

To: Steven Strichman | Troy Capital Resource Corporation;
James Rath | City of Troy Planning
Aaron Vera | City of Troy Engineer

From: Kristie Di Cocco | Alta

CC: Lindsay Zefting | Alta

Date: 04/16/2021

Re: **1st Avenue Existing Conditions and Alternatives**

Introduction and Project Goals

1st Avenue is a 1.05 mile local urban core street that begins at 111th Street and ends at 123rd Street and runs parallel to the Hudson River. The corridor is almost entirely residential with the exception of:

- CVS located between 111th Street and 112th Street
- Post office at 116th Street
- Troy Motor Boat and Canoe Club located near 121st Street, and
- Veteran's of Lansingburgh located near 122nd Street.

The goals of this project are to create a safer place for bicyclists and pedestrians along the corridor and provide a waterfront trail where right-of-way (ROW) permits. While the waterfront isn't fully accessible from the road due to private properties, the proposed trail will have access to three parks and multiple access points where the land is City-owned.

Existing Conditions

The 1st Avenue corridor offers bi-directional travel between 111th Street and 113th Street before it becomes a southbound one-way street between 113th Street and 116th Street. From 116th Street to 123rd Street, 1st Avenue is one-way travel in the northbound direction. The roadway width varies throughout the corridor with sections being as narrow as 24 feet to as wide as 32 feet from curb to curb as shown on the attached drawings (CR101 to CR113). These dimensions include any parking that occurs throughout the corridor. The overall right-of-way within the corridor varies, but is generally approximately 50 feet wide. The roadway however, is not centered within the right-of-way at all locations (See drawings CR101-CR113).

On-street parking is permitted along both sides of the corridor, with parking restrictions based on week days and times for garbage removal. Parking spaces are not delineated by striping, but in some cases, are clearly demarcated through the use of vertical faced curb adjacent to concrete sidewalks.

Pedestrian facilities along the corridor are limited to sidewalks, however they are discontinuous, of varying width and material, and are generally more prevalent along properties with multi-family units. In some cases, parking by adjacent landowners occurs on the existing sidewalks, presenting a challenge for nonmotorized users navigating the

corridor. There are no dedicated bicycle facilities along the corridor, however, during the site visit, it was observed that the bicyclists use the corridor as a shared roadway in both northbound and southbound directions. The low vehicular traffic and vehicle speeds afford bicyclists the opportunity to use the street for travel as an unofficial bike boulevard. Traffic calming measures, such as crosswalks, speed humps, or curb extensions are non-existent along 1st Avenue.

Along the corridor there are three public parks:

- Troy 9/11 Memorial Park
- Herman Melville Park, and the
- 120th Street neighborhood park.

Most east-west streets that intersect with 1st Avenue have right-of-way that continues to the river's edge. Some of these pockets of land have been encroached by adjacent landowners who view these pockets of land as an extension of their property while other areas remain unimproved and heavily vegetated. This right-of-way often also serves as sewer overflows maintained by Rensselaer County.

Alternatives

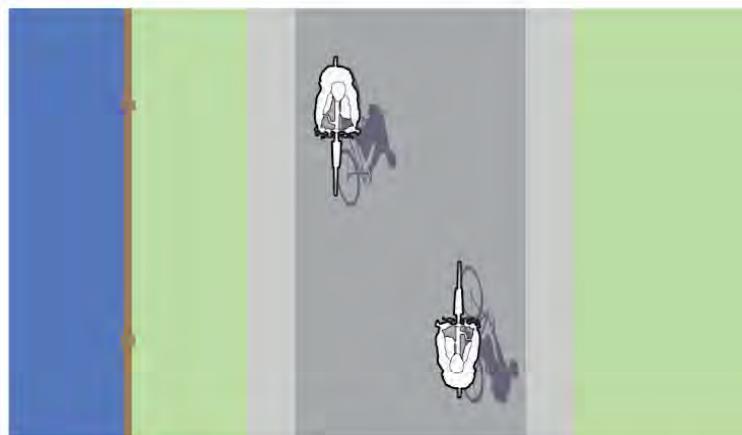
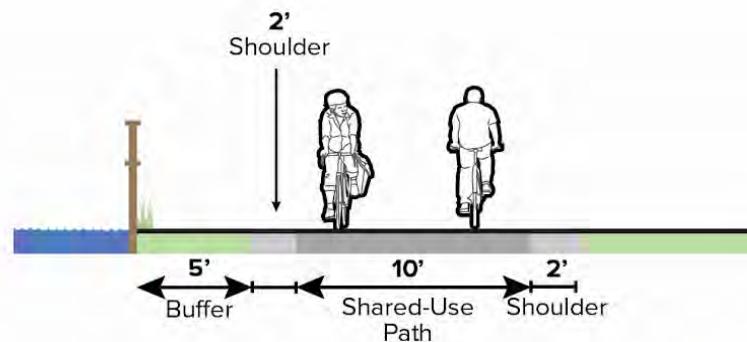
Cross Sections

The following cross sections illustrate the various options available to accommodate nonmotorized users along 1st Avenue. Each section has an illustration which indicates the *minimum* required widths of the various features. In segments where the roadway is wider than the minimum allowable section, the vehicular, parking, or buffer spaces can be increased in width as desired. It should be noted that where a sidepath or shared use path is shown, a 10 foot width is recommended. While 8 feet is the absolute minimum width for a two-way separated bicycle or shared use facility, this width would be limited to locations where no other alternative is available.

The enclosed maps illustrate the locations in which each cross section could be implemented along the corridor, with some locations having multiple treatments available. The cross section titles have been color coded to reflect the color of each alternative on the maps for consistency. The decision to implement one alternative over another will be determined by the City with consideration given to consistency for all users of the corridor, construction cost, maintenance, and overall corridor safety. Different alternatives can be selected for various portions throughout the corridor; however switching between treatments should be minimized as much as possible.

Greenway Alternative

The greenway alternative is intended to provide a separated and dedicated path that would run parallel to the Hudson River wherever feasible. The treatment would include a 10 foot wide shared-use path with 2 foot wide shoulders placed along the riverbank with a vertical barrier. In locations where this cross section is implemented, it is recommended that a shared roadway remain along 1st Avenue for bicyclists choosing a direct route to their destination.



