

**REPORT OF A GEOTECHNICAL EXPLORATION**

**NW 24 AVENUE IMPROVEMENTS**  
**NW 24<sup>TH</sup> AVENUE, FROM NW 28<sup>TH</sup> STREET TO NW 30<sup>TH</sup> STREET**  
**NW 25<sup>TH</sup> AVENUE, FROM NW 31<sup>ST</sup> STREET TO NW 32<sup>ND</sup> STREET**  
**NW 32<sup>ND</sup> STREET, FROM NW 22<sup>ND</sup> AVENUE TO NW 23<sup>RD</sup> AVENUE**  
CITY OF MIAMI  
PROJECT No. B-30723  
MIAMI-DADE COUNTY, FLORIDA

*- Prepared for -*  
**REYNOLDS SMITH AND HILLS, INC.**  
6161 Blue Lagoon Drive, Suite 200  
Miami, Florida 33126

*- Prepared by -*  
**HR ENGINEERING SERVICES, INC.**  
7815 NW 72<sup>nd</sup> Avenue  
Medley, Florida 33166

HRES Project No. HR15-1138R

July 11, 2016

July 11, 2016

Reynolds Smith and Hills, Inc.  
6161 Blue Lagoon Drive, Suite 200  
Miami, Florida 33126

Attention: Mr. Samuel Gonzalez, P.E.  
Vice President, Miami Office Leader

Subject: Report of a Geotechnical Exploration  
**NW 24<sup>th</sup> Avenue Improvements**  
**NW 24<sup>th</sup> Avenue, from NW 28<sup>th</sup> Street to NW 30<sup>th</sup> Street**  
**NW 25<sup>th</sup> Avenue, from NW 31<sup>st</sup> Street to NW 32<sup>nd</sup> Street**  
**NW 32<sup>nd</sup> Street, from NW 22<sup>nd</sup> Avenue to NW 23<sup>rd</sup> Avenue**  
City of Miami  
Project No. B-30723  
HRES Project No. HR15-1138R

Dear Sam:

HR Engineering Services, Inc. (HRES) has completed one South Florida Water Management District (SFWMD) Usual Open-Hole Constant Head Percolation test and three asphalt cores at the subject site. This report briefly outlines our field testing techniques and presents the data obtained.

#### **FIELD TESTING – PERCOLATION TESTING**

One SFWMD Usual Open - Hole Constant Head Percolation test was performed at the subject site. Percolation Test P-1 was conducted at one depth interval: from 0 to 15 feet. The reported location of the percolation test (northing and easting) is approximate. Attached is the Field Exploration Plan showing the percolation test location.

The location of the percolation test was selected by your office. The test was located in the field by our personnel using tape measurements from existing landmarks.

The percolation test was performed in general accordance with the procedures outlined in the South Florida Waste Management District Permit Information Manual (Volume IV), Usual Open-Hole Test as follow:

- The percolation test was performed in 6.0-inch diameter boreholes, drilled to a 15 feet depth.

- To perform the percolation test, a PVC slotted 6-inch diameter casing was placed in the hole and then water was pumped out as an attempt to clean the borehole before testing. Prior starting the test, water was pumped into the hole as an attempt to raise the water level in the borehole to the ground surface. Once the inflow stabilized with the outflow rate, the average pumping rate and the maximum level of the water obtained in the borehole (with this stabilized flow) was recorded.

The hydraulic conductivity value was then calculated and reported in units of cubic feet per second, per square foot, per foot of head (cfs/ft<sup>2</sup>-ft of head). The calculated hydraulic conductivity value was:

- From 0 to 15 feet: 4.5E-05 cfs/ft<sup>2</sup>-ft of head.

This conductivity value is an ultimate value. An appropriate factor of safety should be employed in any storm water or other subsurface drainage design computations. The percolation test result is attached to this report.

#### **FIELD TESTING – PAVEMENT CORES**

Three pavement cores were performed to a maximum depth of 2.8 inches. The asphalt cores were obtained for thickness measurement. In addition, a total of three SPT borings (one per pavement core location) were performed as an attempt to measure the thickness of the base and stabilized subgrade down to a depth of 2 feet. Also, the relative densities of both base and stabilized subgrade were obtained.

