referred to as the "former I-81 northern segment." Motorists traveling on the local streets who want to head north would use a ramp from Pearl Street to connect to the former I-81 northern segment. Pearl Street would be extended from Willow Street to Erie Boulevard East, as it was historically, to optimize this connection. Motorists traveling southbound on the former I-81 northern segment would continue past Butternut Street, where the interstate would transition to a signalized urban street, to Willow Street, where a traffic signal would be provided. This traffic could continue to James Street along the original Oswego Boulevard alignment and then to Erie Boulevard along the existing Oswego Boulevard alignment. Oswego Boulevard would be reconstructed, realigned, and extended to Willow Street as it was historically. The intersections with James Street and Erie Boulevard would be signalized, and Warren Street would be converted to two-way operation between Erie Boulevard and Willow Street.
- **Former I-81 Interchange 19 (Clinton Street/Salina Street) and Interchange 20 (Franklin Street/West Street):** Existing Interchanges 19 and 20 would be combined into one interchange to accommodate the new connections between the I-81 northern segment and the local street grid. This would involve replacing the existing off-ramps from the highway to West Street/Franklin Street (Interchange 20) and to Clinton Street/Salina Street (Interchange 19) with a single ramp that serves Clinton Street. Access to Franklin Street would continue to be accommodated via Webster's Landing. In addition, the existing on-ramps from Pearl Street (Interchange 19) and State Street

(Interchange 20) would be reconfigured as a single, two-lane ramp at Pearl Street. (This improvement also is proposed under the Viaduct Alternative; see above.)

- **Butternut Street Overpass:** The Butternut Street overpass must be rebuilt as part of the reconstruction of the I-81/I-690 interchange, which would shift interstate and ramp locations. Re-alignment of the bridge would allow a ramp from eastbound I-690 to northbound former I-81 to be constructed beneath the Butternut Street overpass. The new bridge would be narrower than the existing bridge, with one lane (rather than the two existing lanes) in each direction. It would include wider sidewalks on both sides and a bike lane on both sides, one in each direction.. (This improvement also is proposed under the Viaduct Alternative; see above.)

- **Former I-81 from Interchange 20 to Interchange 24:** From I-690 to Hiawatha Boulevard, I-81 has three lanes in each direction. To improve capacity and traffic operations, this segment of the highway would be widened to provide four through lanes in each direction. Several non-standard highway features, such as narrow shoulders, tight curves, and reduced sight distance, also would be corrected. To accommodate this wider interstate and correct the non-standard and non-conforming features, Genant Drive would be closed from just north of Spencer Street to Clinton Street. The Court Street interchange (Interchange 21) would be reconstructed with longer entrance ramps and better merges. The Route 370 (Onondaga Lake Parkway) on-ramp (Interchange 24A) and Old Liverpool Road on-ramp to southbound I-81 (Interchange 24B) would be consolidated into a single ramp, and the on-ramp to southbound I-81 from Genant Drive between Spencer and Clinton Streets (Interchange 21) would be closed to accommodate the wider interstate and ramp consolidation. The southbound frontage road on the southwest side of I-81 also would be reconstructed due to the realignment of the interstate.

  Additionally, the existing Bear Street, Court Street, and Spencer Street bridges would be replaced with new structures to accommodate the capacity improvements in this section of I-81. (This modification also is proposed under the Viaduct Alternative; see above.)

- **I-690 Interchange 11 (West Street) and Removal of the West Street Overpass:** NYSDOT would replace the existing, free-flow Interchange 11 with a new interchange, controlled by a traffic signal on West Street. Just south of the new interchange, West Street would be lowered to meet Genesee Street, creating a signalized intersection. The intersection would have traffic signals and pedestrian crossings, thereby calming traffic and improving vehicular, pedestrian, and bicycle connectivity. Genesee Street in this area also would be reconstructed, with continuous sidewalks on both sides. The ramp from West Street to Herald Place, and the ramp from Franklin Street to West Street, also would be removed. The removal of the Franklin-West Street ramp would allow Evans Street to be realigned to connect with Webster's Landing.

