APPENDIX A

Comprehensive Conditions Assessment

part of the East Riverfront Asset Study

Note:
Report was produced prior to paver replacement at Hart Plaza.

Report Date: September 13, 2021

City of Detroit
Parks and Recreation Division
General Services Department
2022

EAST RIVERFRONT ASSET STUDY

CONDITION ASSESSMENT & SEAWALL SHORELINE INVESTIGATION DETROIT, MICHIGAN

MSG JOB NO. R2690008

APRIL 19, 2021

REVISED SEPTEMBER 13, 2021

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EAST RIVERFRONT ASSET STUDY

CONDITION ASSESSMENT & SEAWALL SHORELINE INVESTIGATION DETROIT, MICHIGAN

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SEPTEMBER 13, 2021

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1.0 INTRODUCTION

1.1 General Project Information

This Conditional Assessment Report for the East Riverfront Asset Study by The Mannik & Smith Group, Inc., (MSG) provides an extensive, yet conceptual, evaluation for the structural, civil electrical and mechanical components of Hart Plaza, Erma Henderson Marina, Riverside Marina, and the St. Jean Boat Launch. The site infrastructure professional services include: review and study existing records, perform onsite visual/high-level inspections and develop reports that document: site conditions, relative deterioration of defined infrastructure areas with priorities for improvements, programmed maintenance recommendations, and projected useful remaining life of site infrastructure elements. Our site visit documentation includes photos and video. We have a wide range of findings between all areas evaluated, ranging from a new basketball court at Erma Henderson Park, to the severely-damaged stone pavers in Hart Plaza.

The seven site locations are illustrated in the "Site Location Maps" in Appendix A.

2.0 BACKGROUND AND HISTORICAL RESEARCH

2.1 Background

Of the seven sites evaluated in this study, Hart Plaza is the only site that has been recognized for its potential historical significance, in terms of meeting local and/or federal designation requirements.

2.2 Historical Research Hart Plaza

Hart Plaza was designed by internationally renowned modernist artist Isamu Noguchi between 1972 and 1974. Hart Plaza is locally significant as the culmination of a 'decades-long effort' to establish a civic center at the foot of Woodward Avenue where it meets the Detroit River. It is also nationally significant as the first of only four public spaces designed by Isamu Noguchi. Noguchi was at first commissioned only to create the centerpiece Dodge Fountain, but he ultimately designed the entire plaza, "*creating an interplay of positive and negative spaces that blend monumental sculptures, diagonal axes, and playful forms that balance each other across wide expanses, all focused on the centerpiece fountain*."[1] Smith, Hinchman, and Grylls were the architects of record.

In 2018, a National Register nomination was prepared for Hart Plaza by Ruth Mills and Gregory DeVries of Quinn Evans Architects.[2] The nomination was prepared under a Certified Local Government (CLG) grant from the Michigan State Historic Preservation Office (SHPO) and was administered through the Historic District Advisory Board (HDAB). The nomination was submitted by HDAB to the Michigan State Historic Preservation Office (SHPO). We understand that the SHPO provided comment on the nomination, and that revisions may have been requested, but that the nomination has not yet been submitted for formal consideration by the State Historic Preservation Review Board.

The draft nomination identifies Hart Plaza as eligible for listing in the National Register of Historic Places (NRHP) as a cultural landscape; a complex collection of building, structures, and objects that are contained within one historic site. Since the time of its original construction, the plaza has experienced numerous repairs, additions, and alterations. Those that fall outside the Plaza's construction period (1974-79) are considered non-contributing elements (according to National Register standards), as they do not reflect Noguchi's original design intent.
The surface features diagram in the NRHP nomination (Appendix G, Page 66) shows the limits of the proposed National Register site, identifies the various features (including monuments, sculptures, and commemorative

[1]Ruth E. Mills and Gregory W. DeVries, "Philip A. Hart Plaza (Civic Center Plaza)," National Register of Historic Places Nomination Form (Washington, DC: U.S. Department of the Interior, National Park Service, Draft), Section 7.
[2]The draft nomination is currently under review by the National Park Service.

markers) of the plaza and sub-plaza, and classifies those features as contributing or non-contributing elements. Not shown on the maps are areas where historic paving material (granite pavers, precast hexagonal concrete pavers, and limestone curbs) or trees (flowering crabapple, Norway maple, honey locust, and Austrian pine) have been removed or replaced.

2.3 Preservation Treatment Strategies, General

The Secretary of Interior's Standards are the professional guidelines that are recommended for the treatment of historic resources. They are also the basis for Detroit's historic ordinance, which is administered through the Historic District Commission (HDC). The Standards emphasize treatments that are historically appropriate, architecturally compatible, and do least damage to original fabric. Following these standards will generally ensure that the integrity of a historic resource – in terms of its location, design, setting, materials, workmanship, feeling, and association – is protected.

At Hart Plaza, the sculptures, buildings, and spatial/natural features are all critical components of this unique designed landscape that should be treated sensitively, so that the park retains sufficient integrity to meet the National Register criteria. It should be noted that the issuance of any federal permits, licenses or funding for improvements at Hart Plaza may require that the project comply with the Standards, under a process that is administered through the SHPO.

The NRHP nomination uses a cultural landscape methodology to document and evaluate the historic resources that characterize the site. The following recommendations are thus taken directly from *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (Washington DC: U.S. Department of the interior, National Park Service, 1996). The recommendations below focus on the major organizing features of the site that were identified in the nomination, focusing on preservation and rehabilitation strategies that will retain the overall historic integrity of the site, so that its NR eligibility will not be compromised. The treatment strategies are also presented graphically in Appendix G of this report, for ease of reference.

Natural systems and features.

The topography of the park is represented by three constructed terraces: the upper terrace along Jefferson Avenue, the middle terrace at the central plaza, and the lower terrace along the river.

Recommendation: Stabilize and protect the topography in a manner that is appropriate to the character of the landform. Maintain historic topography by use of non-destructive methods and daily, seasonal, and cyclical tasks. Repair declining topographic features or replace/install drainage systems through appropriate excavation or regrading that is compatible with the shape, slop, elevation, and contour of the topography.

Spatial organization.

The park consists of five spatial divisions: upper plaza, plaza transition, central plaza, sub plaza, and riverbank. Each division consists of areas and features that are self-contained but carefully arranged to emphasize their relationship to other features and spaces. The Transcending, Cadillac, and Gateway to Freedom installations are non-contributing elements that affect the integrity of the site.

Recommendation: The spatial organization should be retained. Changes to the site should not alter the size, configuration, proportion, and relationship of the spatial divisions. Designing and installing new features should respect, and be compatible with, the historic spatial organization. Remove non-significant features that detract from or have altered the spatial organization.

Circulation.

Within the park, circulation serves vehicular, pedestrian, bicycle and riverine movement. Paving materials vary by purpose and location. Historic paving materials are important defining features, but their condition is generally poor (except in the plaza transition area). The historic paving materials vary by size, finish, and texture, but fall within a somewhat limited color palette. There are large areas of non-historic paving material throughout the park.

Recommendation: Repair historic surface treatments, materials and edges where feasible, or replace in kind when features/materials are too deteriorated or damaged to be repaired. New material (or a compatible substitute material) should match the old in composition, design, size, color, and texture. New circulation features should be visually compatible – in terms of alignment, surface treatment, width, edge treatment, grade, materials, or infrastructure – and the design should be compatible with the historic character of the landscape.

Vegetation.

The original landscape design of Hart Plaza consisted of large canopy trees surrounding a hardscaped plaza with flowering crabapples near the center and evergreen trees on the east and west edges. Within that structure, many trees have been removed, and [re]plantings do not conform to the historic design.

Recommendation: Inventory existing vegetation to distinguish original plantings from replacements, and evaluate the condition and age of vegetation. Develop a landscape plan to establish a replanting schedule that is consistent with the original intended plan and addresses succession plantings and maintenance realities. Infill with new plant material that is the same or compatible with the historic vegetation and maintains the historic character of the landscape.

Views and vistas.

The site is characterized by numerous expansive and controlled vistas – to and from the plaza – that are predicated on upright, individual landscape features.

Recommendations: Retain the historic relationships between the landscape and its buildings, structures, furnishings and objects.

Buildings and structures.

Buildings and structures (not intended for human occupation) are located at both surface and subsurface levels. Contributing buildings include the fountain control building and the Ford Auditorium underground parking structure. Contributing underground structures include the sub plaza, which is comprised of a series of spaces and rooms; most interior spaces in the sub plaza are in poor condition. Above-ground contributing structures include the pyramid amphitheater, retaining walls of varying height and color, some with integrated benches, planters, and railings, also serving to define and transition between plaza levels.

Recommendations: Retain the historic relationships between the landscape and its buildings, structures, furnishings and objects. Repair features and materials of structures, furnishings, and objects by reinforcing historic materials. New materials should match the old in composition, design, color, and texture, and new design should be compatible with the historic character of the landscape.

Small-scale features.

Mostly utilitarian features, these include lights, upright poles, bollards, planters, trash receptacles, benches, rails, and interpretive elements (plaques and signs).

Recommendations: The small-scale features are not historic and are not part of the original plaza design.

Sculptures and constructed water features.

Five contributing elements that are part of the original design include: the Pylon; the Horace E. Dodge and Son Memorial Fountain; the circular granite depression west of the Dodge Fountain; the cubist water sculpture north of the Dodge Fountain, and; the spiral seating sculpture south of the Dodge Fountain. Four non-contributing sculptures that are not part of the original historic design include: the Abraham Lincoln bust (installed 1986); Transcending, the Michigan labor Legacy Landmark (installed 2003); Antoine de la Mothe Cadillac statue (installed 2001); Gateway to Freedom International Memorial to the Underground Railroad (installed 2001).

Recommendations: Maintain the water feature's mechanical, plumbing, and electrical systems to ensure appropriate depth of water or direction of flow. Repair water features by reinforcing materials or augmenting mechanical systems, or replace in-kind (to match the composition, design, color, and texture of original material).

Table 1.1 HART PLAZA - HISTORICAL PRESERVATION OBSERVATIONS

HART PLAZA RECOMMENDED PRESERVATION TREATMENT STRATEGIES		
Feature	**Description**	**Recommendation**
Natural systems and features	The topography of the park is represented by three constructed terraces: the upper terrace along Jefferson Avenue, the middle terrace at the central plaza, and the lower terrace along the river.	Stabilize and protect topography in a manner that is appropriate to the character of the landform. Maintain historic topography by use of non-destructive methods and daily, seasonal, and cyclical tasks. Repair declining topographic features or replace/install drainage systems through appropriate excavation or regrading that is compatible with the shape, slope, elevation and contour of the topography.
Spatial organization	The park consists of five spatial divisions: upper plaza, plaza transition, central plaza, sub plaza, and riverbank. Each division consists of areas and features that are self-contained but carefully arranged to emphasize their relationship to other features and spaces. The Transcending, Cadillac, and Gateway to Freedom installations are non-contributing elements that affect the integrity of the site.	The spatial organization should be retained. Changes to the site should not alter the size, configuration, proportion and relationship of the spatial divisions. Designing and installing new features should respect and be compatible with the historic spatial organization. Remove non-significant features that detract from or have altered the spatial organization.
Circulation	Within the park, circulation serves vehicular, pedestrian, bicycle and riverine movement. Paving materials vary by purpose and location. Historic paving materials are important defining features, but their condition is generally poor (except in the plaza transition area). The historic paving materials vary by size, finish and texture, but fall within a somewhat limited color palette. There are large areas of non-historic paving material throughout the park.	Repair historic surface treatments, materials and edges where feasible, or replace in kind when features/materials are too deteriorated or damaged to be repaired. New material (or a compatible substitute material) should match the old in composition, design, size, color and texture. New circulation features should be visually compatible – in terms of alignment, surface treatment, width, edge treatment, grade, materials, or infrastructure – and the design should be compatible with the historic character of the landscape.
Vegetation	The original landscape design of Hart Plaza consisted of large canopy trees surrounding a hardscaped plaza with flowering crabapples near the center and evergreen trees on the east and west edges. Within that structure, many trees have been removed, and replantings do not conform to the historic design.	Inventory existing vegetation to distinguish original plantings from replacements, and evaluate the condition and age of vegetation. Develop a landscape plan to establish a replanting schedule that is consistent with the original intended plan and addresses succession plantings and maintenance realities. Infill with new plant material that is the same or compatible with the historic vegetation and maintains the historic character of the landscape.
Views and vistas	The site is characterized by numerous expansive and controlled vistas – to and from the plaza – that are predicated on upright, individual landscape features.	Retain the historic relationships between the landscape and its buildings, structures, furnishings and objects.

HART PLAZA RECOMMENDED PRESERVATION TREATMENT STRATEGIES		
Feature	**Description**	**Recommendation**
Buildings and structures	Buildings and structures are located at both surface and subsurface levels. Contributing aboveground buildings include the fountain control building and the Ford Auditorium Underground Parking building. Contributing aboveground structures include the pyramid amphitheater, retaining walls of varying height and color, some with integrated benches, planters, and railings, also serving to define and transition between plaza levels. Contributing underground structures include the sub plaza, which is comprised of a series of spaces and rooms; most interior spaces in the sub plaza are in poor condition.	Retain the historic relationships between the landscape and its buildings, structures, furnishings and objects. Repair features and materials of structures, furnishings and objects by reinforcing historic materials. New materials should match the old in composition, design, color and texture, and new design should be compatible with the historic character of the landscape.
Small-scale features	Mostly utilitarian features, these include lights, upright poles, bollards, planters, trash receptacles, benches, rails, and interpretive elements (plaques and signs).	The small-scale features are not historic and are not part of the original plaza design.
Sculptures and constructed water features	Five contributing elements that are part of the original design include: the Pylon; the Horace E. Dodge and Son Memorial Fountain; the circular granite depression west of the Dodge Fountain; the cubist water sculpture north of the Dodge Fountain, and; the spiral seating sculpture south of the Dodge Fountain. Four non-contributing sculptures that are not part of the original historic design include: the Abraham Lincoln bust (installed 1986); Transcending, the Michigan labor Legacy Landmark (installed 2003); Antoine de la Mothe Cadillac statue (installed 2001); Gateway to Freedom International Memorial to the Underground Railroad (installed 2001).	Maintain a water feature's mechanical, plumbing and electrical systems to insure appropriate depth of water or direction of flow. Repair water features by reinforcing materials or augmenting mechanical systems, or replace in-kind (to match the composition, design, color and texture of original material).

