COOPER ENGINEERING

FEASIBILITY STUDY, April, 2023

TOWN OF LA POINTE

Big Bay Town Park Beach Access

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PROFESSIONAL ENGINEER
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Contents

1. EXECUTIVE SUMMARY

Cooper Engineering was hired to perform a study to determine the feasibility of replacing the walkway and pedestrian bridge at Big Bay Town Park in the Town of La Pointe, Wisconsin on Madeline Island. The main focus was determining what kind of handicap-accessible options there are to replace the current walkway and what those options might cost. After visiting the site and discussing the project with officials of the town there were three alternatives that were believed to be favorites. Each of these alternatives as well as a fourth alternative proposed by a local contractor, Arnie Nelson of Nelson Construction, are discussed in detail below.

In each of the alternatives presented below a key design feature was to ensure that the walkway is built to be ADA compliant meaning at a slope of 5% (a vertical drop of 5 feet for every 100 feet of length) or less. Upon initial investigation using Ashland County GIS contour data the end of the bridge across the lagoon is approximately 20-25' below the start of the current walkway. At 5% slope the walkway including the bridge would have to be 400-500 feet in length to maintain ADA compliance. Each of these alternatives were conceptually designed with this factored in.

Cooper Engineering leans towards Alternative 1 – the Elevated Walkway as the preferred alternative. This is less of a grading/poured sidewalk project and more of a structural walkway project. While this Alternative is estimated to cost approximately 40% more than the least costly alternative, it is believed to provide the best views, and the best aesthetics when being viewed. How successful the pursuit of grant funding is will likely determine whether this more costly alternative with better aesthetics is feasible financially.

Of Alternatives 2 through 4 (all sidewalk/grading projects, other than the lagoon-crossing bridge) Alternative 4 may be the most intriguing. This is the alternative suggested by Mr. Nelson for practicality (other than needing land) and the lowest estimated construction cost. Its intent is to save grading costs by taking advantage of an existing natural valley; fit an ADA-slope-compliant sidewalk to the natural lay of the land. It would require a substantial portion of the project to be built on land that is currently owned by the State of Wisconsin. The Town of La Pointe owns nearby land that interests the state. Could a land-swap be brokered to accommodate this alternative? Mr. Nelson proposed this alternative in the dead of the '22/'23 winter with deep snows. This alternative has not yet been walked when the lay of the land is easily seen. It is to be determined if it would minimize grading needs very substantially.

Alternative 3 is probably the most practical (but least exciting) alternative. It is a grading/sidewalk alternative roughly on the same beach access route as the existing pathway.

2. BRIDGE INFORMATION (applies to all alternatives)

With all four alternatives, the current bridge is going to be replaced. The existing timber bridge on timber/rock crib piers has served the park very well. It is, though, reaching the end of its useful life, and access to the bridge is not handicap-accessible. After discussions regarding

general costs for various bridge material types, and maintenance, a single-span prefabricated steel bridge was assumed for all alternatives. To blend the structure into the landscape weathering steel was assumed for the structural members. The decking would be wood planking, and the railing could be wood or other material to mitigate staining on hands/clothing from the weathered steel protective coating (rust colored). Various aesthetics can be added to the bridge for an increased cost. The bridge would be designed to meet AASHTO standards for pedestrian bridges – at a nominal 8-foot width that would require designing for the live load of an occasional maintenance vehicle of weight 10,000 pounds. It will likely be necessary to set the bridge at (or close to) the maximum ADA-compliant slope of 5% to be able to drop a portion of the overall 20-25 feet of vertical distance using the bridge's length as well as the length of the path. A bridge length of 150 feet and a nominal walkway width of 8 feet is assumed for all alternatives. Detailed survey in a project design phase may allow slightly decreasing the bridge length. According to the Contech representative this maximum slope can be built with minimal issues.

Cost estimates

To develop estimates for a new bridge a representative from Contech Engineered Solutions was contacted. The tables below show the estimated purchase price for a "connector truss" style bridge (parallel top and bottom chords; not the greatest aesthetics, especially when without camber) with bridge widths of 8,10, and 12 feet. In each of these estimates wood planking was used as the decking material. In a normal (easily accessible site) bridge replacement scenario the total cost of a prefabricated steel bridge project is generally approximately double the bridge purchase cost. With the unique scenario of having to get the bridge out to the island, and then to a potentially challenging site, the Contech representative opined overall costs may get as high as 3-4 times the bridge purchase price estimate. Additional materials and design alternatives can be added to this basic design, but costs would be increased with each addition. A "keystone" or "bowstring" design (more appealing aesthetics) would increase costs by 15-20 percent. With these various factors we estimate the bridge purchase/shipping/abutment construction/installation to cost approximately $794,000.

Timeline

As of March 2023, Contech recommended planning on a lead time of approximately one year from the time a bridge is ordered to the time the bridge is delivered on-site.

Bridge Purchase Cost Estimates per discussions with ConTech Rep, December 2022:

Bridge Length (ft)	Bridge Width (ft)	Purchase Cost ($)
120	8	165,000
120	10	190,000
120	12	217,000

Bridge Length (ft)	Bridge Width (ft)	Cost ($)
150	8	245,000
150	10	266,000
150	12	305,000

Notes from discussion with Contech Rep

- Bridge estimates are based on Parallel cord with weathering steel design.
- Keystone or bowstring design would increase cost by 15-20 percent.
- Various aesthetics can be added to the bridge for increased cost.
- Typical project cost (bridge, installation, abutment construction, etc.) is double the bridge purchase cost. This situation (island, site w difficult access) may be 3-4 times greater??? Cooper opines 2.7 times greater (2.0 x an "island factor" of 1.35).
- Bridges are designed to meet AASHTO standards for load capacity.
- The 5% for ADA slope requirement is buildable.

Estimated Bridge Sub-Project
= $245,000 x 1.2 x 2 x 1.35 = $793,800

Courtesy of CONTECH Engineered Solutions (conteches.com/bridges-structures):

Connector® Truss

The Connector is one of the most familiar truss designs for both pedestrian and vehicular bridges. The standard Connector designs reach over a 200-foot clear span range for pedestrian and a 150-foot clear span range for vehicular. The Connector style truss features a parallel top and bottom chord and is available in both flat designs or cambered up to 1% of the span length.

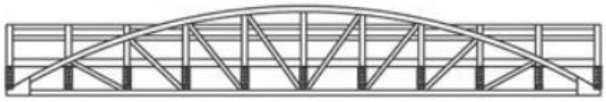
Connector® Pedestrian Truss

Connector® Vehicular Truss

Keystone® Truss

The parabolic curve is one of the most efficient structural designs known in bridge engineering. It is also one of the most timeless. The classic appearance of the Keystone truss bridge is frequently used in residential and commercial settings where aesthetics dictate the bridge style. With clear spans up to 150 feet for vehicular and 250 feet for pedestrian, the Keystone style is one of our most popular designs. The depth at the center is usually 10% of the clear span. With longer spans, the center depth may be reduced to 7% of the span.

Keystone® Pedestrian Truss



Keystone® Vehicular Truss

3. ALTERNATIVES

A) Alternative No. 1 – Elevated Walkway (Refer to attachments in Appendix 1)

i. Access Route Description

The first alternative is a structural elevated walkway. The walkway would be constructed above/beside the existing hillside adjacent the lagoon as it traverses eastward down to the bridge. It will start near the existing pavilion with a small lookout platform. The walkway would then slope at approximately 4.89% towards the bridge. The path would continue across the bridge before tying into the existing walkway near the current canoe landing area across the lagoon. The walkway would be supported by a series of steel supports anchored into the rock along the hillside approximately every 25 feet. Supported by the steel support structures will be a walking surface constructed of steel beams with wood planking. A steel railing (likely with a wooden handrail) would be on both sides of the walkway. The nominal width of the walkway would be 8 feet. Like the bridge, the structural members of this elevated walkway would be made of weathering steel (rust colored protective coating) and would be designed to the same AASHTO loading standard.

ii. Ground Disturbance/Tree Clearing

One of the goals of this alternative is to minimize the number of trees that will need to be cleared. While attempting to minimize clearing, some clearing will definitely be needed not only for the walkway's path, but to provide access for equipment to swing walkway parts into place. With this alternative being built above the ground the amount of excavation needed will be minimal. The main ground disturbance will be drilling into the existing hillside (largely exposed rock) with grouted anchors. The support structures of this alternative can be manipulated to best fit the terrain with minimal disturbance.

