

CONCEPT DESIGN DESCRIPTION

Segment 1

The concept for the construction of the resiliency component between the Rayonier property and the southern terminus of the existing Parking Lots C & D bulkhead and riverwalk project recently completed. Segment 1 will consist of the installation of a low-level earthen berm along the western side of the existing frontage road. The berm will connect to the existing earthen dike system at Rayonier on the southern-most end and at the end of the new constructed wall at Parking Lot D.

The new resiliency berm will consist of an approximately 3 ft high by approximately 78 linear feet dike that will be constructed between the edge of marsh and the west side of the road.

Segment 2

From the end of the recently constructed resiliency wall system at parking lots C & D across the existing three lane boat ramp, the resiliency component will consist of a sheet pile bulkhead system installed at the top of the travel lane ramp with a concrete cap that will be flush with the existing ramp elevation. On each side of the ramp travel lanes the top of the concrete cap will be set at elevation 9.0 NAVD88 and removable hydro-defense plank systems will be installed with removable intermediate mullions to accommodate the travel lane length.

Segment 3

From the existing Boat Ramp to the north side of the existing Brett's Café structure, the resiliency component will consist of a new bulkhead system comprised of a steel sheet pile/steel pipe pile combi-wall with a concrete cap. The new combi-wall bulkhead system will be installed immediately outboard of the existing concrete bulkhead. The new concrete cap top elevation will be 9.0 NAVD88. To accomplish this installation, the existing timber boardwalk structure will need to be removed in its entirety. Upon completion of the new bulkhead construction a new 12 ft wide timber boardwalk will be constructed riverward of the new bulkhead. The combination of the new bulkhead and timber boardwalk will result in a net extension riverward of 2 feet. At intermediate intervals in the cap, openings will be designed to accommodate pedestrian access to the boardwalk and constructed for removable hydro-defense planking. The bulkhead design is to assume the existing building structure will be removed in its entirety.

Segment 4

From the north side of the Brett's Café structure, the resiliency component will consist of a new sheet pile bulkhead system installed landside of the existing steel sheet pile bulkhead. Due to the existing wall's anchorage system being constructed as steel batter piles on the riverside face of the wall, it creates obstructions with installation of sheet piling installation outboard of the existing bulkhead. (The presence of any additional existing tiebacks landside of the existing wall is unknown.) This circumstance results in a more favorable construction from a cost and

installation standpoint in that the existing timber boardwalk will not be required to be removed and re-constructed and the new sheet piling system will not need to be as large a sheet section since it will be installed in the ground landside of the existing. Additionally, this method should result in less interference with the marina's fuel and electrical service in the area during the construction, however, penetrations through the proposed bulkhead will be needed to accommodate the existing utility and fuel lines for the marina. At intermediate intervals in the cap, openings will be designed to accommodate pedestrian access to the boardwalk and constructed for removable hydro-defense planking. At the northern end of the new sheet pile bulkhead, a sheet pile connection interlock will be left exposed for potential future tie-in with a bulkhead system by the adjacent private property owner.

This will, however, involve temporarily excavation of the area landside of the existing boardwalk for the new installation.

Segment 5

At the City's 101 N Front Street property near the future Alachua Street railroad crossing, the resiliency component will consist of a new steel sheet pile bulkhead system with a concrete cap at elevation 9.0 NAVD88. The location of the new bulkhead will be located in close proximity to the existing escarpment line of the upland property and will require an anchorage system utilizing a helical screw anchor system. Although the adjacent private property owners intend to construct bulkheads on each side of the City's property at some future time, the City's design will need to consider bulkhead corners and terminations along the property lines to existing ground/

Fill will be placed between the existing escarpment line and the new bulkhead to facilitate the sufficient anchorage capacity for the bulkhead's structural capacity.

CONCEPT DESIGN CRITERIA

Site Data:

MHW: 2.40 NAVD88

MLW: (-)3.60 NAVD88

Estimated Storm Surge: 9.0 NAVD88 (Proposed top of seawall)

Existing Ground Elevations:

Segment No. 1: approximate Elev. 5.0

Segment No. 2 approximate Elev. 6.5

Segment No. 3 approximate Elev. 7.0

Segment No. 4 approximate Elev. 7.0

Segment No. 5 approximate Elev. 5.5

Materials:

New Bulkhead: Steel Sheet Pile "Z" systems (may be combi-wall system) shaped coated with coal tar epoxy, Grade 50 ksi. Steel Pipe Piling to be Grade A252 or higher

Concrete: 4,000 psi standard weight concrete

Timber: Pressure treated for marine exposure per AWPA

Misc. Hardware: Hot Dipped Galvanized or Stainless-Steel Grade 304

A Geotechnical Investigation of the subsurface soils will be performed at each Segment location to determine embedment lengths and capacities for the proposed bulkhead system.