3.0 EXISTING CONDITIONS ASSESSMENT

3.1 Hart Plaza

3.1.1 General Conditions Narrative

MSG completed an assessment and existing conditions evaluation of Hart Plaza area that included review of structural, civil, electrical mechanical and general features of the main concourse area, two amphitheaters, the Atwater Street Tunnel, the Horace E. Dodge Fountain, and numerous lower level spaces.

3.1.2 Structural

3.1.2.1. Miscellaneous Structural Components

A site visit and visual assessment of the structural components were performed between December 15th and 23rd. The site contains numerous structural components that were visually inspected to identify deficiencies and to assist in the creation of an asset management plan. The focus of the inspections included review of the concrete components, including but not limited to, reinforced concrete walls, pre-cast concrete structures, mass concrete features, masonry walls, and concrete columns and beams.

Overall, the structural components onsite appear to be in good condition. Most of the noted deficiencies identified are typical of concrete structures. Deficiencies observed can be addressed utilizing traditional structural repair techniques. Long-term asset management, including preservation and repair treatments and schedules should be implemented to address the deficiencies and cosmetic repairs. As asset management approach will result in minimizing the total cost of keeping the structural elements good working order. Some sections have been identified to have deficiencies that are more significant and MSG would recommend further investigation to determine appropriate repair strategies.

Items noted for the various components inspected are listed below:

- Observed Foundations
  - Exposed foundation components, including: lighting, flagpole, and monument foundations appear to be in good condition.
- Reinforced Concrete Walls
  - In many locations the steel reinforcement is exposed. It appears that insufficient concrete cover may be causing the concrete delamination.
  - Hairline cracks were observed throughout site.
  - Loss of expansion materials present along the west side of site.
  - Horizontal structural crack at the northeast corner of the site (between the main plaza and Bates Street). Approximately sixty lineal feet of concrete wall has sever cracking, spalling, with moisture permeating.
- Pre-Cast Concrete Structures
  - Expansion material between precast wall sections over the Detroit Police Department offices is in need of repair.
- Mass Concrete Features
  - Mass concrete seating structure located at the southeast corner of the site is in poor condition. Extensive repairs or replacement of this structure is recommended.
- Masonry Walls
  - A vertical crack exists at the southeast corner of the site. Epoxy crack repair at this location is recommended.
- Concrete Columns & Beams

- A numerous hairline cracks were observed throughout site.
- Various locations require concrete surface or crack repairs.

3.1.2.2. Atwater Street Tunnel

The tunnel section along Atwater Street is located below Hart Plaza and runs parallel to the Detroit River. The tunnel section is approximately 600 feet long. The structural components observed include steel beam and column framing, and cast in place concrete elements. The general condition of the tunnel section were found to be in good condition, with minor deterioration noted. The paint on the steel elements is peeling and deficient throughout the tunnel. The application of a new paint coatings system is recommended.

- Steel Beam and Column Framing
  - Protective coating is failing, surface preparation and installation of new paint coating recommended.
- Cast In Place Concrete Components
  - Minor cracking with some efflorescence and moisture present.

3.1.3 Civil

3.1.3.1. Concrete Pavement

The hardscape surface conditions vary from good to very poor, consisting of pavers and concrete. There are two concrete pavement areas on the south side that were recently constructed. The observed concrete pavement areas consist of:

a. The sidewalk in the Jefferson Avenue right of way is in good condition with evidence of recent repairs. Minimal upgrades needed.
b. Walkways meandering throughout the plaza are generally in good condition. Minimal repairs needed.
c. The middle of the Transcending Art piece has concrete pavement integrated with pavers. The pavement is severely broken and will require replacement.
d. The walkway leading to the Gateway to Freedom sculpture is in good condition and appears to be very recently constructed.
e. The section of pavement adjacent to the [former] drive to Ford Auditorium is in very poor condition (refer to photo UL-32A).
f. There is section of new walk installed to replace pavers between the mass concrete structure at the southeast corner of the plaza. This concrete is in very good condition.
g. The sidewalk adjacent to the river is a mix of two-tone concrete pavement sections and is in good condition.
h. There are six concrete sections adjacent to the main entrance to Hart Plaza. These areas are in poor condition and should be replaced.
i. There is a concrete ring around the fountain that is severely deteriorated and should be replaced.
j. The concrete within the lower section of the amphitheater area is in poor condition and should be replaced (refer to photos LL-27 ~ LL-31).
k. There are concrete strips adjacent to the large stone pavers. They are in very poor condition and should be replaced.

3.1.3.2. Pavers

There are three types of brick pavers and three types of stone pavers; two smaller types and one large type of stone paver. The smaller pavers are in good condition, requiring replacement or re-grouting. The large

stone pavers are in very poor condition, with significant cracking. Listed below is a summary of our paver findings and recommendations:

a. Pavers within the fountain area circle are in overall good condition. This area has an estimated 5% broken pavers requiring replacement.
b. Pavers at the main entrance and the open section leading to the UAW Building are in overall good condition with an estimate 15% being broken and requiring replacement.
c. Pavers between the Gateway to Freedom sculpture and the Detroit River are in good condition. No repair required.
d. There are stone pavers in the main plaza area and within some of the walkways. Generally, they are in good condition with an estimated 15% requiring replacement. The stone pavers in the walkways are in better condition than the stone pavers in the plaza area. All stone pavers in the plaza and walkways should be re-grouted, as there is vegetation growing in the joints.
e. Stone pavers are present in front of the Gateway to Freedom sculpture. These stone pavers have engravings on them. Drainage is poor in this area, as there is standing water on the stone pavers following precipitation.
f. There are large stone pavers in multiple locations within Hart Plaza. In all areas, these large stone pavers are in a very poor condition and need to be replaced.
g. The lower level has hexagon concrete pavers throughout that are in good overall condition. Some of the pavers (less than 5%) have minor cracks.

3.1.3.3. Stairs, Stone Curbs, Concrete Walls Adjacent to Walks and Drains

The Plaza stairs connect the upper and lower levels and the two stage areas. Most of the stairs are in very poor condition. There are trench drains between the plaza and the stairs. Most of the trench drains do not work (possibly due to vendors dumping grease in them after events). This has caused water to flow over the drains and down the steps. In some areas, the base material under the steps has washed out leaving the stone pavers or steps in a very deteriorated condition.

- Nearly all stairs need rehabilitation (refer to photos Ul-40, UL-40A, UL-57, UL-57A, UL-58, UL-60, UL-61 and UL 61A).
- Approximately 50% of the stone curbing is in need of repair; primarily in the main entrance area and the walkway section between the main entrance from Jefferson and the abandoned drive to the [former] Ford Auditorium.
- Trench drains located in the plaza need to be removed and replaced. They are too small and get plugged quickly, causing standing water and runoff to areas not designed to have excessive runoff. This condition results in accelerated deterioration to steps and walkways.
- Drainage by the Gateway to Freedom sculpture needs to be fixed, as there is standing water for extended time periods following precipitation events.

3.1.3.4. ADA Compliance

Hart Plaza has an expansive ADA-compliant ramp between the upper and lower levels.

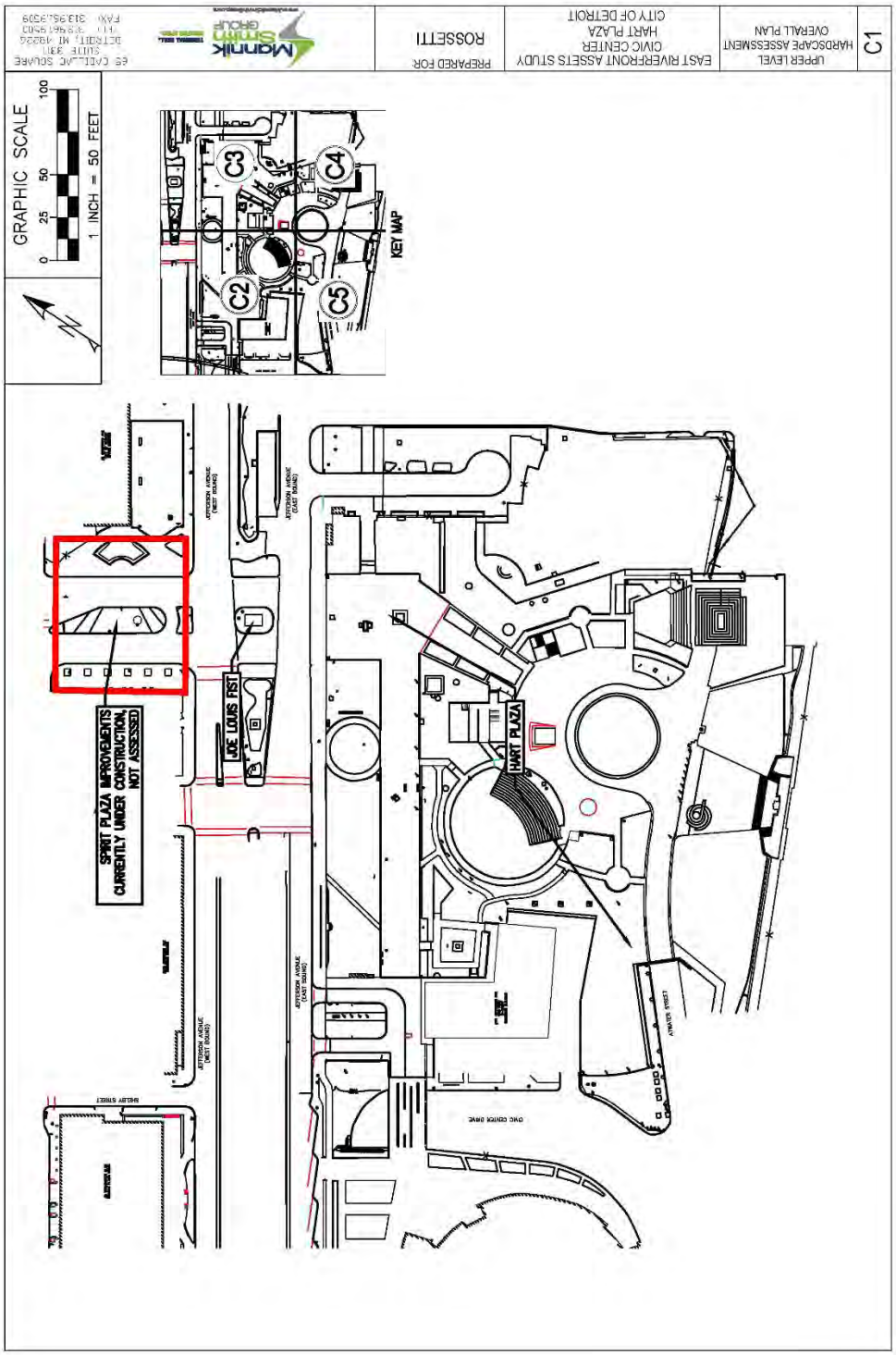
3.1.4 General Observation Tables

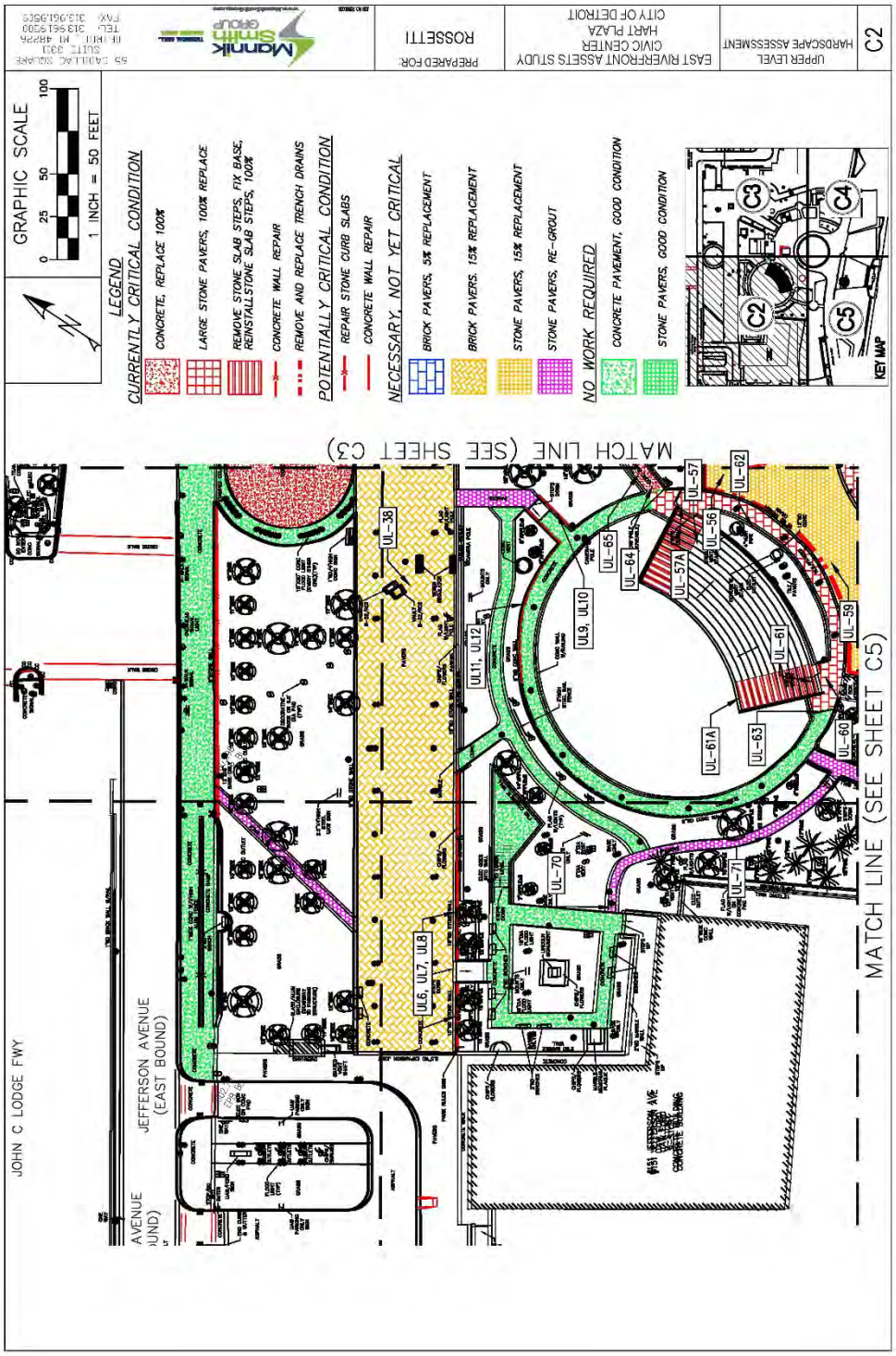
HART PLAZA – GENERAL OBSERVATIONS					
1 - CURRENTLY CRITICAL Conditions in need of immediate improvement to address safety hazards, stop accelerated deterioration to return asset to operation.					
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS	STRUCTURAL OR CIVIL
Reinforced Concrete Walls	Various application of wall structures observed. Most walls in good to fair condition with < 10% in need of more immediate attention.	Maintenance, Repairs, Replacement	Fair	Yes	Structural
Mass Concrete Structure	Notable deterioration of concrete throughout structure creating potential safety concerns	Maintenance, Repairs, Replacement	Poor	Yes	Structural
Drainage	Observed areas settlement in stone/brick pavers that are holding water	Maintenance and Repairs	Good/Fair	No	Structural
Concrete Pavement - Lower Level	Areas of concrete paving deterioration. Lower level concrete at bottom of amphitheater severe deteriorated.	Repairs and Replacement	Good/Fair	No	Civil
Large Stone Pavers	Area of severely broken large stone pavers surrounding fountain over to Atwater St.	Replacement	Fair	No	Civil
Stone Slab Steps	Drainage issues have eroded stair bases and settlement/separation observed.	Repairs and Replacement	Poor	Yes	Civil
Storm Sewers	Observed trench drains around the top amplheator be plugged and full of debris. Lower level storm drains need to be cleaned.	Repairs and Replacement	Poor	Yes	Civil
Drainage	Observed areas settlement in stone/brick pavers that are holding water	Maintenance and Repairs	Good/Fair	Yes	Civil

