CITY OF SUNNY ISLES BEACH

Feasibility Study Summary of a Bridge to Link a Pedestrian/Bicycle Greenway

Extension of North Bay Road from 172nd to 174th Street
City of Sunny Isles Beach

Prepared By:

Calvin, Giordano & Associates, Inc.
Engineers • Surveyors • Planners

Certificate of Authorization: 514
Vendor ID No. 65-001-3869

CGA Project No. 04-4567
September 2004

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SECTION ONE
SUMMARY

1.01 GENERAL DESCRIPTION

The feasibility study consists of a proposed low-level bridge to extend North Bay Road for pedestrian and bicycle greenway facilities over a 100-foot wide canal from 172nd Street to 174th Street in the City of Sunny Isles Beach, Florida. This report is the result of the City's comprehensive plan to divert pedestrian, bicycle, and emergency vehicle traffic from SR-A1A (Collins Avenue) by developing an alternative north-south route.

1.02 ENVIRONMENTAL

Calvin, Giordano and Associates, Inc. performed an environmental assessment of the proposed bridge location (see Appendix A, Figure 3). The area on the North side of the canal is a developed urban area that terminates at the concrete bulkhead. Along the north shoreline no jurisdictional wetlands, listed plants species, or exotic plant species were present.

The south shoreline is a capped sheet pile that runs between an existing concrete seawall, on the west, and connecting to the corner of a parking lot to the east. The landside of the capped sheet pile is urban landscape. On the water side, about half is riprap with no vegetation, while the other half is a shoreline containing a mangrove fringe. The mangrove fringe should be considered a jurisdictional wetland due to the vegetation, soil, and hydrology. Review of the aerial photograph shows that the south bridge connection can be completed near the mangrove fringe without impacting the possible jurisdictional wetland (see

Appendix A, Figure 3). There were no listed plant species or invasive exotic plant species along the south shoreline.

The moderately turbid canal had no sea grasses on the submerged land along the north shoreline, but sparse patches of sea grasses were observed near the proposed bridge connection on the south shoreline. The sparse patches are shown as squares located east and west of the proposed bridge location on the south shoreline in Appendix A, Figure 3.

1.03 GEOTECHNICAL

A preliminary geotechnical analysis was performed by Nutting Engineers of Florida, Inc., which consisted of a site observation, review of Miami-Dade County soil survey map, standard penetration test borings and corrosivity analysis (see Appendix B). Soil borings indicated very hard limestone and sand were encountered approximately 38 feet below ground level. Corrosivity tests demonstrated that the soil was classified as extremely aggressive for superstructure and substructure. It was suggested that a deep foundation system would be the most appropriate for the proposed bridge, with an approximate minimum pile length of 38 feet. Preliminary foundation design was recommended to be composed of either galvanized solid steel helical piers or pre-cast concrete piles. Helical piers were suggested to be the most appropriate foundation based on their low impact on the environment. However, pre-cast concrete piles would be considered an acceptable alternative.

1.04 ENGINEERING AND STRUCTURAL ANALYSIS

Maps and survey data were used to project possible alignment of the proposed bridge (see Appendix C, Figure 1). Feasibility study for structural analysis was performed by Bridge Design Associates, Inc. to determine the placement and costs of the proposed bridge. It was recommended that the bridge should have a concrete substructure with an aluminum or concrete superstructure, due to the corrosivity of the soil. The use of an aluminum superstructure is for pedestrian access only, while the concrete superstructure is for both pedestrian and emergency access. Four possible design alternatives were proposed (see Appendix C, *Design Alternatives*). Option 1 has pedestrian/emergency vehicle capability with a skewed orientation, a total span of 140 feet, 7 spans at 20 feet, and an estimated cost of $1,400,000. Option 2 has a pedestrian/emergency vehicle capability at a straight orientation with a total span of 100 ft, 5 spans at 20 ft, and an estimated cost of $1,330,000. Option 3 has pedestrian access only, with a skewed orientation, a total span of 140 ft, 3 spans at 47 feet, and an estimated cost of $1,310,000. Option 4 has pedestrian access only, a straight orientation, a total span of 100 feet, 2 spans at 50 feet, and an estimated cost of $1,230,000.

SECTION TWO

PERMIT ANALYSIS AND REQUIREMENTS

2.01 PERMIT ANALYSIS

Environmental permitting may require up to three forms of authorization at the state and federal level: State regulatory, state proprietary, and federal regulatory. Permits will be required as follows:

Permits Required

- City of Sunny Isles Beach
- Miami-Dade County environmental Resource Management (DERM) – Class 1 Coastal Construction
- South Florida Water Management District (SFWMD) – Environmental Resource Permit
- Army Corps of Engineers (ACOE)
- Florida Department of Environmental Protection (FDEP) – Environmental Resource Permit

2.02 REQUIREMENTS

Height Requirements

- According to the United States Coast Guard, "The commandant has given his advance approval to the location of the low-level bridge to be constructed across reaches of waterways navigable in law, but not actually navigated other than by rowboats, canoes, and small motorboats. In such cases, clearances provided for high water stages are considered adequate to meet the reasonable needs of navigation (33 CFR 115.70)." The USCG has verified that the

proposed location is in the advance approval category, therefore, not requiring a Coast Guard permit (see Appendix D).

General Requirements

- United States 7th District Coast Guard – "A Notice to Mariners"
  The mariner or boat owners that use the waterway must be notified, and agreement must be made between the city and the mariners.

- Miami-Dade Water and Sewer Department (MDWASD) – Verification and location of subaqueous utilities will be required.

SECTION THREE

RECOMMENDATIONS

3.01 PROJECT RECOMMENDATIONS

After review of the attached reports, it would appear that a low-level bridge at the proposed location is feasible. Bridge option #1 is clearly the favorable choice due to emergency vehicle access capability, and a skewed orientation allowing minimal environmental impact to mangroves and sea grasses. Design of the proposed bridge should have minimal impact on sea grasses and mangroves to avoid possible mitigation and additional wetland permitting. However, a field survey will be needed to confirm the specific location of the bridge connection, and final plans will need to be reviewed, in order to determine if bridge construction may cause any environmental impacts. Preliminary foundation design of the proposed low-level bridge shall be constructed with galvanized solid steel helical piers, or pre-cast concrete piles due to the corrosivity of the soil. The estimated duration of work is approximated at 1 year and 6 months for construction, bidding, design, and permitting, with an estimated cost of $1,400,000.

APPENDIX A
Environmental Assessment

Calvin, Giordano & Associates, Inc.
Engineers Surveyors Planners
1800 Eller Drive, Suite 600
Fort Lauderdale, Florida 33316
Phone: 954.921.7781 Fax: 954.921.8807

INTERNAL MEMORANDUM

DATE: May 4, 2004
TO: Bill Haase
FROM: Sandra Lee
SUBJECT: Sunny Isles Beach, Proposed North Bay Road Bridge, Field Assessment
PROJECT: CGA 04-4567
CC: John Downes

Sunny Isles Beach
Environmental Assessment for the Proposed N. Bay Road Bike/Pedestrian Bridge

NORTH SHORELINE

The north shoreline is a concrete vertical bulkhead that extends approximately 3' above the water line to the land surface. The upland area on the north side of the canal is developed urban land consisting of paved road terminating at the bulkhead with only a very thin area of sod along each side of the roadway. See Figure 1.

There are no jurisdictional wetlands on the north shoreline. There were no listed plant species and no invasive exotic plant species observed on the north shoreline area.

The water, at least several feet deep at the bulkhead, was quite turbid. No coral, seagrasses or hardbottom communities were observed in the submerged lands along the north shoreline. The bulkhead had a narrow fringe of algal material and colonies of mollusks along the mean water line. See Figure 2. The bulkhead continued to the east and west of the proposed bridge location.

SOUTH SHORELINE

The south shoreline is capped sheet pile running between an existing vertical concrete seawall, on the west, connecting to the corner of the parking lot of the adjacent development on the east. The parking lot connection is approximately 50-60 feet landward of the waters edge. The sheet pile is an arc and not a straight line between these two points. See Figure 3.

The landward side of the sheet pile cap, non-wetland, urban landscaping, lawn and sidewalk, is several feet above the water level. See Figure 4. On the waterward side of the sheet pile, approximately half is riprap along open water with no vegetation; the other half abuts a shoreline mangrove fringe. See Figures 5 and 6. The mangrove fringe is approximately 50-60 feet in width from the water line back to where the sheet pile connects to the adjacent parking lot. See Figure 7.

East of the riprap the immediate shoreline is unimproved, consisting of a sandy/mucky substrate vegetated with mangroves. Red Mangroves (*Rhizophora mangle*) dominate closest to the water line with the Black Mangrove (*Avicennia germinans*) and White Mangrove (*Laguncularia racemosa*) dominating closer to the upland development. See Figure 8. Dead tree stumps and washed-up detritus litter the unimproved area of the south shoreline. Sand Cordgrass (*Spartina bakeri*), Beggarticks/Romerillo (*Bidens alba* var. *radiata*), and Ragweed (*Ambrosia artemisiifolia*) plants can be found at the immediate interface of the sheet pile and mangrove fringe near the parking area.

Near the parking lot there is a drop of several feet from the top of the sheet pile cap to the mangrove fringe; this drop increase as you get closer to the riprap shoreline. See Figure 9.

There were no listed plant species and no invasive exotic plant species observed in the south shoreline assessment area. Animal observations included Fiddler Crabs, Mangrove Moth and Brown Anole within the shoreline mangrove fringe area. An indirect observation from the noticeable scent indicates a skunk may have been on site.

Due to the vegetation, soils and hydrology, the unimproved mangrove fringe area from the water line to the sheet pile can be considered a jurisdictional wetland. Similar wetland habitat abuts the assessment area to the east along the south shoreline. See Figure 10.

There were no survey markers in the field to identify the exact location of the proposed bridge on the south shoreline. However, review of the aerials with best assessments by aligning existing structures would indicate the south bridge connection would intersect over the unvegetated riprap area to the landscaped upland. The connection appears to be very near the wetland mangrove fringe but not through it. See Figure 11. Outside of the standard permitting procedures for submerged lands it does not appear there would be additional wetland permitting requirements or mitigation. A field survey will need to confirm the specific location of the bridge connection.

SUBMERGED LANDS

The canal is moderately turbid. Fiddler Crabs and a Barracuda were observed in the water.

Submerged land on the south side of the canal consists of shallow water that gradually deepens to approximately 7.5' in the center of the canal. Depth gauge readings near the center of the canal at 1:08PM on April 30th were 7.5'; low tide was predicted to occur at 1:59PM on that day.

No coral, seagrasses or hardbottom communities were observed in the submerged lands along the north shoreline. No corals and no hard bottom communities were observed in the submerged lands along the south shoreline.

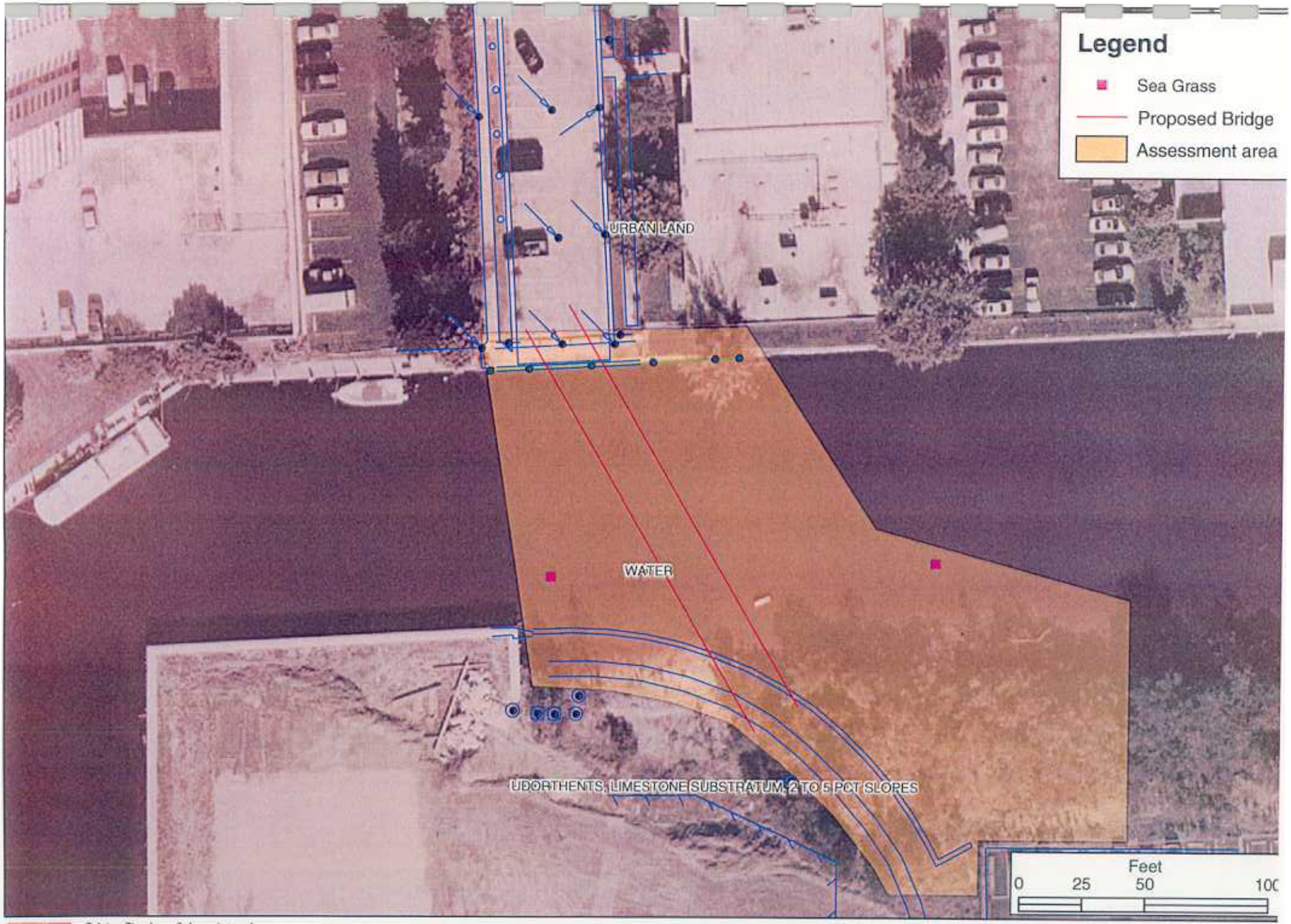
The turbid conditions appear to limit plant growth only to shallow areas along the south side of the canal. The only vegetation in the submerged land along the south shoreline was very limited and very sparse. A small, sparse patch of *Thallasia testudinum* sea grass was found, as well as a small, sparse patch of *Halophila decipiens* sea grass. The T. *testudinum* occurred closer to what was estimated to be the proposed bridge location than the *Halophila decipiens* sea grass; which was located sufficiently east to not be impacted by the proposed development, final plans will need to be reviewed to determine if bridge construction may cause any impacts.

