

DOWNTOWN TAMPA RIVERWALK

STATE PROJECT No.: 10007-1510

WPI No. 7123604

FEDERAL PROJECT No.: SE-8888(122)

PD&E STUDY TECHNICAL REPORT

FINAL

**DOWNTOWN TAMPA RIVERWALK
HILLSBOROUGH COUNTY, FLORIDA
PROJECT DEVELOPMENT & ENVIRONMENTAL STUDY**

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FINAL TECHNICAL REPORT

OCTOBER 5, 1995

SUBMITTED FOR:

FLORIDA DEPARTMENT OF TRANSPORTATION

DISTRICT SEVEN

**DOWNTOWN TAMPA RIVERWALK TECHNICAL REPORT
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1.0 ABSTRACT

1.1 Executive Summary

This report summarizes the activities that have been conducted throughout this PD&E study and highlights the essential elements associated with this project's technical aspects.

The factors related to the data collection and assessment phase are described within Section Two, where the existing physical features that influence this project are identified and addressed.

The key design criteria and elements that controlled the Riverwalk's alignment and composition are described within Section Three. A discussion of the various alternatives considered during this study are also included in that Section along with a description of the preferred alternative. The primary features of preferred alternative are also specified, in conjunction with its evaluation. That Section is concluded with a summary discussion and an itemization of recommendations.

This project complies with the requirements of the Department's and FHWA's metric conversion plan, whereas the documents and reports prepared during the PD&E Phase are produced with metric units. Moreover, in this report and its related exhibits the english equivalent values are also provided in parenthesis, which were obtained through a soft conversion process.

Referenced Exhibits are in Appendix A

1.2 Background Of The Project

Tampa's Central Business District (CDB) is framed by the Hillsborough River on the west and the Garrison Channel on the south. Several major waterfront developments currently exist along this corridor, with others proposed. Once completed, this extensive development along the water's edge will tend to isolate the public's access to one of the regions' primary attractions, namely the waterways.

For several years the City of Tampa has planned for a project that would circumvent that scenario and create an opportunity for the public's use and enjoyment of the special amenities offered by the area's waterfront. The proposed Downtown Riverwalk will fulfill that goal by providing an independent pedestrian corridor that parallels the shoreline of the CBD.

The primary objective of the proposed Riverwalk will be to provide a continuous pedestrian linkage all along the natural waterfront boundary of Tampa's Central Business District. In addition to providing public access to the waterfront, this project will also enhance pedestrian traffic and safety in the region. Throughout the project's entire length, pedestrians will be able to traverse along the water's edge without any conflicts with vehicular traffic.

1.3 Description of the Proposed Action

The project's location and extent are illustrated through Exhibits 1 & 2. Its general location with respect to the City of Tampa is shown in the Vicinity Map (Exhibit 1); while the Location Map (Exhibit 2) focusses on the downtown region and delineates the project limits and its general alignment.

The overall project begins at the western edge of the Beneficial Drive bridge and proceeds westerly along the Garrison Channel to the Tampa Convention Center. From there it bears northerly along the eastern shore of the Hillsborough River to the point where it ties to the recently completed Curtis Hixon Park and terminates near the Tampa Museum. The project is subdivided into three (3) individual segments, designated from south to north as:

<u>Segment</u>	<u>Description Of Segment Limits</u>
One	From west of the Beneficial Drive Bridge to the Tampa Convention Center
Two	From the Tampa Convention Center to Washington Street
Three	From Washington Street to north of the Nations Bank Plaza

Due to the nature and extent of the current and proposed development along the Central Business District's waterfront, the general alignment of the proposed Riverwalk will need to parallel the existing bulkhead, both horizontally and vertically, as much as practicable. Consequently, the Riverwalk in essence will be a linear pedestrian bridge over the water for the majority of its length.

2.0 EXISTING PHYSICAL CHARACTERISTICS

2.1 Existing Adjacent Characteristics

A review of Exhibits 1 & 2 reveals that the proposed Riverwalk will be extensively related to the region's network of existing facilities and features. The combination of those elements assist with the identification of the Riverwalk's location and orientation. The following discussions are based on the available information that was assembled for this PD&E Study, and their relative elements are illustrated on Exhibit 3.

2.1.1 Adjacent Development & Property Lines

The eastern shore of the Hillsborough River exhibits the extent of the currently developed land along the proposed Riverwalk alignment. From the northern end of the project through Washington Street existing buildings include the Tampa Museum, Nations Bank Building and Plaza, Riverside Office Plaza, and the Riverside Hotel. Other existing buildings along the river include the Swire Office along the southern side of Whiting Street, and the City of Tampa Krause Street Sanitary Sewer Pump Station House south of the Crosstown Expressway.

The remainder of the adjacent parcels between these facilities are currently vacant properties that are primarily utilized for at grade parking. The property along the Garrison Channel between the Convention Center and Beneficial Drive is also currently vacant. All of these vacant parcels, with the exception of the Crosstown Expressway's Right-Of-Way, are privately owned.

The City of Tampa provided survey data that located these adjacent property lines with respect to the Baseline of Survey that was established for this project. That baseline and those property lines are shown on the Riverwalk Conceptual Drawings that are included in Appendix C of this report.

2.1.2 Topographic Features

The Hillsborough River and the adjacent property limits are defined by an existing concrete bulkhead (seawall) in the range from the northern end of the project to the Brorein Street bridge. A small seawall does exist along the property beneath the Crosstown Expressway, consisting of concrete block and broken concrete/stone; but it is intermittent and in very poor condition. Beyond that point, from the Krause Street Sanitary Sewer Pump Station to the Convention Center, a natural shoreline is present. The perimeter of the Convention Center along the waterfront is also defined by a concrete bulkhead through to the west side of the Franklin Street bridge. Along the Garrison Channel, between the Franklin Street and Beneficial Drive bridges, a combination of a bulkhead and wharf are present.

At the northern end of the project the existing bulkhead ranges in elevation from approximately 1.5 m (5.0 ft) in front of the Tampa Museum to 7.6 m (25.0 ft) at the Nations Bank Building. A lengthy inclined ramp, that serves as a pedestrian walkway along the plaza, exists behind that bulkhead. The bulkhead remains high on the south side of Kennedy Boulevard along the Riverside Hotel to Washington Street. Between Washington and Brorein Streets the seawall is uniform and lower at approximately elevation 1.5 m (5.0 ft). The Convention Center walkway near the Platt Street bridge is approximately at elevation 2.2 m (7.3 ft), and at elevation 1.2 m (4.0 ft) beneath the Franklin Street bridge.

2.1.3 Roadway Network

The downtown roadway system in the vicinity of the project plays an important role in the definition of the Riverwalk's alignment and its utilization. Ashley Street, located one block east of the riverfront, somewhat parallels the Hillsborough River between Kennedy Boulevard and Platt Street. Water (South Ashley) Street is similarly associated to the north of the project's Garrison Channel sector. Washington and Whiting Streets are perpendicular to Ashley Street and terminate at the river's bulkhead.

There are also six bridges that traverse over these waterways within the Riverwalk's limits.

These include Kennedy Boulevard, Brorein Street, Crosstown Expressway, and Platt Street over the Hillsborough River; as well as Franklin Street and Beneficial Drive over the Garrison Channel. The specific features of these bridges and their influence on the Riverwalk are discussed in other Sections of this report.

2.1.4 Bridges Over The Waterways

In order to eliminate pedestrian and vehicle conflicts, the proposed Riverwalk will traverse beneath five of the six bridges that cross the Hillsborough River and Garrison Channel. Consequently, their vertical and horizontal geometry, span arrangement, and orientation significantly influence the development of the Riverwalk's alignment and configuration. Table 2-1-4 provides a general summary of each of these structure's composition.

The three local bridges over the Hillsborough River (Kennedy Blvd., Brorein St. and Platt St.) each are movable (double leaf bascule) that carry four lanes of bi-directional traffic. The Crosstown Expressway bridges are both high level fixed structures. The Franklin St. and Beneficial Dr. bridges over the Garrison Channel are both low level fixed bridges that accommodate two traffic lanes each.

2.1.5 Pedestrian And Bicycle Facilities

Within Tampa's Central Business District and along the length of this project, pedestrian and bicycle facilities are associated with the local roadway network. All the local streets of this region typically have sidewalks on both sides. However, there are no designated bicycle lanes; consequently, the cyclists must share the roadways with other vehicular traffic.

This is also characteristic of all the local bridges over the Hillsborough River and the Garrison Channel, which intersect with the local roads adjacent to the project. Due to its limited access nature, the Crosstown Expressway is the exception.

With the exception of the Crosstown Expressway, these existing linkages will be the primary source for access to the proposed Riverwalk.

2.1.6 Lighting

Street lighting is present along the local roadway and bridge network adjacent to and within the project limits. This lighting exists to illuminate the roadways but it will not be sufficient for the Riverwalk's purposes. Therefore, it will be necessary to provide a separate system of illumination for the safety and security of the Riverwalk's participants.

TABLE 2-1-4

DOWNTOWN TAMPA RIVERWALK
INVENTORY OF EXISTING BRIDGES OVER THE WATERWAYS

BRIDGE NAME	KENNEDY BOULEVARD NUMBER	BROREIN STREET	CROSTOWN EXPRESSWAY		PLATT STREET	FRANKLIN STREET	BENEFICIAL DRIVE
			WESTBOUND	EASTBOUND			
STRUCTURE TYPE -- MAIN SPAN	MOVABLE BASCULE	MOVABLE BASCULE	FIXED STEEL GIRDER	FIXED STEEL GIRDER	MOVABLE BASCULE	FIXED	(PRIVATE) FIXED
STRUCTURE TYPE -- APPROACH SPAN	CONCRETE ARCH	PRESTRESSED CONCRETE	PRESTRESSED CONCRETE	PRESTRESSED CONCRETE	CONCRETE T-BEAM	PRESTRESSED CONCRETE	PRESTRESSED CONCRETE
YEAR BUILT	1913	1956	1975	1975	1926	1983	1983
YEAR RECONSTRUCTED	1995	N/A	1981	1981	N/A	N/A	N/A
NUMBER OF SPANS -- MAIN	1	1	5	1	1	---	---
NUMBER OF SPANS -- APPROACH	2	3	141	139	10	5	7
STRUCTURE LENGTH (OVERALL)	98.0m (321.5)	96.6m (31.7)	2926m (9600.0)	3013m (9884.0)	157.9m (518.0)	128.7m (422.3)	160.3m (526.0)
LENGTH OF MAXIMUM SPAN	28.9m (94.9)	39.6m (130.0)	57.0m (187.0)	49.1m (161.0)	31.4m (103.0)	28.5m (93.7)	229.3 (96.0)
SIDEWALK WIDTH -- LEFT	2.5m (8.1)	1.5m (5.0)	0.2m (0.8)	0.2m (0.8)	2.4m (8.0)	3.6m (11.8)	1.8m (6.0)
SIDEWALK WIDTH -- RIGHT	2.5m (8.1)	1.5m (5.0)	0.2m (0.8)	0.2m (0.8)	2.4m (8.0)	4.0m (13.0)	1.8m (6.0)
BRIDGE WIDTH CURB TO CURB	18.0m (59.0)	12.8m (42.0)	11.0m (36.0)	11.0m (36.0)	12.2m (40.0)	9.1m (30.0)	17.8m (58.0)
BRIDGE WIDTH OUT TO OUT	24.4m (80.0)	16.5m (54.0)	11.8m (38.8)	11.8m (38.8)	17.9m (58.7.0)	17.8m (58.3)	21.8m (71.7)
SKREW ANGLE	20-20-0 (L-ø)	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0	22-42-17 (L-ø)
NAVIGATION VERTICAL CLEARANCE (@ MHW)	4.4m (14.6)	4.3m (14.0)	12.2m (40.0)	12.2m (40.0)	4.3m (14.0)	3.0m (10.0)	3.0m (10.0)
NAVIGATION HORIZONTAL CLEARANCE	23.7m (77.7)	24.4m (80.0)	15.2m (50.0)	15.2m (50.0)	22.3m (73.0)	27.4m (90.0)	27.4m (90.0)
HISTORICAL SIGNIFICANCE (*)	ELIGIBLE	NOT ELIGIBLE	NOT ELIGIBLE	NOT ELIGIBLE	POSSIBLY ELIGIBLE	NOT ELIGIBLE	NOT ELIGIBLE

(*) Based on eligibility for listing on the National Register of Historic Places

2.1.7 Utilities

Various utility companies were contacted for this study regarding their presence within the proposed Riverwalk's alignment. The major utilities in this region include:

City of Tampa Water Department
City Of Tampa Sanitary Sewer Department
City Of Tampa Storm Sewer Department
Tampa Electric Company (TECO)
General Telephone & Electronics (GTE)

The locations of these utilities are generally shown in Exhibit 3. In terms of the proposed Riverwalk, the most significant of these will be those that cross the Hillsborough River subaqueously, namely:

48" Sanitary from the Krause St. Pump Station
16" Water Main at the Riverside Hotel
69Kv TECO Electric Transmission Line at Washington Street
12 - 4" Armored Electrical at Washington Street

The location and installation of the Riverwalk's foundations will need to consider and accommodate the presence of these utilities.

2.2 Existing Drainage System Inventory

2.2.1 Site Topography And Drainage Information

Both the United States Department Of The Interior Geological Survey Quadrangle map for Tampa, Florida, dated 1981, and the latest Southwest Florida Water Management District (SWFWMD) One-Foot Contour Maps, dated September, 1981, for section, township, and range 19 - 29 - 19 and 24 - 29 - 18 were used to study the existing overland topography. According to these maps, the general offsite topography slopes from the central area of downtown Tampa to the west along the Hillsborough River and to the south along Garrison Channel. Typically, the elevation of the seawall is approximately at elevation 1.52 m (5.0 ft.) along the Hillsborough River and within the proposed project limits.

The project was reviewed in the field twice to gather information about existing drainage patterns and characteristics, as well as to locate potential existing drainage problems along the seawall.

The stormwater runoff for the offsite areas is captured in separate roadway storm sewer systems located upstream of the river. Preliminary site investigations indicated that most of

these systems discharge directly to the Hillsborough River and Garrison Channel through outfall pipes located at various locations along the seawall. The attached Preliminary Drainage Maps (Exhibits 4 & 5) show the location of these existing drainage structures and the associated drainage basin areas. There were no stormwater treatment systems observed prior to the discharge points for these outfall structures. Some areas adjacent to the proposed Tampa Riverwalk Project sheet flow overland and spill over the seawall into the river. At two locations, Whiting Street and Washington Street, roadway drainage is conveyed directly through openings in the seawall and into the river. Both of these locations are public access sites for the Riverwalk; therefore, a drainage design will be prepared to prevent stormwater runoff from discharging onto the walkway.

2.2.2 Soil Information

According to the Soil Conservation Service Soil Survey for Hillsborough County, the only soil type exhibited along and adjacent to the proposed Riverwalk project was Urban Land (Soil Number 56). This soil type is primarily covered by concrete, asphalt, buildings, or other impervious surfaces that obscure or alter the existing native soil characteristics. The Hydrologic Group rating, used to estimate the runoff potential from rainfall, was not listed; however, the primary existing ground cover is impervious and the runoff rate is expected to be high. There are soil reports and other data available for the existing adjacent to the project limits, refer to Section 2.3 of this report for additional information.

2.2.3. Federal Emergency Management Agency (FEMA) Flood Plain Information

The FEMA Flood Insurance Rate Map (FIRM) for the proposed project is Community-Panel Number 120114-0024 C (dated September 30, 1982). According to this map, the proposed project will longitudinally encroach on a designated Flood Zone A10, having a Base Flood elevation (100 year event) of 11 feet (6/18/80). This encroachment into the flood plain for the Hillsborough River will not increase the existing flood heights and limits.

In addition to the FEMA map, the Flood Insurance Study for the City of Tampa (March, 1980) indicates that the Hillsborough River is designated as a Floodway. According to this study, the flood elevations at the Kennedy Boulevard Bridge are 7.0 feet for a 10 year event, 9.9 feet for a 50 year event, and 10.8 feet for a 100 year event.

2.2.4 Rainfall Depth

Rainfall amounts for varying storm events were obtained from the rainfall contour maps contained in the Southwest Florida Water Management District's Permit Information Manual. These depths will be needed to compute the stormwater discharge rates that will be required to finalize the preliminary drainage designs for the proposed project. These rainfall amounts are summarized in the table below.

RAINFALL EVENT	RAINFALL DEPTH
3-Year	4.40 Inches
10-Year	7.00 Inches
25-Year	8.00 Inches
100-Year	11.00 Inches

2.2.5 Regulatory Agency Coordination

The local FEMA coordinator for the City of Tampa, Mr. Perry Sullivan, was contacted and informed about the proposed project. It was determined that there were no outstanding conditions for the City of Tampa, but he indicated the project would need to be consistent with FEMA regulations.

A pre-application meeting was held with SWFWMD personnel (Alba Evans-Engineer Review Supervisor and John Emery-Supervisor) on March 15, 1994. The following items were discussed at this meeting:

- (1) Neither water quality nor quantity considerations are required for this project.
- (2) Compensation for flood plain encroachments is not required.
- (3) Hillsborough River, Tampa Bay, Garrison Channel, and any other bodies of water that are connected to this project are not considered Outstanding Florida Waters.
- (4) A general Environmental Resource Permit (ERP), which merges the MSSW and the Dredge And Fill Permits, was scheduled for implementation around the end of the year, 1994. Given the schedule of this project, this permit may be required.
- (5) A Corps Of Engineers Nationwide Permit may be necessary for this project.

Alba Evans was also contacted concerning permit requirements associated with relocating drainage openings in the seawall. The design intent would involve capturing the offsite stormwater runoff with a drainage structure inlet and discharging it through a new pipe opening in the seawall at a lower elevation, but at the same access point to the river. She

discussed this with John Emery and they determined that this would not require a dredge and fill permit. This design concept is further discussed in the Section 3.5.5. of this report.

Mr. George Craciun, with the Florida Department of Environmental Protection, was also contacted concerning potential permit requirements for relocating the existing discharge point through the seawall to a lower elevation. He indicated that this will not require a permit, but he would like to review the proposed design when the construction plans are completed.

Mr. Joe Bachelor at the Army Corps Of Engineers (COE) was contacted concerning the COE permit requirements. He indicated that the proposed pedestrian facility will require an Individual Permit review via a Public Notice; because the project alignment encroaches into the required navigational channel setback distance. The COE does not expect to have any concerns regarding dredge and fill requirements. Additional information is included in the Permit Coordination Report, prepared by Dames & Moore.

2.3 Existing Geotechnical Conditions

The geotechnical activities for this PD&E study consisted of the collection, review, and evaluation of available existing data relating to site conditions along the general alignment of the proposed Riverwalk. The objectives of this evaluation were to generally assess subsurface soil/rock conditions at the site and to provide a preliminary qualitative assessment of feasible alternative foundation systems for the proposed structure.

2.3.1 Data Collection

The data collection process included a visual reconnaissance of the site, a review of available existing soil boring data, a review of the Hillsborough County Soil Conservation Service (SCS) Soil Survey, a review of the USGS Tampa quadrangle map, and a request for records of sinkhole activity in the vicinity of the project from the Southwest Florida Water Management District (SWFWMD).

Existing soil boring data were obtained from geotechnical reports prepared by others for the Nations Bank (formerly NCNB) building, the City of Tampa Convention Center, and for a Tampa Convention Center Riverwalk concept study. Additional data were obtained from construction plans for the Kennedy Boulevard bridge replacement as well as the Brorein

Street, Crosstown Expressway, Platt Street, and Franklin Street bridges. Other property owners along the project alignment, as well as the Port of Tampa, were contacted; however, no other information was available.

2.3.2 Surface Conditions

The project is located along the eastern bank of the Hillsborough River in downtown Tampa. A concrete bulkhead currently exists at the shoreline of the river along most of the project alignment. A dilapidated wharf structure is located along the north side of Garrison Channel at the southern end of the project.

Based on available survey data, the typical on-shore ground surface elevation along the alignment near the existing bulkheads and wharf appears to be at approximately elevation +1.52m (+5.0 feet) mean sea level (MSL). Mudline elevation data ranged from about -2.43 to -3.05m (-8.0 to -10.0 feet) along the Hillsborough River portion of the alignment to about -6.10 to -9.14m (-20.0 to -30.0 feet) MSL near the mouth of the river at the Convention Center.

2.3.3 Subsurface Conditions

The Hillsborough County SCS Soil Survey categorizes the upland soils in the project area as "urban land" that has been altered by development such that identification is not feasible. Drainage of "urban land" is typically accomplished artificially by sewer systems, gutters, tile drains, and surface ditches.

The soil boring data indicate variable subsurface soils along the project alignment generally consisting of fill (sand to silty sand with some rubble and shell) and medium dense to very loose sand and clayey or silty sand typically underlain by medium to stiff sandy clay to clay or very loose sandy to clayey silt. These soils are underlain by weathered to very hard limestone. A generalized subsurface profile along the project alignment, based on the available data, is shown in Exhibits 7 & 8. Exhibit 6 provides a legend describing the symbols shown in the previous Exhibits along with a Listing of the boring data sources.

As indicated in those Exhibits, limestone was typically initially encountered at elevations ranging from about -3.05 to -6.10m (-10.0 to -20.0 feet) MSL. However, some significant variations in the top of limestone elevation (from -40.0 to -60 feet MSL) were indicated in borings performed at the mouth of the Hillsborough River, along the Tampa Convention Center bulkhead. In addition, due to a notable lack of coverage of the project area by the available data, substantial variations in the soil/limestone conditions are likely to exist at other locations along the proposed alignment.

Based on a qualitative review of the boring data, the limestone strata at the site appear to consist of relatively competent materials with Standard Penetration Tests (SPT) typically indicating "refusal" conditions. Some losses of drill fluid circulation were reported in a few of the borings, typically within the limestone strata, and one void, approximately one foot in vertical extent, was reported within the clay soil overlying limestone in boring B-8 (Exhibit 7).

Unconfined compressive strengths and splitting tensile strengths were reported from tests performed on limestone samples taken at the Kennedy Boulevard bridge site. Although these results indicated some significant variations in strength throughout the strata, with unconfined compressive strengths ranging from as low as 2.6 tons per square foot (tsf) to over 1,000 tsf and splitting tensile strengths ranging from 1.8 tsf to 122 tsf, typical values for unconfined compressive strength and splitting tensile strength appear to be about 275 tsf and 60 tsf, respectively. Reported results from tests on samples taken from the Kennedy Boulevard bridge boring located nearest the Riverwalk alignment are shown in Exhibit 7 (boring B-3).

2.3.4 Sinkhole Potential

Records of reported sinkhole activity in the vicinity of the project were requested from the Southwest Florida Water Management District (SWFWMD). Based on information provided by SWFWMD, no sinkholes have been reported in either of the two Sections (T-29-S, R-19-E, Sec. 19, T-29-S, R-18-E, Sec. 24) that contain the project alignment.

Although a relatively minor void and some losses of drilling fluid circulation were reported in the boring data, no significant cavities or infill features indicating existing sinkhole activity were indicated in any of the borings. In addition, no surface indications of sinkhole activity were noted during our site reconnaissance. However, as in all areas underlain by limestone which is susceptible to solutioning activity, there is a risk of future sinkhole activity. Based on the results of this limited desk study, the potential for sinkhole activity at this site does not appear to be any greater than that which is typical for areas underlain by limestone; however, further site exploration is recommended to confirm subsurface conditions along the entire project alignment.

2.4 Existing Channel Characteristics

2.4.1 Hillsborough River

Within the limits of the proposed project, the Hillsborough River is defined by existing bulkheads along each side. Its width within these confines is approximately 91.4m (300 feet). The Army Corps Of Engineers (COE) regulates a designated navigational channel within the river, that is more or less centered upon the river's alignment. Based upon data furnished by the COE (9 and 12 - Foot Project, Control Data, Dated November 1978), the channel's width is 61.0m (200 feet) from the river's mouth near the Convention Center to south of the Kennedy Boulevard Bridge where it then narrows to 30.5m (100 feet). The limits of this regulated channel are illustrated in Exhibit 9.

2.4.2 Garrison Channel

The Garrison Channel's limits are defined by an existing wharf to the north and a bulkhead along Harbour Island to the south. Its width between these markers is approximately 106.7m (350 feet). The Garrison Channel was once used as a shipping channel, but it has been abandoned since the development of Harbour Island in the early 1980's. The construction of the Franklin Street and Beneficial Drive bridges during that period have restricted the waterway's navigational horizontal and vertical clearances. Therefore the Corps Of Engineers no longer regulates that waterway.