iii. Aesthetics

This route will traverse along the hillside providing the public with an increased view of the lagoon, beach peninsula, and lake beyond. The lookout point is another opportunity for the public to take photos and view all that the landscape has to offer. To make the walkway more appealing and less industrial it is recommended to use weathered steel for the structure and railing. The decking and likely the handrails would be wooden. There would be ample opportunity to decorate the railing.

iv. Maintenance Considerations

The wood planking will be expected to have the shortest life expectancy of the different components of this alternative. While the steel will have a longer life expectancy it will need to be inspected occasionally to ensure its structural integrity/soundness and schedule repairs as found necessary.

v. Cost Estimate

This alternative is estimated to cost $1,815,275. A somewhat detailed preliminary cost estimate is included in Appendix 1.

vi. Pros/Cons/Summary

Aesthetically, this is thought to be the best option for both the public's view from it, and the public's view of it. This is the only option that offers the public an increased opportunity to view the lagoon and lake from the walkway. This option will require the least amount of excavation and will minimize the number of trees needing removal during construction (note that Nelson construction envisions this requiring more tree removal than originally envisioned by Cooper). The biggest obstacle with this alternative is the increased cost when compared to the other choices. When comparing the alternatives this structural walkway is estimated to be approximately $500,000 higher than the next alternative. Another expense-related item to consider long term is the potential to have professional inspections of the structure and the recommended repairs that come with them. This option has the potential to cost the most, but it does offer the most aesthetically pleasing point of view and it is the least destructive to the existing landscape.

B) Alternative No. 2 – Excavated Path at Edge of Slope (Refer to attachments in Appendix 2)

i. Access Route Description

The second route to consider is excavating a path and constructing a poured-on-grade sidewalk at the edge of the existing hillside. The path would start west of the pavilion and would follow the curvature of the hillside as it slopes eastward towards the bridge. The path would be eight feet wide. The walking surface will be a concrete sidewalk. A gravel path was briefly discussed but was ultimately ruled out due to an increased risk of erosion and routine maintenance. This path would be excavated along the hillside so that the south side of the excavation "daylights" to a view of the lagoon, beach peninsula, and lake beyond so the public can enjoy the views as they walk towards the bridge. The north side of the path would be an excavated earth/rock back slope which will increase in height the closer to the bridge it gets. After around 300 feet the path would meet the bridge. At this point, the backslope will be about 8 feet vertically. The path would tie into the existing planked walkway on the beach peninsula approximately 50 feet after the bridge.

ii. Ground Disturbance/Tree Clearing

Developing this path will require substantial tree removal (clear cutting) along the existing hillside. Most of the trees near the slope will need to be removed to excavate the gently sloped path and construct the sidewalk walkway. This alternative will require much more excavation compared to the first alternative. Most of the excavation will be rock excavation.

iii. Aesthetics

This path still allows for views of the lagoon, beach peninsula, and lake as people work their way eastward down to the bridge. A railing would likely be required on the lagoon side of this walkway. This could be decorative. The sidewalk could be stamped and/or colored to increase the aesthetic appearance and aid in blending the sidewalk into the landscape. Artistic features such as a compass medallion could be built into a stamped concrete surface.

iv. Maintenance Considerations

This alternative may be more prone to erosion that will need to be monitored and maintained to ensure that the path does not wash out. The concrete walking surface will be more durable than the wooden planking of the elevated walkway, but concrete can be prone to heaving, cracking, and spalling and thus has risks to consider.

v. Cost Estimate

This excavated walkway alternative is estimated to cost approximately $1,307,395. A somewhat detailed preliminary estimate is included in Appendix 2.

vi. Pros/Cons/Summary

This alternative is more economically friendly than Alternative No. 1. Other than the main bridge, there is no structure to be built. There will be slightly less ground disturbance than alternative three. This route will likely require more tree clearing than Alternatives 1 and 3; the amount of clearing needed is probably similar to that of Alternative No. 4. There are more opportunities to be aesthetically pleasing along this route than Alternatives 3 and 4, but this alternative is probably not as aesthetically pleasing as Alternative No. 1.

C) Alternative No. 3 - Excavate Path in the Vicinity of the Current Trail

i. Access Route Description

The third alternative is excavating an eastwardly sloping swale in the area of the current path that would be ADA compliant. This alternative has the potential to vary in design depending on desire for aesthetics and slope requirements. If the path is excavated in a straight line it will have to be placed farther into the parking lot to get adequate length for the vertical drop. If there are curves in the path the path would be able to start slightly closer to the bridge. The path would begin at the elevation of the parking lot near the pavilion. As the path progresses eastward it will slope down at approximately 4.9 percent. The depth of the swale will deepen until the path meets the bridge. There will be excavated earth/rock backslopes on both sides of the path. These will be approximately 8 feet high vertically as the path "daylights" the hillside and connects to the bridge. After crossing the bridge, the path will need to extend approximately 100 feet on the beach peninsula before tying into the current planked walkway.

ii. Ground Disturbance/Tree Clearing

This route will require less tree clearing than alternatives 2 and 4, but only because it will travel the approximate route of the current path. It will require an extensive amount of ground disturbance through excavation. At one point the grade will need to be 8 feet below the existing surface. A substantial portion of this excavation will likely be rock excavation.

iii. Aesthetics

This route does not provide many opportunities to be aesthetically pleasing for the public. Being inside an excavated cut will not allow continuous opportunity for the public to view the lagoon and beach peninsula as they descend eastwardly towards the bridge. The sidewalk could be

stamped and/or colored to increase the aesthetic appearance and aid in blending the sidewalk into the landscape. Artistic features such as a compass medallion could be built into a stamped concrete surface. A side "spur" could be excavated southward part way to the bridge, with poured sidewalk, to create a view of the lagoon.

iv. Maintenance Considerations

One of the attractions of this alternative is the minimal amount of maintenance it would require. The backslopes may require some maintenance if there are signs of erosion washing onto the sidewalk path. The concrete walking surface will be more durable than the wooden planking of the elevated walkway, but concrete can be prone to heaving, cracking, spalling and thus has risks to consider.

v. Cost Estimate

This route would likely be one of the most economically friendly. A somewhat detailed preliminary estimate is included in Appendix 3.

vi. Pros/Cons/Summary

The biggest downfall of this alternative is the limited opportunities to take in the views of the lagoon, peninsula, lake while walking towards the bridge. This alternative is likely to be one of the most economically friendly. Of the excavation alternatives this one requires the least amount of tree clearing. One consideration is decreasing the length of the path on the mainland, and increasing the length of elevated (fill) path on the beach peninsula to keep walkway slopes at 5% or less. Otherwise, to get down to grade on the peninsula plank walkway the route of this alternative would have to start in the parking lot to be ADA compliant.

D) Alternative No. 4 - Excavate Path Onto/Through State-Owned Land

i. Access Route Description

This alternative follows a route proposed by Arnie Nelson of Nelson Construction. The route would start in the existing parking lot near the pavilion. It would take a path northeasterly; this would cross the east-west property line onto land that is owned by the State. Mr. Nelson notes that once on the state land a natural valley in the land could then be the path eastward and then south-eastward towards the lagoon waterway. Where the existing valley comes out to the waterway the new bridge would be placed across the waterway – this would place the new bridge slightly NE of where the existing bridge is. This alternative, like Alternatives 2 and 3, would include pouring a concrete sidewalk and excavating as necessary to accommodate a 5% maximum longitudinal slope. Mr. Nelson contends that due to the existing valley, this route would require noticeably less excavation to maintain an ADA-compliant path slope. On the SE end of the new bridge (on the beach peninsula) a new path would be built to connect the bridge to the existing planked path on the beach peninsula.

ii. Ground Disturbance/Tree Clearing

This route would require a similar amount of tree clearing as Alternative 2 (potentially less if less grading is required). The extent of the need to excavate in order to develop an ADA compliant path is a bit unknown.

iii. Aesthetics

Similar to alternative three this route has limited opportunities for viewing the lake from the sidewalk. If less grading is required, this would likely be more aesthetically pleasing than a highly excavated pathway. The sidewalk could be stamped and/or colored to increase the aesthetic appearance and aid in blending the sidewalk into the landscape. Artistic features such as a compass medallion could be built into a stamped concrete surface.

iv. Maintenance Considerations

As with the other poured-on-grade sidewalk alternatives the main maintenance consideration will be to ensure that any excavated slopes are not eroding. Eventually the concrete sidewalk may need to be replaced but it should be many years in the future.

v. Cost Estimate

Costs for this alternative should be slightly less than the costs of Alternative 3 as the selling point of this alternative is less required grading. There would likely be costs associated with the legalities of a land swap that may negate any cost savings of less grading.

vi. Pros/Cons/Summary

An easement or land swap would need to be arranged between the town and the state. It may become difficult to maintain an ADA compliant slope (TBD). In this location construction could be less disruptive to the existing path and allow access to the bridge while the new path is constructed.