Topographic/hydrographic survey will also be performed for use in the design of each Segment.

Permitting:

The installation of the new resiliency bulkheads at Segments No.'s 2-5 will require a U.S. Army Corps of Engineers permit and a Florida Department of Environmental Protection permit as well as City of Fernandina permit.

Review of the proposed upland site plan may be required as part of any permit process for the new bulkheads to specifically address storm-water runoff and treatment, and upland uses as it relates to the marine related activities.

Permit applications will require hydrographic surveys of the site to identify river depths and widths

Biological, Endangered Species, and Archaeological Assessments and surveys of the site may be required

Best Management Practices for the construction of the bulkhead work will be utilized.

Construction Schedule:

Based on the complexity of the resiliency work it is likely that the permit process could take between 6 and 9 months for approval. If performed individually, completion of the Final Design for each Segment is anticipated as:

Segment No. 1: 6-8 months from commencement

Segment No. 2: 4-5 months from commencement

Segment No. 3: 7-10 months from commencement

Segment No. 4: 6-9 months from commencement

Segment No. 5: 3-4 months from commencement

It is the intent that the Resiliency design segments are performed as one design activity, however, based on budget availability, the construction plans should be developed to allow for separate construction projects.

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Fernandina
Beach City Hall

Community
Yoga + Wellness

Ar
Muse
Jail

SEGMENT 1

Google Earth

Imagery date: 1/26/...

100 m

Camera: 1,010 m 30°40'05"N 81°27'...

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SEGMENT 5

FAMILY FRIENDLY
SUNSET TOUR

Nassau
Library

SEGMENT 4

Amelia Island
Convention and...

SEGMENT 3

QUARTZ TRAMP

Fernandina
Beach City Hall

Google Earth

Imagery date: 1/26/...

90 m

Camera: 735 m 30°40'17"N 81°27'



