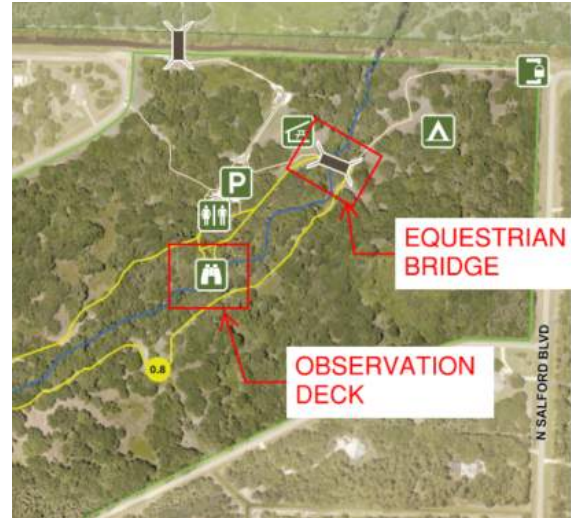




MCEP BRIDGE AND OBSERVATION DECK Limited Structural Condition Assessment

6968 Reisterstown Road
North Port, FL 34291



Submitted To:

Kimberly Humphrey
Project Manager
Public Works
1100 N. Chamberlain Blvd.
North Port, FL 34286



This item has been electronically signed and sealed by James V Barnes PE using a Digital Signature and date. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Submitted By:

Pennoni Associates Inc.
5755 Rio Vista Drive
Clearwater, FL 33760

J. Vincent Barnes III, P.E. #77754
Forensic Division Manager

Chakradhar Gondi PE # 93753
Project Engineer

NPORT22004

March 10, 2023

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EXHIBITS

EXHIBIT A – EXAMPLE PHOTOS FROM VISUAL INSPECTION

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1. EXECUTIVE SUMMARY

Based on our limited visual inspection of the equestrian bridge and observation deck conducted on February 16, 2023 at MCEP, the following damages/issues were identified. Example photos from our inspection have been included as **Exhibit A**.

EQUESTRIAN BRIDGE

- At a minimum, two timber piles supporting the bridge deck at the northwest entrance have significant deterioration and loss of cross section.
- Wood diagonal braces between timber piles below deck has significant deterioration and corrosion in steel bolt connections.
- Deteriorating wood decking panels.
- Damaged handrail vertical posts.
- Missing horizontal mid rail.

It does not appear the damaged piles can support full-service loads under equestrian traffic. Therefore, this should be considered a **Dangerous Condition** as defined by Section 202 of the 2020 Florida Existing Building Code. At the time of our site observations, the bridge does appear to be able to support the lighter pedestrian loading of 100 PSF and at the owners option could remain open solely for that use.

OBSERVATION DECK

- Four timber piles supporting the observation deck in direct contact with water have significant deterioration and loss of cross section.
- Deterioration and insect damage in several vertical post along the handrail.
- Deteriorating wood decking panels.

It is our understanding that the observation deck is being used for pedestrian traffic only. It does not appear the damaged piles in water can support full-service loads and should be considered a **Dangerous Condition** as defined by Section 202 of the 2020 Florida Existing Building Code.

In response to the dangerous conditions observed at both locations, on February 17, 2023, Pennoni issued an urgent letter recommending protective measures at these both locations. We recommended restricting equestrian traffic on the bridge until temporary shoring and further repairs are completed. We also recommended restricting access to the region of the observation deck supported by damaged piles. A copy of this letter has been included as **Exhibit B**. Following our letter, a press note has been released by the City of Northport to inform about the closure of observation deck for pedestrian use and the bridge for equestrian use. A copy of this press release has been included as **Exhibit C**.

See **Section 4** of this report for detailed inspection summary and **Section 5** for recommendations.

2. PROJECT DESCRIPTION

2.1. PROJECT INFORMATION

Pennoni Associates Inc. (Pennoni) was retained by North Port Public Works Department to perform a limited non-destructive visual structural assessment of existing conditions of two structures at the Myakkahatchee Creek Environmental Park (MCEP); a dog and horse friendly public park. A topographic survey was conducted by Pennoni on January 31, 2023. The limited visual inspection of the equestrian bridge and the observation deck was performed by Chakradhar Gondi, P.E and Lianet Fonseca-Peraza from Pennoni on February 15, 2023.

The aerial of the MCEP is shown in **Figure 1** below with all the areas marked.



FIGURE 1 - AERIAL OF MYAKKAHATCHEE CREEK ENVIRONMENTAL (MCEP) PARK MAP

2.2. SCOPE OF SERVICES OF LIMITED VISUAL STRUCTURAL CONDITION ASSESSMENT

- Perform a site visit by a structural engineer licensed in the state of Florida to visually inspect exposed and readily accessible structural elements of bridge and observation deck.
- Observation of previous repairs to determine if they appear to be sufficient or require to be supplemented. Isolated probing will be conducted to review condition sample wood members to review for damage/decay and defects.
- Provide a detailed report summarizing the observed conditions and recommendations for repair and/or further investigation. If it is determined that repairs are not viable, a description of a new replacement structures will be included.

