



**Portage Lakefront  
South Properties  
Sub-Area Plan**

*Portage, Indiana*

February 2013



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## Acknowledgements

**City of Portage**

**U.S. Steel**

**Precoat Metals**

**National Park Service**

**SEH of Indiana**



Site Photography



Site Context Aerial

# Introduction

In January 2005, the five lakefront communities of Portage, Hammond, Whiting, East Chicago and Gary acted as one and embraced the Marquette Plan: The Lakeshore Reinvestment Strategy. This seminal document illustrated a compelling long-term, common vision to guide future decision making along the Lake Michigan shoreline, eventually spanning Indiana's entire 46 mile coastline and all 17 lakeshore communities with the completion of the Marquette Plan Phase II in February 2008. This action-oriented document looked at each community individually and collectively, addressing both community-specific and broader regional objectives. For the City of Portage, a primary focus was placed on the development of a new lakefront park and riverwalk along with their "Northside" as a place to leverage a unique mix of natural and working waterways into a place for residents of Portage and beyond to live, work, play and stay.

In April 2005, the City of Portage took the first important step in implementing recommendations in the Marquette Plan and

created the Northside Master Plan. This effort brought public and private partners together in a consensus-based process to guide decision making for over 1,700 acres of property north of U.S. 20. The Northside Master Plan built upon the Marquette Plan's vision of "Create a Livable Lakefront" and developed land use plans, development concepts and guidelines to guide long and short term actions by the City. It included preliminary concepts for Portage Lakefront and Riverwalk and its environs, referred to as the South Properties in this study, including the opportunity for an improved arrival experience, complementary development, overflow parking, transit and trail access on City-owned property south of the new park site. The City began implementing recommendations of the Northside Master Plan immediately and advanced the implementation of Portage Lakefront and Riverwalk in 2006 through a unique partnership between the City and National Park Service. The site opened to the public in 2008 and has steadily grown to become the most visited site within the Indiana Dunes National Lakeshore.



Portage Northside Rendering

# Introduction



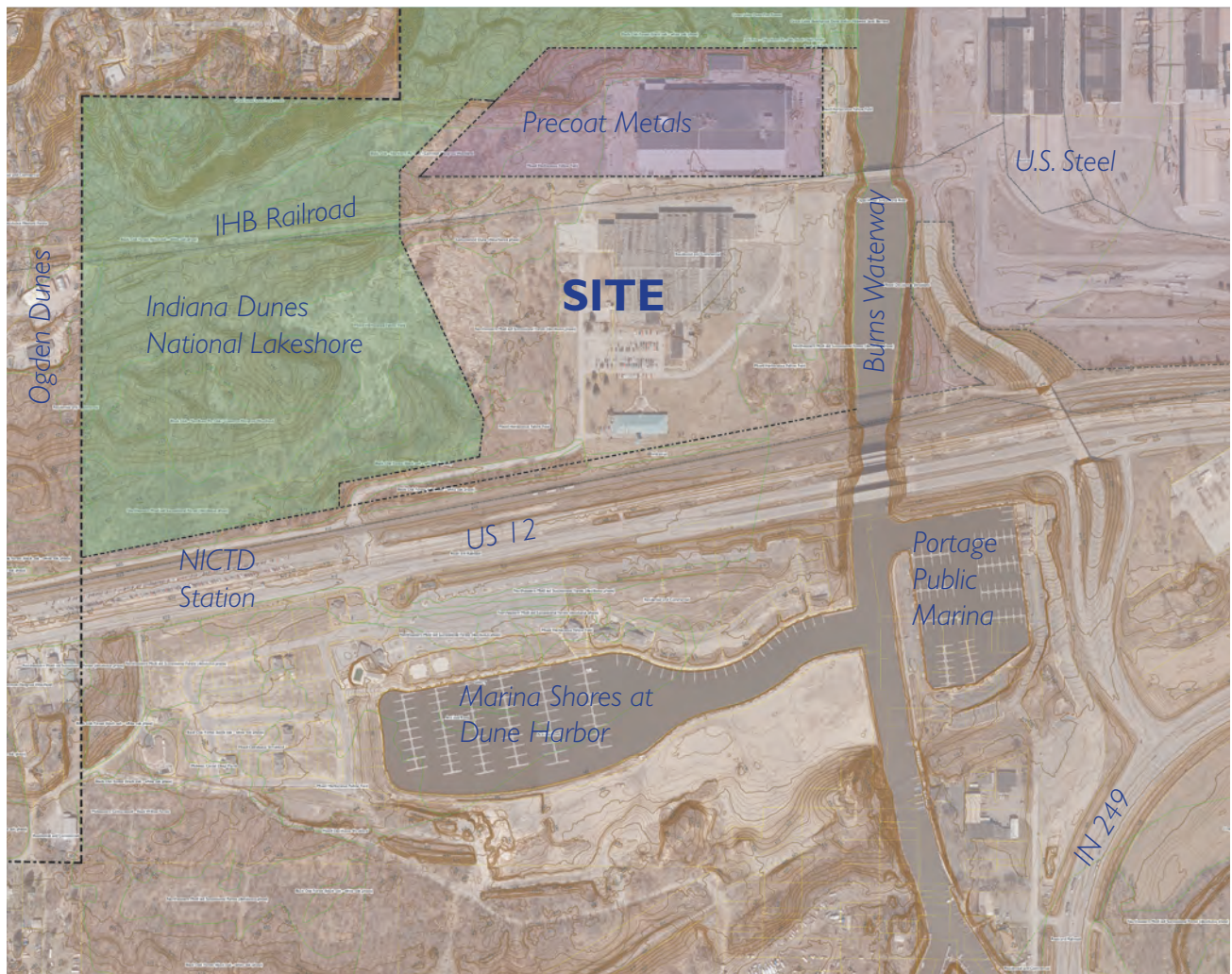
Northside Master Plan

One of the primary findings over the past 4 years has been the need for an updated arrival sequence for visitors, including access, circulation and parking strategies to better serve visitors while preserving a fragile lakefront resource. This is particularly evident on peak days such as summer holidays and lakeshore events, such as the air show, when parking lots become full and use patterns become detrimental to the site.

Concepts contained in Portage's Northside Plan stressed the need for cooperative access and parking strategies south of the Lakefront and Riverwalk site, to serve peak and overflow

demands. Also suggested in the Northside Plan were improved trail connections and linkage to NICTD facilities and other resources in the Northside to minimize the amount of parking and paved surfaces.

The South Properties Enhancements plan revisits this concept, taking into account observed use patterns as well as plans for adjacent properties, and produce a comprehensive plan that includes recommendations for land use, access, circulation and parking. Design guidelines and phasing strategies are also included to help guide implementation.



Site Aerial

# Site Analysis

Through site visits and stakeholder interviews numerous issues and opportunities were identified that will help guide the redevelopment plans for the Portage Lakefront South Properties Sub-Area Plan.

## LAND USE

Portage Lakefront South Properties is a unique site surrounded by both working industrial facilities and federally protected, ecologically sensitive lands managed by the National Parks Service. U.S. Steel and Precoat Metals are current neighboring industrial facilities and plans have been developed within this report that are compatible with the operations of each facility.

## BURNS WATERWAY

At the time of planning, the U.S. Army Corps of Engineers is designing plans to enhance the Burns Waterway. Concepts contained in this report are compatible with their plans and illustrate ways for Portage to leverage new water access and site improvements.

Additionally, the bridge crossing of Burns Waterway was evaluated and a full report has been included within Appendix B of this report.

## SITE STRUCTURES

Various buildings and structures currently exist on the South Properties site that will revert to the City of Portage control in 2014.

- The warehouse building (Warehouse 57) has been reviewed and portions of the structure or infrastructure of the warehouse may be adaptively re-used through different design alternatives.
- The training facility to the south of the warehouse has been determined to be in good condition. This structure is slated for adaptive reuse, with future use and programming to be determined by the City of Portage.



Burns Waterway at U.S. Steel bridge



Warehouse facility



Warehouse facility annex



South training facility

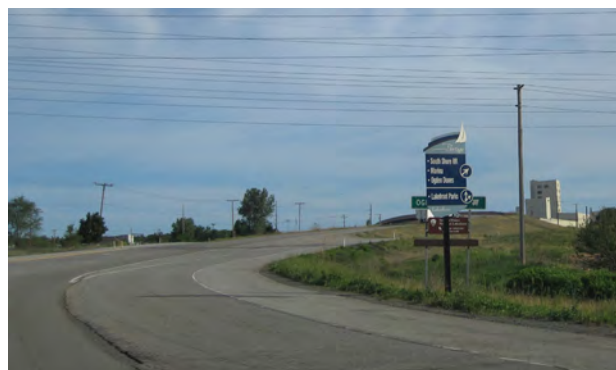
## CIRCULATION

The location of the South Properties and its proximity to waterways, railroads and functional industrial facilities creates issues and opportunities for circulation and access to the site. Key points have been listed below with corresponding images to the right

- Physical barriers such as Burns Waterway and the NICTD railroad allow for visitors to only access the site by vehicle using the overpass bridge connecting Indiana State Route 249 and U.S. Steel.
- Visitors accessing the site by vehicle navigate the same route as large trucks hauling for U.S. Steel and Precoat Metals, causing an unsettling arrival experience.
- Various signage types and multiple ramps create a confusing arrival sequence for visitors accessing the site from IN-249.
- Lack of consistent wayfinding at the U.S. Steel entrance intersection to direct visitors to the park.
- Existing railroad connecting U.S. Steel and Precoat Metals has been determined to still be active with sporadic runs during late night hours.
- An existing roadway to the southwest of the site links the NICTD station with the site. This option was deemed not feasible for visitor vehicle entrance (no vehicular railroad crossing permitted), however may be used for non-motorized visitor entrance, as well as an ingress/egress for emergency vehicles.

