



# Hoosick Hillside Study

## Final Report

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By:



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## List of Acronyms

AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway Transportation Officials
ADT	Average Daily Traffic
ALIS	Accident Location Information System
BRT	Bus Rapid Transit
CDRPC	Capital District Regional Planning Commission
CDTA	Capital District Transportation Authority
CDTC	Capital District Transportation Committee
DDHV	Directional Design Hour Volume
FHWA	Federal Highway Administration
FPN	Freight Priority Network
LOS	Level of Service
NYSDOT	New York State Department of Transportation
PSAP	Pedestrian Safety Action Plan
RPI	Rensselaer Polytechnic Institute
SAC	Study Advisory Committee
TAC	Technical Advisory Committee
TCQSM	Transit Capacity and Quality of Service Manual
TRB	Transportation Research Board
TRIP	Troy Rehabilitation and Improvement Program
vpd	Vehicles per Day
vph	Vehicles per Hour

## Disclaimer

This report was funded in part through a grant from the Federal Highway Administration, U.S. Department of Transportation. The views and opinions of the authors [or agency] expressed herein do not necessarily state or reflect those of the U.S. Department of Transportation. This report was prepared in cooperation with the City of Troy, the Capital District Transportation Committee (CDTC), Rensselaer Polytechnic Institute (RPI), the Capital District Regional Planning Commission (CDRPC), the Capital District Transportation Authority (CDTA), and the New York State Department of Transportation (NYSDOT). The contents do not necessarily reflect the official views or policies of these agencies. The recommendations are conceptual in nature and are presented to characterize the types of improvements that are desirable, and that may be implemented as part of future land use and transportation improvement projects. All transportation concepts will require further engineering evaluation and review and do not commit the City of Troy, NYSDOT, or Rensselaer Polytechnic Institute to the proposed project(s). Undertaking additional engineering or other follow up work will be based upon funding availability. The Hoosick-Hillside Study will have a positive impact on affected Environmental Justice populations, as documented in the Environmental Justice Appendix.

## Acknowledgments

This study was conducted by Creighton Manning Engineering, LLP (CM) and subcontractors Place Alliance, Land Art Studio, and River Street Planning & Design (RSPD) on behalf of the City of Troy and Capital District Transportation Committee, and funded by CDTC's Linkage Program and the City of Troy. A Technical Advisory Committee (TAC) comprised of the City Planning, CDTC and CM staff was also formed to review progress and advance the study.

### Thank you to the following Study Advisory Committee Members:

- Steve Strichman – City of Troy
- Andrew Kreshik – City of Troy
- James Rath – City of Troy
- Beth Steckley – Hillside South Neighborhood
- John Corey – Hillside North Neighborhood
- Chris Nolin - RPI
- Martin Daley – CDRPC
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- Linda Vonder Heide – Rensselaer County Planning
- Rima Shamieh – CDTC
- Chris Bauer – CDTC
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- Jesse Vogl – CM
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- Mike Frederick – Place Alliance
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## Chapter 1 – Introduction

The Hoosick Hillside Study was sponsored by the City of Troy and the Capital District Transportation Committee (CDTC) to pursue Complete Streets improvements and design modifications for Hoosick Street between River Street and Lavin Court, and in the Hillside North and South neighborhoods including 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, and 15<sup>th</sup> Streets, to better facilitate pedestrian and bicycle access between the Hillside North and South neighborhoods, and surrounding areas including River Street and Downtown Troy.

Hoosick Street is a heavily used, major roadway that is a fundamental component of both the local Troy Street network and the greater Capital Region highway system. Before the 1980s, Hoosick Street was part of Troy's historic city street grid. During the post-WWII era, a time of expansive nationwide highway construction, NY State Route 7 was rerouted over the Hudson River via the new Collar City Bridge, through existing neighborhoods in Troy to connect with I-787 and I-87. The new route significantly changed the Hoosick-Hillside area, not only by introducing a large volume of high-speed traffic, but also by eliminating homes and other buildings to the north and south of the corridor, for the bridge's footings and access ramps. This resulted in vast changes to Troy's urban fabric and a challenging barrier between today's Hillside North and Hillside South communities.

Today, as a regional corridor, Hoosick Street connects the Interstate Highway System to points east of Troy, providing a convenient route for motorists outside the City of Troy to cross the Hudson River. The new highway now serves as a primary route between Vermont and the New York State Thruway, facilitating interstate freight movement and tourism. Consequently, Hoosick Street serves a large amount of vehicular through traffic.

Hoosick Street has become a heavily used, major roadway that is a fundamental component of both the local Troy street network and greater Capital Region highway system. As part of Troy's local street network, the corridor must be able to serve a variety of trip types and modes. As a commercial corridor, Hoosick Street provides access to numerous businesses, homes, and institutions. Additionally, Hoosick Street is the only roadway within the approximate  $\frac{3}{4}$  mile area between Middleburgh Street and Jacob Street that provides east-west travel, connecting the Hillside North and Hillside South neighborhoods to Downtown and the Hudson River. Hoosick Street must become a safe corridor for bicyclists, pedestrians, and motor vehicle users alike for those who live, work, or shop in the corridor.

This study identifies future street designs and Complete Streets features that promote safety for all roadway users, balancing the competing needs of different modes of transportation and enhancing community quality of life. The Hoosick-Hillside study also prioritizes connecting the Hillside Neighborhoods and Downtown Troy, ensuring residents in the neighboring communities can access transit services and economic opportunities. This study evaluates existing multi-modal conditions and needs, and a full range of alternatives to recommend the most feasible and context-appropriate Complete Streets design for this area. A robust stakeholder and community-driven process was used throughout the study and during the development of recommendations.

## STUDY APPROACH

A Study Advisory Committee (SAC) was established to guide this study, and review and provide feedback on interim and final study products. SAC members included staff from the City of Troy, Capital District Transportation Committee (CDTC), Capital District Transportation Authority (CDTA), Capital District Regional Planning Commission (CDRPC), Rensselaer County, Rensselaer Polytechnic Institute (RPI), Troy Rehabilitation & Improvement Program (TRIP), First Columbia, and New York State Department of Transportation (NYSDOT) Region 1, and residents of the Hillside North and South neighborhoods. A Technical Advisory Committee (TAC) comprised of the City Planning Department and CDTC Project Manager was also formed to review progress and advance the study. Specific SAC and TAC committee members are listed in the project's Public Participation Plan.

The goal of these committees is to share technical information, provide input on public outreach materials, enable informed decision-making, help shape the draft and final study recommendations, and provide overall guidance on the study as it progresses. The cross-section of agencies and interests on these committees, combined with the open public process, helps to ensure that diverse views are represented and the plan is comprehensive and publicly supported.

Recommendations presented in this study are intended to support the City's Complete Streets efforts and to improve connectivity between the Hillside Neighborhoods and Downtown Troy. While recommendations will be evaluated to the extent possible for a planning study, they are conceptual and presented to characterize the types of improvements that are desirable, and that may be implemented as part of future land use and transportation improvement projects. All transportation concepts will require further engineering evaluation and review.

## PURPOSE AND NEED

At the outset of the study, the SAC discussed and established the following Purpose and Need Statement for the study, which was then reviewed at the public meetings. The purpose is the problem to be solved. The need is the evidence that the problem exists. Together, the Purpose and Need Statement establishes the basis for consideration of alternatives, and future expenditures.

### **Purpose and Need:**

- The purpose of this study is to improve quality of life in the Hillside North and South Neighborhoods through streetscape enhancements and the fostering of safe and convenient pedestrian and bicycle connections to, from, and between the Hillside North and South neighborhoods and surrounding areas including River Street and Downtown, while maintaining traffic operations on Hoosick Street, using a Complete Streets approach.
- Due to the large volume of traffic on Hoosick Street, there is a need to minimize the negative impacts of traffic in neighborhoods and provide safe and convenient pedestrian and bicycle crossings throughout the study area.

## STUDY AREA

The study area generally extends along Hoosick Street from River Street to Lavin Court and includes the adjacent Hillside North and Hillside South Neighborhoods extending along 8<sup>th</sup> Street and 9<sup>th</sup> Street between Middleburgh Avenue and Jacob Street. As depicted in Figure 1.1 the study area can be further defined into the following primary focus areas:

1. Hoosick Street Corridor
2. Collar City Bridge Area
3. Hillside North Neighborhood
4. Hillside South Neighborhood

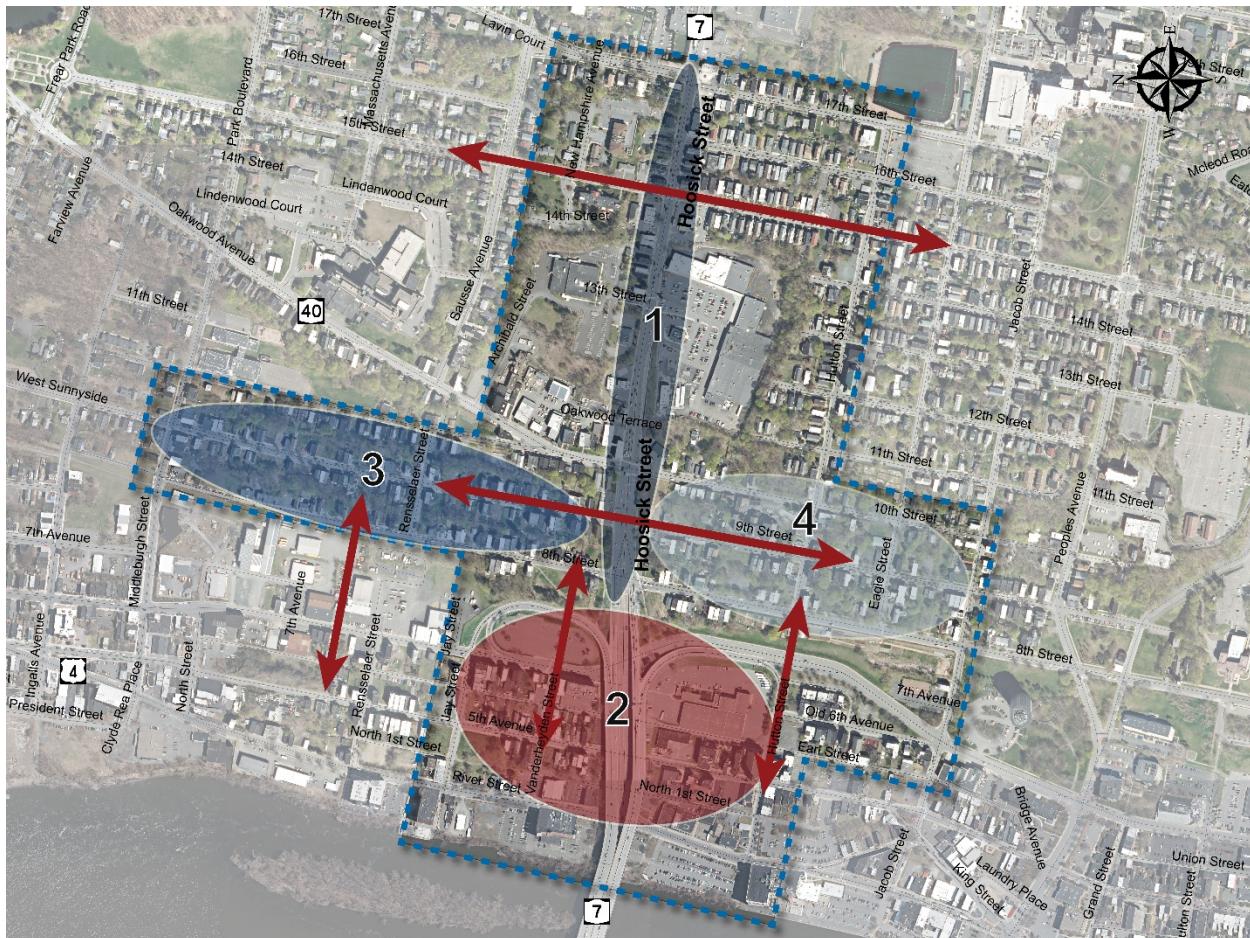


FIGURE 1.1 – STUDY AREA

## PREVIOUS STUDIES

Several previous studies pertain to the corridor.

In 2000, the City of Troy commissioned Clough Harbour and Associates, LLP to prepare the Hoosick Street Corridor Study in response to isolation of the neighborhoods adjacent to Hoosick Street, as a result of increasing traffic volumes. Study goals included preserving and reconnecting the Hillside neighborhoods, reducing land use conflicts through zoning and development guidelines, and implementing pedestrian and streetscape improvements. The study recommended a dual approach of exploring the possibility of rerouting traffic away from Hoosick Street while making physical improvements to the corridor, including access management standards, landscaping, pedestrian bridges, and marked crosswalks, among others.



Image 1: Hoosick Street Corridor Study Rendering

Building upon the 2000 study, the City in conjunction with CDTC initiated Phase II of the Hoosick Street Corridor Study in 2002 to further develop a vision for Hoosick Street that balances local and regional demands. The Phase II Corridor Study provided a detailed implementation plan, prioritizing improvements into short, medium, and long term categories. Recommendations included amendments to the zoning map and code, and the construction of median islands on the eastern and western portions of the corridor to create a gateway and additional enhancements to the streetscape and access management to transform Hoosick Street into a pedestrian-friendly parkway.

In the decade following the Hoosick Street Corridor Studies, there were numerous land use studies and market analyses, such as the 2004 Transaction Screen Report and Hoosick Street Corridor analysis by MapInfo, both of which identified opportunities for development within the Hoosick Street Corridor in an attempt to capitalize on the land use recommendations from the Phase II Corridor Study. Additionally, in 2005, the City of Troy updated its zoning code to create the Hoosick Street waterfront, commerce, and professional zoning districts, implementing the previously recommended design guidelines.

As development on Hoosick Street continued, additional studies were conducted in 2017, including the TRIP Community that Works Study. The TRIP study was large a community-driven neighborhood study focused on 8<sup>th</sup>, 9<sup>th</sup>, and 10<sup>th</sup> Streets between Hoosick Street and Middleburgh Street in the Hillside North Neighborhood. The study identified high traffic speeds, vacant lots, poor sidewalk conditions, perceived lack of parking, and poor pedestrian access to services as key issues within the study area. Recommended improvements included traffic calming, access management, enhancing public spaces, and providing mid-block pedestrian cut-throughs to shorten walking distances.

Also completed in 2017 was the NY Route 7 Comprehensive Pedestrian Safety Study which examined vehicle and pedestrian characteristics along Hoosick Street. The study identified numerous pedestrian safety issues and suggestions including potentially harmful pedestrian behavior, lack of pedestrian accommodations, lighting issues, and access management opportunities. Recommendations included additional crosswalks and signage, exclusive pedestrian phases, and curb ramp improvements. Of these, several items have been completed including new speed limit signs, signal upgrades, and pavement markings.



*Image 2: Hoosick Street/10th Avenue Intersection*

In 2018, the City published the Realize Troy Comprehensive Plan which establishes a vision, strategy, and framework to guide growth, change, and transformation of the City over the next 25 years. The plan identifies the area south of Middleburgh Street and west of 8<sup>th</sup> Street as part of the City Center which is expected to experience additional residential and employment growth. Specifically, the area between 6<sup>th</sup> Avenue and 8<sup>th</sup> Street north of Hoosick Street is a designated employment area, seeking to provide additional employment opportunities through a range of uses including manufacturing, warehousing, and distribution. Further, the Hoosick Street Corridor including the area underneath the Collar City Bridge is designated as a gradual change area, which is targeted for reinvestment in the form of infill development.

The Troy Bicycle Connections Plan was also completed in 2018 and serves as the guiding document for implementing bicycle route connections within the City. The plan identifies best practices in developing bicycle infrastructure and develops a bicycle network comprised of primary, secondary, and neighborhood bikeways. The final section of the plan identifies priority projects, including the Uncle Sam Bikeway Improvement Plan.

Beyond the completed studies above, on-going studies continue to improve the study area, including the statewide Pedestrian Safety Action Plan (PSAP) and implementation of the Capital District Transportation Authority (CDTA) River Corridor Bus Rapid Transit (BRT).

### **Major Takeaways:**

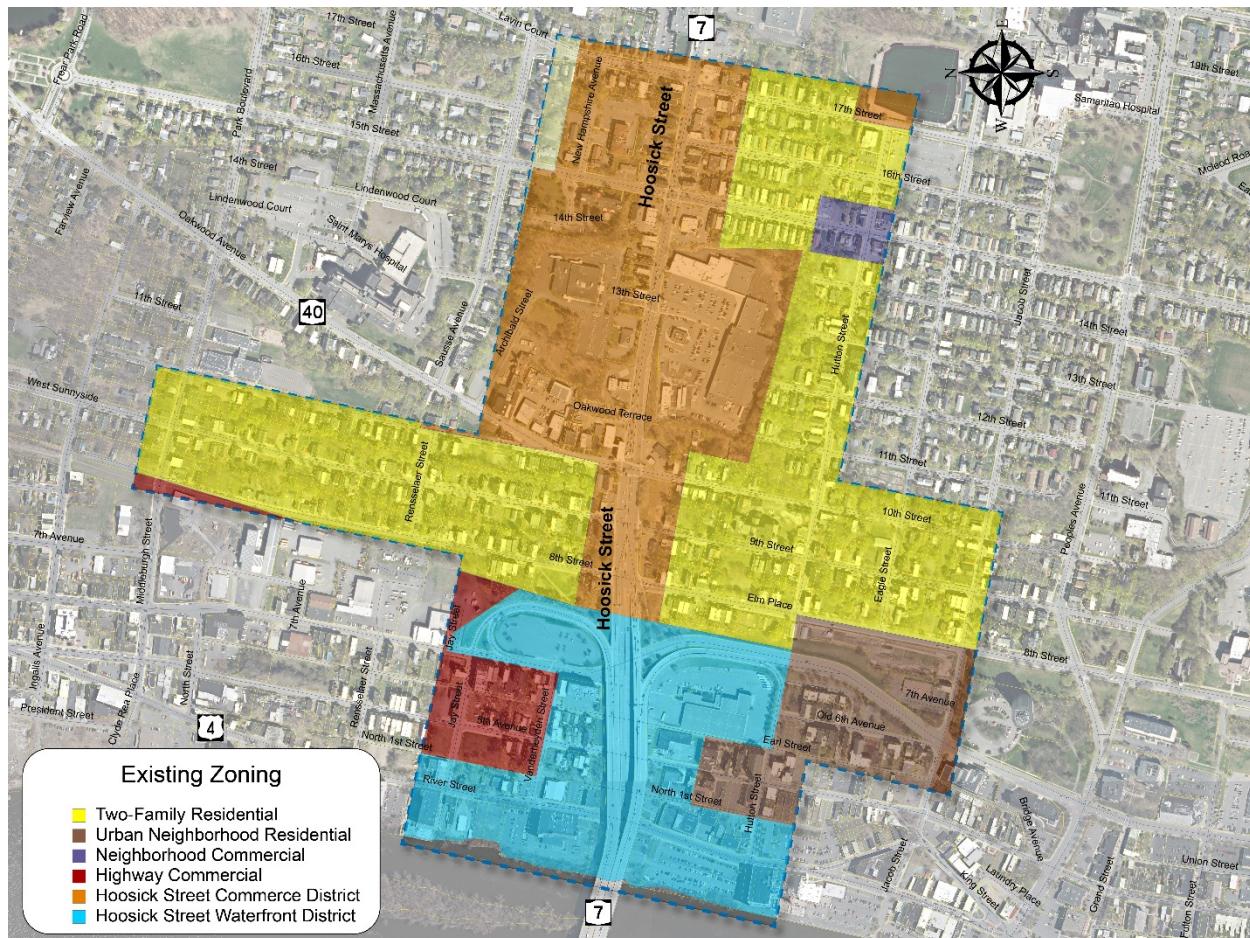
"The combination of above studies and on-going work provide a solid foundation of recommendations which this project has the opportunity to build upon. Specifically, reoccurring themes and elements that can be progressed as part of this project include:

- ❖ Improving pedestrian safety, access, and circulation to enhance quality of life in the Hillside North and South Neighborhoods
- ❖ Constructing traffic calming elements including raised medians, curb bump-outs, and speed tables and a gateway to signal to motorists the transition from a high-speed highway to commercial corridor and neighborhood streets.
- ❖ Encouraging mixed-use redevelopment in Hillside North and along Hoosick Street.
- ❖ Providing pedestrian connections and wayfinding to provide convenient access to retail and services.

## Chapter 2 – Existing Conditions

### STUDY AREA ZONING

The purpose of zoning is to positively shape the community by regulating building size (height and width), lot coverage (placement of buildings), density, and land use by type. The study area zoning is shown on Figure 2.1 and is comprised of commercial, recreational, and residential uses.

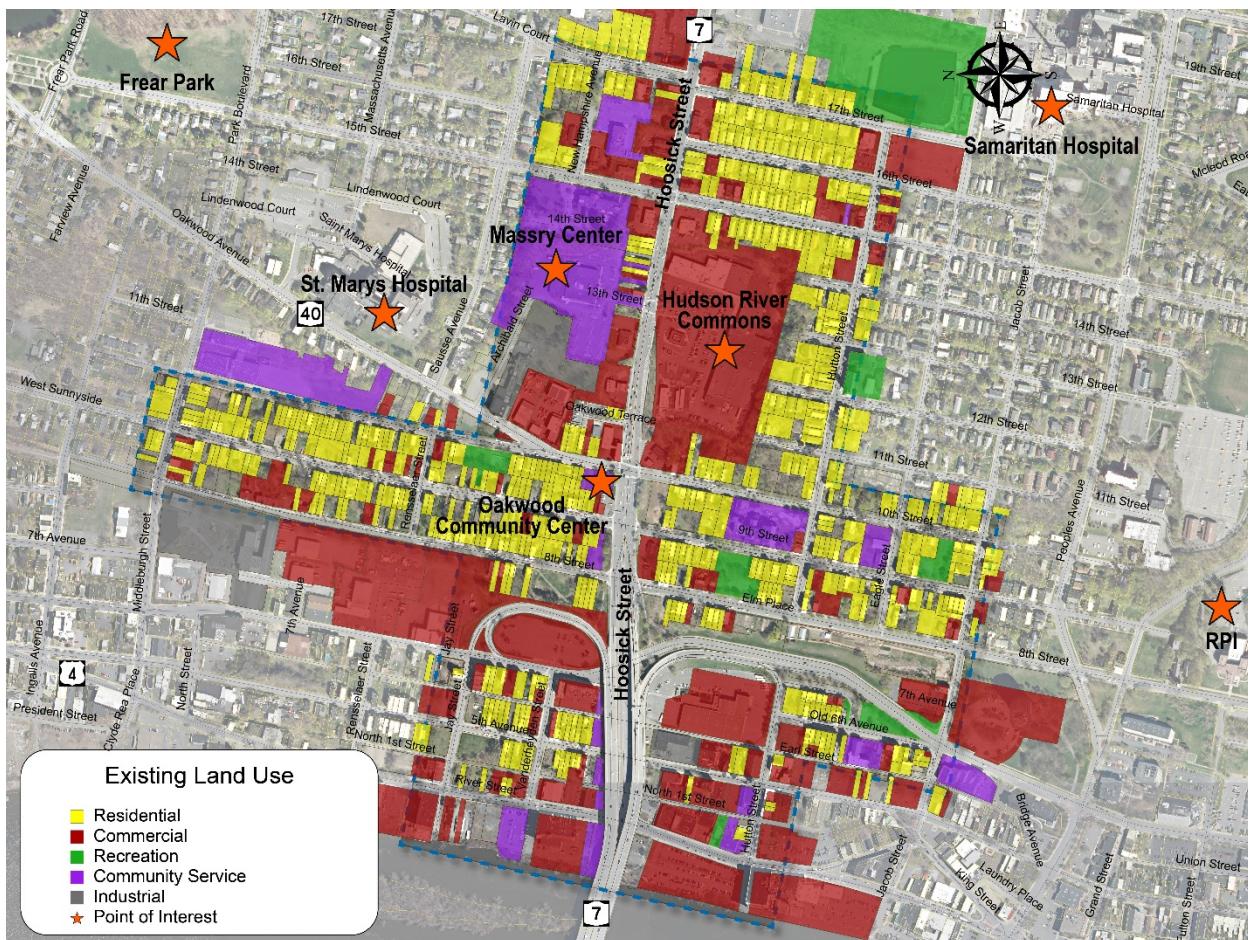


**FIGURE 2.1 – EXISTING ZONING**

Figure 2.1 shows that zoning in the study area is closely aligned with the four designated focus areas. Specifically, the Hoosick Street corridor east of 8<sup>th</sup> Street, zoned as the Hoosick Street Commerce District, is intended to promote a mix of residential and commercial uses that are aesthetically pleasing for motorists, transit riders, and pedestrians. The focus area underneath the Collar City Bridge is zoned as the Hoosick Street Waterfront District which is designed to encourage mixed-use redevelopment of the Hudson River waterfront with an emphasis on recreation and public greenspace. The Hillside North and South neighborhoods are zoned as two-family residential.