After performing each asphalt coring, a truck mounted drilled rig was placed to perform SPT testing at the coring location. The testing was conducted to a depth of 2 feet, measured from the bottom of the asphaltic layer.

Samples of the base and stabilized materials were obtained in addition to the blows/foot (“N”) counts during the penetration. The blows/foot values are used to estimate the approximate in-situ density of the materials encountered. The following is a summary of our visual description of the materials found and their in-situ densities based on correlations with SPT values.

Base –The base layer generally consisted of very dense to medium dense light brown silty fine sand with some limerock with an assigned AASHTO classification of A-1-b (from visual classification). The base material presented “N” values ranging from 5/6” to 30/6” blows/foot. The thickness of the base was measured from the slit-spoon sampler. The base thickness is approximately 6.0 inches.

Stabilized Subgrade – The stabilized subgrade layer at C-1 and C-2, consisted of medium dense brown silty fine sand with some limerock with an assigned AASHTO classification of A-1-b (from visual classification). The stabilized subgrade layer at C-3, consisted of medium dense brown silty fine sand with traces of limerock with an assigned AASHTO classification of A-2-4 (from visual classification). The minimum thickness of the layer is approximately 12.0 inches.

The pavement evaluation condition data table and photos of the locations and core samples are provided in Appendix B.

The following table summarizes the thickness measurements:

**Summary of Pavement Thickness Measurements**

Core No.	Total Asphalt Thickness, inches	Base Thickness, inches	Stabilized Subgrade Thickness, inches
C-1	1.7	6.0 (A)	>12.0 (A)
C-2	1.0	6.0 (A)	>12.0 (A)
C-3	2.8	6.0 (A)	>12.0 (B)

*Notes:*

- (A): The material encountered consist of silty fine sand with some limerock and is classified as A-1-b material.
- (B): The material encountered consist of silty fine sand with traces of limerock and is classified as A-2-4 material.

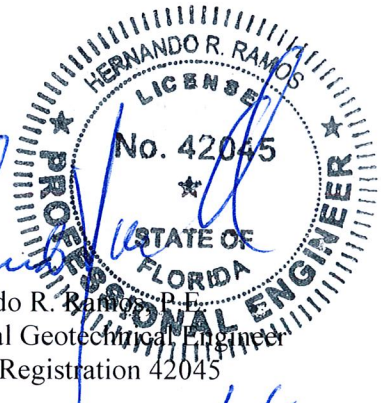
We have enjoyed assisting you on this project and look forward to serving as your geotechnical consultant on the remainder of this project and on future projects. If you have any questions concerning this report, please call our office at (305) 888-8880.

Sincerely,

**HR ENGINEERING SERVICES, INC.**



Rodrigo A. Alba, E.I.  
 Project Manager



Hernando R. Ramos, P.E.  
 Principal Geotechnical Engineer  
 Florida Registration 42045

7/11/16

Distribution: Addressee (1)  
 File (1)

**APPENDIX A:**

- Site Location Map
- Field Exploration Plans
- Summary of Percolation Test and Asphalt Core Locations
- Summary of Percolation Test Results

**APPENDIX B:**

- Pavement Evaluation and Condition Data Table
- Photos of Asphalt Core Location and Sample

# **APPENDIX A**

**SITE LOCATION MAP  
FIELD EXPLORATION PLANS  
SUMMARY OF PERCOLATION TEST AND ASPHALT CORE LOCATIONS  
SUMMARY OF PERCOLATION TEST RESULTS**



**NW 24TH AVENUE IMPROVEMENTS**  
**CITY OF MIAMI**  
**PROJECT No. B-30723**  
**MIAMI-DADE COUNTY, FLORIDA**

**HRES**  
 HR Engineering Services, Inc.

**SITE LOCATION MAP**

DRAWN BY: R.A.C.	DATE: 07/11/16
PROJECT No: HR15-1138R	SCALE: NTS



NW 24TH AVENUE IMPROVEMENTS  
 CITY OF MIAMI  
 PROJECT No. B-30723  
 MIAMI-DADE COUNTY, FLORIDA

**HRES**  
 HR Engineering Services, Inc.

**FIELD EXPLORATION PLANS**

DRAWN BY: R.A.C.

