

CITY OF ST. PETERSBURG MARINA REDEVELOPMENT

Client: City of St. Petersburg

St. Petersburg Task Order #	21-01-MCL-MP(S)
St. Petersburg Project #	21077-119
McLaren Project #	210154.01

ENGINEER'S ESTIMATE MEMO REVISION 1

MARCH 18, 2022

EXECUTIVE SUMMARY

The St. Petersburg Municipal Marina is located along the western shoreline of Tampa Bay, just south of the newly constructed St. Pete Pier. The marina generally comprises three facilities: the Central Basin, Demens Landing, and the South Basin. The Central and South Basins, which were originally constructed in 1963 and 1976, respectively, are located to the north and south of Demens Landing. The marina provides short- and long-term slips for tenants, including day dockage. Additionally, the marina provides users with electric power, potable water, pump out areas, and onsite fueling.

Due to the age of the marina's infrastructure rehabilitation or replacement is required to extend the overall service life of the facility. For the Central Basin, it is recommended that the fixed pier arrangements be demolished and replaced with a floating dock configuration. For the South Basin, a rehabilitation and maintenance program is recommended. Finally, for Demens Landing a combination of rehabilitation, replacement, and upgrades are recommended for the buildings and infrastructure which comprise Demens Landing. Additionally, it is recommended to replace the Mechanical, Electrical and Plumbing (MEP) utilities that support the Central and South Basins. Finally, though the seawalls are excluded from the scope of this program, a facility wide seawall program will be required in the future to address observed deterioration and provide increased resiliency due to the impacts of sea level rise (SLR).

The recommended re-development program is designed to be executed over eight (8) phases occurring over a five (5) year construction program. The following table provides the developed AACE Class 3 cost estimate for the proposed re-development of the St. Petersburg Municipal Marina.

Table 1. Cost Estimate Summary and Element Assumptions

Item	Estimated Budget (\$2022) *	Estimate Elements
Construction Cost Subtotal	\$ 40,891,000	Labor, Equipment, and Materials
Contractor Hard Costs	\$ 2,043,000	General Conditions, Mobilization, Overhead, and Profit
Construction + Hard Costs Subtotal	\$ 42,934,000	
Project Soft Costs	\$ 10,889,000	Design, Permitting, Construction Oversight Services, City Administrative Costs
Contingency Costs	\$ 9,136,000	
Project Total	\$ 62,959,000	

*All costs are rounded to the nearest thousand. Refer to Attachment A for a detailed cost analysis.

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1. INTRODUCTION

Table 2. Project Information

Client	City of St. Petersburg
Project Title	Marina Re-Development
Facility and Location	St. Petersburg Municipal Marina / St. Petersburg, FL
Task Order #	21-01-MCL-MP(S)
St Petersburg Project#	21077-119
Primary Consultant	McLaren Engineering Group
McLaren Project #	210154.01
Report Submission	03/18/2022 – Rev 1 (01/14/2022 – Rev 0)

1.1 PROJECT OVERVIEW

The St. Petersburg Municipal Marina is located along the western shoreline of Tampa Bay, directly south of the newly constructed St. Pete Pier. Due to the age and condition of the facility a significant capital investment is required to provide the City and users with an improved marina experience and a more resilient facility. In support of this investment, Safe Harbor Development, LLC (SHD) provided the City with a proposal to re-develop the marina's central and southern basin infrastructure. However, due to the required investment, and the successful construction of the St. Pete Pier project, the City is exploring the option of redeveloping the marina without the support of a private developer.

This Task Order has been designed by the City to provide an independent review of the proposed re-development project and required investment. With the deliverables provided, the City will have the independent cost and schedule data required to make a final determination about the desired approach to re-develop the marina.

1.2 PROJECT OBJECTIVE AND SCOPE

McLaren Technical Services, Inc. (McLaren) has been tasked by the City of St. Petersburg (COSP) to perform a peer review and independent Engineer's Estimate of the Safe Harbor Development, LLC, (SHD) concept. See Table 2 for Task Order details.

This included reviewing available reference documents, visiting the site to assess the proposed re-development program and collect independent observations, and produce an Engineer's Estimate and schedule.

The Engineer's Estimate has been developed to generally align with the SHD concept. However, where improvements, alterations, or other considerations have been identified, the project team has defined and altered the program accordingly. Additionally, the Engineer's Estimate is intended to provide an Association for the Advancement of Cost Engineering (AACE) Class 3 Cost Estimate with an expected accuracy of -20% to +30%. However, due to the conceptual level of design there are elements of this estimate which have a larger accuracy range. Specifically, elements with a lower level of definition will have greater risk of variability.

To support the development of this project, McLaren assembled an engineering team capable of providing the range of specialties and local knowledge required to deliver this project. The project team and their individual roles have been detailed below in Table 3.

Table 3: Project Team

Firm	Role
McLaren Technical Services, Inc.	Primary Consultant, Project Management, Building Cost Estimating, and Marine Cost Estimating
Applied Technology and Management (ATM) (a Geosyntec Company)	Marine Cost Estimating
McKim & Creed, Inc.	Site Civil/Upland Cost Estimating
Hall Engineering Group	Utility Systems (Marine) Cost Estimating

2. EXISTING CONDITIONS

2.1 STRUCTURE DESCRIPTION

The St. Petersburg Municipal Marina is located along the western shoreline of Tampa Bay, just south of the newly constructed St. Pete Pier. The marina generally comprises three facilities: the Central Basin, Demens Landing, and the South Basin (See Attachment C Sketch No. 7). The Central and South Basins are located north and south of Demens Landing, respectively. The marina provides short- and long-term slips for tenants including day dockage. Additionally, the marina provides users with electric power, potable water, pump out areas, and onsite fueling.

The Central Basin was constructed around 1963 and comprises six areas: North Docks, Transient Docks, West Docks, Central Docks, Pump Out Docks, and Fuel Dock. The docks are fixed concrete piers constructed of square precast prestressed concrete piles which support a reinforced concrete pile cap and precast prestressed concrete deck. Several buildings and comfort stations are supported by these piers and are distributed throughout the basin. Additionally, the St Petersburg Yacht Club occupies the southern pier along the western perimeter of the Central Basin but is not included as a part of the Municipal Marina infrastructure.

The South Basin was constructed around 1976, excluding Pier 5 which was constructed in 2008. The South Basin provides five piers lined with slips along the east and west perimeter, numbered 1 to 5 from west to east. Similar to the Central Basin, the South Basin piers are fixed concrete piers with the same general configuration as the Central Basin. Additionally, the St Petersburg Sailing Center occupies the western extent of the Southern Basin but is not included as a part of the Municipal Marina infrastructure.

Finally, Demens Landing Island abuts the Central Basin to the north and the South Basin to the south. The island provides public access to the waterfront, several building and support infrastructure for the marina, public parking, and a perimeter pedestrian walkway. The island is supported by a combination of concrete panel seawalls and steel sheet pile bulkheads and is accessed by a short concrete bridge structure from Bayshore Drive.

The St. Petersburg Municipal Marina has been rehabilitated several times throughout the life of the facility, with the most recent efforts occurring in 2005 and 2018. These efforts included replacement of deck slabs, spall repairs, pile cap encasements, and structural pile repairs. Additionally, the City implemented an inspection program in 2017 to help document and track the condition of the facility, provide recommendations for required rehabilitation efforts, and to provide the City with the data required to budget for the service life of the facility.

2.2 OBSERVED CONDITIONS

The succeeding observed conditions sections provide brief descriptions of the conditions observed during the one-day site walkthrough. For a more detailed discussion of the inspection effort and observations provided through this project, please refer to Attachment D for the St. Petersburg Municipal Marina Investigation Letter Report. However, this project did not provide a detailed or routine investigation of the facilities which comprise the marina. Therefore, for detailed review of the facility condition, refer to historic routine inspection reports developed under the City's ongoing inspection program (See Attachment E).

2.2.1 MARINE

Overall, the observed conditions generally align with those identified in the Moffatt & Nichol "2021 Annual Marina Structures Inspection Condition Assessment Report". These observations include open spalling and cracking at South Basin finger piers and erosion and spalling along the concrete and steel bulkheads with observed upland fill loss. The condition of the Central Basin did not differ significantly from the previous inspection effort. However, since these elements are scheduled for demolition and replacement, the inspection focused on construction access and the proposed layout rather than existing conditions.

2.2.2 STRUCTURES

The South Basin Comfort Center, Central Basin Comfort Center, and Marina Office and Ship Store were observed during a 19 November 2021 field visit. Overall, these structures are in good condition with components that are in fair condition which require repair or replacement. Roof replacement and painting of exterior facades is a common need for these structures. Several areas of these structures are in need of maintenance including repair of siding, flashing, electrical junction boxes, wood framed deck/stairs, etc.

2.2.3 CIVIL

The Site/Civil components were observed during two field visits, 9 November 2021, and 19 November 2021. The Marina and Demens Landing Park share some facilities, for example parking and amenities. Pavement conditions vary throughout the project area. Generally, the north side of Demens Landing pavement is in better condition than the south side. There are stormwater management systems (sewers and possibly treatment systems) located in Demens Landing but the conditions and configuration is not known (City Atlas does not appear to be accurate). Capacity of onsite potable water and fire mains are not known, and additional investigation is recommended to assess the capacity of these systems. Electrical and communications utilities appear to be below grade and may affect some aspects of proposed improvements.

2.2.4 MECHANICAL, ELECTRICAL, AND PLUMBING (MEP)

2.2.4.1 CENTRAL BASIN

Electrical and Communications

Existing electrical systems originated on the landside at the bulkheads and feed generally down each existing pier. Two (2) Duke Energy 75 kVA pad-mount transformers feed the north side of the central basin and four (4) feed the south side of the central basin. Multiple landside electrical services were located on the landside, feeding different sections of the existing piers. Electrical services ranged in size and voltages appeared to be 208/120 V, 3-Phase. Electrical feeders were routed in PVC conduits mounted below pier structures or attached to the side of bulkhead walls. Most appeared to be in satisfactory condition, but some appeared to be missing supports/attachments.

Generally, each slip was fed from a marina style pedestal of sufficient capacities and voltages for the slips served. It appeared that one pedestal typically served two slips. From the pedestals observed, electrical, communications, and water connections appeared to be on the pedestals. Two (2) electrical meters were generally observed on each pedestal indicating one electrical meter per slip.

Pedestals appeared to be in satisfactory condition but considering their harsh, saltwater environment and of unknown age, are not recommended to be reused and the Electrical cost estimate includes new pedestals for all slips.

Communications observed appeared to indicate copper Cat 5 or similar cables to pedestals with communications capabilities. Conduits under piers were not labeled or identified so precise determinations could not be made; however, it seemed to be consistent with other piers that communications cabling would also be run in PVC conduits.

Conduits and piping under piers and attached to structures were often co-mingled with other services such as water and sanitary piping.

Access Control/CCTV/Security/Wi-Fi systems were not part of this cost estimating effort; however, since Wi-Fi was asked by the client in its responses to project team questions, an allowance was determined and provided.

Domestic Water

Domestic water appeared to be a mix of plastic pipe; (PVC, CPVC) that has been repaired over the years. It was in varying conditions based on age of repairs. As an overall system it appeared to be at end of life. Some hangars were loose or missing on occasion with sagging pipe.

Sanitary

There is an existing pump out station that appears to be in good condition. It is our understanding that the marina is also served with mobile pump out services and wishes to continue with this service.

Fuel System

Fuel system consists of underground fuel storage tanks with (2) dock mounted fuel dispensers, one marine diesel and one gasoline. The dispensers appeared to be in fairly good condition with little corrosion. The nozzles appeared to be in good condition with safety break away in good conditions. The hoses and reels appeared to be in good condition. Overall little to no corrosion was visually seen on the dispensing system and it appeared in good condition.

The underground tanks could not be visually inspected, but nothing out of the ordinary was observed from the minimal above ground items including the vents.

The short section of fuel piping located under the pier appears to be fiberglass with bonded clamshell sealed fittings. The system appears to be in good condition. The clamshell fitting fasteners are the only items with signs of higher levels of corrosion. If further conditional analysis is warranted a specialty contractor will be needed to investigate the hidden fuel components and offer a detailed report.

Fire Protection

The area is served through a manual dry standpipe system with fire department connections near the pier entrances and respective site fire hydrants. Hose valves are placed out on the piers at intervals for coverage. The system appears to be mainly galvanized pipe with mechanical couplings. The piping was not heavily corroded but looked aged.

2.2.4.2 SOUTH BASIN

Electrical and Communications

There were four (4) Duke Energy 75 kVA pad-mount transformers feeding electrical services to the docks. Multiple landside electrical services located on the landside, fed different sections of the existing piers. Electrical services appeared to range from small to large and voltages 208/120 V. Electrical feeders were routed in PVC conduits mounted below pier structures or attached to the side of bulkhead walls. Generally, each slip was fed from a marina style pedestal of sufficient capacities and voltages for the slips served. Two (2) electrical meters were generally observed on each pedestal indicating one electrical meter per slip.

Conduits under piers were not labeled or identified so precise determinations could not be made, however, it seemed to be consistent with other piers that communications cabling would be run in PVC conduits. Conduits and piping under piers and attached to structures were often co-mingled and with other services such as water and sanitary piping.

Access Control/CCTV/Security/Wi-Fi systems were not part of this cost estimating effort, however, since Wi-Fi was asked by the client in its responses to project team questions, an allowance was determined and provided.

Domestic Water

Domestic water appeared to be a mix of plastic pipe; (PVC, CPVC) that has been repaired over the years. It was in varying conditions based on age of repairs.

Conduits and piping under piers and attached to structures were often co-mingled and with other services such as water and sanitary piping. Some hangars were loose or missing on occasion with sagging pipe.

Sanitary

N/A; No sanitary systems exist; area served by mobile pumps.

Fuel System

N/A; No fuel systems exist.

Fire Protection

The area is served through a manual dry standpipe system with fire department connections near the pier entrances and respective site fire hydrants. Hose valves are placed out on the piers at intervals for coverage. The system appears to be mainly galvanized pipe with mechanical couplings. The piping was not heavily corroded but looked aged.

3. BASIS OF DESIGN

The following section provides a preliminary basis of design for the Marina, Structural, Civil, and MEP scopes of work. It should be noted that the content of these sections have been developed from a one-day site visit and through the review of provided reference documents. As such, it should be considered preliminary and intended to define the elements included within the cost estimate. Further development will be required by the design engineer if this project is pursued.

Additional back-up documentation can be found in the attachments section of this report. Refer to Attachment A for the Cost Estimate Backup, which encompasses Marine, Structural, Civil, and MEP quantities and costs. Refer to Attachment B for the Project Schedule. Refer to Attachment C for Figures, which help communicate the scope of the respective Marine, Structural, Civil, or MEP division. Refer to Attachment D for the Field Investigation Report. Refer to Attachment E for References, which includes a list of key documents provided by the City.

3.1 MARINE

3.1.1 Project Scope

The Marine Project Scope for St. Petersburg Marina consists of Divisions 1 and 8 of the Engineer's Estimate, which cover the *Central Basin: Marine – Structural* and *South Basin: Marine – Structural* respectively.

Due to the age of the Central Basin and the City's goal to provide an improved modern facility, complete demolition and replacement with a floating dock marina is recommended. Floating docks, as opposed to fixed piers, are recommended as they can adapt to sea level rise, provide wave attenuation, are more

resilient during weather events, allow for safer access on and off vessels, etc. The work will be performed in phases as defined by the Owner. However, for the purpose of this estimate, five phases have been assumed (See Attachment C Sketch No. 2). Additionally, the transient docks along the western quay wall and the infrastructure owned by the St. Petersburg Yacht Club will not be included in the scope of this project. For the South Basin, an extensive rehabilitation and slip replacement program will be implemented.

The proposed Central Basin facility will provide two primary docking areas along the northern and southern perimeters of the basin. As provided in the reference documents, this arrangement will increase docking space, ease of access, and provide a more resilient facility.

The proposed South Basin rehabilitation program seeks to extend the overall service life of the basin by providing isolated repairs for Pier 1 and Pier 2 and replacing the finger piers at Pier 3 and Pier 4. Pier 5 has been excluded from the scope of this effort. As noted below, this rehabilitation approach will require an ongoing maintenance and rehabilitation program for the South Basin.

The succeeding sections provide the overall functional requirements for the proposed redevelopment project, a detailed discussion of selected elements which should be considered by the owner, and a list of assumptions which guided the development of the Engineer's Estimate.

3.1.2 Functional Requirements

- Functional requirements align with the Moffatt & Nichol "Design Criteria Memorandum for Westshore Marina" report dated 17 August 2020.
- South Basin will require an ongoing maintenance and rehabilitation program to maintain the structures.

3.1.3 Key Design Risks

I. Elevation of the South Basin Piers

The elevation of the South Basin pier is below the elevation of the Demens Landing seawall. Since the proposed re-development program includes efforts replacing and raising the elevation of the perimeter bulkhead, McLaren provided a preliminary review of the projected remaining service life for the South Basin finger piers as it relates to Sea Level Rise (SLR). Note that this preliminary review has been performed utilizing the sea level rise analysis provided in the GPI "Marina Re-Development Vulnerability Assessment Report" dated November 2021. It has been assumed that the sea level rise data provided in this report is accurate.

Based on site observations and available reference documents it is assumed that the South Basin finger piers will be impacted by Mean Higher High Water (MHHW) elevations with approximately 2 ft of SLR. Considering the Intermediate Low and Intermediate SLR

projections provided below, the South Basin has a projected remaining service life of approximately 40 to 80 years (See Figure 1). As a result, a significant capital investment into the South Basin facility is justified since a 50-year service life is probable.

It should be assumed that the South Basin will need to be converted into a floating dock marina, similar to the layout recommended for the Central Basin, within the next 50 years. Over the next 20 to 30 years the impacts and trajectory of SLR will become apparent and the overall timeline to replace the facility can be re-assessed. However, at this time the project impacts of SLR should not alter the rehabilitation program recommended for the South Basin.

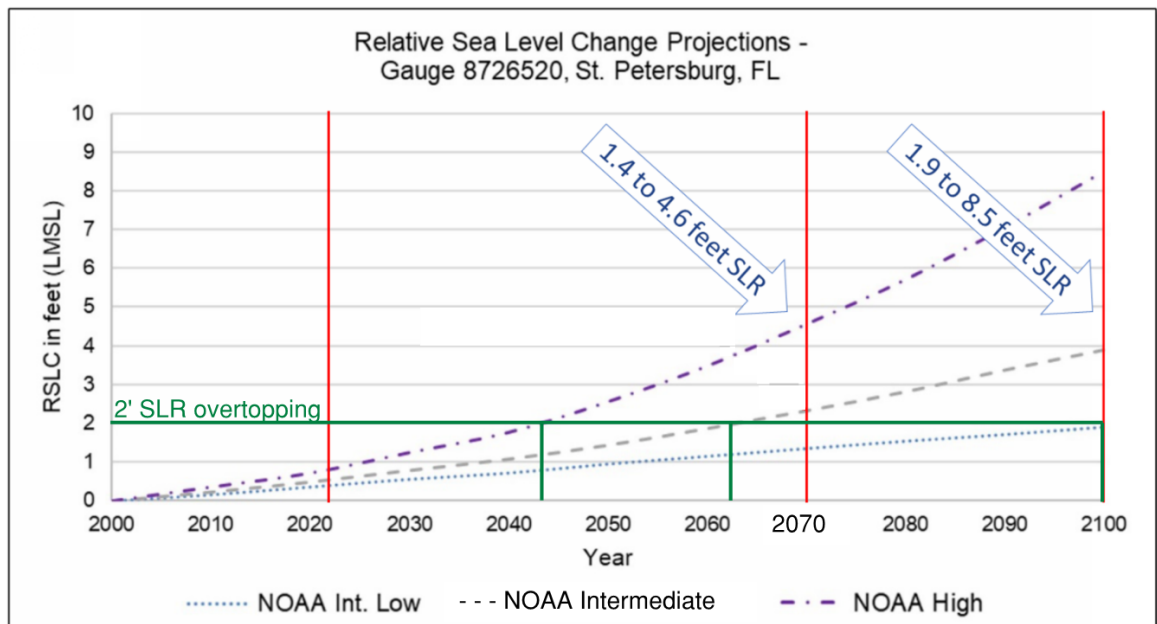


Figure 1. Marina Re-Development Vulnerability Assessment – November 2021 with additional interpolation

II. Slab detail for the South Basin Finger Piers

The South Basin finger pier slabs are 6-inch thick prestressed concrete slabs. Observed spalling revealed limited concrete cover, typically less than 2 inches, over two-way wire reinforcement.

Typical marine construction practices recommend a minimum 3-inch cover for concrete surfaces exposed to the saltwater environment. This concrete cover is important since it slows down the penetration of chlorides through the concrete matrix. Once chlorides reach the embedded reinforcing steel the corrosion process is initiated. As corrosion progresses steel expands resulting in progressively greater deterioration of the concrete structure. Generally, this begins with cracking, followed by closed spalling, and ultimately progresses to open spalling. However, the depth of penetration and the speed of corrosion initiation are not uniform at most facilities and can be impacted by many variables including exposure to wetting and drying, composition of the concrete matrix, and other environmental factors.

As a result of the observed limited concrete cover and the distribution of deteriorated and/or replaced slabs it should be assumed that the original vintage concrete finger pier slabs are saturated with chlorides. This impacts the overall service life requirements for Pier 1 and Pier 2 of the South Basin. Specifically, slab replacements efforts should be integrated into a regular maintenance and rehabilitation program for the South Basin designed to replace the remaining original vintage slabs. Additionally, though the main walkway slabs present fewer signs of deterioration due to the higher elevation, there is a high probability that these elements will begin to present deterioration in the future and will need to be included in the discussed maintenance and rehabilitation program.

III. Steel Sheet Pile Bulkhead Replacement Elevation

The GPI “Marina Re-Development Vulnerability Assessment Report” dated November 2021 recommends replacing and raising portions of the Demens Landing perimeter bulkhead to an elevation of 6.0 ft NAVD88. This elevation is recommended to protect against the projected high tide elevation in 2070 considering the NOAA High SLR Projection.

Due to the condition of the steel sheet pile bulkhead in the northern quadrant of the Demens Landing perimeter, McLaren concurs that replacement is recommended. However, considering the limited extents of recommended replacement, the overall impact on resiliency will be negligible since the remaining seawall surrounding Demens Landing is primarily located around an elevation of 3.8 ft NAVD88. Additionally, as stated in the Moffatt and Nichol “Design Criteria Memorandum of Westshore Marina” report dated August 17, 2020, “the design of the waterfront components will consider the NOAA Intermediate Low value”, which is +0.50 ft for the 30-year RSLR projection and +0.92 ft for the 50-year SLR projection.

As a result, replacement of the steel sheet pile bulkhead is still recommended. However, the overall resiliency approach should be considered on a holistic basis before raising the elevation of the seawall. This effort may include segmenting areas to be protected from the impacts of SLR and defining the desired elevation around the perimeter of the island.

IV. Fill Loss through Deteriorated Concrete Bulkhead

Deflection of isolated segments of the concrete perimeter walkway and sinkholes are present along the southern and eastern perimeter of Demens Landing. Based on the observed condition of the seawall, the primary mechanisms for fill loss are noted as erosion of the seawall concrete panel joints and deterioration of existing outfalls.

Though these observations are occurring at isolated locations, based on the age of the seawall and consistent observed conditions, fill loss will likely be an ongoing maintenance issue. As a result, a global seawall rehabilitation program should be implemented to address this issue and ensure the continued safe operation of the walkway.

As noted in the GPI report this rehabilitation should comprise installation of riprap revetment along the offshore perimeter of the bulkhead as well as excavation along the inshore perimeter to allow the installation of granular fill wrapped in geotextile (See Figure 2). Where obstructions exist, i.e., existing piers, slips, or mangroves, alternate repairs along the offshore perimeter may be considered. These may comprise reinforced concrete encasements or non-structural encapsulations, pending the condition of the segment.

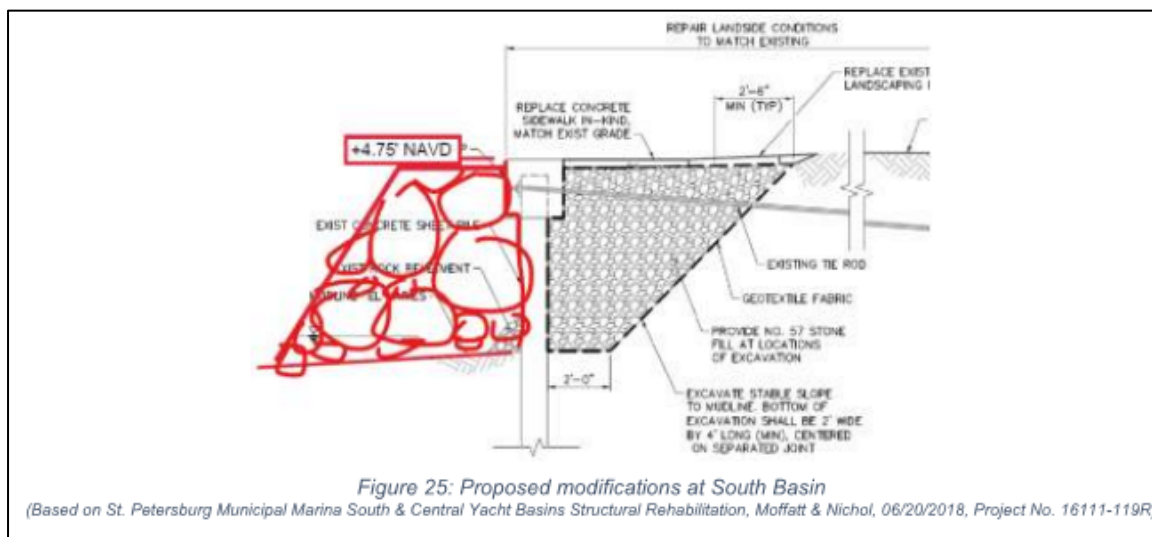


Figure 2. Concrete bulkhead repair detail as presented in Figure 25, of the GPI Marina Re-Development Assessment, dated November 2021.

V. Unknown Condition of Piles in the South Basin

The proposed South Basin rehabilitation program does not include substructure elements (i.e., piles and pile caps). Additionally, the 2017 Moffat & Nichol “St. Petersburg Municipal Marina Marine Infrastructure Condition Assessment” did not include underwater inspection of the concrete structural piles.

Based the provided historic data, and onsite observations, pile rehabilitation efforts were implemented in 2007 at isolated locations throughout the South Basin. Therefore, it is understood that chloride intrusion exists at throughout these substructure elements with varying levels of severity. However, due to heavy marine growth assessment from above water is not feasible.

Therefore, prior to implementing the proposed South Basin rehabilitation program, it is recommended that a thorough underwater inspection be performed to assess the condition of the structural concrete piles. Specifically, it is important to understand the overall condition of the piles and determine the maintenance and rehabilitation efforts required to achieve the desired 50-year service life. Based on these results, the City will be able to determine if the cost benefit ratio for the proposed South Basin rehabilitation program has changed.

Given that the substructure condition in the South Basin (Piers 1 - 4) is unknown and previous condition ratings of the pile caps were satisfactory/fair, it is important to note the risk that this

entails; the service life of the proposed decks may not be met if the piles begin to fail and need replacement. An underwater inspection of the piles is recommended to assess their condition and understand if they are capable of meeting the service life of the proposed dock repairs.

VI. Continued deterioration of facility infrastructure

The scope of work for the Central Basin and South Basin has excluded several elements including the yacht club, sailing club, and restaurant. These pieces of infrastructure will continue to deteriorate and could require rehabilitation or replacement the future. Specifically, the City has noted that the platform and bulkhead supporting the Fresco's Waterfront Bistro will require rehabilitation in the near future.

3.1.4 Design Assumptions and Criteria

The following assumptions have been made during the development of the St. Petersburg Municipal Marina Engineer's Estimate:

- I. The Central Basin existing docks will be demolished and replaced as presented in the Conceptual Design presentation dated 24 March 2021 and the St. Pete Municipal Marina Redevelopment USACE pre-development presentation dated 24 April 2021. Altered or critical assumptions are provided below, noting that these represent conceptual level design items and would be redefined and/or revisited should the project proceed:
 - a. The Central Basin will be re-developed over five phases of work. See Attachment C Sketch No. 2 for the assumed phasing.
 - b. Floating docks shall be manufactured by Marina Technologies Inc. (MTI) or approved equivalent, since there are a range of commercial floating dock suppliers. All docks, aside from the superyacht berth/wave attenuator, are to be the MTI-S222 series aluminum docks, which are aluminum framed systems with a concrete float and foam core. See Attachment C, MTI Figures for the cut sheet.
 - c. Superyacht docks / wave attenuators at the northeast corner of the Central Basin shall be manufactured by Marina Technologies Inc. (MTI) or approved equivalent. The superyacht berth / wave attenuator shall be the mega-yacht series concrete docks. See Attachment C, MTI Figures for the cut sheet.
 - d. Floating dock anchor piles will be 70 ft long 18 in diameter by ½ in thick coated steel pipe piles.
 - e. Floating dock slips will include a single offshore timber mooring pile positioned between floating docks
 - f. All existing timber piles shall be cut at the mudline. All existing square concrete piles shall be cut at the mudline.

- g. Timber pile quantities for “Timber Deck w/ Timber Pile” locations, as called out on the existing drawings of the North Dock and West Dock, are estimated based on photographs.
 - h. The demolition of the existing pile supported buildings will include the building and superstructure. Demolition of pile supports is accounted for in a separate line item.
 - i. The canopy structure and its support columns and piers, located along the southern perimeter of the Central Basin, are to be demolished.
- II. The South Basin rehabilitation effort has been developed utilizing the St. Pete Municipal Marina Redevelopment USACE pre-application meeting dated 24 April 2021, and secondly the Conceptual Design presentation dated 24 March 2021.
- a. Pier 1 and Pier 2 finger piers deck slabs rated Poor, Serious, or Critical in the Moffit & Nichol “2021 Annual Marina Structures Inspection Condition Assessment Report” will be demolished and replaced per the details provided in the “St. Petersburg Municipal Marina South & Central Yacht Basins Structural Rehabilitation” report dated 25 January 2018.
 - b. Dock 3 and Dock 4 finger piers will be replaced per the following parameters:
 - i. Replace the 45’ slip piers in the same footprint
 - ii. Extend the 65’ slip piers by ½ length.
 - iii. Extend the 30’ and 35’ slip piers by 5’.
 - iv. Increase six (6) finger piers by 1’ width.
 - 1. Finger piers to be increased by 1’ width are as follows: three (3) of the 45’ slip piers, one (1) 30’ slip pier, one (1) 35’ slip pier, and one (1) 65’ slip pier.
 - c. In the Central Basin, ADA compliant ramps are being provided. The South Basin will be ADA compliant based on the proposed elevations and slopes of the fixed concrete piers. As such, ADA compliant ramps are not included in the cost estimate for the South Basin.
 - d. Replacement slabs will generally align with the details provided in the “St. Petersburg Municipal Marina South & Central Yacht Basins Structural Rehabilitation” report dated 25 January 2018. For finger piers remaining the same length, the existing piles shall be utilized. For finger piers that are extending in length, a single concrete pile will be added to the end of the pier.
 - e. Where an additional bent is required, the structural piles shall be 75 ft long 14-in square precast prestressed concrete piles, and will include the installation of a reinforced concrete cap.

f. Pier 5 is excluded from the scope of this rehabilitation effort.

- III. Proposed bulkhead rehabilitation and replacement work has been excluded from this cost estimate to align with the Safe Harbor concept and per directive from the City representatives during project coordination. Note that a comprehensive steel sheet pile bulkhead replacement and concrete bulkhead rehabilitation program is recommended. This work should align with the overall Sea Level Rise (SLR) and resiliency plans for the St. Petersburg Municipal Marina.
- IV. Facility will provide unrestricted access for contractor to perform work within limits work defined by the particular phase of construction.

