M E M O R A N D U M

DATE: July 18, 2022

TO: Marty Hohenberger, Director, Center for Economic Development & Community Resilience, *Ohio University Voinovich School of Public Affairs*

FROM: Kate Perani, Special Projects Manager RISE Ohio, *Buckeye Hills Regional Council*
Matt O'Rourke, RISE Ohio Project Manager, *American Structurepoint, Inc.*
Chris Bettinger, Bridge Projects Manager, *American Structurepoint, Inc.*

CC: Samantha Miller, Development Director, *Buckeye Hills Regional Council*

RE: **RISE Ohio Project Proposal: Harmar Bridge Concepts**

Overview

The Historic Harmar Bridge has been a central part of the City of Marietta's identity since it was first constructed in the 1850s. Through the many purposes it has served throughout its history, the Historic Harmar Bridge represents the City's history of over two centuries of continuous, adaptive reuse of its built environment. Initially built as a covered bridge over the Muskingum River for wagon traffic, it was converted to a railroad bridge during the Civil War, making it one of the first iron railroad bridges in the United States. It was also converted in order for a hand-cranked "swing span" (figure 1) to be installed to allow for boat traffic to pass along the Muskingum River. Because virtually all railroad hand-cranked iron swing span bridges built around this time have been either destroyed or repurposed, the Historic Harmar Bridge is perhaps the oldest working hand-cranked iron swing span railroad bridge in the United States, making it a unique and valuable historic landmark.

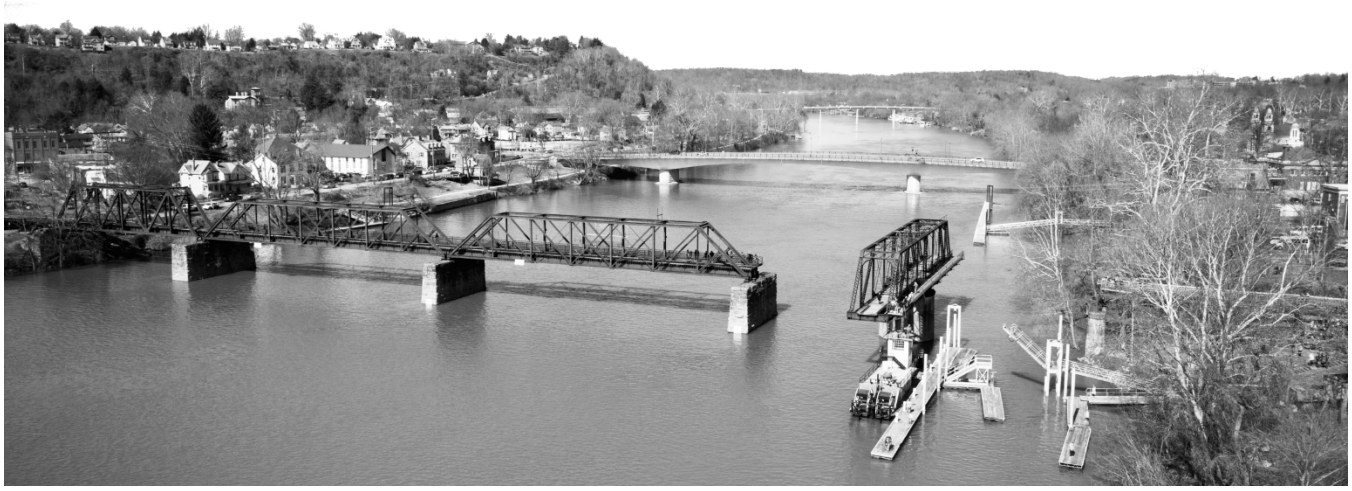


Figure 1: The Historic Harmar Bridge, with swing span activated. Photo Credit: The Historic Harmar Bridge Company (HHBC)