2.5 Existing Environmental Characteristics

2.5.1 Land Use Data

The project lies along the western and southern edges of the Tampa Central Business District. Accordingly, land use development in the vicinity of the project consist of intensive urban uses. Extending from the northern project terminus southward to the confluence of the Hillsborough River and the Garrison Channel, major land uses on the east side of the river include high-rise office buildings, an art museum, hotel, urban park, the Tampa Convention Center, and multi-story parking garages associated with these uses. Along the west side of the river, the predominant land uses include the University Of Tampa campus, the Tampa Tribune Publishing Company, and limited office and multi-family residential uses.

2.5.2 Cultural Resources

A Cultural Resource Assessment Memorandum prepared for this project addressed the historical and archaeological resources identified in the vicinity of the project. The FHWA, in consultation with the State Historic Preservation Officer (SHPO), has determined that two historic bridges, which lie within the project's alignment, have Section 106 involvement with this project. A Section 106 Effects Determination has been prepared and submitted for the Kennedy and Platt Street Bridges. The FHWA, in consultation with the Florida SHPO has determined that the proposed construction of the Riverwalk will have "no adverse effect" on these structures. The Advisory Council On Historic Preservation has concurred with that finding.

For additional information refer to the "Cultural Resource Assessment Memorandum" and the "Section 106 Effects Determination", both under separate cover.

2.5.3 Natural and Biological Features

A "Biological Evaluation" was prepared and distributed to the appropriate regulatory and review agencies for comment/concurrence concerning the conclusion that this project will have no significant physical environmental impacts. Refer to that document (separate cover) for additional information.

3.0 ALTERNATIVES ANALYSES

3.1 Design Criteria

During its planning for this project over the years, the City Of Tampa's Planning Department has developed certain desired criteria for the proposed Riverwalk. Those are contained within the "Tampa Central Business District Riverwalk Design Standards", dated June 1989. Those standards serve as a basis and guide for the development of the proposed Riverwalk project.

These Riverwalk Design Standards establish a desired pedestrian circulation zone width of 4.6m (15 feet) that will accommodate the pedestrian traffic and an occasional light vehicle traffic for emergencies, maintenance, or special events. This circulation zone will provide a 3.0m (10 feet) wide primary corridor for the pedestrian movement, and 1.5m (5 feet) of additional space to accommodate seating, signs, lighting, waste receptacles and planters along the Riverwalk.

The Design Standards also address the desired requirements for the Riverwalk's amenities such as the granite pavers, light bollards and poles, railing, benches, planters, and waste receptacles. Exhibit 10 illustrates these concepts in plan and section.

3.2 Public Access

Public access along the project is available at several existing key locations that are adjacent to publicly owned properties. These regions include the northern end of the Riverwalk next to the Tampa Museum that joins the Curtis Hixon Park, Washington Street, Whiting Street, the open space beneath the Crosstown Expressway, and the Tampa Convention Center.

During the conceptual development of this project it was noted that one of the main pedestrian corridors to downtown Tampa is along the Kennedy Boulevard Bridge between the University of Tampa and the east side of the Hillsborough River. Consequently, it was determined that additional access for the connection between the Kennedy Boulevard route and the Riverwalk should be provided. Section 3.4 provides a discussion of the alternatives considered for this access location.

3.3 Alignment Controls

The general horizontal and vertical alignments of the proposed Riverwalk are dictated by the existing topographic features of the vicinity. Along the Hillsborough River the Riverwalk will generally conform with the alignment of the existing bulkhead, with adjustments as required in order to comply with other existing control elements. The portion along the Garrison Channel is similarly defined, but with less restrictions.

Within the project limits there exist certain elements that specifically control the Riverwalk's location and elevation. These primary controls are classified as either continuous or intermittent. For the purpose of definition, continuous controls are those that are linear and affect the Riverwalk throughout a significant length, whereas intermittent ones occur at isolated locations.

Continuous Controls

The continuous controls in essence define the main corridor for the Riverwalk's horizontal alignment. To some degree they also establish the Riverwalk's elevation, particularly in reference to the existing bulkhead along the Hillsborough River.

Adjacent Property Lines - The majority of the property adjacent to the proposed Riverwalk is private. The only exceptions are those parcels owned by the City Of Tampa (Washington & Whiting Streets, Krause Street Pump Station, Convention Center), and the Right-of-Way under the Crosstown Expressway owned by the Hillsborough County Expressway Authority. In order to avoid the taking of private property the Riverwalk will need to be located over the water.

Bulkhead Limits - The concrete bulkhead along the eastern bank of the Hillsborough River physically defines the river's normal limits. The bulkhead also roughly conforms to the adjacent property limits in that region. Along the Garrison Channel the private property limits are generally defined along the southern edge of the existing wharf.

Navigational Channel - Hillsborough River's regulated navigational channel controls the extent that the Riverwalk can protrude into the waterway. Consequently, the combination of the eastern channel limits and the bulkhead define the corridor available for the Riverwalk along the river.

Intermittent Controls

The intermittent controls further influence the Riverwalk's location and height by providing isolated control points at various occurrences along its length.

Existing Bridges - The presence of these structures create physical obstacles that the Riverwalk must circumvent. The Riverwalk will need to pass beneath these bridges with sufficient clearances vertically for the pedestrian traffic and horizontally from the existing structures' foundation elements. Consequently, the Riverwalk's horizontal alignment will need to become offset from the bulkhead lines in these regions.

Public Access Regions - The Riverwalk must also provide a continuous linkage to the six public access regions previously discussed. Therefore, the Riverwalk will need to tie to the existing features at those sites, both horizontally and vertically.

The following table summarizes the location and type of the project's intermittent control points:

<u>Location</u>	<u>Type Of Control</u>
Tampa Museum	Access Point (At Grade)
Kennedy Boulevard	Access Point (Stairwell)
Kennedy Blvd. Bridge	Under Bridge Clearances
Washington Street	Access Point (At Grade)
Whiting Street	Access Point (At Grade)
Brorein St. Bridge	Under Bridge Clearances
Crosstown Expressway	Under Bridge Clearances
	Access Point (At Grade)
Platt St. Bridge	Under Bridge Clearances
Convention Center	Access Point (At Grade)
Franklin St. Bridge	Under Bridge Clearances

3.4 Various Alternatives Considered

Given the above as a basis, the variability of alignment alternatives is limited for this project. The continuous control elements define the main corridor and provide the general vertical profile, while the intermittent elements further specify vertical and horizontal markers to match at specific locations. Consequently, the development of alternative alignments became more associated with defining alternative methods of getting between various intermittent control points within a certain portion of the Riverwalk's overall alignment.

An initial role during the development of the Riverwalk's routing was to identify locations where the Riverwalk could become land based. This concept would reduce the required structure length and thus minimize the project's overall cost. Since acquisition of private property was not a feasible option for consideration, this could only be achieved at locations with adjacent publicly owned land.

Consequently, it was decided and agreed with the City Of Tampa that the existing open space associated with the Convention Center's waterfront could be utilized for the Riverwalk's purposes. This concept was also investigated for the Crosstown Expressway Right-Of-Way. However given the limited length of that parcel and the tendency for the Riverwalk to appear segmented, this idea was not incorporated at that location.

Along the Hillsborough River a region where alternative alignments were considered involved the stretch from the Tampa Museum to the Washington Street. One concept maintained the Riverwalk next to the concrete bulkhead until it was necessary to become offset for the passage beneath the Kennedy Bridge and then similarly reestablish itself along the Riverside Hotel's bulkhead to Washington Street. An alternative arrangement maintained a separation between the bulkhead and the Riverwalk, and gradually stepped the alignment for the Kennedy Bridge access and under passage, which was similarly mirrored along the Riverside Hotel.

This second option presents several advantages over the first, and is therefore preferred. The separation from the bulkhead is more aesthetically pleasing by establishing the Riverwalk's own identity in this region, pedestrian visibility and safety is enhanced by providing long unobstructed views along the walkway, and pedestrian flow is enhanced by eliminating the transition zone at the base of the access stairwell. In addition, it is perceived that the existing drainage and exhaust vents from the Nation's Bank parking garage behind the bulkhead will not interfere with the Riverwalk's participants.

An alternatives analysis was also conducted regarding the required access to and from Kennedy Boulevard. Four options were considered for that purpose, as described below. In all alternatives an elevation change of approximately 6.1m (20 ft.) from the top of the bulkhead to the Riverwalk is present, thus requiring a stairwell for the proposed linkages.

Alternative 1 provides access to the Nations Bank Plaza at a location just north of the Kennedy Bridge. This option connects the Riverwalk to an existing pedestrian easement at the plaza, that extends from the bulkhead easterly to a series of steps and ramps that lead to Kennedy Boulevard and Ashley Street.

Alternative 2 provides a direct connection from the Riverwalk to the south side of the Kennedy Bridge. This option creates potential pedestrian safety concerns due to insufficient room to accommodate the pedestrian traffic at the Kennedy Bridge level, possible congestion at the landings due to this restricted space, and the fact that

pedestrians would be very close to the vehicular traffic at the Kennedy Bridge landing. In addition, this concept may be unacceptable to SHPO because of the historical significance of the bridge.

Alternative 3 involves a connection from the Riverwalk to the Riverside Office Plaza located to the south of Kennedy Boulevard. This option would link the Riverwalk to the outdoor plaza through the proposed stairwell, from which an existing series of steps would provide access to either Kennedy Boulevard or Ashley Street. This option is not desirable because it requires a linkage to private property, without an existing easement specifically for the purpose of pedestrian access.

Alternative 4 connects the Riverwalk to the Riverside Hotel also through a proposed stairwell. This option requires the pedestrians to walk through the hotel property to Ashley Street and then back to Kennedy Boulevard. This alternative is undesirable because of this indirect linkage, as well as the issue involving the use of private property (as with Alternative 3).

The first alternative is preferred because it links to an existing area that is currently oriented for pedestrian usage along the Nations Bank Plaza, provides a direct tie to Kennedy Boulevard and Ashley Street through existing walkways, and it does not create the negative aspects associated with the other alternatives.

3.5 Description Of Preferred Alternative

The following discussions are related to the project's Conceptual Plans which are provided in Appendix B of this report.

3.5.1 Typical Section

The normal or standard typical section for the Riverwalk is comprised of a 4.57m (15 ft.) clear walkway with a 61mm (2 ft) curb for railing and lighting on both sides, for an overall width of 5.79m (19 ft.). However in order to accommodate an expected increase of pedestrians and to enhance pedestrian flow, this section is enlarged at several locations throughout the Riverwalk's length.

The at grade access points are widened to an overall width of 11.58m (38 ft.). Rounded turrets are also provided at those locations, to create additional space to be utilized as appropriate for certain events and as overlook viewing areas.

The Riverwalk's width is also increased to 11.58m (38 ft.) at all the locations where the horizontal alignment abruptly changes direction, again with the intent to facilitate the redirection of pedestrian flow at these potential congregation areas.

Occasionally along the Riverwalk, additional areas are also provided at various locations to serve as formal sitting areas. These regions are 18.29m (60 feet) long and provide an additional width of 2.44m (8 feet).

3.5.2 Alignment

Segment One - This Segment begins at the shoreline adjacent to the northwestern corner of the Beneficial Drive Bridge. It is then located south of and adjacent to the private property limits along the northern shore of the Garrison Channel. That property line more or less corresponds to the southern edge of the existing wharf structure in that area.

The Riverwalk proceeds along the outside edge of that structure until it reaches the Franklin Street Bridge, where it ties to an existing concrete walkway that was constructed under that bridge simultaneously with the Franklin Street structure. That existing walkway is also tied to the Convention Center Park, located at the northwest quadrant of the Franklin Street Bridge. Consequently, this links this segment of the Riverwalk to the Convention Center's waterfront as well as the remaining Riverwalk segments.

The overall length of Segment One, along its centerline, is approximately 519.53m (1704.5 feet); and the anticipated elevation ranges from 1.82m (6.0 feet) to 1.22m (4.0 feet) from its beginning to end.

Segment Two - This portion begins at the northwest corner of the Convention Center just south of the Platt Street Bridge. From that point it passes beneath the Platt Street Bridge and it then more or less parallels the Hillsborough River's eastern shoreline until it underpasses the Crosstown Expressway structures.

The Riverwalk's alignment then shifts waterward between the westbound Crosstown Expressway and the Brorein Street bridges, in order to cross beneath the Brorein Street Bridge with sufficient clearances. The alignment then re-shifts landward on the north side of the Brorein Street Bridge, where it maintains an orientation that is adjacent to the existing concrete bulkhead through to this segment's end at the proposed Washington Street access point. This segment also includes public access points under the Crosstown Expressway and at the end of Whiting Street.

The approximate overall length of this segment is 461.16m (1513.0 feet) along its centerline. The elevation of the Riverwalk's surface will generally comply with the top of the existing bulkhead wall along its length. Therefore the anticipated elevation would range between 1.68m and 1.83m (5.5 and 6.0 feet), except where it will need to be sloped upward to meet the Convention Center at elevation 2.23m (7.3 feet).

Segment Three - This northernmost segment begins at and includes the public access point at the end of Washington Street. From there it proceeds northwesterly, parallel to but

slightly offset from the existing concrete bulkhead at the Riverside Hotel. Between Washington Street and the Kennedy Boulevard Bridge the Riverwalk includes two waterward alignment shifts in order to be properly oriented for the Riverwalk's passage beneath the Kennedy Bridge.

The proposed public access stairwell for Kennedy Boulevard is located on the north side of the bridge, and it occupies the space between the existing bulkhead and the Riverwalk. Proceeding northerly, the Riverwalk parallels the bulkhead and contains one alignment shift toward that wall until it terminates near the northern end of the Nations Bank Plaza at the Tampa Museum public access point.

Along its centerline this segment of the Riverwalk has an approximate overall length of 432.10m (1417.7 feet). Its surface elevation will vary between 1.52 m and 1.68m (5.0 and 5.5 feet).

3.5.3 Architectural Features

During this PD&E study several conceptual sketches were developed to illustrate various perspectives and views of the Riverwalk and its elements. Those that relate more specifically to the preferred alternative are included in Appendix B. Those illustrations include hand sketched renderings and computer simulated perspectives that superimpose the Riverwalk within photography of the existing conditions. Those illustrations are considered to be conceptual at this stage and they shall be further refined during the project's Design Phase.

3.5.4 Safety

The safety of the pedestrians using the Riverwalk is incorporated into the preferred alignment as well. The extra walkway width at the critical locations discussed previously improve the pedestrian flow and safety. The utilization of long unobstructed views of the Riverwalk from various vantage points will assist law enforcement personnel in their role of safeguarding the area.

The effective use of lighting will also be beneficial to that end. In accordance with the City of Tampa's Riverwalk Design Standards, bollard lighting at 1.22m (4.0 ft) spacing is proposed along each side of the Riverwalk for its entire length, in conjunction with pole lighting provided on the landward side of the walkway. At the regions where the Riverwalk passes under the existing bridges, additional lighting will be incorporated to reduce potential dark spots.

3.5.5 Drainage Alternatives

A preliminary drainage design was conducted for this study which considered both offsite drainage flow patterns and the drainage system required to manage the anticipated runoff

generated by the Riverwalk. The primary design intent was to prevent the walkway from runoff flooding and maintain a safe, traversable walkway for pedestrians, as well as for people with disabilities, during a typical storm event. As previously mentioned, there will be no SWFWMD stormwater treatment or attenuation requirements for this project; therefore, all stormwater runoff may be discharged directly into the Hillsborough River and Garrison Channel.

The primary drainage concerns associated with the offsite drainage areas involve preventing the overland stormwater runoff from discharging onto and flooding the proposed walkway. There are two locations, as previously discussed in Section 2.2.1 of this report, where roadway stormwater runoff drains through openings in the existing seawall, (Whiting Street and Washington Street). Both of these locations are public access points for the Riverwalk and will require a drainage design that intercepts that runoff and discharges it beneath the walkway. Preliminary drainage calculations have been performed to estimate the anticipated discharge runoff rates for these offsite areas along and adjacent to the project, which are labeled on Exhibits 4 & 5.

The proposed Riverwalk typical section was also analyzed with both a continuous monoslope and a crowned cross slope. The continuous cross slope, combined with the longitudinal slope will create a larger area of runoff sheet flow on the walkway during a rainfall event. In addition, this type of design contributes to a larger spread area of runoff and potentially may produce a hazardous surface condition for pedestrians. A crown-shaped cross slope decreases the amount of overall runoff by half and separates the drainage to both sides of the walkway. This provides a safer passage area along the middle of the walkway for pedestrians and persons with disabilities exiting the Riverwalk during a rainfall event. Therefore, it is recommended that the proposed typical section incorporate a crowned cross slope having a minimum slope of one percent and maximum slope of two percent. The proposed longitudinal slope for the walkway should vary between one percent and three percent. The engineering specifics associated with these slopes will be finalized in the design phase of this project.

Several drainage system alternatives were reviewed for the proposed Riverwalk project. The anticipated maintenance required to control and collect debris that may accumulate at the proposed inlets dictated the design selection. One alternative considered the use of slotted drain pipe along the outside edge of the walkway. That option would require the system to be either installed into or suspended beneath the walkway, which would potentially require a greater level of structural and debris maintenance compared to the other design alternatives considered. The construction associated with this drainage system would also be more expensive compared to other design alternatives. A second alternative involved the use of standard 0.10 meter (4 inch) bridge scuppers with a special detail grate on each side of the walkway. This drainage system would effectively convey the runoff; however, these inlets may not have the debris tolerance needed for a pedestrian facility. The primary disadvantage to using this type of system would be the routine maintenance operations

necessary to keep the grate free of debris and operating effectively. The third alternative , involves the joint usage of the standard bridge scupper and an ornamental inlet top that meets current pedestrian and ADA design criteria for grate slot openings. The inlet top would have an approximate surface area of 0.09 square meters (1 square foot), which will adequately convey runoff and provide added relief for debris "build-up" compared to the bridge scupper only design. This drainage system, which is the preferred alternative, will need to be spaced at intervals designed to minimize the potential for flooding while maintaining a safe walkway for pedestrian traffic.

3.5.6 Foundation Alternatives

Based upon the available data discussed in Section 2.3 of this report, the surficial river bed soils do not appear to be sufficiently competent to support shallow spread footings for the proposed Riverwalk. Spread footings bearing on the limestone could likely provide adequate foundation support; however, construction would require relatively large temporary cofferdams or caissons resulting in comparatively high construction costs. Therefore, driven piles or drilled shafts appear to be more appropriate foundation alternatives.

Driven pile alternatives include steel pipe or H-piles or precast, prestressed concrete piles. Due to the relatively shallow limestone at the site, achieving appropriate pile penetrations may be difficult, particularly if inclined piles are required. Pre-drilling may be necessary if prestressed concrete or pipe piles are selected and steel piles would likely require tip reinforcement to prevent damage. In addition, in the case of steel piles, a concrete jacket, coal tar epoxy or other similar coating, would be required over a sufficient length of pile to minimize the possibility of corrosion resulting from variations in the water level.

Because of the proximity of the proposed Riverwalk with existing bulkheads and bridges along most of the alignment, the use of inclined piles to resist lateral loads could potentially lead to conflicts with existing substructures. Excessive vibrations or heave resulting from pile driving could also affect existing structures.

The use of drilled shafts would assure that appropriate penetrations are achieved to provide fixity of the foundation and would also significantly reduce the potential for damage related to vibrations during pile installation. However, temporary casings, extending to the limestone strata, would be required to construct drilled shafts and some vibrations would still likely result from casing installation.

The available limestone strength data indicate that significant drilled shaft compressive resistance should be achievable with reasonable penetrations into the limestone. Therefore, the use of a single drilled shaft foundation at each pier location, sized to provide sufficient lateral and compressive capacity, would eliminate the potential conflicts resulting from inclined piles and may provide a cost-effective foundation alternative. However, further geotechnical investigation is recommended to evaluate the competency of the limestone strata along the entire project alignment in order to assess the most appropriate foundation alternative.

3.5.7 Structural Alternatives

With the surface elevation of the Riverwalk averaging approximately at 1.68m (5.5 ft) and the Mean High Water elevation at approximately 0.36m (1.2 ft), a difference of only 1.31m (4.3 ft) is available to accommodate the structure depth and the necessary vertical clearance. Consequently, the Riverwalk's superstructure will be relatively close to the extremely aggressive salt water environment.

This relationship plays a significant role in the selection of the appropriate materials for the Riverwalk's construction. Of the three major readily available materials, concrete is recommended because of its established durability and cost effectiveness. Structural steel is not appropriate because of the corrosive environment and its maintenance requirements. Similarly, treated timber is subject to attack and deterioration in salt water.

Furthermore, the maximum utilization of precast concrete elements, particularly for the superstructure, will be beneficial for this project, considering its length and the opportunity to incorporate repetitive span units to the design. Precast concrete elements provide the advantages of off site casting and curing in conjunction with a rapid erection process. In contrast, a scheme involving cast in place concrete has the disadvantages of the limited available headroom for the placing and stripping of formwork, and a labor intensive construction process that is slower thus resulting in an overall higher cost.

Those relative elevations also indicate that the superstructure's depth needs to be as thin as practicable, in order to provide a sufficient vertical clearance distance between the bottom of the superstructure and the Mean High Water mark. The use of prestressed concrete superstructure elements offers the opportunity to achieve that objective with reasonable span lengths and cost effectiveness.

The Riverwalk's span lengths will primarily be a function of economics, but they will also be influenced by the existing features intersected and the Riverwalk's horizontal alignment and geometric requirements. Since the majority of the Riverwalk's length is not controlled by existing features, the most economical span arrangement will be incorporated in those regions. Considering the above and the type of live loads anticipated for this structure, span lengths generally in the range of 7.62 to 12.19m (25.0 to 40.0 ft) are applicable for those "average spans". However, the under bridge crossings at Brorein and Platt Streets will need to span the width of those structures, due to the insufficient overhead clearance available for the installation of any foundations beneath those bridges. Consequently, those Riverwalk spans will need to be significantly longer, ranging between 18.29 and 24.38m (60.0 to 80.0 ft).

The superstructure depth is directly related to the required span length. Consequently, the anticipated depths would vary between .030 to .046m (12 to 18 inches) for the shorter spans

and between 0.61 to .091m (24 to 36 inches) for the longer. Applicable superstructure types would include prestressed concrete slab units and double tee beams for those respective spans.

These typical sections are illustrated in Exhibit 11.

All of these above elements will be further developed in the project's Design Phase through the Bridge Development Report (BDR). The BDR will investigate various alternative structural schemes, configurations and span arrangements; evaluate them in terms of their feasibility, constructibility, durability and cost; and recommend the most viable alternative for development in the final design process.

3.6 Evaluation Of Preferred Alternative

3.6.1 Right-Of-Way Requirements & Costs

The proposed Riverwalk alignment is over the water for its entire length. Therefore, no right of way takings are expected, and as a result there will be no associated relocations or costs.

3.6.2 Environmental Impacts

Based on the coordination conducted with the appropriate agencies throughout this PD&E study, no significant environmental impacts are anticipated for this project. In order to ensure that the Contractor exercises appropriate caution during construction, the FDOT Manatee and Sea Turtle Watch Program Guidelines will be included in the construction contract. Additional information relating to this matter is more specifically addressed in the project's "Biological Evaluation" and "Permit Coordination Technical Memorandum" reports (under separate cover).

3.6.3 Permit Coordination

Throughout this PD&E study several meetings were conducted with the regulatory agencies. The "Permit Coordination Technical Memorandum" prepared for this project addresses the permitting issues and agency coordination in detail. The following is provided as a summary of the highlights of that document.

Three agencies will exert permit jurisdiction for this project, namely the U. S. Army Corps of Engineers (COE), Tampa Port Authority (TPA), and the Florida Department of Environmental Protection (FDEP).

The COE indicated that there would be no biological concerns related to either direct or shading effects. The project will encroach upon the COE's desired setback of 30.48m (100.0

ft) from the navigational channel limits within the Hillsborough River. For this reason the issuance of a Public Notice is anticipated, which will require the application of an individual permit. The COE encouraged an early submission of the permit so that the channel encroachment issue can be addressed.

The TPA will require application for a Standard Work Permit, but there were no biological concerns relating to the project.

