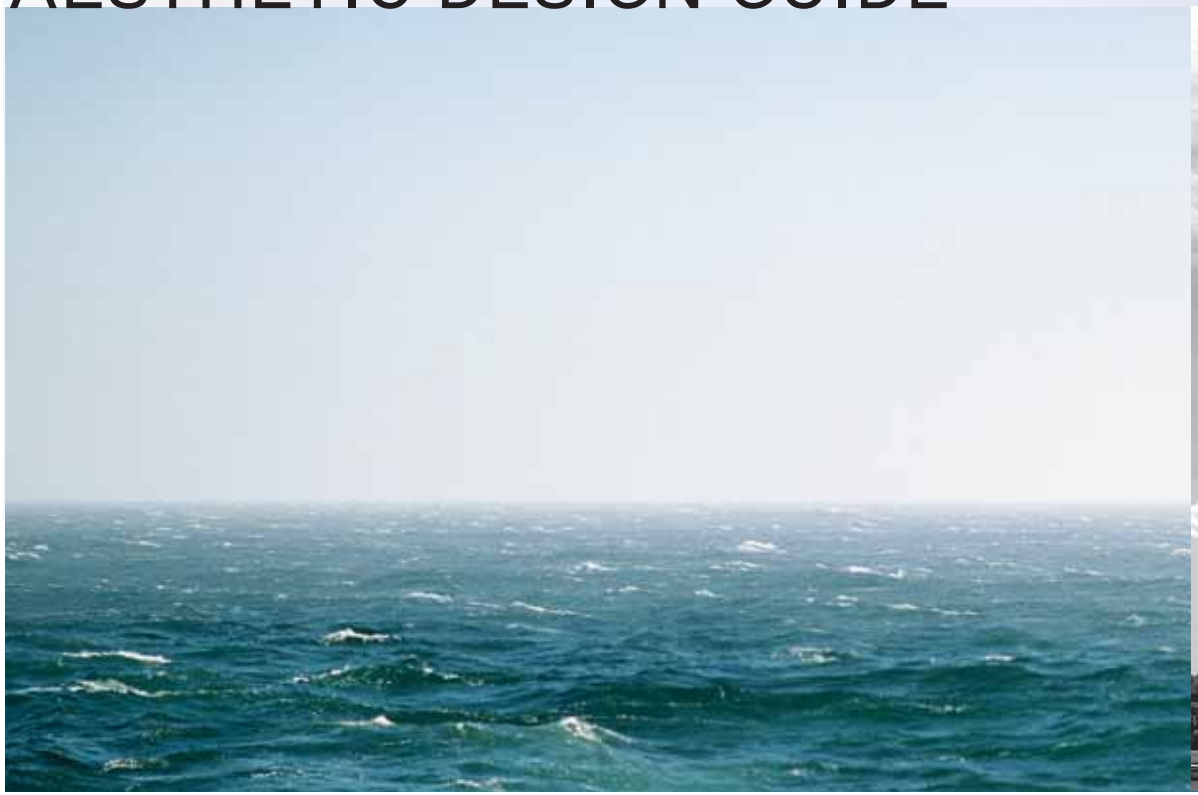
BLUE WATER BRIDGE
PORT HURON, MICHIGAN

June 24, 2009

AESTHETIC DESIGN GUIDE



BLUE WATER BRIDGE
PORT HURON, MICHIGAN

AESTHETIC DESIGN GUIDE

Michigan Department
of Transportation

Community Advisory Group

HNTB Corporation

Wilbur Smith Associates

June 24, 2009

CONTENTS

CONTENTS

As part of their commitment to applying Context Sensitive Solutions (CSS) principles to all projects, the Michigan Department of Transportation (MDOT) established a Community Advisory Group (CAG) for the Blue Water Bridge Plaza and I-94/I-69 project.

Recognizing that this large project can influence and create beneficial improvements to the greater community as well as the adjacent neighborhoods, the CAG was charged to work with the design team to develop an Aesthetic Design Guide.

Composed of members of the governmental agencies that operate at the border crossing and the Port Huron community that is the host, the CAG included representatives from:

- Neighborhoods
- Local businesses
- Port Huron Chamber of Commerce
- St. Clair County
- City of Port Huron
- Port Huron Township
- Federal Highway Administration (FHWA)
- General Services Administration (GSA)
- Historic District Commission
- Bridge Plaza Business and Community Coalition
- Michigan Department of Transportation

(See Appendix pg. 63 for list of CAG participants.)

The CAG was convened for four meetings between December 8, 2008 and April 30, 2009.

The designs in this Guide reflect the aesthetic recommendations of the CAG.

CAG PROCESS

At the **December 2008** meeting, the CAG provided input about their aesthetic vision for the community. They agreed that a successful project should:

- create a unique and inviting perception of Port Huron
- compose aesthetic elements that create a sense of place
- acknowledge the region's rich history while framing a future vision
- leave a positive legacy within Port Huron
- create a "wow" statement.

The CAG received a detailed update from MDOT regarding the design of the plaza, roadway alignments and bridges, and reviewed Inventory and Analysis boards providing orientation to existing conditions and critical issues. (See Appendix, pgs. 64-71).

Five distinct priority areas were identified (see map pg. 5):
1. Blue Water Bridge (BWB) Plaza; 2. Black River Bridge; 3. Water Street; 4. Lapeer Connector; and 5. Welcome Center.

The **January 2009** meeting involved an examination of opportunities and constraints for each of the five areas (see Appendix pgs. 72-75 for display boards) and an exercise to define the character and identity of Port Huron.

CAG comments and responses were collected in a list that became the Design Influences shaping design work for each of the five areas.

At this point, the CAG determined two clear priorities for the project:

1. the perimeter fencing and walls around the BWB Plaza should blend-in with the surrounding neighborhood as much as possible, and;
2. an inviting gateway at the Pine Grove Overpass is needed to greet international visitors as they exit the BWB Plaza and encourage them to visit Port Huron.

At the **March 2009** meeting, CAG members reviewed and responded to conceptual alternatives presented by the designers including elements for the five priority areas:

1. Blue Water Bridge Plaza. Streetscape layouts, perimeter and MSE retaining walls, and landscape concepts for Hancock Street and 10th Avenue; Pine Grove Overpass and Local Entrance grading and landscape concepts, Port Huron marker/landmark, parapet/railing, and ornamental lighting.
2. Black River Bridge. Pedestrian pathway with overlook, decorative railing and lighting.

3. & 4.Water Street and Lapeer Connector. Landscape concept for roundabout and parapet/railing.

5. Welcome Center. Landscape concept.

At the **April 2009** meeting, the CAG examined design development of the conceptual alternatives they selected at the March 2009 meeting.

The elements depicted in this Guide are supported by the consensus of the CAG.

SUMMARY

The designs in this Guide convey the overall spirit of the aesthetic design for the Blue Water Bridge Plaza and I-94/I-69 projects and establish the template for aesthetic recommendations for the project.

The designs are subject to change. They require further development and refinement that will occur during the project's final design phase.

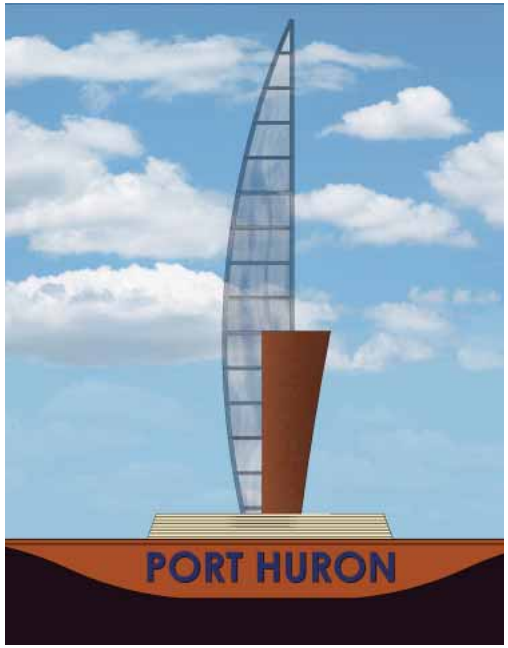
For example, detailed engineering analysis and soil investigations are required for some elements. Long-term maintenance by local agencies of any architectural, landscaping and lighting concepts also must be addressed and all MDOT and U.S. Customs and Border Protection (CBP) operational and security requirements must be met. These considerations may affect the overall design and consequently, design modifications may be necessary.

AESTHETIC DESIGN GUIDE ORGANIZATION

The Guide is organized according to the five priority areas considered by the CAG: 1. Blue Water Bridge Plaza; 2. Black River Bridge; 3. Water Street; 4. Lapeer Connector; and 5. Welcome Center.

Each of the following chapters begins with an orientation map and a section detailing:

- **constraints and opportunities** that realistically define the area's potential,
- **design program influences** that emerged from the CAG meetings in December 2008 and January 2009 that affected the design program and formed the basis for design work, and
- **design development** list identifying the specific design elements considered and supported by the consensus of the CAG and depicted in this Guide.



DESIGN STATEMENT

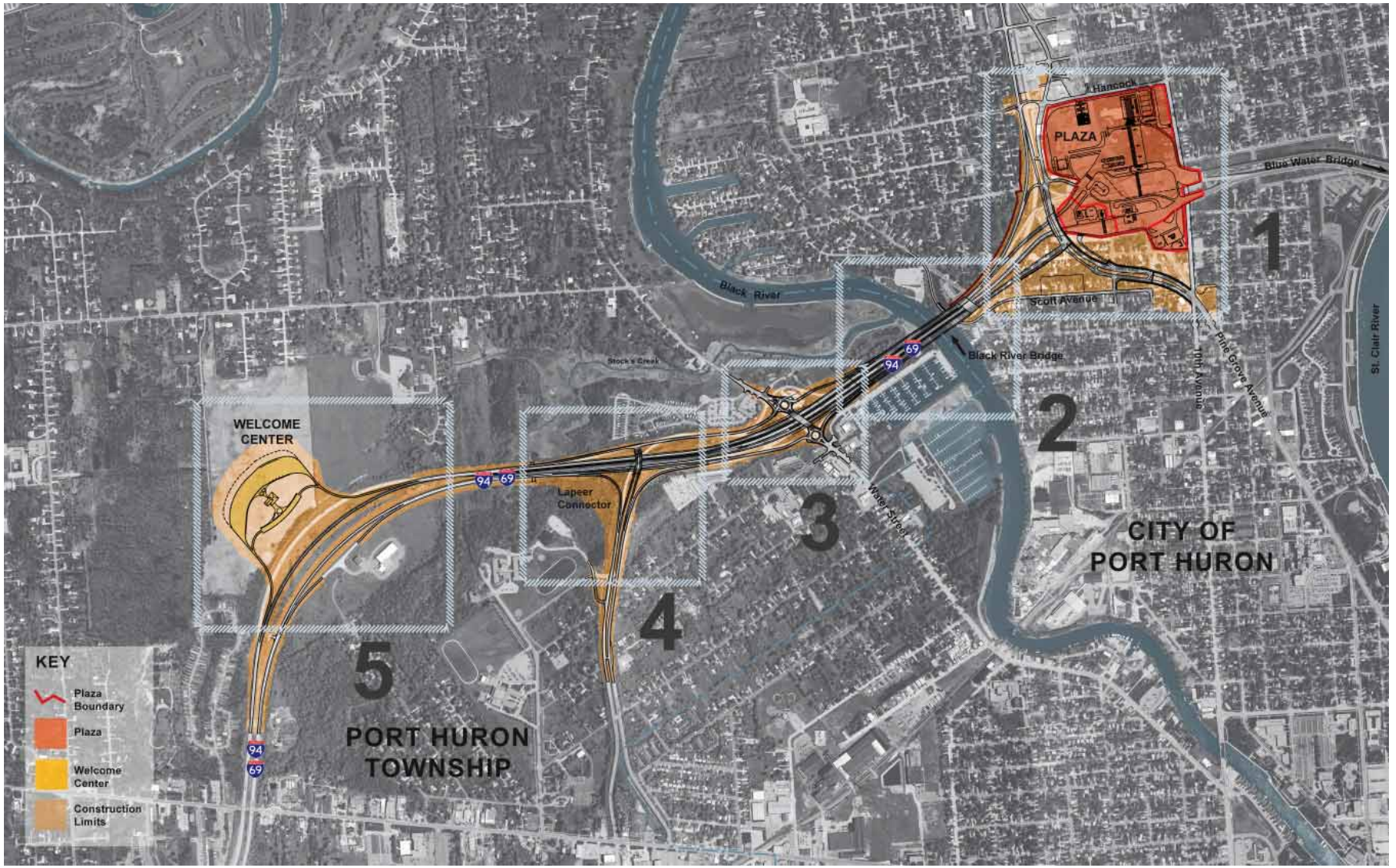
A unified impression is created through conceptual designs for an ensemble of compatible elements including bridges, plaza perimeter walls, retaining walls, street furnishings, landforms and plantings.

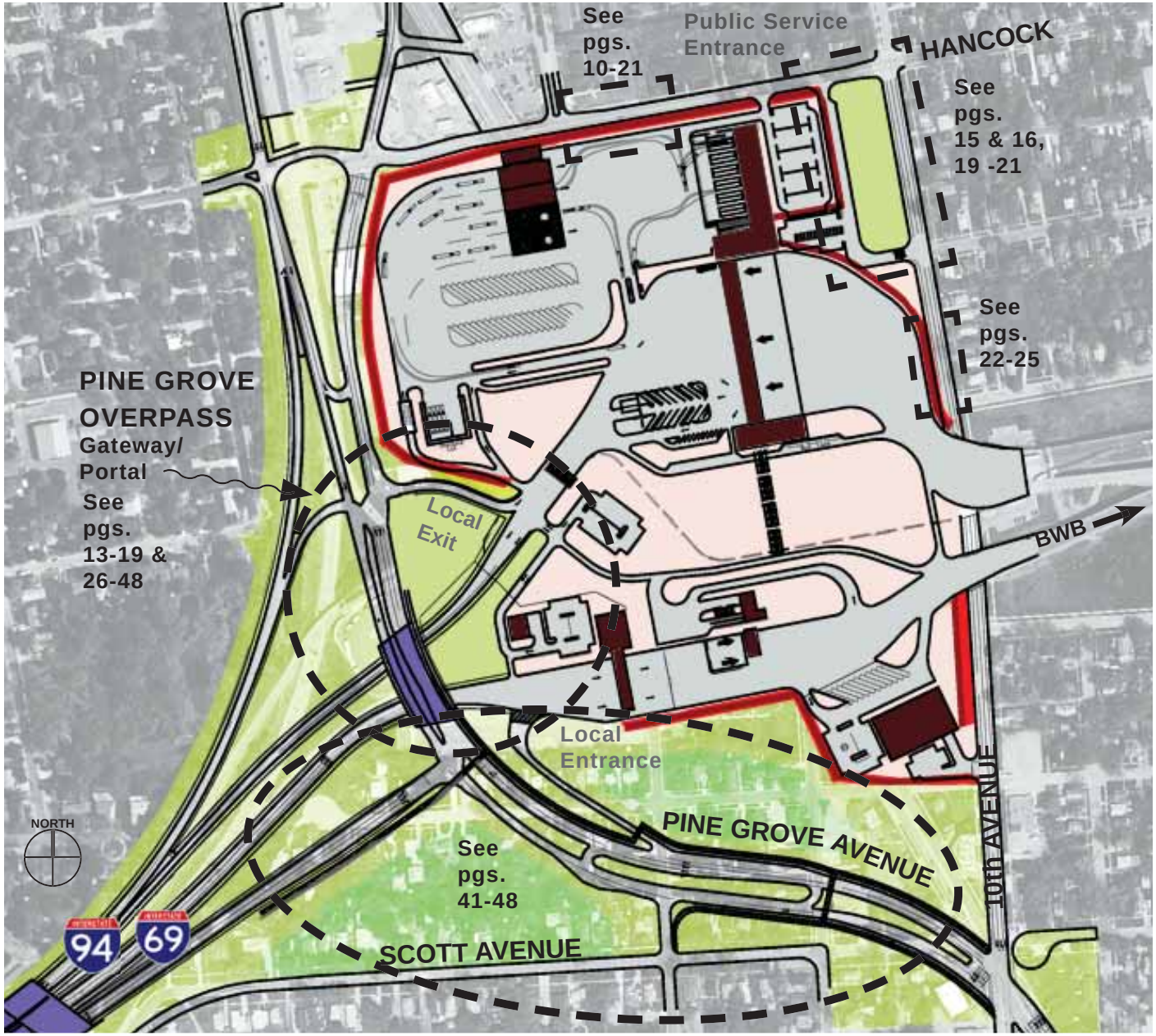
The ensemble is punctuated by a vertical wayfinding marker that becomes a landmark welcoming residents and visitors. Attractive compatible plantings accent and tie together the overall design.

The conceptual designs in this Guide express a dignified civic character suitable for public infrastructure that is in the midst of the City of Port Huron.

SUMMARY

ORIENTATION MAP





ORIENTATION MAP

- Architecture (GSA/CBP/MDOT)
- Exterior Perimeter Fencing/Wall
- Bridge Structures
- Pavement/Hardscape/ Ground Plane (GSA/CBP/MDOT)
- Landscaping
- Construction Staging/ Stormwater Area

1 BLUE WATER BRIDGE PLAZA

CONSTRAINTS

- Roadway geometrics and traffic flow patterns are set.
- Plaza layout, structure and building footprints are set.
- Right of way property acquisition limits have been determined.
- Plaza must be elevated at approach spans over 10th Avenue.
- No screening vegetation is allowed against perimeter fencing/walls.
- Sightlines must be kept open within the secure perimeter – no tall vegetation is allowed.
- Perimeter fencing/walls must not be scalable.
- All CBP building and site operational and security requirements (sightlines, setbacks, heights, etc.), must be maintained.

OPPORTUNITIES

1.1 Perimeter Fencing/Wall

Provide a non-scaleable secure and durable perimeter fence or wall that is pleasing and neighborhood-appropriate.

Design options include materials, surface, pattern, finish and color.

1.2 Boulevard Landscaping

Retain existing street trees on edges. Infill trees behind curbs where feasible and necessary.

1.3 Perimeter Landscaping

Use low native plantings to soften edge of perimeter fencing/walls.

Design options include selection of plant materials considering bloom, texture, form and color.

1.4 Pine Grove Overpass

Craft a portal to frame traveler's views, creating a visual gateway.

Design options include bridge structure elements, lighting, surface treatment, texture, color and pattern.

1.5 Artwork and Iconography

Create a setting for artistic and historical expressions.

Design options include sculptural gateway monuments and integrated artwork such as tile or reliefs on surfaces and facades, or as part of structures.
(Note: this opportunity is also potentially available through the GSA's Art in Architecture program.)

1.6 Local Entrance/Local Exit

Create a physical access point that visually fits within the surrounding neighborhood context.

Design options include landscaping, lighting, entrance signage, and pedestrian features.

Opportunities Contingent upon GSA/CBP Design Process

1.7 Pavement/Hardscape/ Ground Plane

Incorporate various surface treatments for marking and delineating driving surfaces, parking stalls and lanes.

Design options include material, form, color, texture and pattern.

1.8 Stormwater Management

Employ innovative infiltration systems and/or permeable pavement surfaces where feasible for water discharge south of the plaza.

Design variables include paving materials, scoring patterns, color and texture.

1.9 Signage Structures

Create context appropriate signage structures integrated with the site to complement architecture and simplify driver's wayfinding experience.

Design options include materials, form, style, finish and color.

1.10 Building Architecture

Create attractive and inviting structures that combine function with appropriate scale and design vocabulary.

Design variables include massing, form,style, materials and color.

DESIGN PROGRAM INFLUENCES

PINE GROVE OVERPASS & LOCAL ENTRANCE

CONCEPTS
Vertical statement
Lighting controlled for “dark sky”
Blue or other color; water imagery
Horizontal structures
Compatible with/complements downtown
Art-type forms
Iconography about the city

MATERIALS
Glass
Plants

FUNCTIONS
International gateway greets people, inviting them to visit Port Huron
Wayfinding/directions; “virtual” and “physical”
Green areas act as buffers
Pedestrian/human scale at walk-ways
Bicycle connections/official routes

PERIMETER FENCING/WALLS

CONCEPTS
Solid walls/fencing where there is nothing to see
Variety of solid and transparent sections
Water imagery
Earthtone colors
Landscaping at plaza entrances/ exits

MATERIALS
Cast in place concrete, MSE, CMU block, post & panel
Low plantings

FUNCTIONS
Meet security requirements
Sound/noise protection
Shield views in and out
Green areas soften/buffer edge with neighborhood

STREETSCAPE

CONCEPTS
Assists wayfinding
Softens edges
Earthtone colors
Wide boulevards and sidewalks

MATERIALS
Pavers, stamped concrete

FUNCTIONS
Paving for wayfinding; i.e., “Yellow Brick Road”
Pedestrian/human scale
Bicycle connections/official routes

DESIGN DEVELOPMENT

PERIMETER WALL

CMU Brick Wall with Wave Pattern Cap Panel 8' to 10' (H) to screen plaza functions. Base is pre-cast cast stone; middle panel is CMU Brick; and cap (top) panel is pre-cast cast stone with Wave Pattern

Pre-cast Major and Minor Posts with Bulk Head Light on Major Post

Ornamental Metal Fence transitioning to CMU Brick Wall with Wave Pattern Cap Panel

HANCOCK STREET

Scored/Stamped Colored Pavement Strip

No back of curb or behind the curb trees and shrubs on south side of street because of security criteria

Existing trees at back of curb or behind the curb on north side of street retained and protected

Lawn groundcover between sidewalk and perimeter wall

Holophane Ornamental Lights

10TH AVENUE

Park-like Landscape Planting, or rain gardens by agreement of MDOT and city, at south-west corner of Hancock Street and 10th Avenue

Scored/Stamped Colored Pavement Strip

MSE Wall including base panel with larger blocks and cap and mid-panels to simulate brick and stained to match CMU Brick of the perimeter wall

Ornamental Metal Fence transitioning to CMU Brick Wall and Wave Pattern Cap

PINE GROVE OVERPASS

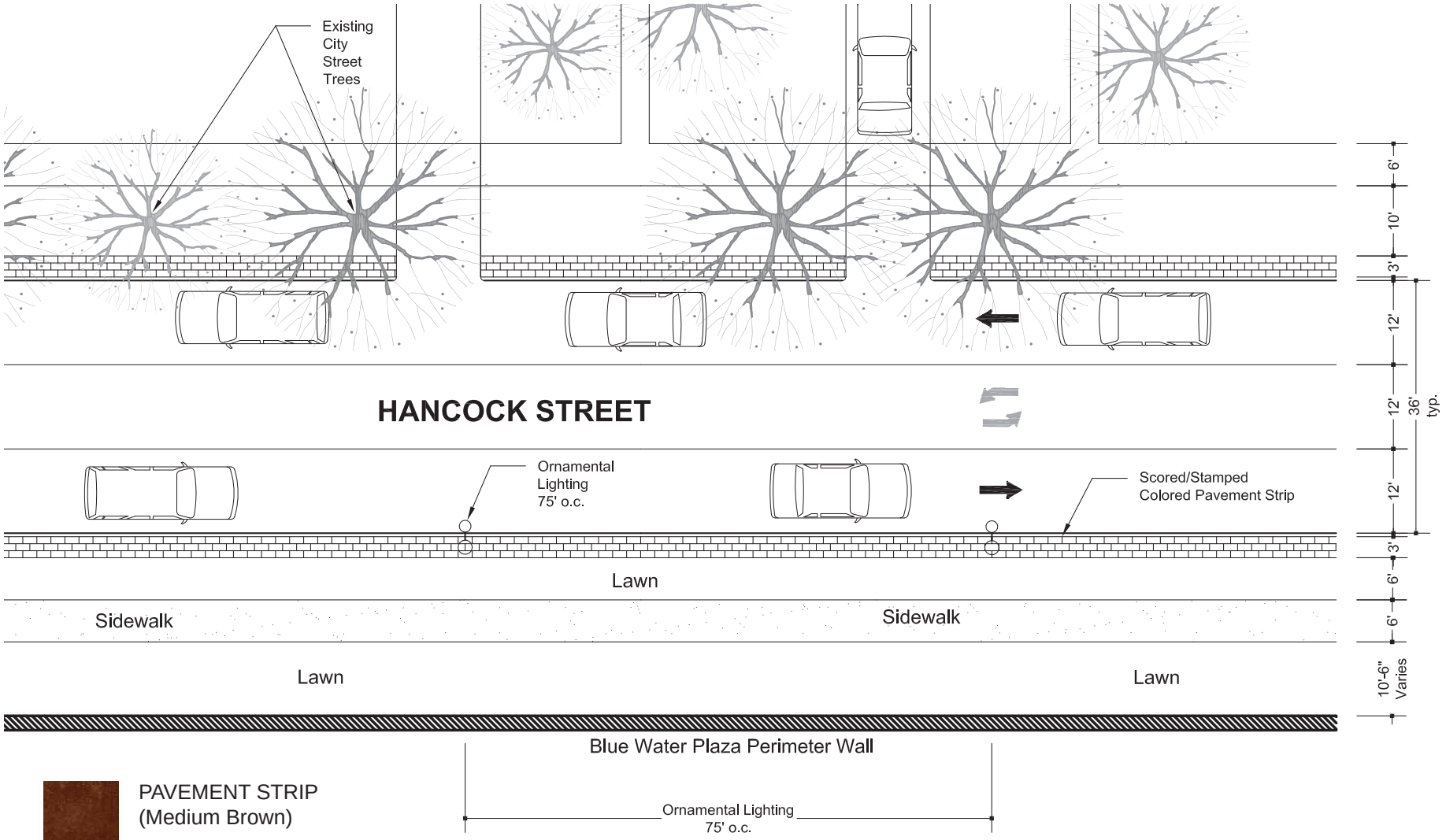
Scored/Stamped Colored Pavement Strip

Vertical markers/landmarks for Port Huron identity and wayfinding –
Alternative 1: Lighthouse
Alternative 2: Great Lakes boat forms

Wave Metal Railing

Landscaping with evergreens and deciduous species; Plant Gallery and Lists include selections from the Low Impact Development Manual for Michigan and other MDOT guidelines as well as Roadside Use of Native Plants, Bonnie Harper-Lore and Maggie Wilson, Eds., 2000.

