M E M O R A N D U M

TO: MRA Board

FROM: Tod Gass, Project Manager

DATE: October 17, 2022

SUBJECT: URD II Bitterroot Trail MRL Bridge
Request to Approve Professional Services Agreement

One of the priority projects in the URD II 9-Year Strategic Exit Plan that was approved by the MRA Board last Spring is the modification of the Montana Rail Link (MRL) Railroad Bridge at McCormick Park to allow bicycle and pedestrian uses. A bicycle/pedestrian bridge at this location would connect the riverfront trail at McCormick Park to the Bitterroot Trail on the north side of West Broadway and complete a critical link in the 50-mile stretch of the Bitterroot Trail connecting downtown Missoula to downtown Hamilton, Montana. This connection will provide a safe, non-motorized crossing of the Clark Fork River effectively connecting the Heart of Missoula Neighborhood and the Westside Neighborhood north of the river to the Riverfront Neighborhood on the south side of the river. The Downtown Master Plan references the need for a non-motorized connection linking downtown to the parks and trail system south of the river.

MRL, the owner of the bridge, has granted permission to the City to investigate the feasibility of creating a shared use facility. It is important to note that MRL has no foreseeable plans to abandon the Bitterroot Spur Line, so the modification of the rail bridge to trail use comes with the condition that the bridge can continue to provide rail use if the need arises in the future.

The MRL bridge project was presented to the MRA Board as a FY23 Capital Improvement Program item this past June. Staff advised the Board that it intended to issue an Request For Proposals to study the feasibility of modifying the bridge to allow non-motorized uses, and the Board approved the inclusion of the project into the MRA CIP. Through a public RFP process, HDR Engineering was chosen by a selection committee to produce a feasibility study for modifying the rail bridge to allow trail use and if feasible, develop conceptual design alternatives of the bridge trail, trail connections, and West Broadway crossing along with a probable cost of construction.

HDR has a long history of working with MRL as their on-call engineer since 1999. HDR's proposal presented a strong surveying, engineering, and design team with in-depth knowledge of MRL design criteria and expectations that will allow for a thorough feasibility review and a design concept that meets MRL's requirements. Since selecting HDR to provide the initial work to modify the rail bridge, HDR and MRA reviewed and refined the terms of a Professional Services Agreement and Scope of Work:

Phase 1 of the HDR scope of services provides for a feasibility study and preliminary conceptual design to illustrate general design characteristics and determine planning-level cost estimates. This work will be accomplished through the following tasks:

- Task 1: Project Management & Project Meetings. This task involves project setup, close-out, coordination between MRA and HDR and sub-consultants, project tracking, preparing reports and invoices, and facilitating project meetings.

- Task 2: Feasibility Study. This task involves stakeholder coordination, evaluating the feasibility of modifying the MRL bridge and bridge/trail connections, coordinating with project stakeholders, and investigating, inspecting, and analyzing the bridge structure, hydraulics, scour, and trail connections.

- Task 3: Preliminary Conceptual Design. This tasks involves preparing a preliminary conceptual design based on the constraints defined as part of Task 2. The intent is to advance the preliminary concept to depict the general characteristics and determine cost estimates for planning purposes.
    - Subsequent stakeholder coordination, public outreach, and refinement of conceptual design is anticipated to occur in Phase II. Phase II will be added by amendment to the Professional Services Agreement and generally includes advancing the conceptual design with the project stakeholders to develop design alternatives which account for maintenance requirements, bridge trail lighting, and design criteria along with compiling estimates of probable cost.

Language in the MRA/HDR Professional Services Agreement shall state that if an insurmountable problem, defect, or flaw is discovered during any point of the Feasibility Study, the MRA may exercise the option to terminate the Agreement and cease work on the project. Critical check points will most likely be during the structural inspection and analysis of the superstructure and substructure or hydraulic and scour analysis in Task 2. HDR presented a fee not to exceed $341,102 for the proposed scope of work. If the project is deemed feasible and a preliminary conceptual design agreed upon by the project stakeholders, MRA anticipates later requesting Board approval of an amendment to the HDR Professional Services Agreement adding further design development, construction administration, and project close-out to HDR's scope of work to complete the bridge modification project. The current available contingency in URD II is approximately $310,000 and MRA anticipates receiving $2.1M in bond revenue soon, so there is ample capacity in the URD for this expenditure.