Looking North at North Bay Road

Figure 1

Seawall at North Side of Proposed Bridge Location

Figure 2



Calvin, Giordano & Associates, Inc.
Engineers • Surveyors • Planners
1800 Eller Drive, Suite 600
Fort Lauderdale, Florida 33316
Phone: 954 921 7781 Fax: 954 921 8807

Aerial Overview of Proposed Bridge Location

Figure 3

CGA Project # 04-4567

Vegetative Strip Along Seawall on South Side of Canal Looking East

Figure 4

South Side of Canal Looking West

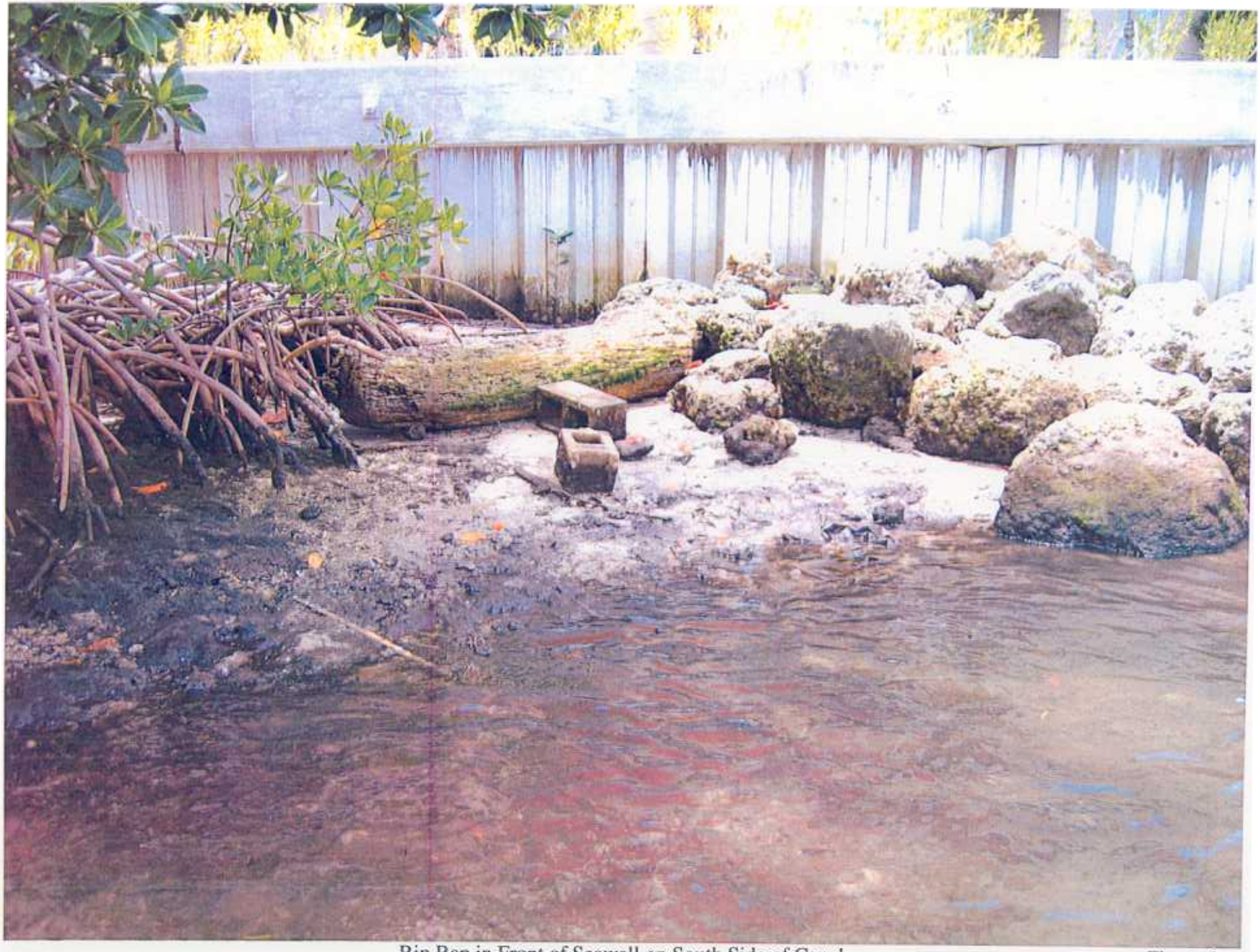
Figure 5

Looking ESE From Canal at Impact Area

Figure 6

oposed Bridge Location

Figure 7



Rip Rap in Front of Seawall on South Side of Canal

Figure 8

Looking at Southern Side of Proposed Bridge Location

Figure 9

Mangrove Roots Adjacent to Seawall on South Side of Canal

Figure 10

Figure

APPENDIX B
Preliminary Report of Geotechnical Exploration

PRELIMINARY REPORT OF GEOTECHNICAL EXPLORATION

SUNNY ISLES PEDESTRIAN/EMERGENCY VEHICLE BRIDGE
NORTH BAY ROAD
SUNNY ISLES BEACH, FLORIDA

FOR

CALVIN GIORDANO & ASSOCIATES, INC
1800 ELLER DRIVE
SUITE 600
FORT LAUDERDALE, FLORIDA 33316

PREPARED BY

NUTTING ENGINEERS OF FLORIDA, INC.
8175 W 32 STREET
SUITE # 2
HIALEAH, FLORIDA 33018
PROJECT # 101.11

MARCH 2004

NUTTING ENGINEERS
OF FLORIDA, INC.
ESTABLISHED 1967

Geotechnical & Construction Materials
Hydrogeology & Monitoring Wells
Engineering • Inspection • Testing

1310 NEPTUNE DRIVE • BOYNTON BEACH, FL 33426
(561) 736-4900 • (954) 941-8700 • (305) 824-0060 • Fax (561) 737-9975 • (954) 938-8900

8175 WEST 32nd AVENUE • SUITE 2 • HIALEAH, FL 33018
(305) 557-3083 • Fax (305) 824-8827

NUTTING ENGINEERS
OF FLORIDA, INC.
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Geotechnical & Construction Materials
Engineering & Testing • Inspection
Environmental Services

Offices throughout the state of Florida

www.nuttingengineers.com • info@nuttingengineers.com

March 15, 2004

Mr. Glen Harrelson
Calvin Giordano & Associates, Inc
1800 Eller Drive
Suite 600
Fort Lauderdale, Florida 33316 Phone: 954-921-7781 Fax: 954-921-8807

Subject: Preliminary Report of Geotechnical Exploration
Sunny Isles Beach Pedestrian/Emergency Vehicle Bridge
North Bay Road
Sunny Isles Beach, Florida.
Project # 101.11

Dear Mr. Harrelson:

Nutting Engineers of Florida, Inc. has performed a preliminary geotechnical exploration per your authorization for the proposed Pedestrian/Emergency Vehicle Bridge to be located in Sunny Isles Beach, Florida. Our work was done in general accordance with our July 28, 2003 proposal. The purpose of this exploration was to obtain information concerning the subsurface conditions in order to provide site preparation and preliminary foundation design recommendations for support of the proposed construction. This report presents our findings and preliminary recommendations.

PROJECT INFORMATION

The site of the referenced project is located in the vicinity North Bay Drive in Sunny Isles Beach, Florida. We understand that plans for this project include constructing a pedestrian/emergency vehicle bridge over the intercostal canal in Sunny Isles Beach. The span will be approximately 150 feet in length. It is also our understanding that the construction of this bridge requires a low impact on the existing conditions within the canal and therefore it will be difficult for large equipment to mobilize within the limited right of way area. The project is in the preliminary stage; therefore, structural information was not available at this time.

SUBSURFACE EXPLORATION/GENERAL SUBSURFACE CONDITIONS

Subsurface Soil Exploration

The exploration of subsurface conditions included site observation, review of the Miami-Dade County Soil Survey Map, Standard Penetration Test borings (ASTM D-1586) and corrosivity analysis.

Nutting Engineers of Florida, Inc. has performed a total of two (2) standard Penetration Test borings (ASTM D-1586) to depths of 50 feet below the existing ground surface in order to evaluate the subsurface soil conditions. The borings were performed along N. Bay Road, one on the north side and on the south side of the canal.

In addition, we performed corrosivity tests on each of the samples. The locations of the test borings are indicated on the attached Test Boring Location Plan. Individual test boring reports are presented in the Appendix of this report. The borings were established in the field using approximate methods; namely, a measuring wheel and available surface controls.

Soil Survey Maps Review

A review of the Soil Survey for Dade County from 1949 revealed that two different types of soils were encountered at the site. On the North side of the canal, the Soil Survey indicates that the predominant soils are Mangrove swamp (unclassified soils). This land type is mapped in the coastal areas of the county. Generally it supports a thick growth of mangrove trees. Small areas of salt-tolerant grasses, or tidal marshes, occur in the areas of mangrove trees. This land is frequently inundated by salt water. The soil material is sand, marl, or peat, or a mixture of these. However, on the south side of the canal the predominant soils are classified as Made Land. This land type was built up from the bay bottoms in the vicinity of Miami and Miami Beach. Made Land is used mainly as building sites for homes, hotels and business establishments.

Test Boring Results

Based on the SPT borings, the generalized subsurface conditions consist of seven main strata encountered below the asphalt and topsoil layer encountered in boring B-1 and B-2 respectively. Following describes each stratum.

Stratum 1 – Sand Fill: A layer of gray to tan fine sands with varying proportions of limerock fragments was found within the upper portion of the soil profile. These materials were found below the asphalt and topsoil layers to variable depths depending on the boring location ranging from 5.7 to 6.8 feet below existing ground surface. Standard Penetration Resistance Values (N-Values) in this stratum ranged from 2 to 9 blows/ft.

Stratum 2 - Peat: A stratum of dark brown organic peat was found below the fill layer to depths ranging from 9.9 to 11 feet below existing ground surface and comprising a thickness ranging from about 3 feet to 5.3 feet. N-values in this stratum typically ranged from 1 to 3 blows/ft. Natural water content was encountered to be 296.7% and the organic content was found to be at 43.5% This indicates the soils can hold more than their weight in water, and are considered highly compressible.

Stratum 3 –Fine Sands: Beneath the low strength and high compressible soils, brown to gray silty fine sand was encountered to depths ranging from 12.5 to 16 feet below the existing ground surface. Standard Penetration Resistance Values (N-Values) in this stratum ranged from 3 to 5 blows/ft.

Stratum 4 – Peat: A stratum of dark brown organic peat was found below this loose sand layer to depths ranging from 15.3 to 21.5 feet below existing ground surface and comprising a thickness ranging from about 3 feet to 5.5 feet. N-values in this stratum typically ranged from 2 to 3 blows/ft. Natural water content was encountered to be 297% and the organic content was found to be at 45.9%

Stratum 5 –Fine Sands/Limestone:

- *North End:* Beneath the low strength and high compressible soils, brown very loose to loose fine sands were encountered to a depth of 34.2 feet below the existing ground surface. Standard Penetration Resistance Values (N-Values) in this stratum ranged from weight of rod to 5 blows/ft.
- *South End:* Beneath the low strength and highly compressible soils, soft limestone with interbedded fine sand were encountered to a depth of 27 feet, followed gray dense fine sand with limestone fragments to a depth of 32.5 feet below the existing ground surface. Standard Penetration Resistance Values (N-Values) in this stratum ranged from 3 to 20 blows/ft.

Stratum 6 – Limestone and Fine Sands: This stratum consists of interbeded layers of soft to very hard limestone and fine sands to depths ranging from 37 feet to 43.5 feet below the existing ground surface. N-values in this stratum ranged from 13 blows/ft to values much greater than 50 blows/ft indicating hard zones within this stratum.

Stratum 7 – Cemented Sand and Fine Sand: A stratum of well cemented sand was found beneath the limestone formation to depths ranging from 44.8 to 48 feet below the existing ground surface, followed by a layer of gray loose to medium dense fine sand to the maximum depth explored of 50 feet. Standard Penetration Resistance Values (N-Values) in the cemented sand stratum were found to be much greater than 50 blows/ft indicating hard zones within this stratum.