Native plants where site conditions, hydrology, maintenance and appearance allow



PAVEMENT STRIP
(Medium Brown)

For detailed information on Materials, see pg. 62.

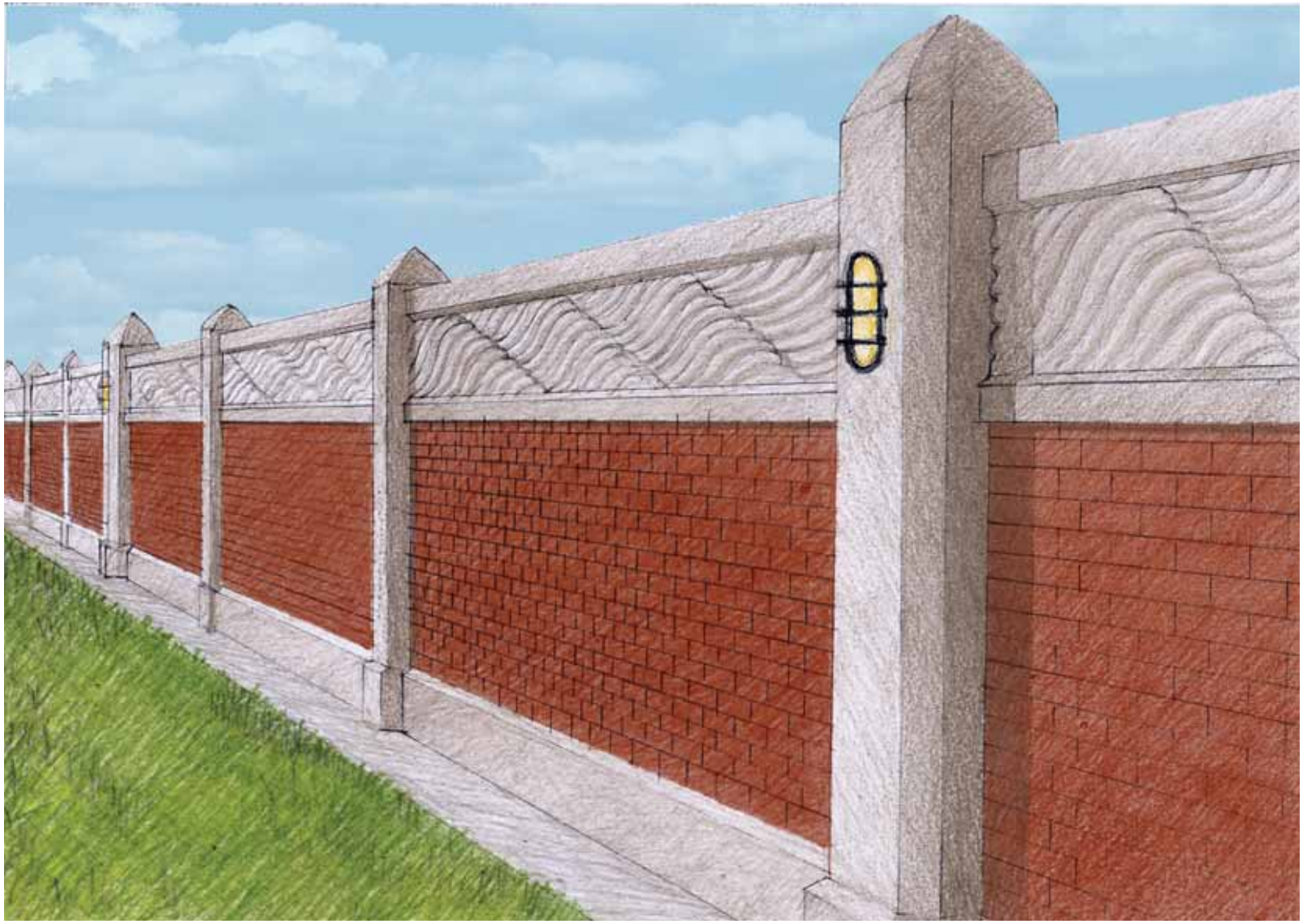
NORTH

0 5 10 20 30
Feet

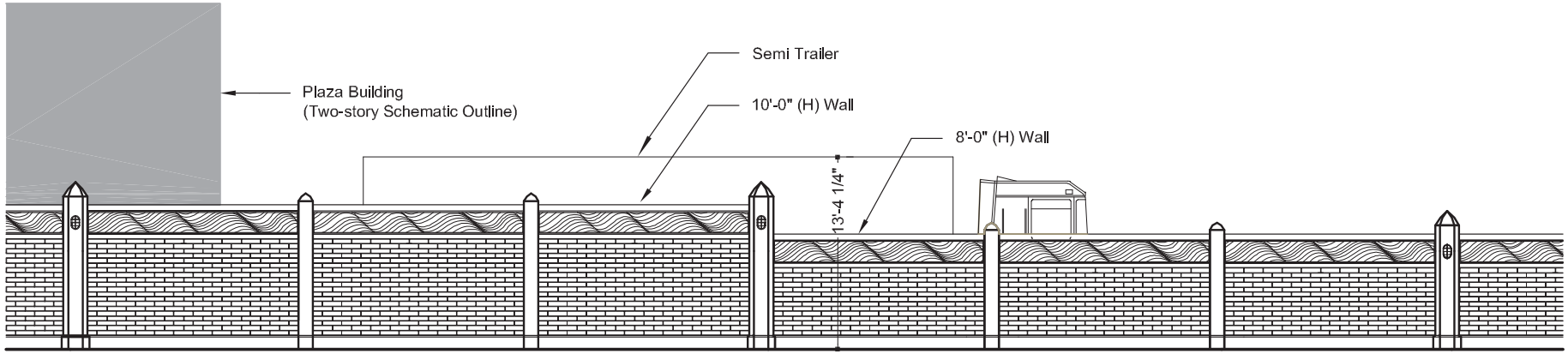
HANCOCK STREET
Plan – Streetscape
Concept Layout

HANCOCK STREET
Perspective – Perimeter CMU Brick Wall and Wave Pattern Cap Panel

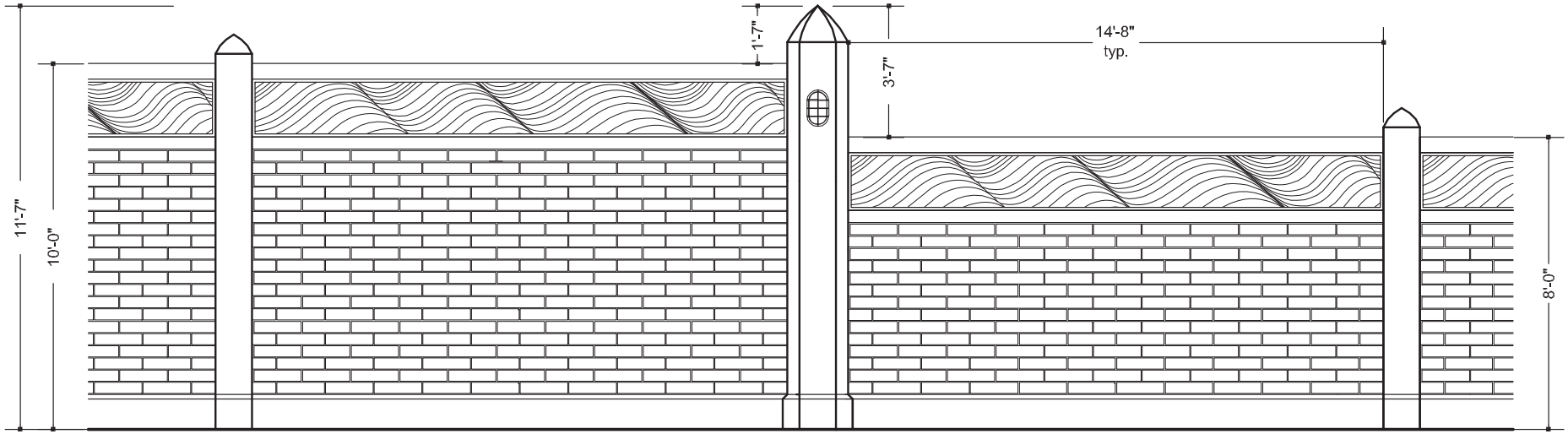
HANCOCK STREET
Perspective – Perimeter CMU Brick Wall and Wave Pattern Cap Panel



HANCOCK STREET & PINE GROVE AVENUE
Sketch of Perimeter CMU Brick Wall, Wave Pattern Cap Panel and Bulk Head Lights

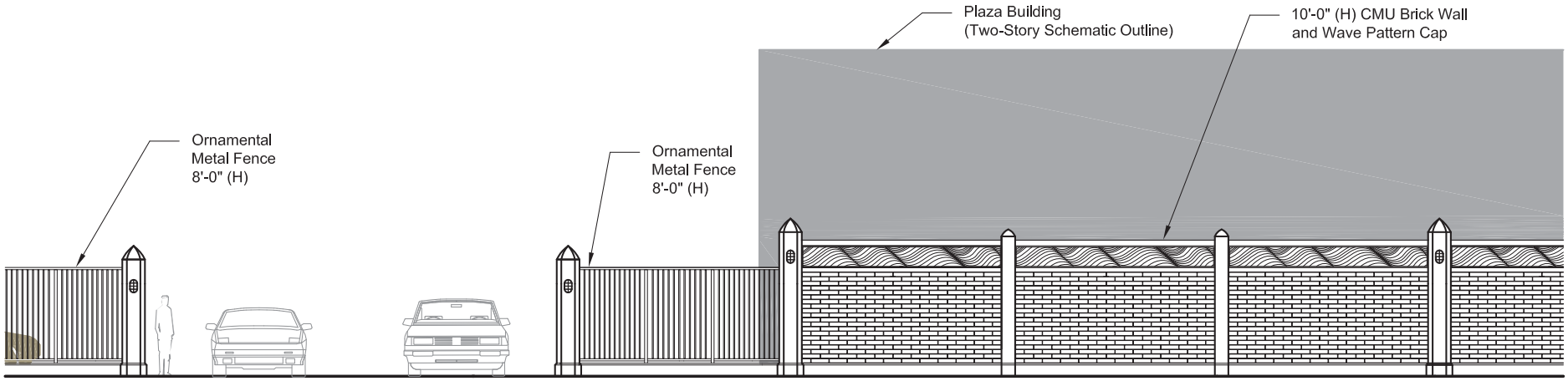


Elevation - CMU Brick Wall and Wave Pattern Cap Panel
10'-0" (H) Wall transitioning to 8'-0" (H) Wall

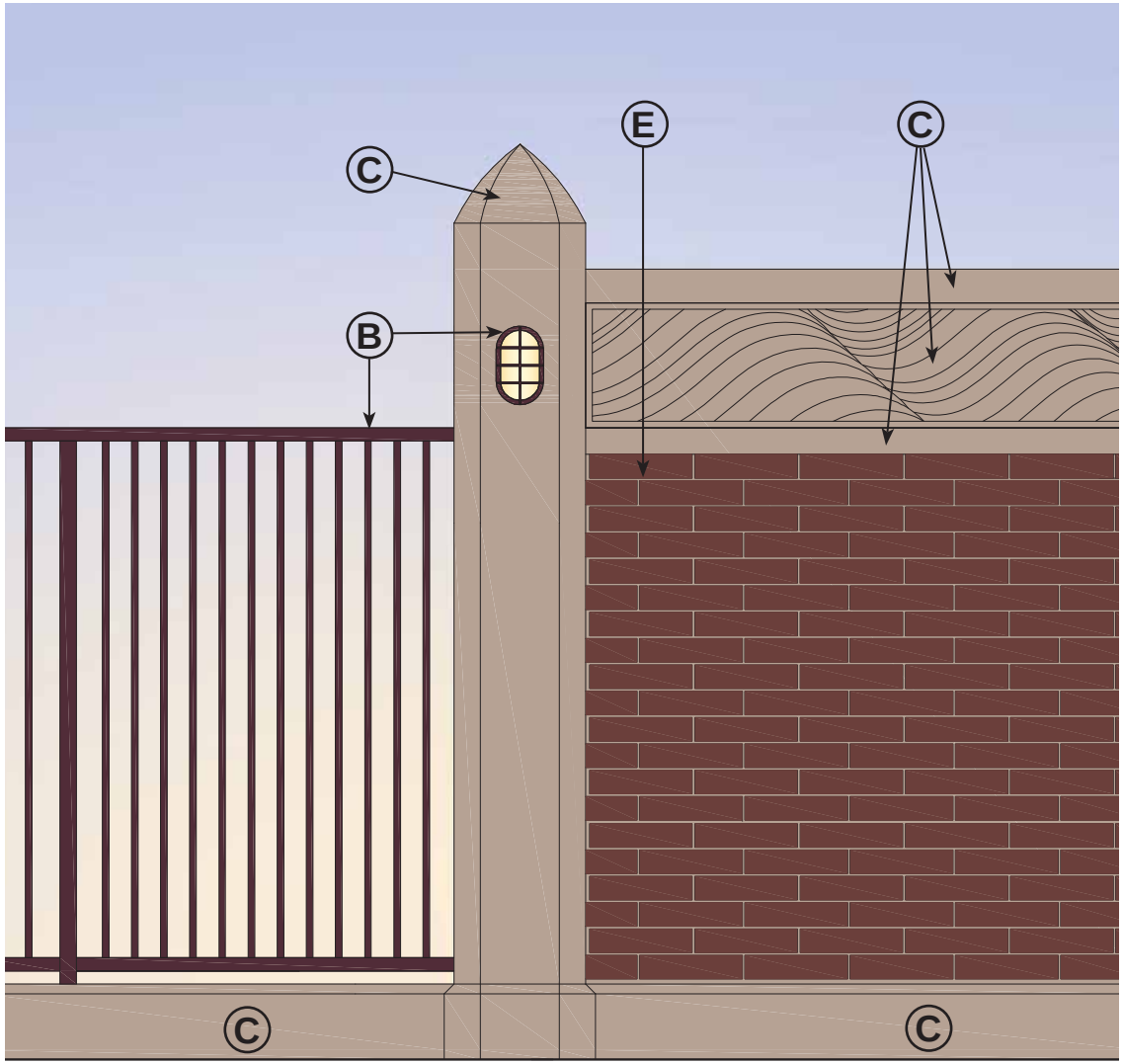


Elevation - CMU Brick Wall and Wave Pattern Cap Panel
10'-0" (H) Wall transitioning to 8'-0" (H) Wall

HANCOCK STREET &
PINE GROVE AVENUE
Elevations – Perimeter
CMU Brick Wall
and Wave Pattern Cap Panel
8’ and 10’ Height Options



HANCOCK STREET & PINE GROVE AVENUE
Perimeter Ornamental Metal Fence
8’-0” (H) Wall transitioning to 10’-0” (H) Wall



MATERIALS & COLORS

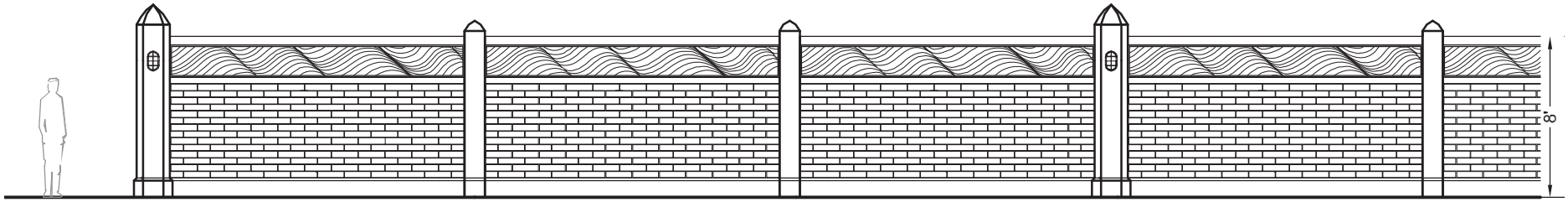
B — METALS ALTERNATE 2 (Dark Brown)

C — CONCRETE & CAST STONE (Warm Grey)

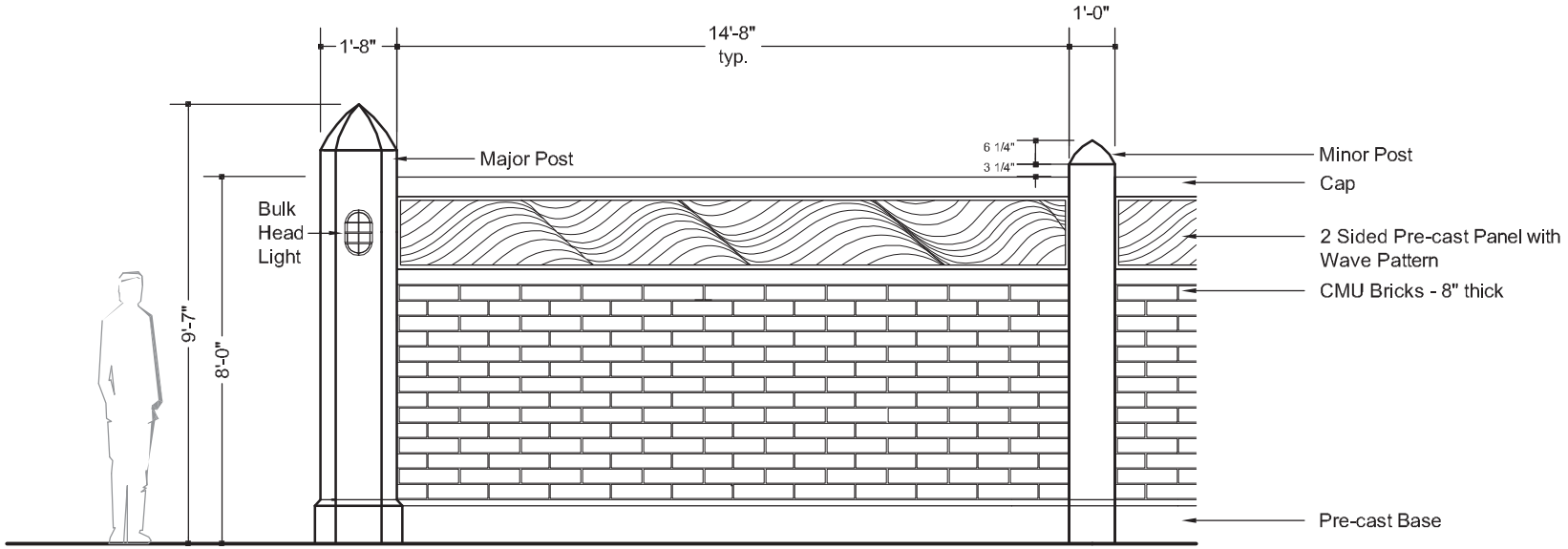
E — CMU BRICK - SMALL BLOCK (Orange Brown Blend)

For detailed information, see pg. 62.

HANCOCK STREET & PINE GROVE AVENUE
Ornamental Metal Fence and CMU Brick Wall and Wave Pattern Cap Panel – Colors

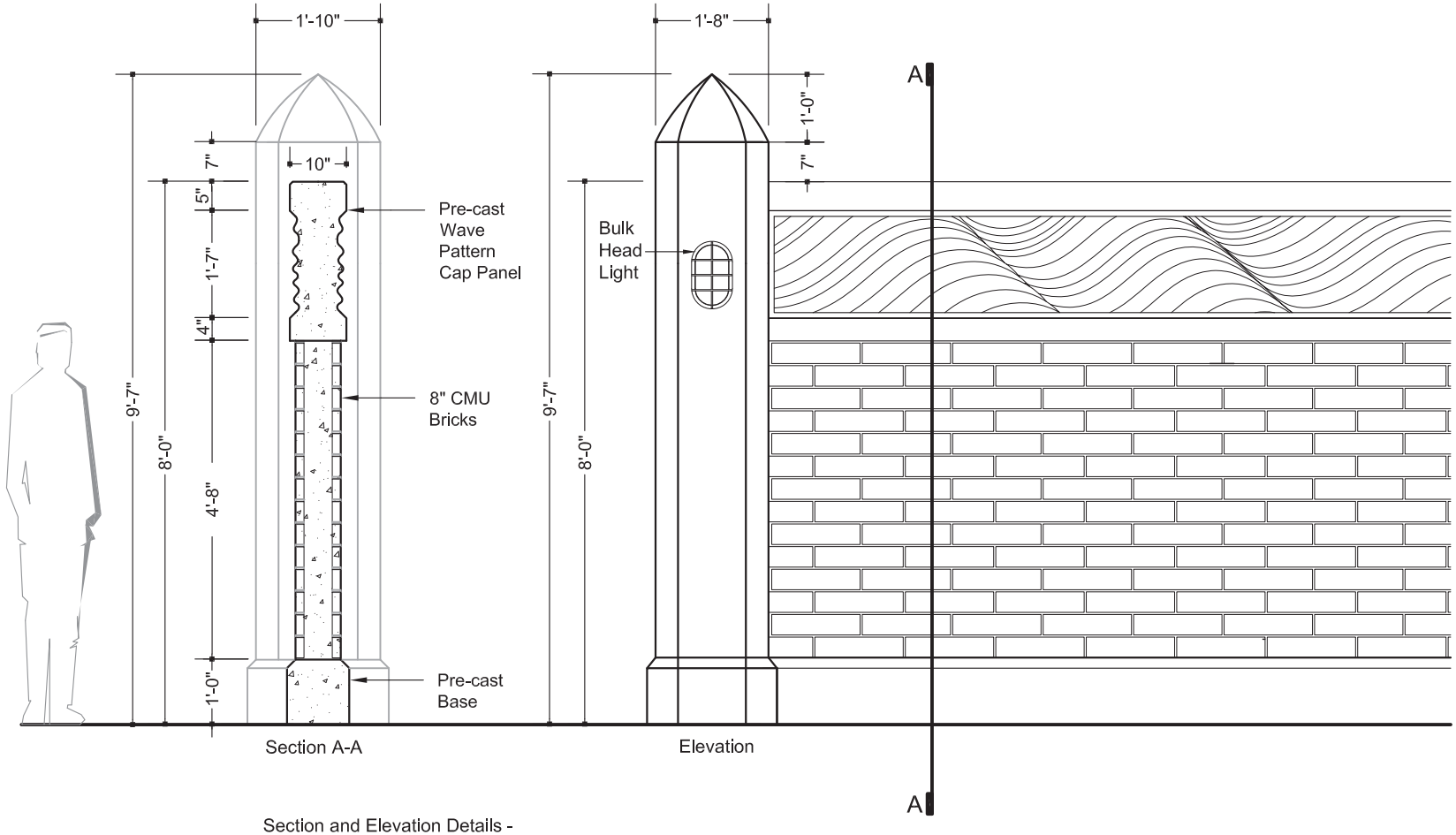


Elevation - CMU Brick Wall and Wave Pattern Cap Panel



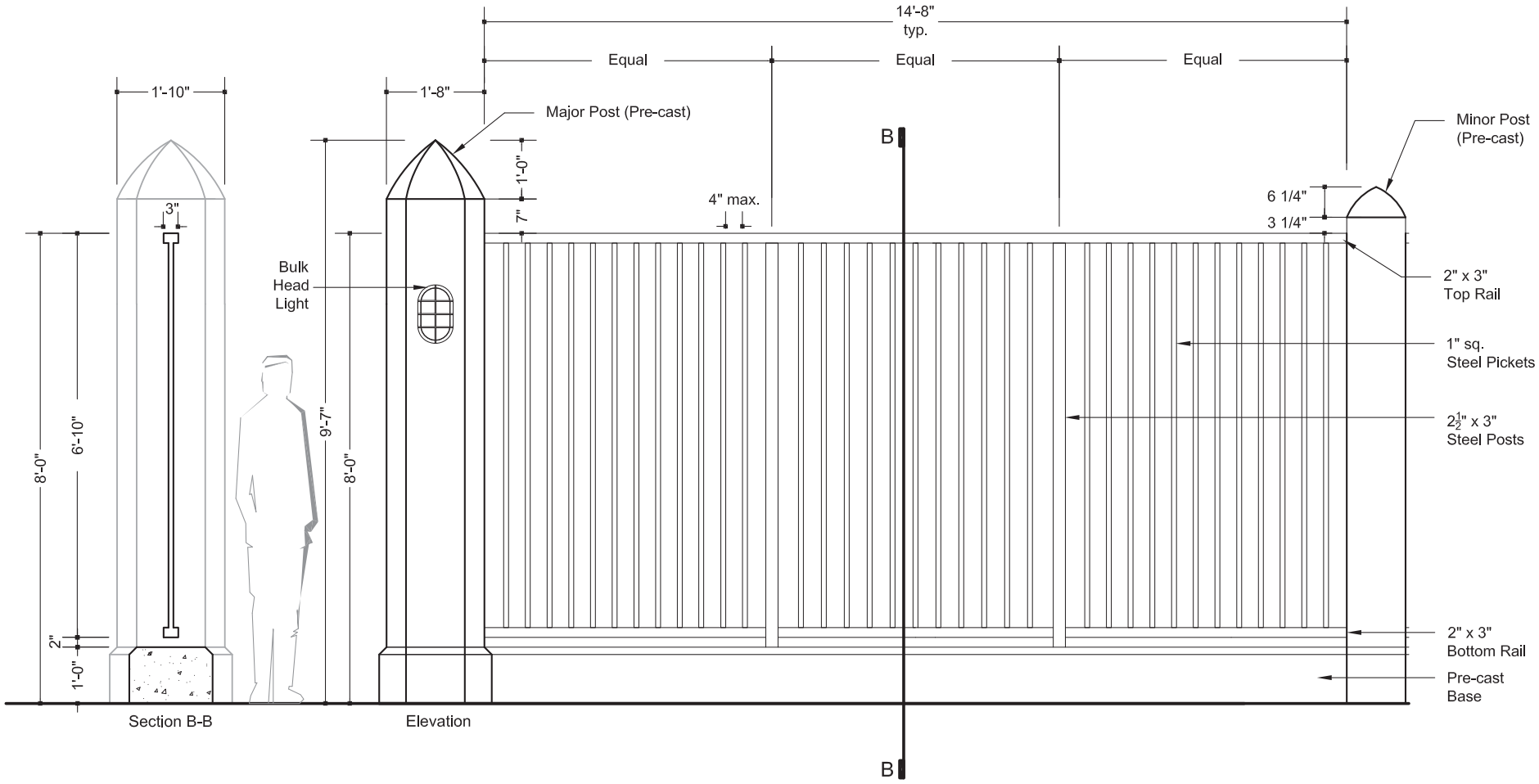
Detail Elevation - CMU Brick Wall and Wave Pattern Cap Panel

