DRESDNER ROBIN

ENGINEER'S REPORT

152 OGDEN AVENUE – RESIDENTIAL

BLOCK 5103, LOT 10

CITY OF JERSEY CITY, HUDSON COUNTY, NEW JERSEY

DRESDNER ROBIN PROJECT No. 11830-001

PREPARED FOR
PINTAK DEVELOPMENT
930 JEFFERSON STREET
HOBOKEN, NEW JERSEY 07030

PREPARED BY
DRESDNER ROBIN
1 EVERTRUST PLAZA
SUITE 901
JERSEY CITY, NEW JERSEY 07302
(201) 217-9200

Digitally signed by Brian Liebeskind
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STATE OF NEW JERSEY
BRIAN S. LIEBESKIND
No. 24GE05322900
LICENSED
PROFESSIONAL ENGINEER

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PROFESSIONAL ENGINEER
NEW JERSEY LICENSE NO. 24GE05322900

DATE
JULY 2022
REV FEBRUARY 2023

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1.0 INTRODUCTION

This report should be reviewed in conjunction with a certain set of drawings titled "*Preliminary and Final Site Plan Application for 152 Ogden Avenue, Block 5103, Lot 10, City of Jersey City, County of Hudson, New Jersey*" prepared by Dresdner Robin. This report has been prepared to demonstrate that the proposed site improvements meet the criteria of the following standards:

- Article VI "*Stormwater Control*" of Chapter 345 "*Zoning*" from the Code of the City of Jersey City;
- New Jersey Residential Site Improvement Standards (NJ.A.C. 5:21) and,
- The Standards for Soil Erosion and Sediment Control In New Jersey.

All elevations cited in this report are referenced to North American Vertical Datum 1988

2.0 EXISTING CONDITIONS

The project is located on Block 5103, Lot 10 in the City of Jersey City, Hudson County, New Jersey and contains 39,484 square-feet (sf) or 0.906 acres (Ac) of land. The site consists primarily of an asphalt-paved parking lot with a small, vegetated area to the east. The project site represents the southwest corner of the overall 0.91-acre parcel and is bounded by Ogden Avenue to the west, an existing residential building to the south, the Palisades cliff to the east and a paved parking lot to the north.

The property is in the Multifamily Mid-rise Residential district R-3 based on the Jersey City Zoning Map. The site is also within the Palisade Preservation Overlay district and the Riverview Arts District overlay.

The project site is within the Metropolitan Planning Area (PA1) and is not located in a flood zone per current FEMA mapping.

2.1 Land Form Analysis

The project site is located within the Palisades Preservation Overlay District (PPOD). As such, the project shall conform to the following regulations and standards concerning existing land form analysis as established under § 345-60.1. Palisades Preservation Overlay District—Establishment, procedures and standards:

B.1. *A topographic map of the site at two foot contour intervals (drawn in a lighter line weight) where the slope is less than ten percent (10%), and ten (10) foot contour intervals (drawn in a heavier line weight) where the slope exceeds ten percent (10%).*

A topographic map of the existing site at two-foot contour intervals has been provided as part of the Boundary and Topographic Survey prepared by Koestner Associates, last revised February 2023.

B.2. *A land form analysis which shows the location and extent of the site's major landforms including the top of the cliff, the cliff face, the side slope and the base of the slope. Any exposed cliff face shall be shown. The area in each land form category shall be calculated and shown on the land form analysis.*

Refer to the Steep Slope Plan, Sheet C-811, prepared by Dresdner Robin, for a breakdown of the existing slopes onsite. This includes a slopes table with a summary of the gentle, mild, steep slope, and cliff areas of the site. Gentle slopes are defined as those less than 10% (shaded green) and mild slopes are defined as those between 10% and 30% (shaded yellow). Consistent with the PPOD definitions, slopes greater than 30% shall be classified as steep slopes (shaded orange). An additional category of cliff has also been included (shaded red). Jersey City zoning ordinances define cliff face as "a sheer, nearly vertical slope of exposed bedrock." For purposes of this analysis, a near-vertical slope was assumed to be a slope greater than 100%.

B.3. *A physical description of the site which shall include a technical summary of site characteristics such as soils, load bearing capacity, erosion potential, depth to bedrock, etc.*

Refer to Appendix C for "Geotechnical Engineering Report - Proposed Building 152 Ogden Avenue Jersey City, NJ JSC Job # 17-428" prepared by Johnson Soils Company, last dated September 14, 2017.

B.4. *Site grading and development data which shall include the type and location of development activity, procedures for grading, excavation, construction access and stockpiling, extent and phasing of construction and cut and fill operations.*

Refer to Grading and Drainage Plan, Sheet C-401, and the Soil Erosion and Sediment Control Plan, Notes, and Details, Sheets C-801 and C-802, prepared by Dresdner Robin, for proposed earthwork.

C.1. *The minimum building setback line from the edge of the cliff face at the top of the cliff shall be thirty (30) feet . The minimum building setback line from the edge of the cliff face at the base of the cliff shall be sixty-five (65) feet.*

The Palisades cliff is not present on the project site based on the latest survey information for the site. Conservatively, as part of the Land Form Analysis, the limits of the cliff face have been interpreted to correspond to the existing exposed rock. The first floor of the proposed building has been set approximately 63.2 feet offset from the existing outcropping. The outer limit of the floors above are approximately 50.9 feet offset from the existing outcropping. The minimum building setback requirement at the base of the cliff does not apply to this project.