The FDEP also indicated that there were no biological concerns, and that there was no apparent wetland involvement for this project. The waters are not designated as Outstanding Florida Waters and no compensation for floodplain encroachments will be required. There will also be no requirement for stormwater treatment or attenuation.

3.6.4 Utility Impacts

The project's adjacent utilities are identified and their influences are discussed in Section 2.1.7 of this report. The utilities of primary concern are those that cross the Hillsborough River subaqueously. Those utilities can not be disturbed. Their specific locations will be determined with the survey services associated with the Design Phase. Once established, the Riverwalk foundations in their vicinity will need to be carefully located to avoid potential conflicts.

3.6.5 Estimated Construction Costs

A preliminary cost estimate has been conducted for the preferred alignment delineated within the Conceptual Plans, based on the associated lengths and plan areas. Those estimates are summarized in Table 3-6-5, which relates the following estimated costs:

Segment One	\$2,547,032
Segment Two	\$2,465,916
Segment Three	<u>\$2,548,650</u>
Estimated Total	\$7,561,598

DOWNTOWN TAMPA RIVERWALK ISTEAM ENHANCEMENT PROJECT
 FDOT PROJECT NO.: 10007-1510 WPI NO.: 7123604 FAP NO.: SE-8888(122)

ESTIMATED QUANTITIES AND CONSTRUCTION COSTS FOR PD&E STUDY

TABLE 3-6-5 JULY, 1995

ELEMENT	PROJECT SEGMENT:		SEGMENT NO. 1		SEGMENT NO. 2		SEGMENT NO. 3	
	UNIT	PRICE	ESTIMATED QUANTITY	ESTIMATED COST	ESTIMATED QUANTITY	ESTIMATED COST	ESTIMATED QUANTITY	ESTIMATED COST
STRUCTURE AREA	SF	\$40.00	37586	\$1,503,440	32787	\$1,311,480	34572	\$1,382,880
ARCHITECTURAL AMENITIES								
Granite Pavers	SF	\$9.00	30766	\$276,894	26887	\$241,983	29092	\$261,828
Railings	LF	\$50.00	3401	\$170,050	2950	\$147,500	2740	\$137,000
Light Poles	EA	\$2,800.00	24	\$67,200	21	\$58,800	20	\$56,000
Bollard Lights	EA	\$1,000.00	213	\$213,000	184	\$184,000	171	\$171,000
Benches	EA	\$1,000.00	25	\$25,000	18	\$18,000	20	\$20,000
Litter Receptacles	EA	\$700.00	7	\$4,900	5	\$3,500	5	\$3,500
Planter Bowls	EA	\$500.00	50	\$25,000	36	\$18,000	40	\$20,000
Landscaping & Irrigation @ Planters	LS	\$30,000.00	1	\$30,000	1	\$30,000	1	\$30,000
Shelters	EA	\$50,000.00	0	\$0	1	\$50,000	1	\$50,000
ESTIMATED CONTINGENCY @	PERCENT		10%	\$231,548	20%	\$402,653	20%	\$416,442
ESTIMATED COST PER CONSTRUCTION SEGMENT				\$2,547,032		\$2,465,916		\$2,548,650
ESTIMATED COST PER SQUARE FOOT OF STRUCTURE				\$67.77		\$75.21		\$73.72
TOTAL ESTIMATED PROJECT COST (ALL SEGMENTS)						\$7,561,598		

NOTES:

1. STRUCTURE LENGTH IS ALONG THE CENTERLINE OF EACH SEGMENT.
2. STRUCTURE WIDTH IS ITS NOMINAL WIDTH (EXCLUSIVE OF EXTRA WIDTH REGIONS).
3. SURFACE AREA IS THE GROSS AREA AS SEEN IN PLAN, INCLUDING EXTRA WIDTH REGIONS.
4. THE ABOVE COST ESTIMATE IS BASED ON THE PROJECT'S CONCEPTUAL CONFIGURATION AS INDICATED IN THE CONCEPTUAL PLANS. UNIT COSTS FOR THE ARCHITECTURAL AMENITIES ARE BASED ON DATA PROVIDED BY THE CITY OF TAMPA.

3.7 Summary & Recommendations

This project will provide a vital pedestrian linkage throughout the Downtown Tampa Central Business District, and assure public access to the region's waterfront. It has received tremendous support from the City of Tampa as well as the adjacent private property owners.

Coordination with the appropriate regulatory agencies has indicated that there would be no significant environmental impacts and that minimal permitting will be required. The only uncertain permitting issue involves the project's encroachment upon the Corps of Engineers desired setback from the navigational channel of the Hillsborough River. This matter will not be addressed by the COE until the actual permit application package is submitted for their review, which will not occur until the project's Design Phase. Therefore, it is recommended that this package should be submitted as early in that phase as possible in order to resolve this situation.

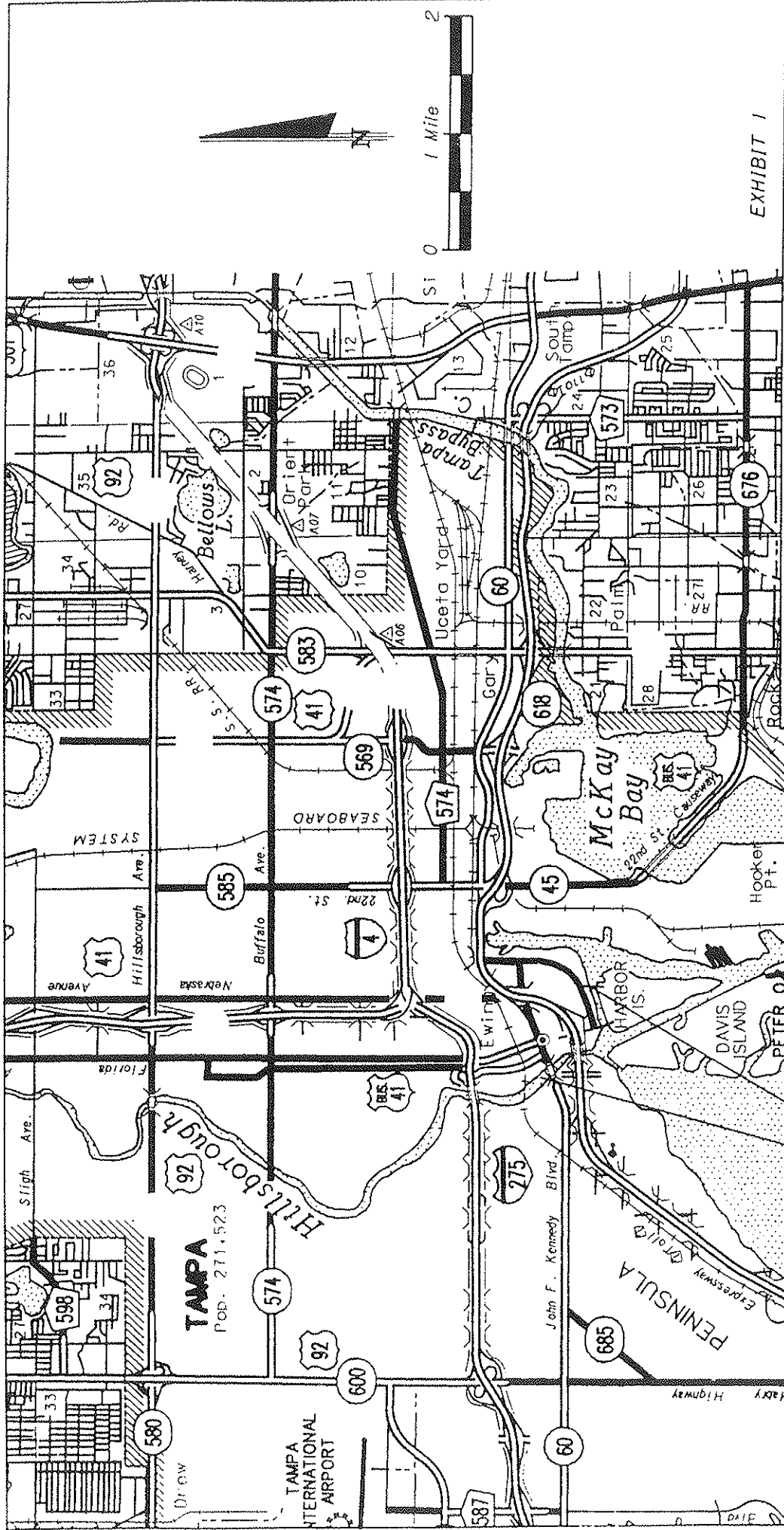
Some offsite improvements, that are beyond the scope of this project, are recommended. These have been discussed with the City of Tampa, which is supportive of their concepts. Those recommendations include the following:

1. Improvements to the designated publicly owned access areas at Washington and Whiting Streets, as well as the space beneath the Crosstown Expressway. Those improvements would include aesthetic enhancements and beautification, landscaping, signage, lighting, addition of benches and other similar entities, and the replacement and/or repair of existing sidewalks that directly lead to the Riverwalk. The existing seawall beneath the Crosstown Expressway should be removed and replaced with either a new seawall or a stabilized slope at the shoreline.

In addition, the walkways at the Nations Bank Plaza in the immediate vicinity of the proposed stairwell to the Riverwalk should be widened to accommodate the expected increased volume of pedestrians at that location.

2. Public access needs to be provided to the Beneficial Drive terminus of the Riverwalk. Currently, the property for and adjacent to Beneficial Drive is privately owned. The City of Tampa will need to acquire an easement along the western edge of the Beneficial Drive property from the Riverwalk to Platt Street, which is one block north of the site. Within that easement, it will be necessary for the City to construct a sidewalk of sufficient width and a retaining wall to contain the existing embankment slope from the Beneficial Drive roadway.
3. The existing structures in the water along the Riverwalk's alignment will need to be removed. These include the timber docks and wharfs that are located at isolated locations within the project limits.

4. The existing concrete bulkhead (seawall) along the Hillsborough River should be repaired prior to the construction of the Riverwalk. Based on the cursory field reviews conducted for this study, the bulkhead appears to generally be in stable condition. However, there are signs of deterioration that need repair. Although these improvements are not necessary for the Riverwalk's construction, it is recommended that they should be completed ahead of the Riverwalk, primarily for equipment access purposes.

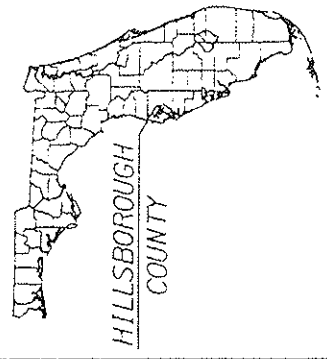


VICINITY MAP

EXHIBIT 1

PROPOSED BRIDGE FOR
 DOWNTOWN TAMPA
 PEDESTRIAN RIVERWALK
 TAMPA, FLORIDA
 HILLSBOROUGH COUNTY

FLORIDA DEPARTMENT OF
 TRANSPORTATION



PROJECT
 LOCATION

Hillsborough
 Bay

END PROJECT

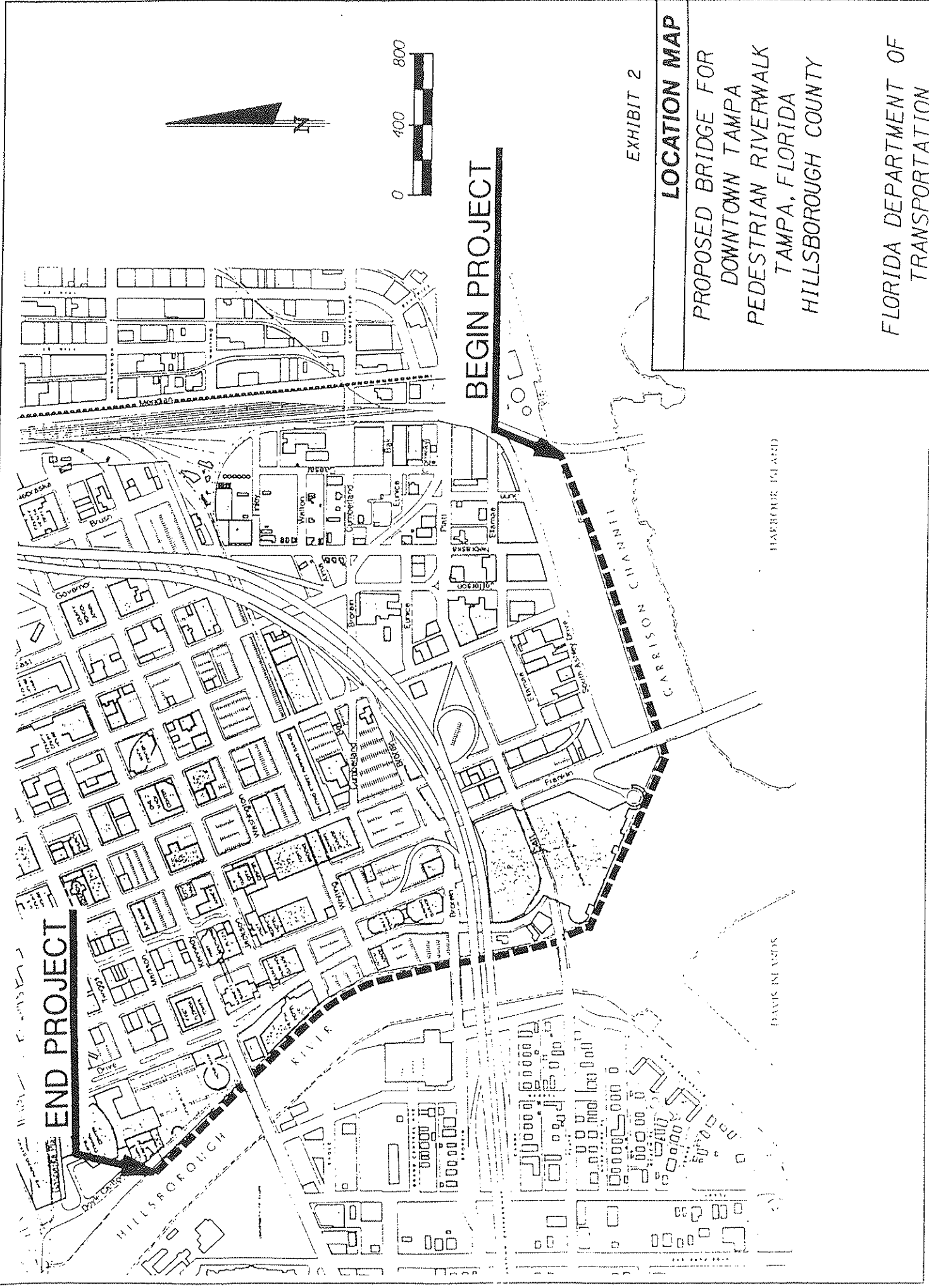
BEGIN PROJECT

EXHIBIT 2

LOCATION MAP

PROPOSED BRIDGE FOR
DOWNTOWN TAMPA
PEDESTRIAN RIVERWALK
TAMPA, FLORIDA
HILLSBOROUGH COUNTY

FLORIDA DEPARTMENT OF
TRANSPORTATION



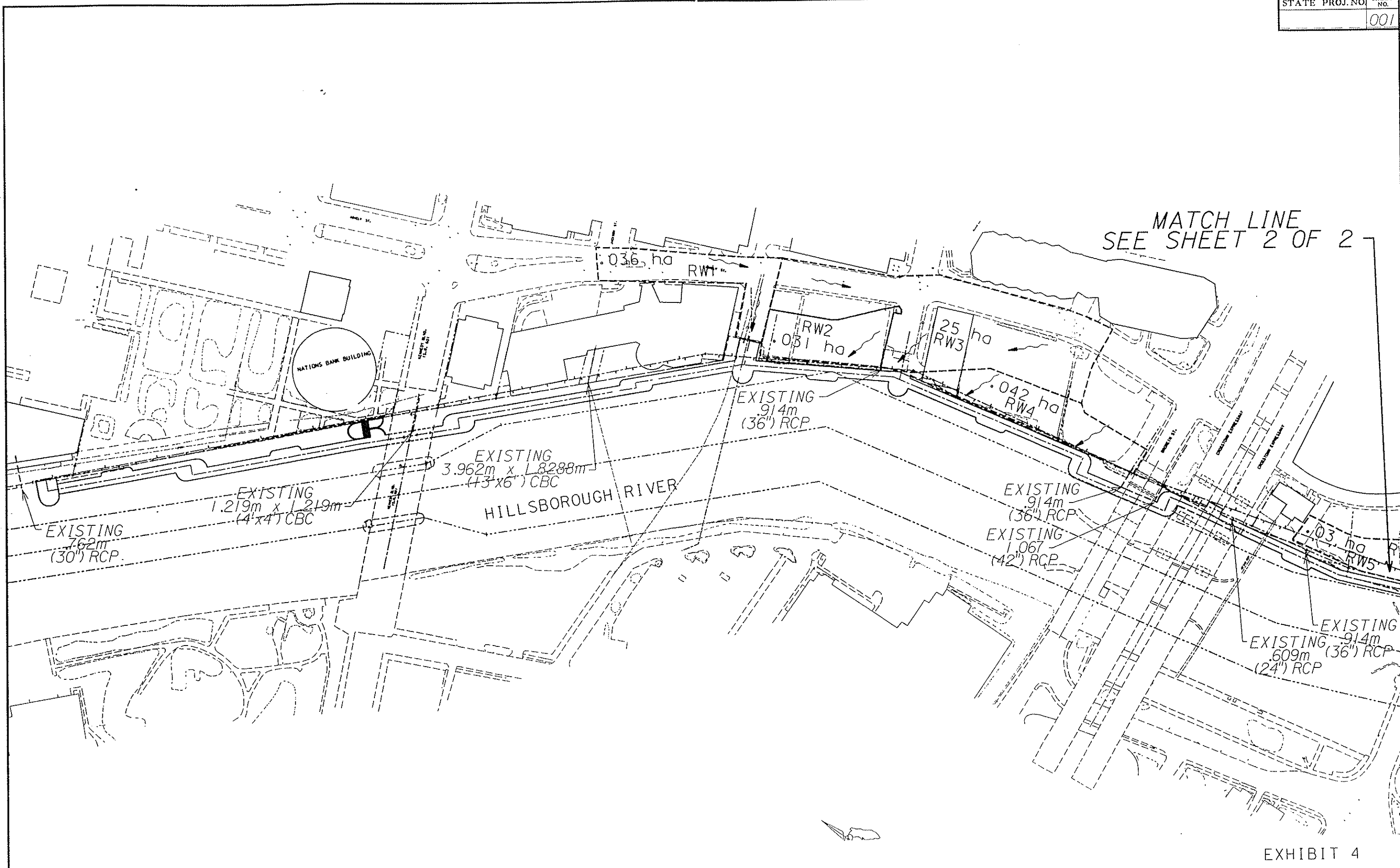


EXHIBIT 4

REVISIONS				DESIGNER				DRAWN				CHECKED				SUPERVISED				
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DESIGNED BY	CDS	DATE	02/95	DRAWN BY	DGB	DATE	02/95
CHECKED BY	MEM	DATE	02/95	CHECKED BY	CDS	DATE	02/95
SUPERVISED BY				MICHAEL MILLS, P.E.			

FLORIDA DEPARTMENT OF TRANSPORTATION		APPROVED BY:		DATE:	
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Dames & Moore One North Dale Mabry Highway Suite Seven Hundred Tampa, Florida 33609 (813) 875-1115	
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PRELIMINARY DRAINAGE PLAN

MATCH LINE
SEE SHEET 1 OF 2

CONVENTION CENTER

EXISTING
.762m
(30") RCP

RW6
2.95 ha

EXISTING
.963m x 1.524m
(38" X 60") RCP

GARRISON CHANNEL

HARBOUR ISLAND

EXHIBIT 5

D:\MPROD2.DGN

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DESIGNED BY	CDS	02/95	DRAWN BY	DGB	02/95
CHECKED BY	MEM	02/95	CHECKED BY	CDS	02/95
SUPERVISED BY MICHAEL MILLS, P.E.					

FLORIDA DEPARTMENT OF TRANSPORTATION
APPROVED BY :
DATE :

Dames & Moore
One North Dale Mabrey Highway
Suite Seven Hundred
Tampa, Florida 33609
(813) 875-1115

PRELIMINARY DRAINAGE PLAN

LEGEND

FILL	- SAND to SILTY SAND; some with brick fragments, wood particles, rubble, shell
SP	- SAND to slightly SILTY SAND
SM	- SILTY SAND
SC	- CLAYEY SAND
CL to CL/CH	- SANDY CLAY to CLAY
ML	- SANDY to CLAYEY SILT
ML/LS	- Calcareous CLAYEY SILT w/LIMESTONE fragments (Weathered Limestone)
CL/LS	- Calcareous SANDY CLAY w/LIMESTONE (Weathered Limestone)
LS	- Hard LIMESTONE
W	- Water
R	- Refusal
q	- Unconfined Compressive Strength (tons per square foot)
s	- Splitting Tensile Strength (tons per square foot)
*	- Loss of Drill Fluid Circulation

Numbers to the right of borings indicate SPT N-values

SOURCE OF BORING DATA

Boring No.	Source
B-1	S&ME, Inc., Geotechnical Report , January, 1986, for NCNB (NationsBank) Building (Boring B-4)
B-2	S&ME, Inc., Geotechnical Report, January, 1986, for NCNB (NationsBank) Building (Boring B-1)
B-3	Kennedy Boulevard Bridge Plans (Boring AB-2)
B-4	Brorain Street Bridge Plans (Boring B-15)
B-5	Brorain Street Bridge Plans (Boring B-2)
B-6	Crosstown Expressway Bridge Plans (Boring S-46)
B-7	Crosstown Expressway Bridge Plans (Boring S-44)
B-8	Greiner, Inc., Tampa Convention Center Riverwalk Concept Study , April, 1989, (Boring B-3)
B-9	Greiner, Inc., Tampa Convention Center Riverwalk Concept Study, April, 1989, (Boring B-2)
B-10	Greiner, Inc., Tampa Convention Center Riverwalk Concept Study, April, 1989, (Boring B-1)
B-11	Platt Street Bridge Plans (Boring Q)
B-12	Law Engineering, Geotechnical Report for Tampa Convention Center, May, 1987, (Boring L-13)
B-13	Law Engineering, Geotechnical Report for Tampa Convention Center, May, 1987, (Boring W-1)
B-14	Law Engineering, Geotechnical Report for Tampa Convention Center, May, 1987, (Boring L-22)
B-15	Law Engineering, Geotechnical Report for Tampa Convention Center, May, 1987, (Boring W-5)
B-16	Law Engineering, Geotechnical Report for Tampa Convention Center, May, 1987, (Boring W-6)
B-17	Law Engineering, Geotechnical Report for Tampa Convention Center, May, 1987, (Boring L-27)
B-18	Law Engineering, Geotechnical Report for Tampa Convention Center, May, 1987, (Boring W-10)
B-19	Law Engineering, Geotechnical Report for Tampa Convention Center, May, 1987, (Boring W-13)
B-20	Franklin Street Bridge Plans (Boring S-3)
B-21	Franklin Street Bridge Plans (Boring S-4)