A detailed description of the interlayering of the profile components is presented in the test boring records provided in the Appendix.

Groundwater

The groundwater level was measured at the boring locations at the time of drilling. The groundwater was encountered throughout the site at a depth of 5 feet below existing ground surface at the time the drilling was performed. Groundwater levels will fluctuate due to tidal influences, rainfall variations, construction activity and other site specific factors.

Laboratory Investigation

All samples obtained from the test borings were preserved in jars and visually classified in the laboratory by a geotechnical engineer to confirm the field classifications. The soil samples with dark brown organics soils recovered from the test borings were subjected to testing to determine natural moisture and organic content to estimate the engineering properties of these soils. The tests were performed on selected samples believed to be representative of the materials encountered. Results of the tests are tabulated below:

LABORATORY RESULTS

Test Boring #	Sample Description	Sample Depth (Feet)	Organic Content (%)	Moisture Content (%)
B - 1	Dark Brown PEAT	6-8	43.5	296.7
B - 2	Dark Brown PEAT	13-15	45.9	297

Environmental Classification (Corrosion Tests)

As part of the laboratory testing, the corrosion tests were performed to determine environmental properties such as consisting of pH, chloride ion, sulfate ion, and electrical resistance. The selection of soil samples for corrosivity tests was performed in accordance with the FDOT Soil and Foundation Handbook, Chapter 3.0, Section 3.2.2.

Based upon the review of the test results and the FDOT Structures Design Guidelines, Chapter 7.0, Section 7.1 and 7.2, the soils encountered in the test borings have been classified as extremely aggressive for superstructure and substructure. Results of the tests are tabulated below:

Boring No.	Depth (feet)	Corrosivity Test				Environmental Assessment	
		Chloride (ppm)	pH	Resistivity (ohm-cm)	Sulfate (ppm)	Substructure	Superstructure
B-2	8-10	21,000	7.3	83.0	1,000	Extremely Aggressive	Extremely Aggressive
B-2	10-12	1,400	7.9	286	2,000	Extremely Aggressive	Slightly Aggressive
B-2	13-15	40,000	6.80	70.0	14,000	Extremely Aggressive	Extremely Aggressive

The environmental assessments were made in accordance with the FDOT Structures Design Guidelines, Chapter 7.0, Section 7.1 and 7.2.

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

Geotechnical Site Suitability

The recommendations reported herein are considered general in nature column loads and structural information are not known at this time. Once this design information is available, and structural information is provided to us, interpretation, analysis, and evaluation of this data should be done to determine if any modifications are necessary in the pile design and foundation recommendations given herein.

It is our opinion that a deep foundation system is the most appropriate foundation system for this project and the one that provides a greater degree of safety against undermining the shallow foundations. Design criteria for deep foundations are provided in the following sections of the report.

PRELIMINARY FOUNDATION DESIGN

Since the proposed construction is required to have a low impact on the existing conditions it is our opinion that helical piers will be the most appropriate foundation system for the proposed bridge. These foundation systems do not require heavy equipment and they can be installed in limited access area. As an alternative, we have also included recommendations for Precast concrete piles for support of the proposed bridge, if access to heavy equipment is permitted and if this alternative is environmentally feasible. Design criteria for a deep foundation system are provided in the following section of the report.

Helical Anchors

Helical anchors consist of a galvanized solid steel shaft with a six to fourteen inch plate on the bottom, called a helix. The shaft and helix are hydraulically augered into the ground with a measured amount of torque. The torque used to install the helix can be converted to the amount

of weight that the pier can hold. Helical anchors can provide an allowable compressive capacity of approximately twenty-five tons when installed to competent material. The helical anchors have an advantage of requiring minimal disruption to the existing canal area during installation.

Based on the results of the borings performed for the proposed bridge, we anticipate that refusal may be encountered at depths ranging from 36 to 37 feet below the existing ground surface. However, note that significantly longer piles may be needed due to the piles penetrating solution holes within the limestone strata.

Precast Concrete Pile Foundation Design

Alternatively, precast concrete piles can be used for support of the proposed bridge. Precast piles will provide good support to the axial loads imposed by the proposed bridge and be resistant to undermining. We have assumed that individual compressive pile capacities on the order of 35 tons will be needed to provide an efficient foundation system. If higher capacities are required, we must be notified so the pile lengths revised.

Our analysis indicates that 14 inch by 14 inch square precast concrete piles driven into the well cemented limestone will provide an allowable compressive capacity of 35 tons. This translates to pile lengths ranging from 38 to 39 feet below the existing ground surface. The actual depths should be expected to vary depending on the driving conditions encountered during installation of these piles. This is based on the borings and our experience in the area. If lateral loads are involved, we should be notified to evaluate this condition.

We recommend that the piles be driven, not jetted or vibrated. It is recommended that the piles be installed under continuous monitoring by a qualified soils Geotechnical engineer from the office of Nutting Engineers of FL. in order to make field judgments of pile penetration and construction. Driven piling should be monitored for penetration, blowcounts during driving, and hammer action.

We have prepared a curve of allowable axial capacity versus tip elevation for 14-inch square piles. The curve was prepared using the FDOT computer program for axial loaded driven concrete piles, Static Pile Bearing Capacities "SPT-97" which was developed based on the procedures outlined in FDOT Research Bulletin 121. The results of the analysis are presented in the Appendix.

The following table summarizes our recommendations for the pile size and minimum embedment to develop the axial compression capacity for this type of pile.

Summary of Driven Precast Concrete Piles

Location	Boring #	Depth Top of Limestone Formation (Feet)	Minimum Pile Length (Feet)	Allowable Compression Capacity (tons)
North End	B-1	34	39	35
South End	B-2	33	38	35

Note: The actual depths should be expected to vary (possibly shallower or deeper) depending on the driving conditions encountered during installation of these piles. If lateral loads are involved, we should be notified to evaluate this condition. The reinforcing steel for the piles should be evaluated and designed for the axial stresses by the project structural engineer. The piles used on this project must conform to the latest Florida Department of Transportation criteria for driven precast concrete piling. If scour are to be considered, then we should be provided with the scour depths so we can re-evaluate our analysis.

Groundwater Control

The water table was encountered at a depth of 5 feet below existing grade. Therefore, we do not anticipate groundwater control during pile cap construction. If required, dewatering could probably be accomplished using sump pumping.

CONSTRUCTION CONSIDERATIONS

Pile Installation

A set of technical specifications for the production pile installation will be required. These specifications should be prepared by our firm to assure proper representation of our recommendations in the construction documents.

Once production pile installation begins, at least five production piles should be installed under the observation of the Nutting project geotechnical engineer. Production pile installation should be observed by a representative of Nutting Engineers on a full time basis. Field observations and prompt engineering decisions must be made to determine the required length of the rock socket and pile tip elevation should soft rock be encountered.

If conditions are encountered which are not consistent with the findings presented in this report, or if proposed construction is moved from the location investigated, this office shall be notified immediately so that the condition or change can be evaluated and appropriate action taken.

Excavations of five feet or more in depth should be sloped or shored in accordance with OSHA and State of Florida requirements.

This concludes our services for this project as defined in the scope of work. We appreciate the opportunity to provide these services for you. Should you have any questions regarding this report or if you require additional engineering or testing services, please contact the undersigned at your convenience.

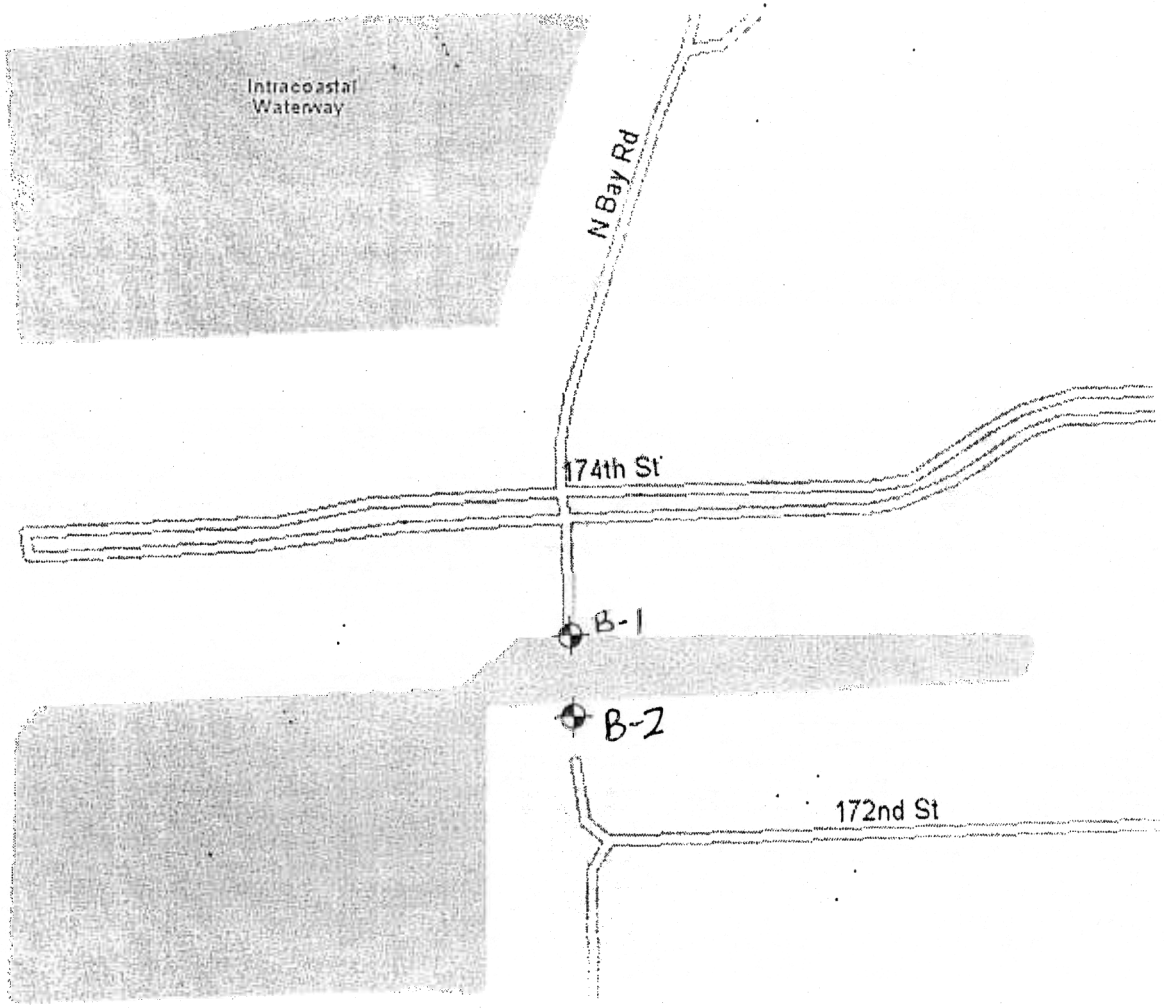
Sincerely,
NUTTING ENGINEERS OF FLORIDA, INC.

Leonardo Offredi, E.I
Project Engineer

Alex R. Montenegro 3/15/04
Alex R. Montenegro, P.E.# 59426
Senior Engineer/Division Manager

Attachments: Test Boring Location Plan
Test Boring Reports (1-2)
SPT-97 Graph Output
Soil Classification Criteria
Limitations of Liability

Calvin Giordano & Associates_Sunny Isles Beach Pedestrian Emergency Vehicle Bridge.Leo



