



# Mohawk Hudson Bike Trail Extension Feasibility Report



*This document/report was prepared for the New York State Department of State with funds provided under Title 11 of the Environmental Protection Fund.*

## Bergmann

Office:

10B Madison Avenue Extension  
Albany, NY 12203

Phone: 518.862.0325

Email: [gursprungg@bergmannpc.com](mailto:gursprungg@bergmannpc.com)

[www.bergmannpc.com](http://www.bergmannpc.com)

September 14, 2018



## TABLE OF CONTENTS

---

### Acknowledgments

<b>Introduction</b> .....	<b>1</b>
<i>Project Overview</i> .....	1
<i>Community Support and Participation</i> .....	1
<i>Trail Feasibility</i> .....	2

<b>Study Area Overview</b> .....	<b>2</b>
<i>Survey and Site Reconnaissance</i> .....	2
<i>Key Parcels along the Optional Trail Alignments</i> .....	3
<i>Geotechnical Investigation</i> .....	4
<i>Natural and Man-made Features</i> .....	4

<b>Trail Alignment Alternatives</b> .....	<b>8</b>
<i>Option 1</i> .....	8
<i>Option 2</i> .....	10
<i>Steering Committee &amp; Public Input</i> .....	11

<b>Preferred and Feasible Trail Alignment and Implementation Plans</b> .....	<b>12</b>
<i>Implementation Plans</i> .....	12
<i>Environmental Review, Approvals and Permits</i> .....	13

<b>General Design Considerations</b> .....	<b>16</b>
<i>Trail Safety and Aesthetics</i> .....	16

<b>Cost Estimates</b> .....	<b>18</b>
-----------------------------	-----------





## **Appendix A: Existing Conditions and Plan Options**

*EC-1 Existing Conditions Plan*

*CP-100 Overall Concept Plan Options*

*CP-101 Concept Plan Options at Bridge Crossing*

*CP-102 Detailed Concept Plans & Sections at Bridge Crossing*

## **Appendix B: Preferred Option Plan**

*CP-200 Preferred Option Concept Plan*

## **Appendix C: Natural Features**

*Map 1a USF&W Wetlands Map*

*Map 1b NYSDEC Resource Mapper*

## **Appendix D: Photos**

*Photo Location Map*

*Photo Appendix*

## **Appendix E: Meeting Notes**

## **Appendix F: Geotechnical Assessment**

## **Appendix G: Hydraulic Analysis**

## **Appendix H: Cost Estimates**

## **Appendix I: Union College Agreement**



## Acknowledgments

---

We wish to thank the many people who participated in the development of this Study.

Program Manager

Stephen J. Feeney, AICP,

Schenectady County Department of Economic Development and Planning

Christopher Wallin, P.E.

Schenectady City Engineer

Valeria Ivan

New York State Department of State

Steering Committee

Brian Hagenbuch

Stockade Neighborhood Association

Howard Halstead

Friends of the Mohawk Hudson Bikeway

David Hogenkamp

Schenectady Metroplex Development Authority

Richard Karis, P.E.

NYS Canal Corporation

Christine Primiano

Principal Planner, City of Schenectady

Mary Ann Ruscitto

Front Street Neighborhood Association

Gillian Scott

Friends of the Mohawk Hudson Bikeway

Consultant

Bergmann Associates, Architects, Engineers,

Landscape Architects & Surveyors, D.P.C.

Sub-Consultant

Dente Engineering





## Introduction

---

The purpose of this study is to evaluate the feasibility of constructing a new trail segment along the south shore of the Mohawk River under the CSX/Amtrak rail bridge at one of two locations. The trail could run under the CSX / Amtrak bridge at the shoreline of the Mohawk River or under the CSX / Amtrak bridge at Front Street. The proposed trail extension would connect the existing Mohawk Hudson Bike Trail spur (Alco Heritage Trail) that terminates at River Street to the existing walkway at Riverside Park.

While Riverside Park trail improvements are not part of the scope of this study, it is acknowledged herein that improvements to the trail through the Park would need to take place simultaneously with the trail extension. Any design contract awarded for the trail extension project should include Riverside Park improvements including potentially the suggestion of a dual trail in the park for walkers and bikers. In addition, a second community meeting should be held to gain input on improvements planned at Riverside Park.

## Project Overview

Schenectady County, in coordination with the Metroplex Development Authority, received a New York State Department of State grant to examine the feasibility of extending the Mohawk Hudson Bike Trail approximately 850 LF from its new terminus at River Street in the City of Schenectady under one of the CSX/Amtrak railroad bridges to Riverside Park in the Stockade Historic District. The goal of the study is to provide an assessment of possible trail alternatives and identify a preferred alternative to complete this trail extension.

The study involved:

- Topographic survey and site reconnaissance.
- An analysis of potential trail alignments and design alternatives.
- Selection of a preferred alternative.
- Development of an implementation plan for future development of the trail.
- A description of required permits and approvals.
- A cost estimate for each alternative.

The physical and environmental attributes of the project area and a preferred alternative are outlined in this report. Overall, the construction of the trail would provide the area with an expanded riverside trail, improved access to Mohawk Harbor and other key destinations, and a more seamless and safe off-road trail route through the City of Schenectady.

## Community Support and Participation

The Schenectady County Department of Economic Development and Planning established a Steering Committee to oversee the development of the Feasibility Study. The Steering Committee included City and regulatory officials, neighborhood representatives as well as other local stakeholders. Bergmann Associates was retained as the consultant to assist with trail feasibility, master planning coordination with potential affected agencies, and public outreach. This included a public meeting, Steering Committee meetings and meetings with landowners potentially affected by the proposed trail.



## Trail Feasibility

Trail alignment alternatives were identified and evaluated according to several criteria, including economic benefit, land ownership, cost, maintenance, permitting, safety and environmental impacts. The preferred trail alignment should balance these criteria along with consideration of impacts to adjacent landowners, convenience to users and timely completion.

## Study Area Overview

The study area boundary is shown in Figure 1 and extends approximately from the National Grid substation on the east, the Mohawk River on the north, Front Street to the south and Riverside Park to the west. Included in the study area are lands of National Grid, CSX Rail, City of Schenectady and Union College as shown on the Existing Conditions Plan provided in Appendix A. The Surveyed Area, as shown in Figure 1, includes the lands located within 20 feet of the Mohawk River and is approximately 1000 feet in length.

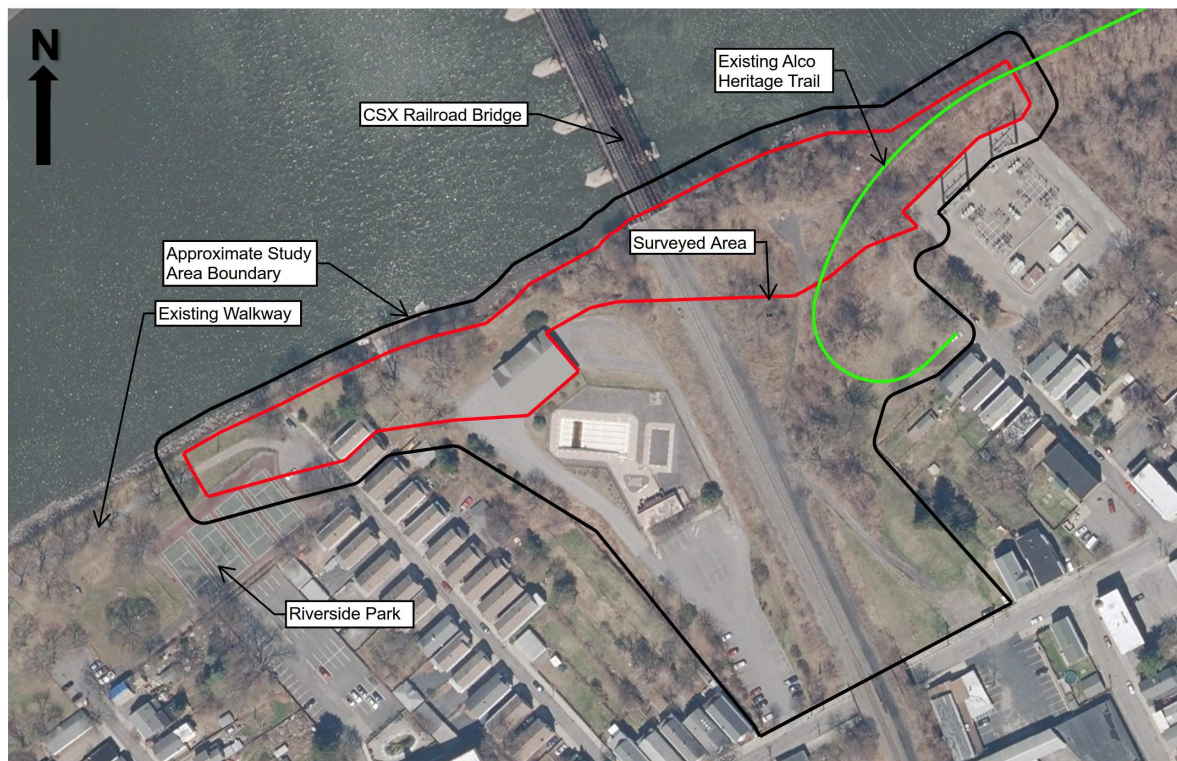


Figure 1 | Study Area Map

## Survey and Site Reconnaissance

Bergmann Associates prepared a topographic survey of a portion of the study area on January 4, 2017. The surveyed area encompasses approximately the 850-foot long project corridor from the existing Mohawk Hudson Bike Trail terminus near River Street west to Riverside Park, with a contour interval of one foot. The balance of the study area was supplemented with LiDAR topographic survey information.



The survey includes:

- Location of all existing improvements as observed above the ground surface.
- Location of existing subsurface utilities (water, sewer, electric, etc.) within the survey limits based on visual observation and record mapping.
- Edge of water elevations along the railroad bridge abutment.
- Elevations along the CSX bridge, including low steel, abutment and wing wall elevations.
- Property boundaries based on Schenectady County tax map information.
- Transportation systems including roadways, driveways, cross streets, sidewalks, and railroads as well as all manmade structures and natural resources adjacent to the site.

## Key Parcels along the Optional Trail Alignments

The trail alignment options potentially run through seven (7) different parcels. Four (4) of these parcels are owned by the City of Schenectady. An Existing Conditions Plan showing where these properties are located is provided in Appendix A.

The properties listed below are included (or potentially included) in the trail alignment options:

- City Owned Parcels

The City owned parcels include the following:

- > T.A. # 39.55-1-38.1, which is part of Riverside Park.
  - > T.A. # 39.55 -2-45.1, which is located along the Mohawk River just east of the Riverside Park walkway.
  - > T.A. #39.56-1-1.1, which is located between the lands of Union College and Front Street on the west side of the CSX rail property.
  - > T.A. # 39.48-1-1, which is located along the Mohawk River just east of the National Grid property.
- Trustees of Union College, T.A # 39.56-1-1.2

The Union College crew house is located on this parcel. The City has an agreement in place with Union College for access through this property. See Appendix I for a copy of the agreement. The proposed alignment of the trail will require a minor modification to an existing gravel drive that runs from the boathouse to the river. Refer to CP-200 in Appendix B.

- CSX Corporation, T.A # 39.79-1-1.4

This parcel will likely be the most affected by the trail design. One option proposes to construct the trail under the existing rail bridge over the Mohawk River and another option proposes to run the trail under the CSX rail bridge at Front Street and along the eastern side of the CSX property. It will be necessary to enter into agreements with CSX Corporation (through Amtrak) supporting the alignment of the trail within the CSX property. The bridge and rail line are leased to Amtrak through a long-term



lease agreement. Refer to CP-100 in Appendix A and CP-200 in Appendix B for the proposed trail alignments on CSX property.

- Niagara Mohawk DBA National Grid, T.A # 39.48-1-2

The recently constructed Alco Heritage Trail is located on this parcel adjacent to the Mohawk River. This trail runs from Mohawk Harbor to the east and connects to River Street. The proposed trail will affect this property by connecting to the existing Alco Heritage Trail. See Photo #9 in Appendix D.

## Geotechnical Investigation

Dente Engineering performed a preliminary assessment of the soil conditions in the project area. Dente Engineering previously performed geotechnical investigations for the former Alco site located approximately 1700 feet east of the bridge and for the City of Schenectady North Ferry Street pump station about 1300 feet west of the bridge. Borings for these investigations were taken near the river embankment. Based on that data, soils beneath and in front of the rail bridge are expected to consist of river sediments followed by a thick layer of alluvial sand and/or silt overlying glacial till and shale bedrock below.

Dente has identified several concerns which will need to be addressed and site specific geotechnical explorations and review of available bridge plans will need to be performed for the design of the trail alternative along the river. The identified concerns are as follows:

- A slope stability analysis must be completed to confirm that the planned 2H:1V slope for the fill is adequate when placed over the loose/soft river sediments that are expected to be present.
- The proposed fills may place new lateral loads on the bridge pier and supporting piles. In addition, the weight of the fills will cause the river sediments to consolidate and this may induce downdrag loads on the south bridge abutment piles. If adequate bridge plans are not available for review, it will not be possible to thoroughly evaluate potential impacts on the structure and in this case it may be warranted to alter the trail design to minimize or eliminate the impacts. Similarly, the trail design may need to be altered if the estimated magnitude of the increased loading on the bridge structure and piles is unacceptable to Amtrak/CSX.

Refer to the geotechnical assessment provided in Appendix F for more detailed information.

## Natural and Man-made Features

The natural and man-made features within the study area will determine the opportunities and constraints associated with the potential trail alignments being studied. This section includes a discussion of the constraints associated with the wetlands, floodplain, topography and rail bridges within the study area.

### *Wetlands*

To determine the extent of regulated wetlands, both New York State Department of Environmental Conservation (NYSDEC) and National Wetlands Inventory (NWI) wetlands were mapped within the Study Area as shown on Maps 1a and 1b in Appendix C. The mapping is based on information



obtained from these agencies' websites. The Mohawk River is classified by NYSDEC as a Class A protected stream and by the NWI as an L1UBHh Lake, which is a protected wetland.

The following information was obtained during a meeting with an ACOE representative.

The area within the Mohawk River below the Ordinary High Water (OHW) mark can be filled under Nationwide Permit #14. Up to 0.10 acres may be filled without providing any mitigation. Mitigation will be required for filling over 0.10 acres up to 0.5 acres. Filling an area greater than 0.5 acres will require an individual permit. Impacts should be minimized to the extent practical and alternatives need to be examined.

Mitigation can be provided in different ways, some of which are listed below:

- a) Provide shoreline enhancements: Enhancements may come in many forms, such as shoreline clean-up, removal of debris or undesirable features (e.g. exposed pipes, etc), creation of floodplain benches, landscaping, and Revegetation / stabilization. These may be improvements that the City and/or County may already be planning to undertake.
- b) Education, such as interpretive signage focused on the River, can be considered a mitigation measure.
- c) Another possibility for mitigation is the In-Lieu Fee program of the Wetland Trust administered by the Upper Susquehanna Coalition. The program ensures that high quality wetland mitigation is provided at another location in lieu of mitigation at the project site. Once the credit is purchased, the permittee has fulfilled all wetland mitigation requirements and all responsibility for the success of such wetland is transferred to The Wetland Trust. See their website for additional information (<http://www.thewetlandtrust.org/ilfp.html>).

### *Floodplains*

Floods, and floodplains, are generally defined according to their statistical frequency or risk of occurrence. A one (1) percent annual chance floodplain (formerly 100-year floodplain), for example, is an area subject to a one percent or greater chance of flooding during any given year. Depending on the degree of risk desired for a given analysis, any other statistical frequency of a flood event may be selected (FEMA flood maps delineate the 1.0 percent/100-year and 0.2 percent/500-year floodplains). For the purposes of this study, the 1.0 percent chance (i.e. 100-year) floodplain was identified. The concept plans show the floodway and floodplain boundaries on the project site based on FEMA mapping. Floodways are the main flow path along the river, while floodplains are the adjacent areas that become flooded, with typically lower flow velocities. The majority of the site is included within the 100-year floodplain and the portion that runs under the bridge is in the floodway zone. Refer to CP-100 in Appendix A. In order to place fill within a floodway, a hydraulic analysis must be performed to show that the placement of the fill will not cause any increase in the flood plain elevation. Fill may be placed within a floodplain with a Floodplain Development Permit from the City's Floodplain Administrator.

Bergmann Associates performed a preliminary hydraulic analysis on the impact on water surface elevations as a result of placing fill in the floodway for the proposed trail. A 20 foot wide trail with a 2H:1V side slope was used for the analysis. The results of the analysis determined that the floodplain





elevation would be lowered by 0.2-feet with the addition of the fill for the 20-foot trail. Refer to the analysis provided in Appendix F. Since the trail decreases the area through which the water flows, the velocity of the water increases, hence lowering the water elevation in that area.

### *Erosion Potential*

The prevention and minimization of soil erosion is one of the primary design issues for trails located adjacent to waterbodies. In addition to impacting water quality and the aesthetic value of the trail, soil erosion can pose user safety issues and require a high level of maintenance investment. To identify any potential soil erosion hazards in the Study Area, Dente Engineering performed a preliminary geotechnical assessment. As a result of that assessment, Dente Engineering has recommended that a slope stability analysis be performed in order to confirm that the 2H:1V slope for the fill is adequate for placement over the loose soil near the bridge abutment (See Appendix C for Geotechnical Report). This would have to be addressed during the design phase of the project.

### *Ice Jam Impacts*

The Mohawk River throughout the City of Schenectady is subject to winter ice jams and associated flooding. When river ice breaks up, ice jams form at constrictions such as bridge piers, dam structures and sections with reduced flood plain. The entire section of Mohawk River between Lock 7 (Vischer Ferry) and Lock 8 (Rotterdam) is prone to ice jams. John Garver, a professor at Union College, has investigated ice jams on the Mohawk River, and notes several factors conducive to ice jams:

- Major discharges from Schoharie Creek, the largest tributary
- Low gradient in the Mohawk River that produces large volumes of sheet ice
- Numerous constrictions where moving ice forms jams

The ice jams cause flooding due to the backwater when the jam forms, and also from the surge of water when the ice jam fails. Ice jams typically occur as river flows are increasing and the sheet ice breaks up and is caught at a constriction. Downstream flow is temporarily reduced by the jam, but as river flow continues to increase, eventually the jam fails and peak flooding can occur downstream. Garver estimates that 80% of historic Mohawk River floods in Schenectady have been associated with winter snowmelt and ice jams.

Since the proposed trail under the CSX bridge is outside the main river flow channel in a relatively shallow area adjacent to the shoreline, it is anticipated that it will not have a significant impact on ice jams.

However, given that the proposed trail in Option 1 runs under the CSX rail bridge and is below the 100-year flood elevation, any above grade improvements, such as fences, railings or other structures, will likely be subject to ice jams or ice floes. As such, consideration should be given to making these improvements removable so they can be taken out during the winter months. Closing the trail during this period can create other issues such as where and how to close the trail and losing the connectivity from one side of the bridge to the other.

### *Rail Bridges*

There are two rail bridges located within the study area, one that spans across the Mohawk River and the other that spans over Front Street. Both bridges are owned by CSX and leased to Amtrak.