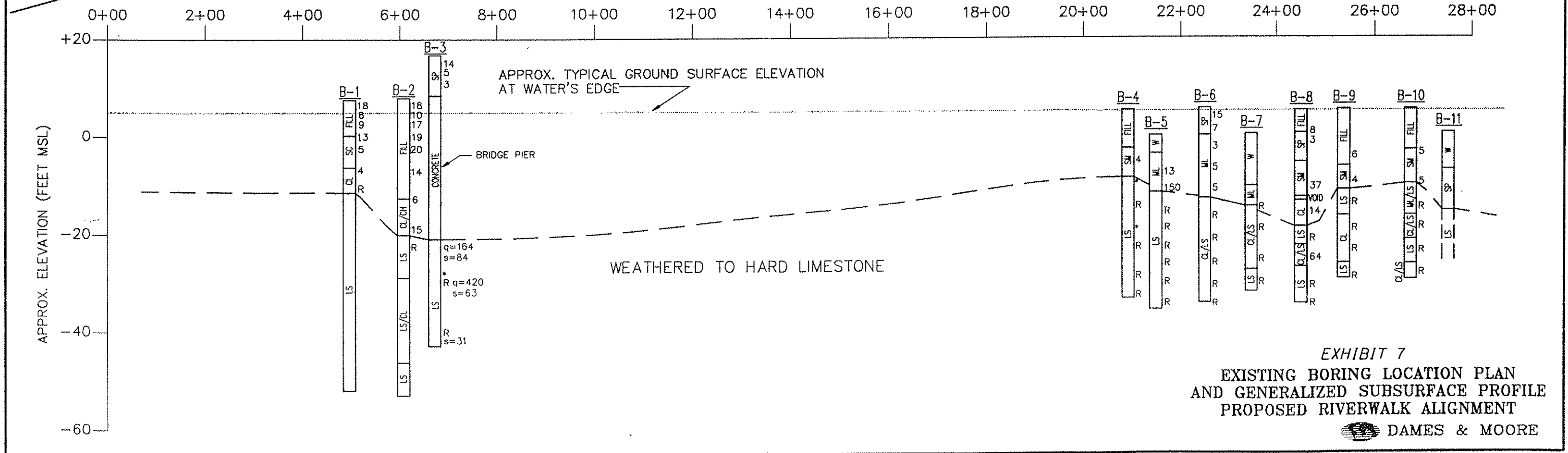
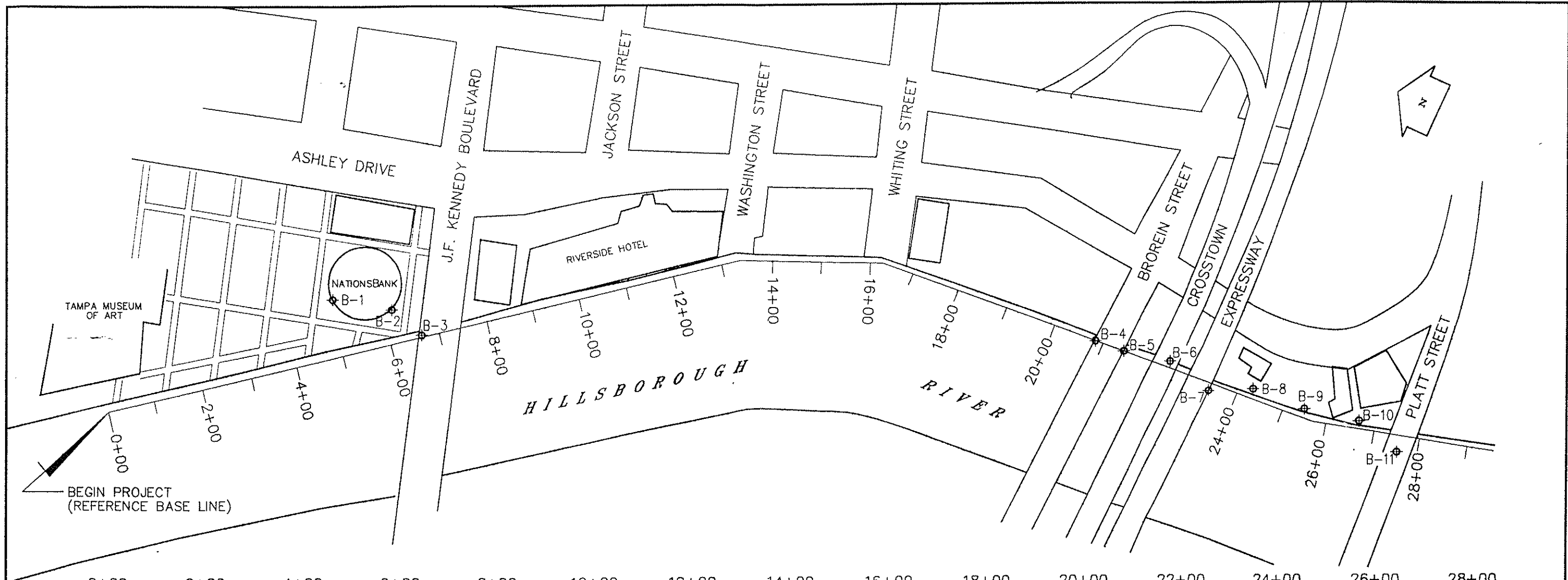


EXHIBIT 7
EXISTING BORING LOCATION PLAN
AND GENERALIZED SUBSURFACE PROFILE
PROPOSED RIVERWALK ALIGNMENT
DAMES & MOORE

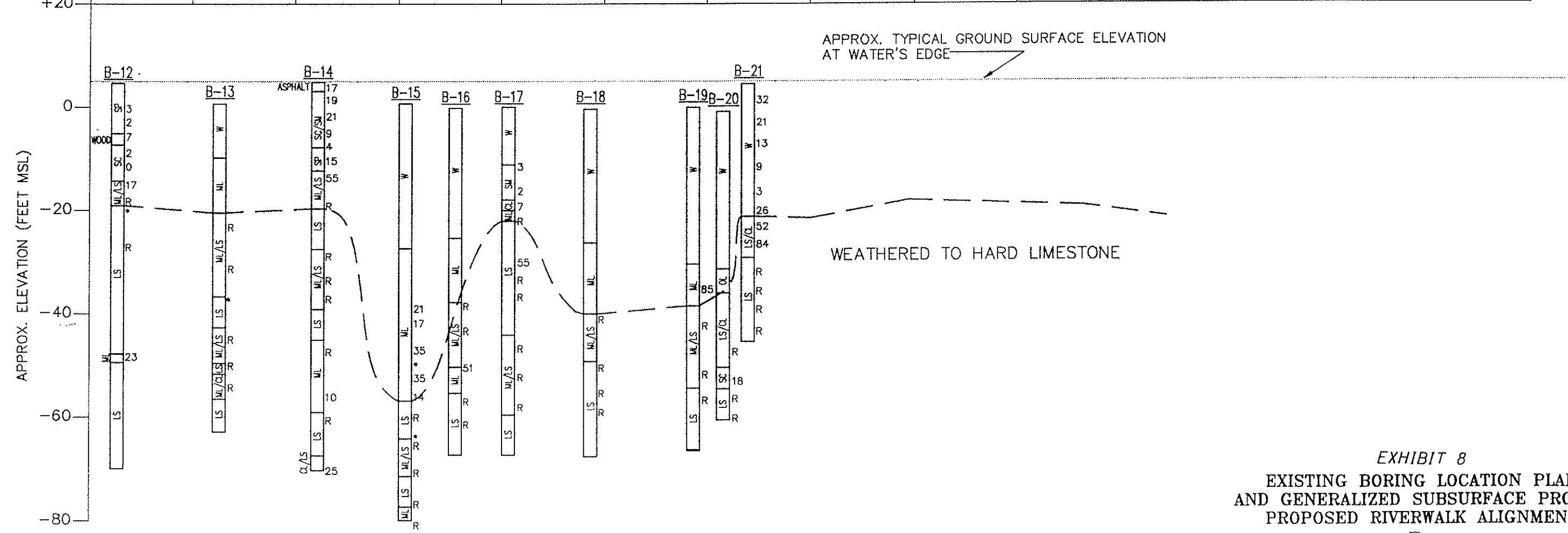
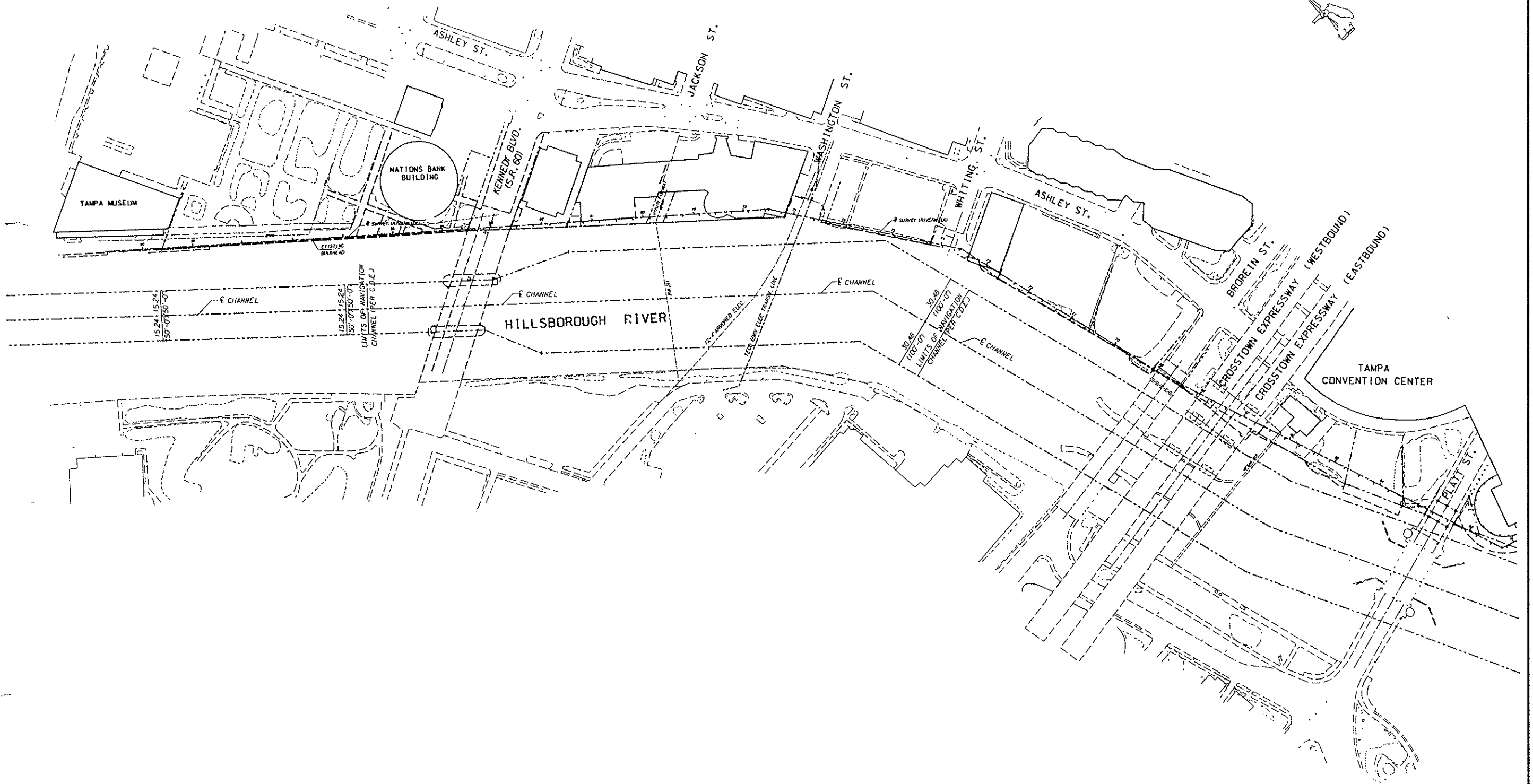
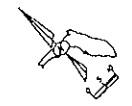


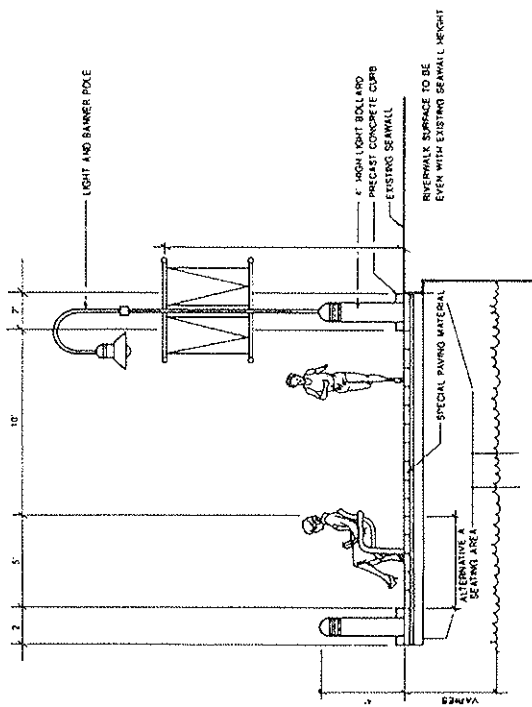
EXHIBIT 8
 EXISTING BORING LOCATION PLAN
 AND GENERALIZED SUBSURFACE PROFILE
 PROPOSED RIVERWALK ALIGNMENT
 DAMES & MOORE



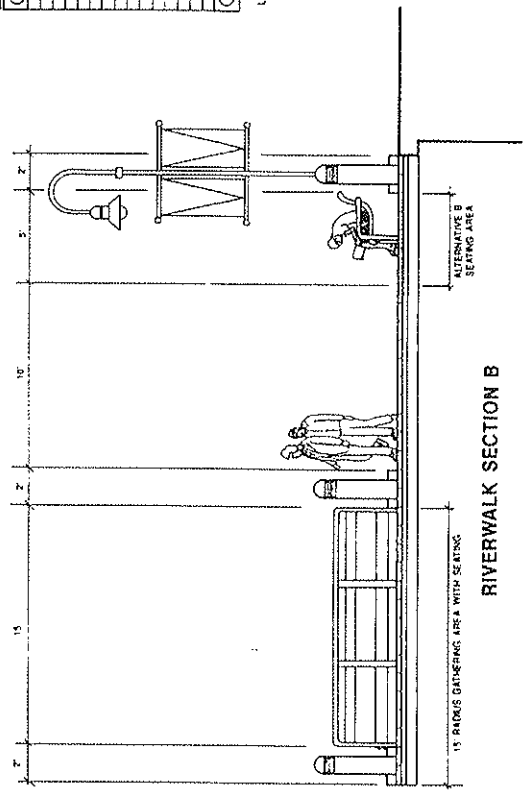
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EXHIBIT 9

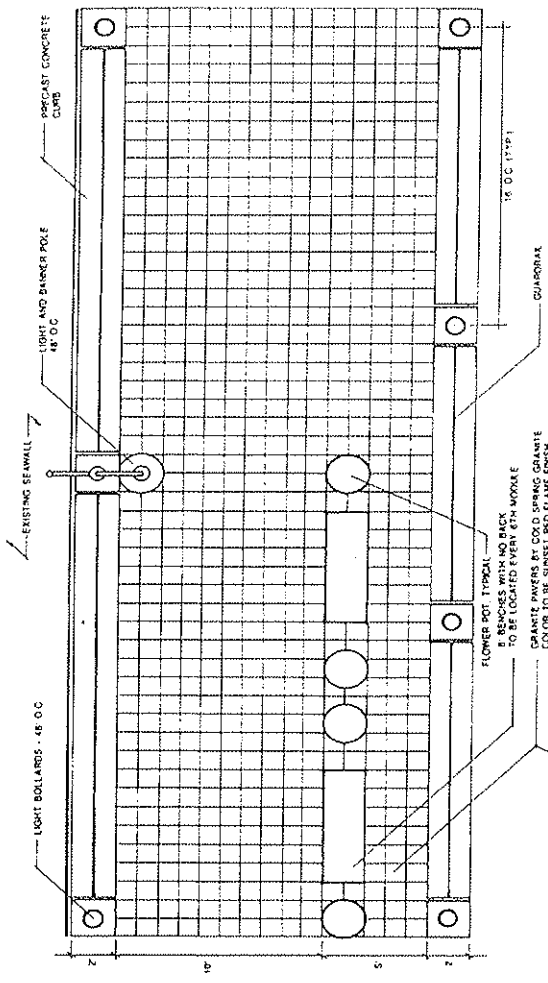
REVISIONS										FLORIDA DEPARTMENT OF TRANSPORTATION		 Dames & Moore <small>One North Dale Mabry Highway Suite Seven Hundred Tampa, Florida 33609 (813) 272-1111</small>	DOWNTOWN TAMPA RIVERWALK CHANNEL LIMITS	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION			APPROVED BY:
												DESIGNED BY D.W.G. 10-94	DRAWN BY P.M.B. 12-94	
												CHECKED BY D.W.G. 1-95	CHECKED BY D.W.G. 1-95	
										SUPERVISED BY DAVID W. GRAFF P.E.				



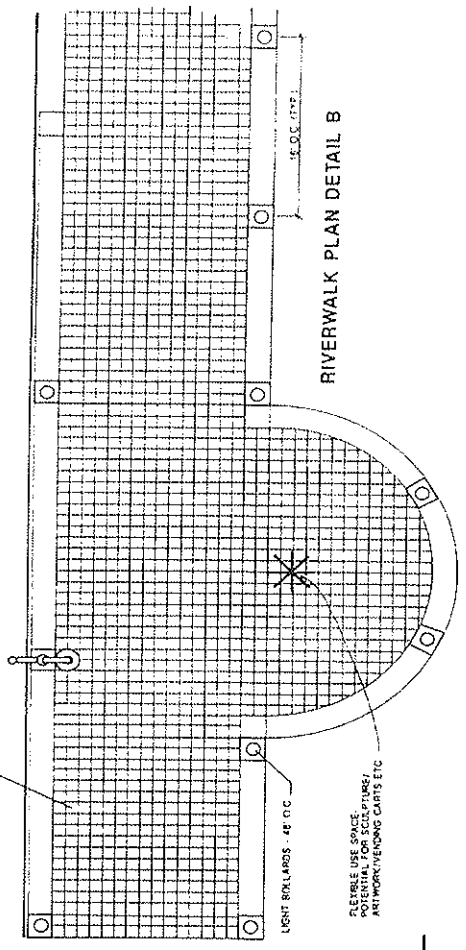
RIVERWALK SECTION A



RIVERWALK SECTION B



RIVERWALK PLAN DETAIL A



RIVERWALK PLAN DETAIL B

TAMPA RIVERWALK

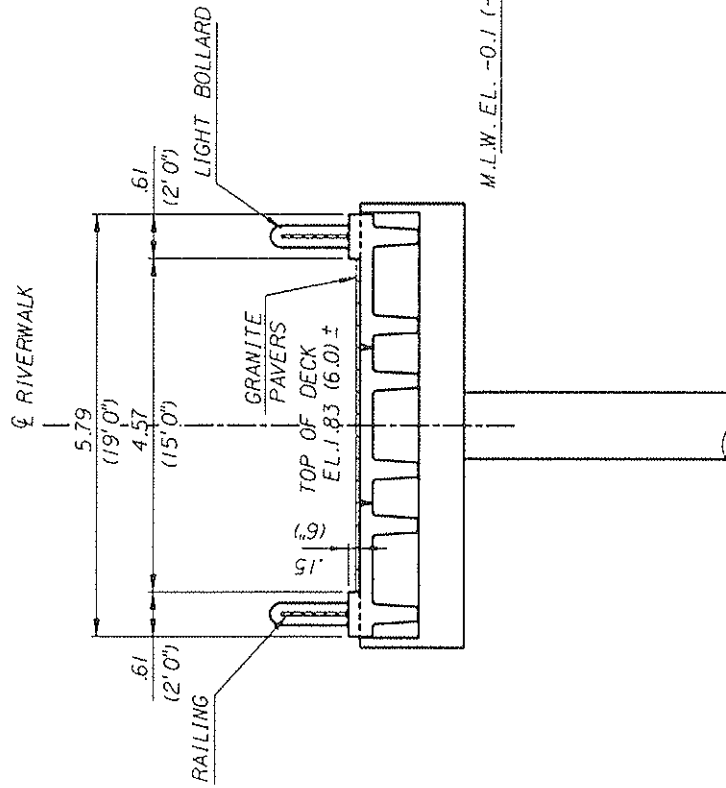
DETAILS

7 OCTOBER 1994
REV. 18 MAY 1995



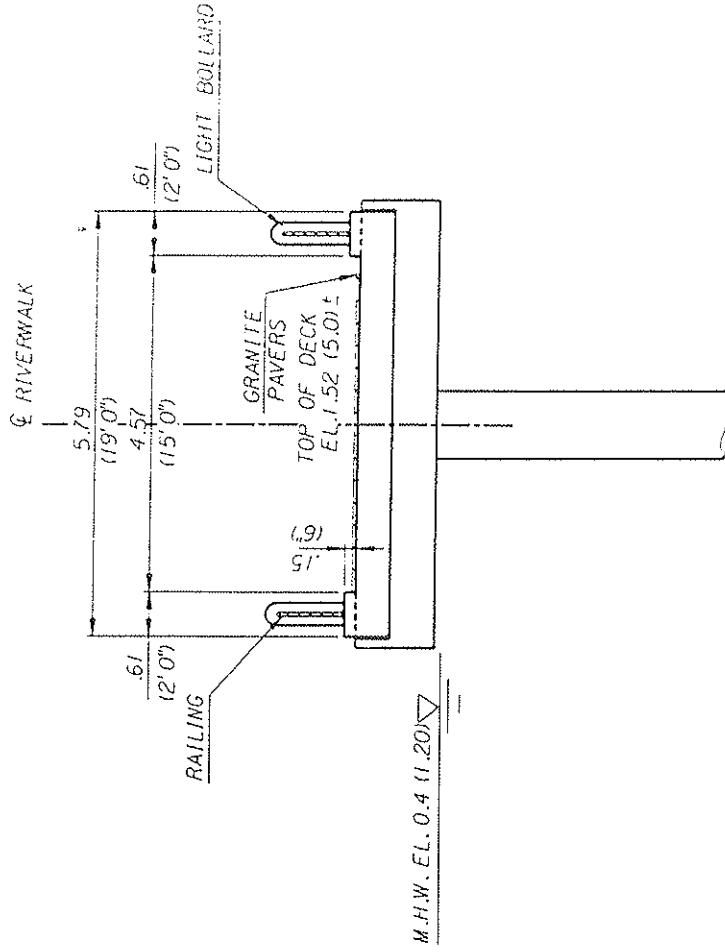
DAMES & MOORE

CIVIL ENGINEERING/WATER RESOURCES/WASTE MANAGEMENT
ENVIRONMENTAL SERVICES/GEOTECHNICAL ENGINEERING/
PLANNING/LANDSCAPE ARCHITECTURE
ONE NORTH DALE HARRY SUITE 200
TAMPA, FLORIDA 33609
(813) 272-1115



TYPICAL SECTION

AT PLATT AND BROEIN ST. BRIDGES



TYPICAL SECTION THRU AVERAGE SPAN

EXHIBIT 11

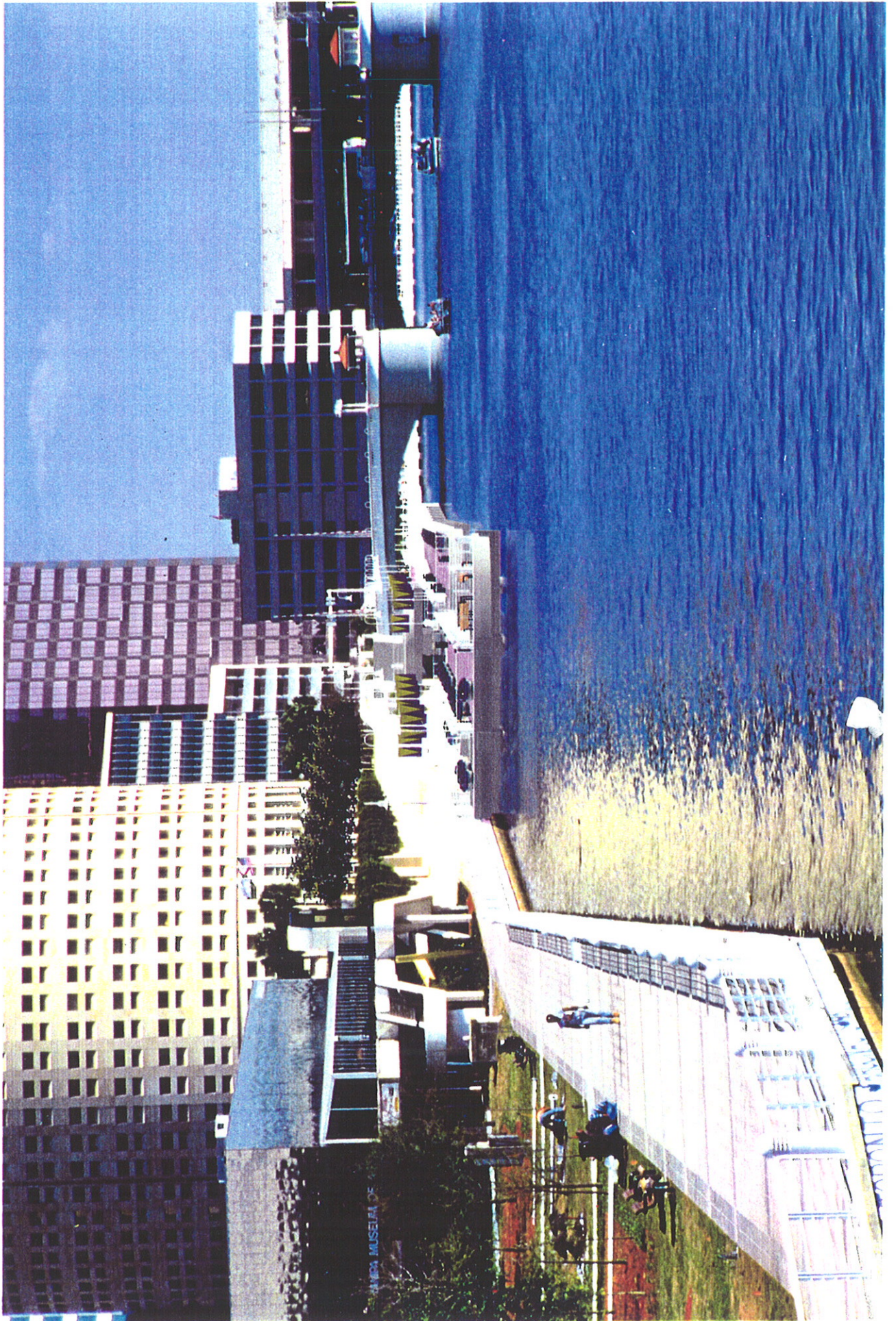
DESIGNED BY	DATE	NAME	DATE
D. W. C.	2-95	P. M. B.	7-95
CHECKED BY	DATE	NAME	DATE
D. W. C.	2-95	D. W. C.	7-95