## UTILITY INFRASTRUCTURE

The site is served with electrical, water, gas and sanitary sewer utilities. Existing utility infrastructure shall be further investigated through the design development process to assess its condition and capacity for redevelopment needs.



Arrival sequence signage and character



Intersection at U.S. Steel entrance



Active rail connecting U.S. Steel & Precoat Metals

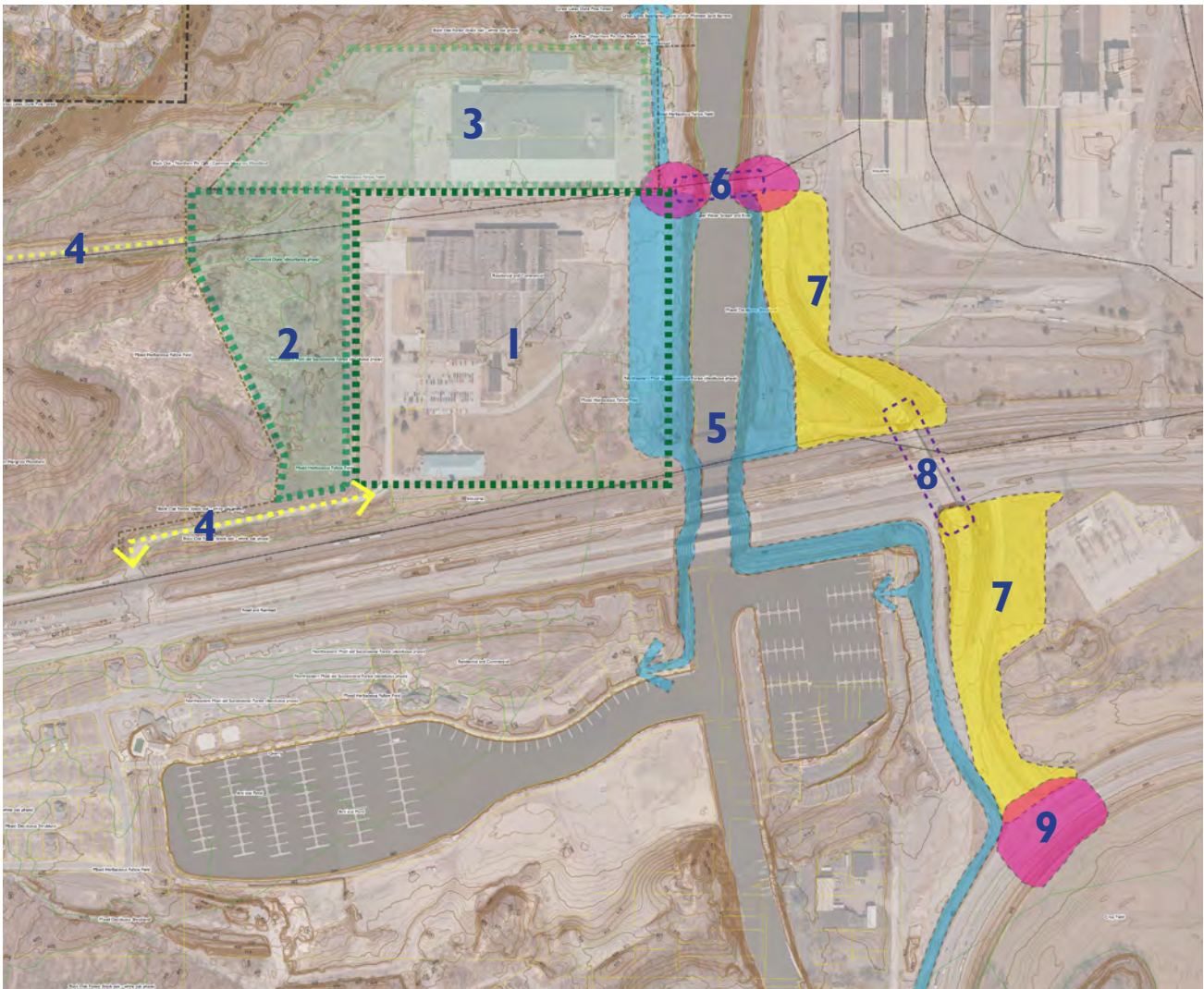


Southwest roadway link to NICTD Station

# Site Opportunities

Through the site analysis, redevelopment of the Lakefront South Properties site has been broken into focus areas to help guide the design.

1. Redevelopment Zone
2. Low-Impact Development
3. Future Development (current Precoat Metals)
4. Non-motorized & emergency vehicle egress corridors
5. Waterway access & enhancements.
6. Intersections & Bridge Enhancements
7. Arrival Sequence with Streetscape Enhancements.
8. Bridge Enhancements
9. IN-249 Intersection



Site Opportunities

# Design Principles

In April 2005, the City of Portage adopted the Northside Master Plan, a consensus-based sub-area plan document intended to guide land use and development of over 1,700 acres of property north of U.S. 20, including Portage Lakefront and Riverwalk and its environs.

The Northside Master Plan built upon the Marquette Plan's vision of "Create a Livable Lakefront" and included a series of guiding principles to guide long and short term actions by the City. These principles were reviewed during this planning process for the South Properties and remain valid for this project, aside from references to residential and commercial development that will not take place in this section of the Northside. Based on this premise, the following guiding principles were tailored from the Northside Master Plan principles and are intended to guide long and short term actions by the City with regard to the South Properties. In addition, this plan also embraces the Marquette Plan's vision of a Livable Lakefront

## VISION

Create a Livable Lakefront

## GUIDING PRINCIPLES

1. Protect open spaces and environmental features with sustainable design
2. Capitalize on transit-oriented opportunities focused on recreation.
3. Utilize high-quality design techniques:
  - Enhance the arrival experience
  - Promote pedestrian-oriented development for a healthy lifestyle
  - Integrate land uses
  - Complement existing development
4. Provide transportation options:
  - Commuter rail access
  - Bus and Shuttle Services
  - Bicycle & Pedestrian Paths
  - Water Access
5. Promote Public/Private Partnerships



Burns Waterway (looking north to Lake Michigan)

# Alternatives

All options include enhancements to the arrival sequence, improvements at the U.S. Steel entrance intersection and gateways. Additional sustainability opportunities should be considered with each option (such as wind power, geothermal, native landscapes, permeable paving, etc.) to help minimize future and on-going maintenance costs.

## OPTION A

This option utilizes an existing roadway and surface parking lot (200 car) to provide access into the site. Additional parking has been included to accommodate overflow traffic from the Lakefront & Riverwalk site.

The existing Training Facility building to the south of the site has been preserved for future use of the City of Portage. Additionally,

the structural frame of the large warehouse building is preserved to create a dynamic open space in the center of the site.

Large berms have been created to both screen Precoat Metals and create a comfortable, flexible open space that can be programmed for a variety of uses. Berms can be created through dredging and sculpting of the shoreline of the Burns Waterway, currently in preliminary plans by the U.S. Army Corps of Engineers.

A River Center facility has been included to provide small non-motorized recreational opportunities with the waterway. A large platform/stage has been included on the waterway for event space. Picnic, camping and zipline opportunities have been provided to complement activities offered at Lakefront & Riverwalk site.



Option A

# Alternatives

## OPTION B

This option brings parking closer to the Lakefront & Riverwalk site entrance to better serve as overflow parking during peak season. The majority of day visitors to the site will be directed to this lot. The additional roadway will be used to serve camping/overnight visitors as well as providing access for deliveries to the preserved Training Facility. This route can be checked and monitored for traffic.

A River Center facility has been included to provide small non-motorized recreational opportunities with the waterway. Fishing platforms have been provided near the River Center, with riverwalk connections to Marina Shores and Portage Marina. Picnic, playground and camping opportunities have been provided to complement activities offered at Lakefront & Riverwalk site.

Large berms have been created to the north of the flexible open space to screen Precoat Metals that can be programmed for a variety of uses. A large berm is shown at the southeast corner of the site to serve as a viewing platform for the area. Berms can be created through dredging and sculpting of the shoreline of the Burns Waterway, currently in preliminary plans by the U.S. Army Corps of Engineers.



