BRETT'S WATERWAY CAFÉ
SUBSTRUCTURE CONDITION ASSESSMENT

For the
CITY OF FERNANDINA BEACH, FLORIDA

JUNE 2023

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KH142806003

Brett's Waterway Café – Substructure Condition Assessment

For the City of Fernandina Beach, Florida

Contents

EXECUTIVE SUMMARY

At the request of The City of Fernandina Beach ("Owner"), Kimley-Horn and Associates, Inc. ("Kimley-Horn") completed a limited condition assessment of the substructure for their Brett's Waterway Café building at 1 S. Front Street, Fernandina Beach, FL 32034 ("Brett's Waterway Café") as part of the letter agreement developed in May 2023 and Purchase Order #23000190 issued in June 2023. The limited condition assessment was performed during the day of June 9, 2023 at the time of the morning low tide. The purpose of the condition assessment was to observe the general condition of the substructure and identify deficient items. No destructive or intrusive testing was performed as part of our evaluation. Also, due to the advanced deterioration of the substructure documented in the Hanson Professional Services report dated March 2022, visual observations by Kimley-Horn staff were made from only outside of the limits of the building substructure. Observations were made both visually from a kayak in the water adjacent to the structure and via the use of an aerial drone, which was piloted underneath the building.

The existing structure serves as a restaurant and gift / souvenir shop located at 1 S. Front Street, Fernandina Beach, FL 32034. Based on historical information provided by the City, the Brett's Waterway Café substructure consists of precast double tees with a topping slab placed around a cast-in-place octagonal system of reinforced concrete beams and slabs supported by reinforced concrete piles. The ends of the double tees away from the octagonal framing are supported on other reinforced concrete beams spanning between reinforced concrete piles. The City's information also describes two sets of double tees used in the construction of the substructure. The original double tees (aka Lower Double Tees), constructed in 1962, were covered over by new reinforced concrete double tees and a wood framed floor in 1988. Although the original double tees were left in place, the City's historical information indicates that they no longer support any load beyond their own self weight.

Observations made during the limited non-destructive, visual review have been noted in this report. Recommendations regarding those observations have been included in the Recommendations section of the report. Based on limited, non-destructive, visual observations, the overall performance rating for each substructure element is as follows:

1) Lower Double Tees (1962): Failed and Failing
2) Upper Double Tees (1988): N/A: Not accessible for observation during this condition assessment
3) Concrete Beams: Poor
4) Concrete Piles: Poor

Based on our observations, the historical information from the City, and the detailed information in the Hanson report from March 2022, the deterioration of the substructure appears to have gotten worse since last year. In our opinion, the substructure has surpassed its useful life and could sustain additional damage, including failure of structural elements during a weather event with high winds, storm surge, and/or waves.

We recommend that the building structure, pedestrian access adjacent to the structure, and the area beneath the structure be closed and cordoned off until repairs can be made to the substructure and structure. Additionally, we recommend that the City advise everyone in that area, including construction personnel, that the introduction of vibrations (such as pile driving, demolition, vibratory compaction equipment, etc.) near the building could cause deteriorated structural elements in the building and its substructure to fail.