The Harmar Village neighborhood of Marietta (hereinafter referred to as "Harmar") has always been and remains

distinct from neighborhoods east of the Muskingum. The site of the first permanent settlements west of the Ohio, the Village of Harmar was formerly an independent municipality prior to reunifying with the City of Marietta in 1890. In the late-19th and early-20th centuries, Harmar was a bustling commercial hub centered on river commerce and the shipbuilding industry. Harmar became a diverse and mixed-income neighborhood where industry, retail business owners, and skilled labor created a welcoming, tight-knit, and enterprising community with rich character. Harmar's industrial base continued to grow throughout the mid-20th century as steel, chemical, heavy equipment supply, and piano manufacturing joined shipbuilding as Harmar's primary industries. For decades, Harmar was home to the region's largest concentration of ironworkers, pipefitters, welders, and skilled laborers, which allowed the neighborhood and the City the ability to adapt to changes in the local industrial mix with ease for many decades. However, as the macroeconomic changes of the late-20th century that resulted in the de-emphasis of and disinvestment in manufacturing throughout the United States unfolded, Harmar began to decline. As a well-established and fully built-out neighborhood, Harmar was not suited for the type of auto-oriented/big box retail commercial nor large plot/suburban-style residential housing development that drove the US economy's growth during the 1980s, 1990s, and 2000s. As Marietta's share of these newer developments were built east of downtown along the SR-7 corridor towards I-77 and beyond; jobs, investment, and residents began to flow out of Harmar, and the neighborhood lost its status as the City's primary economic hub. Fortunately, today Harmar has stabilized and is beginning a remarkable recovery. In spite of the Great Recession and the COVID-19 pandemic, investment from the Creating Healthy Communities Coalition (utilizing state health department funding and federal Community Development Block Grant funding) and investment from local entrepreneurs is catalyzing the redevelopment of Maple and Harmar Streets and the walkability of the Greater West Side along the Franklin Street Corridor, and the neighborhood's median income is rising. The reconnection of Harmar with downtown Marietta via the adaptive reuse of the Historic Harmar Bridge is thus a critical next step to the neighborhood's continuing transformation.

Because the bridge has changed form, alignment, and ownership several times throughout its history, the bridge has been primarily cared for and maintained by the local community, especially the residents of Harmar. Numerous railroad companies have owned and operated the bridge throughout its history, but none of them made any particular financial effort to invest in the long term maintenance of the bridge. When maintenance has been required, volunteers from the community stepped up and provided them, most notably in 1987 when a wooden walkway initially built by the city in 1893 was repaired alongside the truss superstructure by volunteers from Plumbers & Pipefitters Local 168. After the bridge was retired by its last railroad owner in 1967, The Friends of Historic Harmar was established in 1979 to reopen pedestrian access to the bridge by lease from the Baltimore & Ohio Railroad and in 1984 established The Historic Harmar Bridge Company, an all-volunteer nonprofit board to take possession of the bridge in 1985. Drawn from members of the community, for the first two decades of its existence the HHBC Board of Directors focused on maintaining pedestrian access and on raising funds for seasonal lighting and planters to beautify the bridge during community events and festivals. However, as the bridge has aged its structural integrity has weakened. Rust has built up on the trusses, and the superstructure has begun to become gradually loosened from the piers. The wooden walkway had become bowed in several places, and concerns about pedestrian safety on both the primary structure and the walkway increased over time. While all past and present members of the HHBC Board have been dedicated to keeping the bridge open and safe, and have worked actively to raise money for that purpose, it is perhaps fair to say that the need to actively mitigate the deterioration of the bridge was not taken as seriously by previous Boards as perhaps it should have been. As a result, in early 2020 after consultation with both the City and the County Engineer, the HHBC deemed the risks to pedestrian safety to be too great and voted to close the bridge. After the closure of the bridge and in response to community pressure, the HHBC Board of Directors was reconstituted. The new Board voted to revise the bylaws of the HHBC and launched the Save Harmar Bridge

initiative with the support of Marietta Main Street and the Marietta Community Foundation. The initiative aims to raise public and private funds through citizen/corporate donations, state/federal grants, and other sources in order to fully restore the Historic Harmar Bridge, maintain its structural integrity, and create a safe and accessible pathway for pedestrian and bicycle traffic across the Muskingum River.