Option B

# Alternatives

## OPTION C

This option reconfigures the intersection at Precoat Metals and the Lakefront & Riverwalk site to a roundabout to help traffic flows.

The existing Training Facility building to the south of the site has been preserved for future use of the City of Portage. Additionally, the structural frame of the large warehouse building is preserved to create a dynamic open space in the center of the site. The expansion wing of the warehouse has also been preserved in this scheme.

Large berms have been created to the north of the flexible open space to screen Precoat Metals that can be programmed for a variety of uses. A large berm is shown at the southeast corner

of the site to serve as a viewing platform for the area. Berms can be created through dredging and sculpting of the shoreline of the Burns Waterway, currently in preliminary plans by the U.S. Army Corps of Engineers.

A River Center facility has been included to provide small non-motorized recreational opportunities with the waterway. Fishing platforms have been provided near the River Center, with riverwalk connections to Marina Shores and Portage Marina. Picnic, playground and camping opportunities have been provided to complement activities offered at Lakefront & Riverwalk site.



Option C

# Wayfinding

The lack of cohesive vehicular wayfinding from Indiana State Route 249 (and to a further extent Interstate 94) to the site creates challenges for first-time visitors to the site. The City of Portage has installed wayfinding signage along this route, however the typeface of the font at travel speeds is often illegible. Signs have also been placed directly in front of other wayfinding signage (as seen in the image to the right).

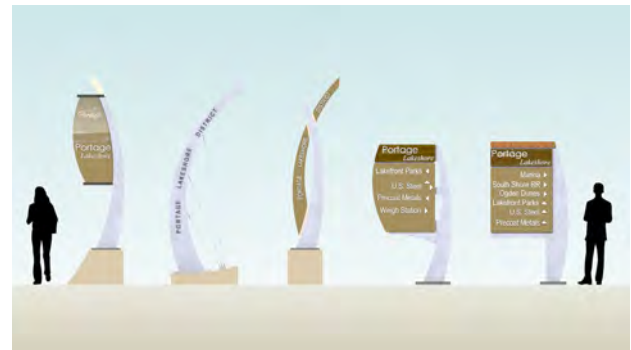
Alternative wayfinding sign families have been developed and are shown below. Typeface sizes follow MUTCD (Manual on Uniform Traffic Control Devices) Standards. Signage shall be primarily steel to respect the site's history with steel production.



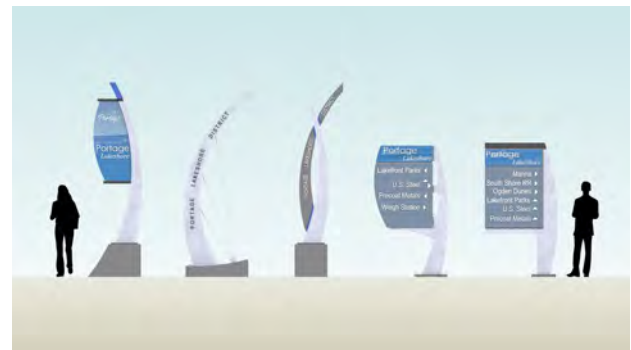
Existing and Conflicting Signage Types



Earth Tones



Cool Tones



# Gateways

Vehicular access to the site currently utilizes the same corridor as large trucks hauling for U.S. Steel, creating an unsettling arrival experience for first-time visitors to the site. Alternatives for the arrival sequence to the site have been developed to clarify and enhance the experience for visitors accessing the site through motorized vehicles.

All options shown below will require coordination with INDOT (for conformance to their standards) and Porter County (as the owner of the overpass bridge over US 12). Improvements to the Burns Waterway vehicular bridge will be discussed in the following chapter.

## OPTION A

- Masonry Gateways with light
- Timber guardrail
- Expanded traditional Portage wayfinding

## OPTION B

- Sculptural Steel Gateways
- Hybrid steel/timber guardrail
- Updated wayfinding

## OPTION C

- Masonry Gateways with light
- Hybrid steel/timber guardrail
- Updated wayfinding

Option A



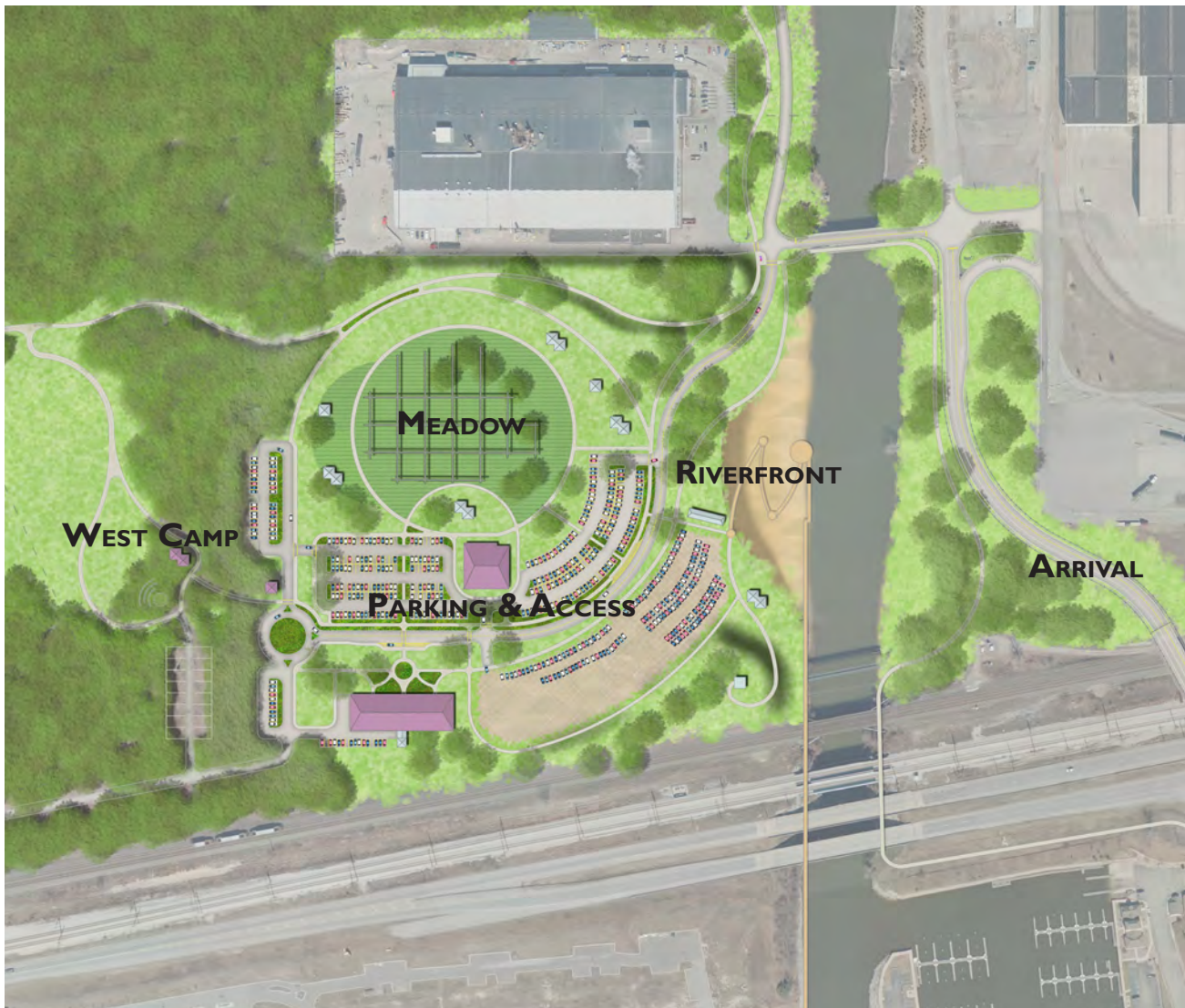
# Gateways

Option B



Option C





Plan alternatives were reviewed with the City of Portage and a preferred plan was created. Major programming elements of the alternatives remained, but were reorganized to better serve the visitor's needs and existing site operations. To the right are the major elements of this plan that are further described in the following pages of this report.