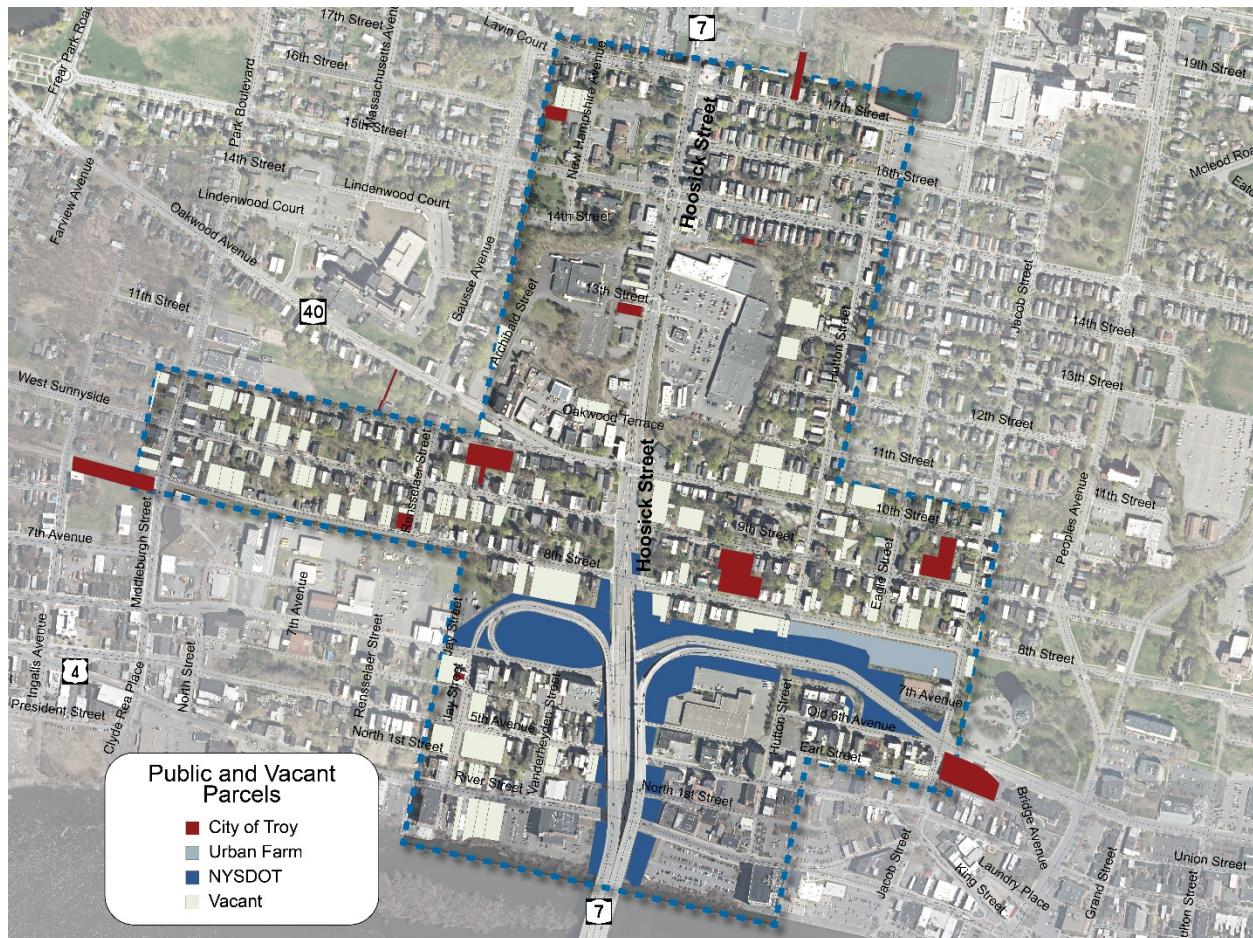
## STUDY AREA LAND USE

Land uses in the study area are primarily residential and commercial. Figure 2.2 shows that commercial uses are primarily concentrated along Hoosick Street and River Street, and include a mix of retail establishments, gas stations, and fast food restaurants. Hudson River Commons located opposite 13<sup>th</sup> Street serves as a strong retail anchor for the study area. The map also shows the Hillside North and Hillside South neighborhoods extending from either side of Hoosick Street. Beyond the study area, there are several points of interest including St. Mary's Hospital, Samaritan Hospital, Frear Park, Rensselaer Polytechnic Institute (RPI), and Downtown Troy.



**FIGURE 2.2 – EXISTING LAND USE**

In addition to the land uses depicted in Figure 2.2 it is important to note parcels that are currently publicly owned or vacant, as they may represent an opportunity to create new connections. Figure 2.3 shows the vacant properties in the study area, and publicly owned parcels.



### FIGURE 2.3 – PUBLIC AND VACANT PARCELS

## HOOSICK STREET CORRIDOR VEHICLE OPERATIONS

Hoosick Street provides east-west travel through the City of Troy from River Street (US Route 4) to the eastern City border with the Town of Brunswick. West of 8<sup>th</sup> Street, Hoosick Street is an approximately 45-foot wide local road. Situated beneath the Collar City Bridge Hoosick Street slopes upward from west to east to join with Alternate Route 7 at the 8<sup>th</sup> Street intersection. East of 8<sup>th</sup> Street, Hoosick Street is designated as NY State Route 7 and classified as an urban principal arterial. Between 8<sup>th</sup> Street and 10<sup>th</sup> Street, Hoosick Street is approximately 90 to 100 feet wide and provides three through lanes in each direction in addition to auxiliary turn lanes. East of 10<sup>th</sup> Street, the roadway narrows to approximately 45 feet wide and provides two 11- to 12-foot lanes in each direction. The posted speed limit on Hoosick Street is 30 mph. Data provided by CDTC indicates that the pavement on Hoosick Street in the study area is in good condition (Rated 7, or 8) with distress beginning to show.

Because the Hoosick Street Corridor has been the subject of numerous recent studies, available traffic volume data was reviewed to determine its applicability to existing conditions. Vehicle turning movement counts conducted at the Hoosick Street/10<sup>th</sup> Street intersection in 2013 as part of the NYSDOT Route 7 Comprehensive Pedestrian Study were compared to newer counts conducted in 2017 as part of the Stewart's Shop redevelopment. The comparison indicates that the peak hour traffic volumes in 2013 were approximately five percent higher than those observed in 2017, and therefore would provide a conservative analysis of traffic operations on Hoosick Street. Additional data collection was conducted at the Hoosick Street/6<sup>th</sup> Avenue intersection in August 2019. The existing traffic data is summarized below.

Traffic data provided by NYSDOT indicates that Hoosick Street carries approximately 42,000 vehicles per day (vpd) between 8<sup>th</sup> and 10<sup>th</sup> Street, with traffic volumes generally lower in the east end of the corridor. Table 2.1 summarizes the traffic volume characteristics on Hoosick Street. The table shows that approximately five percent of the traffic on Hoosick Street is composed of heavy vehicles. According to the CDTC Regional Freight and Goods Movement Plan, Hoosick Street is part of the CDTC Freight Priority Network (FPN) and meets the criteria for a minor FPN classification. Minor FPN routes facilitate general mixed traffic while supporting significant truck movements, and provide connections between major FPN routes and trucking activity centers.

**TABLE 2.1 – TRAFFIC VOLUME SUMMARY**

Hoosick Street Segment	AADT	DHV	DDHV	Heavy Vehicle %
8 <sup>th</sup> Street to 10 <sup>th</sup> Street	42,000	3,250	1,750	5.76%
10 <sup>th</sup> Street to 15 <sup>th</sup> Street	29,000	2,250	1,260	5.14%

AADT = Average Annual Daily Traffic

DHV = Design Hour Volume

DDHV = Directional Design Hour Volume



*Image 3: Hoosick Street Underneath Collar City Bridge*

Chart 2.1 on page 12 shows the directional traffic volumes for a typical weekday. The chart shows that overall traffic volumes on Hoosick Street are generally consistent from 7:00 a.m. to 7:00 p.m. with the roadway carrying approximately 2,000 vehicles per hour. Westbound traffic peaks in the morning as commuters travel towards Albany, Schenectady, and Saratoga, and is generally higher than eastbound traffic until around 4:00 p.m. when eastbound traffic peaks for the return commute.

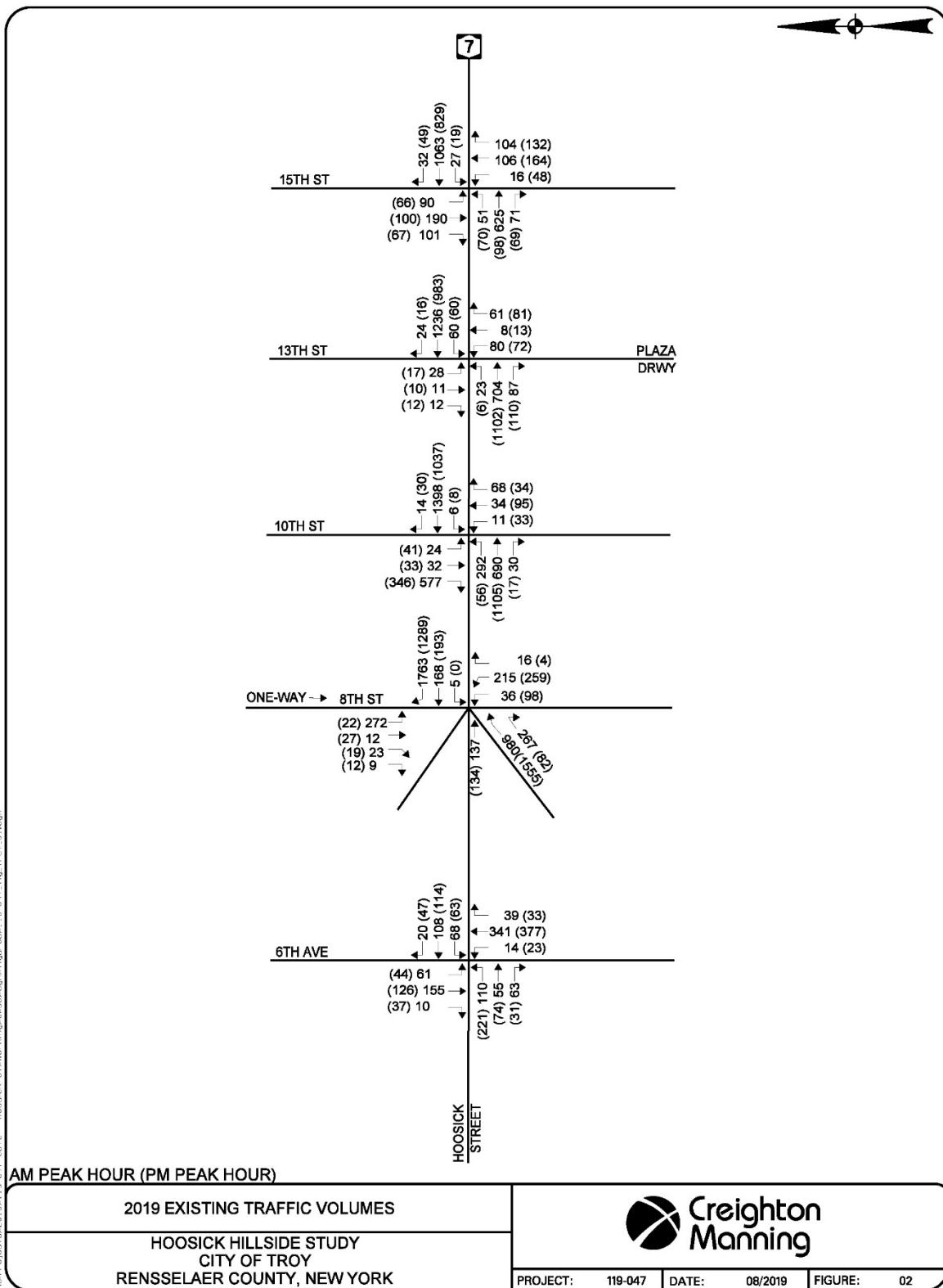
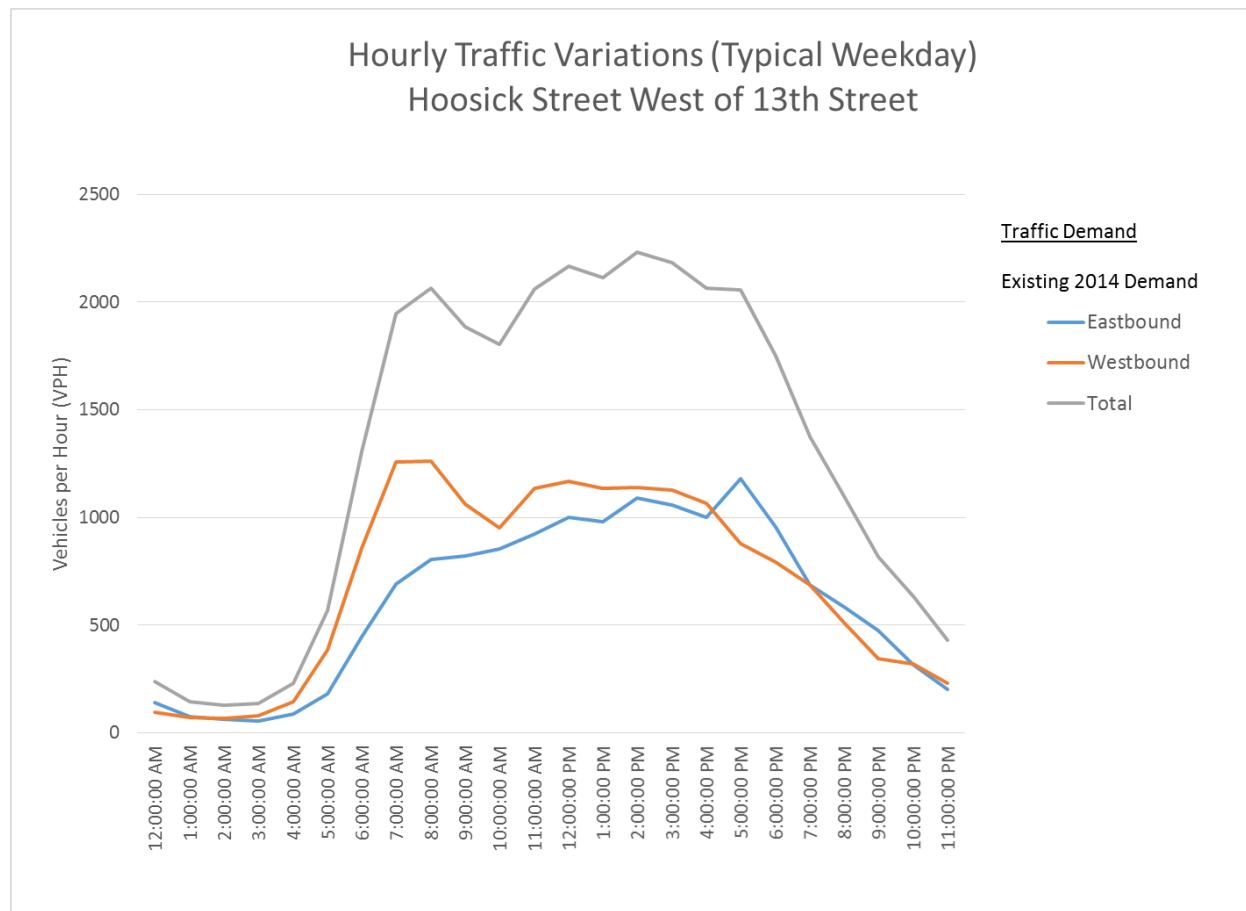


FIGURE 2.4 – EXISTING PEAK HOUR TRAFFIC VOLUMES



#### CHART 2.1 – HOURLY TRAFFIC VARIATIONS BY DIRECTION

The chart shows that while Hoosick Street does exhibit minor directional peaks associated with the commuter peak periods, in general traffic on Hoosick Street increases in the morning and remains high throughout the day. Therefore, while the following peak hour analysis will examine the periods in which traffic volumes are generally heaviest, it is understood that these conditions occur for a significant portion of the day and extend beyond the commuter peaks. This makes Hoosick Street unique in comparison to many other roadways in the Capital Region, where traffic volumes peak during the commuter periods but then gradually decrease during the mid-day.

Intersection Level of Service (LOS) and capacity analysis relate traffic volumes to the physical characteristics of an intersection. Evaluations of the signalized intersections were made using Synchro (Version 10) software which automates the procedures in the Highway Capacity Manual published by the Transportation Research Board (TRB). Levels of service range from A to F, with LOS A conditions considered excellent (less than 10 seconds of delay) while LOS F represents conditions with longer delays (greater than 80 seconds at signalized intersections). Table 2.2 summarizes the existing LOS results in the study corridor.

**TABLE 2.2 – LEVEL OF SERVICE SUMMARY**

Intersection	2019 Existing Overall Intersection LOS	
	AM Peak Hour	PM Peak Hour
Hoosick Street/6 <sup>th</sup> Avenue	B (16.1)	B (17.0)
Hoosick Street/8 <sup>th</sup> Street/NY Route 7	C (31.3)	F (106)
Hoosick Street/ 10 <sup>th</sup> Street	C (24.1)	C (25.2)
Hoosick Street/13 <sup>th</sup> Street	A (9.0)	A (8.6)
Hoosick Street/15 <sup>th</sup> Street	C (28.7)	C (21.1)

Table 2.2 shows that overall traffic operations are fair, with motorists experiencing average vehicle delays during peak times, except at the Hoosick Street/8<sup>th</sup> Street/NY Route 7 intersection which operates at overall LOS F during the PM peak period. While overall intersection LOS shows fair operations on average, certain movements at each intersection may experience longer delays. In particular, the coordinated traffic signal system favors mainline vehicular traffic progression on Hoosick Street, with side streets generally experiencing longer delays.

Operating speeds and travel times were also examined based on the Synchro model, which was calibrated based on data from the National Performance Management Research Data Set and Google travel time observations, for the AM and PM peak hours. The model indicates that it takes around two and a half to three minutes to travel the corridor from end to end during the AM peak period. Westbound travel times are similar during the PM peak period. However, eastbound travel times increase by approximately 85% to approximately six minutes, largely attributed to the higher traffic volumes and merge condition at the Hoosick Street/8<sup>th</sup> Street/NY Route 7 intersection in which the traffic signal must toggle between eastbound NY Route 7 and eastbound Hoosick Street traffic, in addition to serving traffic on 8<sup>th</sup> Street. The model indicates that except for the Hoosick Street/8<sup>th</sup> Street/NY Route 7 intersection, there is generally some delay at traffic signals, but overall through traffic moves well along Hoosick Street with little delay.

## HILLSIDE NEIGHBORHOOD VEHICLE TRAFFIC CHARACTERISTICS

Beyond the Hoosick Street corridor itself, the Study Advisory Committee elected to collect additional traffic volume and speed data in the Hillside Neighborhoods. Automatic traffic recorders were installed on 8<sup>th</sup> and 9<sup>th</sup> Streets in July and August 2019 and supplemented by vehicle turning movement counts at the 9<sup>th</sup> Street/Hutton Street and 10<sup>th</sup> Street/Rensselaer Street intersections.



Image 4: 8th Street South of Hoosick Street

## Hillside North

Table 2.3 summarizes the data collected in the Hillside North area. The table shows that traffic volumes are generally highest on 6<sup>th</sup> Avenue. This is likely because 6<sup>th</sup> Avenue provides direct access to NY Route 7 and a north-south connection between Ferry Street and 125<sup>th</sup> Street. It is noted that 6<sup>th</sup> Avenue is classified as an urban minor arterial while the other roadways in the table are classified as local roadways.

**TABLE 2.3 – HILLSIDE NORTH NEIGHBORHOOD VOLUMES AND SPEED**

	6 <sup>th</sup> Avenue	8 <sup>th</sup> Street	9 <sup>th</sup> Street	10 <sup>th</sup> Street	Rensselaer Street
Volume					
ADT (vpd)	9,400	1,600	2,600	700	700
DHV (vph)	920	N/A	N/A	N/A	50
K	9.2%	13.1%	7.2%	13.1%	7.2%
DDHV	770	215	190	100	30
Speed (mph)					
Average (NB)		28	22		
(SB)	Not Available	33	--	Not Available	Not Available
85 <sup>th</sup> Percentile (NB)		33	28		
(SB)		36	--		

ADT = Average Daily Traffic (vpd = vehicles per day)

DHV = Design Hour Volume (vph = vehicles per hour)

K = Peak hour traffic as percent of daily traffic volume

DDHV = Directional Design Hour Volume

-- = Not Applicable

Within the Hillside North neighborhood itself, traffic volumes are highest on 9<sup>th</sup> Street. This could be caused by motorists using 9<sup>th</sup> Street as a cut-through route to points north rather than wait at the Hoosick Street/10<sup>th</sup> Street intersection which generally experiences queues and longer wait times. It is also noted that the one-way street pattern in the Hillside North neighborhood could force motorists to circle the block to enter or exit the neighborhood, thus increasing travel times and overall traffic.

## Hillside South

Table 2.4 summarizes the data collection in the Hillside South neighborhood. The table shows that traffic volumes are generally highest on 8<sup>th</sup> Street. This could be in part because 8<sup>th</sup> Street provides direct access to NY Route 7. Further, 8<sup>th</sup> Street provides a direct route for motorists traveling between NY Route 7 and destinations to the southeast such as RPI, Wynantskill, and North Greenbush. Reports also suggest that motorists may be cutting through the Hillside South neighborhood using Hutton Street to access 10<sup>th</sup> Street for northbound travel rather than using Hoosick Street. This could be in part due to queuing at the Hoosick Street/10<sup>th</sup> Street intersection.

**TABLE 2.4 – HILLSIDE SOUTH NEIGHBORHOOD VOLUMES AND SPEED**

	8 <sup>th</sup> Street	9 <sup>th</sup> Street	10 <sup>th</sup> Street	Hutton Street
Volume				
ADT (vpd)	5,700	400	2,000	2,000
DHV (vph)	450	30	130	150
K	7.2%	7.2%	8.2%	7.2%
DDHV	320	20	150	140
Speed (mph)				
Average (NB) (SB)	22 --	Not Available	Not Available	Not Available
85 <sup>th</sup> Percentile (NB) (SB)	28 --			

ADT = Average Daily Traffic (vpd = vehicles per day)

DHV = Design Hour Volume (vph = vehicles per hour)

K = Peak hour traffic as percent of daily traffic volume

DDHV = Directional Design Hour Volume

-- = Not Applicable

In addition to traffic volumes, speeds on 8<sup>th</sup> Street are higher than other neighborhood streets in the study area. This is in part due to the wide pavement width in this segment and less on-street parking, and the adjacent open space and vacant parcels, and the change in elevation to the west that provides clearer sightlines.

### STUDY AREA CRASH ANALYSIS

Crash data was provided by CDTc for the most recent five years of available data (March 1, 2014 to February 29, 2019), for the approximate 0.3 square mile study area. The source data was a spreadsheet summarizing crash data from the NYSDOT Accident Location Information System (ALIS). In total, 1,297 known crashes occurred over the five year period (approximately 22 crashes per month on average), including 57 bicycle and pedestrian crashes in the study area. A safety screening was performed focused on the bicycle and pedestrian crashes. Tables 2.5 and 2.6 summarize the crash analysis.