3.2 STRUCTURAL

3.2.1 Project Scope

The Structural Project Scope for St. Petersburg Marina consists of Divisions 6 and 7 of the Engineer's Estimate, which cover the *Demens Landing: Buildings - Ship Store* and *Demens Landing: Buildings - Comfort Station*, respectively.

The proposed South Basin Comfort Center improvements include exterior façade work only. The open-air pavilion adjacent to the South Basin Comfort Center is in good condition and is not included in the scope of work. The exterior façade work includes replacement of the existing metal roof with a new standing seam metal roof, painting of exterior wood siding at walls, and repairs to the existing two-story timber deck and stairs. The timber deck and stair repairs include replacement in kind of warped timber guardrails, warped timber girder plies, and deteriorated members.

The proposed Central Basin Comfort Center improvements include exterior façade work and interior renovation. The Central Basin Comfort Center comprises two small buildings, one with a laundry area and a second with restrooms/showers. Finishes and fixtures at interiors of both buildings are to be demolished and replaced with updated high-end finishes and fixtures.

At the laundry building, the exterior façade work includes construction of a new hip-style wood framed roof to be attached to the existing low-slope roof, painting of exterior stucco walls, and replacement of windows and entrance doors. The new roof is to be constructed from wood framed roof trusses, plywood sheathing, tar paper, flashing, and standing seam metal roofing. Interior items to be removed/demolished and replaced include washing machines, dryers, hot water heaters, utility sinks, and tile at floors. New tile is to be ceramic tile, and counters and any accent shelving are to be granite. Existing fans and exhaust fans are to be removed and a HVAC split unit and space heater are to be added to control temperature and humidity.

At the restroom building, the exterior façade work includes construction of a new wood framed dormer to be attached to the existing hip-style wood framed roof at the water side of the building, replacement of roofing materials, painting of exterior stucco walls, and replacement of windows and entrance doors. The replaced roofing is to consist of tar paper, flashing, and standing seam metal roofing to utilize

consistent roofing materials at the existing roof and the new dormer. Interior items to be removed/demolished and replaced include stalls, toilets, urinals, counters, sinks, shower fixtures, the HVAC split unit in each bathroom, the space heater in each bathroom, tile at floors, and tile at walls. New tile is to be ceramic tile, and counters and any accent shelving are to be granite.

The proposed Marina Office and Ship Store improvements only include minor attention to finishes for the Marina Office and Ship Store. In addition to the planned touch-up of paint and minor repair of finishes, the scope of the estimate includes repairs recommended by McLaren for local areas of exterior siding, flashing, and interior gypsum board ceilings in the ship store. The building's roof will require repairs and may need to be replaced, and as such the scope of the estimate includes the cost of roof replacement as a worst case. The exterior façade work includes replacement of the existing metal roof with a new standing seam metal roof, repair of local areas of damage to Hardie Board siding, repair to local areas of damage to metal flashing just above the open-air carport below the building, repair to miscellaneous items like electrical junction boxes at the ceiling of the open-air carport below the building, and painting of exterior Hardie Board siding at walls. Interior items to be repaired include local areas of damage to gypsum board ceilings due to roof leaks in the Ship Store.

The succeeding sections provide the overall functional requirements for the proposed redevelopment project, a detailed discussion of selected elements which should be considered by the owner, and a list of assumptions which guided the development of the Engineer's Estimate.

3.2.2 Functional Requirements

- The South Basin Comfort Center, Central Basin Comfort Center, and Marina Office and Ship Store are intended to function as they do today i.e., no change is proposed for the use of space within these buildings and no change is proposed for the current occupancy of these buildings.
- The marina buildings will require an ongoing maintenance and rehabilitation program to maintain these structures.
- Unrestricted access will be provided for the contractor to perform work within limits defined by the particular phase of construction.

3.2.3 Key Design Risks

I. Roof Replacement

With replacement of roofing materials, the potential exists that ongoing undetected roof leaks have resulted in rot at plywood roof sheathing and rot at localized areas of wood roof trusses. The Engineer's Estimate for replacement of roofing materials assumes that some local areas of plywood roof sheathing will be rotted and will need to be replaced due to ongoing undetected roof leaks but does not assume that wood roof truss repairs will be required due to rot at localized areas. Ongoing undetected roof leaks can also provide an above-ground water source for termites allowing for termite damage at wood roof framing if termites are present in these structures. The Engineer's Estimate for replacement of roofing

materials assumes that termites and termite damage are not a consideration for the roof framing and other wood framing at these existing structures.

II. Electrical and Water Supply, Sanitary Sewers

At the Central Basin Comfort Center where interior improvements are proposed, new HVAC equipment that will require interface with existing electrical panels/circuits and new plumbing fixtures that will require interface with existing water supplies and sanitary sewer piping are assumed to utilize existing utilities in their current condition. The Engineer's Estimate does not include upgrade or replacement of these utilities due to unknown conditions e.g., overloaded circuits, electrical upgrades due to code requirements, lead piping, deteriorated cast iron piping, etc.

III. HVAC Unit Replacement

A salt air environment advances deterioration of mechanical equipment. The condition of the South Basin Comfort Center, Central Basin Comfort Center, and Marina Office and Ship Store building HVAC systems is unknown. These HVAC systems may be in good condition or may require repair/replacement. The Engineer's Estimate includes the cost of new HVAC systems for these buildings as a worst case.

3.2.4 Design Assumptions and Criteria

The following assumptions have been made during the development of the St Petersburg Municipal Marina Engineer's Estimate:

- I. Contractor access to perform work will be provided around the entire perimeter of the buildings. Work will be performed during first shift.
- II. The work performed by the contractor for the South Basin Comfort Center, Central Basin Comfort Center, and Marina Office and Ship Store will be contiguous i.e., there will be no significant delays after the start of construction requiring multiple mobilization/demobilization efforts by the contractor.
- III. Non-visible conditions as described in section 3.2.3 Key Design Risks above have been included or excluded in the Engineer's Estimate as described.

3.3 CIVIL

3.3.1 Project Scope

The proposed Civil Components appear to have been revised throughout the Concept development process for Safe Harbor. We have combined most of the elements presented to assess the upper limit cost and complexity of these designs.

3.3.2 Functional Requirements

- Pavement replacement
- Parking Expansion
- Limited Potable Water Main Replacement
- Limited Sanitary Sewer Replacement
- Stormwater Management Facility

3.3.3 Key Design Risks

I. Utilities Capacities

Safe Harbor assumed all utilities had capacity for expansion. It is outside of the scope of this review to assess the capacity of critical utilities, for example potable water and fire mains.

II. Stormwater Management

Safe Harbor assumed no stormwater management systems would be necessary. Even though it is possible to configure the proposed improvements to eliminate the need for stormwater management system, it appears that some considerations for stormwater (mostly nutrient removal) may be necessary.

3.3.4 Design Assumptions and Criteria

The following assumptions have been made during the development of the St Petersburg Municipal Marina Engineer's Estimate:

- I. Site/Civil Components refer to pavement, sanitary, potable water, limited landscaping, and storm components.
- II. Upland utility services have adequate capacity for increased demand from additional boat slips.

- III. Seawall improvements will be completed separately and will restore disturbed surfaces (mostly Demens Landing northern parking area).
- IV. Seawall improvements schedule impacts are not known and excluded.
- V. Seawall and riprap improvements are to be completed prior to Site/Civil components.
- VI. Minor drainage improvements will be necessary.
- VII. Existing security gates on the south side of Demens Landing will be reused.
- VIII. Riprap repair along south side of Demens Landing is not considered in this estimate.
- IX. Improvements to north side of the Central Basin are all seaside and excluded.
- X. Maintenance of Traffic for non- Site/Civil activities are excluded
- XI. Access management for non- Site/Civil activities are excluded
- XII. Replacement of existing sanitary sewer and potable water mains will be relocated into drive aisle for the parking on the north side of Demens Landing.
- XIII. All storm sewers are functioning and are adequately sized for minor increases in impervious area.
- XIV. No significant fill will be placed due to seawall and riprap replacements. Ramps will be provided for access to docks on the north side of Demens Landing.
- XV. Subsurface utility exploration was not performed, and all utility information is approximate. Conflicts are not considered.
- XVI. A site survey was not performed and all grades and dimensions for existing and proposed features is approximate. Grades are assumed to reasonably match the publicly available LiDAR data.
- XVII. A Geotechnical Investigation was not performed, and suitability of soils is not known. All soils are considered suitable.
- XVIII. Signing and marking outside of parking expansion on the north side of Demens Landing is excluded.
- XIX. Design and permitting has not been considered or included in Cost or Schedule.

3.4 MECHANICAL, ELECTRIC, AND PLUMBING (MEP)

3.4.1 Project Scope

3.4.1.1 CENTRAL BASIN

Electrical Systems

HEG understands that all existing fixed docks in the Central Basin will be completely demolished including their electrical, communications, water, and sanitary system piping on the docks. Therefore, it is recommended and assumed for this pricing purpose that all equipment will be removed and not reused, and all new systems will be of new modern equipment following current, industry standards and design approaches.

As such, existing electrical services will remain to serve existing 208/120 V landside loads. New electrical services at 480 V, 3-Phase will feed the new slips through a combination of panelboards and unit substations. Slip electrical load calculations will be as required by the National Electrical Code (2017). It is assumed the existing Duke Energy (utility providing electrical power) pad-mount transformer locations can be maintained and reused but all will be increased in size and changed to 480 V, 3-Phase secondaries.

Electrical distribution panelboards were conceptually determined to optimally feed the floating docks of various lengths and configurations. Electrical feeders are planned at 480 V and 240/120 V electrical branch circuits will generally feed slips that are reasonably close to unit substations. 480 V, 3-phase feeders will be routed to strategic locations along docks where it will then use dock mounted transformers/panelboards (unit substations) to distribute 240/120 V to each of the slips as needed. At the end of each dock, 480 V pedestals will be stationed to power larger watercrafts. Please refer to sketch SKE-SB for a conceptual layout.

Floating docks are anticipated to use G-cables. Traditional conductors and conduits will be used on the landside to a demarcation pull box adjacent to the bulkhead. Ground-fault protection of feeders is planned and will be as required by the NEC. G-cables, along with all utilities on the floating docks, will be routed through either integral sleeves and pull boxes within the floating docks or a central trench with trench covers within the floating docks. Segregation between utilities will be followed.

Eaton marina style pedestals (“Marina Lighthouse” or “Admiral” series) and switchgear are the basis-of-design. Voltages and receptacle amperage ratings are from the criteria documents and follow-up client clarifications. To match the existing conditions, a utility grade electrical meter per slip is planned so the electrical usage per vessel can be tracked and billed by the City.

Communications

Environmentally rated Cat 6 is planned to each pedestal, one (1) cable per slip. Pedestals will have Cat 6 jacks integral for user connections. Cables will be routed in the floating docks. Cat 6 cabling

will be distributed on the floating docks similar to electrical and will terminate at the service provider equipment on the landside.

Access Control/CCTV/Security/Wi-Fi systems were not part of this cost estimating effort, however, since Wi-Fi was asked by the client in its responses to project team questions, an allowance was determined and provided.

Domestic Water

It is estimated to require roughly 5,500 LF of 3" UV resistant HPDE DR9 domestic water piping to serve new central basin floating docks. Piping is assumed to be installed inside utility corridor of floating docks then distributed up to pedestal mounted hose bibs. Pipes shall connect through gangways with flexible connections to allow articulation from tidal flow.

Sanitary

It is our understanding that the existing sanitary pump is existing to remain. If pump station is relocated to fuel dock per Moffitt & Nichol Memo; it is assumed to require 140 LF of 4" UV resistant HDPE DR9 pipe installed under existing fuel dock with SS hangers. This does not include the division 26.

Fuel System

It is our understating that the fuel system will be existing to remain.

Fire Protection

Fire protection system will be new class 1 manual dry type. It is assumed that standpipe system will run inside the utility corridor of new floating docks. The standpipe will then run from fire department connection 5" STORZ near respective dock entrance to serve dock mounted dual 2.5" hose valves. Hose valves shall be set at 150 LF intervals along docks. It is estimated to require 5,000 LF of UV resistant 6" HDPE DR 11, thirty (30) Hose valves with (2) valves each. Final details are subject to future approval of the City Fire Marshall.

3.4.1.2 SOUTH BASIN

Electrical System

HEG understands the existing fixed docks in the South Basin will be structurally refurbished and their electrical and communications systems will be replaced. Therefore, it is recommended and assumed for this pricing purpose that all equipment will be removed and not reused, and all new systems will be of new modern equipment following current, industry standards and design approaches.

As such, existing electrical services will be replaced with new to accommodate the higher anticipated electrical loads by the slips required by the National Electrical Code (2017) and to provide 480 V power for the new electrical distribution design. It is assumed that most of the Duke Energy (utility providing electrical power) pad-mount transformer locations can be maintained and reused but

increased in size (i.e., larger utility pad-mount transformers) to efficiently provide power to the refurbished docks.

Electrical distribution panelboards and unit substations were conceptually determined to optimally feed the docks of various lengths and configurations. 240/120 V electrical distribution circuits will be routed to the slips whereas 480 V, 3-phase distribution will be used to strategic locations along docks where it will then use dock mounted transformers/panelboards (unit substations) to distribute 240/120 V to each of the slips as needed.

Docks will again use PVC conduits (schedule 80 is assumed for additional strength over Schedule 40) and will consist of XHHW/XHHW-2 conductors, both in electrical runs from the landside to slip pedestals as well as to and from the electrical distribution design mentioned above. Ground-fault protection of feeders is planned and will be as required by the NEC.

Eaton marina “Admiral” and “Lighthouse” style pedestals and switchgear are the basis of design. Voltages and receptacle amperage ratings are from the criteria documents and follow-up client clarifications.

Communications

Environmentally rated Cat 6 is planned to each pedestal, one (1) cable per slip. Pedestals will have Cat 6 jacks integral for user connections. Cables will be routed in Schedule 80 PVC conduits. Cat 6 cabling will be distributed on the docks similar to electrical and will terminate at the service provider equipment on the landside.

Access Control/CCTV/Security/Wi-Fi systems were not part of this cost estimating effort; however, since Wi-Fi was asked by the client in its responses to project team questions, an allowance was determined and provided.

Domestic Water

Due to age and harsh marine exposure, it is recommended to replace with new. It is unlikely that installing contractor will warranty overall domestic water system when repairing an aged system as needed.

It is estimated to require roughly 2,000 LF of 2” UV resistant HPDE DR9 domestic water piping to serve new south basin floating docks. Piping is assumed to be installed under refurbished docks then up to pedestal mounted hose bibs. However, as requested by the client, an estimated repair allowance has been established. Please refer to the cost estimate.

Sanitary

It is our understanding that no new sanitary will be added to this area.

Fuel System

It is our understanding that no new fuel systems will be added to this area.

Fire Protection

Due to age and harsh marine exposure, it is recommended to replace with new. It is unlikely that the installing contractor will warranty overall fire protection system when repairing an aged system as needed. Recommended to have system hydrostatically tested as well as tested with water flow if left and repaired. However, as requested by the client, an estimated repair allowance has been established. Please refer to the cost estimate.

Fire protection system will be new class 1 manual dry type. It is assumed that standpipe system will run underneath refurbished dock. The standpipe will then run from fire department connection, 5" STORZ near respective dock entrance to serve dock mounted dual 2.5" hose valves. Hose valves shall be set at 150 LF intervals along docks. It is estimated to require roughly 2,000 LF of UV resistant 6" HDPE DR 11, 13 Hose valves with two (2) valves each.

3.4.2 Functional Requirements

- 240/120 V at all pedestals.
- For large vessels: 480 V, 3-phase feeding pedestals.
- Communications cabling and jacks at all pedestals.
- Utility metering at all pedestals.
- Domestic water at all pedestals.
- Dry-pipe fire suppression system.
- Flexible system/connections at all floating docks.

3.4.3 Key Design Risks

- I. New and upsized Duke Energy Transformers do not fit in existing available pad-mount transformer spaces.
- II. In-ground fuel system is in poor condition.
- III. Installing new underground electrical and communications infrastructure across existing 2nd Ave North.
- IV. Mechanical allowances for the South Basin are inadequate.

3.4.4 Design Assumptions and Criteria

The following assumptions have been made during the development of the St Petersburg Municipal Marina Engineer's Estimate:

- I. 240/120 V to each pedestal per the design criteria. 208/120 V presently feeds each pedestal in the Central and South Basins. 208/120 V electrical distribution should be more cost-effective since it is more standard and is a WYE (Y) configuration as opposed to a Delta (Δ). However, it is not preferable for modern marinas/vessels when 50A service is required since most on-board equipment requires 240V service.
- II. Re-feeding existing landside 208/120 V equipment will be straightforward with minimal power interruptions to facilities.
- III. South Basin docks 1 and 2 are recommended to have full replacements of their electrical and communications distribution systems. Existing is in similar appearance and conditions as docks 3 and 4 and it is doubtful a contractor would warrant any repairs. Further, the existing electrical distribution system is 208/120 V instead of the criteria 240/120 V.
- IV. Repair allowances for mechanical systems for South Basin Docks 1, 2, 3, and 4 are inadequate after a repairing contractor is brought on-board.
- V. An allowance for Wi-Fi is provided, but the allowance was not developed from a detailed cost estimating/conceptual design exercise.

4. PROJECT CONTROLS

The succeeding sections present the final result and basis for the developed Engineer's Estimate and project schedule.

4.1 BASIS OF ESTIMATE

The construction cost estimate, hereinafter known as 'estimate', provided below offers an AACE Class 3 estimate for the project detailed in Section 3. As previously noted, elements of the provided estimate may not align with a AACE Class 3 estimate due to the limited definition of the overall project. For a detailed breakdown of the project divisions, phasing, and work items, please refer to Attachment A.

Table 4. Cost Estimate Summary and Element Assumptions

Item	Estimated Budget (\$2022) *	Estimate Elements
Construction Cost Subtotal	\$ 40,891,000	Labor, Equipment, and Materials.
Contractor Hard Costs	\$ 2,043,000	Assumptions provided in Section 4.3.
Construction + Hard Costs Subtotal	\$ 42,934,000	Assumptions provided in Section 4.3.
Project Soft Costs	\$ 10,889,000	Assumptions provided in Section 4.3.
Contingency Costs	\$ 9,136,000	Assumptions provided in Section 4.3.
Project Budget	\$ 62,959,000	Construction cost, contractor hard costs, project soft costs, and contingency.

*All costs are rounded to the nearest thousand. Refer to Attachment A for a detailed cost analysis.

4.2 BASIS OF PLANNING

The construction schedule, hereinafter known as "schedule", provides the projected project schedule for the developed Engineer's Estimate. For a detailed breakdown of the project, including dates, durations, phasing, and predecessors, please refer to Attachment B.

Table 5. Project Schedule Milestones and Estimated Start Dates and Durations

Milestone	Estimated Start Date *(MM/YYYY)	Estimated Finish Date (MM/YYYY)	Duration** (Days)	Consideration
Project Development	01/2022	05/2024	600	City Planning, Planning and Design, Permitting, Procurement, Contracting, etc.
Notice To Proceed	05/2024	-	-	Construction can begin under contract.
Contractor Mobilization	05/2024	12/2026	674	Preliminary submittals and procurement of long lead time items.
Start of Construction	11/2024	-	-	Construction to begin in the Central Basin, Phase 1.
Central Basin	11/2024	10/2026	490	Marine structural demolition of fixed piers and floating dock installation. Upgrades to occur to the utilities, entrances, and floating comfort station.
Demens Landing	10/2026	01/2028	340	Central Basin Comfort Station, South Basin Comfort Station, and Ship Store repairs. Upland work to include civil and infrastructure upgrades.
South Basin	01/2028	10/2029	450	Marine structural repairs to include demolition of finger pier slabs and installation of new finger piers and piles. Utilities to be upgraded.
Substantial Completion	10/2029	-	-	Completion of construction and marina upgrades.

*Estimated start date may vary pending approvals, procurement, and design processes. Dates provided here for illustrative purposes only.

** Duration is in working days. Assume a five (5) day work week.

4.3 ASSUMPTIONS

The following assumptions for the project controls have been developed to detail the overall limits and parameters for the developed estimate and schedule.

- I. Currency is in U.S. Dollars (present day cost)
- II. AACE Class 3 Estimate (Budget, Authorization, or Control) with an expected accuracy of -20% to +30%. Where project is not clearly defined, a larger accuracy range may exist.
- III. Estimate markups are as follows:

Table 6. Cost Estimate Markup Assumptions

Item	Markup	Marine	Structural	Civil	MEP
Contractor Hard Costs	Mobilization	6%	10%	10%	0% *
	General Conditions	0% *	10%	0% *	0% *
Project Soft Costs	Design Fee	7%	6%	7%	7%
	Construction Administration Fee	2%	2%	2%	5%
	Construction Management Fee	10%	10%	10%	10%
	Internal CoSP Fee	5%	5%	5%	5%
	CEI (Third Party Inspection) Fee	1%	1%	0% *	0% *
Contingency Costs	Construction Contingency	20%	20%	30%	25%

* Costs are captured within unit costs.

- IV. Contractor Hard Cost markups calculated from the Construction Sub-Total.
- V. Soft Cost and Contingency markups calculated from the Construction + Contractor Hard Cost Sub-Total.

- VI. Scope of work includes elements detailed in Section 2. Detailed breakdown of divisions and work items are provided in Attachment A.
- VII. It is assumed that there will be unrestricted access for the work with no disruptions (i.e., no remobilization or operational restrictions from marina use). This includes allowing the marine contractor to utilize multiple barges and not have to vacate the basin(s) with their equipment at the end of each day of work.
- VIII. Phased project schedule assumes each phase will be completed and occupied by the City before moving to the next phase.
- IX. Project costs may be escalated using US Army Corps of Engineers Engineer Manual (EM) 1110-5-1304, Civil Works Construction Cost Index System (CWCCIS).

4.4 RECONCILIATION

The Safe Harbor LLC Marina re-development program budget was \$30 million. As a result, the McLaren re-development program estimate represents an approximate \$33 million increase in project budget.

Since limited detailed backup documentation was provided for the Safe Harbor LLC estimate a detailed reconciliation could not be performed. However, based on provided data the following table presents high level cost differences between the two programs.

Table 7. Cost Comparison between Safe Harbor and McLaren Estimates

Work Item	Approximate Change in Budget (\$2022) *	Comments
Central Basin	\$ 24,867,000	Inclusive of contractor markups and contingency
Demens Landing	\$ (2,715,000)	Inclusive of contractor markups and contingency
South Basin	\$ 1,607,000	Inclusive of contractor markups and contingency
Soft Costs	\$ 9,200,000	Safe Harbor's soft costs include preconstruction and design & engineering costs. McLaren's soft costs are inclusive of those listed in Table 6

*Costs are rounded to the nearest thousand.

Based on conversations with the City, Safe Harbor LLC, and vendors the assumed sources of variation include, but are not limited to the following:

- Material cost variability;
- Additional soft cost markups due to City run project;
- Design assumptions due to preliminary level of design.

4.5 CONCLUSIONS

Due to the age of the St. Petersburg Marina a significant re-development program is required to extend the service life of the facility. The McLaren Marina Re-Development plan comprises the rehabilitation and/or replacement of marina, building, and infrastructure systems which support the St. Petersburg Municipal Marina.

The estimated total project cost is approximately \$63 million (in 2022 dollars) and will be performed over eight (8) phases occurring over a five (5) year construction program. As compared with the SHD concept, this represents an approximate increase of \$33 million. Due to the limited detail available for review, a full reconciliation could not be performed. However, the two programs generally align with the replacement of the Central Basin and rehabilitation of the South Basin. However, deviations were recommended for various specific elements throughout the project, i.e., floating dock selection.

The recommended work to be performed in the Central Basin includes the demolition of existing fixed docks and the installation of new floating dock systems. This approach provides a longer service life and accommodates for SLR, storm surge, ease of vessel access, etc. Additionally, a new floating comfort center will be installed to better serve the North Docks in terms of functionality. These upgrades align with St. Petersburg's goal to enhance the boater experience, create a modern aesthetic, and provide a resilient and accessible dock system.

The recommended work to be performed in the South Basin includes isolated repairs of Piers 1 and 2 and partial demolition and replacement of the Pier 3 and 4 finger piers. The rehabilitation approach will extend the service life of the piers; however, they will still be supported by existing piles. Due to observed pile conditions at the facility, there is a risk that the existing structural concrete piles will need to be rehabilitated as a part of this, or future, rehabilitation efforts. This is a design risk for the South Basin. Therefore, an underwater pile inspection should be performed to assess if the recommended program for the South Basin needs to be reconsidered.

The recommended work to be performed on Demens Landing includes but is not limited to demolition and replacement of parking lot pavement, sanitary and sewer line replacement, exterior repairs of the comfort stations, interior replacements of the laundry and restroom areas, HVAC replacements, and more. The marina buildings will require ongoing maintenance and rehabilitation to maintain these structures. Additionally, a major consideration regarding the site/civil work is that the capacity of existing

critical utilities, such as potable water, fire mains, and stormwater. These utilities should be considered in correlation with the overall resiliency and seawall program to be executed for Demens Landing.

Attachment A

Cost Estimate Backup

Phase Cost Totals										
Phases	Marine		Utilities		Civil		Structural		Subtotal Per Phase	Percentage of Construction Cost Subtotal (%)
Phase 1 - Central Basin: Partial Demolition of North Docks, Concrete Docks & Transiant Docks/Installation of Yacht Slips.	\$	1,746,000	\$	658,000	\$	-	\$	-	\$ 2,404,000	5.9%
Phase 2 - Central Basin: Demolish Remainder of North Docks& Transient Docks. Partial Demolition of Concrete Docks. Install (3) Floating Docks Piers.	\$	7,279,000	\$	1,750,000	\$	-	\$	-	\$ 9,029,000	22.1%
Phase 3 - Central Basin: Demolish West Docks and remainder of Concrete Docks. Install (2) Floating Dock Piers.	\$	6,081,000	\$	1,290,000	\$	-	\$	-	\$ 7,371,000	18.0%
Phase 4 - Central Basin: Demolish West Central Docks. Install Floating Dock System (13) Slips Along Demens Landing.	\$	3,422,000	\$	658,000	\$	-	\$	-	\$ 4,080,000	10.0%
Phase 5 - Central Basin: Demolish Pump-Out Dock and Remainder of Central Docks. Install (3) Floating Dock Piers and (5) Slips Along Demens Landing.	\$	9,903,000	\$	1,865,000	\$	-	\$	-	\$ 11,768,000	28.8%
Phase 6 - Demens Landing: Exterior repairs of South Comfort Building, demolition of northwest Comfort Station, interior and exterior repairs of centralized Comfort Stations, and parking lot, sanitary, and sewer improvements.	\$	-	\$	-	\$	1,068,000	\$	448,000	\$ 1,516,000	3.7%
Phase 7 - South Basin Pier 1 & 2: Demolition and replacement of finger piers rated Poor, Serious, Or Critical and utility upgrades.	\$	158,000	\$	1,161,000	\$	-	\$	-	\$ 1,319,000	3.2%
Phase 8 - South Basin Pier 3 & 4: Demolition and replacement of all finger piers, new concrete pile supports, and utility upgrades.	\$	2,178,000	\$	1,226,000	\$	-	\$	-	\$ 3,404,000	8.3%
	Cost	Percentage	Cost	Percentage	Cost	Percentage	Cost	Percentage	Totals	
Construction Cost Subtotal	\$ 30,767,000		\$ 8,608,000		\$ 1,068,000		\$ 448,000		\$ 40,891,000	
Mobilization	\$ 1,846,000	6%	\$ -	0%	\$ 107,000	10%	\$ 45,000	10%	\$ 1,998,000	
General Condition	\$ -	0%	\$ -	0%	\$ -	0%	\$ 45,000	10%	\$ 45,000	
Construction + Hard Costs Sub-Total	\$ 32,613,000		\$ 8,608,000		\$ 1,175,000		\$ 538,000		\$ 42,934,000	
Design Fee	\$ 2,283,000	7%	\$ 603,000	7%	\$ 82,000	7%	\$ 32,000	6%	\$ 3,000,000	
Construction Administration (CA) Fee	\$ 652,000	2%	\$ 430,000	5%	\$ 24,000	2%	\$ 11,000	2%	\$ 1,117,000	
Construction Management (CM) Fee	\$ 3,261,000	10%	\$ 861,000	10%	\$ 118,000	10%	\$ 54,000	10%	\$ 4,294,000	
Internal CoSP Fee	\$ 1,631,000	5%	\$ 430,000	5%	\$ 59,000	5%	\$ 27,000	5%	\$ 2,147,000	
CEI (Third Party Special Inspections) Fee	\$ 326,000	1%	\$ -	0%	\$ -	0%	\$ 5,000	1%	\$ 331,000	
Project Soft Costs	\$ 8,153,000		\$ 2,324,000		\$ 283,000		\$ 129,000		\$ 10,889,000	
Contingency	\$ 6,523,000	20%	\$ 2,152,000	25%	\$ 353,000	30%	\$ 108,000	20%	\$ 9,136,000	
Recommended Budget Per Division	\$ 47,289,000		\$ 13,084,000		\$ 1,811,000		\$ 775,000		\$ 62,959,000	

Total Recommended Budget \$ 62,959,000

Notes:

- 1 See Bid Tabulation Summary for Item Unit Costs and Phasing Costs per Item
- 2 See Sketch No. 2 for a Visual of Central Basin Site Phasing
- 3 Captured Within the Unit Costs
- 4 Costs are rounded to the nearest thousand
- 5 In present day cost
- 6 Contingency calculated from the Construction + Contractor Hard Cost Sub-Total and excludes Soft Costs