- *Parking & Access*
- *Arrival*
- *Meadow*
- *Riverfront*
- *West Camp*

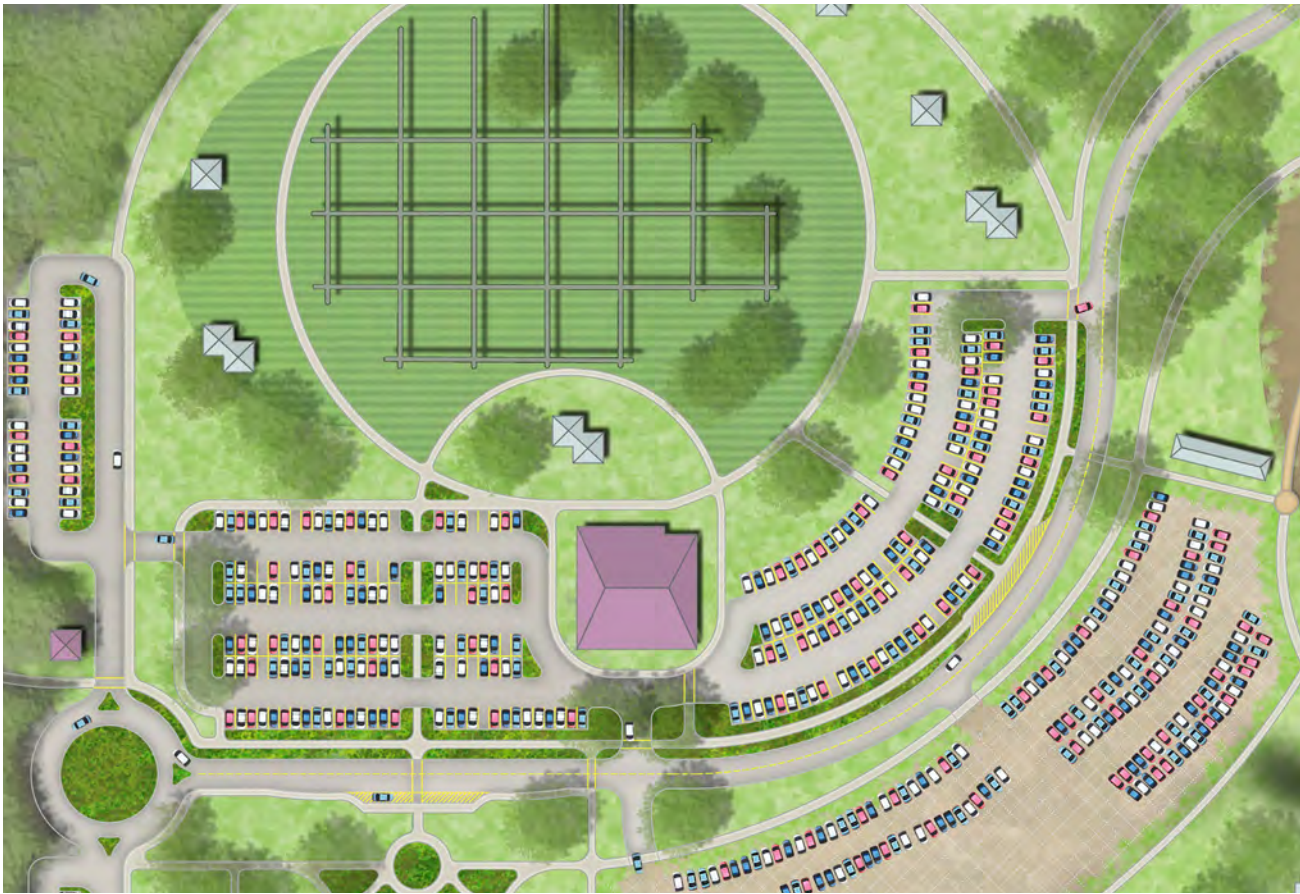
# EXISTING



# PROPOSED



# Parking & Access



Access to the site and parking substantially upgraded in this plan, addressing a primary project objective. The new and upgraded lots will serve as expanded parking for visitors to the Lakeshore and Riverwalk north of the site. It will also serve as parking for the site itself as subsequent phases follow.

Construction consists of a new entry road to the site, a roundabout, two new parking areas and an upgrade to the existing parking lot. New and upgraded sidewalks, and two bus drop-off locations are also included in the construction. In addition, a trail connects to the existing Riverwalk just north of the site.

Shade trees and savannah grasses will enhance the area and tie the site to the wooded area to the west. Creating bioswales, planted with sedges and other plants, along the entry

road, within the parking areas, and within the roundabout will help to capture and improve the quality of water runoff from the site.

An upgrade to the existing access corridor exiting the site towards Hillcrest Road will serve as a pedestrian link to the Portage/Ogden Dunes South Shore Line and provide emergency access. The upgrades consist of new pavement and lighting along the length of the roadway.

## STREETSCAPE

In order to provide continuity throughout the area (SR 249 to Lake Michigan), a consistent palette of materials should be used along the roadways. The image to the right shows the wooden guardrail, dune grasses and deciduous trees that exist at the Lakefront & Riverwalk site.

In addition, trails and sidewalks should be provided with all new road construction, to provide the necessary, safe pedestrian linkages and circulation between the South Properties site to Lakefront & Riverwalk site.



Streetscape Character

## LIGHTING

The use of lighting on-site shall provide minimal light levels in parking areas for security (1 footcandle average), and a few roadway lights to guide visitors and emergency vehicles through the site at night. To the right is an image of the light fixture utilized in Portage Lakefront & Riverwalk, that should be matched within South Properties for continuity.



Roadway Lighting

## PARKING

Due to sandy soils, permeable pavements are suggested for the permanent parking areas of the site. As blowing sand is not a concern on this site as it was for Lakefront & Riverwalk, the issue of clogging and cleaning of the permeable surfaces are a lesser concern.

Additionally, the preferred plan also includes a large overflow parking area to the south of the permanent parking stalls. This area could be native prairie grasses, and reinforced with a geotextile mesh to help prevent rutting.



Permeable Pavers

# Arrival



The Arrival Zone addresses the access corridor for the site. The most notable upgrades to the area are the addition of monuments, decorative roadway railing and trees along the roadway.

Construction consists of relocation of the exit ramp on the arrival roadway to open a greenspace in the ramp's current location. In addition, the intersection with the U.S. Steel entrance and bridge has been updated to provide clearer traffic movements at this formalized intersection.

Decorative wood guardrail with lighted stone pillars line both sides of the arrival roadway. Savannah grasses, evergreen and shade trees enhance the arrival corridor and act to screen the semi-trailer weigh station and parking area adjacent to the site.



## WAYFINDING & SIGNAGE

As noted in the analysis phase, access and circulation from State Route 249 to the site is a very unsettling experience for visitors to the site (minimal and confusing signage, truck route to access U.S. Steel and no visual clues to suggest a park or lakefront access ahead). The City of Portage had implemented a wayfinding series throughout the community, however are often cluttered with signage by others.

To the right, an example for updated wayfinding and signage, conforming to MUTCD standards was presented to Portage. Portage is evaluating wayfinding community-wide, and have not selected any designs at the time of this report.



Potential Signage Family

## GATEWAYS

To reinforce visual clues along the access route to South Properties and Lakefront & Riverwalk sites, gateway locations were identified in the alternatives phase of the project. Two potential gateway options were discussed and reviewed with the City. Alternatives shall be developed and reviewed during the construction design phase.

- **Rustic Stone Monument:** Same shape, size and materials used on the existing stone monument within Lakefront & Riverwalk and throughout the Indiana Dunes National Lakeshore.
- **Contemporary Steel Monument:** Developed due to the contemporary design elements in Lakefront & Riverwalk site and the steel industry history of the site.



Gateway Options

# Meadow



The Meadow Zone addresses the creation of a flexible open space on the site. The most notable change to the site is the deconstruction of the existing U.S. Steel warehouse. The Training and Conference Center and some of the interior I-beam structures will remain. Leaving some of the steel I-beam structure creates a focal point and gathering space for the site and pays homage to the industrial past.

A large portion of the building will be removed from site, including but not limited to; the outer corrugated metal skin, concrete foundation and unneeded utilities. A portion of this building, the Training & Conference Center, will remain and upgrades, primarily in the exterior, will be made. Some of the steel I-beam support structure on the interior of the

building will remain. This facility currently serves as storage but will be vacated prior to demolition.

The addition of picnic structures around the site in conjunction with the reuse of the Training & Conference Center helps to define and support the site as a gathering space. Upgrades in the landscaping, berms to screen the operational facility to the north of the site and new sidewalks are also added.

Additionally, the South Properties has a long history with industrial uses on site, and due to the proximity to the LEED Gold Portage Lakefront & Riverwalk, the initiative of reusing materials and structures on-site were well supported.

## TRAINING CENTER

The existing U.S. Steel training center annex attached to the warehouse is identified as an opportunity to provide the indoor facilities that would be required for this site through adaptive reuse. Simple facade and interior enhancements were envisioned to update this structure for visitor usage without large capital expenditures. Due to U.S. Steel active use of this facility and the warehouse, the feasibility of this reuse is not fully realized at the time of this report.



Training Center Adaptive Reuse of Facilities

## WAREHOUSE STRUCTURE

The large warehouse structure currently being used by U.S. Steel provides an opportunity to transform all or part of the warehouse into a large, unique overhead structure of the Meadow. The warehouse could be stripped of all elements, except the steel structural frame. Lights and coatings could be added to enhance the structure. Further study is recommended to determine if the entire structure should be deconstructed or if there is an appropriate reuse for a portion of the warehouse depending on final Army Corps of Engineers plan for Burns Waterway.



