

REPORT OF GEOTECHNICAL INVESTIGATION

**PROPOSED McDONALD'S RESTAURANT REBUILD #29-0019
4295 & 4299 U.S. ROUTE 130
EDGEWATER PARK, BURLINGTON COUNTY, NEW JERSEY**

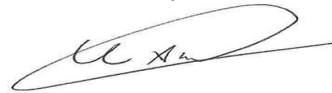


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**Whitestone Project No.: GP1111577.001
February 14, 2020**

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McDONALD'S USA, LLC
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Attention: Jonathan M. Baske, P.E., PMP
Area Construction Manager

**Regarding: REPORT OF GEOTECHNICAL INVESTIGATION &
PRELIMINARY STORMWATER MANAGEMENT AREA EVALUATION
PROPOSED McDONALD'S RESTAURANT REBUILD #29-0019
4295 & 4299 U.S. ROUTE 130
EDGEWATER PARK, BURLINGTON COUNTY, NEW JERSEY
WHITESTONE PROJECT NO.: GP1111577.001**

Dear Mr. Baske:

Whitestone Associates, Inc. is pleased to submit the attached *Report of Geotechnical Investigation* for the above-referenced project. The attached report presents the results of Whitestone's soils exploration efforts and presents recommendations for design of proposed foundations, floor slab, stormwater management facilities, pavements, and associated earthwork.

Whitestone's geotechnical division appreciates the opportunity to be of continued service to McDonald's USA, LLC. Please note that Whitestone has the capability to perform the additional geotechnical engineering services recommended herein. Please contact us at (215) 712-2700 with any questions regarding the enclosed report.

Sincerely,

WHITESTONE ASSOCIATES, INC.

Chase A. Weinhold
Associate Project Manager

Laurence W. Keller, P.E.
Principal, Geotechnical Services

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REPORT OF GEOTECHNICAL INVESTIGATION

Proposed McDonald's Restaurant Rebuild #29-0019

4295 & 4299 U.S. Route 130

Edgewater Park, Burlington County New Jersey

TABLE OF CONTENTS

SECTION 1.0	SUMMARY OF FINDINGS AND RECOMMENDATIONS.....	1
SECTION 2.0	INTRODUCTION	4
2.1	AUTHORIZATION.....	4
2.2	PURPOSE.....	4
2.3	SCOPE.....	4
2.3.1	Field Exploration	5
2.3.2	Laboratory Program.....	5
SECTION 3.0	SITE DESCRIPTION.....	7
3.1	LOCATION AND DESCRIPTION	7
3.2	EXISTING CONDITIONS.....	7
3.3	SITE BEDROCK GEOLOGY.....	8
3.4	PROPOSED CONSTRUCTION	8
SECTION 4.0	SUBSURFACE CONDITIONS.....	9
4.1	SUBSURFACE CONDITIONS	9
SECTION 5.0	CONCLUSIONS AND RECOMMENDATIONS.....	10
5.1	GENERAL.....	10
5.2	SITE PREPARATION AND EARTHWORK	10
5.3	STRUCTURAL FILL AND BACKFILL.....	12
5.4	GROUNDWATER CONTROL	13
5.5	FOUNDATIONS	14
5.6	FLOOR SLAB	15
5.7	PAVEMENT DESIGN CRITERIA.....	15
5.8	LATERAL EARTH PRESSURES.....	16
5.9	SEISMIC AND LIQUEFACTION CONSIDERATIONS	18
5.10	EXCAVATIONS	18
5.11	SUPPLEMENTAL POST INVESTIGATION SERVICES.....	18
5.12	PRELIMINARY STORMWATER MANAGEMENT AREA EVALUATION.....	19
SECTION 6.0	GENERAL COMMENTS.....	21

REPORT OF GEOTECHNICAL INVESTIGATION
Proposed McDonald's Restaurant Rebuild #29-0019
4295 & 4299 U.S. Route 130
Edgewater Park, Burlington County New Jersey

TABLE OF CONTENTS
(Continued)

FIGURES

FIGURE 1 Test Location Plan

APPENDICES

APPENDIX A Records of Subsurface Exploration
APPENDIX B Laboratory Test Results
APPENDIX C Supplemental Information (USCS, Terms and Symbols)
APPENDIX D Infiltration Test Results

SECTION 1.0

Summary of Findings and Recommendations

Whitestone Associates, Inc. (Whitestone) has performed an exploration and evaluation of the subsurface conditions on the site of the proposed McDonald's restaurant #29-0019 located at 4295 & 4299 U.S. Route 130 in the Township of Edgewater Park, Burlington County, New Jersey. The site of the proposed construction is shown on the *Test Location Plan* included as Figure 1.

At the time of the investigation, the northeastern portion of the property was undeveloped with vegetative cover and the southwestern portion of the subject property was developed with an operating McDonald's restaurant, associated paved parking/driveway areas, and a small brick/masonry dumpster corral located south of the proposed new restaurant. Based on a review of available historic aerial imagery, the northeastern portion of the property (and area of proposed redevelopment) was previously developed with residential dwellings, automotive repair facility, and gasoline station.

Based on the aforementioned April 12, 2018 (last revised June 6, 2019) *ALTA/NSPS Land Title Survey* prepared by Blue Marsh Associates, Inc. (BMA), the site generally is gently sloping with ground surface elevations ranging from approximately 31 feet adjacent in the northern portions of the site to 28 feet within southern/southwestern portions of the site. All elevations are referenced from the North American Vertical Datum (NAVD88).

Based on information shown on the October 19, 2017 (last revised December 2, 2019) *Concept Plan* prepared by Bohler Engineering PA, LLC (Bohler), the proposed site redevelopment includes demolition of the existing restaurant in the southwestern portion of the site and construction of an approximately 4,540-square feet McDonald's restaurant with associated new pavements, drive-thru facilities, and utilities including stormwater management (SWM) facilities in the northeastern portion of the site. The locations, types, and bottom elevations of the SWM facilities have not been determined as of the time of this report. Final grading was not determined as of the time of this report; however, Whitestone anticipates that the proposed building and pavements will be constructed at or near existing site elevations and will require minimal cuts and fills, excluding the proposed SWM facilities.

The subsurface exploration included performing a reconnaissance of the project site, drilling a total of 15 soil borings (identified as B-1 through B-15), performing four infiltration tests, and collecting soil samples for laboratory analysis. The soil borings are shown on the *Test Location Plan* included as Figure 1. *Records of Subsurface Exploration* are provided in Appendix A. The data from the exploration and analysis were analyzed by Whitestone in light of the project information provided by McDonald's USA, LLC (McDonald's) and Bohler.

A summary of Whitestone’s findings is presented in the following table and detailed descriptions of the subsurface conditions encountered are presented in Section 4.0.

Subsurface Profile	Description	Bottom of Stratum
<i>Surface Cover Materials</i>	Topsoil: 2.0 inches to 8.0 inches Pavement: 3.0 inches to 5.0 inches of asphalt with up to one inch of underlying granular subbase	0.33 to 0.67
<i>Existing Fill Materials</i>	Consisting of sand and silt mixtures with lesser amounts of gravel-size rock fragments. Mostly apparent re-worked site soils with some trace gravel-size brick, concrete, and fragments encountered in isolated areas.	2.0 to 9.0
<i>Coastal Plain Deposits</i>	Consisting of sand with varying amounts of silt (USCS: SP, SP-SM, and SM) with lesser amounts of gravel. Encountered in loose to medium dense relative density.	+20.0
<i>Groundwater</i>	Not encountered to the maximum exploration depth of 20 fbgs, corresponding to an approximate elevation of 9.5 feet.	+20.0

fbgs: feet below ground surface.

Recommendations developed upon consideration of these findings are summarized in the table below and presented in greater detail in the indicated sections of the report.

Geotechnical Consideration	Recommendation	Report Section
<i>Foundation System & Floor Slabs</i>	Shallow spread and continuous footings bearing on approved and recompacted existing fill materials, natural soils, and imported structural fill.	5.5
<i>Supplemental Evaluation of Existing Fill Materials</i>	The existing fill materials encountered within the soil borings preliminarily appear to be suitable for foundation and slab support. However, there is a potential risk of variability in the existing fill that may not be disclosed solely by soil borings. Therefore, the composition of the existing fill should be verified by visual observation and additional test pit excavations prior to, or during construction, to enable further assessment of the depth, possible presence or absence of voids, uncontrolled conditions, or possible additional deleterious materials.	5.11
<i>On-Site Soil Reuse</i>	The existing fill materials and natural materials will be suitable for selective reuse as structural fill/backfill material, provided that soil moisture contents are controlled within two percent of optimum moisture level. Immediate soil reuse should not be expected due to the material’s moisture sensitivity, especially if construction occurs during winter or early spring months.	5.3
<i>Demolition of Existing Building</i>	Demolition of the existing McDonald’s restaurant building should include complete removal of the floor slab, foundation walls, footings, and associated utilities. The resulting excavations (as well as basement levels) should be backfilled in a controlled manner using approved structural backfill materials.	5.2

Geotechnical Consideration	Recommendation	Report Section
<i>Groundwater Control</i>	Dewatering for construction primarily is anticipated to consist of removing surface water runoff, infiltrating water, or trapped water at this site with sump pits and pumps.	5.4
<i>Pavements</i>	The on-site soils will be suitable for support of the proposed pavements following compaction and proofroll inspections.	5.7
<i>Preliminary Stormwater Management</i>	The underlying granular site soils encountered throughout the site are suitable for infiltration. Final layout, locations, elevations, and size of SWM basins should be submitted to Whitestone to confirm recommendations presented herein. Additional testing may be required to satisfy local requirements.	5.12

SECTION 2.0

Introduction

2.1 AUTHORIZATION

Jonathan Baske, P.E., PMP of McDonald's issued authorization to Whitestone to perform a subsurface investigation on this site relevant to the construction of the proposed McDonald's Restaurant #29-0019 rebuild located at 4295 and 4299 U.S. Route 130 in Edgewater Park, Burlington County, New Jersey. The subsurface investigation was performed in general accordance with Whitestone's December 20, 2019 proposal to McDonald's.

2.2 PURPOSE

The purpose of this subsurface exploration and analysis was to:

- ▶ ascertain the various soil profile components at test locations;
- ▶ estimate the engineering characteristics of the proposed foundation bearing and subgrade materials;
- ▶ provide geotechnical criteria for use by the design engineers in preparing the foundation, slab, pavement, as well as SWM design;
- ▶ provide recommendations for required earthwork and subgrade preparation;
- ▶ record groundwater levels (if encountered) at the time of the investigation and discuss the potential impact on the proposed construction; and
- ▶ recommend additional investigation and/or analysis (if warranted).

2.3 SCOPE

The scope of the exploration and analysis included the subsurface exploration, field testing and sampling, laboratory analysis, and an engineering analysis and evaluation of the foundation materials. This *Report of Geotechnical Investigation* is limited to addressing the site conditions related to the physical support of the proposed construction. Any references to suspicious odors, materials, or conditions are provided strictly for the client's information.

In addition, a *Phase I Environmental Site Assessment* (Phase I ESA); *Survey for Asbestos Containing Materials* (ACM); and a *Limited Phase II Site Investigation* (Phase II SI) reports were prepared by Whitestone's environmental division and submitted under separate cover.