HANCOCK STREET &
PINE GROVE AVENUE
Elevations and Sections –
Perimeter CMU Brick Wall and
Wave Pattern Cap Panel



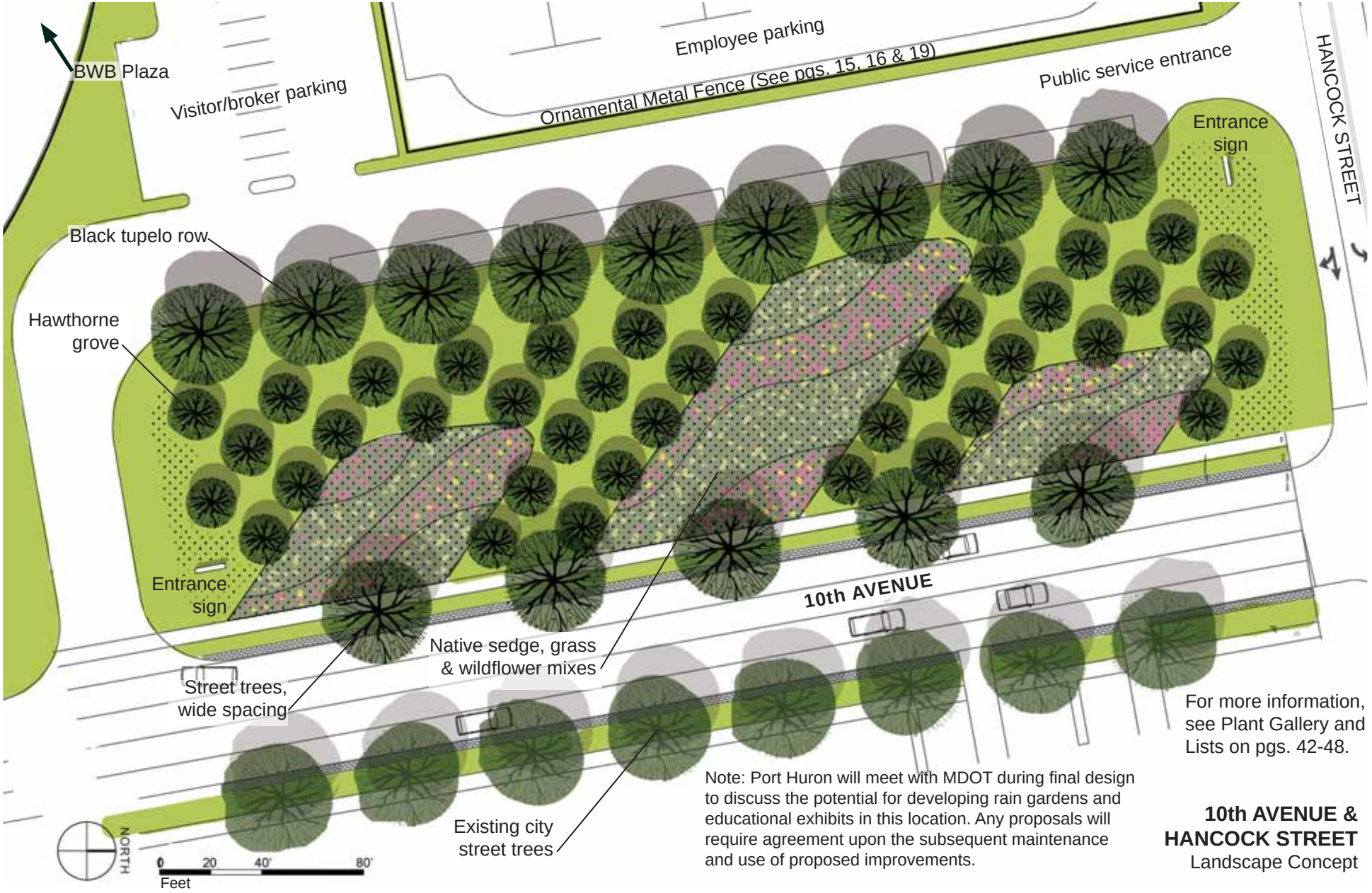
Section and Elevation Details -
CMU Brick Wall and Wave Pattern Cap Panel

HANCOCK STREET &
PINE GROVE AVENUE
Elevations and Sections –
Perimeter CMU Brick Wall and
Wave Pattern Cap Panel



Section and Elevation Details - Ornamental Metal Fence

HANCOCK STREET &
PINE GROVE AVENUE
Elevations and Sections –
Perimeter Ornamental
Metal Fence



For more information, see Plant Gallery and Lists on pgs. 42-48.

Note: Port Huron will meet with MDOT during final design to discuss the potential for developing rain gardens and educational exhibits in this location. Any proposals will require agreement upon the subsequent maintenance and use of proposed improvements.

10th AVENUE & HANCOCK STREET
Landscape Concept

Bioinfiltration swales at H.B. Fuller Corporation, Roseville, MN handle runoff from parking lots.

Knowledge about watershed and site hydrology, careful engineering to accommodate runoff, selection of appropriate native plants, and ongoing care to maintain its cultivated appearance make this stormwater design a success.

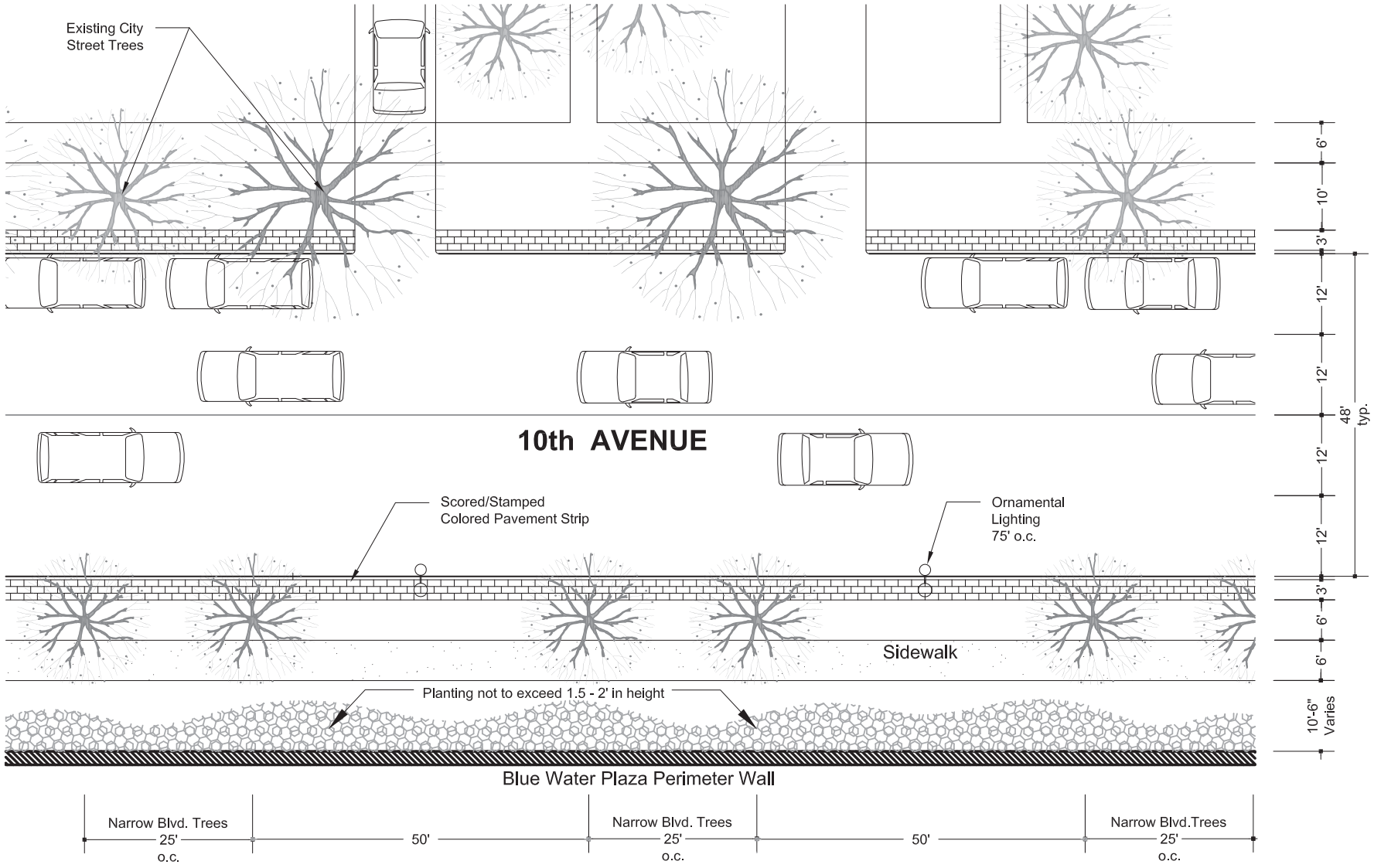
Rain garden in a residential setting, before (left) and (above) just after construction.

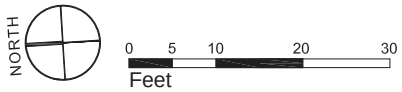
Note curb cut and the use of retaining walls to create the basin and stabilize the slope.

A series of rain gardens at the Ramsey Washington Metro Watershed District office building, Little Canada, MN, has a less cultivated, more natural, appearance in part due to the entirely native plant palette.

Interpretive signage explains the design and function of the rain gardens.

10th AVENUE & HANCOCK STREET
Raingarden Examples

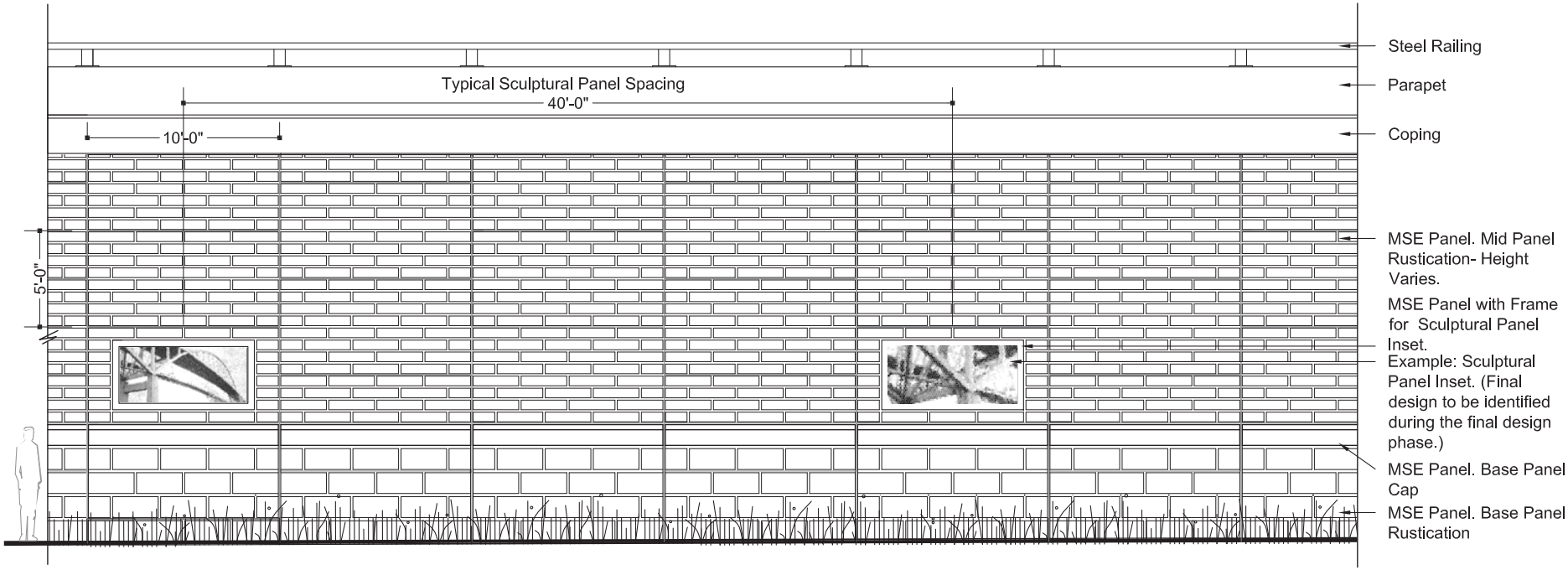




For detailed information
on Materials and Colors,
see pg. 62.

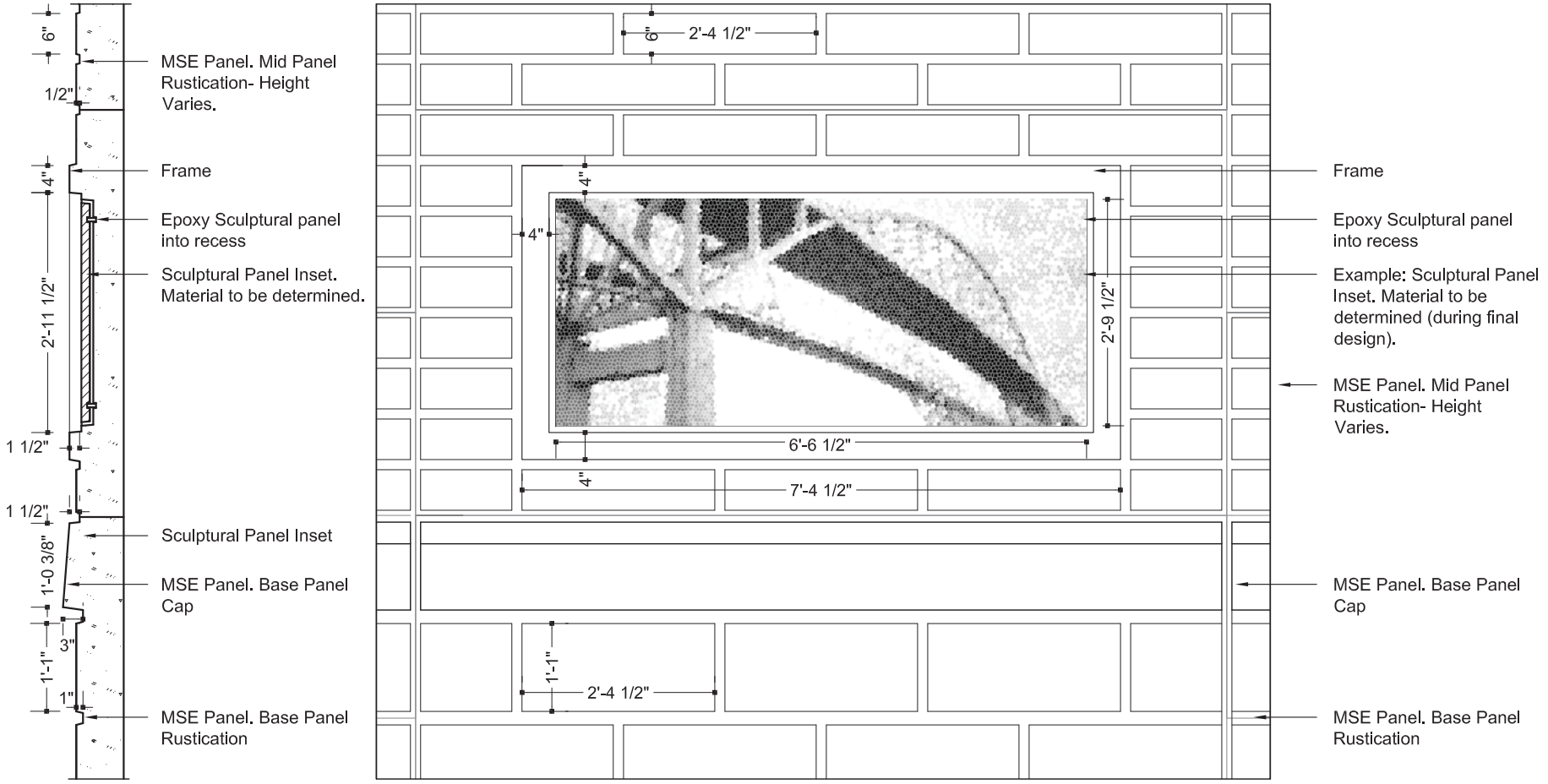
10th AVENUE
Plan – Streetscape
Concept Layout

10th AVENUE
Perspective –
MSE Brick Wall,
Coping and Low
Railing



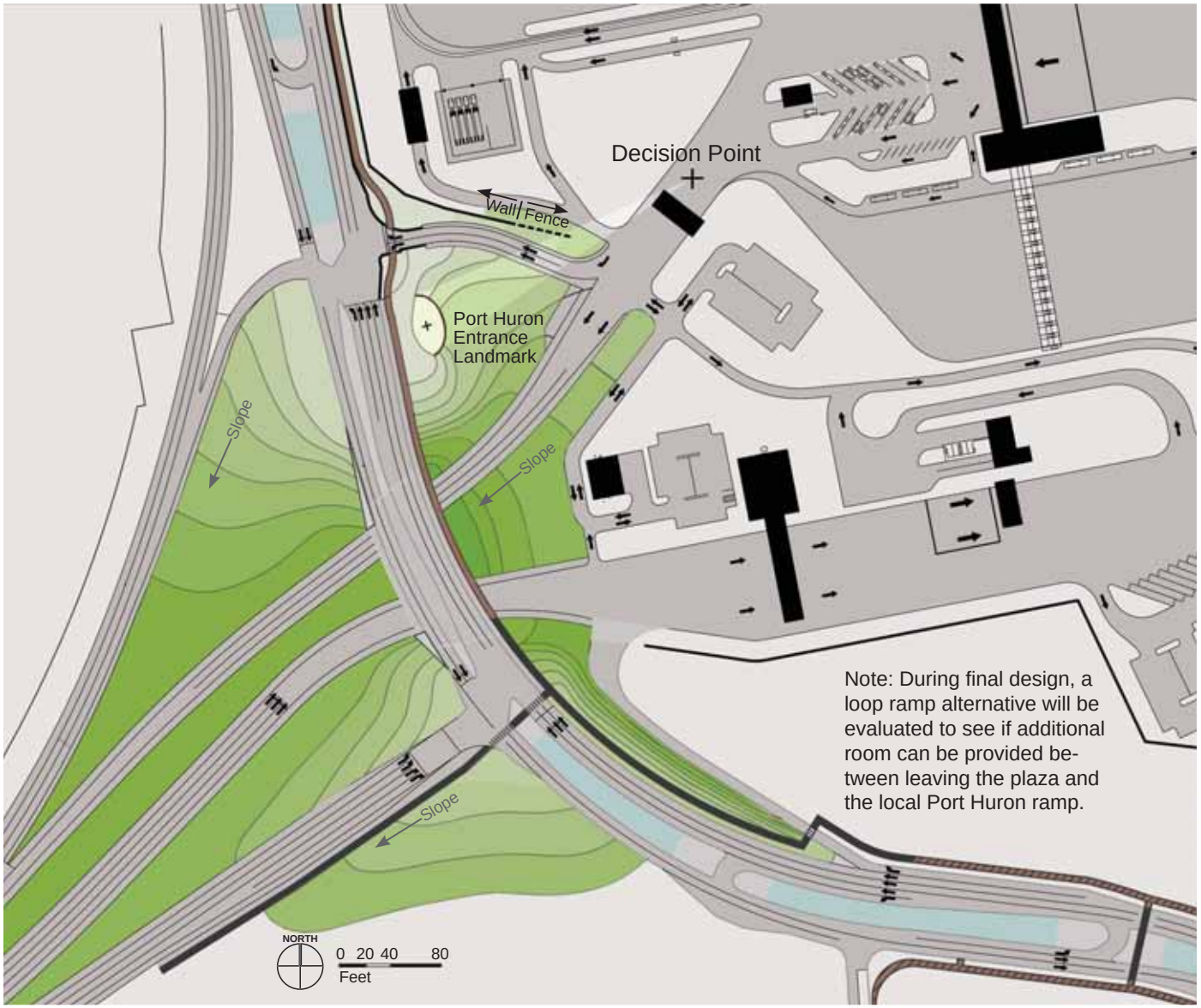
10th AVENUE
Elevation –
MSE Brick Wall, Rusticated Base Panel, Coping Parapet with Low Railing, Sculptural Insets

For detailed information on Materials and Colors, see pg. 62.



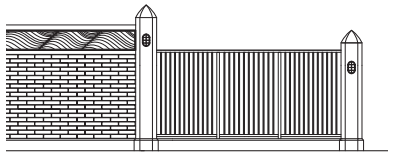
10th AVENUE
Section and Elevation – MSE Brick Wall, Sculptural Inset Detail

For detailed information on Materials and Colors, see pg. 62.



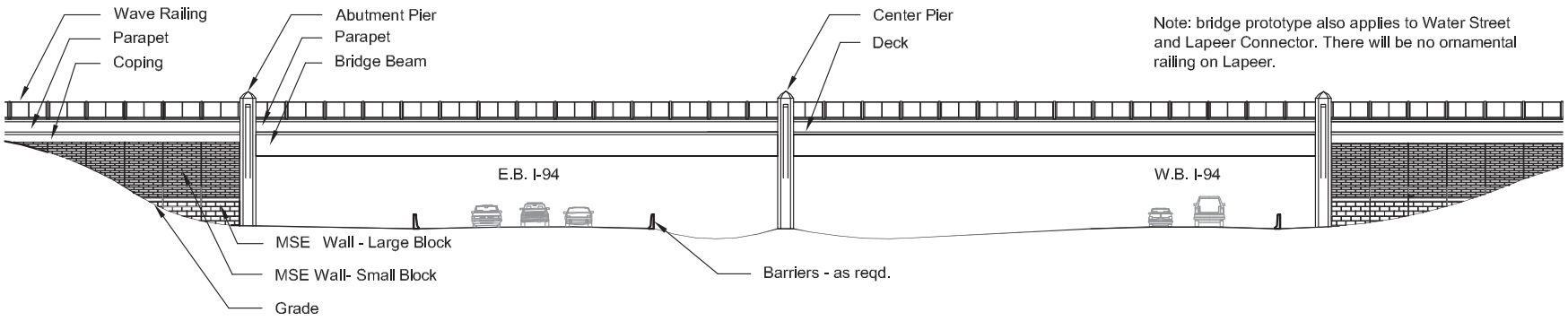
KEY

- Architecture (GSA/CBP)
- Pavement/Hardscape/ Ground Plane
- Sidewalks
- Landscaping
- Median Plantings

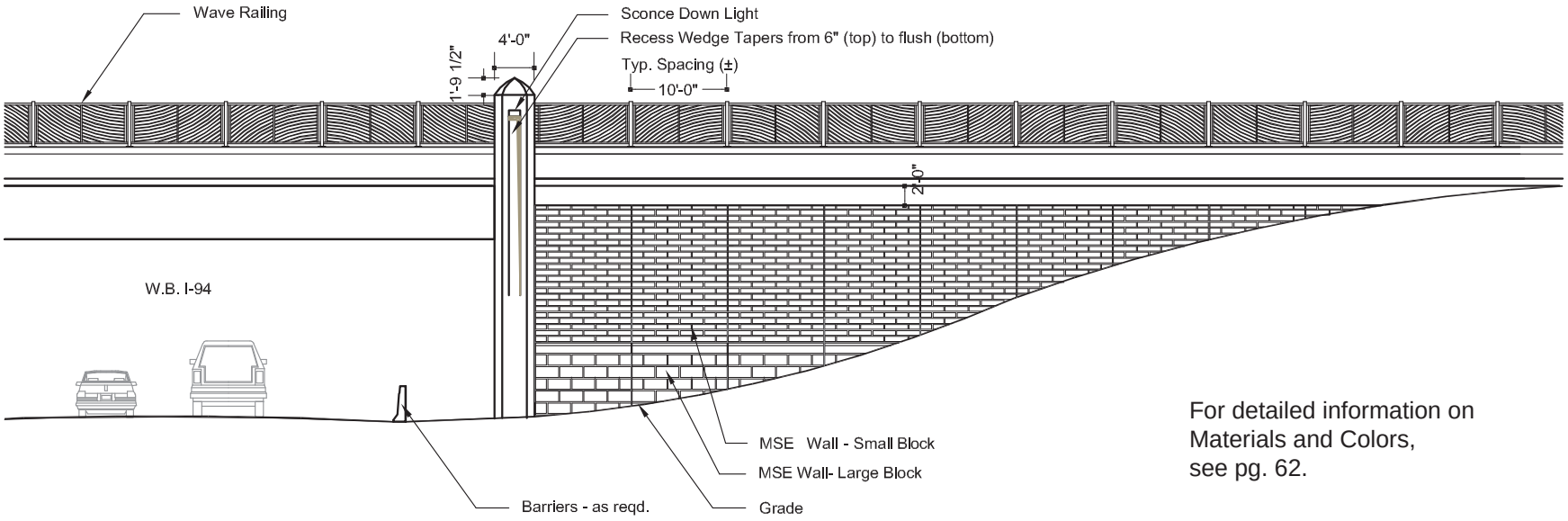


CMU Brick Wall with Ornamental Metal Fence, see pgs. 15, 16 & 19.