C.2. *For purposes of preservation of the Palisades cliff face, no portion of any building or structure shall be constructed on that portion of a lot which has a grade, prior to such construction, in excess of thirty percent (30%), or on any portion of the lot, which lies within ten (10) feet of the portion having such grade.*

Refer to the Steep Slope Plan, Sheet C-811, prepared by Dresdner Robin, for a breakdown of the existing slopes onsite. The existing steep slopes (30% to 100%) are shown in orange on the Steep Slope Plan. A 10-foot offset from the western limits of the steep slopes has been delineated to represent the restricted area. The proposed building will be located 11.2 feet at the closes point at the building from the existing steep slopes and in conformance with the PPOD setbacks.

C.3. *No portion of a building built below the Palisades within the PPOD and within four hundred fifty (450) feet of the cliff face, including all bulkheads, parapets and penthouses, shall extend into the area occupied by the top twenty-five percent (25%) of the distance between the top of cliff and the lowest portion of existing grade of a development site.*

The minimum building setback requirement at the base of the cliff does not apply to this project.

2.2 Geotechnical Engineering Report

Refer to Appendix C for "Geotechnical Engineering Report - Proposed Building 152 Ogden Avenue Jersey City, NJ JSC Job # 17-428" prepared by Johnson Soils Company, last dated September 14, 2017.

3.0 PROPOSED CONDITIONS

3.1.1 Project Description

The Applicant is proposing to construct an 8-story residential building comprised of a ground floor and cellar with parking garage, residential lobby and mechanical spaces with seven (7) residential floors above totaling 14 dwelling units.

3.1.2 Stormwater Analysis Applicability

In accordance with the municipal land use ordinance and New Jersey Stormwater Management (N.J.A.C. 7:8), the project is not considered a "major development" because the improvements will not ultimately disturb one or more acres of land and will not create one-quarter acre of impervious surface. As a result, attenuation of stormwater runoff will not be provided. The project is also exempt from stormwater requirements for water quality and groundwater recharge. Stormwater runoff from the roof of the building will be collected in roof drains and routed internally to the stormwater conveyance system.

Stormwater runoff from hardscape improvements will be collected via area permeable paving and discharge into a subsurface recharge system.

The project disturbs greater than 5,000 square-feet and is therefore considered a "Minor Development" for purposes of the City's Stormwater Control regulations. The proposed site design incorporates a permeable paving and subsurface recharge system to satisfy the stormwater retention requirement as defined in § 345-74.6 – "Stormwater control – Stormwater retention standard for Minor Development".

Proposed impervious surface area = 3,671 sf

Minimum volume of stormwater retained = 0.6 gallons x 3,671 = 2,203 gal = 294 cf

Proposed volume of stormwater retained = [Paver area] x [Stone depth] x [Void ratio]

= 6,608 sf x 0.5 ft x 40% voids

= 1,322 cf > 294 cf ✓

3.2 Sanitary Sewer System

The JCMUA maintains an 18-inch diameter vitrified clay pipe (VP) combined sewer south of the project site along Ogden Avenue. The project proposes a sewer extension within Ogden Avenue including a new sewer manhole and new 18-inch reinforced concrete pipe (RCP) combined sewer. Flow within the sewer is conveyed to the Passaic Valley Sewerage Commission (PVSC) treatment plant for treatment and discharge.

The projected sanitary flow for the project is 3,000 gpd (0.005 cfs). The project does not require a Treatment Works Approval from the NJDEP because the anticipated flow is less than 8,000 gpd. A copy of the projected sanitary flow calculations is provided in **Appendix A** of this report.

3.3 Water Supply

The JCMUA maintains an 8-inch diameter ductile iron pipe (DIP) water main within Ogden Avenue. The project will be served by a new 6-inch diameter cement lined-ductile iron pipe (CLDIP) lateral that will connect to the existing municipal supply system within Ogden Avenue. The estimated average daily water demand and peak daily demand for the project are 1,840 gpd and 5,520 gpd, respectively. A copy of the water demand calculations is provided in the **Appendix B** section of this report

The Applicant will apply for a water service connection with the JCMUA under a separate cover.

4.0 CONCLUSION

This report has been prepared as required by the municipality and demonstrates the proposed development will meet the objectives of minimizing impacts to environmentally-sensitive areas, stormwater quality, stormwater quantity and flood-related matters at the source by land management and source control whenever possible.

APPENDIX A

DRESDNER ROBIN

7/19/2022

SANITARY SEWER CALCULATIONS

8-STORY RESIDENTIAL BUILDING
152 OGDEN AVENUE
BLOCK 5103, LOT 10
JERSEY CITY, NJ
DR PROJECT NO. 11830-001

Type of Establishment	Measurement	# Units	GPD/Unit	GPD
Studio	Per Dwelling		150	0
1 Bedroom	Per Dwelling	2	150	300
2 Bedroom	Per Dwelling	12	225	2,700
3 Bedroom	Per Dwelling		300	0
Office	Sq. Ft.		0.100	0
Retail	Sq. Ft.		0.100	0
_blank	0		0.000	0
_blank	0		0.000	0
_blank	0		0.000	0

Projected Estimates per N.J.A.C. 7:14A-23.3

Flow Received	100%
Total Flow (GPD) ($Q_{projected}$)	3,000
Total Flow (CFS) ($Q_{projected}$)	0.005