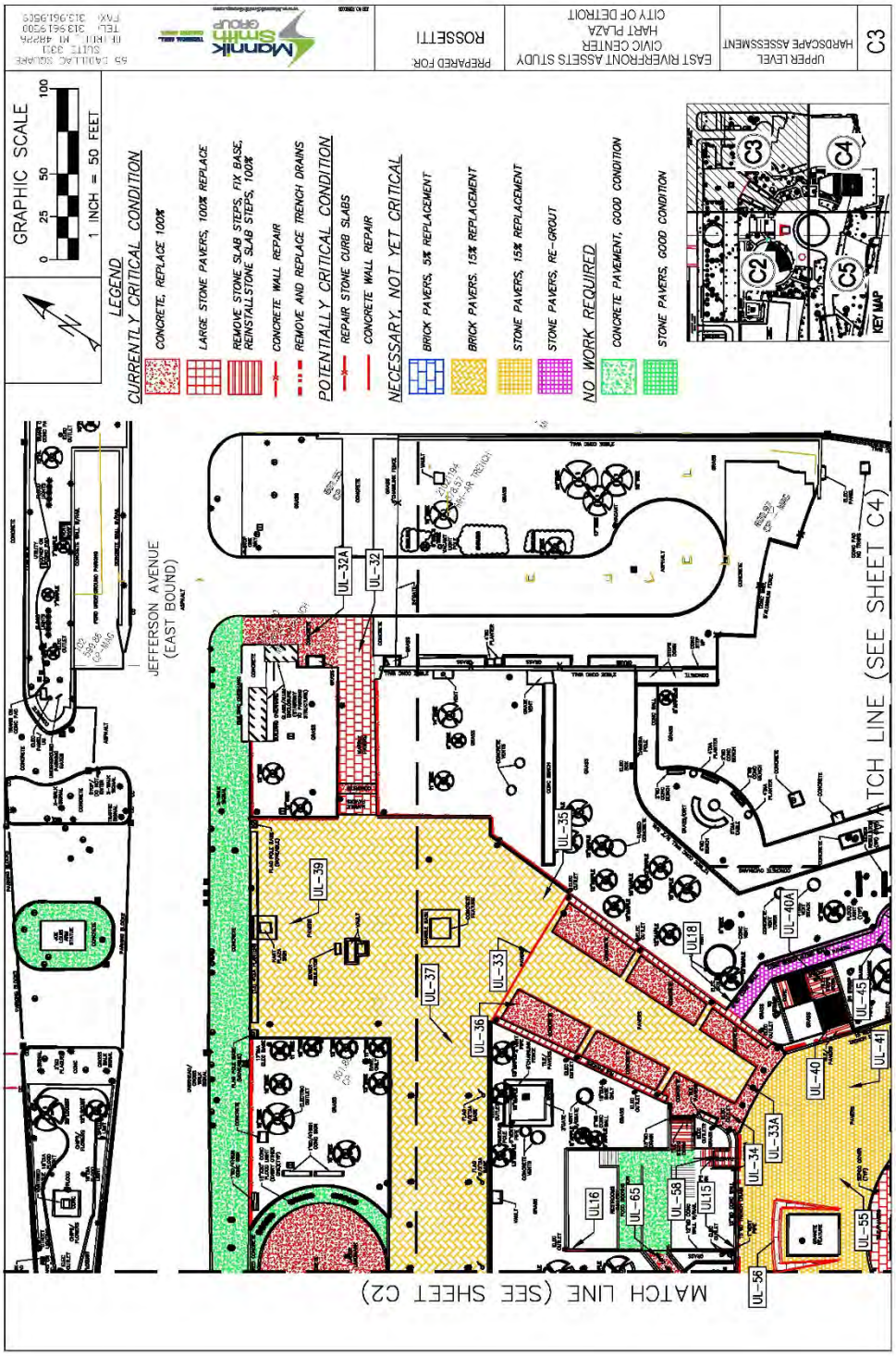
2 - POTENTIALLY CRITICAL Conditions that if not corrected expeditiously, will become critical within a year and could impact operations.					
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS	STRUCTURAL OR CIVIL
Reinforced Concrete Walls	Various application of wall structures observed. Most walls in good to fair condition with < 10% in need of more immediate attention.	Maintenance, Repairs, Replacement	Fair	Yes	Structural
Steel Beam Framing	Observed in Atwater Tunnel Section to need improvements to paint coating systems. Severe rust is a potential issue.	Maintenance and Repairs	Good/Fair	No	Structural
Concrete Pavement - Upper Level	Areas of concrete paving deterioration.	Repairs and Replacement	Good/Fair	No	Civil

3 - NECESSARY, NOT YET CRITICAL Conditions where routine maintenance is needed to avoid potential downtime in operations.					
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS	STRUCTURAL OR CIVIL
Reinforced Concrete Walls	Various application of wall structures observed. Most walls in good to fair condition with < 10% in need of more immediate attention.	Maintenance, Repairs, Replacement	Fair	Yes	Structural
Small Stone Pavers	Areas of broken/missing pavers	Repairs and Replacement	Fair	No	Civil
Brick pavers	Areas of broken/missing bricks	Repairs and Replacement	Fair	No	Civil

3.1.5 Site Observation Maps




C2
UPPER LEVEL
HARDSCAPE ASSESSMENT
EAST RIVERFRONT ASSETS STUDY
CIVIC CENTER
HART PLAZA
CITY OF DETROIT
PREPARED FOR:
ROSSETTI
GRAPHIC SCALE
1 INCH = 50 FEET
LEGEND
CURRENTLY CRITICAL CONDITION
CONCRETE, REPLACE 100%
LARGE STONE PAVERS, 100% REPLACE
REMOVE STONE SLAB STEPS, FIX BASE, REINSTALL STONE SLAB STEPS, 100%
CONCRETE WALL REPAIR
REMOVE AND REPLACE TRENCH DRAINS
POTENTIALLY CRITICAL CONDITION
REPAIR STONE CURB SLABS
CONCRETE WALL REPAIR
NECESSARY, NOT YET CRITICAL
BRICK PAVERS, 5% REPLACEMENT
BRICK PAVERS, 15% REPLACEMENT
STONE PAVERS, 15% REPLACEMENT
STONE PAVERS, RE-GROUT
NO WORK REQUIRED
CONCRETE PAVEMENT, GOOD CONDITION
STONE PAVERS, GOOD CONDITION
KEY MAP
C3
C4
C2
C5
MATCH LINE (SEE SHEET C3)
MATCH LINE (SEE SHEET C5)
JOHN C LODGE FWY
JEFFERSON AVENUE (EAST BOUND)
UL-38
UL11, UL12
UL9, UL10
UL-57
UL-62
UL-56
UL-65
UL-64
UL-57A
UL-59
UL-61
UL-61A
UL-63
UL-60
UL-70
UL-71
UL6, UL7, UL8