Sidepath Alternatives

The sidepath alternative consists of a 10-foot asphalt sidepath that is protected from the travel lane by a 1-foot stripped buffer that is enhanced for user safety by a vertical delineator. The delineator can take various forms such as flexible delineators, low concrete barriers (mini barriers), armadillos/zebras, concrete planters, or rumble strips depending on the needs and desires of the City



Zicla Armadillos



Mini concrete jersey barrier



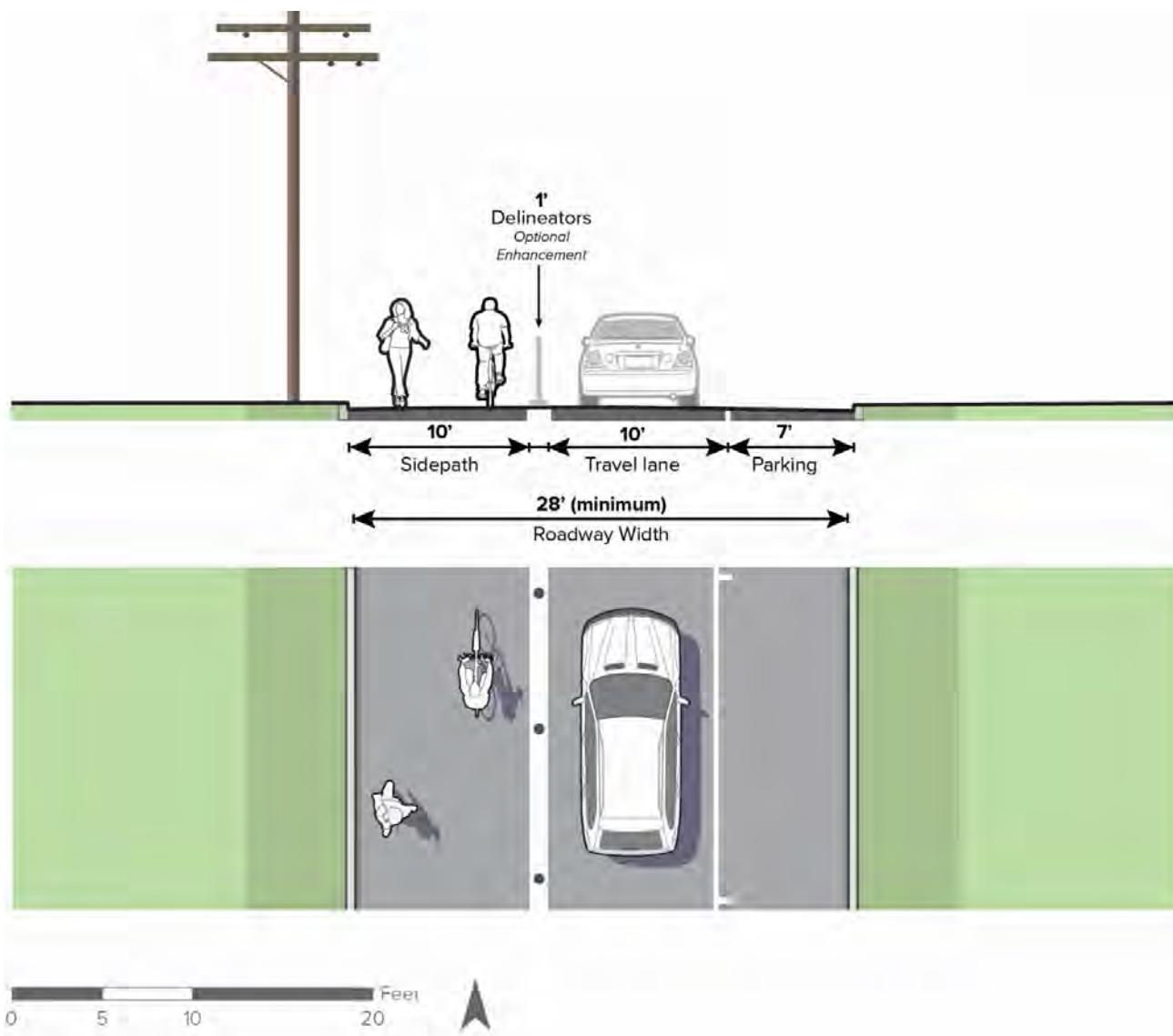
Concrete planters



Rumble strip

The paved sidepath will provide both pedestrians and bicyclists a dedicated space to travel separate from vehicular traffic. While the sections show vehicles parked and traveling in the northbound direction, the direction of travel can be reversed as needed. In all cases, parking will remain on at least one side of the street to accommodate residential vehicles that do not have personal driveways. The removal of parking on one side of the street will result in approximately 145 potential parking spaces being removed. It should be noted that this number does not take into account the actual use of the available space along the corridor, as many locations have the physical space to park vehicles, but that space is not used for parking due to adjacent private driveways or lack of development. In locations where the roadway is wider and parking demand is higher, parking lanes can be provided on both sides of the street.

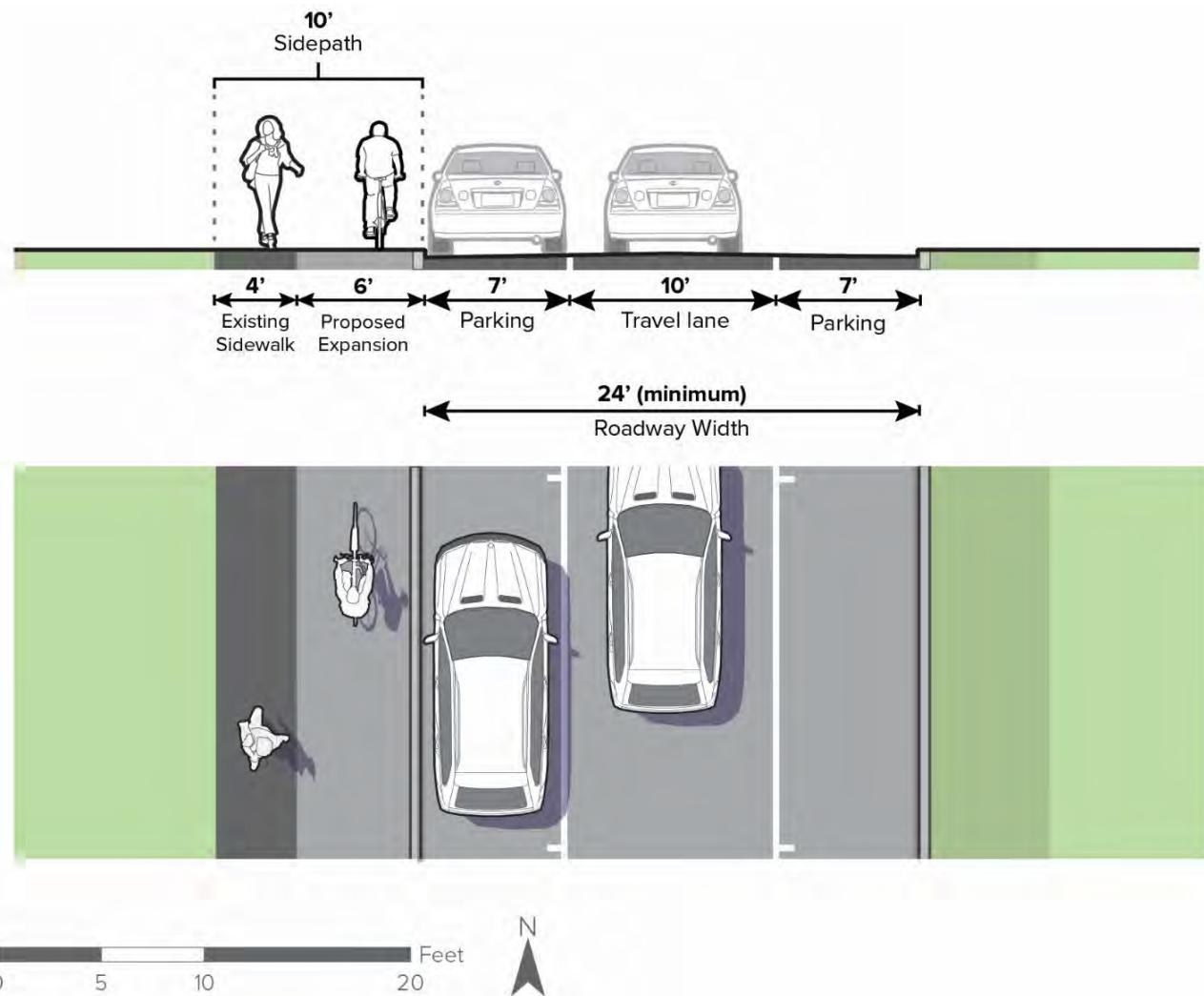
The following cross sections illustrate the sidepath being accommodated within the existing traveled way width.