PINE GROVE OVERPASS
Grading Concept –
Showing Visibility to the
Port Huron Entrance Landmark



Elevation - Pine Grove Avenue Bridge East Elevation

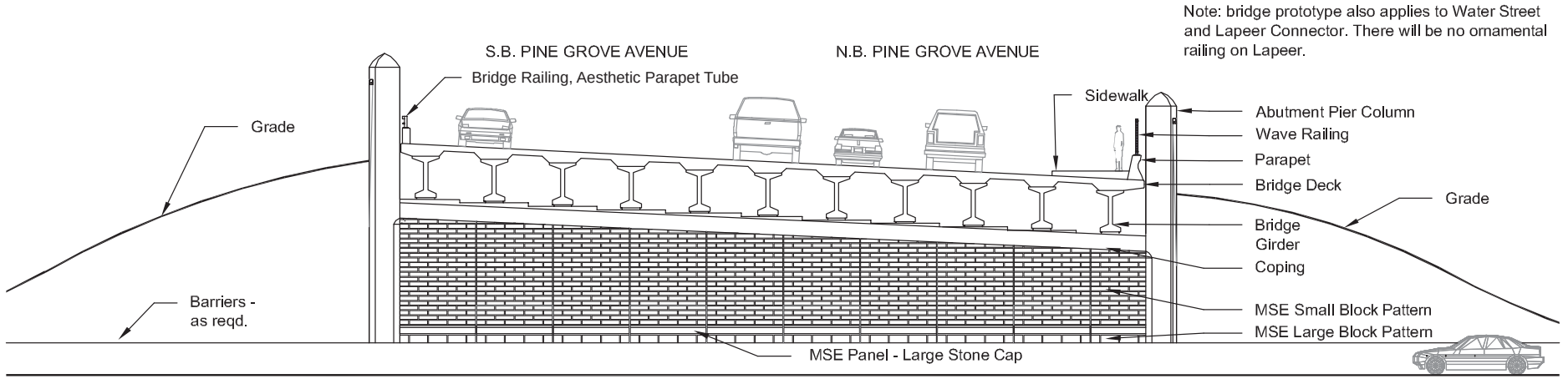


Detail Elevation - Pine Grove Avenue Bridge East Elevation

For detailed information on Materials and Colors, see pg. 62.

PINE GROVE OVERPASS BRIDGE PROTOTYPE
Elevations

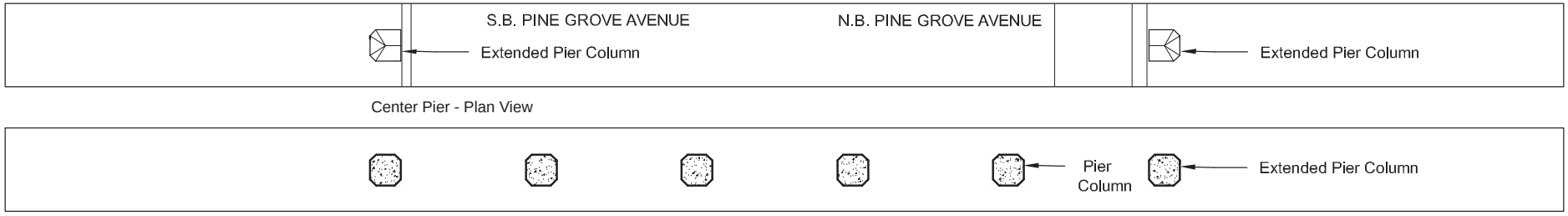
Abutment - Plan View



Elevation - Pine Grove Avenue Bridge North Abutment

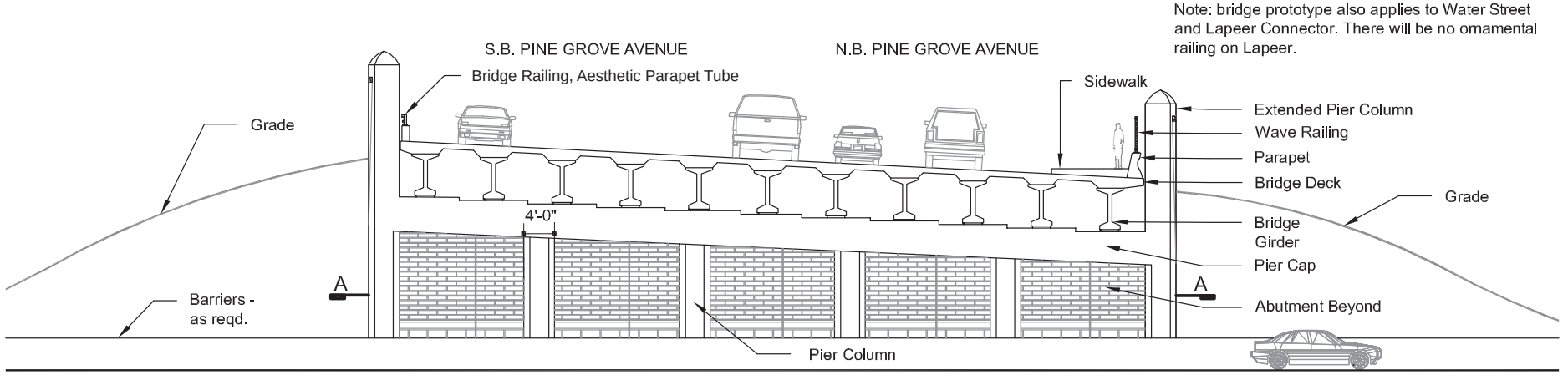
For detailed information on Materials and Colors, see pg. 62.

PINE GROVE OVERPASS BRIDGE PROTOTYPE
Plan, Sections, Elevations



Center Pier - Plan View

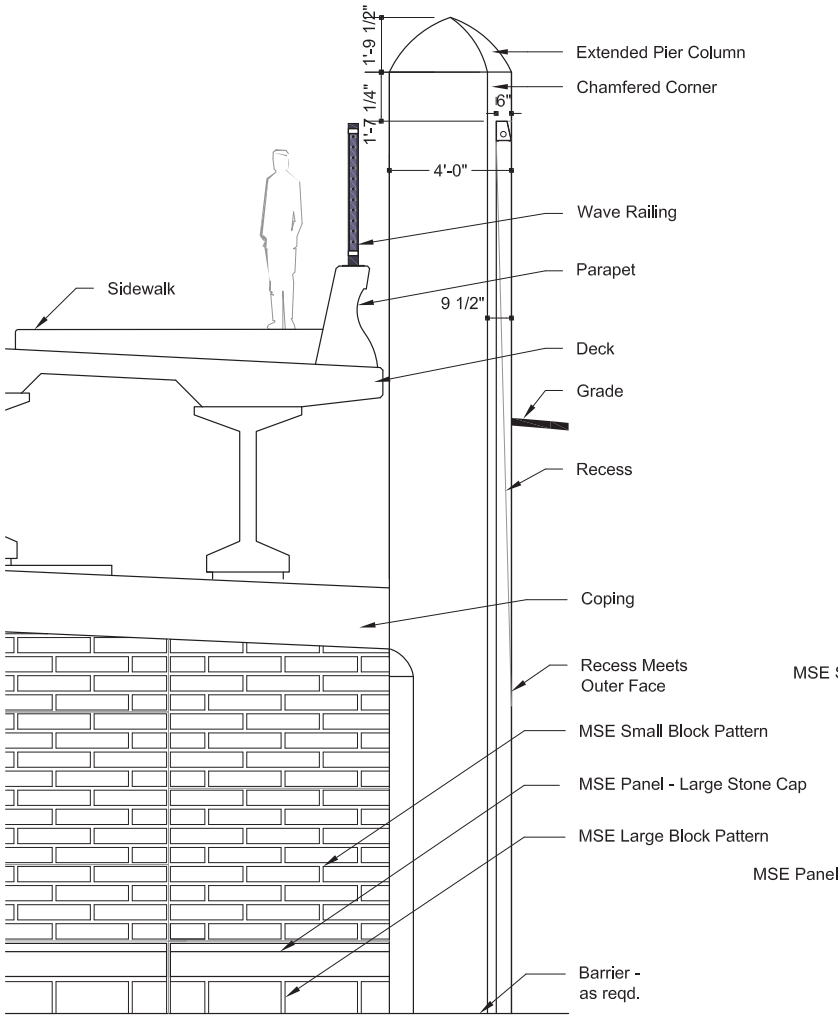
Section AA - Center Pier



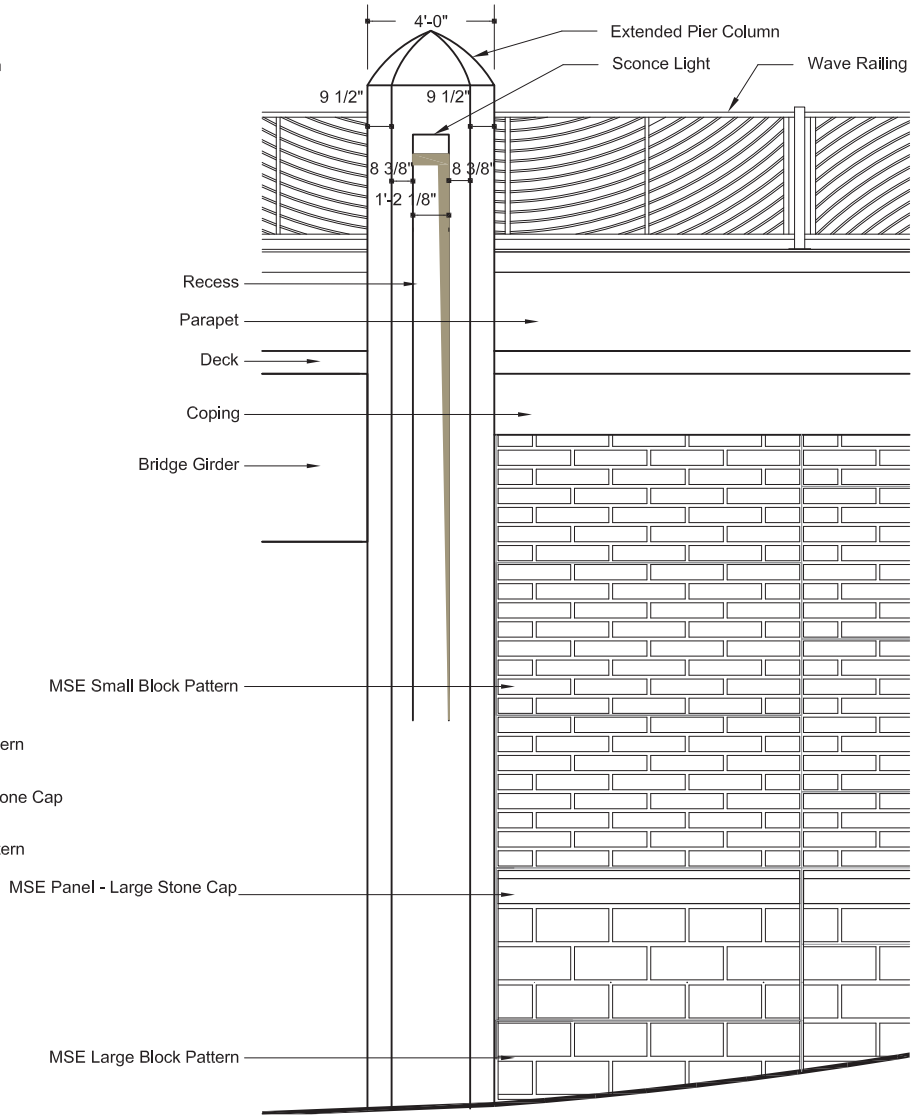
Elevation - Pine Grove Avenue Bridge Center Pier

For detailed information on
Materials and Colors,
see pg. 62.

PINE GROVE OVERPASS
BRIDGE PROTOTYPE
Plan, Sections, Elevations



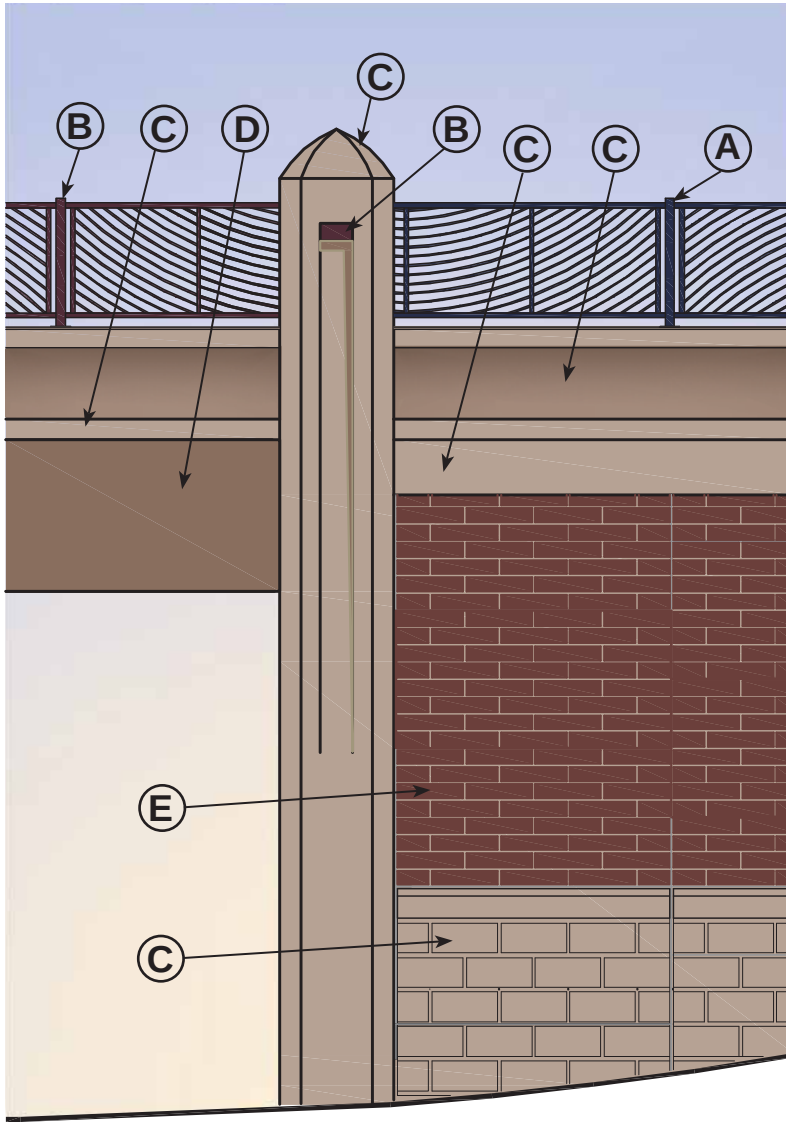
Detail Elevation - Pier Column and Wing Wall North Abutment



Detail Elevation - Pier Column and Wing Wall East Elevation

For detailed information on
Materials and Colors,
see pg. 62.

PINE GROVE OVERPASS
BRIDGE PROTOTYPE
Elevations



Note: Both metal color alternatives A & B for the railings are shown for your reference and comparison. One color will be selected.

MATERIALS & COLORS

A METALS ALTERNATE 1 (Dark Blue)

B METALS ALTERNATE 2 (Dark Brown)

C CONCRETE & CAST STONE (Warm Grey)

D BRIDGE BEAM/ GIRDER (Medium Dark Grey)

E CMU BRICK - SMALL BLOCK (Orange Brown Blend)

For detailed information, see pg. 62.

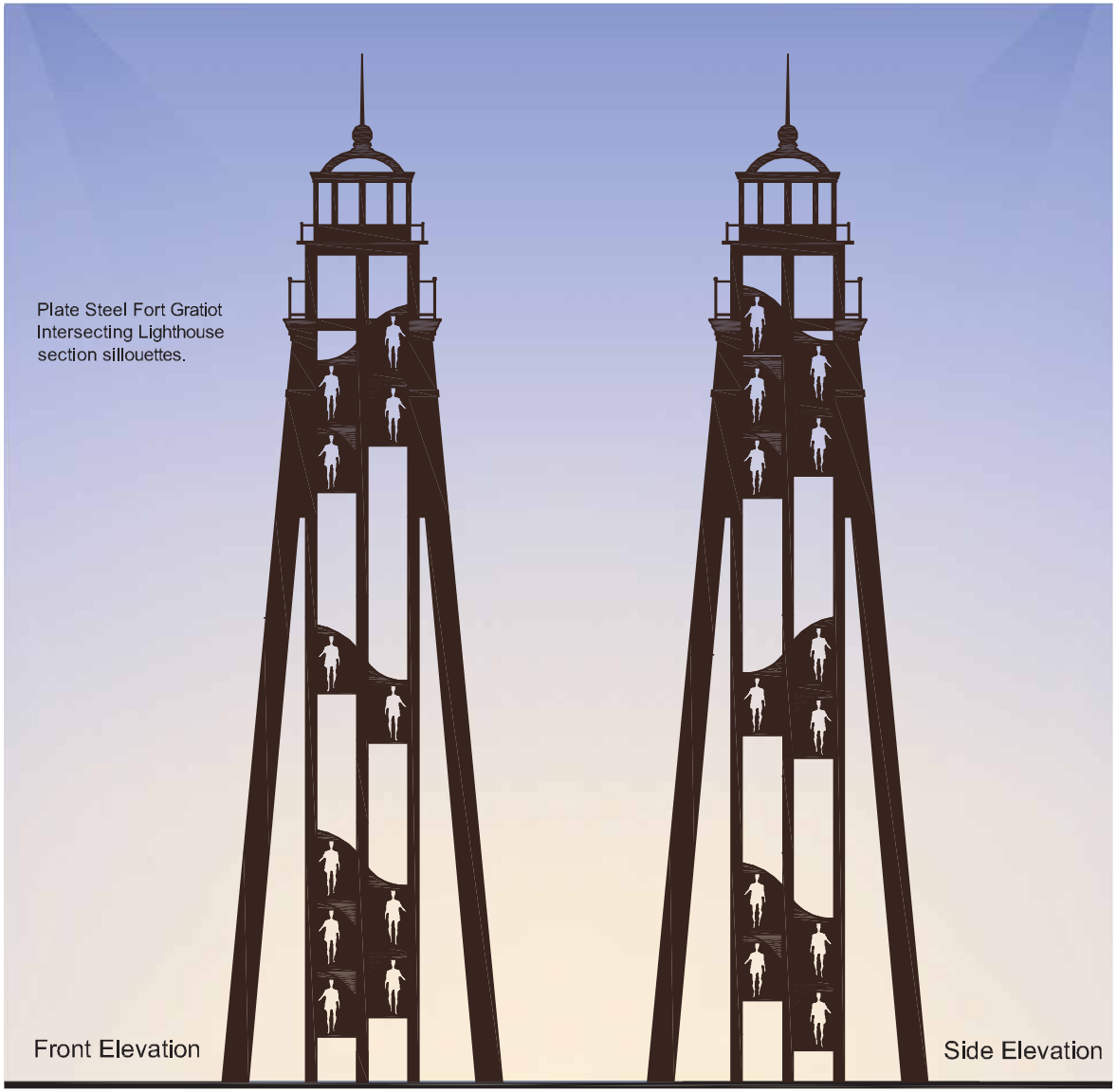
PINE GROVE OVERPASS BRIDGE PROTOTYPE

The Fort Gratiot Lighthouse is the oldest lighthouse in Michigan and an icon worthy of celebrating in a Port Huron entrance marker.

Rather than creating a replica of the lighthouse, we have used its mass and volume as inspiration and reveal the interior stairway and structure in a sculptural way.

A series of human silhouettes are cut into perpendicular plates of steel creating a three dimensional illusion of ascending figures.

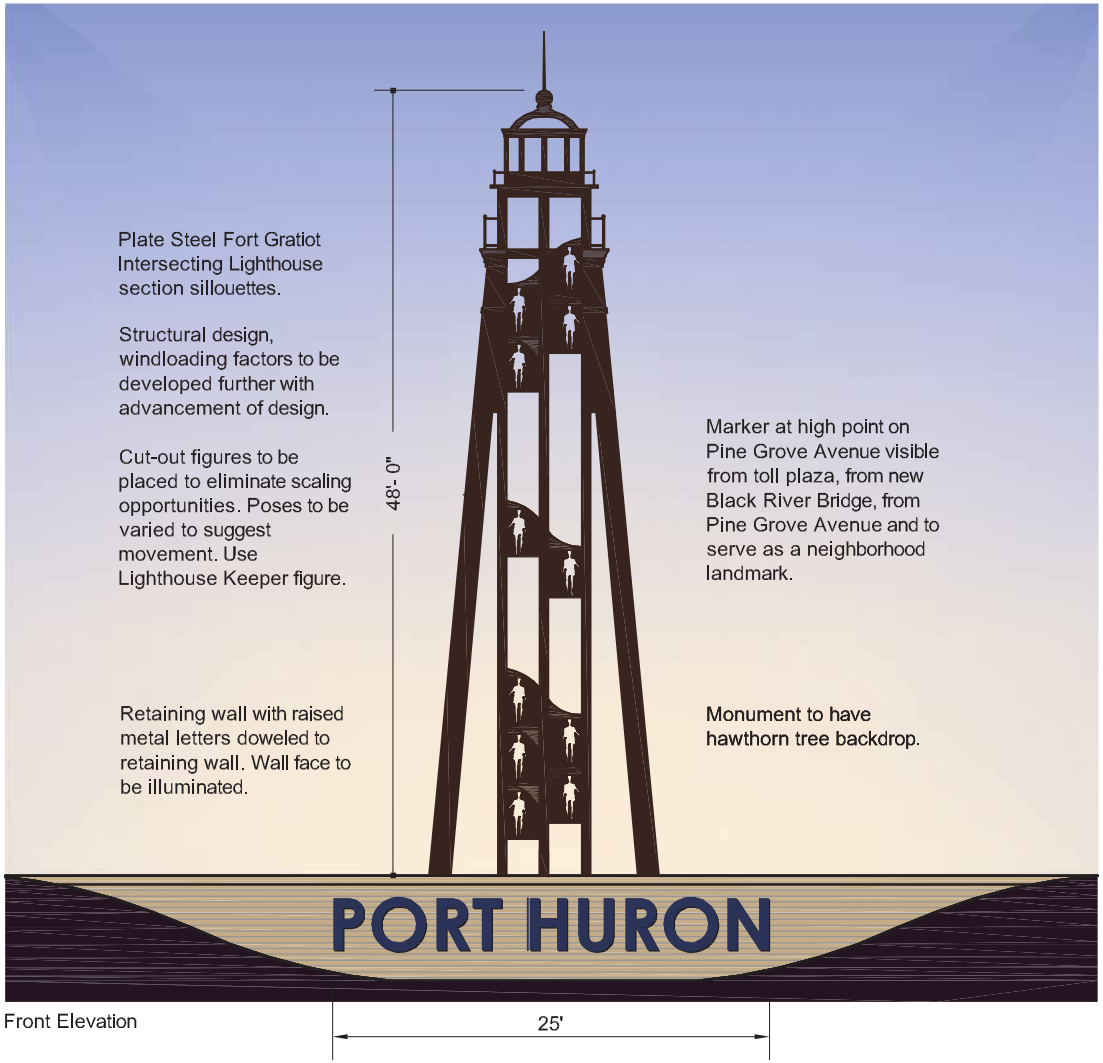
When viewed against the sky and landscape this dynamic form will create interesting shadow patterns as well as offer great potential for lighting effects.



PINE GROVE OVERPASS
Alternative 1 – Lighthouse
Port Huron Entrance Landmark

Fort Gratiot Lighthouse

Lighthouse Keeper- use as ascending sillouette figure.