  The new West Street-Genesee Street intersection would improve interstate access to and from Genesee Street. Additionally, the removal of the West Street overpass would remove a barrier between the West Side and Downtown, creating a new gateway to Downtown and opening up views of the City that are now obstructed. Connections

between the Park Avenue and Leavenworth Park neighborhoods and Armory Square and Downtown would be enhanced.

Parking spaces along the southern side of Genesee Street between Franklin and Clinton Streets may need to be removed to provide a vehicular travel lane. Likewise, parking along the eastern side of Clinton Street between Genesee and Willow Streets may need to be removed to provide a vehicular travel lane. However, reclaimed open space on the east side of West Street could be used for parallel parking and a new sidewalk.

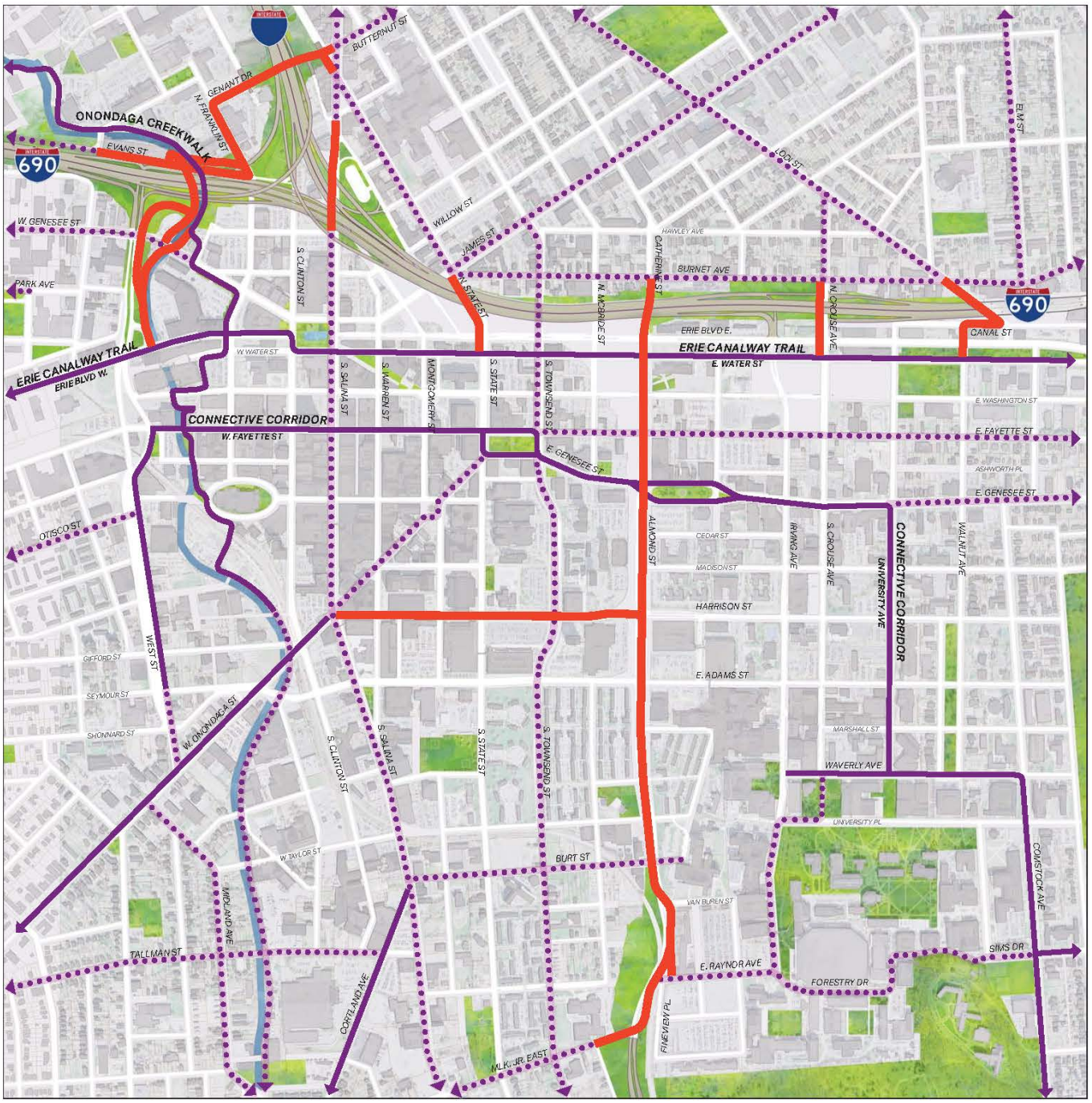
An option to maintain the existing ramp configuration and slightly raise the elevation of West Street was considered but dismissed from further consideration because bringing the existing interchange to current design standards would enlarge its footprint, potentially requiring acquisition of property. (This improvement also is proposed under the Viaduct Alternative; see above.)