DATE: 07/11/16

PROJECT No: HR15-1138R

SCALE: NTS



NW 24TH AVENUE IMPROVEMENTS  
 CITY OF MIAMI  
 PROJECT No. B-30723  
 MIAMI-DADE COUNTY, FLORIDA

**HRES**  
 HR Engineering Services, Inc.

**FIELD EXPLORATION PLANS**

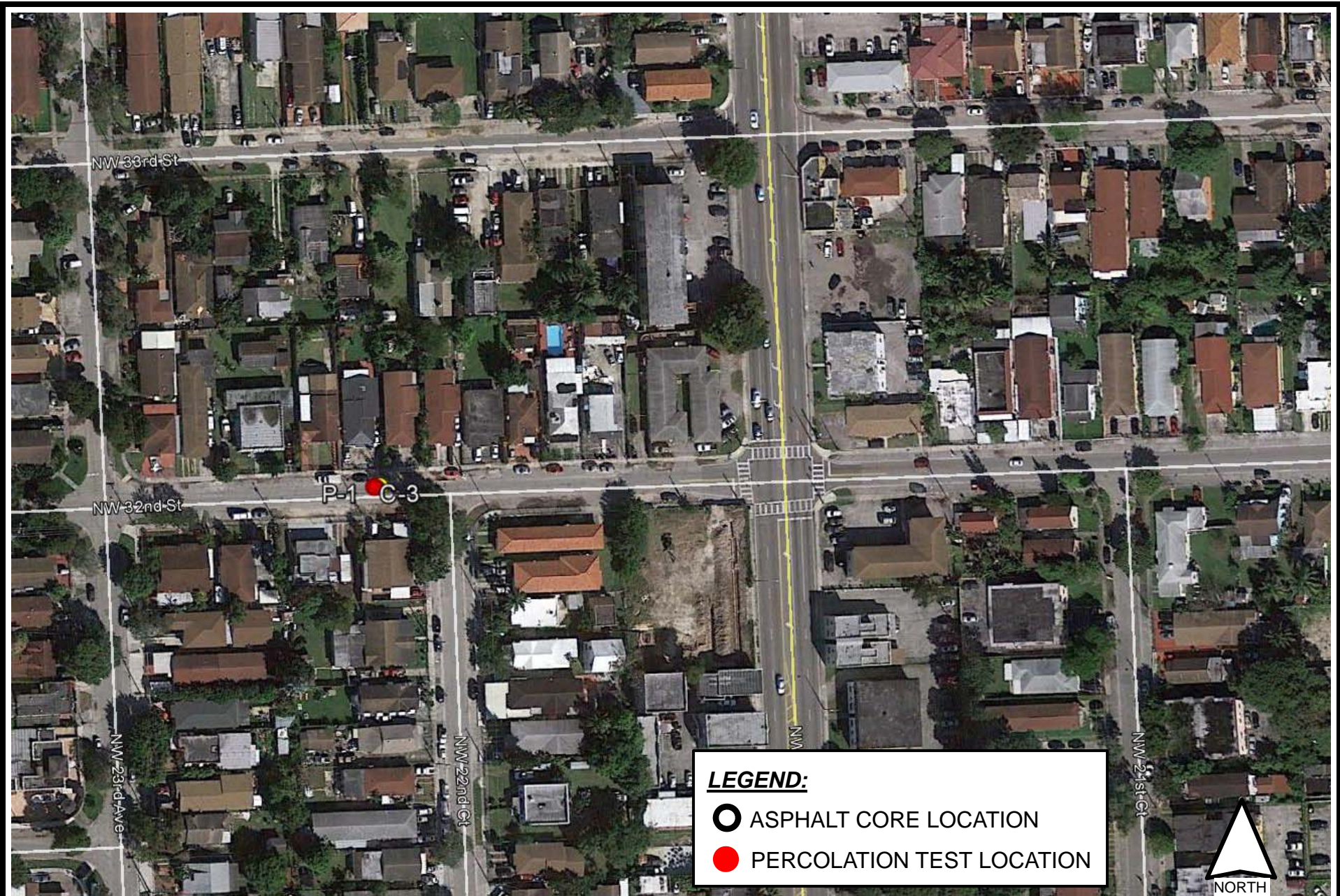
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NW 24TH AVENUE IMPROVEMENTS  
 CITY OF MIAMI  
 PROJECT No. B-30723  
 MIAMI-DADE COUNTY, FLORIDA

**HRES**  
 HR Engineering Services, Inc.

**FIELD EXPLORATION PLANS**

DRAWN BY: R.A.C.