Pipe Length (LF)	Diameter (in)	Material	Slope	n*
37	6	PVC	0.50%	0.013

** Per JCMUA Rules and Regulations, Section 5.01*

Half Flow Pipe Capacity	
Depth of Flow, h (in)	3
h/D	0.500
Pipe Radius, r (ft)	0.250
Circ. Segment Height, h (ft)	0.250
Central Angle, θ (radians)	3.142
Cross-Sectional Area, A (ft^2)	0.098
Wetted Perimeter, P (ft)	0.785
Hydraulic Radius, R (ft)	0.125
Discharge, Q (cfs)	0.199
$Q_{projected}$ (x2) (cfs)	0.009
Pipe % Full [$(A/A_{full})*100\%$]	50.00%
Average Velocity, V (ft/sec)	2.026
Max. Capacity (MGD)	0.107
$Q_{pipe} > 2xQ_{projected}$	**TRUE**
V ≥ 2.2 ft/sec	**TRUE**
Design is	**ADEQUATE**

Actual Pipe Velocity	
**Depth of Flow, h (in)	0.455
Pipe Radius, r (ft)	0.250
Circ. Segment Height, h (ft)	0.038
Central Angle, θ (radians)	1.116
Cross-Sectional Area, A (ft^2)	0.007
Wetted Perimeter, P (ft)	0.279
Hydraulic Radius, R (ft)	0.024
Pipe % Full [$(A/A_{full})*100\%$]	3.46%
Actual Velocity, V (ft/sec)	0.681
V < 10 ft/sec	**TRUE**

***Must have h < r*

Compare	
Discharge, Q (cfs)	0.005
$Q_{projected}$, (cfs)	0.005

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ROBIN

7/19/2022

Equations used for calculations:

Manning's Formula:

$$Q = \left(\frac{1.49}{n}\right) AR^{2/3}\sqrt{S}$$

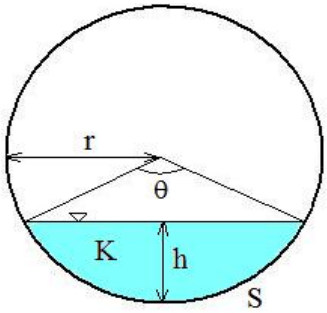
Q = Flow Rate, (ft^3/s)

n = Manning's Coefficient

A = Flow Area, (ft^2)

R = Hydraulic Radius, (ft)

S = Channel Slope, (ft/ft)



$$\theta = 2\arccos\left(\frac{r-h}{r}\right)$$

$$A = \frac{r^2(\theta - sin\theta)}{2}$$

$$P = r\theta$$

APPENDIX B

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7/19/2022

WATER DEMAND CALCULATIONS

8-STORY RESIDENTIAL BUILDING
152 OGDEN AVENUE
BLOCK 5103, LOT 10
JERSEY CITY, NJ

Residential Demand[1]

Type of Establishment	Measurement	# Units	GPD/Unit	Daily Demand (GPD)	Daily Demand (MGD)	Peaking Factor	Peak Daily Demand (GPD)	Peak Daily Demand (MGD)
Studio	Per Dwelling	0	65	0	0.000	3	0	0.000
1-Bedroom	Per Dwelling	2	80	160	0.000	3	480	0.000
2-Bedroom	Per Dwelling	12	140	1,680	0.002	3	5,040	0.005
3-Bedroom	Per Dwelling	0	245	0	0.000	3	0	0.000
Total Units		14						
Total Residential Demand				1,840	0.002		5,520	0.006

Non-Residential Demand[2]

Type of Establishment	Measurement	# Units	GPD/Unit	Daily Demand (GPD)	Daily Demand (MGD)	Peaking Factor	Peak Daily Demand (GPD)	Peak Daily Demand (MGD)
Office/Retail	SF	0	0.125	0	0.000	3	0	0.000
Total Non-Residential Demand				0	0.000		0	0.000

Total Site Demand	Daily Demand (GPD)	Daily Demand (MGD)		Peak Daily Demand (GPD)	Peak Daily Demand (MGD)
	1,840	0.002		5,520	0.006

Notes:

[1] *Residential demand as per N.J.A.C. 5:21-5.1 (November 2, 2020)*

[2] *Non-residential demand as per N.J.A.C. 7:10-12.6 (Table 1)*

APPENDIX C

JOHNSON SOILS COMPANY

66 Glen Avenue
Glen Rock, NJ 07452
Telephone: 201-301-1045
Fax: 201-857-8002
Email: info@johnsonsoils.com

September 14, 2017

PF ASSOCIATES LLC
Attn: Peter Traphagen
234 Kinderkamack Road
Oradell, NJ 07649

VRG Advisory Services LLC
Attn: Joe Stignone and James Pompa
601 Observer Highway, C1
Hoboken, NJ 07030

Re: Geotechnical Engineering Report
Proposed Building
152 Ogden Avenue
Jersey City, NJ
JSC Job # 17-428

Johnson Soils Company, Inc. (JSC) has been retained by **PF ASSOCIATES LLC** and **VRG Advisory Services LLC** to perform a geotechnical investigation at the above referenced location as per our proposal dated July 17, 2017 and revised August 14, 2017. It includes JSC's findings, conclusions and recommendations related to the construction of the proposed building.

The site is currently being used as a parking lot. The property is located on the east side of Ogden Avenue between Wood and Ferry Places in Jersey City, New Jersey. The proposed features are shown on the plan entitled "Boring Location Plan," which was provided by **PF ASSOCIATES LLC** and **VRG Advisory Services LLC.**

INVESTIGATION

Five (5) borings were completed on September 1, 2017. The borings were advanced using truck-mounted drilling equipment by our sub-contractor, RV Drilling, Inc., in accordance with the procedures of the Standard Penetration Test (ASTM-1586). For this test, a standard split barrel sampler, which is two (2) inches outside diameter and one and three eighth (1 3/8) inches inside diameter, is advanced into the soil using a one hundred forty (140) pound weight hammer falling thirty (30) inches. Standard Penetration Tests were taken continuously from zero (0) to twelve (12) feet and at five (5) feet intervals thereafter.