**TABLE 2.5 – SUMMARY OF CRASHES (MARCH 1, 2014 TO FEBRUARY 28, 2019)**

Type	Crashes
Vehicle	1,240
Pedestrian	39
Bicycle	18
<b>Total</b>	<b>1,297</b>

**TABLE 2.6 – SUMMARY OF CRASH SEVERITY (MARCH 1, 2014 TO FEBRUARY 28, 2019)**

Severity	Pedestrian Crashes	Bicycle Crashes	Vehicle Crashes	Total
Non-Reportable	3	6	466	475
Property Damage	2	0	533	535
Injury	33	12	241	286
Fatal	1	0	0	1
<b>Total</b>	<b>39</b>	<b>18</b>	<b>1,240</b>	<b>1,297</b>

Review of this crash data shows several characteristics summarized below:

- There were 39 crashes involving pedestrians within the study area. Of these, 15 crashes occurred with the pedestrian location coded as at an intersection. Approximately 75% (29/39) of the pedestrian crashes in the study area occurred on or directly adjacent to the Hoosick Street corridor. Approximately 85% of pedestrian crashes within the study area resulted in personal injury.
- There was one fatal crash that occurred in the study area within the five year period examined. The crash occurred at the Hoosick Street/15<sup>th</sup> Street intersection when a pedestrian crossing the west leg of the intersection was struck by a vehicle making a left turn from 15<sup>th</sup> Street onto Hoosick Street. Crash details indicate that the pedestrian was crossing with the signal in a marked crosswalk. Failure to yield right-of-way was coded as an apparent contributing factor.
- There were 18 crashes involving bicyclists within the study area. Of these seven crashes occurred with the bicyclist location coded as at an intersection. Approximately 22% (4/18) of the bicycle crashes occurred on Hoosick Street, indicating that cyclists are likely using alternate routes. It is noted that 13 of the 18 bicycle crashes recorded occurred in the western portion of the study area (west of 9<sup>th</sup> Street). Two-thirds of bicycle crashes (12/18) within the study area resulted in personal injury.
- The Hoosick Street/6<sup>th</sup> Avenue intersection has the highest number of pedestrian crashes in the study area (7). Although this intersection experiences lower traffic volumes than those further east on Hoosick Street, it has a greater number of pedestrian involved crashes. The pedestrian action was coded as “crossing – no signal” for six of the seven crashes.

Figure 2.4 shows the location of the bicycle and pedestrian crashes throughout the study area.

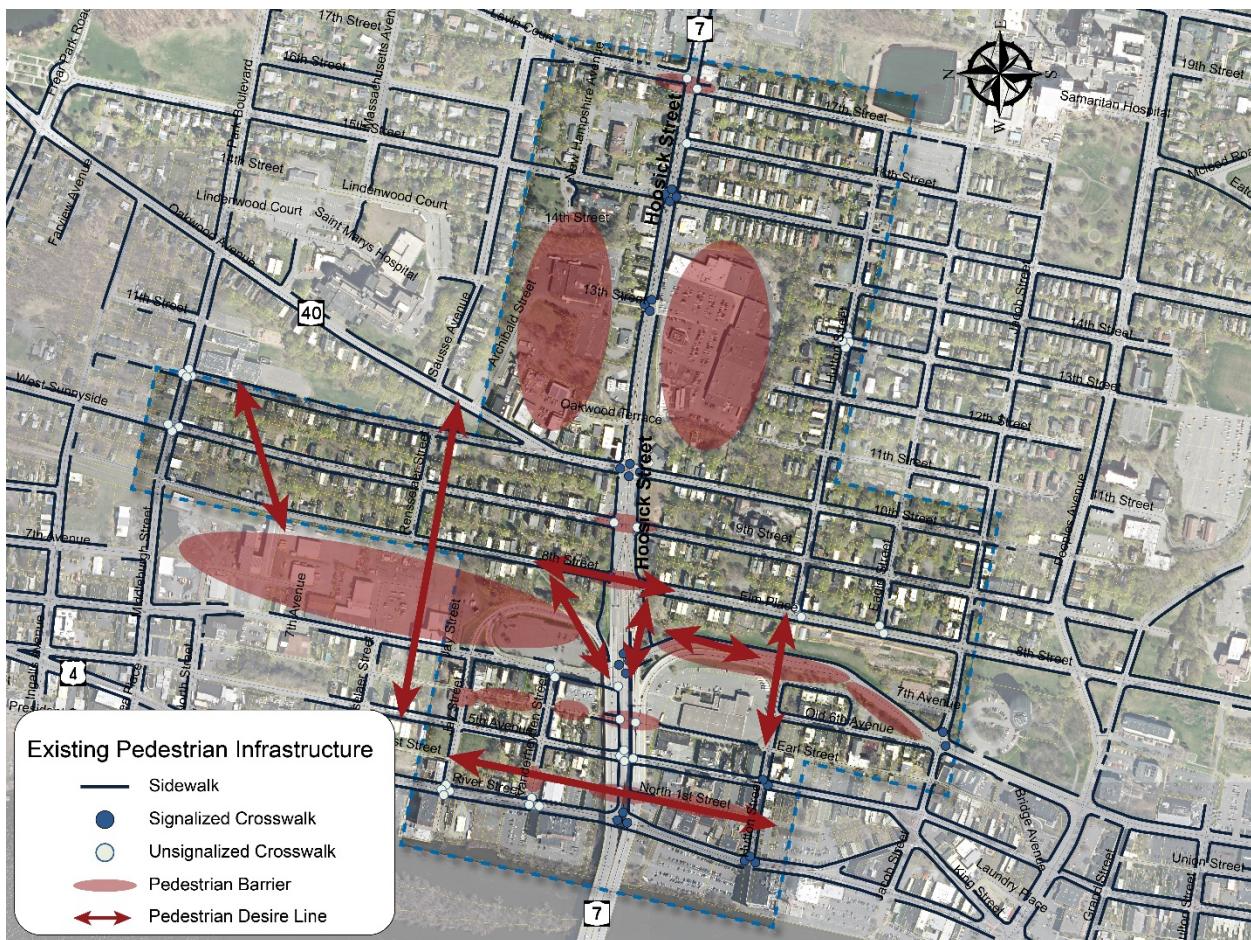


## Figure 2.5 – Study Area Bicycle/Pedestrian Crashes

## STUDY AREA PEDESTRIAN CHARACTERISTICS

As would be expected in an urban area, sidewalks are generally present throughout the study area, with widths varying between three and eight feet. Sidewalk conditions also vary within the study area, with some recently constructed segments in excellent condition and other segments in poor condition.

Marked crosswalks are present at each of the signalized intersections within the study area, except for the 6<sup>th</sup> Avenue/Jay Street and 15<sup>th</sup> Street/Linton Street intersections. While crosswalks provide an east-west pedestrian crossing at the Hoosick Street/8<sup>th</sup> Street intersection, there are no marked crosswalks across Hoosick Street to accommodate north-south pedestrian travel. Numerous unsignalized marked crosswalks are also present throughout the study area, as shown on the following figure.



**FIGURE 2.6 – EXISTING PEDESTRIAN INFRASTRUCTURE**

Figure 2.6 shows barriers to pedestrian connectivity, including areas that lack sidewalks and marked pedestrian crossings, and larger parcels that limit cut-through opportunities. The figure shows that in general, west of 8<sup>th</sup> Street, the study area lacks east-west pedestrian connections, particularly in the vicinity of 6<sup>th</sup> Avenue. East of 8<sup>th</sup> Street, opportunities exist to improve the north-south pedestrian connections, as Hudson River Commons and St. Mary's Massry Center (shown on Figure 2.2) pose barriers to pedestrian connectivity, in addition to Hoosick Street itself where protected crossing opportunities are limited. Within the study area, sidewalks cover approximately 80% of the roadway network. Notable gaps in the sidewalk network are present in the Hillside South neighborhood along 11<sup>th</sup> Street, Eagle Street, and 17<sup>th</sup> Street, and Hillside North neighborhood along 8<sup>th</sup> Street and Rensselaer Street.

Figure 2.6 also shows existing pedestrian desire lines. These desire lines are based on observations of worn foot paths and expected travel patterns to and from existing pedestrian generators within the study area. The map shows that many of the pedestrian desire lines conflict with existing barriers to pedestrian connectivity, particularly between 6<sup>th</sup> Avenue and 8<sup>th</sup> Street.

Table 2.6 shows the average pedestrian delay at the signalized intersections along Hoosick Street. The delay was calculated based on the average cycle length and pedestrian walk time. According to Chapter 19 of the Highway Capacity Manual 6<sup>th</sup> Edition, “Pedestrians become impatient when they experience

delay in excess of 30 [seconds], and there is a high likelihood of their not complying with the signal indication. In contrast, pedestrians are very likely to comply with the signal indication if their expected delay is less than 10 [seconds].”

**TABLE 2.7 – AVERAGE PEDESTRIAN DELAY AT SIGNALIZED INTERSECTIONS ON HOOSICK STREET**

Intersection	Average Pedestrian Delay (seconds)	Distance to Nearest Protected North/South Crossing (feet)	
		West of Intersection	East of Intersection
Hoosick Street/6 <sup>th</sup> Avenue	31.5	675	875
Hoosick Street/8 <sup>th</sup> Street/NY Route 7 <sup>1</sup>	64.5	350	525
Hoosick Street/10 <sup>th</sup> Street	98	875	750
Hoosick Street/13 <sup>th</sup> Street	64.5	750	500
Hoosick Street/15 <sup>th</sup> Street	64.5	500	1,250
<b>Average</b>	<b>64.6</b>	<b>630</b>	<b>780</b>

<sup>1</sup>No pedestrian crossing provided across Hoosick Street

The data shows that the Hoosick Street/10<sup>th</sup> Street intersection has the greatest average pedestrian delay of 96 seconds. This is in part due to the long cycle length and exclusive pedestrian phase at this intersection which extends the cycle length. The Hoosick Street/6<sup>th</sup> Avenue intersection has the lowest average pedestrian delay of 31.5 seconds. It should be noted that the pedestrian delay in all instances, except for the Hoosick Street/8<sup>th</sup> Street/NY Route 7 intersection during the PM peak hour, is greater than the vehicle delay depicted in Table 2.2. Further, average pedestrian delay is greater than the 30-second threshold at all signalized intersections along Hoosick Street within the study area, causing many pedestrians to ignore signalization and designated crosswalks.

Table 2.7 also shows the approximate distance to the nearest protected pedestrian crossing opportunity across Hoosick Street. Depending on a pedestrian’s location within the corridor, the distance between protected crossings ranges from one tenth to one quarter mile.

### **Pedestrian Crossings:**

“Based on FHWA research and AASHTO guidance,

1.6 km (1 mile) is recognized as the maximum walking distance that most healthy/able-bodied people would be willing to undertake. However, the research also states that the majority of pedestrian trips are 0.4 km (1/4 mile) in length. Subject to good engineering judgment, 0.4 km is an appropriate average distance for accommodating “most” pedestrians of all abilities, outside of high-pedestrian traffic zones. In high-pedestrian traffic zones, or central business/walking districts, pedestrian crossings spaced between 100 m and 150 m (330 ft to 500 ft) apart would be reasonable and may correspond with the typical block lengths in high-pedestrian traffic zones.

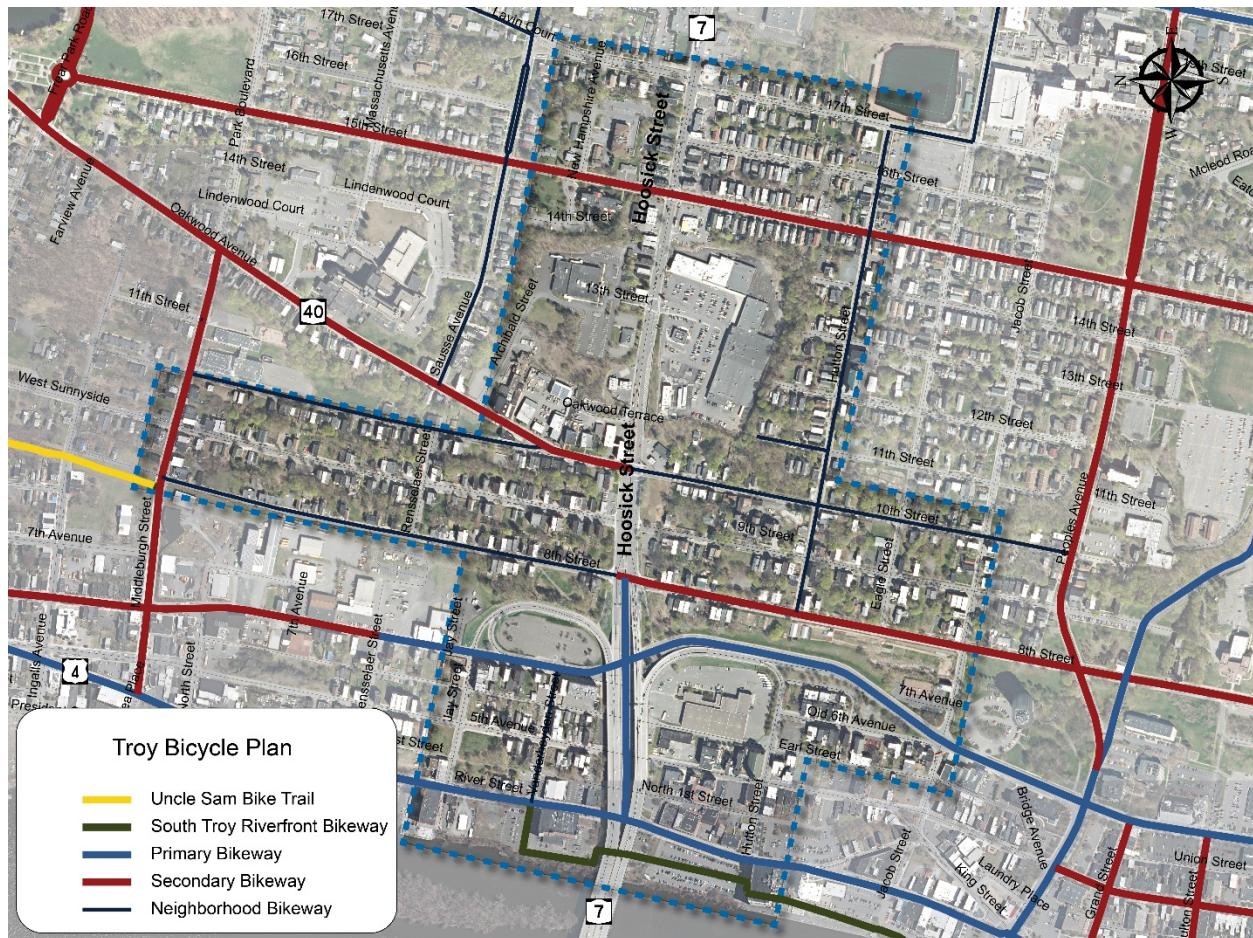
Suggested spacing of crossings are as follows:

- Central business/walking districts –from 100 m to 150 m (330 ft to 500 ft) apart and based on density.
- Urban or suburban residential/retail areas
  - based on density/ land use and not to exceed 0.4 km. (1/4 mile)
- Low-density rural centers/seasonal use areas – as needed. It is easier to find crossable gaps.

The maximum distance that people with disabilities should reasonably be expected to divert from their intended path would be between 50 m and 75 m. (165 ft and 250 ft)”

### **STUDY AREA BICYCLE CHARACTERISTICS**

The Troy Bicycle Connections Plan published in 2018 is the guiding document for implementing bicycle route connections in the City of Troy. In determining criteria for designating bikeways, the plan examined daily traffic volumes and speeds, and physical characteristics such as street width and number of lanes, adjacent land uses, and bicycle network connectivity. Figure 2.6 summarizes the proposed bicycle network for the study area.

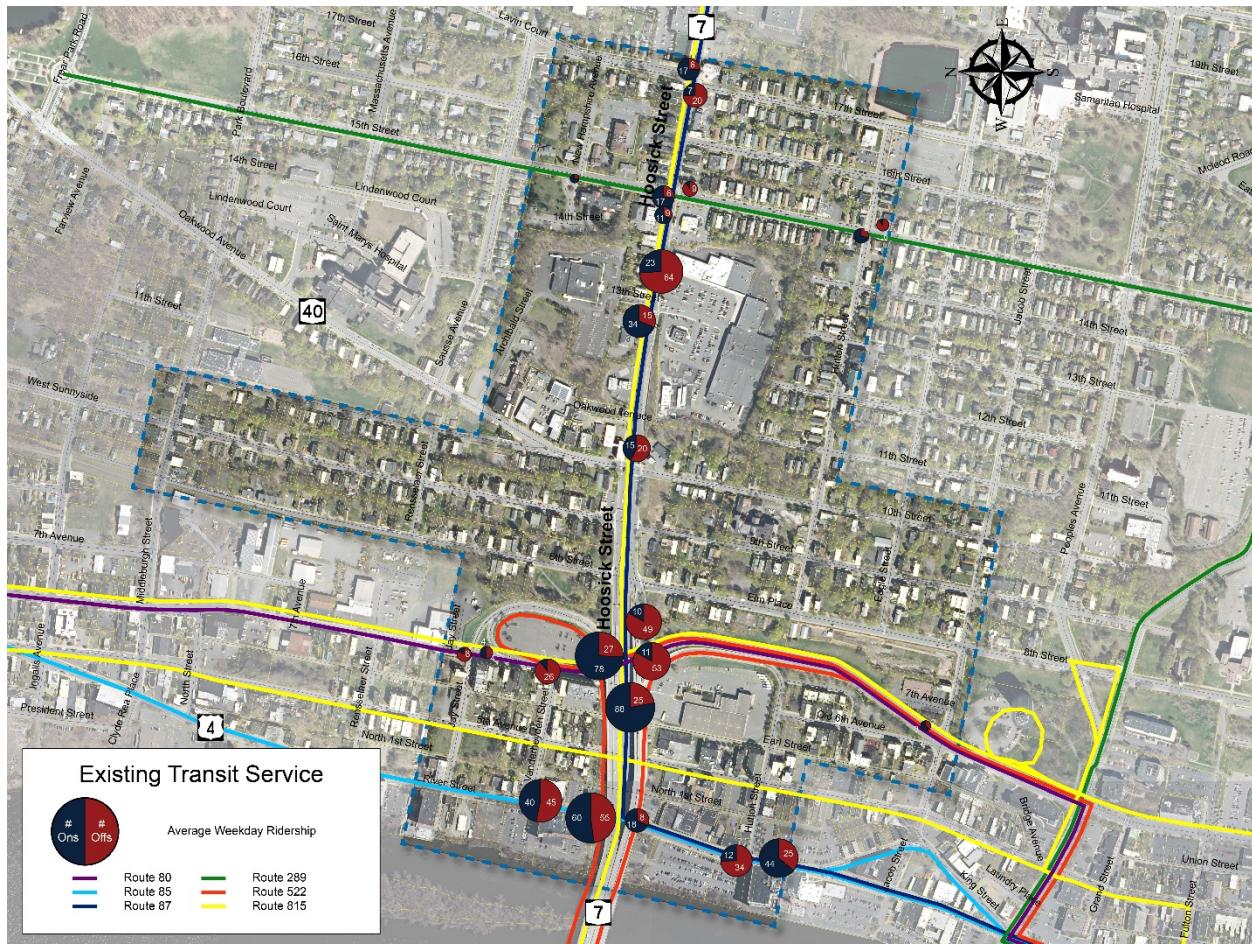


**FIGURE 2.7: TROY BICYCLE PLAN**

As shown in the figure, primary bikeways include River Street, 6<sup>th</sup> Avenue, and Hoosick Street from River Street to 8<sup>th</sup> Street. Hoosick Street east of 8<sup>th</sup> Street is not hospitable to bicyclists due to the large volume of traffic and lack of shoulders or bicycle lanes. As a result, this segment of Hoosick Street is not designated as a future bikeway, with Hutton Street, Middleburgh Street, and Peoples Avenue designated to provide east-west travel instead.

### STUDY AREA TRANSIT CHARACTERISTICS

The Capital District Transportation Authority (CDTA) provides bus service in the Capital Region. Several routes operate within the study area including the 80, 85, 87, 289, 522, and 816. The River Corridor Bus Rapid Transit (BRT) line, which will operate on the same alignment as the existing Route 85, is currently under construction and not displayed on the map below.



**FIGURE 2.8 – CDTA ROUTES AND STOPS**

Routes 80, 85, and 87 are trunk routes and operate primarily along 6<sup>th</sup> Avenue, River Street, and Hoosick Street, respectively. Trunk routes operate seven days a week from early morning to late night with a minimum frequency of every half hour. According to the CDTA 2017-2018 Route Performance Report, routes 80 and 87 perform below the specified productivity threshold for trunk routes of 25 riders per hour.

A review of stop level ridership data indicates that the River Street/Hoosick Street stop has the highest average weekday ridership within the study area with a weekday average of 60 boardings and 55 alightings. The four stops located at the Hoosick Street/6<sup>th</sup> Avenue intersection combined account for one-third of the average weekday ridership within the study area. Other nodes of activity can be seen on River Street north of Hoosick Street, and on Hoosick Street at 13<sup>th</sup> Street.

Figure 2.9 shows the River Corridor BRT line and stations currently under construction. The River Corridor BRT will provide limited stop service along the Hudson River connecting Albany, Cohoes, Menands, Troy, Waterford and Watervliet. Enhanced stations including distinctive signage, real time arrival information, and Wi-Fi service will be provided at Jay Street within the study area, and King Street to the south.



**FIGURE 2.9 –RIVER CORRIDOR BUS RAPID TRANSIT**

A review of Figures 2.8 and 2.9 indicates that the nearest bus stop serving the Hillside North and South neighborhoods is located at Hoosick Street/10<sup>th</sup> Street. However, this stop is primarily served by Route 87 which provides east-west travel. To use transit to travel north-south, passengers would be required to transfer to Routes 80, 85, or 289. Alternatively, riders from the Hillside North and South neighborhoods could walk to the Hoosick Street/6<sup>th</sup> Avenue stop. According to the Transit Capacity and Quality of Service Manual (TCQSM), passengers are typically willing to walk one quarter mile to access transit service or one half mile to access enhanced transit service such as BRT. Therefore, passengers in the Hillside North neighborhood north of Rensselaer Street and passengers in the Hillside South neighborhood South of Hutton Street would be required to walk beyond the one-quarter mile coverage area to access the Hoosick Street/6<sup>th</sup> Avenue stop or one-half mile coverage area to access the River Street/Jay Street BRT Station.

## FIELD WALK

On August 1, 2019, the Study Advisory Committee conducted a field walk of the study area to identify initial issues and potential solutions. The comments and suggestions discussed align closely with the four designated focus study areas. It was noted that there may be an opportunity to transform the area underneath the Collar City Bridge into a destination, focused on active uses.

Opportunities in the area underneath the bridge include reconnecting the 1<sup>st</sup> Street Alley and adding pedestrian accommodations to the Hoosick Street/6<sup>th</sup>

Street intersection to fill gaps in the bicycle and pedestrian networks. Focusing

on the Hoosick Street corridor, it was noted that there is no opportunity for pedestrians to cross Hoosick Street at the 8<sup>th</sup> Street intersection. Although there is an exclusive pedestrian phase at the Hoosick Street 10<sup>th</sup> Street intersection, pedestrians must wait a long time before it is called. In the Hillside South neighborhood, it was noted that 8<sup>th</sup> Street is wide and feels like a thoroughfare. Additional pedestrian paths were observed between 8<sup>th</sup> Street and 6<sup>th</sup> Avenue through RPI property and the Capital Roots garden. In the Hillside North Neighborhood, an abandoned pedestrian connection between 10<sup>th</sup> Street and 9<sup>th</sup> Street was observed through a park, which may present an opportunity for investment.

Residents on 8<sup>th</sup> Street north of Hoosick Street indicated that speeds are an issue in the neighborhood.



Image 5: Field Walk

## PUBLIC INVOLVEMENT

The first neighborhood workshop for the Hoosick Hillside Study was held on Wednesday, October 22, 2019, at the Oakwood Community Center in the Hillside North Neighborhood. The meeting was well advertised and attended by over 60 residents, elected officials, City staff, stakeholders, CDTC staff, and Study Advisory Committee members. The meeting began with an introduction by Steve Strichman, City of Troy Commissioner of Planning & Economic Development. An overview of Complete Streets was presented by Jesse Vogl, (Creighton Manning), followed by a facilitated discussion by Margaret Irwin (River Street Planning).



The second workshop targeting local businesses was held on Tuesday, October 29, 2019, at Troy City Hall and followed a similar format. There were twenty people in attendance including residents, business owners, property owners, developers, nonprofit leaders, City staff, CDTC staff, and Study Advisory Committee Members. See Appendix B for meeting materials including sign-in sheets, the PowerPoint presentation, and the survey and outreach materials.

The purpose of these public workshops was to orient the neighborhoods and local business owners about:

- The scope of this transportation and community planning study
- Opportunities to provide comments,
- Build understanding of the existing conditions and need
- Obtain input regarding neighborhood connectivity issues and ideas (problems and solutions) that should be considered as the study progresses.