DATE: 07/11/16

PROJECT No: HR15-1138R

SCALE: NTS

**SUMMARY OF PERCOLATION TEST AND ASPHALT CORE LOCATIONS  
NW 24TH AVENUE IMPROVEMENTS**

**NW 24TH AVENUE, FROM NW 28TH STREET TO NW 30TH STREET**

**NW 25TH AVENUE, FROM NW 31ST STREET TO NW 32ND STREET**

**NW 32ND STREET, FROM NW 22ND AVENUE TO NW 23RD AVENUE**

**CITY OF MIAMI**

**PROJECT No. B-30723**

**MIAMI-DADE COUNTY - FLORIDA**

**HR ENGINEERING SERVICES, INC.**

**HRES PROJECT No. HR15-1138R**

**JULY 11, 2016**

TEST NUMBER	PLANE COORDINATES		STATION	OFFSET ft.	REFERENCE BASELINE
	NORTHING	EASTING			
C-1	534649.658	907564.814	NA	NA	NA
C-2	535546.972	906855.503	NA	NA	NA
P-1	535778.031	908463.064	NA	NA	NA
C-3	535778.031	908467.999	NA	NA	NA

**Notes:**

Plane coordinates were taken using a hand-held GPS and are approximate within 10 feet.

NA: Not Available

**SUMMARY OF PERCOLATION TEST RESULTS**  
**USUAL OPEN-HOLE - SOUTH FLORIDA WATER MANAGEMENT DISTRICT METHOD**  
**NW 24TH AVENUE IMPROVEMENTS**  
**NW 24TH AVENUE, FROM NW 28TH STREET TO NW 30TH STREET**  
**NW 25TH AVENUE, FROM NW 31ST STREET TO NW 32ND STREET**  
**NW 32ND STREET, FROM NW 22ND AVENUE TO NW 23RD AVENUE**  
**CITY OF MIAMI**  
**PROJECT No. B-30723**  
**MIAMI-DADE COUNTY, FLORIDA**  
**HR ENGINEERING SERVICES, INC.**  
**HRES PROJECT NO. HR15-1138R**  
**JULY 11, 2016**

TEST No.	TEST DATE	NORTHING	EASTING	DEPTH TO WATER BEFORE TEST, H ft.	DEPTH TO WATER DURING TEST, ft.	HEAD, Du ft.	HOLE DEPTH ft.	HOLE DIAMETER, d inches	RATE OF FLOW, P		k, HYDRAULIC CONDUCTIVITY cfs/ft <sup>2</sup> -ft. Head
									gpm	cfs	
P-1	06/10/16	535778.031	908463.064	6.0	0.0	6.0	15.0	6.0	2.3	0.00512	4.5E-05

for 0 to 15 ft.,  $K_{15} = P / 3.1416 * d * Du \{ Du/2 + D_s \}$ , where  $D_s = \text{Hole Depth} - H$   
Plane coordinates were taken using a hand-held GPS and are approximate within 10 feet.

## **APPENDIX B**

**PAVEMENT EVALUATION AND CONDITION DATA TABLE  
PHOTOS OF ASPHALT CORE LOCATION AND SAMPLE**

**PAVEMENT EVALUATION AND CONDITION DATA  
CITY OF MIAMI**

**NW 24TH AVENUE BETWEEN NW 28TH STREET AND NW 30TH STREET, NW 25TH AVENUE BETWEEN NW 31ST STREET AND NW 32ND STREET AND NW 32ND STREET BETWEEN NW 22ND AVENUE AND NW 23RD AVENUE**

**PROJECT No. B-30723  
NW 24TH AVENUE IMPROVEMENTS  
MIAMI-DADE COUNTY, FLORIDA  
HR ENGINEERING SERVICES, INC.  
HRES PROJECT No. HR15-1138R**

Cored By: Eloydis Cruz Date: July 10, 2016 Page: \_\_\_\_\_ Typical Section No. \_\_\_\_\_