The boring location plan and record sheet for each boring are attached to this report.

FINDINGS

The explorations for this study indicate that the site is underlain by uniform subsurface. The strata are listed below in order of increasing depth. Detailed descriptions of the subsurface conditions are shown on the individual "Logs of Borings," Plates 3A through 3E.

1. Asphalt: A layer of Asphalt was encountered from the surface in Borings 2 & 5 to a depth of two (2) inches below the existing surface grade.

2. Gravel: A layer of Gravel was encountered from the surface in Borings 3 & 4 and below the Asphalt in Borings 2 & 5 to depths ranging from three to nine (3-9) inches below the existing surface grade.

3. Fill: A layer of Fill was encountered from the surface in Boring 1 and below the Gravel in Borings 2, 3, 4 & 5 to depths ranging from two to ten (2-10) feet below the existing surface grade.

4. Poorly Graded Sand (SP): A layer of Poorly Graded Sand was encountered below the Fill in Borings 1, 4 & 5 to depths ranging from eight feet nine inches to ten feet one and one half inches (8'9"-10'1.5") below the existing surface grade.

5. Silty Sand & Gravel (SM-GW): A layer of Silty Sand & Gravel was encountered below the Fill in Boring 2 to a refusal depth of thirteen feet seven inches (13'7") below the existing surface grade.

Borings 1, 2, 3, 4 & 5 encountered refusal at 8'9", 13'7", 8', 10'1" & 10'1.5" respectively. The refusal depth is defined as the depth where no further penetration can be achieved with earth drilling and sampling procedures. Rock core drilling would be necessary to define whether the refusal depth is cobble, boulders or bedrock and was not part of our scope of work.

No Ground water was observed at the time of the investigation. It should be noted that the water level conditions may fluctuate due to variations in seasons, rainfall, temperature and other factors.

COMMENTS AND CONCLUSIONS

The proposed building can be supported using conventional spread footings after the removal of all Fill and Loose material and into the dense Poorly Graded Sand or Silty Sand & Gravel. Estimated depths to suitable bearing material vary from two to ten (2-10) feet below the existing surface grade.

If a basement is planned, the excavation will most likely exceed the depth of the misc. Fill.

If higher allowable bearing capacities are required please contact JSC.

All foundation excavations should be verified by a qualified geotechnical engineer at the time of the excavation to confirm the depth to suitable bearing material.

Please see the recommendations section for additional information.

In the instance where groundwater or surface runoff that may enter the proposed excavations, this may be effectively controlled by sump pits placed within or adjacent to the proposed excavations. It should be noted that the water level conditions may fluctuate due to variations in rainfall, temperature and other factors at the time of construction.

RECOMMENDATIONS

The following geotechnical design and construction recommendations are offered:

1. Foundation and Slab-on-Grade:
    i. Remove all Fill and Loose material and into the dense Poorly Graded Sand or Silty Sand & Gravel.
        A. If the existing grades are not changed, estimated depth to suitable material is two (2) feet to ten (10) feet below the existing surface grade.
    ii. All interior piers will also need to be excavated to the dense dense Poorly Graded Sand or Silty Sand & Gravel.
    iii. Excavation shall be a minimum of three (3) feet outside the proposed building dimension.
    iv. A minimum of twelve (12) inches of crushed stone (3/4" or 1 ½") a minimum of one (1) foot outside the proposed footing dimension to prevent the remolding of soils.

b. Use an allowable bearing capacity of **three thousand (3,000) pounds per square foot (PSF)** on crushed stone on dense Poorly Graded Sand or Silty Sand & Gravel.

c. Maximum settlement is less than 1 in.

d. Estimated differential settlement is less than 0.5 in.

e. Minimum depth for frost protection is three feet six inches (3'6") below the final exterior grade.

f. All concrete footings should be kept dry a minimum of forty-eight (48) hours after the footings are poured for proper curing.

g. Concrete blankets (or equivalent) are required if the temperature drops below thirty-two (32) degrees to prevent the concrete from freezing.

2. Slab on Grade:
    a. After removal of all misc. Fill.
    b. Proof roll area with a minimum of four (4) passes of heavy vibratory compactor with a minimum static drum weight of 12,000 pounds or equal.
        i. Any areas which are observed to be soft or unstable should be removed and replaced with controlled Fill and compacted as per recommendations # 8 and #9.
    c. Where compaction is performed, use a Modulus of Subgrade Reaction (k) of one hundred fifty (150) pounds per cubic inch (pci) for slab design.
    d. A minimum of six (6) inches of ¾" crushed stone should be placed under all slabs on grades.
    e. A 6 mil. vapor barrier should be placed on the crushed stone.