RECOMMENDATION: Staff recommends that the Board move to approve a Professional Services Agreement with HDR Engineering Inc. and the associated Scope of Work and budget for completion of the MRL Bridge Feasibility Study & Conceptual Design Project at a cost not to exceed $341,102, and authorize the Board Chairman to sign the Agreement with the understanding that if the project is found to be infeasible due to structural condition, project cost, or other reason, the project will be halted and no further expenditures will be authorized.

N

0 125 250 375 500 Feet

Missoula Redevelopment Agency
Date: October 14, 2022
Prepared By: Tod Gass

Area Map For:

URD II MRL BRIDGE

City of Missoula Redevelopment Agency
140 W. Pine St. Missoula, MT 59802

Note: The information on this map has not been field verified.

MRA Missoula Redevelopment Agency

Introduction

The following scope of work is to perform a Feasibility Study for the City of Missoula Redevelopment Agency (MRA) to analyze converting Montana Rail Link's (MRL) 9th Subdivision Bridge 0 crossing the Clark Fork River for use as a bicycle/pedestrian bridge as Phase I of the project. The Feasibility Study will also evaluate connecting the Bitterroot Trail across West Broadway St to the north and connections with the Riverfront Trail system at McCormick Park and the Milwaukee Trail and Bitterroot Trail to the south. The Feasibility Study will include stakeholder coordination and will focus on implementing bicycle & pedestrian trail facilities using methodologies that will not inhibit the use of the existing railroad bridge or approach trackway for railroad purposes in the future.

This scope of services is for the Phase I Feasibility Study including preliminary conceptual design to illustrate general design characteristics and determine planning-level cost estimates. If determined to be feasible and acceptable to MRA and MRL, the project will proceed with Phase II - Conceptual Design. Phase II will be added by amendment and generally includes advancing the conceptual design with stakeholders to develop design alternatives which account for maintenance requirements, bridge trail lighting, and design criteria, and preparing estimates of probable cost.

General Assumptions

- Project management effort is a function of project duration and is based on the schedule included with this scope of services. Additional project coordination or an extended project schedule may require a contract amendment.
- Survey data using drone lidar capability will be gathered during the feasibility study along the existing railroad alignment from Pine St on the north to S 1st St W on the south. Limited data for key physical features and alignments will be processed and utilized during the Feasibility Study. Additional data will be post-processed and provided for use as needed during the Phase II - Conceptual Design. **Refer to DJ&A's scope of services.**
- Bridges in addition to MRL's Bridge 0 over the Clark Fork River are not included as part of the Phase I scope but can be included as part of an amendment.
- Construction administration services are not included in this scope.
- Bridge and trail schematics will be prepared using Autodesk Civil3D.
- Public involvement services including public outreach and public meetings are not anticipated during Phase I and are not included in this scope.
- Geotechnical services are not anticipated to be needed during Phase I and are not included.
- Right-of-way services are not included.

Schedule

The project schedule generally includes the following milestone dates:

- Notice to Proceed: November 1, 2022
- Structural Feasibility Memorandum March 31, 2023
- Phase I – Feasibility Study complete: April 28, 2023
- Phase I – Preliminary Concept Design complete: June 30, 2023

For purposes of scoping the project and determining average labor rates, a blend of 2022 rates and estimated 2023 rates are assumed. An extended project schedule will require additional project management effort.

Project Meeting Summary

The following Meetings are included in the scope of services.

Meeting	Task	Location
Project Kick-Off Meeting	1.2	Missoula
Bi-weekly MRA Management Meeting	1.2	Virtual
Weekly Team Coordination Meetings	1.2	Virtual
Feasibility Study Review Meeting	2.7.3	Missoula

Scope of Work

Task 1: Project Management & Meetings

Description of Work: Perform project management including project setup and closeout, coordination of work with MRA, coordination of HDR and subconsultant staff, track project budget and schedule, prepare progress reports and invoicing. Organize, conduct, facilitate, and participate in various project meetings including team meetings and meetings with stakeholders.