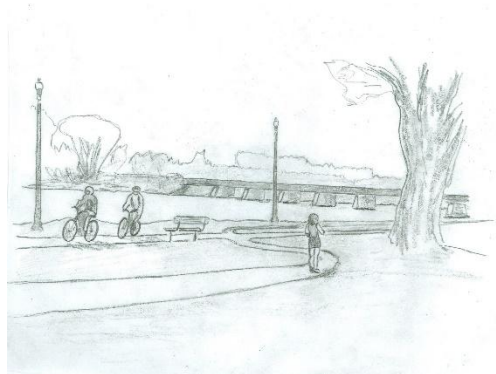
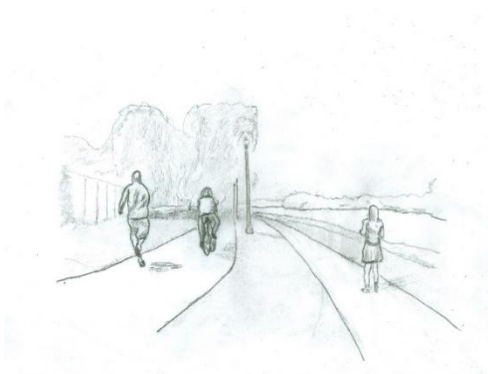
CSX/Amtrak have strict requirements for improvements that are performed adjacent to their bridges. This is primarily applicable to the improvements proposed under the bridge over the Mohawk River since they would be fairly substantial. There would be limitations on any attachments to the bridge structure, abutments or piers. There are also clearance requirements between the underside of the bridge structure and any improvements. It is anticipated that any improvements that may be required under the bridge over Front Street would be minor and not have any impact on the bridge.

### *Trail through Riverside Park*

The existing path in Riverside Park is 10 foot wide asphalt path that extends approximately ¼ mile from Washington Avenue to Ingersoll Avenue. The asphalt is in deteriorating condition in places and is in need of repaving. Lighting consists of cobra-style fixtures on wooden poles. One of the Region's 41 CDPHP sponsored bike share stations is located in the Park.

In many parts of the Riverside Park trail a completely separated walking and bike path can be provided if desired. Consideration should also be given to undergrounding the electrical service and replacing the existing light poles with decorative pedestrian-scale light fixtures.

While potential trail improvements in Riverside Park are not part of the scope of this study, trail improvements in the Park should be designed and constructed simultaneously with the construction of a trail extension between Riverside Park and the Alco Heritage Trail terminus at River Street.





## Trail Alignment Alternatives

Potential trail alignments were developed based upon field visits, the existing conditions analysis and discussions with the County Planner and City Engineer. The trail envisioned with this plan will function as a recreation facility as well as a transportation facility. Regardless of the alternative chosen, it is assumed the trail will begin at Riverside Park near Ingersoll Avenue and end by connecting to the newly built Alco Heritage Trail near River Street.

Trail improvements in Riverside Park should be designed and constructed simultaneously with the construction of a trail extension between Riverside Park and the Alco Heritage Trail terminus at River Street. Riverside Park trail improvements and any future trail extension should be viewed as one project.

### Option 1 – RAILROAD BRIDGE UNDERPASS

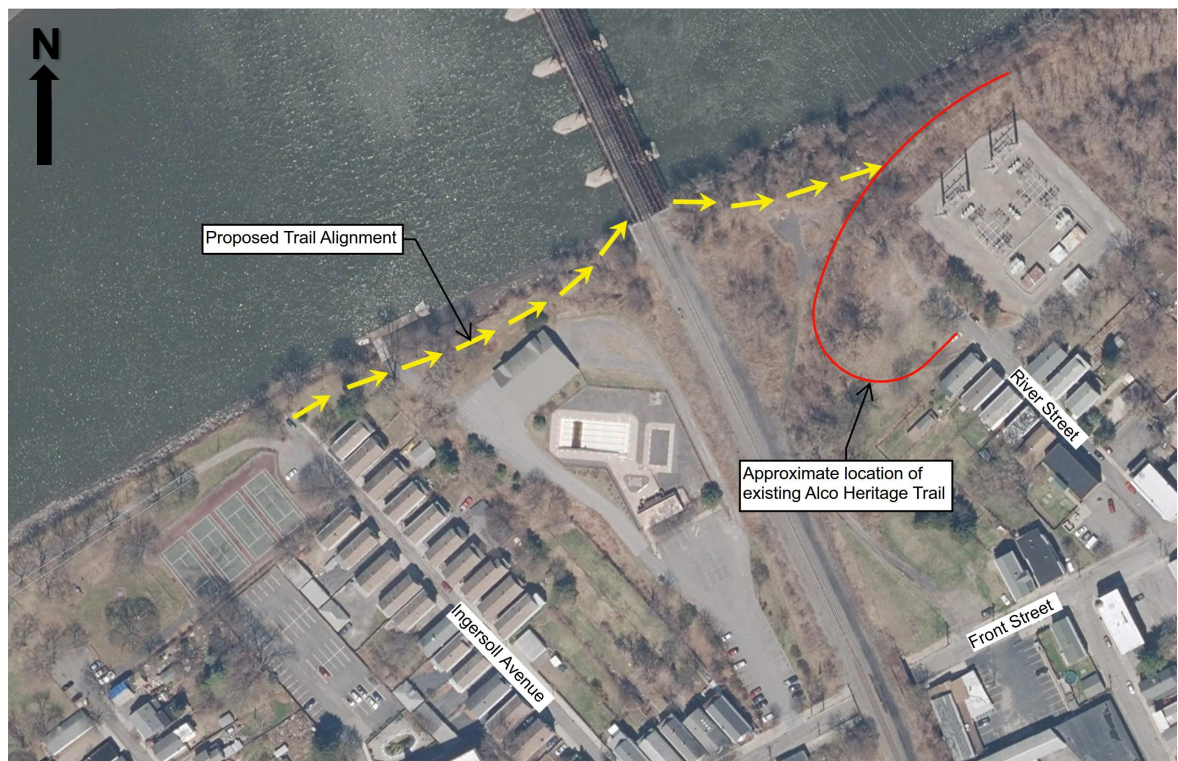


Figure 2 | Option 1

This alignment shows an approximately 900 linear feet paved shared-use trail. The proposed width of the trail is 12 feet which allows enough room for both pedestrian and bicycle traffic. This is a challenging alignment because it proposes that the trail run below the bridge. This path results in disturbance within both the floodplain and the floodway. The existing shoreline slopes on the east side of the bridge are very steep and will require filling in the





floodway to achieve the desired trail elevation above the normal water surface. See Option 1 in Figure 2 above. Also refer to the plans provided in Appendix A.

Another challenging aspect for this option was to determine how to structurally design the portion of the trail that goes under the bridge. Two options were considered as described below.

Option 1A: For this option, the trail would be supported by placing approximately 14 feet of fill material for the trail and then extending the fill with a 2:1 side slope to provide lateral support. This option would avoid attaching to the bridge abutment. The fill area needed for this design is approximately 0.28 acres, which is under the 0.5-acre limit for requiring an ACOE individual permit for filling wetlands. Based on Dente's geotechnical investigation, "the proposed fills may place new lateral loads on the bridge pier and supporting piles. In addition, the weight of the fills will cause the river sediments to consolidate and this may induce down drag loads on the south bridge abutment piles." Using this option will require further geotechnical investigations to assess the additional loads that the fill would impose on the existing foundation of the bridge. Additional geotechnical designs may then have to be considered to alleviate or nullify the effect of the additional lateral load of the fill material. See the *Floodplains* section under *Natural Features* for the proposed fill limits. Also refer to CP-101 in Appendix A.

This option also faces a challenge on its path to connect to the recently constructed Alco Heritage Trail east of the railroad bridge. The slopes in this area are relatively steep and not ideal for pedestrian and cyclists. This portion of the trail has a maximum 8% slope over a length of approximately 200 feet as shown for Alternative Alignment 1A. Refer to CP-100 in Appendix A. This slope and length is within the limits recommended by the United States Access Board along with the Americans with Disabilities Act (ADA) guidelines for such areas where topography presents a challenge to the trail design. Alternative Alignment 1B does not meet the guidelines and is therefore not recommended. Refer to the *General Design Considerations* section in this report for more information on the design criteria.

Option 1B: This option involves the use of sheet piles and fill to support the trail. The purpose of the sheet piles is to support the trail and minimize impact to the Mohawk River. The sheet piles would be driven into the riverbed and backfilled with suitable soil fill. To provide lateral support for soil pressure against the pile, concrete deadmen or some other form of lateral support would be required. Although this plan may be cheaper in cost, the downside rests in its constructability. Because of the alignment of the trail beneath the bridge, contractors may not be able to set and use the equipment needed to drive the piles due to insufficient clearance beneath the bridge. The installation of deadmen affixing to the bridge abutment would also require agreements from Amtrak/CSX presenting an additional obstacle for this option. Refer to CP-102 in Appendix A.





## Option 2 – FRONT STREET PATH

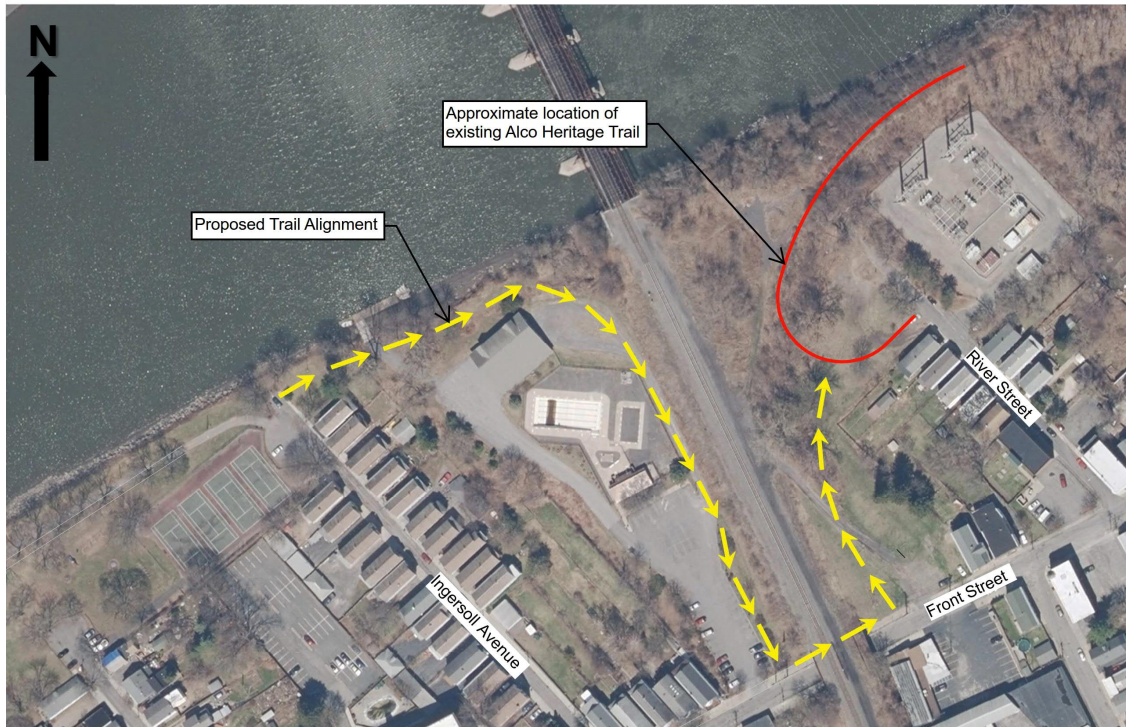


Figure 3 | Option 2

This alternative would follow the same route as Option 1 until it passes the Union College Crew House. The trail would then run through Riverside Park out to Front Street where it would connect to the existing sidewalk. This route requires the trail users to use the existing 9'± wide sidewalk under the rail bridge as part of the trail. There are minimum 9'-4" horizontal and 9'-10" vertical clearances where the sidewalk runs under the rail bridge. This may be sufficient for shared use by pedestrians and cyclists. Then after passing under the bridge, the proposed trail turns back north through CSX's property and eventually connects to the recently constructed Alco Heritage Trail on the National Grid property. See Option 2 shown in Figure 3 above.



This option presents a design challenge by sharing the trail with the existing sidewalk and street that runs under the rail bridge. Although, the sidewalk already has 44" high safety railings, the 90-degree turn to the existing roadway may be somewhat challenging for cyclists. It may be possible to improve the turning angle and remove vegetation to improve sight distance. This option is also slightly longer (approximately 500 feet) than Option 1 and would result in a route that does not run along the river for this short section of trail.





## Steering Committee and Public Input

The following list is based on comments from the Steering Committee and the public at-large, and represents the common concerns, questions and suggestions that were raised regarding the alignment, design and construction of the proposed trail. Notes from the Steering Committee meetings are included in Appendix E.

The comments and concerns of the public obtained during a public meeting held on June 21, 2018 regarding the proposed trail are:

- Multi-use trail is sensible and meets different needs for users.
- The trail would provide safety for cyclists by not having to bike through traffic.
- Option 2 is the better option due to its feasibility, lower maintenance and year-round availability.
- Trail would attract people to the park, which would have a positive effect on the neighborhood.
- Trail could provide easy navigation option for tourists.
- Existing trail needs updating.
- Extending the trail riverside is preferred.
- What are the possible steps and terms of the approvals from Amtrak?
- The removal of railings and trail components for bridge maintenance would require additional responsibility and increase maintenance cost.
- Lack of parking for residents. Trail would block Floyd Simone's property, which is currently used by residents for parking.
- Ice jams would be problematic for bridge underpass option.
- It is unsafe to close bridge during winter.
- National Grid's property requires landscaping to provide buffer.
- Trail conflicts with Union College and boat docks.
- Gravel erosion/drainage would be problematic under the bridge.
- What is the benefit of providing a link from River Street to Riverside Park? Is it necessary? Or perhaps better to leave the park as is?
- Will improvements to Riverside Park be included within the project?
- City code prohibits cyclist from using the path on Riverside Park.
- Existing on-road trail route is functional. Additional path isn't necessary.
- Improve on-road path for fast cyclists.
- Would a canopy/overhead protection need to be provided for under bridge at Front Street?



## Preferred and Feasible Trail Alignment and Implementation Plans

After careful review of the various alternatives and associated costs for locating the trail, a preferred alternative was selected. This process involved presenting the alternatives to the public and obtaining their input and comments; consideration of comments from representatives of involved agencies; and discussions with the Steering Committee weighing the pros and cons of each alternative.

Due to cost, permitting related to CSX/Amtrak bridge, and operational issues (e.g. temporary removal of trail components beneath the bridge for maintenance and closing the trail during winter months) Option 1 is not preferred. However, constructing the trail beneath the bridge could be considered at some point in the future.

Option 2 is the preferred trail alignment for the Mohawk Hudson Bike Extension Trail. The preferred alternative achieves the overall goal of providing recreational transportation for residents of the area, by connecting the existing asphalt walk at Riverside Park to the recently constructed Alco Heritage Trail. This path provide safety to its users, and a reliable access to the Alco Heritage Trail. This option also provides a great view of the river for the users and a convenient, safe and reliable trail for both pedestrian and bicycle users. See the site plan provided in Appendix B.

### Implementation Plans

The implementation plans for both Options 1 and 2 are provided below for comparison.

#### Option 1 Implementation Plan

Install a 12' wide paved trail connecting to the existing asphalt walkway in Riverside Park near Ingersoll Avenue

Removal and clearing of some trees will be necessary. A small portion of the asphalt pavement at the end of Ingersoll Avenue may need to be removed. The trail will also require modification of a portion of the gravel drive that extends down to the river and provides access to seasonal floating docks associated with the Union College property.

Transition of the trail to the bridge abutment and connecting to the existing Alco Heritage Trail

This transition starts with a slight turn of the trail towards the bridge. The turn begins at an elevation of approximately 221 feet, and runs under the bridge where the riverbed elevation is approximately 210.7 feet. To get the trail to a proposed elevation of 220 feet under the bridge, this area will need to be filled with suitable soil material and lined with riprap. The width of the trail under the bridge is also reduced to 10 feet wide to make room for safety measures on each side of the trail as well as to minimize the amount of fill required.







It is noted that there is a large diameter metal pipe (see Photo #4 in Appendix D) that is located adjacent to the bridge abutment and is partially encased in concrete. This is an abandoned pipe and can either be fully encased in concrete or removed.

Located approximately seventy feet south of the shoreline and about fifty feet west of the railroad bridge is a 24" storm sewer outlet that ultimately discharges into the Mohawk River. This storm line must be extended so that it outlets beyond the proposed trail embankment.



Once the trail passes under the rail bridge, it would transition back to a 12' wide trail and connect to the existing Alco Heritage Trail. Refer to CP-101 in Appendix A.

### Option 2 Implementation Plan

The initial portion of trail alignment for Option 2 is similar to Option 1 until it reaches the east side of the boat house on the Union College property, at which point it turns to the south towards Front Street and merges with an existing access driveway that runs along the eastern side of the park to the parking lot. The trail would then run in the area between the parking lot and the railroad property until it reaches Front Street. According to Union College officials, this access is rarely used and a path would not present any operational issues with Union College activities. It is noted that it appears that the existing access driveway encroaches onto the CSX property. It is therefore recommended that a boundary survey be performed to confirm whether or not an encroachment exists.



At Front Street, the trail would then converge with the existing sidewalk and run under the CSX rail bridge. Once it passes completely under the rail bridge, the trail would then turn back towards the north and connect to the Alco Heritage Trail. The trail is shown going over CSX property before it gets to the National Grid property for the connection.



## **Environmental Review, Approvals and Permits:**

Environmental review under the State Environmental Quality Review Act (SEQR) must be completed in accordance with the SEQR regulations (6 NYCRR Part 617). Since the Project is located within the Stockade Historic District it would be considered a Type 1 Action under the SEQR regulations and a Full Environmental Assessment Form and coordinated review with all involved and interested agencies is required.

To construct this project, multiple approvals, permits and consultations are required from various local, state and federal agencies. The necessary approvals and consultations are listed below. These permits / reviews would be applicable to both Options 1 and 2, except that for Option 2, no permits



from the Army Corps of Engineers or NYS Department of Environmental Conservation are anticipated. .

## APPROVALS / CONSULTATIONS

### *City of Schenectady*

#### Flood Plain Development Permit

- A Floodplain Development Permit will be needed from the City's Floodplain Administrator. This Permit is required because this project involves placing fill in the Mohawk River Floodway and 100-year floodplain.

City of Schenectady Local Law 2013-01 states:

- (2) On Streams with a regulatory floodway, as shown on the Flood Boundary and Floodway Map or the Flood Insurance Rate Map adopted 3.2, no new construction, substantial improvements or the other development in the floodway (including fill) shall be permitted unless:
  - ( i ) a technical evaluation by a licensed professional engineer shows that such an encroachment shall not result in any increase in flood levels during occurrence of the base flood, or,
  - ( ii ) the City of Schenectady agrees to apply the Federal Emergency Management Agency (FEMA) for a conditional; FIRM and floodway revision, FEMA approval is received and the applicant provides all necessary data, analyses and mapping and reimburses the City of Schenectady for all fees and other costs in relation to the application, The applicant must also provide all data, analyses and mapping and reimburse the City of Schenectady for all costs related to the final map revisions.

### *NYS Canal Corp*

#### Use & Occupancy Permit

- NYSCC MANUAL 900-1 Section 02.6 states: Environmental Considerations beyond SEQRA review:  
Pursuant to 6 NYCRR Part 502, Floodplain Management Criteria for State Projects, the Corporation must ensure that the use of property under the jurisdiction of the Corporation and the siting, construction, administration and disposition of property under the jurisdiction of the Corporation and State financed facilities are conducted in ways that will minimize flood hazards and losses. This will require a Use and Occupancy Permit. The Division Canal Engineer, in consultation with the Office of Transportation Planning and Environmental Services (OTPES), will complete the Floodplain Management Criteria for State Projects (6 NYCRR Part 502) for projects that fall within a floodplain to ensure compliance with 6 NYCRR Part 502. The completed document will be filed in the Project Record.

### *SHPO (State Historic Preservation Office)*

#### Phase 1A/1B Archaeological Investigation

- A Phase 1A/1B Archeological Investigation is required since the proposed trail is in an archeological sensitive zone according to the NYSDEC Environmental Resource Mapper on NYSDEC's website.



- A “No Impact” letter from SHPO will be required.
- The project area is within the National Register-Listed Stockade Historic District, therefore impacts of the trail on the historic district must be assessed.

*NYSDEC (New York State Department of Environmental Conservation)*

Stormwater and Stream Disturbance Permits

- Coverage under GP-1-2015-01 (if disturbance exceeds one acre.)
- 401 Water Quality Certification.
- Article 15 Steam Disturbance Permit for work along the Mohawk River below the Mean High Water (MHW) mark.