Front Elevation

Port Huron Marker Site Diagram

Detail. Silhouette cut-out of Lighthouse Keeper figures ascending lighthouse stairs

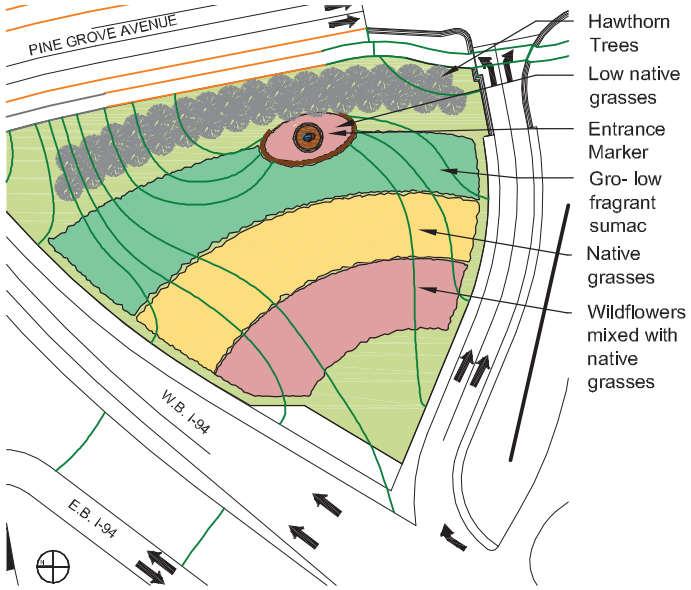
PINE GROVE OVERPASS
Alternative 1 – Lighthouse
Port Huron Entrance Landmark



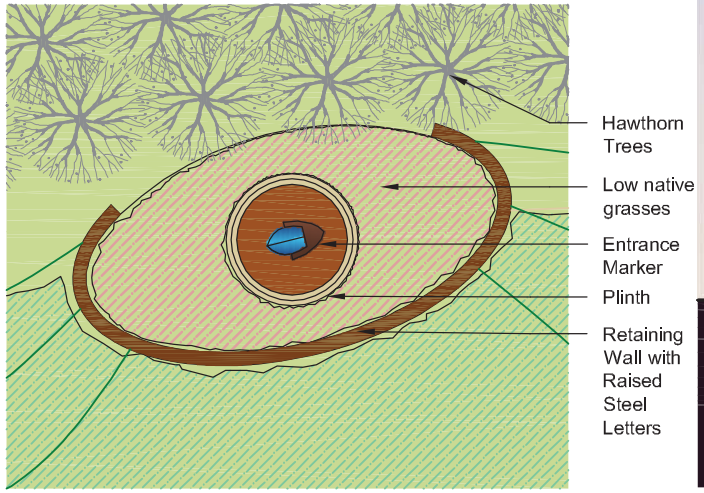



Views of 3-D Model

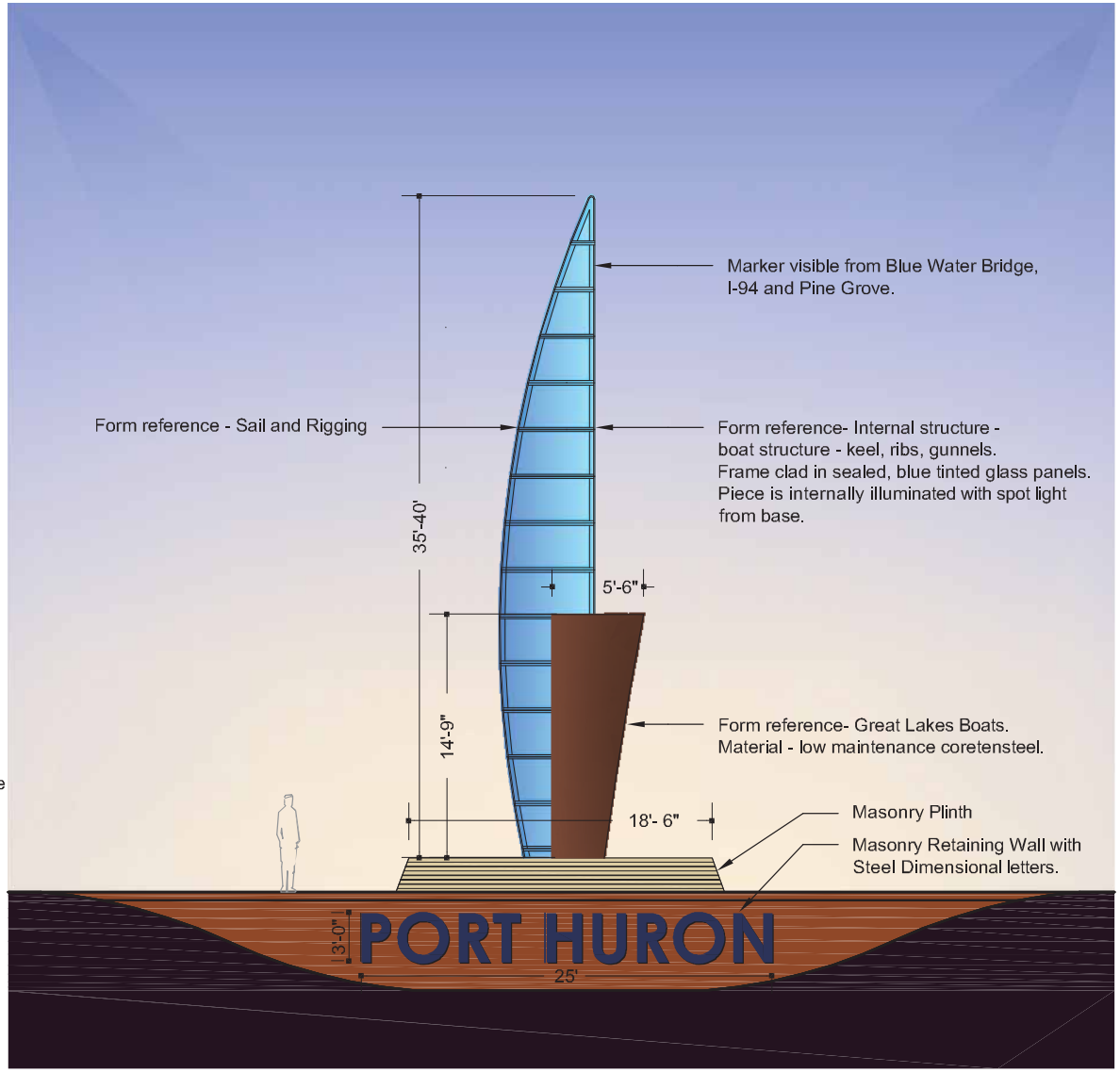
PINE GROVE OVERPASS
Alternative 1 – Lighthouse
Port Huron Entrance Landmark



Plan View

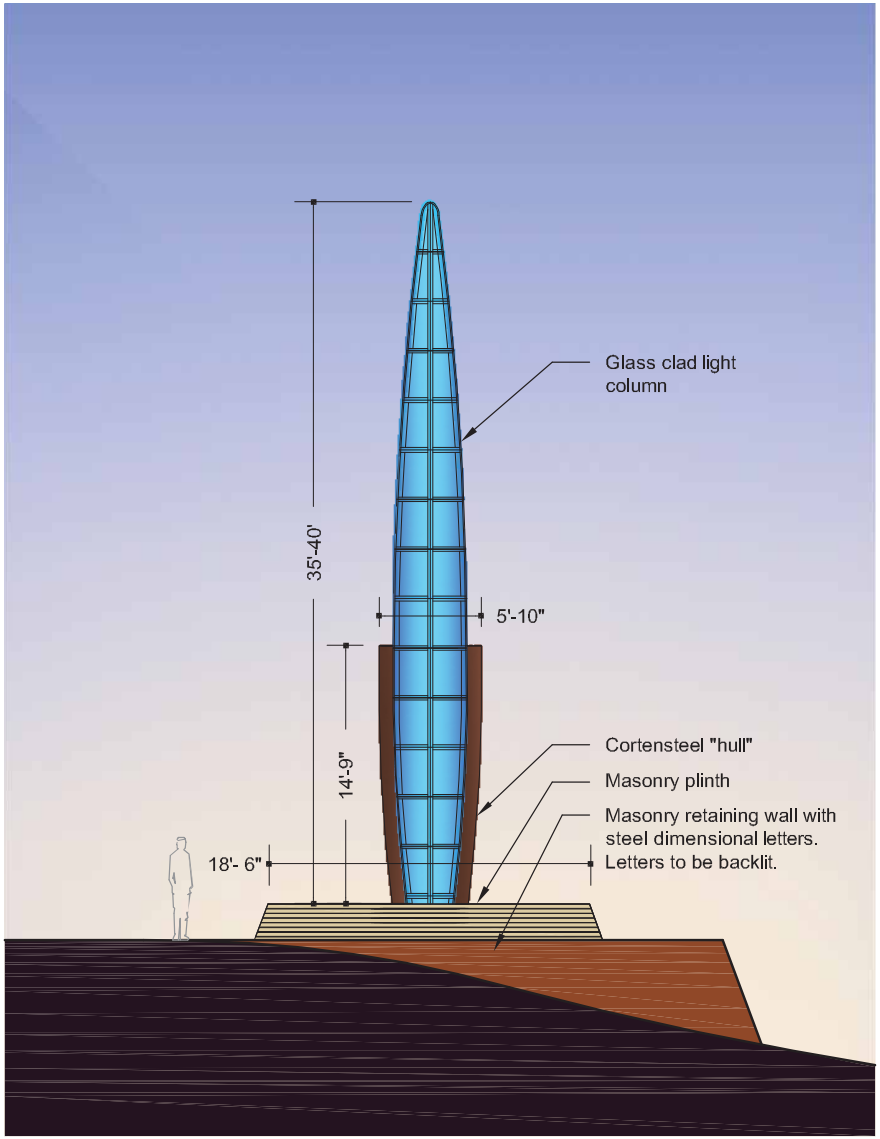


Detailed Plan View

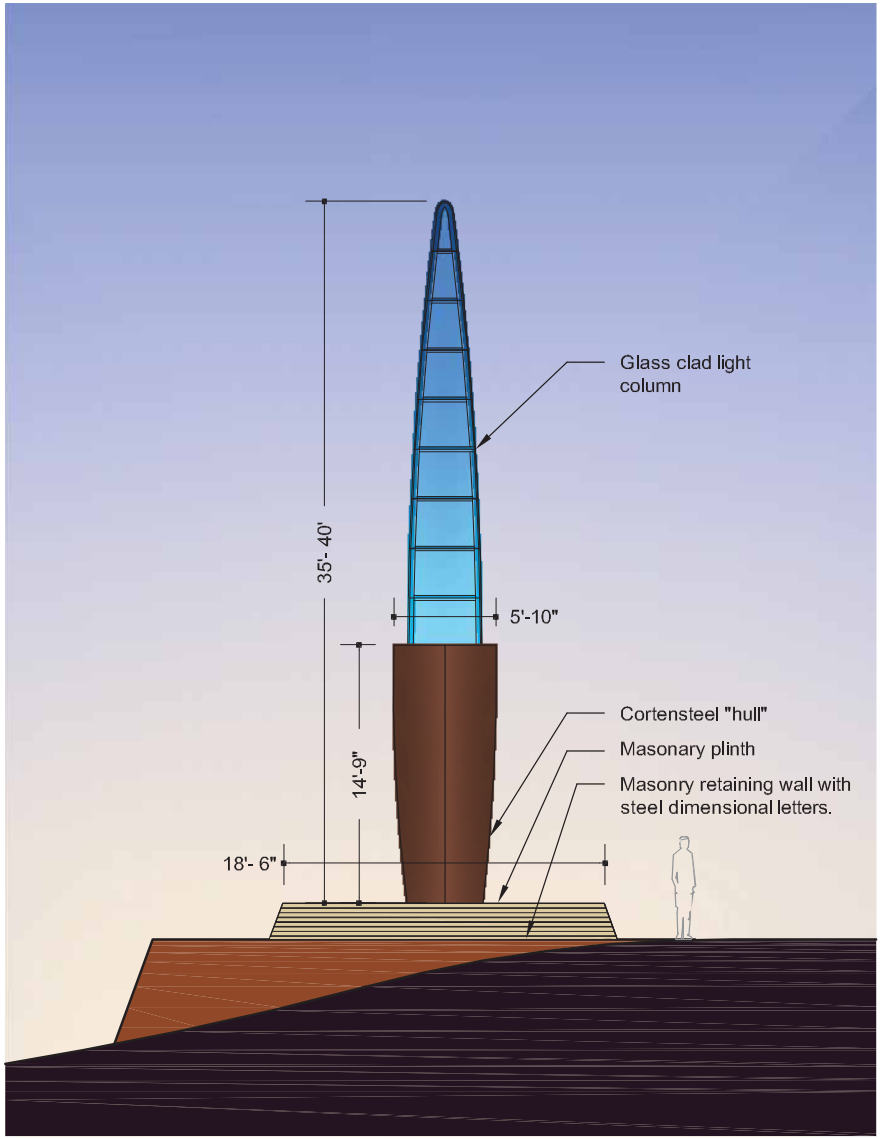


Front Elevation

PINE GROVE OVERPASS
Alternative 2 – Boat Forms
Port Huron Entrance Landmark

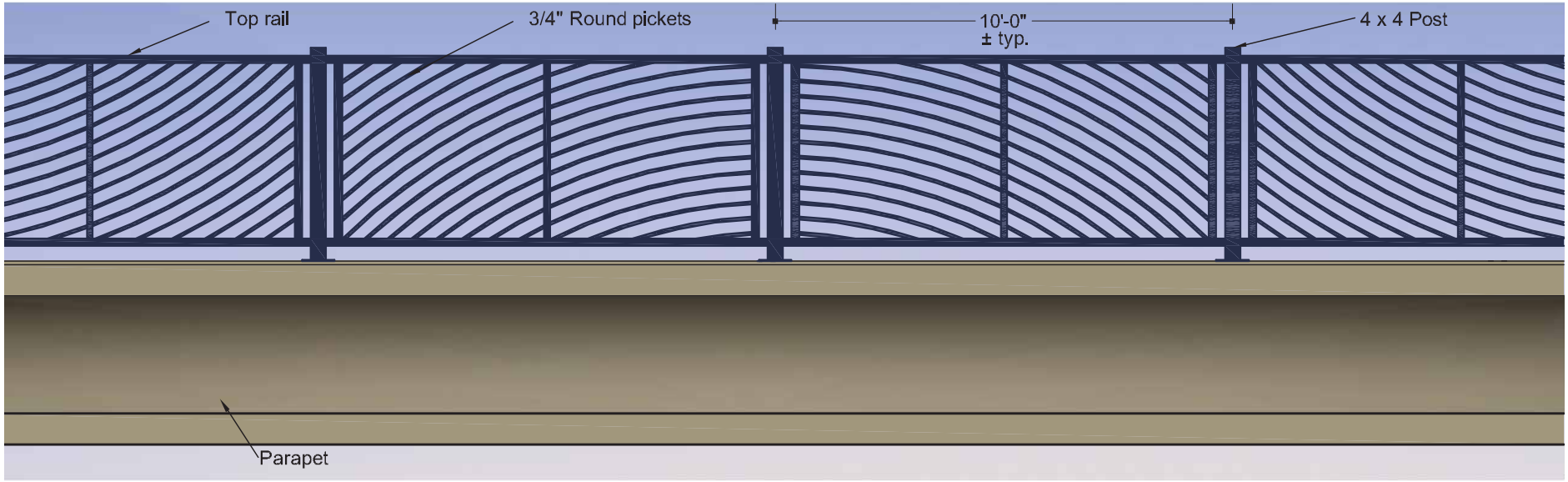


Left Side Elevation



Right Side Elevation

PINE GROVE OVERPASS
Alternative 2 – Boat Forms
Port Huron Entrance Landmark



Elevation – Wave Railing

Note: The railing also applies to Water Street.

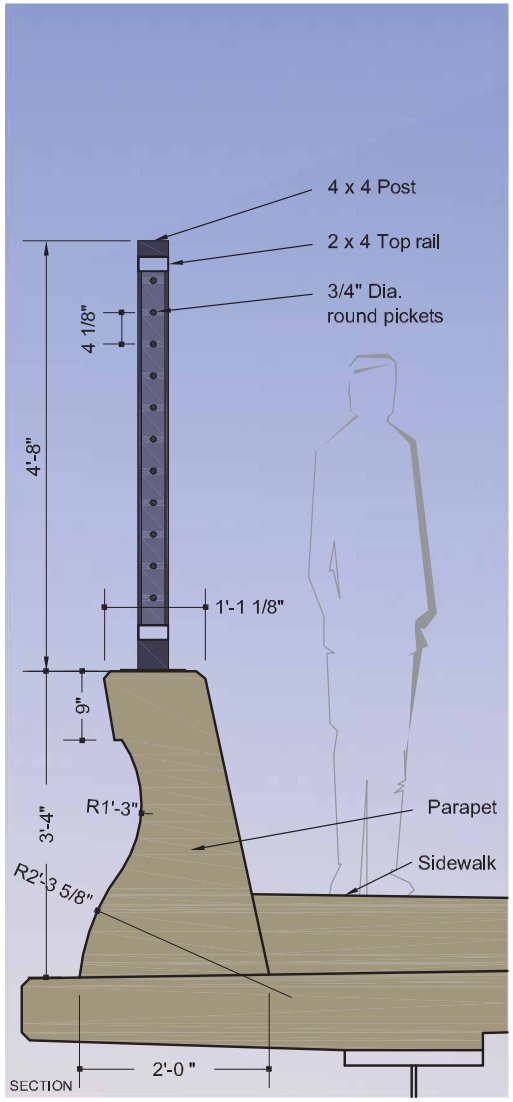
MATERIALS & COLORS

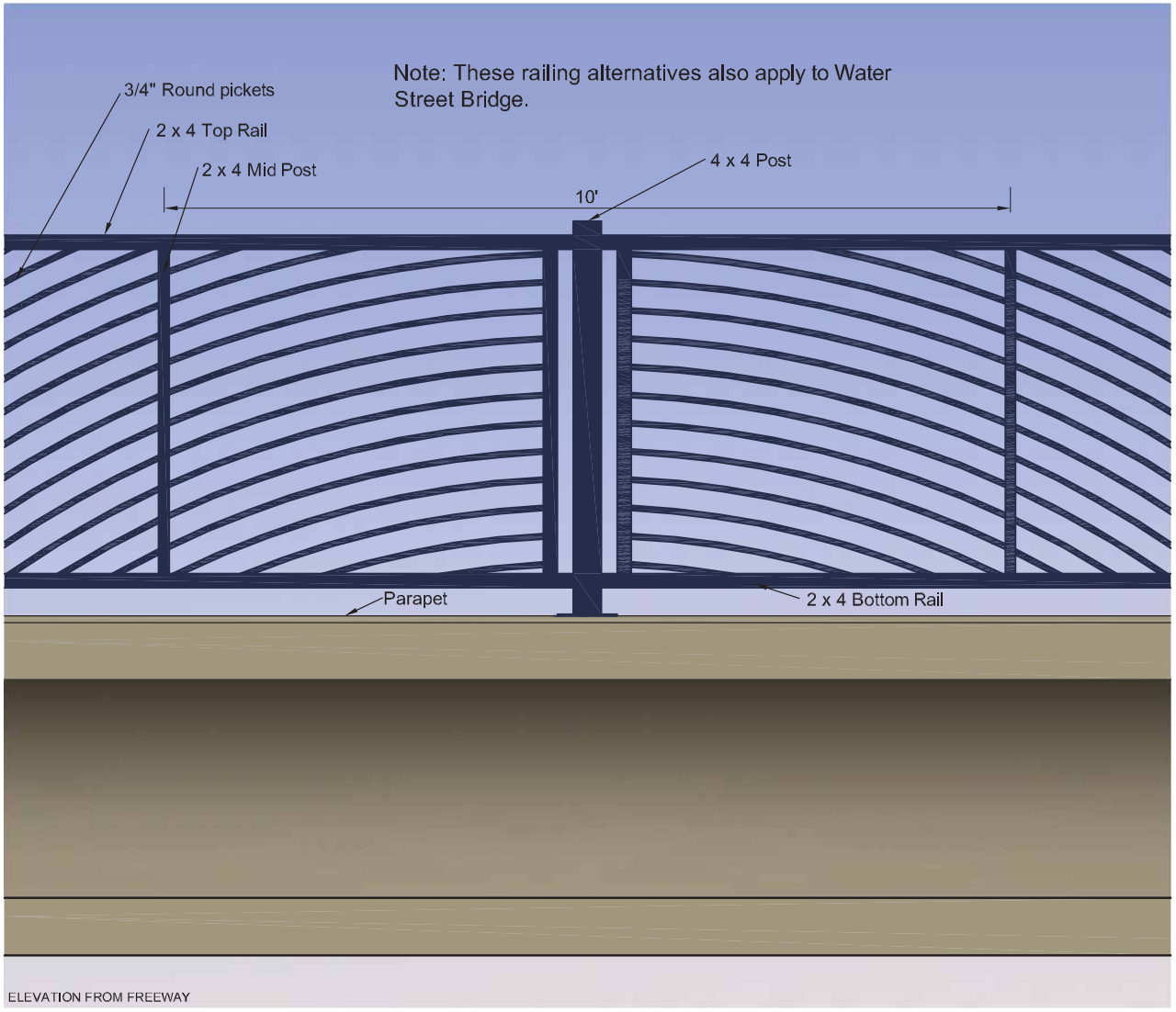
METALS
ALTERNATE 1
(Dark Blue)

METALS
ALTERNATE 2
(Dark Brown)

For detailed information,
see pg. 62.

PINE GROVE OVERPASS/
WATER STREET BRIDGE
Elevation – Wave Railing





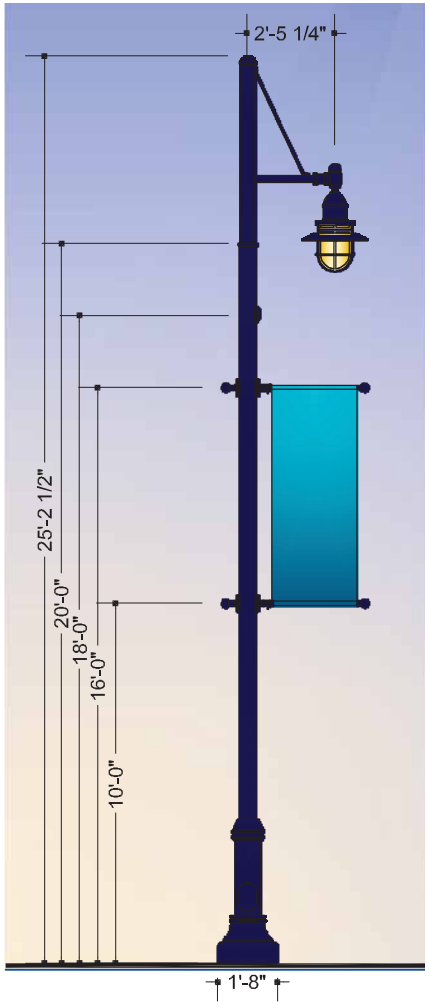
For Information on Materials and Colors, see pg. 62.

PINE GROVE OVERPASS/ WATER STREET BRIDGE
Details – Wave Railing

Ornamental Lighting is inspired by nautical/maritime forms and features mast-like poles.

Light fixtures have been reviewed by Detroit Edison. Exact locations for lights will be determined during the final design phase.

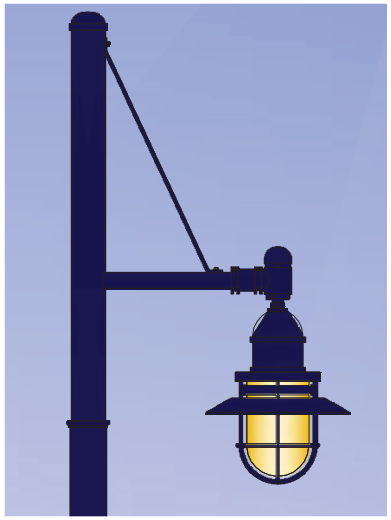
Lights can also provide locations for permanent Port Huron wayfinding signage



Front Elevation

Holophane Port Dickenson Series, Drawing #TSG004775 for Detroit Edison

150W Ceramic Metal Halide



Detail Elevation

METAL COLOR ALTERNATIVES

Dark Blue

Dark Brown

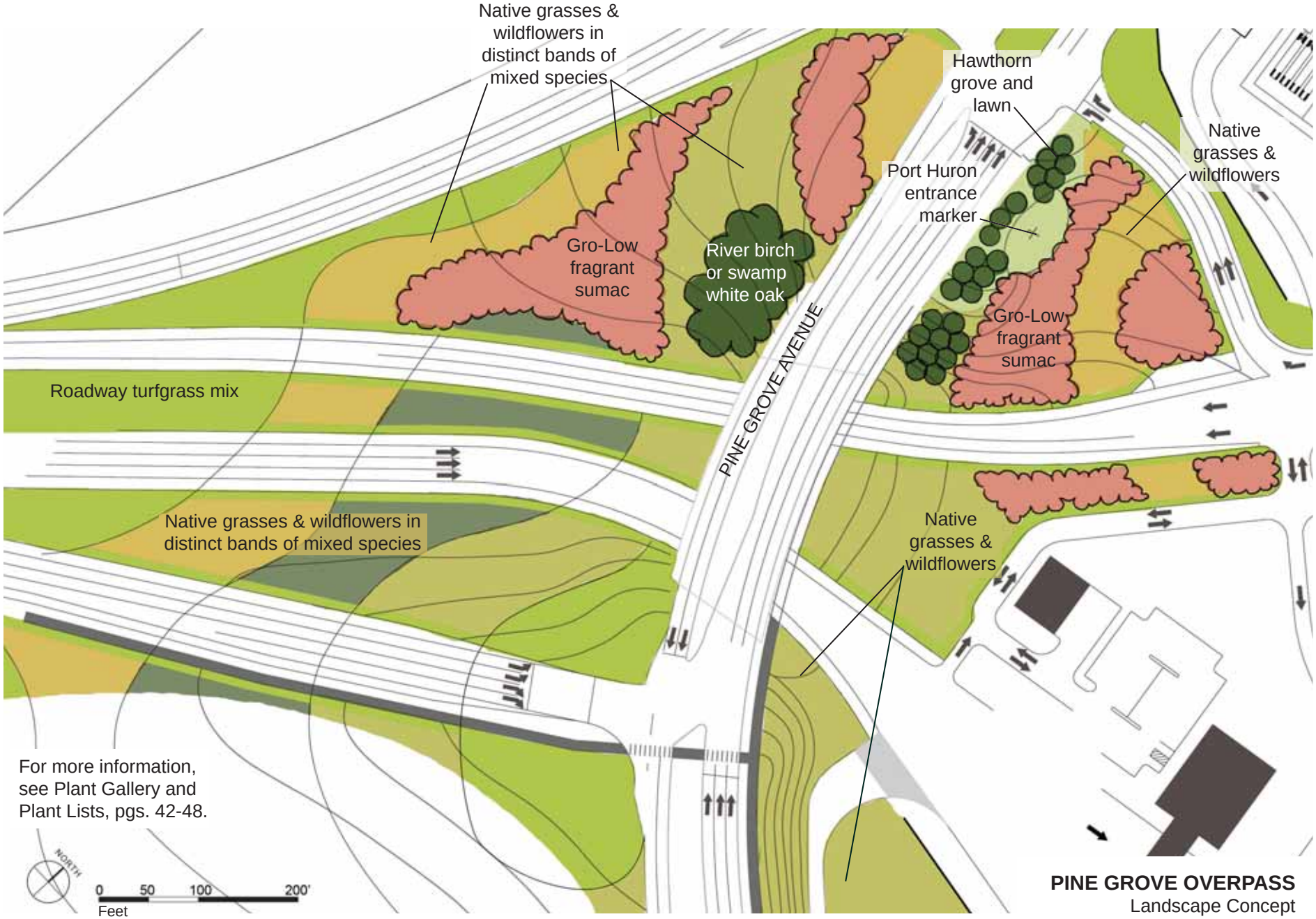
For detailed information, see pg. 62.