2.3. GENERAL DESCRIPTION OF STRUCTURES

Equestrian Bridge:

Approximately ~70' x 8' timber bridge with active equestrian and pedestrian traffic. Original structural drawings were not provided for our review. The walking deck of the bridge consists of 2x6 wood decking. The 2x6 deck decking are supported on 2x10 wood joists spaced approximately at 16" on center. The joists are supported with two 2x10 dropped wood girders that span the width of bridge. The beams are lapped & toe nailed at girders. Each girder is supported by three timber piles of either 6x6 or 6x8 size. All the piles with height greater than 4ft below deck are braced by 2x6 diagonal bracing in both directions. The connections between timber piles and all other members (beam/girders/bracing) are made with 5/8" or 1/2" diameter through bolts. The handrail system above deck consists of 6x6 vertical posts and 2x6 horizontal (top, mid, bottom) rails. The handrail vertical posts are through bolted to the ends of dropped girders below deck.

Observation Deck:

Timber structure supported by piles with active pedestrian traffic. Original structural drawings were not provided for our review. The width of observation deck is roughly 5'-0" for the initial 2/3 portion of length on north side. The remaining 1/3 length on south is wider with +/- 11'-0" width. The decking consists of 2x6 wood panel boards. The 2x6 decking is supported on 2x8 beams spaced at 2'-0" o.c. maximum spacing approximately. The 2x8 beams are supported on dropped girders spanning the width of bridge. The size of girders are two 2x8 in narrow bays and appears to be (1) 6x8 in wider bays. Every girder is supported in 6x6 timber piles at ends. The handrail post above deck consists of 6x6 vertical posts and horizontal (top, mid, bottom) rails.

Background:

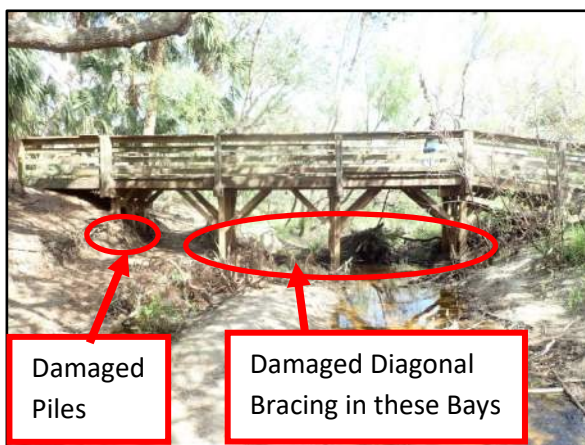
Following the events of Hurricane Ian on September 29, 2022, most of the park was reportedly inundated in flood water for at least a week. The high wind and storm surge events during Hurricane Ian may have worsened some of these damages. At the time of our site visit, water levels had lowered and are assumed to be at the normal levels.

3. INSPECTION SUMMARY

Both structures were visually inspected to determine current conditions in readily accessible areas. Relevant photos from our inspection have been included in the attached **Exhibit A**. Listed below are the issues observed during our site visit along with a discussion as to probable causes and relevant comments.

3.1. EQUESTRIAN BRIDGE

- A. At least two timber piles supporting the bridge deck at the northwest entrance were noted to have significant deterioration and loss of cross section. The location of these piles was marked in **Picture-1** below. It was noticed that this bridge has active equestrian traffic. The typical weight of a mature horse is above 1200lb; the state of these piles represents a safety concern with such loads. **(See Photograph 2)**.
- B. Wood diagonal braces between timber piles below deck has significant deterioration and corrosion in steel bolt connection **(See Photograph 3-4)**. The location of these damaged braces was also shown in **Picture-1** below.
- C. The framing below deck in the initial 20ft length of the deck at southeast end could not be inspected due to lack of access. See **Picture-2** below showing the southeast end.
- D. Damages in the first line of girder on southeast end. The location of this girder was also shown in **Picture-2** below.
 - i. Separation between handrail post and girder **(See Photograph 5A)**.
 - ii. Deterioration at the end of girder at this location **(See Photograph 5A)**.
 - iii. Rotten Handrail post **(See Photograph 5B)**.
 - iv. Corrosion in girder to pile bolts and girder to handrail bolt connections **(See Photograph 5C)**.



Picture 1 – Northwest Entrance Of Bridge



Picture 2 – Southeast Entrance Of Bridge

- E. The beams and girders below the deck that were inspected at other locations during our limited visual inspection appeared to be in acceptable condition at the time of our site visit.

