Depot Square, Mechanicville

Intersection Concept Evaluation

March 2024

Community Planning Technical Assistance Program

CAPITAL REGION Transportation Council

CITY OF Mechanicville, NY

CAPITAL DISTRICT Regional Planning Commission

Introduction

This Technical Memorandum contains recommendations for improving the Depot Square intersection for all road users. These recommendations are design concepts that require additional site-by-site engineering analysis. The City of Mechanicville requested assistance in developing these concepts through the joint Capital Region Transportation Council and Capital District Regional Planning Commission (CDRPC) Technical Assistance Program.

The recommendations contained in this memorandum were developed after a review of infrastructure, mobility, and safety data, site visits, a demonstration project that included neighborhood and stakeholder feedback, and meetings with city officials. The first part of the memorandum includes a traffic and mobility analysis of the study area by the Transportation Council and the second part contains Green Infrastructure Options presented by CDRPC. The last section provides information about costs, funding opportunities, and design references that may be useful for implementing improvements at the intersection.

Key Findings

- Improvements to Depot Square would likely not have broader impacts to the city's road network because the intersection mainly serves the local neighborhood and generates low traffic volumes.
- There is a crash history at and around the intersection but due to low vehicle speeds (average and 85th percentile speeds are below the posted speed limit), most crashes only resulted in property damage.
- A demonstration of some of the improvements presented in Concept 1 yielded positive results and public feedback.
- There is sufficient right-of-way available to implement Concept 1.
- The intersection improvements illustrated in Concept 1 can be implemented quickly using paint and other components can be added as funding becomes available.
- Concept 1 provides opportunities to improve stormwater management through bioretention, like rain gardens.

Background

Objective

The City of Mechanicville's "Depot Square" gets its namesake from the historic D&H Depot building situated at the corner of Second Avenue and Elizabeth Street. The building was closed in the 1960s but remains an important piece of the city's history and character. The 5-leg Depot Square intersection is a sizable area of asphalt without road markings. Given its location and proximity to the Zim Smith Trail, major travel routes in the city and nearby neighborhoods and restaurants, the intersection is used by bicyclists, pedestrians, and drivers.

The Transportation Council, in partnership with the Capital District Regional Planning Commission (CDRPC), collected data and conducted an assessment of the intersection, by request of the City of Mechanicville through the Technical Assistance Program. The objective of the assessment was to identify potential intersection improvement concepts and cost-effective projects that the City can implement with grant assistance and other funding sources. The city's goals are to provides a safe connection between the Zim Smith Trail and downtown, improve the appearance of the intersection while maintaining the vitality of nearby businesses, and improve traffic operations for current and future users of the intersection.

Existing Conditions

The Depot Square intersection is irregular with five local streets meeting in a large, unmarked area. Four of the streets have stop signs leading into the intersection. Traffic from Viall Ave does not stop and there is an active rail line less than 100 feet from the intersection. The roads mostly serve residential neighborhoods and industrial uses.

Within the intersection itself there is a restaurant/diner which has nose in parking and backs up directly into the intersection. There is also a single bay EMS station which has a driveway directly into the intersection. About 200 feet from the intersection on N 2nd Ave there is a fuel business which services large heavy-duty trucks.

Vehicle speeds on the blocks leading to the intersection are relatively slow. The sight lines are obstructed turning on or off Viall Ave due to the proximity of the old train station to the roadway.

Sidewalks are present on Davenport St, Elizabeth St and N 3rd Ave leading to the intersection. There is a sidewalk on N 2nd Ave, but it ends abruptly in front of the old train station and is in disrepair. There are no crosswalks across any of the legs at the Depot Square intersection. The distance across the intersection from the sidewalk on Elizabeth St to N 2nd Ave is about 200 feet which is the same length as some of the blocks in the neighborhood. A study area map with sidewalk locations can be found on the next page.

The Zim Smith Trailhead is about a half mile from the Depot Square intersection. Trail users, both pedestrians and bicyclists, travel through the intersection to access the trail.

Mechanicville Depot Square Sidewalks

Data Collection & Analysis

The Transportation Council utilized its on-demand data collection contract to collect seven-day traffic counts from September 11-17 which includes volume, vehicle classification and speed, and a seven-day count of pedestrians and bicyclists. Additionally, turning movement counts were conducted over a single day to show the paths of vehicles through the intersection. An Eco-Counter Pyro Box was installed about 2,300 feet from the Zim Smith Trail East trailhead located at the terminus of Elizabeth Street Extension. The Pyro Box measures trail use using a sensor that detects body heat. Trail use data was collected August 6-19.

Traffic & Mobility

Traffic data collected in the Study Area suggests that average vehicle speeds are lower than the posted speed due to the current design and layout of the intersection. There is a high volume of trucks in the area because of the intersection's close proximity to industrial land uses. Overall, traffic volumes are low.

Table 1. Roadway Characteristics

Street Name	Posted Speed (mph)	Avg. Speed (mph)	85th Percentile Speed (mph)*	ADT	% heavy vehicles, avg daily total	ADT Heavy Trucks
Viall Ave	30	14.9	20	2,496	3.7	92
Davenport St	30	23.1	29	600	13.4	80
Elizabeth St	30	20.9	26	732	3.4	25
N 2nd Ave	30	22.4	29	769	4.1	31
N 3rd Ave	30	19.9	24	1,731	4.1	71

**approximately*

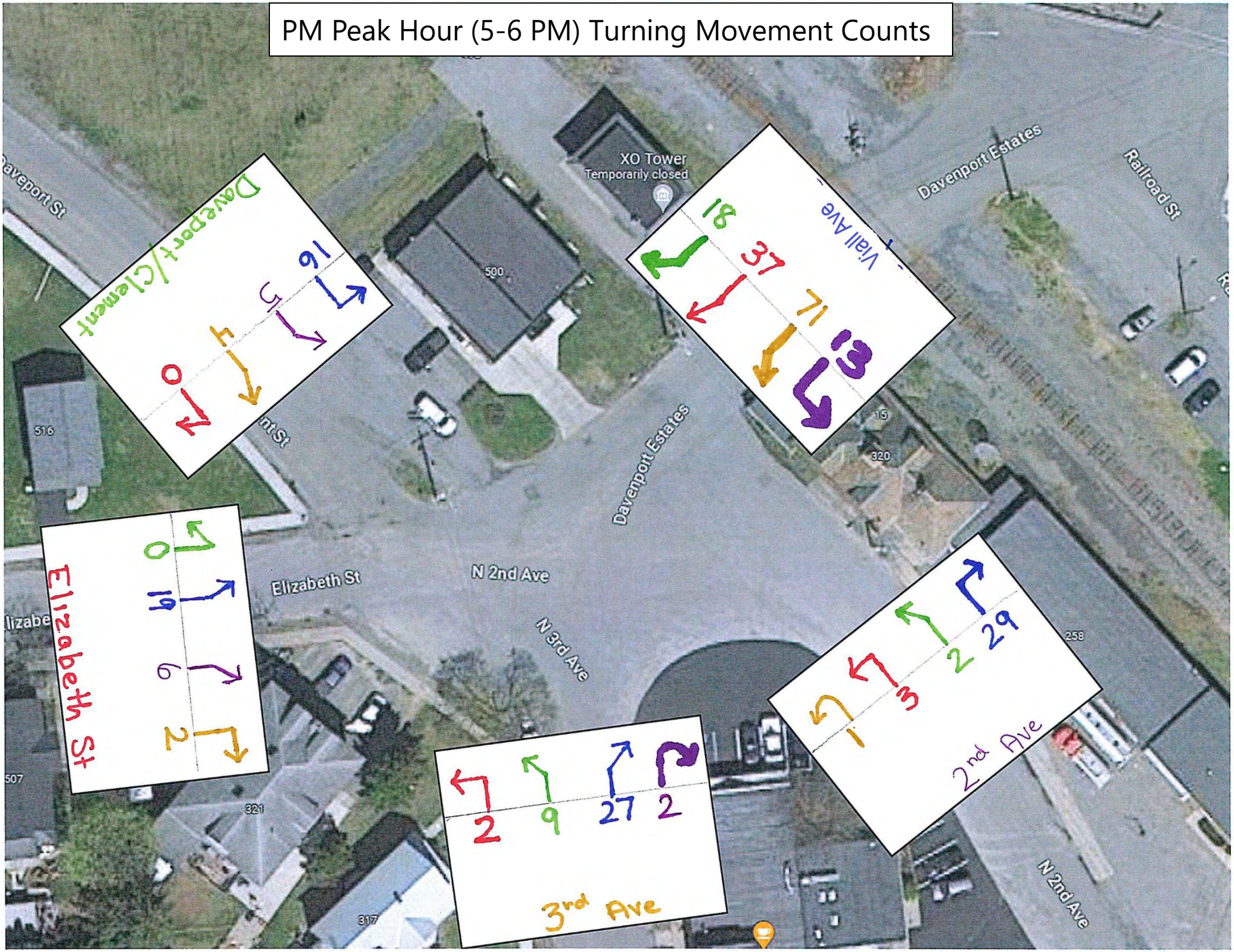
Below is a summary of traffic volumes and movement data collected in the Study Area. The two types of vehicle traffic data collected include: (1) 7-day Automated Traffic Recorder (ATR) (Volume, Classification, Speed) and (2) Turning Movement Count (TMC) with Classification. A diagram of the PM peak hour turning movement counts can be found on the next page.

- Generally, Viall Ave is the heaviest traveled roadway with an average total just under 2,500 vehicles per day. About 50% of those vehicles are continuing south on 3rd Ave and about 20% are turning onto Elizabeth St.

- Third Ave is the next most traveled road with an average total of about 1,700 vehicles per day. About 80% of these vehicles are continuing north onto Viall Ave. The rest are evenly spread on the other roadways in the intersection.

- Elizabeth St, 2nd Ave, and Davenport St each have an average total of less than 800 vehicles per day. Almost 80% of vehicles on 2nd Ave turn on to Viall Ave. On Elizabeth St 60% of vehicles turn onto Viall Ave and about 25 % turn onto 2nd Ave. On Davenport St almost 50% of vehicles turn onto Viall Ave and about 35% turn onto 2nd Ave.

PM Peak Hour (5-6 PM) Turning Movement Counts



- The data collected shows that this intersection is important for local access to the surrounding neighborhood. Roadway volumes are not very high and changes to the intersection will likely not have broader impacts.

- During the count period there was a small number of heavy trucks which drove through the intersection. About 6.5% of all vehicles were heavy trucks, which is normal for local roadways with industrial uses. The turning movement counts show that heavy trucks avoid the tight turn around the old train station.

Safety Analysis

All crashes from March 31, 2018 to March 31, 2023 were pulled from the NYS CLEAR database. Crashes for the Depot Square intersection were pulled along with nearby intersections and roadways. The analysis showed that there were five crashes which caused property damage at the Depot Square intersection. Within the entire searched area there were twenty crashes. Two crashes caused injury; one at the Viall Ave/Railroad St intersection and one at the Chestnut St/N 3rd Ave intersection. There was also a crash which caused possible injury at the Elizabeth St/N 4th Ave intersection. There was one crash involving a pedestrian which was near the Viall Ave/Railroad St intersection. Almost all the crashes analyzed occurred at intersections. See the Crash Location map on the next page.

Mechanicville Depot Square Crashes

Bicycle & Pedestrian

A 7-day pedestrian and bicycle count using video monitoring was conducted at the study area.

- 7-day Pedestrian & Bicycle Count
- Zim Smith Trail User Count(s)

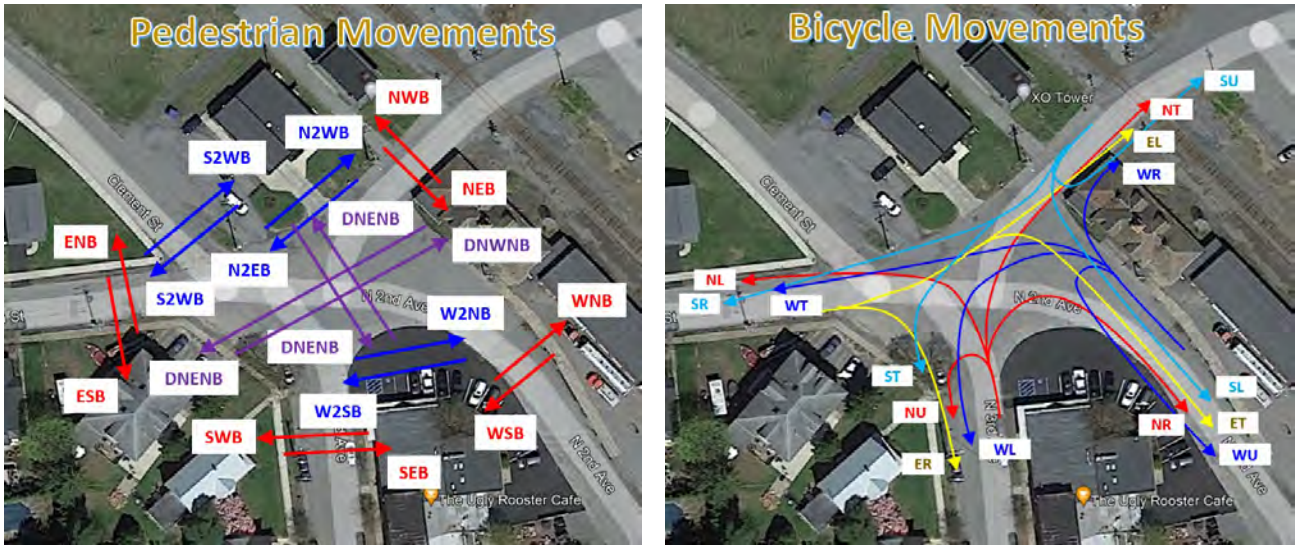
The pedestrian and bicycle count at this intersection show that there is a high amount of activity. On Sunday through Friday there was an average of over 220 pedestrians using the intersection each day. There was also an average of 40 bicyclists each day. On Saturday there were more than 400 pedestrians and almost 70 bicyclists.

Table 2. Bicycle & Pedestrian User Counts (September 11-17)

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Daily Average
Bicycles	31	36	20	51	29	69	44	40
Pedestrians	283	295	160	162	201	417	216	247.7
Total	**314**	**331**	**180**	**213**	**230**	**486**	**260**	**287.7**

Below (Figure 1) are diagrams created by the data collection consultant showing the turning movements of bicyclists and pedestrians through the intersection.

Figure 1. Pedestrian and Bicycle Movement Diagrams



The Zim Smith Trail is a major Saratoga County and Regional Trail, which spans 11.5-miles stretching from Mechanicville to Ballston Spa passing through the Towns of Halfmoon and Ballston, and the Village of Round Lake. The section between Halfmoon and Mechanicville opened in September 2020. Trail user data was collected at the Elizabeth Street Ext. trailhead, which is less than a mile northeast of the Depot Square intersection, between August 6, 2023 and August 19, 2023. Based on the data

collected, the average daily number of users during this period was 172 with a maximum count of 405 on Friday, August 11. Days on the weekend had higher counts than weekdays with an average of 185 daily users on weekend days. This data was extrapolated to an estimate of about 60,000 yearly trail users. See Table 3 for a full profile of the section of trail that begins/ends at the Zim Smith Trailhead in Mechanicville.

Table 3. Zim Smith Trail East User Summary

Estimated Annual Usage	**59,964**
Weekly Usage	**1,896**
Estimated Seasonal Usage	
Winter	**5,397**
Spring	**17,390**
Summer	**16,190**
Fall	**13,792**
Average weekday	**168**
Average weekend	**185**
Maximum weekday	**405**
Maximum weekend	**276**
Estimated Monthly Usage	
January	**1,799**
February	**1,799**
March	**4,197**
April	**6,596**
May	**6,596**
June	**7,196**
July	**7,795**
August	**8,395**
September	**6,596**
October	**3,598**
November	**3,598**
December	**1,799**

Complete Streets Assessment

The term "Complete Streets" refers to a design approach that aims to create streets that enable the safe, convenient access for all users of all ages and abilities, including pedestrians, bicyclists, public transportation users, motorists, and movement of goods. Designing complete streets depends on the unique community context, including surrounding land use patterns, who uses the street, and user needs because the purpose and function of each street varies. The objective of adopting Complete Streets principles and concepts is to support livable, sustainable, and resilient communities.

New York State adopted the Complete Streets Act in 2011, requiring that roadway improvement projects on state facilities include safe accommodations for all users, including bicyclists, pedestrians, and transit riders. Some local governments across have also adopted Completed Streets policies and developed Complete Streets plans to advance the implementation of these concepts to improve the overall well-being of their community.

Key features of Complete Streets include:

- Sidewalks and crosswalks
- Bike lanes or shared bike paths
- Bike racks and other bike amenities
- Street furniture and amenities
- ADA accessibility
- Traffic calming measures
- Street trees
- Green Infrastructure

This section describes the two concepts proposed by the City of Mechanicville, with assistance from Barton & Loguidice, DPC. The two concepts are similar with one significant variation. These concepts were assessed by Transportation Council staff and piloted during a short-term demonstration project in October 2023.

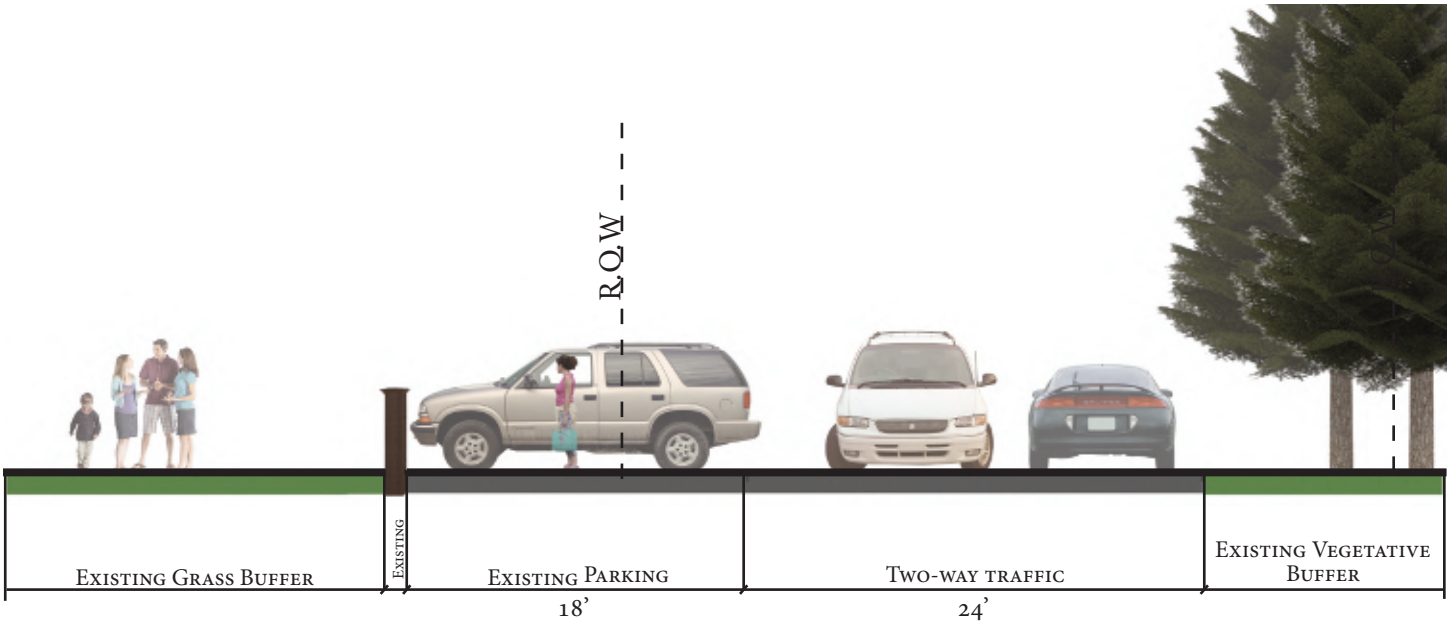
Concept 1.

Concept 1 proposes extending the roadways of Viall Ave, N 2nd Ave, N 3rd Ave and Elizabeth St to come together at one mostly square intersection, with all way stop control. These changes can be seen in the diagram on the next page. The purpose of the proposed changes is to allow cars approaching the intersection from all four streets to be able to see vehicles approaching the intersection from the other streets. The changes required for this concept would be to build out the curb in front of the old train station, in front of the EMS building, in front of the Ugly Rooster, and around the turn between N 3rd Ave and Elizabeth St. These changes would create shorter crossing distances for pedestrians which together with marked crosswalks would make crossing the intersection safer.

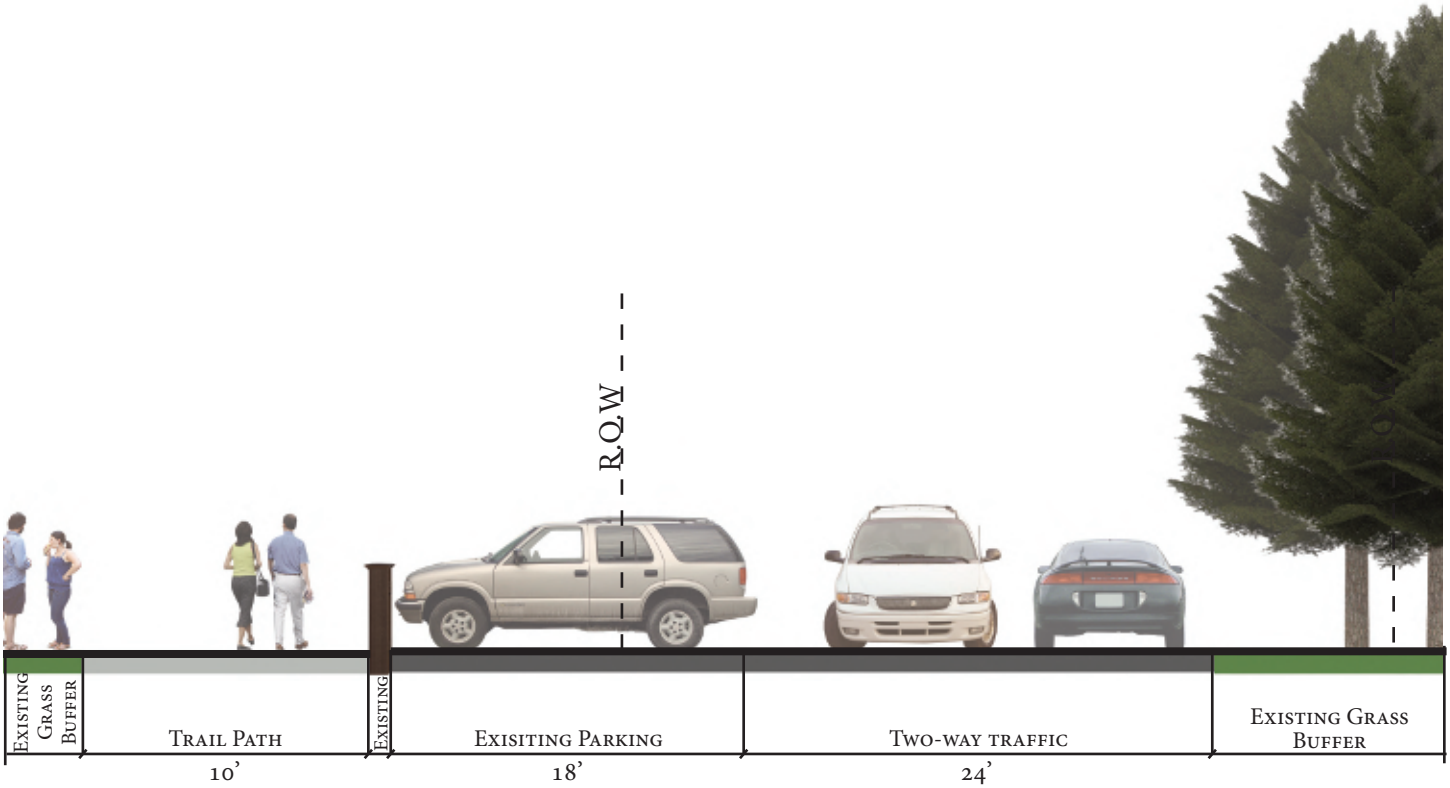
Concept 1 would have relatively little impact on private property. There also would be no need to create additional road surface. Public areas outside of the proposed intersection can be used for green infrastructure and stormwater mitigation. This concept can also be quickly implemented using paint and other easily installed components before a more permanent plan can be funded. This concept accommodates existing roadway uses, including large trucks, and improves pedestrian and bicyclist mobility. This concept will also reduce motorist confusion and improve safety for all users navigating the intersection.

Zim Smith Trail

2. 8th Street
Looking North

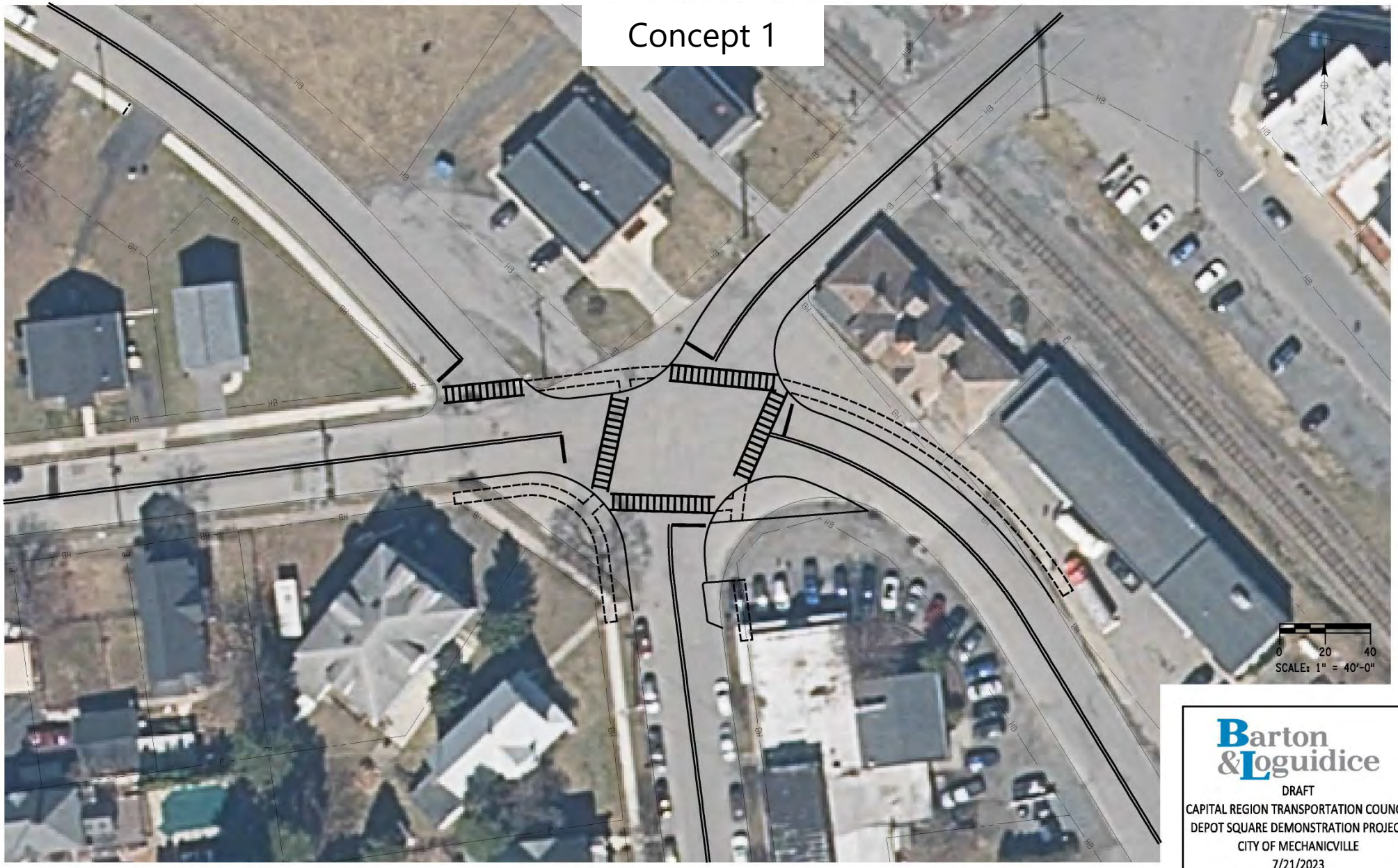


Existing



Proposed

Concept 1



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7/21/2023

Concept 2.

The second concept for the Depot Square intersection includes extending the roadways of Viall Ave, N 2nd Ave, N 3rd Ave and Elizabeth St to come together at one mostly square intersection as well as moving the end of Davenport St westward to move it further from the Depot Square intersection. This would make the Depot Square intersection a safer four-way intersection. Moving the end of Davenport St would essentially create two intersections. One large intersection at Depot Square and "T" intersection between Davenport St and Elizabeth St. While increasing safety, this proposed concept would have a higher cost because it requires relocating and rebuilding Davenport Street. This concept accommodates existing roadway uses, including large trucks, and improves pedestrian and bicyclist mobility. This concept will also reduce motorist confusion and improve safety for all users navigating the intersection. A diagram of Concept 2 can be found on the next page.

Demonstration Project

Description

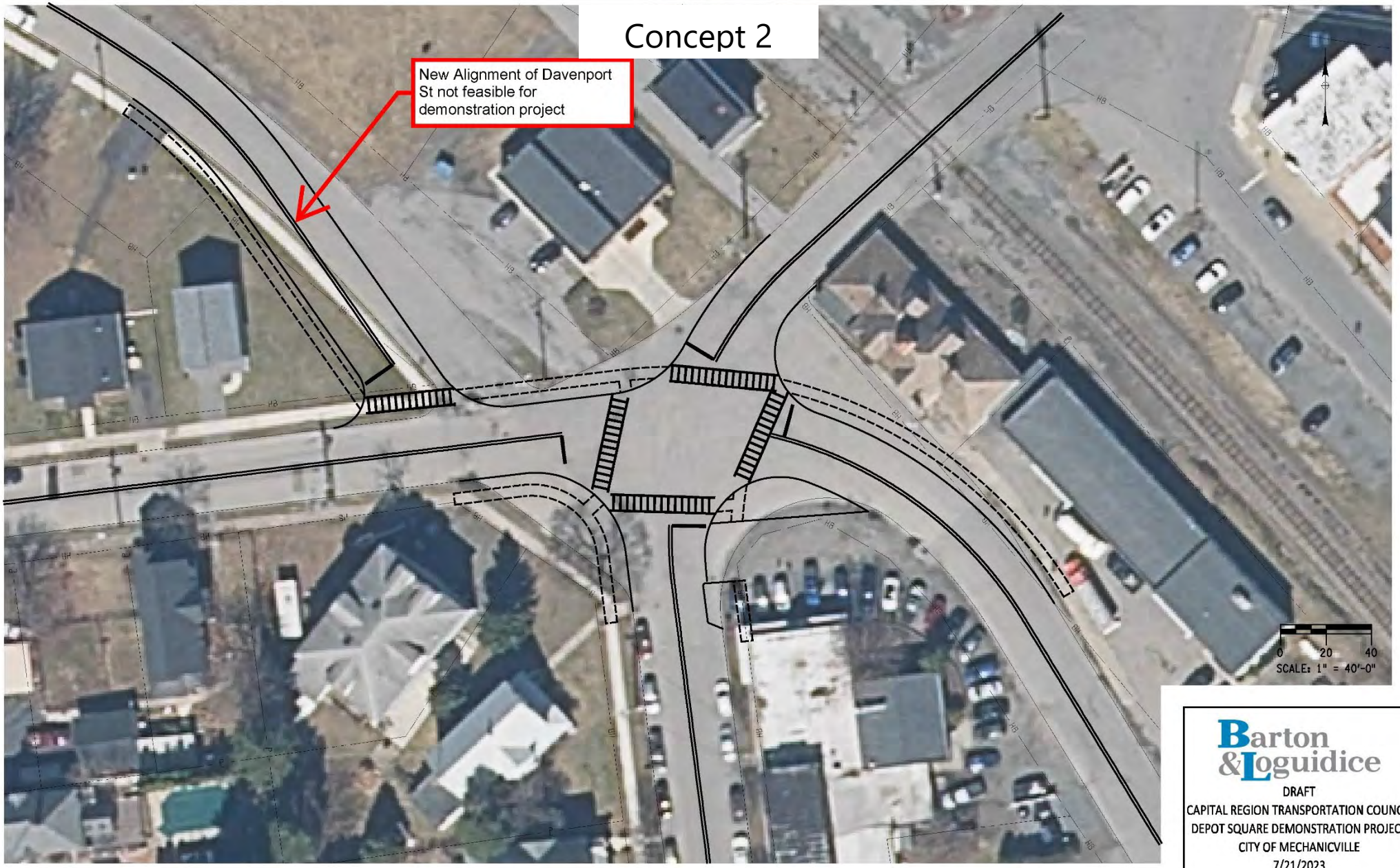
The City of Mechanicville and the Transportation Council demonstrated the impacts of Concept 1 during the period of October 27 – November 3, 2023. Traffic cones were placed where Concept 1 proposes curbs to be installed and sidewalks were taped in the places proposed. Some aspects of the concept were not possible to create with temporary materials. The area on the corner of N 3rd Ave and Elizabeth St was left out of the demonstration because of the active driveway. Aerial photographs of Depot Square before and during the demonstration project are below (Figure 2).

Figure 2. Depot Square Demonstration Project (Before/During)

Source: Photo on left is from Google Earth and Google on right is a photograph taken by drone by a Mechanicville resident

During the demonstration project, flyers were displayed (see Appendix A) in the study area with a link to a survey. Transportation Council staff visited the demonstration project site on October 31, 2023 and surveyed nearby neighbors, as well as business patrons, and bicyclists and pedestrians using the intersection. In total, the survey gathered information from forty-one (41) respondents about their

Concept 2



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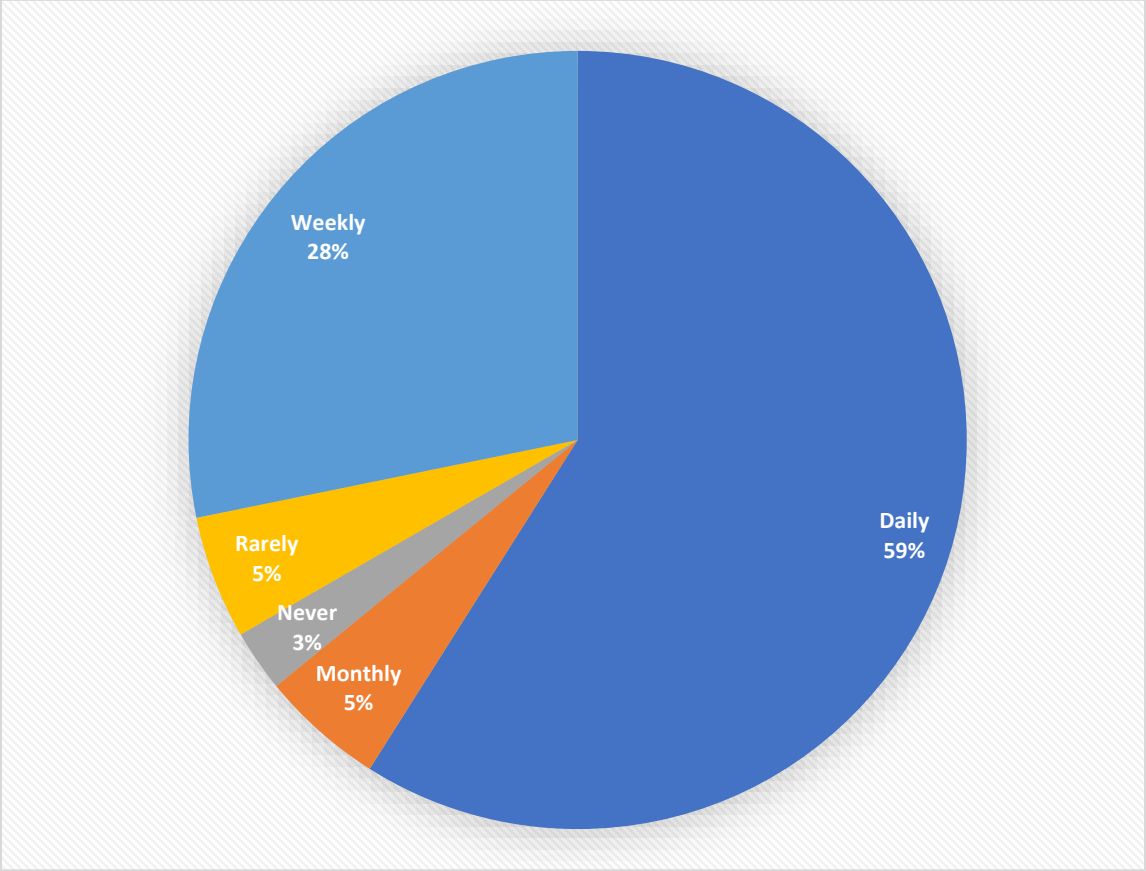
7/21/2023

usage of the intersection and opinions about the intersection improvement concept. The survey included five (5) multiple choice questions and two (2) open-ended opportunities to provide feedback.

Demonstration Survey Summary

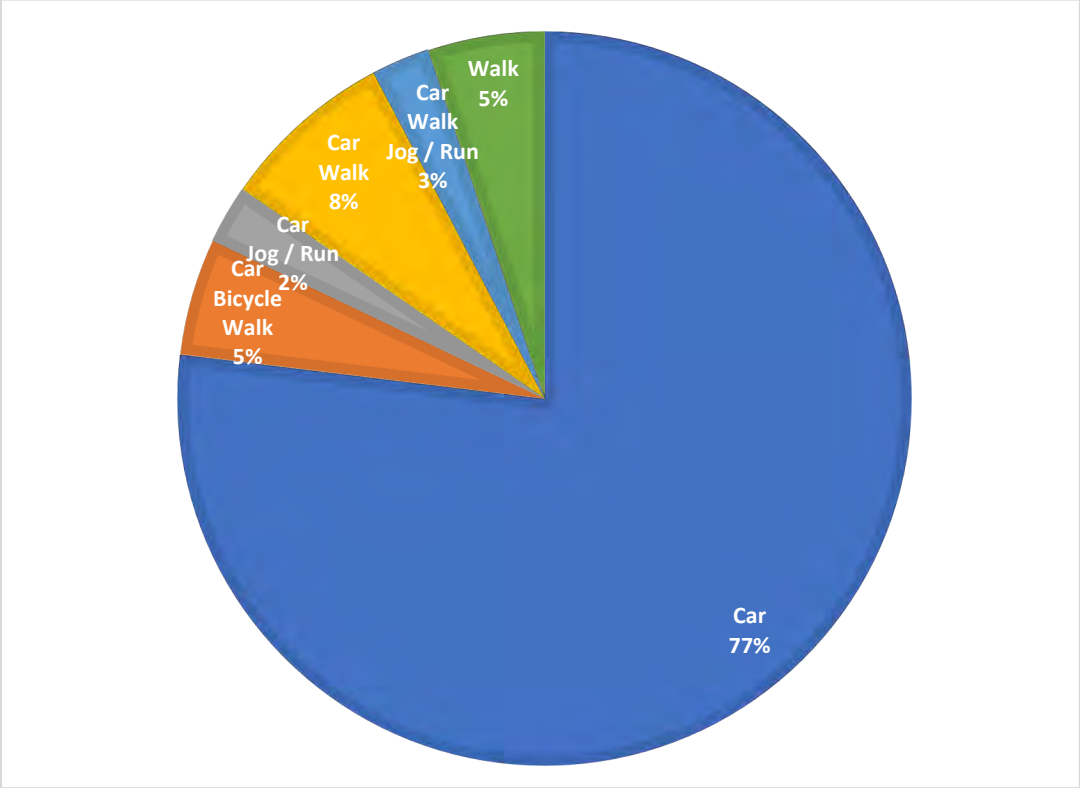
Question 1: How often do you use the Depot Square intersection?

Row Labels	Count of How often do you use the Depot Square intersection?
Daily	23
Monthly	2
Never	1
Rarely	2
Weekly	11
Grand Total	**39**



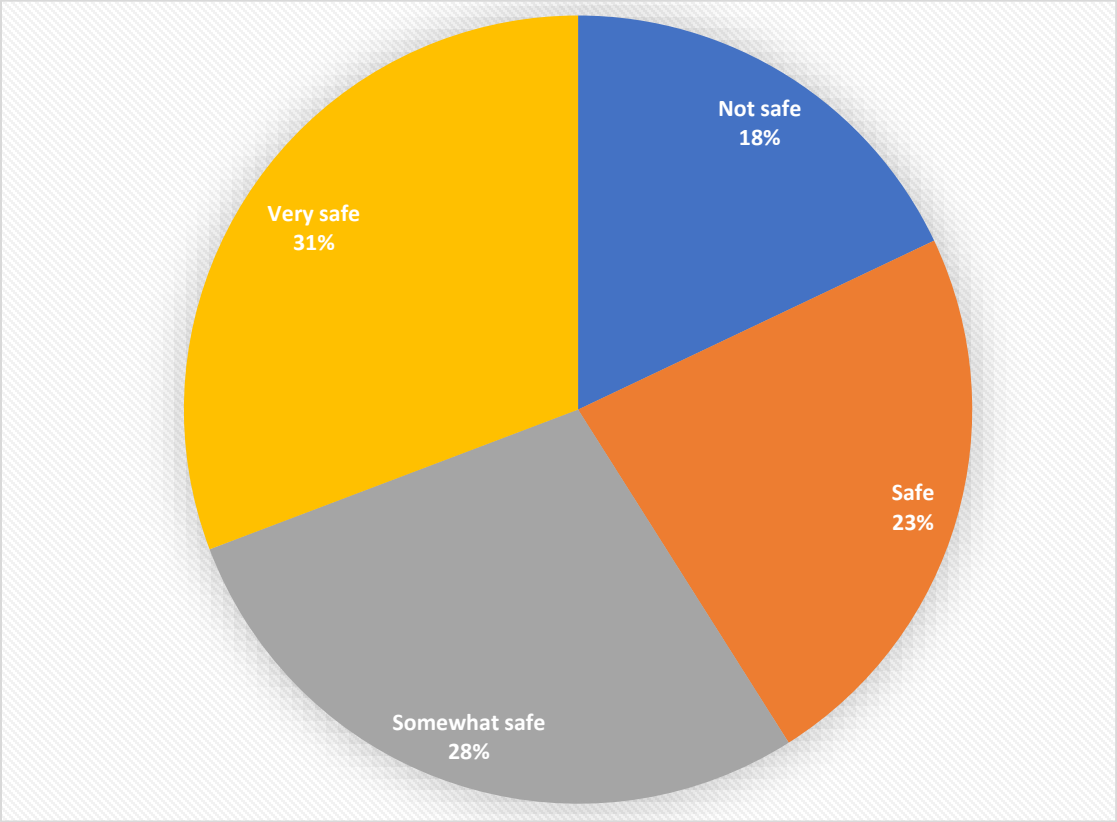
Question 2: What mode of transportation do you primarily use when navigating this intersection?

Row Labels	Count of What mode of transportation do you primarily use when navigating this intersection?
Car	30
Car Bicycle Walk	2
Car Jog / Run	1
Car Walk	3
Car Walk Jog / Run	1
Walk	2
Grand Total	**39**



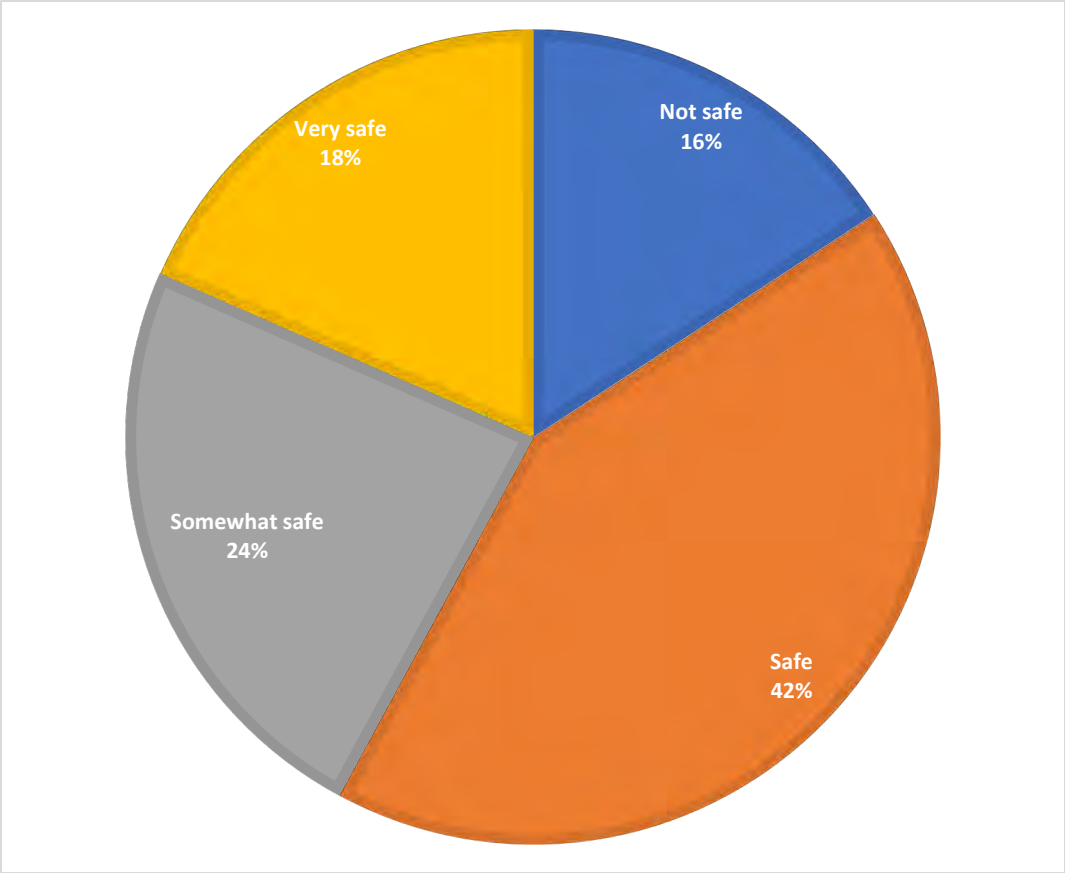
Question 3: How did you feel using this intersection before the demonstration project?

Row Labels	Count of How did you feel using this intersection before the demonstration project? On a sliding scale of not safe (left) to very safe (right), please slide the bar below:
Not safe	7
Safe	9
Somewhat safe	11
Very safe	12
Grand Total	**39**



Question 4: How do you feel using this intersection today?

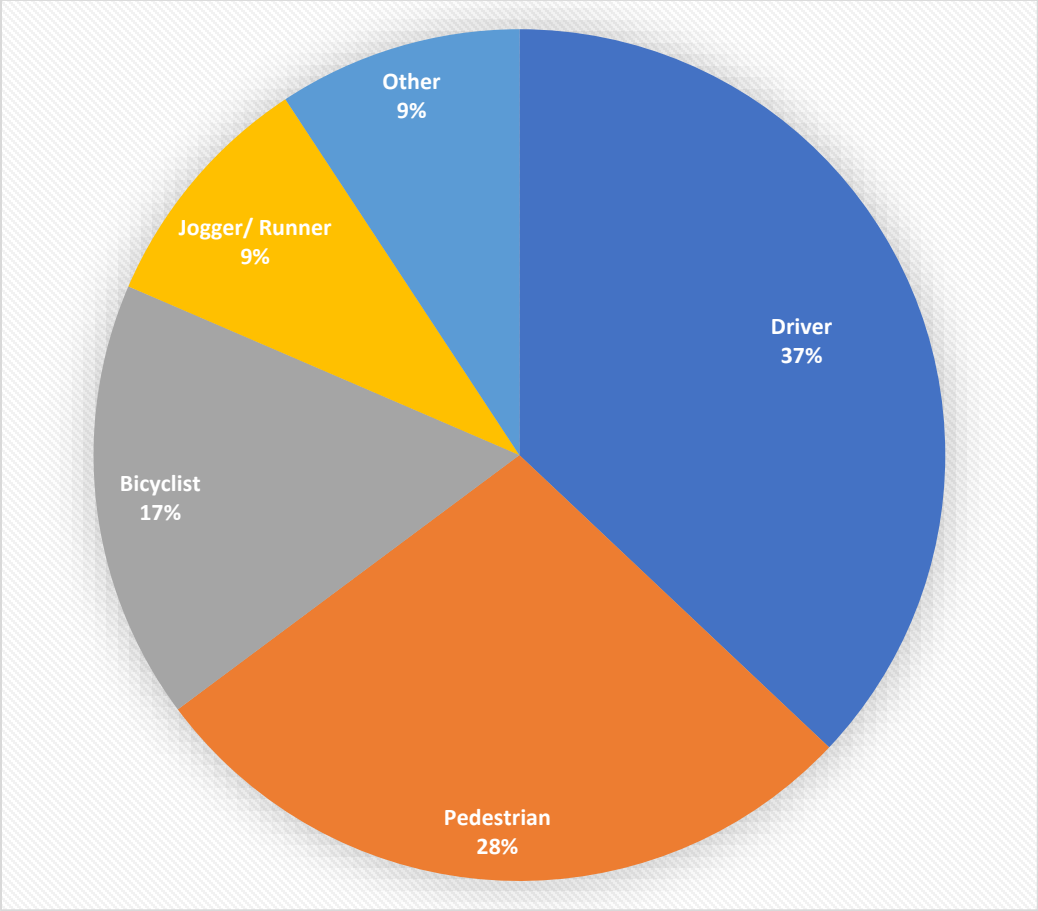
Row Labels	Count of How do you feel using this intersection today? On a sliding scale of very unsafe (left) to very safe (right), please slide the bar below:
Not safe	6
Safe	16
Somewhat safe	9
Very safe	7
(blank)	
Grand Total	**38**



Question 5: Do the demonstrated improvements make you feel more safe as a (check all that apply):

Row Labels	Do the demonstrated improvements make you feel more safe as a (check all that apply):
Driver	20
Pedestrian	15
Bicyclist	9
Jogger/ Runner	5
Other	5
Grand Total*	**54**

**does not represent total survey responses, only number of selections survey respondents made*



Question 6: What other improvements or changes do you think are necessary at this intersection to make it safer and more efficient?

The responses to this question broadly fit within the categories below.

- Better Traffic Control and Signage
- Increase Safety and Aesthetics
- Alternative Solutions such as Crosswalks and a Roundabout
- Focus on other Infrastructure and City Priorities
- Opposition to Change

Question 7: Are there any specific aesthetic or landscaping changes you would like to see at this intersection?

- Safety and Infrastructure Changes
- Greenspace and Aesthetics
- Concerns about the Train Depot

The full survey summary, including written comments and emails can be found in Appendix B.

Green Infrastructure Options

Capital District Regional Planning Commission
Mechanicville Depot Square Technical Assistance Project, January 2024

What is Green Infrastructure?

- As land becomes developed and urbanized, the addition of roofs, streets and other impervious areas increase the volume and rate of stormwater runoff.
- Green Infrastructure (GI) practices are stormwater management features designed to reduce the volume of stormwater runoff (RRv) and reduce the pollutants in stormwater discharges from the site.
- GI practices that reduce impervious areas directly reduce the RRv. For storms of up to 1", most, if not all of the rain that falls on pervious areas is retained with the soils, vegetation or in small depressions. In contrast, almost all of the rain that falls on impervious surfaces results in runoff.
- GI infiltration practices allow stormwater to seep into the ground rather than run off the site and should be the first choice to manage stormwater from impervious surfaces.
- Other GI practices remove pollutants and slow down the rate of discharge using temporary storage.
- Many GI practices use carefully selected plants and soils, configured to help in treatment.

What is RRv?

Runoff Reduction Volume (RRv) is the portion of the water quality volume (WQv) treated by GI practices. The RRv is calculated as follows:

RRv = 1"/12 x Aic

Where: RRv = is the stormwater volume to be managed through GI.
Aic = Area of directly connected impervious cover (new and/or redeveloped) in square feet.
Runoff of 1" is divided by (12"/1 ft) to obtain the volume in cubic feet.

Typically, the required RRv is temporarily stored within the GI Practice. The stored volume then infiltrates to the soils below for infiltration practices or flows out through an underdrain for flow through practices. Depending on the specific configuration of the GI practice, storage is provided in:

- A ponding area above the practice.
- Within the void spaces in a soil layer.
- Within the void spaces in a drainage layer.

Green Infrastructure Options

Capital District Regional Planning Commission
Mechanicville Depot Square Technical Assistance Project, January 2024

Recommendations

Bioretention Practices

Bioretention, a sustainable stormwater management practice, yields various benefits for the environment and communities. Engineered bio-infiltration systems, such as rain gardens, planters, bioretention areas and vegetated bioswales, effectively capture, treat, and absorb stormwater runoff. By incorporating native vegetation, these systems enhance water quality through natural filtration processes, reducing pollutants and sediment before reaching water bodies. Additionally, some GI practices act as green spaces, promoting biodiversity, improving urban aesthetics, and fostering community engagement. With their ability to mitigate flooding risks, control erosion, and recharge groundwater, GI practices contribute to resilient and ecologically balanced urban landscapes, making them a valuable component of sustainable development.

Where to use GI:

• Paved plazas or sidewalk areas, parking lot medians and along drives.

Types of GI:

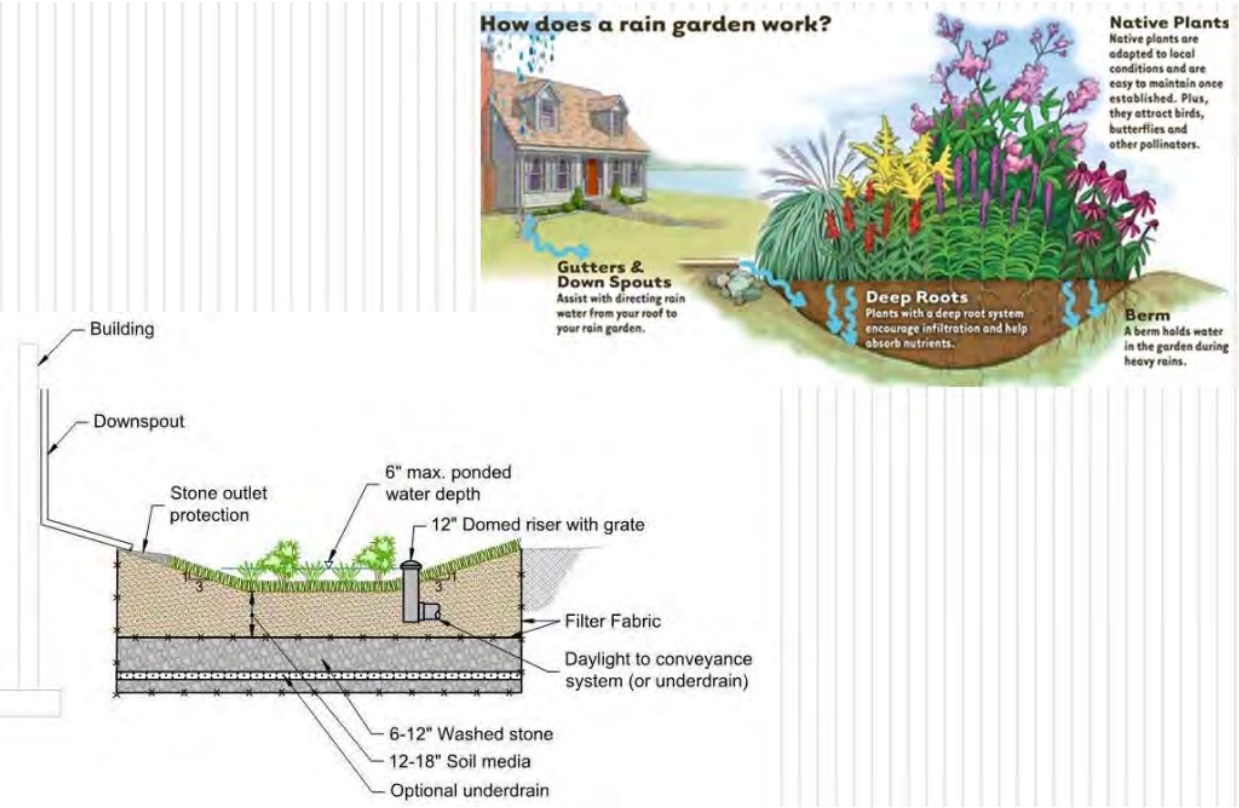
Bioretention – Infiltration Type
- Use as first choice if soils are suitable (infiltration rate > 0.2 inches/hour).
- Keep infiltration areas at least 10 feet away from basements.

Bioretention – Flow Through Type
- Requires underdrain with discharge to storm system or separate infiltration practice.
- Provides water quality treatment, temporary storage of the RRv and some reduction in peak runoff when the release rates are controlled.

Both concepts provided by the Transportation Council have the potential to include bioretention practices to reduce stormwater runoff as well as create a more aesthetic environment. In concept one, there will not be any alterations to impervious surfaces, leaving more budget to incorporate aesthetic GI practices in the study area. In concept two, impervious surfaces in the study area will be altered, with the potential to increase runoff in the study area. GI practices could elevate some of the runoff if incorporated into the design plan. Additionally in concept two, the open-ended question posed to those who took the survey included the desire for better aesthetics in the study area and more greenspace – which can be achieved through thoughtful and intentional GI.

Rain garden

A rain garden is a shallow depression that collects runoff. It is used to treat smaller impervious areas - up to 1,000 ft2 . 6" ponding depth, 12" to 18" soil media, 6" to 12" stone storage area under soil media.



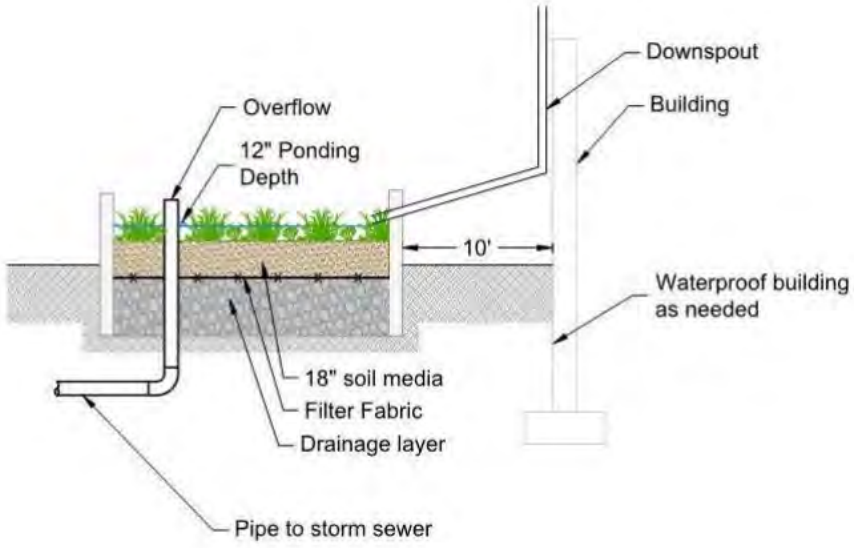
Stormwater planters

Stormwater planters can be above or below grade wood or concrete container with soil media placed in structure. Used to treat areas up to 15,000 ft2 . Typical construction includes 6" to 12" ponding depth, 18" soil media, 12" stone storage area under soil media.

Contained Planters – do not treat adjacent areas. Reduces the impervious area by the area of the contained planter.

Stormwater Planters – Infiltration is the preferred practice if soil is acceptable.

Stormwater Planters – Flow Through, use underdrain with discharge.


Downspout
Building
Overflow
12" Ponding Depth
10'
Waterproof building as needed
18" soil media
Filter Fabric
Drainage layer
Pipe to storm sewer

Bioretention areas

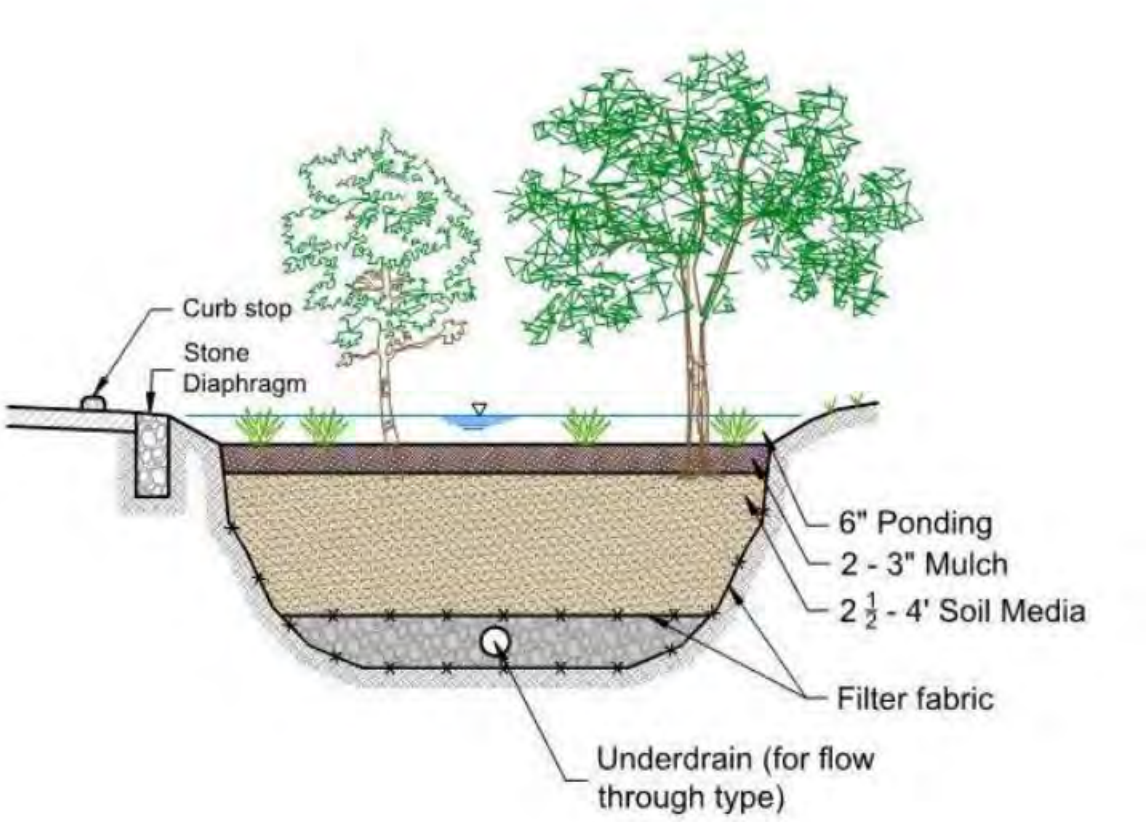
Bioretention areas could be unlined or lined with curbing. They are used to treat areas up to 5 acres. Pretreatment is important for larger impervious areas. Typical construction includes 6" to 12" ponding depth, 2.5' to 4' soil media.

Use Infiltration Type: when soil has adequate infiltration.
Flow Through Type: use underdrain with discharge to storm sewer system.

Design elements:

- Pretreatment
    - Stone or splash block at inlets and roof leaders.
    - Stone diaphragm at pavement edges.
    - Additional pretreatment for large, paved areas:
        - Grass filter strips
        - Sediment basins
        - Proprietary pretreatment devices
- Ponding Area above soils
    - Typically, 6" to12".
    - Provides temporary stormwater storage.
- Plants
    - Select for periodic flooding.
    - Use native, non-invasive species.
- Planting Soils
    - 18" minimum. Typically, 2.5' to 4'.

  - Sandy loam.
  - Mulch layer recommended on top.
- Drainage Layer and Underdrains
  - Drainage Stone under soil media.
  - Increases Storage Volume.
  - Geotextile for soils separation.
  - Infiltration Type – infiltrates to soils below, or;
  - Flow Through Type – Underdrain conveys stormwater to outlet or downstream practice.
  - Perforated or slotted underdrain pipe, typically 4" or 6" diameter.



Vegetated swale

A vegetated swale is a landscaped trapezoid or parabolic shaped ditch. For small sites, vegetated swales without an outlet may be used to satisfy the requirements for disconnection runoff. In these cases, after the required travel length (50'), the swale can overflow to the site or to an off-site storm sewer system. Vegetated swales can be used in place of pipes to convey stormwater.

Requirements:
• Flow velocity of < 1 ft/sec at a design flow < 3 cfs.
• Bottom width 2' to 6'.
• Side Slopes no steeper than 3 horizontal to 1 vertical.
• Where used for conveyance, size to handle a 10 year storm with flow velocity < 5 ft/sec with a freeboard of ≥ 6".
• Maximum slope of 4%.

References:
NYS DEC Stormwater Toolkit: https://dec.ny.gov/environmental-protection/water/water-quality/stormwater/construction-stormwater-toolbox

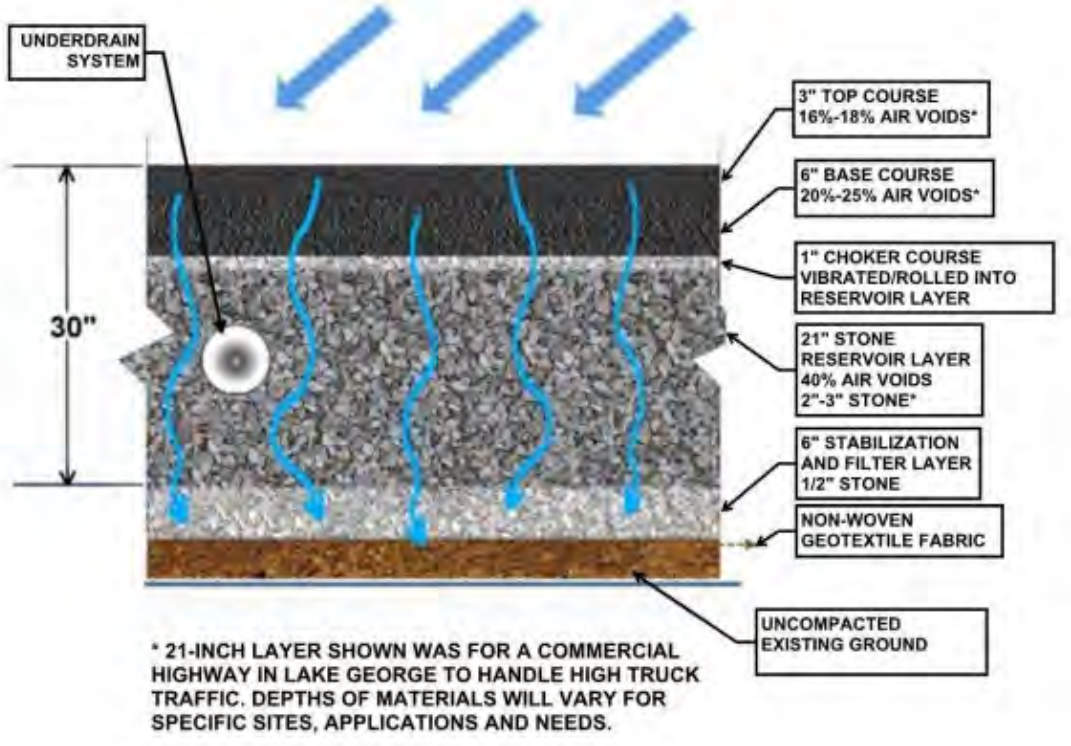
Porus Pavement

Concept one does not increase impervious surface in the study area, therefore, this recommendation only applies to concept two. When altering or adding impervious surfaces like roads or pedestrian infrastructure, it's vital to prioritize stormwater management. If concept two is selected it is important to note that the city of Mechanicville is a part of the Municipal Separate Stormwater Sewer Systems (MS4) community, which is an additional regulations related to stormwater runoff.

This presents a key chance to integrate green infrastructure solutions. Under the general term of "Porous Pavement" there are several variations depending on function and materials. In all cases, the objective is to provide a GI alternative to traditional asphalt and concrete sidewalks, drives and parking areas. Options include porous asphalt, porous concrete, permeable pavers, porous pavers, or pervious pavers.

References:
Porus Asphalt:
http://www.asphaltpavement.org/index.php?option=com_content&view=article&id=359&Itemid=863
Porous Concrete: http://www.perviouspavement.org/
University of New Hampshire Stormwater Center: http://www.unh.edu/unhsc/
Permeable Pavers: https://www.icpi.org/paving-systems/permeable-pavers

Stormwater passing through a porous pavement is typically stored in the subbase under the surface. In addition to stormwater storage, the subbase must provide a suitable foundation to support traffic or pedestrian loads. At a minimum, the storage volume should be sized to store the RRv resulting from rain falling directly on the porous pavement. By providing additional storage capacity, the porous pavement areas can handle the RRv from other impervious areas of the site. The storage capacity of the subbase is based on the area, depth, and porosity of the subbase. A typical open graded stone subbase will have a porosity of 0.4. Where soils are suitable, stormwater temporarily stored in the subbase will infiltrate into the ground. Where soils are less permeable (<0.2" / hour) underdrains will be required.



For low traffic and non-traffic areas, porous asphalt or porous concrete can be used as the surface. Alternatively, there are a wide number of manufactured products that can be used including:

- Stormcretetm.
- FILTERPAVE ®.
- KBI Flexi®-Pave.
- Pavers such as; Unilock ® Belgard ® and EP Henry.
- Plastic turf or gravel systems such as;Truegrid ®, Invisible Structures, NDS ®.

Permeable pavers may also be used without providing storage underneath when placed on permeable soils (HSG A or B). Plastic reinforced turf systems can be used to provide emergency access. While not suitable for frequent traffic, there are options that can support heavy vehicles, including fire trucks.

Tree Planting

In concept one, a feature of complete streets includes the addition of street trees. Street trees could also be used as a green infrastructure technique to aid in soil stabilization and reducing runoff in the study area. Trees can capture and absorb various pollutants, including heavy metals, oils, and nutrients. Concept two involved conducting a public survey with residents. One notable comment from the survey highlighted the desire to enhance the area's green space and overall aesthetics. Planting more trees aligns with the survey feedback by enhancing greenery and aesthetics while effectively mitigating runoff, offering a dual benefit for the community and the environment.

References:
Urban Tree Recommendations: https://www.hort.cornell.edu/uhi/outreach/recurbtree/
NYS Spring Seedling Sale: https://dec.ny.gov/nature/forests-trees/saratoga-tree-nursery/spring-seedling-sale

Infiltration Practices

Including an infiltration practice could remediate any flooding in and around the study area. These techniques could be particularly useful for concept two, where adding more pavement/altering the roadway is recommended.

Infiltration Design

- All infiltration practices require suitable soils with a minimum infiltration rate of 0.2"/hour. (reduced from Design Manual minimum of 0.5"/hour).

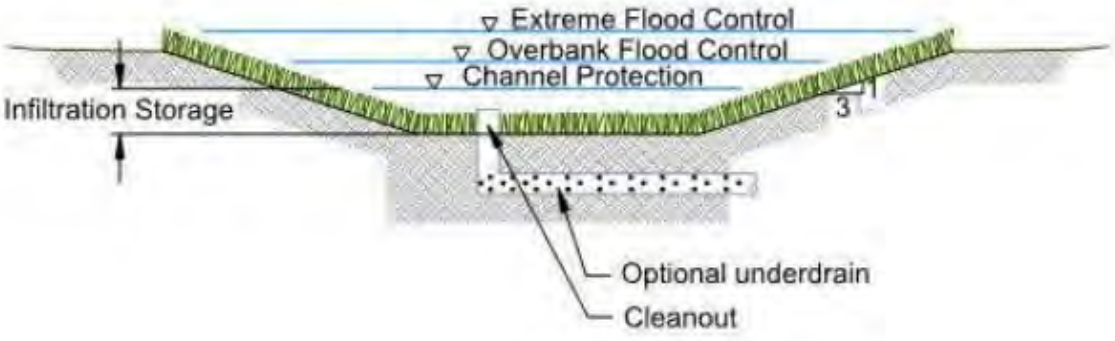
- Maintain a minimum of 2' separation to groundwater or bedrock. Greater separation distance may be required for "hot spots", over aquifers, or as required by local requirements.
- Keep infiltration practices 10' away horizontally from buildings and foundations and 100' from onsite wells.
- Existing soils that will receive infiltration should be protected from over compaction or siltation during construction. De-compaction of previously disturbed soils may be required.
- A conservative approach is recommended, especially when using soils with lower infiltration rates. Consideration should be given to:
    - Providing overflows and/or underdrains.
    - Applying a safety factor to measured infiltration rates.
    - Oversize the infiltration area provided.
- Keep ponding depth ≤ 12" and time to drain < 3 days. Ponding and standing water can be a safety and insect breeding concern.
- Geotextiles are often used to keep adjacent fine soil particles from entering the infiltration practice. Care and judgement should be used however, because excessive fines in the stormwater can plug geotextile surfaces.

Infiltration sizing example:

Infiltration Trench			
Infiltration Practices are sized to store the RRv which infiltrates to the soils below.			
Item	Input	Units	Notes
Runoff Reduction Volume, RRv	1000	ft^3	
Depth of Infiltration Practice, dp	36	inches	
Soil Infiltration Rate, Ir	0.5	"/hr	Minimum of 0.2"/hr
Time to Drain, t = d/Ir	72	hours	Maximum 72 hours
Area of Practice, Ap	900	ft^2	
Porosity of Drainage Stone, nd	0.4		Typically 0.4 for drainage stone
Volume in Practice, Vp=Ap*dp/12*nd	1080	ft^3	
Volume OK?	OK		If Vp<RRv increase area or depths
Note: Calculations are similar for **drywells and storm chambers**, except that the volume in the practice, includes the open volume in the drywell or storm chambers, plus the volume available in the drainage stone.			

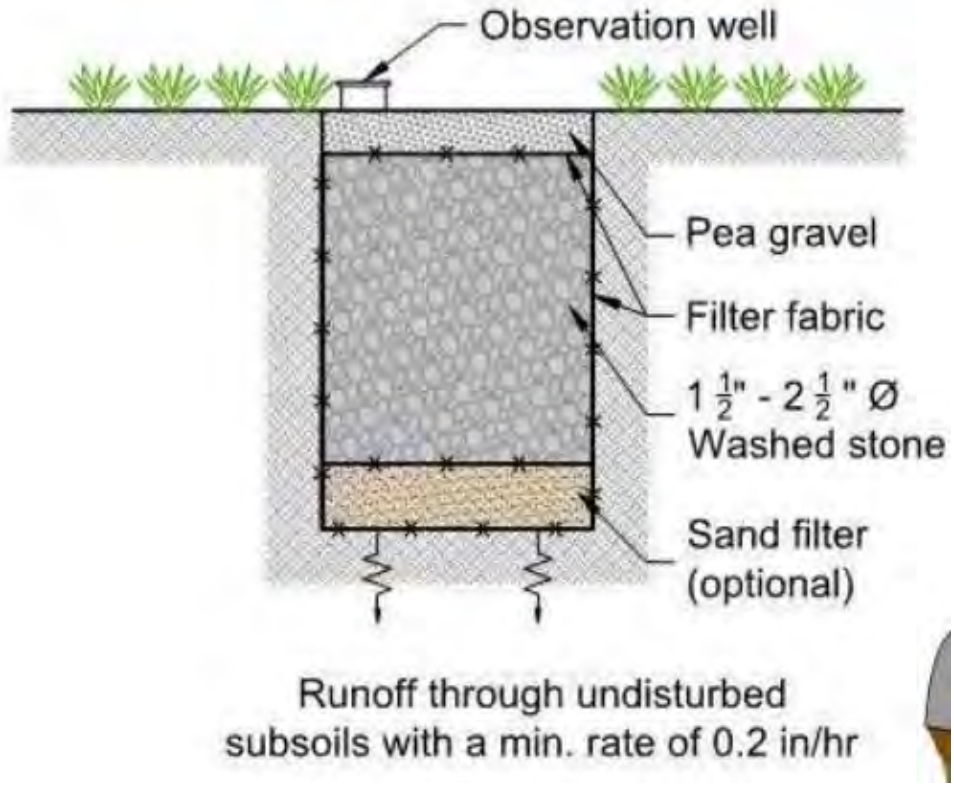
Infiltration Basin

Round or more linear swale, typically grass covered.



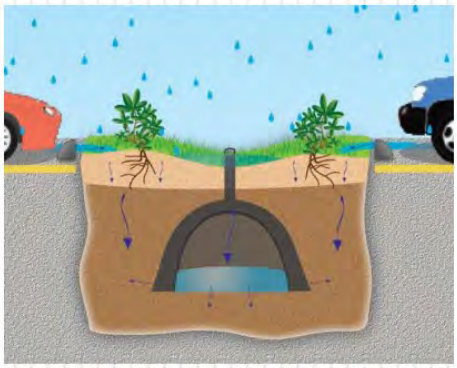
Infiltration Trenches

Open graded stone trench with grass or peastone surface.

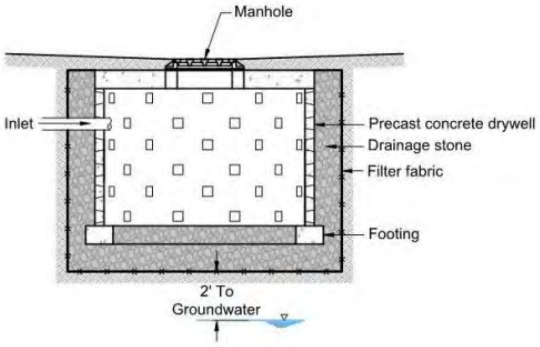


Infiltration Chambers and Drywells

Subsurface structure used to increase the available storage volume. Typically, concrete or plastic surrounded by sand or stone. Can be traffic rated and installed under parking lots or roads.



Storm Chambers



Drywell

Green Infrastructure Options

Capital District Regional Planning Commission
Mechanicville Depot Square Technical Assistance Project, January 2024

Funding

NYSEFC Green Innovation Grant Program

The New York State Environmental Facilities Corporation (EFC) will offer grants to help pay for certain projects that improve water quality and mitigate the effects of climate change through the Green Innovation Grant Program (GIGP).

- The GIGP grants are awarded on a competitive basis for municipal projects that will implement one or
- more of the following green practices (Green Practice(s)):
    - Green Stormwater Infrastructure
    - Energy Efficiency
    - Water Efficiency
    - Environmental Innovation

https://efc.ny.gov/green-stormwater-infrastructure

Spring Seedling Sale

- Low-cost seedlings for public or private entities in NYS.
- Includes native varieties.

https://dec.ny.gov/nature/forests-trees/saratoga-tree-nursery/spring-seedling-sale

Implementation

Cost Estimates

The Transportation Council used the NYSDOT Quick Cost Estimator Reference Tool to estimate the approximate cost for some of the types of facilities and infrastructure included in the intersection improvement concepts. However, the recommendations include a scale of projects which is beyond the scope of individual treatments. These cost estimates are based on cost information collected by NYSDOT for similar projects across Upstate New York in 2019. Local costs may vary and be affected by ongoing economic trends, like inflation, labor shortages, and other uncertainties.

Funding

One of the core functions of the Transportation Council is the development and maintenance of the Transportation Improvement Program (TIP). The TIP is the 5-year capital plan for the Capital Region that implements the products of the planning process described in New Visions 2050. The TIP is funded by a collection of transportation programs outlined in the 2021 Bipartisan Infrastructure Law (BIL). The Transportation Council must update its TIP every four years as an integral element of a Statewide Transportation Improvement Program (STIP). The Transportation Council adopted the 2022-2027 TIP in September 2022 and expects to begin the next TIP update in late 2024. Some of the funding programs outlined below may not be available in the next TIP. Other programs are administered by New York State agencies.

Table 5Table 4 on page 35 provides information on potential funding sources for some of the facility types recommended in this study. It is not an exhaustive list, and it does not include Federal Discretionary Grant Programs that are being released. The BIL created numerous federal transportation program and grant opportunities, many of which are being announced on an ongoing basis. Information regarding these discretionary funding programs can be found on the Transportation Council website. Call or email staff with any questions about BIL programs and funding at (518)45216 or info@capitalmpo.org.

Table 4. Cost Estimates

Facility Type/Item	Materials	Cost	Note
5 ft sidewalk	Concrete	$160 per linear foot	Includes excavation, disposal, subbase material, compaction, construction of sidewalk and finish work. Does not include, sawcutting driveways, excavation to additional depth for driveways, curbing, grading, or turf establishment.
Ladder Crosswalk	Paint	$800 each	Assume 700 LF of 4-inch striping per crosswalk
ADA Curb Ramp	Concrete	$3,900 each	Includes site survey, demolition, saw cutting, excavation, disposal, fill, subbase material, compaction, construction of ramp, landings and associated curbing, detectable warning units, repairs to affected asphalt topsoil, establishing turf (to disturbed areas), and finish work.
Concrete Curbing	Concrete	$90 per linear foot	Includes demolition, saw cutting, excavation, disposal, fill, subbase material, landscaping, compaction, and the construction of new curb, repairs to affected asphalt and concrete as necessary, topsoil, establishing turf, finish work.
Small Single Post-Mounted Signs		$600 each	Includes sign supports, sign foundations, necessary hardware, demotion, excavation, removal of sign panels, posts, supports, foundations, and the relocation of existing signs, disposal of any materials removed, patching and repairs to affected asphalt and concrete as necessary, topsoil, establishing turf, landscaping, finish work, and any required adjustment to utilities.
Concrete Curb Extensions	Concrete	$90 per linear foot	
Painting curb extensions / medians	Paint	$24 per square foot	Limited price data available.
Street tree		$834 each	Includes the cost of all labor, materials, and equipment, including initial watering and mulch, compost, plants and plant protection materials and topsoil necessary to satisfactorily complete the work.
Closing and replacing a driveway with permeable pavement	Permeable pavement (asphalt)	$9 per square foot	Includes removal of existing asphalt pavement, saw cutting, excavation, disposal, fill, subbase materials, compaction, and the construction of the new permeable pavement. All materials and labor required to perform these tasks is included. DOES NOT include requirement adjustments to utilities.

Table 5. Potential Funding Sources

Facility Type	FUNDING PROGRAM						
	Transportation Alternatives (TAP)	Congestion Mitigation & Air Quality (CMAQ)	Recreational Trail Program (RTP)	Surface Transportation Program (STP)*	National Highway Performance Program (NHPP)**	Consolidated Local Street & Highway Improvement Program (CHIPS)	Empire State Economic Development Fund Program
Bicycles lanes on road	X	X		X	X		X
Crosswalks (new or retrofit)	X	X		X	X		X
Curb cuts & ramps	X	X	X	X	X		X
Landscaping, streetscaping, etc.	X		X	X	X		X
Lighting	X			X	X		X
Separated bicycle lanes	X	X		X	X		X
Shared use paths / transportation trails	X	X	X	X	X		X
Sidewalks (new or retrofit)	X	X	X	X	X	X	X
Signs / signals / signal improvements	X	X		X	X	X	X
Traffic calming	X			X	X		X

**In general, STP funds may not be used on local or rural minor collectors. However, there are a number of exceptions to this including safety infrastructure and the construction of bike/pedestrian ways, as well as a limited number of other facilities.*

***NHPP funds are limited to support conditions and performance of the National Highway System (NHS).*

Design References:

There are a range of resources available to municipalities to guide engineering and design of bicycle and pedestrian infrastructure. The Highway Design Manual, MUTCD, and NYS Supplement include guidance on all facility types recommended in this study. However, that does not eliminate the need for other references. Below are additional guides that have been developed with the collective experience of transportation planners, engineers, and bicycle and pedestrian infrastructure users. Many have been recently released and may reflect a more current state of practice for creating safe and inviting bicycle and pedestrian facilities. The Transportation Council encourages municipalities to participate in bicycle and pedestrian design training opportunities as they occur.

New York State & Local Guidelines

- Capital District Complete Streets Design Guide *(call or email for a copy)*
- New York State Highway Design Manual
- Manual on Uniform Traffic Control Devices
- New York State Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways (2009 Edition)
- Designing for All Ages & Abilities: Contextual Guidance for High-Comfort Bicycle Facilities, National Association of City Transportation Officials
- Small Town and Rural Multimodal Networks, U.S. Department of Transportation Federal Highway Administration
- Empire State Trail Design Guide, Hudson River Valley Greenway, New York State Canal Corporation, New York State Department of Transportation, and NYS Office of Parks, Recreation, and Historic Preservation
- Green Infrastructure Toolkit, Capital District Regional Planning Commission

National Guidelines & Best Practices

- The United States Access Board's Proposed Rights-of-Way Accessibility Guidelines (PROWAG), Federal Highway Administration, May 2012

Other

- Quick Cost Estimator Reference, NYSDOT
- NYS Pedestrian Safety Action Plan, NYSDOT
- NYS Pedestrian Safety Corridor Evaluation Guidelines, NYSDOT
- Road and Trail Intersection Safety, Parks & Trails New York
- Capital District Trails Plan, CDTC
- Local Road Safety Action Plan
- New Visions 2050, CDTC
- City of Saratoga Springs Complete Streets Plan (2016)
- New York State Complete Streets Act

APPENDIX A

Demonstration and Survey Flyer

What is happening here?

The city is trying out a new intersection design.

The purpose is to increase safety for all users including pedestrians, bicyclists, and drivers.

For how long? **Oct. 27 - Nov. 2**

Let us know what you think of the changes by scanning the QR code to the right.

tinyurl.com/2p8u9hxh

CAPITAL REGION Transportation Council

CITY OF Mechanicville, NY

Email questions & comments to **info@capitalmpo.org**

APPENDIX B

Survey Results

Submission Date	How often do you use the Depot Square intersection?	What mode of transportation do you primarily use when navigating this intersection?	How did you feel using this intersection before the demonstration project? On a sliding scale of not safe (left) to very safe (right), please slide the bar below:	How do you feel using this intersection today? On a sliding scale of very unsafe (left) to very safe (right), please slide the bar below:	5. Do the demonstrated improvements make you feel more safe as a (check all that apply):	What other improvements or changes do you think are necessary at this intersection to make it safer and more efficient?	Are there any specific aesthetic or landscaping changes you would like to see at this intersection?
Nov 5, 2023	Weekly	Walk	Not safe	Very safe	Pedestrian	no	get rid of scary abandoned building
Nov 4, 2023	Daily	Car	Somewhat safe	Safe	Pedestrian Bicyclist Driver	Make the stop signs larger	Trees,
Nov 4, 2023	Never	Walk	Safe	Safe			
Nov 2, 2023	Daily	Car	Not safe	Very safe	Pedestrian Bicyclist Driver Jogger / Runner		All new sidewalks w hard scaping to make it impossible to not follow the new set up.
Nov 2, 2023	Daily	Car	Very safe	Somewhat safe		Don't change it. It been like that forever.	
Nov 2, 2023	Weekly	Car	Somewhat safe	Somewhat safe	Driver		
Nov 1, 2023	Weekly	Car	Safe	Safe	Pedestrian Bicyclist Driver Jogger / Runner		
Nov 1, 2023	Daily	Car	Safe	Safe	Pedestrian Bicyclist Driver		
Nov 1, 2023	Rarely	Car	Safe	Safe	Pedestrian Driver		
Nov 1, 2023	Daily	Car Jog / Run	Somewhat safe	Somewhat safe		Can’t find improvement plan anywhere	Pedestrian safety and improved traffic control pavement markings
Nov 1, 2023	Daily	Car	Not safe	Safe	Driver	Lighting	
Nov 1, 2023	Weekly	Car	Not safe	Safe			
Nov 1, 2023	Daily	Car	Very safe	Somewhat safe	Other	Make it a circle	A circle with something in the middle
Nov 1, 2023	Weekly	Car	Very safe	Very safe	Other	Just make it a circle	Maybe some nice mulch and plants to fill all the potholes
Nov 1, 2023	Weekly	Car	Very safe	Safe	Driver		
Nov 1, 2023	Rarely	Car	Somewhat safe	Somewhat safe	Driver	leave as is, if it's not broken, don't fix it	have the building torn down that's boarded up

Nov 1, 2023	Weekly	Car Walk	Somewhat safe	Not safe		More crosswalks maybe? The stop signs are still confusing for drivers in either scenario with the incoming traffic from railroad not stopping.	
Nov 1, 2023	Daily	Car	Somewhat safe	Somewhat safe	Pedestrian Bicyclist		Trees greenscape
Nov 1, 2023	Weekly	Car	Safe	Safe	Driver		
Nov 1, 2023	Daily	Car	Safe	Very safe	Pedestrian Bicyclist Driver Jogger / Runner		
Nov 1, 2023	Monthly	Car	Very safe	Very safe			
Nov 1, 2023	Daily	Car	Safe	Safe	Pedestrian Bicyclist Jogger / Runner		
Nov 1, 2023	Daily	Car Walk Jog / Run	Safe	Safe	Other	Not needed	This project looks like hell and is only going to cause traffic backups

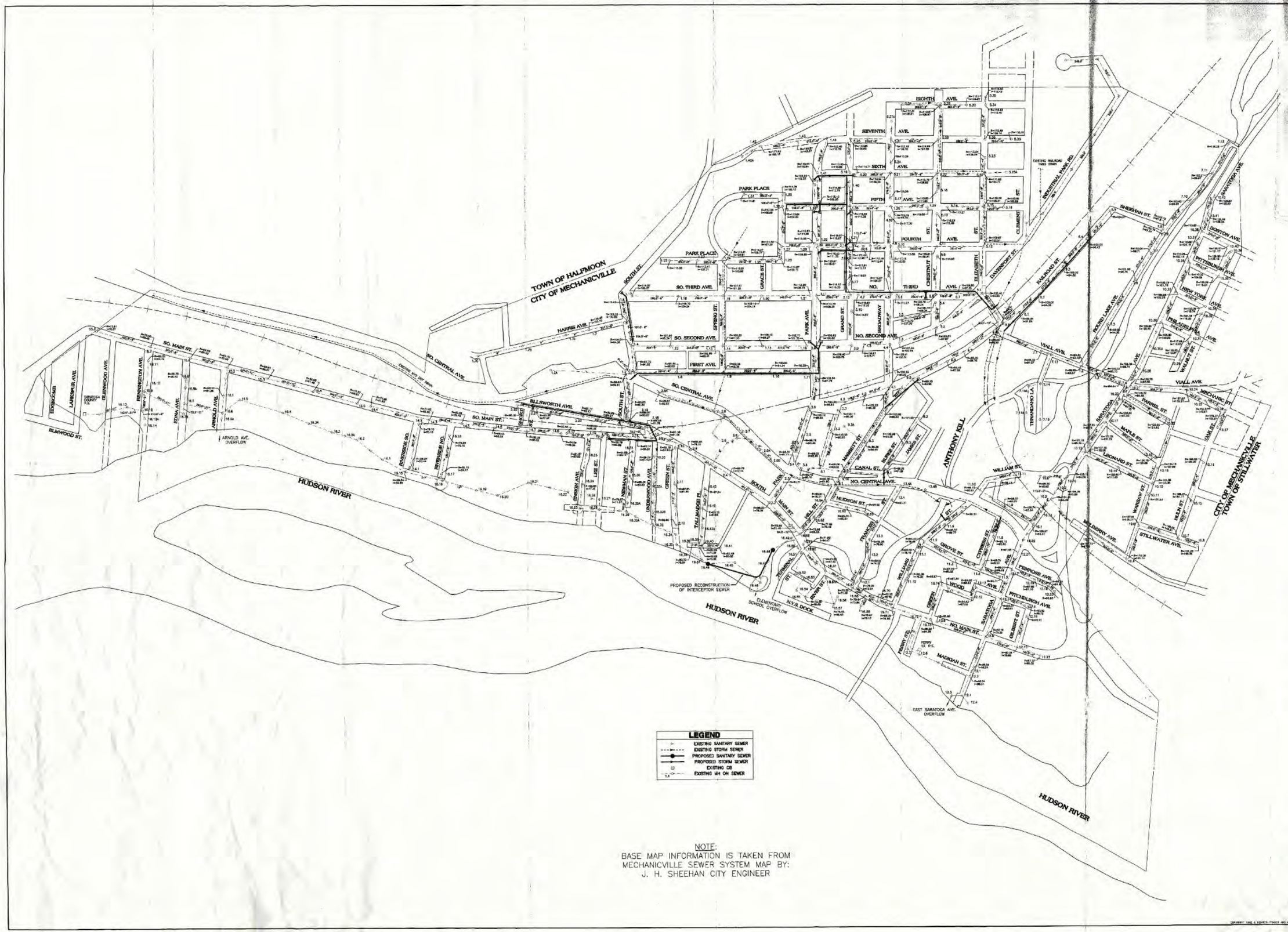
					the intersection. It's existed that way for so long and it's likely one of the safest in town. It is quirky and people like that it is quirky. Everyone is always keeping an eye out for one another in that intersection and there is a kind of unspoken driving etiquette at play here where everyone lets each other go and get around in the intersection. There are so many problems in the city, and the council appears to be set on changing the layout of one of the safest intersections in town without even mentioning to the public what is going on and what is happening. The only information on this is at the	Yeah, maybe actually do something to redevelop the train station and before it is too late. It is one of the last remaining historical buildings in town as a result of urban renewal, and the mayor and the council is letting it fall apart brick by brick. Inexcusable. They have ZERO priorities and the Capital Region Transportation Council is wasting their time, energy, and resources by engaging with Mike and the rest of the council on this waste of time. And why is the mayor involved in a DPW project? Where is the DPW
Nov 1, 2023	Daily	Car	Very safe	Not safe	bottom of the website very few people use. At the last meeting, the mayor said he had nothing to report, and	Commissioner? This city has 1 million problems, and Depot Square sure as heck is not one of them.
Nov 1, 2023	Daily	Car Bicycle Walk	Safe	Somewhat safe	Instead of the crosswalk going across Railroad, a walk to cross and continue down Davenport coming from Viall OR a second crosswalk going across Davenport from Railroad. The 5 points intersection is fine, just takes more observation as a pedestrian. I have never had any issues walking, biking, or driving.	A sidewalk to encourage walkers to stay away from the building on the corner of N. 2nd since its a blind right turn. Otherwise, there's no issues. A circle would be the only other suggestion (costly for no reason) but still need a sidewalk. Let's focus on advertising the zipper merge for S. Central instead.

Nov 1, 2023	Weekly	Car Walk	Very safe	Not safe	Pedestrian	I think there's nothing wrong with the intersection. It's one of the beautiful quirks of mechanicville.	The city owned property needs to be rehabilitated or torn down, or sold to a developer.
						I think they should leave it as it is. I have lived here 58 years in the same vicinity all this time. Actually, I live on one of the intersecting streets. I have never in my life heard of one car accident or pedestrian, car accident, or bike related accident. There are several other municipalities that have five point intersections and don't do this kind of chaos with the streets and crosswalks. There are more questions than answers. I think you have the potential to wreck a profitable business. There are so many big trucks that use that intersection. This is going to impede their mobility. Again the city is fixing something that's not broken. They have bigger fish to fry How about figuring out where our water is going?.	Yeah, knock down that disintegrating train station. If the city was worried about aesthetics, they should figure out how to get rid of the condemned houses, and the rundown houses that are being neglected by their owners. Specifically on Saratoga Avenue N. Main St. and Ellsworth Avenue. Let's fix what is broken and start with that. And while we're talking about aesthetics, let's stop with that stupid train covering over Central Avenue.
Nov 1, 2023	Daily	Car Bicycle Walk	Very safe	Not safe			
Oct 31, 2023	Daily	Car	Somewhat safe		Pedestrian		
Oct 31, 2023	Daily	Car	Very safe	Very safe	Other	Difficult for tractor trailer drivers at Bove to make the right hand turn	Not really
Oct 31, 2023	Daily	Car	Somewhat safe	Somewhat safe	Driver	None	No
Oct 31, 2023	Daily	Car	Not safe	Safe	Pedestrian Driver	Parking lines	Fix the depot
Oct 31, 2023	Daily	Car Walk	Somewhat safe	Very safe	Pedestrian Bicyclist Driver	The new changes really seem to bring a positive and safe change.	No

Oct 30, 2023	Daily	Car	Very safe	Not safe		If it isn't broke don't fix it. No accidents ever occur there. I don't understand why this is a priority. It's silly	If the city would repair the dilapidated building that it owns it would go a long way to the aesthetics of the area. But the traffic pattern is not an issue and as far as most people say… it's fine the way it is.
Oct 29, 2023	Weekly	Car	Very safe	Safe	Driver		
Oct 28, 2023	Daily	Car	Somewhat safe	Somewhat safe	Pedestrian Driver	A median in between the ugly rooster parking lot and the new intersection I feel would make it safer as well as more aesthetically pleasing.	If a median is put in between the ugly rooster parking area and the intersection, a bench and flagpole would look nice. Right where the crosswalks meet at the side is where the median could go with a bench, flagpole, and something to make it look pretty like flowers or mulch for the time being since it's winter
Oct 28, 2023	Weekly	Car	Not safe	Safe	Driver	Knock down the vacant building so drivers can see oncoming traffic over tracks	Just the building obscuring the view of traffic. Safety first, landscaping later
Oct 28, 2023	Monthly	Car	Very safe	Not safe	Driver	Leave ot as it is.	None
Oct 28, 2023	Daily	Car	Not safe	Safe	Pedestrian Bicyclist Driver Jogger / Runner Other	Return acreage to the Old Train Depot building/property and The Ulgy Rooster property for building egress and parking respectively.	See previous question
Oct 28, 2023	Daily	Car	Somewhat safe	Safe	Driver		

APPENDIX C

Sewer Map



NOTE:
BASE MAP INFORMATION IS TAKEN FROM
MECHANICVILLE SEWER SYSTEM MAP BY:
J. H. SHEEHAN CITY ENGINEER

SCALE

NOTES

UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

REVISIONS

DATE	BY	DESCRIPTION	SYMBOL

FRASER
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CITY OF MECHANICVILLE
SARATOGA COUNTY, NEW YORK

SEWER SEPARATION AND CSO CONTROL PROJECT

PROJ. ENGR:	RBR
DRAWN BY:	DEV
ASSEMBLED BY:	RBR
CHECKED BY:	RBR
PROJECT NO.:	17-41.000
CAD FILE NAME:	1741-001

SHEET TITLE:
SYSTEM MAP OF PROPOSED IMPROVEMENTS

DATE: DECEMBER 2003 SHEET 1 OF 1

APPENDIX D

Intersection Concept Rendering by Barton & Loguidice

APPENDIX E

Zim Smith Trail: Mechanicville Segment Feasibility Study (2017)

Zim Smith Trail: Mechanicville Segment
Feasibility Study

Final Report
January 2017

Zim Smith Trail: Mechanicville Segment

Feasibility Study

January 2017

Prepared For:

City of Mechanicville
36 N Main Street
Mechanicville, NY 12118

Prepared By:

Barton & Loguidice, D.P.C.
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This document was prepared for the City of Mechanicville with funds provided by the City of Mechanicville and Saratoga County Planning Department.

Table of Contents

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Appendices:

Zim Smith Trail: Mechanicville Segment
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Jason Kemper, Director of Planning	Saratoga County

This document was prepared for the City of Mechanicville and the Saratoga County Planning Department.

1.0 Introduction

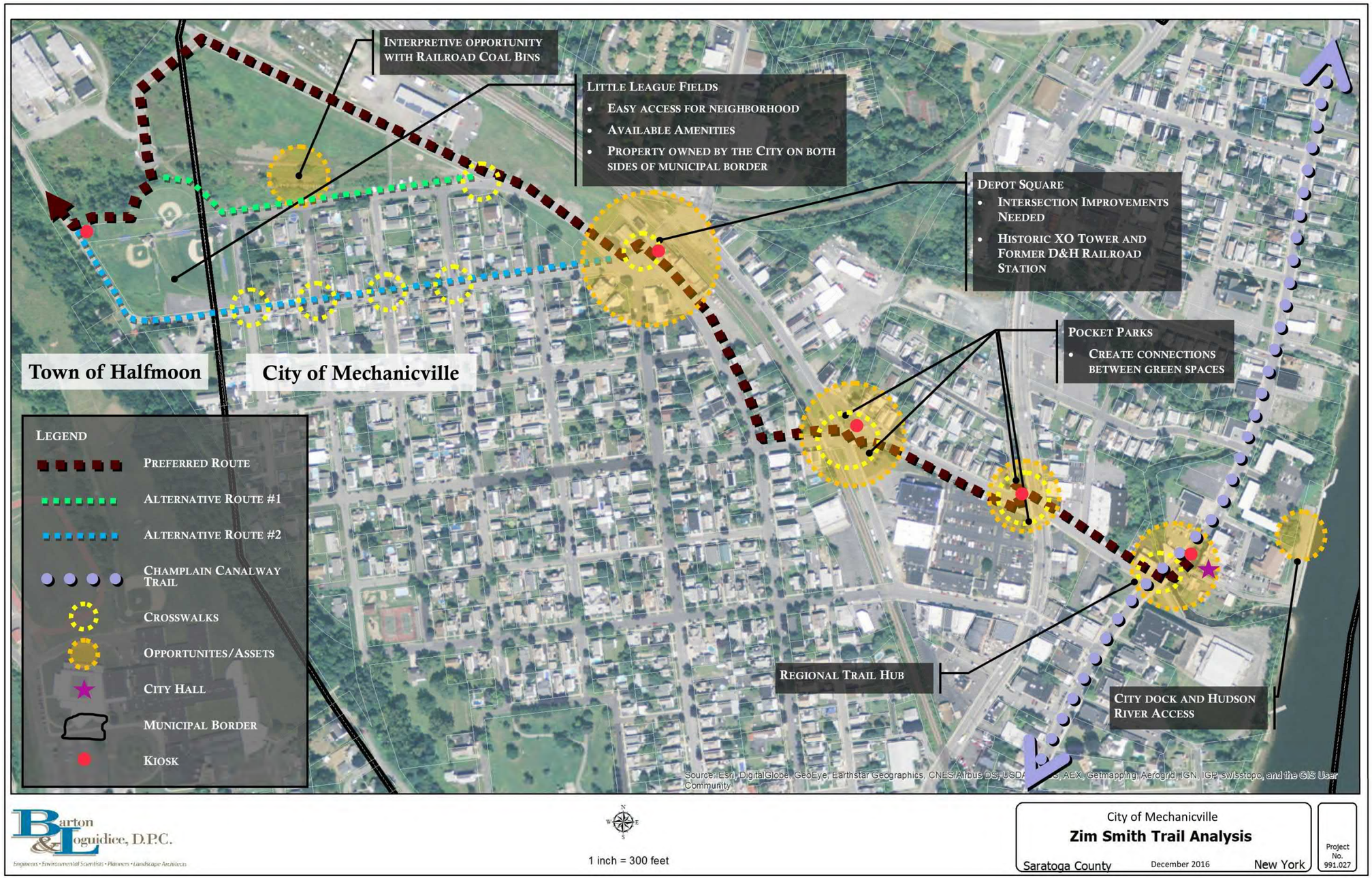
This document was prepared for the City of Mechanicville and the Saratoga County Planning Department to analyze the feasibility of the development of public trails and other access improvements along the Mechanicville segment of the Zim Smith Trail.

The purpose of this analysis is to:

- Determine feasible locations for proposed extension of the Zim Smith Trail through the City of Mechanicville;
- Identify property ownership and the need for acquisition of easements or property;
- Develop conceptual plans and sections for proposed trail;
- Identify opportunities to create a street character along trail roads that is comfortable for pedestrians and appealing for all;
- Identify opportunities for interpretation of local history and heritage;
- Determine potential permitting needs;
- Determine probable project costs;
- Suggest phasing and funding programs for implementation.

The geographic context of the Zim Smith Trail project is illustrated in *Figure 1: Project Overview* below.

Figure 1- Project Overview and Preferred Route (see Appendix C for full size maps)



An initial study of the route was conducted using aerial photography developing a route that would have utilized road corridors. Subsequent field visits conducted identified additional routes including the preferred and alternative routes selected for further analysis in this report.

Input from members of the community was gathered at public information meetings, interviews with stakeholders, and through written comments. As a result, the City selected the preferred route for the Zim Smith Trail which best reflected concerns and vision of Mechanicville residents.

Figure 2 - Photograph of the Stillwater Multi-Use Trail near Mechanicville
(Source: The Mechanicville Mile)

2.0 Planning Context & Existing Conditions

2.1 Zim Smith Trail Planning Context

The Zim Smith Trail was referenced in two recent Mechanicville planning documents: the City of Mechanicville Waterfront and Downtown Revitalization Plan and the Mechanicville Brownfield Opportunity Area (BOA) Revitalization Plan. The goals in each plan in relation to the Zim Smith Trail are similar. As such, this section is organized by goals. Both planning documents, in conjunction with the Champlain Canalway Trail Action Plan, are referenced throughout this document.

The Zim Smith Trail is currently a 9-mile long, partially paved, walking/biking trail that connects Ballston Spa, Malta, Clifton Park, Round Lake Village and the Town of Halfmoon. Design and construction on a stretch bringing the trail to the Halfmoon-Mechanicville border is already underway. The proposed project described in this report would extend the Zim Smith Trail – the centerpiece of Saratoga County's trail plan – providing access to Mechanicville's waterfront area. Furthermore, the anticipated Champlain Canalway Trail extension through Mechanicville will be a key portion of a broader project that aims to connect all 71 miles of that trail from Waterford to Whitehall. This will result in an intersection of two regionally significant trail systems – the Zim Smith Trail and the Champlain Canalway – in Downtown Mechanicville. The trails would converge near City Hall, also improving non-motorized connectivity and accessibility within the Downtown area and near the Mechanicville Dock.

The public has had several opportunities to engage in the trail project and learn what increased walkability can do for the City in terms of economic and health benefits. As indicated in their previous plans, the goals of the community are to:

- Capitalize on their waterfront and Downtown areas
- Maintain and enhance the City's heritage
- Establish Mechanicville as a desirable place for residents to live and attract new residents
- Provide adequate transportation access
- Increase retail opportunities
- Focus on recreation and the environment

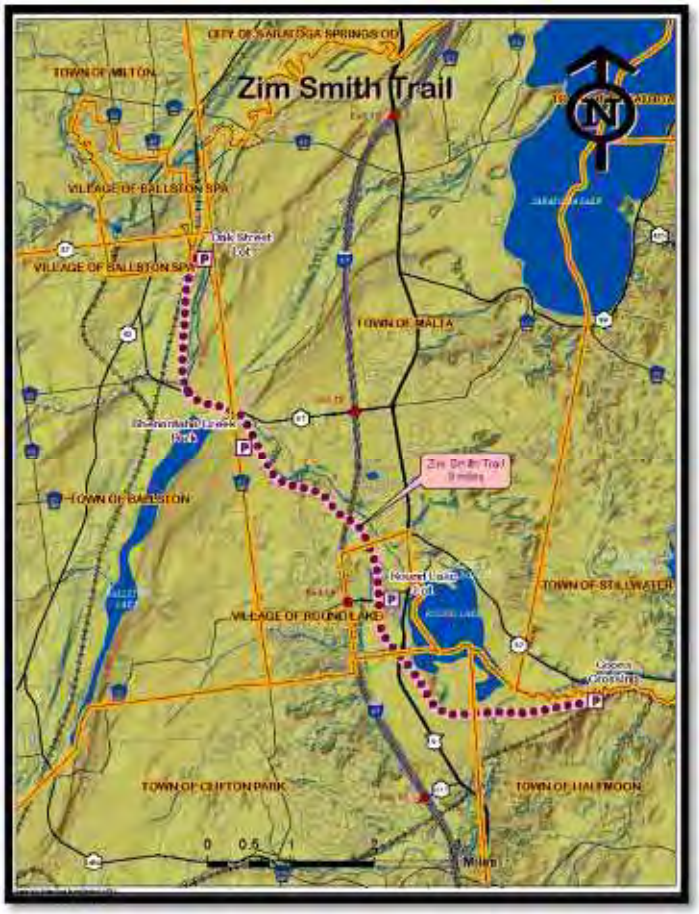


Figure 3 – Zim Smith Trail
(https://en.wikipedia.org/wiki/Zim_smith_trail)

2.2 City of Mechanicville Waterfront and Downtown Revitalization Plan

The City of Mechanicville's Waterfront and Downtown Revitalization Plan identified several areas where the Zim Smith Trail and the Champlain Canalway Trail will work in tandem with other recommendations that both plans have made. Extending both trails through Mechanicville will capitalize on nearby natural resources and enhance connectivity to the waterfront and throughout the Downtown. Their intersection will also establish Mechanicville as a regional trail hub.

2.3 City of Mechanicville Waterfront and Downtown Revitalization Plan

The BOA Revitalization Plan included a detailed analysis of potential routes for the Zim Smith Trail through the City. The Plan also identified an opportunity to connect the Zim Smith Trail to the Pruyn Hill by way of a "trail spur". This spur would connect the Zim Smith Trail to the Mechanicville City Schools Campus via a multi-use path recently built along South Street. Specific recommendations were made in the BOA around several central themes.

"Maintaining And Enhancing the City's Heritage"

During BOA Revitalization Plan Community Workshops, several opportunities to route the trail past heritage sites in the City were discussed. Those discussions resulted in the conception of the Depot Square concept focused on the area around the Mechanicville Train Station and XO Tower and the opportunity to capitalize on the historic value of these buildings by routing the Zim Smith Trail around Depot Square.

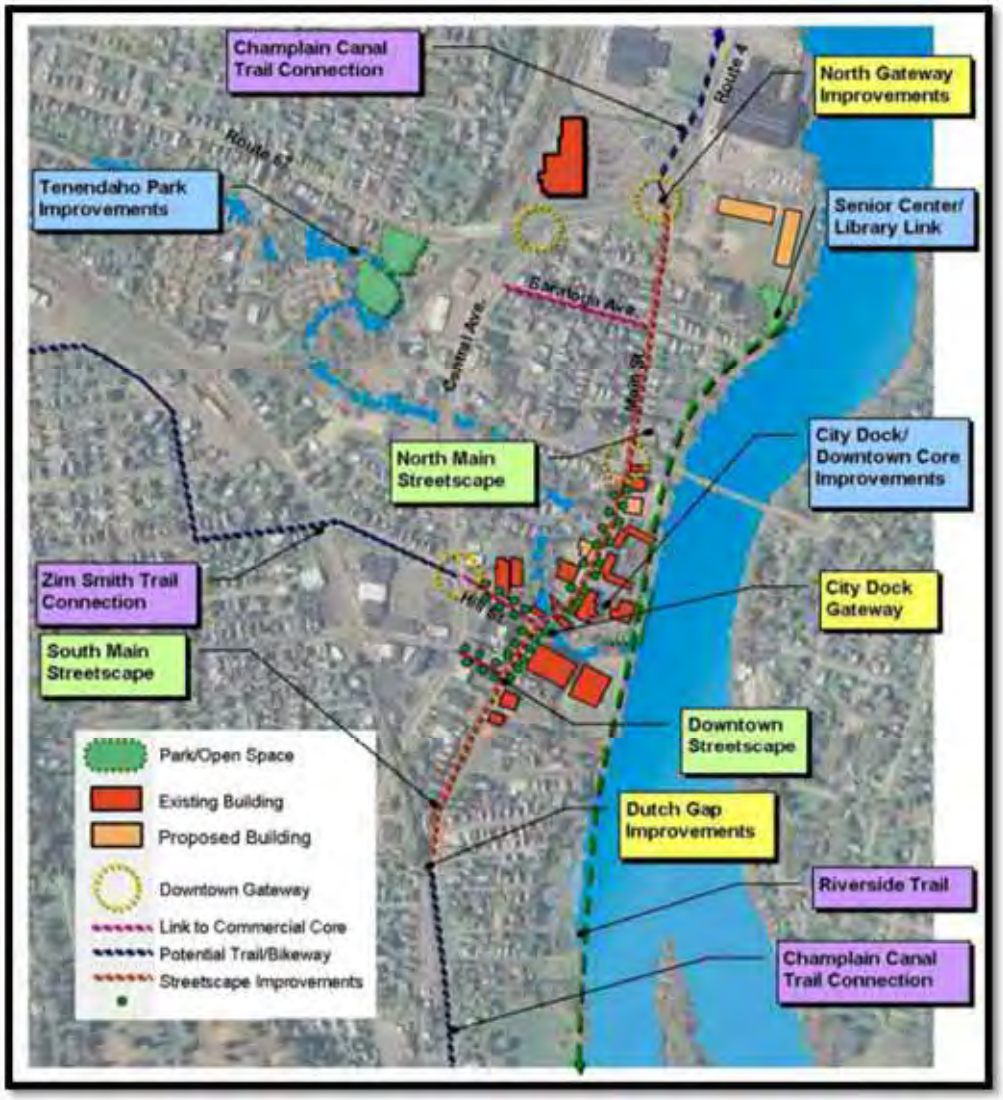


Figure 4 – Physical Enhancements Plan from the 2009 Mechanicville Waterfront and Downtown Revitalization Plan

"Capitalize on the Waterfront and Downtown"

The BOA report also proposed connectivity between Zim Smith Trail and the Champlain Canalway Trail near City Hall. The area will be transformed into a community space by rehabilitating the old buildings and encouraging new retail. The vision for this area is to become the hub of transit and pedestrian movement; this will not be possible without the convergence of the two trails at this location.

"A Desirable Place to Live"

Attracting new residents and making Mechanicville a desirable place for current residents was another goal outlined in the BOA Report. Improved transportation access and connectivity between the Zim Smith Trail and the Champlain Canalway Trail were identified as key strategies to address both of these needs.

2.4 Champlain Canalway Trail Action Plan

The March 2011 Champlain Canalway Trail Action Plan makes a strong case for establishing the trail by citing several studies that have shown measurable benefits of trails in urbanized areas. Among the findings that would be beneficial for the City are findings that property values tend to increase based on their proximity to the trail head, and homes located near trail access actually spend less time on the market than those located further away. The Center for Disease Control (CDC) has reported that increased access to a recreational area can increase the use of these facilities, ultimately encouraging residents to become more active. The trails will also enhance walkability between shops, services, the waterfront, and walkability between neighbors; as a result of the augmented safety and aesthetic features afforded by the formalized trail compared with standard sidewalks.

The Action Plan also reported that a focus on recreation and the environment can have positive economic impacts in the Downtown area. With the anticipated Zim Smith Trail connection to the Champlain Canalway, additional enhancements of the overall streetscape in Downtown Mechanicville can be anticipated. Finally, the Champlain Canalway Trail Action Plan cites that studies show that day-users of trail users can bring anywhere from $1 to $30 per visit; overnight and multi-day users can bring $100 to $300 per day.

2.5 Saratoga County Trail Plans

Saratoga County has been developing the Zim Smith Trail for several years as an opportunity to tie the anticipated Champlain Canalway Trail to several communities across the county. Planned to ultimately stretch from the City of Saratoga Springs southeastward to City of Mechanicville along the old D&H railroad bed, the trail currently runs from the Village of Ballston Spa to 'Coons Crossing' in the Town of Halfmoon. Saratoga PLAN and Saratoga County are developing the trail throughout the county. The trail design standards are for a paved 10'-12' wide ADA-compliant trailway, accommodating a wide range of users from cyclists to pedestrians, families with strollers and those that are wheelchair bound.

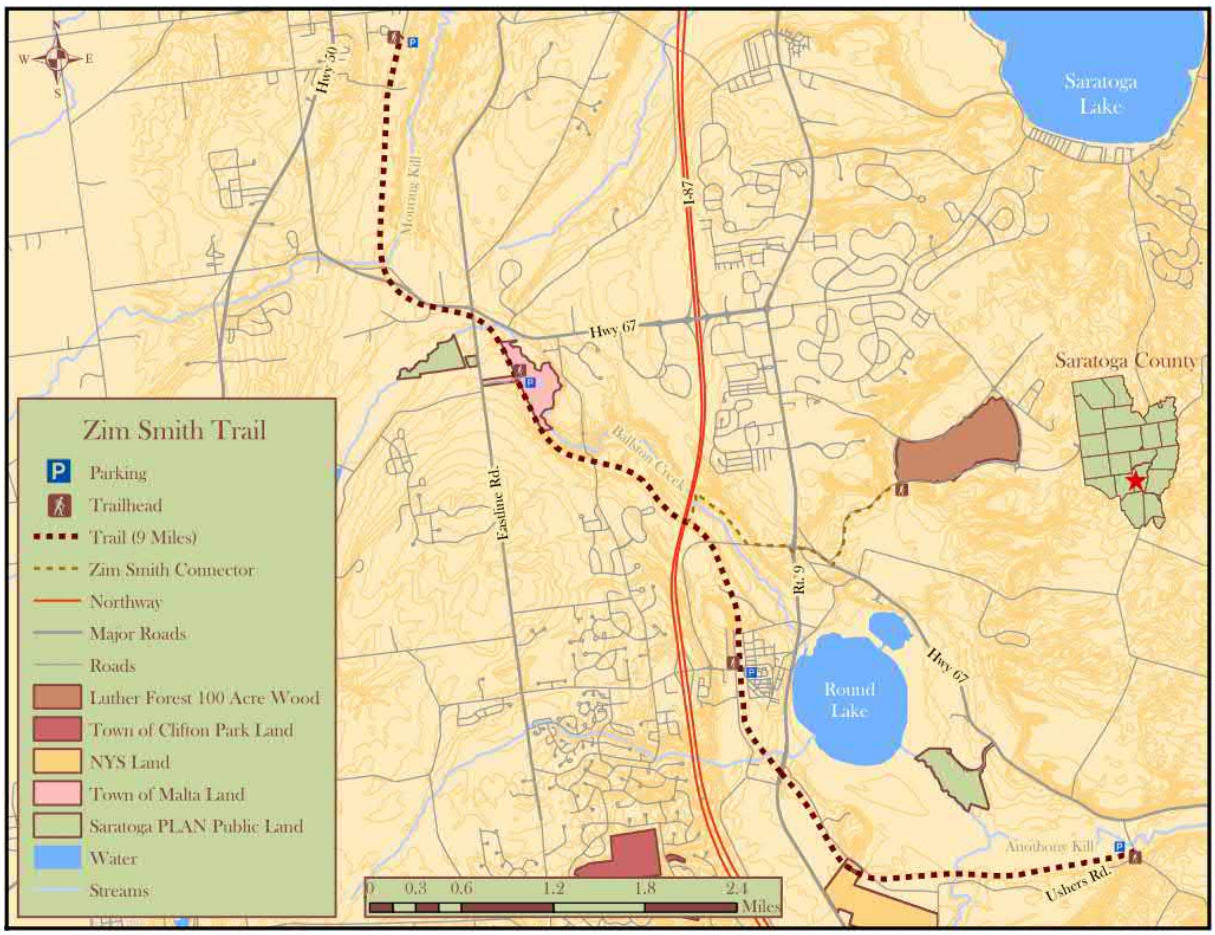


Figure 5 – Existing Zim Smith Trail Map

2.6 Existing Trail Route – Mechanicville Segment

Field investigations were conducted of the trail route as part of the Mechanicville BOA and again in March 2016 to confirm that information and assess alternative routes that were identified in subsequent discussions.

Simultaneous to this study, Saratoga County is currently in the final design phase of extending the Zim Smith Trail from Coons Crossing in the Town of Halfmoon to the City of Mechanicville border. The segment to be studied in this report would run from the City line on Elizabeth Street Extension to North Main Street near Mechanicville City Hall.

The routes investigated included use of City-owned lands and street rights-of-way. A summary of investigations and existing cross sections prepared as part of the BOA project are attached as Appendix B. Alternative trail routes investigated in 2016 are summarized in the map below.

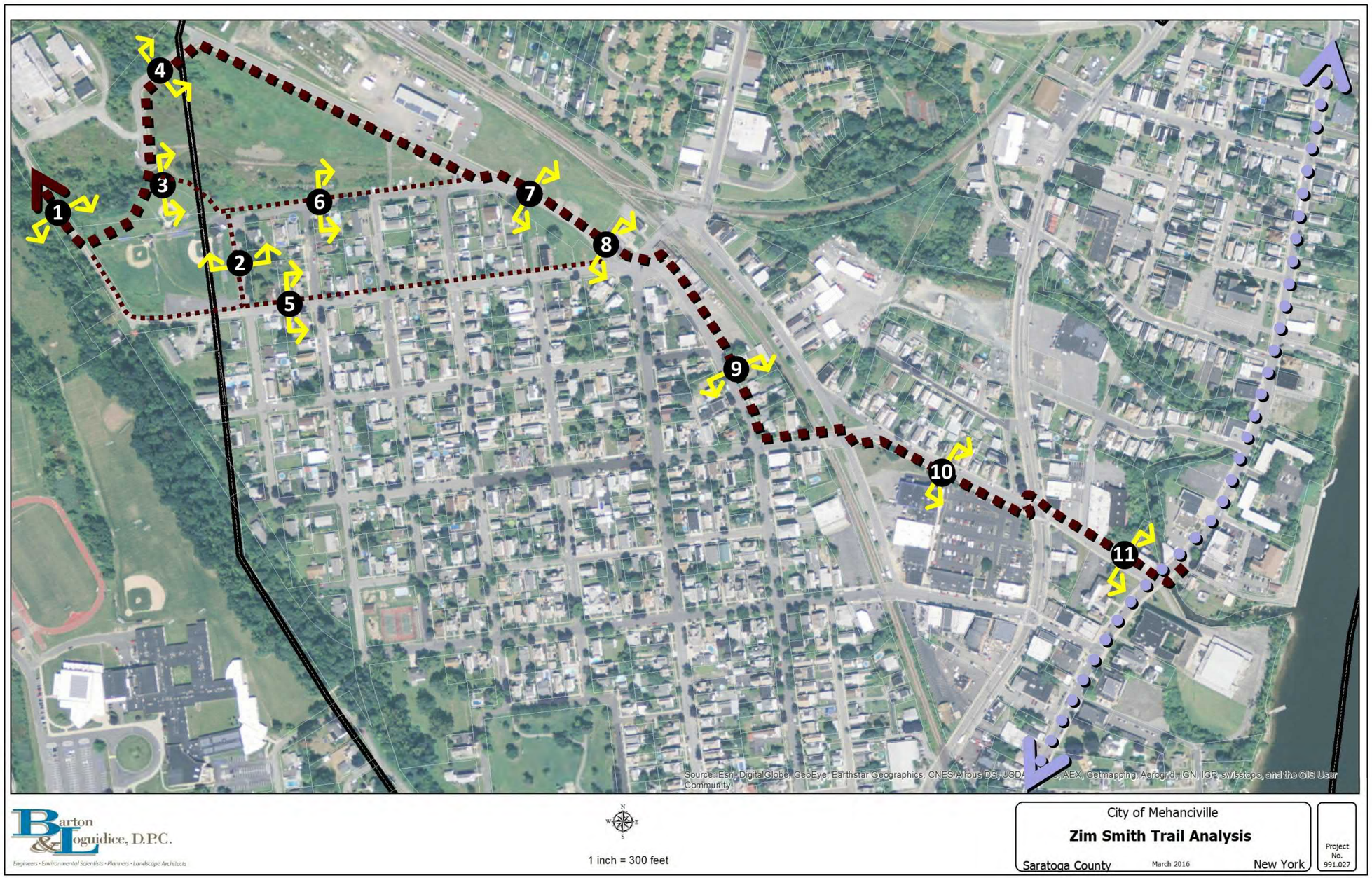


Figure 6 – Trail Analysis *(See Appendix B for full layouts of numbered cross sections)*

2.6.1 Elizabeth Street Extension Segment

A short segment would be routed along east shoulder of Elizabeth Street Extension to enter the Little League ball fields (Preferred Alternative), or continuing along the street into the City. The east shoulder is the preferred location as a steep embankment exists along the west shoulder and the City-owned industrial park lands are on the more gradually sloping east shoulder. A culvert crossing will be needed in this segment as the trail enters the ball fields. The trail corridor can be accommodated within the east shoulder as illustrated in the existing cross section below.

Figure 7a – Looking NW towards School

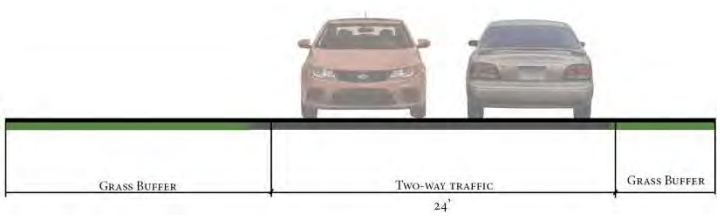


Figure 7b – Existing Structure of Road R.O.W. looking east

2.6.2 Little League Park Segment

The trail would be routed adjacent to some baseball fields under the preferred option. This segment begins at Elizabeth Street and turns east between the industrial park and the ball fields. There is ample open space for the trail and considerable flexibility in routing as the site is nearly flat to slightly sloping. Emergent woodlands to the north may also contain some wetlands. Coordination with the Little League should be undertaken to determine whether the trail should be routed directly through the park or along the northern periphery. The Little League property straddles the Town and City line and the City of Mechanicville owns the property on both sides of the municipal line. This segment could connect directly to a path through the industrial park (preferred route) or can continue east along the north side of Clement Street as an alternative.

Figure 8a – Heading east through Little League Fields behind the Pony Diamond

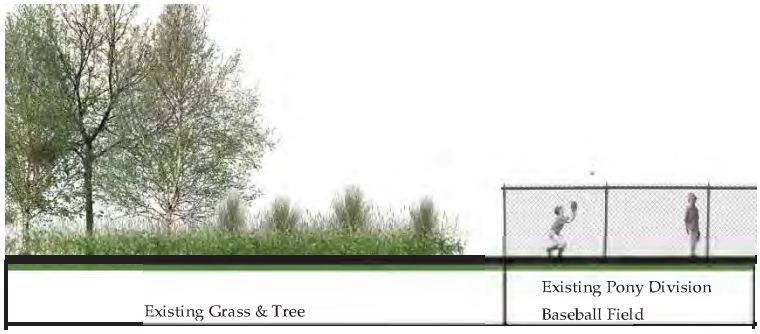


Figure 8b – Existing cross-section of this segment looking east

2.6.3 Industrial Park Drive Segment

The undeveloped industrial park could provide another alternative corridor for the connecting path. Currently vacant, the path could be routed along the south side of the Industrial Park Drive, beginning at the ball fields and continuing through the industrial park to Depot Square and the former Mechanicville Train Station. While virtually free of significant constraints at present, the trail along this route will eventually include a crossing of Industrial Park Drive.

Figure 9a – Industrial Park Rd. looking east

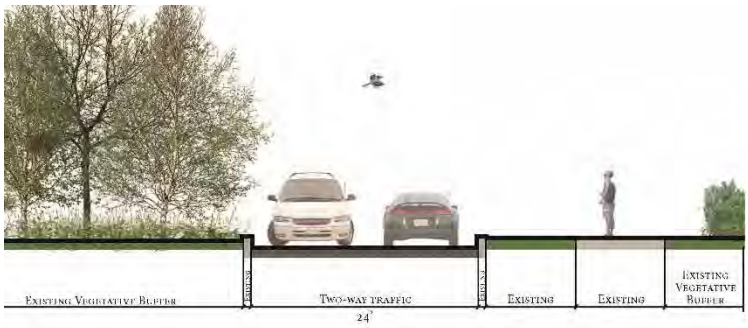


Figure 9b – Existing Road R.O.W. cross-section looking east

2.6.4 Elizabeth Street Alternative Segment

This alterative would continue routing the trail along Elizabeth Street, bypassing the Little League fields. The route would travel eastward into Depot Square on Elizabeth Street or

Figure 10 – Intersection of N 8th Ave. & Elizabeth St. looking east

2.6.5 Clement Street Alternative Segment

This alternative route for the trail would continue east along the north side of Clement Street/Davenport Street. There will be adequate space for the trail within the road right-of-way; however, there are utility poles that may require locating the corridor on a portion of the adjacent industrial park lands. This segment is nearly flat to slightly sloping and some removal over shrubby vegetation might be needed. At the intersection with Industrial Park Drive, the trail would cross to the north side of Industrial Park Drive.

Figure 11a – Clement Street (between 7th and 6th) looking east

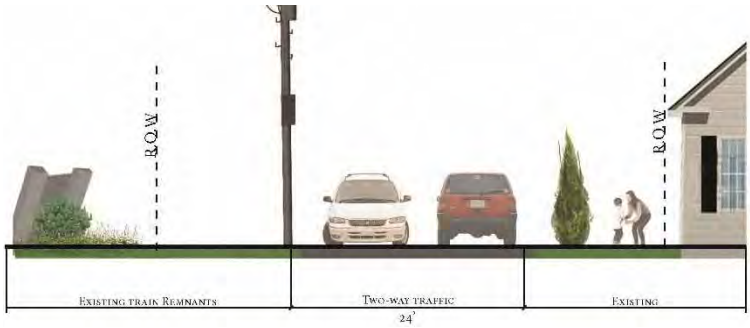


Figure 11b – Existing Road R.O.W. looking east on Clement St.

Figure 12a – Davenport St. / Industrial Park Drive looking east towards Depot Square

Figure 12b – Davenport St. / Industrial Park Dr. Existing Road R.O.W. looking east

2.6.6 Railroad Street Alternative Segment

Earlier concept plans for the trail routed it past the train station and XO Tower across the tracks and then south along the west side of Railroad Street, utilizing the large open space currently used for parking. This corridor is primarily owned by CSX and thus would require an agreement with the railroad for use of railroad lands for the trail. Additionally,

2.6.7 Depot Square Area

The trail will then pass through the intersection of several streets and at the front of the former Mechanicville Train Station. This route will provide an opportunity for interpretation of the era of freight and passenger rail transportation in Mechanicville. The routing will need to be carefully coordinated with the needs of local businesses for on-street parking and access as well as city plans for the reuse of the former train station. An alternative design of this intersection is discussed in Section 4.2.

Figure 13a – Davenport St. looking east into Depot Square

Figure 13b – Ugly Rooster Cafe

Figure 13c – Clifton Park – Halfmoon EMS Facility

2.6.8 Second Avenue Segment

The trail will continue along the east side of Second Avenue towards downtown in the right-of-way. This segment will pass in front of Bove Fuels and several residences. Adequate space exists within the right-of-way and the east side of Second Avenue has fewer residences than the west side of the street.

Figure 14a – N 2nd Ave. looking south

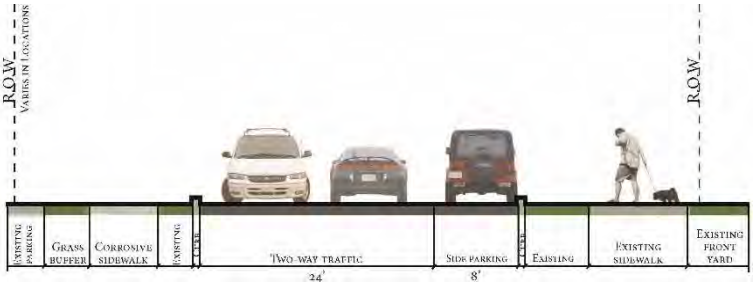


Figure 14b – Existing Road R.O.W. looking south

2.6.9 Broadway / Mabbett Street Segment

The trail will turn east along the south side of Broadway, cross the railroad tracks and Railroad Street onto Mabbett Street and into downtown. The trail can be easily accommodated in open spaces along the south side of Mabbett Street to Central Avenue. At Central Avenue, the trail would cross Mabbett making a connection to Patenaude Park then continuing east on the north side of Hill Street to Main Street.

Figure 15a – Mabbett St. looking east

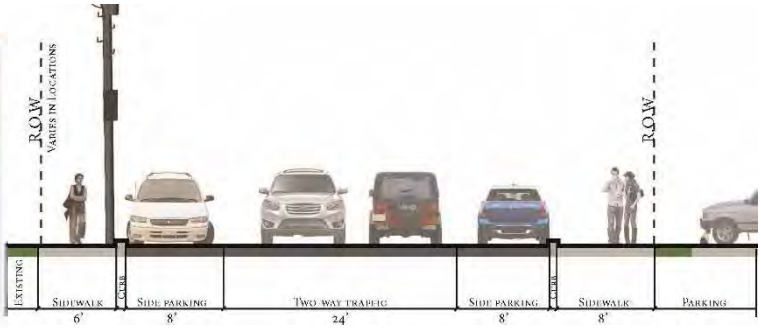


Figure 15b – Existing Road R.O.W. looking east

2.6.10 Hill Street and Main Street Segment

As it moves down Hill Street, the trail would then cross Main Street and make a connection to the Champlain Canalway Trail. This connection will offer trail users a direct path to the Mechanicville Dock and an anticipated public space in front of City Hall at the North Main Street and Terminal Street intersection.

Figure 16a – Hill Street Looking eastward towards Main Street

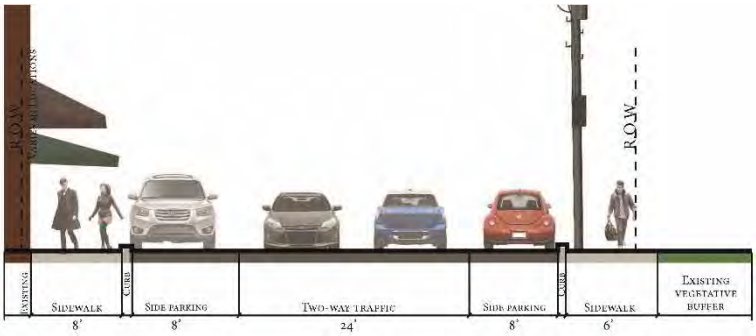


Figure 16b – Existing Road R.O.W. looking east on Hill Street

3.0 Public Outreach

3.1 Public Workshops

The City of Mechanicville has been diligent in engaging the public about potential recreational trail routes and connections during the course of the City's Brownfield Opportunity Area (BOA) project, posting notices on the project website, postings in local weekly and daily newspaper as well as local blogs regarding upcoming public information meetings.

3.1.1 Public Information Meeting

The City of Mechanicville held a pair of steering committee meetings in early 2012 with consultation from the NYSDOS BOA Program and the engineering firm, Barton & Loguidice, D.P.C. In addition, two well attended public information meetings on the Mechanicville Revitalization Brownfield Opportunity Area (BOA) grant were held at Mechanicville Senior Citizens Center at 178 North Main Street on May 3, 2012 and May 15, 2012. Media outlets in attendance included the Express newspaper, the Daily Gazette and a local news website known as the Mechanicville Mile.

Figure 17 – Mechanicville's BOA 2nd Meeting in 2012

3.1.3 Public Meeting Results

At both the Public Information Meetings, members of the public were engaged and forthcoming with their questions and concerns on the Mechanicville BOA including the development of the Zim Smith Trail terminus. With the aid of aerial maps of the City, participants discussed possibilities for future revitalization projects. Citizens voiced their concerns regarding the Depot Square, Central Avenue, and Main Street/Waterfront areas. Among the many ideas discussed was the linkage of the Zim Smith and Champlain Canal pedestrian trails, making Mechanicville a hub for non-motorized travelers.

Figure 18 – Public Input in the Visioning Process

3.3 Referral to County Planning

The Zim Smith Trail Feasibility Study was referred to Jason Kemper, Director of Planning for Saratoga County and his department to ensure that the recommendations of this study are compatible with the County's overall plans for the Zim Smith Trail, especially the segment currently under development from Coons Crossing in the Town of Halfmoon to its boundary with the City of Mechanicville.

Figure 19 – Illustrating their Vision of Mechanicville's future

Figure 20 – Existing Zim Smith Trail (large scale)
https://en.wikipedia.org/wiki/Zim_smith_trail

4.0 Opportunities and Constraints

The Mechanicville section of the Zim Smith Trail has great potential to accommodate active recreation and increase access from Halfmoon to Downtown Mechanicville. Most of the existing lands are City-owned and, as a result, there will be flexibility for design of the trail. There are several options for bringing the trail from the Town of Halfmoon border into Downtown Mechanicville and the confluence with the anticipated Champlain Canalway Trail.

4.1 Segment A - Industrial Park and Little League Fields

The trail starts and goes through the Mechanicville-Stillwater Little League Fields along Elizabeth Street Extension, passing through the Mechanicville Industrial Park along Industrial Park Road or one of the alternative routes and entering Depot Square. The Industrial Park is currently undeveloped with the exception of the Mechanicville Department of Public Works Building.

As the trail enters the city off Elizabeth Street Extension, the Little League Fields would offer seasonal entertainment along with restroom and concessions facilities. An off-road trail could also be used as a safer alternative for kids to walk or bicycle to their baseball games.

Whether it's ultimately routed along Industrial Park Drive or one of the alternative routes, the trail will set a positive community engagement precedent for future Industrial Park tenants. The establishment of the trail may require future tenants to be mindful of safe crossing mechanism across access drives, but it may also help attract more employee health-conscious industries to locate there.

Figure 21 – Mechanicville Industrial Park

Needs:

Traffic

- Delineation between vehicular and pedestrian rights-of-way
- Crosswalks and warning signage

Little League Field
- From foul ball danger (during games)
- Kiosk, benches, bike racks

Opportunities:

Little League Field
- Use of snack bar when there are games
- Restroom
- Rest stop
- Use of open spaces
- Watch games

Trail
- Allow pedestrians to explore Mechanicville; places they normally wouldn't go to
- Connection to Little League fields
- Enhancement to Little League fields
- Provide safer pathways for youths

4.2 Segment B – Neighborhood Including Depot Square

The Neighborhood segment of the trail starts at Depot Square and encompasses North 2nd Avenue or Railroad Street to Broadway. The trail proceeds from Broadway to Mabbett Street this segment concludes at the railroad crossing and Broadway. The trail will provide an opportunity to address a confusing intersection and make the area visually appealing around train area. There is an opportunity to link trail users to one of the most important cultural heritage areas in the city – Depot Square. Additionally, the establishment of the trail through this segment would provide an attractive gateway for the neighborhood and industrial park. Lastly, this intersection is saddled with numerous transportation conflicts between motorists and pedestrians and between motorists and other motorists. This trail would provide clear delineation of the pedestrian travelway and make it safer for all intersection users.

Figure 22 – Depot Square Aerial

Figures 23 and 24 on the following pages depict a recommended and an alternative intersection redesigns for Depot Square.

Needs:

Traffic

- Circulation and transportation system simplifications
- layout is major issue, no delineation between vehicular and
- delineation of crosswalks, sidewalks
- delineation of parking in Depot Square
- Delineation of pedestrian rights-of-way with blind turns around the former train station.

Neighborhood

- May need to provide buffer for residential neighborhoods
-

Opportunities:

Depot Square

- Intermodal link to Museum or Historic Trolley Tour or City Bus
- Potential for increased revenue for existing businesses
- Potential for additional commercial trail related businesses
- Potential for roundabout to direct traffic
- Delineate Parking
- Rest stop

Trail

- Interpretive Kiosk, benches, bike racks
- Museum will make good stopping point with public restroom, shelter, shade, and nearby restaurant
- Enhancing a CSX crossing
- Allow pedestrians to explore Mechanicville
- Opportunity to link into the NY-VT Passenger Rail Study – Mechanicville probable future stop

Figure 23 – Depot Square Recommended Plan

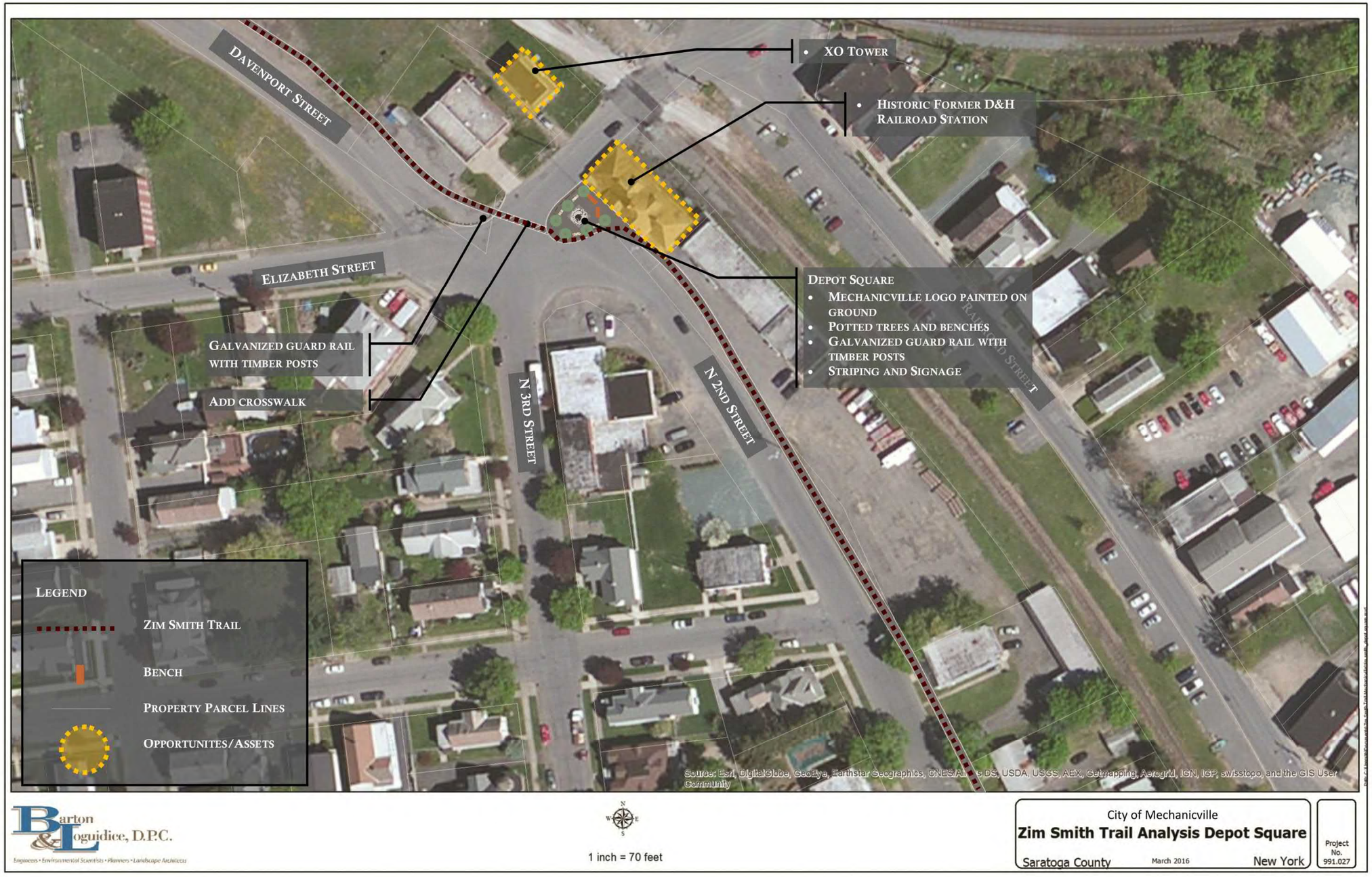
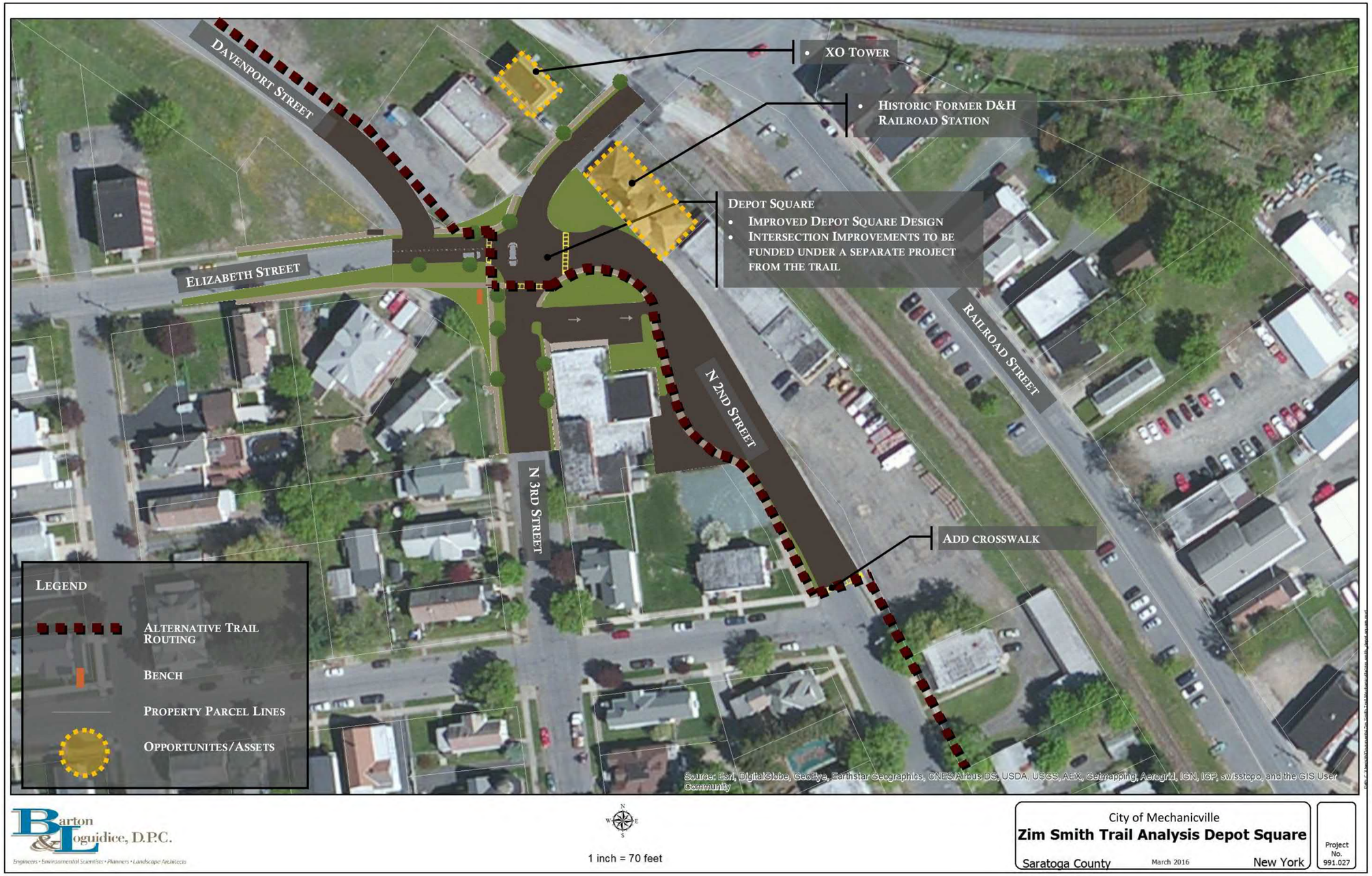


Figure 24 – Depot Square Alternate Plan



4.3 Segment C – Downtown

The Downtown corridor segment runs along Mabbett Street and Hill Street between Railroad Street and North Main Street connecting to the proposed Champlain Canalway Trail. This segment would form a pedestrian connection to Mechanicville's business district from the rest of Saratoga County. Higher vehicular traffic volumes must be accommodated in this segment in addition to the crossing of a state and federal highway (US-4/NY-32).

Figure 25 – Aerial of Downtown Mechanicville

Needs:

- Use volume may warrant for widening of trail
- Enhanced crosswalks, warning signage
- Buffering that doesn't block retail frontage visibility from US-4 and NY-32
- Trail focused wayfinding signage
- Benches, bike racks
- Mabbett Street to Hill Street existing crosswalk lights

Opportunities:

Downtown

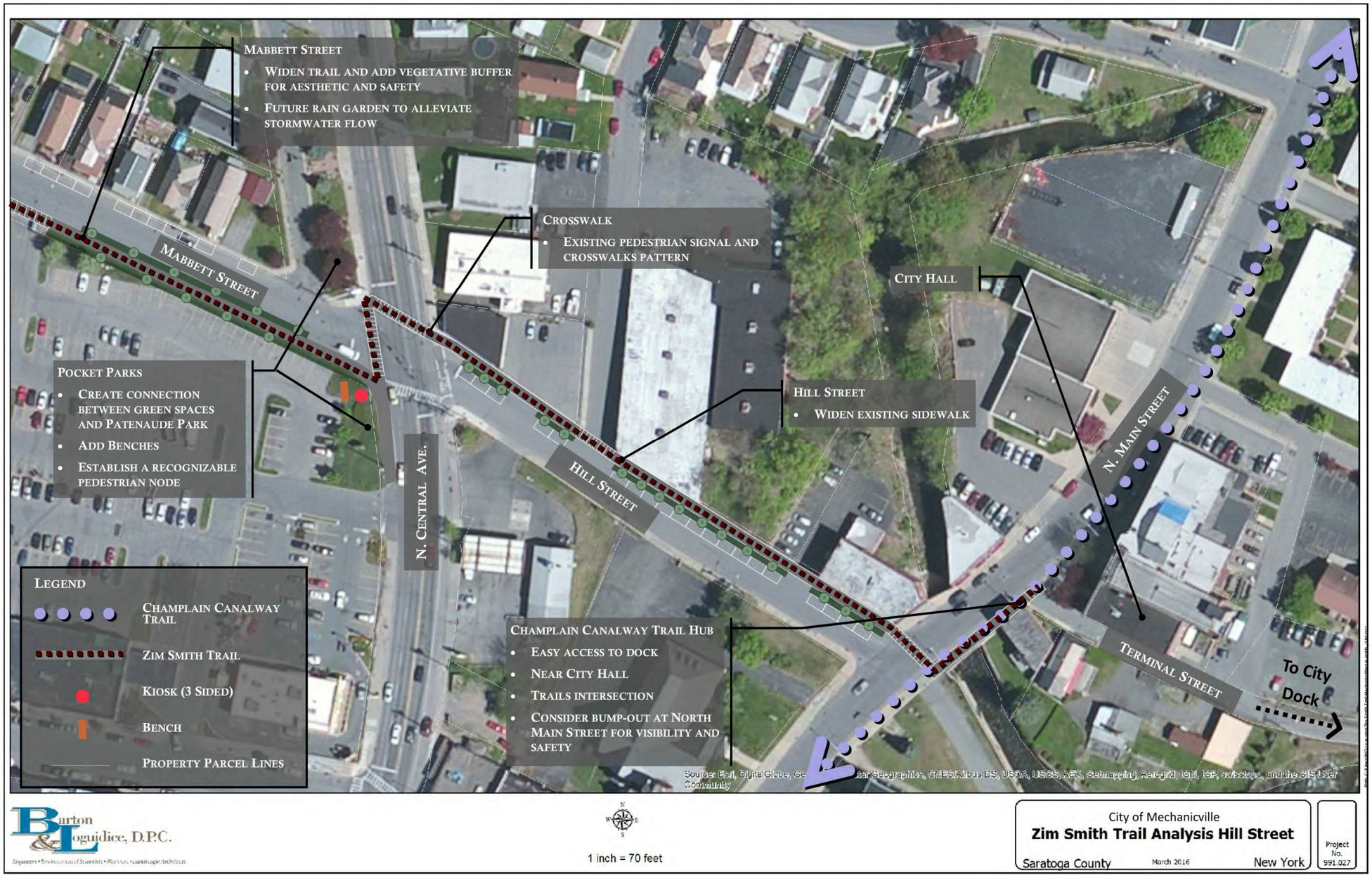
- Potential catalyst for expansion for commercial retail
- Entertainment venues
- Potential for Waterfront Restaurant and/or Micro Brewery on Main Street

Trail Use

- Improved aesthetics for Mabbett St. and Downtown
- Direct more visibility of riverfront

- Great trail hub on Main Street and focus area
- Connection to proposed Champlain Canalway Trail
- Kiosk - educational interpretive information and points of interest
- Pocket Parks - rest stops for pedestrians, bicyclists, and strollers
    - Denier Gazebo Park at Broadway, Mabbett Street, and Railroad Street
    - Green space in back of Park Avenue Plaza at its northwestern corner
    - City Dock on Terminal Street
    - Patenaude Park on Central Avenue, Mabbett Street, Canal Street, and Burke Street

Figure 26 – Zim Smith Trail Analysis Hill Street



4.4 Land Ownership considerations

The design of the trail took into consideration land ownership. Figure 27 presents the property ownership and trail path for the Industrial Park segment. The red dashed line is the proposed trail path going down from Clement Street. The blue dash line going down Industrial Park Drive is the alternate path for the trail. Routing the trail down Clement Street is a more intuitive, direct, accessible and aesthetically pleasing route. It does, however, encroach on one parcel which would require an easement from the property owner while the Industrial Park Road alternative route feasibly fits within the public right-of-way. Throughout the preferred and alternative trail routes the need for easements and utilities is minimized. There are, however, locations where this may not be avoidable. Easement requirements may be needed for 8th Street, Clement Street, and Mabbett Street all varying in locations within those streets.

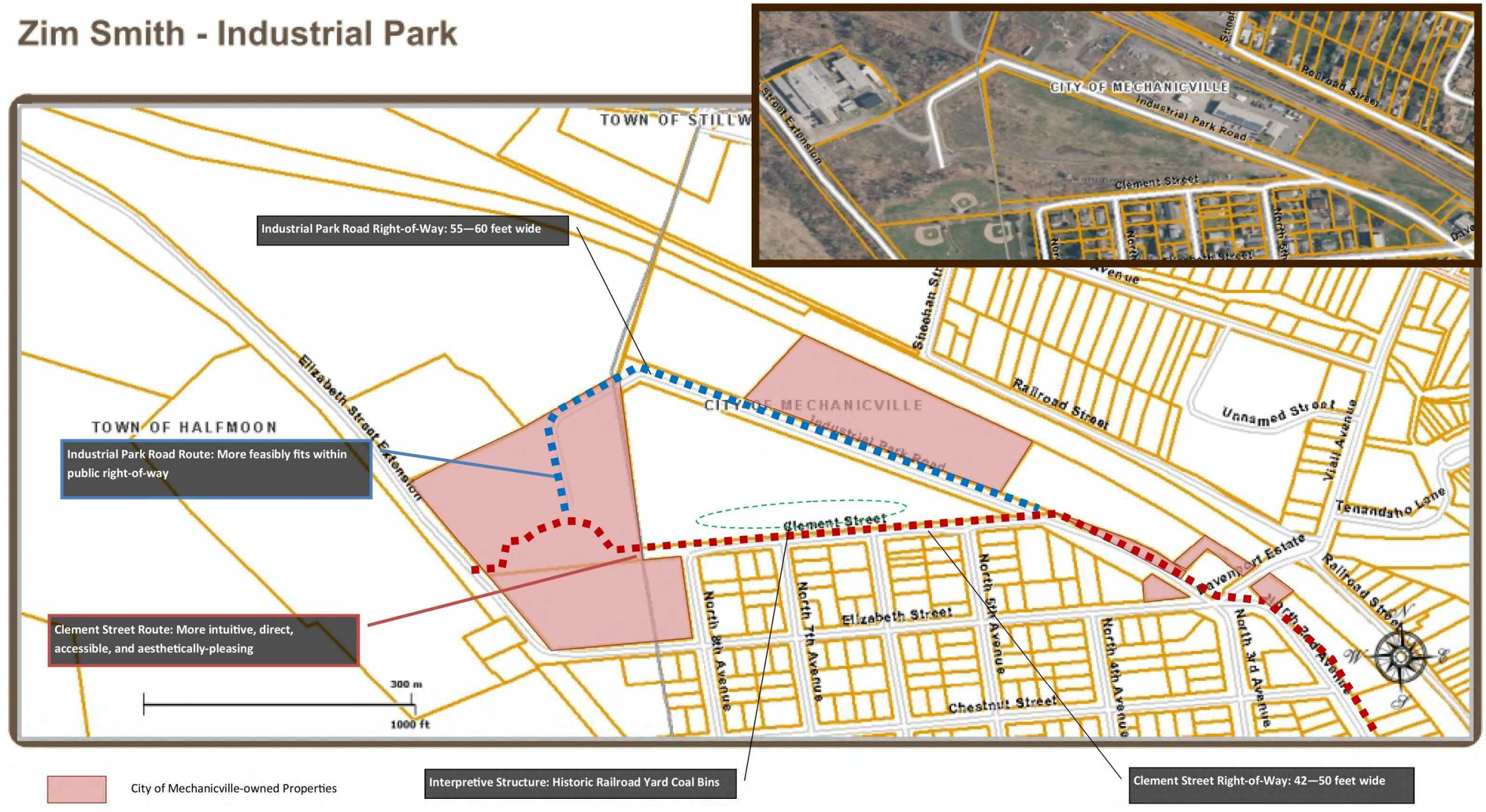


Figure 27 – Property Ownership in the Industrial Park and Little League Field Area

4.6 Future Connections

4.6.1 Champlain Canalway Trail

The Champlain Canalway Trail extension through Mechanicville aims to connect all 71 miles of the trail from Waterford to Whitehall. Both the Zim Smith Trail and the Champlain Canalway Trail would meet within Downtown Mechanicville providing the community and region with centralized access along the waterfront and through the City.

4.6.2 Pocket Parks

There are three pocket Parks ranging in different sizes that are assets for the City that the trail connects to. Patenaude Park, Denier Gazebo Park and the green space in the back of Park Plaza would be better connected, providing educational, interpretive information and distinct points of interest. Furthermore, the proposed route would connect larger recreational sites such as the Little League Fields, XO Tower, and historic former train station, and City Dock.

4.6.3 Rail Museum

The former Delaware and Hudson railroad station in Depot Square has the potential to become a rail museum. The station and XO Tower are two of the most iconic historic structures in the city and will be used to house the Mechanicville-Stillwater Chamber of Commerce, Mechanicville Historical Society and serve as a meeting space for numerous other organizations. Rehabilitation of these historic structures is underway and further grant funding is being sought.

4.7 Depot Square Pedestrian Safety

Constraints:

- Currently, Depot Square is large swath of asphalt at the confluence of five streets. This vehicle-centric intersection is difficult to navigate not only for pedestrians, but for motorists as well. Circulation and layout is major issue, no delineation between vehicular and pedestrian rights-of-way with blind turns around the former train station.
- No delineation of crosswalks, sidewalks
- No delineation of parking in Depot Square.

Opportunities:

- Two plans help delineate pedestrian crossings, making it safer and shorter crossing.
    - Recommended Plan: A recommend roundabout and clearly designated crosswalks. See Figure 23
    - Alternative Plan: The Depot Square rest stop in front of the vacant rail house provides a short safe crossing. With timber railing and galvanized steel posts wrapped around making it a delineated and protected area for pedestrians and bicyclists. See Figure 24
        - Moveable trees
        - Benches
        - Mechanicville logo on ground

4.8 Champlain Canalway Trail Connection Hub

- Connecting the Zim Smith Trail to the Champlain Canalway Trail will allow trail users to venture into Mechanicville or down Terminal Street to the City Dock.
- This trail will follow the course of the Champlain Canal from Waterford in Saratoga County to Whitehall at the bottom of Lake Champlain in Washington County.
- Leveraging the connections of another high-profile regional trail.

4.9 Safety and Accessibility

- Proposed crosswalks and sidewalks will provide safe and accessibility for pedestrians and bicyclists.
- Creating a safe, continuous network of pedestrian walkways within and between developments, pedestrians will feel more inclined to safely walk (rather than drive) between stores.
- A pedestrian network that offers clear circulation paths from the Parking areas to building entries creates a friendlier, more inviting image
- Promote attractive signs which clearly present their visual messages in a manner that is compatible with their surroundings; to reduce sign or advertising distractions and obstructions that may contribute to traffic accidents.

4.10 Historical and Cultural Opportunities (interpretation)

Establishment of the Zim Smith Trail through Mechanicville would connect city residents and trail users from around the region some of the City's most historic areas. These sites include the former railroad yard, XO Tower, former D&H railroad station, City Hall, and the City Dock.

4.11 Recreational Opportunities

The corridor offers significant opportunities to link neighborhoods to recreational amenities and park spaces such as Patenaude, Denier Gazebo Park, and the green space in back of Park Plaza across from Denier Gazebo Park. Recreational opportunities may also take place down to the Hudson River for recreational use of the river and its facilities as well as providing accessibility to the shore. The intersection of Hill Street and North Main Street provides visual view of the river which will encourage trail users to venture to the river and utilize the facilities that are available by the shore. The result of increased usage will establish the corridor as a recreational amenity.

4.11.1 Improvements to Existing and Potential Activity Areas

The main focus of this study was to establish the most appropriate overall redevelopment scenario. In addition, opportunities to enhance informal activity areas as well as opportunities to develop new activity areas exist and are worthy of discussion. In general, the identified areas are spaced at even intervals along the corridor and will provide appropriate rest stops. Amenities and landscape improvements should be low or zero maintenance and native/non-invasive plant materials should be used.

4.12 Economic Opportunities

Recreational trails, particularly those that connect activity nodes, are capable of generating both direct and indirect benefits. Direct economic benefits include activities that generate revenue by being physically located within the trail corridor while indirect benefits occur by way of the trail's interaction with activities that are not confined to the spatial limits of the corridor.

4.12.1 Direct economic benefits include:

- Public events (farmers market, flea market, Zim Smith 5k)

  Hosting public events along the Zim Smith Trail such as farmers market, flea market, street fairs, festivals, car shows or even a 5k will benefit the city of Mechanicville through revenue and recognition of specific events for the city.

- Food trucks

  Allowing food trucks to be present during public events will encourage locals and nonlocals to come to the events. Not only that, food trucks provide customers with a rare dining experience, as well as doing their part to give back to the community. Food trucks not only contribute to the food scene, but they also contribute to the social scene; encouraging friends and family members to join.

- New business (cafes, restaurants, ice cream shops)

  With increased foot traffic, seeking entrepreneurs will find certain areas of Mechanicville as a place to start new businesses that are lacking such as bike shop, cafe, restaurant, ice cream shop, sports bar and much more.

4.12.2 Indirect economic benefits include:

- Expanded access to and from Halfmoon, Clifton Park, Ballston Spa, Malta and Saratoga Springs

  Expanding access will allow other communities within Saratoga County to venture into Mechanicville which will increase business patronage and visibility.

- Quality of life enhancement

  The Zim Smith Trail will provide an enhanced quality of life by being accessible for recreational and physical activities as well as providing an alternative transportation. The trail can also be appealing to those who want to maintain and improve their health and fitness.

- Railroad tourism

  With the trail running along the former Delaware & Hudson Railroad Station in Depot Square and with the potential of becoming a rail museum will encourage railroad enthusiasts from all over to come and enjoy the history. Railroad enthusiasts can experience the former rail route as they use the Zim Smith Trail as a whole.

- Connection To Champlain Canalway Trail

  The Champlain Canalway Trail will connect all 71 miles of the trail from Waterford to Whitehall, also passing through the City of Mechanicville. Both the Zim Smith Trail and the Champlain Canalway would meet within Downtown Mechanicville and would

provide the community and region with desired access along the waterfront and through the City. The trails would converge near City Hall to improve connectivity within the Downtown area. All communities from Waterford to Whitehall along the eastern Saratoga County would be utilizing the trail which would lead to rest stops at local restaurants, cafes, or snack shops which would increase patronage. See Section 2.4 for more on expected benefits derived from the Champlain Canalway Trail Action Plan.

5.0 Trail Design Considerations

5.1 Trail Surfacing

Accessible trail surfaces should be firm and stable. For an urban setting, concrete and asphalt are the usual choices however; they may not be suitable or affordable for trails in open space, parks, and the backcountry. For the Zim Smith Trail, several commonly used trail surfacing materials were evaluated.

5.1.1. Native Materials

Local onsite soils do not generally provide an accessible surface without some additional treatments. Pedestrian and bicycle traffic over untreated native soils could potentially result in erosion for storm water runoff and damage during flood events. Other native materials that can meet the "firm and stable" requirement include 'stone dust' (a.k.a. crusher fines, crushed rock or limestone screenings) which compacts well and provides good drainage."[1] In areas where there is the potential damage from flood waters other more resilient trail pavements should be used.

Figure 28 – Native Materials

5.1.2. Polymer Emulsion Surface Treatment

Several products are available to treat native soils or other granular pavement surfaces with a naturally derived liquid polymer emulsion which hardens into an extremely durable surface. This surface would provide a resilient surface on par with asphalt, but would retain the natural colors and textures of the granular surface. The emulsion-surfaced trails are easily repaired and would resist most flood damage. Polymer emulsions cost about the same as asphalt.

Figure 29 – Polymer Emulsion Surface Treatment

5.1.3. Asphalt Surface

The most common trail surfacing, asphalt provides a flexible surface, common material, and a repairable surface. It can be made pervious to water and, when constructed using recycled asphalt, provides a sustainable design solution. Asphalt, when properly installed, provides good resistance to flood damage and is low maintenance. Asphalt allows the best surface for painted wayfinding and directional information.

Figure 30 – Asphalt Surface

5.1.4. Trail Surfacing Recommendations

The Table 1 below.

[1] http://www.americantrails.org/photoGalleries/cool/3-ADA-Accessible-Trail-Surface.html

Table 1. Trail Surfacing Matrix						
Trail Type	Advantages	Disadvantages	Installation Cost	Flood Resistance	Maintenance	Recommended Usage for Zim Smith Trail
Native Materials	Native material; lowest cost; easiest for volunteers to build and maintain; somewhat permeable	Dusty when used, ruts when wet; not all-weather; surface will be uneven; low accessibility; produces sediment that harms streams; high maintenance	Low	Low	High	None, pedestrian and bicycle traffic over untreated native soils could increase the potential for erosion and damage during flood events.
Polymer Emulsion Surface Treatment	Makes use of natural materials; binders vary; produces smooth surface; accommodates multiple uses; moderate cost	Surface wears unevenly; not stable in extreme weather; erodes over time; difficult to achieve uniform surface; can be high maintenance if not installed correctly	Medium	High	Low	Off-Road and On-Road Areas, this surface would provide a resilient surface on par with asphalt, but would retain the natural colors and textures of a granular surface.
Asphalt	Hard, flexible pavement; supports most users; accessible; low maintenance	High installation cost; costly to repair; not a natural surface; uncomfortable for walking and running; permeability comes at higher cost; hot during summer use	High	High	Low	Off-Road and On-Road Areas , asphalt provides good flood resistance, low maintenance, can be made permeable, and allows the best surface for painted wayfinding and directional information.
Concrete Pavement	Hard, nonflexible pavement; best in areas of extreme environment such as floodplain; can be formed and colored; supports multiple uses; accessible; resists freeze-thaw damage best; low maintenance	High installation cost; very urban appearance; not permeable; hot during summer use	High	Very High	Low	Off-Road and On-Road Areas, concrete pavement provides the most resilient and accessible trail surfacing, but is expensive, difficult to repair, and not as flexible as other systems.

5.2 Pedestrian Accommodations

5.2.1. Pedestrian/Bicycle Accommodations

Separate pedestrian or bicycle access and circulation may be provided both within the site and to adjacent streets, with particular attention to all intersections with vehicular traffic. All pedestrian and bicycle should be hard surfaced, have a minimum width of five feet, and meet applicable handicapped accessibility requirements. All separate walkways and bikeways shall be safe, adequate and convenient.

5.2.2. Crosswalks

Crossings along some of the suggested corridor routes are currently striped with paint. While effective for communicating crossing locations to pedestrians, additional measures would increase the awareness of pedestrian crossings for motorists. The use of textured and colored pavement treatments, warning signage and curb bump-outs would more effectively mark crossing locations for most of the roads in the study area. A variety of surface material options exist for crosswalks that can improve the texture and color of the crosswalk space. Three modern techniques are recommended for consideration: applied thermoplastic, embedded thermoplastic and mill then infill with colored and imprinted asphalt.

5.3 Pocket Parks

There are three pocket Parks along the trail route. The parks are situated near the midpoint of the trail corridor thus will create pleasant resting spots and provide amenities for trail users. Patenaude Park, Denier Gazebo Park and the unnamed open green in the back of Park Plaza, may also provide historical interpretive information, maps, directions to local businesses and other information. Opportunities exist along the Hudson River to create additional open spaces near the City Dock which can easily be connected to the trail corridor.

Figure 31 – Interpretive Kiosk (Falls View Park, Cohoes, NY)

5.4 Amenities

Trail amenities should include interpretive signage, wayfinding signage, benches, railings, and bicycle racks. The trail corridor offers a wealth of historic and cultural sites that can be celebrated on interpretive signage. Design and style of these amenities should be consistent throughout the trail and coordinated with the Saratoga County Planning Department.

5.5 Alternative Trail Construction Scenarios

Three scenarios are provided below for trail construction to allow for various levels of funding. A minimal impact alternative is offered to allow the trail and key connections to get established with a minimal investment. Subsequent scenarios are offered which can be implemented which will provide more moderate funding. Scenario one will allow the quick and inexpensive establishment of the trail while additional funding is obtained. Phased improvements over several years can then be completed of segments ultimately implementing the most desirable (Scenario 3) level of improvements throughout the city segments of the Zim Smith Trail.

5.5.1. Alternative Scenario 1- Minimal Improvements

This alternative would utilize current sidewalks and implementing the trail by painted symbols, new cross walks and signage. A system of painted lines on sidewalks and streets would provide pedestrians with visual clues to the trail route. On streets that do not have existing sidewalk paths a striped bike lane would be provided. Some deteriorating sidewalks should be repaired or replaced to eliminate hazards. Streets that can easily be treated under this scenario to establish the trail include Industrial Park Road, North 2nd Avenue, Broadway, Mabbett Street and Hill Street. The advantages and disadvantages of this scenario include:

- Provides limited interim enhancements to create local trail linkages
- Can be easily accomplished on publicly owned lands
- Does not significantly improve safety for vehicles, pedestrians and bicyclists
- Does not reduce future maintenance requirements
- Would not permanently improve regional and local trail linkages without an annual restriping program

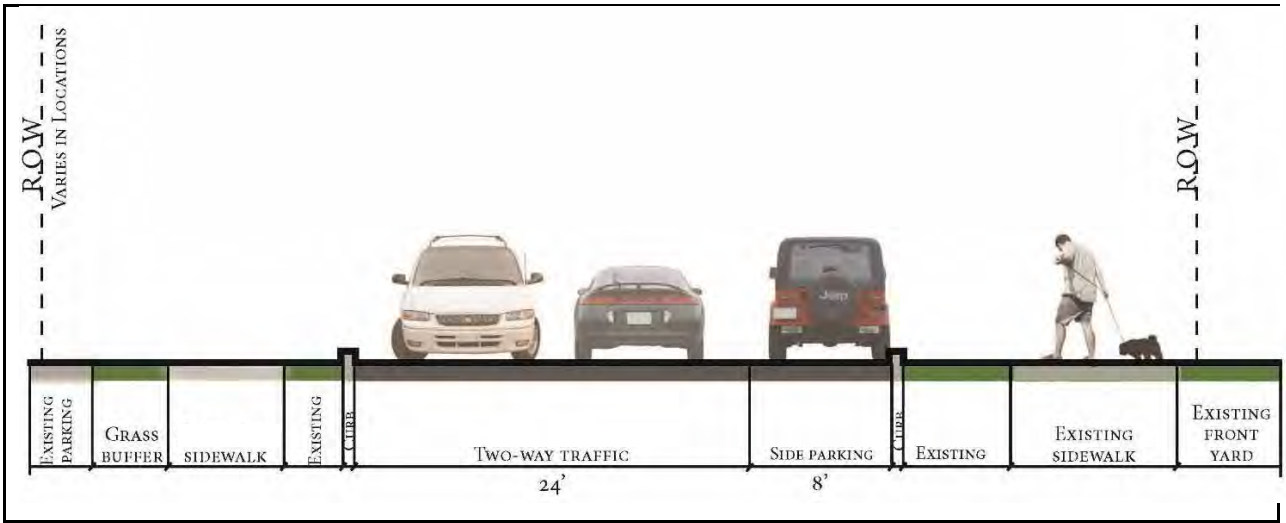


Figure 32: Scenario 1 - Minimal Improvements (Example of reuse of existing sidewalks)

5.5.2. Alternative Scenario 2 - Moderate Improvements

This alternative would include creating new 10' wide dedicated pathways utilizing a stone dust, polymer emulsion or asphalt surface. This pathway would be built along the Elizabeth Street Extension then routed through the Little League Fields, through the industrial park alongside Industrial Park Drive and finally alongside Clement Street and Davenport Street to Depot Square. Asphalt would replace concrete sidewalks along the remaining segments of the trail to establish the trail corridor. In addition to textured and colored crosswalks and signage; pedestrian bump-outs would be added add key intersection including Depot Square, Broadway, Central Avenue and Main Street to slow down vehicular traffic and provide safety and space for pedestrians and bicyclists. More extensive directional and wayfinding signage would be provided under this scenario. The advantages and disadvantages of this scenario include:

- Would provide a dedicated off-road trail link
- Can be easily accomplished on publicly owned lands
- Reduces some future maintenance requirements, but introduces a less resilient surface (asphalt) where currently surfaces are concrete
- Would make some wide ranging safety improvements including some traffic calming features (narrow lanes, curbs)

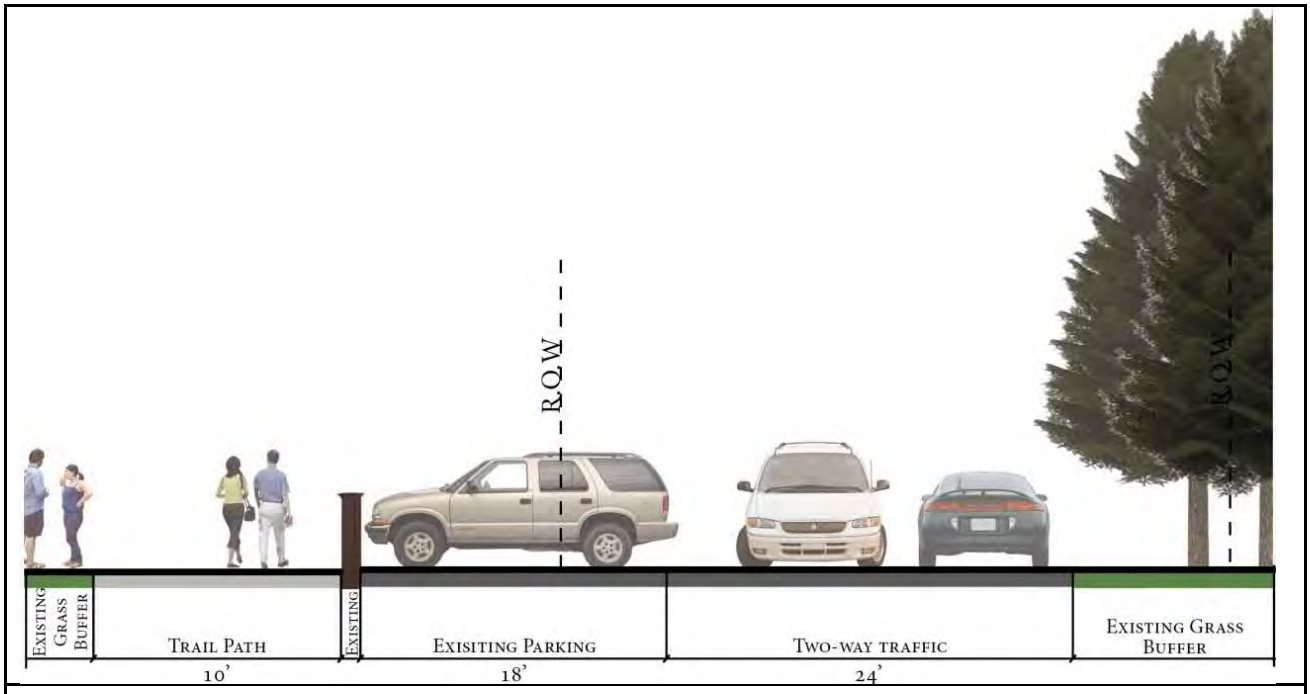


Figure 33: Scenario 2 - Moderate Improvements (Example of Dedicated Off-Road Path near the Little League Fields)

5.5.3. Alternative Scenario 3 - Substantial Improvement

This alternative is similar to Alternative Two, however instead of replacing walks with asphalt, it would include the addition, replacement or expansion of the existing concrete sidewalks to create

a 10' wide trail paths buffered from roadways with a series of two to four-foot wide landscaped spaces. New corridor and interpretive signage would be installed. Extensive landscaping, wetlands, green infrastructure, and interpretive facilities would be incorporated into landscape buffers. Pocket parks would be created or improved to provide additional trail related amenities. The advantages and disadvantages of this scenario include:

- Will require the greatest monetary investment to develop
- Provides the most appropriate level of enhancements for a regional trail link
- Provides the highest level of user experience and quality of life upgrade for residents
- Fully implements complete streets, universal access, and safety objectives
- Will address some structural problems that will result in significant savings on long term maintenance
- Makes significant safety improvements including some traffic calming features (planted median, curbs)
- Includes green infrastructure and streetscape improvements

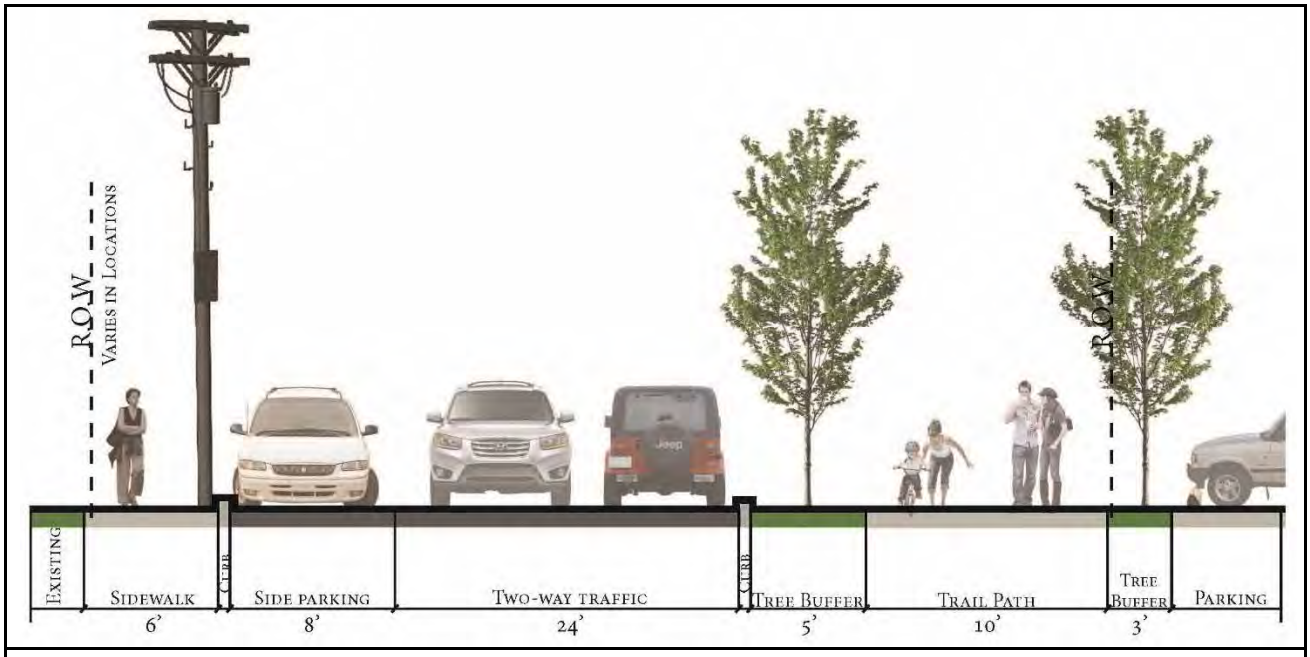


Figure 34: Scenario 3 - Substantial Improvement Cross-section

5.7 Wayfinding

Orientation and wayfinding panels help visitors locate themselves in the region, landscape, byway, or on a trail. They can also involve the reader in the landscape by highlighting points of

interest and opportunities in the area. They can be designed to be used or adapted at several sites and help establish that sense of place and identity.

Wayside maps and interpretive panels along the Zim Smith Trail should be coordinated with signage systems in use by Saratoga County Planning. Consistency is critical to providing effective guidance for visitors and helping to navigate along the system through possibly unknown and complex places. Benefits of trail focused wayfinding signage include:

- Familiarizes users with the bicycle network and provide information about the best routes to destinations and route connections.
- Overcomes a "barrier to entry" for infrequent bicyclists.
- Signage that includes mileage and travel time to destinations may help minimize the tendency to overestimate the amount of time it takes to travel by bicycle.
- Visually indicates to motorists that they are driving along a bicycle route and should use caution.
- Passively markets the bicycle network by providing unique and consistent imagery throughout the jurisdiction.

A signage master plan should be developed to carefully plan and locate the different signage types throughout the project area. More detail about signage types is presented in the standards section of this report (Section 7.0).

Figure 35: Trail Focused Wayfinding Signage Example

6.0 Probable Cost Estimate

6.1 Concept Level Probable Construction Costs

Table 2: Zim Smith Trail Probable Project Cost Comparison				
See Appendices for Detailed Probable Project Costs (Tables 2-1 through 2-6)				
Alternative	Improvement Level	Construction	Engineering, Permitting and Survey	Total
Preferred Route (Industrial Park Dr.)	Minimal Option/Signage & Striping	$425,000.00	$70,000.00	$495,000.00
Preferred Route (Industrial Park Dr.)	Substantial Option/Off-Road Protected Path	$1,100,000.00	$180,000.00	$1,280,000.00
Alternative Route #1 (Clement St.)	Minimal Option/Signage & Striping	$450,000.00	$72,000.00	$522,000.00
Alternative Route #1 (Clement St.)	Substantial Option/Off-Road Protected Path	$1,000,000.00	$170,000.00	$1,170,000.00
Alternative Route #2 (Elizabeth St.)	Minimal Option/Signage & Striping	$360,000.00	$60,000.00	$420,000.00
Alternative Route #2 (Elizabeth St.)	Substantial Option/Off-Road Protected Path	$1,025,000.00	$170,000.00	$1,195,000.00

7.0 Design Criteria and Applicable Standards

7.1 Applicable Guidelines

Several design standards and guidelines are applicable to the design for the Zim Smith Trail including: AASHTO, *Guide for the Development of Bicycle Facilities* (2012) and the NYSDOT *Highway Design Manual* (HDM), Chapters 17 & 18, Facilities for Pedestrians and Bicyclists (2013). The National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide (2014) provides supplemental information and recommendations that will also be drawn upon during design of the project.

In addition, this project would also reference the following additional design standards:

- AASHTO, *Guide for the Planning, Design, and Operation of Bicycle Facilities* (2014)
- AASHTO *Policy on Geometric Design of Highways and* Streets (2011)
- City of Mechanicville City Code
- "Unlocking the Legend", NYS Canal System Signage Design Guidelines (1999)

7.2 General Bicycle and Shared Use Path Design Guidelines

The Zim Smith Trail should generally follow established trail design standards of Saratoga County Planning for Shared Use Paths. In addition, the following guidelines can be applied given the urban nature of this segment.

Shared Use Path

Shared use paths are facilities on exclusive right-of-way and with minimal cross-flow by motor vehicles. Shared use paths should not be used to preclude on-road bike facilities, but rather to supplement a system of on-road bike lanes, wide outside lanes, paved shoulders and bike routes.

Separation between Shared Use Paths and Roadways

When two-way, shared use paths are located adjacent to a roadway, wide separation between a shared use path and the adjacent highway is desirable to demonstrate to both the bicyclist and the motorist that the path functions as an independent facility for bicyclists and others. When this is not possible and the distance between the edge of the shoulder and the shared use path is less than 5 feet, a suitable physical barrier is recommended. The barrier should be a minimum of 55 inches high.

Width and Clearance

A recommended paved width for a two-directional shared use path is 10 feet. In rare instances, a reduced width of 8 feet can be adequate. This reduced width should only be used where the following conditions prevail:

- Bicycle traffic is expected to be low, even on peak days or during peak hours.
- Pedestrian use of the facility is not expected to be more than usual.

- There will be good horizontal and vertical alignment providing safe and frequent passing opportunities.

A minimum 2-foot-wide graded area with a maximum 1:6 slope should be maintained adjacent to both sides of the path; however, 3 feet or more is desirable to provide clearance from trees, poles, walls, fences, guiderails, or other lateral obstructions.

7.3 Signage and Markings System

A bicycle wayfinding system consists of comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes. Signs are typically placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes. Regardless of the type of facility or roadway where they are used, it is recommended that bike route signs include destination information.

Since the Mechanicville segment of the Zim Smith Trail will be connected with the Town of Halfmoon's segment, both stretches should include signage consistent with each other.

There are three general types of wayfinding signs:

1. *Confirmation Signs*

Confirmation signs indicate to bicyclists that they are on a designated bikeway and make motorists aware of the bicycle route and confirm that they are in a National Heritage Corridor. These signs can include information, destinations, and distance/travel time, but do not include directional arrows. These signs are also used to highlight historic sites. Important views, and provide location orientation.

Figure 36 – Signage Example

Every ¼ to ½ mile on off-street facilities and every 2 to 3 blocks along bicycle facilities, unless another type of sign is used (e.g., within 150 ft. of a turn or decision sign). These signs should be placed soon after turns to confirm destination(s). Pavement markings can also act as confirmation that a bicyclist is on a preferred route.

2. *Turn Signs*

Turn signs indicate where a bikeway turns or transitions from one street onto another street. These signs can also be used with pavement markings. Information provided includes a system of identification sign and destinations with arrows. Placement is generally near intersections, recreational sites, or other bikeway features where bike routes turn. Pavement markings can also indicate the need to turn to the bicyclist.

3. *Decision Signs*

The purpose of decision signs is to mark the junction of two or more bikeways or inform bicyclists of the designated bike route to access key destinations. Information provided includes destinations and arrows, distances, and travel times. Placement of decision signs is at the near-side of intersections in advance of a junction with another bicycle route or along a route to indicate a nearby destination.

Pavement Markings

Pavement markings can be installed to help reinforce routes and directional signage and to provide bicyclist positioning and route branding benefits. Markings may be useful where signs are difficult to see (due to vegetation or Parked cars) and can help bicyclists navigate difficult turns and provide route reinforcement. Where there is a concern for damage or loss of signage due to flood waters, pavement marking can be provided instead.

Informational and Interpretive Signage

Multi-faceted kiosks at trailhead locations can provide orientation and wayfinding panels which help visitors locate themselves in the region, landscape, byway, or on the trail. They can also involve the reader in the landscape by highlighting points of interest and opportunities in the area. They can be designed to be used or adapted at several sites and help establish that sense of place and identity.

Design Speed

The Zim Smith Trail will generally have minimal turns or changes in grade. However, travel speed should be considered in the final design. The speed a bicyclist travels is dependent on several factors, including the type and condition of the bicycle; the purpose of the trip; the condition, location and grade of the path; the speed and direction of any prevailing winds; the number and types of users on the path; and the physical condition of the bicyclist. Shared use paths should be designed for a selected speed that is at least as high as the preferred speed of the faster bicyclists. In general, a minimum design speed of 30 km/h (20 mph) should be used. Although bicyclists can travel faster than this, to do so would be inappropriate in a mixed-use setting. Design and traffic controls can be used to deter excessive speed and faster cyclists can be encouraged to use the roadway system. Lower design speeds should not be selected to artificially lower user speeds. When a downgrade exceeds 4 percent, or where strong prevailing tailwinds exist, a design speed of 50 km/h (30 mph) or more is advisable. Pedestrian chicanes should be used to discourage high speeds on the trail on short downslopes.

7.4 City of Mechanicville City Code

Should the decision to implement a more substantial, off-road trail be made, the following sections of City Code relating to sidewalk construction and maintenance must be considered.

§ 164-2. Permit required; repairs after excavation. [Amended 7-28-1971]

A. Hereafter, no person, firm or corporation shall remove or disturb the pavement or any part thereof, or the surface or any part thereof, of any road, street or avenue within said city; or dig, excavate, trench or lay any ditch therein; or therein or thereunder lay any laterals or service pipes for connections with any water, gas or sewer main therein without a permit issued therefor by the Commissioner of Accounts of the City of Mechanicville, attested by the Commissioner of Public Works and sealed with the Seal of said city.
B. The Commissioner of Accounts is authorized and directed to assess a fee in the amount as set from time to time by resolution of the City Council (see fee schedule on file in the City offices) for each and every application requesting permission to excavate in the city streets of the City of Mechanicville. [Added 4-26-1989]

C. Street excavations shall be repaired in accordance with patching methods to be employed in pavement closures for different types of pavements in the City of Mechanicville as shown on a drawing approved by the City Council.
D. Repairs to the City streets after excavations will be made within a time period of 15 days and in accordance with the directives rules and regulations promulgated by the Commissioner of Public Works. 128EN.

§ 164-10. Sidewalk Construction 132EN133EN

B. The commissioner of Public Works shall notify said property owner to erect and construct the sidewalks, and in the event that said sidewalks are not erected and construction within 45 days from the date of said notice, it shall be the duty of the Commissioner of Public works is hereby directed to erect and construct said sidewalks in accordance with said uniform plans and specifications, and it shall be the duty of the Commissioner of Accounts an d the Commissioner of Accounts is hereby directed to assess the entire cost of said construction and erection of said sidewalks upon said abutting or adjoining property owners and collect the same according to law.

C. Sidewalks shall be constructed in accord with specifications promulgated by the Department of Public Works.

§ 164-13. Maintenance

It shall in all cases be the duty of the owner of every lot or piece of land in the City of Mechanicville to keep the sidewalks adjoining his lot or piece of land in good repair and to remove and clean away all snow and ice and other obstructions from such sidewalk.

8.0 Funding Source Analysis

8.1 Recreational Trails Program

The Recreational Trails Program provides funds for the development and maintenance of recreational trails and trail-related facilities. The program benefits hiking, bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or using other off-road motorized vehicles. Funds from the Federal Highway Trust Fund are distributed to States by legislative formula and each State administers its own program. In New York, the Office of Parks, Recreation, and Historic Preservation (OPRHP) awards funding under the Recreational Trails Program through the Consolidated Funding Application.

8.2 Federal Highway Administration (FHWA)

The new Federal transportation legislation, Moving Ahead for Progress in the 21st Century, consolidates funding formerly under Enhancements (TEP), Recreational Trails (RTP), Safe Routes to School (SRTS) and other programs into "Transportation Alternatives" (TAP). Many of the activities discussed below are eligible for funding under that program.

8.3 Transportation Enhancement Program (TEP)

The Transportation Enhancement Program (TEP) is a federal program, administered by the New York State Department of Transportation (NYSDOT) that funds projects not generally eligible for funding through traditional transportation programs. This program enables funding for transportation projects of cultural, aesthetic, historic and environmental significance. The NYSDOT listed five categories of eligible projects under the new program. They are as follows:

8.3.1 Categories:

- Provision of facilities for bicycles and pedestrians
- Scenic or historic* highway programs;
- Landscaping and other scenic beautification;
- Preservation of Abandoned Railway Corridors (Including the Conversion and Use thereof for Pedestrian or Bicycle Trails).
- Environmental mitigation to address water pollution due to highway runoff or to reduce vehicle-caused wildlife mortality while maintaining habitat connectivity

8.3.2 Sub-Categories:

- All improvements funded through this program must be available for public access and use.

- Must have a relationship with the surface transportation system

8.4 Hazard Elimination Program (HEP)

Funds authorized to carry out this program can be used for safety improvement projects on any public road, any public surface transportation facility, or any· publicly owned bicycle or pedestrian pathway or trail. Typical project types include: intersection improvements (channelization, traffic signals, and sight distance); pavement and shoulder widening; guardrail and barrier improvements; installation of crash cushions; modification of roadway alignment, signing, pavement marking and delineation; breakaway utility poles and sign supports; pavement grooving and skid-resistant overlays; shoulder rumble strips; and minor structure replacements or modifications.

8.5 Consolidated Funding Application Programs (CFA)

In 2011 NYS consolidated several agency funding programs into a single online system that provided guidelines for the regional competition for funding by establishing regional councils. Among the state agencies included in this process are the Office of Community Revitalization, Office of Parks, Recreation and Historic Preservation, Environmental Facilities Corporation, Empire State Economic Development Corp., Energy Research and Development Agency, NYS Canal Corporation and the State Drinking Water Revolving Loan Fund.

8.6 Other Sources

8.6.1 Saratoga County Planning Department Trails Grant Program

The Saratoga County Planning Department offers grants to assist its cities, towns, and villages in expanding the County's recreational trail network. Awards, usually between $5,000 and $15,000 each, are accompanied by a dollar-for-dollar local contribution requirement. Solicitation for the program is made directly by the Saratoga County Planning Department to its constituent municipalities.

8.6.2 Local Corporations

Saratoga Casino & Raceway

The Saratoga Casino & Raceway Foundation, Inc. works to support of charitable and public benefit organizations whose mission is improve the quality of life, health and welfare of the Saratoga County residents. Guidelines for this foundation are:

- Applicant organizations must be classified as a not-for-profit organization by the Internal Revenue Service.
- Applicant organizations must carry out services and activities that benefit the residents of Saratoga County.
- Activities that address problem gambling, support youth, senior citizens, recreation, arts and community benefit are preferred

The Foundation generally will not consider:

- Grants or loans to individuals.
- Education or scholarship aid.
- Grants for labor costs.

8.6.3 Private Foundations

Golub Foundation

Price Chopper's Golub Foundation provides financial support to eligible charitable organizations with a current 501(c)(3) tax exempt status located within Price Chopper's marketing areas in New York, Massachusetts, Vermont, Pennsylvania, Connecticut and New Hampshire. Contributions are made through planned, continued giving programs in the areas of health and human services, arts, culture, education, and youth activities.

Zim Smith Trail: Mechanicville Segment

Feasibility Report Appendices

Appendix A: Opinions of Probable Costs

Table 2: Zim Smith Trail Probable Project Cost Comparison				
See Appendices for Detailed Probable Project Costs (Tables 2-1 through 2-6)				
Alternative	Improvement Level	Construction	Engineering, Permitting and Survey	Total
Preferred Route (Industrial Park Dr.)	Minimal Option/Signage & Striping	$425,000.00	$70,000.00	$495,000.00
Preferred Route (Industrial Park Dr.)	Substantial Option/Off-Road Protected Path	$1,100,000.00	$180,000.00	$1,280,000.00
Alternative Route #1 (Clement St.)	Minimal Option/Signage & Striping	$450,000.00	$72,000.00	$522,000.00
Alternative Route #1 (Clement St.)	Substantial Option/Off-Road Protected Path	$1,000,000.00	$170,000.00	$1,170,000.00
Alternative Route #2 (Elizabeth St.)	Minimal Option/Signage & Striping	$360,000.00	$60,000.00	$420,000.00
Alternative Route #2 (Elizabeth St.)	Substantial Option/Off-Road Protected Path	$1,025,000.00	$170,000.00	$1,195,000.00

Table 2: Zim Smith Trail Probable Project Cost Comparison *Table 2-1 - Preferred Route (Industrial Park Dr.) with Signage & Striping*					
Assumptions/Notes	Description	Unit	Quantity	Unit Cost	Total Cost
Small Area Near Ballfields	Clear & Grub Brush Including Stumps	ACRE	1	$ 6,500.00	$ 6,500.00
10' wide x 400' x 18" deep	Excavation - Trail Box Out	CY	300	$ 17.00	$ 5,100.00
10' wide x 400' x 6" deep	Subbase	CY	150	$ 35.00	$ 5,250.00
10' wide x 400' x 4" deep	Asphalt Concrete Sidewalks, Driveways and Bicycle Paths	TON	100	$ 110.00	$ 11,000.00
	Tack Coat	GAL	15	$ 5.00	$ 75.00
Sharrows @ 250'; Share the Lane Signs @ 500'; Striping	Striping and Signage	LF	5300	$ 6.50	$ 34,450.00
Crosswalks 8' wide - Ladder Style	Crosswalk Striping	EA	5	$ 500.00	$ 2,500.00
Select Asphalt Pavement Repair and Replacement	Asphalt Pavement	LS	1	$ 50,000.00	$ 50,000.00
Add Fencing, Signage, Widen/Upgrade Pavement for Bikes	Improve Existing CP Rail Ped Crossing along Broadway for Bicycles	EA	1	$ 50,000.00	$ 50,000.00
Replace CB Grates w ADA Compliant	Drainage Improvements	LS	1	$ 10,000.00	$ 10,000.00
Pedestrian and Cyclist Amenities	Bike Racks, Benches, Bollards, Directional Signage and Landscaping	LS	1	$ 75,000.00	$ 75,000.00
Price per foot based on recent trail projects, includes establishing turf, topsoil	Green Infrastructure	SF	4800	$ 5.00	$ 24,000.00
Construction Subtotal					$ 273,875.00
5% of Total	Field Change Allowance				$ 13,693.75
5% of Total	Mobilization				$ 13,693.75
20% of Total	Contingency				$ 109,550.00
25% of Total	Engineering, Permitting and Survey				$ 68,468.75
Total Probable Construction Cost					$ 479,281.25

Table 2: Zim Smith Trail Probable Project Cost Comparison *Table 2-2 - Preferred Route (Industrial Park Dr.) with Off-road Protected Path*					
Assumptions/Notes	Description	Unit	Quantity	Unit Cost	Total Cost
Small Area Near Ballfields	Clear & Grub Brush Including Stumps	ACRE	1	$ 6,500.00	$ 6,500.00
10' wide x 5,300' x 18" deep	Excavation - Trail Box Out	CY	3,000	$ 17.00	$ 51,000.00
10' wide x 5,300' x 6" deep	Subbase	CY	1,500	$ 35.00	$ 52,500.00
10' wide x 5,300' x 4" deep	Asphalt Concrete Sidewalks, Driveways and Bicycle Paths	TON	1,300	$ 110.00	$ 143,000.00
	Tack Coat	GAL	200	$ 5.00	$ 1,000.00
Crosswalks 8' wide - Ladder Style	Crosswalk Striping	EA	5	$ 500.00	$ 2,500.00
Select Asphalt Pavement Repair and Replacement	Asphalt Pavement	LS	1	$ 50,000.00	$ 50,000.00
Assumed need for 2,000' of the Trail	Timber Pedestrian/Bicycle Guide Rail	LF	2,000	$ 35.00	$ 70,000.00
Add Fencing, Signage, Widen/Upgrade Pavement for Bikes	Improve Existing CP Rail Ped Crossing along Broadway for Bicycles	EA	1	$ 50,000.00	$ 50,000.00
Price per foot based on other trails, includes underdrain	Drainage Improvements	LF	5,300	$ 10.00	$ 53,000.00
Pedestrian and Cyclist Amenities	Bike Racks, Benches, Bollards, Signage and Landscaping	LS	1	$ 75,000.00	$ 75,000.00
Price per foot based on recent trail projects, includes establishing turf, topsoil	Green Infrastructure	SF	30000	$ 5.00	$ 150,000.00
Construction Subtotal					$ 704,500.00
5% of Total	Field Change Allowance				$ 35,225.00
5% of Total	Mobilization				$ 35,225.00
20% of Total	Contingency				$ 281,800.00
25% of Total	Engineering, Permitting and Survey				$ 176,125.00
Total Probable Construction Cost					$ 1,232,875.00

Table 2: Zim Smith Trail Probable Project Cost Comparison *Table 2-3 - Alternative Route #1 (Clement St.) with Signage & Striping*					
Assumptions/Notes	Description	Unit	Quantity	Unit Cost	Total Cost
Small Area Near Ballfields	Clear & Grub Brush Including Stumps	ACRE	1	$ 6,500.00	$ 6,500.00
10' wide x 700' x 18" deep	Excavation - Trail Box Out	CY	725	$ 17.00	$ 12,325.00
10' wide x 700' x 6" deep	Subbase	CY	150	$ 35.00	$ 5,250.00
10' wide x 700' x 4" deep	Asphalt Concrete Sidewalks, Driveways and Bicycle Paths	TON	175	$ 110.00	$ 19,250.00
	Tack Coat	GAL	15	$ 5.00	$ 75.00
Select Asphalt Pavement Repair and Replacement	Asphalt Pavement	LS	1	$ 50,000.00	$ 50,000.00
Sharrows @ 250'; Share the Lane Signs @ 500'; Striping	Striping and Signage	LF	4950	$ 6.50	$ 32,175.00
Crosswalks 8' wide - Ladder Style	Crosswalk Striping	EA	10	$ 500.00	$ 5,000.00
Add Fencing, Signage, Widen/Upgrade Pavement for Bikes	Improve Existing CP Rail Ped Crossing along Broadway for Bicycles	EA	1	$ 50,000.00	$ 50,000.00
Replace CB Grates w ADA Compliant	Drainage Improvements	LS	1	$ 10,000.00	$ 10,000.00
Pedestrian and Cyclist Amenities	Bike Racks, Benches, Bollards, Directional Signage and Landscaping	LS	1	$ 75,000.00	$ 75,000.00
Price per foot based on recent trail projects, includes establishing turf, topsoil	Green Infrastructure	SF	5000	$ 5.00	$ 25,000.00
Construction Subtotal					$ 290,575.00
5% of Total	Field Change Allowance				$ 14,528.75
5% of Total	Mobilization				$ 14,528.75
20% of Total	Contingency				$ 114,930.00
25% of Total	Engineering, Permitting and Survey				$ 71,018.75
Total Probable Construction Cost					$ 505,581.25

Table 2: Zim Smith Trail Probable Project Cost Comparison *Table 2-4 - Alternative Route #1 (Clement St.) with Off-road Protected Path*					
Assumptions/Notes	Description	Unit	Quantity	Unit Cost	Total Cost
Small Area Near Ballfields	Clear & Grub Brush Including Stumps	ACRE	1	$ 6,500.00	$ 6,500.00
10' wide x 5,000 LF x 18" deep	Excavation - Trail Box Out	CY	2,800	$ 17.00	$ 47,600.00
10' wide x 5,000' x 6" deep	Subbase	CY	1,200	$ 35.00	$ 42,000.00
10' wide x 5,000' x 4" deep	Asphalt Concrete Sidewalks, Driveways and Bicycle Paths	TON	1,200	$ 110.00	$ 132,000.00
	Tack Coat	GAL	180	$ 5.00	$ 900.00
Select Asphalt Pavement Repair and Replacement	Asphalt Pavement	LS	1	$ 50,000.00	$ 50,000.00
Crosswalks 8' wide - Ladder Style	Crosswalk Striping	EA	10	$ 500.00	$ 5,000.00
Assumed need for 2,000' of the Trail	Timber Pedestrian/Bicycle Guide Rail	LF	2,000	$ 35.00	$ 70,000.00
Add Fencing, Signage, Widen/Upgrade Pavement for Bikes	Improve Existing CP Rail Ped Crossing along Broadway for Bicycles	EA	1	$ 50,000.00	$ 50,000.00
Price per foot based on other trails, includes underdrain	Drainage Improvements	LF	5,000	$ 10.00	$ 50,000.00
Pedestrian and Cyclist Amenities	Bike Racks, Benches, Bollards, Signage and Landscaping	LS	1	$ 75,000.00	$ 75,000.00
Price per foot based on recent trail projects, includes establishing turf, topsoil	Green Infrastructure	SF	28000	$ 5.00	$ 140,000.00
Construction Subtotal					$ 669,000.00
5% of Total	Field Change Allowance				$ 33,450.00
5% of Total	Mobilization				$ 33,450.00
20% of Total	Contingency				$ 267,600.00
25% of Total	Engineering, Permitting and Survey				$ 167,250.00
Total Probable Construction Cost					$ 1,170,750.00

Table 2: Zim Smith Trail Probable Project Cost Comparison *Table 2-5 - Alternative Route #2 (Elizabeth St.) with Signage & Striping*					
Assumptions/Notes	Description	Unit	Quantity	Unit Cost	Total Cost
Select Asphalt Pavement Repair and Replacement	Asphalt Pavement	LS	1	$ 50,000.00	$ 50,000.00
Sharrows @ 250'; Share the Lane Signs @ 500'; Striping	Striping and Signage	LF	5000	$ 6.50	$ 32,500.00
Crosswalks 8' wide - Ladder Style	Crosswalk Striping	EA	12	$ 500.00	$ 6,000.00
Add Fencing, Signage, Widen/Upgrade Pavement for Bikes	Improve Existing CP Rail Ped Crossing along Broadway for Bicycles	EA	1	$ 50,000.00	$ 50,000.00
Replace CB Grates w ADA Compliant	Drainage Improvements	LS	1	$ 10,000.00	$ 10,000.00
Pedestrian and Cyclist Amenities	Bike Racks, Benches, Bollards, Directional Signage and Landscaping	LS	1	$ 75,000.00	$ 75,000.00
Price per foot based on recent trail projects, includes establishing turf, topsoil	Green Infrastructure	SF	3000	$ 5.00	$ 15,000.00
Construction Subtotal					$ 238,500.00
5% of Total	Field Change Allowance				$ 11,925.00
5% of Total	Mobilization				$ 11,925.00
20% of Total	Contingency				$ 95,400.00
25% of Total	Engineering, Permitting and Survey				$ 59,625.00
Total Probable Construction Cost					$ 417,375.00

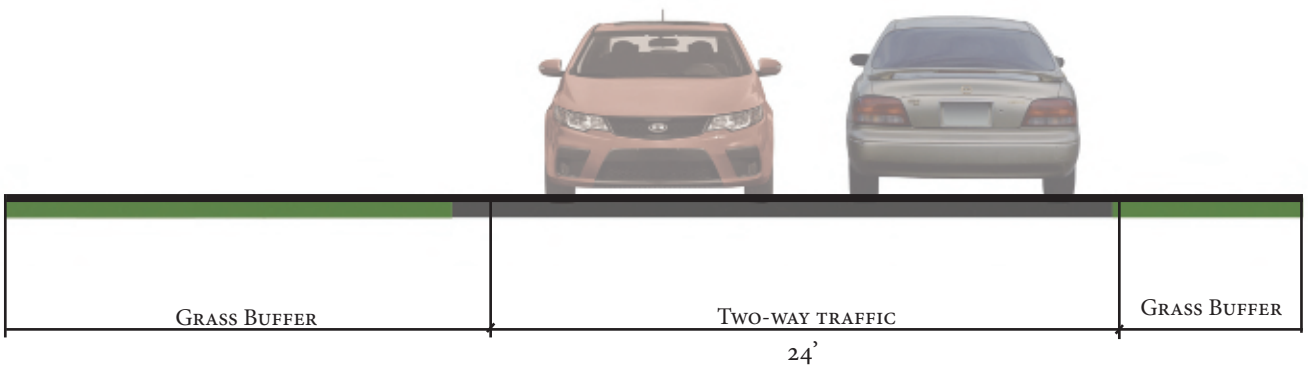
Table 2: Zim Smith Trail Probable Project Cost Comparison *Table 2-6 - Alternative Route #2 (Elizabeth St.) with Off-road Protected Path*					
Assumptions/Notes	Description	Unit	Quantity	Unit Cost	Total Cost
10' wide x 5,000 LF x 18" deep	Excavation - Trail Box Out	CY	2,800	$ 17.00	$ 47,600.00
10' wide x 5,000' x 6" deep	Subbase	CY	1,400	$ 35.00	$ 49,000.00
10' wide x 5,000' x 4" deep	Asphalt Concrete Sidewalks, Driveways and Bicycle Paths	TON	1,200	$ 110.00	$ 132,000.00
	Tack Coat	GAL	180	$ 5.00	$ 900.00
Select Asphalt Pavement Repair and Replacement	Asphalt Pavement	LS	1	$ 50,000.00	$ 50,000.00
Crosswalks 8' wide - Ladder Style	Crosswalk Striping	EA	12	$ 500.00	$ 6,000.00
Assumed need for 2,000' of the Trail	Timber Pedestrian/Bicycle Guide Rail	LF	2,000	$ 35.00	$ 70,000.00
Add Fencing, Signage, Widen/Upgrade Pavement for Bikes	Improve Existing CP Rail Ped Crossing along Broadway for Bicycles	EA	1	$ 50,000.00	$ 50,000.00
Price per foot based on other trails, includes underdrain	Drainage Improvements	LF	5,000	$ 10.00	$ 50,000.00
Pedestrian and Cyclist Amenities	Bike Racks, Benches, Bollards, Signage and Landscaping	LS	1	$ 75,000.00	$ 75,000.00
Price per foot based on recent trail projects, includes establishing turf, topsoil	Green Infrastructure	SF	30000	$ 5.00	$ 150,000.00
Construction Subtotal					$ 680,500.00
5% of Total	Field Change Allowance				$ 34,025.00
5% of Total	Mobilization				$ 34,025.00
20% of Total	Contingency				$ 272,200.00
25% of Total	Engineering, Permitting and Survey				$ 170,125.00
Total Probable Construction Cost					$ 1,190,875.00

Appendix B: Existing Street Cross-sections along Potential Trail Routes

Zim Smith Trail

1. Elizabeth Street ext

Looking East



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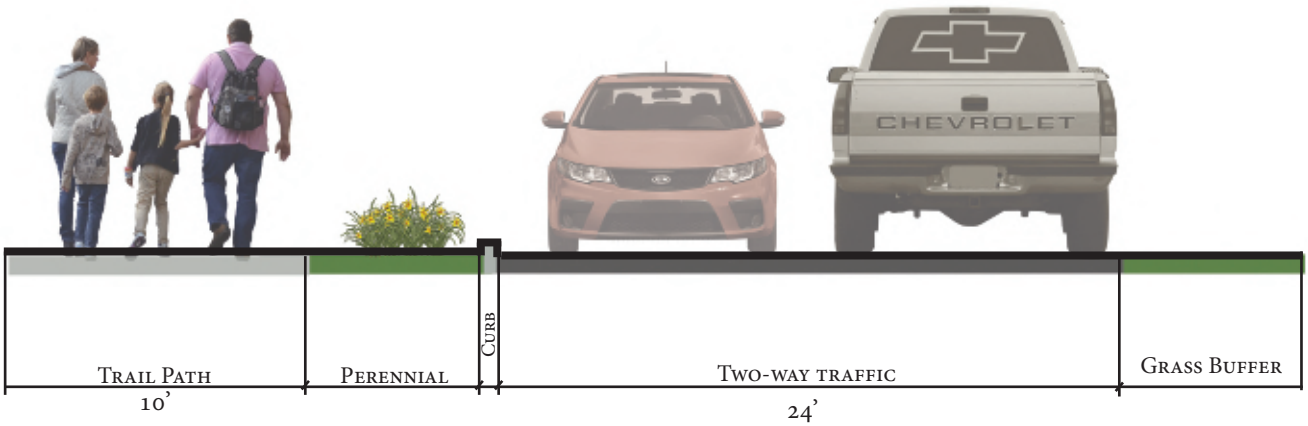
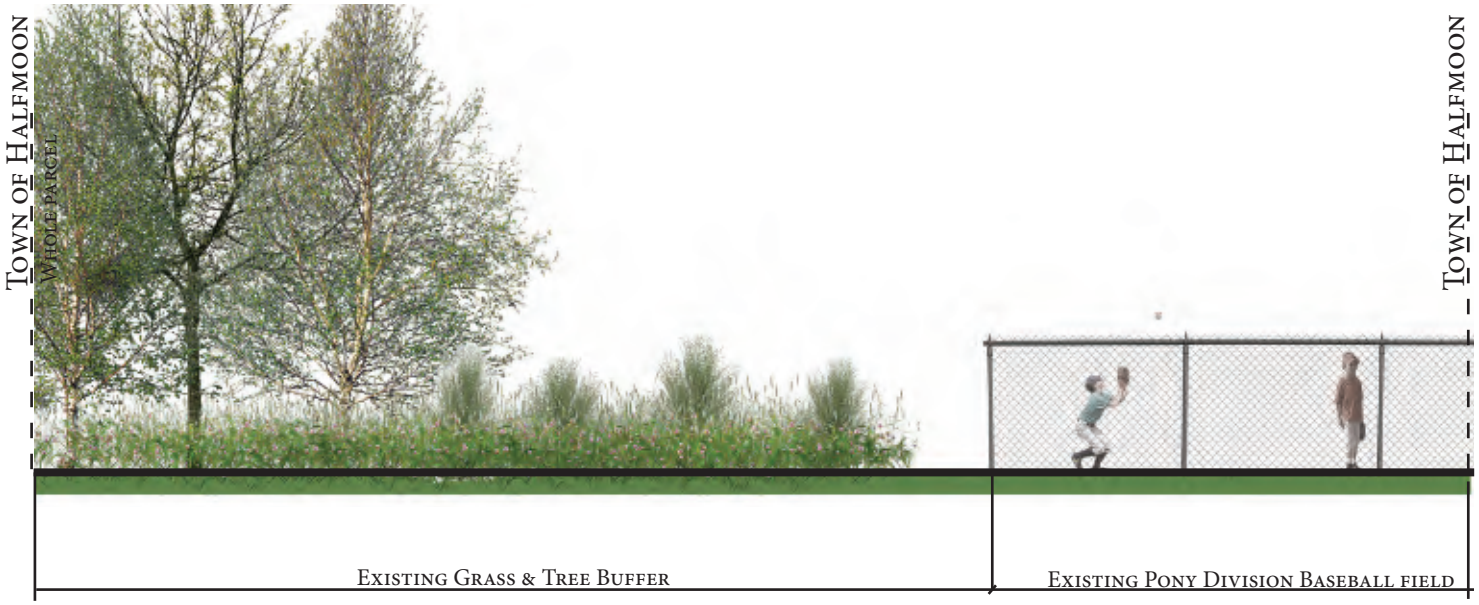


Proposed

Zim Smith Trail

3. Ballfields
Looking East



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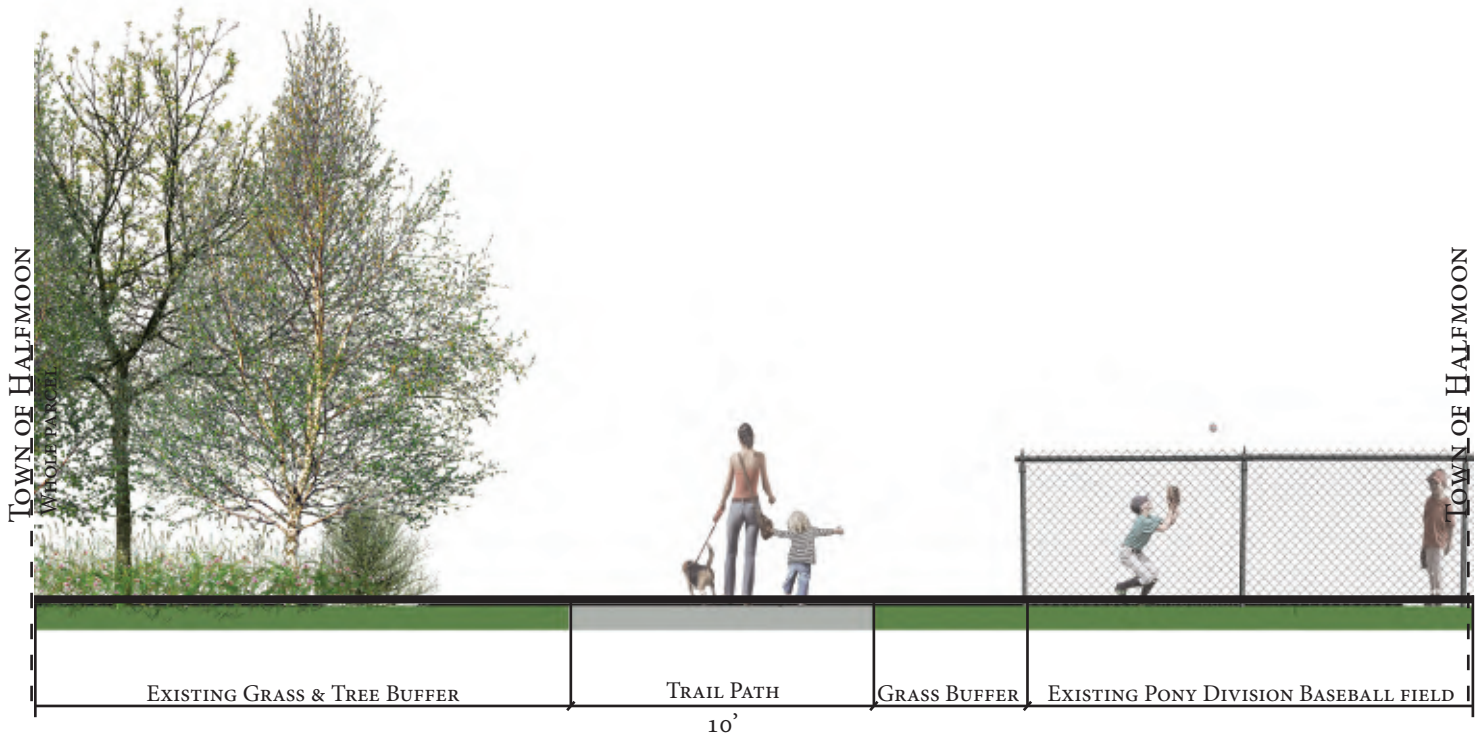
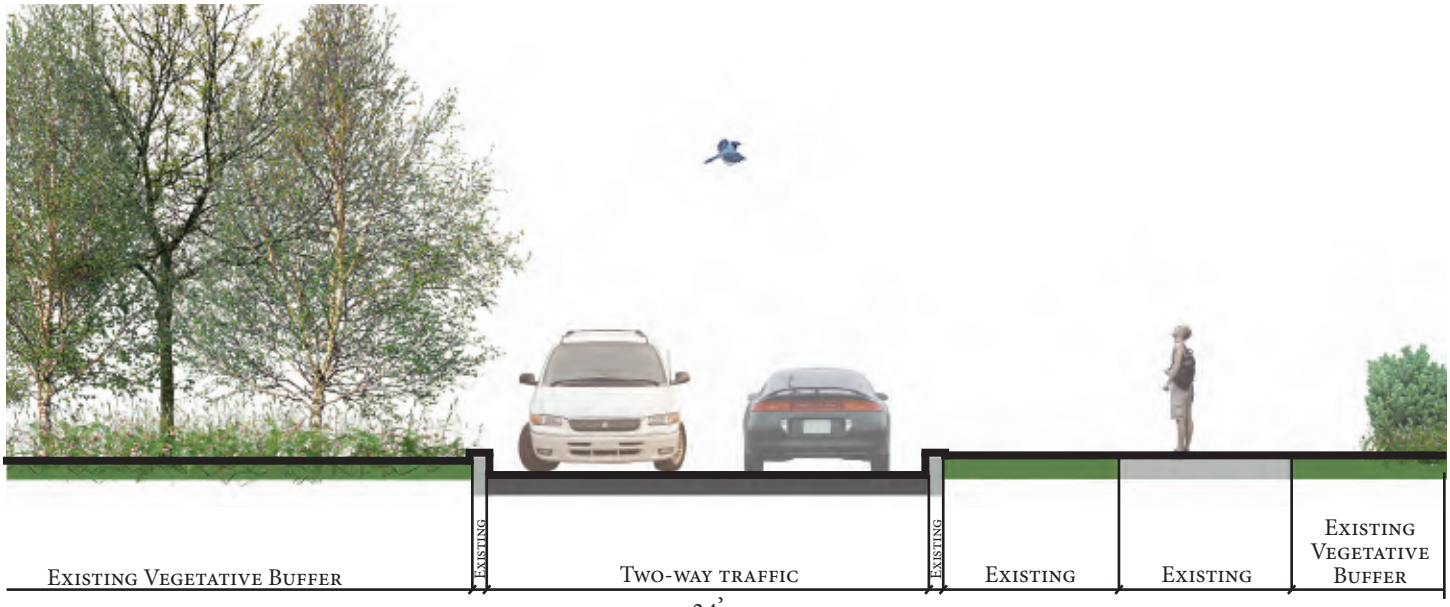


Proposed

Zim Smith Trail

4. Industrial Park Rd.
Looking East



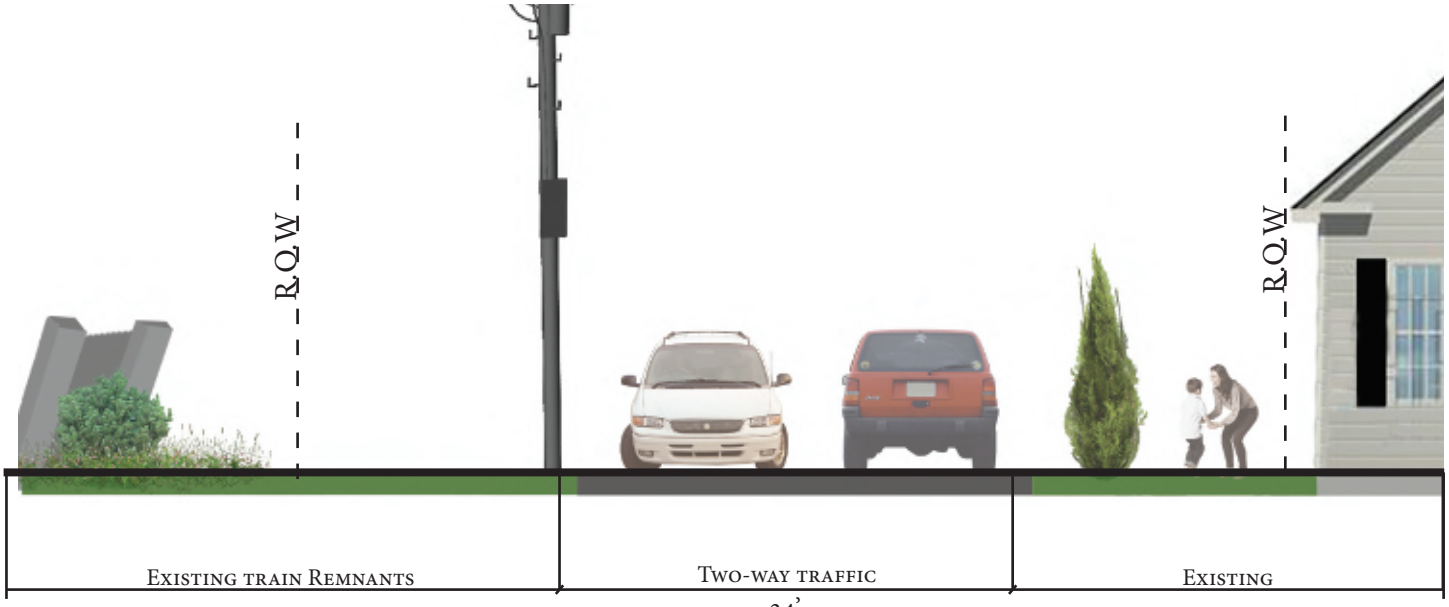
Existing

Proposed

Zim Smith Trail

5. Clement Street (between 7th & 6th)

Looking East



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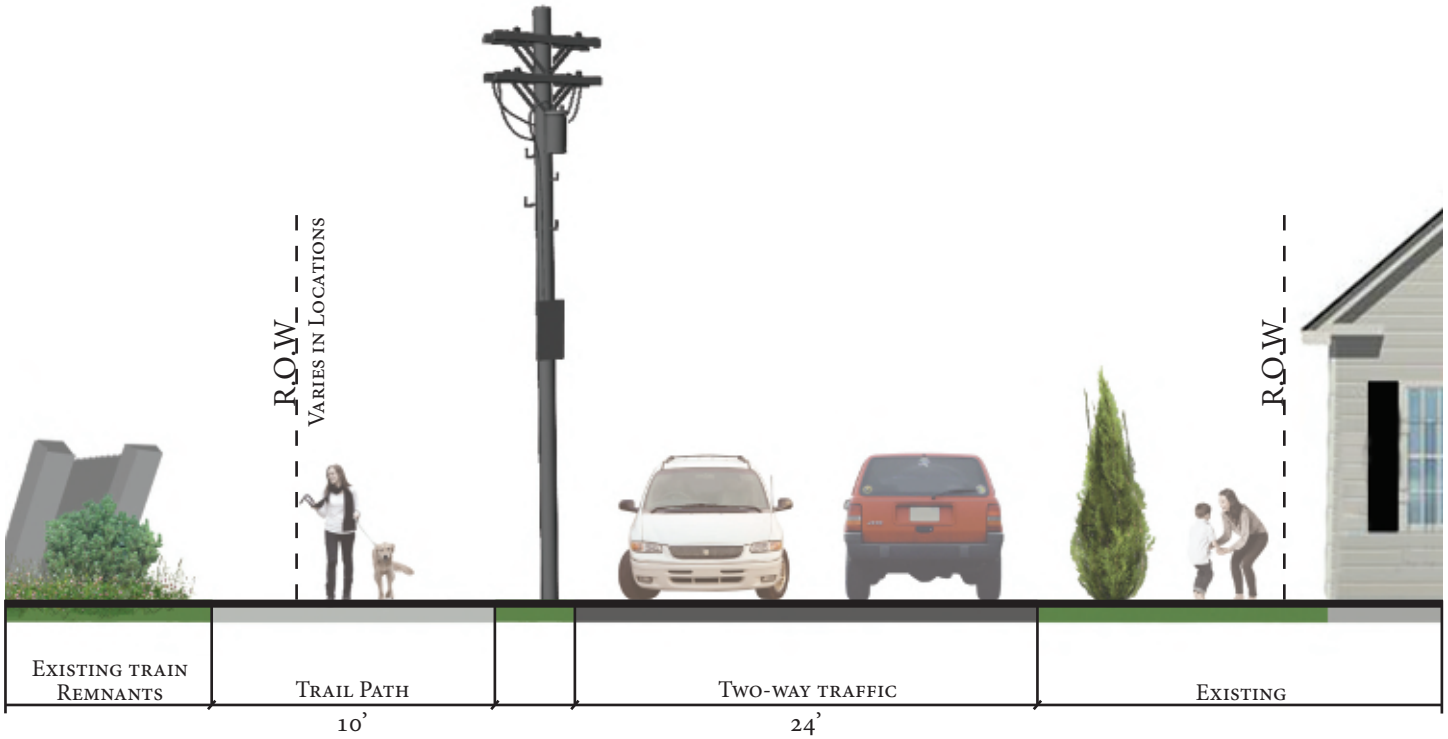
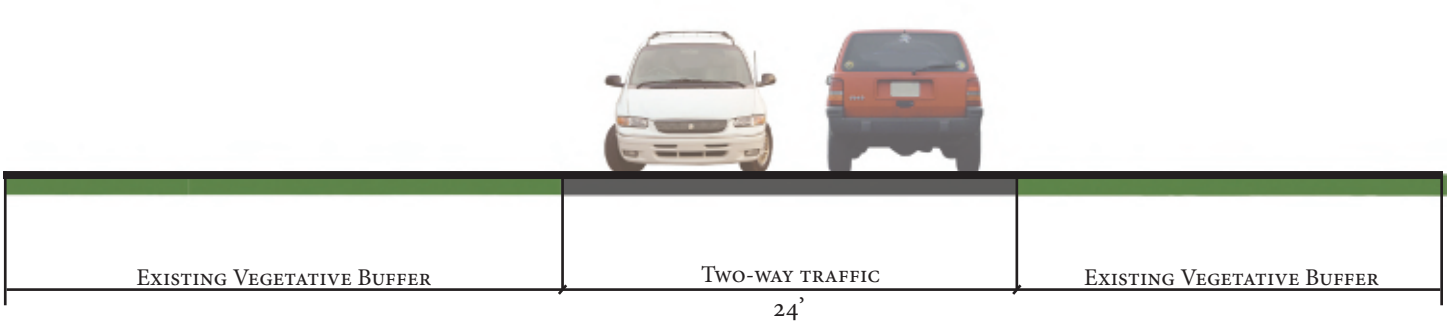


Proposed

Zim Smith Trail

6. Davenport Street
Looking East



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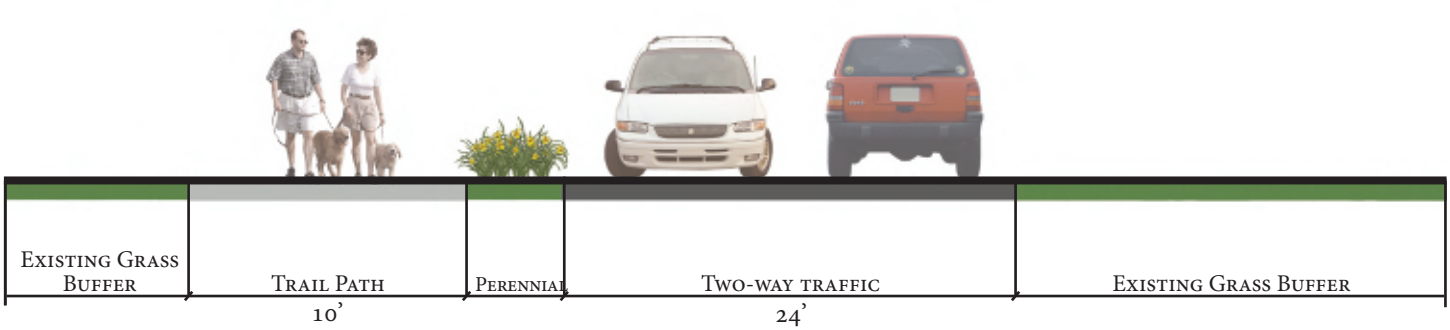
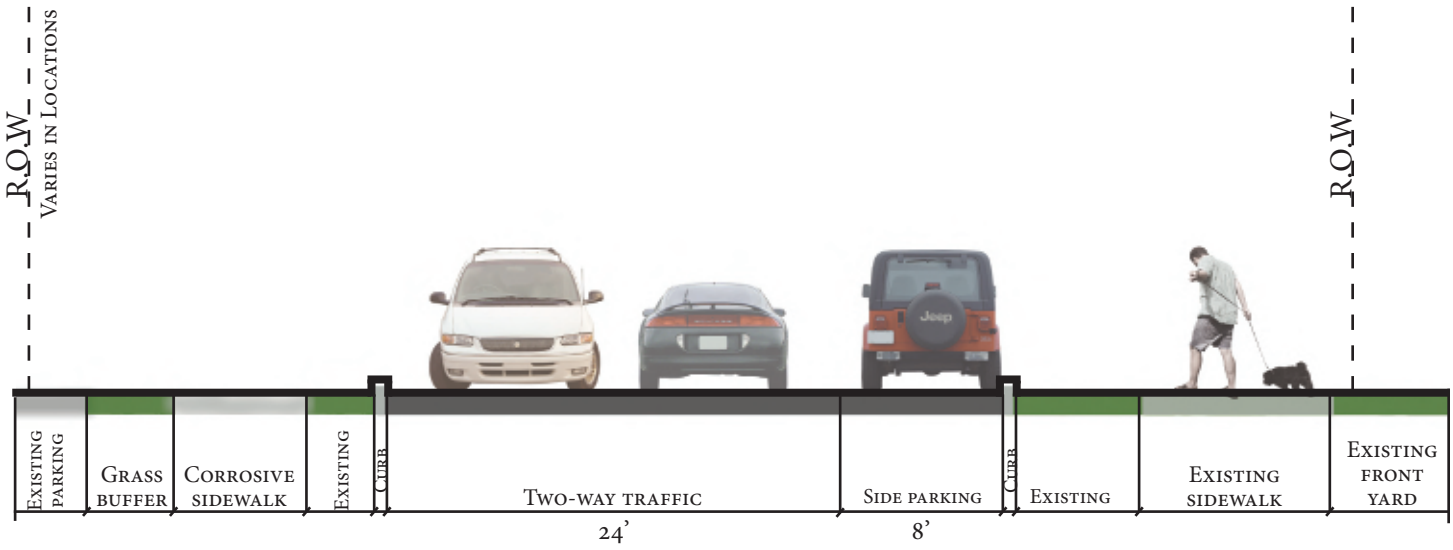


Proposed

Zim Smith Trail

7. N 2nd Ave
Looking East



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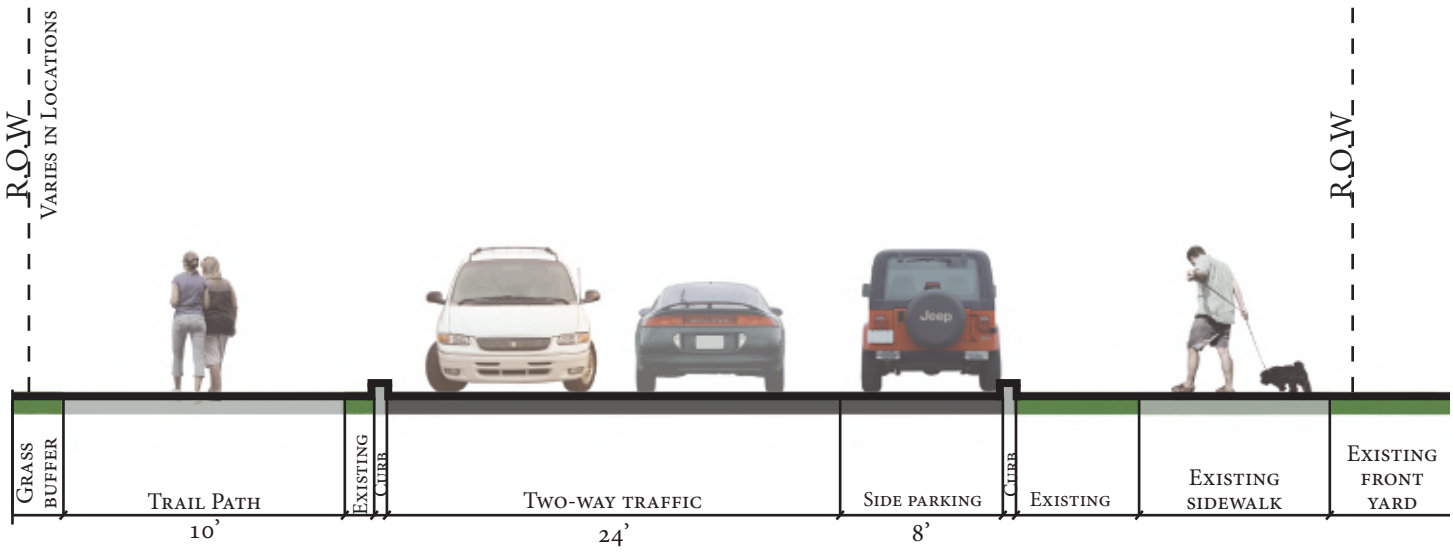
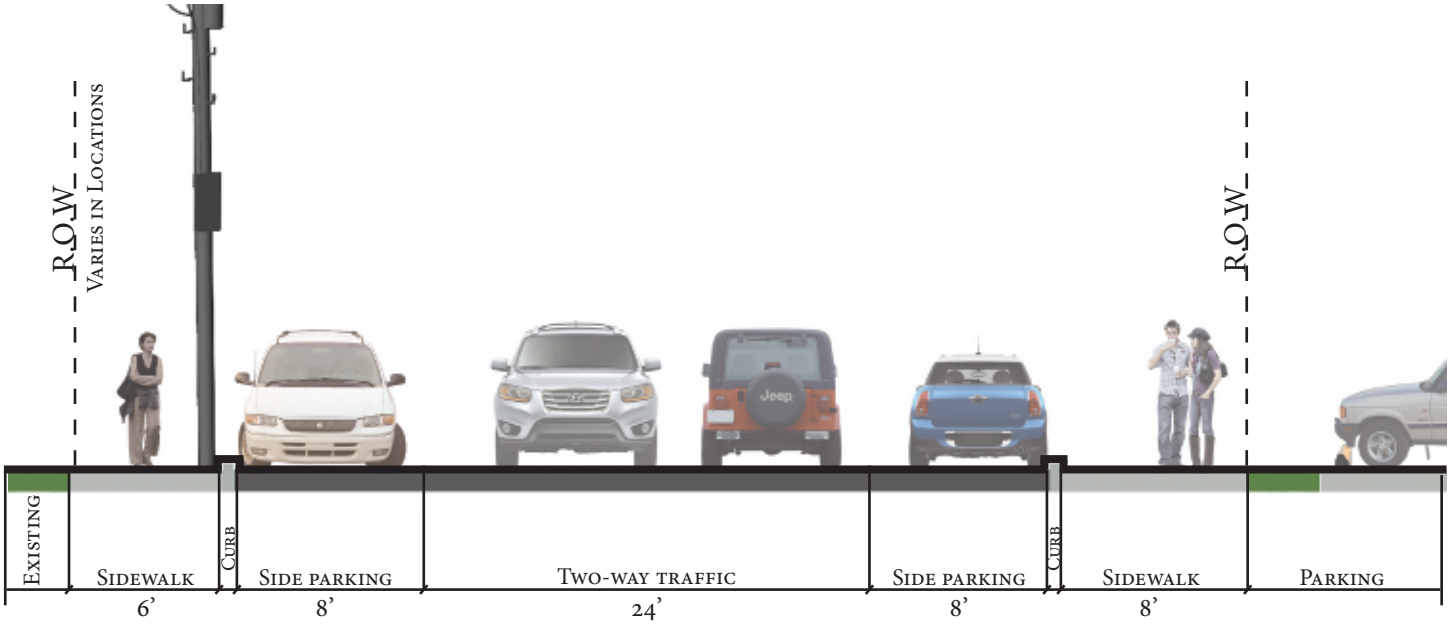


Proposed

Zim Smith Trail

8. Mabbett Street

Looking East



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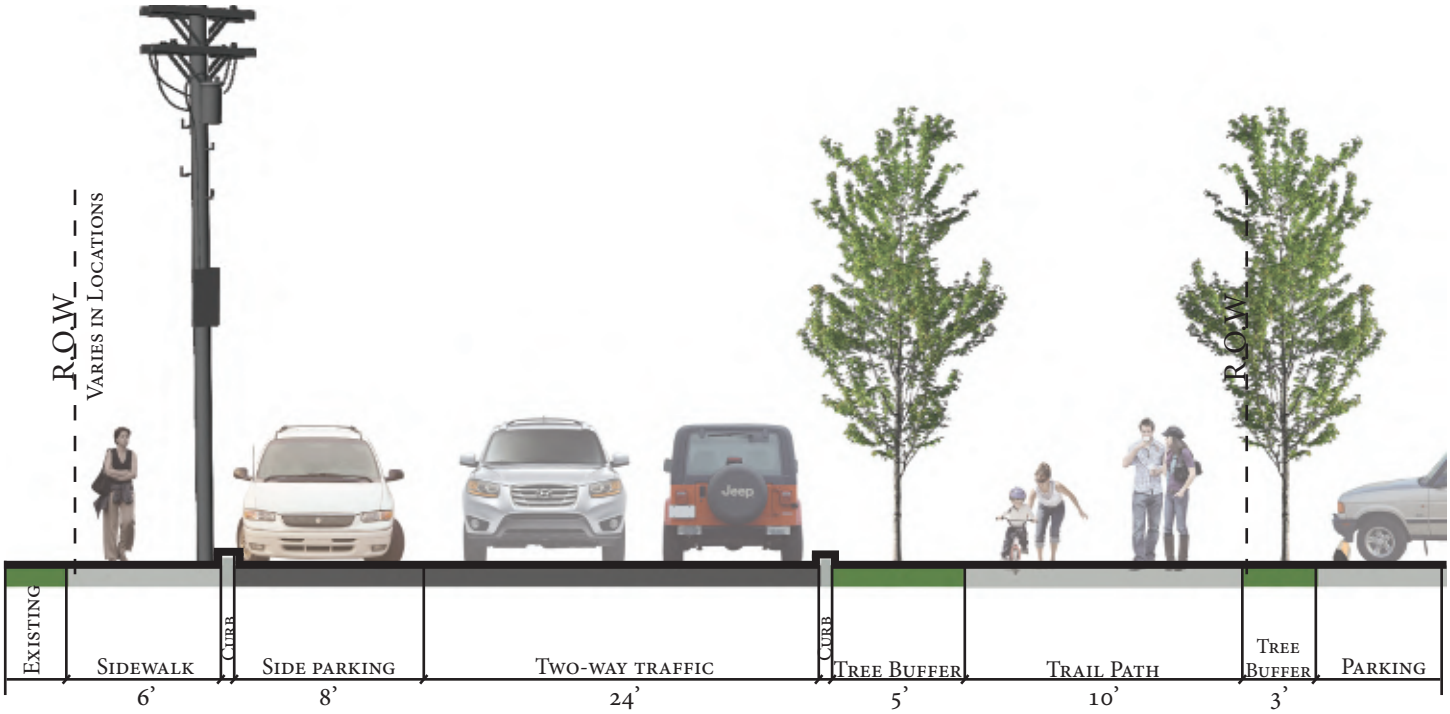
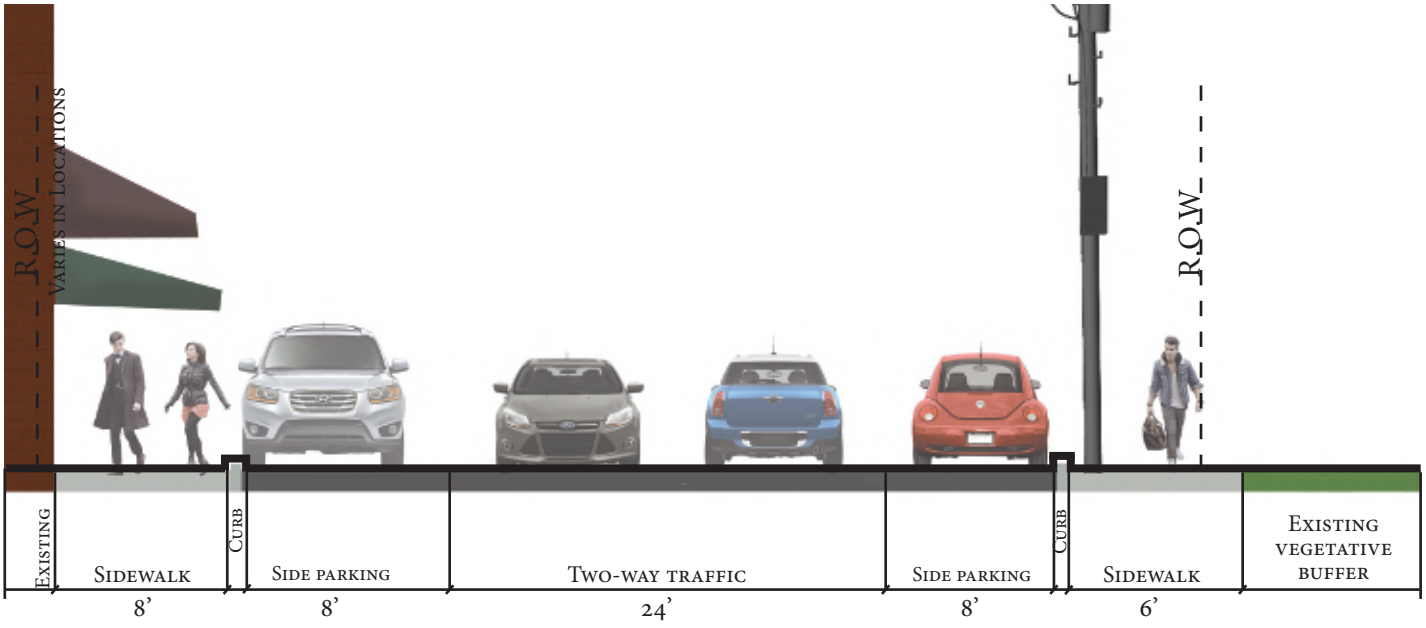


Proposed

Zim Smith Trail

9. Hill Street
Looking East



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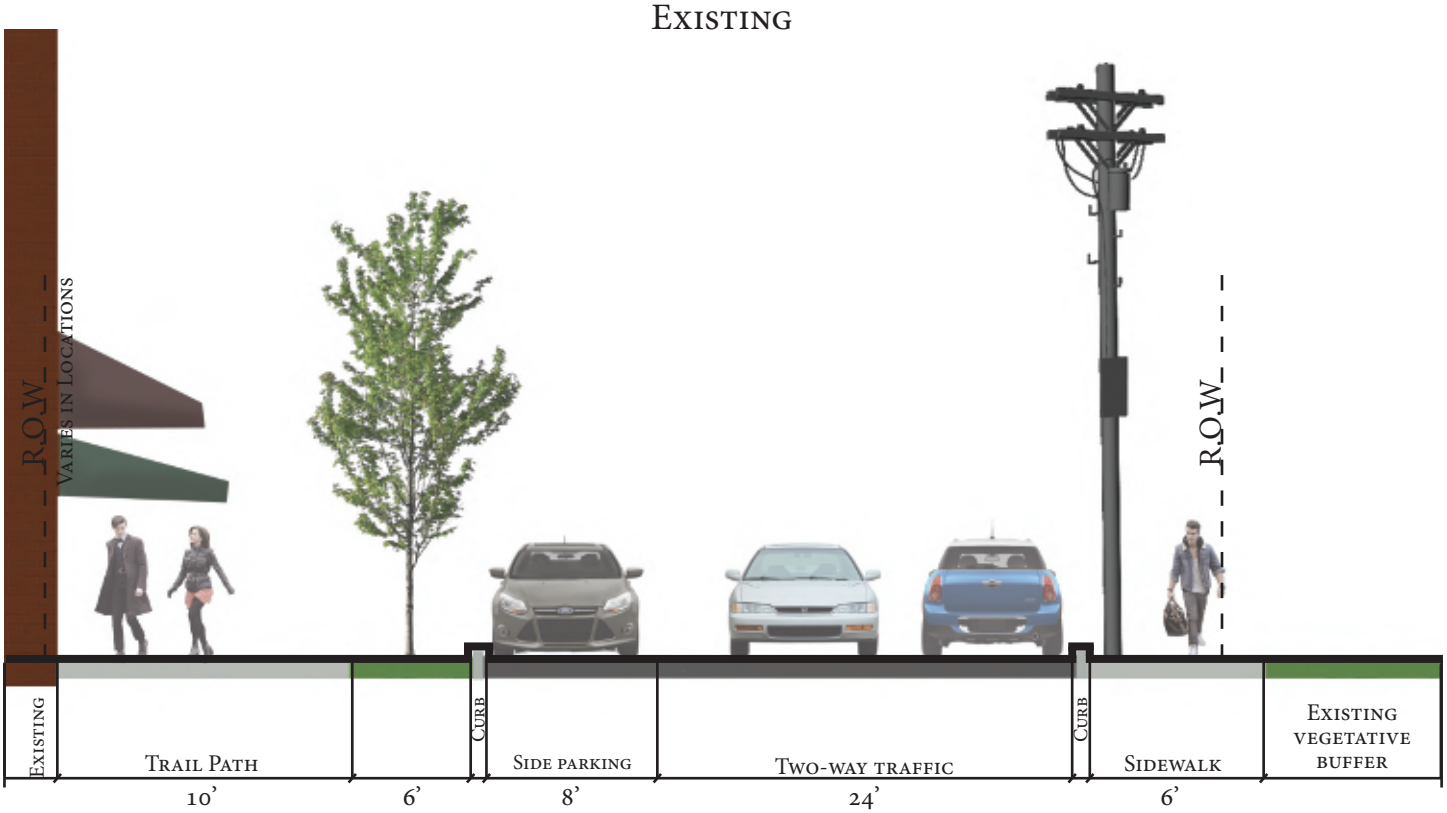
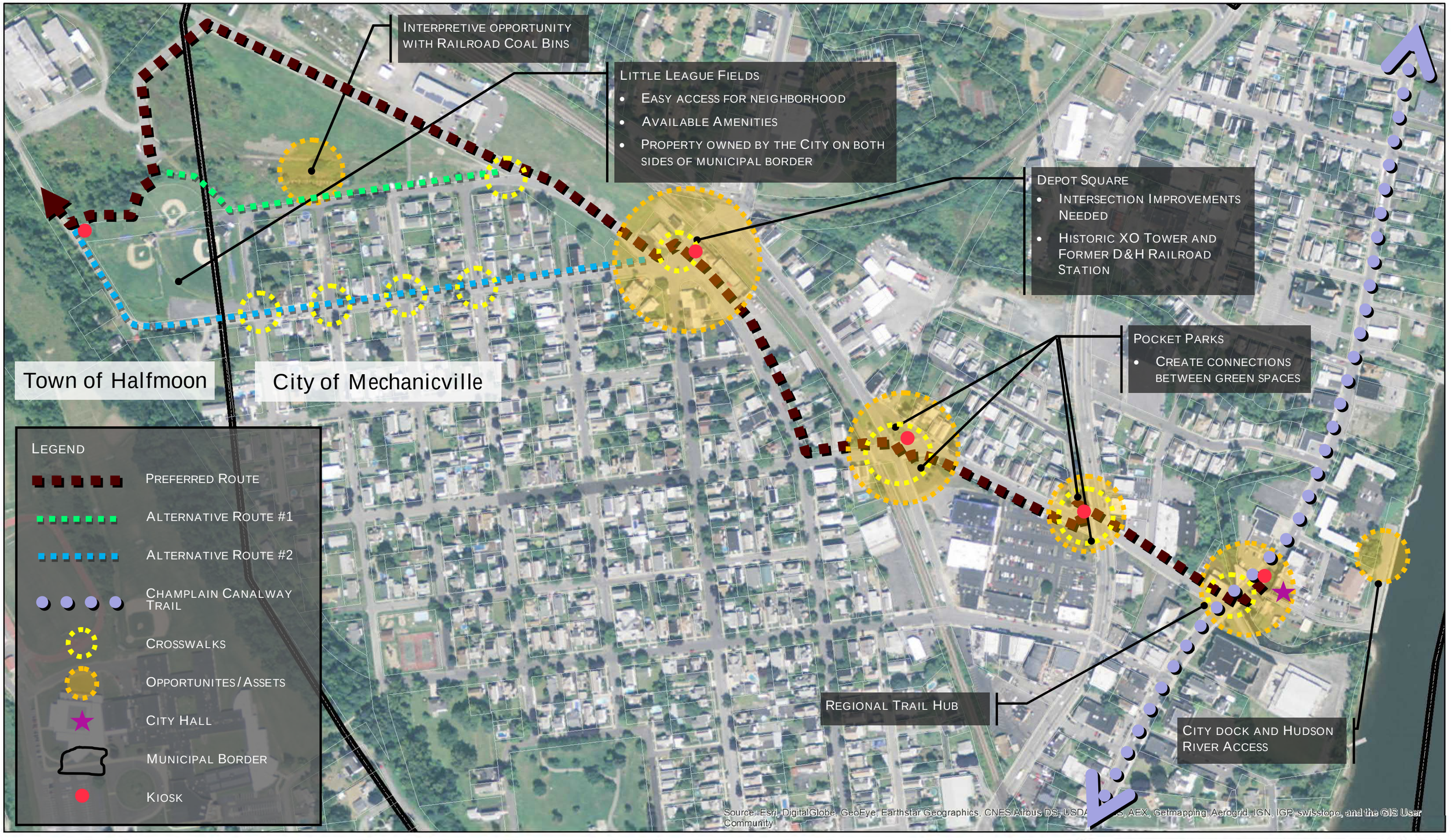


Proposed

Appendix C: Full Size Maps and Industrial Park Considerations

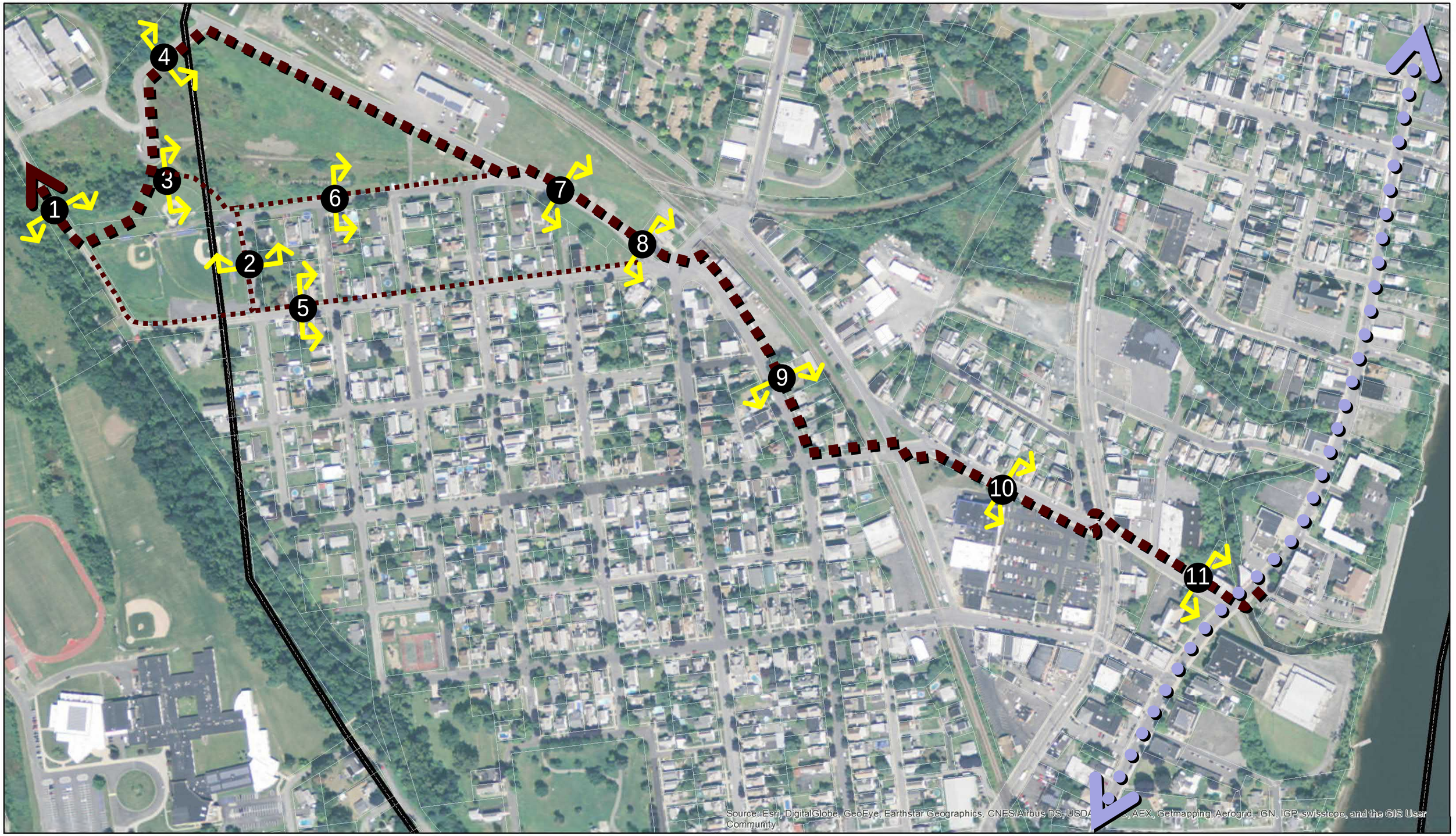


Barton & Loguidice, D.P.C.
Engineers • Environmental Scientists • Planners • Landscape Architects

1 inch = 300 feet

City of Mechanicville
Zim Smith Trail Analysis
Saratoga County December 2016 New York

Project No. 991.027



Barton & Loguidice, D.P.C.

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N W E S

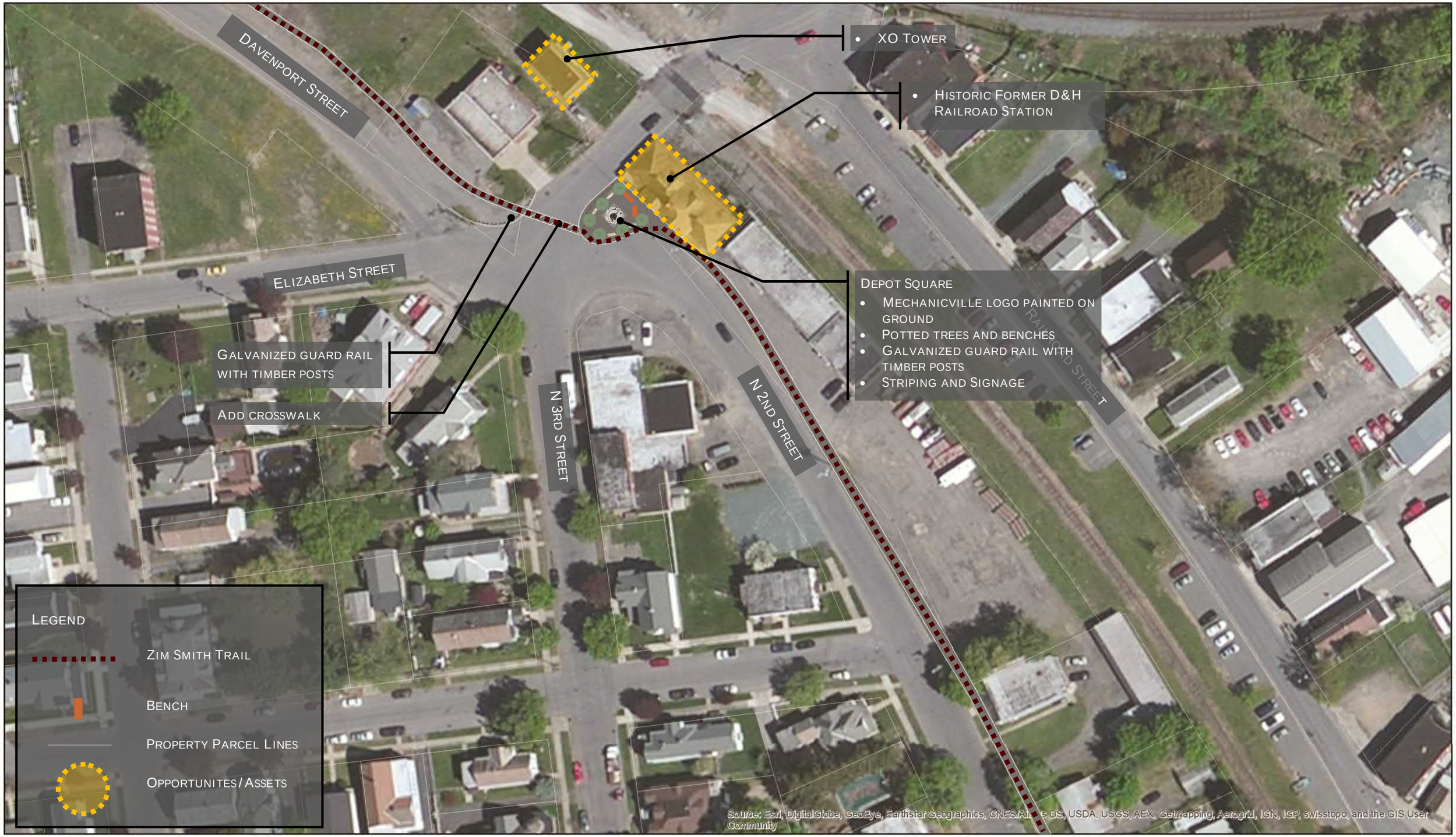
1 inch = 300 feet

City of Mehanciville

Zim Smith Trail Analysis

Saratoga County March 2016 New York

Project No. 991.027



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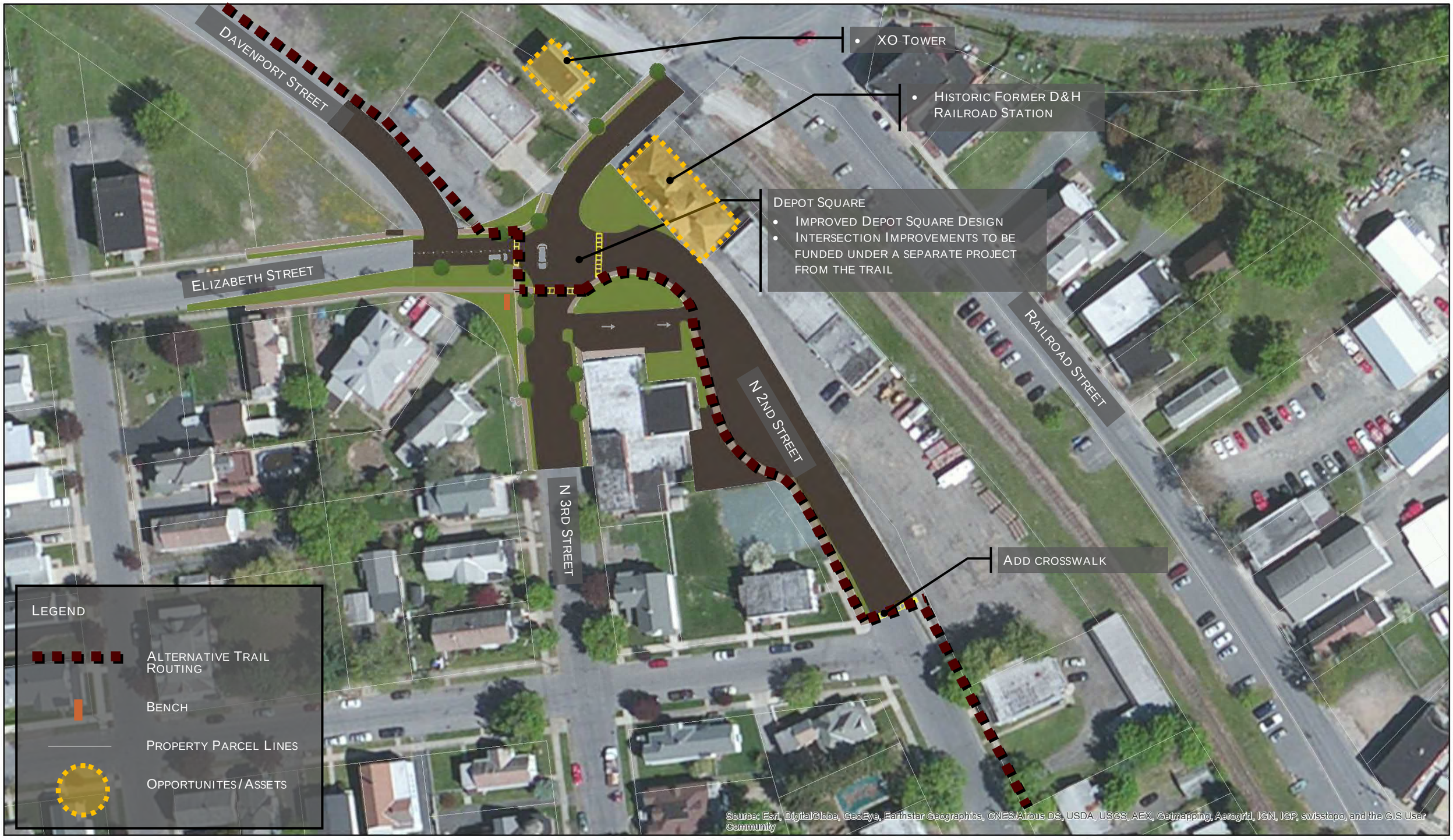
1 inch = 70 feet

City of Mechanicville
Zim Smith Trail Analysis Depot Square
Saratoga County March 2016 New York

Project No. 991.027



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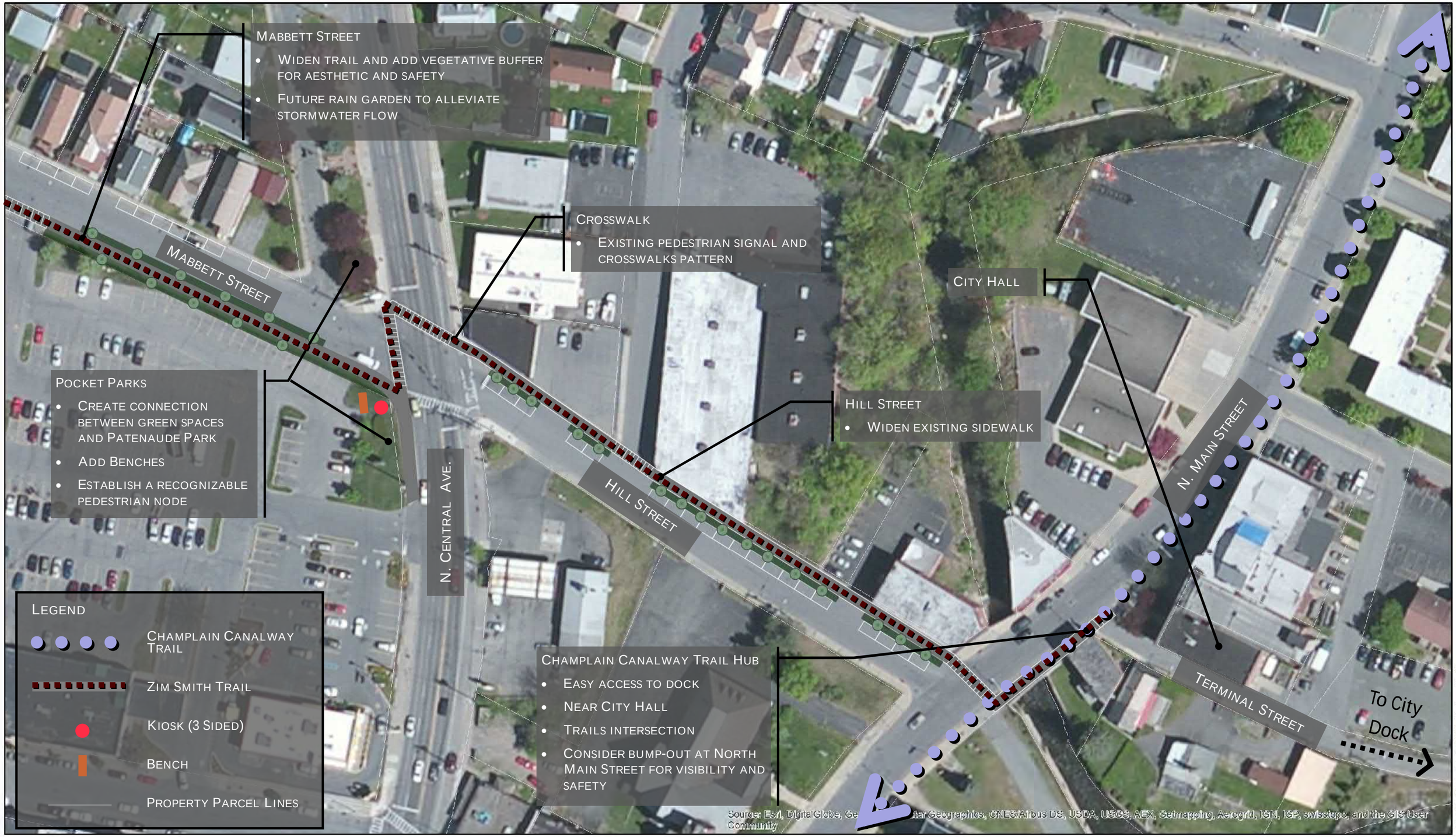
1 inch = 70 feet

City of Mechanicville
Zim Smith Trail Analysis Depot Square
Saratoga County March 2016 New York

Project No. 991.027



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1 inch = 70 feet

City of Mechanicville
Zim Smith Trail Analysis Hill Street
Saratoga County March 2016 New York

Project No. 991.027

Zim Smith - Industrial Park

Industrial Park Road Right-of-Way: 55—60 feet wide

Industrial Park Road Route: More feasibly fits within public right-of-way

Clement Street Route: More intuitive, direct, accessible, and aesthetically-pleasing

City of Mechanicville-owned Properties

Interpretive Structure: Historic Railroad Yard Coal Bins

Clement Street Right-of-Way: 42—50 feet wide


Elizabeth St Exd
Mechanicville, New York
Street View - Sep 2011
Clement St
Elizabeth St Exd
N 8th A
Google

Clement St
Mechanicville, New York
Street View - Sep 2011
Clement St
Elizabeth St Exd
N 8th A
Elizabeth
Google


Industrial Park Dr
Mechanicville, New York
Street View - Sep 2011
Industrial Park Dr
Clement St
Google


Industrial Park Dr
Mechanicville, New York
Street View - Sep 2011
Industrial Park Dr
Industrial Park Dr
Google