The benefits of the adaptive reuse of the Historic Harmar Bridge would be numerous. First and foremost, restoring the pedestrian link between Harmar and downtown Marietta is of critical importance to the residents of Harmar. The closure of the bridge in 2020 deprived Harmar residents of this vital pedestrian link to work, school, nutrition, healthcare, recreation, entertainment, and participation in local government, particularly for the many Harmar residents who do not own a personal vehicle or have access to reliable transit. Safe and equitable access for Harmar residents to all of Marietta must be restored. Second, because the adaptive reuse of the bridge will involve improving its structure and appearance, the Historic Harmar Bridge will go from being a deteriorating liability with an uncertain future to being an iconic landmark asset and the focal point of the entire Marietta community. To give one example, the adaptive reuse of the bridge into a multi-use pedestrian link would create a natural convergence for the numerous multi-use land trails on both sides of the Muskingum River from every direction and up the Muskingum River Water Trail on the nation's first Navigation Historic District as designated by the National Park Service in 2006. Residents on both sides of the Muskingum will benefit tremendously from having these trails become connected together and by the increased access to the riverfronts of both the Muskingum and Ohio these connections will bring. In addition, the adaptive reuse of the bridge is of even greater importance given the joint Marietta-Washington County RAISE grant application to the US Department of Transportation to advance the CROSS Marietta corridor concept, and is integral to the vision of creating a multi-use corridor between Harmar and the Marietta College campus. Third, thanks to its unique history as Ohio's only working hand-cranked swing span bridge, and its highly scenic location at the confluence of the Ohio and Muskingum Rivers, the bridge promises to be a major tourist draw. During existing popular community events, like the Harmar Days Festival and annual holiday events, the bridge would be heavily utilized, especially if regularly scheduled swing span demonstrations are held during events. Finally, the general influx of the foot traffic of residents, students, and tourists to the bridge area would bring more customers to restaurants in Harmar including the Busy Bee, Spagna's, and the Harmar Tavern, as well as spur additional business investment opportunities on both sides of the river. Local business owner Larry Sloter, President of the Harmar Village Restaurant Group, has gone as far as to say that Harmar could become a culinary and tourism destination for the region following the successful adaptive reuse of the bridge. In short, the adaptive reuse of the Historic Harmar Bridge would thus be nothing short of transformational for both the residents of Harmar and the entire Marietta community. As Marietta City Ward 4 Councilman Geoff Schenkel, who grew up on Harmar Hill and whose Ward includes Harmar Village, stated to the project team: "to grow up around a blighted structure influences your outlook on life. Harmar Village and the surrounding residential neighborhoods have dealt with poverty, neglect, crime, and fighting for so long that it makes it hard for neighborhood residents and business owners to take politicians seriously during discussions about community revitalization. The adaptive reuse of this bridge would signal to the community that public agencies and elected officials take seriously the grassroots momentum that the Greater West Side has contributed in the last five years. The adaptive reuse would signal that public entities are willing and able to work with us and take our needs seriously."

Since reorganizing itself under new leadership and launching the Save Harmar Bridge initiative in 2020, the HHBC has positioned itself as a catalyzing force for the adaptive reuse of the Historic Harmar Bridge. In partnership with volunteers and residents of the neighborhood, the HHBC has engaged both local and regional public and private partners in a way it had never before historically. In 2021, it secured grant funding from the Ohio Department of

Natural Resources to commission studies of the bridge. In the spring of 2022, the HHBC hired CONSOR, a national engineering firm that specializes in structural assessments of bridges and other structures, to perform an underwater and superstructure inspection to assess any structural damage and determine the remaining capacity of the existing piers. Their report, delivered to the HHBC in June of 2022, showed that despite their age the piers are in remarkably great shape, and should be able to handle the adaptive reuse of the superstructure. Now that the HHBC has been able to determine the piers are stable and usable, there is a clear next step: to commission an analysis of structural alternatives for a restored/adapted/new superstructure for the Historic Harmar Bridge.

