



Watertown Rock River Seawall

Wall Condition Assessment and Feasibility Study

Prepared for:

**City of Watertown
Watertown, Wisconsin**

July 2026

Watertown Rock River Seawall
Wall Condition Assessment and Feasibility Study



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Executive Summary

Situation

The City of Watertown owns a seawall located along the east side of the Rock River between the Cady St and Main St bridges. The southern end of the wall abuts a privately-owned building, and a parking lot and City Hall are located above the wall with varying slopes of turf down to the top of the wall. The full length of the wall is approximately 700 feet and is comprised of five sections listed below from south to north:

- A. Limestone masonry gravity wall with top elevation at approximately 814.2 feet¹;
- B. Post-and-panel wall with top elevation at approximately 814.0 feet;
- C. Post-and-panel wall with top elevation at approximately 812.0 feet;
- D. Limestone masonry gravity wall with top elevation at approximately 812.0 feet.
- E. Limestone masonry gravity wall with top elevation at approximately 812.0 feet north of parking lot.

Per the request-for-proposal, Section E was not meant to be included in the scope of the study. However, given the wall's similarity to Section D and that each of the alternatives explored could easily be applied to Section E, this study includes this segment of the wall. A photograph of Sections A through D is shown in Figure 1. Section E is not shown but is identical to Section D.



Figure 1. Each section of seawall along the east bank of the Rock River.

¹ All elevations refer to the North American Vertical Datum of 1988 (NAVD88).

Tasks

Ayres was retained by the City of Watertown to evaluate the condition of the existing wall, propose options for wall remediation and/or replacement, and explore funding opportunities applicable to the project.

Actions

To complete the feasibility study, we:

1. Inspected the existing wall, assessing its current condition and noting visible utilities near or passing through the wall. A full topographic survey was not conducted per the City's direction.
2. Reviewed geotechnical and background information supplied by the City or publicly available online.
3. Developed three remediation/replacement alternatives: 1) post and panel wall, 2) precast modular block wall and 3) shotcrete repair and limited wall replacement.
4. Developed concept-level drawings of the three wall modification alternatives.
5. Compiled and described the pros and cons associated with each of the three modification alternatives.
6. Estimated total project costs—including construction and engineering services (design/permitting, bidding, and construction administration)—for each of the modification alternatives.
7. Provided recommendations to assist the City with determining the next steps and described available funding mechanisms.

Assessment

This section contains detailed field observations that were made during the inspection for each section of the wall. The general conditions of each section are summarized based on a rating scale of good, fair, poor, and critical condition, and for the purposes of this report, these are defined as follows:

Good: No deficiencies, like-new condition.

Fair: Some minor deterioration of structural elements, but they remain sound.

Poor: Moderate to advanced deterioration of structural elements.

Critical: Major deterioration of structural elements, imminent failure condition.

Section A

Section A is comprised of a limestone masonry gravity wall with a concrete cap (see Figure 2) approximately 77 feet long and 8.5 feet tall. The retained fill is sloped (3.1H:1.0V) up to the adjacent parking lot. A plaster overlay of sorts was applied on the exposed face of the wall at some point, though most of it has failed, thereby exposing the original masonry. Almost no mortar exists between joints, and a significant void, measuring approximately 4 feet high by 8 feet wide and 5 feet deep, has formed below the concrete cap where the surface drain extends from the adjacent parking lot, as shown in Figure 3. City personnel stated that water was observed actively seeping from the void, most likely coming from an abandoned water main that terminated behind the wall. Since addressing the leaking watermain, the seepage has ceased, but this most likely explains the cause for the size of the void.

Additionally, the drainage from the parking lot meant to be carried by the surface drain may be finding its way to the backside of the wall, also attributing to the loss of material and the large void.



Figure 2. View of Section A looking southeast.



Figure 3. Location of void below surface drain (left) and depth of void (right).

The concrete cap along the top of the wall is approximately 18 inches wide by 12 inches thick. Spalling exists along most of the riverward edge and exposed face, but no exposed rebar was observed here. The railing along the top of the wall has failed with only a few posts still embedded in concrete. This poses a significant hazard to anyone traversing near the wall.

Overall, Section A is in a critical condition. Given its proximity to the adjacent building and parking lot and given the impact to these structures should the wall completely fail, this section is considered the highest risk compared to other sections of the wall.

Section B

This section is a post-and-panel wall, approximately 80-feet-long and 8-feet-tall, which consists of steel wide-flange or H-pile sections driven into the subgrade or socketed into bedrock with precast concrete panels inserted between the posts to retain fill. Section B is of similar height and length to Section A but has a steeper backslope of 2.4H:1.0V. A chain-link fence is mounted to the top of the wall. No visible utilities were noted in Section B.

The top of the Section B wall has deflected approximately 24 inches towards the river, leaving several voids between the soil and wall and areas of very loose soil. Figure 4 demonstrates the extent of deflection in Section B. Although plans or design computations for this section are not available, it is assumed the excessive deflection is due to insufficient embedment into competent subgrade and/or bedrock.



Figure 4. View of extreme deflection in Section B.