CITY OF FERNANDINA BEACH
ENGINEERING DEPARTMENT

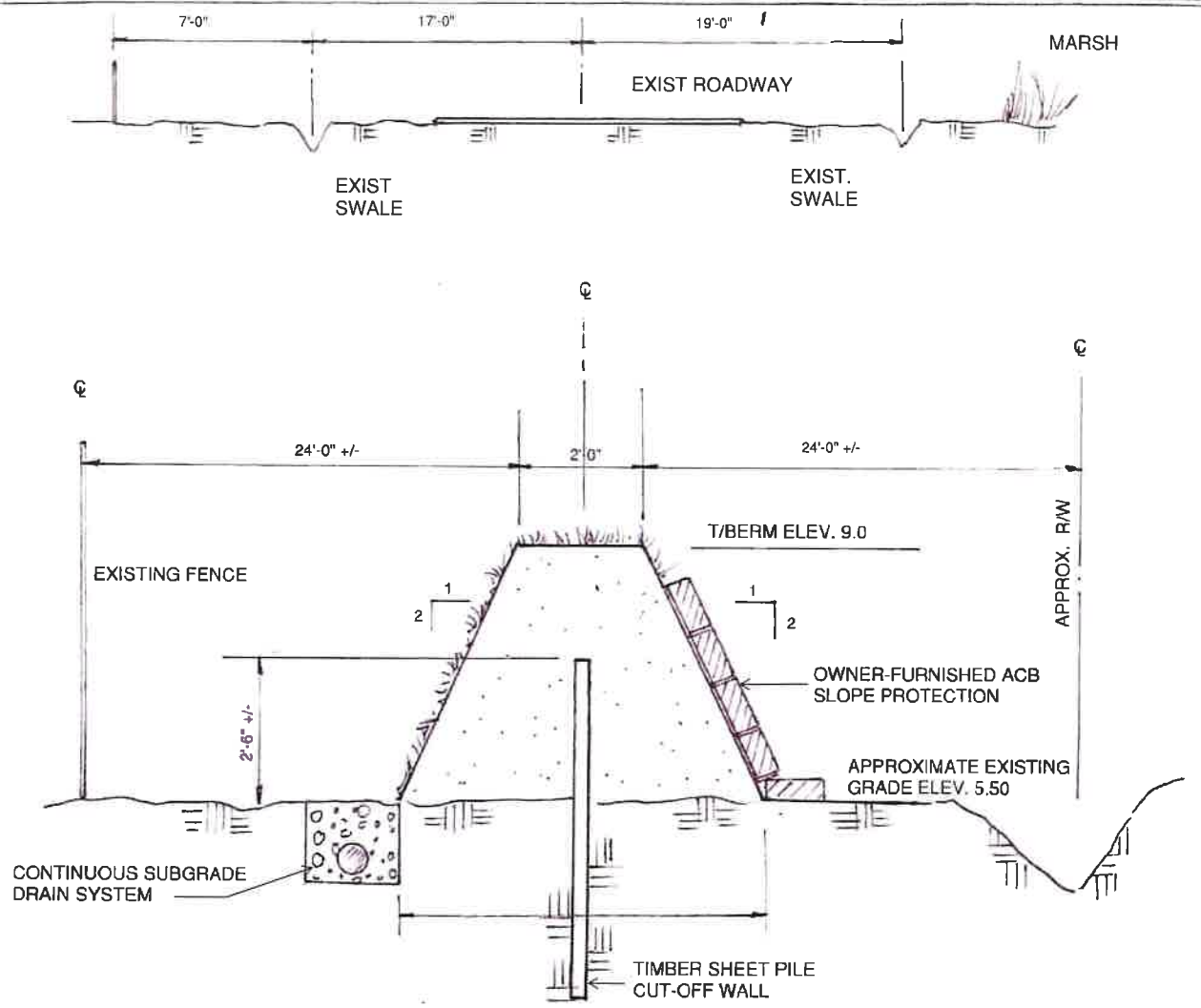


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SEGMENT NO. 1