Warehouse Structure Reuse



Site Furnishings

## DESIGN ELEMENTS

The Meadow serves as the largest public gathering space within the South Properties project and should include a variety of site furnishings and unique elements in order to attract and serve all visitors of the site. Site furnishings should match design and materials of elements currently existing in the Portage Lakefront & Riverwalk site to the north in order to provide continuity between the sites. Shade Structures shown to the right are intended to mimic the form of the Pavilion structure within Lakefront & Riverwalk site.



Potential Shade Shelters

# Riverfront

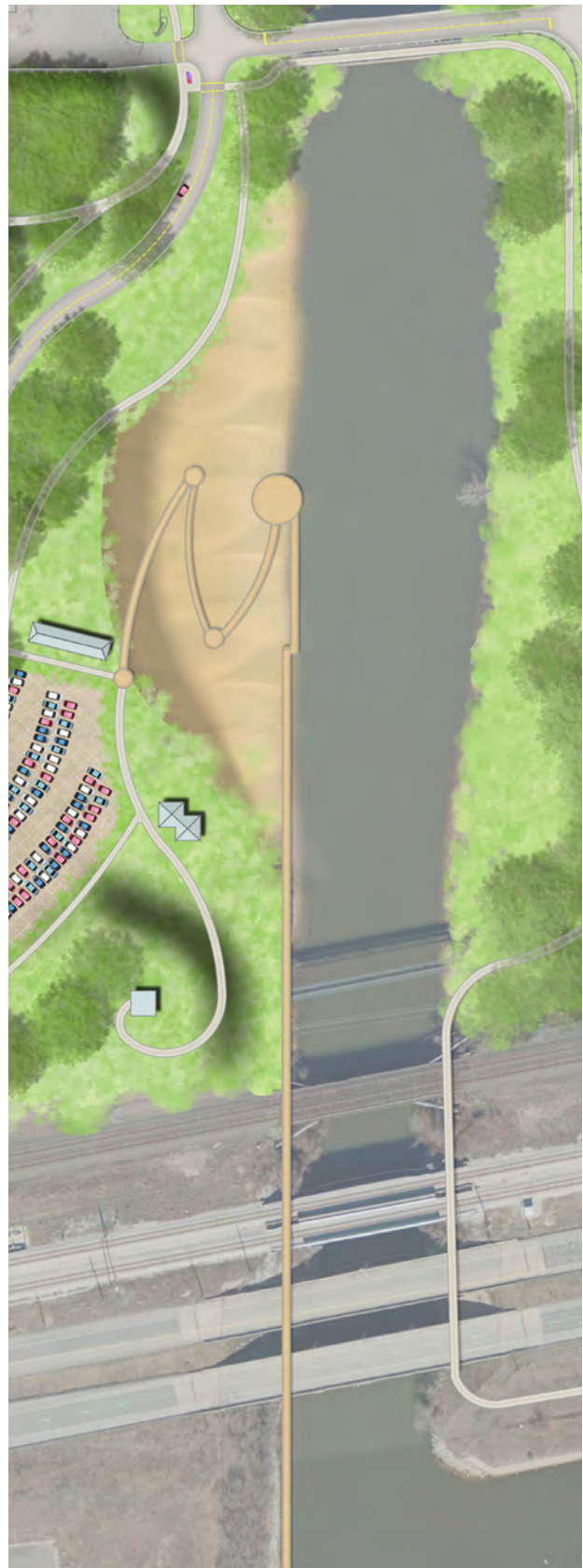
The Riverfront Zone provides a great opportunity to provide additional access to Burns Waterway as well as making trail connections underneath the US 12/NICTD bridges to Portage Public Marina and Marina Shores at Dune Harbor. This project would be dependent on some amount of regrading the existing riparian slope to provide access. An overlook berm is shown on the southwest side of the waterway, being created from the dredgings and regrading of the slope.

A riverwalk (to match Portage Lakefront & Riverwalk site), has been designed on both the east and west sides of Burns Waterway, thereby connecting a larger portion of Portage's population to the site through non-motorized transportation. Fishing platforms and overlooks would be provided along the riverwalk for additional programming opportunities.

Shelters and a potential River Center facility are shown in this zone to support the activities of the Riverfront zone. Discussion of small crafts (kayaks, canoes, etc.) and potential boat launches in this zone arose throughout the design phase. Launches in this location are not precluded by the plan and should be revisited for user demand as the Riverfront project approaches design and U.S. Army Corps of Engineers plans progress.



Riverwalk



# West Camp

The West Camp lies in an existing piece of degraded woodlands that abuts National Park land to the west. During early phases of the project, a demand for overnight camping was identified within Portage and the Indiana Lakeshore in general. This program would likely be developed by a outside organization that would run the operations of the site, if determined by Portage.

Although the West Camp is not fully programmed or designed, elements listed below should be included:

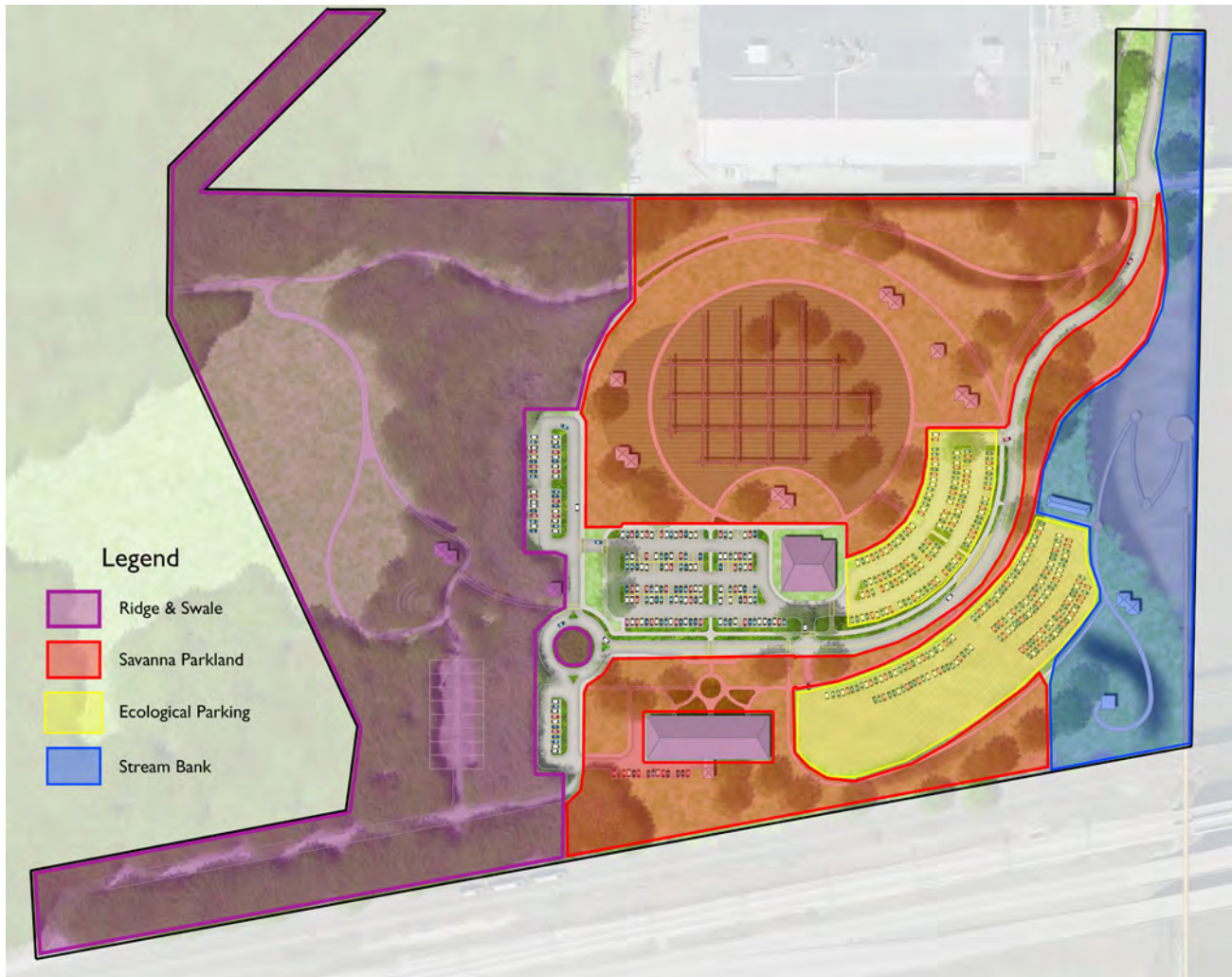
- Tent camping sites
- RV camping sites
- Separate parking from South Properties
- Check-in/Control Point Facility
- Camping Restroom facilities
- Council Ring or Small Amphitheater
- Trails
- Reforestation