The Historic Harmar Bridge is located within Opportunity Zone #0205, and is thus eligible for technical assistance under the RISE Ohio program. After consultation with the HHBC Board of Directors, the City of Marietta, the Washington County Board of Commissioners, the Washington County Engineer, and the SE Ohio Port Authority, Buckeye Hills Regional Council proposes for American Structurepoint to provide technical assistance described herein for the HHBC. This assistance will allow the HHBC to advance forward into the next phase (engaging in grant funding conversations when opportunities to ask for final design and construction money arises) on this regionally transformative project that would significantly enhance the vibrancy of Marietta, Washington County and the Southeast Ohio region. This project thus achieves the goal of the RISE Ohio program by increasing Opportunity Zone investment opportunities within the Buckeye Hills Region.

Project Description

American Structurepoint will provide preliminary engineering services to evaluate alternatives for the rehabilitation and replacement of the existing Historic Harmar Bridge over the Muskingum River in Marietta, Ohio. The existing structure is a retired railroad structure approximately 900' in length, made up of 5 truss spans, including a hand-cranked swing span, as well as timber-framed approach structures. Both the superstructure and the attached wooden walkway are in significant disrepair. The preliminary engineering evaluation will include evaluating the feasibility of rehabilitation of the truss spans as well as up to 3 superstructure replacement alternatives that maintain only the historic swing span portion of the bridge. It is assumed that any rehabilitation or replacement spans will be for pedestrian loading only.

Scope of Work

American Structurepoint will complete the following:

1.1 Existing Document Review and Site Visit: The project team will review available information previously prepared by others for the Historic Harmar Bridge, including 2022, 2008, and 2001 Bridge Inspection Reports, the 2016 Bridge Assessment, and any available existing plans, reviews, and scans. The project team will also visit the site to familiarize the team with the bridge and surrounding area.

1.2 Evaluation of Alternatives: A maximum of four alternatives will be evaluated to either rehabilitate or replace portions of the existing bridge. Services will focus on evaluating the feasibility and methodology of repair to the existing truss spans. For all alternatives, it is assumed the swing span will remain and be rehabilitated with a final appearance closely matching existing conditions. It is assumed that all timber-framed approach spans will be replaced. Based on the 2022 inspection report, it is assumed the substructure units supporting the truss portions of the bridge are in good condition, suitable for continued service without modification, and will be utilized for Alternatives 1, 2, and 3, further described below:

1.2.1 *Alternative 1*: Rehabilitate all truss spans by restoring critical areas of documented section loss. Steel repairs will be conceptual in nature; a detailed analysis will not be performed.

1.2.2 *Alternative 2*: Rehabilitate swing span only and replace three truss spans with beam superstructure

1.2.3 *Alternative 3*: Rehabilitate swing span only and replace three truss spans with new trusses that mimic the appearance of the existing truss spans.

1.2.4 *Alternative 4*: Evaluate Cable Stay (or other) to replace three truss spans. This alternative will likely utilize new substructure unit(s).

1.3 Preparation of Cost Estimates: A preliminary estimate of probable construction cost will be prepared for up to four bridge rehabilitation/replacement alternatives. Initial and lifecycle maintenance costs will be provided for each alternative. Swing span mechanicals are assumed to be in working order. Rehabilitation of the swing span mechanicals are outside the scope of services and will not be included in the cost estimate or repair alternatives.