2.3.1 Field Exploration

Field exploration of the project site was conducted by means of 15 soil borings, identified as B-1 through B-15. The soil borings were advanced with a truck-mounted CME-55 drill rig equipped with hollow-stem augers. The explorations are shown on the *Test Location Plan* included as Figure 1. *Records of Subsurface Exploration* are provided in Appendix A. The test locations were based on the project information available at the time of the investigation including the October 19, 2017 (last revised December 2, 2019) *Concept Plan* prepared by Bohler. A summary of test locations with corresponding termination depths is presented in the following table:

SOIL BORING LOCATION SUMMARY		
Proposed Construction	Boring Location(s)	Termination Depth (fbgs)
McDonald's Restaurant Building	B-1 through B-4	20.0
Pavement Areas/Drive-Thru	B-5, B-7 through B-11	6.0 to 9.0
Proposed Trash Enclosure	B-6	11.0
Proposed Subsurface SWM Areas	B-12 through B-15	14.0

fbgs: feet below ground surface

The soil borings were conducted in the presence of a Whitestone engineer who performed field tests, recorded visual classifications, and collected samples of the various strata encountered. The test areas were located in the field using normal taping procedures and estimated right angles. These locations are presumed to be accurate within a few feet.

Soil borings and Standard Penetration Tests (SPTs) were conducted in general accordance with ASTM International (ASTM) designation D 1586. The SPT resistance value (N) can be used as an indicator of the consistency of fine-grained soils and the relative density of coarse-grained soils. The N-value for various soil types can be correlated with the engineering behavior of earthworks and foundations.

Groundwater level observations, where encountered, were recorded during and immediately after the completion of field operations prior to backfilling the borings. Groundwater elevations derived from sources other than seasonally observed groundwater monitor wells may not be representative of true groundwater levels.

2.3.2 Laboratory Program

In addition to the field investigation, a laboratory program was conducted to determine additional, pertinent engineering characteristics of representative samples of on-site soils. The laboratory program was performed in general accordance with applicable ASTM standard test methods and included physical testing of proposed building foundation bearing and pavement subgrade stratum.

Physical/Textural Analyses: Representative samples of selected strata encountered were subjected to a laboratory program that included Atterberg limits determinations (ASTM D-4318), moisture content determinations (ASTM D-2216) and washed gradation analyses (ASTM D-422) in order to perform supplementary engineering soil classifications in general accordance with ASTM D-2487. The soil strata tested were classified by the Unified Soil Classification System (USCS) and results of the laboratory testing are summarized in the following table. Quantitative test results are provided in Appendix B.

PHYSICAL/TEXTURAL ANALYSES SUMMARY							
Boring No.	Sample	Depth (fbgs)	% Passing No. 200 Sieve	Moisture Content (%)	Liquid Limit	Plastic Index	USCS Classification
B-2	S-5	8.0 to 10.0	21.3	18.9	Non-Plastic		SM
B-4	S-2	3.0 to 5.0	13.5	5.6	Non-Plastic		SM (Fill)
B-12	S-3	6.0 to 8.0	1.8	1.5	Non-Plastic		SP

fbgs: feet below ground surface

The engineering classifications are useful when considered in conjunction with the additional site data to estimate properties of the soil types encountered and to predict the soil's behavior under construction and service loads.

SECTION 3.0 Site Description

3.1 LOCATION AND DESCRIPTION

The subject site is a rectangular-shaped parcel located in the eastern quadrant of the intersection of U.S. Route 130 and Cooper Street in Edgewater Park, Burlington County, New Jersey. Specifically, the site is located at 4295 and 4299 U.S. Route 130. The site is bound by Cooper Street, followed by retail and restaurant development to the north; by U.S. Route 130, followed by retail development to the east; by an automotive wash facility and U.S. Route 130, followed by retail development to the south; and warehouse development to the west.

3.2 EXISTING CONDITIONS

Surface Cover/Development: At the time of the investigation, the subject property was undeveloped in the northeastern portion of the site (areas of the proposed new building) and the southwestern portion of the property was developed with an active McDonald's restaurant and associated paved parking/driveway areas and a detached masonry dumpster corral. In addition, the existing McDonald's building has a partial basement level.

Previous Site Development: Based on a review of available historical aerial imagery dating back to 1931, the site was mostly undeveloped and likely utilized for agricultural purposes with an apparent residential property located in the northeastern portion of the site. The site remained relatively unchanged until sometime between 1953 and 1964, when the residential building was no longer apparent and the existing McDonald's restaurant building in the southwestern portion of the site and an automotive repair facility in the eastern/central portion of the site were apparent. Sometime in between 1989 and 1991, the automotive repair facility was no longer apparent, and a gasoline station was constructed in the northeastern portion of the site. The site remained relatively unchanged from 1991 to 2016 until the underground storage tank (UST) field was removed. The remnant canopy structure was removed sometime in between 2016 and 2019.

Topography: Based on the aforementioned April 12, 2018 (last revised June 6, 2019) *ALTA/NSPS Land Title Survey* prepared by Blue Marsh Associates, Inc. (BMA), the site generally is gently sloping with ground surface elevations ranging from approximately 31 feet adjacent in the northern portions of the site to 28 feet within southern/southwestern portions of the site. All elevations are referenced from NAVD88.

Utilities: The existing McDonald's restaurant reportedly is serviced by natural gas, water, sanitary sewer, communications, and electric. In addition, aboveground and underground utilities traverse the perimeter

of the site along U.S. Route 130 and Cooper Street. The utility information contained in this report is presented for general discussion only and is not intended for construction purposes.

Site Drainage: Surface runoff consists of sheet flow across the existing ground surface and generally appears to flow from the north to the south.

3.3 SITE BEDROCK GEOLOGY

The *Bedrock Geology Map of New Jersey*, prepared by the New Jersey Department of Environmental Protection, Bureau of Topographic and Geologic Survey, indicates that the subject property is located within the Atlantic Coastal Plain Physiographic Province of New Jersey. Specifically, the area is underlain by southeastward dipping, marine and fluvial clay, silt, sand, and gravel of late Cretaceous and Tertiary age identified as the Magothy Formation, which typically is comprised of fine to coarse grained sands interbedded with thin-bedded clay or clayey silt.

The subsurface conditions encountered at the site were generally consistent with the mapped geology. Overburden materials include existing fill materials likely associated with previous and current site development.

3.4 PROPOSED CONSTRUCTION

Based on the aforementioned October 19, 2017 (last revised December 2, 2019) *Concept Plan* prepared by Bohler, the proposed site redevelopment includes demolition of the existing McDonald's restaurant (located southwest of the proposed building) and construction of an approximately 4,540-square foot McDonald's restaurant building including tandem drive-thru facilities, detached trash enclosure, new pavements, and subsurface SWM facilities. Proposed grading was not determined at the time of this report; however, Whitestone assumes a maximum of two feet of earth cuts and fill required to attain final subgrade. No new earth retaining walls are identified on the *Concept Plan*.

Maximum design loads for the proposed restaurant building are expected to be less than 70 kips for columns, 4.0 kips per linear foot for walls, and 125 pounds per square foot for slabs.

The scope of Whitestone's investigation and the professional advice contained in this report were generated based on the project details and loading noted herein. Any revisions or additions to the design details enumerated in this report should be brought to the attention of Whitestone for additional evaluation as warranted.

SECTION 4.0 Subsurface Conditions

Details of the subsurface materials encountered are presented on the *Records of Subsurface Exploration* presented in Appendix A of this report. The subsurface soil conditions encountered in the test locations consisted of the following generalized strata in order of increasing depth.

4.1 SUBSURFACE CONDITIONS

Surface Cover Materials: The majority of the test locations were performed within existing vegetated areas and disclosed approximately two inches to eight inches of topsoil with an average thickness of four inches. Borings performed within existing paved areas encountered approximately three inches to five inches of asphalt with up to one inch of underlying gravel subbase material.

Existing Fill Materials: Underlying the surficial cover materials, a majority of the test borings encountered existing fill materials extending to depths ranging from approximately two fbgs to nine fbgs that consisted predominantly of sand and silt mixtures (USCS: SM, SP-SM) with lesser amounts of gravel. Locations B-9, B-14, and B-15 encountered up to 10 percent gravel-size concrete and brick fragments, otherwise, the compositions of the majority of the existing fill materials generally were consistent with on-site natural soils. The existing fill materials were encountered in a loose to medium dense relative density.

Coastal Plain Deposits: Underlying the existing fill materials, the test borings encountered natural coast plain deposit soils consisting of sand with varying amounts of silt and gravel (USCS: SM, SP-SM, and SP). The coastal plain deposit soils extended through the maximum termination depths ranging between approximately six fbgs and 20.0 fbgs. SPT N-values recorded in the coastal plain deposit soils ranged from four blows per foot (bpf) to 34 bpf, generally indicating a loose to dense relative density.

Groundwater: Static groundwater was not encountered to the maximum exploration depth of 20 fbgs, corresponding to an approximate elevation of 9.5 feet NAVD88. Perched water was encountered at various locations and depths throughout the site at the confluence of existing fill materials and natural soils, as well as above dense soil strata. Static and perched/trapped water conditions are expected to fluctuate seasonally and following periods of precipitation.

SECTION 5.0

Conclusions and Recommendations

5.1 GENERAL

Based on the conditions disclosed by the test borings performed as part of this investigation, Whitestone anticipates that proposed foundations, floor slab, and pavements may be supported on properly prepared, inspected, and approved existing fill materials, natural soils, and/or properly placed structural fill and backfill used to raise grades provided these materials are properly evaluated compacted and proof rolled as recommended herein. Areas requiring overexcavation and replacement may be required due to moisture sensitivity and inherent variability of existing fill materials.

Whitestone anticipates that a majority of the existing fill materials and natural site soils will be suitable for selective reuse as structural fill/backfill during warm, dry conditions provided that soil moisture contents are controlled within two percent of optimum moisture level and the existing fill is further evaluated during construction as recommended herein.

Based on the aforementioned *Concept Plan*, the new McDonald's restaurant building will be completely outside of the existing McDonald's footprint, however this report includes recommendations for proper demolition and earthwork associated with the existing restaurant pad.

5.2 SITE PREPARATION AND EARTHWORK

Surface Cover Stripping and Demolition: Prior to stripping operations, all utilities should be identified and secured. The existing pavements to be removed should be stripped at least five feet beyond the limits of the proposed development. Existing structural elements such as foundation walls, footings, or slabs should be removed entirely from below proposed foundations and their zones of influence (as determined by lines extending at least one foot laterally beyond footing edges for each vertical foot of depth) and excavated to at least two feet below proposed construction subgrade levels elsewhere. Foundations may remain in place below these depths beneath proposed pavements and landscaped areas, provided they do not interfere with future construction. The resulting excavations and former basement areas should be backfilled in accordance with the recommendations of Section 5.3. Any surficial vegetation should be completely stripped and removed within and at least five feet beyond the limits of the proposed construction. The demolition contractor should be required to perform all site work in accordance with the recommendations in this report including backfilling any resulting excavations with structural fill.

Surface Preparation/Proofrolling: Prior to placing any backfill or subbase materials to raise or restore grades to the desired slab or pavement subgrade elevations, the exposed soils should be compacted to a firm

and unyielding surface with a minimum of two passes in two perpendicular directions of a minimum 10-ton, smooth drum roller operated in static mode. The surface should be proofrolled with a loaded tandem axle truck in the presence of the geotechnical engineer to help identify soft or loose pockets that may require removal and replacement or further investigation. Because the upper site soils contain an appreciable amount of moisture-sensitive fines, proofrolling should be conducted after a suitable period of dry weather to avoid degrading an otherwise acceptable subgrade. Any fill or backfill should be placed and compacted in accordance with Section 5.3.

Weather Performance Criteria: Every effort must be made to maintain drainage of surface water runoff away from construction areas by grading and limiting the exposure of excavations and prepared subgrades to rainfall. Accordingly, excavation and fill placement procedures should be performed during favorable weather conditions. Overexcavation of saturated soils and replacement with controlled structural fill per Section 5.3 of this report may be required prior to resuming work on disturbed subgrade soils.