E) Other Alternatives Discussed but Not Studied in Depth

Other alternative means for accessing the beach in a handicap-accessible way that were briefly considered were a funicular and an elevator.

- Funicular
  - definition - a cable railroad, especially one on a mountainside, in which ascending and descending cars are counterbalanced.
  - These are normally constructed in locations where there is a long distance of very steep terrain to be traversed.
  - The very high cost of constructing one of these for a vertical traverse of only 20 to 25 feet would be cost-prohibitive.

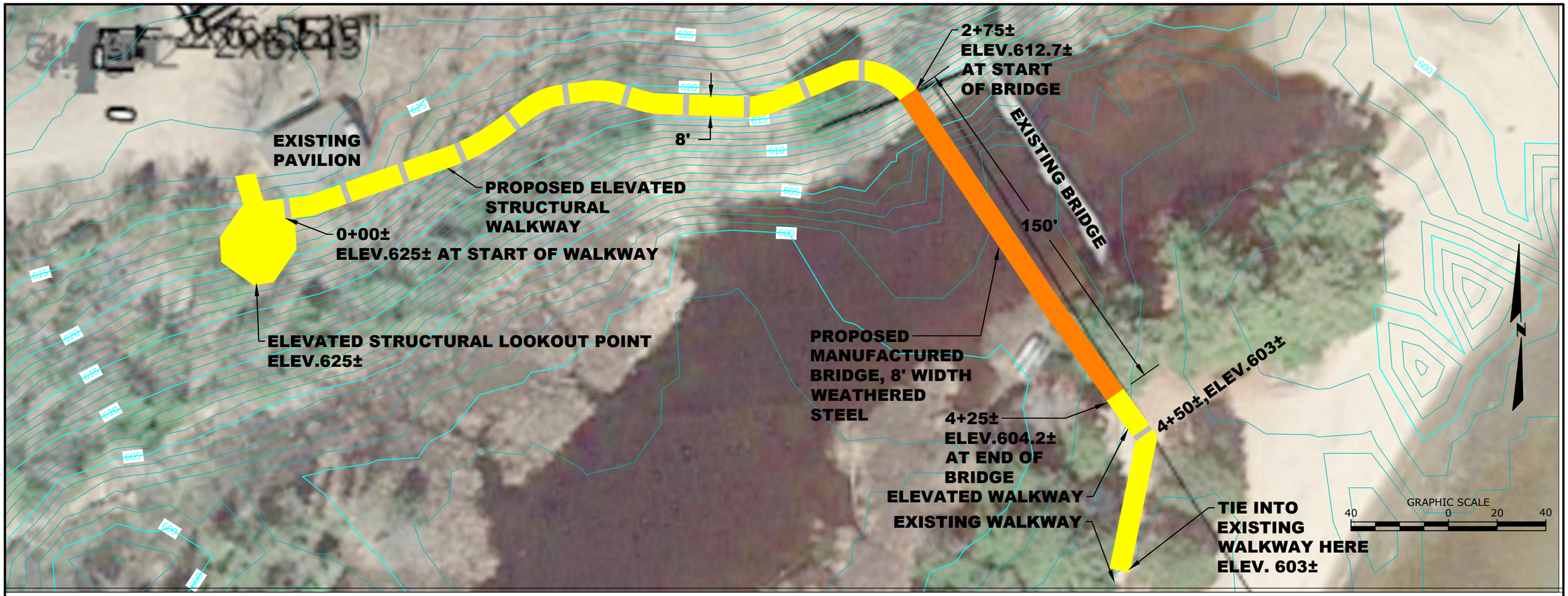
- Elevator
  - This would require an elevator building.
  - The building could have a staircase around its perimeter for those desiring and able to travel stairs.

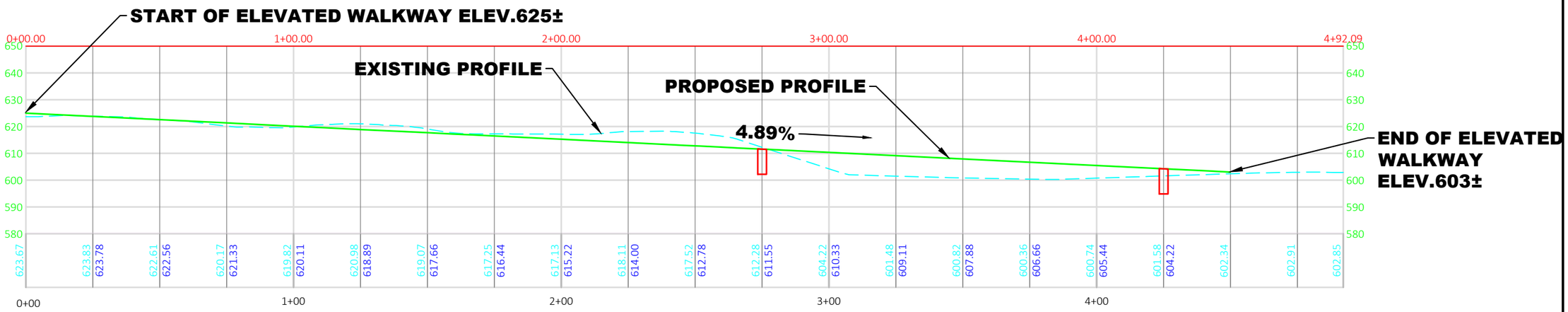
Both of these alternatives were dismissed as options due to a desire to not have ongoing/frequent maintenance efforts/costs. Other fears included not wanting to limit access to the beach for handicapped patrons should a mechanical repair be required that causes a funicular or elevator to be shut down for an extended period.