Sidepath with optional vertical barrier enhancement and parking on one side of 1st Avenue

There are locations where a sidepath can be constructed by widening out the existing sidewalk to the 10-foot width. While a buffer is not shown, one should be provided between the new sidepath and parking, where possible. Locations where this can occur are as follows:

- 116th Street to 118th Street
- 122nd Street to 123rd Street



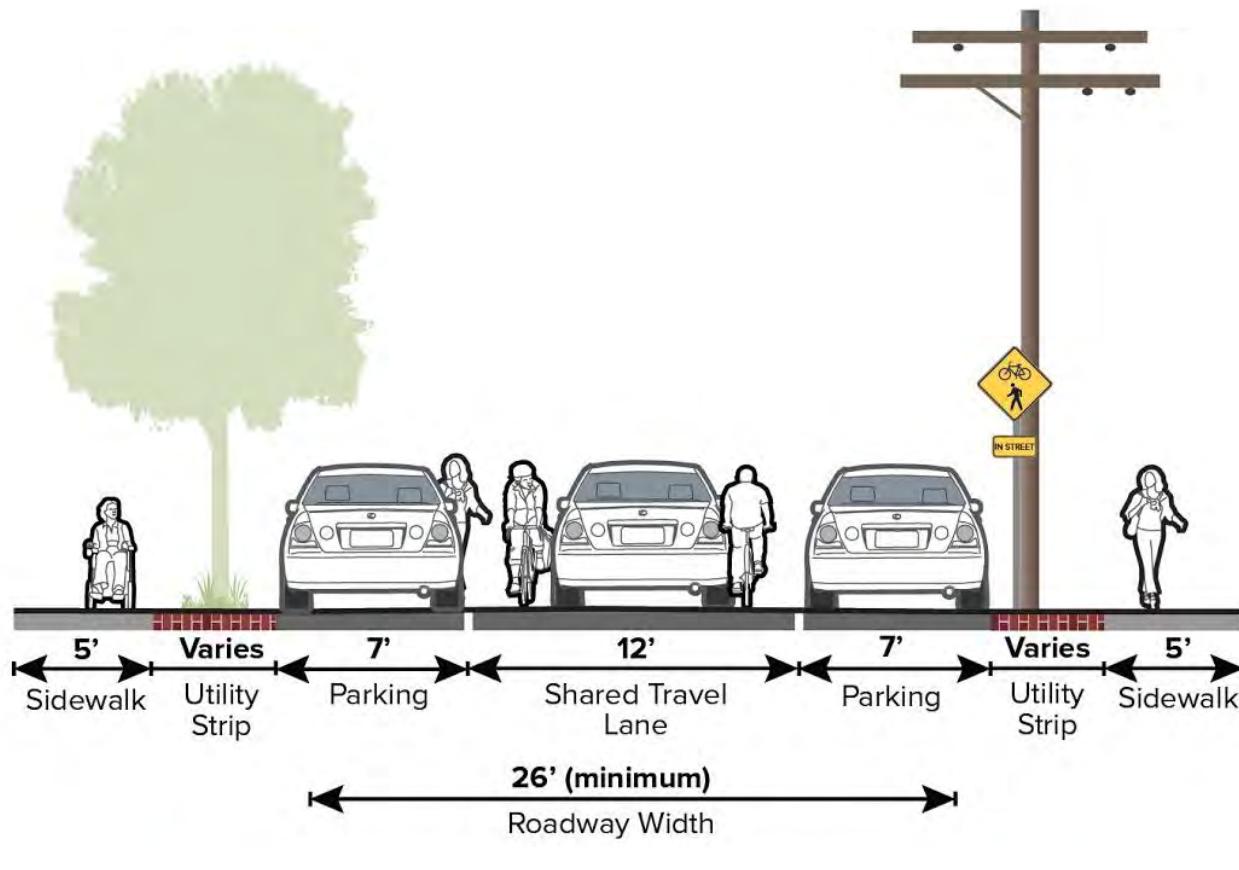
Sidepath created by widening out the existing sidewalk to the 10-foot width and parking on both sides of 1st Avenue