ENGINEER'S ESTIMATE: BID TABULATION SUMMARY

Proposed Work:	The following is an aggregation of the expected costs to conduct the work proposed by the Safe Harbor Group. This includes but is not limited to the demolition and rebuilding of the central basin of the St. Petersburg marina, rehabilitation of the existing piers in the South Basin and upgrades/renovations to the civil and structural infrastructure located on Demens Landing. This cost estimate does not include the proposed repairs to the Demens Landing and Central Basin bulkhead, however, the division is included for clarity.
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Item Number	Division ¹	Work Item ²	Item ³	Quantity		Estimate ⁵										Source ⁸	Comment ¹⁰
				QTY ⁴	Unit ⁵	Unit Cost ⁷	Phase 1 Cost	Phase 2 Cost	Phase 3 Cost	Phase 4 Cost	Phase 5 Cost	Phase 6 Cost	Phase 7 Cost	Phase 8 Cost	Construction Cost Subtotal ⁹		
1	Central Basin: Marine - Structural	Demolition of Central Basin Marina Existing Deck and Pile Caps	Demolition and disposal of existing concrete deck and pile caps.	35,025	SF	\$ 56.00	\$ 117,559.15	\$ 766,912.13	\$ 462,946.40	\$ 270,190.48	\$ 343,812.00	\$ -	\$ -	\$ -	\$ 1,961,420.16	Contractor Supplied	- Includes the removal of 100LF of 8"x10" HSS supports below existing slab - Includes complete demolition of existing docks along northern Quay Wall
2	Central Basin: Marine - Structural	Demolition of Central Basin Offshore Buildings	Demolition of existing overwater pile supported 1 story, timber framed basic office building. Excludes cutting piles at mudline.	2,536	SF	\$ 95.00	\$ -	\$ 120,990.10	\$ 119,937.50	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 240,927.60	Contractor Supplied	
3	Central Basin: Marine - Structural	Demolition of Concrete Canopy Structure	Demolition of concrete canopy along southern perimeter of the central basin. Includes support columns.	50,846	SF	\$ 44.00	\$ -	\$ -	\$ -	\$ 969,478.62	\$ 1,267,729.32	\$ -	\$ -	\$ -	\$ 2,237,207.94	Contractor Supplied	
4	Central Basin: Marine - Structural	Demolition of Timber Piles	Demolition of existing timber mooring piles and existing timber platform piles by cutting at mudline	395	EA	\$ 1,000.00	\$ 48,000.00	\$ 116,000.00	\$ 95,000.00	\$ 70,000.00	\$ 66,000.00	\$ -	\$ -	\$ -	\$ 395,000.00	Contractor Supplied	
5	Central Basin: Marine - Structural	Demolition of Concrete Piles	Demolition of existing square concrete piles by cutting at mudline	717	EA	\$ 2,000.00	\$ 92,000.00	\$ 500,000.00	\$ 396,000.00	\$ 214,000.00	\$ 232,000.00	\$ -	\$ -	\$ -	\$ 1,434,000.00	Contractor Supplied	
6	Central Basin: Marine - Structural	Aluminum Frame Pier Floats	New floating docks, includes: finger docks (width varies), main walkway docks (10') T-head docks (8' width), utility docks, and gangway landings.	85,264	SF	\$ 165.00	\$ 504,586.76	\$ 3,706,782.34	\$ 3,303,301.16	\$ 1,137,185.96	\$ 5,416,703.77	\$ -	\$ -	\$ -	\$ 14,068,560.00	Contractor Supplied	Material cost \$100/SF
7	Central Basin: Marine - Structural	Concrete Pier Floats	New Floating Docks, includes Wave attenuator floating dock and super yacht dock	3,636	SF	\$ 215.00	\$ 781,740.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 781,740.00	Contractor Supplied	
8	Central Basin: Marine - Structural	Floating Comfort Station	Proposed 60 ft x 40 ft floating building (converted barge) for Central Basin	2,400	SF	\$ 339.44	\$ -	\$ 814,652.77	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 814,652.77	Engineer's Estimate with Contractor Input	Barge cost obtained from C&C Marine Estimate. Railing Cost obtained from 2021 Bid Tabulation from Bayou Grande Blvd, other engineer's estimate
9	Central Basin: Marine - Structural	Anchor Piles	New 18" dia x 0.5" wall Gr3 steel pipe piles (70' length per pile typ., coal tar epoxy coating 16 mil typ')	280	EA	\$ 20,000.00	\$ 100,000.00	\$ 1,120,000.00	\$ 1,520,000.00	\$ 580,000.00	\$ 2,280,000.00	\$ -	\$ -	\$ -	\$ 5,600,000.00	Engineer's Estimate with Contractor Input	
10	Central Basin: Marine - Structural	Mooring Piles	New 12" diameter timber mooring piles (45' length per pile typ.)	157	EA	\$ 1,850.00	\$ -	\$ 57,350.00	\$ 83,250.00	\$ 20,350.00	\$ 129,500.00	\$ -	\$ -	\$ -	\$ 290,450.00	Contractor Supplied	
11	Central Basin: Marine - Structural	Fixed Security Gate Platform	Proposed 5 ft x 20 ft security gate for Central Basin	1	LS	\$ 25,000.00	\$ -	\$ -	\$ 25,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 25,000.00	Contractor Supplied	Assumes Security Fence is mounted to a 100SF fixed platform
12	Central Basin: Marine - Structural	Dock entry portal structure (fixed)	Proposed Timber dock entry portal structures for Central Basin ranging from 13 - 20 ft long and 10 - 20 ft wide	1,068	SF	\$ 220.00	\$ 46,992.00	\$ 46,992.00	\$ 46,992.00	\$ 46,992.00	\$ 46,992.00	\$ -	\$ -	\$ -	\$ 234,960.00	Contractor Supplied	\$81/SF gazebo; \$139/SF timber pier below
13	Central Basin: Marine - Structural	Fixed Gangway	Proposed gangways for Central Basin range from 40 - 75 ft long and 4 - 5 ft wide	1,860	SF	\$ 165.00	\$ 55,128.05	\$ 28,949.92	\$ 28,949.92	\$ 93,779.28	\$ 100,092.82	\$ -	\$ -	\$ -	\$ 306,900.00	Engineer's Estimate	Unit cost based on ADA Gangway 6'x8'
14	Central Basin: Marine - Structural	Fixed Landing	Proposed Timber 10 ft x 10 ft landings for Central Basin	200	SF	\$ 200.00	\$ -	\$ -	\$ -	\$ 20,000.00	\$ 20,000.00	\$ -	\$ -	\$ -	\$ 40,000.00	Contractor Supplied	
15	South Basin: Marine - Structural	Partial Demolition & Replacement of Piers 1 & 2	Demolition and replacement of finger piers rated Poor, Serious or Critical at Piers 1 and 2.	680	SF	\$ 232.50	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 158,100.00	\$ -	\$ 158,100.00	Engineer's Estimate with Contractor Input	Obtained from St. Petersburg Project No. 16111-119R (Oct-2018) Bid Tabulation and corresponding construction drawings. Finger Pier Deck Repair Type 2 was assumed.
16	South Basin: Marine - Structural	Demolition of All Finger Piers at Piers 3 & 4	Demolition of finger pier decks at Piers 3 and 4 and replacement with extended finger piers and additional 14" x 14" Concrete pile supports.	6,830	SF	\$ 318.95	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,178,410.88	\$ 2,178,410.88	\$ 2,178,410.88	Engineer's Estimate with Contractor Input	Obtained from St. Petersburg Project No. 16111-119R (Oct-2018) Bid Tabulation and corresponding construction drawings. Finger Pier Deck Repair Type 2 was assumed. Pile and Pile caps obtained from Engineer's Estimate with FDOT information. See Bid Tab comments.
17	Demens Landing: Buildings - Comfort Stations	Demolition (NW Restroom)	Demolition of existing 1-story structure at West of Central Basin	550	SF	\$ 9.09	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,000.00	\$ -	\$ -	\$ 5,000.00	Engineer's Estimate	Existing NW Restroom. Includes: Includes: 1. Toilet, urinals, sinks and shower fixtures 2. Tile Flooring and wall tiles 3. CMU walls and low-slope roof
18	Demens Landing: Buildings - Comfort Stations	Roof Construction	Installation of wood framed hip roof atop existing flat roof at laundry building to match adjacent restroom building roof. Installation of wood framed dormer atop existing hip-style roof at restroom building.	600	SF	\$ 41.67	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 25,000.00	\$ -	\$ -	\$ 25,000.00	Engineer's Estimate	Central Basin Comfort Station (Laundry) - Includes hip roof structural connection to existing flat roof, framing, plywood roof sheathing Central Basin Comfort Station (Restroom) - includes dormer structural connection to existing hip-style roof framing, plywood roof sheathing
19	Demens Landing: Buildings - Comfort Stations	Roofing	Replacement of Existing Metal Roofing at Restroom Building with Standing Seam Roof. New Standing Seam Roof at new hip roof at Laundry Building.	1,450	SF	\$ 13.10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 18,995.00	\$ -	\$ -	\$ 18,995.00	Engineer's Estimate with Contractor Input	New Standing Seam Roof materials at both the Restroom Building and the Laundry Building for the central basin comfort station.
20	Demens Landing: Buildings - Comfort Stations	Restroom Interior Replacement	Interior renovation of existing and installation of high-end, modern fixtures and finishes	850	SF	\$ 150.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 127,500.00	\$ -	\$ -	\$ 127,500.00	Engineer's Estimate	Central Basin Comfort Station (Restroom) - Includes Granite Countertops and Accent Shelving, Sinks, Showers, Stalls with Toilets, Urinals in Men's Bathroom, Ceramic Tile at Floors and Walls, Replacement of Doors, Replacement of Windows, Interior Painting
21	Demens Landing: Buildings - Comfort Stations	Laundry Interior Replacement	Interior renovation of existing and installation of high-end, modern equipment and finishes	600	SF	\$ 150.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 90,000.00	\$ -	\$ -	\$ 90,000.00	Engineer's Estimate	Central Basin Comfort Station (Laundry) - Includes Ceramic Tile at Floor, Granite Countertops and Accent Shelving, Utility Sink, Dryers, Washers, Hot Water Heater, Replacement of Doors, Replacement of Windows, Interior Painting
22	Demens Landing: Buildings - Comfort Stations	Exterior Painting	Painting of exterior walls at Restroom and Laundry Buildings	2,150	SF	\$ 1.50	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 3,225.00	\$ -	\$ -	\$ 3,225.00	Engineer's Estimate with Contractor Input	Painting of the exterior face of the Central Basin Comfort Station Buildings (Restroom and Laundry Buildings) 2100 SF (2150 rounding up) = (90'+120')*10'
23	Demens Landing: Buildings - Comfort Stations	Roofing	Replacement of Existing Metal Roofing with Standing Seam Roof	4,250	SF	\$ 13.10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 55,675.00	\$ -	\$ -	\$ 55,675.00	Engineer's Estimate with Contractor Input	New Standing Seam Roof materials at South Basin Comfort Station.
25	Demens Landing: Buildings - Comfort Stations	HVAC Replacement	Verify Existing HVAC units are in good working condition, otherwise repair/replace as needed. At Central Basin Comfort Station two (2) split units (one for W and one for M restroom) to be installed. Add one (1) split unit for Laundry Building.	3	LS	\$ 2,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 6,000.00	\$ -	\$ -	\$ 6,000.00	Engineer's Estimate with Contractor Input	HVAC split units at both the both the Restroom Building and the Laundry Building. \$2,000 for each split unit to be installed.
26	Demens Landing: Buildings - Comfort Stations	HVAC Replacement	Verify Existing HVAC units are in good working condition, otherwise repair/replace as needed. At South Basin Comfort Station replace the two (2) HVAC split units and six (6) window HVAC units in other areas of building	1	LS	\$ 10,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 10,000.00	\$ -	\$ -	\$ 10,000.00	Engineer's Estimate with Contractor Input	HVAC split units at both the both the Men's and Women's restroom and HVAC window units at office spaces and other areas. Cost is \$1,000 for each HVAC window unit installed and \$2,000 for one HVAC split unit installed
27	Demens Landing: Buildings - Comfort Stations	Repair of Elevated Timber Deck	Replace warping and cracking timber members of the elevated deck	1	LS	\$ 10,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 10,000.00	\$ -	\$ -	\$ 10,000.00	Engineer's Estimate	South Basin Comfort Station. Approx. 475 SF existing deck. Contingency cost.

Item Number	Division ¹	Work Item ²	Item ³	Quantity		Estimate ⁴										Source ⁸	Comment ¹⁰
				QTY ⁴	Unit ⁵	Unit Cost ⁷	Phase 1 Cost	Phase 2 Cost	Phase 3 Cost	Phase 4 Cost	Phase 5 Cost	Phase 6 Cost	Phase 7 Cost	Phase 8 Cost	Construction Cost Subtotal ⁹		
28	Demens Landing: Buildings - Marina Office and Ship Store	HVAC Replacement	Verify Existing HVAC units are in good working condition, otherwise repair/replace as needed. Two (2) HVAC heat pumps.	2	LS	\$ 12,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 24,000.00	\$ -	\$ -	\$ 24,000.00	Engineer's Estimate with Contractor Input	HVAC heat pumps at the Marina Office and Ship Store. Each HVAC heat pump is \$12,000
29	Demens Landing: Buildings - Marina Office and Ship Store	Roofing	Replacement of Existing Metal Roofing with Standing Seam Roof	4,000	SF	\$ 13.10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 52,400.00	\$ -	\$ -	\$ 52,400.00	Engineer's Estimate with Contractor Input	New Standing Seam Roof materials at the Marina Office and Ship Store
30	Demens Landing: Buildings - Marina Office and Ship Store	Exterior Painting	Painting of exterior walls	10,000	SF	\$ 1.50	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15,000.00	\$ -	\$ -	\$ 15,000.00	Engineer's Estimate with Contractor Input	Painting of the exterior face of the Marina Office and Ship Store Assuming perimeter 324 ft, 4000SF footprint, about 20 ft height, round up to 10,000 SF of painting to account for scaffolding or lift required to paint upper story
31	Demens Landing: Buildings - Marina Office and Ship Store	Façade	Repair (3) Locations of damaged Hardie board siding.	1	LS	\$ 2,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,000.00	\$ -	\$ -	\$ 2,000.00	Engineer's Estimate	Scaffolding or a lift will be required to access areas of siding to be repaired.
32	Demens Landing: Buildings - Marina Office and Ship Store	Flashing	Replace dented flashing along top of parking area	150	LF	\$ 13.33	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,000.00	\$ -	\$ -	\$ 2,000.00	Engineer's Estimate	Approximate LF. Flashing above parking area of Ship Store
33	Demens Landing: Buildings - Marina Office and Ship Store	Ceiling Repairs	Repair (3) Locations of damaged gypsum board ceilings in the Ship Store.	1	LS	\$ 1,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,000.00	\$ -	\$ -	\$ 1,000.00	Engineer's Estimate	Scaffolding or a lift will be required to access areas of ceiling to be repaired.
34	Demens Landing: Civil	Demolition, Trees		5	EA	\$577.56	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,887.80	\$ -	\$ -	\$ 2,887.80	Engineer's Estimate	
35	Demens Landing: Civil	Demolition, Pavement		944	SY	\$11.88	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 11,021.20	\$ -	\$ -	\$ 11,021.20	Engineer's Estimate	
36	Demens Landing: Civil	Demolition, Curb		425	LF	\$15.71	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 6,675.54	\$ -	\$ -	\$ 6,675.54	Engineer's Estimate	
37	Demens Landing: Civil	Demolition, Sidewalk Concrete		603	SY	\$14.80	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 8,926.12	\$ -	\$ -	\$ 8,926.12	Engineer's Estimate	
38	Demens Landing: Civil	Demolition, Sanitary Sewer		762	LF	\$36.33	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 27,685.37	\$ -	\$ -	\$ 27,685.37	Engineer's Estimate	
39	Demens Landing: Civil	Demolition, Sanitary Manhole		3	EA	\$1,353.13	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,059.38	\$ -	\$ -	\$ 4,059.38	Engineer's Estimate	
40	Demens Landing: Civil	Demolition, Potable Water Main		850	LF	\$51.98	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 44,184.70	\$ -	\$ -	\$ 44,184.70	Engineer's Estimate	
41	Demens Landing: Civil	Demolition, Fence		1318	LF	\$5.47	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 7,202.87	\$ -	\$ -	\$ 7,202.87	Engineer's Estimate	
42	Demens Landing: Civil	Demolition, Structure		900	SF	\$17.72	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15,943.50	\$ -	\$ -	\$ 15,943.50	Engineer's Estimate	
43	Demens Landing: Civil	Construction, Asphaltic Concrete Road (Heavy-Duty) Drive Aisle	Includes Base And Subgrade	609	SY	\$97.74	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 59,523.66	\$ -	\$ -	\$ 59,523.66	Engineer's Estimate	
44	Demens Landing: Civil	Construction, Asphaltic Concrete Parking Stalls (Light-Duty)	Includes Base And Subgrade	1696	SY	\$61.59	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 104,456.64	\$ -	\$ -	\$ 104,456.64	Engineer's Estimate	
45	Demens Landing: Civil	Construction, Curb, Type D		121	LF	\$44.83	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,424.51	\$ -	\$ -	\$ 5,424.51	Engineer's Estimate	
46	Demens Landing: Civil	Construction, Curb, Valley		303	LF	\$52.05	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15,771.60	\$ -	\$ -	\$ 15,771.60	Engineer's Estimate	
47	Demens Landing: Civil	Construction, Curb, Drop Curb		490	LF	\$52.05	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 25,505.24	\$ -	\$ -	\$ 25,505.24	Engineer's Estimate	
48	Demens Landing: Civil	Construction, Concrete Sidewalk, 4' Thick		1081	SY	\$93.28	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100,835.37	\$ -	\$ -	\$ 100,835.37	Engineer's Estimate	
49	Demens Landing: Civil	Construction, Accessibility Ramp & Stairs		2	EA	\$6,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 12,000.00	\$ -	\$ -	\$ 12,000.00	Engineer's Estimate	
50	Demens Landing: Civil	Construction, Potable Water Main, 6"		850	LF	\$103.96	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 88,369.40	\$ -	\$ -	\$ 88,369.40	Engineer's Estimate	
51	Demens Landing: Civil	Construction, Limestone, 6" Pvc		2	EA	\$7,399.82	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 14,781.64	\$ -	\$ -	\$ 14,781.64	Engineer's Estimate	
52	Demens Landing: Civil	Construction, Gate Valve, 6"		2	EA	\$2,372.06	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,744.13	\$ -	\$ -	\$ 4,744.13	Engineer's Estimate	
53	Demens Landing: Civil	Construction, Valve/Meter Box, 6"		2	EA	\$1,433.33	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,866.67	\$ -	\$ -	\$ 2,866.67	Engineer's Estimate	
54	Demens Landing: Civil	Construction, Sanitary Sewer, 8" Pvc		762	LF	\$72.67	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 55,370.73	\$ -	\$ -	\$ 55,370.73	Engineer's Estimate	
55	Demens Landing: Civil	Construction, Sanitary Manhole, 4'		3	EA	\$5,857.74	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 17,573.23	\$ -	\$ -	\$ 17,573.23	Engineer's Estimate	
56	Demens Landing: Civil	Construction, Back Of Sidewalk Drainage		196	LF	\$67.82	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 13,293.50	\$ -	\$ -	\$ 13,293.50	Engineer's Estimate	
57	Demens Landing: Civil	Construction, Dry Retention Pond	Regular Excavation	355	CY	\$121.67	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 43,193.50	\$ -	\$ -	\$ 43,193.50	Engineer's Estimate	
58	Demens Landing: Civil	Construction, Handrail		1658	LF	\$76.70	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 126,514.79	\$ -	\$ -	\$ 126,514.79	Engineer's Estimate	
59	Demens Landing: Civil	Modification, Existing Storm Inlet		1	EA	\$2,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,000.00	\$ -	\$ -	\$ 2,000.00	Engineer's Estimate	
60	Demens Landing: Civil	Furnish & Install Security Gates		2	EA	\$12,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 24,000.00	\$ -	\$ -	\$ 24,000.00	Engineer's Estimate	
61	Demens Landing: Civil	Relocate, Existing Security Gate		5	EA	\$2,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 10,000.00	\$ -	\$ -	\$ 10,000.00	Engineer's Estimate	
62	Demens Landing: Civil	Construction, Seed/Mulch		2154	SY	\$5.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 10,770.00	\$ -	\$ -	\$ 10,770.00	Engineer's Estimate	
63	Demens Landing: Civil	Milling & Resurfacing	Includes Milling And Pavement	5430	SY	\$24.68	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 134,012.48	\$ -	\$ -	\$ 134,012.48	Engineer's Estimate	
64	Demens Landing: Civil	Parking Striping		5220	LF	\$10.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 52,200.00	\$ -	\$ -	\$ 52,200.00	Engineer's Estimate	
65	Central Basin: Utility	Electrical & Communications	Includes Phases 1 Through 5	1	LS	\$ 5,500,000.00	\$ 590,000.00	\$ 1,540,000.00	\$ 1,140,000.00	\$ 590,000.00	\$ 1,640,000.00	\$ -	\$ -	\$ -	\$ 5,500,000.00	Engineer's Estimate	
66	Central Basin: Utility	Domestic Water/Sanitary/Fire Protection	Includes Phases 1 Through 5	1	LS	\$ 720,500.00	\$ 67,500.00	\$ 210,000.00	\$ 150,000.00	\$ 68,000.00	\$ 225,000.00	\$ -	\$ -	\$ -	\$ 720,500.00	Engineer's Estimate	
67	South Basin: Utility	Electrical & Communications	Includes Docks 1 Through 4	1	LS	\$ 2,240,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,090,000.00	\$ 1,150,000.00	\$ 2,240,000.00	Engineer's Estimate	WiFi installation at Piers 3 & 4 Only
68	South Basin: Utility	Domestic Water/Sanitary/Fire Protection	Includes Docks 1 Through 4	1	LS	\$ 147,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 71,000.00	\$ 76,000.00	\$ 147,000.00	Engineer's Estimate	
Phase Totals:							\$ 2,403,505.96	\$ 9,028,629.27	\$ 7,371,376.98	\$ 4,079,976.34	\$ 11,767,829.92	\$ 1,515,588.55	\$ 1,319,100.00	\$ 3,404,410.88	\$ 40,890,417.90		

Superscript Number Legend	
1	Division of work to be performed.
2	Individual Work Item
3	Provide a brief description of bid item.
4	Quantity of item.
5	Units, i.e. LF, EA, Ton, \$/CY, etc.
6	Item Cost Estimate.
7	Unit price of item, (\$/units).
8	Total Cost of Item.
9	Where did the data come from?
10	Please note important assumptions or considerations.

No	Division	Scope Description
1	Central Basin: Marine - Structural	Existing fixed docks to be demolished and replaced with new floating docks. Floating docks will be supported by a guide pile anchor system. At least one gangway will be installed at each dock area. A new pier approach and overwater comfort station will be installed.
		A concrete floating wave attenuator is proposed to protect the north docks from wave action.
		New articulating aluminum gangways to be added.
2	Central Basin: Bulkhead (Not In Scope)	Bulkhead Replacement - Existing sheet pile bulkheads and concrete retaining walls will be replaced with a new steel sheet pile bulkhead with reinforced concrete cap and fascia.
		Bulkhead Cap Repair - Bulkhead/cap repairs will be performed at some areas of existing bulkhead.
3	Central Basin: Utility	Septic to be replaced with new marina.
		Potable Water to be replaced with new marina.
		Electric to be replaced with new marina.
		New floating docks to be equipped with WiFi. Docks will also be equipped with life saving utilities including fire extinguishers, life rings, and ladders.
4	Demens Landing: Bulkhead (Not in Scope)	Bulkhead Cap Repair - Bulkhead/cap repairs will be performed at some areas of existing bulkhead.
		Concrete demolished from the central basin docks shall be repurposed as riprap for a revetment along the South side of Demens Landing to support the existing bulkhead from the water side.
5	Demens Landing: Civil	Proposed improvements will result in a slight increase in impervious area. Any required stormwater treatment shall be treated on site and drainage outfalls will be combined to minimize the amount of penetrations into the walls. An underground filtration box that will treat the run-off prior to discharging is being considered. A drainage system will need to be installed.
		Existing pump-out station will be relocated to fuel dock to combine fueling and sewage pumping operations.
		Existing parking spaces to be reconfigured.
		Multiple access points to be added along the new pier approach for pedestrians.
		Public accessible greenspace area proposed at Demens Landing.
		Existing security gateways to be remodeled.
		A new bridge entry enhancement in Demens Landing Area.
		A new marina entrance is suggested at various locations to improve the aesthetic of the dock entry and provide a covered security area for boaters.
6	Demens Landing: Buildings - Marina Office and Ship Store	Exterior of Ship Store will be repainted and the roof will be replaced.
7	Demens Landing: Buildings - Comfort Stations	The exterior of the South Comfort Building will be repainted and the roof will be replaced. One of the comfort stations at the northwest corner of Demens Landing is to be demolished. The more centralized comfort station buildings (laundry and restroom buildings) along the north edge of Demens Landing will be repainted, receive new roofs, and will have the interiors renovated.
8	South Basin: Marine - Structural	Existing south docks to be rehabilitated. Structural repairs include finger pier deck slab replacement, dock replacement, and new timber finger piers.
9	South Basin: Utility	Utility upgrades to include upgrades to existing potable water and fire water.
		Utility upgrades to include new electrical service to Docks 3 and 4.
		Utility upgrades to include upgrades to existing communication systems, and for Docks 3 and 4 as well as equipping Docks 3 and 4 with WIFI. Dock boxes, trash receptacles and cleats will be replaced where needed.

Cost Estimate Backup - Marine

ENGINEER'S ESTIMATE: BID TABULATION SUMMARY																	
Proposed Work:				The following is an aggregation of the expected costs to conduct the work proposed by the Safe Harbor Group. This includes but is not limited to the demolition and rebuilding of the central basin of the St. Petersburg marina, rehabilitation of the existing piers in the South Basin and upgrades/renovations to the civil and structural infrastructure located on Demens Landing. This cost estimate does not include the proposed repairs to the Demens Landing and Central Basin bulkhead, however, the division is included for clarity.													
Item Number	Division ¹	Work Item ²	Item ³	Quantity		Estimate ⁵										Source ⁸	Comment ¹⁰
				QTY ⁴	Unit ⁴	Unit Cost ⁷	Phase 1 Cost	Phase 2 Cost	Phase 3 Cost	Phase 4 Cost	Phase 5 Cost	Phase 6 Cost	Phase 7 Cost	Phase 8 Cost	Construction Cost Subtotal ⁹		
1	Central Basin: Marine - Structural	Demolition of Central Basin Marina Existing Deck and Pile Caps	Demolition and disposal of existing concrete deck and pile caps.	35,025	SF	\$ 56.00	\$ 117,559.15	\$ 766,912.13	\$ 462,946.40	\$ 270,190.48	\$ 343,812.00	\$ -	\$ -	\$ -	\$ 1,961,420.16	Contractor Supplied	- Includes the removal of 100LF of 8"x10" HSS supports below existing slab - Includes complete demolition of existing docks along northern Quay Wall
2	Central Basin: Marine - Structural	Demolition of Central Basin Offshore Buildings	Demolition of existing overwater pile supported 1 story, timber framed basic office building. Excludes cutting piles at mudline.	2,536	SF	\$ 95.00	\$ -	\$ 120,990.10	\$ 119,937.50	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 240,927.60	Contractor Supplied	
3	Central Basin: Marine - Structural	Demolition of Concrete Canopy Structure	Demolition of concrete canopy along southern perimeter of the central basin. Includes support columns.	50,846	SF	\$ 44.00	\$ -	\$ -	\$ -	\$ 969,478.62	\$ 1,267,729.32	\$ -	\$ -	\$ -	\$ 2,237,207.94	Contractor Supplied	
4	Central Basin: Marine - Structural	Demolition of Timber Piles	Demolition of existing timber mooring piles and existing timber platform piles by cutting at mudline	395	EA	\$ 1,000.00	\$ 48,000.00	\$ 116,000.00	\$ 95,000.00	\$ 70,000.00	\$ 66,000.00	\$ -	\$ -	\$ -	\$ 395,000.00	Contractor Supplied	
5	Central Basin: Marine - Structural	Demolition of Concrete Piles	Demolition of existing square concrete piles by cutting at mudline	717	EA	\$ 2,000.00	\$ 92,000.00	\$ 500,000.00	\$ 396,000.00	\$ 214,000.00	\$ 232,000.00	\$ -	\$ -	\$ -	\$ 1,434,000.00	Contractor Supplied	
6	Central Basin: Marine - Structural	Aluminum Frame Pier Floats	New floating docks, includes: finger docks (width varies), main walkway docks (10') T-head docks (8' width), utility docks, and gangway landings.	85,264	SF	\$ 165.00	\$ 504,586.76	\$ 3,706,782.34	\$ 3,303,301.16	\$ 1,137,185.96	\$ 5,416,703.77	\$ -	\$ -	\$ -	\$ 14,068,560.00	Contractor Supplied	Material cost \$100/SF
7	Central Basin: Marine - Structural	Concrete Pier Floats	New Floating Docks, includes Wave attenuator floating dock and super yacht dock	3,636	SF	\$ 215.00	\$ 781,740.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 781,740.00	Contractor Supplied	
8	Central Basin: Marine - Structural	Floating Comfort Station	Proposed 60 ft x 40 ft floating building (converted barge) for Central Basin	2,400	SF	\$ 339.44	\$ -	\$ 814,652.77	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 814,652.77	Engineer's Estimate with Contractor Input	Barge cost obtained from C&C Marine Estimate, Railing Cost obtained from 2021 Bid Tabulation from Bayou Grande Blvd, other engineer's estimate
9	Central Basin: Marine - Structural	Anchor Piles	New 18" dia x 0.5" wall Gr3 steel pipe piles (70' length per pile typ., coal tar epoxy coating 16 mil typ)	280	EA	\$ 20,000.00	\$ 100,000.00	\$ 1,120,000.00	\$ 1,520,000.00	\$ 580,000.00	\$ 2,280,000.00	\$ -	\$ -	\$ -	\$ 5,600,000.00	Engineer's Estimate with Contractor Input	
10	Central Basin: Marine - Structural	Mooring Piles	New 12" diameter timber mooring piles (45' length per pile typ.)	157	EA	\$ 1,850.00	\$ -	\$ 57,350.00	\$ 83,250.00	\$ 20,350.00	\$ 129,500.00	\$ -	\$ -	\$ -	\$ 290,450.00	Contractor Supplied	
11	Central Basin: Marine - Structural	Fixed Security Gate Platform	Proposed 5 ft x 20 ft security gate for Central Basin	1	LS	\$ 25,000.00	\$ -	\$ -	\$ 25,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 25,000.00	Contractor Supplied	Assumes Security Fence is mounted to a 100SF fixed platform
12	Central Basin: Marine - Structural	Dock entry portal structure (fixed)	Proposed Timber dock entry portal structures for Central Basin ranging from 13 - 20 ft long and 10 - 20 ft wide	1,068	SF	\$ 220.00	\$ 46,992.00	\$ 46,992.00	\$ 46,992.00	\$ 46,992.00	\$ 46,992.00	\$ -	\$ -	\$ -	\$ 234,960.00	Contractor Supplied	\$81/SF gazebo; \$139/SF timber pier below
13	Central Basin: Marine - Structural	Fixed Gangway	Proposed gangways for Central Basin range from 40 - 75 ft long and 4 - 5 ft wide	1,860	SF	\$ 165.00	\$ 55,128.05	\$ 28,949.92	\$ 28,949.92	\$ 93,779.28	\$ 100,092.82	\$ -	\$ -	\$ -	\$ 306,900.00	Engineer's Estimate	Unit cost based on ADA Gangway 6'x80'
14	Central Basin: Marine - Structural	Fixed Landing	Proposed Timber 10 ft x 10 ft landings for Central Basin	200	SF	\$ 200.00	\$ -	\$ -	\$ -	\$ 20,000.00	\$ 20,000.00	\$ -	\$ -	\$ -	\$ 40,000.00	Contractor Supplied	
15	South Basin: Marine - Structural	Partial Demolition & Replacement of Piers 1 & 2	Demolition and replacement of finger piers rated Poor, Serious or Critical at Piers 1 and 2.	680	SF	\$ 232.50	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 158,100.00	\$ -	\$ 158,100.00	Engineer's Estimate with Contractor Input	Obtained from St. Petersburg Project No. 16111-119R (Oct-2018) Bid Tabulation and corresponding construction drawings. Finger Pier Deck Repair Type 2 was assumed.
16	South Basin: Marine - Structural	Demolition of All Finger Piers at Piers 3 & 4	Demolition of finger pier decks at Piers 3 and 4 and replacement with extended finger piers and additional 14" x 14" Concrete pile supports.	6,830	SF	\$ 318.95	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,178,410.88	\$ 2,178,410.88	Engineer's Estimate with Contractor Input	Obtained from St. Petersburg Project No. 16111-119R (Oct-2018) Bid Tabulation and corresponding construction drawings. Finger Pier Deck Repair Type 2 was assumed. Pile and Pile caps obtained from Engineer's Estimate with FDOT information. See Bid Tab comments.