On-Site Soil Protection and Maintenance: The site soils are moisture sensitive and will degrade when exposed to inclement weather, freeze-thaw cycles, or repeated construction traffic. However, if properly protected and maintained as recommended herein, the site soils will provide adequate support for the proposed construction. The site contractors should employ appropriate means and methods to protect the subgrade including, but not limited to the following:

- ▶ leaving existing pavements in-place as long as practical to help minimize subgrade exposure to inclement weather;
- ▶ sealing exposed subgrade soils on a daily basis with a vibratory smooth drum roller;
- ▶ regrading the site as needed to maintain positive drainage away from open earthwork construction areas and to prevent standing water;
- ▶ removing wet surficial soils immediately; and
- ▶ limiting exposure to construction traffic and precipitation especially following inclement weather and subgrade thawing.

Pavement Subgrade Stabilization and Inspection: The moisture sensitive site soils will degrade when exposed to inclement weather and/or heavy construction traffic and will require either extensive drying time or overexcavation and replacement in order to provide a suitable subgrade for pavements. Overexcavation of unstable soils (existing fill materials or natural site soils) within pavement areas typically should be limited to approximately 1.5 feet below planned subgrade unless directed otherwise by the owner's geotechnical engineer, provided that a reinforcing geogrid approved by the owner's geotechnical engineer is used. Alternatively, unstable materials may be completely overexcavated and either aerated and recompacted or replaced with imported structural fill per Section 5.3. However, this option is likely least economical.

Geogrids typically are economical when proposed undercut depths exceed approximately 16 inches. The geogrid (Tensar TriAx TX130S, or similar) should be placed directly on the exposed subgrade and backfill should consist of a well-graded gravel and sand blend. The services of the geotechnical engineer should be retained to inspect soil conditions during construction and to provide specific recommendations for stabilizing subgrades. Additionally, a geotechnical engineer should be retained to verify the suitability of prepared foundation, floor slab and pavement subgrades for support of design loads.

5.3 STRUCTURAL FILL AND BACKFILL

Imported Fill Material: Any imported material placed as structural fill or backfill to raise elevations or restore design grades should consist of clean, relatively well-graded sand or gravel with a maximum particle size of two inches and five percent to 15 percent of material finer than a #200 sieve. Silts, clays, and silty or clayey sands and gravels with higher percentage of fines and with a liquid limit less than 40 and a plasticity index less than 20 may be considered subject to the owner's approval, provided that the required moisture content and compaction controls are met during favorable weather conditions. The material should be free of clay lumps, organics, and deleterious material. Imported structural fill material should be approved by a qualified geotechnical engineer prior to delivery to the site.

On-Site Materials: Whitestone anticipates that majority of the existing fill materials and natural soils will be suitable for selective reuse as structural fill/backfill material provided that soil moisture contents are controlled within two percent of optimum moisture level and free of clay lumps, organics, and deleterious material. Immediate soil reuse of the upper soils should not be anticipated due to moisture sensitivity, especially if construction occurs during wet periods such as winter or early spring months. Where existing fill materials are not suitable for immediate reuse as structural fill or backfill, these materials may require off-site disposal at a regulated environmental facility. Reuse of any existing fill materials will be contingent on careful inspection in the field by the owner's geotechnical engineer by visual observation performed during construction in accordance with Section 5.11 of this report.

The on-site materials will become increasingly difficult to re-use and compact when wetted beyond the optimum moisture content. On-site materials placed as fill should be sealed on a daily basis using a smooth drum roller to promote drainage and prevent ponding of stormwater. Materials that are or become exceedingly wet will likely require discing and aerating. Alternatively, imported fill materials may be used to attain the desired grades and expedite earthwork operations during wet weather periods. The contractor should cover stockpiled soils, seal subgrades, and provide proper surface drainage prior to forecasted wet weather.

Demolition Material: Demolition material, free of environmental restrictions, may be used as fill material provided the material is properly processed as recommended herein. Concrete and masonry materials should be crushed to a well graded blend with a maximum size of 1.5 inches in diameter. Stripped asphaltic materials and deleterious building materials such as wood, insulation, metal, roofing shingles etc. should

not be used as structural fill material. Milled or recycled asphalt pavement (RAP) may be re-used as granular base for proposed pavements provided that the RAP particle size meets the New Jersey Department of Transportation (NJDOT) standard specifications for granular base and no more than 50 percent of the pavement granular base contains RAP.

Compaction and Placement Requirements: On-site soils and imported materials used as fill or backfill should be placed in maximum nine-inch loose lifts and compacted using a 10-ton smooth drum vibratory drum roller for granular soils. The smooth drum roller can be operated in static mode for more fine-grained soils during mass grading activities. A small walk-behind roller or hand-held vibratory compactor within excavations. All structural fill and backfill should be compacted to at least 95 percent of the maximum dry density within two percent of the optimum moisture content as determined by ASTM D 1557 (Modified Proctor). Fill and backfill placed within non-structural areas may be compacted to at least 92 percent of the maximum dry density within three percent of optimum moisture content as determined by ASTM D 1557 (Modified Proctor).

Structural Fill Testing: A sample of the imported fill material or any on-site material proposed for reuse as structural fill or backfill should be submitted to the geotechnical engineer for analysis and approval at least one week prior to its use. The placement of all fill and backfill should be monitored by a qualified engineering technician to ensure that the specified material and lift thicknesses are properly installed. A sufficient number of in-place density tests should be performed to ensure that the specified compaction is achieved throughout the height of the fill or backfill.

5.4 GROUNDWATER CONTROL

Static groundwater was not encountered to the maximum exploration depth of 20 fbs and thus is expected to be deeper than anticipated excavation depths and overexcavation depths for foundations as well as for typical utilities. However, perched/trapped water may be encountered within fill strata and natural soils. As such, Whitestone anticipates that construction phase dewatering will consist of removing surface water runoff, trapped, or perched water at this site. Minor dewatering of surface runoff, infiltrating water or trapped water typically may be controlled by providing a sufficient number of sump pumps at the base of the excavations. Since excessive amounts of perched groundwater may accumulate during periods of wet weather, Whitestone recommends that foundation construction occur during periods of relatively dry weather.

Because the site soils will degrade when exposed to water, every effort must be made to maintain drainage of surface water runoff away from construction areas by grading and limiting the exposure of excavations to precipitation.

5.5 FOUNDATIONS

Shallow Foundation Design Criteria: Whitestone recommends supporting the proposed building and appurtenances on conventional shallow spread and continuous footings designed to bear within approved existing/recompacted fill materials, natural soils, and/or structural fill materials provided these materials are properly evaluated, placed, and compacted in accordance with Sections 5.2, 5.3, and 5.11 of this report. Foundations bearing within these materials may be designed using a maximum allowable net bearing pressure of 3,000 pounds per square foot.

All footing bottoms should be improved by in-trench compaction in the presence of the geotechnical engineer. Regardless of loading conditions, proposed foundations should be sized no less than minimum dimensions of 24 inches for continuous wall footings and 36 inches for isolated column footings. Due to the variability of the on-site soils, localized areas of existing unsuitable fill material or natural soils may require overexcavation and replacement in controlled lifts. The overexcavations should be backfilled in accordance with Sections 5.2 and 5.3.

Footings should be designed so that the maximum toe pressure due to the combined effect of vertical loads and overturning moment does not exceed the recommended maximum allowable net bearing pressure. In addition, positive contact pressure should be maintained throughout the base of the footings such that no uplift or tension exists between the base of the footings and the supporting soil. Uplift loads should be resisted by the weight of the concrete. Side friction should be neglected when proportioning the footings so that lateral resistance should be provided by friction resistance at the base of the footings. An allowable coefficient of friction against sliding of 0.30 is recommended for use in the design of the foundations bearing within the on-site soils or imported structural backfill.

Inspection Criteria: Whitestone recommends that the suitability of the bearing soils along exposed overexcavation bottoms be verified by the geotechnical engineer prior to reinforcing steel placement. In the event that isolated areas of unsuitable materials are encountered in excavations, overexcavation and replacement of such materials will be necessary to provide a suitable footing subgrade.

Settlement: Whitestone estimates post construction settlements of new building foundations will be on the order of less than one inch if the recommendations outlined in this report are properly implemented. Differential settlement between individual footings should be less than one-half inch.

Frost Coverage Depths: Footings subject to frost action should be placed at least 30 inches below adjacent grades or as required by local building codes to provide protection from frost penetration. Interior footing not subject to frost action may be placed at a minimum depth of 18 inches below the slab subgrade.

5.6 FLOOR SLAB

Whitestone anticipates that properly evaluated and approved site soils or imported materials will provide suitable support for the floor slab. The exposed subgrade should be inspected and compacted in accordance with Sections 5.2, 5.3, and 5.11 of this report. Any areas that become softened or disturbed as a result of wetting and/or repeated exposure to construction traffic or contain objectionable materials should be removed and replaced with compacted structural fill. The properly prepared site soils and structural fill/backfill materials are expected to yield a minimum subgrade modulus (k) of 150 psi/in.

A minimum four inch layer of three-quarter inch crushed stone (AASHTO No. 57 stone or similar) should be installed below the floor slab to provide a uniform subgrade and capillary break. A moisture vapor barrier should be placed beneath the floor slab where recommended by the flooring manufacturer.

5.7 PAVEMENT DESIGN CRITERIA

General: Whitestone anticipates that the majority of the site soils and/or compacted structural fill/backfill placed to raise or restore design elevations will be suitable for support of the proposed pavements provided these materials are properly evaluated, compacted, and proofrolled in accordance with Sections 5.2, 5.3, and 5.11 of this report during favorable weather conditions. Subgrade stabilization with a triaxial geogrid, approved by the owner's geotechnical engineer, may be used to minimize depths of overexcavation as discussed further in Section 5.2. Any areas that become softened or disturbed as a result of wetting and/or repeated exposure to construction traffic should be removed and replaced with compacted structural fill.

Design Criteria: A California Bearing Ratio value of 5.0 has been assigned to the properly prepared subgrade soils for pavement design purposes. This value was correlated with pertinent soil support values and assumed traffic loads to prepare flexible and rigid pavement designs per the AASHTO *Guide for the Design of Pavement Structures*.

Design traffic loads were estimated based on Whitestone's past experience with similar projects and correlated with 18-kip equivalent single axle loads (ESAL) for a 20-year life. An estimated maximum pavement load of 35,000 ESALs was used for the proposed standard duty pavement areas. This value assumes the pavements primarily will accommodate automobile traffic with limited heavier truck traffic. Actual loading is anticipated to be less than this value.

Pavement Section: The recommended flexible pavement section is presented below in tabular format:

FLEXIBLE PAVEMENT SECTION DESIGN		
Layer	Material	Thickness (Inches)
Asphalt Surface	NJDOT Superpave 9.5 mm (PG 64-22)	1.5

FLEXIBLE PAVEMENT SECTION DESIGN		
Layer	Material	Thickness (Inches)
Asphalt Base	NJDOT Superpave 19.0 mm (PG 64-22)	3.0
Granular Subbase	NJDOT Dense-Graded Aggregate	6.0

A rigid concrete pavement should be used to provide suitable support at areas of high traffic or severe turns (such as loading areas, driveway aprons, and garbage dumpster aprons). The recommended rigid pavement is presented below in tabular format:

RIGID PAVEMENT SECTION DESIGN		
Layer	Material	Thickness (Inches)
Surface	4,000 psi Air-Entrained Concrete	6.0
Base	NJDOT 2A Stone	8.0

Additional Design Considerations: The pavement section thickness designs presented in this report are based on the design parameters detailed herein and are contingent on proper construction, inspection, and maintenance. Additional pavement thickness may be required by local code. The designs are contingent on achieving the minimum soil support value in the field. To accomplish this requirement, all subgrade soil and supporting fill or backfill must be properly evaluated, placed, and prepared as detailed in Sections 5.2, 5.3, and 5.11 of this report. Proper drainage must be provided for the pavement structure including appropriate grading and surface water control, as well as measures to drain water from the subgrade.