Overall, the structural elements of Section B are in fair condition, but due to the deflection of the wall, the condition of the wall is considered poor-to-critical.

Section C

Section C is similar to Section B, but the top of the wall is slightly shorter by approximately 2 feet. The overall length is approximately 93 feet. Near the interface of Sections B and C, the backslopes begin to flatten to approximately 4H:1V. A surface drain extends from the parking lot to the south end of Section C intended to pass runoff over the top of the wall. There is also an 18-inch diameter corrugated metal pipe (CMP) storm sewer outfall that daylights and discharges flow over the top of the wall. Given its proximity to the surface drain extending from the parking lot, it is assumed this storm sewer outfall discharges flow collected farther inland, presumably from N. 1st St.

Section C experienced similar deflection as Section B, with large voids between the backfill and wall as seen in Figure 5. As mentioned in Section A, runoff that spills over the surface drain into the retained fill may be contributing to the loss of material behind the wall. The inspection also did not note any presence of geotextile on the backside of the precast panels; geotextile would help prevent the migration of soils through the panel joints.



Figure 5. Lost fill in Section C. Surface drain from parking lot seen near top of photo.

Similar to Section B, the structural elements of Section C are in fair condition, but overall, the wall is in poor-to-critical condition due to the deflection and the loss of soils behind the wall.

Section D

Section D extends from the north end of Section C to the north end of the adjacent parking lot. It consists of an approximately 206-foot-long and 10-foot-high stone retaining wall constructed of irregular, angular fieldstone forming a vertical face. The stones appear to be stacked without any visible mortar. A concrete cap appears to have been added to the top of the wall to provide an anchor location for the chain link fence atop the wall. A 24-inch diameter reinforced concrete pipe (RCP) storm sewer outfall daylights and discharges flow over the top of the wall. It is assumed this storm sewer outfall collects runoff from Jones St.

Most of Section D is covered in vegetation, which makes monitoring the condition of this section difficult from land. However, several sections of Section D were noted to have masonry completely absent and retained fill exposed. Overall, Section D is in poor-to-critical condition.



Figure 6. Failed portion of Section D.

Section E

Section E extends from the north end of Section D to the Cady St bridge. It consists of an identical composition as Section D (irregular, angular fieldstone with concrete cap and chain-link fence). Like Section D, no mortar is visible between the joints, and several portions of fieldstone have completely failed as shown in Figure 7.

What appears to be an old boat launch is located near the north end of Section E (see Figure 8). If no longer in use, the steel platform and stairs should be removed for safety concerns.

Overall, Section E is in poor-to-critical condition.



Figure 7. Failed segment of wall along Section E.



Figure 8. Old boat launch along Section E.

[Assessment Summary](#)

Given the proximity of Section A to the parking lot and adjacent building, complete failure of this wall section would have the greatest impact; as such, its replacement or remediation should be highest

priority. Similarly, the impacts to adjacent infrastructure should complete failure occur can be used to prioritize the other wall sections – Sections B and C with higher priority and Section D and E with lower priority.

Background Information

In 2016, Ayres completed a 90% design for replacement of the entire seawall (Sections A through E), as well as a riverwalk and storm sewer upgrades for the adjacent parking lot. The scope of that project included a topographic survey and geotechnical investigation.

Review of the topographic survey confirms several assumptions stated previously, namely the presence of a watermain behind the Section A wall (now abandoned according to City personnel) and storm sewer details (size and alignment). The survey also indicates the presence of numerous buried fiber optic and electrical utilities in the retained fill area of Section E.

Review of the geotechnical report and borings indicate the presence of loose and soft silty sands and clay overlying very dense and stiff gravel and sand varying in elevation (EL 795 to EL 805). Most likely, the poor fill materials (both in type and lack of compaction) have attributed to the deflections noted in Sections B and C and portions of failed wall in Section D and E. Furthermore, any wall replacement alternative will need to consider this poor fill material as well as the varying elevation of more competent bearing material. More shallow competent bearing material along the majority of the site may deem one alternative more feasible than another; as such, a more thorough geotechnical investigation is necessary to provide more information along the entire length of wall.

Alternatives

Alternative 1: Post and Panel Wall

The 2016 design featured a post and panel wall along the entire length of the seawall and is represented as Alternative 1 as shown in Appendix A. This design consists of vertical wide-flange steel sections (H-piles) installed in concrete-filled casings socketed into the very dense and stiff subgrade layer. Precast concrete panels span between the piles to retain the soil between the parking lot and the water's edge.

Advantages of the post and panel wall include the following:

- The post and panel wall can be installed with minimal formwork and cast-in-place concrete, reducing construction time and weather-related delays.
- Post and panel walls do not require a large excavation footprint due to the absence of a footing.
- With precast panels, the installation of the wall is expedited compared to a typical cast-in-place concrete wall. In addition, the wall can be installed incrementally as excavation progresses, allowing controlled sequencing.
- Casings can be filled by tremie pour (non-dewatered) so cofferdams should not be needed with a lowered pool (see Other Considerations below).
- Form liners and stains can be used in the production of precast panels to provide textured and colored wall faces resulting in more desirable aesthetics.
- Since the piles are driven to bedrock or until reaching the required bearing capacity, they can be installed through mixed soils or obstructions.