Tasks:

1.1. Project Management: Project setup and closeout. Coordinate work with MRA, manage HDR and subconsultant work and coordinate staff, track project budget and schedule, prepare progress reports and invoicing.

1.2. Project Meetings & Communication: Organize, conduct, facilitate, and participate in various project meetings and communicate with HDR team members, MRA, and stakeholders.

Assumptions:

- Project Management
  - Project management duration is assumed to be 9 months from November 1, 2022, thru July 31, 2023.
  - Administrative assistance and support services are included as part of project management.
- Project Leadership Meetings
  - 4.0-hr project kick-off meeting with MRA/Stakeholders is included for up to three (3) HDR team members.
  - 2.5-hr monthly management meeting with MRA held virtually is included for up to two (2) HDR team members.
  - 1.25-hr bi-weekly virtual team coordination meeting is included for up to three (3) HDR team members.
  - Preparation time and meeting minutes are included in estimated meeting duration.

Deliverables:

1. Monthly invoice and progress report (.pdf)
2. Meeting Minutes (.pdf)

Task 2: Feasibility Study

Description of Work: Evaluate the feasibility of providing trail access across MRL Bridge 0 and adjacent connections. Coordinate with stakeholders, gather data, perform investigation and inspection, prepare structural analysis, evaluate drainage and hydraulics, and assess trail connection impacts.

Tasks:

2.1 Stakeholder Coordination

2.1.1 MRL Coordination. The HDR team will initiate and lead ongoing coordination with MRL throughout the Feasibility Study.

- Temporary Occupancy Permit – HDR will work with MRL to obtain a Temporary Occupancy Permit (TOP) allowing HDR's team access to MRL's property including Bridge 0 over the Clark Fork River. The TOP will be required to perform bridge inspection.
- Record Information – HDR will coordinate with MRL to obtain and interpret as-built drawings, previous inspection records, and other available historical information related to MRL's structures and facilities considered by the project.
- Meetings – HDR will organize and facilitate meetings with MRL throughout the Feasibility Study. To maintain MRL involvement and engagement, these meetings will include working sessions to review and discuss the initial findings of the Bridge Investigation and Inspection, Preliminary Structural Analysis, and Trail Structure Analysis. In addition, possible risk elements, and maintenance requirements will be included as topics. Assume up to 2, 2-hr meetings with MRL are assumed and will be attended by 2 HDR staff.

2.1.2 MDT Coordination. The HDR team will coordinate with MDT during the feasibility study with a focus on West Broadway St. DJ&A will lead coordination with MDT and HDR will support the effort which will likely involve a combination of the Missoula District, Headquarters Traffic, and Systems Impact. Assume up to 1, 2-hr meetings per month with MDT attended by 1 HDR staff. **Refer to DJ&A's scope of services**.

2.1.3 City of Missoula Coordination. The HDR team will coordinate with Public Works and Mobility, and Parks during the feasibility study. Assume up to 1, 2-hr meeting per month Parks/PWM attended by 2 HDR staff.

2.1.4 Resource Agency Coordination. The HDR team will coordinate with resource agencies to understand environmental constraints and permitting requirements. **Refer to task 2.6**.

2.2 Survey

DJ&A will perform comprehensive mapping through the project corridor, including scanning the existing bridge structure and topography of the north and south bridge approach and trail connection areas. HDR will review the survey and mapping provided by DJ&A. **Refer to DJ&A's scope of services**.