- **Onondaga Creekwalk Improvements.** The removal of infrastructure in the West Street area described above would allow the creation of a new shared use (bicycle and pedestrian) path along the west bank of Onondaga Creek between Erie Boulevard and Evans Street, providing access to natural and historic resources, and providing views, which are now obstructed, of the historic Erie Canal aqueduct over the Creek. Two ramps between northbound West Street and an elevated portion of Erie Boulevard would be replaced with a single connector roadway, which would open up the space to provide a shared use (bicycle and pedestrian) path along the creek. A new sidewalk would be built along the east side of West Street from Erie Boulevard to West Genesee Street. Connectivity would be enhanced via connections between the new shared use (bicycle and pedestrian) path on the west bank of the creek, the existing Creekwalk on the east bank, and the sidewalks along West Street. (This improvement, including the sidewalk on the east side of West Street and the shared use [bicycle and pedestrian] path along the west side of the creek between Erie Boulevard and Evans Street, also is proposed under the Viaduct Alternative; see above and **Figure 3-10**, which depicts the existing Onondaga Creekwalk and the proposed shared use paths under both the Viaduct and Community Grid Alternatives.)

Bicycle, Pedestrian, and Other Improvements to Local Streets

The Community Grid Alternative would include bicycle and pedestrian facilities to improve connectivity between existing and proposed shared use (bicycle and pedestrian) paths and pedestrian facilities within the project limits. (**Figure 3-23** depicts existing and proposed City bicycle facilities, as well as bicycle facilities proposed under the Community Grid Alternative.) Streets would be designed in compliance with New York State complete streets requirements through the use of an aesthetically unified design and measures to improve safety. Special pavements, planting areas, medians, pedestrian refuge areas, site furnishings, and green infrastructure would be considered. As illustrated in **Figure 3-24,** local street improvements would include pedestrian and bicycle safety and connectivity enhancements in the priority area, such as:

- Providing new sidewalks where there are gaps in the existing network;



Community Grid Alternative:
Existing and Proposed Bicycle Facilities

Community Grid Alternative:
Proposed Pedestrian / Bicycle Enhancements

- Providing ADA compliant curb ramps and crosswalks where they do not exist;
- Distinctive pavement markings, materials, and/or color to define space for bicyclists and pedestrians and promote driver awareness;
- Signals to facilitate pedestrian crossings while encouraging bicycle use;
- Bollards and traffic islands to provide safe refuge for pedestrians; and
- "Bump-outs," or extensions, of the sidewalk corners, to narrow roadway crossing distance for pedestrians.

Newly created bicycle facilities along Almond Street would connect to existing bicycle facilities at Water Street (Erie Canalway Trail) and East Genesee Street (Connective Corridor) and allow for future connections to bicycle facilities identified in the *Syracuse Bicycle Plan: A Component of the Syracuse Comprehensive Plan* at Burnet Avenue, Fayette Street, Burt Street, and MLK, Jr. East. The Fineview Place bridge, which would be removed as described above to allow for the eastward realignment of southern Almond Street, is currently used for bicycle access to University Hill due to its low grade relative to other nearby routes; in its place, a new bicycle/pedestrian path would connect the Almond Street/Van Buren Street intersection with the Fineview Place/East Raynor Avenue intersection.