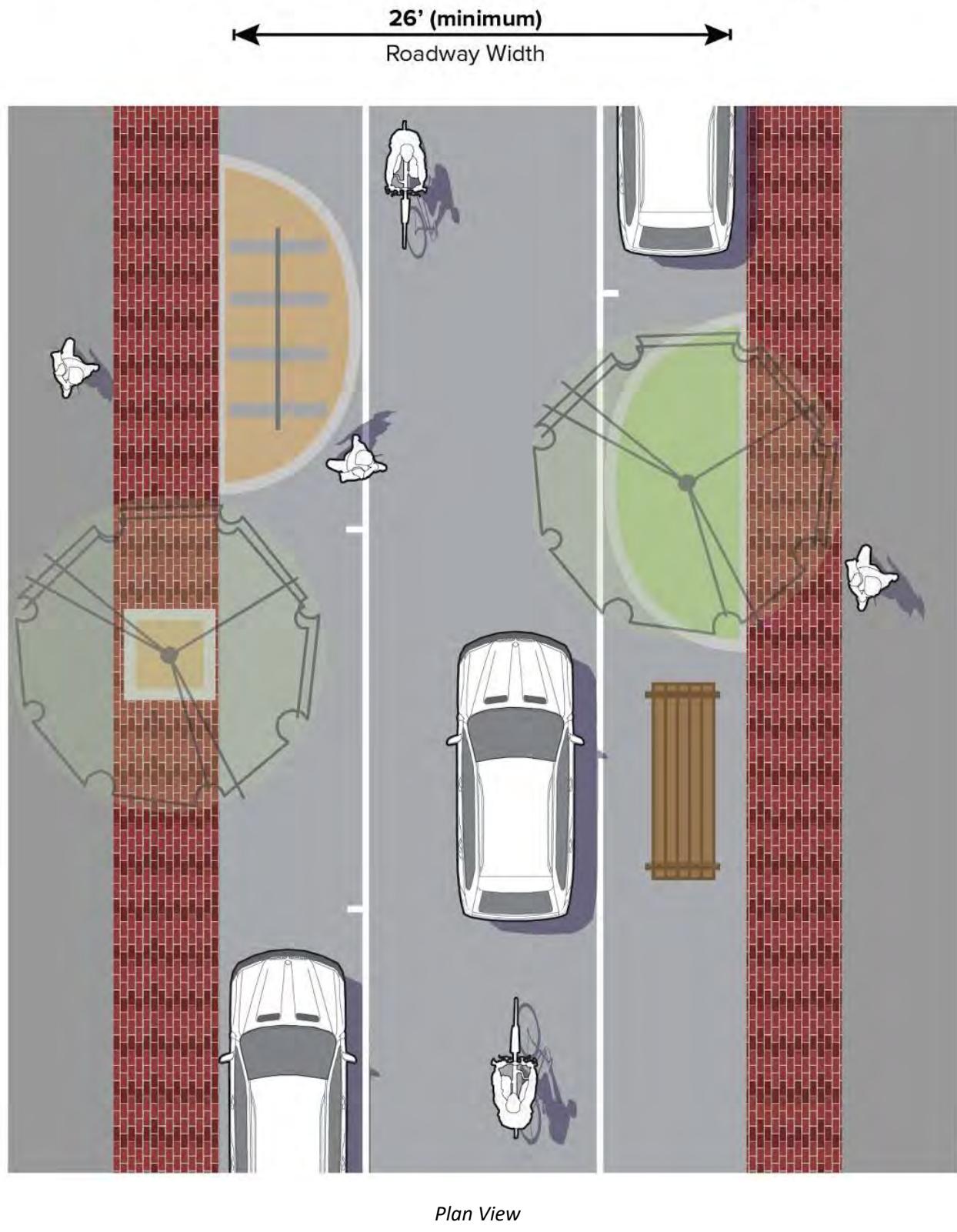
Bicycle Boulevard Alternative

Given the low vehicular volumes and speeds, bike boulevards are an acceptable treatment where bicyclists are accommodated within the roadway. This shared roadway would include sharrows and is recommended to include traffic calming elements throughout to encourage lower vehicular volumes and speeds. While this treatment can be implemented, a more robust alternative would further enhance bicycle comfort and traffic calming. The Woonerf-style

shared roadway would accommodate bicyclists in the street area using signage at the beginning and ends of the various blocks where implemented. The street would be raised to remove any existing curbs, and grassy areas would be replaced with imprinted asphalt treatments. Parking would be demarcated by the use of street furniture, lighting, landscaping, and appurtenances such as bike racks and benches. As this would be the first street within the City limits to receive such a treatment, an educational campaign is recommended to notify adjacent landowners on basics of how the street will function. As the roadway is truly shared between motorized and nonmotorized users, the minimum width required for this treatment is 25 feet. Signage indicating how the street is to be used and warning motorists of recreational play, bicyclists, and pedestrians would be required. This section also assumes that the existing sidewalks are to remain.

In locations where there are no existing sidewalks present, a revised section could be developed. However, accommodating the visually impaired on shared streets can present a challenge, as a detectable warning surface capable of providing directional indication would be needed throughout the entire length of the corridor. This surface would guide the visually impaired along the corridor and deter them from crossing the street unintentionally. For a surface to be useful in providing warning or guidance to individuals who are blind, the surface must be both consistently detectable and identifiable.





Traffic Calming

Traffic calming uses design features that are incorporated onto roadways to slow vehicular traffic, thus improving safety conditions for motorists, pedestrians, and bicyclists. Some traffic calming elements include neighborhood roundabouts, speed tables, speed humps, curb extensions, colored pavements, and raised crosswalks. Each feature is suitable for different locations along this corridor and can increase safety and mitigate traffic if installed appropriately. It is preferred to include a mix of both horizontal and vertical elements to the corridor to provide variety.

Traffic Calming Toolkit

Colored Pavement

Description

Colored pavement can be used in a variety of ways to draw visual attention to an area so as to differentiate the space from other segments of the roadway. The use of colored pavement can be applied to an entire bicycle/pedestrian space, at roadway crossings, or to identify potential areas of conflict. The use of colored pavement reinforces priority to bicyclists and pedestrians where vehicles may have a tendency to illegally use the space.



Green Colored Shared Use Path

Implementation Guidance

- Colored pavements should be applied consistently throughout a corridor or within a locality to promote clear understanding for all users.
- Colored pavements have the same friction and retro-reflectivity requirements as general roadway applications.
- Acceptable colors include green as per FHWA.
- Colored pavement can be used as a background behind sharrows when sharrows are applied on a shared roadway.



Conflict Zone Markings

Raised Intersections and Speed Cushions

Description

Speed cushions are rounded or flat-topped raised areas across the road that include wheel cut-outs to allow large vehicles, such as fire and garbage trucks, to pass unaffected while acting as speed humps to passenger cars. They are best implemented at mid-block locations and can be used as speed reduction devices. Raised intersections

encompasses the entire intersection including the crosswalks and function similar to a speed table that is marked and signed to draw attention to the pedestrian and the intersection itself. Raised intersections function as a speed reduction device. They can also be used as a gateway treatment that not only raises the height of a pedestrian thereby making them more visible to motorized traffic, but also denotes a change in character of the neighborhood or area. Enhancements, such as colored pavement or textures, can be used for the crosswalks or inside the intersection as shown in the photo below.



Speed Cushion



Raised Intersection

Implementation Guidance

- For all vertical traffic calming, slopes should not exceed 1:10 or be less steep than 1:25. Tapers should be no greater than 1:6 to reduce the risk of bicyclists losing their balance. The vertical lip should be no more than a 1/4" high.
- Speed cushions should be located where there is sufficient visibility.
- Raised intersections are best implemented at localized areas of importance where pedestrian movement is the primary goal.
- Raised intersections should be used sparingly to maximize the effect of speed reduction and increased awareness by the driver.
- The height of raised intersection ends should be the same as the curb height, but should not impede drainage.