– LEGEND –
APPROXIMATE TEST BORING (SPT) LOCATION

NUTTING ENGINEERS OF FLORIDA, INC.
ESTABLISHED 1967

SUNNY ISLES PEDESTRIAN/EMERGENCY VEHICLE BRIDGE
NORTH BAY ROAD
SUNNY ISLES BEACH, FLORIDA

GEOTECHNICAL EXPLORATION

TEST BORING LOCATION PLAN

NOT TO SCALE

FIG. 1

MARCH 2004

NUTTING ENGINEERS
OF FLORIDA, INC.
Established 1967

Geotechnical & Construction Materials
Hydrogeology & Monitoring Wells
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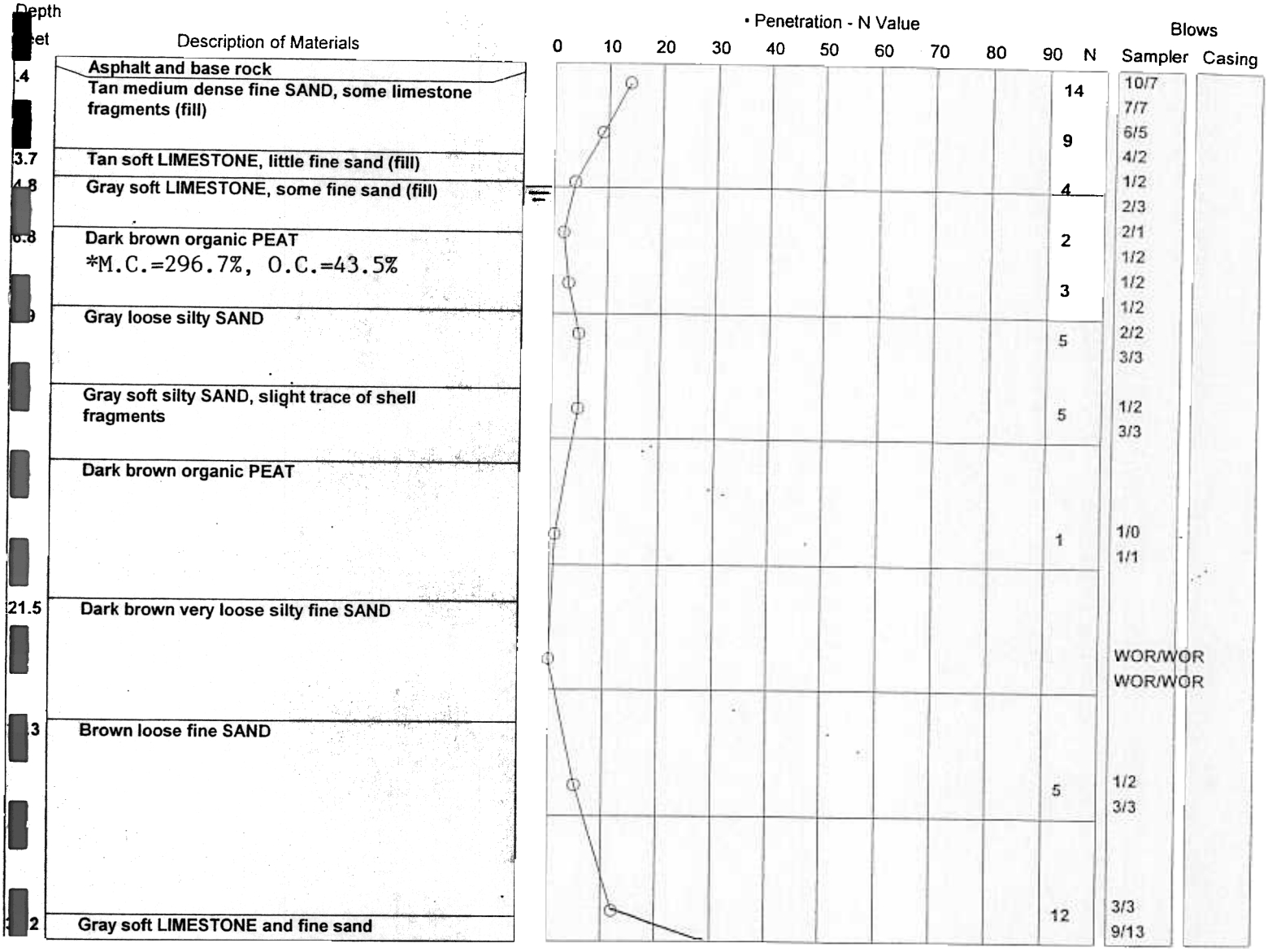
TEST BORING REPORT



Client: Calvin, Giordano & Associates, Inc.
Project Name: Sunny Isles Beach Pedestrian / Emergency Vehicle Bridge
Project Location: North Bay Road, Sunny Isles Beach, FL
Hole Location: Approx. 10' E. of mark on Site
Driller: T. Simmons
Elevation Reference: Approx. @ Road Crown
Casing:Diameter: 3" OD BX Flush Couple
Sampler:Diameter: 2" OD x 2' Split Spoon
Groundwater depth:Immediate: 5'

Order #: 101.11
Hole #:

Date Started: 2/12/04
Date Completed: 2/12/04
Hammer WT: 280# Fall: 24"
Hammer WT: 140# Fall: 30"

SAMPLES WILL BE DISCARDED IN 60 DAYS UNLESS INSTRUCTED OTHERWISE.

1310 Neptune Drive, Boynton Beach, Florida 33426
Boynton Beach (561) 736-4900 • Pompano Beach (954) 941-8700 • FAX (561) 737-9975

NUTTING ENGINEERS
OF FLORIDA, INC.
Established 1967

Geotechnical & Construction Materials
Hydrogeology & Monitoring Wells
Engineering • Inspection • Testing

TEST BORING REPORT

epth et	Description of Materials	• Penetration - N Value 0 10 20 30 40 50 60 70 80 90 N	Blows Sampler	Blows Casing
	Gray soft LIMESTONE and fine sand			
.38	Gray very hard LIMESTONE and fine sand	79	29/38 41/47	
3.5	Gray very hard cemented SAND	100	12/50/5"	
4.8	Gray loose fine SAND, some cemented SAND	10	14/7 3/3	
50	Test Boring terminates @ 50 feet.			

Client: Calvin, Giordano & Associates, Inc.
Project Name: Sunny Isles Beach Pedestrian / Emergency Vehicle Bridge
Project Location: North Bay Road, Sunny Isles Beach, FL
Hole Location: Approx. 10' E. of mark on Site
Driller: T. Simmons
Elevation Reference: Approx. @ Road Crown
Casing:Diameter: 3" OD BX Flush Couple
Sampler:Diameter: 2" OD x 2' Split Spoon
Groundwater depth:Immediate: 5'

Order #: 101.11
Hole #:

Date Started: 2/12/04
Date Completed: 2/12/04
Hammer WT: 280# Fall: 24"
Hammer WT: 140# Fall: 30"

SAMPLES WILL BE DISCARDED IN 60 DAYS UNLESS INSTRUCTED OTHERWISE.

by: Alex R. Montenegro
Alex R. Montenegro, P.E. #59426

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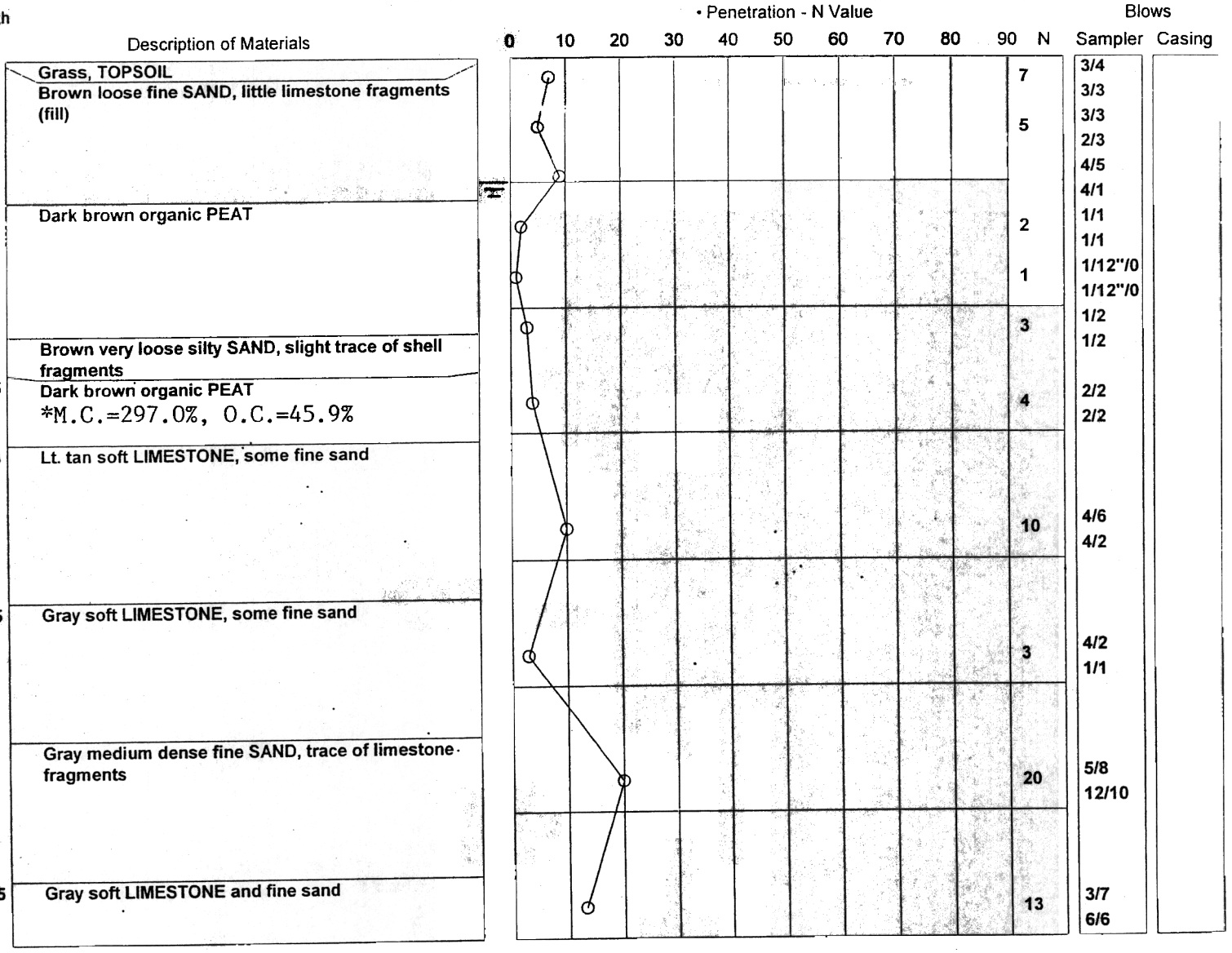
TEST BORING REPORT



Client: Calvin, Giordano & Associates, Inc.
Order #: 101.11
Project Name: Sunny Isles Beach Pedestrian / Emergency Vehicle Bridge
Hole #:
Project Location: North Bay Road, Sunny Isles Beach, FL
Hole Location: Approx. 40' N. and 35' W. of the NE Building Corner @ 17150
Driller: T. Simmons
Date Started: 2/12/04
Elevation Reference: Approx. @ Road Crown
Date Completed: 2/12/04
Casing:Diameter: 3" OD BX Flush Couple
Hammer WT: 280# Fall: 24"
Sampler:Diameter: 2" OD x 2' Split Spoon
Hammer WT: 140# Fall: 30"
Groundwater depth:Immediate: 5'

SAMPLES WILL BE DISCARDED IN 60 DAYS UNLESS INSTRUCTED OTHERWISE.

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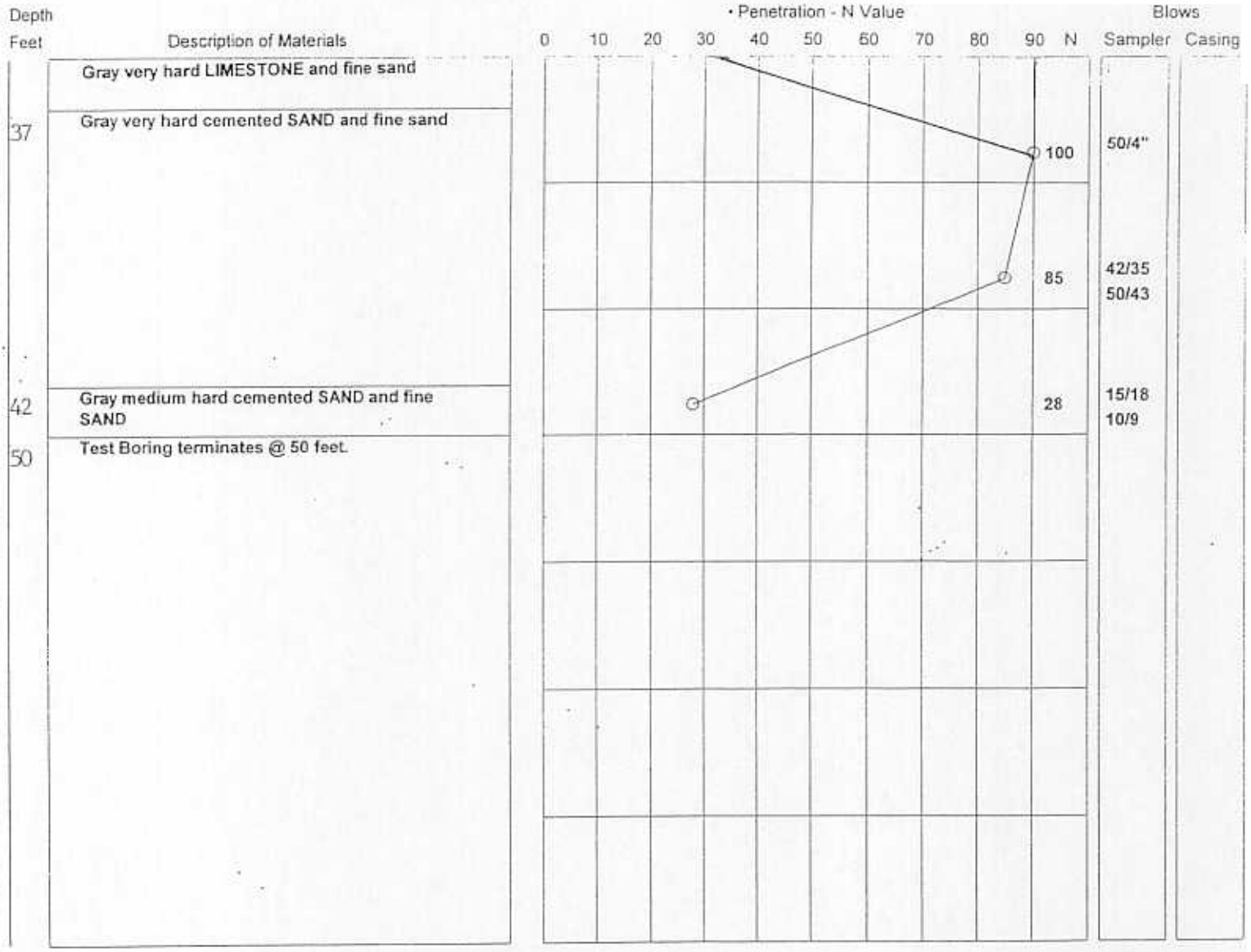
TEST BORING REPORT