INTRODUCTION

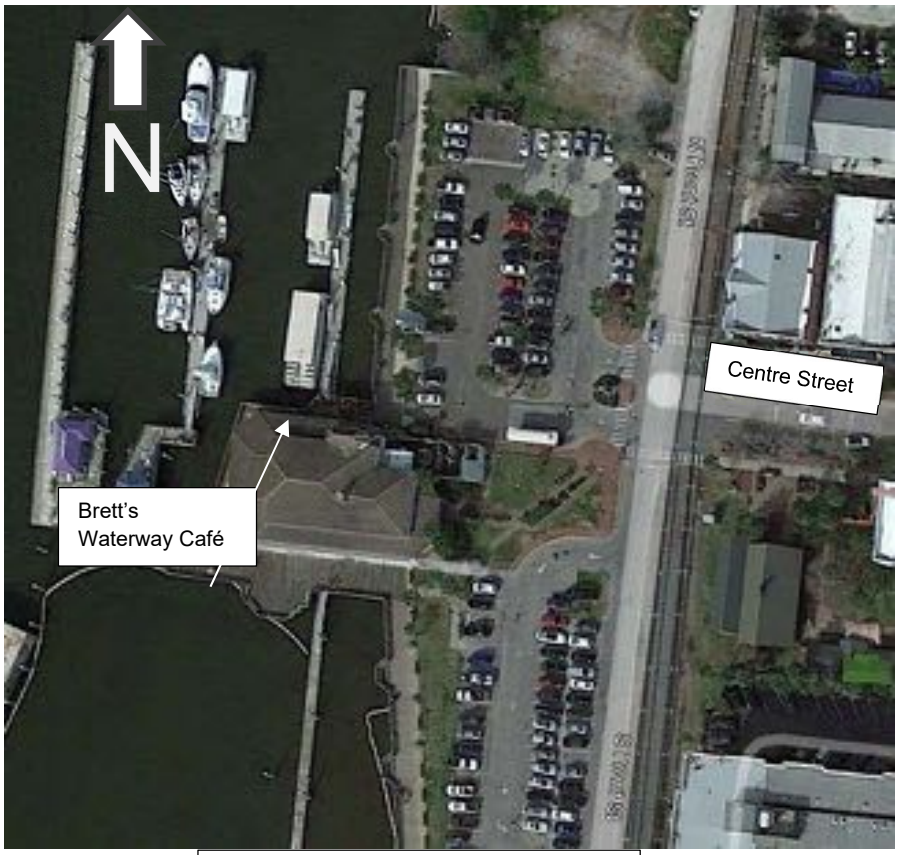
SCOPE OF WORK

At the request of The City of Fernandina Beach ("Owner"), Kimley-Horn and Associates, Inc. ("Kimley-Horn") completed a limited condition assessment of the substructure for their Brett's Waterway Café building at 1 S. Front Street, Fernandina Beach, FL 32034 ("Brett's Waterway Café") as part of the letter agreement developed in May 2023 and Purchase Order #23000190 issued in June 2023. The limited condition assessment was performed during the day of June 9, 2023, starting near the time of the morning low tide. The purpose of the condition assessment was to observe the general condition of the substructure and identify deficient items. No destructive or intrusive testing was performed as part of our evaluation. Also, due to the advanced deterioration of the substructure documented in the Hanson Professional Services report to the City of Fernandina Beach dated March 2022, visual observations by Kimley-Horn staff were made from only outside of the limits of the building substructure. Observations were made both visually from a kayak in the water adjacent to the structure and via the use of an aerial drone, which was piloted underneath the building.

GENERAL DESCRIPTION

Provided below is a general description of the Brett's Waterway Café at 1 S. Front Street, Fernandina Beach, FL 32034 based on historical information from the City and our condition assessment site visit. The aerial image is from Google Earth Pro.

- **Property:** The property is located at 1 S. Front Street, Fernandina Beach, FL 32034. The structure observed is the substructure system currently supporting a restaurant and gift / souvenir shop.



Aerial Image Courtesy of Google Earth Pro

- **Year Constructed:**
  - Constructed in 1962.
  - Substructure Major Renovations, including new secondary substructure above the original double tees in 1988.
  - Pile Repair work in 2006.
- **Construction Type:**
  - Original / Lower Double Tees (1962) [no longer considered load bearing beyond self weight based on City info]
  - New Double Tees (1988)
  - Reinforced Concrete Beams spanning between piles
  - Reinforced Concrete Piles

Based on historical information provided by the City, the Brett's Waterway Café substructure consists of precast double tees with a topping slab placed around a cast-in-place octagonal system of reinforced concrete beams and slabs supported by reinforced concrete piles. The ends of the double tees away from the octagonal framing are supported on other reinforced concrete beams spanning between reinforced concrete piles. The City's information also describes two sets of double tees used in the construction of the substructure. The original double tees,

constructed in 1962, were covered over by new reinforced concrete double tees and a wood framed floor in 1988. Although the original double tees were left in place, the City's historical information indicates that they no longer support any load beyond their own self weight.

OBSERVATIONS

Outlined below are the key findings of our limited condition assessment of the structure. The intent of this summary is not to list every deficiency observed, but rather to provide a more detailed description of key items included in the executive summary and introduction above.