CITY OF FERNANDINA BEACH
ENGINEERING DEPARTMENT

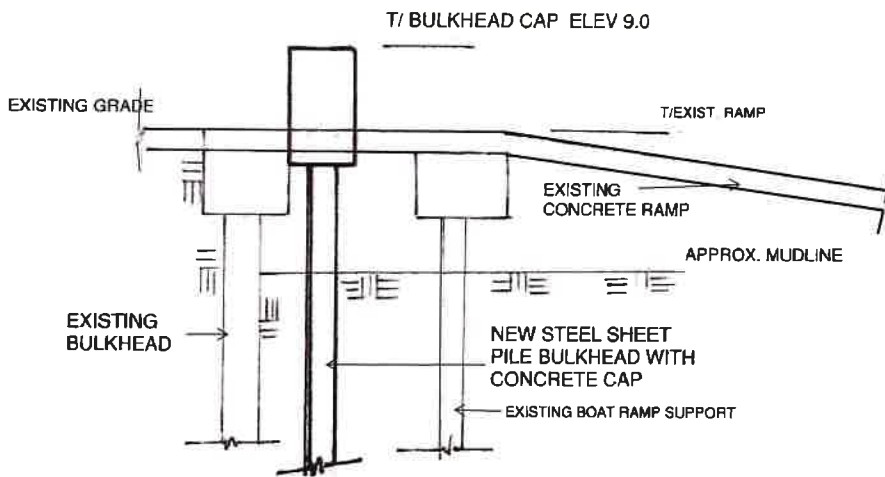
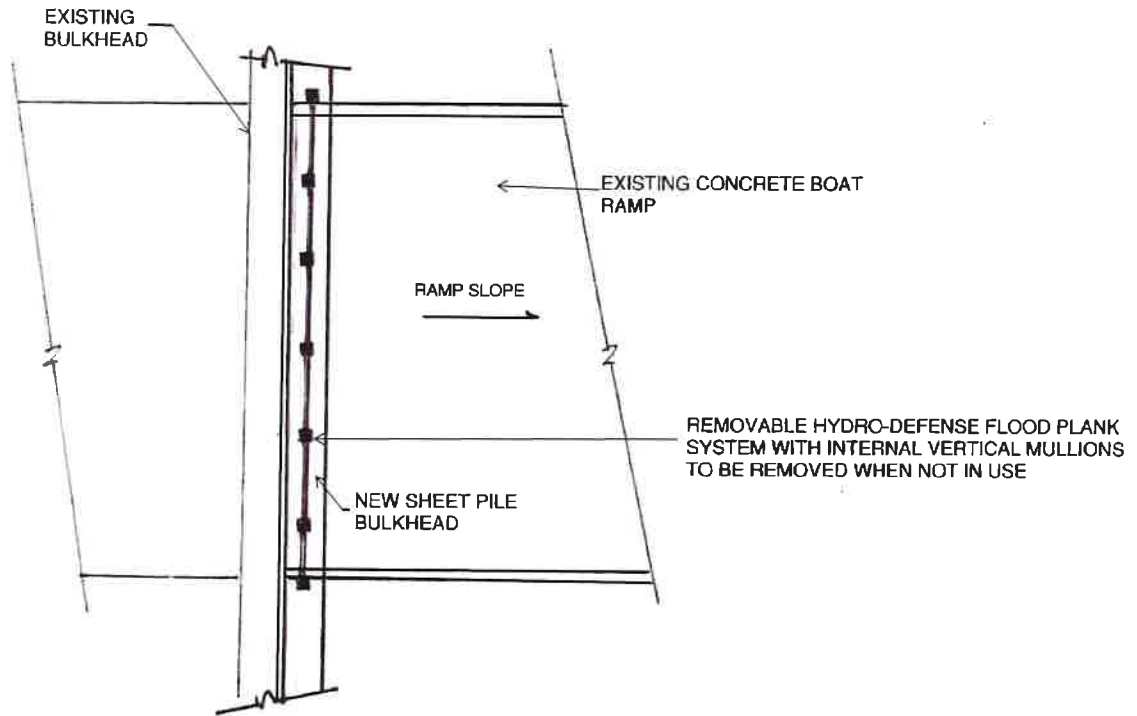