- The design of the wall can accommodate existing utilities, particularly storm drains that outlet to the river.

Disadvantages of the post and panel wall include the following:

- Exposed steel piles may require coating or additional protection to achieve the desired service life.
- Price of steel is high and can be volatile.

We updated the cost estimate from the 2016 project, excluding the riverwalk and other items not needed for wall replacement. The total cost of implementing the post and panel wall alternative is approximately \$3,333,548.00.

Alternative 2: Precast Modular Block Wall

Alternative 2 consists of a precast modular block retaining wall extending the entire length of the seawall. The wall would be constructed using interlocking precast concrete blocks stacked to the design height to retain the soil between the parking lot and the water's edge. The top elevation of the wall is raised to flatten the slopes between the wall and parking lot/City Hall. This helps reduce the lateral load on the wall from sloped backfill as well as provides easier accommodation for a potential future riverwalk. The modular block units function as a gravity wall system, relying on their mass and internal shear keys for stability. Conceptual details of Alternative 2 are presented in Appendix A.

Advantages of a precast modular block wall include the following:

- The precast modular block wall can be installed with minimal formwork and cast-in-place concrete, reducing construction time and weather-related delays.
- The interlocking block geometry allows efficient construction sequencing.
- Modular block walls offer improved aesthetics with multiple block textures and colors available.
- The design of the wall can accommodate existing utilities, particularly storm drains that outlet to the river.

Disadvantages of a precast modular block wall include the following:

- Increasing the wall height to allow for a more level backfill between the wall and parking lot may require geogrid reinforcement, which increases excavation limits behind the wall and may conflict with utilities and/or the adjacent parking lot.
- Modular block walls rely on suitable foundation soils for adequate bearing pressure. Inadequate soil may require over-excavation and imported backfill.
- The large block units require adequate equipment access for handling and placement.

We estimate the total cost of installing the precast modular block wall alternative to be approximately \$2,310,110.00.

Alternative 3: Shotcrete and Limited Wall Replacement

Alternative 3 consists of the installation of a shotcrete overlay of Sections A, D, and E of the existing wall and full replacement of Sections B and C. Shotcrete, also known as gunite, consists of flowable concrete projected at high velocity through a hose onto a surface in layers to create a high-strength structural

element. Shotcrete is used often to stabilize open cuts in excavations as well as to add surface overlays for existing structural elements.

Given the severe deflection of the walls in Sections B and C, the compromised soil around the posts, and the lack of information on the design of these walls, a remediation effort of these existing sections is not viable. Either the post and panel wall or the modular block wall alternative would be required for Sections B and C; the modular block wall is presented given its lower cost.

Conceptual details of Alternative 3 are presented in Appendix A.

Advantages of a shotcrete repair and limited wall replacement include the following:

- Shotcrete eliminates the need to demolish Sections A, D and E, while extending the service life of these sections.
- Remediating existing sections to the extent possible lowers the project cost compared to full replacement.
- Shotcrete can receive textured finishes to match those of the modular block wall to provide a cohesive look along the entire wall.

Disadvantages of shotcrete repair and limited wall replacement include the following:

- Given the riverine environment, the service life of the shotcrete repair could vary considerably, from a few years to possibly 15-20 years.
- Shotcrete requires a specialized contractor and installation equipment.
- Shotcrete may not be aesthetically pleasing without textured finishes.
- The short segment of precast modular block wall does not take advantage of economy of scale.

We estimate the total cost of the shotcrete/limited wall replacement alternative to be approximately \$1,493,120.00.

Other Considerations

For Alternatives 1, 2, and 3, it was assumed the upstream pool of Watertown's Lower Dam, which is located downstream of the project site, would be lowered during construction. While Alternative 1 can be achieved without a cofferdam, Alternatives 2 and 3 would require work to be completed in the dry. All three options would benefit from working with a lowered pool, and dewatering costs, especially for a wall length over 700 linear feet, would be substantial for a large cofferdam, greatly affecting Alternatives 2 and 3. Although a drawdown would negatively impact the hydropower entity's ability to generate power and associated income, the City could save substantially on construction costs.

Full replacement of the wall with steel sheet piling was briefly considered, but given the shallow depths to bedrock/very stiff material, driving sheets would be rather difficult. Furthermore, sheet embedment would be limited and would most likely require a tie-back system of deadmen or an anchor wall. This would have a greater impact on the parking lot and be very costly, so this alternative was not further developed.

Replacing some of the wall sections with sloped riprap and turf was considered during this study. This is viable in portions of Sections C, D, and E. Regrading would be cheaper than full replacement of the wall but several factors may counter the perceived financial benefit. Slopes would vary from 4H:1V to 2H:1V

(or slightly steeper in some areas) making some areas unsafe to traverse for the public and difficult to mow. Also, several areas would still require some new structural elements (modular block wall, cast-in-place wall, etc.) to accommodate grading around wall segments to remain and to prevent grading from impacting the parking lot, especially near its northern end. Many utilities near the City Hall along Section E would be impacted; some of these may be essential to the communications tower located on the west side of the building, presumably used for emergency dispatch. Sloping the grade along these sections may also negatively impact the City's desire for a riverwalk between Cady St and Main St. Steep slopes may leave insufficient room for a ground surface path or may require a suspended boardwalk. Given some of these negative impacts and the lack of a formal plan for the riverwalk, this riprap alternative was not fully developed. However, this option could be revisited when riverwalk plans are clearer.