*ACOE (Army Corp of Engineers)*

Wetland Disturbance Permits

- NWP #14: Required for filling in wetlands/river up to 0.5 acres in size. Filling greater than 0.5 acres will require an ACOE individual permit. The preferred option will require filling approximately 0.28 acres in the Mohawk River.
- Pre-Construction Notification.
- Section 404 Clean Water Act.

*USF&W*

Threatened Species Assessment

- The Northern Long-Eared Bat is a threatened species potentially in the project area. Any clearing of large diameter trees will need to be done during times of the year when the bat is not active.

*Amtrak/CSX*

Agreements/Access Easement

- Temporary / permanent easement agreements will be needed for design and construction of the trail adjacent to the existing bridge abutment and pier and/or anywhere the trail is on CSX property.

*Union College*

Access Easement for Boathouse Property

- The City has an agreement in place with Union College for access over the boathouse property. The agreement states that: “In the event the seller (City of Schenectady) shall at some future time require access across the property to be sold, for the development of a walkway or esplanade or other similar right-of-way that the purchaser (Union College) shall grant such right-of-way or access upon the further terms and conditions hereinafter provided.” Refer to Appendix I for full the agreement.



## General Design Considerations

---

### *Trail Safety and Aesthetics*

The trail is designed to be in accordance with all ADA and AASHTO safety requirements. For mixed used trails, the fourth edition of "AASHTO Guide for the Development of Bicycle Facilities of 2012" was used. In Section 5.1.1, it is stated, "The technical provisions herein either meet or exceed those recommended in current accessibility guidelines", and hence, the requirements followed for the design of the trail are in accordance with both standards. The Architectural Barriers Act Accessibility Guidelines; Outdoor Developed Areas is referred to with regard to slope requirements for ADA accessibility. CSXT and Amtrak also have design requirements for constructing under their bridges.

### Width and Clearance

For mixed use trails, the American Association of State Highway and Transportation Officials (AASHTO) *Guide for Development of Bicycle Facilities* (2012) recommends 10 feet plus 2 foot clear buffers on each side (14 feet total) as the minimum desired width for a two-directional shared-use trail accommodating both bicyclists and pedestrians. The vertical clearance from overhanging trees or objects should be a minimum of 8 feet, although 10 feet is preferred. In constrained areas, a narrower trail (8 feet minimum plus 2-foot clear buffers on each side or 12 feet total) would be acceptable but these sections should be minimized. If additional users are allowed and/or higher usage is expected, a wider trail (12 feet minimum plus 2-foot clear buffers on each side, 16 feet total) should be considered as well as the appropriate trail surface for the intended user. According to the *Bicycle/Pedestrian Pathways and Multi-Use Trails* by CSX Transportation the minimum clearance between the top of the canopy and the underside of the bridge shall be 5 feet and the canopy has to extend 15 feet beyond the bridge fascia.

The proposed trail adheres to all the width and clearance design requirement listed above. The trail width is generally 12 feet wide except for the 10' wide section that runs under the rail bridge. A minimum clearance of 9 feet to the underside of the canopy is provided, which exceeds the 8 feet minimum requirement per AASHTO. The proposed corrugated metal roof for the portion of the trail that runs under the bridge extends approximately 22.5 feet from the bridge fascia and the minimum clearance between the top of the roof and the underside of the bridge is 5 feet per CSX / Amtrak requirements.

### Trail Safety

The bridge underpass was carefully designed to ensure the safety of the trail users. The safety features of the trail includes a safety railing, roof protection, appropriate grades, adequate visibility and signage.

Adding railings and/or handrails to the trail ensures the safety and convenience of trail users mainly in areas where they are required for steeper slopes and other hazards such as the embankment.

According to section 505 of the 2010 ADA Standards manual, handrails are required along "walking surfaces" with slopes steeper than 5%. This section also states that "The top of gripping surfaces of handrails shall be 34 inches minimum and 38 inches maximum vertically above walking surfaces. In addition to the ADA requirements, AASHTO's Guide for Development of Bicycle Facilities provides additional standards for bicycle users. According to AASHTO's Guide, "in locations where bicyclist



will operate in close proximity to bridge railings or barriers, the railing or barriers should be a minimum of 42" high. On bridges where bicycle speeds are likely to be high (such as on a downgrade), and where a bicyclist could impact a barrier at a 25 degree angle or greater (such as on a curve), a higher 48" railing may be considered. Based on those standards, the majority of the trail is accessible without safety railings or handrails. However, for the bridge underpass, a safety railing is required due to the trail's proximity to the river and steep embankments.

Given that the preferred design option requires the trail to run under the CSX/Amtrak Bridge, a protective roof is included in the design to protect trail users from potential falling objects from the rail bridge. According to the *Guide for Development of Bicycle Facilities* (2012), the vertical clearance from overhanging trees or objects should be a minimum of 8 feet, although 10 feet is preferred. Hence, the preferred conceptual design shows a minimum 9-foot high protective roof. Refer to CP-202 in Appendix B. Another factor that guides the design of the roof is the material to be used. After careful review, it was decided that a corrugated metal roof would be better than a chain link roof. The reason behind this choice was primarily the optimal safety of the trail users. If a chain link fence were to be used, small but potentially harmful materials from the rail could fall through the openings and be a potential danger to trail users. CSX Transportation also advises that the roof be designed to sustain the impact of debris, including but not limited to tie plates weighing approximately 36.5 pounds, falling from the bridge.

The trail is also prone to flooding and potential ice floes based on the history of flooding and ice jams in this area along the Mohawk River. As such, the construction of the trail at the bridge underpass should be designed with materials resistant to the effects of water damage and potential corrosion. Consideration should also be given to making the components removable during the winter months to avoid potential damage from ice floes and ice jams.

### Grade

According to section 403 of the 2010 ADA Standards manual, the running slope of walking surfaces shall not be steeper than 1:20 and the cross slope shall not be steeper than 1:48. This requirement is followed to the extent possible, however, other criteria is applied in steeper areas of the trails

According to the Architectural Barriers Act Guidelines; Outdoor Developed Areas section 1017.7.1, "Not more than 30 percent of the total length of a trail shall have a running slope steeper than 1:12 (8.33%). The running slope of any segment of a trail shall not be steeper than 1:8 (12%). Where the running slope of a segment of a trail is steeper than 1:20 (5%), the maximum length of the segment shall be in accordance with Table 1017.7.1, and a resting interval complying with 1017.8 shall be provided at the top and bottom of each segment." The resting interval length shall be 60" minimum and shall not be steeper than 1:48 in any direction. In addition, based on ADA sections 405.8 and 505.1, handrails are required on ramp runs with a rise greater than 6 inches and handrails are not required on walking surfaces with running slopes less than 1:20.

Grade	Maximum Length (Feet)
5% - 8.33%	200
8.33% - 12%	30
10% - 12%	10

ABA Table 1017.7.1





### Aesthetics and Signage

Multiple measures will be taken to provide a pleasant riverfront sight for trail users. Resting/viewing areas will be located along the trail to allow for pedestrian resting and viewing of the river. Landscaping along the trail should be provided to complement surrounding properties and existing site conditions.

Signage indicating accessible routes should also be included. Regulatory signs describe the general rules and regulations that apply to the trail system, such as permitted uses or hours of operation. Area-specific signage should also be included, such as 'STAY ON TRAIL' or 'RESPECT NATURE' signage for portions that pass through or adjacent to ecologically sensitive areas. Interpretive information for historic resources or key features along the trail should also be incorporated into the informational/wayfinding signage system. Additionally, warning signs are recommended to caution about various hazards such as steep adjacent slopes, areas prone to flooding, roadway crossings, merges, etc. Signage should also be provided to prevent trespassers from accessing the CSXT right of way.

Utilization of consistent barrier gates or bollards to control access to the trail can also identify or reinforce the trail system and communicate a consistent application of rules and regulations for all portions of the trail.



Example of wayfinding or interpretive signage

## Cost Estimates

Detailed Cost estimates are provided in Appendix H for both Options 1 and 2. The estimated costs for design and construction are as follows:

Option 1: \$536,000

Option 2: \$260,000



# Appendix A: Existing Conditions and Plan Options



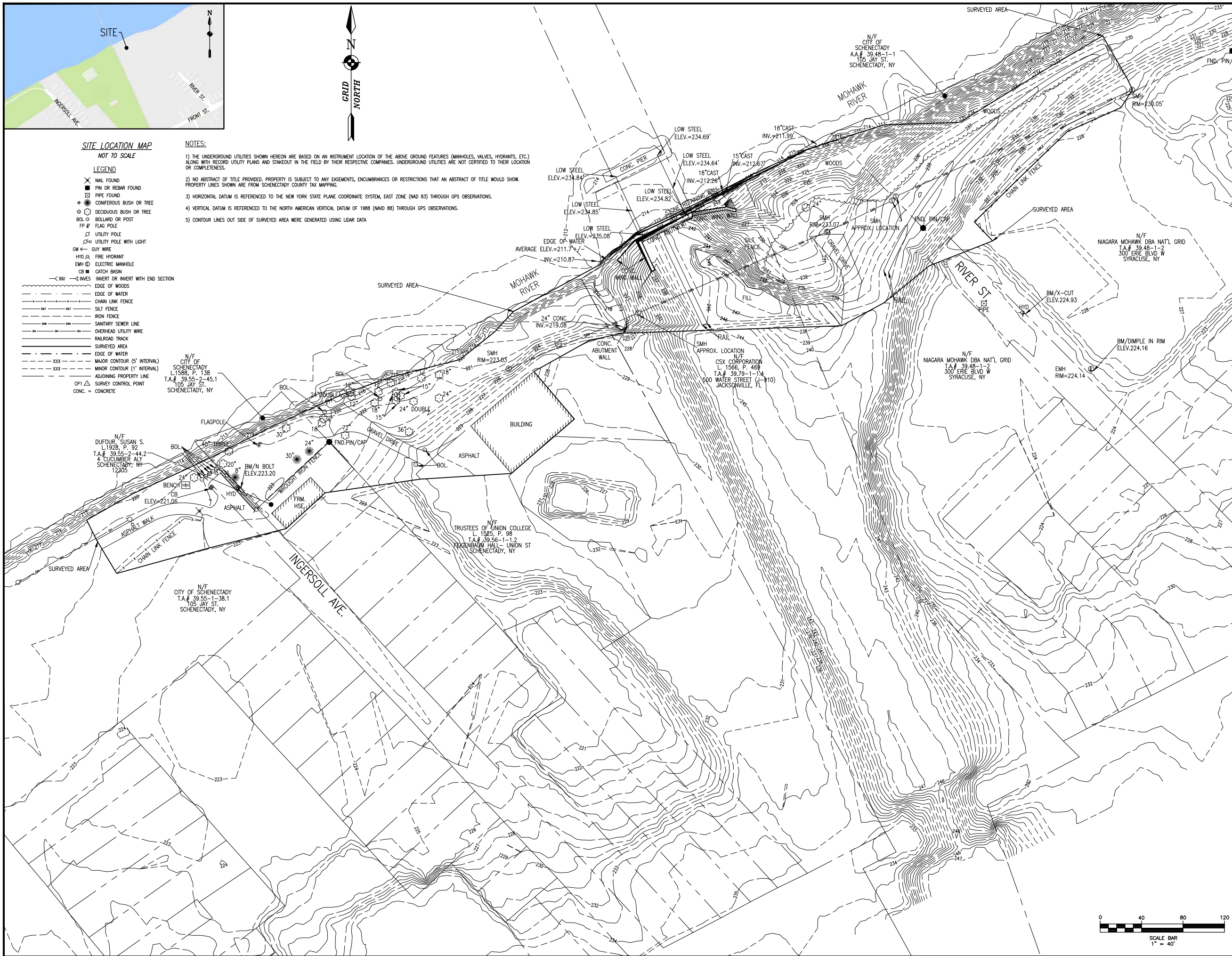
**SITE LOCATION MAP**  
NOT TO SCALE

**LEGEND**

- ✕ NAIL FOUND
- PIN OR REBAR FOUND
- ⊠ PIPE FOUND
- ⊛ CONIFEROUS BUSH OR TREE
- ⊙ DECIDUOUS BUSH OR TREE
- ⊙ BOLLARD OR POST
- FP # FLAG POLE
- ⊙ UTILITY POLE
- ⊙ UTILITY POLE WITH LIGHT
- GW ← GUY WIRE
- HYD Ⓜ FIRE HYDRANT
- EMH ⊙ ELECTRIC MANHOLE
- CB ■ CATCH BASIN
- INV — INVERT OR INVERT WITH END SECTION
- EDGE OF WOODS
- EDGE OF WATER
- CHAIN LINK FENCE
- SILT FENCE
- IRON FENCE
- SANITARY SEWER LINE
- OVERHEAD UTILITY WIRE
- RAILROAD TRACK
- SURVEYED AREA
- EDGE OF WATER
- MAJOR CONTOUR (5' INTERVAL)
- MINOR CONTOUR (1' INTERVAL)
- - - - ADJOINING PROPERTY LINE
- CP1 △ SURVEY CONTROL POINT
- CONC. = CONCRETE

**NOTES:**

- 1) THE UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON AN INSTRUMENT LOCATION OF THE ABOVE GROUND FEATURES (MANHOLES, VALVES, HYDRANTS, ETC.) ALONG WITH RECORD UTILITY PLANS AND STAKEOUT IN THE FIELD BY THEIR RESPECTIVE COMPANIES. UNDERGROUND UTILITIES ARE NOT CERTIFIED TO THEIR LOCATION OR COMPLETENESS.
- 2) NO ABSTRACT OF TITLE PROVIDED. PROPERTY IS SUBJECT TO ANY EASEMENTS, ENCUMBRANCES OR RESTRICTIONS THAT AN ABSTRACT OF TITLE WOULD SHOW. PROPERTY LINES SHOWN ARE FROM SCHENECTADY COUNTY TAX MAPPING.
- 3) HORIZONTAL DATUM IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, EAST ZONE (NAD 83) THROUGH GPS OBSERVATIONS.
- 4) VERTICAL DATUM IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) THROUGH GPS OBSERVATIONS.
- 5) CONTOUR LINES OUT SIDE OF SURVEYED AREA WERE GENERATED USING LIDAR DATA



**SCHENECTADY CO.**  
**MOHAWK HUDSON**  
**TRAIL STUDY**  
CITY OF SCHENECTADY

**SCHENECTADY CO.**

105 JAY ST.  
SCHENECTADY, NY 12305



10B Madison Avenue Extension  
Albany, New York 12203

office: 518.862.0325  
fax: 518.862.0326

www.bergmannpc.com

**SCHENECTADY CO.**  
**MOHAWK HUDSON**  
**TRAIL STUDY**

NOTE:  
Unauthorized alteration or addition to this drawing is a violation of the New York State Education Law Article 145, Section 7209.

Project Manager:

**G. URSPRUNG**

Designed by:

**BEB**

Drawn by:

**PTV**

Checked by:

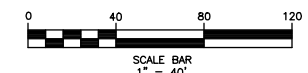
**JANUARY 4, 2017**

Date issued:

Scale:

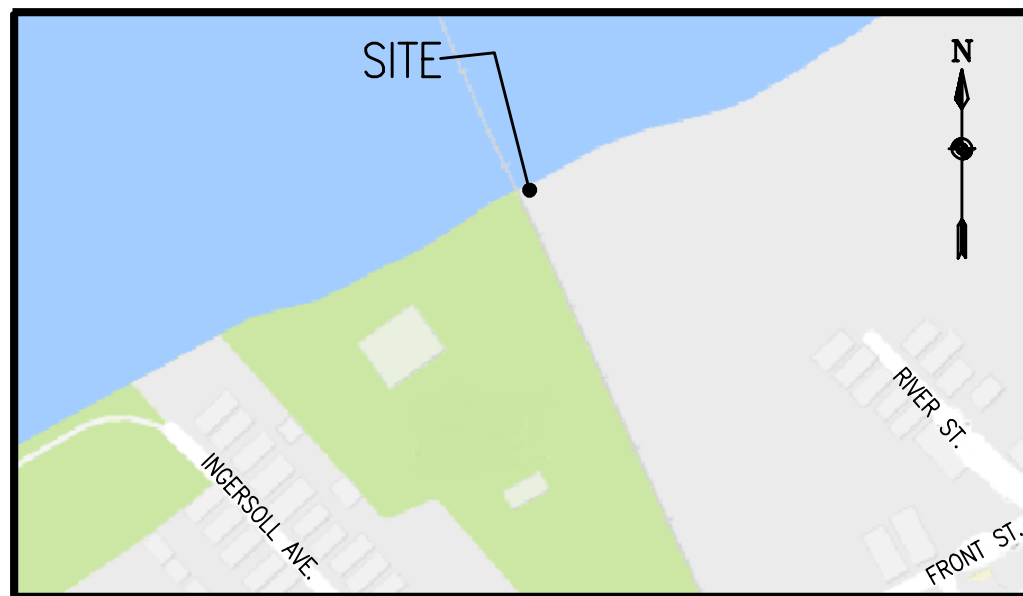
1/4/2017 1" = 40'

Project Number: 012063.00  
Drawing Number: EC-1



**EC-1**



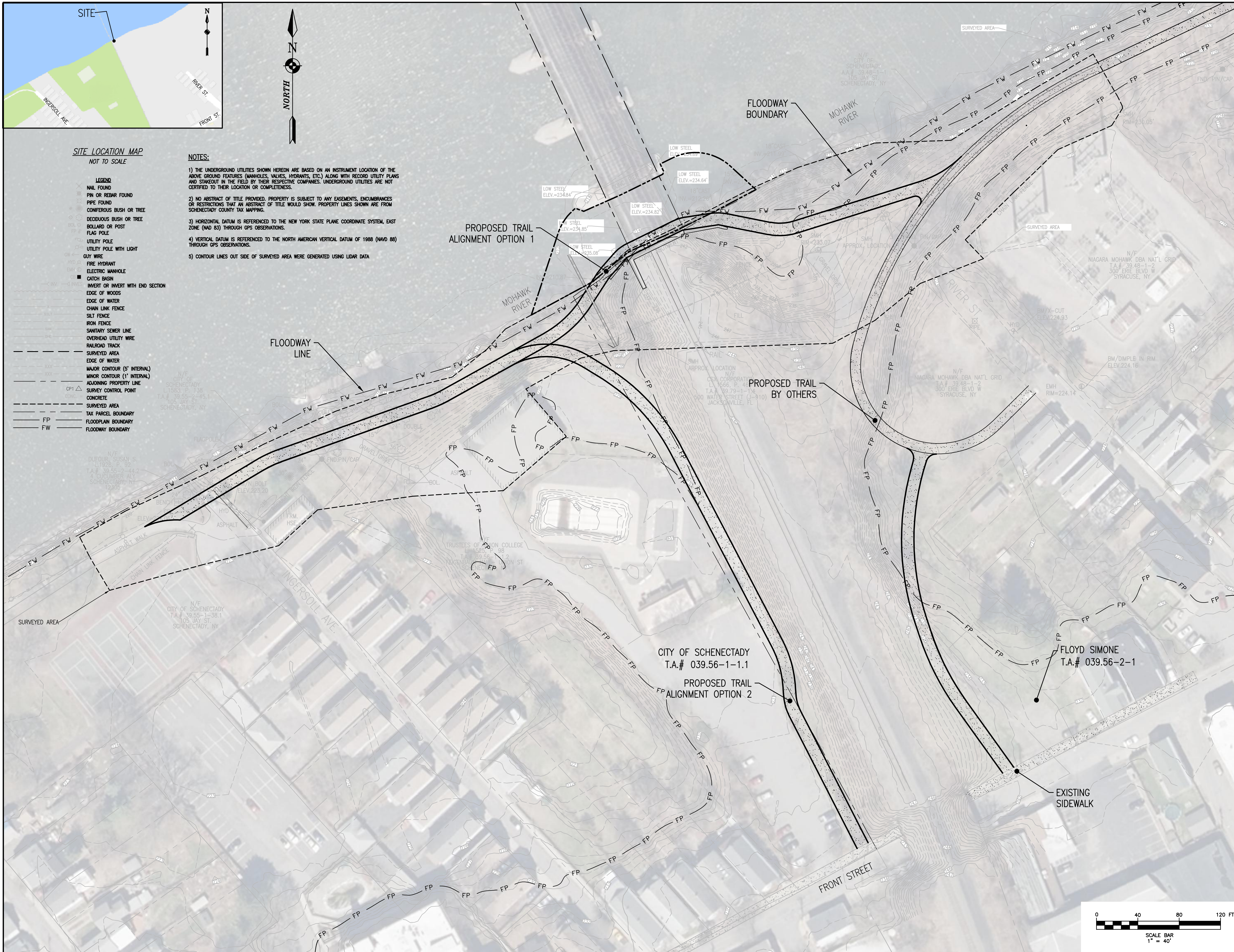


**SITE LOCATION MAP**  
NOT TO SCALE

- LEGEND**
- ✕ NAIL FOUND
  - PIN OR REBAR FOUND
  - PIPE FOUND
  - CONIFEROUS BUSH OR TREE
  - DECIDUOUS BUSH OR TREE
  - BOLLARD OR POST
  - FLAG POLE
  - UTILITY POLE
  - UTILITY POLE WITH LIGHT
  - GUY WIRE
  - FIRE HYDRANT
  - ELECTRIC MANHOLE
  - CATCH BASIN
  - INVERT OR INVERT WITH END SECTION
  - EDGE OF WOODS
  - EDGE OF WATER
  - CHAIN LINK FENCE
  - SILT FENCE
  - IRON FENCE
  - SANITARY SEWER LINE
  - OVERHEAD UTILITY WIRE
  - RAILROAD TRACK
  - SURVEYED AREA
  - EDGE OF WATER
  - MAJOR CONTOUR (5' INTERVAL)
  - MINOR CONTOUR (1' INTERVAL)
  - ADJOINING PROPERTY LINE
  - △ CP1 SURVEY CONTROL POINT
  - CONCRETE
  - SURVEYED AREA
  - TAX PARCEL BOUNDARY
  - FP FLOODPLAIN BOUNDARY
  - FW FLOODWAY BOUNDARY