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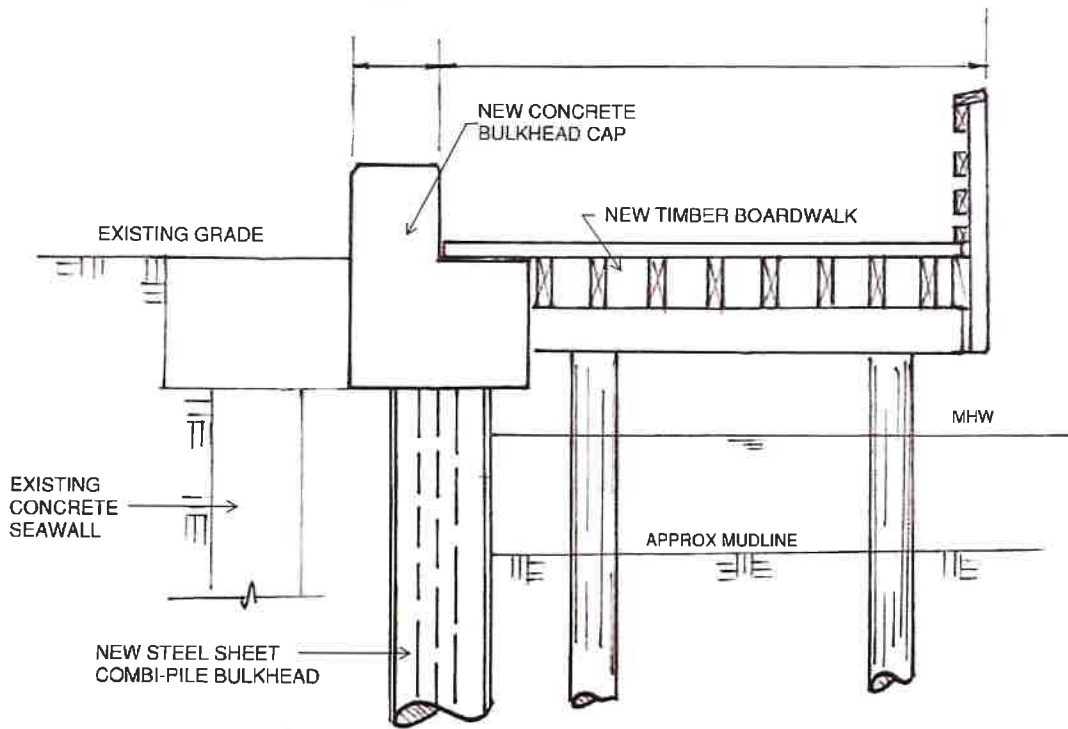
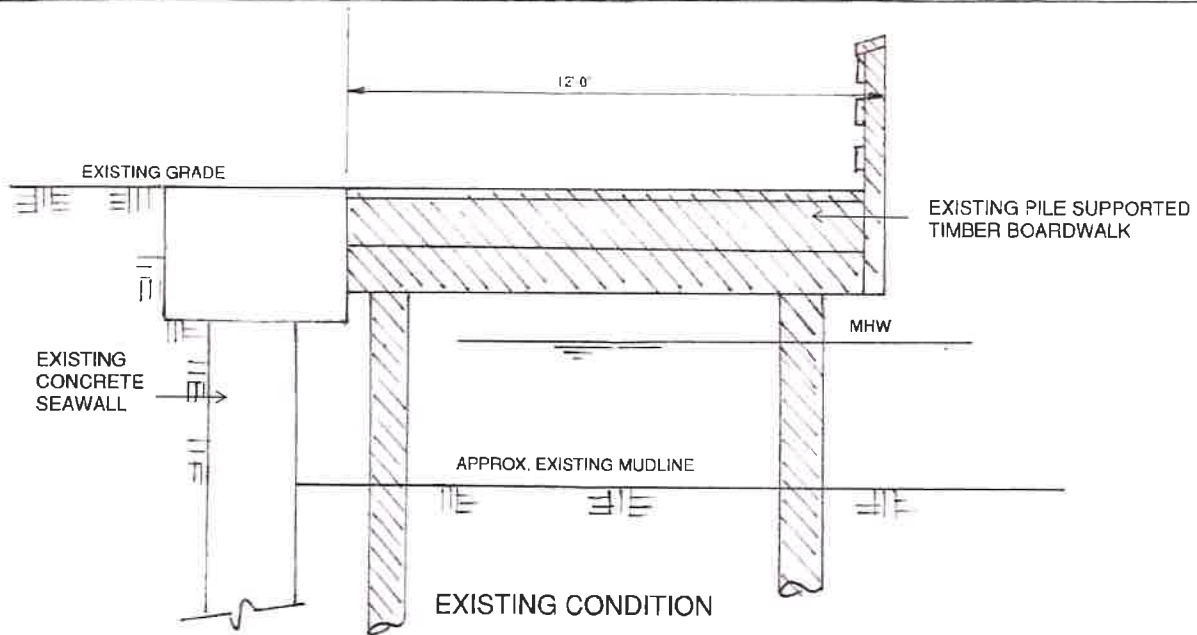