Curb Extensions

Description

Curb extensions minimize pedestrian exposure during crossing by shortening crossing distance and giving pedestrians a better chance to see and be seen before committing to crossing. They may also provide additional space for street furniture and bike parking. They are appropriate for any crosswalk where it is desirable to shorten the crossing distance and there is a parking lane adjacent to the curb.

Implementation Guidance

- In most cases, the curb extensions should be designed to transition between the extended curb and the running curb in the shortest practicable distance.
- For purposes of efficient street sweeping, the minimum radius for the reverse curves of the transition is 10 ft and the two radii should be balanced to be nearly equal.
- Curb extensions should terminate two feet short of the parking lane to maximize bicyclist safety and to minimize conflict with plowing.



Curb Extension

Neighborhood Traffic Circles

Description

Neighborhood traffic circles are raised, circular islands placed in the middle of local roadway intersections that control turning movements and help reduce vehicle speeds by forcing slow turns in a predictable manner. Additional benefits include reductions in local air and noise pollution from the removal of stop –and-go traffic, as well as visual and environmental benefits of added landscaping and tree planting opportunities. Traffic circles will be best implemented along 1st Ave. where there are multiple turning movements occurring at an intersection. Given that 1st Ave. is primarily one-way, the locations will be limited.



Neighborhood Traffic Circle

Implementation Guidance

- Best suited for low-volume, local streets.
- Design must have low turning radii to reduce vehicular turning speeds, which improves pedestrian and bicyclist safety.
- Install signage and pavement markings to guide motorists, pedestrians, and bicyclists through the allowed turning movements and crossing areas.
- May be Yield- controlled.

Traffic Diversion

Description

Traffic diversion treatments reduce motor vehicle volumes by completely or partially restricting through traffic on a neighborhood greenway. By prioritizing local neighborhood traffic, a by-product of diverters is that cut-through traffic attempting to avoid arterial streets typically gets reduced as a result of inconvenience. Traffic diversion can be implemented where one-way travel direction switches (ie. southbound to northbound) or where there is a desire to shift vehicle traffic to another roadway. In these cases, the



Diagonal Diverter

traffic diversion would be a partial closure that allows for full bicycle passage while restricting vehicle access to one way traffic at that point.

Implementation Guidance

- Target motor vehicle volumes range from 1,000 to 3,000 vehicles per day.
- Diversion can be in the form of
 - a right-in / right-out median island
 - median raised island with dedicated bike lane travel

Conclusion

The attached map illustrates the locations where the various cross section alternatives can be implemented throughout the 1st Avenue corridor. Once a cross section has been recommended and determined for the various segments, traffic calming elements from the toolkit can be applied to further enhance the user experience and calm the motorized traffic.







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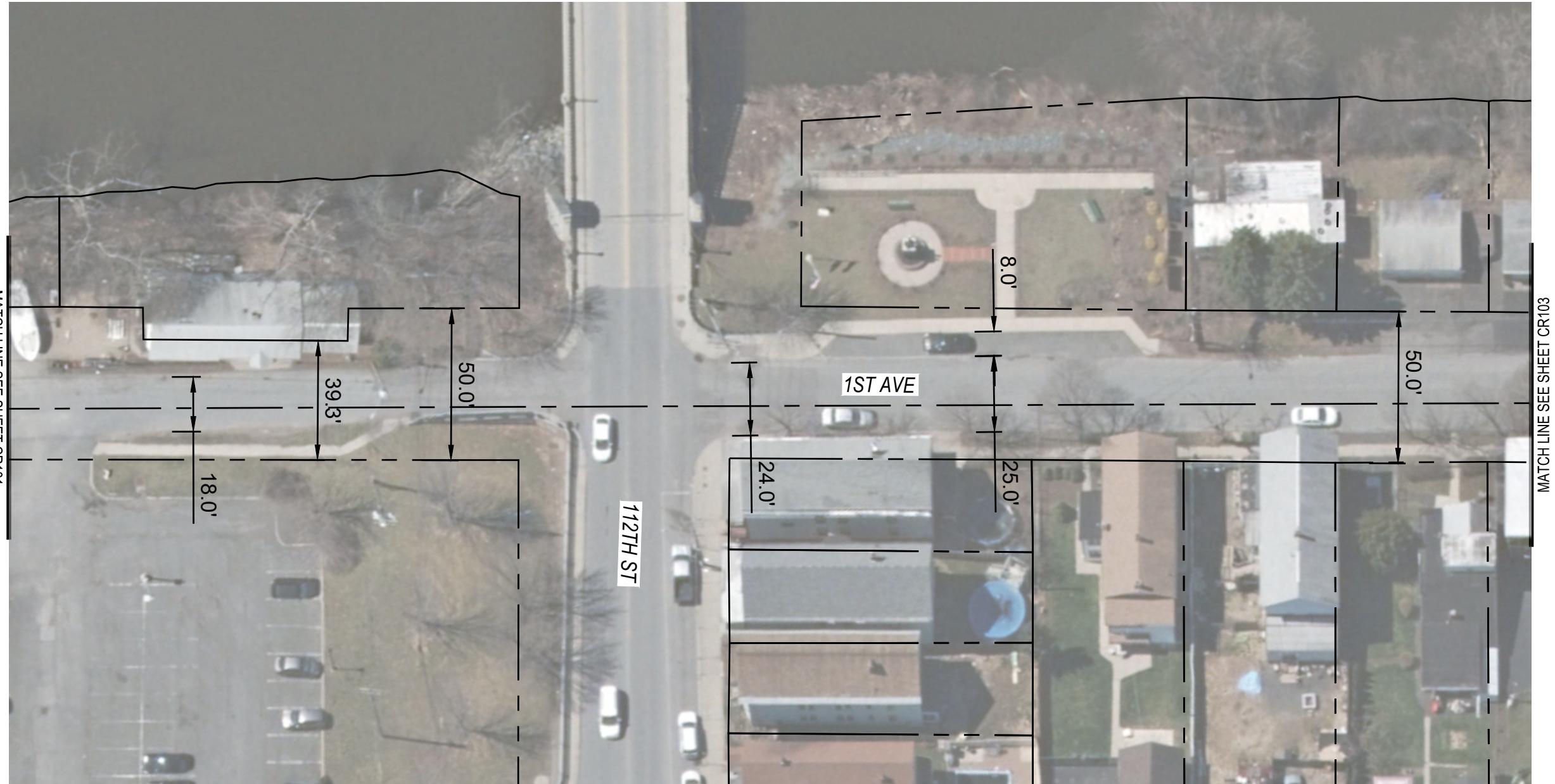
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SHEET TITLE
CITY OF TROY
**1ST AVE
EXISTING CONDITIONS**