**NOTES:**

- 1) THE UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON AN INSTRUMENT LOCATION OF THE ABOVE GROUND FEATURES (MANHOLES, VALVES, HYDRANTS, ETC.) ALONG WITH RECORD UTILITY PLANS AND STAKEOUT IN THE FIELD BY THEIR RESPECTIVE COMPANIES. UNDERGROUND UTILITIES ARE NOT CERTIFIED TO THEIR LOCATION OR COMPLETENESS.
- 2) NO ABSTRACT OF TITLE PROVIDED. PROPERTY IS SUBJECT TO ANY EASEMENTS, ENCUMBRANCES OR RESTRICTIONS THAT AN ABSTRACT OF TITLE WOULD SHOW. PROPERTY LINES SHOWN ARE FROM SCHENECTADY COUNTY TAX MAPPING.
- 3) HORIZONTAL DATUM IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, EAST ZONE (NAD 83) THROUGH GPS OBSERVATIONS.
- 4) VERTICAL DATUM IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) THROUGH GPS OBSERVATIONS.
- 5) CONTOUR LINES OUT SIDE OF SURVEYED AREA WERE GENERATED USING LIDAR DATA



**SCHENECTADY CO.**  
**MOHAWK HUDSON TRAIL STUDY**  
CITY OF SCHENECTADY  
**SCHENECTADY CO.**

105 JAY ST.  
SCHENECTADY, NY 12305



10B Madison Avenue Extension  
Albany, New York 12203

office: 518.862.0325  
fax: 518.862.0326

www.bergmannpc.com

**OVERALL CONCEPT PLAN**  
**OPTIONS**

NOTE:  
Unauthorized alteration or addition to this drawing is a violation of the New York State Education Law Article 145, Section 7209.

Project Manager:  
**G. URSPRUNG, PE**  
Designed by:  
**W. DARBOUZE, EIT**  
Drawn by:  
**W. DARBOUZE, EIT**  
Checked by:  
**G. URSPRUNG, PE**  
Date issued:  
**JANUARY 30, 2017**  
Scale:  
**1" = 40'**

Project Number: 012063.00  
Drawing Number: CP-100

**CP-100**





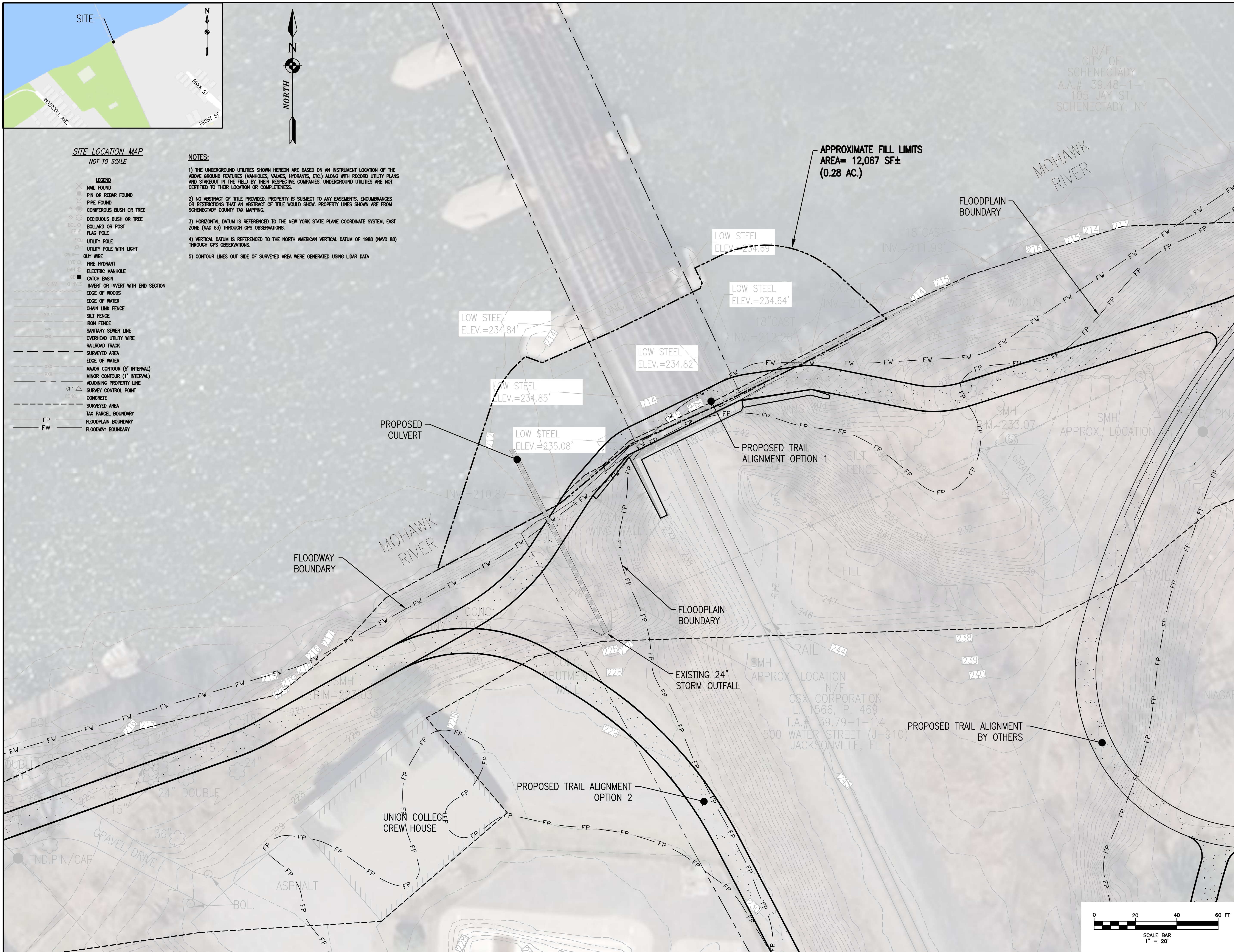
SITE LOCATION MAP  
NOT TO SCALE

**LEGEND**

- ✕ NAIL FOUND
- ⊕ PIN OR REBAR FOUND
- PIPE FOUND
- ⊕ CONIFEROUS BUSH OR TREE
- ⊕ DECIDUOUS BUSH OR TREE
- ⊕ BOLLARD OR POST
- ⊕ FLAG POLE
- ⊕ UTILITY POLE
- ⊕ UTILITY POLE WITH LIGHT
- ⊕ GUY WIRE
- ⊕ FIRE HYDRANT
- ⊕ ELECTRIC MANHOLE
- ⊕ CATCH BASIN
- INVERT OR INVERT WITH END SECTION
- EDGE OF WOODS
- EDGE OF WATER
- CHAIN LINK FENCE
- SILT FENCE
- IRON FENCE
- SANITARY SEWER LINE
- OVERHEAD UTILITY WIRE
- RAILROAD TRACK
- SURVEYED AREA
- EDGE OF WATER
- MAJOR CONTOUR (5' INTERVAL)
- MINOR CONTOUR (1' INTERVAL)
- ADJOINING PROPERTY LINE
- △ SURVEY CONTROL POINT
- CONCRETE
- SURVEYED AREA
- TAX PARCEL BOUNDARY
- FP FLOODPLAIN BOUNDARY
- FW FLOODWAY BOUNDARY

**NOTES:**

- 1) THE UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON AN INSTRUMENT LOCATION OF THE ABOVE GROUND FEATURES (MANHOLES, VALVES, HYDRANTS, ETC.) ALONG WITH RECORD UTILITY PLANS AND STAKEOUT IN THE FIELD BY THEIR RESPECTIVE COMPANIES. UNDERGROUND UTILITIES ARE NOT CERTIFIED TO THEIR LOCATION OR COMPLETENESS.
- 2) NO ABSTRACT OF TITLE PROVIDED. PROPERTY IS SUBJECT TO ANY EASEMENTS, ENCUMBRANCES OR RESTRICTIONS THAT AN ABSTRACT OF TITLE WOULD SHOW. PROPERTY LINES SHOWN ARE FROM SCHENECTADY COUNTY TAX MAPPING.
- 3) HORIZONTAL DATUM IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, EAST ZONE (NAD 83) THROUGH GPS OBSERVATIONS.
- 4) VERTICAL DATUM IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) THROUGH GPS OBSERVATIONS.
- 5) CONTOUR LINES OUT SIDE OF SURVEYED AREA WERE GENERATED USING LIDAR DATA



APPROXIMATE FILL LIMITS  
AREA= 12,067 SF±  
(0.28 AC.)

LOW STEEL  
ELEV.=234.84'

LOW STEEL  
ELEV.=234.69'

LOW STEEL  
ELEV.=234.64'

LOW STEEL  
ELEV.=234.82'

LOW STEEL  
ELEV.=234.85'

LOW STEEL  
ELEV.=235.08'

PROPOSED CULVERT

PROPOSED TRAIL ALIGNMENT OPTION 1

FLOODWAY BOUNDARY

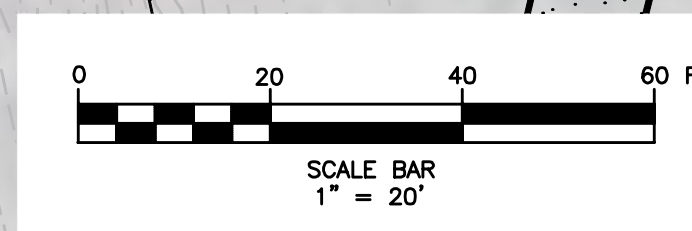
FLOODPLAIN BOUNDARY

EXISTING 24" STORM OUTFALL

PROPOSED TRAIL ALIGNMENT BY OTHERS

PROPOSED TRAIL ALIGNMENT OPTION 2

UNION COLLEGE CREW HOUSE



**SCHENECTADY CO.  
MOHAWK HUDSON  
TRAIL STUDY  
CITY OF SCHENECTADY**

105 JAY ST.  
SCHENECTADY, NY 12305



10B Madison Avenue Extension  
Albany, New York 12203  
office: 518.862.0325  
fax: 518.862.0326  
www.bergmannpc.com

**CONCEPT PLAN OPTIONS  
AT BRIDGE CROSSING**

NOTE:  
Unauthorized alteration or addition to this drawing is a violation of the New York State Education Law Article 145, Section 7209.

Project Manager:	G. URSPRUNG, PE
Designed by:	W. DARBOUZE, EIT
Drawn by:	W. DARBOUZE, EIT
Checked by:	G. URSPRUNG, PE
Date issued:	JANUARY 30, 2017
Scale:	1" = 20'