The performance of the pavement also will depend on the quality of materials and workmanship. Whitestone recommends that NJDOT standards for materials, workmanship, and maintenance be applied to this site. Project specifications should include verifying that the installed asphaltic concrete material composition is within tolerance for the specified materials and that the percentage of air voids of the installed pavement is within specified ranges for the respective materials. All rigid concrete pavements should be suitably air-entrained, jointed, and reinforced.

5.8 LATERAL EARTH PRESSURES

No retaining walls were identified on the aforementioned *Concept Plan*. However, Whitestone anticipates that lateral earth pressure parameters may be required for design of new identification signs and menu boards. The following soil parameters apply to the site soils encountered and imported materials placed in a well-drained, level backfill condition and may be used for design:

LATERAL EARTH PRESSURE PARAMETERS		
Parameters	Site Soils	Imported Granular Fill Materials
Moist Density (γ_{moist})	135 pcf	140 pcf
Internal Friction Angle (ϕ)	26°	30°
Active Earth Pressure Coefficient (K_a)	0.39	0.33
Passive Earth Pressure Coefficient (K_p)	2.56	3.00
At-Rest Earth Pressure Coefficient (K_o)	0.56	0.50

Lateral earth pressure will depend on the slope angle of construction phase grades and subgrades. The effect of other surcharges also will need to be included in earth pressure calculations, possibly including the loads imposed by adjacent traffic. Whitestone would be pleased to assist with the calculation of lateral earth pressures based on the soil parameters presented herein, if necessary. The effects of sloped backfill, surface grades, and proposed slopes beyond the toe of the retaining structures, if applicable, must be considered when calculating resultant forces to be resisted by the retaining structures. Below-grade wall footings should be designed so that the combined effect of vertical and horizontal resultants and overturning moment does not exceed the maximum soil bearing capacity provided in Section 5.5.

Acceptable backfill should be approved by the owner's geotechnical engineer and should be placed in maximum nine-inch loose lifts and compacted to 95 percent of the maximum dry density within two percent of the optimum moisture content, as determined by ASTM D 1557 (Modified Proctor). The maximum densities outlined in the table above should not be exceeded in order to avoid creating excessive lateral pressure on the walls during compaction operations.

Whitestone recommends that backfill directly behind the walls be compacted with light, hand-held compactors. Heavy compactors and grading equipment should not be allowed to operate within a zone measured at a 45-degree angle from the base of the walls during backfilling to avoid developing excessive temporary or long-term lateral soil pressures.

Resistance to sliding should be provided by friction resistance at the base of the wall foundation. For mass concrete on existing site soils or imported structural fill materials, an allowable coefficient of friction against sliding of 0.30 should be used in the design of the below-grade walls. Passive earth pressures at the toe of any proposed below-grade walls should be neglected in the design.

Whitestone should be notified if any other retaining structures or design considerations requiring lateral earth pressure estimations are proposed. Specific recommendations for temporary retaining structures are beyond Whitestone's scope of work.

5.9 SEISMIC AND LIQUEFACTION CONSIDERATIONS

The subsurface conditions are most consistent with a Site Class D as defined by the *2018 International Building Code – New Jersey Edition*. Based on the seismic zone and soil profile, liquefaction considerations are not expected to have a substantial impact on design. Based on the seismic zone and soil profile, liquefaction considerations are considered unlikely and not expected to have a substantial impact on design. The following spectral accelerations are recommended:

SEISMIC SITE PARAMETERS			
S _s	S ₁	F _a	F _v
0.206g	0.061g	1.600	2.400

5.10 EXCAVATIONS

Open Excavations: The existing fill materials and natural soils encountered during this investigation typically are, at a minimum, consistent with Type C Soil Conditions as defined by 29 CFR Part 1926 (OSHA) which require a maximum unbraced excavation angle of 1.5:1 (horizontal:vertical). Actual conditions encountered during construction should be evaluated by a competent person (as defined by OSHA) to ensure that safe excavation methods and/or shoring and bracing requirements are implemented.

5.11 SUPPLEMENTAL POST INVESTIGATION SERVICES

Final Grading Plan Review: The final site grading has not been completed at the time of this report. Whitestone should be provided a final grading plan to confirm the design recommendations provided herein.

Supplemental Existing Fill Evaluation: The existing fill materials encountered within the soil borings preliminarily appear to be suitable for foundation and slab support. However, there is a potential risk of variability in the existing fill that may not be disclosed solely by soil borings. Therefore, the composition of the existing fill should be verified by visual observation and additional test pit excavations prior to, or during construction, to enable further assessment of the depth, possible presence or absence of voids, uncontrolled conditions, or possible additional deleterious materials. These observations will need to be made by a qualified geotechnical engineer in order to identify the extent of overexcavation required versus areas which may remain. If unfavorable fill conditions are encountered during the test pit evaluation, Whitestone recommends overexcavation of the unsuitable materials in their entirety (where present) below foundation, floor slab and pavement areas and replacement with appropriate structural fill as defined in Section 5.3. The recommended supplemental and construction phase evaluation should include performing test pits and proofroll testing throughout the proposed building footprint in order to confirm or revise the recommendations herein prior to construction.

Demolition and Construction Inspection and Monitoring: The owner’s geotechnical engineer with specific knowledge of the subsurface conditions and design intent should perform inspection, testing, and consultation during construction as described in previous sections of this report. Monitoring and testing should also be performed to verify that the building is properly demolished, any encountered underground structures are properly removed and backfilled, the existing surface cover materials are properly removed, and suitable materials used for controlled fill are properly placed and compacted over suitable subgrade soils. In addition, inspection of structural backfill within the exiting basement should be witnessed and documented by the owner’s geotechnical engineer.

5.12 PRELIMINARY STORMWATER MANAGEMENT AREA EVALUATION

General: Four soil borings, identified as B-12 through B-15, were performed in the location of the anticipated SWM facilities provided by Bohler. The soil borings were terminated at an approximate depth of 14.0 fbs. The soils encountered at or below the approximate test elevations ranging between of 25 feet and 21.5 feet consisted of USDA soil types Sand and Loamy Sand. *Records of Subsurface Exploration* are included in Appendix A.

Estimated Seasonal High Groundwater Levels: The methods used in determining the seasonal high groundwater level include evaluating the soil morphology within a test excavation and identifying irregular spots or blotches of different colors or minerals unlike that of the surrounding soil (mottles). Indications of a seasonal high groundwater table within the area of the SWM basin were not encountered to the depths explored, corresponding to elevations ranging between approximately 14 feet and 15 feet, as referenced from NAVD88.

In-Situ Infiltration Rates: In-situ infiltration testing was performed in general accordance with the *New Jersey Stormwater Best Practices Manual* (NJBMP) utilizing cased borehole testing methodology. A summary of the individual infiltration test results are provided in the following table and detailed test results are included in Appendix D.

INFILTRATION TESTING SUMMARY			
Test Location No.	Approximate Test Elevation (feet NAVD88)	In-Situ Infiltration Test Results	
		USDA Classification at Test Elevation	Rate (in/hour)*
I-1 at B-13	22.5	Loamy Sand	1.8
I-2 at B-12	21.5	Loamy Sand	1.2
I-3 at B-15	21.5	Loamy Sand	1.2
I-4 at B-16	25.0	Loamy Sand	1.8

* Does Not Include Safety Factor

Preliminary Conclusions and Recommendations: The results of the infiltration testing indicated that the soils granular soils tested are conducive for SWM infiltration. Whitestone recommends a design rate of 0.6 inches per hour that includes an applicable safety factor of at least 2.0.

Design Considerations: Infiltration rates decrease over time and on-going maintenance, such as preventing the accumulation of sediment, should be performed to extend the capacity of the infiltration system. To satisfy the criterion presented in the NJBMP, additional testing may be necessary depending on the final layout and design of the infiltration facilities.

Construction Considerations: Construction of the SWM facilities should be witnessed by a geotechnical engineer that is familiar with the subsurface investigation and SWM design to ensure that any materials not suitable for infiltration have been properly removed from the bottom of the proposed SWM facility and that any imported backfill materials will not impede drainage. Due to variability in the field infiltration rates and at the discretion of the geotechnical engineer, the above recommended design infiltration rates may require verification by conducting in-situ infiltration testing at the bottom of the SWM facilities during construction.

During basin construction, compaction/densification of undisturbed soils underlying the proposed basin should be avoided. Contractors should use track-mounted equipment and excavators with toothed-buckets for basin construction. Conversely, rubber-tired equipment and excavators with smooth buckets should not be used. Additionally, contractors should avoid unnecessarily traversing the basin footprint with large/heavy equipment during basin construction to the extent possible.

SECTION 6.0

General Comments

Supplemental recommendations may be required upon finalization of construction plans or if significant changes are made in the characteristics or location of the proposed structure. Soil bearing conditions should be checked at the appropriate time for consistency with those conditions encountered during Whitestone's geotechnical investigation.

The recommendations presented herein should be utilized by a qualified engineer in preparing the project plans and specifications. The engineer should consider these recommendations as minimum physical standards which may be superseded by local and regional building codes and structural considerations. These recommendations are prepared for the sole use of McDonald's USA, LLC and Bohler Engineering PA, LLC for the specific project detailed and should not be used by any third party. These recommendations are relevant to the design phase and should not be substituted for construction specifications.

The possibility exists that conditions between borings may differ from those at specific boring locations, and conditions may not be as anticipated by the designers or contractors. In addition, the construction process may alter soil and rock conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered.

Whitestone assumes that a qualified contractor will be employed to perform the construction work, and that the contractor will be required to exercise care to ensure all excavations are performed in accordance with applicable regulations and good practice. Particular attention should be paid to avoiding damaging or undermining adjacent properties and maintaining slope stability.

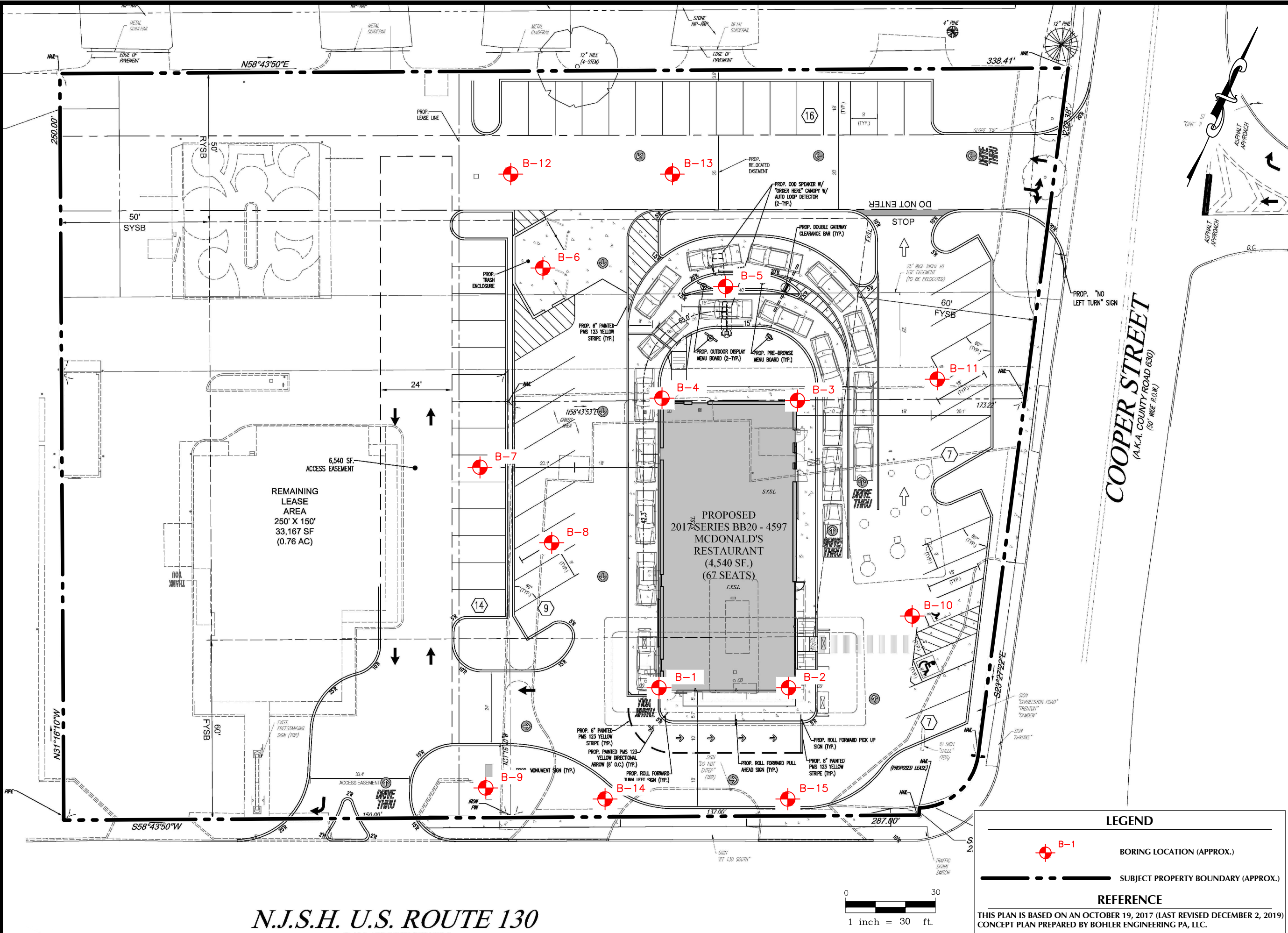
Whitestone recommends that the services of the geotechnical engineer be engaged to test and evaluate the soils in the footing excavations prior to concreting in order to determine that the soils will support the bearing capacities. Monitoring and testing also should be performed to verify that suitable materials are used for controlled fills and that they are properly placed and compacted over suitable subgrade soils.