3. Parking and Driveway Areas:
    a. After removal of all misc. Fill.
    b. Proof roll area with a minimum of four (4) passes with a heavy vibratory compactor with a minimum static drum weight of 12,000 pounds or equal
    c. Any areas, which are observed to be soft or unstable, should be removed and replaced with controlled Fill and compacted as per recommendations #8 and #9.
    d. Subbase: Quarry Process Stone: 6"
    e. Base Course: I-2 – 4"
    f. Surface Course: I-5 – 2"

4. Retaining Wall Design Information:
    a. Poorly Graded Sand (SP):
        i. $\gamma = 120$ PSF
        ii. $\phi = 30^{o}$
        iii. $C = 0$
    b. Silty Sand & Gravel (SM-GM):
        i. $\gamma = 130$ PSF
        ii. $\phi = 32^{o}$
        iii. $C = 0$
    c. Misc. Fill:
        i. $\gamma = 120$ PSF
        ii. $\phi = 30^{o}$
        iii. $C = 0$

5. Soil Classification "C" as per OSHA 1926 Subpart P App A with maximum allowable slopes (H:V) of 1 ½:1 as per OSHA 1926 Subpart P App B Table B-1.
    a. This is for short-term maximum allowable slopes less than twelve (12) feet.
    b. Sloping or benching for excavations greater than twenty (20) feet deep shall be designed by a Professional Engineer licensed in the State of New Jersey.

6. The Seismic Site Classification is "C" in terms of the International Building Code (IBC). The profile is not considered to be susceptible to liquefaction.
    a. $S_S = 0.279g$
    b. $S_1 = 0.072$ g
    c. $S_{MS} = 0.335$ g
    d. $S_{M1} = 0.122$ g
    e. $S_{DS} = 0.223$ g
    f. $S_{D1} = 0.081$ g

7. The existing misc. Fill is **unsuitable** for use as backfill. The existing onsite Poorly Graded Sand and Silty Sand and Gravel can be reused as backfill or controlled Fill when used +/- 2% moisture content and approved by a geotechnical engineer at the time of use.
    a. Other Controlled Fill Options:
        iv. Crushed Stone at ¾" or 1 ½" size with no fines.
        v. Sand and Gravel with less than 20% passing the #200 sieve.
        vi. Quarry Process Stone (QP) with less than 20% passing the #200 sieve.

8. Controlled and Compacted Fill Requirements:
   a. A geotechnical engineer licensed in the state of New Jersey to inspect all earthwork operations.
   b. The contractor and/or owner shall notify the geotechnical engineer in writing a minimum of five (5) days prior to the start of all work on the project. The notification shall include all sources of Fill, equipment to be used, the estimated dates of the work and the proposed onsite supervisor.
   c. In areas where an old basement will be filled to the proposed subgrade elevation, the existing concrete slab shall be removed and the area proof rolled to check for soft or loose material.
   d. All misc. Fill and Topsoil shall be graded prior to the start of all earthwork operations.
   e. All Fill areas shall be proof rolled prior to the placement of any new Fill. All proof rolling shall be performed in the presence of the geotechnical engineer. If soft areas are found during the proof rolling process, the area shall be removed and replaced with compacted, controlled Fill as per the direction of the geotechnical engineer.
   f. Any proposed Fill area shall be leveled before placement of any Fill. The area shall be free from ruts, hummocks or other uneven surfaces that would prevent uniform compaction.
   g. Use any of the material stated in the types of controlled Fill section or other material approved by the geotechnical engineer.
   h. A fifty pound (50-lb) bag of material shall be submitted to the geotechnical engineer for approval and testing a minimum of five (5) days prior to the start of work. No Fill material shall be placed until the geotechnical engineer has approved the material for use in the project.
   i. All controlled Fill should be placed in horizontal layers of eight to twelve (8-12) inches in loose thickness and be uniformly compacted to achieve a density of at least ninety-five (95) percent of the maximum dry density as determined by in the laboratory when tested in accordance with the most recent ASTM D1557 Standard.

j. Backfill within confined areas should be placed in layers of six to eight (6-8) inches in loose thickness and compacted to the same 95% of maximum dry density using portable compaction equipment.

k. No Fill material shall be placed, spread or compacted when the ground or Fill is frozen, thawing or during unfavorable weather conditions. When work is interrupted by heavy rain or frost, operations shall not be resumed unless the moisture content and density of the Fill are acceptable to the geotechnical engineer.

l. A sufficient number of passes shall be approved by the geotechnical engineer in order to achieve the acceptable specified density above. A minimum of three (3) passes of the approved compactor shall be required over all areas of each lift.

m. Field density tests shall be made by the geotechnical engineer to determine the in-place field density in each layer placed. No Fill shall be placed over any layer that has not been previously approved by the geotechnical engineer. Should any of the tests find insufficient density, then additional compaction will be required until the required density is obtained.

9. The following construction tasks should be inspected by a geotechnical engineer using appropriate laboratory and field testing support:

   a. Bottom of excavated area for all footings to be excavated into the dense Poorly Graded Sand or Silty Sand & Gravel.

   b. All types of controlled Fill soils to be used in footings and slab areas.

   c. Compaction of all controlled Fill for footings and slab areas.

The recommendations above are based on the data obtained from soil borings performed at the indicated specific locations and from other identified information. This report does not reflect any variations which may occur across the site apart from the borings. The nature and extent of such variations may not become evident until construction. If variations appear evident, it will be necessary to re-evaluate the recommendations of this report.

This report has been prepared for the specific application to the project noted. In the event that there are changes in the nature, design or locations of the proposed structures, the conclusions and recommendations contained herein are not valid unless the changes are reviewed and the recommendations modified in writing by JSC.