2.3 Structural Evaluation

2.3.1 Bridge Investigation and Inspection. HDR will perform the following work items as part of this task:

- Record Information Review – Evaluate existing as-built plans, inspection records, and other historical documents related to MRL's Bridge 0.
- Field Inspection & Measurements – Perform a visual inspection of the major structural components of the superstructure and substructure of MRL's Bridge 0. The condition-based inspection will be limited to primary elements that can be reviewed from the ground, ladder, or from the top of the bridge superstructure. This task also includes pre-inspection activities such as coordination with MRL, coordination with staff, internal HDR safety documentation, and post inspection activities. It appears that as-built shop plans

for the existing steel lattice girders are not available. This task also includes measuring the girder components to complete the structural analysis. Three rope access certified staff will be required to complete this work with out of state travel required for 2 staff. It is assumed that all girders are the same and only one girder will require detailed measurements. Spot checking of other girders will be performed. This task includes time associated with prep, documentation of measurements, and performing the field work.

- Inspection Summary Report – Prepare a report summarizing the inspection findings with photos and written documentation of the condition of major components.

2.3.2 Preliminary Structural Analysis. HDR will perform preliminary structural modelling and calculations to assess the as-constructed load carrying capacity of the primary superstructure components and substructure. Analysis is limited to 2D methods and frame elements. Analysis of secondary elements and connections is not included; it is assumed these components were adequately designed originally. It is assumed that the existing structure has not undergone significant corrosion or section loss as this will increase the complexity of the analysis and require additional effort to evaluate.

2.3.3 Trail Structure Analysis. Evaluate up to 2 possible concepts (cantilever option and a centered option) for the purpose of determining rough load effect on the existing structure. Two sub-concepts are being considered for the cantilever option: one that would cantilever to one side of the bridge, the other would be divided by the tracks and cantilever off both sides. The intent is that one of the cantilever options would advance for further consideration and the other will be ruled out due to structural issues or obvious disadvantages. Develop concept sketches depicting the trail cross section over the bridge. Perform preliminary calculations to determine the load effect from the two concepts on the bridge. Identify possible deficiencies, need for strengthening or modifications to accommodate the trail structure. The goal is to determine if it is structurally feasible to utilize the rail bridge as a trail crossing such that train traffic may be restored on the bridge in the future.

2.3.4 Prepare Structural Technical Memorandum. Provide a technical memorandum summarizing the results of the preliminary analysis and feasibility of converting the structure to trail use.

2.4 Drainage and Hydraulics

2.4.1 Clark Fork River Hydraulics and Scour. HDR will use the latest effective hydraulic model obtained through Missoula County, the City of Missoula, or the Federal Emergency Management Agency (FEMA) to analyze the theoretical scour for the bridge. HDR will visually inspect the site and confirm that field conditions are generally aligned with the available model information. Additionally, the feasible alternatives and their impacts on the potential scour will also be assessed. In addition to the scour, the impacts that the feasible alternatives will have on the water surface elevations of the floodplain will be estimated. HDR will conduct an independent hydrologic analysis to assist with the hydraulic analysis. The methods and results of the scour analysis will be described in the Feasibility Study Report (Task 2.8).

2.5 Trail Connections & Urban Design

This portion of the feasibility study will focus on potential connections between the proposed new trail along the railroad trestle and adjacent existing trail infrastructure as it relates to bicycle and pedestrian trail users. HDR will support and review the trail connection and urban feasibility evaluation. **Refer to DJ&A's scope of services**.

2.6 Environmental Evaluation

2.6.1 Resource Agency Consultation. This task will include consultation with the U.S. Army Corps of Engineers (USACE) – Seattle District to introduce the project and discuss with the agency the project's location and potential effect on the federal levee project immediately adjacent to the project. Determine the triggers for Section 408 consultation. Document correspondence for the project record. Advise the design team of results from the USACE consultations.

2.6.2 Permitting Requirements. Develop a matrix of anticipated and/or potential regulatory approvals or permits that may be required for each alternative. The matrix will include information on the type of approval, agency involved, the specific threshold or trigger for approval, the required documentation/application, and approximate approval time. Develop a brief narrative for the final Feasibility Study that summarizes the findings.

2.7 Prepare Feasibility Study

2.7.1 Risk Assessment. Identify project risks and document in a risk register. Include input from MRA, MRL and other stakeholders. Identify potential mitigation strategies and potential order of magnitude cost impacts. Summarize the key risks and mitigation strategies within the Feasibility Study Report.