Summary of Alternatives

Estimated total project costs for all three alternatives are summarized in Table 1. For each alternative, costs include engineering services (design, bidding, and construction administration), construction, and permitting.

Table 1. Estimated Total Project Costs

Alternative	Estimated Total Project Cost
Alternative 1: Post and Panel Wall	\$3,333,548.00
Alternative 2: Precast Modular Block Wall	\$2,310,110.00
Alternative 3: Shotcrete Repair and Limited Wall Replacement	\$1,493,120.00

A breakout of each cost estimate is presented in Appendix B. A contingency range from -30% to +50% of construction costs is applied, which is standard practice for cost estimating projects at the conceptual stage.

Floodplain Impacts

The project area is within a FEMA Special Flood Hazard Area (SFHA)—specifically Zone AE—which will be inundated by the 100-year flood. We do not anticipate that the alternatives described in this report will impact the Rock River's regulatory floodway, as 100-yr water surface elevations in the FEMA floodplain map are below the existing walls' top elevations.

Funding Opportunities

The Wisconsin DNR Municipal Flood Control Grant Program provides financial assistance to local governments for projects that reduce flood risks, mitigate flood hazards, and enhance community resilience. Grant cycles occur biennially, with the next application deadline scheduled for March 2028. The program typically reimburses up to \$500,000 in eligible project costs and requires a 50 percent local match.

The Community Development Block Grant (CDBG) Public Facilities Program offers funding to municipalities for projects that improve or protect publicly owned infrastructure and facilities, with priority given to those benefiting low to moderate income (LMI) residents or addressing an urgent local need. This program also requires a local match; however, no maximum award amount is specified. Applications are accepted annually in May. The addition of a riverwalk at the project site would likely increase the likelihood of receiving this grant.

More information regarding each of these opportunities, including links to respective websites, is included in Appendix C.

Conclusions

If cost is the City's primary concern, then Alternative 3 (shotcrete and limited wall replacement) will likely prove to be the lowest-cost alternative. While this option will add some longevity to the lifecycle of the existing masonry walls, the extent of that longevity is difficult to estimate. If a long-term repair is the City's primary concern, then Alternatives 1 and 2 (post and panel wall or precast modular block wall) are likely the best alternatives.

Comparing Alternatives 1 and 2, Alternative 1 may be a better option if a larger geotechnical investigation reveals competent subgrade is on average deeper than what is currently known.

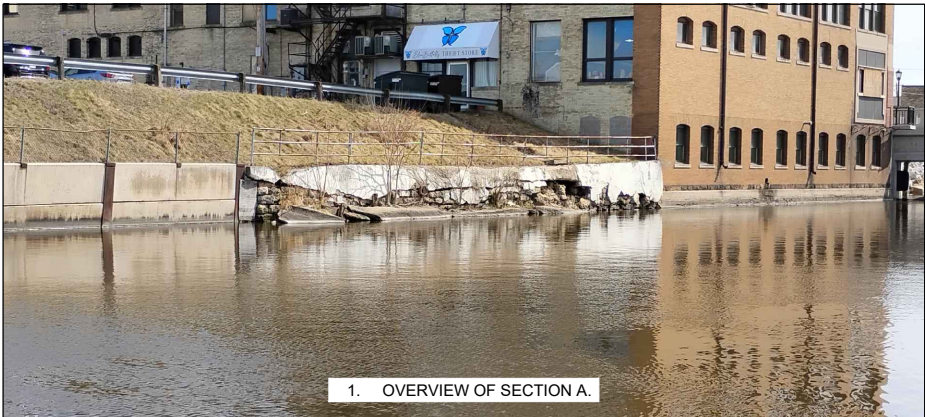
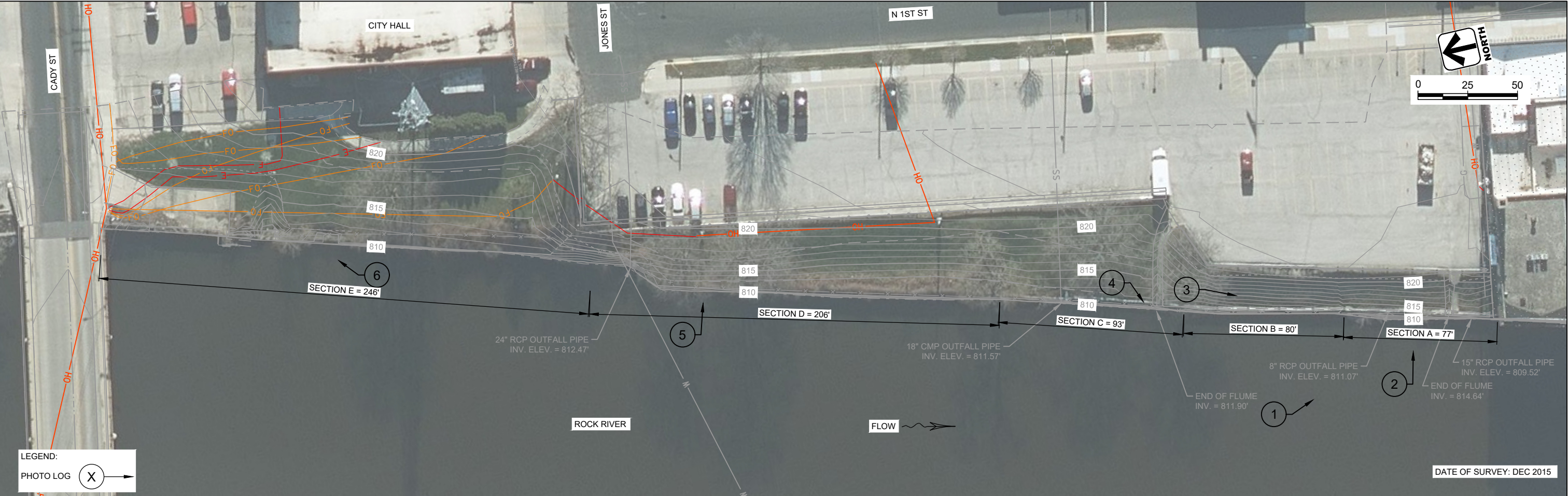
One other deciding factor may be the City's eventual plan, if any, to develop a riverwalk between the Cady St and Main St bridges. Alternatives 1 and 2 (Post and Panel Wall or Modular Block Wall) provide the greatest flexibility with accommodating a ground-surface walkway close to the river's edge. Alternative 3 keeps the existing slopes the same, which may not be conducive to construction of a riverwalk.