C3
UPPER LEVEL
HARDSCAPE ASSESSMENT
EAST RIVERFRONT ASSETS STUDY
CIVIC CENTER
HART PLAZA
CITY OF DETROIT
PREPARED FOR
ROSSETTI
GRAPHIC SCALE
1 INCH = 50 FEET
LEGEND
CURRENTLY CRITICAL CONDITION
CONCRETE, REPLACE 100%
LARGE STONE PAVERS, 100% REPLACE
REMOVE STONE SLAB STEPS, FIX BASE, REINSTALL STONE SLAB STEPS, 100%
CONCRETE WALL REPAIR
REMOVE AND REPLACE TRENCH DRAINS
POTENTIALLY CRITICAL CONDITION
REPAIR STONE CURB SLABS
CONCRETE WALL REPAIR
NECESSARY, NOT YET CRITICAL
BRICK PAVERS, 5% REPLACEMENT
BRICK PAVERS, 15% REPLACEMENT
STONE PAVERS, 15% REPLACEMENT
STONE PAVERS, RE-GROUT
NO WORK REQUIRED
CONCRETE PAVEMENT, GOOD CONDITION
STONE PAVERS, GOOD CONDITION
KEY MAP
C2
C3
C4
C5
JEFFERSON AVENUE
(EAST BOUND)
MATCH LINE (SEE SHEET C4)
MATCH LINE (SEE SHEET C2)
UL-32A
UL-32
UL-35
UL-39
UL-37
UL-33
UL-36
UL-40A
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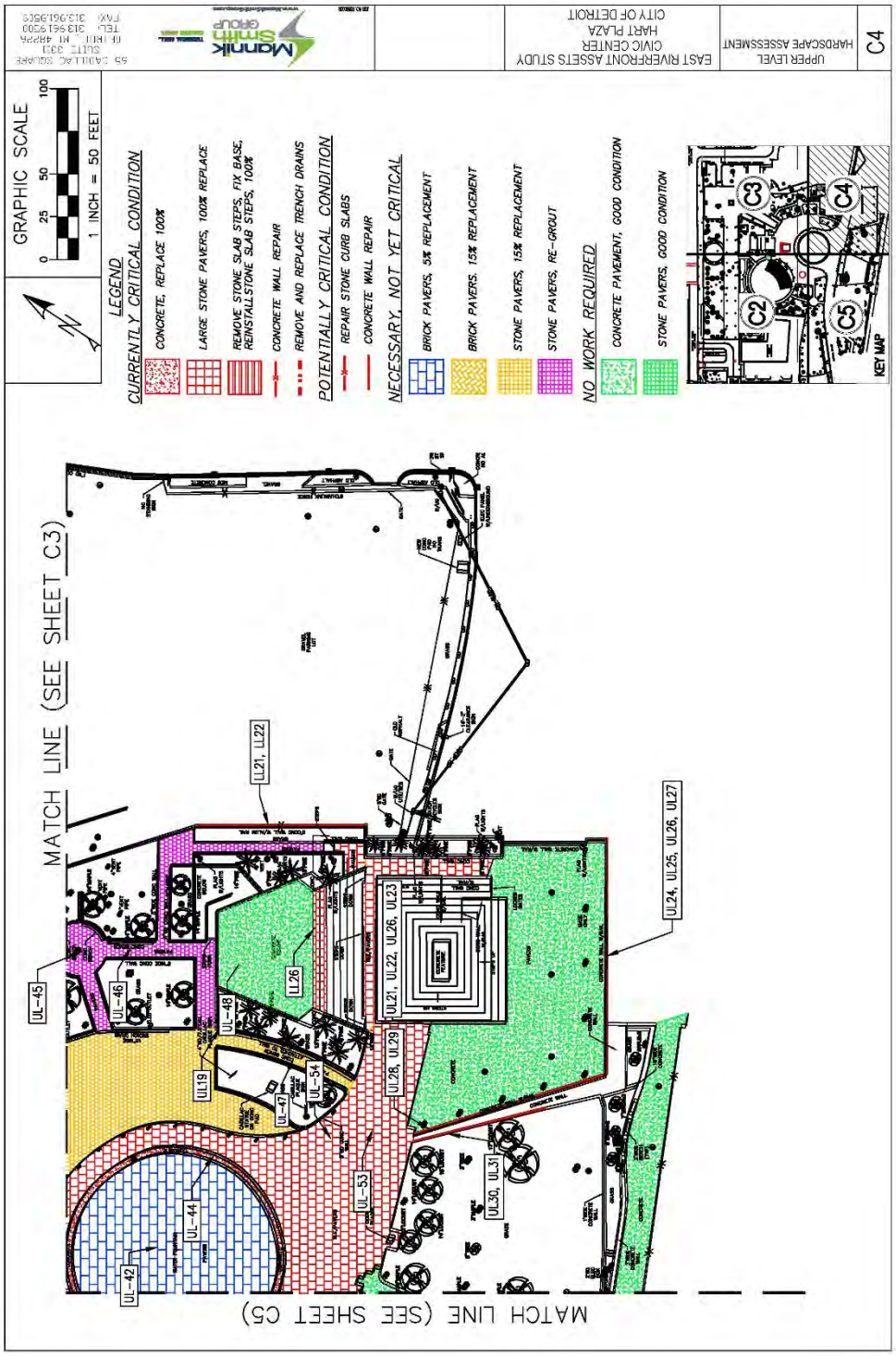
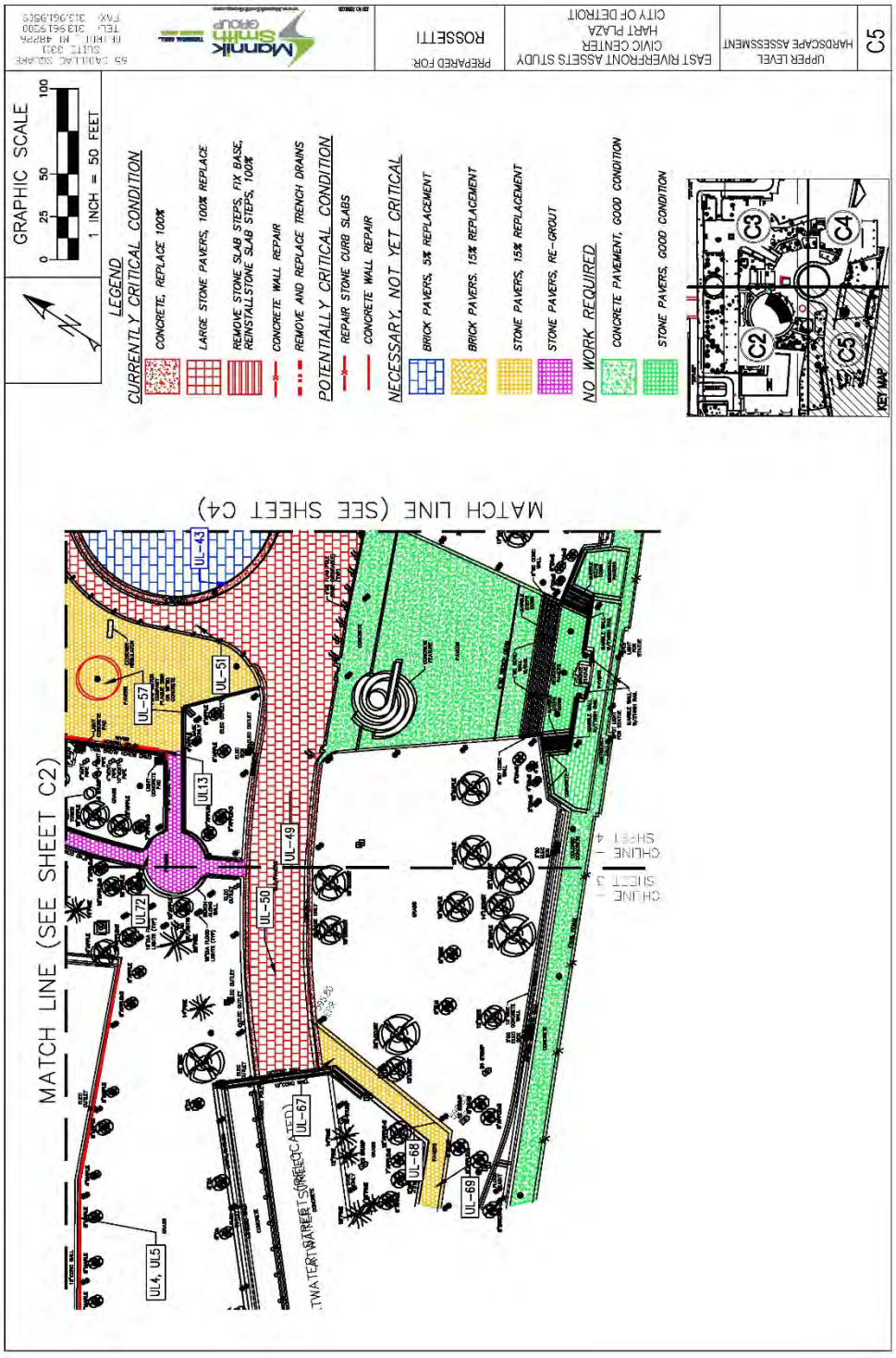
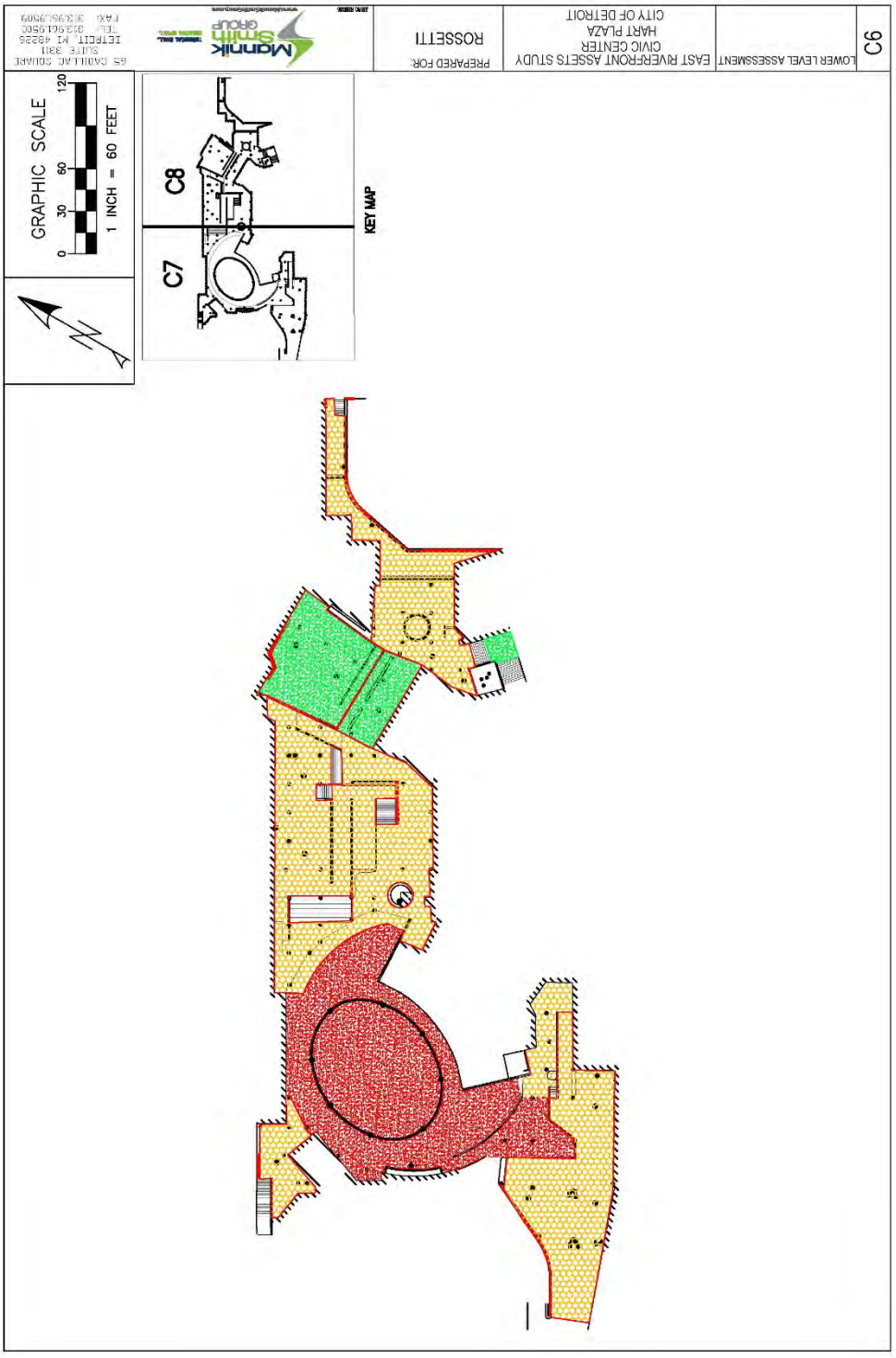
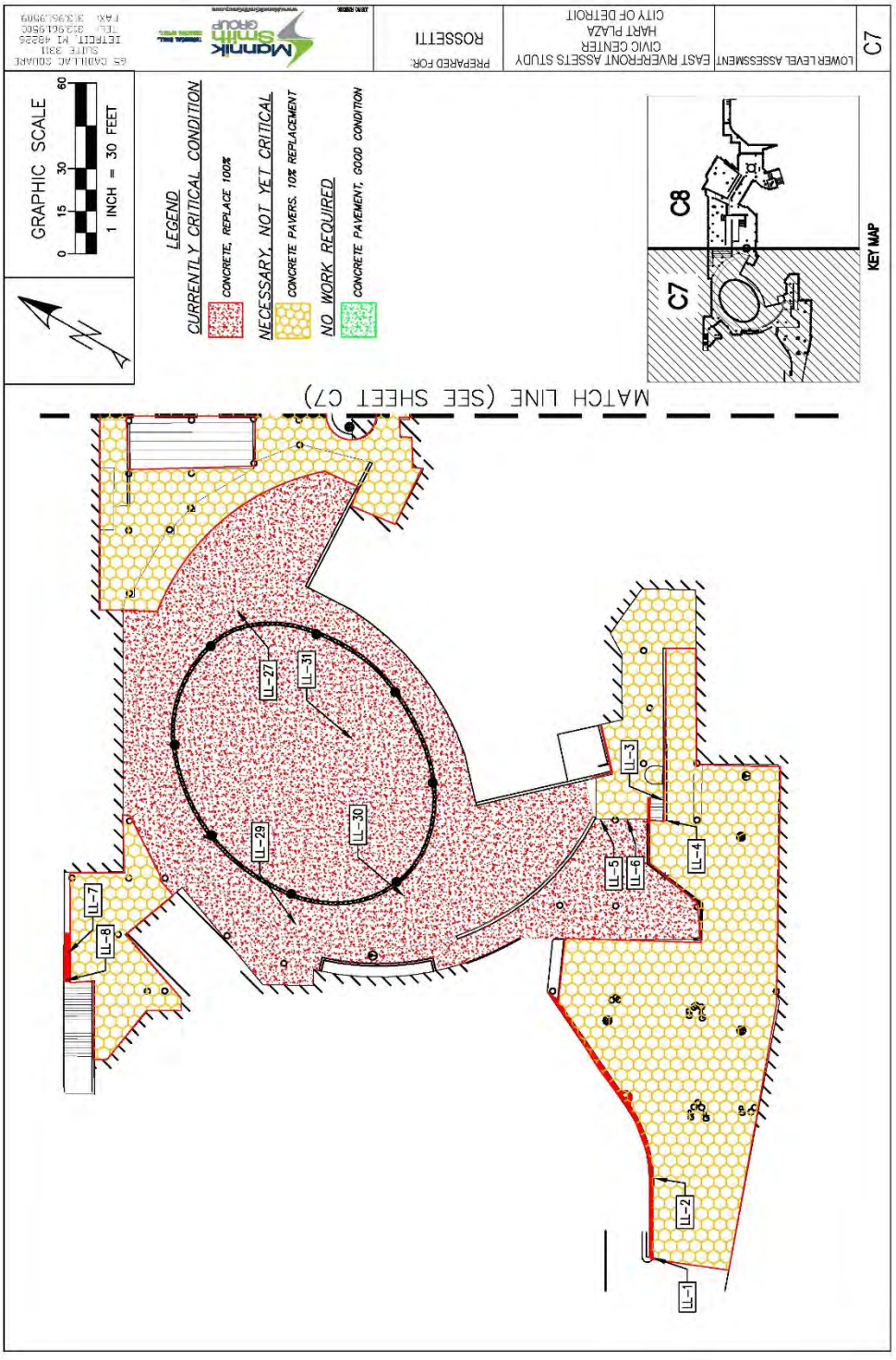
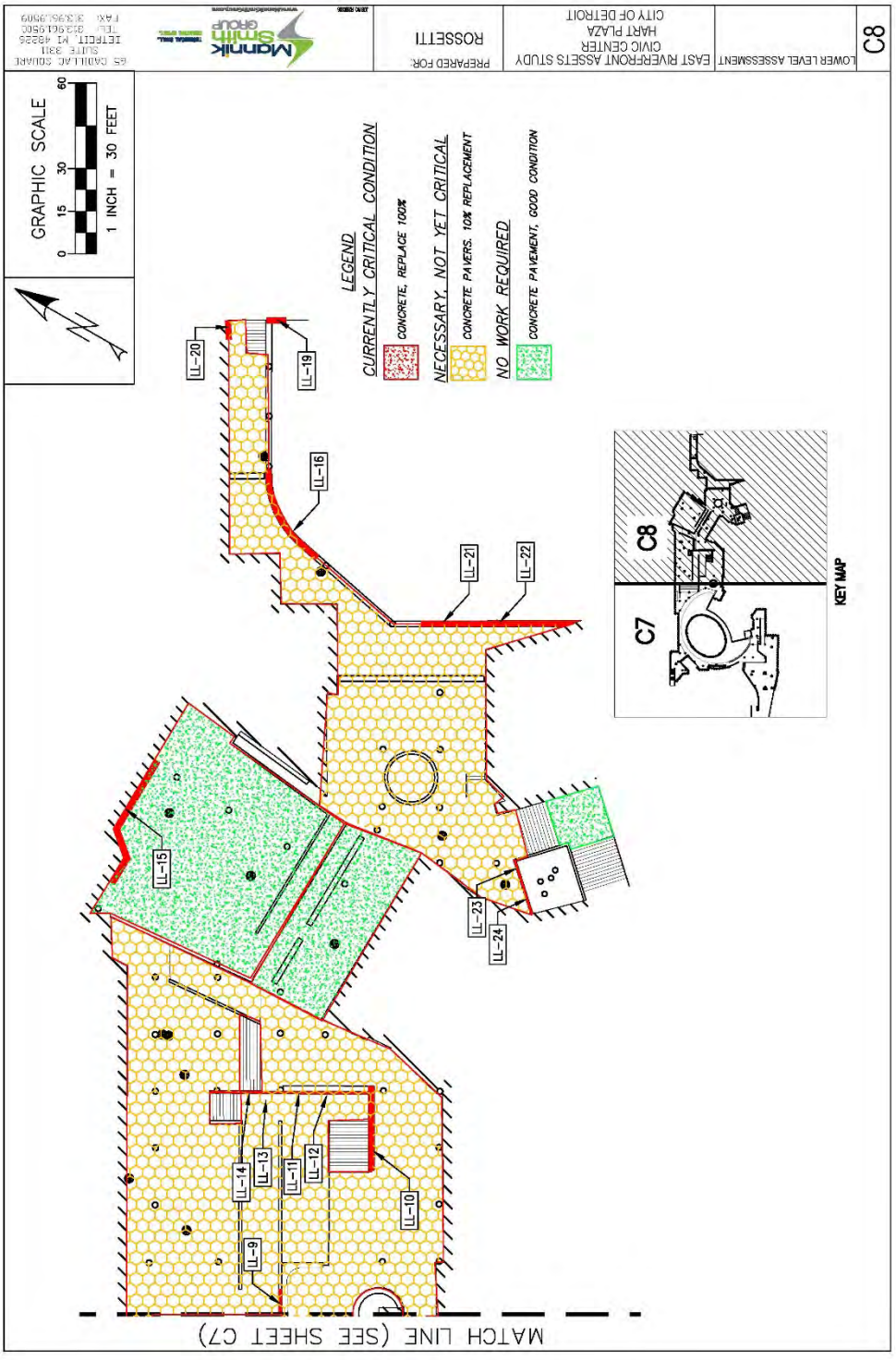
UL-58
UL-65
UL-55
UL-56


