



Feasibility Study:

OHIO RIVER

STEUBENVILLE MARINA

FEASABILITY REPORT

JUNE 17, 2024



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Executive Summary

1.1 Objective

The purpose of this proposal is to provide a feasibility study aimed at identifying and addressing potential site enhancements for the Steubenville Marina. The study provides an assessment of current site challenges & deficiencies, initial environmental assessment, potential improvement recommendations, cost estimations, and identification of the necessary permitting processes for the proposed enhancements.

The included plan set outlines a range of potential improvements tailored to the needs and opportunities of the Steubenville Marina. These recommendations are designed to provide a foundation for informed decision-making by offering a visual representation of potential improvements to the site.

Key components of the feasibility study include:

- Assessment of existing issues and deficiencies at Steubenville Marina.
- Environmental assessments.
- Recommendations for improvements segmented into different options.
- Cost Estimates.
- Permitting Requirements.
- Initial Plan Set.

1.2 Background

The Steubenville Marina, overseen by the City of Steubenville, operates as a public recreational facility. Existing amenities include a paved parking area, boat ramps, picnic shelter houses, and the remnants of Lock & Dam 10, finalized in 1915.



Figure 1 – Historical Image

Existing Conditions

2.1 Summary

The existing site at OH-7 Steubenville, OH 43952, owned by the City of Steubenville, serves as a crucial point for access to the Ohio River, featuring a pier, parking, shelter houses, and an established boat launch. The southeast parking area currently is comprised of insufficiently sized parking stalls, alongside paved areas around the site often utilized by boaters as additional parking. There is additionally an unstriped gravel parking area situated at the northwest portion of the site, contributing to the available parking options. Furthermore, a gravel turnaround area is situated to the southeast of the project site, adjacent to the entrance, with a portion of this loop owned by a private business using it for parking purposes (see Figures 2 and 3 for property limits).

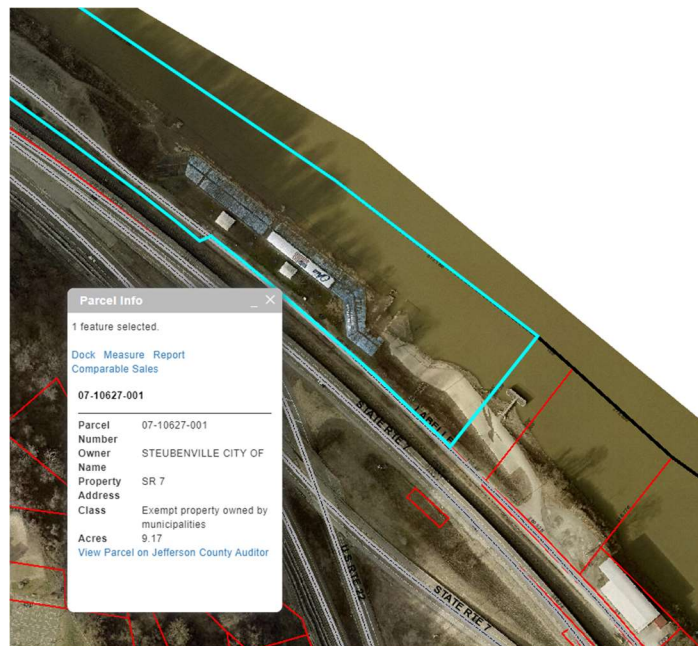


Figure 2 – City Owned Land



Figure 3 – Private Land

Significantly, remnants of a previously employed boat lock are present on the site. The proposed improvements work within the existing limits created by the existing river wall. The full structural condition of the existing river wall is unknown and future investigation would be needed to address structural integrity. Anything beyond external visual inspection of the sea wall integrity lies outside the scope of this report. As part of this investigation an initial aerial survey was performed using drone photography. This imagery is included as part of this report and can be referenced for the sea wall conditions. Based on the visual inspection, it was determined the structure is suitable to support the outlined work. In the event that this project moves forward, it is recommended to have a thorough structural evaluation of the sea wall. Moreover, the evaluation has identified the existing picnic shelter houses as potential candidates for replacement. Another observation is that the existing pier is in satisfactory condition and does not require replacement.



Figure 4 – Existing Pier

Additionally, it is noteworthy that the existing revetment, while currently serving its purpose, is in poor visual condition, with sections visibly crumbling (Figure 5). This visual deterioration signals the need for attention and potential rehabilitation to maintain the structural integrity and aesthetic quality of the site. The recommendation at minimum is to replace at least 30% of the existing revetment with new panels. Ideally if funding allows the revetment could be replaced with a more functional furnishing such as building in amphitheater seating or replacing with a retaining wall. Some options of which have been outlined as part of this report. As part of this project examination, it was determined that Division of Wildlife will not contribute financially to the park infrastructure, of which this revetment is considered. Costs related to park infrastructure will fall under City of Steubenville, and these expenses have been listed separately at the request of ODNR.



Figure 5 – Existing Revetment

The ramp is currently accessible via an existing gravel access drive that transitions into a concrete drive and parking area. However, the existing parking area striping falls short in length. This inadequacy leads to vehicles with trailers parking at awkward angles to avoid obstructing traffic flow as seen in Figure 6. The current site parking striping consists of 19 standard spaces and two ADA parking spaces.

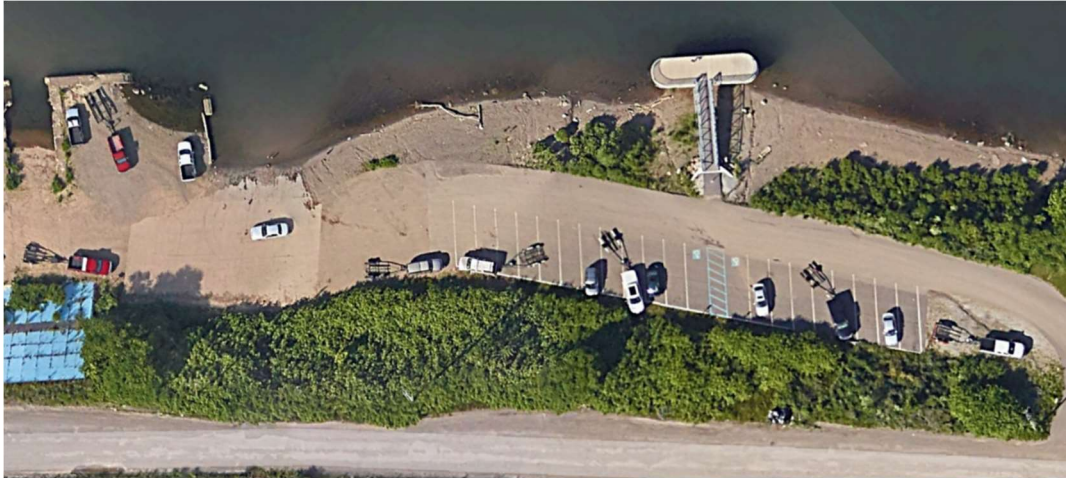


Figure 6 – Existing Parking

A notable issue identified is the substantial amount of dust resulting from traffic traveling on the gravel sections of the access roadway, as illustrated in Figure 7. This dust generation presents an inconvenience and visitor complaints raised the need for mitigation measures.

Furthermore, the overall condition of the roadways is subpar, characterized by numerous potholes that compromise the safety and usability of the area. Addressing these road conditions is imperative to ensure a smoother and safer experience for boaters and other users of the facility. A comprehensive approach to roadway maintenance and surfacing is crucial to enhance accessibility and remove hazards associated with poor road conditions.



Figure 7 – Road Dust

Proposed Plan

3.1 Overview

The initial plan set created as part of this document consists of one base recommendation, supplemented by five other options. These options are structured as such to allow for flexibility in selection due to possible budget constraints.

Option 1 is considered the minimum work required to improve the site, including replacing the existing boat ramp, adjusting the existing paving limits, and restriping the southern parking lot. In addition, the existing lock north of the ramp is to be filled in and paved, and a minimum of 30% of the existing failing revetment is to be removed and replaced.

Option 2 is an addition to option 1 and consists of paving the lower drive from the proposed ramp, to past the extents of the existing revetment. The intention behind this option is to improve circulation for the site. This option can be added independently of other work.

Option 3 is also an extension of option 1 and meant to dovetail with option 2. This entails repaving the existing gravel 'northern parking area' and the upper gravel drive. The intent of this option is to increase the parking count and improving circulation for the site by providing a circular traffic pattern encompassing the entire park.

Option 4 shows the removal of the southern section of existing revetment. This would be replaced with a retaining wall, facilitating the use of the reclaimed area as additional parking.

Option 5 depicts the installation of a retaining wall which can be constructed independently from option 4 and serves to further extend limits of paving for option 1. The proposed retaining wall allows for a more comprehensive regrading of the site which in turn provides more parking spaces and allows larger drive lanes and increased maneuvering area.

Option 6, the replacement of existing revetment with amphitheater style seating, was included as an example of future enhancements to the site. This would further rehabilitate the failing revetment, while providing a usable feature. As part of the development of this report it was determined that this option will not be pursued as a part of this ODNR initiative, but remains included for reference should the city be interested in further site development.

Options 1-3 provide a combined benefit if completed as a package. This would maximize the parking capacity, address road conditions, and provide improved circulation.

Options 4 and 5 similarly provide a combined benefit, also maximizing parking and addressing the existing revetment conditions.

3.2 Option 1 – Base Scope of Work Proposed

The proposed boat ramp outlined in this report signifies the minimum improvements necessary to provide a boat ramp, ensuring ample maneuvering space for a 19' long vehicle towing a trailer measuring 26' long and 8.5' wide, consistent with the standard design dimensions for Ohio boating facilities. Notably, the existing ramp falls short of meeting the minimum slope requirements outlined in the boating manual, posing unnecessary challenges for boaters attempting to access and utilize the ramp. To address this, the initial plan offers a proposed ramp which meets the requirements laid out in the boating design manual. This proposed ramp meets the requirements for being a two-lane launch ramp. At the request of DNR, the proposed two-lane launch ramp was designed to integrate a fixed concrete courtesy dock.

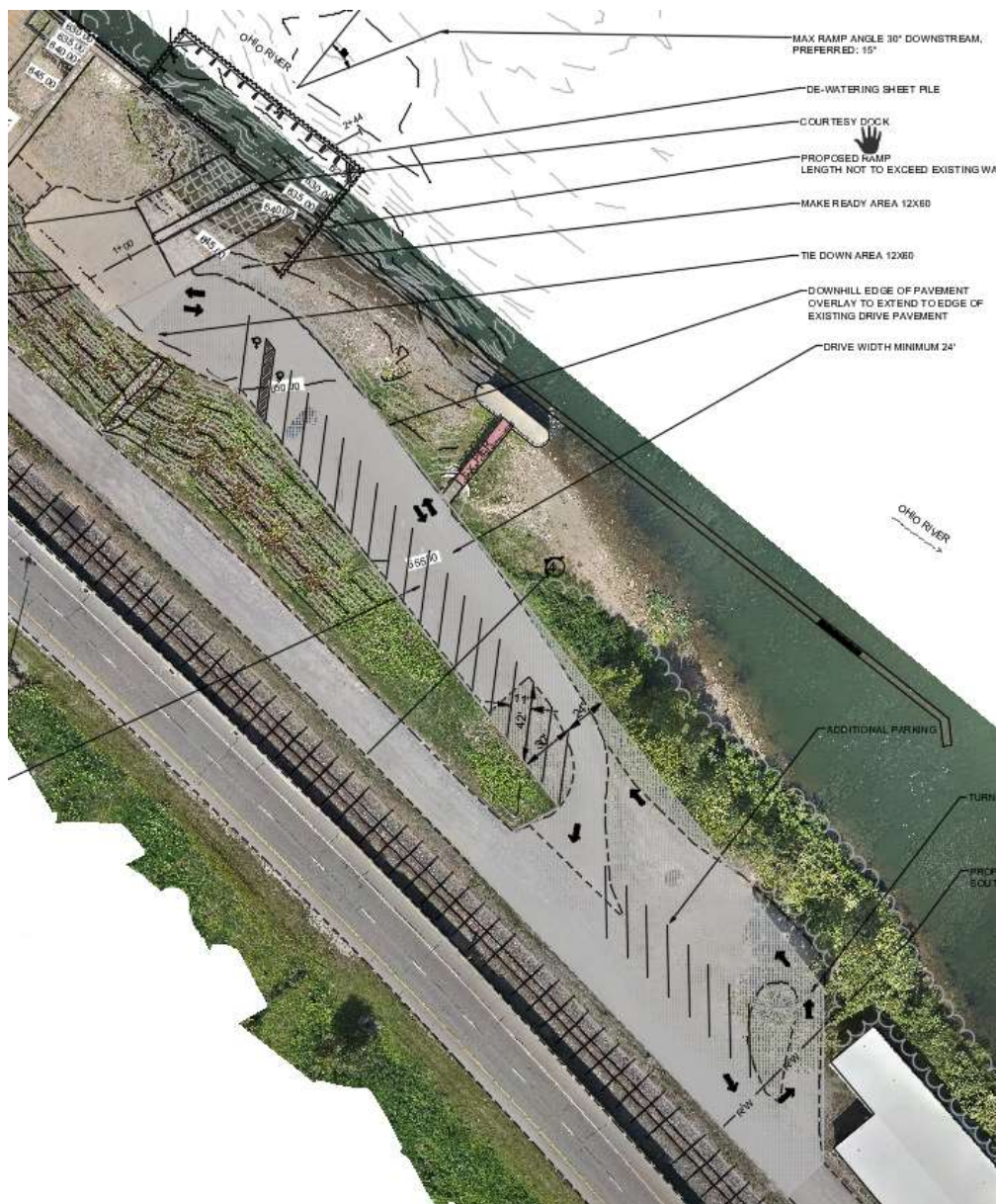


Figure 8 – Option 1

The constraining factor in implementing a two-lane launch ramp is parking and make-ready / tie-down requirements as laid out in the boating facility guidelines. The minimum number of parking spaces needed to install a two-lane ramp is 30. Option 1 alone provides 25 parking spaces. This does not meet the minimum requirements for a two-lane ramp. As such, Option 1 is intended to be partnered with another Option outlined in this report that increases the parking count to meet or exceed the minimum of 30 parking spaces recommended. If this parking count is not achieved, the proposed ramp will have to be redesigned as a one lane launch ramp, per the guidelines set forth in the Ohio Boating Facilities Standards Manual.

1. Number of Launch Lanes Required*

	One Lane	Two Lanes	Three Lanes	Four Lanes
Preferred:	30 Spaces	60 Spaces	90 Spaces	120 Spaces
Minimum:	10 "	30 "	60 "	90 "
Maximum:	50 "	100 "	150 "	200 "

*based on number of boat trailer parking spaces

Figure 9 – Parking Requirements

Recognizing the inadequacy of the current southern parking area for both vehicle and boat parking, a viable solution involves extending and restriping the pavement limits. The Division of Wildlife specifically requested for spaces to be redesigned to accommodate vehicles of 47' in length, and the site has been redesigned in kind. Additionally, the existing asphalt and concrete surfaces throughout the site have been identified as requiring replacement. The remnant of the existing boat lock is also to be filled in and paved over as part of option 1. This section of the sea wall will have sheeting driven alongside it, to facilitate this work.

The proposed boat ramp aligns with the existing layout in length and river approach angle, with modifications focused on ensuring compliance with boat design manual standards. To meet these standards, adjustments to the slope are necessary, requiring both the ramp and the surrounding maneuver area to undergo regrading. See Appendix 5.1 for the existing and proposed ramp profile.

The current roadway will undergo a comprehensive upgrade, involving expansion, and repaving to improve overall functionality and aesthetics. Adjacent to the site's entrance, the existing gravel turnaround will be paved. This turnaround area has been identified as a place to add additional parking stalls. The existing parking area will be restriped and resized to align with mandated dimensions for parking spaces, ensuring compliance with regulatory standards.

3.3 Option 2

The scope of work for this option is limited to paving the lower drive section from the extents of paving of option 1, up to the northern parking lot connection. This option would be beneficial for improving the overall site conditions and flow of traffic to the site. The existing pavement is currently in satisfactory condition and this option can be reserved for future consideration.

The primary disadvantage of this option is the additional cost, and the lack of immediacy in needing to repave this section of the site.

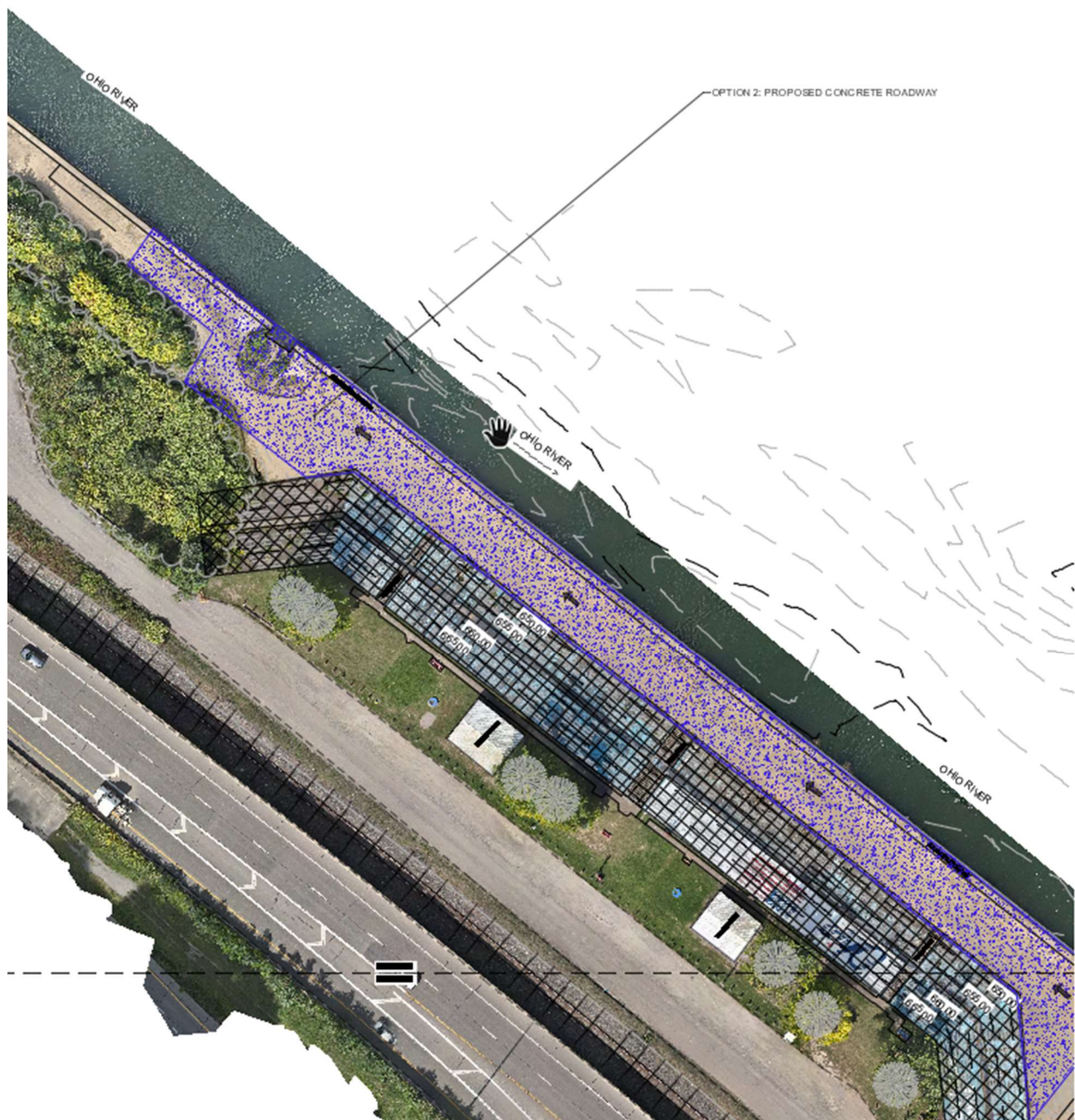


Figure 10 – Option 2

3.4 Option 3

Option 3 focuses on maximizing the site with improvements to the upper lot and access drive. Through the addition of a ramp at the north end of the property a connecting "loop" is created between the upper and lower sections of the Park. The result enhances the experience for both boaters and visitors while ensuring optimal access to all areas. Combining this option with option 2 offers a comprehensive solution, providing boaters with expanded maneuvering and parking options.

The paved northern parking spaces not only improve the overall Park appearance but also offers ample vehicle parking, providing convenient pedestrian access to the nearby picnic shelters.

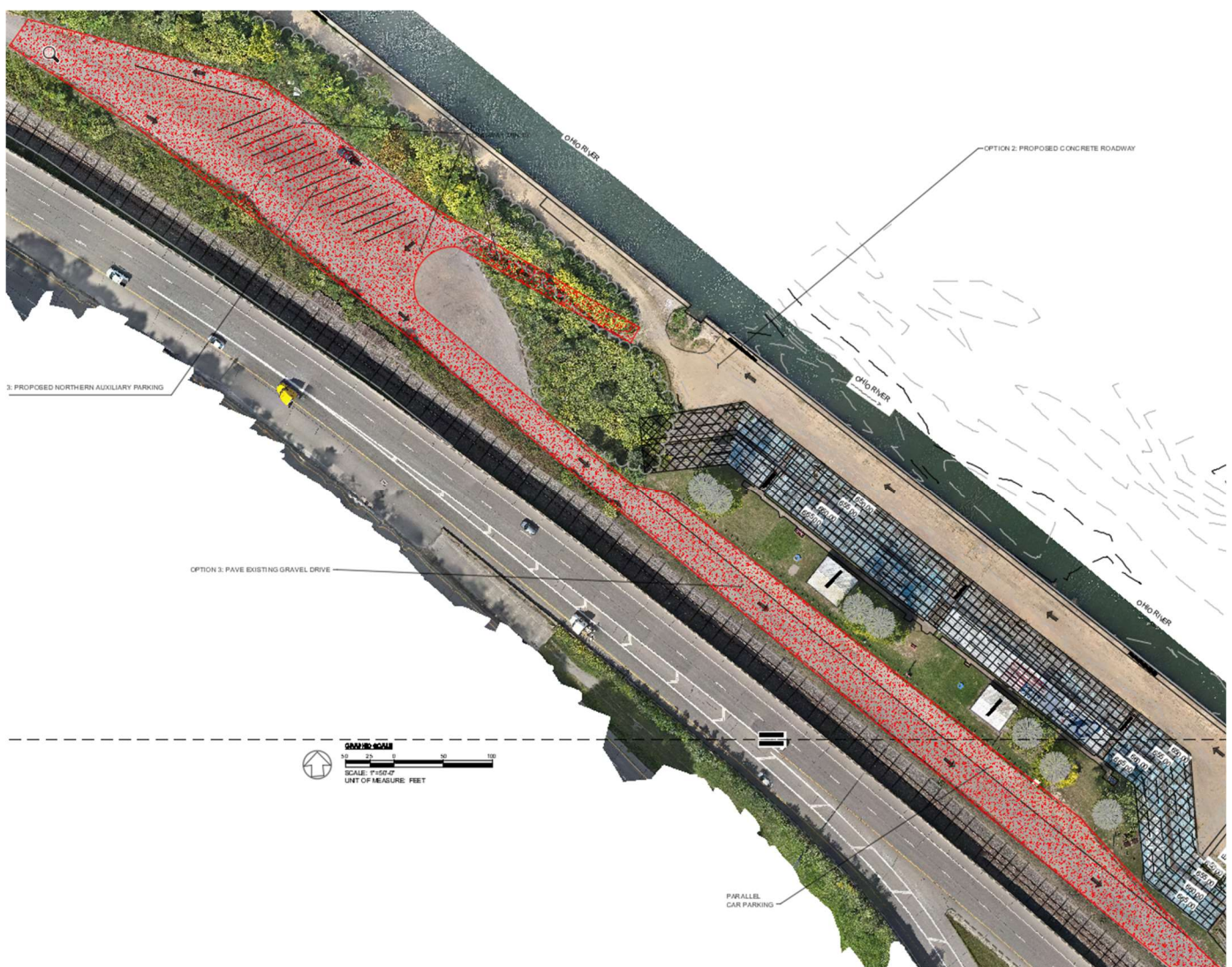


Figure 11 – Option 3

Travel distance from the northern car park to the proposed ramp, was reviewed and highlighted in figures 12-14. These dimensions compare the straight-line distance from this proposed northern parking lot to the furthest parking spaces at existing ODNR facilities. As confirmed in these exhibits the distance from the northern parking area is comparable to that of other ODNR facilities.

This option would greatly improve the site conditions and improve the flow of traffic. Costs are again the primary disadvantage of this option.



Figure 12 – Proposed Parking Distance: 967'



Figure 13 – Existing Site Parking Distance: 968'

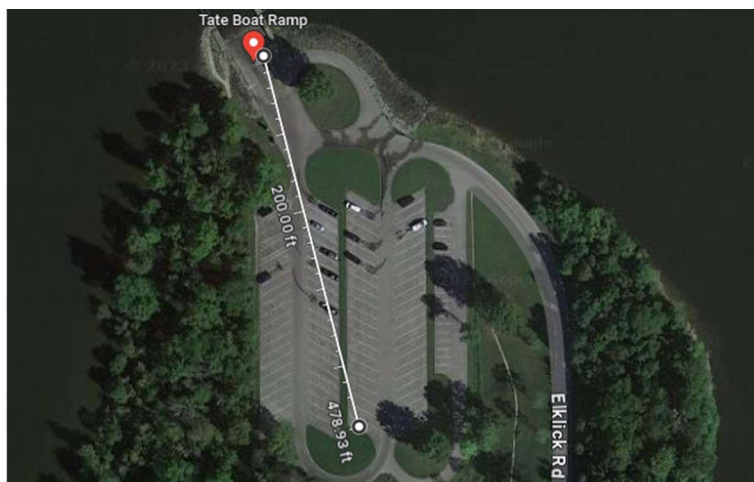


Figure 14 – Existing Site Parking Distance: 478'

3.5 Option 4

To address the failing existing revetment, and increase the parking count, option 4 represents the removal of the failing revetment, replacing with a retaining wall. This reclaimed area would provide an additional 13 parking spaces and expand the turnaround area for the boat launch. This option is highly recommended as it will address two critical issues for the site providing much needed infrastructure improvements, however, the large investment will likely require long term budget planning.