Campsite Example



# Implementation Strategies

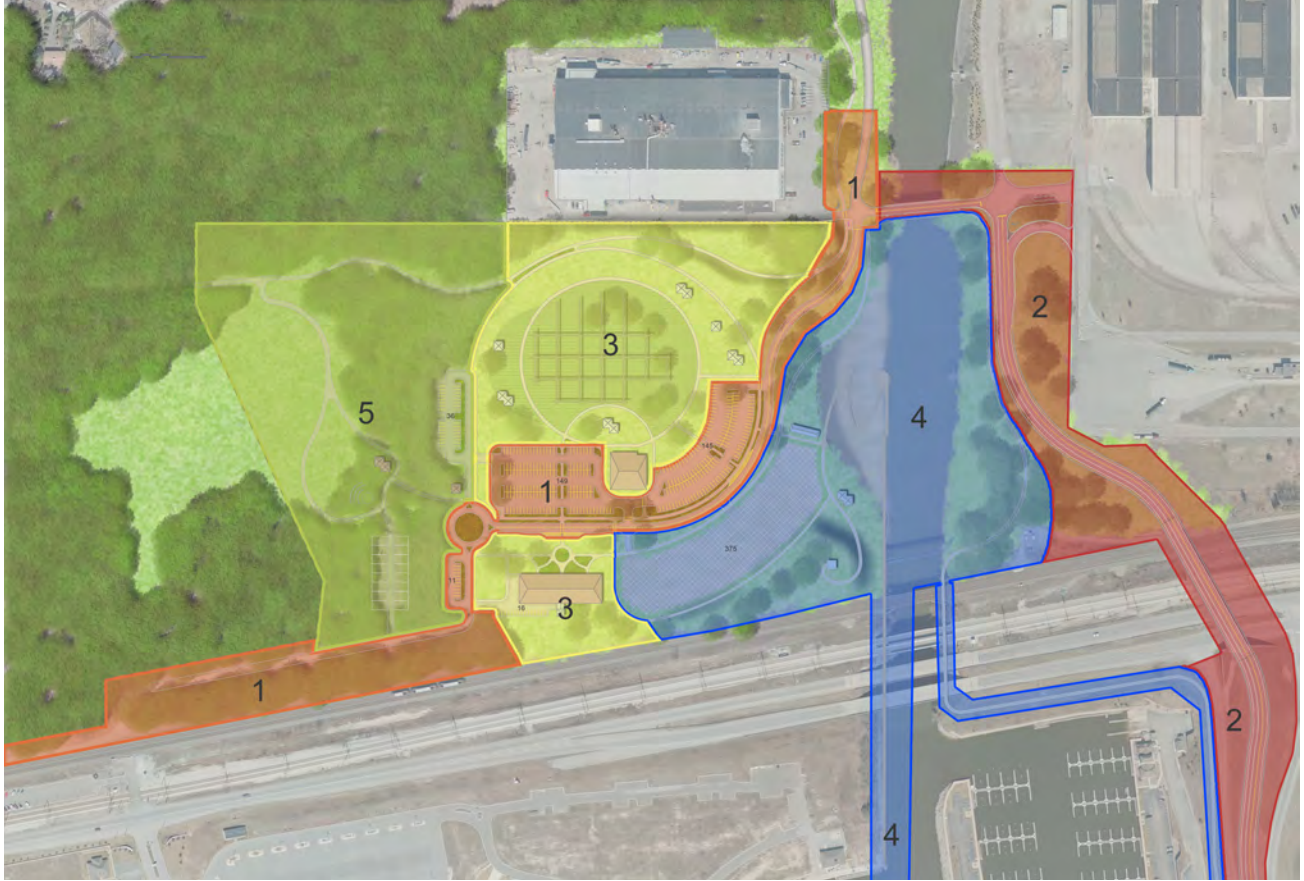


## IMPLEMENTATION

Collaboration has been key from the inception of the Marquette Plan, to the development of the Northside Plan and through the transformation of Portage's Lakefront; successful implementation of the recommendations in this document will also require successful collaboration. With collaboration and well planned project phasing there is an opportunity to leverage partnerships and create opportunities to implement enhancements at Portage Lakefront South Properties. Funding for South Properties Enhancement Plan elements should be phased to leverage limited financial resources. Although the implementation of this plan has been divided into several phases, if possible

the engineering design of multiple phases could be combined to ensure continuity of design and to avoid duplicating costs.

In addition to intra-municipal coordination, partnerships may include industry; regional, state and federal agencies; users groups; and others. One such partnership is between the City of Portage and the US Army Corps of Engineers (USACE) through an engineering and planning grant for restoration of the Lake Michigan Waterfront. Based on December 2010 plans developed by USACE the following figure maps elements of the USACE plan to elements of the South Properties Enhancement Plan.



## PHASING BUNDLES

Due to the operations of U.S Steel within the South Properties and the availability of funds, phasing of the master plan must occur. A sound phasing strategy will help break South Properties Enhancement Plan elements into smaller achievable phases and will help identify opportunities to leverage partners and funding.

The above plan bundles the project into a multi-phase strategy for completing the proposed full build-out of the South Properties Enhancement Plan. To the right are the 5 bundles that have been determined to implement the South Properties Plan and are further described with costs and imagery on the next pages.

1. *Parking & Access*
2. *Arrival*
3. *Meadow*
4. *Riverfront*
5. *West Camp*

# Implementation Strategies



EXISTING SITE



PHASE 1: PARKING & ACCESS

## *Parking & Access*

(\$1.5M)

- This bundle would serve as Phase 1 as all grounds are available for construction.



PHASE 2: ARRIVAL

## *Arrival*

(\$1.7M)

- This bundle would serve as Phase 2 as all grounds are available for construction.

## *Meadow*

(\$2.3 M)

- This bundle would advance when the existing former U.S. Steel building is demolished.



PHASE 3: MEADOW

## *Riverfront*

(\$2.6 M)

- This bundle would advance through Army Corps of Engineers. Further collaboration between Portage and Army Corps would be needed to complete this bundle.



PHASE 4: RIVERFRONT

## *West Camp*

(\$1.8 M)

- This bundle would advance as an outside organization is found to manage and maintain the camping facility.



PHASE 5: WEST CAMP

# Appendix A: Opinion of Probable Costs

<b>PHASE 1</b>					
<b>Item #</b>	<b>Item</b>	<b>Unit</b>	<b>Total Quantity</b>	<b>Unit Cost</b>	<b>Total Cost</b>
	CONSTRUCTION ENGINEERING MOBILIZATION AND DEMOBILIZATION	LS	1	80,000.00	\$ 80,000.00
	SITE CLEARING	LS	1	25,000.00	\$ 25,000.00
	PARKING - FULL DEPTH PAVEMENT	SYS	3,120	28.00	\$ 87,360.00
	PARKING - OVERLAY	SYS	4,550	8.00	\$ 36,400.00
	PARKING - PERMEABLE PAVERS	SFT	35,000	8.00	\$ 280,000.00
	PARKING - CURB	LFT	3,540	20.00	\$ 70,800.00
	SIDEWALK, CONCRETE, 5 IN.	SYS	1,790	50.00	\$ 89,500.00
	ROAD - FULL DEPTH HMA PAVEMENT	SYS	4,425	30.00	\$ 132,750.00
	ROAD - OVERLAY	SYS	2,400	8.00	\$ 19,200.00
	ROAD - CURB AND GUTTER	LFT	4,650	20.00	\$ 93,000.00
	LAKEFRONT TRAIL LINK	LFT	1,200	100.00	\$ 120,000.00
	LIGHTING	LS	1	100,000.00	\$ 100,000.00
	SIGNAGE AND PAVEMENT MARKINGS	LS	1	10,000.00	\$ 10,000.00
	LANDSCAPE	LS	1	50,000.00	\$ 50,000.00
<b>SUB-TOTAL</b>					<b>\$1,194,010.00</b>
<b>25% CONTINGENCY</b>					<b>\$298,502.50</b>
<b>SECTION TOTAL</b>					<b>\$1,492,512.50</b>

<b>PHASE 2</b>					
<b>Item #</b>	<b>Item</b>	<b>Unit</b>	<b>Total Quantity</b>	<b>Unit Cost</b>	<b>Total Cost</b>
	CONSTRUCTION ENGINEERING MOBILIZATION AND DEMOBILIZATION	LS	1	90,000.00	\$ 90,000.00
	REMOVE PAVEMENT	SYS	1,000	4.00	\$ 4,000.00
	TIMBER GUARDRAIL	LFT	4,000	50.00	\$ 200,000.00
	MONUMENT POST	EACH	9	7,000.00	\$ 63,000.00
	FULL DEPTH HMA PAVEMENT	SYS	1,000	30.00	\$ 30,000.00
	BURNS WATERWAY BRIDGE ENHANCEMENTS	LS	1	825,000.00	\$ 825,000.00
	PAVEMENT MARKINGS	LS	1	15,000.00	\$ 15,000.00
	SIGNAGE	LS	1	100,000.00	\$ 100,000.00
	LANDSCAPE	LS	1	15,000.00	\$ 15,000.00
<b>SUB-TOTAL</b>					<b>\$1,342,000.00</b>
<b>25% CONTINGENCY</b>					<b>\$335,500.00</b>
<b>SECTION TOTAL</b>					<b>\$1,677,500.00</b>