C4
UPPER LEVEL
HARDSCAPE ASSESSMENT
EAST RIVERFRONT ASSETS STUDY
CIVIC CENTER
HART PLAZA
CITY OF DETROIT
GRAPHIC SCALE
0 25 50 100
1 INCH = 50 FEET
LEGEND
CURRENTLY CRITICAL CONDITION
CONCRETE, REPLACE 100%
LARGE STONE PAVERS, 100% REPLACE
REMOVE STONE SLAB STEPS, FIX BASE, REINSTALL STONE SLAB STEPS, 100%
CONCRETE WALL REPAIR
REMOVE AND REPLACE TRENCH DRAINS
POTENTIALLY CRITICAL CONDITION
REPAIR STONE CURB SLABS
CONCRETE WALL REPAIR
NECESSARY, NOT YET CRITICAL
BRICK PAVERS, 5% REPLACEMENT
BRICK PAVERS, 15% REPLACEMENT
STONE PAVERS, 15% REPLACEMENT
STONE PAVERS, RE-GROUT
NO WORK REQUIRED
CONCRETE PAVEMENT, GOOD CONDITION
STONE PAVERS, GOOD CONDITION
KEY MAP
C2
C3
C4
C5
MATCH LINE (SEE SHEET C3)
MATCH LINE (SEE SHEET C5)
UL-42
UL-44
UL-45
UL-46
UL-47
UL-48
UL-53
UL-54
UL19
LL21, LL22
LL26
UL21, UL22, UL26, UL23
UL24, UL25, UL26, UL27
UL28, UL29
UL30, UL31


C5
UPPER LEVEL
HARDSCAPE ASSESSMENT
EAST RIVERFRONT ASSETS STUDY
CIVIC CENTER
HART PLAZA
CITY OF DETROIT
PREPARED FOR:
ROSSETTI
GRAPHIC SCALE
1 INCH = 50 FEET
LEGEND
CURRENTLY CRITICAL CONDITION
CONCRETE, REPLACE 100%
LARGE STONE PAVERS, 100% REPLACE
REMOVE STONE SLAB STEPS, FIX BASE, REINSTALL STONE SLAB STEPS, 100%
CONCRETE WALL REPAIR
REMOVE AND REPLACE TRENCH DRAINS
POTENTIALLY CRITICAL CONDITION
REPAIR STONE CURB SLABS
CONCRETE WALL REPAIR
NECESSARY, NOT YET CRITICAL
BRICK PAVERS, 5% REPLACEMENT
BRICK PAVERS, 15% REPLACEMENT
STONE PAVERS, 15% REPLACEMENT
STONE PAVERS, RE-GROUT
NO WORK REQUIRED
CONCRETE PAVEMENT, GOOD CONDITION
STONE PAVERS, GOOD CONDITION
KEY MAP
C2
C3
C4
C5
MATCH LINE (SEE SHEET C4)
MATCH LINE (SEE SHEET C2)
UL-43
UL-51
UL-57
UL13
UL-49
UL-50
UL72
UL-67
UL-68
UL-69
UL4, UL5
WATERFRONT STREET (LOCAL)
SECTION 3 CHLINE
SHEET 4 CHLINE


C6
LOWER LEVEL ASSESSMENT
EAST RIVERFRONT ASSETS STUDY
CIVIC CENTER
HART PLAZA
CITY OF DETROIT
PREPARED FOR:
ROSSETTI
Mannik Smith GROUP
65 CADILLAC SQUARE
SUITE 3311
DETROIT, MI 48226
TEL: 313.961.9500
FAX: 313.961.9509
GRAPHIC SCALE
0
30
60
120
1 INCH = 60 FEET
C8
C7
KEY MAP


C7
LOWER LEVEL ASSESSMENT
EAST RIVERFRONT ASSETS STUDY
HART PLAZA
CIVIC CENTER
CITY OF DETROIT
PREPARED FOR:
ROSSETTI
GRAPHIC SCALE
1 INCH = 30 FEET
LEGEND
CURRENTLY CRITICAL CONDITION
CONCRETE, REPLACE 100%
NECESSARY, NOT YET CRITICAL
CONCRETE PAVERS, 10% REPLACEMENT
NO WORK REQUIRED
CONCRETE PAVEMENT, GOOD CONDITION
KEY MAP
C8
C7
MATCH LINE (SEE SHEET C7)
LL-1
LL-2
LL-3
LL-4
LL-5
LL-6
LL-7
LL-8
LL-27
LL-29
LL-30
LL-31


C8
LOWER LEVEL ASSESSMENT
EAST RIVERFRONT ASSETS STUDY
CIVIC CENTER
HART PLAZA
CITY OF DETROIT
PREPARED FOR:
ROSSETTI
GRAPHIC SCALE
1 INCH = 30 FEET
LEGEND
CURRENTLY CRITICAL CONDITION
CONCRETE, REPLACE 100%
NECESSARY, NOT YET CRITICAL
CONCRETE PAVERS, 10% REPLACEMENT
NO WORK REQUIRED
CONCRETE PAVEMENT, GOOD CONDITION
LL-20
LL-19
LL-16
LL-21
LL-22
LL-15
LL-23
LL-24
LL-14
LL-13
LL-11
LL-12
LL-10
LL-9
KEY MAP
C8
C7
MATCH LINE (SEE SHEET C7)

3.1.6 Photo Log

HART PLAZA PHOTO LOG			
1 - CURRENTLY CRITICAL Conditions in need of immediate improvement to address safety hazards, stop accelerated deterioration to return asset to operation.			
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES	STRUCTURAL OR CIVIL
Reinforced Mass Concrete Feature	UL21, UL22, UL23	Concrete Step Feature with numerous concrete deficiencies at walkway locations and concrete seating locations	Structural
Concrete Screen Structure	LL26	Section of concrete movie screen structure showing significant cracking and loss of material.	Structural
Reinforced Concrete Wall	LL4	8'' section at top of wall broken at handrail insert connection	Structural
Reinforced Concrete Wall and Railing	LL10	Top of concrete wall section and hand rail inserts severely detreated, approximately 30' of wall	Structural
Masonry Wall	LL15	Fire and water damage to outside masonry wall in recessed area. Significant damage to painted surfaces.- 1500 SF	Structural
Reinforced Concrete Beam and Wall	LL16	Severe horizontal cracking causing delamination of concrete surface exposing reinforcement. Significant moisture present potentially caused by insufficient drainage. Approximately 60' LF of 12''x12' wall/beam section	Structural
Reinforced Concrete Wall	LL21, LL22	Severe spalled concrete section at guard rail insert locations. 7 locations along top of wall approximately 4'x2' sections at each.	Structural
Concrete Structure	LL26	Loss of concrete and noted cracking along top of concrete screen structure	Structural
Precast Concrete Barrier Wall Sections	AT1, AT3	Guard Rail and precast concrete temporary barrier wall section damaged	Structural
Slab/tile steps	UL57, UL57A	Walk way steps need replacement due to being undermined by water run-off, trench drain needs to be replaced	Civil
Concrete ramp	UL64, UL65	Concrete barrier free ramp deteriorating, needs replacement	Civil
Slab/tile steps	UL58	Steps need replacement due to being undermined by water run-off, trench drain needs to be replaced	Civil

2 - POTENTIALLY CRITICAL Conditions that if not corrected expeditiously, will become critical within a year and could impact operations.			
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES	STRUCTURAL OR CIVIL
Reinforced Concrete Wall	UL9, UL10	3'x4' Spalled Corner of Balcony Wall Section at two locations	Structural
Cast in Place Cantilevered Concrete	SW1	Spalled concrete joint exposing opening to water	Structural
Bricks Pavers	UL35, UL37,UL38,UL39	Settlement and missing pavers, 25% replacement	Civil

Brick pavers	UL41, UL55, UL56, UL59, UL66	need to be re-grouted, settlement, 15% need to be replaced	Civil

3 - NECESSARY, NOT YET CRITICAL

Conditions where routine maintenance is needed to avoid potential downtime in operations.

STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES	STRUCTURAL OR CIVIL
Stone and Concrete Wall	UL6, UL7, UL8	18'' wall section cracked and spalled, Masonry Materials in need of maintenance	Structural
Reinforced Concrete Wall		Minor cracking noted- 40 LF	Structural
Reinforced Concrete Wall	UL13	Integral concrete wall and bench with cracking at end of wall	Structural
Reinforced Concrete Wall	UL15	Spalling 5' of wall section and damage at inserted railing	Structural
Reinforced Concrete Wall	UL18	Vertical cracks in wall sections	Structural
Reinforced Concrete Wall	UL19	Spalled concrete at corner of wall and bench sections exposing steel reinforcement	Structural
Reinforced Concrete Wall with Rail	UL24, UL25, UL26, UL27	Minor settlement, shifting, and cracking of precast wall sections with some loss of expansion sealants	Structural
Reinforced Concrete Wall with Rail	UL28, Ul29	Minor settlement, shifting, and cracking of precast wall sections with some loss of expansion sealants	Structural
Reinforced Concrete Wall with Rail	UL30, UL31	Slope repairs along precast wall sections	Structural
Reinforced Concrete Wall	LL1	5'x4' section of damaged concrete wall dividing wall	Structural
Reinforced Concrete Wall	LL2	40' of wall with delamination of concrete surface	Structural
Reinforced Concrete Curbing	LL2	40' of 6''x18'' protective curbing damaged at wall base	Structural
Reinforced Concrete Wall	LL3	Approximately 5' of horizontal cracking at base of stairwell	Structural
Reinforced Concrete Wall	LL5, LL6	Random cracking in cast in place wall and overhead panel sections with minor evidence of moisture and efflorescence- 20 LF	Structural
Reinforced Concrete Wall	LL7, LL8	Delamination of concrete beam and wall surface exposing rebar and exhibiting rust- 240 SF	Structural
Reinforced Concrete Column	LL9	Vertical crack in 24''x24'' concrete column- 6 LF	Structural
Reinforced Concrete Wall and Columns	LL11, LL12	Significant deterioration of concrete wall and columns exposing rebar in multiple locations- 60 SF	Structural
Reinforced Concrete Wall and Columns	LL13, LL14	Horizontal cracking in lower section of concrete columns and walls- 30 LF	Structural
Masonry and Concrete Surfaces	LL15	Fire and Smoke residue on all concrete structural surfaces due to fire in recessed area.	Structural
Reinforced Concrete Wall	LL19	Significant crack at concrete beam and wall tie in location at stairwell	Structural
Reinforced Concrete Wall	LL20	Loss of concrete surface at corner of poured wall exposing rebar- 20 SF	Structural
Masonry Wall	LL23	Vertical crack in CMU wall- 12 LF	Structural
Concrete Footing	LL24	6' section of concrete masonry footing with loss of material and exposed rebar approximately 6'' in depth	Structural
Cast In Place Concrete Barrier	AT2	Spalling and horizontal cracking through	Structural

Wall with Rail		length of wall on EB traffic side	
Steel Frame Work	AT2, AT4, AT5, AT6	Oxidized surfaces present throughout	Structural
Steel Frame Work	AT2, AT4, AT5, AT7	Paint system in poor condition	Structural
Concrete Panels	AT8	Very few hairline cracks present, with minor evidence of moisture and efflorescence in these areas	Structural
Hand Rails	AT7	Damaged section of hand rail	Structural
Bricks Pavers	UL33, UL33A	minor settlement, 10% bricks need replacing, all pavers need to be re-grouted	Civil
Brick pavers	UL45, UL46, UL47	brick pavers need to be re-grouted	Civil
Brick pavers	UL42	brick pavers need to be re-grouted	Civil
Brick pavers	UL67, UL68, UL69	brick pavers need to be re-grouted	Civil
Brick pavers	UL71, UL72	Brick pavers need to be re-grouted	Civil