FLORIDA DEPARTMENT OF TRANSPORTATION
 APPROVED BY :
 DATE :

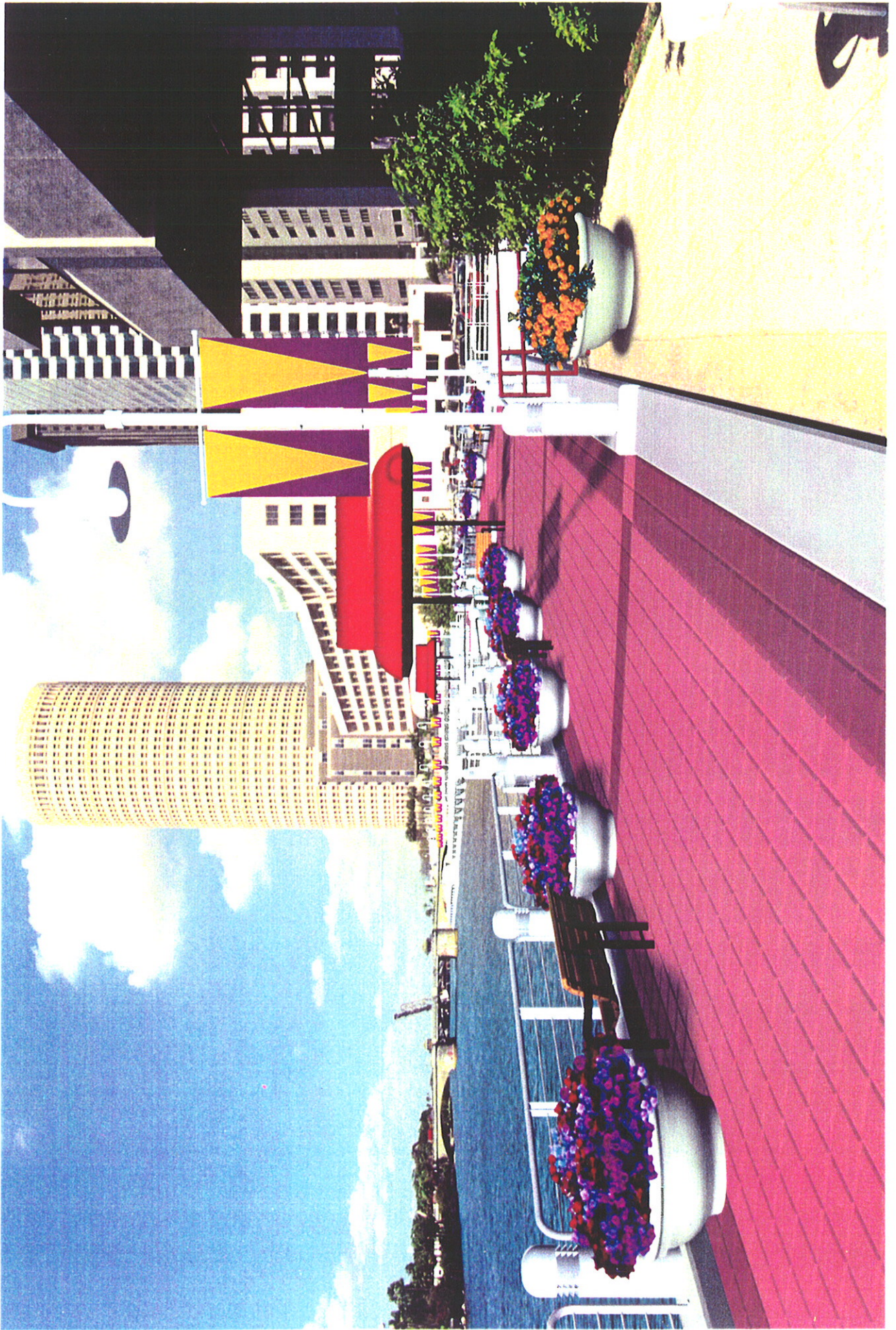
DAMES & MOORE
 One North Dale Mabry Highway
 Suite Seven Hundred
 Tampa, Florida 33609
 (813) 251-1115

DOWNTOWN TAMPA RIVERWALK
 TYPICAL SECTIONS AT
 KENNEDY BLVD. @ PLATT ST.

SUPERVISED BY : DAVID W. CRAFF P.E.









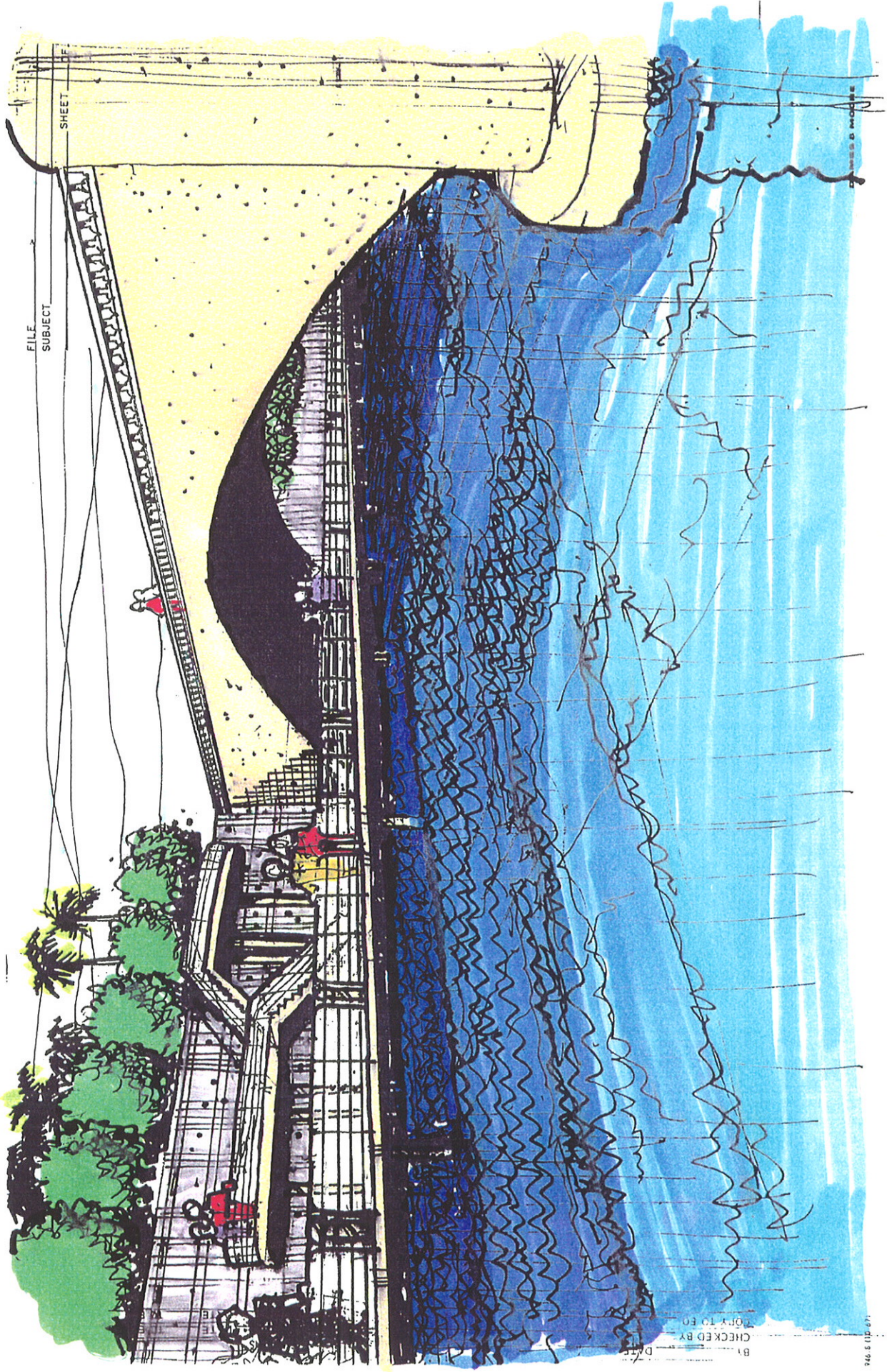
FILE _____
SUBJECT _____
SHEET _____ OF _____



James Moore

REVISIONS
BY _____ DATE _____ TO EO _____
BY _____ DATE _____ TO EO _____

BY _____ DATE _____
CHECKED BY _____
COPY TO EO _____



FILE
SUBJECT

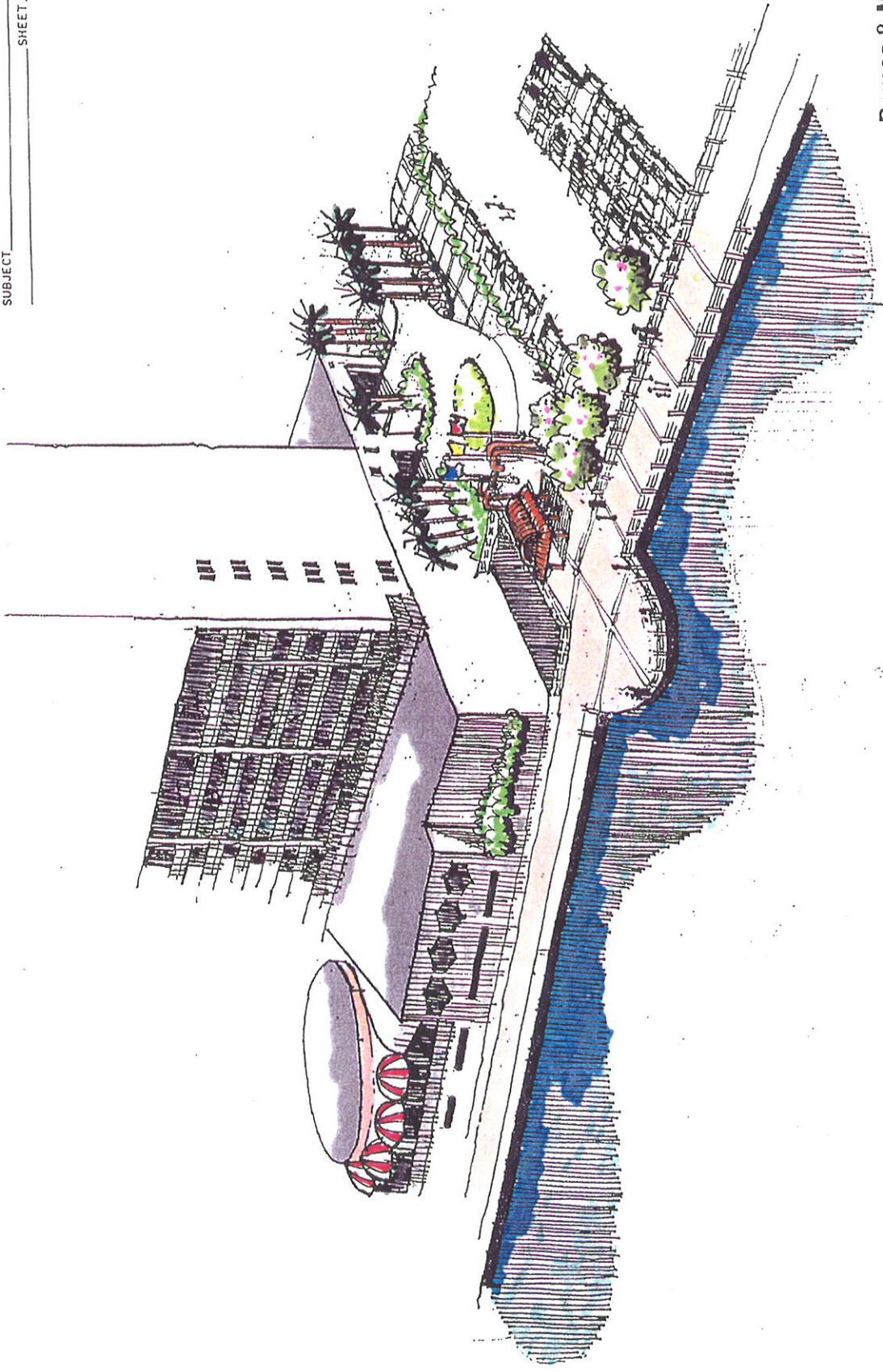
SHEET OF

CHARLES B. MOORE

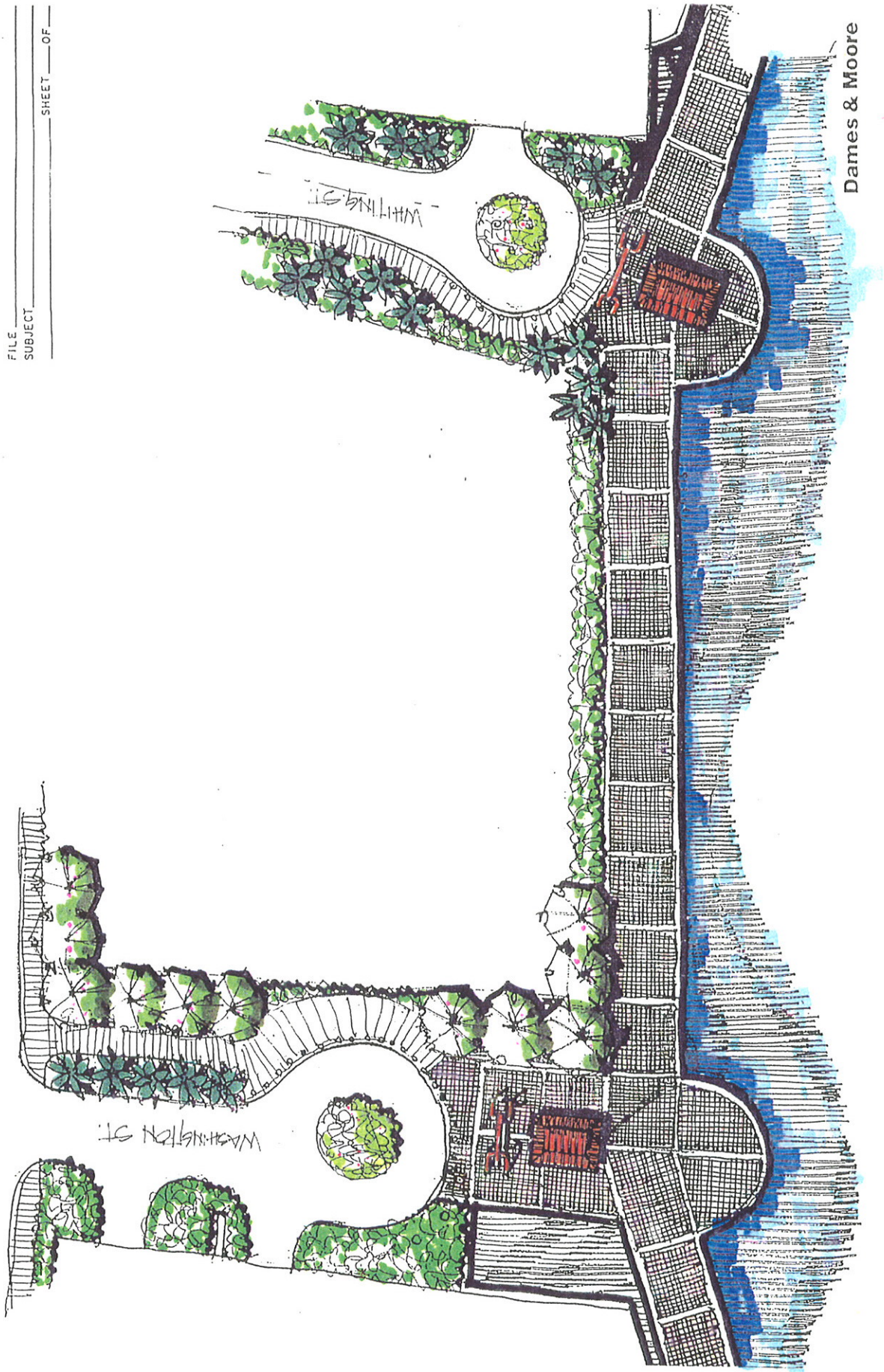
DATE
CHECKED BY
COPY TO ED

246 & (12-67)

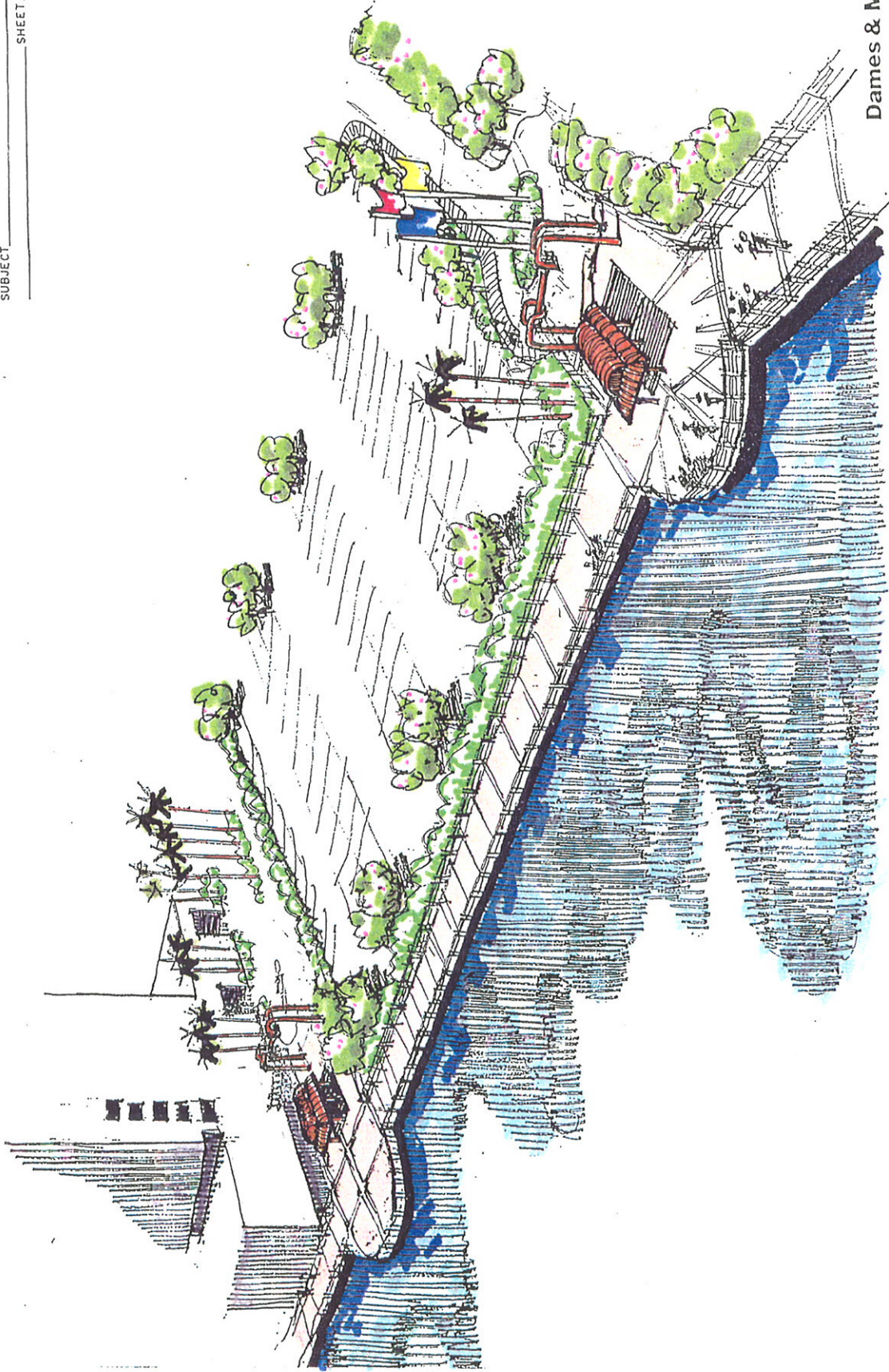
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SHEET _____ OF _____