The exploration and analysis of the foundation conditions reported herein are considered sufficient in detail and scope to form a reasonable basis for the foundation design. The recommendations submitted for the proposed construction are based on the available soil information and the design details furnished by Bohler Engineering PA, LLC. Deviations from the noted subsurface conditions encountered during construction should be brought to the attention of the geotechnical engineer.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been promulgated after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology. No other warranties are implied or expressed.

FIGURE 1
Test Location Plan

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N.J.S.H. U.S. ROUTE 130

COOPER STREET
(A.K.A. COUNTY ROAD 630)
(50' WIDE R.O.W.)

LEGEND

B-1 BORING LOCATION (APPROX.)

SUBJECT PROPERTY BOUNDARY (APPROX.)

REFERENCE

THIS PLAN IS BASED ON AN OCTOBER 19, 2017 (LAST REVISED DECEMBER 2, 2019) CONCEPT PLAN PREPARED BY BOHLER ENGINEERING PA, LLC.

WHITESTONE ASSOCIATES, INC.
Environmental & Geotechnical Engineers & Consultants
1600 MANOR DRIVE, SUITE 220, CHALFONT, PA 18914
215.712.2700 WHITESTONEASSOC.COM

DRAWING TITLE:
TEST LOCATION PLAN

CLIENT:
MCDONALD'S USA, LLC

PROJECT:
PROPOSED MCDONALD'S RESTAURANT REBUILD #29-0019
4295 & 4299 U.S. ROUTE 130
EDGEWATER PARK, BURLINGTON COUNTY, NJ

PROJECT #: GP1111577.001	
DESIGNED BY: GR	PROJ. MGR.: JMM
DATE: 2/13/20	FIGURE: 1
SCALE: 1" = 30'	

APPENDIX A
Records of Subsurface Exploration

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 29.5 feet	Date Started: 1/24/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 20.0 feet bgs	Date Completed: 1/24/2020	During: 6.5(P) 23.0 ▼	At Completion: 14.5 15.0 ☒
Proposed Location: Building Pad	Logged By: TJ	24 Hours: --- --- ▼	24 Hours: --- --- ☒
Drill / Test Method: HSA / SPT	Contractor: BW		
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
						0.0	TOPSOIL	4" Topsoil	
0 - 2	S-1	X	2 - 3 - 5 - 6	13	8	0.3	FILL	Dark Brown Sand with Gravel, Moist (FILL)	
2 - 4	S-2	X	5 - 4 - 3 - 2	16	7			As Above, Moist (FILL)	
4 - 6	S-3	X	3 - 3 - 4 - 5	20	7	4.0	COASTAL PLAIN DEPOSITS	Brown/Orange Silty Sand, Moist, Loose (SM)	
6 - 8	S-4	X	4 - 4 - 5 - 6	18	9			As Above, Moist to Wet, Loose (SM)	Perched Water 6.5 fbgs
8 - 10	S-5	X	5 - 5 - 6 - 6	23	11			As Above, Moist, Medium Dense (SM)	
13 - 15	S-6	X	5 - 6 - 8 - 8	22	14	10.0		Brown Poorly-Graded Sand with Silt, Moist, Medium Dense (SP-SM)	
18 - 20	S-7	X	8 - 12 - 14 - 18	23	26	15.0		As Above, with 10% Gravel, Moist, Medium Dense (SP-SM)	
						20.0		Boring Log B-1 Terminated at a Depth of 20.0 Feet Below Ground Surface	
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 29.5 feet	Date Started: 1/24/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 20.0 feet bgs	Date Completed: 1/24/2020	During: 5.5(P) 24.0	At Completion: 14.0 15.5
Proposed Location: Building Pad	Logged By: TJ	At Completion: NE ---	At Completion: 14.0 15.5
Drill / Test Method: HSA / SPT	Contractor: BW	24 Hours: --- ---	24 Hours: --- ---
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						0.0	TOPSOIL	3" Topsoil	
0 - 2	S-1	X	2 - 4 - 5 - 5	17	9	0.3	FILL	Brown Sand with Gravel, Moist (FILL)	
2 - 4	S-2	X	4 - 5 - 6 - 6	22	11	2.0	COASTAL PLAIN DEPOSITS	Brown/Orange Silty Sand, Moist, Medium Dense (SM)	
4 - 6	S-3	X	5 - 5 - 5 - 5	21	10	5.0		As Above, Moist to Wet, Medium Dense (SM)	Perched Water 5.5 fbgs to 6.0 fbgs
6 - 8	S-4	X	5 - 5 - 5 - 6	22	10	8.0		As Above, Moist, Medium Dense (SM)	
8 - 10	S-5	X	4 - 5 - 5 - 5	24	10	10.0		As Above, Moist to Wet, Medium Dense (SM)	Perched Water 9.0 fbgs to 10.0 fbgs
13 - 15	S-6	X	6 - 7 - 7 - 9	22	14	15.0		Brown/Orange Poorly-Graded Sand with Silt, Moist, Medium Dense (SP-SM)	
18 - 20	S-7	X	8 - 11 - 16 - 24	20	27	20.0		Brown Silty Sand, Moist, Medium Dense (SM)	
								Boring Log B-2 Terminated at a Depth of 20.0 Feet Below Ground Surface	

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 31.5 feet	Date Started: 1/24/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 20.0 feet bgs	Date Completed: 1/24/2020	During: NE --- ▾	At Completion: NE --- ▾
Proposed Location: Building Pad	Logged By: TJ	24 Hours: --- --- ▾	At Completion: 12.5 19.0 <input checked="" type="checkbox"/>
Drill / Test Method: HSA / SPT	Contractor: BW		24 Hours: --- --- <input checked="" type="checkbox"/>
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
						0.0	TOPSOIL	8" Topsoil	
0 - 2	S-1		2 - 6 - 11 - 12	24	17	0.7	FILL	Dark Brown Silty Sand with Gravel, Moist (FILL)	
2 - 4	S-2		7 - 8 - 8 - 7	24	16	2.0	COASTAL PLAIN DEPOSITS	Brown Poorly-Graded Sand with Silt and Gravel, Moist, Medium Dense (SP-SM)	
4 - 6	S-3		4 - 3 - 3 - 2	24	6	5.0		As Above, Moist, Loose (SP-SM)	
6 - 8	S-4		2 - 2 - 3 - 4	18	5	8.0		As Above, Moist, Loose (SP-SM)	
8 - 10	S-5		2 - 3 - 3 - 3	23	6	10.0		Dark Brown Silty Sand, Moist, Loose (SM)	
10 - 12	S-6		3 - 3 - 2 - 2	24	5	12.0		Brown/Orange Poorly-Graded Sand with Silt, Moist, loose (SP-SM)	
12 - 14	S-7		3 - 2 - 3 - 4	19	5	14.0		As Above, Moist, Loose (SP-SM)	
14 - 16	S-8		4 - 4 - 6 - 6	14	10	15.0		As Above, Moist, Medium Dense (SP-SM)	
16 - 18	S-9		5 - 5 - 6 - 6	16	11	17.0		As Above, with 15 % Gravel, Moist, Medium Dense (SP-SM)	
18 - 20	S-10		7 - 8 - 11 - 11	20	19	19.0		As Above, Moist to Wet, Medium Dense (SP-SM)	
						20.0		Boring Log B-3 Terminated at a Depth of 20.0 Feet Below Ground Surface	
						25.0			

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 30.5 feet	Date Started: 1/24/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 20.0 feet bgs	Date Completed: 1/24/2020	During: NE --- ▾	At Completion: NE --- ▾
Proposed Location: Building Pad	Logged By: TJ	24 Hours: --- --- ▾	At Completion: 15.0 15.5 <input checked="" type="checkbox"/>
Drill / Test Method: HSA / SPT	Contractor: BW		24 Hours: --- --- <input checked="" type="checkbox"/>
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
0 - 2	A	B	Environmental Sample	---	---	0.0	TOPSOIL	6" Asphalt, 1" Subbase	
1 - 3	S-1	X	8 - 9 - 12 - 14	18	21	0.7	FILL	Brown Silty Sand with Gravel, Moist (FILL)	
3 - 5	S-2	X	3 - 4 - 3 - 3	20	7	5.0		As Above, with Gravel, Moist (FILL)	
5 - 7	S-3	X	3 - 4 - 4 - 4	21	8	7.0		As Above, with Gravel, Moist (FILL)	
7 - 9	S-4	X	3 - 3 - 3 - 3	17	6	9.0		Brown Silty Sand, Moist (FILL)	
9 - 11	S-5	X	3 - 4 - 4 - 5	16	8	10.0	COASTAL PLAIN DEPOSITS	Orange/Brown Poorly-Graded Sand, Moist, Loose (SP)	
13 - 15	S-6	X	4 - 4 - 5 - 5	24	9	15.0		As Above, Moist, Loose (SP)	
18 - 20	S-7	X	16 - 7 - 11 - 14	24	18	20.0		As Above, Moist, Medium Dense (SP)	
						25.0		Boring Log B-4 Terminated at a Depth of 20.0 Feet Below Ground Surface	

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 29.5 feet	Date Started: 1/24/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 7.0 feet bgs	Date Completed: 1/24/2020	During: NE --- ▾	At Completion: 6.5 23.0 <input checked="" type="checkbox"/>
Proposed Location: Drive-Thru	Logged By: TJ	At Completion: NE --- ▾	24 Hours: --- --- <input checked="" type="checkbox"/>
Drill / Test Method: HSA / SPT	Contractor: BW	24 Hours: --- --- ▾	
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
						0.0			
						0.5	PAVEMENT	5" Asphalt, 1" Gravel Subbase	
							FILL		
1 - 3	S-1	X	3 - 4 - 4 - 5	16	8			Brown Sand with Gravel, Moist (FILL)	
3 - 5	S-2	X	5 - 6 - 7 - 6	24	13	4.0		As Above, Moist (FILL)	
						5.0	COASTAL PLAIN DEPOSITS	Brown Sand, Moist, Medium Dense (SP)	
5 - 7	S-3	X	5 - 4 - 4 - 4	21	8	7.0		As Above, Moist, Loose (SP)	
						7.0		Boring Log B-5 Terminated at a Depth of 7.0 Feet Below Ground Surface	
						10.0			
						15.0			
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 28.5 feet	Date Started: 1/24/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 11.0 feet bgs	Date Completed: 1/24/2020	During: NE --- ▾	At Completion: 7.0 21.5 <input checked="" type="checkbox"/>
Proposed Location: Trash Enclosure	Logged By: TJ	At Completion: NE --- ▾	24 Hours: --- --- <input checked="" type="checkbox"/>
Drill / Test Method: HSA / SPT	Contractor: BW	24 Hours: --- --- ▾	
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
						0.0	PAVEMENT	3" Asphalt, 1" Gravel Subbase	
						0.4	FILL		
1 - 3	S-1	X	3 - 3 - 4 - 4	24	7			Brown Sand, Moist (FILL)	
3 - 5	S-2	X	3 - 4 - 4 - 5	12	8			As Above, Moist (FILL)	
5 - 7	S-3	X	6 - 5 - 5 - 5	24	10	5.0	COASTAL PLAIN DEPOSITS	Brown/Orange Poorly-Graded Sand with Silt and Gravel, Moist, Medium Dense (SP-SM)	
7 - 9	S-4	X	4 - 4 - 5 - 6	24	9			As Above, Moist, Loose (SP-SM)	
9 - 11	S-5	X	6 - 7 - 9 - 12	22	16	10.0		As Above, Moist, Medium Dense (SP-SM)	
						11.0			Boring Log B-6 Terminated at a Depth of 11.0 Feet Below Ground Surface
						15.0			
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 30.0 feet	Date Started: 1/24/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 6.0 feet bgs	Date Completed: 1/24/2020	During: NE --- ▾	At Completion: 4.0 26.0 <input checked="" type="checkbox"/>
Proposed Location: Pavement	Logged By: TJ	At Completion: NE --- ▾	24 Hours: --- --- <input checked="" type="checkbox"/>
Drill / Test Method: HSA / SPT	Contractor: BW	24 Hours: --- --- ▾	
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						0.0	TOPSOIL	4" Topsoil	
0 - 2	S-1	X	2 - 3 - 4 - 6	16	7	0.3	FILL	Dark Brown Silty Sand with Gravel, Moist (FILL)	
2 - 4	S-2	X	5 - 5 - 6 - 6	20	11	4.0		As Above, Brown, Moist (FILL)	
4 - 6	S-3	X	5 - 5 - 4 - 4	24	9	5.0	COASTAL PLAIN DEPOSITS	Brown Silty Sand with 15% Rounded Gravel, Moist, Loose (SM)	
						6.0			Boring Log B-7 Terminated at a Depth of 6.0 Feet Below Ground Surface
						10.0			
						15.0			
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 30.0 feet	Date Started: 1/24/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 6.0 feet bgs	Date Completed: 1/24/2020	During: NE --- ▾	At Completion: DNC --- <input checked="" type="checkbox"/>
Proposed Location: Pavement	Logged By: TJ	At Completion: NE --- ▾	24 Hours: --- --- <input checked="" type="checkbox"/>
Drill / Test Method: HSA / SPT	Contractor: BW	24 Hours: --- --- ▾	24 Hours: --- --- <input checked="" type="checkbox"/>
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
						0.0	TOPSOIL	4" Topsoil	
0 - 2	S-1	X	3 - 5 - 6 - 7	11	11	0.3	FILL	Brown Sand with Gravel, Moist (FILL)	
2 - 4	S-2	X	4 - 4 - 3 - 3	20	7	2.0	COASTAL PLAIN DEPOSITS	Brown/Orange Poorly-Graded Sand with Silt and 10% Gravel, Moist, Loose (SP-SM)	
4 - 6	S-3	X	3 - 2 - 5 - 5	24	4	5.0		As Above, with 10% Rounded Gravel, Moist, Loose to Medium Dense (SP-SM)	
						6.0		Boring Log B-8 Terminated at a Depth of 6.0 Feet Below Ground Surface	
						10.0			
						15.0			
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 29.0 feet	Date Started: 1/24/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 6.0 feet bgs	Date Completed: 1/24/2020	During: NE --- ▾	At Completion: NE --- ▾
Proposed Location: Pavement	Logged By: TJ	24 Hours: --- --- ▾	At Completion: DNC --- <input checked="" type="checkbox"/>
Drill / Test Method: HSA / SPT	Contractor: BW		24 Hours: --- --- <input checked="" type="checkbox"/>
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						0.0	TOPSOIL	3" Topsoil	
0 - 2	S-1	X	3 - 4 - 5 - 7	12	9	0.3	FILL	Brown Silty Sand, with Gravel, Moist (FILL)	
2 - 4	S-2	X	6 - 6 - 6 - 7	20	12	4.0		As Above with 10% Gravel and Brick Fragments, Moist (FILL)	
4 - 6	S-3	X	9 - 11 - 10 - 10	24	21	5.0	COASTAL PLAIN DEPOSITS	Brown/Light Orange Silty Sand with 10% Gravel, Moist, Medium Dense (SM)	
						6.0		Boring Log B-9 Terminated at a Depth of 6.0 Feet Below Ground Surface	
						10.0			
						15.0			
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 30.0 feet	Date Started: 1/24/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 6.0 feet bgs	Date Completed: 1/24/2020	During: NE --- ▾	At Completion: NE --- ▾
Proposed Location: Pavement	Logged By: TJ	24 Hours: --- --- ▾	At Completion: DNC --- <input checked="" type="checkbox"/>
Drill / Test Method: HSA / SPT	Contractor: BW		24 Hours: --- --- <input checked="" type="checkbox"/>
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
						0.0	TOPSOIL	3" Topsoil	
0 - 2	S-1	X	3 - 4 - 5 - 5	12	9	0.3	FILL	Brown Sand with Gravel, Moist (FILL)	
2 - 4	S-2	X	6 - 5 - 4 - 4	24	9	2.0	COASTAL PLAIN DEPOSITS	Brown/Orange Poorly-Graded Sand with Silt and 10% Gravel, Moist, Loose (SP-SM)	
4 - 6	S-3	X	4 - 3 - 4 - 4	24	7	5.0		As Above, Gray/Orange, Very Moist, Loose (SP-SM)	
						6.0		Boring Log B-10 Terminated at a Depth of 6.0 Feet Below Ground Surface	
						10.0			
						15.0			
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 30.5 feet	Date Started: 1/24/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 9.0 feet bgs	Date Completed: 1/24/2020	During: NE --- ▾	At Completion: 6.0 24.5 <input checked="" type="checkbox"/>
Proposed Location: Pavement	Logged By: TJ	At Completion: NE --- ▾	24 Hours: --- --- <input checked="" type="checkbox"/>
Drill / Test Method: HSA / SPT	Contractor: BW	24 Hours: --- --- ▾	
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N				
						0.0			
						0.5	PAVEMENT	4" Asphalt, 1" Gravel Subbase	
							FILL		
1 - 3	S-1	X	2 - 3 - 4 - 4	14	7			Brown Silty Sand with Gravel, Moist (FILL)	
3 - 5	S-2	X	4 - 3 - 4 - 4	17	7			As Above, with Gravel, Moist (FILL)	
5 - 7	S-3	X	5 - 4 - 4 - 4	21	8			As Above, with Gravel, Moist (FILL)	
7 - 9	S-4	X	4 - 4 - 4 - 4	24	8		COASTAL PLAIN DEPOSITS	Brown/Orange Poorly-Graded Sand with Silt and 10% Gravel, Moist, Loose (SP-SM)	
						9.0			
						10.0			Boring Log B-11 Terminated at a Depth of 9.0 Feet Below Ground Surface
						15.0			
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 28.0 feet	Date Started: 1/27/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 14.0 feet bgs	Date Completed: 1/27/2020	During: NE --- ▾	At Completion: NE --- ▾
Proposed Location: SWM	Logged By: TJ	24 Hours: --- --- ▾	At Completion: 10.0 18.0 <input checked="" type="checkbox"/>
Drill / Test Method: HSA / SPT	Contractor: BW		24 Hours: --- --- <input checked="" type="checkbox"/>
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						0.0	TOPSOIL	4" Asphalt, 1" Gravel	
0 - 2	A	B	Environmental Sample	---	---	0.3	FILL	Dark Yellowish Brown (7.5YR 4/4), LOAMY SAND, Single-Grain, No Roots, No Mottling, Moist (FILL)	
2 - 4	S-1	X	4 - 4 - 5 - 4	20	6			As Above, Moist (FILL)	
4 - 6	S-2	X	4 - 2 - 2 - 2	24	4	5.0		As Above, Moist (FILL)	
							COASTAL PLAIN DEPOSITS	Strong Brown (7.5YR 5/8) LOAMY SAND, Single-Grain, Moist, Loose (SP)	
6 - 8	A	B	Environmental Sample	---	---			As Above, with Gravel, Moist, Medium Dense (SP)	
	S-3	X	14 - 21 - 7 - 7	21	28			As Above, Moist, Medium Dense (SP)	
8 - 10	S-4	X	6 - 9 - 10 - 13	21	19			As Above, Moist, Dense (SP)	
10 - 12	S-5	X	11 - 19 - 15 - 17	23	34	10.0		As Above, Moist, Dense (SP)	
12 - 14	S-6	X	13 - 15 - 15 - 15	21	30	14.0		As Above, Moist, Dense (SP)	
						15.0		Boring Log B-12 Terminated at a Depth of 14.0 Feet Below Ground Surface	
						20.0			
						25.0			

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 29.0 feet	Date Started: 1/27/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 14.0 feet bgs	Date Completed: 1/27/2020	During: NE --- ▾	At Completion: 6.0 23.0 <input checked="" type="checkbox"/>
Proposed Location: SWM	Logged By: TJ	At Completion: NE --- ▾	24 Hours: --- --- ▾
Drill / Test Method: HSA / SPT	Contractor: BW	24 Hours: --- --- ▾	
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						0.0	TOPSOIL	4" Asphalt	
0 - 2	A	B	Environmental Sample	---	---	0.3	FILL	Brown (7.5YR 3/2) SANDY LOAM, Single-Grain, No Roots, No Mottling, Moist (FILL)	
2 - 4	S-1	X	4 - 4 - 5 - 5	9	9			As Above, with Gravel, Moist (FILL)	
4 - 6	S-2	X	6 - 9 - 6 - 8	20	17	5.0		As Above, with Gravel, Moist (FILL)	
6 - 8	A	B	Environmental Sample	---	---	6.0	COASTAL PLAIN DEPOSITS	Strong Brown (7.5YR 5/8) LOAMY SAND, Single-Grain, No Roots, No Mottling, Moist, Medium Dense (SP-SM)	
	S-3	X	9 - 10 - 10 - 11	24	20				
8 - 10	S-4	X	10 - 11 - 13 - 15	23	24	10.0		As Above, Moist, Medium Dense (SP-SM)	
10 - 12	S-5	X	11 - 19 - 15 - 19	22	34			As Above, Moist, Dense (SP-SM)	
12 - 14	S-6	X	15 - 15 - 17 - 21	21	32	14.0		As Above, Moist, Dense (SP-SM)	
						15.0		Boring Log B-13 Terminated at a Depth of 14.0 Feet Below Ground Surface	
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