Specific local streets would be improved as follows.

- **Almond Street.** The entire reconstructed length of Almond Street would include a center planted median (with breaks at most intersections) varying between 18 to 29 feet in width. Between Erie Boulevard and Adams Street, Almond Street would be shifted west of its existing alignment within the available right-of-way to accommodate the inclusion of a six-foot-wide utility and buffer strip, a 10-foot-wide northbound cycle track, a 14-foot-wide planting and/or green infrastructure zone, and a 10-foot-wide sidewalk. The west side of the road above the street curb would have the same amenities, but the raised cycle track would be southbound. Where reasonable, eight-foot-wide protected parallel parking would be provided. Intersections would be designed to incorporate pedestrian and bicycle best practices, including "bump-outs," or extensions of sidewalk corners, to narrow roadway crossing distances for pedestrians. Raised center medians, which would provide protected areas for pedestrians, would be installed from MLK, Jr. East to Erie Boulevard. At the west end of Forman Park, in front of the Crowne Plaza Hotel on East Genesee Street, a segment of roadway that now allows U-turn movements would be eliminated and reclaimed as open space, sidewalk, and raised cycle track to improve pedestrian and cyclist circulation and connectivity through this area.

  South of Adams Street to MLK, Jr. East, Almond Street would have a 14-foot-wide two-way shared use (bicycle and pedestrian) path on its west side. The path would be separated from the curb by a planting strip ranging from 14 to 16 feet wide. The east side of the road, between Adams Street and Van Buren Street, would have a 14-foot-wide planting strip and an eight-foot-wide sidewalk. At the intersection of Almond and Van Buren Streets, an eastern spur of the shared use (bicycle and pedestrian) path would continue south of the intersection and connect to the intersection of Fineview Place and

East Raynor Avenue on University Hill. A planting strip and sidewalk would continue parallel to the road along the base of the slope until a street crossing on the north side of the intersection at MLK, Jr. East. A pedestrian crosswalk and bicycle crossing also would be provided on the west side of the intersection of Almond Street and MLK, Jr. East.

- **Harrison Street,** which would be reconstructed from Almond Street to Townsend Street, would be converted from a one-way to a two-way street between Almond Street and Salina Street. One-way bicycle lanes would be provided on both sides of Harrison Street between Almond Street and Warren Street. Between Warren Street and Salina Street, share lane markings would be provided. To accommodate these bicycle facilities, parking on the north side of Harrison Street between State Street and Montgomery Street may need to be removed, with the potential loss of approximately nine spaces.

- **Erie Boulevard** would be rehabilitated from Crouse Avenue to Salina Street. Sidewalks would be provided on both sides of the roadway. Driveway curb cuts would be consolidated wherever possible to improve pedestrian, bicyclist, and vehicular safety.

  Between Oswego Boulevard and North Salina Street, back-in angled parking would be eliminated and replaced with parallel parking. Street curb alignments would be altered, narrowing the roadway and creating a wider southern sidewalk.

  An interpretive design component acknowledging the historic alignment of the Erie Canal towpath would be incorporated into the northern sidewalk where it would tie into a publicly accessible open space at the existing mule driver's monument, located across the street from the Erie Canal Weighlock Building at 318 Erie Boulevard.

- **James Street.** Pedestrian improvements would include sidewalks on both sides of James Street between Warren Street and State Street.

- **Salina Street.** Minor rehabilitation of Salina Street, where it passes beneath I-690 and former I-81, may include pavement resurfacing, as well as sidewalk and curb repair/replacement. A two-way raised cycle track, with an adjacent pedestrian sidewalk, would be provided on the west side of Salina Street between Herald Place and East Laurel Street.