- F. Corroded bolts were noticed in several locations: **(See Photograph 3-6)**
 - i. Diagonal bracing to piles connections.
 - ii. Handrail posts to girders connections.
 - iii. Girder to pile connections.Empty bolt holes adjacent to existing bolt connections were noticed in some members. This indicates that previous repair attempts may have been made to some of these connections.
- G. 2x6 deck panels were noted to be soft and deteriorating at many places due to water intrusion, possible insect damage and vegetation growth. It appears that these deck panels are at the end of their useful life cycle. **(See Photograph 7)**
- H. Several 6"x6" vertical posts of the handrail were found to be rotten and deteriorated with water intrusion, insect and/or bird damage. Previous repair attempts were made to some of these handrail posts in the form of 2x6 members sistered to the damaged posts. The deterioration appears to be active & ongoing at several locations of the handrail post. **(See Photograph 6 & 8-9)**
- I. One section of the handrail has missing horizontal midrail beam. It was also noted that the vertical handrail post supporting this midrail has significant damage with water intrusion and insect damage **(See Photograph 9)**. Unless the damaged vertical posts are replaced, it is likely that horizontal rails at other locations connected to damaged verticals may also fail in similar fashion.
- J. It was noted that top rail at one section of handrail is deflecting. The vertical posts holding this beam were deteriorated. Previous repair attempts were made to the damaged vertical posts by sistering 2x6 members to damaged posts. **(See Photograph 10)**
- K. Signs of raised water level were noticed. It was pointed out that during Hurricane Ian, the park was flooded and for more than a week inaccessible. **(See Photograph 11)**

3.2. OBSERVATION DECK

- A. The four timber piles supporting the observation deck on south end and in direct contact with water have significant deterioration and loss of cross section (**See Photograph 12-13**). The location of these damaged piles was shown in **Picture-3** below.
- B. Many large trees are located at close proximity to the deck in the wider region of south end (**See Photograph 11-15**). The location of these damaged piles was shown in **Picture-4** below.
 - i. Two palm trees are located in the middle of the deck, with openings made in deck around the tree's trunk. One of the palm trees is leaning against the handrail.
 - ii. Large oak tree at corner with branches resting on handrail.
 - iii. The weight of these trees resting on the handrail can cause overstress in the handrail and deck framing. The railings area leaning due to the weight of the trees.



Picture 3 – South End of Observation Deck



Picture 4 – Trees in Observation Deck

- C. Several 6"x6" handrail posts above deck have insect damage, water intrusion and/or missing bolts connections. Some of this post have previous repairs attaching 2"x6" to add additional support to the handrail. The insect infestation appears to be active & ongoing at several locations of the handrail post (**See Photograph 15-17**).
- D. The beams and girders below the deck that were inspected during our limited visual inspection appeared to be in acceptable condition at the time of our site visit.
- E. 2x6 deck panels were noted to be soft and deteriorating at many places due to water intrusion and possible vegetation growth. It appears that these deck panels are at the end of their useful life cycle (**See Photograph 18**)

4. REPAIR RECOMMENDATIONS

4.1. EQUESTRIAN BRIDGE

- A. If the bridge is desired to remain in operation for equestrian traffic until repairs are made, it is recommended to install temporary shoring.
- B. New timber piles or steel helical piles can be added next to the damaged piles to support the bridge framing.
 - a. Geotech testing will be required to obtain site specific soil information for the design of the new piles.
- C. Remove and replace damaged diagonal bracing between piles below deck with new pressure treated wood diagonals.
- D. Replace corroded steel connections with new stainless-steel bolts.
- E. Remove and replace damaged handrail vertical posts above deck with new pressure treated posts.
- F. Remove and replace damaged 2x6 deck panels with new pressure treated deck panels.
- G. All other piles, beams, and girders below deck should be inspected further when the deck panels are being removed. Targeted repairs may be required as needed to reinforce any damaged members.

4.2. OBSERVATION DECK

- A. Based on the damages observed in four piles in water and additional distress that can be caused by the trees resting on handrail, we recommend restricting access at least for a partial portion of the observation deck in south end as shown in **Figure 2** below.