<b>PHASE 3</b>					
<b>Item #</b>	<b>Item</b>	<b>Unit</b>	<b>Total Quantity</b>	<b>Unit Cost</b>	<b>Total Cost</b>
	CONSTRUCTION ENGINEERING MOBILIZATION AND DEMOBILIZATION	LS	1	125,000.00	\$ 125,000.00
	SITE CLEARING	LS	1	60,000.00	\$ 60,000.00
	EARTHWORK FOR BERMS	CYS	5000	25.00	\$ 125,000.00
	PARKING - OVERLAY	SYS	740	8.00	\$ 5,920.00
	PARKING - PERMEABLE PAVERS	SFT	2,600	8.00	\$ 20,800.00
	SIDEWALK, CONCRETE, 5 IN.	SYS	4,250	50.00	\$ 212,500.00
	ASPHALT TRAILS	LFT	875	100.00	\$ 87,500.00
	SHELTER #1	EACH	2	75,000.00	\$ 150,000.00
	SHELTER #2	EACH	4	125,000.00	\$ 500,000.00
	LIGHTING	LS	1	100,000.00	\$ 100,000.00
	WAREHOUSE BUILDING DEMO	LS	1	150,000.00	\$ 150,000.00
	ADAPTIVE RE-USE OF TRAINING BUILDING	LS	1	250,000.00	\$ 250,000.00
	PAVEMENT MARKINGS	LS	1	1,000.00	\$ 1,000.00
	LANDSCAPE	LS	1	50,000.00	\$ 50,000.00
<b>SUB-TOTAL</b>					<b>\$1,837,720.00</b>
<b>25% CONTINGENCY</b>					<b>\$459,430.00</b>
<b>SECTION TOTAL</b>					<b>\$2,297,150.00</b>

<b>PHASE 4</b>					
<b>Item #</b>	<b>Item</b>	<b>Unit</b>	<b>Total Quantity</b>	<b>Unit Cost</b>	<b>Total Cost</b>
	CONSTRUCTION ENGINEERING MOBILIZATION AND DEMOBILIZATION	LS	1	140,000.00	\$ 140,000.00
	SITE CLEARING	LS	1	40,000.00	\$ 40,000.00
	EARTHWORK FOR BERMS	CYS	15000	25.00	\$ 375,000.00
	PARKING - GEOGRID STABILIZATION	SYS	11,250	10.00	\$ 112,500.00
	ASPHALT TRAILS	LFT	4,400	100.00	\$ 440,000.00
	SIDEWALK, CONCRETE, 5 IN.	SYS	2,300	50.00	\$ 115,000.00
	BOARDWALK TRAILS	SYS	2,150	75.00	\$ 161,250.00
	RIVERWALK BUILDING	EACH	1	320,000.00	\$ 320,000.00
	SHELTER #2	EACH	1	125,000.00	\$ 125,000.00
	OVERLOOK FEATURE	EACH	1	125,000.00	\$ 125,000.00
	LIGHTING	LS	1	50,000.00	\$ 50,000.00
	SIGNAGE	LS	1	10,000.00	\$ 10,000.00
	LANDSCAPE	LS	1	50,000.00	\$ 50,000.00
<b>SUB-TOTAL</b>					<b>\$2,063,750.00</b>
<b>25% CONTINGENCY</b>					<b>\$515,937.50</b>
<b>SECTION TOTAL</b>					<b>\$2,579,687.50</b>

## Appendix A: Opinion of Probable Costs

<b>PHASE 5</b>					
<b>Item #</b>	<b>Item</b>	<b>Unit</b>	<b>Total Quantity</b>	<b>Unit Cost</b>	<b>Total Cost</b>
	CONSTRUCTION ENGINEERING MOBILIZATION AND DEMOBILIZATION	LS	1	100,000.00	\$ 100,000.00
	SITE CLEARING	LS	1	65,000.00	\$ 65,000.00
	EARTHWORK FOR BERMS	CYS	5000	25.00	\$ 125,000.00
	PARKING - FULL DEPTH PAVEMENT	SYS	2,300	28.00	\$ 64,400.00
	PARKING - PERMEABLE PAVERS	SFT	5,850	8.00	\$ 46,800.00
	ASPHALT TRAILS	LFT	2,550	100.00	\$ 255,000.00
	RV PARKING AREA	LS	1	20,000.00	\$ 20,000.00
	CAMPER SERVICES BUILDING	LS	1	150,000.00	\$ 150,000.00
	CAMPER FACILITIES BUILDING	LS	1	250,000.00	\$ 250,000.00
	AMPHITHEATRE	LS	1	250,000.00	\$ 250,000.00
	UTILITY EXTENTIONS	LS	1	35,000.00	\$ 35,000.00
	LIGHTING	LS	1	50,000.00	\$ 50,000.00
	LANDSCAPE	LS	1	50,000.00	\$ 50,000.00
<b>SUB-TOTAL</b>					<b>\$1,461,200.00</b>
<b>25% CONTINGENCY</b>					<b>\$365,300.00</b>
<b>SECTION TOTAL</b>					<b>\$1,826,500.00</b>

### NOTES:

1. This engineer's opinion of probable construction cost has been prepared based upon Portage South Properties Design prepared by SEH.
2. This engineer's opinion of probable construction cost has been prepared based upon the engineer's experience as a design professional and is furnished for information only. It does not constitute a guarantee of actual construction costs.
3. This engineer's opinion of probable construction cost does not include any professional design fees or permit fees.
4. This engineer's opinion of probable construction cost does not include construction supervision or inspection costs
5. Construction Engineering and Mobilization and Demobilization assumed to be 7.5% of construction cost; where not listed such costs are assumed in the Lump Sum Unit Cost.

## Appendix B: Burns Waterway Bridge Memo (July 2012)

### Burns Waterway Bridge

#### Portage, Indiana

#### Introduction

The bridge is located in the City of Portage north of Highway 12 and provides access to the Portage Lakefront Park and US Steel facility.

Burns Waterway Bridge serves as an east-west connection into the US Steel facility to the west and the Portage Lakefront Park to the north. A high percentage of truck traffic and vehicle traffic use this bridge. The bridge is currently configured with a flat grade across the deck. There are intersections present off each end of the bridge. The bridge is on a tangent alignment with no skew. There is a single track railroad bridge immediately adjacent to this bridge on the south. The railroad bridge is structurally separated from the vehicle bridge and does not share any supporting members besides the center pier cribbing units.

There are two separate bridge structures that exist at this location. There is the vehicle bridge and the single track railroad bridge. This memo refers to the vehicle bridge. It appears as though the railroad bridge is in good condition with some surface rust on the plate girder that comprise the main span as well as the rolled girders on the short spans on each end of the bridge. The railroad bridge is not used frequently.

#### Bridge Description

The existing bridge is a nine-span steel girder system with a concrete deck. The bridge was originally constructed in the mid 1960's as plans are dated 1964, making it approximately 48 years old. An official construction year was not found. The existing roadway leading up to the bridge is asphalt. The roadway width on the bridge is approximately 22.5 feet. The total width of the bridge is 24.5 feet. The bridge provides for a very tight fit for two lanes of traffic on the deck with most of the traffic using it as a one lane bridge taking turns passing over the bridge. The bridge is not signed as a one lane bridge. The bridge is posted for a maximum vehicle weight of 120,000 pounds.

The total length of the bridge is approximately 197 feet. There are four 12 foot spans on each end of the main span. The main span is approximately 100 feet long. The main span is supported by three plate girders and the end spans are supported by four lines of rolled steel beams.

The existing bridge plans do not state what the design loading was for the existing bridge. There is currently a 120,000 pound load limit on the bridge and signing restricting parking on the bridge and the use of the bridge as a pedestrian walkway. The bridge does appear to be functionally substandard due to the restricted lane width for traffic on the bridge.

The deck has a crown on both sides of the centerline. The existing grade over the bridge currently is relatively flat. Existing plans show the concrete deck to be 8" thick with an asphalt layer currently applied on top. It is not evident when the asphalt layer was added to the bridge deck.

The existing steel girders at the end spans consist of 4 girders spaced at 7 feet. The main center span has 3 girders spaced at 10 feet. The girders are protected by a paint coating system. The abutments are fixed abutments and the end spans are all expansion. The east end of the center span is fixed while the west end is an expansion connection.

The abutments are concrete with small wings placed parallel with the roadway. The piers are comprised of timber pile bents at the end spans and timber cribbing for the center span. The piers of the center span are located within the waterway near the edge.

According to the existing plans all the substructure units are supported by timber piling including the concrete abutments.

The existing railing on the bridge is comprised of plate beam guard system attached to the outside edge of the deck with steel posts. The rail system terminates at each end of the bridge. A small section of beam guard is located on the north side of the bridge at the approaches but is not attached to the bridge.