- **Lodi Street:** A minor rehabilitation of Lodi Street where it passes beneath I-690 may include pavement resurfacing, as well as sidewalk and curb repair/replacement. Bike lanes would be installed on Lodi Street between Burnet Avenue and Canal Street. Shared-lane markings would be installed on Canal Street between Lodi Street and Walnut Street, as well as on Walnut Street between Canal Street and Water Street (the latter would connect the Lodi Street bicycle facility with the Erie Canalway Trail).

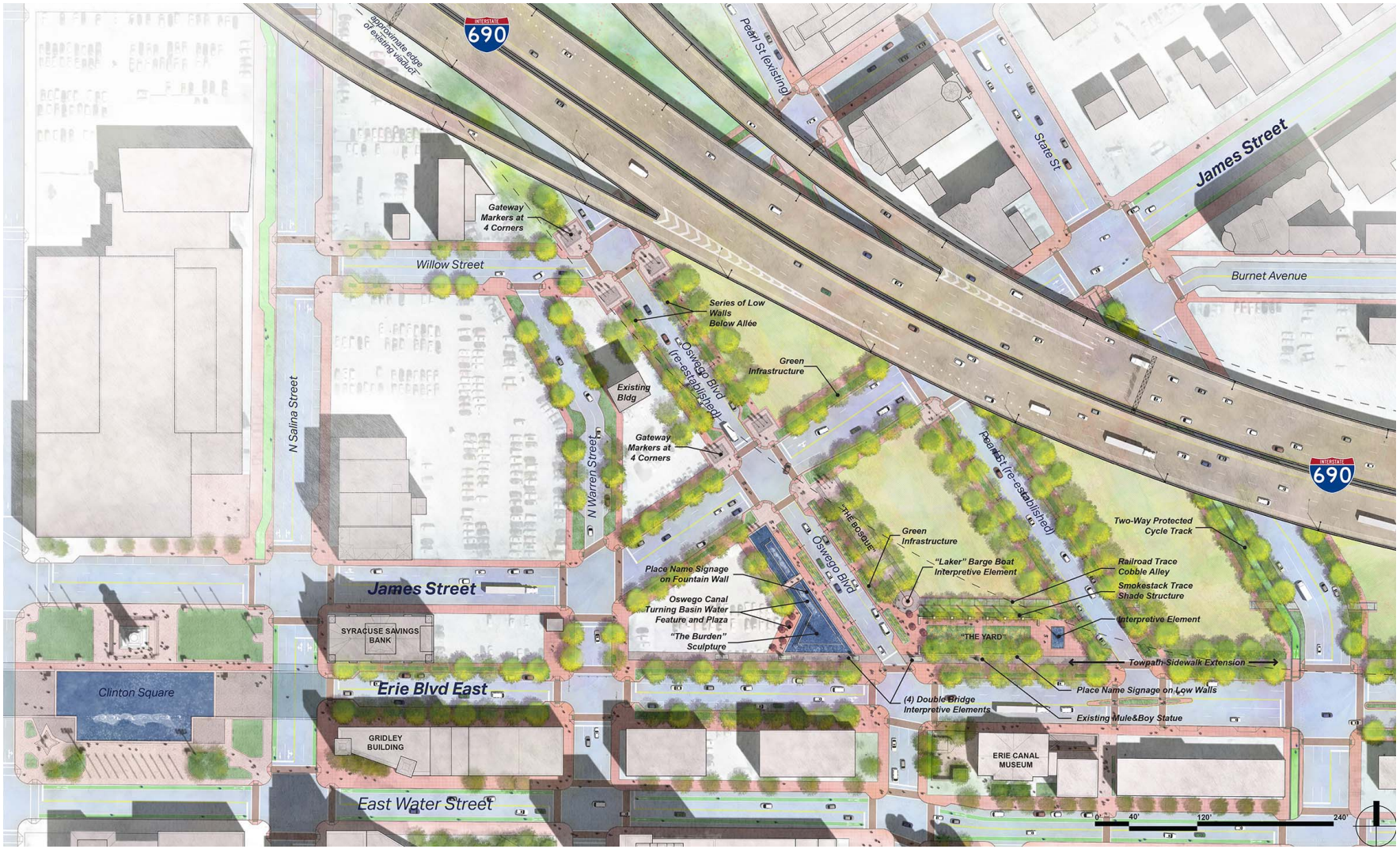
- **Butternut Street Bridge:** The new Butternut Street Bridge would include bicycle lanes that would extend east on Butternut Street to State Street and west to Franklin Street. On Butternut Street between State Street and Salina Street, and on State Street between Butternut and Salina streets, shared-lane markings would be provided.