Client: Calvin, Giordano & Associates, Inc.
Order #: 101.11
Project Name: Sunny Isles Beach Pedestrian / Emergency Vehicle Bridge
Hole #: 2 2of2
Project Location: North Bay Road, Sunny Isles Beach, FL
Hole Location: Approx. 40' N. and 35' W. of the NE Building Corner @ 17150
Driller: T. Simmons
Date Started: 2/12/04
Elevation Reference: Approx. @ Road Crown
Date Completed: 2/12/04
Casing:Diameter: 3" OD BX Flush Couple
Hammer WT: 280# Fall: 24"
Sampler:Diameter: 2" OD x 2' Split Spoon
Hammer WT: 140# Fall: 30"
Groundwater depth:Immediate: 5'

SAMPLES WILL BE DISCARDED IN 60 DAYS UNLESS INSTRUCTED OTHERWISE.

by: Alex R. Montenegro
Alex R. Montenegro, P.E. #59426

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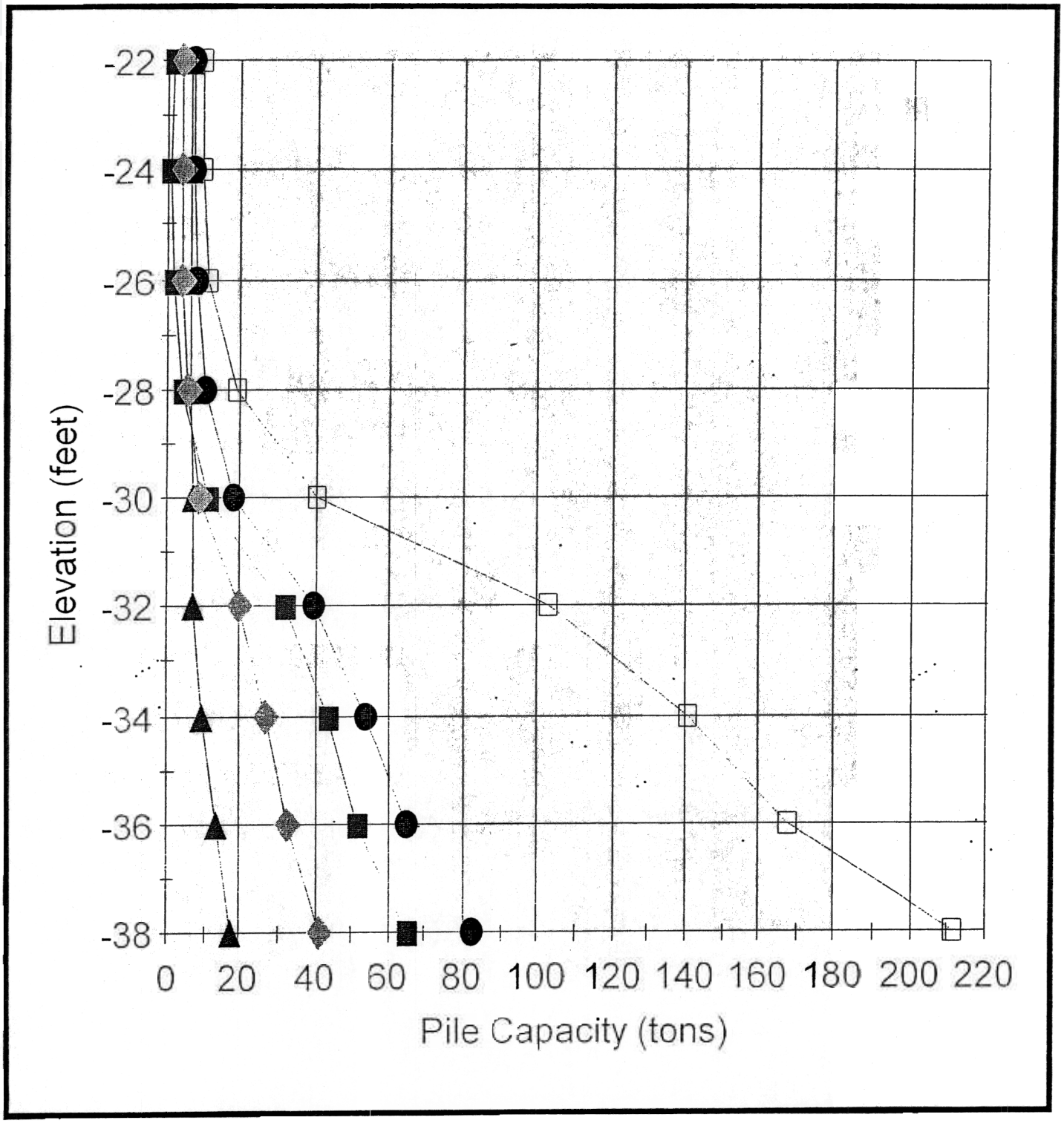
Boynton Beach (561) 736-4900 • Pompano Beach (954) 941-8700 • FAX (561) 737-9975

Pile Capacities for Pile Width of 4.00 in

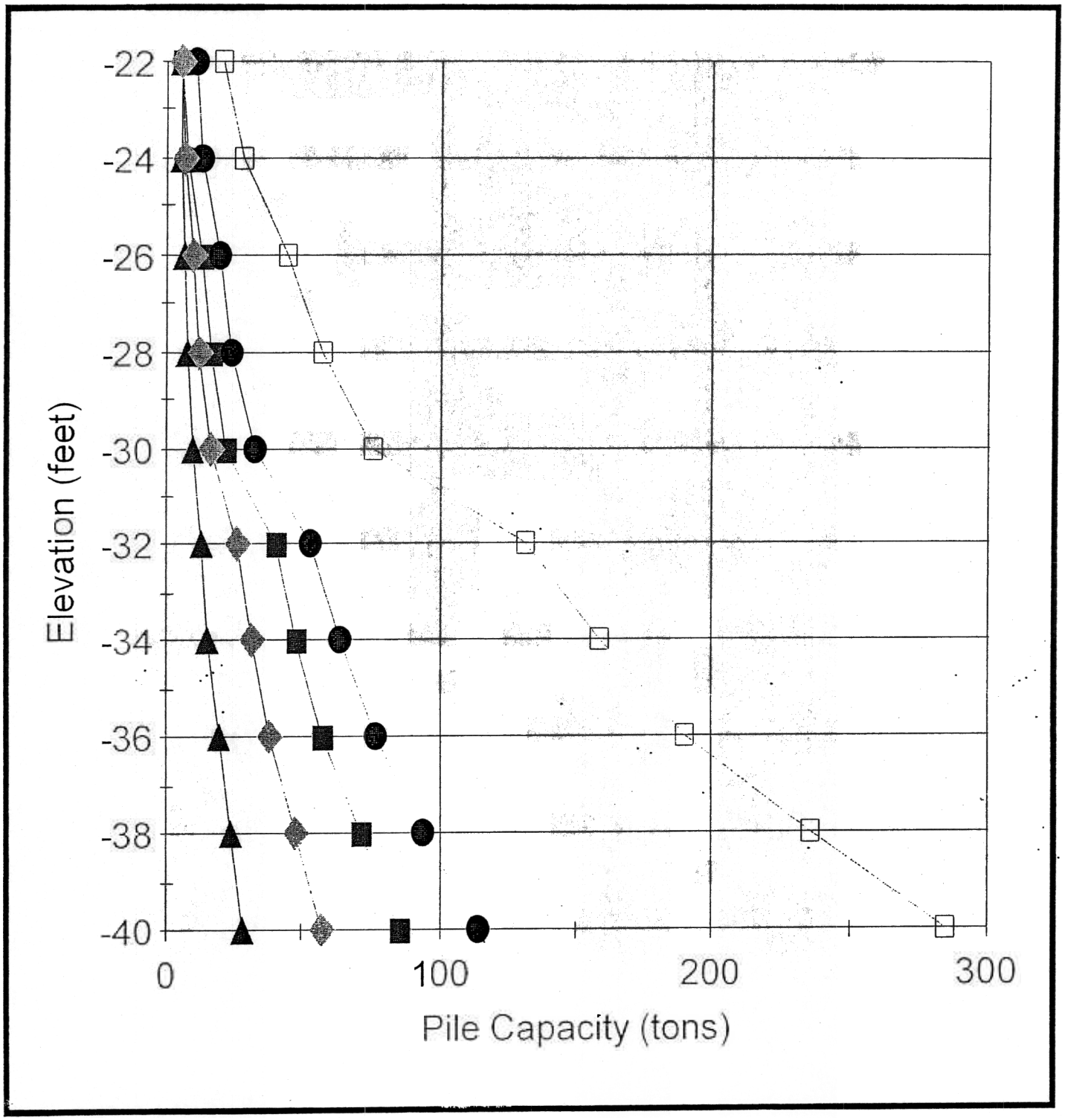
B



Ultimate Side Friction
Mobilized End Bearing
Estimated Davisson Capacity
Allowable Pile Capacity
Ultimate Pile Capacity

Pile Capacities for Pile Width of 4 00 in

B 2



Ultimate Side Friction
Mobilized End Bearing
Estimated Davisson Capacity
Allowable Pile Capacity
ltimate Pile Capacity

SOIL CLASSIFICATION CRITERIA

RELATIVE DENSITY
SAND

SPT N-VALUE (blows/ft.)	RELATIVE DENSITY
0-4	Very Loose
5-10	Loose
11-29	Medium
30-49	Dense
>50	Very Dense
100/6"	Refusal

SHEAR STRENGTH
CLAY

SPT N-VALUE (blows/ft.)	UNCONFINED COMP. STRENGTH (tons/ft.2)	CONSISTENCY
>2	>0.25	Very soft
2-4	0.25-0.50	Soft
5-8	0.50-1.00	Medium
9-15	1.00-2.00	Stiff
16-30	2.00-4.00	Very Stiff
>30	>4.00	Hard

PARTICLE SIZE

Boulder	>12 in.
Cobble	3 to 12 in.
Gravel	4.76mm to 3 in.
Sand	0.074mm to 4.76mm
Silt	0.005mm to 0.074mm.
Clay	<0.005mm

DESCRIPTION MODIFIERS

0-5%	Slight trace
6-10%	Trace
11-20%	Little
21-35%	Some
>35%	And

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS
(more than 50% of material is larger than No. 200 sieve size.)

GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures

FINE-GRAINED SOILS
(50% or more of material is smaller than No. 200 sieve size.)

SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

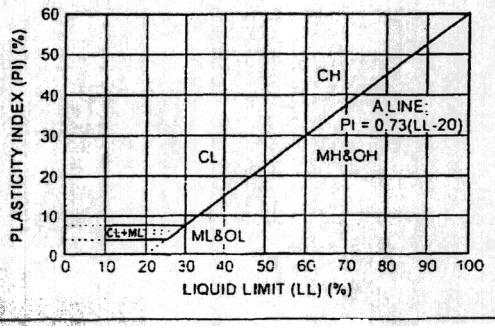
LABORATORY CLASSIFICATION CRITERIA

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent ..... GW, GP, SW, SP
More than 12 percent ..... GM, GC, SM, SC
5 to 12 percent ..... Borderline cases requiring dual symbols

PLASTICITY CHART



LIMITATIONS OF LIABILITY

WARRANTY

We warrant that the services performed by Nutting Engineers of Florida, Inc. are conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions. ***No other warranties, expressed or implied, are made.*** While the services of Nutting Engineers of Florida, Inc. are a valuable and integral part of the design and construction teams, we do not warrant, guarantee or insure the quality or completeness of services provided by other members of those teams, the quality, completeness, or satisfactory performance of construction plans and specifications which we have not prepared, nor the ultimate performance of building site materials.

SUBSURFACE EXPLORATION

Subsurface exploration is normally accomplished by test boring; test pits are sometimes employed. The client may realize benefits through the excavation of test pits and other forms of evaluation whether such work has been explicitly recommended or not in Nutting Engineer's report. Such methods may be more likely to identify buried debris than small diameter discreet soil borings if exploration in the area of such debris is performed. The method of determining the boring location and the surface elevation at the boring is noted in the report. This information is represented on a drawing or on the boring log. The location and elevation of the boring should be considered accurate only to the degree inherent with the method used.

The soil boring log includes sampling information, description of the materials recovered, approximate depths of boundaries between soil and rock strata and groundwater data. The log represents conditions specifically at the location and time the boring was made. The boundaries between different soil strata are indicated at specific depths; however, these depths are in fact approximate and dependent upon the frequency of sampling. The transition between soil strata is often gradual. Also, the N-values may not represent the actual hardness of rock formations due to numerous solution holes within the formation. If formation hardness is of critical concern for proposed site activities such as excavation, supplemental evaluation through the performance of test pits and/or profile piling would be prudent, as appropriate. Water level readings are made at the times and under conditions stated on the boring logs. Water levels change with time, precipitation, canal levels, local well drawdown and other factors. The borings must be interpreted by a Professional Engineer familiar with local soil conditions.

LABORATORY AND FIELD TESTS

Tests are performed in accordance with specific ASTM Standards unless otherwise indicated. All criteria included in a given ASTM Standard are not always required and performed. Each test report indicates the measurements and determinations actually made.

ANALYSIS AND RECOMMENDATIONS

The geotechnical report is prepared primarily to aid in the design of site work and structural foundations. Although the information in the report is expected to be sufficient for these purposes, it is not intended to determine the cost of construction or to stand alone as a construction specification.

Report recommendations are based primarily on data from test borings made at the locations shown on the test boring reports. Soil variations may exist between borings and may not become evident until construction. If variations are then noted, the geotechnical engineer should be contacted so that field conditions can be examined and recommendations revised if necessary.