RECORD OF SUBSURFACE EXPLORATION

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 29.0 feet	Date Started: 1/27/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 14.0 feet bgs	Date Completed: 1/27/2020	During: NE --- ▾	At Completion: 8.0 21.0 <input checked="" type="checkbox"/>
Proposed Location: SWM	Logged By: TJ	At Completion: NE --- ▾	24 Hours: --- --- ▾
Drill / Test Method: HSA / SPT	Contractor: BW	24 Hours: --- --- ▾	24 Hours: --- --- <input checked="" type="checkbox"/>
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						0.0	TOPSOIL	4" Topsoil	
0 - 2	A	B	Environmental Sample	---	---	0.3	FILL	Brown (7.5YR 4/2) SANDY LOAM with 10% Gravel-Sized Concrete Fragments, Moist (FILL)	Poor Recovery Due to Gravel in Spoon Tip
	S-1	X	14 - 21 - 7 - 7	21	28				
2 - 4	S-2	X	19 - 20 - 7 - 4	5	27			As Above, with Gravel, Moist (FILL)	
4 - 6	S-3	X	3 - 3 - 3 - 3	12	6	5.0		As Above, with Trace Roots, Moist (FILL)	
6 - 8	S-4	X	2 - 2 - 3 - 4	24	5	6.0	COASTAL PLAIN DEPOSITS	Strong Brown (7.5YR 5/8) LOAMY SAND, Single-Grain, No Roots, No Mottling, Moist, Very Loose to Loose (SP-SM)	
8 - 10	S-5	X	4 - 4 - 9 - 5	24	8			As Above, Moist, Loose (SP-SM)	
10 - 12	S-6	X	4 - 4 - 4 - 4	20	8	10.0		As Above, Moist, Loose (SP-SM)	
12 - 14	S-7	X	5 - 5 - 5 - 6	23	10	14.0		As Above, Trace Silt, Moist, Medium Dense (SP-SM)	
						15.0		Boring Log B-14 Terminated at a Depth of 14.0 Feet Below Ground Surface	
						20.0			
						25.0			

RECORD OF SUBSURFACE EXPLORATION

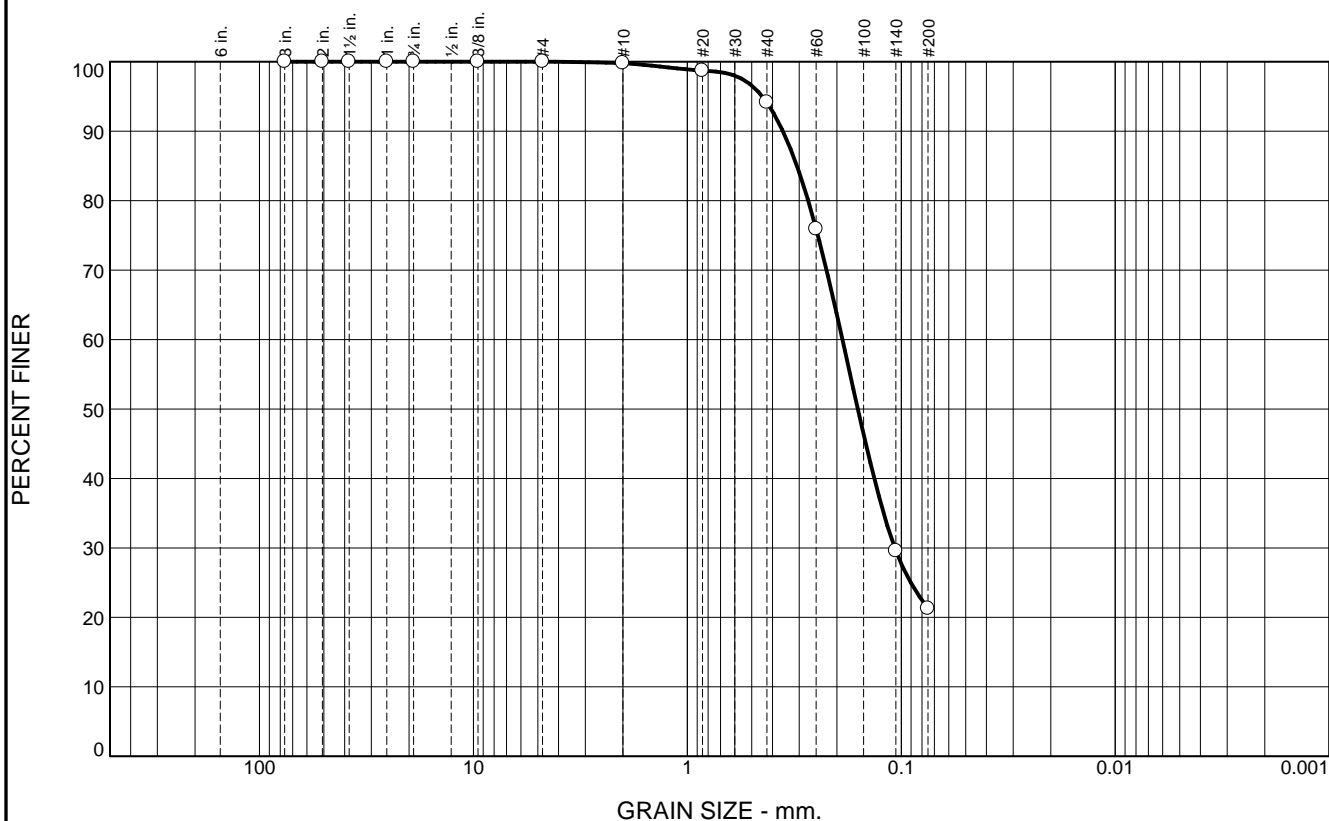
Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild		WAI Project No.: GP1111577.001	
Location: 4295 & 4299 U.S. Route 130; Edgewater Park, Burlington County, NJ		Client: McDonald's USA, LLC	
Surface Elevation: ± 29.0 feet	Date Started: 1/27/2020	Water Depth Elevation (feet bgs) (feet)	Cave-In Depth Elevation (feet bgs) (feet)
Termination Depth: 14.0 feet bgs	Date Completed: 1/27/2020	During: 7.0(P) 22.0 ▾	At Completion: 12.0 17.0 <input checked="" type="checkbox"/>
Proposed Location: SWM	Logged By: TJ	At Completion: NE --- ▾	24 Hours: --- --- <input checked="" type="checkbox"/>
Drill / Test Method: HSA / SPT	Contractor: BW	24 Hours: --- --- ▾	
	Equipment: CME-55		

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						0.0	TOPSOIL	2" Topsoil	
0 - 2	A	B	Environmental Sample	---	---	0.2	FILL	Brown (7.5YR 4/2) SANDY LOAM, with 10% Gravel-Size Concrete Fragments, Single-Grain, No Roots, No Mottling, Moist (FILL)	
	S-1	X	3 - 4 - 4 - 6	15	8				
2 - 4	S-2	X	5 - 17 - 9 - 3	23	21			As Above, with 10% Gravel and Concrete Fragments, Moist (FILL)	
4 - 6	S-3	X	5 - 4 - 4 - 3	24	8	5.0		As Above, with 10% Gravel, Moist (FILL)	
6 - 8	S-4	X	3 - 3 - 4 - 4	21	7	6.0	COASTAL PLAIN DEPOSITS	Strong Brown (7.5YR 5/8) LOAMY SAND, Single-Grain, No Mottling, No Roots, Moist to Wet, Loose (SP-SM)	Perched Water 7.0 fbs to 7.5 fbs
8 - 10	S-5	X	4 - 5 - 6 - 6	24	11			As Above, Moist, Medium Dense (SP-SM)	
10 - 12	S-6	X	6 - 7 - 8 - 8	24	15			As Above, Moist, Medium Dense (SP-SM)	
12 - 14	S-7	X	10 - 11 - 12 - 12	24	23	14.0		As Above, Moist, Medium Dense (SP-SM)	
						15.0		Boring Log B-15 Terminated at a Depth of 14.0 Feet Below Ground Surface	
						20.0			
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

APPENDIX B
Laboratory Test Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	5.7	72.8	21.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	100.0		
#4	100.0		
#10	99.8		
#20	98.7		
#40	94.1		
#60	75.9		
#140	29.6		
#200	21.3		

Material Description

Silty Sand

Atterberg Limits
 PL= NP LL= NP PI= NP

Coefficients
 D₉₀= 0.3577 D₈₅= 0.3076 D₆₀= 0.1886
 D₅₀= 0.1597 D₃₀= 0.1072 D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= SM AASHTO= A-2-4(0)

Remarks

W_n = 18.9 %

* (no specification provided)

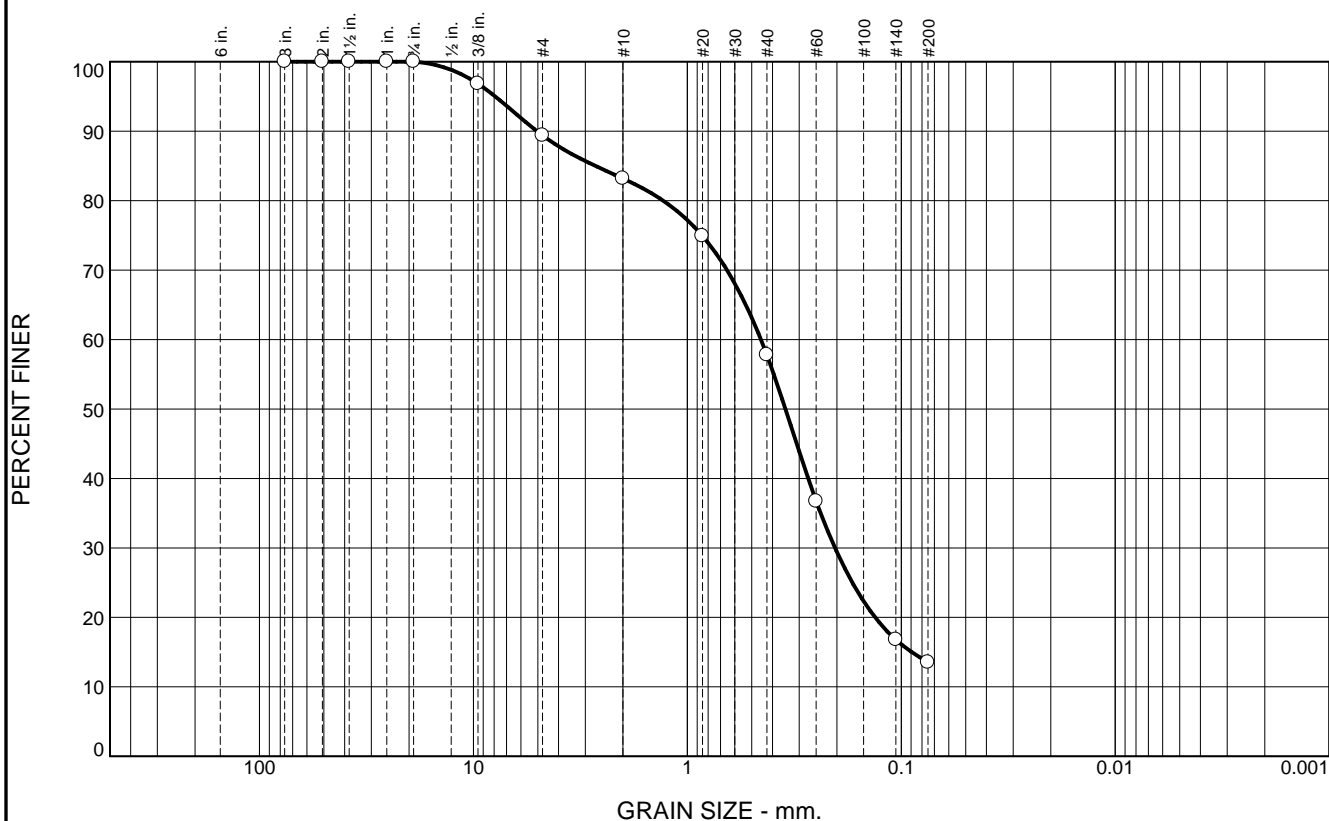
Source of Sample: B-2 Depth: 8.0' - 10.0'
 Sample Number: S-5