Meeting attendees had several opportunities to provide input, ask questions, and offer comments including a survey with open-ended response questions (included in Appendix B); a facilitated discussion session; and a mapping exercise where facilitators interacted with the public to solicit specific issues, concerns, and ideas for the study area. Post-it notes, aerial map mark-ups, and station facilitator notes were used to record the public input received. There were three map stations (all alike) to provide good access for the large number of attendees. A single station was available at the second workshop. The project website address was shared ([www.Hoosick-Hillside-Study.com](http://www.Hoosick-Hillside-Study.com)) and participants to review the material on the website and provide comments via the project email [hoosickhillsidestudy@gmail.com](mailto:hoosickhillsidestudy@gmail.com).

The following summary groups comments received by overall theme. Raw meeting notes from the facilitated discussion and mapping exercise are included in Appendix B.

### Problems

- **Poor connectivity limits access to goods and services.** Residents in the Hillside Neighborhoods indicated that, if possible, they would change their destination (i.e. shop at Walmart in Latham rather than Troy) because of difficulty traveling in and around the study area. Business owners indicated a desire for better connections to attract a broader customer base.
- **Traffic safety is a concern.** People do not feel comfortable walking, biking, or driving in parts of the study area. Traffic volumes, speeds, and turning traffic were noted as concerns. Some people indicated they feel it is safer to cross neighborhood streets mid-block away from Hoosick Street.
- **Hoosick Street acts as a barrier for all users.** Crossing Hoosick Street is difficult for pedestrians, bicyclists and motorists and congestion makes it difficult to access the Hillside neighborhoods.
- **People avoid Hoosick Street, using alternative routes rather than navigating the busy corridor.** Commuters reportedly cut through the Hillside Neighborhoods rather than wait in traffic when the streets are congested.

## Solutions

- **Streetscape enhancements should be considered to calm traffic.** Street trees and planted medians may be desirable elements that will make the neighborhoods more inviting and slow traffic by signaling to motorists that they are traveling on a City roadway as opposed to a highway.
- **Specific pedestrian/bicycle linkages were suggested.** A north-south connection was proposed involving a pedestrian bridge, and east-west connections suggested at or near where foot-paths currently exist. Pedestrian crossing enhancements were proposed at traffic signals, which do not currently have pedestrian signals or marked crosswalks. Bicycle accommodations were proposed on 6<sup>th</sup> Avenue.
- **Consider active space, roadway changes, and/or a multi-use path under the Collar City Bridge.**



## Chapter 3 – Alternatives Analysis

Based on the existing conditions analysis, stakeholder feedback, input from the Study Advisory Committee, and input received at the first round of public workshops, a series of transportation improvements were developed for each of the four study focus areas. In many instances, concerns were related to poor neighborhood connectivity and traffic safety; therefore the proposed alternatives focused on creating new multi-modal connections between each section of the study area, River Street and Downtown, and alternative traffic patterns and traffic calming measures to improve pedestrian and bicycle comfort within the study area. Table 3.1 provides a summary of the major alternatives by study focus area, with a more complete description in the following sections. Many of the elements identified should be incorporated into any roadway alternative to improve connectivity within the study area.

**TABLE 3.1 – TRANSPORTATION ALTERNATIVES**

Focus Area	Alternative 1	Alternative 2	Common Elements
South of NY Route 7 – Includes Hillside South	Road diet 6 <sup>th</sup> Avenue to reallocate the outside northbound through lane and create a two-way separated bike lane – cycle track.	Reconfigure 6 <sup>th</sup> / Hutton St/ NY 7 off-ramp area. Add a controlled pedestrian crossing at Hutton Street with a stair connection to 8 <sup>th</sup> Street (Include further Complete Streets study of 6 <sup>th</sup> Avenue to Ferry St).	Provide a path connection from 11 <sup>th</sup> Street to Hudson River Commons Plaza. Consider traffic calming on 8 <sup>th</sup> Street and 15 <sup>th</sup> Street.
Hillside North	Extend Rensselaer Street from 8 <sup>th</sup> Street to 6 <sup>th</sup> Avenue, creating a new roadway with opportunity for development on both sides.	Create a pedestrian path with a staircase at Rensselaer Street between 8 <sup>th</sup> Street and 6 <sup>th</sup> Avenue.	Consider raised crosswalk at Rensselaer Street/8 <sup>th</sup> Street intersection. Pursue path to School 2 by TRIP. Construct buffered bike lanes on 6 <sup>th</sup> Avenue north of Hoosick Street.
Collar City Bridge	Provide a multi-use path in the median on Hoosick Street from River Street to 6 <sup>th</sup> Avenue.	Provide a multi-use path on one side of Hoosick Street from River Street to 6 <sup>th</sup> Avenue.	Activate space by creating an urban park with multiple active parklets. Include an exclusive pedestrian phase at Hoosick Street/River Street and Hoosick Street/6 <sup>th</sup> Avenue intersections.
Upper Hoosick Street	Provide a continuous landscaped median on Hoosick Street from 6 <sup>th</sup> Avenue to 10 <sup>th</sup> Street.	Provide a landscaped median on Hoosick Street from 6 <sup>th</sup> Avenue to 10 <sup>th</sup> Street with a median break at 8 <sup>th</sup> Street for turning vehicles.	Reconfigure Hoosick Street to two-lanes westbound from 10 <sup>th</sup> Street to 8 <sup>th</sup> Street. Include a pedestrian crossing at 8 <sup>th</sup> Street.

## HILLSIDE SOUTH

Due to its location between NY Route 7 and NY Route 2, the Hillside South neighborhood typically experiences higher traffic volumes, and speeds on 6<sup>th</sup> Avenue, 8<sup>th</sup> Street, and 15<sup>th</sup> Street. As such, the primary alternatives in this focus area emphasize traffic calming to improve neighborhood quality of life.

### Alternative 1 – 6th Avenue Road Diet

This alternative converts the existing northbound through lane to a two-way cycle track between Hoosick Street and Jacob St. Conventional or buffered bike lanes were considered but dismissed due to the free flow merge of the Route 7 off-ramp at Hutton St. As shown in Figure 3.1, the northbound lane reduction would result in 6<sup>th</sup> Avenue being a two-lane roadway north of the NY Route 7 off-ramp, similar to the alignment north of Hoosick Street.



**FIGURE 3.1 – 6TH AVENUE ROAD DIET**

### Alternative 2 – Reconfigure 6<sup>th</sup>/ Hutton St/ NY 7 off-ramp area

This alternative proposes to reconfigure 6<sup>th</sup> Avenue as a two-lane roadway and replace the free flow NY 7 ramp with a stop sign or signal control based on further study. The change would reallocate some of the expansive pavement to provide bicycle infrastructure, on-street parking, and space for developable land along 6<sup>th</sup> Avenue, which would restore the character of this road as a City street and integrate it better with adjacent neighborhoods. A controlled pedestrian crossing would be included across 6<sup>th</sup> Avenue at Hutton Street St, and a potential stair connection as part of redevelopment could be made between 6<sup>th</sup> Avenue and 8<sup>th</sup> Street to improve pedestrian access to the Hillside South neighborhood.

Alternative 2 requires comprehensive changes to the area and further study is recommended to develop the concept and a Complete Streets Plan along 6<sup>th</sup> Avenue from Hoosick St to Ferry Street.

Both alternatives would achieve the study goals of improving connectivity within the study area by calming traffic and providing bicycle infrastructure, (and pedestrian infrastructure for Alternative 2).

As noted in the Troy Bicycle Plan, 6<sup>th</sup> Avenue is designated as a major bikeway, and therefore reasonable accommodations should be provided. The current NY 7 ramp merge is a major impediment to bicycling on-street along 6<sup>th</sup> Avenue. Bicycle conditions for a given roadway segment can be described in terms of the level of traffic stress (LTS) based on a model, developed by the Mineta Transportation Institute at San Jose University, which classifies roadway segments into four levels of stress that cyclists are expected to experience based upon roadway and bicycle facility design characteristics. Specifically, the model considers the number of travel lanes, vehicle speeds, presence of on-street parking and bicycle facilities, and available space for bicyclists as a means to determine a cyclist's exposure to traffic. Roadway segments in which cyclists experience higher levels of exposure result in a higher LTS classification and are considered less friendly to cyclists. Conversely, roadway segments with lower levels of cyclist exposure, including separated bicycle facilities, result in a lower LTS classification and are considered friendlier to cyclists.

An LTS analysis was performed for this segment of 6<sup>th</sup> Avenue to compare the alternatives. The analysis indicates that under existing conditions, cyclists on 6<sup>th</sup> Avenue experience LTS 3, while under both cycle track alternatives, cyclists will experience LTS 1. The model does not pick up the effect of the NY 7 ramp merge which acts as a barrier to cycling along 6<sup>th</sup> Avenue for all but the strongest of riders. As such, the actual existing level of traffic stress for bicyclists may be worse than LTS 3 and many cyclists likely view 6<sup>th</sup> Avenue as a non-viable route.

Although both alternatives will improve conditions for cyclists, the realignment and redevelopment alternative provides a greater benefit to pedestrians. Specifically, 6<sup>th</sup> Avenue as it exists today is an approximate quarter-mile expanse which is inhospitable to pedestrians with no buildings or trees on the east side of the roadway, nor any sidewalk accommodations on the west side of the road. Developing the east side of the street has the potential to improve pedestrian comfort by transforming 6<sup>th</sup> Avenue from a vehicle only roadway to a space that is intended for use by all users. Additionally, development on the Hillside that can create a connection between 6<sup>th</sup> Avenue and 8<sup>th</sup> Street has the potential to provide a direct pedestrian connection which would result in an approximate 35% reduction in pedestrian travel times and distance between the Hillside South neighborhood and the BRT stop located at the River Street/King Street intersection. This connection, which aligns with Hutton Street, used to exist as a city street before the construction of Alternate Route 7. Incorporating a stair connection would restore some of the original neighborhood connectivity.

### Common Elements

Beyond the 6<sup>th</sup> Avenue alternatives, other improvements can be considered independently for the Hillside South neighborhood to promote pedestrian connectivity. Specifically the existing conditions analysis identified poor connectivity in the Hillside South neighborhood, in part due to the barrier formed by the Hudson River Commons which isolates the area south of Hutton Street from destinations to the north. As such, options for residents of the Hillside South neighborhood are limited to automobile travel, long walking distances (often up-hill), or utilizing a make-shift shortcut to avoid these long travel distances.

It is evident from the worn path at the north end of 11<sup>th</sup> Street that pedestrians are using the informal route to access destinations at the Hudson River Commons and along Hoosick Street. To formalize this connection as a safer and more accessible route, stairs with handrails are recommended. A wider (six to eight-foot-wide) stair would be preferable as it would allow people moving in opposite directions to pass one another more comfortably, particularly if they are carrying groceries or other items. To maximize visibility and increase the level of comfort for those using the stair, a minimum 5' clear zone of grass or stone should be installed on both sides of the stair. A 4' chain-link fence set in asphalt (with proper drainage) along the outer edge of the clear zone could also improve the sense of safety and help prevent encroachment of unwanted vegetation.

A less expensive and less formal option would be to make a trail-type stair out of landscape timbers while still including the surrounding clear zones. Regardless of materials, the design will need to be graded so that the drainage is addressed in a way that does not undermine the new stair or the hillside itself. Consideration should also be given to whether it will be maintained during the winter and whether or not it should be closed off and/or signed as closed during certain times of the year.



In addition to the Hudson River Commons connection, additional traffic calming elements can be considered on 8<sup>th</sup> Street and 15<sup>th</sup> Street including the introduction of street trees, curb extensions, and alternate side parking.

## HILLSIDE NORTH

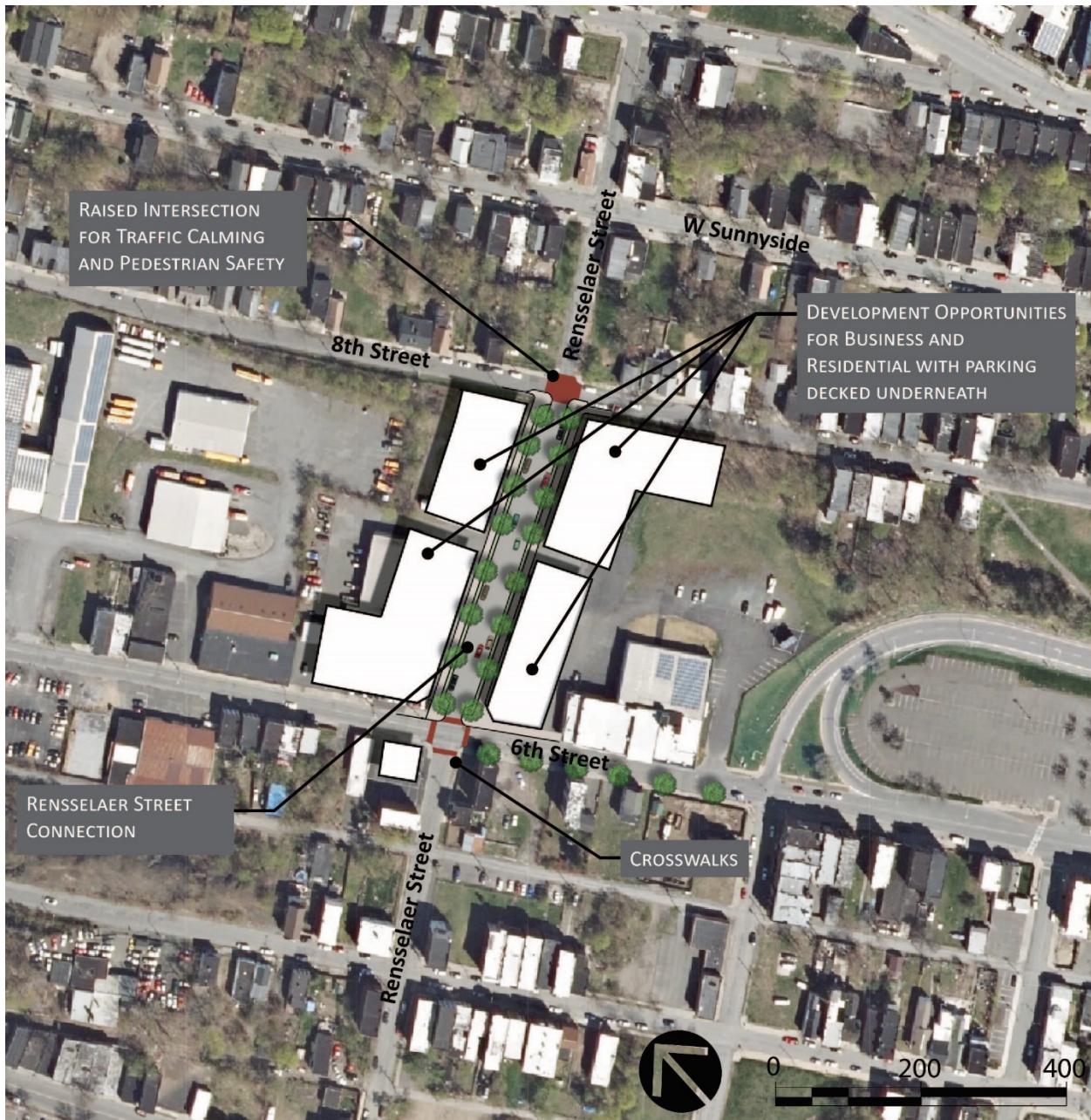
Due in part to topography as well as land uses along 6<sup>th</sup> Avenue, the Hillside North neighborhood is disconnected from River Street and Downtown. As such, the *2018 Realize Troy Comprehensive Plan* makes several recommendations for North Central Troy, which includes areas north of Hoosick Street, and areas east to the city line including North Hillside and Frear Park. Recommendations for improving connections to and from the Hillside North Neighborhood include:

- NC9: Study the existing traffic and pedestrian conditions in the Hillside North neighborhood and the feasibility of additional cross streets on the longer blocks between Rensselaer and Middleburgh Street.
- NC10: Introduce pedestrian-scaled lighting along neighborhood streets to promote passive surveillance and enhanced safety.
- NC11: Consider introducing traffic calming measures in the neighborhood such as speed tables and bump-outs to reduce vehicular speeds.
- NC14: Create waterfront lobbies at the termini of Jay Street, Rensselaer Street, and Middleburgh Street
- NC15: Develop a plan for Redevelopment of the area between 6th Avenue and 8th Street from Hoosick Street to Middleburgh Street and create better connections to the Downtown from the Hillside North neighborhood.
- NC16: Restore Hillside's connectivity to Hoosick Street and the Route 4 transit network and explore additional opportunities to restore connections from Hillside North to the downtown transit network on Route 4.
- NC17: Work with property owners between Hoosick Street and Middleburgh Street to support improved access to Hoosick Street and enhanced neighborhood connectivity

The above recommendations from the comprehensive plan led to the development of the following primary alternatives which prioritize creating east-west connections between 6<sup>th</sup> Avenue and 8<sup>th</sup> Street in order to reconnect the Hillside North neighborhood to River Street and Downtown.

### Alternative 1 – Rensselaer Street Connection

Extending Rensselaer Street from 6th to 8th Avenue could accomplish many of the goals of the Realize Troy Plan, including enhancing neighborhood connectivity; expanding housing, business, and parking opportunities; reducing incompatible uses; connecting Hillside North to the River and Downtown; providing better access to public transportation networks; shortening the longest block between Hoosick Street and Middleburgh Street; increasing pedestrian access and safety; and calming traffic at intersections. The potential roadway connection is shown in Figure 3.2.



**FIGURE 3.2 – RENSSELAER STREET CONNECTION**

Due to the elevation differences between 6th and 8th Streets, lining the street with structures would minimize the amount of fill required and maximize development opportunities. Parking could be shelved on the lower level(s), while opportunities for residential and/or office space could be supported on the upper levels, which could be accessed from the new Rensselaer Street connection. Pedestrian safety would also be improved by having adjacent uses front on the street.

## Alternative 2 – Rensselaer Pedestrian Connection

Creating a pedestrian connection that would connect Rensselaer Street from 6th to 8th Avenue could accomplish some of the goals of the Realize Troy Plan, including enhancing neighborhood connectivity; connecting Hillside North to the River and Downtown; providing better pedestrian access to public transportation networks; shortening the longest block between Hoosick Street and Middleburgh Street for pedestrians; increasing pedestrian access and safety; and calming traffic at intersections. Figure 3.3 shows the potential pedestrian connection.



**FIGURE 3.3 – RENSSELAER STREET PEDESTRIAN CONNECTION**

Due to the elevation differences between 6th and 8th Streets, the connection would likely require steps along the section closest to 8th Street where the elevation change is the most significant. Formalizing the connection with pedestrian-scale lighting, a wide walkway that provides ample visibility, decorative fencing, trees, and landscaping would make the walk safer and more inviting, thereby increasing its appeal and usage. Any opportunities for adding occupied structures along its edges would be desirable for further increasing pedestrian safety through adding “eyes on the street.”

Both alternatives achieve the study goals of improving pedestrian connectivity to and from the Hillside North neighborhood. Specifically, the proposed connections would reduce the travel time and distance for a pedestrian at the 8<sup>th</sup> Street/Rensselaer Street intersection traveling to/from the new BRT station at the River Street/Jay Street by approximately 40%. Similarly, both alternatives provide the opportunity for a design that promotes pedestrian comfort and safety, which can encourage use over some of the existing paths that are perceived as unsafe.

While both alternatives achieve the study goals from a pedestrian standpoint, the full roadway connection provides additional benefits for bicyclists and vehicles. Specifically, under the existing roadway network, access to the Hillside Neighborhood is only available via Hoosick Street and Middleburgh Street. By creating a new road connection, both vehicles and cyclists will be able to access the Hillside North neighborhood without having to travel on Hoosick Street, which was cited as a concern during the public workshops.

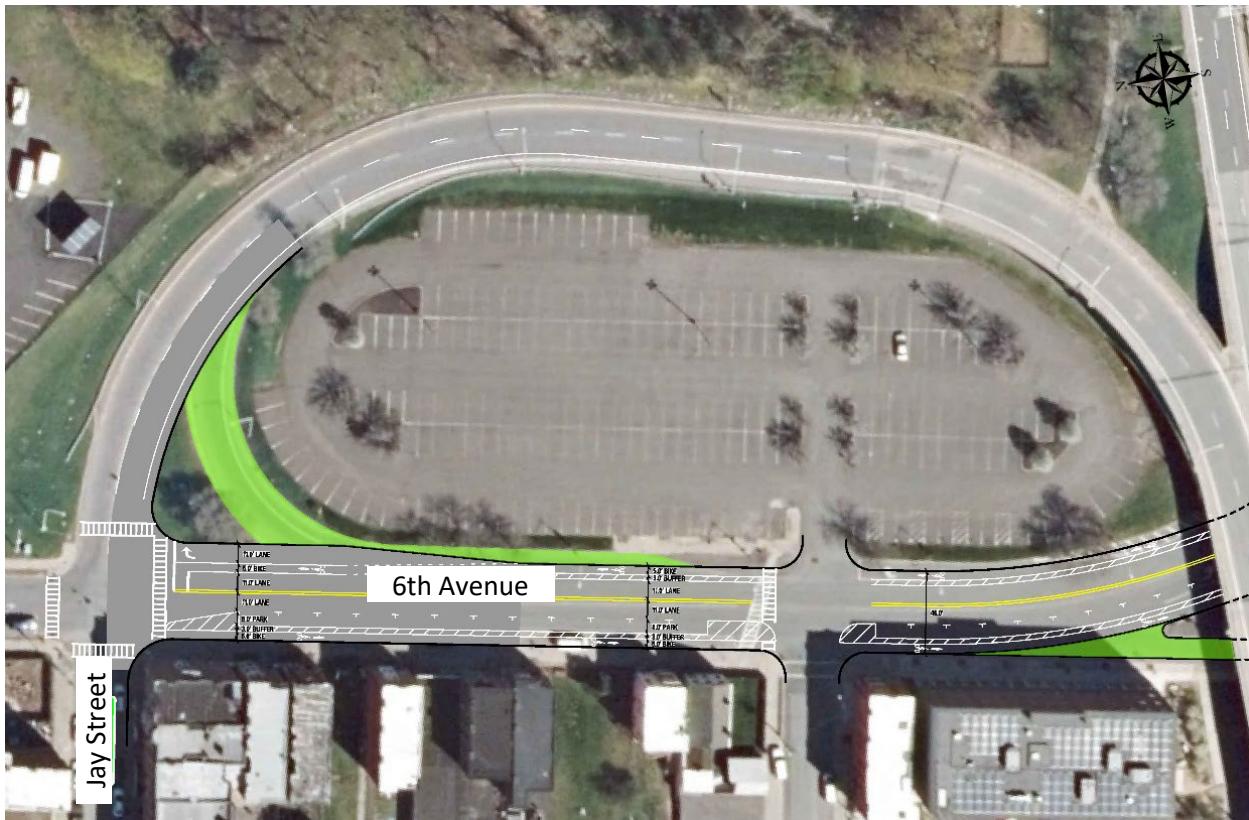
The property required to make the connection is currently privately owned, and the plan would be to pursue one of these options when the property redevelops.

### Common Elements

Whether the proposed connection at Rensselaer Street is a pedestrian path or a city street, the Rensselaer Street/8<sup>th</sup> Street intersection will become a key access point for the Hillside North neighborhood, resulting in an opportunity to introduce traffic calming measures. As such, raised crosswalks should be considered as a vertical speed control measure to reduce vehicle speeds and increase pedestrian visibility.

Another element that can be progressed independently of the Rensselaer Street connection is a path connection from 8<sup>th</sup> Street, north of Rensselaer Street to School 2. As noted in Chapter 2, blocks on 8<sup>th</sup> Street, 9<sup>th</sup> Street, and 10<sup>th</sup> Street are approximately one-quarter mile long, resulting in few opportunities for pedestrians to travel east-west, and therefore, increasing pedestrian trip lengths. As such, the Troy Rehabilitation and Improvement Program (TRIP) has been pursuing mid-block path connections in the Hillside North neighborhood to facilitate pedestrian access. By pursuing the proposed path from 8<sup>th</sup> Street, between Rensselaer Street and Middleburgh Street, to School 2, block lengths in the Hillside North neighborhood will be reduced to approximately one-tenth of a mile which is more consistent with the Hillside South and Downtown block lengths.

Further elements can be included on 6<sup>th</sup> Avenue north of Hoosick Street to improve bicycle connectivity in the study area. Specifically, the northbound right-turn lanes into the DGS parking lot and NY Route 7 on-ramp could be removed to reallocate pavement width for buffered bicycle lanes on both sides of the roadway, as shown in Figure 3.4.