1.4 Environmental Screening: The project team will conduct an Environmental Screening (ES) of the project corridor[1], prepare a narrative report with key findings, and produce maps describing key project characteristics as necessary. The purpose of the ES is to evaluate the potential impacts to the natural environment of the proposed project. The ES will be performed utilizing a desktop analysis of available resources, a site visit for the sole purpose of the ES is not necessary at this time. The ES report will include narratives and maps describing a preliminary analysis of publicly-available ecological, hydrological, hazardous material, cultural resources data, and other environmental resources within the project corridor, as described below:

1.4.1 *Ecological and Hydrological Records Review.*

a. Review U.S. Geological Survey topographical mapping to evaluate contour and elevation of the land and drainage patterns associated with the study area and surrounding area

b. Review the National Wetland Inventory mapping maintained by the U.S. Fish and Wildlife Services to evaluate any potential wetlands already established for the study area

c. Review high-resolution orthophotography to evaluate land use of the study area and surrounding area, and other features (such as waterways, drainage patterns, flooding, or dark coloration of surface soils) indicating hydric soils, and vegetation

d. Review the County Soil Survey to determine soil classification and drainage features within the study area

e. Review available local Threatened and Endangered Species Lists

1.4.2 *Hazardous Materials Records Review*

a. Research the Ohio Regulated Properties Search (ORPS) Tool Webpage for properties of concern near the study area

b. Prepare a written summary of the records review, including a tabular summary of sites identified through the ORPS search

1.4.3 *Cultural Resources Review*

[1] "Project corridor" refers to the general area surrounding the Historic Harmar Bridge that could plausibly be environmentally impacted by the project moving forward. Precise boundaries will be determined once ES starts, and a map will be provided to show the area.

a. Conduct a preliminary cultural resources literature review via inventories maintained by the Ohio Historical Preservation Office (OHPO), which includes: the Ohio Archaeological Inventory (OAI), and the Ohio Historic Inventory (OHI), available county and township histories, atlases, gazetteers, and historic maps regarding historical land use, surrounding land use, and physical setting of the study area

1.4.4 *Other Environmental Resources Review*

a. Conduct a preliminary literature review of Section 4(f)/6(f) resources, underserved populations, and drinking water protection areas

1.5 Draft a Preliminary Engineering Report: A Preliminary Engineering Report will be prepared summarizing the evaluation of each alternative including feasibility, planning level costs, advantages, and disadvantages of each alternative.

1.6 Provide Renderings: A rendering of the bridge profile over the Muskingum River will be prepared for up to three rehabilitation/replacement alternatives. This task includes drone photographs of existing bridge profile to develop the renderings and review/coordination of renderings with architect.

1.7 Identify Connection Opportunities. Up to three (3) conceptual site plans for each of the west and east bridge termini that outline the urban design and development opportunities that the bridge rehabilitation project could support will be developed. These site plans will include conceptual land uses, infrastructure, ornamentation, and supportive projects and policies.

1.8 Assist with Project Coordination: Including project setup, project oversight, and preliminary coordination with HHBC Board of Directors, the City of Marietta, and Washington County.

1.9 Meetings: In addition to the planned site visit described in section 1.1, three virtual project update meetings, including preparation and drafting of meeting minutes, are included, if deemed necessary by the HHBC. A final, in-person meeting with community stakeholders is also included, if deemed necessary by the HHBC.

American Structurepoint anticipates this work will be completed no later than October 31st, 2022, based upon an authorization date of August 1st, 2022.

Budget

It is anticipated that the services described above will be approximately **$55,000.00**. Justification of this amount is based on American Structurepoint's projection of the hours necessary to complete this work. All time spent on the project will be billed using the standard hourly rates indicated in our master service agreement. Reimbursable expenses will be invoiced at cost.

Once project activities begin and should it arise that project costs may exceed $55,000.00, Buckeye Hills Regional Council and American Structurepoint will draft a written justification describing the need for additional resources.