An overview of our observations and recommendations are as follows:

Based on our limited visual observations, historical information conveyed by the City of Fernandina Beach, and information presented in the Hanson Professional Services report to the City of Fernandina Beach dated March 2022 (see Appendix C), the substructure of the Brett's Waterway Café has deteriorated, been repaired, and continues to deteriorate. A serious situation involves the condition of the lower double tees. Historical information states that the lower double tees currently only support their own self weight. Based on our observations, these lower double tees have advanced deterioration to the point of loss of total section of the tee stem in many locations where they bear on the perimeter beams; cracking through the full section of more than one lower double tee; and loss of concrete and reinforcing steel in the bottoms of several lower double tee stems. This advanced deterioration is to the point that one lower double tee has fallen into the river below the building and several of the other lower double tees may be close to losing the capacity to support their own self weight. When the lower double tees fail, they have the potential to strike and damage the existing piles and cause structural damage to the supporting beams as they rotate on their points of bearing. The existing reinforced concrete beams spanning between the piles were previously reported to have cracks, delamination, and pitting in the Hanson report. Those cracks, delamination, and pitting still exist and remain open to water and saltwater intrusion which will deteriorate the reinforcing steel within the beams and lead to a loss of structural capacity. Since our visual observations were made from a distance and using an aerial drone for safety reasons, we did not collect measurements or otherwise quantify the defects we observed. Therefore, were unable to assess whether or not specific defects have increased in size, length, or severity as compared to the information presented in the Hanson Professional Services report from March 2022. The above water portions of the piles are covered in significant marine life limiting our observation to a small sections of the top of the piles where they intersect with the reinforced concrete beams. These short sections of the piles appear to be in fair condition. Based on historical information provided by the City, the piles have been repaired in the past. We observed what appeared to be pile encasement and jacketing type repairs, most of which is covered in marine life. We were unable to observe the condition of any pile below the water or mudline.

Representative photographs were taken to provide examples of the observed deficiencies and can be seen on the pages that follow.

1.01~West Elevation at the Northwest corner of the building

1.02~Enlarged view of West Elevation at the Northwest corner of the building. Horizontal cracking in the concrete beams and marine growth on piles.

1.03~ West Elevation looking at the center of the building exterior. Concrete beams with multiple horizontal cracks. Marine growth on piles.

1.04~ Enlarged View of West Elevation looking at the center of the building exterior. Reinforced concrete beam / pile cap marked "B1" & "B2" by others in previous condition assessment with horizontal cracking at bottom of beam.

1.05~ Southeast portion of substructure. Timber piles and underside of boardwalk decking in the foreground. Reinforced concrete piles with marine growth in the background. Failed reinforced concrete lower double tee (1962) on righthand side of picture.

1.06~ Southeast portion of substructure. Timber piles and underside of boardwalk decking in the foreground. Reinforced concrete piles with marine growth in the background. Failed reinforced concrete lower double tee (1962) on righthand side of picture. Other lower double tees missing the bottom of their stems.

1.07~Southeast portion of substructure looking northwest. Concrete beams without visible defects. Piles with marine growth.

1.08~ South-central portion of substructure looking north. Lower double tees with missing portions of their stems. Concrete beams without visible defects. Piles with marine growth.

1.09~ South-central portion of substructure looking northeast. Lower double tees with missing portions of their stems. Concrete beams without visible defects. Piles with marine growth.

1.10~ Western portion of substructure looking northeast. Lower double tees with missing portions of their stems. Concrete beams with horizontal cracking and spalled concrete. Piles with marine growth.

1.11~ Western portion of substructure near south side looking east. Lower double tees with missing portions of their stems. One of the lower double tees has failed and dropped into the river in the background of the picture. Concrete beams with horizontal cracking in the bottom face. Piles with marine growth.

1.12~ West side of substructure looking northeast. Concrete beams with multiple horizontal cracks in bottom and side faces. Marine growth on piles.

1.13~ West side of substructure looking northeast. Concrete beams with missing / spalled concrete and horizontal cracking; piles with some repairs and marine growth.

1.14~ West side of substructure looking northeast. Lower double tees with missing sections of the stem at the points of bearing and along the span; concrete beams with missing / spalled concrete and horizontal cracking; piles with some repairs and marine growth.

1.15~ West side of substructure near north side of structure looking east. Lower Double Tees with missing sections of the stem at the points of bearing and along the span; concrete beams with horizontal cracking in the bottom face; piles with some repairs and marine growth.

1.16~Lower double tees with missing sections of the stem at the points of bearing and along the span; concrete beams with horizontal cracking; piles with some repairs and marine growth.

1.17~Aerial drone headed under building from the West

1.18~Aerial drone entering substructure area from the West

1.19~Lower double tees missing stems. Concrete beam in Octagon area with prior patching.

1.20~ Lower double tees missing stems. Concrete beam in Octagon area with patching and surface.

1.21~Lower double tees missing stems. Top of one Lower double tee has deflected. Concrete beams with patching.