While all the alternatives have been presented as replacement or remediation options of the entire length of wall, each option could be scaled into phases depending on overall budget. However, spanning the project over multiple phases would increase the overall cost.

Study Limitations

The goal of this feasibility study is to provide the City of Watertown with information that can be used to assist with developing a plan to repair the existing seawall. Technical analyses completed for this study were of an appropriate level of detail for the planning phase of a project, but they are not of a design level of detail. Therefore, the alternatives presented may be subject to modification and refinement during the design phase. Furthermore, the cost estimates provided here are engineers' opinions of probable total project costs. We based these cost estimates on published construction data and our experience with similar local projects. Estimates for engineering fees, which include design and permitting, bidding, and construction administration, are generally 10 to 20 percent of the total construction costs. We believe our cost estimates to be conservative and appropriate for budgetary planning purposes. However, we do not guarantee that actual project costs will fall within the estimates provided.

Appendix A
Conceptual Drawings



1. OVERVIEW OF SECTION A.



2. LARGE VOID IN SECTION A.



3. LARGE DEFLECTION IN SECTION B.



4. LOST FILL IN SECTION C.



5. TYPICAL VIEW OF SECTION D.



6. VIEW OF SECTION E.

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SEAWALL FEASIBILITY STUDY
CITY OF WATERTOWN



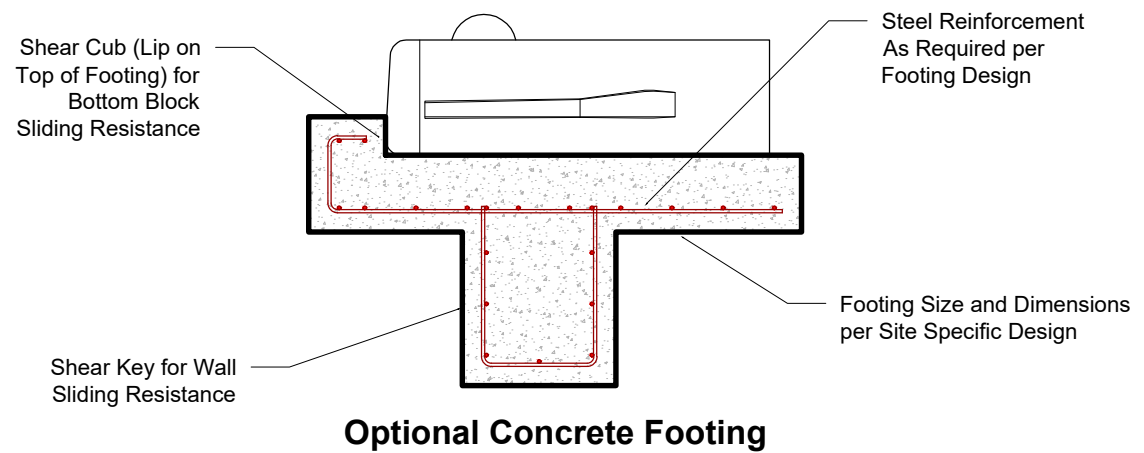
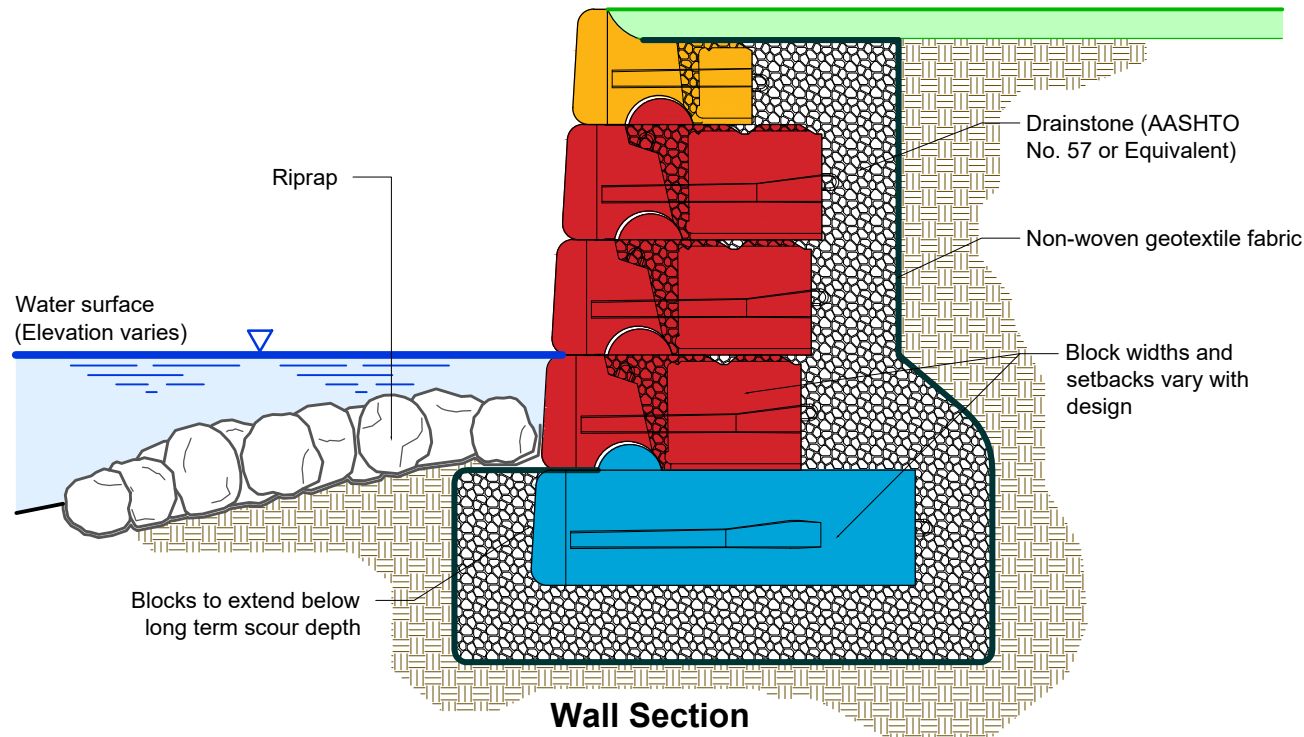
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DRAWING TAKEN FROM 90% PLAN
SUBMITTAL FROM 2016 AYRES PROJECT.

SHEET NO.

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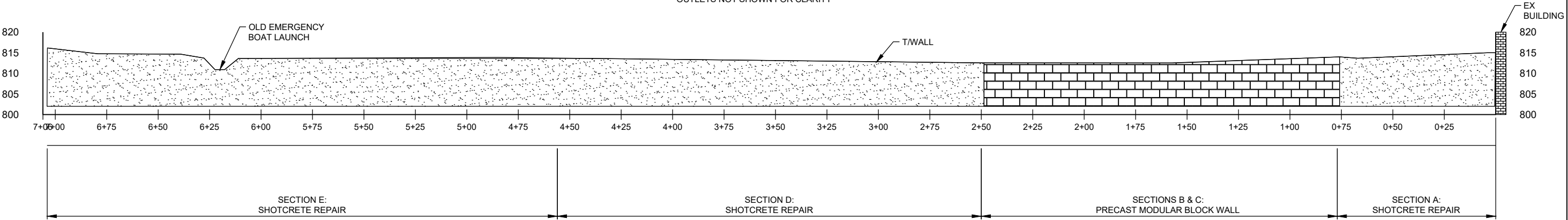
SEAWALL FEASIBILITY STUDY
CITY OF WATERTOWN



ALTERNATIVE B



Profile View of Wall Looking Landward
Exaggeration: 2
CHAIN-LINK FENCE AND STORM SEWER
OUTLETS NOT SHOWN FOR CLARITY