PUTNAM STREET
UNION STREET
BUTLER STREET
4th STREET
60 / 3rd STREET / OHIO RIVER SCENIC BYWAY
60
OHIO RIVER SCENIC BYWAY
PUTNAM AVE.
GILMAN AVE.
MAPLE STREET
FRONT STREET
POST STREET
2nd STREET
GREENE STREET
W. OHIO STREET
nearmap

HARMAR BRIDGE - MARIETTA, OHIO

PREFABRICATED TRUSS ALTERNATIVE

AMERICAN STRUCTUREPOINT INC.

HARMAR BRIDGE - MARIETTA, OHIO

BEAM & SLAB ALTERNATIVE

AMERICAN STRUCTUREPOINT INC.

HARMAR BRIDGE: END TRANSITIONS

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

HARMAR BRIDGE: END TRANSITIONS

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

HARMAR BRIDGE: A-BEFORE

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

New Patio Space

New Boat Dock

Suspended Overlook

TERRACED BOAT DOCK

HARMAR BRIDGE - A-1

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

Trail Extension

New Patio Space

New Performance Space

Industrial Overlook

ELEVATED WALKWAY

HARMAR BRIDGE - A-2

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

HARMAR BRIDGE: B-BEFORE

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

Standard Overlook

Relocate Boxcar

Refurbished Train Cars

Refurbished Train Cars

Train Sculpture

LOCOMOTIVE SCULPTURE

HARMAR BRIDGE - B-1

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

Crow's Nest Overlook

Trailhead

Relocated Boxcar
Cafe Space

Refurbished Train Cars

Refurbished Train Cars

CONTAINER CAFE

HARMAR BRIDGE - B-2

CONCEPTUAL GRAPHICS
Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

DOWNTOWN VISION PLAN

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

MULTIMODAL DOWNTOWN

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

2ND STREET & UNION - BEFORE

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

OFFSET ROADWAY

2ND STREET & UNION - RENDER A

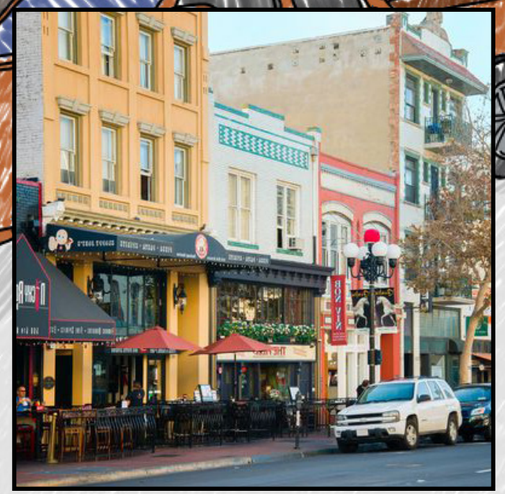
CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.