1.22~Lower double tee with full section crack, missing portions of stem, and deflection.

1.23~ Lower double tee with full section crack, missing portions of stem, and deflection.

1.24~ Lower double tees with missing sections of the stem along the span; concrete beams with horizontal cracking; piles with marine growth.

1.25~Lower double tees with missing sections of the stem along the span; concrete beams in fair condition; piles with marine growth.

1.26~Southwestern corner of substructure; Lower double tees with missing sections of the stem along the span; concrete beam with horizontal cracking entire length of beam and missing bottom section at pile, righthand side of picture; piles with marine growth.

1.27~Lower double tees with missing sections of the stem along the span; concrete beams in good condition; piles with marine growth.

1.28~Northern portion of substructure; Lower double tees with missing sections of the stem at points of bearing and along the span; Octagonal area beams in good condition; beam on righthand side of picture has horizontal crack near bottom; piles with marine growth.

1.29~Northern portion of substructure; Lower double tees with missing sections of the stem along the span; Octagonal area beams in good condition; piles with marine growth.

1.30~Northeast area of substructure looking southeast Lower double tees missing sections of the stem at points of bearing and along the spans; Octagonal area beams in fair condition with some patching; beam in picture foreground has cracking and spalling along bottom; piles with marine growth.

1.31~ Northeast area of substructure looking south; Lower double tees missing sections of the stem at points of bearing and along the spans; Octagonal area beams in fair condition with some patching; beam in picture foreground has cracking and spalling along bottom; piles with marine growth.

1.32~Northeast area of substructure looking east Lower double tees missing sections of the stem at points of bearing and along the spans; Octagonal area beams in fair condition with some patching; beam in picture foreground has cracking and spalling along bottom; piles with marine growth.

1.33~ Northeast area of substructure looking south; Lower double tees missing sections of the stem at points of bearing and along the spans; Octagonal area beams in fair condition with some patching; beam in picture foreground has cracking and spalling along bottom; piles with marine growth.

RECOMMENDATIONS

The Brett's Waterway Café Facility substructure is exposed to the environment and requires diligent upkeep to maintain structural components in good condition. Anywhere water intrusion is observed should be addressed as quickly as possible, as ignoring these items can accelerate the deterioration of the substructure. Based on our observations, the historical information from the City, and the detailed information in the Hanson Professional Services report from March 2022, the deterioration of the substructure appears to have gotten worse since last year. In our opinion, the substructure has surpassed its useful life and could sustain additional damage, including failure of structural elements during a weather event with high winds, storm surge, and/or waves.

We recommend that the building structure, pedestrian access adjacent to the structure, and the area beneath the structure be closed and cordoned off until repairs can be made to the substructure. Additionally, we recommend that the City advise everyone in that area, including construction personnel, that the introduction of vibrations (such as pile driving, demolition, vibratory compaction equipment, etc.) near the building could cause deteriorated structural elements in the building and its substructure to fail.

APPENDIX A - LIMITATIONS

Kimley-Horn and Associates, Inc. endeavors with this report to assist the Owner in the understanding of the existing conditions of the existing structure in an effort to plan for the repair and maintenance of the structures. This report is based on the specific observations made and the professional opinion and experience of Kimley-Horn. Our recommendations do not provide specific repair details or specifications. The report is not a warranty or guarantee of the items noted. The extent of our evaluation was limited, and we cannot guarantee that the assessment discovered every possible condition that has or will occur.

Throughout the existing structure's service life, it will be exposed to environmental conditions detrimental to the structural integrity and the aesthetic system conditions. Kimley-Horn cannot guarantee further deterioration will not occur over time. However, preventative maintenance performed by the Owner can help to minimize the long-term repair needs.

This report has been prepared in accordance with the professional standard of care. No other warranties or guarantees, express or implied, are made or intended. This report has been prepared solely for the City of Fernandina Beach for the purpose stated herein and should not be relied upon by any other party for any other purpose. Specifically, this report may not be used in connection with actual renovation or construction of any kind. The conclusions in this report are based on the limited investigation described above. Any reliance on this report by any party other than the City of Fernandina Beach shall be without liability to Kimley-Horn and Associates, Inc., or its employees.

Rating Guidelines:

The following narrative provides a summary of the rating guidelines and brief definitions of some items that were observed in the garage and noted in this report.