Project Number: 012063.00  
Drawing Number: CP-101

**CP-101**



**SCHENECTADY CO.  
MOHAWK HUDSON  
TRAIL STUDY  
CITY OF SCHENECTADY**

**SCHENECTADY CO.**

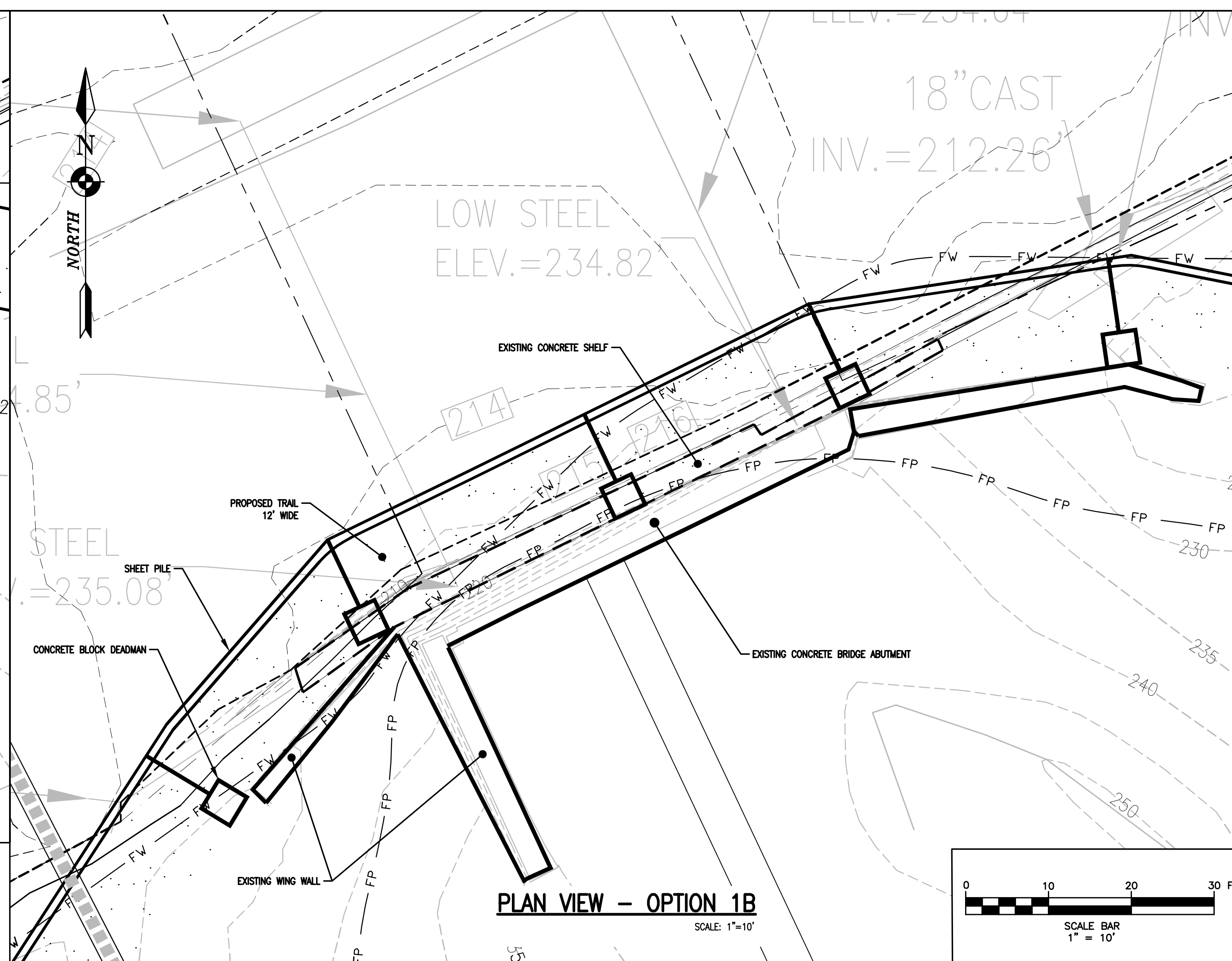
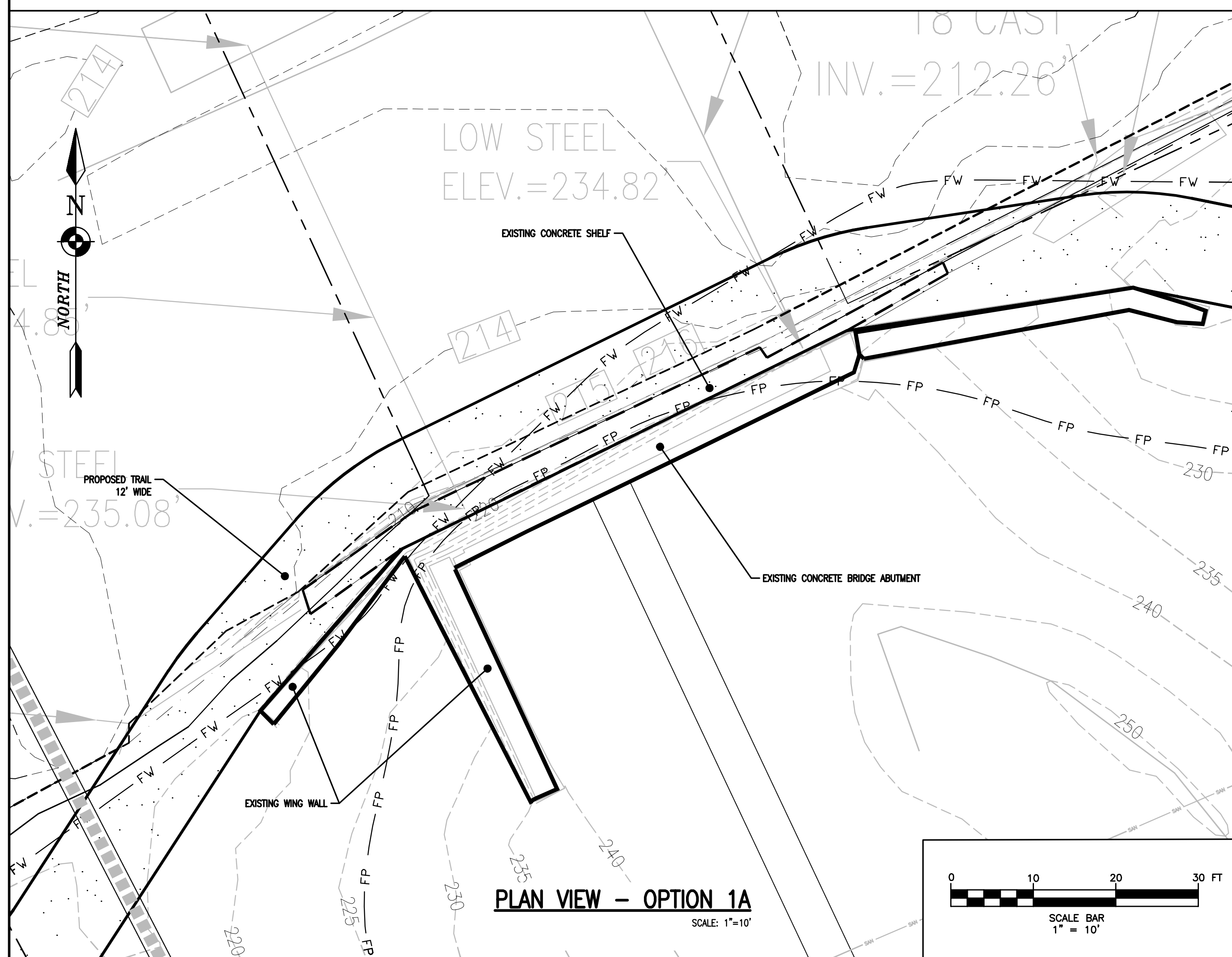
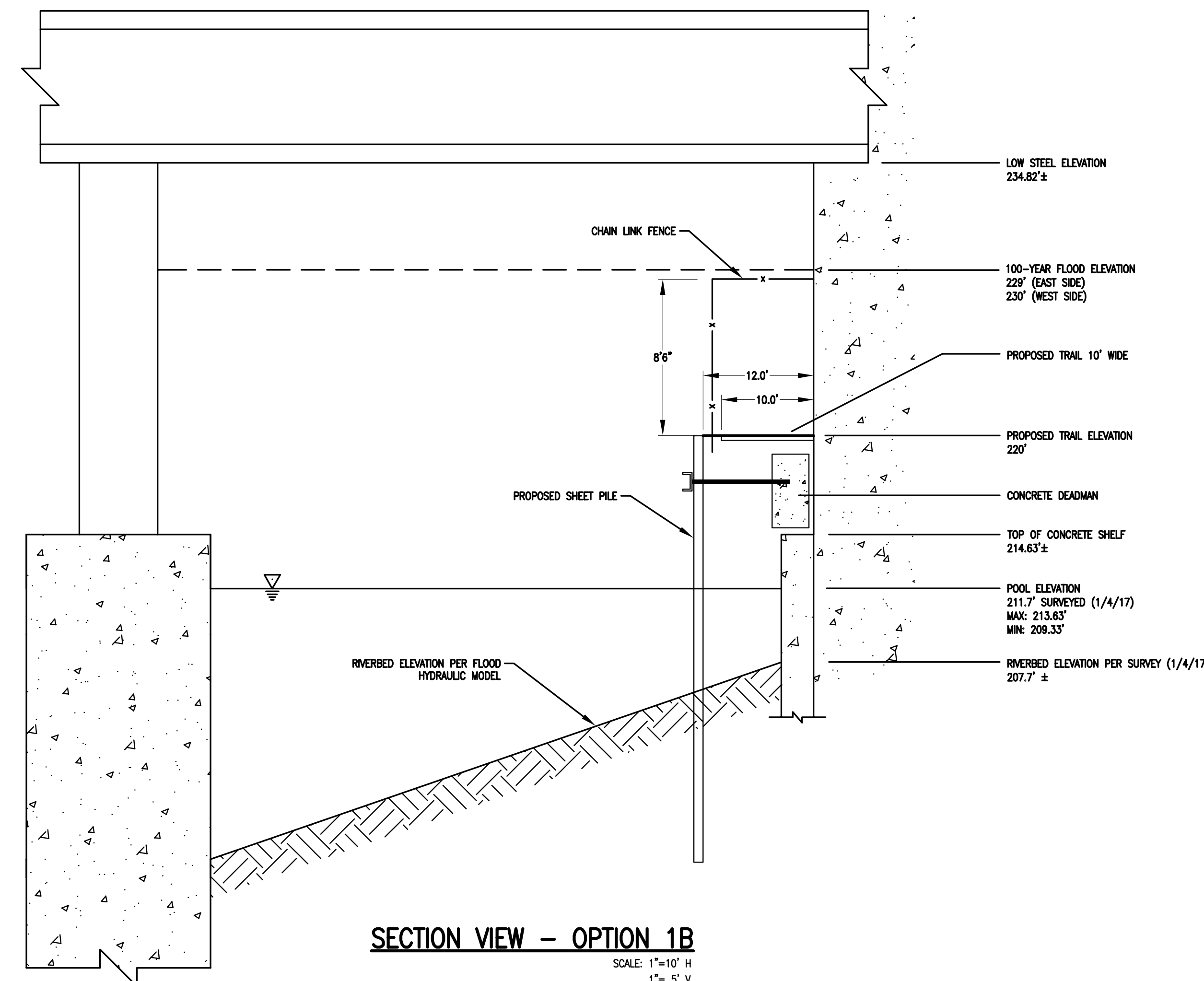
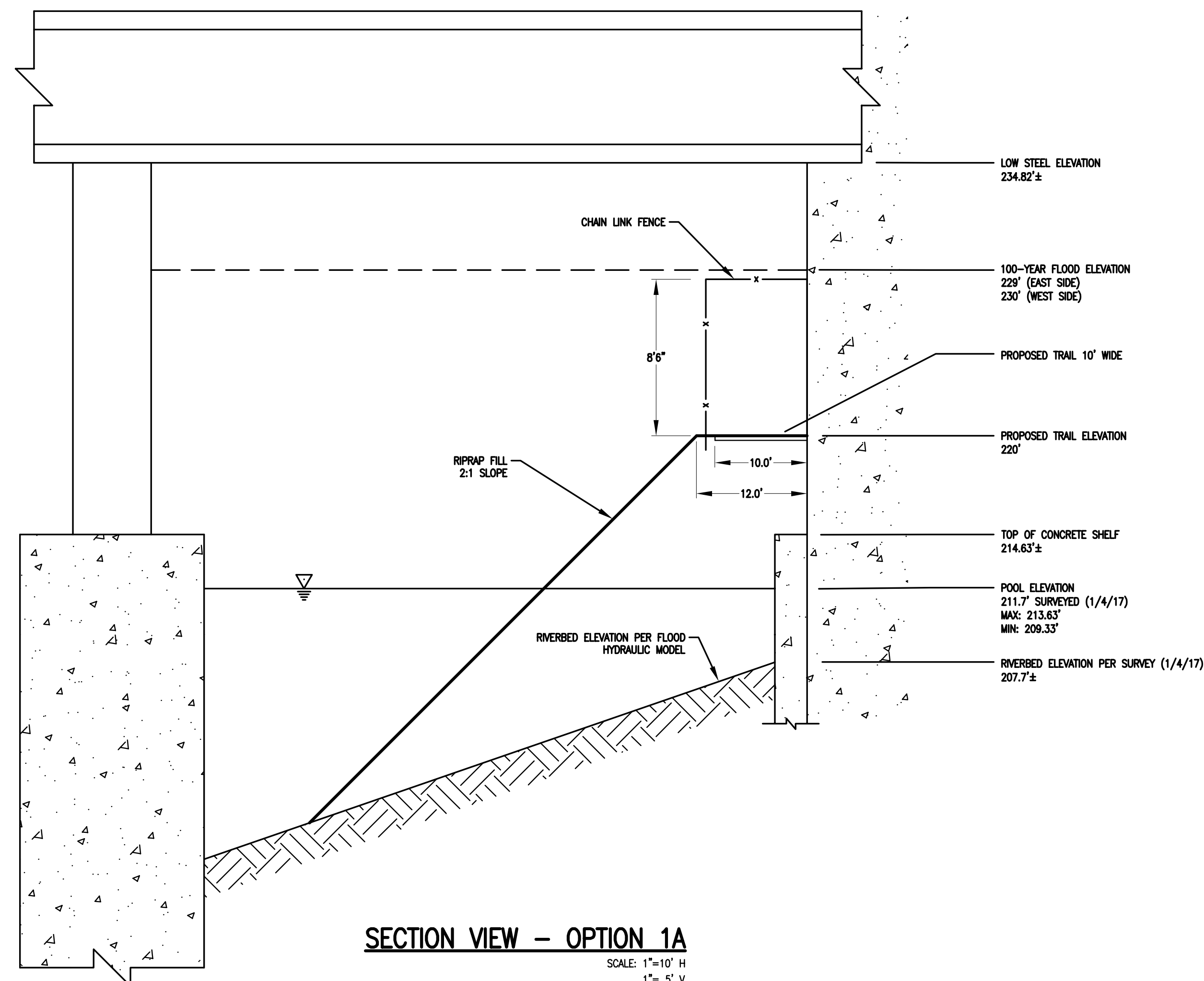
105 JAY ST.  
SCHENECTADY, NY 12305

**Bergmann**  
associates  
architects // engineers // planners

10B Madison Avenue Extension  
Albany, New York 12203

office: 518.862.0325  
fax: 518.862.0326

www.bergmannpc.com



**DETAILED  
CONCEPT PLANS &  
SECTIONS  
AT BRIDGE CROSSING**

NOTE:  
Unauthorized alteration or addition to this drawing is a  
violation of the New York State Education Law Article  
145, Section 7209.

Project Manager:  
**G. URSPRUNG, PE**  
Designed by:  
**W. DARBOUZE, EIT**  
Drawn by:  
**W. DARBOUZE, EIT**  
Checked by:  
**G. URSPRUNG, PE**  
Date issued:  
**JANUARY 30, 2017**

Scale:  
**1" = 10'**  
Project Number: 012063.00  
File Name: Z:\Projects\Schenectady Co\1003.00 SCHENECTADY  
CO-MOHAWK HUDSON TRAIL STUDY-A.Dwg  
4.1 CH#1/Concept plans for trail/C102.dwg  
Drawing Number:

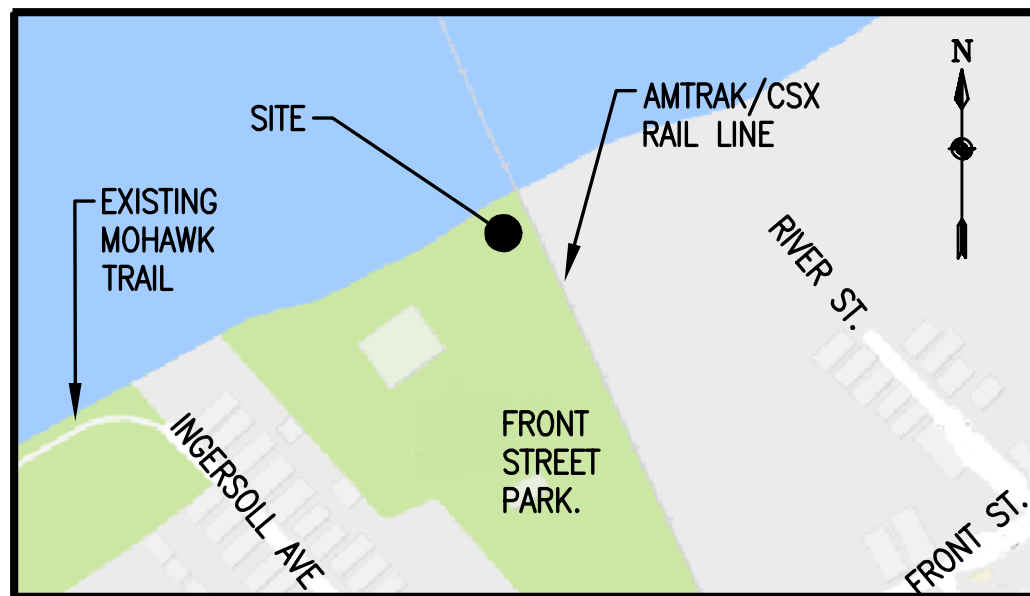
**CP-102**



## Appendix B: Preferred Option Plan

---



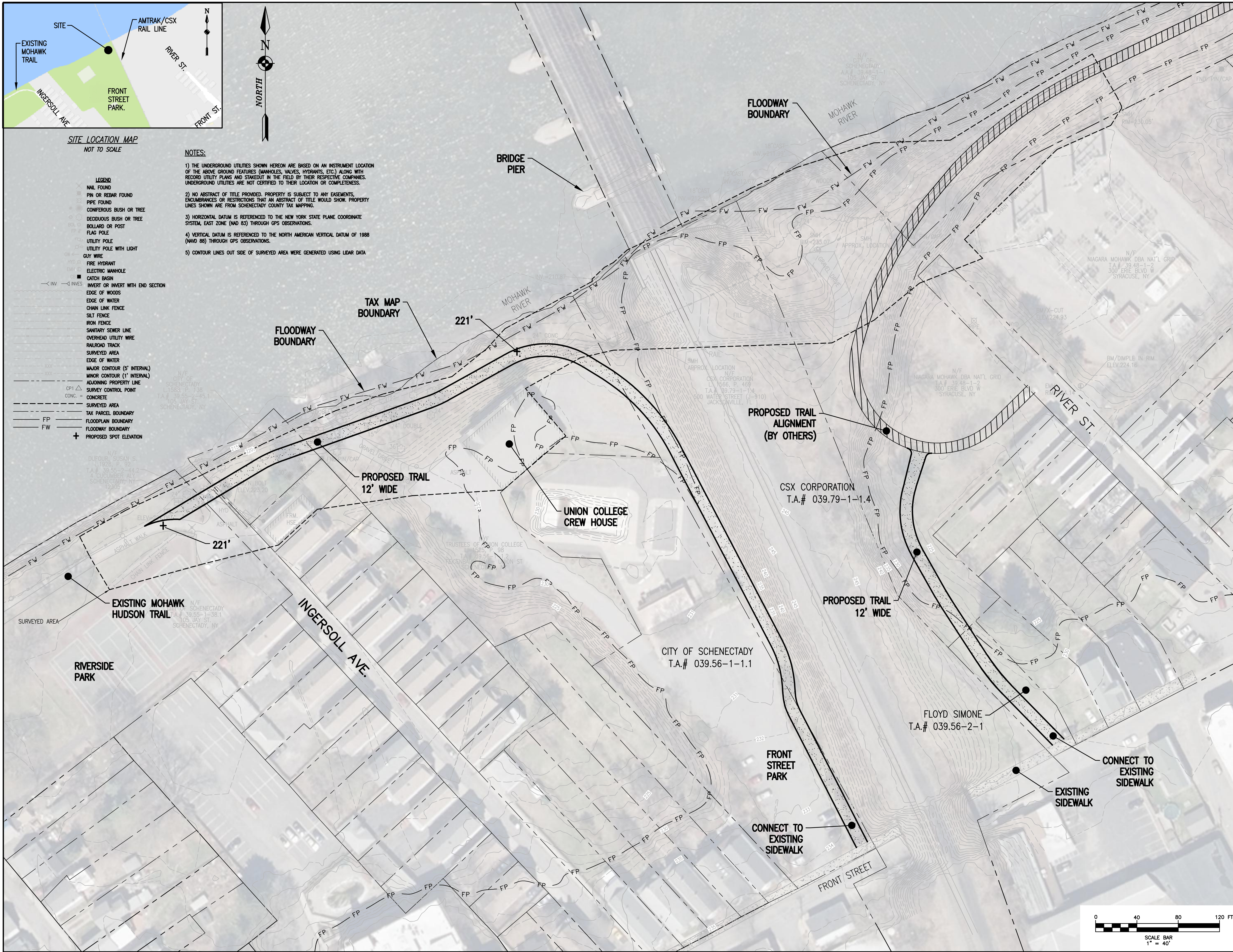


**SITE LOCATION MAP**  
NOT TO SCALE

**NOTES:**

- 1) THE UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON AN INSTRUMENT LOCATION OF THE ABOVE GROUND FEATURES (MANHOLES, VALVES, HYDRANTS, ETC.) ALONG WITH RECORD UTILITY PLANS AND STAKEOUT IN THE FIELD BY THEIR RESPECTIVE COMPANIES. UNDERGROUND UTILITIES ARE NOT CERTIFIED TO THEIR LOCATION OR COMPLETENESS.
- 2) NO ABSTRACT OF TITLE PROVIDED. PROPERTY IS SUBJECT TO ANY EASEMENTS, ENCUMBRANCES OR RESTRICTIONS THAT AN ABSTRACT OF TITLE WOULD SHOW. PROPERTY LINES SHOWN ARE FROM SCHENECTADY COUNTY TAX MAPPING.
- 3) HORIZONTAL DATUM IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, EAST ZONE (NAD 83) THROUGH GPS OBSERVATIONS.
- 4) VERTICAL DATUM IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) THROUGH GPS OBSERVATIONS.
- 5) CONTOUR LINES OUT SIDE OF SURVEYED AREA WERE GENERATED USING LIDAR DATA

- LEGEND**
- NAIL FOUND
  - PIN OR REBAR FOUND
  - PIPE FOUND
  - CONIFEROUS BUSH OR TREE
  - DECIDUOUS BUSH OR TREE
  - BOLLARD OR POST
  - FLAG POLE
  - UTILITY POLE
  - UTILITY POLE WITH LIGHT
  - GUY WIRE
  - FIRE HYDRANT
  - ELECTRIC MANHOLE
  - CATCH BASIN
  - INVERT OR INVERT WITH END SECTION
  - EDGE OF WOODS
  - EDGE OF WATER
  - CHAIN LINK FENCE
  - SILT FENCE
  - IRON FENCE
  - SANITARY SEWER LINE
  - OVERHEAD UTILITY WIRE
  - RAILROAD TRACK
  - SURVEYED AREA
  - EDGE OF WATER
  - MAJOR CONTOUR (5' INTERVAL)
  - MINOR CONTOUR (1' INTERVAL)
  - ADJOINING PROPERTY LINE
  - △ CP1 SURVEY CONTROL POINT
  - CONC. = CONCRETE
  - SURVEYED AREA
  - TAX PARCEL BOUNDARY
  - FLOODPLAIN BOUNDARY
  - FLOODWAY BOUNDARY
  - FLOODWAY BOUNDARY
  - + PROPOSED SPOT ELEVATION



**SCHENECTADY CO.**  
**HUDSON MOHAWK TRAIL STUDY**  
CITY OF SCHENECTADY  
**SCHENECTADY CO.**

105 JAY ST.  
SCHENECTADY, NY 12305



10B Madison Avenue Extension  
Albany, New York 12203

office: 518.862.0325  
fax: 518.862.0326

www.bergmannpc.com



This drawing was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protection Fund.

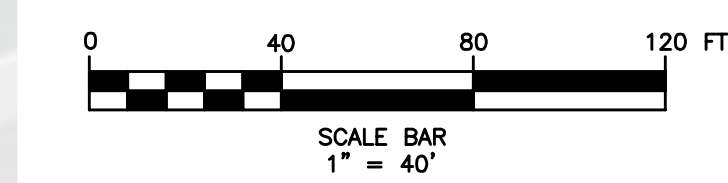
**PREFERRED OPTION CONCEPT PLAN**

NOTE:  
Unauthorized alteration or addition to this drawing is a violation of the New York State Education Law Article 145, Section 7209.

