MIAMI-DADE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS (DTPW)

ADDENDUM No. 5
November 22, 2024

PROJECT:	Biscayne Shores Pump Station Retrofit Nos. 109 and 110 and MIC Stormwater Pump Station Trash Rack Repair Project No. 20230197-R
BID DUE DATE:	December 11, 2024; 02:00 P.M.
FROM:	Miami-Dade County DTPW Capital Improvements Division 111 NW First Street, 14th Floor Miami, FL 33128 305.375.2930
TO:	Prospective Bidders and Interested Parties

This Addendum forms part of the project solicitation documents and will be incorporated into the Contract Documents, as applicable. Insofar as the Original Contract Documents, Drawings and Specifications are inconsistent, this Addendum shall govern. Please acknowledge receipt of this Addendum, at the time of bid submittal to Miami-Dade County, in the space provided on the "Acknowledgement of Addenda Form" provided with the project solicitation documents. Failure to acknowledge receipt of all addenda may be cause for disqualification.

CHANGES TO SUPPLEMENTAL INFORMATION:

A. Add to Section 4, Supplemental Information of the Solicitation Documents, the Geotechnical Report (23 pages), (Attached).

CHANGES TO SUPPLEMENTARY CONDITIONS:

A. Add to Section 5, Supplementary Conditions of the Solicitation Documents, document from Florida Department of Environmental Protection, Build America, Buy America Acknowledgement, dated 2/3/2023 (2 pages), (Attached).

CHANGES TO THE SPECIAL PROVISIONS:

A. Add to the Appendix "B" Technical Specifications the following Specifications Sections (Attached):

- SECTION 11202 Sluice Gates
- SECTION 15110 Valves and Appurtenances
- SECTION 16110 Raceways
- SECTION 16120 Wires and Cables
- SECTION 16135 Cabinets, Boxes and Fittings

ADDENDUM No. 5
November 19, 2024

- SECTION 16143 Wiring Devices
- SECTION 16170 Circuit and Motor Disconnects, Starters and Contractors

CHANGES TO ENGINEERING DRAWINGS:

A. Add to the Plans at NW 25 ST: Sheet No. P-7 (attached), Biscayne Shores – Phase II & Phase III, Stormwater Improvements Plans, Trash Interceptor Details.

B. Delete 20230197 Plans PS 109 & 110 and replace them with the attached revised 20230197-R Plans PS 109 & 110 by Addendum No. 5.

END OF ADDENDUM NO. 5

Alejandro Barrios
Assistant Director, Construction Division
Department of Transportation and Public Works (DTPW)

AB:er

c: Elva Reyes, DTPW
Liza Herrera, P.E., DTPW
Daryl Hildoer, P.E., DTPW
Laurie Johnson, SBD
Caesar Suarez, SBD
Clerk of the Board
Project File

CHANGES TO SUPPLEMENTAL INFORMATION

Added by Addendum No. 5

REPORT OF SUBSURFACE EXPLORATION & GEOTECHNICAL ENGINEERING EVALUATION OF SUBSURFACE CONDITIONS

Project:

BISCAYNE SHORES PUMP STATIONS 109 & 110 RETROFIT

Project No. 20170082
Pump Station 109: North Bayshore Drive at N.E. 109th Street
Pump Station 110: North Bayshore Drive at N.E. 110th Street
Miami-Dade County, Florida

Issued: **November 2019**

Prepared for:

Miami-Dade County DT & PW
Stormwater Drainage Design Section
111 N.W. 1st Street, Suite 1510
Miami, Florida 33128

WLI Order No. 19-1441

WINGERTER LABORATORIES INC.
Professional Engineering & Testing
Established 1949

WINGERTER LABORATORIES, INC.
1820 N.E. 144th Street
North Miami, Florida 33181

Added by Addendum No. 5

WINGERTER
LABORATORIES INC.
Engineering Testing and Inspection Service
Established 1949

November 15, 2019

Miami-Dade County DT & PW
Attention: Mr. Daryl K. Hildoer, P.E.
Stormwater Drainage Design Section
1111 N.W. 1st Street, Suite 1510
Miami, Florida 33128

Reference: Report of Subsurface Soil Exploration and Geotechnical Engineering Evaluation of Subsurface Conditions, including Allowable Bearing Capacity
Project: Biscayne Shores Pump Stations #109 & #110 Retrofit
Project No. 20170082
Locations: P.S. 109: East of North Bayshore Drive, at N.E. 109th Street
P.S. 110: East of North Bayshore Drive, at N.E. 110th Street
Miami, Miami-Dade County, Florida
WLI Order No. 19-1441

Gentlemen:

We are pleased to present this report of our subsurface soil exploration and geotechnical engineering evaluation for the above referenced project. These services were performed in general accordance with our Professional Services Agreement dated November 5, 2019. This report presents our evaluation and specific recommendations for the proposed retrofit of existing pump stations together with the field data.

This report was prepared in compliance with the 6th Edition of the Florida Building Code (2017).

We appreciate this opportunity to be of service to you during this phase of the project. If you have any questions or comments regarding the information contained in this report, please contact the undersigned.

DONALD J. FLOOD LICENSE No 44847 STATE OF FLORIDA PROFESSIONAL ENGINEER

Respectfully submitted,
WINGERTER LABORATORIES, INC.

11/18/19

Donald J. Flood, Jr., P.E.
Florida Registration No. 44847

The original of this report was signed and sealed by the above referenced Florida Registered Professional Engineer in accordance with Rule 61G15-23.001 of the Florida Administrative Code.

1820 N.E. 144th Street • North Miami, FL 33181 • (305) 944-3401 • 1-800-345-SOIL • Fax: (305) 949-8698
Broward: (954) 764-0472 • Dispatch Fax: (305) 949-1328

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INTRODUCTION

Wingerter Laboratories, Inc. (WLI) is pleased to present this report of our subsurface soil exploration and geotechnical engineering evaluation for the subject site. The purpose of this investigation was to obtain specific subsurface data in order to provide an engineering evaluation of the subsurface conditions, including allowable soil bearing capacity, for the proposed retrofit of Pump Stations 109 & 110 located east of North Bayshore Drive at N.E. 109th & 110th Streets, in the Biscayne Shores subdivision of unincorporated Miami-Dade County, Florida.

Our subsurface exploration consisted of a total of two Standard Penetration Test Borings, one boring each performed at the two subject sites, as shown on the annotated site plan provided in Appendix B of this report. The following presents a review of the project information provided to us, a discussion of the subsurface conditions, detailed geotechnical engineering recommendations, including allowable bearing capacity, and our Report of Test Boring Nos. B-1 and B-2.

PROJECT INFORMATION

We were provided with Figures 1 & 2: Boring Location Plan for each site with the proposed test boring location notated on each plan. These documents were prepared by CES Consulting Engineering & Science and are dated June 24, 2019. These documents are included in Appendix B of this report.

Google Maps was reviewed. The subject sites are located in northeast Miami-Dade County in the Biscayne Shores subdivision, east of Biscayne Boulevard (U.S. Highway 1) between the cities of North Miami and Miami Shores. Pump Station 109 is on the east side of North Bayshore Drive at N.E. 109th Street, between residences addressed at 10901 and 10875. Pump Station 110 is on the east side of North Bayshore Drive at the terminus of N.E. 110th Street east extension. Both sites are bounded on the east by Biscayne Bay/Intracoastal Waterway.

Our site reconnaissance was conducted prior to our work commencement in order to observe and document the existing surface conditions. This information was used in our interpretation of the subsurface data and also to detect any conditions which could affect our evaluation of the site. The subject sites are developed with the existing pump station buildings and equipment on the ground or pavement. The proposed test soil boring locations were marked with white paint.

Utility clearances were requested with Sunshine State One Call. Once the clearances were obtained, the work was scheduled to commence.

INVESTIGATIVE PROCEDURES

Our field work was performed using the standard truck-mounted drilling equipment at Pump Station 109. Trailer mounted drilling equipment was used at Pump Station 110 after the temporary generator was moved.

Soil samples (disturbed) were obtained in accordance with ASTM D-1586 utilizing a 2-foot long, 2-inch diameter split spoon sampler which is advanced by successive blows of a 140 pound hammer free-falling 30 inches. The number of blows for each 6 inches of penetration is recorded. The sum of the second and third blow counts for each 2-foot sampling interval constitutes the Standard Penetration Resistance in blows per foot, which is referred to as the "N" Value. The following tables may be used in interpreting the consistency of the materials based on the "N" Value:

SOIL CONSISTENCY vs. "N VALUE"					
Cohesionless Soils		**Cohesive Soils**		**Rock and Gravels**	
"N Value" (blows/ft)	Consistency Designation	"N Value" (blows/ft)	Consistency Designation	"N Value" (blows/ft)	Consistency Designation
0 to 4	Very Loose	0 to 2	Very Soft	0 to 25	Loose or Soft
5 to 10	Loose	3 to 4	Soft	26 to 50	Medium Dense
11 to 30	Medium Dense	5 to 8	Medium	51 to 90	Dense
31 to 50	Dense	9 to 15	Stiff	-	-
50 or More	Very Dense	16 to 30	Very Stiff	-	-
-	-	31 or More	Hard	-	-

The Standard Penetration Test, "N" value curve shown on the boring logs indicates the general variation of the "N" value throughout the depth of the boring. This curve is plotted in a straight line which connects each "N" value. However, it should not be assumed that the changes in the "N" value are a linear function. The graphical representations shown on the boring logs should not be substituted for the actual material descriptions included in the logs.

Soil samples will be retained by **WLI** for a period of 30 days from issuance of this report, unless specifically requested otherwise by the client.

The test boring locations were marked in the field by a WLI technician from recognized landmarks, based on the provided test boring location plan. The boring locations are generally as shown on the

Testing Locations map, but no degree of accuracy is stated or implied. Elevations were not established for the test boring locations. Depths reported on the logs represent depths below ground surface as they existed on the date drilled. The client is cautioned that if subsequent filling or excavation of the site occurs, the reported depth must be so adjusted. **WLI** can not assume responsibility for the accuracy of reported depths if the site is disturbed subsequent to the date drilled.

Upon completion of each test boring, the hole was refilled with soil cuttings with two feet of patch material on top.

TESTING PROGRAM AND CONDITIONS REVEALED

Our subsurface exploration consisted of a total of two Standard Penetration Test Borings conforming to the requirements of ASTM D-1586 that were performed at the subject sites on November 6, 2019. Please refer to Appendix A for our individual Reports of Test Borings for detailed description of the materials encountered and the depth intervals at which they were encountered. The Test Boring locations are shown on the notated map of testing locations in Appendix B of this report.

Standard Penetration Test Borings (ASTM D-1586)

The number, location and depth of the test borings was determined by the client and **WLI,** taking into consideration the requirements of the project, site accessibility and the subsurface conditions revealed. The discussions, opinions and recommendations contained in this report are based upon the conditions revealed in the referenced test borings.

Test Boring Number B-1 was located at Pump Station 109, at the northeast area of the site. The test boring encountered medium dense to dense layers of limesand with trace fragmented limestone to four feet below existing land surface. Following were loose layers of limesand with trace fragmented limestone, low medium dense layers of fragmented limestone, very soft layers of silt and organics to about ten feet. Thereafter, loose layers of fragmented limestone were encountered, becoming dense layers at the maximum explored depth of 15 feet below land surface. The ground water level at the time of our investigation was encountered at the depth of two feet, ten inches (2'-10") below the existing land surface at the test boring location.

Test Boring Number B-2 was located at Pump Station 110, at the northeast area of the site. The test boring encountered dense layers of limesand and fragmented limestone to two feet, followed by medium dense to loose layers of fragmented limestone to eight feet below existing land surface. Following were low medium dense to soft layers of silt and organics to about 13 feet. Thereafter,

low medium dense layers of silty sand were encountered to the maximum explored depth of 15 feet below land surface. The ground water level at the time of our investigation was encountered at the depth of three feet (3'-0") below the existing land surface at the test boring location.

The ground water level at the time of our investigation was encountered at the depths of two feet, ten inches and three feet (2'-10" & 3'-0") below the existing land surface at the test boring locations, respectively. Fluctuations in the ground water level should be expected due to seasonal climatic changes, tidal action, rainfall variation, surface runoff, construction activity and other site specific factors.

GEOTECHNICAL ENGINEERING EVALUATION

Evaluation of the subsurface data obtained from the test boring logs, using accepted geotechnical criteria, indicates that the existing subsurface conditions are not suitable for proposed loadings due to layers of compressible Silt and Organics located at various depths. Test Boring B-1, at Pump Station 109, boring logs indicates that the top four feet of strata is an adequate layers of Limestone & Limesand, but deteriorates to loose Limesand to a depth of eight feet. A layer of soft Silt & Organics is then encountered, ranging in thickness from two to seven feet. The soil conditions begin to recover into dense Limestone at 15 feet deep, at the boring termination. Test Boring B-2, at Pump Station 110, boring logs found similar soils as in Test Boring B-1, but the Limestone strata from seven to 15 feet deep remained loose. Test Boring B-2 also terminated at 15 feet deep.

Based upon our review, it is expected that any proposed foundation structure must be supported on pile foundations to a minimum depth of 20 feet. These piles will be installed to preclude any settlements of the Silt & Organics layers present in both borings.

It is therefore recommended that auger cast-in-place concrete pilings be installed to transfer any structural loads to a denser strata layer below the compressible layers. These pilings are expected to be either 12 or 14 inches in diameter, depending on the accessibility of the drilling equipment and loads required. It is also recommended that an additional test boring be obtained to sample the strata to a minimum depth of 30 feet, or when a suitable bearing layer is confirmed.

This recommendation is also subject to modification when additional information concerning the type of structure and/or retrofit loading becomes available.

SPECIAL REMARKS & ANNOTATIONS

In dealing with the unseen subsurface dimension, a prudent test boring program acts to identify the general range of conditions and to reduce, but not eliminate, the risks of unknown conditions. Therefore, **WLI** cannot offer a warranty, expressed or implied, that materials or conditions other than those revealed in the test borings will not be encountered, nor that the relative proportions and density of the materials will not vary from those reported.

Furthermore, **WLI** assumes no responsibility for the accuracy of the reported depths should any excavation, filling or alteration of the site grade occur, subsequent to the date of the drilling operation, without surveying the existing conditions.

Also, since the criteria furnished to **WLI** constitutes our total knowledge and understanding of the project; inaccuracies, deviations or alterations of the criteria may invalidate these recommendations to the extent they impact the magnitude, distribution, and elevation of applied loads, or impact the nature of the construction.

November 15, 2019

Miami-Dade County DT & PW
Attention: Mr. Daryl K. Hildoer, P.E.
Stormwater Drainage Design Section
1111 N.W. 1st Street, Suite 1510
Miami, Florida 33128

Reference: Report of Subsurface Soil Exploration and
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Project No. 20170082
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Based upon our review, it is expected that any proposed foundation structure must be supported on pile foundations to a minimum depth of 20 feet. These piles will be installed to preclude any settlements of the Silt & Organics layers present in both borings.

It is therefore recommended that auger cast-in-place concrete pilings be installed to transfer any structural loads to a denser strata layer below the compressible layers. These pilings are expected to be either 12 or 14 inches in diameter, depending on the accessibility of the drilling equipment and loads required. It is also recommended that an additional test boring be obtained to sample the strata to a minimum depth of 30 feet, or when a suitable bearing layer is confirmed.

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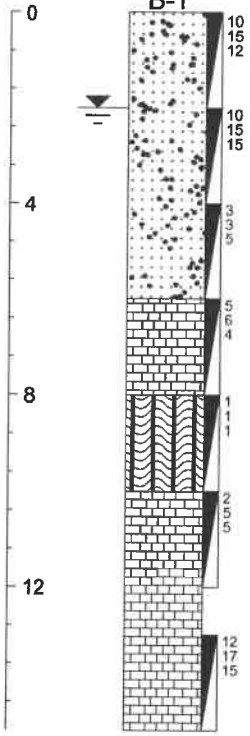
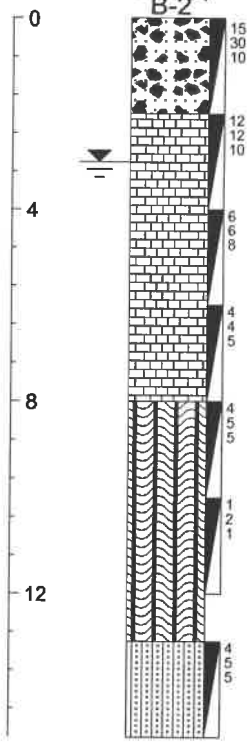
Added by Addendum No. 5

APPENDIX A
TEST BORING LOGS

LOG OF BORINGS

Biscayne Shores Pump Stations 109 & 110 (Proj. #20170082)





Added by Addendum No. 5

KEY TO SYMBOLS

Added by Addendum No. 5

Description

Strata symbols

Sand with trace fragmented limestone

Limestone

Organics and silt

Fragmented limestone and limesand

Silty sand

Misc. Symbols

Water table during drilling

Soil Samplers

Standard penetration test

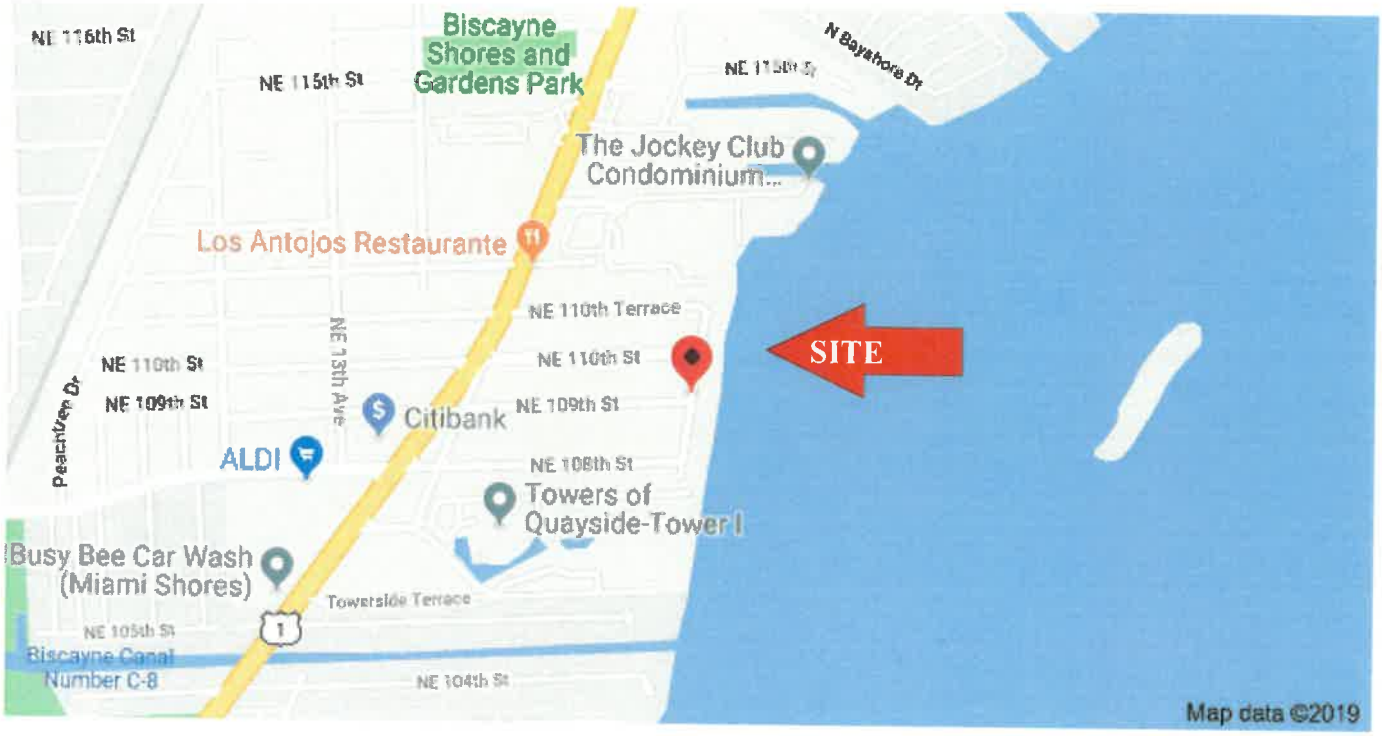
Added by Addendum No. 5

APPENDIX B

SITE AND TEST BORING LOCATION MAPS

Added by Addendum No. 5

SITE LOCATION MAP



N

WINGERTER LABORATORIES INC.

Professional Engineering & Testing

1820 N.E. 144th Street, North Miami, Florida 33181

Miami Dade County DT & PW

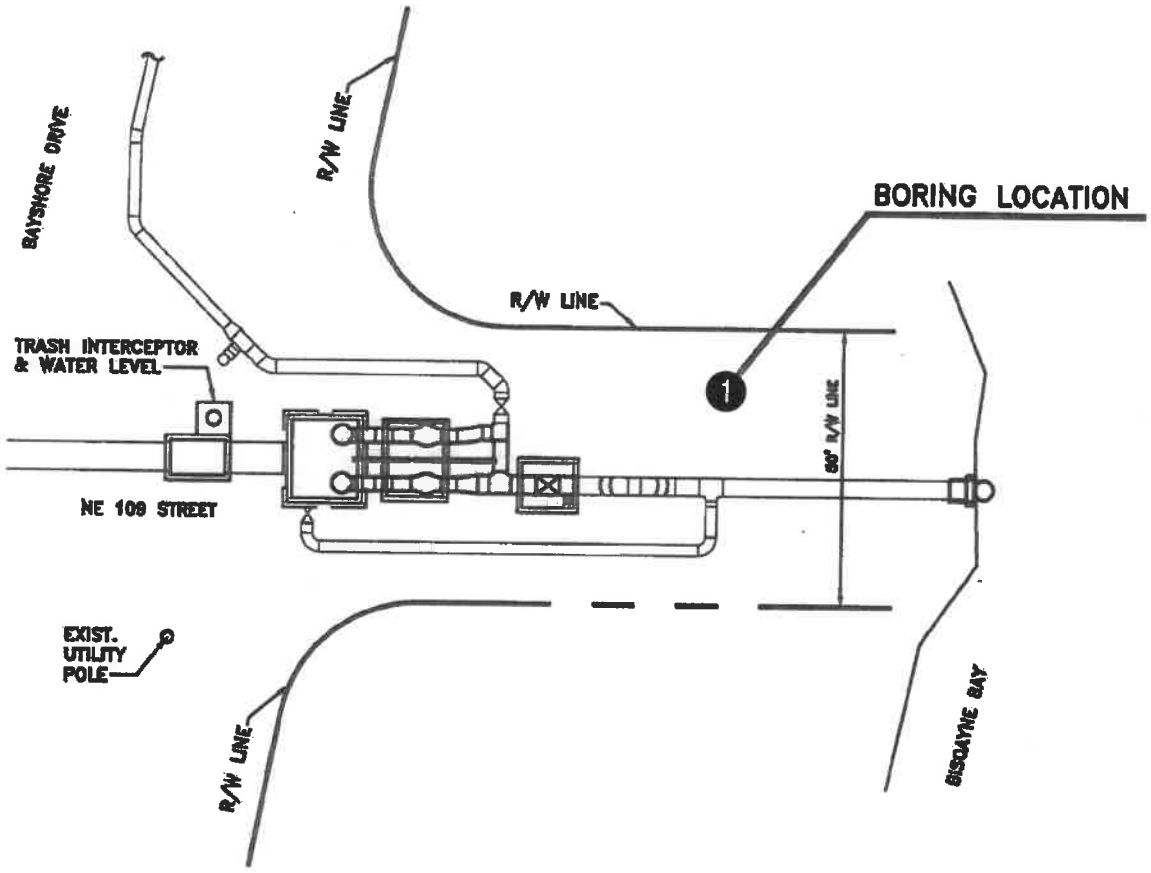
Project: **Proj # 20170082 - Biscayne Shores Pump Stations 109 & 110**

Location: N. Bayshore Drive at NE 109th Street & NE 110th Street Miami, FL

Order No.: 19-1441

Added by Addendum No. 5

TESTING LOCATIONS MAP



● Test Boring Location

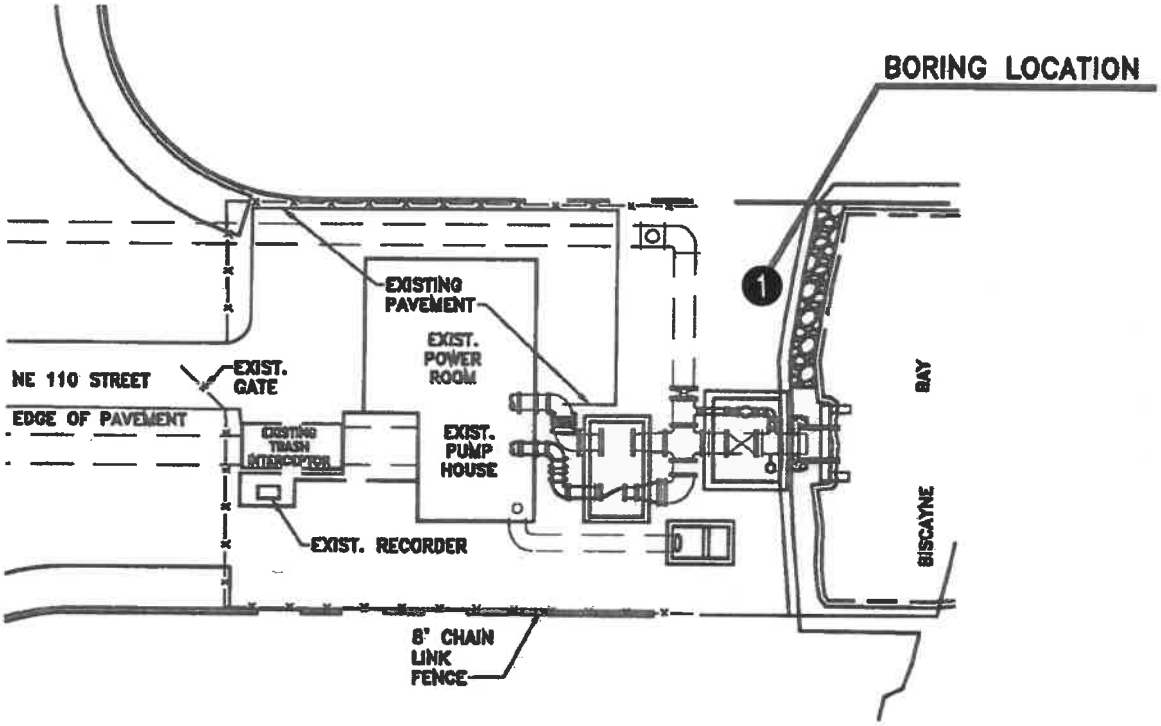
WINGERTER LABORATORIES INC.
Professional Engineering & Testing
1820 N.E. 144th Street, North Miami, Florida 33181

Miami Dade County DT & PW
Project: **Proj # 20170082 - Biscayne Shores Pump Station 109**
Location: N. Bayshore Drive at NE 109th Street Miami, FL

Order No.: 19-1441

Added by Addendum No. 5

TESTING LOCATIONS MAP



● Test Boring Location

WINGERTER LABORATORIES INC.

Professional Engineering & Testing

1820 N.E. 144th Street, North Miami, Florida 33181

Miami Dade County DT & PW

Project: **Proj # 20170082 - Biscayne Shores Pump Station 110**

Location: N. Bayshore Drive at NE 110th Street Miami, FL

Order No.: 19-1441

Added by Addendum No. 5

WINGERTER LABORATORIES INC.
Professional Engineering & Testing
Established 1949
1820 N.E. 144th Street
North Miami, FL 33181
Phone No.: 305-944-3401 Fax No.: 305-949-8698

Professional Service Agreement

DATE : 11/5/2019

WORK ORDER : 19-1441

PHONE NO. : (305) 375-4972

FAX NO.: (305) 375-2547

CLIENT:

Miami Dade County DT & PW
Attn: Daryl K. Hildoer, P.E.
Stormwater Drainage Design Section
1111 NW 1st Street, Suite 1510
Miami, Florida 33128

PROJECT : Proj # 20170082 - Biscayne Shores PS

LOCATION: SEE BELOW

TERMS: Net 45

P.O. #:

PERMIT #:

DESCRIPTION	QTY	UNIT	COST	ESTI...
Biscayne Shores Pump Station Retrofit Project # 20170082: PS 109:N. Bayshore Drive and NE 109th Street, Miami, Florida PS 110:N. Bayshore Drive and NE 110th Street, Miami, Florida				
Item 1A: Mobilization/Demobilization of Equipment and Personnel	1	Day	376.56	376.56
Item 1B: Perform Two (2) Standard Penetration Test, ASTM D-1586 with Standard Truck Mounted Equipment from 0' to 15' depth each	30	Feet	21.63	648.90
Item 1J: Closing of holes with grout or other approved methods to safe proof the site (per lineal foot)	30	Feet	8.65	259.50
Item 23G: Engineering Technician to perform Boring Layout & Utility Coordination (Minimum 4 Hrs.)	4	Hour	68.14	272.56
Item 1N: Geotechnical Engineering Evaluation Report of Existing Soil with respect to allowable bearing capacity.	6	Hour	129.79	778.74

ESTIMATED TOTAL $2,336.26

Wingerter Laboratories, Inc., shall not be held responsible for damage to underground Utilities, Septic Tanks or any other structures not identified to us prior to commencement of the work. Rates are based on a regular work schedule as well as work conditions. Adverse work conditions will be charged at a higher rate.

ACCEPTANCE: Client and endorser agrees to the "Standard Terms and Conditions" for the work as authorized and performed. Client will receive 4 Sealed Copies. Please see reverse side for Additional Report Distribution List.

NOTE: PLEASE SIGN BELOW AND FAX BACK TO PROCEED WITH SERVICES. TESTING SERVICES WILL NOT BE PERFORMED WITHOUT SIGNED AGREEMENT ON FILE.

The Fees listed above are in accordance with Contract E15-PWWM-08

SIGNATURE & PRINTED NAME: _____ **REP** JLW

CHANGES TO SUPPLEMENTARY CONDITIONS

FLORIDA DEPARTMENT OF
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

BUILD AMERICA, BUY AMERICA ACKNOWLEDGEMENT

On November 15, 2021, President Biden signed into law the Infrastructure Investment and Jobs Act ("IIJA"), Pub. L. No. 117-58, which includes the Build America, Buy America Act ("the Act"). Pub. L. No. 117-58, §§ 70901-52. The Act requires that, no later than May 14, 2022—180 days after enactment of the IIJA—the head of each covered Federal agency shall ensure that "none of the funds made available for a Federal financial assistance program for infrastructure, including each deficient program, may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States."

The Act requires compliance with the following Build America, Buy America requirements regarding materials used in infrastructure projects funded in whole or in part by federal funds – except for projects where a waiver has been granted or for projects funded wholly from the American Rescue Plan Act's Coronavirus State and Local Fiscal Recovery Funds ("SLFRF") program:

1. All iron and steel used in the project must be produced in the United States. This means that all manufacturing processes, from the initial melting stage through the application of coatings, must occur in the United States.
2. All manufactured products used in the project must be produced in the United States. This means that all such manufactured products must be physically manufactured in the United States, and the cost of all components of such manufactured products that are mined, produced, or manufactured in the United States must be greater than fifty-five percent (55%) of the total cost of all components of the manufactured products, unless another standard for determining the minimum amount of domestic content of the manufactured products has been established under applicable law or regulation.
3. All construction materials used in the project must be manufactured in the United States. This means that all manufacturing processes for such construction material must occur in the United States.
4. The bidder for this proposed contract must include in all contracts and purchase agreements for this project the following contract language:

   The Contractor hereby presents and warrants to and for the benefit of the Owner and State that: (a) the Contractor has reviewed and understands all requirements of the Build America, Buy America Act applicable to this project; (b) all of the products used in this project will be and/or have been produced in the United States in a manner that complies with the Build America, Buy America Act, unless a waiver of applicable requirement(s) is approved; and (c) the Contractor will provide any further verified information, certification, or assurance of compliance with this Acknowledgement, or information necessary to support a valid waiver of the Build America, Buy America Act, as may be requested by the Owner or the State.

DAVIS-BACON ACT ACKNOWLEDGEMENT

Grantees may be subject to the requirements of the Davis-Bacon Act when SLFRF funds are used in conjunction with another federal program that requires enforcement of the Davis-Bacon Act. For those Grantees receiving federal funding other than SLFRF funds for a project with a total project cost over $10 million, the following provisions apply:

PROJECTS WITH TOTAL PROJECT COSTS OVER $10 MILLION

1. Wage Certification

Grantees may provide a certification that all laborers and mechanics employed by Grantee in the performance of such project are paid wages at the rates not less than those prevailing, as determined by the U.S. Secretary of Labor in accordance with the Davis-Bacon Act, for the corresponding classes of laborers and mechanics employed projected of a character similar to the contract work in the civil subdivision of Florida in which the work is to be performed. If the

Grantee does not provide such certification, the Grantee must provide a project employment and local impact report detailing:

i. The number of employees of contractors and sub-contractors working on the project;
ii. The number of employees on the project hired directly and hired through a third party;
iii. The wages and benefits of workers on the project by classification; and
iv. Whether those wages are at rates less than those prevailing.

Grantee must maintain sufficient records to substantiate this information upon request.

2. Project Labor Agreements

Grantees may provide a certification that the project includes a project labor agreement, meaning a pre-hire collective bargaining agreement consistent with the section 8(f) of the National Labor Relations Act (29 U.S.C. 158(f)). If the Grantee does not provide such certification, the Grantee must provide a project workforce continuity plan, detailing:

i. How the Grantee will ensure the project has ready access to a sufficient supply of appropriately skilled and unskilled labor to ensure high-quality construction throughout the life of the project;
ii. How the Grantee will minimize risks of labor disputes and disruptions that would jeopardize timeliness and cost-effectiveness of the project;
iii. How the Grantee will provide a safe and healthy workplace that avoids delays and costs associated with workplace illnesses, injuries, and fatalities;
iv. Whether workers on the project will receive wages and benefits that will secure an appropriately skilled workforce in the context of the local or regional labor market; and
v. Whether the project has completed a labor agreement.

3. Other Reporting Requirements

Grantees must report whether the project prioritizes local hires and whether the project has a Community Benefit Agreement, with a description of any such agreement, if applicable.

I acknowledge that I have read and understand the applicable requirements and provisions of the Build America, Buy America Act and the Davis Bacon Act and agree to comply with the terms and conditions provided herein. Additionally, I certify that I am legally authorized to sign and submit this information on behalf of the entity that is being awarded project funding. I understand that any misrepresentation or failure to disclose information requested may be grounds for recapture of grant funds awarded or received by the grant based on fraud or omission.

Miami-Dade County	Jimmy Morales
Grantee Name	Printed Name of Grantee's Authorized Representative
Little River (C-7) Basin Improvements Phase 1	
Project Title	Signature of Grantee's Authorized Representative
22FRP39	2/3/2023
Grant Agreement Number	Date

CHANGES TO THE SPECIAL PROVISIONS

SECTION 11202

SLUICE GATES

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install sluice gates, operators, operating stems, wall thimbles, and appurtenances as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Concrete work is included under Division 3. Wall thimbles and anchor bolts, however, shall be furnished and installed under this Section.

B. Painting, except as specified herein, is included under Division 9.

1.03 QUALIFICATIONS

A. The sluice gates, operators, operating stems, wall thimbles, and appurtenances specified under this section shall be furnished by a manufacturer who is fully experienced, reputable and qualified in the manufacture of the equipment furnished. The sluice gates, operators, operating stems, wall thimbles and all related equipment shall be designed, constructed and installed with the best practices and methods.

B. The sluice gates and appurtenances shall be as manufactured by Water Technologies Inc ,Rodney Hunt Company, Orange, MA, (Moss Kelley, Inc., Coral Springs, FL), Fontaine, Inc. (Enviro Sales of FLA, Sebring, FL), Golden Gates, (Giralt Enterprises Inc Miami, FL) or approved equal.

1.04 SUBMITTALS

A. Copies of all materials required to establish compliance with the Specifications shall be submitted in accordance with the provisions of Section 01340. Submittals shall include at least the following:

1. Certified shop and erection drawings and data regarding sluice gates.

2. Literature on drawings describing the equipment and showing all important details of construction and dimensions.

3. Data on operators.

B. In the event that it is impossible to conform with certain details of the Specifications due to different manufacturing techniques, describe completely all nonconforming aspects.

C. Upon receipt and review of submitted material that has been approved, provide for requirements of Section 01340. Provide equipment warranty per Section 01740.

1.05 OPERATING INSTRUCTIONS

A. Operating and maintenance instructions, for each type of equipment, shall be furnished to the Engineer as provided for in Section 01730.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

1. General:

   1. The equipment covered by these Specifications is intended to be standard sluice gates as manufactured by a reputable firm having long experience in the production of such equipment. The equipment furnished shall be designed, constructed, and installed in accordance with the best practice and methods, and shall operate satisfactorily when installed as shown on the Drawings.

   2. All parts shall be so designed and proportioned as to have liberal strength and stiffness and to be especially adapted for the work to be done. Ample room and facilities shall be provided for inspection, repairs, and adjustment.

   3. All necessary foundation, bolts, plates, nuts, and washers shall be furnished.

2. Material Requirements:

   1. Thimble, frame, guides, slide, pedestal, and gear housing: ASTM A126, Class B or ASTM A48, Class 30 or stainless steel ASTM 276

   2. Yoke: Cast iron, ASTM A126, Class B or ASTM A48, Class 30 or stainless steel, ASTM A 236.

   3. Gears: Bronze, ASTM B148 (CA 952, CA 954, or CA 958) ASTM B584 (CA 865 or CA 867) or steel AISI 8620 or AISI 4140.

   4. Electric activated lift mechanism worm gears: AISI 8620.

   5. Electric activated lift mechanism spur gears and helical gears: AISI 4140.

   6. Electric activated lift mechanism shafting: AISI 1020 or 1018.

   7. Bearings: bronze, ASTM 8148-9C (CA 954) or ASTM B-150 (CA 623).

   8. Wedges, thrust nut, stem couplings, and gate activator lift nut: bronze, ASTM B584 (CA 865, CA 867, or CA 872).

   9. Seating faces and stem guide liners: bronze, ASTM B21*, alloys A or B (CA 464 or CA 482), ASTM B138 (CA 675), ASTM B98 (CA 651 or CA 655), ASTM B139 (CA 521, CA 524 or CA 544), or stainless steel, ASTM A267, type 302, or 304.

   10. Stems: bronze ASTM B124 (CA 675), ASTM B 98 (CA 655) or stainless steel, ASTM A582, type 303, or ASTM A276, type 302 or 304.

11. Fasteners: bronze, ASTM B98 (CA 651 or CA 655), ASTM B158 (CA 614, CA 623, or CA 630), or stainless steel ASTM A276, type 303 or 304, or ASTM A582, type 303.

12. Flush bottom seal: elastomeric materials, ASTM D2000.

13. Flush bottom retainer bar: cast iron ASTM A126, Class B; stainless steel, ASTM A276, type 302 or 304, ASTM A582, type 303; bronze ASTM A276, type 302 or 304, ASTM A582, type 303; bronze ASTM B98, (CA 651 or 655), ASTM B150 9CA 614, CA 623, or CA 630), or ASTM B138 (CA 675).

2.02 FRAMES

A. The frames shall be of stainless steel 304. They shall be of ample section and case in one piece.

B. The frames shall be designed for the maximum head indicated on the Drawings with a minimum safety factor of five with respect to tensile, compressive, and shear strength. All surfaces forming joints or bearings shall be machined.

C. The frames shall be one of two types as shown on the drawings: (1) flat back or (2) flange back. Both types shall be machined on the rear face to bolt directly to the machined face of the wall thimble.

2.03 SLIDES

A. The slide shall be made of stainless steel 304, with strengthening ribs, where required, and a reinforced section to receive the seating faces.

B. The slide shall be designed for the maximum head indicated with a minimum safety factor of five with respect to tensile, compressive and shear strength.

C. The slide shall have tongues on each side extending its full length, and these tongues shall be accurately machined on contact surfaces. Surfaces of the slide that come in contact with the seat facings and wedges shall be accurately machined. The maximum allowable clearance between the slide and the slide guide shall be 1/16-inch.

D. A thrust nut pocket shall be provided above the horizontal center line of the slide reinforced by ribs. The thrust nut pocket shall be drained.

2.04 SEATING FACES

A. Seating faces shall be made of strips of rolled or extruded bronze or stainless steel. They shall be firmly secured in finished grooves in the frame and slide faces in such a way as to insure that they will remain in place, free from distortion and loosening during the life of the sluice gate.
B. These faces shall be of ample section and so finished that the maximum clearance between the seating surfaces, with the slide in the closed position, shall be 0.0004-inches.

2.05 SEALS

A. Resilient seals for flush bottom gates shall be of natural or synthetic rubber. Reclaimed rubber shall be used. Rubber compounds shall be free of vegetable oils, vegetable-oil derivatives, animal fats, and animal oils. Rubber seals shall be resistant to microbiological attack, copper poisoning and ozone attack.

B. The design of the seal should be as to provide tight shutoff required by 3.04.

C. Seals shall be mounted on the slide or the frame and shall be securely held in place with a retainer bar bolted to the frame or slide leaving an unobstructed flush invert.

D. Material Tests

1. Rubber compounds shall be capable of withstanding an ozone resistance test when tested in accordance with ASTM D-1149. The tests shall be conducted on an unstressed sample for 70 hours at 104 F without visible cracking in the surfaces of the test samples after the tests.

2. Rubber compounds shall have less than 2 percent volume increase when tested in accordance with ASTM D-471 after being immersed in distilled water at 73.4 F, plus or minus 2 F for 70 hours.

2.06 GUIDES

A. Guides shall be made of stainless steel and bolted to the frame or cast integrally with it and shall be machined on all bearing and contact faces.

B. Guides shall be designed for the maximum head indicated with a safety factor of five for shear, compression and tension. The guides shall be of such length as to support at least one-half of the vertical height of the slide when in the open position.

C. Provision shall be made to prevent lateral movement of bolted-on guides. They shall be capable of taking the whole thrust produced by water pressure and wedging action with a safety factor of five. Wedges or wedge facings shall be securely attached to the guides at points where, in the closed position, they will make full contact with the wedging surfaces on the slides.

2.07 YOKE

A. Self-contained gates shall be provided with a cast-iron or stainless steel yoke designed for the thrust of the floorstand or hoist with a safety factor of five. The top of the yoke shall be machined to receive the operating mechanism. The pads on the yoke that contact those on the top of the guides shall be machined on contact faces and bolted to the guides to take the thrust developed under maximum operating conditions.

2.08 THRUST NUT

A. Each gate shall be provided with a thrust nut for connecting the stem to the slide. It shall be of ample design to take the thrust developed during gate operation under the maximum operating head condition loads with a safety factor of five, in opening and closing direction. The thrust nut and slide shall be constructed to prevent turning of the thrust nut in the pocket in the slide. On rising-stem gates, the thrust nut shall be threaded and keyed or threaded and pinned to the stem. On non-rising stem gates, the thrust nut shall be threaded but not keyed or pinned to the stem, so that the nut and slide can move up and down the stem, as the stem turns.

2.09 WEDGING DEVICES

A. All sluice gates shall be equipped with adjustable side-wedging devices to provide contact between the slide and frame facings when the gate is in closed position. All faces shall be accurately machined to give maximum contact wedging action. Wedges shall be fully adjustable and so designed that they will remain in the fixed position after adjustment. On all gates larger than 24-inches in size that will be subjected to unseating heads, top and bottom wedging devices shall be provided. If the gates are flush bottom closure gates, they will be provided with top wedges only.

2.10 WALL THIMBLES

A. Wall thimbles shall be made of stainless steel and shall be furnished by the gate manufacturer. The wall thimble shall provide a rigid mounting designed to prevent warping of the gate frame during installation.

B. The cross section of the thimble shall have the shape of the letter "F" or "E", or of a flange and suitable end for attaching to the connecting pipe. The front, or mounting flange shall be machined and shall be drilled and tapped to the same template used for its particular gate frame. A ring shall be cast on the periphery of the wall thimble to form a water stop and anchor ring in the concrete. The gate shall be attached to the wall thimble with bolts or studs specified in 2.11.

C. To permit entrapped air to escape as the thimble is being encased in concrete, holes shall be cast or drilled in each entrapment zone formed by the reinforcing ribs or the flange and water stops. The holes shall be 1 ½-inches in diameter and no more than 2 feet apart.

2.11 ASSEMBLY BOLTS, STUDS, NUTS AND ANCHOR BOLTS

A. All assembly bolts, studs, nuts, and anchor bolts shall be of such size and spacing as required to provide for the design forces with a safety factor of five. Bolting on circular flanged-back gates shall mate with 25 lb. or 125 lb. drilling as specified in NSI B16.1. An adequate number of holes shall be provided in the flange on the back of the gate to prevent leakage under the design heads and to resist the shearing action caused by closing and opening forces.

2.12 STEMS AND STEM COUPLINGS

A. The operating stems shall be designed for a tensile strength to withstand a 200 pound effort on the crank or handwheel or a 240 foot pound effort on the crank or handwheel, or a 100 foot pound torque on a wrench nut. The critical buckling load shall be determined using the Euler column formula, using C=2. Where hydraulic cylinder lifts are used, the stem design force shall not be less than 1.25 times the output thrust of the hydraulic cylinder with a pressure equal to the maximum working pressure of the hydraulic fluid supply. Where electric motor drivin lifts are used the stem design force shall not be less than 1.25 times the output thrust of the unit in the stalled motor condition.

B. The threads of the stem shall be machine cut or rolled and of the square or Acme type. The number of threads per inch shall be such as to work most effectively with the lift mechanism used. On rising-stem gates with manual hoists, the top of the stem shall be provided with a stop collar.

C. Were stems are furnished in more than one piece, the different sections shall be joined together by solid couplings. The couplings shall be threaded and keyed or threaded and bolted, and shall be of greater strength than the stem.

2.13 STEM GUIDES

A. Bracket and floor mounted stem guides (including both the guide housing and the bracket) shall be constructed that when properly speced they will hold the stem in alignment and yet allow it enough play to permit easy operation. The inside diameter of the guide shall not be greater than 1/8-inch larger than the outside diameter of the stem. The guides shall be spaced in accordance with the manufacturer's recommendations for each stem size. The L/r ratio shall not be greater than 200. The guides shall be adjustable with respect to the bracket to provide proper concentric alignment with the stem, and shall be so designed that alignment will be maintained after the adjustment. The guides shall be lined with provisions shall be made to hold the lining in place. Brackets shall be attached to the wall by sufficient anchor bolts to prevent twisting or sagging under load.

2.14 PAINTING

A. Surfaces shall be cleaned by commercial sandblasting to base metal, dry and free of grease before painting in conformance with the paint manufacturer's instructions. After cleaning the surfaces shall be primed by application of a coal tar coating suitable for use in potable water and applied in conformance with paint manufacturer's instructions. After painted surfaces are dry, the machined or bearing surfaces with the holes, both plain and threaded, shall be coated with a protective grease until installation.

B. The wall thimble shall have the above treatment except for those surfaces in contact with the concrete.

2.15 MANUAL LIFTING DEVICES

A. The manual lift mechanism shall have either a handwheel without a gear ratio, or be crank-operated with either a single or double gear type, shall have a lift nut threaded to fit the operating stem. Ball or roller bearings shall be provided above and below the flange on the lift nut to take the thrust developed in opening and closing the gate with a force of 40 ft.-lbs. on the crank or handwheel.

B. Gears shall be accurately machined with cut teeth to provide smooth, proper operations for the lifting mechanism. Suitable shafts shall be installed with sleeve, ball, or roller bearings of the appropriate size. All gears and bearings shall be enclosed in a housing. Fittings shall be provided so that all gears and bearings can be periodically lubricated.

C. The lift mechanism shall be supplied with a pedestal, machined and drilled to receive the gear housing and drilled for bolting to the operating floor. The mechanism shall be geared in such a manger to permit the slide operation with an effort of not more than 50 ft.-lbs. on the lifting device after the slide is unseated from its wedges based on the operating head specified. All geared lifts shall be suitable for operation by use of a portable motor apparatus.

D. The crank shall be removable and fitted with a corrosion resistant rotating handle. The maximum crank radius shall be 15-inches and the maximum handwheel diameter shall be 30-inches.

E. The direction of wheel or crank rotation to open the gate shall be indicated on the lift mechanism. Single speed operators shall be counterclockwise to open and two speed operators shall be counterclockwise to open for the high speed gear ratio and clockwise to open at the low speed gear ratio.

F. Each rising stem unit shall be provided with a stem cover unless otherwise noted on the Drawings. The cover shall be made of clear butyrate plastic which will not discolor or become opaque for 5 years after installation. The cover shall be of sufficient diameter and length to permit full travel of the threaded stem without obstruction. The top of the stem cover shall be closed. The bottom end of the stem cover shall be mounted in a housing or adaptor plate for each field mounting.

G. All gates have widths equal to or greater than two times the height shall be provided with two lifting devices connected by a tandem shaft for simultaneous operation.

H. Surfaces shall be prepared and shall have protective coatings applied in accordance with 2.14.

2.16 ELECTRIC ACTUATION

A. ELECTRIC MOTORS

Electric motors shall be specifically designed for valve actuator service, and be totally enclosed, non-ventilated. The enclosure shall meet Nema 4 (weatherproof), Nema 6 (submersible), or Nema 7 (explosion-proof), as required for the project. Motor shall be capable of operation under maximum specified loads when voltage to the motor is +/- 10% of the nominal voltage. Motor shall have Class F insulation with thermal overload sensors embedded in the motor windings. Electric actuator shall be EIM Co, Auma or approved equal.

B. LIMIT SWITCHES

Limit switches shall be geared to the drive mechanism and in step with actual valve position at all times, whether operation is by power or manual mode. Switches shall be activated by a rotor type design. Contacts shall be silver and have a rating of 10 amps at 120 VAC. A minimum of (3) N.O. and (3) N.C. contacts shall be provided for each direction of travel. The limit switch gear mechanism shall be enclosed to prevent entrance of foreign matter or wire entanglement. Use of cams or screws to set switches or designs requiring battery back-up methods to ensure position control in the event of a power failure, are unacceptable.

C. TORQUE SWITCHES

The actuator shall include an adjustable torque switch to interrupt the motor power circuit when an obstruction is encountered in either direction of travel, or when torque seating of valves is required for tight shut off. The torque switch shall have a calibrated dial for adjustment and have means to ensure maximum actuator rating is not exceeded. Contacts shall be same construction and rating as limit switch. Mechanical torque springs for load control shall be field replaceable without need of actuator dismantling or removal of the worn assembly.

D. POSITION INDICATION

Local position indication for quarter valves shall be by indicator dial located on the gear operator and graduated in 25 percent increments. For rising stem multi-turn actuators, a

dial window indicator shall be located on the limit switch compartment cover and labeled 0 to 100% open and graduated in 5 percent increments. If remote position indication is specified, this shall be by means of a 100 ohm potentiometer in step with valve position at all times whether operation is electrical or manual.

E. ELECTRICAL CONTROLS

1. As a minimum, the actuator shall be furnished with power and control terminal strips, space heater (25 watt), limit switches, torque switches, all housed in a control compartment meeting Nema 4 (weatherproof), Nema 6 (submersible), or Nema 7 (explosion-proof), as specified for the project. The rectangular enclosure shall have a bonded O-ring seal and hinged cover. Cover bolting shall be captive stainless hex head screws.

2. When built-in controls are specified, they shall be an integrated modular package, completely wired and easily removable or replaceable, as a complete package, by removal of four (4) captivate screws. Motor leads and power supply leads will be terminated to the terminal strips located on the modular package. Power supply terminals (5 pounds minimum) and control supply terminal (48 points minimum) shall be physically isolated from each other to protect against transient voltages.

3. The terminal strips shall be completely shrouded with high impact resistant plastic to avoid accidental terminal contact by personnel. The module is to include a snubber circuit to provide control voltage protection for switches and electronic modules from voltage surges. All electrical components of the modular package, such as reversing removal and replacement without concerns for proper wiring connections. All optional control requirements such as modulating control, 2-wire control, interposing relays, etc. shall be plug-in printed circuit type boards having gold plated contact connectors. Unless otherwise specified, all PC boards must be temperature rated -40 degrees to +70 degrees C. Ease of replacement of upgrading shall be of a paramount consideration.

F. OPEN-CLOSE SERVICE CONTROLS

1. Reversing Connector
   Control voltage shall be 120 volts, 60 or 50 Hz. N.O. Seal-in contacts for momentary contact pushbutton control and N.C. contacts for electrical interlock shall be supplied. When specified, additional auxiliary contacts (1 N.O. and 1 N.C. for open and close coils) shall be supplied. The contractor shall be both electrically and mechanically interlocked. It shall be completely wire as an assembly and plug connected to the modular package.

2. Control Power Transformer
   The transformer assembly shall provide 115, 18 and 12 Vac. It shall be epoxy impregnated and encapsulated to prevent moisture incursion and shall be completely wired as an assembly and plug connected to the modular package.

3. Pushbuttons
   Each actuator shall be supplied with open-stop-close pushbuttons furnished integrally mounted. Pushbuttons shall be double O-ring sealed and include a protective silicon boot. Seal material shall be resistant to ozone and ultraviolet light. When integrally mounted pushbuttons are specified, the design shall permit operation of the buttons when the electrical enclosure cover is open.

4. Indicating Lights
   The actuator shall include two (2) long life, high intensity LED type pilot lights to indicate open, closed, and intermediate valve position (both lamps on). Red shall indicate valve open and green shall indicate valve closed. An additional LED pilot light shall be furnished to indicate power is on. A fourth LED pilot light shall be furnished to indicate torque switch trip.
5. Selector Switch
   The actuator shall include a 3-position selector switch, for local (hand)-off-remote (auto) control. If specified, the switch shall be padlockable in any position. A tumbler keylock option may be specified.

6. Other Options
   (When specified), such as interposing relays, two wire control, positioning control, etc., shall be by means of plug-in-type PC board modules designed for easy upgrading without need of changing existing equipment.

G. POSITIONING CONTROL SERVICE

1. Providing up to 600 starts per hour with positioning accuracy to +/- 1.0% dependent on valve operating time, shall include, in addition to Open-Close controls.
2. Comparator Circuit

   The comparator circuit shall be a solid state plug-in PC board to accept a 4-20 mA input control signal from a position controller and have zero, span and deadband adjustments. The circuit shall provide, as standard, a 4-20 mA output signal for remote position indications. Both input and output signals shall be optically isolated. The circuit shall include a jumper selectable setting to Remain-In-Last Position or Close on Loss of control signal.

3. Feedback Potentiometer
   A valve position feedback potentiometer shall be included and shall be mechanically connected to the valve stem and in step with valve position at all times whether the unit is being operated electrically or by handwheel.

2.17 TOOLS AND SPARE PARTS

A. One (1) set of all special tools required for normal operations and maintenance shall be provided for each type of gate supplied. All such tools shall be furnished in a suitable steel tool chest with lock and duplicate keys.

PART 3 – EXECUTION

3.01 SHOP FABRICATION

A. All parts in the sluice gate and accessories shall be accurately machined on mating and bearing surfaces. All like parts, except the bronze seating surfaces shall be interchangeable so that the replacement parts can be furnished at any time and attached in the field with a minimum of fitting, chipping or re-machining. All parts shall confirm to the design dimensions and shall be free of parts shall conform to the design dimensions and shall be free of defects of material and workmanship. All attaching bolt holes shall be drilled accurately to layout indicated on the drawings.

B. All castings shall be clean and sound without defects capable of impairing their functions. The seating facings shall be machined to a finish of 63 micro-inch. The applicable standard

is ANSI B46.1. All mating surfaces such as guides-to-frame and frame-to-wall thimble, shall be machined flat.

3.02 SHOP TESTING

A. Before final assembly, all seating and wedging surfaces shall be thoroughly cleaned of all foreign materials and final adjustments made. With the gate fully closed, the clearance between seating faces shall be checked with a 0.0004-inch thickness gage. If this thickness gage can be inserted between seating faces, wedging devices must be readjusted or the gate slide or gate frame or both re-machined, until insertion is no longer possible. In the event of re-machining, clearances will again be checked as stated above.

B. After completion, all seating and wedging surfaces shall be thoroughly cleaned of all foreign materials and final adjustments made. The sluice gate shall then be shop operating from the fully closed to the fully open position to verify that the assembly is workable. A shop leakage test meeting the requirements of Sec. 3.04 shall be made when called for by the purchaser's supplemental specifications.

3.03 INSTALLATION

A. It shall be the Contractor's responsibility to handle, store, and install the wall thimble, gate, operating mechanism, stem, stem guides, and accessories in accordance with the manufacturer's drawings and recommendations. Care shall be taken to avoid warping the gate frame and to maintain tolerances between seating faces. All gates, thimbles, stems, and operators shall be plumbed, shimmed and accurately aligned.

B. Tapped holes in thimbles shall be plugged for protection during concrete pouring and setting. During construction, the surfaces of the thimble and gate shall be covered or otherwise protected from concrete spillage, paint, oil and debris. Any damage that occurs to the thimble or gate in storage or handling shall be corrected prior to installation of the gate or operation and testing of the gate.

C. Thimbles shall be accurately positioned and supported to prevent shifting during the pouring of the surrounding concrete. Thimbles shall be carefully braced both horizontally and vertically to prevent distortion. Concrete shall be carefully poured to provide a good bond to the thimble without voids. Grout shall be forced into the air vent holes.

D. After the entire assembly of manually operated gates has been installed, adjusted and properly lubricated, each slide shall be operated for one complete cycle, open-close-open or close-open-close.

E. After installation of gates with motor-operated lift mechanisms, torque switches shall be adjusted and limit switches set in accordance with the manufacturer's recommendations. The gate shall then be run through one complete cycle open-close-open or close-open-close.

3.04 INSPECTION AND TESTING

A. After all gates have been completely installed, the contractor, under the direction of the manufacturer's factory representative shall conduct in the presence of the engineer, such tests as are necessary to ensure the operation of all equipment conforms to the

Specifications. Field tests shall include all equipment included under this Section. These services may be combined with those provided under Article 1.05, OPERATING INSTRUCTIONS.

B. Field Leakage Test

1. A field leakage test may be performed by the purchaser after installation of the sluice gate. The manufacturer shall be notified of the sluice gate. The manufacturer shall be notified of the test in sufficient time to enable him to have a representative present at that test. After all adjustments have been made and the mechanisms properly lubricated, each gate slide shall be run through one complete cycle as a final check on proper operation before starting the leakage test. Seating and unseating heads shall be measure from the top surface of the water to the center of the gate.

2. Under the design seating head, the leakage shall not exceed 0.1 gpm per foot of seating perimeter.

3. Under the design unseating head, the leakage for heads of 20 feet or less shall not exceed 0.2 gpm per foot of seating perimeter. For unseating heads greater than 20 feet, the allowable leakage shall not exceed the following rate per foot of seating perimeter:

Unseating Head (Ft)	Maximum Allowable Leakage (gpm/foot of seating perimeter)
30	0.25
40	0.30
50	0.35

C. If equipment performance does not meet the Specifications, corrective measures shall be taken by the contractor, or the equipment shall be removed and replaced with equipment that satisfy the conditions specified.

END OF SECTION

SECTION 15110

VALVES AND APPURTENANCES

PART 1 – GENERAL

1.01 WORK INCLUDED

A. Furnish labor, materials, equipment and incidentals required and ready for operation of all valves, couplings, and connectors, etc., as shown on the Drawings and as specified herein.

B. The equipment shall include, but not be limited to the following:
1. Gate Valves
2. Ball Valves
3. Plug Valves
4. Check Valves
5. Check Valve (Tide-Flex)
6. Flexible Couplings
7. Flanges Coupling Adapters
8. Unions

1.02 RELATED WORK

A. Section 02221 – “Trenching, Bedding, and Backfill for Pipe”

B. Section 09900 – “Painting”

C. Section 15061 – “Steel Pipe”

1.03 DESCRIPTION OF SYSTEMS

A. Equipment and materials specified herein are intended to be standard items for use in controlling the flow of stormwater.

1.04 QUALIFICATIONS

A. All of the types of valves and appurtenances shall be products of well established reputable firms who are fully experienced, and qualified in the manufacture of the particular equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these specifications as applicable.

1.05 SUBMITTALS

A. Submit, within 30-days after Contract execution, a list of valves to be furnished, the names of the suppliers and the date of delivery.

B. Complete shop drawings of all valves and appurtenances shall be submitted in accordance with the requirements of Section 01340 – “Submittals and Substitutions”.

1.06 TOOLS

A. Special tools, handles or wrenches, if required for normal operation and maintenance of the specified valves, shall be supplied with the equipment furnished.

PART 2 – PRODUCTS

2.01 GENERAL

A. All valves and appurtenances shall be of the size shown on the Drawings and all similar valves shall be from one manufacturer.

B. Valves and appurtenances shall have the name of the manufacturer and the working pressure for which they are designed cast in raised letters upon some appropriate part of the body.

C. All valves shall open left, counter-clockwise.

2.02 GATE VALVES

A. Exposed gate valves unless otherwise specified or approved, shall be iron body, bronze mounted, wedge disc gate valves with flanged ends and conforming tot he AWWA Standards Specification for Gate Valves for Ordinary Water Works Service, Designation C500-86 rated 150 psi WOG, minimum. Exposed valves shall be outside screw and yoke type. Buried gate valves shall be mechanical joint, ANSI Standard 21.11 except where shown otherwise.

B. Face to face dimension shall conform to ANSI Standard Face to Face and End to End Dimensions o Ferrous Valves, (ANSI B16.10) for 125-pound cast iron valves.

C. Bronze gate rings shall be fitted into grooves of dovetail or similar shape in the gates. For grooves or other shapes, the rings shall be firmly attached to the gates with bronze rivets.

D. Gate valves shall have a resilient rubber seated ring or wedge permanently bonded to the wedge disc and complying with AWWA C509-80.

E. Stuffing box follower bolts shall be of steel and the nuts shall be of bronze.

F. The design of the valves shall be such as to permit packing the valves without undue leakage while they are wide open and in service. O-ring stuffing boxes may be used.

G. Where indicated on the Drawings or necessary due to location, size, or inaccessibility, chain wheel operators shall be furnished with the valves. Such operators shall be designed with adequate strength for the valves with which they are supplied and to provide for easy operation of the valve. Chains for valve operators shall be galvanized.

H. Where required, gate valves shall be provided with a box cast in the slab and a box cover. Length of box shall be slab thickness. All buried valves shall have cast iron, sliding type valve boxes as shown on the Drawings. Box cover opening shall be for valve stem and nut. Valve wrenches and extension stems shall be provided by the manufacturer to actuate the valves. The box and cover shall be equal to those manufactured by Rodney Hunt Machine Company, Clow Corporation, or equal.

I. Gate valves shall be as manufactured by the Mueller Company, Clow Valve Company, American Darling, or equal.

2.03 BALL VALES FOR PVC PIPE

A. Ball valves for PVC pipe shall be of PVC Type 1 with union, socket, threaded or flanged ends as required. Ball valves shall be full port, full flow, all plastic construction, 150 psi rated with Teflon seat seals and T-handles. PVC ball valves shall be as manufactured by Celanese Piping Systems, Inc., Nibco True-Bloc, Wallace and Tiernan Inc., Plastiline, Inc., or equal.

B. All valves shall be mounted in such a position that valve position indicators are plainly visible when standing on the floor.

2.04 PLUG VALVES

A. Plug valves shall be non-lubricated eccentric type with resilient faces plugs, and shall be furnished with end connections as shown on the Drawings. Flanged valves shall be faced and drilled to the ANSI B16.1 Class 125 Standard. Mechanical joint ends shall be AWWA C111. Bell ends shall be to the AWWA C100 Class B. Grooved ends shall be AWWA C606.

B. Port areas for valves shall be 80% or greater of full pipe area.

C. Valve bodies shall be of ASTM A126 Class B cast iron in compliance with AWWA Standard C507-73 Section 5.1 and AWWA Standard C504-80. All exposed nuts, bolts, springs, washers, etc. shall be zinc plated. Resilient plug facings shall be of Neoprene or Hycar on a single piece plug. The plug shall be of sufficient construction so that no strengthening member is required opposite the face.

D. Valves shall be furnished with corrosion resistant seats which comply with AWWA Standard C507, Section 7, paragraph 7.2, and with AWWA Standard C504, Section 3.5. The seat shall be in the body only. Seat ring shall be adjustable and replaceable.

E. Valves shall be furnished with replaceable, sleeve-type bearings in the upper and lower journals. These bearings shall comply with AWWA Standard C507-73, Section 8, paragraphs 8.1, 8.3, and 8.5, and with AWWA Standard C504, Section 3.6.

F. Valve shaft seals or packing shall be adjustable and replaceable without removing the valve from service or interrupting service with flow in either direction. Shaft seals shall comply with AWWA Standard C507-73, Section 10, and with AWWA C507-70, Section 111.

G. Valve pressure ratings shall be as follows and shall be established by hydrostatic tests as specified by ANSI Standard B16.1. Pressure ratings shall be 175 psi for valves through 12-inch, 150 psi for valves in sizes 14” through 36-inch, and 125 psi for valves in sizes 42” through 54-inch. Valves shall be capable of providing drip-tight shutoff up to the full valve rating with pressure in either direction.

H. All valves 8-inches and larger shall be equipped with gear actuators. All gearing shall be enclosed suitable for running in oil with seals provided on all shafts to prevent entry of dirt and water into the actuator. All shaft bearings shall be furnished with permanently lubricated bronze bearing bushings. Actuator shall clearly indicate valve position and an adjustable stop shall be provided. Construction of actuator housing shall be semi-steel.

I. Plug valves installed such that actuators are 6-feet or more above the floor, shall have chainwheels and chains provided.

J. Where shown on the Drawings, plug valves shall be installed with extended shafts and actuators. Actuators for extended shafts shall be mounted on floor stands where indicated on the Drawings or shall be removable handwheels where floor stands are not called for. Six-inch sleeves shall be provided for extended shafts in all floors; where necessary, covers shall be provided. Shafts shall be of adequate strength to operate the valve. Floor stands and covers, where called for shall be cast iron. Floor stands shall be equipped with valve position indicators and a lock for the handwheel.

K. All plug valves shall be installed so that the direction of flow through the valve is in accordance with the manufacturer's recommendations.

L. Valves and actuators shall be as manufactured by Pratt, DeZurik, M&H, Victaulic, or equal.

2.05 CHECK VALVES

A. Check valves for cast iron and ductile iron pipelines shall be swing type and shall meet the material requirements of AWWA Specification C508. The valves shall iron body, bronze mounted, single disc, 150 psi minimum working water pressure, non-shock, and hydro statically tested at 300 psi. Ends shall be 125 pounds ANSI B16.1 flanges or 125 pound ANSI 2.1 threaded fittings depending upon location.

B. When there is no flow through the line, the disc shall hang lightly against its seat in practically a vertical position. When open, the disc shall swing clear of the waterway.

C. Check valves shall bronze seat and body rings, extended bronze hinge pins and bronze nuts on the bolts of bolted covers.

D. Valves shall be so constructed that disc and body seat may easily be removed and replaced without removing the valve from the line. Valves shall be fitted with an extended hinge arm with outside lever and weight. Springs with various tensions shall be provided and springs approved by the Engineer shall be installed.

E. Check valves for cast and ductile iron pipelines shall be as manufactured by Pratt, M & H, American Darling, or equal.

F. Check valves for PVC pipe shall be of PVC Type 1, Series BC with union, socket, threaded or flanged ends as required. PVC ball check valves shall be as manufactured by Celanese Piping Systems, Inc., Nibco Chemtrol, Wallace & Tiernan, Inc., Plastiline, Inc., or equal.

G. Check valve for the stormwater pump discharge shall be wafer-style Duo-Check 2 by Crane Valve Company. Body shall be ASTM Type 316 stainless steel with an EPDM resilient seat and a raised face. A stainless steel shaft separates the stainless steel plates. A single stainless steel spring operates each plate independently. Hinged support sleeves reduce friction and help reduce water hammer. Provide Crane Valve Model No. 30H15 CAF and 16 H 15 CAF equal by Val-Matic Valve & Manufacturing Corp., Elmhurst, Illinois. Rep John Colton & Associates (321) 636-2540.

2.06 CHECK VALVES (Tide-Flex)

A. Check valve at discharge point, in canals and river, shall be of 100% elastomer (rubber) construction and provide a check valve type design. The valve shall operate solely on line and back pressure and require no outside energy source for operation. Sleeve shall be Buna-N rubber with stainless steel bands.

B Valve shall be Tide-Flex as manufactured by Red Valve Company, Inc., Carnegie, PA.

2.07 FLEXIBLE COUPLINGS

A. Flexible couplings shall be either the split type or the sleeve type as show on the Drawings.

2.08 UNION

A. Unions on ferrous pipe 2-inches in diameter and smaller shall be 150-pounds malleable iron, zinc coated. Unions on water piping 2-1/2-inches in diameter and larger shall be flange pattern, 125-pound class, zinc-coated. Gaskets for flanged unions shall be of the best quality fiber or plastic. Unions shall not be concealed in walls, ceilings or partitions.

2.09 FLANGED COUPLING ADAPTER

A. Coupling adapter shall be Smith-Blair Model No. 912, or equal. Body and follower flange shall be iron. Bolt circle, size and spacings shall conform to ASA 125 flange. Gasket shall be Smith-Blair Grade 30 or 60, or equal. O-Ring shall be grade 60. Cross and tee bolts shall conform to ANSI A 21.11.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Valves and appurtenances shall be installed in the locations shown, true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of the Engineer before they are installed.

B. Install floor boxes, brackets, extension rods, guides, the various types of operators and appurtenances that are in masonry floors or walls, and install concrete inserts for hangers and supports as soon as forms are erected and before concrete is poured. Before setting these items, the Contractor shall check all plans and figures which have a direct bearing on their location and he shall be responsible for the proper location of these valves and appurtenances during the construction of the structures.

C. Flanged joints shall be made with hot dipped galvanized bolts, nuts and washers. Mechanical joints shall be made with mild corrosion resistant alloy steel bolts and nuts. All exposed bolts shall be painted the same color as the pipe. All buried bolts and nuts shall be heavily coated with 2-coats of bituminous paint.

D. Prior to assembly of split couplings, the grooves as well as other parts shall be thoroughly cleaned. The ends of the pipes and outside of the gaskets shall be moderately coated with petroleum jelly, cup grease, soft soap or graphite paste, and the gasket shall be slipped over one pipe end. After the other pipe has been brought to the correct position, the gasket shall be centered properly over the pipe ends with the lips against the pipes. The housing sections shall then be placed. After the bolts have been

inserted, the nuts shall be tightened until the housing sections are firmly in contact, metal-to-metal, without excessive bolt tension.

E. Prior to the installation of sleeve-type couplings, the pipe ends shall be cleaned thoroughly. Soapy water may be used as a gasket lubricant. A follower and gasket, in that order, shall be slipped over each pipe to a distance of about 6-inches from the end, and the middle ring shall be placed on the already laid pipe end until it is properly centered over the joint. The other pipe end shall be inserted into the middle pipe already laid. The gaskets and followers shall then be pressed evenly and firmly into the middle ring flares. After the bolts have been inserted and all nuts have been made up fingertight, diametrically opposite nuts shall be progressively and uniformly tightened all around the joint, preferably by use of a torque wrench of the appropriate size and torque for the bolts.

3.02 SHOP PAINTING

A. Ferrous surfaces of valves and appurtenances shall receive an exterior coating of rust-inhibitive primer. Interior coatings shall be the manufacturer's standard except that vales for potable water lines shall be coated with paints approved by EPA, FDA, and AWWA for potable water service. All pipe connection openings shall be capped after shop painting to prevent the entry of foreign matter prior to installation.

3.03 FIELD PAINTING

A. All metal valves and appurtenances specified herein and exposed to view will be painted as part of the work. Paint valves as specified for pipe in Section 09850 - "Painting".

3.04 INSPECTION AND TESTING

A. Completed pipe shall be subjected to hydrostatic pressure test for 2-hours at 150-percent full working pressure. All leaks shall be repaired and lines re-tested until approved by the Engineer.

END OF SECTION

SECTION 16110 – RACEWAYS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Requirements of the following Division 16 Sections apply to this Section:

1. "Basic Electrical Materials and Methods."

1.2 SUMMARY

A. This Section includes raceways for electrical wiring. Types of raceways in this section include the following:

1. Electrical metallic tubing (EMT)
2. Flexible metal conduit (FMC)
3. Intermediate metal conduit (IMC)
4. Liquid tight flexible conduit (LFMC)
5. Rigid galvanized metal conduit (RGC)
6. Rigid nonmetallic conduit (RNC)
7. Surface raceways
8. Electrical nonmetallic tubing (ENT)
9. Wireway

B. Related Sections: The following Division 16 Sections contain requirements that relate to this section:

1. "Wires and Cables" for other wiring methods.

2. "Supporting Devices" for raceway supports.

3. "Cabinets, Boxes and Fittings" for boxes used conduit and tubing systems.

1.3 SUBMITTALS

A. General: Submit the following shop drawings and product data in accordance with Conditions of Contract and Specification Sections.

B. Product Data for the following products:

1. Surface raceways, wireways and fittings, and fittings, floor boxes, hinged-cover enclosures, and cabinets.

A. Installation Instructions: Manufacturer's written installation instructions for wireways, surface raceways, nonmetallic raceway products, floor boxes, hinged-cover enclosures, and cabinets.

1.4 QUALITY ASSURANCE

A. Electrical Component Standard: Components and installation shall comply with NFPA 70 "National Electrical Code," latest adopted Edition.

B. NFMA Compliance: Comply with applicable requirements of NEMA standards pertaining to raceways.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.5 SEQUENCING AND SCHEDULING

A. Coordinate with other work, including metal and concrete deck installation, as necessary to interface installation of electrical raceways and components with other work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:

1. Conduit Bodies:

   a. Adalet-PLM
   b. Appleton Electric Co.
   c. Carlon
   d. Crouse-Hinds Division, Cooper Industries, Inc.
   e. Hubbell Killark Electric Mfg. Co.
   f. O-Z/Gedney

2. Wireway:

   a. Hoffman Engineering Co.

b. Square D Co.
c. Wiremold

3. Surface Metal Raceway:

a. Allied Tube & Conduit
b. Wheatland
c. Robroy Industries, Inc.
d. Triangle PWC, Inc.
e. The Wiremold Co.

4. Surface Nonmetallic Raceway:

a. Carlon
b. Hoffman Engineering Co.
c. Hubbell, Inc.
d. The Wiremold Co.

2.2 METAL CONDUIT AND TUBING

A. Rigid Steel Conduit: UL 6, ANSI C80.1.

B. Intermediate Steel Conduit: UL 1242, ANSI C80.6.

C. Electrical Metallic Tubing and Fittings: UL 797, ANSI C80.3.

D. Flexible Metal Conduit: UL 1, aluminum, ANSI C80.5.

E. Flexible Metal Conduit: UL 1, zinc-coated steel.

F. Liquid tight Flexible Metal Conduit and Fittings: UL 360. Fittings shall be specifically approved for use with this raceway.

2.3 NONMETALLIC CONDUIT AND TUBING

A. Rigid Nonmetallic Conduit (RNC): NEMA TC 2 and UL 651, Schedule 40 or 80 PVC.

B. PVC Conduit and Tubing Fittings: NEMA TC 3; match to conduit or conduit/tubing type and material.

C. Liquid tight Flexible Nonmetallic Conduit and Fittings: UL 1660. Fittings shall be specifically approved for use with this raceway.

D. Conduit, Tubing, and Duct Accessories: Types, sizes, and materials complying with manufacturer's published product information. Mate and match accessories with raceway.

2.4 CONDUIT BODIES

A. General: Types, shapes, and sizes as required to suit individual applications and NEC requirements. Provide matching gasketed covers secured with corrosion-resistant screws.

B. Metallic Conduit and Tubing: Use metallic conduit bodies. Use bodies with threaded hubs for threaded raceways.

C. Conduit Bodies for 1 inch and Smaller EMT: Use bodies with compression-type EMT connectors.

D. Nonmetallic Conduit and Tubing: Use nonmetallic conduit bodies conforming to UL 514 B.

2.5 WIREWAYS

A. General: Electrical wireways shall be of types, sizes, and number of channels as indicated. Fittings and accessories including but not limited to couplings, offsets, elbows, expansion joints, adapters, hold-down straps, and end caps shall match and mate with wireways as required for complete system. Where features are not indicated, select to fulfill wiring requirements and comply with applicable provisions of NEC.

2.6 SURFACE RACEWAYS

A. General: Sizes and channels as indicated. Provide fittings that match the mate with raceway.

B. Surface Metal Raceway: Construct of galvanized steel with snap-on covers, with 1/8-inch mounting screw knockouts in base approximately 8 inches o.c. Finish with manufacturer's standard prime coating suitable for painting. Provide raceways of types suitable for each application required.

2.7 BOXES, ENCLOSURES, AND CABINETS

A. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

B. Cast-Metal Outlet and Device Boxes: NEMA FB 1, Type FD, with gasketed cover.

C. Nonmetallic Outlet and Device Boxes: NEMA OS 2.

D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

E. Cast-Metal Pull and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.

F. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous hinge cover and flush latch.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Plastic, finished inside with radio-frequency-resistant paint.

G. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage and include accessory feet where required for freestanding equipment.

1.2 FACTORY FINISHES

Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard paint applied to factory-assembled surface raceways, enclosures, and cabinets before shipping.

PART 3 - EXECUTION

3.1 WIRING METHOD

A. Outdoors: Use the following wiring methods:

1. Exposed: PVC-coated rigid galvanized steel.

2. Concealed: intermediate metal conduit or rigid steel..

3. Underground, Single Run: rigid nonmetallic conduit.

4. Underground, Grouped: rigid nonmetallic conduit.

5. Connection to Vibrating Equipment: Including transformers and hydraulic, pneumatic, or electric solenoid or motor-driven equipment: liquid tight flexible metal conduit.

6. Indoors or Outdoors: Connection to vibrating equipment and hydraulic, pneumatic, or electric solenoid or motor-driven equipment in moist or humid location or corrosive atmosphere, or where subject to water spray or dripping oil, grease, or water: liquid tight flexible metal conduit.

B. Indoors: Use the following wiring methods:

1. Exposed: Rigid steel conduit.

2. Concealed: Rigid steel conduit.

3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.

4. Damp or Wet Locations: PVC-coated RGS conduit.

5. Boxes and Enclosures: NEMA 250, Type 1, except as follows:

a. Damp or Wet Locations: NEMA 250, Type 4X, stainless steel.

3.2 INSTALLATION

A. General: Install electrical raceways in accordance with manufacturer's written installation instructions, applicable requirements of NEC, and as follows:

1. Conceal Conduit and EMT, unless indicated otherwise, within finished walls, ceilings, and floors. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot water pipes. Install raceways level and square and at proper elevations.

2. Elevation of Raceway: Where possible, install horizontal raceway runs above water and steam piping.

3. Complete installation of electrical raceways before starting installation of conductors within raceways.

4. Provide supports for raceways as specified elsewhere in Division 16.

5. Prevent foreign matter from entering raceways by using temporary closure protection.

6. Protect stub-ups from damage where conduits rise from floor slabs. Arrange so curved portion of bends is not visible above the finished slab.

7. Make bends and offsets so the inside diameter is not effectively reduced. Unless otherwise indicated, keep the legs of a bend in the same plane and the straight legs of offsets parallel.

8. Use raceway fittings that are of types compatible with the associated raceway and suitable for the use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings except as otherwise indicated.

9. Run concealed raceways with a minimum of bends in the shortest practical distance considering the type of building construction and obstructions except as otherwise indicated. This does not apply to conduits in crawl spaces.

10. Raceways embedded in slabs: Install in middle third of the slab thickness where practical and leave at least 1 inch concrete cover. Tie raceways to reinforcing rods or otherwise secure them to prevent sagging or shifting during concrete placement. Space raceway laterally to prevent voids in the concrete. Run conduit larger then 1-inch trade size, parallel with or at right angles to the main reinforcement; where at right angles to the reinforcement, the conduit shall be close to one of the supports of the slab. Where nonmetallic conduit is used, raceways must be converted to rigid steel conduit or IMC before rising above floor.

11. Install exposed raceways parallel and perpendicular to nearby surfaces or structural members and follow the surface contours as much as practical.

12. Run exposed, parallel, or banked raceways together. Make bends in parallel or banked runs from the same center line so that the bends are parallel. Factory elbows may be used in banked runs only where they can be installed parallel. This requires that there be a change in the plane of the run such as from wall to ceiling and that the raceways be of the same size. In other cases, provide field bends for parallel raceways.

13. Join raceways with fittings designed and approved for the purpose and make joints tight. Where joints cannot be made tight, use bonding jumpers to provide electrical continuity of the raceway system. Make raceway terminations tight. Where terminations are subject to vibration, use bonding bushings or wedges to assure electrical continuity. Where subject to vibration or dampness, use insulating bushings to protect conductors.

14. Tighten set screws of threadless fittings with suitable tool.

15. Terminations: Where raceways are terminated with locknuts and bushings, align the raceway to enter squarely and install the locknuts with dished part against the box. Where terminations cannot be made secure with one locknut, use two locknuts, one inside and one outside the box.

16. Where terminating in threaded hubs, screw the raceway or fitting tight into the hub so the end bears against the wire protection shoulder. Where chase nipples are used, align the raceway so that coupling is square to the box, and tighten the chase nipple so no threads are exposed.

17. Install pull wires in empty raceways. Use no. 14 AWG zinc-coated steel or monofilament plastic line having not less than 200-lb tensile strength. Leave not less than 12 inches of slack at each end of the pull wire.

18. Telephone and Signal System Raceways 2-inch Trade Size and Smaller: In addition to the above requirements, install raceways 2-inch and smaller trade size in maximum lengths at 150 feet and with a maximum of two, 90-degree bond or equivalent. Install pull or junction boxes where necessary to comply with these requirements.

19. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment with an adjustable top or coupling threaded inside for plugs and set flush with the finished floor. Extended conductors to equipment with rigid steel conduit; flexible metal conduit may be used 6 inches above the floor. Where equipment connections are not made under this contract, install screwdriver-operated threaded flush plugs flush with floor.

20. Flexible Connections: Use short length (maximum of 6 ft.) of the flexible conduit for recessed and semirecessed lighting fixtures, for equipment subject to vibration, noise transmission, or movement; and for all motors. Use liquid tight flexible conduit in wet locations. Install separate ground conductor inside of all flexible conduit to next outlet.

21. Provide suitable fittings to accommodate expansion and deflection where conduit crosses expansion joints.

22. Surface Metal Raceway: Install a separate green ground conductor in raceway from the junction box supplying the raceway to receptacle or fixture ground terminals.

23. Select each surface metal raceway outlet box to which a lighting fixture is attached to be of sufficient diameter to provide a seat for the fixture canopy.

24. Where a surface metal raceway is used to supply a fluorescent lighting fixture having central stem suspension with a backplate and a canopy, with or without extension ring, the backplate and canopy will serve as the outlet box and no separate outlet box need be provided.

25. All underground and exterior conduits and ducts must be slopped to drain. Provide underground pull boxes where necessary to comply.

3.3 ADJUSTING AND CLEANING

A. Upon completion of installation of raceways, inspect interiors of raceways; clear all blockages and remove burrs, dirt, and construction debris.

END OF SECTION 16110

SECTION 16120 - WIRES AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Requirements of the following Division 16 Sections apply to this Section:

1. General Requirements.
2. Electrical Identification.
3. Grounding.

1.2 SUMMARY

A. This Section includes wires, cables, and connectors for power, lighting, signal, control and related systems rated 600 volts and less.

B. Related Sections: The following Sections contain requirements that relate to this section:

1. Division 16 Section “Cabinets, Boxes and Fittings” for connectors for Terminating Cables in boxes and other electrical enclosures.

1.3 SUBMITTALS

A. Product Data for electrical wires, cables and connectors.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with provisions of the following code:

1. NFPA 70 “National Electrical Code,” latest adopted Edition for components and installation.

2. UL Compliance: Provide components which are listed and labeled by UL under the following standards.

a. UL Std. 83 Thermoplastic-Insulated Wires and Cables

b. UL Std. 486A Wire Connectors and Soldering Lugs for use with Copper Conductors.

3. NEMA/ICEA Compliance: Provide components which comply with the following standards:

   a. WC-5 Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

   b. WC-7 Cross Linked Thermosetting Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

4. IEEE Compliance: Provide components which comply with the following standard.

   a. Std. Test procedures for 500 Volt DC Megger Tests on Insulated Conductors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

1. Wire and Cable:

   a. American Insulated Wire Corp.
   b. Carol Cable Co. Inc.
   c. Senator Wire and Cable Co.
   d. Southwire Company

2. Connectors for Wires and Cable Conductors:

   a. Ideal
   b. 3M Company
   c. ILSCO
   d. Square D Company
   e. Thomas & Betts

2.2 WIRES AND CABLES

A. General: Provide wire and cable suitable for the temperature, conditions and location where installed.

B. Conductors: Provide solid conductors for power and lighting circuits No. 10 AWG and smaller. Provide stranded conductors for sizes No. 8 AWG and larger.

C. Conductor Material: copper for all wires and cables.

D. Insulation: Provide THHN/THWN insulation for all conductors sizes. For special applications provide THHN/THWN or XHHW insulation as appropriate for the locations where installed.

E. Color Coding for phase identification as specified in Division 16 Section "Electrical Identification."

2.3 CONNECTORS FOR CONDUCTORS

A. Provide UL-listed factory-fabricated, solderless metal connectors of sizes, ampacity ratings, materials, types and classes for applications and for services indicated. Use connectors with temperature ratings equal to greater than those of the wires upon which used.

PART 3 - EXECUTION

3.1 WIRING METHOD

A. Use the following wiring methods as indicated:

1. Wire: install all wire in raceway.

3.2 INSTALLATION OF WIRES AND CABLES

A. General: Install electrical cables, wires, and connectors in compliance with NEC.

B. Coordinate cable installation with other work.

C. Pull conductors simultaneously where more than one is being installed in same raceway. Use UL listed pulling compound or lubricant, where necessary.

D. Use pulling means including, fish tape, cable, rope, and basket weave wire/cable grips which will not damage cables or raceways. Do not use hitches for pulling attachment to wire or cable.

E. Keep conductor splices to minimum.

F. Install splice and tap connectors which possess equivalent or better mechanical strength and insulation rating than conductors being spliced.

G. Use splice and tap connectors which are compatible with conductor material.

H. Provide adequate length of conductors within electrical enclosures and train the conductors to terminal points with no excess. Bundle multiple conductors, with conductors larger than No. 10 AWG cabled in individual circuits. Make terminations so there is no bare conductor at the terminal.

I. Tighten electrical connectors and terminals, including screws and bolts, in accordance with manufacturer's published torque tightening values. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL 486A and UL 368B.

J. Seal around cables penetrating fire-rated elements according to approved through-penetration firestop methods.

K. Identify and color-code conductors and cables according to Division 16 Section "Electrical Identification."

3.3 FIELD QUALITY CONTROL

A. Prior to energizing, check installed wires and cables with megohm meter to determine insulation resistance levels to assure requirements are fulfilled.

B. Prior to energizing, test wires and cables for electrical continuity and for short-circuits.

C. Subsequent to wire and cable hook-ups, energize circuits and demonstrate proper functioning. Correct malfunctioning units, and retest to demonstrate compliance.

END OF SECTION 16120

SECTION 16135 - CABINETS, BOXES, AND FITTINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Conditions, and other Technical Specification Sections, apply to work of this section insofar as applicable.

B. Requirements of the following Division 16 Sections apply to this Section:

1. "Basic Electrical Materials and Methods".

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1.2 SUMMARY

A. This Section includes cabinets, boxes, and fittings for electrical installations and certain types of electrical fittings not covered in other sections. Types of products specified in this Section include:

1. Outlet and device boxes.
2. Pull and junction boxes.
3. Floor boxes and service fittings.
4. Cabinets.
5. Hinged door enclosures.

B. Conduit-body-type electrical enclosures and wiring fittings are specified in Division 16 Section "Raceways."

1.3 DEFINITIONS

A. Cabinets: An enclosure designed either for surface or for flush mounting and having a frame, or trim in which a door or doors may be mounted.

B. Device Box: An outlet box designed to house a receptacle device or a wiring box designed to house a switch.

C. Enclosure: A box, case, cabinet, or housing for electrical wiring or components.

D. Hinged Door Enclosure: An enclosure designed for surface mounting and having swinging doors or covers secured directly to and telescoping with the walls of the box.

E. Outlet Box: A wiring enclosure where current is taken from a wiring system to supply utilization equipment.

F. Wiring Box: An enclosure designed to provide access to wiring systems or for the mounting of indicating devices or of switches for controlling electrical circuits.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections:

1. Product data for cabinets and enclosures with classification higher than NEMA 1.

2. Shop drawings for floor boxes and boxes, enclosures and cabinets that are to be shop fabricated, (nonstock items). For shop fabricated junction and pull boxes, show accurately scaled views and spatial relationships to adjacent equipment. Show box types, dimensions, and finishes.

1.5 QUALITY ASSURANCE

A. UL Listing and Labeling: Items provided under this section shall be listed and labeled by UL.

B. Nationally Recognized Testing Laboratory Listing and Labeling (NRTL): Items provided under this section shall be listed and labeled by a NRTL. The term "NRTL" shall be as defined in OSHA Regulation 1910.7.

C. National Electrical Code Compliance: Components and installation shall comply with NFPA 70 "National Electrical Code," latest adopted Edition.

D. NEMA Compliance: Comply with NEMA Standard 250, "Enclosures for Electrical Equipment (1000 Volts Maximum)."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

1. Floor Boxes:
   a. Cooper Industries, Inc.
   b. Hubbell
   c. Raco, Inc.
   d. Thomas & Betts Corp.

2. Outlet Boxes:

a. Appleton
b. Cooper Industries, Inc.
c. Raco, Inc.

3. Cabinets:

a. English Electric
b. Hoffman Engineering Co.
c. Parker Electrical Mfg. Co.
d. Square D Co.

4. Boxes and Fittings for Hazardous Locations:

a. Adalet-PLM
b. Appleton
c. Cooper Industries, Inc.
d. Crouse Hinds
e. Killark Electric Mfg. Co.
f. OZ/Gedney
g. Spring City Electrical Mfg. Co.

2.2 CABINETS, BOXES, AND FITTINGS, GENERAL

A. Electrical Cabinets, Boxes, and Fittings: Of indicated types, sizes, and NEMA enclosure classes. Where not indicated, provide units of types, sizes, and classes appropriate for the use and location. Provide all items complete with covers and accessories required for the intended use. Provide gaskets for units in damp or wet locations.

2.3 MATERIALS AND FINISHES

A. Sheet Steel: Flat-rolled, code-gage, galvanized steel.

B. Fasteners for General Use: Corrosion resistant screws and hardware including cadmium and zinc plated items.

C. Fasteners for Damp or Wet Locations: Stainless steel screws and hardware.

D. Cast Metal for Boxes, Enclosures, and Covers: Cooper-free aluminum except as otherwise specified.

E. Exterior Finish: Gray baked enamel for items exposed in finished locations except as otherwise indicated.

F. Painted Interior Finish: Where indicated, white baked enamel.

G. Fittings for Boxes, Cabinets, and Enclosures: Conform to UL 514B. Malleable iron or zinc plated steel for conduit hubs, bushings and box connectors.

2.4 METAL OUTLET, DEVICE, AND SMALL WIRING BOXES

A. General: Conform to UL 514A, "Metallic Outlet Boxes, Electrical," and UL 514B, "Fittings for Conduit and Outlet Boxes." Boxes shall be of type, shape, size, and depth to suit each location and application.

B. Steel Boxes: Conform to NEMA OS 1, "Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports." Boxes shall be of type, shape, size, and depth to suite each location and application.

C. Cast-Aluminum Boxes: Copper free aluminum threaded raceway entries, and features and accessories suitable for each location including mounting ears, threaded screw holes for devices and closure plugs.

D. Steel Floor Boxes: Sheet steel, concrete tight, fully adjustable, with stamped knockouts, adjusting rings, and brass floor plates. Where indicated, provide multi-section boxes with concealed individual section covers under a common flush floor plate. Provide for a duplex receptacle in one of the concealed section covers and a one inch diameter bushed opening in the other.

E. Steel Boxes: Sheet steel with welded seams. Where necessary to provide a rigid assembly, construct with internal structural steel bracing.

F. Hot-Dipped Galvanized Steel Boxes: Sheet steel with welded seams. Where necessary to provide a rigid assembly, construct with internal structural steel bracing. Hot-dip galvanized after fabrication.

G. Cast-Aluminum Boxes: Molded of copper free aluminum, with gasketed cover and integral threaded conduit entrances.

2.5 CABINETS

A. Comply with UL 50, "Electrical Cabinets and Boxes."

B. Construction: Sheet steel, NEMA 1 class except as otherwise indicated. Cabinet shall consist of a box and a front consisting of a one piece frame and a hinged door. Arrange door to close against a rabbet placed all around the inside edge of the frame, with a uniformly close fit between door and frame. Provide concealed fasteners, not over 24-inches apart, on hold fronts to cabinet boxes and provide for adjustment. Provide flush or concealed door hinges not over 24-inches apart

and not over 6-inches from top and bottom of door. For flush cabinets, make the front approximately 3/4 inch larger than the box all around. For surface mounted cabinets make front same height and width as box.

C. Locks: Combination spring catch and key lock, with all locks for cabinets of the same system keyed alike. Locks may be omitted on signal, power, and lighting cabinets located within wire closets and mechanical-electrical rooms. Locks shall be of a type to permit doors to latch closed without locking.

2.6 UNDERGROUND PULL BOXES

A. Box: (COMPOSITE) as manufactured by (QUAZITE), a division of "MMFG".

1. Stackable Boxes:

a. Bottom Box to be footed box.

b. Top box with no base.

2. Concrete Collar: field formed and installed in accordance with manufacturer's recommendations.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locations: Install items where indicated and where required to suit code requirements and installation conditions.

B. Cap unused knockout holes where blanks have been removed and plug unused conduit hubs.

C. Support and fasten items securely in accordance with Division 16 Section "Supporting Devices."

D. Sizes shall be adequate to meet NEC volume requirements, but in no case smaller than sizes indicated.

E. Remove sharp edges where they may come in contact with wiring or personnel.

3.2 APPLICATIONS

A. Cabinets: Flush mounted, NEMA enclosure type 1 except as otherwise indicated.

B. Outlet Boxes and Fittings: Install outlet and device boxes and associated covers and fittings of materials and NEMA types suitable for each location and in conformance with the following requirements:

1. Interior Dry Locations: NEMA type 1, sheet steel or nonmetallic as permitted by local code.

2. Interior Dry Locations: Sheet steel, NEMA type 1.

3. Locations Exposed to Weather or Dampness: Cast metal, NEMA type 3R.

4. Wet Locations: NEMA type 4 enclosures.

5. Corrosive Locations: NEMA type 4X enclosures.

6. Hazardous (Classified) Locations: NEMA type listed and labeled for the location and class of hazard indicated.

C. Pull and Junction Box: Install pull and junction boxes of materials and NEMA types suitable for each location except at otherwise indicated.

D. Floor Boxes: In slabs on grade and wet locations use NEMA type 4 boxes. At other locations in slabs, use concrete-tight NEMA 1 boxes.

E. Underground Pull Boxes: Install underground pull boxes where shown on the drawings, type and size as shown in underground pull box schedule as shown on the drawings. Installation shall include a 1 foot by 1 foot concrete collar as detailed in the manufacturers recommendations.

3.3 INSTALLATION OF OUTLET BOXES

A. Gasketed Boxes: At the following locations use cast metal, threaded hub type boxes with gasketed weatherproof covers:

1. Exterior locations

2. Where surface mounted on unfinished walls, columns or pilasters. (Cover gaskets may be omitted in dry locations).

3. Where exposed to moisture laden atmosphere.

B. Mounting: Mount outlet boxes for switches with the long axis vertical or as indicated. Mount boxes for receptacles either vertically or horizontally but consistently either way. Three or more gang boxes shall be mounted with the long axis horizontal. Locate box covers or device plates so they will not span different types of buildings finishes either vertically or horizontally. Locate boxes

for switches near doors on the side opposite the hinges and close to door trim, even though electrical floor plans may show them on hinge side.

C. Ceiling Outlets: For fixtures, where wiring is concealed, use outlet boxes 4-inches square by 1-1/2-inches deep, minimum.

D. Cover Plates for Surface Boxes: Use plates sized to box front without overlap.

E. Protect outlet boxes to prevent entrance of plaster, and debris. Thoroughly clean foreign material from boxes before conductors are installed.

F. Concrete Boxes: Use extra deep boxes to permit side conduit entrance without interfering with reinforcing, but do not use such boxes with over 6-inch depth.

G. Floor Boxes: Install in concrete floor slabs so they are completely enveloped in concrete except for the top. Where normal slab thickness will not envelope box as specified above, provide increased thickness of the slab. Provide each compartment of each floor box with grounding terminal consisting of a washer-in-head machine screw, not smaller than No. 10-32, screwed into a tapped hole in the box. Adjust covers of floor boxes flush with finished floor.

3.4 INSTALLATION OF PULL AND JUNCTION BOXES

A. Mount pull boxes in inaccessible ceilings with the covers flush with the finished ceiling to provide access.

B. Size: Provide pull and junction boxes for telephone, signal, and other systems at least 50 percent larger than would be required by Article 370 of NEC, or as indicated. Locate boxes strategically and provide shapes to permit easy pulling of future wires or cables of types normal for such systems.

C. Underground Pull Boxes: Excavate 6” deeper than box depth shown in table on drawings and fill the 6” deep area with gravel. Set box cover flush with pavement or grade.

3.5 GROUNDING

A. Electrically ground metallic cabinets, boxes, and enclosures. Where wiring to item includes a grounding conductor, provide a grounding terminal in the interior of the cabinet, box or enclosure.

B. Grounding in underground pull boxes. Drive ground rods in underground pull boxes, where shown on the drawings. Use ground rod clamps to connect grounding electrode conductor to ground rod to permit future test of the ground rod.

3.6 CLEANING AND FINISH REPAIR

A. Upon completion of installation, inspect components. Remove burrs, dirt, and construction debris and repair damaged finish including chips, scratches, abrasions and weld marks.

B. Galvanized Finish: Repair damage using a zinc-rich paint as manufactured by Z.R.C. Products Company or approved equal.

C. Painted Finish: Repair damage using matching corrosion inhibiting touch-up coating.

END OF SECTION 16135

SECTION 16143 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Conditions, and other Technical Specification Sections, apply to work of this section insofar as applicable.

B. Requirements of the following Division 16 Sections apply to this Section:

1. "Basic Electrical Materials and Methods".

1.2 SUMMARY

A. This Section includes the following:

1. Receptacles
2. Ground Fault Circuit Interrupter Receptacles
3. Plugs
4. Plug Connectors
5. Snap Switches
6. Wall Plates

B. Related Sections: The following sections contain requirements that relate to this section:

1. Division 16 Section "Circuit and Motor Disconnects, Starters, and Contactors" for devices other than snap switches and plug/receptacle sets used as disconnects for motors.

2. Division 16 Section "Electrical Identification" for requirements for legends to be engraved on wall plates.

1.3 SUBMITTALS

A. Product data for each type of product specified.

B. Samples of those products indicated for sample submission in Architect's comments on product data submittal. Include color and finish samples of device plates and other items per Architect's request.

1.4 QUALITY ASSURANCE

A. Comply with provisions of NFPA 70 "National Electrical Code" latest adopted Edition for devices and installation.

B. UL and NEMA Compliance: Provide wiring devices which are listed and labeled by UL and comply with applicable UL and NEMA standards.

1.5 SEQUENCE AND SCHEDULING

A. Schedule installation of finish plates after the surface upon which they are installed has received final finish.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

1. Bryant Electric Co.
2. Challenger-Circle F
3. Eagle Electric Mfg. Co.
4. General Electric Co.
5. Hubbell Inc.
6. Leviton
7. Pass and Seymour Inc.
8. Slater Electric Co.

2.2 WIRING DEVICES

A. General: Provide wiring devices, in types, characteristics, grades, colors, and electrical ratings for applications indicated which are UL listed and which comply with NEMA WD 1 and other applicable UL and NEMA standards. Provide gray color devices and wall plates except as otherwise indicated. Verify color selection with Architect.

B. Receptacles: As scheduled in Table 1 in Part 3 below. Comply with UL 498 and NEMA WD 1. All receptacles shall be specification grade.

C. Ground-Fault Circuit Interrupter (GFCI) Receptacles: As indicated in Table 1 in Part 3 below; provide “feed-thru” type ground-fault circuit interrupter, with integral heavy-duty specification grade, NEMA 5-20R duplex receptacles. Provide unit designed for installation in a 2-3/4 inch deep outlet box without adapter, grounding type, Class A, Group 1, per UL Standard 94.3.

D. Snap Switches: Quiet type specification grade AC switches as indicated in Table 2 in Part 3 below. Comply with UL 20 and NEMA WD 1.

2.3 WIRING DEVICE ACCESSORIES

A. Wall plates: single and combination, of types, sizes, and with ganging and cutouts as indicated. Provide plates which mate and match with wiring devices to which attached. Provide wall plate for securing plates to devices with screw heads colored to match finish of plates. Provide wall plate color to match wiring devices except as otherwise indicated. Provide wall plates with engraved legend where indicated. Conform to requirements of Section "Electrical Identification." Provide plates possessing the following additional construction features:

1. Material and Finish: Office area: Smooth Nylon standard size finished gray or as directed by the Architect.

2. Prelabeled GFCI wall plates, engraved by manufacturer, for secondary protected receptacles.

PART 3 - EXECUTION

3.1 INSTALLATION OF WIRING DEVICES AND ACCESSORIES

A. Install wiring devices and accessories as indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC and in accordance with recognized industry practices to fulfill project requirements.

B. Coordinate with other work, including painting, electrical boxes and wiring installations, as necessary to interface installation of wiring devices with other work.

C. Install wiring devices only in electrical boxes which are clean; free from building materials, dirt, and debris.

D. Install galvanized steel wallplates in unfinished spaces.

E. Install wiring devices after wiring work is completed.

F. Install wall plates after painting work is completed.

G. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for wiring devices. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torque as specified in UL Standard 486A. Use properly scaled torque indicating hand tool.

H. All receptacles are to have GFCI protection. Each branch is to be individually protected by first device on the circuit as a minimum. Subsequent devices may be protected by the first device in line. Each device so protected must be so indicated

by a pre-marked wall plate labeled “GFCI PROTECTED” or similar wording. All pre-marked wall plates must be identical. Stick on labels are unacceptable. Careful attention must be paid to wiring and neutral wiring requirements.

3.2 PROTECTION

A. Protect installed components from damage. Replace damaged items prior to final acceptance.

3.3 FIELD QUALITY CONTROL

A. Testing: Prior to energizing circuits, test wiring for electrical continuity, and for short-circuits. Ensure proper polarity of connections is maintained. Subsequent to energizing, test wiring devices and demonstrate compliance with requirements, operating each operable device at least six times.

B. Test ground fault interrupter operation with both local and remote fault simulations in accordance with manufacturer recommendations. Test at every receptacle location in the presence of the Engineer.

END OF SECTION 16143

SECTION 16170 - CIRCUIT AND MOTOR DISCONNECTS, STARTERS AND CONTACTORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Contract Conditions, and other Technical Specification Sections, apply to work of this section insofar as applicable.

1.2 SUMMARY

A. This Section includes circuit and motor disconnects, starters and contactors.

B. Related Sections: The following sections contain requirements that relate to this section:

1. Division 16 Section “Wiring Devices” for snap switches used as motor disconnects.

2. Division 16 Section “Overcurent Protective Devices” for the fuses to be used in fusible switches.

1.3 SUBMITTALS

A. Product data for each type of product specified.

B. Maintenance data for circuit and motor disconnects.

1.4 QUALITY ASSURANCE

A. Electrical Component Standards: Provide components complying with NFPA 70 “National Electrical Code,” latest adopted Edition and which are listed and labeled by UL. Comply with UL Standard 98 and NEMA Standard KS 1.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

1. Cutler-Hammer, Inc.
2. Furnas Electric Co.
3. General Electric Co.

4. Square D Company
5. Westinghouse Electric Corp.

2.2 CIRCUIT AND MOTOR DISCONNECT SWITCHES

A. General: Provide circuit and motor disconnect switches, starters, contactors and combination starter/disconnects in types, sizes, duties, features ratings, and enclosures as indicated. Provide NEMA 1 enclosure except for outdoor switches, and other indicated locations provide NEMA 3R enclosures with raintight hubs. For motor and motor starter disconnects, provide units with horsepower ratings suitable to the loads.

1. Fusible Switches: Heavy duty switches, with fuses of classes and current ratings indicated. See Section "FUSES" for specifications. Where current limiting fuses are indicated, provide switches with non-interchangeable feature suitable only for current limiting type fuses.

2. Non-fusible Disconnects: heavy duty switches of classes and current ratings as indicated.

2.3 MOTOR STARTERS

A. Manual Motor Starters

1. Fractional Horsepower Manual Starter: NEMA ICS 2; AC general-purpose Class A manually operated, 1 pole, full-voltage controller for fractional horsepower induction motors, with thermal overload unit.

2. Enclosure: ANSI/NEMA ICS 6; Type 1.

B. Magnetic Motor Starters

1. Magnetic Motor Starters: NEMA ICS 2; AC general-purpose Class A magnetic controller for induction motors rated in horsepower.

2. Full Voltage Starting: Non-reversing type.

3. Size: NEMA ICS 2; size as shown on Drawings.

4. Overload Relay: NEMA ICS 2; bimetal.

5. Enclosure: NEMA ICS 6; Type 1.

6. Auxiliary Contacts: NEMA ICS 2; one normally open field convertible contacts in addition to seal-in contact.

PART 3 - EXECUTION

3.1 INSTALLATION OF CIRCUIT AND MOTOR DISCONNECTS

A. General: Provide circuit and motor disconnect switches, starters and contactors as indicated and where required by the above Code. Comply with manufacturers' printed installation instructions.

3.2 INSTALLATION OF FUSES

A. Install fuses in fusible devices as indicated. Arrange fuses so that fuse ratings are readable without removing fuse.

3.3 INSTALLATION OF CONTACTORS AND DUMPING RELAYS

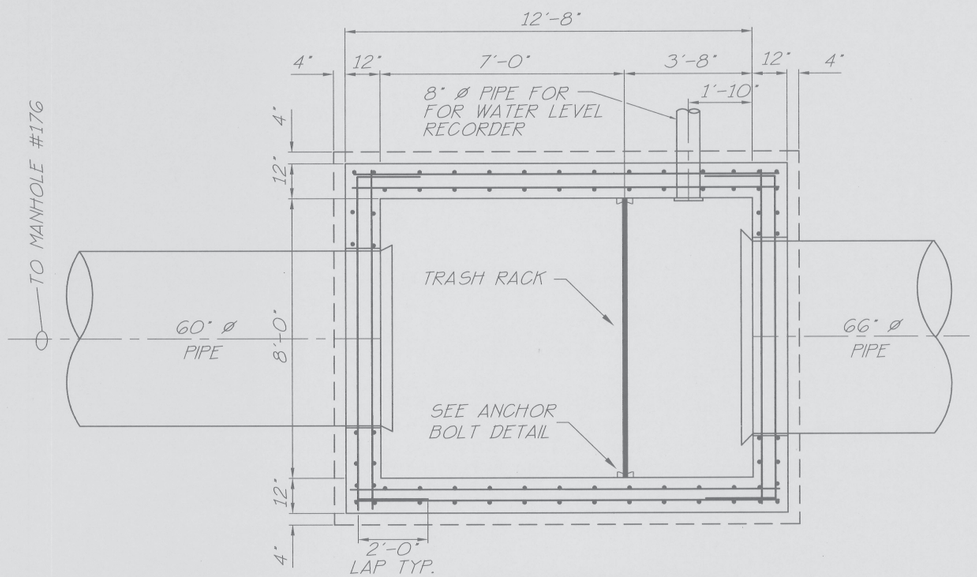
A. Install contactors and dumping relays in NEMA 1 enclosure with screw cover as shown on the drawings.

3.4 FIELD QUALITY CONTROL

A. Testing: Subsequent to completion of installation of electrical equipment of this section, energize circuits and demonstrate capability and compliance with requirements. Except as otherwise indicated, do not test switches by operating them under load. However, demonstrate switch operation through six opening/closing cycles with circuit unloaded. Open each equipment enclosure for inspection of interior, mechanical and electrical connections, fuse installation, and for verification of type and rating of fuses installed. Correct deficiencies then retest to demonstrate compliance. Remove and replace defective units with new units and retest.

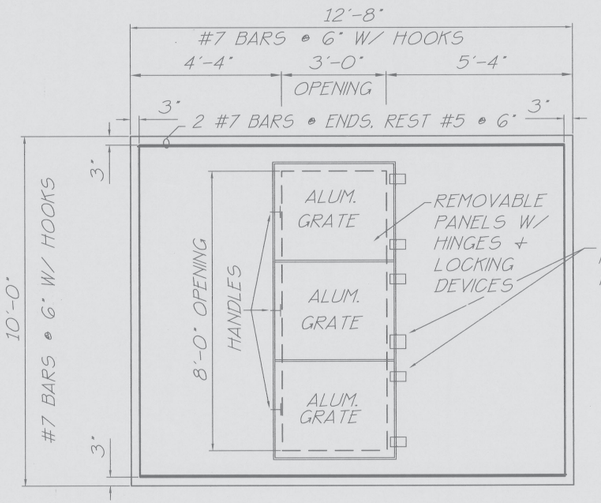
END OF SECTION 16170

CHANGES TO ENGINEERING DRAWINGS



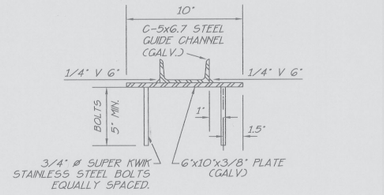
TRASH INTERCEPTOR

SCALE: 1/2" = 1'



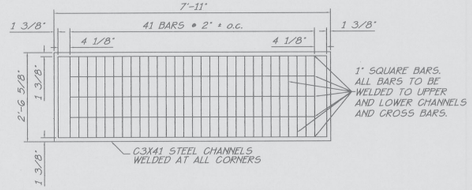
TOP SLAB

SCALE: 1/2" = 1'



ANCHOR BOLT DETAIL

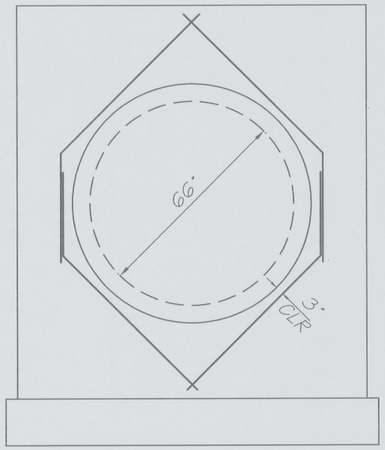
SCALE: 1/2" = 1'



STEEL TRASH RACK DETAIL

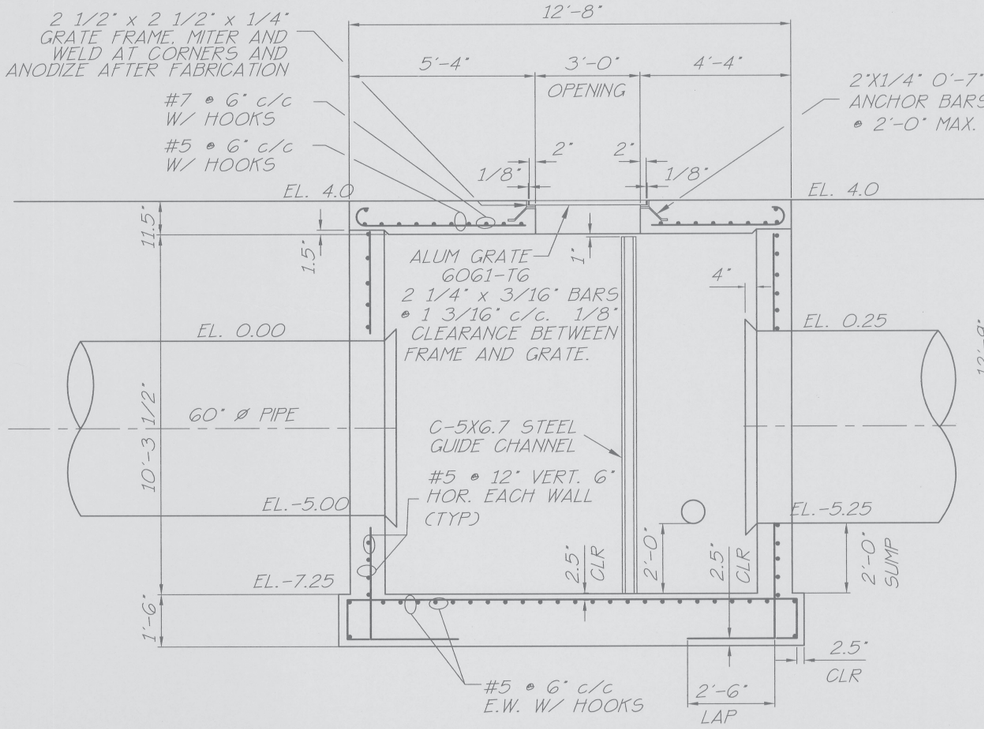
SCALE: 1/2" = 1'

#5 ADDITIONAL REIN. BARS (TYP)



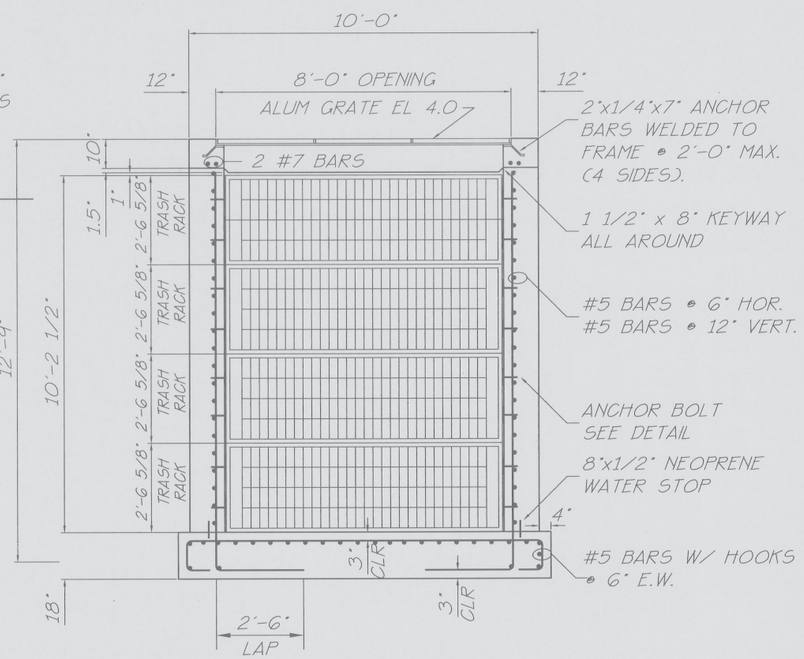
SIDE VIEW

SCALE: 1/2" = 1'



TRASH INTERCEPTOR

SCALE: 1/2" = 1'



STEEL TRASH RACK

SCALE: 1/2" = 1'

NOTES:

1. CONCRETE MIN. COMPRESSIVE STRENGTH 4000 P.S.I. NO CHLORIDES ARE PERMITTED IN CONCRETE.
2. STEEL REINFORCEMENT TO BE NEW BARS IN ACCORDANCE WITH A.S.T.M. A-615 GRADE 60. TRASH RACK SHALL BE A.S.T.M. A-36.
3. SHOP DRAWINGS OF PRECAST MANHOLE MUST BE PROVIDED BY CONTRACTOR FOR APPROVAL BY ENGINEER PRIOR TO FABRICATION. ALSO INCLUDED: SHOP DRAWINGS FOR TRASH RACK, FRAME AND ALUMINUM GRATES.
4. CONTRACTOR HAS OPTION OF PRECASTING VAULT OR OR CAST IN PLACE.
5. STEEL TRASH RACK AND GUIDE TO BE GALVANIZED OR PLYAMIDE EPOXY (15 MILS DRY FILM THICKNESS).
6. ALUMINUM IN CONTACT WITH CONCRETE SHALL HAVE ZINC CHROMATE PRIMER CONFORMING TO FED. SPEC. TT-P-645

REVISION	DATE

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CORAL GABLES, FLORIDA

BISCAYNE SHORES - PHASE II & PHASE III
STORMWATER IMPROVEMENT PLANS
TRASH INTERCEPTOR DETAILS

Date 1/5/96
Drawn VMS
Checked
Manager LMB
Dwg Name: 4066P-7.DWG

PROJECT No. 4066.00

SHEET No. P-7

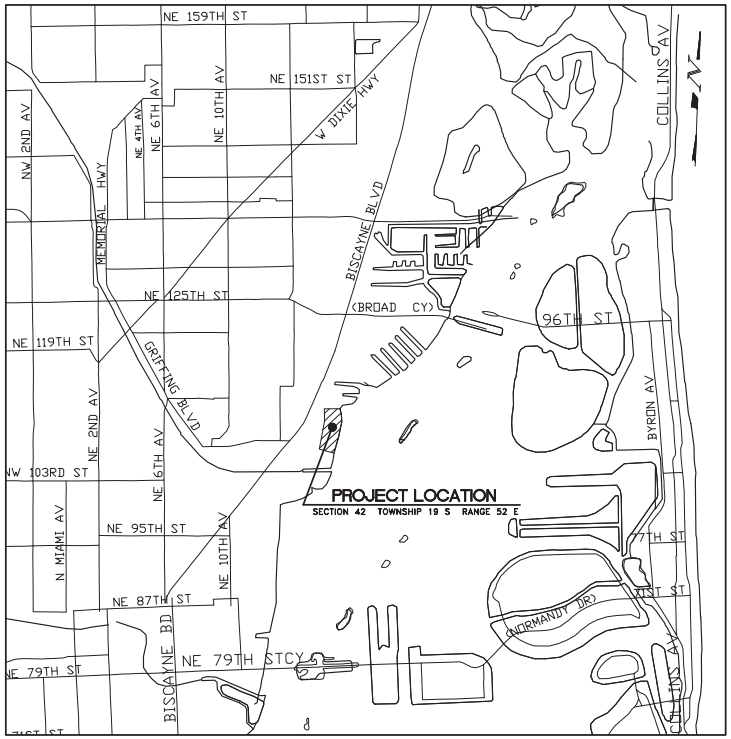
M.F. 2001

Revised Plans by Addendum No.5

BISCAYNE SHORES PUMP STATION RETROFIT

No. 109 AND 110

DTPW PROJECT NO. 20180139



LOCATION MAP
SCALE: APPROX. 1" = 2,000'

MIAMI - DADE COUNTY
STORM WATER UTILITY

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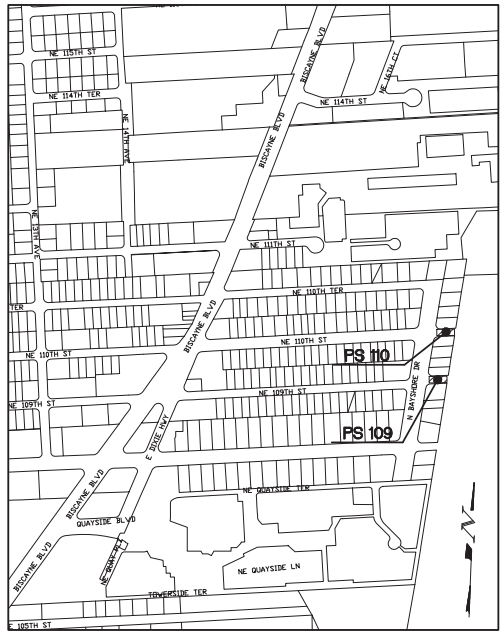

KEY PLAN
N.T.S.

09/13/2024 ADDRESS M-D C COMMENTS

GRAEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270

NELSON H. ORTIZ
LICENSED
No 57556
STATE OF FLORIDA
PROFESSIONAL ENGINEER
09/17/2024

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FOR THE FIRM: PROJECT NO. 2017-7053.01 | NELSON H. ORTIZ PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	COVER SHEET	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 1
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CHECKED BY: N.H.O.	DATE:						

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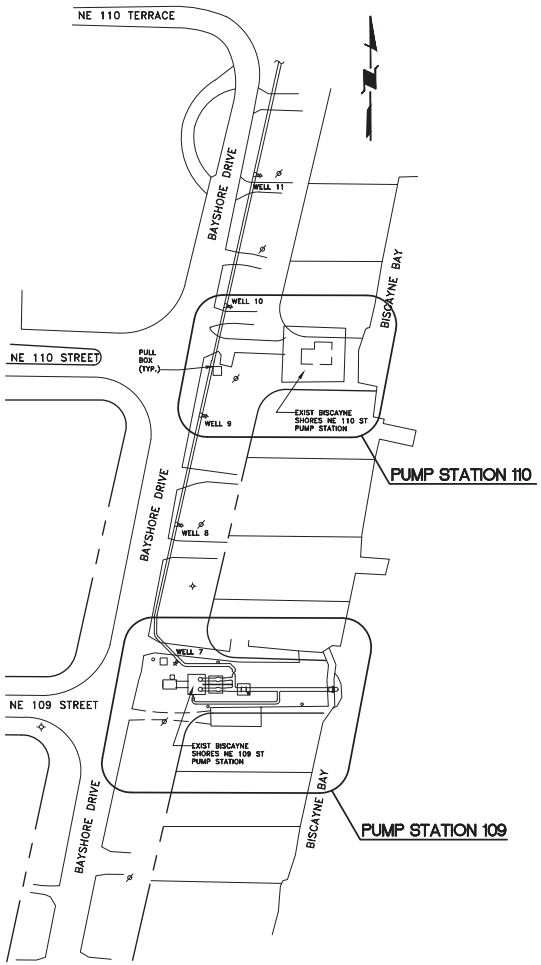

SITE LOCATION PLAN
SCALE: 1" = 50'

SUMMARY OF PAY ITEMS

Item No.	Description	Unit	Quantity
102-74-1	Barricades (Temporary - Types I, II, VP and Drum)	EA./DAY	7,200
104-10-3	Sediment Barrier	L.F.	675
104-11	Floating silt barrier	L.F.	200
104-18	Inlet Protection System	EA.	2
110-1-1B	Clearing and grubbing	L.S.	1
110-3D	Building Demolition	LS	1
120-6	Embankment	C.Y.	79
334-2-13-1A	Driveway Pavement - Asphalt	S.Y.	159
400-1-15	Class I Concrete [(Miscellaneous) (Trench build-up, collars, pipe plugs, structure plugs etc.) (This item is contingent upon field conditions and may increased decreased or eliminated by the Engineer)]	C.Y.	5
400-11-4	Seawall (Includes reinforcement)	S.F.	840
425-99E	ENERGY DISSIPATING OUTFALL (E.A.)	E.A.	2
430-19-30	Ductile Iron Pipe and Fittings, 30" Diameter	LF	145
430-19-36	Ductile Iron Pipe and Fittings, 36" Diameter	LF	120
430-94-1-1	Desilting Pipe, 0 - 48"	L.F.	190
430-95-2	Desilting Drainage Structure	E.A.	3
430-880-2533	CHECK VALVE (Pipe diameter 18" to 36 or equivalent)	EA	4
446-30-45	30" D.I.P. - 45 DEGREE BEND	E.A.	4
446-30-90	30" D.I.P. - 90 DEGREE BEND	E.A.	1
446-36-90	36" D.I.P. - 90 DEGREE BEND	E.A.	3
446-38-16	30" X 16" D.I.P.CONCENTRIC REDUCER	E.A.	1
446-38-30	30" X 24" D.I.P.CONCENTRIC REDUCER	E.A.	1
446-38-36	36" X 30" D.I.P.CONCENTRIC REDUCER	E.A.	2
447-30-30	30" x 30" Tee	E.A.	1
447-36-36	36" x 36" Tee	E.A.	1
508-72A	Emergency Generator with ATS and Fuel Tank	ASSM.	2
527-2	Detectable Warning on Walking Surface	S.F.	40
550-10-99R	FENCE (Type B) (5.1'-6.0' Height)	L.F.	573
550-60-233	Fence Gate - Type B, Sliding/Cantilever, 12'-18'- Opening	E.A.	1
550-60-235	Fence Gate, Type B, Sliding/Cantilever, 20.1 – 24' Opening	E.A.	1
550-75-1	REMOVAL AND DISPOSAL OF EXISTING CHAIN LINK FENCE	L.F.	300
575-2A	Sodding-ST. Augustine, or match existing, includes watering and maintenance. Contingent item based on field conditions, may be increased, or decreased by the engineer.	S.Y.	1,020
580-4-32	Clusia Rosea Shrub	L.F.	160
580-327-3C	Removal and Relocate Existing Coconut Palm Trees	E.A.	3
600-4	Pump Station Improvements	L.S.	1
639-1-021	Electrical Power Service (FPL)	LS	1
685-11B1	Telemetry System	LS	1

NOTES:

1) The Pump Station Improvements item covers, but is not limited to, all work to be completed at the BS 109 and BS 110 Pump Stations in the (structure/building footprint). Work is to include the replacement of roof and floor at BS 110, a new generator platform at BS 109, all electrical work, including the parts, associated in the cost of separating both pump station electrical systems; new ultra sonic transmitters and other miscellaneous items. Item price incudes all labor, parts, and permits.
2) The Electrical Power Service item includes all work and materials to establish new power and/or reestablish power at the pump stations, which includes all cost to FPL.
3) The Telemetry System item includes all work, labor, and materials to establish a new telemetry system and/or re-establish the system at the pump stations.
4) The Energy Dissipating Structure items includes the cost of the adjacent approved bank stabilization method and related costs.
5) The Emergency generator fuel tank shall be full upon delivery.

GENERAL NOTES

1. ELEVATIONS SHOWN REFER TO THE NATIONAL GEODETIC VERTICAL DATUM 1929 (N.G.V.D. 29). SUBTRACT 1.55 FEET FROM ELEVATION SHOWN TO N.A.V.D.
2. ALL CONSTRUCTION LAYOUT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. IT IS THE INTENT OF THESE DRAWINGS TO BE IN ACCORDANCE WITH APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION. ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND APPLICABLE CODES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
4. EXISTING UTILITIES SHOWN ARE BASED ON INFORMATION SUPPLIED BY OTHERS. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL UNDERGROUND FACILITIES PRIOR TO THE START OF CONSTRUCTION AND COORDINATE WITH THE VARIOUS UTILITY COMPANIES TO RELOCATE, BY PASS OR OTHERWISE ENSURE THAT UTILITY SERVICES WILL NOT BE INTERRUPTED DURING CONSTRUCTION.
5. EXISTING GRADES WERE TAKEN FROM THE BEST AVAILABLE DATA AND MAY NOT ACCURATELY REFLECT PRESENT CONDITIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH CURRENT SITE CONDITIONS, AND SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO STARTING WORK.
6. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO APPLICABLE STANDARDS AND SPECIFICATIONS OF THE MIAMI-DADE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS, MIAMI-DADE COUNTY DRER AND ALL OTHER LOCAL, STATE AND NATIONAL CODES, WHERE APPLICABLE.
7. ALL SECTIONS INDICATED HEREIN REFER TO THE MIAMI-DADE COUNTY PUBLIC WORKS MANUAL.
8. THE INFORMATION PROVIDED IN THESE DRAWINGS IS SOLELY TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF CONDITIONS WHICH WILL BE ENCOUNTERED DURING THE COURSE OF WORK. THE CONTRACTORS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT WHATEVER INVESTIGATIONS THEY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSIONS REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED, AND UPON WHICH BIDS WILL BE BASED.
9. LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING FACILITIES AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THE PREPARATION OF THESE DRAWINGS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, ELEVATIONS, AND OTHER FEATURES AFFECTING HIS WORK PRIOR TO CONSTRUCTION, AND NOTIFY THE ENGINEER IMMEDIATELY WHEN CONFLICT BETWEEN DRAWINGS AND ACTUAL CONDITIONS ARE DISCOVERED. CONTRACTOR SHALL WORK AS NEEDED TO AVOID CONFLICT WITH EXISTING UTILITIES (NO ADDITIONAL COST SHALL BE PAID FOR THIS WORK). EXISTING UTILITIES SHALL BE MAINTAINED IN SERVICE DURING CONSTRUCTION UNLESS OTHERWISE APPROVED BY THE UTILITY OWNER.
10. THE CONTRACTOR SHALL COORDINATE WITH UTILITIES TO ARRANGE RELOCATION AND TEMPORARY SUPPORT OF UTILITY FEATURES, ETC. AS NECESSARY TO COMPLETE THE WORK.
11. THE CONTRACTOR SHALL GIVE AT LEAST 48 HOURS NOTICE TO UTILITY COMPANIES TO PROVIDE FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES IN ADVANCE OF CONSTRUCTION. CONTACT UTILITIES NOTIFICATION CENTER AT 1-800-432-4770.
12. THE CONTRACTOR IS REQUIRED TO HAVE ALL APPLICABLE CONSTRUCTION PERMITS PRIOR TO START OF CONSTRUCTION.
13. THE CONTRACTOR SHALL NOTIFY THE MIAMI-DADE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS, MIAMI-DADE COUNTY DRER, WATER CONTROL, STORMWATER PLANNING AND DESIGN SECTION AND THE ENGINEER OF RECORD AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.
14. PRIOR TO CONSTRUCTION AND INSTALLATION OF THE PROPOSED IMPROVEMENTS, FIVE SETS OF SHOP DRAWINGS SHALL BE SUBMITTED TO, AND APPROVED BY DRER-STORMWATER PLANNING AND DESIGN SECTION. IN ADDITION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ANY OTHER AGENCY SHOP DRAWING APPROVAL, IF REQUIRED.
15. THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY ON ANY CONFLICT ARISING DURING CONSTRUCTION OF ANY IMPROVEMENTS SHOWN IN THESE DRAWINGS.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE, REMOVAL OR MODIFICATION, ACCIDENTALLY OR PURPOSELY, CAUSED TO ANY IRRIGATION SYSTEMS, PRIVATE OR PUBLIC. THE CONTRACTOR SHALL REPLACE ANY DAMAGED, REMOVED OR MODFIED IRRIGATION PIPES, SPRINKLER HEADS OR OTHER PERTINENT APPURTENANCES AT NO ADDITIONAL COST.
17. COMPLETE "AS-BUILT" INFORMATION RELATIVE TO LOCATION, SIZE AND DEPTH OF NEW PIPES, STRUCTURES, ETC., SHALL BE ACCURATELY RECORDED BY THE CONTRACTOR AND SUBMITTED (SIGNED AND SEALED BY A FLORIDA CERTIFIED P.L.S.) TO THE ENGINEER, PRIOR TO FINAL ACCEPTANCE OF THE WORK. ALL RECORD INFORMATION ON EXISTING UTILITIES CROSSINGS ENCOUNTERED DURING CONSTRUCTION, INCLUDING BUT NOT LIMITED TO PIPES, INLETS, MANHOLES, ETC., SHALL BE TAKEN BY A FLORIDA REGISTERED SURVEYOR AND SHOWN ON THE RECORD DRAWINGS. COST OF SIGNED AND SEALED AS-BUILTS SHALL BE COVERED IN OVERALL BID.
18. GRADING SHALL CONSIST OF ALL EXCAVATION, FILLING, SHAPING AND SLOPING NECESSARY FOR THE CONSTRUCTION, PREPARATION AND COMPLETION OF ALL SUBGRADES, SHOULDERS, SLOPES, INTERSECTIONS, PAVEMENTS AND OTHER AREAS, ALL IN ACCORDANCE WITH THE ALIGNMENT AND GRADES SHOWN IN THESE DRAWINGS.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR RESETTING ALL DISTURBED EXISTING MANHOLE COVERS, VALVE BOXES, BLOW-OFF RISERS, ETC. TO NEW ELEVATIONS, AS REQUIRED, WHETHER SPECIFICALLY SHOWN ON DRAWINGS OR NOT.
20. THE CONTRACTOR SHALL NOT ENCROACH INTO PRIVATE PROPERTY WITH PERSONNEL, MATERIAL OR EQUIPMENT, UNLESS SPECIFICALLY APPROVED BY THE ENGINEER.
21. ALL DEMOLITION DEBRIS AND EXCESS MATERIAL TO BE DISPOSED OF BY CONTRACTOR IN AREAS PROVIDED BY HIM, UNLESS OTHERWISE NOTED. NO SEPARATE PAYMENT WILL BE MADE FOR THIS ITEM.
22. THE PROJECT SITE IS LOCATED IN FLOOD ZONE VE 11 (+11 FEET N.G.V.D. 29). ALL ELECTRICAL AND MECHANICAL EQUIPMENT, SUCH AS MOTORS, SWITCHES, RECEPTACLES, ETC. ARE REQUIRED TO BE AT LEAST A FOOT ABOVE FEMA'S FLOOD ELEVATION (+11 NGVD).

SPECIAL NOTES

EXISTING PUMP CAPACITY (32,000 GPM) SHALL BE MAINTAINED DURING CONSTRUCTION BY MEANS OF TEMPORARY STAND-BY PUMPS. TEMPORARY STAND-BY PUMPS, WITH AUTOMATIC AND MANUAL START/STOP, TO BE OPERATED AND MAINTAINED BY CONTRACTOR AT ALL TIMES (24 HOURS PER DAY-7 DAYS A WEEK).

05/15/2024 UPDATE PAY ITEMS
12/05/2023 UPDATE PAY ITEMS
09/26/2022 UPDATE PAY ITEMS
12/17/2021 ADDRESS M-D C COMMENTS
04/15/2021 ADDRESS SFWMD COMMENTS

GRAEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270

NELSON H. ORTIZ
LICENSED
No 57556
STATE OF FLORIDA
PROFESSIONAL ENGINEER
03/17/2024

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FOR THE FIRM: NELSON H. ORTIZ
PROJECT NO.: 2017-7053.01 PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	QUANTITIES, PAY ITEMS, AND NOTES	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 2
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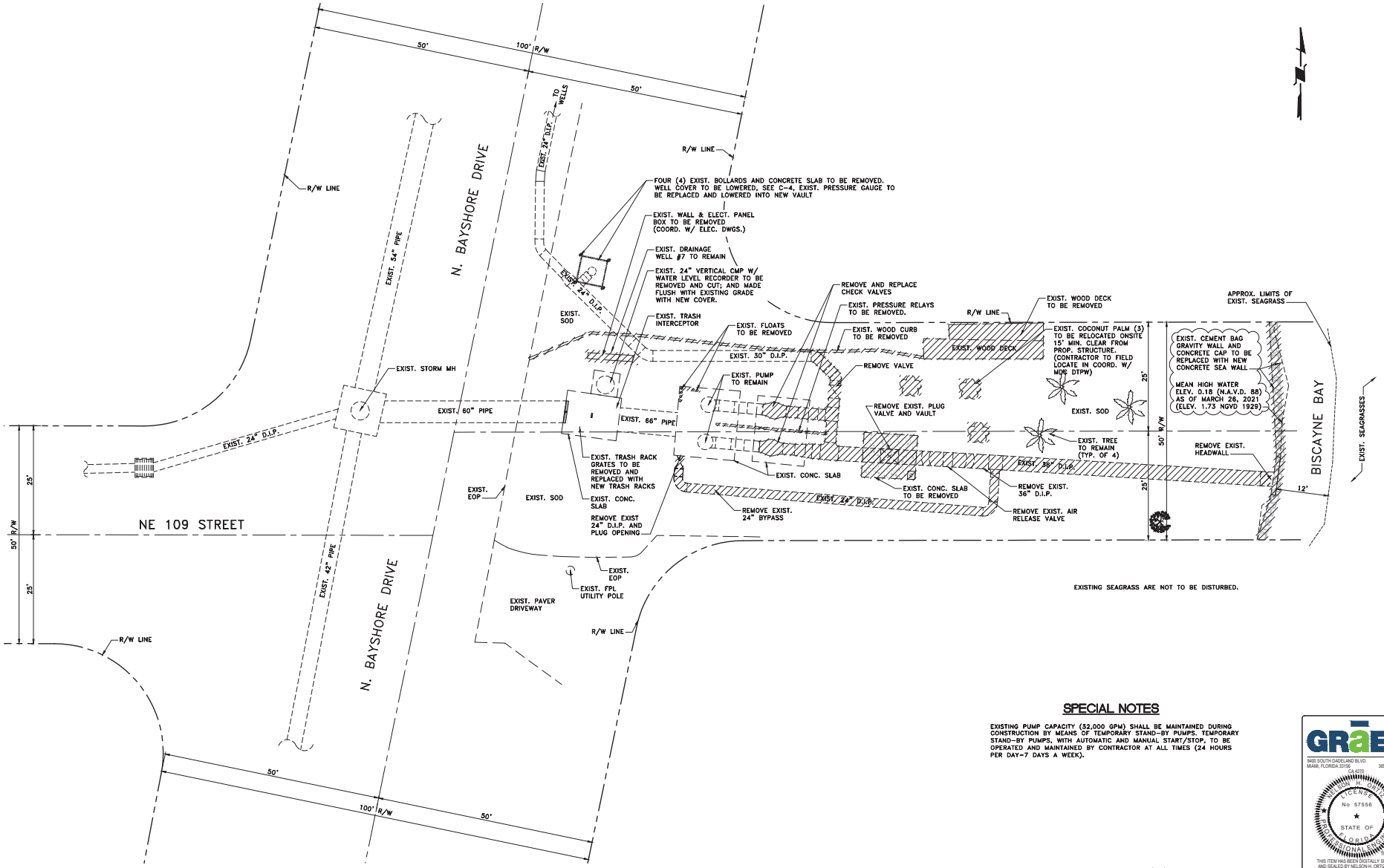

PS 109 EXISTING CONDITIONS/ DEMOLITION PLAN

SCALE: 1" = 10'

SPECIAL NOTES

EXISTING PUMP CAPACITY (52,000 GPM) SHALL BE MAINTAINED DURING CONSTRUCTION BY MEANS OF TEMPORARY STAND-BY PUMPS. TEMPORARY STAND-BY PUMPS, WITH AUTOMATIC AND MANUAL START/STOP, TO BE OPERATED AND MAINTAINED BY CONTRACTOR AT ALL TIMES (24 HOURS PER DAY-7 DAYS A WEEK).

09/13/2024 ADDRESS M-D C COMMENTS
07/20/2023 ADDRESS DERM COMMENTS
06/22/2023 ADDRESS M-D C COMMENTS
12/17/2021 ADDRESS M-D C COMMENTS
04/15/2021 ADDRESS SFWMD COMMENTS

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NELSON H. ORTIZ LICENSE No 57556 STATE OF FLORIDA PROFESSIONAL ENGINEER
10/17/2024
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FOR THE FIRM: PROJECT NO. 2017-7053.01
NELSON H. ORTIZ PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	PS 109 EXISTING CONDITIONS / DEMOLITION PLAN	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 3
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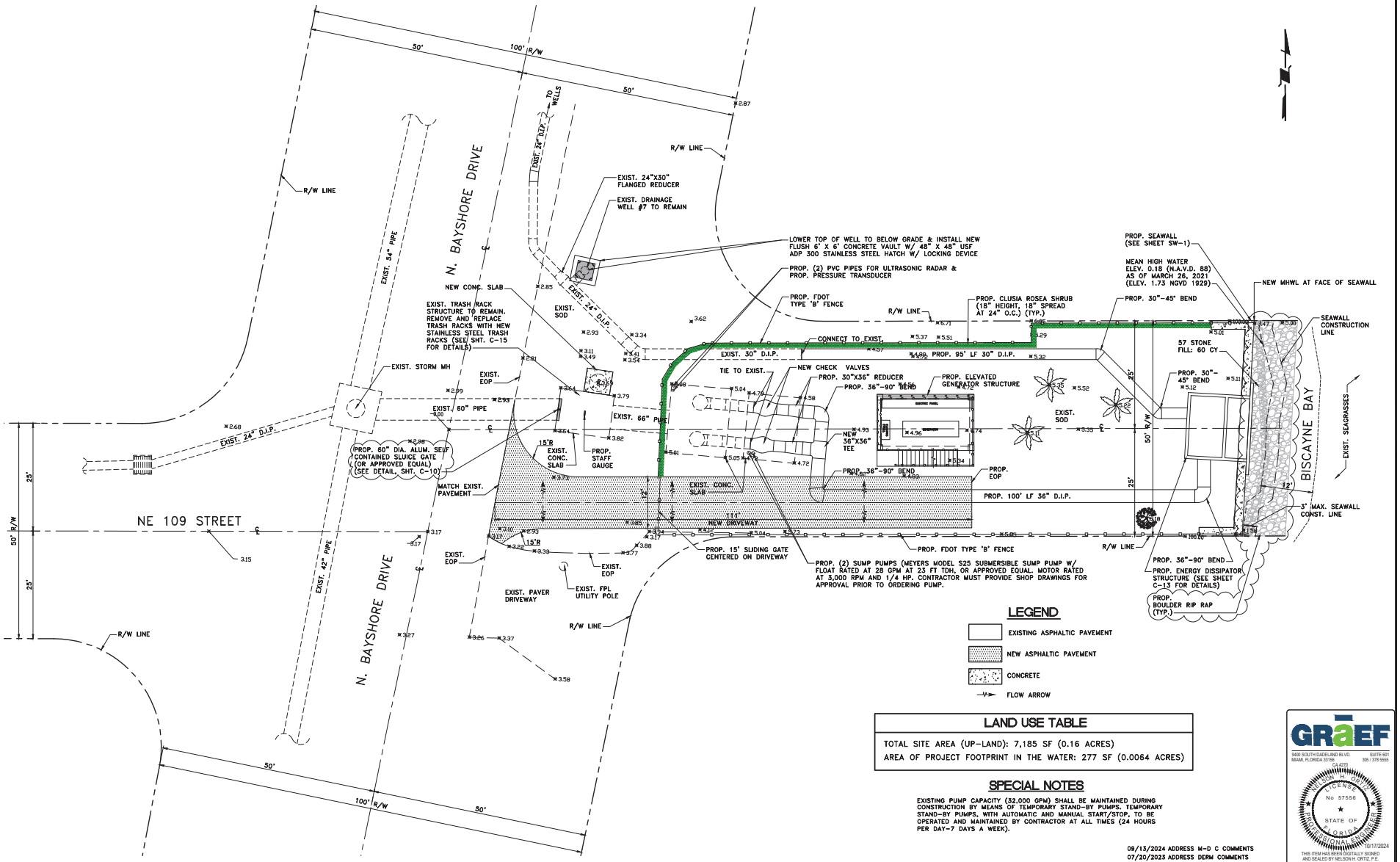

LEGEND

- EXISTING ASPHALTIC PAVEMENT
- NEW ASPHALTIC PAVEMENT
- CONCRETE
- FLOW ARROW

LAND USE TABLE

TOTAL SITE AREA (UP-LAND): 7,185 SF (0.16 ACRES)
AREA OF PROJECT FOOTPRINT IN THE WATER: 277 SF (0.0064 ACRES)

SPECIAL NOTES

EXISTING PUMP CAPACITY (32,000 GPM) SHALL BE MAINTAINED DURING CONSTRUCTION BY MEANS OF TEMPORARY STAND-BY PUMPS. TEMPORARY STAND-BY PUMPS, WITH AUTOMATIC AND MANUAL START/STOP, TO BE OPERATED AND MAINTAINED BY CONTRACTOR AT ALL TIMES (24 HOURS PER DAY-7 DAYS A WEEK).

PS 109 PROPOSED SITE PLAN

SCALE: 1" = 10'

DATUM: N.G.V.D. 29

09/13/2024 ADDRESS M-D C COMMENTS
07/20/2023 ADDRESS DERM COMMENTS
06/22/2023 ADDRESS M-D C COMMENTS
12/17/2021 ADDRESS M-D C COMMENTS
09/08/2021 ADDRESS SFWMD COMMENTS
08/10/2021 ADDRESS SFWMD COMMENTS
04/15/2021 ADDRESS SFWMD COMMENTS

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DESIGN BY: J.R.G.	DATE: 04/10/2020	PS 109 PROPOSED SITE PLAN	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 4
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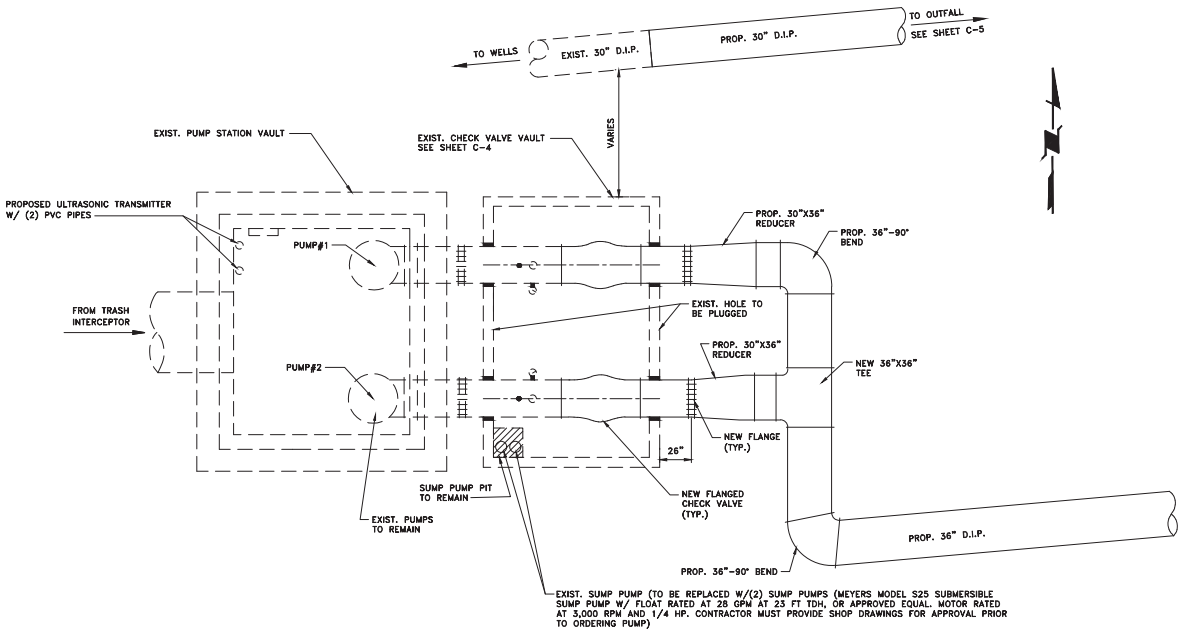


OVERALL PROPOSED PLAN

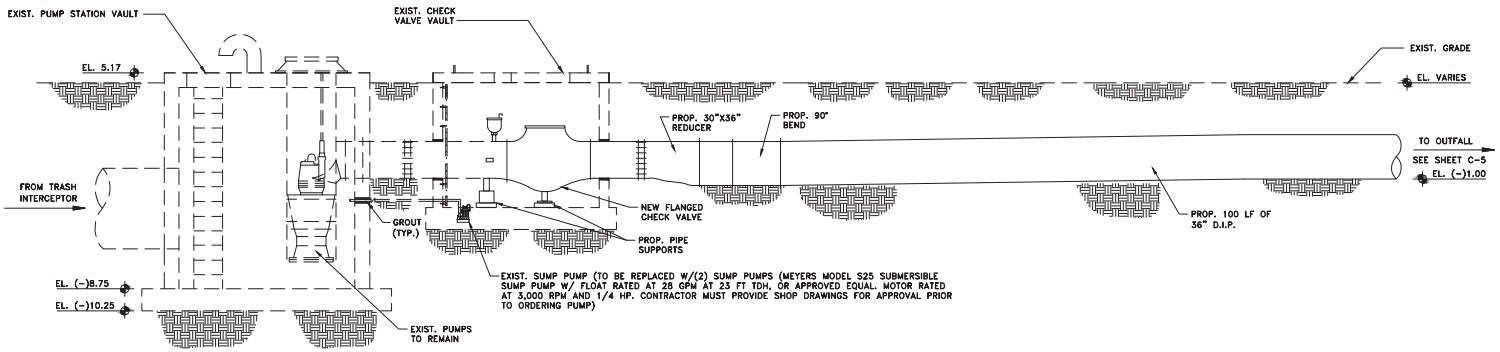
SCALE: 1" = 4'

EXIST. PUMP STATION DATA TABLE			
EACH PUMP	PUMP CAPACITY	G.P.M.	16.000
	T.D.H.	FEET	12.0
	PUMP CAPACITY	G.P.M.	16.000
	T.D.H.	FEET	12.0
NORMAL OPERATING RANGE		FEET OF HEAD	6.0-18.0
PUMP CYCLE TIME		MINUTES	10 MIN.
WET WELL DIMENSIONS		FEET	12'X14' I.D.
PUMP MODEL		SUBMERSIBLE PROPELLER	
SIZE		24" PROPELLER	
B.H.P.		–	61
PUMP EFFICIENCY		–	80%
DISCHARGE PIPE DIAMETER		INCHES	30"
MOTOR SIZE		H.P.	75
FINISH GRADE		ELEV. A	4.5
℄ DISCHARGE PIPE		ELEV. B	0.25
INFLUENT PIPE INVERT		ELEV. C	-5.25
ALARM SIGNAL HIGH WATER VALVE OPEN		ELEV. D	3.5
LAG PUMP ON		ELEV. E	3.0
LEAD PUMP ON		ELEV. F	2.5
WET WELL SLAB		ELEV. H	-8.75
ELECTRICAL SERVICE		AMP. MIN.	
R.P.M.		–	660
HIGH PRESSURE SHUT OFF SWITCH		FEET OF HEAD	22#
HIGH PRESSURE ALARM LIGHT AND CONTROL VALVE OPEN		FEET OF HEAD	18
LAG PUMP LOW WATER SHUT OFF		ELEV. J	-2.0
LEAD PUMP LOW WATER SHUT OFF		ELEV. K	-2.5
LOW WATER ALARM/EMERGENCY SHUT OFF		ELEV. L	-3.0

SEQUENCE OF CONSTRUCTION NOTES

1. TURN OFF PUMPS #1 & #2.
2. REMOVE EXIST. PLUG VALVE VAULT IN ITS ENTIRETY.
3. REMOVE ALL PLUG VALVES AND PIPES, AS REQUIRED.
4. INSTALL ENERGY DISSIPATOR STRUCTURE.
5. INSTALL PIPES & APPURTENANCES.
6. ALL PIPES AND VALVES SHALL BE TESTED FOR LEAKS PRIOR TO BACKFILLING THE EXCAVATIONS, WHILE MIAMI-DADE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS PERSONNEL ARE PRESENT.

NOTE: CONTRACTOR TO PROVIDE CONTINUOUS TEMPORARY BY-PASS PUMPING AND PIPING DURING THE DURATION OF PROJECT CONSTRUCTION. CAPACITY SHALL MATCH EXISTING CAPACITY.



OVERALL PROPOSED SECTION

SCALE: 1" = 4'

DATUM: N.G.V.D. 29

12/17/2021 ADDRESS M-D C COMMENTS

GRAEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270
NELSON H. ORTIZ LICENSED No 57556 STATE OF FLORIDA PROFESSIONAL ENGINEER
10/17/2024
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NELSON H. ORTIZ PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	PS 109 PLAN AND ELEVATION	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 5
DRAWN BY: P.F.	DATE:					DRAWING NO. C-5	OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:						

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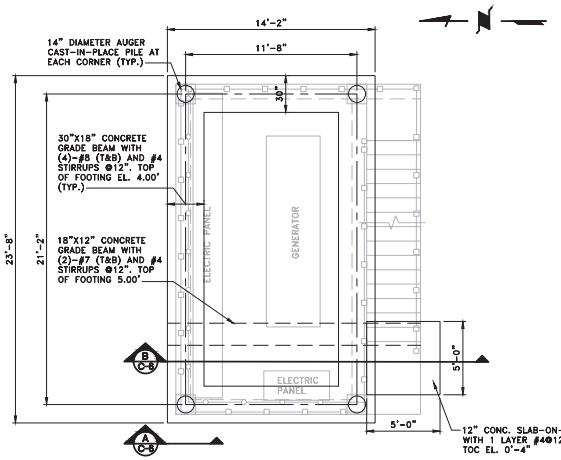
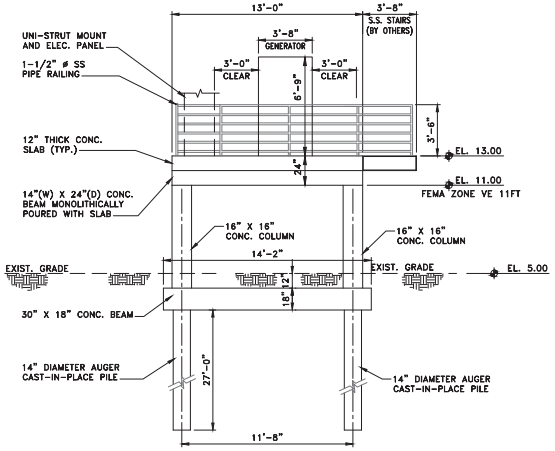


FOUNDATION PLAN VIEW

SCALE: 1/4" = 1'-0"

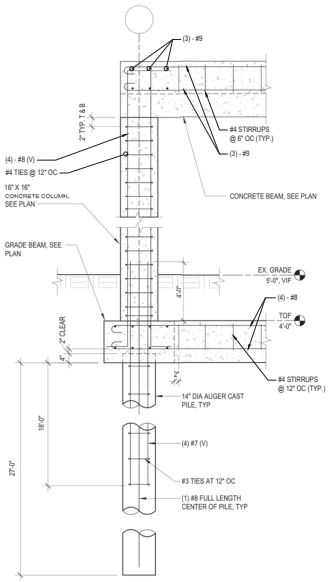


WEST ELEVATION

SCALE: 1/4" = 1'-0"

NOTES:

1. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR FABRICATION.
2. CONTRACTOR SHALL PROVIDE ACCESS LADDER SHOP DRAWINGS BEFORE BEGINNING FABRICATION TO E.O.R. FOR REVIEW & APPROVAL.
3. DIMENSIONS SHOWN ON THIS SHEET SHALL NOT SUPERCEDE DIMENSIONS SHOWN ON FABRICATION DRAWINGS.



SECTION 'A'

SCALE: N.T.S.

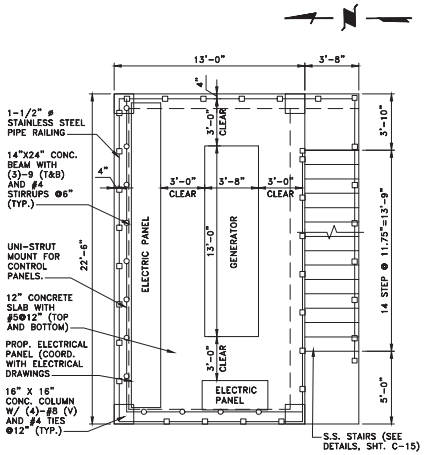
PILE DESIGN CAPACITY:

ALLOWABLE AXIAL LOADS:

- 26 TONS DOWNWARD
- 6.5 TONS UPWARD
- 10 TONS LATERAL

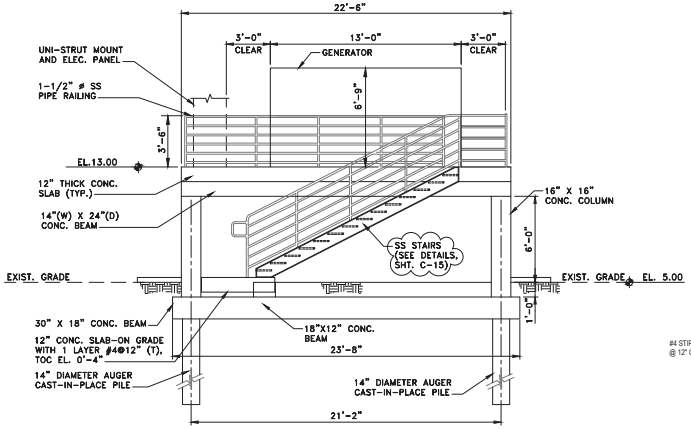
STRUCTURAL GENERAL NOTES

1. DESIGN IS IN ACCORDANCE WITH THE STATE OF FLORIDA BUILDING CODE, (2023) EDITION.
2. MINIMUM 28 DAY CONCRETE CYLINDER STRENGTH SHALL BE:
   AUGER CAST-IN-PLACE PILES: 5000 PSI
   OTHERS: 4000 PSI.
   WATER/CEMENT RATIO SHALL NOT BE LARGER THAN 0.50.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60.
4. STAINLESS STEEL WIDE FLANGE BEAMS, CHANNELS, ANGLES SHALL CONFORM TO ASTM A276, ALLOY 316L.
5. STAINLESS STEEL PLATES SHALL CONFORM TO ASTM A240, ALLOY 316L.
6. STAINLESS STEEL BOLTS SHALL CONFORM TO ASTM F593D, ALLOY 316L.
7. STAINLESS STEEL NUTS AND WASHERS SHALL CONFORM TO ASTM F594 GROUP 2, ALLOY 316L.
8. ALL WELDING SHALL COMPLY WITH AWS D1.6 USING E316 ELECTRODES. ALL WELDERS TO BE CERTIFIED BY AWS.
9. ALL STAIR, HARDWARE, WIDE FLANGE BEAMS, CHANNELS, ANGLES, PLATES, RAILS, BRACKETS, BOLTS AND ANY FIXTURES OR SUPPORTS SHALL BE STAINLESS STEEL.
10. STATED AUGER CAST PILE COMPRESSIVE CAPACITY IS 26 TONS, TENSILE CAPACITY IS 6.5 TONES AND LATERAL CAPACITY IS 10, BASED ON SOIL REPORT PREPARED BY WINGERTER LABORATORIES, INC., DATED NOVEMBER 15, 2019.
11. DESIGN LOADS:
    LIVE LOADS:
    PLATFORM: 40 PSF
    WIND LOAD (ASCE 7-(22))
    BUILDING RISK CATEGORY III
    BASIC WIND SPEED V = (186) MPH
    EXPOSURE: D
    INTERNAL PRESSURE COEFFICIENT GCPI =0.0
12. RESISTANCE TO LATERAL LOADS ON STRUCTURE IS PROVIDED BY FLOOR DIAPHRAGMS AND CONCRETE MOMENT FRAMES. CONTRACTOR SHALL PROVIDE SUFFICIENT TEMPORARY BRACING UNTIL ALL LATERAL SUPPORT SYSTEMS ARE IN PLACE AND FUNCTIONAL.
13. ALL STRUCTURAL FRAMING AND CONNECTIONS HAVE BEEN DESIGNED FOR THE FINAL COMPLETED CONDITION AND HAVE NOT BEEN INVESTIGATED FOR POTENTIAL LOADINGS ENCOUNTERED DURING ERECTION AND CONSTRUCTION. ANY INVESTIGATION OF THE STRUCTURAL FRAMING AND CONNECTIONS FOR ADEQUACY DURING THE ERECTION AND CONSTRUCTION PROCESS IS THE RESPONSIBILITY OF THE CONTRACTOR.
14. CONTRACTOR IS RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION AND JOB SITE SAFETY.
15. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR THE FOLLOWING ITEMS PRIOR TO FABRICATION: REBAR, CONCRETE MIX DESIGN, STRUCTURAL STEEL, STEEL STAIRS AND STEEL RAILING.



PLATFORM PLAN VIEW

SCALE: 1/4" = 1'-0"

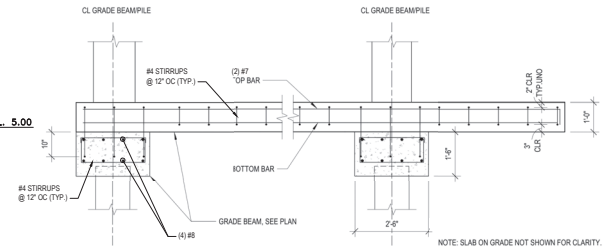


NORTH ELEVATION

PROPOSED ELEVATED GENERATOR STRUCTURE

SCALE: 1/4" = 1'-0"

DATUM: N.G.V.D. 29



SECTION 'B'

SCALE: 1/2" = 1'-0"

09/13/2024 ADDRESS M-D C COMMENTS
12/17/2021 ADDRESS M-D C COMMENTS

GRAEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270
NELSON H. ORTIZ
LICENSED
No 57556
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
10/17/2024
THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY NELSON H. ORTIZ, P.E. ON THE DATE ADJACENT TO THE SEAL.
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.
FOR THE FIRM: NELSON H. ORTIZ
PROJECT NO.: 2017-7053.01 PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	PS 109 ELEVATED GENERATOR STRUCTURE	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01 / SHEET NO. 6
DRAWN BY: P.F.	DATE:				DRAWING NO. C-6 / OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:				

100% SUBMITTAL

STRUCTURAL NOTES

1. ALL DEBRIS ASSOCIATED WITH CLEARING SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR.
2. CONCRETE PILES SHALL BE DRIVEN TO THE FOLLOWING CRITERIA:
   KING PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 25 TONS AND TO A TIP ELEVATION OF ELEV.
   BATTER PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 25 TONS AND A MINIMUM DEPTH OF EMBEDMENT OF FEET INTO FIRM MATERIAL.
3. CONCRETE PILES SHALL BE 12" SQUARE PRECAST PRESTRESSED PILES, AS DETAILED IN THESE DRAWINGS.
4. SHOP DRAWINGS FOR ALL REBAR SHALL SHOW THE ACTUAL MILL MARK ON THE REBARS MEETING ASTM A615.
5. SPLICES IN REINFORCING STEEL BARS SHALL BE A MINIMUM OF 36 BAR DIAMETERS EXCEPT WHERE DIMENSIONED OTHERWISE.
6. MINIMUM CONCRETE COVER FOR REINFORCING SHALL BE AS DETAILED IN THESE DRAWINGS. WHERE THIS COVER IS NOT DIMENSIONED, USE THE SAME AS DIMENSIONED FOR SIMILAR ITEMS. WHERE THERE ARE NO SIMILAR ITEMS THAT INDICATE THE AMOUNT OF COVER, 3 INCHES OF COVER SHALL BE PROVIDED.
7. THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS FOR ALL PRECAST UNITS AND SHALL NOT PROCEED WITH THE MANUFACTURE OF THESE ITEMS PRIOR TO RECEIVING APPROVAL OF THE ENGINEER.
8. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL DIMENSIONS PRIOR TO CASTING ANY NON-TYPICAL CONCRETE PANELS. RE-CASTING OF ANY NON-TYPICAL CONCRETE PANEL DUE TO A DISCREPANCY IN DIMENSIONS SHALL AT THE CONTRACTOR'S EXPENSE.
9. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4", OR AS SHOWN.
10. ALL EXPOSED CONCRETE SURFACES SHALL HAVE A LIGHT BROOM FINISH.
11. EXPANSION JOINTS SHALL BE PREFORMED BITUMINOUS MATERIAL CONFORMING TO ASTM D1751 AND LOCATED AS SHOWN IN THESE DRAWINGS.
12. NO CONSTRUCTION JOINTS, OTHER THAN SHOWN, SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE
13. ALL BACKFILL WHICH MAY BE REQUIRED FOR THE PROJECT WILL BE ACQUIRED FROM OFF-SITE SOURCES. CONTRACTOR SHALL BEAR ALL COSTS OF TRANSPORT OF THIS MATERIAL TO AND WITHIN THE PROJECT
14. TESTING OF CONCRETE: TESTING LABORATORY WILL BE RETAINED BY THE OWNER TO VERIFY SPECIFIED CONCRETE STRENGTHS. FAILURE OF ANY CONCRETE CYLINDER TO MEET SPECIFIED REQUIREMENTS SHALL BE DEEMED NON-COMPLYING. ALL COSTS OF ADDITIONAL TESTING TO DETERMINE ADEQUACY AND/OR REPLACEMENT OF DEFECTIVE WORK SHALL BE BORNE BY CONTRACTOR.
15. SILT BARRIERS: FLOATING SILT BARRIERS SHALL BE INSTALLED AROUND ALL GRADING OPERATIONS AND AROUND PILE OPERATIONS (PREDRILLING PILE HOLES AND PILE DRIVING), WHERE NECESSARY, SUCH THAT ALL REQUIRED TURBIDITY LIMITS AS DESIGNATED BY ENVIRONMENTAL REGULATORY AGENCIES ARE MAINTAINED.

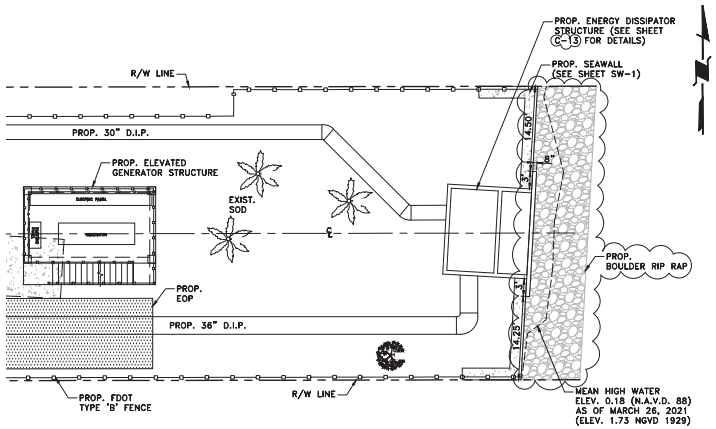
GENERAL NOTES

1. ELEVATIONS SHOWN REFER TO THE NORTH GEODETIC VERTICAL DATUM. (N.G.V.D.).
2. HORIZONTAL AND VERTICAL CONTROL SHALL BE PROVIDED BY THE OWNER'S SURVEYOR. ALL CONSTRUCTION LAYOUT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. IT IS THE INTENT OF THESE PLANS TO BE IN ACCORDANCE WITH APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION. ANY DISCREPANCIES BETWEEN THESE PLANS AND APPLICABLE CODES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
4. IT IS THE INTENT OF THESE PLANS AND THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH LOCAL, STATE, AND FEDERAL ENVIRONMENTAL PERMITS ISSUED FOR THIS PROJECT. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH AND GOVERN HIMSELF BY ALL PROVISIONS OF THESE PERMITS.
5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL UNDERGROUND FACILITIES PRIOR TO THE START OF CONSTRUCTION AND COORDINATE WITH THE VARIOUS UTILITY COMPANIES TO RELOCATE, BYPASS, OR OTHERWISE ENSURE THAT UTILITY SERVICES WILL NOT BE INTERRUPTED DURING CONSTRUCTION.
6. EXISTING GRADES AND SOUNDINGS WERE TAKEN FROM THE BEST AVAILABLE DATA AND MAY NOT ACCURATELY REFLECT PRESENT CONDITIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH CURRENT SITE CONDITIONS, AND SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO STARTING WORK.
7. EXISTING CONDITIONS WERE TAKEN FROM THE SURVEY PREPARED BY MIAMI-DADE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS ROADWAY ENGINNERING AND RIGHT OF WAY DIVISION, MIAMI, FLORIDA, DATED JUNE 14, 2016.

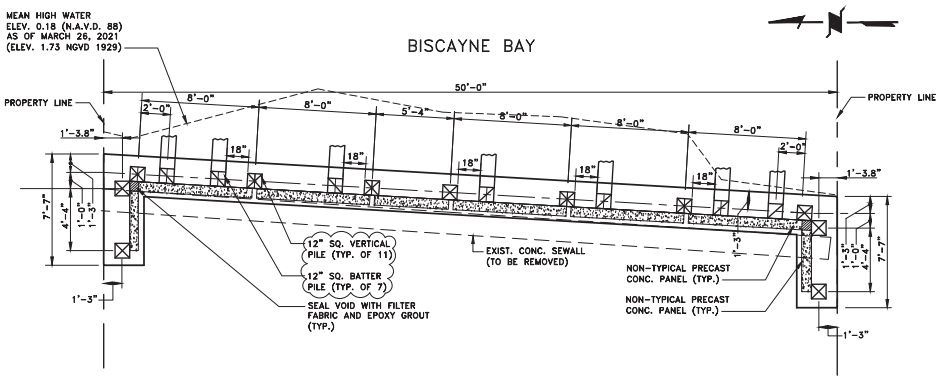
MATERIAL AND DESIGN DATA

A. MATERIALS:
1. CONCRETE: (Fc' = MIN. COMPRESSIVE STRENGTH AT 28 DAYS)
   A. CAST-IN-PLACE CONCRETE.....Fc' = 4,000 PSI
   B. PRECAST CONCRETE.....Fc' = 4,000 PSI
   C. PRECAST PRESTRESSED CONCRETE PILES.....Fc' = 5,500 PSI
2. CONCRETE PILES SHALL BE 12" SQUARE PRECAST PRESTRESSED PILES WITH FOUR 1/2"ø 270K LO-LAX STRANDS WITH #5 GAGE WIRE SPIRAL TIES.
3. REBAR, ANY SIZES, SHALL BE GALVANIZED STEEL AND SHALL CONFORM TO ASTM A615, GRADE 60.
4. ACCESSORIES SHALL BE ASTM A-36.
5. GEOTEXTILE FABRIC SHALL BE NON-WOVEN POLYPROPYLENE, MIRAFI 140N OR APPROVED EQUAL AT EACH PILE LOCATION (24" MIN. WIDTH).

B. STRUCTURAL DESIGN IN ACCORDANCE WITH THE FOLLOWING CODES AND SPECIFICATIONS:
1. THE FLORIDA BUILDING CODE (CURRENT EDITION).
2. ACI STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318).



N.E. 109 STREET PUMP STATION SEAWALL
SCALE: 1" = 10'



PILE LAYOUT PLAN
SCALE: 1/4" = 1'-0"

09/13/2024 ADDRESS M-D C COMMENTS

GRÄEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270

NELSON H. ORTIZ
LICENSED
No 57556
STATE OF FLORIDA
PROFESSIONAL ENGINEER
10/17/2024

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FOR THE FIRM: NELSON H. ORTIZ
PROJECT NO. 2017-7053.01 PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	PS 109 SEAWALL PLAN AND DETAILS	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 7
DRAWN BY: P.F.	DATE:					DRAWING NO. C-7	OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:						

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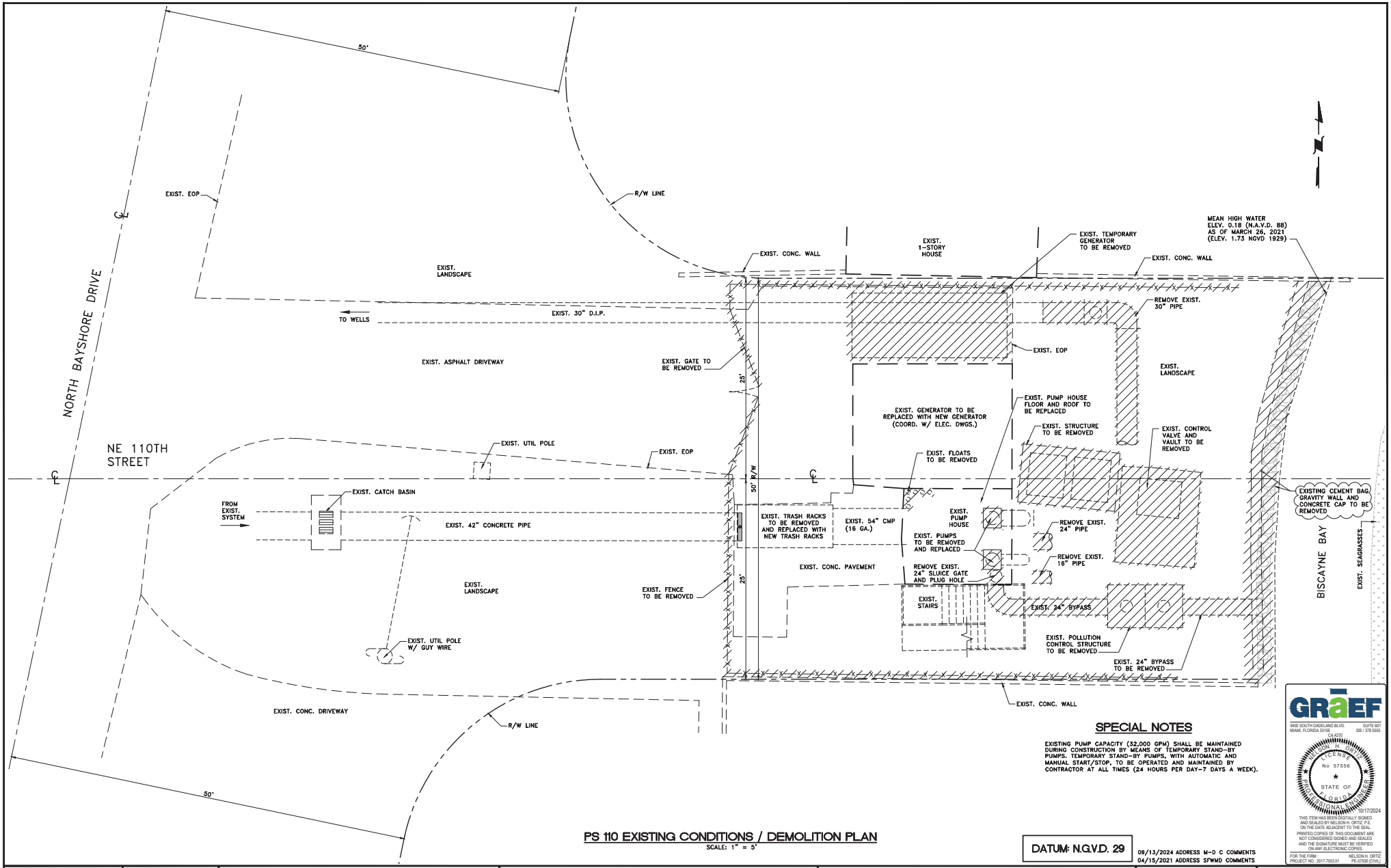
Revised Plans by Addendum No.5



SPECIAL NOTES

EXISTING PUMP CAPACITY (32,000 GPM) SHALL BE MAINTAINED DURING CONSTRUCTION BY MEANS OF TEMPORARY STAND-BY PUMPS. TEMPORARY STAND-BY PUMPS, WITH AUTOMATIC AND MANUAL START/STOP, TO BE OPERATED AND MAINTAINED BY CONTRACTOR AT ALL TIMES (24 HOURS PER DAY-7 DAYS A WEEK).

PS 110 EXISTING CONDITIONS / DEMOLITION PLAN

SCALE: 1" = 5'

DATUM: N.G.V.D. 29

08/13/2024 ADDRESS M-D C COMMENTS
04/15/2021 ADDRESS SFWMD COMMENTS

GRAEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270

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No 57556
STATE OF FLORIDA
PROFESSIONAL ENGINEER
10/17/2024

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FOR THE FIRM: PROJECT NO. 2017-7053.01 NELSON H. ORTIZ PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	PS 110 EXISTING CONDITIONS / DEMOLITION PLAN	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 8
DRAWN BY: P.F.	DATE:					DRAWING NO. C-8	OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:						

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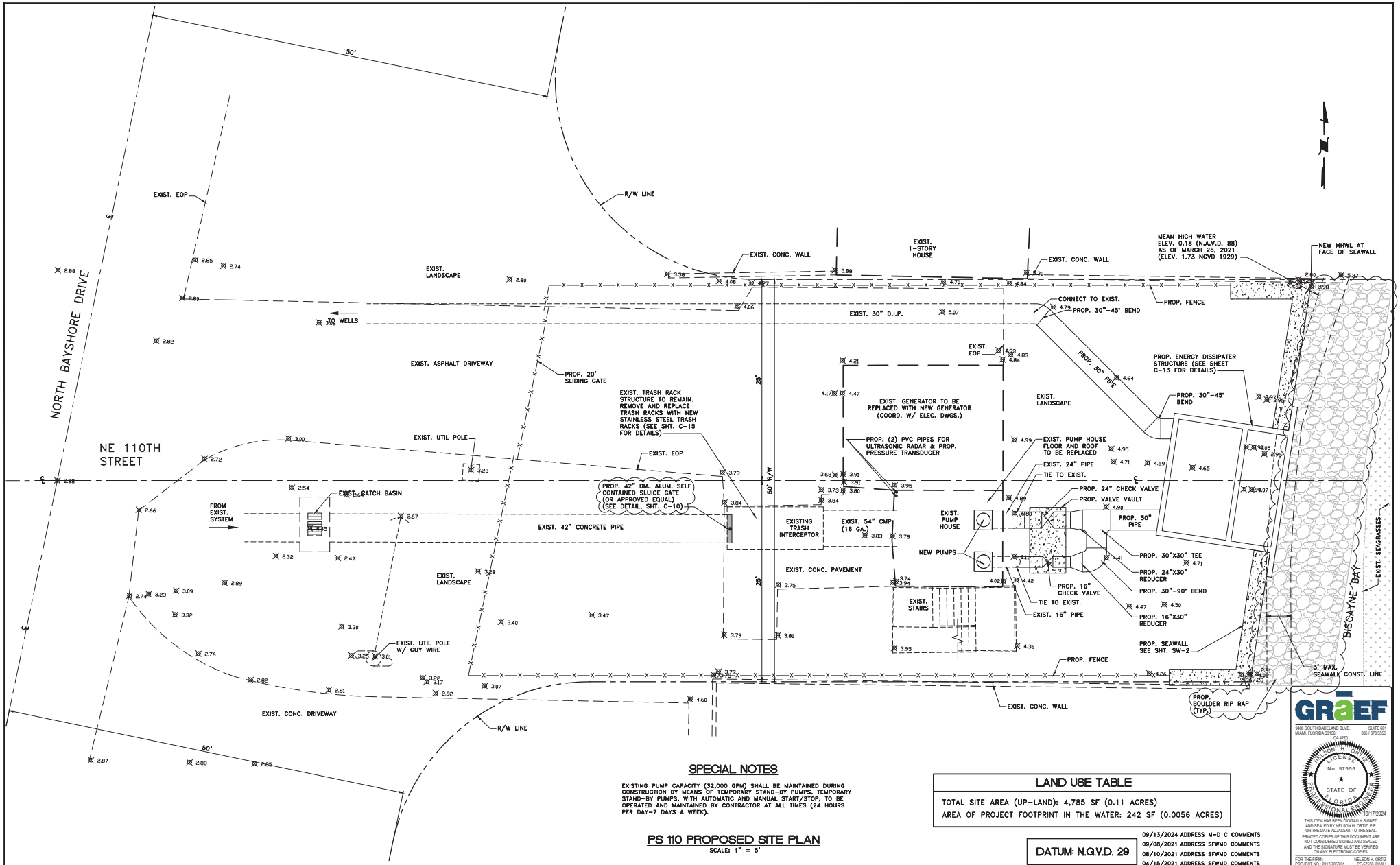

SPECIAL NOTES

EXISTING PUMP CAPACITY (32,000 GPM) SHALL BE MAINTAINED DURING CONSTRUCTION BY MEANS OF TEMPORARY STAND-BY PUMPS. TEMPORARY STAND-BY PUMPS, WITH AUTOMATIC AND MANUAL START/STOP, TO BE OPERATED AND MAINTAINED BY CONTRACTOR AT ALL TIMES (24 HOURS PER DAY-7 DAYS A WEEK).

PS 110 PROPOSED SITE PLAN

SCALE: 1" = 5'

LAND USE TABLE
TOTAL SITE AREA (UP-LAND): 4,785 SF (0.11 ACRES)
AREA OF PROJECT FOOTPRINT IN THE WATER: 242 SF (0.0056 ACRES)

DATUM: N.G.V.D. 29

09/13/2024 ADDRESS M-D C COMMENTS
09/08/2021 ADDRESS SFWMD COMMENTS
08/10/2021 ADDRESS SFWMD COMMENTS
04/15/2021 ADDRESS SFWMD COMMENTS

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MIAMI, FLORIDA 33156 305 / 378 5555
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STATE OF FLORIDA
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10/17/2024

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FOR THE FIRM: PROJECT NO. 2017-7053.01 — NELSON H. ORTIZ PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	PS 110 PROPOSED SITE PLAN	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 9
DRAWN BY: P.F.	DATE:					DRAWING NO. C-9	OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:						

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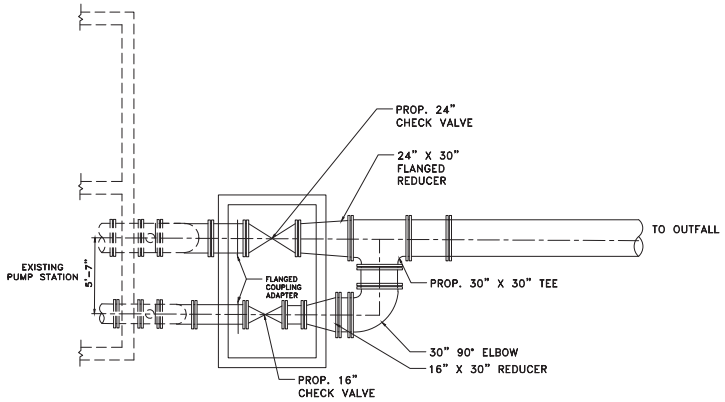
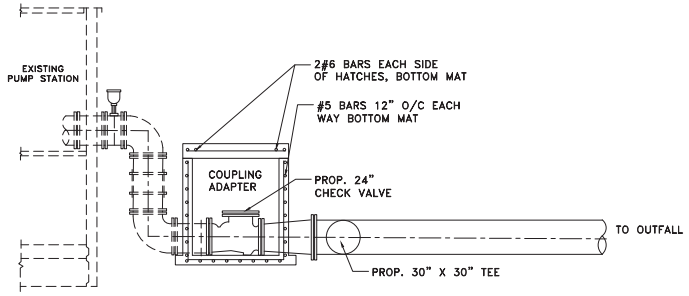
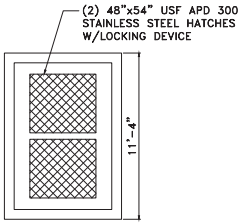


PLAN
N.T.S.

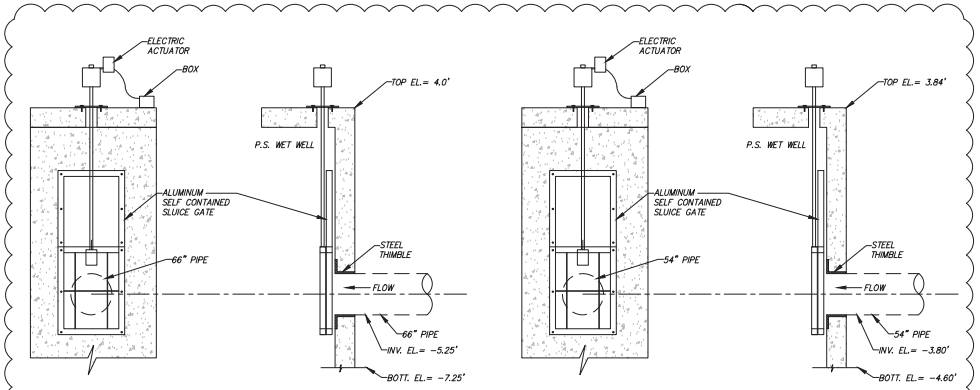


ELEVATION
N.T.S.



NOTES:

1. ALL JOINTS UP STREAM OF PLUG SHALL BE FLANGED OR RESTRAINED.
2. 16" & 24" CHECK VALVES SHALL BE APCO SERIES 100 RUBBER FLAPPER TYPE OR APPROVED EQUAL.
3. ADJUST PIPING TO FIT EXISTING CONDITIONS.



ELEVATION SECTION ELEVATION SECTION

BISCAYNE SHORES 109 P.S.
SLUICE GATE DETAIL
N.T.S.

BISCAYNE SHORES 110 P.S.
SLUICE GATE DETAIL
N.T.S.

09/13/2024 ADDRESS M-D C COMMENTS
12/17/2021 ADDRESS M-D C COMMENTS

GRAEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270

NELSON H. ORTIZ
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STATE OF
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10/17/2024

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FOR THE FIRM: NELSON H. ORTIZ
PROJECT NO.: 2017-7053.01 PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	PS 110 PLAN AND ELEVATION SLUICE GATE DETAILS	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 10
DRAWN BY: P.F.	DATE:					DRAWING NO. C-10	OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:						

100% SUBMITTAL

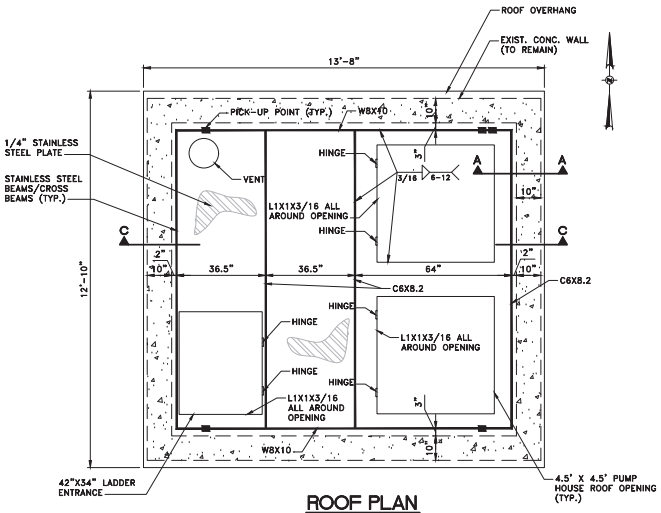
Revised Plans by Addendum No.5

STRUCTURAL GENERAL NOTES

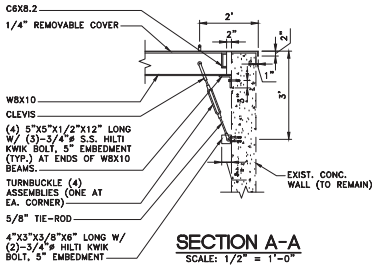
1. DESIGN IS IN ACCORDANCE WITH THE STATE OF FLORIDA BUILDING CODE, (2023) EDITION.
2. STAINLESS STEEL WIDE FLANGE BEAMS, CHANNELS SHALL CONFORM TO ASTM A276, ALLOY 316L.
3. STAINLESS STEEL PLATES SHALL CONFORM TO ASTM A240, ALLOY 316L.
4. STAINLESS STEEL BOLTS SHALL CONFORM TO ASTM F593D, ALLOY 316L.
5. STAINLESS STEEL NUTS AND WASHERS SHALL CONFORM TO ASTM F594 GROUP 2, ALLOY 316L.
6. ALL WELDING SHALL COMPLY WITH AWS D1.6 USING E316 ELECTRODES. ALL WELDERS TO BE CERTIFIED BY AWS.
7. CONTRACTOR MUST FIELD MEASURE EXACT VAULT DIMENSIONS PRIOR TO FABRICATION OF WORKING PLATFORM AND NEW ROOF. WORKING PLATFORM MUST BE INSTALLED PRIOR TO INSTALLATION OF DISCHARGE PIPES.
8. ALL LADDERS, HARDWARE, WIDE FLANGE BEAMS, CHANNELS, ANGLES, PLATES, RAILS, BRACKETS, BOLTS AND ANY FIXTURES OR SUPPORTS SHALL BE STAINLESS STEEL.
9. DESIGN LOADS:

   LIVE LOADS:
   FLOOR: 40 PSF
   ROOF: 20 PSF

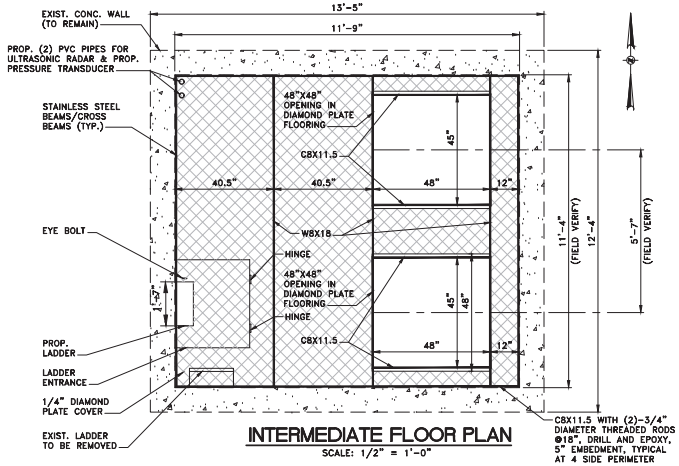
   WIND LOAD (ASCE 7-(22))
   BUILDING RISK CATEGORY III
   BASIC WIND SPEED V = (186) MPH
   EXPOSURE: D
   INTERNAL PRESSURE COEFFICIENT GCPI =+/-0.18
10. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR THE FOLLOWING ITEMS PRIOR TO FABRICATION: STRUCTURAL STEEL, STEEL PLATES, AND STEEL LADDER.



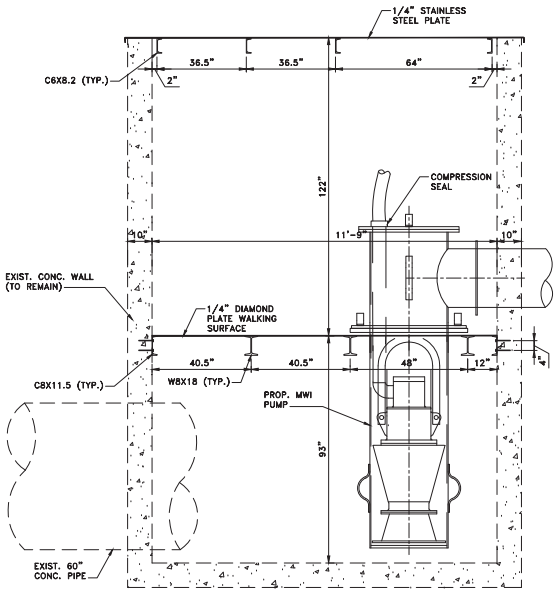
ROOF PLAN
SCALE: 1/2" = 1'-0"



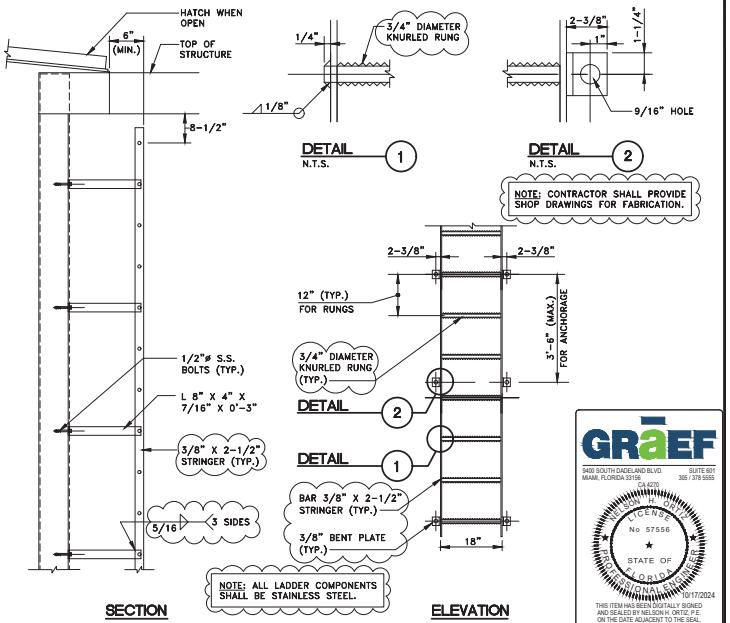
SECTION A-A
SCALE: 1/2" = 1'-0"



INTERMEDIATE FLOOR PLAN
SCALE: 1/2" = 1'-0"



SECTION C-C
SCALE: 1/2" = 1'-0"



LADDER DETAIL
N.T.S.

09/13/2024 ADDRESS M-D C COMMENTS
12/17/2021 ADDRESS M-D C COMMENTS

GRAEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270

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FOR THE FIRM: NELSON H. ORTIZ
PROJECT NO.: 2017-7053.01 PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	PS 110 PUMP HOUSE RETROFIT DETAILS	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01
DRAWN BY: P.F.	DATE:				DRAWING NO. C-11
CHECKED BY: N.H.O.	DATE:				OF 27 SHEETS

100% SUBMITTAL

GENERAL NOTES

1. ELEVATIONS SHOWN REFER TO THE NORTH GEODETIC VERTICAL DATUM. (N.G.V.D.).
2. HORIZONTAL AND VERTICAL CONTROL SHALL BE PROVIDED BY THE OWNER'S SURVEYOR. ALL CONSTRUCTION LAYOUT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. IT IS THE INTENT OF THESE PLANS TO BE IN ACCORDANCE WITH APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION. ANY DISCREPANCIES BETWEEN THESE PLANS AND APPLICABLE CODES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
4. IT IS THE INTENT OF THESE PLANS AND THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH LOCAL, STATE, AND FEDERAL ENVIRONMENTAL PERMITS ISSUED FOR THIS PROJECT. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH AND GOVERN HIMSELF BY ALL PROVISIONS OF THESE PERMITS.
5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL UNDERGROUND FACILITIES PRIOR TO THE START OF CONSTRUCTION AND COORDINATE WITH THE VARIOUS UTILITY COMPANIES TO RELOCATE, BYPASS, OR OTHERWISE ENSURE THAT UTILITY SERVICES WILL NOT BE INTERRUPTED DURING CONSTRUCTION.
6. EXISTING GRADES AND SOUNDINGS WERE TAKEN FROM THE BEST AVAILABLE DATA AND MAY NOT ACCURATELY REFLECT PRESENT CONDITIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH CURRENT SITE CONDITIONS, AND SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO STARTING WORK.
7. EXISTING CONDITIONS WERE TAKEN FROM THE SURVEY PREPARED BY MIAMI-DADE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS ROADWAY ENGINNERING AND RIGHT OF WAY DIVISION, MIAMI, FLORIDA, DATED JUNE 14, 2016.

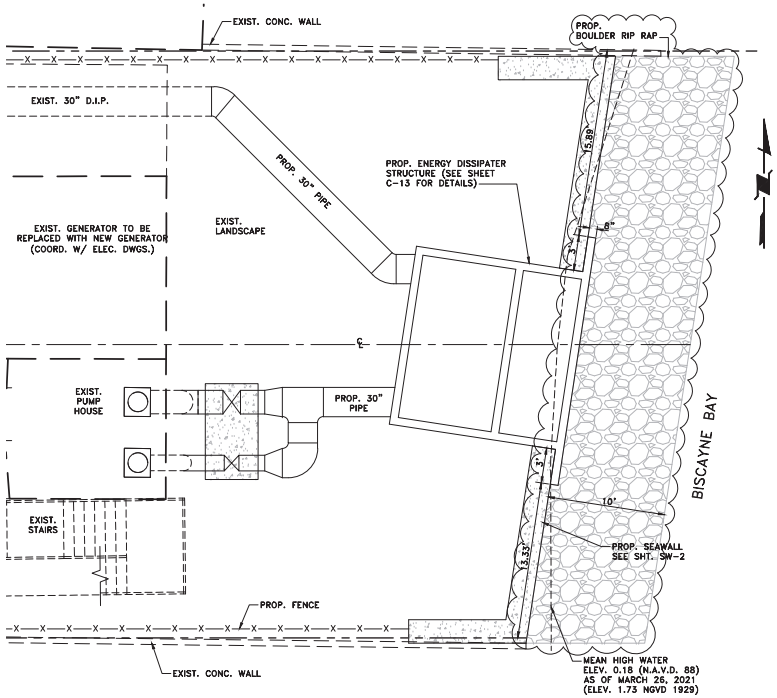
STRUCTURAL NOTES

1. ALL DEBRIS ASSOCIATED WITH CLEARING SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR.
2. CONCRETE PILES SHALL BE DRIVEN TO THE FOLLOWING CRITERIA:
   A. KING PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 25 TONS AND TO A TIP ELEVATION OF ELEV.
   B. BATTER PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 25 TONS AND A MINIMUM DEPTH OF EMBEDMENT OF FEET INTO FIRM MATERIAL.
3. CONCRETE PILES SHALL BE 12" SQUARE PRECAST PRESTRESSED PILES, AS DETAILED IN THESE DRAWINGS.
4. SHOP DRAWINGS FOR ALL REBAR SHALL SHOW THE ACTUAL MILL MARK ON THE REBARS MEETING ASTM A615.
5. SPLICES IN REINFORCING STEEL BARS SHALL BE A MINIMUM OF 36 BAR DIAMETERS EXCEPT WHERE DIMENSIONED OTHERWISE.
6. MINIMUM CONCRETE COVER FOR REINFORCING SHALL BE AS DETAILED IN THESE DRAWINGS. WHERE THIS COVER IS NOT DIMENSIONED, USE THE SAME AS DIMENSIONED FOR SIMILAR ITEMS. WHERE THERE ARE NO SIMILAR ITEMS THAT INDICATE THE AMOUNT OF COVER, 3 INCHES OF COVER SHALL BE PROVIDED.
7. THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS FOR ALL PRECAST UNITS AND SHALL NOT PROCEED WITH THE MANUFACTURE OF THESE ITEMS PRIOR TO RECEIVING APPROVAL OF THE ENGINEER.
8. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL DIMENSIONS PRIOR TO CASTING ANY NON-TYPICAL CONCRETE PANELS. RE-CASTING OF ANY NON-TYPICAL CONCRETE PANEL DUE TO A DISCREPANCY IN DIMENSIONS SHALL AT THE CONTRACTOR'S EXPENSE.
9. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4", OR AS SHOWN.
10. ALL EXPOSED CONCRETE SURFACES SHALL HAVE A LIGHT BROOM FINISH.
11. EXPANSION JOINTS SHALL BE PREFORMED BITUMINOUS MATERIAL CONFORMING TO ASTM D1751 AND LOCATED AS SHOWN IN THESE DRAWINGS.
12. NO CONSTRUCTION JOINTS, OTHER THAN SHOWN, SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.
13. ALL BACKFILL WHICH MAY BE REQUIRED FOR THE PROJECT WILL BE ACQUIRED FROM OFF-SITE SOURCES. CONTRACTOR SHALL BEAR ALL COSTS OF TRANSPORT OF THIS MATERIAL TO AND WITHIN THE PROJECT SITE.
14. TESTING OF CONCRETE: TESTING LABORATORY WILL BE RETAINED BY THE OWNER TO VERIFY SPECIFIED CONCRETE STRENGTHS. FAILURE OF ANY CONCRETE CYLINDER TO MEET SPECIFIED REQUIREMENTS SHALL BE DEEMED NON-COMPLYING. ALL COSTS OF ADDITIONAL TESTING TO DETERMINE ADEQUACY AND/OR REPLACEMENT OF DEFECTIVE WORK SHALL BE BORNE BY CONTRACTOR.
15. SILT BARRIERS: FLOATING SILT BARRIERS SHALL BE INSTALLED AROUND ALL GRADING OPERATIONS AND AROUND PILE OPERATIONS (PREDRILLING PILE HOLES AND PILE DRIVING), WHERE NECESSARY, SUCH THAT ALL REQUIRED TURBIDITY LIMITS AS DESIGNATED BY ENVIRONMENTAL REGULATORY AGENCIES ARE MAINTAINED.

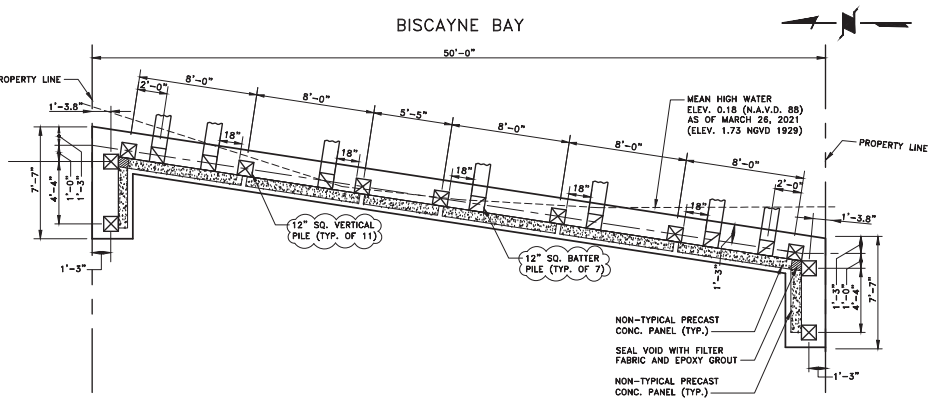
MATERIAL AND DESIGN DATA

A. MATERIALS:
1. CONCRETE: (Fc' = MIN. COMPRESSIVE STRENGTH AT 28 DAYS)
   A. CAST-IN-PLACE CONCRETE.....Fc' = 4,000 PSI
   B. PRECAST CONCRETE.....Fc' = 4,000 PSI
   C. PRECAST PRESTRESSED CONCRETE PILES.....Fc' = 5,500 PSI
2. CONCRETE PILES SHALL BE 12" SQUARE PRECAST PRESTRESSED PILES WITH FOUR 1/2"ø 270K LO-LAX STRANDS WITH #5 GAGE WIRE SPIRAL TIES.
3. REBAR, ANY SIZES, SHALL BE GALVANIZED STEEL AND SHALL CONFORM TO ASTM A615, GRADE 60.
4. ACCESSORIES SHALL BE ASTM A-36.
5. GEOTEXTILE FABRIC SHALL BE NON-WOVEN POLYPROPYLENE, MIRAFI 140N OR APPROVED EQUAL AT EACH PILE LOCATION (24" MIN. WIDTH).

B. STRUCTURAL DESIGN IN ACCORDANCE WITH THE FOLLOWING CODES AND SPECIFICATIONS:
1. THE FLORIDA BUILDING CODE (CURRENT EDITION).
2. ACI STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318).



N.E. 110 STREET PUMP STATION SEAWALL
SCALE: 1" = 5'



PILE LAYOUT PLAN
SCALE: 1/4" = 1'-0"

09/13/2024 ADDRESS M-D C COMMENTS

GRÄEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270

NELSON H. ORTIZ
LICENSED
No 57556
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
10/17/2024

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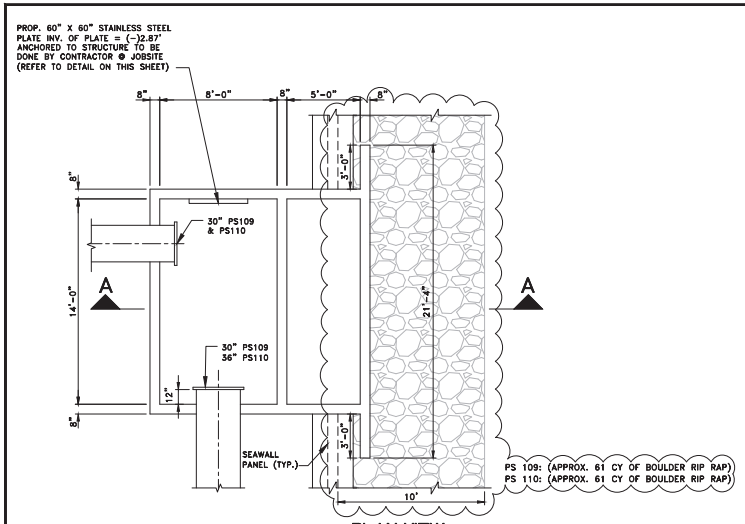
FOR THE FIRM: NELSON H. ORTIZ
PROJECT NO. 2017-7053.01 PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	PS 110 SEAWALL PLAN AND DETAILS	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 12
DRAWN BY: P.F.	DATE:					DRAWING NO. C-12	OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:						

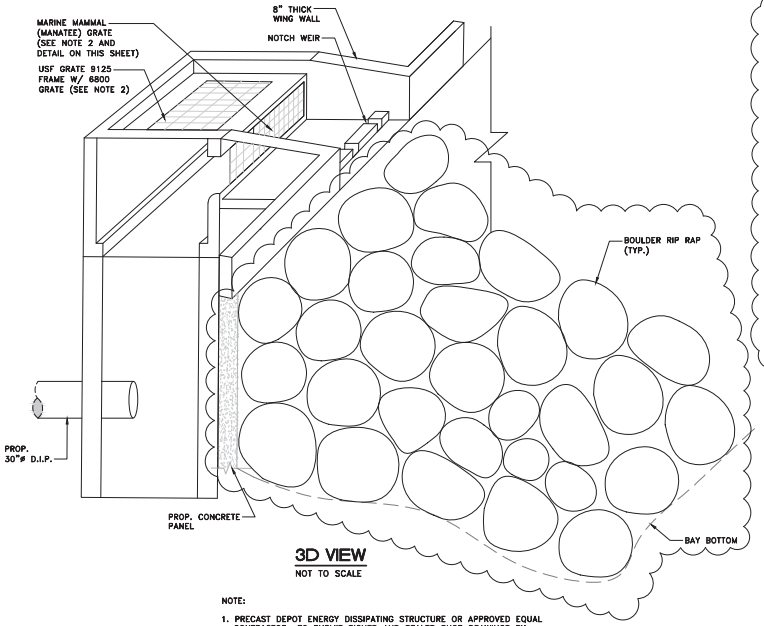
100% SUBMITTAL

Revised Plans by Addendum No.5



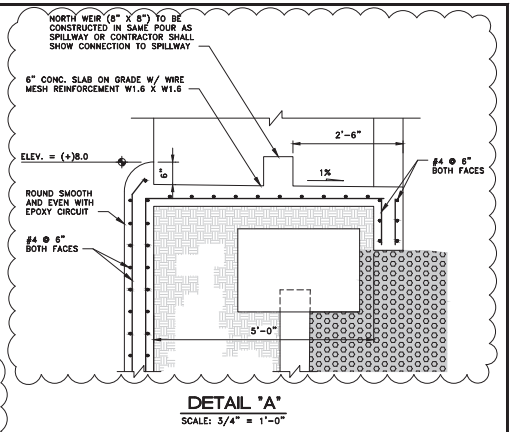
PLAN VIEW

SCALE: 1" = 4'



3D VIEW

NOT TO SCALE

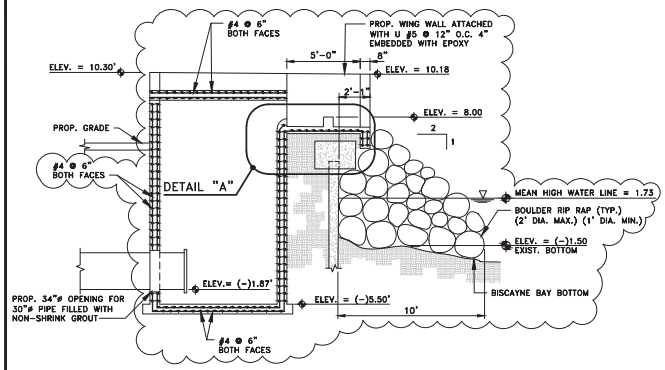


DETAIL "A"

SCALE: 3/4" = 1'-0"

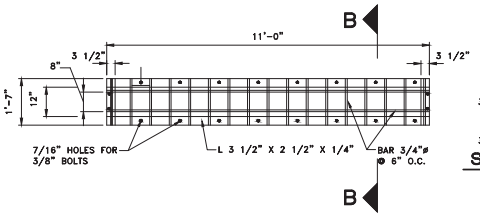
NOTE:

1. PRECAST DEPOT ENERGY DISSIPATING STRUCTURE OR APPROVED EQUAL CONTRACTOR TO SUBMIT SIGNED AND SEALED SHOP DRAWINGS BY SPECIALTY ENGINEER FOR ENGINEER'S APPROVAL SHOP DRAWINGS TO INCLUDE ANCHORAGE SPECIFICATIONS.
2. GRATE 6800 AND MARINE MAMMAL (MANATEE) GRATE TO BE REMOVABLE AND LOCKABLE. CONTRACTOR TO SHOW IN SHOP DRAWINGS AND SUBMIT FOR ENGINEER'S APPROVAL.



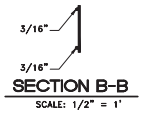
SECTION A-A

SCALE: 1" = 4'



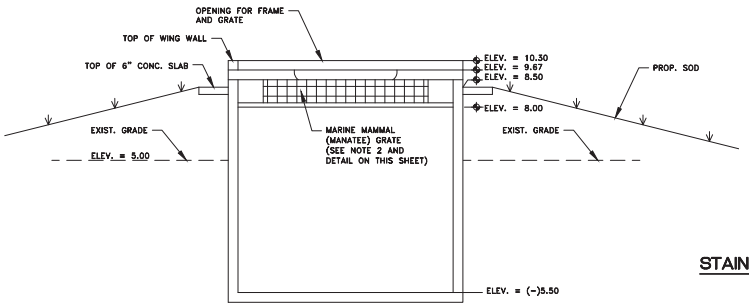
STRUCTURAL DETAIL OF MANATEE GRATE

SCALE: 1/2" = 1'



SECTION B-B

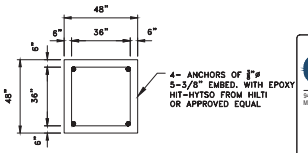
SCALE: 1/2" = 1'



FRONT VIEW

NOT TO SCALE

NOTE: ALL METAL MUST BE STAINLESS STEEL.



STAINLESS STEEL PLATE DETAIL

SCALE: 1/4" = 1'

09/13/2024 ADDRESS M-D C COMMENTS
05/22/2024 ADDRESS DERM COMMENTS
07/20/2023 ADDRESS DERM COMMENTS
12/17/2021 ADDRESS M-D C COMMENTS
08/10/2021 ADDRESS SFWMD COMMENTS
04/15/2021 ADDRESS SFWMD COMMENTS

DATUM: N.G.V.D. 29

GRAEF

9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270

NELSON H. ORTIZ
LICENSED
No 57556
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

10/17/2024

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FOR THE FIRM: NELSON H. ORTIZ
PROJECT NO. 2017-7053.01 PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	ENERGY DISSIPATOR DETAILS	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 13
DRAWN BY: P.F.	DATE:					DRAWING NO. C-13	OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:						

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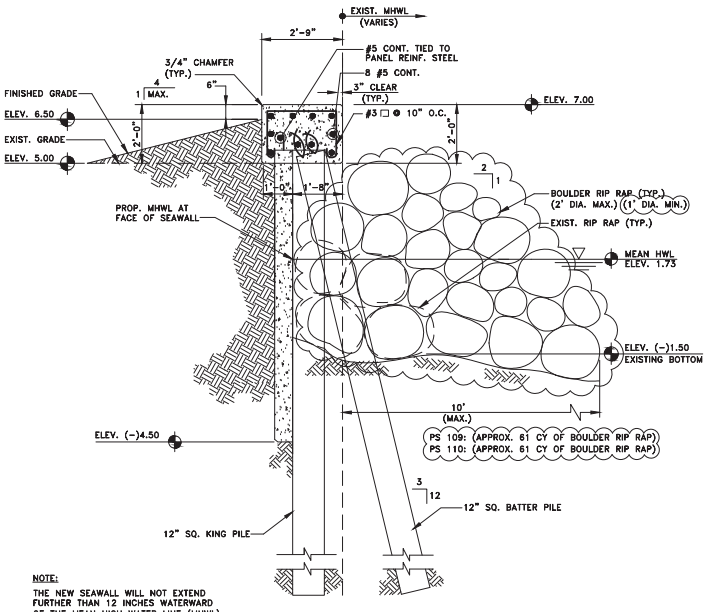
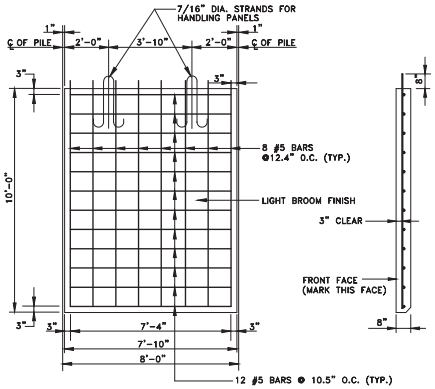
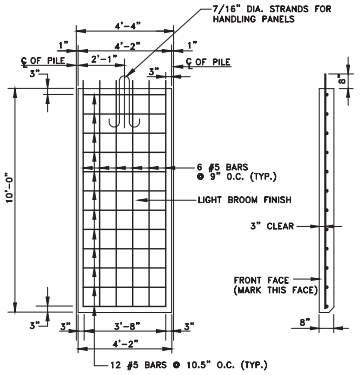


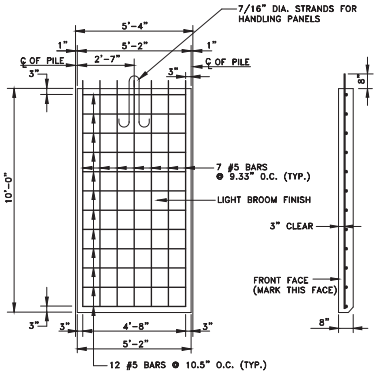
SECTION A-A
SCALE: 1/2" = 1'-0"



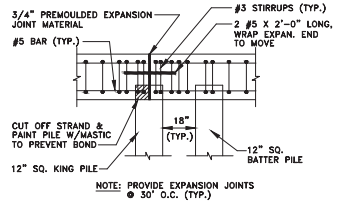
DETAIL: TYPICAL PRECAST CONCRETE PANEL
SCALE: 3/8" = 1'-0"



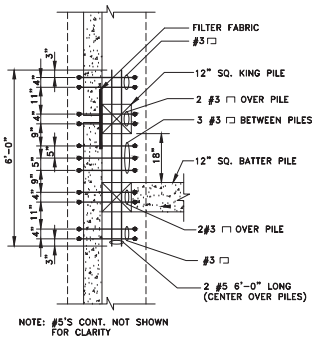
DETAIL: NON-TYPICAL PRECAST CONCRETE PANEL
SCALE: 3/8" = 1'-0"



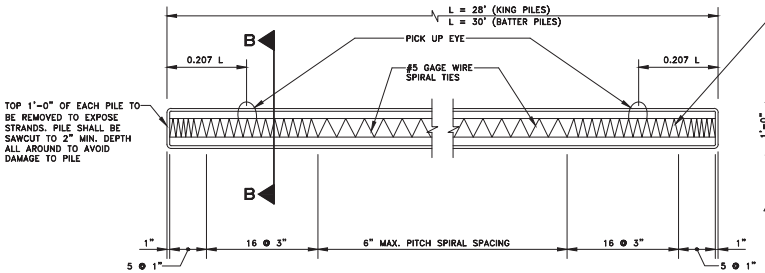
DETAIL: NON-TYPICAL PRECAST CONCRETE PANEL
SCALE: 3/8" = 1'-0"



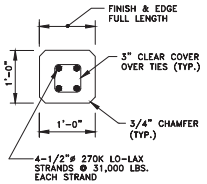
TYPICAL ELEVATION AT EXPANSION JOINT
N.T.S.



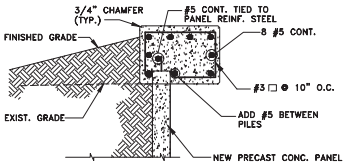
PLAN: ADDED REINF. @ PILES
SCALE: 1/2" = 1'-0"



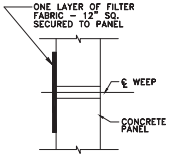
12" X 12" PRESTRESSED CONCRETE PILE
N.T.S.



SECTION B-B
N.T.S.



TYPICAL CAP SECTION BETWEEN PILES
N.T.S.



WEEP DETAIL
N.T.S.

09/13/2024 ADDRESS M-D C COMMENTS
07/20/2023 ADDRESS DERM COMMENTS
08/10/2021 ADDRESS SFWMD COMMENTS
04/15/2021 ADDRESS SFWMD COMMENTS

GRÄEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270

NELSON H. ORTIZ
LICENSED
No 57556
STATE OF FLORIDA
PROFESSIONAL ENGINEER
10/17/2024

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FOR THE FIRM: PROJECT NO. 2017-7053.01
NELSON H. ORTIZ PE-57556 (CIVIL)

DATUM: N.G.V.D. 29

DESIGN BY: J.R.G.	DATE: 04/10/2020	SEAWALL DETAILS AND SECTIONS	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 14
DRAWN BY: P.F.	DATE:					DRAWING NO. C-14	OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:						

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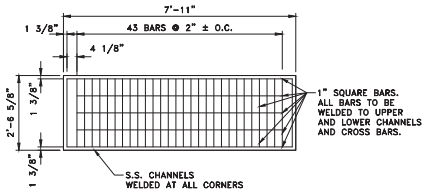
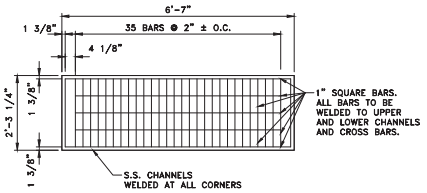
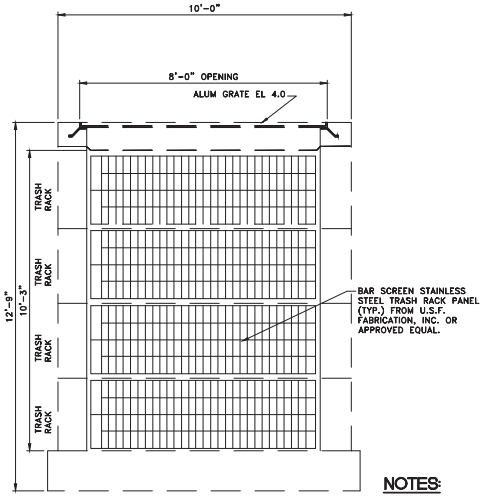


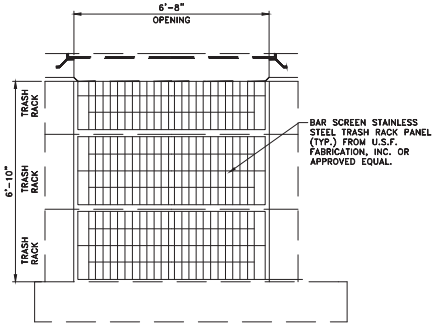
P.S. 109 TRASH RACK DETAIL
N.T.S.



P.S. 110 TRASH RACK DETAIL
N.T.S.



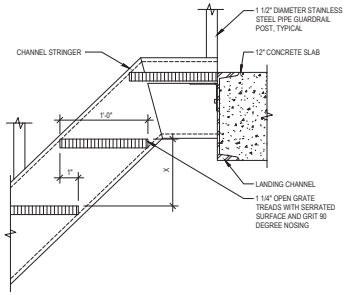
P.S. 109 STAINLESS STEEL TRASH RACK
SCALE: 1/2" = 1'



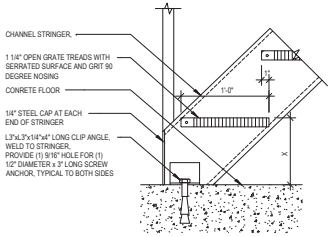
P.S. 110 STAINLESS STEEL TRASH RACK
SCALE: 1/2" = 1'

NOTES:

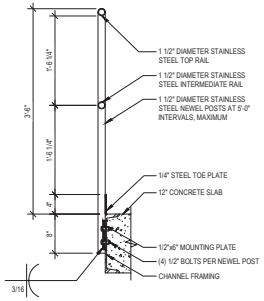
1. SHOP DRAWINGS OF TRASH RACK MUST BE PROVIDED BY CONTRACTOR FOR APPROVAL BY ENGINEER PRIOR TO FABRICATION.



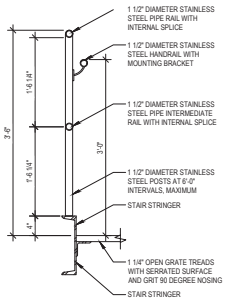
GRATE TREADS WITH OPEN RISERS AT LANDING CONNECTION DETAIL
SCALE: 1-1/2" = 1'-0"



GRATE TREADS WITH OPEN RISERS FLOOR CONNECTION DETAIL
SCALE: 1-1/2" = 1'-0"



SIDE MOUNTED PIPE GUARDRAIL SECTION
SCALE: 1" = 1'-0"



STAIR GUARRAIL AND HANDRAIL SECTION
SCALE: 1" = 1'-0"

NOTE: CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR FABRICATION.

09/13/2024 ADDRESS M-D C COMMENTS

GRÄEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270

NELSON H. ORTIZ LICENSE No 57556 STATE OF FLORIDA PROFESSIONAL ENGINEER

10/17/2024

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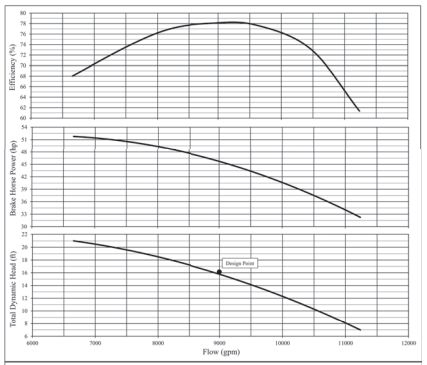
FOR THE FIRM: PROJECT NO. 2017-7053.01
NELSON H. ORTIZ PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	TRASH INTERCEPTOR DETAILS	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 15
DRAWN BY: P.F.	DATE:					DRAWING NO. C-15	OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:						

100% SUBMITTAL



MWI CORPORATION ESTABLISHED 1926

PUMP BOWL PERFORMANCE CURVE

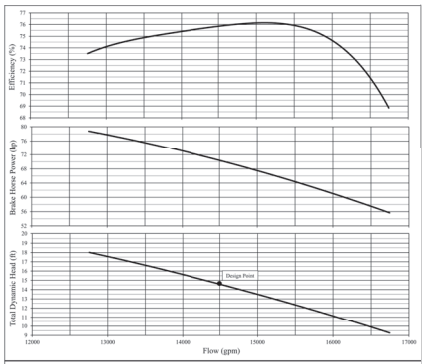
Project: Miami Dade Biscayne Shores 110th PS 9000

TYPE: Axial Flow	PROPELLER DIA: 18 in
MODEL NO.: SEA318X20	SPEED: 1180 RPM
INTAKE DIA: 27 in	DISCHARGE DIA: 20 in

SINGLE STAGE PERFORMANCE
FOR TWO STAGES MULTIPLY HEAD AND HORSEPOWER BY 2.0 AND EFFICIENCY BY 1.0
PERFORMANCE IS BASED ON PUMPING CLEAR, NON-AERATED WATER, WITH A SPECIFIC GRAVITY OF 1.0, TEMPERATURE 85 DEG F OR LESS AND AT SEA LEVEL. PUMP PERFORMANCE MAY BE AFFECTED BY HIGHER TEMPERATURES, SPECIFIC GRAVITY, ALTITUDES, AND SUMP CONDITIONS.

IT IS HEREBY CERTIFIED THAT THIS CURVE REPRESENTS THE TRUE PERFORMANCE CHARACTERISTICS OF THE MWI PUMP MANUFACTURED AND WAS OBTAINED BY SCALE MODEL TEST AND CALCULATIONS IN ACCORDANCE WITH STANDARDS OF THE HYDRAULIC INSTITUTE.

MWI CORPORATION CERTIFIED BY:
MWI CORPORATION Deerfield Beach, Florida



MWI CORPORATION ESTABLISHED 1926

PUMP BOWL PERFORMANCE CURVE

Project: Miami Dade Biscayne Shores 110th PS 14500

TYPE: Axial Flow	PROPELLER DIA: 24 in
MODEL NO.: SEA324X26	SPEED: 700 RPM
INTAKE DIA: 36 in	DISCHARGE DIA: 26 in

SINGLE STAGE PERFORMANCE
FOR TWO STAGES MULTIPLY HEAD AND HORSEPOWER BY 2.0 AND EFFICIENCY BY 1.0
PERFORMANCE IS BASED ON PUMPING CLEAR, NON-AERATED WATER, WITH A SPECIFIC GRAVITY OF 1.0, TEMPERATURE 85 DEG F OR LESS AND AT SEA LEVEL. PUMP PERFORMANCE MAY BE AFFECTED BY HIGHER TEMPERATURES, SPECIFIC GRAVITY, ALTITUDES, AND SUMP CONDITIONS.

IT IS HEREBY CERTIFIED THAT THIS CURVE REPRESENTS THE TRUE PERFORMANCE CHARACTERISTICS OF THE MWI PUMP MANUFACTURED AND WAS OBTAINED BY SCALE MODEL TEST AND CALCULATIONS IN ACCORDANCE WITH STANDARDS OF THE HYDRAULIC INSTITUTE.

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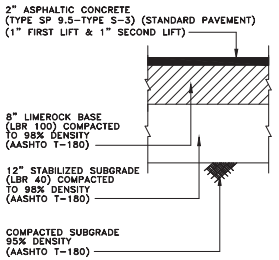
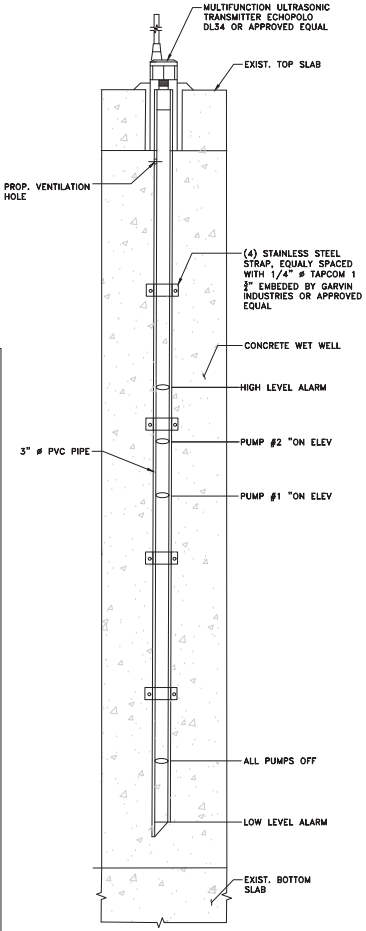
MWI CORPORATION Deerfield Beach, Florida



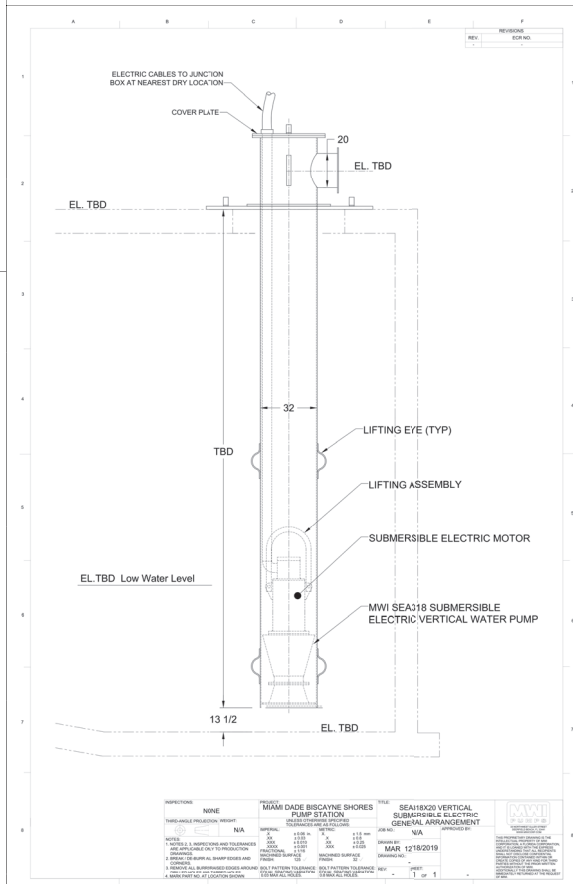
ASPHALTIC PAVEMENT SECTION

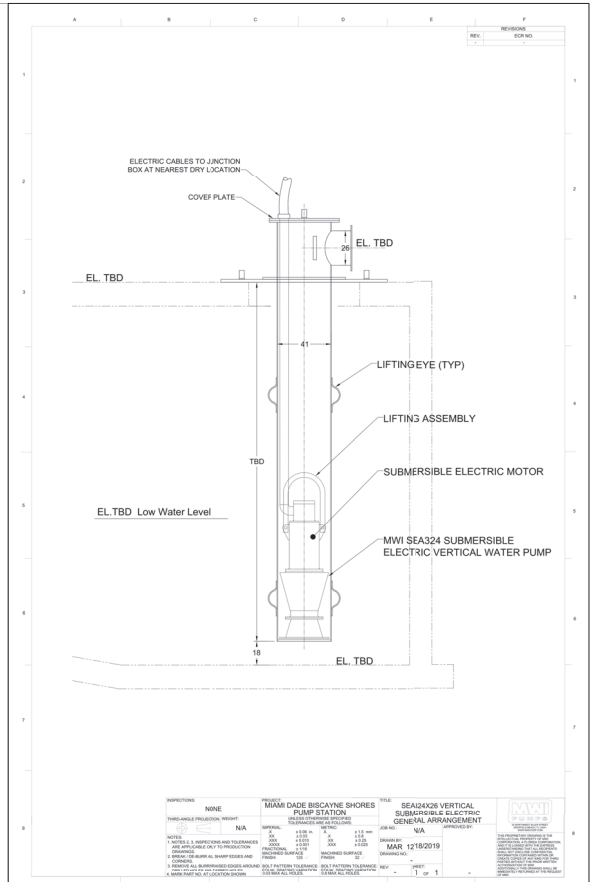
SCALE: 1" = 1'-0"



ULTRASONIC TRANSMITTER DETAIL

N.T.S





GRAEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270

NELSON H. ORTIZ
LICENSED
No 57556
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

10/17/2024

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FOR THE FIRM: NELSON H. ORTIZ
PROJECT NO.: 2017-7053.01 PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	MISCELLANEOUS DETAILS & NOTES	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT
DRAWN BY: P.F.	DATE:		
CHECKED BY: N.H.O.	DATE:		

MIAMI-DADE COUNTY

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
STEPHEN P. CLARK CENTER
111 NW 1ST STREET, 16TH FLOOR
MIAMI, FLORIDA 33128

PROJECT NO. 17053.01	SHEET NO. 16
DRAWING NO. C-16	OF 27 SHEETS

100% SUBMITTAL

A. GENERAL NOTES

ENVIRONMENTAL CONTROL FEATURES AS PROVIDED IN PLANS ARE TO BE INSTALLED AT ALL AREAS OF EXCAVATION OR FILL FOR DRAINAGE SYSTEM OR STRUCTURE CONSTRUCTION PRIOR TO SUCH EXCAVATION OR FILL. INLET ENTRANCES ARE ALSO TO BE PROTECTED FROM SILTATION AS DETAILED IN THE FDOT STANDARDS.

ALL ENVIRONMENTAL CONTROL FEATURES ARE TO BE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT IN ACCORDANCE WITH FDEP'S NPDES REQUIREMENTS. THE CONTRACTOR MUST ENSURE THAT ALL EROSION CONTROL FEATURES FUNCTION PROPERLY AT ALL TIMES.

ALL EROSION AND MATERIAL DEPOSITS MUST BE CONTAINED WITHIN THE PROJECT LIMITS.

CONTRACTOR'S SUBMITTALS: THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING THE FOLLOWING ITEMS TO FDEP IN ORDER FOR THE NPDES PERMIT TO BE PROCESSED:

IF THIS SWPPP IS ADOPTED BY THE CONTRACTOR, THE SWPPP SHEETS AND OTHER PLAN SHEETS SHALL BE INCLUDED BY REFERENCE IN THE NOTICE OF INTENT (NOI) SUBMITTAL. THE CONTRACTOR MAY ELECT TO SUBMIT A REVISED SWPPP THAT IS IN COMPLIANCE WITH THE STORM WATER REGULATIONS AT 40 CFR 122.26(B)(14) AND STATE WATER QUALITY STANDARDS. SIGNED CONTRACTOR CERTIFICATION FORMS (2). THESE FORMS MUST BE SIGNED BY BOTH THE PRIME CONTRACTOR AND SUB-CONTRACTOR (IF APPLICABLE) PERFORMING SOIL-DISTURBING ACTIVITIES.
HAZARDOUS MATERIAL SPILL CONTROL PLAN.
STAGING AREAS, STOCKPILE LOCATIONS AND STABILIZATION PRACTICES.
BRIDGE CONSTRUCTION METHOD AND SEQUENCING (IF APPLICABLE).
DEWATERING PLAN (IF APPLICABLE).

NO SOIL DISTURBING ACTIVITIES CAN BE CONDUCTED UNTIL THE NPDES PACKAGE HAS BEEN MAILED TO THE FDEP.

ANY DAMAGED OR INEFFECTIVE BAGS ARE TO BE REPLACED WITH NEW ONES. THE LOCATION OF ROCK BAG INSTALLATION IS AS MENTIONED IN EROSION CONTROL PLANS. THE PROJECT ENGINEER MAY SPECIFY OTHER AREAS AS NECESSARY.

DITCH BOTTOM INLETS SHALL BE PROTECTED FROM SEDIMENT INTAKE UNTIL PROJECT IS COMPLETE. ELEVATION OF GROUND OUTSIDE INLET TOP SHALL NOT BE HIGHER THAN INLET TOP. ROCK BAGS SHALL BE INSTALLED AROUND INLET TOP.

COMPLETED INLETS IN PAVED AREAS SHALL ALSO BE PROTECTED WITH ROCK BAGS TO PREVENT SEDIMENT INTAKE FROM OTHER AREAS.

CURB INLETS ALSO SHALL BE PROTECTED FROM SEDIMENT INTAKE UNTIL THE PROJECT IS COMPLETE. ALL FILL EMBANKMENT AND GRADED AREAS SHALL BE PROTECTED AGAINST EROSION BY METHODS STATED IN "SECTION ID4" FDOT STANDARDS SPECIFICATIONS FOR BRIDGE AND ROAD CONSTRUCTION.

STOCKPILED MATERIALS SHALL NOT BE LEFT IN EROSION PRONE AREAS UNLESS PROTECTED BY COVER AND/OR OTHER APPROPRIATE EROSION CONTROL MEASURES.

INSPECTION OF EROSION CONTROL MEASURES AND CONDITION OF ADJACENT PROPERTIES SHALL BE PERFORMED DAILY BY THE CONTRACTOR'S REPRESENTATIVE AND THE PROJECT ENGINEER. DEFICIENCIES SHALL BE NOTED AND CORRECTED.

ANY OFFSITE SEDIMENT DISCHARGE TO A MUNICIPALLY SEPARATE STORM SEWER SYSTEM ARISING FROM THE CONTRACTOR'S ACTIVITIES SHALL HAVE EROSION CONTROLS PROVIDED FOR THOSE INLETS.

THE AGGREGATE LAYER OF ALL CONSTRUCTION ENTRANCE GRAVEL BEDS MUST BE AT LEAST 6 INCHES THICK. IT MUST EXTEND THE FULL WIDTH OF THE VEHICULAR INGRESS AND EGRESS AREA. THE LENGTH OF THE ENTRANCE MUST BE AT LEAST 50 FEET. THE ENTRANCE MUST WIDEN AT ITS CONNECTION TO THE ROADWAY IN ORDER TO ACCOMMODATE THE TURNING RADIUS OF LARGE TRUCKS.

B. SITE DESCRIPTION

1. CONSTRUCTION ACTIVITY:
   CLEARING AND DEMOLITION; DRAINAGE AND UTILITY INSTALLATION, NEW BUILDING, LAND DEVELOPMENT.

   PROJECT LIMITS:
   MIAMI-DADE COUNTY PS 109 AND 110 LOCATED IN BISCAYNE SHORES BETWEEN N. BAYSHORE DRIVE AND BISCAYNE BAY.

   PROJECT DESCRIPTION:

   REPLACE EXISTING PUMPS AT PS 110 AND DISCONNECT ELECTRIC DEPENDANCY AT PS 109 FROM PS 110. SEAWALL REPLACEMENT AT BOTH SITES WITH CONCRETE PILE AND PANEL AND INSTALLATION OF NEW DISSIPATOR STRUCTURES. CONSTRUCTION OF NEW GENERATOR HOUSE AND REPLACEMENT OF ROOF AND FLOOR OF EXISTING PUMP HOUSE.

2. MAJOR SOIL DISTURBING ACTIVITIES:

   DEMOLITION; CLEARING; EXCAVATION FOR STORMWATER FACILITIES, PARKING, AND OTHER UTILITIES.

3. TOTAL PROJECT AREA: 0.324 ACRES
   TOTAL AREA TO BE DISTURBED: 0.324 ACRES

4. LOCATIONS OF DRAINAGE AREAS AND OUTFALLS:
   SEE ATTACHED PLAN.

5. THE DRAINAGE SYSTEM RECEIVING WATER IN THE EVENT OF A MAJOR STORM EVENT WILL BE BISCAYNE BAY AT LATITUDE AND LONGITUDE 25°52'37.0"N / 80°09'50.0"W AND 25°52'34.2"N / 80°09'50.2"W.

6. AREA OF DISCHARGE FOR THIS PROJECT IS ACRES = 14,424 SF

7. SOILS ARE CLASSIFIED AS URBAN LAND AND QUALITY OF DISCHARGE IS LIMEROCK FILL AND SAND.

8. LATITUDE AND LONGITUDE OF DIRECT DISCHARGE POINTS ARE 25°52'37.0"N / 80°09'50.0"W AND 25°52'34.2"N / 80°09'50.2"W.

C. CONTROLS

NARRATIVE – SEQUENCE OF SOIL DISTURBING ACTIVITIES AND IMPLEMENTATION OF CONTROLS.

1. CLEARING AND DEMOLITION

2. CONSTRUCTION OF REPLACEMENT SEAWALL AT PS 109 AND PS 110.

3. REPLACEMENT OF PUMPS AT PS 110.

4. CONSTRUCTION OF NEW GENERATOR HOUSE.

5. REPLACEMENT OF FLOOR AND ROOF OF EXISTING PUMP HOUSE.

PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES, ALL EROSION CONTROLS MUST BE IMPLEMENTED.

1. TEMPORARY STABILIZATION:
   DISTURBED PORTIONS OF THE SITE (E.G. EMBANKMENT AT TEMPORARY RAMPS) WHERE CONSTRUCTION ACTIVITY CEASES FOR AT LEAST 21 DAYS, SHALL BE STABILIZED WITH TEMPORARY SOD OR TEMPORARY SEEDING AND MULCHING NO LATER THAN 14 DAYS FROM THE LAST CONSTRUCTION ACTIVITY IN THAT AREA.

   PERMANENT STABILIZATION: DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY PERMANENTLY CEASES SHALL BE STABILIZED WITH SOD NO LATER THAN 14 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY.

   EROSION AND SEDIMENT CONTROLS:

   (1) STABILIZATION PRACTICES:
   _____ TEMPORARY SODDING
   _____ TEMPORARY GRASSING
   __X__ PERMANENT SODDING, SEEDING OR SEED & MULCH
   _____ TEMPORARY MULCHING
   _____ ARTIFICIAL COVERING
   _____ BUFFER ZONES
   _____ PRESERVATION OF NATURAL RESOURCES

   OTHER:

   (2) STRUCTURAL PRACTICES:
   _____ SAND BAGGING
   __X__ SILT FENCES
   _____ ROCK BAGS
   _____ BERMS
   _____ DIVERSION, INTERCEPTOR, OR PERIMETER DITCHES
   _____ PIPE SLOPE DRAINS
   _____ FLUMES
   __X__ ROCK BEDDING AT CONSTRUCTION EXIT
   _____ TIMBER BEDDING AT CONSTRUCTION EXIT
   _____ DITCH LINER
   _____ SEDIMENT TRAPS
   _____ SEDIMENT BASINS
   __X__ STORM INLET SEDIMENT TRAP
   _____ STONE OUTLET STRUCTURES
   _____ CURBS AND GUTTERS
   __X__ STORM SEWERS
   _____ VELOCITY CONTROL DEVICES
   __X__ TURBIDITY BARRIER
   _____ RIP RAP

2. DESCRIPTION OF STORM WATER MANAGEMENT:

   THE STORMWATER MANAGEMENT SYSTEM CONSISTS OF RAINWATER LEADERS THAT CONVEY STORMWATER INTO CATCH BASINS, AND EXFILTRATION TRENCHES THAT TREAT THE WATER QUALITY REQUIREMENTS.

   OTHER CONTROLS
   (1) WASTE DISPOSAL:
   IN APPROVED OFFSITE AREAS PROVIDED BY THE CONTRACTOR.

   (2) OFFSITE VEHICLE TRACKING:
   __X__ HAUL ROADS DAMPENED FOR DUST CONTROL
   __X__ LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
   __X__ EXCESS DIRT ON ROAD REMOVED DAILY
   __X__ STABILIZED CONSTRUCTION ENTRANCE

3. OTHER:

   (1) SANITARY WASTE: ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS AS NECESSARY OR AS REQUIRED BY LOCAL REGULATION OF A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.
   (2) FERTILIZERS AND PESTICIDES: FERTILIZER TO BE APPLIED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER. IF STORED ON-SITE, STORAGE WILL BE IN COVERED SHED. THE CONTENT OF ANY PARTIALLY USED BAGS OF FERTILIZER WILL BE TRANSFERRED TO A SEPARATE PLASTIC BIN TO AVOID SPILLS.
   (3) NON-STORM WATER DISCHARGE (INCLUDING SPILL REPORTING) THE CONTRACTOR IS RESPONSIBLE FOR REPORTING SPILLS TO MIAMI-DADE COUNTY DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER). DEWATERING IS NOT ANTICIPATED.

4. REMARKS:

   IF CONTAMINATED SOIL OR GROUNDWATER IS ENCOUNTERED OR HAZARDOUS SPILLS OCCUR DURING CONSTRUCTION THE MIAMI-DADE COUNTY DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER) SHALL BE CONTACTED AT THEIR HOTLINE: (305) 372-6955.

   APPROVED STATE, LOCAL PLANS, OR STORM WATER PERMITS: MIAMI-DADE COUNTY BUILDING DEPARTMENT, MIAMI-DADE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS AND MIAMI-DADE COUNTY RER.

D. MAINTENANCE

ITEM:	MAINTENANCE:
SILT FENCE	ALL CONTROLS SHALL BE MAINTAINED IN PROPER WORKING ORDER AT ALL TIMES DURING CONSTRUCTION. IF A REPAIR IS NECESSARY, IT WILL BE INITIATED WITHIN 24 HOURS OF BEING NOTED IN CONTRACTOR'S DAILY INSPECTION REPORT.
CONSTRUCTION ENTRANCE	WHEN THE CONSTRUCTION ENTRANCE GRAVEL BEDS BECOME LOADED WITH SEDIMENTS, REWORK BEDS TO DISPLACE SEDIMENT LOAD AND RE-ESTABLISH EFFECTIVENESS OF THE GRAVEL BEDS.
	ALL CONTROLS SHALL BE MAINTAINED IN PROPER WORKING ORDER AT ALL TIMES DURING CONSTRUCTION. IF A REPAIR IS NECESSARY, IT WILL BE INITIATED WITHIN 24 HOURS OF BEING NOTED IN CONTRACTOR'S DAILY INSPECTION REPORT.

E. INSPECTION

THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL FEATURES AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM OF 0.5" OR GREATER. IN ADDITION, A DAILY REVIEW OF THE LOCATION OF SILT FENCES SHALL BE MADE IN AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CHANGED THE NATURAL CONTOUR AND DRAINAGE RUNOFF. IN ORDER TO INSURE THAT SILT FENCES AND OTHER EROSION CONTROL DEVICES ARE PROPERLY LOCATED FOR EFFECTIVENESS. A FORM ACCEPTABLE TO THE FDEP WILL BE USED TO REPORT ALL INSPECTION FINDINGS AND CORRECTIVE ACTIONS TAKEN AS A RESULT OF THE INSPECTION. EACH INSPECTION REPORT SHALL BE SIGNED AND SUBMITTED WEEKLY TO THE PROJECT ENGINEER. IF A REPAIR IS NECESSARY, IT WILL BE INITIATED WITHIN 24 HOURS OF BEING NOTED IN CONTRACTOR'S INSPECTION REPORT.

STATE OF FLORIDA E&SC DESIGNER & REVIEWER MANUAL; LATEST EDITION: JULY 2013

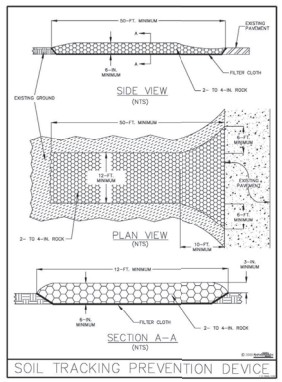
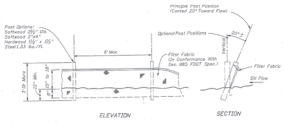


Figure V-19: Illustration of a Soil Tracking Prevention Device

V-44



TYPE III SILT FENCE DETAIL
(FDOT INDEX 102) N.T.S.

GRAEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270

NELSON H. ORTIZ
LICENSED
No 57556
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
10/17/2024

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FOR THE FIRM: NELSON H. ORTIZ
PROJECT NO.: 2017-7053.01 PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	STORMWATER POLLUTION PREVENTION PLAN DETAILS AND NOTES	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 17
DRAWN BY: P.F.	DATE:					DRAWING NO. C-17	OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:						

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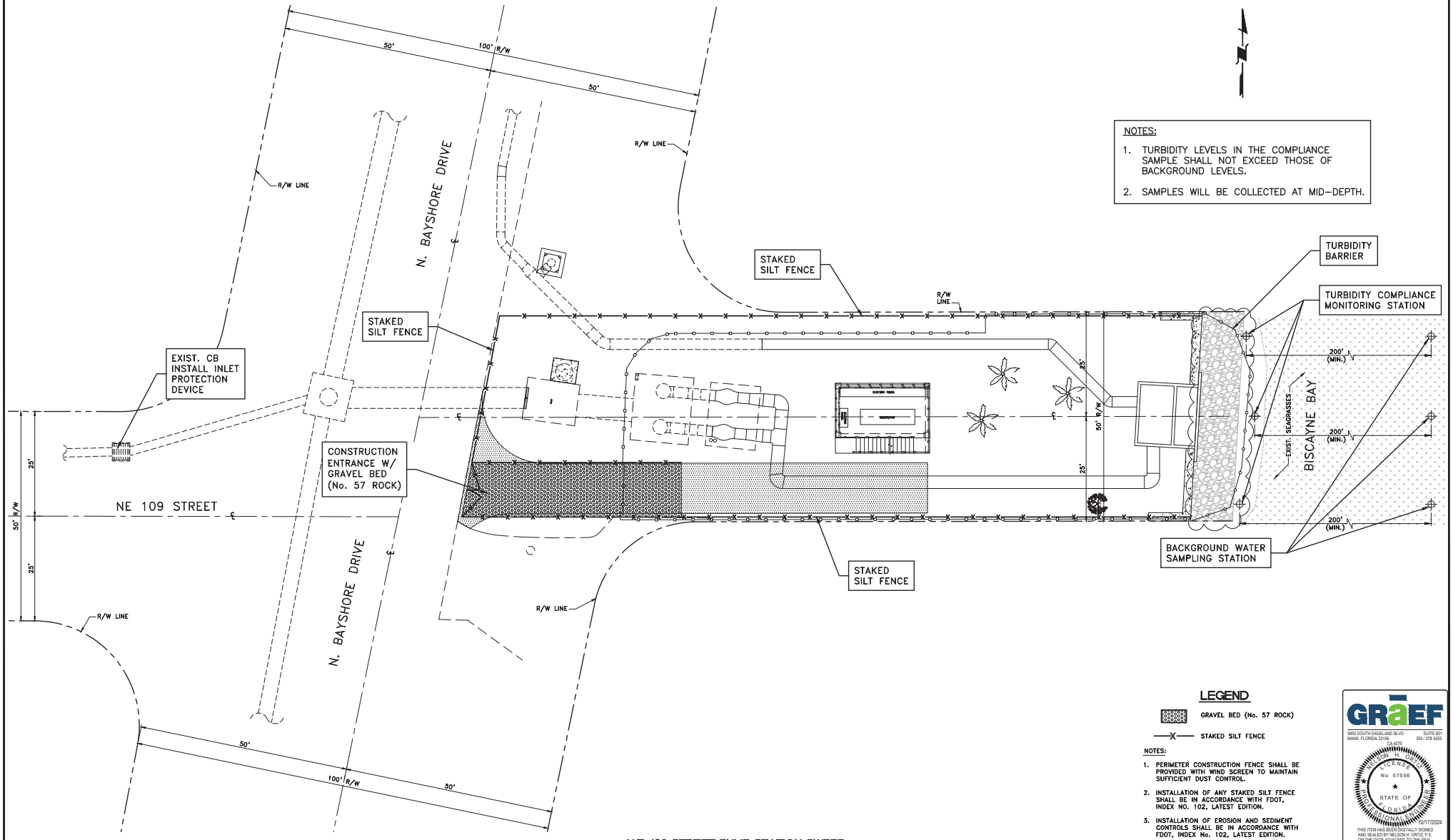

N.E. 109 STREET PUMP STATION SWPPP
SCALE: 1" = 10'

GRAEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270
NELSON H. ORTIZ LICENSE No 57556 STATE OF FLORIDA PROFESSIONAL ENGINEER
9/17/2024
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FOR THE FIRM: PROJECT NO. 2017-7053.01
NELSON H. ORTIZ PE-67556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	PS 109 STORMWATER POLLUTION PREVENTION PLAN	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 18
DRAWN BY: P.F.	DATE:					DRAWING NO. C-18	OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:						

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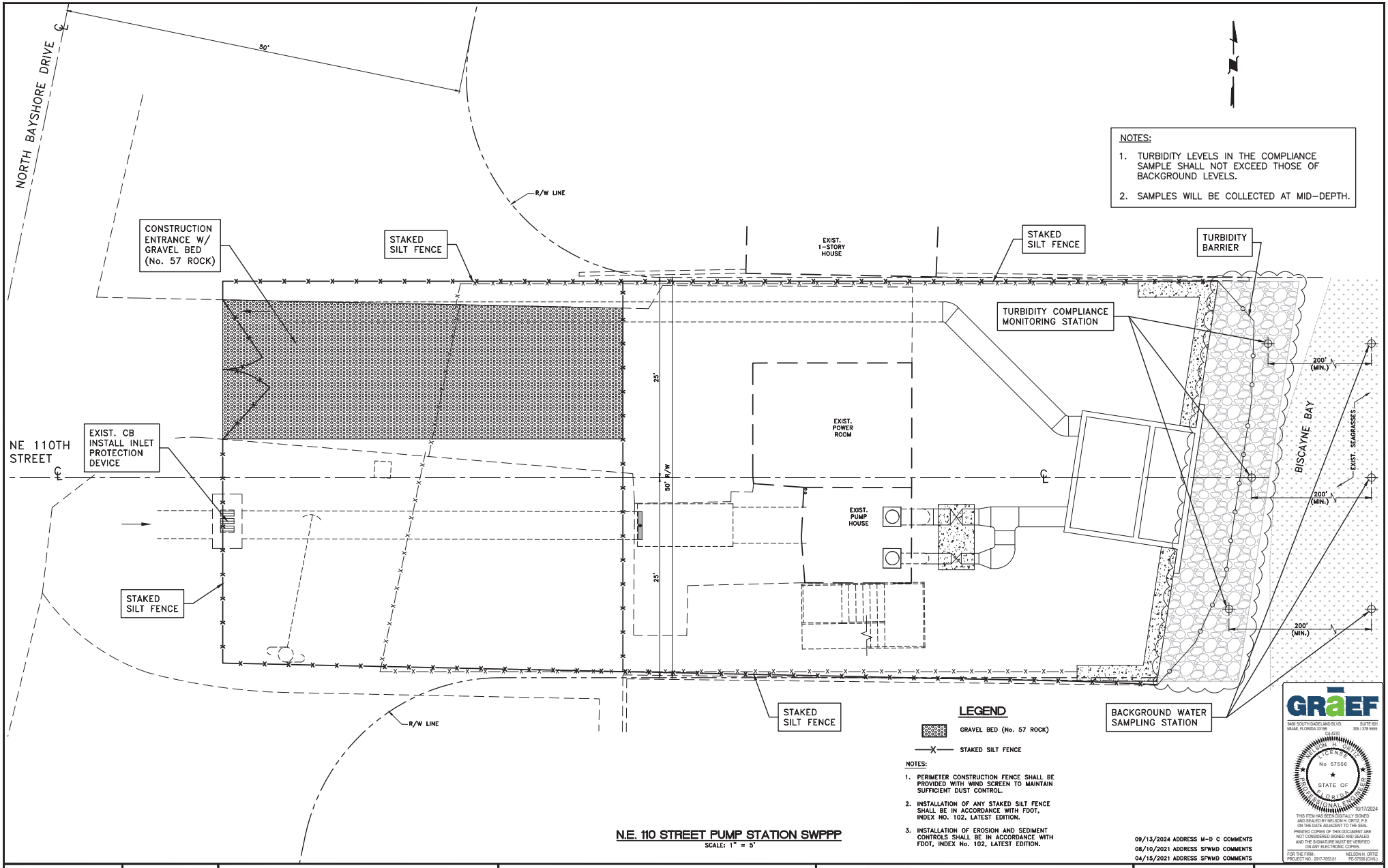
Revised Plans by Addendum No.5



NOTES:

1. TURBIDITY LEVELS IN THE COMPLIANCE SAMPLE SHALL NOT EXCEED THOSE OF BACKGROUND LEVELS.
2. SAMPLES WILL BE COLLECTED AT MID-DEPTH.

LEGEND

GRAVEL BED (No. 57 ROCK)

STAKED SILT FENCE

NOTES:

1. PERIMETER CONSTRUCTION FENCE SHALL BE PROVIDED WITH WIND SCREEN TO MAINTAIN SUFFICIENT DUST CONTROL.
2. INSTALLATION OF ANY STAKED SILT FENCE SHALL BE IN ACCORDANCE WITH FDOT, INDEX NO. 102, LATEST EDITION.
3. INSTALLATION OF EROSION AND SEDIMENT CONTROLS SHALL BE IN ACCORDANCE WITH FDOT, INDEX No. 102, LATEST EDITION.

N.E. 110 STREET PUMP STATION SWPPP

SCALE: 1" = 5'

09/13/2024 ADDRESS M-D C COMMENTS
08/10/2021 ADDRESS SFWMD COMMENTS
04/15/2021 ADDRESS SFWMD COMMENTS

GRÄEF
9400 SOUTH DADELAND BLVD. SUITE 601
MIAMI, FLORIDA 33156 305 / 378 5555
CA 4270
NELSON H. ORTIZ
LICENSED
No 57556
STATE OF FLORIDA
PROFESSIONAL ENGINEER
10/17/2024
THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY NELSON H. ORTIZ, P.E. ON THE DATE ADJACENT TO THE SEAL.
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.
FOR THE FIRM: NELSON H. ORTIZ
PROJECT NO.: 2017-7053.01 PE-57556 (CIVIL)

DESIGN BY: J.R.G.	DATE: 04/10/2020	PS 110 STORMWATER POLLUTION PREVENTION PLAN	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 19
DRAWN BY: P.F.	DATE:					DRAWING NO. C-19	OF 27 SHEETS
CHECKED BY: N.H.O.	DATE:						

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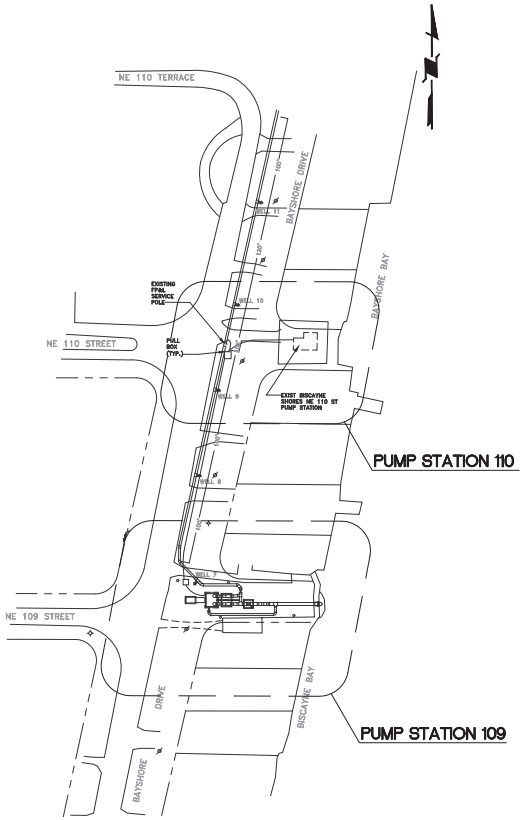

SITE LOCATION PLAN

SCALE: NONE

GENERAL ELECTRICAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE CURRENT ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE, FLORIDA BUILDING CODE AND OTHER APPLICABLE CODES, ORDINANCES AND STANDARDS.
2. IT IS THE CONTRACTORS RESPONSIBILITY TO BE FULLY COGNIZANT WITH ALL CODE SECTIONS AS THEY APPLY TO THE WORK/INSTALLATION AT HAND WHETHER OR NOT SHOWN ON THE DRAWINGS BUT REQUIRED BY CODE. IF ANY DISCREPANCY ARISES BETWEEN ANY DESIGN ISSUES AND CODE REQUIREMENTS, CONTRACTOR MUST ADHERE TO THE MOST STRINGENT REQUIREMENT.
3. THE DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL OFFSETS, BENDS AND BOXES REQUIRED TO MAKE A COMPLETE INSTALLATION IN ACCORDANCE WITH THE NEC.
4. IF CONFLICTS ARISE IN LOCATING WIRING DEVICES, ELECTRICAL EQUIPMENT, DISCONNECTS, PANELBOARDS, OR OTHER MISCELLANEOUS ELECTRICAL EQUIPMENT, DUE TO FIELD CONDITION OR IMPROPER FIELD COORDINATION, THEN THE CONTRACTOR SHALL BRING THE ISSUE TO THE A/E FOR RESOLUTION, AND SHALL RELOCATE THE ITEM AT NO EXTRA COST TO THE OWNER.
3. THE CONTRACTOR SHALL EVALUATE FIELD CONDITIONS BY VISITING THE SITE PRIOR TO BIDDING/STARTING WORK. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL TRADES PRIOR TO ROUGH-IN.
4. CONTRACTOR SHALL FURNISH AND INSTALLING ALL ELECTRICAL SYSTEMS EQUIPMENT, COMPONENTS, MATERIALS AND CONTROLS FOR A COMPLETE WORKING SYSTEM IN ACCORDANCE WITH APPLICABLE CODES AND EQUIPMENT/SYSTEM MANUFACTURER RECOMMENDATIONS.
5. THE CONTRACTOR SHALL SATISFACTORILY REPAIR/REPLACE EQUIPMENT OR PART OF STRUCTURE DAMAGED AS A RESULT OF HIS WORK. SURFACES AND FINISHED AREAS SHALL BE RESTORED TO MATCH ADJACENT AREAS.
6. APPROVAL SHALL BE OBTAINED FROM THE ARCHITECT/STRUCTURAL ENGINEER, IN WRITING, PRIOR TO CUTTING OR DRILLING ANY STRUCTURAL SUPPORT MEMBER.
7. NOT USED.
8. ALL DEVICES INSTALLED OUTDOORS TO HAVE WEATHERPROOF COVERS.
8. WIRE SIZE SHALL BE 12 AWG THHN/THWN UNLESS OTHERWISE NOTED ON PLANS. CONDUCTORS 6 AWG AND LARGER SHALL BE THHN.
9. ALL CONDUCTORS SHALL BE COPPER.
10. ALL CONDUCTORS SHALL BE RUN IN PVC CONDUIT. AN EQUIPMENT GROUND CONDUCTOR SIZED IN ACCORDANCE WITH NEC 250-122 SHALL BE RUN WITH ALL FEEDERS AND BRANCH CIRCUITS. EXPOSED EXTERIOR CONDUIT SHALL BE SCHEDULE 80 PVC WITH COMPATIBLE FITTINGS.
11. ALL MATERIALS SHALL BE U.L. LISTED.
12. TYPEWRITTEN PANEL DIRECTORIES, REFLECTING WORK PERFORMED, SHALL BE FURNISHED AFTER JOB IS COMPLETED. THIS APPLIES TO NEW AND EXISTING PANELBOARDS.
13. PANELBOARDS SHALL BE PROPERLY PHASE BALANCED.
14. CONTRACTOR SHALL SEAL ALL OPENINGS WITH AN APPROVED FIRE SEAL SIMILAR TO 'OZ' FLAMESEAL.
15. ALL BRANCH CIRCUITS TO HAVE A GREEN INSULATION EQUIPMENT GROUNDING CONDUCTOR SIZED PER NEC 250.122.
16. ALL EMPTY CONDUITS TO BE PROVIDED WITH NYLON PULL STRING. EXPOSED CONDUIT SHALL BE RUN PERPENDICULAR (PLUMB) TO BUILDING CONSTRUCTION LINES.
17. FUSES SHALL BE DUAL ELEMENT, TIME DELAY TYPE UNLESS OTHERWISE NOTED.
18. RISERS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW EVERY BEND, OFFSET, OR ELBOW REQUIRED FOR THE INSTALLATION.
19. ALL WIRING SHALL BE RUN WITHOUT SPLICES EXCEPT AS OTHERWISE INDICATED.
20. ALL PULL AND JUNCTION BOXES SHALL BE ACCESSIBLE AT COMPLETION OF WORK.
21. EXACT POINT AND METHODS OF CONNECTION SHALL BE DETERMINED IN FIELD.
22. ALL WORK SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER IN ACCORDANCE WITH NECA, NEMA AND THE NEC.
23. BRANCH CIRCUIT BREAKERS SHALL BE OF THE BOLT-ON TYPE. PLUG-IN CIRCUIT BREAKERS WILL NOT BE ACCEPTED.
24. ELECTRICAL SYSTEM CONDUCTOR COLOR CODE SHALL BE AS FOLLOWS OR AS DIRECTED BY MIAMI-DADE:

	208Y/120V-3ø-4W SYSTEM	480Y/277V-3ø-4W
PHASE 'A'	BLACK	ORANGE
PHASE 'B'	RED	BROWN
PHASE 'C'	BLUE	PURPLE
NEUTRAL	WHITE	GRAY
GROUND	GREEN	GREEN W/YELLOW STRIPE

25. ALL ROUGH-IN DIMENSIONS ARE TO CENTER LINE OF DEVICE UNLESS OTHERWISE NOTED.
26. ALL CONDUCTOR SPLICES IN EXTERIOR LOCATED JUNCTION/PULL BOXES EXPOSED TO THE WEATHER SHALL BE WEATHER SEALED WITH AN APPROVED METHOD SUCH AS 3M SCOTCHLOCK CONNECTOR EPOXY SEALING PACKS OR SIMILAR.
27. WHEN ITEMS ARE REQUIRED BY LOCAL, STATE OR NATIONAL CODES, CONTRACTOR SHALL INCLUDE THEM WHETHER SHOWN ON THE DRAWINGS OR NOT.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	FLUORESCENT FIXTURE
	FLUORESCENT FIXTURE, BARE STRIP
	WALL MOUNTED LUMINAIRE
	EXIT LIGHT FIXTURE (CLG/WALL MTD)
S_a	SINGLE-POLE TOGGLE SWITCH, 20A-125/277V, +48", SWITCH "a"
S_3	THREE-WAY TOGGLE SWITCH, 20A-125/277V, +48"
	DUPLEX RECEPTACLE OUTLET, 20A-125V-3W, +18"
	JUNCTION BOX
	MOTOR, SIZE AS INDICATED
	MOTOR STARTER OR CONTROLLER
$S\frac{30}{F}$ $S\frac{30}{20}$	DISCONNECT SWITCH; 3 = NUMBER OF POLES; 30 = AMP RATING; 20 = FUSE SIZE; F = FUSE SIZE RECOMMENDED BY EQUIPMENT MANUFACTURER
	LIGHTING AND APPLIANCE PANELBOARD
	DISTRIBUTION PANELBOARD
	CONDUIT RUN CONCEALED IN WALL OR CEILING
	QUADRUPLEX RECEPTACLE NEMA 5-20R, 20A-125V-3W, +18" U.O.N.
GFI	GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE NEMA 5-20R, 20A-125V-3W, HEIGHT AS DENOTED ON PLANS.
	SINGLE RECEPTACLE OUTLET, 20A,125V,+18" UNLESS OTHERWISE NOTED
IG	ISOLATED GND DUPLEX RECEPTACLE (ORANGE) NEMA 5-20R, 20A, 125V,3W
	CONDUIT RUN EXPOSED
1G	BRANCH CIRCUIT HOMERUN. SHORT CROSSMARKS = NUMBER OF PHASE CONDUCTORS, LONG CROSSMARKS = NEUTRAL, 1G = ISOLATED GROUND CONDUCTOR, FLAGGED CROSSMARK OR G = GROUND CONDUCTOR.
	FLEXIBLE CONDUIT
WP	DENOTES 'WEATHERPROOF' EQUIPMENT
EC	EMPTY CONDUIT
AFF	ABOVE FINISHED FLOOR
3R	NEMA '3R' ENCLOSURE (RAINTIGHT)
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
N.I.C	NOT IN CONTRACT
M.L.O	MAIN LUG ONLY
DISC	DISCONNECT SWITCH
JB	JUNCTION BOX
NEC	NATIONAL ELECTRICAL CODE
(1)	DENOTES KEY NOTE #1 SEE APPROPRIATE DWG FOR KEY NOTE DESCRIPTION.
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AGFCI	COMBINATION ARC/GROUND FAULT CIRCUIT INTERRUPTER
SPD	SURGE PROTECTION DEVICE

SCOPE OF WORK

1. PROVIDE DEMOLITION AND NEW WORK AS INDICATED BY THE PLANS.
2. MAINTAIN POWER, CONTROLS, AND COMMUNICATIONS TO INFRASTRUCTURE TO REMAIN AS REQUIRED.
3. COORDINATE THE POWER OUTAGE(S) WITH FPL PRIOR TO STARTING WORK.
4. DEVELOP A SEQUENCE OF WORK TO BE APPROVED IN WRITING BY MIAMI-DADE.
5. BUILDING PENETRATIONS SHALL BE APPROVED BY ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO ANY ROUGH-IN.
6. SEAL BUILDING ENVELOPE PENETRATIONS AND REPAIR FINISHES AS DIRECTED BY ARCHITECT.
7. COORDINATE INSTALLATION OF NEW FEEDERS AND ASSOCIATED DISTRIBUTION EQUIPMENT WITH EXISTING INFRASTRUCTURE AND MEP/FP SERVICES.
8. PROVIDE TEMPORARY BY-PASS SYSTEMS AND SERVICES AS REQUIRED TO ACCOMPLISH WORK INDICATED BY THE PLANS.
9. CONTRACTOR SHALL MAINTAIN SITE IN ORDERLY CONDITION AT THE END OF EACH DAY BY REMOVING AND DISPOSING OF CONSTRUCTION DEBRIS AND STORING EQUIPMENT AND MATERIALS IN ASSIGNED/DESIGNATED AREAS.
10. PROVIDE FULL FUEL TANKS FOR GENERATORS AFTER TESTING AND COMMISSIONING THE PROJECT.

GENERAL DEMOLITION NOTES

1. PROVIDE ELECTRICAL DEMOLITION WORK NECESSARY TO INSTALL NEW WORK. ELECTRICAL CONTRACTOR SHALL RE-ROUTE AND RECONNECT ANY CIRCUITS THAT REMAIN IN USE BUT INTERFERE WITH NEW CONSTRUCTION.
2. MAINTAIN CONTINUITY OF ALL EXISTING CIRCUITS TO REMAIN OR PORTIONS THEREOF AFFECTED BY NEW WORK.
3. ALL MATERIALS REMOVED UNDER DEMOLITION, AND NOT TO BE RE-USED OR NOT TO BE RELOCATED, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED COMPLETELY FROM THE SITE.
4. CONTRACTOR SHALL EXERCISE CARE IN REMOVING DEMOLITION ITEMS AND SHALL REPAIR OR REPLACE AT HIS COST ANY DAMAGE CAUSED TO EXISTING CONSTRUCTION AND EQUIPMENT TO REMAIN.
5. DRAWINGS ARE BASED ON EXISTING PLANS AND FIELD INVESTIGATION WITHOUT DEMOLITION. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH EXISTING CONDITIONS AND SHALL EXAMINE ALL RELATED DRAWINGS TO AVOID CONFLICTS. FAILURE TO REVIEW ALL CONTRACT DOCUMENTS AND/OR VISIT THE SITE WILL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO PERFORM ALL WORK REQUIRED AT NO ADDITIONAL COST TO THE OWNER.

DRAWING INDEX

E-0 SITE LOCATION, LEGEND AND NOTES
E-1 PS 110 EXISTING SITE CONDITIONS / DEMOLITION PLAN
E-2 PUMP STATION 110 ELECTRICAL DEMOLITION PLAN
E-3 PUMP STATION 110 ELECTRICAL NEW WORK PLAN
E-4 PUMP STATION 109 SITE CONDITIONS / DEMOLITION PLAN
E-5 PUMP STATION 109 ELECTRICAL NEW WORK PLAN
E-6 POWER RISER DIAGRAMS
E-7 PANEL SCHEDULES AND GENERATOR SPECIFCATIONS

BUILDING CODES

FFPC FLORIDA FIRE PREVENTION CODE CHAPTER 69A-60 (8TH EDITION)
NFPA 110 LIFE SAFETY CODE(2019 EDITION)
NFPA 1 FIRE CODE (2021 EDITION)
NFPA 70 NEC (2020 EDITION)
NFPA 30 (2021 EDITION)
NFPA 37 (2021 EDITION)

GENERATOR NFPA 110 LABLING

CLASS: 24
TYPE: 10
LEVEL 1

08-29-24 REVISION 2ADDRESS MDC COMMENTS
02-04022 REVISION 1 ADDRESS MDC COMMENTS

HUPSHEY • NICOLAIDES • GARCIA • SUAREZ
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MIAMI, FLORIDA 33155 (305) 270-9035 Fax (305)665-6891
FL CA Lic. # 444

PERMIT SET 02-02-2022

DESIGN BY: A.E.W.	DATE: 12/16/19	SITE LOCATION, LEGEND, AND NOTES	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	TRANSPORTATION AND PUBLIC WORKS DEPARTMENT STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 1
DRAWN BY:	DATE:					DRAWING NO. E-0	OF 17 SHEETS
CHECKED BY: A.E.W.	DATE:						

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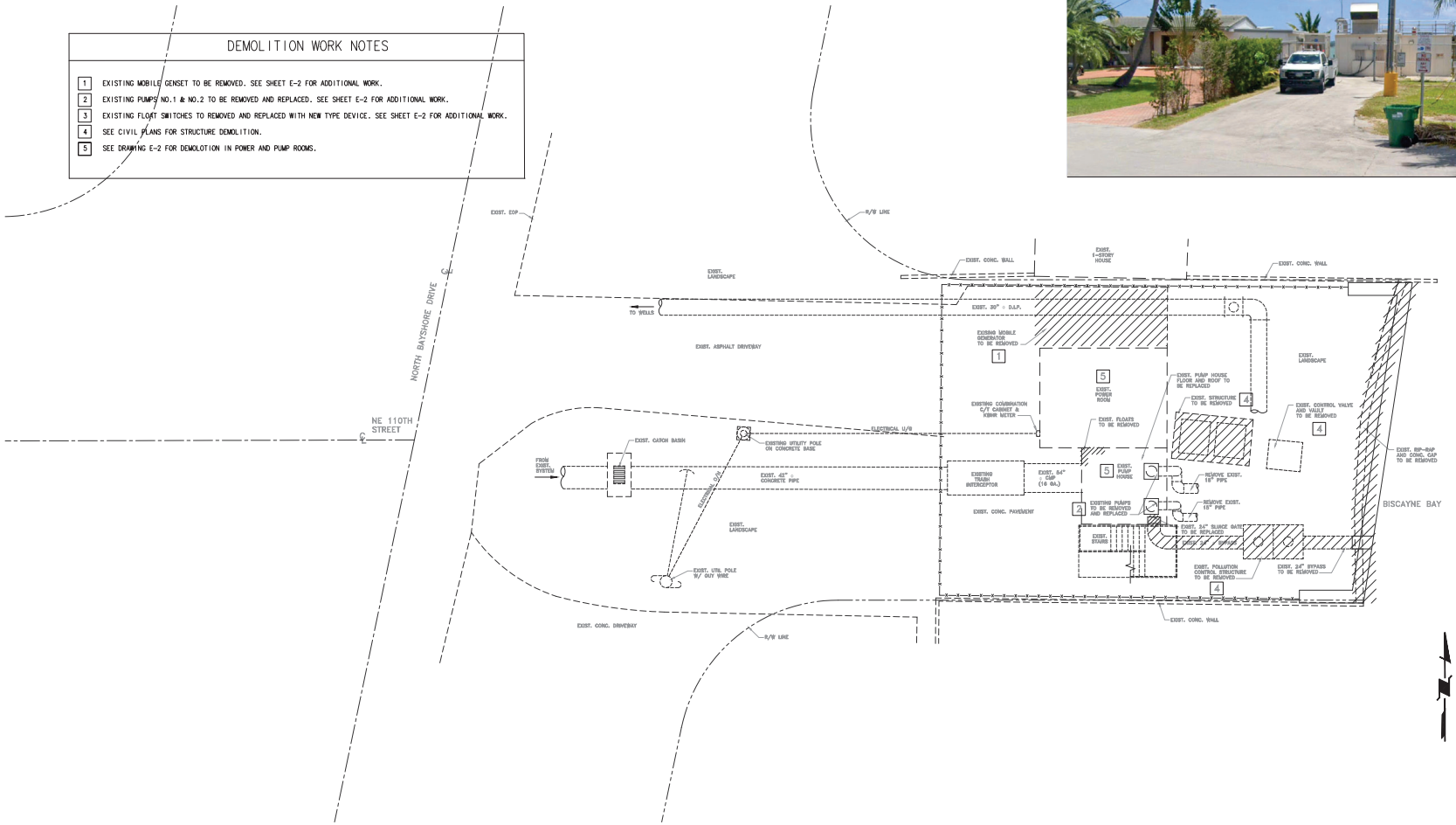
DEMOLITION WORK NOTES

1. EXISTING MOBILE GENSET TO BE REMOVED. SEE SHEET E-2 FOR ADDITIONAL WORK.
2. EXISTING PUMPS NO.1 & NO.2 TO BE REMOVED AND REPLACED. SEE SHEET E-2 FOR ADDITIONAL WORK.
3. EXISTING FLOAT SWITCHES TO REMOVED AND REPLACED WITH NEW TYPE DEVICE. SEE SHEET E-2 FOR ADDITIONAL WORK.
4. SEE CIVIL PLANS FOR STRUCTURE DEMOLITION.
5. SEE DRAWING E-2 FOR DEMOLOTION IN POWER AND PUMP ROOMS.



PS 110 EXISTING SITE CONDITIONS / DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

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02-04022 REVISION 1 ADDRESS MDC COMMENTS

PERMIT SET 02-02-2022

DESIGN BY: A.E.W.	DATE: 12/16/19	PS 110 EXISTING SITE CONDITIONS / DEMOLITION PLAN	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	TRANSPORTATION AND PUBLIC WORKS DEPARTMENT STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 2
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CHECKED BY: A.E.W.	DATE:						

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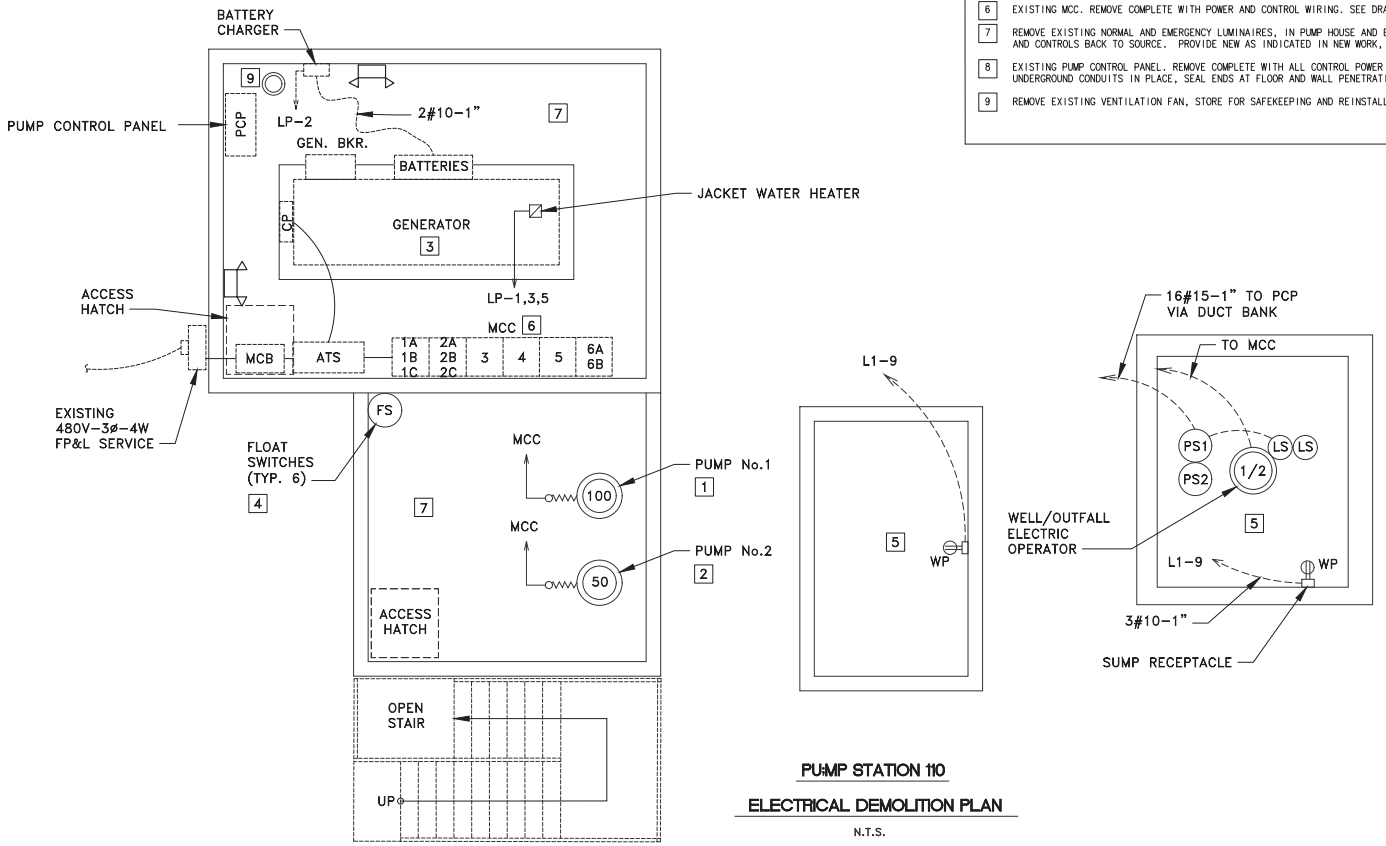
Revised Plans by Addendum No.5

MCC DEVICES

1A INCOMING SECTION (MLO)
1B CIRCUIT MONITOR
1C EXISTING 110TH ST PUMP 2 STARTER
2A EXISTING SPD
2B LIGHTING PANEL LP
2C TRANSFORMER
3 EXISTING 109TH ST PUMP 1 STARTER
4 EXISTING 110TH ST PUMP 1 STARTER
5 EXISTING 109TH ST PUMP 2 STARTER
6A EXISTING MOTORIZED VALVE 110TH ST
6B EXISTING MOTORIZED VALVE 109TH ST

DEMOLITION WORK NOTES

1. EXISTING PUMP NO. 1, 100HP-480V-3ø. REMOVE PUMP, FEEDER AND CONTROL BACK TO SOURCE. PROVIDE NEW AS INDICATED ON DRAWING E-3. SEE POWER RISER DIAGRAM DRAWING E-7 FOR ADDITIONAL WORK.
2. EXISTING PUMP NO. 2, 50HP-480V-3ø. REMOVE PUMP, FEEDER AND CONTROL BACK TO SOURCE. PROVIDE NEW AS INDICATED ON DRAWING E-3. SEE POWER RISER DIAGRAM DRAWING E-7 FOR ADDITIONAL WORK.
3. EXISTING DETROIT DIESEL 300KW DIESEL GENSET. DRAIN FUEL AND SAVE FOR REUSE IN NEW GENSET. REMOVE GENSET COMPLETE WITH OUTPUT FEEDER, CONTROL WIRING, ASSOCIATED APPURTENANCES BACK TO SOURCE. SEE DRAWING E-3 AND E-7 FOR NEW WORK. (2)
4. REMOVE EXISTING FLOAT SWITCHES (QUANTITY TO BE VERIFIED ON SITE). MAKE PROVISIONS FOR NEW EQUIPMENT AS REQUIRED. SEE DRAWING E-3 FOR NEW WORK.
5. EXISTING STRUCTURES TO BE REMOVED. SEE CIVIL PLANS FOR WORK. REMOVE POWER AND LOW VOLTAGE WIRING BACK TO SOURCE OR LAST DEVICE TO REMAIN ACTIVE. SEE DRAWING E-3 FOR NEW WORK.
6. EXISTING MCC. REMOVE COMPLETE WITH POWER AND CONTROL WIRING. SEE DRAWING E-3 FOR NEW WORK.
7. REMOVE EXISTING NORMAL AND EMERGENCY LUMINAIRES, IN PUMP HOUSE AND ELECTRICAL ROOM, INCLUDING ALL WIRING AND CONTROLS BACK TO SOURCE. PROVIDE NEW AS INDICATED IN NEW WORK, SEE DRAWING E-3 AND E-7.
8. EXISTING PUMP CONTROL PANEL. REMOVE COMPLETE WITH ALL CONTROL POWER AND CONTROL WIRING. ABANDON UNDERGROUND CONDUITS IN PLACE, SEAL ENDS AT FLOOR AND WALL PENETRATIONS AS DIRECTED.
9. REMOVE EXISTING VENTILATION FAN, STORE FOR SAFEKEEPING AND REINSTALL IN NEW WORK.



PUMP STATION 110

ELECTRICAL DEMOLITION PLAN

N.T.S.

08-29-24 REVISION 2ADDRESS MDC COMMENTS
02-04022 REVISION 1 ADDRESS MDC COMMENTS

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DESIGN BY: A.E.W.	DATE: 12/16/19	PUMP STATION 110 ELECTRICAL DEMOLITION PLAN	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	TRANSPORTATION AND PUBLIC WORKS DEPARTMENT STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 3
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CHECKED BY: A.E.W.	DATE:						

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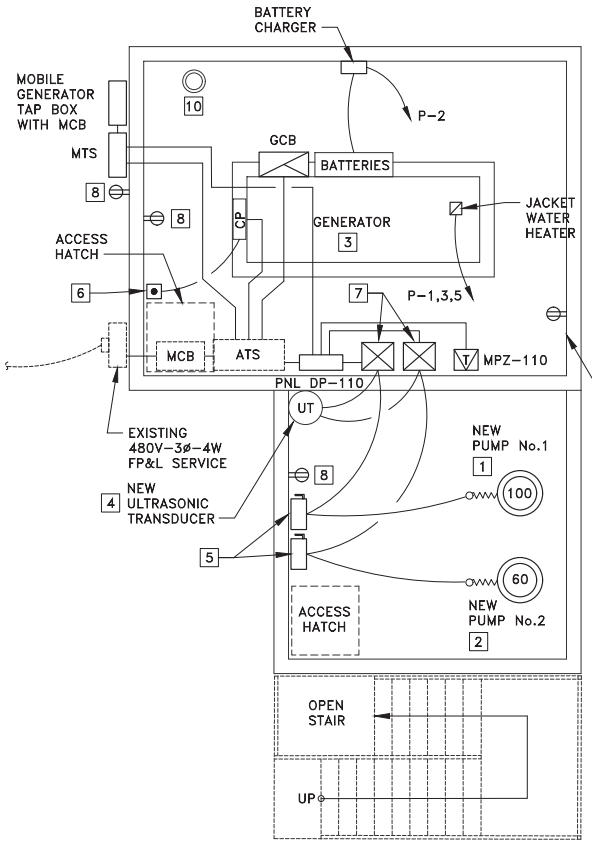


POWER PLAN

NEW WORK NOTES

1. NEW PUMP NO. 1, 100HP-480V-3ø. PROVIDE NEW SOFT START STARTER. PROVIDE NEW FEEDER TO NEW PANEL DP. SEE POWER RISER DIAGRAM FOR SPECS.
2. NEW PUMP NO. 2, 60HP-480V-3ø. PROVIDE NEW SOFT START STARTER. PROVIDE NEW FEEDER TO NEW PANEL DP. SEE POWER RISER DIAGRAM FOR SPECS.
3. NEW GENSET 200KW-480V-3ø-4W. SEE SHEET E-7 FOR DETAILS. TRANSFER DIESEL FUEL FROM TEMPORARY CONTAINER TO NEW GENSET BASE TANK. NEW GENERATOR TO BE PROVIDED WITH NEW DOUBLE WALL TANK.
4. NEW ULTRASONIC TRANDUCER. FINAL CONNECT AS REQUIRED.
5. 200A-3P-600V-NFSS-NEMA 4X
6. GENERATOR EMERGENCY POWER OFF (EPO) PUSHBUTTON IN NEMA 4X WEATHER PROOF ENCLOSURE. MOUNT EPO ADJACENT ACCESS HATCH AS REQUIRED.
7. SOFT START STARTER. EATON S811+T18P3S IN NEMA 4X ENLOSURE OR APPROVED EQUAL. PROVIDE WITH HOA SWITCH AND RUN/OFF PILOT LIGHTS IN COVER.
8. RECEPTACLE WITH WEATHERPROOF COVER. MOUNT 48" AFF. CONNECT TO 1P-20A CKT BKR IN PANEL P.
9. SWITCH WITH WEATERPROOF COVER. MOUNT ADJACENT LADDER NEAR TOP OF ACCESS COVER. CARLON-E98TSCN-WP-COVER FOR TOGGLE SWITCH.
10. RE-INSTALL VENTILATON FAN. PROVIDE NEW CONTROLS AS REQUIRED. FINAL CONNECT AS REQUIRED.

REC FOR SUMP PUMP CONNECTION

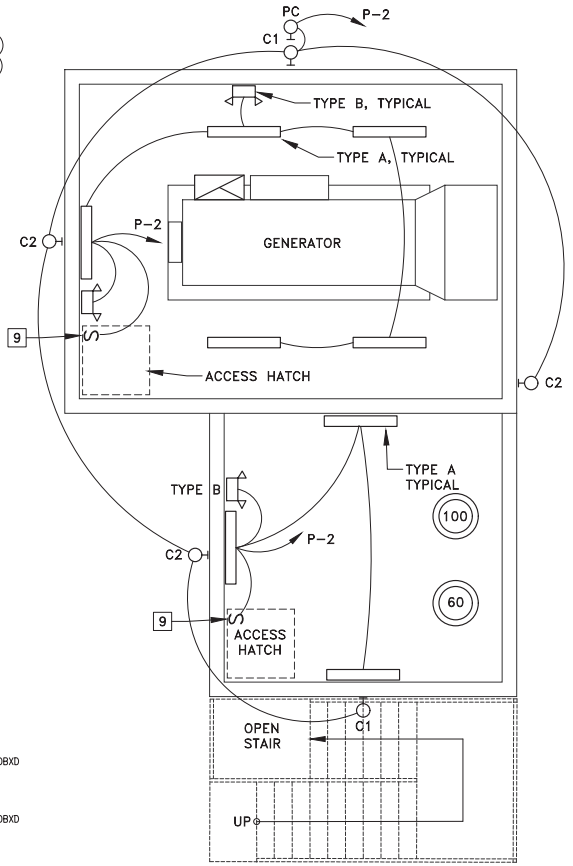
LUMINAIRE SCHDULE

A LITHONIA ENCLOSED GASKETED STRIPLIGHT FEM L48 4000LM LPAFL MD 120 35K 90CRI WLFEND2 STSL - 120V-23.8W

B LITHONIA EMERGENCY LIGHT MLTU MR - 120V-6W

C1 LITHONIA WALL PACK WDGE2 LED P5 35K 80CRI VF MVOLT AWS DDBXD - 120V-18W

C2 LITHONIA WALL PACK WDGE2 LED P5 35K 80CRI VW MVOLT AWS DDBXD - 120V-18W



LIGHTING PLAN

PUMP STATION 110

ELECTRICAL NEW WORK PLAN

N.T.S.

08-29-24 REVISION 2ADDRESS MDC COMMENTS
02-04022 REVISION 1 ADDRESS MDC COMMENTS

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DESIGN BY: A.E.W.	DATE: 12/16/19	PUMP STATON 110 ELECTRICAL NEW WORK PLAN	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	TRANSPORTATION AND PUBLIC WORKS DEPARTMENT STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 4
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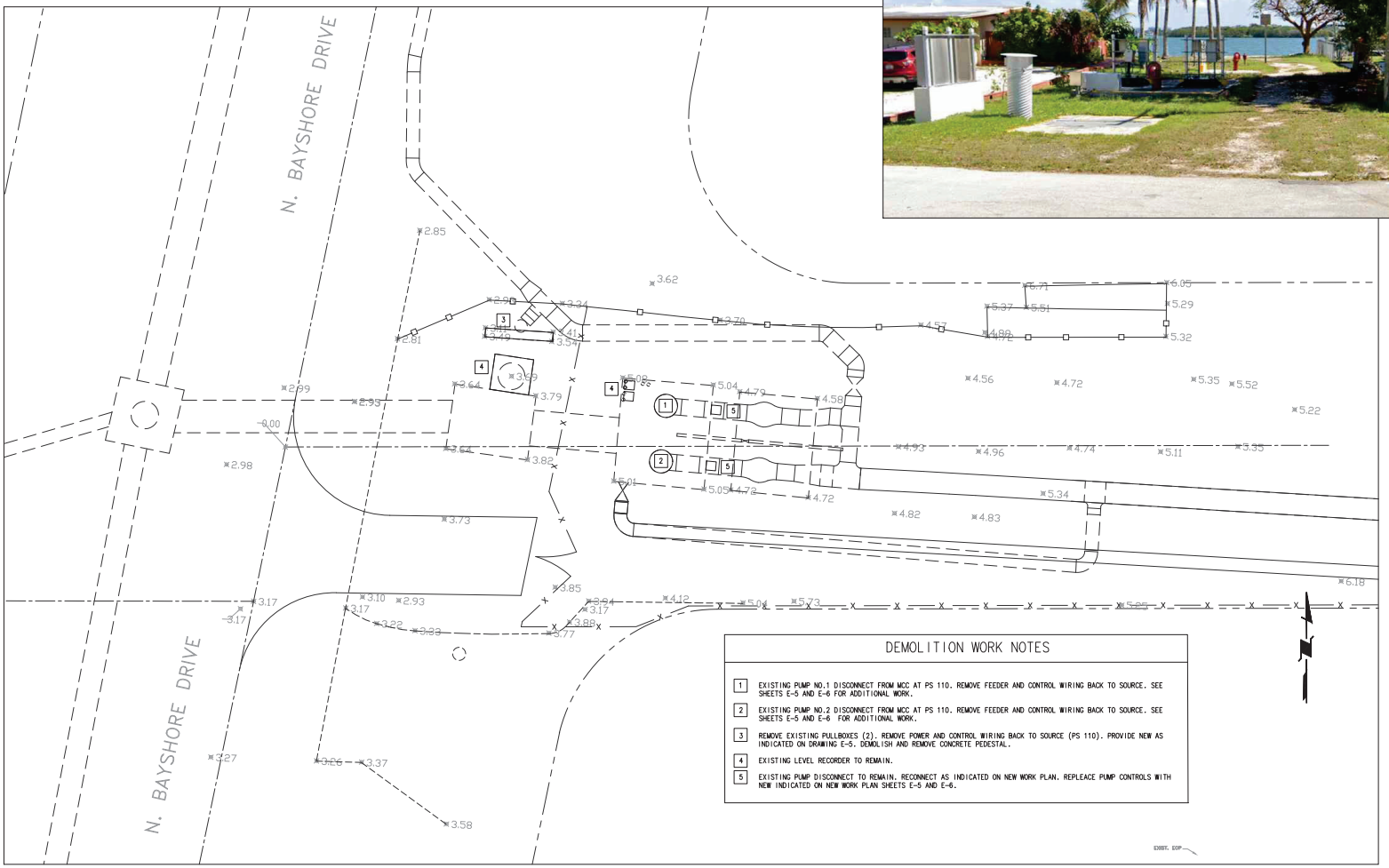

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02-04022 REVISION 1 ADDRESS MDC COMMENTS

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DESIGN BY: A.E.W.	DATE: 12/16/19	PS 109 EXISTING CONDITIONS / DEMOLITION PLAN	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	TRANSPORTATION AND PUBLIC WORKS DEPARTMENT STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 5
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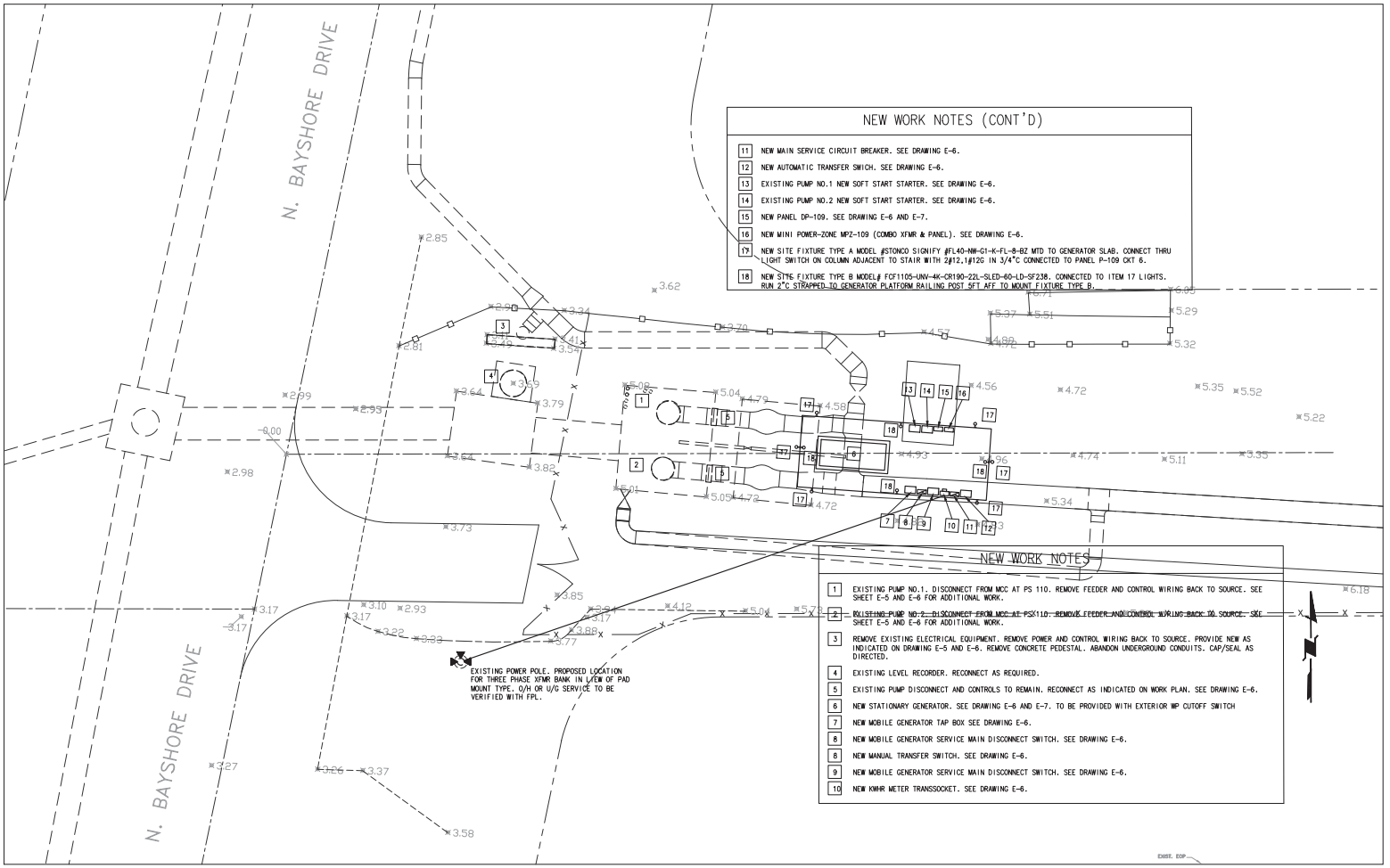


NEW WORK NOTES (CONT'D)

11. NEW MAIN SERVICE CIRCUIT BREAKER. SEE DRAWING E-6.
12. NEW AUTOMATIC TRANSFER SWICH. SEE DRAWING E-6.
13. EXISTING PUMP NO.1 NEW SOFT START STARTER. SEE DRAWING E-6.
14. EXISTING PUMP NO.2 NEW SOFT START STARTER. SEE DRAWING E-6.
15. NEW PANEL DP-109. SEE DRAWING E-6 AND E-7.
16. NEW MINI POWER-ZONE MPZ-109 (COMBO XFMR & PANEL). SEE DRAWING E-6.
17. NEW SITE FIXTURE TYPE A MODEL #STONCO SIGNIFY #FL40-NW-G1-K-FL-8-BZ MTD TO GENERATOR SLAB. CONNECT THRU LIGHT SWITCH ON COLUMN ADJACENT TO STAIR WITH 2#12,1#12G IN 3/4"C CONNECTED TO PANEL P-109 CKT 6.
18. NEW SITE FIXTURE TYPE B MODEL# FCF1105-UNV-4K-CR190-22L-SLED-60-LD-SF238. CONNECTED TO ITEM 17 LIGHTS. RUN 2"C STRAPPED TO GENERATOR PLATFORM RAILING POST 5FT AFF TO MOUNT FIXTURE TYPE B.

NEW WORK NOTES

1. EXISTING PUMP NO.1. DISCONNECT FROM MCC AT PS 110. REMOVE FEEDER AND CONTROL WIRING BACK TO SOURCE. SEE SHEET E-5 AND E-6 FOR ADDITIONAL WORK.
2. ~~EXISTING PUMP NO.2. DISCONNECT FROM MCC AT PSX110. REMOVE FEEDER AND CONTROL WIRING BACK TO SOURCE. SEE~~ SHEET E-5 AND E-6 FOR ADDITIONAL WORK.
3. REMOVE EXISTING ELECTRICAL EQUIPMENT. REMOVE POWER AND CONTROL WIRING BACK TO SOURCE. PROVIDE NEW AS INDICATED ON DRAWING E-5 AND E-6. REMOVE CONCRETE PEDESTAL. ABANDON UNDERGROUND CONDUITS. CAP/SEAL AS DIRECTED.
4. EXISTING LEVEL RECORDER. RECONNECT AS REQUIRED.
5. EXISTING PUMP DISCONNECT AND CONTROLS TO REMAIN. RECONNECT AS INDICATED ON WORK PLAN. SEE DRAWING E-6.
6. NEW STATIONARY GENERATOR. SEE DRAWING E-6 AND E-7. TO BE PROVIDED WITH EXTERIOR WP CUTOFF SWITCH
7. NEW MOBILE GENERATOR TAP BOX SEE DRAWING E-6.
8. NEW MOBILE GENERATOR SERVICE MAIN DISCONNECT SWITCH. SEE DRAWING E-6.
8. NEW MANUAL TRANSFER SWITCH. SEE DRAWING E-6.
9. NEW MOBILE GENERATOR SERVICE MAIN DISCONNECT SWITCH. SEE DRAWING E-6.
10. NEW KWHR METER TRANSSOCKET. SEE DRAWING E-6.

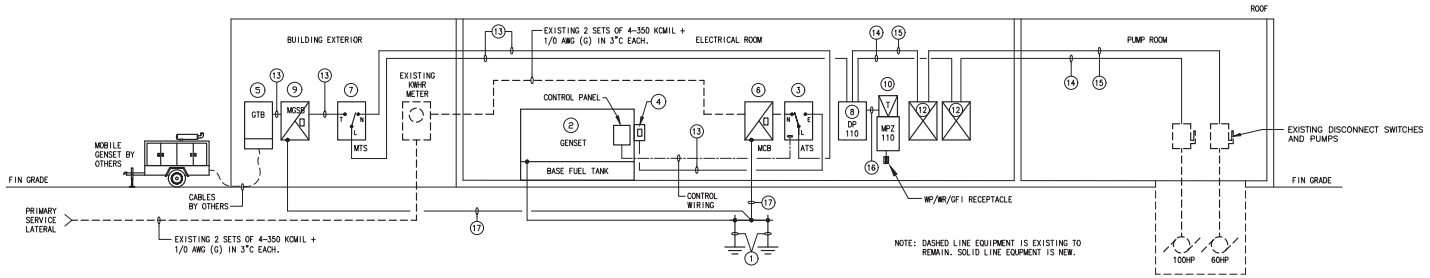
HUPSHEY • NICOLAIDES • GARCIA • SUAREZ
CONSULTING ENGINEERS HNGS # 190069
4850 SW 74TH COURT
MIAMI, FLORIDA 33155 (305) 270-9035 Fax (305)665-6891
FL CA Lic. # 444

02-04022 REVISION 1 ADDRESS MDC COMMENTS

PERMIT SET 02-02-2022

DESIGN BY: A.E.W.	DATE: 12/16/19	PUMP STATION 109 ELECTRICAL NEW WORK PLAN	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	TRANSPORTATION AND PUBLIC WORKS DEPARTMENT STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 6
DRAWN BY:	DATE:					DRAWING NO. E-5	OF 17 SHEETS
CHECKED BY: A.E.W.	DATE:						

100% SUBMITTAL

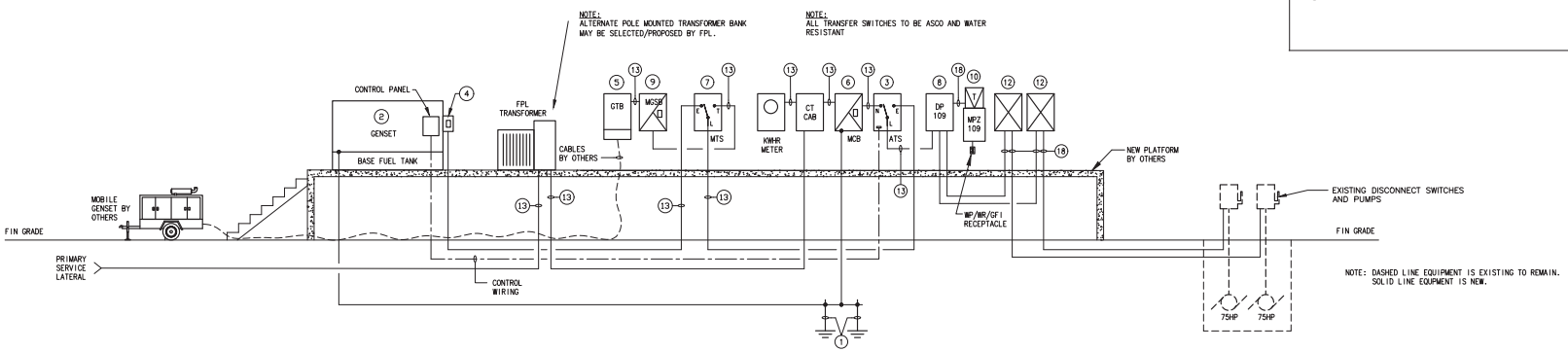


1 E-5 PS 110 POWER RISER DIAGRAM
SCALE: NONE

NOTE:
POWER RISER DIAGRAM IS DIAGRAMMATIC IN NATURE. INSTALLATION AND FINAL CONFIGURATION TO BE DETERMINED BY ACTUAL EQUIPMENT PROVIDED.
PS 110 GENERATOR IS LOCATED IN AN ENCLOSED BUILDING SPACE AND DOES NOT REQUIRE A WEATHER ENCLOSURE.

KEY NOTES

1. 1-1/0 AWG TO TWO (2) COPPER CLAD STEEL GROUND RODS AND BOND TO FOUNDATION REBARS. INSTALL RODS MINIMUM SIX (6) FEET ON CENTER. PROVIDE 10' LONG BY 3/4" DIAMETER RODS.
2. 200KW-480V-3φ-3W EMERGENCY STAND-BY DIESEL GENERATOR WITH ALUMINUM SOUND ATTENUATED, WEATHERPROOF AND HURRICANE RESISTANT ENCLOSURE. GENSET INCLUDES A SUB-BASE FUEL TANK PROVIDING 24 HOURS RUN TIME.
3. NEW AUTOMATIC TRANSFER SWITCH (ATS) 3P-400A-480V, 45KAIC IN NEMA 4X ENCLOSURE.
4. 3P-400A-600V-45KAIC GENERATOR MOUNTED CIRCUIT BREAKER.
5. GENERATOR TAP BOX. 400A-3P-3W IN NEMA 4X ENCLOSURE. PROVIDE WITH FEMALE KAM-LOC CONNECTORS. POWERTRON SERIES 400 OR APPROVED EQUAL.
6. NEW MCB – 400A-3P-480V IN NEMA 4X ENCLOSURE.
7. MANUAL TRANSFER SWITCH (MTS) 3P-400A, 480V, IN NEMA 4X ENCLOSURE.
8. PANEL DP. SEE SCHEDULE SHEET E-7.
9. MGSB (MOBILE GENSET SERVICE BREAKER) – 400A-3P-480V IN NEMA 4X ENCLOSURE.
10. MINI POWER-ZONE CENTER (MPZ), 10KVA-480V:120/240V-1φ-3W NEMA 4X WITH 65KAIC 20A PRI MCB, 40A SEC MCB, AND 8-1P SPACES. MPZ TO SERVE 120V AND 240V LOADS AS REQUIRED.
11. PROVIDE STAND ALONE KWHR DEMAND METER AND CT CABINET OR COMBINATION UNIT AS REQUIRED BY FPL.
12. SOFT START STARTERS IN NEMA 4X ENCLOSURES. SIZE AND TYPE WITH ACCESSORIES AS RECOMMENDED BY PUMP MANUFACTURER.
13. NEW 2 SETS OF 4-4/0 AWG + 2 AWG (G) IN 2.5"C EACH.
14. NEW 3-4/0 AWG + 4 AWG (G) IN 2"C.
15. NEW 3-1/0 AWG + 6 AWG (G) IN 2"C.
16. NEW 2-12 AWG + 12 AWG (G) IN 3/4" C.
17. 1/0 AWG GROUNDING ELECTRODE CONDUCTOR IN 3/4" C.
18. 3-2/0 AWG + 1-6AWG (G) IN 2" C.
18. 2-10 AWG + 1-10 AWG (G) IN 3/4" C.



1 E-5 PS 109 POWER RISER DIAGRAM
SCALE: NONE

NOTE:
POWER RISER DIAGRAM IS DIAGRAMMATIC IN NATURE. INSTALLATION AND FINAL CONFIGURATION TO BE DETERMINED BY ACTUAL EQUIPMENT PROVIDED.

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02-04022 REVISION 1 ADDRESS MDC COMMENTS

PERMIT SET 02-02-2022

DESIGN BY: A.E.W.	DATE: 12/16/19	PS 109 NEW WORK PLAN	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY	TRANSPORTATION AND PUBLIC WORKS DEPARTMENT STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 7
DRAWN BY:	DATE:					DRAWING NO. E-6	OF 17 SHEETS
CHECKED BY: A.E.W.	DATE:						

100% SUBMITTAL

TRADEWINDS POWER CORP

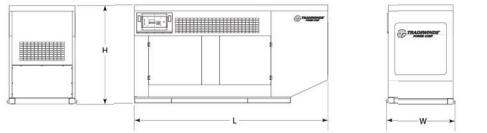
MODEL: TP200 T3

STANDBY UL2200 GENERATOR SET

ENGINE SPECIFICATION	
Manufacturer	Perkins
Model	1106D-E70TAG5
Emissions	EPA Tier 3
Engine speed (rpm)	1800
Nominal Engine hp 1800rpm	306
Cylinder arrangement	Vertical inline
Combustion system	Direct injection
Aspiration	Turbocharged aftercooled
Engine type	Diesel
Diesel Fuel Grade	ASTM D975 D2
Number of Cylinders	6
Displacement in³ (liters)	428.0 (7.0)
Bore and Stroke inches (mm)	4.13 x 5.3 (105 X 135)
Cooling	Water-cooled
Governor	Electronic
Starting aids	Glow Plugs
Compression ratio	16.8:1
Air cleaner type	Medium duty dry type
Exhaust Silencer dBA	80dBA
Oil Filter	Engine mounted/water separator
COOLING SYSTEM FOR OPERATING AT 120° AMBIENT:	
Total coolant capacity gals (Liter)	5.5 (21.0)
Cooling System	Water-cooled
Radiator System	Engine Mounted
Maximum Allowable Oil Temperature F (C)	250 (121)
LUBRICATING SYSTEM:	
Total lubricating capacity quarts (Liter)	4.6 (17.5)
Oil consumption at full load	< 0.1% of fuel consumption
Recommended lubricating oil grade	SAE 15W40
Oil Filter	Full flow spin on, cartridge type

ENGINE ELECTRICAL SYSTEM:	
Starting motor voltage	12 volt
Charger	65 amp alternator with DC output
WetCell Battery	Lead Acid
ALTERNATOR:	
Configuration	Brushless, 12-wire, 4-pole
Frequency	60 Hz
Voltage regulation	+/- 1%, VHz, Electronic, EMI filtered
No load to full load voltage regulation	+/- 2%
Coupling	SAE Adapter, Flexible Disc, Direct
Bearing	Single
Manufacturer	Marathon
Model	431CSL6206
Load acceptance	One Step, 100% per NFPA 110
Comnliance	NEMA, IEEE & ANSI for temp. rise
Rotor	Self-ventilated drip-proof
FUEL CONSUMPTION: PER HOUR GALS (LITERS)	
100%	15.6 (59.1)
75%	11.5 (43.5)
50%	7.8 (29.5)
25%	4.2 (16.0)
CONTROL PANEL SPECIFICATIONS:	
Manufacturer (Model)	Basler (DGC-2020ES)
MPC 10 Controller Inputs	16
MPC 10 Controller Outputs	12
Operating power/consumption	6-32 VDC, Average load 14.2W
Communications	UL 508 R & CSA C22.2 #14
GENERATOR HOUSING:	
Aluminum Enclosure	Sound attenuated to 68 dBA
Base arrangement	Rigid steel base frame with AVMs
Spill containment	UL double wall base mounted

DIMENSIONS & ARRANGEMENT DRAWING UL2200 MODEL: TP200 T3



KEY DIMENSIONS (inches), WEIGHT (pounds) FUEL TANK (US gals)

Description & Configuration		Height		Length		Width		Dry Weight lbs	Fuel Tank
Open set	H1	60.00	L1	10700	W1	44.00	3185	270
Enclosed Set	H2	81.00	L2	13200	W2	44.00	5649	TBA

Ordering#: PWB3184RPER | www.tradewindspower.com | TPS1010-UL

TRADEWINDS POWER CORP

SPECIFICATION SHEET

Power Ratings		kW	kVA
Power	Standby	200.0	250.0
	Prime	180	225
Amps 0.8 Power Factor 3-phase 208V		695	
12-wire voltages: 1P = 120/240; 3P = 120/208, 120/240, 480/277			

Rating Definitions: Rated for 1800 rpm.

Standby ratings are applicable for the duration of any power outage. No overload is available at these ratings. Prime ratings are continuous per BS 5514, DIN 6271, ISO3046-8, IEC 34-1. Overload capacity on prime-power ratings is 10% for one hour in each twelve hours of operation. All single phase ratings are based on a 1.0 power factor. Three phase ratings based on a 0.8 power factor. Ratings are established based on 85°F (29°C) and an elevation of 1,000 feet (305 meters).

STANDARD FEATURES:

Tradewinds Power Corp (TPC) PERKINS diesel powered generator sets are UL2200 approved self contained standby generator packages complete with mounted auto control panel, fuel connector, air cleaners, exhaust silencers, and other accessories mounted on a rigid base frame. All TPC systems and components are prototyped, assembled and tested within a purpose built packaging, manufacturing, and test facility.

Engine:

- PERKINS model 1106D-E70TAG5 3-cylinder diesel engines designed to provide economic and durable operation at prime and standby duties, hitting the key power nodes required by the power generation industry.
- Building upon Perkins proven reputation within the power generation industry, the 1100 Series range of ElectropaK engines fit closely to customers needs
- These ultra clean engines are assembled on a new high technology production line. Frequent computerised checks during the production process ensure high build quality is maintained throughout.
- Oil and filter changes are 500 hours, dependent on load factor
- Wet steel sump with filler and dipstick
- Spin-on full-flow lub oil filter

Alternator:

- Marathon 4-pole, 12-wire brushless generator, single bearing
- Superior voltage waveform achieved by a 2/3 pitch and skewed rotor.
- Vacuum-impregnated windings with fungus-resistant epoxy for dependability and long-life
- Sustained short-circuit capability enabling down-line circuit breakers to trip without collapsing the generator field

Starting System:

- 12-VDC Starter
- Engine mounted battery charging Alternator
- Battery Cables and Rack along with Grounding Strap

Enclosure and Arrangement of Complete Assembly:

- Engine and generator close coupled on rigid frame with vibration isolators
- Vertical radiator and exhaust discharge
- Oil & Coolant Drain Lines with Brass Ball Check Valves

Generator Options:

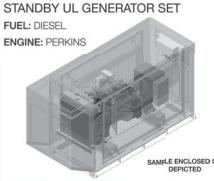
- Weather Protective Enclosure constructed of Marine Grade Aluminum 0.125 thickness, SS Hardware, white powder coat paint finish on both sides, sound Insulation resistant to high temperatures, fuel and oil, hinged / removable / keyed alike doors
- UL double wall base mounted fuel tank
- Residential rated interior mounted exhaust silencer kit

MODEL: TP200 T3

STANDBY UL GENERATOR SET

FUEL: DIESEL

ENGINE: PERKINS



SAMPLE ENCLOSED SET DEPICTED

AUTOMATIC ENGINE CONTROLLER DGC2020:

- Automatic engine controller with analog display of all functions
- Microprocessor Based, Navigation key with large LCD display
- SAE J1939 CANBUS Communication
- Event Recording
- Transfer Switch Control (main failures)
- Alternator Protection: under/over voltage, under/over frequency
- Engine Protection: Low oil pressure, High coolant temperature,Over speed & over crank, Sender Unit failure, Fuel Failure sensor, Battery Charger Failure
- All protections are programmable as Alarms or Pre-alarms
- Metering (ample range): Volts, Current, Hz, Watts, VA, PI, Oil Pressure, Coolant Temperature, RPM, DC Volts Fuel Level, Engine running time
- Engine Control with Timers
- External remote start input (on or off load)
- 16 programmable contact inputs - 7 Contact outputs

SCADA interface points:

- No fuel
- Low battery charging vonage
- Engine running
- Common engine alarm
- Switch in Emergency Position

DGC-2020 DIGITAL CONTROLLER

OPTIONAL CONTROL EQUIPMENT:

- Low coolant level switch
- Water separator fuel filter
- Space heater
- Generator drip covers
- 17-light remote annunciator panel

WARRANTY:

- Engine covered under the original equipment manufacturer's warranty - consult Tradewinds Power Corp for details
- Complete package supplied with 2-year limited warranty

The manufacture reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

www.tradewindspower.com | TPS1010-UL

VOLTAGE: 480Y277V 3PH 4W | TYPE: SIEMENS P3
BUS: 400A | CIRCUITS: AS NOTEC
MAIN: CIRCUIT BREAKER | MOUNT: SURFACE
MAIN SIZE: 400A | LOCATION:
OPTION: SPD | SERVES:

PANEL: DP-110

PANEL COVER SHALL BE MARKED "DANGER: POTENTIAL ARC FLASH HAZARD"
PANEL AIC: 42,000 SYMM

LT	CKT NO	LOAD DESCRIPTION	BKR P	BKR TRIP	WIRING AND CONDUIT	CONNECTED VA A	CONNECTED VA B	CONNECTED VA C	WIRING AND CONDUIT	BKR P	BKR TRIP	LOAD DESCRIPTION	CKT NO	LT
L	1	PUMP NO. 1	3	225	SEE RISER DIAG	34333	21329		SEE RISER DIAG	3	150	PUMP NO. 2	2	M
L	3	-	-	-			34333	21329		-	-	-	4	M
L	5	-	-	-				34333	21329	-	-	-	6	M
M	7	PANEL P TRANSFORMER	2	30	3-10,1-10G,3/4"C	5000			4-10+1-10G	3	30	SPD	8	
M	9	-	-	-			5000			-	-	-	10	
	11	SPACE	1	-						-	-	-	12	
	13	SPACE	1	-									14	
	15	SPACE	1	-									16	
	17	SPACE	1	-									18	
	19	SPACE	1	-									20	
	21	SPACE	1	-									22	
	23	SPACE	1	-									24	
		CONNECTED VA:				60662	60662	55662						

TOTAL CONNECTED VA: 176986 | TOTAL CONNECTED A: 213 | PANEL REQUIRED AMPACITY: 244

LT	LOAD TYPE	FACTOR	VA
C	CONTINUOUS	1.25	0
L	LARGEST MOTOR	1.25	128749
M	MISCELANEOUS	1.00	73987
R	RECEPTACLES ≤ 10kVA	1.00	0
	RECEPTACLES >10kVA	0.50	
K	KITCHEN	0.65	0
		TOTAL CALCULATED LOAD	202736

VOLTAGE: 120/240V 1PH 3W | TYPE: SIEMENS
BUSS: 100A | MOUNTING: SURFACE
MAIN: 60A MCB | LOCATION:
OPTION: | SERVES:

PANEL: P-110

PANEL COVER SHALL BE MARKED "DANGER: POTENTIAL ARC FLASH HAZARD"
BRANCH CKT BKRS INT. RATING: 10 kAIC MAX.

LT	CKT NO	LOAD DESCRIPTION	BKR P	BKR TRIP	WIRING AND CONDUIT	CONNECTED VA A	CONNECTED VA B	WIRING AND CONDUIT	BKR P	BKR TRIP	LOAD DESCRIPTION	CKT NO	LT
C	1	LIGHTS - ELEC RM	1	20	2-12+12G-3/4"C	131	180	2-12+12G-3/4"C	1	20	RECEPTACLE - ELEC RM	2	R
C	3	LIGHTS - PUMP RM	1	20	2-12+12G-3/4"C		77	180	2-12+12G-3/4"C	1	20	RECEPTACLE - PUMP RM	4	R
C	5	LIGHTS - EXTERIOR	1	20	2-12+12G-3/4"C	90	180	2-12+12G-3/4"C	1	20	RECEPTACLE - ROOF	6	R
M	7	BATTERY CHARGER	2	30	2-10+10G-3/4"C		3000	600	2-12+12G-3/4"C	1	20	CONTROLS	8	M
M	9	-	-	-		3000	864		2-12+12G-3/4"C	1	20	EXHAUST FAN	10	L
	11	SPACE	1	-				200	2-12+12G-3/4"C	1	20	SUMP PUMP	12	R
	13	SPACE	1	-						1	-	SPACE	14	
	15	SPACE	1	-						1	-	SPACE	16	
	17	SPACE	1	-						1	-	SPACE	18	
	19	SPACE	1	-						1	-	SPACE	20	
	21	SPACE	1	-						1	-	SPACE	22	
	23	SPACE	1	-						1	-	SPACE	24	
		CONNECTED VA:				4445		4057						

TOTAL CONNECTED VA: 8502 | TOTAL CONNECTED A: 35 | PANEL REQUIRED AMPACITY: 37

LT	LOAD TYPE	VA
C	CONTINUOUS	373
L	LARGEST MOTOR	1080
M	MISCELANEOUS	6600
R	RECEPTACLES	740
		8793

VOLTAGE: 120/240V 1PH 3W | TYPE: SIEMENS
BUSS: 100A | MOUNTING: SURFACE
MAIN SIZE: 60A MCB | LOCATION:
OPTION: | SERVES:

PANEL: P-109

PANEL COVER SHALL BE MARKED "DANGER: POTENTIAL ARC FLASH HAZARD"
BRANCH CKT BKRS INT. RATING: 18 kAIC MAX.

LT	CKT NO	LOAD DESCRIPTION	BKR P	BKR TRIP	WIRING AND CONDUIT	CONNECTED VA A	CONNECTED VA B	WIRING AND CONDUIT	BKR P	BKR TRIP	LOAD DESCRIPTION	CKT NO	LT
M	1	BATTERY CHARGER	1	20	2-12+12G-3/4"C	1440	180	2-12+12G-3/4"C	1	20	RECEPTACLE	2	R
M	3	BLOCK HEATER	1	20	2-12+12G-3/4"C		1500	200	2-12+12G-3/4"C	1	20	CONTROLS	4	M
M	5	OIL PRE-HEATER	1	20	2-12+12G-3/4"C	500		2-12+12G-3/4"C	1	20	EXTERIOR LTG 1	6	C
	7	SPACE	1	-					1	-	SPACE	8	
	9	SPACE	1	-					1	-	SPACE	10	
	11	SPACE	1	-					1	-	SPACE	12	
		CONNECTED VA:				2120	1700						

TOTAL CONNECTED VA: 3820 | TOTAL CONNECTED A: 16 | PANEL REQUIRED AMPACITY: 16

1 VIA 2 POLE ASTRONOMIC TIME CLOCK

LT	LOAD TYPE	VA
C	CONTINUOUS	625
L	LARGEST MOTOR	0
M	MISCELANEOUS	3140
R	RECEPTACLES	180
		3945

VOLTAGE: 480Y277V 3PH 4W | TYPE: SIEMENS P3
BUS: 400A | CIRCUITS: AS NOTEC
MAIN: CIRCUIT BREAKER | MOUNT: SURFACE
MAIN SIZE: 400A | LOCATION:
OPTION: SPD | SERVES:

PANEL: DP-109

PANEL COVER SHALL BE MARKED "DANGER: POTENTIAL ARC FLASH HAZARD"
PANEL AIC: 42,000 SYMM

LT	CKT NO	LOAD DESCRIPTION	BKR P	BKR TRIP	WIRING AND CONDUIT	CONNECTED VA A	CONNECTED VA B	CONNECTED VA C	WIRING AND CONDUIT	BKR P	BKR TRIP	LOAD DESCRIPTION	CKT NO	LT
L	1	PUMP NO. 1	3	175	SEE RISER DIAG	26600	26600		SEE RISER DIAG	3	175	PUMP NO. 2	2	M
L	3	-	-	-			26600	26600		-	-	-	4	M
L	5	-	-	-				26600	26600	-	-	-	6	M
M	7	PANEL P TRANSFORMER	2	30	3-10,1-10G,3/4"C	3750			4-10+1-10G	3	30	SPD	8	
M	9	-	-	-			3750			-	-	-	10	
	11	SPACE	1	-						-	-	-	12	
	13	SPACE	1	-									14	
	15	SPACE	1	-									16	
	17	SPACE	1	-									18	
	19	SPACE	1	-									20	
	21	SPACE	1	-									22	
	23	SPACE	1	-									24	
		CONNECTED VA:				56950	56950	53200						

TOTAL CONNECTED VA: 167100 | TOTAL CONNECTED A: 201 | PANEL REQUIRED AMPACITY: 225

LT	LOAD TYPE	FACTOR	VA
C	CONTINUOUS	1.25	0
L	LARGEST MOTOR	1.25	99750
M	MISCELANEOUS	1.00	87300
R	RECEPTACLES ≤ 10kVA	1.00	0
	RECEPTACLES >10kVA	0.50	
K	KITCHEN	0.65	0
		TOTAL CALCULATED LOAD	187050

HNGS ENGINEERS
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CONSULTING ENGINEERS HNGS # 190069
4850 SW 74TH COURT
MIAMI, FLORIDA 33155 (305) 270-9035 Fax (305)665-6891
FL CA Lic. # 444

02-04022 REVISION 1 ADDRESS MDC COMMENTS

PERMIT SET 02-02-2022

DESIGN BY: A.E.W.	DATE: 12/16/19	PANEL SCHECULES AND GENERATOR SPECIFICATIONS	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	MIAMI-DADE COUNTY TRANSPORTATION AND PUBLIC WORKS DEPARTMENT STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01 / SHEET NO. 8
DRAWN BY:	DATE:				DRAWING NO. E-7 / OF 17 SHEETS
CHECKED BY: A.E.W.	DATE:				

100% SUBMITTAL

Revised Plans by Addendum No.5

Department of Regulatory and Economic Resources
Plan Review & Development Approval Division
11805 SW 26th Street Suite 124
Miami,Florida 33175-2464
T 786-315-2800 F 786-315-2919
miamidade. gov

GENERATOR FUEL CONSUMPTION WORKSHEET

Facility: MIAMI DADE CO. PUMP STA 109&110 Process/Permit #:
Address: Folio Number #:
Date: 09/11/2024 Reviewed by: Yuniel Diaz

GENERATOR	
1. Type of Fuel:	☑ Diesel ☐ Gasoline ☐ Propane ☐ Natural Gas
2. Number of Generators: (include new and existing for entire site)	New: 1 per site Existing: 0
3. Fuel Consumption of all Emergency Generators at full (100%) load (Table 1): (gallon / hour)	15.6 GAL/HR AT 100%
4. Exercise time: (hour / week) 0.25 HR/WEEK	5. Annual Fuel Usage (gal / yr): = (3) × (4) × (52 weeks / yr) 203 GALS/YR
6. Is (5) greater than any of the following amounts? [5,400 gallons of gasoline; 64,000 gallons of diesel fuel; 288,000 gallons of propane; 8.8 million standard cubic feet of natural gas] ☐ Yes. STOP. State and County Air Permit Applications need to be completed. Contact Air Facilities Section at 305.372.6925 for instructions. ☑ No. Go to line 7.	
7. Potential Annual Fuel Consumption (gal / yr): = (3) × 500 (hr/year)	7,800 GAL/YR
8. Is (7) greater than any of the following amounts? [5,400 gallons of gasoline; 64,000 gallons of diesel fuel; 288,000 gallons of propane; 8.8 million standard cubic feet of natural gas] ☐ Yes. STOP. County Air Permit Application needs to be completed. ☑ No. Go to line 9.	
9. Is there any other source of air emissions? ☐ Yes. STOP. County Air Permit Application needs to be completed. ☑ No. Resubmit your plans w/completed worksheet or make an appt. 786.315.2800 to see an AIR Reviewer.	

Table 1: List of Generators*

No.	Manufacturer	Model	kW	Fuel	Fuel Consumption @ full (100%) load	New/ Existing
1	Tradewind	TE200	200	Diesel	15.8 gal/hr	New
2						
3						
4						
5						
				Total	15.8 gal/hr	gal/hr

*Attach generator's specifications.

The information provided above is true to the best of my knowledge and corresponds to the referenced project site.

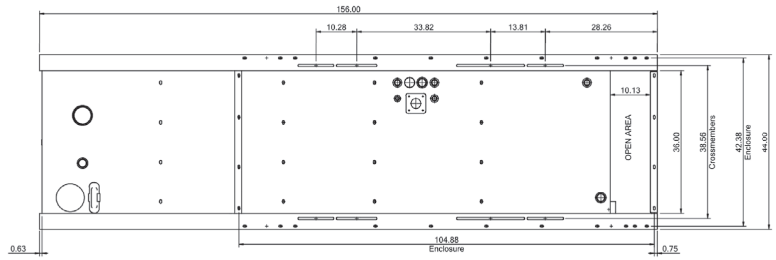
Anthony Schulz PE
Name in Print Responsible Party / Title

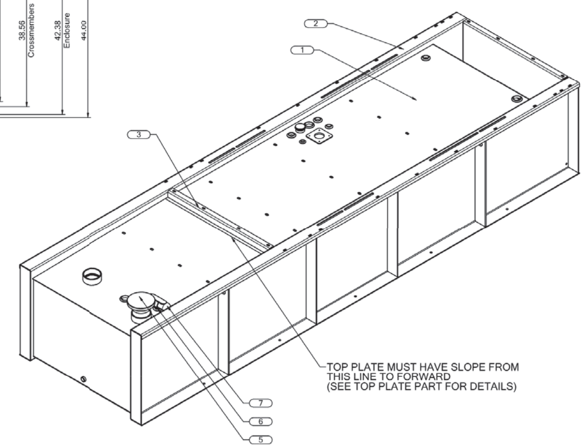
Signature

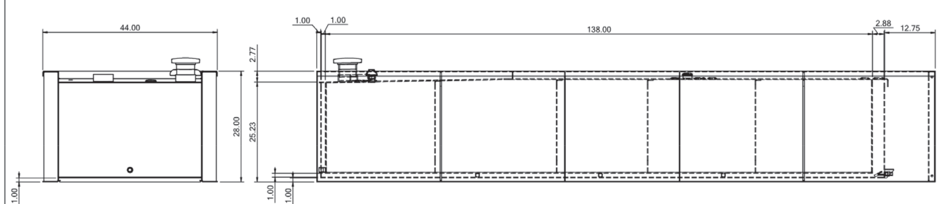
awh 06/12

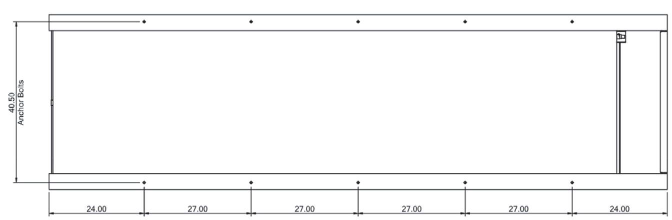
NOTE:
1- TANK SIZE IS 474 GALLONS
2- FUEL TYPE IS DIESEL
3- TANK IS A STEEL DOUBLE WALL UL142
4- ALL APPLICABLE EQUIPMENT WILL BE FDEP APPROVED.
5- ALL GENERATOR TANKS WILL BE NEW.
6- TANK TO BE MANUFACTURED BY TRADEWINDS POWER CORP.
7- OVERFILL EQUIPMENT IS MANUAL OPERATION.
8- INTERSTITIAL SPACE LEAK DETECTION IS WIRED TO THE GENERATOR CONTROL PANEL AND CONNECTED REMOTELY WITH THE SCADA INTERFACE CONNECTION. CONTROL PANEL TO SOUND ALARM UPON LEAK DETECTION.

Bill of Materials			
Item	Part No.	Description	Qt'y
1	401-220528-IT	Inner Tank	1
2	401-220528-OT	Outer Tank Asm	1
3	401-220528-14	Angle	1
4	4YM36OPP	Leak Detector	1
5	N/A	Emergency Vent, 4" NPT	1
6	G10575110OPP	Close Nipple, 1-1/4" NPT	1
7	N/A	Normal Vent, 1 1/4" NPT	1









NOTE :
Tank shall comply with UL-142 standards for above ground tanks

NOTE :
Tank Stated Capacity : 470 Gal.
Tank Actual Capacity : 474 Gal.

FINISH :
AWLGRIP (Black Semi-Gloss)

Rev	Description	Date	By
1	See rev. in item # 401-220528-12 & # 401-220528-IT	10/18/2017	RB

Revisions

TRADEWINDS POWER CORP

Tank Group

Tank Asm, C 470 Gal/2w UL FDEP Ready

Scale : 1:12
Drawn : RB Date : 11/1/2016
Appr : Date :
Weight : 2287.8#

Drawing No	Req Asm	Req Total	Remarks
401-220528		1	

Next Assy

All dimensions are in inches (Except as noted)

Material: Rev 1 Sheet 1 of 1 Size D Drawing No. 401-220528TPC

File Name : 401-220528

NEW SHEET

HUFSEY • NICOLAIDES • GARCIA • SUAREZ
CONSULTING ENGINEERS HNGS # 190069
4800 SW 74TH COURT
MIAMI, FLORIDA 33155 (305) 270-9935 Fax (305)665-5891
FL CA Lic. # 444

PERMIT SET 02-02-2022

08-29-24 REVISION 2 ADDRESS MDC COMMENTS
02-04022 REVISION 1 ADDRESS MDC COMMENTS

DESIGN BY: A.E.W.	DATE: 12/16/19	GENERATOR TANK DRAWING	BISCAYNE SHORES PUMP STATIONS No. 109 AND 110 RETROFIT	TRANSPORTATION AND PUBLIC WORKS DEPARTMENT STEPHEN P. CLARK CENTER 111 NW 1ST STREET, 16TH FLOOR MIAMI, FLORIDA 33128	PROJECT NO. 17053.01	SHEET NO. 9
DRAWN BY:	DATE:				DRAWING NO. E-8	OF 17 SHEETS
CHECKED BY: A.E.W.	DATE:					

100% SUBMITTAL