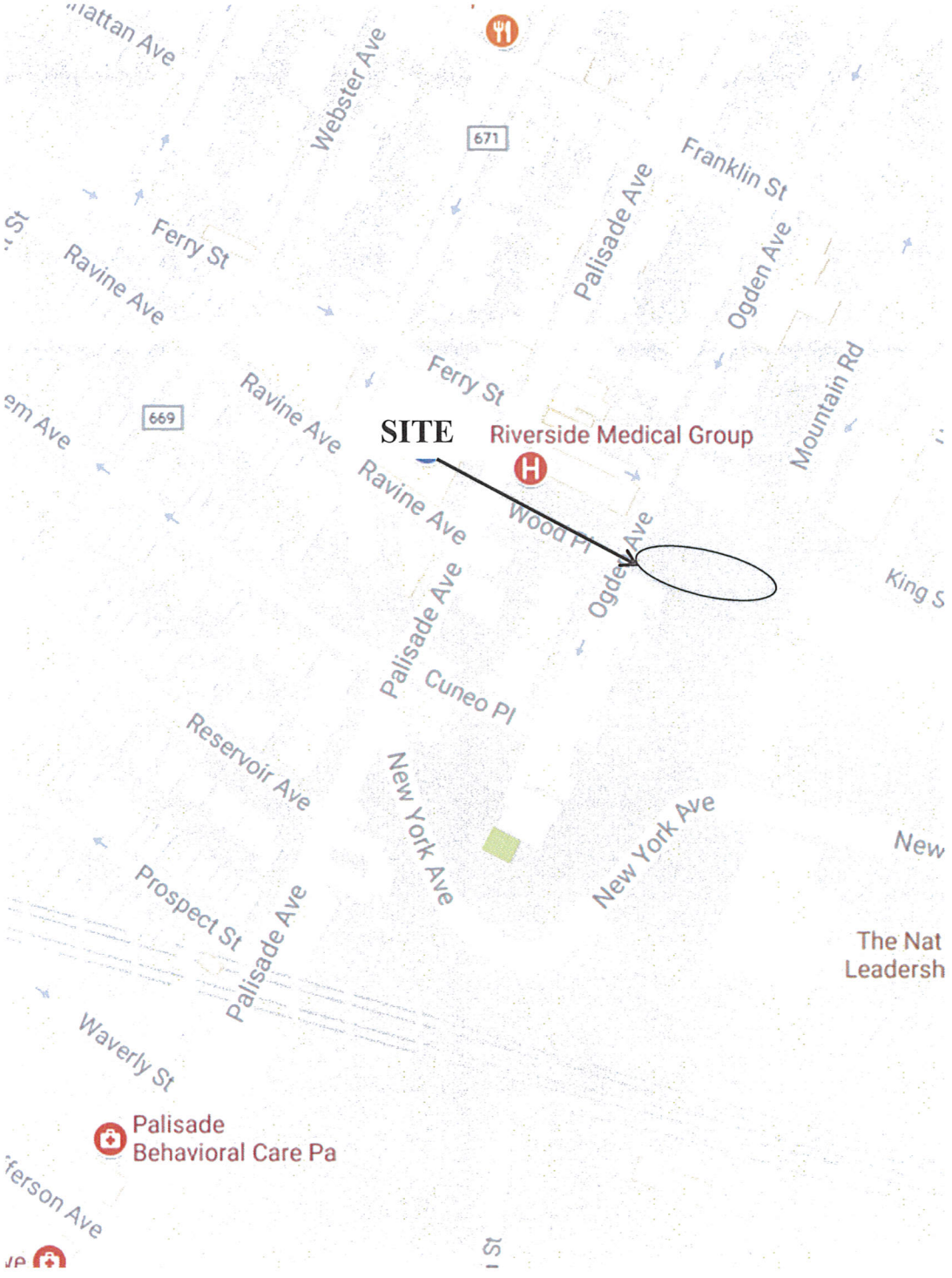
The information and opinions rendered in our report are exclusively for use by **PF ASSOCIATES LLC** and **VRG Advisory Services LLC** and JSC will not distribute or publish this report without written consent except as required by law or court order. The information and opinions expressed in this report are given in response to a limited assignment and should be considered and implemented only in light of that assignment. The services provided by JSC in completing this project were consistent with normal standards of the profession. No warranty, expressed or implied, is made.

The following Plates are attached to this report:

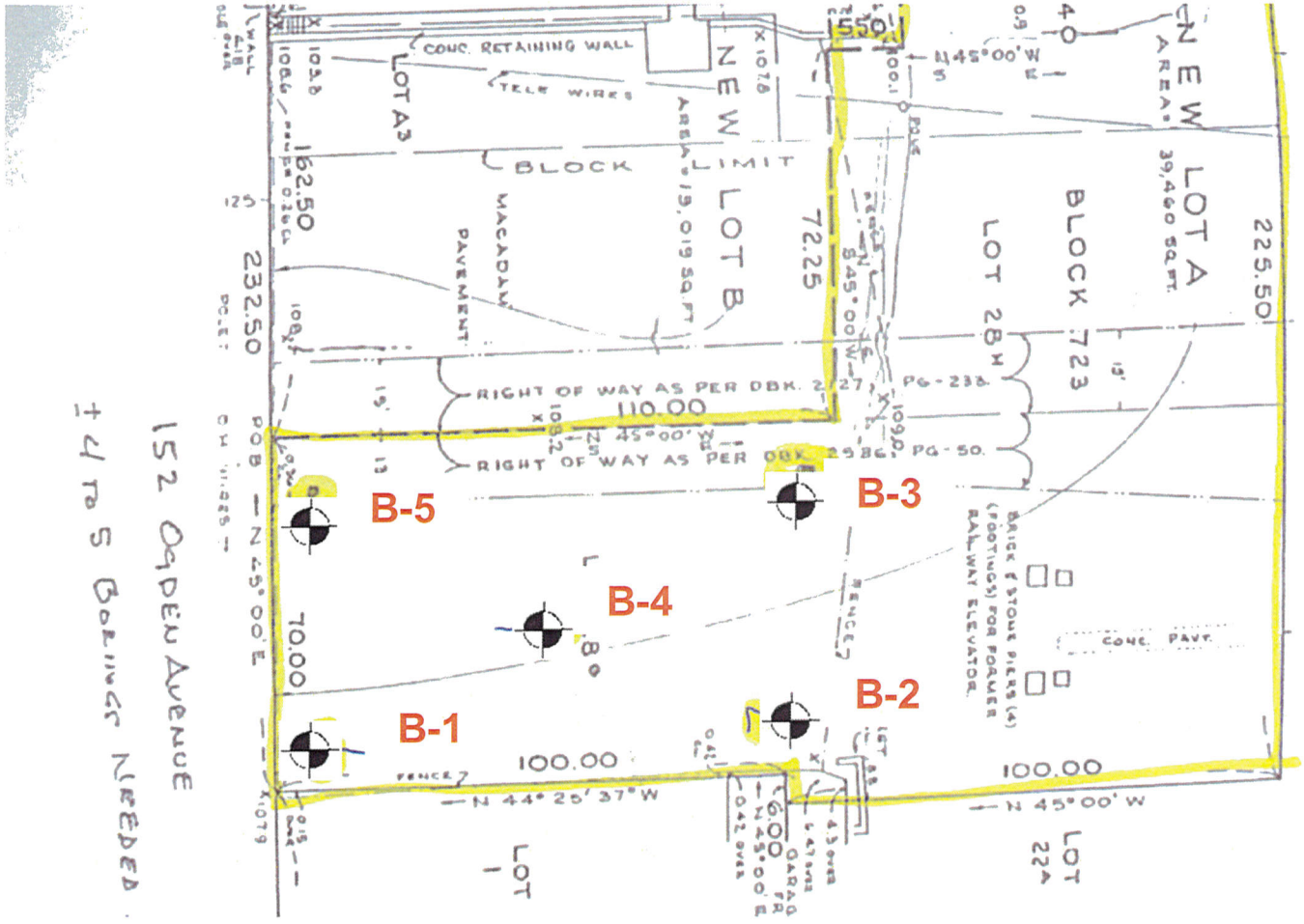
Plate 1 -	Site Location Map
Plate 2 -	Boring Location Plan
Plates 3A through 3E -	Logs of Borings
Plate 4 -	Unified Soil Classification System

Very truly yours,
JOHNSON SOILS COMPANY

Lisa V. Mahle-Greco, P.E.
Engineering Manager
NJ Lic. No. 43197



JOHNSON SOILS COMPANY	**Site Location Plan**	JSC #17-428
	152 Ogden Avenue Jersey City, NJ	PLATE 1



Scale: N.T.S.

JOHNSON SOILS COMPANY	Boring Location Plan	JSC #17-428
	152 Ogden Avenue Jersey City, NJ	PLATE 2

JOHNSON SOILS COMPANY

LOG OF BORING
B-1

Sheet 1 of 1
JSC #17-428
Completed: 9/1/17
Water Level: Dry

Depth (Feet)	Sample #	Depth (Feet)	Sample/Spoon Blows/6"	Symbol USCS	Depth	Description
0 -	1	0-2	4-5-7-9		0-2'	Fill- Gravel, Sand, Organic Silt
- -	2	2-4	6-4-5-8	SP	2'-8'9"	Brown Fine to Medium Sand, little Silt and Gravel (moist, medium dense)
- 5	3	4-6	9-12-9-9			
- -	4	6-8	8-9-10-13			
- -	5	8-10	25-100/3"			
-					8'9"	Possible rock (Palisade Diabase)
10 - - - - 15 - - - - 20 - - - - 25 - - - - 30 - - - - 35						

Remarks: Boring 1 refusal at 8'9" on 9/1/2017

Client: PF Associates, LLC — [X] Hollow Stem Auger

Site: 152 Ogden Avenue, Jersey City, NJ — [ ] Portable

Driller: RV Drilling — [ ] Mud Rotary

PLATE 3A

JOHNSON SOILS COMPANY

LOG OF BORING
B-2

Sheet 1 of 1
JSC #17-428
Completed: 9/1/17
Water Level: Dry

Depth (Feet)	Sample #	Depth (Feet)	Sample/Spoon Blows/6"	Symbol USCS	Depth	Description	
0	1	8"-2	--2-6-6		0-2"	Asphalt	2"-8" Gravel
-					8"-10'	Fill- Cinders, Gravel, Sand and Organic Silt	
-	2	2-4	5-4-4-6				
-							
-	3	4-6	6-8-5-3				
5							
-	4	6-8	3-3-2-1				
-							
-	5	8-10	2-2-2-2				
-							
10	6	10-12	2-7-10-19	SM-GM	10'-13'7"	Grayish Brown Fine to Coarse Sand and Gravel little Silt (moist, medium dense)	
-							
-							
-	7	13'6"	100/1"		13'7"	Possible Rock (Palisades Diabase)	
-							
15							
-							
-							
-							
-							
20							
-							
-							
-							
-							
25							
-							
-							
-							
-							
30							
-							
-							
-							
-							
35							