Project Manager: **G. URSPRUNG, PE**  
Designed by: **W. DARBOUZE, EIT**  
Drawn by: **W. DARBOUZE, EIT**  
Checked by: **G. URSPRUNG, PE**  
Date issued: **FEBRUARY 15, 2017**  
Scale: **1" = 40'**

Project Number: **012063.00** File Name: **Z:\Projects\Schenectady Co\012063.00 SCHENECTADY CO-MOHAWK HUDSON TRAIL STUDY-A.0 Drawn**  
Drawing Number: **4.1 CH#1/Concept plans for trail/C102.dwg**

**CP-200**





## Appendix C: Natural Features


---



U.S. Fish and Wildlife Service, National Standards and Support Team,  
wetlands\_team@fws.gov

June 1, 2017

**Wetlands**

- |   |                                |   |                                   |   |          |
|---|--------------------------------|---|-----------------------------------|---|----------|
|  | Estuarine and Marine Deepwater |  | Freshwater Emergent Wetland       |  | Lake     |
|  | Estuarine and Marine Wetland   |  | Freshwater Forested/Shrub Wetland |  | Other    |
|  | Freshwater Pond                |  |                                   |  | Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



# Mohawk Trail (MAP 1B)

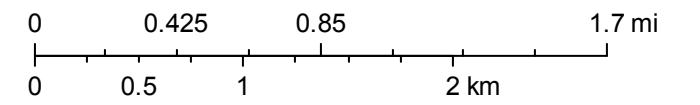


March 30, 2017

Legend:

- Rare Plants and Animals
- State Regulated Freshwater Wetlands
- State Regulated Wetland Checkzone

1:36,112



Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community  
 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



## Appendix D: Photos

---



# HUDSON MOHAWK BIKE TRAIL EXTENSION

CITY OF SCHENECTADY

## SCHENECTADY COUNTY

105 JAY STREET  
SCHENECTADY, NY 12305

### BERGMANN ASSOCIATES

10B Madison Avenue Extension  
Albany, New York 12203

office: 518.862.0325  
fax: 518.862.0326

[www.bergmannpc.com](http://www.bergmannpc.com)

DRAWING TITLE:

### PHOTO LOCATION MAP

DRAWN BY:

**W. DARBOUZE**

CHECKED BY:

**G. URSPRUNG, PE**

DATE:

**AUGUST 4, 2017**

PROJECT:

**12063.00**

SHEET:

**1 OF 1**

# PLM-1



Z:\projects\12063.00 SCHENECTADY COUNTY HUDSON MOHAWK BIKE TRAIL EXTENSION\12063.00 Report\12063.00 Photo Location Map.dwg / 12063.00.dwg / Wednesday, August 09, 2017 1:00:00 PM / 7/16/2017 11:11



**PHOTOGRAPHIC APPENDIX:**



Photo 1 - Trail adjacent to Riverside Park (4/30/2016)



Photo 2 - Union College Boat House (4/30/2016)





Photo 3 – Railroad Bridge Abutment (4/30/2016)



Photo 4 - Railroad Bridge Abutment and Pipe (4/30/2016)





Photo 5 – Existing 24" Outlet Pipe (4/30/2016)



Photo 6 – West of Railroad Bridge (4/30/2016)





Photo 7 - East of Railroad Bridge (4/30/2016)



Photo 8 – National Grid Substation east of Railroad Bridge (4/30/2016)





Photo 9 - Recently constructed Alco Heritage Trail (6/9/2017)



Photo 10 - CSX Rail Bridge underpass at Front Street

## Appendix E: Meeting Notes

---

# **Bike Trail Extension Feasibility Study**

Advisory Committee Meeting

June 8, 2017 – 4:00PM

City Hall Room 110

## **AGENDA**

1. Introductions
2. Project Overview
3. Existing Conditions
4. Trail Alternatives
5. Preferred Alternative
  - a. Wetland Impacts
  - b. Flood Plain Impacts
  
6. Permitting & Approvals
  - a. City of Schenectady Planning Commission
  - b. NYS Canal Corp
  - c. SHPO (no impact letter)
  - d. NYSDEC
  - e. ACOE/USF&W
  - f. Amtrak/CSX - NYSDOT Administrative Hearing
  - g. Union College
  
7. Public Meeting

### Mohawk / Hudson Trail Project

Schenectady, New York

Purpose: Kick-off Meeting  
Date: 11/04/16 @ 2:00 p.m.  
Participants: Steve Feeney, Schenectady County  
Chris Wallin, City of Schenectady  
Valeria Ivan, DOS  
Gregg Ursprung, Bergmann  
Mike Cooper, Bergmann

#### Discussion Items:

1. Primary focus of meeting was to review project goals & objectives, project scope, schedule, communications, key issues and identify existing data as indicated on the attached meeting agenda.
2. It was noted that separate bike / pedestrian paths are planned through Riverside Park to the west of the project site. There is a possibility that the scope for this project could be expanded to include improvements to a portion of the trail through Riverside Park.
3. The proposed trail will connect to a new trail (not yet constructed) to be located to the east of the project site. That trail was designed by CHA. There is a possibility that the scope for this project could be expanded to include improvements on the portion of the trail through Riverside Park.
4. The City has an agreement in place with Union College for access over the boathouse property. A copy of the deed transfer from the City to Union College was provided to Bergmann at the meeting.
5. Construction of the trail on the National Grid property to make the connection to the proposed trail to the east is not anticipated to be a problem.
6. The rail bridge in the vicinity of the project is owned by CSX, however, Amtrak has a long term lease and is responsible for operation and maintenance of the bridge. It is anticipated that Amtrak would need to approve any trail improvements on the bridge property. The local Amtrak contact is William Hollister and the contact in Philadelphia is Mike Colanowski.
7. It would be difficult to obtain approval for attaching a trail structure directly to the bridge abutment, therefore it is anticipated that the portion of the trail that runs under the bridge would require a separate independent structure.
8. The addition of a structure under the bridge, which would be within the floodway, would likely require approvals from NYSDEC, ACOE, and Canal Corp. In addition, impacts on the flood plain elevations would need to be evaluated to show that the addition of the trail structure would not cause an increase in the flood elevation.
9. The portion of the trail that runs under the bridge would need to be covered to protect trail users from debris or other material that may fall from the bridge. The trail will need a minimum vertical clearance of 8'-2" to accommodate trail users. In addition, clearance must be maintained between the trail structure and the underside of the bridge.





## Meeting Minutes

our people and our passion in every project

10. Bergmann asked if there are any locally specific trail design standards applicable to the project and the response was that there weren't.
11. With regard to trail width for pedestrians and bikers, 8 feet would be minimum, 10 feet would be standard and 12 feet would be preferred.
12. The possibility of providing a floating dock for the portion of the trail under the bridge was discussed, however, the thinking was that it would likely not be feasible since the docks would need to be removed and stored somewhere during the winter months.
13. One of the options considered should be bypassing the bridge and running the trail out to Front Street where there is an existing sidewalk that goes under the rail bridge that runs over Front Street. Bikers may need to use the street rather than the sidewalk to pass under the bridge since the vertical clearance at the sidewalk appears to be limited.
14. Chris Wallin requested that the existing sanitary manhole near the river on the west side of the bridge be located when the field work for the survey is done.
15. Bergmann requested that the CHA cad files for the proposed trail to the east be provided for use in the design of the subject trail.
16. Steve Feeney indicated that he is in the process of forming the trail advisory committee and will advise everyone once it has been established. It is anticipated that a meeting with the advisory committee would be held in late December or early January.

**Disclaimer:** This confirms and records our interpretation of the discussions which occurred and our understanding reached during this meeting. Unless notified in writing within 7 days of the date below, we will assume that the above description is complete and accurate.

**Prepared by:** Gregg Ursprung, PE  
Bergmann Associates

**Date Issued:** January 9, 2017

**cc:** Attendees, project file



### Mohawk / Hudson Trail Project

Schenectady, New York

Purpose: Meeting w/ ACOE  
Date: 3/30/17 @ 1:30 p.m.  
Location: Bergmann's Office  
Participants: Steve Feeney, Schenectady County  
Chris Wallin, City of Schenectady  
Brad Sherwood, USACOE  
Gregg Ursprung, Bergmann

#### Discussion Items:

The primary focus of the meeting was to review the proposed trail project with Brad Sherwood to identify the required ACOE permits as well as any issues that may impede the project. Following is a summary of the discussion.

1. Gregg provided an overview of the proposed trail project and the options for crossing under the CSX/Amtrak rail bridge. The options included filling for the trail and either grading out into the River to the first pier or providing sheet piling. The latter did not appear feasible under the bridge due to the clearance need for driving the sheet piles. However, sheet piles may be feasible outside of the limits of the bridge.
2. Brad indicated that the area below the Ordinary High Water (OHW) mark can be filled under Nationwide Permit #14. Up to 0.10 acres may be filled without providing any mitigation. Mitigation will be required for filling over 0.10 acres up to 0.5 acres. Filling an area greater than 0.5 acres will require an individual permit. Impacts should be minimized to the extent practical and alternatives need to be examined.
3. Mitigation can be provided in different ways, some of which are listed below:
  - a) Annual Fee (ACOE preferred method): Mitigation is provided by paying an annual fee of \$1,000 per credit. The number of credits is determined by the quality of the wetland and the amount of area filled.
  - b) Provide shoreline enhancements: Enhancements may come in many forms, such as clean-up, removal of undesirable features (e.g. exposed pipes, etc), creation of floodplain benches, landscaping, etc.
  - c) Improvements that the City is already considering or planning to undertake may be considered as mitigation.
  - d) Education, such as interpretive signage focused on the River, can be considered a mitigation measure.
  - e) Another possibility for mitigation is the Wetland Trust administered by the Upper Susquehanna Coalition. See their website for additional information.

<http://www.thewetlandtrust.org/ilfp.html>



## Meeting Minutes

our **people** and our **passion** in every **project**

4. Brad recommended avoiding an individual permit, if possible. The timeframe for obtaining an individual permit is about a year, as compared to 3 to 4 months for obtaining coverage under Nationwide Permit #14.
5. Filling below the OHW mark will require an ACOE / NYSDEC joint permit. NYSDEC will require an Article 15 Protection of Waters permit and a 401 Water Quality Certification. Review of NWP #14 by ACOE and review of the Article 15 permit by DEC would occur concurrently and the permits would be issued at the same time.
6. Impacts on habitat must also be addressed in accordance with NYSDEC and US Fish & Wildlife (USF&W) requirements.
7. The project will also require State Historic Preservation Officer (SHPO) signoff.

**Disclaimer:** This confirms and records our interpretation of the discussions which occurred and our understanding reached during this meeting. Unless notified in writing within 7 days of the date below, we will assume that the above description is complete and accurate.

**Prepared by:** Gregg Ursprung, PE  
Bergmann Associates

**Date Issued:** April 21, 2017

**cc:** Attendees, project file



# Appendix F: Geotechnical Assessment

---





**ALBANY AREA**

594 Broadway  
Watervliet, NY 12189  
Voice 518-266-0310  
Fax 518-266-9238

**BUFFALO AREA**

PO Box 482  
Orchard Park, NY 14127  
Voice 716-649-9474  
Fax 716-648-3521

June 26, 2017

Gregg Ursprung, P.E.  
Bergmann Associates  
10B Madison Avenue Extension  
Albany, New York 12203

Re: Mohawk Hudson Trail Study  
Amtrak/CSX Rail Line Crossing  
Schenectady, New York  
Dente File No. FDE-17-123

Dear. Mr. Ursprung,

At your request we have completed a preliminary assessment of the soil conditions in the vicinity of the proposed trail beneath the Amtrak/CSX rail bridge in Schenectady, New York. This included a site reconnaissance by a Geotechnical Engineer and review of subsurface exploration reports available to us for nearby sites.

Our understanding of the project is based upon your Concept Plan drawings CP-100, 101, and 102. In general the plans call for the construction of a trail beneath the Amtrak/CSX rail bridge at the location shown on the attached USGS topographic map and aerial photographs. The trail construction will entail the placement of up to 13 feet of fill in the Mohawk River in front of the south bridge abutment. A level trail about 10 feet wide will be formed adjacent to the abutment and the fills sloped 2H:1V down to the river bed. The toe of the slope ends at or near the first bridge pier. Heavy stone fill is planned to protect the slope from erosion.

Available to us are the logs for test borings we completed at the former ALCO site located about 1700 feet east of the bridge and the City of Schenectady North Ferry Street pump station about 1300 feet west of the bridge. These borings were located at the top of the river embankment near elevation 225 feet. Based upon these borings, we expect that the soils beneath and in front of the rail bridge abutment consist of river sediments followed in sequence with depth by a thick layer of alluvial sand and/or silt overlying glacial till and shale bedrock.

**River Sediments**

River sediments in the project area are generally composed of clayey silt, silt, and mixtures of silt and fine sand containing occasional decayed organic matter. The non-cohesive silt and fine sand river sediments are typically of a loose relative density and

the cohesive clayey silt sediments of a soft to very soft consistency. This sediment layer may be on the order of 10 to 20 feet thick.

### **Alluvial Soils**

Beneath the river sediments should be alluvial soils composed of sand of varying gradation and/or mixtures of fine sand and silt. These soils should be of a loose to firm relative density. Also contained within this deposit may be interbedded layers of silt and clay of medium to stiff consistency. The alluvial soils may extend greater than 60 feet below the river bed in front of the bridge abutment.

### **Glacial Till and Shale Bedrock**

Beneath the alluvial soils may be a thin layer of glacial till composed of very compact sand, silt, and gravel overlying shale bedrock. The bedrock surface can vary significantly between the widely spaced explorations available to us along the river, but it is expected to be found at depths on the order 60 to 80 feet below the river bed at the rail bridge site.

The general configuration and condition of the existing rail bridge abutment and pier is shown on the attached photographs. The bridge was apparently built in 1907 based upon a date stamped in the side of the bridge pier. No bridge plans were made available to us, however, we assume that the bridge abutment and piers are pile supported. The piles may be end bearing type driven to glacial till and/or shale bedrock or a friction type pile which develops its capacity in the alluvial soils above the till/rock.

## **CONCLUSIONS**

Based upon the expected subsurface profile, we have identified several concerns which must be evaluated in planning for the trail design and construction. Site specific explorations and review of available bridge plans, if any, must be conducted to serve as the basis for these evaluations.

First, a slope stability analysis must be completed to confirm that the planned 2H:1V slope for the fills is adequate when placed over the loose/soft river sediments expected to be present. Our preliminary assessment, based upon evaluations at the former ALCO site, is that the slope should be acceptable.

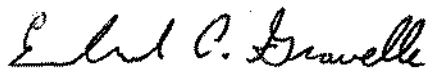
Second, the proposed fills may place new lateral loads on the bridge pier and supporting piles. In addition, the weight of the fills will cause the river sediments to consolidate and this may induce downdrag loads on the south bridge abutment piles. If adequate bridge plans are not available for review, it will not be possible to thoroughly evaluate potential impacts on the structure and in this case it may be warranted to alter the trail design to minimize or eliminate the impacts. Similarly, the trail design may need to be altered if the estimated magnitude of the increased loading on the bridge structure and piles is unacceptable to Amtrak/CSX.

Site explorations recommended to determine the subsurface profile include at least two test borings between the bridge abutment and pier using a barge mounted drill rig. The borings should be taken to bedrock, with soil sampling conducted on a continuous basis through the river sediments and at maximum five foot intervals below the sediment layer.

The cost for the supplemental investigation, i.e., two test borings from a barge, should be less than \$30,000. Fees for our associated supplemental geotechnical testing and evaluations should be less than \$10,000. The supplemental evaluations will address the concerns discussed above and offer possible options to the trail design if required to minimize impacts on the existing rail bridge.

This report was prepared to provide a preliminary assessment of the expected soil conditions at the project site and a general scope of work for followup investigations and evaluations which would be necessary to evaluate the proposed construction and its potential impacts on the existing rail bridge. Please contact us if you have any questions or need additional information.

Your truly,  
Dente Engineering



Edward C. Gravelle, P.E.  
Dente Engineering

Attachments:

Information Regarding Geotechnical Report  
USGS Topographical Map  
Aerial and Site Photographs



# Important Information about This

# Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

## Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

## Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

## Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

## A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

### **Do Not Redraw the Engineer's Logs**

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

### **Give Constructors a Complete Report and Guidance**

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Environmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

### **Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance**

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your GBC-Member geotechnical engineer for more information.



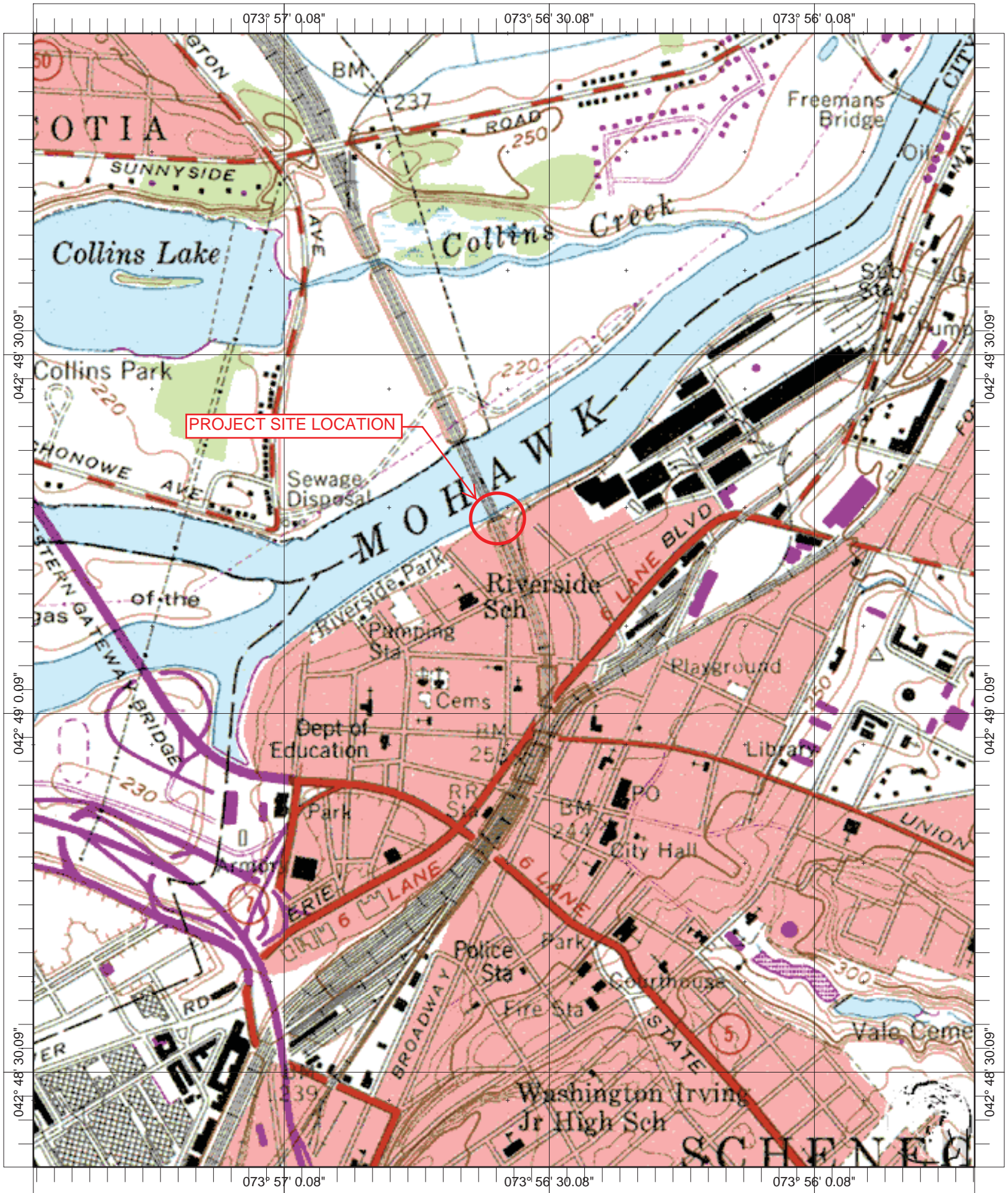
8811 Colesville Road/Suite G106, Silver Spring, MD 20910

Telephone: 301/565-2733 Facsimile: 301/589-2017

e-mail: [info@geoprofessional.org](mailto:info@geoprofessional.org) [www.geoprofessional.org](http://www.geoprofessional.org)

Copyright 2015 by Geoprofessional Business Association (GBA). Duplication, reproduction, or copying of this document, or its contents, in whole or in part, by any means whatsoever, is strictly prohibited, except with GBA's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of GBA, and only for purposes of scholarly research or book review. Only members of GBA may use this document as a complement to or as an element of a geotechnical-engineering report. Any other firm, individual, or other entity that so uses this document without being a GBA member could be committing negligent or intentional (fraudulent) misrepresentation.