APPENDIX 1

ATTACHMENTS ASSOCIATED WITH

ALTERNATIVE NO. 1 - ELEVATED WALWAY





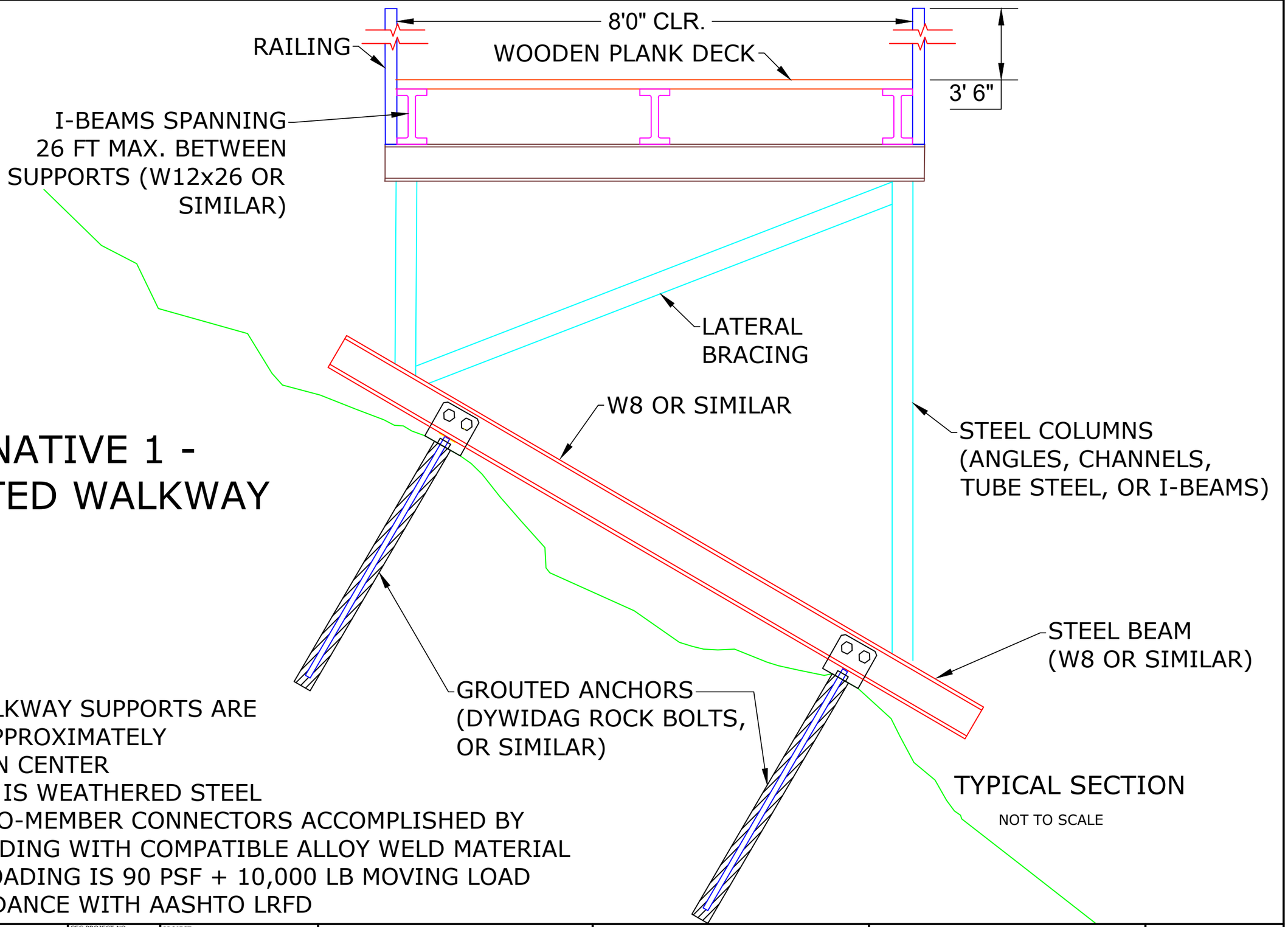
ALTERNATIVE 1-ELEVATED STRUCTURAL WALKWAY

NO.	BY	DATE	REVISIONS	CEC PROJECT NO. 22552182	PROJECT MANAGER BRAD VOLKER P.E.
				DRAWN BY BSW	CHECKED BY
				ISSUE DATE 04/04/2023	APPROVED BY

COOPER ENGINEERING
2600 COLLEGE DRIVE, P.O. BOX 230
RICE LAKE, WISCONSIN 54868-0230
TELEPHONE (715) 234-7008
FAX (715) 234-1025

BIG BAY TOWN PARK	ACCESS TRAIL PROOF OF CONCEPT	
TOWN OF LA POINTE, WI	ALT.1 - PLAN & PROFILE	SHEET 1 OF 2

ALTERNATIVE 1 - ELEVATED WALKWAY



TYPICAL SECTION

NOT TO SCALE

NOTES

- STEEL WALKWAY SUPPORTS ARE SPACED APPROXIMATELY 25 FEET ON CENTER
- ALL STEEL IS WEATHERED STEEL
- MEMBER-TO-MEMBER CONNECTORS ACCOMPLISHED BY FIELD WELDING WITH COMPATIBLE ALLOY WELD MATERIAL
- DESIGN LOADING IS 90 PSF + 10,000 LB MOVING LOAD IN ACCORDANCE WITH AASHTO LRFD

NO.	BY	DATE	REVISIONS

CEC PROJECT NO. 22552182
DRAWN BY BSW
ISSUE DATE 04/04/2023
PROJECT MANAGER BRAD VOLKER P.E.
CHECKED BY
APPROVED BY

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BIG BAY TOWN PARK
TOWN OF LA POINTE, WI

ACCESS TRAIL PROOF OF CONCEPT
ALT 1-TYPICAL SECTION

Rock Bolts

Basic Concept

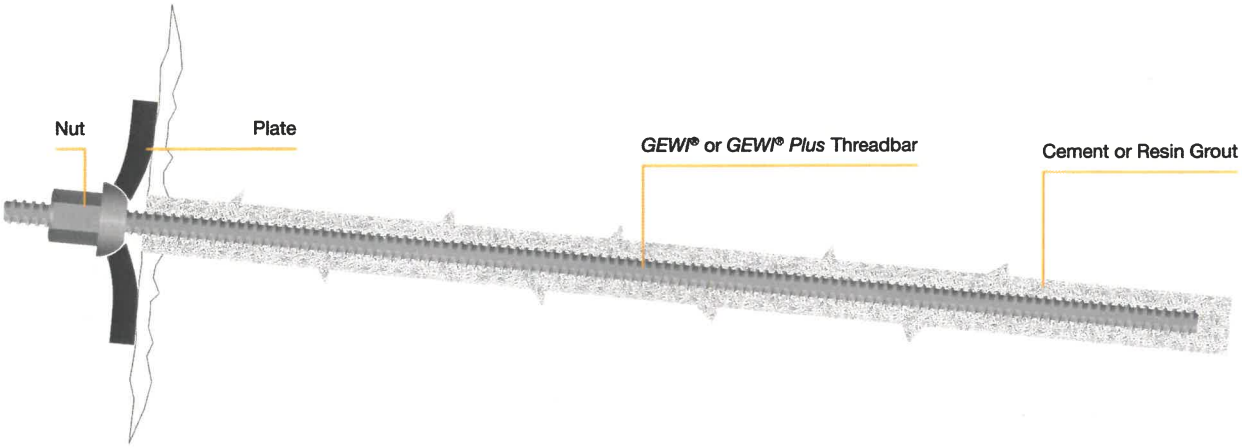
Rock Bolts are generally formed from solid threadbar systems, i.e. bar, nut, couplers and plates. The steel threadbar is used to bond unstable rock to stable sections, beyond the face, and requires both capacity for tensile and shear loads. Rock bolts are fully bonded and unlike ground anchors are passive installations.

Unless it has been severely weathered, rock will usually allow for an open hole to be drilled without any risk of collapse. Solid threadbars offer the most efficient means of transferring load and maintaining the smallest diameter borehole. Due to the higher bond strength offered by rock compared to soil, rock bolts can be installed into a much smaller hole than soil nails or ground anchors.

Smaller boreholes are desirable, as drilling through rock can be time consuming and expensive.

Fully threaded bar - can be cut and coupled at any point. They have a robust threadform that makes them ideal for construction site use:

- Coarse Pitch Threadform (d/2, except Ø 63.5mm which is d/3) with two flats – ensures thread is self cleaning
- Fully Galvanized Systems – galvanized threadbars and accessories also readily available



GEWI® Rock Bolts & DELTAX® – Installation at Heads of The Valley Road Improvement Scheme, A465 South Wales

PRELIMINARY COST ESTIMATE

Town of La Pointe
BW/SP/BV, 4-5-23

DESCRIPTION:
Alternative 1 - Elevated Structural Walkway

Bid Item	Description	Unit	Plan Quantity	Engineer's Conceptual Estimate: Normal Unit Price	Island Factor	Extension
1	MOBILIZATION	L.S.	1	$37,000.00	1.35	$49,950.00
2	ELEVATED WALKWAY SUPPORTS APPROX. EVERY 25 LINEAL FEET, WEATHERED STEEL, INCLUDING ANCHORING/FOUNDATIONS	EACH	12	$16,000.00	1.35	$259,200.00
3	LONGITUDINAL WALKWAY SUPPORT BRACING/CABLING	L.S.	1	$25,000.00	1.35	$33,750.00
4	ELEVATED WALKWAY, 8'-WIDTH, LUMBER PLANKED, WEATHERED STEEL STUCTURE	LF	300	$350.00	1.35	$141,750.00
5	NON-ELEVATED WALKWAY ON SAND SPIT, 6-FOOT WIDTH (REPLICATE EXISTING)	LF	60	$85.00	1.35	$6,885.00
6	ELEVATED STRUCTURAL VIEWING PLATFORM A (NEAR THE PAVILION, AT START OF WALKWAY)	L.S.	1	$25,000.00	1.35	$33,750.00
7	VIEWING PLATFORM A FOUNDATIONS OR ANCHORS	L.S.	1	$80,000.00	1.35	$108,000.00
8	PREFABRICATED WEATHERED STEEL BRIDGE, 8' WIDTH, 150' LONG, KEYSTONE TRUSS	LS	1	$588,000.00	1.35	$793,800.00
9	BRIDGE/WALKWAY ART/DECORATIVE FEATURES	LS	1	$25,000.00	1.35	$33,750.00
10	SEEDING	LBS.	100	$12.00	1.35	$1,620.00
11	MULCHING	SY	2000	$1.00	1.35	$2,700.00
12	EROSION MAT	SY	300	$4.00	1.35	$1,620.00
13	EXISTING BRIDGE REMOVAL	LS	1	$20,000.00	1.35	$27,000.00
14	EXCAVATION (INCLUDING ROCK EXCAVATION)	LS	1	$25,000.00	1.35	$33,750.00
15	CLEARING AND GRUBBING	LS	1	$25,000.00	1.35	$33,750.00
Totals	**Alternative 1 - Elevated Structural Walkway**					**$1,561,275.00**