- **Franklin Street:** Shared-lane markings would be provided on Franklin Street between Butternut Street and Evans Street.

- **Evans Street:** Shared-lane markings would be provided on Evans Street between Franklin Street and Plum Street.
- **State Street:** A two-way raised cycle track would be provided on the west side of State Street between James Street and the Erie Canalway Trail.
- **Crouse and Irving Avenues.** As previously discussed, Irving Avenue would be extended four blocks north (beyond its current terminus at East Fayette Street) to connect to the new I-690 access ramps to the north of Erie Boulevard. Sidewalks would extend along both sides of Irving Avenue between East Genesee Street and Erie Boulevard and would connect to the existing sidewalks at each of the intersecting streets. Sidewalks on both sides of Crouse Avenue between East Genesee Street and Burnet Avenues would be reconstructed. In addition, a new two-way raised cycle track on the west side of Crouse Avenue would be constructed between Burnet Avenue and the existing bicycle facility on Water Street.
- **Spencer Street Bridge:** The new Spencer Street bridge would include bicycle lanes that would extend east on Catawba Street to Salina Street, and west to Clinton Street.

  The portions of Irving and Crouse Avenues between East Genesee and Adams Streets would be improved with the installation of accessible curb ramps and crosswalk markings. Deteriorated sidewalk segments would be replaced. These improvements would be designed in compliance with the Americans with Disabilities Act (ADA) and other applicable accessibility and safety requirements.
- **Oswego Boulevard and the Extension of Pearl Street/Proposed "Canal District."** The Community Grid Alternative's provision of new connections to and from the interstate and Downtown Syracuse would re-establish a portion of the historic street grid. A new exit from the interstate (former I-81, re-numbered as I-381, I-581, etc.) would connect to the northern end of Oswego Boulevard, creating an entrance to Downtown that coincides with the historic alignment of the Oswego Canal. One block to the east, Pearl Street would be extended south, re-establishing its historic alignment, and would provide access to a northbound interstate on-ramp from Erie Boulevard. The reconstructed on-ramp and new off-ramp, combined with a reinstated street grid and a substantially reduced highway footprint, provide an opportunity to create a gateway district centered on the historic confluence of the Oswego and Erie Canals.

  Figure 3-25, a concept plan view rendering, shows one possible configuration of the proposed canal-themed district, which would be bordered by Salina Street to the west, Erie Boulevard to the south, State Street to the east, and Willow Street to the north. The Erie Canal Museum and mule driver's monument on the historic location of the towpath would be located at the heart of the district. Streetscape improvements are proposed to underscore a sense of arrival, civic vitality, and recognition of the central role of both the Erie and Oswego Canals in the development of the city. As illustrated in **Figure 3-26**, streetscape improvements along Erie Boulevard, such as the interpretive towpath, would connect historic Clinton Square to the museum and to the mule driver's monument across the street.



Community Grid Alternative:
Proposed "Canal District"

Community Grid Alternative:
Proposed "Canal District"

New city blocks (Oswego Boulevard from Willow to James Streets; Pearl Street from Willow Street to Erie Boulevard) would be created by the new alignments and could include additional public access and interpretive space. **Figure 3-27** shows potential streetscape treatments, publicly accessible interpretive open space, and residual land within the newly created gateway area. Potential entry features could include elements such as stone walls and gateway markers, a fountain that recalls the historic presence of water on site, a promenade, shade pavilion, public art, sculpture, plazas, and plantings. **Figure 3-28** is a rendering that illustrates a potential water feature, which could serve as a gateway signage element that recalls the canals.