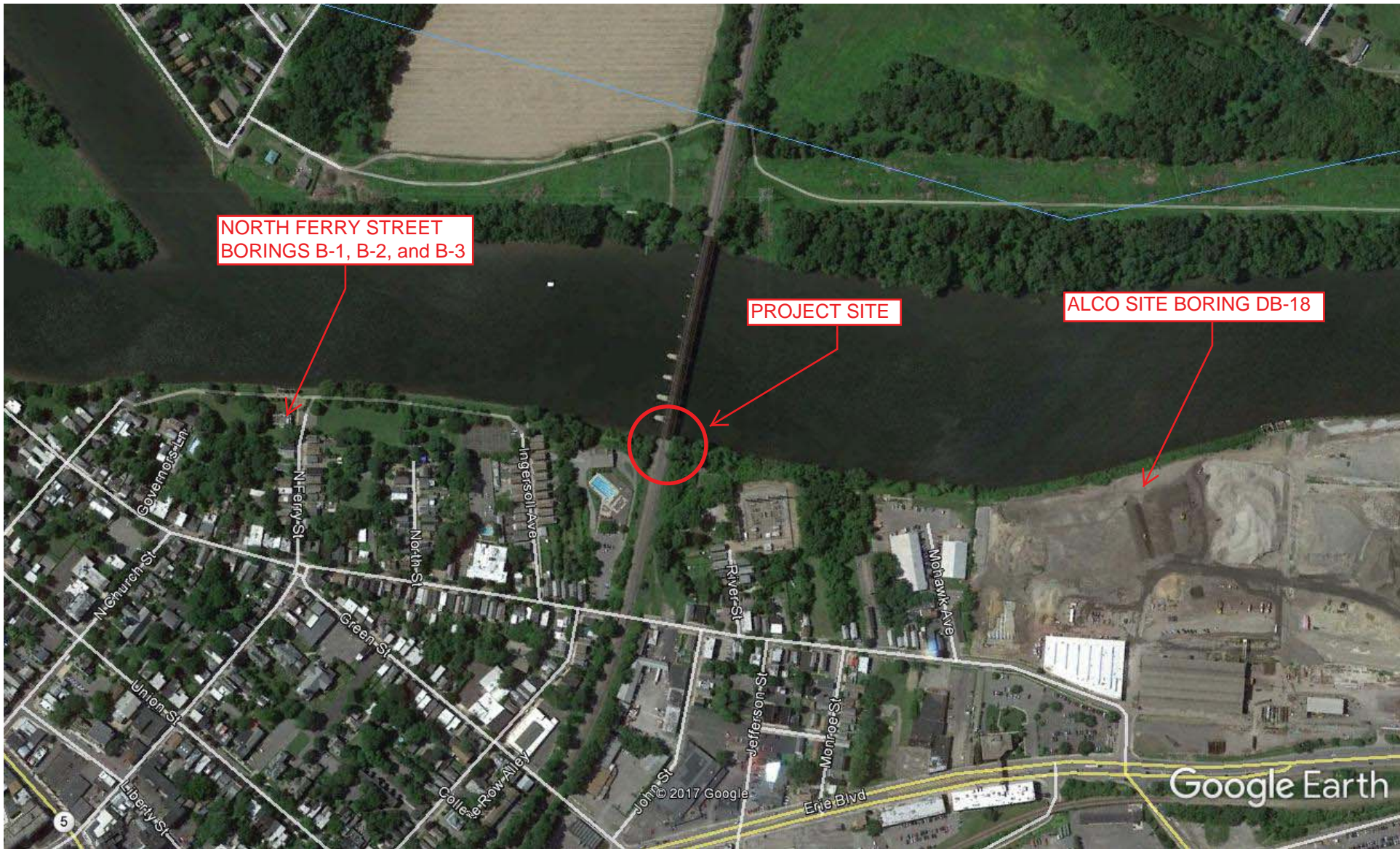




Name: SCHENECTADY  
 Date: 6/21/117  
 Scale: 1 inch equals 1000 feet

Location: 042° 49' 09.6" N 073° 56' 35.2" W  
 Caption: MOHAWK HUDSON TRAIL STUDY  
 SCHENECTADY, NEW YORK





Google Earth

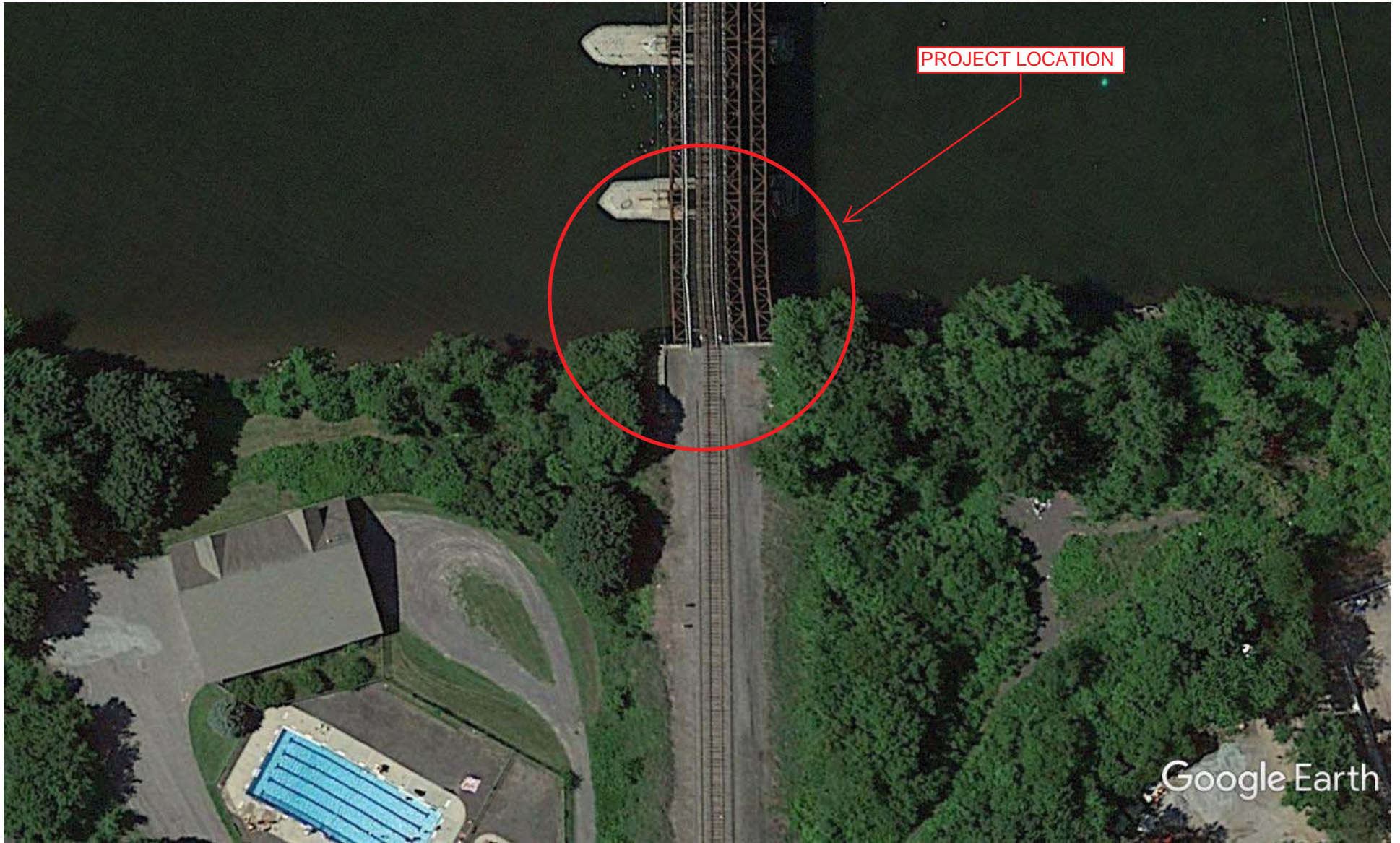
feet  
meters

3000  
900



NEARBY SITE EXPLORATION LOCATIONS  
MOHAWK HUDSON TRAIL STUDY  
AMTRAK/CSC RAIL LINE CROSSING  
SCHENECTADY, NEW YORK





PROJECT LOCATION

Google Earth

feet  
meters

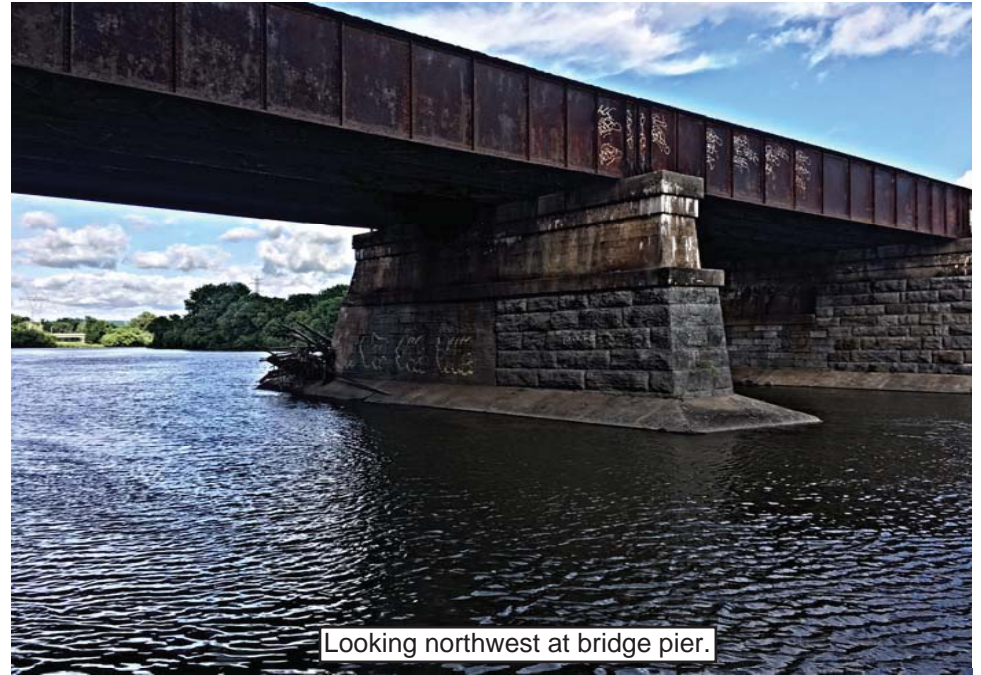


MOHAWK HUDSON TRAIL STUDY  
AMTRAK/CSC RAIL LINE CROSSING  
SCHENECTADY, NEW YORK





Looking east at bridge abutment and pier.



Looking northwest at bridge pier.



Looking northeast at bridge pier.



Looking west at bridge abutment.



# Appendix G: Hydraulic Analysis

---

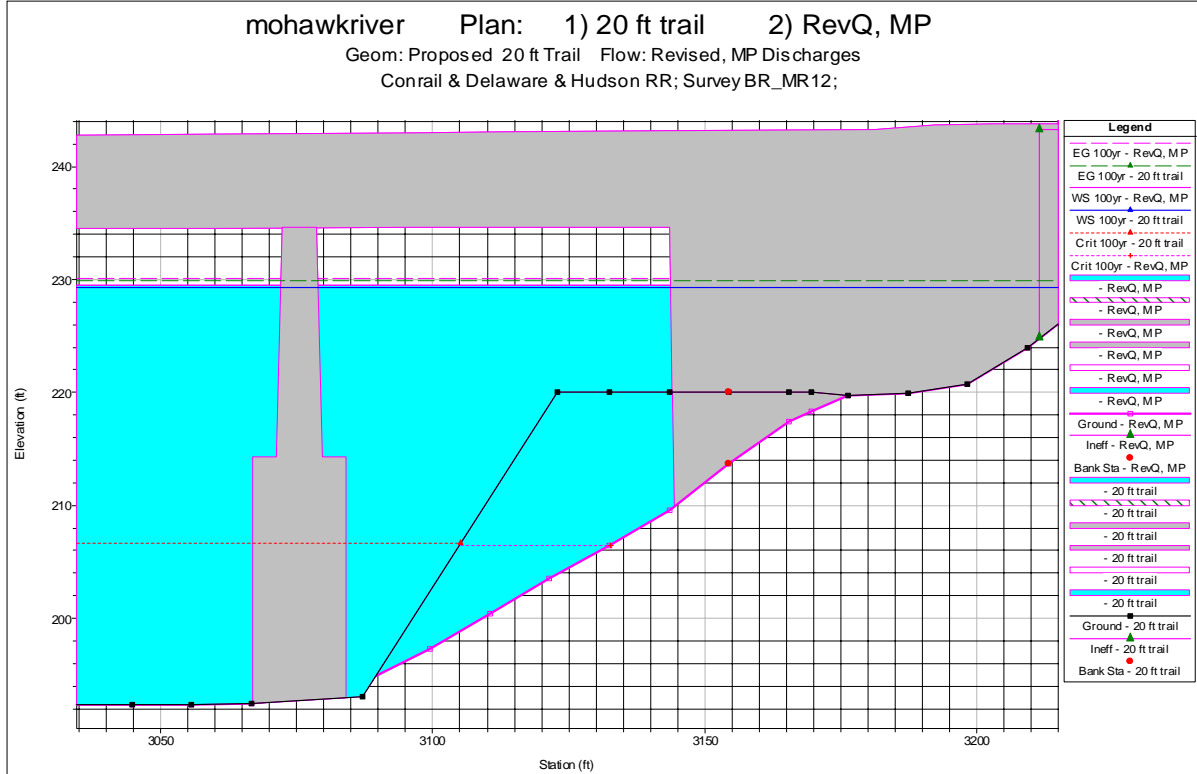


**Mohawk Hudson Trail Study**

**Schenectady County, NY**

**Proposed Trail at Amtrak Bridge**

HEC RAS Section RS 2717 BR U and Standard Table 1



River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude
5883	100yr	20 ft trail	126546.6	188.66	230.99	208.11	231.42	0.000148	5.78	33196.43	4393	0.17
5883	100yr	RevQ, MP	126546.6	188.66	231.15	208.11	231.57	0.000145	5.73	33524.7	4405.52	0.17
5298	100yr	20 ft trail	126546.6	190.41	230.93	209.61	231.14	0.000091	4.36	43183.87	3791.29	0.13
5298	100yr	RevQ, MP	126546.6	190.41	231.1	209.62	231.3	0.000089	4.33	43565.67	3794.69	0.13
4669	100yr	20 ft trail	126546.6	190.18	230.81	210.31	230.98	0.000082	4.21	50867.16	7911.39	0.13
4669	100yr	RevQ, MP	126546.6	190.18	230.97	210.31	231.14	0.00008	4.17	51379.41	7916.23	0.13
4276	100yr	20 ft trail	126546.6	191.2	230.74	208.34	230.88	0.000063	3.67	55136.34	6874.64	0.11
4276	100yr	RevQ, MP	126546.6	191.2	230.91	208.34	231.04	0.000061	3.64	55674.98	6886.48	0.11
3765	100yr	20 ft trail	126546.6	190.22	230.52	207.42	230.73	0.000094	4.53	38930.28	3089.43	0.14
3765	100yr	RevQ, MP	126546.6	190.22	230.71	207.42	230.9	0.000089	4.41	41755	3132.55	0.13
3711 Western Gateway Bridge												
3667	100yr	20 ft trail	126546.6	190.3	230.08	207.34	230.31	0.000096	4.65	37433.07	3291.77	0.14
3667	100yr	RevQ, MP	126546.6	190.3	230.25	207.35	230.48	0.000093	4.61	37747.26	3351	0.14
3387	100yr	20 ft trail	126546.6	190.09	230.09	205.99	230.16	0.000035	2.86	70155.76	4223.38	0.08
3387	100yr	RevQ, MP	126546.6	190.09	230.26	205.98	230.33	0.000034	2.83	70883.55	4224.45	0.08
3057	100yr	20 ft trail	126546.6	190	229.99	205.69	230.12	0.000056	3.57	58292	3654.44	0.11
3057	100yr	RevQ, MP	126546.6	190	230.17	205.7	230.29	0.000054	3.53	58931.91	3655.59	0.1
2745	100yr	20 ft trail	126546.6	192.29	229.62	205.11	229.97	0.000115	4.91	29457.04	3106.23	0.15
2745	100yr	RevQ, MP	126546.6	192.29	229.82	205.05	230.15	0.000103	4.77	30384.83	3110.81	0.14



2717 Amtrak Bridge (Formerly Conrail)

2674	100yr	20 ft trail	126546.6	192.1	229.36	205.14	229.76	0.00013	5.24	26571	3044.51	0.16
2674	100yr	RevQ, MP	126546.6	192.1	229.36	204.73	229.74	0.000113	5.05	27583.05	3044.59	0.15
2275	100yr	20 ft trail	126546.6	189.91	229.3	203.4	229.55	0.000083	4.4	40613.56	2863.01	0.13
2275	100yr	RevQ, MP	126546.6	189.91	229.3	203.39	229.55	0.000083	4.4	40605.97	2862.88	0.13
1828	100yr	20 ft trail	126546.6	188.3	228.85	203.66	229.37	0.000147	6.02	25502.57	1973.6	0.17
1828	100yr	RevQ, MP	126546.6	188.3	228.84	203.66	229.36	0.000147	6.03	25498.4	1973.35	0.17
1533	100yr	20 ft trail	126546.6	186.11	228.67	202.88	229.22	0.000155	6.14	25028.27	1566.35	0.18
1533	100yr	RevQ, MP	126546.6	186.11	228.66	202.88	229.22	0.000155	6.14	25023.09	1565.87	0.18
1359	100yr	20 ft trail	126546.6	185.49	227.93	205.02	228.95	0.000281	8.21	16891	1735.03	0.24
1359	100yr	RevQ, MP	126546.6	185.49	227.93	205.02	228.94	0.000281	8.21	16887.43	1733.78	0.24

1324 Freeman Bridge Mult Open

1297	100yr	20 ft trail	126546.6	185.3	226.38	205.41	227.3	0.000281	7.74	18004.79	1850.95	0.24
1297	100yr	RevQ, MP	126546.6	185.3	226.38	205.41	227.3	0.000281	7.74	18004.79	1850.95	0.24
1035	100yr	20 ft trail	126546.6	185.55	225.83	205.48	226.97	0.000344	8.55	15234.52	1972.13	0.26
1035	100yr	RevQ, MP	126546.6	185.55	225.83	205.49	226.97	0.000344	8.55	15234.52	1972.13	0.26
848	100yr	20 ft trail	126546.6	185.7	225.61	206.7	226.75	0.000374	8.59	15227.72	1175.44	0.27
848	100yr	RevQ, MP	126546.6	185.7	225.61	206.7	226.75	0.000374	8.59	15227.72	1175.44	0.27

824 D and H RR Bridge

791	100yr	20 ft trail	126546.6	185.52	225.36	205.83	226.48	0.000359	8.55	15392.17	1810.1	0.27
791	100yr	RevQ, MP	126546.6	185.52	225.36	205.83	226.48	0.000359	8.55	15392.17	1810.1	0.27
430	100yr	20 ft trail	126546.6	182.13	225.11	201.23	226.03	0.000252	7.72	16989.68	1121.48	0.23
430	100yr	RevQ, MP	126546.6	182.13	225.11	201.23	226.03	0.000252	7.72	16989.68	1121.48	0.23
32	100yr	20 ft trail	126546.6	190.22	225.1	204.56	225.63	0.000189	5.99	24202.66	1212.65	0.19
32	100yr	RevQ, MP	126546.6	190.22	225.1	204.56	225.63	0.000189	5.99	24202.66	1212.65	0.19