Dames & Moore

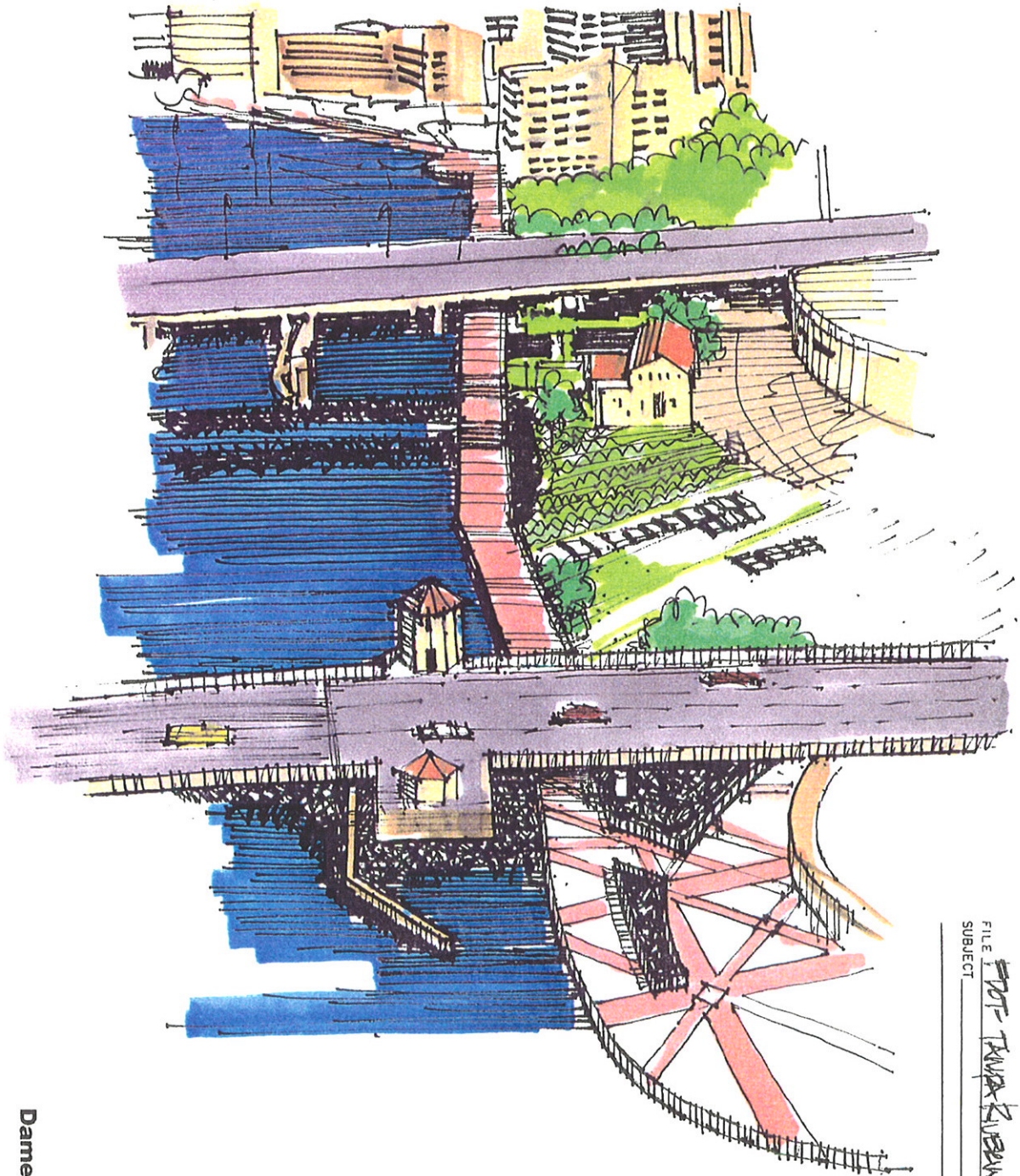


Dames & Moore

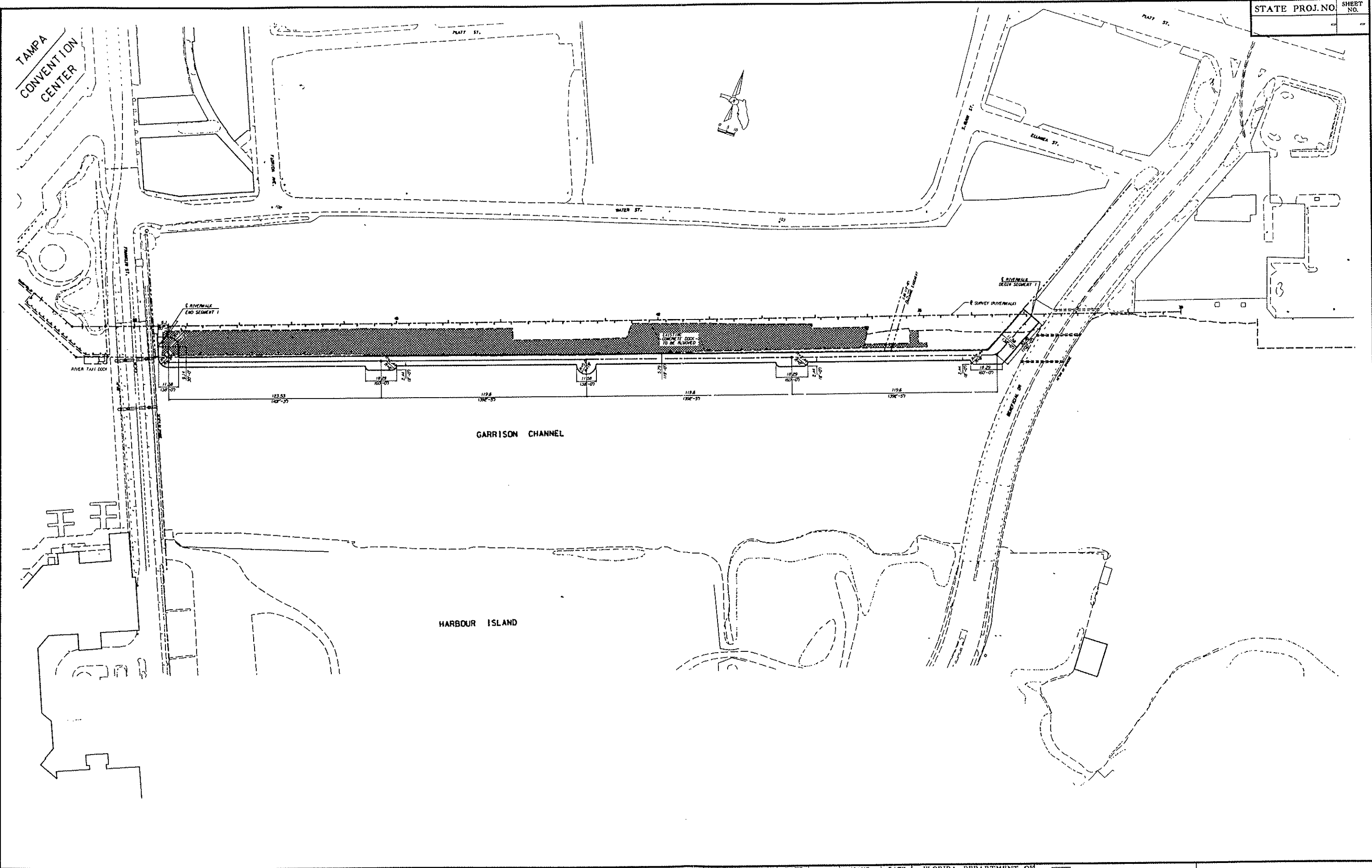


BY _____ DATE 10/20/94
CHECKED BY _____
COPY TO EO _____

REVISIONS
BY _____ DATE _____ TO EO _____
BY _____ DATE _____ TO EO _____



FILE # DOT TRUCK SUBWAYS
SUBJECT _____
SHEET _____ OF _____



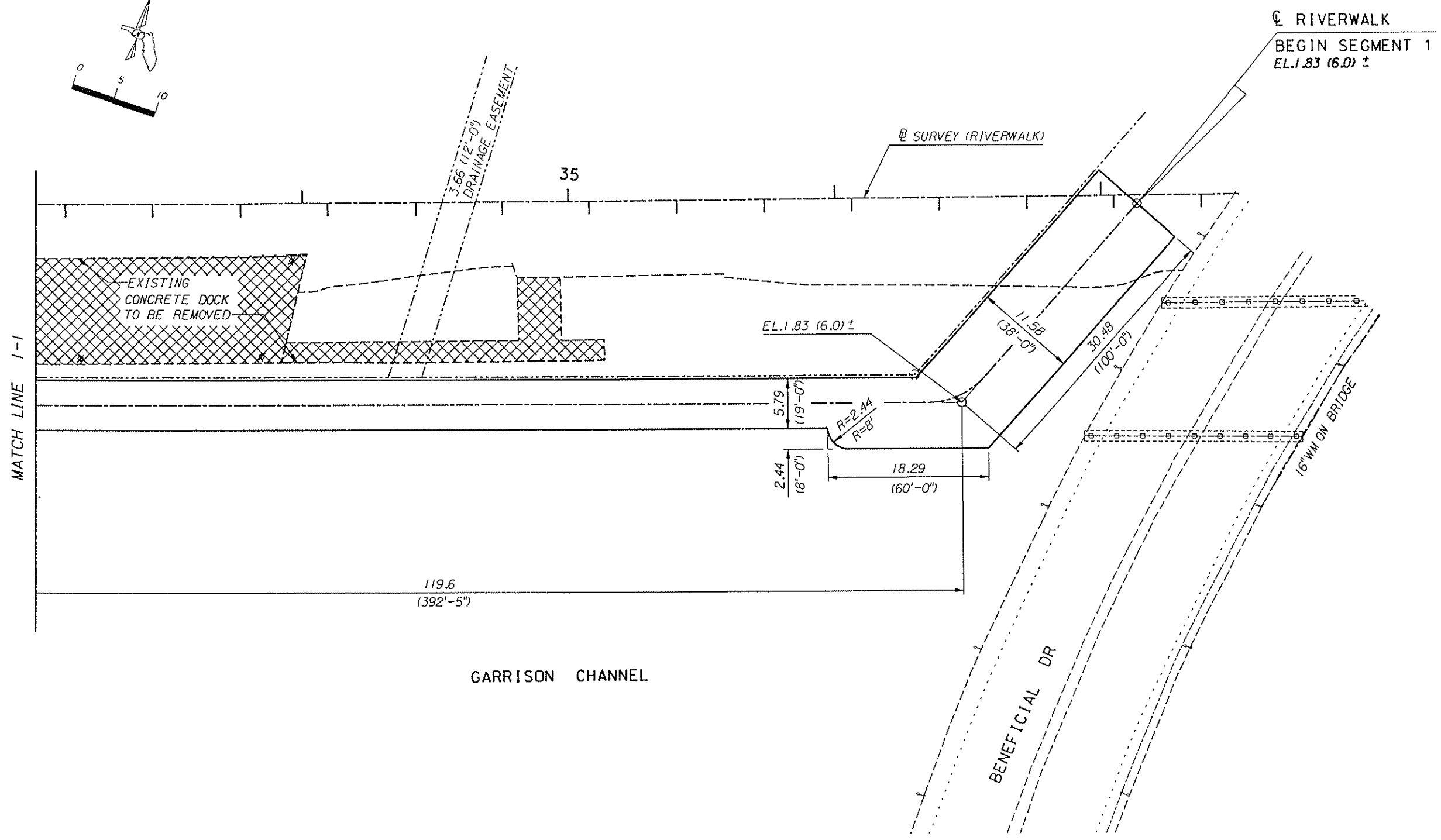
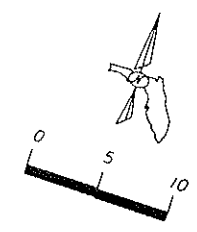
P-PROJ-RIVERWALK-RIBASER-7-6-95-P.U.B.

REVISIONS							
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

DESIGNED BY	D.W.G.	11-94	DRAWN BY	P.M.B.	1-95
CHECKED BY	D.W.G.	1-95	CHECKED BY	D.W.G.	1-95
SUPERVISED BY: DAVID W. GRAFF P.E.					

FLORIDA DEPARTMENT OF TRANSPORTATION
 APPROVED BY: _____
 DATE: _____

Dames & Moore
 One North Dale Mabey Highway
 Suite Seven Hundred
 Tampa, Florida 33609
 (813) 275-1112



P:--PROJ--RIVERWALK--RIVBASER-4-18-95-P.M.B.

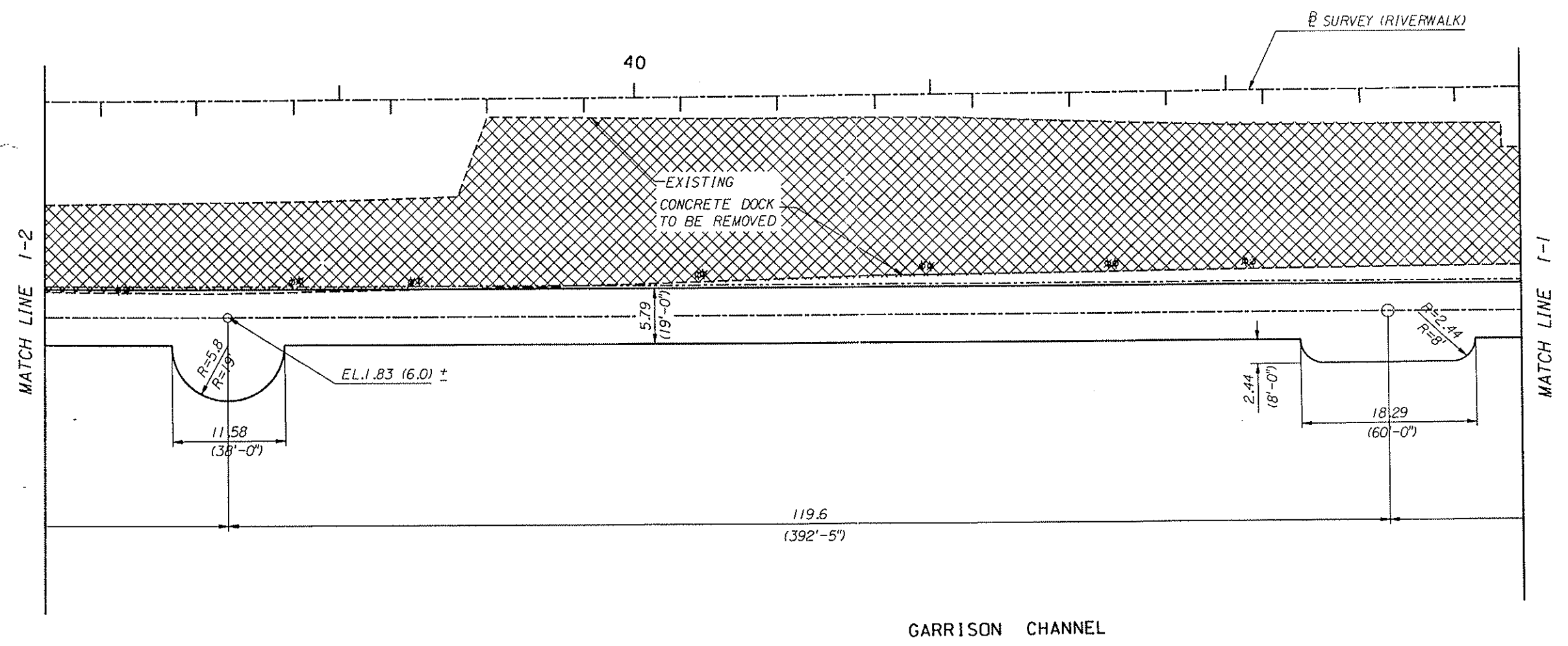
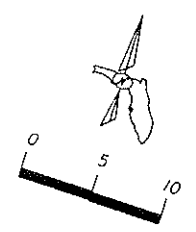
DATE		BY		DESCRIPTION		DATE		BY		DESCRIPTION	

DESIGNED BY	NAME	DATE	DRAWN BY	NAME	DATE
D.W.G.		10-94	P.M.B.		12-94
CHECKED BY	D.W.G.	1-95	CHECKED BY	D.W.G.	12-94
SUPERVISED BY		DAVID W. GRAFF P.E.			

FLORIDA DEPARTMENT OF TRANSPORTATION
 APPROVED BY: _____
 DATE: _____

Dames & Moore
 One North Dale Mabry Highway
 Suite Seven Hundred
 Tampa, Florida 33609
 (813) 875-1115

DOWNTOWN TAMPA RIVERWALK
SEGMENT 1 PLAN (2 OF 5)



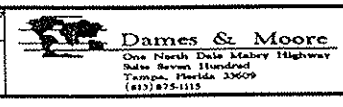
GARRISON CHANNEL

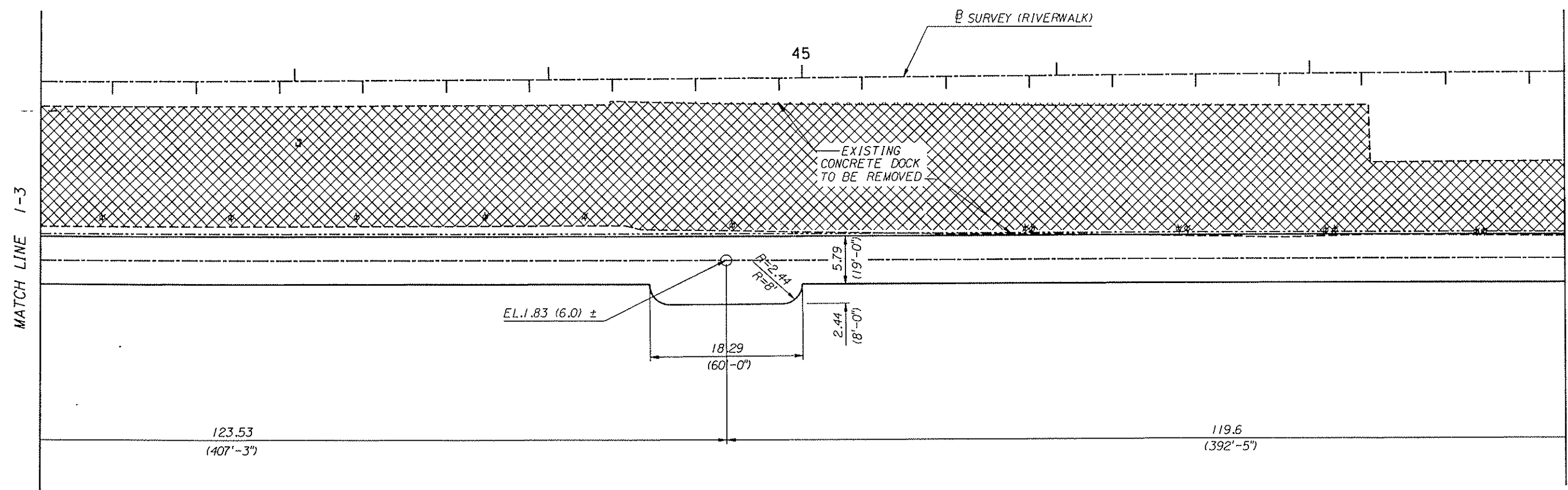
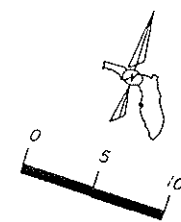
P-PROJ-RIVERWALK-RIBASER-7-6-95-P.M.B.

REVISIONS			
DATE	BY	DESCRIPTION	

DESIGNED BY	D.W.G.	10-94	DRAWN BY	P.M.B.	12-94
CHECKED BY	D.W.G.	1-95	CHECKED BY	D.W.G.	12-94
SUPERVISED BY :		DAVID W. GRAFF P.E.			

FLORIDA DEPARTMENT OF TRANSPORTATION
 APPROVED BY :
 DATE :





GARRISON CHANNEL

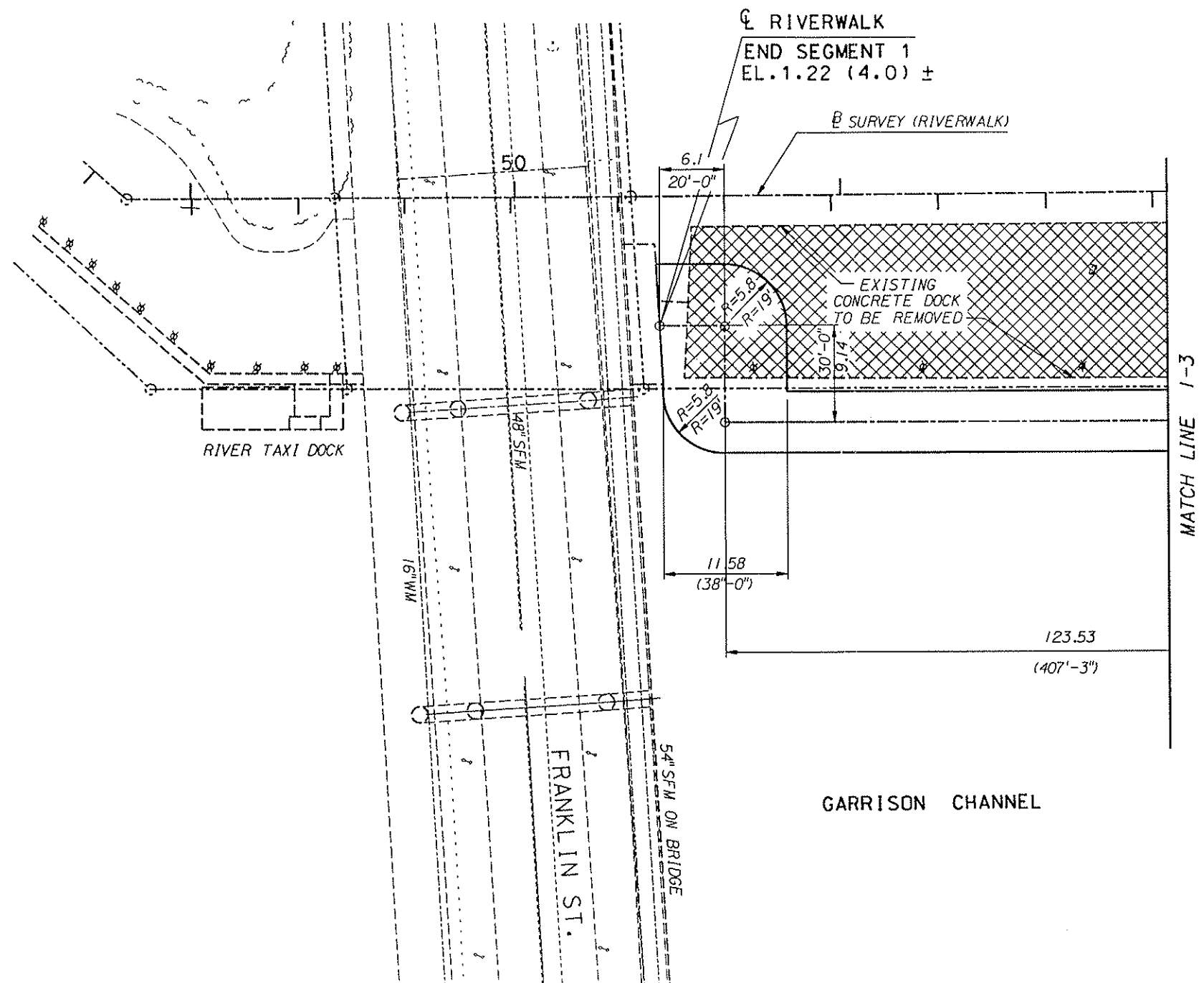
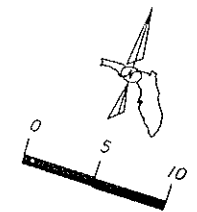
P-PROJ-RIVERWALK-RIVERWALK-7-6-95-P.M.B.

REVISIONS									
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE

DESIGNED BY	D.W.G.	DATE	10-94	DRAWN BY	P.M.B.	DATE	12-94
CHECKED BY	D.W.G.	DATE	1-95	CHECKED BY	D.W.G.	DATE	12-94
SUPERVISED BY :		DAVID W. GRAFF P.E.					

FLORIDA DEPARTMENT OF TRANSPORTATION
 APPROVED BY :
 DATE :





P- PROJ-RIVERWALK-RIVBASER-7-6-95-P.M.B.

DATE		BY		DESCRIPTION	

REVISIONS					
NO.	DATE	BY	DESCRIPTION	DATE	BY

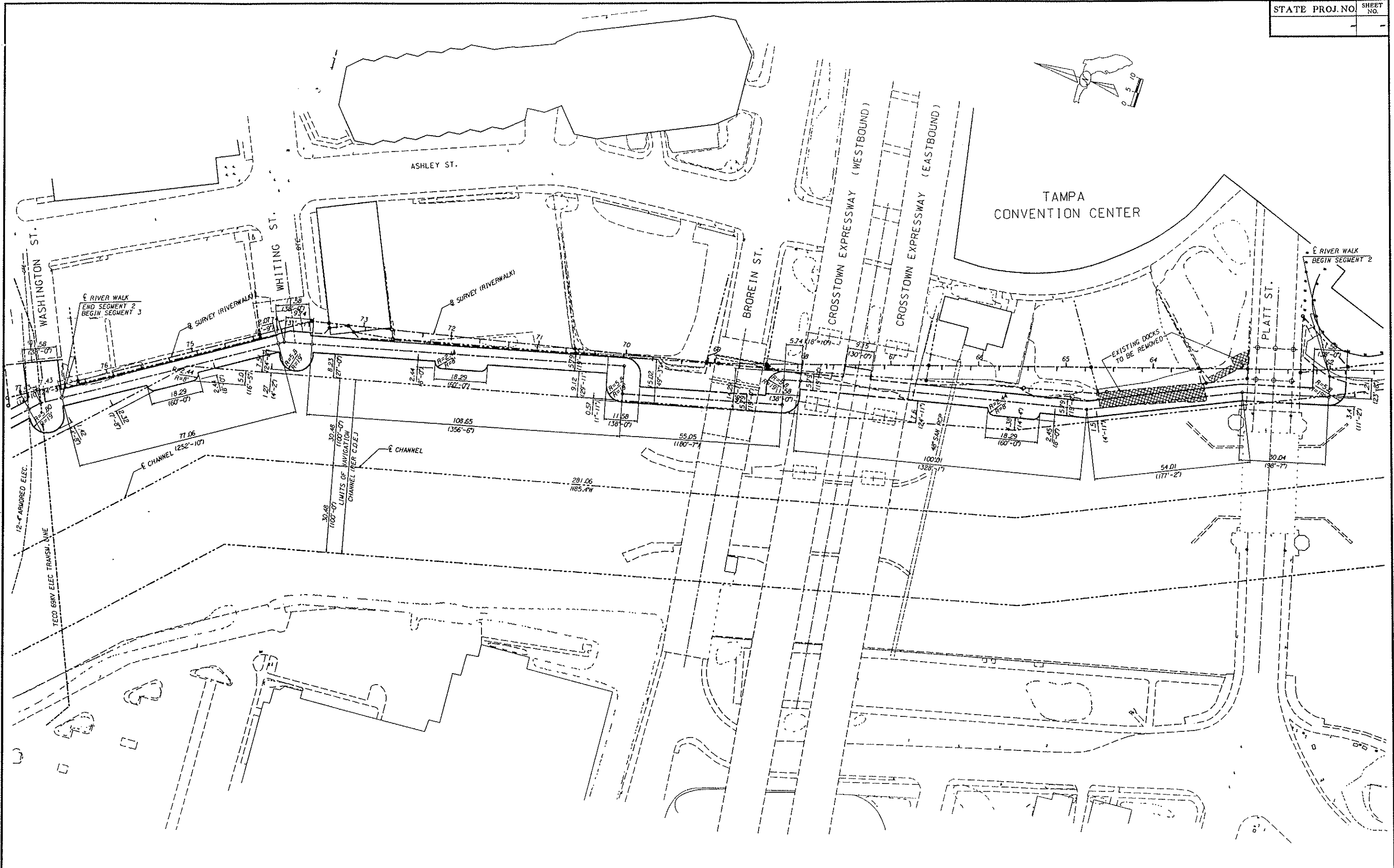
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CHECKED BY	D.W.G.	DATE	1-95	CHECKED BY	D.W.G.	DATE	12-94
SUPERVISED BY :				DAVID W. GRAFF		P.E.	