Other Elements of the Community Grid Alternative

Parking lots beneath the I-81 viaduct would be removed under the Community Grid Alternative, but the new Almond Street would include on-street parking except from East Adams Street to MLK, Jr. East; parking data and potential impacts to parking are presented in **Chapter 5, Transportation and Engineering Considerations**. The new Almond Street also would include left- and right-turn lanes at certain intersections, including new left turns at Adams and Harrison Streets. Portions of Adams and Harrison Streets would be converted from one- to two-way streets. All of these elements would be accommodated within the Almond Street right-of-way.

NYSDOT has and will continue to coordinate with Centro on potential street improvements (transit amenities, such as bus stops and shelters, bus turnouts, and layover and turnaround places) in the project limits to enhance and support access to Centro's transit initiatives.

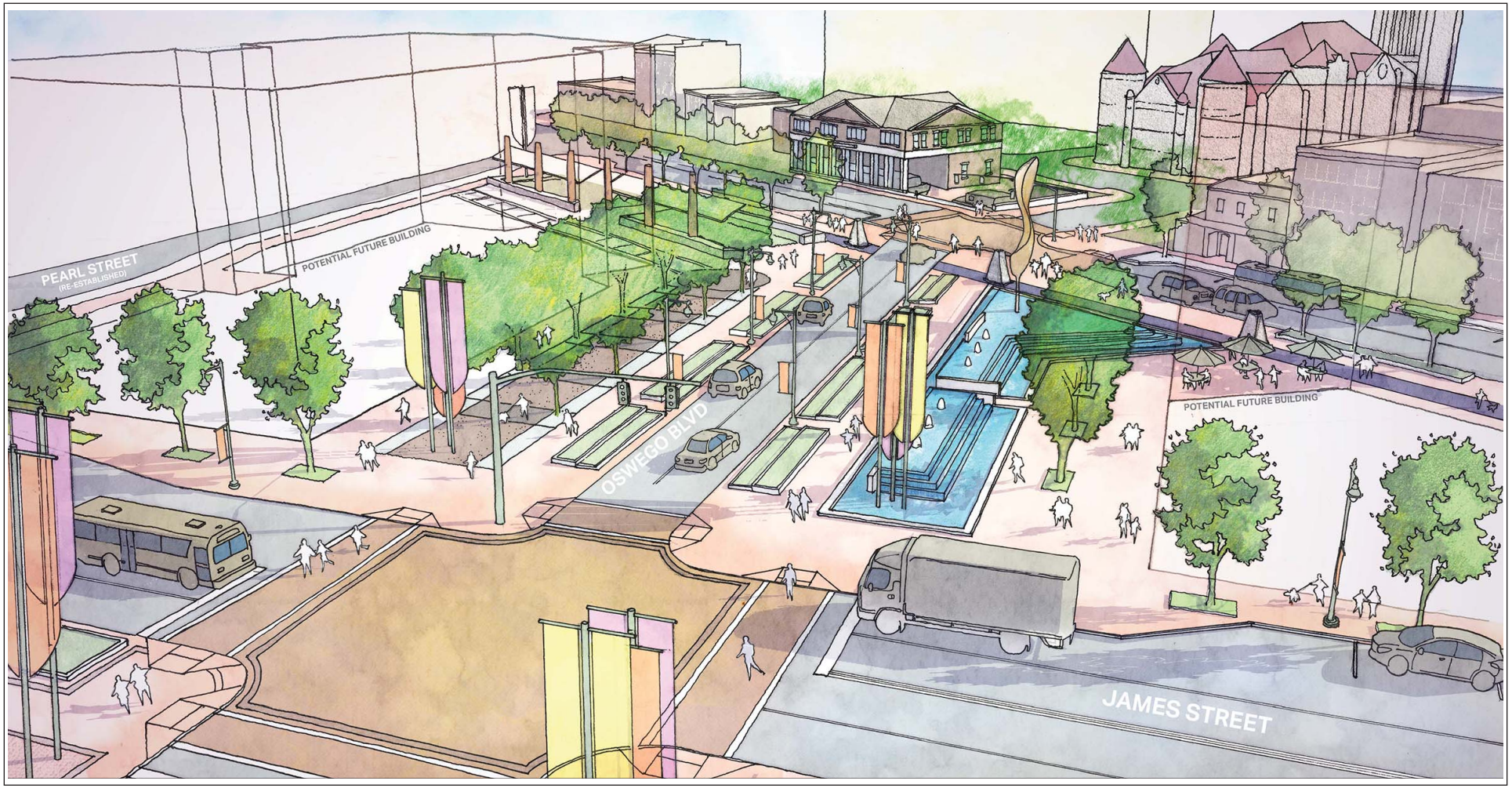
Highway segments and interchanges that are reconstructed would meet FHWA and NYSDOT highway design standards, and thus it is anticipated that most non-standard and non-conforming features of the existing highway within the I-81 priority area would be addressed. By removing the viaduct and reconstructing or rehabilitating remaining highway segments within the I-81 priority area, the Community Grid Alternative also would eliminate the existing structural deficiencies identified in **Chapter 1, Introduction**.