BID ITEM ESTIMATE BREAKDOWN: ITEM 1

Division of Subtask:	Central Basin: Marine - Structural
Description of Subtask:	Demolition and disposal of existing concrete deck and pile caps.
Materials:	N/A
Notes:	

Labor and Equipment Costs for ITEM 1

CREW BREAKDOWN					
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
EQUIPMENT BREAKDOWN					
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 1					
Installation Unit ⁸	Output (SF/Day)	Labor-Hours / SF	Labor (\$/SF)	Equipment (\$/SF)	TOTAL (\$/SF)
SF	1.00	0	0	0	\$ -

UNIT COSTS FOR ITEM 1					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/SF)	Source ⁴
West Dock	SF	\$ 56.00	8266.90	\$ 462,946.40	Contractor Supplied
North Dock	SF	\$ 56.00	14014.13	\$ 784,791.28	Contractor Supplied
SC, SX and SY-East Dock	SF	\$ 56.00	6139.50	\$ 343,812.00	Contractor Supplied
SZ Dock	SF	\$ 56.00	1719.50	\$ 96,292.00	Contractor Supplied
SY West Dock	SF	\$ 56.00	3105.33	\$ 173,898.48	Contractor Supplied
North Quay Wall	SF	\$ 56.00	1780.00	\$ 99,680.00	Contractor Supplied
Total Cost				\$ 1,961,420.16	

ITEM 1: Demolition and disposal of existing concrete deck and pile caps.- Summary

Item Description	Unit Cost (\$/SF)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	SF	35,025	\$ -
Material	\$ 56.00	SF	35,025	\$ 1,961,420.16
Subtotal Direct Constructions Costs	\$ 56.00			\$ 1,961,420.16
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 56.00		Total Item Cost:	\$ 1,961,420.16

BID ITEM ESTIMATE BREAKDOWN: ITEM 2

Division of Subtask:	Central Basin: Marine - Structural
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Description of Subtask:	Demolition of existing overwater pile supported 1 story, timber framed basic office building. Excludes cutting piles at mudline.
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Materials:	N/A
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Notes:	
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Labor and Equipment Costs for ITEM 2

CREW BREAKDOWN				
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Total:			\$ -	

EQUIPMENT BREAKDOWN				
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Total:			\$ -	

LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 2					
Installation Unit ⁸	Output (SF/Day)	Labor-Hours / SF	Labor (\$/SF)	Equipment (\$/SF)	TOTAL (\$/SF)
SF	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 2					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/SF)	Source ⁴
North Dock Building	SF	\$ 95.00	1273.58	\$ 120,990.10	Contractor Supplied
West Dock Building	SF	\$ 95.00	1262.50	\$ 119,937.50	Contractor Supplied
Total Cost:				\$ 240,927.60	

ITEM 2: Demolition of existing overwater pile supported 1 story, timber framed basic office building. Excludes cutting piles at mudline.- Summary				
Item Description	Unit Cost (\$/SF)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	SF	2,536	\$ -
Material	\$ 95.00	SF	2,536	\$ 240,927.60
Subtotal Direct Construction Costs	\$ 95.00			\$ 240,927.60
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 95.00			\$ 240,927.60

BID ITEM ESTIMATE BREAKDOWN: ITEM 3

Division of Subtask:	Central Basin: Marine - Structural
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Description of Subtask:	Demolition of concrete canopy along southern perimeter of the central basin. Includes support columns.
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Materials:	N/A
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Notes:	
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Labor and Equipment Costs for ITEM 3

CREW BREAKDOWN				
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Total:			\$ -	

EQUIPMENT BREAKDOWN				
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Total:			\$ -	

LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 3					
Installation Unit ⁸	Output (SF/Day)	Labor-Hours / SF	Labor (\$/SF)	Equipment (\$/SF)	TOTAL (\$/SF)
SF	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 3					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/SF)	Source ⁴
SY East Dock	SF	\$ 44.00	4266	\$ 187,710.38	Contractor Supplied
SX Dock	SF	\$ 44.00	18846	\$ 829,202.44	Contractor Supplied
SZ Dock	SF	\$ 44.00	9967	\$ 438,526.88	Contractor Supplied
SY West Dock	SF	\$ 44.00	17767	\$ 781,768.24	Contractor Supplied
Total Unit Cost:				\$ 2,237,207.94	

ITEM 3: Demolition of concrete canopy along southern perimeter of the central basin. Includes support columns.- Summary				
Item Description	Unit Cost (\$/SF)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	SF	50,846	\$ -
Material	\$ 44.00	SF	50,846	\$ 2,237,207.94
Subtotal Direct Constructions Costs	\$ 44.00			\$ 2,237,207.94
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 44.00			\$ 2,237,207.94

BID ITEM ESTIMATE BREAKDOWN: ITEM 4

Division of Subtask:	Central Basin: Marine - Structural
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Description of Subtask:	Demolition of existing timber mooring piles and existing timber platform piles by cutting at mudline
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Materials:	N/A
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Notes:	
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Labor and Equipment Costs for ITEM 4

CREW BREAKDOWN				
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Total:			\$ -	

EQUIPMENT BREAKDOWN				
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Total:			\$ -	

LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 4					
Installation Unit ⁸	Output (EA/Day)	Labor-Hours / EA	Labor (\$/EA)	Equipment (\$/EA)	TOTAL (\$/EA)
EA	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 4					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/EA)	Source ⁴
Timber Pile	EA	\$ 1,000.00	395	\$ 395,000.00	Contractor Supplied
Total Unit Cost:				\$ 395,000.00	

ITEM 4: Demolition of existing timber mooring piles and existing timber platform piles by cutting at mudline - Summary				
Item Description	Unit Cost (\$/EA)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	EA	395	\$ -
Material	\$ 1,000.00	EA	395	\$ 395,000.00
Subtotal Direct Construction Costs	\$ 1,000.00			\$ 395,000.00
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 1,000.00			Total Item Cost: \$ 395,000.00

BID ITEM ESTIMATE BREAKDOWN: ITEM 5

Division of Subtask:	Central Basin: Marine - Structural
Description of Subtask:	Demolition of existing square concrete piles by cutting at mudline
Materials:	N/A
Notes:	Contractor Supplied costs include cost of installation

Labor and Equipment Costs for ITEM 5

CREW BREAKDOWN				
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Total:			\$ -	

EQUIPMENT BREAKDOWN				
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Total:			\$ -	

LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 5					
Installation Unit ⁸	Output (EA/Day)	Labor-Hours / EA	Labor (\$/EA)	Equipment (\$/EA)	TOTAL (\$/EA)
EA	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 5					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity Conversion (Purchase Unit/Installation Unit) ¹²	Installation Unit Cost (\$/EA)	Source ⁴
Concrete Pile	EA	\$ 2,000.00	717	\$ 1,434,000.00	Contractor Supplied
Total Unit Cost:				\$ 1,434,000.00	

ITEM 5: Demolition of existing square concrete piles by cutting at mudline- Summary				
Item Description	Unit Cost (\$/EA)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	EA	717	\$ -
Material	\$ 2,000.00	EA	717	\$ 1,434,000.00
Subtotal Direct Construction Costs	\$ 2,000.00			\$ 1,434,000.00
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 2,000.00			Total Item Cost: \$ 1,434,000.00

BID ITEM ESTIMATE BREAKDOWN: ITEM 6

Division of Subtask:	Central Basin: Marine - Structural
Description of Subtask:	New floating docks, includes: finger docks (width varies), main walkway docks (10') T-head docks (8' width), utility docks, and gangway landings.
Materials:	Concrete Floats, Aluminium Frame
Notes:	Contractor Supplied costs include cost of installation

Labor and Equipment Costs for ITEM 6

CREW BREAKDOWN					
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
EQUIPMENT BREAKDOWN					
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 6					
Installation Unit ⁸	Output (SF/Day)	Labor-Hours / SF	Labor (\$/SF)	Equipment (\$/SF)	TOTAL (\$/SF)
SF	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 6					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/SF)	Source ⁴
Finger Pier Concrete Floats	SF	\$ 165.00	25070	\$ 4,136,550.00	Contractor Supplied
Main Walkway Concrete Floats	SF	\$ 165.00	53234	\$ 8,783,610.00	Contractor Supplied
T-Head Concrete Floats	SF	\$ 165.00	5560	\$ 917,400.00	Contractor Supplied
Utility Floats	SF	\$ 165.00	1400	\$ 231,000.00	Contractor Supplied
Total Cost:				\$ 14,068,560.00	

ITEM 6: New floating docks, includes: finger docks (width varies), main walkway docks (10') T-head docks (8' width), utility docks, and gangway landings.
- Summary

Item Description	Unit Cost (\$/SF)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	SF	85,264	\$ -
Material	\$ 165.00	SF	85,264	\$ 14,068,560.00
Subtotal Direct Construction Costs	\$ 165.00			\$ 14,068,560.00
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 165.00			\$ 14,068,560.00

BID ITEM ESTIMATE BREAKDOWN: ITEM 7

Division of Subtask:	Central Basin: Marine - Structural
Description of Subtask:	New Floating Docks, includes Wave attenuator floating dock and super yacht dock
Materials:	Concrete Floating Dock, Heavy Duty
Notes:	Contractor Supplied costs include cost of installation

Labor and Equipment Costs for ITEM 7

CREW BREAKDOWN					
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
EQUIPMENT BREAKDOWN					
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 7					
Installation Unit ⁸	Output (SF/Day)	Labor-Hours / SF	Labor (\$/SF)	Equipment (\$/SF)	TOTAL (\$/SF)
SF	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 7					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/SF)	Source ⁴
Wave Attenuator Dock	SF	\$ 215.00	1948	\$ 418,820.00	Contractor Supplied
Super Yacht Dock	SF	\$ 215.00	1688	\$ 362,920.00	Contractor Supplied
Total Cost:				\$ 781,740.00	

ITEM 7: New Floating Docks, includes Wave attenuator floating dock and super yacht dock- Summary				
Item Description	Unit Cost (\$/SF)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	SF	3,636	\$ -
Material	215	SF	3,636	\$ 781,740.00
Subtotal Direct Construction Costs	\$ 215.00			\$ 781,740.00
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 215.00			\$ 781,740.00

BID ITEM ESTIMATE BREAKDOWN: ITEM 8

Division of Subtask: Central Basin: Marine - Structural

Description of Subtask: Proposed 60 ft x 40 ft floating building (converted barge) for Central Basin

Materials: Barge, Wood Frame Structure

Notes: Contractor Supplied, Engineer's estimate and values taken from previous estimates account for installation cost.

Labor and Equipment Costs for ITEM 8					
CREW BREAKDOWN					
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
EQUIPMENT BREAKDOWN					
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 8					
Installation Unit ⁸	Output (SF/Day)	Labor-Hours / SF	Labor (\$/SF)	Equipment (\$/SF)	TOTAL (\$/SF)
SF	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 8					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/SF)	Source ⁴
Steel Barge Float	SF	\$ 224.00	2400	\$ 537,600.00	Contractor Estimate, includes purchase of barge. DOES NOT INCLUDE TRANSPORTATION.
Railing	LF	\$ 122.53	100	\$ 12,252.77	Engineer's Estimate from Existing Bid Tabulation
Canopy	SF	\$ 81.00	800	\$ 64,800.00	Contractor Supplied
Single Story Building	SF	\$ 125.00	1600	\$ 200,000.00	Engineer's Estimate
Total Cost:				\$ 814,652.77	

ITEM 8: Proposed 60 ft x 40 ft floating building (converted barge) for Central Basin- Summary					
Item Description	Unit Cost (\$/SF)	Unit	Installation Quantity ¹²	Total Cost	
Labor and Equipment	\$ -	SF	2,400	\$ -	
Material	\$ 339.44	SF	2,400	\$ 814,652.77	
Subtotal Direct Construction Costs	\$ 339.44			\$ 814,652.77	
Overhead	0%	N/A	N/A	\$ -	
Profit	0%	N/A	N/A	\$ -	
Mobilization/Demobilization	0%	N/A	N/A	\$ -	
General Conditions	0%	N/A	N/A	\$ -	
Insurance	0%	N/A	N/A	\$ -	
Total Item Unit Cost:	\$ 339.44			\$ 814,652.77	

BID ITEM ESTIMATE BREAKDOWN: ITEM 9

Division of Subtask:	Central Basin: Marine - Structural
Description of Subtask:	New 18" dia x 0.5" wall Gr3 steel pipe piles (70' length per pile typ., coal tar epoxy coating 16 mil typ')
Materials:	Coated Steel Pipe Piles
Notes:	Contractor Supplied costs include cost of installation

Labor and Equipment Costs for ITEM 9

CREW BREAKDOWN					
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
EQUIPMENT BREAKDOWN					
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 9					
Installation Unit ⁸	Output (EA/Day)	Labor-Hours / EA	Labor (\$/EA)	Equipment (\$/EA)	TOTAL (\$/EA)
EA	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 9					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/EA)	Source ⁴
18" x 0.5" Thk. Steel Pile @ 70' Length	EA	\$ 20,000.00	280	\$ 5,600,000.00	Contractor Supplied
Total Cost:				\$ 5,600,000.00	

ITEM 9: New 18" dia x 0.5" wall Gr3 steel pipe piles (70' length per pile typ., coal tar epoxy coating 16 mil typ')- Summary

Item Description	Unit Cost (\$/EA)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	EA	280	\$ -
Material	\$ 20,000.00	EA	280	\$ 5,600,000.00
Subtotal Direct Construction Costs	\$ 20,000.00			\$ 5,600,000.00
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 20,000.00			Total Item Cost: \$ 5,600,000.00

BID ITEM ESTIMATE BREAKDOWN: ITEM 10

Division of Subtask:	Central Basin: Marine - Structural
Description of Subtask:	New 12" diameter timber mooring piles (45' length per pile typ.)
Materials:	Timber piles
Notes:	Contractor Supplied costs include cost of installation

Labor and Equipment Costs for ITEM 10

CREW BREAKDOWN					
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
EQUIPMENT BREAKDOWN					
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 10					
Installation Unit ⁸	Output (EA/Day)	Labor-Hours / EA	Labor (\$/EA)	Equipment (\$/EA)	TOTAL (\$/EA)
EA	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 10					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/EA)	Source ⁴
Timber pile	EA	\$ 1,850.00	157	\$ 290,450.00	Contractor Supplied
Total Cost:				\$ 290,450.00	

ITEM 10: New 12" diameter timber mooring piles (45' length per pile typ.)- Summary

Item Description	Unit Cost (\$/EA)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	EA		\$ -
Material	\$ 1,850.00	EA	157	\$ 290,450.00
Subtotal Direct Construction Costs	\$ 1,850.00			\$ 290,450.00
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 1,850.00			Total Item Cost: \$ 290,450.00

BID ITEM ESTIMATE BREAKDOWN: ITEM 11

Division of Subtask:	Central Basin: Marine - Structural
Description of Subtask:	Proposed 5 ft x 20 ft security gate for Central Basin
Materials:	Security Gate material, Fixed Pier
Notes:	Contractor Supplied costs include cost of installation

Labor and Equipment Costs for ITEM 11

CREW BREAKDOWN					
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
EQUIPMENT BREAKDOWN					
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 11					
Installation Unit ⁸	Output (LS/Day)	Labor-Hours / LS	Labor (\$/LS)	Equipment (\$/LS)	TOTAL (\$/LS)
LS	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 11					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/LS)	Source ⁴
Security Fence	LS	\$ 5,000.00	1	\$ 5,000.00	Contractor Supplied
Fixed Timber Landing	SF	\$ 200.00	100	\$ 20,000.00	Contractor Supplied
Total Cost:				\$ 25,000.00	

ITEM 11: Proposed 5 ft x 20 ft security gate for Central Basin- Summary				
Item Description	Unit Cost (\$/LS)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	LS	1	\$ -
Material	\$ 25,000.00	LS	1	\$ 25,000.00
Subtotal Direct Construction Costs	\$ 25,000.00			\$ 25,000.00
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 25,000.00			\$ 25,000.00

BID ITEM ESTIMATE BREAKDOWN: ITEM 12

Division of Subtask:	Central Basin: Marine - Structural
Description of Subtask:	Proposed Timber dock entry portal structures for Central Basin ranging from 13 - 20 ft long and 10 - 20 ft wide
Materials:	Timber Pier, Gazebo
Notes:	Contractor Supplied costs include cost of installation

Labor and Equipment Costs for ITEM 12

CREW BREAKDOWN					
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
EQUIPMENT BREAKDOWN					
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 12					
Installation Unit ⁸	Output (SF/Day)	Labor-Hours / SF	Labor (\$/SF)	Equipment (\$/SF)	TOTAL (\$/SF)
SF	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 12					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/SF)	Source ⁴
Gazebo	SF	\$ 81.00	1068	\$ 86,508.00	Contractor Supplied
Fixed Timber Landing	SF	\$ 139.00	1068	\$ 148,452.00	Contractor Supplied
Total Cost:				\$ 234,960.00	

ITEM 12: Proposed Timber dock entry portal structures for Central Basin ranging from 13 - 20 ft long and 10 - 20 ft wide- Summary				
Item Description	Unit Cost (\$/SF)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	SF		\$ -
Material	\$ 220.00	SF	1,068	\$ 234,960.00
Subtotal Direct Construction Costs	\$ 220.00			\$ 234,960.00
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 220.00			\$ 234,960.00

BID ITEM ESTIMATE BREAKDOWN: ITEM 13

Division of Subtask:	Central Basin: Marine - Structural
Description of Subtask:	Proposed gangways for Central Basin range from 40 - 75 ft long and 4 - 5 ft wide
Materials:	Aluminum Gangway
Notes:	Engineer's Estimate, based on previous bids, includes cost of installation

Labor and Equipment Costs for ITEM 13

CREW BREAKDOWN					
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
EQUIPMENT BREAKDOWN					
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 13					
Installation Unit ⁸	Output (SF/Day)	Labor-Hours / SF	Labor (\$/SF)	Equipment (\$/SF)	TOTAL (\$/SF)
SF	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 13					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/SF)	Source ⁴
Aluminum Gangway	SF	\$ 165.00	1860	\$ 306,900.00	
				\$ -	
				\$ -	
				\$ -	
				\$ -	
Total Cost:				\$ 306,900.00	

ITEM 13: Proposed gangways for Central Basin range from 40 - 75 ft long and 4 - 5 ft wide- Summary				
Item Description	Unit Cost (\$/SF)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	SF	1,860	\$ -
Material	\$ 165.00	SF	1,860	\$ 306,900.00
Subtotal Direct Construction Costs	\$ 165.00			\$ 306,900.00
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 165.00			\$ 306,900.00

BID ITEM ESTIMATE BREAKDOWN: ITEM 14

Division of Subtask:	Central Basin: Marine - Structural
Description of Subtask:	Proposed Timber 10 ft x 10 ft landings for Central Basin
Materials:	Timber Landing
Notes:	Contractor Supplied costs include cost of installation

Labor and Equipment Costs for ITEM 14

CREW BREAKDOWN					
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
EQUIPMENT BREAKDOWN					
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴	
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
			\$ -		
Total:			\$ -		
LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 14					
Installation Unit ⁸	Output (SF/Day)	Labor-Hours / SF	Labor (\$/SF)	Equipment (\$/SF)	TOTAL (\$/SF)
SF	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 14					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/SF)	Source ⁴
Timber Landing	SF	\$ 200.00	200	\$ 40,000.00	Contractor Supplied
Total Unit Cost:				\$ 40,000.00	

ITEM 14: Proposed Timber 10 ft x 10 ft landings for Central Basin- Summary

Item Description	Unit Cost (\$/SF)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	SF	200	\$ -
Material	\$ 200.00	SF	200	\$ 40,000.00
Subtotal Direct Construction Costs	\$ 200.00			\$ 40,000.00
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 200.00			\$ 40,000.00

BID ITEM ESTIMATE BREAKDOWN: ITEM 15

Division of Subtask:	South Basin: Marine - Structural
Description of Subtask:	Demolition and replacement of finger piers rated Poor, Serious or Critical at Piers 1 and 2.
Materials:	Concrete Deck
Notes:	Demolition of finger piers rated Poor, Serious, or Critical at Piers 1 and 2.

Labor and Equipment Costs for ITEM 15

CREW BREAKDOWN				
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Total:			\$ -	

EQUIPMENT BREAKDOWN				
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Total:			\$ -	

LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 15					
Installation Unit ⁸	Output (SF/Day)	Labor-Hours / SF	Labor (\$/SF)	Equipment (\$/SF)	TOTAL (\$/SF)
SF	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 15					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity Conversion (Purchase Unit/Installation Unit) ¹²	Installation Cost (\$/SF)	Source ⁴
Demo and Replacement of Concrete Deck	SF	\$ 232.50	680	\$ 158,100.00	Engineer's Estimate based on prior bid item.
Total Unit Cost:				\$ 158,100.00	

ITEM 15: Demolition and replacement of finger piers rated Poor, Serious or Critical at Piers 1 and 2. - Summary				
Item Description	Unit Cost (\$/SF)	Unit	Installation Quantity ¹²	Total Cost
Labor and Equipment	\$ -	SF	680	\$ -
Material	\$ 232.50	SF	680	\$ 158,100.00
Subtotal Direct Construction Costs	\$ 232.50			\$ 158,100.00
Overhead	0%	N/A	N/A	\$ -
Profit	0%	N/A	N/A	\$ -
Mobilization/Demobilization	0%	N/A	N/A	\$ -
General Conditions	0%	N/A	N/A	\$ -
Insurance	0%	N/A	N/A	\$ -
Total Item Unit Cost:	\$ 232.50		Total Item Cost:	\$ 158,100.00

BID ITEM ESTIMATE BREAKDOWN: ITEM 16

Division of Subtask:	South Basin: Marine - Structural
Description of Subtask:	Demolition of finger pier decks at Piers 3 and 4 and replacement with extended finger piers and additional 14" x 14" Concrete pile supports.
Materials:	Concrete Deck, Concrete Support Piles and Concrete Pile Caps
Notes:	Piers are replaced per criteria set forth in USACE Pre-app presentation dated 2021-04-21. Replacements are not 1:1, average between demo area and replacement area taken for unit costs

Labor and Equipment Costs for ITEM 16

CREW BREAKDOWN				
Trade ¹	Rate (\$/Hour) ²	Quantity ³	Day Rate (\$/Day)	Source ⁴
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Total:			\$ -	

EQUIPMENT BREAKDOWN				
Tool ⁵	Unit Cost (\$/Day) ⁶	Quantity ⁷	Expanded Rate (\$/Day)	Source ⁴
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
Total:			\$ -	

LABOR AND EQUIPMENT UNIT COSTS FOR ITEM 16					
Installation Unit ⁸	Output (SF/Day)	Labor-Hours / SF	Labor (\$/SF)	Equipment (\$/SF)	TOTAL (\$/SF)
SF	1.00	0	0	0	\$ -

MATERIAL UNIT COSTS FOR ITEM 16					
Material ⁹	Purchase Unit ¹⁰	Cost (\$/Purchase Unit) ¹¹	Quantity	Installation Cost (\$/SF)	Source ⁴
Demo and Replacement of Concrete Deck	SF	\$ 232.50	6,710	\$ 1,560,075.00	Prior Bid Item, escalated to 2021 Dollars
14" x 14" Concrete Pile	LF	\$ 289.50	1573.25	\$ 455,455.88	ATM Engineers Estimate, scaled down from FDOT 18" sq pile - \$289.50/LF
2' x 2'x 4' Pile Cap	EA	\$ 1,000.00	55	\$ 55,000.00	\$1650/CY from ATM's FDOT data, average of Bridge Substructure 12mo cost statewide and Tampa area
Demo and Replacement of T-heads	SF	\$ 232.50	464	\$ 107,880.00	Prior Bid Item, escalated to 2021 Dollars
Total Cost:				\$ 2,178,410.88	

ITEM 16: Demolition of finger pier decks at Piers 3 and 4 and replacement with extended finger piers and additional 14" x 14" Concrete pile supports.- Summary					
Item Description	Unit Cost (\$/SF)	Unit	Installation Quantity ¹²	Total Cost	
Labor and Equipment		SF	6,830	\$	-
Material	\$ 318.95	SF	6,830	\$	2,178,410.88
Subtotal Direct Construction Costs	\$ 318.95			\$	2,178,410.88
Overhead	0%	N/A	N/A	\$	-
Profit	0%	N/A	N/A	\$	-
Mobilization/Demobilization	0%	N/A	N/A	\$	-
General Conditions	0%	N/A	N/A	\$	-
Insurance	0%	N/A	N/A	\$	-
Total Item Unit Cost:	\$ 318.95			Total Item Cost:	\$ 2,178,410.88

Cost Estimate Backup - Structural

ENGINEER'S ESTIMATE: BID TABULATION SUMMARY

Proposed Work:		Structural Scope for St. Petersburg Marina Re-Development						
Division ¹	Work Item ²	Item ³	Quantity		Estimate ⁶		Source ⁹	Comment ¹⁰
			QTY ⁴	Unit ⁵	Unit Cost ⁷	Total Cost ⁸		
Central Basin Building - Comfort Station	Demolition	Demolition of existing 1-story structure at West of Central Basin	550	SF	\$ 9.09	\$ 5,000.00	Engineer's Estimate	Existing NW Restroom. Includes: Includes: 1. Toilet, urinals, sinks and shower fixtures 2. Tile Flooring and wall tiles 3. CMU walls and low-slope roof
Central Basin Buildings - Comfort Station	Roof Construction	Installation of wood framed hip roof atop existing flat roof at laundry building to match adjacent restroom building roof. Installation of wood framed dormer atop existing hip-style roof at restroom building.	600	SF	\$ 41.67	\$ 25,000.00	Engineer's Estimate	Central Basin Comfort Station (Laundry) - Includes hip roof structural connection to existing flat roof, framing, plywood roof sheathing Central Basin Comfort Station (Restroom) - Includes dormer structural connection to existing hip-style roof framing, plywood roof sheathing
Central Basin Buildings - Comfort Station	Roofing	Replacement of Existing Metal Roofing at Restroom Building with Standing Seam Roof. New Standing Seam Roof at new hip roof at Laundry Building.	1,450	SF	\$ 13.10	\$ 18,995.00	Engineer's Estimate with Contractor Input	New Standing Seam Roof materials at both the Restroom Building and the Laundry Building.
Central Basin Buildings - Comfort Station	Restroom Interior Replacement	Interior renovation of existing and installation of high-end, modern fixtures and finishes	850	SF	\$ 150.00	\$ 127,500.00	Engineer's Estimate	Central Basin Comfort Station (Restroom) - Includes Granite Countertops and Accent Shelving, Sinks, Showers, Stalls with Toilets, Urinals in Men's Bathroom, Ceramic Tile at Floors and Walls, Replacement of Doors, Replacement of Windows, Interior Painting
Central Basin Buildings - Comfort Station	Laundry Interior Replacement	Interior renovation of existing and installation of high-end, modern equipment and finishes	600	SF	\$ 150.00	\$ 90,000.00	Engineer's Estimate	Central Basin Comfort Station (Laundry) - Includes Ceramic Tile at Floor, Granite Countertops and Accent Shelving, Utility Sink, Dryers, Washers, Hot Water Heater, Replacement of Doors, Replacement of Windows, Interior Painting
Central Basin Buildings - Comfort Station	Exterior Painting	Painting of exterior walls at Restroom and Laundry Buildings	2,150	SF	\$ 1.50	\$ 3,225.00	Engineer's Estimate with Contractor Input	Painting of the exterior face of the Central Basin Comfort Station Buildings (Restroom and Laundry Buildings) 2100 SF (2150 rounding up) = (90'+120')*10'
South Basin Building - Comfort Station	Roofing	Replacement of Existing Metal Roofing with Standing Seam Roof	4,250	SF	\$ 13.10	\$ 55,675.00	Engineer's Estimate with Contractor Input	New Standing Seam Roof materials at South Basin Comfort Station.
South Basin Building - Comfort Station	Exterior Painting	Painting of exterior walls	4,000	SF	\$ 1.50	\$ 6,000.00	Engineer's Estimate with Contractor Input	Painting of the exterior walls for the South Basin Comfort Station
Central Basin Building - Comfort Station	HVAC Replacement	Verify Existing HVAC units are in good working condition, otherwise repair/replace as needed. At Central Basin Comfort Station two (2) split units (one for W and one for M restroom) to be installed. Add one (1) split unit for Laundry Building.	3	LS	\$ 2,000.00	\$ 6,000.00	Engineer's Estimate with Contractor Input	HVAC split units at both the both the Restroom Building and the Laundry Building. \$2,000 for each split unit to be installed.
South Basin Building - Comfort Station	HVAC Replacement	Verify Existing HVAC units are in good working condition, otherwise repair/replace as needed. At South Basin Comfort Station replace the two (2) HVAC split units and six (6) window HVAC units in other areas of building.	1	LS	\$ 10,000.00	\$ 10,000.00	Engineer's Estimate with Contractor Input	HVAC split units at both the both the Men's and Women's restroom and HVAC window units at office spaces and other areas. Cost is \$1000 for each HVAC window unit installed and \$2,000 for one HVAC split unit installed.
South Basin Building - Comfort Station	Repair of Elevated Timber Deck	Replace warping and cracking timber members of the elevated deck	1	LS	\$ 10,000.00	\$ 10,000.00	Engineer's Estimate	South Basin Comfort Station. Approx. 475 SF existing deck. Contingency cost.
Building - Marina Office and Ship Store	HVAC Replacement	Verify Existing HVAC units are in good working condition, otherwise repair/replace as needed. Two (2) HVAC heat pumps.	2	LS	\$ 12,000.00	\$ 24,000.00	Engineer's Estimate with Contractor Input	HVAC heat pumps at the Marina Office and Ship Store. Each HVAC heat pump is \$12,000
Building - Marina Office and Ship Store	Roofing	Replacement of Existing Metal Roofing with Standing Seam Roof	4,000	SF	\$ 13.10	\$ 52,400.00	Engineer's Estimate with Contractor Input	New Standing Seam Roof materials at the Marina Office and Ship Store
Building - Marina Office and Ship Store	Exterior Painting	Painting of exterior walls	10,000	SF	\$ 1.50	\$ 15,000.00	Engineer's Estimate with Contractor Input	Painting of the exterior face of the Marina Office and Ship Store Assuming perimeter 324 ft, 4000SF footprint, about 20 ft height, round up to 10,000 SF of painting to account for scaffolding or lift required to paint upper story
Building - Marina Office and Ship Store	Façade	Repair (3) Locations of damaged Hardie board siding.	1	LS	\$ 2,000.00	\$ 2,000.00	Engineer's Estimate	Scaffolding or a lift will be required to access areas of siding to be repaired.
Building - Marina Office and Ship Store	Flashing	Replace dented flashing along top of parking area	150	LF	\$ 13.33	\$ 2,000.00	Engineer's Estimate	Approximate LF. Flashing above parking area of Ship Store
Building - Marina Office and Ship Store	Ceiling Repairs	Repair (3) Locations of damaged gypsum board ceilings in the Ship Store.	1	LS	\$ 1,000.00	\$ 1,000.00	Engineer's Estimate	Scaffolding or a lift will be required to access areas of ceiling to be repaired.
					Total =	\$ 453,795.00		

Superscript Number Legend

- 1 Division of work to be performed.
- 2 Individual Work Item
- 3 Provide a brief description of bid item.
- 4 Quantity of item.
- 5 Units, i.e. LF, EA, Ton, \$/CY, etc.
- 6 Item Cost Estimate.
- 7 Unit price of item, (\$/units).
- 8 Total Cost of Item
- 9 Where did the data come from? [Click in cell and choose from drop-down list.](#)
- 10 Please note important assumptions or considerations.