SHEET NO.
CR101
SHEET 1 OF 13



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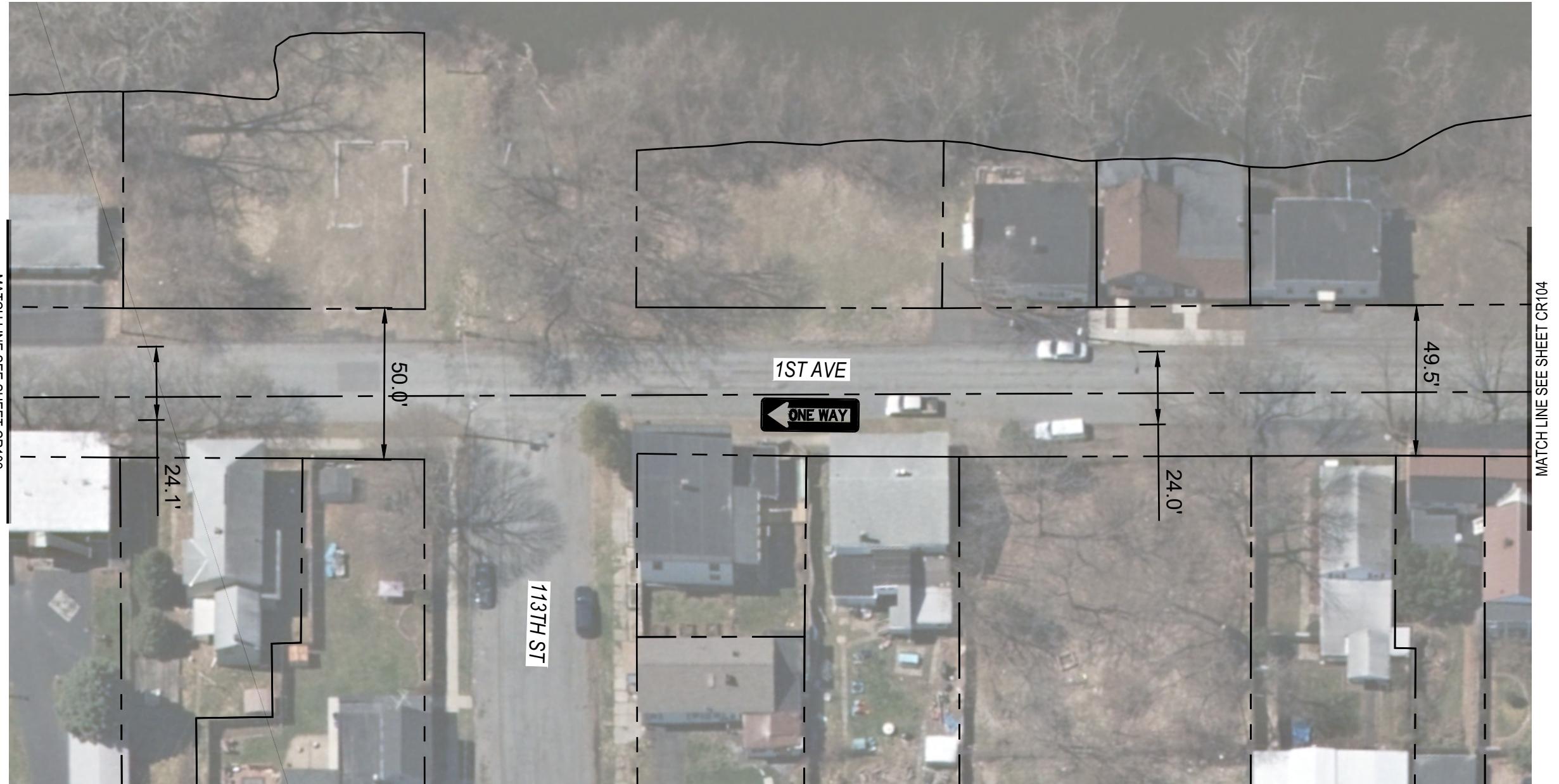
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SHEET NO.
CR102
SHEET 2 OF 13



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SHEET TITLE
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SHEET NO.
CR103
SHEET 3 OF 13

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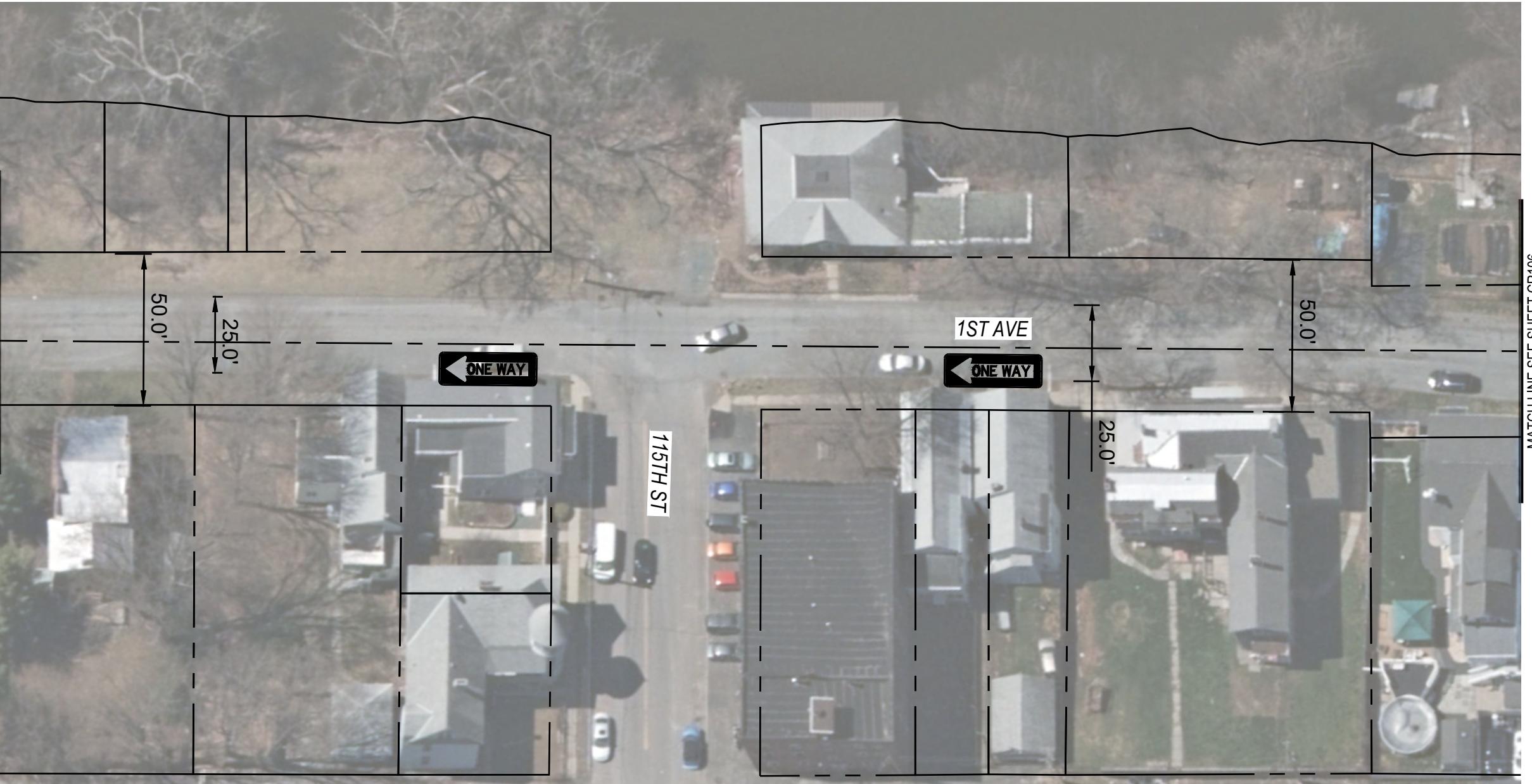
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SHEET TITLE
CITY OF TROY
1ST AVE
EXISTING CONDITIONS