**FIGURE 3.4 – 6TH AVENUE NORTH OF HOOSICK STREET BICYCLE LANES**

As can be seen in the figure, the northbound bicycle lane would provide a buffer with a bike-box for left-turning cyclists at the 6<sup>th</sup> Avenue/Jay Street intersection. The southbound bicycle lane would be located between the curb and parking lane, to provide an additional buffer between cyclists and traffic. As such, this segment of the roadway which is designated as a Primary Bikeway under the Troy Bicycle Plan would be improved from LTS 3 to LTS 1.

### **UNDERNEATH THE COLLAR CITY BRIDGE**

The area underneath the Collar City Bridge is currently uninviting due to the hardscape bridge elements, pavement, and road noise from vehicles traveling on NY Route 7. Therefore, alternatives in this area focus on improving the pedestrian and bicyclist experience by adding a path and green space that connects River Street to 6<sup>th</sup> Street, and potentially to 8<sup>th</sup> Street. There is also an opportunity to introduce a mix of active uses, on-street parking, and public art to the area underneath the bridge that can result in a more vibrant park area, well connected to the adjacent neighborhoods.

#### **Alternative 1 – Boulevard Shared Path**

This alternative proposes to transform Hoosick Street into a boulevard with a multi-use path running up the median from River Street to 6<sup>th</sup> Avenue. Specifically, this concept would reduce the roadway to two-lanes, featuring on-street parking, plantings, and sidewalks on both sides. This boulevard-inspired median would exist between the footprint and shadow-line of the bridge above, thus allowing for street

trees to be placed and a primary 10 foot-wide shared-use path in the center of Hoosick Street presenting users with a softer, landscaped experience in the area currently dominated by the bridge infrastructure. The multi-use path and related street improvements could be progressed as a standalone project, or combined with park improvements to transform the area into an active City park. Improvements such as courts or a synthetic field, a skate park, rock climbing, other active space, murals, public art, lighting, and sculpture installations could drastically improve the area beneath the bridge and become an asset and attraction for the community. A detailed concept has been developed for this alternative and is presented in the next Chapter.

### Alternative 2 – Multi-use Path on One Side

This alternative proposes a similar multi-use path connection between River Street and 6<sup>th</sup> Avenue as Alternative 1, however, the path would be on one-side of Hoosick Street, located under or outside the bridge piers. The idea behind this concept is that it would allow Hoosick Street to operate similarly to how it does today while providing an improved bicycle and pedestrian connection. Park enhancements could also be incorporated, although less transformative than Alternative 1.

Both alternatives would accomplish the study goals of improving bicycle and pedestrian connectivity within the study area. An LTS analysis (as described above) was performed for this segment of Hoosick Street to compare the alternatives. The analysis indicates that under existing conditions, cyclists on Hoosick Street experience LTS 3, while under both path alternatives, cyclists will experience LTS 1. Additionally, both alternatives include upgrades to the Hoosick Street/6<sup>th</sup> Avenue signal including an exclusive pedestrian phase.

### Common Elements

While the above alternatives improve conditions for pedestrians and cyclists, vehicle delay is likely to increase as a result of removing vehicle lanes. Specifically, traffic analysis was performed at the Hoosick Street/6<sup>th</sup> Avenue intersection to assess the feasibility of different intersection configurations. Under all alternatives, the analysis assumes that the existing traffic signal will be upgraded to provide pedestrian signals with countdown timers and an exclusive pedestrian phase to accommodate a multi-use path. Beyond that, the following alternatives were considered:

- Option 1 – Maintain left-turn lanes on all approaches.
- Option 2 – Maintain left-turn lanes on only the northbound and southbound 6<sup>th</sup> Avenue approaches.
- Option 3 – Remove all left-turn lanes and provide a single lane for shared travel movements on all approaches.

Table 3.2 summarizes the results of the LOS analysis.

**TABLE 3.2 – HOOSICK STREET/6<sup>TH</sup> AVENUE LOS SUMMARY**

Intersection Approach	Control	AM Peak Hour				PM Peak Hour			
		Existing	Option 1	Option 2	Option 3	Existing	Option 1	Option 2	Option 3
Hoosick Street/6 <sup>th</sup> Avenue	S								
Hoosick Street EB	L	B (10.8)	B (19.4)	--	--	B (14.0)	C (29.2)	--	--
	TR	A (9.9)	B (17.7)	--	--	A (9.9)	B (18.6)	--	--
	[LTR]	--	--	C (22.0)	C (28.9)	--	--	C (29.9)	C (29.9)
Hoosick Street WB	L	A (10.0)	B (17.9)	--	--	A (10.0)	B (18.6)	--	--
	TR	B (10.2)	B (18.4)	--	--	B (10.5)	B (19.5)	--	--
	[LTR]	--	--	B (18.9)	C (23.0)	--	--	B (17.7)	B (17.7)
6 <sup>th</sup> Avenue NB	L	B (15.9)	B (11.1)	B (14.0)	--	B (15.7)	B (14.2)	C (21.7)	--
	T	C (22.8)	--	--	--	C (25.1)	--	--	--
	R	B (14.9)	--	--	--	B (14.9)	--	--	--
	[TR]	--	B (14.7)	B (18.8)	--	--	C (20.7)	D (39.4)	--
	[LTR]	--	--	B (13.7)	B (18.6)	--	--	--	E (56.4)
6 <sup>th</sup> Avenue SB	L	B (15.5)	B (10.8)	--	--	B (18.4)	B (15.3)	C (26.5)	--
	T	B (17.6)	--	--	--	B (16.9)	--	--	--
	R	B (15.2)	--	--	--	B (15.1)	--	--	--
	[TR]	--	B (12.6)	B (15.8)	--	--	B (15.5)	C (23.7)	--
	[LTR]	--	--	--	B (14.9)	--	--	--	C (27.4)
Overall		B (16.1)	B (15.6)	B (18.7)	C (20.9)	B (17.0)	C (20.7)	C (29.6)	D (36.8)

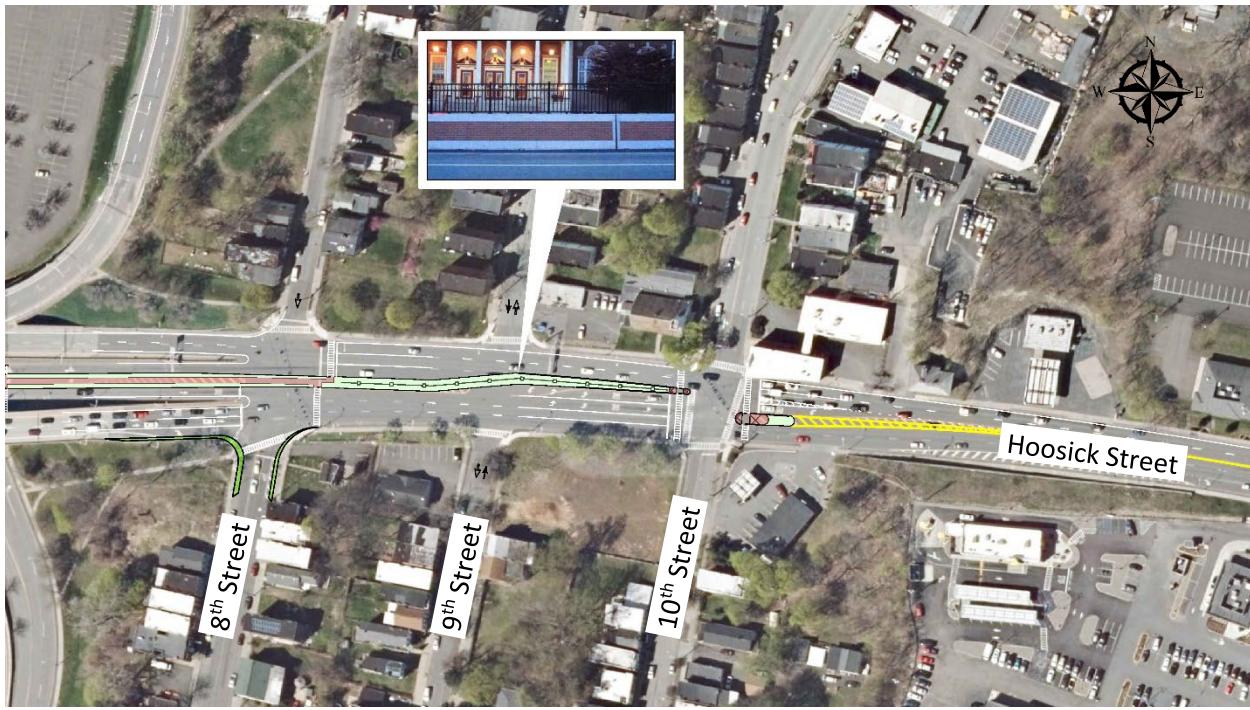
The analysis indicates that during the AM Peak hour, adding an exclusive pedestrian phase and removing all turn lanes will result in approximately five seconds of additional overall delay, with all approaches operating at LOS C or better. During the PM peak hour, adding an exclusive pedestrian phase and maintaining the existing geometry will result in approximately three seconds of additional delay, with all approaches operating at LOS C or better. Removing turn lanes will result in further increases in delay during the PM peak hour, particularly on the northbound 6<sup>th</sup> Avenue approach. This is the highest pedestrian crash location in the study area with seven pedestrian crashes during the six-year period studied. Increased vehicle delay is considered an acceptable trade-off for improved pedestrian safety.

## UPPER HOOSICK STREET

Upper Hoosick Street acts as a barrier to pedestrian and bicycle connectivity between the Hillside North and Hillside South neighborhoods, as safe crossing opportunities are limited to signalized intersections. As such, adding a signalized pedestrian crossing to Hoosick Street at the 8<sup>th</sup> Street/NY Route 7 intersection would improve pedestrian connectivity by reducing the distance pedestrians traveling between the neighborhoods would need to deviate out of their way to reach a signalized crossing. To accommodate this new pedestrian crossing, two median options were examined.

### Alternative 1 – Median Through 8<sup>th</sup> Street

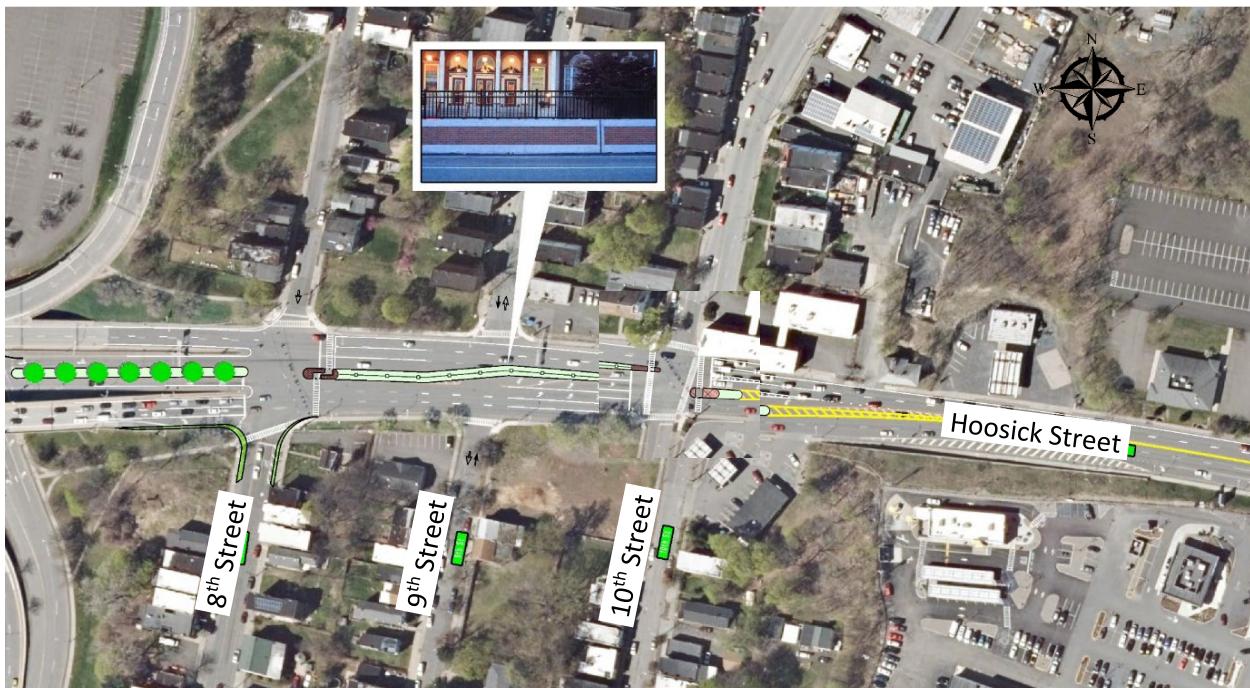
This alternative proposes a median between 6<sup>th</sup> Avenue and 10<sup>th</sup> Street with no break at 8<sup>th</sup> Street for turning vehicles. In addition to creating a crossing opportunity at 8<sup>th</sup> Street, this alternative would allow a pedestrian path in the median between 6<sup>th</sup> Avenue and 8<sup>th</sup> Street, thus creating a direct bicycle and pedestrian connection to the Hillside neighborhoods, as shown in Figure 3.5.



**FIGURE 3.5: HOOSICK STREET MEDIAN ALTERNATIVE 1**

#### Alternative 2 – Median with Break at 8<sup>th</sup> Street

This alternative proposes a raised median between 6<sup>th</sup> Avenue and 10<sup>th</sup> Street with a break for vehicle turning movements at the Hoosick Street/8<sup>th</sup> Street intersection. The median provides an opportunity for a pedestrian crossing at 8<sup>th</sup> Street as shown in Figure 3.6.



**FIGURE 3.6 – HOOSICK STREET MEDIAN ALTERNATIVE 2**

Both median options will result in the addition of a pedestrian connection between the Hillside North and South neighborhoods. Under existing conditions, a pedestrian standing at the Hoosick Street/8<sup>th</sup> Street/NY Route 7 intersection must walk to the Hoosick Street/10<sup>th</sup> Street intersections to cross the road at a protected crossing. Given that this intersection is approximately 500 feet away from the Hoosick Street/8<sup>th</sup> Street/NY Route 7 intersection, the resulting diversion equates to about 1,000 feet. At average walking speeds, this diversion takes pedestrians about 4 minutes of walk time. Therefore, both median alternatives would shorten the pedestrian diversion distance and walking time and result in a direct connection between the Hillside North and South neighborhoods. If the median does not break at 8<sup>th</sup> Street, there is potential to continue the multi-use path from 6<sup>th</sup> Avenue up to 8<sup>th</sup> Street, providing a high-quality bicycle and pedestrian connection between the Hillside neighborhoods and River Street.

As noted in Chapter 2, Hoosick Street east of 8<sup>th</sup> Street is not designated as a future bikeway in the Troy Bicycle Plan. Therefore, the above alternatives do not prioritize bicycle improvements in this section of the study area. A qualitative analysis of the above alternatives indicates that while cyclists traveling along Hoosick Street will likely experience similar levels of comfort under each alternative, cyclists traveling along 8<sup>th</sup> Street, which is classified as a secondary bikeway in the Hillside South neighborhood and neighborhood bikeway in the Hillside North neighborhood, will benefit from the pedestrian crossing at Hoosick Street/8<sup>th</sup> Street/NY Route 7.

Although the median alternatives will result in substantial improvement for pedestrians and bicyclists, it is important to examine the traffic impacts of each option. Analysis of the median and lane reduction alternatives was performed using Synchro Software which automates the procedures contained in the *Highway Capacity Manual*. The results of the LOS analysis are summarized in Table 3.3.

**TABLE 3.3 – UPPER HOOSICK STREET LOS SUMMARY**

Intersection Approach	Control	AM Peak Hour			PM Peak Hour		
		Existing	Alternative 1	Alternative 2	Existing	Alternative 1	Alternative 2
Hoosick Street/8 <sup>th</sup> Street/NY Route 7	S						
Hoosick Street EB	T	E (55.2)	E (62.6)	E (62.6)	E (55.4)	E (62.7)	E (62.7)
Hoosick Street WB	L	E (74.0)	--	--	E (68.0)	--	--
8 <sup>th</sup> Avenue NB	TTT	A (8.7)	A (6.5)	B (11.5)	A (8.6)	A (4.3)	B (11.0)
8 <sup>th</sup> Avenue SB	L	F (81.4)	--	F (95.5)	F (89.4)	--	F (107)
8 <sup>th</sup> Avenue SB	R	D (43.5)	B (12.0)	D (48.2)	D (42.1)	B (10.9)	D (47.0)
NY Route 7 EB	LT	D (44.2)	--	D (48.9)	D (42.3)	--	D (47.2)
NY Route 7 EB	R	E (56.3)	E (63.7)	D (52.3)	D (41.8)	E (61.6)	D (46.6)
NY Route 7 EB	TT	C (28.6)	B (18.9)	--	F (93.1)	C (25.7)	--
NY Route 7 EB	[T,TR]	--	--	C (32.5)	--	--	E (79.4)
NY Route 7 EB	R	C (21.9)	B (15.0)	--	B (19.3)	B (10.8)	--
Overall		C (24.7)	B (16.9)	C (28.6)	D (53.5)	B (17.5)	D (51.8)
Hoosick Street/ 10 <sup>th</sup> Street	S						
Hoosick Street EB	L,L	D (41.8)	E (66.0)	E (61.4)	D (37.0)	E (63.8)	D (43.0)
Hoosick Street EB	T,TR	A (7.1)	A (8.6)	A (6.0)	A (8.7)	B (16.3)	A (8.6)
Hoosick Street WB	L	B (17.1)	B (18.8)	B (15.3)	C (26.4)	C (33.1)	C (26.4)
10 <sup>th</sup> Street NB	T,T,TR	C (27.3)	--	--	D (38.4)	--	--
10 <sup>th</sup> Street SB	LT	--	C (33.9)	C (27.0)	--	D (53.3)	D (41.0)
10 <sup>th</sup> Street SB	R	D (47.6)	F (81.7)	E (73.4)	E (55.6)	E (55.9)	E (58.5)
10 <sup>th</sup> Street SB	LT	D (42.0)	D (54.1)	E (56.8)	D (45.9)	D (44.4)	D (48.0)
10 <sup>th</sup> Street SB	R	D (44.0)	E (58.8)	E (59.8)	D (51.1)	D (49.3)	D (53.9)
Overall		C (32.1)	D (44.2)	D (47.3)	C (21.1)	C (23.3)	C (23.2)

Alt 1 = Median with break at 8<sup>th</sup> Street; Alt 2 = Median through 8<sup>th</sup> Street

The analysis indicates that in general, the median and associated turn restrictions on Hoosick Street will have varying impacts on vehicle delay. In general, the median with a break at 8<sup>th</sup> Street (alternative 1) will have minimal impacts on vehicle delay with approximately three to five additional seconds of overall vehicle delay during the AM peak hour at the 8<sup>th</sup> Street and 10<sup>th</sup> Street intersections respectively. During the PM peak hour, alternative 1 will result in an approximate two-second reduction in vehicle delay at 8<sup>th</sup> Street with an equal increase in delay at 10<sup>th</sup> Street. In contrast, a continuous median through 8<sup>th</sup> Street (alternative 2) results in improved operations at 8<sup>th</sup> Street, while the 10<sup>th</sup> Street intersection experiences approximately 10 seconds of additional delay.

The addition of a median to upper Hoosick Street will result in a diversion of traffic through the Hoosick Street/6<sup>th</sup> Avenue intersection, and therefore could impact the alternatives discussed above. As such, a sensitivity level of service analysis was conducted to analyze the operational impacts. Table 3.4 summarizes the results of the sensitivity LOS analysis.

**TABLE 3.4 – HOOSICK STREET/6<sup>TH</sup> AVENUE WITH MEDIAN ON UPPER HOOSICK STREET**

Intersection Approach	Control	AM Peak Hour				PM Peak Hour			
		Existing	Option 1	Option 2	Option 3	Existing	Option 1	Option 2	Option 3
Hoosick Street/6 <sup>th</sup> Avenue	S								
Hoosick Street EB	L	B (10.8)	C (24.2)	--	--	B (14.0)	C (29.2)	--	--
	TR	A (9.9)	C (21.8)	--	--	A (9.9)	B (18.7)	--	--
	[LTR]	--	--	C (27.3)	C (28.4)	--	--	D (47.9)	E (68.4)
Hoosick Street WB	L	A (10.0)	C (22.1)	--	--	A (10.0)	B (18.7)	--	--
	TR	B (10.2)	C (22.3)	--	--	B (10.5)	B (19.5)	--	--
	[LTR]	--	--	C (21.7)	C (22.5)	--	--	C (20.7)	C (22.5)
6 <sup>th</sup> Avenue NB	L	B (15.9)	B (10.1)	B (12.9)	--	B (15.7)	B (14.2)	B (18.9)	--
	T	C (22.8)	--	--	--	C (25.1)	--	--	--
	R	B (14.9)	--	--	--	B (14.9)	--	--	--
	[TR]	--	B (14.4)	B (18.8)	--	--	C (27.8)	D (44.6)	--
	[LTR]	--	--	B (12.4)	C (25.4)	--	--	--	D (50.1)
6 <sup>th</sup> Avenue SB	L	B (15.5)	A (9.7)	--	--	B (18.4)	B (17.2)	C (26.0)	--
	T	B (17.6)	--	--	--	B (16.9)	--	--	--
	R	B (15.2)	--	--	--	B (15.1)	--	--	--
	[TR]	--	B (11.2)	B (14.2)	--	--	B (15.4)	C (20.4)	--
	[LTR]	--	--	--	B (14.7)	--	--	--	C (20.7)
Overall		B (16.1)	B (16.5)	B (19.7)	C (23.4)	B (17.0)	C (23.5)	D (36.9)	D (45.3)

The table indicates that, providing a median on upper Hoosick Street will result in a slight increase in delay at the Hoosick Street/6<sup>th</sup> Avenue intersection as a result of traffic diversions. These impacts are particularly evident during the PM peak hour under Option 3 which proposes to convert the 6<sup>th</sup> Avenue/Hoopsick Street intersection to a single lane on all approaches. Overall delay increases by approximately 10 seconds compared to the no-median alternative.

#### Common Elements

Regardless of whether the median on Hoosick Street is continuous or has a median break at 8<sup>th</sup> Street, several elements are consistent in both alternatives. Specifically, both alternatives propose to reconfigure Hoosick Street to two-lanes westbound between 10<sup>th</sup> Street and 8<sup>th</sup> Street. This lane reduction results in improved lane balance for westbound vehicles, better aligning traffic with the NY Route 7 ramp, which is the predominant travel movement. Additionally, both alternatives include a pedestrian crossing and associated signal phasing at the Hoosick Street/8<sup>th</sup> Street/NY Route 7 intersection.

In addition to the westbound lane reduction, there is an opportunity to remove the eastbound right turn lane from NY Route 7 onto 8<sup>th</sup> Street southbound. Removing the right turn lane would improve walkability by improving comfort for pedestrians crossing 8<sup>th</sup> Street, which is a concern that was raised by the public. Table 3.5 summarizes the results of the right turn lane removal without a median on Hoosick Street, while table 3.6 summarizes the results with the median.