## **Bridge Alternatives**

Three scenarios were looked at concerning providing upgrades to the Burns Waterway Bridge. Those three scenarios consist of the following:

1. Maintenance including New Railing and End Monuments
2. Rehabilitation
3. Replacement

It should be noted that bridges life expectancy is approximately 75 years. Currently this bridge is approximately 48 years of age. A number of factors need to be evaluated when determining whether to rehabilitate the bridge or replace the bridge. Some of these factors are remaining life, condition of the bridge elements, load capacity, clear roadway width of the structure and cost.

The following summary will review each alternative based on the condition of the bridge and work to do done. Cost for alternatives are estimates only and are used only for budgetary evaluation. These estimates are not to be construed as actual costs for work to be done.

## Appendix B: Burns Waterway Bridge Memo (July 2012)

### Maintenance including New Railing and End Monuments

Maintenance of the bridge refers to repairing or replacing bridge elements that have deteriorated to a certain state. This is a very subjective operation as elements of the bridge and opinion of what needs to be repaired can vary from person to person. There are items that can be done yearly to a bridge to help maintain the bridge. Those include clearing brush from the bridge, patching the asphalt surface on the deck, repainting painted surfaces of the bridge elements, repairing bridge elements that have been damaged and so on. Other maintenance items that are not yearly items consist of full cleaning and painting operations on the bridge, replacing the asphalt overlay on the deck, joint replacements, just to name a few. For this case, yearly maintenance of the bridge going forward along with the addition of new rails and end monuments will be looked at.

Estimating maintenance costs per year is approximately \$5000/year. This takes into account maintaining the deck surface, cutting and clearing brush and debris from the bridge, as well as cosmetic repairs and cleaning. The cost of adding concrete monuments at each end along with new railing is estimated to be \$185,000.

This alternative does not address the insufficient clear roadway width of the bridge as well as the inability of the current bridge width to support pedestrian use. In the near future, depending on the condition state and traffic volume, the steel girders need to be cleaned and painted and the deck needs to be replaced. These costs are not included in the cost for this alternative as this is included in the Rehabilitation Alternative.

### Rehabilitation Alternative

The rehabilitation alternative looks at repairing and/or replacing items on the bridge which are essential to allow the bridge to function as well as extend the life of the bridge for at least another 10 years or more.

The existing bridge deck is in need of replacement. The deck has been overlaid previously and is showing signs of deterioration with asphalt cracking. The underside of the deck has seepage indicating full depth cracks. The bridge existing clear width is also insufficient to support vehicle traffic safely. There is no room on the current deck configuration for pedestrian use. The existing railing is substandard in regards to federal guidelines.

The existing steel girder support system is in good structural condition. The support girders, diaphragms and bearings have some areas of paint failure and corrosion taking place. The abutment and piers are in good condition with no unsound structural members.

This rehabilitation alternative would look to remove the existing deck and railing. The existing steel members consisting of girders, diaphragms, cross members and bearings would be cleaned and painted. A new, widened deck would be provided to address the need for adequate access for vehicles. A new railing system would be provided on the

deck. The amount of widening would have to be decided if it was to account for pedestrian use.

One issue with widening the existing deck is the need to relocate existing utilities that are directly adjacent to one side of the bridge. The railroad structure is adjacent to the bridge on the other side. If widening would occur, the substructure units may have to be widened depending on the width.

Another option would be to widen just enough for vehicle traffic and then provide pedestrian access on a separate structure.

The cost estimate for the rehabilitation alternative consists of deck removal and replacement with new rails and end monuments, cleaning and painting the steel members and widening the bridge just enough for vehicle traffic. The preliminary size used to provide the estimate is a 27 foot wide bridge, including rail width.

Breakdown of estimate:

Redeck and Widen:	\$550,000
Clean & Paint Structural Elements:	\$115,000
End Monuments and Rail:	<u>\$160,000</u>
Total:	\$825,000

This rehabilitation will provide another 30-40 years out of the rehabilitated elements. Thought must then be given to the condition and life of the piers and abutments. The cost does not include the relocation of the existing utilities adjacent to the bridge or temporary shoring of the utilities being provided during this work.

### Replacement Alternative

This alternative provides for complete removal and replacement of the existing structure with a new structure. This new structure can be sized to accommodate the appropriate width for vehicles and the option of providing pedestrian access on the bridge.

The option for structure type can be a prestressed girder bridge with one large main span and two adjacent short spans in which the pier would be located on either side of the waterway. Another option would be to span the entire waterway with a steel girder type structure. The size estimated for preliminary use is a 200 foot long bridge by 27 feet wide, including rail width.

New Bridge cost: \$800,000 (including end monuments and railing)

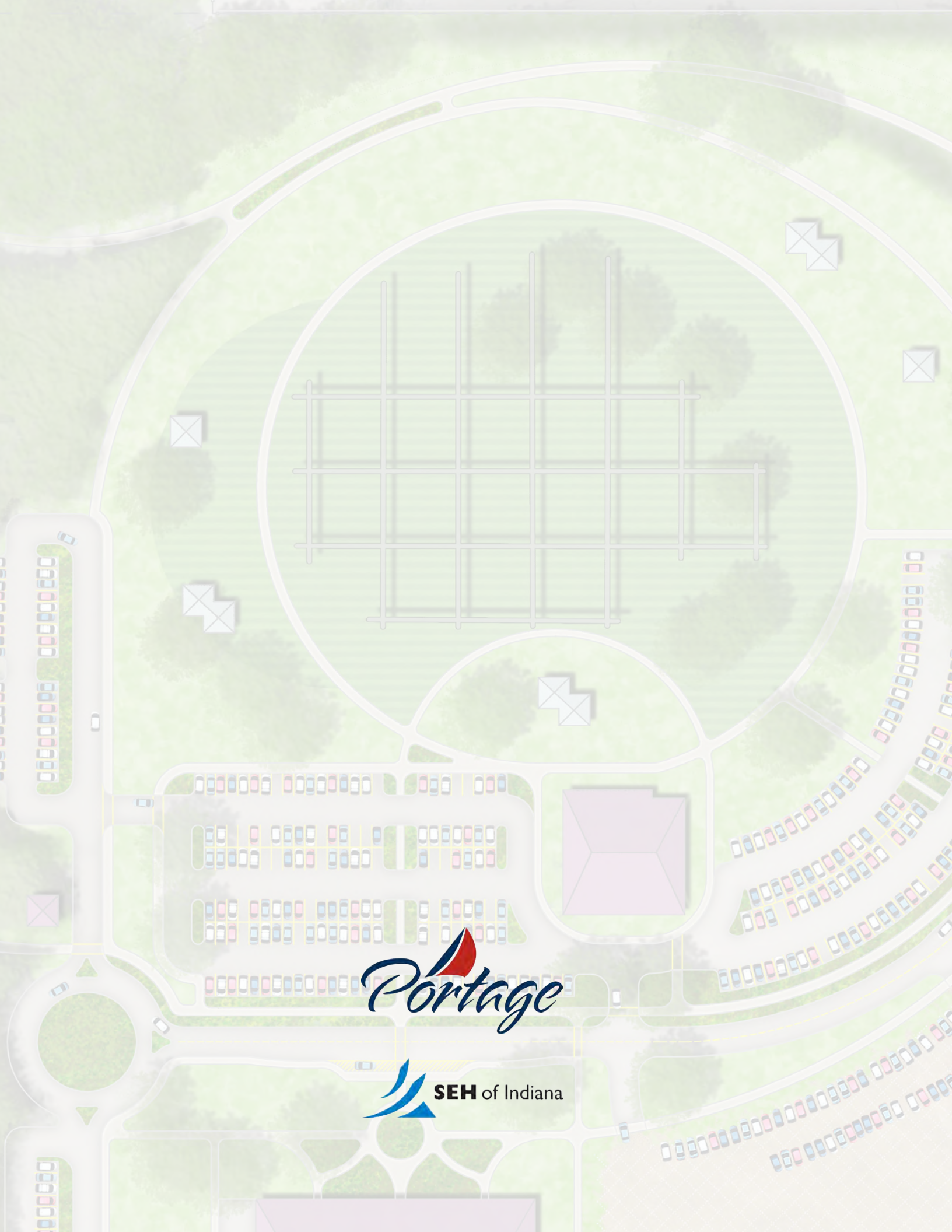
This cost does not include the relocation of adjacent utilities or railroad bridge. The cost also does not include added width for pedestrians.

## Recommendation

The recommendation for the Burns Waterway Bridge is to provide a new structure type at this location. This alternative will address the substandard roadway width issue and provide for the possibility of adding pedestrian access with a wider bridge. It should be noted that providing a wider bridge for use by pedestrians will also increase the cost of this bridge.

The bridge will be a main entrance attraction to the park as well as provide a safe structure that will provide years of service for the public. Maintenance on a new structure is relatively low and increases with time.

It should be noted that all costs are representative of a preliminary concepts. No actual design has been provided for cost estimating purposes.



*Portage*



**SEH** of Indiana