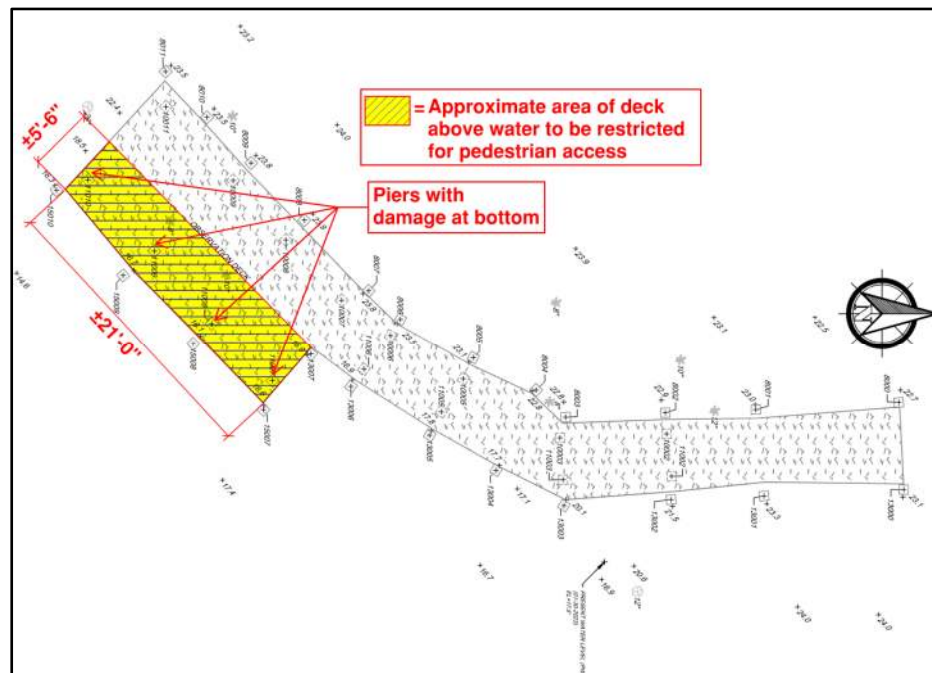


FIGURE 2 – OBSERVATION DECK SHOWING THE REGION TO BE RESTRICTED FOR ACCESS

- B. New timber piles or steel helical piles can be added next to the damaged piles to support the bridge framing.
 - a. Geotech testing will be required to obtain site specific soil information for the design of the new piles.
- C. Remove and replace damaged handrail vertical posts above deck with new pressure treated posts.
- D. Remove and replace damaged 2x6 deck panels with new pressure treated deck panels.
- E. All other piles, beams, and girders below deck should be inspected further when the deck panels are being removed. Targeted repairs may be required as needed to reinforce any damaged members.
- F. Replace corroded steel connections with new stainless-steel bolts.

Pennoni is available to provide a detailed design drawings of repairs or replacement as part of a separate scope of services if requested.

5. LIMITATIONS

Information for this limited investigation and assessment was completed based on a review of the listed documents and a visual non-intrusive site observation. Our review is not intended to be a comprehensive review of all building components.

The signage and seal on this project indicates professional engineering responsibility for the structural portion only. General architecture, life safety, accessibility, electrical, mechanical, fire protection, etc. are the responsibility of others.

EXHIBIT A
EXAMPLE PHOTOS FROM VISUAL INSPECTION

EXHIBIT A
EXAMPLE PHOTOS FROM VISUAL INSPECTION

EQUESTRIAN BRIDGE



Photograph #1: Overall Equestrian Bridge



Photograph #2: Damaged Piles



Photograph #3: Damaged Brace



Photograph #4: Corroded Bolts



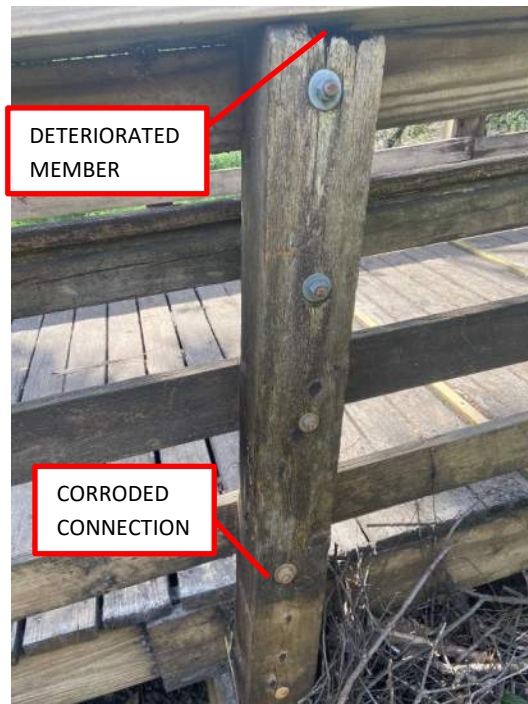
Photograph #5A: Damaged Girder and Handrail Post



Photograph #5B: Damaged Girder and Handrail Post



Photograph #5C: Corroded Girder to Beam Connection



Photograph #6: Damaged Handrail Post



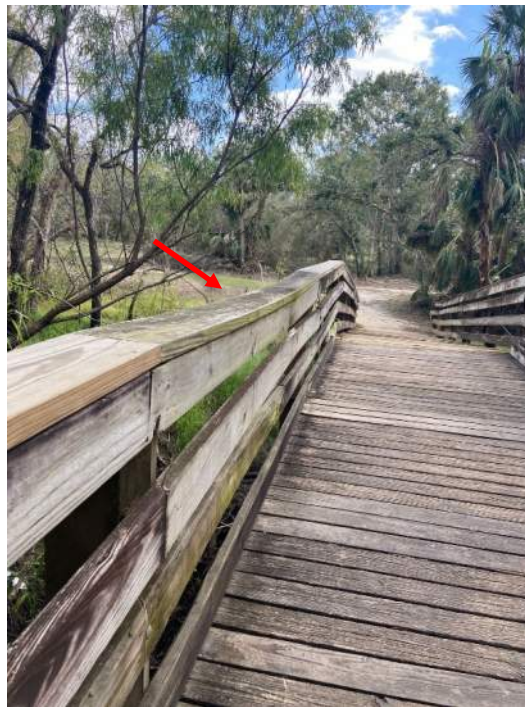
Photograph #7: Rotten Deck



Photograph #8: Bird Damage at Post



Photograph #9: Beam Missing on Handrail



Photograph #10: Deflection at Beam on Handrail



Photograph #11: Debris Underside the Deck

OBSERVATION DECK



Photograph #11: Overall Observation Deck



Photograph #12: Piles on Water



Photograph #13: Damaged Pile



Photograph #14: Tree Branch Resting on Handrail



Photograph #15: Tree Very Close by to Deck



Photograph #16: Damaged Post



Photograph #17: Damaged Post



Photograph #18: Damaged Deck

EXHIBIT B
DANGEROUS CONDITION REPORT

February 17, 2023

PROJECT NO. NPORT22004

Kimberly Humphrey
Project Manager
Public Works
1100 N. Chamberlain Blvd.
North Port, FL 34286