FLORIDA DEPARTMENT OF TRANSPORTATION

Dames & Moore

One North Dale Mabry Highway
Dale Harvey Building
Tampa, Florida 33609
(813) 275-3115

DOWNTOWN TAMPA RIVERWALK
SEGMENT 1 PLAN (5 OF 5)

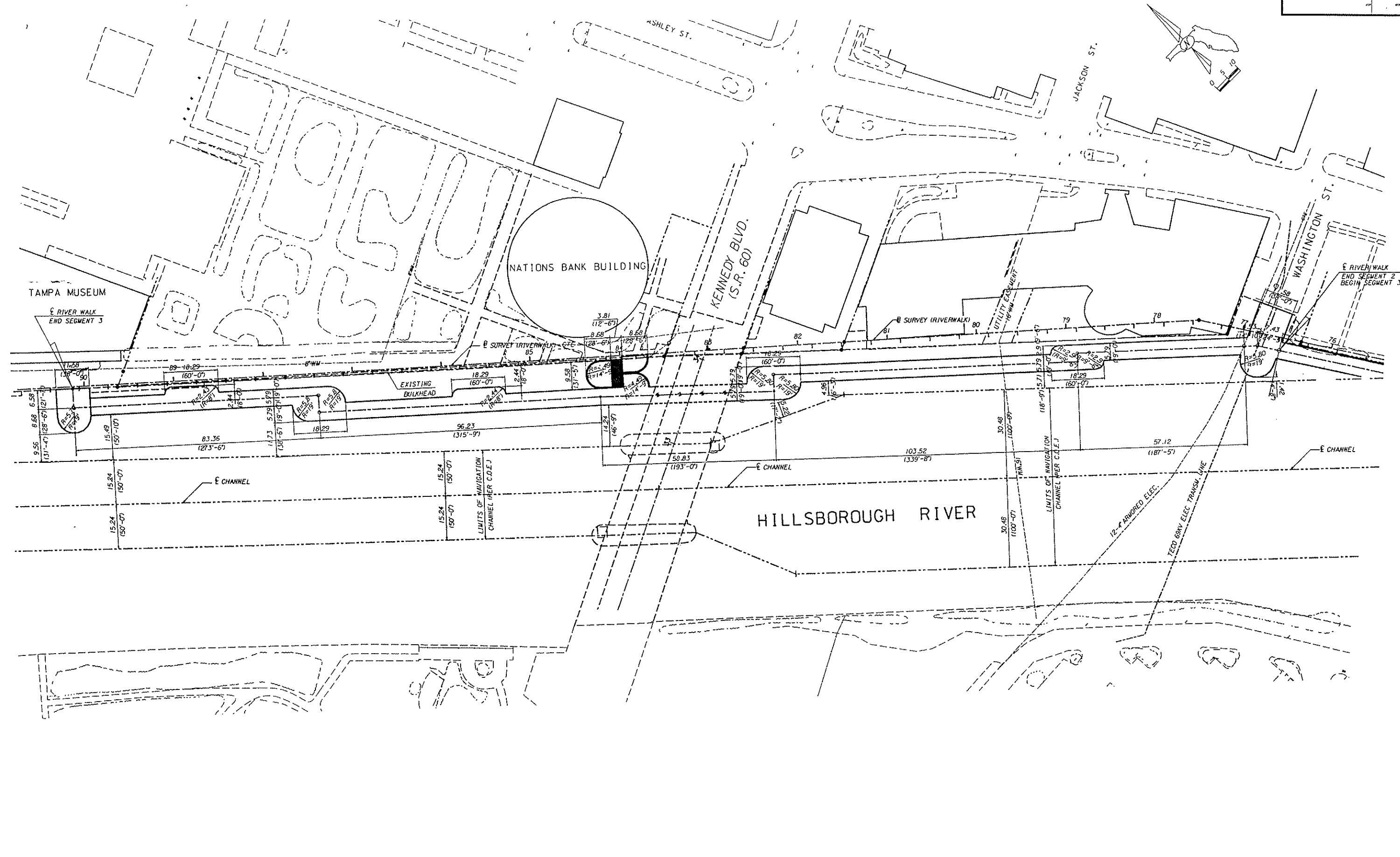


P.-PROJ-RIVERWALK-RIVGAR06-7-7-95-P.M.B.

REVISIONS				DESIGNED BY	NAME	DATE	DRAWN BY	NAME	DATE	FLORIDA DEPARTMENT OF TRANSPORTATION		 Dames & Moore One North Dale Mabry Highway Suite Seven Hundred Tampa, Florida 33609 (813) 775-1115	DOWNTOWN TAMPA RIVERWALK SEGMENT 2 PLAN
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	APPROVED BY	DATE			

DESIGNED BY: D.W.G. 10-94
 CHECKED BY: D.W.G. 1-95
 SUPERVISED BY: DAVID W. GRAFF P.E.

DRAWN BY: P.M.B. 12-94
 CHECKED BY: D.W.G. 1-95
 APPROVED BY: _____
 DATE: _____



P.-PROJ-RIVERWAL-RIVCAR05-7-21-95-P.M.B.

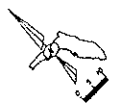
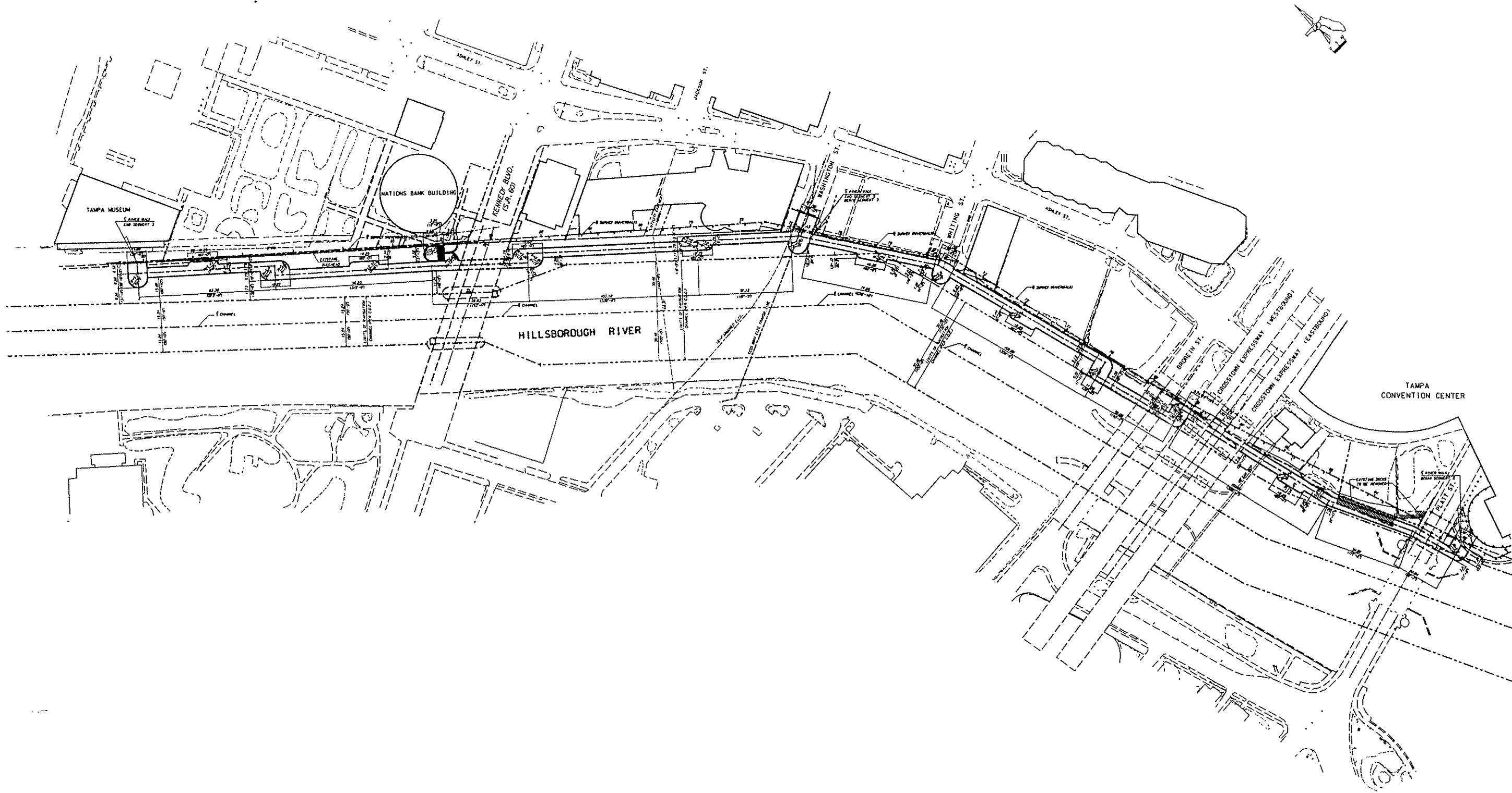
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DESIGNED BY	D.W.G.	10-94	DRAWN BY	P.M.B.	12-94
CHECKED BY	D.W.G.	1-95	CHECKED BY	D.W.G.	1-95
SUPERVISED BY		DAVID W. GRAFF P.E.			

FLORIDA DEPARTMENT OF TRANSPORTATION
 APPROVED BY: _____
 DATE: _____

Dames & Moore
 One North Dale Mabry Highway
 Suite Seven Hundred
 Tampa, Florida 33609
 (813) 878-1115

DOWNTOWN TAMPA RIVERWALK
 SEGMENT 3 PLAN



P-PROJ-RIVERWALK-RIVGARD-7-5-95-P.M.B.

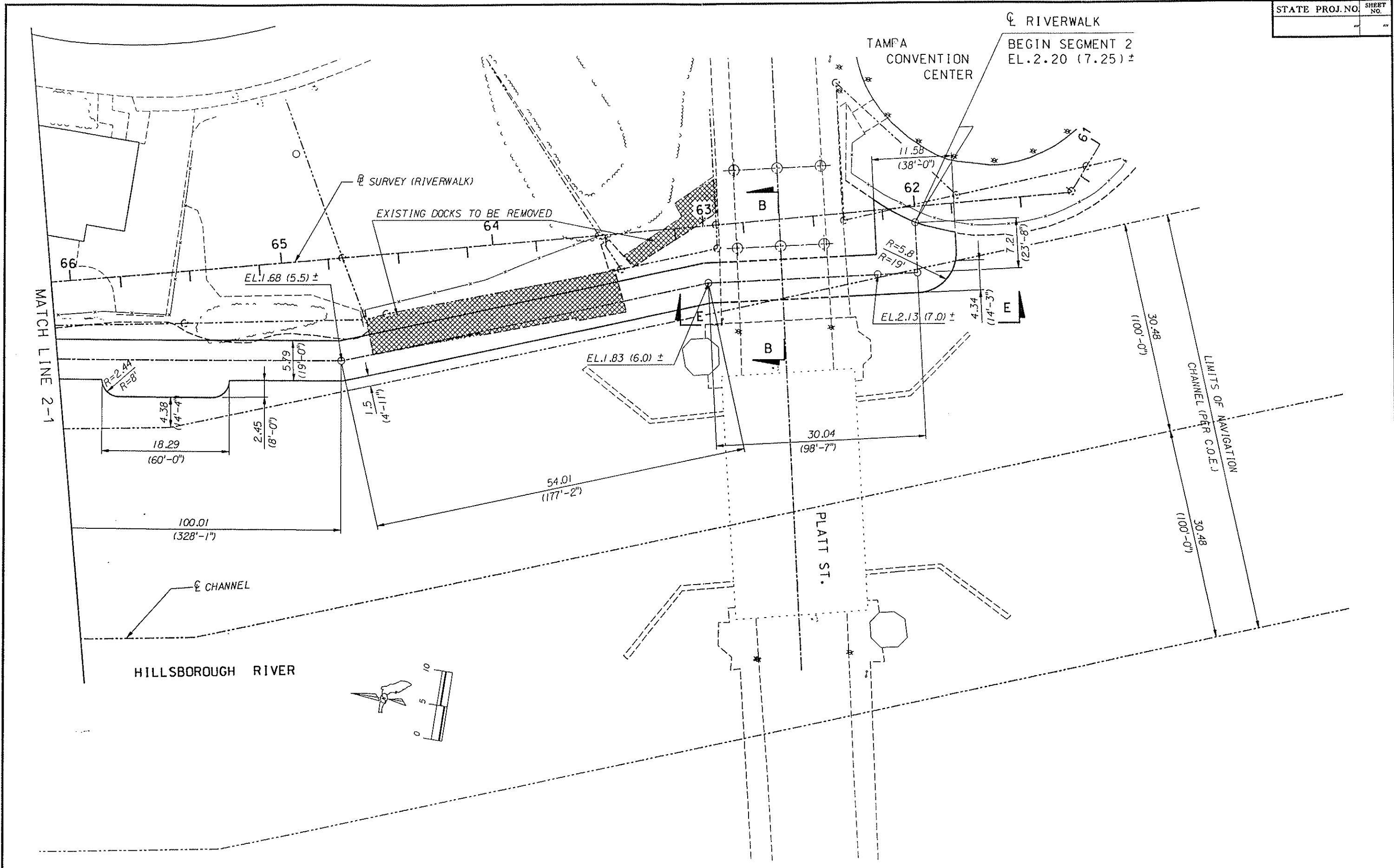
REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DESIGNED BY	D.W.G.	DATE	10-94	DRAWN BY	P.M.B.	DATE	12-94
CHECKED BY	D.W.G.	DATE	1-95	CHECKED BY	D.W.G.	DATE	1-95
SUPERVISED BY DAVID W. GRAFF P.E.							

FLORIDA DEPARTMENT OF TRANSPORTATION
 APPROVED BY: _____
 DATE: _____

Dames & Moore
 One North Dale Mabry Highway
 Suite Seven Hundred
 Tampa, Florida 33609
 (813) 875-3113

**DOWNTOWN TAMPA RIVERWALK
 SEGMENTS 2 & 3 PLAN (1 OF 6)**



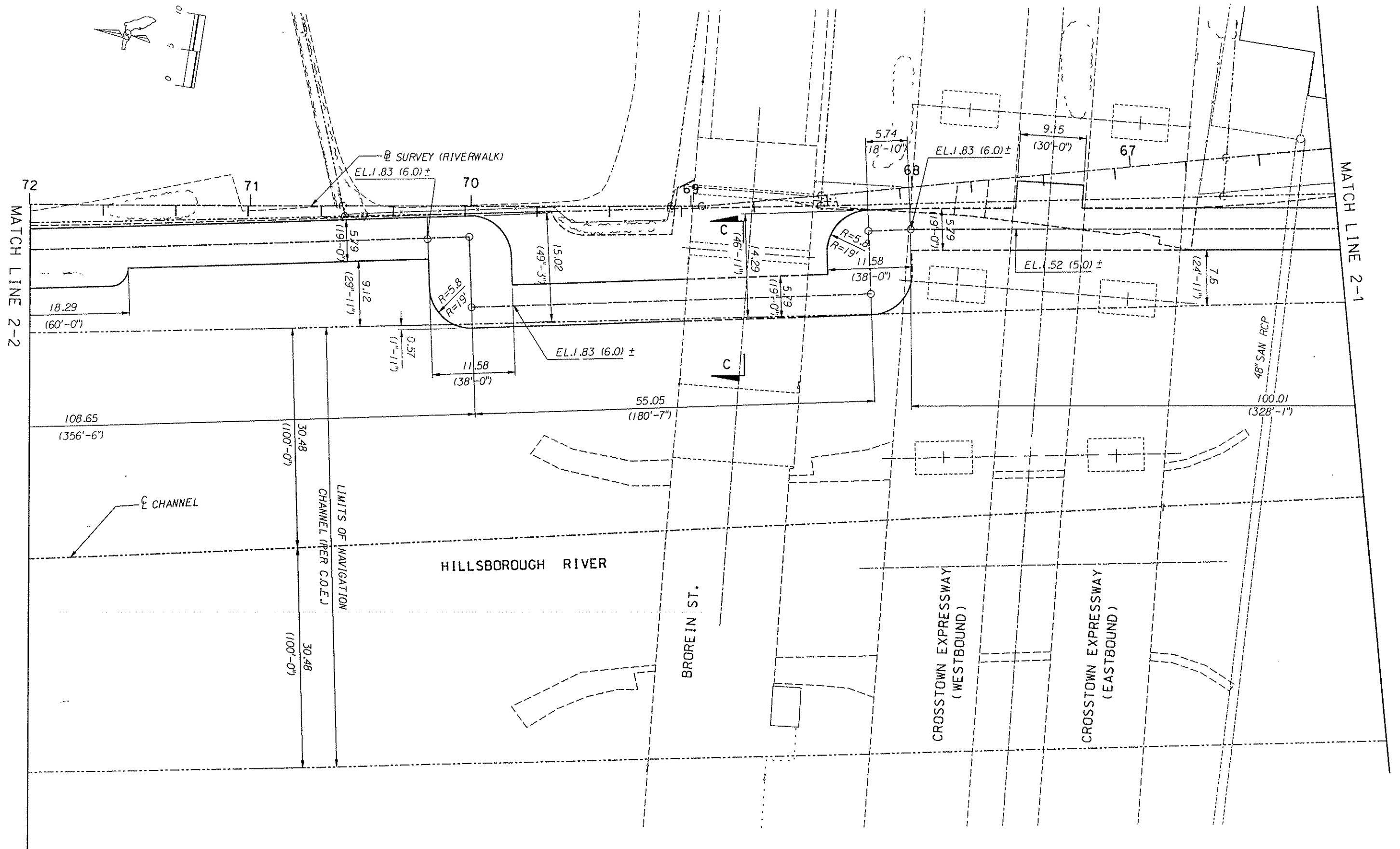
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REVISIONS											
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DESIGNED BY	D.W.G.	10-94	DRAWN BY	P.M.B.	12-94
CHECKED BY	D.W.G.	1-95	CHECKED BY	D.W.G.	1-95
SUPERVISED BY : DAVID W. GRAFF P.E.					

FLORIDA DEPARTMENT OF TRANSPORTATION
 APPROVED BY :
 DATE :

Dames & Moore
 One North Dale Mabry Highway
 Suite Seven Thousand
 Tampa, Florida 33609
 (813) 875-1115



P.-PROJ-RIVERWALK-RIVDOTDG-7-6-95-P.M.B.

REVISIONS							
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

DESIGNED BY	D.W.G.	DATE	10-94	DRAWN BY	P.M.B.	DATE	12-94
CHECKED BY	D.W.G.	DATE	1-95	CHECKED BY	D.W.G.	DATE	1-95
SUPERVISED BY	DAVID W. GRAFF P.E.						

FLORIDA DEPARTMENT OF TRANSPORTATION
APPROVED BY: _____
DATE: _____

Dames & Moore
One North Dale Mabry Highway
Suite Seven Hundred
Tampa, Florida 33609
(813) 875-1115

MATCH LINE 3-1

MATCH LINE 2-2

END SEGMENT 2
BEGIN SEGMENT 3

HILLSBOROUGH RIVER

RIVERWALK

CHANNEL

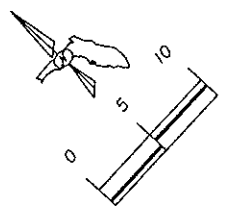
B SURVEY (RIVERWALK)

B SURVEY (RIVERWALK)

LIMITS OF NAVIGATION
CHANNEL (PER C.O.E.)

12" ARMORED ELEC.

TECO 69KV ELEC TRANSM. LINE



P.-PROJ-RIVERWALK-RIVD0TDG-7-6-95-P.M.B.