MIXED USE SPACE

2ND STREET & UNION - RENDER B

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

BUTLER STREET TRAIL CORRIDOR

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

2ND STREET & BUTLER - BEFORE

CONCEPTUAL GRAPHICS
Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

LIGHT SCULPTURE

2ND STREET & BUTLER SCULPTURE

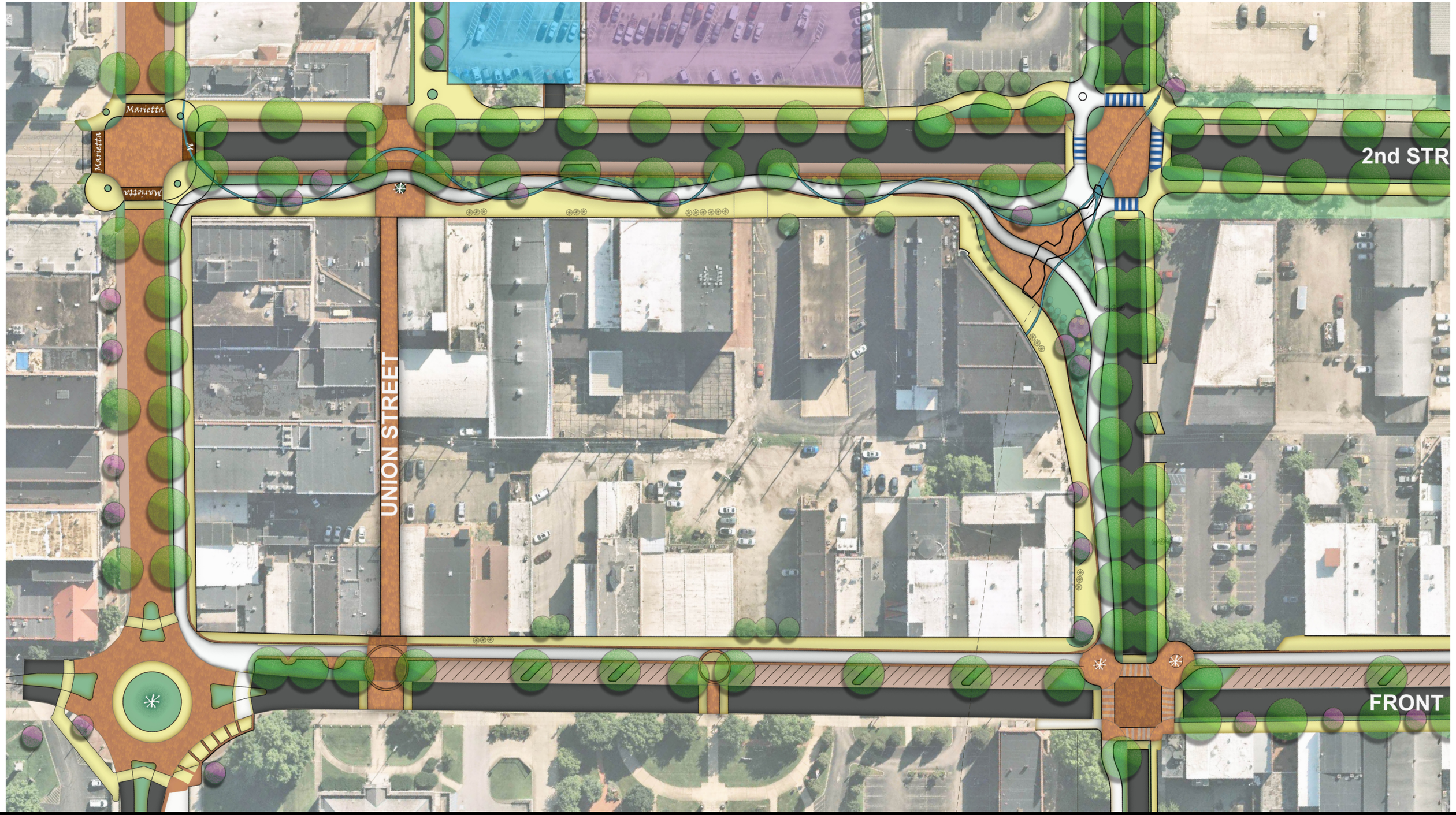
CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.



2ND STREET 'STREET PARK'

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

UNION ST. - BEFORE

CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.

ALLEY LIGHTS

UNION ST. ALLEYWAY

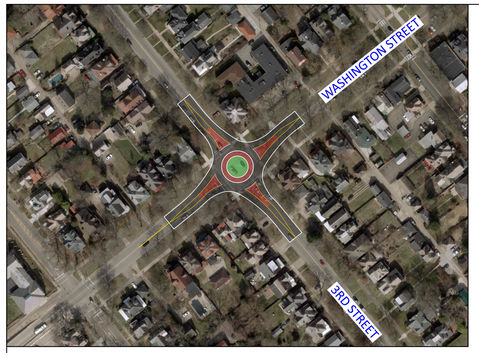
CONCEPTUAL GRAPHICS

Marietta, Ohio

March 10, 2023

2022.02814

AMERICAN STRUCTUREPOINT INC.