**TABLE 3.5 – HOOSICK STREET/8<sup>TH</sup> STREET RIGHT TURN LANE REMOVAL WITH MEDIAN BREAK**

Intersection Approach	Control	AM Peak Hour			PM Peak Hour		
		Existing	With RT Lane	Without RT Lane	Existing	With RT Lane	Without RT Lane
Hoosick Street/8 <sup>th</sup> Street/NY Route 7	S						
Hoosick Street EB	T	E (55.2)	E (62.6)	E (62.6)	E (55.4)	E (62.7)	E (62.7)
Hoosick Street WB	L	E (74.0)	--	--	E (68.0)	--	--
8 <sup>th</sup> Avenue NB	L	A (8.7)	B (11.5)	B (11.5)	A (8.6)	B (11.0)	B (11.0)
	TTT	F (81.4)	F (95.5)	F (95.5)	F (89.4)	F (107)	F (107)
8 <sup>th</sup> Avenue SB	L	D (43.5)	D (48.2)	D (48.2)	D (42.1)	D (47.0)	D (47.0)
	R	D (44.2)	D (48.9)	D (48.9)	D (42.3)	D (47.2)	D (47.2)
NY Route 7 EB	LT	E (56.3)	D (52.3)	D (52.3)	D (41.8)	D (46.6)	D (46.6)
	R	C (28.6)	C (27.1)	--	F (93.1)	E (67.7)	--
	[T,TR]	--	--	C (32.5)	--	--	E (79.4)
	R	C (21.9)	C (21.3)	--	B (19.3)	B (18.7)	--
Overall		C (24.7)	C (26.5)	C (28.6)	D (53.5)	D (45.5)	D (51.8)

**TABLE 3.6 – HOOSICK STREET/8<sup>TH</sup> STREET RIGHT TURN LANE REMOVAL WITH MEDIAN**

Intersection Approach	Control	AM Peak Hour			PM Peak Hour		
		Existing	With RT Lane	Without RT Lane	Existing	With RT Lane	Without RT Lane
Hoosick Street/8 <sup>th</sup> Street/NY Route 7	S						
Hoosick Street EB	T	E (55.2)	E (62.6)	E (62.6)	E (55.4)	E (62.7)	E (62.7)
Hoosick Street WB	L	E (74.0)	--	--	E (68.0)	--	--
8 <sup>th</sup> Avenue NB	L	A (8.7)	A (6.5)	A (6.5)	A (8.6)	A (4.3)	A (4.3)
	TTT	F (81.4)	--	--	F (89.4)	--	--
8 <sup>th</sup> Avenue SB	L	D (43.5)	B (12.0)	B (12.0)	D (42.1)	B (10.9)	B (10.9)
	R	D (44.2)	--	--	D (42.3)	--	--
NY Route 7 EB	LT	E (56.3)	E (63.7)	E (63.7)	D (41.8)	E (61.6)	E (61.6)
	R	C (28.6)	B (18.9)	--	F (93.1)	C (25.7)	--
	[T,TR]	--	--	C (22.2)	--	--	C (27.7)
	R	C (21.9)	B (15.0)	--	B (19.3)	B (10.8)	--
Overall		C (24.7)	B (16.9)	B (18.3)	D (53.5)	B (17.5)	B (18.9)

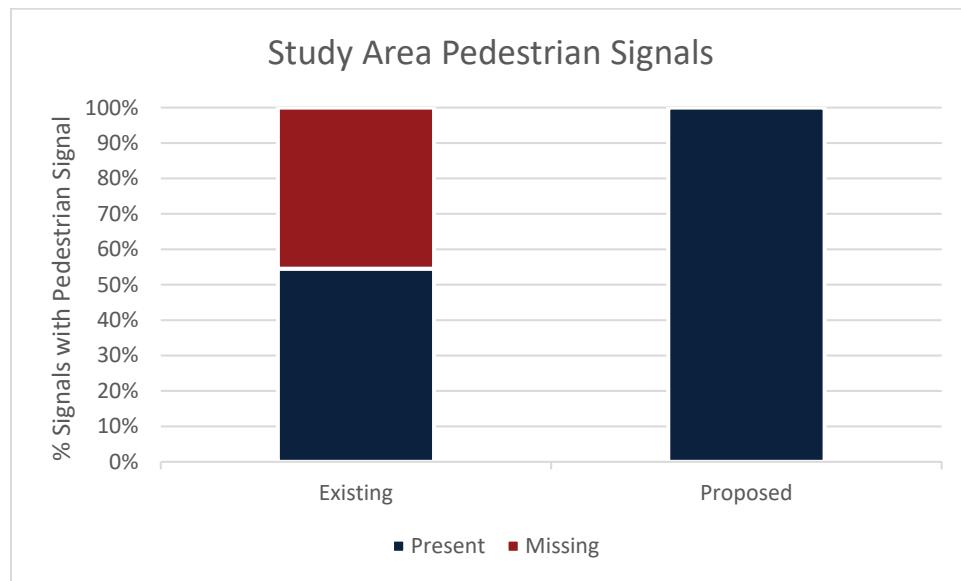
The tables indicate that with a median break at 8<sup>th</sup> Street, the overall delay will generally increase by approximately two to six seconds as a result of removing the right turn lane. In contrast, with a median on Hoosick Street extending through the 8<sup>th</sup> Street intersection, overall delay increases by approximately two seconds or less as a result of the right turn lane removal.

## GENERAL STUDY AREA CONSIDERATIONS

In addition to the above focus area improvements, it is important to note that pedestrian connectivity can be improved throughout the entire study area by upgrading traffic signals to provide pedestrian accommodations. Specifically, a review of the 11 traffic signals in the study area indicated that five of the signals do not have any pedestrian buttons or indicators, as shown in Figure 3.7. As such, the City should pursue state of the practice pedestrian traffic signal upgrades, including pedestrian signals with push buttons and countdown timers at the following locations:

- Hoosick Street/6<sup>th</sup> Avenue
- Hutton Street/15<sup>th</sup> Street
- Jacob Street/6<sup>th</sup> Avenue
- Hutton Street/5<sup>th</sup> Avenue
- Jay Street/6<sup>th</sup> Avenue

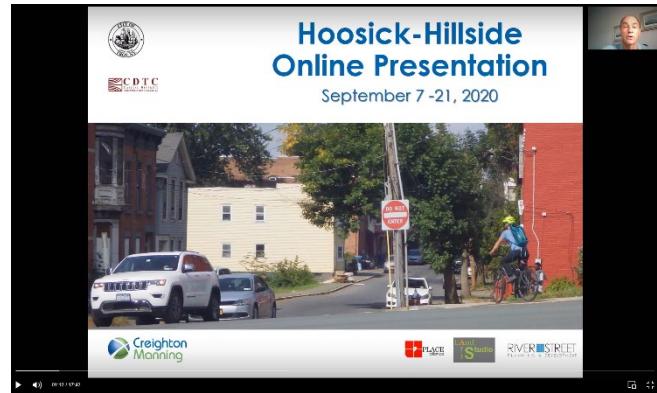
The above traffic signal upgrades will result in all of the signalized intersections in the study area providing adequate pedestrian crossing opportunities, resulting in enhanced pedestrian connectivity.



**FIGURE 3.7 – PEDESTRIAN SIGNAL IMPROVEMENTS**

## PUBLIC INVOLVEMENT

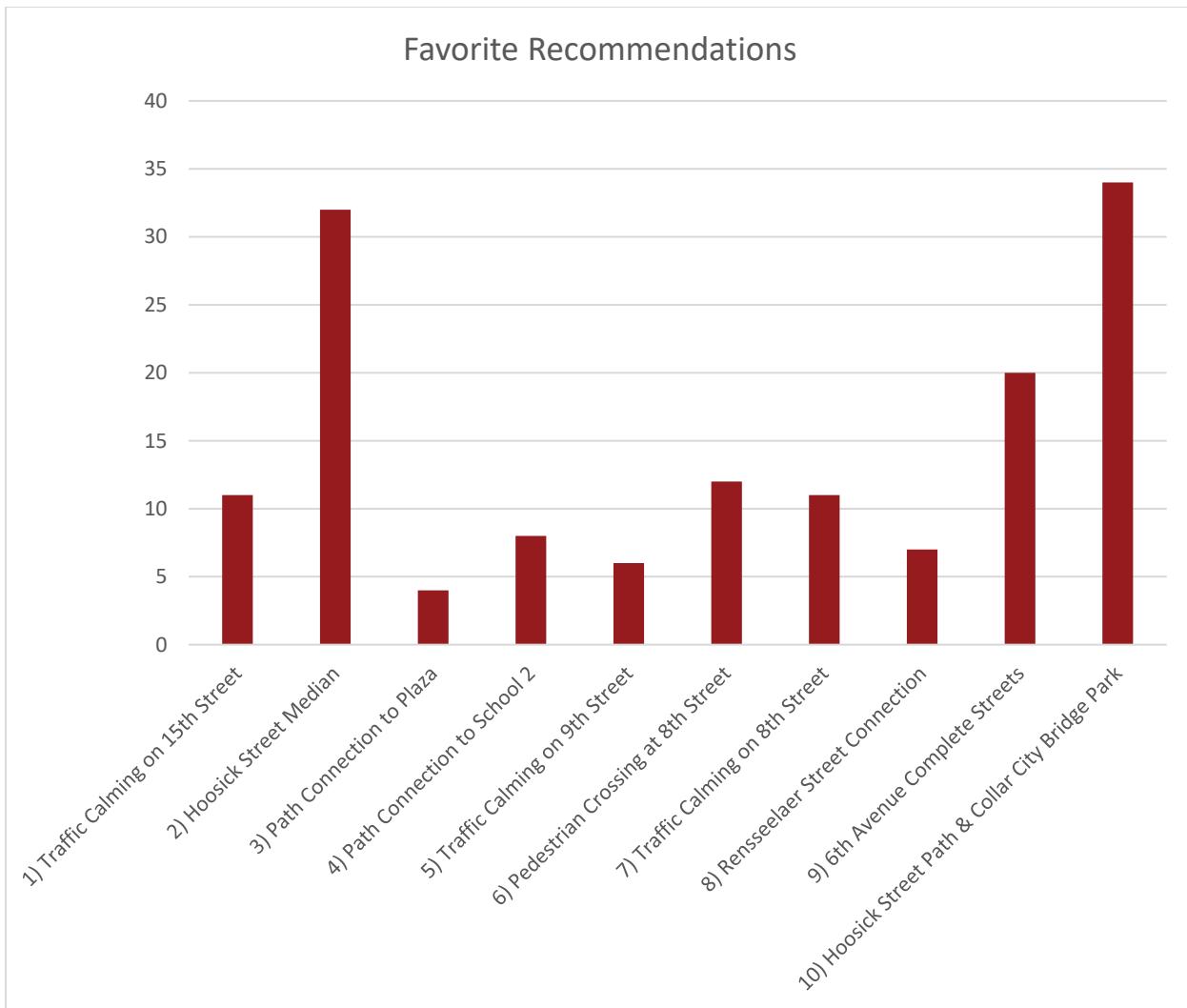
The second public workshop for the Hoosick-Hillside Study was held online as a “Join at Your Own Pace” presentation due to limitations on public gatherings resulting from the Covid-19 Pandemic. The online presentation was available for review and public comment on the study website [www.hoosick-hillside-study.com](http://www.hoosick-hillside-study.com) from Monday, September 7, 2020, through Monday, September 21, 2020. The meeting was well advertised by a direct mailing to study area addresses, email blast, and press-release; and was attended with over 508 unique visits to the site. The online presentation began with an introduction by Steve Strichman, City of Troy Commissioner of Planning & Economic Development, and Michael Franchini, CDTC Executive Director. An overview of the study goals, analysis, and draft recommendations was presented by Jesse Vogl (Creighton Manning). The purpose of the public workshop was to update the public about the concepts developed for the study area, and to receive input from the public about the study recommendations to connect Hillside North and South neighborhoods with Hoosick Street and downtown Troy.



Meeting attendees had several opportunities to provide input and offer comments including a survey with open-ended response questions (included in Appendix B) and a comment section on the project website. The project website address was shared ([www.Hoosick-Hillside-Study.com](http://www.Hoosick-Hillside-Study.com)) and participants were encouraged to review the material on the website and provide additional comments via the project email [hoosickhillsidestudy@gmail.com](mailto:hoosickhillsidestudy@gmail.com).

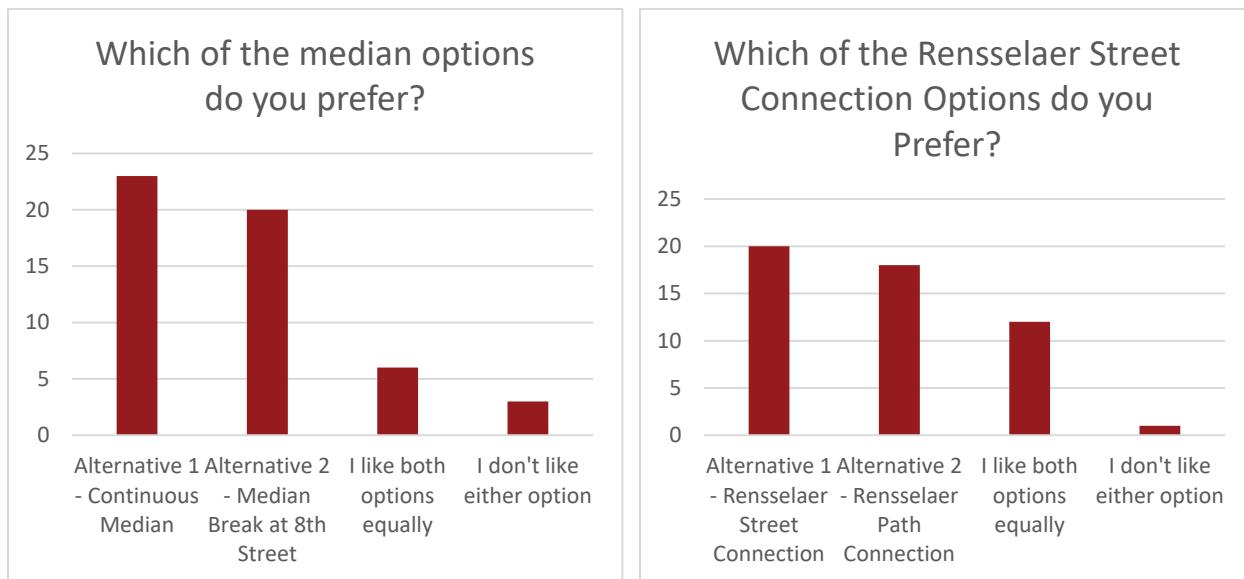
### Survey Responses

The online presentation and advertising materials directed the public to complete an online survey to provide input on the draft recommendations. As of this writing (September 25, 2020), 58 surveys were completed. The raw survey results are included in Appendix B. In general, 83% of survey respondents felt that the draft recommendations accomplished the study goal of making it easier/safer/more comfortable to travel around the neighborhood, while 75% of respondents indicated that the draft recommendations accomplished the study goal of making it easier/safer/more comfortable to travel to/from downtown. Likewise, a review of each recommendation indicates that on average, 90% of respondents approved of the recommendation as is or with minor changes, with every recommendation receiving at least 80% support. When asked which recommendations respondents were most excited about the Hoosick Street median and Hoosick Street Path & Collar City Bridge Park were the two favorites followed by Complete Streets improvements on 6<sup>th</sup> Avenue, as shown in Figure 3.8.



**FIGURE 3.8: FAVORITE RECOMMENDATIONS**

In addition to the overall study goals and prioritization of recommendations, the survey also provided respondents an opportunity to indicate their preference for draft recommendations in which multiple alternatives were presented, namely the Hoosick Street Median and Rensselaer Pedestrian Connection which each provided two options. Figures 3.9 and 3.10 show the responses and indicate that, in general, either alternative would be acceptable with a slight favor towards Alternative 1 (continuous median and Rensselaer Street connection) in both instances.



### Written Comments

As of this writing (September 25, 2020) one week after the close of the public comment period, over 250 comments were received through the survey and project website. A detailed list of comments and directed responses from the project team are included in Appendix B. A synopsis of the comments shows the following themes:

- In general, the public opposes two-way traffic on 9<sup>th</sup> Street and would rather traffic calming measures such as the Hoosick Street Median or vertical traffic calming elements such as raised crosswalks.
- While the public supports additional pedestrian connections, there is a concern that it could lead to increased crime including drug use and gun violence. Proper design and adequate lighting were strongly emphasized.
- Traffic calming on 10<sup>th</sup> Street and an increase in traffic resulting from the Hoosick Street Median was cited as a public concern.
- Public opinion of the two median alternatives is mixed with a slight preference for the continuous median (Alternative 1). Likewise, public opinion of the two Rensselaer Street alternatives is mixed with a slight preference for the street connection (Alternative 1).
- The public supports Complete Streets improvements on 6<sup>th</sup> Avenue and encourages further enhancement including a pedestrian connection at Hutton Street with a controlled pedestrian crossing.

## Chapter 4 – Recommendations and Conclusions

A fundamental objective of this study was to develop improvements to connect the Hillside North and Hillside South neighborhoods, as well as the Hudson River and Downtown Troy. The technical studies show that incorporating a number of the proposed recommendations will support the City's efforts to improve pedestrian and bicycle connectivity and calm traffic in these neighborhoods, promoting access to goods and services, and improving quality of life for neighborhood residents.

### THE PLAN

The plan identifies several bicycle and pedestrian connectivity improvements and traffic calming elements to improve quality of life in the Hillside North and Hillside South neighborhoods. While a number of these improvements are described in further detail below, many of the traffic calming elements can be applied throughout the City beyond the study area boundary. As such, it is useful to think of these traffic calming elements as a “Toolbox” with many different treatments that can be incorporated into future projects to calm traffic and promote pedestrian safety and comfort. The traffic calming tools, and overall study recommendations, are shown on Figure 4.1 and are described in further detail below. The improvements begin at the east end of the study area and continue west and are not in priority order. The numbering corresponds to the east to west convention on Figure 4.1.

1

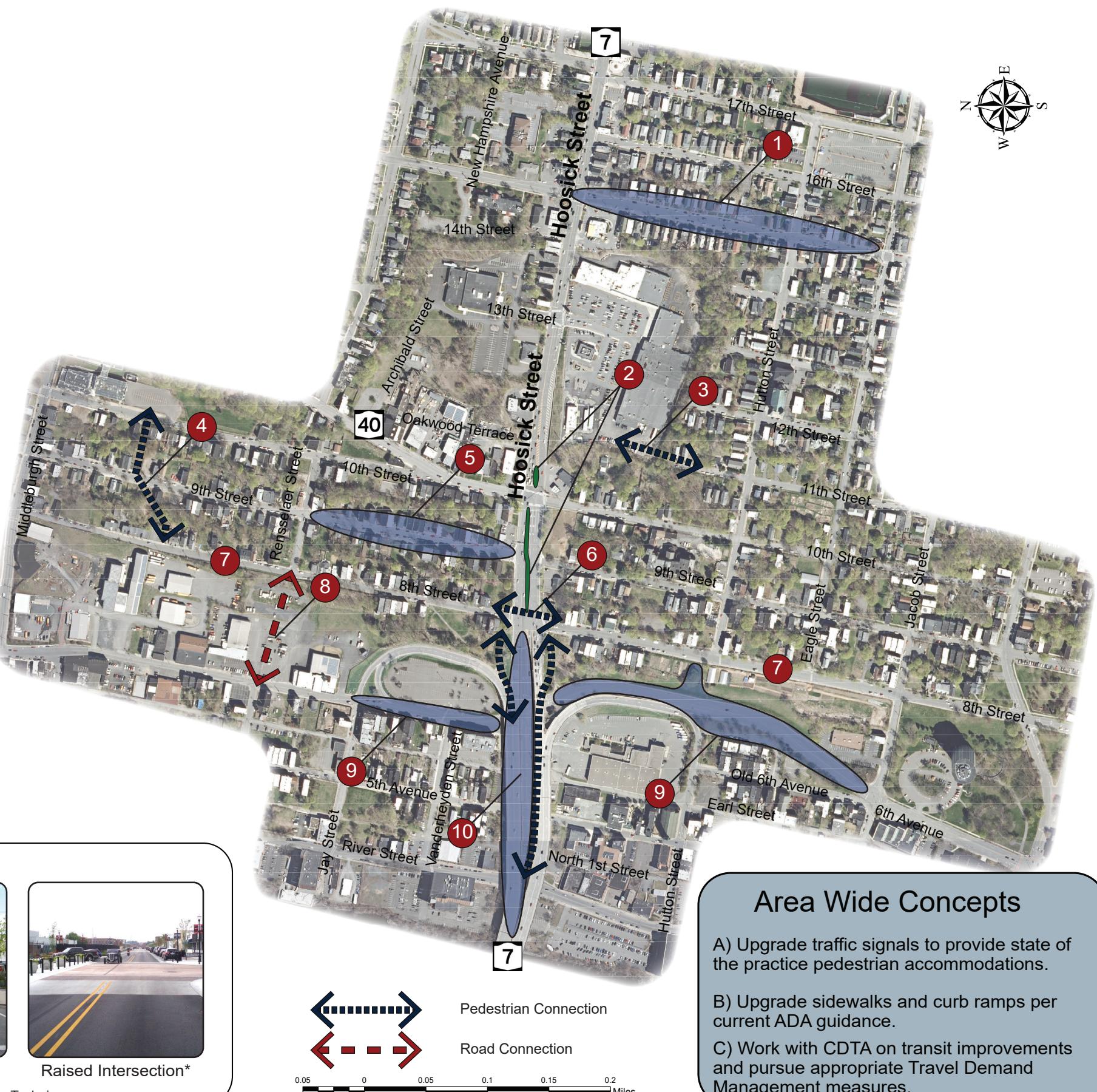
Beginning at the east end of the study area, elements from the traffic calming toolbox should be applied to 15<sup>th</sup> Street south of Hoosick Street to enhance the streetscape and promote pedestrian comfort. This segment of 15<sup>th</sup> Street is classified as an Urban Principal Arterial Other, and therefore vertical traffic calming elements are not considered appropriate treatments per NYSDOT Highway Design Manual Chapter 25. Elements that are considered more appropriate include street trees, curb extensions, and alternate side parking. Specifically, as shown in Figure 4.2, curb extensions at the 15<sup>th</sup> Street/Hutton Street intersection will shorten pedestrian crossing distances, improve sight lines, and calm vehicle traffic.

Likewise, curb extensions placed opposite each other south of the McDonald's driveway can be used to create a gateway effect, signaling to motorists that they are traveling through a neighborhood rather than the Hoosick Street commercial corridor.

# Recommendations

Numbered from East to West

- 1 Consider traffic calming and streetscape improvements on 15th Street. (see traffic calming toolbox)
- 2 Provide a center landscaped median. Consider reconfiguring Hoosick Street to two lanes westbound from 10th Street to 8th Street.
- 3 Provide a path connection between 11th Street and Hudson River Commons Plaza.
- 4 Pursue mid-block path connection to School 2 by TRIP.
- 5 Calm 9th Street by extending median on Hoosick Street through the Hoosick Street/9th Street intersection and making 9th Street two-way, or maintaining one-way on 9th Street with traffic calming toolbox measures.
- 6 Add pedestrian crossing with median refuge on the east side of Hoosick Street at 8th Street.
- 7 Consider traffic calming and streetscape improvements on 8th Street. (see traffic calming toolbox)
- 8 Improve the connection between Hillside North Neighborhood and Downtown:
  - High Impact Option: Extend Rensselaer Street from 6th Avenue to 8th Street.
  - Low Impact Option: Consider path from 8th Street to 6th Avenue on the south side of Johnstone Supply property.
- 9 Convert 6th Avenue to a complete street:
  - High Impact Option: Realign 6th Avenue to create developable space on the east side of the roadway. Signalize the Hutton Street/6th Avenue/NY Route 7 off-ramp and add controlled pedestrian crossing and two-way traffic on Hutton Street. Include a stair connection between 6th Avenue and 8th Street.
  - Low Impact Option: Possible road diet on 6th Avenue and reallocate excess pavement for a two-way cycle track.
- 10 Create active park space underneath the Collar City bridge with a multi-use path (center vs. side) between 8th Street and River Street. Consider on-street parking. Enhance pedestrian connections between 8th street and 6th Avenue.



## Select Traffic Calming Tools



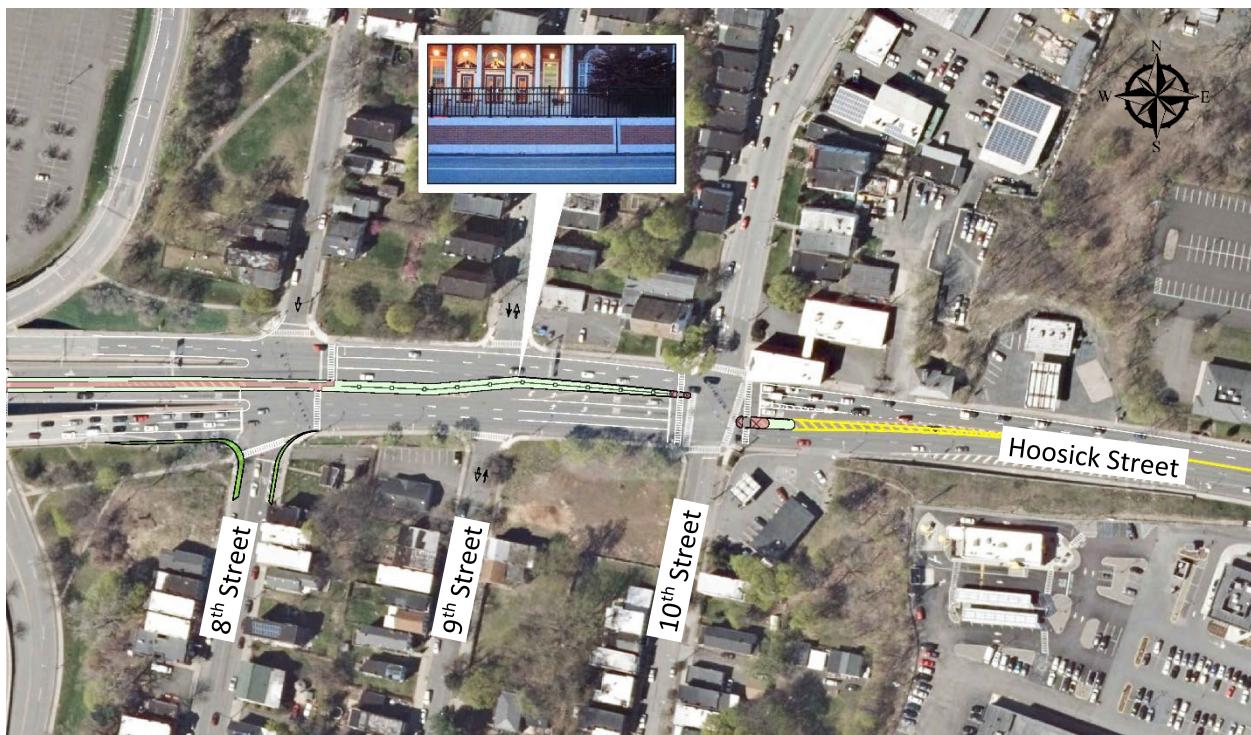
\*Not recommended in Hillside South Neighborhood on 8th Street or 15th Street per NYSDOT Traffic Calming Techniques.