## Appendix H: Cost Estimates

---





Opinion of Probable Cost: Option 1

October 19, 2017

Item Description	Unit	Quantity	Unit Price	Cost
Clearing and Grubbing	AC	0.6	\$4,500	\$2,475
General earthwork	CY	360.0	\$20	\$7,200
Unclassified excavation and disposal	CY	500.0	\$18	\$9,000
Tree Removal (assumed quantity)	EA	10	\$510	\$5,100
Prune Existing Trees and Shrubs	LS	1	\$5,000	\$5,000
Asphalt Trail (2.5" Base course, 1.5" Top course)	SY	1,060	\$22.00	\$23,320
6" Sub-base layer (NYSDOT type 2)	CY	180	\$41.00	\$7,380
Handrail	LF	200	\$185.00	\$37,000
Safety Railing	LF	210	\$185	\$38,850
Fill (Structural)	CY	1,900	\$28	\$53,200
Fill (Heavy Stone)	CY	960	\$77	\$73,920
Cofferdam (tie-back method, 20' long)	SF	1,050	\$60	\$63,000
Columns (6" X 8" Tube steel)	LF	180	\$80	\$14,400
Corrugated metal roof	SF	750	\$6	\$4,500
Ornamental Benches	EA	2	\$2,000	\$4,000
Wayfinding Signage (57"x24" sign with post and panel)	EA	2	\$2,300	\$4,600
MUTCD Trail Signage	EA	6	\$500	\$3,000
Topsoil - Assume 4" depth	CY	150	\$60	\$9,000
Hydroseeding	SF	12,200	\$0.25	\$3,050
Establishing Wildflowers / Light Landscaping	SF	2,700	\$0.50	\$1,350
			<b>SUB-TOTAL</b>	<b>\$369,345</b>
Basic Work Zone traffic control (3%)				\$11,080
Mobilization (4%)				\$14,774
Survey Operations (2%)				\$7,387
Erosion and Sediment control (4%)				\$14,774
Contingency (15%)				\$55,402
Engineering, Design and Permitting (15%)				\$55,402
CSX Oversight (2%)				\$7,387
			<b>TOTAL</b>	<b>\$535,550</b>
			<b>SAY</b>	<b>\$536,000</b>

Opinion of Probable Cost: Option 2

October 19, 2017

Item Description	Unit	Quantity	Unit Price	Cost
Clearing and Grubbing	AC	0.7	\$4,500	\$3,150
General earthwork (1 depth)	CY	660.0	\$20	\$13,200
Unclassified excavation and disposal	CY	500.0	\$18	\$9,000
Tree Removal (assumed quantity)	EA	10	\$510	\$5,100
Prune Existing Trees and Shrubs	LS	1	\$5,000	\$5,000
Asphalt Trail (2.5" Base course, 1.5" Top course)	SY	1,970	\$22.00	\$43,340
6" Sub-base layer (NYSDOT type 2)	CY	330	\$41.00	\$13,530
Fill (Structural)	CY	1,550	\$28	\$43,400
Ornamental Benches	EA	2	\$2,000	\$4,000
Wayfinding Signage (57"X24" sign with post and panel)	EA	4	\$2,300	\$9,200
MUTCD Trail Signage	EA	10	\$500	\$5,000
Topsoil - Assume 4" depth	CY	220	\$60	\$13,200
Hydroseeding	SF	15,000	\$0.25	\$3,750
Establishing Wildflowers / Light Landscaping	SF	10,000	\$0.50	\$5,000
			<b>SUB-TOTAL</b>	<b>\$175,870</b>
Basic Work Zone traffic control (5%)				\$8,794
Mobilization (4%)				\$7,035
Survey Operations (2%)				\$3,517
Erosion and Sediment control (4%)				\$7,035
Contingency (15%)				\$26,381
Engineering, Design and Permitting (15%)				\$26,381
CSX Oversight (2%)				\$3,517
			<b>TOTAL</b>	<b>\$258,529</b>
			<b>SAY</b>	<b>\$260,000</b>



# Appendix I: Union College Agreement

---



*WMS*

**HIGGINS, ROBERTS, BEYERL & COAN, P.C.**  
ATTORNEYS AND COUNSELORS AT LAW

Richard E. Roberts  
Robert J. Coan  
James H. Erceg  
John K. Sharkey  
Michael R. Suprunowicz  
Charles J. Assini, Jr.  
Michael E. Basile  
Amy Herter Robinson

1430 Balltown Road  
Niskayuna, New York 12309-4332

Telephone: 518-374-3399  
Fax: 518-374-9416

Maura C. Mottolese  
Robert Patrick Coan  
Maryanne E. Low-Haviland

September 10, 1997

Roger Hull, President  
Union College  
via fax 388-6006

RE: Front Street Property  
City of Schenectady to Union College

Dear Roger:


Rick Killeen sent me a boathouse contract addendum, a copy of which follows. Essentially, the addendum would permit the City to develop a pedestrian right-of-way across our property subject to the College's approval.

Rick understood that you and the Mayor had discussed this and were in agreement. I am not certain where such a right-of-way would be developed since the sewer line runs immediately in front of the boathouse and further clearance and construction below the boathouse would re-involve ENCON, the Army Corps and the Canal Authority.

I do not have any legal objection to the addendum. If it is in accordance with your agreement with the Mayor, I suggest that you sign 4 copies of the addendum and let my office know when they are signed so they can be picked up.

Please give me a call if you have any questions.

Very truly yours,

  
JOHN K. SHARKEY

JKS:jm



**City of Schenectady**  
**Department of Law**

City Hall, Jay Street, Schenectady, NY 12305  
Voice 382-5073 Fax 382-5074

Michael T. Brockbank, Corporation Counsel

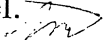
July 22, 1997

memo to: Rick Killeen  
re: boathouse contract

Rick:

Spoke with the Mayor; he spoke with Hull. Union has no problem with an addendum or additional agreement that if in the future the city needs or wants access across their property with any walkway, esplanade, or other pedestrian right of way, they will grant it subject to approval of the architectural impact or cohesiveness with their boathouse motif, and that with that reservation their approval will not be unreasonably withheld.

He asks that you and John work out the wording for he and Hull to sign.

thanks,  
michael. 

**CITY OF SCHENECTADY  
NEW YORK**

---

OFFICE OF THE CORPORATION COUNSEL

Room 201 - City Hall  
Schenectady, New York 12305-1938  
Tel. No. (518) 382-5073  
Fax No. (518) 382-5074

Michael T. Brockbank  
Corporation Counsel

September 17, 1997

John K. Sharkey, Esq.  
Higgins, Roberts, Beyerl & Coan  
1430 Balltown Road  
Niskayuna, New York 12309-4332

Re: Union College - Front Street

Dear John:

Enclosed herewith please find a fully executed copy of the above referenced contract in duplicate, which has been executed by the Mayor on behalf of the City of Schenectady. Please contact me so that we can discuss the scheduling of a closing relative to this property.

Very truly yours,

*Frederick W. Killeen* 10's

FREDERICK W. KILLEEN  
Assistant Corporation Counsel

FWK:js  
Encl.



Duplicate Original



Commercial and Industrial Real Estate Brokers, Inc.

STANDARD FORM  
CONTRACT FOR PURCHASE AND SALE OF REAL ESTATE

THIS IS A LEGALLY-BINDING CONTRACT. WE RECOMMEND  
ALL PARTIES TO THE CONTRACT CONSULT AN ATTORNEY BEFORE SIGNING.

1. IDENTIFICATION OF PARTIES TO THE CONTRACT

A. SELLER—The Seller is CITY OF SCHENECTADY

(The word "Seller" refers to each and all parties who have an ownership interest in the property).

B. PURCHASER—The Purchaser is TRUSTEES OF UNION COLLEGE IN THE TOWN & COUNTY OF SCHENECTADY, STATE OF NEW YORK.

(The word "Purchaser" refers to each and all of those who sign below as Purchaser).

2. PROPERTY TO BE SOLD

The property and improvements which the Seller is agreeing to sell and which the Purchaser is agreeing to purchase is known as Front Street

located in the city, village or town of SCHENECTADY in SCHENECTADY County. (This property includes all the Seller's rights and privileges, if any, to all land, water, streets and roads annexed to, and on all sides of the property.) The lot size of the property is described as approximately 1.275 ACRES TOGETHER WITH EASEMENTS (See Addendum paragraph 1)

3. ITEMS INCLUDED IN SALE

The items if now in or on said premises are represented to be owned by the Seller, free from all liens and encumbrances, and are included in the sale "as is," on the date of this offer, together with the following items:

4. PURCHASE PRICE

The purchase price is (\$ 48,000.00) FORTY-EIGHT THOUSAND----- DOLLARS.

The Purchaser shall pay the purchase price as follows:

\$ \_\_\_\_\_ deposit with this contract.

\$ \_\_\_\_\_ additional deposit on \_\_\_\_\_

\$ 48,000.00 in cash or certified check at closing.

\$ \_\_\_\_\_ by PURCHASER assuming and agreeing to pay a Mortgage, now a recorded lien on the premises, upon which there is unpaid estimated principal amount.

\$ \_\_\_\_\_ Purchase money mortgage to SELLER (see attached addendum for terms)

\$ \_\_\_\_\_ TOTAL PRICE

5. MORTGAGE CONTINGENCY

This Agreement is contingent upon Purchaser obtaining approval of a mortgage loan in the amount of \$ N/A

at an initial rate of \_\_\_\_\_ percent, fixed or adjustable;

for a term of \_\_\_\_\_ not to exceed \_\_\_\_\_ points. Purchaser agrees to use diligent efforts to obtain said approval

and shall apply for the mortgage loan within \_\_\_\_\_ business days after the Seller has accepted this contract. Purchaser

agrees to apply for such a mortgage loan to two lending institutions. If necessary. This contingency shall be deemed waived unless

Purchaser shall notify \_\_\_\_\_ in writing as called for in paragraph 19 no later

than \_\_\_\_\_ of his inability to obtain said approval. If the Purchaser so notifies, then this agreement

shall be deemed cancelled, null and void, and all deposits made hereunder shall be returned to the Purchaser.

6. MORTGAGE EXPENSE AND RECORDING FEES

The mortgage recording tax imposed on the mortgage, mortgage and deed recording fees, expenses of drawing papers and any other expenses to be incurred in connection with procuring a mortgage, shall be paid by the Purchaser.

7. OTHER TERMS (if any) SEE ATTACHED ADDENDUM

8. TITLE AND SURVEY

The abstract of title or any continuation thereof, or any title insurance policy be obtained at SELLER'S X PUR-

CHASER'S \_\_\_\_\_ expense. The Seller shall cooperate in providing any available abstract of title or title insurance policy

information without cost to PURCHASER. If the SELLER has a survey of the premises, it shall be provided to the Purchaser and

SELLERS \_\_\_\_\_ PURCHASERS X shall pay the cost of updating any such survey or the cost of a new survey.

9. CONDITIONS OF PREMISES

The buildings on the premises are sold "as is" without warranty as to condition, and the Purchaser agrees to take title to the buildings "as is" and in their present condition subject to reasonable use, wear, tear and natural deterioration between the date hereof and the closing of title; except that in the case of any destruction within the meaning of the provisions of Section 5-1311, of the General Obligations Law of the State of New York entitled "Uniform Vendor and Purchaser Risk Act," said section shall apply to this contract.

10. CONDITIONS AFFECTING TITLE

The Seller shall convey and the Purchaser shall accept the property subject to all covenants, conditions, restrictions and easements of record and zoning and environmental protection laws so long as the property is not in violation thereof and any of the foregoing does not prevent the intended use of the property for the purpose of EDUCATION (BOAT HOUSE & RELATED USE) also subject to any existing tenancies, any unpaid installments of street or other improvement assessments payable after the date of the transfer of title to the property, and any state of facts which an inspection and/or accurate survey may show, provided that nothing in this paragraph renders the title to the property unmarketable.

11. DEED

The Seller shall convey the premises to the Purchaser by Warranty Deed in proper form for recording, which deed shall include the covenant required by Subdivision "5" of Section 13 of the Lien Law. If the Seller conveys in any trust capacity, the usual deed given in such cases shall be accepted. The said deed shall be prepared, duly signed by the Seller, signature(s) acknowledged and have any transfer tax stamps in the proper amount affixed thereto, all at the Seller's expense, so as to convey to the Purchaser the fee simple of said premises free and clear of all liens and encumbrances, except as herein stated.

12. TAX AND OTHER ADJUSTMENTS

The following, if any, shall be apportioned so that the Purchaser and Seller are assuming the expenses of the property and income from the property as of the date of transfer of title:

- a. rents and security deposits. Seller shall assign to Purchaser all written leases and security deposits affecting the premises.
- b. taxes, sewer, water, rents, and condominium or association fees.
- c. municipal assessment yearly installments except as set forth in Item 9.
- d. fuel, based upon fair market value at time of closing as confirmed by a certificate provided by Seller's supplier.

13. RIGHT OF INSPECTION AND ACCESS

Purchaser and/or a representative shall be given access to the property for any tests or inspections. The PURCHASER agrees to hold SELLER harmless against any and all liabilities that may arise from said tests and inspections. In the event the Purchaser does not purchase the Property, the Purchaser agrees to restore the property to its original condition. This Agreement is contingent upon a written determination(s), at Purchaser's expense, by a licensed architect or licensed engineer or by an agreed third party that the property is free from any substantial structural, mechanical, and/or environmental defects. This contingency shall be deemed waived unless the Purchaser shall notify N/A, in

writing, by certified or registered mail, return receipt requested, post-marked no later than \_\_\_\_\_, or by personal service by such date, of such substantial defect(s), and furthermore supplied a written copy of the inspection report. If the Purchaser so notifies, then this Agreement shall be deemed cancelled, null and void and all deposits made hereunder shall be returned to Purchaser or, at Purchaser's option, said cancellation may be deferred for a period of ten (10) days in order to provide the parties an opportunity to otherwise agree in writing.

14. TRANSFER OF TITLE

Transfer of title is to be completed at 12:00 Noon on or about 10 DAYS OF SATISFACTION OF CONTINGENCIES at the office of SCHENECTADY CITY HALL

15. DEPOSITS

It is agreed that any deposits by the Purchaser are to be deposited with the Listing Broker as part of the purchase price. If the Seller does not accept the Purchaser's offer, all deposits shall be returned to Purchaser.

If the offer is accepted by the Seller, all deposits will be held in escrow by the Listing Broker until the contingencies and terms have been met. The Purchaser will receive credit on the total amount of the deposit toward the purchase price. Broker shall apply the total deposit to the brokerage fee. Any excess of deposit over and above the fee earned will go to the Seller.

If the contingencies and terms contained herein cannot be resolved, or in the event of default by the Seller or the Purchaser, the deposits will be held by the Broker pending a resolution of the disposition of the deposits.

16. REAL ESTATE BROKER

The Purchaser and Seller agree that NO REAL ESTATE BROKER OR SALESPERSON and \_\_\_\_\_ brought about the sale, and Seller agrees to pay the Brokers' commission to N/A as agreed to per separate agreement.

17. ADDENDA

The following attached addenda are part of this agreement:

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

18. ATTORNEYS APPROVAL CLAUSE

This agreement is contingent upon Purchaser and Seller obtaining approval of this Agreement by their attorney as to all matters contained therein. This contingency shall be deemed waived unless Purchaser's or Seller's attorney on behalf of their client notifies \_\_\_\_\_ in writing, as called for in paragraph 19, of their disapproval of the Agreement no later than \_\_\_\_\_. If Purchaser's or Seller's attorney so notifies, then this Agreement shall be deemed cancelled, null and void, and all deposits shall be returned to the Purchaser.

19. NOTICES

All notices contemplated by this agreement shall be in writing, delivered by certified or registered mail, return receipt requested, postmarked no later than the required date, or by personal service by such date.

20. ENTIRE AGREEMENT

This contract contains all agreements of the parties hereto. There are no promises, agreements, terms, conditions, warranties, representations or statements other than contained herein. This Agreement shall apply to and bind the heirs, legal representatives, successors and assigns of the respective parties. It may not be changed orally.

THIS IS A LEGALLY-BINDING CONTRACT. IF NOT FULLY UNDERSTOOD, WE RECOMMEND ALL PARTIES TO THE CONTRACT CONSULT AN ATTORNEY BEFORE SIGNING.

Dated: \_\_\_\_\_

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Witness

Trustees of Union College  
by: Joseph L. Manna  
Purchaser

\_\_\_\_\_  
Purchaser

ACCEPTANCE

Dated: \_\_\_\_\_

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Witness

Albert J. [Signature]  
Seller

\_\_\_\_\_  
Seller



ADDENDUM TO CONTRACT:  
CITY OF SCHENECTADY TO UNION COLLEGE

1. Seller agrees to provide Purchaser with a right of ingress and egress over the Seller's lands adjoining the property to be conveyed, together with any necessary easement for the installation and maintenance of utilities, sewer and water lines. The installation of all necessary utilities, sewer and water lines to be at Purchaser's own expense.

2. This contract is contingent upon the Purchaser obtaining all governmental approvals and permits for the construction, placement and use of a boathouse on the land to be conveyed and a dock sufficient for crew purposes on the adjoining portion of the Mohawk River.

3. With respect to the adjoining lands to be retained by the Seller, Seller agrees to pave the existing parking lot, install lighting and to otherwise improve said parcel as provided by Resolution No. 97-27 adopted by the Schenectady City Council. Seller will prepare a parking and lighting plan which insofar as practicable will be consistent with the City-wide lighting plan developed by Schenectady 2000. Seller will permit Purchaser to review and comment upon such plan prior to the same being finalized. Seller agrees to commence paving of the parking lot and the installation of lighting upon its adjacent lands, once construction of Purchaser's boathouse is substantially complete. The terms and provisions of this paragraph shall survive transfer of title.

4. Seller agrees to the placement and construction of the improvements on the land to be conveyed as set forth on the attached site plan. Seller agrees to permit the Purchaser to remove pool apron (at Purchaser's expense) surrounding the existing pool on Seller's property and to relocate the fence surrounding the pool, so as to accommodate the siting of the boathouse and improvements as shown on the site plan, such work to be carried out in conjunction with Seller, provided, however, that Purchaser's relocation of the fence and removal of asphalt surrounding the existing pool shall not interfere with the use and operation of the pool during the summer months.

5. The parties agree that following the transfer of title that they will use their best efforts to keep their respective properties well maintained and in good repair, subject to their available financial resources. This provision shall survive the transfer of title.

6. This contract is contingent upon the Purchaser obtaining an easement or revocable right-of-way from Consolidated Rail Corporation for the use of a driveway located to the east of the property to be conveyed and the property to be retained by Seller.

7. Seller agrees to grant Purchaser a non-exclusive right to use the existing parking area located upon the lands retained by the Seller, in conjunction with the Boat House and related activities.

8. The Seller reserves an easement over the property to be conveyed for the purpose of maintaining and repairing all water and sanitary sewer main lines, lateral or interceptor lines, located on the property.

9. In the event that the Seller shall cease to utilize the existing municipal pool and the adjacent lands upon which it is located as a park facility, and seeks authorization to sell said lands, then in such event, Purchaser shall have a right to purchase said property at its then fair market value in accordance with all customary procedures applicable to the sale of municipal park lands. Any such sale shall be subject to and expressly conditioned upon the adoption of all local, state or federal legislation and/or the issuance of such permits as may be required to allow the alienation of said property. This provision shall survive the transfer of title.

10. In the event Purchaser contributes to the cost of hydroseeding the parcel to be conveyed and/or adjoining lands of Seller, Purchaser shall be given a credit against the purchase price for sums contributed. Such contribution shall not exceed \$ 3000.

TRUSTEES OF UNION COLLEGE

By: Joseph H. Maurer

CITY OF SCHENECTADY

By: Albert P. Jozala



**SECOND ADDENDUM TO CONTRACT:  
CITY OF SCHENECTADY TO UNION COLLEGE**

1. The parties hereby further agree that in the event the Seller shall at some future time require access across the property to be sold, for the development of a walkway, esplanade or other similar pedestrian right-of-way, that the Purchaser shall grant such right-of-way or access upon the further terms and conditions hereinafter provided.

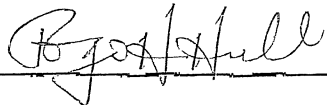
2. The Seller's right of access across the property to be conveyed shall be subject to the Purchaser's approval of the architectural impact and cohesiveness of any walkway or esplanade with the design motif of the boathouse to be constructed by the Purchaser upon the property to be conveyed, provided, however, that Purchaser's approval shall not be unreasonably withheld.


3. Seller agrees that any walkway, esplanade or other pedestrian right-of-way shall not obstruct or unreasonably interfere with the use or operation of the boathouse to be constructed by the Purchaser.

4. The provisions of this Second Addendum shall survive the transfer of title.

TRUSTEES OF UNION COLLEGE

CITY OF SCHENECTADY

By: 

By:   
Albert P. Jurczynski  
Mayor