2.7.2 Feasibility Study Report. Prepare a draft Feasibility Study Report summarizing the findings developed in Task 2. Submit the draft report to MRA and MRL for review. Conduct a review meeting to discuss comments on the report and then revise and submit a final version of the report.

2.7.3 Feasibility Study Review. Facilitate and conduct a review of the Feasibility Study Report with MRA, MRL, and other stakeholders. Document comments and feedback from the review participants.

Assumptions:

- Stakeholder Coordination
  - MRL's Temporary Occupancy Permit (TOP) application fee of $600 is included as a direct expense. Time to prepare TOP is included in stakeholder coordination with MRL.
- Survey
  - Bathymetric survey of the Clark Fork River is not included.
- Geotechnical
  - Geotechnical services are not required as part of the Feasibility Study.
- Structural Evaluation
  -
  - MRL will require a Temporary Occupancy Permit (TOP) to perform on-site bridge inspection.
  - Underwater inspection is not included.
  - Inspection can be performed during good weather (no snowfall, good visibility)
  - No critical deficiencies in the existing bridge are present that require more detailed review.
  - As-built plans accurately represent the in-situ structure with the exception of the main steel lattice girders. Field verification of lattice girder dimensions is included; however, it is assumed that all girders and all spans are identical.
  - Rapid removal of trail structure components to allow train traffic is not necessary or included as part of the feasibility study.
  - Rail traffic and bike/pedestrian use will not be concurrent. It is assumed that the trail will be closed if the bridge is open to train traffic.
- Drainage & Hydraulics

  - The hydrologic analysis used to inform the scour analysis will be limited to the methods outlined by the United States Geologic Survey (USGS) in SIR 2015-5019 (USGS Regression Equations and Gage Transfer) as well as, an independent regional frequency analysis.
  - Fees for procuring the effective FEMA model are included as a direct expense.
  - HDR will be provided a streambed gradation, or a gradation can be assumed using a referenced resource for the Clark Fork River.
  - No scour mitigation design will be performed in Phase I.
  - Bridge stormwater analysis is not included in Phase I and will be part of Phase II Concept Design.
- Trail Connections & Urban Design
  - West Broadway At-grade Railroad Crossing - It is understood and assumed that MRL's existing at-grade railroad crossing is planned to be removed.
  - A traffic impact study on West Broadway is not included in Phase I and is anticipated as part of Phase II Concept Design.
- Feasibility Study
  - An in-person Feasibility Study Review Meeting at MRA's office lasting 3-hrs is included for up to five (5) HDR team members.

Deliverables:

1. Stakeholder Meeting Minutes
2. Electronic file of survey map (.pdf and .dwg using AutoCAD Civil 3D 2018) [refer to DJ&A's scope]
3. Bridge Inspection Summary (.pdf)
4. Structural Technical Memorandum (.pdf)
5. Feasibility Study – draft and final (.pdf)

Task 3: Preliminary Conceptual Design

Description of Work: Prepare a preliminary conceptual design based on the constraints defined as part of Task 2. The intent is to advance the preliminary concept to depict the general characteristics and determine estimates of probable construction cost for planning purposes. Subsequent stakeholder coordination, public outreach, and refinement of concepts is anticipated to occur in Phase II.

Tasks:

3.1. Draft Memorandum of Understanding (MOU). Assuming MRA and MRL agree the project is feasible, the HDR team will develop a framework MOU for MRA and MRL to document understanding and agreement of key terms which will guide future phases of project. Key terms may include, but are not limited to, such items such as:

- Specific design criteria
- Maintenance requirements
- Railroad operational considerations
- Project approval processes
- Responsibilities for various costs.

3.2. Bridge Preliminary Concept Design. Prepare an exhibit that depicts the structure concept and typical section. Prepare an estimate of probable construction cost for the bridge related items.