Date: 02/07/2020

**WHITESTONE
 ASSOCIATES, INC.
 Warren, New Jersey**

Client: McDonald's USA, LLC
 Project: Proposed McDonald's Restaurant Rebuild
 4296 Route 130, Edgewater Park Twp, Burlington Co, NJ
 Project No: GP1111577.001 Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	10.6	6.2	25.4	44.3	13.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	96.8		
#4	89.4		
#10	83.2		
#20	74.9		
#40	57.8		
#60	36.7		
#140	16.8		
#200	13.5		

Material Description

Silty Sand

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D₉₀= 5.0540 D₈₅= 2.6894 D₆₀= 0.4530
D₅₀= 0.3481 D₃₀= 0.2041 D₁₅= 0.0894
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

W_n = 5.6 %

* (no specification provided)

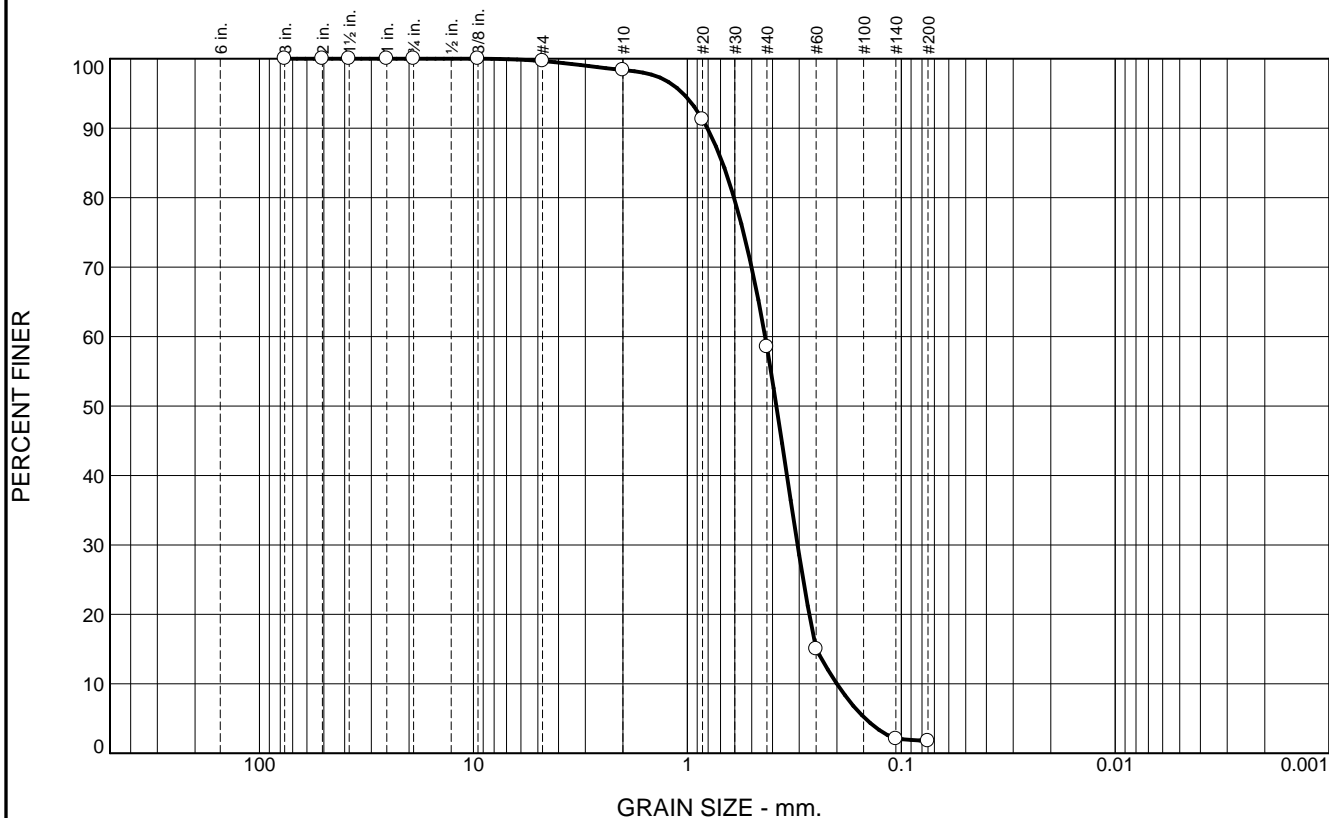
Source of Sample: B-4 Depth: 3.0' - 5.0'
Sample Number: S-2

Date: 02/07/2020

**WHITESTONE
ASSOCIATES, INC.
Warren, New Jersey**

Client: McDonald's USA, LLC
Project: Proposed McDonald's Restaurant Rebuild
4296 Route 130, Edgewater Park Twp, Burlington Co, NJ
Project No: GP1111577.001 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	1.3	39.9	56.7	1.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	100.0		
#4	99.7		
#10	98.4		
#20	91.3		
#40	58.5		
#60	15.0		
#140	2.1		
#200	1.8		

Material Description

Poorly Graded Sand

Atterberg Limits
 PL= NP LL= NP PI= NP

Coefficients
 D₉₀= 0.8067 D₈₅= 0.6849 D₆₀= 0.4332
 D₅₀= 0.3834 D₃₀= 0.3055 D₁₅= 0.2499
 D₁₀= 0.2001 C_u= 2.16 C_c= 1.08

Classification
 USCS= SP AASHTO= A-3

Remarks
 W_n = 1.5 %

* (no specification provided)

Source of Sample: B-12 Depth: 6.0' - 8.0'
 Sample Number: S-3

Date: 02/07/2020

**WHITESTONE
 ASSOCIATES, INC.
 Warren, New Jersey**

Client: McDonald's USA, LLC
Project: Proposed McDonald's Restaurant Rebuild
 4296 Route 130, Edgewater Park Twp, Burlington Co, NJ
Project No: GP1111577.001 **Figure**

APPENDIX C
Supplemental Information
(USCS, Terms and Symbols)

UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

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

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS FOR SAMPLES WITH 5% TO 12% FINES

GRADATION*

% FINER BY WEIGHT

TRACE..... 1% TO 10%
LITTLE..... 10% TO 20%
SOME..... 20% TO 35%
AND..... 35% TO 50%

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 POUNDS 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

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

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Other Office Locations:

WARREN, NJ
908.668.7777

SOUTHBOROUGH, MA
508.485.0755

ROCKY HILL, CT
860.726.7889

WALL, NJ
732.592.2101

STERLING, VA
703.464.5858

EVERGREEN, CO
303.670.6905

GEOTECHNICAL TERMS AND SYMBOLS

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

- N: Standard Penetration Value: Blows per ft. of a 140 lb. hammer falling 30" on a 2" O.D. split-spoon.
 Qu: Unconfined compressive strength, TSF.
 Qp: Penetrometer value, unconfined compressive strength, TSF.
 Mc: Moisture content, %.
 LL: Liquid limit, %.
 PI: Plasticity index, %.
 δd: Natural dry density, PCF.
 ▽: Apparent groundwater level at time noted after completion of boring.

DRILLING AND SAMPLING SYMBOLS

- NE: Not Encountered (Groundwater was not encountered).
 SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
 ST: Shelby Tube - 3" O.D., except where noted.
 AU: Auger Sample.
 OB: Diamond Bit.
 CB: Carbide Bit
 WS: Washed Sample.

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

<u>Term (Non-Cohesive Soils)</u>	<u>Standard Penetration Resistance</u>
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

<u>Term (Cohesive Soils)</u>	<u>Qu (TSF)</u>
Very Soft	0 - 0.25
Soft	0.25 - 0.50
Firm (Medium)	0.50 - 1.00
Stiff	1.00 - 2.00
Very Stiff	2.00 - 4.00
Hard	4.00+

PARTICLE SIZE

Boulders	8 in.+	Coarse Sand	5mm-0.6mm	Silt	0.074mm-0.005mm
Cobbles	8 in.-3 in.	Medium Sand	0.6mm-0.2mm	Clay	-0.005mm
Gravel	3 in.-5mm	Fine Sand	0.2mm-0.074mm		

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APPENDIX D
Infiltration Test Results



INFILTRATION TEST

Client: McDonald's USA, LLC

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild

Location: 4295 & 4299 U.S. Route 130, Edgewater Park, Burlington Co., NJ

File No. GP1111577.001

Surf. Elev. ±28.0

Test Hole No.: I-2 at B-12

Date: 1/27/2020

Weather: Cloudy/Clear (30-40°F)

Field Engineer: TJ

Test Depth Ft. | Elev.: ±6.5 | 21.5

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	10:29 AM	10:59 AM	24.0	19.0	5.0	0.5	10.0
PS	10:59 AM	11:39 AM	24.0	23.0	1.0	0.5	6.0
1	11:39 AM	11:49 AM	24.0	23.5	0.5	0.16	3.0
2	11:49 AM	11:59 AM	24.0	23.8	0.2	0.16	1.2
3	11:59 AM	12:09 PM	24.0	23.8	0.2	0.16	1.2
4	12:09 PM	12:19 PM	24.0	23.8	0.2	0.16	1.2
5	12:19 PM	12:29 PM	24.0	23.8	0.2	0.16	1.2
6	12:29 PM	12:39 PM	24.0	23.8	0.2	0.16	1.2

Field *i* = 1.2 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed



INFILTRATION TEST

Client: McDonald's USA, LLC

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild

Location: 4295 & 4299 U.S. Route 130, Edgewater Park, Burlington Co., NJ

File No. GP1111577.001

Surf. Elev. ±29.0

Test Hole No.: I-3 at B-15

Date: 1/27/2020

Weather: Cloudy/Clear (30-40°F)

Field Engineer: TJ

Test Depth Ft. | Elev.: ±7.5 | 21.5

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	1:00 PM	1:30 PM	24.0	21.0	3.0	0.5	6.0
PS	1:30 PM	2:00 PM	24.0	21.0	3.0	0.5	6.0
1	2:00 PM	2:10 PM	24.0	23.2	0.8	0.16	4.8
2	2:10 PM	2:20 PM	24.0	23.5	0.5	0.16	3.0
3	2:20 PM	2:30 PM	24.0	23.8	0.2	0.16	1.2
4	2:30 PM	2:40 PM	24.0	23.8	0.2	0.16	1.2
5	2:40 PM	2:50 PM	24.0	23.8	0.2	0.16	1.2
6	2:50 PM	3:00 PM	24.0	23.8	0.2	0.16	1.2
7	3:00 PM	3:10 PM	24.0	23.8	0.2	0.16	1.2

Field *i* = 1.2 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed



INFILTRATION TEST

Client: McDonald's USA, LLC

Project: Proposed McDonald's Restaurant No. 29-0019 Rebuild

Location: 4295 & 4299 U.S. Route 130, Edgewater Park, Burlington Co., NJ

File No. GP1111577.001

Surf. Elev. ±29.0

Test Hole No.: I-4 at B-14

Date: 1/27/2020

Weather: Cloudy/Clear (30-40°F)

Field Engineer: TJ

Test Depth Ft. | Elev.: ±4.0 | 25.0

Reading No.	Time		Water Level Reading (inches)		Water Level Fall (Inches)	Time Interval (Hours)	Rate of Flow (Inches/Hour)
	Start	Finish	Start	Finish			
PS	1:05 PM	1:35 PM	24.0	18.50	5.50	0.5	11.0
PS	1:35 PM	2:05 PM	24.0	21.5	2.5	0.5	5.0
1	2:05 PM	2:15 PM	24.0	23.7	0.3	0.16	1.8
2	2:15 PM	2:25 PM	24.0	23.7	0.3	0.16	1.8
3	2:25 PM	2:35 PM	24.0	23.7	0.3	0.16	1.8
4	2:35 PM	2:45 PM	24.0	23.7	0.3	0.16	1.8
5	2:45 PM	2:55 PM	24.0	23.70	0.30	0.16	1.8
6	2:55 PM	3:05 PM	24.0	23.70	0.30	0.16	1.8

Field *i* = 1.8 in/hr

NOTES: PS = Pre Soak; NS = Not Surveyed