RE: MCEP BRIDGE AND OBSERVATION DECK ASSESSMENT AND REPAIRS
MYAKKAHATCHEE PARK
6968 REISTERSTOWN ROAD
NORTH PORT, FL 34291

Ms. Humphrey,

At your request, on Wednesday, February 15, 2023, Chakradhar Gondi, PE and Lianet Fonseca representing Pennoni performed an onsite limited visual assessment of the equestrian bridge and observation deck at the above referenced project.

A comprehensive report will be submitted upon completion of our evaluation, but in the meantime, the conditions noted below present a safety concern and require immediate attention. A brief discussion of each item has been included along with temporary recommendations to address the issues until permanent repairs can be made.

1.0 Equestrian Bridge:

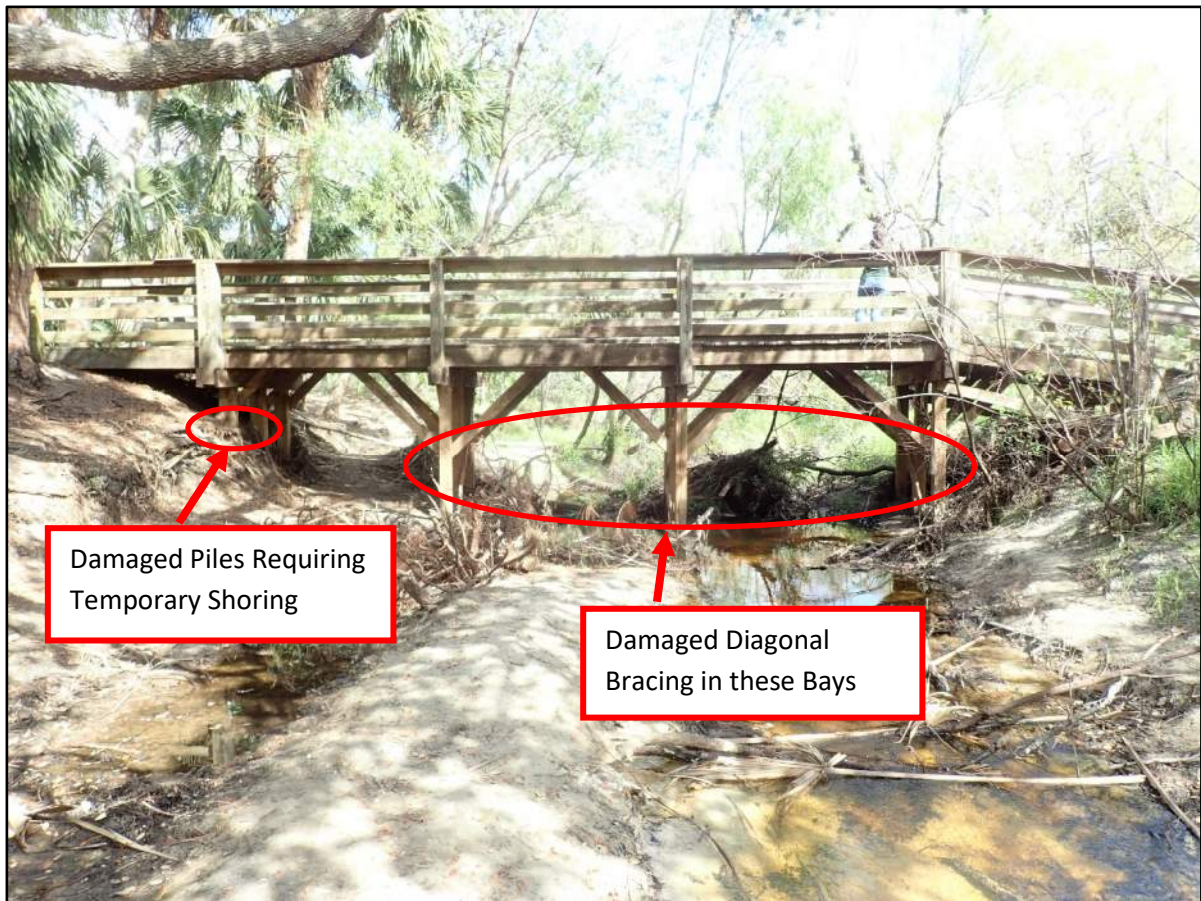
Significant damage was observed in (2) timber piles supporting the bridge deck and in diagonal bracing between the piles. It is our understanding that the bridge is being used for pedestrian and equestrian traffic.