APPROXIMATE DESIGN AND CONSTRUCTION ENGINEERING	**$231,000.00**
APPROXIMATE TOWN ADMIN COSTS	**$23,000.00**
APPROXIMATE TOTAL PROJECT OVERALL	**$1,815,275**

COOPER ENGINEERING

Outline of Work Items with Estimated Schedule
BIG BAY TOWN PARK BEACH ACCESS PROJECT

ALTERNATIVE 1 - ELEVATED WALKWAY

Owner: Town of La Pointe
Madeline Island
Ashland County, Wisconsin

Prepared by: Cooper Engineering - April, 2023

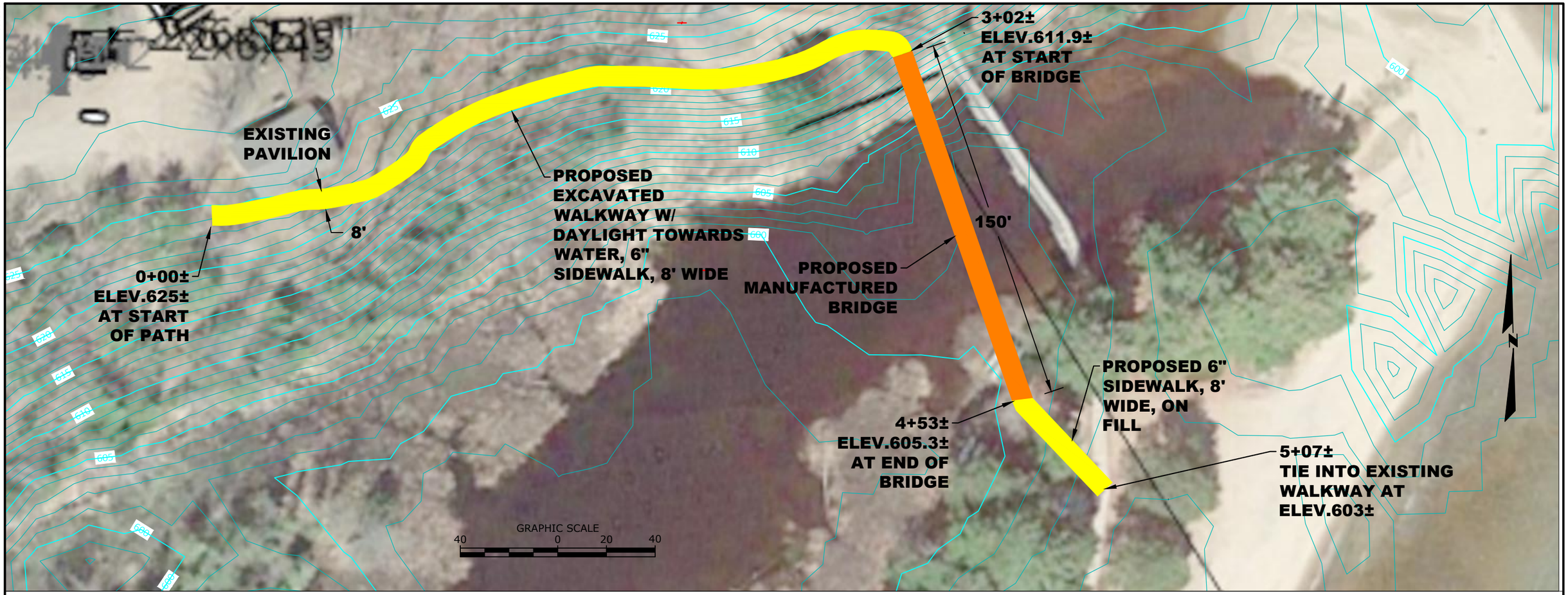
	2023							2024											2025											2026										
Month	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Town Submittal of Access Alternatives Study to State																																										
Wisconsin Coastal Management Program Review																																										
Pursuit of Grant Funding																																										
Design Consultant Hiring																																										
Design Engineering																																										
Project Bidding																																										
Project Award to Contractor																																										
Project Construction																																										
•Bridge Fabrication (Per Contech)																																										
•Staking (after peak camping season close)																																										
•Clearing/Grubbing (as found necessary)																																										
•Walkway Foundation Construction																																										
•Bridge Abutment Construction																																										
•Walkway Shop Fabrication																																										
•Walkway Installation/Field Fitting																																										
•Bridge Installation																																										
•Landscaping, Restoration, Site Finishing																																										
Substantial Completion																																										
Construction Punch List Work																																										
Construction Final Acceptance																																										
Project/Grant Closeout																																										