SEGMENT 2

CITY OF FERNANDINA BEACH
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SEGMENT 3

CITY OF FERNANDINA BEACH
ENGINEERING DEPARTMENT

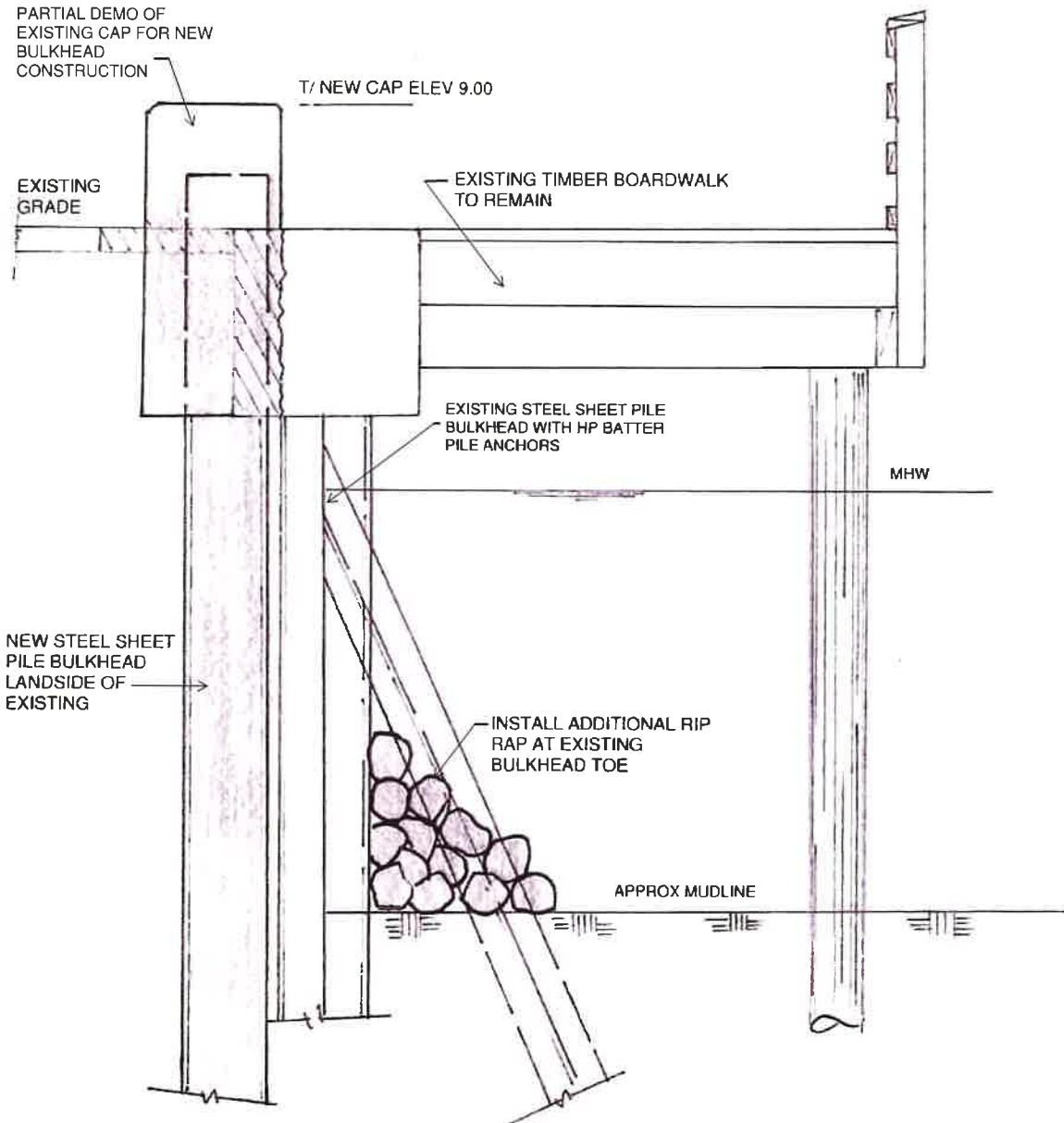


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SEGMENT 4

CITY OF FERNANDINA BEACH
ENGINEERING DEPARTMENT

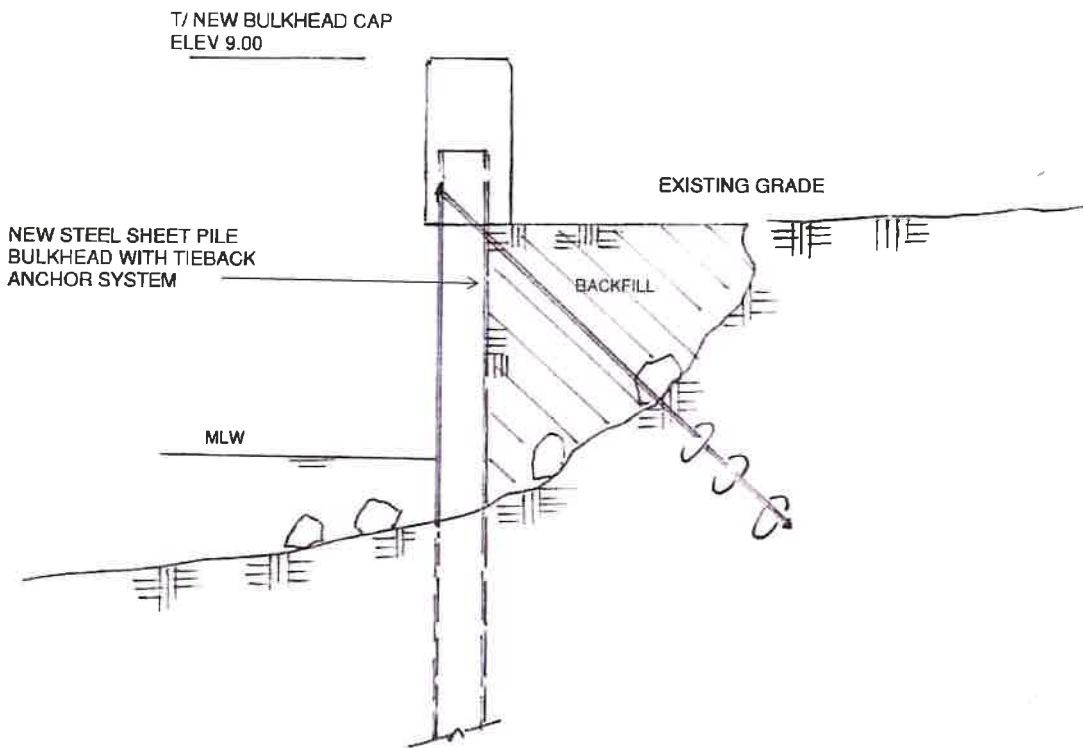


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SEGMENT 5