Bega #2841S bulk-head type lights for the Perimeter Walls

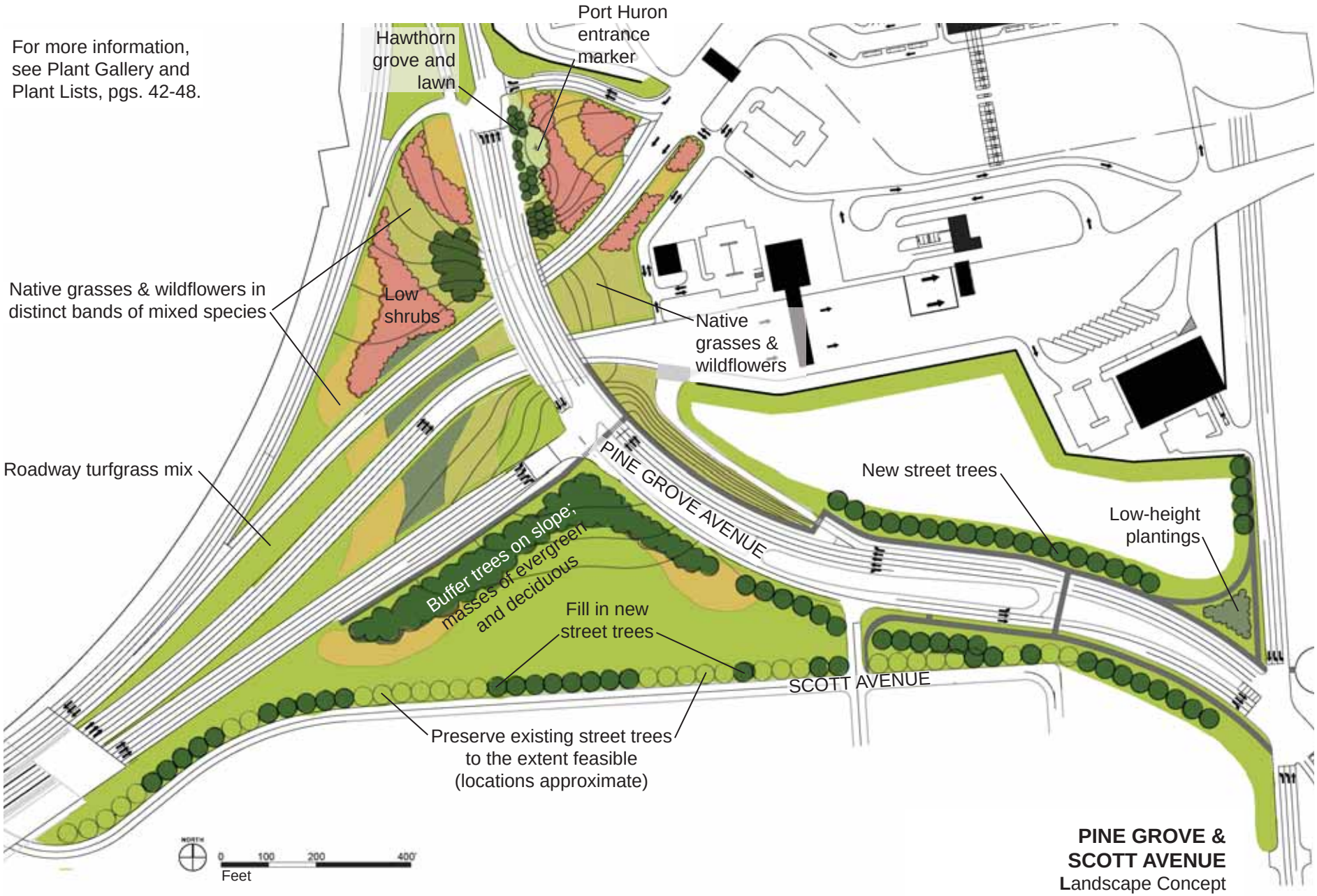
Bega #2841S
Tech Wall
Luminaire with
Poly Diffuser

120V/277V Magnetic Ballast
50 W E-17 HPS Lamp

PINE GROVE OVERPASS/ OVERALL PROJECT
Ornamental Lighting



PINE GROVE OVERPASS
Landscape Concept



PINE GROVE & SCOTT AVENUE
Landscape Concept

PLANT GALLERY

TREES
Deciduous
and Evergreen

* = native plant species

** = cultivar of native plant species


Red maple, *Acer* x *fremanii* 'Autumn Blaze'**


River birch, *Betula nigra*


Austrian pine, *Pinus nigra*


Eastern red cedar, *Juniperus virginiana**


Honeylocust, *Gleditsia triacanthos*


Black tupelo, *Nyssa sylvatica**


Swamp white oak, *Quercus bicolor**


Hawthorn, *Crataegus crus-galli**

Ohio buckeye, *Aesculus glabra*


Crabapple, *Malus* 'Prairie Fire'


Serviceberry, *Amelanchier x grandiflora* 'Autumn Brilliance'**


Littleleaf linden, *Tilia cordata* 'Greenspire'**

2-4 FEET

Blue rug juniper, *Juniperus horizontalis* 'Wiltonii'**

Fragrant sumac, *Rhus aromatica* 'Gro-Low'**

Dwarf bush honeysuckle, *Diervilla lonicera**

PLANT GALLERY

SHRUBS
Deciduous
and Evergreen

* = native plant species

** = cultivar of native plant species

4-8 FEET

Yew, *Taxus canadensis**

Michigan holly, *Ilex verticillata* (winter)*

Winged euonymous, *Euonymous alata* 'Compactus'**

Smooth sumac, *Rhus glabra**

Meadowsweet, *Spiraea alba**

Black chokeberry, *Aronia prunifolia**

Common witch hazel, *Hamamelis virginiana*

Red-twig dogwood, *Cornus sericea* 'Cardinal'**

MOIST TO DRY


Catmint, *nepeta x faasenni* 'Walkers Low'


Shrub rose, *Rosa x* 'Nearly Wild'

MOIST TO WET


Great blue lobelia, *Lobelia siphilitica**


Blue vervain, *Verbena hastata**


Woolgrass, *Scirpus cyperinus**


Boneset, *Eupatorium perfoliatum**


Black-eyed susan, *Rudbeckia fulgida*


Azure aster, *Aster oolentangiensis**


Showy goldenrod, *Solidago speciosa**


Wild bergamot, *Monarda fistulosa**


Lance-leaf coreopsis, *Coreopsis lanceolata**


Gray-headed coneflower, *Ratibida pinnata**


Rough blazingstar, *Liatris aspera**

DRY


Prairie dropseed, *Sporobolus heterolepis*


Switchgrass, *Panicum virgatum**


Little bluestem, *Schizachyrium scoparium**


Prairie brome, *Bromus kalmii**

PLANT GALLERY

WILDFLOWERS AND GRASSES

* = native plant species

PLANT LIST OF TREES — Deciduous and Evergreen

Scientific Name	Common Name	Salt Tolerance	Drought/Flooding Tolerance	Michigan Native?	Culture/Attributes
Acer x freemanii 'Autumn Blaze' and/or Acer 'Autumn Radiance'	Red maple	moderate	moderate/moderate	no	wet to dry soils, orange-red fall color
Aesculus glabra	Ohio Buckeye	very tolerant	moderate/yes	yes	pumpkin-red fall color
Amelanchier x grandiflora 'Autumn Brilliance' multi-stem form	Serviceberry	sensitive	moderate/high	no	sun/shade, dramatic blooms, burgundy/orange fall
Betula nigra	River Birch	unknown	yes/yes	no	papery, salmon-orange bark, fast growth rate
Celtis occidentalis	Hackberry	moderate	yes/no	yes	corky bark texture, tough
Crataegus crus-galli	Hawthorn	moderate	yes/moderate	yes	flowers May, dark red/purple fall
Gleditsia triacanthos 'Shademaster'	Shademaster honeylocust	tolerant	yes/moderate	species yes, cultivar no	yellow fall
Juniperus virgniana	Eastern red cedar	moderate	yes/no	yes	evergreen
Malus 'Prairie Fire'	Prairie Fire crabapple	sensitive	moderate /no	no	dry to wet soils, pink-red blooms spring
Nyssa sylvatica	Black tupelo	moderate	yes/moderate	yes	orange-red fall
Pinus nigra	Austrian pine	very tolerant	yes/no	no	evergreen
Quercus bicolor	Swamp White Oak	moderate	yes/yes	yes	wet to dry soils, yellow fall
Quercus imbricaria	Shingle Oak	moderate	yes/moderate	yes	varied reds in fall
Taxus spp.	Yew	tolerant	yes/moderate	no	evergreen
Tilia americana & Tilia cordata 'Greenspire'	Linden	sensitive	yes/yes	species, yes cultivar, no	Fragrant flowers, yellow fall

PLANT LIST OF SHRUBS — Deciduous and Evergreen

Scientific Name	Common Name	Salt Tolerance	Drought/Flooding Tolerance	Michigan Native?	Culture/Attributes
Aronia prunifolia	Black chokeberry	tolerant	moderate/high	yes	sun/part shade & wet to dry, showy fruit, orange-red fall
Cornus racemosa	Gray dogwood	sensitive	yes/high	yes	sun to shade & wet to dry
Cornus sericia 'Cardinal'	Red-twig dogwood	sensitive	yes/high	species yes, cultivar no	sun & moist/wet, red stems winter, stoloniferous
Diervilla lonicera	Dwarf Bush honeysuckle	tolerant	yes/moderate	yes	sun/part shade & wet to dry, bronze fall color
Euonymous alata 'Compactus'	Winged euonymous	very tolerant	yes/moderate	no	rosy fall color, corky branches catch snow
Hamamelis virginiana	Common Witch Hazel	sensitive	moderate/yes	yes	sun to shade & moist to wet, fragrant yellow flowers in fall
Illex verticillata	Michigan holly	sensitive	moderate/yes	yes	sun to shade & moist to wet, need male and female plants for fruiting
Juniperus horizontalis 'Wiltonii'	Blue rug juniper	sensitive	yes/no	no	sun & wet to dry
Physocarpus opulifolius	Ninebark	moderate	yes/high	yes	sun & moist/wet, not flashy, but tough
Rhus aromatica 'Gro Low'	Gro Low fragrant sumac	moderate	yes/no	no	sun & moist to dry, orange-red fall
Rhus glabra	Smooth sumac	moderate	yes/no	yes	sun & wet to dry, orange-red fall
Spiraea alba	Meadow Sweet	sensitive	yes/very tolerant	yes	sun to part shade, wet to moist soils, white flower spikes
Taxus x media	Spreading Yew	tolerant	no/moderate	no	partial sun/shade & moist/wet, evergreen
Viburnum dentatum	Arrowwood viburnum	moderate	yes/yes	no	sun to shade & moist/wet
Viburnum x burkwoodii	Burkwood viburnum	sensitive	no/no	no	sun to shade & moist/wet, pink bud, fragrant white flower
Viburnum trilobum	American cranberry-bush viburnum	sensitive	yes/yes	yes	sun to shade & moist/wet, white flower followed by berries

PLANT LIST OF WILDFLOWERS AND GRASSES that add color to seeded areas

Scientific Name	Common Name	Sun/Shade & Habitat	Michigan Native?
Aster oolentangiensis	Azure aster	sun & moist to dry	yes
Bromus kalmii	Prairie Brome	sun & moist to dry	no
Carex pennsylvanica	Sun Sedge	sun to shade & moist to dry	yes
Coreopsis lanceolata	Lance-leaf coreopsis	sun/part shade & dry	yes
Heliopsis helianthoides	Oxeye	sun/part shade & moist to dry	yes
Liatris aspera	Rough blazingstar	sun & moist to dry	yes
Monarda fistulosa	Wild Bergamot	sun/part shade & moist to dry	yes
Nepeta x faasenni ‘Walkers Low’	Catmint	sun & moist to dry	no
Panicum virgatum	Switchgrass	sun & wet to moist	yes
Ratibida pinnata	Gray-headed Coneflower	sun & moist to dry	yes
Rosa x ‘Nearly Wild’	Wild Rose	sun/part shade & moist	no
Schizachyrium scoparium	Little bluestem	sun & wet to dry	yes
Solidago speciosa	Showy Goldenrod	sun & wet to dry	yes
Sorghastrum nutans	Indian Grass	sun & wet to dry	yes
Sporobolus cryptandrus	Sand Dropseed Grass	sun & moist to dry	yes
Verbena hastata	Blue vervain	sun/part shade & wet to moist	yes

SEED MIXES — Clear Zone and Slope Plantings

Name	Description		Michigan Native?
Low-height prairie mix	Incorporating such grasses and wildflowers as sun sedge, little bluestem, Canada wild rye, sideoats grama, wild bergamot, oxeye, nepeta, rough blazingstar		yes
Stormwater mix	Incorporating such native plants as big bluestem, switchgrass, woolgrass, fringed sedge, swamp milkweed, boneset, ironweed, blue vervain		yes
Short shoulder edge mix, for mowing	Incorporating such tough, mowable grasses as slender wheatgrass, blue grama, fescues, perennial rye, alkali grass		yes

Slope planting examples

Detention ponds as amenity examples

ORIENTATION MAP

- Bridge Structures
- Pavement/Hardscape/ Ground Plane
- Landscaping

2 BLACK RIVER BRIDGE

CONSTRAINTS

- Roadway geometrics and traffic flow patterns are set.
- Longer bridge spans are required due to poor soils.
- Bridge structure type is not intended to be a landmark statement.

OPPORTUNITIES

2.1 Bridge Piers, Abutments, Retaining Walls

Develop a cohesive system of Corridor architectural elements that visually link the Corridor, Welcome Center and Plaza.

Design options include form, shape, color, pattern and surface texture.

2.2 Railings and Parapet

Incorporate decorative railings on top of the concrete parapet for separation and fall protection along the 14’ bi-directional non-motorized path.

Design options include form, shape, color and pattern.

2.3 Lighting

Employ appropriate pedestrian-scale lighting along the path.

Design options include form, style, materials and color.

DESIGN PROGRAM INFLUENCES

RAILINGS & PARAPET

CONCEPTS
Hospitable environment for pedestrians/bicyclists
Open design for railing; view through railing to river
Gentle curves
Natural or neutral colors

MATERIALS
Concrete parapet with crash-tested steel tube rail
Steel ornamental railing

FUNCTIONS
Walkway with seating/resting point/overlook
Railing with barrier protecting pedestrians/bicyclists
Lighting for safety

PEDESTRIAN LIGHTING

CONCEPTS
All down-lighting for freeway and walkway
Nautical influence
Contrast in color

MATERIALS
Glass and reflective materials

DESIGN DEVELOPMENT

BRIDGE

Open Aesthetic Barrier to separate traffic from path

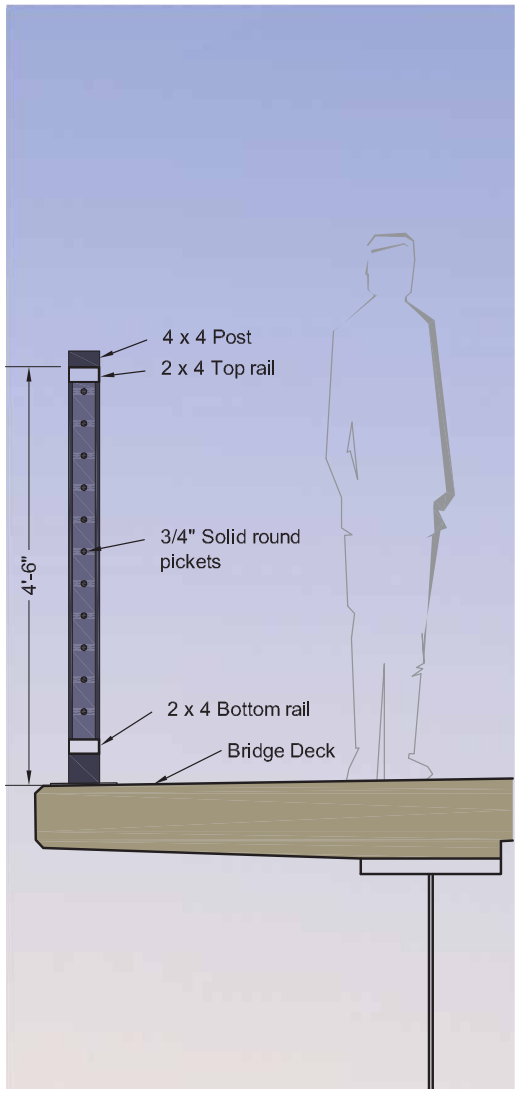
Wave Railing compliant with AASHTO requirements for bicycle railings

Two overlooks; one in vicinity of marina

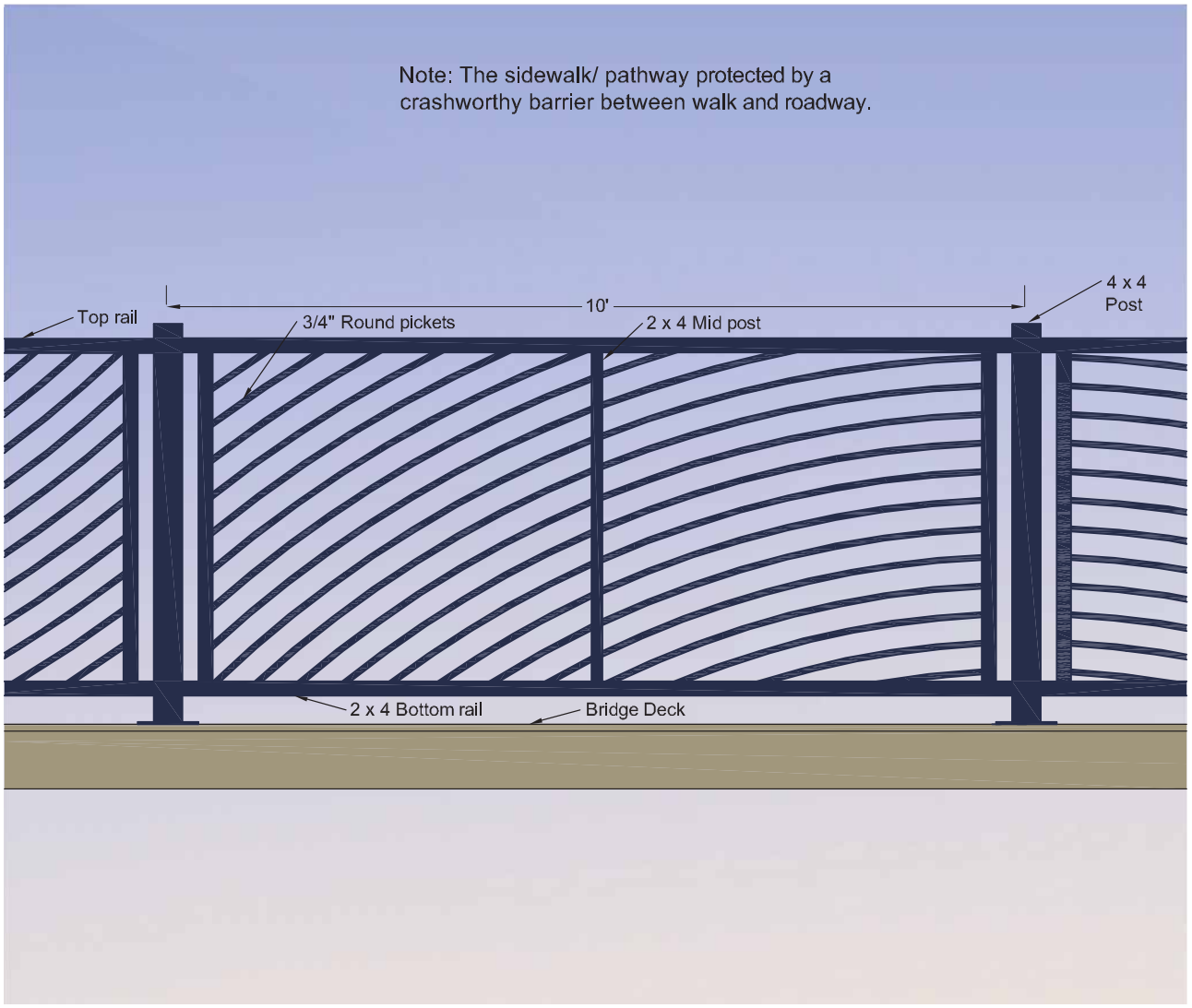
Mainline lighting

Holophane Ornamental Lights

BLACK RIVER BRIDGE PATHWAY
Perspective Sketch – Wave Railing



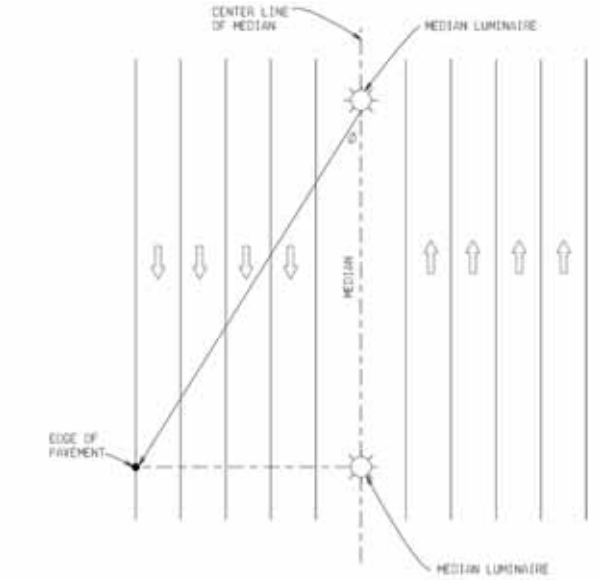
SECTION



ELEVATION

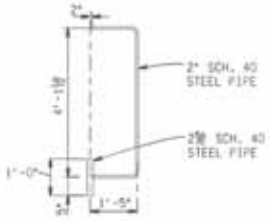
For Information on Materials and Colors, see pg. 62.

BLACK RIVER BRIDGE
Details – Wave Railing



AIMING ANGLE ø FOR 400 & 1000 WATT
PRO BEAM HIGH PRESSURE SODIUM LUMINAIRE

NOTE: ANGLE ø WILL VERY WITH SPACING OF MEDIAN LUMINAIRES AND DISTANCE OF EDGE OF PAVEMENT FROM CENTER LINE OF MEDIAN. (SEE MANUFACTUER'S INSTRUCTION)
(FOR USE WITH HOLOPHANE 400 & 1000 WATT HIGH PRESSURE SODIUM LUMINAIRE)



ARM (SHEPHERD'S CROOK) DETAIL FOR:
LIGHT STANDARD SHAFT, 30' OR LESS
& LIGHT STANDARD SHAFT, 31' TO 40'

(MOUNT SHEPHERD'S CROOK C PARALLEL TO MEDIAN BARRIER)
(FOR USE WITH HOLOPHANE 250, 400, & 1000 WATT HIGH PRESSURE SODIUM LUMINAIRE)

DETAIL FOR:
LIGHT STANDARD SHAFT, 30' OR LESS
& LIGHT STANDARD SHAFT, 31' TO 40'

(WORK THIS DETAIL WITH "LIGHT STANDARD DETAILS" SHEET LTE AND ROAD STANDARD PLAN R-50-E)

BLACK RIVER BRIDGE/MAINLINE
Freeway Lighting Fixture

3 & 4 WATER STREET & LAPEER CONNECTOR

ORIENTATION MAP

- Bridge Structures
- Pavement/Hardscape/ Ground Plane
- Landscaping

3 & 4 WATER STREET & LAPEER CONNECTOR

CONSTRAINTS

- Roadway geometrics and traffic flow patterns are set.

OPPORTUNITIES

3.1 Traffic Separation

Local traffic will be separated between the Lapeer Connector and Water Street. See Roundabouts below.

3.2 Roundabouts

Create roundabouts that aid the functional requirements of bike/pedestrian crossing and wayfinding.

Design options include form, shape, color, pattern and surface texture of landscaping, gateway monuments, signage and ground plane.

3.3 & 4.1 Bridge Structure Elements (Piers, Abutments, Wing Walls, Retaining Walls and Railings)

Integrate bridge elements that visually link the Corridor, Welcome Center and the Plaza.

Design options include form, shape, color, pattern and surface texture.

3.4 & 4.2 Corridor Landscaping

Integrate low maintenance native plant material to naturalize the right of way.

Design options include selection and massing of plant material considering species, bloom, texture, form and color.

