**RESOLUTION No. 23-199**

**A RESOLUTION OF THE MAYOR AND THE CITY COUNCIL OF THE CITY OF DORAL, FLORIDA, AUTHORIZING THE CITY MANAGER TO EXECUTE THE SECOND AMENDMENT TO A WORK ORDER WITH KIMLEY-HORN AND ASSOCIATES, INC., TO INCREASE THE AVAILABLE FUNDS TO COVER THE COST FOR ADDITIONAL DESIGN AND PERMITTING SERVICES ASSOCIATED WITH THE ROADWAY IMPROVEMENTS ALONG NW 112 AVENUE, NW 66 STREET, AND 99 AVENUE IN AN AMOUNT NOT TO EXCEED $13, 110.00; AUTHORIZING THE CITY MANAGER TO EXECUTE THE WORK ORDER AMENDMENT AND EXPEND BUDGETED FUNDS ON BEHALF OF THE CITY; PROVIDING FOR IMPLEMENTATION; AND PROVIDING FOR AN EFFECTIVE DATE**

**WHEREAS,** on April 14, 2021, the Public Works Department (PWD) executed Work Order No. 1 with the firm Kimley-Horn and Associates, Inc. to provide the provision of design and permitting services for the roadway improvements along NW 66th Street from NW 97th Avenue to NW 102nd Avenue, along NW 102nd Avenue from NW 64th Way to NW 66th Street, and along NW 99th Avenue from NW 64th Way to NW 66th Street; and

**WHEREAS,** the Work Order was approved via Resolution No. 21-100 and executed on a time and material basis in a not to exceed amount of $232,083.00; and

**WHEREAS,** Kimley-Horn and Associates, Inc. is a prequalified provider of professional engineering services selected in accordance with Consultant Competitive Negotiation Act (CCNA) requirements and approved by the City Council in December 2020 via Resolution 20-24; and

**WHEREAS,** in May 2023, Amendment No. 1 to Work Order No. 1 was approved by the Mayor and the City Councilmembers via Resolution No. 23-73; and

**WHEREAS,** the Amendment increased the Work Order amount by $10,736.00, from $232,083.00 to $242,819.0, due to additional efforts that resulted from the permitting phase with Miami-Dade County (MDC); and

**WHEREAS,** during the permitting phase with South Florida Water Management District (SFWMD) additional requests were made that require additional professional services hours and a work order amendment; and

**WHEREAS,** in order to cover the additional efforts that resulted from the permitting phase with SFWMD, the PWD requested a proposal and negotiated with Kimley-Horn and Associates, Inc. the attached supplemental proposal on a time and material basis with a not to exceed amount of $13,100.00 for a new “amended” work order total amount of $255,929.00; and

**WHEREAS,** the PWD respectfully requests authorization from the Mayor and the City Councilmember to authorize the City Manager to execute the second amendment to Work Order No. 1 enclosed as part of "Exhibit A" for Kimley-Horn and Associates, Inc. to provide additional hours for design professional service associated with the roadway improvements along NW 66th Street / NW 102nd Avenue / NW 99th Avenue; and

**WHEREAS,** funding for this request is available in the Public Works Department Transportation Fund, “Construction in Progress” Account, Account Num. 101.80005.500650.

**NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND THE CITY COUNCIL OF THE CITY OF DORAL AS FOLLOWS:**

**Section 1. Recitals.** The above recitals are confirmed, adopted, and incorporated herein and made part hereof by this reference.

**Section 2. Approval.** The Amendment number 2 to Work Order No. 1 between the City of Doral and Kimley-Horn and Associates, Inc. for additional professional service hours associated with the design of the roadway improvements along NW 66th Street / NW 112th Avenue / NW 99th Avenue, in an amount not to exceed $13,110.00 for a revised total work order not to exceed amount of $255,929.00, a copy which is attached hereto as Exhibit "A", is hereby approved.

**Section 3. Authorization.** The City Manager is authorized to execute the work order amendment and expend budgeted funds on the behalf of the City.

**Section 4. Implementation.** The City Manager and the City Attorney are hereby authorized to take such further action as may be necessary to implement the purpose and provisions of this Resolution.

**Section 5. Effective Date.** This Resolution shall become effective immediately upon its adoption.

The foregoing Resolution was offered by Vice Mayor Puig-Corve who moved its adoption. The motion was seconded by Councilmember Porras and upon being put to a vote, the vote was as follows:

| | |
|---|---|
| Mayor Christi Fraga | Yes |
| Vice Mayor Oscar Puig-Corve | Yes |
| Councilwoman Digna Cabral | Yes |
| Councilman Rafael Pineyro | Yes |
| Councilwoman Maureen Porras | Yes |

PASSED AND ADOPTED this 8 day of November, 2023.

CHRISTI FRAGA, MAYOR

ATTEST:

CONNIE DIAZ, MMC
CITY CLERK

APPROVED AS TO FORM AND LEGAL SUFFICIENCY
FOR THE USE AND RELIANCE OF THE CITY OF DORAL ONLY:

VALERIE VICENTE, ESQ. for
NABORS, GIBLIN & NICKERSON, P.A.
CITY ATTORNEY

# EXHIBIT “A”

**SECOND AMENDMENT TO WORK ORDER No. 1 BETWEEN THE CITY OF DORAL, FLORIDA AND KIMLEY-HORN AND ASSOCIATES, INC**

The Second Amendment to Kimley-Horn and Associates, Inc Work Order No.1, made and entered into this ____ day of **November**, **2023,** by and between the City of Doral, Florida, a municipal corporation of the State of Florida ("City") and Kimley-Horn and Associates ("Consultant") having its place of business at 355 Alhambra Circle, Suite 1400 Miami, Florida 33134, is made a part of the original Work Order No. 1 dated April 14, 2021, as amended (the "Work Order") between the City and Consultant attached hereto as composite Exhibit "A". The City and the Consultant hereby agree as follows:

**WHEREAS,** the City engaged Consultant to perform the design and permitting services of roadway improvements along NW 102nd Avenue, NW 66th Street, and NW 99" Avenue, as more particularly described in Work Order No. 1, as amended by the First Amendment dated April 6, 2023, attached hereto as composite Exhibit "A" (collectively, "Work Order"); and

**WHEREAS,** the original cost for the design services approved by the original Work Order was a not to exceed amount of $ 232,083.00; and

**WHEREAS,** pursuant to the First Amendment, the cost for the provision of design services was increased by $10,736.00, which brought the new total not to exceed amount to $242,819.00, and added additional services as more particularly described therein; and

**WHEREAS,** the compensation set forth in the Word Order is insufficient to cover design phase completion as a result of additional services/scope necessitated by the permitting phase with South Florida Water Management District ("SFWMD") as set forth herein; and

**WHEREAS,** during the permitting phase, SFWMD submitted a request for additional information (RAI) that require additional professional services hours and a work order amendment with the Consultant—specifically, a flood plain analysis and calculations had to be performed to satisfy permit requirements, and roadway plans were revised to include detailed stormwater Pollution Prevention Plans (SWPPP); and

**WHEREAS,** in addition to the above, additional coordination with the SFWMD and Miami Dade County DERM was required for confirmation of wetlands presence and acceptance of the out-of-area Wetland Mitigation Bank; and

**WHEREAS,** the performance of services associated with the aforementioned additional services was negotiated and will be executed on a time and material basis in a not to exceed the amount of $13,110.00, as more particularly set forth in Consultant's proposal attached hereto as Exhibit "B" ("Additional Services"); and

**WHEREAS,** the City now requires the Additional Services from the Consultant in the amount of $13,110.00, thereby bringing the new total not to exceed amount of the Work Order, as amended, to $255,929.00, as more particularly described in Exhibit "B".

**NOW THEREFORE,** in consideration of the mutual covenants set forth in this amendment, the parties agree as follows:

**Section 1.** **Recitals.** The above recitals are true and correct and incorporated herein.

**Section 2.** **Amendments**. The following Section of the Work Order tilted "Scope of Services and Schedule" is hereby amended to be deleted in its entirety and replaced with the following:

> **SCOPE OF SERVICES AND SCHEDULE:**
> The performance of services associated with this Work Order will be executed on a time and material basis with a not to exceed amount of $255, 929.00.
>
> The scope of the project will be as described in the attached composite Exhibit "A", inclusive of the Additional Services as more particularly described in Exhibit "B".
>
> Consultant is required by the Continuing Service Agreement to begin work subsequent to the execution of this Work Order, or as directed otherwise.

**Section 3.** **Incorporation of Continuing Services Agreement**. The Work Order, as amended, incorporates the terms and conditions set forth in the Continuing Services Agreement dated January 4, 2021, between the parties as though fully set forth herein. In the event that any terms or conditions of the Work Order conflict with the Continuing Services Agreement, the provisions of this specific Work Order shall prevail and apply.

**Section 4.** **Other Provisions Remain in Effect.** Except as specifically modified herein, all terms and conditions of the original Work Order, as amended by the First Amendment, between the parties shall remain in full force and effect.

**Section 5.** **Conflicting Provisions.** The terms, statements, requirements, and provisions contained in this Second Amendment shall prevail and be given superior effect and priority over any conflicting or inconsistent term, statement, requirement or provision contained in any other document or attachment, including but not limited to composite Exhibit "A."

**IN WITNESS WHEREOF,** the parties hereto have executed this second amendment on the day and date first above written, in three (3) counterparts, each of which shall, without proof or accounting for the other counterpart, be deemed an original.

**CONSULTANT**: Kimley-Horn and Associates, Inc WITNESSES: SEAL:

BY: _____ 1. _____
NAME: _____ 2. _____
TITLE: _____

OWNER: **CITY OF DORAL** AUTHENTICATION:

| | | | |
|---|---|---|---|
| BY: | _____ | BY: | _____ |
| NAME: | Barbara Hernandez, | NAME: | Connie Diaz |
| TITLE: | City Manager | TITLE: | City Clerk |

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY FOR THE SOLE USE
OF THE CITY OF DORAL:

BY: _____
NAME: Valerie Vicente, Esq for Nabors Giblin and Nickerson, P.A
TITLE: City Attorney

# Composite Exhibit “A”

# WORK ORDER No. 1 FOR PROFESSIONAL SERVICES

TO: Kimley-Horn and Associates, Inc.
355 Alhambra Circle, Suite 1400
Coral Gables, Florida 33134

DATE: April 14, 2021

The City of Doral authorizes the firm of Kimley-Horn and Associates, Inc. (Kimley-Horn) to provide professional engineering design and permitting services for the provision of roadway improvements along NW 102nd Avenue, NW 66th Street, and NW 99th Avenue. Where Kimley-Horn is a prequalified provider of professional engineering services selected in accordance with Consultant Competitive Negotiation Act (CCNA) requirements and approved by the City Council in October 2020 through Resolution 20-243. The work should be performed in accordance with the contract provisions contained in the Continuing Professional Services Agreement between Kimley-Horn and the City of Doral dated January 4, 2021, and the attached Proposal and submitted in March 2021 by your firm for the above referenced project.

SCOPE OF SERVICES AND SCEHDULE:
The scope of the project will be as described in the attached proposal from Kimley-Horn for the design and permitting of the adjacent roads to the vacant parcel referenced by Folio No. 35-3017-001-0660, NW 102nd Avenue, NW 66th Street, and NW 99th Avenue. The schedule requires the scoped of work to be completed within 9 months of NTP. All limitations of time set forth in this Work Order are of the essence. The performance of services associated with this Work Order will be executed on a time and material basis not to exceed the amount of $232,083.00.

You are required by the Continuing Service Agreement to begin work subsequent to the execution of this Work Order, or as directed otherwise. If you fail to begin work subsequent to the execution of this Work Order, the City of Doral will be entitled to disqualify the Proposal and revoke the award.

Work Order incorporates the terms and conditions set forth in the Continuing Services Agreement dated January 4, 2021 between the parties as though fully set forth herein. In the event that any terms or conditions of this Work Order conflict with the Continuing Services Agreement, the provisions of this specific Work Order shall prevail and apply. Work Order is not binding until the City of Doral agrees and approves this Work Order.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and date first above written, in three (3) counterparts, each of which shall, without proof or accounting for the other counterpart be deemed an original Contract.

CONSULTANT: Kimley-Horn and Associates

WITNESSES:

SEAL:

BY: _____
NAME: Aaron Buchler, P.E.
TITLE: Senior Vice President

1. _____
2. _____

OWNER: City of Doral

AUTHENTICATION:

BY: _____
NAME: Albert P. Childress
TITLE: City Manager

BY: _____
NAME: Connie Diaz
TITLE: City Clerk

APPROVED AS TO FORM AND LEGAL SUFFICIENCY FOR THE SOLE USE OF THE CITY OF DORAL:

BY: _____
NAME: Luis Figueredo, Esq
TITLE: City Attorney

Kimley»Horn

Mr. Eugene Collings-Bonfill, P.E.
Assistant Director/Chief of Engineering
City of Doral
8401 NW 53rd Terrace – Suite 200
Doral, FL 33166

***RE: Proposal for Professional Engineering Consulting Services for NW 66th Street from NW 102nd Avenue to NW 99th Avenue City of Doral, Miami-Dade County, Florida***

Dear Mr. Collings-Bonfill:

Kimley-Horn and Associates, Inc. ("Kimley-Horn" or "Consultant") is pleased to submit this letter agreement ("Agreement") to the City of Doral ("Client") for providing professional engineering consulting services for the above referenced project. All work under this scope will be in accordance with the terms and conditions of Professional Services Agreement (General Engineering/Architecture Services RFQ 2020-22), between the City of Doral and Kimley-Horn. Our project understanding, scope of services, schedule, and fees follow:

## PROJECT UNDERSTANDING

1. Our proposed scope of services and fee proposal is based on the Client's request for the design of roadway improvements to NW 66th Street from 97th Avenue to NW 102nd Avenue. Currently NW 66th Street within the project limits is a curbed 3-lane undivided road. The proposed right-of-way is 70'. Kimley-Horn will provide construction plans for the roadway improvements to widen NW 66th St to the south to accommodate bike lanes and two 12' travel lanes, with curb & gutter, and a sidewalk proposed on the south side. A self-contained interconnected drainage system will be designed with associated modifications to the existing roadway. In addition, improvements will be extended on NW 102nd Avenue and NW 99th Avenue. On NW 102nd Avenue, the existing roadway south of NW 66th Street will be widened to match the recently built portion of the roadway south of the intersection, approximately 300' of widening is being proposed with sidewalk, curb and gutter and drainage improvements. Along NW 99th Avenue, a new roadway connection between NW 66th Street and the recently built roadway approximately 300' south is being proposed within the 35' available right-of-way. Milling and resurfacing of NW 99th Ave and NW 102nd Ave to transition striping to proposed typical sections is expected for approximately 300' south of the widened/new constructed roads. The intersections with NW 99th Avenue and 102nd Avenue will be considered as stop conditions for NW 66th Street as directed by the Client.

2. Because the project is adjacent to the Miami-Dade Resources Recovery Facility and related landfills, an Environmental Site Assessment (ESA) Phase I and Phase II has been already prepared by the City. If additional coordination is required, as a result of the prior coordination the City has had with Miami-Dade RER, these services are nor covered in this scope of services.

3. As part of the scope of services, Kimley-Horn will conduct an on-site investigation to determine if wetland permits will be required. If required, wetlands permitting will be addressed as per Task 04 – Environmental Permitting - Optional Services.

4. If determined during the permitting process that a Bonneted Bat Survey is required, it will be addressed as per Task 04 – Environmental Permitting - Optional Services.

5. If determined during the tree permitting process that tree mitigation is required, it will be addressed as per Task 05 – Tree Mitigation - Optional Services.

6. If available, the City shall provide existing information including existing plans (PDF and CAD format if available) of ongoing and previous public and private projects along the corridor and its vicinity.

7. Plans are to be prepared using Miami-Dade County Plans Preparation Format and Standards for Roadway Construction Projects and FDOT Basis of Estimates for cost estimates.

8. It is anticipated that the proposed improvements will require permits from Miami-Dade County Regulatory and Economic Resources Department (RER), as well as a permit from the Miami-Dade County Department of Public Works (MDC-PW) and South Florida Waste Management District (SFWMD).

9. It is assumed project phasing may be required due to coordination with ongoing private development east of the project limits. It is assumed a permitting set will be developed and NW 99th Ave may be advanced to 100% prior to the additional roads.

10. Proposed improvements will be designed in accordance with the requirements, standards and specifications of the City of Doral, Miami-Dade County and FDOT, where applicable. It is anticipated that this project will follow the Miami Dade County's standard requirements for 60%, 90% and final plans review process.

## SCOPE OF SERVICES

The scope of services for the project will be completed by Kimley-Horn and Associates, Inc. (Kimley-Horn) and their sub-consultants, Tierra of South Florida, Inc. (Geotechnical Services) and M. G. Vera & Assoc., Inc. (Survey Services) (See ***Appendix "A"*** – Sub-consultants' fee proposals).

### TASK 01 – GEOTECHNICAL SERVICES

See Appendix "A", Sub-consultant Fee Proposal for Scope of Services.

### TASK 02 – TOPOGRAPHIC SERVICES

See Appendix "A", Sub-consultant Fee Proposal for Scope of Services.

## TASK 03 – ROADWAY CONSTRUCTION DOCUMENTS

### Task 03 – A: Preliminary Typical Section

Based on our preliminary coordination with the City, NW 66th Street will be widened to the south from the existing crown and drainage inlets will be proposed on the south side of the road connected to a proposed french drain interconnected system. Similarly NW 102nd Ave will be widened to the east and a connection to NW 99th Ave will be proposed within the future 70' right-of-way, where this scope of services is only responsible for the design of the western 35' of right-of-way and a future development will build the remaining 35' to the east. No drainage outfalls will be proposed.

Kimley-Horn will prepare three (3) typical sections for review and coordination with the City. Kimley-Horn will attend one (1) meeting with the City to review and obtain concurrence on the typical section to use along the project.

***Deliverables:***

*Three (3) Typical Sections – 11" x 17" for NW 66th Street, NW 102nd Ave and NW 99th Ave*

### TASK 03 – B: Construction Documents for Approved Typical Section

A base map of the existing conditions will be prepared, at a scale of 1" = 40', utilizing the field survey data. Kimley-Horn will develop a typical section for the proposed roadway improvements within the roadway right of way. Kimley-Horn will submit this typical section to the Client for approval. Kimley-Horn will provide plans based upon the approved typical section. The design plans will show the geometric layout over the base survey data.

Kimley-Horn will submit three (3) copies of the 60% plans to the City of Doral prior to submitting revised 60% plans to the permitting agencies for distribution to the appropriate departments for their review. After sufficient review time, a meeting will be scheduled with City and County staff to review the 60% design plans. The purpose of the meeting will be to review the 60% plan comments, discuss revisions and design decisions, solicit additional comments from agencies' staff and Client representatives, concluding the meeting with an approved Plan. The 90% plans review will be similar to the 60% review process.

Kimley-Horn will furnish the plans to each utility company known to operate within the project area with a request that each utility company return one set of marked-up plans, identifying the horizontal and vertical location of their facilities. Kimley-Horn will incorporate the markups related to location of existing utilities into the plans.

Kimley-Horn anticipates attending the following meetings as part of the construction documents phase: four (4) meetings with Client staff for coordination and review comments; Three (3) meetings with RER; one (1) meeting with the utility companies to review the project and potential impacts to their utilities (Utility Coordination Meeting); and two (2) meetings with Miami Dade County for permit coordination.

In general, the roadway construction plans and other deliverables will contain the following information:

**Roadway**

1. A cover sheet utilizing the standard Miami-Dade County cover sheet.
2. Typical sections will be prepared, depicting the proposed work. It is anticipated that five (5) typical sections will be required for NW 66th Street, NW 102 Ave and NW 99th Ave.
3. Summary of quantities.
4. Horizontal alignments and roadway improvements will be shown on the plan sheets.
5. General notes will be provided as needed.
6. Existing utility information, as provided in the survey and the information provided by the respective utility Owners will be added to the plans.
7. Miscellaneous Details not included in County or FDOT Standards.
8. Maintenance of traffic plans will include only: phasing notes, and phasing typical sections at 1"=40' scale. Detailed Maintenance of Traffic plans are not included.
9. Opinion of probable cost at 60%, 90% and final submittal.

***Estimated Number of Sheets: 35***

**Drainage**

Kimley-Horn will attend up to three (3) coordination meetings with the Client and Miami-Dade County Regulatory and Economic Resources Department (RER) during the course of the design and permitting process. The meetings will consist of a meeting to review the conceptual stormwater design, two (2) meetings with RER to review and approve of the Final Design Package.

A hydraulic analysis will be conducted in the project area. During the analysis, the volume of stormwater runoff will be calculated from the design storm. Following the calculation of excess stormwater volume various methods, including on-site disposal, will be evaluated to provide water quality treatment within the project area. Methods previously developed for the County and RER will be used to predict stormwater pollutant loads and treatment capability.

Following the hydraulic analysis, Kimley-Horn will prepare a conceptual design for improvements to the stormwater collection and disposal systems within the project area. The conceptual design will include locations and capacities of catch basins and localized disposal systems (e.g., French drains), and a listing of details to be included into drainage features.

Drainage deliverables will include the following:

1. Drainage Report
2. Drainage plan, to be shown on Roadway plans.
3. Drainage structure sheets.
4. Miscellaneous Drainage Details – These sheets would provide drainage details that are not included in the Florida Department of Transportation Standard Indexes or Miami-Dade County details.

***Estimated Number of Sheets: 10***

**Signing and Pavement Marking**

In general the Signing and Pavement Marking plans will include the following:

1. Summary of Signing and Pavement Marking Quantities and Notes - Summarizing the anticipated work elements and their associated approximate quantities as well as Notes relating to these elements.
2. Signing and Pavement Marking Plans – Signing and pavement markings will be shown at a scale of 1" = 40'.

***Estimated Number of Sheets: 8***

**Lighting**

It is assumed that the original NW 66th Street lighting design accounted for the additional widening of NW 66th Street and that NW 99th Ave will have lighting on the east side of the roadway proposed by the future developer. Therefore, this scope of services the lighting plans will only include lighting along NW 102nd Ave.
In general, the Lighting plans will include the following:

1. Summary of Lighting Quantities and Notes – Summarizing the anticipated work elements and their associated approximate quantities as well as Notes relating to these elements.
2. Lighting plan will be shown on the roadway plans.
3. Pole Data Sheet
4. Light Pole Data Sheet
5. Schematic Wiring Sheet
6. Miscellaneous Detail Sheet
7. Lighting Analysis

The proposed light poles and fixtures will be in accordance with the City of Doral lighting requirements.

***Estimated Number of Sheets: 8***

**Permitting**

It is anticipated that permits will be required for the proposed roadway improvements from the following agencies:

1. RER – Stormwater management permit
2. RER Tree Permit (Optional Services)
3. Miami-Dade County Public Works Department Traffic Engineering Division
4. City of Doral Public Works Department

Prior to beginning the 60% design and permitting process, Kimley-Horn will conduct an onsite investigation to determine if wetlands exist in the corridor, which may be impacted by the construction of the proposed project. Based on this investigation Kimley-Horn and Associates will determine the need of wetlands permits.

Kimley-Horn will conduct a meeting with RER. During this meeting, the conceptual design will be reviewed as well as the technical approach to provide water quality treatment. Meeting minutes will be prepared and submitted to the Client.

Kimley-Horn will prepare and submit a package with Drainage Report and Plans to RER for review. The package will consist of the pre- and post-development runoff calculations, a schedule of proposed maintenance activities, and the engineering drawings. Final response to comments (up to two [2] sets of review comments by RER) will be prepared within the Final construction documents.

No other permits are included in this scope of services. Contractor will be responsible for acquiring all required permits prior to initiating any work, including other permits not included herein.

All permit fees, plan review fees and impact fees will be paid directly by the Client.

**Existing Utilities**

Using readily available utility record (as-built) drawings, Kimley-Horn will identify known existing underground utilities along the project corridor. During the course of design, potential conflicts between proposed improvements and known existing utilities will be identified and specific locations will be recommended for performing subsurface utility exploration along the project corridor.

**Specifications and Contract Documents**

It is expected that the Miami-Dade County Standard Contract Documents and the Florida Department of Transportation Technical Specifications will be used for this project. Kimley-Horn will prepare Technical Specifications that will address project-specific construction elements. A preliminary set of the technical specifications will be forwarded to the Client for review and approval with the 90% submittal. The final response to comments, formatting and preparation of final Technical Specifications will be prepared and submitted with the final construction documents. The Client will incorporate these Technical Specifications into their bid documents.

***Estimated Total Number of Sheets for Task 03-B: 61***

## TASK 04 – ENVIRONMENTAL PERMITTING - OPTIONAL SERVICES

### Sub-Task 1 - Wetland Delineation

Kimley-Horn will conduct background research on the project limits and will field flag the wetlands/ surface waters (or determine top of bank is the jurisdiction for surface waters) in accordance with the State unified wetland delineation methodologies described in Chapter 62-340, Florida Administrative Code (FAC) and the US Army Corps of Engineers 1987 Wetland Delineation Manual and regional supplement. Seasonal high water elevations will be set in the wetland based on presence of biological indicators available. Data will be collected in the field to complete wetland assessments using the State's Uniform Mitigation Assessment Methodology (UMAM). UMAM data forms will be completed for each wetland. We will coordinate with the Client's surveyor to incorporate the flags into the site plan

(surveying of wetland flags is not included in this scope). We will collect field data to determine if the wetlands are isolated and thus not subject to USACE jurisdiction.

**Sub-Task 2 - Florida Bonneted Bat Limited Roost Survey**

Kimley-Horn staff will follow the USFWS Florida Bonneted Bat Consultation guidelines (October 2019) for conducting a limited roost survey within the project limits. This includes pedestrian transects within the project limits covering suitable roost habitat and visually inspect trees and snags for evidence of cavities. Locations of cavities, hollows, or other suitable structures found on-site will be recorded using a Global Positioning System (GPS) unit. Cavities, hollows, or other suitable structures will be visually reviewed using a video camera probe to assess the cavity contents.

Kimley-Horn will summarize the results of the cavity/roost survey, including a photographic log of the cavities searched as part of the permitting documentation. Acoustic surveys for the bonneted bat are not included in this scope and would be considered additional services. Coordination with U.S. Fish and Wildlife Service (USFWS) for concurrence on potential species will be conducted as part of the permitting process.

**Sub-Task 3 - Miami-Dade County & SFWMD Permitting**

Kimley-Horn will attend one (1) preapplication meeting with the South Florida Water Management District (SFWMD) and one (1) preapplication meeting with Miami-Dade Department of Environmental Resources Management prior to preparing permitting documentation. Kimley-Horn will complete the application documents for DERM permitting and sections A, C and E of the SFWMD ERP including associated wetland mitigation tables as well as figures depicting the limits of wetland impacts, as applicable. A mitigation plan will be prepared and incorporated into the permit application. For the purposes of this scope, it is assumed that mitigation will be accomplished through a combination of the purchase of off-site mitigation bank credits (if available). If credits are not available or mitigation other than mitigation bank wetland credits are needed, a separate scope and fee will be prepared to evaluate other mitigation options and modify the mitigation plan. Once the application is submitted, Kimley-Horn will respond to up to one Request for Additional Information (RAI) from DERM and one (1) RAI from SFWMD and will attend up to one field or office meeting with each agency staff. Any additional RAIs or meetings with each agency will be considered additional services. All mitigation and application fees shall be paid by the Client.

At this time, it is not anticipated wetlands and/or surfaces waters within the project limits would be jurisdictional to the USACE and as such permitting through this agency is not included in this scope.

## TASK 05 – TREE PERMIT / MITIGATION - OPTIONAL SERVICES

Based on the tree permitting process, Kimley-Horn will prepare tree survey/disposition plans, which will be developed to include the trees that are necessary to provide the required mitigation.

In general, the plans will include the following:

1. Summary of Quantities and Notes - Summarizing the anticipated work elements and their associated approximate quantities as well as notes relating to these elements
2. Tree Survey
3. Tree Disposition Plan
4. Coordination with Miami-Dade DERM for tree permit.

***Estimated Number of Sheets: 12***

## TASK 06 – SUBSURFACE UTILITY EXPLORATION SERVICES (OPTIONAL SERVICES)

See Appendix "A", Sub-consultant Fee Proposal for Scope of Services.

## TASK 07 – THE CLIENT'S ADDITIONAL SERVICES

Upon your authorization, we will provide any additional services that may be required beyond those described in **Tasks 01 through 06**. These services may include but are not limited to such items as the following:

- Phase I and Phase II Environmental Site Assessment
- Utility Subsurface Engineering (SUE), to locate existing utilities at potential conflicts locations.
- Utility Relocation/ Design and plans.
- Resident Project Representative/CEI Services
- Bidding assistance
- Construction Phase Services
- Post Design Services (meetings, shop drawing reviews, contract clarifications, site observations, substantial completion review)
- Review of pay applications
- MOT plans other than described in Task 03
- Evaluation of contractor's sub-divisions or Value Engineering Proposals
- Meetings, presentations or coordination in addition to those described in Task 01 through Task 06 above
- Redesign required as a result of major change from scope of services described above
- Sketches and legal descriptions, if more than one dedication is needed
- Permit expediting
- Any work related to grants of easement or right of way acquisition
- Signalization
- 4-Way Stop Warrant Traffic Analysis and permitting with MDC
- Specific listed species surveys, permitting, and/or relocation of endangered species
- Services not specifically included within "Scope of Services"

### *SCHEDULE*

We will provide the above-described services outlined in an expeditious and orderly manner to meet the schedule mutually agreed to by the Client and Kimley-Horn and Associates, Inc. for the various elements of the project.

Due to the everchanging circumstances surrounding the COVID-19 Virus, situations may arise during the performance of this Agreement that affect availability of resources and staff of Kimley-Horn, the client, other consultants, and public agencies. There could be changes in anticipated delivery times, jurisdictional approvals, and project costs. Kimley-Horn will exercise reasonable efforts to overcome the challenges presented by current circumstances, but Kimley-Horn will not be liable to Client for any delays, expenses, losses, or damages of any kind arising out of the impact of the COVID-19 Virus.

## *FEE AND BILLING*

Kimley-Horn will accomplish the services outlined in Tasks 01 through 03 on a time material basis with estimated labor fees shown below. Labor fee will be billed hourly on monthly basis, based on the standard hourly rate agreed between Kimley-Horn and the Client. Direct expenses, if required, will be billed at 1.15 of the cost. Expenses are in addition to the labor amount. Billing will be due and payable within twenty-five (25) days of receipt of invoice.

Tasks 04 through 07 will require a separate client signature for approval prior to beginning work. Tasks 04 through 07 will be billed hourly, based on the standard hourly rate agreed upon between Kimley-Horn and the client. Fees and expenses will be invoiced monthly based upon actual services performed and expenses incurred as of the invoice date. Billing will be due and payable within twenty-five (25) days of receipt of invoice.

### Estimated Hourly Fees

| Task | Description | Labor Fee |
|---|---|---|
| 01 | Geotechnical Services (See Scope in Appendix “A”) | $15,692.00 |
| 02 | Topographic Services (See Scope in Appendix “A”) | $20,401.00 |
| 03 | Roadway Construction Documents | $143,280.00 |
| | ***Total Labor*** | ***$179,373.00*** |

### Optional Services

| | | |
|---|---|---|
| 04 | Environmental Permitting | $22,500.00 |
| 05 | Tree Permit/Mitigation | $7,000.00 |
| 06 | Subsurface Utility Explorations (See Scope in Appendix “A”) | $23,210.00 |
| | ***Total Labor for Optional Services*** | ***$ 52,710.00*** |

### Hourly Fees

| | | |
|---|---|---|
| 07 | Additional Services | Hourly as Required |

In addition to the matters set forth herein, our Agreement shall include and be subject to, and only to, the terms and conditions of the Professional Services Agreement (General Engineering/Architecture Services RFQ 2020-22), between the City of Doral and Kimley-Horn, which is hereby incorporated by reference. If you concur in all the foregoing and wish to direct us to proceed with the services, please have authorized persons execute both copies of this Agreement in the spaces provided below, retain one copy and return the other to us. Fees and times stated in this Agreement are valid for sixty (60) days after the date of this letter.

With Kimley-Horn, you should expect more and will experience better. We appreciate the opportunity to provide these services to you. Please don't hesitate to contact Leonte Almonte or me at (305) 673-2025 if you have any questions.

Very truly yours,

**KIMLEY-HORN AND ASSOCIATES, INC.**

By: Aaron Buchler, PE
*Senior Vice President*

Leonte I. Almonte, P.E.
*Project Manager*

Attachments:
*Appendix "A": Sub-consultants' Fee Proposals*

Agreed to this _____ day of _____, 20___.

**CITY OF DORAL (A Municipality)**

By: _____

_____
(Print or Type Name)

Title: _____
(As Authorized by Law)

_____
(Email Address)

_____, Witness

_____
(Print or Type Name)

Official Seal:

## FEE QUOTATION PROPOSAL FOR NW 66TH STREET
## FROM NW 97TH AVENUE TO NW 102ND AVENUE

**Consultant's Name:** Kimley-Horn and Associates, Inc.
**Project Number:**
**Project Length: 0.50** Miles

**Prepared by:** Gabriela Ramirez, PE
**Date:** 3/10/2021

**STAFF HOURS**

| | Activity | Principal Engineer | Project Manager | Sr. Engineer | Project Engineer | Engineering Technician | CADD Tech. | Staff Hours by Activity | Salary Cost for Activity |
|---|---|---|---|---|---|---|---|---|---|
| | **Distribution** | **3%** | **9%** | **6%** | **32%** | **26%** | **24%** | **100%** | |
| 1 | Roadway Plans | 24 | 71 | 47 | 252 | 205 | 189 | 788 | $94,087.20 |
| 2 | Pavement Marking & Signing Plans | 3 | 10 | 7 | 36 | 29 | 27 | 112 | $13,372.80 |
| 3 | Signalization Plans and School Flashers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| 4 | Roadway Lighting Plans | 4 | 11 | 7 | 40 | 32 | 30 | 124 | $14,805.60 |
| 5 | Drainage Design, Report & Permit Applications w/Sketches | 5 | 16 | 11 | 56 | 46 | 42 | 176 | $21,014.40 |
| 6 | Post-Design Services | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| 7 | Tree Permitting/Mitigation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| 8 | Public Involvement | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| | **TOTAL HOURS** | 36 | 108 | 72 | 384 | 312 | 288 | 1200 | $143,280.00 |
| | | | | | | | | | |
| | **Rates** | $210.00 | $200.00 | $172.00 | $139.00 | $83.00 | $78.00 | | |
| | **Totals S-H and Cost** | **$7,560.00** | **$21,600.00** | **$12,384.00** | **$53,376.00** | **$25,896.00** | **$22,464.00** | **$143,280.00** | **$119.40** |

| TOTAL FEE BREAKDOWN BY ACTIVITY | Amount |
|---|---|
| **Roadway Plans** | $94,087.20 |
| **Signing & Marking Plans** | $13,372.80 |
| **Signal Plans (Not included)** | $0.00 |
| **Roadway Lighting Plans** | $14,805.60 |
| **Drainage Plans** | $21,014.40 |
| | = |
| **Phase I Environmental Assessment (not included)** | $0.00 |
| **Tree Permitting/Mitigation (Optional)** | $7,000.00 |
| **Public Involvement (not Included)** | $0.00 |
| **Environmental Permitting (Optional)** | $22,500.00 |
| | |
| **Post-Design Services (Not Included)** | $0.00 |
| **Maximum Fee** | **$172,780.00** |

**KHA**

| | |
|---|---|
| Design Traffic/Traffic Operations Analysis | |
| Signal Warrant Analysis | |
| Signal Plans | |
| Utility Relocation Plans | |
| **Sub-Consultants** | |
| Surveyor Labor Fees | $20,401.00 |
| Geotechnical Labor Fees | $15,692.00 |
| Subsurface Utility Exploration Fees - Optional Services | $23,210.00 |
| | **$59,303.00** |

TOTAL CONTRACT COST COMPUTATIONS

| | |
|---|---|
| Total Activity Salary Costs | $143,280.00 |
| (a) Overhead Additives | |
| (a1) Combined O-H percent | |
| (a2) Combined O-H Cost | $0.00 |
| Subtotal (Salary + Overhead) | $143,280.00 |
| | |
| (b) Operating Margin Percent | $0 |
| (b1) Operating Margin Cost - Fixed Fee | $0 |
| Subtotal (Salary Related Cost) | **$143,280.00** |
| | |
| Expenses & Optional Services | |
| (a) Printing & Reproduction | $ - |
| (b) Public Involvement (5%) | $ - |
| Phase I Env. Assessment (Optional) | $0.00 |
| Tree Permitting/Mitigation (Optional) | $7,000.00 |
| Wetlands Permitting (Optional) | $22,500.00 |
| **TOTAL KHA** | **$172,780.00** |

| | |
|---|---|
| Design Fee | $172,780.00 |
| Bidding Phase Services | - |
| Construction Phase | - |
| Design Traffic/Traffic Operations Analysis | $0.00 |
| Signal Warrant Analysis | $0.00 |
| Signal Plans | $0.00 |
| Utility Relocation Plans | $0.00 |
| Surveying | $20,401.00 |
| Geotechnical | $15,692.00 |
| Utility Locates | $23,210.00 |
| **TOTAL FEE** | **$232,083.00** |

**PROJ. NO.:** _____ **F.A.P.** _____ **DESCRIPTION:** **Roadway Improvements**

**LENGTH IN MILES :** 0.53 **FEET :** 2650 **LANES:** _____ **DIV'D:** _____ **URBAN:** X

| ITEM | SCALE | BASIS OF ESTIMATE | NO. OF UNITS | NO. OF SHEETS | M - H UNITS | TOTAL M-H | COMMENTS |
|---|---|---|---|---|---|---|---|
| **ROADWAY PLANS** | | | | | | | |
| Key Map | | SHT | 1 | 1 | 10 | 10 | Key sheet |
| Typical Section | | EA | 5 | 1 | 8 | 40 | 1 for NW 66th ST, 2 for each of side streets (widening & m&R) |
| Summary of Quantities | | SHT | 1 | 1 | 30 | 30 | Sheet with Quantities |
| General Notes | | SHT | 1 | 1 | 16 | 16 | |
| Plan Sheets for M & R | 1"=20' | HRS | 0 | 0 | 0 | 0 | N/A |
| Plan Sheets New Construction | 1"=20' | SHT | 7 | 3 | 30 | 210 | To connect to existing EOP. Do not include Plateau intersections |
| Profile Sheets for M & R | 1"=20' | SHT | 0 | 0 | 0 | 0 | N/A |
| Profile Sheets New Construction | 1"=20' | SHT | 7 | 3 | 30 | 210 | Includes swale profiles, Exfiltration Trench |
| Intersection Details - Plateau | | SHT | 0 | 0 | 40 | 0 | |
| Intersection Profiles - Plateau | | EA | 0 | 0 | 0 | 0 | |
| Intersection Profiles - Side Streets | | EA | 1 | 1 | 10 | 10 | At NW 99th Avenue |
| SWPP Plan | | SHT | 1 | 1 | 12 | 12 | Develop SWPPP (1 Sheet) as per CAD Sample from County (NOI) also |
| | | | | | | | |
| Misc. Construction Details | | SHT | 1 | 1 | 10 | 10 | Details Not included in MDC or FDOT Standards |
| Maint. of Traffic | | SHT | 2 | 2 | 10 | 20 | 2 T.S. sheets, 1 General Notes/Phasing sequence sheets |
| Cross-Sections | 1"=10' | EA | 20 | 10 | 5 | 100 | 2 sections per sheet - 15 cross section for 66th St {(1400ft/100 + 1} 5 cross sections for each side street |
| Computation book | | LS | 1 | | 0 | 0 | |
| Opinion of Probable Cost | | EA | 3 | | 4 | 12 | Includes Submittals at 60%, 90%, 100% and Final |
| Pavement Design | | LS | 1 | | 30 | 30 | Review soils report recommendation/coordination |
| Geometry Plan | | LS | 1 | | 12 | 12 | As part of the roadway plan (benchmarks, etc) |
| FDOT Coordination | | EA | 0 | | 0 | 0 | |
| Utility Coordination | | LS | 1 | | 40 | 40 | Coordinate and attend one (1)Meeting @ 60% (2 People @ 4hrs ea.) and follow up |
| Railroad Permit and Coordination | | LS | 1 | | 0 | 0 | |
| Special Provisions, Technical Specs | | HRS | 1 | | 24 | 24 | |
| Value Engineering/Coord | | LS | 0 | | 18 | 0 | Prepare material/ Attend one meeting @30% (All coordination by Client) |
| Meetings and Reviews | | HRS | 4 | | 6 | 24 | 4 Mtgs @4hrs each / Includes Minutes. |
| Typical Section Coord Meeting | | HRS | 1 | | 6 | 6 | |
| Geotechnical Coordination | | LS | 1 | | 6 | 6 | Evaluate, Coordinate data, Report |
| Surveying Data Processing | | HRS | 1 | | 8 | 8 | Topographic Survey Data Processing/coordination |
| Field Reviews | | EA | 1 | | 16 | 16 | 2 People@8hrs each |
| **ROADWAY PLANS TOTALS** | | | | 25 | | **846** | |

Prepared By: Gabriela Ramirez, PE Date: March 9, 2021

CCN: A2664

**COUNTY PROJ. NO.:** 0 **F.A.P.** _____ **DESCRIPTION:** Roadway Improvements

**LENGTH IN MILES :** 0.53 **FEET :** 2650 **LANES:** _____ **DIV'D:** _____ **URBAN:** X

| ITEM | SCALE | BASIS OF ESTIMATE | NO. OF UNITS | NO. OF SHEETS | M - H UNITS | TOTAL M-H | COMMENTS |
|---|---|---|---|---|---|---|---|
| **GROUND SIGNING & MARKING** | | | | | | | |
| Key Map | | | | | | | |
| Summary of Quantities | | SHT | 1 | 1 | 12 | 12 | |
| Plan Sheets | 1"=20' | SHT | 7 | 3 | 10 | 70 | |
| Opinion of Probable Cost | | HRS | 0 | | 0 | 0 | Part of Roadway |
| Field Review | | EA | 0 | | 16 | 0 | 2 People@4hrs each, Exist Signs inventory |
| MDC Traffic Plans Approval | | LS | 1 | 0 | 30 | 30 | Includes Meetings w/ MDC-Traffic and address MDC comments/requests |
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| **SIGNING & MARKING TOTALS** | | | | 4 | | **112** | |

Prepared By: Gabriela Ramirez, PE Date: March 9, 2021

CCN: A2664

**COUNTY PROJ. NO.:** 0 **F.A.P.** _____ **DESCRIPTION:** Roadway Improvements

**LENGTH IN MILES :** 0.53 **FEET :** 2650 **LANES:** _____ **DIV'D:** _____ **URBAN:** X

| ITEM | SCALE | BASIS OF ESTIMATE | NO. OF UNITS | NO. OF SHEETS | M - H UNITS | TOTAL M-H | COMMENTS |
|---|---|---|---|---|---|---|---|
| **LIGHTING PLANS** | | | | | | | |
| Key Map | | SHT | | | | | |
| Summary of Quantities | | SHT | 1 | 1 | 8 | 8 | |
| Pole Data Sheet | | SHT | 1 | 1 | 16 | 16 | |
| General notes | | SHT | 1 | 1 | 8 | 8 | |
| Light Pole Detail Sheet | | SHT | 1 | 1 | 16 | 16 | Decorative Pole |
| Service Point Detail | | SHT | 1 | 1 | 8 | 8 | |
| Schematic Wiring | | SHT | 2 | 1 | 8 | 16 | |
| Plan Sheets | 1"=50' | SHT | 2 | 0 | 4 | 8 | Prop.lighting to Show on Roadway Plan |
| Miscellaneous Detail Sheet | | SHT | 1 | 2 | 8 | 8 | |
| Special Details | | SHT | 0 | | | | |
| Computation Book | | SHT | 0 | | | | |
| Opinion of Probable Cost | | LS | 0 | | 0 | 0 | |
| Meeting / Review / Quality Control | | HRS | 0 | | 6 | 0 | |
| Lighting Design | | HRS | 1 | | 30 | 30 | Includes Photometric anaysis, calculations |
| Field Review | | HRS | 1 | | 6 | 6 | 1@2People@3hrs Each |
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| LIGHTING PLAN S TOTALS | | | | 8 | | **124** | |

Prepared By: Gabriela Ramirez, PE Date: March 9, 2021

CCN: A2664

**COUNTY PROJ. NO.:** 0 **F.A.P.** _____ **DESCRIPTION:** Roadway Improvements

**LENGTH IN MILES :** 0.53 **FEET :** 2650 **LANES:** _____ **DIV'D:** No **URBAN:** X

| ITEM | SCALE | BASIS OF ESTIMATE | NO. OF UNITS | NO. OF SHEETS | M - H UNITS | TOTAL M-H | COMMENTS |
|---|---|---|---|---|---|---|---|
| **DRAINAGE PLANS** | | | | | | | |
| Drainage Map | 1"=200' | SHT | 0 | 0 | 0 | 0 | |
| Drainage Structures | | EA | 12 | 9 | 4 | 48 | 12 Structures. |
| Drainage Structures - M & R** | | EA | 0 | 0 | | | |
| Summary of Drainage Structure | | SHT | | | 0 | | N/A |
| Meetings / Review / Quality Control | | LS | 1 | | 18 | 18 | Assume 3 Review Meetings w/ DRER & Client 2 peop @ 3 hrs= 18hrs. |
| Drainage Details | | EA | 1 | 1 | 16 | 16 | |
| Field Review | | EA | 0 | | 0 | | |
| Wetlands Assessment | | LS | 1 | | 20 | 20 | On-ste wetlandas and impacts assesment, review database to determine related wetlands permits required. |
| Design of French Drain | | LS | 1 | | 20 | 20 | |
| Drainage Design (Including Report) | | LS | 1 | | 30 | 30 | |
| Permitting (Drainage System) | | LS | 1 | | 24 | 24 | Prepare permit sketches and packages for DRER Review, submit, revise design as needed (DRER-Water Control). Wetlands permitting not included |
| Environmental Assesment | | LS | 0 | | 40 | 0 | Research Landfills /Recovey Center Data Base. Environmental Assesment Phase I- **Not included** |
| Opinion of Probable Cost | | EA | 0 | | 0 | 0 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| **DRAINAGE PLANS TOTALS** | | | | 10 | | **176** | |

Prepared By: Gabriela Ramirez, PE Date: March 9, 2021

# APPENDIX “A”

# Subconsultants’ Fee Proposals

Kimley»Horn

Geotechnical Services

**Professional Service Industries, Inc.**

Rev 2 3/5/21
December 3, 2020

Kimley-Horn
355 Alhambra Circle, Suite 1400
Coral Gables, FL 33134
Attn: Ms. Gabriela P. Ramirez, P.E.
email: gabriela.ramirez@kimley-horn.com

Re: **Proposal for Geotechnical Services**
**NW 66th St - NW 102nd Ave to NW 99th Ave**
**City of Doral, FL**
**TSF Proposal No.: 2012-768**

Dear Gabriela:

As requested, **TSF** is pleased to submit this proposal for the above-referenced project. The proposal is based on project and site information provided. It is our understanding that roadway improvements are being designed for the following sections:

- Widening of NW 66th St from NW 102nd Ave to NW 99th Ave - 2,667 ft
- Widening of NW 102nd ave 300' south of NW 66th Street -300 ft
- New construction of NW 99th Ave -300 ft
- Milling and resurfacing of NW 102nd Ave - 420 ft
- Milling and resurfacing of NW 99th Ave - 100 ft

This proposal includes an outline of our proposed scope of work, an estimate of the total fees, and our anticipated schedule for completion of the work.

## PROPOSED SCOPE OF WORK

Based on the information provided in the request, we have proposed the services noted below in Table 1 for the project.

**Table 1 – Proposed Field Testing**

| Location | Proposed Services |
|---|---|
| Roadways | Perform twenty-sixteen (16) Standard Penetration Test (SPT) borings to a depth of approximately 6 feet below site grades for roadway widening. Perform six (6) Asphalt Cores to determine the asphalt, base and shallow subgrade conditions. (Note – 2 days of MOT is anticipated for the SPTs and Cores) |
| Drainage Areas | Perform two (2) Borehole Permeability (BHP) tests |
| See the Boring Location Plan for proposed locations of all tests | |

Prior to drilling at the project site, TSF will notify the local utility companies and request that underground utilities be marked. Our experience, however, is that the utility companies will not mark privately owned utilities. Our proposal assumes that private utility lines will be located in the field by others prior to mobilization of the drill rig. TSF will recommend a utility line locating service upon request.

Our fee is based on the assumption that boring locations are open and accessible to our truck-mounted drill rig and that any utilities at the site will be marked by others prior to our mobilization.

Upon completion of the field-testing, a report will be issued which contains the soil profile data, permeability data, pavement data, core photographs, core data, and recommendations for roadway construction.

## UNIT FEE ESTIMATE

It is proposed that the fee for the performance of the services outlined above is determined on a unit price basis in accordance with the attached Fee Schedule and that the work be performed pursuant to TSF's General Conditions enclosed herewith and incorporated into this proposal. On the basis of the proposed quantities, it is estimated that the total fee will be approximately as follows:

| | |
|---|---|
| **Field and Lab Testing** | **$8,304.00** |
| **Proessional Services** | **$7,388.00** |
| **Total** | **$15,692.00** |

Our estimate covers the work needed to present our findings in a formal report. Not included are reviews of foundation drawings, preparation of construction specifications, special conferences and any other work requested after submittal of our report.

Boring, sampling, and testing requirements are a function of the subsurface conditions encountered. Therefore, the estimated fee previously indicated is approximate, and compensation for the exploration will be based on the actual work and tests performed. We will endeavor to keep the exploration cost at a minimum consisting with good engineering practice.

## SCHEDULE AND AUTHORIZATION

TSF will proceed with the work immediately upon approval, and after utilities are cleared. With our present schedule, upon utility clearance, the fieldwork is expected to take 5 to 7 days to complete. The written report can be submitted within 2 weeks after completion of the field

exploration. Verbal preliminary results can be made to appropriate parties prior to submittal of the written report. For our records, please sign and fax/email a copy of this proposal to our office.

We appreciate the opportunity to submit this proposal and look forward to working with you on this project. If you should have any questions concerning our proposal, please contact our office.

Respectfully submitted,

**TSF, INC.**

Harmon C. Bennett, P.E.
Principal Engineer

Ramakumar Vedula, P.E.
Principal Engineer

Attachments:

1. General Conditions
2. Estimated Fees
3. Field Exploration Plan

| AUTHORIZED BY: | INVOICE TO: |
|---|---|
| **Name:** | **Firm:** |
| **Title:** | **Name:** |
| **Date:** | **Address:** |
| | **Phone :** |

**Tierra South Florida's General Conditions**

1. **SCOPE OF WORK**: Work means the specific geotechnical, analytical, testing or other service to be performed by Tierra South Florida, Inc. (TSF) as set forth in TSF's proposal, Client's acceptance of the scope of work and these General Conditions. Additional work ordered by Client shall also be subject to these General Conditions. "Client" refers to the person or business entity ordering the work to be done by TSF. Client shall communicate these General Conditions to each and every third party to whom Client transmits any part of TSF's work. TSF shall have no duty or obligation to any third party greater than that set forth in TSF's proposal, Client's acceptance of TSF's proposal and these General Conditions. The ordering of work from TSF, or the reliance on any of TSF's work, shall represent acceptance of the terms of TSF's proposal and these General Conditions, regardless of the terms of any subsequently issued document.

2. **RIGHT-OF-ENTRY -**The client will provide right-of-entry for TSF and all necessary equipment in order to complete the work. While TSF will take all reasonable precautions to minimize any damage to the property, it is understood by Client that in the normal course of work some damage may occur; the correction of which is not part of this agreement.

3. **DAMAGE TO EXISTING MAN-MADE OBJECTS -**The Client, will provide the location of all underground utilities or obstructions to TSF who, in the prosecution of their work, will take all reasonable precautions to avoid damage or injury to any such subterranean structure or utility. The Owner agrees to hold TSF harmless for any damages to subterranean structures which are not called to TSF' attention and correctly shown on the plans furnished and will reimburse TSF for any expenses in connection with any claims or suits including reasonable attorney fees at the trial and appellate levels.

4. **IN-PLACE MATERIALS TESTING -**TSF will not be responsible for repair or damage to portions of structures designated for in-place materials testing. Repairs can be made for aesthetic reasons if requested in advance of the work to be performed. The cost for labor and materials would be charged.

5. **SAMPLE RETENTION -**TSF will retain all soil and rock samples obtained for geotechnical explorations for 30 days. Samples subjected to Construction Materials and Laboratory testing are disposed of subsequent to testing. Further storage or transfer of samples can be made at Client's expense upon written authorization**.**

6. **DEFINITION OF RESPONSIBILITY (OBSERVATION SERVICES) -** The presence of our field representative will be for the purpose of providing observation and field testing. Our work does not include supervision or direction of the actual work of the contractor, his employees or agents. The contractor for this project should be so advised.

   6.1. The Contractor should also be informed that neither the presence of our field representative or the observation and testing by our firm shall excuse him in any way for defects discovered in his work. It is understood that TSF will not be responsible for the Contractor's job or site safety on his project. That will be the sole responsibility of the contractor.

7. **STANDARD OF CARE** -Service performed by TSF under this Agreement will be conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty, expressed or implied, is made.

   7.1. Client recognizes that subsurface conditions may vary from those encountered at the location where borings, surveys or explorations are made by TSF and that the data, interpretations and recommendations of TSF are based solely on the information available to it. TSF shall not be responsible for the interpretation by others of information developed.

8. **ORAL AGREEMENTS -**No oral agreement, guarantee, promise, representation or warranty shall be binding.

9. **OWNERSHIP OF DOCUMENTS -**All reports, boring logs, field data and notes, laboratory test data, calculations, estimates and other documents prepared by TSF, as instruments of service, shall remain the property of TSF until final payment is received and a letter of copyright transfer been executed.

10. **BASIS OF PAYMENT** -Payment is due within 30 days of date of invoice. Payments not made when due shall bear interest at eighteen (18) percent annum or at the maximum rate allowed by law from the date of the invoice until same is paid.

    10.1. If the Client fails to make any payment due to TSF for service and/or expenses within 60 days of date of invoice, TSF may, after giving seven days' written notice to Client, suspend services until all outstanding amounts have been paid to TSF in full. Further, TSF may, in addition to withholding services, or singularly, withhold reports, plans and other documents not paid in full by the Client. In the event that final payment for completed work is not made, TSF shall request that all copyrighted documents which were submitted to client be returned and all information used in project plans be removed from project documents.

    10.2. In the event it is necessary to take legal action to effect collection, whether or not litigation is commenced, the Client agrees to reimburse TSF for expenses in connection with any claims or suits, including reasonable attorney's fees, including but not limited to the trial and appellate levels.

    10.3. This contract shall be governed by the laws of the State of Florida.

11. **CONSTRUCTION REVIEW -** TSF cannot accept responsibility for any design work unless the work includes services for construction review to determine whether or not the work performed is in substantial compliance with TSF's conclusions and recommendations.

12. **INDEMNIFICATION -**TSF agrees to hold harmless and indemnify Client from and against liability arising out of TSF's negligent performance of the work. Client agrees to indemnify and hold TSF harmless from all liability including all costs, attorney's fees and expenses of defense for any claims by any other person or corporation which may arise out of the performance or breach of this contract for which TSF was not solely negligent.

13. **LIMITATION OF LIABILITY -**The Client/Owner agrees to limit TSF' liability for negligent professional acts, errors or omissions, such that the total aggregate liability of TSF shall not exceed $50,000 or the total fee for the services rendered on this project; whichever is greater. The Owner further agrees to require the contractor and his subcontractors a similar limitation of liability suffered by the contractor or the subcontractors arising from TSF' negligent professional acts, errors or omissions.

    13.1. If Client prefers to have higher limits on professional liability, TSF agrees to increase the limits up to a maximum of $1,000,000 upon Client's written request at the time of accepting our proposal provided that Client agrees to pay an additional consideration of 5 percent of our total fee. The additional charge for the higher liability limits is because of the greater risk assumed and is not strictly a charge for additional professional liability insurance.

14. **INSURANCE -**TSF represents and warrants that it and its agents, staff and consultants employed by it are protected by Worker's Compensation insurance and Employer's Liability Insurance in conformance with applicable state laws. TSF has such coverage under public liability and property damage insurance policies that TSF deems to be adequate. A Certificate of Insurance can be supplied evidencing such coverage upon request.

    14.1. Within the limits and conditions of such insurance, TSF agrees to indemnify and save client harmless from and against any loss, damage or liability arising from any negligent acts by TSF, its agents, staff and consultants employed by it. TSF shall not be responsible for any loss, damage or liability beyond the amounts, limits and considerations of such insurance. TSF shall not be responsible for any loss, damage or liability arising from any acts by clients, its agents, staff and other consultants employed by it.

    14.2. Cost of the above coverage is included in our quoted fees. If additional coverage or increased limits of liability are required, TSF will endeavor to obtain the requested insurance and charge separately for costs associated with additional coverage or increased limits.

15. **TERMINATION -**This agreement may be terminated by either party upon seven days written notice in the event of substantial failure by the other party to perform in accordance with the terms thereof. Such termination shall not be effective if the substantial failure has been remedied before expiration of the period specified in the written notice. In the event of termination, TSF shall be paid for services performed to the termination notice date plus reasonable termination expenses.

    15.1. In the event of termination or suspension for more than three months, prior to completion of all reports contemplated by this Agreement, TSF may complete a report on the services performed to the date of notice of termination or suspension. The expenses of termination or suspension shall include all direct costs for TSF in completing such analyses, records and reports.

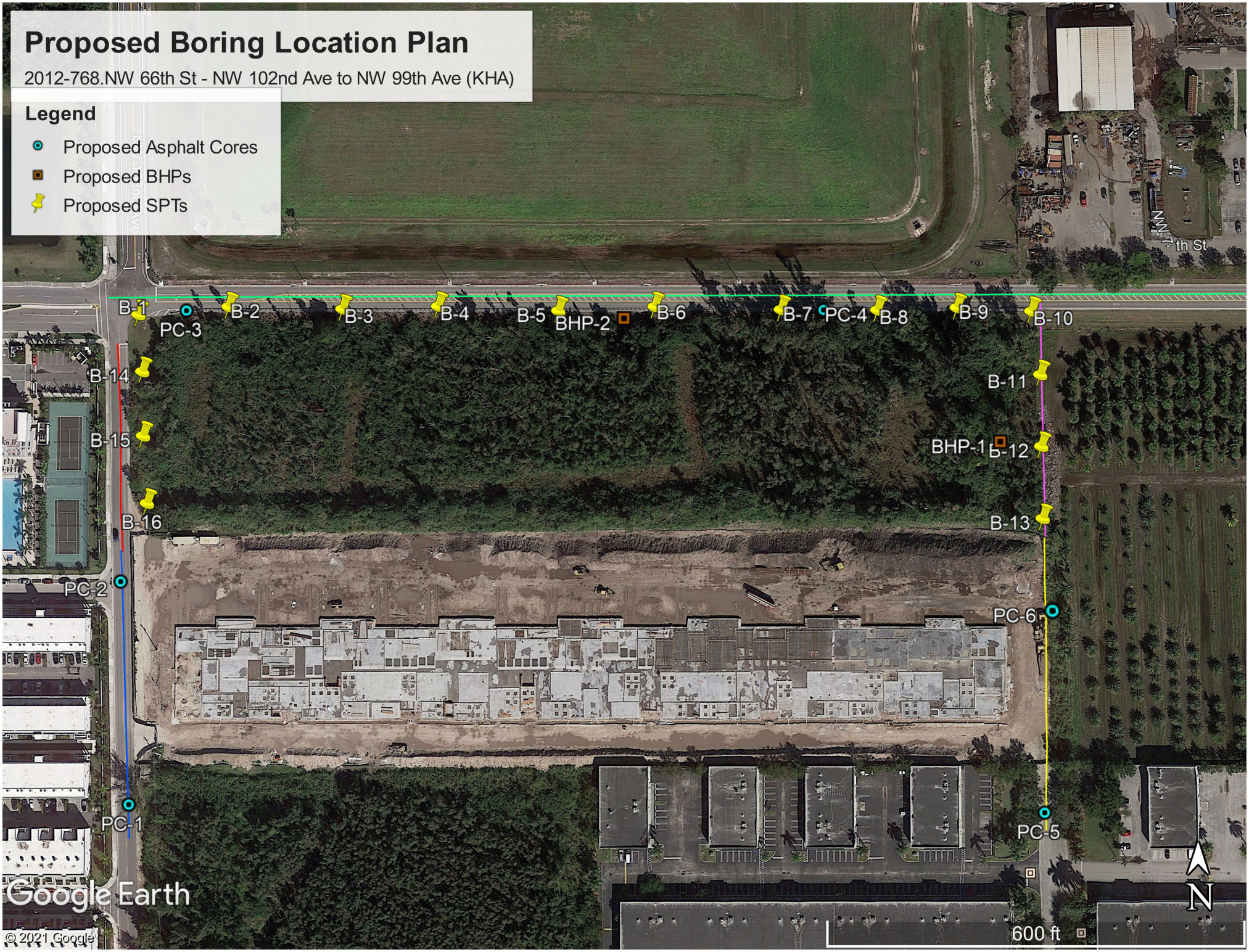
16. **CLIENT'S OBLIGATION TO NOTIFY TSF -** Client represents and warrants that it has advised TSF of any known or suspected hazardous materials or conditions, utility lines and pollutants at any site at which TSF is to do work hereunder, and unless TSF has assumed in writing the responsibility of locating subsurface objects, structures, lines or conduits, Client agrees to defend, indemnify and save TSF harmless from all claims, suits, losses, costs and expenses, including reasonable attorney's fees as a result of personal injury, death or property damage occurring with respect to TSF's performance of its work and resulting to or caused by contact with subsurface or latent objects, structures, lines or conduits where the actual or potential presence and location thereof were not revealed to TSF by Client.

17. **HAZARDOUS MATERIALS -**This agreement shall not be interpreted as requiring TSF to assume the status of an owner, operator, generator, storer, transporter, treater or disposal facility as those terms appear within RCRA or within any Federal or State statute or regulation governing the generation, transportation, treatment, storage and disposal of pollutants.

Initial _____

**Tierra South Florida Fee Schedule - City of Doral**

| Description | Rate | Unit | Quantity | Fees |
|---|---|---|---|---|
| **Geotechnical Engineering - Field and Laboratory Testing** | | | | |
| **Field Investigation** | | | | |
| Mobilization Truck-Mounted Equipment | $350.00 | trip | 1 | $350.00 |
| MobilizationSpecialized ATV/Mudbug | $720.00 | trip | | |
| Support Vehicle | $150.00 | day | 5 | $750.00 |
| Mobilization Barge-Mounted Equipment | $9,500.00 | day | | |
| Crane Rental | $250.00 | hour | | |
| Support Boat | $500.00 | day | | |
| Standard Penetration Test Borings | | | | |
| (By Truck-Mounted Equipment) | | | | |
| Land: 0 - 50 ft depth | $13.00 | feet | 96 | $1,248.00 |
| 50 - 100 ft depth | $15.00 | feet | | |
| Grout-Seal Boreholes | | | | |
| (By Truck-Mounted Equipment) | | | | |
| Land: 0 - 50 ft depth | $5.50 | feet | 96 | $528.00 |
| 50 - 100 ft depth | $6.50 | feet | | |
| Casing Allowance | | | | |
| (By Truck-Mounted Equipment) | | | | |
| Land: 0 - 50 ft depth | $8.00 | feet | 96 | $768.00 |
| 50 - 100 ft depth | $10.00 | feet | | |
| Standard Penetration Test Borings | | | | |
| (By Barge-Mounted Equipment) | | | | |
| Water: 0 - 50 ft depth | $20.00 | feet | | |
| 50 - 100 ft depth | $27.00 | feet | | |
| Grout-Seal Boreholes | | | | |
| (By Barge-Mounted Equipment) | | | | |
| Water: 0 - 50 ft depth | $9.00 | feet | | |
| 50 - 100 ft depth | $11.00 | feet | | |
| Casing Allowance | | | | |
| (By Barge-Mounted Equipment) | | | | |
| Water: 0 - 50 ft depth | $14.00 | feet | | |
| 50 - 100 ft depth | $17.00 | feet | | |
| Rock Coring (Truck) | $65.00 | feet | | |
| Rock Coring (Barge) | $80.00 | feet | | |
| Field Permeability Tests | $400.00 | test | 2 | $800.00 |
| Pavement Cores, Asphalt | $125.00 | each | 6 | $750.00 |
| Pavement Cores, Concrete | $150.00 | each | | |
| MOT | $1,200.00 | set-up | 1 | $1,200.00 |
| **Laboratory Testing** | | | | |
| Natural Moisture Content Tests | $15.00 | test | 12 | $180.00 |
| Grain-Size Analysis - Full Gradation | $75.00 | test | 6 | $450.00 |
| Grain-Size Analysis - Single Sieve | $35.00 | test | 4 | $140.00 |
| Organic Content Tests | $45.00 | test | 2 | $90.00 |
| Atterberg Limit Tests | $75.00 | test | 2 | $150.00 |
| Field CBR | $600.00 | test | | |
| Lab CBR | $300.00 | test | 3 | $900.00 |
| LBR | $350.00 | test | | |
| Rock compression test | $125.00 | test | | |
| Split tension test | $150.00 | test | | |
| Grain-Size with Hydrometer | $125.00 | test | | |
| Proctor Test a) Modified | $125.00 | test | | |
| b) Standard | $125.00 | test | | |
| Bitumen Extraction | $150.00 | test | | |
| Bitumen Gradation | $150.00 | test | | |
| | | **Field and Lab Testing** | | $8,304.00 |
| | | | | |
| **PROFESSIONAL SERVICES - EXHIBIT "B"** | | | | |
| CONSULTANT'S BILLING RATE | | | | |
| **Job Classification** | | | | |
| Principal Engineer | $210.00 | hour | 2 | $420.00 |
| Project Manager | $200.00 | hour | 4 | $800.00 |
| Senior Engineer | $172.00 | hour | 6 | $1,032.00 |
| Project Engineer | $139.00 | hour | 12 | $1,668.00 |
| Engineering Technician | $83.00 | hour | 12 | $996.00 |
| CADD Technician | $78.00 | hour | 24 | $1,872.00 |
| CEI Inspector | $82.00 | hour | | |
| All Building/Threshold | $80.00 | hour | | |
| Clerical | $60.00 | hour | 10 | $600.00 |
| | | **Proessional Services** | | $7,388.00 |
| | | | **Total** | $15,692.00 |


Proposed Boring Location Plan
2012-768.NW 66th St - NW 102nd Ave to NW 99th Ave (KHA)
Legend
Proposed Asphalt Cores
Proposed BHPs
Proposed SPTs
B-1
PC-3
B-2
B-3
B-4
B-5
BHP-2
B-6
B-7
PC-4
B-8
B-9
B-10
B-11
B-12
BHP-1
B-13
B-14
B-15
B-16
PC-2
PC-6
PC-1
PC-5
th St
N
600 ft
Google Earth
© 2021 Google

Kimley»Horn

Topographic Services

**M. G. Vera & Associates, Inc.**

M.G. VERA & ASSOCIATES

13960 SW 47th St, Miami, FL 33175
t: 305.221.6210 | f: 305.221.1295
www.mgvera.com

December 3, 2020 (Rev. 3-8-21)

Survey Scope of Service

Leo Almonte, PE
Kimley-Horn
355 Alhambra Circle
Suite 1400
Coral Gables, FL 33134

Project: NW 66th Street Survey
Limits: See Attached Sketch

MGV appreciates the opportunity to perform our surveying services on this project. Below is the scope of services for the Design Survey of the above referenced project. Please see attached Survey Man-Hour spread sheet for our man-hour breakdown. In addition to the specific scope items, all survey work will adhere to the City of Doral survey Guidelines and in accordance with the STATE OF FLORIDA MINIMUM TECHNICAL STANDARDS, Chapter 427.027 Florida Statutes and Rule 5J-17 Florida Administrative Code. The proposed Design Survey Scope of work includes the following Design Survey Services:

## Design Survey Services:

27.01 Horizontal Primary Network Control (HPNC)

27.02 Vertical Primary Network Control (VPNC)

27.03 Alignment (Project Survey Baseline)

27.06 Topographic Survey / Digital Terrain Model (DTM)

27.12 Drainage Survey

## Project Limits:

- NW 66th St. between NW 102nd Ave and NW 99th Ave.

## 27.01 & 27.02 Horizontal and Vertical Control

Primary control points will be set and established. Horizontal Control will be established on the Florida State Plane Coordinate System, East Zone, and North American Datum (NAD) of 1983 / 1990 Adjustment. Vertical Control will be established on NAVD 88 Datum.

*Control will be shown on Topo file only*.

27.03 Survey Baseline

The Historic survey baseline and right of ways will be established as Right of Way Maps, platted and / or dedicated rights of way.

27.06 Topographic Survey / DTM (3D)

Topographic and DTM Survey will be performed from right way to right way along the area defined above. All above ground features and improvements, break-lines, high and low points will be located with sufficient density of points (a minimum of a 50-ft. grid will be established) in order to create a DTM as well as topographic features including: existing lighting, pedestrian ramps, driveways, visible above ground utilities, sodded and paved areas, drainage structures (including rim/gutter elevations), etc. A Micro-station file will be delivered along with Geopack files (tin).

27.12 Drainage Survey

Perform drainage survey within the project limits.

Notes:

- A surveyors report will be prepared; signed and sealed copies will be provided for the Topographic survey.
- If additional tasks are required beyond the aforementioned items, MGV will provide an additional fee estimate.
- Tree Survey is not included in this scope of services.

Cost and Man-hour breakdown

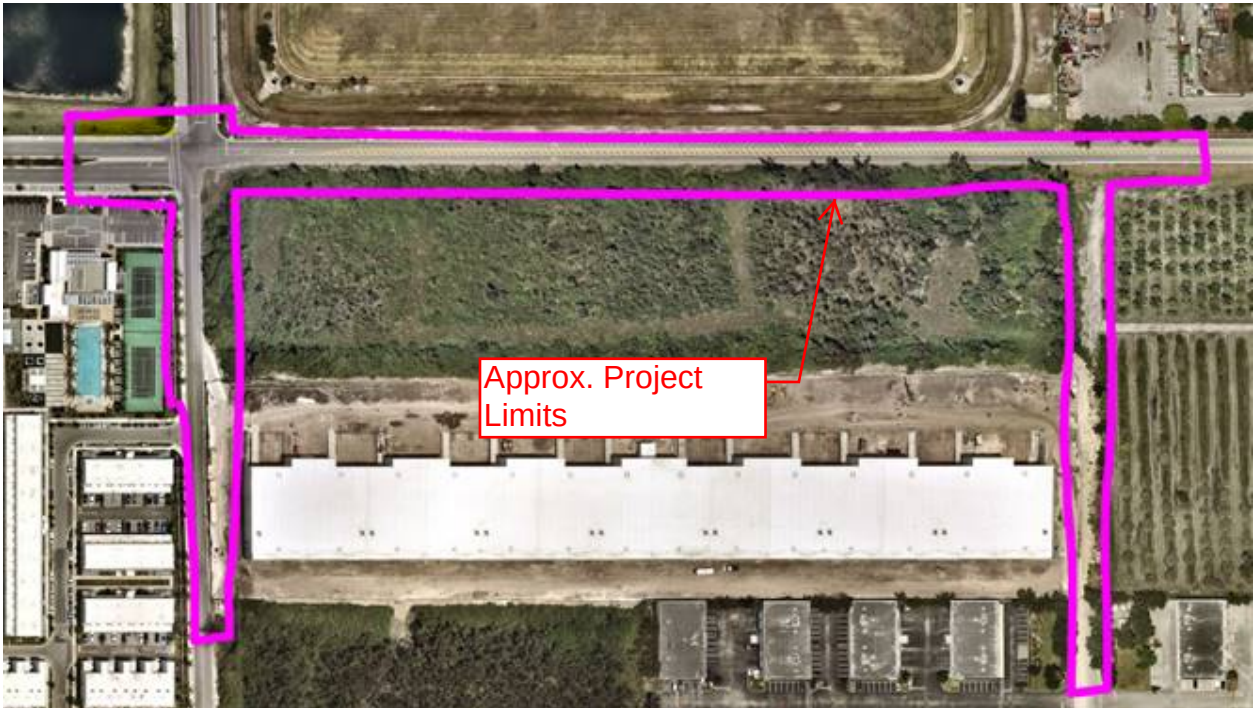
Please refer to FDOT Project Activity 27: Survey Man-Hour spreadsheet for our man-hour breakdown and to the Fee sheet attached here-to.

We look forward to providing our services and please contact me if you have any questions or require additional information.

Sincerely,

Manuel G. Vera & Associates, Inc.

Manuel G. Vera Jr. PSM


Approx. Project Limits

# ESTIMATE OF WORK EFFORT AND COST - SUBCONSULTANT

Name of Project: NW 66 St
County: Miami Dade
FPN:
FAP No.:

Consultant Name: Manuel G. Vera & Associates Inc.
Consultant No.: enter consultants proj. number
Date: 3/8/2021
Estimator: Mark Sowers

| Staff Classification | Total Staff Hours From "SH Summary - Firm" | Senior Surveyor and Mapper | Surveyor and Mapper | Survey Technician | Staff Classification 4 | Staff Classi-fication 5 | Staff Classi-fication 6 | Staff Classi-fication 7 | Staff Classi-fication 8 | Staff Classi-fication 9 | Staff Classi-fication 10 | Staff Classi-fication 11 | Staff Classi-fication 12 | SH By Activity | Salary Cost By Activity | Average Rate Per Task |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $137.00 | $108.00 | $75.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | | | |
| 27. Survey (Field & Office Support) | 67 | 13 | 40 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 67 | $7,151 | $106.73 |
| 28. Photogrammetry | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 | #DIV/0! |
| 29. Mapping | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 | #DIV/0! |
| **Total Staff Hours** | 67 | 13 | 40 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 67 | | |
| **Total Staff Cost** | | $1,781.00 | $4,320.00 | $1,050.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | | **$7,151.00** | **$106.73** |

Check = $7,151.00

| | | | | | |
|---|---|---|---|---|---|
| SALARY RELATED COSTS: | | | | | $7,151.00 |
| OVERHEAD: | | 0% | | | $0.00 |
| OPERATING MARGIN: | | 0% | | | $0.00 |
| FCCM (Facilities Capital Cost Money): | | 0.00% | | | $0.00 |
| EXPENSES: | | 0.00% | | | $0.00 |
| SUBTOTAL ESTIMATED FEE: | | | | | **$7,151.00** |
| Survey Field Crew | 10 | 3-person crew | $1,325.00 | / day | $13,250.00 |
| | | | | | $0.00 |
| SUBTOTAL ESTIMATED FEE: | | | | | **$20,401.00** |
| Optional Services | | | | | $0.00 |
| GRAND TOTAL ESTIMATED FEE: | | | | | **$20,401.00** |

Notes:
1. This sheet to be used by Subconsultant to calculate its fee.

Kimley»Horn

Subsurface Utility Exploration Services (Optional)

**M. G. Vera & Associates, Inc**

M.G. VERA & ASSOCIATES

13960 SW 47th St, Miami, FL 33175
t: 305.221.6210 | f: 305.221.1295
www.mgvera.com

December 3, 2020 (Rev. 3-8-21)

SUE Scope of Service- Optional Services

Leo Almonte, PE
Kimley-Horn
355 Alhambra Circle
Suite 1400
Coral Gables, FL 33134

Project: NW 66th Street
Limits: See Attached Sketch

MGV appreciates the opportunity to perform our surveying services on this project. Below is the scope of services for the Design Survey of the above referenced project. Please see attached Survey Man-Hour spread sheet for our man-hour breakdown. In addition to the specific scope items, all survey work will adhere to the City of Doral survey Guidelines and in accordance with the STATE OF FLORIDA MINIMUM TECHNICAL STANDARDS, Chapter 427.027 Florida Statutes and Rule 5J-17 Florida Administrative Code. The proposed Design Survey Scope of work includes the following Design Survey Services:

## 27.10 Underground Utilities

Provide Utility Designates within the project limits. Once the designates have been reviewed by the Design team, MGV will provide up to 15 Utility Locates (Test Holes) on specific utility conflicts as identified by the EOR.

MGV will notify Sunshine One-Call 48 hours in advance of performing the utility locates (test holes). A non-destructive vacuum excavation system will be utilized to expose the utilities or perform exploratory test holes. Test holes performed will be of minimum size (usually 1' by 1'). Backfill of test holes will be performed utilizing material removed. Test holes performed in the street will be patched utilizing cold patch. Basic maintenance of traffic (signs, cones) will be included.

## Subsurface Utility Designating and Locating Conditions and Understandings

The utility designates and locates are for design purposes only. The Florida One Call must be notified forty-eight (48) hours in advance of any excavation.

Accuracy of Geophysical Mapping techniques, although highly reliable, are subject to outside interference. A few examples are: Soil condition, material conductivity, depth of utility, and various other geological anomalies that may distort or hinder electromagnetic and GPR frequencies.

MGV will make every effort possible utilizing state of the art technology to designate and locate underground utilities; however there are no guarantees that all underground utilities or structures will be detected.

MGV will not access confined spaces and is not included in this fee estimate. If accessing confined spaces are required, MGV will notify the client to discuss options. Additional fees may be applicable.

## Additional Clarifications and Understandings

If cap rock or an obstruction is encountered during the test hole phase and further vacuum excavation cannot be completed or performed without the potential for utility damage, MVG will consider the test hole completed, measure the depth to the top of the cap rock or obstruction reached, survey the location and consider the test hole completed and invoice accordingly.

The below fee includes only backfill of test holes utilizing material removed in natural ground or cold patch within asphalt pavement or concrete in sidewalks for the approximate 1' x 1' test hole. If additional restoration is required, MG Vera will provide an additional proposal to cover the additional expense.

Basic maintenance of traffic (signs, cones) is included, but if advanced MOT is required, MGV will provide a cost estimate to cover these additional expenses.

This estimate does not include permits or permit fees.

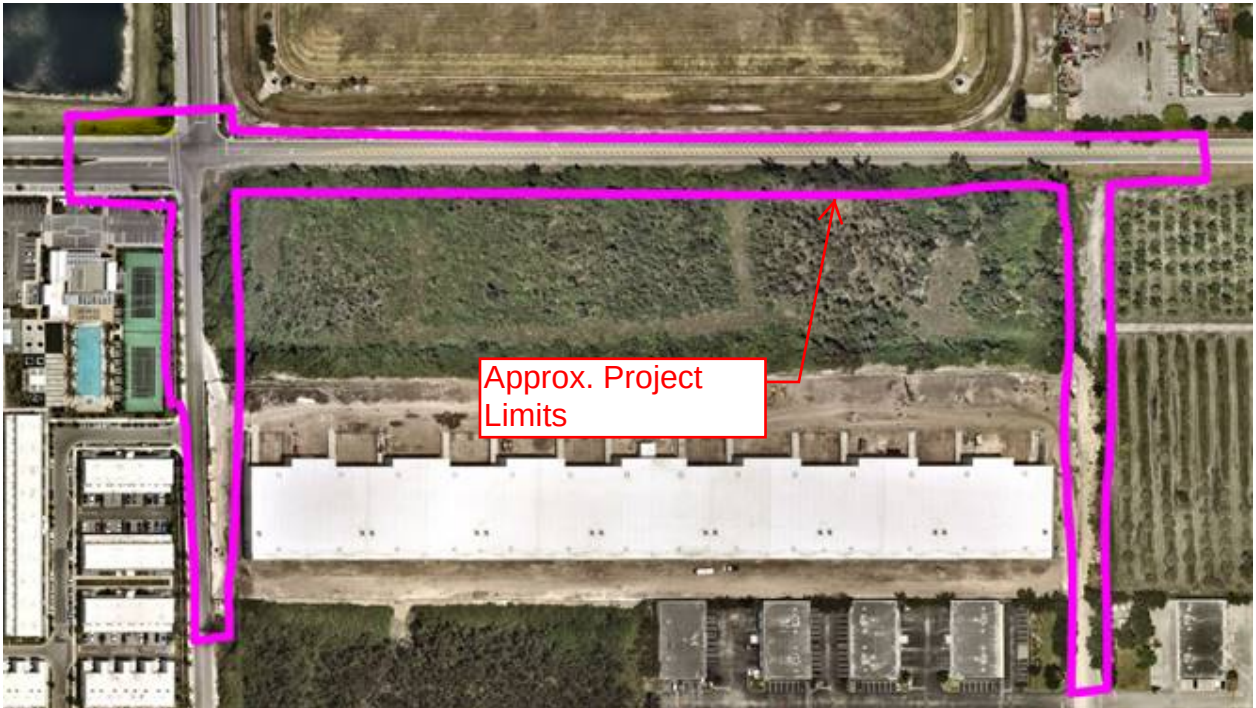
This estimate does not include fees for signed and sealed MOT plans.

## Fee and Man-hour breakdown

Please refer to Survey Man-Hour spreadsheet for our man-hour breakdown and Fee sheet attached here-to.
We look forward to providing our services and please contact me if you have any questions or require additional information.

Sincerely,
Manuel G. Vera & Associates, Inc.

Manuel G. Vera Jr. PSM


Approx. Project Limits

## Survey Rates based on Miami Dade County Survey Contract E15-DTPW-07

Name of Project: NW 66 St
County: Miami Dade
FPN:
FAP No.:

Consultant Name: Manuel G. Vera & Associates Inc.
Consultant No.: enter consultants proj. number
Date: 3/8/2021
Estimator: insert name

| Staff Classification | Total Staff Hours From "SH Summary Firm" | Senior Surveyor and Mapper | Surveyor and Mapper | Survey Technician | Staff Classification 4 | Staff Classi-fication 5 | Staff Classi-fication 6 | Staff Classi-fication 7 | Staff Classi-fication 8 | Staff Classi-fication 9 | Staff Classi-fication 10 | Staff Classi-fication 11 | Staff Classi-fication 12 | SH By Activity | Salary Cost By Activity | Average Rate Per Task |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $137.00 | $108.00 | $75.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | | | |
| 27. Survey (Field & Office Support) | 49 | 10 | 30 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | $5,285 | $107.86 |
| 28. Photogrammetry | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 | #DIV/0! |
| 29. Mapping | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 | #DIV/0! |
| **Total Staff Hours** | 49 | 10 | 30 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | | |
| **Total Staff Cost** | | $1,370.00 | $3,240.00 | $675.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | | **$5,285.00** | **$107.86** |

Check = $5,285.00

Notes:
1. This sheet to be used by Subconsultant to calculate its fee.

| | | | | | |
|---|---|---|---|---|---|
| SALARY RELATED COSTS: | | | | | $5,285.00 |
| OVERHEAD: | | 0% | | | $0.00 |
| OPERATING MARGIN: | | 0% | | | $0.00 |
| FCCM (Facilities Capital Cost Money): | | 0.00% | | | $0.00 |
| EXPENSES: | | 0.00% | | | $0.00 |
| SUBTOTAL ESTIMATED FEE: | | | | | **$5,285.00** |
| Survey (Field) | | 4-person crew | $0.00 | / day | $0.00 |
| Survey Field Crew | 9 | 3-person crew | $1,325.00 | / day | $11,925.00 |
| Test Holes | 15 | per test hole | $400.00 | / test holes | $6,000.00 |
| | | | | | $0.00 |
| SUBTOTAL ESTIMATED FEE: | | | | | **$23,210.00** |
| Optional Services | | | | | $0.00 |
| GRAND TOTAL ESTIMATED FEE: | | | | | **$23,210.00** |

**FIRST AMENDMENT TO WORK ORDER No. 1 BETWEEN THE CITY OF DORAL, FLORIDA AND KIMLEY-HORN AND ASSOCIATES, INC**

The first Amendment to Kimley-Horn and Associates, Inc Work Order No.1, made and entered into this **6** day of **April, 2023,** by and between the City of Doral, Florida, a municipal corporation of the State of Florida ("City") and Kimley-Horn and Associates ("Consultant") having its place of business at 2 Alhambra Plaza, Suite 500 Coral Gables, Florida 33134, for the provision to provide professional engineering design and permitting services of roadway improvements along NW 102 nd Avenue, NW 66 th Street, and NW 99 Avenue .

**WHEREAS,** the City of Doral is presently engaged in the design and permitting services of roadway improvements along NW 102 nd Avenue, NW 66 th Street, and NW 99" Avenue; and

**WHEREAS,** the awarded design firm's budget will be exhausted prior to design phase completion as a result of additional scope of work extending project limits given proposed work by a private development along NW 66 th St; and

**WHEREAS** the City of Doral is presently contracted with Kimley-Horn and Associates, Inc. to provide professional engineering design and permitting services throughout the duration of the design schedule; and

**WHEREAS** due to extended scope of work, additional hours are required to ensure that consultant firm services will be conducted up to design phase closeout; and

**WHEREAS,** the original cost for the design services approved by the work order was a not to exceed amount of $ 232, 083.00; and

**WHEREAS,** the cost for the provision of design services was increased to a not exceed amount of $ 242,819.00, for the additional hours required to provide coverage up to design phase closeout, with the cost of amended work to be a not to exceed amount of $ 10,736.00

**NOW THEREFORE,** in consideration of the mutual covenants set forth in this amendment, the parties agree as follows:

Section 1. Recitals. The above recitals are true and correct and incorporated herein.

Section 2. Amendments. The following Sections of the Work Order are hereby amended to read as follows:

**SCOPE OF SERVICES AND SCEHDULE:**
The performance of services associated with this Work Order will be executed on a time and material basis with a not to exceed amount of ~~$232,083.00~~, $242,819.00.
The scope of the project will be as described in the attached supplemental proposal from Kimley-Horn for

the additional design and permitting of the adjacent roads to the vacant parcel referenced by Folio No. 35-3017-001-0660, NW 102nd 'Avenue, NW 66th Street, and NW 99 Avenue, extended to NW 97th Avenue. The scope included among others change in typical section and harmonization widths caused a need to develop cut and fill mitigation alternatives to present to the client Miami-Dade County (MDC) regulatory and economic Resources (RER). An initial project completion date assumption is triggering additional coordination and an extension of project limits given proposed work by a private development along NW 66th St. At a pre-application meeting with Miami-Dade County RER, the need for groundwater contamination samples to be performed and reviewed by RER in conjunction with other permit applications. The performance of services associated with this Work Order was negotiated and will be executed on a time and material basis not to exceed the amount of $10, 736.00.

**EXCEPT AS PROVIDED HEREIN,** all other terms and conditions of the Contract dated January 4, 2021, remain in full force, and affect.

IN **WITNESS WHEREOF,** the parties hereto have executed this First Amendment on the day and date first above written, in three (3) counterparts, each of which shall, without proof or accounting for the other counterpart, be deemed an original.

**CONSULTANT**: Kimley-Horn and Associates, Inc

BY: _____
NAME: Leonte F. Almonte, P.E.
TITLE: Associate

WITNESSES:
1. _____
2. _____

SEAL: KIMLEY-HORN AND ASSOCIATES, INC. CORPORATE SEAL N.C.

OWNER: **CITY OF DORAL**

BY: _____
NAME: Barbara Hernandez,
TITLE: City Manager

AUTHENTICATION:

BY: _____
NAME: Connie Diaz
TITLE: City Clerk

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY FOR THE SOLE USE
OF THE CITY OF DORAL:

BY: _____
NAME: Valerie Vicente, Esq for Nabors Gibling and Nickerson, P.A
TITLE: City Attorney

Darlin Perez, P.E.
Chief of Engineering
City of Doral
8401 NW 53rd Terrace – Suite 200
Doral, FL 33166

***RE: Supplemental Professional Engineering Consulting Services for NW 66th Street from NW 102nd Avenue to NW 99th Avenue City of Doral, Miami-Dade County, Florida***

Dear Ms. Perez:

Kimley-Horn and Associates, Inc. ("Kimley-Horn" or "Consultant") is pleased to submit this letter agreement ("Agreement") to the City of Doral ("Client") to amend the agreement to provide professional engineering consulting services for the above referenced project. All work under this scope will be in accordance with the terms and conditions of Professional Services Agreement (General Engineering/Architecture Services RFQ 2020-22), between the City of Doral and Kimley-Horn. Our project understanding, scope of services, schedule, and fees follow:

## PROJECT UNDERSTANDING

This amendment covers three (3) specific areas of additional work not included in the original scope for this project:

1. A change in typical section and harmonization widths caused a need to develop cut and fill mitigation alternatives to present to the client and Miami-Dade County (MDC) Regulatory and Economic Resources (RER).
2. An initial project completion date assumption is triggering additional coordination and an extension of project limits given proposed work by a private development along NW 66th St.
3. At a pre-application meeting with Miami-Dade County RER, the need for groundwater contamination samples to be performed and reviewed by RER in conjunction with other permit applications.

## SCOPE OF SERVICES

**(ORIGINAL) TASK 01 – GEOTECHNICAL SERVICES (COMPLETED – no changes)**

**(ORIGINAL) TASK 02 – TOPOGRAPHIC SERVICES (COMPLETED - no changes)**

**(ORIGINAL) TASK 03 – ROADWAY CONSTRUCTION DOCUMENTS (ONGOING – changes below)**

**Task 03 A: Preliminary Typical Section (COMPLETED – no changes)**

**Task 03 B: Construction Documents for Approved Typical Section (ONGOING)**

**Task 03 B is being amended to include the following sub items:**

**(ADD to "Permitting" section)**

An additional permit will be required for the proposed roadway improvements from the following agencies:

1. RER Water Control – Cut and Fill permit

Kimley-Horn will conduct a meeting with RER to present cut and fill alternatives developed by the Consultant. During this meeting, the conceptual alternatives will be reviewed as well as the technical approach. Meeting minutes will be prepared and submitted to the Client.

Kimley-Horn will prepare and submit a package with Cut and Fill calculations and Plans to RER for review. Final response to comments (up to two [2] sets of review comments by RER) will be prepared within the Final construction documents.

All permit fees, plan review fees and impact fees will be paid directly by the Client.

**(NEW SECTION) Coordination with Royal Palm Doral Private Development**

The original scope assumed this project to reach 100% prior to additional roads being designed/built in conjunction with ongoing private development east of the project limits (Royal Palm). Based on coordination, a change in project limits was deemed necessary as the developer is only restriping the eastbound lanes on NW 66th St between NW 99th Ave and NW 97th Ave, thus in order to match the typical section to the west of NW 97th Ave, this project will include the milling and resurfacing and restriping of the westbound through lane and bike lane along NW 66th ST (approximately 1300 linear feet). Design coordination (approximately 30hrs) and five (5) meetings are also included in this task.

**TASK 04 - ENVIRONMENTAL PERMITTING (ONGOING – see changes)**

**Sub-Task 1 - Wetland Delineation (COMPLETED – no changes)**

**Sub-Task 2 - Florida Bonneted Bat Limited Roost Survey (ONGOING – no changes)**

**Sub-Task 3 - Miami-Dade County & SFWMD Permitting (ONGOING – changes below)**

**(NEW SECTION) Sub-Task 4 – Groundwater Sampling Plan**

Kimley-Horn reviewed groundwater sampling data from adjacent and nearby contaminated sites along the NW 66th Street corridor. Results of this review identified contaminants of concern to consist of iron and aluminum in groundwater at concentrations exceeding their respective groundwater cleanup target levels (GCTLs). As part of obtaining Miami-Dade County RER Environmental Resources Management (ERM) approval, a sampling plan was prepared and sent to DERM for approval. The sampling plan provided locations for soil and groundwater sampling to address local contamination concerns in the area. Upon MDC RER ERM review, a phone call was conducted to negotiate the sampling plan approval. On February 26, MDC RER ERM responded with a conditional approval of the sampling plan. This proposal was prepared to satisfy those conditions.

Kimley-Horn will subcontract a licensed well driller to install two (2) soil borings along the NW 66th Street corridor (See Attachment A for Subconsultant's proposal), from NW 102nd Ave. to NW 99th Ave (see attached Proposed Sample Location Map and Plan Sheets #14 & #15). The borings will be installed using a GeoProbe® equipped with direct push technology (DPT) to the depth of groundwater, anticipated within 4 feet of surface. Soil samples will be collected for observations, logged on a soil boring log, and placed in laboratory supplied containers and shipped under chain-of-custody protocol to a laboratory accredited under the National Environmental Laboratory Accreditation Program (NELAP). Soil samples will be submitted from the following depth intervals:

land surface to 0.5 ft., 0.5 ft to 2 ft. and 2 ft. to 4 ft., or to the water table, whichever is encountered first.
All soil samples will be analyzed for the following parameters:

- Arsenic by EPA Method 6010
- Petroleum Aromatic Hydrocarbons (PAHs) by EPA Method 8270

Additionally, the soil borings will then be converted to temporary well locations. The temporary wells will be installed to a depth of 12 ft. and consist of 10 ft. of 1-inch diameter, 0.010-inch slotted PVC and solid riser to 2-3 ft. above land surface. The boring anulus will be backfilled with clean 20/30 sand to above the screened portion of the well and developed until relatively free of sediment. When relatively free of sediment (<20 NTUs), the wells will be purged according to FDEP SOPs (FS2200) and sampled. Each well will be analyzed for the following parameters:

- Iron and aluminum by EPA Method 6010

Upon receipt of the laboratory analytical results, Kimley-Horn will prepare a Limited Assessment Report to details sampling activities, tabulate analytical results, and prepare figures to show sampling locations and results. The report will be prepared for DERM review and approval by a licensed Professional Geologist in the State of Florida.

Field work is estimated to take one day in the field and a report will be prepared within 3 weeks from receiving laboratory results.

All permit fees, plan review fees and impact fees will be paid directly by the Client.

## TASK 05 – TREE PERMIT / MITIGATION (NOT STARTED)

## TASK 06 – SUBSURFACE UTILITY EXPLORATION SERVICES (NOT STARTED)

15 test holes budget for, only 2 may be used. Unused funds being reallocated, see fee table.

## TASK 07 – THE CLIENT'S ADDITIONAL SERVICES

Upon your authorization, we will provide any additional services that may be required beyond those described in **Tasks 01 through 06**. These services may include but are not limited to such items as the following:

- Phase I and Phase II Environmental Site Assessment
- Utility Subsurface Engineering (SUE), to locate existing utilities at potential conflicts locations.
- Utility Relocation/ Design and plans.
- Resident Project Representative/CEI Services
- Bidding assistance
- Construction Phase Services
- Post Design Services (meetings, shop drawing reviews, contract clarifications, site observations, substantial completion review)
- Review of pay applications
- MOT plans other than described in Task 03
- Evaluation of contractor's sub-divisions or Value Engineering Proposals
- Meetings, presentations or coordination in addition to those described in Task 01 through Task 06 above
- Redesign required as a result of major change from scope of services described above
- Sketches and legal descriptions, if more than one dedication is needed
- Permit expediting
- Any work related to grants of easement or right of way acquisition
- Signalization

- 4-Way Stop Warrant Traffic Analysis and permitting with MDC
- Specific listed species surveys, permitting, and/or relocation of endangered species
- Services not specifically included within “Scope of Services”

## *SCHEDULE*

We will provide the above-described services outlined in an expeditious and orderly manner to meet the schedule mutually agreed to by the Client and Kimley-Horn and Associates, Inc. for the various elements of the project.

Due to the everchanging circumstances surrounding the COVID-19 Virus, situations may arise during the performance of this Agreement that affect availability of resources and staff of Kimley-Horn, the client, other consultants, and public agencies. There could be changes in anticipated delivery times, jurisdictional approvals, and project costs. Kimley-Horn will exercise reasonable efforts to overcome the challenges presented by current circumstances, but Kimley-Horn will not be liable to Client for any delays, expenses, losses, or damages of any kind arising out of the impact of the COVID-19 Virus.

## *FEE AND BILLING*

Kimley-Horn will accomplish the services outlined in Tasks 01 through 06 on a time material basis with estimated labor fees shown below. Labor fee will be billed hourly on monthly basis, based on the standard hourly rate agreed between Kimley-Horn and the Client. Direct expenses, if required, will be billed at 1.15 of the cost. Expenses are in addition to the labor amount. Billing will be due and payable within twenty-five (25) days of receipt of invoice.

Task 07 will require a separate client signature for approval prior to beginning work. Fees and expenses will be invoiced monthly based upon actual services performed and expenses incurred as of the invoice date. Billing will be due and payable within twenty-five (25) days of receipt of invoice.

| Task | Description | Original Labor Fee | Additional Scope Fee | Total New Labor Fee |
|---|---|---|---|---|
| 01 | Geotechnical Services | $15,692.00 | **$0.00** | $15,692.00 |
| 02 | Topographic Services | $20,401.00 | **$0.00** | $20,401.00 |
| 03 | Roadway Construction Documents | $143,280.00 | **$18,919.00** | $162,199.00 |
| 04 | Environmental Permitting | $22,500.00 | **$10,517.00** | $33,017.00 |
| | Subconsultant - Drilling Services | $0.00 | **$1,300.00** | $1,300.00 |
| 05 | Tree Permit/Mitigation | $7,000.00 | **$0.00** | $7,000.00 |
| 06 | Subsurface Utility Explorations | $23,210.00 | **($20,000.00)** | $3,210.00 |
| | **Total** | $232,083.00 | **$10,736.00** | $242,819.00 |

***Total Additional Services Labor ..... $10,736.00***

### Estimated Expenses

04a Task 04 Expenses Estimation ..... $2,000.00

### Hourly Fees

07 Additional Services ..... Hourly as Required

In addition to the matters set forth herein, our Agreement shall include and be subject to, and only to, the terms and conditions of the Professional Services Agreement (General Engineering/Architecture Services RFQ 2020-22), between the City of Doral and Kimley-Horn, which is hereby incorporated by reference. If you concur in all the foregoing and wish to direct us to proceed with the services, please have authorized persons execute both copies of this Agreement in the spaces provided below, retain one copy and return the other to us. Fees and times stated in this Agreement are valid for sixty (60) days after the date of this letter.

With Kimley-Horn, you should expect more and will experience better. We appreciate the opportunity to provide these services to you. Please don't hesitate to contact Gabriela Ramirez or me at (305) 673-2025 if you have any questions.

Very truly yours,

**KIMLEY-HORN AND ASSOCIATES, INC.**

By: Leonte I. Almonte, PE
*Associate*

Gabriela P. Ramirez, P.E.
*Project Manager*

# APPENDIX "A"

# Subconsultants' Fee Proposals

# INDIVIDUAL PROJECT ORDER NUMBER WOM 238

This Individual Project Order describes a specific agreement between Kimley-Horn and Associates, Inc. (the Consultant) and Wombat Environmental, LLC (the Associate Consultant) pursuant to the Master Agreement for Continuing Professional Services dated December 5, 2006, the terms of which are incorporated by reference.

Identification of Project and Consultant's Client:

NW 66th Street Project
NW 66th St. & 102nd Ave.
Doral, Florida
Project No. 043515013

Scope of Associate Consultant's Services:

Wombat will call in utility locates prior to drilling. Wombat will provide up to one (1) day of drilling services to install two (2) soil borings to groundwater depth (groundwater is anticipated at 4-5 feet below ground surface) and two (2) temporary groundwater monitoring wells. Total depth for the wells is anticipated at 12 feet below ground surface. Each well will consist of 10 feet of 0.010-inch slotted screen and solid riser to approximately 3 ft. above land surface. The boring anulus will be backfilled with clean 20/30 sand to the surface. Upon completion of sampling activities, the wells will be removed and the land restored to similar conditions.

Schedule to be met by Associate Consultant:

TBD

Associate Consultant's Compensation:

Lump sum of $1,300.00, per email quote dated 3/9/2023

| WOMBAT ENVIRONMENTAL, LLC | KIMLEY-HORN AND ASSOCIATES, INC. |
|---|---|
| By:_____ | By:_____ |
| (signature) | (signature) |
| _____ | Leonte I. Almonte Associate |
| (Print Name and Title) | (Print Name and Title) |

## FEE QUOTATION PROPOSAL FOR NW 66TH STREET
## FROM NW 97TH AVENUE TO NW 102ND AVENUE

**Consultant's Name:** Kimley-Horn and Associates, Inc.
**Project Number:**
**Project Length: 0.50** Miles

**Prepared by:** Gabriela Ramirez, PE
**Date:** 3/23/2023

**STAFF HOURS**

| | Activity | Principal Engineer | Project Manager | Sr. Engineer | Project Engineer | Engineering Technician | CADD Tech. | Staff Hours by Activity | Salary Cost for Activity |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Roadway Plans | 6 | 16 | 10 | 4 | 2 | 0 | 38 | $6,902.00 |
| 2 | Pavement Marking & Signing Plans | 2 | 6 | 6 | 10 | 4 | 2 | 30 | $4,530.00 |
| 3 | Signalization Plans and School Flashers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| 4 | Roadway Lighting Plans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| 3 | Drainage Design, Report & Permit Applications | 4 | 10 | 14 | 12 | 5 | 2 | 48 | $7,487.00 |
| 6 | Post-Design Services | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| 4 | Groundwater Sampling | 15 | 2 | 30 | 13 | 0 | 0 | 60 | $10,517.00 |
| 8 | Public Involvement | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| | **TOTAL HOURS** | 27 | 34 | 60 | 39 | 11 | 4 | 176 | $29,436.00 |
| | | | | | | | | | |
| | **Rates** | $210.00 | $200.00 | $172.00 | $139.00 | $83.00 | $78.00 | | |
| | **Totals S-H and Cost** | **$5,670.00** | **$6,800.00** | **$10,320.00** | **$5,421.00** | **$913.00** | **$312.00** | **$29,436.00** | **$167.25** |

| TOTAL CONTRACT COST COMPUTATIONS | |
|---|---|
| Total Activity Salary Costs | $29,436.00 |
| (a) Overhead Additives | |
| (a1) Combined O-H percent | |
| (a2) Combined O-H Cost | $0.00 |
| Subtotal (Salary + Overhead) | $29,436.00 |
| (b) Operating Margin Percent | $0 |
| (b1) Operating Margin Cost - Fixed Fee | $0 |
| Subtotal (Salary Related Cost) | **$29,436.00** |
| Expenses & Optional Services | |
| (a) Printing & Reproduction | $ - |
| (b) Public Involvement (5%) | $ - |
| Phase I Env. Assessment (Optional) | $0.00 |
| Tree Permitting/Mitigation (Optional) | $0.00 |
| Wetlands Permitting (Optional) | $0.00 |
| **TOTAL KHA** | **$29,436.00** |

**PROJ. NO.:** _____ **F.A.P.** _____ **DESCRIPTION:** **Roadway Improvements**

**LENGTH IN MILES :** **0.53** **FEET :** **2650** **LANES:** _____ **DIV'D:** _____ **URBAN:** **X**

| ITEM | SCALE | BASIS OF ESTIMATE | NO. OF UNITS | NO. OF SHEETS | M - H UNITS | TOTAL M-H | COMMENTS |
|---|---|---|---|---|---|---|---|
| **ROADWAY PLANS** | | | | | | | |
| Key Map | | SHT | 0 | 1 | 0 | 0 | |
| Typical Section | | EA | 1 | 1 | 0 | 0 | |
| Summary of Quantities | | SHT | 0 | 1 | 0 | 0 | |
| General Notes | | SHT | 0 | 1 | 0 | 0 | |
| Plan Sheets for M & R | 1"=20' | HRS | 0 | 0 | 0 | 0 | N/A |
| Plan Sheets New Construction | 1"=20' | SHT | 0 | | | 0 | |
| Profile Sheets for M & R | 1"=20' | SHT | 2 | 2 | 0 | 0 | Additional 2 sheets for NW 66th St to NW 97th Ave |
| Profile Sheets New Cons 10 | 1"=20' | SHT | 0 | 0 | 0 | 0 | |
| Intersection Details - Plateau | | SHT | 0 | 0 | 40 | 0 | |
| Intersection Profiles - Plateau | | EA | 0 | 0 | 0 | 0 | |
| Intersection Profiles - Side Streets | | EA | 0 | 1 | 10 | 0 | |
| SWPP Plan | | SHT | 0 | 1 | 12 | 0 | |
| | | | | | | | |
| Misc. Construction Details | | SHT | 0 | 1 | 8 | 0 | |
| Maint. of Traffic | | SHT | 0 | 2 | 10 | 0 | |
| Cross-Sections | 1"=10' | EA | 0 | 10 | 4 | 0 | |
| Computation book | | LS | 0 | | 0 | 0 | |
| Opinion of Probable Cost | | EA | 0 | | 4 | 0 | |
| Pavement Design | | LS | 0 | | 20 | 0 | |
| Geometry Plan | | LS | 0 | | 12 | 0 | |
| FDOT Coordination | | EA | 0 | | 0 | 0 | |
| Utility Coordination | | LS | 0 | | 30 | 0 | |
| Railroad Permit and Coordination | | LS | 0 | | 0 | 0 | |
| Special Provisions, Technical Specs | | HRS | 0 | | 12 | 0 | |
| Value Engineering/Coord | | LS | 0 | | 18 | 0 | |
| Meetings and Reviews | | HRS | 3 | | 6 | 18 | 3 meetings with Royal Palm developer - 2 people |
| Coordination | | HRS | 0 | | 20 | 20 | |
| Geotechnical Coordination | | LS | 0 | | 6 | 0 | |
| Surveying Data Processing | | HRS | 0 | | 8 | 0 | |
| Field Reviews | | EA | 0 | | 12 | 0 | |
| **ROADWAY PLANS TOTALS** | | | | 21 | | **38** | |

Prepared By: Gabriela Ramirez, PE Date: March 23, 2023

CCN: A2664

**COUNTY PROJ. NO.:** 0 **F.A.P.** _____ **DESCRIPTION:** Roadway Improvements

**LENGTH IN MILES :** 0.53 **FEET :** 2650 **LANES:** _____ **DIV'D:** _____ **URBAN:** X

| ITEM | SCALE | BASIS OF ESTIMATE | NO. OF UNITS | NO. OF SHEETS | M - H UNITS | TOTAL M-H | COMMENTS |
|---|---|---|---|---|---|---|---|
| **GROUND SIGNING & MARKING** | | | | | | | |
| Key Map | | | | | | | |
| Summary of Quantities | | SHT | 0 | 0 | 12 | 0 | |
| Plan Sheets | 1"=20' | SHT | 2 | 2 | 15 | 30 | Additional 2 sheet for NW 66th St to NW 97th Ave |
| Opinion of Probable Cost | | HRS | 0 | | 0 | 0 | |
| Field Review | | EA | 0 | | 0 | 0 | |
| MDC Traffic Plans Approval | | LS | 0 | 0 | 0 | 0 | 0 |
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| **SIGNING & MARKING TOTALS** | | | | 2 | | **30** | |

Prepared By: Gabriela Ramirez, PE Date: March 23, 2023

CCN: A2664

**COUNTY PROJ. NO.:** 0 **F.A.P.** _____ **DESCRIPTION:** Roadway Improvements

**LENGTH IN MILES :** 0.53 **FEET :** 2650 **LANES:** _____ **DIV'D:** No **URBAN:** X

| ITEM | SCALE | BASIS OF ESTIMATE | NO. OF UNITS | NO. OF SHEETS | M - H UNITS | TOTAL M-H | COMMENTS |
|---|---|---|---|---|---|---|---|
| **DRAINAGE PLANS** | | | | | | | |
| Drainage Map | 1"=200' | SHT | 0 | 0 | 0 | 0 | |
| Drainage Structures | | EA | 0 | 0 | 0 | 0 | |
| Drainage Structures - M & R** | | EA | 0 | 0 | | | |
| Summary of Drainage Structure | | SHT | 1 | | 0 | | N/A |
| Meetings / Review / Quality Control | | LS | 1 | | 8 | 8 | Meeting with RER and City to present Cut and Fill Alternatives |
| Drainage Details | | EA | 0 | 0 | 0 | 0 | |
| Field Review | | EA | 0 | | 0 | | |
| Wetlands Assessment | | LS | 0 | | 20 | 0 | |
| Design of French Drain | | LS | 0 | | 20 | 0 | |
| Drainage Design (Including Report) | | LS | 0 | | 30 | 0 | |
| Permitting (Drainage System) | | LS | 1 | | 40 | 40 | Cut and Fill Alternatives and cost related to each alternative |
| Environmental Assesment | | LS | 0 | | 0 | 0 | |
| Opinion of Probable Cost | | EA | 0 | | 0 | 0 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| **DRAINAGE PLANS TOTALS** | | | | 0 | | **48** | |

Prepared By: Gabriela Ramirez, PE Date: March 23, 2023

**COUNTY PROJ. NO.:** 0 **F.A.P.** _____ **DESCRIPTION:** Roadway Improvements

**LENGTH IN MILES :** 0.5 **FEET :** 2650 **LANES:** _____ **DIV'D:** No **URBAN:** X

| ITEM | SCALE | BASIS OF ESTIMATE | NO. OF UNITS | NO. OF SHEETS | M - H UNITS | TOTAL M-H | COMMENTS |
|---|---|---|---|---|---|---|---|
| **Groundwater Sampling** | | | | | | | |
| **KHA Items:** | | | | | | | |
| Review existing groundwater sampling data | | LS | 1 | | 4 | 4 | |
| Sampling Plan for DERM review | | LS | 1 | | 4 | 4 | |
| Field work | | LS | 2 | | 8 | 16 | one day - 2 people |
| Review laboratory results | | LS | 1 | | 4 | 4 | |
| Report preparation | | LS | 1 | | 16 | 16 | |
| Meetings | | LS | 2 | | 8 | 16 | 2 meetings with DERM |
| 10 | | | | | | | |
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| **TOTAL** | | | | 0 | | **60** | |

Prepared By: Gabriela Ramirez, PE Date: March 23, 2023

CNN:A2664

## PH II Expense estimate

| ITEM | UNIT | COST PER UNIT | TASK 2 - Sampling | |
|---|---|---|---|---|
| | | | NUMBER OF UNITS | COST |
| **Expenses** | | | | |
| CAR RENTAL/GAS | lump sum | $ 200.00 | 1 | $ 200.00 |
| AIRFARE | lump sum | $ 815.00 | | $ - |
| Sample Supplies | lump sum | $ 300.00 | 1 | $ 300.00 |
| shipping | lump sum | $ 150.00 | | $ - |
| Perdiem (per person) | day | $ 150.00 | 1 | $ 150.00 |
| | | | | |
| **Driller** | | | | |
| | | | | |
| Well Materials | each | $ 150.00 | 2.00 | $ 300.00 |
| LFG Monitor | week | $ 300.00 | | $ - |
| Well Permits | each | $ 150.00 | 1 | $ 150.00 |
| Drums | each | $ 50.00 | | $ - |
| | | | | |
| | | | | |
| **Laboratory (GW/SW)** | | | | |
| Arsenic | sample | $ 16.00 | 8 | $ 128.00 |
| PAHs | sample | $ 75.00 | 8 | $ 600.00 |
| | sample | | | $ - |
| iron | sample | $ 16.00 | 4 | $ 64.00 |
| Aluminum | sample | $ 16.00 | 4 | $ 64.00 |
| | sample | | | $ - |
| | sample | | | $ - |
| disposal | sample | $ 3.00 | 3 | $ 9.00 |
| EIF | sample | $ 25.00 | 1 | $ 25.00 |
| | | | | $ - |
| | | | | $ - |
| **Task Total** | | | | **$1,990.00** |
| **Grand Total** | | | | |

# Exhibit “B”

Darlin Perez, P.E.
Chief of Engineering
City of Doral
8401 NW 53rd Terrace – Suite 200
Doral, FL 33166

***RE: Supplemental Professional Engineering Consulting Services for NW 66th Street from NW 102nd Avenue to NW 99th Avenue City of Doral, Miami-Dade County, Florida***

Dear Ms. Perez:

Kimley-Horn and Associates, Inc. ("Kimley-Horn" or "Consultant") is pleased to submit this letter agreement ("Agreement") to the City of Doral ("Client") to amend the agreement to provide professional engineering consulting services for the above referenced project. All work under this scope will be in accordance with the terms and conditions of Professional Services Agreement (General Engineering/Architecture Services RFQ 2020-22), between the City of Doral and Kimley-Horn. Our project understanding, scope of services, schedule, and fees follow:

## PROJECT UNDERSTANDING

This amendment covers two (2) specific areas of additional work not included in the original scope for this project:

1. Permit requirements by SFWMD triggering additional analysis and plan changes.
2. Additional coordination with SFWMD and DERM.
3. Reallocation of unused SUE funds.

## SCOPE OF SERVICES

**(ORIGINAL) TASK 01 – GEOTECHNICAL SERVICES (COMPLETED – no changes)**

**(ORIGINAL) TASK 02 – TOPOGRAPHIC SERVICES (COMPLETED - no changes)**

**(ORIGINAL) TASK 03 – ROADWAY CONSTRUCTION DOCUMENTS (ONGOING – changes below)**

**Task 03 A: Preliminary Typical Section (COMPLETED – no changes)**

**Task 03 B: Construction Documents for Approved Typical Section (ONGOING)**

**Task 03 B is being amended to include the following sub items:**

**(ADD to "Permitting" section)**

Based on received request for additional information (RAI) by SFWMD a flood plain analysis and calculations had to be performed to satisfy permit requirements. Additionally, roadway plans were revised to include detailed Stormwater Pollution Prevention Plans (SWPPPs).

**TASK 04 - ENVIRONMENTAL PERMITTING (ONGOING – see changes)**

**Sub-Task 1 - Wetland Delineation (COMPLETED – no changes)**

**Sub-Task 2 - Florida Bonneted Bat Limited Roost Survey (ONGOING – no changes)**

**Sub-Task 3 - Miami-Dade County & SFWMD Permitting (ONGOING – changes below)**

Additional coordination with SFWMD and MDC DERM for confirmation of wetlands presence and acceptance of out-of-area Wetland Mitigation Bank. Assuming additional 60 hours of coordination, including new mitigation bank agreement and forms.

## TASK 05 – TREE PERMIT / MITIGATION (ONGOING – no changes)

## TASK 06 – SUBSURFACE UTILITY EXPLORATION SERVICES (NOT STARTED – pending, no changes)

2 remaining test holes in budget.

## TASK 07 – THE CLIENT'S ADDITIONAL SERVICES

Upon your authorization, we will provide any additional services that may be required beyond those described in **Tasks 01 through 06**. These services may include but are not limited to such items as the following:

- Phase I and Phase II Environmental Site Assessment
- Utility Relocation/ Design and plans.
- Resident Project Representative/CEI Services, Bidding assistance, Construction Phase Services, Post Design Services (meetings, shop drawing reviews, contract clarifications, site observations, substantial completion review), Review of pay applications, Evaluation of contractor's sub-divisions or Value Engineering Proposals
- MOT plans other than described in Task 03
- Meetings, presentations or coordination in addition to those described in Task 01 through Task 06 above
- Redesign required as a result of major change from scope of services described above
- Sketches and legal descriptions, if more than one dedication is needed.
- Permit expediting
- Any work related to grants of easement or right of way acquisition
- Signalization Design and 4-Way Stop Warrant Traffic Analysis and permitting with MDC
- Specific listed species surveys, permitting, and/or relocation of endangered species
- Services not specifically included within "Scope of Services"

## *SCHEDULE*

We will provide the above-described services outlined in an expeditious and orderly manner to meet the schedule mutually agreed to by the Client and Kimley-Horn and Associates, Inc. for the various elements of the project.

## *FEE AND BILLING*

Kimley-Horn will accomplish the services outlined in Tasks 01 through 06 on a time material basis with estimated labor fees shown below. Labor fee will be billed hourly on monthly basis, based on the standard hourly rate agreed between Kimley-Horn and the Client. Direct expenses, if required, will be

billed at 1.15 of the cost. Expenses are in addition to the labor amount. Billing will be due and payable within twenty-five (25) days of receipt of invoice.

Task 07 will require a separate client signature for approval prior to beginning work. Fees and expenses will be invoiced monthly based upon actual services performed and expenses incurred as of the invoice date. Billing will be due and payable within twenty-five (25) days of receipt of invoice.

| Task | Description | Previous Labor Fee | Additional Scope Fee | Total New Labor Fee |
|---|---|---|---|---|
| 01 | Geotechnical Services | $15,692.00 | **$0.00** | $15,692.00 |
| 02 | Topographic Services | $20,401.00 | **$0.00** | $20,401.00 |
| 03 | Roadway Construction Documents | $162,199.00 | **$7,350.00** | $169,549.00 |
| 04 | Environmental Permitting | $33,017.00 | **$5,760,00** | $38,777.00 |
| | Subconsultant - Drilling Services | $1,300.00 | **$0.00** | $1,300.00 |
| 05 | Tree Permit/Mitigation | $7,000.00 | **$0.00** | $7,000.00 |
| 06 | Subsurface Utility Explorations | $3,210.00 | **$0.00** | $3,210.00 |
| | **Total** | $242,819.00 | **$13,110.00** | $255,929.00 |

***Total Additional Services Labor .....$13,110.00***

## Hourly Fees

07 Additional Services ..... Hourly as Required

In addition to the matters set forth herein, our Agreement shall include and be subject to, and only to, the terms and conditions of the Professional Services Agreement (General Engineering/Architecture Services RFQ 2020-22), between the City of Doral and Kimley-Horn, which is hereby incorporated by reference. If you concur in all the foregoing and wish to direct us to proceed with the services, please have authorized persons execute both copies of this Agreement in the spaces provided below, retain one copy and return the other to us. Fees and times stated in this Agreement are valid for sixty (60) days after the date of this letter.

With Kimley-Horn, you should expect more and will experience better. We appreciate the opportunity to provide these services to you. Please don't hesitate to contact Gabriela Ramirez or me at (305) 673-2025 if you have any questions.

Very truly yours,

**KIMLEY-HORN AND ASSOCIATES, INC.**

By: Leonte I. Almonte, PE
*Associate*

Gabriela P. Ramirez, P.E.
*Project Manager*

## FEE QUOTATION PROPOSAL FOR NW 66TH STREET
## FROM NW 97TH AVENUE TO NW 102ND AVENUE

**Consultant's Name:** Kimley-Horn and Associates, Inc.
**Project Number:**
**Project Length: 0.50** Miles

**Prepared by:** Gabriela Ramirez, PE
**Date:** 10/6/2023

**STAFF HOURS**

| | Activity | Principal Engineer | Project Manager | Sr. Engineer | Project Engineer | Engineering Technician | CADD Tech. | Staff Hours by Activity | Salary Cost for Activity |
|---|---|---|---|---|---|---|---|---|---|
| | **Distribution** | **12%** | **30%** | **28%** | **24%** | **6%** | **0%** | **100%** | |
| **1** | Roadway Plans | 1 | 4 | 3 | 3 | 1 | 0 | 10 | $1,860.00 |
| **2** | Pavement Marking & Signing Plans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| **3** | Signalization Plans and School Flashers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| **4** | Roadway Lighting Plans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| **3** | Drainage Design, Report & Permit Applications | 4 | 10 | 9 | 7 | 3 | 0 | 32 | $5,490.00 |
| **6** | Post-Design Services | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| **4** | Environmental Permitting | 4 | 16 | 10 | 0 | 0 | 0 | 30 | $5,760.00 |
| **8** | Public Involvement | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0.00 |
| | **TOTAL HOURS** | 9 | 29 | 22 | 10 | 4 | 0 | 72 | $13,110.00 |
| | | | | | | | | | |
| | **Rates** | $210.00 | $200.00 | $172.00 | $139.00 | $83.00 | $78.00 | | |
| | **Totals S-H and Cost** | **$1,898.00** | **$5,820.00** | **$3,742.72** | **$1,358.03** | **$290.50** | **$0.00** | **$13,110.00** | **$182.08** |

| | |
|---|---|
| TOTAL CONTRACT COST COMPUTATIONS | |
| Total Activity Salary Costs | $13,110.00 |
| (a) Overhead Additives | |
| (a1) Combined O-H percent | |
| (a2) Combined O-H Cost | $0.00 |
| Subtotal (Salary + Overhead) | $13,110.00 |
| | |
| (b) Operating Margin Percent | $0 |
| (b1) Operating Margin Cost - Fixed Fee | $0 |
| Subtotal (Salary Related Cost) | **$13,110.00** |
| | |
| Expenses & Optional Services | |
| (a) Printing & Reproduction | $ - |
| (b) Public Involvement (5%) | $ - |
| Phase I Env. Assessment (Optional) | $0.00 |
| Tree Permitting/Mitigation (Optional) | $0.00 |
| Wetlands Permitting (Optional) | $0.00 |
| **TOTAL KHA** | **$13,110.00** |

**PROJ. NO.:** _____ **F.A.P.** _____ **DESCRIPTION:** **Roadway Improvements**

**LENGTH IN MILES :** **0.53** **FEET :** **2650** **LANES:** _____ **DIV'D:** _____ **URBAN:** **X**

| ITEM | SCALE | BASIS OF ESTIMATE | NO. OF UNITS | NO. OF SHEETS | M - H UNITS | TOTAL M-H | COMMENTS |
|---|---|---|---|---|---|---|---|
| **ROADWAY PLANS** | | | | | | | |
| Key Map | | SHT | 0 | 1 | 0 | 0 | |
| Typical Section | | EA | 1 | 1 | 0 | 0 | |
| Summary of Quantities | | SHT | 0 | 1 | 0 | 0 | |
| General Notes | | SHT | 0 | 1 | 0 | 0 | |
| Plan Sheets for M & R | 1"=20' | HRS | 0 | 0 | 0 | 0 | N/A |
| Plan Sheets New Construction | 1"=20' | SHT | 0 | | | 0 | |
| Profile Sheets for M & R | 1"=20' | SHT | 2 | 2 | 0 | 0 | |
| Profile Sheets New Cons 10 | 1"=20' | SHT | 0 | 0 | 0 | 0 | |
| Intersection Details - Plateau | | SHT | 0 | 0 | 40 | 0 | |
| Intersection Profiles - Plateau | | EA | 0 | 0 | 0 | 0 | |
| Intersection Profiles - Side Streets | | EA | 0 | 1 | 10 | 0 | |
| SWPP Plan | | SHT | 0 | 1 | 10 | 10 | Detail SWPP plan per SFWMD comments |
| | | | | | | | |
| Misc. Construction Details | | SHT | 0 | 1 | 8 | 0 | |
| Maint. of Traffic | | SHT | 0 | 2 | 10 | 0 | |
| Cross-Sections | 1"=10' | EA | 0 | 10 | 4 | 0 | |
| Computation book | | LS | 0 | | 0 | 0 | |
| Opinion of Probable Cost | | EA | 0 | | 4 | 0 | |
| Pavement Design | | LS | 0 | | 20 | 0 | |
| Geometry Plan | | LS | 0 | | 12 | 0 | |
| FDOT Coordination | | EA | 0 | | 0 | 0 | |
| Utility Coordination | | LS | 0 | | 30 | 0 | |
| Railroad Permit and Coordination | | LS | 0 | | 0 | 0 | |
| Special Provisions, Technical Specs | | HRS | 0 | | 12 | 0 | |
| Value Engineering/Coord | | LS | 0 | | 18 | 0 | |
| Meetings and Reviews | | HRS | 3 | | 0 | 0 | |
| Coordination | | HRS | 0 | | 20 | 0 | |
| Geotechnical Coordination | | LS | 0 | | 6 | 0 | |
| Surveying Data Processing | | HRS | 0 | | 8 | 0 | |
| Field Reviews | | EA | 0 | | 12 | 0 | |
| **ROADWAY PLANS TOTALS** | | | | 21 | | **10** | |

Prepared By: Gabriela Ramirez, PE Date: October 5, 2023

CCN: A2664

**COUNTY PROJ. NO.:** 0 **F.A.P.** _____ **DESCRIPTION:** Roadway Improvements

**LENGTH IN MILES :** 0.53 **FEET :** 2650 **LANES:** _____ **DIV'D:** No **URBAN:** X

| ITEM | SCALE | BASIS OF ESTIMATE | NO. OF UNITS | NO. OF SHEETS | M - H UNITS | TOTAL M-H | COMMENTS |
|---|---|---|---|---|---|---|---|
| **DRAINAGE PLANS** | | | | | | | |
| Drainage Map | 1"=200' | SHT | 0 | 0 | 0 | 0 | |
| Drainage Structures | | EA | 0 | 0 | 0 | 0 | |
| Drainage Structures - M & R** | | EA | 0 | 0 | 0 | 0 | |
| Summary of Drainage Structure | | SHT | 1 | | 0 | 0 | N/A |
| Meetings / Review / Quality Control | | LS | 1 | | 0 | 0 | |
| Drainage Details | | EA | 0 | 0 | 0 | 0 | |
| Field Review | | EA | 0 | | 0 | | |
| Wetlands Assessment | | LS | 0 | | 0 | 0 | |
| Design of French Drain | | LS | 0 | | 0 | 0 | |
| Drainage Design (Including Report) | | LS | 0 | | 0 | 8 | Update drainage report calculations due to flood plain analysis |
| Flood Plain Calcs | | LS | 1 | | 24 | 24 | Flood Plain calcs per SFWMD request |
| Environmental Assesment | | LS | 0 | | 0 | 0 | |
| Opinion of Probable Cost | | EA | 0 | | 0 | 0 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| **DRAINAGE PLANS TOTALS** | | | | 0 | | **32** | |

Prepared By: Gabriela Ramirez, PE Date: October 5, 2023

**COUNTY PROJ. NO.:** 0 **F.A.P.** _____ **DESCRIPTION:** Roadway Improvements

**LENGTH IN MILES :** 0.5 **FEET :** 2650 **LANES:** _____ **DIV'D:** No **URBAN:** X

| ITEM | SCALE | BASIS OF ESTIMATE | NO. OF UNITS | NO. OF SHEETS | M - H UNITS | TOTAL M-H | COMMENTS |
|---|---|---|---|---|---|---|---|
| **Groundwater Sampling** | | | | | | | |
| **KHA Items:** | | | | | | | |
| Coordination with permitting agency | | LS | 1 | | 30 | 30 | Continuous coordination with SFWMD and DERM for Wetland mitigation bank acceptance and final permitting |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| **TOTAL** | | | | 0 | | **30** | |

Prepared By: Gabriela Ramirez, PE Date: October 5, 2023

CNN:A2664

# STORMWATER MANAGEMENT REPORT

# NW 66TH STREET ROADWAY IMPROVEMENTS FROM NW 102ND AVENUE TO NW 97TH AVENUE

**PREPARED FOR**

**City of Doral, Florida**

**PREPARED BY**

**Kimley-Horn and Associates, Inc.**

2 Alhambra Plaza, Suite 500

Miami, FL 33134

---

**Gabriela Ramirez, PE**

Florida PE No. 79620

**July 2023**

## Engineer's Certification

I, Gabriela Ramirez, P.E. # 79620, certify that I currently hold an active Professional Engineer's License in the State of Florida and am competent through education or experience to provide engineering services in the civil and drainage engineering disciplines contained in this report. I further certify that this report was prepared by me or under my responsible charge as defined in Chapter 61G15-18.001 F.A.C., and that all statements, conclusions, and recommendations made herein are true and correct to the best of my knowledge and ability.

Project Description:

**NW 66$^{TH}$ Street Roadway Widening**

_____

Gabriela Ramirez, P.E.
P.E. No. 79620
Kimley-Horn and Associates, Inc.
Registry No. 35106
355 Alhambra Circle, Suite 1400
Coral Gables, FL 33134

Gabriela Ramirez, P.E., State of Florida, Professional Engineer, License No. 79620
This item has been digitally signed and sealed by Gabriela Ramirez, P.E. on 8/9/2023. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

# TABLE OF CONTENTS



# APPENDIX

# 1 INTRODUCTION

This stormwater narrative has been prepared on behalf of the City of Doral for the proposed roadway improvements of NW 66th Street from NW 102nd to NW 97th Avenue. Additional improvements are proposed to segments of NW 102nd Avenue and NW 99th Avenue, extending approximately 300-ft south of their intersection with NW 66th Street. The proposed improvements generally consist of widening the existing roadway for additional travel and bike lanes, curb and gutter, curb inlets, sidewalks, culverts, and exfiltration trenches. Proposed roadway construction documents are provided in **Appendix A**. This proposed project is a continuation of the previous phase of NW 66th Street. The previous phase consisted of construction of one travel lane in each direction, two way left-turn lane, and a self-contained drainage system. The project area Flood Insurance Rate Maps (FIRMs) can be found on Miami-Dade County Map number 12086c0278L, refer to **Appendix B**.

The proposed project abuts the Miami-Dade County Resource Recovery Facility to the north and is located within the Basin B Fill Encroachment and Water Management Area. The proposed drainage system will consist of curb and gutter that convey stormwater runoff to a series of curb inlets for treatment and attenuation via the proposed exfiltration. Exfiltration trenches will provide the required capacity to retain the runoff volume required by the Miami-Dade County Department of Regulatory and Economic Resources (DRER) and South Florida Water Management District (SFWMD) water quality and quantity criteria. The proposed drainage system will connect to the existing system along NW 66th street through stub-outs that were provided as part of the previous project. The proposed drainage along NW 102nd Avenue and NW 99th Avenue will be independent systems. The drainage system along NW 66th street is self-contained with no outfalls to a surface water body.

# 2 DESIGN CRITERIA

The DRER and SFWMD have design criteria that control the proposed design of the stormwater management facility. The following sections outline the criteria used for design.

## 2.1 WATER QUALITY

The required detention/retention pretreatment volume shall be the greater of 1-inch of runoff over the project area or 2.5-inches of runoff over the impervious area.

## 2.2 WATER QUANTITY

The required stormwater management design will retain the runoff from the 10-year 24-hour storm event. Furthermore, the 25-year 72-hour storm event was analyzed for discharge criteria.

## 2.3 FLOODPLAIN ENCROACHMENT

No net encroachment into the Federal Emergency Management Agency (FEMA) 100-year floodplain that will adversely affect the existing rights of others, will be allowed.

## 2.4 SPECIAL CUT AND FILL BASIN (BASIN B)

The project is located within a special “Cut and Fill Basin” which requires that the volume of fill material placed on a project between the existing land elevation and an elevation 7.58-ft NGVD not exceed 1.8 times the total area of the project.

# 3 SITE STORMWATER ANALYSIS

The proposed stormwater management facility for the site consists of inlets and pipes that route stormwater runoff to exfiltration trenches for treatment and attenuation. The proposed stormwater management design is based on the best available data. More details on the methodologies are provided in the following sections.

## 3.1 SEASONAL HIGH-WATER LEVEL

The Seasonal High Ground Water (SHGW) levels were determined based on the United States Geological Survey (USGS) maps, that were developed in cooperation with the Miami-Dade County Department of Environmental Resource Management (DERM). The SHGW in Miami-Dade County is defined by the October Average groundwater level, where a ground water contour elevation of approximately 4.0-ft NGVD was determined for the project site. Additionally, the Average Yearly High groundwater elevation for the site is 5.75-ft NGVD. The USGS Miami Dade County Groundwater Maps are provided in **Appendix C**.

## 3.2 SOIL PROPERTIES AND SUBSURFACE EXPLORATION

A subsurface investigation was performed by Tierra South Florida, Inc. The geotechnical exploration report provided in **Appendix D** describes the general subsurface conditions based on borings obtained along NW 66$^{th}$ Street.

Subsurface exploration of the site was performed by means of six (16) soil borings, and two (2) percolation tests. The percolation tests were performed in general accordance with South Florida Water Management District specifications for Usual Open Hole Test. A hydraulic conductivity summary table is provided below for the in-situ exfiltration test performed by PSI, Inc.

**Table 1: Hydraulic Conductivity Summary Table**

| Test No. | Casing Dia. (in) | Hole Depth (ft) | Depth to Water Table (ft) | Pump Rate (gpm) | Hydraulic Conductivity (cfs/ft$^2$-ft head) |
|---|---|---|---|---|---|
| 1 | 4 | 15 | 0.8 | 35 | $6.34 \times 10^{-3}$ |
| 2 | 4 | 15 | 8.0 | 50 | $1.20 \times 10^{-3}$ |
| | | | | Average | $3.77 \times 10^{-3}$ |

## 3.3 CURVE NUMBER

The SCS Curve Number method was used to calculate hydrological losses. A Curve Number relationship was determined based on guidance from the Natural Resource Conservation (NRCS) Urban Hydrology for Small Watersheds TR-55. Curve Number calculations for the pre- and post-development conditions are provided in **Appendix E.**

## 3.4 DESIGN STORMS

Precipitation depths were obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14. Precipitation frequency estimates for the project area are provided in **Appendix F.** The table below provides a summary of the precipitation depths and rainfall distributions used in the flood routing analysis.

**Table 2: Design Storm Summary**

| Design Storm | Rainfall Distribution | Precipitation Depth (in.) |
|---|---|---|
| 10-Year, 24-Hour | SCS-Type III - 24hr | 8.41 |
| 25-Year, 72-Hour | SFWMD-72 | 13.1 |

### 3.5 EXFILTRATION TRENCH

The proposed exfiltration trench is designed to adhere to state and local water quality and water quantity standards. The use of exfiltration trench as a suitable means of achieving relative standards is predicated on the in-situ soil conditions promoting sufficient hydraulic capacity. The minimum depth of the proposed exfiltration trench is 15 feet deep. The proposed exfiltration trench design is based on existing topography, constructability, and design considerations. Moreover, the regulatory agency requires the exfiltration trench pipe invert elevation be placed at the October Seasonal High Groundwater table. However, this was unattainable due to minimum pipe depth restrictions. The proposed drainage system will connect to the existing system along NW 66th street through stub-outs that were provided as part of the previous project.

Exfiltration trench was modeled in ICPR using a rating curve and variable groundwater table as described in the Florida Department of Transportation District (FDOT) ICPR Applications Manual. FDOT District VI has an agreement with the SFWMD, that will allow exfiltration throughout storm events greater than 1-hour. This methodology will require the use of variable groundwater levels, which stages fluctuates between the Miami Dade October Ground water elevation, which is typically the Design Highwater Elevation, and the Average Yearly High Ground water elevation. This approach incorporates the use of rainfall distribution curves included in the FDOT and SFWMD design manuals as percentage of the rain-fall distribution during the storm durations 24- hour and 72-hours rainfall hydrographs. This methodology instills boundary conditions that mimic the variability in groundwater levels when the in-situ soil conditions are saturated and there is peak rise of sub surface water levels.

Water quality and quantity calculations for the proposed project are provided in **Appendix G** and **H,** respectively.

### 3.6 FLOODPLAIN ENCROACHMENT

Floodplain impacts are limited to a small segment of NW 99th Avenue. Impacts were calculated from existing ground elevations up to the BFE for those areas within the FEMA floodplain. A cup for cup analysis was performed to compensate for impacts to the existing floodplain. Floodplain encroachment exhibits and calculations are provided in **Appendix I**.

### 3.7 BASIN B – FILL ENCROACHMENT

Approvals were previously obtained from the DRER for NW 66th Street from NW 102nd Avenue to NW 97th Avenue for "Cut and Fill" criteria under permit number CF-00690. The approved permit under CF-00690 will be modified to include the additional improvements described in this stormwater management report. Cut and fill calculations are provided in **Appendix J.**

# 4 RESULTS

The results of the stormwater analysis show the proposed roadway improvements meet water quality and quantity criteria. Maximum flood stage elevations for the 10-year 24-hour design storm are below minimum inlet elevations for the roadway improvements along NW 66 Street, NW 102 Avenue, and NW 99 Avenue. A summary of design stages for the 10-year 24-hour design storm is provided in the following table.

**Table 3: 10-Year, 24-Hour Node Maximum Flood Stage Summary Table**

| Node | Minimum Inlet Elevation (ft NGVD) | Maximum Flood Stage Elevation (ft NGVD) |
|---|---|---|
| **NW66_Road** | 6.35 | 6.15 |
| **NW99_Road** | 6.60 | 6.02 |
| **NW102_Road** | 7.57 | 6.38 |

A pre- vs. post-development analysis was performed for the 25-year 72-hour design storm. The results show discharges to the adjacent property and wetlands are reduced by 8.51-cfs. A summary of discharges for the pre- and post-development condition are provided in the tables below.

**Table 4: Pre-development Discharges Summary Table**

| Basin | 25-Year, 72-Hour Discharge (cfs) |
|---|---|
| **Site** | 12.39 |

**Table 5: Post Development Discharges Summary Table**

| Basin | 25-Year, 72-Hour Discharge (cfs) |
|---|---|
| **NW66_Berm** | 3.06 |
| **NW99_Berm** | 0.49 |
| **NW102_Berm** | 0.33 |

Additionally, impacts to the existing 100-year floodplain as a result of the proposed development were analyzed based on a “cup for cup” methodology. The volume of storage provided in the proposed exfiltration trench is greater than the volume of floodplain impacts. Therefore, no adverse impacts to the existing 100-year floodplain are anticipated as a result of the proposed roadway improvements. Floodplain encroachment exhibits and calculations are provided in **Appendix I**.

# APPENDIX A – ROADWAY CONSTRUCTION PLANS

# CITY OF DORAL

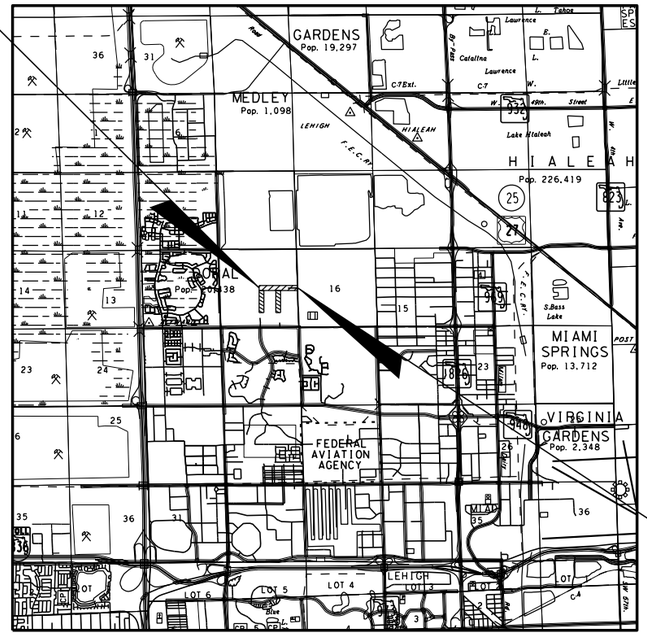
## PLANS FOR PROPOSED
## NW 66TH STREET
## ROADWAY WIDENING

### FROM NW 102ND AVENUE TO NW 97TH AVENUE

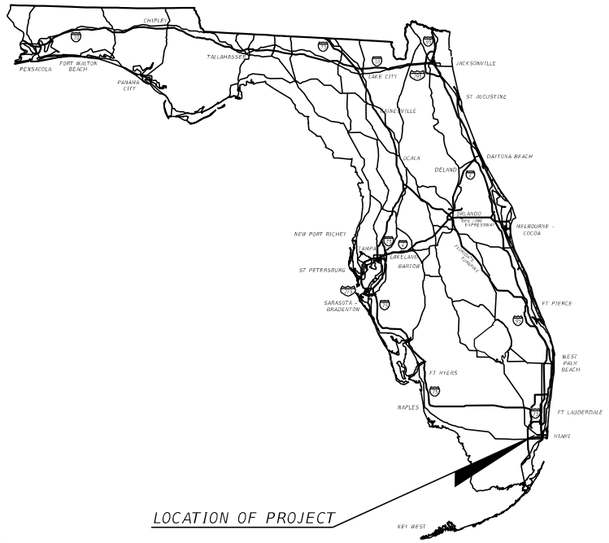
### INDEX OF SHEETS



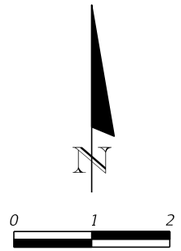
BEGIN PROJECT
STA. 99+39.75




END PROJECT
STA. 125+96.51




LOCATION OF PROJECT




#### CITY COUNCIL

MAYOR
JUAN CARLOS BERMUDEZ

VICE MAYOR
DIGNA CABRAL

COUNCILMAN
PETE CABRERA

COUNCILWOMAN
CLAUDIA MARIACA

COUNCILMAN
OSCAR PUIG-CORVE

*GOVERNING DESIGN STANDARDS:*

*Florida Department of Transportation, FY2022-23 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRs).*

*Standard Plans for Road Construction and IRs are available at the following website: http://www.fdot.gov/design/standardplans*

*Manual on Uniform Traffic Control Devices (2009 Edition, Including Revisions 1 and 2)*

*Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways "Florida Greenbook" 2018 Edition.*

*Miami-Dade County Public Works Department Standards and Specifications Part 1, 2, and 3. The Miami-Dade County Public Works Department - Highway Division Standard Details*

*GOVERNING STANDARD SPECIFICATIONS:*

*Florida Department of Transportation, July 2022 Standard Specifications for Road and Bridge Construction at the following website: http://www.dot.state.fl.us/programmanagement/Implemented/SpcBooks*



PREPARED FOR

CITY OF DORAL

BY


Kimley»Horn

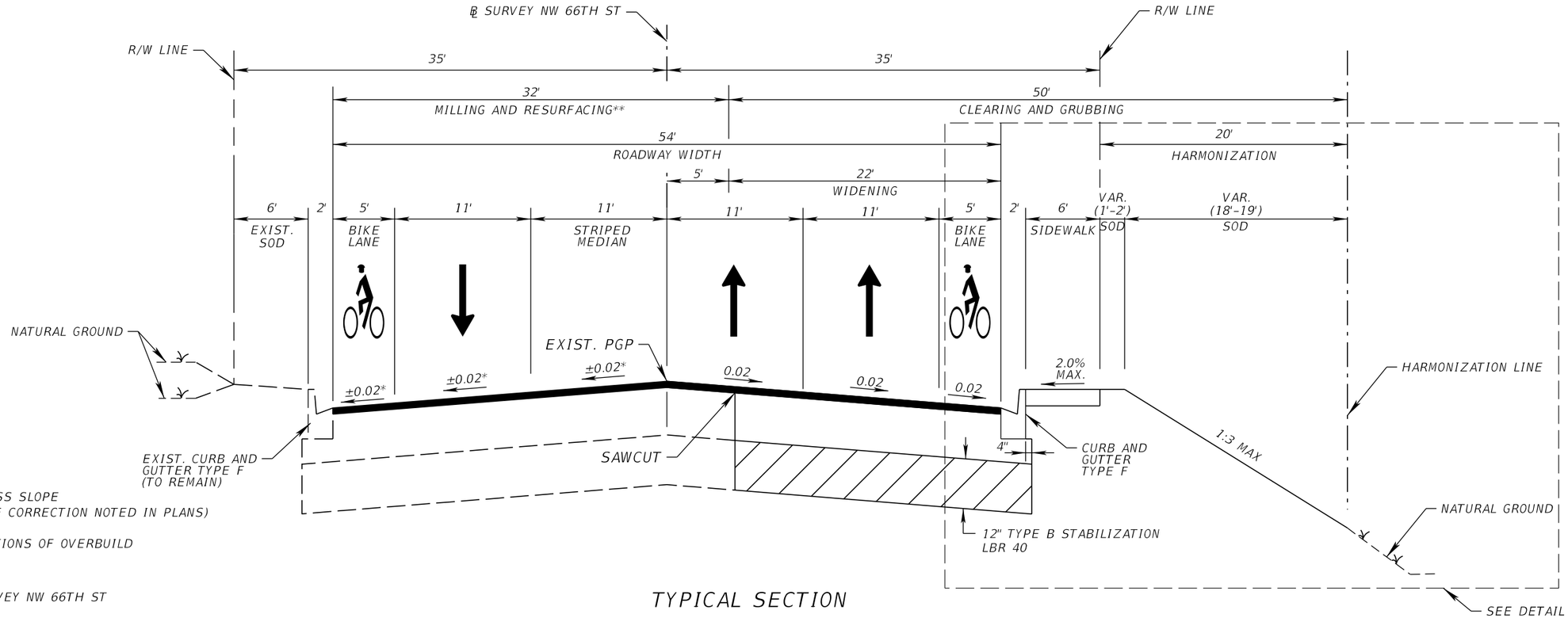
KIMLEY-HORN AND ASSOCIATES, INC.
CONSULTING ENGINEERS AND PLANNERS
355 ALHAMBRA CIRCLE #1400
CORAL GABLES, FLORIDA 33134
PHONE (305) 673-2025


90% SUBMITTAL

ENGINEER OF RECORD:

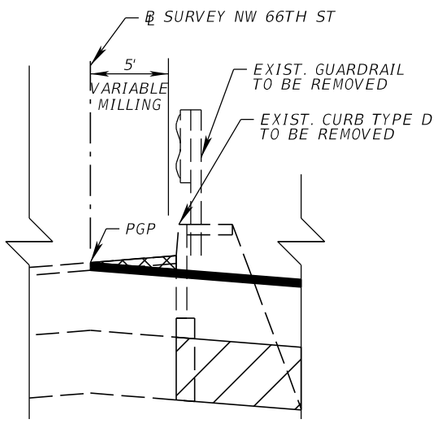
GABRIELA P. RAMIREZ, P.E.
FLORIDA REGISTRATION P.E. No. 79620

| FISCAL YEAR | SHEET NO. |
|---|---|
| 23 | |




* MATCH EXISTING CROSS SLOPE
(UNLESS CROSS SLOPE CORRECTION NOTED IN PLANS)

** SEE PLANS FOR LOCATIONS OF OVERBUILD




**MILLING**

MILL EXISTING ASPHALT PAVEMENT (VARIABLE DEPTH)
STA. 100+00.00 TO 113+18.71

**POSTED SPEED: 30 MPH**
**DESIGN SPEED: 35 MPH**

# TYPICAL SECTION
# NW 66TH STREET

STA. 99+39.75 TO STA. 113+81.91

**MILLING**

MILL EXISTING ASPHALT PAVEMENT (1" AVG. DEPTH)

**RESURFACING**

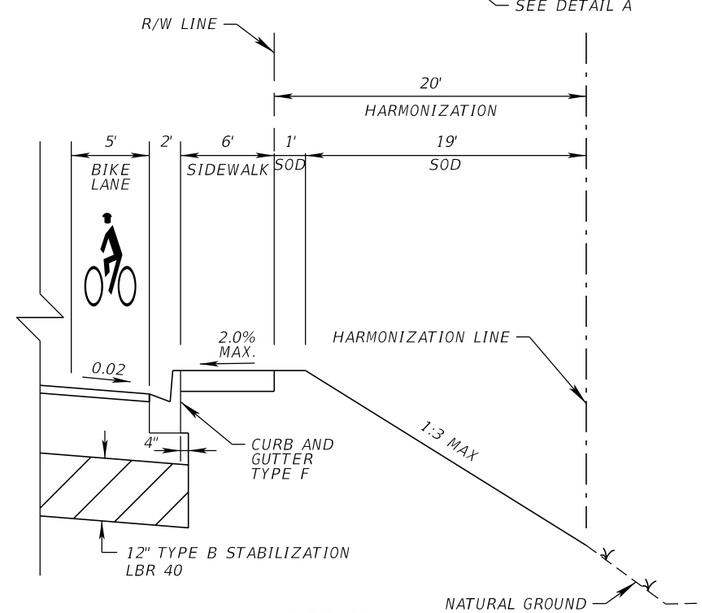
FRICTION COURSE FC-9.5 (TRAFFIC C) (1") (PG 76-22)

**OVERBUILD**

TYPE SP OVERBUILD (TRAFFIC C)

**NEW CONSTRUCTION**

OPTIONAL BASE GROUP 9 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (2")
AND FRICTION COURSE FC-9.5
(TRAFFIC C) (1") (PG 76-22)




DETAIL A
STA. 109+25.00 TO STA. 110+25.00

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |


Kimley-Horn and Associates, Inc.
Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, Fl 33134

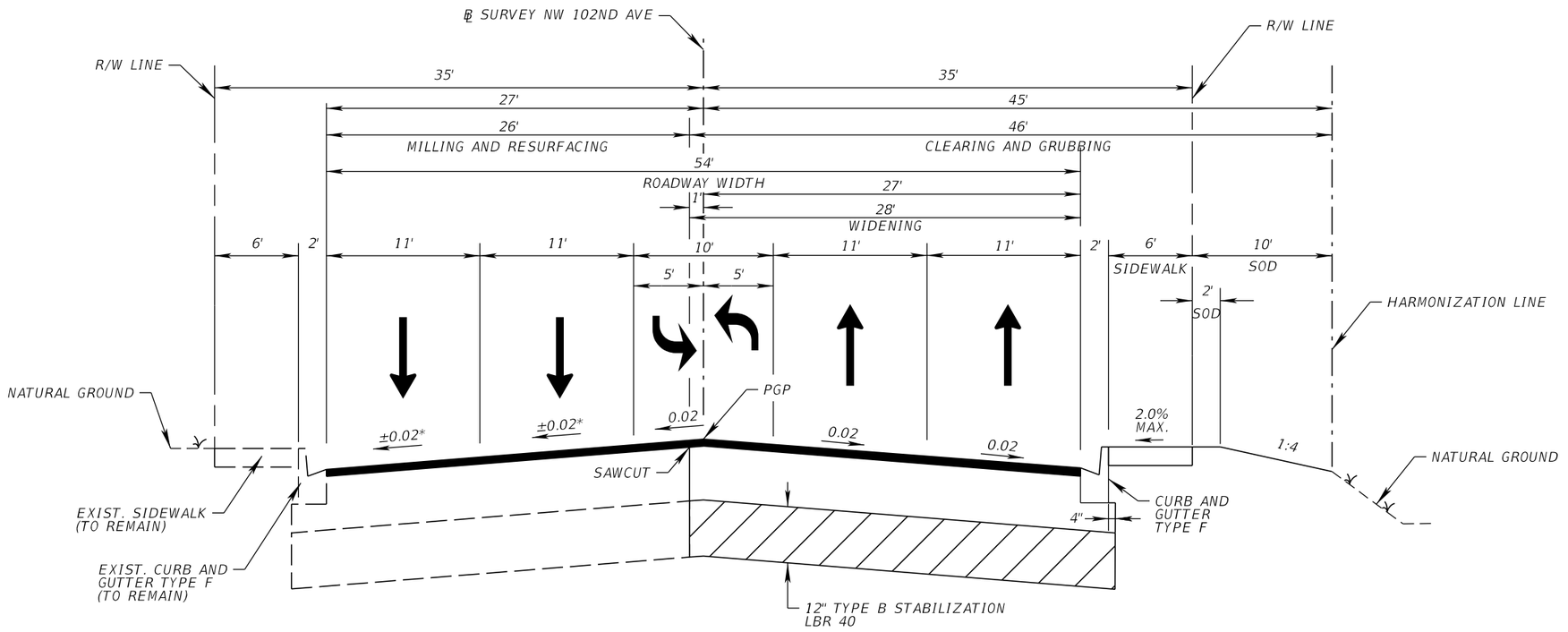

CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

TYPICAL SECTION

SHEET NO.


Renzo.Marengo 8/7/2023 4:56:12 PM c:\pw\kh1\d0142661\TYPSRD02.DGN




* MATCH EXISTING CROSS SLOPE

## TYPICAL SECTION
## NW 102ND AVENUE

STA. 23+38.86 TO STA. 30+00.00

**MILLING**

MILL EXISTING ASPHALT PAVEMENT (1" AVG. DEPTH)

**RESURFACING**

FRICTION COURSE FC-9.5 (TRAFFIC C) (1") (PG 76-22)

**NEW CONSTRUCTION**

OPTIONAL BASE GROUP 9 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (2")
AND FRICTION COURSE FC-9.5
(TRAFFIC C) (1") (PG 76-22)

POSTED SPEED: 30 MPH
DESIGN SPEED: 35 MPH

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

Kimley-Horn and Associates, Inc.
Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, Fl 33134

CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

TYPICAL SECTION

SHEET NO.

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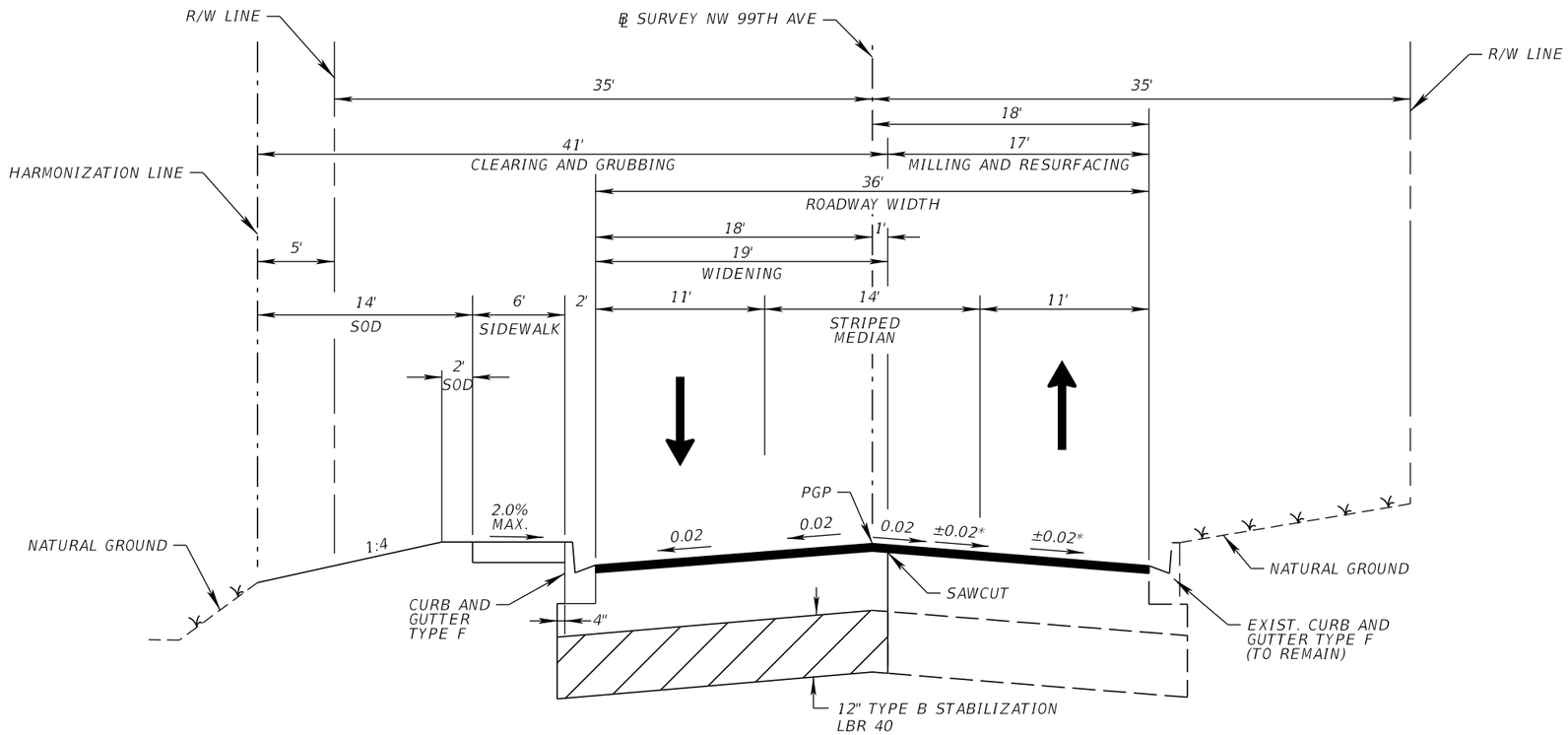


* MATCH EXISTING CROSS SLOPE

## TYPICAL SECTION
## NW 99TH AVENUE

STA. 21+50.00 TO STA. 30+00.00

**MILLING**

MILL EXISTING ASPHALT PAVEMENT (1" AVG. DEPTH)

**RESURFACING**

FRICTION COURSE FC-9.5 (TRAFFIC C) (1") (PG 76-22)

**NEW CONSTRUCTION**

OPTIONAL BASE GROUP 9 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (2")
AND FRICTION COURSE FC-9.5
(TRAFFIC C) (1") (PG 76-22)

POSTED SPEED: 30 MPH
DESIGN SPEED: 35 MPH

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

Kimley-Horn and Associates, Inc.
Gabriela P. Ramirez, P.E.
P.E. License No. 79620
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Coral Gables, Fl 33134

CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

TYPICAL SECTION

SHEET NO.

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THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

# TABULATION OF QUANTITIES

| PAY ITEM | DESCRIPTION | UNIT | TOTAL QUANTITY | ADDITIONAL QUANTITY |
|---|---|---|---|---|
| 101-1 | MOBILIZATION | LS | 1 | |
| 102-1 | MAINTENANCE OF TRAFFIC | LS | 1 | |
| 102-71-13 | TEMPORARY BARRIER, F&I, LOW PROFILE, CONCRETE | LF | 2277.04 | 207 |
| 102-99 | PORTABLE CHARGEABLE MESSAGE SIGN, TEMPORARY | ED | 360 | |
| 104-18 | INLET PROTECTION SYSTEM | EA | 42 | |
| 110-1-1 | CLEARING AND GRUBBING | AC | 2.27 | |
| 110-4-10 | REMOVAL OF EXISTING CONCRETE | SY | 127.09 | 12 |
| 120-1 | REGULAR EXCAVATION | CY | 673.09 | 61 |
| 120-6 | EMBANKMENT | CY | 5660.38 | 515 |
| 160-4 | TYPE B STABILIZATION | SY | 5898.20 | 536 |
| 285-7-09 | OPTIONAL BASE GROUP 9 | SY | 5898.20 | 536 |
| 327-70-1 | MILLING EXISTING ASPHALT PAVEMENT, 1" AVG DEPTH | SY | 15455.55 | 1405 |
| 327-70-4 | MILLING EXISTING ASPHALT PAVEMENT, 3" AVG DEPTH | SY | 844.47 | 77 |
| 334-1-13 | SUPERPAVE ASPH CONC, TRAFFIC C | TN | 1174.80 | 107 |
| 337-7-82 | ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22 | TN | 1191.69 | 108.3 |
| 425-1-351 | INLETS, CURB, TYPE P-5, <10' | EA | 7 | |
| 425-1-361 | INLETS, CURB, TYPE P-6, <10' | EA | 5 | |
| 430-175-118 | PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"S/CD | LF | 994 | 90 |
| 443-70-3 | FRENCH DRAIN, 18" | LF | 200 | 5 |
| 520-1-10 | CONCRETE CURB & GUTTER, TYPE F | LF | 1856 | |
| 522-1 | CONCRETE SIDEWALKS AND DRIVEWAYS, 4" THICK | SY | 1267 | 115 |
| 522-2 | CONCRETE SIDEWALKS AND DRIVEWAYS, 6" THICK | SY | 88 | 8 |
| 527-2 | DETECTABLE WARNINGS | SF | 22 | 2.0 |
| 536-73 | GUARDRAIL REMOVAL | LF | 1383 | 126 |
| 570-1-2 | PERFORMANCE TURF, SOD | SY | 3825 | 348 |
| | | | | |
| 700-1-11 | SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF | AS | 18 | |
| 700-1-12 | SINGLE POST SIGN, F&I GROUND MOUNT, 12-20 SF | AS | 2 | |
| 700-1-60 | SINGLE POST SIGN, REMOVE | AS | 11 | |
| 700-3-601 | SIGN PANEL, REMOVE, UP TO 12 SF | EA | 1 | |
| 706 1 3 | RAISED PAVEMENT MARKER, TYPE B | EA | 1123 | |
| 710-90 | PAINTED PAVEMENT MARKINGS, FINAL SURFACE | LS | 1 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 12" | LF | 570.1 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 18" FOR DIAGONALS & CHEVRONS | LF | 243.40 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 24" FOR STOP LINE & CROSSWALK | LF | 123.5 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, 2-4 DOTTED GUIDELINE, 6" | GM | 0.07 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, 2-4 DOTTED GUIDELINE, 6" | GM | 0.04 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, MESSAGE (ONLY) | EA | 4 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD,WHITE ARROW | EA | 27 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 18" FOR DIAGONALS & CHEVRONS | LF | 2641.20 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD-OTHER SURFACES WHITE, SKIP, 3-9 LANE DROP | GM | 0.05 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD-OTHER SURFACES, WHITE, SOLID, 6" | GM | 1.40 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD-OTHER SURFACES, WHITE, SKIP, 6",10-30 SKIP | GM | 0.33 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6" | GM | 2.260 | |
| ** | PAINTED PAVEMENT MARKINGS, STANDARD-OTHER SURFACES,YELLOW, SKIP, 6",10-30 SKIP OR 3-9 LANE DROP | GM | 0.270 | |
| 711-11-123 | THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 12" | LF | 570.1 | |
| 711-11-124 | THERMOPLASTIC, STANDARD, WHITE, SOLID, 18" FOR DIAGONALS & CHEVRONS | LF | 243.4 | |
| 711-11-125 | THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE & CROSSWALK | LF | 123.5 | |
| 711-11-141 | THERMOPLASTIC, STANDARD, WHITE, 2-4 DOTTED GUIDELINE, 6" | GM | 0.07 | |
| 711-11-160 | THERMOPLASTIC, STANDARD, WHITE, MESSAGE | EA | 4 | |
| 711-11-170 | THERMOPLASTIC, STANDARD,WHITE ARROW | EA | 27 | |
| 711-11-224 | THERMOPLASTIC, STANDARD, YELLOW, SOLID, 18" FOR DIAGONALS & CHEVRONS | LF | 2641.2 | |
| 711-11-241 | THERMOPLASTIC, STANDARD, YELLOW, 2-4 DOTTED GUIDELINE, 6" | GM | 0.04 | |
| 711-14-160 | THERMOPLASTIC, PREFORMED, WHITE, MESSAGE (BIKE) | EA | 9 | |
| 711-14-170 | THERMOPLASTIC, PREFORMED, WHITE, ARROW (BIKE) | EA | 9 | |
| 711-16-101 | THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6" | GM | 1.40 | |
| 711-16-131 | THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SKIP, 6",10-30 SKIP | GM | 0.33 | |
| 711-16-133 | THERMOPLASTIC, STANDARD-OTHER SURFACES WHITE, SKIP, 3-9 LANE DROP | GM | 0.05 | |
| 711-16-201 | THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6" | GM | 2.260 | |
| 711-16-231 | THERMOPLASTIC, STANDARD-OTHER SURFACES,YELLOW, SKIP, 6",10-30 SKIP | GM | 0.27 | |
| | | | | |
| 630-2-12 | CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE | LF | 70 | |
| 635-2-11 | PULL AND SPLICE BOX, F&I, 13" X 24" COVER | EA | 2 | |
| 715-1-12 | LIGHTING CONDUCTORS, F&I, INSULATED, NO 8 TO NO 6 | LF | 210 | |
| 715-4-11 | LIGHT POLE COMPLETE, F&I STANDARD POLE STANDARD FOUNDATION, 30' MOUNTING HEIGHT | EA | 1 | |
| 715-500-1 | POLE CABLE DISTRIBUTION SYSTEM, CONVENTIONAL | EA | 1 | |

* ADDITIONAL QUANTITIES HAVE BEEN INCLUDED IN THE TOTAL QUANTITY AMOUNT AND ARE INCLUDED AS CONTINGENCY TO BE USED AS DIRECTED BY THE ENGINEER.

** QUANTITIES ARE PAID UNDER PAINTED PAVEMENT MARKINGS (FINAL SURFACE), LUMP SUM PAY ITEM 710-90. THE QUANTITIES SHOWN ARE FOR TWO APPLICATIONS. REFER TO SPECIFICATION 710 FOR MORE INFORMATION.

## PAY ITEM NOTES

**102-1** TO BE ACCOMPLISHED IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION DESIGN STANDARDS INDEX 102-600 SERIES, THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, MIAMI-DADE COUNTY PUBLIC WORKS MANUAL, AND THE LATEST REVISIONS OF THE AFORE MENTIONED MANUALS. INCLUDES THE COST OF FURNISHING, INSTALLING, MAINTAINING, AND REMOVING ALL ITEMS OF MAINTENANCE OF TRAFFIC NOT PAID FOR UNDER SEPARATE ITEMS INCLUDING BUT NOT LIMITED TO SIGNS, BARRICADES, FLASHING LIGHTS, TEMPORARY BARRIER WALLS, TRAFFIC CONTROL OFFICER, DETOURS, TEMPORARY PAVEMENT, TEMPORARY LIGHTING, TEMPORARY PAVEMENT MARKINGS, TEMPORARY SODDING, MOWING, FLASHING BOARDS, PCMS, ETC. SEE TEMPORARY TRAFFIC CONTROL PLANS GENERAL NOTES FOR MORE INFORMATION.

**104-** INCLUDES ESTIMATED QUANTITY CONTINGENT UPON FIELD CONDITIONS AND MAY BE INCREASED OR DECREASED AS DIRECTED BY THE ENGINEER.

**110-1-1** INCLUDES REMOVAL OF EXISTING PAVEMENT, SAWCUTTING OF EXISTING PAVEMENT, DRAINAGE STRUCTURES AND PIPES, FRENCH DRAINS, MISCELLANEOUS CONCRETE, VEGETATION, TREES AND DEBRIS WITHIN THE LIMITS OF CONSTRUCTION TO BE DISPOSED OF IN LEGAL AREAS PROVIDED BY THE CONTRACTOR. INCLUDES THE COST OF CLEANING-OUT ALL EXISTING DRAINAGE STRUCTURES WHICH ARE TO REMAIN WITHIN THE LIMITS OF CONSTRUCTION.

**120-** THESE ARE ESTIMATED QUANTITIES AND MAY BE INCREASED OR DECREASED BY THE ENGINEER.

**425-** COST OF BAFFLE, SKIMMER, MATERIALS, METAL PIPE ENCASEMENT, LABOR & CONSTRUCTION SHALL BE INCLUDED IN COST OF STRUCTURES.

**430-175-124** PIPE ALTERNATIVES INCLUDE RCP AND HDPE CLASS II.

**443-70-4** INCLUDES THE COST OF EXCAVATION TO PLAN ELEVATION, PERFORATED PIPE, NON-PERFORATED PIPE, PEA ROCK, BALLAST ROCK, PLASTIC FILTER FABRIC AND BACKFILLING WITH SELECT FILL AND ALL APPLICABLE ITEMS REQUIRED TO CONSTRUCT EXFILTRATION DRAIN. PIPE ALTERNATIVES INCLUDE RCP AND HDPE CLASS II.

**570-1-2** INCLUDES SOD TO BE USED IN THE RESTORATION OF LAWNS AND MAY BE INCREASED OR DECREASED AS DIRECTED BY THE ENGINEER. BAHIA OR TO MATCH EXISTING SOD.

**630-2-12** INCLUDES 3/4" CONDUIT TO BE USED FOR GROUND WIRE BETWEEN ADJACENT PULL BOX AND POLE. GROUND WIRE INCLUDED IN BID ITEM.

**715-500-1** INCLUDES COST OF CABLE DISTRIBUTION SYSTEM (MG SQUARE, DOT 3)

SUMMARY OF EARTHWORK HAS BEEN CALCULATED USING THE LIMEROCK BASE OPTION SHOWN IN THE TYPICAL SECTION. IF ANOTHER OPTION IS CONSTRUCTED, THERE SHALL BE NO REVISION TO THE EARTHWORK QUANTITIES FOR WHICH PAYMENT IS MADE BY PLAN QUANTITY.

ANY EXCAVATED MATERIAL, IF UNSUITABLE, SHALL NOT BE USED IN THE CONSTRUCTION OF THE EMBANKMENT.

EXCESS MATERIAL TO BE DISPOSED OF BY THE CONTRACTOR IN AREAS PROVIDED BY HIM. NO SEPARATE PAYMENT WILL BE MADE FOR THIS ITEM.

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| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

Kimley-Horn and Associates, Inc.
Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, FL 33134

CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

SUMMARY OF QUANTITIES

SHEET NO.

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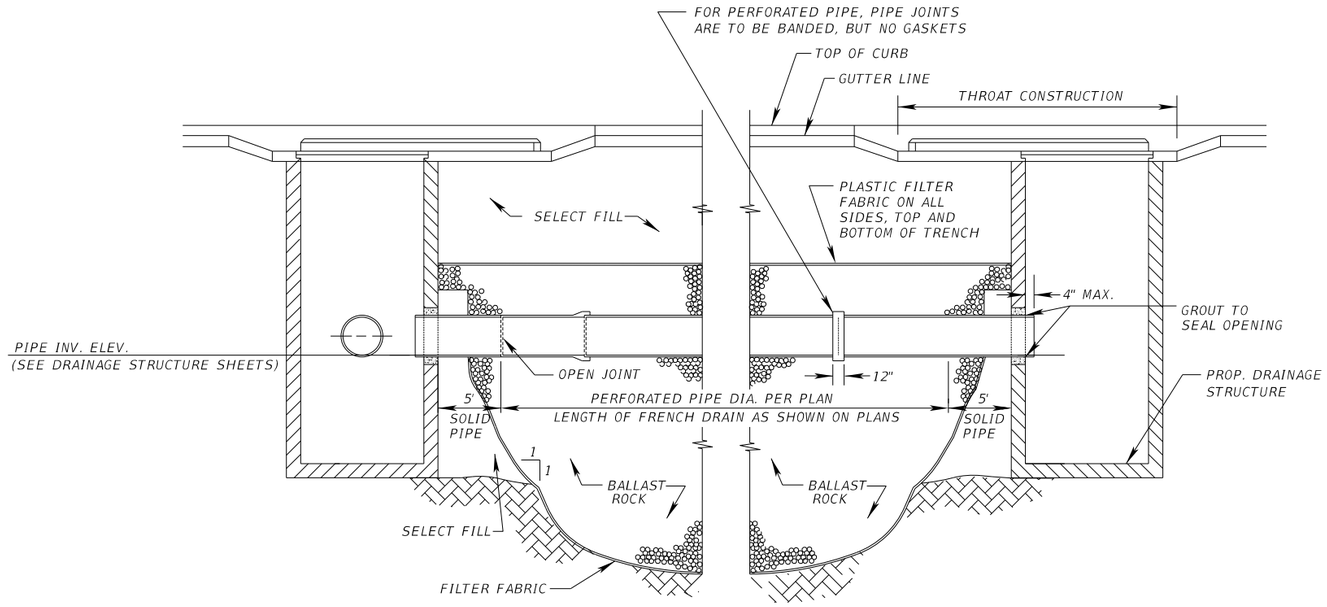
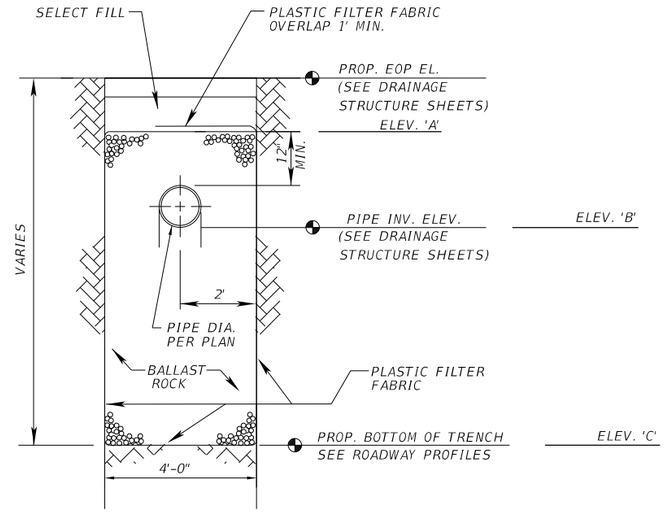


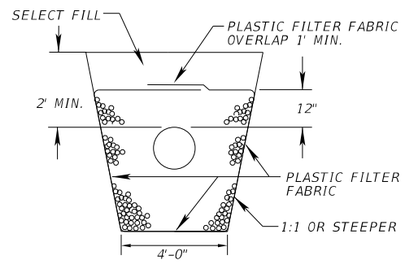

## LONGITUDINAL SECTION




## TRANSVERSE SECTION

NOTES

1. AFTER THE BALLAST ROCK HAS BEEN PLACED TO THE PROPER ELEVATION IT SHALL BE CAREFULLY WASHED DOWN WITH CLEAN WATER TO ALLOW FOR INITIAL SETTLEMENT THAT MAY OCCUR. IF SETTLEMENT DOES TAKE PLACE, ADDITIONAL BALLAST ROCK WILL BE ADDED TO RESTORE THE PROPER ELEVATION SO THAT THE FRENCH DRAIN IS COMPLETED IN ACCORDANCE WITH THE DETAILS.
2. THE CONTRACTOR'S UNIT PRICE FOR LINEAR FOOTAGE OF FRENCH DRAIN SHALL INCLUDE THE NECESSARY ADDITIONAL PIPE LENGTHS TO INCLUDE THE 5'-0" TRANSITION LENGTHS INCLUDING THE DRAINAGE STRUCTURE INTERNAL WALL LENGTH REQUIREMENTS AS SHOWN IN THIS DETAIL.
3. PIPE ALTERNATIVES INCLUDE RCP AND HDPE CLASS II.
4. CONCRETE PIPE SHALL BE PLACED WITH THE SLOTS POSITIONED ON THE SIDES.
5. FILTER FABRIC SHALL BE TYPE D-3 MEETING THE REQUIREMENTS OF SECTION 985. ALL FILTER FABRIC JOINTS SHALL LAP A MINIMUM OF ONE (1) FOOT.
6. THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO PREVENT CONTAMINATION OF THE TRENCH WITH SAND, SILT AND FOREIGN MATERIALS.




## ALT. TRANS. SECTION*

*MAY BE USED IN AREAS WHERE TRENCH WALLS WILL NOT STAND VERTICAL, OR WHERE CAVE-IN BELOW THE WATER TABLE IS LIKELY TO OCCUR. TO BE USED AT THE ENGINEER'S DISCRETION.

### FRENCH DRAIN SUMMARY TABLE

| FRENCH DRAIN SECTION | PIPE DIA. | ELEV. 'A' | ELEV. 'B' | ELEV. 'C' | LENGTH |
|---|---|---|---|---|---|
| S-6 TO S-5 | 18" | 4.49' | 1.70' | (-) 8.51' | 132' |
| S-7 TO S-8 | 18" | 4.05' | 1.35' | (-) 8.95' | 25' |
| S-10 TO S-11 | 18" | 3.04' | 0.30' | (-) 8.41' | 25' |

# FRENCH DRAIN DETAIL
N.T.S.

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

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CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

DRAINAGE DETAILS

SHEET NO.



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GENERAL

1. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) AND DETERMINED FROM MIAMI-DADE COUNTY BENCHMARKS: N-3128-R AND H-331-R. HORIZONTAL DATA IS BASED ON THE STATE PLANE COORDINATE SYSTEM, FLORIDA EAST ZONE, NAD OF 1983, ADJUSTMENT OF 1990.

2. ANY N.G.V.D. BENCH MARK MONUMENTS WITHIN THE LIMITS OF CONSTRUCTION ARE TO BE PROTECTED AND PROPERLY REFERENCED BY A REGISTERED-LAND SURVEYOR IN ACCORDANCE WITH THE MINIMUM TECHNICAL STANDARDS OF THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS PRIOR TO BEGINNING WORK AT THE SITE. IF ANY MONUMENT IS IN DANGER OF DAMAGE, THE PROJECT ENGINEER SHALL NOTIFY THE FLORIDA STATE GEODETIC ADVISOR NOAA/NOS/NGS, 3900 COMMONWEALTH BLVD, MAIL STATION 105, TALLAHASSEE, FLORIDA 32399, TELEPHONE (850) 245-2610.

3. ALL PUBLIC LAND CORNERS AND MONUMENTS WITHIN THE LIMITS OF CONSTRUCTION ARE TO BE PROTECTED BY THE CONTRACTOR AS FOLLOWS: CORNERS AND MONUMENTS IN CONFLICT WITH THE WORK AND IN DANGER OF BEING DAMAGED, DESTROYED, OR COVERED SHALL BE PROPERLY REFERENCED BY A REGISTERED-LAND SURVEYOR IN ACCORDANCE WITH THE MINIMUM TECHNICAL STANDARDS OF THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS PRIOR TO BEGINNING WORK AT THE SITE. THE CONTRACTOR SHALL RETAIN THE LAND SURVEYOR TO REFERENCE, AND RESTORE UPON COMPLETION OF THE WORK, ALL SUCH CORNERS AND MONUMENTS AND SHALL FURNISH TO MIAMI-DADE COUNTY PUBLIC WORKS DEPARTMENT A SIGNED AND SEALED COPY OF THE LAND SURVEYOR'S REFERENCE DRAWING.

4. ALL STATIONS AND OFFSETS REFER TO BASELINE OF SURVEY NW 66TH STREET, NW 102ND AVENUE, AND NW 99TH AVENUE.

5. ALL GRADES SHOWN IN PLAN ARE FINISHED GRADES.

6. FDOT DIVISION 1 SECTION 5-3 CONFORMITY OF WORK WITH CONTRACT DOCUMENT IS REVISED TO REQUIRE FINISH GRADES TO VARY NO MORE THAN 0.1 FEET FROM GRADES SHOWN IN THE PLANS.

7. THE CONTRACTOR SHALL MAINTAIN STATIONING WITH SURVEY STAKES AND MAINTAIN THE STATION MARKS VISIBLE UNTIL FINAL INSPECTION.

8. BASELINE CONTROL SURVEY CONDUCTED BY MANUEL J. VERA AND ASSOCIATES, INC. PLEASE CALL MR. VERA AT 305-221-6210 CONCERNING SURVEY RELATED QUESTIONS.

9. ALL CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF DORAL, AND ANY OTHER STATE OR LOCAL AGENCY WITH JURISDICTION. 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 PROJECT ENGINEER.

10. THE LOCATION AND SIZE OF THE UTILITIES SHOWN IN THE PLANS ARE BASED ON AVAILABLE INFORMATION PROVIDED BY UTILITY OWNERS AND SHOULD BE CONSIDERED APPROXIMATE ONLY. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL UTILITIES BY ELECTRONIC METHODS AND BY PRE-TRENCHING IN COORDINATION WITH ALL UTILITY COMPANIES, PRIOR TO BEGINNING ANY CONSTRUCTION OPERATION. ANY AND ALL CONFLICTS OF EXISTING UTILITIES WITH PROPOSED IMPROVEMENTS MUST BE RESOLVED BY THE ENGINEER AND THE OWNER. THIS WORK BY THE CONTRACTOR SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED. THE CONTRATOR WILL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES DUE TO CONTRACTOR'S CONSTRUCTION OPERATIONS.

11. THE CONTRACTOR IS TO USE CAUTION WHEN WORKING IN OR AROUND AREAS OF OVERHEAD AND UNDERGROUND UTILITIES.

12. CONTRACTOR SHALL CONTACT SUNSHINE STATE ONE-CALL AT 811 AT LEAST TWO (2) FULL WORKING DAYS PRIOR TO PERFORMING ANY DIGGING TO VERIFY THE EXACT LOCATION OF EXISTING UTILITIES. A CONTRACTOR'S REPRESENTATIVE MUST BE PRESENT WHEN UTILITY COMPANIES LOCATE THEIR FACILITIES.

13. KNOWN UTILITY COMPANIES IN THE PROJECT LIMITS INCLUDE, BUT ARE NOT LIMITED TO:

| COMPANY | CONTACT | TELEPHONE |
|---|---|---|
| AT&T DISTRIBUTION | DINO FARRUGGIO | 561-683-2729 |
| COMCAST CABLE | RICARDI DAVIDSON | 786-586-5805 |
| FLORIDA CITY GAS | GUSTAVO PENA | 305-835-3624 |
| FLORIDA POWER AND LIGHT | EDGAR AGUILAR | 386-586-6403 |
| MIAMI-DADE COUNTY PUBLIC WORKS AND TRAFFIC | OCTAVIO VIDAL | 305-412-0891, X102 |
| HOTWIRE COMMUNICATIONS | WALTER DAVILA | 954-699-0900 |
| MIAMI DADE WATER AND SEWER | LAZARO GUERRAA | 786-268-5273 |

14. THE CONTRACTOR IS ADVISED THAT PROPERTIES ADJACENT TO THE PROJECT HAVE ELECTRIC, TELEPHONE, GAS, WATER, AND/OR SEWER SERVICE LATERALS WHICH MAY NOT BE SHOWN IN PLANS. THE CONTRACTOR MUST REQUEST THE LOCATION OF THESE LATERAL SERVICES FROM THE UTILITY COMPANIES. THE ADDITIONAL COST OF EXCAVATING, INSTALLING, BACKFILLING, AND COMPACTING AROUND THESE LATERAL SERVICES MUST BE INCLUDED IN THE BID RELATED ITEM FOR THE WORK BEING DONE.

15. THE CONTRACTOR SHALL FIELD VERIFY UTILITY LOCATIONS, DIMENSIONS, ELEVATIONS AND SUBMIT THIS INFORMATION WITH THE SHOP DRAWINGS FOR DRAINAGE STRUCTURES FOR APPROVAL PRIOR TO FABRICATION. ALL ASSOCIATED COSTS SHALL BE INCLUDED IN THE COST OF DRAINAGE STRUCTURES.

16. IF THE CONTRACTOR IS REQUIRED TO SUPPORT EXISTING UTILITIES, ALL ASSOCIATED COSTS SHALL BE INCLUDED IN THE ASSOCIATED PAY ITEM FOR THE WORK BEING DONE.

17. ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY SHALL BE RESTORED WITHIN 48 HOURS BY THE CONTRACTOR AT NO COST TO THE OWNER, UNLESS OTHERWISE AGREED IN WRITING BY THE OWNER.

18. CLEARING AND GRUBBING, GRADING AND OTHER INCIDENTAL WORK NECESSARY FOR HARMONIZATION OUTSIDE R/W SHALL BE INCLUDED IN RELATED BID ITEMS.

19. ALL GRASS AREAS AFFECTED BY CONSTRUCTION SHALL BE RE-SODDED TO MATCH EXISTING AT THE CONTRACTOR'S EXPENSE.

20. THE CONTRACTOR SHOULD TAKE SPECIAL NOTE OF SOIL CONDITIONS THROUGHOUT THIS PROJECT. ANY SPECIAL SHORING, SHEETING OR OTHER PROCEDURES NECESSARY TO PROTECT ADJACENT PROPERTY, PUBLIC OR PRIVATE INCLUDING ADJACENT UTILITIES DURING THE EXCAVATION OF SUBSOIL MATERIAL AND EXFILTRATION TRENCH, OR FILLING OF ANY AREA, OR FOR ANY OPERATION DURING CONSTRUCTION, SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

21. IF SHEETING, SHORING, OR DEWATERING, INCLUDING WELL POINTS ARE NECESSARY, THE CONTRACTOR MUST MONITOR AND CONTROL ALL WORK THAT MAY CAUSE CRACKING TO ANY ADJACENT BUILDING, STRUCTURE, OR PROPERTY AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES CAUSED BY THESE OPERATIONS. COST OF MONITORING, SHEETING, SHORING, OR DEWATERING SHALL BE INCLUDED IN THE RELATED BID ITEM FOR THE WORK BEING DONE.

22. IF DEWATERING IS NECESSARY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE DEWATERING PERMIT. COST OF THE PERMIT ACTIVITIES, AND TIME TO PROCURE THE PERMIT SHALL BE INCLUDED IN THE RELATED BID ITEM FOR THE WORK BEING DONE. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS, LICENSES AND GIVE NOTICES TO THE APPROPIATE AGENCIES TO COMPLETE THE PROJECT.

23. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE EPA AND NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES).

24. EXPLORATORY OR PRE-TRENCHING IN THE ALIGNMENT AND GRADE OF PROPOSED PIPES, STRUCTURES, FRENCH DRAINS, CONDUITS, POLE FOUNDATIONS AND/OR SUB-GRADE SHALL BE PERFORMED SEVEN DAYS IN ADVANCE OF ITS CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE UNDERGROUND UTILITY OWNERS AND THE CITY WITH IMMEDIATE NOTIFICATION OF ANY CONFLICT WITH PROPOSED CONSTRUCTION. THIS NOTIFICATION SHALL PROVIDE SURVEY INFORMATION ABOUT EXISTING UTILITY ALIGNMENT, GRADE AND POSSIBLE CONFLICTS. PAYMENT FOR EXPLORATORY OR PRE-TRENCHING, SURVEY AND BACKFILLING SHALL BE INCLUDED IN THE COST OF THE RELATED BID ITEM FOR THE THE WORK BEING DONE.

25. ALL TRENCH EXCAVATIONS SHALL BE PERFORMED IN FULL COMPLIANCE WITH THE PROVISIONS OF THE TRENCH SAFETY ACT.

26. THE CONTRACTOR WILL RESTRICT PERSONNEL, THE USE OF EQUIPMENT, AND THE STORAGE OF MATERIALS TO AREAS WITHIN THE LIMITS OF CONSTRUCTION AND STAGING AREA.

27. ALL EXCESS MATERIAL, AS DESIGNATED BY THE ENGINEER, IS TO BE DISPOSED BY THE CONTRACTOR IN AREAS PROVIDED BY HIM WITHIN 72 HOURS OF BEING DEPOSITED IN THE CONSTRUCTION AREA AND AT THE CONTRACTOR'S EXPENSE.

28. ALL DISPOSAL OF MATERIALS, RUBBISH, AND DEBRIS SHALL BE MADE BY THE CONTRACTOR AT A LEGAL DISPOSAL SITE OR BY OTHER PRIOR APPROVED MANNER. ALL COSTS ARE TO BE INCLUDED IN PAY ITEM 102-1 MAINTENANCE OF TRAFFIC. MATERIAL CLEARED FROM THE SITE AND DEPOSITED ON ADJACENT OR NEARBY PROPERTY WILL NOT BE CONSIDERED AS HAVING BEEN DISPOSED OF SATISFACTORILY.

29. ANY KNOWN OR SUSPECTED HAZARDOUS MATERIAL FOUND ON THE PROJECT BY THE CONTRACTOR SHALL BE IMMEDIATELY REPORTED TO THE PROJECT ENGINEER, AND THE CONTRACTOR SHALL TREAT/DISPOSE OF SUCH MATERIAL APPROPRIATELY. THE CONTRACTOR SHALL ARRANGE FOR INVESTIGATION, IDENTIFICATION, AND REMEDIATION OF THE HAZARDOUS MATERIAL. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE PERMIT REQUIREMENTS FOR TREATMENT/DISPOSAL OF ANY SUCH MATERIAL. COST TO BE INCLUDED IN ASSOCIATED PAY-ITEM FOR THE WORK BEING DONE.

30. IF EVIDENCE OF UNDOCUMENTED GROUND AND/OR GROUND WATER CONTAMINATION IS ENCOUNTERED, THE CONTRACTOR IS REQUIRED TO IMMEDIATELY NOTIFY MIAMI-DADE COUNTY POLLUTION REMEDIATION SECTION AT (305) 372-6700.

31. ANY CONTAMINATED SOILS AND/OR BURIED SOLID WASTE MATERIAL EXCAVATED DURING CONSTRUCTION REQUIRES PROPER HANDLING AND DISPOSAL IN ACCORDANCE WITH THE LOCAL, STATE AND FEDERAL REGULATIONS. BE ADVISED THAT THE LANDFILL OWNER/OPERATOR IS THE FINAL AUTHORITY ON DISPOSAL AND MAY HAVE REQUIREMENTS BEYOND THOSE PROVIDED BY HEREIN. IF DISPOSAL WITHIN A MIAMI-DADE COUNTY OWNED LANDFILL (CLASS I LANDFILL) IS APPROPRIATE AND SELECTED, THE CONTRACTOR SHALL CONTACT LEE CASEY OF THE MIAMI-DADE COUNTY DEPARTMENT OF PUBLIC WORKS AT (305) 594-1670 FOR MORE INFORMATION. CONTRACTOR IS RESPONSIBLE FOR COORDINATION, DISPOSAL, HANDLING, ETC. ALL ASSOCIATED COSTS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

32. THE CONTRACTOR IS REQUIRED TO COMPLY WITH ANY CONDITIONS INCLUDED IN PERMITS AND/OR APPROVAL LETTERS BY THE MIAMI-DADE COUNTY DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES AND U.S. ARMY CORPS OF ENGINEERS.

33. EXISTING ABOVE GROUND FEATURES ARE SHOWN ACCORDING TO THE AVAILABLE DATA AND MAY NOT ACCURATELY REFLECT PRESENT CONDITIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH CURRENT SITE CONDITIONS, AND SHALL REPORT DISCREPANCIES TO THE ENGINEER PRIOR TO STARTING WORK.

34. THE CONTRACTOR IS ADVISED THAT INFORMATION SHOWN ON THE TREE SURVEY PLANS, TREE SURVEY TABLE, TREE MITIGATION PLANS AND TREE DISPOSITION TABLE IS TO THE AVAILABLE DATA AND MAY NOT ACCURATELY REFLECT PRESENT CONDITIONS. ALL TREES AND VEGETATION WITHIN THE LIMITS OF CONSTRUCTION ARE TO BE REMOVED. ALL ASSOCIATED COSTS ARE TO BE INCLUDED IN PAY ITEM 110-1-1, CLEARING AND GRUBBING.

35. CONTRACTOR IS TO VERIFY THE EXACT LOCATION OF ALL EXISTING TREES, STRUCTURES AND UTILITIES, WHICH MAY NOT BE SHOWN ON PLANS. ANY STRUCTURE, PAVEMENT, TREES OR OTHER EXISTING FEATURE NOT SPECIFIED FOR REMOVAL WHICH IS TEMPORARILY DAMAGED, EXPOSED OR IN ANY WAY DISTURBED BY CONSTRUCTION PERFORMED UNDER THIS CONTRACT, AS DETERMINED BY THE ENGINEER, SHALL BE REPAIRED, PATCHED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.

36. THE CONTRACTOR SHALL USE A STREET SWEEPER (USING WATER) OR OTHER EQUIPMENT CAPABLE OF CONTROLLING AND REMOVING DUST ON A DAILY BASIS. APPROVAL OF THE USE OF SUCH EQUIPMENT IS CONTINGENT UPON ITS DEMONSTRATED ABILITY TO DO THE WORK.

37. THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS FOR ALL ITEMS USED IN THIS PROJECT.

38. WHEN DISSIMILAR MATERIAL CONNECTIONS ARE MADE, SUCH AS CONCRETE TO METAL, THE DISSIMILAR MATERIAL SHALL BE SEPARATED BY COATING THE CONTACT SURFACE WITH AN APPROVED NON-TOXIC BITUMASTIC MATERIAL.

39. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING EXISTING AND NEW INLETS CLEAN OF MILLING MATERIAL, LIMEROCK, DEBRIS, ETC. DURING CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER. ALL LINES AND STRUCTURES SHALL BE CLEANED PRIOR TO FINAL INSPECTION AND ACCEPTANCE.

40. EXISTING DRAINAGE STRUCTURES WITHIN THE LIMITS OF CONSTRUCTION ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED ON PLANS.

41. EXISTING MANHOLES AND INLETS SCHEDULED TO REMAIN SHALL BE THROUGHLY CLEANED BY REMOVING ALL DEBRIS AND SEDIMENTS, AND THE INTERIOR SHALL BE SEALED WITH AN APPROVED NON-TOXIC BITUMASTIC SEALANT. ALL ASSOCIATED COSTS SHALL BE INCLUDED IN THE CONTRACTORS BID.

42. PRIOR TO CONSTRUCTION THE CONTRACTOR WILL INSPECT ALL EXISTING STRUCTURES WHICH ARE TO REMAIN AND NOTIFY THE ENGINEER OF ANY OBVIOUS STRUCTURAL DEFICIENCIES. RELATED COST TO BE INCLUDED IN PAY-ITEM FOR CLEARING AND GRUBBING.

43. CONTRACTOR SHALL ADJUST ALL EXISTING CATCH BASINS, GRATES, AND STORM MANHOLE COVERS TO MEET NEW FINISH GRADES WHERE APPLICABLE. ALL ASSOCIATED COSTS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

44. CONTRACTOR SHALL ADJUST ALL EXISTING MANHOLES, VALVES, AND PULL BOXES WITHIN THE LIMITS OF CONSTRUCTION TO MEET NEW FINISH GRADES ON PAVEMENT AND SIDEWALK. ALL ASSOCIATED COSTS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

45. RADII ON CURB RETURNS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.

46. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY INVERT ELEVATIONS OF ALL PIPES WHICH ARE TO REMAIN AND NOTIFY THE ENGINEER OF ANY ELEVATION DEVIATIONS.

47. THERE SHALL BE NO MORE THAN THREE LATERAL DRAINAGE INSTALLATIONS WITHOUT BACKFILLING. BACKFILLING OF LATERAL DRAINAGE SHALL NOT LAG MORE THAN 72 HOURS BEHIND THE START OF EXCAVATION.

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| REVISIONS | | | |
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| DATE | DESCRIPTION | DATE | DESCRIPTION |
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CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# GENERAL NOTES

SHEET NO.

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48. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION, INSTALLATION, AND MAINTENANCE OF ALL TRAFFIC CONTROL AND SAFETY DEVICES, IN ACCORDANCE WITH SPECIFICATIONS OUTLINED IN THE LATEST PUBLIC WORKS DEPARTMENT MANUAL, THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND THE FDOT DESIGN STANDARDS.

49. WHERE NEW PAVEMENT MEETS EXISTING, CONNECTION SHALL BE MADE IN A NEAT STRAIGHT LINE AND FLUSH WITH THE EXISTING PAVEMENT.

50. AT NO COST TO THE CITY, COMPLETE AS-BUILT INFORMATION RELATIVE TO LOCATION AND DEPTH OF PIPES, MANHOLES, ETC. SHALL BE ACCURATELY RECORDED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER PRIOR TO FINAL ACCEPTANCE OF THE WORK. ALL ELEVATIONS SHALL BE TAKEN BY A FLORIDA REGISTERED SURVEYOR AND SHOWN ON THE RECORD DRAWINGS. 2 SETS OF AS-BUILT HARD COPIES SHALL BE SUBMITTED ALONG WITH A CD CONTAINING A DIGITAL COPY IN PDF AND CAD FORMAT.

51. DESIGN WATER TABLE ELEVATION: 4.0-FT NGVD.

52. MIAMI-DADE COUNTY FLOOD CRITERIA ELEVATION: 7.00-FT NGVD.

53. CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL MUCK AND UNSUITABLE MATERIAL FROM THE ROADBED PRIOR TO COMMENCING WITH BACKFILL OPERATIONS.

54. 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 CONCLUSION REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED, AND UPON WHICH BIDS WILL BE BASED.

55. ROADWAY SOIL SURVEY CONDUCTED BY TIERRA SOUTH FLORIDA, INC. (TSF). PLEASE CALL HARMON C. BENNETT, P.E. AT 561-252-4153 CONCERNING GEOTECH RELATED QUESTIONS.

56. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A GENERAL CONSTRUCTION PERMIT (GCP) AND A NOTICE OF INTENT (NOI) FROM DEP.

57. PORTABLE SANITARY FACILITIES SHALL BE PLACED AT AT LEAST 25 FEET AWAY FROM ANY WATER BODY.

58. THE CONTRACTOR SHALL BE ADVISED THAT OTHER PROJECTS MAY BE UNDER CONSTRUCTION CONCURRENTLY WITH THIS PROJECT AND THAT COORDINATION EFFORTS MAY BE NECESSARY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE CONSTRUCTION SCHEDULE AND FOR THE AMOUNT OF COORDINATION REQUIRED. ALL ASSOCIATED COSTS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

SIGNING AND PAVEMENT MARKINGS

59. ALL SIGNING AND PAVEMENT MARKINGS SHALL CONFORM WITH THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD PLANS.

60. ALL EXISTING SIGNS ARE TO REMAIN UNLESS SPECIFIED FOR REMOVAL IN PLANS. BEFORE STARTING THE PROJECT, THE CONTRACTOR WILL REVIEW EXISTING SIGNS SHOWN ON THE PLANS TO BE RELOCATED OR TO REMAIN. THE CONTRACTOR WILL NOTIFY THE PROJECT ENGINEER IN WRITING OF ANY MISSING SIGNS BEFORE CONSTRUCTION STARTS. SIGNS DAMAGED BY THE CONTRACTOR'S OPERATIONS WILL BE REPLACED AT NO COST TO THE CITY.

61. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED.

62. REFLECTIVE PAVEMENT MARKERS ARE TO BE PLACED ALONG THE ENTIRE LENGTH OF THE PROJECT AND SHALL BE PER FDOT STANDARD INDEX NO. 706-001.

63. MATCH EXISTING PAVEMENT MARKINGS AT THE BEGINNING AND AT THE END OF THE PROJECT WITHOUT JOGS OR OFFSETS.

64. THE CONTRACTOR SHALL REMOVE EXISTING MARKINGS BY FDOT APPROVED METHOD WITHOUT DAMAGE TO THE FRICTION COURSE.

65. SIGN ASSEMBLY LOCATIONS SHOWN ON PLANS WHICH ARE IN CONFLICT WITH LIGHTING, UTILITIES, DRIVEWAYS, WHEELCHAIR RAMPS, ETC. MAY BE ADJUSTED SLIGHTLY AS DIRECTED BY THE ENGINEER. EXTREME LOCATION CHANGES MUST BE APPROVED BY MIAMI-DADE SIGNALS AND SIGNS DIVISION.

66. EXTRUDED ALUMINUM SIGN SUPPORT CLAMPS ARE NOT ACCEPTABLE. ALL RELOCATED SIGNS MUST COMPLY WITH THE DESIGN STANDARDS AS IF THEY WERE NEW SIGNS. IF EXISTING CLAMPS, BRACKETS, POLES, ETC. NEED TO BE REPLACED THE COST SHALL BE INCLUDED IN THE RELOCATION PAY-ITEM.

67. D3 STREET NAME SIGNS SHALL BE PER MIAMI-DADE COUNTY STANDARDS.

68. PROPOSED SIGNS AND/OR EXISTING SIGNS THAT NEED TO BE RELOCATED WITHIN PUBLIC R/W MUST FOLLOW MDC STANDARD DETAIL R18.1 AND MUST USE STANDARD MIAMI-DADE COUNTY "U" IRON POSTS

ENVIRONMENTAL NOTES:

1. THE CONTRACTOR SHALL REVIEW ENVIRONMENTAL REQUIREMENTS OF ANY PROPOSED STAGING AREA WITH THE CITY OF DORAL PUBLIC WORKS DEPARTMENT AT LEAST (72) HOURS PRIOR TO USE. ANY MATERIAL TO BE STOCKEDPILED FOR PERIODS GREATER THAN 24 HOURS SHALL BE PROTECTED BY APPROPRIATE EROSION CONTROL DEVICES. COST TO BE INCLUDED IN PAY ITEM 101-1, MOBILIZATION. ALL LANDSCAPING IS DESIGNATED TO REMAIN UNLESS OTHERWISE ON THE PLANS.

2. ALL LANDSCAPE WITHIN 5' OF CONSTRUCTION ACTIVITIES SHALL BE PROTECTED AS PER DESIGN STANDARD INDEX 580-001. COST TO BE INCLUDED IN 101-1, MOBILIZATION.

3. WHERE MATERIAL OR DEBRIS HAS WASHED OR FLOWED INTO OR BEEN PLACED IN WATER COURSES, GRAVITY SEWER, DITCHES, DRAINS, CATCH BASINS, OR ELSEWHERE AS A RESULT OF THE CONTRACTOR'S OPERATIONS, SUCH MATERIAL OR DEBRIS SHALL BE REMOVED AND SATISFACTORY DISPOSED OF DURING PROGRESS OF THE WORK, AND THE AREA KEPT IN A CLEAN AND NEAT.

AS-BUILT REQUIREMENT

1. THE CONTRACTOR SHALL MAINTAIN ACCURATE AND COMPLETE RECORDS OF WORK ITEMS COMPLETED.

2. ALL "AS-BUILT" INFORMATION SUBMITTED TO THE CITY PUBLIC WORKS DIRECTOR SHALL BE SUFFICIENTLY ACCURATE, CLEAR AND LEGIBLE TO SATISFY THE CITY OF DORAL THAT THE INFORMATION PROVIDES A TRUE REPRESENTATION OF THE COMPLETED WORK. AS-BUILT PLANS SHALL INCLUDE SURVEY CROSS SECTIONS AT BASELINE STATION INCLUDED IN THE CROSS SECTION PLANS. THE CONTRACTOR IS RESPONSIBLE FOR THE COST OF PERFORMING AND PROVIDING THE "AS-BUILT".

3. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT TO THE CITY PUBLIC WORKS DIRECTOR ONE COMPLETE SET OF "AS-BUILT" CONSTRUCTION DRAWINGS. THESE DRAWINGS SHALL BE MARKED TO SHOW "AS-BUILT" CONSTRUCTION CHANGES AND DIMENSIONED LOCATIONS AND ELEVATIONS OF ALL WORK PERFORMED AND SHALL BE SIGN BY THE CONTRACTOR.

4. ALL "AS-BUILT" INFORMATION ON ELEVATIONS OF WORK PERFORMED SHALL BE CERTIFIED BY A REGISTERED LAND SURVEYOR.

5. PRIOR TO A FINAL INSPECTION BY THE CITY OF DORAL, THE CONTRACTOR SHALL SUBMIT TO THE CITY TWO (2) SETS OF BLUEPRINTS OF "AS-BUILT" CONSTRUCTION DRAWINGS

6. UPON A FINAL INSPECTION BY THE CITY OF DORAL, THE CONTRACTOR SHALL SUBMIT TO THE CITY TWO (2) SETS OF BLUEPRINTS OF "AS-BUILT" CONSTRUCTION DRAWINGS THAT HAVE BEEN CERTIFIED BY A REGISTERED LAND SURVEYOR, AND COMPUTER FILES OF "AS-BUILT" CONSTRUCTION DRAWINGS ON COMPACT DISK IN AUTOCAD RELEASED 2000 FORMAT EDITION & PDF VERSION.

| REVISIONS | | | |
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| DATE | DESCRIPTION | DATE | DESCRIPTION |
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CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# GENERAL NOTES

SHEET NO.

POT STA. 31+70.50

℄ SURVEY NW-102ND AVE

S 1° 43' 20" E

R/W LINE

BEGIN PROJECT
BEGIN MILLING AND RESURFACING
MATCH EXISTING GRADE
℄ SURVEY NW 66 ST
STA. 99+39.75

LIMITS OF MILLING AND RESURFACING
STA. 30+42.10

℄ OF SURVEY NW 66TH ST
STA. 100+00.00 =
℄ OF SURVEY NW 102ND AVE
STA. 30+00.00

EXIST. 18" HDPE PIPE TO REMAIN

R/W LINE

NW 66TH STREET

88°36'45.6"

POT STA. 100+00.00

PROPOSED TIE IN WITH EXIST. 18" HDPE PIPE

℄ SURVEY NW 66TH ST

EXIST. CURB TO BE REMOVED

99 100 101 102 103

N 89° 39' 54" E

POT STA. 30+00.00

MATCHLINE STA. 103+80.00

35'

45'

MATCH EXIST. ± 0.023

+68.64
27.00' RT
EL. 4.89'

0.02 PT

± 0.017 MATCH EXIST.

CONST. 17' OF 18" PIPE WITH CONC. JACKET

R 40'

CR-C

S-1

S-1A

CONST. 119' OF 18" PIPE

20'

6' SIDEWALK

R/W LINE

GUARDRAIL TO BE REMOVED

+34.46
46.23' RT

+28.65
67.97' RT
EL. 5.98'

0.02 PC

HARMONIZATION LINE

CURB AND GUTTER TYPE F

S-9

EX-16

R/W LINE

BEGIN WIDENING
STA. 99+99.12, 5.00' RT

BT(C)

BT(D)

BTV(D)

NW 102ND AVENUE

29

S 1° 43' 20" E

CONST. 162' OF 18" PIPE

6' SIDEWALK

MATCHLINE STA. 28+40.00

35' 35'

0 10 40
Feet

LEGEND:
- MILLING AND RESURFACING
- PAVEMENT WIDENING
- 6" THICK SIDEWALK

NW 66TH STREET

| REVISIONS | | | |
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CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# ROADWAY PLAN

SHEET NO.




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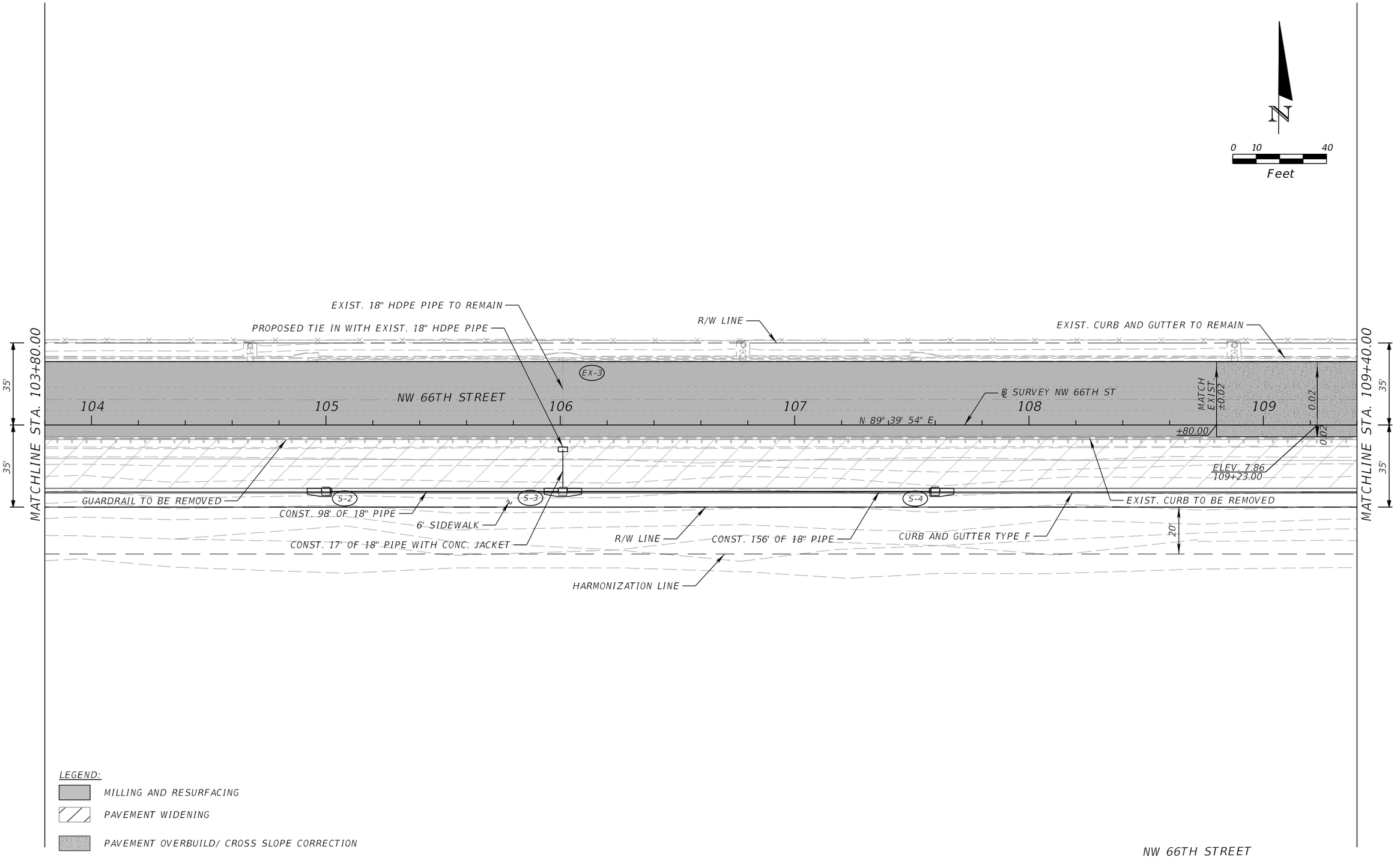


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| NW 66TH STREET | MIAMI-DADE |

# ROADWAY PLAN

SHEET NO.




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N

0 10 40
Feet

℄ OF SURVEY NW 66TH ST
STA. 113+17.58 =
℄ OF SURVEY NW 99TH AVE
STA. 30+00.00

END MILLING AND RESURFACING EB
MATCH EXIST.
STA. 113+81.91

END WIDENING
STA. 113+18.71, 4.99' RT

EXIST. CURB AND GUTTER TO REMAIN

EXIST. 18" HDPE PIPE TO REMAIN

EX-6

ELEV. 7.89
112+61.22

±17.58

R/W LINE

MATCHLINE STA. 109+40.00

35'

MATCH EXIST. ±0.02

110

111

112

113

114

NW 66TH STREET

℄ SURVEY NW 66TH ST

N 89° 39' 54" E

+60.00

±03.78

0.02

POT STA. 30+00.00

EXIST. CURB TO BE REMOVED

CONST. 132' OF 18" FD

S-5

GUARDRAIL TO BE REMOVED

S-6

PROPOSED TIE IN WITH
EXIST. 18" HDPE PIPE

CURB AND GUTTER TYPE F

6' SIDEWALK

CONST. 140' OF 18" PIPE

20'

CONST. 17' OF 18" PIPE
WITH CONC. JACKET

HARMONIZATION LINE

END SPECIAL GUTTER PROFILE
STA. 112+11.30
MIN. 0.3% SLOPE EAST

BEGIN SPECIAL GUTTER PROFILE
STA.112+61.22
MIN. 0.3% SLOPE WEST

+61.22
27.00' RT
EL. 6.47'

R 40'

±0.012

±0.16

88°35'11.04"

CR-C

CR-G

R 30'

113+63.39
27.22' RT

113+54.83
29.58' RT

113+47.33
34.35' RT

112+81.76
32.68' RT

+01.21
66.01' RT
EL. 6.62'

0.02

NW 99TH AVENUE

℄ SURVEY NW 99TH AVE

29

S 1° 44' 55" E

6' SIDEWALK

S-11

CONST. 97' OF 18" PIPE

FEMA ZONE AH
EL. 5.00 NGVD

MATCHLINE STA. 28+30.00

35' 35'

NOTES:
1. EXISTING ROADWAY SHOWN EAST OF ℄ OF CONSTRUCTION NW 99TH AVE IS PER ROYAL PALM DORAL PAVING AND DRAINAGE PLANS DATED 04/13/2022.

LEGEND:

- MILLING AND RESURFACING
- PAVEMENT WIDENING
- PAVEMENT OVERBUILD/ CROSS SLOPE CORRECTION
- 6" THICK SIDEWALK

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| NW 66TH STREET | MIAMI-DADE |

# ROADWAY PLAN

SHEET NO.


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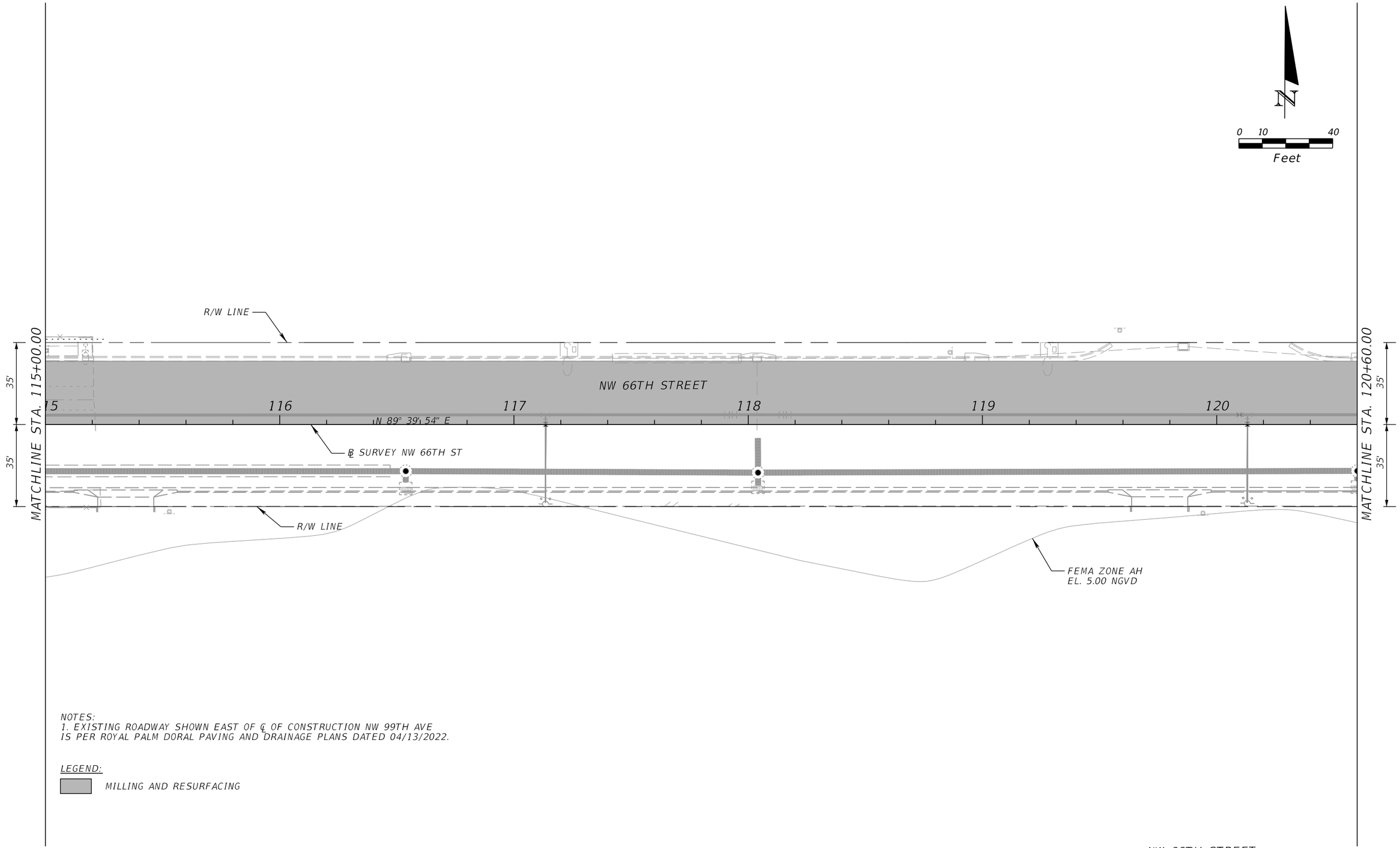


NOTES:
1. EXISTING ROADWAY SHOWN EAST OF ℄ OF CONSTRUCTION NW 99TH AVE IS PER ROYAL PALM DORAL PAVING AND DRAINAGE PLANS DATED 04/13/2022.

LEGEND:

MILLING AND RESURFACING

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| NW 66TH STREET | MIAMI-DADE |

# ROADWAY PLAN

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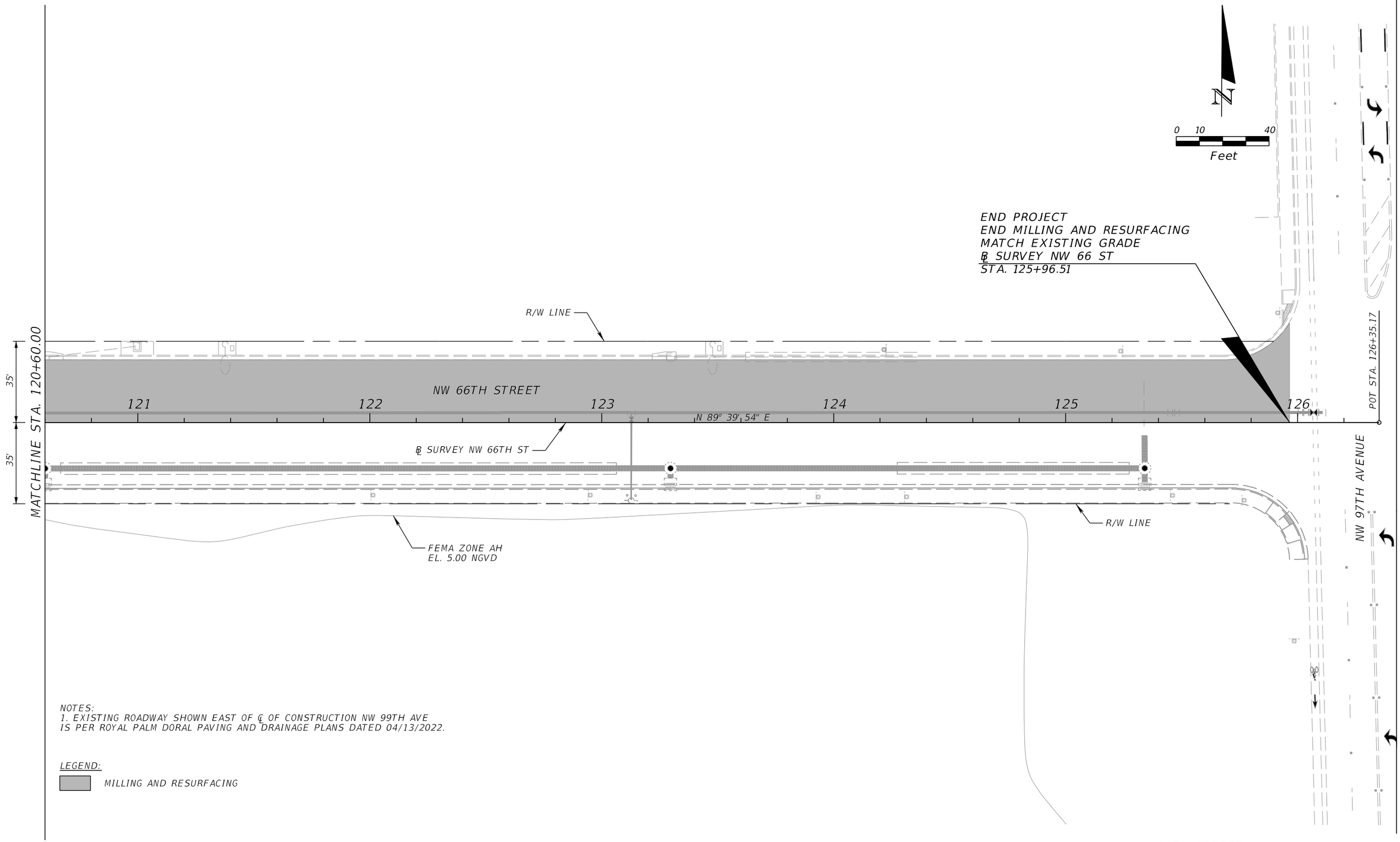


NOTES:
1. EXISTING ROADWAY SHOWN EAST OF ℄ OF CONSTRUCTION NW 99TH AVE IS PER ROYAL PALM DORAL PAVING AND DRAINAGE PLANS DATED 04/13/2022.

LEGEND:

MILLING AND RESURFACING

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# ROADWAY PLAN

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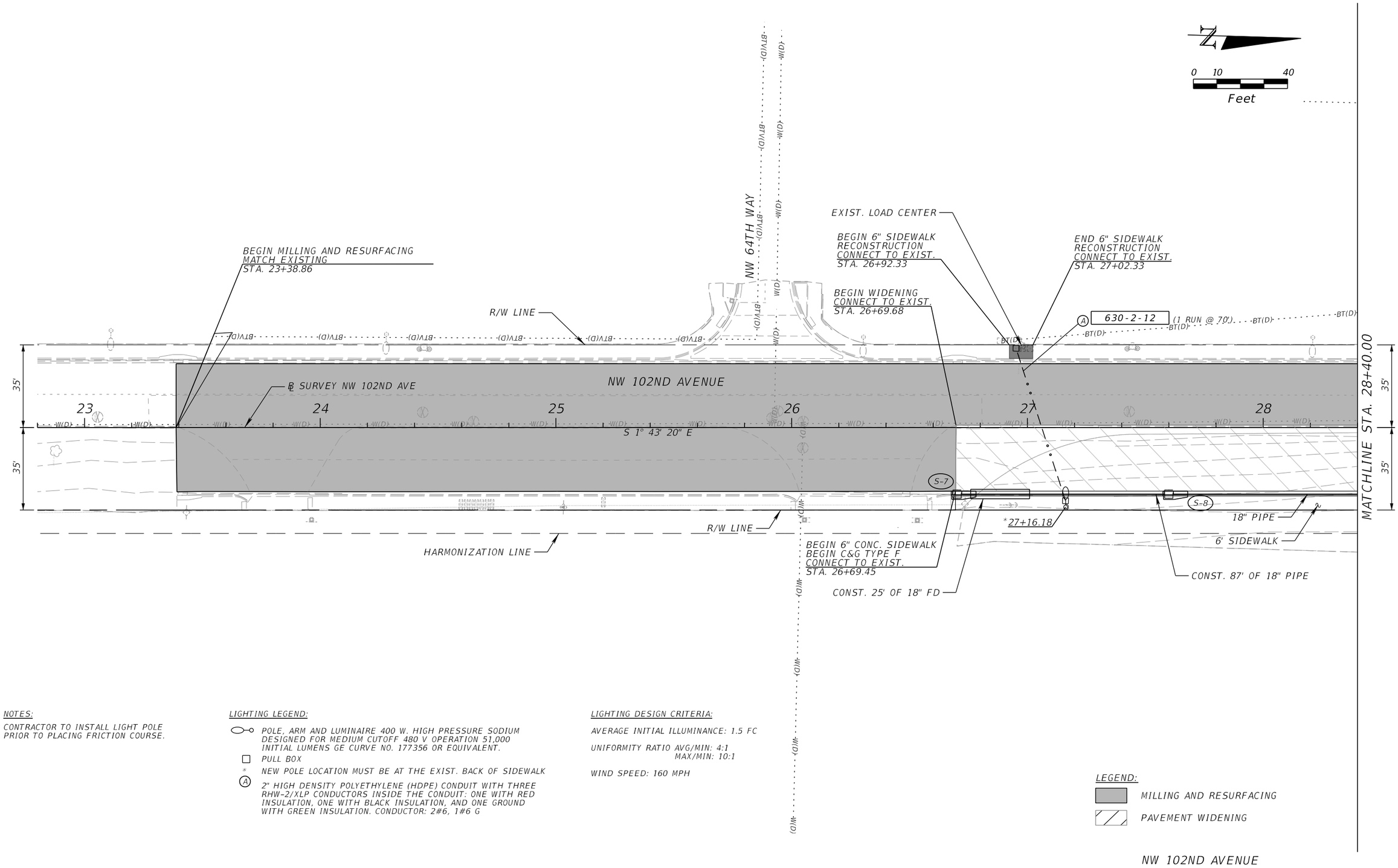


NOTES:

CONTRACTOR TO INSTALL LIGHT POLE PRIOR TO PLACING FRICTION COURSE.

LIGHTING LEGEND:

- POLE, ARM AND LUMINAIRE 400 W. HIGH PRESSURE SODIUM DESIGNED FOR MEDIUM CUTOFF 480 V OPERATION 51,000 INITIAL LUMENS GE CURVE NO. 177356 OR EQUIVALENT.
- PULL BOX
- NEW POLE LOCATION MUST BE AT THE EXIST. BACK OF SIDEWALK
- (A) 2" HIGH DENSITY POLYETHYLENE (HDPE) CONDUIT WITH THREE RHW-2/XLP CONDUCTORS INSIDE THE CONDUIT: ONE WITH RED INSULATION, ONE WITH BLACK INSULATION, AND ONE GROUND WITH GREEN INSULATION. CONDUCTOR: 2#6, 1#6 G

LIGHTING DESIGN CRITERIA:

AVERAGE INITIAL ILLUMINANCE: 1.5 FC

UNIFORMITY RATIO AVG/MIN: 4:1
MAX/MIN: 10:1

WIND SPEED: 160 MPH

LEGEND:

- MILLING AND RESURFACING
- PAVEMENT WIDENING

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# ROADWAY PLAN

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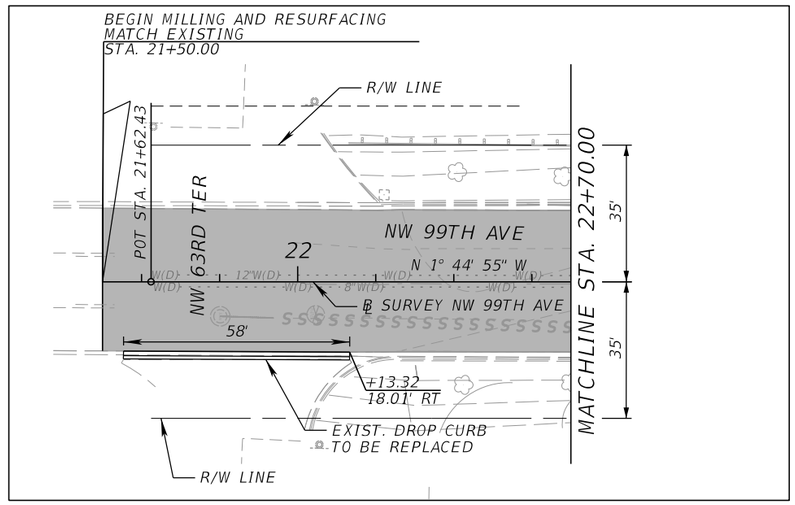






NOTES:
1. EXISTING ROADWAY SHOWN EAST OF ℄ OF CONSTRUCTION NW 99TH AVE IS PER ROYAL PALM DORAL PAVING AND DRAINAGE PLANS DATED 04/13/2022.

LEGEND:

- MILLING AND RESURFACING
- PAVEMENT WIDENING/ RECONSTRUCTION

NW 99TH AVENUE

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

Kimley-Horn and Associates, Inc.
Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, FL 33134

CITY OF DORAL

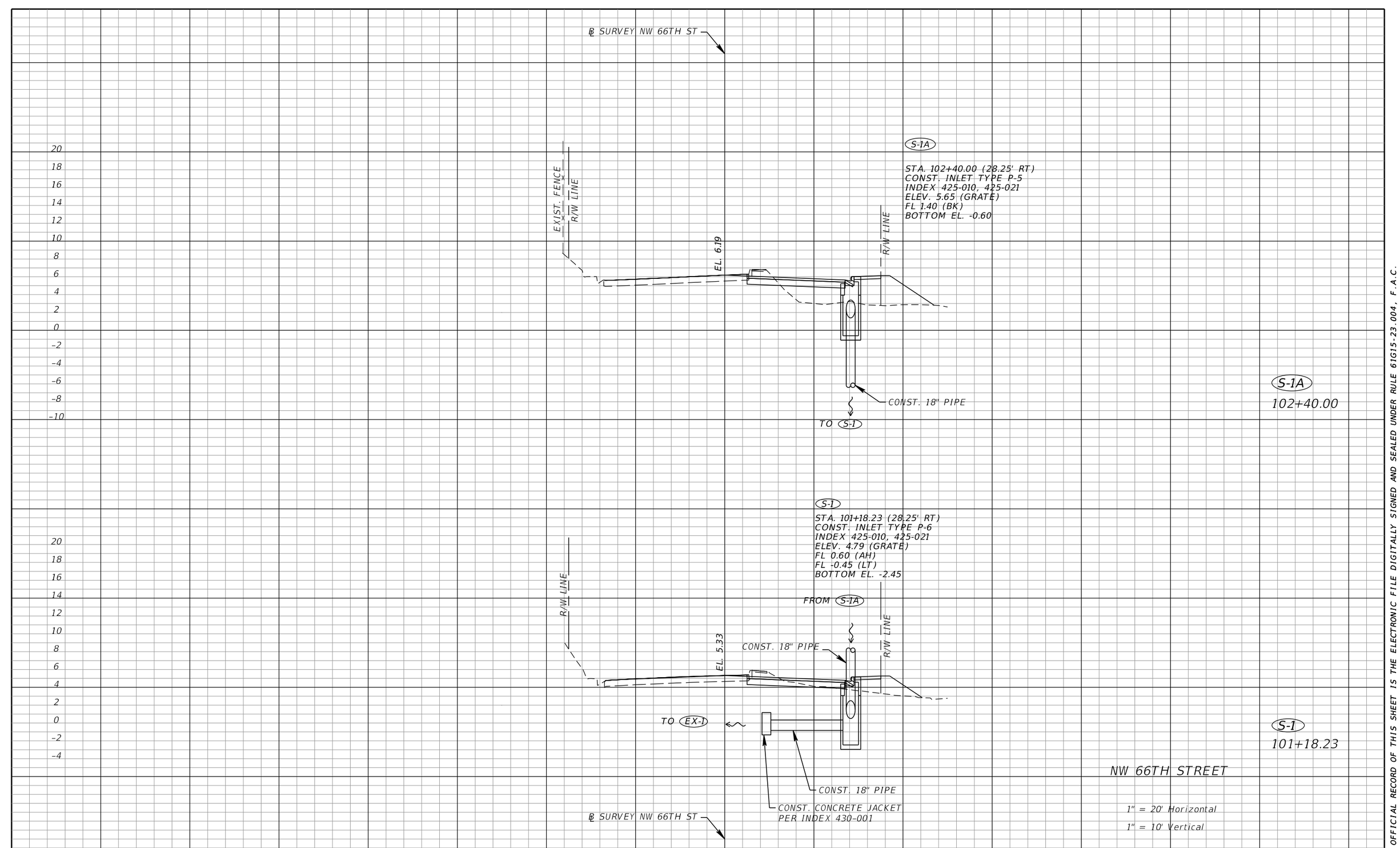
| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# ROADWAY PLAN

SHEET NO.



Renzo.Marengo 8/7/2023 4:58:01 PM c:\pw\kh1\d0142661\PLANRD07.dgn

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| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
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CITY OF DORAL

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|---|---|
| NW 66TH STREET | MIAMI-DADE |

# DRAINAGE STRUCTURES

SHEET NO.

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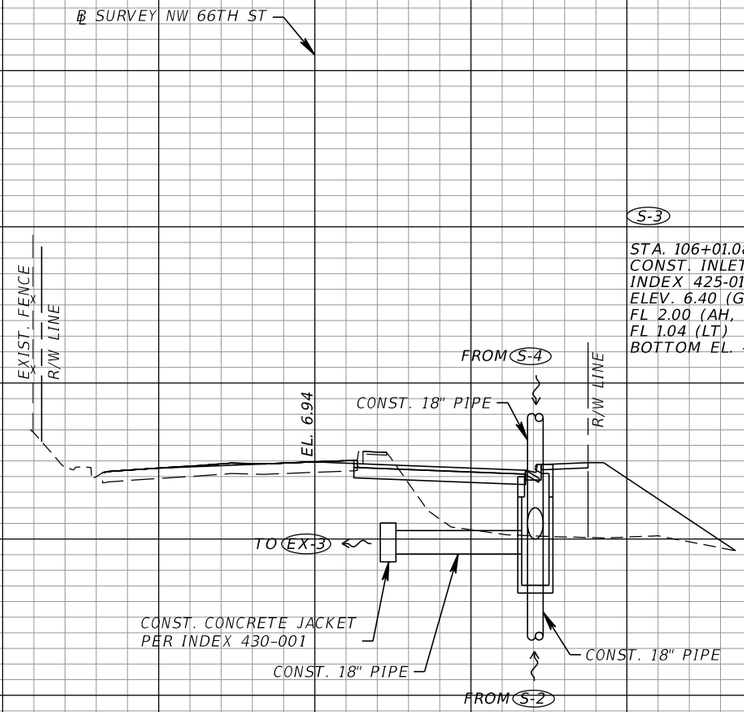


S-3
106+01.08

S-2
105+00.00

NW 66TH STREET

1" = 20' Horizontal
1" = 10' Vertical

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|---|---|
| NW 66TH STREET | MIAMI-DADE |

# DRAINAGE STRUCTURES

SHEET NO.

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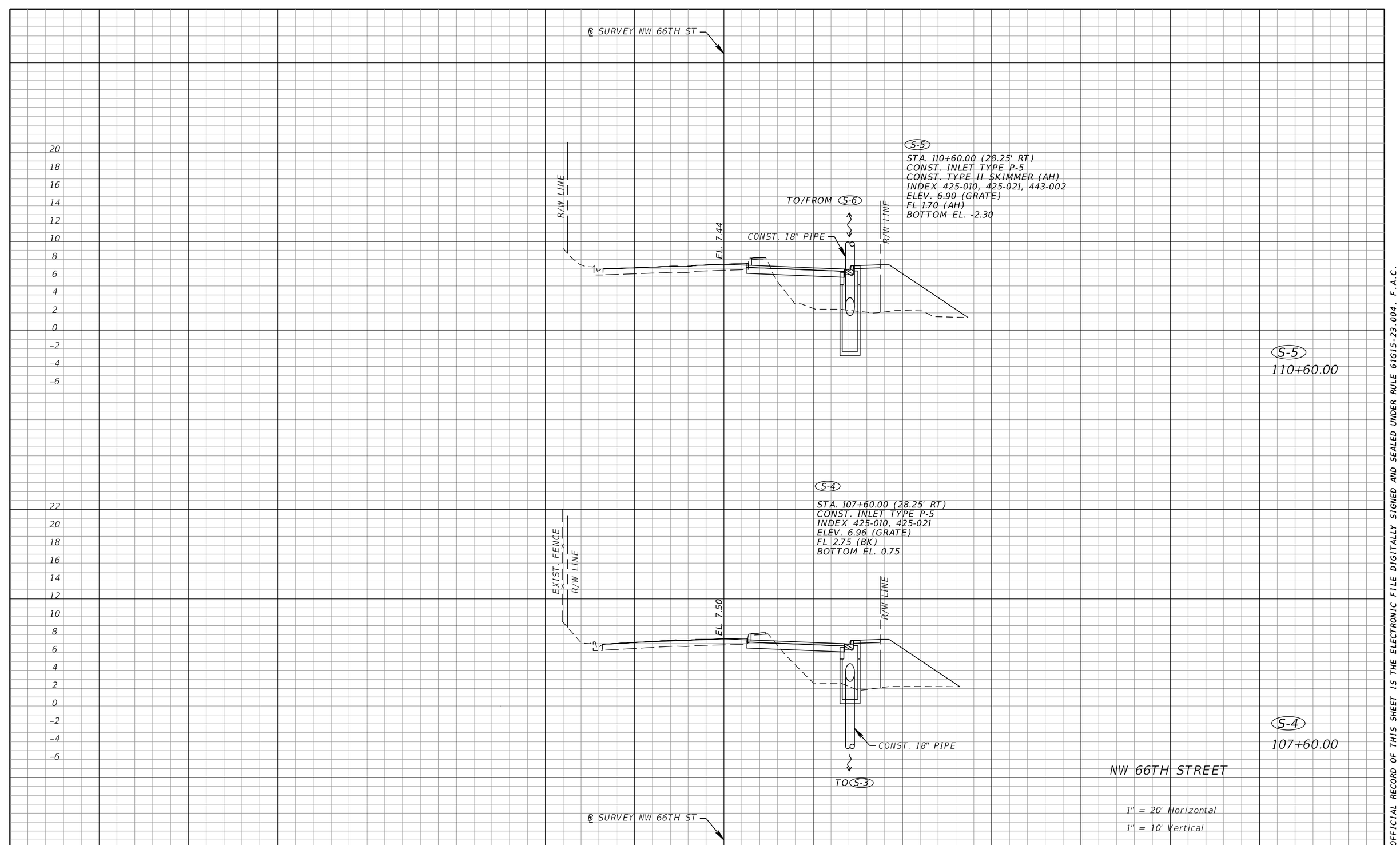


| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |


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CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# DRAINAGE STRUCTURES

SHEET NO.




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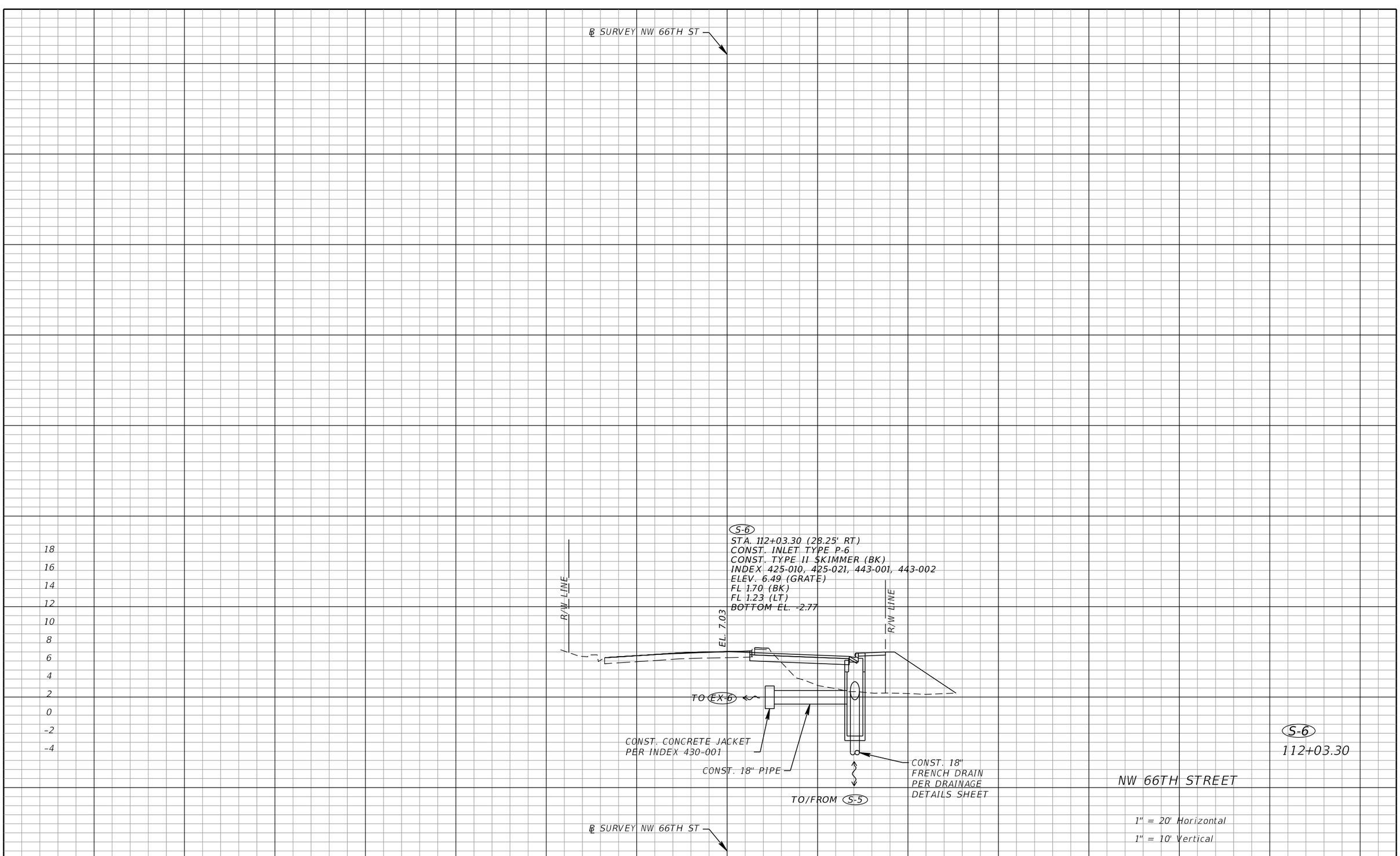


S-6

112+03.30

NW 66TH STREET

1" = 20' Horizontal

1" = 10' Vertical

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|---|---|
| NW 66TH STREET | MIAMI-DADE |

# DRAINAGE STRUCTURES

SHEET NO.


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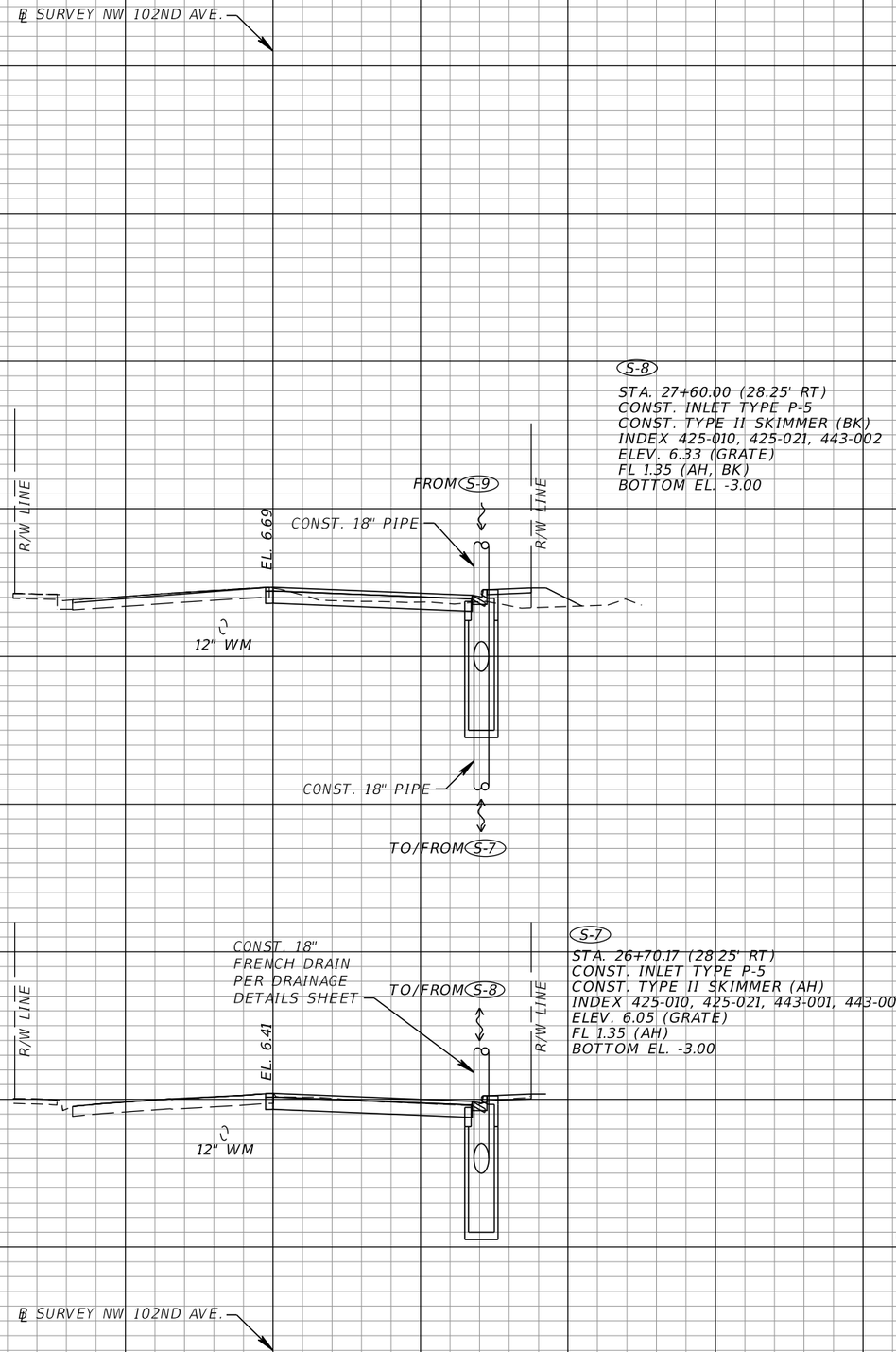


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|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
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|---|---|
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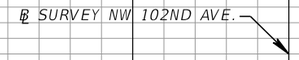
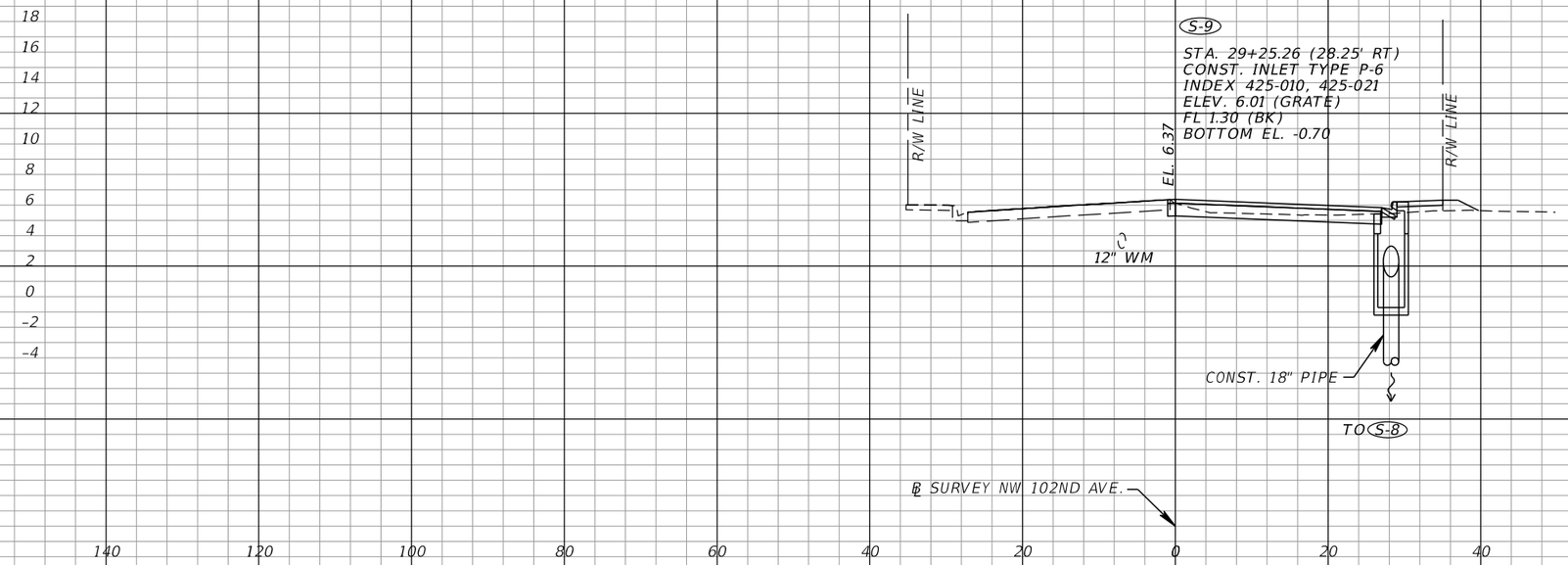
# DRAINAGE STRUCTURES

SHEET NO.


Renzo.Marengo 8/7/2023 4:58:29 PM c:\pw\kh1\d0146903\DRXSRD02.dgn




S-9
29+25.26

NW 102ND AVENUE

1" = 20' Horizontal
1" = 10' Vertical

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| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
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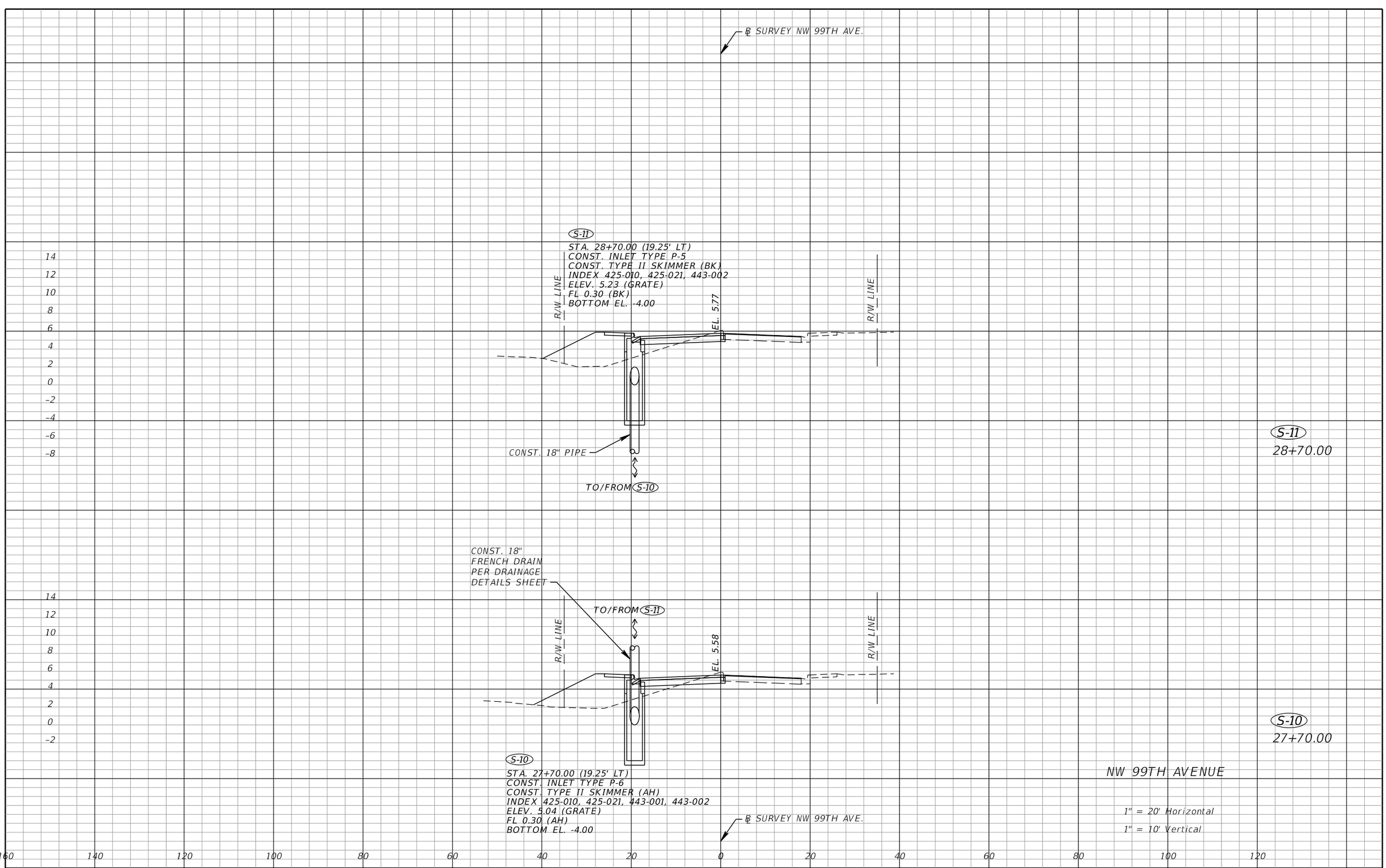
CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# DRAINAGE STRUCTURES

SHEET NO.

Renzo.Marengo 8/7/2023 4:58:29 PM c:\pw\kh1\d0146903\DRXSRD02.dgn




S-11
28+70.00

S-10
27+70.00

NW 99TH AVENUE

1" = 20' Horizontal
1" = 10' Vertical

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| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |


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Coral Gables, Fl 33134


CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# DRAINAGE STRUCTURES

SHEET NO.


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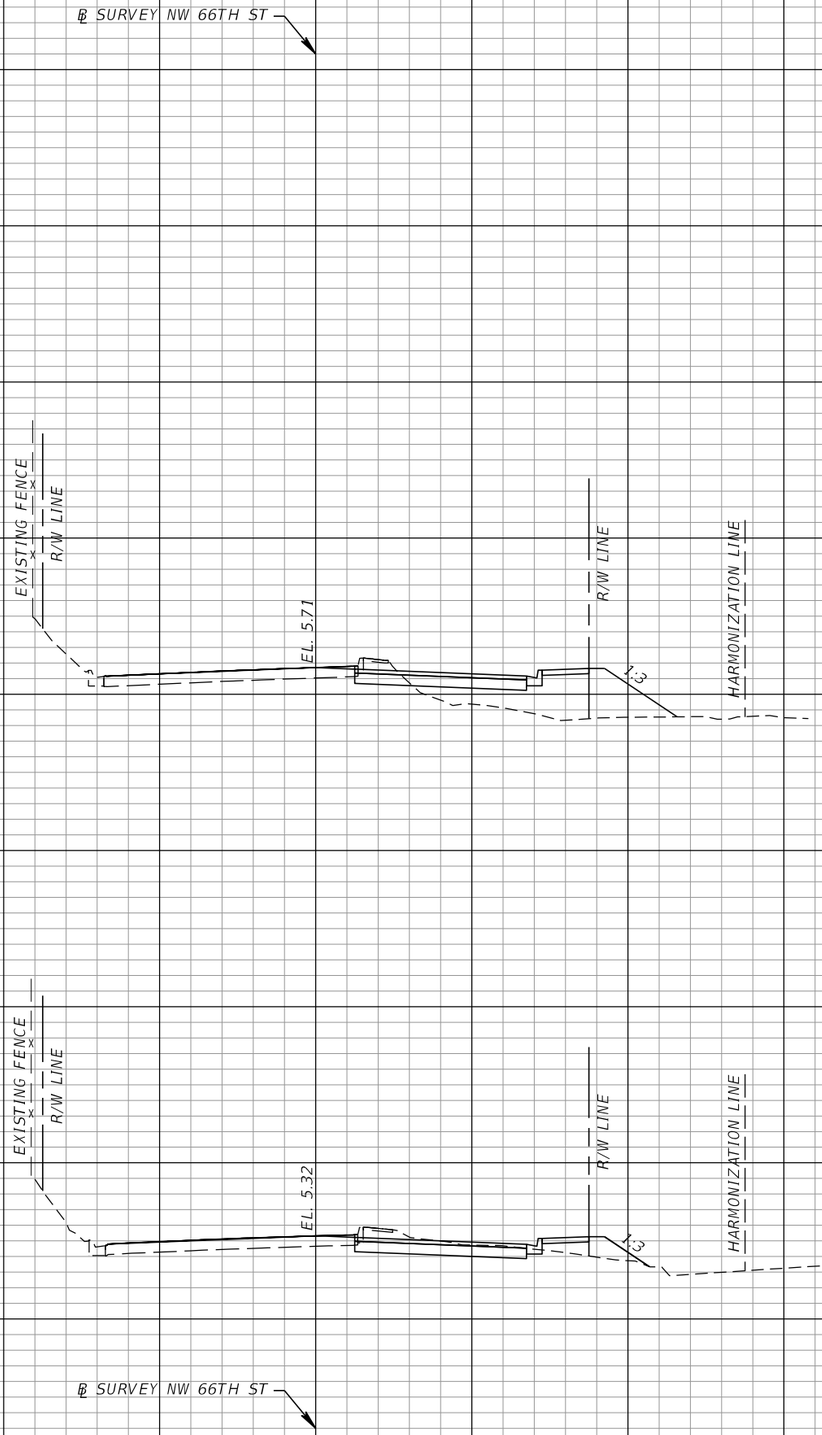


| | Regular Exc. | | Embankment | |
|---|---|---|---|---|
| | A | V | A | V |
| 102+00.00 | 8.9 | 59.1 | 56.0 | 122.1 |
| 101+00.00 | 23.0 | 0.0 | 10.0 | 0.0 |

1" = 20' Horizontal

1" = 10' Vertical

BEGIN WIDENING
BEGIN EARTHWORK
℄ SURVEY NW 66 ST
STA. 99+99.12

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| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

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P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, Fl 33134

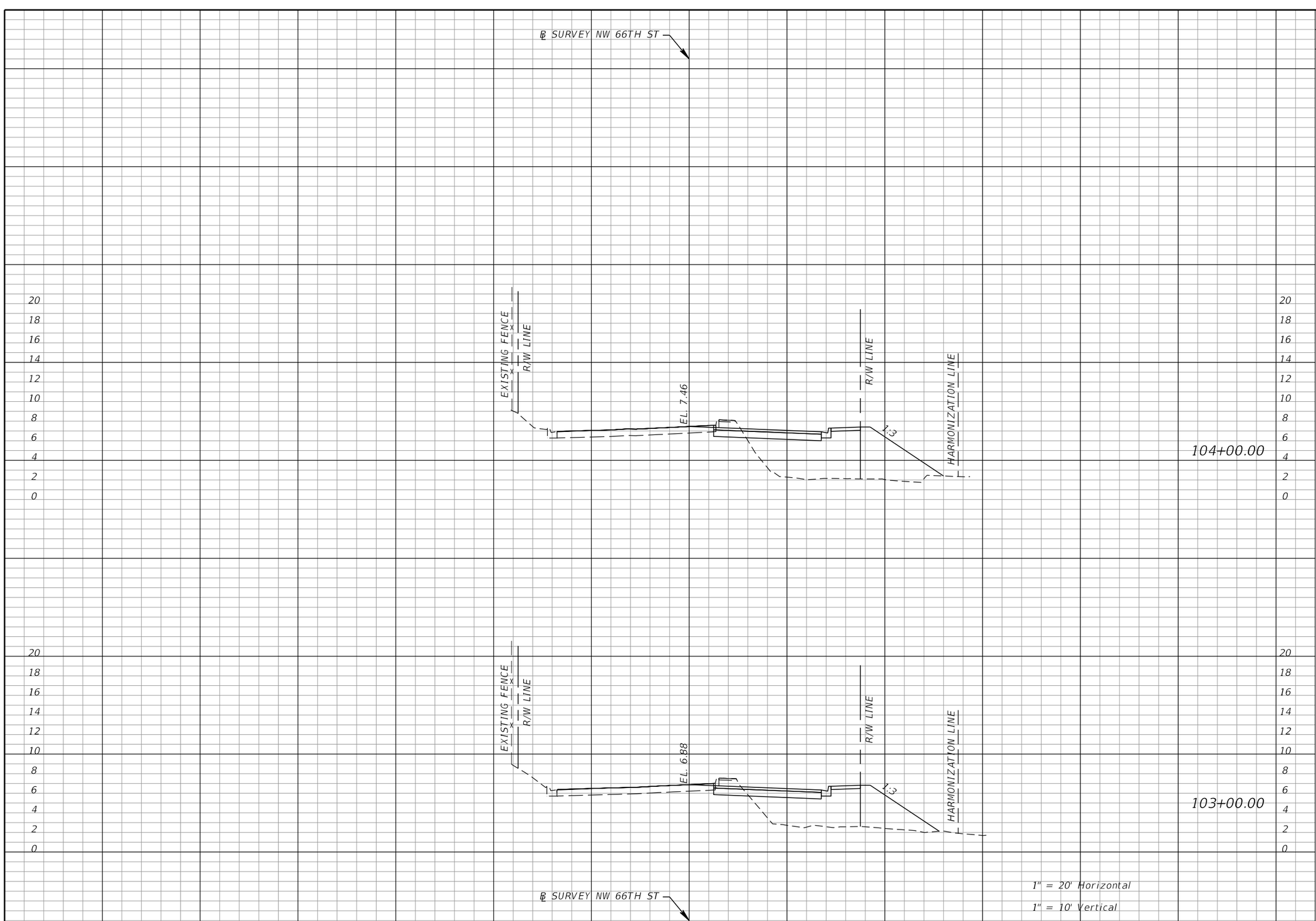
CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# ROADWAY CROSS SECTIONS
# NW 66TH ST

SHEET NO.

Renzo.Marengo 8/7/2023 4:58:48 PM c:\pw\kh1\d0142661\RDXSRD01.dgn




| Regular Exc. | | Embankment | |
|---|---|---|---|
| A | V | A | V |
| 9.2 | 34.7 | 139.8 | 451.9 |
| 9.6 | 34.2 | 104.2 | 296.7 |

104+00.00

103+00.00

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| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

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355 Alhambra Circle, Suite 1400
Coral Gables, Fl 33134

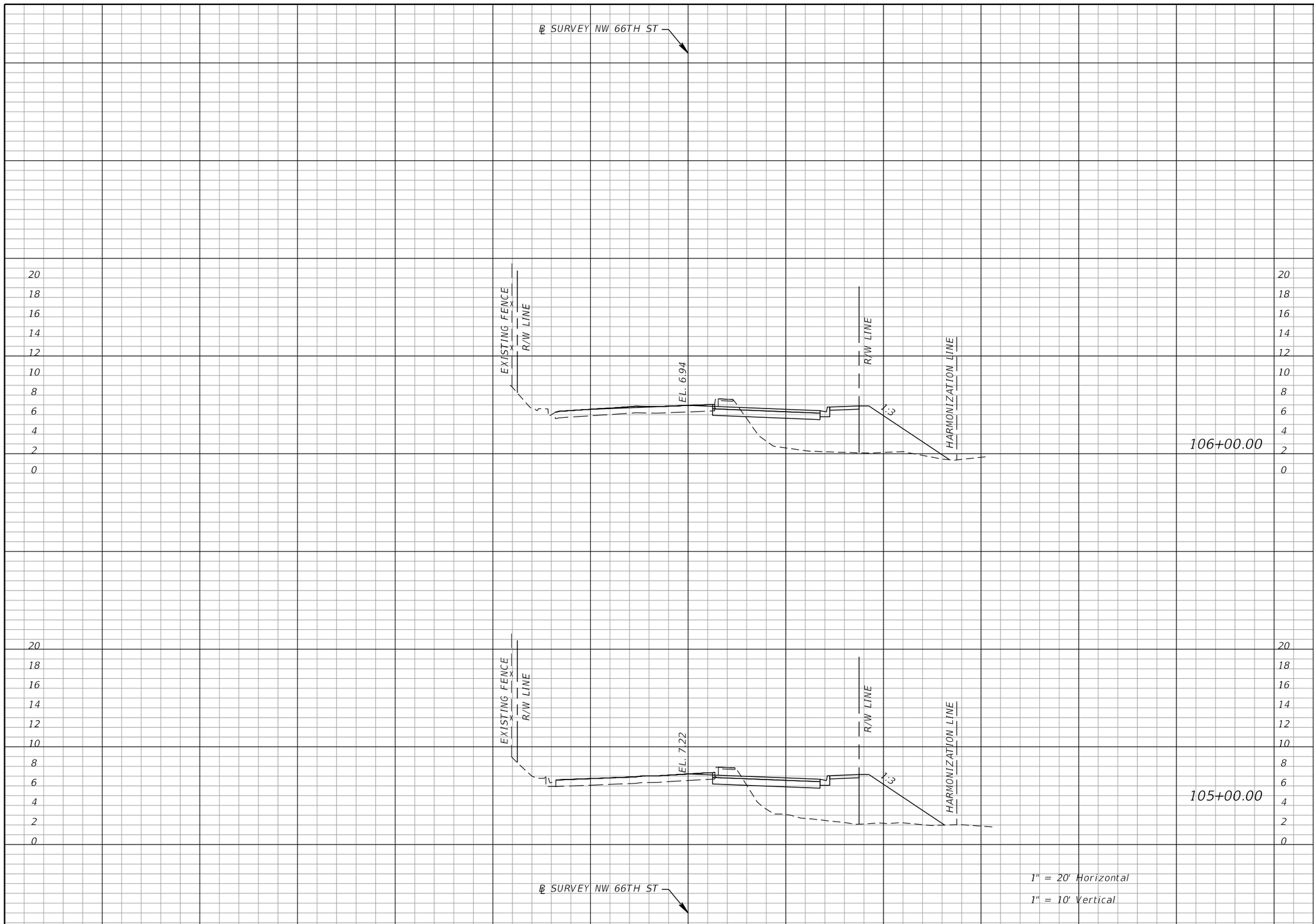
CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# ROADWAY CROSS SECTIONS
# NW 66TH ST

SHEET NO.

Renzo.Marengo 8/7/2023 4:58:49 PM c:\pw\kh1\d0142661\RDXSRD01.dgn




| | Regular Exc. | | Embankment | |
|---|---|---|---|---|
| | A | V | A | V |
| 106+00.00 | 9.0 | 35.0 | 119.3 | 445.0 |
| 105+00.00 | 9.8 | 35.2 | 121.0 | 483.0 |

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|---|---|---|---|
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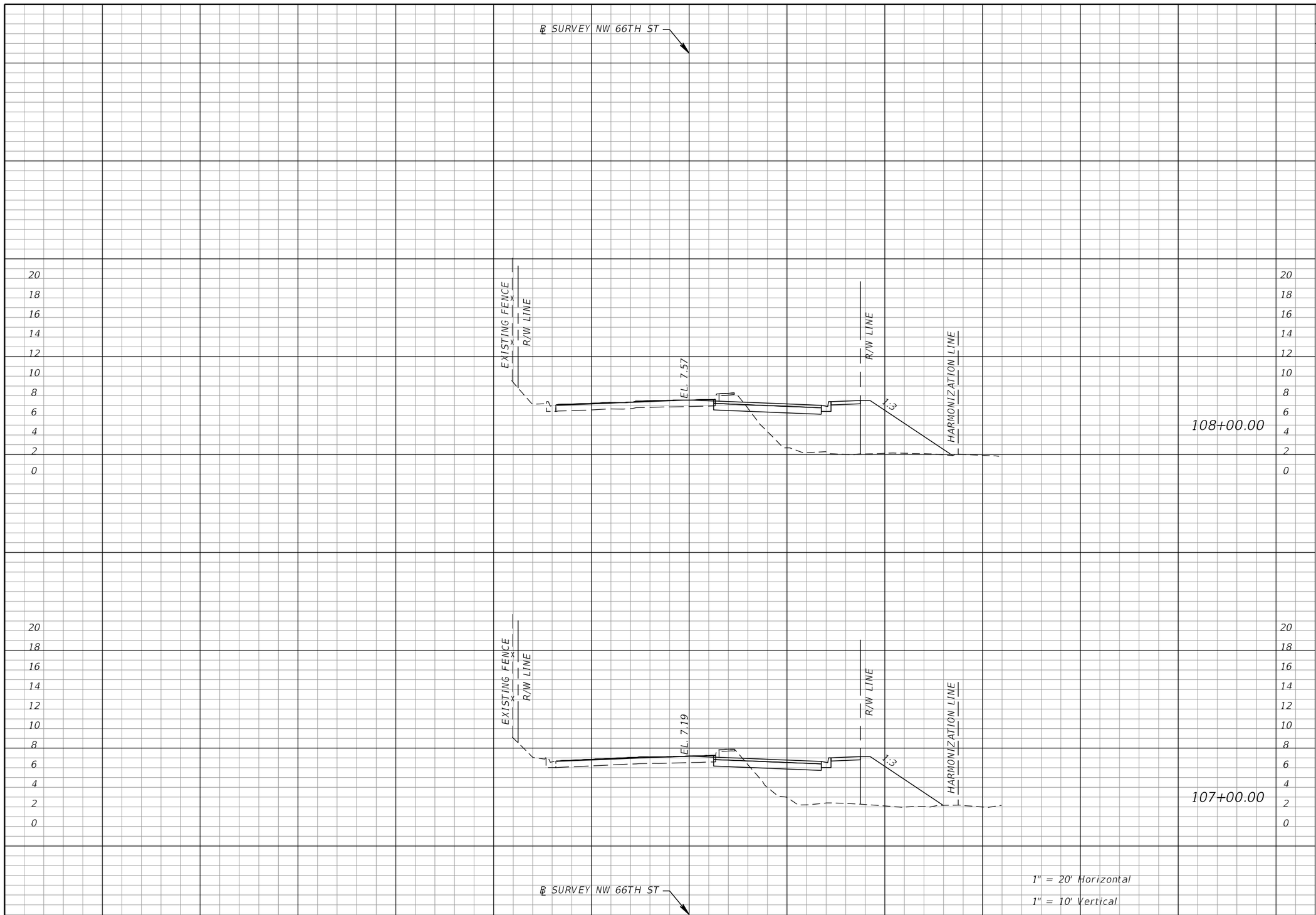
CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# ROADWAY CROSS SECTIONS NW 66TH ST

SHEET NO.

Renzo.Marengo 8/7/2023 4:58:49 PM c:\pw\kh1\d0142661\RDXSRD01.dgn




| | Regular Exc. | | Embankment | |
|---|---|---|---|---|
| | A | V | A | V |
| 108+00.00 | 10.3 | 37.6 | 136.5 | 474.9 |
| 107+00.00 | 10.0 | 35.4 | 120.0 | 443.0 |

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| DATE | DESCRIPTION | DATE | DESCRIPTION |
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Coral Gables, Fl 33134

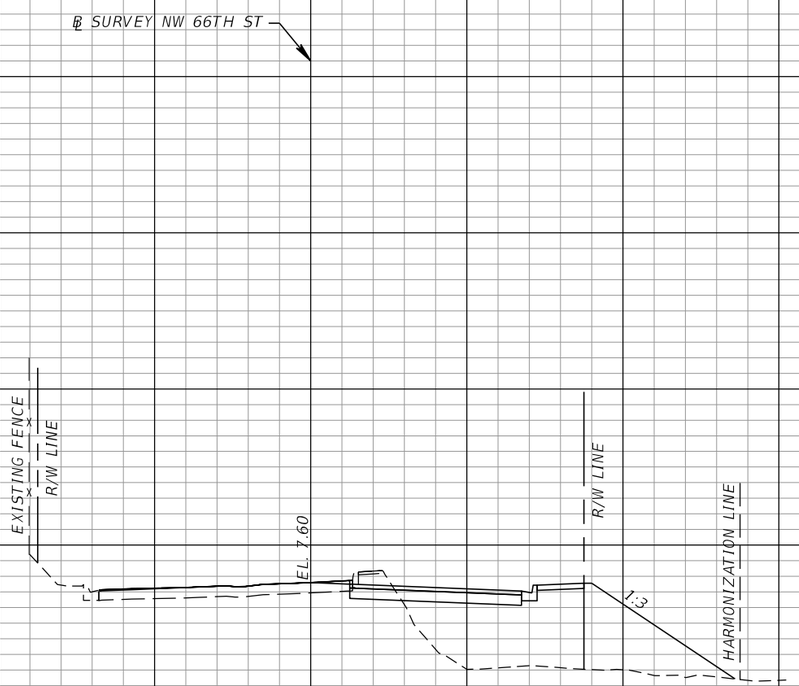
CITY OF DORAL

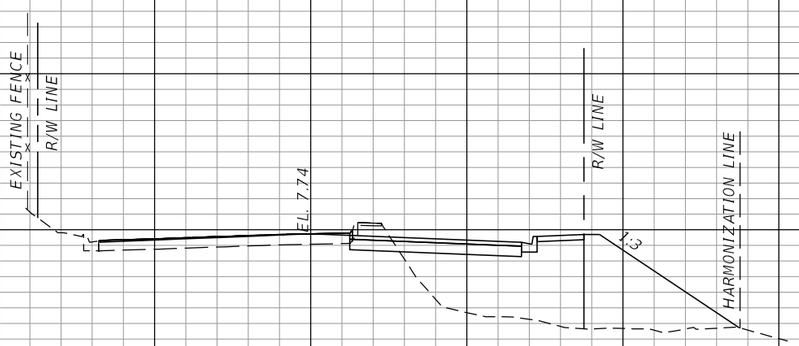
| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

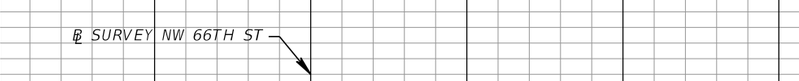
# ROADWAY CROSS SECTIONS
# NW 66TH ST

SHEET NO.

Renzo.Marengo 8/7/2023 4:58:49 PM c:\pw\kh1\d0142661\RDXSRD01.dgn




140 120 100 80 60 40 20 0 20 40 60 80 100 120

1" = 20' Horizontal

1" = 10' Vertical

| | Regular Exc. | | Embankment | |
|---|---|---|---|---|
| | A | V | A | V |
| 110+00.00 | 9.4 | 33.9 | 145.1 | 559.1 |
| 109+00.00 | 8.9 | 35.4 | 156.8 | 543.1 |

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Coral Gables, Fl 33134

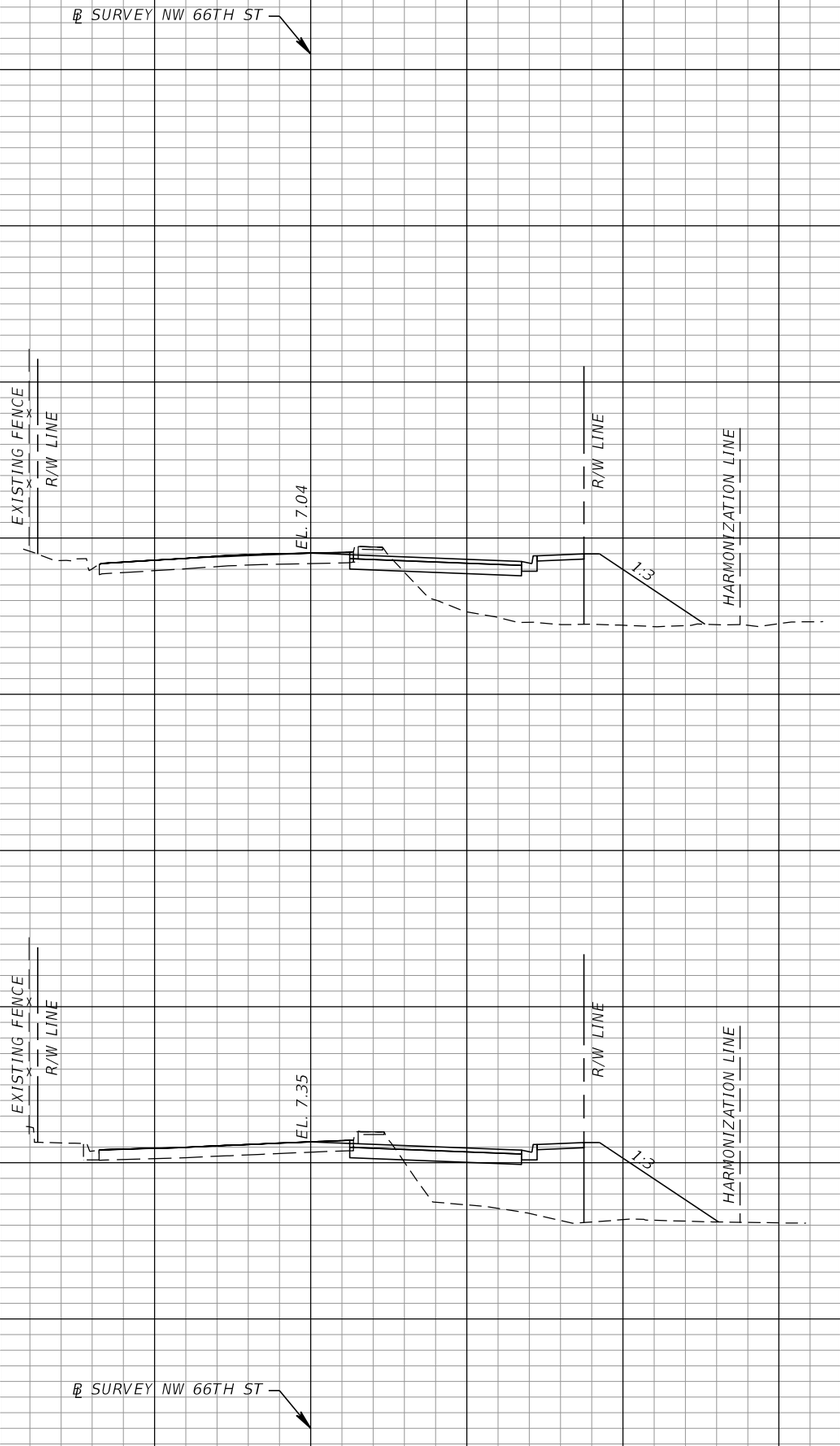

CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# ROADWAY CROSS SECTIONS
# NW 66TH ST

SHEET NO.

Renzo.Marengo 8/7/2023 4:58:49 PM c:\pw\kh1\d0142661\RDXSRD01.dgn




END WIDENING
END EARTHWORK
℄ SURVEY NW 66 ST
STA. 113+18.71

1" = 20' Horizontal
1" = 10' Vertical

| | Regular Exc. | | Embankment | |
|---|---|---|---|---|
| | A | V | A | V |
| 112+00.00 | 7.8 | 31.5 | 103.3 | 410.7 |
| 111+00.00 | 9.2 | 34.5 | 118.5 | 488.1 |

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| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

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CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# ROADWAY CROSS SECTIONS
# NW 66TH ST

SHEET NO.

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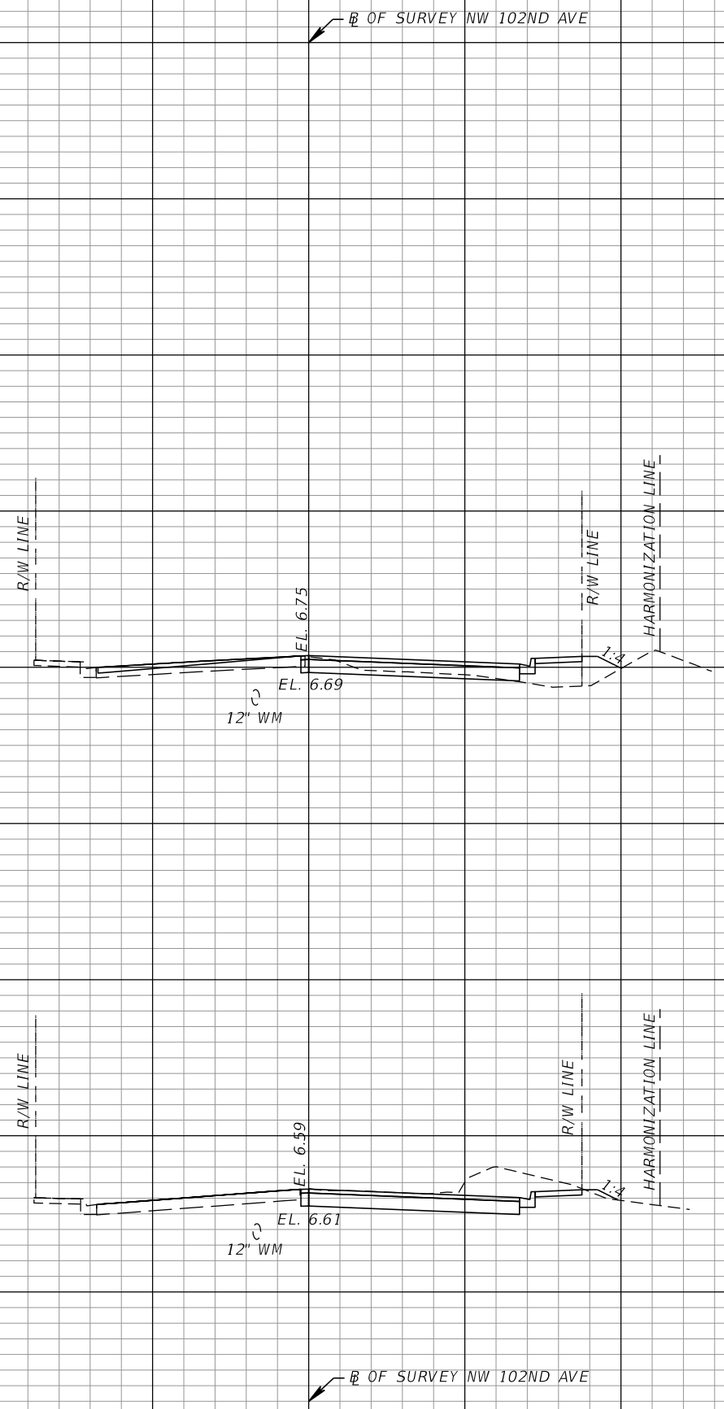


| | Regular Exc. | | Embankment | |
|---|---|---|---|---|
| | A | V | A | V |
| 28+00.00 | 10.8 | 116.3 | 16.5 | 32.0 |
| 27+00.00 | 52.0 | 0.0 | 0.8 | 0.0 |

1" = 20' Horizontal
1" = 10' Vertical

BEGIN WIDENING
BEGIN EARTHWORK
℄ SURVEY NW 102 AVE
STA. 26+69.68

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

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Coral Gables, Fl 33134

CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# ROADWAY CROSS SECTIONS
# NW 102ND AVE

SHEET NO.

Renzo.Marengo 8/7/2023 4:58:56 PM c:\pw\kh1\d0142661\RDXSRD02.dgn

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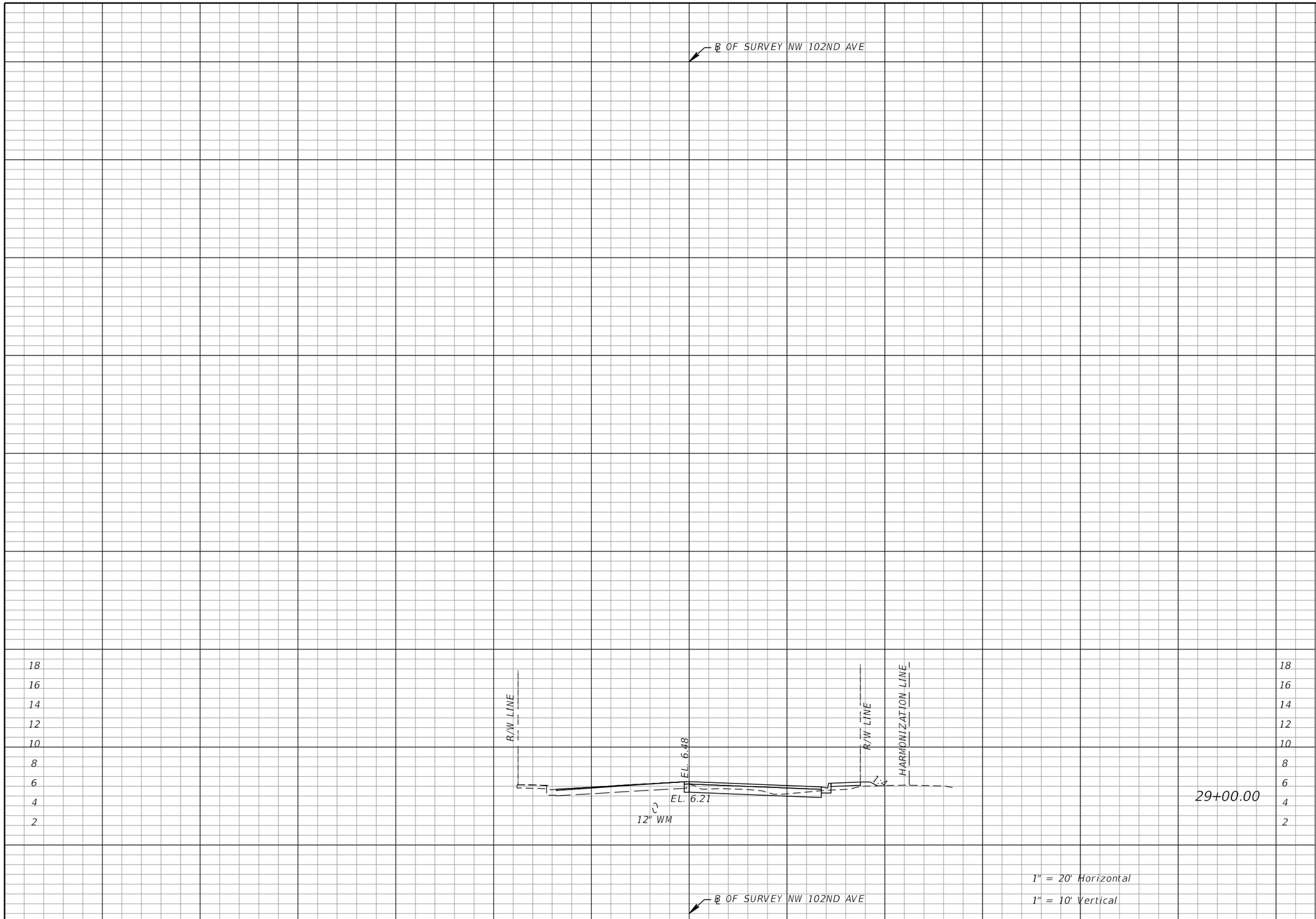


| Regular Exc. | | Embankment | |
|---|---|---|---|
| A | V | A | V |
| 29+00.00 | | | |
| 13.2 | 44.5 | 3.0 | 36.2 |

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|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |


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Coral Gables, Fl 33134


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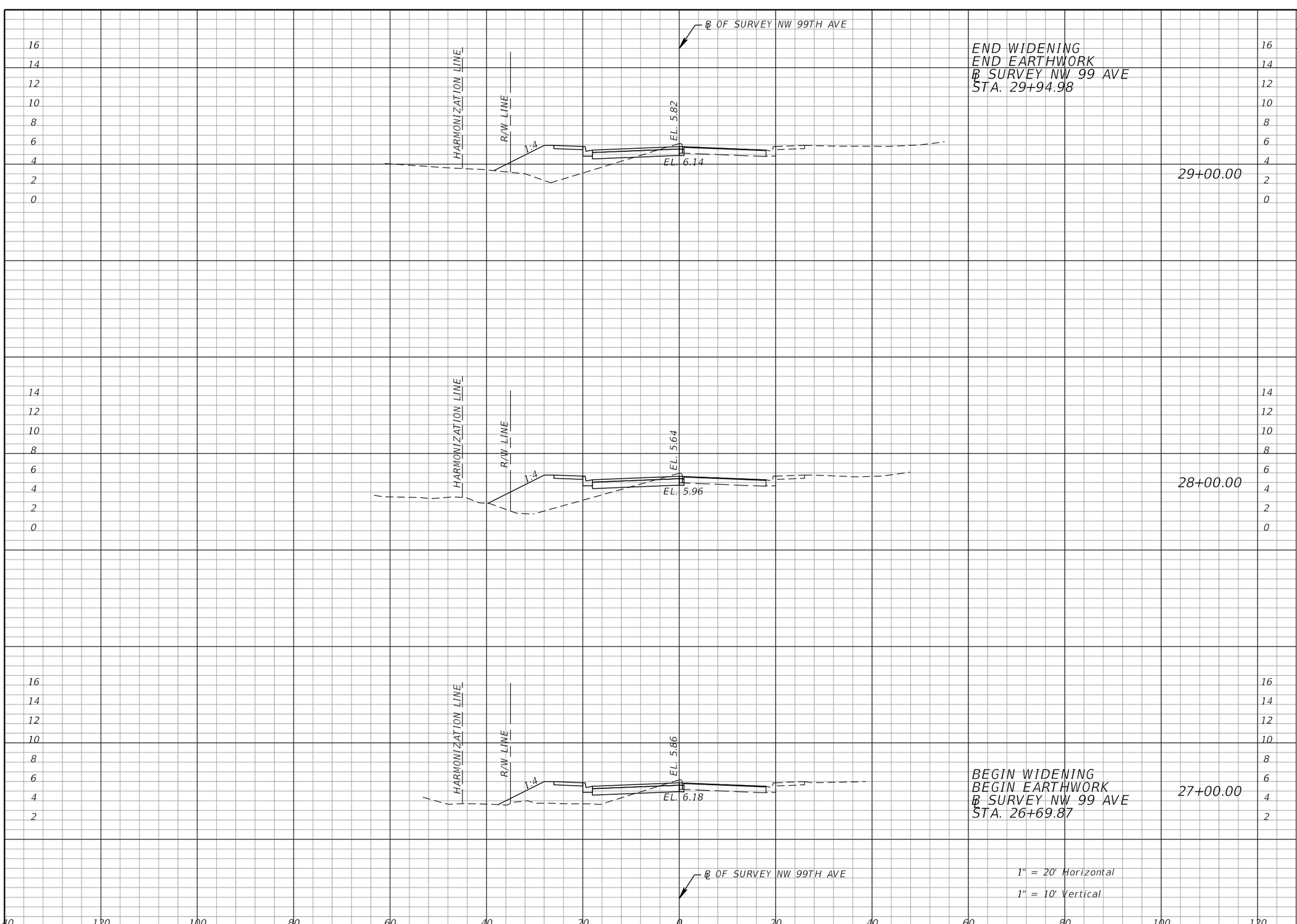
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# ROADWAY CROSS SECTIONS
# NW 102ND AVE

SHEET NO.


Renzo.Marengo 8/7/2023 4:58:57 PM c:\pw\kh1\d0142661\RDXSRD02.dgn




| Regular Exc. | | Embankment | |
|---|---|---|---|
| A | V | A | V |
| 5.7 | 22.4 | 50.9 | 196.4 |
| 6.4 | 22.2 | 55.2 | 163.4 |
| 5.6 | 0.0 | 33.1 | 0.0 |

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|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |


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| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# ROADWAY CROSS SECTIONS
# NW 99TH AVE

SHEET NO.


Renzo.Marengo 8/7/2023 4:59:03 PM c:\pw\kh1\d0142661\RDXSRD03.dgn

STORMWATER POLLUTION PREVENTION PLAN

NARRATIVE DESCRIPTION

THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE DESCRIPTION CONTAINS REFERENCES TO THE CONTRACT DOCUMENTS, THE STATE OF FLORIDA EROSION AND SEDIMENT CONTROL DESIGNER AND REVIEWER MANUAL (E&SC MANUAL), THE FDOT DESIGN STANDARDS, AND OTHER SHEETS OF THESE CONSTRUCTION PLANS. THE COMPLETE SWPPP IS COMPRISED OF SEVERAL ITEMS INCLUDING: THIS NARRATIVE DESCRIPTION, THE DOCUMENTS REFERENCED IN THIS NARRATIVE, THE CONTRACTOR'S APPROVED EROSION CONTROL PLAN (ECP) PREPARED AND SUBMITTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND REPORTS OF INSPECTIONS MADE DURING CONSTRUCTION. ALL OF WHICH ARE COMPLEMENTARY TO THE SIGNED AND CERTIFIED SWPPP IF ONE IS PROVIDED BY THE DEPARTMENT. CONTRACTOR IS REQUIRED TO MAINTAIN COPIES OF THE AFOREMENTIONED ITEMS ON SITE, INCLUDING ALL APPLICABLE PERMITS.

1. SITE DESCRIPTION

A. NATURE OF CONSTRUCTION ACTIVITIES: THE PROJECT CONSISTS OF WIDENING OF A 2-LANE ROADWAY, INCLUDING DRAINAGE AND LIGHTING IMPROVEMENTS AND SIGNING AND PAVEMENT MARKING.

B. SEQUENCE OF MAJOR SOIL DISTURBING ACTIVITIES: THE CONTRACTOR SHALL PROVIDE IN THE ECP A DETAILED SEQUENCE OF CONSTRUCTION FOR ALL CONSTRUCTION ACTIVITIES. EACH CONSTRUCTION PHASE REQUIRES THE INSTALLATION OF PERIMETER CONTROL, AFTER CLEARING AND GRUBBING AS NECESSARY FOR THE INSTALLATION OF THE CONTROLS, PRIOR TO BEGINNING ANY WORK. THE CONTRACTOR SHALL FOLLOW THE SEQUENCE OF MAJOR ACTIVITIES BELOW, UNLESS THE CONTRACTOR PROPOSES A DIFFERENT SEQUENCE THAT IS EQUAL OR BETTER AT CONTROLLING EROSION AND TRAPPING SEDIMENT AND IS APPROVED BY THE ENGINEER.

1) CLEARING AND GRUBBING, EARTHWORK, DRAINAGE IMPROVEMENTS CONSTRUCTION.
2) FINAL GRADING WHERE NECESSARY.

C.AREA ESTIMATES (ACRE)

1) TOTAL SITE AREA: 2.07 A.C.
2) TOTAL AREA OF THE SITE THAT IS EXPECTED TO BE DISTURBED: 2.07 A.C.

D. EXISTING DATA DESCRIBING THE SOIL OR THE QUALITY OF ANY DISCHARGE FROM THE SITE AND AN ESTIMATE OF THE SIZE OF THE DRAINAGE AREA FOR EACH DISCHARGE POINT:

1) RATIONAL RUNOFF COEFFICIENT
A) BEFORE: 0.73
B) DURING: 0.73 TO 0.87
C) AFTER CONSTRUCTION: 0.87

2) EXISTING DATA DESCRIBING THE SOIL OR THE QUALITY OF DISCHARGE FROM THE SITE: ACCORDING TO THE UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE SOIL SURVEY REPORT OF DADE COUNTY AREA, FLORIDA, THE SOIL ENCOUNTERED ON THE PROJECT ARE OF URBAN LAND, WHICH ARE CATEGORIZED AS POORLY SUITED.

3) THE SIZE OF THE DRAINAGE AREA FOR EACH OUTFALL: N/A . THIS PROPOSED ROADWAY HAS NO OUTFALL.

4) THE LOCATION OF EACH OUTFALL IS PROVIDED IN ITEM 1.F. BELOW. N/A . THIS PROJECT HAS NO OUTFALL.

E. SITE MAP: THE ASSOCIATED CONSTRUCTION PLAN SHEETS WILL BE USED AS THE SITE MAP. LOCATIONS OF THE REQUIRED INFORMATION ARE DESCRIBED BELOW.THE SHEET NUMBERS FOR ALL ITEMS DISCUSSED ARE IDENTIFIED ON THE COVER SHEET OF THE CONSTRUCTION PLANS.

1) DRAINAGE PATTERNS AND APPROXIMATE SLOPES ANTICIPATED AFTER MAJOR GRADING ACTIVITIES: THE SLOPES OF THE SITE CAN BE SEEN ON THE CONSTRUCTION PLAN SHEETS.

2) AREAS OF SOIL DISTURBANCE: THE AREAS TO BE DISTURBED ARE INDICATED ON THE CONSTRUCTION PLAN SHEETS. ANY AREAS WHERE PERMANENT FEATURES ARE SHOWN TO BE CONSTRUCTED ABOVE OR BELOW GROUND WILL BE DISTURBED.

3) AN OUTLINE OF AREAS WHICH MAY NOT BE DISTURBED: THESE AREAS OF THE PROJECT OUTSIDE THE CLEARING AND GRUBBING AND CONSTRUCTION ACTIVITIES WHICH COMPRISED OF THOSE THAT ARE NOT SUBJECT TO ANY SOIL DISTURBING ACTIVITIES.

4) THE LOCATION OF MAJOR STRUCTURAL AND NONSTRUCTURAL CONTROLS IDENTIFIED IN THE PLAN:TEMPORARY SEDIMENT CONTROL DEVICES SHALL BE INSTALLED ALL LOCATIONS WHERE DISTURBANCE OF SOLIDS WILL OCCUR. ADDITIONAL MEASURES MAY BE REQUIRED AS NECESSARY WHERE STORMWATER RUNOFF HAS THE POTENTIAL TO REACH SURFACE WATERS OR OFFSITE STORMWATER COLLECTION FACILITIES.

5) THE LOCATION OF AREAS WHERE STABILIZATION PRACTICES ARE EXPECTED TO OCCUR, SURFACE WATERS, WETLANDS AND LOCATIONS WHERE STORMWATER IS DISCHARGED TO A SURFACE WATER OR MS4: AREAS OF PERMANENT STABILIZATION ARE SHOWN ON THE CONSTRUCTION PLAN SHEETS.

F. DISCHARGE POINT(S): N/A. THIS PROJECT HAS NO OUTFALL.

2. CONTROLS

A. EROSION AND SEDIMENT CONTROLS: THE CONTRACTOR SHALL DESCRIBE IN THE ECP THE PROPOSED STABILIZATION AND STRUCTURAL PRACTICES. THE CONTRACTOR MAY CHOOSE TO ACCEPT THE FOLLOWING GUIDELINES OR MODIFY THEM IN THE ECP, SUBJECT TO APPROVAL BY THE ENGINEER. AS WORK PROGRESSES, THE CONTRACTOR SHALL MODIFY THE PLAN TO ADAPT TO SEASONAL VARIATION, CHANGES IN CONSTRUCTION ACTIVITIES, AND THE NEED FOR BETTER MANAGEMENT PRACTICES. FOR EACH CONSTRUCTION PHASE INSTALL PERIMETER CONTROLS AFTER CLEARING AND GRUBBING NECESSARY. FOR INSTALLATION OF CONTROLS BUT BEFORE BEGINNING OTHER WORK FOR THE CONSTRUCTION PHASE. REMOVE PERIMETER CONTROLS ONLY AFTER ALL UPSTREAM AREAS ARE STABILIZED. IN ADDITION :

. FURNISH AND PLACE INLET PROTECTION SYSTEMS TO CONTROL EROSION AND SILTATION.

. INSTALL SOIL TRACKING PREVENTION DEVICES (STPDS) AT ALL COMMON AREAS WHERE CONSTRUCTION VEHICLES WILL BE ENTERING AND EXITING THE CONSTRUCTION SITE.

. SEDIMENT BARRIERS SHALL BE INSTALLED AND AT THE TOE OF SLOPE OF EMBANKMENTS AND AT LOCATIONS AS DESCRIBED IN THE EROSION AND SEDIMENT CONTROL DETAILS AND THE E&SC MANUAL.

. INLET PROTECTION SYSTEMS SHALL BE USED FOR ALL EXISTING AND PROPOSED INLETS SUBJECT TO SEDIMENT RUNOFF.

. CLEARING AND GRUBBING OPERATIONS WILL BE CONTROLLED SO AS TO MINIMIZE UNPROTECTED ERODIBLE AREAS EXPOSED TO WEATHER. AREAS OUTSIDE THE LIMITS OF CONSTRUCTION SHALL NOT BE DISTURBED.

. EXCAVATED MATERIAL SHALL NOT BE DEPOSITED IN LOCATIONS WHERE THE MATERIAL COULD BE WASHED AWAY BY HIGH WATER, RAIN OR STORMWATER RUNOFF. STOCKPILES SHALL BE COVERED OR ENCIRCLE WITH SEDIMENT BARRIERS.

1) STABILIZATION PRACTICES: IN THE ECP, THE CONTRACTOR SHALL DESCRIBE THE STABILIZATION PRACTICES PROPOSED TO CONTROL EROSION. THE CONTRACTOR SHALL INITIATE ALL STABILIZATION MEASURES AS SOON AS PRACTICAL, BUT IN NO CASE MORE THAN 7 DAYS, IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. THE STABILIZATION PRACTICES SHALL INCLUDE AT LEAST THE FOLLOWING, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

A) TEMPORARY: INCLUDES SOD, MULCH, AND ARTIFICIAL COVERINGS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

B) PERMANENT: INCLUDES ASPHALT OR CONCRETE SURFACE, SOD, ROADSIDE, AND SWALES, IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

2) STRUCTURAL PRACTICES: IN THE ECP, THE CONTRACTOR SHALL DESCRIBE THE PROPOSED STRUCTURAL PRACTICES TO CONTROL TRAP SEDIMENT AND OTHERWISE PREVENT THE DISCHARGE OF POLLUTANTS FROM EXPOSED AREAS OF THE SITE. SEDIMENT CONTROLS SHALL BE IN PLACE BEFORE DISTURBING SOIL UPSTREAM OF THE CONTROL. THE STRUCTURAL PRACTICES SHALL INCLUDE AT LEAST THE FOLLOWING, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

A) TEMPORARY: INCLUDES INLET PROTECTION SYSTEMS, SEDIMENT BARRIERS, TURBIDITY BARRIERS AND SOIL TRACKING PREVENTION DEVICES AS PER THE ES&C MANUAL AND THE CONTRACT DOCUMENTS. SEE EROSION AND SEDIMENT CONTROL DETAILS FOR MORE INFORMATION. ALL SEDIMENT CONTROLS SHALL BE IN PLACE PRIOR TO ANY SOIL DISTURBING ACTIVITY.

B) PERMANENT: NO PERMANENT FEATURES FOR EROSION CONTROL WILL BE INSTALLED.

B. PERMANENT STORMWATER MANAGEMENT CONTROLS: STORMWATER RUNOFF WILL BE CONVEYED IN A CLOSE DRAINAGE SYSTEM WITH INLETS AND FRENCH DRAINS.

C. CONTROL FOR OTHER POTENTIAL POLLUTANTS: THE CONTRACTOR SHALL PRACTICE GOOD HOUSEKEEPING BY INSTITUTING A CLEAN, ORDERLY CONSTRUCTION SITE. THE FOLLOWING CONTROLS SHALL BE IMPLEMENTED TO FURTHER REDUCE POLLUTION AT THE PROJECT SITE:

1) WASTE DISPOSAL: IN THE ECP, THE CONTRACTOR SHALL DESCRIBE THE PROPOSED METHODS TO PREVENT THE DISCHARGE OF SOLID MATERIALS, INCLUDING BUILDING MATERIALS, TO WATERS OF THE UNITED STATES. THE PROPOSED METHODS SHALL INCLUDE AT LEAST THE FOLLOWING, UNLESS OTHERWISE APPROVED BY THE ENGINEER:

A) THE CONTRACTOR SHALL DEMONSTRATE THE PROPER DISPOSAL OF ALL CONSTRUCTION WASTE GENERATED WITHIN THE PROJECT LIMITS. WASTE MAY INCLUDE, BUT NOT BE LIMITED TO, VEGETATION FROM CLEARING AND GRUBBING ACTIVITIES, PACKAGING MATERIALS, SCRAP BUILDING MATERIALS, LITTER FROM TRAVELING PUBLIC, SEWAGE FROM SANITARY FACILITIES, HERBICIDES AND PESTICIDES AND THEIR CONTAINERS, AND HYDROCARBON PRODUCTS. CONTRACTOR SHALL DESIGNATE A WASTE COLLECTION AREA ONSITE AND DELINEATE THE AREA ON THE SWPPP SITE MAP.

B) SANITARY/SEPTIC FACILITIES SHALL BE PROVIDED AND MAINTAINED IN A NEAT AND SANITARY CONDITION, FOR THE USE OF THE CONTRACTOR'S EMPLOYEES AS NECESSARY TO COMPLY WITH THE REQUIREMENTS AND REGULATIONS OF THE STATE AND LOCAL BOARDS OF HEALTH. A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR AS REQUIRED BY STATE REGULATIONS WILL COLLECT ALL SANITARY WASTE FROM PORTABLE UNITS.

C) THE CONTRACTOR WILL PROVIDE LITTER CONTROL AND COLLECTION WITHIN THE PROJECT LIMITS DURING CONSTRUCTION ACTIVITIES. CONTRACTOR WILL PROVIDE AN ADEQUATE NUMBER OF LITTER CONTAINERS WITH LIDS AT THE STAGING, STOCKPILE AND FIELD OFFICE AREAS (AS APPLICABLE). WASTE COLLECTION WILL BE SCHEDULED SO THAT CONTAINERS ARE EMPTIED PRIOR TO OVERFLOW. SPILLED LITTER CONTAINERS WILL BE CLEANED UP IMMEDIATELY.

2) OFF-SITE VEHICLE TRACKING & GENERATION OF DUST: IN THE ECP, THE CONTRACTOR SHALL DESCRIBE THE PROPOSED METHODS FOR MINIMIZING OFFSITE VEHICLE TRACKING OF SEDIMENTS AND GENERATING DUST. THE PROPOSED METHODS SHALL INCLUDE AT LEAST THE FOLLOWING, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

A) STABILIZING CONSTRUCTION ENTRANCES AS NECESSARY ACCORDING TO THE E&SC MANUAL AND THE CONTRACT DOCUMENTS.

B) THE CONTRACTOR SHALL TAKE MEASURES TO INSURE THE CLEANUP OF SEDIMENTS THAT HAVE BEEN TRACKED BY VEHICLES OR HAVE BEEN TRANSPORTED BY WIND OR STORMWATER ABOUT THE SITE OR ONTO NEARBY ROADWAYS.

C) REMOVING EXCESS DIRT FROM ROADS DAILY.

D) USING ROADWAY SWEEPERS DURING DUST GENERATING ACTIVITIES SUCH AS EXCAVATION AND MILLING OPERATIONS.

E) STABILIZED CONSTRUCTION ENTRANCES AND CONSTRUCTION ROADS, IF APPROPRIATE, SHALL BE IMPLEMENTED IN ORDER TO REDUCE OFF-SITE TRACKING.

F) LOADED HAUL TRUCKS SHALL BE COVERED WITH TARPAULIN. EXCESS DIRT ON THE ROAD SHALL BE REMOVED DAILY.

3) STATE OR LOCAL REGULATIONS: IN THE ECP, THE CONTRACTOR SHALL DESCRIBE THE PROPOSED PROCEDURES TO COMPLY WITH APPLICABLE STATE AND LOCAL REGULATIONS FOR WASTE DISPOSAL, AND SANITARY SEWER OR SEPTIC SYSTEMS.

4) APPLICATION OF FERTILIZER AND PESTICIDES

A) THE APPLICATION AND HANDLING OF HERBICIDES AND PESTICIDES SHALL BE IN COMPLIANCE WITH THE MANUFACTURE RECOMMENDED METHOD AND IN ACCORDANCE WITH FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AS MODIFIED BY THE CONTRACT DOCUMENTS.

B) HERBICIDES AND PESTICIDES SHALL BE STORED ONSITE IN THEIR ORIGINAL CONTAINERS WITH PRODUCT LABEL INTACT.

5) TOXIC SUBSTANCES AND MATERIALS

A) IN THE ECP, THE CONTRACTOR SHALL PROVIDE A LIST OF TOXIC SUBSTANCES AND MATERIALS THAT ARE LIKELY TO BE USED ON THE JOB AND PROVIDE A PLAN ADDRESSING THE GENERATION, APPLICATION, MIGRATION, STORAGE, AND DISPOSAL OF THESE SUBSTANCES.

B) CONTRACTOR SHALL PROVIDE EQUIPMENT NECESSARY TO CONTAIN AND CLEAN UP SPILLS OF HAZARDOUS MATERIALS, INCLUDING PETROLEUM PRODUCTS. SPILLS SHALL BE CONTAINED AND CLEANED UP IMMEDIATELY AFTER THEY OCCUR. SPILLED MATERIAL AND THE EQUIPMENT USED TO CLEAN UP THE SPILL SHALL NOT COME IN CONTACT WITH SURFACE WATERS OR BE INTRODUCED INTO STORMWATER. DISPOSAL OF SURPLUS PRODUCT WILL BE DONE ACCORDING TO MANUFACTURER RECOMMENDED METHOD.

C) CONTRACTOR SHALL PROVIDE A PROJECT SPECIFIC HAZARDOUS MATERIALS SPILL CONTROL PLAN IN ORDER TO ADDRESS THE HANDLING OF HYDROCARBON AND HAZARDOUS MATERIALS.

D) PETROLEUM PRODUCTS SHALL BE STORED IN COVERED AREAS WITH SECONDARY CONTAINMENT SURROUNDING CONTAINER.

E) TOXIC/HAZARDOUS MATERIALS EXPOSED DURING CONSTRUCTION ACTIVITIES SHALL BE HANDLED PER THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AS MODIFIED BY THE CONTRACT DOCUMENTS.

D. APPROVED STATE AND LOCAL PLANS AND PERMITS

3. MAINTENANCE: IN THE ECP, THE CONTRACTOR SHALL PROVIDE A PLAN FOR MAINTAINING ALL EROSION AND SEDIMENT CONTROLS THROUGHOUT CONSTRUCTION. THE MAINTENANCE PLAN SHALL AT A MINIMUM, COMPLY WITH THE FOLLOWING:

A. SEDIMENT BARRIERS: TWELVE (12) MONTHS, OR AS REQUIRED, REPLACEMENT INTERVAL IN ACCORDANCE WITH CONTRACT'S SPECIFICATIONS.

B. INLET PROTECTION SYSTEMS AT INLETS-CHECK AFTER RAINFALL EVENTS. CLEAN IF CLOGGING OCCURS.

C. THE MAINTENANCE OF THESE DEVICES SHALL OCCUR UNTIL THE ENGINEER HAS DEEMED AN AREA PERMANENTLY STABILIZED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE EROSION AND SEDIMENT CONTROL DEVICES ONCE THEY HAVE SERVED THEIR PURPOSE.

4. INSPECTION

A. THE CONTRACTOR SHALL BE REQUIRED TO CONDUCT DAILY VISUAL INSPECTIONS OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES ALONG THE PROJECT CORRIDOR. THE CONTRACTOR SHALL MAINTAIN, REPAIR AND/OR REPLACE THESE ITEMS AS NECESSARY.

B. THE ENGINEER SHALL HAVE AN INSPECTOR REVIEW THE PROJECT'S TEMPORARY AND PERMANENT EROSION CONTROL MEASURES FOR THE ITEMS LISTED BELOW AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND/OR WITHIN 24 HOURS OF THE END OF A STORM THAT IS 0.5 INCHES OR GREATER. A WRITTEN INSPECTION REPORT IS REQUIRED EVERY SEVEN CALENDAR DAYS OR WITHIN 24 HOURS OF THE END OF A STORM THAT DEPOSITS 0.5 INCHES OF RAIN OR GREATER.

1) OUTFALLS INTO THE WATERS OF THE UNITED STATES

2) POINTS OF DISCHARGE TO MUNICIPAL SEPARATED STORM SEWER SYSTEMS

3) DISTURBED AREAS OF THE SITE THAT HAVE NOT BEEN STABILIZED

4) AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION

5) STRUCTURAL CONTROLS

6) STORMWATER MANAGEMENT SYSTEMS

7) LOCATIONS WHERE VEHICLES ENTER OR EXIT THIS SITE

8) CHECK THAT THE APPROVED OR REVISED EROSION CONTROL PLAN IS FOLLOWED

9) WHERE SITES HAVE BEEN STABILIZED, INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH.

C. THE CONTRACTOR SHALL INITIATE REPAIRS WITHIN 24 HOURS OF INSPECTIONS THAT INDICATE ITEMS ARE NOT IN GOOD WORKING ORDER.

D. IF INSPECTIONS INDICATE THAT THE INSTALLED STABILIZATION AND STRUCTURAL PRACTICES ARE NOT SUFFICIENT TO MINIMIZE EROSION, RETAIN SEDIMENT, AND PREVENT DISCHARGING POLLUTANTS, THE CONTRACTOR SHALL PROVIDE ADDITIONAL MEASURES, AS APPROVED BY THE ENGINEER.

5. NON-STORMWATER DISCHARGES

A. IN THE ECP, THE CONTRACTOR SHALL IDENTIFY ALL ANTICIPATED NON-STORMWATER DISCHARGES (EXCEPT FLOWS FROM FIRE FIGHTING ACTIVITIES). THE CONTRACTOR SHALL DESCRIBE THE PROPOSED MEASURES TO PREVENT POLLUTION FROM THESE NON-STORMWATER DISCHARGES.

B. IF CONTAMINATED SOIL OR GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR IS TO CEASE OPERATIONS IN THAT AREA. THE CONTRACTOR SHALL CONTACT THE MIAMI-DADE COUNTY REGULATORY AND ECONOMIC RESOURCES DEPARTMENT (D.R.E.R.) COMPLIANCE DESK, AT (305) 372-6955.



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Kimley-Horn and Associates, Inc.
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CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# STORMWATER POLLUTION PREVENTION PLAN

SHEET NO.

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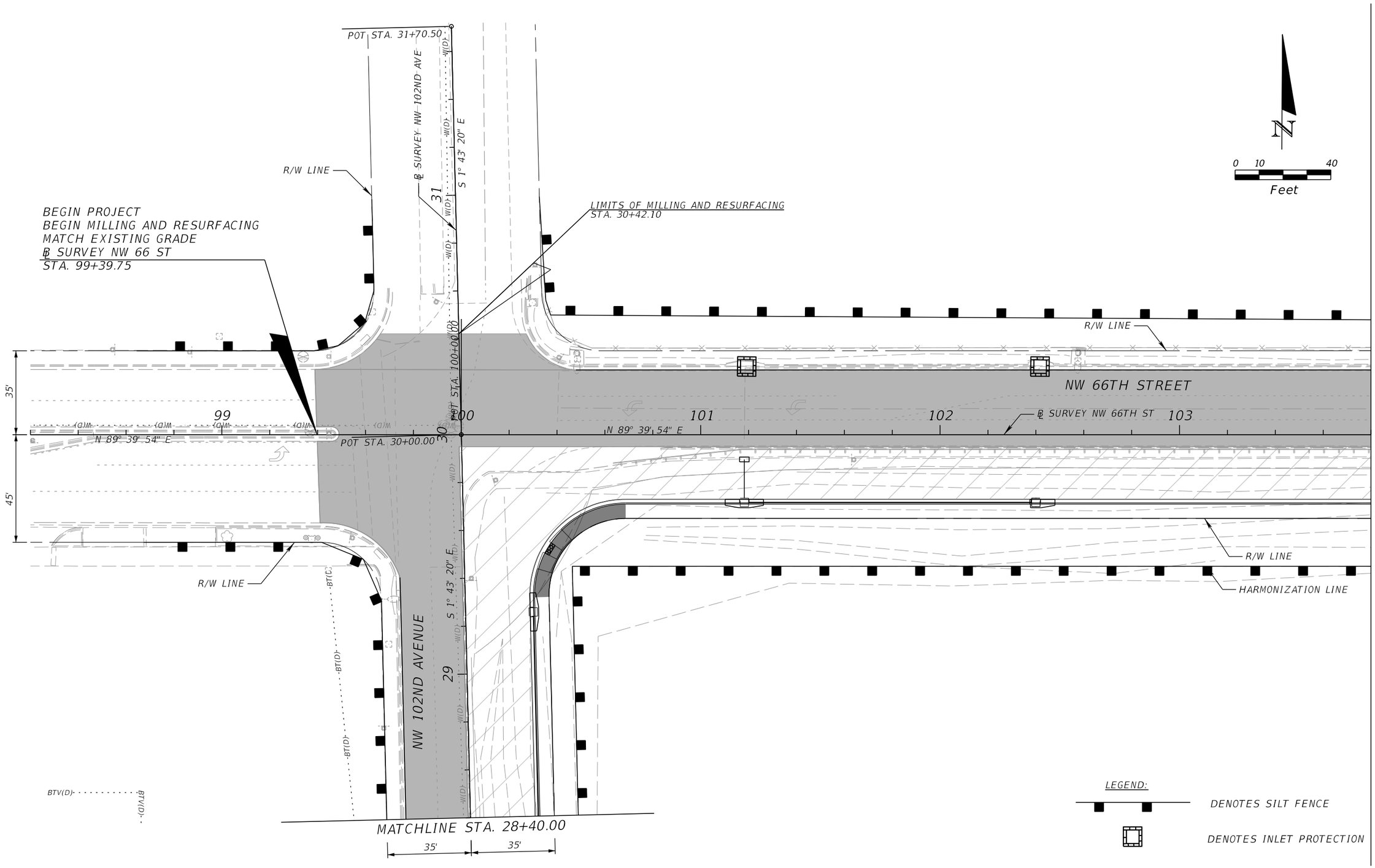


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# STORMWATER POLLUTION PREVENTION PLAN

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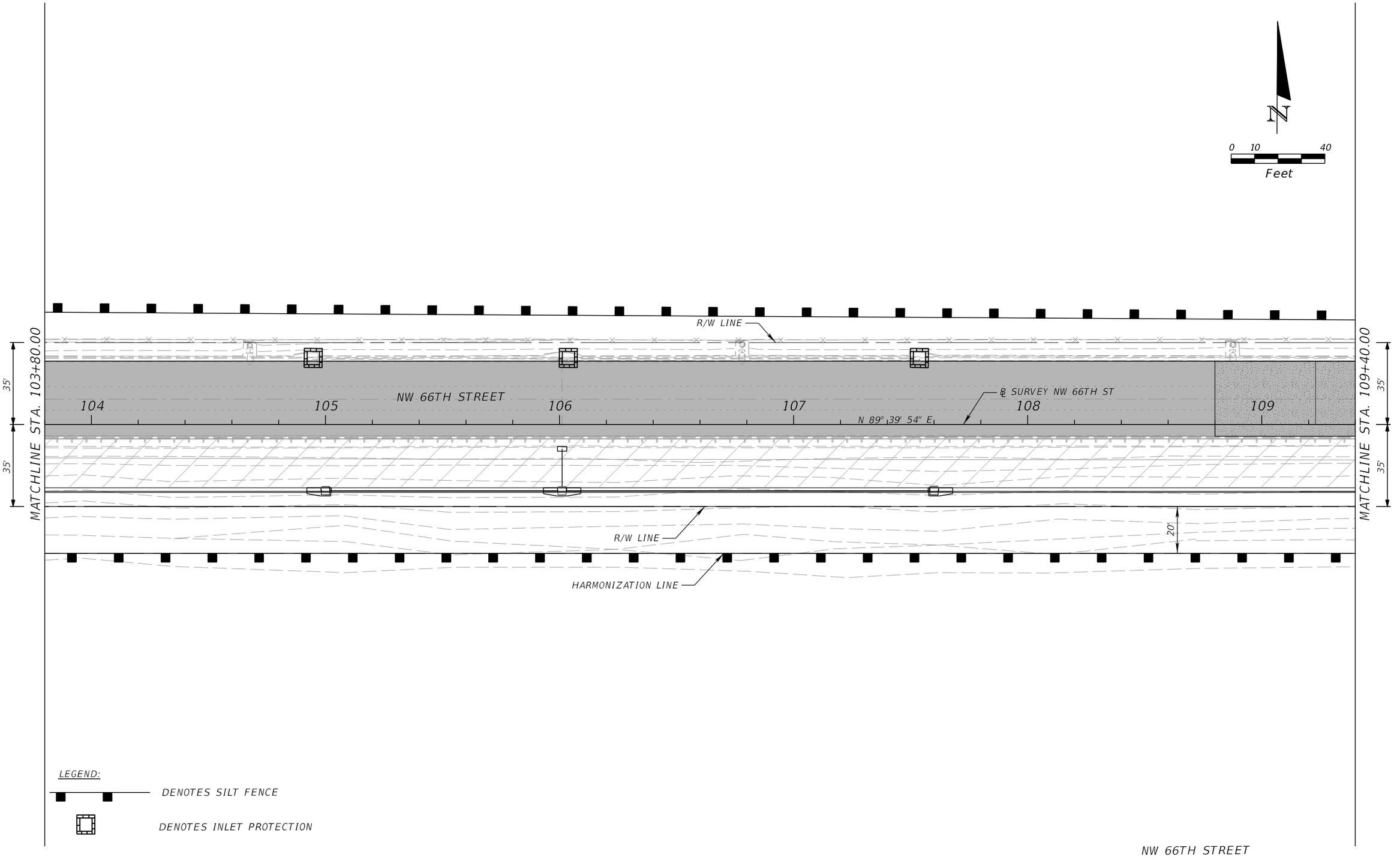


LEGEND:

DENOTES SILT FENCE

DENOTES INLET PROTECTION

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# STORMWATER POLLUTION PREVENTION PLAN

SHEET NO.


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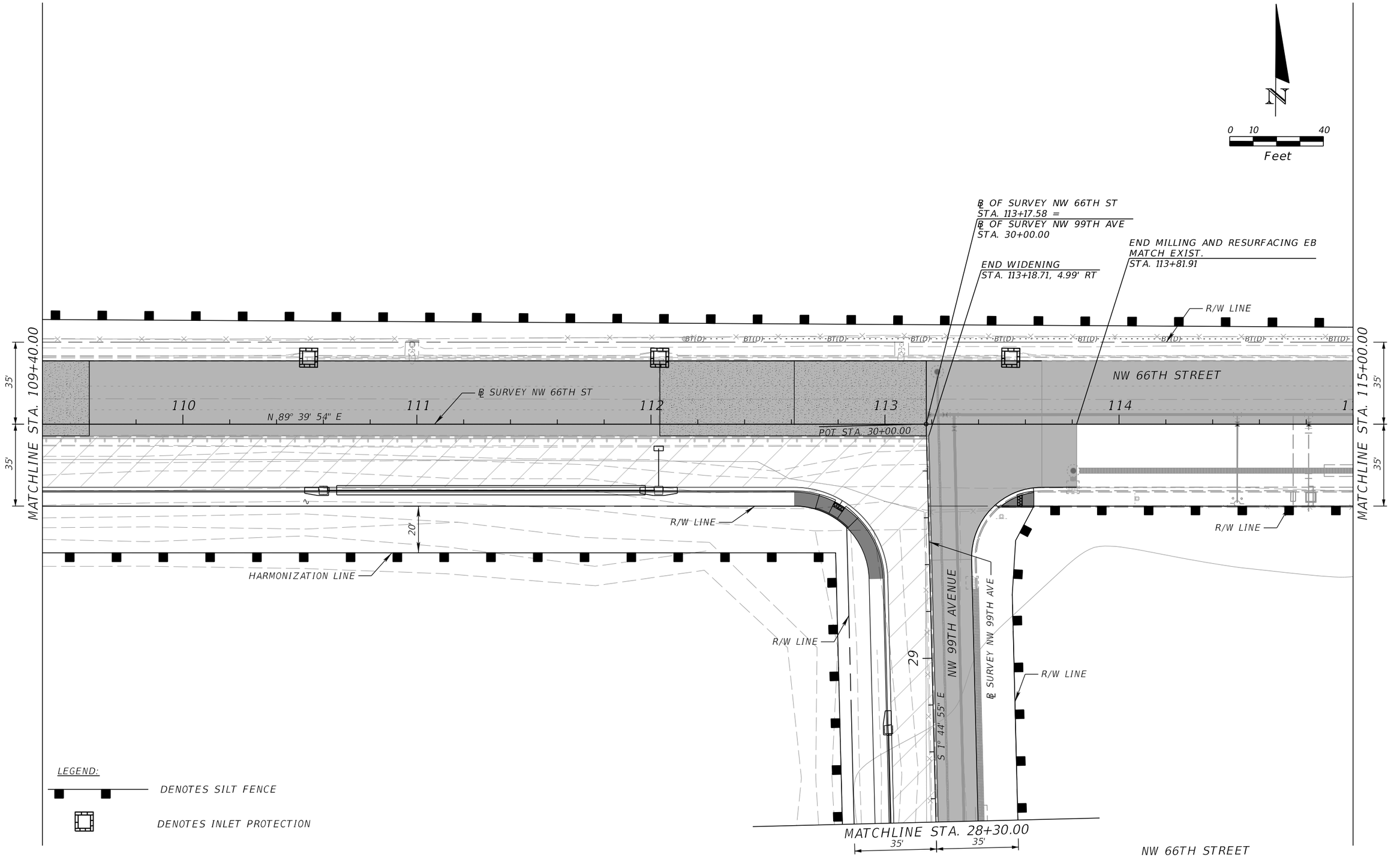


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# STORMWATER POLLUTION PREVENTION PLAN

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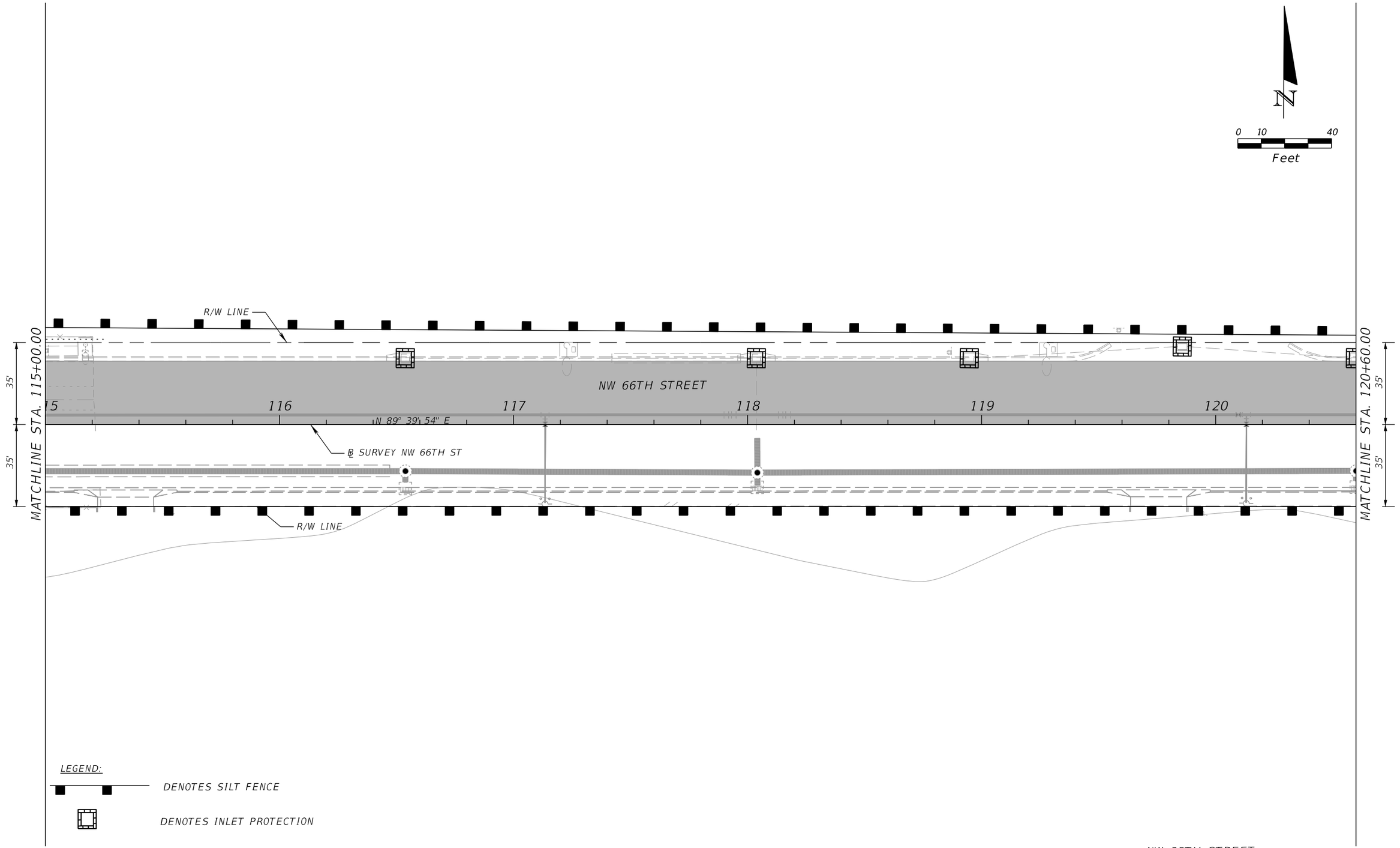


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# STORMWATER POLLUTION PREVENTION PLAN

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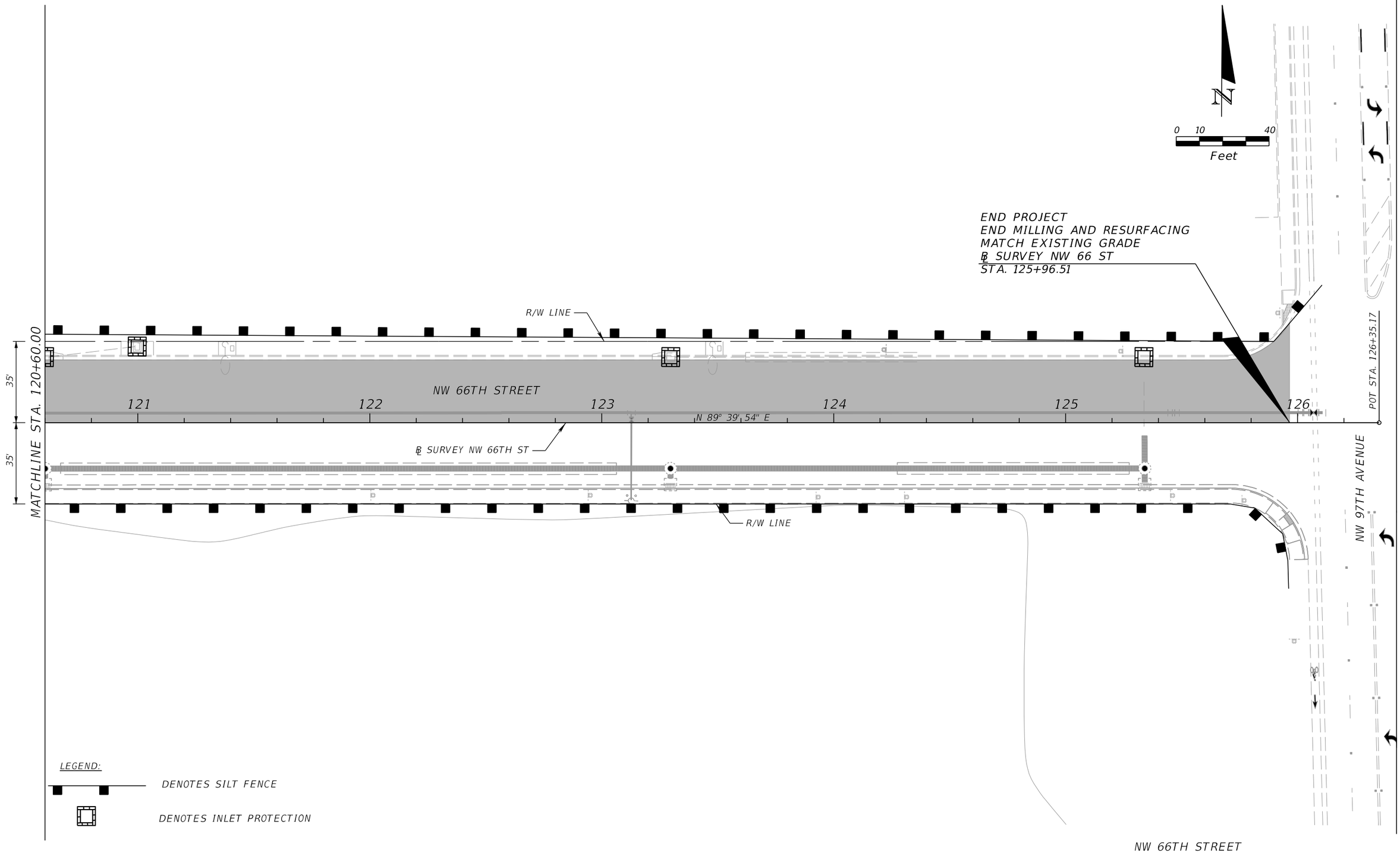


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# STORMWATER POLLUTION PREVENTION PLAN

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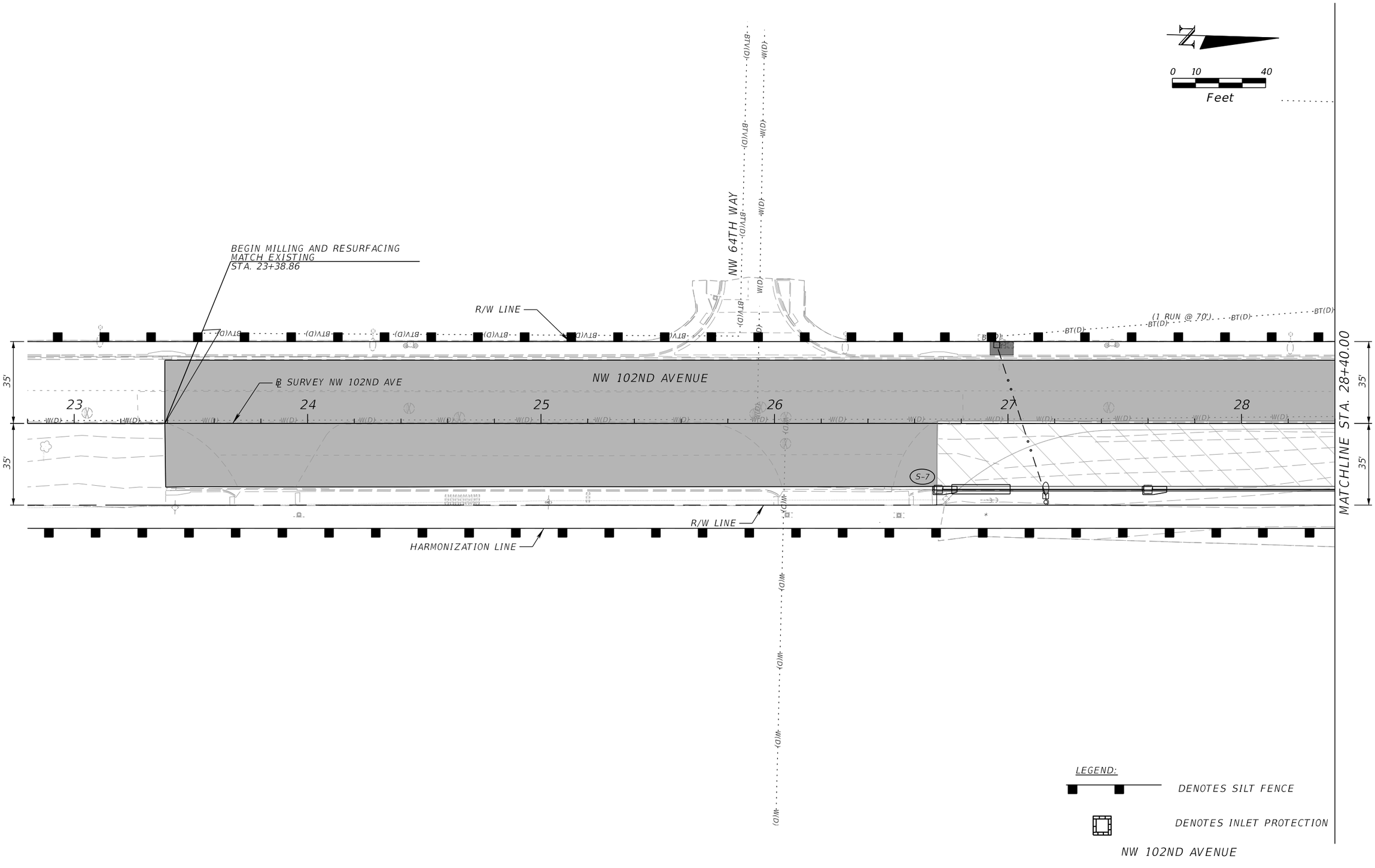


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# STORMWATER POLLUTION PREVENTION PLAN

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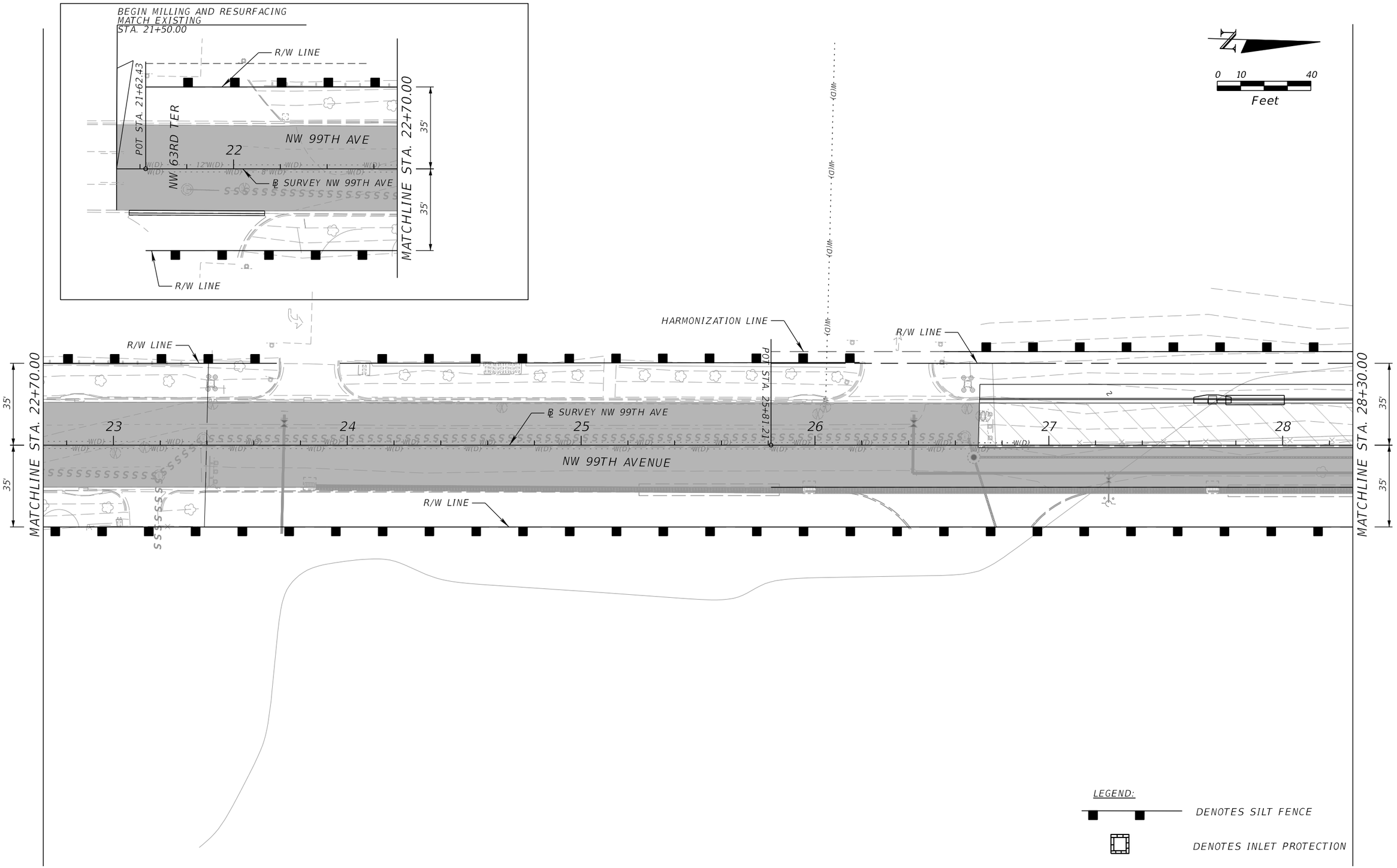


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# STORMWATER POLLUTION PREVENTION PLAN

SHEET NO.


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# TEMPORARY TRAFFIC CONTROL NOTES

## GENERAL NOTES

1. THE CONTRACTOR SHALL DEVELOP MAINTENANCE OF TRAFFIC PLANS OF HIS OWN IN ACCORDANCE WITH THE PROJECT PLANS, THE MIAMI-DADE COUNTY PUBLIC WORKS MANUAL AS PERTAINS TO MAINTENANCE OF TRAFFIC, THE FLORIDA DOT DESIGN STANDARDS (102 SERIES), THE FDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AS MINIMUM CRITERIA AND THE LATEST REVISIONS OF AFORE MENTIONED MANUALS.
2. THE CONTRACTOR'S MAINTENANCE OF TRAFFIC PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO START OF CONSTRUCTION. THE PLANS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA.
3. CONTRACTOR SHALL PROVIDE THE CITY OF DORAL AND ADJACENT PROPERTY OWNERS WRITTEN NOTICE 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR SHALL IMMEDIATELY REPAIR ALL POTHOLES THAT DEVELOP WITHIN THE PROJECT LIMITS AND WILL MAINTAIN A SUPPLY OF COLD MIX ON THE PROJECT SITE TO EXPEDITE THOSE REPAIRS. COST OF REPAIR TO BE INCLUDED IN PAY ITEM 102-1, MAINTENANCE OF TRAFFIC.
5. NOTIFICATION OF LANE CLOSURES OR TEMPORARY DETOURS SHALL BE ACCOMPLISHED 14 WORKING DAYS PRIOR TO CLOSURE OR DETOUR BY COORDINATING WITH MIAMI-DADE COUNTY PUBLIC WORKS DEPARTMENT, MIAMI-DADE COUNTY TRAFFIC OPERATIONS, AND THE CITY OF DORAL.
6. LANE CLOSURES SHALL OCCUR ONLY DURING NON-PEAK HOURS ON NON-EVENT WEEKDAYS.
7. THE CONTRACTOR SHALL NOTIFY LAW ENFORCEMENT AND FIRE PROTECTION SERVICES TWENTY-FOUR (24) HOURS IN ADVANCE OF A DETOUR IN ACCORDANCE WITH SECTION 336.07 OF THE FLORIDA STATUTES.
8. AT THE DISCRETION OF THE ENGINEER, IF A LANE CLOSURE CAUSES EXTENDED CONGESTION OR DELAY, THE CONTRACTOR SHALL BE DIRECTED TO REOPEN THE CLOSED LANE(S) UNTIL SUCH TIME THAT THE TRAFFIC FLOW HAS RETURNED TO AN ACCEPTABLE LEVEL.
9. THE TRAFFIC AND TRAVEL WAYS SHALL NOT BE ALTERED BY THE CONTRACTOR TO CREATE A WORK ZONE UNTIL ALL LABOR AND MATERIAL ARE AVAILABLE FOR THE CONSTRUCTION IN THAT AREA. NO INTERRUPTION TO TRAFFIC IS PERMITTED FROM MONDAY-FRIDAY 7-9 A.M. AND 4-6 P.M. OR ON WEEKENDS AND HOLIDAYS, UNLESS PREVIOUSLY APPROVED BY THE CITY.
10. CONTRACTOR SHALL MAINTAIN ACCESS TO PRIVATE PROPERTY DURING ALL PHASES OF CONSTRUCTION. LOCAL RESIDENTS WITHIN THE AREA OF CONSTRUCTION SHALL BE GIVEN ACCESS TO THEIR PROPERTY DURING ALL PHASES OF CONSTRUCTION. LOCAL RESIDENTS INCLUDE ALL COMMERCIAL ESTABLISHMENTS AND BUSINESSES.
11. THE CONTRACTOR SHALL COVER WORK ZONE SIGNS WHEN CONDITIONS NO LONGER WARRANT THEIR USE. COST OF COVERING AND UNCOVERING THE SIGNS SHALL BE INCLUDED IN PAY ITEM 102-1, MAINTENANCE OF TRAFFIC.
12. CONTRACTOR SHALL REMOVE, RELOCATE, OR COVER ANY EXISTING OR PROPOSED SIGNS THAT CONFLICT WITH THE TEMPORARY TRAFFIC CONTROL PLANS. WHEN THE CONFLICT NO LONGER EXISTS, THE CONTRACTOR SHALL RESTORE THE SIGNS TO THEIR ORIGINAL POSITION. COST OF TEMPORARILY REMOVING, RELOCATING, COVERING, AND RESTORING THE SIGNS SHALL BE INCLUDED IN PAY ITEM 102-1, MAINTENANCE OF TRAFFIC.
13. EACH EXISTING STREET NAME AND TRAFFIC SIGN AFFECTED BY CONSTRUCTION SHALL BE RELOCATED AND MAINTAINED IN AN APPROPRIATE LOCATION FOR THE DURATION OF THE PROJECT. WHEN NO LONGER AFFECTED BY CONSTRUCTION, THESE SIGNS SHALL BE RESTORED IN THEIR ORIGINAL POSITION. COST OF TEMPORARILY RELOCATING AND RESTORING THE SIGNS SHALL BE INCLUDED IN PAY ITEM 102-1, MAINTENANCE OF TRAFFIC.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMMEDIATE REMOVAL OF STORM WATER FROM ROADWAYS UTILIZED FOR MAINTAINING TRAFFIC IN A MANNER APPROVED BY THE ENGINEER. COST FOR REMOVING THE WATER SHALL BE INCLUDED IN PAY ITEM 102-1, MAINTENANCE OF TRAFFIC.
15. FOR DROP-OFF, THE CONTRACTOR'S ATTENTION IS DIRECTED TO FDOT STANDARD INDEX NO. 102-600, SHEET 8.
16. DURING ASPHALT CONSTRUCTION OPERATIONS, NO MORE THAN 1 1/4" DROP-OFF BETWEEN ADJACENT TRAVEL LANES OR AT TRANSVERSE JOINTS SHALL BE ALLOWED WHEN LANES ARE OPEN TO TRAFFIC. WHERE DROP OFF CONDITIONS EXIST, THE SIGNING FOR UNEVEN LANES SHALL BE INSTALLED FOR THE DURATION OF THE CONDITION (W8-11).
17. THE CONTRACTOR IS TO PLACE TEMPORARY OR REMOVABLE PAVEMENT MARKINGS BETWEEN EACH LAYER OF PAVEMENT, AND IS RESPONSIBLE FOR THE TEMPORARY RELOCATION OF STOP BARS & STOP SIGNS AS APPLICABLE. PAVEMENT MARKINGS AND BARRICADES PLACEMENT SHALL BE APPROPRIATELY COORDINATED.
18. THE CONTRACTOR SHALL REMOVE ANY EXISTING OR TEMPORARY PAVEMENT MARKINGS THAT CONFLICT WITH THE TRAFFIC CONTROL PLANS. GRINDING OR MILLING SHALL ONLY BE PERMITTED IN NON-TRAFFIC AREAS.
19. COST OF REMOVAL OF TEMPORARY PAVEMENT MARKINGS, REGARDLESS OF METHOD, IS INCLUDED IN THE RELATED PAY ITEMS. USE OF BLACK PAINT TO COVER EXISTING AND/OR TEMPORARY PAVEMENT MARKINGS IS PROHIBITED.
20. AT ALL INTERSECTING STREETS, NO LESS THAN ONE "ROAD CONSTRUCTION AHEAD" SIGN AND ONE "END CONSTRUCTION" SIGN MUST BE INSTALLED.
21. ADJACENT INTERSECTIONS SHALL NOT BE CONSTRUCTED SIMULTANEOUSLY UNLESS DIRECTED BY THE ENGINEER. TRAFFIC SHALL BE MAINTAINED ON A PAVED, DUST-FREE SURFACE AT ALL TIMES.
22. ALL LANES OPEN TO TRAFFIC SHALL BE A MINIMUM OF 10' IN WIDTH.
23. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE EROSION CONTROL MEASURES TO PREVENT CLOG OF PROPOSED DRAINAGE STRUCTURES AND SEDIMENT INTRUSION ON WATERWAYS DURING CONSTRUCTION. THESE MEASURES SHALL BE APPROVED BY THE ENGINEER AND CONFORM WITH CURRENT EDITION OF THE STATE OF FLORIDA EROSION AND SEDIMENT CONTROL DESIGNER AND REVIEWER MANUAL.
24. CONTRACTOR MUST MAINTAIN DRAINAGE AT ALL TIMES. THE EXISTING DRAINAGE SYSTEM SHALL BE KEPT OPERATIONAL OR TEMPORARY DRAINAGE PROVIDED WHILE THE PROPOSED DRAINAGE SYSTEM IS BEING CONSTRUCTED. THE CONTRACTOR SHALL PROVIDE THE NECESSARY TEMPORARY DRAINAGE AS APPROVED BY THE ENGINEER. ALL COSTS SHALL BE INCLUDED IN THE PAY ITEM 102-1, MAINTENANCE OF TRAFFIC.
25. ALL AREAS DISTURBED BY CONSTRUCTION ARE TO BE TEMPORARILY SODDED FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. COST ASSOCIATED WITH FURNISHING, LAYING, AND REMOVING TEMPORARY SOD TO BE INCLUDED IN ITEM 102-1 MAINTENANCE OF TRAFFIC.
TEMPORARY SOD IS TO BE REMOVED WHEN APPROPRIATE FOR PLACEMENT OF PERMANENT SOD.
26. THE CONTRACTOR SHALL FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) AS DIRECTED BY THE ENGINEER. MESSAGES FOR THE PCMS SHALL BE AS DIRECTED BY THE ENGINEER. THE PCMS SHALL BE IN PLACE ONE WEEK BEFORE THE START OF ANY WORK ITEMS AFFECTING THE EXISTING VEHICULAR AND PEDESTRIAN TRAFFIC. PCMS INSTALLATION, OPERATION, AND REMOVAL TO BE INCLUDED IN THE PAY ITEM 102-1, MAINTENANCE OF TRAFFIC.
27. THE CONTRACTOR MUST PROVIDE FLASHING ARROW BOARD FOR ANY LANE THAT IS CLOSED OR DIVERTED.
28. THE CONTRACTOR SHALL PROVIDE TWO (2) PROJECT INFORMATION SIGNS PER THE CITY OF DORAL REQUIREMENTS. PROJECT INFORMATION SIGNS SHALL BE PRESENT AT ALL TIMES DURING CONSTRUCTION. ALL ASSOCIATED COSTS INCLUDING MAINTENANCE OF THE SIGNS SHALL BE INCLUDED IN PAY ITEM 102-1, MAINTENANCE OF TRAFFIC.

## PHASE I

1. PLACE ALL TEMPORARY TRAFFIC CONTROL DEVICES, TEMPORARY SIGNS, CHANNELIZING DEVICES AND MARKINGS IN ACCORDANCE WITH STANDARDS 102-600 SERIES.
2. CONSTRUCT PROPOSED ROADWAY WIDENING, DRAINAGE IMPROVEMENTS, SIDEWALK CONSTRUCTION AND GRADING AS PER CONTRACT PLANS.
3. CONTRACTOR SHALL NOT PERFORM SIDEWALK AND RAMP WORK ON BOTH SIDES OF THE ROAD WITHIN THE SAME BLOCK.
4. MAINTAIN AT LEAST ONE LANE OPEN IN EACH DIRECTION AT ALL TIMES.
5. DO NOT PLACE FRICTION COURSE IN THIS PHASE.

## PHASE II

1. PLACE OR ADJUST ALL TEMPORARY TRAFFIC CONTROLS DEVICES, TEMPORARY SIGNS, CHANNELIZING DEVICES AND MARKINGS AS REQUIRED FOR FINAL MILLING AND RESURFACING OPERATIONS,
2. INSTALL FRICTION COURSE AND FINAL PAVEMENT MARKINGS.

| REVISIONS | | | |
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| DATE | DESCRIPTION | DATE | DESCRIPTION |
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CITY OF DORAL

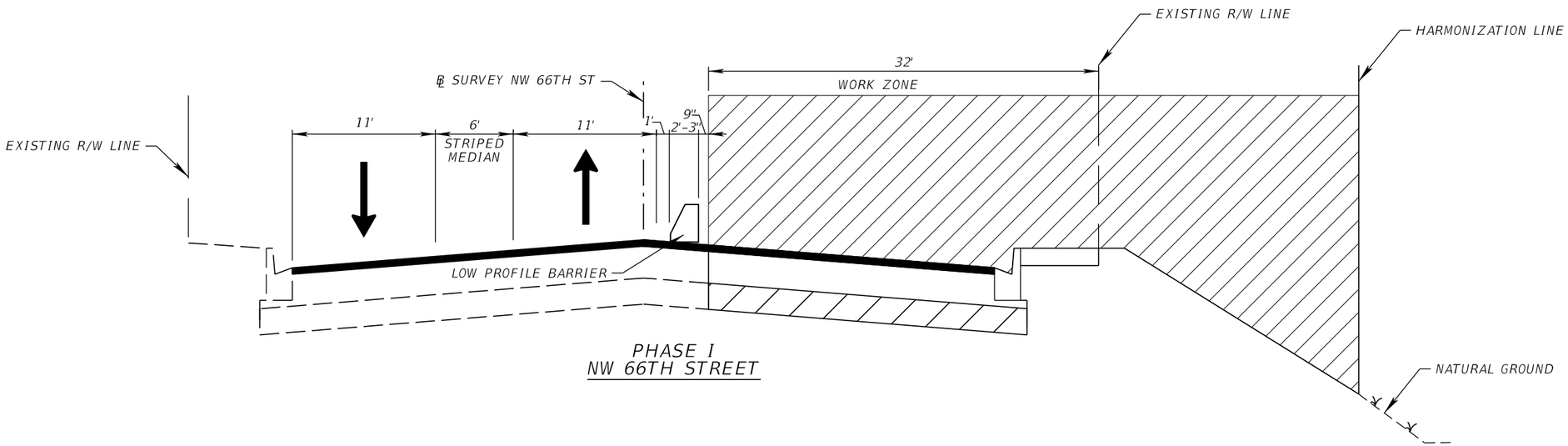
| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

TEMPORARY TRAFFIC CONTROL PLAN

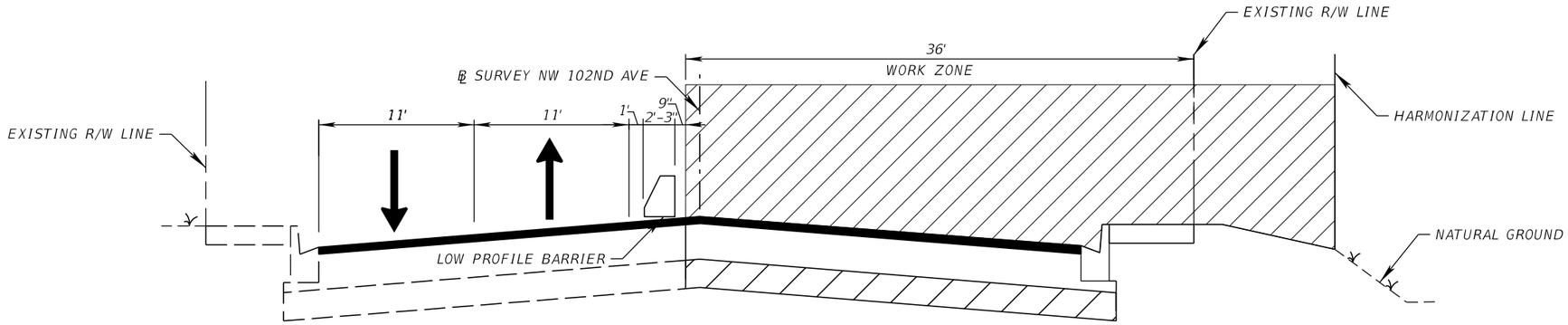
SHEET NO.



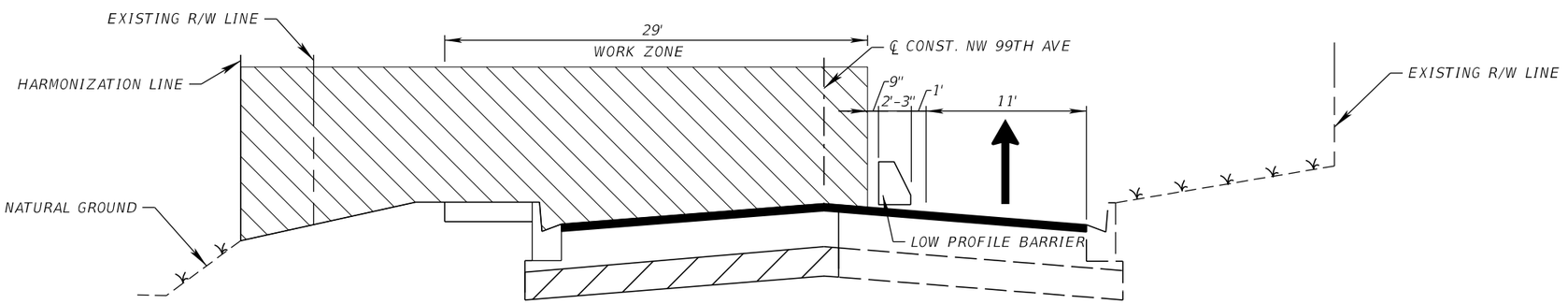
Renzo.Marengo 8/7/2023 5:00:58 PM c:\pw\kh1\d0142661\TCTYRD01.DGN




PHASE I
NW 66TH STREET




PHASE I
NW 102ND AVENUE




PHASE I
NW 99TH AVENUE

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CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# TEMPORARY TRAFFIC CONTROL PLAN

SHEET NO.



Renzo.Marengo 8/7/2023 5:01:05 PM c:\pw\kh1\d0142661\TCTYRD03.DGN

POT STA. 31+70.50

R/W LINE

℄ SURVEY NW 102ND AVE

BEGIN SIGNING AND PAVEMENT MARKINGS
MATCH EXISTING MARKINGS
℄ SURVEY NW 66 ST
STA. 99+39.75

LIMITS OF SIGNING AND PAVEMENT MARKINGS
MATCH EXISTING PAVEMENT MARKINGS
STA. 30+42.10

℄ OF CONSTRUCTION NW 66TH ST
STA. 100+00.00 =
℄ OF CONSTRUCTION NW 102ND AVE
STA. 30+00.00

TO BE REMOVED
700-1-60
1 AS

R1-1
36" X 36"
D3 STREET NAME
STA. +52.6
700-1-12
1 AS

R3-17
24" X 18"
R3-17BP
24" X 8"
STA. +40.0
700-1-11
1 AS

R/W LINE

6" WHITE (2'-4' SKIP)

18' YELLOW (TYP.)

24" WHITE (TYP.)

℄ SURVEY NW 66TH ST

NW 66TH STREET

+01.2
22.0' LT

+76.2
11.4' LT

+26.2
0.4' LT

+06.2
11.0' LT

+44.1

+55.4
3.5' LT

+66.6
31.9' LT

6" WHITE
(2'-4' SKIP)

STA. 30+00.00

+51.2
0.4' RT

+55.4
2.8' RT

6" DBL YELLOW WITH YELLOW/
YELLOW RPMS @ 8" O.C.

6" WHITE WITH WHITE/RED
RPMS @ 20' O.C.(TYP.)

6" WHITE (2'-4' SKIP)

6" WHITE (10'-30' SKIP) WITH
WHITE/RED RPMS @ 40' O.C.

6" WHITE (TYP.)

+71.8
42.2' RT

+38.6
40.6' RT

+96.0
57.8' RT

12" WHITE (TYP.)

R/W LINE

TO BE REMOVED
700-3-601
1 EA

12" WHITE WITH WHITE/RED
RPMS @ 20' O.C.

W4-2
36" X 36"
STA. 29+07.3
700-1-11
1 AS

6" WHITE (TYP.) WITH WHITE/RED
RPMS @ 20' O.C.

6" DBL YELLOW WITH YELLOW/
YELLOW RPMS @ 40' O.C.

MATCHLINE STA. 28+40.00

NW 102ND AVENUE

TO BE REMOVED
700-1-60
1 AS

R2-1
30" X 36"
STA. +61.1
700-1-11
1 AS

R3-7
36" X 36"
STA. +80.0
700-1-11
1 AS

TO BE REMOVED
700-1-60
1 AS

R3-17
24" X 18"
R3-17AP
24" X 8"
STA. +00.0
700-1-11
1 AS

TO BE REMOVED
700-1-60
1 AS

R2-1
30" X 36"
STA. +74.3
700-1-11
1 AS

6" DBL YELLOW WITH YELLOW/
YELLOW RPMS @ 10' O.C.

MATCHLINE STA. 103+80.00

NW 66TH ST

0 10 40
Feet

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CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# SIGNING AND PAVEMENT MARKING PLAN

SHEET NO.


Renzo.Marengo 8/7/2023 5:01:17 PM c:\pw\kh1\d0146887\PLANSP01.dgn

N

0 10 40

Feet

R/W LINE

18' YELLOW (TYP.)

℄ SURVEY NW 66TH ST

NW 66TH STREET

10' TYP.

104 105 106 107 108 109

11' 11' 11' 5'

5' 11' 11' 11'

MATCHLINE STA. 103+80.00

MATCHLINE STA. 109+40.00

6" WHITE (10'-30' SKIP) WITH WHITE/RED RPMS @ 40' O.C.

6" WHITE (TYP.)

6" DBL YELLOW WITH YELLOW/ YELLOW RPMS @ 10' O.C.

R/W LINE

NW 66TH ST

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CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.

Renzo.Marengo 8/7/2023 5:01:27 PM c:\pw\kh1\d0146887\PLANSP02.dgn

N

0 10 40

Feet

OM1-1
18" X 18"
STA. +12.5, +17.5, +27.5
700-1-11
3 AS

W1-7
48" X 24"
STA. +22.50
700-1-11
1 AS

R3-17
24" X 18"
STA. +40.0
700-1-11
1 AS

℄ OF SURVEY NW 66TH ST
STA. 113+17.58 =
℄ OF SURVEY NW 99TH AVE
STA. 30+00.00

MATCHLINE STA. 109+40.00

R/W LINE

18' YELLOW (TYP.)

6" WHITE (10'-30' SKIP) WITH
WHITE/RED RPMS @ 40' O.C.

BIKE LANE

BIKE LANE

NW 66TH STREET

10' TYP.

+37.1
11.4' LT

R 75'

+71.0
3.4' LT

R 2'

POT STA. 30+00.00

+70.1
0.4' RT

110 111 112 113 114

11' 11' 11' 11' 5' 5' 11' 11' 11' 11'

6" WHITE (TYP.)

R/W LINE

6" DBL YELLOW WITH YELLOW/
YELLOW RPMS @ 10' O.C. (TYP.)

+61.2
22.0' RT

+70.1
28.0' RT

+11.3
44.2' RT

R 20'

+14.7
44.1' RT

24" WHITE

R/W LINE

6" DBL YELLOW WITH YELLOW/
YELLOW RPMS @ 10' O.C. (TYP.)

12" WHITE

+67.0
0.4' RT

+59.3
28.0' RT

10'

+39.9
44.1' RT

NW 99TH AVE

℄ SURVEY NW 99TH AVE

29'

11' 11'

+31.0

11'

R/W LINE

6" WHITE WITH WHITE/RED
RPMS @ 20' O.C. (TYP.)

℄ OF SURVEY NW 66 ST +92.0
11.0' LT

R/W LINE

END EB PAVEMENT MARKINGS
MATCH EXISTING
STA. 113+92.00

SW 66 AV

SW 99 AV

NW 66 ST

NW 99 ST

STOP

TO BE REMOVED
700-1-60
1 AS

BIKE LANE

STOP

R1-1
36" X 36"
D3 STREET NAME
STA. 113+42.8, 51.0 RT
700-1-12
1 AS

6" WHITE WITH WHITE/RED
RPMS @ 20' O.C. (TYP.)

R/W LINE

MATCHLINE STA. 28+30.00

MATCHLINE STA. 115+00.00

NW 66TH ST

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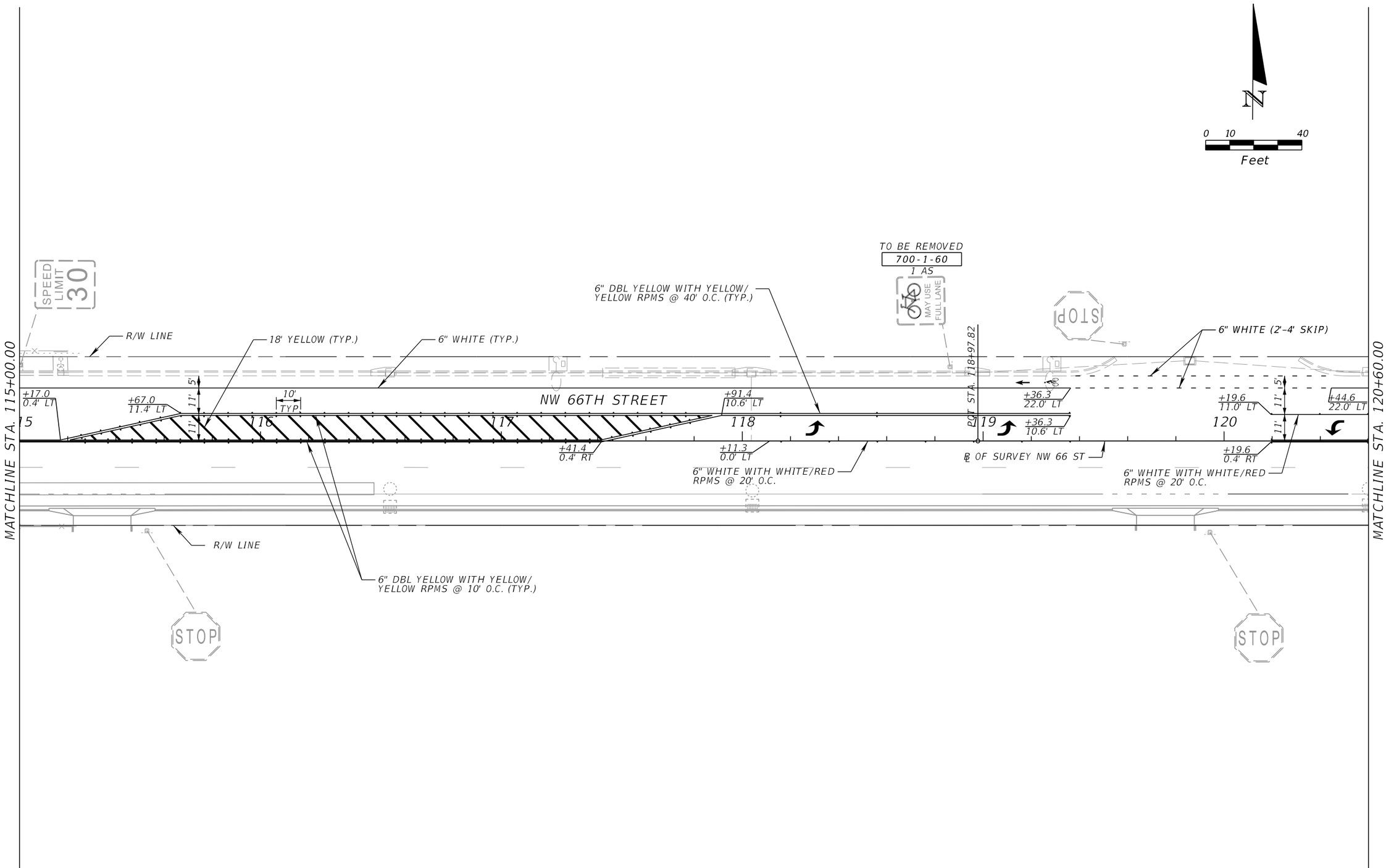
CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# SIGNING AND PAVEMENT MARKING PLAN

SHEET NO.


Renzo.Marengo 8/7/2023 5:01:36 PM c:\pw\kh1\d0146887\PLANSP03.dgn

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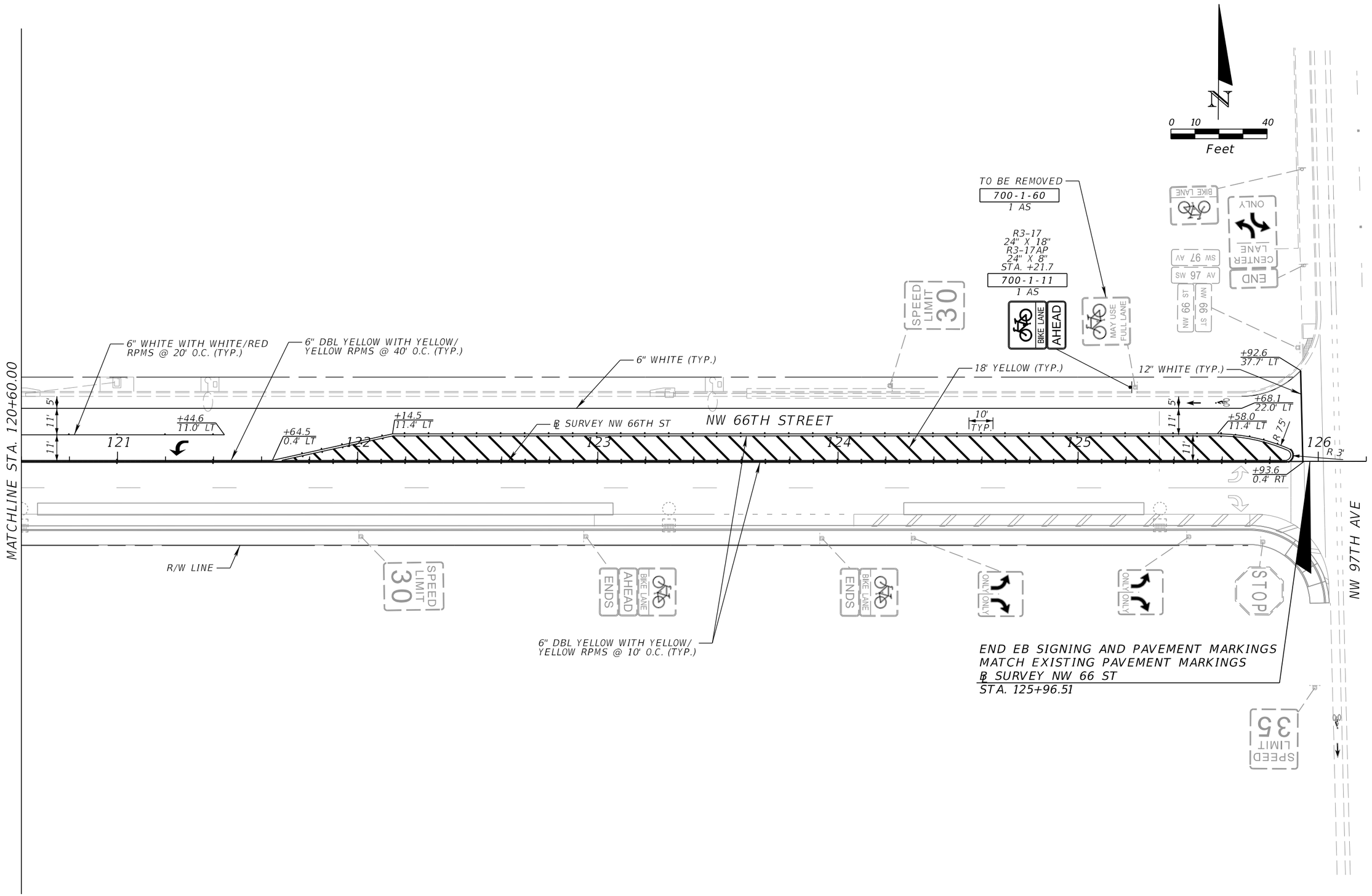


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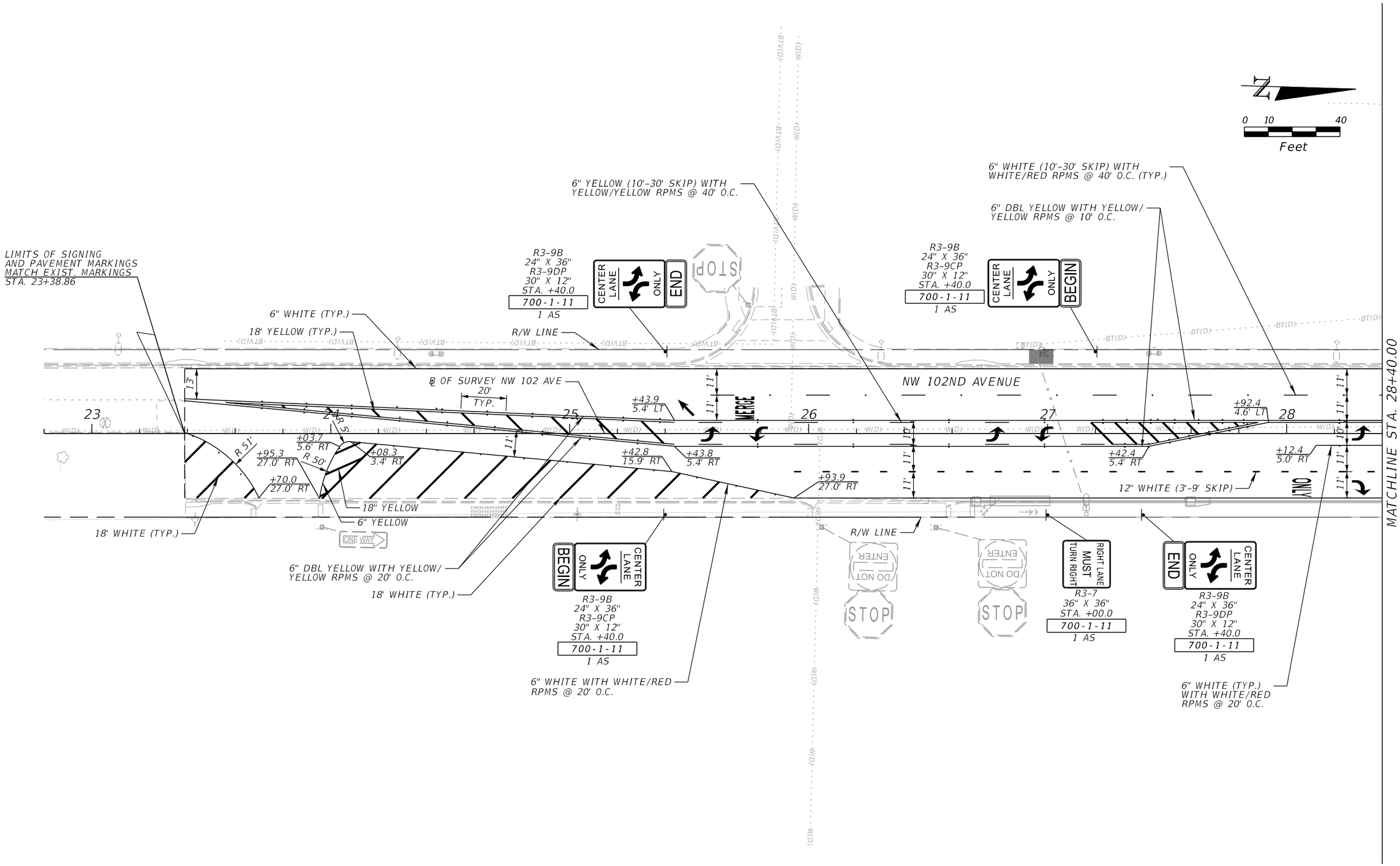


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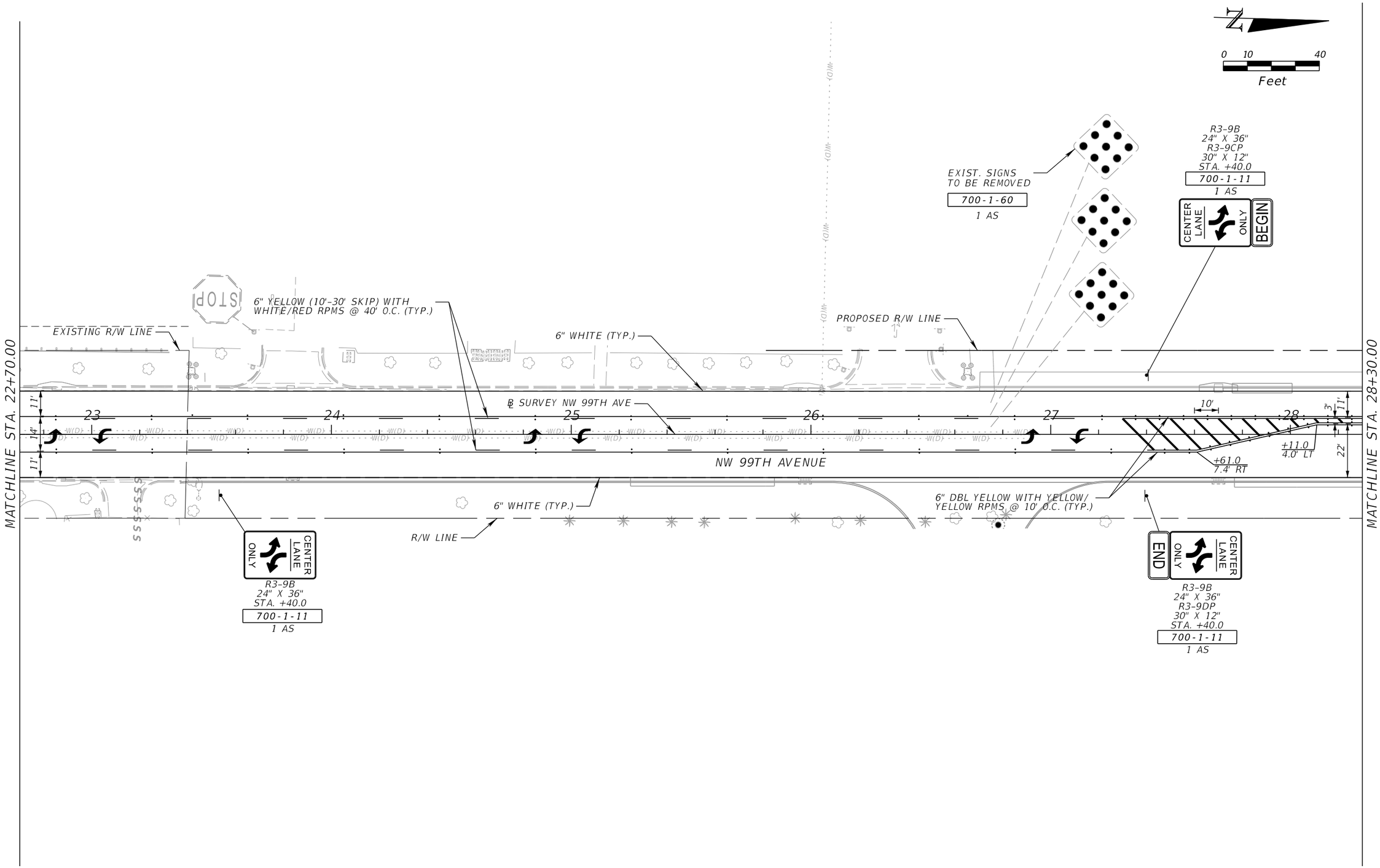


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| NW 66TH STREET | MIAMI-DADE |

# SIGNING AND PAVEMENT MARKING PLAN

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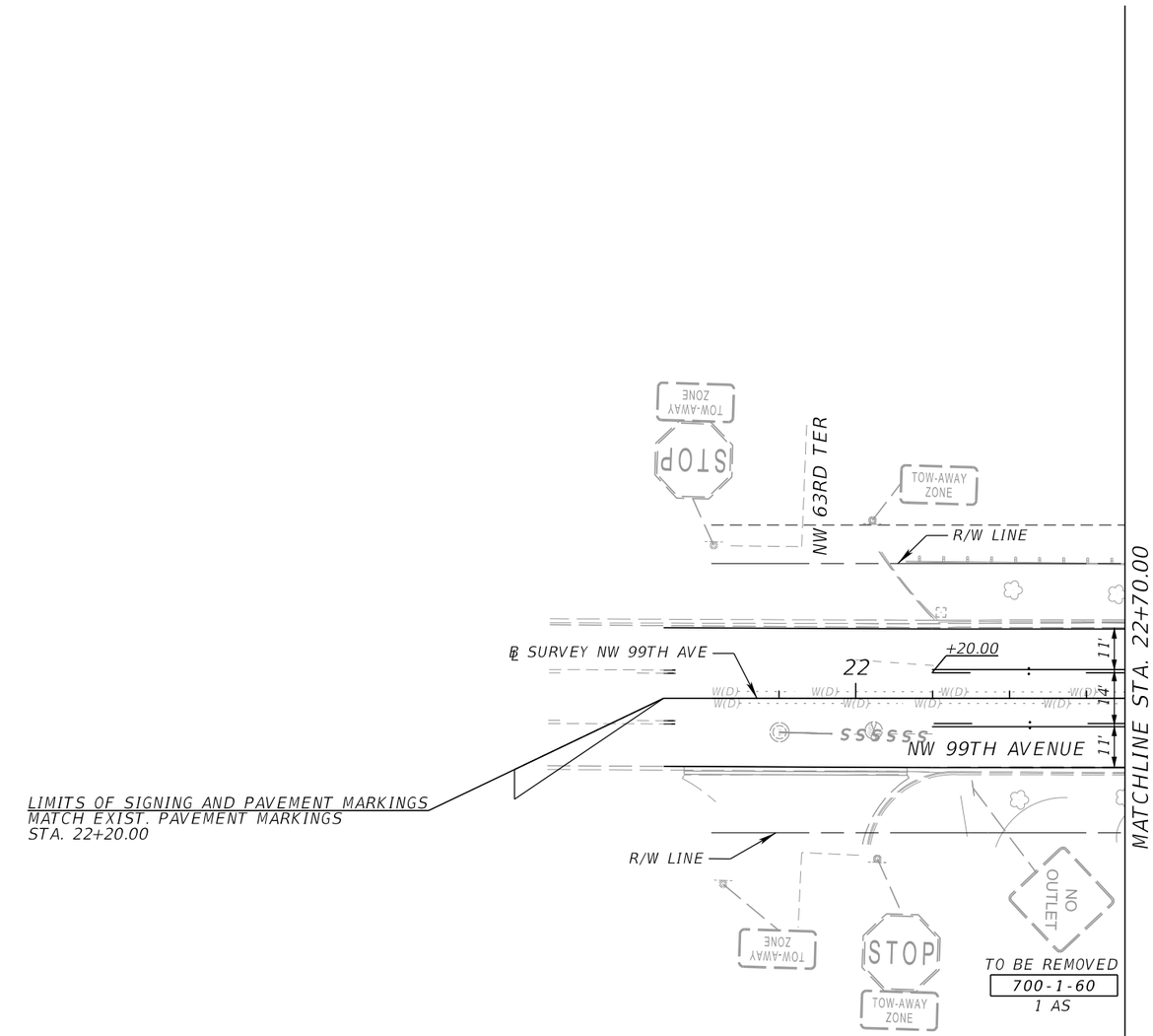


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CITY OF DORAL

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# SIGNING AND PAVEMENT MARKING PLAN

SHEET NO.

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1. CITY OF DORAL IS THE MAINTAINING AGENCY FOR THE LIGHTING SYSTEM.

2. ENDS OF CONDUITS SHALL BE SEALED WITH POLYURETHANE FOAM AFTER WIRING IS COMPLETE. FOAM SEAL SHALL NOT BE USED AS A MEANS TO PROTECT CONDUCTORS FROM ABRASION IN RACEWAYS. GALVANIZED RIGID METAL CONDUIT SHALL HAVE PROPER FITTINGS TO PROTECT CONDUCTORS FROM ABRASION.

3. ATTACH LIGHTING ARRESTOR TO THE WALL OF THE PULL BOX BY A SELF-TAPPING SCREW OR BY A MASONRY SCREW. SCREWS SHOULD BE FIRM BUT NOT SNUG AGAINST THE SUPPORTING TABS. LIGHTNING ARRESTORS MUST BE INSTALLED BY THE PROVISIONS OF ARTICLE 280 OF NFPA 70 (NATIONAL ELECTRIC CODE).

4. TWO 5/8" X 20' COPPER CLAD STEEL GROUNDING ELECTRODES ARE REQUIRED AT EACH SERVICE POINT. THEY MUST BE SPACED A MINIMUM OF SIX FEET AND SIX INCHES FROM EACH OTHER WHEN INSTALLED AS AN ARRAY. WHEN THE GROUNDING ELECTRODE CONDUCTOR IS ENCLOSED IN A METAL RACEWAY, BOTH ENDS OF THE RACEWAYS AND ALL INTERVENING RACEWAYS AND METALLIC ENCLOSURES CONTAINING THE GROUNDING ELECTRODE CONDUCTOR MUST BE BONDED TO THE GROUNDING ELECTRODE CONDUCTOR.

5. ALL AERIAL GROUNDING CONNECTIONS SHALL BE EXOTHERMICALLY WELDED AS PER F.D.O.T. SPECIFICATIONS SECTION 715-11. WHERE THE POLE CABLE DISTRIBUTION SYSTEM IS EMPLOYED (MG SQUARE, DOT 3), GROUNDING CONNECTIONS TO THE DISTRIBUTION BLOCK AND LIGHTNING ARRESTER OR OTHER DEVICES CONTAINING LEADS SMALLER THAN # 8 AWG, SHALL BE DONE BY MECHANICAL CONNECTIONS OR OTHER APPROVED MEANS.

6. THE CONTRACTOR SHALL CHECK THE CONTINUITY OF GROUNDING CONDUCTOR USING MEGGER OR EQUAL LOW RESISTANCE/HIGH CAPACITY OHMMETER CALIBRATED WITHIN THE PAST 180 DAYS. A NEUTRAL/ GROUND LOOP RESISTANCE OF MORE THAN 0.5 OHMS-PER THOUSAND FEET SHALL BE CONSIDERED INADEQUATE.

7. PULL BOX COVERS SHALL BE OF HEAVY-DUTY POLYMER COMPOSITE AND LABELED WITH "STREET LIGHT".

8. INSTALLATIONS OF NEW PULL BOXES SHALL BE PERFORMED BY A QUALIFIED ELECTRICAL CONTRACTOR. WHEN LIGHT POLES ARE INSTALLED AT R/W THE PULL BOX SHOULD BE ORIENTED IN FRONT OF THE LIGHT POLE WITH SPACING AS INDICATED IN INDEX 715-001. WHEN NEW PULL BOX IS REPLACING EXISTING PULL BOX, THE CONTRACTOR SHALL ADJUST CONDUITS AND CABLES TO FIT THE NEW PULL BOX ELEVATION. COST OF ADJUSTMENTS IS INCLUDED IN THE PULL BOX PAY ITEM.

9. ONLY LINE CONDUCTORS WILL BE PERMITTED IN SERVICE PULL BOX. NO GROUND RODS OR ANY OTHER ITEMS OR DEVICES SHALL BE ALLOWED.

10. LIGHT POLE FOUNDATIONS SHALL BE INSTALLED AT GRADE THAT IS FLUSH WITH THE ADJACENT AND SURROUNDING SIDEWALK.

11. THE POLE FOUNDATION CONDUITS SHALL EXTEND FROM 1" TO 2" INSIDE THE POLE BASE.

12. RACEWAYS: RACEWAYS CONTAINING # 6 AWG OR LARGER CONDUCTORS MUST BE PROTECTED BY AN INSULATING FITTING, UNLESS THE CONDUCTORS ARE SEPARATED FROM THE FITTING OR RACEWAY BY SUBSTANTIAL INSULATING MATERIAL THAT IS SECURELY FASTENED IN PLACE. INSTALL BUSHING BELLS ON CONDUITS THAT ENTER PULL BOXES AND BARRIER WALL JUNCTION BOXES. THE COST TO FURNISH AND INSTALL BUSHING BELLS IS INCIDENTAL TO THE RELATED PAY ITEM.

13. POLE CABLE DISTRIBUTION SYSTEM USED SHALL BE MG SQUARE DOT 3 AND SHALL CONFORM WITH SPECIFICATIONS.

14. SPLICES FOR #4 AWG AND #6 AWG CONDUCTORS SHALL UTILIZE THE MOLDED SPLICE KIT TYCO-RAYCHEM CATALOG # GELCAP-SL-2/0-3 HOLE.

15. NO UNNECESSARY SPLICING WILL BE PERMITTED IN PULL BOXES.

16. WHERE CONVENTIONAL WIRING SYSTEMS ARE EMPLOYED OR THE EXISTING POLES ARE UTILIZED, CONDUCTORS SHALL BE SO ROUTED AND COORDINATED AS TO TERMINATE ON THE LINE SIDE OF THE FUSE-HOLDERS (HEB'S & HEBR'S).

17. PULL BOXES CONTAINING # 4 AWG OR LARGER CONDUCTORS CONTAINING SPLICES OR U PULLS, THE DISTANCE BETWEEN RACEWAY AND THE OPPOSITE WALL OF THE BOX SHALL NOT BE LESS THAN SIX TIMES THE TRADE SIZE OF THE LARGEST RACEWAY IN A ROW. INCREASE THE DISTANCE BY ADDING THE SUM OF THE DIAMETERS OF ANY ADDITIONAL RACEWAYS THAT ARE IN A ROW.

18. PAYMENT FOR CONDUCTOR SHALL BE BASED ON THE LINEAR FEET OF SINGLE CONDUCTOR IN HORIZONTAL MEASUREMENT. NO ALLOWANCES SHALL BE MADE FOR CONNECTION IN PULL BOXES, CABINETS OR POLES.

19. THE CONTRACTOR IS RESPONSIBLE TO PAY THE POWER COMPANY THE COST OF PROVIDING ELECTRICITY TO THE TEMPORARY AND PROPOSED LIGHTING FROM THE MOMENT THE EXISTING SERVICE IS DISCONNECTED UNTIL FINAL ACCEPTANCE OF THE NEW LIGHTING BY THE MAINTAINING AGENCY. COST TO BE INCLUDED IN PAY ITEM 102-1 MAINTENANCE OF TRAFFIC.

20. THE CONTRACTOR IS RESPONSIBLE FOR ALL REQUIRED PERMITS. ALL ASSOCIATED COSTS TO BE INCLUDED IN THE CONTRACTOR'S BID.

21. PROVIDE NOTICE TO UTILITY OWNER(S) PER FLORIDA STATUE 553.851 (1998) AND 556 (1998). THESE STATUTES REQUIRE THAT, BEFORE EXCAVATION, NOTICE BE GIVEN TO THE UTILITY OWNER A MINIMUM OF TWO (2) WORKING DAYS AND A MAXIMUM OF FIVE (5) WORKING DAYS, EXCLUDING SATURDAY, SUNDAY, AND LEGAL HOLIDAYS. NOT ALL UTILITY COMPANIES ARE MEMBERS OF "SUNSHINE" 1-800-432-4770.

22. THE LOCATIONS OF EXISTING UTILITIES, AS SHOWN ON THESE PLANS, ARE APPROXIMATE AND BASED ON THE INFORMATION FURNISHED TO THE ENGINEER BY THE UTILITY OWNER(S). TWO FULL BUSINESS DAYS PRIOR TO DIGGING. THE CONTRACTOR SHALL CALL SUNSHINE STATE ONE CALL OF FLORIDA (TELEPHONE NUMBER 1 (800) 432-4770) AND UTILITY OWNERS TO REQUEST UTILITY LOCATIONS. A CONTRACTOR'S REPRESENTATIVE MUST BE PRESENT WHEN UTILITY COMPANIES LOCATE THEIR FACILITIES.

23. ALL ELECTRICAL WORK ASSOCIATED WITH LIGHT POLE INSTALLATION SHALL BE IN ACCORDANCE WITH THE CITY OF DORAL, FLORIDA CODE OF ORDINANCES AND THE 2011 NATIONAL ELECTRICAL SAFETY CODE.

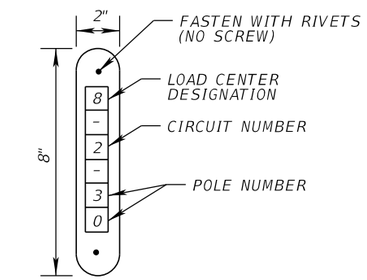
24. PREPARE ACCURATELY DIMENSIONED "AS BUILT" PLANS OF FINAL POLE, PULL BOX, CONDUCTOR, AND CONDUIT LOCATIONS. PLANS SHALL BE REVIEWED AND APPROVED BY THE ENGINEER. COST OF SUCH PREPARATION SHALL BE INCIDENTAL TO PAY ITEMS PROVIDED.

25. SUBMITTAL DATA
PRIOR TO ANY PROCUREMENT ORDER THE CONTRACTOR SHALL SUBMIT FOR APPROVAL, EQUIPMENT SPECIFICATIONS OR DESIGN DATA FOR ALL MATERIALS PROPOSED FOR THE PROJECT AND SHALL INCLUDE, BUT NOT LIMITED TO:

   A. SHOP DRAWINGS FOR THE LUMINARIES, POLES AND BASES.
   B. CONDUCTORS, CONDUIT, GROUND RODS AND PULL BOXES.
   C. FUSES, FUSE HOLDERS, SURGE PROTECTORS AND POLE DISTRIBUTION SYSTEMS.
   D. SAFETY SWITCHES, PANELS, CIRCUIT BREAKERS, AND OTHER MAJOR SERVICE POINT COMPONENTS.

   SEVEN COPIES OF THE SHOP DRAWINGS AND DESIGN DATA SHALL BE SUBMITTED TO THE ENGINEER WITH A COPY OF THE SUBMITTAL LETTER SENT TO THE DEPARTMENT'S RESIDENT CONSTRUCTION ENGINEER IN CHARGE OF THE PROJECT. ALLOW A 45 DAY TURNAROUND FOR SUBMITTALS.

26. FURNISH AND INSTALL AN ALUMINUM IDENTIFICATION TAG ON EACH ROADWAY LIGHTING STANDARD. TAGS SHALL BE 2" x 8" IN SIZE WITH BLACK LETTERS ON YELLOW BACKGROUND, ATTACHED WITH RIVETS (NO SCREWS). NUMBERS SHALL BE AS SHOWN ON THE POLE IDENTIFICATION TAG DETAIL. COST OF TAGS SHALL BE INCLUDED IN THE BID ITEMS FOR LIGHT POLE COMPLETE. TAG SHALL BE PLACED 5 FEET ABOVE GRADE. TAGS SHOULD BE PLACED SO WHEN DRIVING IN THE DIRECTION OF THE POLE THE TAG SHOULD BE VIEWED AT A 45 DEGREE ANGLE.




POLE IDENTIFICATION TAG DETAIL

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

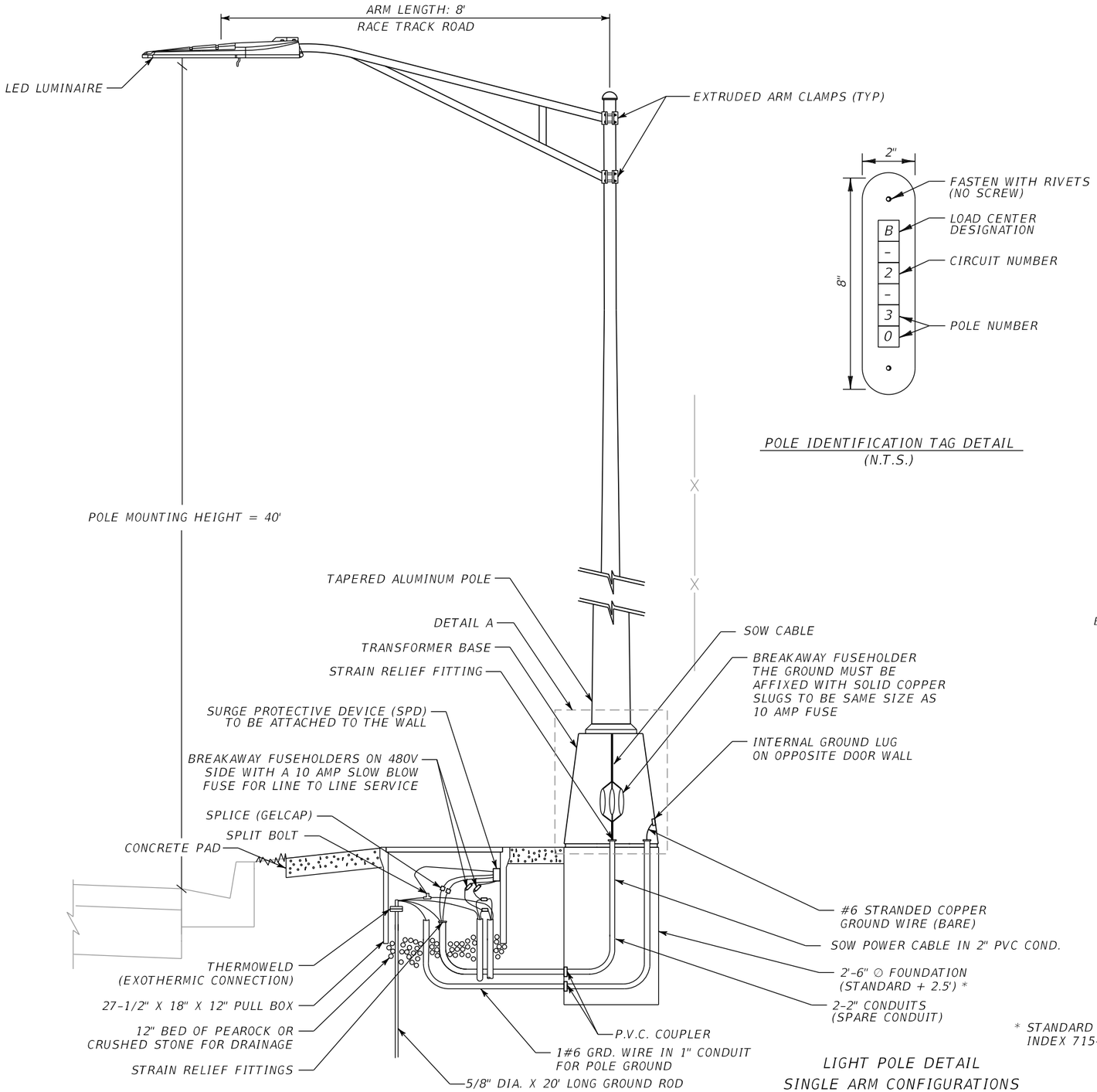

Kimley-Horn and Associates, Inc.
Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, FL 33134


CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# LIGHTING GENERAL NOTES

SHEET NO.

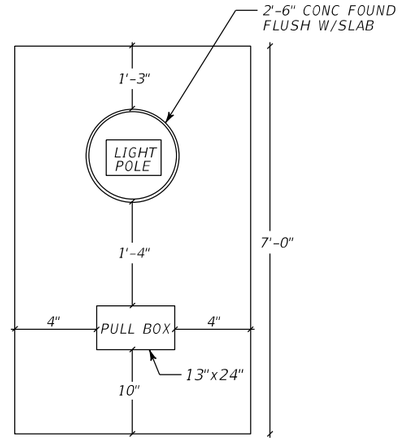



* STANDARD REINFORCEMENT PER INDEX 715-002

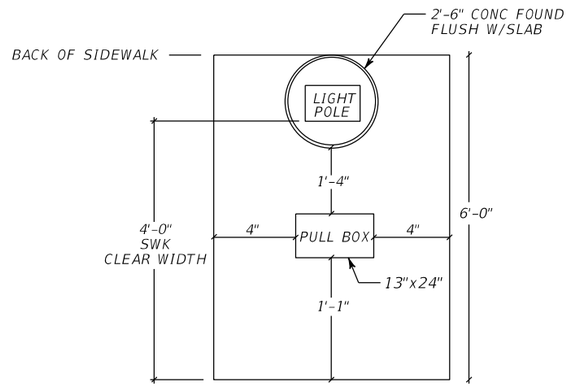
LIGHT POLE DETAIL
SINGLE ARM CONFIGURATIONS
(N.T.S.)




POLE IDENTIFICATION TAG DETAIL
(N.T.S.)




LIGHT POLE
INSTALLATION DETAIL
GRASSY AREAS
(N.T.S)




LIGHT POLE
INSTALLATION DETAIL
BACK OF SIDEWALK
(N.T.S)

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |


Kimley-Horn and Associates, Inc.
Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, FL 33134


CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# LIGHTING DETAILS

SHEET NO.

Renzo.Marengo 8/7/2023 5:02:35 PM c:\pw\kh1\d0146878\LUDTLT01.dgn

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

# APPENDIX B – FEMA FIRM MAP

# NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

**Coastal Base Flood Elevations** shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Florida State Plane east zone (FIPSZONE 0901). The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

**Base map** information shown on this FIRM was provided in digital format by the Miami-Dade County Information Technology Department. These data were compiled at a scale of 1:3,600 from digital orthophotography dated 2001. Additional base map information was provided by the Cities of Aventura, Coral Gables, and Homestead, the Town of Cutler Bay, and Miami-Dade County.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to confirm to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

**Corporate limits** shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.


# LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

| | |
|---|---|
| **ZONE A** | No Base Flood Elevations determined. |
| **ZONE AE** | Base Flood Elevations determined. |
| **ZONE AH** | Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined. |
| **ZONE AO** | Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined. |
| **ZONE AR** | Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood. |
| **ZONE A99** | Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined. |
| **ZONE V** | Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined. |
| **ZONE VE** | Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined. |

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

| | |
|---|---|
| **ZONE X** | Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood. |

OTHER AREAS

| | |
|---|---|
| **ZONE X** | Areas determined to be outside the 0.2% annual chance floodplain. |
| **ZONE D** | Areas in which flood hazards are undetermined, but possible. |

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

| | |
|---|---|
| | Floodplain boundary |
| | Floodway boundary |
| | Zone D boundary |
| | CBRS and OPA boundary |
| | Boundary dividing Special Flood Hazard Area zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities. |
| 513 | Base Flood Elevation line and value; elevation in feet* |
| (EL 987) | Base Flood Elevation value where uniform within zone; elevation in feet* |

* Referenced to the National Geodetic Vertical Datum of 1929

| | |
|---|---|
| A — A | Cross section Line |
| 23 — 23 | Transect line |
| 87°07'45", 32°22'30" | Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere |
| $^{17}76^{000m}$N | 1000-meter Universal Transverse Mercator grid values, zone 17 |
| 600000 FT | 5000-foot grid ticks: Florida State Plane coordinate system, East zone (FIPSZONE 0901), Transverse Mercator projection |
| DX5510 × | Bench mark (see explanation in Notes to Users section of this FIRM panel) |
| ●M1.5 | River Mile |

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
January 20, 1993

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
March 2, 1994 - May 16, 1994 - July 17, 1995 - for description of revision, see Notice to Users page in the Flood Insurance Study report.
September 11, 2009 - to reflect revised shoreline, to incorporate previously issued Letters of Map Revision, to reflect updated topographic information, to update corporate limits, to add and change Base Flood Elevations, to change zone designations, to add roads and road names, and to add and change Special Flood Hazard Areas

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0278L

# FIRM

## FLOOD INSURANCE RATE MAP

## MIAMI-DADE COUNTY, FLORIDA AND INCORPORATED AREAS

## PANEL 278 OF 1031

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|---|---|---|---|
| DORAL, CITY OF | 120041 | 0278 | L |
| MEDLEY, TOWN OF | 120649 | 0278 | L |
| MIAMI - DADE COUNTY | 120635 | 0278 | L |

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**
**12086C0278L**

**MAP REVISED**
**SEPTEMBER 11, 2009**

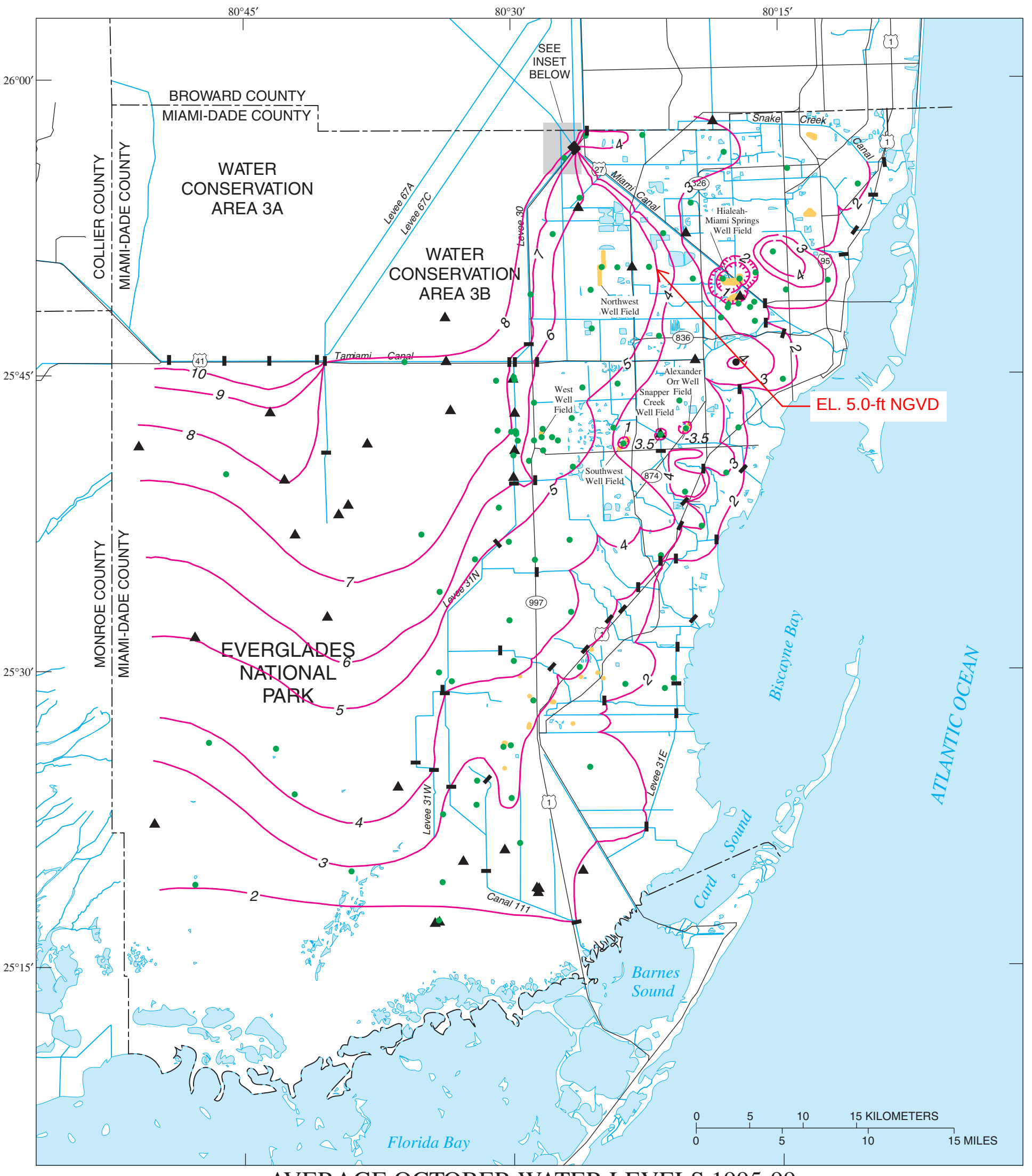
Federal Emergency Management Agency

# APPENDIX C – MIAMI DADE COUNTY GROUNDWATER MAPS

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE

MIAMI-DADE COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES MANAGEMENT




# AVERAGE OCTOBER WATER LEVELS 1995-99

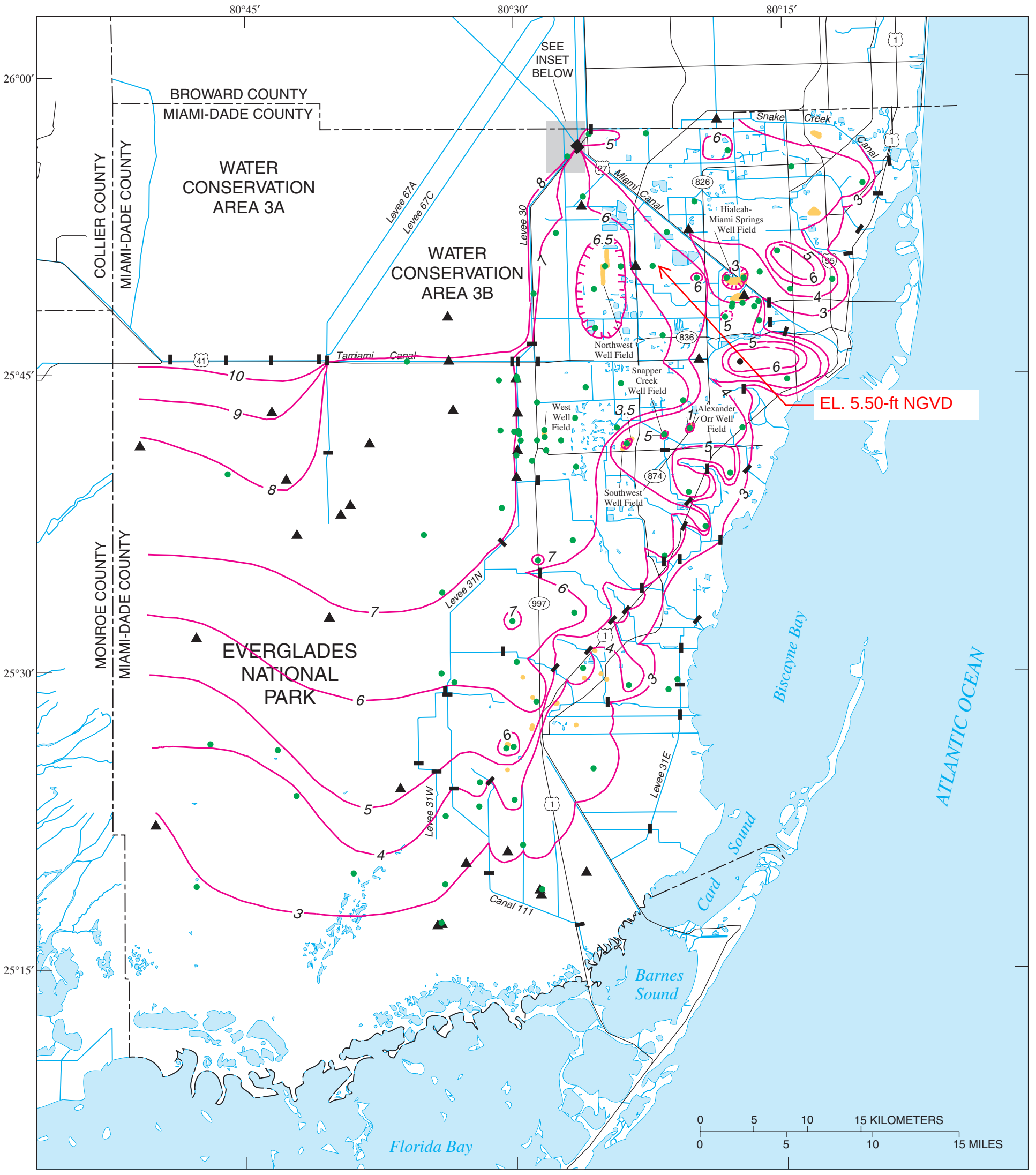

## EXPLANATION

- WELL FIELD
- –2– WATER-TABLE CONTOUR--Shows altitude of water table. Hachures indicate depression. Dashed where approximately located. Contour interval 0.5 and 1 foot. Datum is sea level
- CANAL AND LEVEE
- GROUND-WATER WELL
- SURFACE-WATER STATION
- CONTROL STRUCTURE

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE

MIAMI-DADE COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES MANAGEMENT




# AVERAGE YEARLY HIGH WATER LEVELS 1995-99


## EXPLANATION

- WELL FIELD
- –2– WATER-TABLE CONTOUR--Shows altitude of water table. Hachures indicate depression. Dashed where approximately located. Contour interval 0.5 and 1 foot. Datum is sea level
- CANAL AND LEVEE
- GROUND-WATER WELL
- SURFACE-WATER STATION
- CONTROL STRUCTURE

# APPENDIX D – GEOTECHNICAL REPORT BY TIERRA SOUTH FLORIDA, INC.

# TIERRA SOUTH FLORIDA, INC.

August 10, 2021

Kimley-Horn
355 Alhambra Circle, Suite 1400
Coral Gables, FL 33134
Phone (305)673-2025 Direct: (305)535-7727  Cell (305)992-6342
Attn: Ms. Gabriela P. Ramirez, P.E.
email: gabriela.ramirez@kimley-horn.com

RE: Roadway Soil Survey Report
NW 102nd Avenue, NW 66th Street and NW 99th Avenue
City of Doral, FL
Miami-Dade County
TSF Project No. 7111-21-207

Dear Gabriela,

Tierra South Florida, Inc. (TSF) has completed a roadway soil survey for the subject project. The soil survey was performed in general accordance with Miami-Dade County procedures. The results of our exploration program and subsequent geotechnical recommendations are presented in this report.

If you have any questions or comments regarding this report, please contact our office at your earliest convenience.

Sincerely,

***TIERRA SOUTH FLORIDA, INC.***

Harmon C. Bennett, P.E.
Principal Engineer
FL Registration No. 53130

Kumar Vedula, P.E.
Principal Engineer
FL Registration No. 54873

**Roadway Soil Survey Report**
**NW 102nd Avenue, NW 66th Street and NW 99th Avenue**
**City of Doral, FL**
**Miami-Dade County**
**TSF Project No. 7111-21-207**

Table of Contents ..... Page #

## 1.0 PROJECT DESCRIPTION

The project includes improvements to three separate roadways, in the vicinity of address noted as: 6300 NW 99th Ave, Doral, FL 33178. The proposed improvements included the following.

- East-West Roadway
  - Widening of NW 66th St from NW 102nd Ave to NW 99th Ave 1,400 ft
- North-South Roadway
  - 300 LF of Widening of NW 102nd Ave, to the south of NW 66th Street
  - 420 LF of Resurfacing of NW 102nd Ave from widening section to the south
  - 670 LF of New construction of NW 99th Ave, to the south of NW 66$^{th}$ St
  - 100 LF of Resurfacing of NW 99th Ave, from widening section to the south.

The project area is noted on the **Site Vicinity Map** included in **Appendix A**.

## 2.0 SCOPE OF SERVICES

The study was performed to obtain information on the existing subsurface conditions along the project alignment to assist in the design and preparation of construction plans for the proposed improvements. The following services were provided:

1. Reviewed readily available published topographic and soils information. This information was obtained from the "Soil Survey of Miami-Dade County, Florida," published by the United States Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS) and USGS Maps.

2. Performed a geotechnical exploration along the project corridor, which included borings with quantity and depths noted in Table 2.2 below:

| **Table 2.2 – Boring Locations and Quantities** | |
|---|---|
| **Type of Service** | **Quantity, type and depth** |
| Roadway | Sixteen (16) Standard Penetration Test (SPT) Borings to a depth of 6-feet below grades. |
| Drainage | Two (2) Augers to 15-feet with the Borehole Permeability (BHP) Tests |
| Resurfacing/Pavement Details | Six (6) Asphalt Cores |

3. Estimated the Seasonal High Groundwater Table (SHGWT)

4. Classified soil samples in the laboratory using the AASHTO Soil Classification System for the project. A limited amount of soil samples were tested in the laboratory to establish the

soil properties and confirm the visual classification. The laboratory testing included grain size analysis, moisture content tests and organic content tests.

5. Performed a total of two (2) Borehole Permeability (BHP) tests along the project corridor.

6. Performed a total of six (6) asphalt cores and base checks to determine the asphalt and base material characteristics along the roadway corridor.

7. Prepared this Roadway Soil Survey Report for the project.

## 3.0 REVIEW OF AVAILABLE SOIL AND TOPO INFORMATION

### 3.1 USDA Soil Survey

Based on a review of the Miami-Dade County Soil Survey by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), it appears that the improvement area is mapped as follows:

Map Unit 9 - Udorthents-Water complex
The Udorthents component makes up 75 percent of the map unit. Slopes are 15 to 60 percent. This component is on fills on marine terraces on coastal plains. The parent material consists of altered marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent.
The Water component is a miscellaneous area. No soils data is available for miscellaneous areas.

Map Unit 14 - Dania muck, frequently ponded, 0 to 1 percent slopes - The Dania component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on marshes on marine terraces on coastal plains. The parent material consists of herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, lithic, is 10 to 29 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 75 percent.

Map Unit 34 - Hallandale fine sand, 0 to 2 percent slopes - The Hallandale component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 2 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 3 percent.

A portion of the USDA soil survey map for the project area is presented as **Soil Map—Miami-Dade County, Florida, East Part** in **Appendix A** of this report.

## 3.2 USGS Soil Data

Based on a review of the USGS website for Miami-Dade County, Florida, the below three Geologic units are described:

Miami Limestone (Pleistocene) at surface, covers 92 % of this area
The Miami Limestone (formerly the Miami Oolite), named by Sanford (1909), occurs at or near the surface in southeastern peninsular Florida from Palm Beach County to Dade and Monroe Counties. It forms the Atlantic Coastal Ridge and extends beneath the Everglades where it is commonly covered by thin organic and freshwater sediments. The Miami Limestone occurs on the mainland and in the southern Florida Keys from Big Pine Key to the Marquesas Keys. From Big Pine Key to the mainland, the Miami Limestone is replaced by the Key Largo Limestone. To the north, in Palm Beach County, the Miami Limestone grades laterally northward into the Anastasia Formation. The Miami Limestone consists of two facies, an oolitic facies and a bryozoan facies (Hoffmeister et al. [1967]). The oolitic facies consists of white to orangish gray, poorly to moderately indurated, sandy, oolitic limestone (grainstone) with scattered concentrations of fossils. The bryozoan facies consists of white to orangish gray, poorly to well indurated, sandy, fossiliferous limestone (grainstone and packstone). Beds of quartz sand are also present as unindurated sediments and indurated limey sandstones. Fossils present include mollusks, bryozoans, and corals. Molds and casts of fossils are common. The highly porous and permeable Miami Limestone forms much of the Biscayne Aquifer of the surficial aquifer system.

Holocene sediments (Holocene) at surface, covers 7 % of this area
The Holocene sediments in Florida occur near the present coastline at elevations generally less than 5 feet (1.5 meters). The sediments include quartz sands, carbonate sands and muds, and organics.

Shelly sediments of Plio-Pleistocene age (Pliocene/Pleistocene) at surface, covers 1 % of this area
Tertiary-Quaternary Fossiliferous Sediments of Southern Florida - Molluskbearing sediments of southern Florida contain some of the most abundant and diverse fossil faunas in the world. The origin of these accumulations of fossil mollusks is imprecisely known (Allmon, 1992). The shell beds have attracted much attention due to the abundance and preservation of the fossils but the

biostratigraphy and lithostratigraphy of the units has not been well defined (Scott, 1992). Scott and Wingard (1995) discussed the problems associated with biostratigraphy and lithostratigraphy of the Plio-Pleistocene in southern Florida. These "formations" are biostratigraphic units. The "formations" previously recognized within the latest Tertiary-Quaternary section of southern Florida include the latest Pliocene - early Pleistocene Caloosahatchee Formation, the early Pleistocene Bermont formation (informal) and the late Pleistocene Fort Thompson Formation. This section consists of fossiliferous sands and carbonates. The identification of these units is problematic unless the significant molluscan species are recognized. Often exposures are not extensive enough to facilitate the collection of representative faunal samples to properly discern the biostratigraphic identification of the formation. In an attempt to alleviate the inherent problems in the biostratigraphic recognition of lithostratigraphic units, Scott (1992) suggested grouping the latest Pliocene through late Pleistocene Caloosahatchee, Bermont and Fort Thompson Formations in to a single lithostratigraphic entity, the Okeechobee formation (informal). In mapping the shelly sands and carbonates, a generalized grouping as Tertiary-Quaternary shell units (TQsu) was utilized. This is equivalent to the informal Okeechobee formation. The distribution of the Caloosahatchee and Fort Thompson Formation are shown on previous geologic maps by Cooke (1945), Vernon and Puri (1964) and Brooks (1982). The Nashua Formation occurs within the Pliocene - Pleistocene in northern Florida. However, it crops out or is near the surface is an area too small to be shown on a map of this scale. Lithologically these sediments are complex, varying from unconsolidated, variably calcareous and fossiliferous quartz sands to well indurated, sandy, fossiliferous limestones (both marine and freshwater). Clayey sands and sandy clays are present. These sediments form part of the surficial aquifer system

Key Largo Limestone (Pleistocene) at surface, covers 0.2 % of this area

The Key Largo Limestone, named by Sanford (1909), is exposed at the surface in the Florida Keys from Soldier Key on the northeast to Newfound Harbor Keys near Big Pine Key on the southwest (Hoffmeister, 1974). This unit is a fossil coral reef much like the present day reefs offshore from the Keys. An exceptional exposure of the Key Largo Limestone occurs in the Windley Key Quarry State Geological Site in the upper Florida Keys. Exposures of the limestone containing large coral heads are in a series of old quarries. The Key Largo Limestone is a white to light gray, moderately to well indurated, fossiliferous, coralline limestone composed of coral heads encased in a calcarenitic matrix. Little to no siliciclastic sediment is found in these sediments. Fossils present include corals, mollusks and bryozoans. It is highly porous and permeable and is part of the Biscayne Aquifer of the surficial aquifer system

Reference:
https://mrdata.usgs.gov/geology/state/fips-unit.php?code=f12086

A portion of the Geological Map titled “Florida Geological Survey” for Miami-Dade County is presented as the **Site Geological Map** in **Appendix A**. It appears that, based on the USGS website, the project site is covered only with Miami Limestone at the surface.

Reference:
https://ca.dep.state.fl.us/mapdirect/?webmap=7a85fea2918a4e1f8effdb5bc9fe87f9

## 3.3 USGS Quadrangle Map, Hialeah - North, FL 2015

Elevations were reviewed from as-designed-plans for the last alterations of the east-west roadway. The asphalt grade appears to be between +4 and +8 NAVD 1988, and the surrounding terrain appears to be at a +2 elevation. This elevation data should be used for general reference information only.

A portion of the Hialeah – North Topographical map is provided as **Site Topographical Map** in **Appendix A**

# 4.0 RESULTS OF SUBSURFACE EXPLORATION

## 4.1 Field Explorations

The subsurface conditions along the project interchange were explored by sixteen (16) borings, with depth of 6 feet below the ground surface, and two (2) borings with a depth of 15 feet for the BHPs. The 6-foot borings were performed as Standard Penetration Test (SPT) borings per ASTM D1586, and the BHP borings were completed as auger borings. The soils information is presented on the **Soil Profiles** Sheets in **Appendix A**.

The boring field locations were determined by TSF personnel using a hand-held GPS system.

Approximate locations of the borings performed are presented on the **Boring Location Plan** included in **Appendix A**. The soil samples were returned to our laboratory for classification by a geotechnical engineer. The samples were visually classified in the laboratory in general accordance with the AASHTO Soil Classification Systems.

## 4.2 General Soil Conditions

The soil types encountered in the borings have been assigned a stratum number. The stratum numbers and soil types encountered are listed in Table 4.2 below.

| **Table 4.2 - Soil Legend** | | | |
|---|---|---|---|
| **Stratum Number** | **Typical Soil Description** | **AASHTO Classification** | **FDOT Soil Designation** |
| 1 | TOPSOIL | A-8 | Unsuitable |
| 2 | BROWN SAND WITH TRACE SILT AND LIMEROCK | A-2-4 | Suitable |
| 3 | BROWN ORGANIC SAND WITH LIMEROCK | A-8 | Unsuitable |
| 4 | LIGHT BROWN SANDY LIMESTONE | - | Suitable |
| 5 | LIMEROCK (FILL) | - | Suitable |
| 6 | ASHPALT | - | Unsuitable |
| | | | |

Profiles for the soils encountered in the borings are presented in Appendix A.

A Geotechnical engineer bases soil stratification on a visual review of the recovered samples, laboratory testing, and interpretation of the field boring logs. The boring stratification lines represent the approximate boundaries between soil types of significantly different engineering properties; however, the actual transition may be gradual. In some cases, small variations in properties not considered pertinent to our engineering evaluation may have been abbreviated or omitted for clarity. The boring profiles represent the conditions at a particular boring location, and variations do occur and should be expected among the borings.

## 5.0 LABORATORY TESTING

### 5.1 Classification Testing

Representative soil samples collected from the borings were classified and stratified in general accordance with the AASHTO Soil Classification System for roadway borings. Our classification was based on visual inspection, using the results from the laboratory testing as confirmation. The laboratory tests performed included natural moisture content, grain size analysis, and organic content tests. Laboratory test results are included in **Appendix B** as **Summary of Laboratory Test Results** and **Grain Size Data Sheets**.

Tests were performed in general accordance with the test methods noted in Table 5.1 below.

| **Table 5.1 – Soil Sample Testing Methods** | |
|---|---|
| **Test Type** | **Test Method** |
| Sieve Analysis | ASTM C 136 (AASHTO T 27) |
| Moisture Content | ASTM D 2216 (AASHTO T 265) |
| Organic Content | ASTM D 2974 (AASHTO T 267) |

# 6.0 GROUNDWATER CONDITIONS

## 6.1 Groundwater

Encountered groundwater depth was measured at the boring locations following the termination of drilling. Groundwater was marked as "GNE" (Groundwater Not Encountered) when the groundwater was not encountered within the boring depth. Encountered groundwater depths measured in the borings are presented on the **Soil Profiles Sheets** in **Appendix A**, along with a summary titled **Groundwater Table and Boring Location Summary Data** in **Appendix A** recorded.

Based on the reviewed maps for the project area, the Seasonal High Groundwater Table (SHGWT) levels are expected to be between +5 and +6 feet (Seal Level) The water levels are controlled by existing drainage features present throughout the corridor. We recommend the project design be also coordinated with the existing permits from previous constructions, profiles of existing roadway and drainage structures, and the SHGWT and Design High Water (DHW) elevations are adjusted accordingly.

Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as human-made influences (i.e., existing canals, swells, drainage ponds, under drains, and areas of covered soils, like paved parking lots and sidewalks). Fluctuation should be anticipated. We recommend that the contractor determine the actual groundwater levels at the time of construction to determine groundwater impact on the construction procedures. Based on the **Site Groundwater Map**, included in **Appendix A**, the groundwater high levels should be anticipated to be near 5 feet, Sea Level.

## 6.2 Borehole Permeability (BHP) Test Results

Two (2) BHP tests were performed using the usual open-hole, constant head methodology. The holes were advanced to approximately 15 feet below the existing grade and they were drilled with a hollow stem auger so that soil samples could be retrieved for visual classification by an engineer. The BHP test borings were completed as open well with gravel pack (6-20 silica sand). The well-screen slot widths were 0.020 inches. Water from the drill rig tank was then pumped into the open well, and the amount of water required maintaining a constant head was recorded. The test results are presented as the **Summary of Borehole Permeability Test Results** in **Appendix C**. The borings are presented on the **Soil Profiles Sheets** in **Appendix A**.

# 7.0 ENGINEERING EVALUATIONS AND RECOMMENDATIONS

## 7.1 General

In general, the existing shallow subsurface soils encountered in the borings are suitable for supporting the proposed improvements after proper subgrade preparation. Site preparation should consist of normal clearing and grubbing, followed by compaction of subgrade soils.

The removal of topsoil, where required, should be accomplished in accordance with the Florida Department of Transportation (FDOT) Standard Specifications Section 120 – Excavation and Embankment. Encountered buried organic soils, plastic soils, debris, or unsuitable fills encountered during construction (which are not shown on the boring profiles) should be removed and replaced with properly compacted suitable fill if encountered during excavations. The removal of organic soils and plastic soils, where required, should be accomplished in accordance with FDOT Standard Plans Index 120-002. Backfill should consist of materials conforming to FDOT Standard Plans Index 120-001 and compacted in accordance with Section 120-9 of the Standard Specification for Road and Bridge Construction, latest edition.

**An underlying layer of organic material exists at the site, as noted in the borings from the previous roadway project. The relatively thin layer encountered in the borings may remain in place, due to the depth of excavation required to remove the layer. Geofabrics shall be included in the embankment to assist in maintaining embankment stability as the organic layer decays over time.**

## 7.2 Permanent Cut and Fill Slopes

We anticipate that fills will be required for the proposed roadway widening. Assuming proper subgrade preparation and adequate fill materials are utilized, we recommend that all proposed permanent side slopes be constructed on 2.0 horizontal to 1.0 vertical (2H:1V) or flatter. To prevent minor sloughing at the surface, we recommend that the slopes be seeded, mulched, and maintained to enhance slope stability soon after being completed.

## 7.3 Excavations

All excavations should be performed in accordance with FDOT Standard Plans 120-002, the latest Standard Specifications for Road and Bridge Construction, and in accordance with OSHA Standards. We recommend that sides of temporary excavations be sloped to 2H:1V or flatter or supported by temporary shoring.

## 7.4 Groundwater Control

Groundwater may not have an impact on the proposed roadway widening if the proposed roadway elevations are kept at or above the existing road level. However, depending upon groundwater levels at the time of construction, some form of dewatering may be required for utility and/or drainage structure excavations. The groundwater was not encountered in some of the boring depths completed. A summary of recorded groundwater readings is included as page titled **Groundwater Table and Boring Location Summary Data** in **Appendix A**.

## 7.5 Pavement Design Considerations

We anticipate that the proposed pavement structure will be a semi-flexible asphaltic concrete section. Soils existing along the majority of the project alignments should have modest subgrade strength for pavement support.

For a stabilized subgrade, we recommend a sand-gravel mixture, 12 inches thick, with a minimum design LBR of 40. The Base course should consist of limerock, shell rock or coquina, meeting the minimum requirements of the FDOT "Standard Specifications for Road and Bridge Construction," Sections 911, 913 or 915, respectively. The limerock should have a minimum LBR value of 100. Both the base and stabilized subgrade should be compacted to at least 98 percent of maximum dry density (FM 1-T180 Method D).

Asphalt thickness should be determined considering the anticipated traffic loading conditions and expected life expectancy of the pavement section.

## 7.6 On-Site Soil Suitability

The following notes are included on the **Roadway Soil Survey Sheet**, which is included in **Appendix A**, with some minor edits in this written report for clarity.

**Stratum 1** consists of Topsoil (A-8) and should be stripped from the proposed widening and new pavement areas. It may be used on the project in accordance with Standard Plans Index 120-001 or discarded per Specification 120 Excavation and Embankment.

**Stratum 2** consists of Brown Sand with Trace Silt and Limerock (A-2-4). This material appears to be suitable to use in subgrade and embankment support and should be utilized according to Standard Plans Index 120-001. However, this material is likely to retain excess moisture and may be difficult to dry and compact. It may be used in the embankment above the water level existing at the time of construction and should be used according to Standard Plans Index 120-001. It may be used in the subgrade portion of the roadbed when approved by the District Materials Engineer. Material placed below the existing water level must be non-plastic and contain less than 15% passing the Number 200 U.S. Standard Sieve.

**Stratum 3** consists of Brown Organic Sand with Limerock (A-8) and should be removed and replaced per Standard Index 120-002 if encountered during excavations. The relatively thin layer encountered in the borings may remain in place, due to the depth of excavation required to remove the layer. Geofabrics shall be included in the embankment to assist in maintaining embankment stability as the organic layer decays over time.

**Stratum 4** consists of Light Brown Sandy Limestone. This material can be used as select material as long as the gradation satisfies the FDOT Standard Specification Requirements. Limestone is anticipated to be Hard to Difficult to excavate. Additionally, Limestone can be porous and difficult to dewater.

**Stratum 5** consists of Limerock (fill) (A-1-a). These materials appear to be suitable to use in subgrade and embankment and should be utilized according to Standard Plans Index 120-001.

## 8.0 PAVEMENT CORES

### 8.1 Roadway General Information

The existing pavement section details, including total pavement thickness, layer thickness, base type, and base thickness were determined by performing cores within the project asphalt. A total of six (6) asphalt cores were obtained. The asphalt layer and base-depth information is provided on the **Pavement and Base Material Data Sheets** in **Appendix D**, with abbreviations for Pavement Layer Type and Base Type.

### 8.2 Coring Process

The pavement cores were located in the field by a representative of TSF using handheld Global Positioning System (GPS) equipment (non-survey grade), which is estimated to have an accuracy of 30 feet.

The approximate pavement core and base check locations are presented on the **Boring Location Plan** sheets in **Appendix A**. The GPS coordinates (Latitude/Longitude) are included on the **Pavement and Base Material Data Sheets** in **Appendix D** and on the **Photographs of Pavement Cores**, included in **Appendix D**.

The pavement cores were performed with the use of a 6-inch outside diameter core bit. Core samples of the existing pavement section were collected, and the thickness of the pavement and base was measured.

## 9.0 REPORT LIMITATIONS

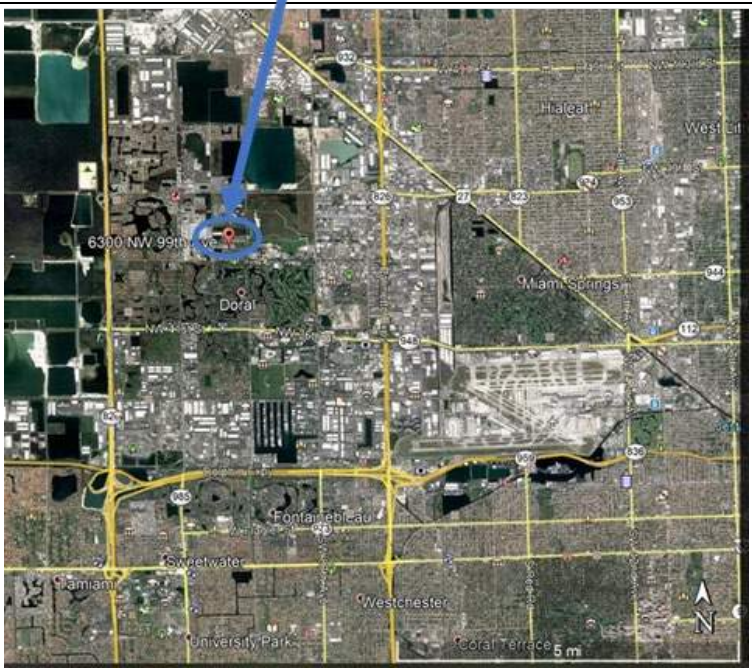
Our Geotechnical engineering evaluation of the site and subsurface conditions concerning the planned roadway improvements and our recommendations for site preparation and foundation construction are based upon the followings: (1) site observations, (2) the field exploratory test data obtained during the geotechnical study, and (3) our understanding of the project information and anticipated final grades as presented in this report.

If the final grades vary considerably from those stated or when final cross-sectional data becomes available, please contact our offices so that we can review our recommendations. Furthermore, upon the discovery of any site or subsurface conditions during construction, which appears to deviate from the data obtained during this geotechnical exploration, please contact us immediately so that we may visit the site, observe the differing conditions, and evaluate the new information with regards to our evaluation and recommendations contained herein.

The recommendations presented herein represent design and construction techniques that we feel are both applicable and feasible for the planned construction. We recommend, however, that we are provided the opportunity to review the final construction plans and the earthwork/roadway embankment construction specifications to evaluate whether our recommendations have been properly interpreted and implemented.

APPENDIX A
1, Site Vicinity Map (1 Page)
2, Site Geological Map (1 Page)
3, Site Topographical Map (1 Page)
4, Soil Map—Miami-Dade County, Florida, East Part (3 Pages)
5, Site Groundwater Map (1 Page)
6, Roadway Soil Survey (1 Page)
7, Soil Profiles (2 Pages)
8, Boring Location Plan (1 Page)
9, Groundwater Table and Boring Location Summary Data (1 Page))

**APPROXIMATE SITE LOCATION**



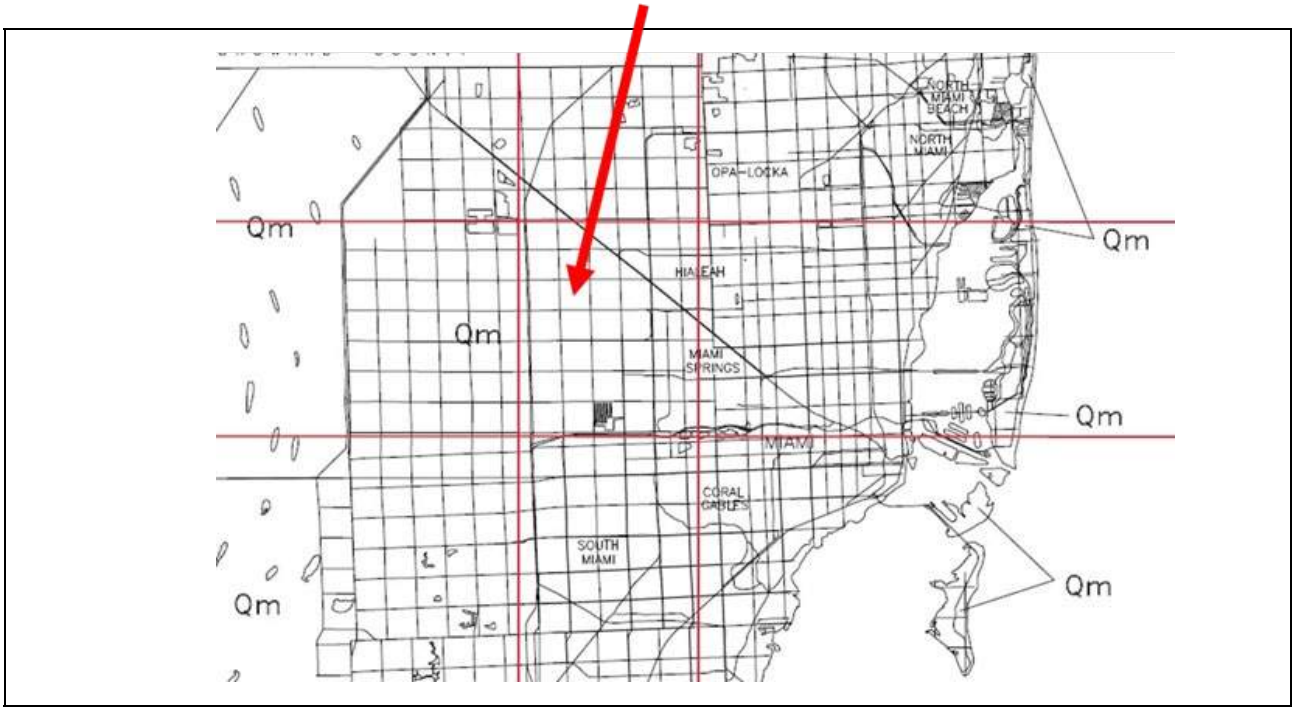

**SITE VICINITY MAP**

**COUNTY:** **MIAMI-DADE COUNTY, FLORIDA**

**REFERENCE:** **GOOGLE EARTH**

| NW 102nd Avenue, NW 66th Street and NW 99th Avenue City of Doral, FL Miami-Dade County | | |
|---|---|---|
| Drawn by: J.O. | Scale: N.T.S. | Project No: 7111-21-207 |

**APPROXIMATE SITE LOCATION**




**SITE GEOLOGICAL MAP**

**COUNTY:** **MIAMI-DADE COUNTY, FLORIDA** **T43S** **R43E** **S6**

**REFERENCE:** **FLORIDA GEOLOGICAL SURVEY (PART OF MAP AND LEGEND INCLUDED HERE)**
**online**
http://publicfiles.dep.state.fl.us/FGS/FGS_Publications/OFMS/CountyMaps/OFMS67-DADE.pdf

**EXPLANATION**

QUATERNARY

Qm— Miami Limestone. White to light gray limestone, variably fossiliferous, oolitic and pelletal. Variable percentages of quartz sand ranging fro a sandy limestone to a calcareous quartz sand.

| NW 102nd Avenue, NW 66th Street and NW 99th Avenue<br>City of Doral, FL<br>Miami-Dade County | | |
|---|---|---|
| Drawn by:<br>J.O. | Scale:<br>N.T.S. | Project No:<br>7111-21-207 |

**APPROXIMATE SITE LOCATION**


**SITE TOPOGRAPHICAL MAP**

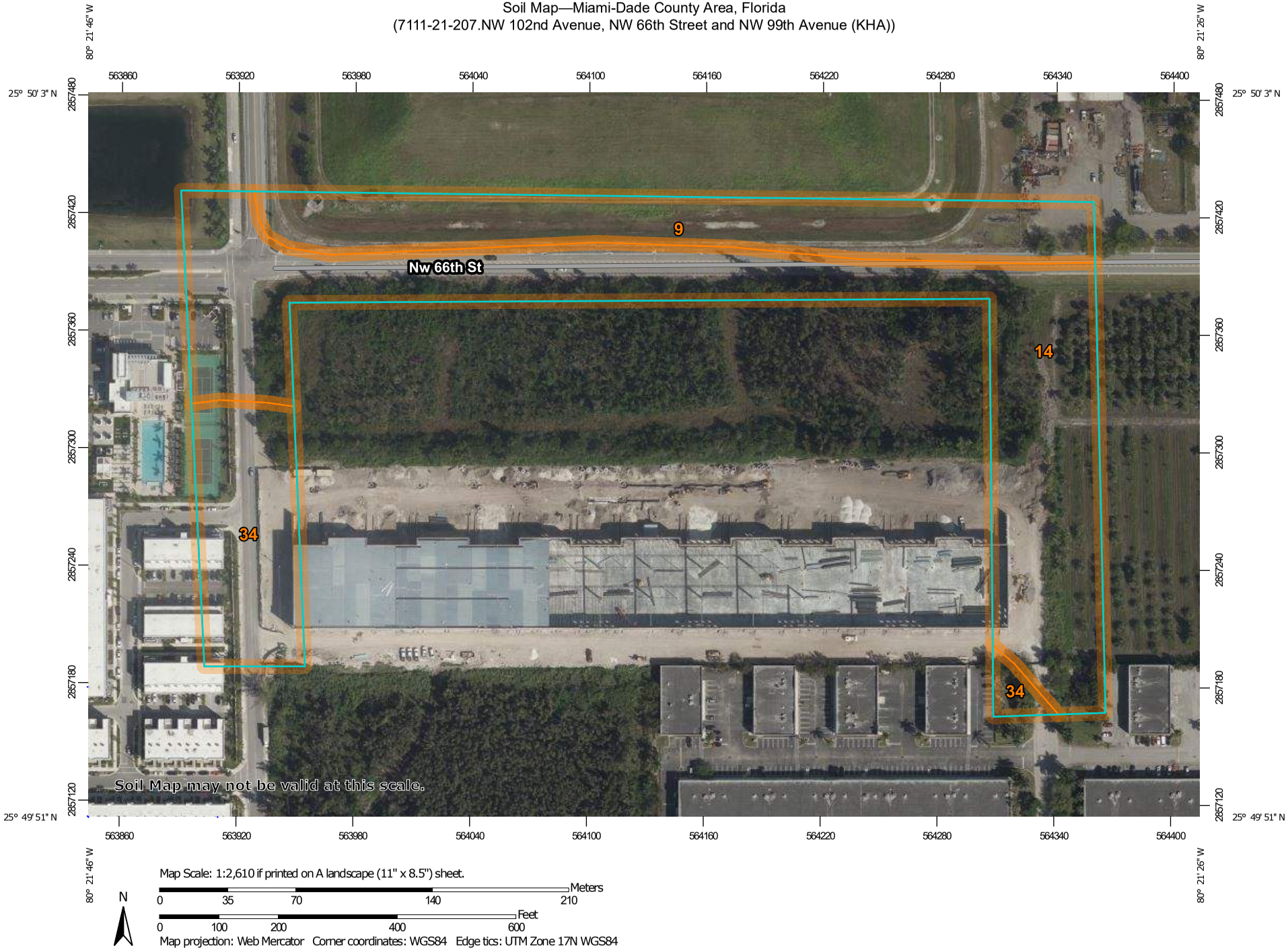
**COUNTY:** **MIAMI-DADE COUNTY, FLORIDA**

**REFERENCE:** **TOPOGRAPHIC MAP, HIALEAH, FLORIDA (PART OF MAP INCLUDED HEREIN)**
https://www.anyplaceamerica.com/directory/fl/miami-dade-county-12086/

**T53S R40E S17**

| NW 102nd Avenue, NW 66th Street and NW 99th Avenue<br>City of Doral, FL<br>Miami-Dade County | | |
|---|---|---|
| Drawn by:<br>J.O. | Scale:<br>N.T.S. | Project No:<br>7111-21-207 |

Soil Map—Miami-Dade County Area, Florida
(7111-21-207.NW 102nd Avenue, NW 66th Street and NW 99th Avenue (KHA))




Map Scale: 1:2,610 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 35 70 140 210

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Miami-Dade County Area, Florida
Survey Area Data: Version 12, Jun 9, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

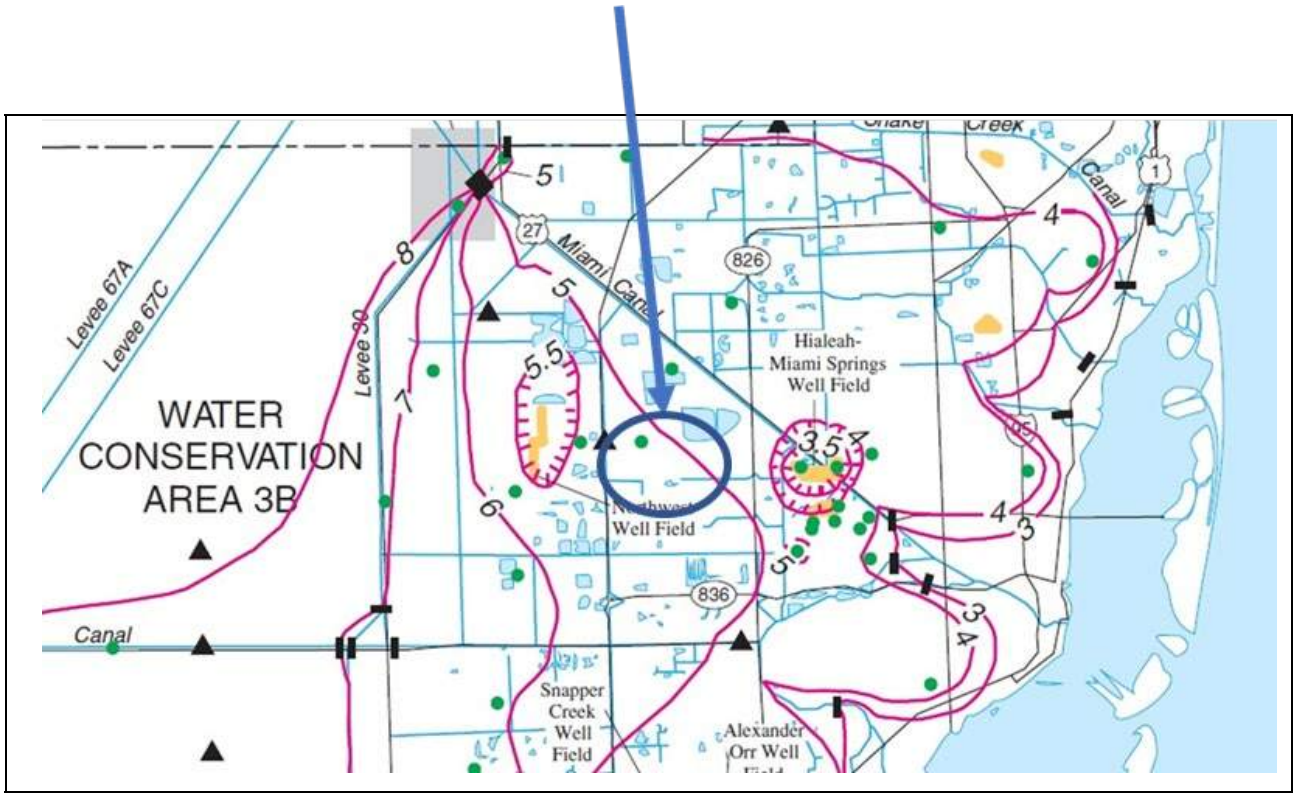
Date(s) aerial images were photographed: Dec 6, 2019—Mar 24, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 9 | Udorthents-Water complex | 3.0 | 26.1% |
| 14 | Dania muck, frequently ponded, 0 to 1 percent slopes | 6.6 | 57.4% |
| 34 | Hallandale fine sand, 0 to 2 percent slopes | 1.9 | 16.5% |
| **Totals for Area of Interest** | | **11.6** | **100.0%** |

**APPROXIMATE SITE LOCATION**




**SITE GROUNDWATER MAP**

**COUNTY:** **MIAMI-DADE COUNTY, FLORIDA**

**REFERENCE:** **AVERAGE YEARLY HIGH WATER LEVELS 1990-99**

PLATE 4. MAPS SHOWING ALTITUDE OF THE WATER TABLE IN THE BISCAYNE AQUIFER, MIAMI-DADE COUNTY, FLORIDA, BASED ON AVERAGE YEARLY LOW WATER LEVELS FOR 1990-99, 1990-94, AND 1995-99

By
A.C. Lietz, Joann Dixon, and Michael Byrne
2002

**CONTOURS IN 0.5-FOOT INTERVALS SEALEVEL**

| NW 102nd Avenue, NW 66th Street and NW 99th Avenue City of Doral, FL Miami-Dade County | | |
|---|---|---|
| Drawn by: | Scale: | Project No: |
| J.O. | N.T.S. | 7111-21-207 |

DATE OF SURVEY: JULY 2021
SURVEY MADE BY: TIERRA SOUTH FLORIDA, INC.
SUBMITTED BY: TIERRA SOUTH FLORIDA, INC.

# STATE OF FLORIDA
# DEPARTMENT OF TRANSPORTATION
# MATERIALS AND RESEARCH

DISTRICT: CITY OF DORAL
ROAD NO.:
COUNTY: MIAMI-DADE

PROJECT NAME: NW 66TH AVE

FINANCIAL PROJECT ID: 7111-21-207

## CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

SURVEY BEGINS STA.: 30+00 SURVEY ENDS STA.: 44+00

REFERENCE: BL NW 66TH AVE

| | ORGANIC CONTENT | | MOISTURE CONTENT | | SIEVE ANALYSIS RESULTS % PASS | | | | | | ATTERBERG LIMITS (%) | | | | | CORROSION TEST RESULTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STRATUM NO. | NO. OF TESTS | % ORGANIC | NO. OF TESTS | % MOISTURE | NO. OF TESTS | 10 MESH | 40 MESH | 60 MESH | 100 MESH | 200 MESH | NO. OF TESTS | LIQUID LIMIT | PLASTIC INDEX | AASHTO GROUP | DESCRIPTION | NO. OF TESTS | RESISTIVITY ohms-cm | CHLORIDE ppm | SULFATES ppm | pH |
| 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | A-8 | TOPSOIL | - | - | - | - | - |
| 2 | 1 | 1 | 1 | 12 | 1 | 93 | 71 | 59 | 46 | 35 | - | - | - | A-2-4 | BROWN SAND WITH TRACE SILT AND LIMEROCK | - | - | - | - | - |
| 3 | 3 | 7 - 11 | 3 | 15 - 34 | 2 | 36 - 69 | 27 - 51 | 22 - 44 | 15 - 33 | 9 - 24 | - | - | - | A-8 | BROWN ORGANIC SAND WITH LIMEROCK | - | - | - | - | - |
| 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | LIGHT BROWN SANDY LIMESTONE | - | - | - | - | - |
| 5 | 1 | 1 | 1 | 1 | 1 | 28 | 20 | 17 | 16 | 10 | - | - | - | A-1-a | LIMEROCK (FILL) | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | ASHPALT | - | - | - | - | - |

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE. MAKE FINAL CHECK AFTER GRADING.

▽ - WATER TABLE ENCOUNTERED

▼ - ESTIMATED SEASONAL HIGH GROUNDWATER LEVEL

GNE - GROUNDWATER NOT ENCOUNTERED

NP - NON PLASTIC

1. STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH BORING LOCATION ONLY. ANY SUBSOIL CONNECTING LINES SHOWN ARE FOR ESTIMATING EARTHWORK ONLY AND DO NOT INDICATE ACTUAL STRATUM LIMITS. SUBSURFACE VARIATIONS BETWEEN BORING SHOULD BE ANTICIPATED AS INDICATED IN STANDARD ESPECIFIFCATIONS SECTION 2-4. FOR FURTHER DETAILS SEE SECTION 120-3.

2. GROUNDWATER LEVEL SHOWN AS ( ▽ ) WHERE ENCOUNTERED, GROUNDWATER NOT ENCOUNTERED SHOWN AS "GNE". ESTIMATED SEASONAL HIGH GROUNDWATER LEVEL SHOWN AS ( ▼ ), IF ESTIMATED AT OR ABOVE THE BOTTOM OF BORING PROFILE ELEVATION.

3. REMOVAL OF MUCK AND PLASTIC MATERIAL OCCURRING WITHIN THE ROADWAY SHALL BE ACCOMPLISED IN ACCORDANCE WITH STANDARD PLANS INDEX 120-002, UNLESS OTHERWISE SHOWN ON THE PLANS. THE MATERIAL UTILIZED IN EMBANKMENT CONSTRUCTION SHALL BE IN ACCORDANCE WITH STANDARD PLANS INDEX 120-001.

4. SOIL ANALYSIS INCLUDEDS DATA FROM ROADWAY AREAS AND RAMP AREAS, AS NOTED IN LIMITS ABOVE.

5. THE SYMBOL "-" REPRESENTS AN UNMEASURED PARAMETER.

6. STRATUM 1 CONSISTS OF TOPSOIL (A-8) AND SHOULD BE STRIPPED FROM THE PROPOSED WIDENING AND NEW PAVEMENT AREAS IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 120 - EXCAVATION AND EMBANKMENT.

7. STRATUM 2 CONSISTS OF BROWN SAND WITH TRACE SILT AND LIMEROCK (A-2-4). THIS MATERIAL APPEARS TO BE SUITABLE TO USE IN SUBGRADE AND EMBANKMENT SUPPORT AND SHOULD BE UTILIZED ACCORDING TO STANDARD PLANS INDEX 120-001. HOWEVER, THIS MATERIAL IS LIKELY TO RETAIN EXCESS MOISTURE AND MAY BEDIFFICULT TO DRY AND COMPACT. IT MAY BE USED IN THE EMBANKMENT ABOVE THE WATER LEVEL EXISTING AT THE TIME OF CONSTRUCTION AND SHOULD BE USED ACCORDING TO STANDARD PLANS INDEX 120-001. IT MAY BE USED IN THE SUBGRADE PORTION OF THE ROADBED WHEN APPROVED BY THE COUNTY MATERIALS ENGINEER. MATERIAL PLACED BELOW THE EXISTING WATER LEVEL MUST BE NON-PLASTIC AND CONTAIN LESS THAN 15% PASSING THE NO . 200 U.S. STANDARD SIEVE.

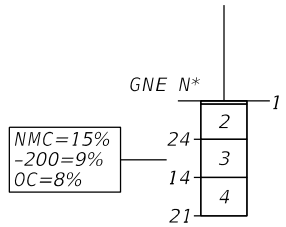
8. STRATUM 3 CONSISTS OF BROWN ORGANIC SAND WITH LIMEROCK (A-8) AND SHOULD BE REMOVED AND REPLACED PER STANDARD INDEX 120-002 IF ENCOUNTERED DURING EXCAVATIONS. THE RELATIVELY THIN LAYER ENCOUNTERED IN THE BORINGS MAY REMAIN IN PLACE, DUE TO THE DEPTH OF EXCAVATION REQUIRED TO REMOVE THE LAYER. GEOFABRICS SHALL BE INCLUDED IN THE EMBANKMENT TO ASSIST IN MAINTAINING EMBANKMENT STABILITY AS THE ORGANIC LAYER DECAYS OVER TIME.

9. STRATUM 4 CONSISTS OF LIGHT BROWN SANDY LIMESTONE. THIS MATERIAL CAN BE USED AS SELECT MATERIAL AS LONG AS THE GRADATION SATISFIES THE FDOT STANDARD SPECIFICATION REQUIREMENTS. LIMESTONE IS ANTICIPATED TO BE HARD TO DIFFICULT TO EXCAVATE. ADDITIONALLY, LIMESTONE CAN BE POROUS AND DIFFICULT TO DEWATER.

10. STRATUM 5 CONSISTS OF LIMEROCK (FILL) (A-1-a). THESE MATERIALS APPEAR TO BE SUITABLE TO USE IN SUBGRADE AND EMBANKMENT AND SHOULD BE UTILIZED ACCORDING TO STANDARD PLANS INDEX 120-001.

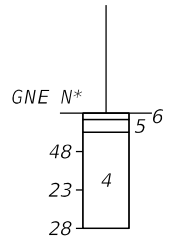
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DRAWN BY: NG<br>CHECKED BY: KV | APPROVED BY: RK<br>DATE: 7/28/2021 | ENGINEER OF RECORD:<br>RAJ KRISHNASAMY, P.E.<br>FLORIDA LICENSE NO.: 53567 | TIERRA SOUTH FLORIDA<br>2765 VISTA PARKWAY, S-10<br>WEST PALM BEACH, FL 33411 | SCALE: NTS | PROJECT NUMBER: 7111-21-207 | ROADWAY SOIL SURVEY<br>NW 102ND AVENUE<br>NW 66TH STREET AND NW 99TH AVENUE<br>CITY OF DORAL, FLORIDA | Sheet: 2 |

BOR # B-1
STA. 30+16 BL NW 66TH ST
OFF. 10 FT RT
ELEV. 6
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.83338
LONGITUDE -80.362079
NORTHING 545641
EASTING 865989



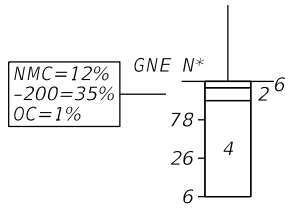

Boring Terminated at Elev. 0ft

BOR # B-2
STA. 31+47 BL NW 66TH ST
OFF. 1 FT RT
ELEV. 5.35
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.833411
LONGITUDE -80.361681
NORTHING 545653
EASTING 866120



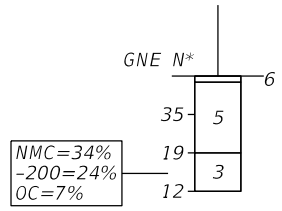

Boring Terminated at Elev. -0.65ft

BOR # B-3
STA. 33+12 BL NW 66TH ST
OFF. 2 FT RT
ELEV. 7.01
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.833402
LONGITUDE -80.361179
NORTHING 545651
EASTING 866285



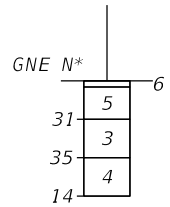

Boring Terminated at Elev. 1.01ft

BOR # B-4
STA. 34+52 BL NW 66TH ST
OFF. 1 FT RT
ELEV. 7.29
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.833413
LONGITUDE -80.360755
NORTHING 545655
EASTING 866425

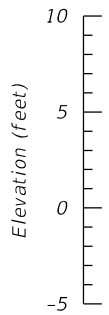


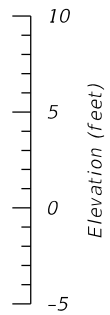

Boring Terminated at Elev. 1.29ft

BOR # B-5
STA. 36+27 BL NW 66TH ST
OFF. 5 FT RT
ELEV. 7.04
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.833395
LONGITUDE -80.360223
NORTHING 545650
EASTING 866600

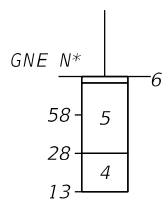



Boring Terminated at Elev. 1.04ft



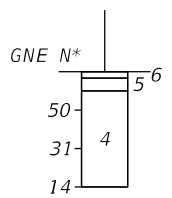




BOR # B-6
STA. 37+66 BL NW 66TH ST
OFF. 2 FT RT
ELEV. 7.52
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.833412
LONGITUDE -80.359799
NORTHING 545657
EASTING 866739



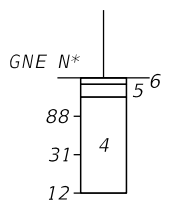

Boring Terminated at Elev. 1.52ft

BOR # B-7
STA. 39+50 BL NW 66TH ST
OFF. 3 FT RT
ELEV. 7.77
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.8334
LONGITUDE -80.359241
NORTHING 545653
EASTING 866923



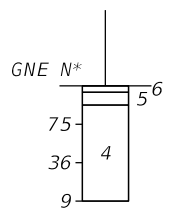

Boring Terminated at Elev. 1.77ft

BOR # B-8
STA. 40+90 BL NW 66TH ST
OFF. 4 FT RT
ELEV. 7.45
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.833398
LONGITUDE -80.358816
NORTHING 545653
EASTING 867063



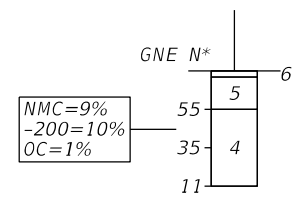

Boring Terminated at Elev. 1.45ft

BOR # B-9
STA. 42+05 BL NW 66TH ST
OFF. 1 FT RT
ELEV. 7.04
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.833407
LONGITUDE -80.358464
NORTHING 545657
EASTING 867178

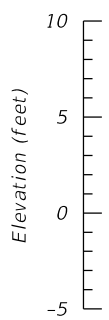


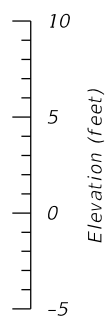

Boring Terminated at Elev. 1.04ft

BOR # B-10
STA. 43+13 BL NW 66TH ST
OFF. 7 FT RT
ELEV. 7.82
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.833393
LONGITUDE -80.358136
NORTHING 545652
EASTING 867286




Boring Terminated at Elev. 1.82ft




Legend

1 TOPSOIL (A-8)
2 BROWN SAND WITH TRACE OF SILT AND LIMEROCK (A-2-4)
3 BROWN ORGANIC SAND WITH LIMEROCK (A-8)
4 LIGHT BROWN SANDY LIMESTONE
5 LIMEROCK (FILL) (A-1-a)
6 ASPHALT

NMC= Natural Moisture Content (%)
-200= Fines Passing #200 Sieve (%)
OC= Organic Content (%)

▽ Encountered Groundwater Table

GNE Groundwater Table Not Encountered in upper 10 feet.

* SPT N-VALUES SHOWN ABOVE WERE OBTAINED USING AUTOMATIC HAMMERS. GENERALLY DESIGN CORRELATIONS AND PROGRAMS USE SAFETY HAMMER N-VALUES. HENCE, THE ABOVE N-VALUES NEED TO BE MULTIPLIED BY 1.24 TO OBTAIN EQUIVALENT SAFETY HAMMER N-VALUES FOR DESIGN PURPOSE.

** LATITUDE AND LONGITUDE ARE APPROXIMATE, BASED ON HANDHELD GPSMap GARMIN 78s. ACTUAL BORING LOCATIONS COULD VARY

DRAWN BY: NG
CHECKED BY: KV
APPROVED BY: RK
DATE: 7/28/2021
ENGINEER OF RECORD: RAJ KRISHNASAMY, P.E.
FLORIDA LICENSE NO.: 53567

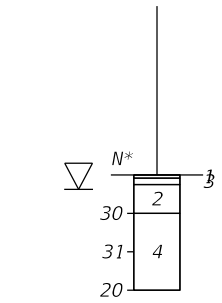
TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411

SCALE: NTS
PROJECT NUMBER: 7111-21-207

SOILS PROFILES
NW 102ND AVENUE
NW 66TH STREET AND NW 99TH AVENUE
CITY OF DORAL, FLORIDA

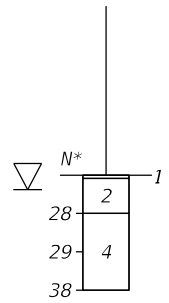
Sheet: 3

BOR # B-11
STA. 43+26 BL NW 66TH ST
OFF. 98 FT RT
ELEV. 2.19
DATE 7/19/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.833142
LONGITUDE -80.358097
NORTHING 545561
EASTING 867300



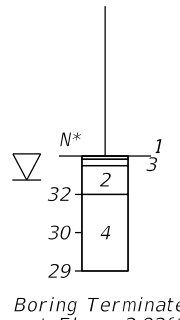

Boring Terminated at Elev. -3.81ft

BOR # B-12
STA. 43+27 BL NW 66TH ST
OFF. 202 FT RT
ELEV. 2.18
DATE 7/19/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.832855
LONGITUDE -80.358095
NORTHING 545457
EASTING 867301



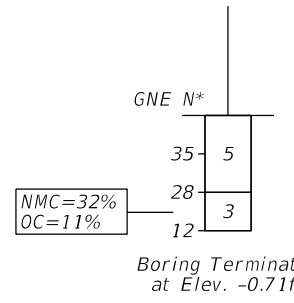

Boring Terminated at Elev. -3.82ft

BOR # B-13
STA. 43+27 BL NW 66TH ST
OFF. 306 FT RT
ELEV. 3.18
DATE 7/16/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.83257
LONGITUDE -80.358092
NORTHING 545353
EASTING 867302



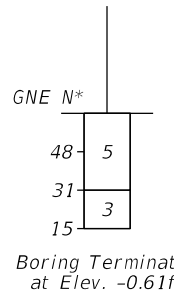

Boring Terminated at Elev. -2.82ft

BOR # B-14
STA. 30+22 BL NW 66TH ST
OFF. 92 FT RT
ELEV. 5.29
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.833154
LONGITUDE -80.36206
NORTHING 545559
EASTING 865996

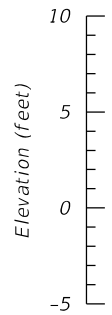


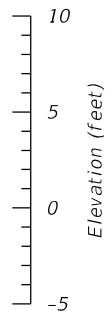

Boring Terminated at Elev. -0.71ft

BOR # B-15
STA. 30+24 BL NW 66TH ST
OFF. 185 FT RT
ELEV. 5.39
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.832897
LONGITUDE -80.362054
NORTHING 545466
EASTING 865998

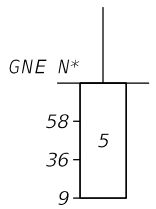



Boring Terminated at Elev. -0.61ft



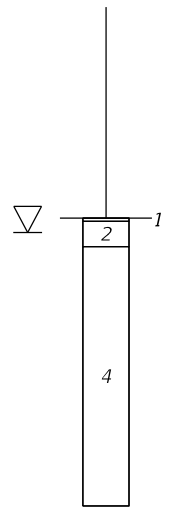




BOR # B-16
STA. 30+31 BL NW 66TH ST
OFF. 282 FT RT
ELEV. 7.03
DATE 7/1/2021
HAMMER AUTO
RIG CME 45
LATITUDE 25.83263
LONGITUDE -80.362033
NORTHING 545369
EASTING 866006



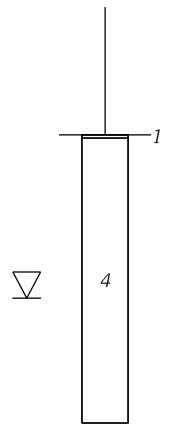

Boring Terminated at Elev. 1.03ft

BOR # BHP-1
STA. 42+66 BL NW 66TH ST
OFF. 195 FT RT
ELEV. 0
DATE 7/19/2021
LATITUDE 25.832872
LONGITUDE -80.358279
NORTHING 545463
EASTING 867240

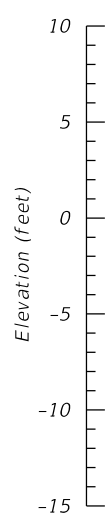


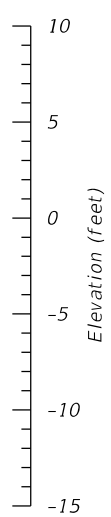

Boring Terminated at Elev. -15ft

BOR # BHP-2
STA. 37+21 BL NW 66TH ST
OFF. 16 FT RT
ELEV. 4.33
DATE 7/1/2021
LATITUDE 25.833364
LONGITUDE -80.359938
NORTHING 545639
EASTING 866694




Boring Terminated at Elev. -10.67ft




Legend

1 TOPSOIL (A-8)
2 BROWN SAND WITH TRACE OF SILT AND LIMEROCK (A-2-4)
3 BROWN ORGANIC SAND WITH LIMEROCK (A-8)
4 LIGHT BROWN SANDY LIMESTONE
5 LIMEROCK (FILL) (A-1-a)
6 ASPHALT

NMC= Natural Moisture Content (%)
-200= Fines Passing #200 Sieve (%)
OC= Organic Content (%)

▽ Encountered Groundwater Table

GNE Groundwater Table Not Encountered in upper 10 feet.

* SPT N-VALUES SHOWN ABOVE WERE OBTAINED USING AUTOMATIC HAMMERS. GENERALLY DESIGN CORRELATIONS AND PROGRAMS USE SAFETY HAMMER N-VALUES. HENCE, THE ABOVE N-VALUES NEED TO BE MULTIPLIED BY 1.24 TO OBTAIN EQUIVALENT SAFETY HAMMER N-VALUES FOR DESIGN PURPOSE.

** LATITUDE AND LONGITUDE ARE APPROXIMATE, BASED ON HANDHELD GPSMap GARMIN 78s. ACTUAL BORING LOCATIONS COULD VARY

DRAWN BY: NG
CHECKED BY: KV
APPROVED BY: RK
DATE: 7/28/2021
ENGINEER OF RECORD: RAJ KRISHNASAMY, P.E.
FLORIDA LICENSE NO.: 53567

TIERRA SOUTH FLORIDA
2765 VISTA PARKWAY, S-10
WEST PALM BEACH, FL 33411

SCALE: NTS
PROJECT NUMBER: 7111-21-207

SOILS PROFILES
NW 102ND AVENUE
NW 66TH STREET AND NW 99TH AVENUE
CITY OF DORAL, FLORIDA

Sheet: 4


## BORINGS LOCATION PLAN

- Approximate Location of SPT Boring
- Approximate Location of BHP Test
- Approximate Location of Pavement Core

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DRAWN BY: NG<br>CHECKED BY: KV | APPROVED BY: RK<br>DATE: 7/28/2021 | ENGINEER OF RECORD:<br>RAJ KRISHNASAMY, P.E.<br>FLORIDA LICENSE NO.:<br>53567 | TIERRA SOUTH FLORIDA<br>2765 VISTA PARKWAY, S-10<br>WEST PALM BEACH, FL 33411 | SCALE: NTS | PROJECT NUMBER: 7111-21-207 | BORING LOCATION PLAN<br>NW 102ND AVENUE<br>NW 66TH STREET AND NW 99TH AVENUE<br>CITY OF DORAL, FLORIDA | Sheet: 1 |

**NW 102nd Avenue, NW 66th Street and NW 99th Avenue**
**City of Doral, FL**
**Miami-Dade County**
**TSF Project No. 7111-21-207**
**Groundwater Table Summary Data**

| BORING # | NORTHING | EASTING | LATITUDE | LONGITUDE | STATION | OFFSET (FT) | REFERENCE | ELEVATION | GROUNDWATER DEPTH (FT) | BORING DEPTH (FT) |
|---|---|---|---|---|---|---|---|---|---|---|
| B-1 | 545641 | 865989 | 25.833380 | -80.362079 | 30+16 | 10 RT | BL NW 66TH | 6.0 | GNE | 6 |
| B-2 | 545653 | 866120 | 25.833411 | -80.361681 | 31+47 | 1 RT | BL NW 66TH | 5.4 | GNE | 6 |
| B-3 | 545651 | 866285 | 25.833402 | -80.361179 | 33+12 | 2 RT | BL NW 66TH | 7.0 | GNE | 6 |
| B-4 | 545655 | 866425 | 25.833413 | -80.360755 | 34+52 | 1 RT | BL NW 66TH | 7.3 | GNE | 6 |
| B-5 | 545650 | 866600 | 25.833395 | -80.360223 | 36+27 | 5 RT | BL NW 66TH | 7.0 | GNE | 6 |
| B-6 | 545657 | 866739 | 25.833412 | -80.359799 | 37+66 | 2 RT | BL NW 66TH | 7.5 | GNE | 6 |
| B-7 | 545653 | 866923 | 25.833400 | -80.359241 | 39+50 | 3 RT | BL NW 66TH | 7.8 | GNE | 6 |
| B-8 | 545653 | 867063 | 25.833398 | -80.358816 | 40+90 | 4 RT | BL NW 66TH | 7.5 | GNE | 6 |
| B-9 | 545657 | 867178 | 25.833407 | -80.358464 | 42+05 | 1 RT | BL NW 66TH | 7.0 | GNE | 6 |
| B-10 | 545652 | 867286 | 25.833393 | -80.358136 | 43+13 | 7 RT | BL NW 66TH | 7.8 | GNE | 6 |
| B-11 | 545561 | 867300 | 25.833142 | -80.358097 | 43+26 | 98 RT | BL NW 66TH | 2.2 | 0.75 | 6 |
| B-12 | 545457 | 867301 | 25.832855 | -80.358095 | 43+27 | 202 RT | BL NW 66TH | 2.2 | 0.75 | 6 |
| B-13 | 545353 | 867302 | 25.832570 | -80.358092 | 43+27 | 306 RT | BL NW 66TH | 3.2 | 1.25 | 6 |
| B-14 | 545559 | 865996 | 25.833154 | -80.362060 | 30+22 | 92 RT | BL NW 66TH | 5.3 | GNE | 6 |
| B-15 | 545466 | 865998 | 25.832897 | -80.362054 | 30+24 | 185 RT | BL NW 66TH | 5.4 | GNE | 6 |
| B-16 | 545369 | 866006 | 25.832630 | -80.362033 | 30+31 | 282 RT | BL NW 66TH | 7.0 | GNE | 6 |
| BHP-1 | 545463 | 867240 | 25.832872 | -80.358279 | 42+66 | 195 RT | BL NW 66TH | 0.0 | 0.75 | 15 |
| BHP-2 | 545639 | 866694 | 25.833364 | -80.359938 | 37+21 | 16 RT | BL NW 66TH | 4.3 | 8.5 | 15 |
| | | | | | | | Max | | 8.5 | |
| | | | | | | | Min | | 0.75 | |

Lat/Lon is estimated from field points. Northing/Easting are derived from Lat/Lon
Station/Offset/Elevation were provided by the EOR, and are based on Northing/Easting.
All values should be consdidered approximate.

APPENDIX B -
1, Summary of Laboratory Test Results (1 Page)
2, Grain Size Data Sheets (5 Pages)

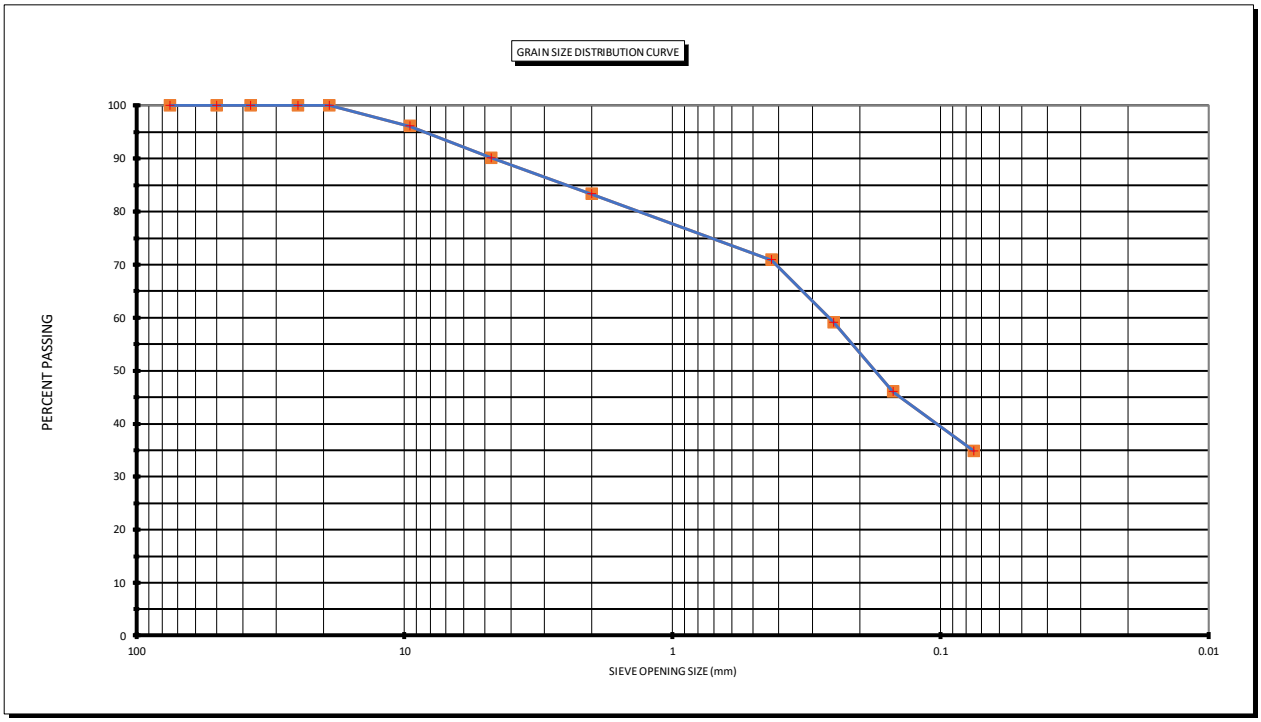
**SUMMARY OF LABORATORY TESTS**
**NW 102nd Avenue, NW 66th Street and NW 99th Avenue**
**City of Doral, FL**
**Miami-Dade County**
**TSF Project No. 7111-21-207**

| Boring Number | Sample Number | Sample Depth (ft) | Stratum Number | AASHTO Symbol | Sieve Analysis, Percentage Passing | | | | | | | | Written Description | Organic Content (%) | Natural Moisture Content (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 3/4" | 3/8" | #4 | #10 | #40 | #60 | #100 | #200 | | | |
| B-3 | 1 | 0.33 TO 1 | 2 | A-2-4 | 100 | 96 | 90 | 83 | 71 | 59 | 46 | 35 | BROWN SAND WITH TRACE SILT AND LIMEROCK (A-2-4) | 1 | 12 |
| B-1 | 2 | 2 TO 4 | 3 | A-8 | 61 | 55 | 45 | 36 | 27 | 22 | 15 | 9 | BROWN ORGANIC SAND WITH LIMEROCK (A-8) | 8 | 15 |
| B-4 | 3 | 4 TO 6 | 3 | A-8 | 89 | 85 | 80 | 69 | 51 | 44 | 33 | 24 | BROWN ORGANIC SAND WITH LIMEROCK (A-8) | 7 | 34 |
| B-14 | 3 | 4 TO 6 | 3 | A-8 | | | | | | | | | BROWN ORGANIC SAND WITH LIMEROCK (A-8) | 11 | 32 |
| B-10 | 3 | 2 TO 4 | 5 | A-1-a | 65 | 50 | 39 | 28 | 20 | 17 | 13 | 10 | LIMEROCK (FILL) A-1-a | 1 | 9 |

# GRAIN SIZE DATA SHEET

**PROJECT INFORMATION**
**NW 102nd Avenue, NW 66th Street and NW 99th Avenue**
**City of Doral, FL**
**Miami-Dade County**
**TSF Project No. 7111-21-207**

**DATE:** 7/2/2021




| | | | | | |
|---|---|---|---|---|---|
| ASTM D 2487 Classification of Soil for Engineering Purposes | | | Coarse Sand | < #4 and > #10 | $Cu = D_{60} / D_{10}$ |
| Coarse Gravel | < 3" and > 3/4" | | Medium Sand | < #10 and > #40 | $Cc = (D_{30})^2 / (D_{10} \times D_{60})$ |
| Fine Gravel | < 3/4" and > #4 | | Fine Sand | < #40 and > #200 | |

**BORING #** B-3 **SAMPLE #** 1 **DEPTH (ft):** 0.33 TO 1

**STRATUM:** 2

**SOIL CLASSIFICATION:** A-2-4

**MC%** 11.9
**OC%** 1.06
**-200%** 35

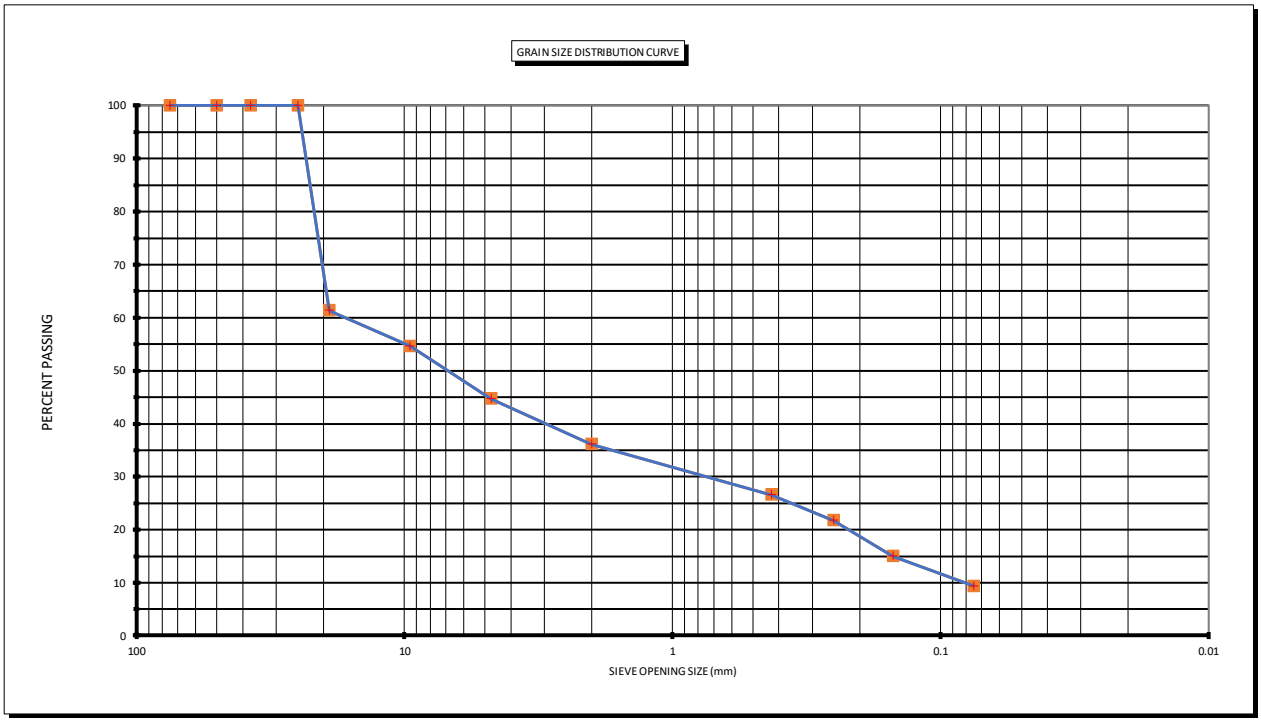
**BROWN SAND WITH TRACE SILT AND LIMEROCK (A-2-4)**

| ATTERBERG LIMIT ( - #40 Material ) | |
|---|---|
| LIQUID LIMIT | |
| PLASTIC LIMIT | |
| PLASTIC INDEX | |

# GRAIN SIZE DATA SHEET

**PROJECT INFORMATION**
**NW 102nd Avenue, NW 66th Street and NW 99th Avenue**
**City of Doral, FL**
**Miami-Dade County**
**TSF Project No. 7111-21-207**

**DATE:** 7/2/2021




| ASTM D 2487 Classification of Soil for Engineering Purposes | | | Coarse Sand | < #4 and > #10 | Cu = $D_{60}$ / $D_{10}$ |
|---|---|---|---|---|---|
| Coarse Gravel | < 3" and > 3/4" | | Medium Sand | < #10 and > #40 | Cc = $(D_{30})^2$ / ($D_{10}$ x $D_{60}$) |
| Fine Gravel | < 3/4" and > #4 | | Fine Sand | < #40 and > #200 | |

**BORING #** B-1 **SAMPLE #** 2 **DEPTH (ft):** 2 TO 4

**STRATUM:** 3

**SOIL CLASSIFICATION:** A-8

**MC%** 15.1
**OC%** 7.59
**-200%** 9

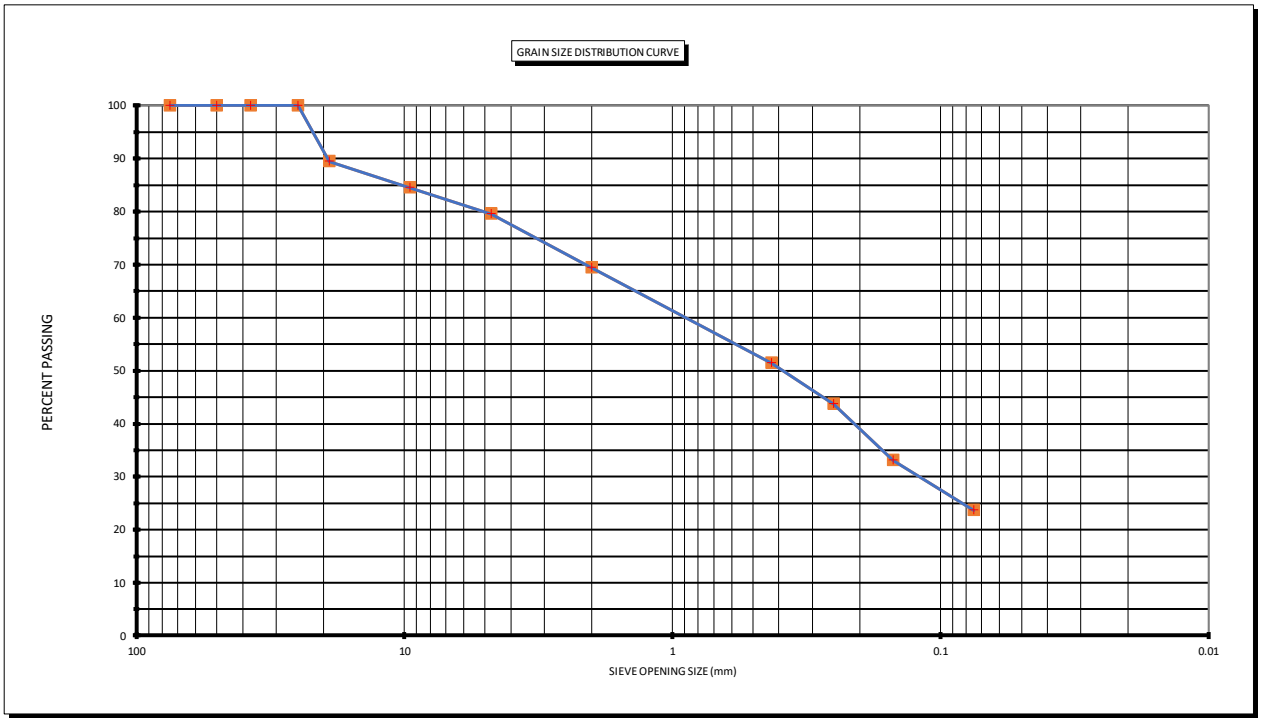
**BROWN ORGANIC SAND WITH LIMEROCK (A-8)**

| ATTERBERG LIMIT ( - #40 Material ) | |
|---|---|
| LIQUID LIMIT | |
| PLASTIC LIMIT | |
| PLASTIC INDEX | |

# GRAIN SIZE DATA SHEET

**PROJECT INFORMATION**
**NW 102nd Avenue, NW 66th Street and NW 99th Avenue**
**City of Doral, FL**
**Miami-Dade County**
**TSF Project No. 7111-21-207**

**DATE:** 7/2/2021




| ASTM D 2487 Classification of Soil for Engineering Purposes | | | Coarse Sand | < #4 and > #10 | $Cu = D_{60} / D_{10}$ |
|---|---|---|---|---|---|
| Coarse Gravel | < 3" and > 3/4" | | Medium Sand | < #10 and > #40 | $Cc = (D_{30})^2 / (D_{10} \times D_{60})$ |
| Fine Gravel | < 3/4" and > #4 | | Fine Sand | < #40 and > #200 | |

**BORING #** B-4 **SAMPLE #** 3 **DEPTH (ft):** 4 TO 6

**STRATUM:** 3

**SOIL CLASSIFICATION:** A-8

**MC%** 33.9
**OC%** 7.20
**-200%** 24

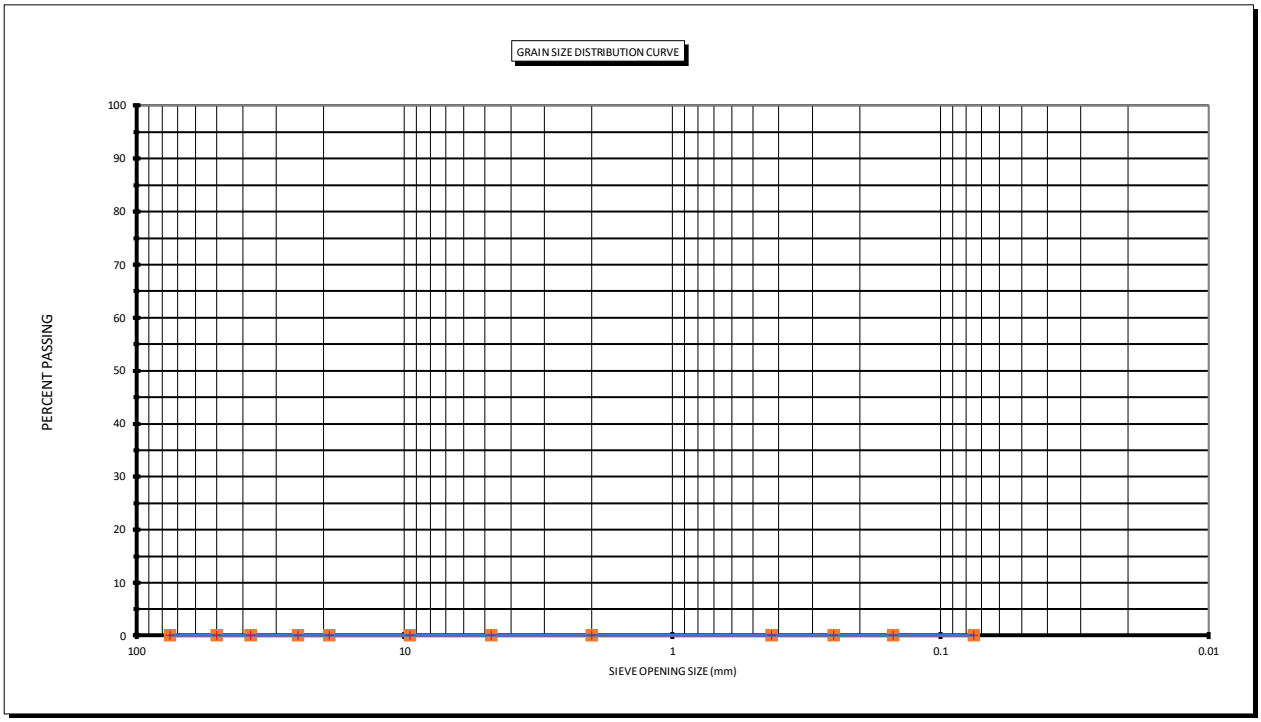
**BROWN ORGANIC SAND WITH LIMEROCK (A-8)**

| ATTERBERG LIMIT ( - #40 Material ) | |
|---|---|
| LIQUID LIMIT | |
| PLASTIC LIMIT | |
| PLASTIC INDEX | |

# GRAIN SIZE DATA SHEET

**PROJECT INFORMATION**
**NW 102nd Avenue, NW 66th Street and NW 99th Avenue**
**City of Doral, FL**
**Miami-Dade County**
**TSF Project No. 7111-21-207**

**DATE:** 7/6/2021




| ASTM D 2487 Classification of Soil for Engineering Purposes | | | Coarse Sand | < #4 and > #10 | $Cu = D_{60} / D_{10}$ |
|---|---|---|---|---|---|
| Coarse Gravel | < 3" and > 3/4" | | Medium Sand | < #10 and > #40 | $Cc = (D_{30})^2 / (D_{10} \times D_{60})$ |
| Fine Gravel | < 3/4" and > #4 | | Fine Sand | < #40 and > #200 | |

**BORING #** B-14 **SAMPLE #** 3 **DEPTH (ft):** 4 TO 6

**STRATUM:** 3

**SOIL CLASSIFICATION:** A-8

**MC%** 32.4
**OC%** 11.23
**-200%**

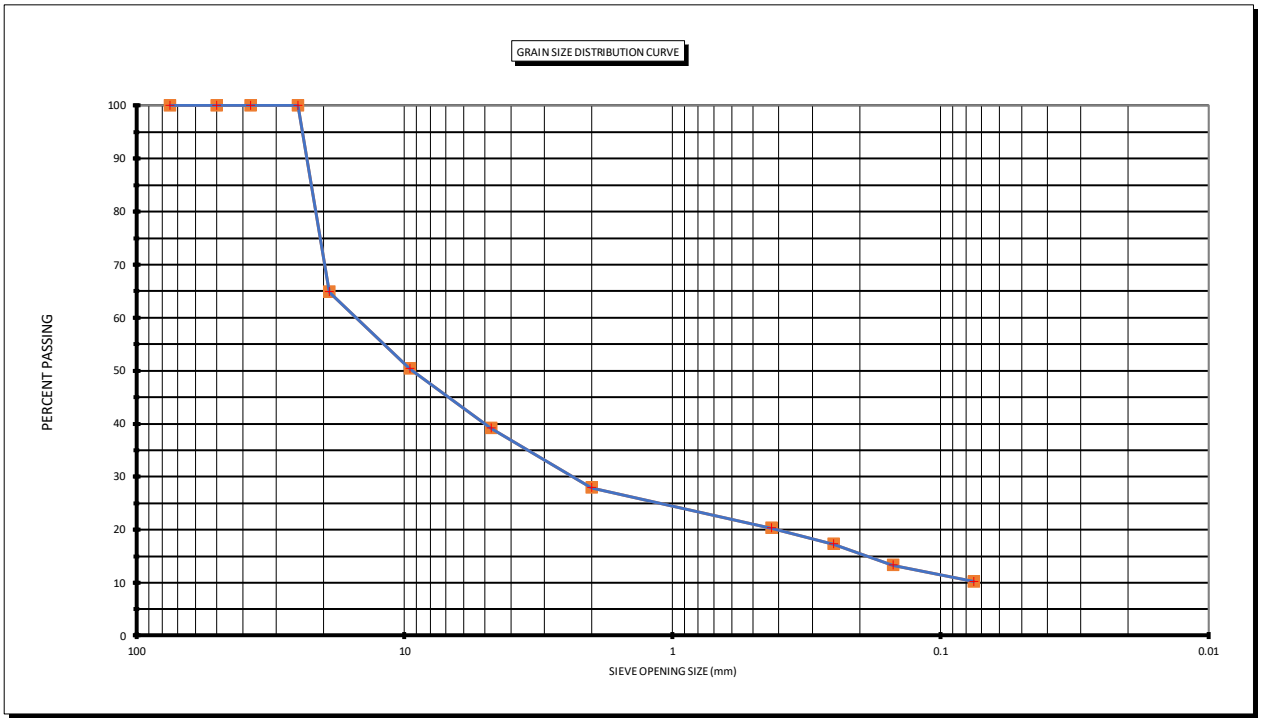
**BROWN ORGANIC SAND WITH LIMEROCK (A-8)**

| ATTERBERG LIMIT ( - #40 Material ) | |
|---|---|
| LIQUID LIMIT | |
| PLASTIC LIMIT | |
| PLASTIC INDEX | |

# GRAIN SIZE DATA SHEET

**PROJECT INFORMATION**
**NW 102nd Avenue, NW 66th Street and NW 99th Avenue**
**City of Doral, FL**
**Miami-Dade County**
**TSF Project No. 7111-21-207**

**DATE:** 7/2/2021




| ASTM D 2487 Classification of Soil for Engineering Purposes | | | Coarse Sand | < #4 and > #10 | Cu = $D_{60}$ / $D_{10}$ |
|---|---|---|---|---|---|
| Coarse Gravel | < 3" and > 3/4" | | Medium Sand | < #10 and > #40 | Cc = $(D_{30})^2$ / ($D_{10}$ x $D_{60}$) |
| Fine Gravel | < 3/4" and > #4 | | Fine Sand | < #40 and > #200 | |

**BORING #** B-10 **SAMPLE #** 3 **DEPTH (ft):** 2 TO 4

**STRATUM:** 5

**SOIL CLASSIFICATION:** A-1-a

**MC%** 9.0
**OC%** 1.45
**-200%** 10

LIMEROCK (FILL) A-1-a

| ATTERBERG LIMIT ( - #40 Material ) | |
|---|---|
| LIQUID LIMIT | |
| PLASTIC LIMIT | |
| PLASTIC INDEX | |

APPENDIX C –

1, Summary of Borehole Permeability Test Results (1 Page)

**Summary of Exfiltration Test Results**

**NW 102nd Avenue, NW 66th Street and NW 99th Avenue**
**City of Doral, FL**
**Miami-Dade County**
**TSF Project No. 7111-21-207**

| Test Location | Date Performed | Diameter | | Depth of Hole | Depth to Groundwater Level Below Ground Surface (Feet) | | Hydraulic Head, $H_2$ | Saturated Hole Depth, Ds | Average Flow Rate, Q | Horizontal Hydraulic Conductivity (K) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Hole (Inches) | Casing (Inches) | (Feet) | Prior to Test | During Test | (Feet) | (Feet) | (gpm) | ($ft^3$/sec/$ft^2$-ft Head) |
| BHP-1 | 7/19/2021 | 4 | 4 | 15.0 | 0.8 | 0.0 | 0.8 | 14.2 | 35.00 | 6.34E-03 |
| BHP-2 | 7/1/2021 | 4 | 4 | 15.0 | 8.0 | 0.0 | 8.0 | 7.0 | 50.00 | 1.20E-03 |

Note:

(1) The above hydraulic conductivity values represent an ultimate value. The designer should decide on the required factor of safety

(2) The hydraulic conductivity values were calculated based on the South Florida Water Management Districts's USUAL OPEN HOLE CONSTANT HEAD percolation test procedure.

(3) Casing diameter was used for the calculation of hydraulic conductivity values.

APPENDIX D –
1, Pavement and Base Material Data Sheets (2 Pages)
2, Photographs of Pavement Cores (3 Sheets)

**NW 102nd Ave, NW 66th St and NW 99th Ave**
**City of Doral, FL**
**Miami-Dade County**
**TSF Project No. 7111-21-207**
**Pavement and Base Material Data Sheet**

| Latitude | Longitude | Core ID | Core Date | Number of Layers Estimated | Pavement Layers (in.) | | | Total Core Length (in.) | Base Material | | Subgrade | | Crack | Pavement Condition* | Rut Depth (in.) | Cross Slope (%) | Cross Slope Direction | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Layer 1 | Layer 2 | Layer 3 | | Base Stratum 1 LR | Total Base Thickness (in.) | Type Stratum | Thickness (in.) | Depth (in.) | | | | | |
| 25.83144 | -80.362105 | PC-01 | 7/2/2021 | 2 | 1.2 | 0.9 | | 2.1 | 12 | 12.0 | Light Brown Sand with Trace Limerock | 12.0 | N/A | Good | 0 | 3.1 | In | |
| 25.832317 | -80.362148 | PC-02 | 7/1/2021 | 2 | 1.4 | 0.8 | | 2.2 | 7 | 7.0 | Light Brown Sand with Trace Limerock | 12.0 | N/A | Good | 0 | 2.1 | Out | |
| 25.833394 | -80.36187 | PC-03 | 7/1/2021 | 2 | 1.2 | 1.9 | | 3.1 | 6 | 6.0 | Light Brown Sand with Trace Limerock | 12.0 | N/A | Good | 0 | 0.5 | Out | |
| 25.833397 | -80.359057 | PC-04 | 7/1/2021 | 2 | 1.2 | 1.9 | | 3.1 | 5 | 5.0 | Light Brown Sand with Trace Limerock | 12.0 | N/A | Good | 0 | 1.6 | In | |
| 25.831409 | -80.358099 | PC-05 | 7/1/2021 | 1 | 1.8 | | | 1.8 | 6 | 6.0 | Light Brown Sand with Trace Limerock | 12.0 | N/A | Good | 0 | 1 | Out | |
| 25.832203 | -80.358057 | PC-06 | 7/1/2021 | 1 | | | 1 | 1 | 5 | 5.0 | Light Brown Sand with Trace Limerock | 12.0 | N/A | Good | 0 | 1 | In | |

Note - Latitude and Longitude are approximate

**MATE OF ASPHALT T**
**Pavement Layer Code (1)**
**Pavement Layer Code (2)**
**Pavement Layer Code (3)**

**Pavement Conditions:**
G = Good
F = Fair
P = Poor
B = Bad

*** Pavement conditions based on visual observations only.**

# Core Photos - NW 102nd Avenue, NW 66th Street and NW 99th Avenue - City of Doral, FL
# Miami-Dade County - TSF Project No. 7111-21-207



**Core ID PC-01**
**Core Date 7/2/2021**
**Latitude 25.83144**
**Longitude -80.362105**
**Station 30+06.72, 715.06 RT**
**Roadway BL NW 102ND AVE**
**Pavement Layer 1 S2 1.2**
**Pavement Layer 2 S2 0.9**
**Total Core Length (in.) 2.1**
**Base Material Thickness (in.) 1 LR 12**
**Stabilized Subgrade? Light Brown Sand with Trace Limerock**
**Stabilized Subgrade Thickness (in.) 12**
**Crack * Depth (in.) N/A**
**Pavement Condition Good**
**Rut Depth (in.) 0**
**Cross Slope (%) 3.1**
**Cross Slope Direction In**



**Core ID PC-02**
**Core Date 7/1/2021**
**Latitude 25.832317**
**Longitude -80.362148**
**Station 30+00, 395.98 RT**
**Roadway BL NW 102ND AVE**
**Pavement Layer 1 S2 1.4**
**Pavement Layer 2 S2 0.8**
**Total Core Length (in.) 2.2**
**Base Material Thickness (in.) 1 LR 7**
**Stabilized Subgrade? Light Brown Sand with Trace Limerock**
**Stabilized Subgrade Thickness (in.) 12**
**Crack * Depth (in.) N/A**
**Pavement Condition Good**
**Rut Depth (in.) 0**
**Cross Slope (%) 2.1**
**Cross Slope Direction Out**

# Core Photos - NW 102nd Avenue, NW 66th Street and NW 99th Avenue - City of Doral, FL
# Miami-Dade County - TSF Project No. 7111-21-207



**Core ID PC-03**
**Core Date 7/1/2021**
**Latitude 25.833394**
**Longitude -80.36187**
**Station 30+84.83, 4.5 RT**
**Roadway BL NW 102ND AVE**
**Pavement Layer 1 S2 1.2**
**Pavement Layer 2 S2 1.9**
**Total Core Length (in.) 3.1**
**Base Material Thickness (in.) 1 LR 6**
**Stabilized Subgrade? Light Brown Sand with Trace Limerock**
**Stabilized Subgrade Thickness (in.) 12**
**Crack * Depth (in.) N/A**
**Pavement Condition Good**
**Rut Depth (in.) 0**
**Cross Slope (%) 0.5**
**Cross Slope Direction Out**



**Core ID PC-04**
**Core Date 7/1/2021**
**Latitude 25.833397**
**Longitude -80.359057**
**Station 40+09.84, 4.84 RT**
**Roadway BL NW 102ND AVE**
**Pavement Layer 1 S2 1.2**
**Pavement Layer 2 S2 1.9**
**Total Core Length (in.) 3.1**
**Base Material Thickness (in.) 1 LR 5**
**Stabilized Subgrade? Light Brown Sand with Trace Limerock**
**Stabilized Subgrade Thickness (in.) 12**
**Crack * Depth (in.) N/A**
**Pavement Condition Good**
**Rut Depth (in.) 0**
**Cross Slope (%) 1.6**
**Cross Slope Direction In**

# Core Photos - NW 102nd Avenue, NW 66th Street and NW 99th Avenue - City of Doral, FL
# Miami-Dade County - TSF Project No. 7111-21-207



**Core ID PC-05**
**Core Date 7/1/2021**
**Latitude 25.831409**
**Longitude -80.358099**
**Station 43+24.67, 727.67 RT**
**Roadway BL NW 102ND AVE**
**Pavement Layer 1 S2 1.8**
**Total Core Length (in.) 1.8**
**Base Material Thickness (in.) 1 LR 6**
**Stabilized Subgrade? Light Brown Sand with Trace Limerock**
**Stabilized Subgrade Thickness (in.) 12**
**Crack * Depth (in.) N/A**
**Pavement Condition Good**
**Rut Depth (in.) 0**
**Cross Slope (%) 1**
**Cross Slope Direction Out**



**Core ID PC-06**
**Core Date 7/1/2021**
**Latitude 25.832203**
**Longitude -80.358057**
**Station 43+38.34, 438.74 RT**
**Roadway BL NW 102ND AVE**
**Pavement Layer 3 S3 1**
**Total Core Length (in.) 1**
**Base Material Thickness (in.) 1 LR 5**
**Stabilized Subgrade? Light Brown Sand with Trace Limerock**
**Stabilized Subgrade Thickness (in.) 12**
**Crack * Depth (in.) N/A**
**Pavement Condition Good**
**Rut Depth (in.) 0**
**Cross Slope (%) 1**
**Cross Slope Direction In**

# APPENDIX E – CURVE NUMBER CALCULATIONS

*PRE-DEVELOPMENT CURVE NUMBER CALCULATIONS*

*POST-DEVELOPMENT CURVE NUMBER CALCULATIONS*

# PRE-DEVELOPMENT CURVE NUMBER CALCULATIONS

| Pre-Development Basin Summary | |
|---|---|
| **Project** | NW 66th Street |
| **Location** | Miami Dade County |

| | |
|---|---|
| **Basin** | Site |
| **Drainage Area (ac)** | 2.20 |
| **Weighted CN** | 86 |

| Land Cover | Soil Type | Area (ac) | Curve Number |
|---|---|---|---|
| Roadway | D | 0.29 | 98 |
| Open Space | D | 1.91 | 84 |

# POST-DEVELOPMENT CURVE NUMBER CALCULATIONS

| Post-Development Basin Summary | |
|---|---|
| **Project** | NW 66th Street |
| **Location** | Miami Dade County |

| | |
|---|---|
| **Basin** | NW66_Road |
| **Drainage Area (ac)** | 1.04 |
| **CN** | 98 |

| Land Cover | Soil Type | Area (ac) | Curve Number |
|---|---|---|---|
| Roadway | D | 1.04 | 98 |

| | |
|---|---|
| **Basin** | NW66_Berm |
| **Drainage Area (ac)** | 0.56 |
| **CN** | 80 |

| Land Cover | Soil Type | Area (ac) | Curve Number |
|---|---|---|---|
| Open Space (Good Condition) | D | 0.56 | 80 |

| | |
|---|---|
| **Basin** | NW99_Road |
| **Drainage Area (ac)** | 0.20 |
| **CN** | 98 |

| Land Cover | Soil Type | Area (ac) | Curve Number |
|---|---|---|---|
| Roadway | D | 0.20 | 98 |

| | |
|---|---|
| **Basin** | NW99_Berm |
| **Drainage Area (ac)** | 0.09 |
| **CN** | 80 |

| Land Cover | Soil Type | Area (ac) | Curve Number |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Open Space (Good Condition) | D | 0.09 | 80 |

| | |
|---|---|
| **Basin** | NW102_Road |
| **Drainage Area (ac)** | 0.25 |
| **CN** | 98 |

| Land Cover | Soil Type | Area (ac) | Curve Number |
|---|---|---|---|
| Roadway | D | 0.25 | 98 |

| | |
|---|---|
| **Basin** | NW102_Berm |
| **Drainage Area (ac)** | 0.06 |
| **CN** | 80 |

| Land Cover | Soil Type | Area (ac) | Curve Number |
|---|---|---|---|
| Open Space (Good Condition) | D | 0.06 | 80 |

# APPENDIX F – NOAA ATLAS 14 – PRECIPITATION ESTIMATES

**NOAA Atlas 14, Volume 9, Version 2**
**Location name: Miami, Florida, USA***
**Latitude: 25.8333°, Longitude: -80.3599°**
**Elevation: 3 ft****
* source: ESRI Maps
** source: USGS

**POINT PRECIPITATION FREQUENCY ESTIMATES**

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

## PF tabular

**PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]**

| Duration | Average recurrence interval (years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | **0.580** (0.466-0.735) | **0.662** (0.532-0.840) | **0.795** (0.637-1.01) | **0.906** (0.721-1.16) | **1.06** (0.815-1.40) | **1.17** (0.885-1.58) | **1.29** (0.942-1.78) | **1.41** (0.989-2.00) | **1.56** (1.06-2.29) | **1.68** (1.11-2.51) |
| 10-min | **0.850** (0.683-1.08) | **0.969** (0.778-1.23) | **1.16** (0.932-1.48) | **1.33** (1.06-1.70) | **1.55** (1.19-2.04) | **1.72** (1.30-2.31) | **1.89** (1.38-2.60) | **2.06** (1.45-2.93) | **2.29** (1.55-3.36) | **2.46** (1.63-3.68) |
| 15-min | **1.04** (0.833-1.31) | **1.18** (0.949-1.50) | **1.42** (1.14-1.81) | **1.62** (1.29-2.07) | **1.89** (1.46-2.49) | **2.10** (1.58-2.81) | **2.30** (1.68-3.18) | **2.52** (1.76-3.57) | **2.79** (1.89-4.09) | **3.00** (1.98-4.48) |
| 30-min | **1.59** (1.28-2.02) | **1.82** (1.46-2.31) | **2.20** (1.76-2.80) | **2.51** (2.00-3.21) | **2.94** (2.26-3.87) | **3.26** (2.46-4.38) | **3.59** (2.62-4.95) | **3.92** (2.75-5.57) | **4.36** (2.94-6.38) | **4.68** (3.09-6.99) |
| 60-min | **2.10** (1.69-2.66) | **2.40** (1.92-3.04) | **2.91** (2.33-3.70) | **3.36** (2.67-4.29) | **4.02** (3.12-5.36) | **4.56** (3.46-6.17) | **5.13** (3.76-7.13) | **5.74** (4.05-8.22) | **6.59** (4.47-9.71) | **7.26** (4.80-10.8) |
| 2-hr | **2.62** (2.11-3.29) | **2.97** (2.40-3.75) | **3.62** (2.91-4.57) | **4.21** (3.37-5.35) | **5.11** (4.00-6.81) | **5.86** (4.48-7.92) | **6.68** (4.94-9.26) | **7.56** (5.37-10.8) | **8.82** (6.04-13.0) | **9.84** (6.54-14.6) |
| 3-hr | **2.89** (2.34-3.62) | **3.28** (2.66-4.12) | **4.02** (3.24-5.06) | **4.72** (3.79-5.98) | **5.83** (4.61-7.81) | **6.80** (5.22-9.19) | **7.85** (5.84-10.9) | **9.02** (6.45-12.9) | **10.7** (7.38-15.7) | **12.1** (8.08-17.9) |
| 6-hr | **3.38** (2.75-4.22) | **3.87** (3.15-4.83) | **4.82** (3.91-6.03) | **5.75** (4.64-7.23) | **7.25** (5.77-9.70) | **8.56** (6.63-11.6) | **10.0** (7.51-13.9) | **11.7** (8.40-16.6) | **14.0** (9.74-20.5) | **16.0** (10.8-23.5) |
| 12-hr | **3.95** (3.23-4.89) | **4.60** (3.76-5.70) | **5.84** (4.75-7.25) | **7.02** (5.69-8.77) | **8.90** (7.11-11.8) | **10.5** (8.19-14.1) | **12.3** (9.28-16.9) | **14.3** (10.4-20.2) | **17.2** (12.0-25.0) | **19.6** (13.2-28.6) |
| 24-hr | **4.59** (3.77-5.64) | **5.42** (4.45-6.68) | **6.97** (5.70-8.60) | **8.41** (6.85-10.4) | **10.6** (8.53-14.0) | **12.6** (9.80-16.7) | **14.6** (11.1-19.9) | **16.9** (12.3-23.7) | **20.2** (14.2-29.1) | **22.9** (15.6-33.2) |
| 2-day | **5.36** (4.43-6.55) | **6.34** (5.23-7.76) | **8.12** (6.68-9.96) | **9.77** (7.99-12.0) | **12.3** (9.88-16.0) | **14.4** (11.3-19.0) | **16.8** (12.7-22.6) | **19.3** (14.1-26.8) | **22.9** (16.2-32.7) | **25.9** (17.7-37.2) |
| 3-day | **5.97** (4.95-7.27) | **6.98** (5.78-8.50) | **8.81** (7.26-10.8) | **10.5** (8.62-12.9) | **13.1** (10.5-16.9) | **15.3** (12.0-20.0) | **17.6** (13.4-23.7) | **20.2** (14.8-28.0) | **23.9** (16.9-34.0) | **26.9** (18.5-38.6) |
| 4-day | **6.54** (5.43-7.94) | **7.51** (6.23-9.13) | **9.30** (7.69-11.3) | **11.0** (9.02-13.4) | **13.5** (10.9-17.5) | **15.7** (12.4-20.5) | **18.1** (13.8-24.2) | **20.7** (15.2-28.5) | **24.4** (17.3-34.6) | **27.5** (18.9-39.3) |
| 7-day | **8.06** (6.72-9.73) | **8.88** (7.40-10.7) | **10.5** (8.68-12.7) | **12.0** (9.90-14.6) | **14.4** (11.7-18.5) | **16.5** (13.1-21.5) | **18.9** (14.5-25.2) | **21.5** (15.9-29.5) | **25.3** (18.1-35.7) | **28.4** (19.7-40.4) |
| 10-day | **9.32** (7.78-11.2) | **10.1** (8.47-12.2) | **11.7** (9.76-14.2) | **13.3** (11.0-16.1) | **15.7** (12.8-20.0) | **17.8** (14.2-23.0) | **20.1** (15.5-26.7) | **22.7** (16.9-31.1) | **26.5** (19.0-37.3) | **29.6** (20.6-42.0) |
| 20-day | **12.5** (10.5-15.0) | **13.9** (11.7-16.7) | **16.3** (13.6-19.5) | **18.3** (15.2-22.0) | **21.2** (17.2-26.5) | **23.5** (18.7-29.9) | **25.9** (20.0-33.8) | **28.4** (21.1-38.2) | **31.9** (22.9-44.2) | **34.6** (24.3-48.8) |
| 30-day | **15.3** (12.9-18.2) | **17.2** (14.4-20.4) | **20.2** (16.9-24.1) | **22.7** (18.9-27.2) | **26.0** (21.0-32.1) | **28.5** (22.7-35.9) | **31.0** (23.9-40.1) | **33.5** (24.9-44.6) | **36.8** (26.4-50.5) | **39.2** (27.6-54.9) |
| 45-day | **18.9** (16.0-22.4) | **21.3** (18.0-25.2) | **25.0** (21.0-29.7) | **27.9** (23.4-33.4) | **31.7** (25.7-38.9) | **34.5** (27.4-43.0) | **37.1** (28.6-47.5) | **39.6** (29.5-52.3) | **42.6** (30.7-58.1) | **44.7** (31.6-62.5) |
| 60-day | **22.2** (18.8-26.2) | **24.8** (21.0-29.4) | **28.9** (24.4-34.3) | **32.1** (26.9-38.3) | **36.2** (29.3-44.1) | **39.1** (31.1-48.5) | **41.8** (32.3-53.3) | **44.3** (33.0-58.2) | **47.3** (34.1-64.2) | **49.3** (34.9-68.6) |

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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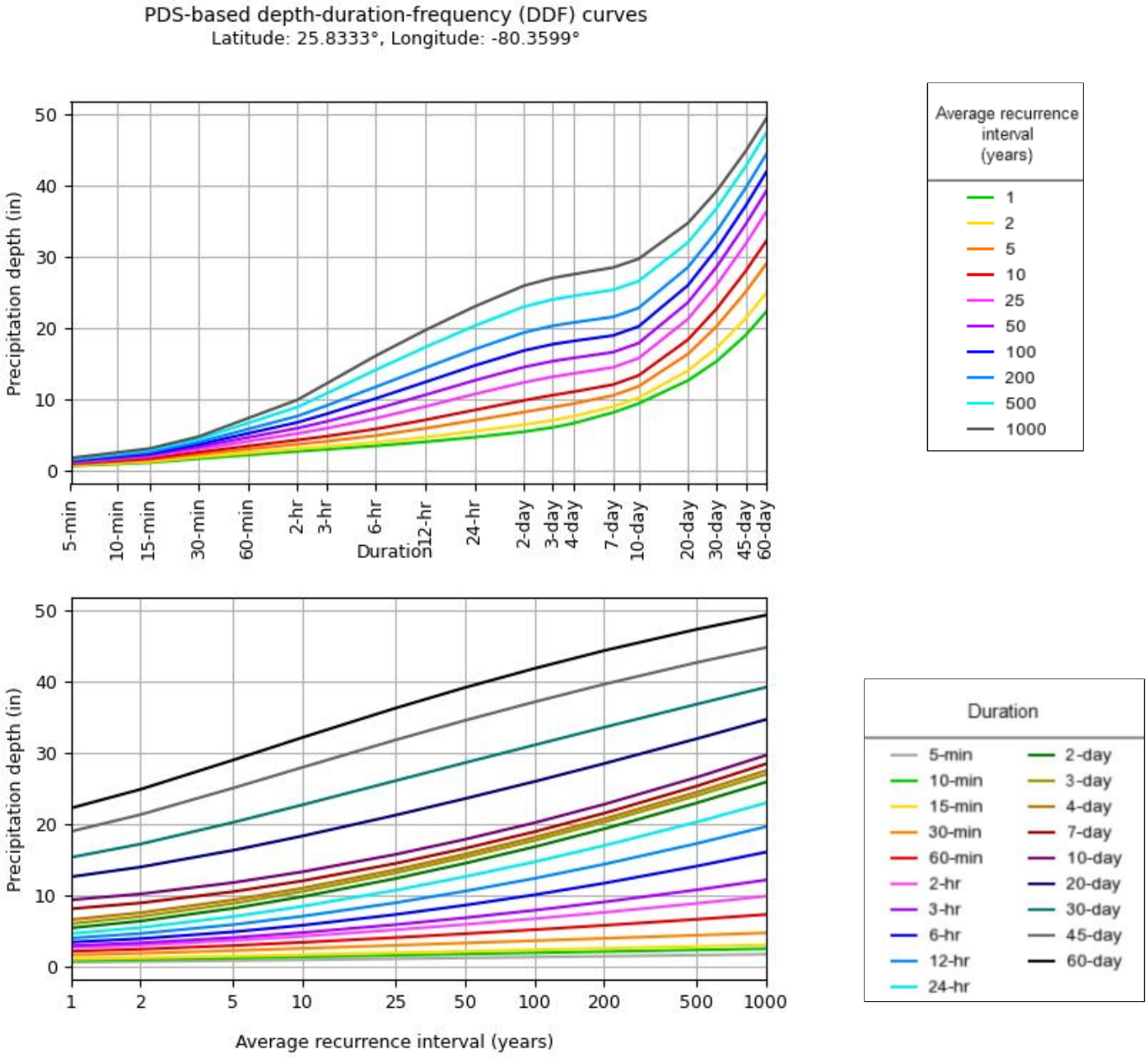
## PF graphical




NOAA Atlas 14, Volume 9, Version 2

Created (GMT): Thu Aug 3 14:25:03 2023

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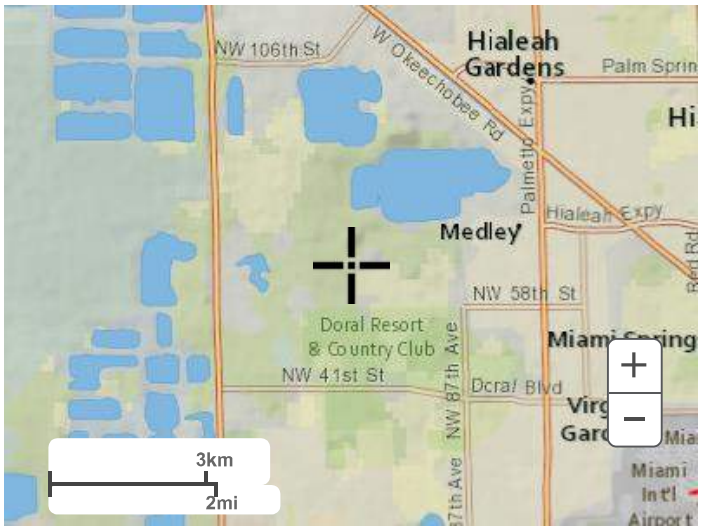
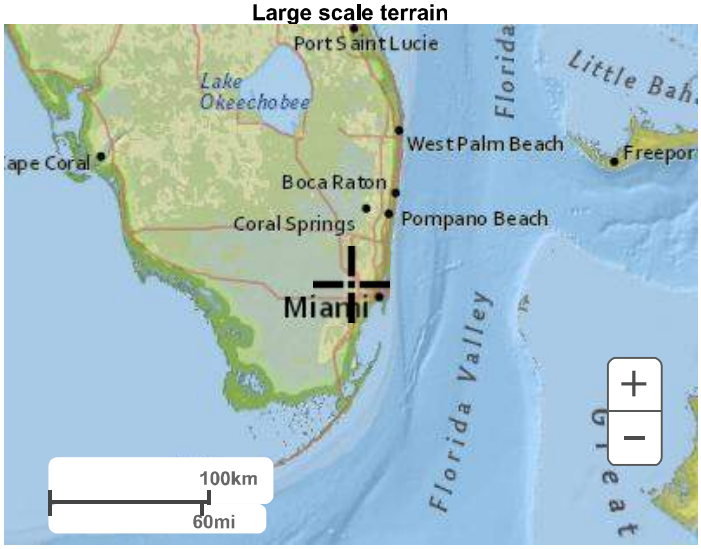
## Maps & aerials

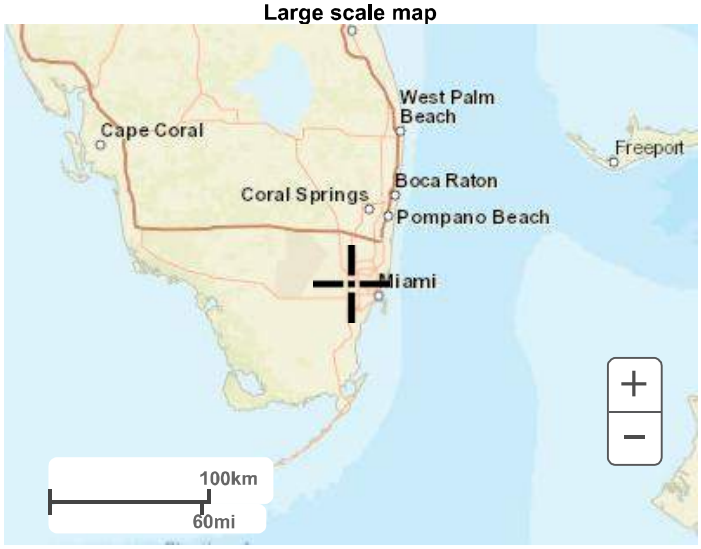
**Small scale terrain**



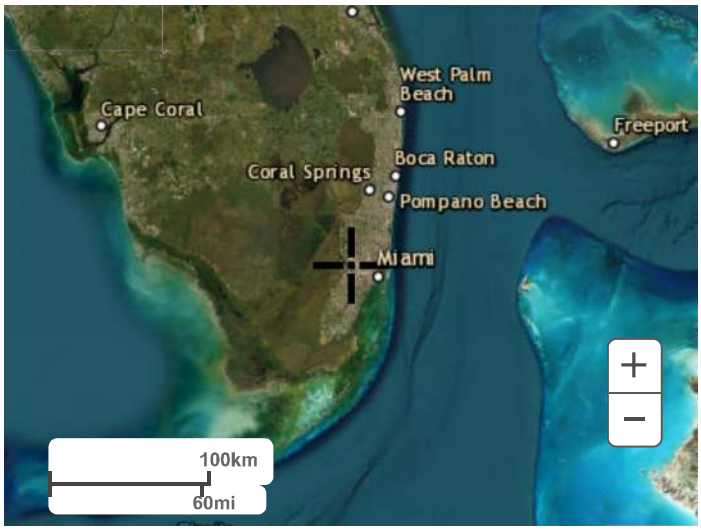

**Large scale terrain**




**Large scale map**




**Large scale aerial**

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National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

# APPENDIX G – WATER QUALITY CALCULATIONS

# Complete Report (not including cost) Ver 4.3.5

Project: NW 66 Street Roadway Improvements
Date: 8/9/2023 8:17:43 AM

## Site and Catchment Information

Analysis: Net Improvement

| | |
|---|---|
| Catchment Name | NW 66 Street Roadway |
| Rainfall Zone | Florida Zone 5 |
| Annual Mean Rainfall | 58.00 |

## Pre-Condition Landuse Information

| | |
|---|---|
| Landuse | Agricultural - General: TN=2.800 TP=0.487 |
| Area (acres) | 2.20 |
| Rational Coefficient (0-1) | 0.29 |
| Non DCIA Curve Number | 84.00 |
| DCIA Percent (0-100) | 15.00 |
| Nitrogen EMC (mg/l) | 2.800 |
| Phosphorus EMC (mg/l) | 0.487 |
| Runoff Volume (ac-ft/yr) | 3.084 |
| Groundwater N (kg/yr) | 0.000 |
| Groundwater P (kg/yr) | 0.000 |
| Nitrogen Loading (kg/yr) | 10.646 |
| Phosphorus Loading (kg/yr) | 1.852 |

## Post-Condition Landuse Information

| | |
|---|---|
| Landuse | Highway: TN=1.520 TP=0.200 |
| Area (acres) | 2.20 |
| Rational Coefficient (0-1) | 0.60 |
| Non DCIA Curve Number | 80.00 |
| DCIA Percent (0-100) | 68.00 |
| Wet Pond Area (ac) | 0.00 |
| Nitrogen EMC (mg/l) | 1.520 |
| Phosphorus EMC (mg/l) | 0.200 |
| Runoff Volume (ac-ft/yr) | 6.378 |
| Groundwater N (kg/yr) | 0.000 |
| Groundwater P (kg/yr) | 0.000 |
| Nitrogen Loading (kg/yr) | 11.953 |

| | |
|---|---|
| Phosphorus Loading (kg/yr) | 1.573 |

# Catchment Number: 1 Name: NW 66 Street Roadway

**Project:** NW 66 Street Roadway Improvements
**Date:** 8/9/2023

**Exfiltration Trench Design**

| | |
|---|---|
| Pipe Span (in) | 18.0 |
| Pipe Rise (in) | 18.0 |
| Pipe Length (ft) | 324.0 |
| Trench Width (ft) | 4.0 |
| Trench Depth (ft) | 15.0 |
| Trench Length (ft) | 182.0 |
| Aggregate Void % | 0.50 |
| Storage Volume (Ac-ft) | 0.13 |
| Retention Depth (in over CA) | 0.720 |

**Watershed Characteristics**

| | |
|---|---|
| Catchment Area (acres) | 2.20 |
| Contributing Area (acres) | 2.200 |
| Non-DCIA Curve Number | 80.00 |
| DCIA Percent | 68.00 |
| Rainfall Zone | Florida Zone 5 |
| Rainfall (in) | 58.00 |

**Surface Water Discharge**

| | |
|---|---|
| Required TN Treatment Efficiency (%) | 11 |
| Provided TN Treatment Efficiency (%) | 59 |
| Required TP Treatment Efficiency (%) | |
| Provided TP Treatment Efficiency (%) | 59 |

**Media Mix Information**

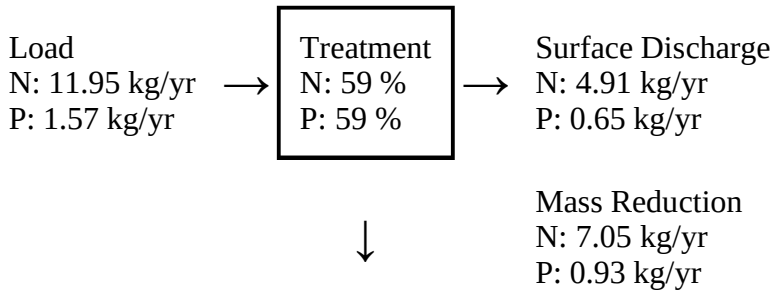
| | |
|---|---|
| Type of Media Mix | Not Specified |
| Media N Reduction (%) | |
| Media P Reduction (%) | |

**Groundwater Discharge (Stand-Alone)**

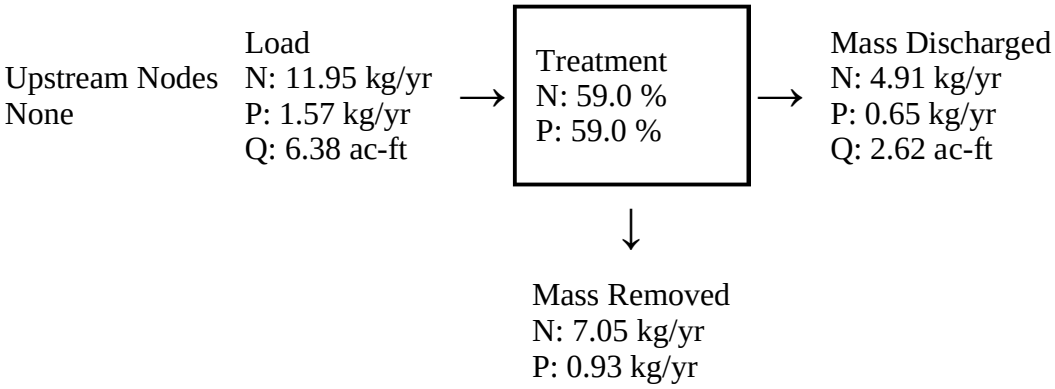
| | |
|---|---|
| Treatment Rate (MG/yr) | 0.000 |
| TN Mass Load (kg/yr) | 7.047 |
| TN Concentration (mg/L) | 0.000 |

| | |
|---|---|
| TP Mass Load (kg/yr) | 0.927 |
| TP Concentration (mg/L) | 0.000 |

## Load Diagram for Exfiltration Trench (stand-alone)




### Load Diagram for Exfiltration ( As Used In Routing)




# Summary Treatment Report Version: 4.3.5

Project: NW 66 Street Roadway Improvements

Date:8/9/2023

**Analysis Type:** Net Improvement
**BMP Types:**
Catchment 1 - (NW 66 Street Roadway) Exfiltration Trench
Based on % removal values to the nearest percent

**Routing Summary**
Catchment 1 Routed to Outlet

Total nitrogen target removal met? **Yes**
Total phosphorus target removal met? **Yes**

# Summary Report

## Nitrogen

**Surface Water Discharge**

| | | |
|---|---|---|
| Total N pre load | 10.65 kg/yr | |
| Total N post load | 11.95 kg/yr | |
| Target N load reduction | 11 % | |
| Target N discharge load | 10.65 kg/yr | |
| Percent N load reduction | 59 % | |
| Provided N discharge load | 4.91 kg/yr | 10.82 lb/yr |
| Provided N load removed | 7.05 kg/yr | 15.54 lb/yr |

## Phosphorus

**Surface Water Discharge**

| | | |
|---|---|---|
| Total P pre load | 1.852 kg/yr | |
| Total P post load | 1.573 kg/yr | |
| Target P load reduction | % | |
| Target P discharge load | 1.852 kg/yr | |
| Percent P load reduction | 59 % | |
| Provided P discharge load | .645 kg/yr | 1.42 lb/yr |
| Provided P load removed | .927 kg/yr | 2.045 lb/yr |

# WATER QUALITY CALCULATIONS

NW 66TH Street from 102nd Avenue to 99th Avenue (Phase II)

| | | | | | |
|---|---|---|---|---|---|
| Total Drainage Area = | 1.60 | acres. | (% IMP.= | 65.0% | ) |
| Impervious Area = | 1.04 | acres. | (C = | 0.9 | ) |
| Pervious Area (sod) = | 0.56 | acres. | (C = | 0.3 | ) |
| Weighted C = | 0.69 | | | | |
| Contributing Area (CA) = | 1.10 | | | | |

| | | |
|---|---|---|
| Lowest Grade Elev. for Prop. Exfil. Trench = | 8.05 | ft. NGVD |
| Lowest Existing Grate Elevation = | n/a | ft. NGVD |

## Proposed Exfiltration Trench:

| | | |
|---|---|---|
| Depth of Trench = | 15 | feet below grade |
| Top of trench elevation = | 6.05 | ft. NGVD |
| GWT = | 5.00 | ft. NGVD |
| Top of Pipe = | 3.49 | ft. NGVD |
| Pipe Diameter = | 18 | inches |
| Pipe Inv. Elevation = | 3.26 | ft. NGVD |
| Bottom of trench elevation = | -6.95 | ft. NGVD |
| Width = | 4.00 | feet. |
| Weir Elevation = | n/a | ft. NGVD |

| | | |
|---|---|---|
| **Weighted k (Used for design) =** | 3.77E-03 | cfs/sf-ft of head. |
| Safety Factor = | 2 | |
| DESIGN STORM FREQUENCY (YEARS): | 5 | |
| MINIMUM TIME OF CONCENTRATION (MINUTES): | 10.00 | |

# BASIN DESIGN INFORMATION per DERM

| | | | | |
|---|---|---|---|---|
| TOTAL DRAINAGE AREA = | **0.648** | hectares or | **1.600** | acres. |
| TOTAL IMPERVIOUS DRAINAGE AREA = | **0.421** | hectares or | **1.040** | acres. |
| IMPERVIOUS RUNOFF COEFFICIENT = | **0.90** | | | |
| TOTAL PERVIOUS DRAINAGE AREA = | **0.227** | hectares or | **0.560** | acres. |
| PERVIOUS RUNOFF COEFFICIENT = | **0.30** | | | |
| SUB-BASIN DRAINAGE AREA = | **0.648** | hectares or | **1.600** | acres. |
| SUB-BASIN IMPERVIOUS DRAINAGE AREA = | **0.421** | hectares or | **1.040** | acres. |
| IMPERVIOUS RUNOFF COEFFICIENT = | **0.90** | | | |
| SUB-BASIN PERVIOUS DRAINAGE AREA = | **0.227** | hectares or | **0.560** | acres. |
| PERVIOUS RUNOFF COEFFICIENT = | **0.30** | | | |
| SUB-BASIN TIME OF CONCENTRATION = | **10.00** | minutes | | |
| DESIGN STORM FREQUENCY = | **5** | years | | |

# WATER QUALITY CALCULATIONS per DERM CRITERIA

| | | |
|---|---|---|
| SUB-BASIN TIME OF CONCENTRATION = | **10.00** | minutes |
| SUB-BASIN TIME FOR FIRST INCH OF RUNOFF = | **15.73** | minutes |
| REQUIRED WATER QUALITY TREATMENT TIME = | **25.73** | minutes |

| | | | |
|---|---|---|---|
| **Required treatment volume $V_{trmt}$ =** | **230.340** | **cu. meters or** | **8,134 cu. ft.** |
| **Required treatment volume $V_{trmt}$ =** | **0.023** | **hectare-meters or** | **0.187 ac.-ft.** |

# WATER QUALITY CALCULATIONS per SFWMD Criteria

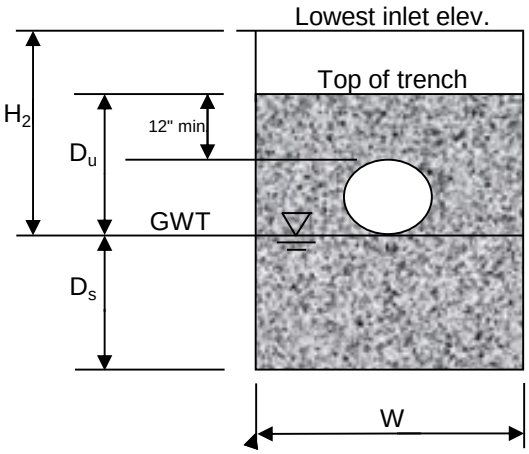
| | | |
|---|---|---|
| 1" Run-off volume X total project area = | **0.133** | ac-ft |
| 2.5" Run-off X impervious(%) X total project area = | **0.217** | ac-ft |

| | | | |
|---|---|---|---|
| **Required treatment volume $V_{trmt}$ =** | **267.256** | **cu. meters or** | **9,438 cu. ft.** |
| **Required treatment volume $V_{trmt}$ =** | **0.027** | **hectare-meters or** | **0.217 ac.-ft.** |

# TYPICAL EXFILTRATION TRENCH DESIGN by DERM

Required Trench Length (L) = $V \;/\; [\, k / SF \times (2H_2D_u - D_u^2 + 2H_2D_s) + (1.39 \times 10^{-4}) \times (WD_u + PS) \,]$

V = Treatment Vol. - Capacity of Exist. Trench (ac-in)
k = Weighted Hyd. Conductivity (cfs/sf - ft)
H2 = Depth to the Water Table (ft)
W = Trench width (ft)
Du = Non-Saturated Trench Depth (ft)
Ds = Saturated Trench Depth (ft)
SF = Safety Factor
PS = Pipe Storage (ft.^3)




| | | | |
|---|---|---|---|
| Treatment Volume = | **0.027** | ha-m or | **0.217 ac-ft** |
| Treatment Volume = | **2.600** | ac-in. | |
| k = | **3.77E-03** | cfs/sf-ft | |
| H2 = | **3.05** | ft. | |
| W = | **4.00** | ft. | |
| Du = | **1.05** | ft. | |
| Ds = | **11.95** | ft. | |
| SF = | **2.00** | | |

## Quality:

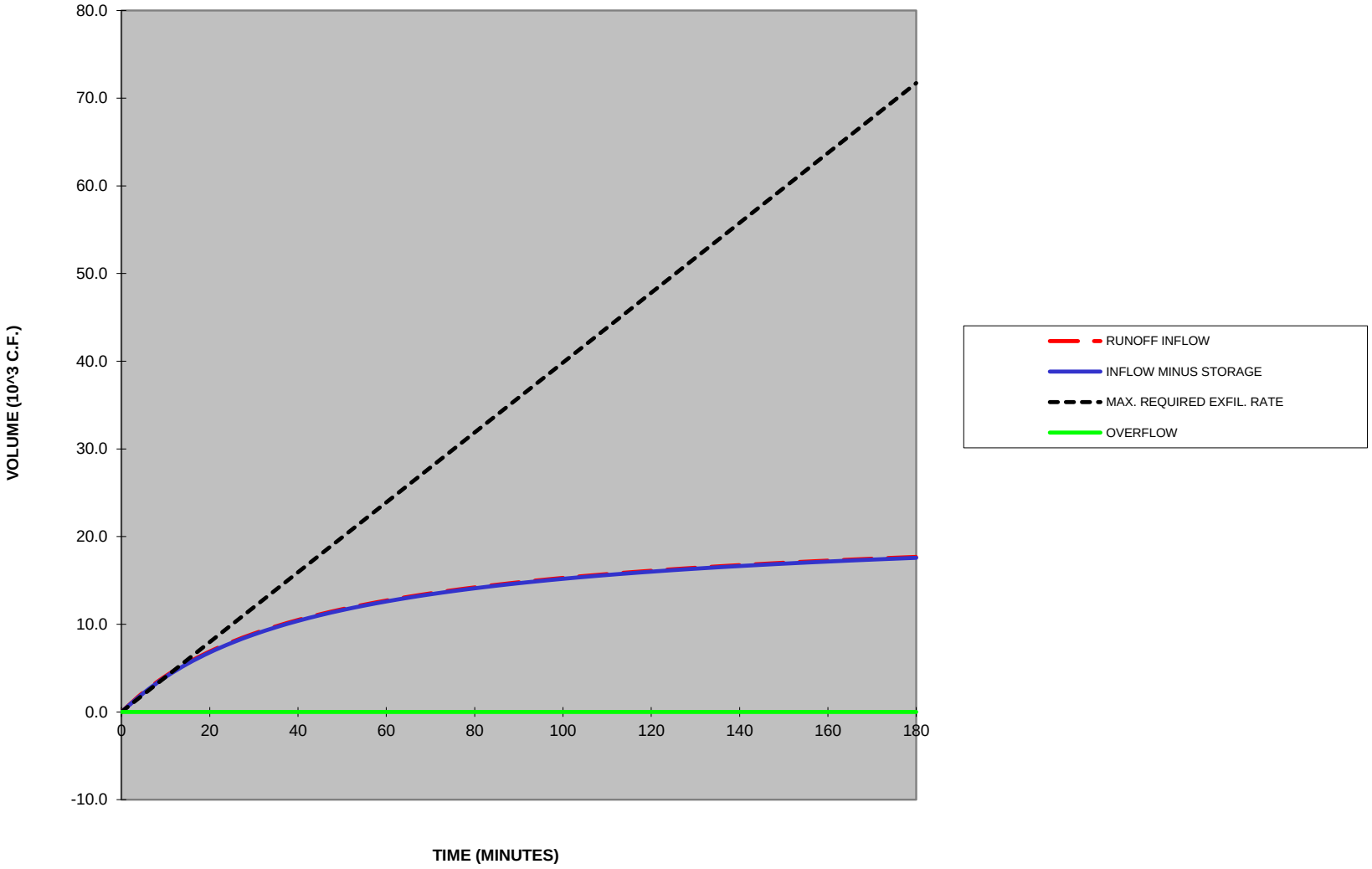
| | |
|---|---|
| **Required Length =** | **17.58 feet** |

## Quantity:

| | |
|---|---|
| **Min. Required Length =** | **49 feet** |
| **Provided Length =** | **132 feet** |

Kimley»Horn

## MASS DIAGRAM



Kimley»Horn

**MAXIMUM OVERFLOW RATE = 0.00 CFS**

| TIME (MIN.) | CA | RAINFALL INTENSITY (in./hr.) | INFLOW RATE (CFS) | INFLOW VOLUME ($ft^3$) | PROP. DRY RETENTION ($ft^3$) | ADJUSTED INFLOW VOLUME ($10^3$ CF) | PROPOSED F.D. STORAGE ($ft^3$) | EXCESS RUNOFF ($10^3$ CF) | REQUIRED EXFIL. RATE (CFS) | MAXIMUM REQUIRED EXFIL. VOLUME ($10^3$ CF) | ACTUAL EXFIL. VOLUME ($10^3$ CF) | OVERFLOW VOLUME ($10^3$ CF) | OVERFLOW RATE (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1.10 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 102.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 1.10 | 6.8 | 7.5 | 2252.4 | 0.0 | 2.3 | 102.0 | 2.2 | 0.0 | 2.0 | 2.2 | 0.0 | 0.0 |
| 10 | 1.10 | 6.2 | 6.8 | 4086.1 | 0.0 | 4.1 | 102.0 | 4.0 | 6.6 | 4.0 | 4.3 | 0.0 | 0.0 |
| 15 | 1.10 | 5.6 | 6.2 | 5607.9 | 0.0 | 5.6 | 102.0 | 5.5 | 6.1 | 6.0 | 6.5 | 0.0 | 0.0 |
| 20 | 1.10 | 5.2 | 5.7 | 6891.2 | 0.0 | 6.9 | 102.0 | 6.8 | 5.7 | 8.0 | 8.6 | 0.0 | 0.0 |
| 25 | 1.10 | 4.8 | 5.3 | 7987.9 | 0.0 | 8.0 | 102.0 | 7.9 | 5.3 | 10.0 | 10.8 | 0.0 | 0.0 |
| 30 | 1.10 | 4.5 | 5.0 | 8936.0 | 0.0 | 8.9 | 102.0 | 8.8 | 4.9 | 12.0 | 12.9 | 0.0 | 0.0 |
| 35 | 1.10 | 4.2 | 4.6 | 9763.8 | 0.0 | 9.8 | 102.0 | 9.7 | 4.6 | 13.9 | 15.1 | 0.0 | 0.0 |
| 40 | 1.10 | 4.0 | 4.4 | 10492.8 | 0.0 | 10.5 | 102.0 | 10.4 | 4.3 | 15.9 | 17.2 | 0.0 | 0.0 |
| 45 | 1.10 | 3.7 | 4.1 | 11139.7 | 0.0 | 11.1 | 102.0 | 11.0 | 4.1 | 17.9 | 19.4 | 0.0 | 0.0 |
| 50 | 1.10 | 3.5 | 3.9 | 11717.6 | 0.0 | 11.7 | 102.0 | 11.6 | 3.9 | 19.9 | 21.5 | 0.0 | 0.0 |
| 55 | 1.10 | 3.4 | 3.7 | 12237.1 | 0.0 | 12.2 | 102.0 | 12.1 | 3.7 | 21.9 | 23.7 | 0.0 | 0.0 |
| 60 | 1.10 | 3.2 | 3.5 | 12706.5 | 0.0 | 12.7 | 102.0 | 12.6 | 3.5 | 23.9 | 25.8 | 0.0 | 0.0 |
| 65 | 1.10 | 3.1 | 3.4 | 13132.7 | 0.0 | 13.1 | 102.0 | 13.0 | 3.3 | 25.9 | 28.0 | 0.0 | 0.0 |
| 70 | 1.10 | 2.9 | 3.2 | 13521.5 | 0.0 | 13.5 | 102.0 | 13.4 | 3.2 | 27.9 | 30.1 | 0.0 | 0.0 |
| 75 | 1.10 | 2.8 | 3.1 | 13877.5 | 0.0 | 13.9 | 102.0 | 13.8 | 3.1 | 29.9 | 32.3 | 0.0 | 0.0 |
| 80 | 1.10 | 2.7 | 3.0 | 14204.8 | 0.0 | 14.2 | 102.0 | 14.1 | 2.9 | 31.9 | 34.4 | 0.0 | 0.0 |
| 85 | 1.10 | 2.6 | 2.8 | 14506.7 | 0.0 | 14.5 | 102.0 | 14.4 | 2.8 | 33.9 | 36.6 | 0.0 | 0.0 |
| 90 | 1.10 | 2.5 | 2.7 | 14786.0 | 0.0 | 14.8 | 102.0 | 14.7 | 2.7 | 35.9 | 38.7 | 0.0 | 0.0 |
| 95 | 1.10 | 2.4 | 2.6 | 15045.2 | 0.0 | 15.0 | 102.0 | 14.9 | 2.6 | 37.8 | 40.9 | 0.0 | 0.0 |
| 100 | 1.10 | 2.3 | 2.5 | 15286.4 | 0.0 | 15.3 | 102.0 | 15.2 | 2.5 | 39.8 | 43.0 | 0.0 | 0.0 |
| 105 | 1.10 | 2.2 | 2.5 | 15511.4 | 0.0 | 15.5 | 102.0 | 15.4 | 2.4 | 41.8 | 45.2 | 0.0 | 0.0 |
| 110 | 1.10 | 2.2 | 2.4 | 15721.7 | 0.0 | 15.7 | 102.0 | 15.6 | 2.4 | 43.8 | 47.3 | 0.0 | 0.0 |
| 115 | 1.10 | 2.1 | 2.3 | 15918.8 | 0.0 | 15.9 | 102.0 | 15.8 | 2.3 | 45.8 | 49.5 | 0.0 | 0.0 |
| 120 | 1.10 | 2.0 | 2.2 | 16103.9 | 0.0 | 16.1 | 102.0 | 16.0 | 2.2 | 47.8 | 51.6 | 0.0 | 0.0 |
| 125 | 1.10 | 2.0 | 2.2 | 16277.9 | 0.0 | 16.3 | 102.0 | 16.2 | 2.2 | 49.8 | 53.8 | 0.0 | 0.0 |
| 130 | 1.10 | 1.9 | 2.1 | 16442.0 | 0.0 | 16.4 | 102.0 | 16.3 | 2.1 | 51.8 | 55.9 | 0.0 | 0.0 |
| 135 | 1.10 | 1.9 | 2.0 | 16596.9 | 0.0 | 16.6 | 102.0 | 16.5 | 2.0 | 53.8 | 58.1 | 0.0 | 0.0 |
| 140 | 1.10 | 1.8 | 2.0 | 16743.4 | 0.0 | 16.7 | 102.0 | 16.6 | 2.0 | 55.8 | 60.2 | 0.0 | 0.0 |
| 145 | 1.10 | 1.8 | 1.9 | 16882.1 | 0.0 | 16.9 | 102.0 | 16.8 | 1.9 | 57.8 | 62.4 | 0.0 | 0.0 |
| 150 | 1.10 | 1.7 | 1.9 | 17013.7 | 0.0 | 17.0 | 102.0 | 16.9 | 1.9 | 59.8 | 64.5 | 0.0 | 0.0 |
| 155 | 1.10 | 1.7 | 1.8 | 17138.6 | 0.0 | 17.1 | 102.0 | 17.0 | 1.8 | 61.8 | 66.7 | 0.0 | 0.0 |
| 160 | 1.10 | 1.6 | 1.8 | 17257.4 | 0.0 | 17.3 | 102.0 | 17.2 | 1.8 | 63.7 | 68.8 | 0.0 | 0.0 |
| 165 | 1.10 | 1.6 | 1.8 | 17370.5 | 0.0 | 17.4 | 102.0 | 17.3 | 1.7 | 65.7 | 71.0 | 0.0 | 0.0 |
| 170 | 1.10 | 1.6 | 1.7 | 17478.4 | 0.0 | 17.5 | 102.0 | 17.4 | 1.7 | 67.7 | 73.1 | 0.0 | 0.0 |
| 175 | 1.1 | 1.5 | 1.7 | 17581.3 | 0.0 | 17.6 | 102.0 | 17.5 | 1.7 | 69.7 | 75.3 | 0.0 | 0.0 |
| 180 | 1.1 | 1.5 | 1.6 | 17679.6 | 0.0 | 17.7 | 102.0 | 17.6 | 1.6 | 71.7 | 77.4 | 0.0 | 0.0 |

# WATER QUALITY CALCULATIONS

NW 99th Avenue from 66th Street to Approx. 350-ft South

| | | | | | |
|---|---|---|---|---|---|
| Total Drainage Area = | 0.29 | acres. | (% IMP.= | 69.0% | ) |
| Impervious Area = | 0.20 | acres. | (C = | 0.9 | ) |
| Pervious Area (sod) = | 0.09 | acres. | (C = | 0.3 | ) |
| Weighted C = | 0.71 | | | | |
| Contributing Area (CA) = | 0.21 | | | | |

| | | |
|---|---|---|
| Lowest Grade Elev. for Prop. Exfil. Trench = | 6.60 | ft. NGVD |
| Lowest Existing Grate Elevation = | n/a | ft. NGVD |

## Proposed Exfiltration Trench:

| | | |
|---|---|---|
| Depth of Trench = | 15 | feet below grade |
| Top of trench elevation = | 4.60 | ft. NGVD |
| GWT = | 5.00 | ft. NGVD |
| Top of Pipe = | 3.60 | ft. NGVD |
| Pipe Diameter = | 18 | inches |
| Pipe Inv. Elevation = | 1.86 | ft. NGVD |
| Bottom of trench elevation = | -8.40 | ft. NGVD |
| Width = | 4.00 | feet. |
| Weir Elevation = | n/a | ft. NGVD |

| | | |
|---|---|---|
| **Weighted k (Used for design) =** | 3.77E-03 | cfs/sf-ft of head. |
| Safety Factor = | 2 | |
| DESIGN STORM FREQUENCY (YEARS): | 5 | |
| MINIMUM TIME OF CONCENTRATION (MINUTES): | 10.00 | |

# BASIN DESIGN INFORMATION per DERM

| | | | | |
|---|---|---|---|---|
| TOTAL DRAINAGE AREA = | **0.117** | hectares or | **0.290** | acres. |
| TOTAL IMPERVIOUS DRAINAGE AREA = | **0.081** | hectares or | **0.200** | acres. |
| IMPERVIOUS RUNOFF COEFFICIENT = | **0.90** | | | |
| TOTAL PERVIOUS DRAINAGE AREA = | **0.036** | hectares or | **0.090** | acres. |
| PERVIOUS RUNOFF COEFFICIENT = | **0.30** | | | |
| SUB-BASIN DRAINAGE AREA = | **0.117** | hectares or | **0.290** | acres. |
| SUB-BASIN IMPERVIOUS DRAINAGE AREA = | **0.081** | hectares or | **0.200** | acres. |
| IMPERVIOUS RUNOFF COEFFICIENT = | **0.90** | | | |
| SUB-BASIN PERVIOUS DRAINAGE AREA = | **0.036** | hectares or | **0.090** | acres. |
| PERVIOUS RUNOFF COEFFICIENT = | **0.30** | | | |
| SUB-BASIN TIME OF CONCENTRATION = | **10.00** | minutes | | |
| DESIGN STORM FREQUENCY = | **5** | years | | |

# WATER QUALITY CALCULATIONS per DERM CRITERIA

| | | |
|---|---|---|
| SUB-BASIN TIME OF CONCENTRATION = | **10.00** | minutes |
| SUB-BASIN TIME FOR FIRST INCH OF RUNOFF = | **15.02** | minutes |
| REQUIRED WATER QUALITY TREATMENT TIME = | **25.02** | minutes |

| | | | |
|---|---|---|---|
| **Required treatment volume $V_{trmt}$ =** | **42.436** | **cu. meters or** | **1,499 cu. ft.** |
| **Required treatment volume $V_{trmt}$ =** | **0.004** | **hectare-meters or** | **0.034 ac.-ft.** |

# WATER QUALITY CALCULATIONS per SFWMD Criteria

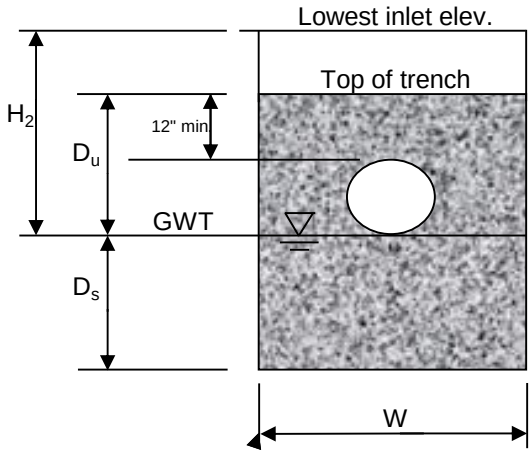
| | | |
|---|---|---|
| 1" Run-off volume X total project area = | **0.024** | ac-ft |
| 2.5" Run-off X impervious(%) X total project area = | **0.042** | ac-ft |

| | | | |
|---|---|---|---|
| **Required treatment volume $V_{trmt}$ =** | **51.395** | **cu. meters or** | **1,815 cu. ft.** |
| **Required treatment volume $V_{trmt}$ =** | **0.005** | **hectare-meters or** | **0.042 ac.-ft.** |

# TYPICAL EXFILTRATION TRENCH DESIGN by DERM

Required Trench Length (L) = $V \;/\; [\, k / SF \times (2H_2D_u - D_u^2 + 2H_2D_s) + (1.39 \times 10^{-4}) \times (WD_u + PS) \,]$

V = Treatment Vol. - Capacity of Exist. Trench (ac-in)
k = Weighted Hyd. Conductivity (cfs/sf - ft)
H2 = Depth to the Water Table (ft)
W = Trench width (ft)
Du = Non-Saturated Trench Depth (ft)
Ds = Saturated Trench Depth (ft)
SF = Safety Factor
PS = Pipe Storage (ft.^3)




| | | | |
|---|---|---|---|
| Treatment Volume = | **0.005** | ha-m or | **0.042 ac-ft** |
| Treatment Volume = | **0.500** | ac-in. | |
| k = | **3.77E-03** | cfs/sf-ft | |
| H2 = | **1.60** | ft. | |
| W = | **4.00** | ft. | |
| Du = | **0.00** | ft. | |
| Ds = | **13.40** | ft. | |
| SF = | **2.00** | | |

## Quality:

| | |
|---|---|
| **Required Length =** | **6.19 feet** |

## Quantity:

| | |
|---|---|
| **Min. Required Length =** | **17 feet** |
| **Provided Length =** | **25 feet** |

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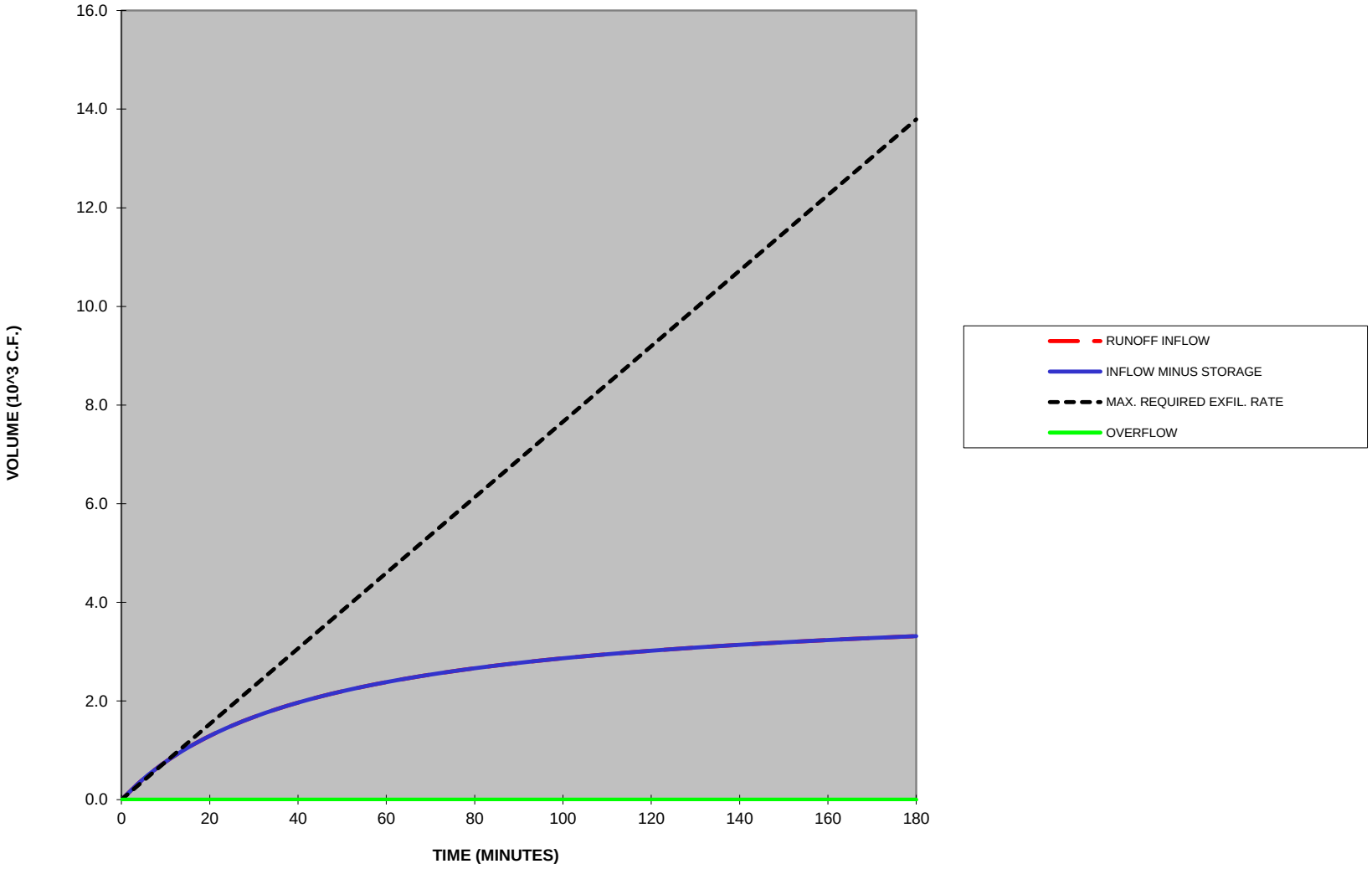
## MASS DIAGRAM



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**MAXIMUM OVERFLOW RATE = 0.00 CFS**

| TIME (MIN.) | CA | RAINFALL INTENSITY (in./hr.) | INFLOW RATE (CFS) | INFLOW VOLUME ($ft^3$) | PROP. DRY RETENTION ($ft^3$) | ADJUSTED INFLOW VOLUME ($10^3$ CF) | PROPOSED F.D. STORAGE ($ft^3$) | EXCESS RUNOFF ($10^3$ CF) | REQUIRED EXFIL. RATE (CFS) | MAXIMUM REQUIRED EXFIL. VOLUME ($10^3$ CF) | ACTUAL EXFIL. VOLUME ($10^3$ CF) | OVERFLOW VOLUME ($10^3$ CF) | OVERFLOW RATE (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.21 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.21 | 6.8 | 1.4 | 422.3 | 0.0 | 0.4 | 0.0 | 0.4 | 0.0 | 0.4 | 0.4 | 0.0 | 0.0 |
| 10 | 0.21 | 6.2 | 1.3 | 766.1 | 0.0 | 0.8 | 0.0 | 0.8 | 1.3 | 0.8 | 0.8 | 0.0 | 0.0 |
| 15 | 0.21 | 5.6 | 1.2 | 1051.5 | 0.0 | 1.1 | 0.0 | 1.1 | 1.2 | 1.1 | 1.3 | 0.0 | 0.0 |
| 20 | 0.21 | 5.2 | 1.1 | 1292.1 | 0.0 | 1.3 | 0.0 | 1.3 | 1.1 | 1.5 | 1.7 | 0.0 | 0.0 |
| 25 | 0.21 | 4.8 | 1.0 | 1497.7 | 0.0 | 1.5 | 0.0 | 1.5 | 1.0 | 1.9 | 2.1 | 0.0 | 0.0 |
| 30 | 0.21 | 4.5 | 0.9 | 1675.5 | 0.0 | 1.7 | 0.0 | 1.7 | 0.9 | 2.3 | 2.5 | 0.0 | 0.0 |
| 35 | 0.21 | 4.2 | 0.9 | 1830.7 | 0.0 | 1.8 | 0.0 | 1.8 | 0.9 | 2.7 | 3.0 | 0.0 | 0.0 |
| 40 | 0.21 | 4.0 | 0.8 | 1967.4 | 0.0 | 2.0 | 0.0 | 2.0 | 0.8 | 3.1 | 3.4 | 0.0 | 0.0 |
| 45 | 0.21 | 3.7 | 0.8 | 2088.7 | 0.0 | 2.1 | 0.0 | 2.1 | 0.8 | 3.4 | 3.8 | 0.0 | 0.0 |
| 50 | 0.21 | 3.5 | 0.7 | 2197.1 | 0.0 | 2.2 | 0.0 | 2.2 | 0.7 | 3.8 | 4.2 | 0.0 | 0.0 |
| 55 | 0.21 | 3.4 | 0.7 | 2294.4 | 0.0 | 2.3 | 0.0 | 2.3 | 0.7 | 4.2 | 4.6 | 0.0 | 0.0 |
| 60 | 0.21 | 3.2 | 0.7 | 2382.5 | 0.0 | 2.4 | 0.0 | 2.4 | 0.7 | 4.6 | 5.1 | 0.0 | 0.0 |
| 65 | 0.21 | 3.1 | 0.6 | 2462.4 | 0.0 | 2.5 | 0.0 | 2.5 | 0.6 | 5.0 | 5.5 | 0.0 | 0.0 |
| 70 | 0.21 | 2.9 | 0.6 | 2535.3 | 0.0 | 2.5 | 0.0 | 2.5 | 0.6 | 5.4 | 5.9 | 0.0 | 0.0 |
| 75 | 0.21 | 2.8 | 0.6 | 2602.0 | 0.0 | 2.6 | 0.0 | 2.6 | 0.6 | 5.7 | 6.3 | 0.0 | 0.0 |
| 80 | 0.21 | 2.7 | 0.6 | 2663.4 | 0.0 | 2.7 | 0.0 | 2.7 | 0.6 | 6.1 | 6.8 | 0.0 | 0.0 |
| 85 | 0.21 | 2.6 | 0.5 | 2720.0 | 0.0 | 2.7 | 0.0 | 2.7 | 0.5 | 6.5 | 7.2 | 0.0 | 0.0 |
| 90 | 0.21 | 2.5 | 0.5 | 2772.4 | 0.0 | 2.8 | 0.0 | 2.8 | 0.5 | 6.9 | 7.6 | 0.0 | 0.0 |
| 95 | 0.21 | 2.4 | 0.5 | 2821.0 | 0.0 | 2.8 | 0.0 | 2.8 | 0.5 | 7.3 | 8.0 | 0.0 | 0.0 |
| 100 | 0.21 | 2.3 | 0.5 | 2866.2 | 0.0 | 2.9 | 0.0 | 2.9 | 0.5 | 7.7 | 8.4 | 0.0 | 0.0 |
| 105 | 0.21 | 2.2 | 0.5 | 2908.4 | 0.0 | 2.9 | 0.0 | 2.9 | 0.5 | 8.0 | 8.9 | 0.0 | 0.0 |
| 110 | 0.21 | 2.2 | 0.4 | 2947.8 | 0.0 | 2.9 | 0.0 | 2.9 | 0.4 | 8.4 | 9.3 | 0.0 | 0.0 |
| 115 | 0.21 | 2.1 | 0.4 | 2984.8 | 0.0 | 3.0 | 0.0 | 3.0 | 0.4 | 8.8 | 9.7 | 0.0 | 0.0 |
| 120 | 0.21 | 2.0 | 0.4 | 3019.5 | 0.0 | 3.0 | 0.0 | 3.0 | 0.4 | 9.2 | 10.1 | 0.0 | 0.0 |
| 125 | 0.21 | 2.0 | 0.4 | 3052.1 | 0.0 | 3.1 | 0.0 | 3.1 | 0.4 | 9.6 | 10.6 | 0.0 | 0.0 |
| 130 | 0.21 | 1.9 | 0.4 | 3082.9 | 0.0 | 3.1 | 0.0 | 3.1 | 0.4 | 10.0 | 11.0 | 0.0 | 0.0 |
| 135 | 0.21 | 1.9 | 0.4 | 3111.9 | 0.0 | 3.1 | 0.0 | 3.1 | 0.4 | 10.3 | 11.4 | 0.0 | 0.0 |
| 140 | 0.21 | 1.8 | 0.4 | 3139.4 | 0.0 | 3.1 | 0.0 | 3.1 | 0.4 | 10.7 | 11.8 | 0.0 | 0.0 |
| 145 | 0.21 | 1.8 | 0.4 | 3165.4 | 0.0 | 3.2 | 0.0 | 3.2 | 0.4 | 11.1 | 12.2 | 0.0 | 0.0 |
| 150 | 0.21 | 1.7 | 0.4 | 3190.1 | 0.0 | 3.2 | 0.0 | 3.2 | 0.4 | 11.5 | 12.7 | 0.0 | 0.0 |
| 155 | 0.21 | 1.7 | 0.3 | 3213.5 | 0.0 | 3.2 | 0.0 | 3.2 | 0.3 | 11.9 | 13.1 | 0.0 | 0.0 |
| 160 | 0.21 | 1.6 | 0.3 | 3235.8 | 0.0 | 3.2 | 0.0 | 3.2 | 0.3 | 12.3 | 13.5 | 0.0 | 0.0 |
| 165 | 0.21 | 1.6 | 0.3 | 3257.0 | 0.0 | 3.3 | 0.0 | 3.3 | 0.3 | 12.6 | 13.9 | 0.0 | 0.0 |
| 170 | 0.21 | 1.6 | 0.3 | 3277.2 | 0.0 | 3.3 | 0.0 | 3.3 | 0.3 | 13.0 | 14.4 | 0.0 | 0.0 |
| 175 | 0.2 | 1.5 | 0.3 | 3296.5 | 0.0 | 3.3 | 0.0 | 3.3 | 0.3 | 13.4 | 14.8 | 0.0 | 0.0 |
| 180 | 0.2 | 1.5 | 0.3 | 3314.9 | 0.0 | 3.3 | 0.0 | 3.3 | 0.3 | 13.8 | 15.2 | 0.0 | 0.0 |

# WATER QUALITY CALCULATIONS

NW 102nd Avenue from NW 66th Street to Approx. 350-ft South

| | | | | |
|---|---|---|---|---|
| Total Drainage Area = | 0.31 | acres. | (% IMP.= | 80.6% ) |
| Impervious Area = | 0.25 | acres. | (C = | 0.9 ) |
| Pervious Area (sod) = | 0.06 | acres. | (C = | 0.3 ) |
| Weighted C = | 0.78 | | | |
| Contributing Area (CA) = | 0.24 | | | |

| | | |
|---|---|---|
| Lowest Grade Elev. for Prop. Exfil. Trench = | 7.61 | ft. NGVD |
| Lowest Existing Grate Elevation = | n/a | ft. NGVD |

## Proposed Exfiltration Trench:

| | | |
|---|---|---|
| Depth of Trench = | 15 | feet below grade |
| Top of trench elevation = | 5.61 | ft. NGVD |
| GWT = | 5.00 | ft. NGVD |
| Top of Pipe = | 4.61 | ft. NGVD |
| Pipe Diameter = | 18 | inches |
| Pipe Inv. Elevation = | 2.91 | ft. NGVD |
| Bottom of trench elevation = | -7.39 | ft. NGVD |
| Width = | 4.00 | feet. |
| Weir Elevation = | n/a | ft. NGVD |

| | | |
|---|---|---|
| **Weighted k (Used for design) =** | 3.77E-03 | cfs/sf-ft of head. |
| Safety Factor = | 2 | |
| DESIGN STORM FREQUENCY (YEARS): | 5 | |
| MINIMUM TIME OF CONCENTRATION (MINUTES): | 10.00 | |

# BASIN DESIGN INFORMATION per DERM

| | | | | |
|---|---|---|---|---|
| TOTAL DRAINAGE AREA = | **0.125** | hectares or | **0.310** | acres. |
| TOTAL IMPERVIOUS DRAINAGE AREA = | **0.101** | hectares or | **0.250** | acres. |
| IMPERVIOUS RUNOFF COEFFICIENT = | **0.90** | | | |
| TOTAL PERVIOUS DRAINAGE AREA = | **0.024** | hectares or | **0.060** | acres. |
| PERVIOUS RUNOFF COEFFICIENT = | **0.30** | | | |
| SUB-BASIN DRAINAGE AREA = | **0.125** | hectares or | **0.310** | acres. |
| SUB-BASIN IMPERVIOUS DRAINAGE AREA = | **0.101** | hectares or | **0.250** | acres. |
| IMPERVIOUS RUNOFF COEFFICIENT = | **0.90** | | | |
| SUB-BASIN PERVIOUS DRAINAGE AREA = | **0.024** | hectares or | **0.060** | acres. |
| PERVIOUS RUNOFF COEFFICIENT = | **0.30** | | | |
| SUB-BASIN TIME OF CONCENTRATION = | **10.00** | minutes | | |
| DESIGN STORM FREQUENCY = | **5** | years | | |

# WATER QUALITY CALCULATIONS per DERM CRITERIA

| | | |
|---|---|---|
| SUB-BASIN TIME OF CONCENTRATION = | **10.00** | minutes |
| SUB-BASIN TIME FOR FIRST INCH OF RUNOFF = | **13.27** | minutes |
| REQUIRED WATER QUALITY TREATMENT TIME = | **23.27** | minutes |

| | | | |
|---|---|---|---|
| **Required treatment volume $V_{trmt}$ =** | **47.542** | **cu. meters or** | **1,679 cu. ft.** |
| **Required treatment volume $V_{trmt}$ =** | **0.005** | **hectare-meters or** | **0.039 ac.-ft.** |

# WATER QUALITY CALCULATIONS per SFWMD Criteria

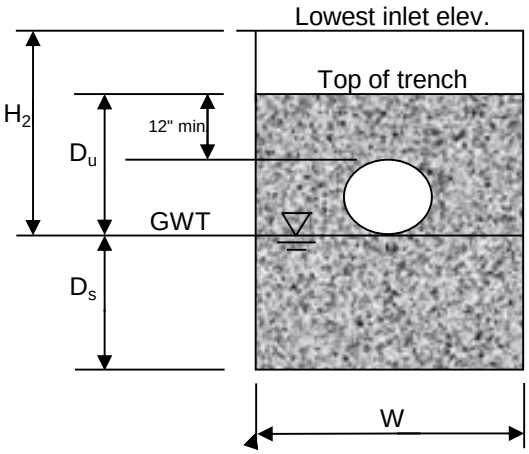
| | | |
|---|---|---|
| 1" Run-off volume X total project area = | **0.026** | ac-ft |
| 2.5" Run-off X impervious(%) X total project area = | **0.052** | ac-ft |

| | | | |
|---|---|---|---|
| **Required treatment volume $V_{trmt}$ =** | **64.244** | **cu. meters or** | **2,269 cu. ft.** |
| **Required treatment volume $V_{trmt}$ =** | **0.006** | **hectare-meters or** | **0.052 ac.-ft.** |

# TYPICAL EXFILTRATION TRENCH DESIGN by DERM

Required Trench Length (L) = V / [ k / SF x ($2H_2D_u - D_u^2 + 2H_2D_s$) + ($1.39 \times 10^{-4}$) x ($WD_u + PS$) ]

V = Treatment Vol. - Capacity of Exist. Trench (ac-in)
k = Weighted Hyd. Conductivity (cfs/sf - ft)
H2 = Depth to the Water Table (ft)
W = Trench width (ft)
Du = Non-Saturated Trench Depth (ft)
Ds = Saturated Trench Depth (ft)
SF = Safety Factor
PS = Pipe Storage (ft.^3)




| | | | |
|---|---|---|---|
| Treatment Volume = | **0.006** | ha-m or | **0.052 ac-ft** |
| Treatment Volume = | **0.625** | ac-in. | |
| k = | **3.77E-03** | cfs/sf-ft | |
| H2 = | **2.61** | ft. | |
| W = | **4.00** | ft. | |
| Du = | **0.61** | ft. | |
| Ds = | **12.39** | ft. | |
| SF = | **2.00** | | |

## Quality:

| | |
|---|---|
| **Required Length =** | **4.90 feet** |

## Quantity:

| | |
|---|---|
| **Min. Required Length =** | **13 feet** |
| **Provided Length =** | **25 feet** |

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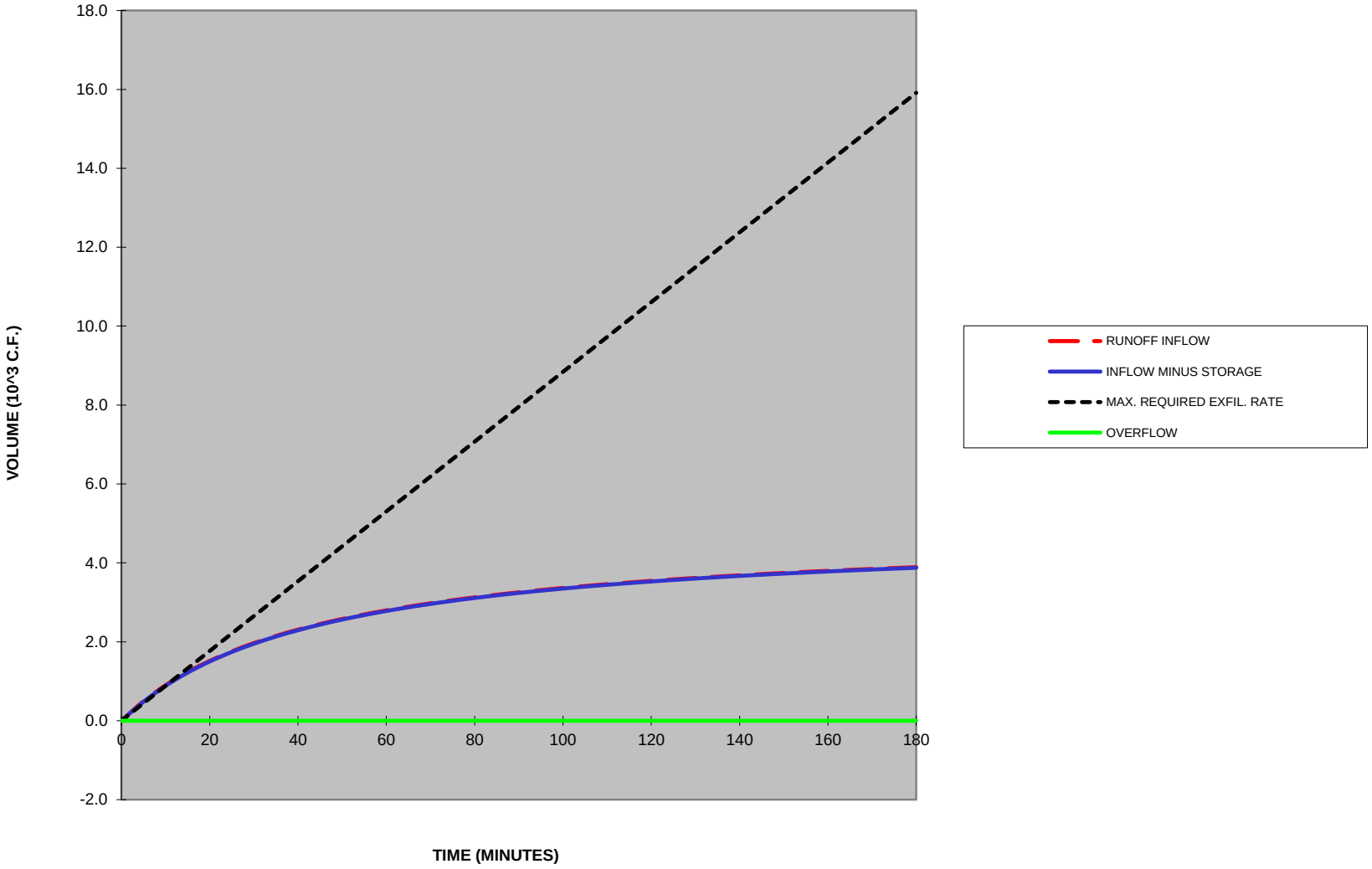
## MASS DIAGRAM



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**MAXIMUM OVERFLOW RATE = 0.00 CFS**

| TIME (MIN.) | CA | RAINFALL INTENSITY (in./hr.) | INFLOW RATE (CFS) | INFLOW VOLUME ($ft^3$) | PROP. DRY RETENTION ($ft^3$) | ADJUSTED INFLOW VOLUME ($10^3$ CF) | PROPOSED F.D. STORAGE ($ft^3$) | EXCESS RUNOFF ($10^3$ CF) | REQUIRED EXFIL. RATE (CFS) | MAXIMUM REQUIRED EXFIL. VOLUME ($10^3$ CF) | ACTUAL EXFIL. VOLUME ($10^3$ CF) | OVERFLOW VOLUME ($10^3$ CF) | OVERFLOW RATE (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.24 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.24 | 6.8 | 1.7 | 495.8 | 0.0 | 0.5 | 15.3 | 0.5 | 0.0 | 0.4 | 0.5 | 0.0 | 0.0 |
| 10 | 0.24 | 6.2 | 1.5 | 899.4 | 0.0 | 0.9 | 15.3 | 0.9 | 1.5 | 0.9 | 1.0 | 0.0 | 0.0 |
| 15 | 0.24 | 5.6 | 1.4 | 1234.3 | 0.0 | 1.2 | 15.3 | 1.2 | 1.4 | 1.3 | 1.4 | 0.0 | 0.0 |
| 20 | 0.24 | 5.2 | 1.3 | 1516.8 | 0.0 | 1.5 | 15.3 | 1.5 | 1.3 | 1.8 | 1.9 | 0.0 | 0.0 |
| 25 | 0.24 | 4.8 | 1.2 | 1758.2 | 0.0 | 1.8 | 15.3 | 1.7 | 1.2 | 2.2 | 2.4 | 0.0 | 0.0 |
| 30 | 0.24 | 4.5 | 1.1 | 1966.9 | 0.0 | 2.0 | 15.3 | 2.0 | 1.1 | 2.7 | 2.9 | 0.0 | 0.0 |
| 35 | 0.24 | 4.2 | 1.0 | 2149.1 | 0.0 | 2.1 | 15.3 | 2.1 | 1.0 | 3.1 | 3.4 | 0.0 | 0.0 |
| 40 | 0.24 | 4.0 | 1.0 | 2309.6 | 0.0 | 2.3 | 15.3 | 2.3 | 1.0 | 3.5 | 3.8 | 0.0 | 0.0 |
| 45 | 0.24 | 3.7 | 0.9 | 2451.9 | 0.0 | 2.5 | 15.3 | 2.4 | 0.9 | 4.0 | 4.3 | 0.0 | 0.0 |
| 50 | 0.24 | 3.5 | 0.9 | 2579.2 | 0.0 | 2.6 | 15.3 | 2.6 | 0.9 | 4.4 | 4.8 | 0.0 | 0.0 |
| 55 | 0.24 | 3.4 | 0.8 | 2693.5 | 0.0 | 2.7 | 15.3 | 2.7 | 0.8 | 4.9 | 5.3 | 0.0 | 0.0 |
| 60 | 0.24 | 3.2 | 0.8 | 2796.8 | 0.0 | 2.8 | 15.3 | 2.8 | 0.8 | 5.3 | 5.8 | 0.0 | 0.0 |
| 65 | 0.24 | 3.1 | 0.7 | 2890.6 | 0.0 | 2.9 | 15.3 | 2.9 | 0.7 | 5.7 | 6.2 | 0.0 | 0.0 |
| 70 | 0.24 | 2.9 | 0.7 | 2976.2 | 0.0 | 3.0 | 15.3 | 3.0 | 0.7 | 6.2 | 6.7 | 0.0 | 0.0 |
| 75 | 0.24 | 2.8 | 0.7 | 3054.6 | 0.0 | 3.1 | 15.3 | 3.0 | 0.7 | 6.6 | 7.2 | 0.0 | 0.0 |
| 80 | 0.24 | 2.7 | 0.7 | 3126.6 | 0.0 | 3.1 | 15.3 | 3.1 | 0.6 | 7.1 | 7.7 | 0.0 | 0.0 |
| 85 | 0.24 | 2.6 | 0.6 | 3193.1 | 0.0 | 3.2 | 15.3 | 3.2 | 0.6 | 7.5 | 8.2 | 0.0 | 0.0 |
| 90 | 0.24 | 2.5 | 0.6 | 3254.5 | 0.0 | 3.3 | 15.3 | 3.2 | 0.6 | 8.0 | 8.6 | 0.0 | 0.0 |
| 95 | 0.24 | 2.4 | 0.6 | 3311.6 | 0.0 | 3.3 | 15.3 | 3.3 | 0.6 | 8.4 | 9.1 | 0.0 | 0.0 |
| 100 | 0.24 | 2.3 | 0.6 | 3364.7 | 0.0 | 3.4 | 15.3 | 3.3 | 0.6 | 8.8 | 9.6 | 0.0 | 0.0 |
| 105 | 0.24 | 2.2 | 0.5 | 3414.2 | 0.0 | 3.4 | 15.3 | 3.4 | 0.5 | 9.3 | 10.1 | 0.0 | 0.0 |
| 110 | 0.24 | 2.2 | 0.5 | 3460.5 | 0.0 | 3.5 | 15.3 | 3.4 | 0.5 | 9.7 | 10.6 | 0.0 | 0.0 |
| 115 | 0.24 | 2.1 | 0.5 | 3503.9 | 0.0 | 3.5 | 15.3 | 3.5 | 0.5 | 10.2 | 11.1 | 0.0 | 0.0 |
| 120 | 0.24 | 2.0 | 0.5 | 3544.6 | 0.0 | 3.5 | 15.3 | 3.5 | 0.5 | 10.6 | 11.5 | 0.0 | 0.0 |
| 125 | 0.24 | 2.0 | 0.5 | 3582.9 | 0.0 | 3.6 | 15.3 | 3.6 | 0.5 | 11.1 | 12.0 | 0.0 | 0.0 |
| 130 | 0.24 | 1.9 | 0.5 | 3619.0 | 0.0 | 3.6 | 15.3 | 3.6 | 0.5 | 11.5 | 12.5 | 0.0 | 0.0 |
| 135 | 0.24 | 1.9 | 0.5 | 3653.1 | 0.0 | 3.7 | 15.3 | 3.6 | 0.4 | 11.9 | 13.0 | 0.0 | 0.0 |
| 140 | 0.24 | 1.8 | 0.4 | 3685.4 | 0.0 | 3.7 | 15.3 | 3.7 | 0.4 | 12.4 | 13.5 | 0.0 | 0.0 |
| 145 | 0.24 | 1.8 | 0.4 | 3715.9 | 0.0 | 3.7 | 15.3 | 3.7 | 0.4 | 12.8 | 13.9 | 0.0 | 0.0 |
| 150 | 0.24 | 1.7 | 0.4 | 3744.9 | 0.0 | 3.7 | 15.3 | 3.7 | 0.4 | 13.3 | 14.4 | 0.0 | 0.0 |
| 155 | 0.24 | 1.7 | 0.4 | 3772.4 | 0.0 | 3.8 | 15.3 | 3.8 | 0.4 | 13.7 | 14.9 | 0.0 | 0.0 |
| 160 | 0.24 | 1.6 | 0.4 | 3798.5 | 0.0 | 3.8 | 15.3 | 3.8 | 0.4 | 14.1 | 15.4 | 0.0 | 0.0 |
| 165 | 0.24 | 1.6 | 0.4 | 3823.4 | 0.0 | 3.8 | 15.3 | 3.8 | 0.4 | 14.6 | 15.9 | 0.0 | 0.0 |
| 170 | 0.24 | 1.6 | 0.4 | 3847.1 | 0.0 | 3.8 | 15.3 | 3.8 | 0.4 | 15.0 | 16.3 | 0.0 | 0.0 |
| 175 | 0.2 | 1.5 | 0.4 | 3869.8 | 0.0 | 3.9 | 15.3 | 3.9 | 0.4 | 15.5 | 16.8 | 0.0 | 0.0 |
| 180 | 0.2 | 1.5 | 0.4 | 3891.4 | 0.0 | 3.9 | 15.3 | 3.9 | 0.4 | 15.9 | 17.3 | 0.0 | 0.0 |

# APPENDIX H – WATER QUANTITY ANALYSIS

*ICPR Pre-Development Schematic Diagram*

*ICPR Post-Development Schematic Diagram*

*ICPR Variable Groundwater Table*

*ICPR Rating Curve Calculations*

*ICPR Pre-Development Input Report*

*ICPR Post-Development Input Report*

*ICPR Node Maximum Stage Report*

# ICPR PRE-DEVELOPMENT SCHIMATIC DIAGRAM

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# ICPR POST-DEVELOPMENT SCHIMATIC DIAGRAM

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Kimley»Horn

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Kimley»Horn

# ICPR VARIABLE GROUNDWATER TABLE

| Variable Tailwater Elevation Boundary Condition Input (24-Hour Duration) | | | | |
|---|---|---|---|---|
| Hour | Avg. October Groundwater Table (ft NGVD) | Percent Rise in Groundwater | Average Yearly Groundwater Table (ft NGVD) | Groundwater Elevation (ft NGVD) |
| 0 | 5.00 | 0.00 | 5.50 | 5.00 |
| 1 | 5.00 | 0.01 | 5.50 | 5.01 |
| 2 | 5.00 | 0.03 | 5.50 | 5.02 |
| 3 | 5.00 | 0.06 | 5.50 | 5.03 |
| 4 | 5.00 | 0.09 | 5.50 | 5.05 |
| 5 | 5.00 | 0.12 | 5.50 | 5.06 |
| 6 | 5.00 | 0.16 | 5.50 | 5.08 |
| 7 | 5.00 | 0.20 | 5.50 | 5.10 |
| 8 | 5.00 | 0.24 | 5.50 | 5.12 |
| 9 | 5.00 | 0.30 | 5.50 | 5.15 |
| 10 | 5.00 | 0.36 | 5.50 | 5.18 |
| 11 | 5.00 | 0.44 | 5.50 | 5.22 |
| 12 | 5.00 | 0.54 | 5.50 | 5.27 |
| 13 | 5.00 | 0.61 | 5.50 | 5.31 |
| 14 | 5.00 | 0.67 | 5.50 | 5.34 |
| 15 | 5.00 | 0.73 | 5.50 | 5.37 |
| 16 | 5.00 | 0.78 | 5.50 | 5.39 |
| 17 | 5.00 | 0.82 | 5.50 | 5.41 |
| 18 | 5.00 | 0.86 | 5.50 | 5.43 |
| 19 | 5.00 | 0.90 | 5.50 | 5.45 |
| 20 | 5.00 | 0.93 | 5.50 | 5.47 |
| 21 | 5.00 | 0.96 | 5.50 | 5.48 |
| 22 | 5.00 | 0.98 | 5.50 | 5.49 |
| 23 | 5.00 | 0.99 | 5.50 | 5.50 |
| 24 | 5.00 | 1.00 | 5.50 | 5.50 |
| 36 | 5.00 | 0.00 | 5.50 | 5.00 |

| Variable Tailwater Elevation Boundary Condition Input (72-Hour Duration) | | | | |
|---|---|---|---|---|
| Hour | Avg. October Groundwater Table (ft NGVD) | Percent Rise in Groundwater | Average Yearly Groundwater Table (ft NGVD) | Groundwater Elevation (ft NGVD) |
| 0 | 5.00 | 0.00 | 5.5 | 5.00 |
| 24 | 5.00 | 0.11 | 5.5 | 5.05 |
| 36 | 5.00 | 0.19 | 5.5 | 5.09 |
| 48 | 5.00 | 0.26 | 5.5 | 5.13 |
| 49 | 5.00 | 0.27 | 5.5 | 5.14 |
| 50 | 5.00 | 0.28 | 5.5 | 5.14 |
| 51 | 5.00 | 0.29 | 5.5 | 5.14 |
| 52 | 5.00 | 0.30 | 5.5 | 5.15 |
| 53 | 5.00 | 0.31 | 5.5 | 5.15 |
| 54 | 5.00 | 0.33 | 5.5 | 5.16 |
| 55 | 5.00 | 0.34 | 5.5 | 5.17 |
| 56 | 5.00 | 0.37 | 5.5 | 5.18 |
| 57 | 5.00 | 0.39 | 5.5 | 5.20 |
| 57.5 | 5.00 | 0.40 | 5.5 | 5.20 |
| 58 | 5.00 | 0.42 | 5.5 | 5.21 |
| 58.5 | 5.00 | 0.44 | 5.5 | 5.22 |
| 59 | 5.00 | 0.46 | 5.5 | 5.23 |
| 59.5 | 5.00 | 0.50 | 5.5 | 5.25 |
| 60 | 5.00 | 0.75 | 5.5 | 5.37 |
| 60.5 | 5.00 | 0.80 | 5.5 | 5.40 |
| 61 | 5.00 | 0.83 | 5.5 | 5.41 |
| 61.5 | 5.00 | 0.85 | 5.5 | 5.42 |
| 62 | 5.00 | 0.87 | 5.5 | 5.43 |
| 62.5 | 5.00 | 0.88 | 5.5 | 5.44 |
| 63 | 5.00 | 0.89 | 5.5 | 5.44 |
| 64 | 5.00 | 0.91 | 5.5 | 5.46 |
| 65 | 5.00 | 0.92 | 5.5 | 5.46 |
| 66 | 5.00 | 0.94 | 5.5 | 5.47 |
| 68 | 5.00 | 0.96 | 5.5 | 5.48 |
| 70 | 5.00 | 0.98 | 5.5 | 5.49 |
| 72 | 5.00 | 1.00 | 5.5 | 5.50 |
| 108 | 5.00 | 0.00 | 5.5 | 5.00 |

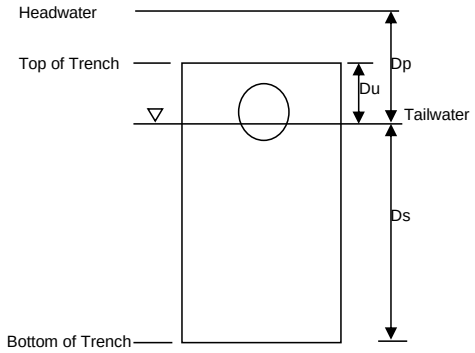
# ICPR RATING CURVE CALCULATIONS

**Proposed French Drain - ICPR Model Rating Curve Calculations**
**NW 66th Street Roadway Improvements**

Avg October Groundwater Table 4 NGVD
Avg Yearly Groundwater Table 5.75 NGVD

| | | Tail water Oct. | Head Water | Dp Ft. | Du ft. | HG Elevation | Exfiltration Rate | $E_T$ Head Losses Through Pipe | Calc. Length | Discharge | Discharge Rate | Area |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lowest Inlet elevation | 6.6 | (ft) | (ft) | (ft) | (ft) | (ft) | (cfs/ft) | (cfs/ft) | (ft) | (cfs-ft) | (cfs) | (AC) |
| K15ave | 3.77E-03 | 4.00 | 4.00 | 0 | 0.00 | 0.00 | 0.000 | 0.000 | 1 | 0.000 | 0.000 | 0.0000 |
| Top Trench El. (ft) | 4.6 | 4.00 | 4.60 | 0.6 | 0.60 | 4.60 | 0.057 | 0.0463 | 1 | 0.046 | 0.046 | 0.0000 |
| Trench Depth (ft) | 15 | 4.00 | 8.00 | 4 | 0.60 | 8.00 | 0.391 | 0.1939 | 1 | 0.194 | 0.100 | 0.0000 |
| Pipe Size (in) | 18 | | | | | | | | | | | |
| Dp (ft) | see figure | | | | | | | $E_T$ Head Losses | | | | |
| Du (ft) | 0.6 | **Tail water Avg Yearly** | **Head Water** | **Dp ft.** | **Du ft.** | **HG Elevation** | **Exfiltration Rate** | **Trough Pipe** | **Calc. Length** | **Discharge** | **Discharge Rate** | **Area** |
| Ds (ft) | 12.4 | (ft) | (ft) | (ft) | (ft) | (ft) | (cfs/ft) | (cfs/ft) | (ft) | (cfs-ft) | (cfs) | (AC) |
| Bottom of the trench EL (ft) | -8.4 | 5.75 | 5.75 | 0 | 0.00 | 0.00 | 0.000 | 0.000 | 1 | 0.000 | 0.000 | 0.0000 |
| Width (ft) | 4 | 5.75 | 5.75 | 0 | 0.00 | 5.75 | 0.000 | 0.0000 | 1 | 0.000 | 0.000 | 0.0000 |
| Trench length (ft) | 1 | 5.75 | 8.00 | 2.25 | 0.00 | 8.00 | 0.221 | 0.1299 | 1 | 0.130 | 0.100 | 0.0000 |

| | |
|---|---|
| K15ave | 4.68E-03 |
| Top Trench El. (ft) | 4.6 |
| Trench Depth (ft) | 15 |
| Pipe Size (in) | 18 |
| Dp (ft) | see figure |
| Du (ft) | 0 |
| Ds (ft) | 13 |
| Bottom of the trench EL (ft) | -8.4 |
| Width (ft) | 4 |
| Trench length (ft) | 1 |




**Trench Schematic**

Exfiltration values are reduced to account for the head loss through the openings of a concrete pipe when they exceed 0.02 cfs/ft, per Technical Paper No. 6, FDOT VI Drainage, by R. Carvajal, PE, 1998, **$Et=2*K_{15}*Du*(Dp-Du/2-1.39/g*(Et/A)^2)+2*K_{15}*Ds*(Dp-1.39/g*(Et/A)^2)$** where, Et=Exfiltration, g=Gravity, 32.2ft/s^2, A=Area of slots per foot, 0.0283 ft^2/ft.

**Note:** Exfiltration rate was calculated using $E_{15}= 2*K_{15}*(Du*(Dp-Du/2)+Ds*Dp)$

# ICPR PRE-DEVELOPMENT INPUT REPORT

## Simple Basin: Site

| | |
|---|---|
| Scenario: | Pre-Development |
| Node: | Site |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 10.0000 min |
| Max Allowable Q: | 0.00 cfs |
| Time Shift: | 0.0000 hr |
| Unit Hydrograph: | UH256 |
| Peaking Factor: | 256.0 |
| Area: | 2.2000 ac |
| Curve Number: | 86.0 |
| % Impervious: | 0.00 |
| % DCIA: | 0.00 |
| % Direct: | 0.00 |
| Rainfall Name: | |

Comment:

## Node: Site

| | |
|---|---|
| Scenario: | Pre-Development |
| Type: | Stage/Area |
| Base Flow: | 0.00 cfs |
| Initial Stage: | 4.00 ft |
| Warning Stage: | 0.00 ft |

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 4.00 | 0.2951 | 12857 |
| 4.10 | 0.3849 | 16767 |
| 4.20 | 0.4905 | 21368 |
| 4.30 | 0.6074 | 26458 |
| 4.39 | 0.6898 | 30049 |
| 4.49 | 0.7848 | 34184 |
| 4.59 | 0.8725 | 38007 |
| 4.69 | 0.9443 | 41134 |
| 4.79 | 1.0025 | 43670 |
| 4.89 | 1.0503 | 45749 |
| 4.99 | 1.0912 | 47533 |
| 5.09 | 1.1273 | 49106 |
| 5.19 | 1.1564 | 50371 |
| 5.29 | 1.1813 | 51455 |
| 5.39 | 1.2056 | 52517 |
| 5.49 | 1.2297 | 53566 |
| 5.59 | 1.2501 | 54452 |
| 5.69 | 1.2677 | 55219 |
| 5.79 | 1.2840 | 55933 |
| 5.89 | 1.3022 | 56725 |

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 5.99 | 1.3160 | 57325 |
| 6.09 | 1.3311 | 57982 |
| 6.19 | 1.3448 | 58579 |
| 6.29 | 1.3592 | 59206 |
| 6.39 | 1.3751 | 59899 |
| 6.49 | 1.3878 | 60453 |
| 6.59 | 1.4034 | 61130 |
| 6.69 | 1.4202 | 61864 |
| 6.79 | 1.4402 | 62737 |
| 6.89 | 1.4771 | 64341 |
| 6.99 | 1.5250 | 66429 |
| 7.09 | 1.5646 | 68152 |
| 7.19 | 1.5998 | 69689 |
| 7.29 | 1.6356 | 71248 |
| 7.39 | 1.6685 | 72680 |
| 7.49 | 1.6971 | 73926 |
| 7.59 | 1.7240 | 75098 |
| 7.69 | 1.7519 | 76313 |
| 7.79 | 1.7758 | 77353 |
| 7.89 | 1.8010 | 78451 |
| 7.99 | 1.8217 | 79355 |
| 8.09 | 1.8423 | 80248 |
| 8.19 | 1.8582 | 80941 |
| 8.29 | 1.8722 | 81554 |
| 8.39 | 1.8888 | 82278 |
| 8.49 | 1.9051 | 82987 |
| 8.59 | 1.9326 | 84184 |
| 8.69 | 1.9569 | 85241 |
| 8.79 | 1.9872 | 86564 |
| 8.89 | 2.0149 | 87770 |
| 8.99 | 2.0434 | 89012 |
| 9.09 | 2.0715 | 90236 |
| 9.19 | 2.0987 | 91417 |
| 9.29 | 2.1234 | 92495 |
| 9.39 | 2.1400 | 93217 |
| 9.49 | 2.1565 | 93937 |
| 9.59 | 2.1682 | 94448 |
| 9.69 | 2.1794 | 94934 |
| 9.79 | 2.1868 | 95256 |
| 9.90 | 2.1925 | 95506 |
| 10.00 | 2.1930 | 95526 |
| 10.09 | 2.1935 | 95551 |
| 10.19 | 2.1943 | 95582 |
| 10.30 | 2.1947 | 95600 |
| 10.40 | 2.1949 | 95611 |
| 10.50 | 2.1952 | 95623 |
| 10.60 | 2.1955 | 95638 |
| 10.69 | 2.1957 | 95643 |
| 10.79 | 2.1962 | 95668 |

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 10.90 | 2.1966 | 95683 |
| 11.00 | 2.1971 | 95707 |
| 11.10 | 2.1974 | 95717 |
| 11.20 | 2.1974 | 95719 |
| 11.30 | 2.1975 | 95724 |
| 11.40 | 2.1976 | 95725 |
| 11.50 | 2.1976 | 95727 |
| 11.60 | 2.2000 | 95833 |
| 11.70 | 2.2000 | 95833 |

Comment:

## Simulation: 10YR 24HR

Scenario: Pre-Development
Run Date/Time: 7/20/2023 3:00:50 PM
Program Version: ICPR4 4.07.04

### General

Run Mode: Normal

| | Year | Month | Day | Hour [hr] |
|---|---|---|---|---|
| Start Time: | 0 | 0 | 0 | 0.0000 |
| End Time: | 0 | 0 | 0 | 30.0000 |

| | Hydrology [sec] | Surface Hydraulics [sec] | Groundwater [sec] |
|---|---|---|---|
| Min Calculation Time: | 60.0000 | 0.1000 | 900.0000 |
| Max Calculation Time: | | 30.0000 | |

### Output Time Increments

#### Hydrology

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 15.0000 |

#### Surface Hydraulics

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 15.0000 |

#### Groundwater

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 60.0000 |

## Restart File

Save Restart: False

## Resources & Lookup Tables

### Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

### Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

## Tolerances & Options

| | | | |
|---|---|---|---|
| Time Marching: | SAOR | IA Recovery Time: | 24.0000 hr |
| Max Iterations: | 6 | ET for Manual Basins: | False |
| Over-Relax Weight Fact: | 0.5 dec | | |
| dZ Tolerance: | 0.0010 ft | Smp/Man Basin Rain Opt: | Global |
| Max dZ: | 1.0000 ft | OF Region Rain Opt: | Global |
| Link Optimizer Tol: | 0.0001 ft | Rainfall Name: | ~SCSIII-24 |
| | | Rainfall Amount: | 8.41 in |
| Edge Length Option: | Automatic | Storm Duration: | 24.0000 hr |
| Dflt Damping (2D): | 0.0050 ft | Dflt Damping (1D): | 0.0050 ft |
| Min Node Srf Area (2D): | 100 ft2 | Min Node Srf Area (1D): | 100 ft2 |
| Energy Switch (2D): | Energy | Energy Switch (1D): | Energy |

Comment:

## Simulation: 25YR 72HR

Scenario: Pre-Development
Run Date/Time: 7/20/2023 3:01:22 PM
Program Version: ICPR4 4.07.04

## General

Run Mode: Normal

| | Year | Month | Day | Hour [hr] |
|---|---|---|---|---|
| Start Time: | 0 | 0 | 0 | 0.0000 |
| End Time: | 0 | 0 | 0 | 80.0000 |

| | Hydrology [sec] | Surface Hydraulics [sec] | Groundwater [sec] |
|---|---|---|---|
| Min Calculation Time: | 60.0000 | 0.1000 | 900.0000 |
| Max Calculation Time: | | 30.0000 | |

## Output Time Increments

### Hydrology

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 15.0000 |

### Surface Hydraulics

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 15.0000 |

### Groundwater

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 60.0000 |

### Restart File

Save Restart: False

## Resources & Lookup Tables

### Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

### Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:

Green-Ampt Set:
Vertical Layers Set:
Impervious Set:
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

## Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight 0.5 dec

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False

| | | | |
|---|---|---|---|
| Fact: | | | |
| dZ Tolerance: | 0.0010 ft | Smp/Man Basin Rain Opt: | Global |
| Max dZ: | 1.0000 ft | OF Region Rain Opt: | Global |
| Link Optimizer Tol: | 0.0001 ft | Rainfall Name: | ~SFWMD-72 |
| | | Rainfall Amount: | 13.10 in |
| Edge Length Option: | Automatic | Storm Duration: | 72.0000 hr |
| Dflt Damping (2D): | 0.0050 ft | Dflt Damping (1D): | 0.0050 ft |
| Min Node Srf Area (2D): | 100 ft2 | Min Node Srf Area (1D): | 100 ft2 |
| Energy Switch (2D): | Energy | Energy Switch (1D): | Energy |

Comment:

# ICPR POST-DEVELOPMENT INPUT REPORT

## Simple Basin: NW102_Berm

| | |
|---|---|
| Scenario: | Post-Development |
| Node: | NW102_Berm |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 10.0000 min |
| Max Allowable Q: | 0.00 cfs |
| Time Shift: | 0.0000 hr |
| Unit Hydrograph: | UH256 |
| Peaking Factor: | 256.0 |
| Area: | 0.0600 ac |
| Curve Number: | 80.0 |
| % Impervious: | 0.00 |
| % DCIA: | 0.00 |
| % Direct: | 0.00 |
| Rainfall Name: | |

Comment:

## Simple Basin: NW102_Road

| | |
|---|---|
| Scenario: | Post-Development |
| Node: | NW102_Road |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 10.0000 min |
| Max Allowable Q: | 0.00 cfs |
| Time Shift: | 0.0000 hr |
| Unit Hydrograph: | UH256 |
| Peaking Factor: | 256.0 |
| Area: | 0.2500 ac |
| Curve Number: | 98.0 |
| % Impervious: | 0.00 |
| % DCIA: | 0.00 |
| % Direct: | 0.00 |
| Rainfall Name: | |

Comment:

## Simple Basin: NW66_Berm

| | |
|---|---|
| Scenario: | Post-Development |
| Node: | NW66_Berm |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 10.0000 min |
| Max Allowable Q: | 0.00 cfs |

| | |
|---|---|
| Time Shift: | 0.0000 hr |
| Unit Hydrograph: | UH256 |
| Peaking Factor: | 256.0 |
| Area: | 0.5600 ac |
| Curve Number: | 80.0 |
| % Impervious: | 0.00 |
| % DCIA: | 0.00 |
| % Direct: | 0.00 |
| Rainfall Name: | |

Comment:

## Simple Basin: NW66_Road

| | |
|---|---|
| Scenario: | Post-Development |
| Node: | NW66_Road |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 10.0000 min |
| Max Allowable Q: | 0.00 cfs |
| Time Shift: | 0.0000 hr |
| Unit Hydrograph: | UH256 |
| Peaking Factor: | 256.0 |
| Area: | 1.0400 ac |
| Curve Number: | 98.0 |
| % Impervious: | 0.00 |
| % DCIA: | 0.00 |
| % Direct: | 0.00 |
| Rainfall Name: | |

Comment:

## Simple Basin: NW99_Berm

| | |
|---|---|
| Scenario: | Post-Development |
| Node: | NW99_Berm |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 10.0000 min |
| Max Allowable Q: | 0.00 cfs |
| Time Shift: | 0.0000 hr |
| Unit Hydrograph: | UH256 |
| Peaking Factor: | 256.0 |
| Area: | 0.0900 ac |
| Curve Number: | 80.0 |
| % Impervious: | 0.00 |
| % DCIA: | 0.00 |

| | |
|---|---|
| % Direct: | 0.00 |
| Rainfall Name: | |

Comment:

## Simple Basin: NW99_Road

| | |
|---|---|
| Scenario: | Post-Development |
| Node: | NW99_Road |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 10.0000 min |
| Max Allowable Q: | 0.00 cfs |
| Time Shift: | 0.0000 hr |
| Unit Hydrograph: | UH256 |
| Peaking Factor: | 256.0 |
| Area: | 0.1900 ac |
| Curve Number: | 98.0 |
| % Impervious: | 0.00 |
| % DCIA: | 0.00 |
| % Direct: | 0.00 |
| Rainfall Name: | |

Comment:

## Node: GWT

| | |
|---|---|
| Scenario: | Post-Development |
| Type: | Time/Stage |
| Base Flow: | 0.00 cfs |
| Initial Stage: | 0.00 ft |
| Warning Stage: | 0.00 ft |
| Boundary Stage: | GWT |

Comment:

## Node: NW102_Berm

| | |
|---|---|
| Scenario: | Post-Development |
| Type: | Stage/Volume |
| Base Flow: | 0.00 cfs |
| Initial Stage: | 5.00 ft |
| Warning Stage: | 0.00 ft |

| Stage [ft] | Volume [ac-ft] | Volume [ft3] |
|---|---|---|
| 4.00 | 0.00 | 0 |
| 4.50 | 0.00 | 0 |
| 5.00 | 0.00 | 0 |
| 5.50 | 0.01 | 436 |
| 6.00 | 0.02 | 871 |
| 6.50 | 0.03 | 1307 |
| 7.00 | 0.05 | 2178 |
| 7.50 | 0.07 | 3049 |
| 8.00 | 0.10 | 4356 |
| 8.50 | 0.13 | 5663 |
| 9.00 | 0.16 | 6970 |
| 9.50 | 0.19 | 8276 |
| 10.00 | 0.22 | 9583 |

Comment:

## Node: NW102_Road

Scenario: Post-Development
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 5.00 ft
Warning Stage: 7.57 ft

| Stage [ft] | Volume [ac-ft] | Volume [ft3] |
|---|---|---|
| 4.00 | 0.00 | 0 |
| 7.57 | 0.00 | 131 |
| 8.00 | 0.03 | 1307 |
| 8.50 | 0.16 | 6970 |
| 9.00 | 0.28 | 12197 |
| 9.50 | 0.41 | 17860 |
| 10.00 | 0.53 | 23087 |

Comment:

## Node: NW66_Berm

Scenario: Post-Development
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 5.00 ft
Warning Stage: 0.00 ft

| Stage [ft] | Volume [ac-ft] | Volume [ft3] |
|---|---|---|
| 4.00 | 0.04 | 1742 |
| 4.50 | 0.10 | 4356 |

| Stage [ft] | Volume [ac-ft] | Volume [ft3] |
|---|---|---|
| 5.00 | 0.19 | 8276 |
| 5.50 | 0.31 | 13504 |
| 6.00 | 0.45 | 19602 |
| 6.50 | 0.62 | 27007 |
| 7.00 | 0.81 | 35284 |
| 7.50 | 1.04 | 45302 |
| 8.00 | 1.29 | 56192 |
| 8.50 | 1.56 | 67954 |
| 9.00 | 1.84 | 80150 |
| 9.50 | 2.12 | 92347 |
| 10.00 | 2.40 | 104544 |

Comment:

## Node: NW66_Road

Scenario: Post-Development
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 5.00 ft
Warning Stage: 6.35 ft

| Stage [ft] | Volume [ac-ft] | Volume [ft3] |
|---|---|---|
| 4.00 | 0.00 | 0 |
| 6.35 | 0.00 | 131 |
| 8.00 | 0.03 | 1307 |
| 8.50 | 0.42 | 18295 |
| 9.00 | 0.94 | 40946 |
| 9.50 | 1.46 | 63598 |
| 10.00 | 1.98 | 86249 |

Comment:

## Node: NW99_Berm

Scenario: Post-Development
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 5.00 ft
Warning Stage: 0.00 ft

| Stage [ft] | Volume [ac-ft] | Volume [ft3] |
|---|---|---|
| 4.00 | 0.00 | 0 |
| 4.50 | 0.01 | 436 |
| 5.00 | 0.03 | 1307 |
| 5.50 | 0.05 | 2178 |

| Stage [ft] | Volume [ac-ft] | Volume [ft3] |
|---|---|---|
| 6.00 | 0.08 | 3485 |
| 6.50 | 0.11 | 4792 |
| 7.00 | 0.15 | 6534 |
| 7.50 | 0.19 | 8276 |
| 8.00 | 0.24 | 10454 |
| 8.50 | 0.28 | 12197 |
| 9.00 | 0.33 | 14375 |
| 9.50 | 0.37 | 16117 |
| 10.00 | 0.42 | 18295 |

Comment:

## Node: NW99_Road

Scenario: Post-Development
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 5.00 ft
Warning Stage: 6.60 ft

| Stage [ft] | Volume [ac-ft] | Volume [ft3] |
|---|---|---|
| 4.00 | 0.00 | 0 |
| 6.60 | 0.00 | 131 |
| 7.00 | 0.02 | 871 |
| 7.50 | 0.11 | 4792 |
| 8.00 | 0.21 | 9148 |
| 8.50 | 0.31 | 13504 |
| 9.00 | 0.41 | 17860 |
| 9.50 | 0.51 | 22216 |
| 10.00 | 0.61 | 26572 |

Comment:

## Rating Curve Link: RC_NW102_Road

Scenario: Post-Development
From Node: NW102_Road
To Node: GWT
Link Count: 25
Flow Direction: Both

| Table | Elev On [ft] | Elev On Node | Elev Off [ft] | Elev Off Node |
|---|---|---|---|---|
| RC-EXFIL | 0.00 | | 0.00 | |

Comment:

## Rating Curve Link: RC_NW66_Road

Scenario: Post-Development
From Node: NW66_Road
To Node: GWT
Link Count: 132
Flow Direction: Both

| Table | Elev On [ft] | Elev On Node | Elev Off [ft] | Elev Off Node |
|---|---|---|---|---|
| RC-EXFIL | 0.00 | | 0.00 | |

Comment:

## Rating Curve Link: RC_NW99_Road

Scenario: Post-Development
From Node: NW99_Road
To Node: GWT
Link Count: 25
Flow Direction: Both

| Table | Elev On [ft] | Elev On Node | Elev Off [ft] | Elev Off Node |
|---|---|---|---|---|
| RC-EXFIL | 0.00 | | 0.00 | |

Comment:

## Simulation: 10YR 24HR

Scenario: Post-Development
Run Date/Time: 8/7/2023 3:56:06 PM
Program Version: ICPR4 4.07.04

### General

Run Mode: Normal

| | Year | Month | Day | Hour [hr] |
|---|---|---|---|---|
| Start Time: | 0 | 0 | 0 | 0.0000 |
| End Time: | 0 | 0 | 0 | 30.0000 |

| | Hydrology [sec] | Surface Hydraulics [sec] | Groundwater [sec] |
|---|---|---|---|
| Min Calculation Time: | 60.0000 | 0.1000 | 900.0000 |
| Max Calculation Time: | | 30.0000 | |

### Output Time Increments

#### Hydrology

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 15.0000 |

## Surface Hydraulics

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 15.0000 |

## Groundwater

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 60.0000 |

## Restart File

Save Restart: False

## Resources & Lookup Tables

### Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

### Lookup Tables

Boundary Stage Set: 24HR
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

## Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~SCSIII-24
Rainfall Amount: 8.41 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

## Simulation: 25YR 72HR

Scenario: Post-Development
Run Date/Time: 8/7/2023 3:56:40 PM
Program Version: ICPR4 4.07.04

## General

Run Mode: Normal

| | Year | Month | Day | Hour [hr] |
|---|---|---|---|---|
| Start Time: | 0 | 0 | 0 | 0.0000 |
| End Time: | 0 | 0 | 0 | 80.0000 |

| | Hydrology [sec] | Surface Hydraulics [sec] | Groundwater [sec] |
|---|---|---|---|
| Min Calculation Time: | 60.0000 | 0.1000 | 900.0000 |
| Max Calculation Time: | | 30.0000 | |

## Output Time Increments

### Hydrology

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 15.0000 |

### Surface Hydraulics

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 15.0000 |

### Groundwater

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 60.0000 |

### Restart File

Save Restart: False

## Resources & Lookup Tables

### Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

### Lookup Tables

Boundary Stage Set: 72HR
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

| | |
|---|---|
| Conductivity Set: | |
| Leakage Set: | |

## Tolerances & Options

| | | | |
|---|---|---|---|
| Time Marching: | SAOR | IA Recovery Time: | 24.0000 hr |
| Max Iterations: | 6 | ET for Manual Basins: | False |
| Over-Relax Weight Fact: | 0.5 dec | | |
| dZ Tolerance: | 0.0010 ft | Smp/Man Basin Rain Opt: | Global |
| Max dZ: | 1.0000 ft | OF Region Rain Opt: | Global |
| Link Optimizer Tol: | 0.0001 ft | Rainfall Name: | ~SFWMD-72 |
| | | Rainfall Amount: | 13.10 in |
| Edge Length Option: | Automatic | Storm Duration: | 72.0000 hr |
| Dflt Damping (2D): | 0.0050 ft | Dflt Damping (1D): | 0.0050 ft |
| Min Node Srf Area (2D): | 100 ft2 | Min Node Srf Area (1D): | 100 ft2 |
| Energy Switch (2D): | Energy | Energy Switch (1D): | Energy |

Comment:

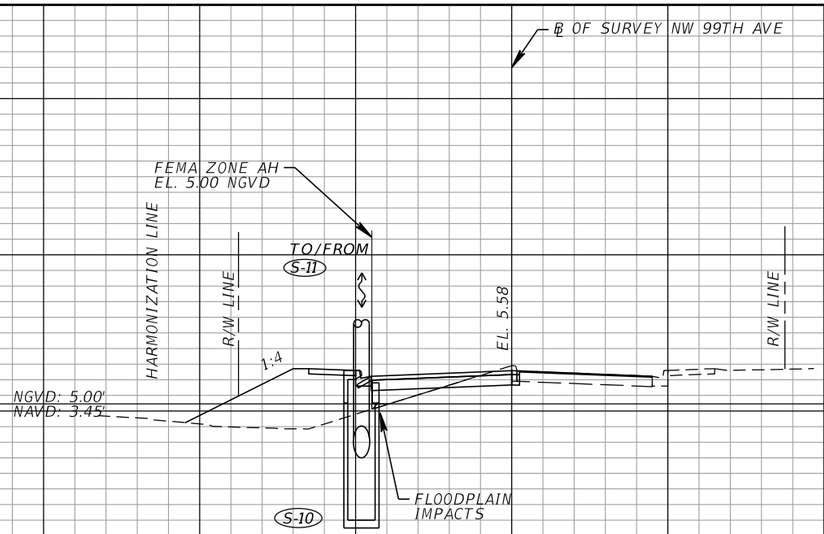
Kimley»Horn

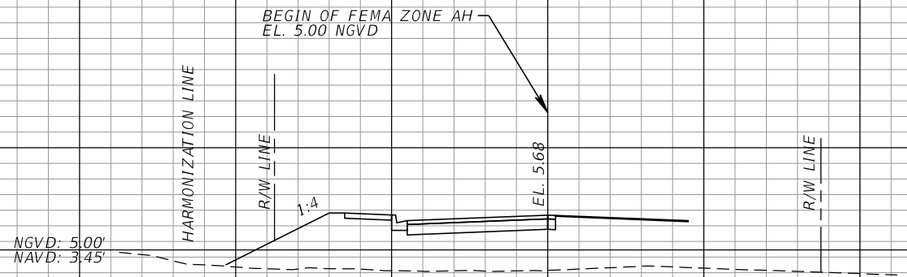
# ICPR OUTPUT REPORT

| Scenario | Sim | Node Name | Maximum Stage [ft] |
|---|---|---|---|
| Post-Development | 10YR 24HR | GWT | 5.50 |
| Post-Development | 10YR 24HR | NW102_Berm | 6.50 |
| Post-Development | 10YR 24HR | NW102_Road | 6.38 |
| Post-Development | 10YR 24HR | NW66_Berm | 6.06 |
| Post-Development | 10YR 24HR | NW66_Road | 6.15 |
| Post-Development | 10YR 24HR | NW99_Berm | 5.92 |
| Post-Development | 10YR 24HR | NW99_Road | 6.02 |
| Post-Development | 25YR 72HR | GWT | 5.50 |
| Post-Development | 25YR 72HR | NW102_Berm | 7.12 |
| Post-Development | 25YR 72HR | NW102_Road | 6.61 |
| Post-Development | 25YR 72HR | NW66_Berm | 6.67 |
| Post-Development | 25YR 72HR | NW66_Road | 6.41 |
| Post-Development | 25YR 72HR | NW99_Berm | 6.45 |
| Post-Development | 25YR 72HR | NW99_Road | 6.23 |

| Scenario | Sim | Basin Name | Maximum Flow Rate [cfs] |
|---|---|---|---|
| Post-Development | 25YR 72HR | NW102_Berm | 0.33 |
| Post-Development | 25YR 72HR | NW66_Berm | 3.06 |
| Post-Development | 25YR 72HR | NW99_Berm | 0.49 |
| Pre-Development | 25YR 72HR | Site | 12.39 |

# APPENDIX I – FLOODPLAIN ENCROACHMENT CALCULATIONS




FILL

℄ OF SURVEY NW 99TH AVE

1" = 20' Horizontal

1" = 10' Vertical

140 120 100 80 60 40 20 0 20 40 60 80 100 120

| FILL | | | |
|---|---|---|---|
| A | V | A | V |
| 0.75 | 0.4 | | |
| 0.0 | 0.0 | | |

27+70.00

27+44.55

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |


Kimley-Horn and Associates, Inc.

Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, Fl 33134

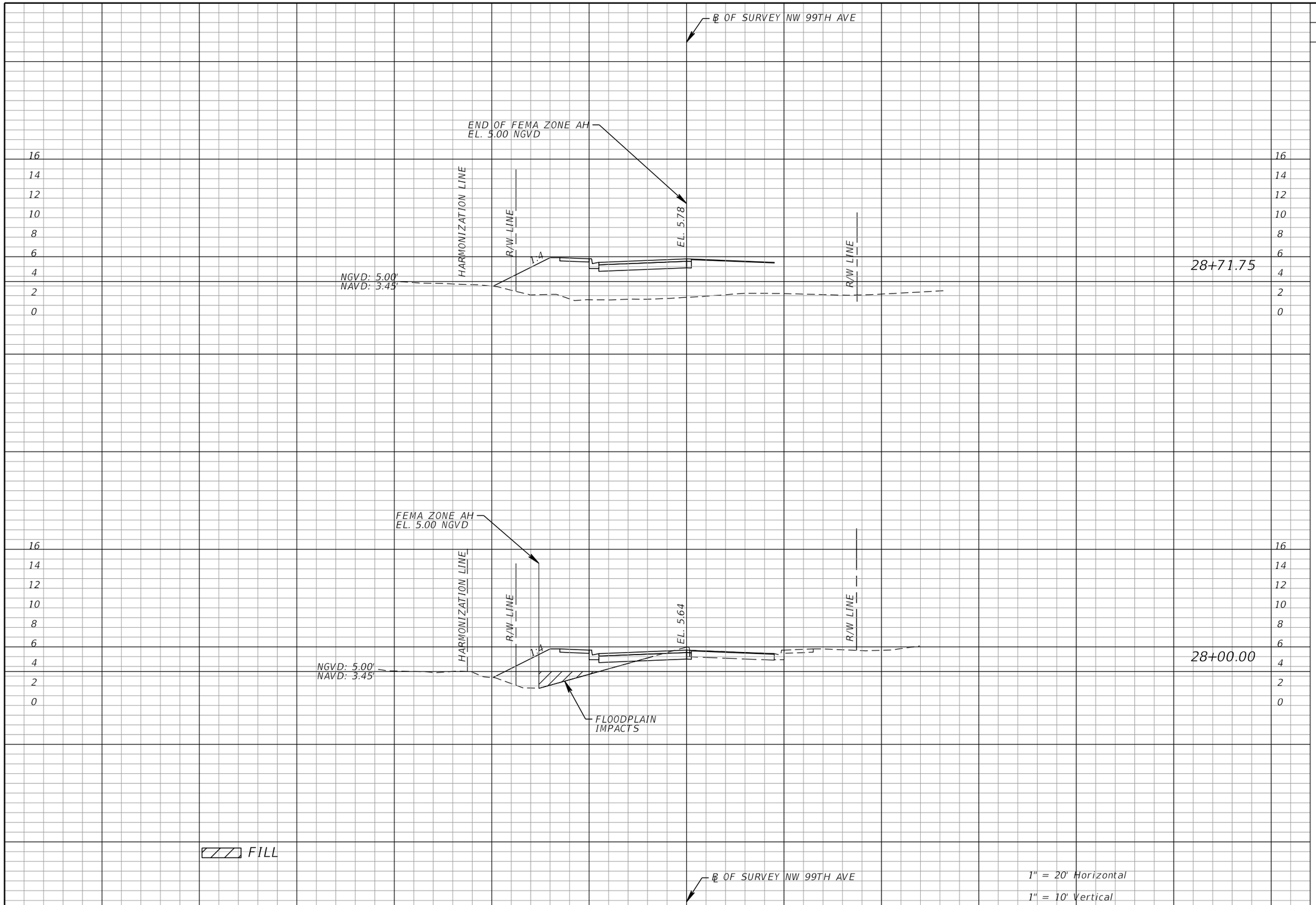

CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# FLOOD PLAIN FILL
# CROSS SECTIONS NW 99TH AVE

SHEET NO.

Renzo.Marengo 8/7/2023 12:09:33 PM c:\pw\kh1\d0146903\RDXSRD104_FloodPlain.dgn




| FILL | | | |
|---|---|---|---|
| A | V | A | V |
| 0 | 0 | | |
| 21.4 | 12.3 | | |

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |


Kimley-Horn and Associates, Inc.

Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, Fl 33134


CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# FLOOD PLAIN FILL
# CROSS SECTIONS NW 99TH AVE

SHEET NO.

Renzo.Marengo 8/7/2023 12:09:33 PM c:\pw\kh1\d0146903\RDXSRD104_FloodPlain.dgn

| Flood Plain Fill | | |
|---|---|---|
| **STA** | **AREA (SF)** | **VOLUME (CF)** |
| 27+44.55 | 0 | 0 |
| 27+70.00 | 0.75 | 10 |
| 28+00.00 | 21.40 | 332 |
| 28+71.75 | 0 | 768 |
| | | |
| | **TOTAL** | 1110 |

| Exfiltration Trench Storage | |
|---|---|
| **Street** | **VOLUME (CF)** |
| NW 66th Street | 25800 |
| NW 99th Ave | 5100 |
| NW 102nd Street | 5800 |
| | |
| **TOTAL *** | 36700 |

* Note: Exfiltration Trench Storage is the summation of the proposed Exfiltration Trench Volume at the 60 minute mark on NW 66th Street (Phase II), NW 99th Avenue and 102nd Avenue.

# APPENDIX J – BASIN B – FILL ENCROACHMENT CALCULATIONS

*CUT AND FILL PERMIT #CF-00690*

*PROJECT AREA EXHIBIT*

*FILL ENCROACHMENT CROSS SECTIONS*

*FILL ENCROACHMENT CALCULATIONS*

Kimley»Horn

# CUT AND FILL PERMIT #CF-00690

MIAMI-DADE COUNTY
Carlos A. Gimenez, Mayor

**Department of Regulatory and Economic Resources**
Environmental Resources Management
701 NW 1st Court, 6th Floor
Miami, Florida 33136-3912
T 305-372-6567 F 305-372-6407

miamidade.gov

February 23, 2016

Luis G. Cubas, P.E.
Kimley-Horn and Associates, Inc.
1221 Brickell Avenue
Miami, Florida 33131

Re: Basin B Cut and Fill Approval CF-690 for the "City of Doral Plans for Proposed NW 66th Street Roadway Improvements from NW 102nd Avenue to NW 97th Avenue", prepared by Luis G. Cubas, P.E., of Kimley-Horn and Associates, Inc., dated 02/03/2016, Miami-Dade County, Florida S17/TWP53/R40E

Dear Mr. Cubas:

This office has completed its review of the above referenced proposed fill encroachment for the referenced project, as required in Section 24-48.2(II)(B)(9), and finds it approvable. Pursuant to the plans and calculations, we have concluded that the proposed surface water management area calculated for fill encroachment comply with the Basin B Fill Encroachment and Water Management Criteria.

Therefore its final approval is subject to the following conditions:

1. A covenant running with the land binding present and future owners must be executed and submitted to Water Control Section (see attached). The covenant must reserve a minimum total surface water management area (set-aside area) 14,729 sf, based on the fill calculations and proposed site grading plan. Said covenant and accompanying storm water area management plan, must be submitted after preliminary approval of the plans by the Coastal & Wetlands Resources Section and prior to issuance of the Class IV Permit or final plat approval. Please call this office at 305-372-6681 for specific instruction when submitting the draft covenant for review prior to execution.

2. The average crown of road, with exception of the proposed water management areas, shall be filled to of 7.58 feet NGVD.

3. No encroachment by fill or any use other than drainage is allowed in the designated surface water management areas (set-aside area).

Be advised that if during the review of the Class IV Permit application, it is determined that the site plan needs to be revised; a modification of the Cut and Fill review will be required. Should you have any further questions or need additional information, please contact Camilo P. Ignacio, Natural Resources Division, at (305) 372-6681 or via email at ignacc@miamidade.gov.

Sincerely,

Maria D. Molina, P.E.
Sr. Professional Engineer,
Water Control Section

Attachments

COVENANT RUNNING WITH THE LAND OF **CITY OF DORAL PUBLIC WORKS DEPARTMENT** IN FAVOR OF THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, CONCERNING THE PROTECTION AND MAINTENANCE OF STORMWATER MANAGEMENT SYSTEM LOCATED AT **NW 66th STREET FROM NW 102ND AVENUE TO NW 97TH AVENUE, DORAL**, MIAMI-DADE COUNTY, FLORIDA.

The undersigned owner(s) of a parcel of real property, legally described as set forth in Exhibit "A", attached hereto and incorporated herein by reference, located at **NW 66th Street, from NW 102nd Avenue to NW 97th Avenue, Doral,** Miami-Dade County, Florida, and further identified for ad valorem tax purposes by all or part of folio number(s) **N/A (Roadway ROW)** (hereinafter referred to as the "Property").

The undersigned owner(s) has submitted and the Miami-Dade County Department of Regulatory and Economic Resources (RER) or its successors or assigns department has reviewed and approved: the site plan, stormwater management plan, and the maintenance plan for the control of impediments to the function of the stormwater management system.

The undersigned owner, in order to guarantee the permanency of all features depicted in the approved site plan, does hereby create(s) a covenant (the "Covenant") on behalf of the undersigned owner(s) and his/their heirs, successors, assigns and grantees (hereafter collectively referred to as the "Undersigned"), running with the land, to and in favor of the Board of County Commissioners of Miami-Dade County, Florida (hereafter referred to as the "Board"), their successors and assigns, with respect to the Property, as follows:

1. The Undersigned covenant(s) and represent(s) that the Undersigned owner(s) is/are the owner(s) in fee simple of the Property and that no other person or other legal entity has any fee interest in the Property.

2. The Undersigned agree(s) and covenant(s) that, if applicable, it shall form a Florida non-profit Homeowners Association to which all third party purchasers of any part of the Property shall be members, which Homeowners Association (the "Association") shall be obligated to maintain the stormwater management system at the sole cost and expense of the Association. The Undersigned agree(s) and covenant(s) that, if applicable, it shall form the Association upon the earlier of twelve (12) months from the date hereof or before the issuance of the first building permit.

3. This Covenant shall remain in effect unless and until an Improvement District is created to maintain and operate the stormwater management system as it relates to the Property. At the time that the Improvement District is created, the Miami-Dade Public Works Department or its successor department shall assume financial responsibility for the stormwater management system, at which time, this Covenant may be released by the County.



CF690

4. The Undersigned agree(s) and covenant(s) that, prior to entering into a landlord-tenant relationship with respect to granting an easement upon, encumbering or selling the stormwater management area or any portion thereof, the undersigned shall notify, in writing, all proposed tenants, easement holders, mortgagees or purchasers of the existence and contents of this Covenant, and shall provide the RER with copies of all such written notifications. Failure of the current Property owner(s) to provide such written notice to all successors, heirs, assigns and grantees shall not, however, affect the validity of this Covenant or the ability of the RER to enforce this Covenant against any successors, heirs, assigns and grantees.

5. The Undersigned has attached hereto as Exhibit "B", the site plan titled, "**NW 66th Street Roadway Improvements**", and Exhibit "C" the stormwater management and maintenance plan, prepared by **Kimley-Horn and Associates, Inc.** and dated **4/13/2016** The Undersigned agree(s) and covenant(s) that any and all portion(s) of the Property designated as the stormwater management system, including all open, pervious, impervious and lake areas, as well as structural components of the conveyance system shall be maintained:

   A) in the condition depicted on the approved plans;
   B) free of silt, debris, solid waste or fill,
   C) free of noxious vegetation; and
   D) in accordance with the maintenance schedule and control techniques approved by the RER for the control of noxious vegetation, as applicable.

   The Undersigned agree(s) and covenant(s) that the same shall not be used for the placement or storage of any materials. The stormwater management area shall not be altered in size or shape without the approval of the RER.

6. The Undersigned agree(s) and covenant(s) to prevent any clearing or removal of native plants not defined as noxious vegetation pursuant to Section 24-5 of the Code of Miami-Dade County, Florida, and plants required to be planted by Miami-Dade County in the stormwater management area(s), except as required to maintain the stormwater management area(s) in a functional condition, in accordance with the approved management plan(s).

7. The Undersigned agree(s) and covenant(s) to prevent and prohibit adverse impacts to the stormwater management system. In the event RER determines that the stormwater management system is being adversely impacted, then RER may require the installation of protective barriers around the impacted portions of the stormwater management system.

8. The Undersigned agree(s) and covenant(s) that the RER shall have the right to inspect the Property at reasonable times to determine whether the Property is being used and maintained in the manner consistent with this Covenant. Should RER determine, after such an inspection, that curative action is required in order to achieve compliance with this Covenant, the RER shall notify the current Property owner(s) in writing be certified mail, return receipt requested, of the particular curative action is required in order to achieve compliance with this Covenant, the RER shall notify the current Property owner(s) in writing by certified mail, return receipt requested, of the particular curative action to be taken and the reasons therefor. The owner(s) shall take such curative action within a reasonable time, provided, however, that the owner(s) shall have the right to appeal RER's actions or decisions to the Miami-Dade County Environmental Quality Control Board in accordance with the provisions of Section 24-6 of the Code of Miami-Dade County. The owner(s) shall be entitled to seek judicial review of any decisions of the Miami-Dade County Environmental Quality Control Board in accordance with the Florida Rules of Appellate Procedure.

9. Upon agreement by Miami-Dade County, this instrument may be modified, amended or released for any portion of the Property by a written instrument executed by the fee simple owner(s) of the Property, or any portion thereof, that would be affected by such modification, amendment or release. The director of RER shall have the authority to approve modifications or amendments to the site plans required under this instrument and require same to be recorded in the Public Records of Miami-Dade County. No other provisions of this Covenant shall be subject to cancellation, revision, alteration or amendment without the consent of the Board.

10. This instrument shall constitute a covenant running with the land binding upon the Undersigned and his/their heirs, successors, assigns and grantees upon the recording of the same in the Public Records of Miami-Dade County, Florida. The conditions contained herein shall apply to all present and future owners of any portion of the Property. This Covenant shall remain in full force and effect and shall be binding upon the Undersigned and his/their heirs, successors, assigns and grantees for an initial period of thirty (30) years from the date that this instrument is recorded in the Public Records of Miami-Dade County, Florida, and shall be automatically extended for successive periods of (10) years thereafter unless released prior to the expiration thereof as set forth in Paragraph 9 above.

11. The Undersigned agree(s) and covenant(s) that this Covenant and the provisions contained herein may be enforced by the Director of the RER or its successor agency by preliminary and permanent, prohibitory and mandatory injunctions as well as otherwise provided for by law or ordinance.

12. After this Covenant is accepted by the RER, the Covenant, together with a certified copy of the Board's resolution authorizing the RER to accept covenants in substantially the form of this Covenant, shall be promptly filed with the Clerk of Court for recording in the official records of Miami-Dade County.

13. Invalidations of any one of the covenants herein, to the extent it is not material, shall in no way affect any of the other provisions of this Covenant which shall remain in full force and effect.

IN WITNESS WHEREOF, the Undersigned, being the owner(s) of the Property, agree(s) to the terms of this Covenant, hereby create same as a covenant running with the land, and set their hands and seal unto this Covenant this 24 day of May, 2016.

Witnesses:

sign Lourdes Lopez
print Lourdes Lopez
Address 8401 NW 53 Terr
Doral, Fl 33166

Witnesses:
sign Matilde Menendez
print Matilde Menendez
Address 8401 NW 53 Terr
Doral, Fl 33166

Property Owner(s): City of Doral,
A Municipality of the State of Florida

Edward A. Rojas
City Manager, City of Doral

Karina La Rosa
NOTARY PUBLIC
STATE OF FLORIDA
Comm# FF219157
Expires 4/9/2019

Attest:

Connie Diaz, CMC (Karina La Rosa for Connie Diaz)
City Clerk, City of Doral

Approved as to Form and Legal Sufficiency for the Sole Use and Reliance of the City of Doral

Daniel A. Espino, Esq.
Weiss Serota Helfman Cole & Bierman, PL
City Attorney, City of Doral

STATE OF FLORIDA
COUNTY OF MIAMI-DADE

The foregoing instrument was acknowledged before me this 24 day of May, 2016 by Edward A. Rojas, who is personally known to me or who has produced _____ as identification and who did take an oath.

Karina La Rosa
NOTARY PUBLIC
STATE OF FLORIDA
Comm# FF219157
Expires 4/9/2019

NOTARY PUBLIC
sign
print Karina La Rosa

State of Florida at Large (seal)
My Commission Expires: 04/09/2019

Accepted by the Miami-Dade County Mayor or designee, on behalf of the Board of County Commissioners of Miami-Dade County, Florida

sign _____ Date 6/7/16

print maria molina

By: County Mayor or designee

Prepared by

sign _____

print Luis G. Cubas, PE

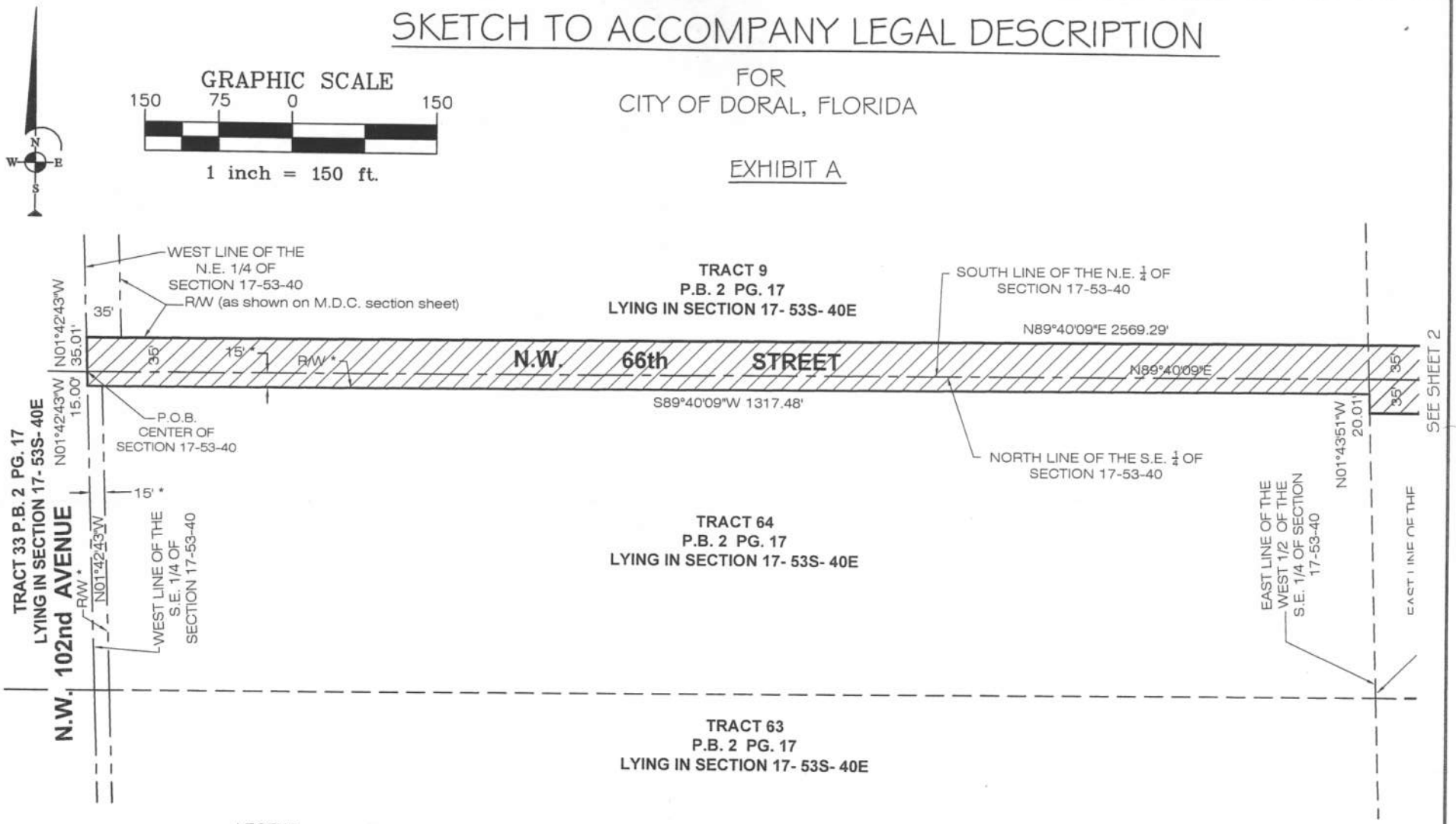
Board of County Commissioners
Miami-Dade Center Suites 220 and 230
111 N.W. First Street
Miami, Florida 33128-1963

# SKETCH TO ACCOMPANY LEGAL DESCRIPTION

FOR
CITY OF DORAL, FLORIDA

EXHIBIT A

GRAPHIC SCALE
150 75 0 150
1 inch = 150 ft.




LEGEND:

PG. -DENOTES PAGE
P.B. -DENOTES PLAT BOOK
P.O.C.-DENOTES POINT OF COMMENCEMENT
P.O.T.-DENOTES POINT OF TERMINATION
P.O.B.-DENOTES POINT OF BEGINNING
R/W -DENOTES RIGHT-OF-WAY
M.D.C.-DENOTES MIAMI-DADE COUNTY
N -DENOTES NORTH
S-DENOTES SOUTH
W-DENOTES WEST
E-DENOTES EAST
R-DENOTES RADIUS
D-DENOTES DELTA
A-DENOTES ARC

FOR LEGAL DESCRIPTION SEE SHEET 3

LICENSED BUSINESS No.2439

NOTICE: NOT FULL AND COMPLETE WITHOUT SHEETS 1, 2 AND 3

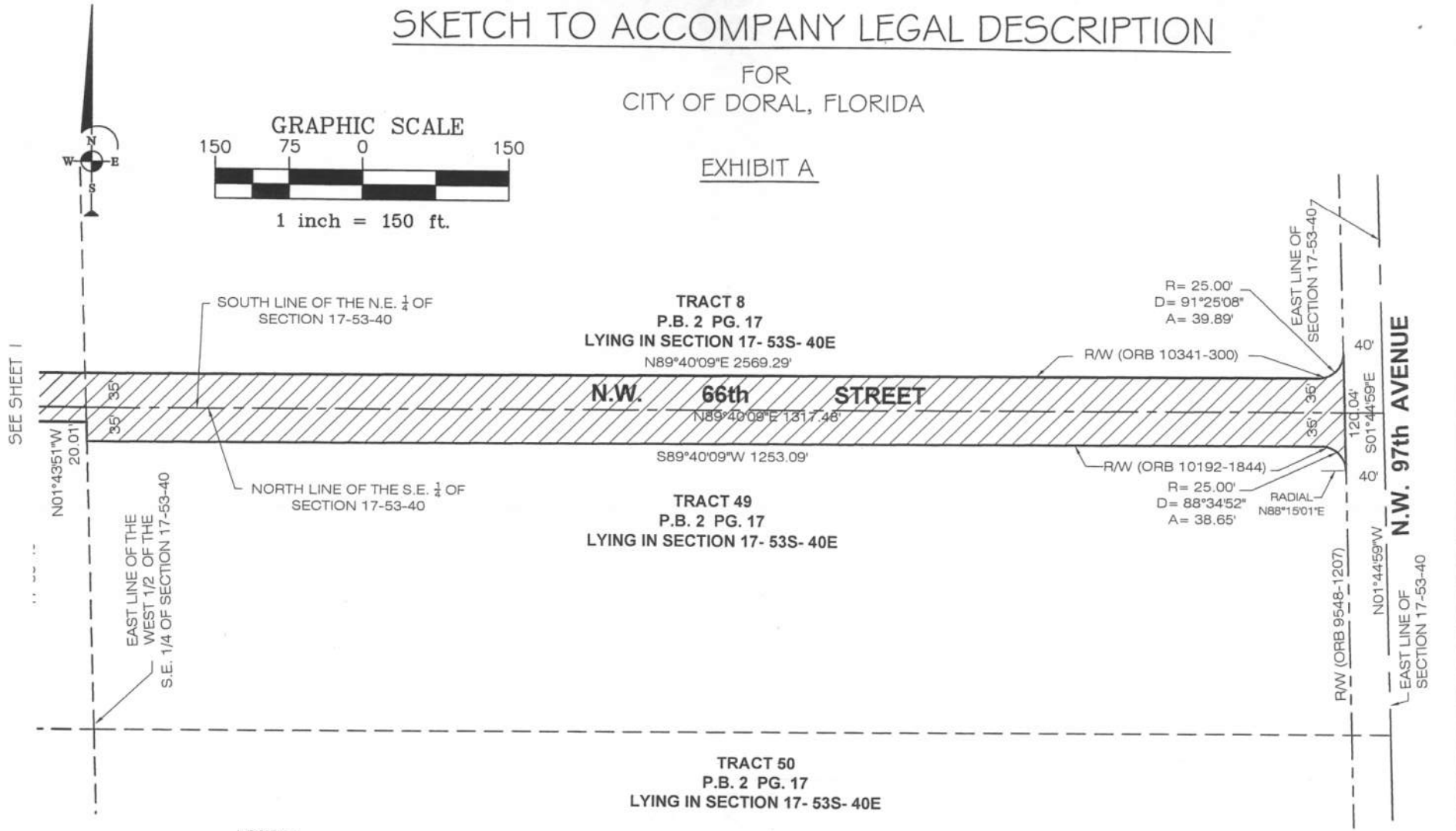
MANUEL G.VERA AND ASSOCIATES, INC.
ENGINEERS-SURVEYORS & MAPPERS
13960 S.W. 47th ST. MIAMI, FLORIDA 33175
PHONE: (305) 221-6210 e-mail: snuin@mgvera.com

| | | |
|---|---|---|
| PROJECT NUMBER: 15-564 | | |
| TYPE OF PROJECT: SKETCH & LEGAL DESCRIPTION | | |
| PROJECT NAME: | | |
| DATE: 03-11-2016 | SCALE | SHEET |
| DRAWN BY: S.N. | AS SHOWN | 1 OF 3 |

# SKETCH TO ACCOMPANY LEGAL DESCRIPTION

FOR
CITY OF DORAL, FLORIDA

EXHIBIT A

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PG. -DENOTES PAGE
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FOR LEGAL DESCRIPTION SEE SHEET 3

LICENSED BUSINESS No.2439

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| | | |
|---|---|---|
| PROJECT NUMBER: 15-564 | | |
| TYPE OF PROJECT: SKETCH & LEGAL DESCRIPTION | | |
| PROJECT NAME: | | |
| DATE: 03-11-2016 | SCALE | SHEET |
| DRAWN BY: S.N. | AS SHOWN | 2 OF 3 |

# SKETCH TO ACCOMPANY LEGAL DESCRIPTION

FOR

CITY OF DORAL, FLORIDA

EXHIBIT A

## LEGAL DESCRIPTION:

ALL THOSE PORTIONS OF TRACTS 8, 9, 49 AND 64 LYING IN SECTION 17, TOWNSHIP 53 SOUTH, RANGE 40 EAST, MIAMI-DADE COUNTY, FLORIDA, OF FLORIDA FRUIT LANDS COMPANY'S SUBDIVISION No. 1, ACCORDING TO THE PLAT THEREOF, AS RECORDED IN PLAT BOOK 2, AT PAGE 17, OF THE PUBLIC RECORDS OF MIAMI-DADE COUNTY FLORIDA, TOGETHER WITH A PORTION OF THE S.E. 1/4 AND A PORTION OF THE N.E. 1/4 OF SAID SECTION 17, TOWNSHIP 53 SOUTH, RANGE 40 EAST, MIAMI-DADE COUNTY, FLORIDA, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:
BEGINNING AT THE CENTER CORNER OF SAID SECTION 17; THENCE N01°42'43"W ALONG THE WEST LINE OF THE N.E. 1/4 OF SAID SECTION 17, FOR A DISTANCE OF 35.01 FEET TO A POINT ON A LINE PARALLEL WITH AND 35 FEET NORTH OF, AS MEASURED AT RIGHT ANGLES, THE SOUTH LINE OF THE N.E. 1/4 OF SAID SECTION 17; THENCE N89°40'09"E, ALONG THE PREVIOUSLY DESCRIBED PARALLEL LINE, FOR A DISTANCE OF 2569.29 FEET TO THE POINT OF CURVATURE OF A CIRCULAR CURVE CONCAVE TO THE NORTHWEST; THENCE NORTHEASTERLY, NORTHERLY AND NORTHWESTERLY, ALONG THE ARC OF SAID CURVE TO THE LEFT, HAVING A RADIUS OF 25 FEET AND A CENTRAL ANGLE OF 91°25'08" FOR A DISTANCE OF 39.89 FEET TO A POINT ON A LINE PARALLEL WITH AND 40 FEET WEST OF, AS MEASURED AT RIGHT ANGLES, THE EAST LINE OF SAID SECTION 17; THENCE S01°44'59"E, ALONG THE PREVIOUSLY DESCRIBED PARALLEL LINE, FOR A DISTANCE OF 120.04 FEET TO A POINT ON A CIRCULAR CURVE CONCAVE TO THE SOUTHWEST, SAID POINT BEARS N88°15'01"E FROM THE CENTER OF SAID CURVE; THENCE NORTHWESTERLY, WESTERLY AND SOUTHWESTERLY, ALONG THE ARC OF SAID CURVE TO THE LEFT, HAVING A RADIUS OF 25 FEET AND A CENTRAL ANGLE OF 88°34'52" FOR A DISTANCE OF 38.65 FEET TO THE POINT OF TANGENCY, SAID POINT ALSO BEING ON A LINE PARALLEL WITH AND 35 FEET SOUTH OF, AS MEASURED AT RIGHT ANGLES, THE SOUTH LINE OF THE N.E. 1/4 OF SAID SECTION 17; THENCE S89°40'09"W, ALONG THE PREVIOUSLY DESCRIBED PARALLEL LINE, FOR A DISTANCE OF 1253.09 FEET TO A POINT ON THE EAST LINE OF THE WEST 1/2 OF THE S.E. 1/4 OF SAID SECTION 17; THENCE N01°43'51"W, ALONG THE PREVIOUSLY DESCRIBED EAST LINE, FOR A DISTANCE OF 20.01 FEET TO A POINT ON A LINE PARALLEL WITH AND 15 FEET SOUTH OF, AS MEASURED AT RIGHT ANGLES, THE SOUTH LINE OF THE N.E. 1/4 OF SAID SECTION 17; THENCE S89°40'09"W, ALONG THE PREVIOUSLY DESCRIBED PARALLEL LINE, FOR A DISTANCE OF 1317.48 FEET TO A POINT ON THE WEST LINE OF THE S.E. 1/4 OF SAID SECTION 17; THENCE N01°42'43"W, ALONG THE PREVIOUSLY DESCRIBED WEST LINE, FOR A DISTANCE OF 15.00 FEET TO THE POINT OF BEGINNING.
ALL OF THE ABOVE DESCRIBED PARCEL CONTAINING 155,564.88 SQUARE FEET OR 3.57 ACRES MORE OR LESS.

## SURVEYOR'S REPORT :

BEARINGS SHOWN HEREON ARE BASED ON AN ASSUMED MERIDIAN ALONG THE NORTH LINE OF THE S.E. 1/4 OF SECTION 17, TOWNSHIP 53 SOUTH, RANGE 40 EAST, WHICH BEARS N89°40'09"E.

THIS IS NOT A BOUNDARY SURVEY, THIS IS A SKETCH TO ACCOMPANY A LEGAL DESCRIPTION.

ALL BEARINGS AND DISTANCES SHOWN HEREON ARE RECORD AND MUST BE FIELD VERIFIED.

15' * PER MIAMI-DADE COUNTY COURT CASE No.72-17020.

R/W * PER MIAMI-DADE COUNTY COURT CASE No.72-17020.

THE LIMITS OF THE SUBJECT PROPERTY WERE DETERMINED AS PER CLIENT'S INSTRUCTIONS.

AREA SHOWN IN LEGAL DESCRIPTION INCLUDES PORTIONS OF DEDICATED R/W AS SHOWN ON M.D.C. SECTION SHEET MAPS FOR SECTION 17-53-40 AND/OR IN PLAT BOOK 2, AT PAGE 17.

## SURVEYOR'S CERTIFICATION :

I HEREBY CERTIFY THAT THIS SKETCH TO ACCOMPANY LEGAL DESCRIPTION WAS PREPARED UNDER MY DIRECT SUPERVISION AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND FURTHER, THAT SAID SKETCH MEETS THE MINIMUM TECHNICAL STANDARDS SET FORTH BY THE FLORIDA BOARD OF LAND SURVEYORS AND MAPPERS PURSUANT TO CHAPTER 472.027 OF THE FLORIDA STATUTES AND TO RULE 5J-17 OF THE FLORIDA ADMINISTRATIVE CODE.

MANUEL G. VERA JR.
PROFESSIONAL SURVEYOR AND MAPPER No. 5291
STATE OF FLORIDA
NOTICE: NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF THE FLORIDA LICENSED SURVEYOR AND MAPPER.
EACH SHEET AS INCORPORATED THEREIN SHALL NOT BE CONSIDERED FULL, VALID AND COMPLETE UNLESS ATTACHED TO THE OTHERS. THIS NOTICE IS REQUIRED BY RULE 5J-17 OF THE FLORIDA ADMINISTRATIVE CODE.

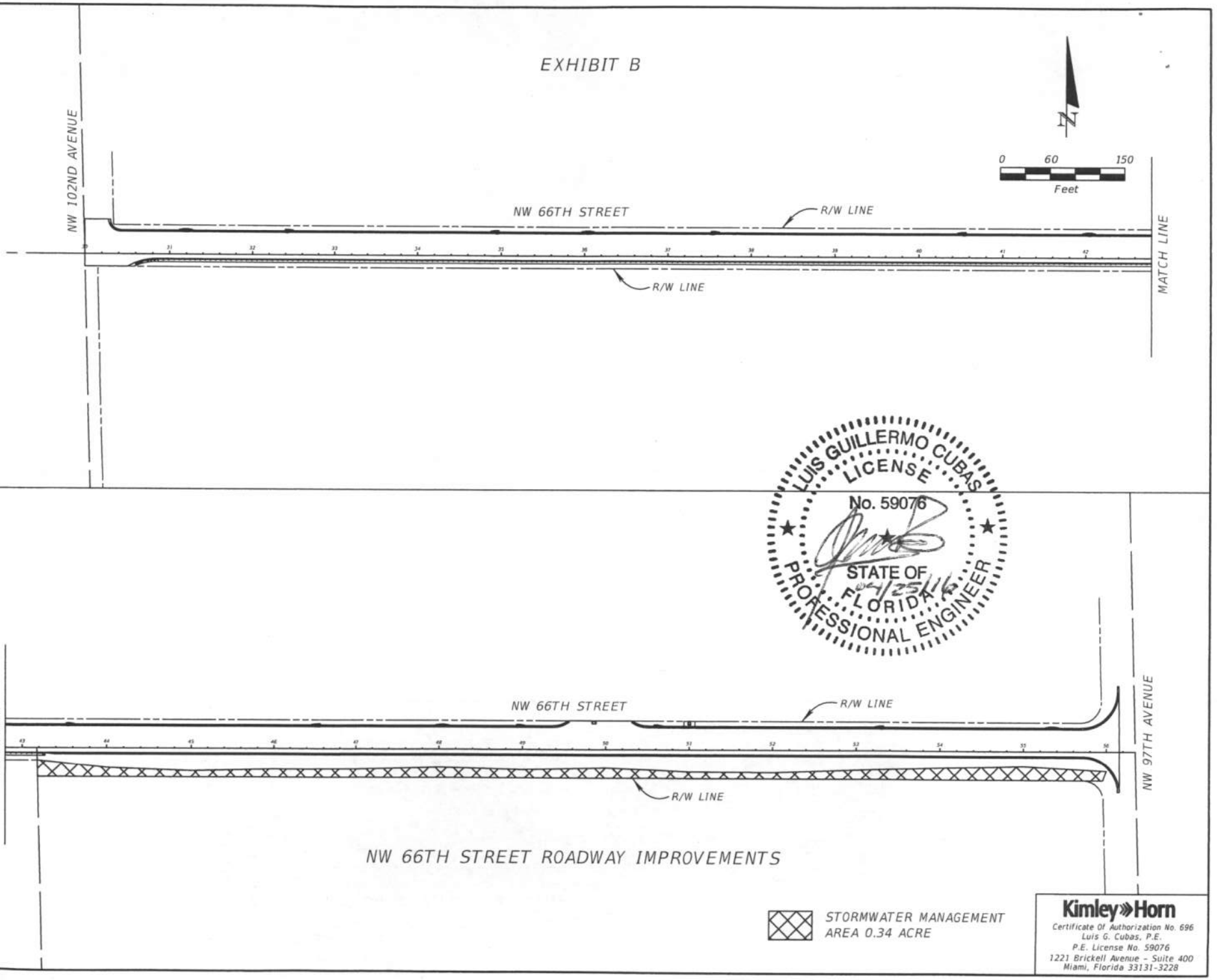
FOR SKETCH SEE SHEETS 1 & 2
LICENSED BUSINESS No.2439

NOTICE: NOT FULL AND COMPLETE WITHOUT SHEETS 1, 2 AND 3

MANUEL G.VERA AND ASSOCIATES, INC.
ENGINEERS-SURVEYORS & MAPPERS
13960 S.W. 47th ST. MIAMI, FLORIDA 33175
PHONE: (305) 221-6210 e-mail: snuin@mgvera.com

| | | |
|---|---|---|
| PROJECT NUMBER: 15-564 | | |
| TYPE OF PROJECT: SKETCH & LEGAL DESCRIPTION | | |
| PROJECT NAME: | | |
| DATE: 03-11-2016 | SCALE | SHEET |
| DRAWN BY: S.N. | N.A. | 3 OF 3 |

# EXHIBIT B




## NW 66TH STREET ROADWAY IMPROVEMENTS

STORMWATER MANAGEMENT
AREA 0.34 ACRE


Kimley»Horn
Certificate Of Authorization No. 696
Luis G. Cubas, P.E.
P.E. License No. 59076
1221 Brickell Avenue - Suite 400
Miami, Florida 33131-3228

File # CF-690 File Name: Basin B Cut and Fill Approval

**Exhibit "C"**

**Stormwater Area Maintenance Plan**
**NW 66th Street, from NW 102nd Avenue to NW 97th Avenue**

This Maintenance Plan is to be performed on a quarterly basis, in perpetuity (unless legally released), regardless of ownership, and is important to ensure proper functioning of the retention area, the purpose of which is to provide flood protection for the folio numbers referenced above. Deviation from this plan requires prior approval from the Department of Regulatory and Economic Resources/Environmental Resources Management (RER/ERM) or its successor or assigns department.

Maintenance Activities include the following activities:

- Maintenance of the configuration, slopes and elevations as detailed on the site plan.
- Removal of any silt, debris, solid waste and/or fill illegally placed in the Stormwater Management Area.
- Maintaining the Stormwater Management Area free of noxious and/or exotic vegetation with the exotic removal to be completed by a licensed herbicide applicator registered in the State of Florida.
- Maintenance of the Stormwater Management Area will be in accordance with the approved schedule referenced above and control techniques approved by RER/ERM or its successor or assigns department for the control of noxious and/or exotic vegetation, as applicable.
- Maintenance of native plant communities.

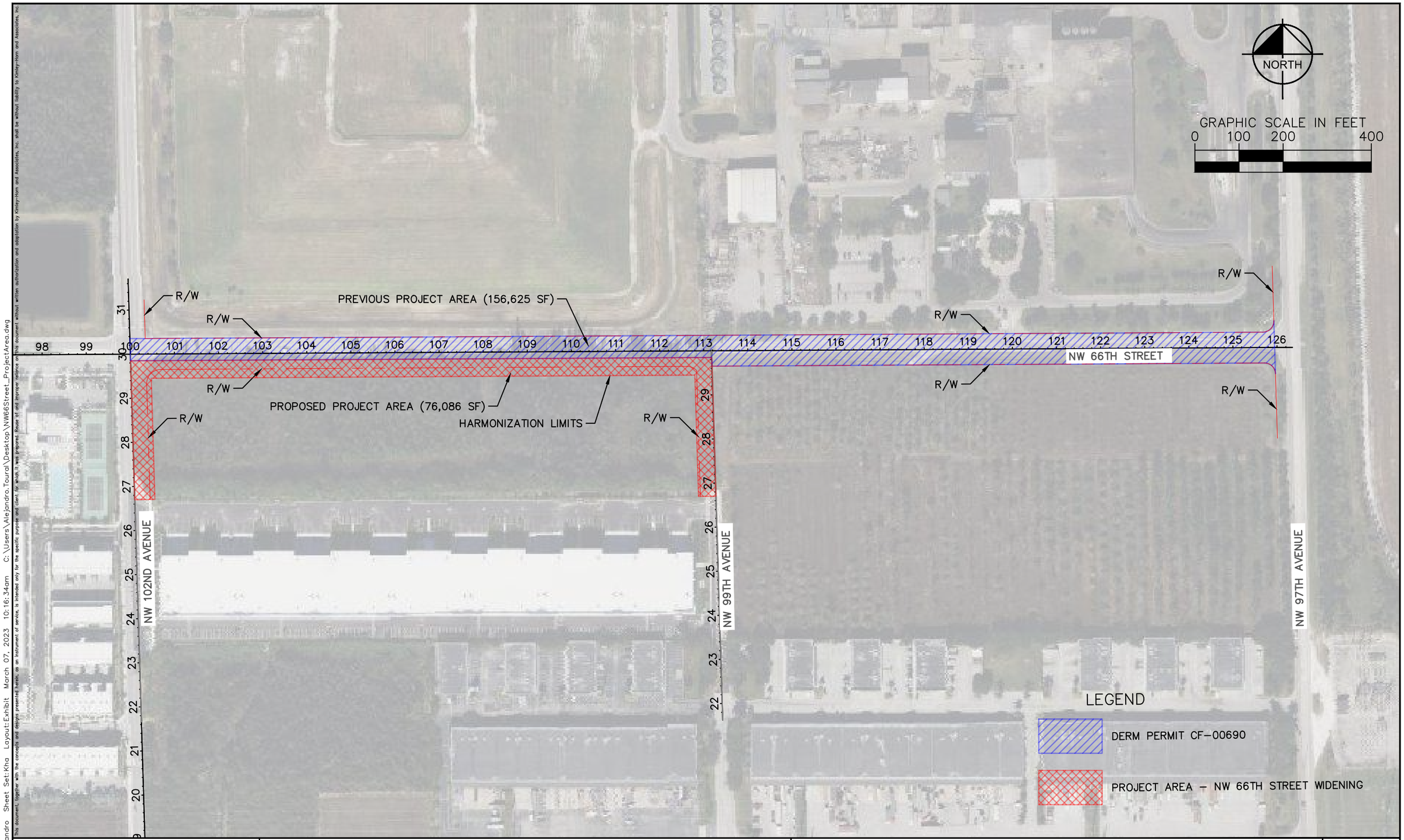
The property owner hereby covenants to allow Miami-Dade RER/ERM access to the site at reasonable times to ensure compliance with the covenant. In the event RER/ERM or its successor or assigns department determines that modifications are required to ensure property operation of the stormwater maintenance area, the property owner will make said revisions within a set timeframe. Said decision can be presented for appeal at the RER/ERM EQCB (Environmental Quality Control Board).

By reference in this document, the property owner agrees to comply with any and all conditions listed in the stormwater covenant.

| CUT AND FILL CRITERIA CALCULATIONS | |
|---|---|
| NW 66th Street Roadway Improvements<br>from NW 102nd Avenue to NW 97th Avenue | |
| **Criteria:** | *"Total volume of fill material placed on a property between existing land elevation and elevation 7.58' NGVD shall not exceed the area of the site in SF x 1.8"* |
| **Total Area of Site:** | 156,625 $ft^2$ |
| **Total area of site x 1.8 (Total Allowable Fill):** | 281,925 $ft^3$ |
| **Total volume of fill between existing land elevation and elevation 7.58' NGVD:** | 256,608 $ft^3$ |
| Total area of site x 1.8 > total volume of fill between land elevation and elevation 7.58' NGVD | |

Kimley»Horn

# PROJECT AREA EXHIBIT





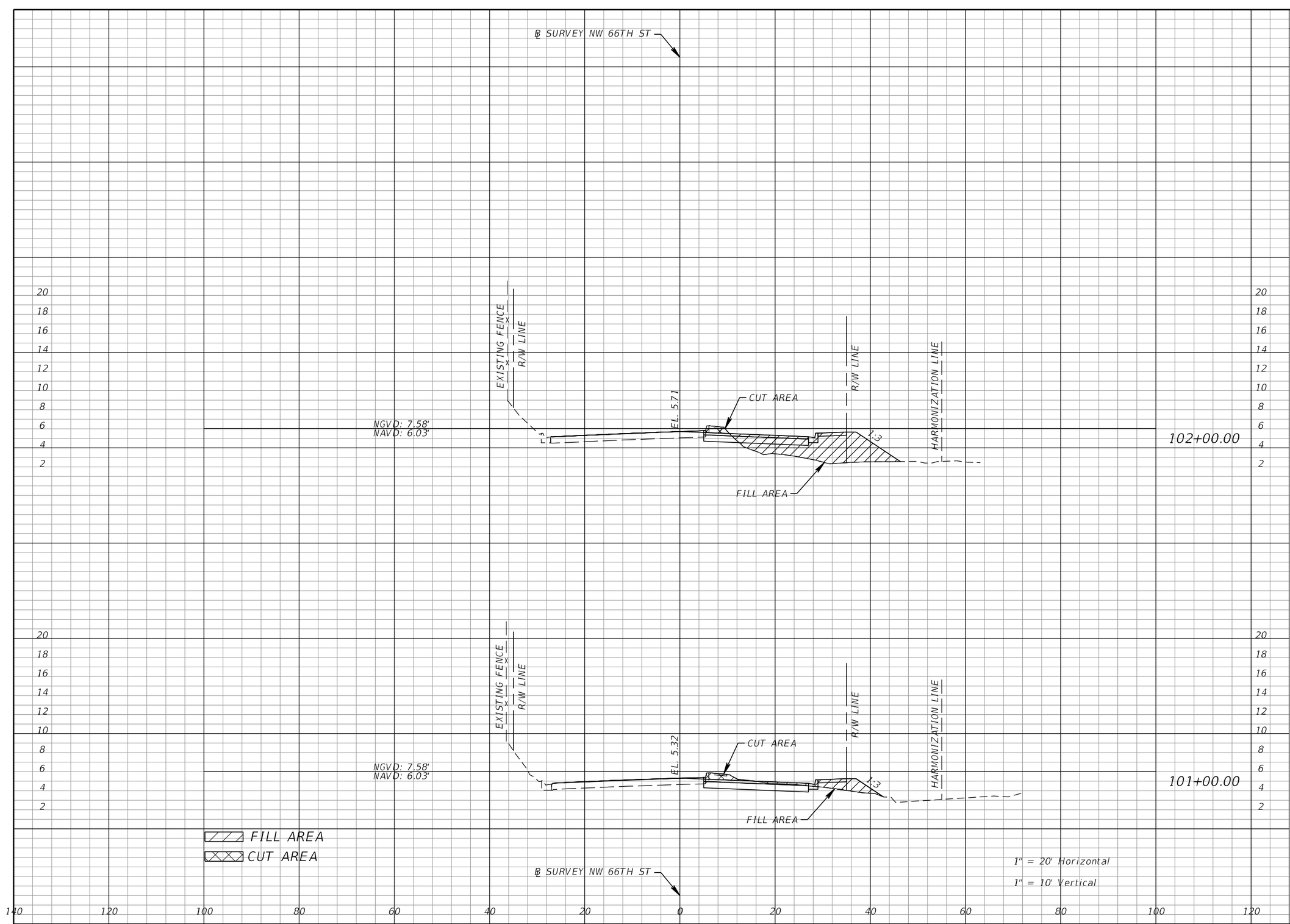

Kimley»Horn
© 2020 KIMLEY-HORN AND ASSOCIATES, INC.
2 ALHAMBRA PLAZA, SUITE 500, CORAL GABLES, FL 33134
PHONE: 305-673-2025
WWW.KIMLEY-HORN.COM REGISTRY 35106

# NW 66TH STREET ROADWAY WIDENING
# PROJECT AREA EXHIBIT

CITY OF DORAL, FLORIDA

SHEET NUMBER
1

# FILL ENCROACHMENT CROSS SECTIONS




| Regular Exc. | | Embankment | |
|---|---|---|---|
| A | V | A | V |
| 2.2 | 11.5 | 73.7 | 163.3 |
| 4.0 | 0.0 | 14.5 | 0.0 |

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

Kimley–Horn and Associates, Inc.
Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, Fl 33134

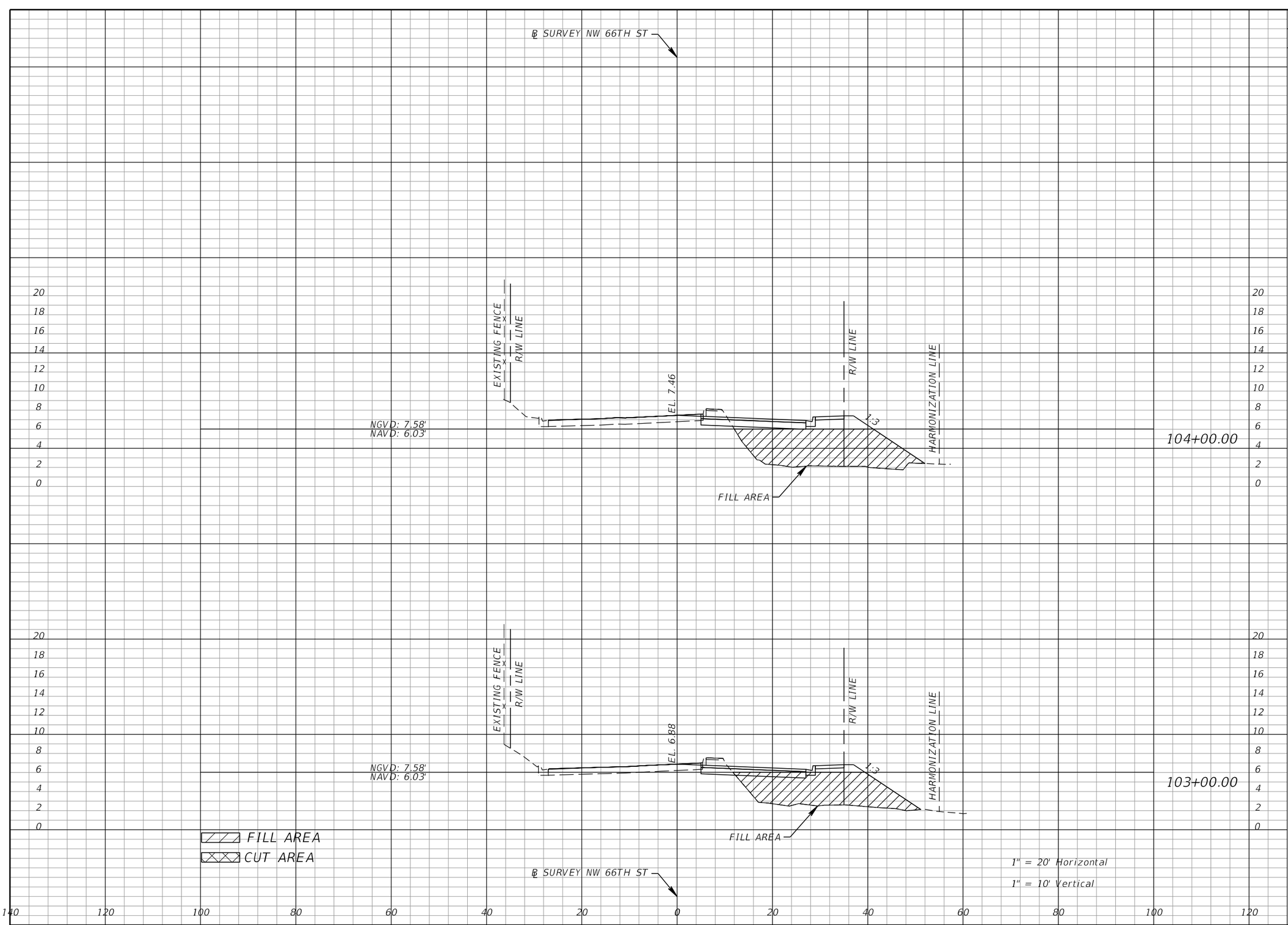
CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# CUT & FILL CROSS SECTIONS NW 66TH ST

SHEET NO.

Renzo.Marengo 12/7/2022 10:42:37 AM c:\pw\kh1\d0146903\RDXSRD101.dgn




| | Regular Exc. | | Embankment | |
|---|---|---|---|---|
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| 103+00.00 | 0.0 | 4.1 | 106.7 | 334.1 |

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

Kimley–Horn and Associates, Inc.
Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, Fl 33134

CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# CUT & FILL CROSS SECTIONS NW 66TH ST

SHEET NO.

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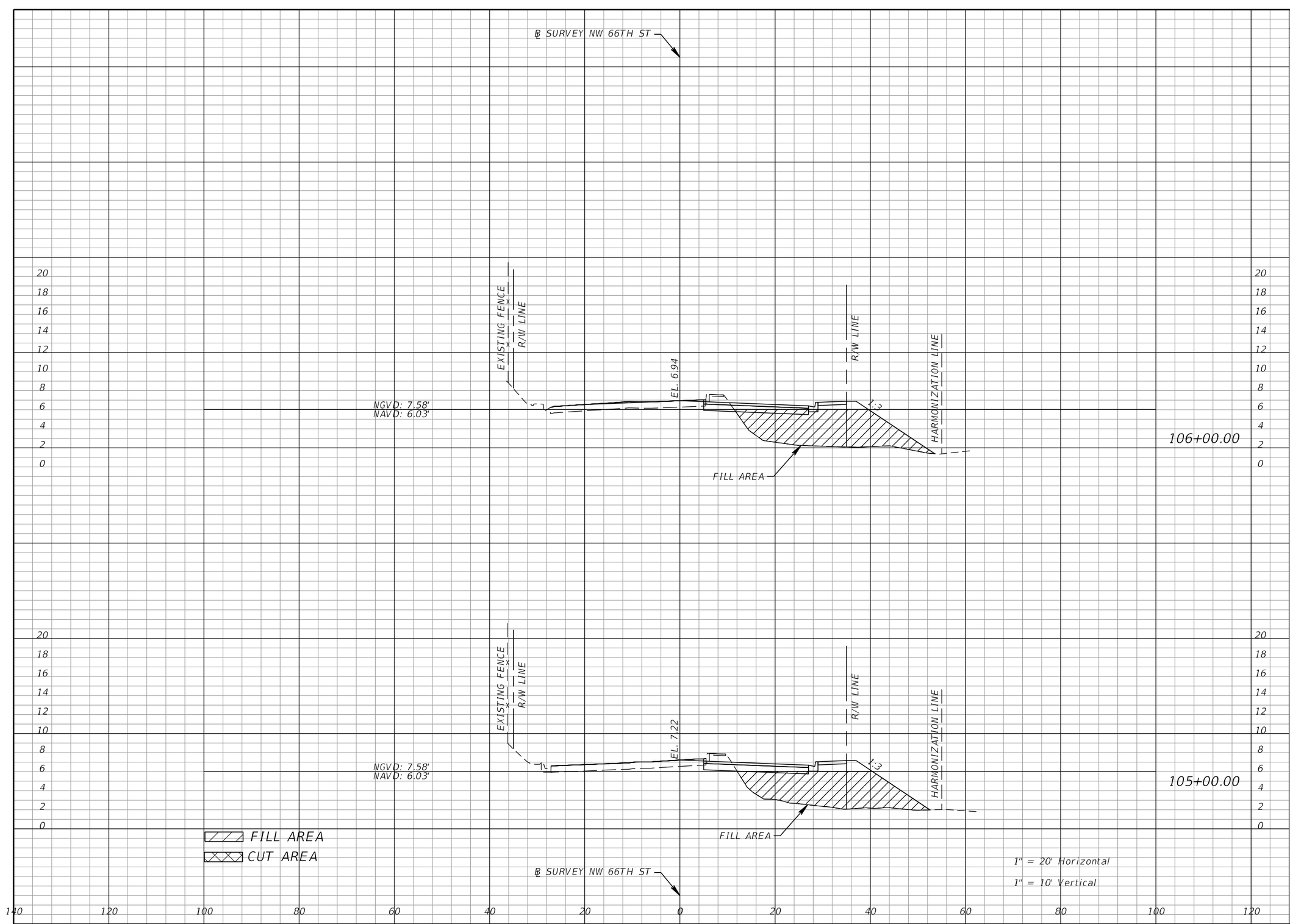


| | Regular Exc. | | Embankment | |
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| 105+00.00 | 0.0 | 0.0 | 113.9 | 444.1 |

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| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

Kimley–Horn and Associates, Inc.
Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, Fl 33134

CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# CUT & FILL CROSS SECTIONS NW 66TH ST

SHEET NO.

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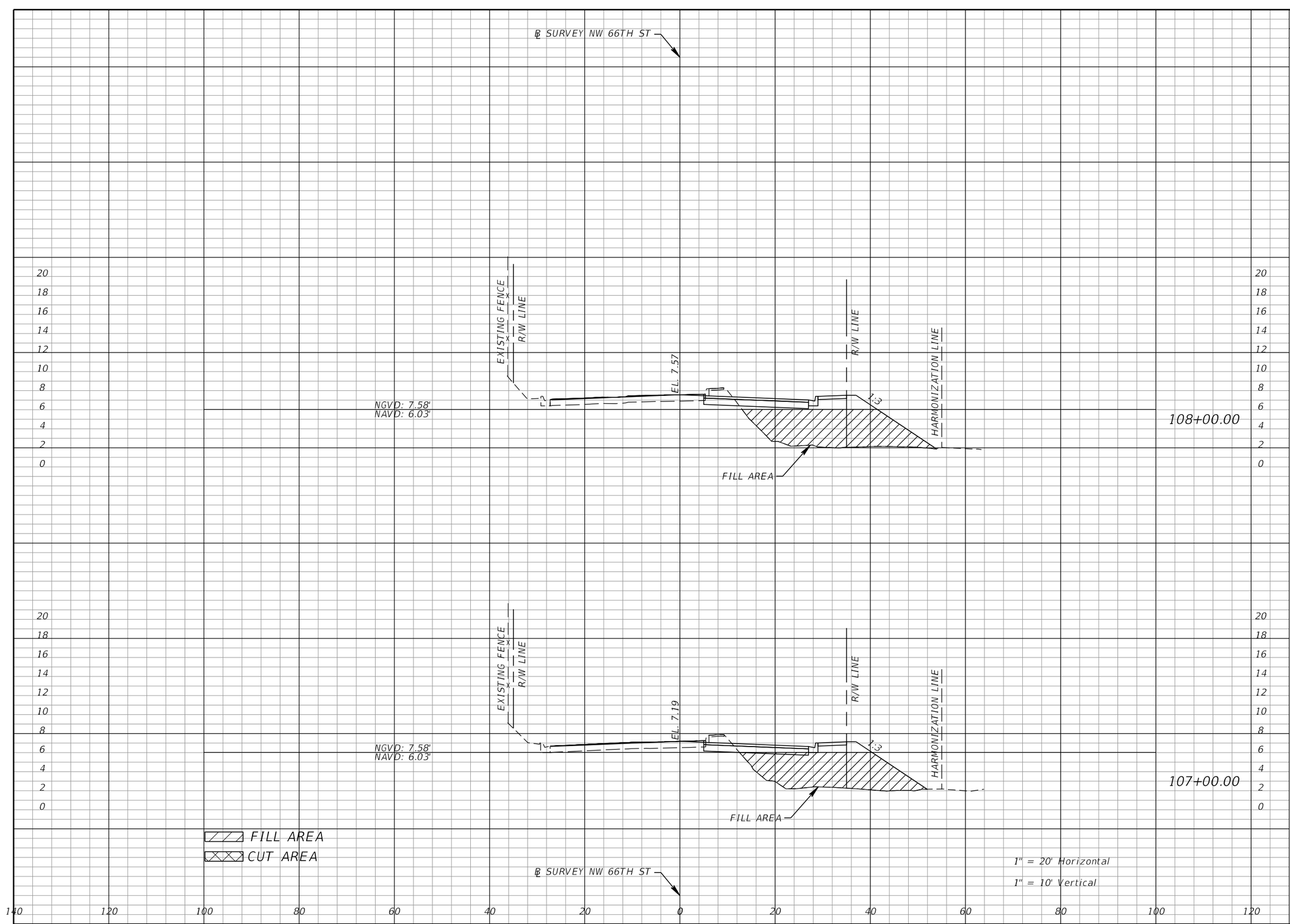


| | Regular Exc. | | Embankment | |
|---|---|---|---|---|
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| 107+00.00 | 0.0 | 0.0 | 113.8 | 433.0 |

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

Kimley–Horn and Associates, Inc.
Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, Fl 33134

CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# CUT & FILL CROSS SECTIONS NW 66TH ST

SHEET NO.

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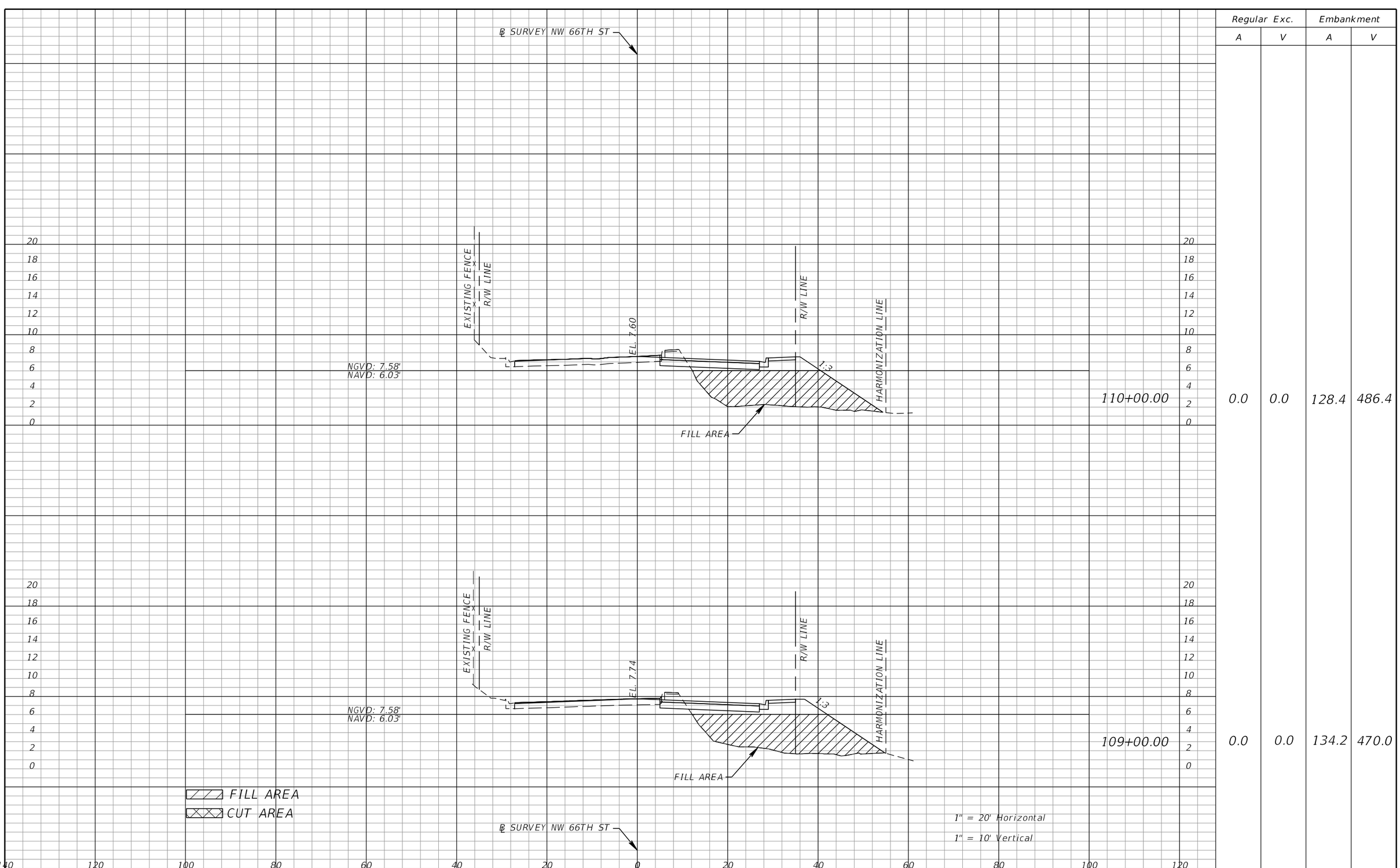


| | Regular Exc. | | Embankment | |
|---|---|---|---|---|
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| 109+00.00 | 0.0 | 0.0 | 134.2 | 470.0 |

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |

Kimley–Horn and Associates, Inc.
Gabriela P. Ramirez, P.E.
P.E. License No. 79620
355 Alhambra Circle, Suite 1400
Coral Gables, Fl 33134

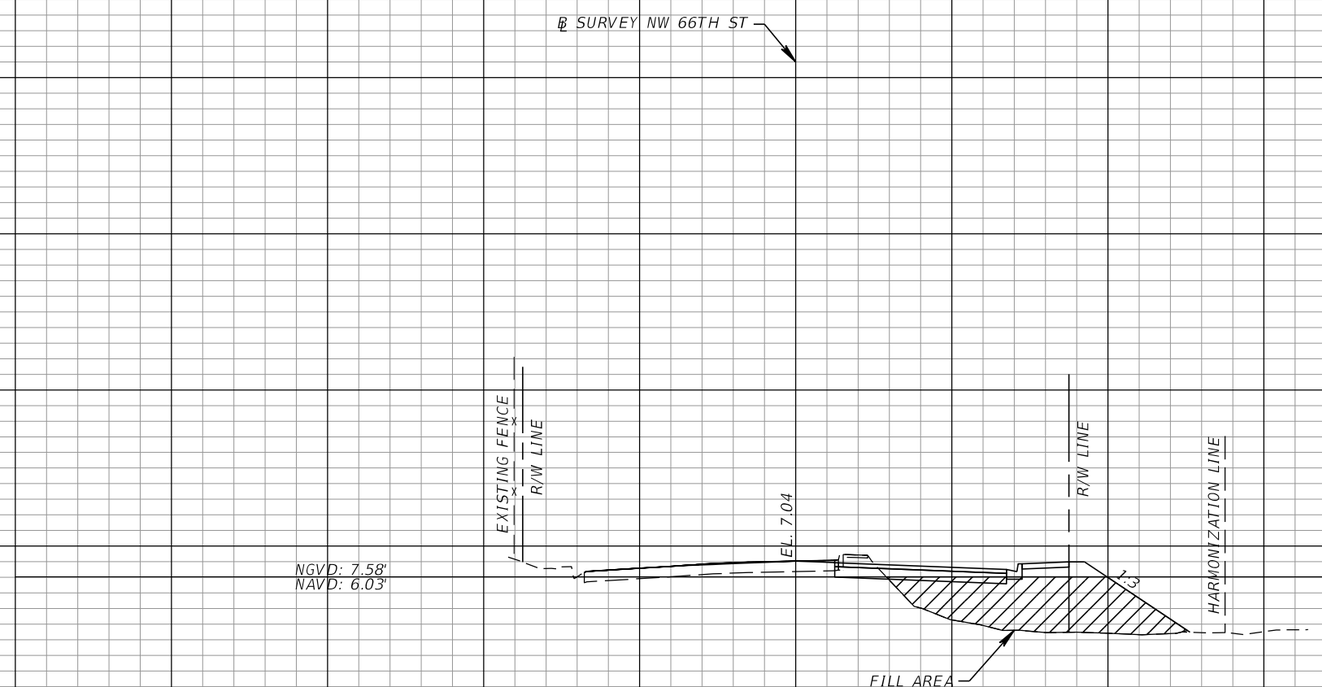
CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

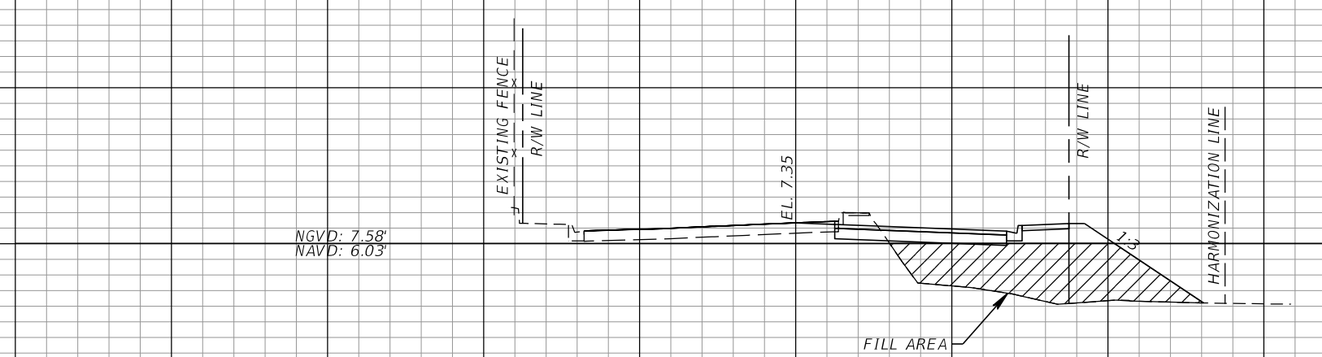
# CUT & FILL CROSS SECTIONS NW 66TH ST

SHEET NO.

Renzo.Marengo 12/7/2022 10:42:38 AM c:\pw\kh1\d0146903\RDXSRD101.dgn




| Station | Regular Exc. A | Regular Exc. V | Embankment A | Embankment V |
|---|---|---|---|---|
| 112+00.00 | 0.0 | 0.0 | 101.4 | 387.8 |




| Station | Regular Exc. A | Regular Exc. V | Embankment A | Embankment V |
|---|---|---|---|---|
| 111+00.00 | 0.0 | 0.0 | 108.1 | 437.9 |

FILL AREA
CUT AREA

℄ SURVEY NW 66TH ST

140 120 100 80 60 40 20 0 20 40 60 80 100 120

1" = 20' Horizontal
1" = 10' Vertical

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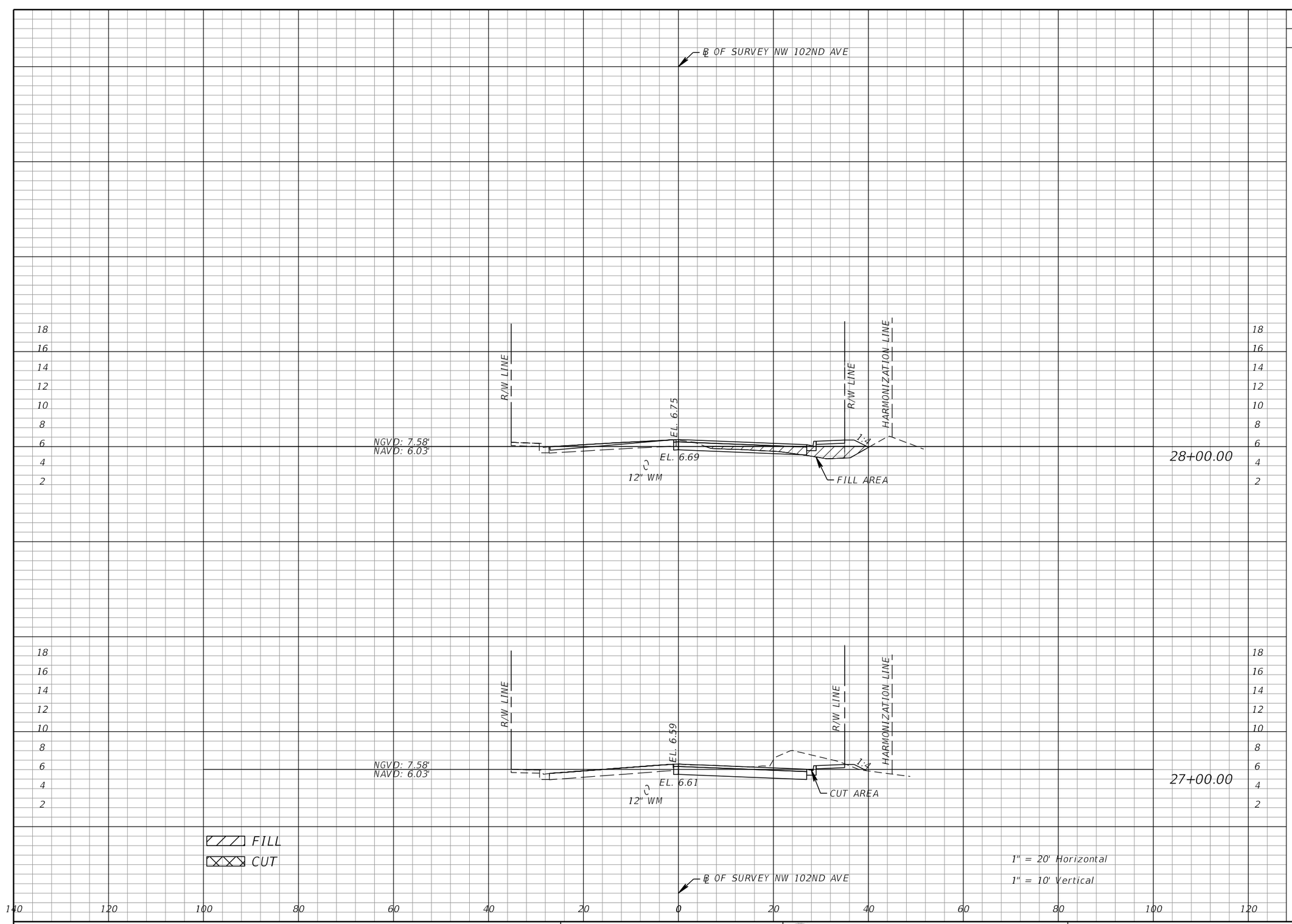
SHEET NO.

Renzo.Marengo 12/7/2022 10:42:38 AM c:\pw\kh1\d0146903\RDXSRD101.dgn




| Regular Exc. | | Embankment | |
|---|---|---|---|
| A | V | A | V |
| 0.0 | 0.1 | 23.3 | 43.2 |
| 0.1 | 0.0 | 0.0 | 0.0 |

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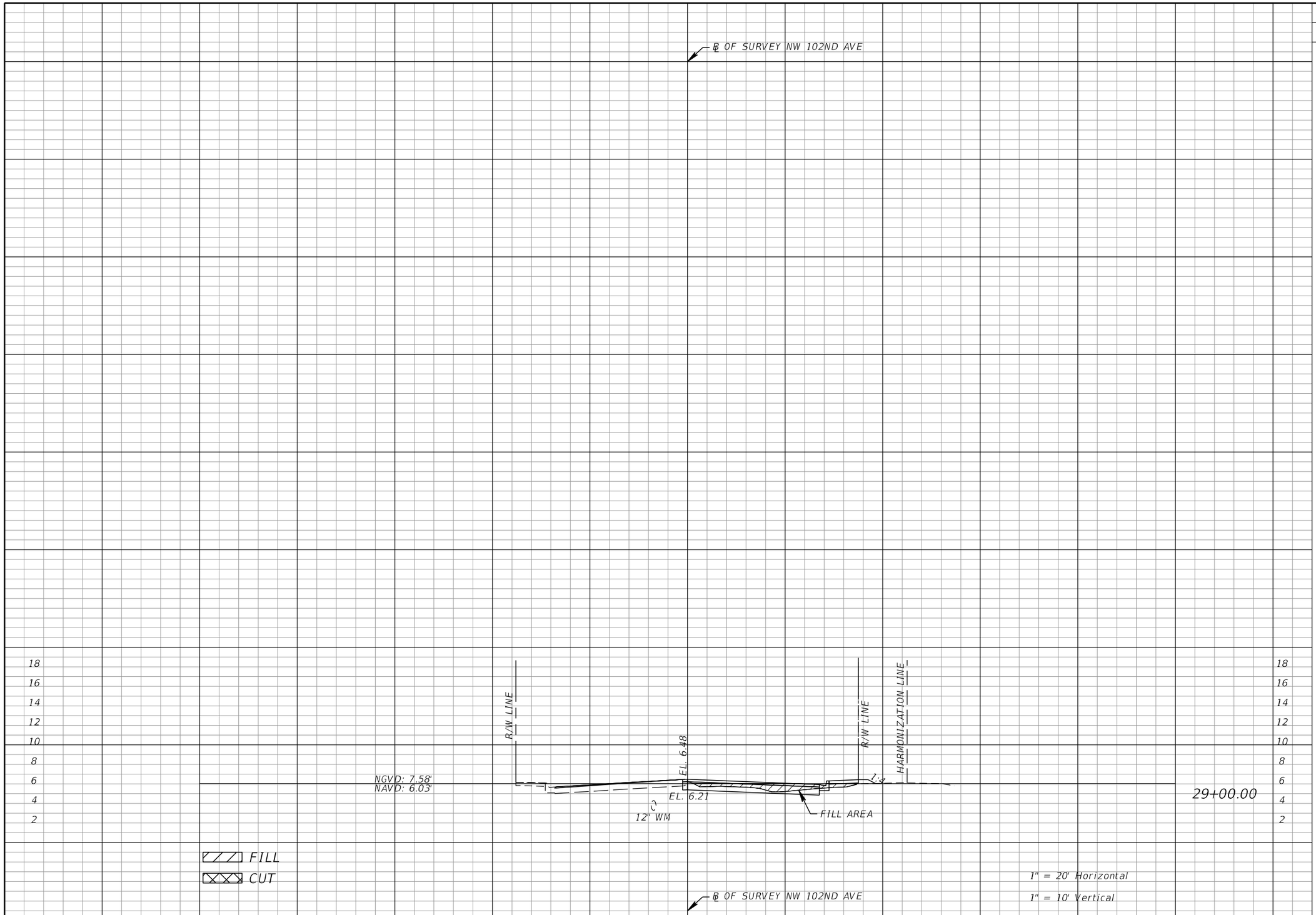
CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# CUT & FILL CROSS SECTIONS NW 102ND AVE

SHEET NO.

$USER$ $DATE$ $TIME$ $FILE$




1" = 20' Horizontal

1" = 10' Vertical

| Regular Exc. | | Embankment | |
|---|---|---|---|
| A | V | A | V |
| 0.0 | 0.0 | 15.1 | 71.1 |

29+00.00

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DATE | DESCRIPTION |
| | | | |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CITY OF DORAL

| ROAD NO. | COUNTY |
|---|---|
| NW 66TH STREET | MIAMI-DADE |

# CUT & FILL CROSS SECTIONS
# NW 102ND AVE

SHEET NO.

$USER$ $DATE$ $TIME$ $FILE$

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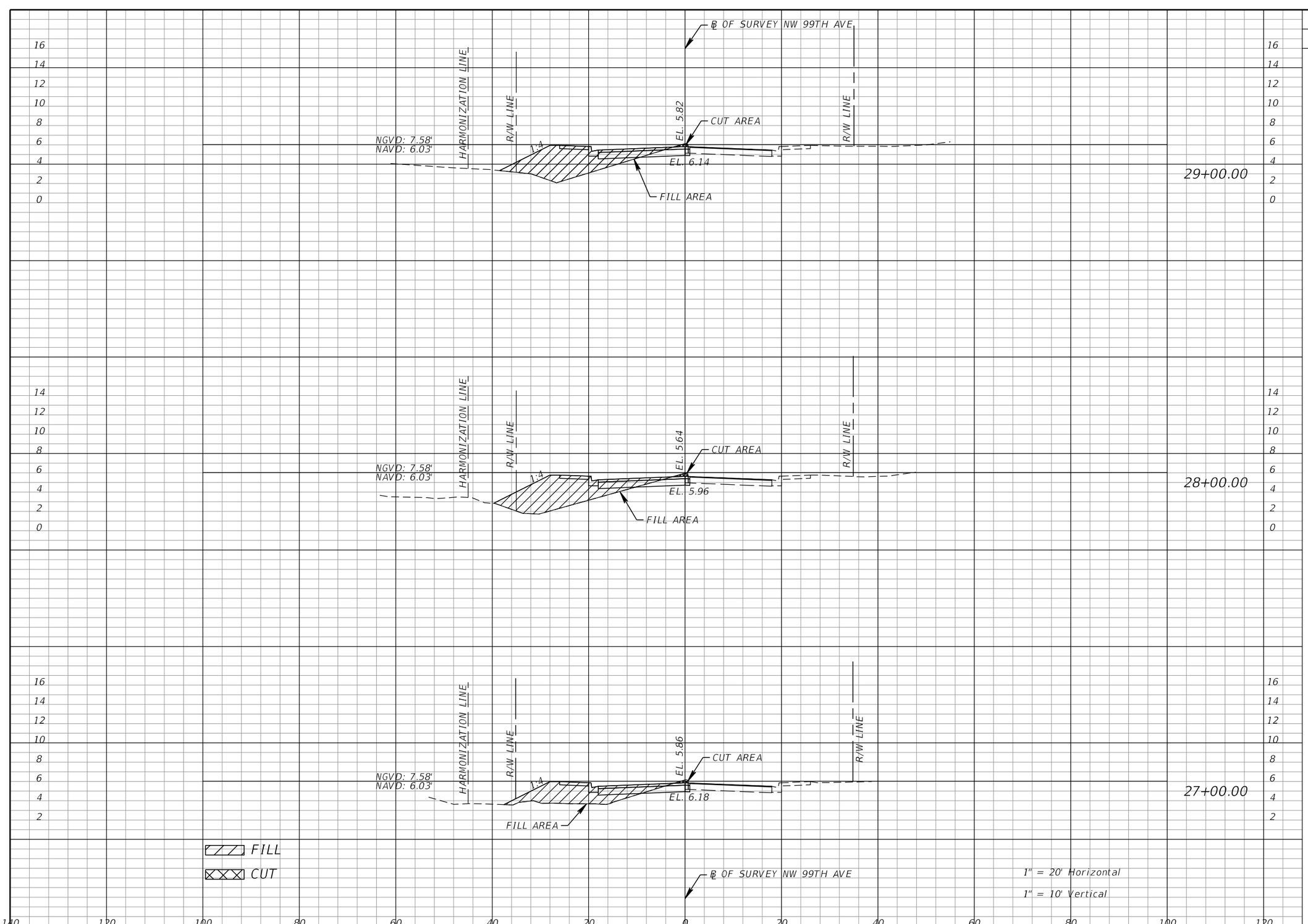


| Station | Regular Exc. A | Regular Exc. V | Embankment A | Embankment V |
|---|---|---|---|---|
| 29+00.00 | 0.5 | 2.0 | 65.4 | 249.0 |
| 28+00.00 | 0.6 | 1.9 | 69.1 | 216.3 |
| 27+00.00 | 0.4 | 0.0 | 47.7 | 0.0 |

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|---|---|
| NW 66TH STREET | MIAMI-DADE |

# CUT & FILL CROSS SECTIONS NW 99TH AVE

SHEET NO.


Renzo.Marengo 12/7/2022 10:42:46 AM c:\pw\kh1\d0146903\RDXSRD103.dgn

# FILL ENCROACHMENT CALCULATIONS

| CUT AND FILL CRITERIA CALCULATIONS (Harmonization Line) | | |
|---|---|---|
| **NW 66th Street Roadway Improvements** | | |
| **Criteria:** | **Total volume of fill material placed on a property between existing land elevation and elevation 7.58' NGVD shall not exceed the area of the site in SF x 1.8** | |
| **Site Area (CF-00690)** | 156,625 | $ft^2$ |
| **Site Area (Current Project)** | 76,086 | $ft^2$ |
| **Total area of site x 1.8 (Total Allowable Fill):** | 418,880 | $ft^3$ |
| **Volume of fill (DERM CF-690)** | 256,608 | $ft^3$ |
| **Volume of fill (Current Project)** | 135,870 | $ft^3$ |
| **Volume of Excavation (Current Project)** | 530 | $ft^3$ |
| **Total volume of fill between existing land elevation and elevation 7.58' NGVD** | 391,948 | $ft^3$ |
| Total area of site x 1.8 > total volume of fill between land elevation and elevation 7.58' NGVD | | |