Five buildings would be acquired under the Community Grid Alternative (see **Section 6.3.4** for more information about property impacts).

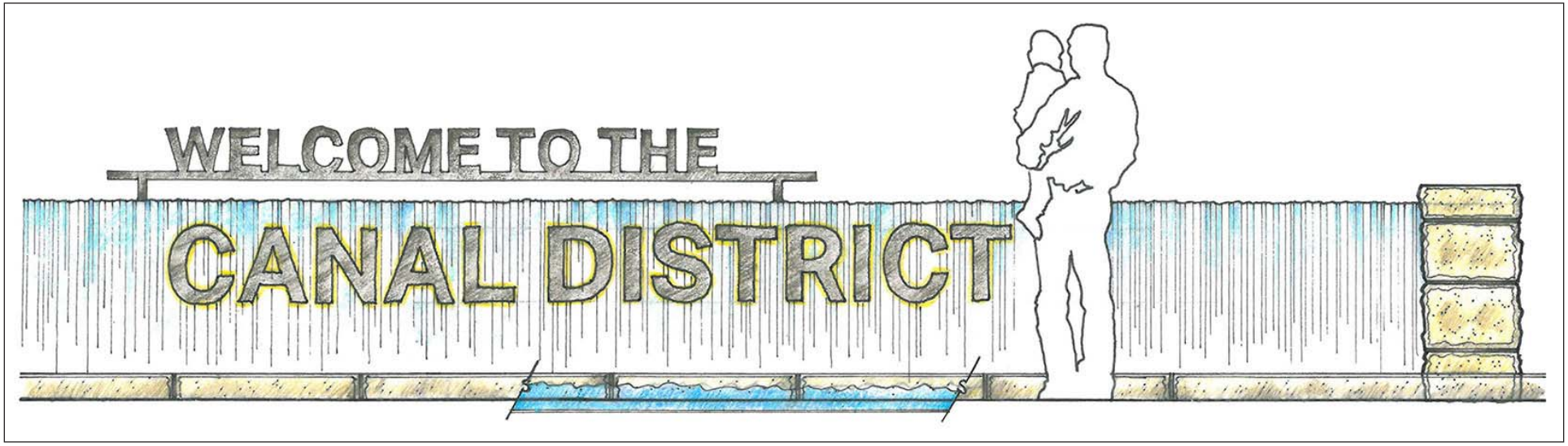
Construction duration for the Community Grid Alternative would be an estimated five years, including work on the new route (i.e., I-481) to carry I-81. The estimated cost of the Community Grid Alternative is $1.3 billion.

3.5 SELECTION OF A PREFERRED ALTERNATIVE

FHWA and NYSDOT will identify the preferred alternative in the Final EIS in consideration of comments received on this DDR/Draft EIS, including those received at the public hearing.



Community Grid Alternative:
Proposed "Canal District"



Community Grid Alternative:
Proposed “Canal District”