Figure 15 – Option 4

Option 5 is a reimagining of Option 1 with the addition of constructing a retaining wall to the south of the existing revetment. This retaining wall will allow for the site to be regraded even further. The area gained from regrading the site will be used to expand the drive lanes, increase parking, and expand the turnaround area. Ideally Options 4 and 5 can be implemented together, but if cost prohibitive, the two options can be completely independent of one another. Option 5 is the recommended, all-inclusive alternative approach which absorbs the scope of Option 1 along with the new wall.



3.7 Option 6

Option 6 focuses on the complete rehabilitation of existing shelters, stairs, and the revetment. This design envisions the reconstruction of the existing revetment. A notable enhancement in this proposal is the integration of amphitheater-style seating, creating an attractive, multipurpose event space for park visitors. This seating is positioned to allow spectators a view of the nearby bridge. This option is designed to not only improve infrastructure but also enhance the recreational and event capabilities of the park. In addition to the above site improvements, this option allows for an expanded boat ramp maneuvering area. Although this concept provides optimal improvements to the site, the extent of construction required appears to be cost prohibitive at this stage. This Option was determined to be not relevant to the current project scope but remains included as an example of future site enhancements for the City of Steubenville to consider.



Figure 17 – Option 6

3.8 Options not Pursued

While exploring design possibilities, the consideration of incorporating floating courtesy docks was examined. However, based on feedback gathered during the initial kickoff meeting with ODNR and local representatives, and considering the river conditions and the regular maintenance demands associated with floating docks, it was determined that such additions were deemed inappropriate for this site. At the request of ODNR, a fixed courtesy dock was designed instead.

At the request of ODNR another design that was considered was adding a secondary ramp location to the north of the existing ramp. Cutting a ramp into a new section of the existing wall is also not the preferred option, as the integrity of the wall is hard to quantify within the scope of this assessment. This option was explored but ultimately due to the grades involved and inadequacy of the site layout, determined to not be worth pursuing.

3.9 Summary and Recommendation

The report outlines several options for improving a boat ramp site, focusing on upgrades to meet standards, increase parking, and enhance overall functionality. Option 1 proposes basic ramp upgrades and surface improvements. Option 2 is limited to paving the lower drive section, while Option 3 focuses on paving the northern parking area and access road to reduce dust and improve access. Option 4 addresses failing infrastructure by replacing part of the revetment with a retaining wall to add parking. Option 5 constructs a new retaining wall southward for further site regrading and expansion. Option 6 depicts options for revetment rehabilitation by adding amphitheater-style seating and is included as an example of future enhancements.

If the project budget allows scope beyond the minimum improvements of Option 1, a combination of Options 2,3 and 5 are recommended for optimal results.

Permitting and Regulations

4.1 Permitting and Regulations

The proposed project would require U.S. Army Corps of Engineers (USACE) authorization under an **NWP 36 – Boat Ramps permit**. The project location is in an area where the Ohio EPA has not granted Section 401 coverage to NWP 36 – Boat Ramps permits. An **Individual 401 or Director’s Authorization** would be required from the Ohio EPA after a USACE permit had been obtained.

The FEMA Flood Insurance Rate Map indicates that the project location is within a special flood hazard area regulatory floodway Zone B. This designation would have minimal impact on the project as no structures with enclosed areas, such as buildings, are included in the design.

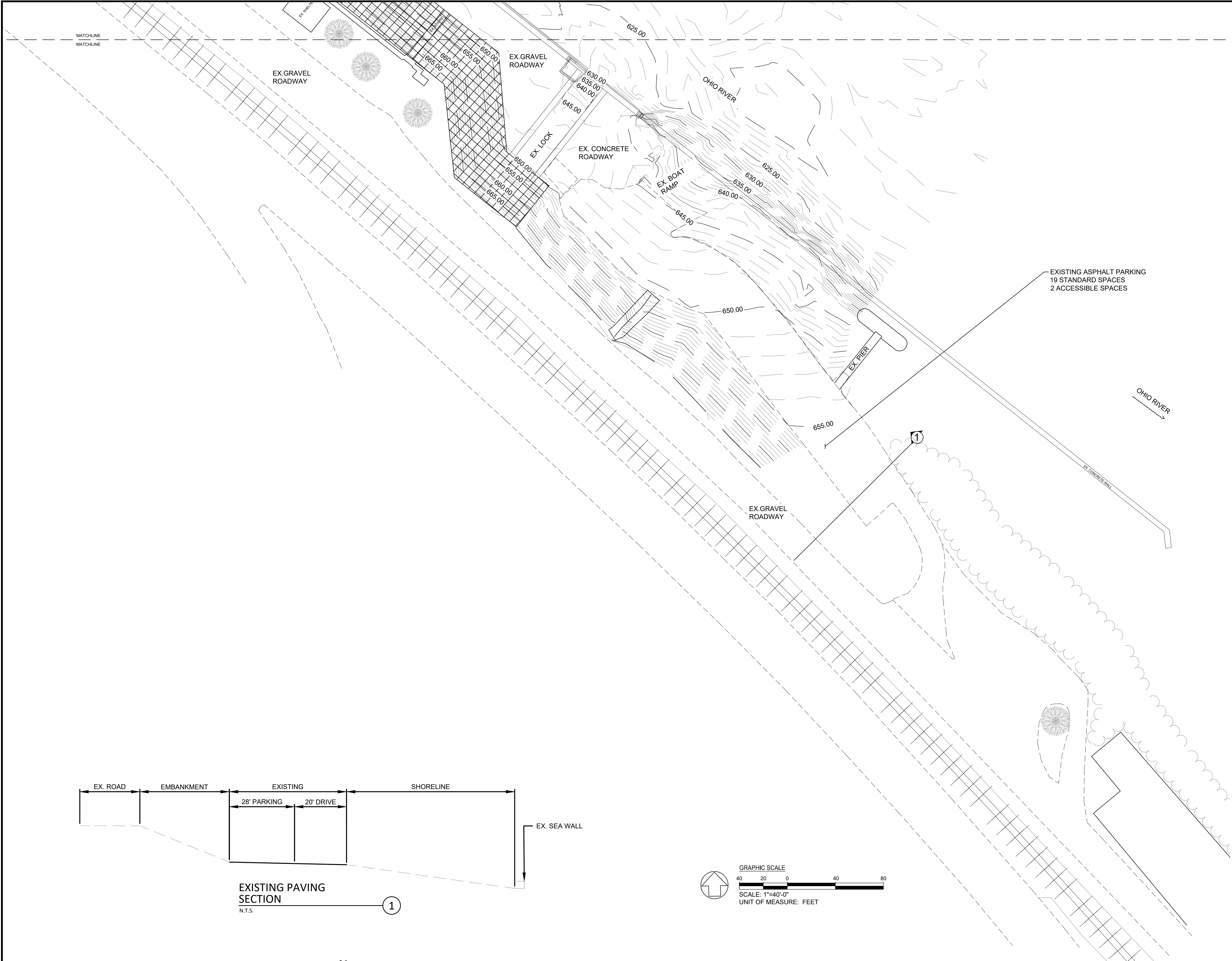
Two wetlands have been identified. These wetlands are small and located outside of the base bid proposed work areas. Wetland B would however lie within the limits of Option 2. These wetlands can be seen as part of the ecological resources map in appendix 5.1. Wetland A would likely be determined to be category 1, and wetland B a category 3.

A stream was identified near the site but is out of the scope of the ecological survey limits. This can also be seen in appendix 5.1.

Threatened and Endangered species may be present at the project location. **USFWS Section 7 Consultation** including an **Ecological Survey** and **Mussel Survey** is required. ODNR Office of Real Estate and Land Management had records of 3 rare or endangered species at the site or within a one-mile radius, with two of the noted species having potentially suitable habitat within the project site. The ODNR ONHD database does not have any Indiana bat capture location or hibernacula records within a one-mile radius of the study area. However, several trees in the project area would be suitable roosts for these bats and therefore all tree removal should be performed between October 1 and March 31.

APPENDIX

5.1 Preliminary Plan Set

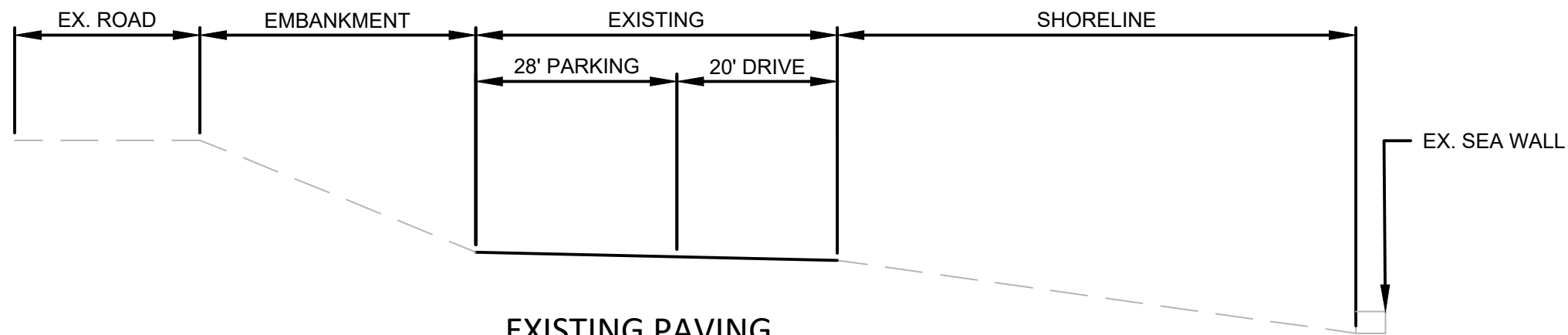


- MISC. NOTES**
- ALL ITEMS NOTED FOR DEMOLITION SHALL BE REMOVED & RECYCLED OR DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE FEDERAL & LOCAL REGULATIONS, UNLESS OTHERWISE DIRECTED TO BE SAVED BY OWNER.
 - CONTRACTOR SHALL TAKE CARE TO PREVENT DAMAGE TO TREES NOT MARKED FOR REMOVAL.
 - CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF DISCREPANCIES OR CONFLICTS BETWEEN ACTUAL CONDITIONS AND THOSE INDICATED ON PLANS.
 - ALL STORM SEWER INLETS IMPACTED BY CONSTRUCTION ACTIVITY SHALL BE FITTED WITH THE APPROPRIATE INLET PROTECTION FOR SEDIMENT CONTROL DEVICES DURING CONSTRUCTION.
 - EROSION CONTROL MEASURES SHALL BE IN-PLACE AND OPERATIONAL PRIOR TO GROUND DISTURBANCE.
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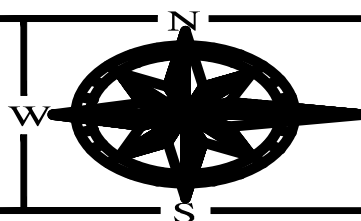
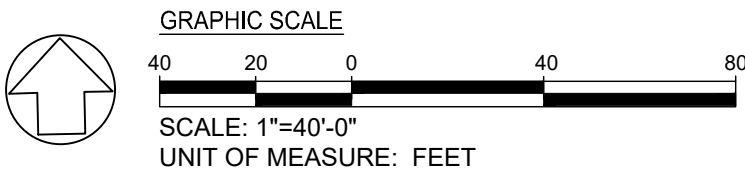
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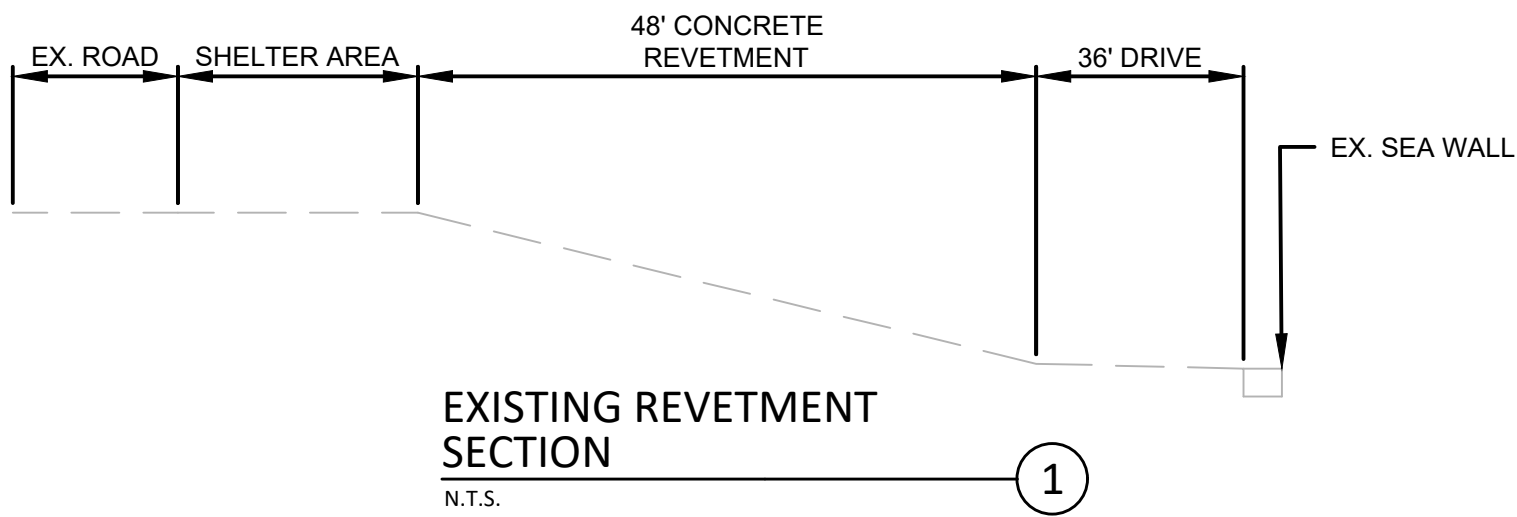
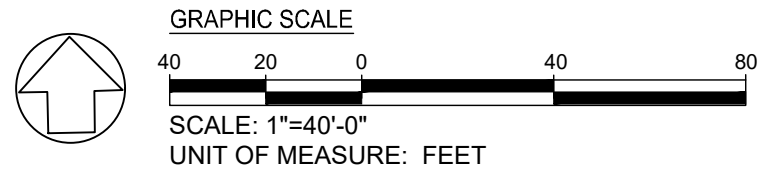
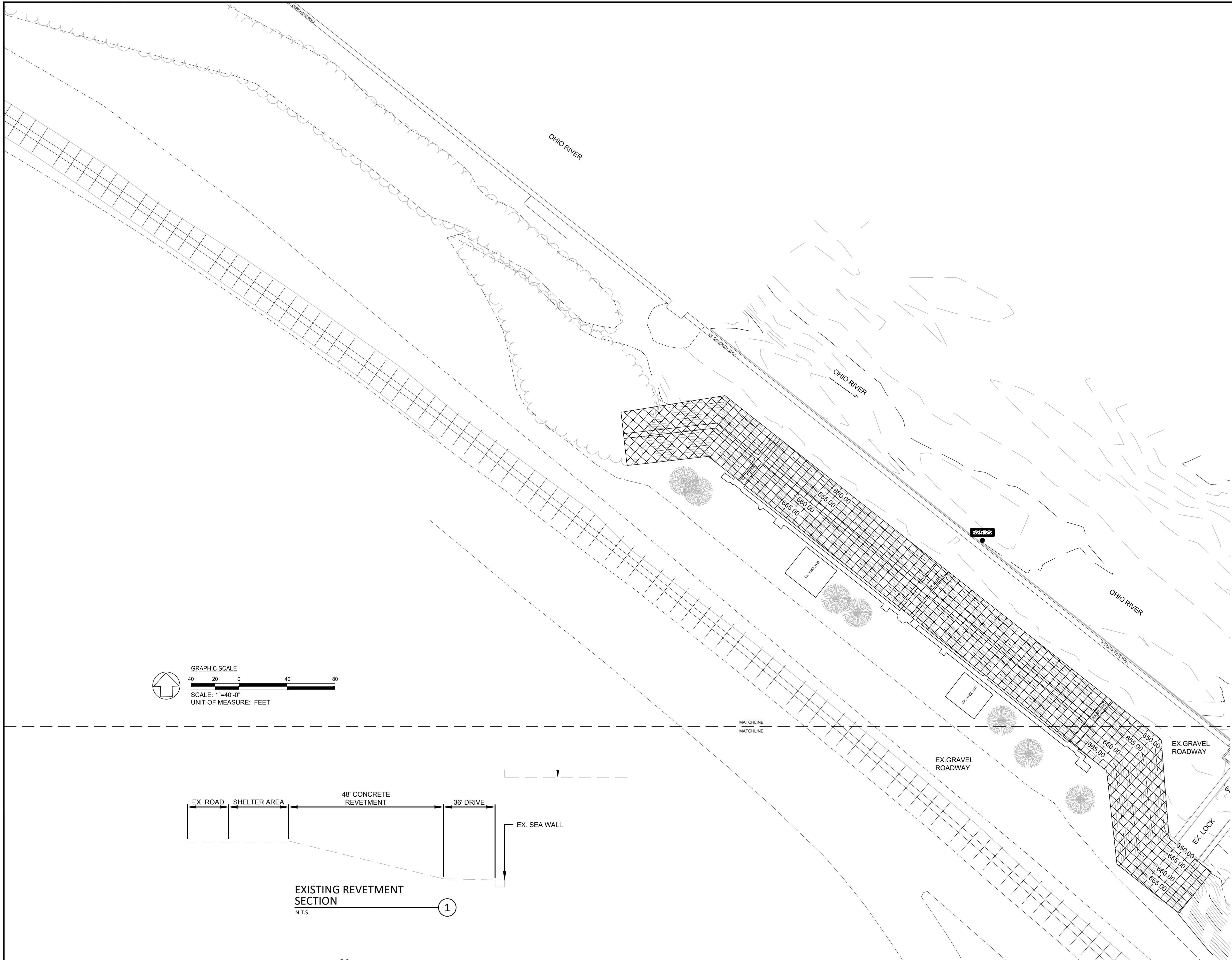
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PARKING COUNT		21
STANDARD	19	
ACCESSIBLE	2	
TOTAL	21	



EXISTING PAVING SECTION
N.T.S.

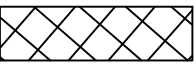




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LEGEND

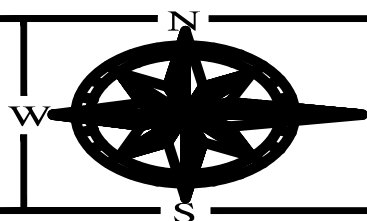


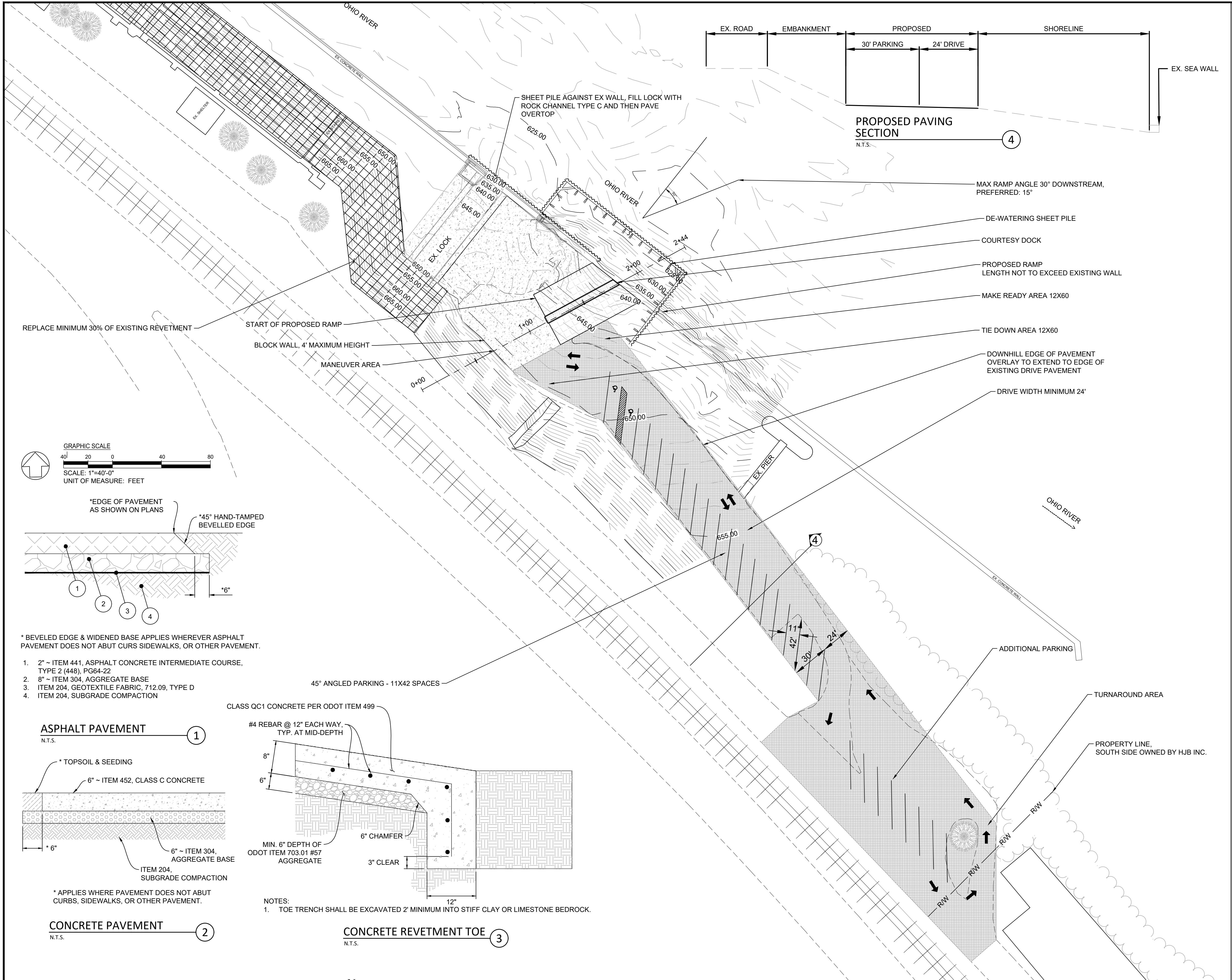
REVETMENT

PARKING COUNT

STANDARD	19
ACCESSIBLE	2
TOTAL	21

21





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- PROPOSED ONE-WAY DRIVE LANES MUST BE A MINIMUM 15' WIDE
- PROPOSED TWO-WAY DRIVE LANES MUST BE A MINIMUM OF 24' WIDE
- MANEUVER AREA MAXIMUM CROSS SLOPE 2%. MAXIMUM SLOPE TOWARDS RAMP 10%
- 30% MINIMUM OF EXISTING CONCRETE REVETMENT TO BE REPLACED

LEGEND

- PROPOSED FULL DEPTH ASPHALT, REFER TO DETAIL 1
- PROPOSED RAMP
- PROPOSED CONCRETE, REFER TO DETAIL 2
- REVETMENT

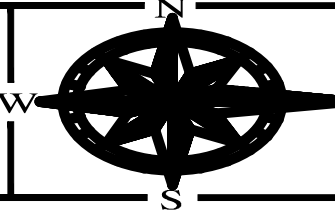
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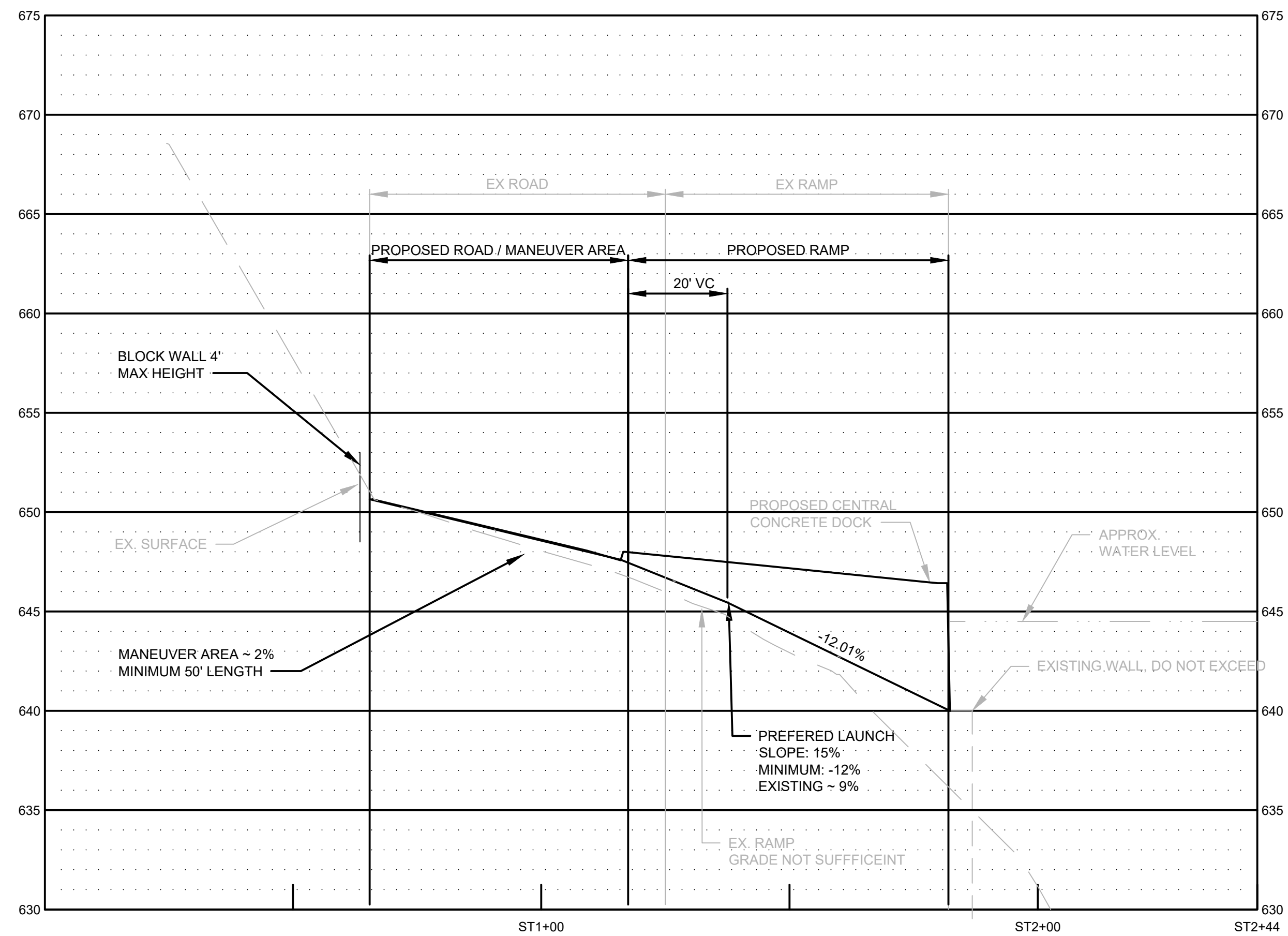
STANDARD	23
ACCESSIBLE	2
TOTAL	25

COST ESTIMATE

CITY COSTS	\$206,910.00
ODNR COSTS	\$2,897,259.08
TOTAL	\$3,104,169.08

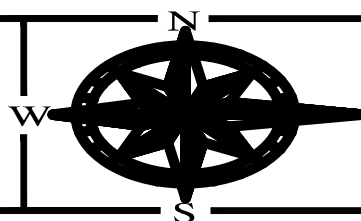
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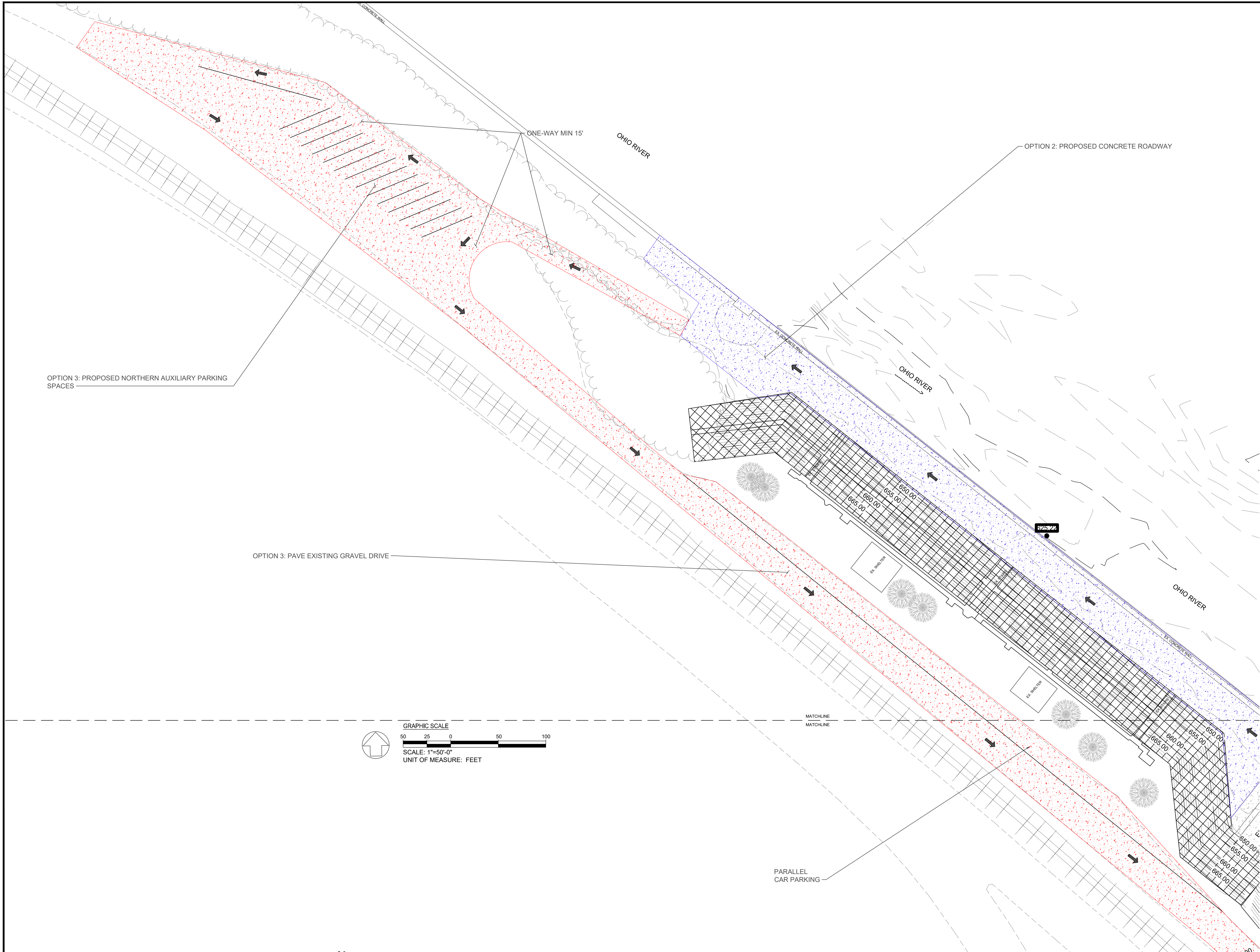




PROPOSED RAMP
PROFILE
N.T.S. ①

SET





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- MANEUVER AREA MAXIMUM CROSS SLOPE 2%. MAXIMUM SLOPE TOWARDS RAMP 10%

LEGEND

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- PROPOSED RAMP
- PROPOSED CONCRETE
- OPTION 2
- OPTION 3
- REVTMENT

PARKING COUNT

STANDARD	23
ACCESSIBLE	2
OPTION 3	13
TOTAL	38

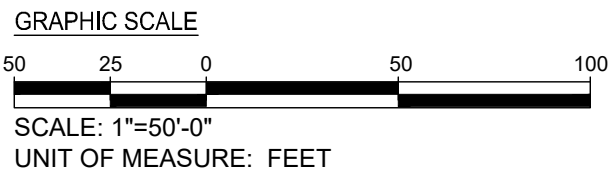
COST ESTIMATE - OPT 2

ODNR	\$846,339.65
CITY	\$0
TOTAL	\$846,339.65

COST ESTIMATE - OPT 3

ODNR	\$1,744,523.90
CITY	\$0
TOTAL	\$1,744,523.90

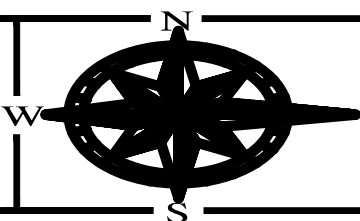
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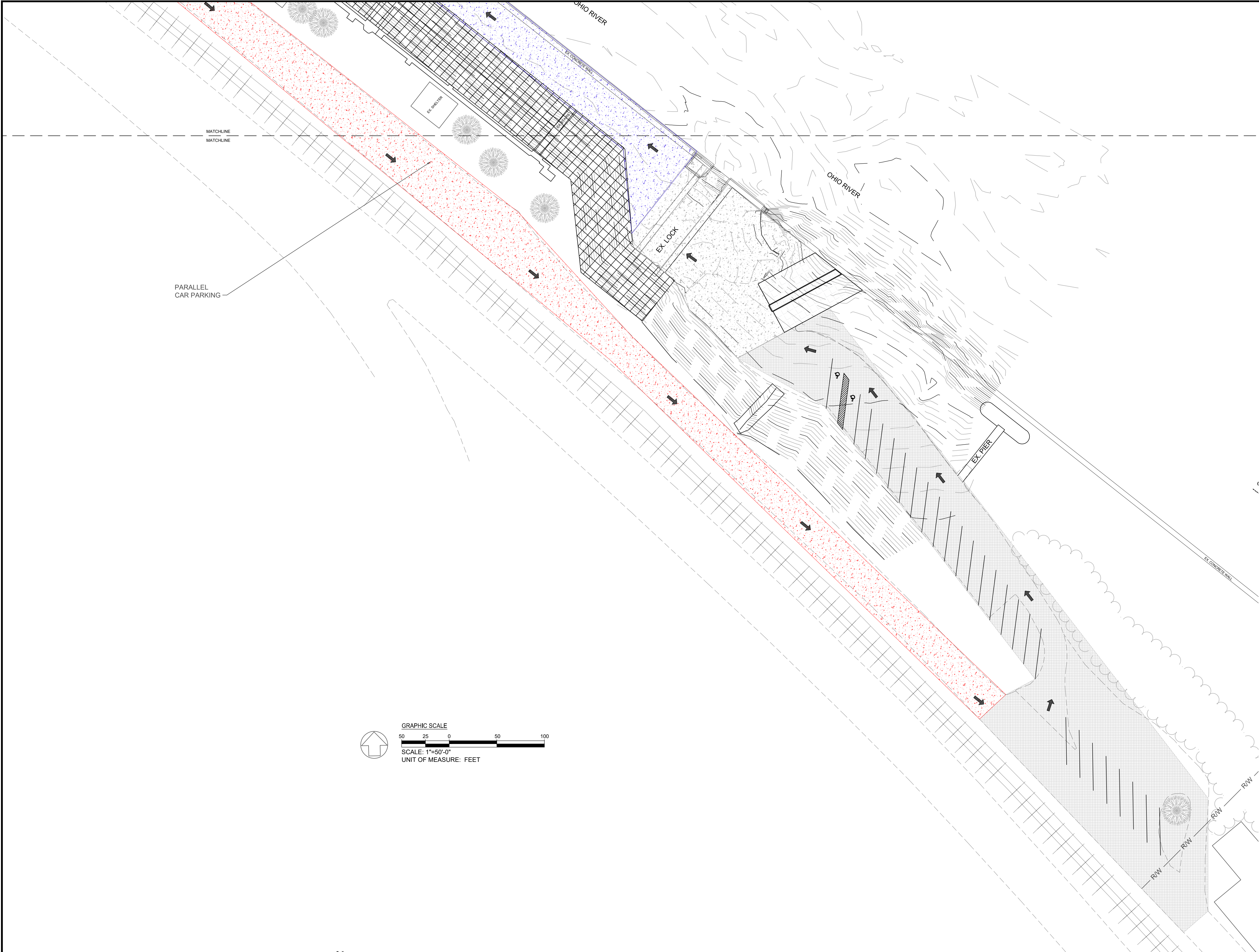


OPTION 2 & 3

DESIGNED BY: JJS	JOB NUMBER: DNR-
DRAWN BY: JJS	SCALE: 1"=40'
CHECKED BY: BAM	DATE: 1-30-24
APPROVED BY: VPJ	REVISED:

SET





MISC. NOTES

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- MANEUVER AREA MAXIMUM CROSS SLOPE 2%. MAXIMUM SLOPE TOWARDS RAMP 10%

LEGEND

- PROPOSED FULL DEPTH ASPHALT
- PROPOSED RAMP
- PROPOSED CONCRETE
- OPTION 2
- OPTION 3
- REVTMENT

PARKING COUNT

STANDARD	23
ACCESSIBLE	2
OPTION 3	13
TOTAL	38

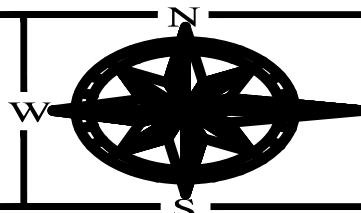
COST ESTIMATE - OPT 2

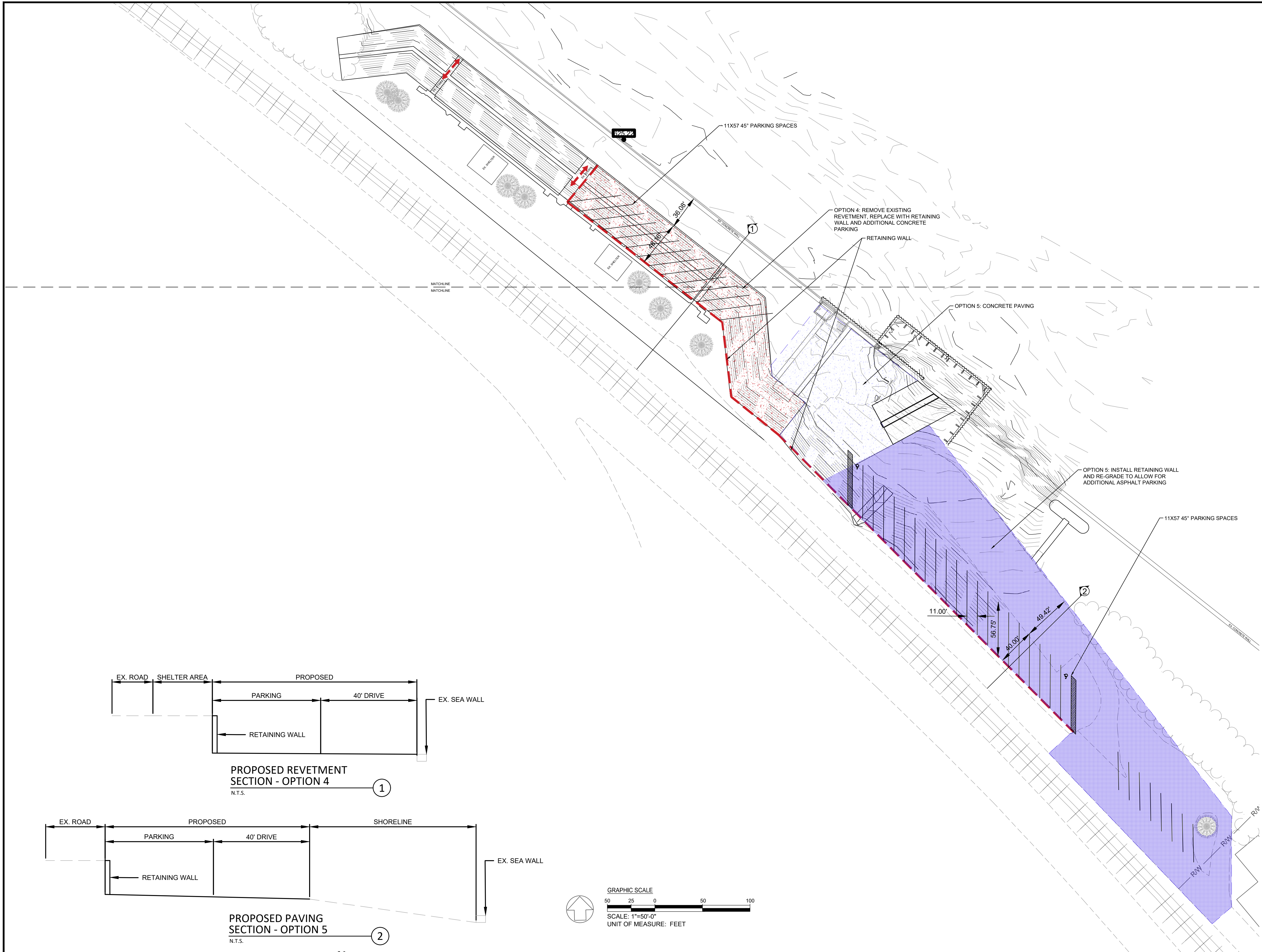
ODNR	\$846,339.65
CITY	\$0
TOTAL	\$846,339.65

COST ESTIMATE - OPT 3

ODNR	\$1,744,523.90
CITY	\$0
TOTAL	\$1,744,523.90

38





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 - OPTION 5 SUPERCEDES OPTION 1

LEGEND

	PROPOSED FULL DEPTH ASPHALT
	PROPOSED RAMP
	PROPOSED CONCRETE
	OPTION 4
	OPTION 5 - CONCRETE PAVEMENT
	OPTION 5 - ASPHALT PAVEMENT
	REVTMENT

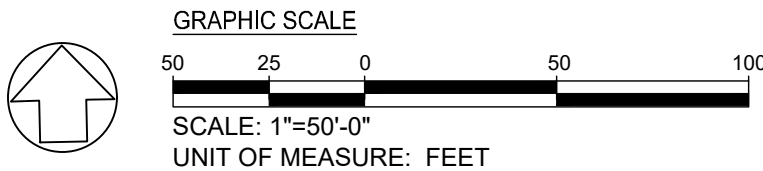
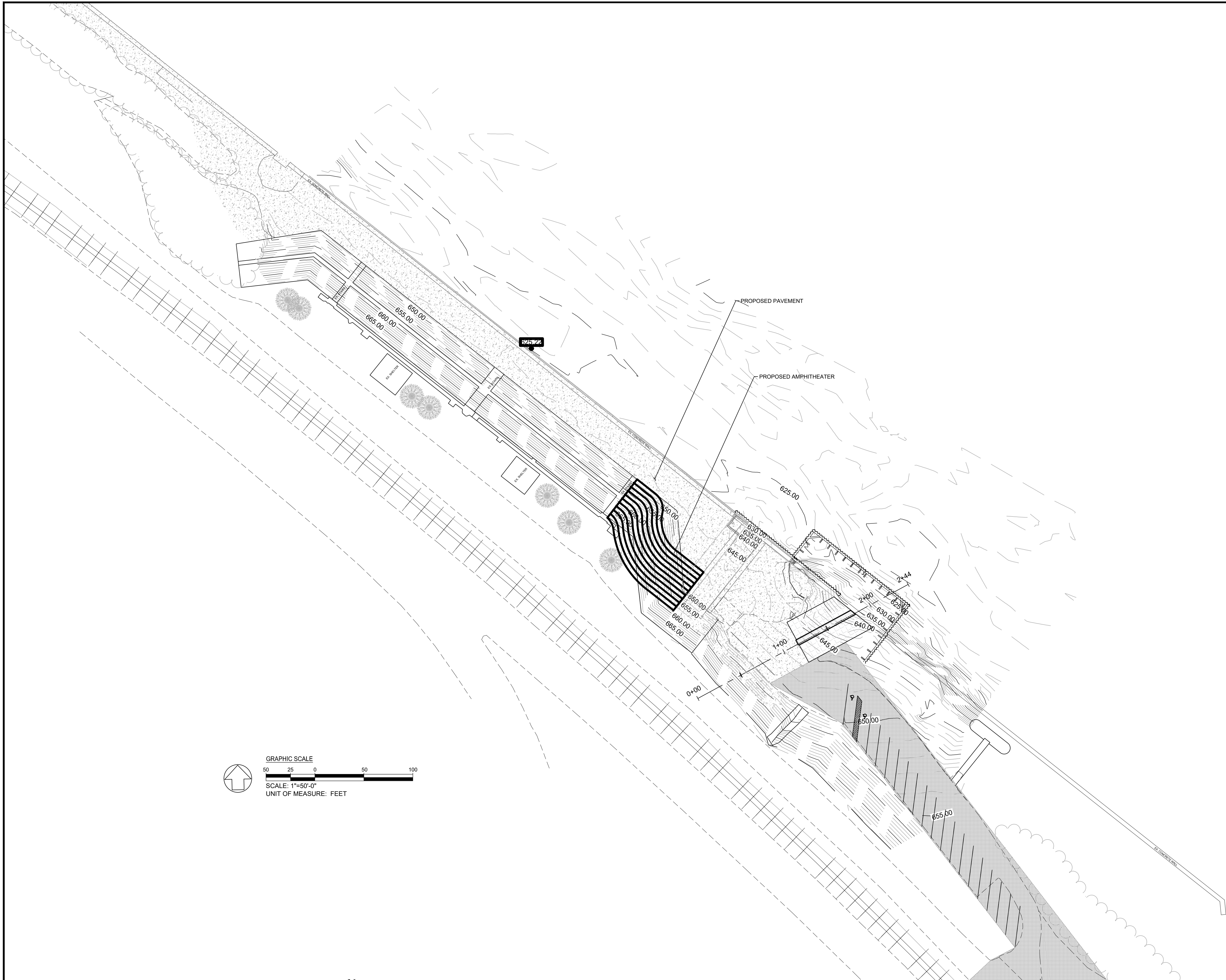
PARKING COUNT - 4	38
STANDARD - OPT 4	13
OPTION 1 -	25
TOTAL	38

PARKING COUNT - 5	28
STANDARD - OPT 5	26
ACCESSIBLE - OPT 5	2
TOTAL	28

PARKING COUNT 4&5	41
OPT 4	13
OPT 5	28
TOTAL	41

COST ESTIMATE - OPT 4	
ODNR	\$1,305,276.61
CITY	\$1,899,855.59
TOTAL	\$3,205,132.20

COST ESTIMATE - OPT 5	
ODNR	\$3,834,528.98
CITY	\$1,490,000.00
TOTAL	\$5,324,528.98



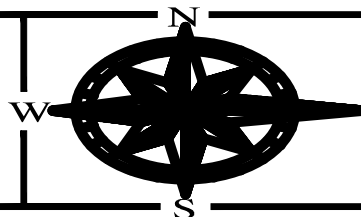
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- 30% MINIMUM OF EXISTING CONCRETE REVETMENT TO BE REPLACED

LEGEND

- PROPOSED FULL DEPTH ASPHALT, REFER TO DETAIL 1
- PROPOSED RAMP
- PROPOSED CONCRETE, REFER TO DETAIL 2
- REVETMENT

SET



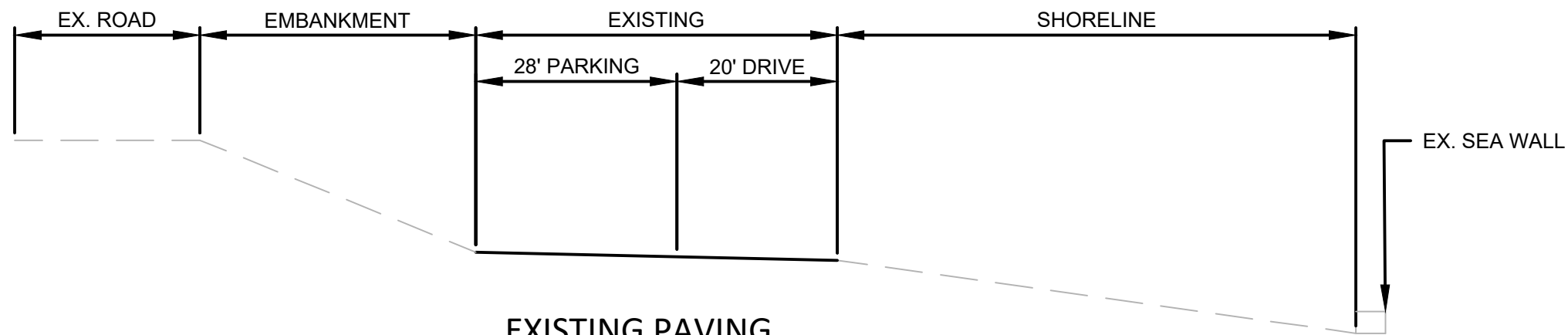


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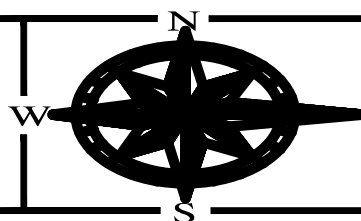
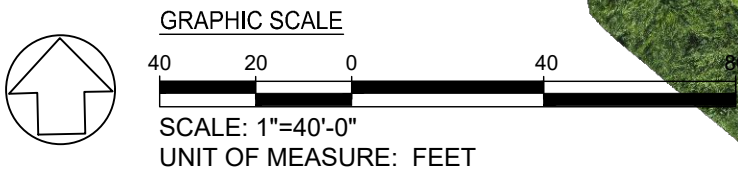
LEGEND

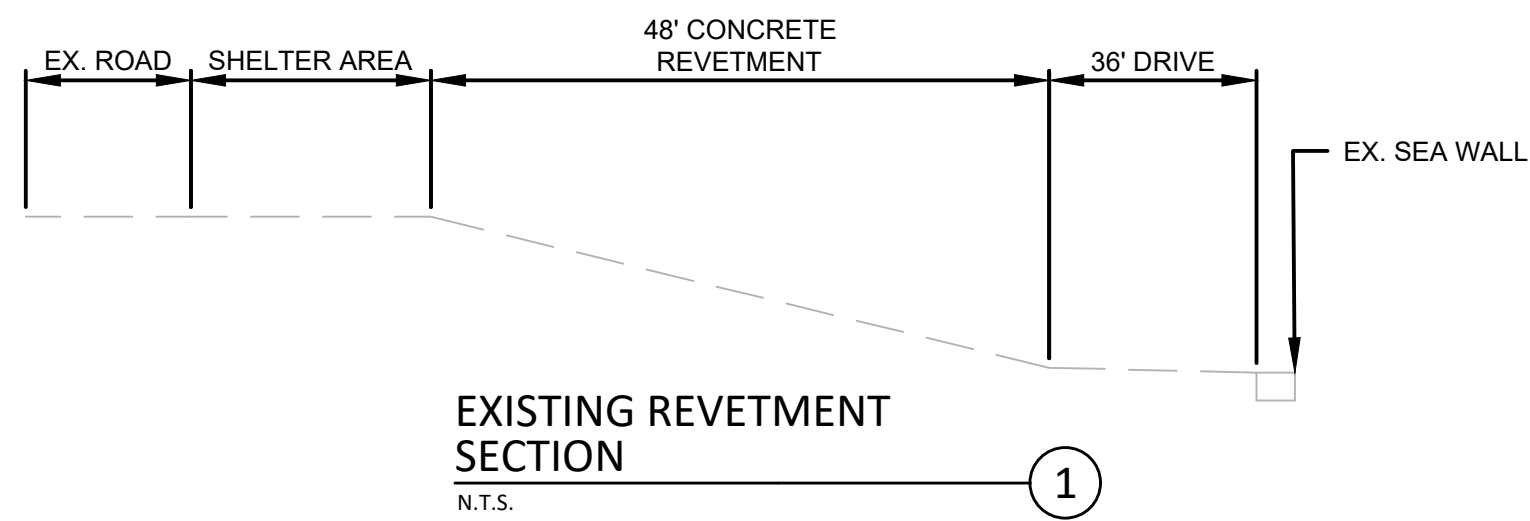
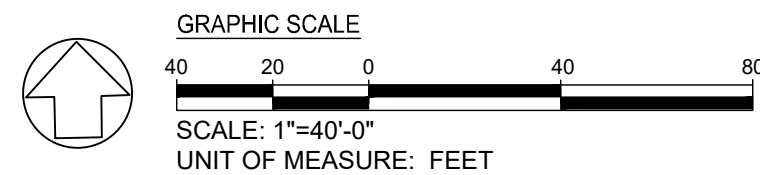
 REVETMENT

PARKING COUNT		21
STANDARD	19	
ACCESSIBLE	2	
TOTAL	21	



EXISTING PAVING SECTION
N.T.S.





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LEGEND

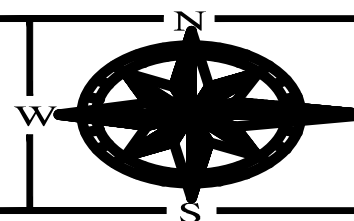


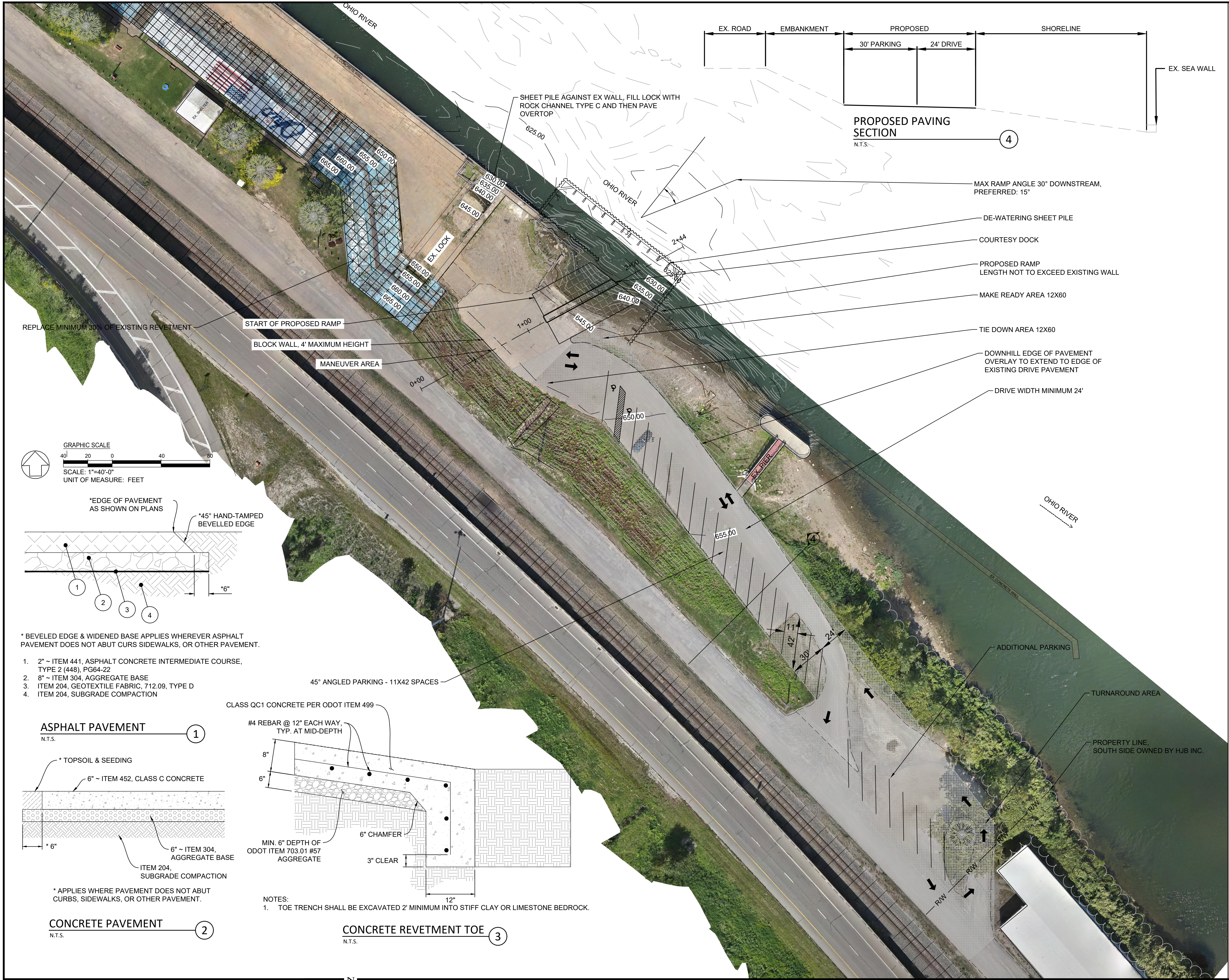
REVETMENT

PARKING COUNT

STANDARD	19
ACCESSIBLE	2
TOTAL	21

21





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LEGEND

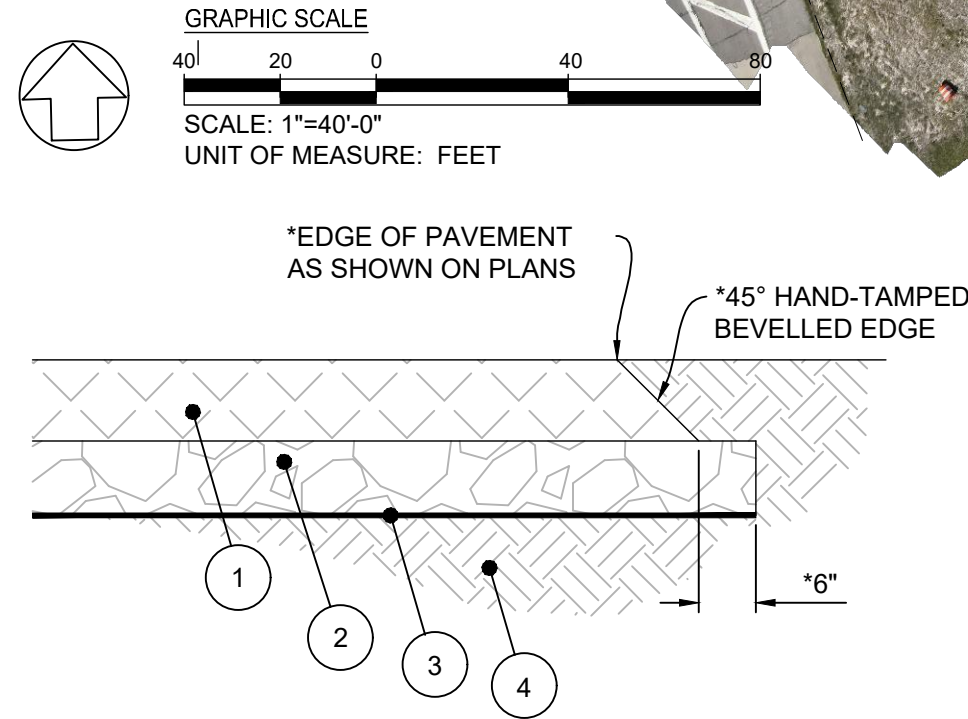
	PROPOSED FULL DEPTH ASPHALT, REFER TO DETAIL 1
	PROPOSED RAMP
	PROPOSED CONCRETE, REFER TO DETAIL 2
	REVETMENT

PARKING COUNT

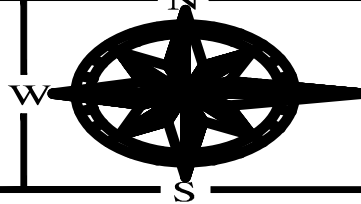
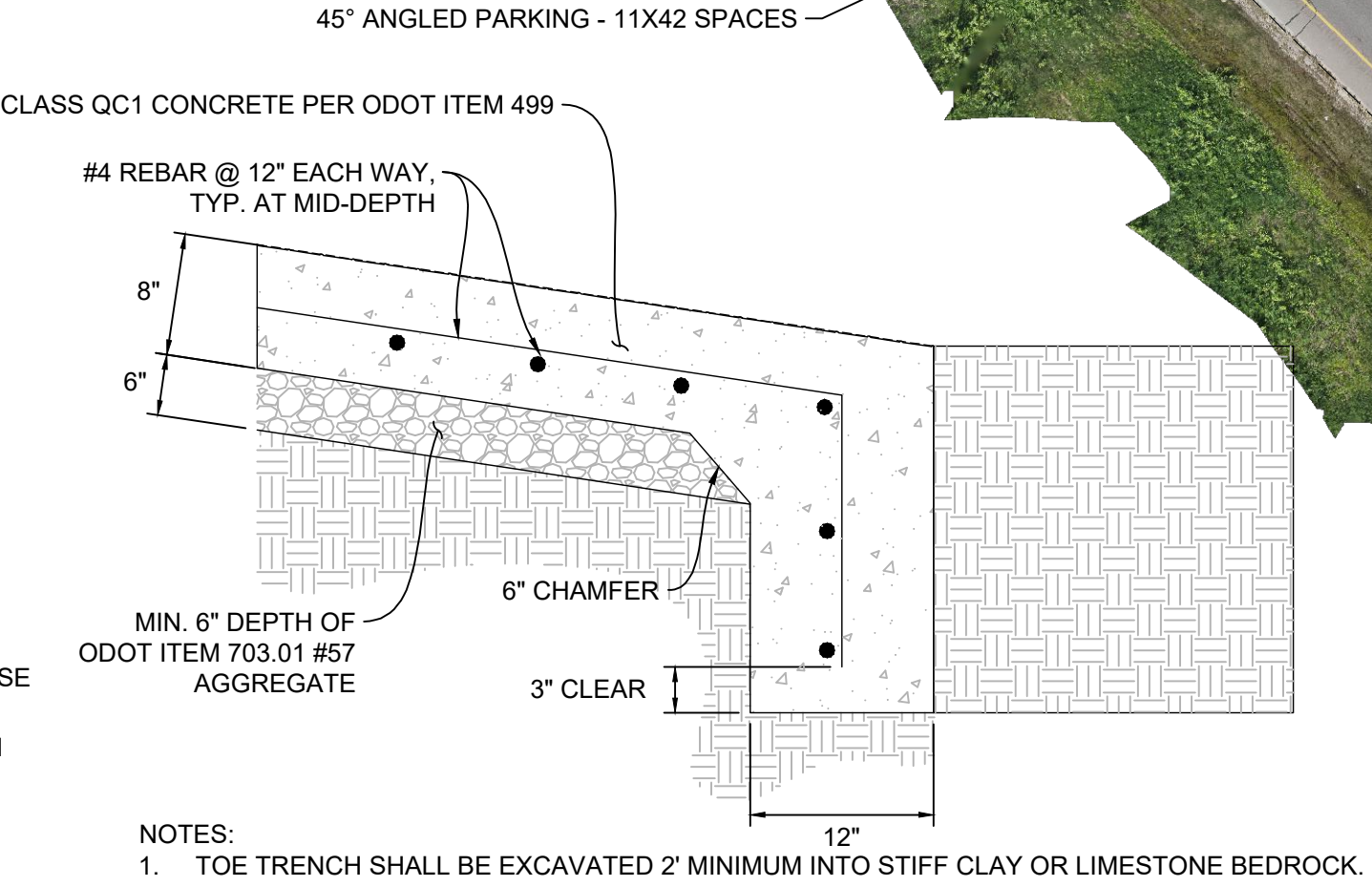
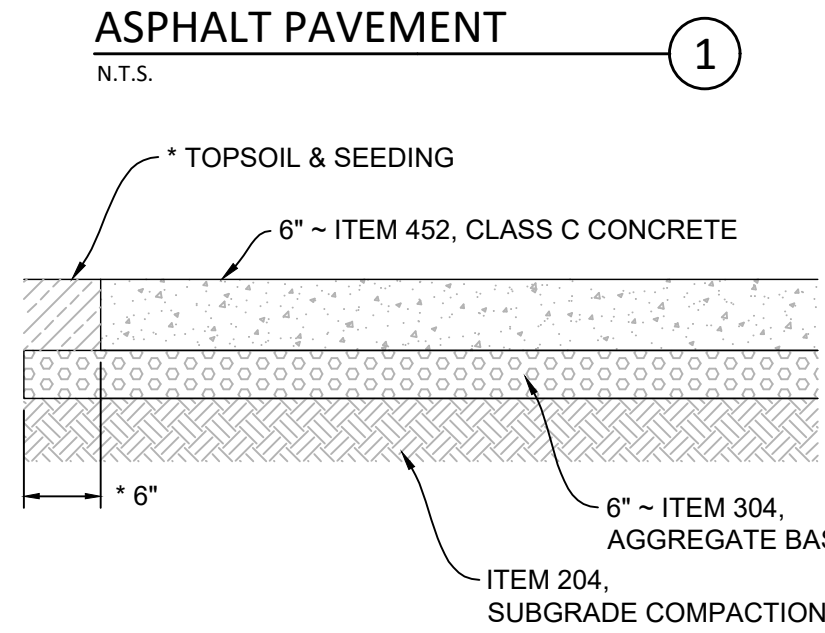
STANDARD	23
ACCESSIBLE	2
TOTAL	25

COST ESTIMATE

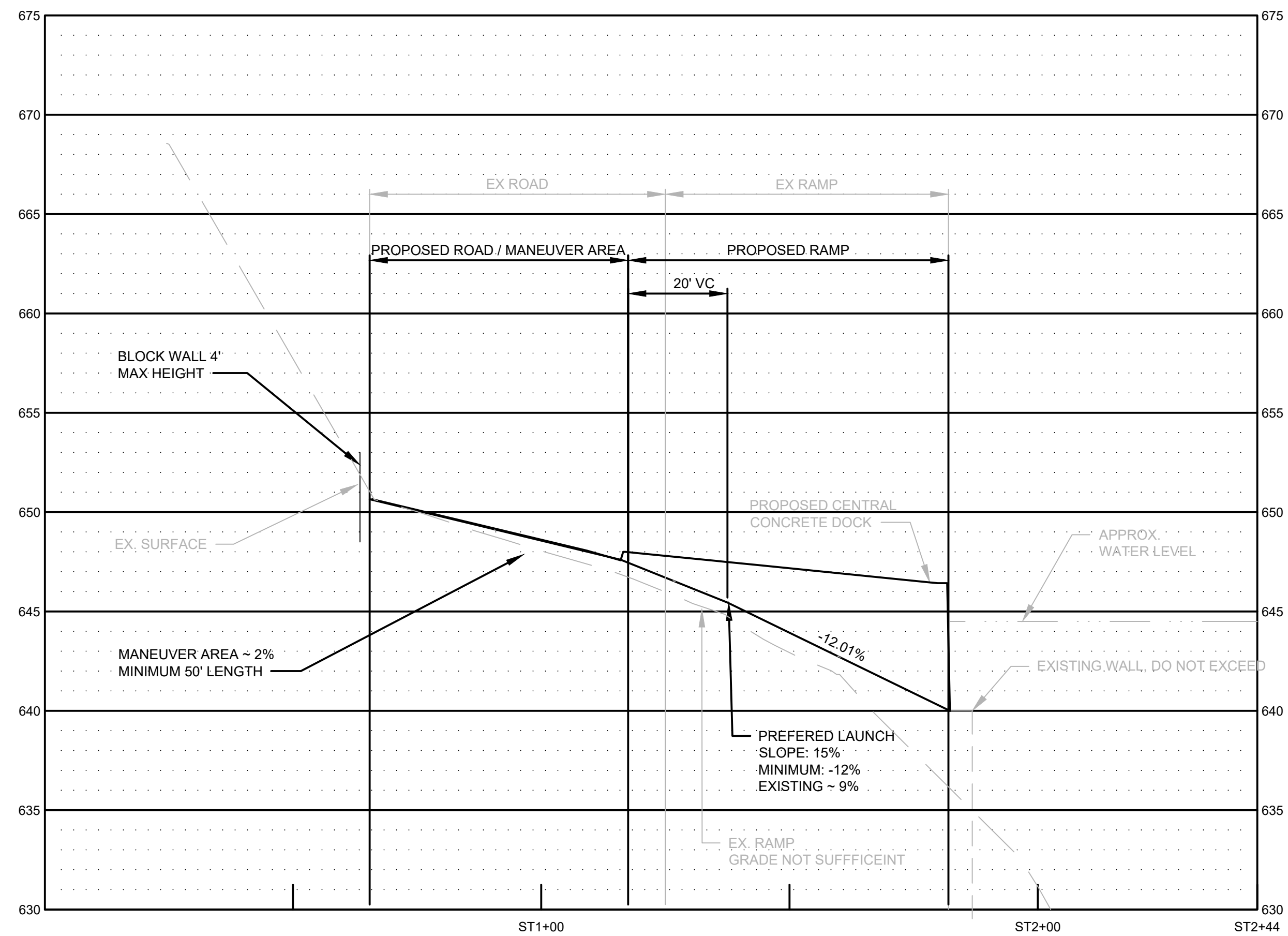
CITY COSTS	\$206,910.00
ODNR COSTS	\$2,897,259.08
TOTAL	\$3,104,169.08



- * BEVELED EDGE & WIDENED BASE APPLIES WHEREVER ASPHALT PAVEMENT DOES NOT ABUT CURS SIDEWALKS, OR OTHER PAVEMENT.
1. 2" ~ ITEM 441, ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2 (448), PG64-22
 2. 8" ~ ITEM 304, AGGREGATE BASE
 3. ITEM 204, GEOTEXTILE FABRIC, 712.09, TYPE D
 4. ITEM 204, SUBGRADE COMPACTION



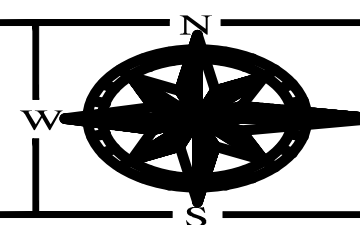
DESIGNED BY: JJS	JOB NUMBER: DNR-
DRAWN BY: JJS	SCALE: 1"=40'
CHECKED BY: BAM	DATE: 1-30-24
APPROVED BY: VPJ	REVISED:



PROPOSED RAMP
PROFILE
N.T.S.

1

SET





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LEGEND

	PROPOSED FULL DEPTH ASPHALT
	PROPOSED RAMP
	PROPOSED CONCRETE
	OPTION 2
	OPTION 3
	REVTMENT

PARKING COUNT

STANDARD	23
ACCESSIBLE	2
OPTION 3	13
TOTAL	38

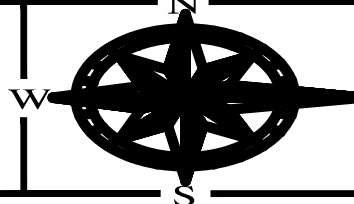
COST ESTIMATE - OPT 2

ODNR	\$846,339.65
CITY	\$0
TOTAL	\$846,339.65

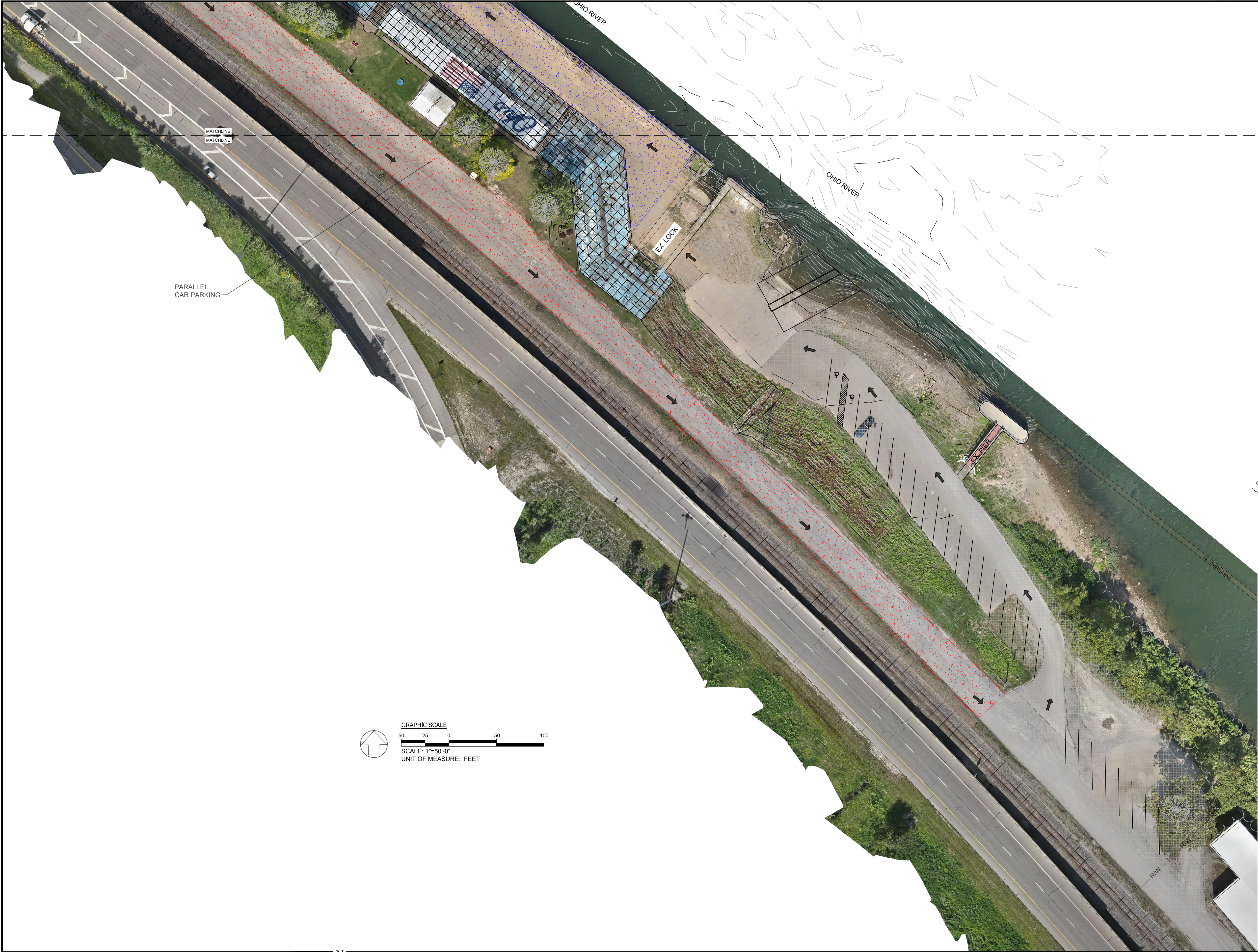
COST ESTIMATE - OPT 3

ODNR	\$1,744,523.90
CITY	\$0
TOTAL	\$1,744,523.90

38



DESIGNED BY: JJS	JOB NUMBER: DNR-
DRAWN BY: JJS	SCALE: 1"=40'
CHECKED BY: BAM	DATE: 1-30-24
APPROVED BY: VPJ	REVISED:



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LEGEND

	PROPOSED FULL DEPTH ASPHALT
	PROPOSED RAMP
	PROPOSED CONCRETE
	OPTION 2
	OPTION 3
	REVTMENT

PARKING COUNT

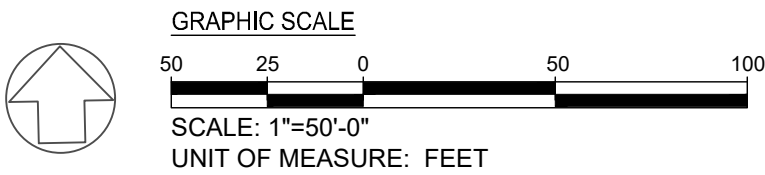
STANDARD	23
ACCESSIBLE	2
OPTION 3	13
TOTAL	38

COST ESTIMATE - OPT 2

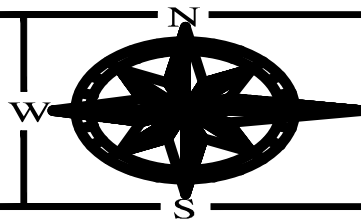
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TOTAL	\$846,339.65

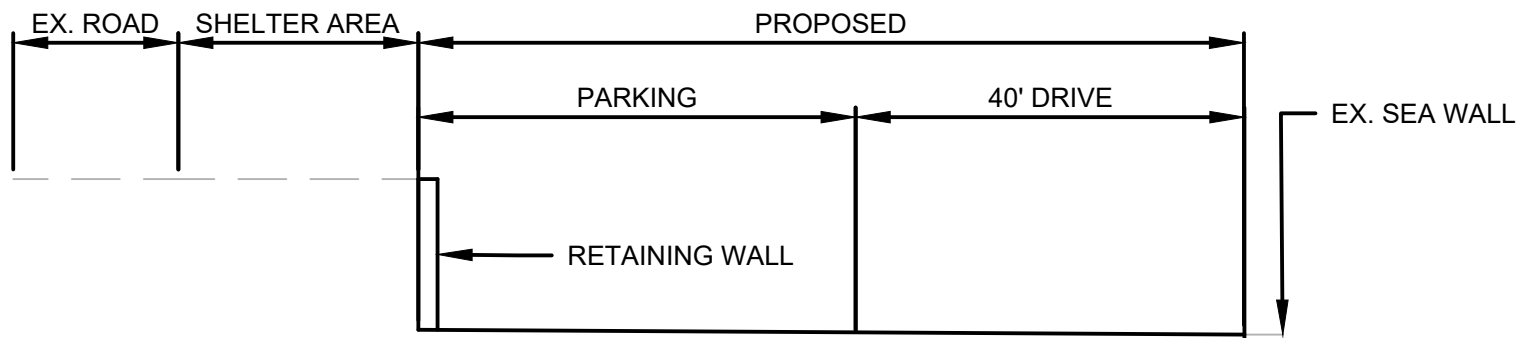
COST ESTIMATE - OPT 3

ODNR	\$1,744,523.90
CITY	\$0
TOTAL	\$1,744,523.90

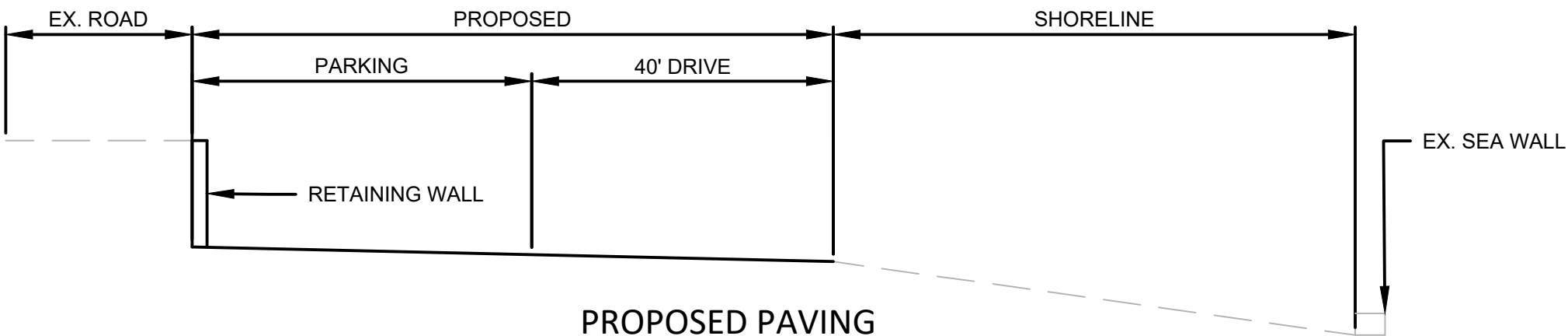


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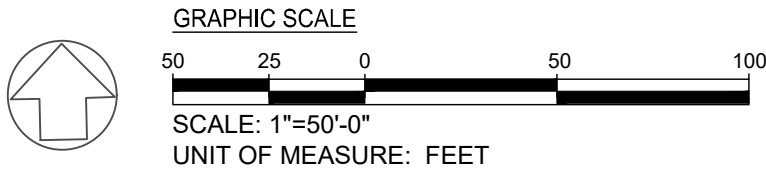




PROPOSED REVELMENT
SECTION - OPTION 4
N.T.S.



PROPOSED PAVING
SECTION - OPTION 5
N.T.S.



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- OPTION 5 SUPERCEDES OPTION 1

LEGEND

- PROPOSED FULL DEPTH ASPHALT
- PROPOSED RAMP
- PROPOSED CONCRETE
- OPTION 4
- OPTION 5 - CONCRETE PAVEMENT
- OPTION 5 - ASPHALT PAVEMENT
- REVELMENT

PARKING COUNT - 4

STANDARD - OPT 4	13
OPTION 1 -	25
TOTAL	38

PARKING COUNT - 5

STANDARD - OPT 5	26
ACCESSIBLE - OPT 5	2
TOTAL	28

PARKING COUNT 4&5

OPT 4	13
OPT 5	28
TOTAL	41

COST ESTIMATE - OPT 4

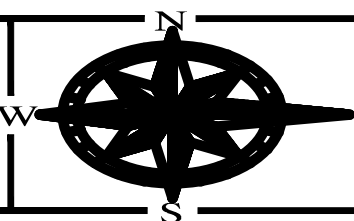
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TOTAL	\$3,205,132.20

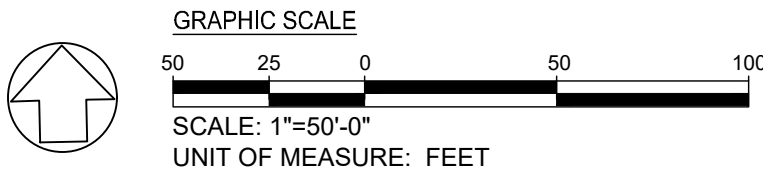
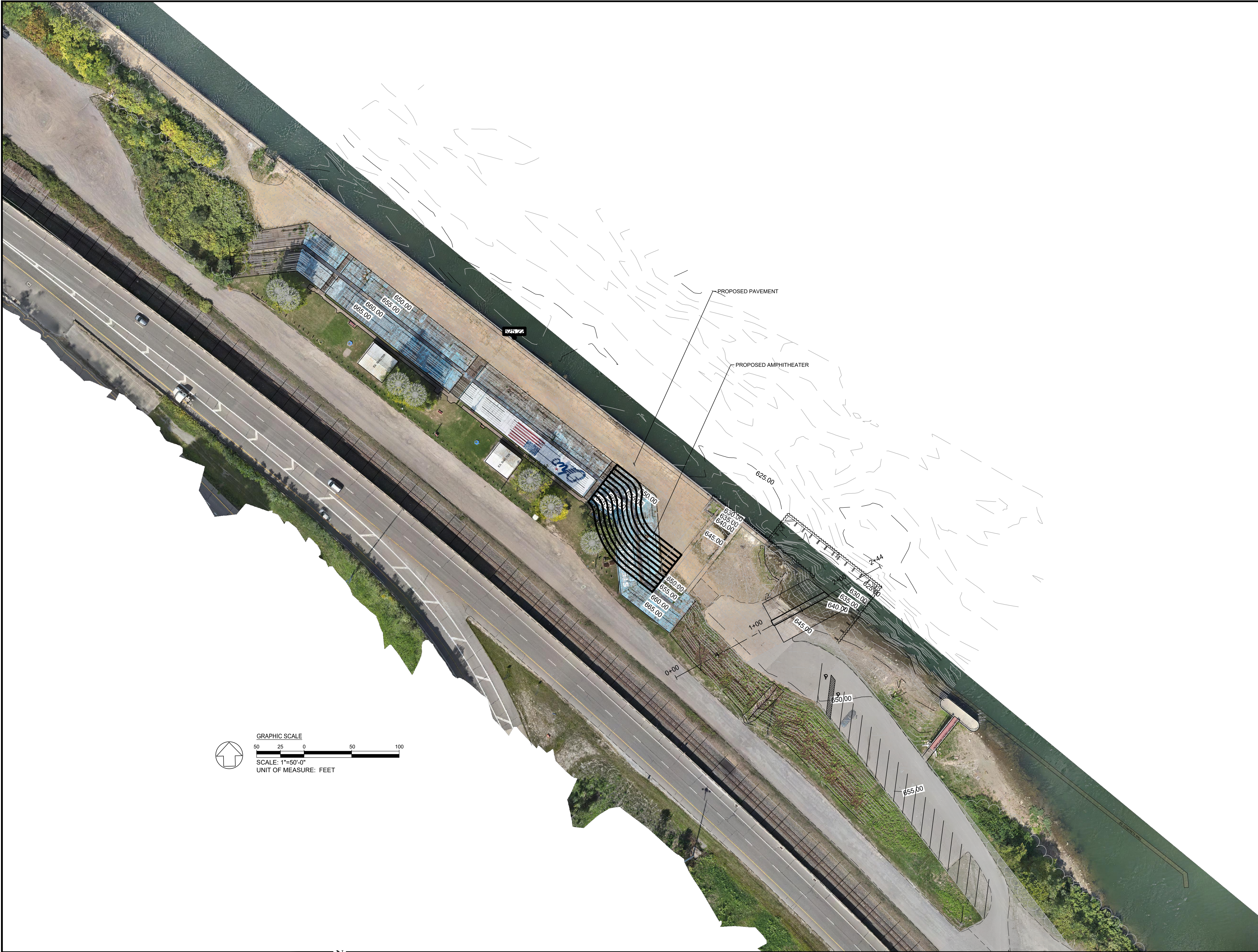
COST ESTIMATE - OPT 5

ODNR	\$3,834,528.98
CITY	\$1,490,000.00
TOTAL	\$5,324,528.98

OPTION 4 & 5

SET





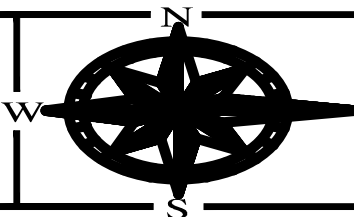
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LEGEND

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- PROPOSED RAMP
- PROPOSED CONCRETE, REFER TO DETAIL 2
- REVETMENT

SET



5.2 Ecological Survey

FEASIBILITY STUDY

***Steubenville Marina Boat Launch
Jefferson County, Ohio***

L&A Project No: 23-0378



Prepared for:

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November 15, 2023

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1.0 INTRODUCTION

On October 19, 2023, Lawhon & Associates, Inc. (L&A) investigated the ODNR proposed Steubenville Marina boat launch project area. The purpose of the field visit was to complete a feasibility study for the proposed construction of a new concrete boat ramp. The project is located within Island Creek Township, Jefferson County, Ohio (Figures 1 & 2). The purpose of this feasibility study is to identify any significant cultural or ecological concerns that could be prohibitive to the installation of river access at this site, identify potentially jurisdictional waters and isolated wetlands onsite, and complete a threatened and endangered (T&E) species habitat assessment. The Steubenville Marina study area is approximately 10.1 acres and is located along La Belle Avenue on the northeastern edge of Steubenville, Ohio. The Steubenville Marina survey area is centered at approximately 40.379855°, -80.616697° (WGS 1984) and is in the Wills Creek – Ohio River Watershed (12-Digit HUC #050301011109).

A general description of the Steubenville Marina survey area conditions and a summary of findings are detailed in the following sections.

1.1 SITE DESCRIPTION

The project area is located on the southwest bank of the Ohio River in Island Creek Township, Jefferson County, Ohio. A large portion of the 10.1-acre project area is paved or gravel roadway and parking space. This developed space contains thin corridors of maintained turf, scrub/ shrub, and low-level forested habitat. The Ohio River can be found flowing southeast along the entire northeastern aspect of the study area which is protected by a large block wall spanning a significant portion of the bank. Two dilapidated boat launches, and a viewing pier can be found extending into the Ohio River from the developed area of the Marina. The project lies within the Little Switzerland Plateau physiographic region of Ohio and with soils entirely composed of Udorthents-Urban land complex, a gradually sloped and graded substrate of primarily fill material.

2.0 METHODS

The following methodologies were utilized while preparing for the site visit and during the field investigation to document the existing conditions at the Steubenville Marina survey area.

2.1 Analysis of Resource Materials

Available resource materials and technical documents were reviewed prior to initiation of the field investigation. These documents included:

- USGS 7.5-minute Topographic Map: Weirton, WV (1958, revised 2023) – Figure 2
- National Wetland Inventory (NWI) Map (USFWS, 2023) and United States Geological Survey (USGS) National Hydrography Dataset (NHD; 2023) - Figure 3
- FEMA Flood Zone Map (FIRM Panel #54029C0113E; FEMA, 2023) – Figure 5
- USDA-NRCS Web Soil Survey version 21 (USDA, 2023) – Figure 6
- Aerial Imagery (Google Earth, 1985 - 2023)

These data were assembled in a GIS database to expedite analysis and facilitate graphical presentation of results. The GIS product was then used for desktop analysis of the topography, soils, and drainage within the study area (Figures 2, 3, 5, & 6).

2.2 Field Investigation

Field work was completed by L&A ecologists on October 19, 2023. The study area conditions were evaluated to determine the presence or absence of potentially jurisdictional (i.e., non-

isolated) or isolated wetlands and any Water of the United States (WOUS). The potentially jurisdictional wetland areas were determined by the dominance of hydrophytic vegetation and evidence of hydrology in a discrete location. These locations were determined by the guidelines set out in the 1987 Corps Manual, the 3-parameter approach, and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont version 2.0 (USACE, 2010). Streams were only mapped and included in this report if they exhibited a defined bed, bank, and identifiable ordinary high watermark (OHWM), and were identified using the Field Evaluation Manual for Ohio's Primary Headwater Streams version 3.0 and Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI). Criteria in the 2023 Range-wide Indiana Bat Summer Survey Guidelines were used to identify potential habitat for the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*) [USFWS, 2023].

3.0 RESULTS

Within the study area boundary two potential wetland areas were identified by the standards set out above. The USGS topographic map and NWI map confirmed the presence of the Ohio River (R2UBH), which is located within the study area and runs from the southeastern corner to the northwestern corner. The NWI mapping system is a preliminary assessment tool developed using remote imaging techniques, and not definitive locations of resources. Streams and wetlands mapped by the NWI program are not field verified by the USFWS. However, these maps provide valuable information about where resources are likely to occur. These findings and results from the literature research and field investigation are discussed in greater detail in the following sections.

3.1 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel #54029C0113E indicates that the study area is located within a special flood hazard area regulatory floodway (Zone AE) [Figure 5].

3.2 Wetlands

The NWI map does not indicate the presence of wetlands within the study area (Figure 3). This mapping system is a preliminary assessment tool developed using remote imaging techniques and does not definitively locate wetlands. Resources mapped by the NWI program are not field verified by the USFWS. However, these maps provide valuable information about where wetlands are likely to occur.

During the field investigation, two potential wetland areas were identified within the study area. It was determined these areas satisfied at least two (the hydrophytic vegetation and hydrology parameters) of the three-parameter approach (hydrology, soils, vegetation) for classification as wetland communities and no formal wetland evaluation or delineation was completed at the time of the field visit. A summary of wetland characteristics can be found below in Table 1 and the location of these potential wetland areas is depicted on the Ecological Resource Map (Figure 4).

Potential wetland areas, Wetland A and Wetland B, are both small riverine wetlands identified below the ordinary high watermark of the Ohio River with exclusively emergent plant communities. Wetland A, located in the southeastern corner of the study area (Figure 4), is situated in a depressionary feature at the base of a gradual slope adjacent to the Ohio River. The hydrology for Wetland A is attributed to the proximity to the river which allows the soil to maintain hydrology year-round. The emergent plant community within Wetland A was dominated by American water-

willow (*Justicia americana*) and smallspike false-nettle (*Boehmeria cylindrica*) with smaller portions of dotted smartweed (*Persicaria punctata*), red amaranth (*Amaranthus cruentus*), and late boneset (*Eupatorium serotinum*).

Wetland B can be found in the northwestern corner of the study area in a similar depression beside the Ohio River which provides wetland hydrology (Figure 4). The emergent plant community within Wetland B was dominated by water willow (*Justicia americana*), lizard's tail (*Saururus cernuus*), and small spike false nettle (*Boehmeria cylindrica*). Due to their proximity to the Ohio River, soil is naturally problematic and would likely qualify as a hydric soil.

Due to the predominately emergent vegetation communities, size (acreage) of the wetlands, surrounding land uses, records of T&E species within the wetlands, observed hydrologic regimes, and available habitat observed within therein, Wetland A would likely score in Category 1. Wetland B is located within an area known to contain the state listed species Goldeye (*Hiodon alosoides*), discussed below, and would likely be considered an automatic Category 3 wetland after ORAM scoring (Figure 8). This is a preliminary assessment only and could change following a formal ORAM evaluation and categorization as part of coordination with the Ohio EPA.

Table 1. Wetland Summary Table.

Identifier	Approximate On-site Acreage	Hydrophytic Veg. Dominant?	Evidence of Hydrology?	Provisional ORAM Category ²	Provisional Jurisdictional Status ¹
Wetland A	0.02	Yes	Yes	Category 1	Jurisdictional
Wetland B	0.05	Yes	Yes	Category 3	Jurisdictional

1 – Preliminary determination based on the professional opinion of L&A; Subject to review by the USACE.

2 – Preliminary determination based on the professional opinion of L&A; Subject to review by the OEPA.

3.3 Streams

The literature review indicates the presence of one stream resource mapped within the limits of the study area. The stream resource mapped by the NWI program within the limits of the study area is the Ohio River. The modern topographic maps show the Ohio River bordering the entire northeastern shore of the study area. According to the NWI, the Ohio River is mapped as a riverine feature (R2UBH). One additional surface water, or Waters of the US, was identified within the study area. A summary of stream characteristics can be found below in Table 2 and the location of these streams is depicted on the Ecological Resource Map (Figure 4).

Stream 1

Stream 1 appears to be an intermittent stream located to the southeast of Wetland B, approximately 36 feet outside of the study area (Figure 4; Appendix B, Photographs 9-11). Stream 1 is a 43-foot unnamed tributary to the Ohio River and, at the time of the site visit, was flowing. Stream 1 originates from a culvert at the top of a steep slope leading up to the southern aspect of the Marina. Stream 1 had a heterogenous mixture of substrates, primarily composed of artificial concrete rip rap with a small amount of cobble, gravel, and sand between interstitial spaces. A formal stream evaluation was not completed for Stream 1 and a complete HHEI evaluation will be required in the future.

Ohio River

The Ohio River is a perennial stream and creates the northern boundary of the study area. The Ohio River begins at the convergence of the Allegheny and Monongahela Rivers in Pittsburgh Pennsylvania. Visibility within the river within the study area was clear to bottom allowing surveyors to see the substrates, which were a heterogeneous mixture of boulder, cobble, gravel, and sand.

Table 2. Stream Summary Table.

Identifier	Receiving Waters	Flow Regime	Future Assessment	OEPA NWP Stream Eligibility Map Status
Stream 1	Ohio River	Intermittent	HHEI	Ineligible
Ohio River	Mississippi River	Perennial	N/A	Ineligible

¹Drainage area was indeterminable, or the identified stream did not exist in the USGS StreamStats online program.

3.4 Other Waters

No other Waters of the U.S. (WOTUS) were identified during the October 10, 2023, survey.

3.5 Threatened & Endangered Species

A records request was submitted to the Ohio Department of Natural Resources (ODNR) Office of Real Estate – Environmental Review Services Section and the US Fish and Wildlife Service (USFWS) Information for Planning and Consulting (IPaC) to determine if there are any records of threatened & endangered species or unique ecological features in the vicinity of the Steubenville Marina.

According to ODNR there are three (3) records of a state listed species within a one-mile radius of the Marina, which are identified in Table 3 and discussed below. There are no records of Indiana bat, tricolored bat, or northern long-eared bat capture locations or hibernacula within a one-mile radius of the Site.

Table 3. State listed species with known ranges within 1 mile of the Steubenville Marina Site.

Species	Common Name	State Status
<i>Esox masquinongy</i>	Muskellunge	Species of Concern
<i>Hiodon alosoides</i>	Goldeye	Endangered
<i>Percina copelandi</i>	Channel Darter	Threatened

The muskellunge is listed as a species of concern in the State of Ohio. This species prefers heavily vegetated lakes with logs and woody debris for cover. In streams, the muskellunge can be found in large, deep pools containing woody debris and boulders for cover. This type of habitat was not observed within the existing limits of the survey area.

The goldeye is a species of fish found in Ohio streams that is listed as a state endangered species. It can be found in large rivers or streams with strong currents and quiet pools. It is an active feeder, hunting insects along shallow vegetated shores at night. Habitat characteristic to this species can be found with the surveyed area, and the location identified by ODNR is also within the existing survey limits, specifically, surrounding Wetland B.

The channel darter lives in rivers and streams with moderate current and substrates composed of fine sand and gravel. This habitat is critical to this species for breeding and hunting. The surveyed area does appear to contain suitable habitat for this species along the banks of the Ohio River within the study area.

Review of the U.S. Fish & Wildlife Service's (USFWS) county distribution map for threatened & endangered species and the US Fish and Wildlife Service (USFWS) Information for Planning and Consulting (IPaC) indicate that the Site is within range of five (5) proposed or federally listed species within Jefferson County, which are identified in Table 4 below.

Table 4. Federally listed species with known ranges in Jefferson County, Ohio.

Species	Common Name	Federal Status
<i>Myotis septentrionalis</i>	Northern long-eared Bat	Endangered
<i>Myotis sodalis</i>	Indiana Bat	Endangered
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Bald and Gold Eagle Protection Act
<i>Epioblasma torulosa rangiana</i>	Tricolor Bat	Proposed Endangered
<i>Danaus plexippus</i>	Monarch Butterfly	Candidate

There are approximately 1.1 acres of wooded habitat present within the boundaries of the Site which could be utilized for habitation or foraging by any of the federally or state listed bat species. These areas contained trees displaying roosting characteristics including but not limited to exfoliated bark, snags, cavities, and dead limbs, which would qualify them as suitable summer roost habitat. Individual roost trees were not identified during the field survey effort given their abundance throughout the woodlots and no maternity roosting trees were identified.

While there were wooded aspects of the Marina, and this area is bordered by the Ohio River, there were no trees identified that would be considered mature or suitable for habitation by the Bald Eagle. No individual bald eagles or nests were observed during the surveying activities conducted 10/19/2023.

The USFWS and ODNR response letters can be found in Appendix C. The Environmental Review letter provides guidance on coordination and recommends specific work periods to minimize impacts to protected species.

4.0 CULTURAL RESOURCES

The project area is located on the right descending bank of the Ohio River in Island Creek Township, Jefferson County, Ohio. The 10-acre project area is an area that was created for Lock and Dam 10 on the Ohio River. It is now called the Steubenville Marina Boat Launch after Lock and Dam 10 were partially removed. The area now consists of one lock wall with breaches into it to allow access to the water. Much of the area has reverted to shrub/scrub on the steep sideslope descending to the river. Flat areas in the project area consist of gravel and asphalt parking. However, one grassed park area with two park shelters is roughly in the center of the project area. There is only one soil type within the project area, Udorthents-Urban land complex (Ud), which indicates the presence of severe disturbance within the project area. The project area is located on the northern edge of the City of Steubenville between State Route 7 and the Ohio River.

A cultural resources literature review for this area included consultation of Mills' 1914 *Archaeological Atlas of Ohio*, Ohio State Historic Preservation Office files, and historical maps

and aerial photographs to identify any possible cultural resources that could be present within the area. The only standing structure or building of 50 years of age within the project area is the Lock and Dam 10 wall remnant. Photographs of the Ohio Lock and Dam 10 can be seen in the attached photolog (Figure 7). The entire project area was modified and manipulated for the creation of Lock and Dam 10.

Mills' atlas does not place any archaeological sites within or immediately adjacent to the project area. There are some resources along the Ohio River to the north or south of Steubenville but these are located well away from the project area. These resources indicate that the project area could be in a location that is sensitive for archaeological resources. The Ohio State Historic Preservation Office site files indicate that a portion of the project area has been previously surveyed for archaeological resources for a previous Steubenville Marina project (Fitzgibbons 1999) [Figure 9]. The previous investigations involved mechanical trench excavations along the lower portion of the current project area near Lock and Dam 10. The mechanical excavations did not discover any archaeological resources and confirmed the disturbed soils along Lock and Dam 10 nearer the water's edge. Fitzgibbons recommended that the only potentially significant historic period cultural resources within the project area appear to have been built between 1912 and 1916 consisting of the Ohio Lock and Dam 10 itself. However, Fitzgibbons also mentioned that the upper area that contains the Steubenville Marina Park could contain historic period cultural resources associated with the occupation and operation of Lock and Dam 10. This location contained two lock tender houses and the lock and dam powerhouse. In 1975 these buildings were razed. It was the opinion of Fitzgibbons that deeply buried potentially significant historic period cultural resources may exist in the upper portion of the marina park nearer SR 7 (Fitzgibbons 1999).

Historical maps dating back to 1856 were consulted to gain an understanding of land-use history. The 1856 map does not show any buildings or structures near the project area. The 1871 atlas map shows the same conditions with no buildings or structures near the project area, although railroad tracks are adjacent to the project area. The next available historical map is the 1904 Steubenville, Ohio 15-minute USGS quadrangle and it shows no buildings or structures in the project area. Another 15-minute quadrangle was issued in 1942 showing Lock and Dam 10 in the project area. The 1958 7.5-minute quadrangle shows Lock and Dam 10 stretching across the Ohio River with the lock on the right descending bank of the river. Modern topographic maps do not show the presence of Lock and Dam 10, although one of the walls is clearly visible on readily available aerials (NETR 2023).

5.0 SUMMARY

A routine feasibility study to identify potentially jurisdictional waters and isolated wetlands was completed for the Steubenville Marina project area in Island Creek Township, Jefferson County, Ohio. Two potentially jurisdictional emergent wetlands (Wetland A & B) were identified within the study area. The potential wetland areas total approximately 0.07 acre within the study area. All of the potential wetland areas exhibited at least two of the three parameters (positive for hydrophytic vegetation dominance and hydrology indicators) outlined in the 3-parameter approach, and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont version 2.0. The jurisdictional status and categorization of these wetlands are subject to review and concurrence by the Ohio EPA and US Army Corps of Engineers.

One unnamed stream and the Ohio River were identified within or around the study area. Stream 1 generally flows from southwest to northeast just outside of the southeast aspect of the study

area. This stream is an intermittent, unnamed tributary to the Ohio River. The Ohio River generally flows from northwest to southeast and borders the northern aspect of the study area.

The wooded habitat within the study area appears to provide suitable summer roost habitat for the Indiana Bat and/or northern long-eared bat based on the presence of trees with sloughing/exfoliated bark and cavities. If any tree removal is required for the Marina improvements, the trees should be removed between October 1 – March 31 during the winter seasonal tree clearing dates.

Rehabilitation of either the boat ramp or lock wall would likely be eligible for authorization under a Nationwide Permit (NWP), specifically NWP 3 – Maintenance. NWP 3 can authorize the rehabilitation of these structures, provided there is no more than a minimal deviation from the original structures configuration or filled area. The study area is located within a watershed where the Ohio EPA did not grant Section 401 coverage to certain NWPs. The project is located within an ineligible area and any impacts to the Ohio River would require additional authorization from the Ohio EPA under either an Individual 401 WQC or an Ohio EPA Director's Authorization.

The cultural resources red flag review demonstrates that only a portion of the project area has been previously surveyed and the previous 1999 survey recommended that potentially significant historic period cultural resources may exist in the marina park. If determined necessary, a Phase I cultural resources survey conducted in project area would likely consist of backhoe trench excavations in the marina park upper portion to determine if deeply buried historic period cultural resources still exist and to assess their potential significance. Additionally, the Ohio Lock and Dam 10 wall remnant is present within the project area. The Ohio Lock and Dam 10 wall remnant has never been formally recorded nor assessed for eligibility to the National Register of Historic Places (NRHP). If required, a Phase I cultural resources survey would assess both the potential archaeological deposits and the wall remnant.

6.0 LITERATURE CITED

- Anderson, Dennis M. 1982. *Plant Communities of Ohio: A Preliminary Classification and Description*. Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Columbus, Ohio
- Cowardin, L.M., F.C. Golet, and E.T. LaRoe. 1979 Classification of wetlands and deepwater habitats of the United States. Office of Biological Services Fish and Wildlife Service, U.S. Department of the Interior, Washington, DC. 103 pp.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1. US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 100 pp. and appendices.
- Fitzgibbons, P. T. 1999. *Phase I Cultural Resources Management Investigations of the Steubenville Marina Project Area in the City of Steubenville, Jefferson County, Ohio*. Submitted by the Franciscan University of Steubenville, Steubenville, Ohio. Submitted to the City of Steubenville, Ohio. Copy on file at Ohio Historic Preservation Office.
- Flood Emergency Management Agency (FEMA). Data publication date: 2023.
<http://www.msc.fema.gov>
- Mack, John J. 2001. Ohio Rapid Assessment Method for Wetlands (ORAM), Manual for using Version 5.0. Ohio EPA Technical Bulletin Wetland/2001-1-1. Ohio Environmental Protection Agency, Division of Surface Water, 401 Wetland Ecology Unit, Columbus, Ohio. 63 pp.
- Mills, W. F. 1914. *Archaeological Atlas of Ohio*. Ohio State Archaeological and Historical Society. Fred J. Heer, Columbus.
- National Environmental Title Research (NETR) 2023. *Historic Aerials*.
<http://www.historicaerials.com/>, accessed October 30, 2023.
- Natural Resources Conservation Service (NRCS). Soil Survey version 21 (USDA, 2023).
<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed December 22nd, 2022.
- Ohio Department of Natural Resources (ODNR). April 2023. Ohio Mussel Survey Protocol. ODNR, Division of Wildlife and USFWS, Ohio Ecological Service Field Office. 62 pp.
- Ohio EPA. 2006. Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI). Ohio Environmental Protection Agency. Columbus, Ohio.
- Ohio EPA. 2020. Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams in Ohio. Version 4.1. Ohio EPA Division of Surface Water, Columbus, Ohio. 130 pp.
- USACE. April 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)*. US Army Corps of Engineers Engineer Research and Development Center. ERDC/EL TR-12-9 April 2012. 180 pp.

USDA. 2015. United States Department of Agriculture Natural Resources Conservation Service. National Hydric Soils List 2015.
<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/>

USGS. Weirton, Ohio [map]. 1:24,000. 7.5 Minute Series. Washington, D.C.: USGS, 1958, Revised 2023.

USFWS Information for Planning and Consulting (IPaC) Species List. January 4th, 2023.
Accessed October 16, 2023. <https://ipac.ecosphere.fwd.gov>

USFWS. National Wetlands Inventory. Ohio dataset. May 1, 2023.
<http://www.fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/>

USFWS. 2023. Range-Wide Indiana Bat Summer Survey Guidelines. March 2023. [Range-Wide Indiana Bat & Northern Long-Eared Bat Survey Guidelines \(fws.gov\)](#)

Munsell Soil-color Charts: With Genuine Munsell Color Chips. 2009 Revision, 2012 Publication

Natural Resources Conservation Service (NRCS). September 30, 2023. Web Soil Survey [Web Soil Survey \(usda.gov\)](#). Accessed October 2023.

Ohio Division of Geological Survey (ODGS). 1998. Physiographic Regions of Ohio: Ohio Department of Natural Resources, Division of Geological Survey. 2 pp.

USGS. 2023. National Hydrography Dataset Plus High Resolution. Ohio dataset.

Missouri Department of Conservation (MDC). Field Guide: Goldeye (*Hiodon alosoides*).
Website: Goldeye | Missouri Department of Conservation (mo.gov).

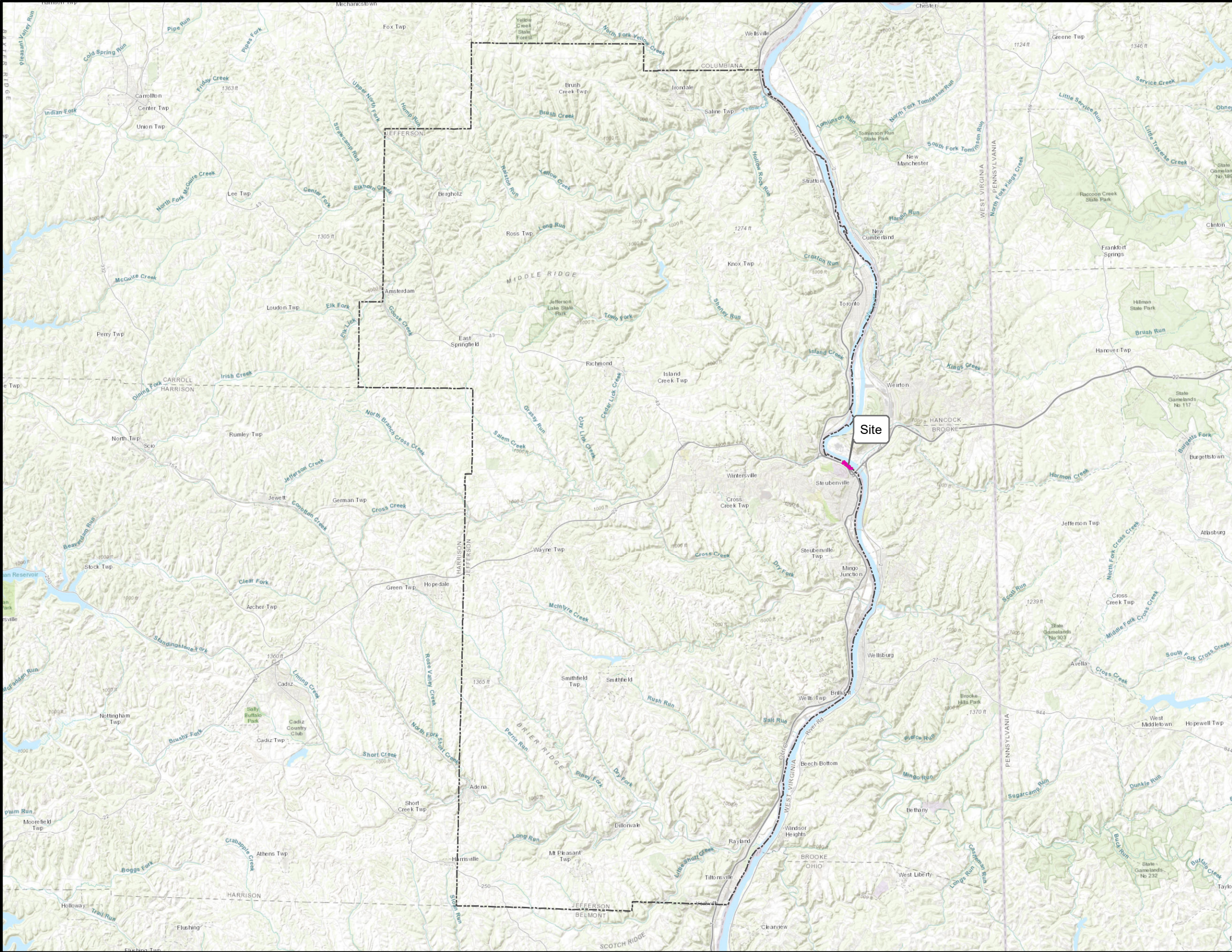
Michigan State University (MSU). Michigan Natural Features Inventory: Plants and Animals. Channel Darter (*Percina copelandi*). Website: *Percina copelandi* (Channel darter) - Michigan Natural Features Inventory (msu.edu).

Ohio Department of Natural Resources (ODNR). Muskellunge (*Esox masquinongy*). Website: Muskellunge | Ohio Department of Natural Resources (ohiodnr.gov).

APPENDICES

Appendix 1

Figures



Source: Esri World Topo



Overview of Ohio

Legend

- Jefferson County
- Study Area



Steubenville Marina Boat Launch

Jefferson County Map with an Overview of Ohio

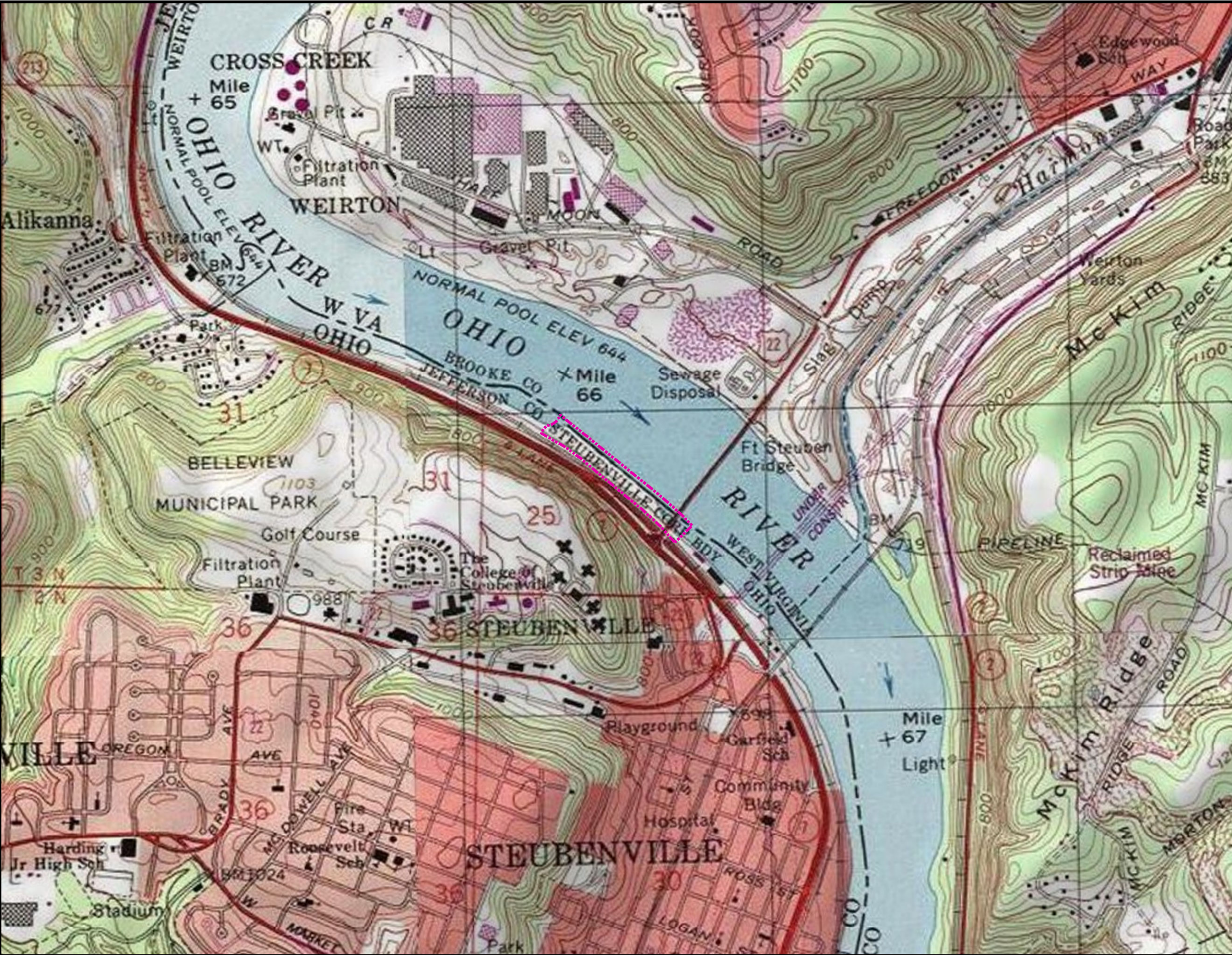


Lawhon & Associates, Inc.

Date: Nov 2023	Approved by: JE	L&A No. 23-0378	Figure 1
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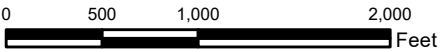
Edited: 11/13/2023 By: dwilliams



Site Location Map

Legend

 Study Area



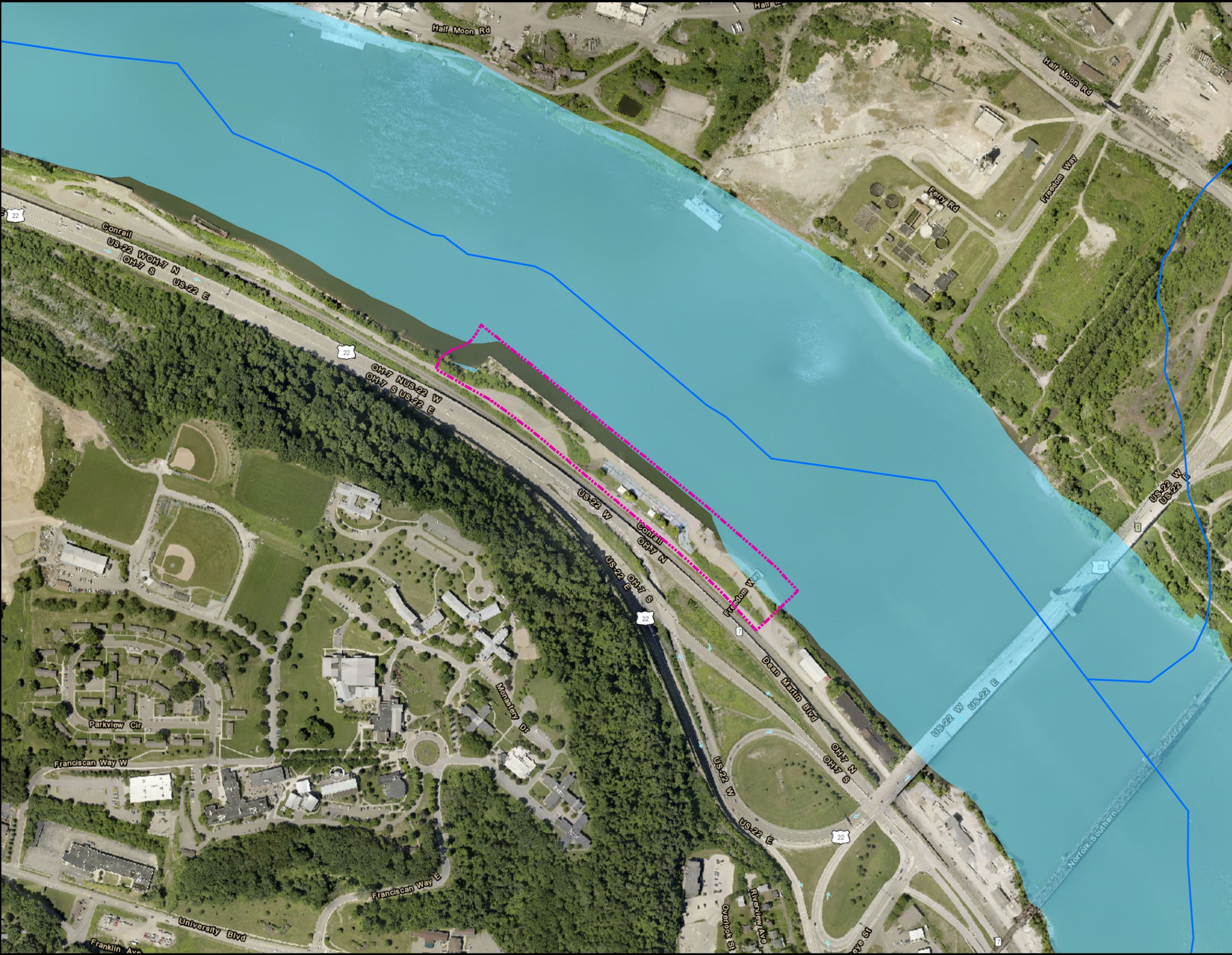
Steubenville Marina
Boat Launch

USGS Topographic Map
Weirton Quad



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Site Location Map

Legend

- Study Area
- NHD River/Stream

NWI Classification

- Riverine

0 200 400 800 Feet

Steubenville Marina Boat Launch

NWI / NHD Map

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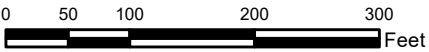
Date: Nov 2023	Approved by: JE	L&A No. 23-0378	Figure 3
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Site Location Map

Legend

- Study Area
- Culvert
- Stream
- Wetland
- Sample Point



Steubenville Marina
Boat Launch

Ecological Resources Map



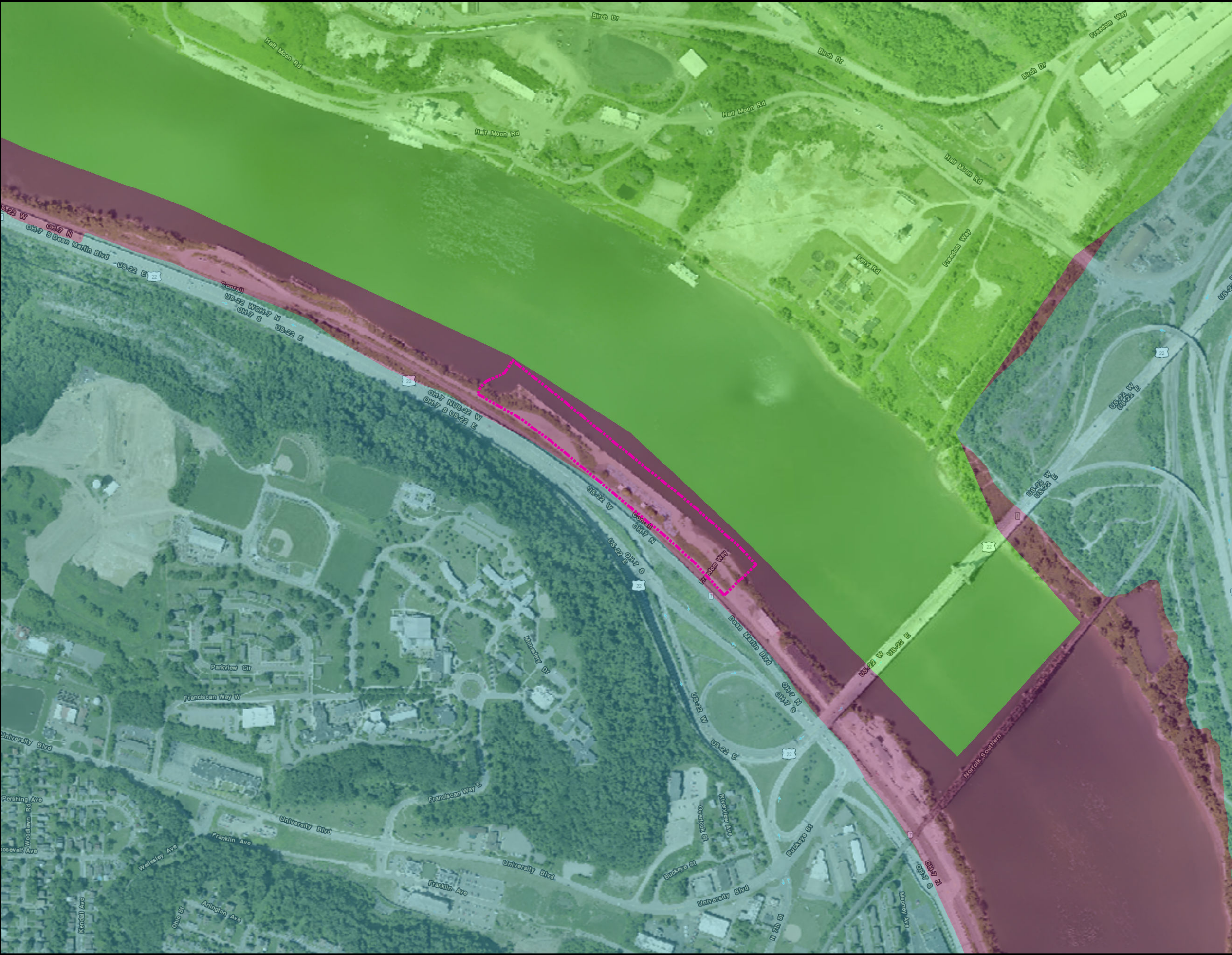
Lawhon & Associates, Inc.

Date:
Nov 2023

Approved by:
JE

L&A No.
23-0378

Figure
4



Site Location Map

Legend

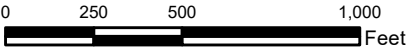
 Study Area

Flood Zone

 AE

 AREA NOT INCLUDED

 X



**Steubenville Marina
Boat Launch**

FEMA Flood Hazard Map



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Figure
5



Site Location Map

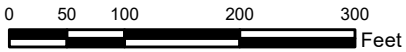
Legend

 Study Area

Soil Type

 Ud

 W



**Steubenville Marina
Boat Launch**

SSURGO Soils Map



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23-0378

Figure
6

Appendix 2

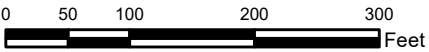
Photo Log



Site Location Map

Legend

- Study Area
- Culvert
- Stream
- Wetland
- Photo Location



Steubenville Marina Boat Launch

Photograph Location Map



Lawhon & Associates, Inc.

Date: Nov 2023	Approved by: JE	L&A No. 23-0378	Figure 7
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Photograph 1:

View of Wetland A.

Direction:

North



Photograph 2:

View of Wetland A.

Direction:

East



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Photograph 3:

View of Wetland A.

Direction:

South



Photograph 4:

View of Wetland A.

Direction:

West



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Photograph 5:

View of Wetland B.

Direction:

North



Photograph 6:

View of Wetland B.

Direction:

East



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Photograph 7:

View of Wetland B.

Direction:

South



Photograph 8:

View of Wetland B.

Direction:

West



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Photograph 9:

Upstream view of Stream 1.

Direction:

Southwest



Photograph 10:

Downstream view of Stream 1.

Direction:

Northeast



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Photograph 11:

Representative view of
Stream 1 substrates.



Photograph 12:

View of the entrance to
the Steubenville Marina in
the southeastern aspect of
the survey area.

Direction:

Northeast



Lawhon & Associates, Inc.

**Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378**

**Photographs taken by Lawhon & Associates, Inc.
October 19, 2023**

Photograph 13:

View of the Steubenville Marina from the southeastern corner of the survey area.

Direction:

Northwest



Photograph 14:

View of the center of the survey area.

Direction:

Southeast



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Photograph 15:

View of the center of the survey area.

Direction:

Northwest



Photograph 16:

View of the wooded habitat and gravel lot in the northwestern aspect of the survey area.

Direction:

Northwest



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Photograph 17:

View of the northeastern boundary of the survey area and Wetland B from the northwestern corner.

Direction:

Southeast



Photograph 18:

Central view of the northeastern boundary of the survey area.

Direction:

Southeast



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Photograph 19:

Central view of the northeastern boundary of the survey area, including wooded habitat, and the Ohio River.

Direction:

Northwest



Photograph 20:

View of the northeastern boundary of the survey area and the Ohio River from the viewing deck.

Direction:

Northwest



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Photograph 21:

View of the conditions
from the southwestern
corner of the survey.

Direction:

North



Photograph 22:

View of the conditions
from the southeastern
corner of the survey.

Direction:

Northwest



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Photograph 23:

View of the Ohio Lock and Dam 10 at its most southern point.

Direction:

Northwest



Photograph 24:

View of the Ohio Lock and Dam 10 at its most northern point.

Direction:

East



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Photograph 25:

View along the Ohio Lock and Dam 10 wall.

Direction:

Northwest



Photograph 26:

View of the survey area where the lock tender houses, and previous powerhouse used to exist.

Direction:

Northwest



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Photograph 27:

View of the survey area where the lock tender houses, and previous powerhouse used to exist.

Direction:

Southeast



Photograph 28:

View of the severely manipulated portion of the survey area from its northwestern corner.

Direction:

Southeast



Steubenville Marina Red Flag Survey
Jefferson County, Ohio
L&A Project Number 23-0378

Photographs taken by Lawhon & Associates, Inc.
October 19, 2023

Appendix 3
Agency Coordination



Source: Esri World Imagery



Site Location Map

Legend

Study Area

ODNR Species

Channel Darter

Goldeye

Muskellunge

N

0 500 1,000 2,000 Feet

Steubenville Marina Boat Launch

ODNR ONHD Map

Lawton & Associates, Inc.

Date: Nov 2023	Approved by: JE	L&A No. 23-0378	Figure 8
-------------------	--------------------	--------------------	-------------

File Name: 08-Odnr.mxd

Edited: 11/13/2023 By: dwilliams



Ohio Department of Natural Resources

MIKE DeWINE, GOVERNOR

MARY MERTZ, DIRECTOR

Office of Real Estate

Tara Paciorek, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6661
Fax: (614) 267-4764

November 6, 2023

John Ballas
Lawhon & Associates, Inc.
1441 King Avenue
Columbus, Ohio 43212

Re: 23-1173_Steubenville Marina Boat Launch

Project: The proposed project involves the assessment and repair of an existing boat launch ramp at the Steubenville Marina.

Location: The proposed project is located in Island Creek Township, Jefferson County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state, or federal agency nor relieve the applicant of the obligation to comply with any local, state, or federal laws or regulations.

Natural Heritage Database: The Natural Heritage Database has the following data at or within one mile of the project area:

Muskellunge (*Esox masquinongy*), SC
Goldeye (*Hiodon alosoides*), E
Channel Darter (*Percina copelandi*), T

Conservation status abbreviations are as follows: E = state endangered; T = state threatened; P = state potentially threatened; SC = state species of concern; SI = state special interest; U = state status under review; X = presumed extirpated in Ohio; FE = federally endangered, and FT = federally threatened. The review was performed on the specified project area as well as an additional one-mile radius. Records searched date from 1980. Features searched include locations of rare and endangered plants and animals determined to be of value to the conservation of their species, high quality plant communities, animal breeding assemblages, and outstanding geological features.

Location records for the species listed above are provided in a shapefile attachment to this letter. Species location information will not be disclosed, published or distributed beyond the scope of your project.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for an area is not a statement that rare species or unique features are absent from that area.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that Best Management Practices be utilized to minimize erosion and sedimentation.

The entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally endangered species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH ≥ 20 if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "[OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING](#)". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW (contact Eileen Wyza at Eileen.Wyza@dnr.ohio.gov).

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS "[RANGE-WIDE INDIANA BAT & NORTHERN LONG-EARED BAT SURVEY GUIDELINES](#)." If a habitat assessment finds that a potential hibernaculum is present within 0.25 miles of the project area, please send this information to Eileen Wyza for project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

This project must not have an impact on native mussels. This applies to both listed and non-listed species, as all species of mussel are protected in Ohio. Per the Ohio Mussel Survey Protocol (2022), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) and unlisted streams with a watershed of 5 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the

project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the [Ohio Mussel Survey Protocol](#). If there is no in-water work proposed, impacts to mussels are not likely.

The project is within the range of the following listed fish species.

State Endangered

goldeye (*Hiodon alosoides*)

Ohio lamprey (*Ichthyomyzon bdellium*)

State Threatened

American eel (*Anguilla rostrata*)

channel darter (*Percina copelandi*)

paddlefish (*Polyodon spathula*)

river darter (*Percina shumardi*)

The DOW recommends no in-water work from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed, this project is not likely to impact these or other aquatic species.

The project is within the range of the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern. This long-lived, entirely aquatic salamander inhabits perennial streams with large flat rocks. In-water work in hellbender streams can reduce availability of large cover rocks and can destroy hellbender nests and/or kill adults and juveniles. The contribution of additional sediment to hellbender streams can smother large cover rocks and gravel/cobble substrate (used by juveniles), making them unsuitable for refuge and nesting. Projects that contribute to altered flow regimes (e.g., by increasing areas of impervious surfaces or modifying the floodplain) can also adversely affect hellbender habitat. Due to the location, this project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus hudsonius*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the US Fish & Wildlife Service.

Water Resources: The Division of Water Resources has the following comment.

The [local floodplain administrator](#) should be contacted concerning the possible need for any floodplain permits or approvals for this project.

ODNR appreciates the opportunity to provide these comments. Please contact Mike Pettegrew at mike.pettegrew@dnr.ohio.gov if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ohio Ecological Services Field Office

4625 Morse Road, Suite 104

Columbus, OH 43230-8355

Phone: (614) 416-8993 Fax: (614) 416-8994



In Reply Refer To:

October 16, 2023

Project Code: 2024-0005326

Project Name: Steubenville Marine Boat Launch

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see <https://www.fws.gov/program/migratory-bird-permit/what-we-do>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Ohio Ecological Services Field Office

4625 Morse Road, Suite 104

Columbus, OH 43230-8355

(614) 416-8993

PROJECT SUMMARY

Project Code:	2024-0005326
Project Name:	Steubenville Marine Boat Launch
Project Type:	Boat Ramp - New Construction
Project Description:	Proposed location of a new marina.
Project Location:	

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@40.379958900000005,-80.61670528084564,14z>



Counties: Jefferson County, Ohio

ENDANGERED SPECIES ACT SPECIES

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Ohio Department of Natural Resources

Name: Levi Webster

Address: 1441 King Avenue

City: Columbus

State: OH

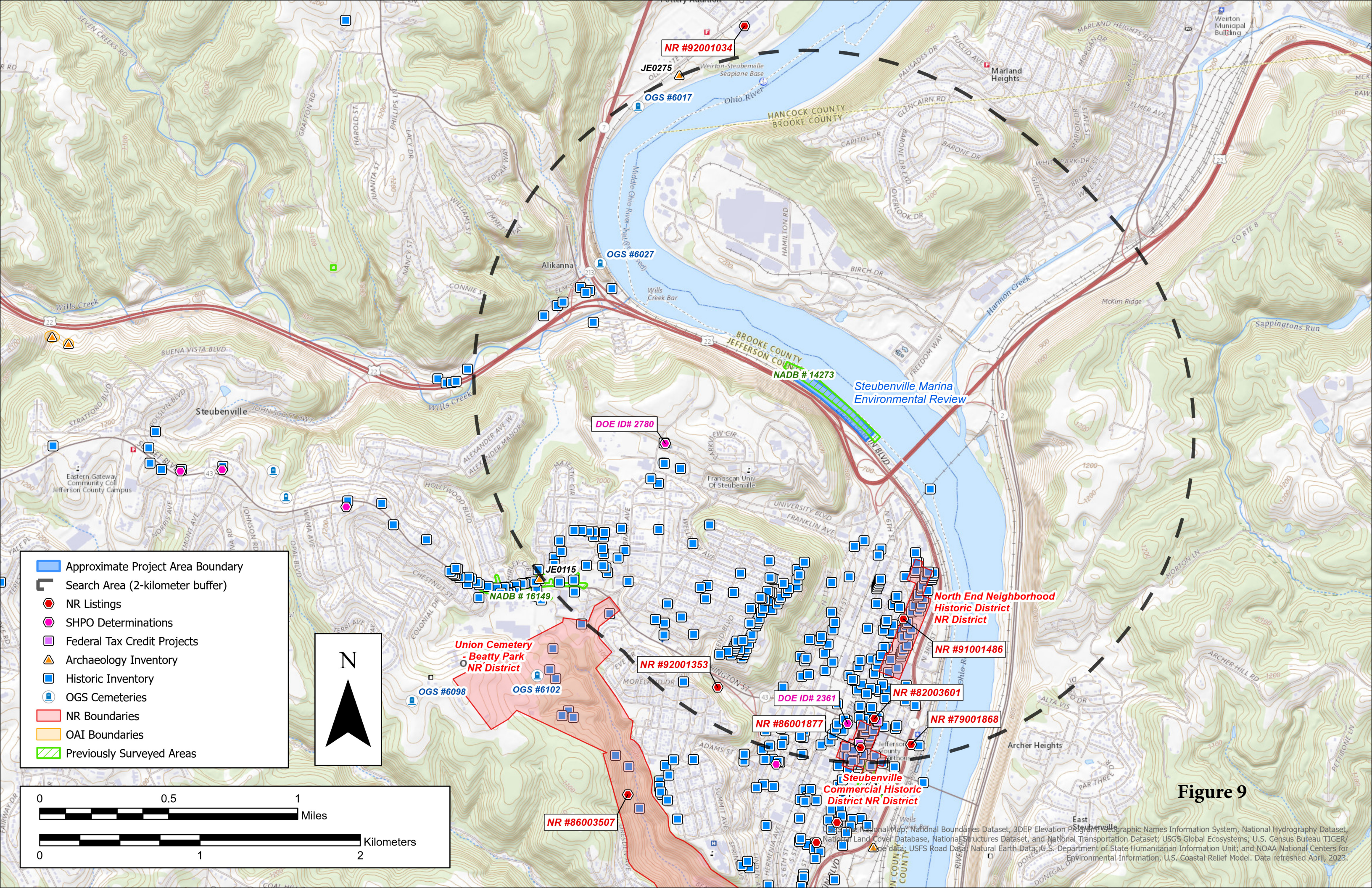
Zip: 43212

Email: lwebster@lawhon-assoc.com

Phone: 6146325376

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Ohio Department of Natural Resources



- Approximate Project Area Boundary
- Search Area (2-kilometer buffer)
- NR Listings
- SHPO Determinations
- Federal Tax Credit Projects
- Archaeology Inventory
- Historic Inventory
- OGS Cemeteries
- NR Boundaries
- OAI Boundaries
- Previously Surveyed Areas

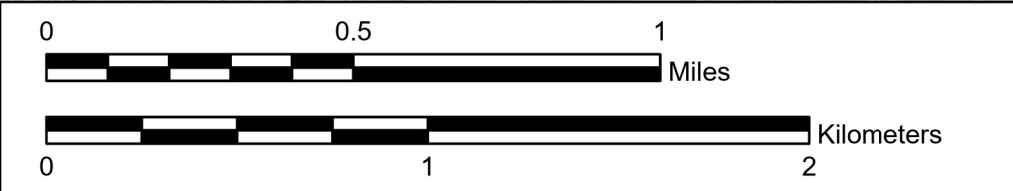


Figure 9

Map data: National Map, National Boundaries Dataset, 3DEP Elevation Program, National Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.

5.3 Permit Checklist



REGULATORY APPROVALS CHECKLIST

Project #: DNR-230141

Project Name: Steubenville Marina Feasibility Study

ODNR Permits

- ☐ Y ☒ N ODNR Dam Safety Construction Permit or Approval
Application Date: _____ Permit Rec'd Date: _____
- ☐ Y ☒ N ODNR Permit to Construct Shoreline Erosion Control Structure
Application Date: _____ Permit Rec'd Date: _____
- ☐ Y ☒ N ODNR State Scenic River Approval
Application Date: _____ Approval Rec'd Date: _____
- ☐ Y ☒ N ODNR Division of Wildlife – Fish & Snake Species Permit
Application Date: _____ Permit Rec'd Date: _____
- ☐ Y ☒ N MOU with another ODNR division
Description: _____
Application Date: _____ Approval Rec'd Date: _____

Ohio Department of Commerce Permits

- ☐ Y ☒ N Structural & Mechanical Permit
Application Date: _____ Addendum Rec'd Date: _____ Permit Rec'd Date: _____
- ☐ Y ☒ N Electrical Permit
Application Date: _____ Addendum Rec'd Date: _____ Permit Rec'd Date: _____
- ☐ Y ☒ N Plumbing Permit
Application Date: _____ Addendum Rec'd Date: _____ Permit Rec'd Date: _____
- ☐ Y ☒ N Sprinkler Permit
Application Date: _____ Addendum Rec'd Date: _____ Permit Rec'd Date: _____
- ☐ Y ☒ N Elevator Permit
Application Date: _____ Addendum Rec'd Date: _____ Permit Rec'd Date: _____
- ☐ Y ☒ N Boiler Permit
Application Date: _____ Addendum Rec'd Date: _____ Permit Rec'd Date: _____
- ☐ Y ☒ N Industrialized Unit Permit
Application Date: _____ Addendum Rec'd Date: _____ Permit Rec'd Date: _____
- ☐ Y ☒ N State Fire Marshall Fire Protection Permit or Approval (Marinas/Docks)
Application Date: _____ Addendum Rec'd Date: _____ Permit Rec'd Date: _____
- ☐ Y ☒ N State Fire Marshall AST/UST (BUSTR) Permit
Application Date: _____ Addendum Rec'd Date: _____ Permit Rec'd Date: _____

Project #: DNR-230141

Project Name: Steubenville Marina Feasibility Study

Ohio EPA Permits

☒	Y	☐	N	Ohio EPA Section 401 Water Quality Certification	Application Date: _____	Permit Rec'd Date: _____
☐	Y	☒	N	Ohio EPA Isolated Wetland Permit for fill into Wetlands	Application Date: _____	Permit Rec'd Date: _____
☒	Y	☐	N	Ohio EPA NPDES Construction Site Stormwater Permit	Application Date: _____	Permit Rec'd Date: _____
☐	Y	☒	N	Ohio EPA NPDES Wastewater Disposal Permit	Application Date: _____	Permit Rec'd Date: _____
☐	Y	☒	N	Ohio EPA Water System Plan Approval	Application Date: _____	Permit Rec'd Date: _____
☐	Y	☒	N	Ohio EPA Well Site Approval	Application Date: _____	Permit Rec'd Date: _____
☐	Y	☒	N	Ohio EPA Permit to Install Wastewater System	Application Date: _____	Permit Rec'd Date: _____
☐	Y	☒	N	Ohio EPA Demolition Notification	Application Date: _____	Permit Rec'd Date: _____

ODOT Permits

☐	Y	☒	N	ODOT Permit to Install Utility	Application Date: _____	Permit Rec'd Date: _____
☐	Y	☒	N	ODOT Permit for Entry (Driveway Permit)	Application Date: _____	Permit Rec'd Date: _____

Ohio / Local Health Department Permits

☐	Y	☒	N	Ohio OR Local Department of Health Campground Plan Approval	Application Date: _____	Approval Rec'd Date: _____
☐	Y	☒	N	Ohio OR Local Department of Health Permit to Install a Vault or Privy	Application Date: _____	Permit Rec'd Date: _____
☐	Y	☒	N	Ohio OR Local Department of Health On-site Sanitary Sewer System Permit	Application Date: _____	Permit Rec'd Date: _____
☐	Y	☒	N	Ohio OR Local Department of Health Swimming Pool/Splash Pad Permit	Application Date: _____	Permit Rec'd Date: _____
☐	Y	☒	N	Ohio OR Local Department of Health Private Water System Approval	Application Date: _____	Approval Rec'd Date: _____

Project #: DNR-230141

Project Name: Steubenville Marina Feasibility Study

USACE Permits

☒ Y ☐ N U.S. Army Corps of Engineers Section 10/404 Permit
Application Date: _____ Permit Rec'd Date: _____

☒ Y ☐ N U.S. Army Corps of Engineers Real Estate Section Approval
Application Date: _____ Permit Rec'd Date: _____

☐ Y ☒ N U.S. Army Corps of Engineers ARPA Permit
Application Date: _____ Permit Rec'd Date: _____

US Coast Guard Permits

☐ Y ☒ N U.S. Coast Guard Private Aids to Navigation Permit
Application Date: _____ Permit Rec'd Date: _____

☐ Y ☒ N U.S. Coast Guard Bridge Permit
Application Date: _____ Permit Rec'd Date: _____

Various Other Permits

☒ Y ☐ N County Floodplain Approval
Application Date: _____ Approval Rec'd Date: _____

☒ Y ☐ N Easement or Lease Agreement (power company, right-of-way, etc.)
Description: _____
Application Date: _____ Agreement Rec'd Date: _____

☒ Y ☐ N Ohio Historic Preservation Office Archaeological Review-Section 106
Application Date: _____ Approval Rec'd Date: _____

☒ Y ☐ N U.S. Fish & Wildlife Service Approval-Endangered Species Permits
Application Date: _____ Permit Rec'd Date: _____

☐ Y ☒ N FAA Notification of Obstruction to Navigable Airspace / FAR Part 77
Application Date: _____ Approval Rec'd Date: _____

☐ Y ☐ N Description: _____
Application Date: _____ Approval Rec'd Date: _____

☐ Y ☐ N Description: _____
Application Date: _____ Approval Rec'd Date: _____

Identify any permits that are to be obtained by the contractor(s) and indicate specification or plan sheet where required in the construction documents:

- 1.
- 2.
- 3.
- 4.
- 5.

5.4 Tabulated Parking Count by Option

	Existing	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6
Standard	19	23	23	36	13	26	23
Accessible	2	2	2	2	n/a	2	2
Total	21	25	25	38	38	28	25

Note: Options 2-4, and 6 are additive to Option 1. Option 5 replaces Option 1

5.5 Cost Estimate

STEUBENVILLE

ITEM NO.	DESCRIPTION	LABOR	MATERIALS	QUANTITY	UNIT	ITEM TOTAL
Option 1						
Testing Services		\$ 5,000.00	\$ 5,000.00	1	LS	\$ 10,000.00
Mobilization		\$ 45,000.00	\$ 20,000.00	1	LS	\$ 65,000.00
Erosion and Sediment Control		\$ 4,500.00	\$ 6,000.00	1	LS	\$ 10,500.00
Cofferdam & Dewatering		\$ 45.00	\$ 65.00	1,800	SF	\$ 198,000.00
Clearing and Grubbing		\$ 2,500.00	\$ 3,000.00	1	LS	\$ 5,500.00
Construction Layout		\$ 11,000.00	\$ 2,000.00	1	LS	\$ 13,000.00
Existing Concrete Ramp Removal		\$ 15.00	\$ 15.00	333	SY	\$ 10,000.00
Existing Asphalt Pavement Removal		\$ 2.00	\$ 1.00	4,393	SY	\$ 13,178.67
Two-Lane Concrete Boat Ramp		\$ 15.00	\$ 12.00	3,000	SF	\$ 81,000.00
Fixed Concrete Courtesy Dock		\$ 450.00	\$ 600.00	239	CY	\$ 250,833.33
Rock Channel Protection with Fabric		\$ 60.00	\$ 70.00	208	SY	\$ 27,078.52
Sheetpile against Existing Sea Wall		\$ 45.00	\$ 65.00	1,500	LF	\$ 165,000.00
Recap Existing River Wall		\$ 100.00	\$ 125.00	1,238	LF	\$ 278,550.00
Excavation		\$ 45.00	\$ 10.00	890	CY	\$ 48,950.00
Embankment		\$ 40.00	\$ 10.00	20	CY	\$ 1,000.00
Asphalt Pavement (2" top coat, 8" base)		\$ 5.00	\$ 7.00	42,100	SF	\$ 505,200.00
Ex Concrete Pavement Removal		\$ 3.00	\$ 2.00	1,014	SY	\$ 5,070.00
Concrete Pavement (6" concrete, 6" base)		\$ 7.00	\$ 9.00	12,815	SF	\$ 205,040.00
Vegetation		\$ 1.00	\$ 1.00	500	SY	\$ 1,000.00
Pavement Striping		\$ 3,500.00	\$ 4,500.00	1	LS	\$ 8,000.00
Minimum 30% Revetment Replacement		\$ 10.00	\$ 12.00	9,405	SF	\$ 206,910.00
Design Contingency					15%	\$ 316,321.58
Total Option 1- Construction						\$ 2,425,132.10
Construction Contingency					10%	\$ 242,513.21
Design and Permitting					18%	\$ 436,523.78
ODNR Costs						\$ 2,897,259.08
City Costs						\$ 206,910.00
Total Project Costs						\$ 3,104,169.08
Option 1 - Reduced Scope						
MINIMUM WORK REQUIRED (RAMP) - ODNR COSTS						
Testing Services		\$ 5,000.00	\$ 5,000.00	1	LS	\$ 10,000.00
Mobilization		\$ 45,000.00	\$ 20,000.00	1	LS	\$ 65,000.00
Erosion and Sediment Control		\$ 4,500.00	\$ 6,000.00	1	LS	\$ 10,500.00
Cofferdam & Dewatering		\$ 45.00	\$ 65.00	1,800	SF	\$ 198,000.00
Clearing and Grubbing		\$ 2,500.00	\$ 3,000.00	1	LS	\$ 5,500.00
Construction Layout		\$ 11,000.00	\$ 2,000.00	1	LS	\$ 13,000.00
Existing Concrete Ramp Removal		\$ 15.00	\$ 15.00	333	SY	\$ 10,000.00
Two-Lane Concrete Boat Ramp		\$ 15.00	\$ 12.00	3,000	SF	\$ 81,000.00
Fixed Concrete Courtesy Dock		\$ 450.00	\$ 600.00	239	CY	\$ 250,833.33
Rock Channel Protection with Fabric		\$ 60.00	\$ 70.00	208	SY	\$ 27,078.52
Sheetpile against Existing Sea Wall		\$ 45.00	\$ 65.00	1,500	LF	\$ 165,000.00
Recap Existing River Wall		\$ 100.00	\$ 125.00	1,238	LF	\$ 278,550.00
Excavation		\$ 45.00	\$ 10.00	890	CY	\$ 48,950.00
Embankment		\$ 40.00	\$ 10.00	20	CY	\$ 1,000.00
Vegetation		\$ 1.00	\$ 1.00	500	SY	\$ 1,000.00
Concrete Pavement (6" concrete, 6" base)		\$ 7.00	\$ 9.00	12,815	SF	\$ 205,040.00
Ex Concrete Pavement Removal		\$ 3.00	\$ 2.00	1,014	SY	\$ 5,070.00
Ramp Subtotal						\$ 1,375,521.85
MINIMUM WORK REQUIRED (ROAD) - ODNR COSTS						
Seal Existing Asphalt		\$ 2.00	\$ 2.00	2,287	SY	\$ 9,149.33
Pavement Striping		\$ 2,800.00	\$ 3,600.00	1	LS	\$ 6,400.00
Minimum Scope Road Subtotal						\$ 15,549.33
Minimum Subtotal Road and Ramp						\$ 1,391,071.19
Design Contingency					15%	\$ 208,660.68
Construction Contingency					10%	\$ 139,107.12
Design and Permitting					18%	\$ 250,392.81
Total Costs						\$ 1,989,231.79

ITEM NO.	DESCRIPTION	LABOR	MATERIALS	QUANTITY	UNIT	ITEM TOTAL
OPTIMUM WORK RECOMMENDED - CITY COSTS						
	Minimum 30% Revetment Replacement	\$ 10.00	\$ 12.00	9,405	SF	\$ 206,910.00
	Existing Asphalt Pavement Removal	\$ 2.00	\$ 1.00	4,393	SY	\$ 13,178.67
	Asphalt Pavement (2" top coat, 8" base)	\$ 5.00	\$ 7.00	42,100	SF	\$ 505,200.00
	Pavement Striping	\$ 3,500.00	\$ 4,500.00	1	LS	\$ 8,000.00
	Optimum Work Subtotal					\$ 733,288.67
	Design Contingency				15%	\$ 109,993.30
	Construction Contingency				10%	\$ 73,328.87
	Design and Permitting				18%	\$ 131,991.96
	Total Costs					\$ 1,048,602.79
Option 2						
	Concrete Pavement Removed	\$ 3.00	\$ 2.00	27,379	SF	\$ 136,895.00
	Concrete Pavement (6" concrete, 6" base)	\$ 7.00	\$ 9.00	27,379	SF	\$ 438,064.00
	Design Contingency				15%	\$ 86,243.85
	Total Option 2- Construction					\$ 661,202.85
	Construction Contingency				10%	\$ 66,120.29
	Design and Permitting				18%	\$ 119,016.51
	Total Project Costs					\$ 846,339.65
Option 3						
	Asphalt Pavement (2" top coat, 8" base)	\$ 5.00	\$ 7.00	74,000	SF	\$ 888,000.00
	Gravel Road Removal	\$ 1.00	\$ 2.00	74,000	SF	\$ 222,000.00
	Pavement Striping	\$ 5,500.00	\$ 3,500.00	1	LS	\$ 9,000.00
	Earthwork	\$ 45.00	\$ 10.00	1,203	CY	\$ 66,138.52
	Design Contingency				15%	\$ 177,770.78
	Total Option 3- Construction					\$ 1,362,909.30
	Construction Contingency				10%	\$ 136,290.93
	Design and Permitting				18%	\$ 245,323.67
	Total Project Costs					\$ 1,744,523.90
Option 4						
	Pavement Striping	\$ 5,500.00	\$ 3,500.00	1	LS	\$ 9,000.00
	Concrete Pavement (6" concrete, 6" base)	\$ 7.00	\$ 9.00	16,784	SF	\$ 268,544.00
	Earthwork	\$ 45.00	\$ 10.00	12,433	CY	\$ 683,792.59
	Removal of Existing Concrete Stairs	\$ 15.00	\$ 10.00	743	SF	\$ 18,575.00
	Removal of Existing Revetment	\$ 4.00	\$ 3.00	16,784	SF	\$ 117,488.00
	Retaining wall ~ 15' high	\$ 75.00	\$ 60.00	8,000	SF	\$ 1,080,000.00
	Design Contingency				15%	\$ 326,609.94
	Total Option 4- Construction					\$ 2,504,009.53
	Construction Contingency				10%	\$ 250,400.95
	Design and Permitting				18%	\$ 450,721.72
	ODNR Costs					\$ 1,305,276.61
	City Costs					\$ 1,899,855.59
	Total Project Costs					\$ 3,205,132.20
Option 5						
	Pavement Striping	\$ 3,500.00	\$ 4,500.00	1	LS	\$ 8,000.00
	Asphalt Pavement (2" top coat, 8" base)	\$ 5.00	\$ 7.00	57,861	SF	\$ 694,332.00
	Concrete Pavement (6" concrete, 6" base)	\$ 7.00	\$ 9.00	15,448	SF	\$ 247,168.00
	Testing Services	\$ 5,000.00	\$ 5,000.00	1	LS	\$ 10,000.00

ITEM NO.	DESCRIPTION	LABOR	MATERIALS	QUANTITY	UNIT	ITEM TOTAL
	Mobilization	\$ 45,000.00	\$ 20,000.00	1	LS	\$ 65,000.00
	Erosion and Sediment Control	\$ 4,500.00	\$ 6,000.00	1	LS	\$ 10,500.00
	Cofferdam & Dewatering	\$ 45.00	\$ 65.00	1,800	SF	\$ 198,000.00
	Clearing and Grubbing	\$ 2,500.00	\$ 3,000.00	1	LS	\$ 5,500.00
	Construction Layout	\$ 11,000.00	\$ 2,000.00	1	LS	\$ 13,000.00
	Existing Concrete Ramp Removal	\$ 15.00	\$ 15.00	333	SY	\$ 10,000.00
	Existing Asphalt Pavement Removed	\$ 2.00	\$ 1.00	4,393	SY	\$ 13,178.67
	Two-Lane Concrete Boat Ramp	\$ 15.00	\$ 12.00	3,000	SF	\$ 81,000.00
	Fixed Concrete Courtesy Dock	\$ 450.00	\$ 600.00	239	CY	\$ 250,950.00
	Rock Channel Protection with Fabric	\$ 60.00	\$ 70.00	208	SY	\$ 27,078.52
	Sheetpile against Existing Sea Wall	\$ 45.00	\$ 65.00	1,500	LF	\$ 165,000.00
	Recap Existing River Wall	\$ 100.00	\$ 125.00	1,238	LF	\$ 278,550.00
	Excavation	\$ 45.00	\$ 10.00	890	CY	\$ 48,950.00
	Embankment	\$ 40.00	\$ 10.00	20	CY	\$ 1,000.00
	Earthwork - parkinglot regrade	\$ 4.00	\$ 3.00	20,000	SF	\$ 140,000.00
	Retaining wall	\$ 75.00	\$ 60.00	10,000	SF	\$ 1,350,000.00
	Design Contingency				15%	\$ 542,581.08
	Total Option 5- Construction					\$ 4,159,788.26
	Construction Contingency				10%	\$ 415,978.83
	Design and Permitting				18%	\$ 748,761.89
	ODNR Costs					\$ 3,834,528.98
	City Costs					\$ 1,490,000.00
	Total Project Costs					\$ 5,324,528.98
	Option 6					
	amptheater install	\$ 1,500,000.00	\$ 1,250,000.00	1	LS	\$ 2,750,000.00
	revetment removal	\$ 150,000.00	\$ 55,000.00	1	LS	\$ 205,000.00
	Design Contingency				15%	\$ 443,250.00
	Total Option 6- Construction					\$ 3,398,250.00
	Construction Contingency				10%	\$ 339,825.00
	Design and Permitting				18%	\$ 611,685.00
	City Costs					\$ 4,349,760.00
	Total Project Costs					\$ 4,349,760.00

5.6 Site Evaluation Checklist

Site Evaluation Submittal Checklist

Facility/Project: DNR-230141 Steubenville Marina Feasibility Study

Ohio Department of Natural Resources Standard Forms and Documents

Please answer all questions and provide appropriate attachments for each item as necessary. In addition to the following information, a concept drawing(s) depicting basic site characteristics including, but not limited to: *north/south orientation, roadways, rivers and other waterways, topography, existing structures, and sewer lines*. The site address and/or approximate location information should be included.

Site Location:

Is the site located within one mile of state route or US Highway? If yes, ODOT been contacted for feedback on access to the site? Yes ☒ No ☐ Attach ☐

Site Size:

Is the site shape approximate to fit the building and site amenities? Yes ☐ No ☒ Attach ☐

Has a Traffic Impact Study been prepared for the site? What are the results? Yes ☐ No ☒ Attach ☐

Topography:

Does the site have sufficient level area to accommodate the building? Yes ☐ No ☐ Attach ☐

Will there be sufficient natural storm drainage? Yes ☒ No ☐ Attach ☐

Testing:

Has a Phase I environmental assessment been done? Yes ☒ No ☐ Attach ☐

Has a Phase 2 environmental assessment been done? Yes ☐ No ☒ Attach ☐

Are hazardous materials present? What plans for remediation exist? Yes ☐ No ☒ Attach ☐

Has any Geo-Tech testing been done? Yes ☒ No ☐ Attach ☐

Site Survey:

Has a site survey been done? Yes ☒ No ☐ Attach ☐

Are easements or rights-of-way present on the site? Yes ☐ No ☐ Attach ☐

Will easements or rights of way adversely affect the site development? Yes ☐ No ☐ Attach ☐

Does the site have zoning or deed restrictions that prohibit proper development? Yes ☐ No ☐ Attach ☐

Are safety concerns such as railroad tracks or high-voltage lines present? Yes ☐ No ☐ Attach ☐

Is any part of the site located in a flood plain? Yes ☒ No ☐ Attach ☐

Are there any wetlands or waterways on the site? Yes ☒ No ☐ Attach ☐

Soil Characteristics:

Is the subsurface condition suitable for standard footing design? Yes ☐ No ☐ Attach ☐

Are subsurface groundwater levels suitable? Yes ☐ No ☐ Attach ☐

Is rock present on the site? Yes ☐ No ☐ Attach ☐

Site Utilities:

Is storm water detention feasible? Yes ☐ No ☐ Attach ☐

Is an approved storm water outlet available? Yes ☐ No ☐ Attach ☐

Will an on-site sewage treatment system be required? Yes ☐ No ☒ Attach ☐

Is a domestic water line available to the site? Yes ☐ No ☒ Attach ☐

Does the waterline provide sufficient capacity for complete fire suppression? Yes ☐ No ☒ Attach ☐

Have all utilities been located for a site entry location? Yes ☐ No ☐ Attach ☐

Site Preparation:

Are there any known structures that were demolished on the site? Yes ☒ No ☐ Attach ☐

Is demolition of existing structures required? Yes ☒ No ☐ Attach ☐

Are underground storage tanks present on site? Have plans been made to remove them? Yes ☐ No ☒ Attach ☐

Has appropriate environmental testing been done for demolition or tank removal? Yes ☐ No ☒ Attach ☐

Is adequate space available for construction staging? Yes ☒ No ☐ Attach ☐

Please include any other relevant information pertaining to the site in question that has not been included in this checklist.

5.7 Geotechnical Evaluation

February 19, 2024

RMF Engineering, Inc.
2323 West 5th Avenue, Suite 148
Columbus, OH 43204

Attention: Vince Jarrett, P.E.

Reference: Geotechnical Subsurface Exploration
Boat Ramp Upgrades – Steubenville Marina
Steubenville, Jefferson County, Ohio
CTL Project No. 23050041MOR

Dear Mr. Jarrett:

CTL Engineering, Inc. has completed the subsurface exploration for the above referenced project. A copy of the report is being provided in digital (pdf) format.

Thank you for the opportunity to be of service to you on this project. If you have any questions, please contact our office.

Respectfully Submitted,

CTL ENGINEERING, INC.



Joe Grani, P.E.
Project Engineer

GEOTECHNICAL SUBSURFACE EXPLORATION

**BOAT RAMP UPGRADES – STEUBENVILLE MARINA
STEUBENVILLE, JEFFERSON COUNTY, OHIO
CTL PROJECT NO. 23050041MOR**

PREPARED FOR:

**RMF ENGINEERING, INC.
2323 WEST 5TH AVENUE, SUITE 148
COLUMBUS, OH 43204**

PREPARED BY:

**CTL ENGINEERING, INC.
1091 CHAPLIN ROAD
MORGANTOWN, WV 26501
Phone 304-292-1135**

FEBRUARY 19, 2024



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APPENDIX A Boring Location Plan

APPENDIX B Test Boring Records



I. PROJECT INFORMATION

The project site is located at the Steubenville Marina in Steubenville, Ohio, between State Route 7 and the Ohio River, just north of the US Route 22 bridge to Weirton, WV. The site is located near coordinate 40.379272°, -80.615529°.

The project involves upgrades to the existing marina including a boat launch ramp and the sea wall. It is understood that cofferdams will likely be installed during construction. It is understood that the bottom of the Ohio River is about 22 feet below the top of the existing sea wall.

II. EXPLORATION

Two (2) test borings, designated as B-1 and B-2, were drilled at the approximate locations shown on the Boring Location Map in Appendix A. The borings were advanced to depths ranging from 19.2 to 28.7 feet below existing grade.

The borings were drilled on August 30, 2023, with a Diedrich D-50 track mounted drill rig utilizing hollow stem augers (HSA). Standard penetration tests (SPTs) were conducted in the borings using an automatic hammer providing a 140-pound force falling 30 inches to drive 2-inch O.D. split barrel samplers for 18 inches. The automatic hammer for the rig has a rod energy ratio of 84.7 percent.

Soil samples obtained from the drilling operation were preserved in glass jars, visually described in the field and laboratory, and tested for natural moisture content.

The ground surface elevation at the test boring locations were assumed to be 100.0 feet.

III. FINDINGS

A. Site Geology

The following section outlines findings based upon documents and information obtained and reviewed by CTL. The available information consisted of mining and geological information compiled by the U.S. Geological Survey (USGS), the Ohio Department of Natural Resources (ODNR), and the U.S. Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS). Some interpretations and interpolations have been made by CTL, based upon engineering standards and professional experience.

The site is located within the Little Switzerland Plateau physiographic region in the unglaciated portion of eastern Ohio. Bedrock below the site consists of Pennsylvanian Age shale, siltstone and mudstone of the Conemaugh Group.



According to web-based mapping from USDA – NRCS, the upper soils at the site consist of Udorthents-Urban land complex.

According to the ODNR Mines of Ohio website, no mining activity has been mapped below the site. However, deep mining activities have been mapped less than 500 feet to the southwest of the site.

According to the ODNR Karst Interactive Map, no karst points have been mapped in the vicinity of the project.

B. Visual Observations

A site visit was performed by CTL personnel on August 25, 2023. The test borings were drilled about 10 to 25 feet away from the existing sea wall along the Ohio River. The existing ground surface in the vicinity of the test borings is relatively flat and bare, with some weeds. Broken concrete pieces of varying size were noticed at the ground surface in the vicinity of boring B-2.

The existing sea wall exhibited numerous signs of distress including spalling, cracking, and areas where the concrete has fallen off.

Standing water was noted behind the wall at the time of the site visit.

C. Subsurface Conditions

No discernable surface cover was noted at either boring location. The test borings encountered soils described as fill or possible fill to depths ranging from 19.2 to 23.5 feet. The fill and possible fill materials were described as well graded gravel (GW), clayey gravel (GC), sandy gravel (GS), silty sand (SM) or clayey sand (SC). Broken concrete pieces were encountered within the fill in boring B-2. These materials exhibited N_{60} values ranging from 4 blows per foot (bpf) to 50 blows for 1 inch of penetration, with natural moisture content values ranging from 4 to 27 percent. Boring B-1 was terminated upon encountering auger refusal at a depth of 19.2 feet.

Alluvial soils were encountered beneath the fill materials in boring B-2. The alluvial soils were described as poorly-graded sand with gravel (SP). These alluvial soils exhibited an N_{60} value of 4 bpf, and a natural moisture content value of 16 percent.

Boring B-2 exhibited weathered shale at a depth of about 28.5 feet below existing grade. The weathered shale exhibited an N_{60} value of 50 blows for 2 inches of penetration. Boring B-2 was terminated in the weathered shale.

Groundwater and soil cave in levels were measured in the test borings as tabulated below.

Boring No.	Groundwater Depth (feet)		Soil Cave-in Depth (feet)
	During Drilling	At Completion	
B-1	1.2	N.A.*	2.3
B-2	3.1	N.A.*	---

* No reading – boring was grouted upon completion

It should be noted that fluctuations in groundwater levels should be expected over time due to variations in precipitation, and the level of the adjacent Ohio River. Static groundwater levels can only be determined through observations made in cased holes over relatively long periods of time.

For more detailed descriptions, please refer to the Test Boring Records provided in Appendix B.

IV. **ANALYSES AND RECOMMENDATIONS**

At the time that this report was prepared, specific details about the proposed improvements were not available. However, it is understood that a cofferdam will likely need to be constructed. Therefore, in addition to general site preparation and earthwork, we are providing parameters for use in the design of the cofferdam.

It should be noted that bedrock is present at about the level of the bottom of the Ohio River. Therefore, it is expected that the cofferdam will need to have a foundation drilled into the underlying bedrock.

A. **General Site Preparation and Earthwork**

1. All vegetation, or topsoil encountered within the proposed construction limits should be removed.
2. Any existing utilities located within the limits of the proposed structure should be removed or relocated. Utility trench excavations should be backfilled with properly compacted engineered fill, preferably granular fill.
3. Engineered fill should be free from unsuitable materials such as coal, pyritic materials, organic matter, debris, waste, clay clods, frozen materials, and other deleterious matter. The Plasticity Index, PI (ASTM D4318), for any material utilized as engineered fill should not exceed 20 and the Liquid

Limit should not exceed 40 (Unified Soil Classifications GW, GM, GC, SW, SM, SC, ML, and some CL). Topsoil, elastic silt (MH), and fat clay (CH) soils are not suitable for use as fill.

4. The engineered fill should be placed in controlled, loose, relatively horizontal lifts not to exceed 8 inches in thickness, with each layer being compacted to at least 100 percent of the material's maximum dry density as determined by the Standard Proctor Compaction Test (ASTM D698).
5. Approved existing on-site soils materials may be used as engineered fill provided they meet the criteria listed above. However, these soils may need to be dried back prior to being used as engineered fill.
6. Adequate drainage should be provided on the surface of the exposed soils both during construction and permanently. Absorption of heavy rainfall, accumulations of water and heavy construction traffic may result in softening of these soils, hence, severely weakening the strength of subgrade soils.
7. Subsequent to site clearing and excavation, and prior to any engineered fill placement, the exposed soils should be compacted and/or proof-rolled in the presence of the Soils Engineer. Soft or loose soils, wherever encountered, should be disked, dried and recompacted, or undercut and replaced with compacted engineered fill, or otherwise improved as determined by the Soils Engineer.
8. Temporary excavations in excess of 4.0 feet in depth should be sloped or shored according to OSHA requirements.
9. If the surface soils soften or freeze during the fill placement operations, then these soils should be removed before additional fill is placed.
10. Shallow groundwater should be expected at this site, particularly after periods of precipitation.
11. All earthwork should be performed under the full-time supervision of the Geotechnical Engineer assisted by a certified soils engineering technician to confirm the specified degree of compaction is being achieved.

B. Below Grade Walls

Below grade walls such as retaining walls or cofferdams may be designed using the lateral soil parameters tabulated below. Design of the walls should take into account the influence of loads that will be applied adjacent to the structure. Lateral pressure equivalent to the applied loads should be added to the soil pressure when designing these walls.

Parameter	Select Granular Fill	Existing Granular Soils/Fill
At Rest Pressure Coefficient, (K_0)	0.44	0.50
Active Pressure Coefficient, (K_a)	0.28	0.33
Passive Pressure Coefficient, (K_p)*	3.54	3.00
Angle of Internal Friction, degrees	34	30
Soil/Concrete Friction Angle, degrees	23	20
Total Unit Weight, pcf	120	120

* The passive pressure in the upper 3.0 feet should be neglected.

Backfill immediately behind the walls should consist of free draining granular material. Perforated PVC pipe drains should be installed along the base of the walls to prevent the accumulation of water which would increase lateral loads. These drains may be connected directly to nearby catch basins or sump pumps.

C. Seismic Considerations

Based on the subsurface conditions in the test borings, a Seismic Site Class “C” may be used for the seismic design. The Site Class was determined using the SPT N_{60} values on the test boring records.

D. Additional Geotechnical Exploration

As discussed above, due to the presence of bedrock at or near the Ohio River bottom, the proposed cofferdam will need to have a foundation drilled into the underlying bedrock. Therefore, additional geotechnical information will be needed to design the proposed retaining walls or coffer dams.

CTL recommends performing additional test borings including rock coring within the project limits to better define the top of bedrock, as well as the bedrock type and strengths.

Upon request, CTL can submit a change order to perform additional test borings and engineering services on this project.

V. CHANGED CONDITIONS

The evaluations, conclusions, and recommendations in this report are based on our interpretation of the field and laboratory data obtained during the exploration, our understanding of the project and our experience with similar sites and subsurface conditions using generally accepted geotechnical engineering practices. Although individual test borings are representative of the subsurface conditions at the boring locations on the dates drilled, they are not necessarily representative of the subsurface conditions between boring locations or subsurface conditions during other seasons of the year.

In the event that changes in the project are proposed, additional information becomes available, or if it is apparent that subsurface conditions are different from those provided in this report, CTL Engineering should be notified so that our recommendations can be modified, if required.

VI. TESTING AND OBSERVATION

During the design process, it is recommended that CTL Engineering work with the project designers to confirm that the geotechnical recommendations are properly incorporated into the final plans and specifications, and to assist with establishing criteria for the construction observation and testing.

CTL Engineering is not responsible for independent conclusions, opinions and recommendations made by others based on the data and recommendations provided in this report. It is recommended that CTL be retained to provide construction quality control services on this project. If CTL Engineering is not retained for these services, CTL shall assume no responsibility for compliance with the design concepts or recommendations provided.

VII. CLOSING

The report was prepared by CTL Engineering, Inc. (Consultant) solely for the use of the Client in accordance with an executed contract. The Client's use of or reliance on this report is limited by the terms and conditions of the contract and by the qualifications and limitations stated in the report. It is also acknowledged that the Client's use of and reliance of this report is limited for reasons which include: actual site conditions that may change with time; hidden conditions, not discoverable within the scope of the assessment, may exist at the site; and the scope of the investigation may have been limited by time, budget and other constraints imposed by the Client.

Neither the report, nor its contents, conclusions nor recommendations are intended for the use of any party other than the Client. Consultant and the Client assume no liability for any



reliance placed on this report by such party. The rights of the Client under contract may not be assigned to any person or entity, without the consent of the Consultant which shall not be unreasonably withheld.

This geotechnical report does not address the environmental conditions of the site. The Consultant is not responsible for consequences or conditions arising from facts that were concealed, withheld, or not fully disclosed at the time the assessment was conducted.

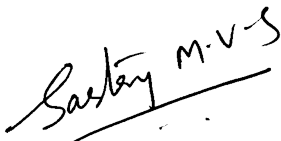
To the fullest extent permitted by law, the Consultant and Client agree to indemnify and hold each other, and their officers and employees harmless from and against claims, damages, losses and expenses arising out of unknown or concealed conditions. Furthermore, neither the Consultant nor its employees shall be liable to the Owner in an amount in excess of the available professional liability insurance coverage of the Consultant. In addition, Client and Consultant agree neither shall be liable for any special, indirect or consequential damages of any kind or nature.

The Consultant's services have been provided consistent with its professional standard of care. No other warranties are made, either expressed or implied.

Specific design and construction recommendations have been provided in this report. Therefore, the report should be used in its entirety.

Respectfully Submitted,

CTL ENGINEERING, INC.



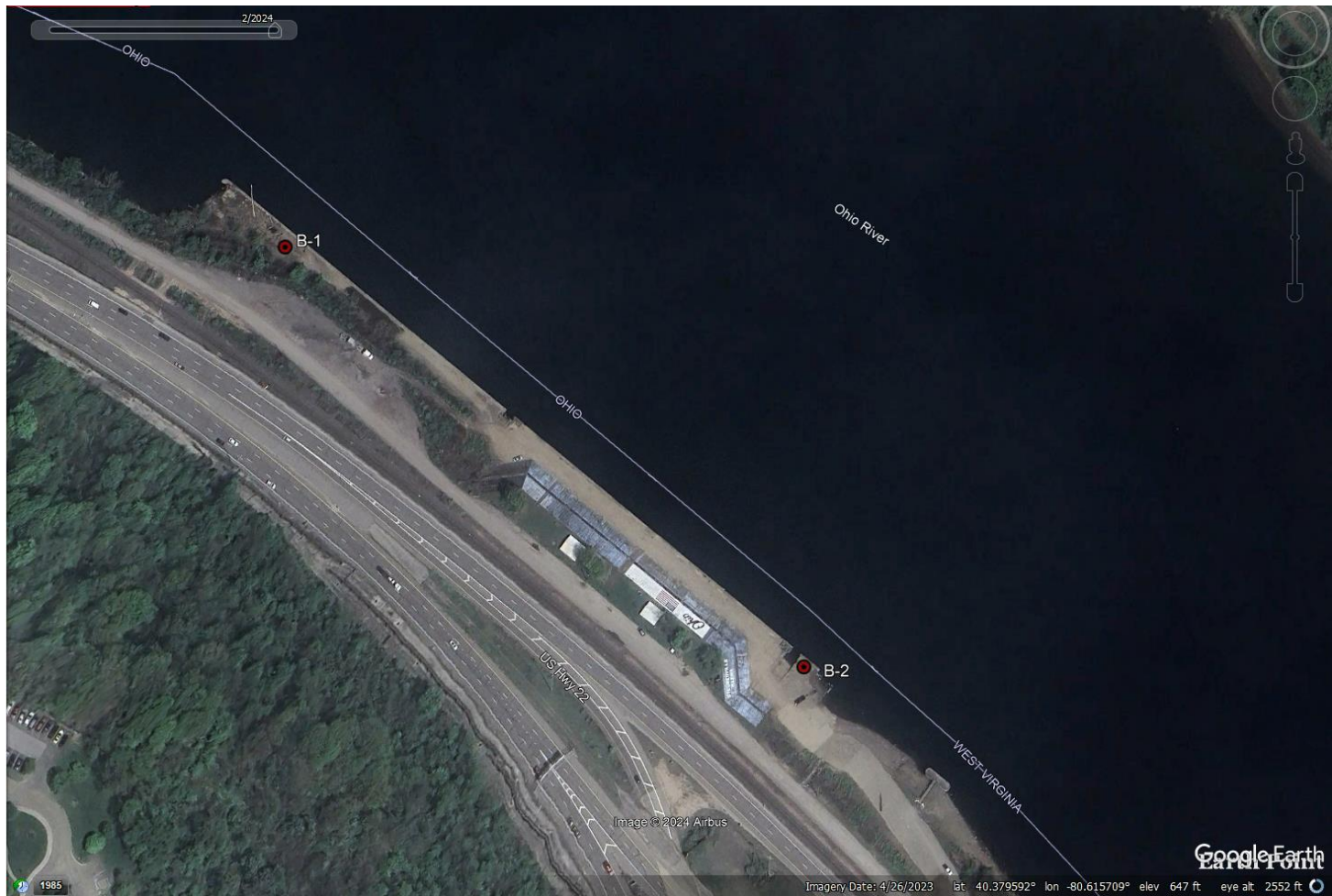
Sastry Malladi, P.E.
Project Engineer



Joe Grani, P.E.
Project Engineer

APPENDIX A

BORING LOCATION PLAN



LEGEND		BORING LOCATION PLAN	
 Approximate Test Boring Location  CTL ENGINEERING, INC. GEOTECHNICAL ENGINEERS TESTING * INSPECTION LABORATORY SERVICES	Date 2/19/2024	NOTE:	
	Scale As Shown		
	Drawn By TM	Reviewed By JG	Page
Steubenville Marina Boat Ramp Upgrades Jefferson County, Ohio			CTL Project No. 23050041MOR

APPENDIX B

TEST BORING RECORDS

TEST BORING RECORD

CLIENT : RMF Engineering, Inc.
 PROJECT : Steubenville Marina Boat Ramp Upgrades
 LOCATION : Steubenville, Ohio
 PROJECT NO. : 23050041MOR

BORING NO.: **B-1**
 SHEET 1 OF 1
 DATE STARTED : 08-30-23
 DATE COMPLETED : 08-30-23

BORING ELEVATION : 100.0 Feet	RIG TYPE : Diedrich D-50 Track	DRILLER : AW
STATION :	CASING DIA. : 3.25	TEMPERATURE :
OFFSET :	CORE SIZE : N/A	WEATHER :
DEPTH : 19.2 Feet	HAMMER : Auto	
BORING METHOD : HSA	ENERGY RATIO : 84.7	

GROUNDWATER: Encountered at 1.2' Caved in at 2.3'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	N ₆₀	RECOVERY (%)	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., tsf	ATTERBERG LIMITS		
											LL	PL	PI
100.0	0												
	1			SS-1	8 8 7	21	67	14					
	5			SS-2	9 6 4	14	11	10					
		Medium Dense, Grayish-Brown WELL-GRADED GRAVEL with CLAYEY SAND (GW) , Wet (FILL)		SS-3	5 4 4	11	56	13					
	10			SS-4	3 5 4	13	44	10					
88.0			12.0										
	15			SS-5	10 4 10	20	67	8					
		Medium Dense, Brown CLAYEY GRAVEL with SAND (GC) , Wet (Possible Fill)											
83.0			17.0										
		Very Dense, Brown SANDY GRAVEL (GP) , Wet (Possible Fill)											
80.8			19.2	SS-6	20 50-2"		100	10					
	20	BOTTOM OF BORING AUGER REFUSAL											

 1091 Chaplin Road Morgantown, WV 26501 Telephone: 304-292-1135 Fax: 304-296-9302 Email: ctlwv@ctleng.com	BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
	HSA - Hollow Stem Auger SFA - Solid Flight Auger RC - Rock Coring MD - Mud Drilling WD - Wash Drilling HA - Hand Auger	SS - Split Spoon Sample ST - Shelby Tube Sample CR - Rock Core Sample BS - Bag Sample	* - Hand Penetrometer LL - Liquid Limit PL - Plastic Limit PI - Plasticity Index SPT - Standard Penetration Test N ₆₀ - Standard Penetration Normalized to 60% Drill Rod ER

TEST BORING RECORD

CLIENT : RMF Engineering, Inc.
 PROJECT : Steubenville Marina Boat Ramp Upgrades
 LOCATION : Steubenville, Ohio
 PROJECT NO. : 23050041MOR

BORING NO.: **B-2**
 SHEET 1 OF 2
 DATE STARTED : 08-30-23
 DATE COMPLETED : 08-30-23

BORING ELEVATION : 100.0 Feet	RIG TYPE : Diedrich D-50 Track	DRILLER : AW
STATION :	CASING DIA. : 3.25	TEMPERATURE :
OFFSET :	CORE SIZE : N/A	WEATHER :
DEPTH : 28.7 Feet	HAMMER : Auto	
BORING METHOD : HSA	ENERGY RATIO : 84.7	

GROUNDWATER: ▼ Encountered at 3.1'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	N ₆₀	RECOVERY (%)	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., tsf	ATTERBERG LIMITS		
											LL	PL	PI
96.5		Very Dense, Brown, Gray SILTY SAND with GRAVEL (SM) , Contains Broken Concrete, Damp (FILL)	3.5	SS-1	50-1"		100	4					
	5			SS-2	4 2 2	6	67	27		1.0*			
				SS-3	5 2 1	4	34	19					
	10			SS-4	4 3 4	10	67	14					
		Loose to Dense, Brown CLAYEY SAND (SC) , Contains Rock Fragments, Wet (Possible Fill)		SS-5	8 6 4	14	0						
	15												
				SS-6	3 3 24	38	39	13					
	20												

Continued on next page

 1091 Chaplin Road Morgantown, WV 26501 Telephone: 304-292-1135 Fax: 304-296-9302 Email: ctlwv@ctleng.com	BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
	HSA - Hollow Stem Auger SFA - Solid Flight Auger RC - Rock Coring MD - Mud Drilling WD - Wash Drilling HA - Hand Auger	SS - Split Spoon Sample ST - Shelby Tube Sample CR - Rock Core Sample BS - Bag Sample	* - Hand Penetrometer LL - Liquid Limit PL - Plastic Limit PI - Plasticity Index SPT - Standard Penetration Test N ₆₀ - Standard Penetration Normalized to 60% Drill Rod ER

TEST BORING RECORD

CLIENT : RMF Engineering, Inc.

BORING NO.: **B-2**

PROJECT : Steubenville Marina Boat Ramp Upgrades

SHEET 2 OF 2

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	N ₆₀	RECOVERY (%)	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., tsf	ATTERBERG LIMITS		
											LL	PL	PI
76.5	25	Loose to Dense, Brown CLAYEY SAND (SC) , Contains Rock Fragments, Wet (Possible Fill)	23.5	SS-7	WOH 2 1	4	67	16					
71.5		Very Loose, Brown POORLY-GRADED SAND with GRAVEL (SP) , Wet											
71.3	30	SHALE, GRAY, HIGHLY WEATHERED, FRIABLE (SOIL-LIKE) BOTTOM OF BORING AUGER REFUSAL	28.5 28.7	SS-8	50-2"		100	8					
	35												
	40												
	45												

 1091 Chaplin Road Morgantown, WV 26501 Telephone: 304-292-1135 Fax: 304-296-9302 Email: ctlwv@ctleng.com	BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
	HSA - Hollow Stem Auger SFA - Solid Flight Auger RC - Rock Coring MD - Mud Drilling WD - Wash Drilling HA - Hand Auger	SS - Split Spoon Sample ST - Shelby Tube Sample CR - Rock Core Sample BS - Bag Sample	* - Hand Penetrometer LL - Liquid Limit PL - Plastic Limit PI - Plasticity Index SPT - Standard Penetration Test N ₆₀ - Standard Penetration Normalized to 60% Drill Rod ER

TEST BORING/PIT RECORD 23050041MOR.GPJ CTL CORPORATE.GDT 2/19/24

5.8 Schedule

Stuebenville Marina Boat Access Improvements