3.1.7 Photos


AT1


AT2


AT3


AT4


AT5


AT6


AT7


AT8


LL1


LL2


LL3


LL4


LL5


LL6


LL7


LL8


LL9


LL10


LL11


LL12


LL13


LL14


LL15


LL16

LL17

LL18

LL19

LL20

LL21

LL22

LL23

LL24

LL25

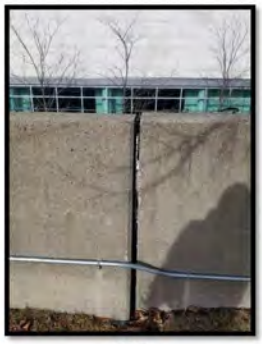
LL26

UL1

UL2

UL3

UL4


UL5

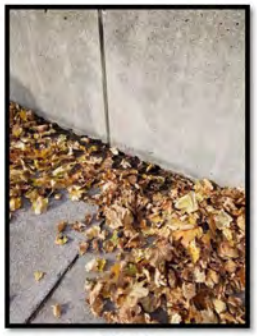

UL6


UL7


UL8


UL9


UL10


UL11


UL12


UL13


UL14


UL15


UL16


UL17

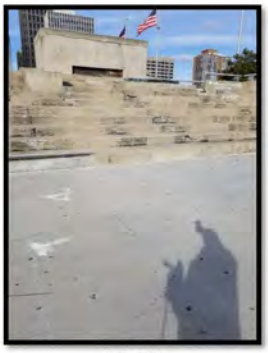

UL18


UL19


UL20


UL21


UL22


UL23


UL24


UL25


UL26


UL27


UL28

UL29

UL30

UL31

UL-32

UL-32A

UL-33

UL-33A

UL-34

UL-34A

UL-35

UL-36

UL-37

UL-38

UL-39

UL-40

UL-40A

UL-41

UL-42

UL-43

UL-44

UL-45

UL-46

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UL-49

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UL-51

UL-53

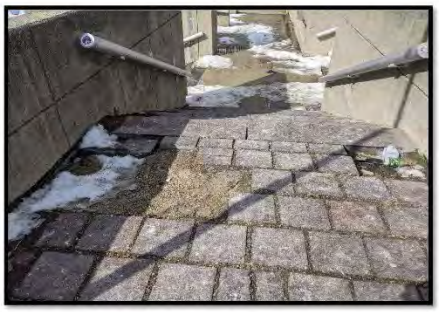
UL-54

UL-55

UL-56

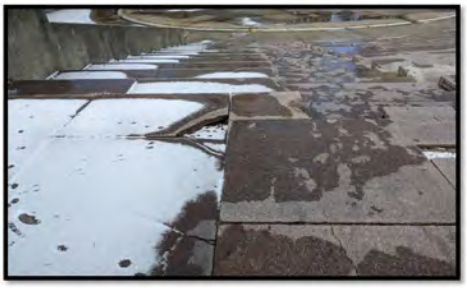
UL-57

UL-57A



UL-58

UL-59



UL-60

UL-61

UL-61A

UL-62

UL-63

UL-64

UL-65

UL-67

UL-68

UL-69

UL-70

UL-71

UL-72

UL-73

LL-27

LL-28

LL-29

3.1.8 Electrical

3.1.8.1. Electrical Documents are in Exhibit F

3.1.9 Dodge Fountain

3.1.9.1. Dodge Fountain Documents are in Exhibit G

3.2 Riverside Marina

3.2.1 General Conditions Narrative

Riverside Marina is a large facility. All of the asphalt pavement is in poor to very poor condition. The pavement will need to be replaced. This includes the roadways and parking lots. There is one section of concrete road near the river that is in fair condition, 20% should be replaced and all the joints sealed. There are also two concrete areas shown in photos RM35A, RM35B and RM83. RM 35A and B are near the river and RM 83 is near Freud Street. Both of these areas need to have the concrete replaced. There is a tennis court that is in poor condition and needs to be resurfaced, or removed. There is also a gravel storage area and path running to another paved storage area. This gravel section is also in poor condition and the path cuts across an open grass area on a diagonal reducing recreational space.

3.2.2 General Observation Tables

RIVERSIDE MARINA – GENERAL OBSERVATIONS					
1 - CURRENTLY CRITICAL Conditions in need of immediate improvement to address safety hazards, stop accelerated deterioration to return asset to operation.					
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS	STRUCTURAL OR CIVIL
Asphalt Pavement	Severe deterioration of asphalt parking lots, asphalt paths showing signs of deterioration.	Repairs and Replacement	Poor	No	Civil
Concrete Pavement	Concrete near fuel station deteriorating. Concrete drive near river needs repairing	Maintenance and Repairs, and Replacement	Fair	No	Civil
Strom Sewers	Some catch basins full of water and debris. Need to be cleaned and inspected.	Maintence, Repairs and Replacement	fair	No	Civil
Drainage	Areas of drainage problems are creating seawall issues and standing water in parking areas.	Maintenance and Repairs	Fare	No	Civil
2 - POTENTIALLY CRITICAL Conditions that if not corrected expeditiously, will become critical within a year and could impact operations.					
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS	STRUCTURAL OR CIVIL
3 - NECESSARY, NOT YET CRITICAL Conditions where routine maintenance is needed to avoid potential downtime in operations.					
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS	STRUCTURAL OR CIVIL

3.2.3 Site Observation Maps

3.2.4 Photo Log

RIVERSIDE MARINA PHOTO LOG			
1 - CURRENTLY CRITICAL Conditions in need of immediate improvement to address safety hazards, stop accelerated deterioration to return asset to operation.			
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES	STRUCTURAL OR CIVIL
Asphalt Pavement	RM-53A to RM-62	Poor condition, needs 100% replacement	Civil
Asphalt Pavement	RM-67 to RM-72	Poor condition, needs 100% replacement	Civil
Asphalt Pavement	RM-73 to RM-77	Poor condition, needs 100% replacement	Civil
Asphalt Pavement	RM-78	Poor condition, needs 100% replacement	Civil
Asphalt Pavement	RM-79 to RM-80	Poor condition, needs 100% replacement	Civil
Concrete Pavement	RM-83	Poor condition, needs 100% replacement	Civil
Gravel Pavement	RM-85, RM-86	Poor condition, needs to be graded and capped with addition gravel.	Civil
Asphalt Pavement	RM-91, RM-96	Poor condition, needs 100% replacement	Civil

2 - POTENTIALLY CRITICAL Conditions that if not corrected expeditiously, will become critical within a year and could impact operations.			
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES	STRUCTURAL OR CIVIL
Concrete Pavement	RM-63 to RM-66	Fair condition, needs joints sealed and 20% replacement	Civil
Asphalt Pavement	RM-84	Poor condition, needs joint sealing and 50% replacement	Civil

3 - NECESSARY, NOT YET CRITICAL Conditions where routine maintenance is needed to avoid potential downtime in operations.			
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES	STRUCTURAL OR CIVIL
Concrete Pavement	RM-81, RM-82	Fair condition, needs 40% replacement	Civil
Asphalt Pavement	RM-87 to RM-90	Fair condition, needs joints sealed and replace 20%	Civil

3.2.5 Photos


RM53


RM53A


RM54


RM55


RM56


RM57


RM58


RM59


RM60


RM61


RM62


RM63


RM64

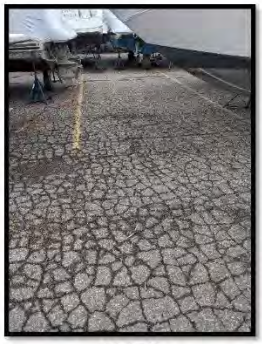

RM65


RM66


RM67


RM68


RM69


RM70


RM71


RM72


RM73


RM74


RM75


RM76


RM77


RM77A


RM78


RM79


RM81


RM82


RM83


RM84


RM85


RM86


RM87


RM88


RM89


RM90


RM91


RM92


RM93


RM94


RM95


RM96


RM97

3.3 St. Jean Boat Launch

3.3.1 General Conditions Narrative

The St. Jean Boat Launch consists of a concrete road with asphalt parking areas on both sides of the road. Both the concrete road and bituminous parking areas are in fair to good condition. We recommend replacing 20% of the concrete road and 15% of the asphalt pavements and seal all joints. There are no drainage structures to repair or upgrade in the boat launch area.

3.3.2 General Observation Tables

ST. JEAN BOAT LAUNCH – GENERAL OBSERVATIONS

1 - CURRENTLY CRITICAL

Conditions in need of immediate improvement to address safety hazards, stop accelerated deterioration to return asset to operation.

ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS	STRUCTURAL OR CIVIL
Fence	Section of fence needs to be replaced at the entrance	Replacement	Poor	Yes	Civil

2 - POTENTIALLY CRITICAL

Conditions that if not corrected expeditiously, will become critical within a year and could impact operations.

ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS	STRUCTURAL OR CIVIL
Concrete Pavement	Observed large cracks through most of the drive lane	Maintenance and Repairs	Fair	No	Civil
Asphalt Pavement	Observed large cracks through most of the parking lot	Maintenance and Repairs	Fair	No	Civil

3 - NECESSARY, NOT YET CRITICAL

Conditions where routine maintenance is needed to avoid potential downtime in operations.

ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS	STRUCTURAL OR CIVIL
Storm Sewers/Drainage	Catch basins and storm sewers need to be cleaned and inspected.	Maintenance and Repairs	Fair	No	Civil

3.3.3 Site Observation Maps

3.3.4 Photo Log

ST. JEAN BOAT LAUNCH PHOTO LOG			
1 - CURRENTLY CRITICAL Conditions in need of immediate improvement to address safety hazards, stop accelerated deterioration to return asset to operation.			
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES	STRUCTURAL OR CIVIL
Asphalt Pavement	SJBL-7 to SJBL-10, JBBL-13	Fair condition, needs joints sealed and 15% replacement	Civil
Fence and Gate	SJBL-14 to SJBL-15	Fair condition, needs joints sealed and 20% replacement	Civil

2 - POTENTIALLY CRITICAL Conditions that if not corrected expeditiously, will become critical within a year and could impact operations.			
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES	STRUCTURAL OR CIVIL
Concrete Pavement	SJBL-8, SJBL-11	Fair condition, needs joints sealed and 20% replacement	Civil

3 - NECESSARY, NOT YET CRITICAL Conditions where routine maintenance is needed to avoid potential downtime in operations.			
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES	STRUCTURAL OR CIVIL

3.3.5 Photos


SJBL7


SJBL8


SJBL9


SJBL10


SJBL11


SJBL12

SJBL13

SJBL14

SJBL15

3.4 Erma Henderson Marina

3.4.1 General Conditions Narrative

The Erma Henderson Marina has an ongoing problem with flooding, primarily on the north and east sides. There is a concrete valley gutter with catch basins that consistently flood. Most of these catch basins in the valley gutter have not been maintained and are full of dirt and debris, causing flooding issues. High water in the river keeps the sewer pipes in a wet condition, which also contributes to sewer plugging. We recommend replacing the sewer system and clean all the catch basins, then determine if any additional improvements are needed. The concrete valley gutter is in very poor condition and should be replaced. There is a concrete walk area behind the seawall that is in fair condition and should have portions (30%) replaced. The asphalt pavement along the ring road is in good condition and it is recommended for joint sealing.

3.4.2 General Observation Tables

ERMA HENDERSON MARINA – GENERAL OBSERVATIONS

1 - CURRENTLY CRITICAL
Conditions in need of immediate improvement to address safety hazards, stop accelerated deterioration to return asset to operation.

ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS	STRUCTURAL OR CIVIL
Fence	Section of fence damaged/broken	Replacement	Poor	Yes	Civil
Concrete Pavement	Concrete valley gutter needs to be replaced. 5' strip of concrete behind seawall needs to be replaced in sections.	Maintenance and Repairs	Poor	No	Civil
Storm Sewers	Plugged catch basins creating standing water, catch basins full of debris and water	Replacement	Poor	Yes	Civil
Drainage	Standing water due to plugged storm sewers.	Maintained and Repairs	Fair	No	Civil

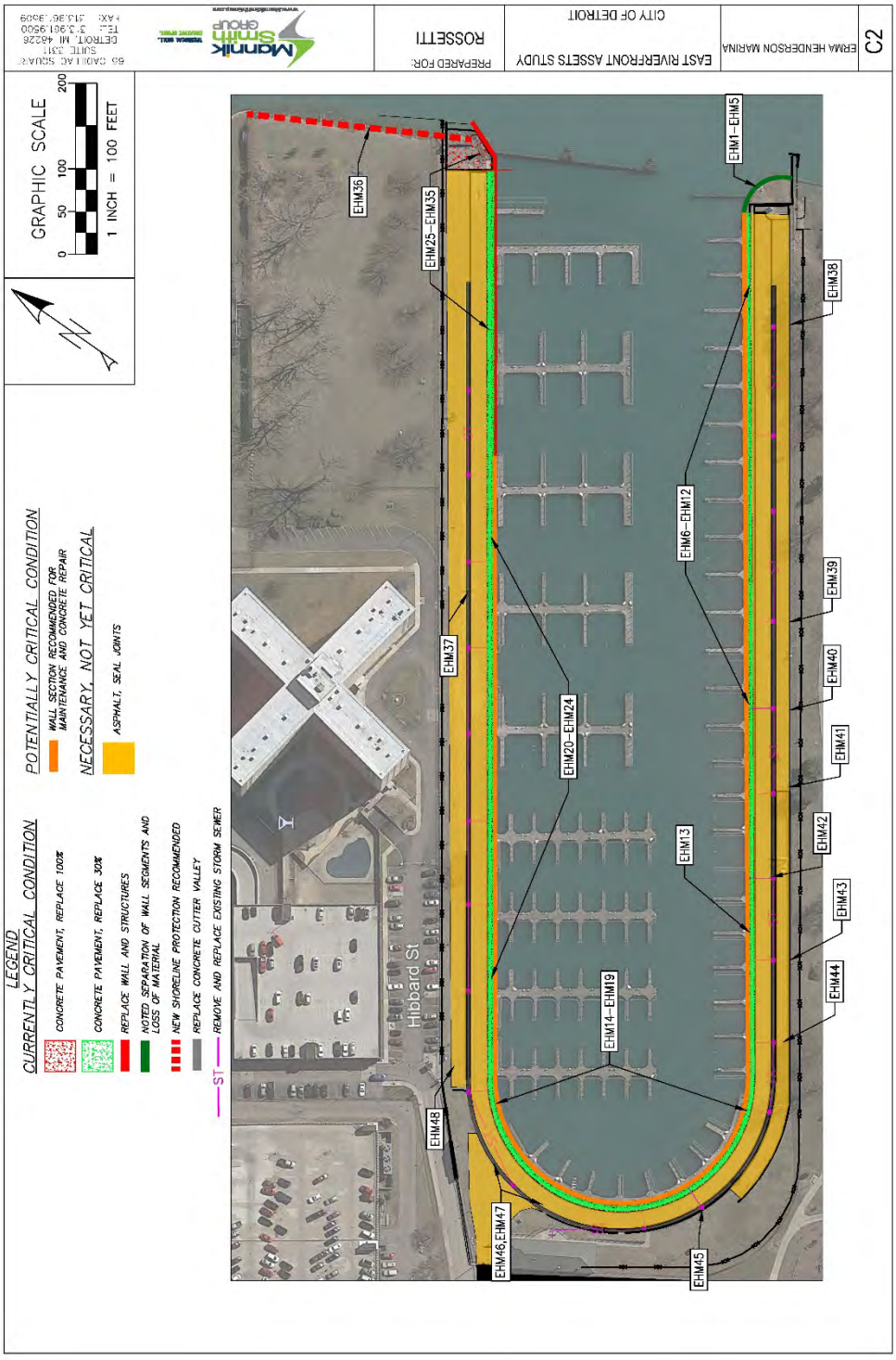
2 - POTENTIALLY CRITICAL
Conditions that if not corrected expeditiously, will become critical within a year and could impact operations.

ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS	STRUCTURAL OR CIVIL
Asphalt Pavement	Observed large cracks through most of the parking lot	Maintenance and Repairs	Fair	No	Civil

3 - NECESSARY, NOT YET CRITICAL
Conditions where routine maintenance is needed to avoid potential downtime in operations.

ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS	STRUCTURAL OR CIVIL

3.4.3 Site Observation Maps



3.4.4 Photo Log

ERMA HENDERSON MARINA PHOTO LOG			
1 - CURRENTLY CRITICAL Conditions in need of immediate improvement to address safety hazards, stop accelerated deterioration to return asset to operation.			
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES	STRUCTURAL OR CIVIL
Fence	EHM-35	Replace section of fence that has been damaged.	Civil
Storm Sewer	EHM-38 to EHM-45	Storm sewer to be removed and replaced. Concrete gutter valley needs to be replaced	Civil
Storm Sewer, Concrete Gutter	EHM-46, EHM-47	Storm sewer to be removed and replaced. Concrete gutter valley needs to be replaced	Civil
Concrete Paving	EHM-48	Concrete gutter valley needs to be replaced, asphalt pavement to be joint sealed.	Civil

2 - POTENTIALLY CRITICAL Conditions that if not corrected expeditiously, will become critical within a year and could impact operations.			
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES	STRUCTURAL OR CIVIL
Shoreline	EHM-36	New shoreline protection recommended	Civil

3 - NECESSARY, NOT YET CRITICAL Conditions where routine maintenance is needed to avoid potential downtime in operations.			
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES	STRUCTURAL OR CIVIL

3.4.5 Photos

EHM-35

EHM-36

EHM-38

EHM-39

EHM-40

EHM-41

EHM-42

EHM-43

EHM-44

EHM-45

EHM-46

EHM-47

EHM-48

4.0 SEAWALL

4.1 Aretha Franklin Seawall and Shoreline Conditions

MSG has been working with the City of Detroit (under a separate contract) to design shoreline stabilization measures along the Detroit River embankment adjacent to The Aretha Franklin Amphitheater (refer to Appendix D). Under the separate contract, additional riprap in combination with marine mattresses (mechanically connected riprap blankets) were placed on the embankment. Regulatory permits from EGLE and ACOE were obtained for the proposed improvements. This work is scheduled to be completed in the spring of 2021.

4.2 Owen Park Onsite Structures and Shoreline

Onsite observations were performed on January 29th. During the site inspection, the top of the concrete seawall was very close to the Detroit River water elevation; therefore, only a limited inspection of the seawall could be performed. There is approximately 610 lineal feet of shoreline adjacent to the park; of which, approximately 500 feet is concrete seawall. Significant erosion and minor flooding was noted behind the concrete wall sections. The remaining 110 feet of shoreline includes a storm water outfall with six large pipes that extend through a steel sheet pile wall. Other minor structures identified included a stand-alone solar panel unit, wood light poles and lighting fixtures, brick masonry wall, and a concrete foundation. Based on the visual inspection of the shoreline, we recommend a detailed evaluation of the most cost effective shoreline protection systems.

4.3 Stockton Park Onsite Structures and Shoreline

Structural components located within the limits of Stockton Park were inspected on January 29th. The shoreline was found to be in poor condition with notable erosion and no protective devices or structures in place along the 200 feet of river frontage. It was noted that unformed concrete had been poured along sections of shoreline in an attempt to limit erosion. The other notable deficiencies are vertical cracking on two of the precast light poles. Other structural components and amenities onsite include but are not limited to playground equipment, monument sign, park benches and tables, and chain link fencing all found to be in fair condition. Based on the visual inspection of the shoreline, we recommend a detailed evaluation of the most cost effective shoreline protection systems.

4.4 Hart Plaza Seawall

Approximately 830 feet of seawall exists along the Detroit River and adjacent to Hart Plaza. It was inspected and evaluated utilizing drone and video technology (refer to Appendix F). Due to the current Detroit River high water levels, the portion of seawall above the waterline (that could be observed and evaluated) was limited. The components of the seawall evaluated included the steel sheet pile, cast in place concrete, protective railing, and timber fender system. Based on the limited visual information gathered, the seawall was found to be in fair condition with noted deficiencies.

Specific items noted for the various components inspected are listed below:

- Steel Sheet Piling
  - Observed steel section above [high] water level found to be intact with no observed penetration or damage.
- Cast-In-Place Concrete
  - Deterioration of concrete noted. Surface preparation, repairs, and protective coatings or sealants recommended.
- Projective Railing
  - Stainless steel protective railing found to be in good condition.
- Timber Fender System
  - Missing and damaged sections recommended for repairs and replacement.

- Seven aluminum access ladders noted to be damaged. Recommended to be repaired or replaced.

4.5 Riverside Marina – Seawall and Observations

MSG visited the Riverside Marina site on March 2nd. During the visit a visual inspection of the seawall and shoreline conditions was performed. This inspection was limited to the exposed seawall and its components above the [high] water levels. The marina contains approximately 5,400 lineal feet of steel sheet pile seawall, along with riprap shoreline protection and jetties constructed for river access. The majority of the sheet pile seawall was found to be in good condition with no significant deficiencies noted; however, there are a few areas located at dock locations where penetrations for dock utilities along with high water levels appear to have eroded material from the back of wall, creating issues with paved walkway surface areas identified in the site exhibit. There are also two noted areas where the sheet pile wall has significant deflection. This appears to be due to the current drainage from the elevated site which may lead to the consolidation of material behind the wall. It is also important to note that the consolidation of material may be contributing factor to the settlement issues of pavement sections located at the onsite fueling station.

We recommend a more detailed investigation in order to determine the most cost effective improvements for drainage at the seawall interface. We also recommend that the two areas of the steel sheet pile noted to have significant deflection be repaired or replaced in kind.

4.6 St. Jean Boat Launch – Seawall and Observations

The St. Jean Boat Launch was inspected on March 2nd. The site contains approximately 850 lineal feet of steel sheet pile protection. The seawall and shoreline protection on the boat launch site were found to be in good condition with no deficiencies.

4.7 Erma Henderson Marina – Seawall and Observations

MSG visited the Erma Henderson Marina site on March 2nd. During the visit a visual inspection of the seawall and shoreline conditions was performed. This inspection was limited to the exposed seawall above the [high] water levels. The Erma Henderson Marina consists of approximately 2,700 lineal feet of concrete seawall. Much of the observed concrete seawall appears free of structural deficiencies; however, approximately 200 lineal feet of the wall located at the southeast corner of the site has failed. This portion of the seawall should be replaced. The remaining wall section was observed to have no significantly noticeable settlement, deflection, or rotation. One wall segment was noted at the southwest corner has a loss of backing material and has been temporarily remedied by filling the back side of the wall with concrete. The timber and steel break wall section, also located at the southwest corner of the site, appears in poor condition, and is in need of either significant repair or replacement.

In addition to the 200 lineal feet of failed seawall at the southeast corner of site, we recommend replacement of the breakwall section at the southwest corner of the site, as well as the wall segment separation also located at the southwest corner of the site (i.e., excavate and fill with suitable material in order to stop the loss of material from behind wall section). Various locations of the exposed concrete seawall above the high water level were observed to have significant cracking and loss of concrete surface material. We recommend these areas be addressed with various applications of chipping and patching, epoxy crack repair, or selective removal and replacement. Further investigation (detailed inspection) is also recommended based on apparent loss of material and settlement behind seawall structure.

4.8 Erma Henderson Park Onsite Structures and Shoreline

Structural components at Erma Henderson Park were inspected on January 29th. The shoreline was found to be in poor condition, as water levels were found to be above the top of the wall with significant erosion and flooding across the entire 600 feet of river frontage. Note – The City of Detroit is currently in the process of accepting bids for the

construction of the removal and replacement of the existing shoreline protection. This construction scope will include the removal of concrete seawall structures and replacement with a marine mattress system and heavy riprap (refer to Appendix D). Other structural components and amenities onsite include but are not limited to new concrete lighting foundations, playground equipment, boulder retaining walls, monument sign, and park benches all found to be in generally good condition. We recommend general maintenance of structures, including minor repairs, cleaning, and sealing of the site structures.

4.9 General Observation Tables

SEAWALL AND SHORELINE – GENERAL OBSERVATIONS				
1 – ARETHA FRANKLIN				
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS
Rip Rap Shore Line	See Shoreline Restoration Report (December 2019). Construction of new shorline completed Summer 2021.	None	Good	No
2 – OWEN PARK				
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS
Concrete Seawall	Observed deterioration of wall sections above current water level. Significant erosion behind wall. Evaluation of wall hieght needed as current water levels meet wall elevation.	Replacement of Shoreline Protection	Poor	Yes
Steel Sheet Pile Wall and Cap	Steel Sheet Pile walls found to be in generally good condition.	None	Good	No
Tie Backs	No broken tie backs observed	None	Good	No
3 – STOCKTON PARK				
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS
Natural Shoreline	No current shoreline protection in place. Significant erosion was noted. Placement of unformed concrete for protection creating potential safety concerns.	Installation of New Shoreline Protection	Poor	Yes
4 – HART PLAZA				
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS
Steel Sheet Pile Wall	Surveyed using drone technology. Limited observations made due to high water conditions. One minor observation noted from above walkway.	Further Investigation	Good/Fair	No
Cantilevered Concrete Walk	Areas of deterioration along outer edge of concrete section. One spalled area at joint creating hole to water.	Repairs and Maintenance	Good/Fair	Yes
Timber Fender System	Noted damage and missing timber sections in need of repairs.	Repairs and Maintenance	Fair	No
Galvanized Ladders	A number of ladders damaged or missing.	Repairs and Maintenance	Fair	No

5 – RIVERSIDE MARINA				
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS
Steel Sheet Pile Wall and Cap	Steel Sheet Pile walls found to be in generally good condition. Isolated areas in need of repairs and or maintanance. Recommend grading and drainage improvements to improve life expectancy of seawall.	Repairs and Maintenance	Good	No
Tie Backs	No broken tie backs observed	None	Good	No
Rip Rap Shore and Break	No noted deficiencies	None	Good	No
6 – ST. JEAN BOAT LAUNCH				
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS
Steel Sheet Pile Wall and Cap	Steel Sheet Pile walls found to be in generally good condition. All cap material and tie backs observed to be intact with no deficiencies.	None	Good	No
Tie Backs	No broken tie backs observed	None	Good	No
7 – ERMA HENDERSON MARINA				
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS
Concrete Seawall	Observed deterioration of wall sections above current water level is reccomended for repairs. Approximately 200' section of wall failing and in need of replacement. A more comprehensive investigation of seawall is also recommended.	Repairs and Replacement	Poor	Yes
Timber Pile Breakwall	65' Section of breakwall on downriver side in need of repairs or replacement	Repairs and Replacement	Poor	Yes
8 – ERMA HENDERSON PARK				
ITEM	GENERAL OBSERVATIONS	ACTION	CONDITION	SAFETY OR INTEGRITY CONCERNS
Concrete Seawall	Concrete Seawall protection has been removed and replaced with Rip Rap Shoreline Protection. Construction completed Summer of 2021.	None	Good	No

4.10 Photo Log

1 – ARETHA FRANKLIN PHOTO LOG		
Refer to 2019 Shoreline Restoration Report located in Appendix B		
2 – OWEN PARK PHOTO LOG		
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES
Seawall and Shoreline	OP-1	Noted erosion and current water level over concrete wall section- 250 LF of wall section with between 10-20 feet of erosion behind wall
Seawall and Shoreline	OP-2	Noted erosion and current water level over concrete wall section- 250 LF of wall section with between 10-20 feet of erosion behind wall
Seawall and Shoreline	OP-3	Noted erosion and current water level over concrete wall section- 250 LF of wall section with between 10-20 feet of erosion behind wall
Seawall and Shoreline	OP-4	Noted erosion and current water level over concrete wall section- 250 LF of wall section with between 10-20 feet of erosion behind wall
Seawall and Shoreline	OP-5	Deteriorated concrete structural component with exposed rebar
Onsite Structure	OP-6	Solar Panel System
Onsite Structure	OP-7	Wooden pole with light fixture
Seawall and Shoreline	OP-8	Noted deterioration of concrete seawall
Seawall and Shoreline	OP-9	Steel sheet pile wall section with outfall
Seawall and Shoreline	OP-10	Steel sheet pile wall return
Seawall and Shoreline	OP-11	Continuation of concrete wall section underwater
Seawall and Shoreline	OP-12	Noted deterioration of concrete seawall
Seawall and Shoreline	OP-13	Steel sheet pile wall return
3 – STOCKTON PARK PHOTO LOG		
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES
Shoreline	SP-1	Noted that unformed concrete poured along portions of shoreline is undermined
Shoreline	SP-2	Noted that unformed concrete poured along portions of shoreline
Shoreline	SP-3	No shoreline flood protection, significan erosion observed- Approx 210 LF of unprotected shoreline
Shoreline	SP-4	Gaurdrail section along shoreline damages and missing, potential hazard
Shoreline	SP-5	Noted that unformed concrete poured along portions of shoreline
Shoreline	SP-6	Precast concrete lighting fixtures with vertical cracking
4 – HART PLAZA PHOTO LOG		
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES
Castin Place Cantilevered Concrete	SW1	Spalled concrete joint exposing opening to water
Castin Place Cantilevered Concrete	SW2	Deterioration of concrete surface
Galvanized Ladders	SW3	Access ladders with damage and bent sections (Multiple Locations)
Timber Fender System	SW4	Damage to timber sections (Multiple Locations)
Timber Fender System and Galvanized Ladder	SW5	Missing timber section and damage to ladder
Castin Place Cantilevered Concrete	SW6	Deterioration of concrete between components