1. Two timber piles near the end of bridge have significant deterioration and loss of cross section.
2. Wood diagonal braces between timber piles below deck has significant deterioration and corrosion in steel bolt connections. The damage is more extensive at the bottom of the piles.

It does not appear the damaged piles can support full-service loads under equestrian traffic. Therefore, this should be considered a **Dangerous Condition** as defined by Section 202 of the 2020 Florida Existing Building Code. See the below **Photograph 1** for the relative location of the damaged beams.

To address this damage, we recommend the following:

1. Immediately restrict equestrian traffic on the bridge.
2. Place signage noting closure for equestrian traffic.
3. Install temporary shoring to support beams and stringers at the damaged piles location.
4. Pedestrian traffic may be allowed until temporary shoring and further repairs are completed.
5. Repairs to the timber piles by replacing or reinforcing with new helical or timber piles.
6. Repairs to the diagonal bracing and bolt connections.



Photograph 1 – Equestrian Bridge with Damages

2.0 Observation Deck:

Significant damage was observed at the bottom of (4) timber piles in water supporting the bridge deck. Wood deterioration and loss of cross section was observed at the bottom of these piles located on the south end. See the below **Photograph 2** for the relative location of the damaged piles. It is our understanding that the bridge is being used for pedestrian traffic only. It does not appear the damaged piles can support full-service loads and should be considered a **Dangerous Condition** as defined by Section 202 of the 2020 Florida Existing Building Code.

To address this damage, we recommend the following:

1. Immediately restrict access at least for a partial area of the deck that is supported on the damaged (4) piles. See the below **Figure 1** for the approximate region of deck that needs to be restricted for access.
2. Place signage noting closure of the partial area of deck.
3. Repairs to the damaged timber piles by replacing or reinforcing with new helical or timber piles.



Photograph 2 – Observation Deck with Damages

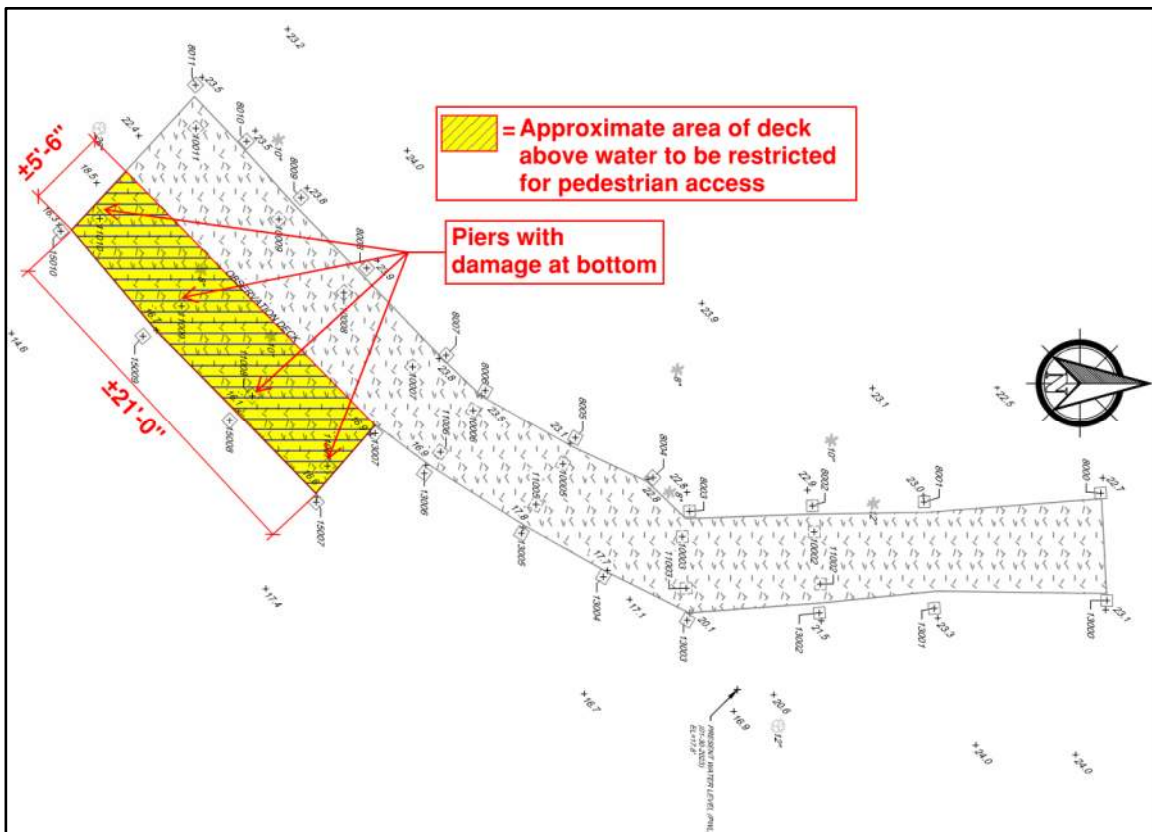


Figure 1 – Observation Deck Showing the Region to be Restricted for Access

Pennonni is available to assist in any way with temporary protection measures.