**FIGURE 4.2 – 15TH STREET TRAFFIC CALMING**

2

The plan recommends a continuous median between 6<sup>th</sup> Avenue and 10<sup>th</sup> Street as shown in figure 4.3. There is strong support for the construction of a median on lower Hoosick Street between 8<sup>th</sup> and 10<sup>th</sup> Streets, which will implement elements of the previously recommend Hoosick Street Corridor Study (2000). The median is conceived as a decorative barrier that channelizes pedestrians to controlled crosswalks at 8<sup>th</sup> and 10<sup>th</sup> Street and helps address some of the pedestrian crash issues identified in this area as discussed in Chapter 2. The City is also interested in extending this median to the west, through the 8<sup>th</sup> Street intersection with a path in the median west of 8<sup>th</sup> Street.



**FIGURE 4.3 – PREFERRED MEDIAN ALTERNATIVE**

The median with path west of 8<sup>th</sup> Street will tie into a new path under the Collar City Bridge discussed further under recommendation 10. Combined with the new pedestrian crossing at 8<sup>th</sup> Street, the median and pedestrian connections will improve multi-modal access between the Hillside North and South neighborhoods and to/from downtown. The median will also calm traffic in the neighborhoods by restricting left turns at 8<sup>th</sup> Street and 9<sup>th</sup> Street. Although some public comments oppose two-way traffic on 9<sup>th</sup> Street, it is recommended that 9<sup>th</sup> Street become a two-way street to maintain reasonable access to the neighborhood. It is recommended that the City pursue funding for the median between 6<sup>th</sup> Avenue and 10<sup>th</sup> Street as a standalone project with side-street access to be confirmed during design.

3

Providing a stair connection between 11<sup>th</sup> Street and the Hudson River Commons Plaza will improve pedestrian access between the Plaza and the South Hillside neighborhood. Residents on local streets between 11<sup>th</sup> Street and 14<sup>th</sup> Street would benefit from the connection, and the Plaza itself should benefit from improved accessibility. It is recommended that the City discuss the feasibility of this connection with the Plaza owner.

4

In the Hillside North Neighborhood, pedestrian and bicycle connectivity will be improved by a path connecting 8<sup>th</sup> Street to School 2. It is recommended that TRIP continue to pursue this connection to shorten the block lengths in the Hillside North neighborhood and improve walkability. Per NACTO Guidelines, the path connection should be at least 10 feet wide with 5 feet of clear space on either side to provide good visibility, as shown in Figure 4.4.

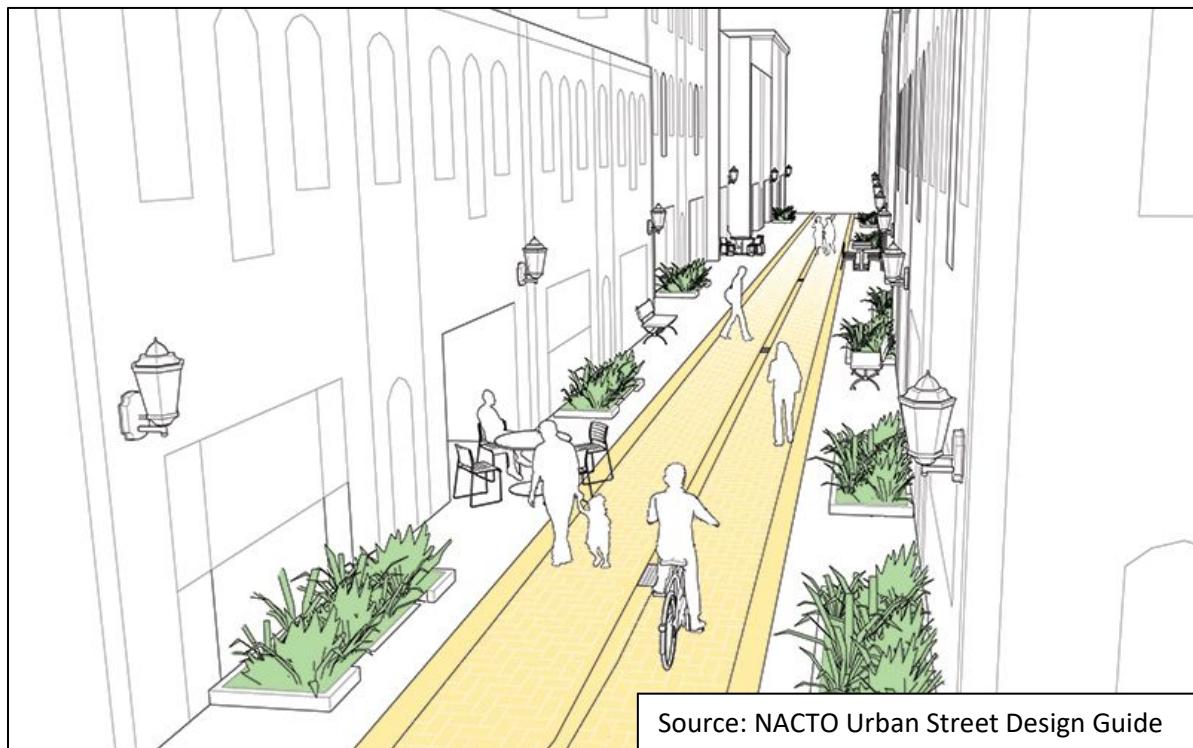


FIGURE 4.4 – COMMERCIAL ALLEY

5

In addition to the TRIP path connection in the Hillside North neighborhood, traffic calming on 9<sup>th</sup> Street will also improve pedestrian connectivity. Specifically, constructing a median on Hoosick Street through the 9<sup>th</sup> Street intersection eliminates left turns from eastbound Hoosick Street. As such, pedestrians walking along the north side of Hoosick Street no longer conflict with vehicles making left turns, which was previously noted as a concern. Additional traffic calming measures from the Traffic Calming Toolbox may also be applied to 9<sup>th</sup> Street for further pedestrian improvement.

6

Adding a pedestrian crossing at the Hoosick Street/8<sup>th</sup> Street intersection is recommended as a two-stage pedestrian crossing to minimize impacts on traffic operations. Pedestrians would cross half-way to the median refuge island during one signal phase, then complete the crossing to the far side of Hoosick Street during a subsequent signal phase. This protected signal crossing will fill the gap where pedestrian crossings are currently lacking between 6<sup>th</sup> Avenue and 10<sup>th</sup> Street, resulting in better connectivity between the Hillside North and Hillside South neighborhoods. This crosswalk with median refuge island could be progressed as a stand-alone project in advance of the larger median project discussed under recommendation 3.

7

Traffic calming on 8<sup>th</sup> Street in the Hillside North and South neighborhoods can be achieved by applying the tools from the Traffic Calming Toolbox. In the Hillside South neighborhood, curb extensions should be applied along 8<sup>th</sup> Street at the Hoosick Street, Hutton Street, and Eagle Street intersections to shorten pedestrian crossing distances, increase visibility, and slow traffic. Additional gateway enhancements may be considered at Riley Park as shown in Figure 4.5.

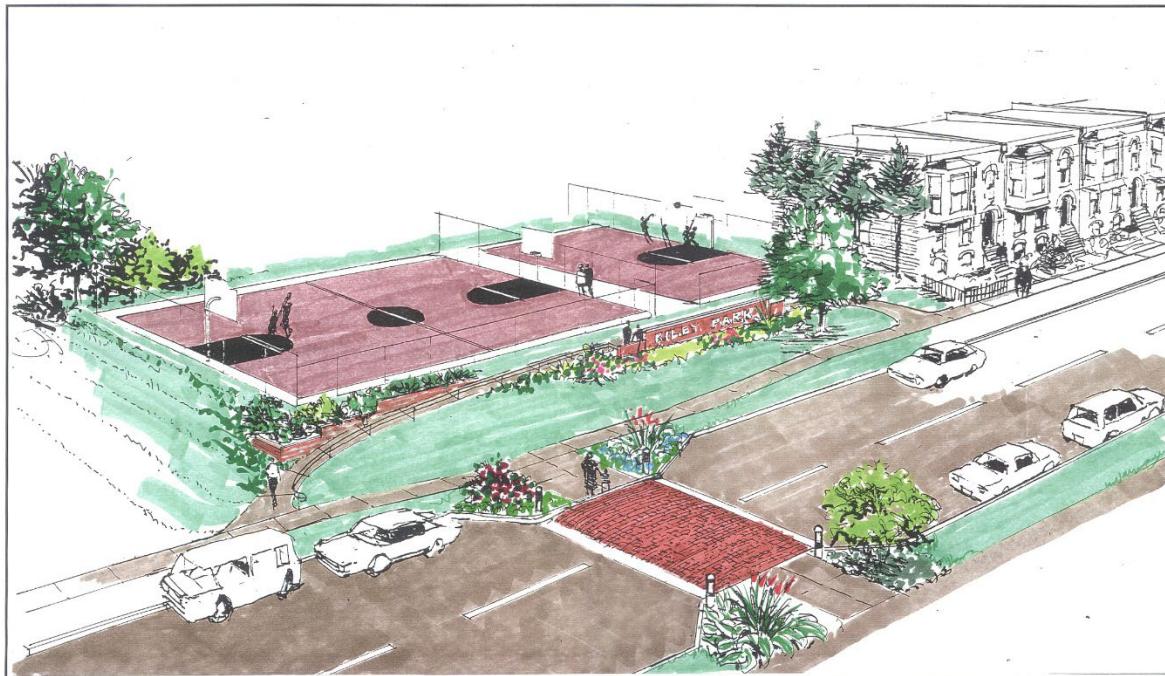


FIGURE 4.5 –RILEY PARK GATEWAY BY TAP

8

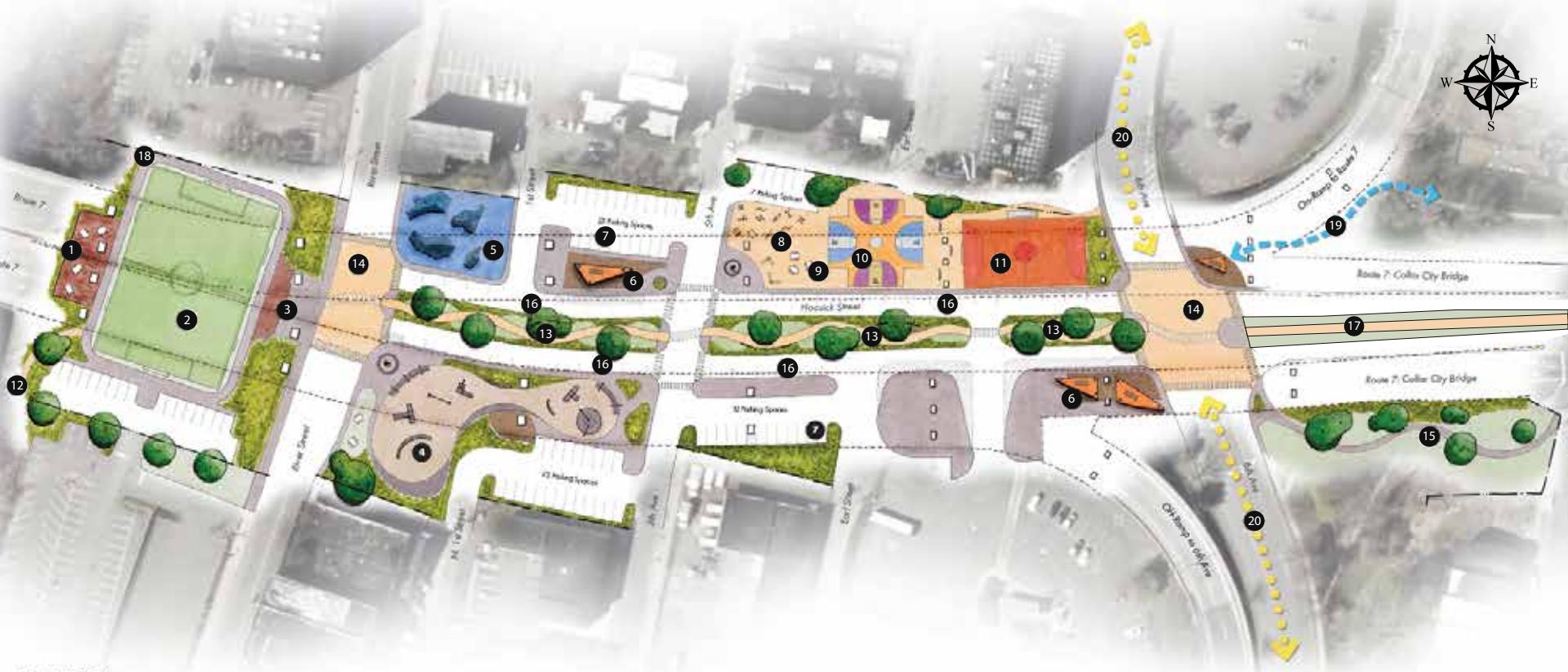
Providing a connection between 8<sup>th</sup> Street and 6<sup>th</sup> Avenue in the vicinity of Rensselaer Street will significantly improve access for residents of the Hillside North neighborhood to/from downtown and River Street, and the BRT station at Jay Street. It is recommended that the City pursue the street connection as the properties between 8<sup>th</sup> Street and 6<sup>th</sup> Street redevelop. While a direct street connection is the preferred alternative, the details of this functional multi-modal connection will be dependent on the circumstances of redevelopment.

9

Transforming 6<sup>th</sup> Avenue into a complete street will result in substantial pedestrian and bicycle connectivity improvements for individuals traveling north-south along 6<sup>th</sup> Avenue and to/from downtown. Beginning at Jay Street and continuing south, the recommendation is to provide one-way buffered bicycle lanes on each side of 6<sup>th</sup> Avenue. The City prefers the southbound bicycle lane in this area as a separated bike lane between the parking lane and the curb to provide cyclists with further protection from traffic. Beginning at Hoosick Street and continuing south, the two one-way bike lanes will transition to a two-way separated bike lane or “cycle track,” by converting the outside northbound lane of 6<sup>th</sup> Avenue to a two-way cycle track. Moving the bicycle infrastructure to the east side of the street in this area avoids bicycles conflicting with the higher speed traffic entering from Route 7 at Hutton Street. South of the study area, further study of 6<sup>th</sup> Avenue is recommended from Hutton Street to Ferry Street to determine the feasibility of extending this bike infrastructure further into the City and other Complete Streets features desired in this corridor. A long term goal is to reconfigure the 6<sup>th</sup> Avenue/Hutton St intersection to eliminate the high-speed entry from Route 7, install a possible traffic signal (subject to warrants analysis) with pedestrian crossing at 6<sup>th</sup> Avenue and pedestrian connection to 8<sup>th</sup> Street.

10

The recommendation under the Collar City Bridge includes the completion of a path connection between River Street and 8<sup>th</sup> Street. Along with the path connection or as a separate project, the recommendation under the Collar City Bridge includes creating an inviting streetscape and active park space. The path is a priority from a transportation connectivity standpoint per the goals of this study. The park elements would provide an important amenity to the community and improve quality of life. The recommendation is to include the following elements as described below and shown on Figure 4.6.

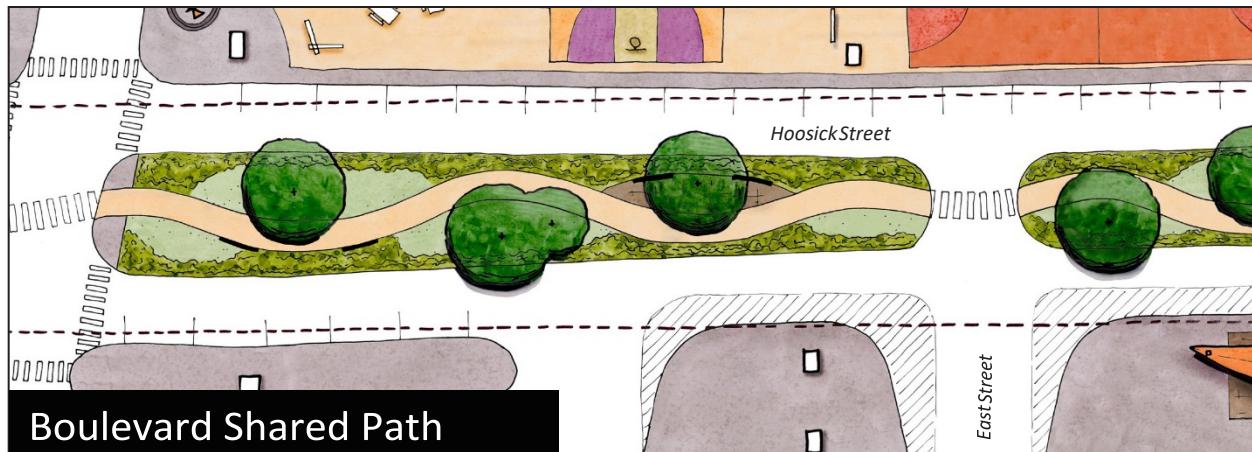


#### PLAN KEY

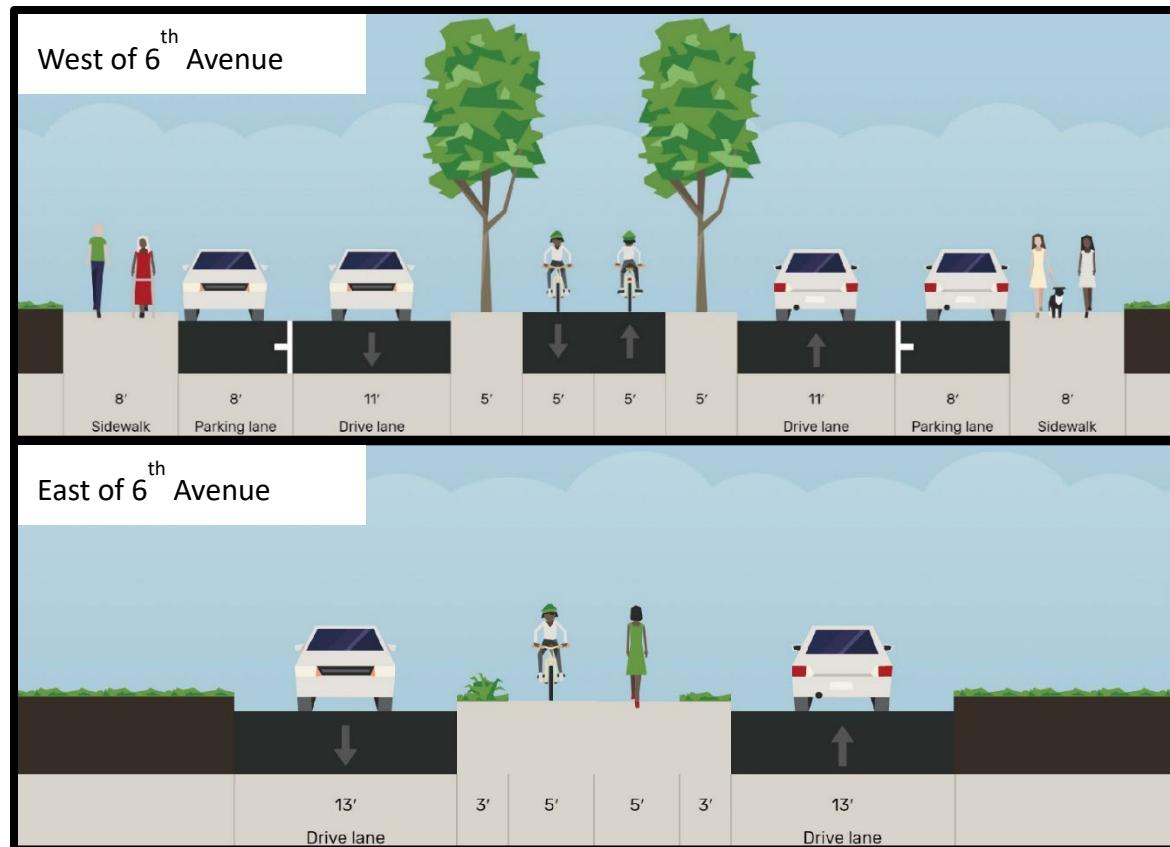
- 1. RIVER OVERLOOK PLAZA
- 2. MIXED-USE/SOCCER SYNTHETIC TURF FIELD
- 3. STADIUM/BLEACHER SEATING
- 4. SKATE PARK
- 5. ROCK CLIMBING STRUCTURES
- 6. LANDMARK STRUCTURES WITH CDTA BUS SHELTERS
- 7. PUBLIC PARKING
- 8. OUTDOOR WORKOUT AREA
- 9. FLEX SPACE WITH PARK SEATING OPPORTUNITIES
- 10. (2) FULL/ (4) HALF-COURT BASKETBALL COURTS
- 11. FUTSAL HARD COURT
- 12. RIVERWALK CONNECTION
- 13. 10' MIXED-USE PATH WITH MIXED PLAZA/SEATING OPPORTUNITIES
- 14. RAISED INTERSECTION
- 15. PARK CONNECTOR PATH TO 8TH STREET
- 16. ON STREET PARKING
- 17. OPTIONAL PATH
- 18. 8' WALKING/RUNNING PERIMETER PATH
- 19. ENHANCED CONNECTION BETWEEN 6TH AVE AND 8TH STREET
- 20. PROPOSED COMPLETE STREETS IMPROVEMENTS

#### PROPOSED PARKING TOTALS

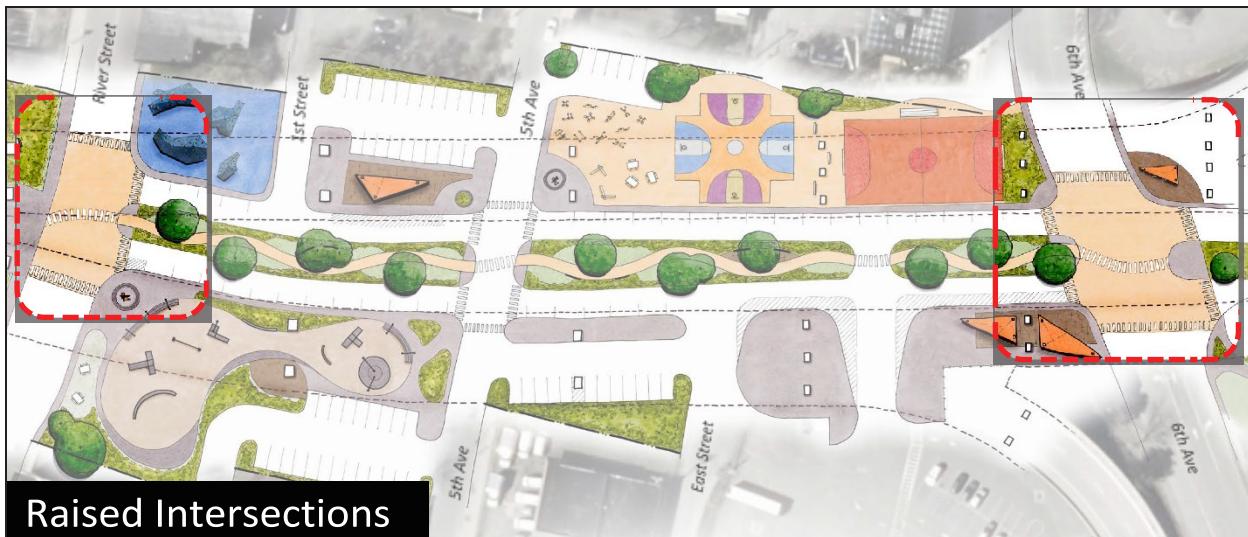
PROPOSED PARKING TOTAL:	64
PROPOSED ON STREET PARKING TOTAL:	40
APPROX. NET PARKING:	-4



Currently, Hoosick Street accommodates two-way traffic with a turning lane or striped median in the center. On average, the street spans 44'-48' from curb to curb. The design proposes two lanes, featuring on-street parking and 8-foot sidewalks on both sides, separated by a planted median. This boulevard-inspired median exists between the footprint and shadow-line of the bridge above. This condition allows for street trees to be placed and a primary 10' wide shared-use path in the center presenting users with a softer, landscaped experience in an otherwise urban setting. Strategically placed seating areas along the shared-use path provide resting opportunities for pedestrians utilizing the proposed network of parklets. Figure 4.7 shows the proposed cross-section of the shared-use path.