The geotechnical report states our understanding as to the location, dimensions and structural features proposed for the site. ***Any significant changes in the nature, design, or location of the site improvements must be communicated to the geotechnical engineer*** so that the geotechnical analysis, conclusions, and recommendations can be appropriately adjusted.

CONSTRUCTION OBSERVATION

Construction observation and testing is an important element of geotechnical services. The geotechnical engineer's field representative (G.E.F.R.) is the "owner's representative" observing the work of the contractor, performing tests and reporting data from such tests and observations. ***The geotechnical engineer's field representative does not direct the contractor's construction means, methods, operations or personnel.*** The G.E.F.R. does not interfere with the relationship between the owner and the contractor and, except as an observer, does not become a substitute owner on site. The G.E.F.R. is responsible for his/her safety, but has no responsibility for the safety of other personnel at the site. The G.E.F.R. is an important member of a team whose responsibility is to observe and test the work being done and report to the owner whether that work is being carried out in general conformance with the plans and specifications.

APPENDIX C

FEASIBILITY STUDY

for

SUNNY ISLES PEDESTRIAN / EMERGENCY VEHICLE BRIDGE
NORTH BAY ROAD
SUNNY ISLES BEACH, FLORIDA

PROJECT NO.: 04-514

Prepared by:

BRIDGE DESIGN ASSOCIATES, INC
P.O. Box 210173
West Palm Beach, Florida 33421

June, 2004

FEASIBILITY STUDY

PROJECT OVERVIEW: Bridge Design Associates, Inc. is providing a feasibility study for the installation of a new pedestrian / emergency vehicle bridge from North Bay Road across the Intracoastal Waterway into Sunny Isles Beach, Florida.

We have reviewed the geotechnical exploration report prepared by Nutting Engineers dated March 15, 2004. This report indicates that very hard limestone and sand were encountered at approximately 38 feet below ground, followed by loose and cemented sand. This data will be utilized to determine minimum pile lengths.

We have provided a review of applicable permitting issues.

In addition, Nutting Engineer's report indicates that corrosivity tests demonstrate extremely aggressive environments. Due to the high corrosivity, it is our recommendation that a concrete substructure and either aluminum or concrete superstructure be constructed.

DESIGN ALTERNATIVES:

OPTION 1:	Pedestrian / Emergency Vehicle	
	Superstructure:	Concrete
	Orientation:	Skewed
	Width:	12 feet
	Total Span:	140 feet ±
	Number of Spans:	7 at 20 feet ±
OPTION 2:	Pedestrian / Emergency Vehicle	
	Superstructure:	Concrete
	Orientation:	Straight
	Width:	12 feet
	Total Span:	100 feet ±
	Number of Spans:	5 at 20 feet ±
OPTION 3:	Pedestrian Only	
	Superstructure:	Aluminum
	Orientation:	Skewed
	Width:	8 feet
	Total Span:	140 feet ±
	Number of Spans:	3 at 47 feet ±

OPTION 4:	Pedestrian Only		
	Superstructure:		Aluminum
	Orientation:		Straight
	Width:	8 feet	
	Total Span:		100 feet ±
	Number of Spans:		2 at 50 feet ±

PROJECT CONSIDERATIONS:

Permits will be required from U.S. Coast Guard, Army Corps of Engineers and Department of Environmental Protection.

Verification and location of subaqueous utilities will be required.

Estimated duration of work (240 days)

Mangroves are located at the east side of south property. The skewed bridge may intersect mangrove locations which will require removal and addition of new at a rate of ten to one (10:1)

A straight bridge will require a fewer number of supporting bents and reduced square footage of bridge deck.

A concrete superstructure will provide both pedestrian and emergency vehicle access. An aluminum superstructure will allow pedestrian access only.

PERMITTING

Environmental permitting may require up to three forms of authorization at the state and federal level: State regulatory, state proprietary, and federal regulatory.

STATE REGULATORY

The most appropriate form of authorization would be a Standard General Permit, which would be reviewed by either the Florida Department of Environmental Protection (DEP) or the South Florida Water Management District (SFWMD). If any activities are proposed on the adjacent uplands that require an Environmental Resource Permit (ERP) from the SFWMD, then the structure would likely be reviewed by the SFWMD.

The state regulatory process includes review of many factors including potential

impacts to seagrasses and water quality.
One of the "Conditions for Issuance" of Environmental Resource Permits pursuant to Chapter 40E-4 F.A.C. is "whether the activity will adversely affect navigation."
During the application process, we would be required to demonstrate that the structure does not adversely affect navigation. While we cannot be certain that any particular argument would be successful in this regard, we might try to show that the canal is privately owned, and the general public does not have the ability to access the canal from the land.
Additionally, if the project is pursued, the bottom should be observed for the presence of seagrass. If present, the structure may be required to be relocated or redesigned to minimize adverse impacts to seagrass.

STATE PROPRIETARY

This authorization would be required if the canal is sovereignty submerged land, or owned by the state. If the canal is man-made or if the submerged lands are sold or transferred by the state, then no proprietary authorization is required. Based on information available on the Miami-Dade County Property Appraiser GIS, we believe the canal is owned by an entity called "Cavalry Corp", and therefore not sovereignty owned.
We recommend that the status of ownership of the canal be further investigated to confirm this prior to any application. Additionally, we believe the owner of the canal may be required to be the applicant or co-applicant in the permitting process.
We have reviewed the limits of the Biscayne Bay Aquatic Preserve, based on the DEP mapping, to determine if the project site falls within the Preserve. It appears that it does not, and therefore should not be subject to the additional review process, standards and criteria in Chapter 18-18, F.A.C.

FEDERAL

This authorization depends on the outcome of a review process whereby the U.S. Army Corps of Engineers (COE) will look at several issues, and coordinate with other federal commenting agencies on these issues, including impacts to the seagrass, "Essential Fish Habitat", and navigation. The presence of seagrass may complicate the process and require site or design changes.
A major concern in the federal process is the navigation issue. Section 401, U.S.C. states that "It shall not be lawful to construct or commence the construction of any bridge, causeway, dam or dike over or in any port, roadstead, haven, harbor, canal, navigable river, or other navigable water of the United States until the consent of Congress to the building of such structures shall have been obtained and until the plans for... the bridge or causeway shall have been submitted to and approved by the Secretary of Transportation..." We believe the canal meets the definition of navigable waters of the US, which includes "those waters that are subject to the ebb and flow of the tide". Therefore, we believe the COE may require U.S. Coast Guard (USCG) approval of the bridge as a part of the federal regulatory process. With USCG authorization, the COE navigation concerns may be adequately addressed.

USCG

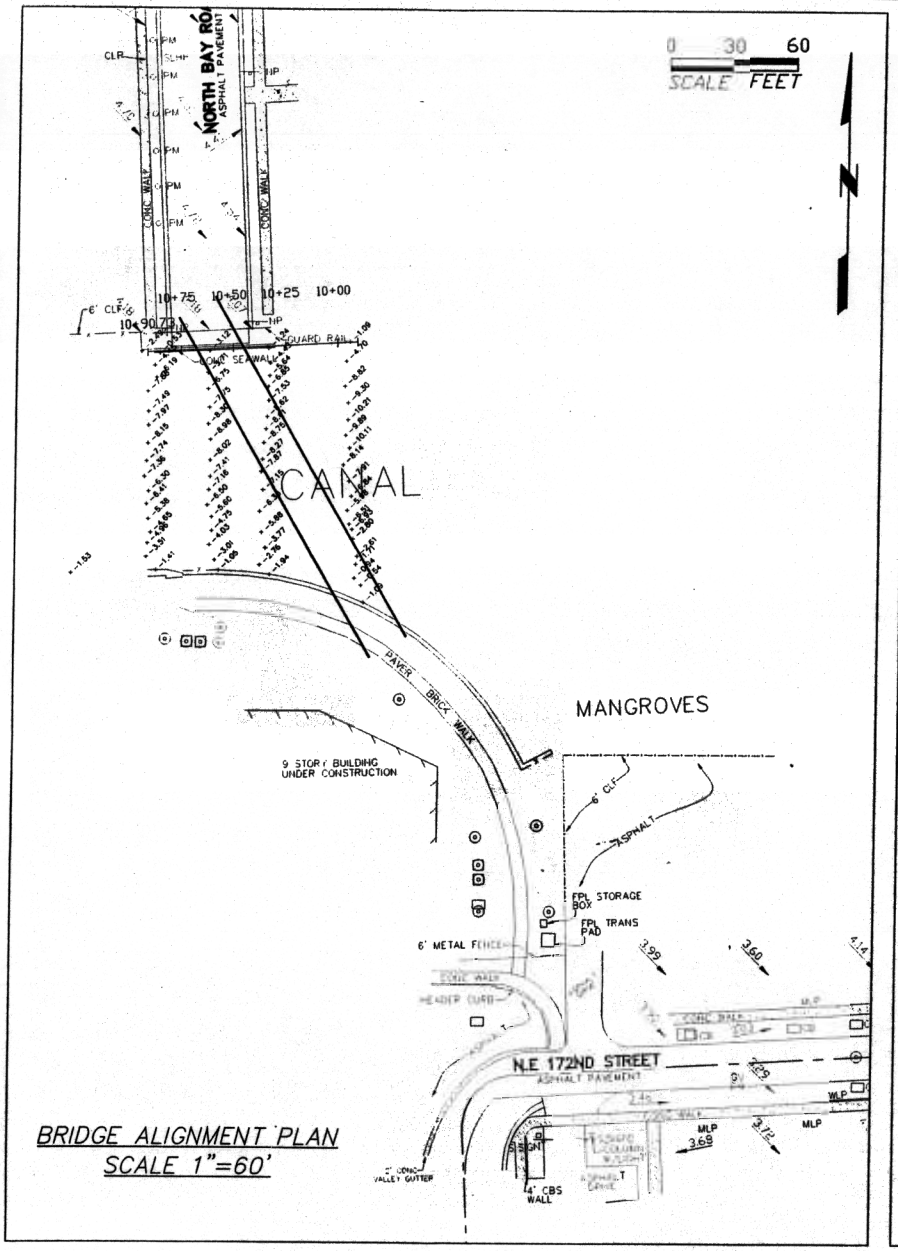
Pursuant to CFR 33 parts 114 and 115, the structure must provide "for the reasonable needs of navigation after full consideration of the effect of the proposed action of the human environment."
The applicant must be a state or municipal agency or have the "authority inherent in the ownership of the land on which the structure is placed." The USCG will review the application to determine if the proposed bridge provides sufficient clearance based on the description of the navigation on the waterway past the site of the proposed bridge, and may hold public hearings "concerning the effect that the proposed bridge will have on the reasonable needs of navigation,"
There is a provision for "advance approval to the location and plans of bridges to be constructed across reaches of waterways navigable in law, but not actually navigated other than by logs, log crafts, rowboats, canoes and small motorboats."
According to a USCG 7th District (Miami) Bridge Management Specialist, the interpretation of use under this provision is applied to the current use only. Since the canal is not currently being used for dockage or mooring, this "advance approval" provision may apply.
There is a process being adopted by the 7th District, whereby an applicant may submit a "Bridge Approval Questionnaire", and the USCG can provide a determination that the proposed bridge meets the "advance approval" provision in CFR 33 §115.70. If the project is pursued, we recommend that this take place prior to submittal of the environmental permit application.

It is very possible that state permitting could result in an administrative hearing, or that challenges could be filed in other processes. In any environmental permit process, there is also a possibility that contentious issues would be raised by the agencies or third parties that may further increase the difficulty of obtaining the authorizations. Before pursuing the concept further, we strongly recommend that the owner obtain additional advice related to any local government criteria or permitting requirements, including those of Miami-Dade County Department of Environmental Resources Management, which are not addressed in this report.