CONCEPTUAL STREET GRID

ENRICH MARIETTA

AMERICAN STRUCTUREPOINT INC.

HORIZONTAL SCALE IN FEET

0 200

100 400

Harmar Bridge - Marietta, Ohio

Beam & Slab Alternative

American StructurePoint Inc.

Harmar Bridge - Marietta, Ohio

Prefabricated Truss Alternative

American StructurePoint Inc.

Harmar Bridge Draft Task List

American Structurepoint partnered with the HHBC to perform a structure alternatives evaluation including proposed concept renderings and planning level cost estimates for a restored and/or new superstructure and approach spans for the Harmar Bridge. Four Harmar Bridge concepts (Alternatives A through D) were evaluated by American Structurepoint to assist The Historic Harmar Bridge Company and all stakeholders in determining the optimal course of action to make the Harmar Bridge safe again for pedestrian and bicycle traffic while maintaining its historical significance. It is our understanding that the following two alternatives remain as viable candidates:

- ***Alternative B***: Rehabilitate the swing span truss only and replace the other three truss spans with a beam and slab superstructure.
- ***Alternative C***: Rehabilitate the swing span truss only and replace the other three truss spans with new trusses.

Please refer to American Structurepoint's *Harmar Bridge Concept Evaluation (DRAFT)* document dated October 31, 2022.

The next vital steps, regarding the Harmar Bridge Project, are selection of a preferred bridge type alternative, selection of a preferred bridge approach types (east and west ends), determination of project limits and initiation of environmental services.

A draft of the remaining significant tasks up to construction is provided below. If federal funding is not utilized the environmental tasks can be significantly scaled back and the *italicized* tasks can be removed. Tasks **bolded** can be completed at this time to progress the project.

- REMAINING STUDY TASKS
    - Develop Preliminary Project Limits, Geometrics, and Design Criteria
    - **Perform Environmental Screening Report**
    - **Develop Purpose and Need**
    - *Prepare a Public Engagement Plan and Initiate Public Engagement*
    - Perform Field Survey, Basemapping, & R/W Verification
    - Utility Coordination & Documentation
    - Trail, Roadway, Landscape, Drainage, Lighting
    - Evaluate Aesthetics
    - Evaluate Impacts to FEMA Flood Zones and Perform Hydraulic Study
    - **Site Visit and Inspection**
        - **Swing Span Truss: Arm's Length Inspection & Measurements**
        - **Existing Substructure Evaluation: Observe overall integrity, determine extent of rehabilitation**
    - Finalize Structure Type Study for Main Spans and Develop for Approach Spans

    - **Preliminary Analysis of Swing Span**
        - **Existing Condition and Proposed Condition Load Ratings**
        - **Mechanical rehabilitation evaluation of existing swing mechanics**
        - **Material strength tests and rivet tests**

- STAGE 1 DESIGN
    - Geotechnical Services & Report
    - Roadway/Trail Plans
    - Drainage Design
    - Preliminary Right-of-Way (R/W) Plans
    - Utility Coordination & Documentation
    - Bridge Design Report and Final Site Plans
    - Environmental Field Studies
    - *Prepare Environmental Documents (CE)*
    - Cultural Resources Coordination
    - Waterway Permit Applications and Coordination

- DETAILED DESIGN
    - Roadway/Trail Plans
    - Landscape and Lighting Plans
    - Drainage Details
    - Bridge Design and Details Developed for all Bridge Components
    - Design of Approach Spans and/or Boardwalk
    - Utility Coordination
    - Final R/W Plans

- FINAL PLANS AND QUANTITIES

- CONSTRUCTION PHASE