Cost Estimate Backup - Civil

Item No	Item Description	Quantity	Unit	Unit Cost Low	Unit Cost Avg	Unit Cost High	Item Cost Low	Item Cost Avg	Item Cost High	Description
1	MOBILIZATION (10% OF NON-CONTINGENCY COSTS)	1	LS	\$37,266.84	\$123,863.61	\$324,679.31	\$37,266.84	\$123,863.61	\$324,679.31	
2	MAINTENANCE OF TRAFFIC	120	DAY	\$300.00	\$924.00	\$1,200.00	\$36,000.00	\$110,880.00	\$144,000.00	
3	DEWATERING	70	DAY	\$200.00	\$400.00	\$600.00	\$14,000.00	\$28,000.00	\$42,000.00	
4	SILT FENCE	2000	LF	\$1.82	\$5.70	\$12.24	\$3,640.00	\$11,405.00	\$24,480.00	
5	TURBIDITY CURTAIN	100	LF	\$6.14	\$14.13	\$22.12	\$614.00	\$1,413.00	\$2,212.00	
6	INLET PROTECTION	10	EA	\$109.80	\$1,056.69	\$2,003.57	\$1,098.00	\$10,566.85	\$20,035.70	
7	TREE BARRICADES	1000	LF	\$3.53	\$3.53	\$10.00	\$3,530.00	\$3,530.00	\$10,000.00	
8	CLEARING & GRUBBING	0.25	AC	\$884.96	\$20,205.29	\$72,049.12	\$221.24	\$5,051.32	\$18,012.28	
9	DEMOLITION, TREES	5	EA	\$370.12	\$577.56	\$785.00	\$1,850.60	\$2,887.80	\$3,925.00	
10	DEMOLITION, PAVEMENT	944	SY	\$1.00	\$11.68	\$30.00	\$944.00	\$11,021.20	\$28,320.00	
11	DEMOLITION, CURB	425	LF	\$3.00	\$15.71	\$73.50	\$1,275.00	\$6,675.54	\$31,237.50	
12	DEMOLITION, SIDEWALK CONCRETE	603	SY	\$9.00	\$14.80	\$24.00	\$5,427.00	\$8,926.12	\$14,472.00	
13	DEMOLITION, SANITARY SEWER	762	LF	\$9.75	\$36.33	\$51.50	\$7,425.69	\$27,685.37	\$39,243.00	
14	DEMOLITION, SANITARY MANHOLE	3	EA	\$1,000.00	\$1,353.13	\$1,706.25	\$3,000.00	\$4,059.38	\$5,118.75	
15	DEMOLITION, POTABLE WATER MAIN	850	LF	\$25.00	\$51.98	\$114.45	\$21,250.00	\$44,184.70	\$97,282.50	
16	DEMOLITION, FENCE	1318	LF	\$4.00	\$5.47	\$6.93	\$5,272.00	\$7,202.87	\$9,133.74	
17	DEMOLITION, STRUCTURE	900	SF	\$4.80	\$17.72	\$30.63	\$4,320.00	\$15,943.50	\$27,567.00	
18	CONSTRUCTION, ASPHALTIC CONCRETE ROAD (HEAVY-DUTY) DRIVE AISLE	609	SY	\$47.68	\$97.74	\$173.74	\$29,038.77	\$59,522.83	\$105,806.85	INCLUDES BASE AND SUBGRADE
19	CONSTRUCTION, ASPHALTIC CONCRETE PARKING STALLS (LIGHT-DUTY)	1696	SY	\$39.46	\$61.59	\$118.62	\$66,929.28	\$104,453.82	\$201,171.05	INCLUDES BASE AND SUBGRADE
20	CONSTRUCTION, CURB, TYPE D	121	LF	\$10.00	\$44.83	\$160.00	\$1,210.00	\$5,424.51	\$19,360.00	
21	CONSTRUCTION, CURB, VALLEY	303	LF	\$10.00	\$52.05	\$160.00	\$3,030.00	\$15,771.60	\$48,480.00	
22	CONSTRUCTION, CURB, DROP CURB	490	LF	\$10.00	\$52.05	\$160.00	\$4,900.00	\$25,505.24	\$78,400.00	
23	CONSTRUCTION, CONCRETE SIDEWALK, 4" THICK	1081	SY	\$26.00	\$93.28	\$225.00	\$28,106.00	\$100,835.37	\$243,225.00	
24	CONSTRUCTION, ACCESSIBILITY RAMP & STAIRS	2	EA	\$5,000.00	\$6,000.00	\$7,000.00	\$10,000.00	\$12,000.00	\$14,000.00	
25	CONSTRUCTION, POTABLE WATER MAIN, 6"	850	LF	\$50.00	\$103.96	\$228.90	\$42,500.00	\$88,369.40	\$194,565.00	
26	CONSTRUCTION, LINESTOP, 6" PVC	2	EA	\$2,100.00	\$7,390.82	\$13,000.00	\$4,200.00	\$14,781.64	\$26,000.00	
27	CONSTRUCTION, GATE VALVE, 6"	2	EA	\$1,390.00	\$2,372.06	\$3,302.25	\$2,780.00	\$4,744.13	\$6,604.50	
28	CONSTRUCTION, VALVE/METER BOX, 6"	2	EA	\$700.00	\$1,433.33	\$1,950.00	\$1,400.00	\$2,866.67	\$3,900.00	
29	CONSTRUCTION, SANITARY SEWER, 8" PVC	762	LF	\$19.49	\$72.67	\$103.00	\$14,851.38	\$55,370.73	\$78,486.00	
30	CONSTRUCTION, SANITARY MANHOLE, 4'	3	EA	\$2,465.10	\$5,857.74	\$9,500.00	\$7,395.30	\$17,573.23	\$28,500.00	
31	CONSTRUCTION, BACK OF SIDEWALK DRAINAGE	196	LF	\$10.84	\$67.82	\$120.00	\$2,124.64	\$13,293.50	\$23,520.00	
32	CONSTRUCTION, DRY RETENTION POND	355	CY	\$6.48	\$121.67	\$570.00	\$2,300.40	\$43,193.50	\$202,350.00	REGULAR EXCAVATION
33	CONSTRUCTION, HANDRAIL	1858	LF	\$15.00	\$76.70	\$180.00	\$27,870.00	\$142,514.79	\$334,440.00	
34	MODIFICATION, EXISTING STORM INLET	1	EA	\$1,000.00	\$2,000.00	\$3,000.00	\$1,000.00	\$2,000.00	\$3,000.00	
35	FURNISH & INSTALL SECURITY GATES	2	EA	\$10,000.00	\$12,000.00	\$14,000.00	\$20,000.00	\$24,000.00	\$28,000.00	
36	RELOCATE, EXISTING SECURITY GATE	5	EA	\$1,000.00	\$2,000.00	\$3,000.00	\$5,000.00	\$10,000.00	\$15,000.00	
37	CONSTRUCTION, SEED/MULCH	2154	SY	\$2.00	\$5.00	\$20.00	\$4,308.00	\$10,770.00	\$43,080.00	
38	MILLING & RESURFACING	5430	SY	\$6.10	\$24.68	\$78.84	\$33,124.03	\$134,012.48	\$428,093.05	INCLUDES MILLING AND PAVEMENT
39	PARKING STRIPING	5220	LF	\$8.41	\$10.00	\$12.00	\$43,900.20	\$52,200.00	\$62,640.00	

SUBTOTAL							\$503,102.37	\$1,362,499.68	\$3,030,340.24	
CONTINGENCY 30%							\$150,930.71	\$408,749.91	\$909,102.07	
TOTAL							\$654,033.08	\$1,771,249.59	\$3,939,442.31	
PROBABLE CONSTRUCTION COST							\$1,363,000 +/- \$422,000			
RECOMMENDED CONSTRUCTION BUDGET							\$1,772,000			

[illegible]

REFERENCES
0 = RS MEANS
1 = FDOT
2 = SAN PIPE REPAIR & REPLACE (19036-111)
3 = 31ST STREET SOUTH 12-INCH WATER MAIN IMPROVEMENT (18091-111)
4 = BRIDGE REPLACEMENT AT BAYOU GRADE BLVD, NORTH OF TANGLEWOOD (18052-110)
5 = BEACH PARK STORMWATER IMPROVEMENTS (21-C-00017)
6 = CITYWIDE METER, HYDRANT AND VALVE INSTALLATION AND REPLACEMENT (21-C-00018)
7 = CITYWIDE SIDEWALK MAINTENANCE AND RESTORATION – SHELTERED MARKET (20-C-00048)
8 = ROADWAY RESTORATION – WATER DEPARTMENT (21-C-00011)
9 = SUNSET PARK WATER MAIN REPLACEMENT (WEST) (20-C-00045)
10 = WASTEWATER COLLECTION SYSTEM REPAIR – FY21 (21-C-00001)

Cost Estimate Backup - MEP



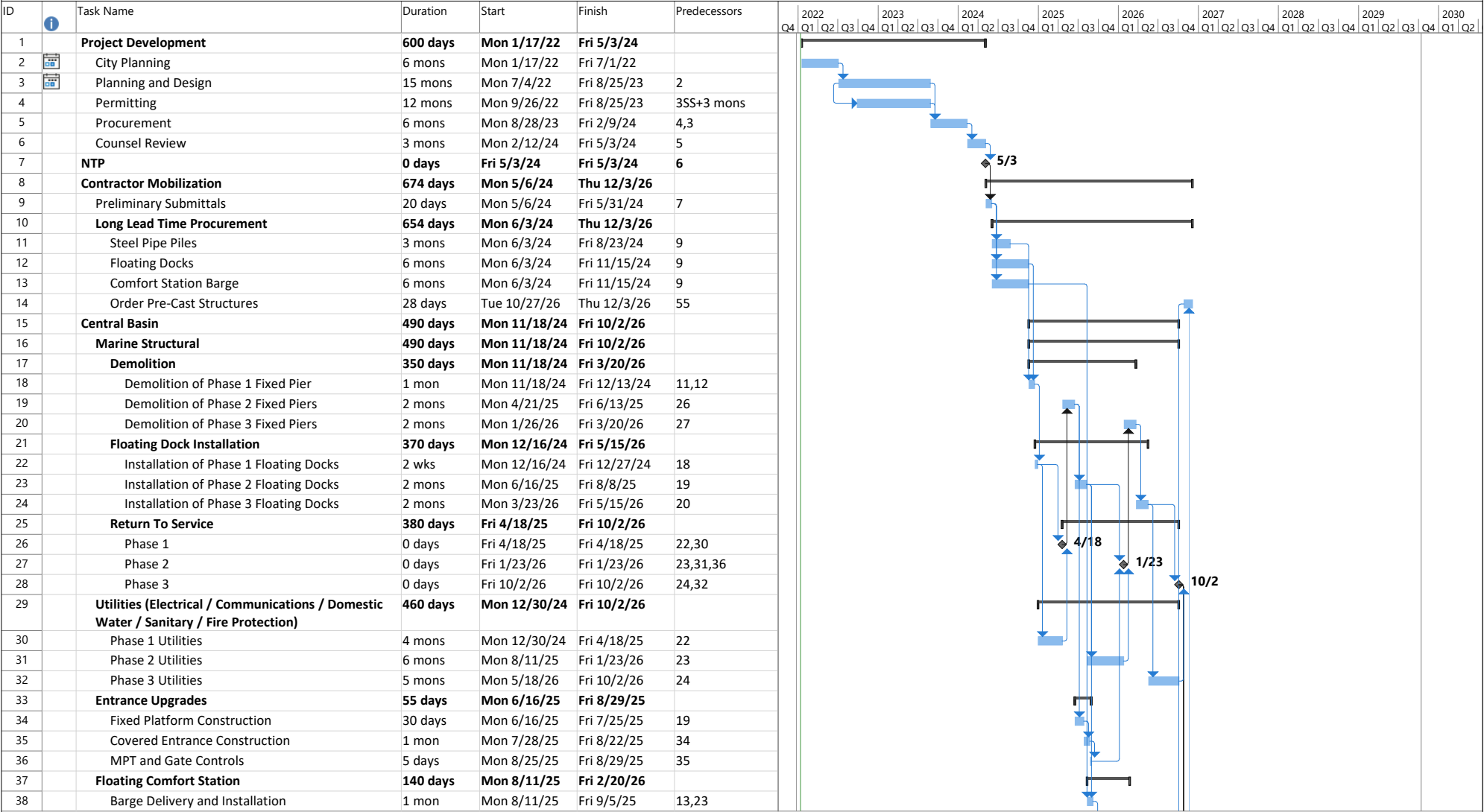
Opinions-of-Probable Costs & Estimated Work Duration

January 6, 2022	St. Petersburg Municipal Marina (Safe Harbor) Cost Estimate		HEG Project #2111B	
Central Basin			Opinions-of-Probable Costs (Materials, Labor, Overhead, and Profit)	Estimated Work Duration (Calendar Days)
	Phase 1			120
		Electrical & Communications	\$590,000.00	
		Domestic Water/Sanitary/Fire Protection	\$67,500.00	
	Phase 2			180
		Electrical & Communications	\$1,540,000.00	
		Domestic Water/Sanitary/Fire Protection	\$210,000.00	
	Phase 3			150
		Electrical & Communications	\$1,140,000.00	
		Domestic Water/Sanitary/Fire Protection	\$150,000.00	
	Phase 4			120
		Electrical & Communications	\$590,000.00	
		Domestic Water/Sanitary/Fire Protection	\$68,000.00	
	Phase 5			180
		Electrical & Communications	\$1,640,000.00	
		Domestic Water/Sanitary/Fire Protection	\$225,000.00	
		Central Basin Subtotal	\$6,220,500.00	
South Basin				
	Dock 1			120
		Electrical & Communications	\$535,000.00	
		Domestic Water/Sanitary/Fire Protection (Repair Allowance)	\$35,000.00	
	Dock 2			120
		Electrical & Communications	\$555,000.00	
		Domestic Water/Sanitary/Fire Protection (Repair Allowance)	\$36,000.00	
	Dock 3			120
		Electrical & Communications	\$525,000.00	
		Domestic Water/Sanitary/Fire Protection (Repair Allowance)	\$34,000.00	
	Dock 4			120
		Electrical & Communications	\$625,000.00	
		Domestic Water/Sanitary/Fire Protection (Repair Allowance)	\$42,000.00	
	Dock 5			120
		Electrical & Communications	N/A	
		Domestic Water/Sanitary/Fire Protection (Repair Allowance)	N/A	
		South Basin Subtotal	\$2,387,000.00	
		Grand Total	\$ 8,607,500.00	

Attachment B

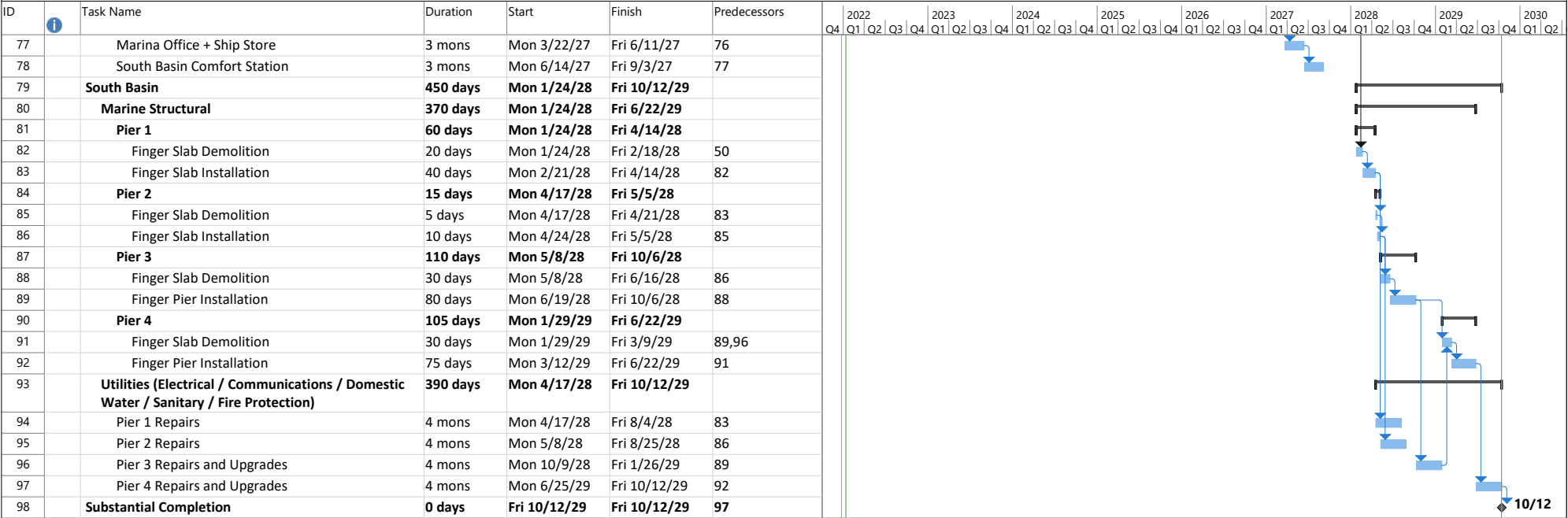
Project Schedule

Conceptual Re-Development Schedule



ID	Task Name	Duration	Start	Finish	Predecessors
39	Floating Comfort Station Construction	6 mons	Mon 9/8/25	Fri 2/20/26	38
40	Demens Landing	340 days	Mon 10/5/26	Fri 1/21/28	
41	Marine Structural	340 days	Mon 10/5/26	Fri 1/21/28	
42	Demolition	180 days	Mon 10/5/26	Fri 6/11/27	
43	Demolition of Phase 4 Fixed Pier	2 mons	Mon 10/5/26	Fri 11/27/26	28
44	Demolition of Phase 5 Fixed Piers	2 mons	Mon 4/19/27	Fri 6/11/27	49
45	Floating Dock Installation	180 days	Mon 11/30/26	Fri 8/6/27	
46	Installation of Phase 4 Floating Docks	1 mon	Mon 11/30/26	Fri 12/25/26	43
47	Installation of Phase 5 Floating Docks	2 mons	Mon 6/14/27	Fri 8/6/27	44
48	Return To Service	200 days	Fri 4/16/27	Fri 1/21/28	
49	Phase 4	0 mons	Fri 4/16/27	Fri 4/16/27	46,52
50	Phase 5	0 mons	Fri 1/21/28	Fri 1/21/28	47,53
51	Utilities (Electrical / Communications / Domestic Water / Sanitary / Fire Protection)	280 days	Mon 12/28/26	Fri 1/21/28	
52	Phase 4 Utilities	4 mons	Mon 12/28/26	Fri 4/16/27	46
53	Phase 5 Utilities	6 mons	Mon 8/9/27	Fri 1/21/28	47
54	Civil Scope	162 days	Mon 10/5/26	Tue 5/18/27	
55	Civil Mobilization	16 days	Mon 10/5/26	Mon 10/26/26	28
56	Install Erosion & Sedimentation Control	30 days	Mon 11/16/26	Fri 12/25/26	55,14SS+14 days
57	Construct Stormwater Management System	15 days	Mon 12/28/26	Fri 1/15/27	56
58	Dewater for Sanitary Sewer Installation	30 days	Mon 12/28/26	Fri 2/5/27	56
59	Remove Building	5 days	Mon 12/28/26	Fri 1/1/27	56
60	Construct Sanitary Sewer	10 days	Mon 1/4/27	Fri 1/15/27	58SS+5 days
61	Connect Sanitary Sewer	5 days	Mon 1/18/27	Fri 1/22/27	60
62	Remove Existing Sanitary Sewer	10 days	Mon 1/25/27	Fri 2/5/27	61
63	Dewater for Potable Water Main Installation	32 days	Mon 2/8/27	Tue 3/23/27	62
64	Install Potable Water main	10 days	Mon 2/15/27	Fri 2/26/27	63SS+5 days
65	Connect Potable Water Main	2 days	Mon 3/1/27	Tue 3/2/27	64
66	Connect Service Lines to Potable Water Main	5 days	Wed 3/3/27	Tue 3/9/27	65
67	Disconnect Existing Potable Water Main	5 days	Wed 3/10/27	Tue 3/16/27	66
68	Remove Sidewalk	5 days	Wed 3/17/27	Tue 3/23/27	67
69	Construct Sidewalk	10 days	Wed 3/24/27	Tue 4/6/27	68
70	Construct Ramps and Stairs	5 days	Wed 4/7/27	Tue 4/13/27	69
71	Install Handrails and Gates	5 days	Wed 4/7/27	Tue 4/13/27	69
72	Construct Pavement	15 days	Wed 4/7/27	Tue 4/27/27	69
73	Seed/Mulch	10 days	Wed 4/28/27	Tue 5/11/27	72
74	Remove Erosion & Sedimentation Controls	5 days	Wed 5/12/27	Tue 5/18/27	73
75	Structure / Building Scope	240 days	Mon 10/5/26	Fri 9/3/27	
76	Central Basin Comfort Centers	6 mons	Mon 10/5/26	Fri 3/19/27	28

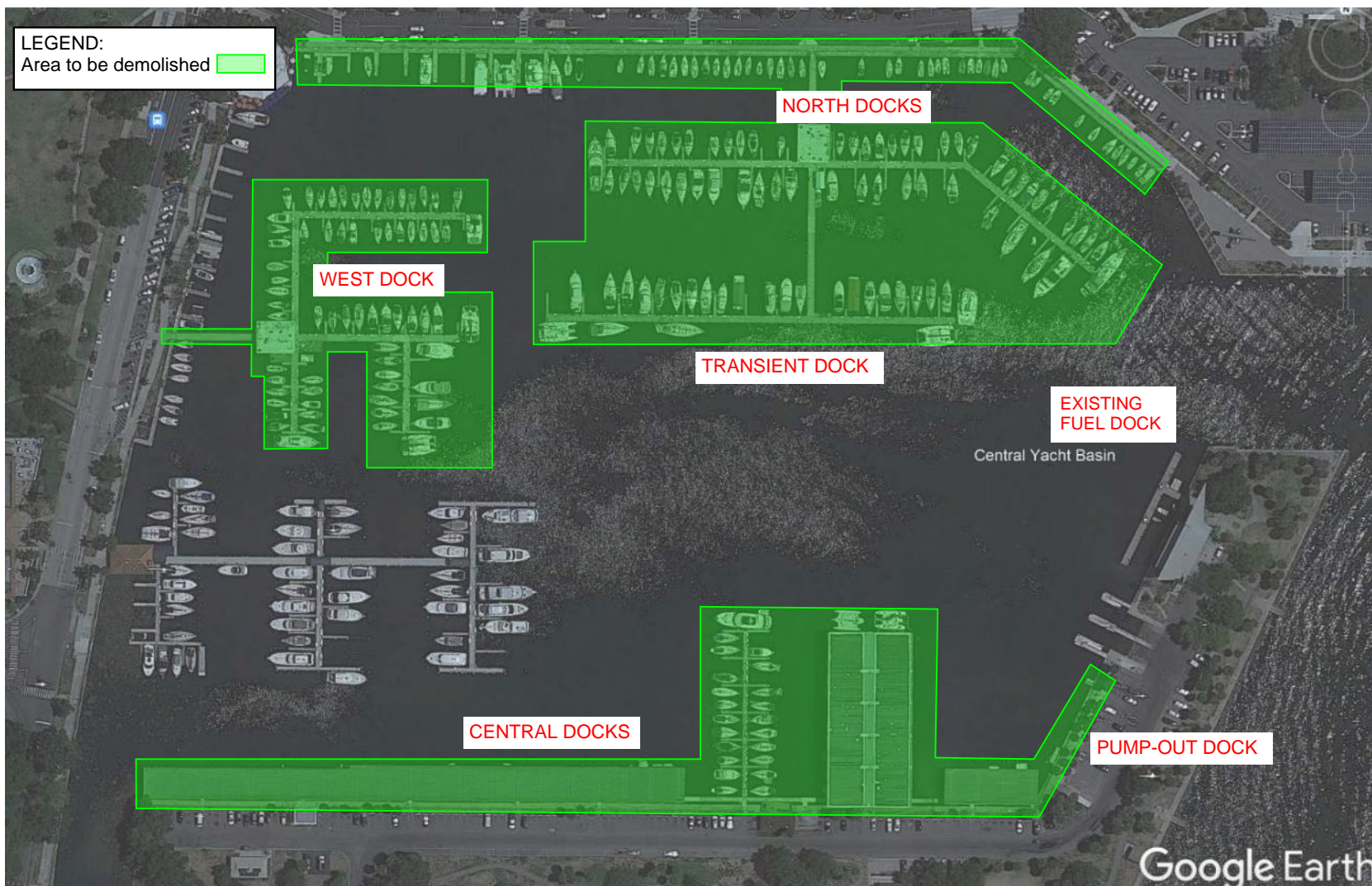
Conceptual Re-Development Schedule




Attachment C

Figures


Figures - Marine

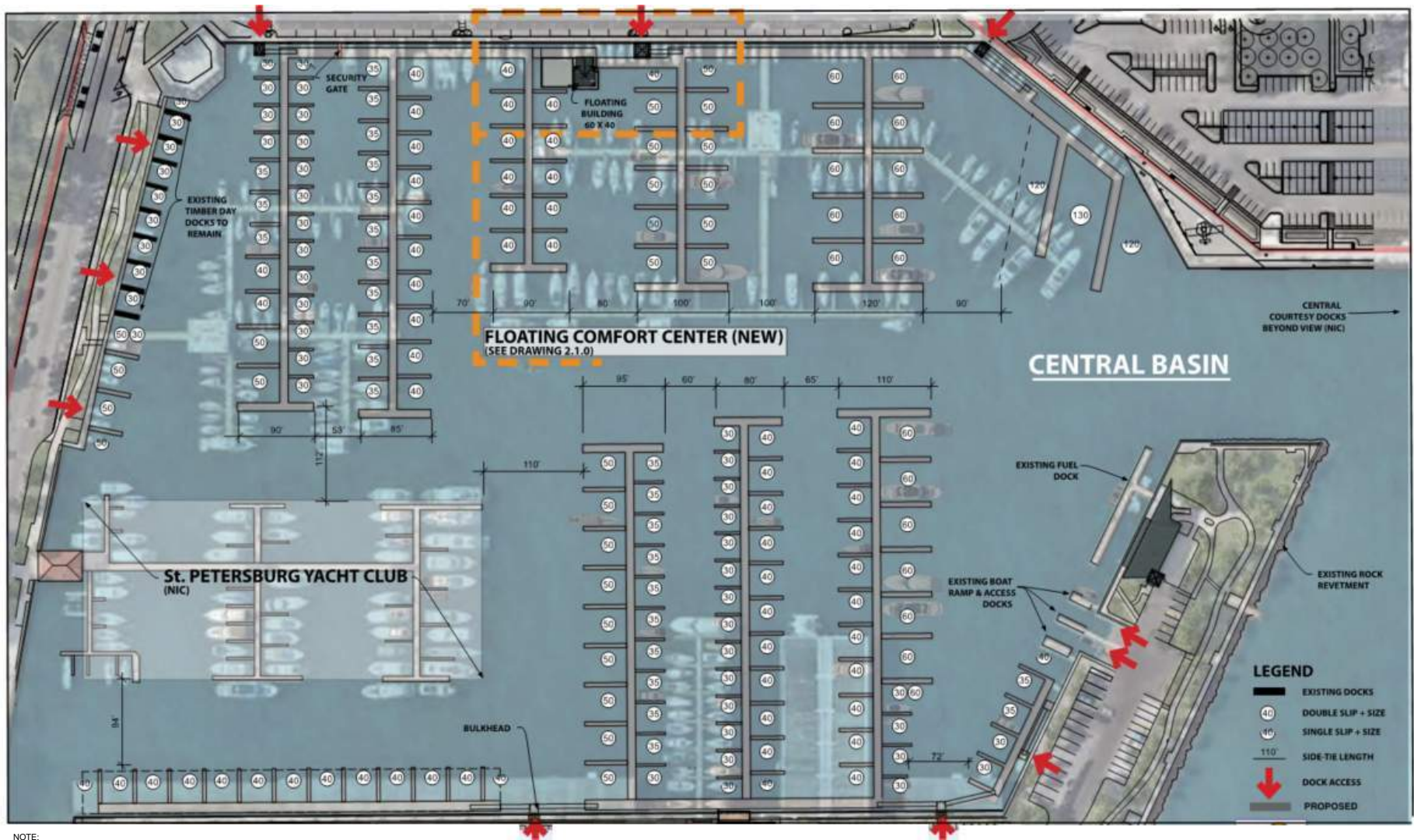


	DESIGNED BY:	City of St. Petersburg Marina Redevelopment	SCALE	REVISION
	DRAWN BY:		01/14/21	
	CHECKED BY:		SKETCH NO.	
			1	
		Central Basin Demolition Plan		




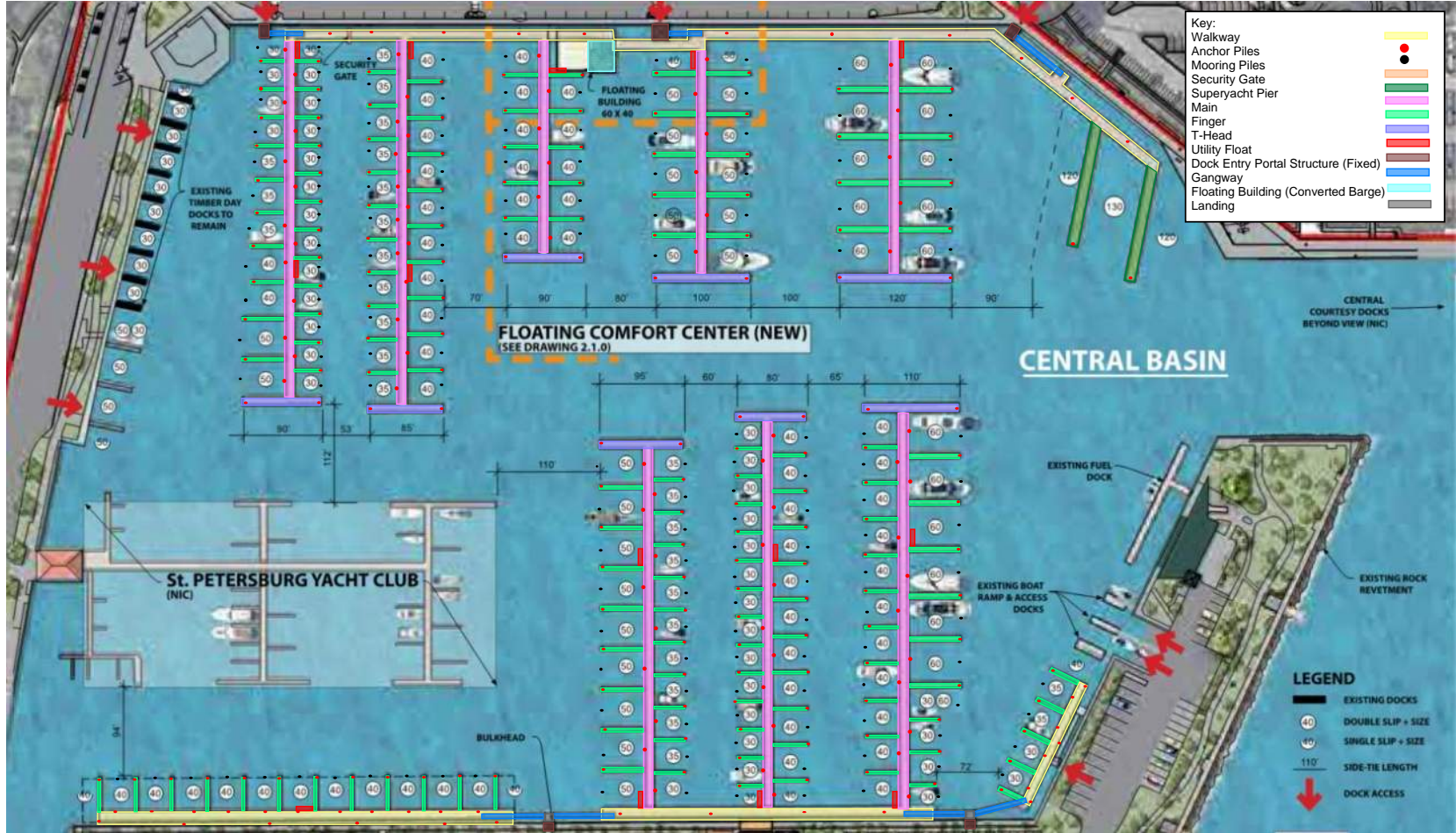
NOTE:
The background image copied from the August 2020 Conceptual Layout. However, the phasing and design reflects the March 2021 Addendum, which includes several updates to the background image.