FPID No.: _____					Name: <u>NW 24th Avenue Improvements</u>					Lanes: _____													
County: <u>Miami-Dade County</u>					S.R. No. _____					Shoulder Type & Cond: <u>Paved</u>													
Median Curbed? <u>N/A</u>					From _____					Inside: _____													
					To. _____					End Sta: _____ Length: _____ Outside: _____													
					Beg. Sta. _____					Other? _____ Curb & Gutter? _____													
					Lawn? _____																		
HRES Core No.	Core No.	Northing	Easting	Lane	Lane Description	Wheel Path	Pavement Layer (inches)							Base (inches)	Sub Base (inches)	Crack				Pavement Condition	Rut Depth (in)	Rut Location (ft)	Cross Slope (ft/6ft)
							Top									Depth (ft)	Type	Class	Extent				
							FC-2	FC-4	S-I	Binder	Type II	ABC-1	Core Length (in)										
C-1	1	534649.7	907564.8	NB	NW 24th Ave. NB lane at 4.0 ft. from EOP	Y	---	---	--	---	---	---	1.7	6.0 (A)	>12.0 (A)	---	---	---	---	P	--	--	--
C-2	2	535547.0	906855.5	NB	NW 25th Ave. NB lane at 3.5 ft. from EOP	Y	---	---	--	---	---	---	1.0	6.0 (A)	>12.0 (A)	---	---	---	---	P	--	--	--
C-3	3	535778.0	908468.0	WB	NW 32nd St. WB lane at 4.0 ft. from EOP	Y	---	---	--	---	---	---	2.8	6.0 (A)	>12.0 (B)	---	---	---	---	P	--	--	--

**Notes:**  
A = The material encountered consisted of silty fine sand with some limerock and was visually classified as A-1-b material  
B = The material encountered consisted of silty fine sand with traces of limerock and was visually classified as A-2-4 material  
P = Poor condition  
EOP = Edge of Pavement



Northing: 534649.7 Offset: 907564.8

Core No. C-1 Core Thickness: 1.7 in.

NW 24<sup>TH</sup> AVENUE IMPROVEMENTS  
 NW 24<sup>TH</sup> AVENUE, FROM  
 NW 28<sup>TH</sup> STREET TO NW 30<sup>TH</sup> STREET  
 PROJECT No. B-30723  
 MIAMI-DADE COUNTY, FLORIDA

HR ENGINEERING SERVICES, INC.  
 7815 NW 72<sup>ND</sup> AVENUE  
 MEDLEY, FLORIDA 33166

**PHOTOS OF ASPHALT CORE  
 LOCATION AND SAMPLE**

DRAWN BY: HRR

DATE: 07/11/16

PROJECT:HR15-1138R

SHEET No.



Northing: 535547.0 Offset: 906855.5

Core No. C-2 Core Thickness: 1.0 in.

NW 24<sup>TH</sup> AVENUE IMPROVEMENTS  
 NW 25<sup>TH</sup> AVENUE, FROM  
 NW 31<sup>ST</sup> STREET TO NW 32<sup>ND</sup> STREET  
 PROJECT No. B-30723  
 MIAMI-DADE COUNTY, FLORIDA

HR ENGINEERING SERVICES, INC.  
 7815 NW 72<sup>ND</sup> AVENUE  
 MEDLEY, FLORIDA 33166

**PHOTOS OF ASPHALT CORE  
 LOCATION AND SAMPLE**

DRAWN BY: HRR

DATE: 07/11/16

PROJECT:HR15-1138R

SHEET No.



Northing: 535778.0 Offset: 908468.0

Core No. C-3 Core Thickness: 2.8 in.

NW 24<sup>TH</sup> AVENUE IMPROVEMENTS  
 NW 32<sup>ND</sup> STREET, FROM  
 NW 22<sup>ND</sup> AVENUE TO NW 23<sup>RD</sup> AVENUE  
 PROJECT No. B-30723  
 MIAMI-DADE COUNTY, FLORIDA

HR ENGINEERING SERVICES, INC.  
 7815 NW 72<sup>ND</sup> AVENUE  
 MEDLEY, FLORIDA 33166

**PHOTOS OF ASPHALT CORE LOCATION AND SAMPLE**

DRAWN BY: HRR

DATE: 07/11/16

PROJECT:HR15-1138R

SHEET No.