SHEET NO.
CR104

4 OF 13



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CITY OF TROY
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SHEET NO.
CR105
SHEET 5 OF 13

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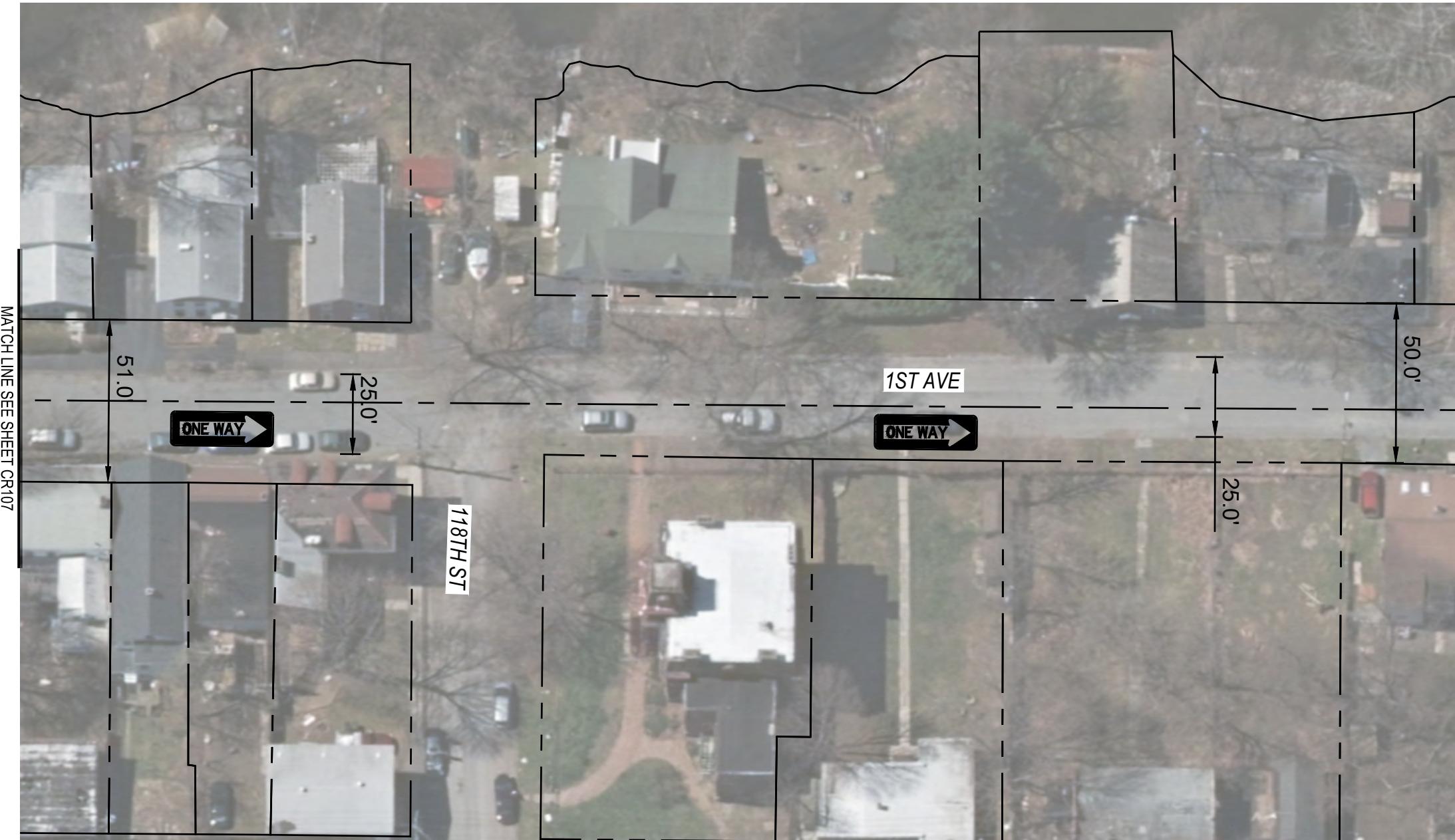
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SHEET TITLE
CITY OF TROY
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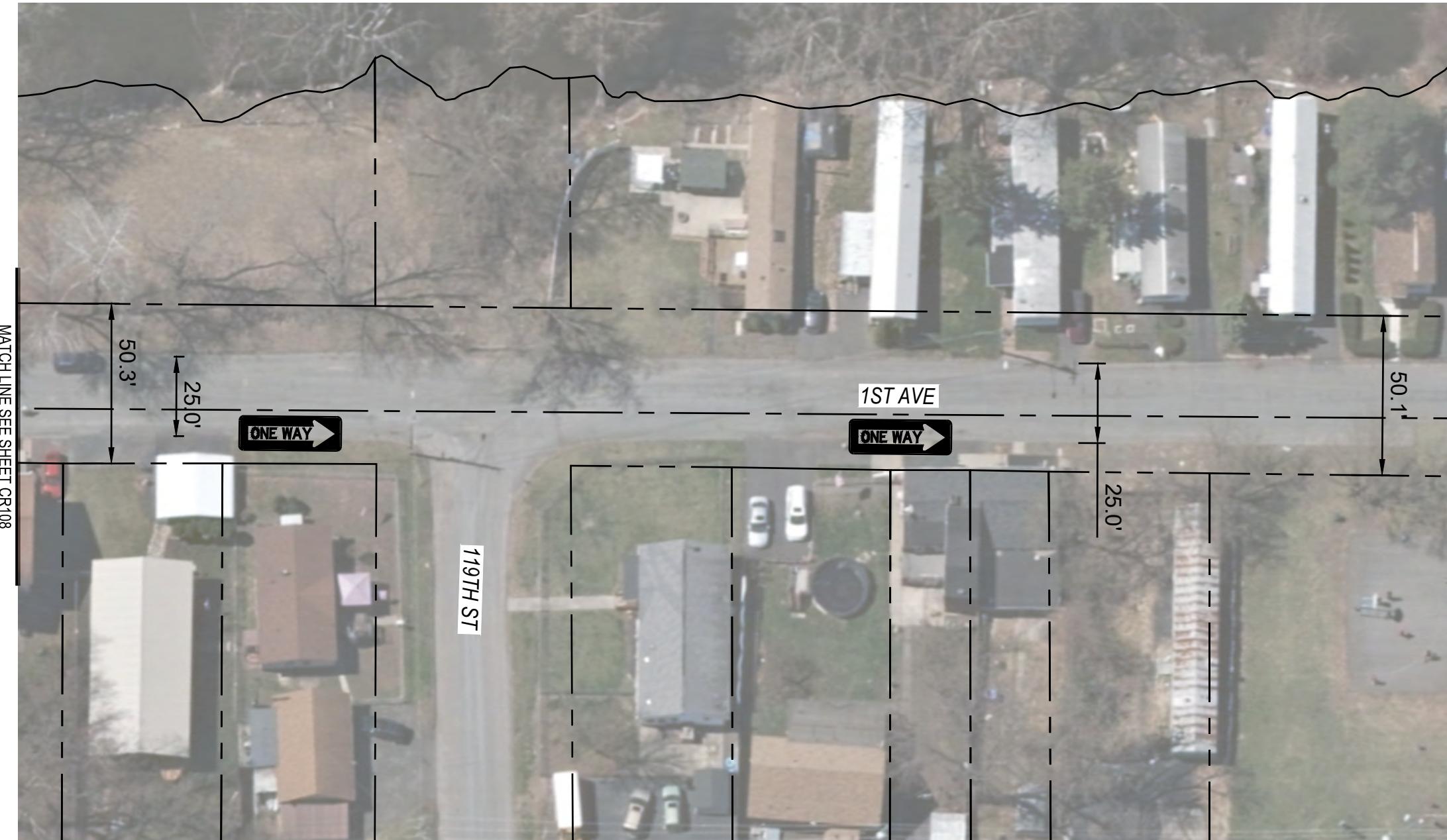
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CR108