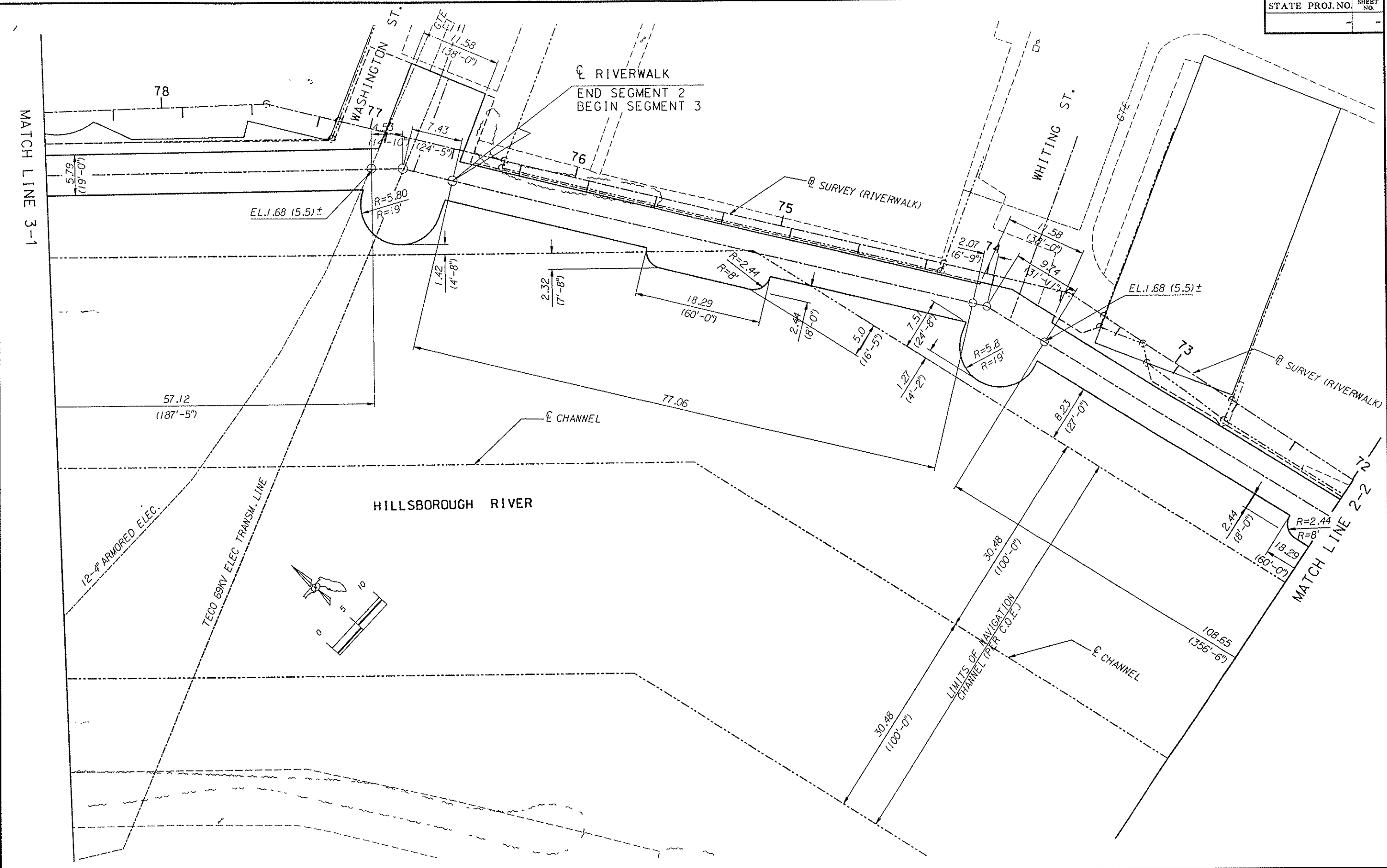
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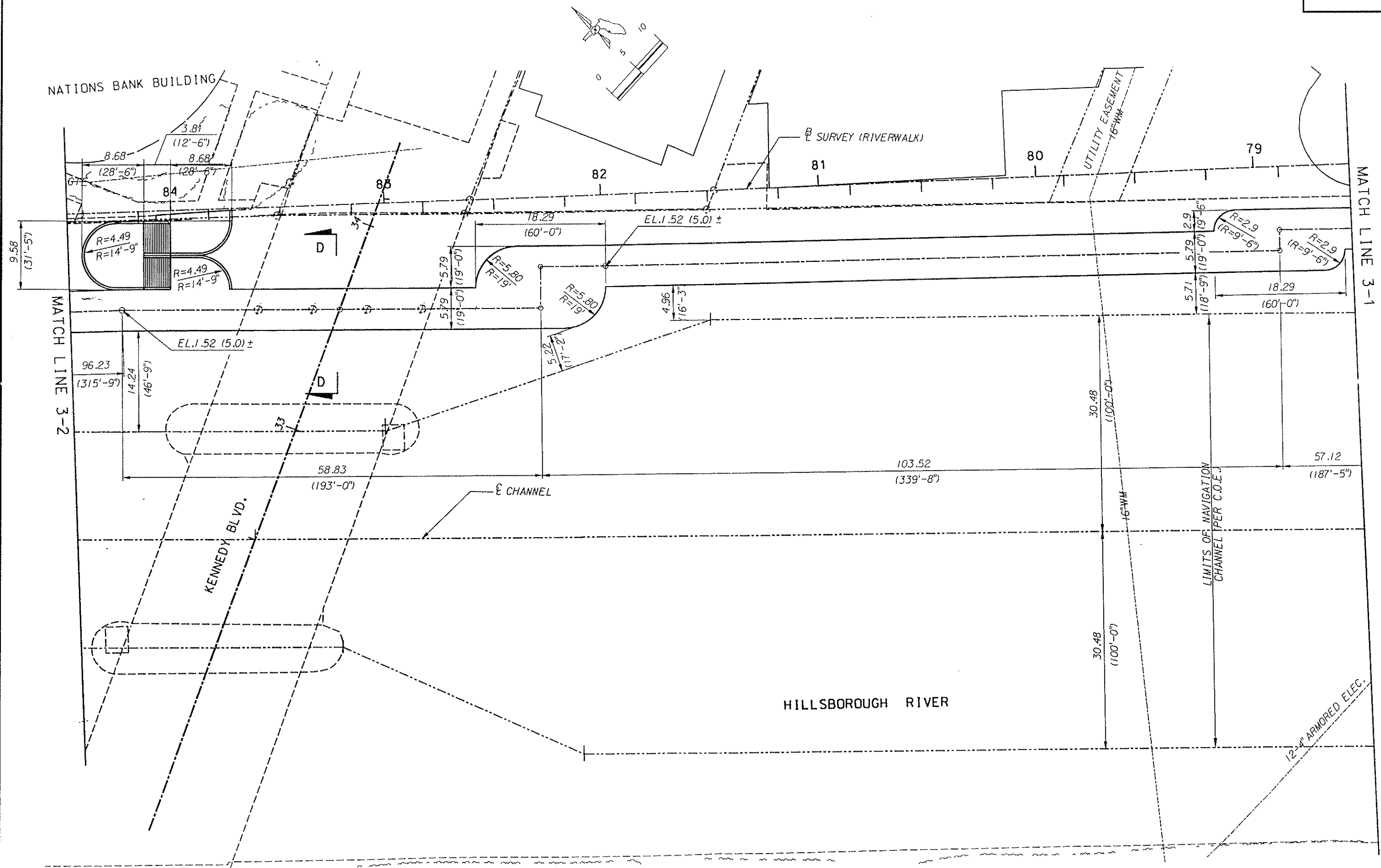
DESIGNED BY	D.W.G.	DATE	10-94	DRAWN BY	P.M.B.	DATE	12-94
CHECKED BY	D.W.G.	DATE	1-95	CHECKED BY	D.W.G.	DATE	1-95
SUPERVISED BY: DAVID W. GRAFF				DATE:			

FLORIDA DEPARTMENT OF TRANSPORTATION
APPROVED BY:

Dames & Moore
One North Dale Mabry Highway
Suite Seven Hundred
Tampa, Florida 33609
(813) 875-1115

DOWNTOWN TAMPA RIVERWALK
SEGMENTS 2 & 3 PLAN
(4 OF 6)





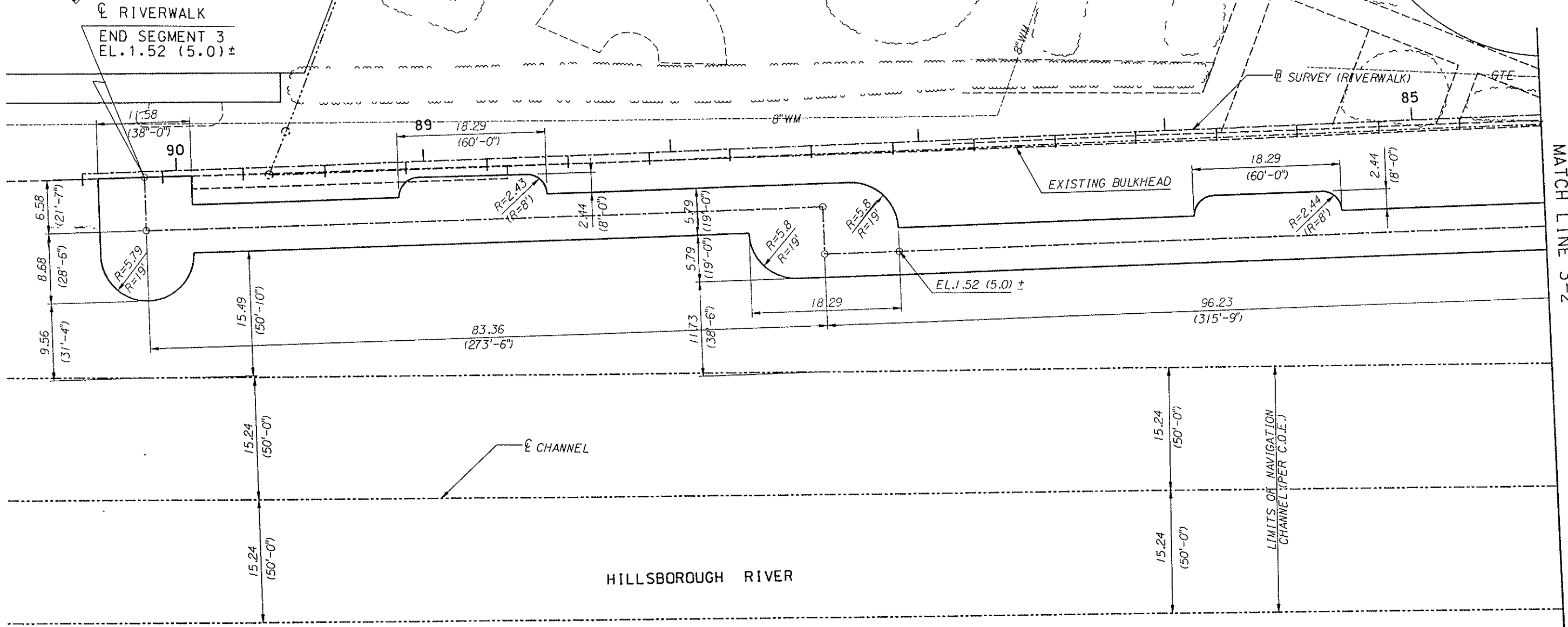
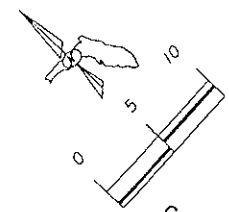
P.-PROJ-RIVERWAL-RIVD0TDG-7-6-95-P.M.B.

REVISIONS			
DATE	BY	DESCRIPTION	

DESIGNED BY	D. W. G.	DATE	10-94	DRAWN BY	P. M. B.	DATE	12-94
CHECKED BY	D. W. G.	DATE	1-95	CHECKED BY	D. W. G.	DATE	1-95
SUPERVISED BY: DAVID W. GRAFF P.E.				DATE:			

FLORIDA DEPARTMENT OF TRANSPORTATION
APPROVED BY:

Dames & Moore
One North Dale Mabey Highway
Suite Seven Hundred
Tampa, Florida 33609
(813) 875-1115



P.-PROJ-RIVERWALK-RIVDOTD6-7-6-95-P.M.B.

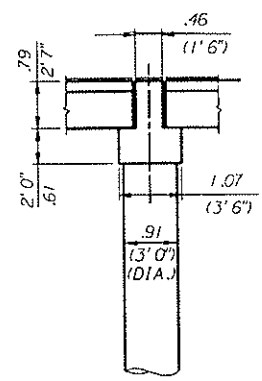
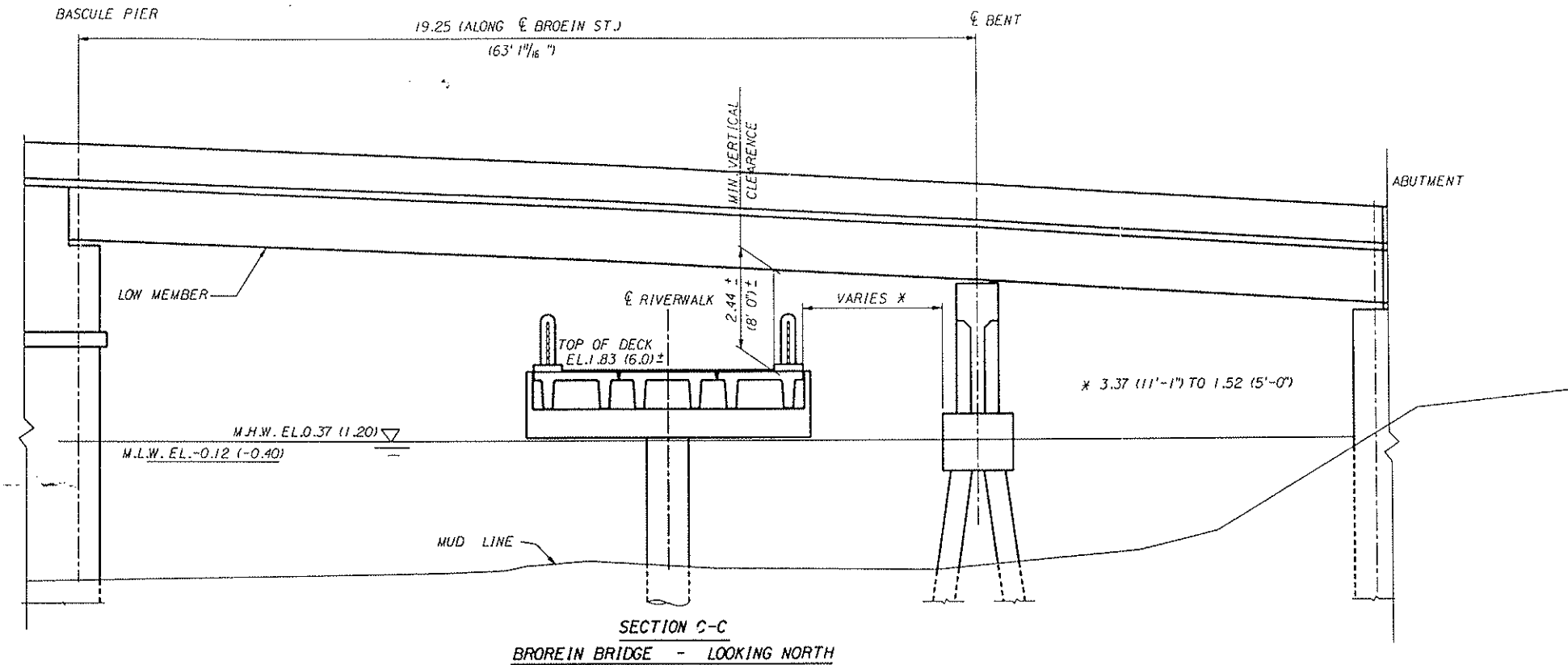
REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DESIGNED BY	D.W.G.	10-94	DRAWN BY	P.M.B.	12-94
CHECKED BY	D.W.G.	1-95	CHECKED BY	D.W.G.	1-95
SUPERVISED BY: DAVID W. GRAFF P.E.					

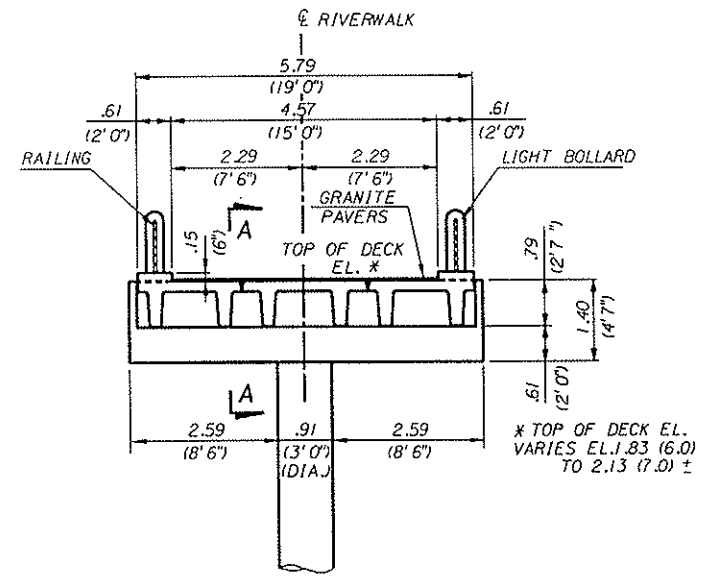
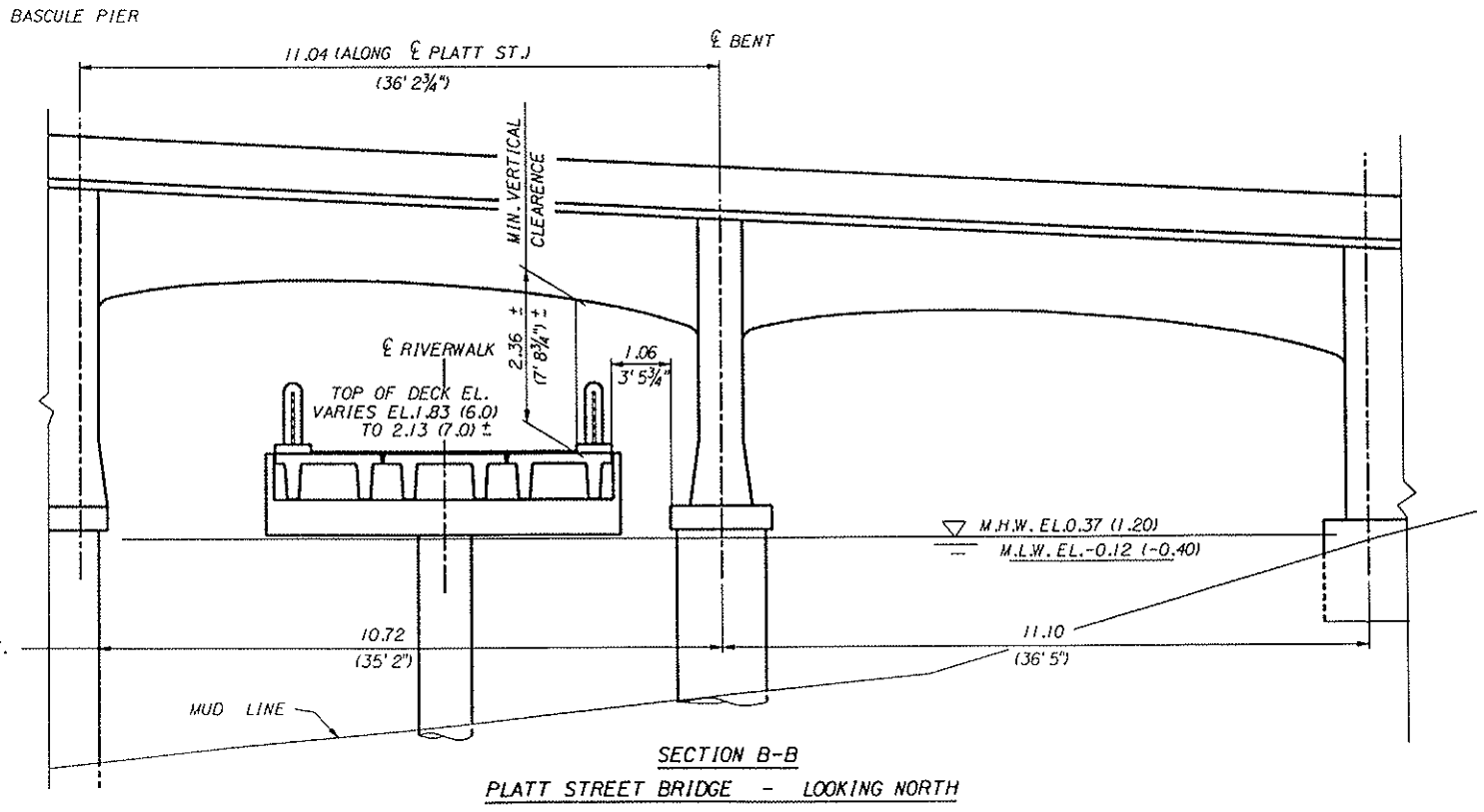
FLORIDA DEPARTMENT OF TRANSPORTATION
 APPROVED BY: _____
 DATE: _____



DOWNTOWN TAMPA RIVERWALK
 SEGMENTS 2 & 3 PLAN
 (6 OF 6)



SECTION A-A



TYPICAL SECTION THRU WALKWAY

TYPICAL SECTION AT BROREIN AND PLATT ST. BRIDGES

P:\PROJ\PI\WALK-RMPLCONV.DGN/7-6-95/P.M. BROWN

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DESIGNED BY	NAME	DATE	DRAWN BY	NAME	DATE
D.W.G.	D.W.G.	10-94	P.M.B.	P.M.B.	12-94
CHECKED BY	D.W.G.	1-95	CHECKED BY	D.W.G.	1-95

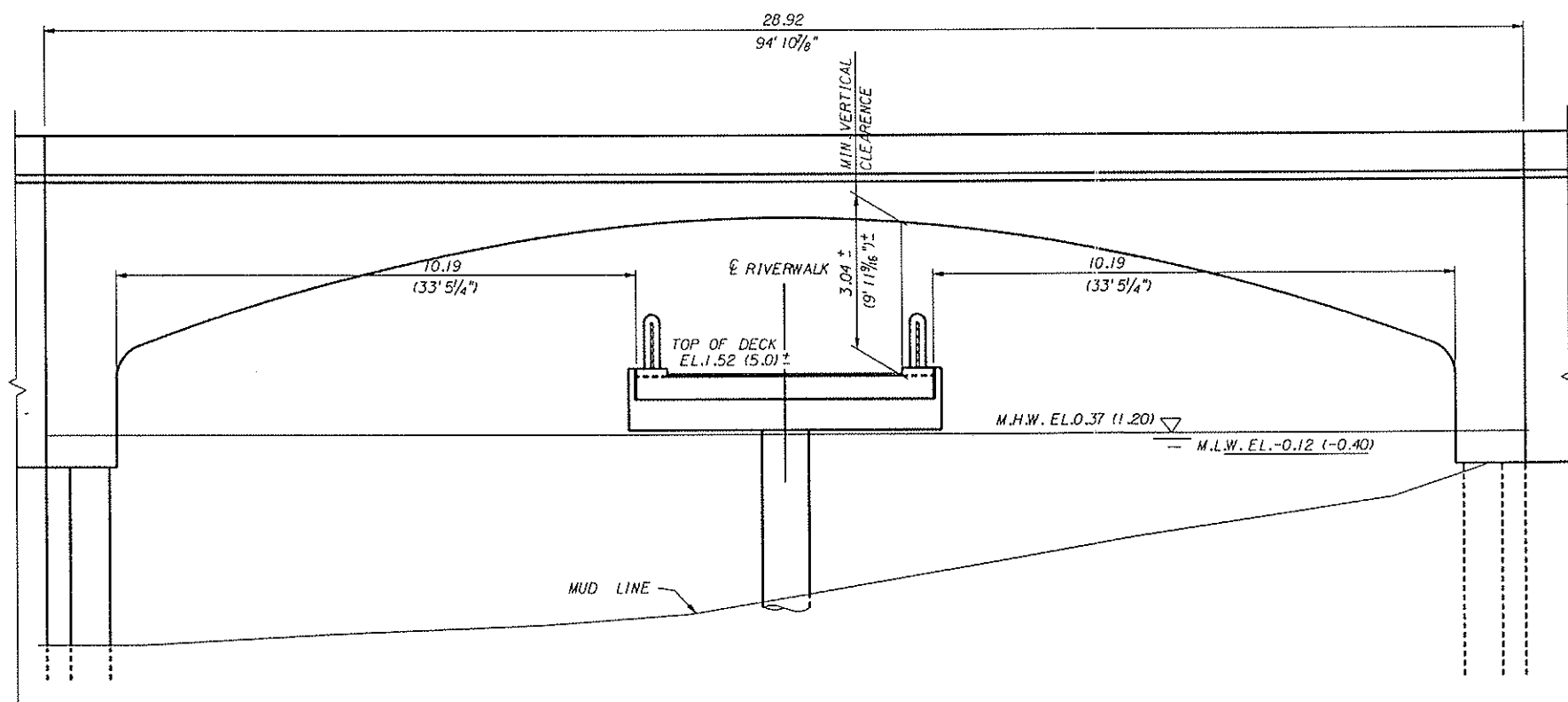
FLORIDA DEPARTMENT OF TRANSPORTATION
APPROVED BY: _____
DATE: _____

Dames & Moore
One North Dale Mabry Highway
Tampa, Florida 33609
(813) 275-1115

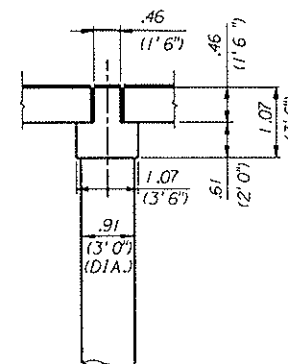
DOWNTOWN TAMPA RIVERWALK
SEGMENT 2

BASCULE PIER

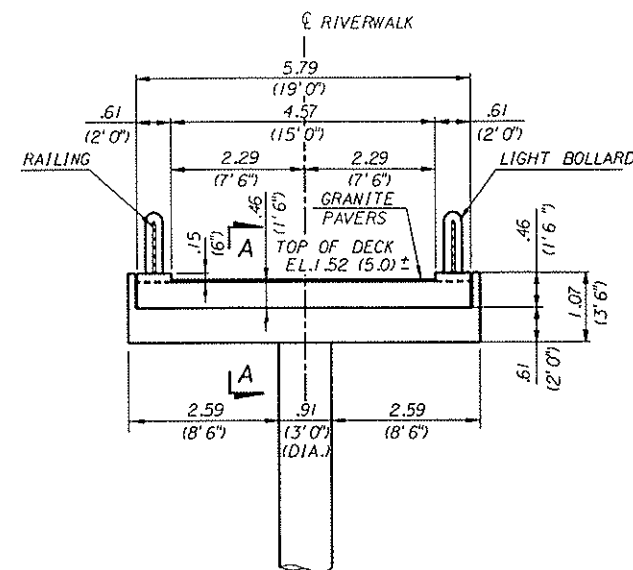
ABUTMENT



KENNEDY BLVD. BRIDGE - LOOKING NORTH



SECTION A-A



TYPICAL SECTION THRU WALKWAY

TYPICAL SECTION AT KENNEDY BLVD. BRIDGE

P: - PROJ - RIVERWALK - RWPLA1BR / --7-21-95 / P.M. BROWN

REVISIONS									
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE

DESIGNED BY	D.W.G.	DATE	10-94	DRAWN BY	P.M.B.	DATE	12-94
CHECKED BY	D.W.G.	DATE	1-95	CHECKED BY	D.W.G.	DATE	1-95
SUPERVISED BY: DAVID W. GRAFF P.E.							

FLORIDA DEPARTMENT OF TRANSPORTATION
APPROVED BY: _____
DATE: _____

Dames & Moore
One North Dale Mabry Highway
Suite Seven Hundred
Tampa, Florida 33609
(813) 875-3115

DOWNTOWN TAMPA RIVERWALK SEGMENT 3