	DESIGNED BY:	City of St. Petersburg Marina Redevelopment	SCALE	REVISION
	DRAWN BY:		01/14/21	
	CHECKED BY:	Central Basin Demolition Phasing Plan	SKETCH NO.	
			2	




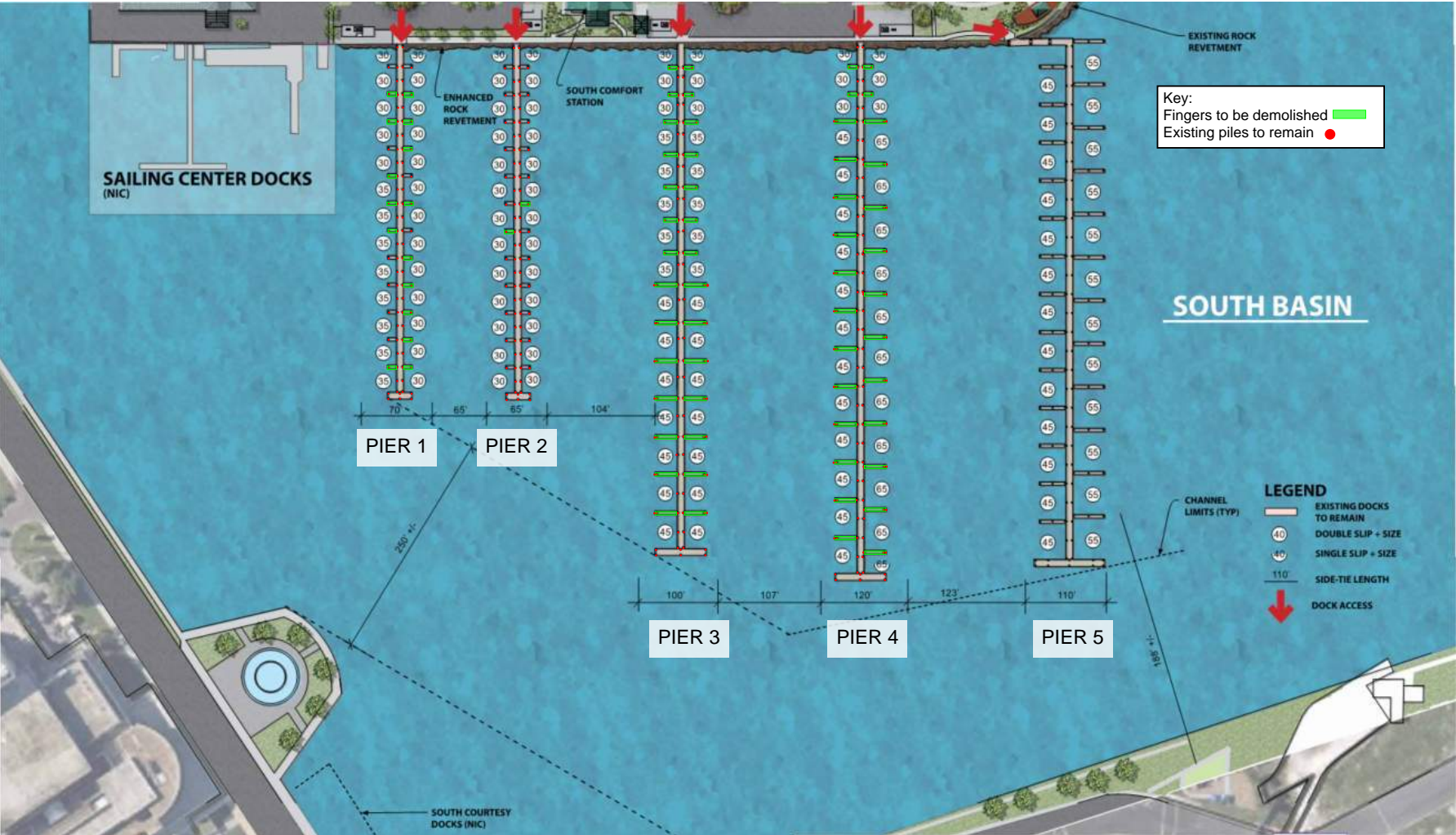
NOTE:
The presented figure copied from reference documents provided by the City.

	DESIGNED BY:	City of St. Petersburg Marina Redevelopment	SCALE	REVISION
	DRAWN BY:		01/14/21	
	CHECKED BY:		SKETCH NO. 3	
			Central Basin Proposed Plan - General	




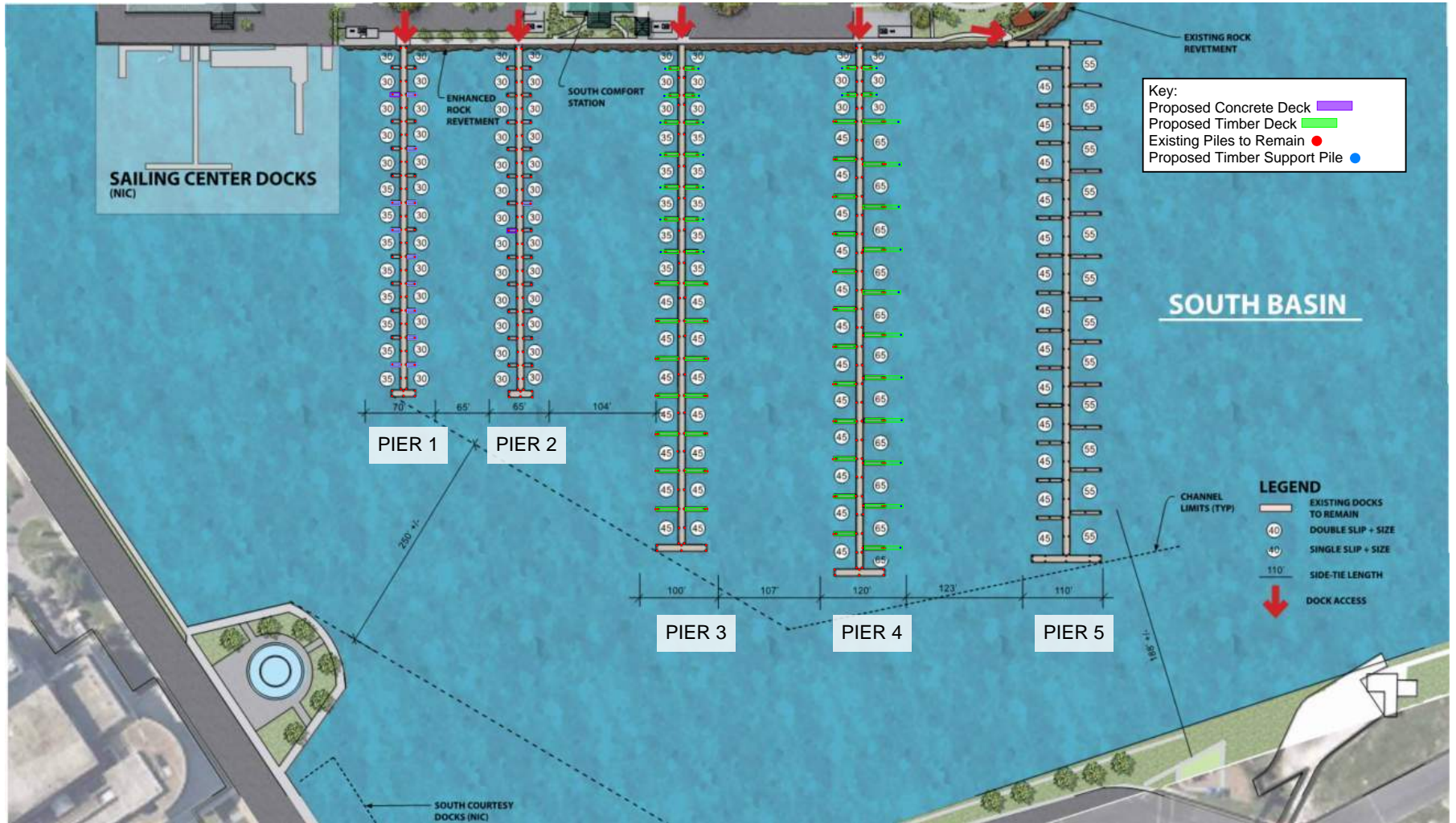
NOTE:
The presented figure copied from reference documents provided
by the City.


	DESIGNED BY:	City of St. Petersburg Marina Redevelopment	SCALE	REVISION
	DRAWN BY:		01/14/21	
	CHECKED BY:		SKETCH NO.	
			4	
		Central Basin Proposed Plan		



- NOTE:
1. The presented figure copied from reference documents provided by the City.
 2. Piers 1 and 2 are to be demolished as needed (Critical/Serious/Poor condition only) and replaced.
 3. Piers 3 and 4 fingers are to be demolished and replaced.
 4. No demolition or repair is needed for Pier 5.

	DESIGNED BY:	City of St. Petersburg Marina Redevelopment	SCALE	REVISION
	DRAWN BY:		01/14/21	
	CHECKED BY:	South Basin Demolition Plan	SKETCH NO.	
			5	

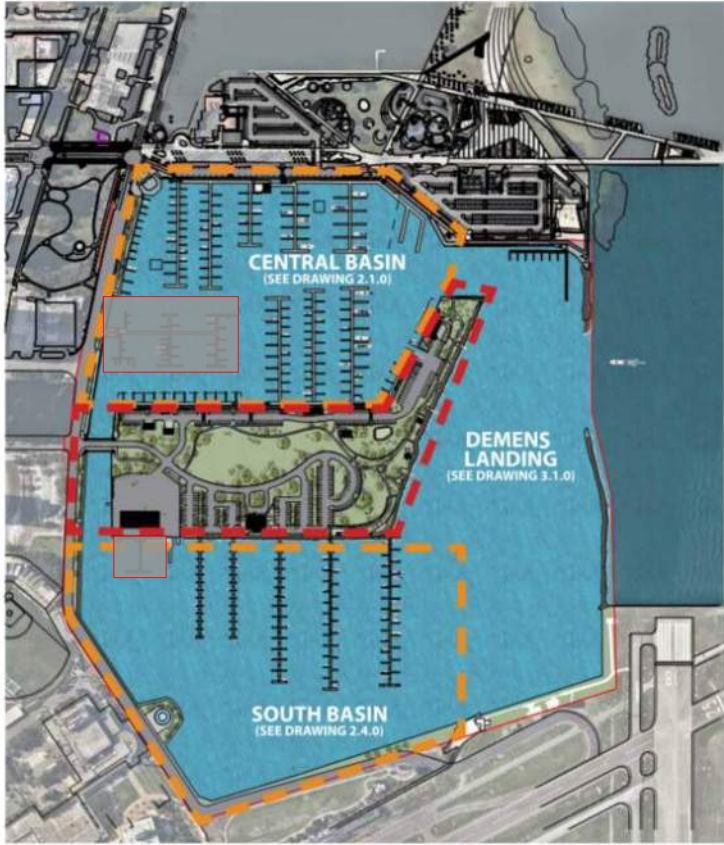


	DESIGNED BY:	City of St. Petersburg Marina Redevelopment	SCALE	REVISION
	DRAWN BY:		01/14/21	
	CHECKED BY:		SKETCH NO. 6	
			South Basin Proposed Plan	



ILLUSTRATIVE MASTER PLAN CONCEPT - EXISTING AERIAL

→ LAND ACCESS
→ WATER ACCESS



ILLUSTRATIVE MASTER PLAN CONCEPT - OVERALL SITE

AREA NOT IN SCOPE.



DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

City of St. Petersburg Marina Redevelopment	SCALE	REVISION
	01/14/21	
Overall Site Plan	SKETCH NO.	7

Marina Technologies, Inc. (MTI) Floating Docks

1. Typical aluminum framed system with composite or hardwood timber decking & concrete flotation units

MTI-S222 SERIES ALUMINUM DOCKS

The MTI-S222 Series Aluminum Docks are constructed using Marine-Grade 6061-T6 Aluminum alloy and are designed and engineered to be very strong, maintenance free and elegant. The MTI-S222 Series is an advanced and versatile aluminum system that exceeds your expectations. Reconfiguration is easy thanks to the built-in top, bottom and lateral track system which allows for quick installation and repositioning of finger piers and cleats. The MTI-S222 dock sections are typically 40' long and quickly connect together using strong noise-free high density rubber connectors with stainless steel hardware.

The MTI-S222 main docks are typically 4', 6', 8', 10' and 12' wide. Single piece finger piers are typically 3', 4', 5', 6', and 8' wide and come rectangular or tapered.

The MTI-S222 Series Aluminum Docks also offer an optional unique flotation system using HI-STABILITY CONCRETE floats which greatly increases the dock mass, stability and loading capacity. This unique system combines the elegance of our aluminum series with the proven strength and stability of our concrete products. Each HI-STABILITY CONCRETE float weighs approximately 2,500 - 4,000 lbs. and offers extra resistance to tropical storms/hurricanes, ice, and floating debris. The stability is incredible and approaches the feel of an all concrete dock.

KEY Benefits:

- Proven strength, durability and stability.
- Polyethylene floats or unique HI-STABILITY CONCRETE floats.
- Noise-free, strong, and flexible rubber connectors allow the dock to perform in rough water conditions
- Built in growth potential - track System on all mains and fingers for quick assembly and reconfiguration - cleats, fingers and pile guides are easily repositioned also.
- Unique inner stainless-steel back plate within the track system for extra strong cleat connections.
- Quick and easy installation.
- 35 year design life with minimal maintenance.
- 18" - 24" standard freeboard.
- Internal utility routing and/or single or dual top-access utility troughs.
- Several fender options to choose from such as hardwood, composite, PVC, and rubber fenders with matching color corner bumpers.
- Several decking options to choose from such as hardwood, composite, open-mesh and textured concrete panels.
- Internal or external aluminum pile guides with rollers or wear-pads.

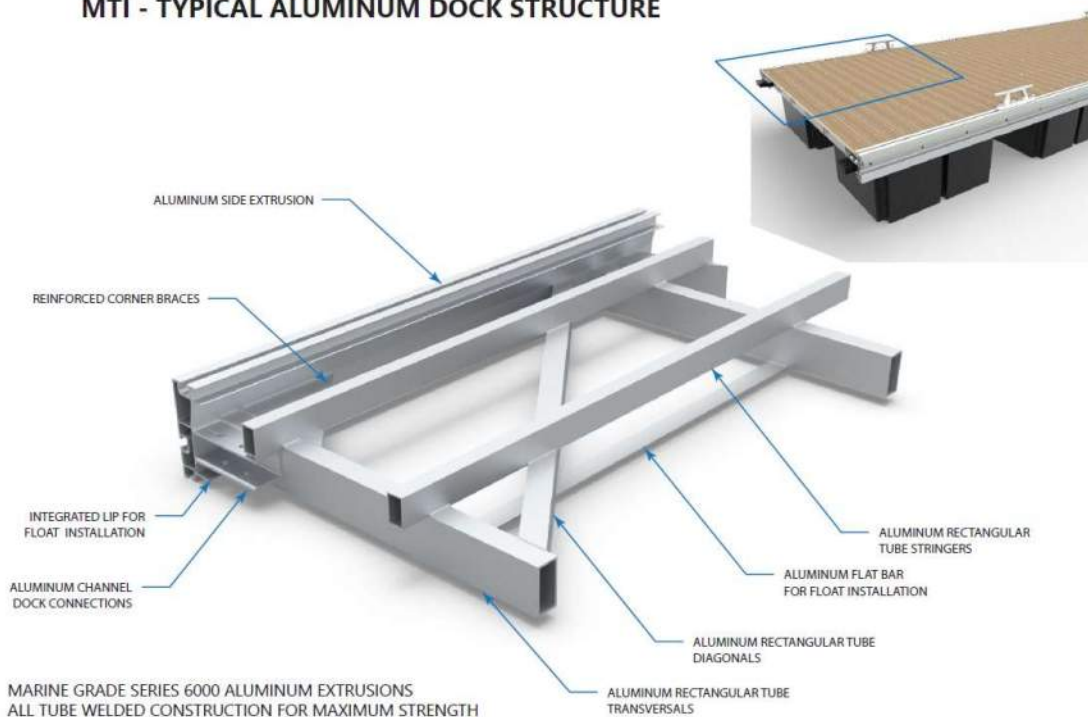


S222 System with Hi-Stability Concrete Floats



MARINA TECHNOLOGIES INC.

MTI - TYPICAL ALUMINUM DOCK STRUCTURE

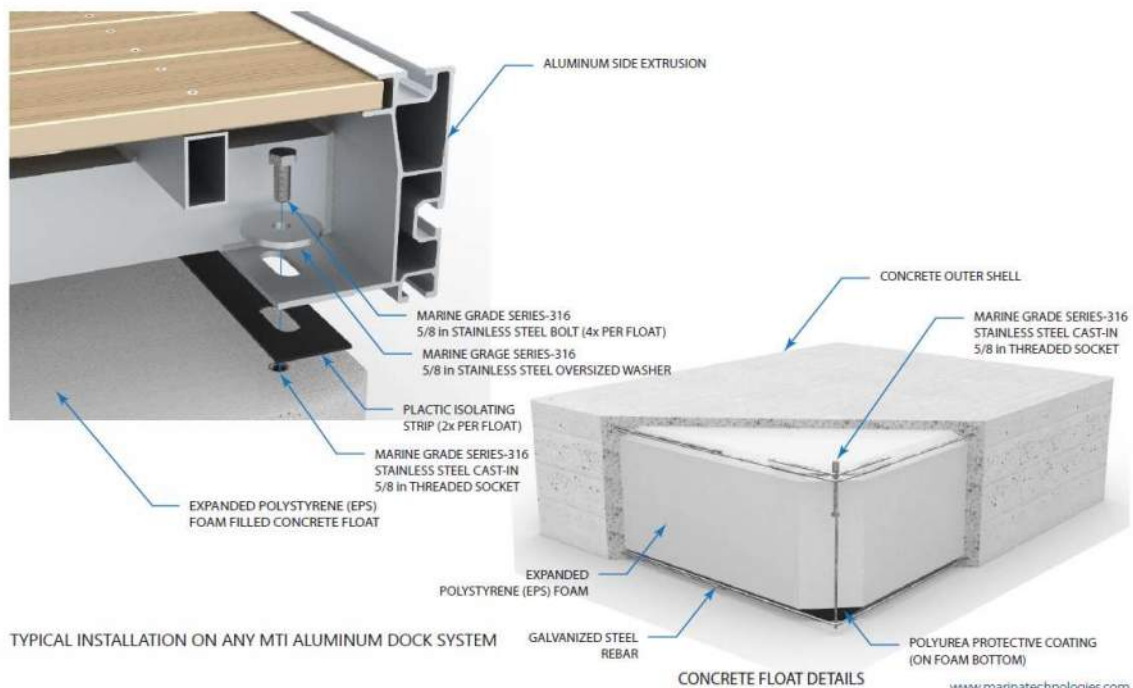


www.marinatechnologies.com
info@marinatechnologies.com



MARINA TECHNOLOGIES INC.

CONCRETE FLOATS ON ALUMINUM DOCK STRUCTURE

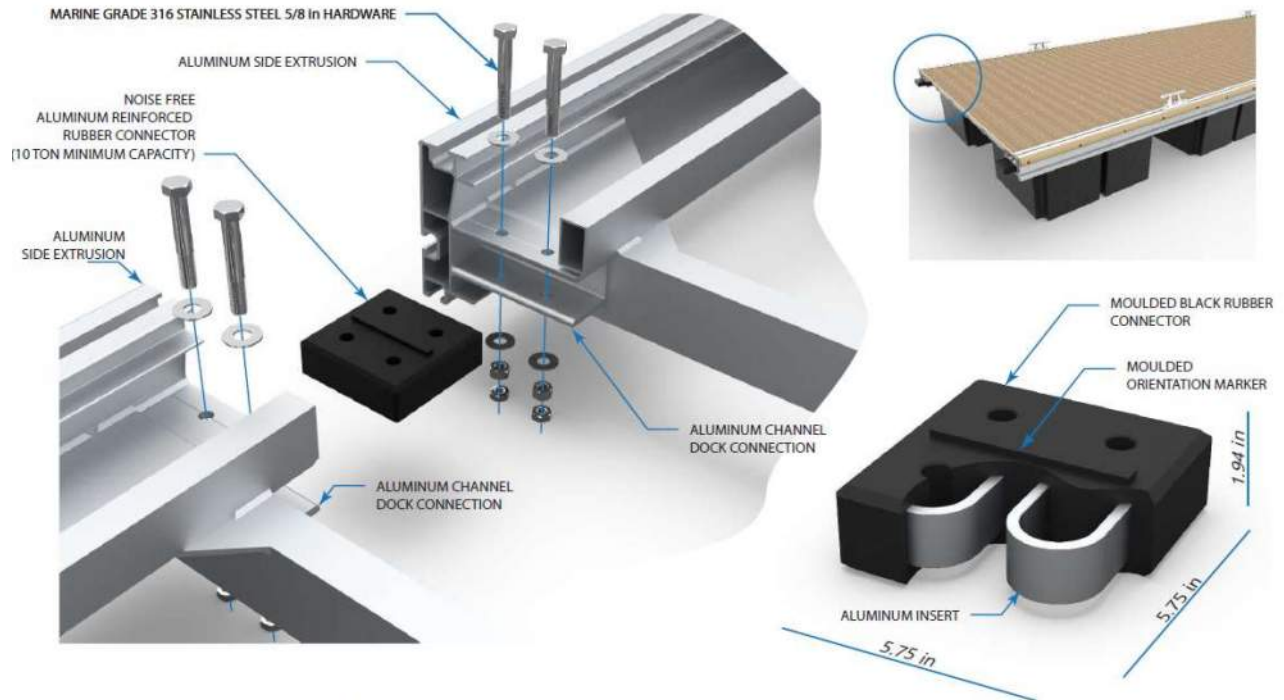


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MARINA TECHNOLOGIES INC.

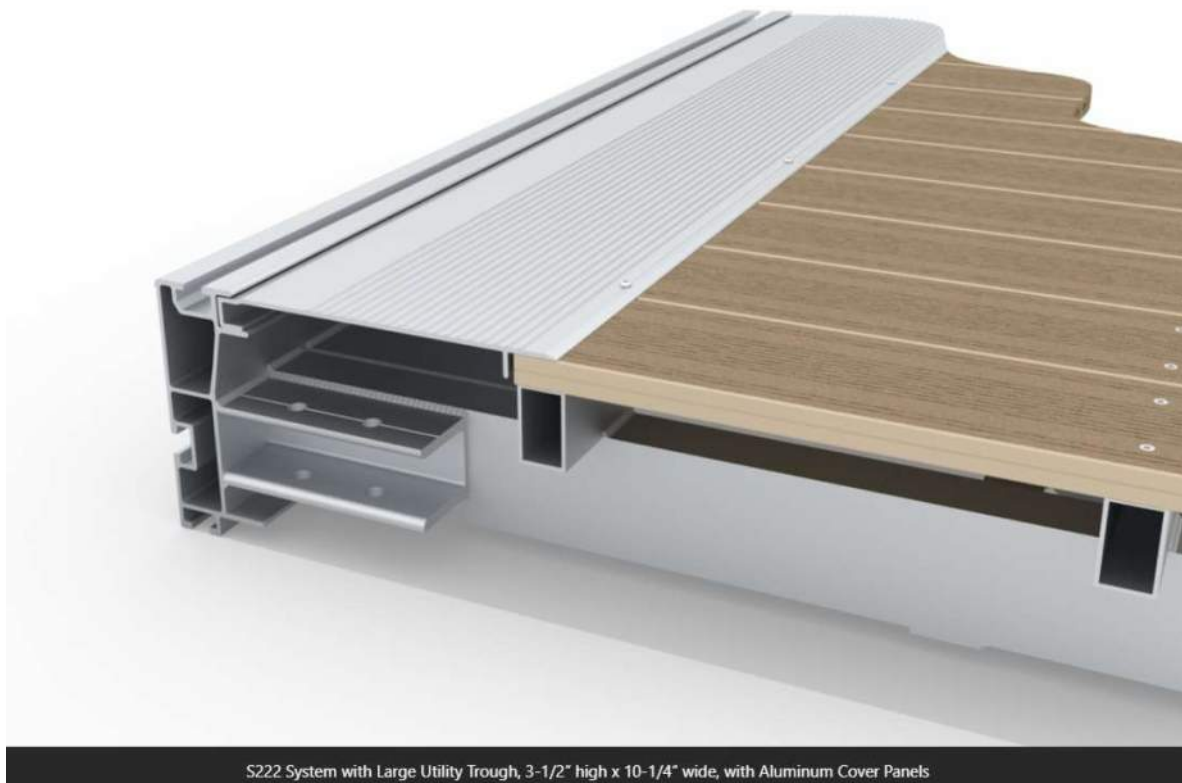
MTI - STANDARD DOCK TO DOCK NOISE FREE FLEXIBLE RUBBER CONNECTION



NOISE FREE ALUMINUM REINFORCED RUBBER CONNECTOR WITH MARINE GRADE 316 STAINLESS STEEL 5/8 in HARDWARE ON ALL ALUMINUM DOCK TO DOCK CONNECTIONS (MINIMUM 2 RUBBER CONNECTORS PER DOCK CONNECTION)

RUBBER CONNECTOR DETAILS

www.marinatechnologies.com
info@marinatechnologies.com



2. Superyacht Berth/Wave Attenuator Concrete Floating Docks

MEGA-YACHT SERIES CONCRETE DOCKS

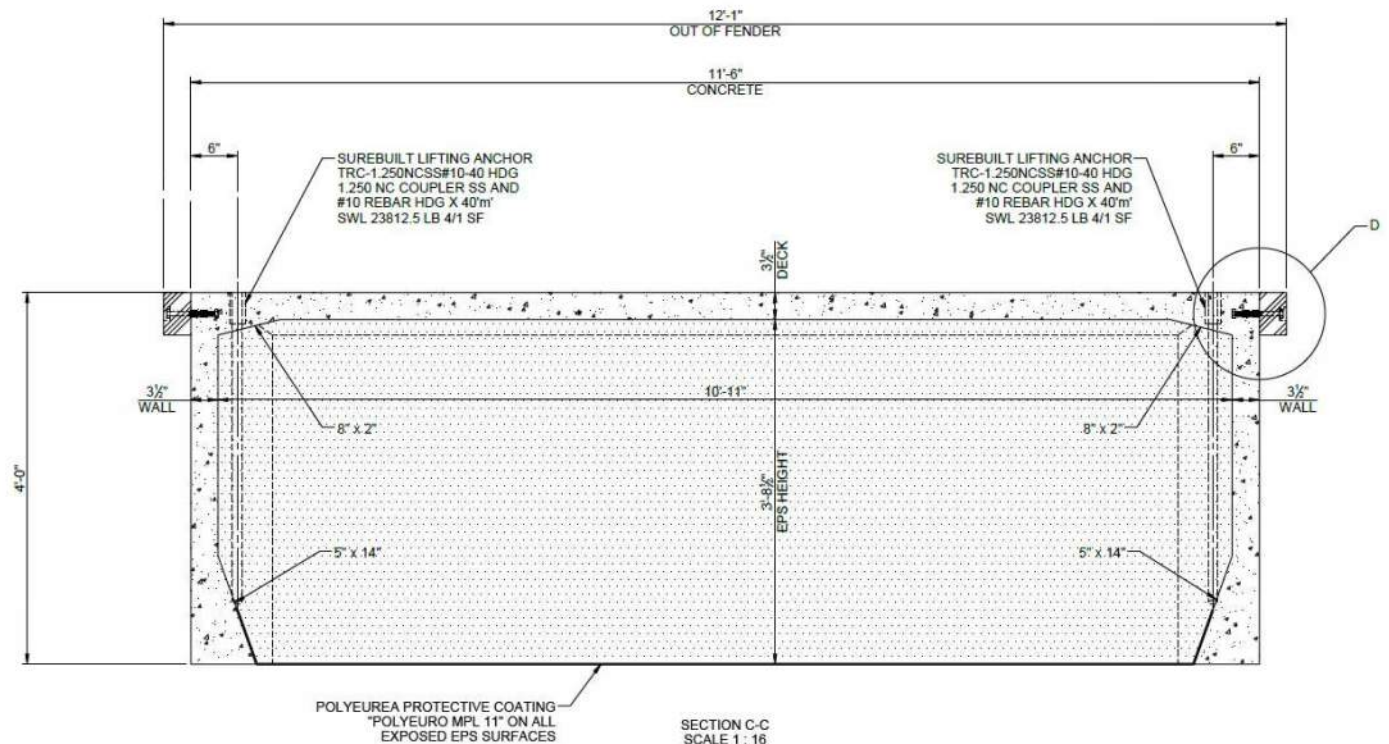
The MTI Mega-Yacht series offers a higher 24" freeboard. This massive single cast all reinforced concrete pontoon with HDG internal steel rebar and wire mesh makes it the strongest structural system available today. Designed and engineered for hurricane force winds and waves, the Mega-Yacht series survive where other systems fail.

Mega-Yacht dock sections are typically 40', 50' and 60' long and can also be customized. Each massive unit connects together using our dual flexible single-bolt connection system on each side making it the strongest system in the industry. Mega Yacht main docks are typically 10', 12', 14', 16', 18' and 20' wide. Single piece finger piers are typically 5', 6', 8', 10' and 12' wide and can be up to 60' long.

MTI Mega-Yacht Series Concrete Docks are built extremely strong and only use high strength concrete (6,000 Psi) with internal HDG steel reinforcing rebar and wire mesh. Stainless steel sockets are cast into the concrete and tied to the internal steel reinforcement, providing high loading capabilities for fender and cleat mounting.

KEY Benefits:

- Remarkable proven strength, durability and stability.
- Quick and easy installation.
- Designed to last over half a century with very little maintenance.
- Standard 24" freeboard.
- Internal utility routing via sleeves and or single or dual top-access utility troughs.
- Your choice of composite, rubber, vinyl or wood fenders.
- Proven flexible connections designed for rough water conditions.
- No hi-maintenance cables, timber, walers or thru-rods.
- Top-access, internal connection boxes for chain or flexible anchoring systems.
- Internal or external pile guides in either HDG steel or 316L stainless steel.