3 & 4 WATER STREET & LAPEER CONNECTOR

DESIGN PROGRAM INFLUENCES

ROUNDABOUTS

CONCEPTS
Vary surface textures for cross-walk cues

MATERIALS
Low plantings
Scored concrete/texture

FUNCTIONS
Signage about how to use roundabout and directions for wayfinding
Bicycle connections/official routes

DESIGN DEVELOPMENT

BRIDGES

See Bridge Prototypes, pgs. 27-31 and Wave Railing, pg. 37 & 38

LANDSCAPE PLAN

Landscaping with evergreens and deciduous species; Plant Gallery and Lists on pgs. 42-48 include selections from the Low Impact Development Manual for Michigan and other MDOT guidelines

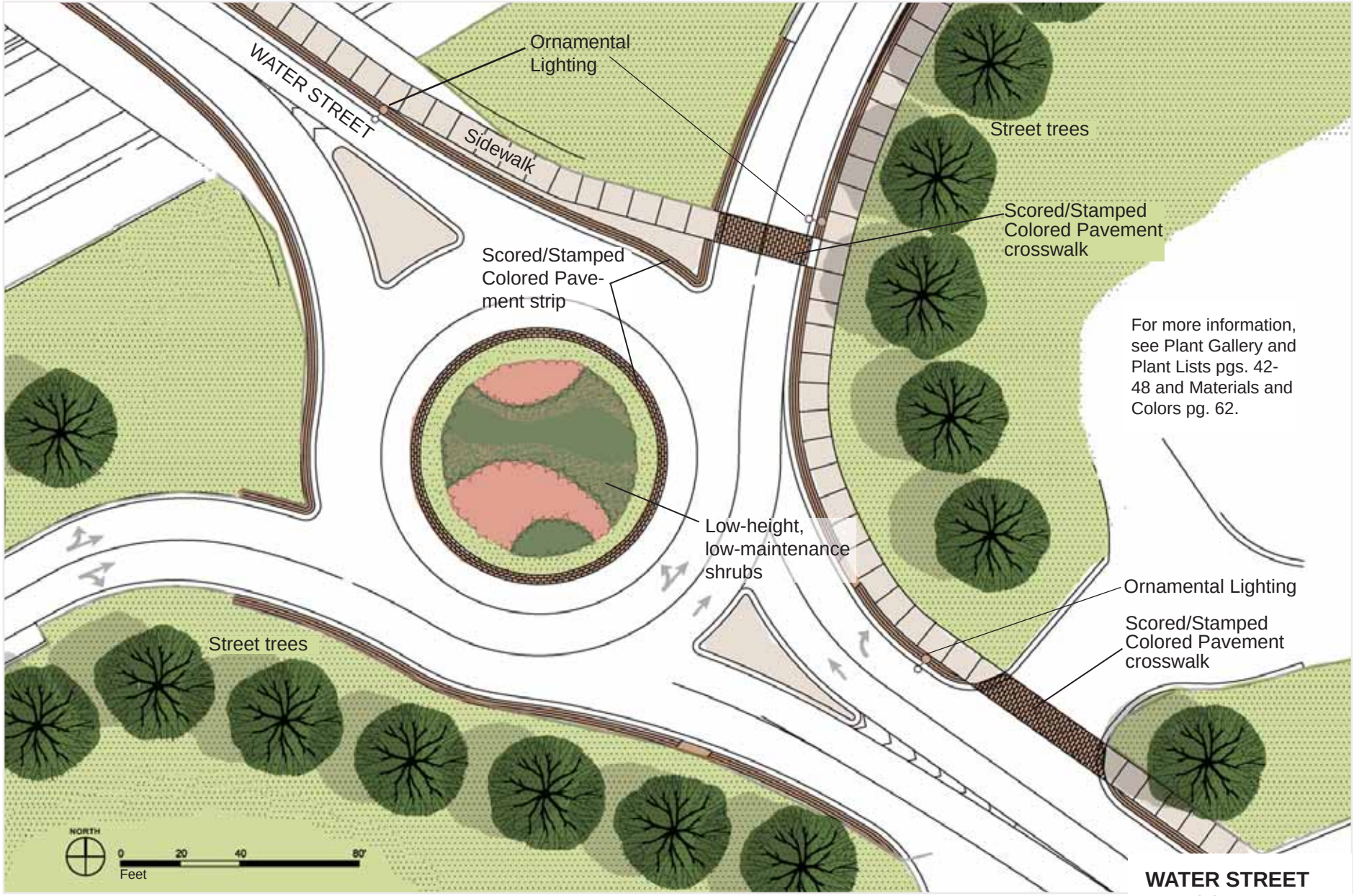
Native plants where site conditions, hydrology, maintenance and appearance allow

ROUNDABOUT

Pedestrian lighting; Holophane ornamental lights

Layout meets ADA requirements and sightlines

Please Note: If suitable ADA design cannot be achieved for intersection, traditional intersection design may be used.



WATER STREET
Roundabout Concept

CONSTRAINTS

- Roadway and deceleration/ acceleration ramp geometrics are determined.
- Footprint of car and truck parking is set.
- Right of way property acquisition limits have been determined.
- Facility will serve only west bound traffic and not have a local connector.
- The facility will meet MDOT functional service and programmatic needs.

OPPORTUNITIES

5.1 Architecture

Create a functional, welcoming and inviting facility. Architectural character of Welcome Center to fit within its regional context and complement the architecture of the corridor and the new Blue Water Plaza.

Design variables include form, massing, style, materials and color.

5.2 Building and Site Layout

Place the building to best utilize site attributes and to incorporate a pedestrian circulation pattern that maximizes the setting and lessens pedestrian/vehicle conflict points.

Design options include layout of features, form, style, materials and color.

5.3 Site Landscaping

Incorporate low-maintenance native plant material to help define architecture and naturalize berm.

Design options include selection of plants, blooming, texture, form and color.

5.4 Stormwater Management

Incorporate on-site ponding for pavement runoff.

Design variables include edge treatment, form and location of pond and the pattern, color and texture riparian plant material.

DESIGN PROGRAM INFLUENCES

SITE LAYOUT – GROUND

CONCEPTS
Water, flowing curved walkways
Organic patterning

MATERIALS
Pavers, stamped and/or colored concrete
Blue/gray colors, reflective materials

FUNCTIONS
Wayfinding

SITE LANDSCAPING & STORMWATER MANAGEMENT

CONCEPTS
Native plants especially ornamental grasses
Shrubs as buffers
Texture
Color

MATERIALS
Large stones
Birches, maples
Cattails

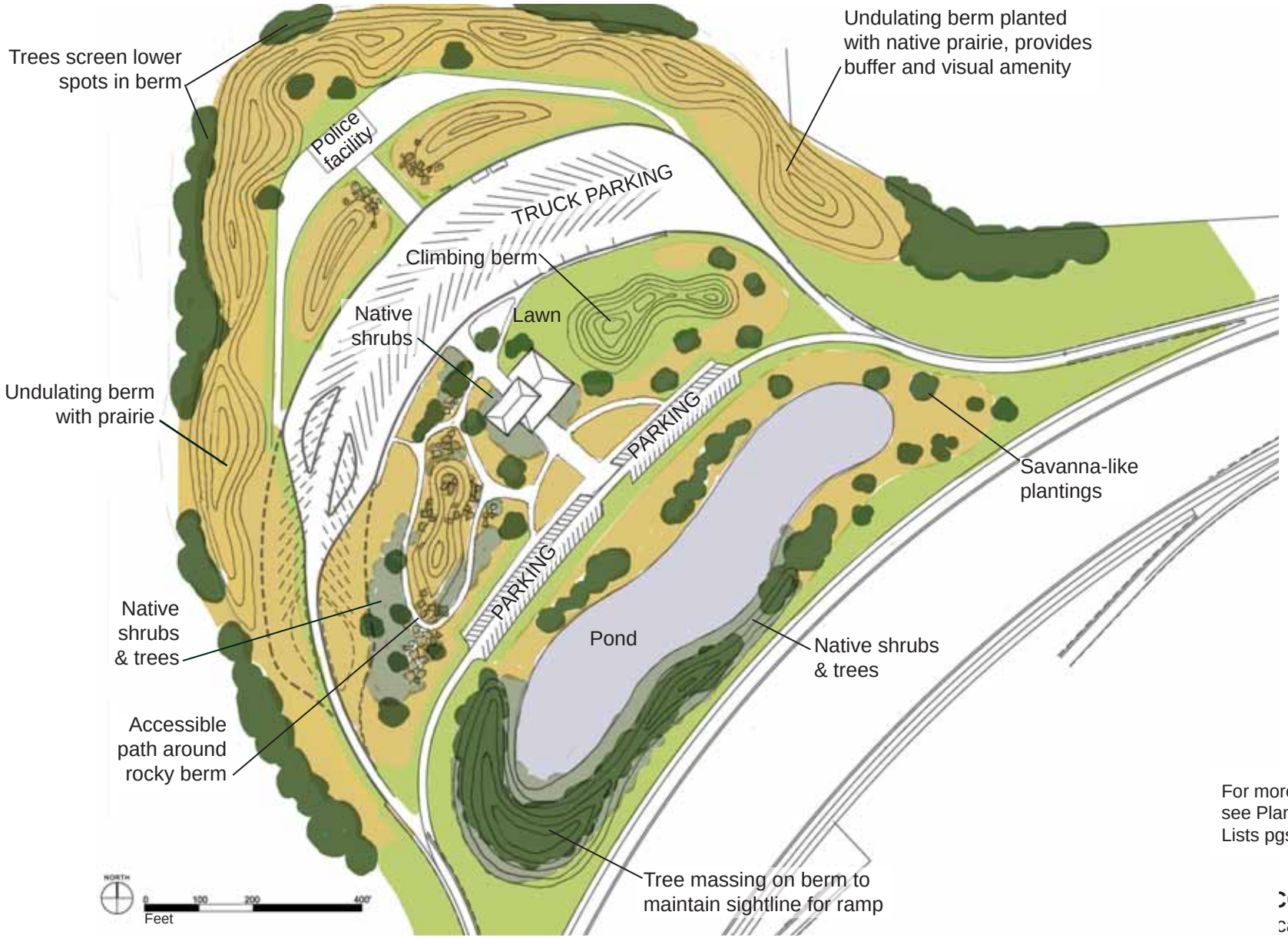
FUNCTIONS
Rain gardens
Edge treatments
Signage re: native plants for teaching

DESIGN DEVELOPMENT

LANDSCAPE PLAN

Landscaping with evergreens and deciduous species; Plant Gallery and Lists on pgs. 42-48 include selections from the Low Impact Development Manual for Michigan and other MDOT guidelines

Native plants where site conditions, hydrology, maintenance and appearance allow



For more information, see Plant Gallery and Lists pgs. 42-48.

COME CENTER
cape Concept

MATERIALS COLOR CHART & APPLICATION

Ⓐ 

METALS- ALTERNATE 1 (Dark Blue) — RAL 5013
- Ornamental Lights
- Bridge Railing

Ⓑ 

METALS- ALTERNATE 2 (Dark Brown) — RAL 8017
- Ornamental Lights
- Bulk Head & Sconce Lights
- Bridge Railing

Ⓒ 

CONCRETE & CAST STONE (Warm Grey) — WILL PROVIDE SAMPLE TO MATCH
- Bridge Piers and Caps
- Bridge Parapets and Coping
- MSE Large Stone Base and Cap
- Perimeter Major & Minor Posts, Caps, Wave Pattern Panels and Base Panels.

Ⓓ 

BRIDGE BEAM/ GIRDER (Medium Warm Grey) — FEDERAL STANDARD COLOR #30372
- Concrete
- Steel

Ⓔ 

CMU BRICK- SMALL BLOCK) (Orange Brown Blend) — WILL PROVIDE SAMPLE TO MATCH
- Middle Panel MSE Panel
- Middle Section Perimeter Walls

Ⓕ 

PAVEMENT STRIP- (Medium Brown) — WILL PROVIDE SAMPLE TO MATCH
- Scored, Stamped & Colored Concrete Band

PARTICIPANTS

Community Advisory Committee (CAG)

Joseph Conard, Neighborhood Representative

Dwayne Croff, Port Huron Chamber of Commerce

Shaun Groden, St. Clair County

Kim Harmer, City of Port Huron

William Kaufman, St. Clair County

Robert Lewandowski, Port Huron Township

Paul and Tracy Peacock, Port Huron Chamber of Commerce

James Watson, Port Huron Chamber of Commerce

Ryan Rizzo, Federal Highway Administration

James Sharp and Dana Pionke, General Services Administration

Loraine Shepley, Business and Arts Community

Art Smith, Bridge Plaza Business and Community Coalition

William Vogan, Historic District Commission

Michigan Department of Transportation (MDOT)

Lloyd Baldwin

Sheryl Holcomb

Lynn Lynwood

Paul McAllister

Brad Peterson

Mark Sweeney

Matt Webb

Consultants

HNTB Corporation

Craig Churchward

Regina Flanagan

Peter Kinney

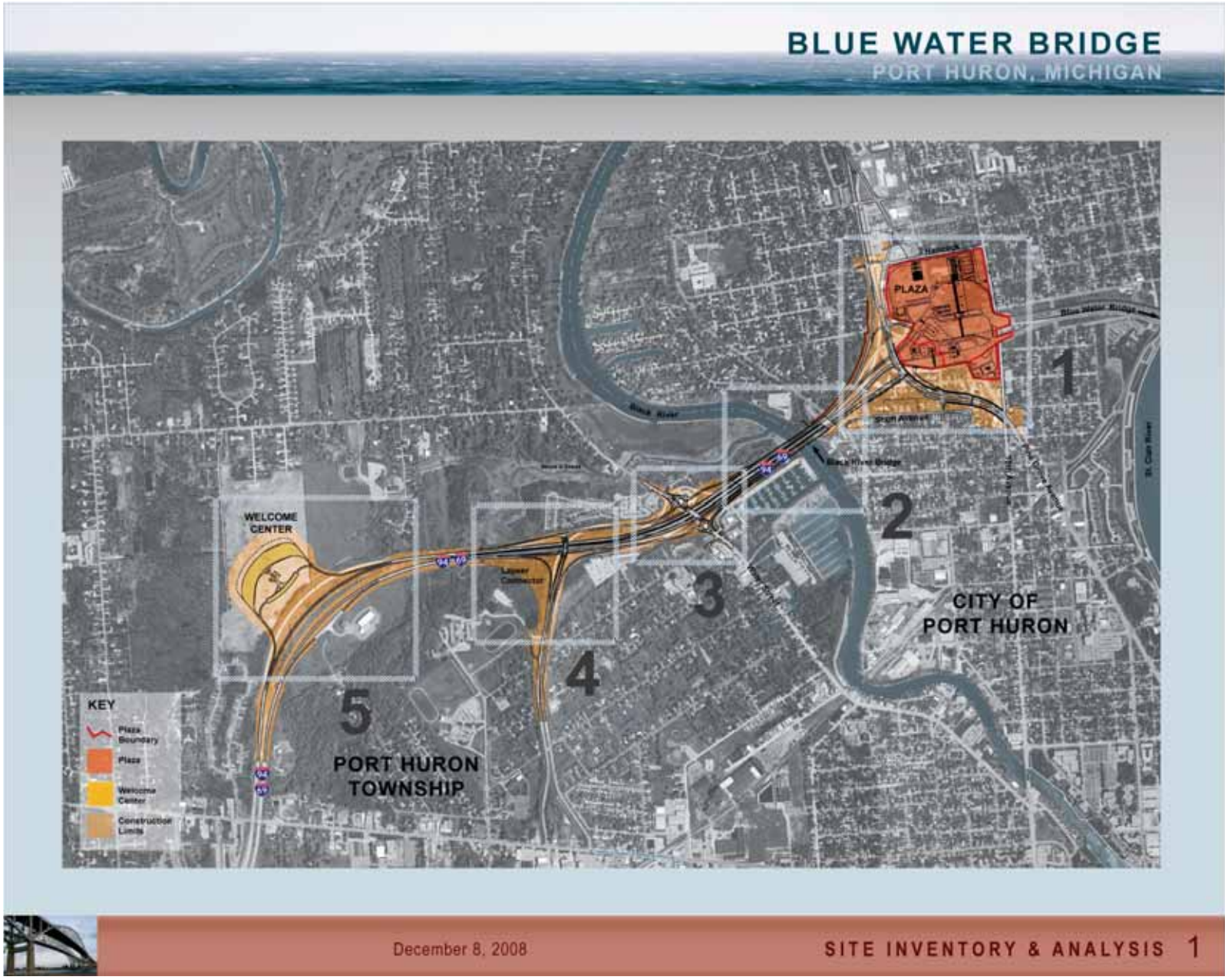
Mark Salzman

Karl Weissenborn

Wilbur Smith Associates

Todd Davis

APPENDIX


BLUE WATER BRIDGE
PORT HURON, MICHIGAN
PLAZA
WELCOME CENTER
1
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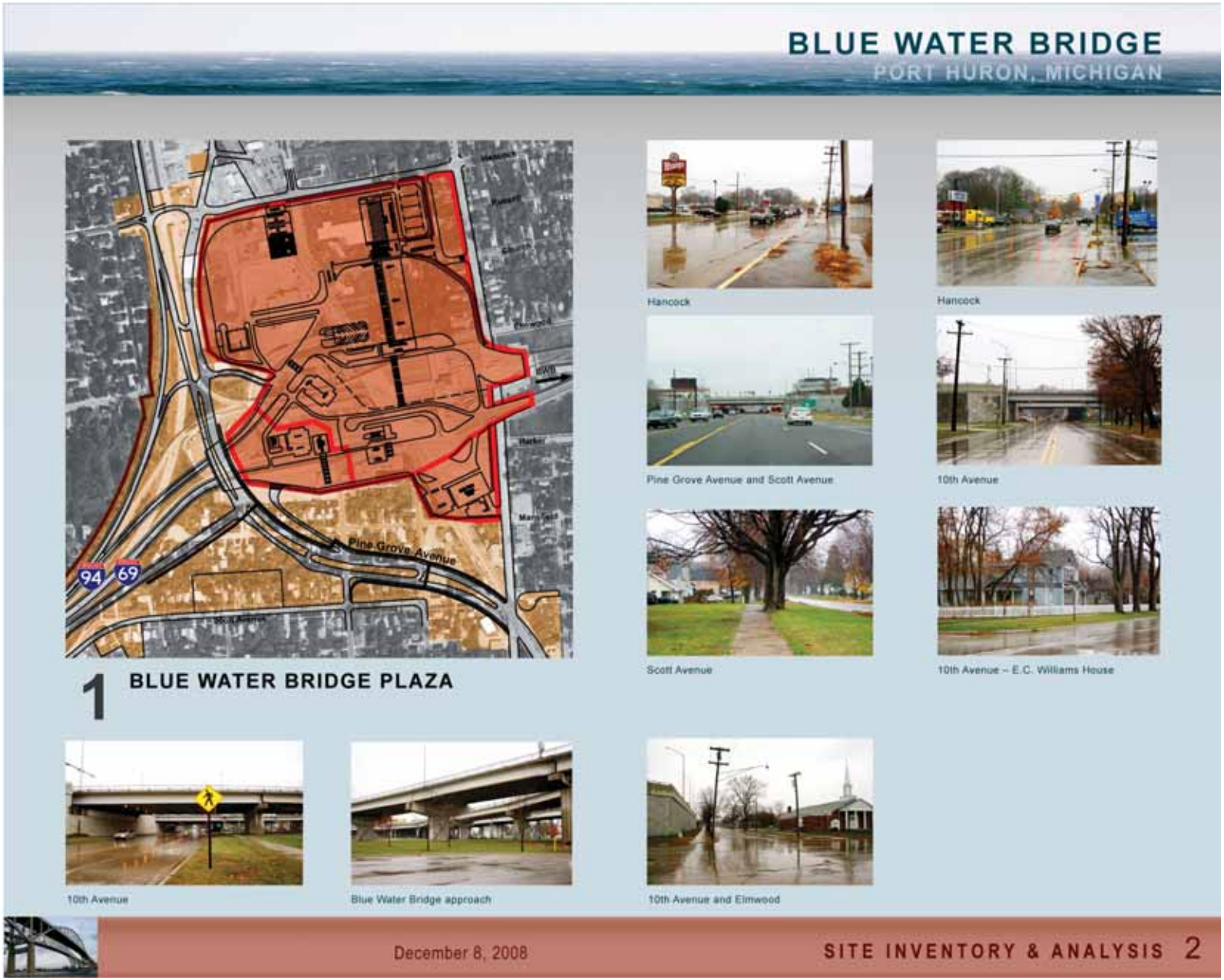
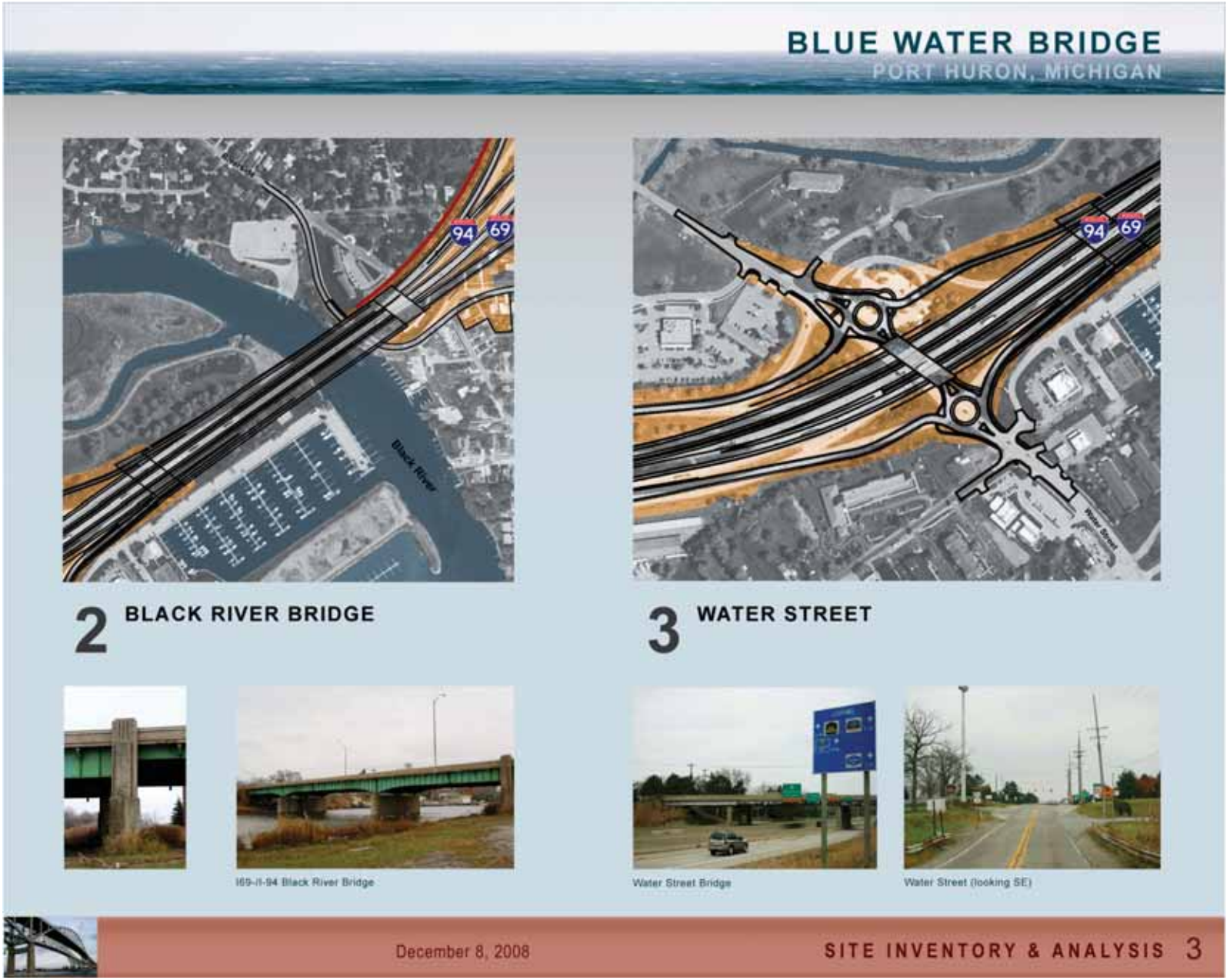
CITY OF PORT HURON
PORT HURON TOWNSHIP
KEY
Plaza Boundary
Plaza
Welcome Center
Construction Limits
December 8, 2008
SITE INVENTORY & ANALYSIS 1

APPENDIX


BLUE WATER BRIDGE
PORT HURON, MICHIGAN
Pine Grove Avenue
94
69
1 BLUE WATER BRIDGE PLAZA
Hancock
Hancock
Pine Grove Avenue and Scott Avenue
10th Avenue
Scott Avenue
10th Avenue – E.C. Williams House
10th Avenue
Blue Water Bridge approach
10th Avenue and Elmwood
December 8, 2008
SITE INVENTORY & ANALYSIS 2

APPENDIX


BLUE WATER BRIDGE
PORT HURON, MICHIGAN
94
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Black River
2 BLACK RIVER BRIDGE
I69-/I-94 Black River Bridge
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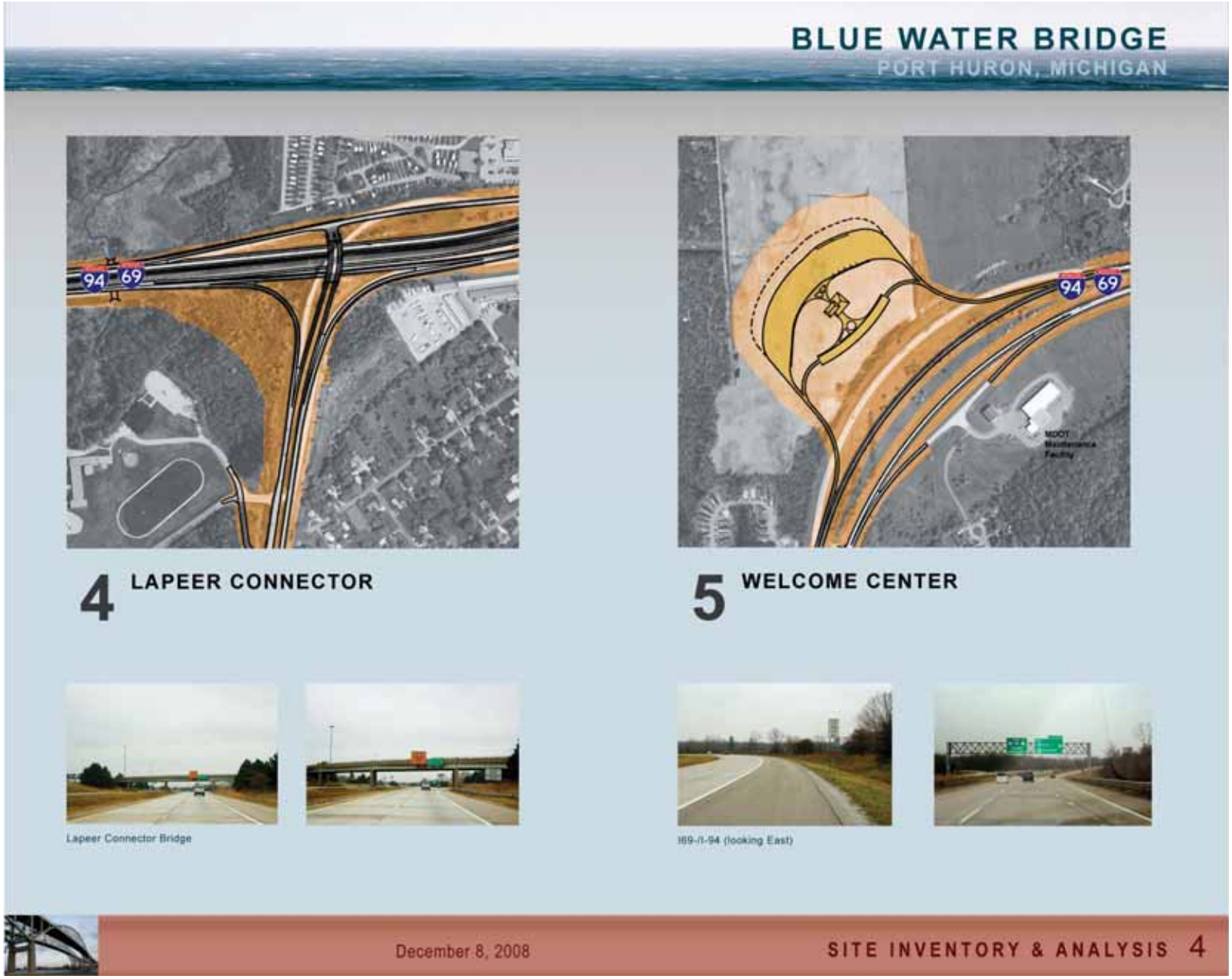
Water Street
3 WATER STREET
Water Street Bridge
Water Street (looking SE)
December 8, 2008
SITE INVENTORY & ANALYSIS 3