Remarks: Boring 2 refusal at 13'7" on 9/1/2017

Client: PF Associates, LLC — [X] Hollow Stem Auger

Site: 152 Ogden Avenue, Jersey City, NJ — [ ] Portable

Driller: RV Drilling — [ ] Mud Rotary

PLATE 3B

JOHNSON SOILS COMPANY

LOG OF BORING
B-3

Sheet 1 of 1
JSC #17-428
Completed: 9/1/17
Water Level: Dry

Depth (Feet)	Sample #	Depth (Feet)	Sample/Spoon Blows/6"	Symbol USCS	Depth	Description
0	1	4"-2	--3-43-34		0-1"	Asphalt
-					1"-4"	Gravel
-	2	2-4	10-9-10-3		4"-8'	Fill- Gravel, Sand, Organic Silt
-						
-	3	4-6	4-3-2-17			
5						
-	4	6-8	3-3-3-9			
-						
-	5	8-10	100/1"		8'	Possible Rock (Palisades Diabase)
-						
10						
-						
-						
-						
-						
15						
-						
-						
-						
-						
20						
-						
-						
-						
-						
25						
-						
-						
-						
-						
30						
-						
-						
-						
-						
35						

Remarks: Boring 3 refusal at 8'1" on 9/1/2017

Client: PF Associates, LLC

Site: 152 Ogden Avenue, Jersey City,

Driller: RV Drilling

X	Hollow Stem Auger
	Portable
	Mud Rotary

PLATE 3C

JOHNSON SOILS COMPANY

LOG OF BORING
B-4

Sheet 1 of 1
JSC #17-428
Completed: 9/1/17
Water Level: Dry

Depth (Feet)	Sample #	Depth (Feet)	Sample/Spoon Blows/6"	Symbol USCS	Depth	Description
0	1	3"-2	10-35-11-24		0-3"	Gravel
-					3"-4'	Fill- Sand and Organic Silt
-	2	2-4	4-4-5-4			
-						
-	3	4-6	5-5-8-11		4'-10'1"	Yellow Brown Fine to Medium Sand, little Silt, little Gravel
5						(moist, medium dense)
-	4	6-8	10-9-10-12	SP		- grading to dense @ 6'
-						
-	5	8-10	10-11-12-16			
-						
10	6	10-12	100/1"		10'1"	Possible Rock (Palisades Diabase)
-						
-						
-						
-						
15						
-						
-						
-						
-						
20						
-						
-						
-						
-						
25						
-						
-						
-						
-						
30						
-						
-						
-						
-						
35						

Remarks: Boring 4 refusal at 10'1" on 9/1/2017

Client: PF Associates, LLC — [X] Hollow Stem Auger

Site: 152 Ogden Avenue, Jersey City, NJ — [ ] Portable

Driller: RV Drilling — [ ] Mud Rotary

PLATE 3D

JOHNSON SOILS COMPANY

LOG OF BORING
B-5

Sheet 1 of 1
JSC #17-428
Completed: 9/1/17
Water Level: Dry

Depth (Feet)	Sample #	Depth (Feet)	Sample/Spoon Blows/6"	Symbol USCS	Depth	Description
0	1	9"-2	--5-6		0-2"	Asphalt
-					2"-9"	Gravel
-	2	2-4	11-18-13-10		9"-3'	Fill- Sand, Gravel, Wood, Organic Silt
-				SP	3'-10'1 1/2"	Brown Fine to Medium Sand, little Silt and Gravel (moist, dense)
-	3	4-6	11-11-11-13			
5						
-	4	6-8	7-7-10-8			
-						
-	5	8-10	10-14-16-18			
-						
10	6	10-12	100/1 1/2"			
-					10' 1 1/2"	Possible Rock (Palisades Diabase)
-						
-						
-						
15						
-						
-						
-						
-						
20						
-						
-						
-						
-						
25						
-						
-						
-						
-						
30						
-						
-						
-						
-						
35						

Remarks: Boring 5 refusal at 10' 1 1/2" on 9/1/2017

Client: PF Associates, LLC — [X] Hollow Stem Auger

Site: 152 Ogden Avenue, Jersey City, NJ — [ ] Portable

Driller: RV Drilling — [ ] Mud Rotary

PLATE 3E

JOHNSON SOILS COMPANY

66 Glen Avenue
Glen Rock, NJ 07452
Telephone: 201-301-1045
Fax: 201-857-8002
Email: johnsonsoils@gmail.com

UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COURSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COURSE FRACTION PASSING NO.4 SIEVE	CLEAN SAND (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY-SANDS LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, GRAVELLY SANDS LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDS CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

GRADUATION*

% FINER BY WEIGHT

TRACE.....0% TO 10%
LITTLE.....10% TO 20%
SOME.....20% TO 35%
AND.....35% TO 50%

VALUES ARE FROM LABORATORY OR FIELD TEST DATA WHERE APPLICABLE WHEN NO TESTING WAS PERFORMED, VALUES ARE ESTIMATED.

COMPACTNESS*
SAND AND/OR GRAVEL

RELATIVE DENSITY

LOOSE.....0% TO 40%
MEDIUM DENSE.....40% TO 70%
DENSE.....70% TO 90%
VERY DENSE.....90% TO 100%

CONSISTENCY*
CLAY AND/OR SILT

RANGE OF SHEARING STRENGTH
IN POUND PER SQUARE FOOT

VERY SOFT.....LESS THAN 250
SOFT..... 250 TO 500
MEDIUM.....500 TO 1000
STIFF.....1000 TO 2000
VERY STIFF.....2000 TO 4000
HARD.....GREATER THAN 4000

PLATE -4