Good – rating denotes no life-safety issues, no immediate losses of strength or performance, including aesthetics, and no short-term changes in performance with regular maintenance and observation. A structural system is said to be in good condition if there is minor concrete damage, minimal corrosion, and no leaks or leaching. An operational system is said to be in good condition if the system is in good working order with minor cleaning or routine maintenance required.

Fair – rating denotes no life-safety issues and functional performance but repairs are needed to maintain the current level of service. There are some aesthetic issues and inconveniences to patrons. Without repairs, the deterioration will continue to accelerate. Fair condition is assigned to the structural system if moderate damage, corrosion, leaks, or leaching is found in several locations or if severe damage is found in a few locations.

Poor – rating denotes obvious problems, even to the casual observer, that without immediate remediation will result in further loss of structural member capacity. This condition can produce noticeable deflections in members, cause loose concrete to spall away, and presents the possibility of an unsafe condition to pedestrians in the near future. The system may still be functioning at this state but repair costs will increase rapidly with the amount of time that passes before the item is corrected. The structural system is considered poor if severe damage is found in several locations. A poor assessment is assigned to any operational system that requires replacement.

N/A – Not Applicable to this structure. While typically included as a part of our normal condition assessment, this particular category of items was not originally installed in this structure or was not part of the scope of this evaluation.

Definitions:

The photographs provided in Appendix B are sample representative photographs of each definition.

Figure 1: Failing Concrete Patch

1. Patches – Repairs to concrete that require a filler material, usually grout or repair mortar. Patches may be required due to the following causes: reinforcing steel corrosion, concrete spalling, concrete delaminations, failing grout pockets, or external forces, such as automobile collisions. See Figure 1.

Figure 2: Concrete Delamination

2. Delamination – A delamination of concrete occurs when bleed (excess) water rises in concrete to just below the concrete surface as the concrete is curing. This process leaves a thin layer of concrete that separates from the concrete body. Delaminations are detectable by sounding the suspected concrete with a metal object, such as a chain or hammer, and listening for the distinctive dead/hollow sound produced. The sounding instrument will produce a crisp metal ring when sounding over solid concrete. See Figure 2.

Figure 3: Concrete Spall

3. Spall – A spall is generally a piece of concrete that separates from the main body of the concrete member. Examples include a grout patch that has shrunken away from its pocket or a corner of a member that has broken off and is in the process of falling away or has fallen away already. See Figure 3.

Figure 4: Structural Steel Corrosion and Scaling

4. Surface Corrosion and Scaling – Surface corrosion occurs when steel is oxidized. Air, water, and chlorides are some agents that typically cause steel to corrode. Scaling is a more advanced condition of corrosion and occurs when corrosion is deeper than the surface and flakes off in pieces or 'scales'. See Figure 4.

Figure 5: Fine Crack

Figure 6: Medium Crack

Figure 7: Wide Crack

5, 6, 7. Cracking – Cracks are qualitatively assigned values of Fine (F), Medium (M) or Wide (W). A fine crack is a hairline crack less than 0.01" thick and can sometimes be very hard to see. A medium crack is in between 0.01" and 1/32" wide and a wide crack is anything greater than 1/32" wide. Cracks are qualitatively rated according to their dominant characteristics. See Figure 5, Figure 6, and Figure 7.

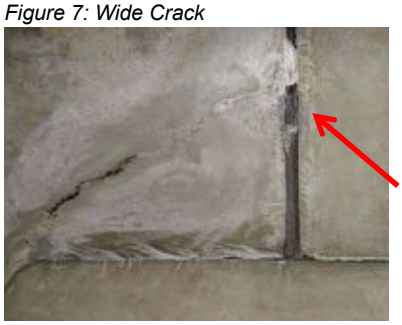


Figure 8: Leaking and Leaching Concrete

Figure 9: Ponding Water

8a. Leaking – Leaking is determined by any observable sign of fluid flow through a crack or joint. See Figure 8.

8b. Leaching – Leaching occurs when water flows through a crack, thereby dissolving away the components of the concrete, mainly calcium, and depositing it in the form of a whitish film or stalactite on the surface. The whitish film is also called efflorescence. See Figure 8.

9. Ponding – Ponding water is the settling of water in low areas where it has no way to drain. This standing water not only presents a pedestrian safety hazard, but as water penetrates the concrete the deterioration mechanism is accelerated. See Figure 9.

APPENDIX C – HANSON PROFESSIONAL SERVICES MARCH 2022 REPORT

The following a copy of a structural condition report prepared by Hanson Professional Services, Inc. in March 2022 for the Brett's Waterway Café was provided by the City of Fernandina Beach.