APPENDIX


BLUE WATER BRIDGE
PORT HURON, MICHIGAN
94
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4 LAPEER CONNECTOR
Lapeer Connector Bridge
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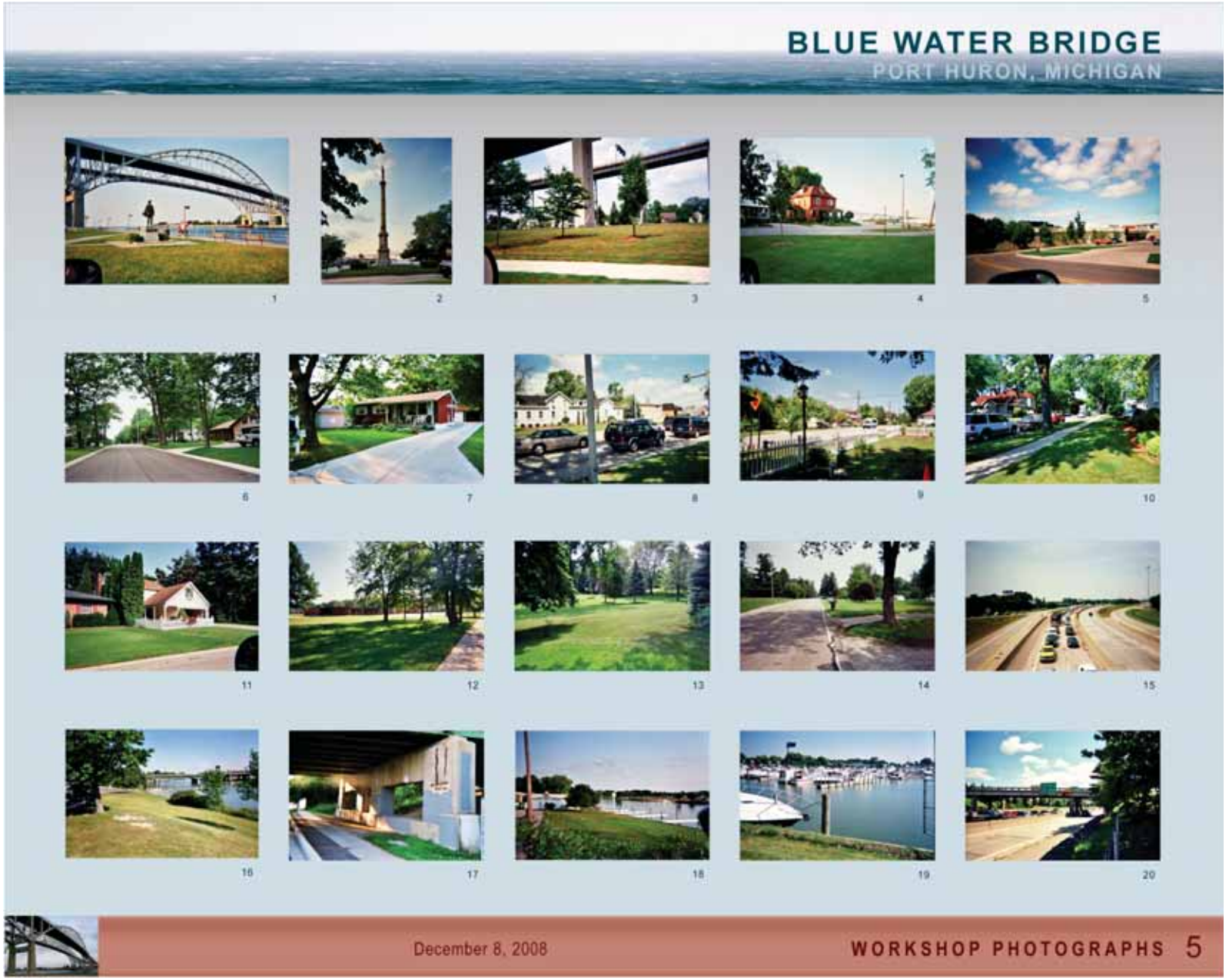
MDOT Maintenance Facility
5 WELCOME CENTER
I69-/I-94 (looking East)
December 8, 2008
SITE INVENTORY & ANALYSIS 4

APPENDIX


BLUE WATER BRIDGE
PORT HURON, MICHIGAN
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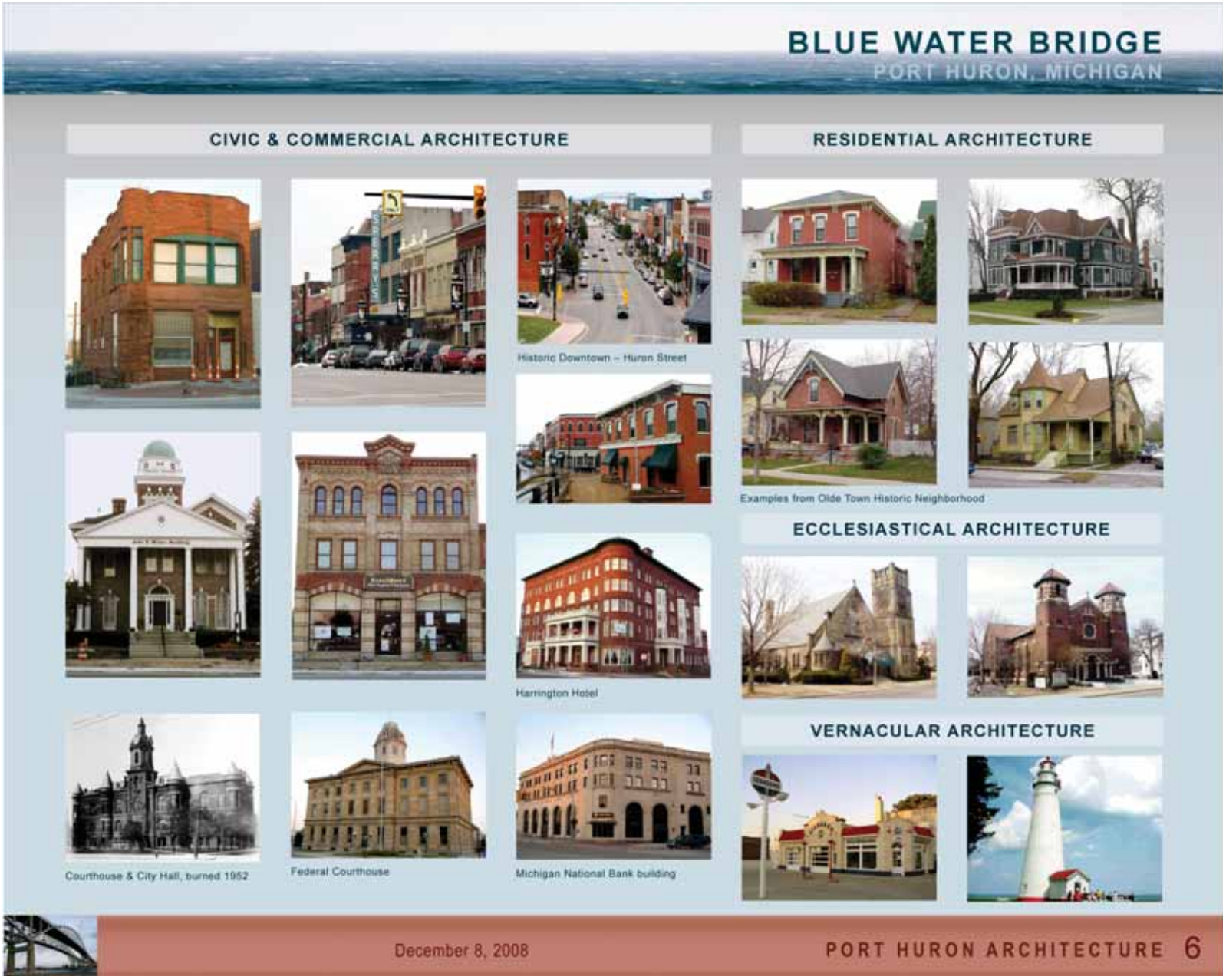
December 8, 2008
WORKSHOP PHOTOGRAPHS 5

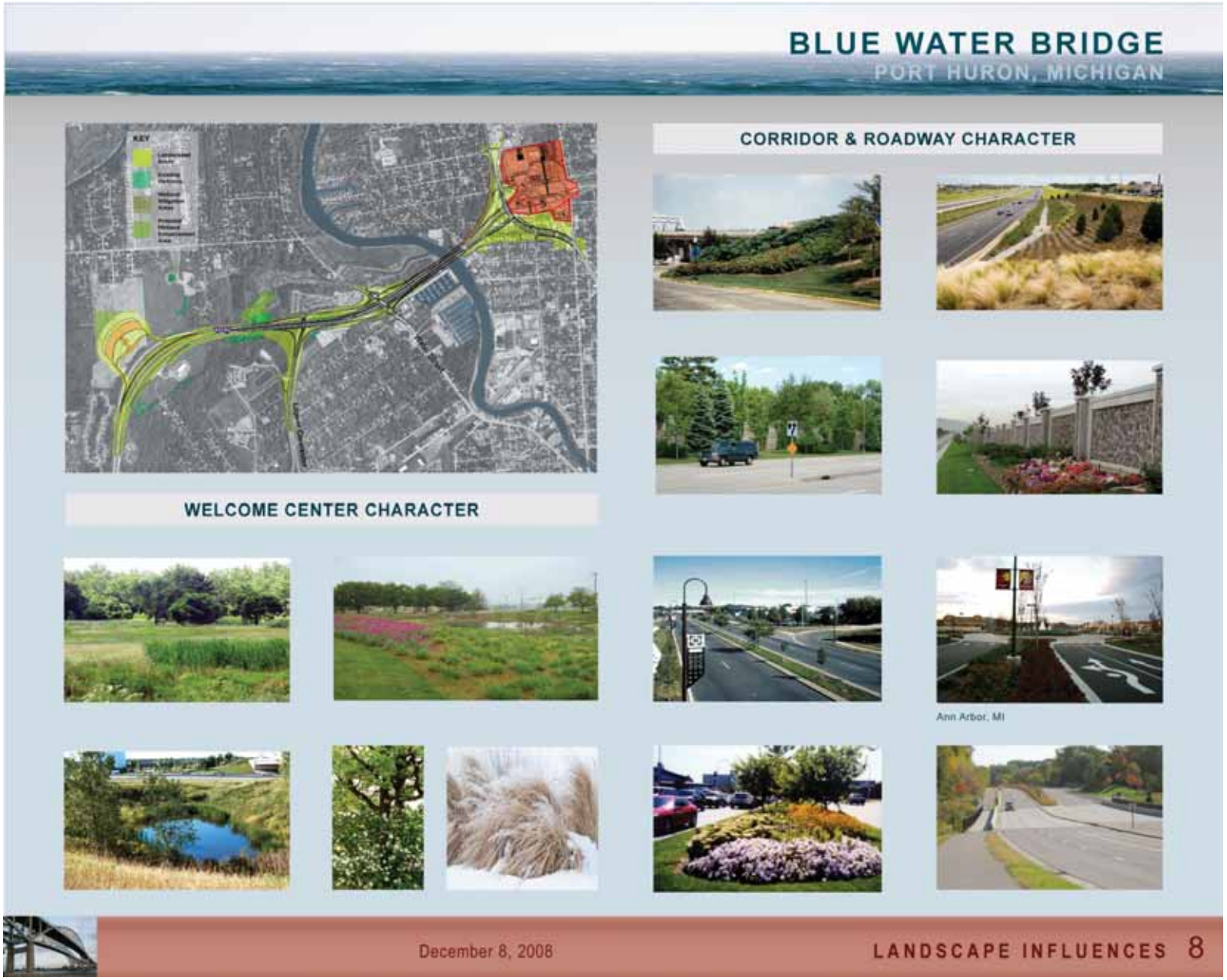
APPENDIX


BLUE WATER BRIDGE
PORT HURON, MICHIGAN
CIVIC & COMMERCIAL ARCHITECTURE
RESIDENTIAL ARCHITECTURE
Historic Downtown – Huron Street
Examples from Olde Town Historic Neighborhood
ECCLESIASTICAL ARCHITECTURE
Harrington Hotel
VERNACULAR ARCHITECTURE
Courthouse & City Hall, burned 1952
Federal Courthouse
Michigan National Bank building
December 8, 2008
PORT HURON ARCHITECTURE 6

APPENDIX


BLUE WATER BRIDGE
PORT HURON, MICHIGAN
PLAZA CHARACTER
WELCOME CENTER CHARACTER
Millau Viaduct Toll Gate, France
Millau Viaduct Toll Gate, France
Amarillo (TX) Travel Info Center
Pellston (MI) Airport
Johns Hopkins Campus
Transit Hub with tensile fabric roof
Blue Water Bridge Detail
Herman Miller Yard, Zeeland, MI
American Civil War Center, Tredegar
ROADWAY CHARACTER
Blue Water Bridge Detail
Eprunes Tollgate, Melun, France
Eprunes Tollgate, Melun, France
Grand Rapids, MI
BRIDGE CHARACTER
Blue Water Bridge
Blue Water Bridge Detail
December 8, 2008
ARCHITECTURAL INFLUENCES 7

APPENDIX


BLUE WATER BRIDGE
PORT HURON, MICHIGAN
KEY
CORRIDOR & ROADWAY CHARACTER
WELCOME CENTER CHARACTER
Ann Arbor, MI
December 8, 2008
LANDSCAPE INFLUENCES 8

APPENDIX

BLUE WATER BRIDGE
PORT HURON, MICHIGAN

1 BLUE WATER BRIDGE PLAZA

KEY TO OPPORTUNITIES

- Architecture
- Perimeter Fencing/Wall
- Bridge Structures
- Pavement/Hardscape/ Ground Plane
- Landscaping
- Construction Staging/ Stormwater Area

BLUE WATER BRIDGE PLAZA AND LAYOUT

Constraints

- Roadway geometrics and traffic flow patterns are set.
- Plaza layout, structure and building footprints are set.
- Right of way property acquisition limits have been determined.
- Plaza must be elevated at approach spans over 10th Avenue.
- No screening vegetation is allowed against perimeter fencing/walls.
- Sightlines must be kept open within the secure perimeter – no tall vegetation is allowed.
- Perimeter fencing/walls must not be scalable.
- All CBP building and site operational and security requirements (sightlines, setbacks, heights, etc.), must be maintained.

Opportunities

1.1 Perimeter Fencing/Wall

Provide a non-scaleable secure and durable perimeter fence or wall that is pleasing and neighborhood-appropriate.

Design options include materials, surface, pattern, finish and color.

1.2 Boulevard Landscaping

Retain existing street trees on edges. Infill trees behind curbs where feasible and necessary.

1.3 Perimeter Landscaping

Use low native plantings to soften edge of perimeter fencing/walls.

Design options include selection of plant materials considering bloom, texture, form and color.

1.4 Pine Grove Overpass

Craft a portal to frame traveler's views, creating a visual gateway.

Design options include bridge structure elements, lighting, surface treatment, texture, color and pattern.

1.5 Artwork and Iconography

Create a setting for artistic and historical expressions.

Design options include sculptural gateway monuments and integrated artwork such as tile or reliefs on surfaces and facades, or as part of structures.
(Note: this opportunity is also potentially available through the GSA's Art in Architecture program.)

1.6 Local Entrance/Local Exit

Create a physical access point that visually fits within the surrounding neighborhood context.

Design options include landscaping, lighting, entrance signage, and pedestrian features.

Opportunities Contingent upon GSA/CBP Design Process

1.7 Pavement/Hardscape/ Ground Plane

Incorporate various surface treatments for marking and delineating driving surfaces, parking stalls and lanes.

Design options include material, form, color, texture and pattern.

1.8 Stormwater Management

Employ innovative infiltration systems and/or permeable pavement surfaces where feasible for water discharge south of the plaza.

Design variables include paving materials, scoring patterns, color and texture.

1.9 Signage Structures

Create context appropriate signage structures integrated with the site to complement architecture and simplify driver's wayfinding experience.

Design options include materials, form, style, finish and color.

1.10 Building Architecture

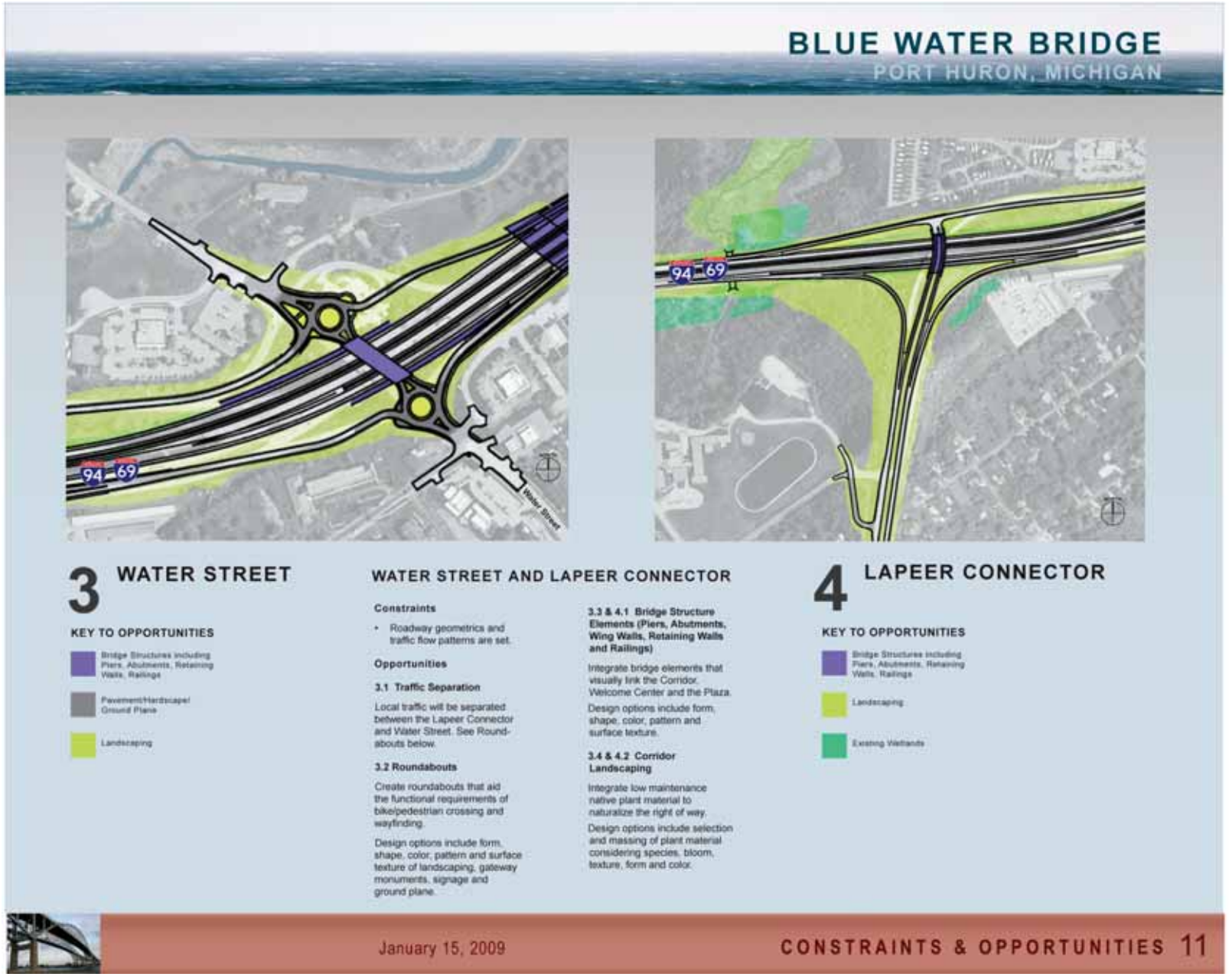
Create attractive and inviting structures that combine function with appropriate scale and design vocabulary.

Design variables include massing, form,style, materials and color.

APPENDIX


BLUE WATER BRIDGE
PORT HURON, MICHIGAN
Riverside
Black River
94
69
2 BLACK RIVER BRIDGE
KEY TO OPPORTUNITIES
Bridge Structures including Piers, Abutments, Retaining Walls, Railings
Landscaping
BLACK RIVER BRIDGE
Constraints
• Roadway geometrics and traffic flow patterns are set.
• Longer bridge spans are required due to poor soils.
• Bridge structure type is not intended to be a landmark statement.
Opportunities
2.1 Bridge Piers, Abutments, Retaining Walls
Develop a cohesive system of Corridor architectural elements that visually link the Corridor, Welcome Center and Plaza.
Design options include form, shape, color, pattern and surface texture.
2.2 Railings and Parapet
Incorporate decorative railings on top of the concrete parapet for separation and fall protection along the 14' bi-directional non-motorized path.
Design options include form, shape, color and pattern.
2.3 Lighting
Employ appropriate pedestrian-scale lighting along the path.
Design options include form, style, materials and color.
January 15, 2009
CONSTRAINTS & OPPORTUNITIES 10

APPENDIX


BLUE WATER BRIDGE
PORT HURON, MICHIGAN
94
69
Water Street
94
69
3 WATER STREET
KEY TO OPPORTUNITIES
Bridge Structures including Piers, Abutments, Retaining Walls, Railings
Pavement/Hardscape/ Ground Plane
Landscaping
WATER STREET AND LAPEER CONNECTOR
Constraints
• Roadway geometrics and traffic flow patterns are set.
Opportunities
3.1 Traffic Separation
Local traffic will be separated between the Lapeer Connector and Water Street. See Round-abouts below.
3.2 Roundabouts
Create roundabouts that aid the functional requirements of bike/pedestrian crossing and wayfinding.
Design options include form, shape, color, pattern and surface texture of landscaping, gateway monuments, signage and ground plane.
3.3 & 4.1 Bridge Structure Elements (Piers, Abutments, Wing Walls, Retaining Walls and Railings)
Integrate bridge elements that visually link the Corridor, Welcome Center and the Plaza.
Design options include form, shape, color, pattern and surface texture.
3.4 & 4.2 Corridor Landscaping
Integrate low maintenance native plant material to naturalize the right of way.
Design options include selection and massing of plant material considering species, bloom, texture, form and color.
4 LAPEER CONNECTOR
KEY TO OPPORTUNITIES
Bridge Structures including Piers, Abutments, Retaining Walls, Railings
Landscaping
Existing Wetlands
January 15, 2009
CONSTRAINTS & OPPORTUNITIES 11

APPENDIX


BLUE WATER BRIDGE
PORT HURON, MICHIGAN
State Police Inspection Facility
94
69
MDOT Maintenance Facility
WELCOME CENTER
Constraints
• Roadway and deceleration/acceleration ramp geometrics are determined.
• Footprint of car and truck parking is set.
• Right of way property acquisition limits have been determined.
• Facility will serve only west bound traffic and not have a local connector.
• The facility will meet MDOT functional service and programmatic needs.
Opportunities
5.1 Architecture
Create a functional, welcoming and inviting facility. Architectural character of Welcome Center to fit within its regional context and complement the architecture of the corridor and the new Blue Water Plaza.
Design variables include form, massing, style, materials and color.
5.2 Building and Site Layout
Place the building to best utilize site attributes and to incorporate a pedestrian circulation pattern that maximizes the setting and lessens pedestrian/vehicle conflict points.
Design options include layout of features, form, style, materials and color.
5.3 Site Landscaping
Incorporate low-maintenance native plant material to help define architecture and naturalize berm.
Design options include selection of plants, blooming, texture, form and color.
5.4 Stormwater Management
Incorporate on-site ponding for pavement runoff.
Design variables include edge treatment, form and location of pond and the pattern, color and texture riparian plant material.
5 WELCOME CENTER
KEY TO OPPORTUNITIES
Architecture
Existing Wetlands
Pavement/Hardscape/ Ground Plane
Wetland Mitigation Area
Landscaping
Detention Pond
January 15, 2009
CONSTRAINTS & OPPORTUNITIES 12

APPENDIX