**FIGURE 4.7: SHARED-USE PATH CONCEPT**



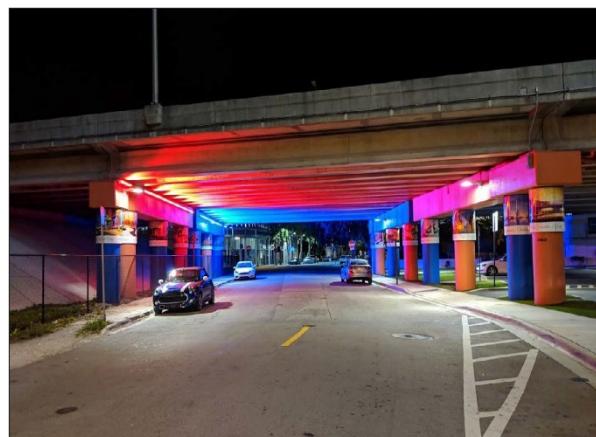
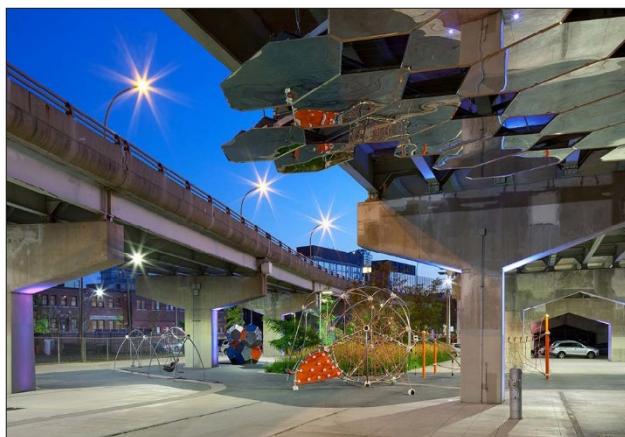
Raised intersections on the east and west ends of the corridor at River Street and 6th Ave are envisioned to improve walkability, calm vehicular traffic, and signify key gateways. The multi-use path will require exclusive pedestrian phases at these signals. An increase in road profile elevation to meet sidewalks flush heightens alertness to both pedestrians and vehicles.





## Pillar Treatments

Improvements to the underside of the bridge and bridge piers could range from murals and public art to both lighting and sculptural installations. These types of improvements can drastically improve the experience beneath the bridge and introduce a sense of pride and ownership for the community. The City was recently awarded a \$25,000 Public Art Grant from Bloomberg Philanthropies to implement placemaking through public art and murals underneath the Collar City Bridge to begin this transformation.





## Mixed-Use Synthetic Turf Field

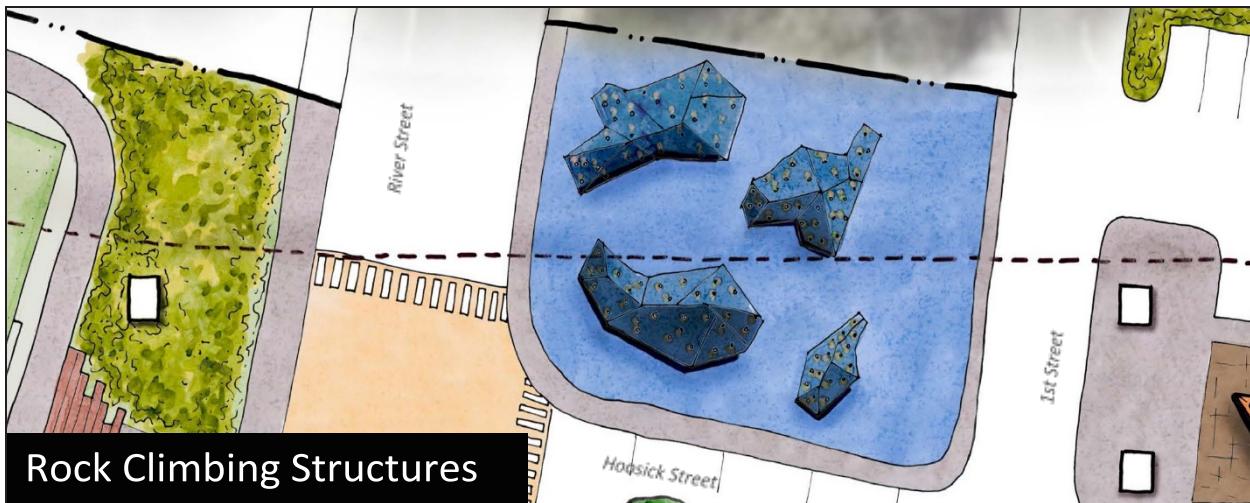
Given the smaller scale of the proposed parklets along Hoosick Street, the need for larger mixed-use flex space is key to anchor the proposed improvements. The introduction of a synthetic turf field could attract multiple user groups. Stadium seating would lead down to the field for spectators and visitors. To take advantage of the adjacent Hudson River and the interesting views of the bridge support columns, the introduction of a plaza space provides an opportunity for seating and gathering to take place. An 8-foot perimeter path around the field doubles as a walking or running path.





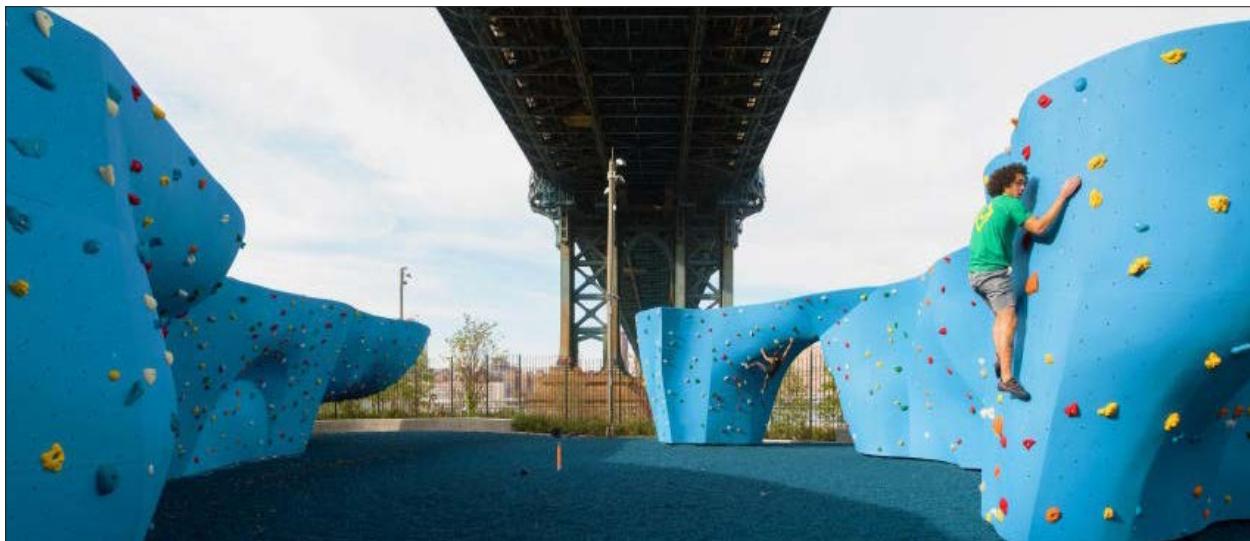
Given the noise created by the high-speed traffic above, these parklet spaces must foster specific active recreation uses. The proposed skate park utilizes the grade challenges presented between North 1st Street and 5th Ave. Designating the entire block to this particular program relieves competition with other user groups.

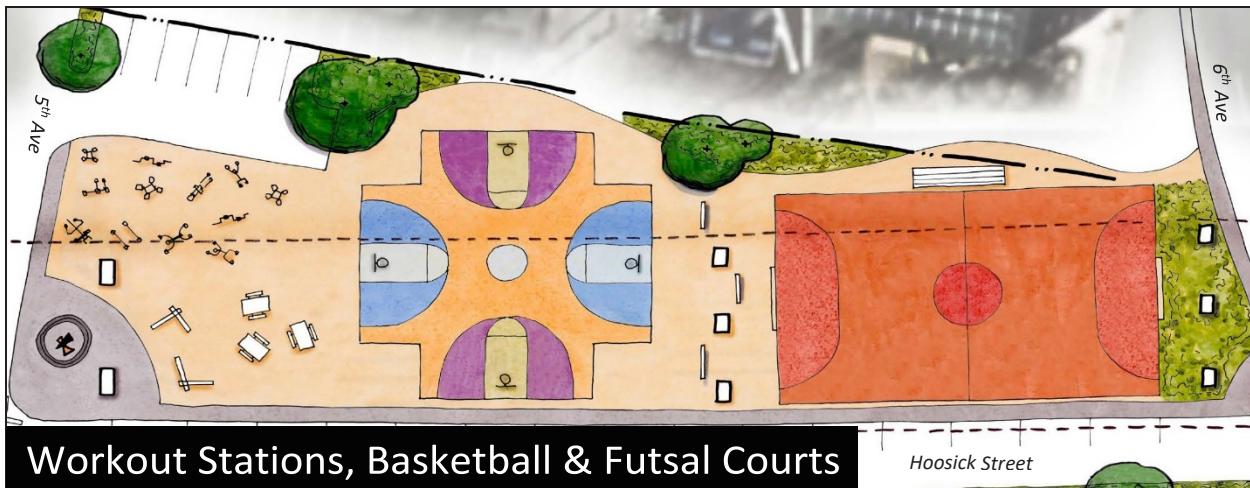




## Rock Climbing Structures

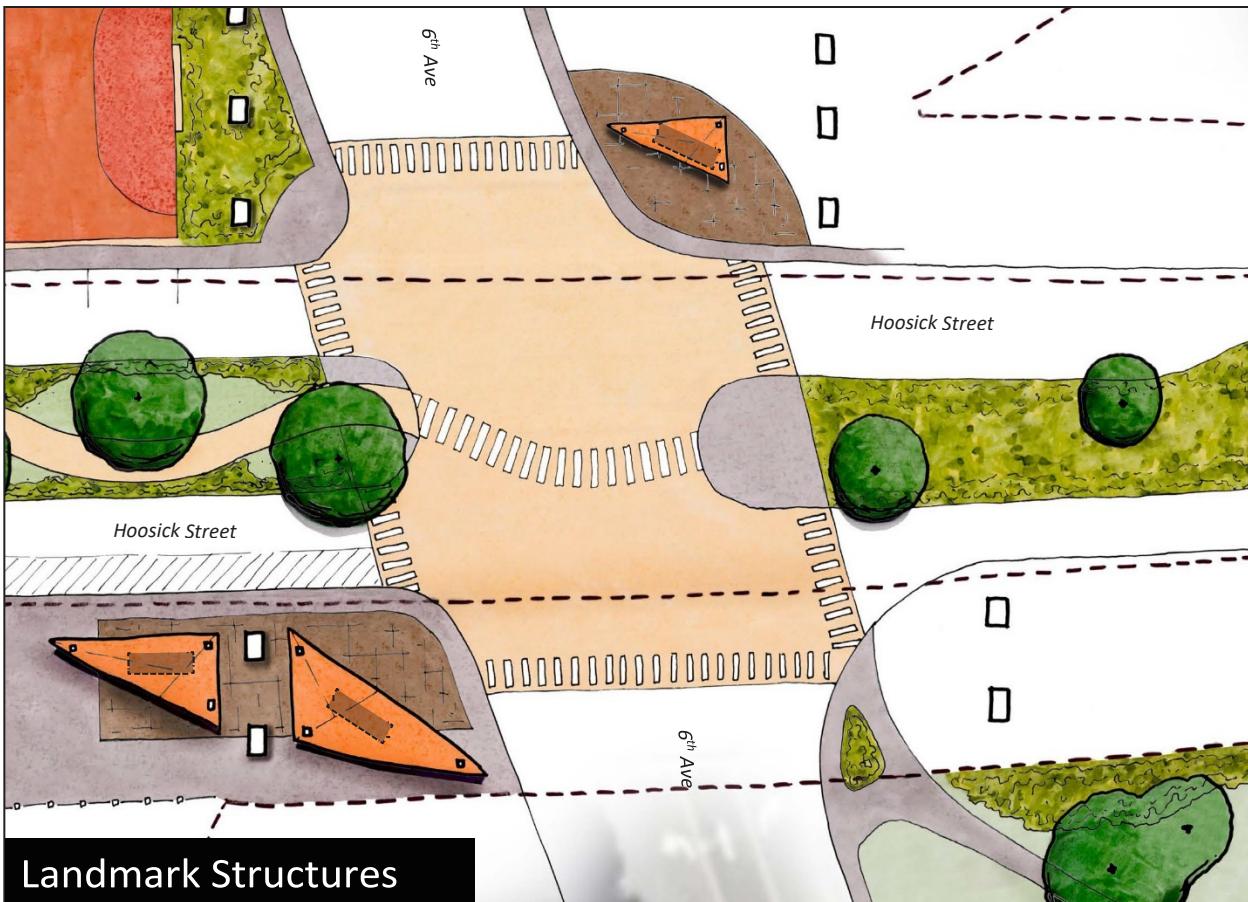
Rock climbing and bouldering structures bring a unique activation to Collar City Bridge Park. Low-height bouldering rocks allow for utilization of this space without oversight or management. The sculptural nature of the rock climbing equipment contributes to the lively theme proposed throughout the park.





The block between 5th and 6th Ave could be converted into a flexible hardscape space that accommodates a 4-court basketball area, mixed seating area, workout stations, and a futsal court; which is a variant of soccer played on a hard court. This programmed space could serve as the largest mixed-use park amenity to the adjacent neighborhoods. During the public meetings, residents asked for active space.

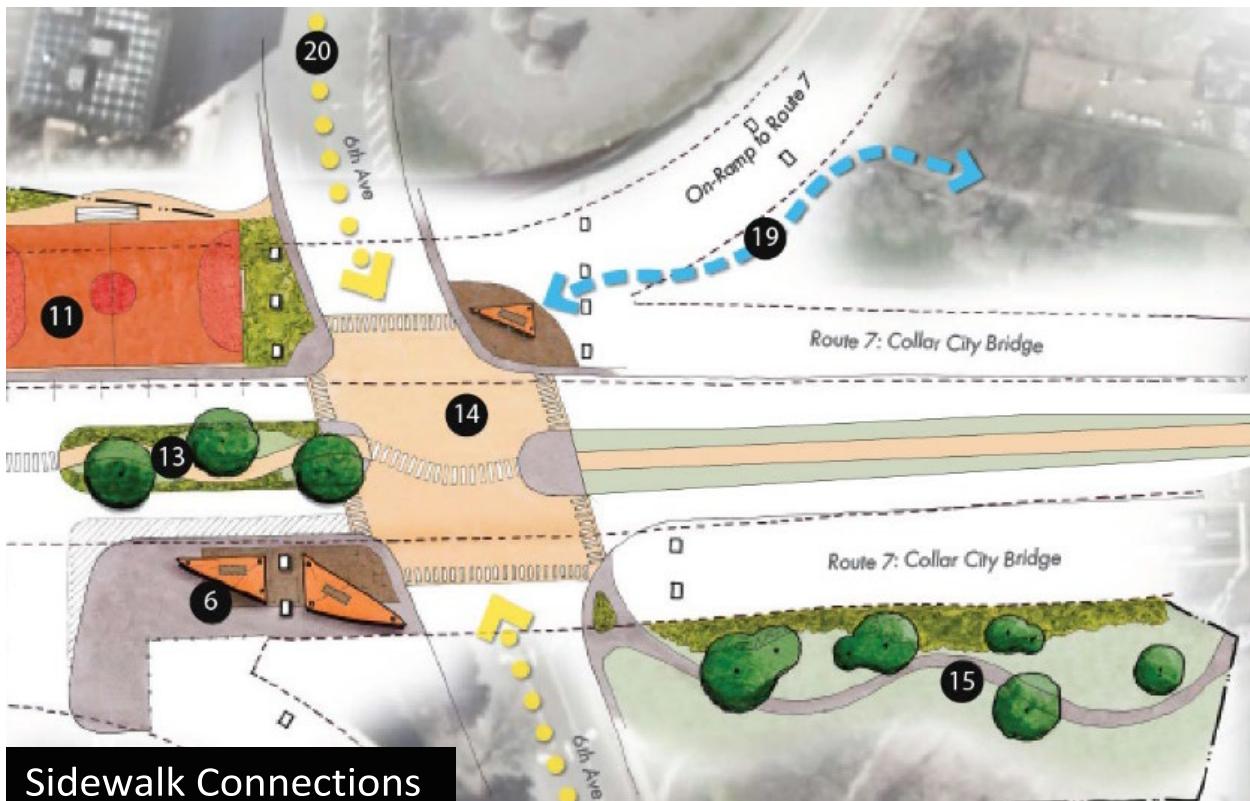




## Landmark Structures

Landmark structures will be placed at key locations as large architectural sculptures that can be seen from further away as a wayfinding indicator. The landmark structures are located at CDTA branded bus stop shelters, housing the critical amenity without needing to affect the CDTA bus shelter. The structures will provide protected seating and gathering areas, and signify critical locations to both pedestrians and vehicles while maintaining the artistic brand of Collar City Bridge Park.





Enhanced sidewalk connections are recommended on either side of the bridge between 6<sup>th</sup> Avenue and 8<sup>th</sup> Street to improve direct access between upper and lower Hoosick Street. The existing sidewalk on the north currently lacks delineation and lighting under the bridge, while the existing sidewalk on the south does not connect directly to the 6<sup>th</sup> Avenue intersection.

G

Beyond the above numbered improvements, Figure 4.1 also notes three area-wide concepts to improve bicycle and pedestrian connectivity. Specifically, upgrading the existing traffic signals, sidewalks, and curb ramps in the study area, will benefit pedestrians by ensuring that existing connections are functional and accessible.

Reducing traffic congestion along the Hoosick corridor and surrounding neighborhoods can free up public space for biking and walking, making those modes safer to use and improving neighborhood connectivity. Transportation demand management (TDM) uses a combination of incentives and disincentives to reduce traffic congestion and encourage commuters to take transit, carpool, bike, walk, or vanpool rather than drive alone. There are many ways that the impacts of traffic congestion can be reduced in the study area. CDTA has been successful in reducing the number of car trips in our region through its Universal Access Program. The basic premise of CDTA's Universal Access Program is that employees of participating employers ride the bus for free, and the employers reimburse CDTA for the service. Participation in the plan is an expense for employers, but can shift people from their cars to transit, leaving fewer cars on

the road, improving traffic operations, reducing parking demand, and thereby increasing safety and quality of life in the Hillside neighborhoods. Other TDM tools that may be effective in reducing car traffic in the area are employer-based carpool and vanpool programs, structuring parking programs to require daily rather than monthly or free parking, and increasing employee access to secure bike storage. As such, it is recommended that the City work with CDTC, CDTA and employers in the study area including St. Mary's Hospital and Samaritan Hospital to support employer-based TDM programs.

## **IMPLEMENTATION PLAN**

This plan recommends that the City work with the CDTC and the NYSDOT to get one or two Hoosick Street project(s) on the local and Statewide Transportation Improvement Program (TIP). The Hoosick Street Median could be funded as a single project from River Street to 10<sup>th</sup> Street, or broken into two projects with the logical break line being 6<sup>th</sup> Avenue. Smaller projects such as traffic calming on 8<sup>th</sup> Street and 15<sup>th</sup> Street can be funded and implemented separately from larger roadway projects.

The same goes for the proposed sidewalk and path projects, which could be eligible for separate bicycle and pedestrian funding sources. Private funding through cooperative arrangements, site plan approval and SEQR mitigation should also play a role. The proposed connection to Hudson River Commons and the potential Rensselaer Street connection are good examples of locations where local land owners can share with the implementation costs.

The following table (4.1) summarizes the Implementation Plan and estimated costs, proposed projects, partners, and potential funding sources. The planning level cost estimates are based on major work items and include a 30% contingency, along with design and construction inspection costs. At the time of any grant application or funding, the costs should be reviewed and updated if necessary based on timing and the specific project description.

**TABLE 4.1. IMPLEMENTATION PLAN AND COSTS**

ID	Description	Partners	Cost (Thousands)	Potential Funding Sources
1	Traffic Calming on 15 <sup>th</sup> Street	City, RPI	\$105	City/Private/State (CHIPS)
2	Hoosick Street Median	City, NYSDOT	\$1,150	City/State (TIP/HSIP/NHPP/TA/STP)
3	Hudson River Commons Path Connection	City, Private	\$80	City/Private
4	School 2 Path	City, TRIP	\$720	City/Private/State (TA)
5	Traffic Calming on 9 <sup>th</sup> Street	City		Included in Median Cost
6	Pedestrian Crossing at 8 <sup>th</sup> Street	City, NYSDOT		Included in Median Cost
7	Traffic Calming on 8 <sup>th</sup> Street	City	\$270	City/Private/State (CHIPS)
8	Rensselaer Street Connection	City, Private	\$2,450	City/Private
9	6 <sup>th</sup> Avenue Complete Street	City, NYSDOT	\$1,155	City/State (TA,STP)
10	Hoosick Street Path under the Collar City Bridge	City, NYSDOT,	\$2,150	City/State (TA, STP)
10	Collar City Bridge Park	City, NYSDOT, Private	\$4,230	City/State (CFA)
G	Area Wide Concepts	City	\$600	City/State (NHPP,STP)

Transportation funding resources are constrained. The current NYSDOT funding policy for transportation projects in New York is focused on “preservation first” to keep the existing transportation system and bridges in a state of good repair. However, projects that address identified safety needs have a better chance when competing for the limited public funds that are available. Similarly projects that show a local funding commitment also have a better chance to leverage State funds.

Below is a description of the available Federal, State and Local funding sources.

#### Federal

TIP – The Transportation Improvement Program (TIP) is a five-year capital improvement program that allocates federal highway funds to surface transportation projects that have been selected through CDTC’s planning process. CDTC updates the TIP every two years to maintain a current list of projects. Below are several federal funding sources typically found on the TIP:

- HSIP – Highway Safety Improvement Program funding is for projects designed to achieve significant reductions in traffic fatalities and serious injuries on all public roads.
- NHPP – National Highway Performance Program funding for projects that support progress toward achievement of national performance goals for improving infrastructure condition, safety, mobility. Although mostly used for maintenance, some funding can be eligible for capacity projects.
- TA – Transportation Alternatives funding is a set-aside of funds under the Surface Transportation Block Grant (STGB) Program for on and off road pedestrian and bicycle facilities, non-driver access to public transportation, and safe routes to schools. States have flexibility in how the TA program is administered and the New York State program is run through the state level TAP office.
- STP – Surface Transportation Program funding provides flexible funding that may be used by states and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway or bridge on any public road, pedestrian and bicycle infrastructure, and transit capital projects.

#### State

- State Dedicated Funds – Programmed at the discretion of the NYSDOT.
- CFA/REDC – The Consolidated Funding Application is an efficient, streamlined tool to apply for State economic development funds. The application examines funding for transportation infrastructure from multiple State sources including NYSDOT.
- CHIPS – The Consolidated Local Street and Highway Improvement Program provides State funds to municipalities to support the construction and repair of highways on the State highway system. To be eligible for CHIPS funding, the project must be undertaken by a municipality (i.e. City of Troy), be for a highway-related purpose, and have a service life of 10 years or more.

#### Local

- Federal transportation programs typically require a 20% local match. The City should plan to cover a portion of the project's cost through their general fund or bonding.

The City of Troy may adopt or formally acknowledge the findings of this Planning Study as a first step to pursue funding and ultimately to implement the recommendations of this study.