5 – RIVERSIDE MARINA PHOTO LOG		
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES
Steel Sheet Pile Seawall	RM-1	Steel Sheet Pile Seawall in good condition. Wood deck walk platform needs repairs. Drainage improvements may be nessessary for consolidation behind wall. Fiberglass docks in very poor condition.
Steel Sheet Pile Seawall	RM-2	Steel Sheetpile Seawall in good condition. Wood deck walk platform needs repairs. Drainage improvements may be nessessary for consolidation behind wall. Fiberglass docks in very poor condition.
Fiberglass and Wood Boat Docking	RM-3	Fiberglass docks in very poor unusable condition.
Fiberglass and Wood Boat Docking	RM-4	Fiberglass docks in very poor unusable condition.
Fiberglass and Wood Boat Docking	RM-5	Fiberglass docks in very poor unusable condition.
Steel Sheet Pile Seawall	RM-6	Steel Sheet Pile Seawall in good condition. Noted consolidation of soil materials at back of wall.
Steel Sheet Pile Seawall	RM-7	Steel Sheet Pile Seawall in good condition. Noted consolidation of soil materials at back of wall.
Steel Sheet Pile Seawall	RM-8	Steel Sheet Pile Seawall in good condition. Wood deck walk platform needs repairs. Drainage improvements may be nessessary for consolidation behind wall. Docks in very poor condition. Retaining backwall in poor condition and sliding due to material consolidation behind wall.
Steel Sheet Pile Seawall	RM-9	Steel Sheet Pile Seawall in good condition. Wood deck walk platform needs repairs. Drainage improvements may be nessessary for consolidation behind wall. Docks in very poor condition. Retaining backwall in poor condition and sliding due to material consolidation behind wall.
Steel Sheet Pile Seawall	RM-10	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-11	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-12	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Retaining Wall	RM-13	Welded tie back and wahler system looks to be in good condition. Toe of wall could not be observed but appears to be moving pssibly due to consolidation of in place materials.
Steel Sheet Pile Retaining Wall	RM-14	Welded tie back and wahler system looks to be in good condition. Toe of wall could not be observed but appears to be moving pssibly due to consolidation of in place materials.
Steel Sheet Pile Seawall	RM-15	Steel Sheet Pile Seawall in good condition. Noted loss of materials behind wall due to various penetrations for equipment. Material loss and consolidation causing failures on HMA walking surfaces.
Steel Sheet Pile Seawall	RM-16	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-17	Steel Sheet Pile Seawall in good condition. Noted loss of materials behind wall due to various penetrations for equipment. Material loss and consolidation causing failures on HMA walking surfaces.
Steel Sheet Pile Seawall	RM-18	Steel Sheet Pile Seawall in good condition. Noted loss of materials behind wall due to various penetrations for equipment. Material loss and consolidation causing failures on HMA walking surfaces.
Steel Sheet Pile Seawall	RM-19	Steel Sheet Pile Seawall in good condition. Noted loss of materials behind wall due to various penetrations for equipment. Material

		loss and consolidation causing failures on HMA walking surfaces.
Steel Sheet Pile Seawall	RM-20	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-21	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-22	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-23	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition. Noted that wall has minor deflection.
Steel Sheet Pile Seawall	RM-24	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-25	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-26	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-27	Steel Sheet Pile Seawall in fair condition. Noted that wall has significant deflection potentially due to consolidation of material.
Steel Sheet Pile Seawall	RM-28	Steel Sheet Pile Seawall in fair condition. Noted that wall has significant deflection potentially due to consolidation of material.
Steel Sheet Pile Seawall	RM-29	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-30	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Concrete Flatwork	RM-31	Concrete flatwork around fuel center building in poor condition. Differential movement in slabs creating multiple trip hazards. Many areas have been previously patched.
Concrete Flatwork	RM-32	Concrete flatwork around fuel center building in poor condition. Differential movement in slabs creating multiple trip hazards. Many areas have been previously patched.
Concrete Flatwork	RM-33	Concrete flatwork around fuel center building in poor condition. Differential movement in slabs creating multiple trip hazards. Many areas have been previously patched.
Concrete Flatwork	RM-34	Concrete flatwork around fuel center building in poor condition. Differential movement in slabs creating multiple trip hazards. Many areas have been previously patched.
Concrete Flatwork	RM-35	Concrete flatwork around fuel center building in poor condition. Differential movement in slabs creating multiple trip hazards. Many areas have been previously patched.
Shoreline Conditions	RM-36	Natural Shoreline protected with Rip-Rap in good condition.
Shoreline Conditions	RM-37	Jetty protection for reiverside marinal entrance in good condition.
Shoreline Conditions	RM-38	Natural Shoreline protected with Rip-Rap in good condition.
Shoreline Conditions	RM-39	Natural Shoreline protected with Rip-Rap in good condition.
Steel Sheet Pile Seawall	RM-40	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-41	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Drainage Structure	RM-42	Structure in need of repair.
Steel Sheet Pile Seawall	RM-43	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-44	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-45	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-46	Steel Sheet Pile Seawall in good condition. Tie back locations

		appear to be in good condition.
Steel Sheet Pile Seawall	RM-47	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-48	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-49	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-50	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-51	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-52	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	RM-53	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
6 – ST. JEAN BOAT LAUNCH PHOTO LOG		
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES
Steel Sheet Pile Seawall	SJBL-1	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition. Metal top-rail in good condition.
Steel Sheet Pile Seawall	SJBL-2	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	SJBL-3	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	SJBL-4	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	SJBL-5	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition.
Steel Sheet Pile Seawall	SJBL-6	Steel Sheet Pile Seawall in good condition. Tie back locations appear to be in good condition. Monument sign in good condition.
7 – ERMA HENDERSON MARINA PHOTO LOG		
STRUCTURE AND COMPONENT TYPE	PHOTO LOG ID #	NOTES
Reinforced Concrete Seawall	EHM-1	Concrete seawall in fair condition.
Reinforced Concrete Seawall	EHM-2	Concrete seawall in fair condition. Noted seperation in wall segments causing material loss from behind wall.
Reinforced Concrete Seawall	EHM-3	Concrete seawall in fair condition. Noted seperation in wall segments causing material loss from behind wall.
Wood and Steel Constructed Breakwall	EHM-4	Timber pile and steel components noted to be in poor condition for breakwall at riverside entrance.
Wood and Steel Constructed Breakwall	EHM-5	Timber pile and steel components noted to be in poor condition for breakwall at riverside entrance.
Reinforced Concrete Seawall	EHM-6	Concrete seawall in fair condition.
Reinforced Concrete Seawall	EHM-7	Concrete seawall in fair condition.
Reinforced Concrete Seawall	EHM-8	Concrete seawall in fair condition.
Reinforced Concrete Seawall	EHM-9	Concrete seawall in fair condition.
Reinforced Concrete Seawall	EHM-10	Concrete seawall in fair condition. Noted deterioration to top of wall section requiring maintenance.
Reinforced Concrete Seawall	EHM-11	Concrete seawall in fair condition. Noted deterioration to top of wall section requiring maintenance.
Reinforced Concrete Seawall	EHM-12	Concrete seawall in fair condition. Noted deterioration to top of wall section requiring maintenance.
Reinforced Concrete Retaining Wall	EHM-13	Concrete retaining wall in good condition.
Reinforced Concrete Seawall	EHM-14	Concrete seawall in fair condition. Noted deterioration to top of wall section requiring maintenance.

Reinforced Concrete Seawall	EHM-15	Concrete seawall in fair condition. Noted deterioration to top of wall section requiring maintenance.
Reinforced Concrete Seawall	EHM-16	Concrete seawall in fair condition. Noted deterioration to top of wall section requiring maintenance.
Reinforced Concrete Seawall	EHM-17	Concrete seawall in fair condition. Noted deterioration to top of wall section requiring maintenance.
Reinforced Concrete Seawall	EHM-18	Concrete seawall in fair condition. Noted seperation between wall and concrete walk creating potential trip hazard.
Reinforced Concrete Seawall	EHM-19	Concrete seawall in fair condition.
Reinforced Concrete Seawall	EHM-20	Concrete seawall in fair condition.
Reinforced Concrete Seawall	EHM-21	Significant settlement behind wall causing concrete walk to be very uneven and creating potential hazards.
Reinforced Concrete Seawall	EHM-22	Significant settlement behind wall causing concrete walk to be very uneven and creating potential hazards.
Reinforced Concrete Seawall	EHM-23	Significant settlement behind wall causing concrete walk to be very uneven and creating potential hazards.
Reinforced Concrete Seawall	EHM-24	Significant settlement behind wall causing concrete walk to be very uneven and creating potential hazards.
Reinforced Concrete Seawall	EHM-25	Concrete Seawall appears to be failing. Approximately 180' of wall moving significantly toward waterside. Failure is also causing significant issues with pavement surfaces behing wall.
Reinforced Concrete Seawall	EHM-26	Concrete Seawall appears to be failing. Approximately 180' of wall moving significantly toward waterside. Failure is also causing significant issues with pavement surfaces behing wall.
Reinforced Concrete Seawall	EHM-27	Concrete Seawall appears to be failing. Approximately 180' of wall moving significantly toward waterside. Failure is also causing significant issues with pavement surfaces behing wall.
Reinforced Concrete Seawall	EHM-28	Concrete Seawall appears to be failing. Approximately 180' of wall moving significantly toward waterside. Failure is also causing significant issues with pavement surfaces behing wall.
Reinforced Concrete Seawall	EHM-29	Concrete Seawall appears to be failing. Approximately 180' of wall moving significantly toward waterside. Failure is also causing significant issues with pavement surfaces behing wall.
Reinforced Concrete Seawall	EHM-30	Concrete Seawall appears to be failing. Approximately 180' of wall moving significantly toward waterside. Failure is also causing significant issues with pavement surfaces behing wall.
Reinforced Concrete Seawall	EHM-31	Concrete Seawall appears to be failing. Approximately 180' of wall moving significantly toward waterside. Failure is also causing significant issues with pavement surfaces behing wall.
Reinforced Concrete Seawall	EHM-32	Concrete Seawall appears to be failing. Approximately 180' of wall moving significantly toward waterside. Failure is also causing significant issues with pavement surfaces behing wall.
Reinforced Concrete Seawall	EHM-33	Concrete Seawall appears to be failing. Approximately 180' of wall moving significantly toward waterside. Failure is also causing significant issues with pavement surfaces behing wall.
Steel Sheet Pile Breakwall	EHM-34	Steel Sheet Pile Breakwall in fair condition.
Perimeter Fencing	EHM-35	Damage noted to fence section. Approximately 40' of fence to be repaired.
8 – ERMA HENDERSON PARK PHOTO LOG		
STRUCTURE AND COMPONENT TYPE	**PHOTO LOG ID #**	**NOTES**
Seawall and Shoreline	EH-1	Existing concrete and steel sheet pile wall, leaning railing sections and flooding noted
Seawall and Shoreline	EH-2	Existing concrete and steel sheet pile wall, leaning railing sections and flooding noted
Seawall and Shoreline	EH-3	Water level at same elevation as top of wall

Seawall and Shoreline	EH-4	Damaged and missing light pole
Seawall and Shoreline	EH-5	Flooded area and eroision at berm
Seawall and Shoreline	EH-6	Broken post at railing
Seawall and Shoreline	EH-7	Broken post at railing
Seawall and Shoreline	EH-8	Noted erosion at berm section
Seawall and Shoreline	EH-9	Area from seawall to berm flooding
Seawall and Shoreline	EH-10	Approximately 70' of mission railing and damaged posts

4.11 Photos


OP-1


OP-2


OP-3

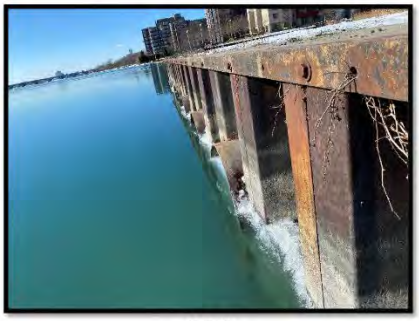

OP-4


OP-5


OP-6


OP-7


OP-8



OP-9

OP-10

OP-11

OP-12

OP-13


SP-1


SP-2


SP-3


SP-4


SP-5


SP-6

SW2

SW3

SW4

SW5

SW6


RM1


RM2


RM3


RM4


RM5


RM6


RM7


RM8


RM9


RM10


RM11


RM12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RM51

RM52

RM53

SJBL1

SJBL2

SJBL3

SJBL4

SJBL5

SJBL6


EHM-1


EHM-2


EHM-3


EHM-4


EHM-5


EHM-7


EHM-8


EHM-9


EHM-10


EHM-11


EHM-12


EHM-13


EHM-14


EHM-15


EHM-16


EHM-17


EHM-18


EHM-19


EHM-20


EHM-21


EHM-22


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EHM-24


EHM-25


EHM-26


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EHM-30


EHM-31


EHM-32


EHM-33

EHM-34

EHM-35

EH-1

EH-2

EH-3

EH-4


EH-5


EH-6


EH-7


EH-8


EH-9


EH-10