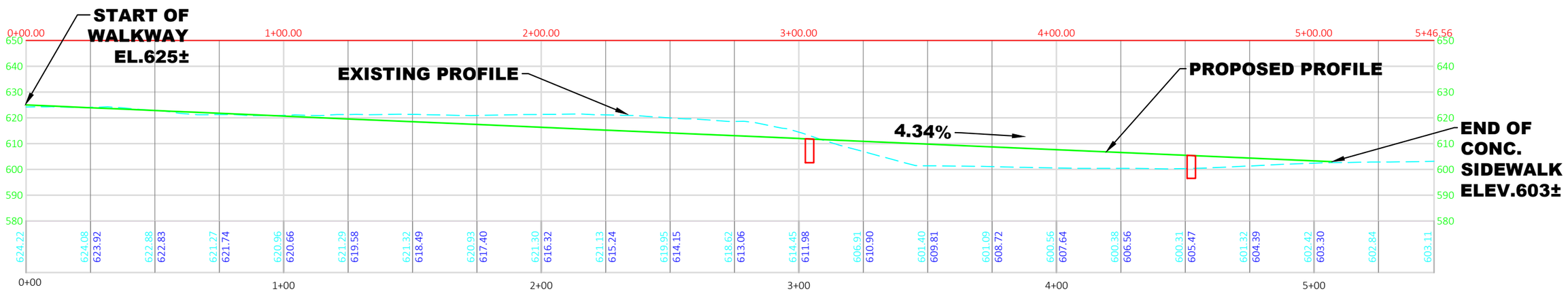
APPENDIX 2

ATTACHMENTS ASSOCIATED WITH

ALTERNATIVE NO. 2 – EXCAVATED

PATH AT THE EDGE OF THE SLOPE

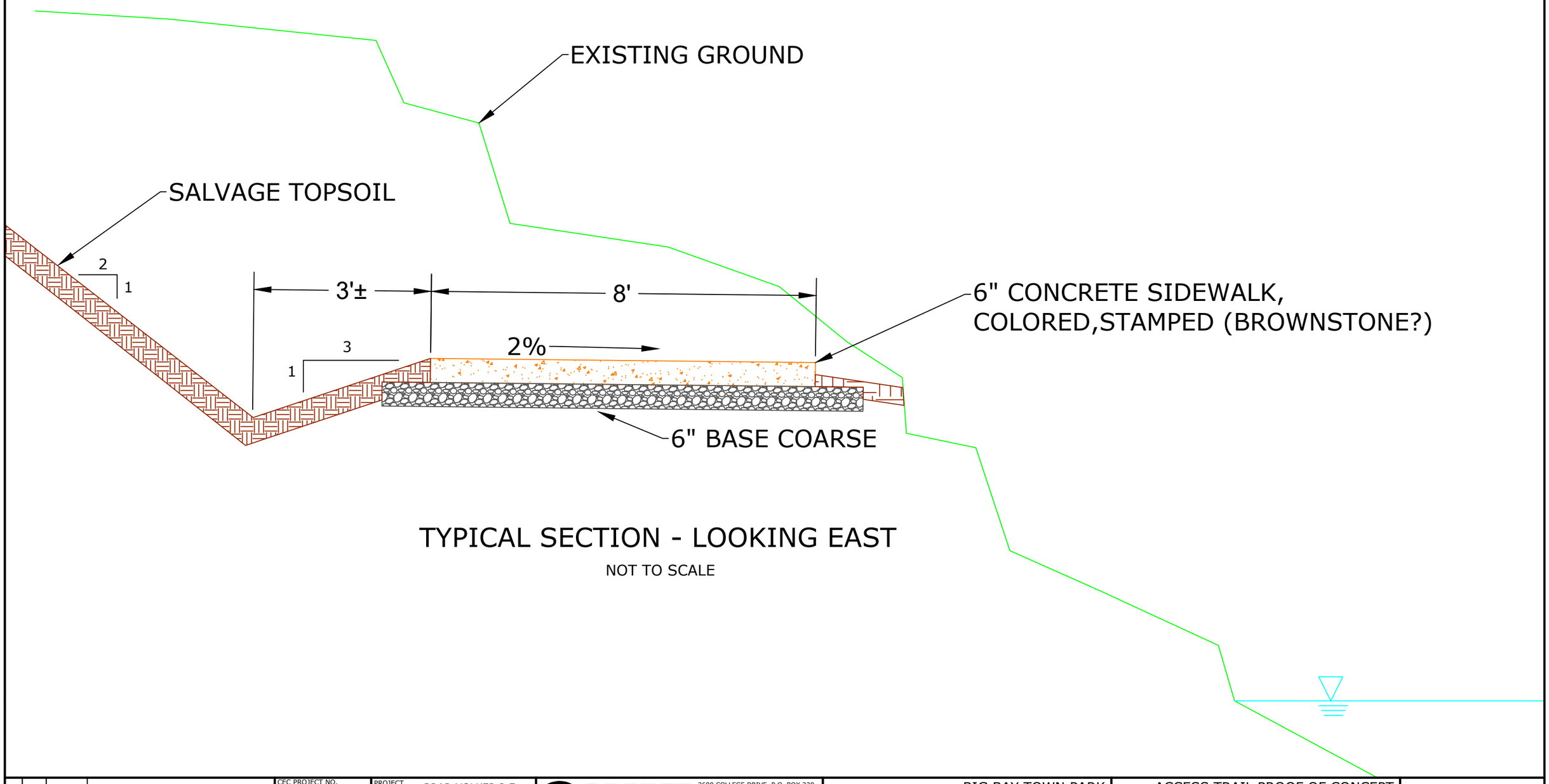




ALTERNATIVE 2-EXCAVATE PATH AT EDGE OF SLOPE

NO.	BY	DATE	REVISIONS	CEC PROJECT NO. 22552182	PROJECT MANAGER BRAD VOLKER P.E.	COOPER ENGINEERING	BIG BAY TOWN PARK	ACCESS TRAIL PROOF OF CONCEPT	
				DRAWN BY BSW	CHECKED BY	2600 COLLEGE DRIVE, P.O. BOX 230 RICE LAKE, WISCONSIN 54868-0230 TELEPHONE (715) 234-7008 FAX (715) 234-1025	TOWN OF LA POINTE, WI	ALT.2-PLAN & PROFILE	SHEET 1 OF 2
				ISSUE DATE 04/04/2023	APPROVED BY				

ALTERNATIVE 2 - EXCAVATE PATH AT EDGE OF SLOPE



TYPICAL SECTION - LOOKING EAST

NOT TO SCALE

NO.	BY	DATE	REVISIONS	CEC PROJECT NO. 22552182	PROJECT MANAGER BRAD VOLKER P.E.
				DRAWN BY BSW	CHECKED BY
				ISSUE DATE 04/04/2023	APPROVED BY

COOPER ENGINEERING
2600 COLLEGE DRIVE, P.O. BOX 230
RICE LAKE, WISCONSIN 54868-0230
TELEPHONE (715) 234-7008
FAX (715) 234-1025

BIG BAY TOWN PARK	ACCESS TRAIL PROOF OF CONCEPT	
TOWN OF LA POINTE, WI	ALT.2 - TYPICAL SECTION	SHEET 2 OF 2

PRELIMINARY COST ESTIMATE

Town of La Pointe
BW/SP/BV, 4-5-23

DESCRIPTION: **Alternative 2 - Excavate Path at Edge of Slope**				Engineer's Conceptual Estimate		
Bid Item	**Description**	**Unit**	**Plan Quantity**	**Normal Unit Price**	**Island Factor**	**Extension**
1	MOBILIZATION	L.S.	1	$37,000.00	1.35	$49,950.00
2	SIDEWALK - 6" CONCRETE, 8' WIDE, STAMPED/COLORED (BROWNSTONE?)	LF	350	$65.00	1.35	$30,712.50
3	BASE AGGREGATE DENSE - 6-INCH NOMINAL THICKNESS	TON	180	$85.00	1.35	$20,655.00
4	PREFABRICATED WEATHERED STEEL BRIDGE, 8' WIDTH, 150' LONG, KEYSTONE TRUSS	LS	1	$588,000.00	1.35	$793,800.00
5	BRIDGE/WALKWAY ART/DECORATIVE FEATURES	LS	1	$25,000.00	1.35	$33,750.00
6	SEEDING	LBS.	200	$12.00	1.35	$3,240.00
7	MULCHING	SY	4000	$1.00	1.35	$5,400.00
8	EROSION MAT	SY	500	$4.00	1.35	$2,700.00
9	EXISTING BRIDGE REMOVAL	LS	1	$20,000.00	1.35	$27,000.00
10	EXCAVATION (INCLUDING ROCK EXCAVATION)	LS	1	$55,000.00	1.35	$74,250.00
11	CLEARING AND GRUBBING	LS	1	$30,000.00	1.35	$40,500.00
12	RAILING (LAGOON SIDE OF SIDEWALK)	LF	300	$50.00	1.35	$20,250.00
13	BREAKER ROCK FOR DITCHES	CY	90	$125.00	1.35	$15,187.50
Totals Alternative 2 - Excavate Path at Edge of Slope						**$1,117,395.00**

APPROXIMATE DESIGN AND CONSTRUCTION ENGINEERING	**$170,000.00**
APPROXIMATE TOWN ADMIN COSTS	**$20,000.00**
APPROXIMATE TOTAL PROJECT OVERALL	**$1,307,395**

COOPER ENGINEERING

Outline of Work Items with Estimated Schedule
BIG BAY TOWN PARK BEACH ACCESS PROJECT

ALTERNATIVE 2 - EXCAVATE PATH AT EDGE OF SLOPE

Owner: Town of La Pointe
Madeline Island
Ashland County, Wisconsin

Prepared by: Cooper Engineering - April, 2023

	2023							2024											2025											2026										
Month	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Town Submittal of Access Alternatives Study to State		■																																								
Wisconsin Coastal Management Program Review		■	■																																							
Pursuit of Grant Funding	■	■	■	■	■	■	■	■	■	■	■	■																														
Design Consultant Hiring											■	■	■																														
Design Engineering														■	■	■	■	■	■																								
Project Bidding																				■	■	■																					
Project Award to Contractor																						■																					
Project Construction																																										
•Bridge Fabrication (Per Contech)																						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
•Staking (after peak camping season close)																										■	■																
•Clearing/Grubbing (as found necessary)																										■	■																
•Grading/Excavation/Base Placement																										■	■	■	■		■	■						■	■				
•Bridge Abutment Construction																													■	■								■					
•Pour Sidewalk																														■	■								■				
•Bridge Installation																																							■	■			
•Landscaping, Restoration, Site Finishing																																							■	■			
Substantial Completion																																								■			
Construction Punch List Work																																								■	■	■	■	■
Construction Final Acceptance																																										■	
Project/Grant Closeout																																										■	■

APPENDIX 3

ATTACHMENTS ASSOCIATED WITH

ALTERNATIVE NO. 3 – EXCAVATED PATH

IN THE VICINITY OF THE EXISTING TRAIL

8'

INTERSECTION 1+65±, ELEV. 619.9±

2+50±
ELEV.615.8± AT START OF BRIDGE

PROPOSED EXCAVATED WALKWAY

0+00
ELEV.628± AT START OF TRAIL

EXISTING PAVILION

EXCAVATED DOG-LEG PATH DAYLIGHTED FOR LOOKOUT, ELEV. 619.2±

PROPOSED MANUFACTURED BRIDGE

EXISTING BRIDGE

150'

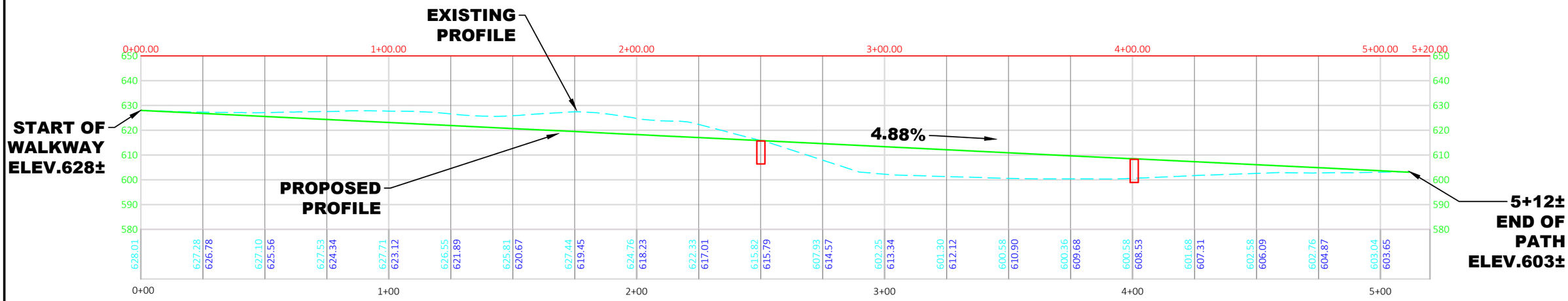
PROPOSED 6" SIDEWALK, 8' WIDE, ON FILL

4+00±
ELEV.608.5± AT END OF BRIDGE

5+12±
TIE INTO EXISTING WALKWAY AT ELEV. 603±

N

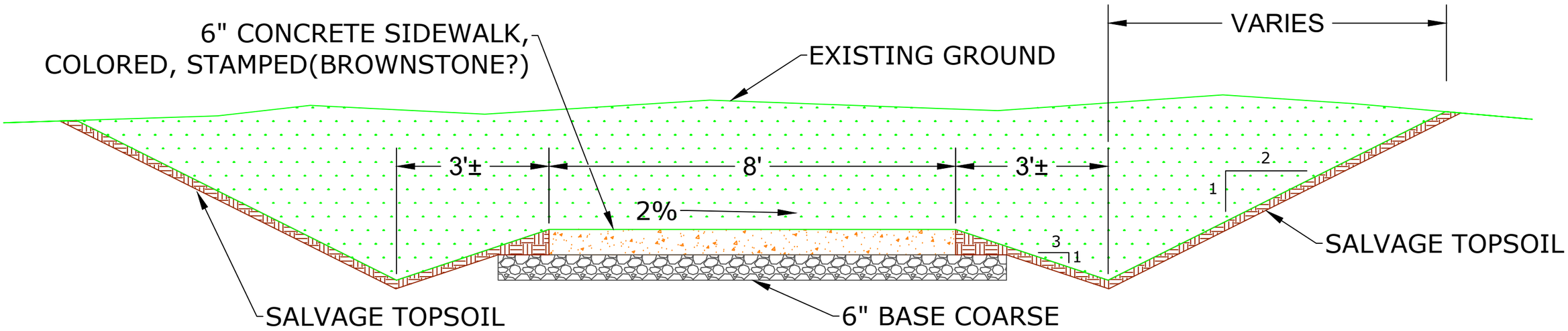
GRAPHIC SCALE
40 0 20 40



ALTERNATIVE 3 EXCAVATE PATH NEAR CURRENT TRAIL

NO.	BY	DATE	REVISIONS	CEC PROJECT NO. 22552182	PROJECT MANAGER BRAD VOLKER P.E.	COOPER ENGINEERING	BIG BAY TOWN PARK	ACCESS TRAIL PROOF OF CONCEPT	
				DRAWN BY BSW	CHECKED BY	2600 COLLEGE DRIVE, P.O. BOX 230 RICE LAKE, WISCONSIN 54868-0230 TELEPHONE (715) 234-7008 FAX (715) 234-1025	TOWN OF LA POINTE, WI	ALT. 3 - PLAN & PROFILE	SHEET 1 OF 2
				ISSUE DATE 04/04/2023	APPROVED BY				

ALTERNATIVE 3 - EXCAVATE PATH ON CURRENT ROUTE±



TYPICAL SECTION - LOOKING EAST

NOT TO SCALE

NO.	BY	DATE	REVISIONS	CEC PROJECT NO. 22552182	PROJECT MANAGER BRAD VOLKER P.E.
				DRAWN BY BSW	CHECKED BY
				ISSUE DATE 04/04/2023	APPROVED BY

COOPER ENGINEERING
2600 COLLEGE DRIVE, P.O. BOX 230
RICE LAKE, WISCONSIN 54868-0230
TELEPHONE (715) 234-7008
FAX (715) 234-1025

BIG BAY TOWN PARK	ACCESS TRAIL PROOF OF CONCEPT	
TOWN OF LA POINTE, WI	ALT.3 - TYPICAL SECTION	SHEET 2 OF 2

PRELIMINARY COST ESTIMATE

Town of La Pointe
BW/SP/BV, 4-5-23

DESCRIPTION:
Alternative 3-Excavate Path in Vicinity of Current Path

Bid Item	Description	Unit	Plan Quantity	Engineer's Conceptual Estimate: Normal Unit Price	Island Factor	Extension
1	MOBILIZATION	L.S.	1	$37,000.00	1.35	$49,950.00
2	SIDEWALK - 6" CONCRETE, 8' WIDE, STAMPED/COLORED (BROWNSTONE?)	LF	392	$65.00	1.35	$34,398.00
3	BASE AGGREGATE DENSE - 6-INCH NOMINAL THICKNESS	TON	200	$85.00	1.35	$22,950.00
4	PREFABRICATED WEATHERED STEEL BRIDGE, 8' WIDTH, 150' LONG, KEYSTONE TRUSS	LS	1	$588,000.00	1.35	$793,800.00
5	BRIDGE/WALKWAY ART/DECORATIVE FEATURES	LS	1	$25,000.00	1.35	$33,750.00
6	SEEDING	LBS.	200	$12.00	1.35	$3,240.00
7	MULCHING	SY	4000	$1.00	1.35	$5,400.00
8	EROSION MAT	SY	500	$4.00	1.35	$2,700.00
9	EXISTING BRIDGE REMOVAL	LS	1	$20,000.00	1.35	$27,000.00
10	EXCAVATION (INCLUDING ROCK EXCAVATION)	LS	1	$55,000.00	1.35	$74,250.00
11	CLEARING AND GRUBBING	LS	1	$25,000.00	1.35	$33,750.00
12	RAILING (VICINITY OF SIDEWALK MEETING BRIDGE)	LF	80	$50.00	1.35	$5,400.00
13	BREAKER ROCK IN THE DITCHES	CY	90	$125.00	1.35	$15,187.50
Totals	**Alternative 3 - Excavate Path in Vicinity of Current Path**					**$1,101,775.50**

APPROXIMATE DESIGN AND CONSTRUCTION ENGINEERING	**$170,000.00**
APPROXIMATE TOWN ADMIN COSTS	**$20,000.00**
APPROXIMATE TOTAL PROJECT OVERALL	**$1,291,776**

COOPER ENGINEERING

Outline of Work Items with Estimated Schedule
BIG BAY TOWN PARK BEACH ACCESS PROJECT

ALTERNATIVE 3 - EXCAVATE PATH IN VICINITY OF CURRENT PATH

Owner: Town of La Pointe
Madeline Island
Ashland County, Wisconsin

Prepared by: Cooper Engineering - April, 2023

	2023							2024											2025											2026										
Month	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Town Submittal of Access Alternatives Study to State																																										
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•Landscaping, Restoration, Site Finishing																																										
Substantial Completion																																										
Construction Punch List Work																																										
Construction Final Acceptance																																										
Project/Grant Closeout																																										

APPENDIX 4

ATTACHMENTS ASSOCIATED WITH

ALTERNATIVE NO. 4 – EXCAVATED PATH

ONTO/THROUGH STATE OWNED LAND

PROPOSED EXCAVATED WALKWAY, 6" SIDEWALK, 8' WIDE

8'

0+00 ELEV.628± AT START OF TRAIL

EXISTING PAVILION

3+24± ELEV.613.5± AT START OF BRIDGE

PROPOSED MANUFACTURED BRIDGE

EXISTING BRIDGE

150'

PROPOSED 6" SIDEWALK, 8' WIDE, ON FILL

4+74± ELEV.606.8± AT END OF BRIDGE

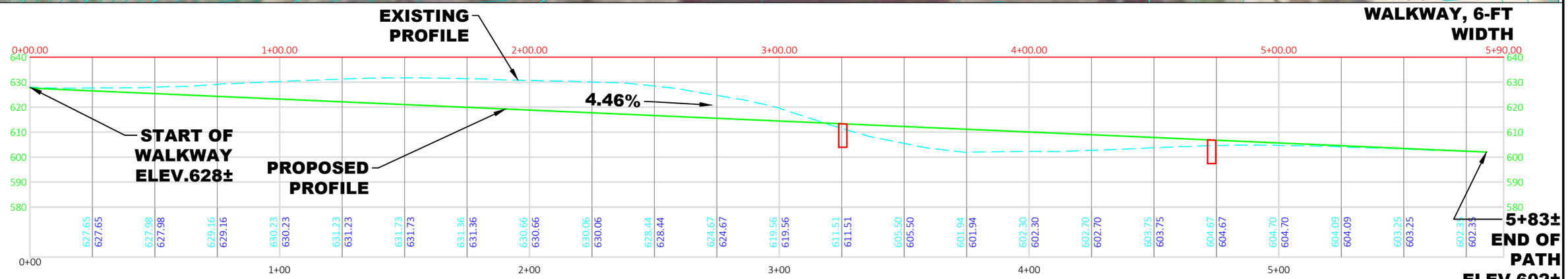
5+21

5+83± TIE INTO EXISTING WALKWAY AT ELEV. 602±

WOOD PLANK WALKWAY, 6-FT WIDTH

N

GRAPHIC SCALE
40 0 20 40



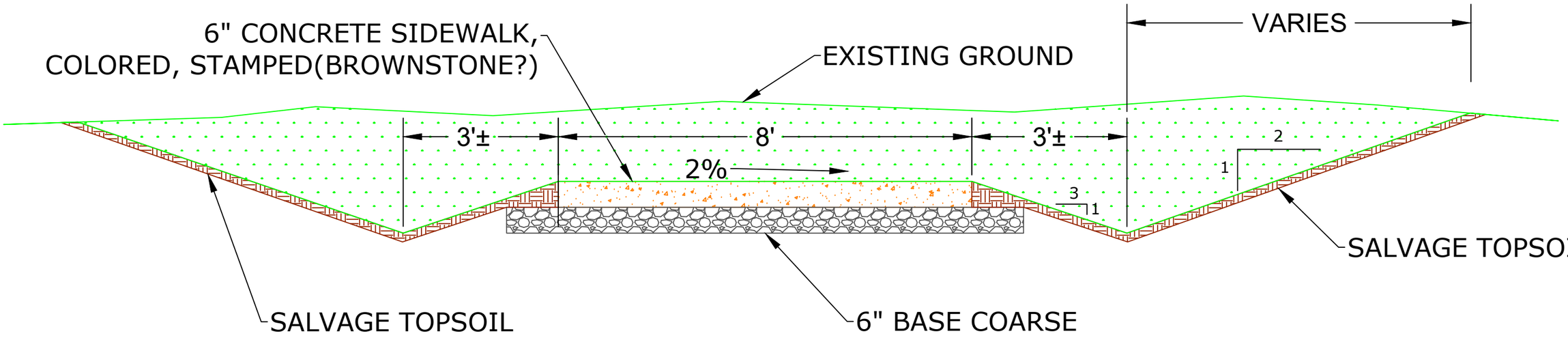
ALTERNATIVE 4-EXCAVATE PATH ONTO/THRU STATE LAND PLAN

NO.	BY	DATE	REVISIONS	CEC PROJECT NO. 22552182	PROJECT MANAGER BRAD VOLKER P.E.
				DRAWN BY BSW	CHECKED BY
				ISSUE DATE 04/04/2023	APPROVED BY

COOPER ENGINEERING
2600 COLLEGE DRIVE, P.O. BOX 230
RICE LAKE, WISCONSIN 54868-0230
TELEPHONE (715) 234-7008
FAX (715) 234-1025

BIG BAY TOWN PARK	ACCESS TRAIL PROOF OF CONCEPT	
TOWN OF LA POINTE, WI	ALT.4 - PLAN & PROFILE	SHEET 1 OF 2

ALTERNATIVE 4 - EXCAVATE PATH ONTO/THRU STATE LAND±



TYPICAL SECTION - LOOKING EAST

NOT TO SCALE

NO.	BY	DATE	REVISIONS	CEC PROJECT NO. 22552182	PROJECT MANAGER BRAD VOLKER P.E.	COOPER ENGINEERING 2600 COLLEGE DRIVE, P.O. BOX 230 RICE LAKE, WISCONSIN 54868-0230 TELEPHONE (715) 234-7008 FAX (715) 234-1025	BIG BAY TOWN PARK	ACCESS TRAIL PROOF OF CONCEPT	
				DRAWN BY BSW	CHECKED BY		TOWN OF LA POINTE, WI	ALT.4 - TYPICAL SECTION	SHEET 2 OF 2
				ISSUE DATE 04/04/2023	APPROVED BY				

PRELIMINARY COST ESTIMATE

Town of La Pointe
BW/SP/BV, 4-5-23

DESCRIPTION:
Alternative 4 - Excavate Path Onto/Thru State Land

Bid Item	Description	Unit	Plan Quantity	Engineer's Conceptual Estimate: Normal Unit Price	Island Factor	Extension
i	LAND SWAP SERVICES (VERY PRELIMINARY GUESSTIMATE)	L.S.	1	$20,000.00	1.20	$24,000.00
1	MOBILIZATION	L.S.	1	$37,000.00	1.35	$49,950.00
2	SIDEWALK - 6" CONCRETE, 8' WIDE, STAMPED/COLORED (BROWNSTONE?)	LF	374	$65.00	1.35	$32,818.50
3	BASE AGGREGATE DENSE - 6-INCH NOMINAL THICKNESS	TON	190	$85.00	1.35	$21,802.50
4	NON-ELEVATED WALKWAY ON SAND SPIT, 6-FOOT WIDTH (REPLICATE EXISTING)	LF	60	$85.00	1.35	$6,885.00
5	PREFABRICATED WEATHERED STEEL BRIDGE, 8' WIDTH, 150' LONG, KEYSTONE TRUSS	LS	1	$588,000.00	1.35	$793,800.00
6	BRIDGE/WALKWAY ART/DECORATIVE FEATURES	LS	1	$25,000.00	1.35	$33,750.00
7	SEEDING	LBS.	150	$12.00	1.35	$2,430.00
8	MULCHING	SY	3000	$1.00	1.35	$4,050.00
9	EROSION MAT	SY	400	$4.00	1.35	$2,160.00
10	EXISTING BRIDGE REMOVAL	LS	1	$20,000.00	1.35	$27,000.00
11	EXCAVATION (INCLUDING ROCK EXCAVATION)	LS	1	$35,000.00	1.35	$47,250.00
12	CLEARING AND GRUBBING	LS	1	$25,000.00	1.35	$33,750.00
13	RAILING (VICINITY OF SIDEWALK MEETING BRIDGE)	LF	80	$50.00	1.35	$5,400.00
14	BREAKER ROCK IN THE DITCHES	CY	90	$125.00	1.35	$15,187.50
Totals	**Alternative 4 - Excavate Path Onto/Thru State Land**					**$1,100,233.50**

APPROXIMATE DESIGN AND CONSTRUCTION ENGINEERING	**$170,000.00**
APPROXIMATE TOWN ADMIN COSTS	**$20,000.00**
APPROXIMATE TOTAL PROJECT OVERALL	**$1,290,234**

COOPER ENGINEERING

Outline of Work Items with Estimated Schedule
BIG BAY TOWN PARK BEACH ACCESS PROJECT

ALTERNATIVE 4 - EXCAVATE PATH ONTO/THROUGH STATE LAND (LESS GRADING REQUIRED?)

Owner: Town of La Pointe
Madeline Island
Ashland County, Wisconsin

Prepared by: Cooper Engineering - April, 2023

	2023							2024											2025											2026											2027										
Month	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Town Submittal of Access Alternatives Study to State																																																		
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