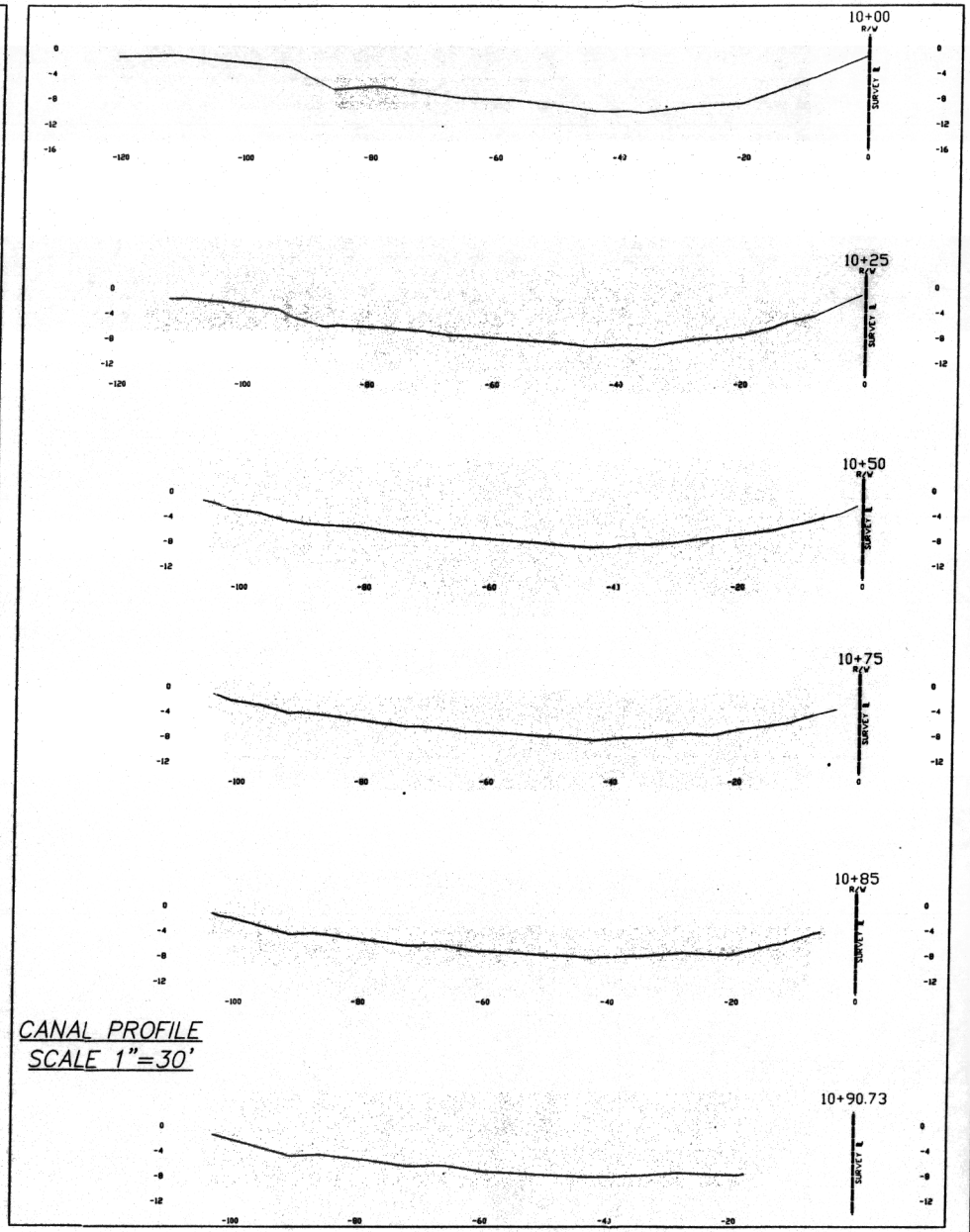
If permitting is pursued, the next step would be to conduct any necessary field investigations and application for submittal to the state and federal agencies.

LAK:kedA:\REP04514.wpd

APPENDIX C
Feasibility Study



BRIDGE ALIGNMENT PLAN
SCALE 1"=60'

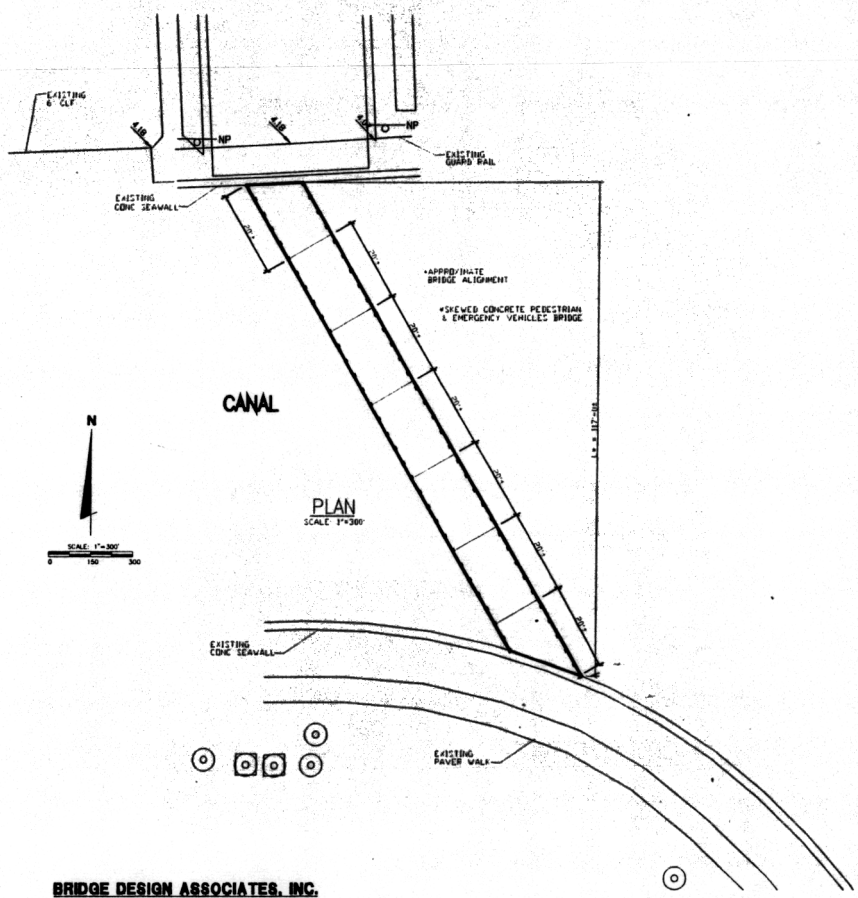


CANAL PROFILE
SCALE 1"=30'

SUNNY ISLES BEACH
PEDESTRIAN BRIDGE
FEASIBILITY STUDY

SHEET FIGURE 1 OF 1
PROJECT No 04-4567
CAD FILE
SCALE N.T.S.
PLOT DATE

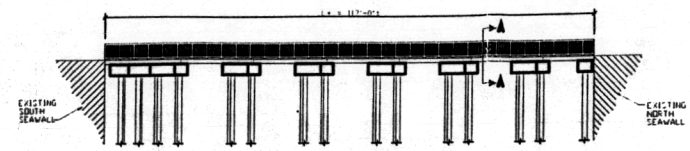
Calvin, Giordano & Associates, Inc.
Engineers Surveyors Planners
1800 Eller Drive Suite 600
Fort Lauderdale, Florida 33316
954.921.7781 954.921.8807 fax



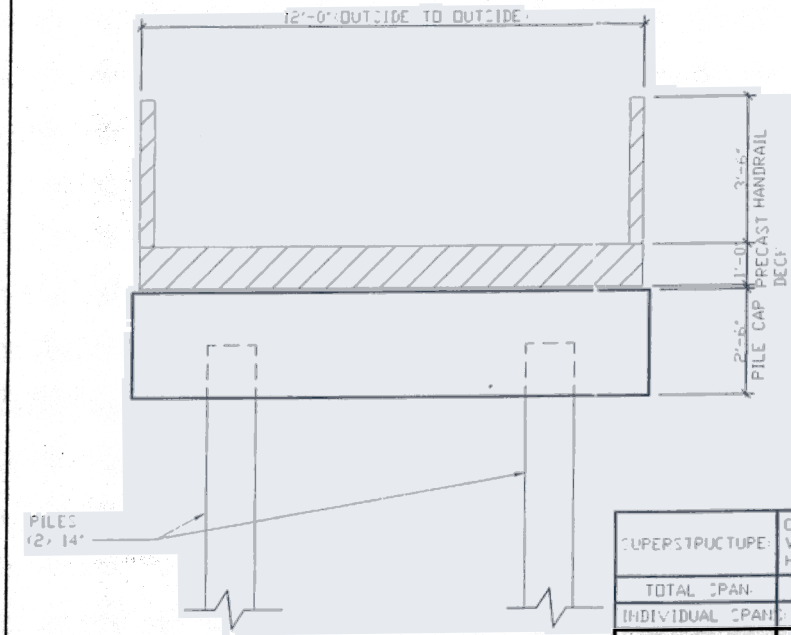
BRIDGE DESIGN ASSOCIATES, INC.
P.O. Box 210173, West Palm Beach, FL 33421-0173
Tel. (561) 753-0816 Fax (561) 753-0798
CONSULTING ENGINEERS
FLORIDA E.B. NO. 4962

PROJECT NO. 04-514

SUNNY ISLES PEDESTRIAN BRIDGE FEASIBILITY STUDY



ELEVATION
LOOKING WEST
SCALE 1"=300'



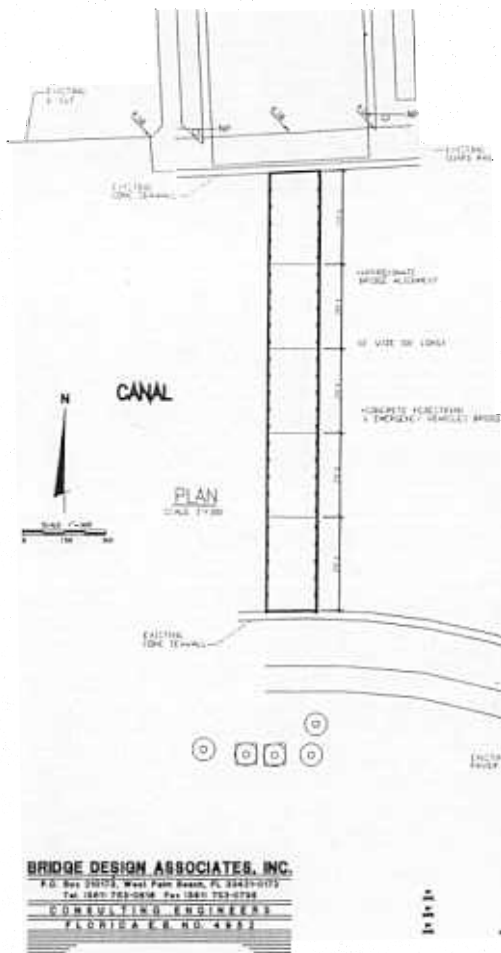
SUPERSTRUCTURE:	CONCRETE DECKS WITH ALUMINUM HANDRAILS
TOTAL SPAN:	140 L.F.±
INDIVIDUAL SPANS:	7 @ 20 L.F.±
ORIENTATION:	SKEWED 30° ±
BRIDGE WIDTH:	12'±
USE	PEDESTRIAN & EMERG. VEHICLES

SECTION "A-A"
SCALE 1"=30'

SUNNY ISLES BEACH
PEDESTRIAN BRIDGE
FEASIBILITY STUDY

SCALE N.T.S.
PROJECT No. 04-4567
SHEET OPTION 1
PLOT DATE
CAD FILE

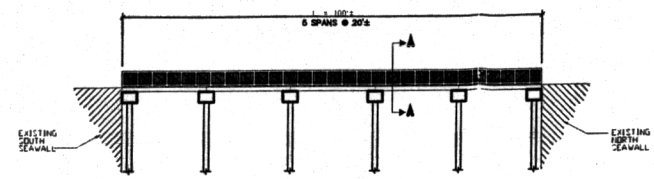
Calvin, Giordano & Associates, Inc.
Engineers Surveyors Planners
1800 Eller Drive, Suite 600
Fort Lauderdale, Florida 33316
Phone: 954.921.7781 Fax: 954.921.8807



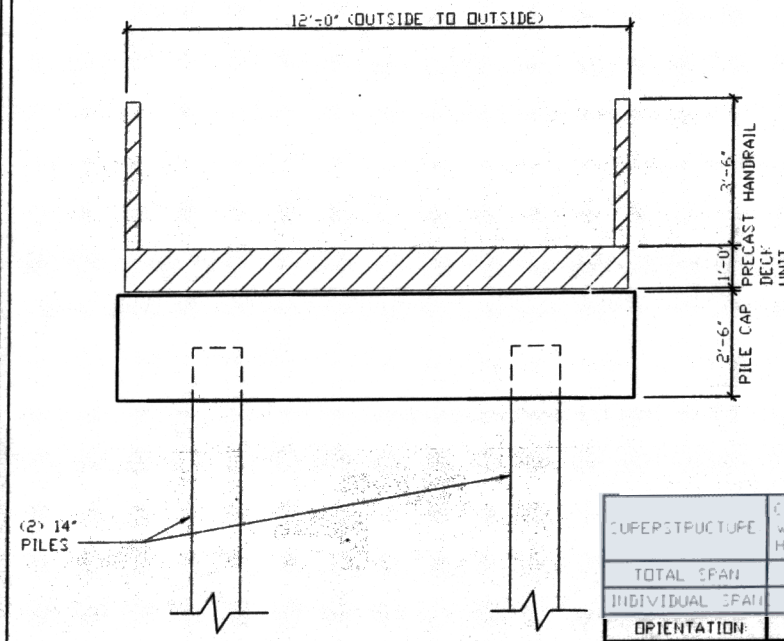
BRIDGE DESIGN ASSOCIATES, INC.
P.O. Box 210172, West Palm Beach, FL 33421-0172
Tel. (561) 753-0838 Fax (561) 753-0738
CONSULTING ENGINEERS
FLORIDA E.B. NO. 4852

PROJECT NO. 04-514

SUNNY ISLES
PEDESTRIAN BRIDGE
FEASIBILITY STUDY



ELEVATION
LOOKING WEST
SCALE 1"=30'