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SHEET 9 OF 13

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1ST AVE
EXISTING CONDITIONS
CITY OF TROY

CR110
SHEET NO.
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PROJECT NO:
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1ST AVE
EXISTING CONDITIONS
CITY OF TROY

CR111
SHEET NO.
11 OF 13



PROJECT NO:
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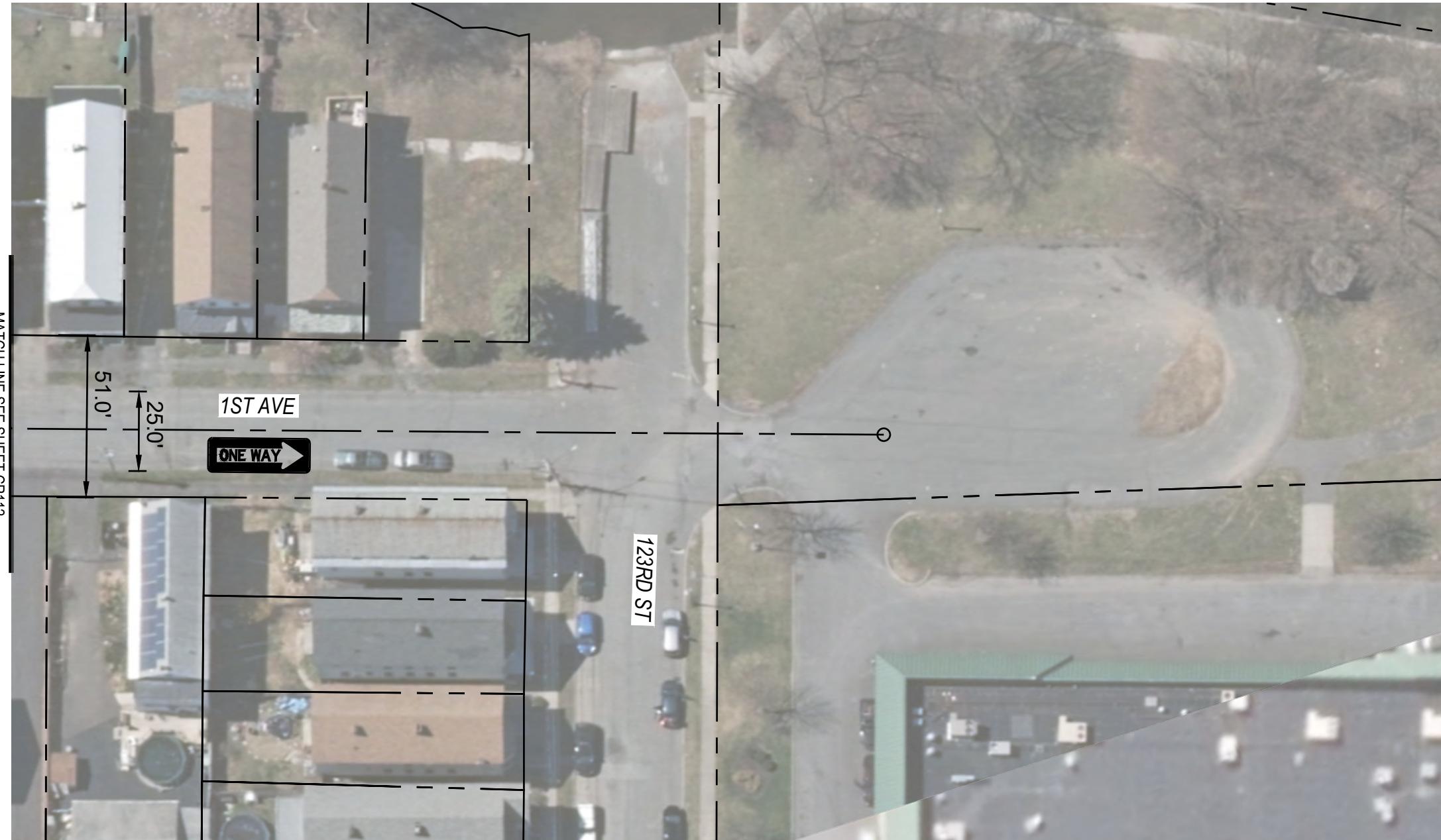
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SHEET TITLE
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SHEET NO.
CR113
SHEET 13 OF 13