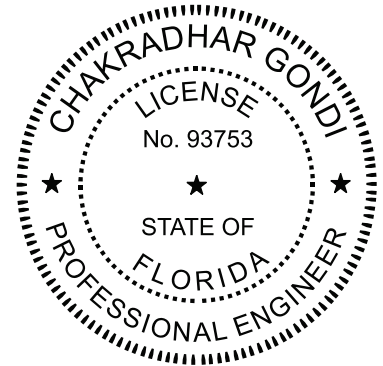
It shall be noted that the above listed issues do not include completed list of all identified items found during our visual inspection or unknown hidden damage. A final report will be issued upon completion of our on-going assessment of the structures. The sign and seal on this project indicates professional engineering responsibility for the structural portion only. General architecture, life safety, accessibility, electrical, mechanical, etc. are the responsibility of others.

Sincerely,
Pennonni Associates

J. Vincent Barnes III, P.E. #77754
Forensic Division Manager

Chakradhar Gondhi, P.E. #93753
Project Engineer

Attachment: Exhibit A – Relevant Inspection Photos



This item has been electronically signed and sealed by Chakradhar Gondhi PE using a Digital Signature and date. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Exhibit A Relevant Inspection Photos



Photograph 1 – Damaged Piles In Equestrian Bridge



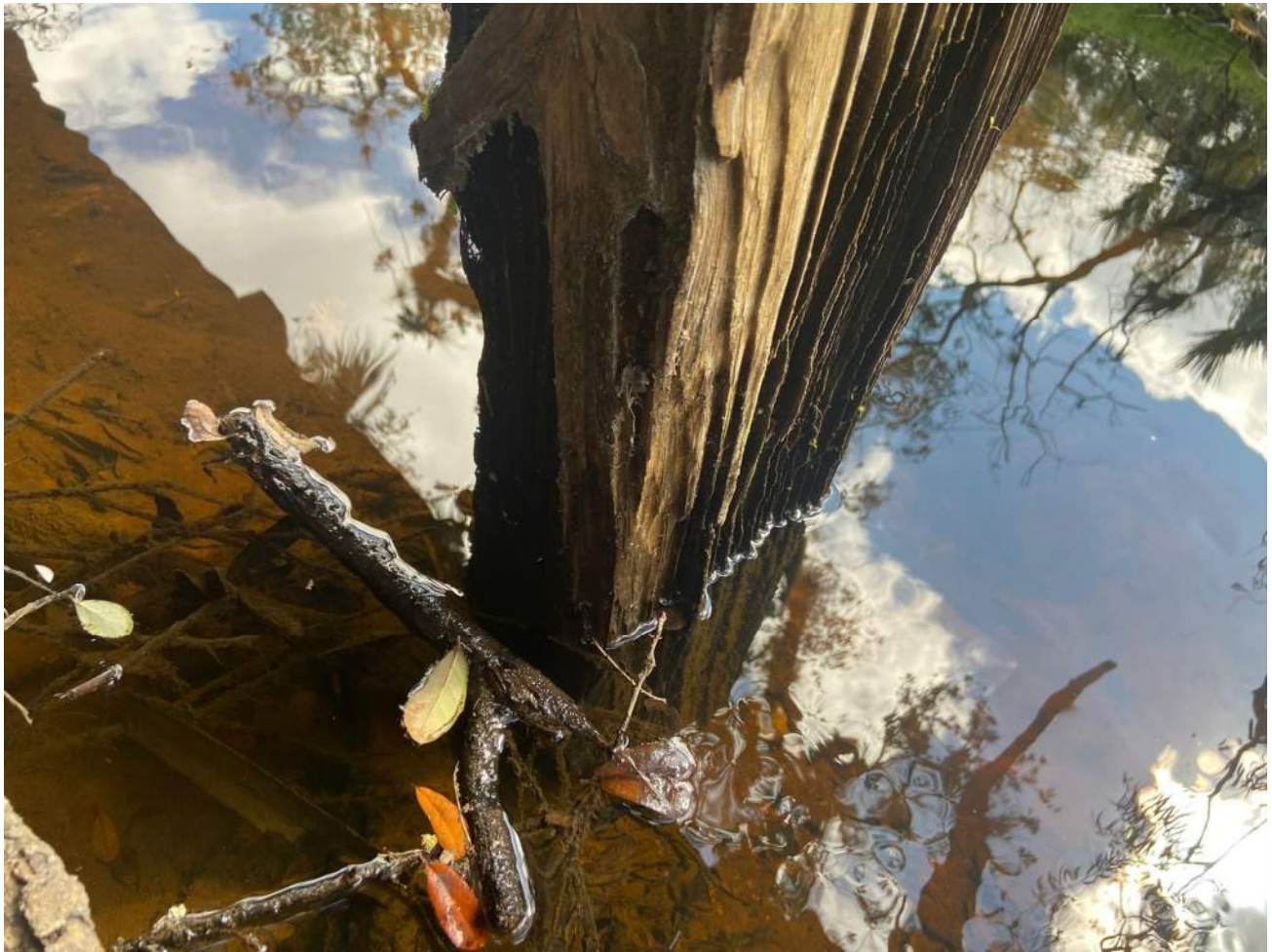
Photograph 2 – Closeup Of Damaged Piles In Equestrian Bridge