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SEAWALL FEASIBILITY STUDY
CITY OF WATERTOWN



ALTERNATIVE C

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Appendix B
Cost Estimates



Opinion of Probable Cost
July 2026

Watertown Seawall Repairs
City of Watertown
Alternative A: Post and Panel Wall

DESCRIPTION		UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
1	Mobilization	LS	1	\$ 252,400.00	\$ 252,400.00
2	Clearing and Grubbing	LS	1	\$ 2,500.00	\$ 2,500.00
3	Site Preparation	LS	1	\$ 2,000.00	\$ 2,000.00
4	Electrical Removals	LS	1	\$ 3,000.00	\$ 3,000.00
5	Erosion Control	LS	1	\$ 10,000.00	\$ 10,000.00
6	Excavation	LS	1	\$ 45,000.00	\$ 45,000.00
7	Demolition and Removal of Sections A - E	LS	1	\$ 65,000.00	\$ 65,000.00
8	Backfill Structure	TON	1260	\$ 47.50	\$ 59,850.00
9	Breaker Run	TON	990	\$ 20.00	\$ 19,800.00
10	Concrete Masonry (Including Rebar)	CY	111	\$ 1,000.00	\$ 111,000.00
11	Concrete Masonry (Drilled Shafts)	CY	570	\$ 120.00	\$ 68,400.00
12	Structural Steel HS	LB	300850	\$ 4.00	\$ 1,203,400.00
13	Rubberized Membrane Waterproofing	SY	4	\$ 50.00	\$ 200.00
14	Painting	LS	1	\$ 50,000.00	\$ 50,000.00
15	Concrete Staining	SF	9100	\$ 3.00	\$ 27,300.00
16	Architectural Surface Treatment	SF	7850	\$ 13.00	\$ 102,050.00
17	Riprap	TON	355	\$ 80.00	\$ 28,400.00
18	Pipe Underdrain Wrapped 6-Inch	LF	730	\$ 17.00	\$ 12,410.00
19	Geotextile Type SAS	SY	750	\$ 3.00	\$ 2,250.00
20	Geotextile Type HR	SY	550	\$ 5.00	\$ 2,750.00
21	Foundation Drilling	LF	2120	\$ 94.00	\$ 199,280.00
22	Precast Panels for Post and Panel Walls	SF	8080	\$ 35.00	\$ 282,800.00
23	Manholes 4x4-FT	EA	3	\$ 5,250.00	\$ 15,750.00
24	Inlets 2x3-FT	EA	3	\$ 2,350.00	\$ 7,050.00
25	Inlet Covers Type C	EA	3	\$ 750.00	\$ 2,250.00
26	Inlet Covers Type H-S	EA	2	\$ 950.00	\$ 1,900.00
27	Salvage Inlet Cover	EA	1	\$ 500.00	\$ 500.00
28	12-Inch RCP Class III Storm Sewer	LF	44	\$ 100.00	\$ 4,400.00
29	15-Inch RCP Class III Storm Sewer	LF	65	\$ 122.00	\$ 7,930.00
30	24-Inch RCP Class III Storm Sewer	LF	24	\$ 180.00	\$ 4,320.00
31	18-Inch CMP Storm Sewer	LF	12	\$ 150.00	\$ 1,800.00
32	Railing	LF	700	\$ 225.00	\$ 157,500.00
33	6" Topsoil	SY	2100	\$ 4.00	\$ 8,400.00
34	Seeding	SY	2050	\$ 7.00	\$ 14,350.00
35	Seeding Mixture: Native Hill Mix	SF	450	\$ 0.78	\$ 350.00
Construction Subtotal					\$ 2,776,290.00
Range Appropriate for Class 4 Cost Estimate				-30%	\$ 1,943,403.00
				+50%	\$ 4,164,435.00
WDNR Permit Fees					\$ 2,000.00
Fees Total					\$ 2,000.00
Engineering/Construction Administration (20% of Construction Subtotal Costs)					\$ 555,258.00
Engineering Total					\$ 555,258.00
Total Project Cost				Low (-30%)	\$ 2,500,661.00
				Estimate	\$ 3,333,548.00
				High (+50%)	\$ 4,721,693.00



Opinion of Probable Cost
July 2026

Watertown Seawall Repairs
City of Watertown
Alternative B: Precast Modular Block Wall