Bob Berry
Project Development
MARINA TECHNOLOGIES

433 Central Ave, Ste 300
St. Petersburg, FL 33701
Mobile +1.910.262.6061
Email. Bob.B@MarinaTechnologies.com
www.marinatechnologies.com

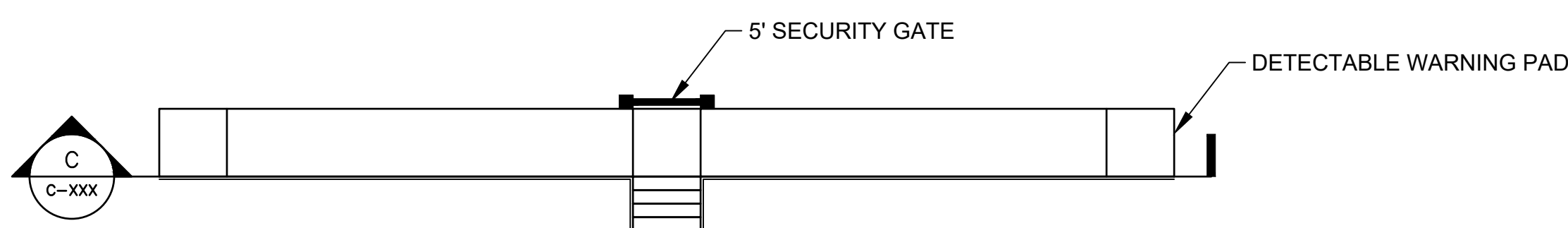
Figures - Structural



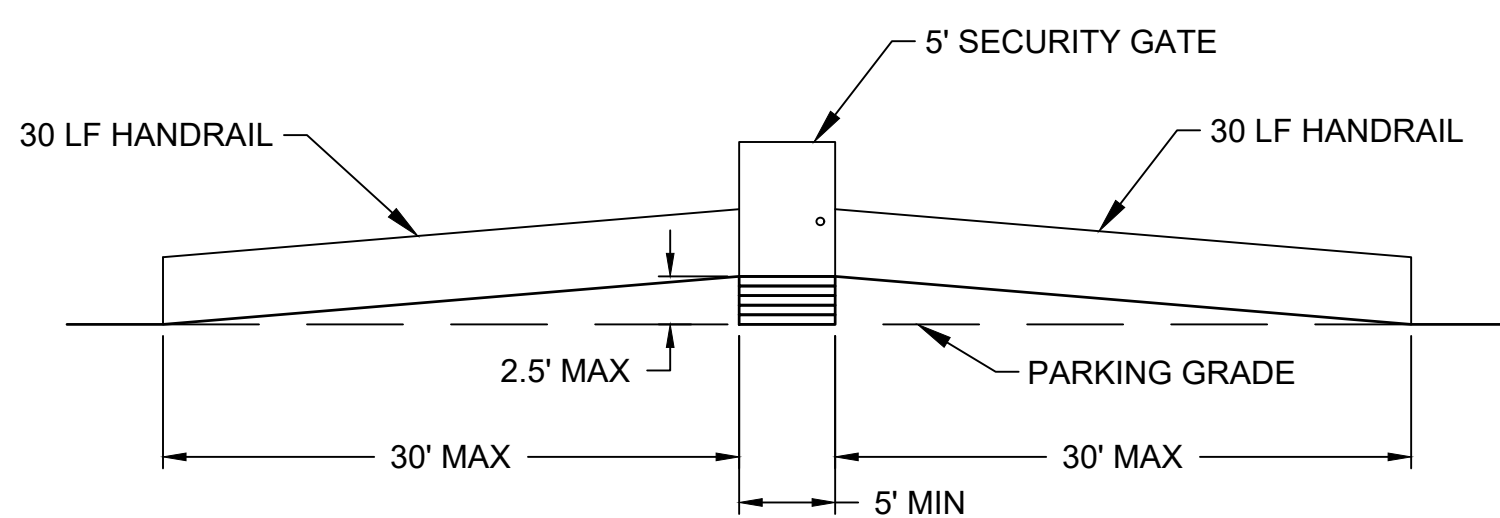
ALL DRAWINGS AND DIMENSIONS ARE FOR CONCEPTUAL DESIGN INTENT ONLY. NOT FOR CONSTRUCTION.

	DESIGNED BY:	Demens Landing Site Plan	SCALE N.T.S.	REVISION
	DRAWN BY:		DATE 12/27/2021	
	CHECKED BY:		SKETCH NO. 1.0	
		City of St. Petersburg Marina Redevelopment		

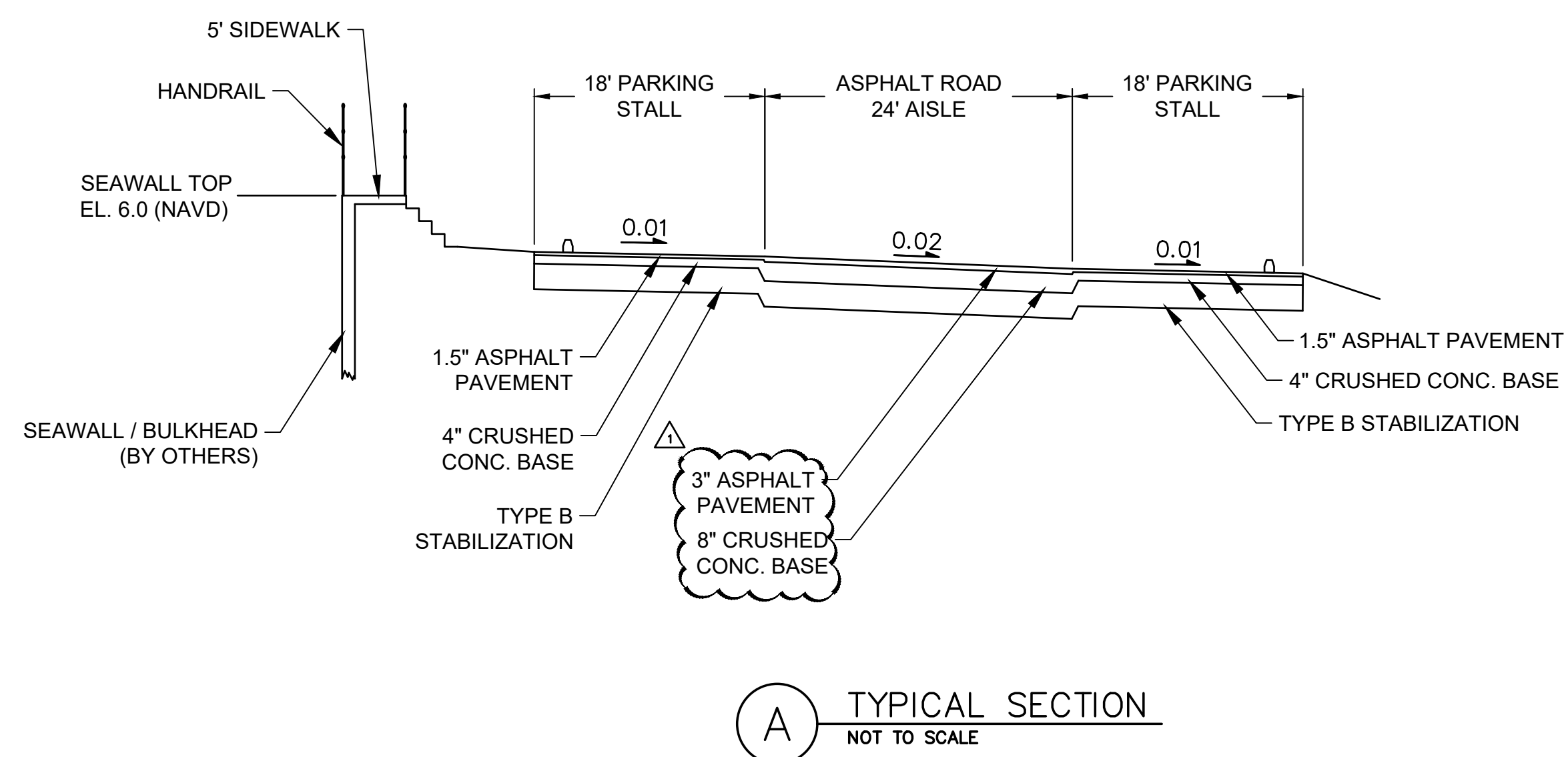
Figures - Civil



PLAN VIEW



© ACCESS RAMP & STAIRS
NOT TO SCALE



A TYPICAL SECTION
NOT TO SCALE

[illegible]

ENGINEERING & CAPITAL IMPROVEMENTS
DEPT. CITY OF ST. PETERSBURG, FL
 1 4TH ST N
 SAINT PETERSBURG, FL 33701
 V: (727) 893-7295

ST. PETE MARINA

DETAILS

PROJ. START DATE:	11/01/2021
MCE PROJ. #	055050003
DRAWN	CTM
DESIGNED	CTM
CHECKED	CTM
PROJ. MGR.	CTM

SCALE

HORIZONTAL:
N/A




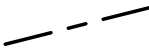

VERTICAL:
N/A

M&C FILE NUMBER
XBASE
DRAWING NUMBER
C-102

STATUS: **PRELIMINARY -
NOT FOR CONSTRUCTION**

Revision
2

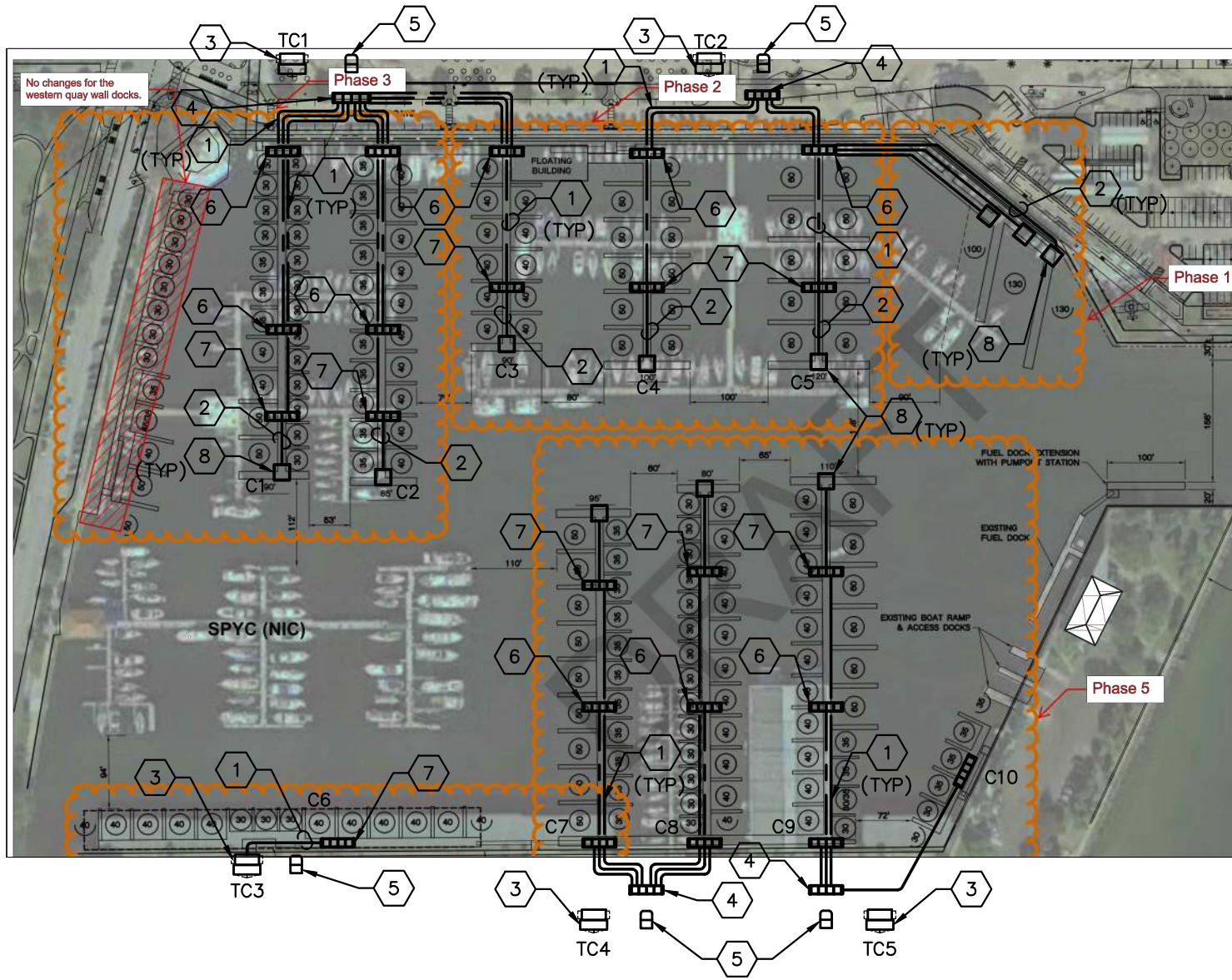
Figures - MEP

LEGEND	
	ELECTRICAL DISTRIBUTION PANEL
	12470/7208 V, TRANSFORMER
	480-208/120 V, TRANSFORMER
	CIRCUIT/CONDUIT OR CABLE UNDERGROUND OR UNDER DOCK
	ELECTRICAL/ COMM/ WATER MARINA PEDESTAL

#	DRAWING NOTES
	<ol style="list-style-type: none"> 1. NEW 600A, 480 V, 3ϕ ELECTRICAL FEEDER TO UNIT SUBSTATION. G-CABLES TO BE USED IN FLOATNG DOCKS. 2. NEW 200 A, 480 V, 3ϕ UNDER DOCK ELECTRICAL FEEDER, TO 480 V PEDESTAL. 3. DUKE ENERGY TO REPLACE EXISTING PAD-MOUNT WITH NEW 480/277 V SECONDARY. 4. NEW 1,200 A, 480 V, 3ϕ PANELBOARD. 5. NEW 150 kVA 480 – 208/120 V TRANSFORMER TO RE-FEED EXISTING 208/120 V EQUIPMENT THAT REMAINS. 6. 250 kVA 480 – 240/120 V UNIT SUBSTATION WITH 240/120 V PANELBOARD AND GROUND FAULT PROTECTION. 7. 333 kVA 480 – 240/120 V UNIT SUBSTATION WITH 240/120 V PANELBOARD AND GROUND FAULT PROTECTION. 8. PEDESTAL FOR LARGE VESSELS. 9. UNDER DOCK 480 V ELECTRICAL FEEDER. 10. DOCK NOT IN SCOPE.

Sketch No. SKE-1	Detail Title: LEGEND AND NOTES	Drawn Date: 1/04/2022
		Revised By: KH
	View Scale: NONE	Approved By: KH
		Drawn By: EV





DRAWING GENERAL NOTES

A. REFER TO SKE-1 FOR LEGEND AND NOTES.

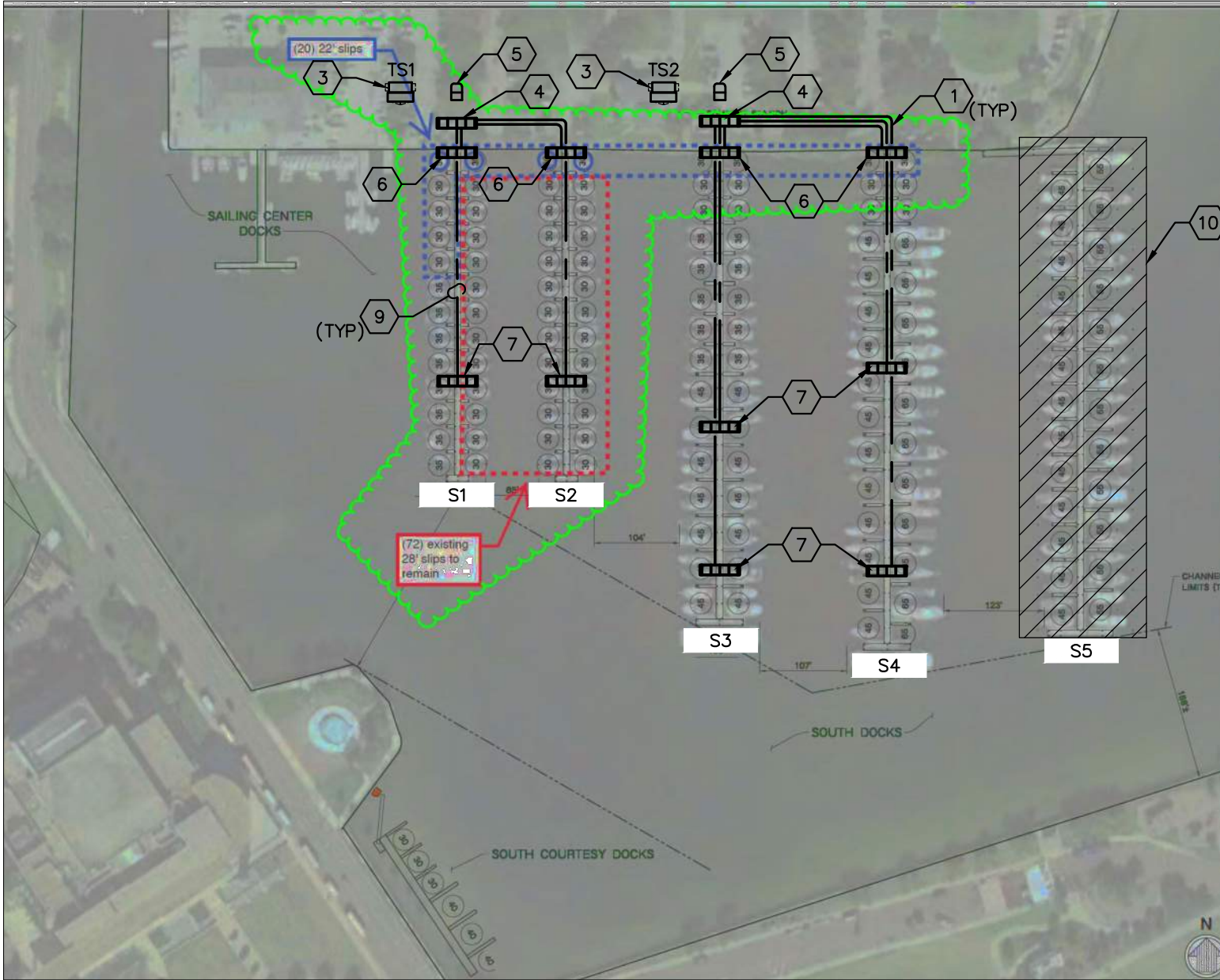


Drawn Date: 1/04/2022
Revised By: KH
Approved By: KH
Drawn By: EV



Detail Title:
CENTRAL BASIN ELECTRICAL CONCEPT
View Scale: NONE

Sketch No.
SKE-CB



DRAWING GENERAL NOTES

A. REFER TO SKE-1 FOR LEGEND AND NOTES.



Drawn Date: 1/04/2022
 Revised By: KH
 Approved By: KH
 Drawn By: EV



Detail Title:
SOUTH BASIN ELECTRICAL CONCEPT
 View Scale: NONE

Sketch No.
SKE-SB

Drawn Scale: N/A

Attachment D

Site Investigation Letter Report

March 18, 2022

City of St. Petersburg
Engineering and Capital Improvements
P.O. Box 2842
St. Petersburg, FL 33731-2842

Attn: Marshall Hampton P.E.
Senior Professional Engineer - Project Manager

email: Marshall.Hampton@stpete.org

Re: St. Petersburg Marina Redevelopment – Site Investigation Letter Report
St. Petersburg Task Order # 21-01-MCL-MP(S)
St. Petersburg Project # 210077-119
McLaren File No. 200053

Dear Mr. Hampton,

McLaren Technical Services, Inc. (McLaren) and our team of subconsultants performed site visits at the St. Petersburg Municipal Marina on 19 November 2021 and 30 November 2021 to support the development of a Class 3 Cost Estimate, Project Schedule, and Engineer's Estimate Memo. The following Site Investigation Letter Report provides a concise summary of the key observations noted onsite and discussions about how these observations may impact the conceptual marina redevelopment effort. Specifically, this site investigation letter report seeks to inform the client about the potential root causes behind observed deterioration and provide holistic insight on conceptual marina upgrades.

Introduction

The St. Petersburg Marina Redevelopment project comprised a topside site investigation of existing conditions at the St. Petersburg Municipal Marina along with a detailed review of the St. Petersburg Re-Development Concept planning documents and other provided reference documentation. The objective of this investigation is to supplement the client's understanding of the existing site conditions, proposed repairs, proposed construction, and verify construction costs of Safe Harbor Group's concept plan. Since the City of St. Petersburg has an ongoing routine inspection program for the facility, this investigation did not duplicate these inspections and focused on identifying and discussing observations which may impact the overall redevelopment project.

The following report is separated by design division (i.e., Marine, Structural, Civil, and MEP) with each section providing a discussion on Observed Conditions and Conceptual Design Considerations. The Observed Conditions section provides an overview of key investigation findings. The Conceptual Design Considerations section provides detailed discussion(s)

regarding design elements included in the “Re-Development Concept” dated 24 March 2021, the succeeding “Addenda to Concept Plan” dated 19 July 2021, the “USACE Pre-Application Meeting” dated 24 April 2021, and the “Design Criteria Memorandum Draft” dated 21 July 2020. The “Next Steps” section concludes the report. Additionally, photographs for each design division are provided in Appendices A through D.

Observed Conditions - Marine

Overall, the observed conditions generally align with those identified in the Moffatt & Nichol “2021 Annual Marina Structures Inspection Condition Assessment Report”. These observations include open spalling and cracking at South Basin finger piers and erosion and spalling along the concrete and steel bulkheads with observed upland fill loss. The condition of the North Dock did not differ significantly from the previous inspection effort. However, since these elements are scheduled for demolition and replacement the inspection focused on construction access and the proposed layout rather than existing conditions.

Table 1 below identifies five observations which may impact the proposed re-development effort and/or the overall service life of the facility. The tables provided in the conceptual design considerations provides a detailed description of the observation and a discussion about the impact(s) on the facility.

Table 1: Key Observations

Marine Observation	Discussion	Photograph(s)
1	Elevation of the South Basin Piers	Appendix A Photograph 1 – 2
2	Slab detail for the South Basin Finger Piers	Appendix A Photographs 3
3	Steel Sheet Pile Bulkhead Replacement Elevation	Appendix A Photograph 4 – 5
4	Fill Loss through Deteriorated Concrete Bulkhead	Appendix A Photographs 6 - 7
5	Unknown Condition of South Basin Piles	Appendix A Photograph 8

Conceptual Design Considerations - Marine

McLaren performed a review of the provided Conceptual Marine Design documents prior to performing the site investigation. The following tables identify key observations collected onsite that have the potential to impact proposed re-development program and/or the overall service life of the facility. A detailed discussion of the observations, impacts, and considerations are provided below.

Table 2: Marine Considerations - Observation 1

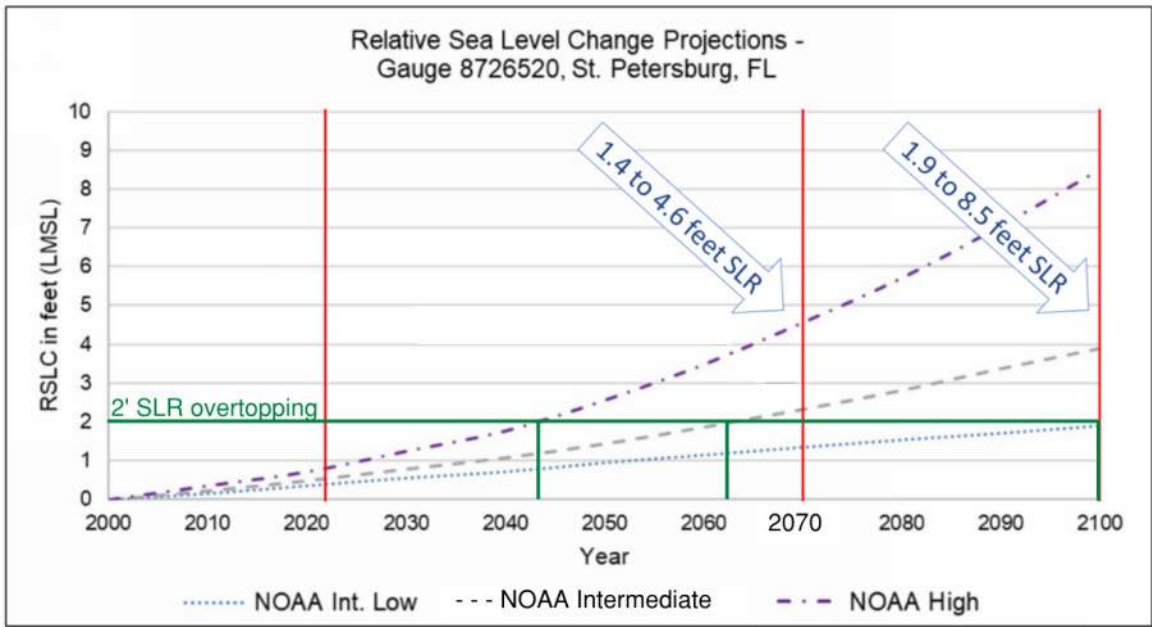
Re-Design Concept Design Element
Elevation of the South Basin Piers
Marine Discussion
<p>The elevation of the South Basin piers are below the elevation of the Demens landing seawall. Since the proposed re-development program includes efforts to replace and raise the elevation of the perimeter bulkhead, McLaren provided a preliminary review of the projected remaining service life for the South Basin finger piers as it relates to Sea Level Rise (SLR). Note that this preliminary review has been performed utilizing the sea level rise analysis provided in the GPI “Marina Re-Development Vulnerability Assessment Report” (November 2021). It has been assumed that the sea level rise data provided in this report is accurate.</p> <p>Based on site observations and available reference documents it is assumed that the South Basin finger piers will be impacted by Mean Higher High Water (MHHW) elevations with approximately 2 ft of Relative Sea Level Rise (RSLR). Considering the Intermediate Low and Intermediate SLR projections, provided below, the South Basin has a projected remaining service life of approximately 40 to 80 years. As a result, a significant capital investment into the South Basin facility is justified since a 50-year service life is probable.</p> <p>It should be assumed that the South Basin will need to be converted into a floating dock marina, similar to the layout recommended for the Central Basin, within the next 50 years. Over the next 20 to 30 years the impacts and trajectory of SLR will become apparent and the overall timeline to replace the facility can be re-assessed. However, at this time the project impacts of SLR should not alter the rehabilitation program recommended for the South Basin.</p>
 <p>Figure 1. Marina Re-Development Vulnerability Assessment – November 2021 with additional interpolation</p>

Table 3: Marine Considerations – Observation 2

Re-Design Concept Design Element
Slab detail for the South Basin Finger Piers
Marine Discussion
<p>The South Basin finger pier slabs are 6 inches thick prestressed concrete slabs. Observed spalling revealed limited concrete cover, typically less than 2 inches, over two-way wire reinforcement.</p> <p>Typical marine construction practices recommend a minimum 3-inch cover for concrete surfaces exposed to the saltwater environment. This concrete cover is important since it slows down the penetration of chlorides through the concrete matrix. Once chlorides reach the embedded reinforcing steel the corrosion process is initiated. As corrosion progresses steel expands resulting in progressively greater deterioration of the concrete structure. Generally, this begins with cracking, followed by closed spalling, and ultimately progresses to open spalling. However, the depth of penetration and the speed of corrosion initiation are not uniform at most facilities and can be impacted by many variables including exposure to wetting and drying, composition of the concrete matrix, and other environmental factors.</p> <p>As a result of the observed limited concrete cover and the distribution of deteriorated and/or replaced slabs it should be assumed that the original vintage concrete finger pier slabs are saturated with chlorides. This impacts the overall service life requirements for Pier 1 and Pier 2 of the South Basin. Specifically, slab replacements efforts should be integrated into a regular maintenance and rehabilitation program for the South Basin designed to replace the remaining original vintage slabs. Additionally, though the main walkway slabs present fewer signs of deterioration due to the higher elevation, there is a high probability that these elements will begin to present deterioration in the future and will need to be included in the discussed maintenance and rehabilitation program.</p>

Table 4: Marine Considerations – Observation 3

Re-Design Concept Design Element
Steel Sheet Pile Bulkhead Replacement Elevation
Marine Discussion
<p>The GPI “Marina Re-Development Vulnerability Assessment Report” (November 2021) recommends replacing and raising portions of the Demens Landing perimeter bulkhead to an elevation of 6.0 ft NAVD88. This elevation is recommended to protect against the projected high tide elevation in 2070 considering the NOAA High SLR Projection.</p> <p>Due to the condition of the steel sheet pile bulkhead in the northern quadrant of the Demens Landing perimeter, McLaren concurs that replacement is recommended. However, considering the limited extents of recommended replacement, the overall impact on resiliency will be negligible since the remaining seawall surrounding Demens Landing is primarily located around an elevation of 3.8 ft NAVD88. Additionally, as stated in the Moffatt and Nichol “Design Criteria Memorandum of Westshore Marina” (Draft, August 17, 2020), “The design of the waterfront components will consider the NOAA Intermediate Low value”.</p> <p>As a result, replacement of the steel sheet pile bulkhead is still recommended. However, the overall resiliency approach should be considered on a holistic basis before raising the elevation</p>

of the seawall. This effort may include segmenting areas to be protected from the impacts of SLR and defining the desired elevation around the perimeter of the island.

Table 5: Marine Considerations – Observation 4

Re-Design Concept Design Element

Fill Loss through Deteriorated Concrete Bulkhead

Marine Discussion

Deflection of isolated segments of the concrete perimeter walkway and sinkholes are present along the southern and eastern perimeter of Demens Landing. Based on the observed condition of the seawall, the primary mechanisms for fill loss are noted as erosion of the seawall concrete panel joints and deterioration of existing outfalls.

Though these observations are occurring at isolated locations, based on the age of the seawall and consistent observed conditions, fill loss will likely be an ongoing maintenance issue. As a result, a global seawall rehabilitation program should be implemented to address this issue and ensure the continued safe operation of the walkway.

As noted in the GPI report this rehabilitation should comprise installation of riprap revetment along the seaward perimeter of the bulkhead as well as excavation along the landward perimeter to allow the installation of granular fill wrapped in geotextile (See Figure 2 below). Where obstructions exist, i.e., existing piers, slips, or mangroves, alternate repairs along the offshore perimeter may be considered. These may comprise reinforced concrete encasements or non-structural encapsulations, pending the condition of the segment.

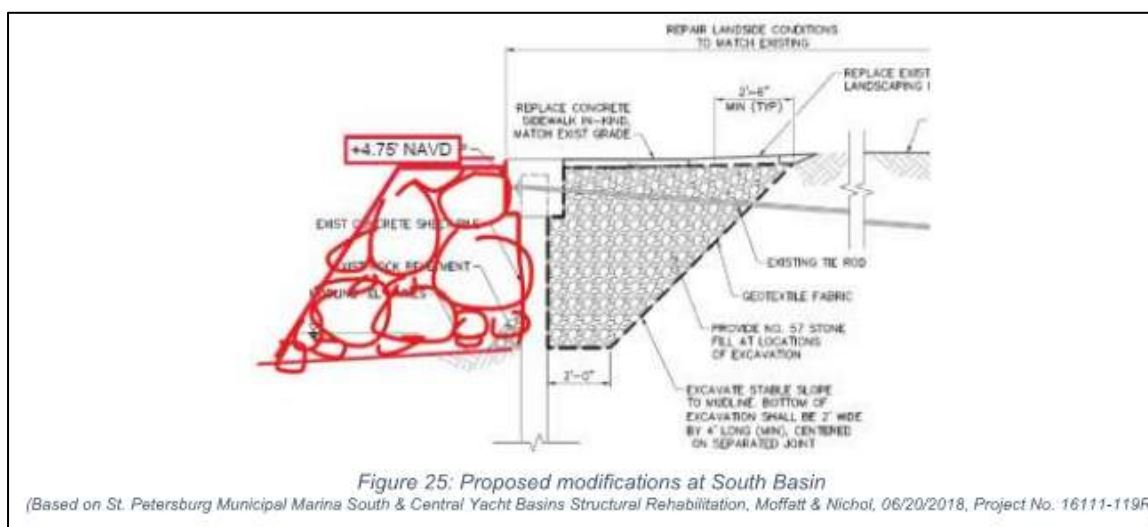


Figure 2. Concrete bulkhead repair detail as presented in Figure 25, of the GPI Marina Re-Development Assessment, dated November 2021.

Table 6: Marine Considerations – Observation 5

Re-Design Concept Design Element
Unknown Condition of South Basin Piles
Marine Discussion
<p>The proposed South Basin rehabilitation program does not include substructure elements (i.e. piles and pile caps). Additionally, the 2017 Moffat & Nichol “St. Petersburg Municipal Marina Marine Infrastructure Condition Assessment” did not include underwater inspection of the concrete structural piles.</p> <p>Based the provided historic data, and onsite observations, pile rehabilitation efforts were implemented in 2007 at isolated locations throughout the South Basin. Therefore, it is understood that chloride intrusion exists throughout these substructure elements with varying levels of severity. However, due to heavy marine growth, assessment from above water is not feasible.</p> <p>Therefore, prior implementing the proposed South Basin rehabilitation program, it is recommended that a thorough underwater inspection be performed to assess the condition of the structural concrete piles. Specifically, it is important to understand the overall condition of the piles and determine the maintenance and rehabilitation efforts required to achieve the desired 50-year service life. Based on these results, the city will be able to determine if the cost:benefit ratio for the proposed South Basin rehabilitation program has changed.</p>

Observed Conditions - Structures

The South Basin Comfort Center is in need of exterior repairs. Warped guardrails, warped girders, and deterioration was observed at the two-story timber deck and stairs. Timber repairs should be made to the two-story timber deck and stairs. The building's existing metal roof is in poor condition, has reached the end of its service life, and should be replaced. The building's existing exterior siding is in good condition but should be painted.