Photograph 3 – Example of Damaged Bracing In Equestrian Bridge



Photograph 4 – Damaged Piles In Observation Deck



Photograph 5 – Closeup of Damaged Piles In Observation Deck

EXHIBIT C
COPY OF PRESS RELEASE

Chakri Gondi

From: Laura Ansel <lansel@northportfl.gov>
Sent: Friday, February 17, 2023 4:57 PM
Subject: Amenities closed at Myakkahatchee Creek Environmental Park for repairs

FOR IMMEDIATE RELEASE: Feb. 17, 2023

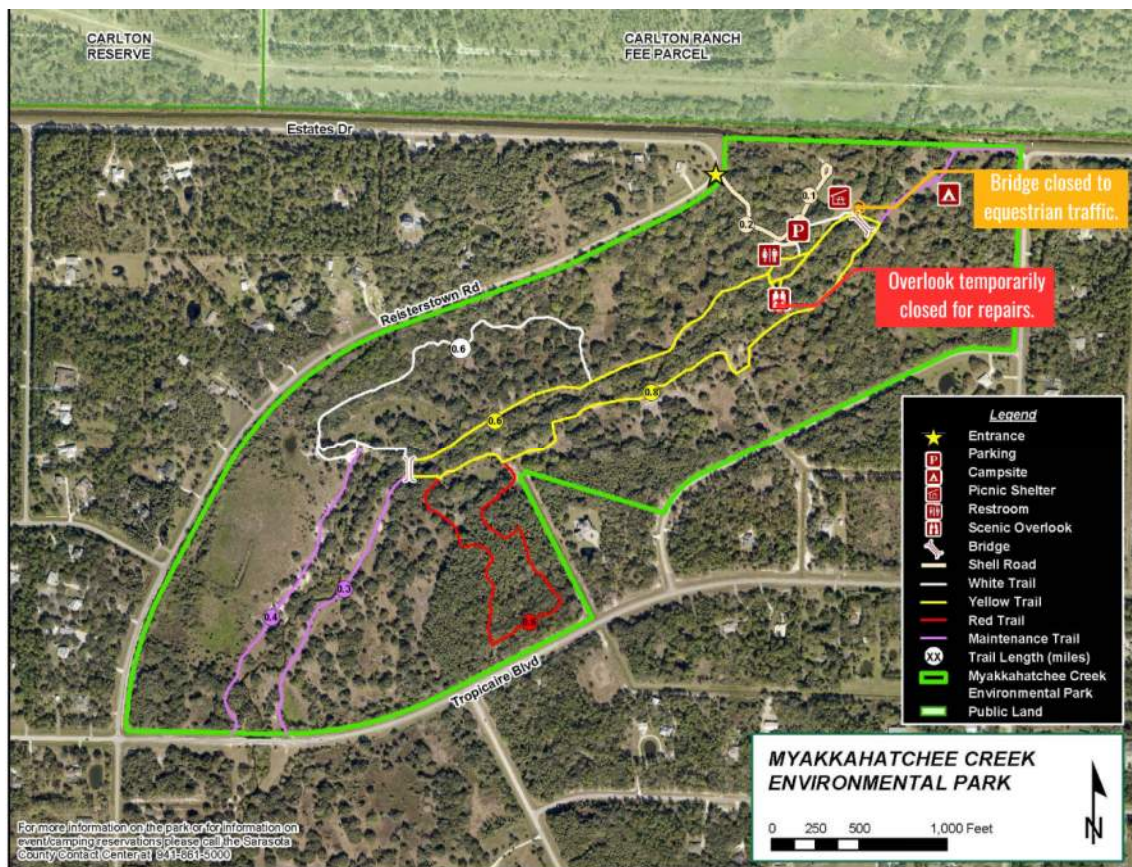
MEDIA CONTACT:
Communications@NorthPortFL.gov 941-429-7169

Amenities closed at Myakkahatchee Creek Environmental Park for repairs

NORTH PORT, FL — Upon inspection at the Myakkahatchee Creek Environmental Park, 6968 Reisterstown Road, it was determined that the scenic overlook and one of the bridges had storm damage. For the safety of visitors, the scenic overlook will be temporarily closed until repairs can be completed. The bridge is safe for pedestrian foot traffic, but will be temporarily closed to equestrian use until the necessary repairs are completed.

Thank you for your patience and understanding as we work on these repairs! For more information, call 941-429-PARK(7275).

Site map



Laura Ansel, MAC, APR
Marketing & Partnership Manager

4970 City Hall Blvd. | NorthPortFL.gov/ParksAndRecreation
C: 941.302.7769 | LAnsel@NorthPortFL.gov