3.3. Trail & Street Connection Preliminary Concept Design. Prepare exhibits that depict the North and South trail connections in concept. Prepare an estimate of probable construction cost for the trail connections to the bridge. **Refer to scope of services from DJ&A.**

3.4. Compile Estimates of Probable Cost.

Assumptions:

- Stakeholder coordination and public outreach is not included in this task and will be included in Phase II to advance the project concept.
- Lighting analysis and design is not included in Phase I and is anticipated to be added by amendment in Phase II.
- In providing opinions of probable cost, HDR has no control over cost or price of labor and materials, unknown or latent conditions of existing equipment or structures that might affect operation or maintenance costs, competitive bidding procedures and market conditions, time or quality of performance by operating personnel or third parties, and other economic and operational factors that might materially affect the ultimate the project construction cost or schedule. HDR, therefore, will not warranty that project costs will not vary from their opinions, analyses, projections, or estimates.

Deliverables:

1. Draft MOU (.docx)
2. Bridge Concept Exhibit (.pdf)
3. Trail & Street Connection Concept Exhibits (.pdf)
4. Estimate of Probable Cost (.pdf)

Missoula Redevelopment Agency
Bitterroot Trail-MRL Bridge Feasibility Study & Conceptual Design
HDR Design Services Fee Estimate

October 17, 2022

Work Item	Project Manager	Sr. Bridge Engineer	Sr Project Engineer	Bridge Engineer	Civil/Env Engineer	QC	CAD/EIT	Accounting & Admin
Task 1: Project Management								
1.1 Project Management	*64*							*16*
1.2 Project Meetings & Communication	*48*	*32*	*32*					
Task 1 Subtotal	**112**	**32**	**32**					**16**
Task 2: Feasibility Study								
2.1 Stakeholder Coordination		*26*	*70*	*28*				
2.2 Survey			*2*		*2*		*4*	
2.3 Structural Evaluation		*177*		*322*		*24*	*16*	
2.4 Drainage & Hydraulics			*16*		*92*	*11*		
2.5 Trail Connections & Urban Design			*8*	*4*	*6*			
2.6 Environmental Evaluation					*46*	*2*		
2.7 Prepare Feasibility Study	*14*	*36*	*46*	*18*	*4*	*6*	*12*	*12*
Task 2 Subtotal	**14**	**239**	**142**	**372**	**150**	**43**	**32**	**12**
Task 3: Conceptual Design								
3.1 Draft Memorandum of Understanding	*4*	*4*	*14*					*8*
3.2 Bridge Preliminary Concept Design		*8*		*24*			*40*	
3.3 Trail & Street Connection Preliminary Concept Design			*8*				*20*	
3.4 Compile Estimates of Probable Cost		*2*	*16*			*2*		*4*
Task 3 Subtotal	**4**	**14**	**38**	**24**		**2**	**60**	**12**
Total Hours (1350)	**130**	**285**	**212**	**396**	**150**	**45**	**92**	**40**
	10%	*21%*	*16%*	*29%*	*11%*	*3%*	*7%*	*3%*

DIRECT COST SUMMARY

Task	Total Hours	Total Direct Cost
Task 1: Project Management	192	$ 39,424.00
Task 2: Feasibility Study	1004	$ 193,468.80
Task 3: Conceptual Design	154	$ 24,320.00
Total Direct Cost (including overhead and profit)	1350	$ 257,212.80

DIRECT NONLABOR SUMMARY

Miscellaneous (Mylars, telephone, postage, copies, photos, etc.)									$500.00
MRL Temporary Occupancy Permit									$600.00
Travel (Airlines/meals/lodging)	Trips	2		Per Trip	$2,150.00				$4,300.00
Mileage	Miles	100		Per Mile	0.625				$62.50
TOTAL DIRECT NONLABOR									$5,462.50

OUTSIDE SERVICES AND SUBCONTRACTS

Survey & Trail Design - DJ&A	$78,426.50
	$0.00
	$0.00
	$0.00
TOTAL OUTSIDE SERVICES AND SUBCONTRACTS	$78,426.50

RECAPITULATION

Total Labor/ Overhead/Profit	$ 257,212.80
Total Direct NonLabor	$ 5,462.50
Total Outside Services & Subcontracts	$ 78,426.50
TOTAL ESTIMATED COST	**$ 341,101.80**