The Central Basin Comfort Center is comprised of two small buildings, one with a laundry area and a second with restrooms/showers. The exterior and interiors of these buildings were observed to be in fair condition, however, finishes and fixtures at both building interiors are to be demolished and replaced with updated high-end finishes and fixtures.

The Marina Office and Ship Store was observed to be in good condition overall with several maintenance items to be addressed. These maintenance items include repair of local areas of siding and flashing as well as repair of miscellaneous items like electrical junction boxes at the ceiling of the open-air carport below the building. The building's existing metal roof is leaking in areas and has caused damage to the gypsum board ceiling. The roof should be repaired and may need to be replaced.

Table 7: Key Observations

Structures Observation	Discussion	Photograph(s)
1	South Basin Comfort Center	Appendix B Photographs 9 - 13
2	Central Basin Comfort Center (Laundry)	Appendix B Photographs 14 - 15
3	Central Basin Comfort Center (Restrooms)	Appendix B Photographs 16 – 20
4	Marina Office and Ship Store	Appendix B Photographs 21 – 29

Conceptual Design Considerations – Structures

McLaren performed a review of the provided Conceptual Design documents prior to performing the site investigation. The following tables identify key observations that impact design elements from the reference documents. A detailed discussion was developed based on observations in regard to the overall impact on the proposed marina project.

Table 8: Structures Considerations – Observation 1

Re-Design Concept Design Element
South Basin Comfort Center
Structures Discussion
Proposed repairs to the South Basin Comfort Center are currently limited to the exterior of the building. The existing roof is to be replaced with a standing seam metal roof, the building exterior is to be repainted, and repairs to the two-story timber deck and stairs including replacing warped guardrails, warped girders, and deteriorated members are to be performed.

During the site walk, the interior of the building was also observed and is in fair condition in areas and good condition in other areas. The portions of the building interior that are in fair condition are high traffic areas, specifically the restrooms and hallway to the restrooms, and are showing signs of wear. Future budgeting is recommended for a remodel for these high traffic areas. As a salt air environment advances deterioration of mechanical equipment, it is recommended to verify the condition of the building's HVAC systems and budget for replacement as needed.

Table 9: Structures Considerations – Observation 2

Re-Design Concept Design Element
Central Comfort Basin Center (Laundry)
Structures Discussion
<p>The Central Basin Comfort Center laundry room finishes and fixtures at interiors are to be demolished and replaced with updated high-end finishes and fixtures. Interior and exterior elements to be removed/demolished and replaced include washing machines, dryers, hot water heaters, utility sinks, tile at floors, jalousie windows, and entrance doors. Tile is to be ceramic tile and counters and any accent shelving are to be granite. Exhaust fans are to be removed and a HVAC split unit and space heater are to be added.</p> <p>The existing building is a low-slope roof. A new hip-style wood framed roof for the building is to be constructed with plywood sheathing, tar paper, flashing, and standing seam metal roofing for roofing materials. The stucco exterior of the building is to be repainted to address existing cracking and discolored paint in an effort to improve the aesthetic of the building.</p>

Table 10: Structures Considerations – Observation 3

Re-Design Concept Design Element
Central Comfort Basin Center (Restrooms)
Structures Discussion
<p>The Central Basin Comfort Center restroom finishes and fixtures at interiors are to be demolished and replaced with updated high-end finishes and fixtures. Interior and exterior elements to be demolished and replaced include stalls, toilets, urinals, counters, sinks, shower fixtures, the HVAC split unit in each bathroom, the space heater in each bathroom, tile at floors, tile at walls, windows, and entrance doors. Tile is to be ceramic tile and counters and any accent shelving are to be granite.</p> <p>The hip-style roof of the building is to be modified to include a wood framed dormer above the entrance on the water side of the building. The roof is to be finished with tar paper, flashing, and standing seam metal roofing to utilized consistent roofing materials at the existing roof and new dormer. The stucco exterior of the building is to be repainted to address existing cracking and discolored paint in an effort to improve the aesthetic of the building.</p>

Table 11: Structures Considerations – Observation 4

Re-Design Concept Design Element
Marina Office and Ship Store
Structures Discussion
<p>The concept plan includes minor attention to finishes for the Marina Office and Ship Store. In addition to the planned touch-up of paint and minor repair of finishes, it is recommended that repairs be performed for local areas of exterior siding, flashing, roofing, and interior gypsum board ceilings in the ship store.</p> <p>The Marina Office and Ship Store roof should be repaired and may need to be replaced. If replaced, it is recommended that the new roof be a standing seam metal roof. Damage to local areas of gypsum board ceilings due to roof leaks in the Ship Store was observed and should be repaired. Local areas of damage to the Hardie board siding were observed at the east and west elevations of the building which should be repaired. Local areas of metal flashing damage was observed at the east elevation of the building just above the open-air carport below the building. This damage to the metal flashing should be repaired. Damage to miscellaneous items like electrical junction boxes at the ceiling of the open-air carport below the building should also be repaired.</p> <p>It is recommended to repaint the exterior of the building in an effort to improve the aesthetic of the building. As a salt air environment advances deterioration of mechanical equipment, it is recommended to verify the condition of the building's HVAC systems and budget for replacement as needed.</p>

Observed Conditions - Civil

The Site/Civil components were observed during two field visits, 9 November 2021, and 19 November 2021. The Marina and Demens Landing Park share some facilities, for example parking and amenities.

Table 12: Key Observations

Civil Observation	Discussion	Photograph(s)
1	Pavement Condition: North side of Demens Landing is moderate to good condition. The south side of Demens Landing is moderate condition.	Appendix C Photograph 30 – 31
2	Stormwater Management: There are several unlocated stormwater management systems which may discharge directly to the Marina.	Appendix C Photograph 32 – 33
3	The utilities (sanitary, potable water, electrical) appear to be below grade. Flows and pressures for potable water was not reviewed.	

Conceptual Design Considerations – Civil

The design components and considerations for those components are not well defined by the Re-Development Concept Plans.

Table 13: Civil Considerations – Observation 1

Re-Design Concept Design Element
Pavement Section
Civil Discussion
The pavement section was designed based on general requirements, which may not be appropriate for heavy traffic generated by the public boat launch.

Table 14: Civil Considerations – Observation 2

Re-Design Concept Design Element
Potable Water Main Capacity
Civil Discussion
The capacity of the existing water main is not known. Additionally, whether the existing system can support the additional demands from expanded boat slips.

Additional investigation is recommended to reduce uncertainty. Recommended investigations: topographic survey of project area, geotechnical investigation of potential stormwater management areas, pavement cores, pressure/flow tests at onsite fire hydrants.

Observed Conditions - MEP

On November 30, 2021, the Hall Engineering Group (HEG) Team consisting of Keith W. Hall, PE (HEG), Edgar Villa (HEG), Shane Hamilton (EPI – Fire Protection, Plumbing and Fuel, Sub-Consultant), and Ed Roseman (EMC, Electrical Subcontractor), visited the site and performed a visual field observation of existing conditions of the St. Petersburg Marina Central and South Basins. The site visit was previously scheduled with McLaren Engineering and coordinated with City of St. Petersburg (City) staff. We convened at the marina Ship Store and the City provided a small boat for the HEG team to view the Central and South basins from the water side which coincided with the HEG scope of work. The Central Basin was viewed first followed by the South Basin.

I. Central Basin

The Central Basin consisted of older fixed pier structures consisting of slips ranging in length from approximately 22' to 65' with commercial ends that could accommodate larger vessels. Along the south end of the Central Basin were primarily concrete covered slips designated as SY, SX, SC, and SZ on the St. Petersburg Marina published marina map. The existing West Dock, Quay Wall West, North Dock, and Quay Wall North docks were uncovered, typical slips. It appeared docks were generally of concrete pier construction. A floating transient dock was located on the eastern end of the Central Basin. Restrooms and Showers and Laundromats were located at the West Dock and North Dock areas. The Ship Store, sanitary pump out station, and fueling system are located on the east end of the Central Basin. The existing St. Petersburg Yacht Club was not part of the project scope.

Electrical and Communications

Existing electrical systems originated on the landside at the bulkheads and feed generally down each existing pier. Two (2) Duke Energy 75 kVA pad-mount transformers feed the north side of the Central Basin and four (4) feed the south side of the Central Basin. Multiple landside electrical services were located on the landside, feeding different sections of the existing piers. Electrical services ranged in size and voltages appeared to be 208/120 V, 3-Phase. Electrical feeders were routed in PVC conduits mounted below pier structures or attached to the side of bulkhead walls. Most appeared to be in satisfactory condition, but some appeared to be missing supports/attachments.

Generally, each slip was fed from a marina style pedestal of sufficient capacities and voltages for the slips served. It appeared that one (1) pedestal typically served two (2) slips. From the pedestals observed, electrical, communications, and water connections appeared to be on the pedestals. Two (2) electrical meters were generally observed on each pedestal indicating one (1) electrical meter per slip.

Pedestals appeared to be in satisfactory condition but considering their harsh, saltwater environment and have an unknown age, they are not recommended to be reused and the Electrical cost estimate includes new pedestals for all slips.

Communications observed appeared to indicate copper Cat 5 or similar cables to pedestals with communications capabilities. Conduits under piers were not labeled or identified so precise determinations could not be made, however, it seemed to be consistent with other piers that communications cabling would also be run in PVC conduits.

Conduits and piping under piers and attached to structures were often co-mingled with other services such as water and sanitary piping.

Domestic Water

Domestic water appeared to be a mix of plastic pipe; (PVC, CPVC) that has been repaired over the years. It was in varying conditions based on age of repairs. As an overall system it appeared to be at end of life.

Conduits and piping under piers and attached to structures were often co-mingled and with other services such as water and sanitary piping. Some hangars were loose or missing on occasion with sagging pipe.

Sanitary

There is an existing pump out station that appears to be in good condition. It is our understanding that the marina is also served with mobile pumping services and wishes to continue with this service.

Fuel System

Fuel system consists of underground fuel storage tanks with two (2) dock mounted fuel dispensers, one (1) marine diesel and one (1) gasoline. The dispensers appeared to be in fairly good condition with little corrosion. The nozzles appeared to be in good condition with safety break away in good conditions. The hoses and reels appeared to be in good condition. Overall, little to no corrosion was visually seen on dispensing system and it appeared in good condition.

The underground tanks could not be visually inspected, but nothing out of the ordinary was observed from the minimal above ground items including the vents. The short section of fuel piping located under the pier appears to be fiberglass with bonded clamshell sealed fittings. The system appears to be in good condition. The clamshell fitting fasteners are the only items with signs of higher levels of corrosion. If further conditional analysis is warranted a specialty contractor will be needed to investigate the hidden fuel components and offer a detailed report.

Fire Protection

The area is served through a manual dry standpipe system with fire department connections near the pier entrances and respective site fire hydrants. Hose valves are placed out on the piers at intervals for coverage. The system appears to be mainly galvanized pipe with mechanical couplings. The piping was not heavily corroded but looked aged.

II. South Basin

The South Basin consists of older fixed pier structures consisting of slips ranging from 28' to 55' with ends that can accommodate larger vessels. Docks are identified as "Dock 1" through "Dock 5", west to east. The existing docks were uncovered, and it appeared the docks were generally concrete pier construction.

The existing St. Petersburg Sailing Club facility was not part of this project scope. Dock 5 at the South Basin was not part of this project scope.

Electrical and Communications

Existing electrical systems originated on the landside at the bulkheads and feed generally down each existing pier. There were four (4) Duke Energy 75 kVA pad-mount transformers feeding electrical services to the docks. Multiple landside electrical services located on the landside, fed different sections of the existing piers. Electrical services appeared to range from small to large and voltages 208/120 V. Electrical feeders were routed in PVC conduits mounted below pier structures or attached to the side of bulkhead walls. Most appeared to be in satisfactory condition, but some appeared to be missing supports/attachments.

Generally, each slip was fed from a marina style pedestal of sufficient capacities and voltages for the slips served. It appeared that one (1) pedestal typically served two (2) slips. From the pedestals observed, electrical, and water connections appeared to be on the pedestals. Two (2) electrical meters were generally observed on each pedestal indicating one (1) electrical meter per slip.

Pedestals appeared to be in satisfactory condition but considering their harsh, saltwater environment and of unknown age, are not recommended to be reused and the Electrical cost estimate includes new pedestals for all slips.

Conduits under piers were not labeled or identified so precise determinations could not be made, however, it seemed to be consistent with other piers that communications cabling would be run in PVC conduits. Conduits and piping under piers and attached to structures were often co-mingled and with other services such as water and sanitary piping.

Domestic Water

Domestic water appeared to be a mix of plastic pipe; (PVC, CPVC) that has been repaired over the years. It was in varying conditions based on age of repairs.

Conduits and piping under piers and attached to structures were often co-mingled and with other services such as water and sanitary piping. Some hangars were loose or missing on occasion with sagging pipe.

Sanitary

N/A; No sanitary systems exist; area served by mobile pumps.

Fuel System

N/A; No fuel systems exist.

Fire Protection

The area is served through a manual dry standpipe system with fire department connections near the pier entrances and respective site fire hydrants. Hose valves are placed out on the piers at intervals for coverage. The system appears to be mainly galvanized pipe with mechanical couplings. The piping was not heavily corroded but looked aged.

Table 15: Key Observations

MEP Observation	Discussion	Photograph(s)
1	Central Basin – Electrical System	
2	Central Basin – Communications	
3	Central Basin – Domestic Water	Appendix D Photographs 34 - 35
4	Central Basin – Sanitary	Appendix D Photograph 36
5	Central Basin – Fuel System	Appendix D Photographs 37 - 38
6	Central Basin – Fire Protection	Appendix D Photograph 39
7	South Basin – Electrical System	Appendix D Photographs 40 - 42
8	South Basin – Communications	
9	South Basin – Domestic Water	Appendix D Photograph 43
10	South Basin – Sanitary	
11	South Basin – Fuel System	
12	South Basin – Fire Protection	

Conceptual Design Considerations – MEP

HEG performed a review of the provided Conceptual Design documents prior to performing the site investigation. The following tables identify key observations that impact design elements from the reference documents. A detailed discussion was developed based on observations in regard to the overall impact on the proposed marina project. Similar to the observed conditions section, the conceptual design considerations are broken down into Central Basin and South Basin.

Table 16: MEP Considerations – Observation 1

Re-Design Concept Design Element
Central Basin – Electrical System
MEP Discussion
HEG understands that all existing fixed docks (with the exception of the West Quay wall docks) in the Central Basin will be completely demolished including their electrical, communications, water, and sanitary system piping on the docks. Therefore, it is recommended and assumed for this pricing purpose that all equipment will be removed and not reused, and all new systems will be of new modern equipment following current, industry standards and design approaches. Floating docks will replace existing docks as shown on the Safe Harbor drawings and confirmed by the City.

As such, existing electrical services will remain to serve existing 208/120 V landside loads. New electrical services at 480 V, 3-Phase will feed the new slips through a combination of panelboards and unit substations. Slip electrical load calculations will be as required by the National Electrical Code (2017). It is assumed the existing Duke Energy (utility providing electrical power) pad-mount transformer locations can be maintained and reused but all will be increased in size and changed to 480 V, 3-Phase secondaries. 480 V feeders will minimize conductor sizes and voltage drops and will efficiently provide power to the new Central Basin floating docks.

Electrical distribution panelboards were conceptually determined to optimally feed the floating docks of various lengths and configurations. Electrical feeders are planned at 480 V and 240/120 V electrical branch circuits will generally feed slips that are reasonably close to unit substations. 480 V, 3-phase feeders will be routed to strategic locations along docks where it will then use dock mounted transformers/panelboards (unit substations) to distribute 240/120 V to each of the slips as needed. At the end of each dock, 480 V pedestals will be stationed to power larger watercrafts. Please refer to sketch SKE-SB for a conceptual layout.

For electrical power, floating docks are anticipated to use G-cables: flexible, harsh condition rated multi-conductor cables often used in floating dock marina applications. Traditional conductors and conduits will be used on the landside to a demarcation pull box adjacent to the bulkhead. At this pull box, splicing will occur to convert the G-cables. G-cables will be sized as required by the criteria documents and electrical homeruns will be from the electrical panelboard to each pedestal – no daisy chaining of circuits was part of the cost estimating exercise. No PVC conduit is anticipated for the floating docks. (PVC conduit is anticipated for new landside underground installations and if future bulkhead routing is needed. However, where this occurs, conductors shall be as allowed by the AHJ, G-cables are prohibited in conduits.) Ground-fault protection of feeders is planned and will be as required by the NEC.

G-cables, along with all utilities on the floating docks, will be routed through either integral sleeves and pull boxes within the floating docks or a central trench with trench covers within the floating docks. Segregation between utilities will be followed.

Electrical load calculations of NEC allowed diversity factors was taken into consideration.

Each electrical feeder and pedestal will have NEC required ground conductors.

Eaton marina style pedestals (“Marina Lighthouse” or “Admiral” series) and switchgear are the basis-of-design. Voltages and receptacle amperage ratings are from the criteria documents and follow-up client clarifications. Priced was a typical, marina grade, harsh environment pedestal that offers flexibility for the user and operational and maintenance simplicities. Please refer to the attached cut-sheets for a typical pedestal. To match the existing conditions, a utility grade electrical meter per slip is planned so the electrical usage per vessel can be tracked and billed by the City.

Table 17: MEP Considerations – Observation 2

Re-Design Concept Design Element
Central Basin - Communications
MEP Discussion
Environmentally rated Cat 6 is planned to each pedestal, one (1) cable per slip. Pedestals will have Cat 6 jacks integral for user connections. Cables will be routed in the floating docks. Cat 6 cabling will be distributed on the floating docks similar to electrical and will terminate at the service provider equipment on the landside.
Wifi is not part of the HEG scope.

Table 18: MEP Considerations – Observation 3

Re-Design Concept Design Element
Central Basin – Domestic Water
MEP Discussion
It is estimated to require roughly 5,500 LF of 3" UV resistant HPDE DR9 domestic water piping to serve new Central Basin floating docks. Piping is assumed to be installed inside utility corridor of floating docks then distributed up to pedestal mounted hose bibs. Pipes shall connect through gangways with flexible connections to allow articulation from tidal flow.

Table 19: MEP Considerations – Observation 4

Re-Design Concept Design Element
Central Basin - Sanitary
MEP Discussion
It is our understanding that the existing sanitary pump is existing to remain.
If pump station is relocated to fuel dock per Moffitt & Nichol Memo; it is assumed to require 140 LF of 4" UV resistant HDPE DR9 pipe installed under existing fuel dock with SS hangers. This does not include the division 26.

Table 20: MEP Considerations – Observation 5

Re-Design Concept Design Element
Central Basin - Fuel System
MEP Discussion
It is our understating that the fuel system will be existing to remain.

Table 21: MEP Considerations – Observation 6

Re-Design Concept Design Element
Central Basin – Fire Protection
MEP Discussion
Fire protection system will be new Class 1 manual dry type. It is assumed that standpipe system will run inside the utility corridor of new floating docks. The standpipe will then run from fire department connection 5" STORZ near respective dock entrance to serve dock mounted dual 2.5" hose valves. Hose valves shall be set at 150 LF intervals along docks. It is estimated to require 5,000 LF of UV resistant 6" HDPE DR 11, 30 Hose valves with (2) valves each.

Table 22: MEP Considerations – Observation 7

Re-Design Concept Design Element
South Basin – Electrical System
MEP Discussion
<p>HEG understands the existing fixed docks in the South Basin will be structurally refurbished and their electrical, communications, water, and sanitary system piping and systems will be replaced. Therefore, it is recommended and assumed for this pricing purpose that all equipment will be removed and not reused, and all new systems will be of new modern equipment following current, industry standards and design approaches.</p> <p>As such, existing electrical services will be replaced with new to accommodate the higher anticipated electrical loads by the slips required by the National Electrical Code (2017) and to provide 480 V power for the new electrical distribution design. It is assumed that most of the Duke Energy (utility providing electrical power) pad-mount transformer locations can be maintained and reused but increased in size (i.e., larger utility pad-mount transformers) to efficiently provide power to the refurbished docks.</p> <p>Electrical distribution panelboards and unit substations were conceptually determined to optimally feed the docks of various lengths and configurations. 240/120 V electrical distribution circuits will be routed to the slips whereas 480 V, 3-phase distribution will be used to strategic locations along docks where it will then use dock mounted transformers/panelboards (unit substations) to distribute 240/120 V to each of the slips as needed.</p> <p>Docks will again use PVC conduits (schedule 80 is assumed for additional strength over Schedule 40) and will consist of XHHW/XHHW-2 conductors, both in electrical runs from the landside to slip pedestals as well as to and from the electrical distribution design mentioned above. The conductors will be sized as required by the criteria documents where electrical homeruns will be from an electrical panelboard to each pedestal – no daisy chaining of circuits was part of the cost estimating exercise. Ground-fault protection of feeders is planned and will be as required by the NEC.</p> <p>Electrical load calculations of NEC allowed diversity factors was taken into consideration.</p> <p>Each electrical feeder and pedestal will have NEC required ground conductors.</p>

Eaton marina “Admiral” and “Lighthouse” style pedestals and switchgear are the basis of design. Voltages and receptacle amperage ratings are from the criteria documents and follow-up client clarifications. This is a typical, marina grade, harsh environment pedestal that offers flexibility for the user and operational and maintenance simplicities. Please refer to the attached for cut sheets for a typical pedestal. As existing, a utility grade electrical meter per slip is planned so the electrical usage per vessel can be tracked and billed.

Table 23: MEP Considerations – Observation 8

Re-Design Concept Design Element
South Basin - Communications
MEP Discussion
Environmentally rated Cat 6 is planned to each pedestal, one (1) cable per slip. Pedestals will have Cat 6 jacks integral for user connections. Cables will be routed in Schedule 80 PVC conduits. Cat 6 cabling will be distributed on the docks similar to electrical and will terminate at the service provider equipment on the landside.
Wifi is not part of the HEG scope.

Table 24: MEP Considerations – Observation 9

Re-Design Concept Design Element
South Basin – Domestic Water
MEP Discussion
Due to age and harsh marine exposure, it is recommended to replace with new. It is unlikely that installing contractor will warranty overall domestic water system when repairing an aged system as needed.
It is estimated to require roughly 2,000 LF of 2” UV resistant HPDE DR9 domestic water piping to serve new south basin floating docks. Piping is assumed to be installed under refurbished docks then up to pedestal mounted hose bibs.

Table 25: MEP Considerations – Observation 10

Re-Design Concept Design Element
South Basin – Sanitary
MEP Discussion
It is our understanding that no new sanitary will be added to this area.

Table 26: MEP Considerations – Observation 11

Re-Design Concept Design Element
South Basin – Fuel System
MEP Discussion
It is our understanding that no new fuel systems will be added to this area.

Table 27: MEP Considerations – Observation 12

Re-Design Concept Design Element
South Basin – Fire Protection
MEP Discussion
<p>Due to age and harsh marine exposure, it is recommended to replace with new. It is unlikely that installing contractor will warranty overall fire protection system when repairing an aged system as needed. Recommended to have system hydrostatically tested as well as tested with water flow if left and repaired.</p> <p>Fire protection system will be new Class 1 manual dry type. It is assumed that standpipe system will run underneath refurbished dock. The standpipe will then run from fire department connection, 5" STORZ near respective dock entrance to serve dock mounted dual 2.5" hose valves. Hose valves shall be set at 150 LF intervals along docks. It is estimated to require roughly 2,000 LF of UV resistant 6" HDPE DR 11, 13 Hose valves with (2) valves each.</p>

Next Steps

McLaren has provided this letter report as a concise summary of the field efforts provided in support of the Engineers Estimate, Schedule, and Memo development. As such, the content of this report, and the report itself, will be included with the pending Engineers Estimate Memo. Following submission of the Engineer's Estimate Memo, McLaren and the Design Team will participate in a meeting with the Client to discuss the elements presented in this letter.

Respectfully submitted by,

The Office of
McLaren Technical Service, Inc.

David A Jones, P.E.

Attachments:

- Appendix A – Marine Photographs
- Appendix B – Structural Photographs
- Appendix C – Civil Photographs
- Appendix D – MEP Photographs

APPENDIX A

PHOTOGRAPHS - MARINE



Photograph 1 – Overall view of South Basin Pier 1. Note that the main pier slopes down from the bulkhead.



Photograph 2 – Typical South Basin finger pier deck slab.



Photograph 3 – Typical open spalling with exposed prestressing strands on the underside of a South Basin finger pier deck slab.



Photograph 4 – Overall view of steel sheet pile bulkhead from the walkway.



Photograph 5 – Typical condition of steel sheet pile bulkhead with widespread corrosion blistering and delamination at the knuckles.



Photograph 6 –Deflection of walkway slab along South Basin seawall.



Photograph 7 –Sinkhole below walkway along eastern perimeter of Demens Landing.



Photograph 8 – View of substructure in South Basin. Marine growth visible on piles and some cracking and deterioration visible on pile cap.

APPENDIX B

PHOTOGRAPHS – STRUCTURES



Photograph 9 – South Elevation of South Basin Comfort Center, View of Two-Story Timber Deck and Stairs.



Photograph 10 – West Elevation of South Basin Comfort Center, View of Existing Roof to be Replaced.



Photograph 11 – Partial South Elevation of South Basin Comfort Center, View of Existing Roof to be Replaced.



Photograph 12 – South Basin Comfort Center, View of Warped Timber Guardrails and Girder.



Photograph 13 – South Basin Comfort Center, View of Warped Timber Guardrails.



Photograph 14 – North Elevation of Central Basin Comfort Center Laundry Building.



Photograph 15 - Central Basin Comfort Center Laundry Building, View of Existing Finishes and Equipment.



Photograph 16 – North Elevation of Central Basin Comfort Center Restroom Building.



Photograph 17 – South Elevation of Central Basin Comfort Center Restroom Building.



Photograph 18 – Central Basin Comfort Center Restroom Building, View of Existing Finishes and Countertops/Sinks.



Photograph 19 – Central Basin Comfort Center Restroom Building, View of Existing Finishes, Fixtures, and HVAC Split Unit.



Photograph 20 – Central Basin Comfort Center Restroom Building, View of Existing Finishes and Wall-Mounted Space Heater.



Photograph 21 – South Elevation of Marina Office and Ship Store.



Photograph 22 – South and East Elevation of Marina Office and Ship Store.



Photograph 23 – North Elevation of Marina Office and Ship Store.



Photograph 24 – West Elevation of Marina Office and Ship Store.



Photograph 25 – East Elevation of Marina Office and Ship Store, View of Damaged Metal Flashing just above Open-Air Carport.



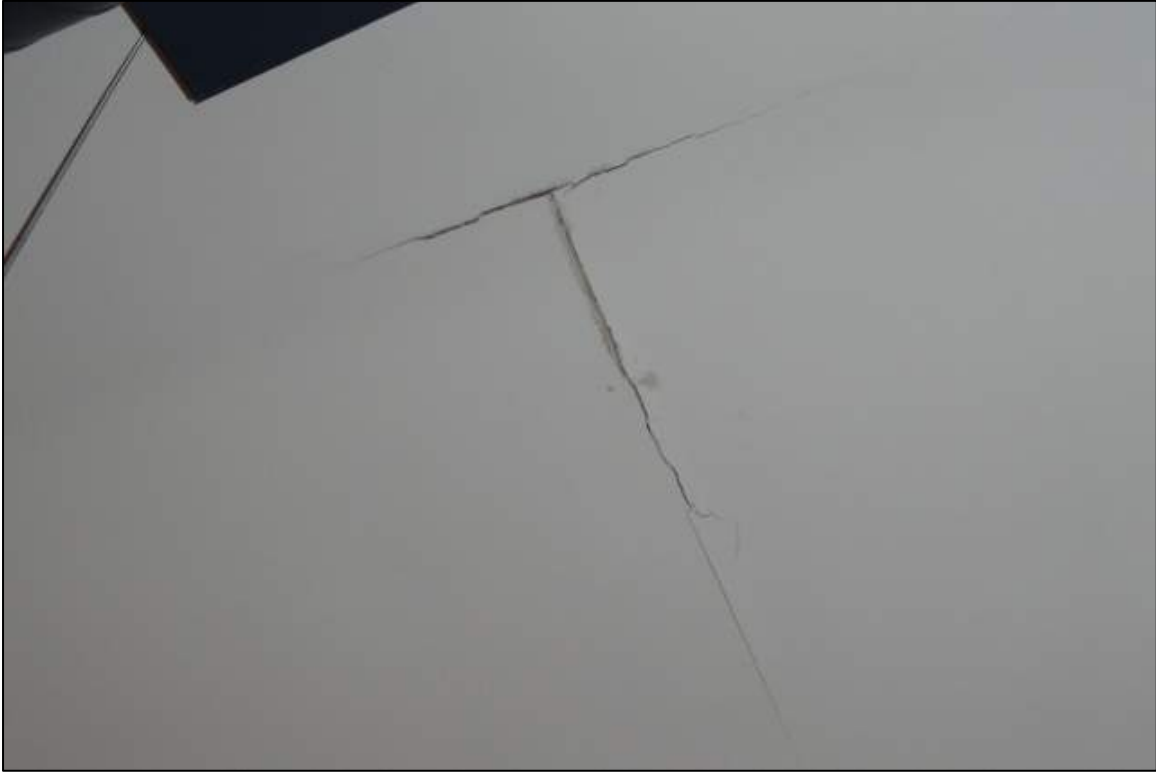
Photograph 26 – Marina Office and Ship Store, View of Damaged Electrical Junction Box at the Ceiling of the Open-Air Carport Ceiling.



Photograph 27 – Marina Office and Ship Store, View of Ship Store Interior.



Photograph 28 – Marina Office and Ship Store, View of Damage to Local Area of Gypsum Board Ceiling due to Roof Leak.



Photograph 29 – Marina Office and Ship Store, Close-up View of Damage to Local Area of Gypsum Board Ceiling due to Roof Leak.

APPENDIX C

PHOTOGRAPHS - CIVIL



Photograph 30 – View of North Side of Demens Landing Parking Lot where pavement is in good condition.



Photograph 31– View of South Side of Demens Landing where sidewalk is collapsing in.



Photograph 32 – View of grate inlet, identified by red arrow, that is potentially modifiable to retain stormwater runoff for treatment.



Photograph 33 – View of potential stormwater management system not identified on the City Utilities Atlases.

APPENDIX D

PHOTOGRAPHS – MEP



Photograph 34 – View of sagging utility (domestic water) lines at Central Basin.



Photograph 35 – Existing comingled utility piping under piers at Central Basin.



Photograph 36 – View of existing sanitary pump in Central Basin.



Photograph 37 – Existing fiberglass fuel piping below fuel dock in Central Basin.



Photograph 38 – Existing clamshell sealed fitting fuel lines in Central Basin.



Photograph 39 – View of Existing galvanized standpipe at Central Basin.



Photograph 40 – View of typical Duke Energy transformer and 208/120 V switchgear in the South Basin.



Photograph 41 – View of 208/120 V switchgear that will need to be re-fed in the South Basin.



Photograph 42 – View of typical dock with pedestals in the South Basin.



Photograph 43 – View of existing comingled utility piping under the piers in the South Basin.

Attachment E

References

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