DESCRIPTION		UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
1	Mobilization	LS	1	\$ 165,800.00	\$ 165,800.00
2	Dewatering	LS	1	\$ 100,000.00	\$ 100,000.00
3	Clearing and Grubbing	LS	1	\$ 2,500.00	\$ 2,500.00
4	Site Preparation	LS	1	\$ 2,000.00	\$ 2,000.00
5	Erosion Control	LS	1	\$ 10,000.00	\$ 10,000.00
6	Excavation	LS	1	\$ 75,000.00	\$ 75,000.00
7	Demolition and Removal of Sections A - E	LS	1	\$ 65,000.00	\$ 65,000.00
8	Remove Driven H-Piles	LF	100	\$ 120.00	\$ 12,000.00
9	Modular Block Wall	LF	700	\$ 1,200.00	\$ 840,000.00
10	Leveling Pad Rock	CY	265	\$ 80.00	\$ 21,200.00
11	Drainage Rock	CY	4200	\$ 80.00	\$ 336,000.00
12	4" Drainage Pipe	LF	875	\$ 25.00	\$ 21,875.00
13	Filter Fabric	SY	3500	\$ 5.00	\$ 17,500.00
14	Riprap	TON	355	\$ 80.00	\$ 28,400.00
15	Manholes 4x4-FT	EA	3	\$ 5,250.00	\$ 15,750.00
16	Inlets 2x3-FT	EA	3	\$ 2,350.00	\$ 7,050.00
17	Inlet Covers Type C	EA	3	\$ 750.00	\$ 2,250.00
18	Inlet Covers Type H-S	EA	2	\$ 950.00	\$ 1,900.00
19	Salvage Inlet Cover	EA	1	\$ 500.00	\$ 500.00
20	12-Inch RCP Class III Storm Sewer	LF	44	\$ 100.00	\$ 4,400.00
21	15-Inch RCP Class III Storm Sewer	LF	65	\$ 122.00	\$ 7,930.00
22	24-Inch RCP Class III Storm Sewer	LF	24	\$ 180.00	\$ 4,320.00
23	18-Inch CMP Storm Sewer	LF	12	\$ 150.00	\$ 1,800.00
24	Railing	LF	700	\$ 225.00	\$ 157,500.00
25	6" Topsoil	SY	2100	\$ 4.00	\$ 8,400.00
26	Seeding	SY	2050	\$ 7.00	\$ 14,350.00
Construction Subtotal					\$ 1,923,425.00
Range Appropriate for Class 4 Cost Estimate				-30%	\$ 1,346,397.50
				+50%	\$ 2,885,137.50
WDNR Permit Fees					\$ 2,000.00
Fees Total					\$ 2,000.00
Engineering/Construction Administration (20% of Construction Subtotal Costs)					\$ 384,685.00
Engineering Total					\$ 384,685.00
Total Project Cost				Low (-30%)	\$ 1,733,082.50
				Estimate	\$ 2,310,110.00
				High (+50%)	\$ 3,271,822.50



Opinion of Probable Cost
July 2026

Watertown Seawall Repairs
City of Watertown
Alternative C: Shotcrete Repair and Limited Wall Replacement

DESCRIPTION		UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
1	Mobilization	LS	1	\$ 103,900.00	\$ 103,900.00
2	Dewatering	LS	1	\$ 100,000.00	\$ 100,000.00
3	Clearing and Grubbing	LS	1	\$ 2,500.00	\$ 2,500.00
4	Site Preparation	LS	1	\$ 2,000.00	\$ 2,000.00
5	Erosion Control	LS	1	\$ 7,500.00	\$ 7,500.00
6	Excavation	LS	1	\$ 20,000.00	\$ 20,000.00
7	Demolition and Removal of Section B and C Walls	LS	1	\$ 6,400.00	\$ 6,400.00
8	Remove Driven H-Piles	LF	100	\$ 120.00	\$ 12,000.00
9	Wall Preparation and Shotcrete Installation	SF	5290	\$ 100.00	\$ 529,000.00
10	Modular Block Wall	LF	173	\$ 1,400.00	\$ 242,200.00
11	Leveling Pad Rock	CY	65	\$ 80.00	\$ 5,200.00
12	Drainage Rock	CY	1040	\$ 80.00	\$ 83,200.00
13	4" Drainage Pipe	LF	220	\$ 25.00	\$ 5,500.00
14	Filter Fabric	SY	865	\$ 5.00	\$ 4,325.00
15	Riprap	TON	355	\$ 80.00	\$ 28,400.00
16	Chain link fence	LF	700	\$ 121.00	\$ 84,700.00
17	6" Topsoil	SY	525	\$ 4.00	\$ 2,100.00
18	Seeding	SY	525	\$ 7.00	\$ 3,675.00
Construction Subtotal					\$ 1,242,600.00
Range Appropriate for Class 4 Cost Estimate				-30%	\$ 869,820.00
				+50%	\$ 1,863,900.00
WDNR Permit Fees					\$ 2,000.00
Fees Total					\$ 2,000.00
Engineering/Construction Administration (20% of Construction Subtotal Costs)					\$ 248,520.00
Engineering Total					\$ 248,520.00
Total Project Cost				Low (-30%)	\$ 1,120,340.00
				Estimate	\$ 1,493,120.00
				High (+50%)	\$ 2,114,420.00

Appendix C
Funding Opportunities

Funding Opportunities - Watertown Rock River Seawall

Eligible Activities	Agency	Program	Description	Best Fit Project Types	Eligibility Requirements	Match Requirement	Restrictions or Requirements	Deadline
Feasibility Study	DEHCR	CDBG-PLNG	Funds engineering reports and feasibility studies tied to future public facility improvements	when deteriorating riverfront infrastructure affecting public safety; strong documentation of need is critical (failing structure, public risk, erosion impacts)	Meets LMI objective at 52%	2:1	Must tie to a future CDBG-PF application	May 2027
Design & Construction	DEHCR	CDBG – Public Facilities (CDBG-PF)	Supports public infrastructure construction and improvements	Eligible for: Streets, drainage, and potentially river-adjacent retaining structures tied to infrastructure	Meets LMI objective at 52%	2:1	Requires EA and resolution from council	May 2027
Design & Construction	WDNR	Municipal Flood Control Grants	Funds flood control structures (levees, floodwalls, etc.)	- Structural shoreline protection - Floodwall-type retaining systems - Land/easement acquisition if needed	Strong alignment if wall protects public infrastructure or developed area from flooding/erosion	\$500K 1:1 Match	Requires EA and resolution from council	March 2028