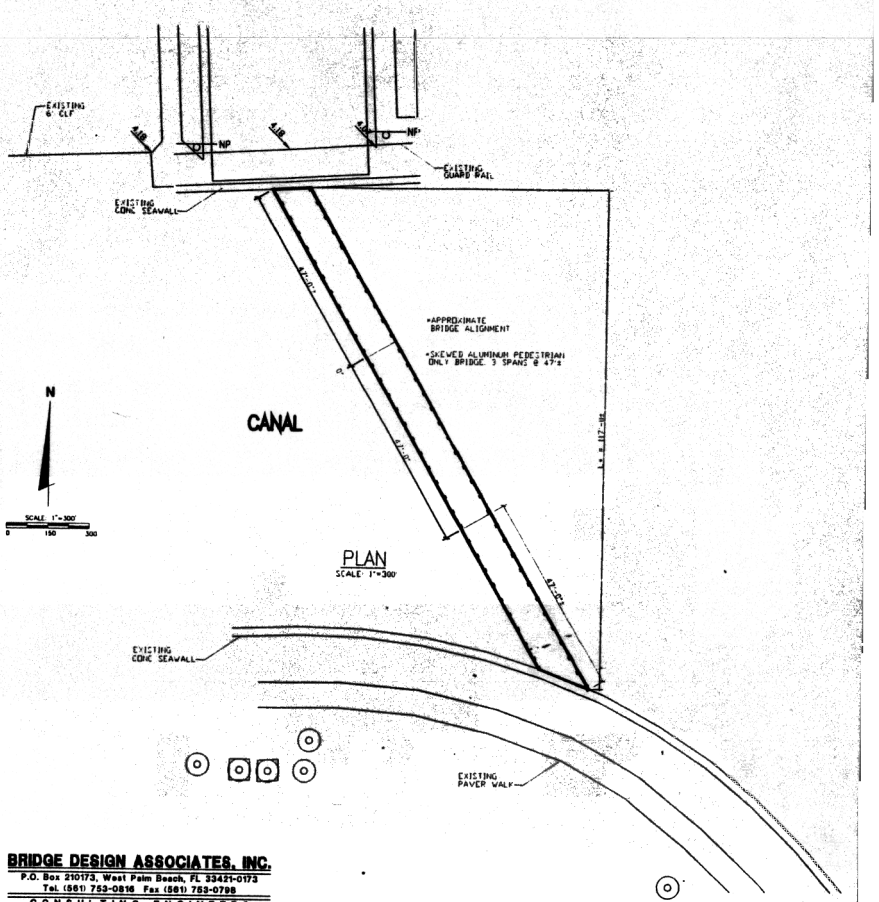
SUPERSTRUCTURE	CONCRETE DECKS WITH ALUMINUM HANDRAILS
TOTAL SPAN	100 L.F.±
INDIVIDUAL SPAN	5 @ 20 L.F.±
ORIENTATION	STRAIGHT
BRIDGE WIDTH	12'±
USE	PEDESTRIAN & EMERG. VEHICLE

SECTION "A-A"
SCALE: 1"=30'

SHEET OPTION 2 OF
PROJECT No. 04-4567
CAD FILE
SCALE N.T.S.
PLOT DATE

SUNNY ISLES BEACH
PEDESTRIAN BRIDGE
FEASIBILITY STUDY

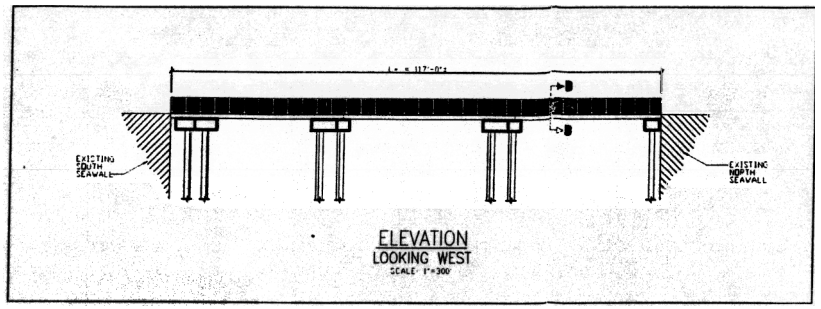
Calvin, Giordano & Associates, Inc.
Engineers Surveyors Planners
1800 Eller Drive, Suite 600
Fort Lauderdale, Florida 33316
Phone: 954.921.7781 Fax 954.921.8807



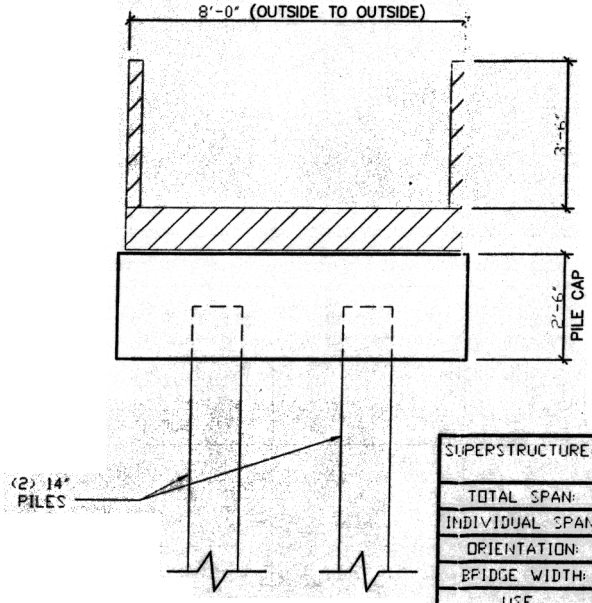
BRIDGE DESIGN ASSOCIATES, INC.
P.O. Box 210173, West Palm Beach, FL 33421-0173
Tel. (561) 753-0816 Fax (561) 753-0795
CONSULTING ENGINEERS
FLORIDA E.B. NO. 4962

PROJECT NO. 04-514

SUNNY ISLES
PEDESTRIAN BRIDGE
FEASIBILITY STUDY



ELEVATION
LOOKING WEST
SCALE: 1"=300'



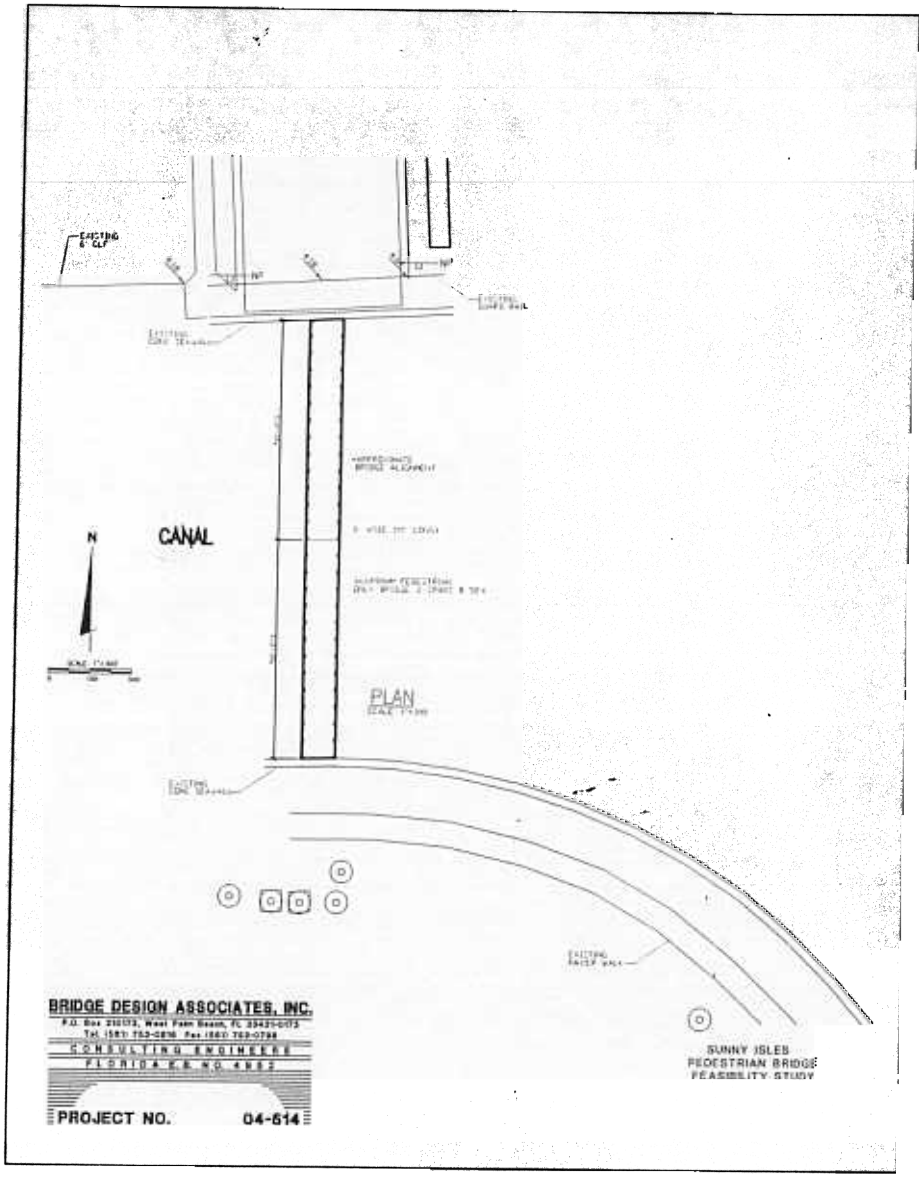
SUPERSTRUCTURE:	ALUMINUM DECK & HANDRAILS
TOTAL SPAN:	140 L.F.±
INDIVIDUAL SPAN:	3 @ 47 L.F.±
ORIENTATION:	SKEWED 30° ±
BRIDGE WIDTH:	8'±
USE	PEDESTRIAN ONLY

SECTION "B-B"
SCALE: 1"=30'

SHEET

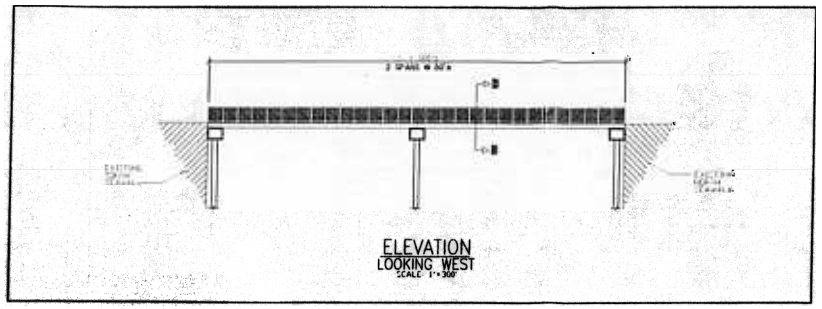
SCALE N.T.S.

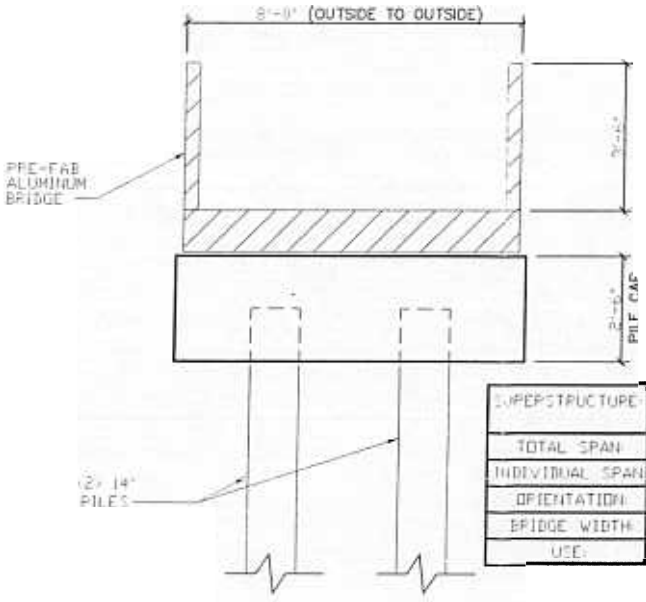
PLOT DATE



BRIDGE DESIGN ASSOCIATES, INC.
P.O. Box 210173, West Palm Beach, FL 33421-0173
Tel. (561) 753-0836 Fax (561) 753-0794
CONSULTING ENGINEERS
FLORIDA E.B. NO. 4882

PROJECT NO. 04-614





SUPERSTRUCTURE	ALUMINUM DECK & HANDRAILS
TOTAL SPAN	100 L.F.±
INDIVIDUAL SPANS	2 @ 50 L.F.±
ORIENTATION	STRAIGHT
BRIDGE WIDTH	8'±
USE	PEDESTRIAN ONLY

SECTION "B-B"
SCALE: 1"=30'

SHEET 6

SCALE N.T.S.
PLOT DATE

APPENDIX D
Confirmation of Advance Approval Category

U.S. Department of Homeland Security

United States Coast Guard

Commander
Seventh Coast Guard District

909 SE 1st Ave. (Rm432)
Miami, Fl 33131
Staff Symbol: (obr)
Phone: 305-415-6749
Fax: 305-415-6763
Email: roverton@d7.uscg.mil

16211/FL
Ser:1206
June 3, 2004

Mr. Bill Haase, E.I.
Project Engineer
Calvin, Giordano & Associates, Inc
1800 Eller Drive (Suite 600)
Fort Lauderdale, FL 33316

Mr. Haase,

This is in response to your bridge project questionnaire of April 20, 2004 concerning a proposed bridge crossing a no name canal in the vicinity of mile 1077.6 of the Atlantic Intracoastal Waterway on North Bay Road in Sunny Isles Beach, Miami-Dade, Florida.

The Commandant has given his advance approval to the location and plans of bridges to be constructed across reaches of waterways navigable in law, but not actually navigated other than by rowboats, canoes, and small motorboats. In such cases, the clearances provided for high water stages are considered adequate to meet the reasonable needs of navigation (33 CFR 115.70).

Based on our determination, the no name canal in the vicinity of mile 1077.6 of the Atlantic Intracoastal Waterway on North Bay Road in Sunny Isles Beach, Miami-Dade, Florida is in the advance approval category. A Coast Guard bridge permit will not be required for the proposed bridge-widening project. Although an individual bridge permit isn't required, you still must comply with all other applicable federal, state, and local laws and regulations. When the bridge is no longer used for transportation purposes, it must be removed and you must notify us that the waterway has been cleared.

If you have any questions about our approval, please call me at (305) 415-6749.

Sincerely,

RANDALL D. OVERTON
Bridge Management Specialist
U.S. Coast Guard
By direction

Copy: