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Report of Subsurface Exploration and Foundation Evaluation

Hightstown Redevelopment

Block 21, Lots 1 -14 and 26, and Block 30, Lots 1-7 and 10 Bank Street and North Main Street Borough of Hightstown, Mercer County, New Jersey

March 13, 2018

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1.0 INTRODUCTION

This report presents the results of the geotechnical explorations undertaken to provide geotechnical design criteria and foundation support recommendations for the proposed construction of a mixed-use development consisting of multi-family units and retail space along with typical appurtenant site improvements on an existing 6.9 acres of land located between North Academy Street, Bank Street and North Main Street in the Borough of Hightstown, Mercer County, New Jersey

The purpose of this exploration was to evaluate the existing subsurface conditions at the project site and to provide recommendations for foundation support; as well as site development for the proposed facilities and pavement design considerations. The recommendations include foundation support options to be considered for preliminary design, seismic site class, and a discussion of earthwork operations and related procedures that may be required.

2.0 SITE AND PROJECT DESCRIPTION

The subject project site is an approximately 6.9 acres site bounded by North Academy Street, Bank Street and North Main Street, in the Borough of Hightstown, Mercer County, New Jersey and is referred to as Block 21, Lots 1-14 and 26, and Block 30, Lots 1-7 and 10 on the Borough of Hightstown Tax Maps. Rocky Brook divides the site roughly in half, and Stockton Street lies to the south of the property. The current use consists primarily of warehouse structures (RTL Merchandising, Moving, Storage and Decorations).

Seven (7) structures presently occupy the site. The buildings vary from masonry to steel construction and are utilized for various commercial and municipal purposes. Several of the existing structures are located in areas where new structures are proposed. The site varies in elevation from a high point of approximately 98 feet at the western end sloping to a low point of approximately 78 feet at Rocky Brook then rising to an elevation of approximately 85 feet in the east.



Maser Consulting understands the purpose of the proposed project is to redevelop the site with a combination of multi-family units and retail space along with typical appurtenant site improvements.

3.0 SCOPE OF SERVICES

The purposes for this subsurface exploration are to evaluate the subsurface conditions within the planned construction limits of a proposed development and to provide geotechnical recommendations for proposed site development, foundation construction, earthwork, and utility construction. We were authorized to perform the following scope of services:

- a) Retain a drilling contractor to perform test borings to explore the subsurface soil and groundwater conditions and excavation contractors to perform test pits to expose existing exterior footings, interior footing and slab cutting for two existing warehouse buildings;
- b) Provide full-time technical observation of the work of the drilling and excavation contractors;
- c) Obtain representative soil samples encountered within the test borings and test pits;
- d) Evaluate and prepare test boring logs showing the types of soils, as well as depth to encountered groundwater; and
- e) Prepare this Report of Subsurface Exploration and Foundation Evaluation, presenting the results of our subsurface exploration, engineering evaluation, and subsequent recommendations for foundation support, pavement design, and site earthwork considerations.



4.0 SUBSURFACE EXPLORATION PROGRAM

4.1 2017 Exploration

The subsurface conditions at the site were explored from August 14 to August 18, 2017, through the advancement of 16 test borings, identified herein as TB-101 through TB-116. The test borings were field-located by Maser Consulting using the details provided on the project plans prepared by Maser Consulting and existing site features available at the time of our field exploration program. The test boring locations are shown on the Exploration Location Plan, Figure No. 2.

The test borings were advanced to termination depths between 25 to 50 feet below ground surface (bgs) by Accurate Drilling, LLC, of Blackwood, New Jersey using standard hollow-stem auger drilling techniques. Split spoon sampling was performed in accordance with ASTM D1586 (Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils). The number of blows required to drive the split spoon every 6 inches into the soil was recorded and is shown on the test boring log. The sum of blows for the interval from 6 inches to 18 inches is the N-value. The N-value indicates the soil resistance encountered within each sampling interval.

In addition, Accurate Drilling, LLC was contracted for the excavation of the test pits to expose the existing foundations of the existing warehouses, known as the "Tan" and "Red" buildings to determine their construction, current condition, and obtain relevant dimensions. Each of the test pits were excavated to a depth of approximately 6 feet below existing grade using a CAT 420E rubber-tired backhoe. The test pit locations are shown on the Exploration Location Plan, Figure No. 3.

On September 15, 2017, Cutting Technologies, Inc. of Gloucester City, NJ, was contracted to sawcut the existing concrete slabs in both the "Tan" and "Red" buildings to determine the thickness of the slab, expose the foundations of interior columns to obtain relevant dimensions, and to conduct Dynamic Cone Penetrometer Test (DCP) in two



locations – a proposed stairway and a proposed elevator shaft in the "Red" building. The Dynamic Cone Penetrometer Test was performed in accordance with ASTM D6951 (Standard Test Method for Use of the Dynamic Cone Penetrometer in Shallow Pavement Applications) using a Wildcat Dynamic Cone Penetrometer. The number of blows required to drive the rods every 4 inches into the soil was recorded and are shown on the logs. The test pit locations are shown on the Exploration Location Plan, Figure No. 3.

The test borings, test pits, and DCP test were performed under the full-time technical observation of Maser Consulting. Representative soil samples from the test borings were collected and visually identified in accordance with the Burmister Soil Classification System. Representative soil samples of the strata encountered were collected and taken to our laboratory facilities for further evaluation and analyses. Details pertaining to the subsurface conditions encountered are presented on the Test Boring Logs (2017) in Appendix A and DCPT Results in Appendix D.

4.2 2004 Subsurface Exploration

A previous subsurface exploration was conducted at this project site by Maser Consulting from July 12 to 16, 2004 and on October 14, 2004 through the advancement of 16 test borings. The test borings were advanced to depths of between 37 and 52 feet below the existing grade by Granese Drilling, Inc. The boring locations are presented on the Test Boring Location Plan, Figure No. 3. Details pertaining to the subsurface conditions encountered are presented on the Test Boring Logs (2005) in Appendix B.

5.0 LABORATORY TESTING

Selected soil samples from the 2004 subsurface exploration were tested by the Maser Geotechnical Laboratory. The testing consisted of 12 grainsize analyses and 138 natural moisture contents, performed to confirm the field classifications of the soils and determine soil index properties.



Grainsize analysis was performed to verify the field soil classifications and identify soil plasticity characteristics. Materials passing the No. 200 sieve are typically classified as silts. Grainsize distribution as well as the amount of material passing the No. 200 sieve are useful in determining properties such as frost susceptibility or moisture sensitivity. Soils with significant silt and clay content, for example, are typically moisture sensitive and not considered optimum for use as fill. Granular and structural fills typically have silt contents of between 5 to 15 percent. The laboratory classifications, with respect to grainsize, were consistent with the field descriptions. The percentages of material passing the No. 200 sieve varied from 32.1 percent to 98.9 percent.

Natural moisture contents for the samples ranged from 7.6% to 43.9% and averaged 28.6%. Moisture content is a ratio of the weight of water in the sample to the weight of dry soil in the sample. The moisture content typically increases with an increase in the percentage of silt, clay or organic material in a sample. Moisture content is also affected by precipitation and the samples location with regard to the water table. Natural moisture contents more than 20% are typically indicative of saturated silty materials or the presence of clay in the sample. Occasionally, moisture contents are found more than 100% indicating that the soil is predominantly organic with a unit weight less than that of water. Detailed moisture content test reports are provided in Appendix C.

6.0 SUBSURFACE CONDITIONS

6.1 Subsurface Description

The site surface consists of paved areas, gravel parking lots and some landscape and grass areas. Asphaltic pavement and gravel was noted from 2 inches to 1 foot thick. Topsoil, when encountered, was measured to be six (6) inches thick. The topsoil layer was noted to be in a loose state of relative density.

Immediately underlying the topsoil stratum was brown or yellowish brown coarse to fine sand, some silt and trace portions of fine gravel. The material was encountered at approximately six (6) to twelve (12) inches below grade and extended to depths of four (4) to ten (10) feet below grade. Standard penetration test (SPT) "N" values ranged from four (4) to thirty-four (34) blows per foot (bpf) and averaged approximately fifteen (15) bpf. The material was generally found to exist in a loose to dense state of relative density.

Beneath the yellowish brown fine sand stratum is a series of inter-layered dark grey medium to fine sand and clayey silt. SPT values for the strata indicates a relative density of loose to dense or soft to stiff consistency. The stratum appears to be mostly cohesive in nature. N-values range from 5 to 25 blows per foot and averaged approximately 13 blows per foot. The dark gray layer was encountered in the test borings extending from beneath the yellowish brown fine sand layer to the completion depth in 14 of the 16 test borings in the 2017 exploration and 12 of the 14 test borings from the 2004 exploration. The layer extended to depths of 42 feet in test borings TB-1 and TB-2, and 45 feet in test borings TB-103 and TB-113.

Test borings TB-1, TB-2, TB-103, and TB-104 were completed in a gray coarse to fine sand layer with traces of silt. The stratum extended to the bottom of the borings. The layer was very dense, based on SPT values ranging from 19 blows per foot to 50 blows over 3 inches of penetration.

6.2 Groundwater Conditions

Groundwater was encountered during the 2004 and 2017 explorations at depths ranging from ± 3.2 to ± 7.0 feet bgs. See the specific logs in Appendix A for details. It should be noted that fluctuation in groundwater levels can occur due to several factors, including variations in precipitation, seasonal changes, and site development activities, which can alter surface water drainage paths.



6.3 Existing Foundations and Floor Slabs

During our August 2017 exploration, two (2) tests pits were excavated adjacent to the exterior building lines – one each for the "Tan" and "Red" buildings to expose the existing foundations and to obtain relevant dimensions. Test pit TP-101 was excavated along the south side of the existing "Tan" building, approximately 50 feet from the Roger C. Cook Greenway, to a depth of approximately 6 feet below current grade. The excavation indicated that the existing foundation wall is constructed of formed concrete supported by shallow foundations (concrete spread footings) bearing on fill material consisting of dark brown coarse to fine sand, trace clay, trace fine gravel with construction debris (brick, concrete, and wood). The test pits revealed that the concrete wall extended to a depth of approximately 53 inches below existing grade to a concrete footing which was 6 inches thick. The projection of the concrete footing from the front face of the concrete wall was approximately 8 inches.

Test pit TP-102 was excavated along the east side of the existing "Red" building to a depth of approximately 6 feet below current grade. The excavation indicated that the existing foundation wall is constructed of formed concrete supported by shallow foundations (concrete spread footings) bearing on fill material consisting of dark brown coarse to fine sand, trace clay, trace fine gravel with construction debris (brick, concrete, and wood). The test pits revealed that the concrete wall extended to a depth of approximately 48 inches below existing grade to a concrete footing which was 8 inches thick. The projection of the concrete footing from the front face of the concrete wall was approximately 12 inches

During our September 2017 exploration, a total of five (5) test pits were excavated – four (4) in the "Red" building and one (1) in the "Tan" building – by first saw cutting the existing concrete slabs and exposing foundations of interior columns to obtain relevant dimensions and to conduct Dynamic Cone Penetrometer Test (DCP) in two locations – a proposed stairway and a proposed elevator shaft in the "Red" building. Test pits TP-103 and TP-104 were conducted near the locations of a proposed stairway and elevator shaft,



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respectively. The concrete floor slab was found to be 5 inches thick, underlain by 3 to 7 inches of stone, underlain by natural soils. DCP blow counts (done in increments of 1.75 inches) ranged from 3 to 6 blows to a depth of 3 feet in the proposed stairway area and from 5 to 26 blows to a depth of 2 feet in the proposed elevator shaft area.

Test pit TP-105 exposed an interior column footing in the "Red" building. The structural column was an 11-inch x 11-inch H-shape supported by a rectangular concrete footing that was measured to be 7 feet long, 4 feet wide, and 3 feet thick. The concrete floor slab was found to be 5 inches thick. Test pit TP-106 exposed an exterior wall footing which revealed a brick wall which extended to a depth of 1.5 feet below top of floor slab; however, no footing was encountered beneath the wall.

One test pit, TP-107, was excavated to expose an interior column footing in the "Tan" building. The column base, above the floor slab, measured 22 inches by 22 inches and 4.5 inches thick and was supported by an approximately 3-foot diameter round column that extended to a depth of at least 3 feet below the bottom of the floor slab. The concrete floor slab was found to be 1 foot thick in this location.

7.0 DISCUSSION AND RECOMMENDATIONS

Based upon of the subsurface data collected as part of this evaluation and review of regional geology, the site is favorable for use of shallow foundation and slab-on-grade construction with the need for deep foundations for larger structures, such as parking garages.

7.1 Site Preparation

The purpose of these site preparation procedures is to provide stable and uniform bearing conditions for the proposed building foundations and slab-on-grade construction. The site surface is covered by paved parking lots, grass and landscaped areas as well as existing structures. The site will also need to be cleared of debris and materials stored by the businesses occupying the property.

The following procedures should be performed under the technical supervision of the Geotechnical Engineer.

- Install soil erosion and sedimentation control devices, as well as temporary stormwater management facilities, as specified by Site/Civil Engineer.
- Maintain positive drainage conditions throughout construction, avoiding unnecessary ponding of stormwater in excavations or low areas of the site. Seal-roll exposed soil or subgrade surfaces prior to rain or snow events, and promptly remove any standing water immediately afterwards.
- Any existing underground or above-ground utility locations should be verified in the field and relocated or abandoned as necessary, prior to construction. If the option to abandon utilities in-place is chosen, we recommend that a lean cement grout (500 psi) be used to fill the utility lines.
- Remove and dispose of any vegetation at an appropriate off-site facility. Strip topsoil and stockpile onsite for later use in landscaping areas only. Trees, shrubs, vines and other vegetation, must be cleared from the building lot with stumps and roots grubbed from beneath the site surface. Topsoil shall be stripped from the site surface and removed from within structural areas to be developed. Based upon the test boring data, the stripping depth will be approximately six (6) inches of topsoil.
- Demolish the existing structures including foundations, floor slabs, underground structures, and utility conduits that will interfere with the new development. Below-grade elements shall be removed to a depth of at least 3 feet below proposed subgrade elevations. Those deeper than 3 feet below the new construction may remain in place. Hoe rams or specialized demolition equipment may be required to dislodge and remove such buried obstructions. Caution must be exercised in areas where portions of structures are demolished adjacent to buildings that are to remain to avoid

undermining of the existing structures. Underpinning of structures may be required, depending upon final structural design and grading.

- Demolition debris shall be disposed of off-site in accordance with local, state, and federal regulations. If desired, some of this material may be crushed to NJDOT DGA gradation and stockpiled for future use on site.
- Following demolition of the existing structures, stripping of vegetation and pavement materials, and prior to the placement of load-bearing fills, proof-roll and compact the exposed subgrade heavily with a 10-ton vibratory compactor. The vibratory or static modes shall be used as directed by the on-site Geotechnical Engineer.
- Afterwards, the subgrade shall be proof-rolled with a loaded dump truck. Any remaining unstable zones should be remediated as directed by the onsite Geotechnical Engineer. Excavate any loose disturbed soils from within and a minimum distance of 5 feet beyond the proposed building footprint. Following the satisfactory subgrade preparation, replace the over-excavated soils in controlled, compacted lifts in accordance with the Load Bearing Fill section of this report.
- Place and compact load-bearing fill, as needed, to achieve the final subgrade elevations in accordance with the recommendations presented in the Load Bearing Fill section of this report.
- Consideration may be given to mill the existing pavement meeting NJDOT recycled asphalt pavement (RAP) requirements for use as fill under the raised parking lot areas. The maximum reuse thickness is approximately 6 to 8 inches. Excess pavement, utilities and concrete from the area shall be removed and disposed off-site in accordance with local, state and federal regulations.



• In accordance with the Occupational Safety and Health Administration (OSHA) requirements, all excavations shall be properly sloped or otherwise structurally retained to provide stable and safe working conditions.

7.2 Shallow Foundations

The test borings indicated that the site subsurface conditions, after the above site preparation, will be suitable to the support of two (2) story structures without parking on conventional shallow foundations. Conventional spread and strip footings may be designed for a maximum allowable soil bearing pressure of 2,500 pounds per square foot (psf). The bearing capacity may be increased by 30% for transient loadings. Results of DCP testing in the area of the proposed stairwell and elevator shaft indicate that the 2,500 psf bearing capacity is applicable as well.

Footings may be supported on compacted natural soils or on compacted structural fill. Loose or soft soil is not considered suitable for foundation support and, if encountered, should be excavated and replaced with structural fill compacted in-place. See Section 7.7, Load Bearing Fill, of this report for further details.

The length of time that the exposed subgrade remains exposed to weather conditions should be kept to a minimum so as to not generate more unsuitable material removal. On site fill and soils exposed to weather conditions may soften, requiring removal and replacement prior to fill placement and foundation installation due to their sensitivity to moisture.

Wall and column footing widths should not be less than 1.5 and 3.0 feet, respectively. Footings should be founded at a minimum depth of 3 feet beneath finished grades for frost protection and for bearing considerations. Footing subgrades should be compacted using a "Jumping Jack" or other trench compactor upon completion of footing excavation prior to any form of reinforcing steel placement.



To confirm the design allowable soil bearing pressure, foundation bearing grades should be inspected by a qualified geotechnical engineer prior to the placement of forms and/or concrete. Should the footing subgrade be disturbed, the loosened soil should be compacted in-place. Backfilling against foundations and under floor slabs should be accomplished using structural fill, placed and compacted under engineering observation. Any water that accumulates in the bottom of the excavation should be removed within 24 hours.

It is estimated that maximum post-construction footing settlement of the proposed building will be on the order of 1-inch or less and the differential settlement between adjacent columns will be less than $\frac{1}{2}$ inch. These values are generally within tolerable limits for this type of structure.

7.3 Pile Foundations

For higher structures, structures with parking areas and parking decks, we recommend that pile foundation systems be considered at this time. Piles are recommended to overcome concerns about differential settlements due to anticipated increase in footing loads. Timber pile may be considered; however, closed end concrete filled, pipe piles may be preferred due to increased capacities. Piles can be driven to capacities ranging from 30 to 80 tons with pile depths ranging from 45 to 70 feet below existing grade. The concrete filled, steel pipe piles may be preferred for larger structures and parking decks due to their ability to resist larger lateral faces.

7.3.1 General Considerations

There are a series of difficulties related to the installation of piles, load testing, and construction control of all piles on this site. It is desirable to consider the following items in framing the cost estimate and specifications, as well as in prebid discussions with the contractors:



- 1. The specification should stipulate the highest permissible tip level, which is approximately 45 to 70 feet below existing ground surface. Pre-drilling the piles will minimize the effect of driving and vibration on the existing structure. Vibration monitoring in the field may remove the requirement for pre-drilling if vibrations (particle velocity and frequency) are within acceptable limits.
- We recommend utilizing dynamic pile driving analyzer on a minimum of four
 (4) test piles. Test piles can be used as production piles if they are not damaged and meet or exceed required capacity.
- 3. We believe that a simple criterion such as the Engineering News Record (ENR) Formula is applicable to driving at this site. However, it must be utilized in conjunction with all existing records and data obtained during the driving of each individual pile and the dynamic pile analyzer results. Other pile driving formulas may be utilized upon the evaluation of the pile load test results.
- 4. Alignment and pile top elevation should be checked daily until piles within a radius of approximately 25 feet have been driven. Piles showing heave greater than ¹/₄-inch should be re-driven to a least the original tip elevation.
- 5. Pile installation records should be taken by a Geotechnical Engineer and must include a record of hammer blows for at least the last several feet of driving and the results of the pile inspection.
- 6. Bottom of exterior piles should be placed a minimum of 3 feet below finished grade for frost protection. Interior pile caps may be placed at a convenient depth. Piles should be placed at a minimum of 4 feet center-to-center.



- 7. Only qualified pile contractors should be considered. Their name should be submitted to the owner and the Site Geotechnical Engineer for qualification and evaluation.
- 8. Prior to construction, the successful contractor should provide the pile length design, pile driving scheme, type of hammer, sequence of work and pile numbering plan to the Geotechnical Engineer for his approval.
- 9. It is recommended that the Geotechnical Engineer review the pile specification prior to the bidding process.
- 10. As-built pile locations should be surveyed by the pile contractor and provided to the structural engineer for his review prior to the pile contractor demobilizing from the site.

7.4 Floor Slab

Concrete floor slabs can be uniformly supported on-grade and simply supported at the wall to allow unrestricted rotation or vertical movement of slab edges. Large floor areas should be provided with joints at frequent intervals, as directed by the Structural Engineer. A minimum of six inches of ³/₄-inch clean, crushed stone or a 12-inch thick layer (minimum) of well-graded sand and gravel, with no more than 12% non-plastic fines, is recommended below the slab to assure uniform curing conditions. A 6-mil PVC vapor retarder may be placed between the slab and base course, as directed by the Architect, to minimize moisture migration to the surface. Structural fill supporting the floor slab should be compacted to 95% of the maximum dry density determined in accordance with ASTM D1557 for the Modified Proctor test.



7.5 Seismic Considerations

In accordance with the provisions of the 2015 International Building Code (New Jersey Edition), the site generally has a Site Class Definition of "D" for the existing subsurface soil and groundwater conditions. This classification was determined by utilizing the Standard Penetration Test (SPT) blow count data through the upper 50 feet of the subsurface profile. Medium dense soil conditions were assumed throughout the remainder of the soil profile to a depth of 100 feet. The following design parameters are provided utilizing tables in the IBC Code and United States Geological Survey (USGS) design tools:

From the USGS and using ASCE 7-10 information (See Appendix E):

Short Period Spectral Acceleration (S _s)	0.231g
Spectral Acceleration at 1 Second (S ₁)	0.065g
Peak Ground Acceleration (PGA)	0.132g

7.6 Site Drainage, Surface Water and Groundwater Control

Adequate temporary and permanent control of surface water runoff will be required to allow site access, grading and construction to proceed. Excavation, filling, subgrade and grade preparation should be performed in a manner and sequence that will provide drainage always, as well as proper control of erosion. Surface water shall be pumped or drained to provide a suitable working platform. Any water accumulating in the open excavation shall be removed within 24 hours.

Groundwater was encountered during the subsurface explorations at depths ranging from ± 3 to ± 7.0 feet bgs. As such, it should be anticipated that excavations extending more than 3 feet below the existing site grades will likely encounter groundwater. Should groundwater seepage be encountered, pumping from sumps located within the excavations should be sufficient to control such seepage, provided excavations extend no



deeper than 2 feet below the groundwater level. Excavations extending deeper than 2 feet below the groundwater level will likely require the use of high capacity pumps and/or well points to maintain stable excavations and allow placement of backfill. Sump pits should be filled with minimum ³/₄-inch clean stone and lined with geotextile filter fabric to prevent excessive particle migration, particularly if heavy pumping is required. Pumped water should be discharged away from the building pad and open excavations and filtered as per soil erosion / sediment control requirements.

Surface grading should be maintained on a continual basis during construction to direct surface water runoff away from open excavations and prevent water from pooling on subgrade soils. The contract documents should require the contractor to provide whatever means and methods are necessary to maintain stable and relatively dry excavations and subgrade conditions at all times during construction.

For below grade structures, we recommend that waterproofing and collection drains be incorporated in the design due to the regionally perched groundwater levels encountered. Where possible, collection drains should flow by gravity to the on-site stormwater management systems.

7.7 Load-Bearing Fill

Load-bearing fill should consist of inorganic, readily compactable, predominantly wellgraded granular soils with no more than 15% fines (material passing the No. 200 sieve). Maser Consulting recommends that fragments having a maximum dimension greater than three (3) inches be excluded from the fill. The moisture content of the fill materials should be controlled to within tolerable limits of the optimum by wetting, aeration, or blending to facilitate compaction. The field moisture-density relationship of materials being used will be as per ASTM D1557 and monitored by the Site Geotechnical Engineer during fill placement activities.



Load-bearing fill should be controlled fill placed in loose horizontal lifts with a maximum thickness of 12 inches. It is recommended that controlled fill within the construction area be compacted to at least 95% of the maximum dry density as determined by the Modified Proctor Test (ASTM D1557). In addition, we recommend that fills be stable without significant movement under construction traffic, as judged by the Site Geotechnical Engineer.

Quality control testing of in-place fill densities should be conducted throughout the entire earthwork operation, load bearing fills, and areas where pavement and structures are proposed. Adjustments to the lift thickness and/or compaction equipment may be required, as directed by the geotechnical engineer, based on prevailing weather conditions at the time of fill placement and performance of the compacted soils.

Imported granular fill material, if required, shall be well-graded and should conform to the following material gradation requirements. Alternate material submissions such as dense graded aggregate and recycled concrete aggregates may be made to the Site Geotechnical Engineer for approval:

Recommended Gradation Envelope IMPORTED GRANULAR FILL

U.S. Standard Sieve Size	Percent Finer By Weight
2"	100
1"	80-100
3/8"	70-100
No. 10	50-100
No. 30	30-85
No. 60	15-65
No. 200	5-15



TABLE NO. 1COMPACTION RECOMMENDATIONS				
Location Percent of Maximum Dry Densit (ASTM D1557)				
Structural fill below foundations, floor slabs, and pavements	95%			
Backfill for retaining walls, below-grade walls, and utility trenches	92%			
General fill for landscaped and other non- structural areas	90%			

Table No. 1 below provides compaction requirements for the coarse-grained soils.

7.8 Reuse of Onsite Soils

The topsoil stratum is unsuitable for use as structural fill materials throughout the site. As noted above, the stripped material may be used to raise site grades in lawn areas but may be difficult to re-handle and place in a manner that will minimize post-construction subsidence. The upper soil strata consisting of fine sand and clayey silt is also considered poor for re-use as fill. During periods of inclement weather, placing and compaction difficulties will occur since the materials, in general, will be moisture sensitive. Based on the referenced laboratory testing results, soils encountered below approximately four (4) feet were found to be poorly graded with excessive quantities of silt and clay. These materials will be moisture sensitive and are considered poor for use as fill. The material can be placed in landscaped areas of the site but will be difficult to handle and be placed, especially during or after periods of exposure to precipitation.

7.9 Below-Grade Utilities

Proposed utility installation will be impacted by groundwater provided they are installed at typical depths of 4 to 6 feet or less below final site grades. Refer to Section 7.6, Site Drainage, Surface Water and Groundwater Control, for recommendations regarding dewatering and groundwater control. In addition, we offer the following recommendations specific to utility construction:



- Any excavated utility trenches beneath the proposed finished floor or pavement subgrades should be backfilled with compacted load-bearing fill in accordance with the recommendations outlined in the Load-Bearing Fill Section 7.7 of this report.
- Prior to installation, the bearing surface for utility structures (manholes, vaults, etc.) should be evaluated by the Geotechnical Engineer or technician. If loose or otherwise unstable material is present, this material should be removed and replaced with load-bearing fill. The utility structures should receive a bedding of at least 4 inches of dense-graded aggregate (DGA).

7.10 Existing Utilities

Any existing underground utilities should be located, and those utilities which are not reused should be removed and capped. The utility trenches that are in the influence zone of new construction are recommended to be backfilled with compacted structural fill or grout, as needed. Underground utilities, which are to be reused, should be evaluated by the structural engineer and utility backfill should be evaluated by the geotechnical engineer, to determine their suitability for support of the planned construction. If any existing utilities are to be preserved, grading operations must be carefully performed to not disturb or damage the existing utility.

7.11 Pavements

New pavements can be constructed on the natural soils, suitable existing fill materials or new compacted structural fill. Immediately prior to pavement construction, the exposed pavement subgrade should be compacted with a minimum 10-ton smooth-drum roller and be proof-rolled with a loaded tandem-axle dump truck under the observation of the geotechnical engineer to evaluate stability. Any subgrade areas that are observed to be unstable or contain debris/deleterious matter should be selectively excavated and replaced with compacted structural fill or granular subbase material. As previously indicated, portions of the site soils with varying amounts of silt/clay content will be susceptible to disturbance from excessive moisture and construction equipment. Depending on the timing between pavement subgrade preparation and pavement section construction, the contractor should anticipate that remedial work could be required to achieve a stable subgrade prior to paving, even if the subgrade soils had previously been compacted to the required densities. Prudent scheduling of pavement construction and control of construction equipment traffic will reduce the need for potential remedial work.

Provided the pavement subgrade is prepared in accordance with the recommendations contained herein, we have assumed a California Bearing Ratio (CBR) of 5 for the subgrade soils. The following tables present recommended minimum flexible and rigid pavement sections.

Material	Standard Duty (inches)	Heavy Duty (inches)
Wearing Course	1.5	2.0
Binder Coarse	2.5	4.0
Aggregate Subbase	6.0	6.0

FLEXIBLE ASPHALT PAVEMENT

Material	Heavy-Duty (inches)
4,000 psi Reinforced Concrete	6.0
Aggregate Subbase	6.0

RIGID CONCRETE PAVEMENT

The asphalt wearing and binder course mix designs and placement methods should conform to the Hot Mix Asphalt (HMA) requirements of the New Jersey Department of Transportation (NJDOT) Standard Specifications for Road and Bridge Construction. The pavements should be designed assuming low compaction levels in accordance with the NJDOT Specifications. Performance grade binder oil rated at PG64-22 should be used for Superpave mix designs. The subbase material should meet the requirements of NJDOT Dense Graded Aggregate (DGA) material specifications. Rigid pavements



should meet the requirements of NJDOT Concrete Surface Course specifications. We recommend that rigid concrete pavements be reinforced with minimum No. 3 bars at 18 inches on-center, each way. These recommended pavement sections may be subject to township approval.

7.12 Over-Excavation / Stabilization

Construction during extended wet weather periods could create the need to over-excavate exposed soils if they become disturbed and cannot be recompacted due to elevated moisture content and/or weather conditions. The need for over-excavation should be confirmed through continuous observation and testing by the Geotechnical Engineer. Selective drying and recompaction of unsuitable subgrades may be accomplished by scarifying or windrowing surficial material during extended periods of dry and warm weather. Otherwise, use of imported material or chemical subgrade stabilization methods such as cement or fly ash could become necessary at additional cost. The need for subgrade over excavation and/or stabilization will be dependent, in part, on the subgrade protection effort exercised by the contractor. Similar subgrade stability problems may develop after completion of subgrade preparation due to weather and construction traffic effects, requiring stabilization prior to floor slab-on-grade and pavement construction.

8.0 CONSTRUCTION OBSERVATION

Regardless of the thoroughness of a geotechnical engineering exploration, there is always a possibility that conditions between the borings and below the depths explored may be different from those encountered in the borings, that conditions are not as anticipated by the designers, or that the construction process has altered the subsurface conditions. Therefore, geotechnical engineering construction observation should be performed under the supervision of a Geotechnical Engineer from Maser Consulting who is familiar with the intent of the recommendations presented herein. This observation is recommended to evaluate whether the conditions anticipated in the design actually exist or whether the recommendations presented herein should be modified where necessary. Maser Consulting should also provide observation



and testing of compacted structural fill and backfill. Maser Consulting recommends that a representative from Maser Consulting be on-site on a full-time basis during the earthwork construction and pile installation.

9.0 CLOSING

The conclusions and recommendations presented in this report are based, in part, on the explorations accomplished for this evaluation. The number, location, and depth of the explorations were completed within the constraints of budget and site access to yield the information to formulate the recommendations. It is recommended that we be provided the opportunity for general review of the project plans and specifications when they become available, to confirm that the recommendations and design considerations presented in this report have been properly interpreted and implemented into the project design package.

It is emphasized that this evaluation should not be made directly available to prospective bidders. We do, however, recommend that the test boring logs be a part of the specifications for the project along with a reference to the plan sheets that contain the test boring locations for informational purposes. Should the data not be adequate for the Contractor's purposes, the Contractor may make, prior to bidding, his own explorations, tests and analyses.

10.0 LIMITATIONS

This report has been prepared in accordance with generally accepted geotechnical design practices for specific application to this project. This report has been based on assumed conditions and characteristics of the proposed development where specific information was not available.

The conclusions and recommendations contained in this report are based upon the subsurface data obtained during this exploration and on details stated in this report. The validity of the projections, conclusions and recommendations contained in this report is necessarily limited by the scope of field investigation and by the number of borings that were performed. Should



conditions arise which differ from those described in this report, Maser Consulting should be notified immediately and provided with all information when available regarding subsurface conditions.

The recommendations contained herein are based upon the assumption that the services of a qualified geotechnical engineer will be retained for the observation of stripping operations, proof-rolling, structural fill placement, and all critical earthwork operations.

The scope of this exploration was limited to the evaluation of the load-carrying capabilities and load stability of the subsurface soils. Oil, hazardous/contaminated waste, radioactivity, irritants, pollutants, radon or other dangerous substances and conditions were not the subject of this exploration. Their presence and/or absence are not implied, inferred or suggested by this report or results of this exploration.

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EXPLORATION LOCATION PLAN

Project: HIGHTSTOWN REDEVELOPMENT Block 30, Lots 1-7 and 10

Mercer County Hightstown NJ

New	Jersey	New York	Pennsylvania	Virginia
	Customer	Loyalty throu	gh Client Satisfacti	on

	r nghtoto tini, r to					
Drawn By:	PA	Checked By	/: MC	Project No.:	16001094A	
Scale:	N.T.S.	Date:	03-12-2018	Figure No.:	3	





APPENDIX A

TEST BORING LOGS (2017)

VISUAL IDENTIFICATION OF SAMPLES

(Burmister Soil Classification System)

I. Definition of Soil Components and Fractions

<u>Material</u>	<u>Symbol</u>	<u>Fraction</u>	<u>Sieve Size</u>	Definition
Boulders	Bldr		9" +	Material retained on 9" sieve.
Cobbles	Cbl		3" to 9"	Material passing the 9" sieve and retained on the 3" sieve.
Gravel	G	coarse (c) medium (m) fine (f)	1" to 3" 3/8" to 1" No. 10 to 3/8"	Material passing the 3" sieve and retained on the No. 10 sieve.
Sand	S	coarse (c) medium (m) fine (f)	No. 30 to No. 10 No. 60 to No. 30 No. 200 to No. 60	Material passing the No. 10 sieve and retained on the No. 200 sieve.
Silt	\$		Passing No. 200 (0.075 mm)	Material passing the No. 200 sieve that is non-plastic in character and exhibits little or no strength when air dried
Clayey SILT	Cy\$	Slight (SL)	1 to 5	Clay - Soil
SILT & CLAY	\$ & C	Low (L)	5 to 10	Material passing the No. 200 which can be
CLAY & SILT	C & \$	Medium (M)	10 to 20	within a certain range of moisture content,
Silty CLAY	\$yC	High (H)	20 to 40	when air-dried.
CLAY	С	Very High (VH)	40 Plus	
Organic Silt	(O\$)			Material passing the No. 200 sieve which exhibits plastic properties within a certain range of moisture content, and exhibits fine granular and organic characteristics.

II. Definition of Component Proportions

<u>Component</u>	<u>Written</u>	<u>Proportions</u>	<u>Symbol</u>	Percentage Range by Weight*
Principal	CAPITALS			50 or more
Minor	Lower Case	and	a.	$35 ext{ to } 50$
		some	s.	$20 ext{ to } 35$
		little	1.	10 to 20
		trace	t.	1 to 10

* Minus sign (-) lower limit, plus sign (+) upper limit, no sign middle range.

Consulting Planners	g, Municipal & En Surveyors - L	NVIRONME Landsca	ntal Engi pe Arch	R. A. P. A. ineers itects		RED BAN 331 Newr Suite 203 Red Bank Phone (73 Fax (732 E-mail - g	IK OFFICE man Spring: (, N.J. 0770 32) 383-199 2) 383-1990 leotech@m	s Road 1 50 aserconsulting.com	PROJECT <u>Hightstown Redevelopmen</u> t <u>Borough of Hightstown</u> <u>Mercer County, NJ</u> sutting.com PROJECT NO. <u>16001094A</u>			BORING NO. <u>TB-101</u> page <u>1</u> of <u>1</u> location <u>SEE PLAN</u> OFFSET		
CONTRAC DRILLER DRILLING METHOD HAMMER	CTOR: <u>Accu</u> : <u>Danny</u> G EQUIPMEN ⁻ : HSA <u>×</u> : CH	rate D : <u>CN</u> _ Mu Sa	rilling, IE-75 Id Roto fety	LLC Truck ary	Mounte Otł 	ed her		GROUND First Enco End of Drilling	WATER: puntered	DEPTH (ft.)) DATE <u>8/14/17</u> <u>8/14/17</u>	DATE STARTED 8/14/17 DATE FINISHED 8/14/17 GROUND FLEV 81.0+/-		
RODS INSPECT	: AW <u>×</u> OR: <u>Pavle</u>	NV NV e Ayou	/ b		Otł	ner		After Drilling (>:	24 hrs.) <u>'</u>	<u> </u>		GROUND WATER ELEV		
DEPTH BELOW SURFACE (ft)	SAMPLE BLOWS PER 6 INCHES POCKET POCKET PENETR- PENETR- PMETR- POMETER POMETER OMETER (in) OMETER (is) Content (is) (is) (is) (is) (is) (is) (is) (is) (is) (is)						POCKET PENETR- OMETER (tsf)	PROFILE CHANGE DEPTH FLEV.		IDENTIFICATION OF SOILS / REMARKS				
- 0 -	S-1 0'-2'	11	13	14	18	12			S-1:	Brown cmf San and Concrete fr	d, and cmf Gro ragments. (Fill	avel, little(+) Silt. Frequent Brick)) (Dry).		
	S-2 2'-4'	6	3	5	7	14			S-2: S-3:	Top 10": Dk. Gr Bot 4": Lt. Gree Top 8": Lt. Gree	reenish Gray m en-Brown cmf en-Brown cmf	f Sand, and Silt & Clay. (Moist). SAND, trace(+) Silt. (Moist). SAND, little Silt. Occasional Silt and		
	4'-6' S-4	5	3	2	2	6			S-4·	Clay pockets. Bot 4": Green-(Fine Roots. (W Top 4": Orange-	(Wet). Gray Organic Si et). -Brown mf San	ilt & Clay, some f Sand. Frequent		
	6'-8' S-5	2	2	3	3	16			S-5:	Bot 2": Gray CL Gray Silt & Clay	AY & SILT, tra , and f Sand.	ce f Sand. (Micaceous) (Wet). Frequent Lt. Gray pockets.		
— 10 —	8'-10'									(Micaceous) (We	.t).			
	S-6	2	1	3	5	18			S-6:	Gray f Sand, ar	nd Clayey Silt.	(Micaceous) (Wet).		
	13'-15'													
		7		6	7	16			S_7·	Same as S-6				
—20 —	18'-20'	5	4	0	/				57.	Sume us S U.				
	S-8 23'-25'	3	3	4	5	14			S-8:	Gray f Sand, ar (Micaceous) (We	nd Silt & Clay. et).	Occasional Lt. Gray Sand seams.		
						-				END OF	f test bori	NG AT 25.0 FEET.		
_ 70														
50						-								
						-								
-40														
NOTES:														
VISUAL		ON OF	SOILS	(BL	JRMISTER		ATION SYST	EM)		TERMINOLOG	Y for STRATIFIE	D SOILS		
ComponentProportions% Range (by weight)PRINCIPAL50 or moreClayeMinorand35 to 50SILTsome20 to 35CLAYlittle10 to 20Siltytrace1 to 10CLAY								Clayey Solls Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	t PI. PI. ium PI. PI. high PI.	parting seam layer occasiona frequent	Definiti 0 to 1 1/16" 1/2" t one or more of	1/16" thickness to 1/2" thickness to 12" thickness r less per foot of thickness than one per foot of thickness		

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Consulting Planners	, Municipal & Ei Surveyors - I	nvironme Landsca	Ental Eng ape Arch	R. P. A. ineers itects		RED BAN 331 Newr Suite 203 Red Ban Phone (7 Fax (73 E-mail -	VK OFFICE man Spring 3 k, N.J. 077(732) 383-199 (2) 383-199(geotech@rr	s Road)1 50 0 naserconsulting.com	PROJECT <u>Borou</u> <u>Merce</u> PROJECT	Hightstown Redevelopn Jgh of Hightstown er County, NJ NO. <u>16001094A</u>	ment BORING NO. TB-102 PAGE 1 of 1 LOCATION SEE PLAN OFFSET		
CONTRAC DRILLER: DRILLING METHOD HAMMER RODS	TOR: <u>Accu</u> <u>Danny</u> ; EQUIPMEN ¹ : HSA <u>X</u> : CH <u></u> : AW <u>X</u>	<u>rate D</u> [: Μι Sc Νν	<u>rilling,</u> 1 <u>E-75</u> ud Rotr ufety _ N	LLC Truck ary	<u>Mounte</u> Otł Au ⁱ	ed her tomatic _ her		GROUND First Enco End of Drilling After Drilling (>	WATER: puntered <u>\</u> (0 hrs.) <u>\</u> 24 hrs.) <u>\</u>	DEPTH (ft.) DATE <u>7 5.0 8/14/1</u> <u>7 5.0 8/14/1</u> <u>7 N.A.</u>	DATE STARTED 8/14/17 17 DATE FINISHED 8/14/17 17 GROUND ELEV. 81.0+/- GROUND WATER ELEV. 75.0+/-		
DEPTH BELOW SURFACE	STECTOR Total rigida PTH SAMPLE BLOWS PER 6 INCHES POCKET NUMBER BLOWS PER 6 INCHES RECOVERY POCKET RFACE DEPTH (4) 0-6" 6-10" 12-18" 12-28" (in) OMETER							PROFILE CHANGE DEPTH	IDENTIFICATION OF SOILS / REMARKS				
- 0 <u>-</u>	$0 \xrightarrow{(i,j)} \underbrace{S-1}_{0,j-2} \underbrace{6}_{13} \underbrace{13}_{16} \underbrace{12}_{12} \underbrace{12}_{12} \underbrace{12}_{12}$						(151)		S-1:	Brown cmf Sand, and cr fragments. (Fill) (Moist)	nf Gravel, little Silt. Frequent Concrete		
	S-2	6	7	7	7	12			S-2:	Green-Brown mf Sand, c	and Silt & Clay, little f Gravel. Occasional		
	2-4 S-3	3	3	3	3	10			S-3:	Orange-Brown CLAY & S'	noist). iILT, little mf Sand, little(-) f Gravel. Frequent		
	4-0 S-4	3	3	4	3	20			S-4:	Gray Silt & Clay, and f	Sand. (Micaceous) (Wet).		
	b = 0 S=5	2	3	2	3	14			S-5:	Gray Silt & Clay, and f	Sand. trace f Gravel. (Micaceous) (Wet).		
- 10	8-10	<u> </u>	<u> </u>	<u> </u>		-							
			<u> </u>	<u> </u>	<u> </u>						· · · · · · · · · · · · · · · · · · ·		
	S-6 13'-15'	2	<u> </u>	5	4	20			S-6:	Gray f Sand, and Silt &	Clay. (Micaceous) (Wet).		
l													
l	S-7	2	3	5	7	20			S-7:	Gray f Sand, and Silt &	Clay. (Micaceous) (Wet).		
-20	18'-20']							
l		Ē	<u> </u>	Ē	F								
	S-8 23'-25'	3	4	5	9	18			S-8:	Gray f Sand, and Silt & pockets. (Micaceous) (M	Clay. Occasional Lt. Gray Silt & Clay Vet).		
— —						-				END OF TEST I	BORING AT 25.0 FEET.		
l		F	F	F	F	-							
— 30 —		<u> </u>	<u> </u>	<u> </u>		+							
		<u> </u>	—	<u> </u>	—	-							
1		-	<u> </u>	-	-	-							
		—	 	—	 	-							
l		<u> </u>	<u> </u>	<u> </u>									
-40 —													
NOTES:													
VISUAL	IDENTIFICATI	ON OF	SOILS	; (BI	JRMISTEF	₹ CLASSIFIC	ATION SYST	rem)		TERMINOLOGY for STF	RATIFIED SOILS		
Compor PRINCIF	<u>Pro</u> AL –	portion	<u>18</u>	% Ran	<u>ige (by</u> 50 or 1 75 to	' weight) more	- -	Clayey Soils Clayey SILT sligh	ות PI.	parting ()efinition 0 to 1/16" thickness 1/16" to 1/0" thickness		
MINOr	Minorand35 to 50SILT & CLAY low PI.seam1/16" to 1/2" thicknesssome20 to 35CLAY & SILT medium PI.layer1/2" to 12" thicknesslittle10 to 20Silty CLAYhigh PI.occasionalone or less per foot of thicknesstrace1 to 10CLAYvery high PI.frequentmore than one per foot of thickness												

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CONTRAC	CTOR: <u>Accu</u> : Danny	rate D	rilling,	LLC				GROUNDWATER: DEPTH (ft.) DATE DATE S			DATE STARTED 8/14/17			
	G EQUIPMEN	: <u>_CN</u>	<u>1E-75</u>	Truck	Mount	ed		First Enco	First Encountered <u> </u>			DATE FINISHED		
HAMMER	: HSA : CH	Mu Sa	ifety _	ury	Ou Au	tomatic _	X	End of Drilling	End of Drilling (0 hrs.) <u>4.5</u> <u>8/14/17</u> GROUND ELEV. <u>80.0+/-</u>					
RODS INSPECT	: AW <u> </u>	NV e Ayou	V b		Ot	her		After Drilling (>:	4 hrs.) <u>V</u> N.A GROUND WATER ELEV					
DEPTH	DEPTH SAMPLE BLOWS PER 6 INCHES PROVED POCKET							PROFILE CHANGE	PROFILE CHANGE					
SURFACE	FACE (ft) DEPTH DEPTH 0-6" 6-12" 12-18" 18-24" (in) OMETER OMETER (tsf) DEPTH ELEV.							DEPTH ELEV.	IDENTIFICATION OF SOILS / REMARKS					
- 0 -	S-1	3	4	3	3	16			S-1:	Brown cmf Sand Brick, and Asph	d, and cmf Gro alt fragments.	avel, little Silt. Frequent Concrete, (Fill) (Moist).		
	0-2 S-2	3	2	2	2	14			S-2:	Top 6": Yellow-	Brown mf SANI	D, little Clayey Silt. (Moist).		
	2'-4'									Bot 8": Gray m	f Sand, and Cl	ayey Silt, little f Gravel. (Moist).		
	5-3 4'-6'	2			2	12			S-3:	Gray-Brown cm Brown Fine Roo	r SAND, some ts. (Possible l	Organic Silt, trace f Gravel. Frequent Lt. Fill) (Wet).		
	S-4 3 4 8 4 14								S-4:	Gray-Brown cm	f SAND, some	Silt, little f Gravel. Frequent Brick		
	6'-8' S-5	1	1	2	1	8			S-5.	Dk Grav-Brown	mf(+) Sand	and Clavey Silt (Wet)		
_ 10 _	8'-10'			2					0.01	DR. ordy Drown	ini(1) ound, i			
10						-								
						-								
	S-6	2	2	4	7	12			S-6:	Gray Clayey Silt, (Micaceous) (We	. Occasional Silt & Clay layers.			
	13 - 15					-				(
		2	7	5	7	20			S_7·	Top 6": Samo a	5 6			
- 00	18'-20'	2	5	5	/				Bot 14": Gray f Sand, and Silt & Clay. (Micaceous) (We					
-20 -						-								
						-								
	S-8	3	3	5	6	6			S-8:	Gray CLAY & SI	LT, some f Sa	nd. (Micaceous) (Wet).		
	23'-25'					-				↑ Coarse gravei	STUCK IN TIP.			
						-								
		2		6										
	$\frac{S-9}{28'-30'}$	2	2	5	0	18 			S-9:	Gray SILI & CL	AY, little(+)f So	and. (Micaceous) (Wet).		
— 30 —	20 00													
						-								
	S-10	2	6	10	11	24			S-10:	Same as S-9.				
	33'-35'													
						-								
						1								
S-11 4 6 15 12 14 S-1								S-11:	S-11: Gray f Sand, and Silt & Clay. (Micaceous) (Wet).					
- 40 -		1	1	1	1	I		1	1					
NOTES:														
1/10/11/											V (OTDATICI			
VISUAL	IDENTIFICATI	UN OF	SUILS) (Bl 7 Rar	JRMISTEF	< CLASSIFIC ✓ weight)	ATION SYST	EM) Clavev Soils		Term	t tor STRATIFIE Definiti	U SUILS		
PRINCIPAL 50 or more Clayey SILT clight D										0 to 1	1/16" thickness			

PRINCIPAL Minor

and some little

trace

l

_	% Range (by weight)	Clayey Soils	Term
	50 or more	Clayey SILT slight PI.	parting
	35 to 50	SILT & CLAY IOW PI.	seam
	20 to 35	CLAY & SILT medium PI.	layer
	10 to 20	Silty CLAY high Pl.	occasional
	1 to 10	CLAY very high Pl.	frequent

0 to 1/16" thickness 1/16" to 1/2" thickness 1/2" to 12" thickness one or less per foot of thickness more than one per foot of thickness

Consulting Planners	g, Municipal & En Surveyors - L	NVIRONME Landsca	ntal Engi pe Arch	R. A. P. A. ineers itects		RED BAN 331 Newi Suite 203 Red Bank Phone (7 Fax (73) E-mail - g	IK OFFICE man Spring , N.J. 0770 32) 383-199 2) 383-1990 2) 383-1990 jeotech@m	Road PROJECT Hightstown Redevelopment I Borough of Hightstown 0 Mercer County, NJ aserconsulting.com PROJECT NO. 16001094A			BORING NO. <u>TB-103</u> page <u>2</u> of <u>2</u> location <u>SEE PLAN</u> OFFSET	
CONTRAC DRILLER DRILLING	CTOR: <u>Accu</u> : <u>Danny</u> G EQUIPMEN	rate D	rilling, IE-75	LLC Truck	Mounte	ed		GROUNDWATER: DEPTH (ft First Encountered <u>↓</u> 4.5) DATE 8/14/17	DATE STARTED 8/14/17 DATE FINISHED 8/14/17
HAMMER: CH Safety Other RODS: AWX NW Other INSPECTOR: Pavle Ayoub								End of Drilling (0 hrs.) <u>¥</u> <u>4.5</u> <u>8/14/17</u> After Drilling (>24 hrs.) <u>¥</u> <u>N.A.</u>			GROUND ELEV. 80.0+/- GROUND WATER ELEV. 75.5+/-	
DEPTH BELOW SURFACE	SAMPLE NUMBER BLOWS PER 6 INCHES RECOVERY PENETR- (in) POCKET PENETR- (tsf) ZE t) DEPTH (ft) 0-6" 6-12" 12-18" 18-24" (in) OMETR- (tsf) OMETR- (tsf)					PROFILE CHANGE DEPTH ELEV.	IDENTIFICATION OF SOILS / REMARKS					
	S-12 43'-45'	4	7	11	14	20			S-12:	Top 18": Gray Bottom 2": Gr Clay. (Wet).	Silt & Clay, an ay—Brown cmf S	d f Sand, trace f Gravel. (Wet). Sand, and mf Gravel, some Silt and
	S-13	14	50/3"	,		6			S-13:	Lt. Gray mf S	AND, some Silt.	(Wet).
—50 —	40 - 50			<u> </u>						END (of test borin	NG AT 50.0 FEET.
—60 —												
—70 —												
- 80				<u> </u>	<u> </u>							
NOTES:	NOTES:											
VISUAL	IDENTIFICATI	ON OF	SOILS	(BL	JRMISTER		ATION SYST	EM)	,	TERMINOLO	IGY for STRATIFIE	D SOILS
ComponentProportions% Range (b)PRINCIPAL50 orMinorand35 tosome20 tolittle10 totrace1 to 1					<u>ge (by</u> 30 or r 35 to 5 20 to 3 10 to 3 1 to 10	weight) more 50 35 20)	- -	Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	, PI. ium PI. PI. high PI.	parting seam layer occasion frequent	0 to 1/16" 1/16" 1/2" t more or more of	1/16" thickness to 1/2" thickness to 12" thickness r less per foot of thickness than one per foot of thickness

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Consulting Planners	g, Municipal & En Surveyors - L	s u L T nvironme Landsca	ental Engli pe Arch	R. A. P. A. ineers itects		RED BAN 331 New Suite 203 Red Ban Phone (7 Fax (73 E-mail - g	IK OFFICE man Spring: (, N.J. 0770 32) 383-199 2) 383-1990 eotech@m	s Road 1 50 aserconsulting.com	PROJECT <u>Boro</u> <u>Merc</u> PROJECT	Hightstown Rede ugh of Hightstow er County, NJ NO. <u>16001094</u>	evelopment /n IA	BORING NO. <u>TB-104</u> page <u>1</u> of <u>1</u> location <u>SEE PLAN</u> OFFSET
CONTRAC DRILLER DRILLINC METHOD HAMMER RODS INSPECT	CTOR: <u>Accu</u> <u>Danny</u> EQUIPMEN HSA <u>X</u> CH <u>X</u> AW <u>X</u> OR: <u>Pavle</u>	rate D [: Mu Sa NW e Ayou	irilling, IE-75 id Roto ifety b	LLC Truck ary	<u>Mounte</u> Otł Auł Otł	ed ner comatic _ ner	X	GROUND First Enco End of Drilling After Drilling (>:	WATER: ountered (0 hrs.) 24 hrs.)	DEPTH (ft.) <u>5.0</u> <u>5.0</u> <u>5.0</u> <u>7</u> <u>5.0</u> <u>7</u>	DATE 8/15/17 8/15/17	DATE STARTED 8/15/17 DATE FINISHED 8/15/17 GROUND ELEV. 80.0+/- GROUND WATER ELEV.
DEPTH BELOW SURFACE	SAMPLE NUMBER	BL	.OWS PE	R 6 INC	HES	RECOVERY (in)	POCKET PENETR- OMETER (tsf)	PROFILE CHANGE DEPTH		IDENTI	IFICATION OF S	IOILS / REMARKS
— 0 (<u>()</u>		4 6 5	7 4 4	7 4 2	8 3 1	16 14 0	((31)	ELEV.	S-1: S-2: S-3:	Brown—Gray cmf Concrete, Brick a Dk. Gray—Brown n Brick and Concre No Recovery.	Sand, and cr Ind Asphalt fr mf GRAVEL, s te fragments.	nf Gravel, some(—) Silt. Frequent agments. (Fill) (Moist). ome cmf Sand, little Silt. Frequent (Fill) (Dry).
	4'-6' S-4 6'-8' S-5 8'-10'	WOH 4	WOH 5	2	3	14 12			S-4: S-5:	* Coarse gravel s Top 8": Brown m Fine Roots. (Wet Bot 6": Brown cm Top 6": Dk. Green Bot 6": Green-Gra	stuck in tip. (—)f Sand, ar t). nf SAND, little n cmf Sand, n ay mf(+) Sar	nd Organic Clayey Silt. Frequent Brown :(-) Silt. (Wet). and mf Gravel, little Silt. (Wet). nd, and Silt & Clay. (Micaceous) (Wet).
— 10 — — —	S-6 13'-15'	6	9	5	6	8			S-6:	Green-Brown f Sc	and, and Clay	rey Silt. (Micaceous) (Wet).
—20 —	S-7 18'-20'	7	6	6	6	6			S-7:	Gray Silt & Clay, (Micaceous) (Wet)	and f Sand.	Occasional Yellow seams.
	S-8 23'-25'	8	6	4	7	12			S-8:	Gray f Sand, and (Micaceous) (Wet)	Clayey Silt.	Frequent Dk. Gray Silt and Clay pockets.
— 30 —						· · ·						NG AT 23.0 TEET.
 40						· ·						
NOTES:												
VISUAL Compor PRINCIF Minor	IDENTIFICATI nent Prc PAL – a sa sa tr tr	ON OF portion nd ome ttle race	SOILS	% Rar	IRMISTER 1ge (by 50 or 1 35 to 5 20 to 5 10 to 1 1 to 1	cLASSIFIC, weight) more 50 35 20 0	ATION SYST	EM) Clayey Soils SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	t PI. PI. ium PI. PI. high PI.	TERMINOLOGY 	for STRATIFIE Definitio 0 to 1 1/16" 1/2" to one or more	D SOILS on /16" thickness to 1/2" thickness o 12" thickness r less per foot of thickness than one per foot of thickness

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CONTRAC DRILLER DRILLING METHOD HAMMER RODS	CTOR: Accu : Danny : EQUIPMEN' : HSA : CH : AW	Irate D Г: <u>СМ</u> Ми Sa NW	Drilling, 1E-75 ud Rote ifety V	LLC Truck ary	<u>Mounte</u> Otł Au ¹	ed ner tomatic _	X	GROUND First Enco End of Drilling After Drilling (>	WATER: puntered <u>\</u> (0 hrs.) <u>\</u> 24 hrs.) <u>\</u>	DEPTH (ft. 4.5 4.5 N.A.) DATE <u>8/15/17</u> <u>8/15/17</u>	DATE STARTED 8/15/17 DATE FINISHED 8/15/17 GROUND ELEV. 82.0+/- GROUND WATER ELEV. 77.5+/-
DEPTH BELOW	OR: POVIE SAMPLE NUMBER	BL	d .ows pe	R 6 INC	HES	RECOVERY	POCKET PENETR-	PROFILE CHANGE		IDE		
$-0^{(ft)}$	DEPTH (ft) S-1	0-6"	6-12" 8	12-18" 5	18-24" 4	(in) 12	(tsf)	ELEV.		Top 6": Asphalt	Pavement.	JUILS / KEMARKS
	0'-2' S-2	3	5	6	5	12			S-1: S-2:	Top 4 : Aspha Bot 8": Yellow Top 6": Same Bot 6": Yellow-	nt Pavement mf SAND, little(as S—1 Bottom	(+) Silt, trace f Gravel. (Moist).
	2 - 4 S-3	5	4	3	2	6			S-3:	Same as S-2.	BIOWIT CITIL SAL	vo, some ni oravel, nue sin. (moist).
	4 -0 S-4 6'-8'	2	3	3	4	0			S-4:	No Recovery.		
	S-5 8'-10'	WOH	WOH	2	2	16			S-5:	Greenish Gray f	Sand, and Silt	& Clay. (Micaceous) (Wet).
- 10												
	S-6	2	4	4	5	18			S-6:	Same as S-5.		
	13'-15'					-						
			5		0	10			0.7	0 0		
—20 —	<u> </u>	4	5	5	8	10			5-7:	Greenish Gray f seams. (Micac	Sand, and Cla eous) (Wet).	yey Silt. Occasional Dk. Gray Silt & Clay
				<u> </u>		-						
	S-8 23'-25'	4	5	9	12	10			S-8:	Gray f Sand, ai (Micaceous) (We	nd Clayey Silt. et).	Frequent Dk. Gray partings.
										END O	f test borin	NG AT 25.0 FEET.
						-						
— 30 —												
				<u> </u>		-						
				<u> </u>								
				<u> </u>		-						
HU NOTES:												
VISUAL	IDENTIFICATI	ON OF	SOILS) (Bl	JRMISTER	CLASSIFIC	ATION SYST	EM)		TERMINOLOG	BY for STRATIFIE	D SOILS
PRINCIF Minor	PAL –	nd ome			50 or 35 to 20 to	more 50 35 20	- -	Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY	HI. PI. ium PI.	parting seam layer	0 to 1 1/16" 1/2" t	/16" thickness to 1/2" thickness to 12" thickness less per foot of thickness
	tr	ace		4	1 to 1	0		CLAY very	high Pl.	frequent	more	than one per foot of thickness

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CONTRAC DRILLER	TOR: <u>Accu</u> : <u>Danny</u>	rate D	rilling,	LLC				GROUND	WATER:	DEPTH (ft.) DATE	DATE STARTED
DRILLING METHOD	; EQUIPMENT : HSA <u> </u>	Γ: <u>CM</u> Μι	<u>E-75</u> Jd Rotr	<u>Truck</u> ary <u> </u>	<u>Mounte</u> Otł	<u>ed</u> her		First Enco	ountered _		DATE FINISHED
HAMMER RODS	: CH : AWX	Sa NV	fety V		Aut Ot!	tomatic _ her		After Drilling (>	24 hrs.)	$\underline{\underline{V}} = \underline{\underline{N.A.}}$	GROUND ELEV. 81.5+/-
INSPECT	OR: <u>Pavle</u>	3 Ayou BL	D OWS PE	R 6 INC	HES		POCKET	PROFILE CHANGE		-	GROUND WALLY LLEV.
	DEPTH (ft)	0-6"	6-12"	12-18"	18-24"	(in)	PENEIR- OMETER (tsf)	DEPTH ELEV.		IDENTIFICATION OF	SOILS / REMARKS
Ŭ	S-1 0'-2'		7	5	4	12			S-1:	Top 8": Asphalt Pavement. Yellow-Gray cmf Sand, and n Frequent Concrete fragments.	nf Gravel, little(+) Silt. (Fill) (Moist).
	S-2 2'-4'	2	4	9	5	14			S-2:	Top 8": Yellow-Brown cmf SA (Moist).	ND, some(-) Silt, little mf Gravel.
┣ —	S-3 4'-6'	7	4	3	2	6			S-3:	Bot 6 : Gray cmt Gravei, ana Dk. Brown cmf SAND, some(-	cmf Sand, little Silt. (Moist). -) Silt, little mf Gravel. (Moist).
	S-4 6'-8'	3	26	13	7	10			S-4:	Green cmf SAND, some Silt, pockets. (Wet).	little mf Gravel. Occasional Yellow Gravel
	S-5	2	3	3	4	4			S-5:	Greenish Brown mf Sand, and	I Silt & Clay. Occasional Yellow seams.
— 10 —	8'-10									(Wei).	
		[['	<u> </u>	<u> </u>	-					
	S-6	2	3	4	5	4			S-6:	Greenish Gray mf Sand, and	Silt & Clay. (Micaceous) (Wet).
					<u> </u>	4					
						-					
	S-7 18'-20'	3	2	5	6	12			S-7:	Greenish Gray Clayey SILT, so	me(+) f Sand. (Micaceous) (Wet).
—20 —		 		 	<u> </u>	1					
						-					
L	S-8 23'-25'	3	5	6	9	14			S-8:	Greenish Gray f Sand, and Cl partings. (Micaceous) (Wet).	ayey Silt. Frequent Dk. Gray Silt & Clay
— —				<u> </u>	<u> </u>	-				END OF TEST BOR	NG AT 25.0 FEET.
		 	<u> </u>	—	<u> </u>	1					
_ 30 —						-					
			'	<u> </u>		-					
		<u> </u>		<u> </u>	<u> </u>	-					
L _		<u> </u>		<u> </u>	<u> </u>	-					
			<u> '</u>	 		-					
-40						1					
NOTES: * A	dded water	in auç	jers to	rinse	out s	oils stucł	k inside	at 13' prior to S-	-6.		
VISUAL	IDENTIFICATI	ON OF	SOILS) (Bl	JRMISTEF	R CLASSIFIC	CATION SYS	TEM)		TERMINOLOGY for STRATIFI	ED SOILS
Compoi PRINCIF Minor	AL Pro AL – al si líf	nd ome ttle	<u>15</u>	% Ran	<u>ige</u> (by 50 or 1 35 to 20 to 10 to 1 to 1	/ weight) more 50 35 20 0	- -	Clayey Soils Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	t PI. PI. Jium PI. PI. PI. ν high PI.	Term Definit parting 0 to seam 1/16' layer 1/2" occasional one of freauent more	ion 1/16" thickness ' to 1/2" thickness to 12" thickness or less per foot of thickness than one per foot of thickness

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CONTRAC DRILLER: DRILLING METHOD	;TOR: <u>Accu</u> : <u>Danny</u> ; EQUIPMEN ⁻ : HSA <u> ×</u>	<u>rate D</u> T: <u>CN</u>	<u>rilling,</u> <u>IE-75</u> ud Rot	<u>LLC</u> <u>Truck</u> ary	Mount Otl	 ed her		GROUND First Enc	WATER:	DEPTH (ft.) <u> </u>	DATE <u>8/15/17</u> 8/15/17	DATE STARTED 8/15/17 DATE FINISHED 8/15/17
HAMMER RODS INSPECT	: CH : AW OR:Pavle	Sa NV <u>e Ayou</u>	.fety V ib	· 	Aut Otł	tomatic _ her		After Drilling (>	24 hrs.) .	⊻ ⊻ 		GROUND ELEV GROUND WATER ELEV
DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER DEPTH (ft)	BL 0-6"	.OWS PER	R 6 INC	HES	RECOVERY (in)	POCKET PENETR- OMETER (tsf)	PROFILE CHANGE DEPTH ELEV.		IDEN	NTIFICATION OF S	SOILS / REMARKS
	S-1 0'-2' S-2	2	4	4	3	14 10			S-1:	Top 10": Asphalt Top 4": Yellow-E Brick and Concr Brown-Gray cm	t Pavement. Brown cmf Sar rete fragments. f Sand and S	nd, and mf Gravel, little Silt. Frequent . (Fill) (Moist).
	2'-4' S-3	2	WOH	WOH	WOH	16			S-3:	Orange-Gray CL/	AY & SILT. Fre	equent Brown Fine Roots. (Wet).
	4'-6' S-4 6'-8'	WOH	WOH	WOH	WOH	20			S-4:	Same as S-3.		
	S-5 8'-10'	2	2	2	4	14			S-5:	Greenish Gray Si Gravel pockets.	ilt & Clay, son (Micaceous) (ne f Sand. Frequent Lt. Gray Silt & Clay (Wet).
• •		<u> </u>	<u> </u>	<u> </u>	<u> </u>	-						
	S-6 13'-15'	2	3	6	8	16			S-6:	Same as S-5.		
						-						
— ₂₀ —	S-7 18'-20'	2	4	8	8	18 -			S-7:	Top 10": same o Bot 8": Greenish	as S-6. 1 Gray Clayey S	Silt, and f Sand. (Micaceous) (Wet).
	S-8 23'-25'	4		5			<u> </u>	+	S-8:	Dk. Greenish Gra	y f Sand, and	Clayey Silt. (Micaceous) (Wet).
		<u> </u>	\vdash		<u> </u>	-						NG AT 20.0 TELT.
-30		<u> </u>	\vdash	\vdash	+	-						
			\square			-						
						-						
			—			_						
<u> </u>					<u> </u>	<u> </u>						
NOTES: * A	.dded water	in auç	jers to	rinse	out s	oils stucł	k inside	at 13' prior to S-	-6.			
VISUAL	IDENTIFICATI	ION OF	SOILS) (BI	URMISTEF	R CLASSIFIC	CATION SYS	TEM)		TERMINOLOG	Y for STRATIFIE	ED SOILS
Compor PRINCIF Minor	nent Pro PAL – au sc li ⁱ tr	portior nd ome ttle race	<u>15</u>	<u>% Ran</u>	<u>ige (by</u> 50 or 1 35 to 2 20 to 10 to 1 to 1	/ weight) more 50 35 20 0	- -	Clayey Soils Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	it PI. PI. Jium PI. η PI. η high PI.	Term parting seam layer occasional frequent		on 1/16" thickness to 1/2" thickness to 12" thickness r less per foot of thickness than one per foot of thickness

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CONTRAC DRILLER: DRILLING METHOD: HAMMER	TOR: <u>Accu</u> Danny EQUIPMENT HSA <u> </u>	rate D -: <u>CN</u> Mu Sa	rilling, 1 <u>E-75</u> ud Roto	LLC Truck ary	<u>Mounte</u> Oth	ed ner		GROUND First Enco End of Drilling	WATER: ountered (0 hrs.)	DEPTH (ft. <u>∑</u> <u>5.0</u> <u></u> <u>5.0</u>) DATE <u>8/16/17</u> <u>8/16/17</u>	DATE STARTED 8/16/17 DATE FINISHED 8/16/17 GROUND FLEV 83.0+/-
RODS INSPECT	: AW <u> </u>	NV NV e Ayou	V b		Oth	ner		After Drilling (>:	24 hrs.) <u>'</u>	<u> </u>		GROUND WATER ELEV
DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER DEPTH (ft)	BL 0-6"	.OWS PE	R 6 INC	HES 18-24"	RECOVERY (in)	POCKET PENETR- OMETER (tsf)	PROFILE CHANGE DEPTH		IDE	NTIFICATION OF S	SOILS / REMARKS
— 0 <u>~</u>	S-1 0'-2'		3	2	2	16	((0))		S-1:	Top 6": Asphalt Top 4": Yellow-	: Pavement. -Brown cmf Sai	nd, little Silt, little f Gravel. (Moist).
	S-2 2'-4'	3	2	2	4	6			S-2:	Brown Wood fro Greenish Gray ((Moist)	agments. (Fill) Silt & Clay, and	(Moist). d mf(+) Sand. Occasional Brown pockets
	S-3 4'-6'	WOH	WOH	WOH	2	16			S-3:	Orange-Gray Cl	_AY & SILT, littl	e f Sand. (Wet).
	S-4 6'-8'	2	3	4	5	20			S-4:	Top 14": Lt. br Bot 6": Gray SI	own mf Sand, ILT & CLAY, soi	and Silt & Clay, little f Gravel. (Wet). me(+) f Sand. (Micaceous) (Wet).
— 10 —	S-5 8'-10'	1	1	4	3	8			S-5:	Gray SILT & CL	AY, some f Sai	nd. (Micaceous) (Wet).
10												
	S-6	1	2	4	5	16			S-6:	Gray SILT & CL pockets (Mica	AY, some f Sai ceous) (Wet)	nd. Frequent Lt. Gray Silt & Clay
	15 - 15									,	,	
	S-7	3	5	7	7	14			S-7·	Grav Clavey SIL	T_some(+)_f_S	and (Micaceous) (Wet)
—20 —	18'-20'										, somo(1) 1 c	
	S-8 23'-25'	3	5	8	8	14			S-8:	Same as S-7.		
										END O	f test bori	NG AT 25.0 FEET.
— 30 —												
	1		1	1	1	1		1				
NUTES:												
VISUAL	IDENTIFICATI	ON OF	SOILS	G (BL	JRMISTER	CLASSIFIC/	ATION SYST	EM)		TERMINOLOG	GY for STRATIFIE	D SOILS
Compor PRINCIF Minor	hent Pro PAL – so lit	portion nd ome tle ace	ns	% Rar 5 2 1 1	ige (by 50 or 1 35 to 5 20 to 5 10 to 5 1 to 10	weight) more 50 35 20 0		Clayey Soils Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	nt PI. PI. ium PI. PI. high PI.	Term parting seam layer occasionc frequent	Definiti 0 to 1/16" 1/2" one on more	on 1/16" thickness to 1/2" thickness to 12" thickness r less per foot of thickness than one per foot of thickness

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CONTRAC DRILLER: DRILLING	;TOR: <u>Accu</u> ; <u>Danny</u> ; EQUIPMEN	rate D	<u>rilling,</u> <u>1E-75</u>	LLC Truck	Mount	ed		GROUND First Enc	WATER: ountered	DEPTH	⊣ (ft.) .0	DATE 8/16/17	DATE STARTED 8/16/17 DATE FINISHED 8/16/17
HAMMER RODS INSPECT	HSA : CH : AWX :OR:Pavlr	Sa NV <u>e</u> Ayou	id Roix fety V b		Aut Otł	ter tomatic _ ner		End of Drilling After Drilling (>	(0 hrs.) <u>-</u> 24 hrs.) <u>-</u>	<u>▼ 8.0</u> <u>▼ N.</u>	<u>0</u>	8/16/17	GROUND ELEV. 85.0+/- GROUND WATER ELEV. 77.0+/-
DEPTH BELOW SURFACE _ (ft)	SAMPLE NUMBER DEPTH (ft)	BL 0-6"	OWS PER	R 6 INC	HES	RECOVERY (in)	POCKET PENETR- OMETER (tsf)	PROFILE CHANGE DEPTH FI EV.			IDENTI	IFICATION OF S	SOILS / REMARKS
- 0 -	S-1 0'-2'	<u> </u>	10	8	7	6	× .		S-1:	Top 6": A Brown cm	∖sphalt F nf Sand,	^D avement. , and cmf Gr	ravel, little(+) Silt. (Dry).
	S-2 2'-4'	6	5	7	7	8			S-2:	Brown cm	nf Grave	I, and cmf S	Sand, little Silt. (Moist).
┣ _	S-3 1'-6'	7	10	19	26	0			S-3:	No Recove * Coarse	ery. aravel :	stuck in tip.	
l	S-4	6	3	5	5	12			S-4:	Green-Brc Clavey Silf	own cmf ^{It} nocke	f SAND, some ts (Wet).	e Silt, little(+) f Gravel. Occasional Greer
l	b -o S-5	1	2	4	4	14			S-5:	Gray SILT	& CLAY	r, some f Sa	nd. (Micaceous) (Wet).
- 10	8'-10												
	[[<u> </u>	<u> </u>	<u> </u>	-							
	S-6 13'-15'	2	3	4	4	14			S-6:	Gray Silt & (Micaceous	& Clay, ıs) (Wet)	and f Sand.).	Frequent Lt. Gray mf Gravel pockets.
		\square	\vdash	\vdash	<u> </u>	-							
l	C_7		7		+	 16			_{<-7} .	Crav Silt	• Clay		(11
-20 -	5-7 18'-20'				/				5-7.	Gruy on c	ά Uluy,	ana i suna.	(Micaceous) (wei).
	S-8	3	8	11	13	4			S-8:	Same as	S-7.		
┣ —	23'-25'	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	+	FI	ND OF	TEST BORI	NG AT 25.0 FFFT
		<u> </u>			<u> </u>	-					10 0.		
1	<u> </u>	 	<u> </u>	 	<u> </u>	-							
— 30 —			<u> </u>	<u> </u>	<u> </u>								
						-							
			<u> </u>	<u> </u>	<u> </u>	-							
		<u> </u>	<u> </u>	<u> </u>	<u> </u>	-							
-40 —													
NOTES:													
VISUAL	IDENTIFICATI	ON OF	SOILS	<u>) (В</u>	URMISTEF	R CLASSIFIC	ATION SYS	TEM)		TERMI	INOLOGY	for STRATIFIE	ED SOILS
Compor PRINCIF Minor	<u>ient</u> Pro iAL — ai s; li' tr	portior –– nd ome ttle race	15	% Ran	1ge (by 50 or 35 to 20 to 10 to 1 to 1	v weight) more 50 35 20 0		Clayey Soils Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	it PI. PI. Jium PI. i PI. i high PI.	Term part sear laye occ frec	n ting ım er casional quent	Definiti O to 1/16" 1/2" one o more	on 1/16" thickness to 1/2" thickness to 12" thickness r less per foot of thickness than one per foot of thickness

Consulting Planners	9, Municipal & E Surveyors - I	NVIRONME Landsca		R. P. A. jineers nitects		RED BAN 331 New Suite 203 Red Ban Phone (7 Fax (73 E-mail -	<u>VK OFFICE</u> man Spring 3 ik, N.J. 0770 732) 383-19 32) 383-199i geotech@m	, s Road D1 150 0 naserconsulting.com	PROJECT <u>Boro</u> <u>Merc</u> PROJECT	Hightstown ugh of Hight er County, N NO. <u>1600</u>	Redevelopment tstown NJ 1094A	BORING NO. TB-110 page 1 of 1 location SEE PLAN 0FFSET
CONTRAC DRILLER: DRILLIN(TOR: <u>Accu</u> : <u>Danny</u> ; EQUIPMEN	<u>rate D</u> T: <u>CN</u>	<u>rilling,</u> <u>ME-75</u>	LLC Truck	Mount	 ed		GROUND First Enc	WATER:	DEPTH (6.0	(ft.) DATE 8/16/17	DATE STARTED <u>8/16/17</u> DATE FINISHED <u>8/16/17</u>
METHOD. HAMMER RODS INSPECT	HSA : CH : AWX OR:Pavle	Ми Sa NV <u>е Ауои</u>	и кош ifety _ N ib	ייי אינ 	Ou Aut Otł	her tomatic _ her		End of Drilling After Drilling (>	(0 hrs.) 24 hrs.)	<u>▼</u> 6.0 <u>▼</u> N.A.	8/16/17	GROUND ELEV GROUND WATER ELEV
DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER DEPTH (ft)	BL 0-6"	_OWS PE	.R 6 INC	HES	RECOVERY (in)	POCKET PENETR- OMETER (tsf)	PROFILE CHANGE DEPTH FI FV.			IDENTIFICATION OF	SOILS / REMARKS
- 0 -	S-1 0'-2'		6	5	3	4			S-1:	Top 6": Asph Brown cmf 5 * Possibly p	halt Pavement. Sand, and mf Grc pushing a cobble.	ovel, little Silt. (Moist).
	S-2 2'-4'	2	3	4	3				S-2:	Brown cmf S	SAND, some m(-)	ıf Gravel, some(—) Clayey Silt. (Moist).
	5-3 4'-6' S-4	3	4	د 5	2				S-3:	No Recovery. * Gravel and Grav SILT &	Clay stuck in au	uger, auger cleaned out.
	6'-8' S-5	4		2	3	1 0 1 10			S-5:	Grav SILT &	CLAY. little f Sar	nd (Micaceous) (Wet).
-10	8'-10'					-				014)		0. (modology, (),
			<u> </u>									
L _	S-6 13'-15'	2	5	5	5	10 -			S-6:	Gray CLAY & (Micaceous)	SILT, little † San (Wet).	d. Frequent Lt. Gray pockets.
		<u> </u>	<u> </u>		<u> </u>	-						
	S-7 18'-20'	5	5	8	7	8			S-7:	Same as S-	6.	
-20 -												
	S-8	4	5	6	8	18			S-8:	Top 6": Sam Bot 12": Grc	ie as S-7. 1v Clayey SILT, so	me(+) f Sand. (Micaceous) (Wet).
- _	23 - 25				<u> </u>	-	+	<u> </u>	+	END	OF TEST BORI	NG AT 25.0 FEET.
		<u> </u>	<u> </u>	<u> </u>	<u> </u>	-						
-30												
		<u> </u>	<u> </u>	<u> </u>	<u> </u>							
┢ _		<u> </u>	<u> </u>	<u> </u>	<u> </u>	-						
		<u> </u>	+		+	-						
L 40 —						-						
NOTES:												
VISUAL	IDENTIFICATI	ON OF	SOILS) (Bl	JRMISTEF	₹ CLASSIFIC	ATION SYST	TEM)		TERMINOL	LOGY for STRATIFIE	ED SOILS
PRINCIP Minor	ient Pro 'AL – a' s' li ⁱ tr	<u>portion</u> –– nd ome ttle race	<u>15</u>	<u>% Kur</u>	<u>19</u> (by 50 or 1 35 to 1 20 to 10 to 1 to 1	/ weighty more 50 35 20 0	-	Clayey SILT sligh SILT & CLAY low CLAY & SILT mec Silty CLAY high CLAY very	It PI. PI. Jium PI. PI. high PI.	parting seam layer occasi freque	0 to 1/16" 1/2" onal one c nt more	1/16" thickness 1/16" thickness to 1/2" thickness to 12" thickness or less per foot of thickness than one per foot of thickness

Consulting Planners	g, Municipal & Er • Surveyors • L	NVIRONME andsca	ntal Engi pe Arch	R. A. P. A. ineers itects		RED BAN 331 New Suite 203 Red Ban Phone (7 Fax (73 E-mail - g	IK OFFICE man Spring: , , N.J. 0770 32) 383-1990 2) 383-1990 2) 383-1990 (eotech@m	s Road 1 50 aserconsul ti ng.com	PROJECT Bord Merc PROJECT	Hightstown f ugh of Hights er County, No	Redevelopment stown J 094A	BORING NO. TB-111 PAGE 1 OF 1 LOCATION SEE PLAN OFFSET
DRILLER DRILLING METHOD	: <u>Danny</u> EQUIPMENT HSA <u>x</u>	<u>rate D</u> Г: <u>СМ</u> Ми	IE–75 Id Rote	Truck	Mounte Oth	ed		GROUND First Enco End of Drilling	WATER: puntered (0 hrs.)	DEPTH (f <u> →</u> <u>5.0</u> ▼ <u>5.0</u>	t.) DATE _ <u>8/16/17</u> 8/16/17	DATE STARTED 8/16/17 DATE FINISHED 8/16/17
HAMMER RODS INSPECT	: CH : AWX OR:Pavle	Sa NV e Ayou	fety _ / b		Aut Otł	omatic _ Ier		After Drilling (>:	24 hrs.) _	<u> </u>		GROUND ELEV GROUND WATER ELEV
DEPTH BELOW SURFACE	SAMPLE NUMBER DEPTH (ft)	BL 0-6"	OWS PE	R 6 INC	HES 18-24"	RECOVERY (in)	POCKET PENETR- OMETER (tsf)	PROFILE CHANGE DEPTH ELEV.		١	DENTIFICATION OF	SOILS / REMARKS
_ 0 _	S-1 0'-2'	3	3	4	4	4			S-1:	Top 6": Aspha Brown cmf GF	It Pavement. AVEL, some(+)	cmf Sand, little(+) Silt. (Moist).
	2'-4' S-3	1	3	3	8	6			S-2:	Bot 6": Orang (Moist). Orange-Brown	e-Gray CLAY & mf Sand, and	SILT, some f Sand, trace f Gravel. Silt & Clay, little f Gravel. (Wet).
	4'-6' S-4	10	7	8	5	8			S-4:	Orange-Brown	Silt & Clay, an	d m(-)f Sand, trace f Gravel. (Wet).
	6 -8 S-5 8'-10'	2	2	3	5	16			S-5:	Gray CLAY & pockets. (Mic	SILT, some f Sa caceous) (Wet).	nd. Frequent Dk. Gray Clay & Silt
- 10						,						
	S-6	2	3	5	5	14			S-6:	Gray SILT & ((Micaceous) (\	CLAY, some f Sa Net).	nd. Frequent Lt. Gray hard Clay.
	S-7	3	5	7	10	12			S-7:	Gray Clayey S	ilt, and f Sand.	(Micaceous) (Wet).
—20 —	10 - 20											
	S-8	4	6	7	9	14			S-8:	Same as S-7		
	23 23									END	of test bori	NG AT 25.0 FEET.
— 30 —												
-40												
NOTES:												
VISUAL	IDENTIFICATI	<u>on of</u>	SOILS	(BL	JRMISTER	CLASSIFIC	ATION SYST	EM)		TERMINOLO	DGY for STRATIFIE	ED SOILS
Compo PRINCIF Minor	nent Pro PAL – au sc lit tr	pportior nd ome ttle race	าร	% Rar	ige (by 50 or 1 35 to 5 20 to 5 10 to 5 1 to 10	weight) more 50 35 20 0	-	Clayey Soils Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	t PI. PI. ium PI. PI. high PI.	Term parting seam layer occasion frequent	Definit 0 to 1/16" 1/2" nal one o more	ion 1/16" thickness to 1/2" thickness to 12" thickness r less per foot of thickness than one per foot of thickness

Consulting Planners	y, Municipal & Er Surveyors - I	NVIRONME Landsca	ental Engi pe Arch	R. A. P. A. ineers itects		RED BAN 331 New Suite 203 Red Ban Phone (7 Fax (73 E-mail - (<u>VK OFFICE</u> man Spring } k, N.J. 0770 '32) 383-19 (2) 383-1990 geotech@rr	s Road)1 50 0 naserconsulting.com	PROJECT <u>Boro</u> <u>Merc</u> PROJECT	Hightstown R ugh of Hights er County, NJ NO. <u>16001</u>	Redevelopment stown J 094A	BORING NO. TB-112 PAGE 1 OF 1 LOCATION SEE PLAN OFFSET
CONTRAC DRILLER: DRILLING	TOR: <u>Accu</u> : <u>Danny</u> ; EQUIPMEN	<u>rate D</u> T: <u>CN</u>	<u>rilling,</u> <u>IE-75</u>	LLC Truck	Mounte			GROUND First Enc	WATER:	DEPTH (f† 3.0	t.) DATE 8/16/17	DATE STARTED <u>8/16/17</u> DATE FINISHED <u>8/16/17</u>
METHOD: HAMMER RODS INSPECT	: HSA <u>*</u> : CH <u>*</u> : AW <u>*</u> OR: <u>Pavl</u> e	Mu Sa NV <u>e_Ayou</u>	id Roto fety V b	ıry	Otr Aut Otł	1er tomatic _ ner		End of Drilling After Drilling (>	(0 hrs.) _ 24 hrs.) _	⊻ <u>3.0</u> ⊻ N.A.	8/16/17	GROUND ELEV GROUND WATER ELEV
DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER DEPTH (ft)	BL 0-6*	OWS PER	R 6 INC	HES 18-24"	RECOVERY (in)	POCKET PENETR- OMETER (tsf)	PROFILE CHANGE DEPTH ELEV.			DENTIFICATION OF	SOILS / REMARKS
- 0	S-1 0'-2'		10	7	3	6			S-1:	Top 6": Asphal Brown cmf GR * Coarse grav	It Pavement. AVEL, some cmf rel stuck in tip.	f Sand, trace Silt. (Moist).
	S-2 2'-4' S-3	2	5	4					S-2:	Orange pocket	mt SAND, some is. (Wet bottom	Clayey Silt, trace I Gravel, Frequence 16")
- _	4'-6' S-4	3	3	2	3	12			S-J.	Ton 6": Orang	nt Sana, una Si 1e-Brown CLAY {	layey Silt, trace(+) i Glavei. (mec). & Silt little(-) f Sand,
	6'-8' S-5	3	3	3	4	12			S-5:	trace cmf Gra Grav SILT & C	Wet). (Wet).	Sand Frequent Lt. Gray dry Silt & Clay
-10	8'-10'				<u> </u>	 				clump pockets.	(Micacèoús)	(Wet).
	S-6 13'-15'	3	3	5	8	18			S-6:	Gray Silt & Cl clump pockets	lay, and f Sand. 3. (Micaceous)	. Frequent Lt. Gray dry Silt & Clay (Wet).
			 	<u> </u>	<u> </u>	-						
	S-7 18'-20'	3	4	5	7	10			S-7:	Same as S-6.	·.	
-20				<u> </u>	-	• -						
	S-8	4	5	9	10	12			S-8:	Gray Silt & Cl	lay, and f Sand.	. (Micaceous) (Wet).
	23 - 25		<u> </u>	<u> </u>	<u> </u>	-			+	END (of test bori	NG AT 25.0 FEET.
				-	<u> </u>	-						
— 30 —					\vdash	 						
					<u> </u>	 - -						
				<u> </u>	<u> </u>	-						
				<u> </u>	<u> </u>	-						
-40												
NOTES:												
VISUAL	IDENTIFICATI	ON OF	SOILS	j (Bl	JRMISTEF	₹ CLASSIFIC	ATION SYS	(EM)		TERMINOLC)GY for STRATIFIE	ED SOILS
Compor PRINCIF Minor	<u>nent</u> Pro AL – au sa lit tr	portion nd ome ttle race	<u>15</u>	<u>% Ran</u>	<u>ige (by</u> 50 or 1 35 to 4 20 to 4 10 to 1 1 to 1	<u>v weight)</u> more 50 35 20 0	- -	Clayey Soils Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	: Pl. Jium Pl. Pl. High Pl.	Term parting seam layer occasior frequent	Definit 0 to 1/16" 1/2" nal one o t more	ion 1/16" thickness ' to 1/2" thickness to 12" thickness or less per foot of thickness than one per foot of thickness

Consulting Planners), Municipal & Er Surveyors - L	NVIRONME Landsca	ntal Engi pe Archi	R.A. P.A. neers itects		RED BAN 331 New Suite 203 Red Ban Phone (7 Fax (73 E-mail - g	IK OFFICE man Spring , N.J. 0770 32) 383-199 2) 383-1990 2) 383-1990 jeotech@m	s Road 1 50 aserconsulting.com	PROJECT Borou Merce PROJECT	Hightstown Re ugh of Hightsto er County, NJ NO. <u>1600109</u>	development own 94A	BORING NO. <u>TB-113</u> page <u>1</u> of <u>2</u> location <u>SEE PLAN</u> OFFSET
	TOR: <u>Accu</u> Danny	rate D	rilling, IF–75	LLC Truck	Mounte			GROUND	WATER:	DEPTH (ft.)) DATE	DATE STARTED
METHOD HAMMER RODS	: HSA <u>×</u> : CH <u>×</u> : AW <u>×</u>	Mu Sa NW	id Roto fety	ary	Otł Aut Otł	ner tomatic _ ner	X	End of Drilling After Drilling (>	(0 hrs.)	<u> </u>	8/18/17	GROUND ELEV
INSPECT DEPTH	OR: <u>Pavle</u> SAMPLE	e Ayoul	ows pri				POCKET	PROFILE CHANGE				GROUND WATER ELEV
BELOW SURFACE	NUMBER DEPTH (ft)	0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	PENETR- OMETER (tsf)	DEPTH ELEV.		IDEN	ITIFICATION OF S	OILS / REMARKS
_ 0 _	S-1 0'-2'		7	12	8	12			S-1:	Top 6": Asphalt Gray cmf SAND, fragments	Pavement. some cmf Gr	avel, little Clayey Silt. Frequent Brick
	S-2	7	13	9	4	12			S-2:	Top 6": Orange- Bot 6": Orange-	-Gray cmf San -Gray CLAY &	d, and cmf Gravel, some(-) Clayey Silt. SILT, some(-) f Sand. Occasional Red
L _	2-4 S-3	5	5	4	3	8			S-3:	pockets. (Moist Brown-Gray SILT). & CLAY, som	e(+) f Sand. Frequent Orange seams.
	4'-6' S-4	4	4	3	3	18			S-4:	Top 9": Same a	n Fine Roots. is S-3.	(Moist).
	6'-8' S-5	2	3	4	4				5-5.	Bot 9": Gray SIL	_T & CLAY, so	ne f Sand. (Micacous) (Wet).
— 10 —	8'-10'	~	-							* Possibly pushi	ng a cobble.	
						_						
	S-6	3	3	6	6	20			S-6:	Gray f Sand, an	id Clayey Silt.	Frequent Lt. Gray Sand and Clay
L _	13'-15'					-				pockets. (Micad	ceous) (Wet).	, , ,
						_						
	S-7	5	9	13	12	10			S-7:	Greenish-Grav f	Sand. and Clo	avev Silt. (Micaceous) (Wet).
— ₂₀ —	18'-20'					-				,		
						-						
	S-8	3	3	6	7	12			S-8:	Gray f Sand, an	nd Clayey Silt.	(Micaceous) (Wet).
┣ —	23'-25'										,,,	
						-						
	S-9	3	6	11	13	12			S-9:	Gray f Sand, ar	nd Clayey Silt.	Frequent Dk. Gray seams. (Micaceous)
— 30 —	28'-30'									(Wet).		
						-						
	S-10	4	8	11	11	12			S-10:	Gray Silt & Clay	v, and f Sand.	(Micaceous) (Wet).
	33'-35'					+						
						-						
	S-11	4	8	14	18	14			S-11:	Same as S-10.		
- 40	38'-40'											
NOTES:												
VISUAL	IDENTIFICATI	<u>ON_</u> OF	SOILS	<u>(B</u> L	JRMISTER	CLASSIFIC	ATION SYST	EM)		TERMINOLOG	Y for STRATIFIE	D SOILS
	nent Pro	portior	าร	% Rar	ige (b)	/ weight)		Clayey Soils	s	Term	Definiti	on /16" thickness
Minor	— ai sa	nd ome			35 to . 20 to .	50 35		SILT & CLAY low CLAY & SILT med	PI. ium PI.	seam laver	1/16" 1/2" +	to 1/2" thickness to 12" thickness
	lit tr	tle ace		1 1	10 to 1 to 1	20 0		Silty CLAY high CLAY very	Pl. high Pl.	occasional frequent	one oi more	less per foot of thickness than one per foot of thickness

Consulting Planners	9. Municipal & Er Surveyors - I	NVIRONME Landsca	ental Engi ape Arch	R. A. P. A. ineers itects		RED BAN 331 New Suite 203 Red Ban Phone (7 Fax (73: E-mail - ç	<u>JK OFFICE</u> man Spring: , к, N.J. 0770 32) 383-199 2) 383-1990 geotech@m	s Road /1 50) aserconsulting.com	PROJECT Boroug Mercer PROJECT N	Hightstown F gh of Hights r County, NJ NO. <u>16001(</u>	Redevelopment town 094A	BORING NO. <u>TB-113</u> page <u>2</u> of <u>2</u> location <u>SEE PLAN</u> offset
CONTRAC DRILLER DRILLINC	TOR: <u>Accu</u> : <u>Danny</u> ; EQUIPMEN ⁻	<u>rate D</u> T: <u>CM</u>	<u>rilling,</u> <u>1E-75</u>	LLC Truck	Mounte	ed		GROUND First Enco	WATER:	DEPTH (ft <u>7</u> 7.0	t.) DATE 8/18/17	DATE STARTED 8/18/17 DATE FINISHED 8/18/17
HAMMER RODS INSPECT	: CH : AWX OR:Pavle	Sa Sa NW e Ayoul	fety V b		Aut Otł	tomatic _ ner		End of Drilling After Drilling (>:	(0 hrs.) <u> </u>	<u> </u>	<u>8/18/17</u>	GROUND ELEV. <u>83.0+/-</u> GROUND WATER ELEV. <u>76.0+/-</u>
DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER DEPTH (ft)	BL:	OWS PEF	₹ 6 INC	HES 18-24"	RECOVERY (in)	POCKET PENETR- OMETER (tsf)	PROFILE CHANGE DEPTH ELEV.		ID	DENTIFICATION OF S	OILS / REMARKS
40				[-						
	S-12 43'-45'	3	12	16	17	14			S-12:	Gray SILT & C	CLAY, some f Sa	nd. (Micaceous) (Wet).
						-						
-50 -	S-13 48'-50'	5	7	12	28	16			S-13:	Gray f Sand, *Crushed Lt. [and Silt & Clay. Brown Gravel bot	(Micaceous) (Wet). tom 2 inches of spoon.
				<u> </u>	\vdash					END (of test bori	NG AT 50.0 FEET.
				 	\vdash	-						
						-						
				\vdash								
—60 —				<u> </u>	<u> </u>	-						
				-	\vdash	-						
				<u> </u>		-						
—70 —				<u> </u>	+	-						
						-						
				<u> </u>	<u> </u>	-						
						-						
- 80												
VISUAL	IDENTIFICATI	ON OF	SOILS	; (Bl	JRMISTEF	CLASSIFIC.	ATION SYST	EM)		TERMINOLC	OGY for STRATIFIE	D SOILS
Compor PRINCIF Minor	<u>nent</u> Pro PAL – ai sc lit tr	<u>portion</u> nd ome ttle face	<u>15</u>	<u>% Ran</u> 5 2	<u>ige (by</u> 50 or r 35 to 5 20 to 5 10 to 1 1 to 1	<u>v weight)</u> more 50 35 20 0		Clayey Soils Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	It PI. PI. ium PI. PI. high PI.	lerm parting seam layer occasior frequent	Definiti 0 to 1 1/16" 1/2" t nal one or more	on I/16" thickness to 1/2" thickness to 12" thickness less per foot of thickness than one per foot of thickness

Consulting Planners	, Municipal & E Surveyors - 1	nvironme Landsca	SEI ental Eng ape Arch	R. Jineers nitects		RED BAN 331 Newi Suite 203 Red Ban Phone (7 Fax (73 E-mail -	<u>UK OFFICE</u> man Spring: 3 Ik, N.J. 0770 732) 383-199 32) 383-1991 geotech@m	s Road)1 50 0 naserconsulting.com	PROJECT <u>Borc</u> <u>Merc</u> PROJEC	 Hightstown R Jugh of Hightst Jer County, NJ T NO. 16001(<u>'edevelopment</u> town 094A	BORING NO. TB-114 PAGE 1 0F 1 LOCATION SEE PLAN 0FFSET
DRILLER: DRILLING METHOD	Danny ; EQUIPMEN ⁻ ; HSA <u>×</u>	[:M	<u>1E-75</u> ud Rot	 Truck	<u>Mount</u> e	ed		GROUND First Encr End of Drilling	WATER: puntered (0 hrs.)	DEPTH (ft <u>↓ 4.0</u> <u>↓ 4.0</u>) DATE - <u>8/18/17</u> 8/ <u>18/17</u>	DATE STARTED 07.107.17 DATE FINISHED 8/18/17 82.0+/-
HAMMER: RODS INSPECT	CH	Sa NV <u>e Ayou</u>	fety <u>v</u> <u>ub</u>		Aut Otł	:omatic _ ner		After Drilling (>'	(3 24 hrs.)	⊻ ⊻		GROUND ELEV GROUND WATER ELEV
DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER DEPTH (ft)	BL 0-6"	.0WS PE	R 6 INC	:HES 18-24"	RECOVERY (in)	POCKET PENETR- OMETER (tsf)	PROFILE CHANGE DEPTH ELEV.		ID	ENTIFICATION OF	SOILS / REMARKS
	S-1 0'-2' S-2		8	8	8	12 14			S-1: S-2:	Top 6": Asphalt Brown cmf Sar Brick fragment Greenish Brow	t Pavement. nd, and cmf Gr is. (Fill) (Moist n mf SAND, sor	avel, some(-) Clayey Silt. Occasional .). me Clavev Silt. (Moist).
	2'-4' S-3	2	3	4	2	6			S-3:	Gray SILT & C	CLAY, some f Sc	and. (Micaceous) (Wet).
	4'-6' S-4 6'-8'	4	4	5	5	0			S-4:	No Recovery. * Possibly pus	shing a cobble.	
-10	S-5 8'-10'	2	3	4	3	14			S-5:	Gray Silt & Cla (Micaceous) (M	ay, and f Sand. Vet).	. Frequent Lt. Gray Silt & Clay pockets.
1~		<u> </u>		<u> </u>	+	-						
	S-6 13'-15'	3	3	6	7	14			S-6:	Gray f Sand, c	and Clayey Silt.	(Micaceous) (Wet).
		<u> </u> _	<u> </u>	<u> </u>		-						
-20 -	S-7 18'-20'	3	3	6	6	18			S–7:	Gray f Sand, c (Micaceous) (W	and Clayey Silt. Vet).	Occasional Greenish Gray layers.
						-						
┣ _	S-8 23'-25'	3	4	7	8	16	<u> </u>	<u> </u>	S-8:	Same as S-7.		110 AT OF O FFFT
						 - -)F IESI DURI	NG AT 25.0 FEET.
— 30 —	<u> </u>	<u> </u>	+	+	+	 						
		\vdash	<u> </u>	<u> </u>								
┣ -		<u> </u>	+	+		 						
		\square	<u> </u>	<u> </u>		 						
-40 -			<u> </u>									
NOTES: * A	dded water	in auç	jers to	> rinse	out s	oils stucl	k inside	at 6' prior to S-·	4.			
VISUAL	IDENTIFICATI	ON OF	SOILS	s (Bl		CLASSIFIC	CATION SYST	IEM)		TERMINOLO)GY for STRATIFI	ED SOILS
PRINCIP Minor	AL – ar si li	nd ome ttle race	<u>15</u>	<u>% Kun</u> 5	<u>ige (by</u> 50 or r 35 to 5 20 to 5 10 to 1 1 to 1	weignty more 50 35 20 0		Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	t PI. PI. lium PI. PI. high PI.	parting seam layer occasior frequent	0 to 1/16" 1/2" nal one c more	ion 1/16" thickness ' to 1/2" thickness to 12" thickness or less per foot of thickness than one per foot of thickness

Consulting Planners	9. Municipal & En Surveyors - I	NVironme Landsca	Intal Engi pe Arch	R. P. A. ineers itects		RED BAN 331 Newr Suite 203 Red Bank Phone (7 Fax (73; E-mail - ç	√K OFFICE man Spring: } K, N.J. 0770 32) 383-19! 2) 383-1990 geotech@m	Image: gs Road PROJECT _Hightstown Redevelopment '01 '01 '01 '01 '01 '01 '01 '01			BORING NO. TB-115 page 1 of 1 location SEE PLAN offset			
CONTRAC DRILLER DRILLING METHOD HAMMER RODS	TOR: <u>Accu</u> <u>Danny</u> EQUIPMENT HSA <u>x</u> CH <u>x</u> AW <u>x</u>	<u>rate</u> D Μι Sa ΝΥ	<u>rilling,</u> IE-75 Id Roto Ifety V	<u>LLC</u> Truck ary	<u>Mounte</u> Otł Au ⁱ	ed her tomatic _ her	X	GROUND First Enco End of Drilling After Drilling (>	WATER: ountered <u></u> (0 hrs.) <u></u> 24 hrs.) <u></u>	DEPTH (ft.) [DATE /18/17 /18/17	DATE STARTED 8/18/17 DATE FINISHED 8/18/17 GROUND ELEV. 83.0+/- GROUND WATER ELEV.		
INSPECT DEPTH BELOW SURFACE	OR: <u>Puvie</u> SAMPLE NUMBER	3 Ayou BL	D .OWS PEI	R 6 INC T ₁₂₋₁₈ "	HES	RECOVERY (in)	POCKET PENETR- OMETER	PROFILE CHANGE		IDENTIFICA	ATION OF S	SOILS / REMARKS		
— 0 ⁽¹¹⁾	S-1 0'-2' S-2 2'-4' S-3	1	2 3 10	6	3 6 2	12 16 14		ELEV.	S-1: S-2:	Top 6": Asphalt Pave Top 4": Asphalt Pave Bot 8": Greenish Gra Top 10": Green-Brow Roots. (Moist). Bot 6": Green-Brown Frequent Orange poo	ement. ement. by mf SANI wn m(-)f n cmf San ckets. (We	D, some Clayey Silt. (Moist). Sand, and Silt & Clay. Frequent Fine d, and cmf Gravel, little Clayey Silt. et).		
	4'-6' S-4 6'-8'	2	3	4	4	14			 S-3: Orange-Brown cmf Gravel, and cmf Sand, little Silt. Frequent f pockets. (Wet). S-4: Gray SILT & CLAY, little(+) f Sand. (Micaceous) (Wet). 					
— 10 —	S-5 8'-10'	1	3	4	4	16			S-5:	Gray SILT & CLAY, s (Micaceous) (Wet).	ome f Sar	nd. Frequent Lt. Gray pockets.		
	S-6 13'-15'	2	3	5	7	18			S-6:	Gray Silt & Clay, an (Micaceous) (Wet).	d f Sand.	Occasional Dk. Gray seams.		
-20	S-7 18'-20'	4	7	9	7	14			S–7:	Greenish Gray f SAN	D, some (Clayey Silt. (Micaceous) (Wet).		
	S-8 23'-25'	4	5	8	8	14			S-8:	Greenish Gray f Sand	d, and Cla	iyey Silt. (Micaceous) (Wet).		
										END OF IL	St Bori	NG AT 25.0 FEET.		
— 30 —														
						•								
—40 —														
NOTES:														
VISUAL Compor PRINCIF Minor	IDENTIFICATI nent Pro PAL – si si li ¹ tr	ON OF portior nd ome ttle race	SOILS	(BL % Rar	JRMISTER 1ge (by 50 or 1 35 to 1 20 to 1 10 to 1	CLASSIFIC/ weight) more 50 35 20 0	ATION SYST	EM) Clayey Sils Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	it PI. PI. lium PI. PI. high PI.	TERMINOLOGY for Term parting seam layer occasional frequent	r STRATIFIE Definiti 0 to 1 1/16" 1/2" t one or more 1	D SOILS on 1/16" thickness to 1/2" thickness to 12" thickness r less per foot of thickness than one per foot of thickness		

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Consulting Planners	, Municipal & En Surveyors - L	NVIRONME Landsca	ntal Engi pe Arch	R.A. P.A. ineers itects		RED BAN 331 New Suite 203 Red Ban Phone (7 Fax (73: E-mail - g	IK OFFICE man Spring: , N.J. 0770 32) 383-199 2) 383-1990 geotech@m	s Road PROJECT Hightstown Redevelopment Borough of Hightstown Mercer County, NJ PROJECT NO. 16001094A			BORING NO. TB-116 PAGE 1 0F 1 LOCATION SEE PLAN 0FFSET			
CONTRAC DRILLER: DRILLING	TOR: <u>Accu</u> Danny FOUIPMENT	rate D r∙ CM	rilling, IE–75	LLC Truck	Mounte			GROUND	WATER:	DEPTH (*	ft.) DATE 8/18/17	DATE STARTED 8/18/17 DATE FINISHED 8/18/17		
METHOD HAMMER RODS INSPECT	: HSA <u> </u>	Mu Sa NW e Ayoul	id Roto fety / b	ary	Oth Aut Oth	er omatic _ ier	X	End of Drilling	(0 hrs.) _ 24 hrs.) _	⊻ <u> </u>	<u>8/18/17</u>	GROUND ELEV GROUND WATER ELEV80.0+/		
DEPTH BELOW SURFACE	SAMPLE NUMBER DEPTH (ft)	BL 0-6"	OWS PE	R 6 INC	HES 18-24"	RECOVERY (in)	POCKET PENETR- OMETER (tsf)	PROFILE CHANGE			IDENTIFICATION OF	SOILS / REMARKS		
— 0 ⁽⁽⁾ —		4	2	1 12 3	2 7 2	12 12 12	(0)		S-1: S-2: S-3:	Top 6": Aspha Top 5": Aspha Bot 7": Grn.– Top 6": Same Bot 6": Orang Occasional Re Orange–Brown	alt Pavement. Jt Pavement. Gray cmf Sand e as S-1. ge-Brown cmf G ad pockets. (We n cmf SAND, sor	and cmf Gravel, little Clayey Silt. (Moist). ravel, and cmf Sand, little Silt. t). ne(+) Clayey Silt, little f Gravel. (Wet).		
	4 - 6 S-4 6'-8'	2	3	6	5	18			S−4: Dk. Gray SILT & CLAY, some(−) f Sand. (Micaceous) (Wet).					
- 10	S-5 8'-10'	2	1	3	3	12			S-5:	Dk. Gray SILT	& CLAY, little f	Sand. (Micaceous) (Wet).		
	S-6 13'-15'	2	2	4	3	14			S-6:	Dk. Gray Silt (Micaceous) (& Clay, and f S Wet).	Sand. Frequent Lt. Gray pockets.		
—20 —	S-7 18'-20'	2	3	5	6	16			S-7:	Dk. Gray Silt (Micaceous) (& Clay, and f S Wet).	Sand. Frequent Greenish Gray seams.		
	S-8 23'-25'	3	10	8	9	14			S-8:	Same as S-7	7.			
										END	of test bori	NG AT 25.0 FEET.		
—30 —														
HU														
VISUAL	IDENTIFICATI	ON OF	SOILS	(BL	IRMISTER	CLASSIFIC	ATION SYST	EM)		TERMINOL	OGY for STRATIFI	ED SOILS		
Compoi PRINCIF Minor	nent Pro PAL – au su lit tr	portior nd ome ttle race	<u>18</u>	<u>% Kan</u> 5 2 2 1 1	ge (by 50 or r 55 to 5 20 to 5 0 to 2 to 10	weight) more 50 35 20)	-	Clayey Soils Clayey SILT sligh SILT & CLAY low CLAY & SILT med Silty CLAY high CLAY very	t PI. PI. ium PI. PI. high PI.	lerm parting seam layer occasic frequen	Definit 0 to 1/16 1/2" onal one c t more	tion 1/16" thickness ' to 1/2" thickness to 12" thickness or less per foot of thickness than one per foot of thickness		



APPENDIX B

TEST BORING LOGS (2005)

VISUAL IDENTIFICATION OF SAMPLES

(Burmister Soil Classification System)

I. Definition of Soil Components and Fractions

<u>Material</u>	<u>Symbol</u>	<u>Fraction</u>	<u>Sieve Size</u>	Definition
Boulders	Bldr		9" +	Material retained on 9" sieve.
Cobbles	Cbl		3" to 9"	Material passing the 9" sieve and retained on the 3" sieve.
Gravel	G	coarse (c) medium (m) fine (f)	1" to 3" 3/8" to 1" No. 10 to 3/8"	Material passing the 3" sieve and retained on the No. 10 sieve.
Sand	S	coarse (c) medium (m) fine (f)	No. 30 to No. 10 No. 60 to No. 30 No. 200 to No. 60	Material passing the No. 10 sieve and retained on the No. 200 sieve.
Silt	\$		Passing No. 200 (0.075 mm)	Material passing the No. 200 sieve that is non-plastic in character and exhibits little or no strength when air dried
Clayey SILT	Cy\$	Slight (SL)	1 to 5	Clay - Soil
SILT & CLAY	\$ & C	Low (L)	5 to 10	Material passing the No. 200 which can be
CLAY & SILT	C & \$	Medium (M)	10 to 20	within a certain range of moisture content,
Silty CLAY	\$yC	High (H)	20 to 40	when air-dried.
CLAY	С	Very High (VH)	40 Plus	
Organic Silt	(O\$)			Material passing the No. 200 sieve which exhibits plastic properties within a certain range of moisture content, and exhibits fine granular and organic characteristics.

II. Definition of Component Proportions

<u>Component</u>	<u>Written</u>	<u>Proportions</u>	<u>Symbol</u>	Percentage Range by Weight*
Principal	CAPITALS			50 or more
Minor	Lower Case	and	a.	$35 ext{ to } 50$
		some	s.	$20 ext{ to } 35$
		little	1.	10 to 20
		trace	t.	1 to 10

* Minus sign (-) lower limit, plus sign (+) upper limit, no sign middle range.

Consulting Planners DEPTH DEPTH WEIGHT	A Municipal & Surveyors OF WATER OF WATER OF HAMM	AASSER	₩/ ₩/	R 0 33 F F E CASIM	ED BAN The River 31 Newn ted Bank Phone (7: iax (732 i-mail - g T. CAS VG OUT BS SAI	K OFFIC Centre - nan Sprin J. N.J. 077 32) 383-19 eotech@ ING OU I ON MPLER	E Building Two 195 Road 701 950 90 Imaserconsulting.com IT ON	PROJECT N. Bo PROJECT DATE ST DATE ST DATE FII CASING: SAMPLEI	F Hightstown Mill Dev. Project Main St. & N. Academy St. prough of Hightstown I NO. 04-0073A IARTED 07/12/04 NISHED 07/12/04 O.D. 1.D. R: 0.D. 2" 1.D.	SHEET 1 OF 2 BORING NO. TB-1 LOCATION SEE PLAN OFFSET		
INSIDE	LENGTH O)F_SAMPLER:	24		IN.			COUPLIN	I.D	SAMPLER 30*		
DEPTH BELOW SURFACE	CASING BLOWS PER	SAMPLE NUMBER	BLOWS	PER 6" ER	ON	·	PROFILE CHANGE DEPTH	IDENTIFICATION OF SOILS / REMARKS				
- 0 -	FÖÖT H	SURFACE, FT.	<u>0-6'</u> 10	<u>6-12</u>	12-18	<u>18-24</u> 9	ELEV.	<u>S-1;</u>	Plack and SAND some Silt, sor			
	0	0'-2'						J	Bluck citii annu, aonne an, aon	në mi uravel, Asphalau i avenena		
		<u>S-2</u>	7	6	6	4	-	s_2:	Vallan Provid of SAND some S	"I trans of Crowal		
		2-4	- <u></u>	4	+		-	S-2: Tellow Brown mi SANU, some Silt, trace mi Gravel.				
┠─	W	4'-6'	<u>+</u>	<u>+ -</u>	<u>+</u>	<u>+</u>	1	S-3: No Recovery (rock in tip).				
		S-4	4	6	6	7		$S = A = D = C_{\text{cons}} C_{c$				
		6-8 S-5	 ,	$\frac{1}{3}$	$\left -\frac{1}{3} \right $	<u> </u>	-	5-4;	Dk. Gray Clayey SILI, httle(+) a	nf Sand.		
	E	8'-10'	+	<u> </u>	<u> </u>		1	с_ <u>5</u> ,	OL O Ol CHI (HIG(1) M	· · · · /// · · ·		
- 10	м	S-6	4	5	6	6	1	3-5.	Dk. Gray Clayey Sili, muchty m	nf Sand (Micaceous).		
		10 - 12			–	_	-	S-6;	Same an 5-5			
			+	<u> </u>	<u>+</u>	<u> </u>	1		Suine us 5 5.			
	G		<u> </u>	Ļ	Ļ	Ļ	j					
		S-/ 15'-17'	2		6	6		S-7:	Same as S-5.			
	<u>``</u>			<u> </u>	1	<u> </u>						
							-					
-20 -	 '	R+2	$\frac{1}{1}$	$\frac{1}{5}$	$\frac{1}{6}$	R R	4	с_ <u>я</u> .	Die Oren Clause Sit T come mf	•		
	!	20'-22'	<u> </u>		<u> </u>	0	•	3-0.	Dk. Gray Clayey Sich, some mi	Sond.		
Į												
Į –	 !	ļ				_	4					
┣ ─	┼───┘	S-9	+	5	7	8	•	_{S-9:}	Dk Grav f Sand and Clayey Sil	H (Minnepule)		
Ì		25'-27'						.	Dr. oray i Dana, and Day,			
İ		·	—	—	Ţ	_	H					
İ	├ ──── [/]		+	+	 							
- 30	- <u></u>	<u>S-10</u>	5	7_	9	11		S-10:	Same as S-9.			
		30'-32'		_	—		ļ					
	[/]	} —		'								
			+	<u> </u>		+						
		S-11	6	8	9	17		S-11:	Same as S-9.			
		35'-37		· '		<u> </u> '	1					
			<u> </u>	<u> </u>	<u> </u>	<u>}</u>						
Soils Er	ngineer:	James J.	Serpico	o, Jr.				Contracta	or: Granese Drilling, Inc.			
Drilling	Inspector:	Bruce Lap	pento					Driller: .	Mike Granese			
	•											
	<u> </u>					- Pala	VISUAL IDENTIFICA	ATION TERM	IS USED			
		Clayey Soils /	At Boll	Moistu	Jre	Gran	iular Soils		Consistency of Clayey Soils	Proportions Used		
Clo SiL CLA Sill CLA	Yey Silt & CLAY Y & SILT Y CLAY Y	slight Pl. T low Pl. T medium Pl. T high Pl. T very high Pl.	hread Ihread Ihread Ihread Thread Thread	1/4" 1/8 1/16" 1/32" 1/64"	•	Very Loos Medi Den: Very	loose 0-1: ;e 15- ium 35- se 65- r Dense 85-	5 % 35 % 65 % 85 %	soft (S) 0.1-0.5 tr firm (F) 0.5-1.0 tr med.hard (MH) 1.0-2.0 tr hard (H) 2.0-4.0 t very hard (VH) Over 4.0	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		

Consulting Planners DEPTH DEPTH WEIGHT	OF WATEF OF WATEF	AASER Environmental Enginee Landscape Architec AFT. V AFT. V AER:	W/ W/ ALL	R C 3 F F E C CASIN	ED BAN Ine River 31 Newr Red Bank thone (7: fax (7:32 f-mail - g f. CASI IG OUT	K OFFIC Centre nan Sprin N.J. 07 32) 383-19 sotech@ NG OU ON	E Building Two rgs Road 701 950 90 maserconsulting.com TON	PROJECT N. Bo PROJECT DATE ST DATE FII CASING:	Hightstown Mill Dev. Project Main St. & N. Academy St. rough of Hightstown NO. 04-0073A ARTED 07/12/04 VISHED 07/12/04 0.D. 1.D.	SHEET 2 OF 2 BORING NO. TB-1	
INSIDE	LENGTH C	CASING DF SAMPLER:	24	L8	BS SAM IN.	ipler	140LBS	SAMPLER	R: 0.D. <u>2</u> 1.D. <u>1-3/8</u> G: 0.D. <u>1.D. 1.D.</u>	CASING SAMPLER30°	
DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER	BLOWS	PER 6" ER	' ON	1	PROFILE CHANGE DEPTH FLEX	IDENTIFICATION OF SOILS / REMARKS			
- 40	H	SURFALL, FI.	7	<u>6-12</u>	12-18	15-24		S-12:	Dk. Gray f Sand, and Silt (Mice	aceous).	
	0	40'-42'	1	<u> </u>						,	
	L						-				
	W	S-13	13	24	38	60	1	S-13:	Gray cmf SAND, trace Silt.		
		45'-47'			<u> </u>						
					+						
_ 50 _	Ē							S-14.	Some as S-13		
- 50 -	E M S-14 22 35 52 46 50'-52'								June 43 5 10.		
		50 - 52					_		End of Test Boring	at 52 East	
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-70 -					.						
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- 80											
Soils E	ngineer:	James J.	Serpic	o, Jr.				Contracto	r: Granese Drilling, Inc.		
Drilling	inspector	Bruce Lop	penta					Driller:	Mike Gronese		
	VISUAL_IDENT							ATION TERM	is used	·····	
	Clayey Soils At Ball Moisture Relative Density(Dr) Granular Soils								Consistency of Clayey Soils	Proportions Used	
Cha Sill CLJ Sill CLJ	iyey Silt T & CLAY AY & SILT iy CLAY AY	slight Pl. low Pl. medium Pl. high Pl. very high Pl.	Thread Thread Thread Thread Thread	1/4 1/8 1/16 1/32 1/64	•	Very Loos Medi Dens Very	loose 0-1 se 15- jum 35- se 65- Dense 85-	5 % 35 % 65 % 85 % 100%	soft (S) 0.1-0.5 firm (F) 0.5-1.0 med.hard (MH) 1.0-2.0 hard (H) 2.0-4.0 very hord (VH) Over 4.0	isf trace = 1-10 % isf little = 10-20 % isf some = 20-35 % isf and = 35-50 %	

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Consulting Planners DEPTH DEPTH WEIGHT	g, Municipal 8 s Surveyors OF WATEF OF WATEF	AASSER	¥3 13 W/ W/ ALL	R 9 F E . CASIN	(ED BAN Ine River 31 Newn Red Bank Phone (73 Fax (732 F-mail - 9 T. CAS NG OUI	K OFFIC r Centre - nan Sprin ;, N.J. 077 32) 383-19 eotech@ ING OU F ON	E Building Two ygs Road 701 950 90 Imaserconsulting.com	PROJECT Hightstown Mill Dev. Project SHEET 1 0F 2 N. Main St. & N. Academy St. BORING NO. TB-2 Borough of Hightstown LOCATION SEE PLAN PROJECT NO. 04-0073A OFFSET					
INSIDE	LENGTH C	CASING)F SAMPLER:	24	LE	BS SAN	IPLER	<u>140 LBS</u>	SAMPLEF COUPLIN	R: O.D. <u>2"</u> I.D. <u>1-3/8</u> " IG: O.D. <u>1.D</u>	CASING			
DEPTH BELOW SURFACE	CASING BLOWS PER	SAMPLE NUMBER	BLOWS SAMPLE	PER 6" ER	ON		PROFILE CHANGE DEPTH	IDENTIFICATION OF SOILS / REMARKS					
⊢ o —	FOOT H	SURFACE, FT.	22	<u>6-12</u> * 12	22	<u>18-24*</u> 40	ELEV.	S-1:	Black cmf SAND, some Silt, son	ne f Gravel (Fill).			
		0'-2' S-2	13	7	7	9	- - -	S-2:	Brown cmf SAND, trace Silt.				
L _		2-4 S-3 4'-6'	6	3	4	15	4	S-3:	Gray f Sand, and Silt.				
	S	S-4 6'-8'	8	3	2	4	4	S-4: Olive Brown cmf SAND, trace Silt.					
	T E	S-5 8'-10'	3	3	3	4	-	S5:	Dark Gray Clayey SILT, some c(-)mf Sand, trace f Gravel.			
- 10	M	S-6 10'-12'	4	5	6	7		S-6: 5	Same as S-5.				
	A U C		+	+	\vdash	<u> </u>	4						
┢ -	E R	S-7 15'-17'	4	6	8	10		S-7:	Same as S-5.				
				\vdash									
-20		S-8	4	6	6	9	•	S-8:	Dk. Gray Clayey SILT, smoe m(-	-)f Sand.			
			+	╞	╞		-						
		S9	4	6	7	13		S-9:	Same as S-8.				
		25'-27'		\square			 						
-30	 	S-10					 	S-10:	Die Craw Clavar SILT trace(+)	/)/ 01			
		30'-32'			- <u>/</u>		•		UK. Groy Cloyey ΣιΕι, πασε(τ)	m(−)i Sana.			
L _													
l		S-11 35'-37'	5	5	8	10	4	S-11:	Dk. Gray f Sand, and Clayey Si	ilt.			
	 		+	 	+	 							
40 Soits E	ingineer:	James J.	Serpice	o, Jr.	<u> </u>		·	Contracto	or: Granese Drilling, Inc.				
Drilling	Inspector:	Bruce Lop	senta					Driller: _	Mike Granese				
							VISUAL IDENTIFIC/	ATION TERM	IS USED				
		Cloyey Soils	At Ball	Moisti	ure	Relat Gran	tive Density(Dr) of Jular Soils		Consistency of Clayey Soils	Proportions Used			
Cla SIL CL Sill CL	yey Silt T & CLAY AY & SILT (y CLAY AY	slight Pl. 1 Iow Pl. 1 medium Pl. 1 high Pl. very high Pl.	Thread Thread Thread Thread Thread	1/4" 1/8" 1/16" 1/32" 1/64"	•	Very Loos Medi Dens Very	loose 0-1 ie 15- ium 35- se 65- Dense 85-	5 % 35 % 65 % 85 %	soft (S) 0.1–0.5 tr firm (F) 0.5–1.0 tr med.hard (MH) 1.0–2.0 tr hard (H) 2.0–4.0 tr very hard (VH) Over 4.0	sf trace = 1-10 % sf little = 10-20 % sf some = 20-35 % sf and = 35-50 %			

Consultin Planners DEPTH DEPTH WEIGHT	OF WATEF OF WATEF	AASSER	w/ W/ ALL	R G G F F E CASIN CASIN	(ED BAN) Jhe River 131 Newrr Red Bank, Phone (732 Famail - gr T. CASI NG OUT BS SA)	K OFFIC Centre - nan Sprir 12) 383-19 ectech@ ING OU ON	E • Building Two vgs Road 701 1950 90 ymaserconsulting.com JT ON 07/12/04 140 LBS	PROJECT N. Bo PROJECT DATE ST DATE ST DATE FII CASING: SAMPLEI	Hightstown Mill Dev. Project Main St. & N. Academy St. irough of Hightstown I NO. 04-0073A ARTED 07/12/04 NISHED 07/12/04 O.D. 1.D. R: 0.D. 2*	SHEET 2 OF 2 BORING NO. TB-2 LOCATION SEE PLAN OFFSET
INSIDE	LENGTH C)F SAMPLER:	24		IN.			COUPLIN	IG: 0.D I.D	SAMPLER 30"
DEPTH BELOW SURFACE	CASING BLOWS PER	SAMPLE NUMBER	BLOWS SAMPLI	PER 6" ER	' ON		PROFILE CHANGE		IDENTIFICATION OF SOILS	/ REMARKS
- 40 -		SURFACE, FT.	<u>0-6</u>	6-12	12-18*	18-24	ELEV.	c_12,	Di Crau & Cand and Cili	,
		40'-42'				10	4	5-12:	Dk. Gray t Sand, and Silt.	
		· · · · · · · · · · · · · · · · · · ·		·		<u> </u>	1			
	L		1							
L _	0			<u> </u>]	C_13.	A A CAND - France Cill	
	W S-13 16 30 50/3" 45'-46.3'							5-13.	Gray cmi SAND, trace sill.	
		40 - 40.J		┼──	–	—		 		
	<u> </u>	<u></u>					1		End of Test Boring	at 46.3 Feet
	E	<u> </u>	1	·†			1			
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Soils F	noineer:	James J.	Serpic	o, Jr.				Contracto	Granese Drilling, Inc.	
	.nymeer.	Bruce Lor	i						Mike Gronese	
Urilling	Inspector:							Driller: _		
					<u> </u>		VISUAL IDENTIFIC/			
						l Relo	tive Density(Dr) of	TION LENN		
		Cloyey Soils	At Boll	Moistu	ure	Gran	iular Soils		Consistency of Cloyey Soils	Proportions Used
Clo Sil	iyey Silt T & CLAY	slight Pl.	Thread Thread	1/4	I	Very	loose 0-1	5 % 35 %	soft (S) 0.1-0.5 t firm (E) 0.5-1.0	tsi trace = $1-10\%$
ČL Sił CL	ÀY & SILT ty CLAY AY	medium PI. high PI. very high PI.	Thread Thread Thread	1/16" 1/32" 1/64"	•	Medi Dens Very	ium 35- se 65- • Dense 85-	65 % 85 % 100%	med.hard (MH) 1.0-2.0 t hard (H) 2.0-4.0 t very hard (VH) Over 4.0	some = 20 - 35 % some = 35 - 50 % tsf

Consultin Planners DEPTH	g, Municipal / surveyor: OF WATEI	AASER & Environmental Enginer s - Landscape Architer RFT.	w/ _3	<u>Р</u> В В В В В В В В В В В В В В В В В В В	ED BAN Die River 31 Newn ted Bank Phone (73 Fax (737 E-mail - g T. CAS	K OFFIC 7 Centre - nan Sprir (, N.J. 07: 32) 383-19 jeotech@ ING OL	E • Building Two vgs Road 701 1950 190 ymaserconsulting.com JT ON 0 <u>7/13/04</u>	PROJECT N. Boy PROJECT DATE ST.	Hightstown Mill Dev. Project Main St. & N. Acodemy St. rough of Hightstown	SHEET 1 OF 1 BORING NO. TB-3			
DEPTH	OF WATEF	RFT. '	W/ ALL	CASIN	NG OUT	I ON		DATE FIN	NISHED 07/13/04	GROUND WATER ELEV.			
WEIGHT	OF HAMM	MER:					·	CASING:	0.D I.D	HAMMER FALL ON:			
	· •··•••••• /	CASING	24	LE	BS SAM	I PLER	140 LBS	SAMPLER	0.D. <u>2</u> I.D. <u>1-3/8</u>	CASING			
INSIDE)F SAMPLER:			IN.			COUPLIN	G: 0.D I.D	SAMPLER			
BELOW	BLOWS PER	SAMPLE NUMBER	SAMPLE					IDENTIFICATION OF SOILS / REMARKS					
⊢ ∘ −	F001 H	SURFACE, FI.	0-6-	6-12	12-18 ⁻ 5	18-24 ⁻ 6		S-1:	3" Asphalt				
		0'-2'					- .		Yellow Brown c(-)mf SAND, little	e Silt, trace f Gravel.			
		S-2	5	6	6	15		S-2:	Same as S-1 (Fill).				
		2'-4		+	- <u>-</u> -		4	c_3.	D-awa amf SAND little Silt little	Court /1941a Recovery)			
┝ ─	w	4'-6'	+ ''	$\frac{1}{1}$	┼┷			0-0	Brown chill annu, inclu and includ) Mi utavel (Little Neuvery).			
		S-4	4	4	5	5	Perched?	S-4: Brown cmf SAND, little cmf Gravel, trace Silt (Wet).					
1	<u> </u>	6'-8'	Ţ	Ļ	Ļ	Ļ	-						
1	<u></u>	8'-10'	<u>- - 2</u>	<u> </u>	<u> </u> →	4	-	S-5: Dk. Gray f Sand, and Clayey Silt.					
- 10 -	M	S6	5	6	<u> 7</u>	7_	4						
Í		10'-12'					<u> </u>	S-6: [)k. Gray Clayey SILT, some mf S	Sand.			
1				 	–	┥	4						
	<u> </u>	<u> </u>	+	+	+	+	-						
	Ε	S-7	2	4	4	6	<u>_</u>	S-7:	Dk. Gray f Sand, and Silt.				
ł	<u> </u>	15'-17	_		┨───	<u> </u>	-						
1				–	┼──		4						
<u></u>		·		<u> </u>		†	1						
-20		S-8	3	5	7	10	۱ ۱	S-8:	Dk. Gray Clayey SILT, some(+) ;	mí Sand.			
i		20'-22	<u> </u>	–		–	4						
1			+	\vdash	+	+							
L_		<u> </u>	<u> </u>	Ŀ]						
	— —	S-9 25'-27'	4	7	11	12		S-9:	Same as S-8.				
l		20-21		┼──	┼──	—	4						
l		·	+	<u> </u>	·	·	1						
- 30]						
~~		S-10 30'-32'	4	6	9	11	4	S-10:	Dk. Gray Clayey SILT, little mf S	Sand.			
1		JU - J2					-						
1													
┣ –	[<u> </u>	<u> </u>	<u> </u>	$\frac{1}{1}$	<u> </u>	4	₋₁₁ ,	Di Di- 6 Cond and Clover Si				
1		<u>S-11</u> 35'-37'	4	7	<u> 11</u>	16	- -	5-11.	Dk. Gray i Sano, and Gayey un	lt.			
1			+	<u> </u>	+	+		 	End of Test Boring	nt 37 Feet			
							'		<u> </u>				
-40	<u> </u>		<u> </u>	<u> </u>			<u> </u>	<u> </u>					
Soils E	Soils Engineer:James J. Serpico, Jr.								r: Granese Drilling, Inc.				
Drilling	Drilling Inspector: Bruce Lapenta								Mike Granese				
 													
								ATION TERM	IS USED				
	Cloyey Soils At Ball Moisture Clauder Soils								Consistency of Clayey Soils	Proportions Used			
Cio Sil	yey Silt	slight Pl. / low Pl.	Thread Thread	1/4 1/8		Very Loo:	/ toose 0-1 se 15-	5 % 35 %	soft (S) 0.1-0.5 t firm (F) 0.5-1.0 t	sf trace = 1-10 % sf little = 10-20 %			
CL/ Sil!	AY & SILT IV CLAY	medium Pl. hiah Pl.	Thread Thread	1/16 1/32	•	Medi Den:	ium 35– se 65–	65 % 85 %	med.hard (MH) 1.0-2.0 t hard (H) 2.0-4.0 t	sf some = 20-35 % sf and = 35-50 %			
CL/	ŶŤ	very high PI.	Thread	1/64"		Very	Dense 85-	100%	very hard (VA) Over 4.0	tsf			

				<u>R</u>	ED BAN	K OFFIC	E	PROJECT	Hightstown Mill Dev. Project	SHEFT 1 OF 1			
		AACED		0	ne River	Centre -	Building Two	N	Main St. & N. Academy St				
	> 1	MADEK	L.	R	ed Bank	N.J. 077	701		indir of the holds	BORING NO.			
			L ,	P	hone (73	2) 383-1	950		rough of Hightstown	LOCATION SEE PLAN			
Planners	s, municipel a Survevors	= Landscape Archited	ers Xs	Ē	ex (/32 -mail-g) 363-193 Botechildi	ou maserconsulting.com	PROJECT	NO. 04-0073A	OFFSET			
DEPTH	OF WATER	2FT. Y	w/	F	. CASI	NG OU	T ON	DATE ST.	ARTED07/13/04	GROUND ELEV.			
DEPTH	OF WATER) FT (w/	CASIN	ic out	ΩN.		DATE EIN	USHED 07/13/04				
DEPTH		(1.		. CASIN	001	UN	<u> </u>			GROUND WATER ELEV:			
WEIGHT	OF HAMM	IER:						CASING:	0.D 1.D	HAMMER FALL ON:			
		CASING		LE	3S SAN	PLER	<u> 140 </u> LBS	SAMPLER	2: 0.D. <u>2</u> 1.D. <u>1–3/8</u>	CASING			
INSIDE	LENGTH C	F SAMPLER:	24		_ IN.			COUPLIN	G; O.D I.D	SAMPLER 30"			
	1	1	1						· · · ·				
DEPTH Below	BLOWS	SAMPLE NUMBER	BLOWS	PER 6" "R	ON		PROFILE CHANGE	IDENTIFICATION OF SOILS / REMARKS					
SURFACE	FOOT	DEPTHS BELOW SURFACE, FT.	0-6	6-12"	12-18	18-24*	ELEV.		IDENTIFICATION OF SUILS	/ REMARKS			
- 0	Н	S-1	2	2	2	2	i	S-1:	Yellow Brown cmf SAND, some	Silt, little mf Grovel.			
	0	0'-2'	1	1									
	L	S-2	2	10	16	14							
	L	2'-4'	1	1	1			S-2:	Brown cmf SAND, some cmf Gr	ovel, little Silt.			
	0	S-3	7	5	6	6							
h	Ŵ	4'-6'	+	† <u> </u>	<u> </u>	<u> </u>		S-3: Yellow Brown c(-)mf SAND, some Silt (Wet).					
I		S-4	5	5	5	6	{ reiched?						
	s	6'-8'	+	<u>†</u> -	- <u>`</u> -	Ť	í	S-4: Dk. Gray mf Sand, and(+) Clayey Silt.					
	T	S-5	3	4	5	6	í	S-4: UK. Gray mt Sand, and(+) Clayey Silt.					
	E	8'-10'	<u> </u>	<u>† </u>	Ť	Ť	1						
<u> </u>	M	S-6	7	7	7	9	f	S-5: Same as S-4.					
		10'-12'	+	 	- <u>_</u>	<u> </u>	ł						
	A			1			{	S-6:	Same as S-4.				
	<u> </u>		+	+									
	G		+	+									
	F	S-7	2	2	3	4		5-7.	Dk. Grav Clavev SILT little f. Sa	nd			
	 R	15'-17'	<u> </u>	<u> </u>	<u> </u>			, , ,					
		f	+	<u> </u>	· · · · ·								
			-	1		[<u> </u>							
				1			1						
-20 -	1	S-8	2	4	5	7	1	S-8:	Same as S-7.				
		20'-22'		1		<u> </u>	1						
				1			1						
					[
	[1		[]						
г –	[S-9	4	6	9	11]	S-9:	Some as S-7.				
		25'-27']						
					<u> </u>	[]						
			1	1	_ ```	[· · ·]	1						
- ³⁰ -	[S-10	6	7	12	16	1	S-10:	Dk. Gray Clayey SILT, little(+) m	nf Sand.			
		30'-32'	1	1]	l					
	[Ι	<u> </u>			l					
				l i	<u> </u>			Ī					
			1	1]						
r -	[]	S-11	5	9	11	13		\$-11: °	Same as S-10.				
	[35'-37'	Ĩ.	T	I								
									End of Test Rosino	at 37 Feet			
					[and or root overlig				
				Ι	<u> </u>								
40 -		.lomes I	Seroic	n Jr	-				Cropons Drilling Lar				
Soils E	ngineer:		Jappin	u, u(.				Contracto	r: <u>Gronese Unling, inc.</u>				
Drilling	Drilling Inspector: Bruce Lapenta								Mike Granese				
´													
	VISUAL IDENT								S USED				
	Clause Soils At Dall Mainteen Relative Density(Dr)								· · · · · ·				
	Clayey Soils At Ball Moisture Granular Soils								Consistency of Clayey Soils	Proportions Used			
Cla	Clayey Silt slight PI. Thread 1/4" Very loose								soft (S) 0.1-0.5 t	sí trace = $1-10$ %			
SIL CL	iα clay AY & SILT	medium Pl.	Thread	1/16"		Medi	um 35-	55 % 65 %	med.hard (MH) 1.0-2.0 (si nue = $10-20\%$ si some = $20-35\%$			
Silt	Y CLAY	high Pl. very high Pl	Thread Thread	1/32"		Dens Verv	se 65- Dense 85-	85 % 100%	hard (H) 2.0-4.0 t	sf and = 35-50 %			
		tary myn rh		.707			20						

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	P ,	AACED	4	c	Ine Rive	r Centre	- Building Two	PROJECT	Hightstown Mill Dev. Project	SHEET		
	7	NAJEN	.	R F	31 Normal Red Bank	הוקובי חמח ג, N.J. 07 הרפיביי	ngs Koao 701	Bc	mount of Hightstown	BORING) NO	
Consultin Planner:	g, Municipal <i>I</i> se Surveyor:	L Environmental Enginer s • Landscape Architer	213 CtS	F	hone (r. 'ax (732 E-mail - g	12) 383-19 2) 383-19 jeotech@	.1950 190 Igmaserconsulting.com	PROJECT	T NO04-0073A	OFFSET	0N	
DEPTH	OF WATE	ਸ. '	w/	F	T CAS		IT AN	DATE ST	FADTED 07/13/04	GROUN	ייייי <u>י</u>	
DEPTH	OF WATE	RFT. '	W/ ALI	CASIN		TON		DATE FI	NISHED 07/13/04	GROUN	D WATER ELEV.	
WEIGHT	OF HAM	MER:						CASING:	0.D I.D	НАММЕ	R FALL ON:	
		CASING		lí	BS SAM	MPLÉR	140 LBS	SAMPLER	R: 0.D. <u>2</u> I.D. <u>1-3/8</u>	CASING	;	
INSIDE	LENCTH (OF SAMPLER:	24		IN.			COUPLIN	I.D I.D	SAMPLE	ER	
DEPTH BELOW	CASING	SAMPLE NUMBER	BLOWS	PER 6	' ON		PROFILE CHANGE			(· · · · · · · · · · · · · · · · · · ·	
SURFACE	PER FOOT	DEPTHS BELOW SURFACE, FT.	0-6*	6-12	12-18	18-24"	ELEV.		IUENBIRGATION OF SUBS	/ NEMPU	*KS	
ľ	Н	S-1 0'-2'		2	2	2	4	S-1:	2" Aspholt.			
	ι <u>.</u>	S-2	2_	7	11	15	-		Groy cmt Savu, some Six.			
ł	L	2'-4'			<u> </u>]	S−2:	Olive cmf SAND, little cmf Grave	el, little S	Silt.	
F -	<u> </u>	S-3	3	3	4	4	4	S-3:	Dk. Grav Clovey SILT, trace(-) r	mf Sand.		
				4	5	5	-					
	S	6'-8'					1	S-4: Same as S-3.				
ł		S-5	5	4	6	6						
<u> </u>		S-6	+	+	$\frac{1}{5}$	$\frac{1}{5}$	4	S-5: Dk. Gray cmf SAND, some Silt, trace(-) f Gravel.				
		10'-12'				<u> </u>	-					
	A]				_	S-6:	Dk. Gray f Sand, and Clayey Sil	t.		
	G						-					
┟╴╴	E	S-7	10	11	13	13	1	S-7:	Dk. Gray Clayey SILT, some(-)	mf Sand,	, little(-) f Gravel.	
	R	15'-17		-	-		-					
l							1					
L ₂₀ _					Ļ]					
2.v		S-8 20'-22'		4	7	<u> 9</u>	4	S-8:	Dk. Gray Clayey SILT, little mf S	land.		
			+	<u> </u>	<u> </u>		4					
			<u> </u>			—						
┣ -	+	S-9	+ 5	4	$\frac{1}{6}$	$\frac{1}{8}$	4	s_9.	Dr. Crow Clover SILT some m(-	14 Sand.		
	<u> </u>	25'-27'	+	t_		Ē	-	J-0.	Dk. Gluy Gluyey dien, dome my	*)i uunu.		
			- T '	—	_	F	1					
						┼──	4					
- 30 -	t	S-10	7	3	5	8	1	S-10:	Same as S-9			
	[30'-32'	'		ļ		-					
						·'	1					
L _							<u>]</u>					
		S-11 75'-17'	11	7	8	11	4	S-11:	Dk. Gray f Sand, and Silt.			
			+	<u> </u>	<u> </u>	<u> </u>		 	Find of Test Boring		Faat	
							ĺ		baltie we have a working	j u	real	
- 40 -	<u>i</u>	<u> </u>	<u>نے ا</u>	<u> </u>	<u> </u>		<u> </u>	<u> </u>				
Soils E	ngineer:	James J.	Serpice), Jr.		<u> </u>		Contracto	or: Granese Drilling, Inc.	 ,		
Drilling	Inspector	: Bruce Lap	ento					Driller: _	Mike Gronese			
i ——	······						VISUAL IDENTIFIC/	ATION TERN	AS USED		<u> </u>	
	·	Clover Soils	At Boll	Moistr	17.0	Rela	itive Density(Dr) of		Consistency of Clayer Soils			
Cic	wey Silt	slight PL	At Dun Thread	1/4"	ife	Very	iulor Solis I loose 0-1	 -5 %	enft (S) 0.1-0.5 t		$\frac{\text{Proportions Used}}{\text{trace}} = 1 - 10 \text{ %}$	
SIL CL	T& CLAY AY & SILT	low Pl. 7 (medium Pl.	Inread Thread	1/8 1/16"	ı	Loos Med	se 15- lium 35-	35 % 65 %	firm (F) 0.5-1.0 to med.hard (MH) 1.0-2.0 to	sí sí	little = 10-20 % some = 20-35 %	
Silt CL	Y CLAY AY	high Pl. <u>P</u> very high Pl.	(hreod Threod	1/32 1/64"		Dens Very	se 65 7 Dense 85-	85 % 100%	hard (H) 2.0-4.0 ts very hard (VH) Over 4.0	sf tsf	and = 35-50 %	

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				Ŗ	ED BAN	K OFFIC	£	PROJECT	Hightstown Mill Dev. Project	SHEFT 1 OF 1		
		AACED		03	Ine River	Centre -	Building Two	N.	Moin St. & N. Acodemy St.			
		VIAJEN	⊾.	R	ted Bank	. N.J. 07	701		multi bli a thinketown	BORING NO.		
Consultin	Municipal /	E Forimomental Foning	- AL	P	hone (73 fex (73)	32) 383-19 21 383-19	950 An	Uu	rougn of rightstown	LOCATIONSEE_PLAN		
Planner	s = Surveyor:	 Landscape Archited 	xs xs	E	i-mail - g	eotech@	maserconsulting.com	PROJECT	NO. 04-0073A	OFFSET		
					<u> </u>			<u> </u>	07/11/04			
DEPTH	OF WATER	RFT. 1	₩/	F1	f. CASI	NG OU	T ON	. DATE ST	ARTED	GROUND ELEV.	<u> </u>	
DEPTH	OF WATER	R <u>33.0</u> FT. 1	₩/ ALL	CASIN	10 OUT) ON	07/14/04	DATE FIN	NISHED07/14/04	GROUND WATER ELEV.		
WEIGH7	OF HAM	AFR:							0 D L.D.	HAMMER FALL ON:		
	-	CASING		Lf	RS SAN	MPLER	140 LBS	SAMPLEE	p op 2 [™] in 1−3/8 [™]	CASING	ļ	
	LENGTH (24		IN				с. о.р (.р	CAMDLED 30"	,	
INSIDE					UN+				0. 0. <i>D</i> 1.0	JAMFLER		
DEPTH BELOW	CASING	SAMPLE NUMBER	BLOWS	PER 6"	ON	I	PROFILE CHANGE				I	
SURFACE	PÉR FOOT	DEPTHS BELOW SURFACE, FT.	0-6	<u>6-12"</u>	12-18	18-24				/ REMARKS		
	н	S-1	T	2	2	2		S-1:	2" Aspholt.			
1	0	0'-2'	Τ						Gray cmf SAND, some Silt.		I	
	L	S-2	2	7	11	15			·	_		
	L	2'-4'			[S-2:	Olive cmf SAND, little cmt Grave	el, little Silt.		
	0	S-3	3	3	4	4	1	C 7.	DI O 6 Cd	1	I	
1	W	4 - 6	<u> </u>	\vdash	Ļ	<u> </u>	1	2-0:	Dk. Gray i Sana, and Glayey Sii	t.	I	
1		5-4	4	4		5	-	S-4: Same as S-3.				
1		0-0		┼╍	+	<u> </u>	4	S-4: Same as S-3.				
1	- r	8'-10'	- 	4	<u> </u>		4					
- 10 -	+ <u>~</u>	8-2		+	+ 5	<u> </u>	•	S-5: Dk. Gray cmf SAND, some Silt.				
		10'-12'	- *		\vdash	- 	1					
	A		+	+	+	·	1	S-6:	Dk. Gray Clayey SILT, some mf	Sand.		
	U		+	+	1	-	1		· · ·			
1_	G	·	1	† <u> </u>	1		1					
r -	E	S-7	10	11	13	13		S-7:	Same as S-6.			
1	R	15'-17'	<u> </u>	\square								
1		ļ	_	.	<u> </u>	- 	4					
			_	—			-					
-20 -		S8	+	+	+	+	4	<u> </u>	N. O. Oliviou Oliviou Olivio (s)	7 August	1	
		20'-22'	++	4	+	3		2-0:	Dk. Gray Clayey SiLi, indet+) in	if Sana.		
ŧ					·							
		1			·†	·						
			+	1	1		1					
F -		S-9	5	4	6	8		S-9:	Same as S-8.			
1		25'-27'	\Box									
			_	<u> .</u>	\downarrow	 '	1					
				<u> </u>	<u> </u>	_	1					
L ₃₀ –	<u> </u>		<u> </u>	Ļ	<u> </u>	Ļ	1					
* *		S-10	7	3	5	8	1	S-10:	Dk Gray Clayey SILT, little(+) m	f Sond.		
		<u> </u>		┨───	_	 '	4					
				 		·{'	1					
		-		┨───	·}		1					
┣ ─	+	S-11	$+_{11}$	7			ł	S-11:	Dk. Grav f Sand, and Silt.			
		35'-37'		<u> </u>	<u> </u>		ĺ	-				
			1		<u> </u>			ł	End of Test Boring	at 17 fact		
			1					ļ	LIN VI INA DATAS	GL J/ FOCL		
			T									
		James J.	Serpic	o, Jr.			· 	Centracto	- Gronese Drilling, Inc.			
20113 0	ngmeer.	Ichn Baz	orra ir					CONTRACIO	Nike Gronese		<u> </u>	
Drilling	Inspector	: <u> </u>	Britu or.					Driller: _	MIKE OFUIICSG			
 						· Dala	VISUAL IDENTIFICA	ATION 1ERM	IS USED			
1		Clayey Soils	At Boll	Moistu	ure	Reia Grar	tive Density(Dr) of jular Soils		Consistency of Clayey Sails	Proportions Used		
Clr	ovev Silt	slight PI.	Thread	1/4"		Very	loose 0-1	5 %	soft (S) 0.1-0.5 t	sf trace = 1-10 %		
Sil Ci	AY & CLAY	low Pl. medium Pl	Thread	1/8"	,	Loos	ie 15-	35 %	firm (F) 0.5-1.0 t	sf little = $10-20\%$		
Šil	ίχ ČLAΫ	high Pl.	Thread	1/32"	, *	Dens	se 65-	85 %	hard (H) 2.0-4.0 t	sf ond = 35-50 %		
UL	At	very night ri.	Inregu	1/04		Very	Uense ou-	100%	very nora (vm) uver t.u	tsi		
									l			

Consulting Planners DEPTH DEPTH WEIGHT	OF WATEF OF WATEF	AASER Environmental Enginee Landscape Architec FT. N FT. N MER: CASING	w/ W/	R P F E . CASIN	ED BAN The River 31 Newn ted Bank thone (73 iax (732 i-mail - p T. CASI IG OUT BS SAI	K OFFIC : Centre - nan Sprin ., N.J. 077 32) 383-19: sotech@r ING OU ING OU ON	E Building Two gs Road 701 950 90 maserconsulting.com IT ON	PROJECT N. BOI PROJECT DATE ST. DATE ST. DATE FIN CASING: SAMPLEF	Hightstown Mill Dev. Project Main St. & N. Academy St. rough of Hightstown NO. 04-0073A ARTED 07/14/04 VISHED 07/14/04 0.D. 1.D. R: 0.D.	SHEET 1 OF 1 BORING NO. TB-7 LOCATION SEE PLAN OFFSET			
INSIDE	LENGTH C	DF SAMPLER: _	24		IN.			COUPLIN	I.D I.D	SAMPLER30*			
DEPTH BELOW SURFACE	CASING BLOWS PER	SAMPLE NUMBER	BLOWS	PER 6* Er	ON		PROFILE CHANGE DEPTH	[IDENTIFICATION OF SOILS	/ REMARKS			
- 0 -		SURFACE, FT.	0-6"	6-12"	12-18"	18-24*	ELEV.		Tan 6", Tannail	•			
	0	0'-2'	+	4	<u> </u>	<u> </u>		5-1;	lop b : lopson. Bot: Ton mf SAND, little(+) Silt.				
	L	S-2	2	2	2	5			=				
		2'-4'	\Box		Ļ		H I	S-2:	Tan mf SAND, some Clayey Silt.				
┝ ─		S-3 4'_6'	15	18	7	6	4	_{S-3:}	Oronge Brown cmf SAND, some(-) m(-)f Gravel, little(+) Clavev Silt,			
		S-4	$\frac{1}{9}$	$+_{11}$	+ 13	13	1		One Piece Large Gravel.				
	s	6'-8'	Ť	<u> </u>	<u>'''</u>		4	S-4:	Orange Brown Clayey SILT, some	e() f Sond.			
	T	S-5	5	7	8	10	1						
L ₁₀	E	8'-10'		<u> </u>		<u> </u>		S-5:	Oronae Brown SILT & CLAY, little	e(-) f Sand, trace f Gravel,			
	<u> </u>	S-6	5	8	9	13			Ironstone Fragments.				
		10 - 12						S-6:	Dk Grav and Orange Brown SIL ¹	T & CLAY little f Sond			
	U			<u> </u>					(Mottled).	I QE GENTA, RELIG Y GUNIG,			
	G						1						
Γ	E	S-7	2	3	4	6	-	S-7:	Dk. Groy Clayey SILT, little(+) m	of Sand,			
ł 👘	R	15-17	-				, I I I I I I I I I I I I I I I I I I I		Micoceous, (Moist).				
			-				4						
				<u> </u>			1						
-20 -	†	S-8	3	5	5	7	†	S-8:	Same as S-7.				
		20'-22'	<u> </u>										
		-r	-		-		4						
			-		·		-						
┠─	+	S-9	15	7	8	9	•	5-9:	Same as S-8 mf Gravel in Tip				
		25'-27'	1	<u> </u>	1		1						
			1	<u> </u>			1						
			<u> </u>	<u> </u>	<u> </u>	Ţ]	ł					
L ₃₀ –	<u> </u>	C 10	<u> </u>	+	Ļ	<u> </u>	4	L . 10.					
		30'-32'	<u> </u>	- ⁰	<u> </u>		4	5-10.	Dk Gray Clayey SiLi, ana(-) m	if Sand. Micaceous.			
Į			+	+	<u> </u>		-						
				†	1	<u> </u>				i			
L _							1						
	 	S-11	5	6	9	13	4	S-11;	Same as S-10.				
		35-37	-	–	-		<u> </u>						
						╂──	4		End Ut lest borng	g 0 37 Feet			
	······	<u> </u>	+	<u> </u>	+	<u> </u>	1	1					
40		James J.	Serpic	a. Jr.	<u> </u>	<u>. </u>			Granese Drillina, Inc.				
2002 C	ngineer.	John Bezi	erro .lr	<u> </u>		· · ·			Mike Gronese	<u></u>			
Drilling	Inspector	· ·····		<u> </u>	••••••			Driller: _					
							VISUAL IDENTIFIC/	ATION TERM	is used				
						l Rela							
Clayey Soils At Ball Moisture Granular Soils									Consistency of Clayey Soils	Proportions Used			
Cla Şil	iyey Silt T & CLAY	slight Pl. Iow Pl.	Thread Thread	1/4 1/8		Very Loos	loose 0-1 se <u>15</u> -	5 % -35 %	soft (S) 0.1-0.5 t firm (F) 0.5-1.0 t	sf trace = 1-10 % sf little = 10-20 %			
CL Sili	AY & SILI IV CLAY	medium PI. hiah PI.	Thread Thread	1/16 1/32	•	Med) Dens	ium 35- se 65-	65 % 85 %	med.hard (MH) 1.0-2.0 t hard (H) 2.0-4.0 t	sf some = 20-35 % sf and = 35-50 %			
CLAY very high PI. Thread 1/54 Very Dense 85-100%									very hard (VH) Over 4.0	tsf			

				<u>8</u>	RED BAN	K offic	E	PROJECT	Hightstown Mill Dev. Project	SHEFT 1 OF 1
		AACTD		0	One Rive	r Centre ·	- Building Two	N	Main St. & N. Academy St	
	> 1	NAJEK	L	C F	ted Bank	nan Spri . N.J. 07	ngs koao 701		Main St. a. N. Academy St.	BORING NO.
	7 🔳 🗔		4.	P	hone (73	32) 383-1	950	Bor	ough of Hightstown	LOCATION SEE PLAN
Consultin	ig, Municipal &	Environmental Enginee	13	F	Fex (732	2) 383-19	90	DRAIFOT	No. 04-0073A	
Fiaminara	s e ourveyurs	е свянзавре Аканнос	43		- 11404 - 9	ooraa iig	maser consoliting.com	PROJECT	NO	
ПЕРТН		, T	w /	F	240 T			DATE STA	NOTED 07/13/04	
			"/	·····					07/13/04	
DEPTH	OF WATER	RFT. 1	₩/ ALL	CASIN	NG OUT	í ON		_ DATE FIN	ISHED	GROUND WATER ELEV.
WEIGHT	OF HAMM	AER:						CASING	0.0. 10.	HAMMER FALL ON:
		CASING		1	AN 29	API FR	140 LBS		2" ID 1-3/8"	CARING
			- 24				00	SAMPLER		
INSIDE	LENGIH C	JF SAMPLER:			IN.			COUPLING	G: 0.D I.D	SAMPLER
DEPTH	CASING	SAMPLE NUMBER	BLOWS	PER 6	ON		PROFILE CHANGE			
BELOW SURFACE	PER	DEPTHS BELOW	SAMPLE	R		·			IDENTIFICATION OF SOILS	/ REMARKS
⊢ ₀ −	FOOT	SURFACE, FT.	0-6*	6-12	12-18*	18-24				
Ť	н.	<u>S-1</u>	<u> </u>	. 4	1 11	ļ	4	S-1: 1	lop 6": Gravel.	
		0 -2	+	<u>.</u>			-	E	Bot: Brown mf SAND, little(+) S	iit.
		S-2	5	5	6	6	-			
		2'-4'		I	ļ]	5-2: t	Brown mi SAND, some(-) Llaye	∦ Sill.
L _	0	<u>S-3</u>	3	4	7	7	<u> </u>			
	W	4'-6'		1	<u> </u>		-	5-3: 0	Little Recovery, Rock in Tip.	
		S-4	6	7	7	9	1			
	S	6'-8'			1			S-4: (Orange Brown SILT & CLAY, littl	e f Sand, (Mattled Gray).
	T	S-5	5	8	10	10				
L10_	E	8'-10'						S_5.	A* Recovery Some or S-4 Ro	ck in Tin
r 10	м	S-6	6	8	9	7]	J_J_J		se ur op.
		10'-12']			
	A]	S-6: (Greenish Gray Clayey SILT, some	: cmf Sand, some mf Gravel,
	U]		ronstone Fragments.	
L _	G									
	<u> </u>	S-7	2	3	5	7		S-7: [Dk. Gray Clayey SILT, some f S	and, Micaceous.
	R	15'-17'								
						-				
20		S-8	3	8	7	9]	S-8: {	Dk. Gray Clayey SILT, some(+)	cmf Sand, (Slightly Varved Darker Gray),
		20'-22'							Occasional mf Gravel Layers, Mi	coceous.
]			
		S-9	4	6	7	9		S-9: (Groy Clayey SILT, some f Sand,	Occasional mf Gravel Layers,
		25'-27'						۱ ۱	Micaceous.	
70										
- 30 -		S-10	5	6	8	11		S-10:	Dk Gray Clayey SILT, and mf(+) Sand, Micaceous.
		30'-32'								
				ł						
- -		S-11	5	9	12	15		S-11:	Some as S-10.	
		35'-37'		1						
			1					-	End Of Test Boring	n A 37 Feet
		1	1	1						
L										
40		James J	Seroic	o, Jr.				0- 1	Grozese Drilling Inc.	
Soils 8	ngineer:							Contractor	Ordinese Draining, Inc.	<u></u>
Drilling	Inspector	: John Bez	erra Jr.					. Driller: 🔔	Mike Granese	
		<u></u>					VISUAL IDENTIFIC	ATION TERM	s used	
Í		Chaves Saile		Malak		Relo	tive Density(Dr) of		Consistency of Clause Salls	Proportions Used
	.	Cityey Solis		MUISI				<u> </u>	Consistency of Cloyey Soils	rioportions Used
Clo	oyey Silt LT & CLAY	slight PI. 7 Iow PI.	Inread Thread	1/4		Very Loos	/ loose 0-1 se 15-	13 % -35 %	sont (S) 0.1–0.5 t firm (F) 0.5–1.0	si trace = 1-10 % si little = 10-20 %
Çi	AY & SILT	medium PI.	Thread	1/16	-	Med	ium <u>35</u> -	-65 %	med.hard (MH) 1.0-2.0 t	sf some = 20-35 %
ČL	Ity CLAY high Pl. Thread 1/32" Dense LAY very high Pl. Thread 1/64" Very Dense							- 100%	very hard (VH) Over 4.0	si ulu – 55–50 %
í	CLAY very high Pl. Thread 1/64" Very Dense								. , ,	

Consulting Planners DEPTH DEPTH	Municipal & Surveyors OF WATEF	Environmental Engined Landscape Archited	A. HS HS HS HS HS HS HS HS HS HS HS HS HS	<u>Р</u> 3 8 7 7 8 8 8 8 8 9 8 9 8 9 8 9 9 8 9 9 9 9	IED BAN Dine River 31 Newin Red Bank Phone (73 isox (732 isox (732) isox (732 isox (732) isox (732 isox (732) isox (732) i	KOFFIC Centre - nen Sprin N.J. 077 22) 383-1 333-19 sotech@ NG OU	E Building Two gs Road 950 90 maserconsulting.com T ON 07/15/04	PROJECT N. Bo PROJECT DATE ST.	Hightstown Mill Dev. Project Main St. & N. Academy St. rough of Hightstown NO. 04-0073A ARTED 07/15/04 MILLED 07/15/04	SHEET 1 OF 1 BORING NO. TB-9
WEIGHT	OF HAM		W/ AL1	. UAlin		UN		CASING		
	v ,	CASING		U	BS SAN	IPLER	LBS	SAMPLER	8: 0.D. <u>2*</u> I.D. <u>1-3/8*</u>	CASING
INSIDE	LENGTH C)F SAMPLER: _	24		IN.			COUPLIN	6: 0.0 I.D	SAMPLER30"
DEPTH BELOW	CASING BLOWS	SAMPLE NUMBER	BLOWS SAMPL	per 6' Er	ON		PROFILE CHANGE DEPTH		IDENTIFICATION OF SOILS	/ REMARKS
- 0	FÖÖT	SURFACE, FT.	0-6'	6-12	12-18*	18-24°	ELEV.	5-1-	12" Asobali	
	0	1'-2'				· ·		5-1.	Miscellaneous Fill, Black cmf SA	ND, some(~) mf Gravel, Asphalt, Brick.
		<u>S-2</u> 2'-4'	5	5	6	6		S-2:	(6" Recovery) Top: Same as S- Bot: Orange Brown (SAND, little	-1. e(+) Silt, little mf Gravel,
L _	0	S-3	3	4	7	7		S-3:	Orange Brown Clayey SILT, littlet	(+) mf Sand, trace f Gravel.
		S-4	6	7	7	9		S-4:	Dk. Gray Clayey SILT, little mf S	Sand, Micaceous,
	S T	6'-8' S-5	5	8	10	10			trace Dk. Green, Glauconite.	
- 10	E	8'-10'						5-5:	Same as 5-4.	
10	<u> </u>	S-6 10'-12'	6	8	9	7		S-6:	Same as S-4.	
	A									
	U G		-							
	E	S-7	2	3	5	.7		S-7:	Dk. Gray Clayey SILT, little(+)	mf Sand, Micaceous.
	R	15'-17	-							
- 20 -		S-8	3	8	7	9		S-8:	Dk. Grav Clavev SILT, some(+)	mf Sand, Micaceous,
		20'-22'		ļ		_				
			-				Tot 23.0'		•	
L										
r		25'-27'	4	6	/	y		S-9:	Dk. Gray Clayey SILT, and(-) m	í Sand, Micaceous.
- 30		S-10	5	6	8	11		S-10:	Same as S-9.	
		30-32								
			-							
⊢ —		S-11	5	9	12	15		S-11:	Same as S-9.	
		35'-37'								
									End Of Test Boring	g O 37 Feet
- 40 —										
Soils E	ngineer:	James J.	Serpic	o, Jr.				Contracto	r:Granese Drilling, Inc.	
Drilling	Inspector	John Bez	erra Jr	•				Oriller: _	Mike Granese	
							VISUAL IDENTIFICA		IS USED	
		Clayey Soils	At Ball	Moistu	ıre	Rela Gran	tive Density(Dr) of utor Soils		Consistency of Clayey Soils	Proportions Used
Cla SIL CL/ Silt CL/	yey Sill T & CLAY AY & SILT Y CLAY AY	slight Pl. low Pl. medium Pl. high Pl. very high Pl.	Thread Thread Thread Thread Thread	1/4 1/8 1/16 1/32 1/64		Very Loos Medi Dens Very	loose 0-1: e 15- um 35- e 65- Dense 85-	5 % 35 % 65 % 85 % 100%	soft (S) 0.1-0.5 t firm (F) 0.5-1.0 t med.hard (MH) 1.0-2.0 t hard (H) 2.0-4.0 t very hard (VH) Over 4.0	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

Consulting Planners DEPTH DEPTH WEIGHT	A Municipal & Surveyors OF WATEF OF WATEF OF HAMA	Environmental Engine Landscape Archite Landscape Archite Casing Landscape Archite FT. 2. 2. 4. CASING	w/ W/ ALL	 G G F F F F C ASIN	RED BAN Dine River 31 Nawr Red Bank Hone (73 Frax (73 Frazi - g T. CASI NG OUT BS SAM	K OFFIC Centre - nan Sprin N.J. 071 32) 383-19 eotech@ NG OU ON	E Building Two gs Road 701 950 90 maserconsulting.com T ON 07/15/04 LBS	PROJECT Hightstown Mill Dev. Project SHEET 1 0F 1 N. Main St. & N. Academy St. BORING NO. TB-10 BORING NO. TB-10 Borough of Hightstown LOCATION SEE PLAN OCATION SEE PLAN PROJECT NO. 04-0073A OFFSET OFFSET OFFSET DATE STARTED 07/15/04 GROUND ELEV. CROUND WATER ELEV. OFFSET CASING: 0.0. I.D. HAMMER FALL ON: CASING CASING					
INSIDE Depth	LENGTH ()F SAMPLER: _	24	PER 6	IN. ' ON		PROFILE CHANGE	COUPLING: O.D I.D SAMPLER 30"					
BELOW SURFACE	BLOWS PER FOOT	DEPTHS BELOW SURFACE, FT.	- SAMPLI 0-6"	ER 6-12"	\$2-18*	18-24*	DEPTH ELEV.	IDENTIFICATION OF SOILS / REMARKS					
•	н 0	S-1 1'-2'		-	8	5		S-1: 12" Asphalt. Miscellaneous Fill, Black mf SAND, little mf Gravel.					
	L 1	S-2 2'-4'	5	5	7	10		S-2: Orange Brown c(-)mf SAND, some(-) Silt, little(-) f Gravel.					
	0	S-3	6	5	8	8		Ironstone Fragments.					
	W	4'-6' S-4	7	8	10	13		S-3: 1" Recovery, Large Gravel in Tip. Same as S-2.					
	S T	6'-8' S-5		5	7	8		S-4: Orange Brown and Gray Clayey SILT, some(-) mf Sand, (Mottled).					
- 10	Ē	8'-10'						S-5: Top: Same as S-4.					
	<u> </u>	<u>S-6</u> 10'-12'	7	8	9	11		S-5: Top: Same as S-4. Bot: Gray Clayey SILT, some(-) mf Sand, trace f Gravel.					
	A		-					S-6: Dk. Gray/Olive SILT & CLAY, little f Sand, Micaceaus, Glauconitic.					
	G							S-7: Same as S-6, Occasional Layer of Gray mf Sand, and(-) Clayey Silt, little(+) mf Gravel.					
	<u>Е</u> R	S-7 15'-17'	4	5	8	8							
		-	-										
- 20													
		20'-22'	4	6	6	8		S-8: Dk. Gray/Olive Clayey Silt, and(-) f Sand, Micaceous, Glauconitic, Occasional Layer of Gray mf Sand, and(-) Clayey Silt,					
							🜉 at 23.0°	little(+) mf Grovel.					
L _		5.0											
		25'-27'	4	0	<u>/</u>	9		S—9: Dk. GrayClayey SILT, and(~) mf Sand, Micaceous.					
- 30													
		30'-32'	5	6	11	15		S-10: Same as S-9.					
				<u> </u>									
		<u>S-11</u> <u>35'-37'</u>	5	7	9	14		5-11: 50me ds 5-3.					
								End Of Test Boring @ 37 Feet					
-40				1	1								
Soils E	ngineer:	James J.	Serpic	o, Jr.				Contractor: Granese Drilling, Inc.					
Drilling	Inspector:	John Bez	erra Jr	•				Dritler: Mike Granese					
						Pole	TION TERMS USED						
<u>م</u> ا-		Clayey Soils	At Ball	Moisti	ure	Gran	utor Soils	Consistency of Clayey Sails Proportions Used					
Cla SIL CLA Silt CLA	yey Sill I & CLAY IY & SILT Y CLAY IY	siight Pl. Iow Pl. medium Pl. high Pl. very high Pl.	Thread Thread Thread Thread Thread	1/8 1/16 1/32 1/64		Very Loos Medi Dens Very	ioose 0-11 e 15- um 35-1 ie 65-1 Dense 85-	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$					

Consultin	Aunicipal &	Environmental Enginee Landscape Architec	L. Is	R C 3 R F E	ED BAN One River 31 Newn ted Bank thone (73 ax (732 -mail - g	K OFFIC r Centre - nan Sprin , N.J. 077 32) 383-19 90tach@	E Bulkting Two ga Road 701 950 90 maserconsulting.com	PROJECT Hightstown Mill Dev. Project SHEET 1 OF 1 N. Main St. & N. Academy St. BORING NO. TB-11 Borough of Hightstown LOCATION SEE PLAN PROJECT NO. 04-0073A OFFSET				
depth Depth	OF WATEF OF WATEF	RFT. N	N/ N/ ALL	FT . Casin	r. Casi Ig out	NG OU ON	T ON 07/15/04	DATE STARTED GROUND ELEV DATE FINISHED 07/15/04 GROUND WATER ELEV				
WEIGHT INSIDE	OF HAMA	IER: CASING DF SAMPLER:	24	L.E	BS SAN	PLER	140 LBS	CASING: O.D. I.D. HAMMER FALL ON: SAMPLER: O.D. 2" I.D. 1-3/8" CASING COUPLING: O.D. I.D. I.D. SAMPLER 30"				
DEPTH Below	CASING	SAMPLE NUMBER	BLOWS	PER 6	ON		PROFILE CHANGE					
SURFACE	FOOT	DEPTHS BELOW SURFACE_FT.	0-6"	6-12	12-18	18-24"	ELEV.	IDENTIFICATION OF SOILS / REMARKS				
-	н 0	0'-2'	8	6	<u> -</u>	8		S-1: Miscellaneous Fill, Black/Brown cmf SAND, some(-) mf Gravel. little(+) Silt, (12" Recovery, Rock in Tip).				
	L	S-2	4	4	6	8		S=2: $(6^{\circ}, \text{Recovery})$ Orange Brown $c(-)mf(SAND, \text{some}(-))$ Clover Sit				
		<u>2-4</u> S-3	5	6	8	8		little(+) mf Gravel.				
Γ –	W	4'-6'	<u> </u>					S-3: No Recovery.				
	s	5-4 6'-8'	6	<u> </u>	<u> ./</u>	10						
	Ť	S-5	4	2	3	3		S-4: (6 Recovery), Orange Brown c(-)mf SAND, some(+) Clayey Silt, little(+) mf Gravel.				
- 10	L M	8'-10' S-6		2	5	6	:	S-5: Dk. Gray/Olive f Sand, and(-) Clayey Silt, Micaceous,				
		10'-12'										
	A							S-6: Dk. Gray SILT & CLAY, little f Sand, Micaceous.				
L _	G											
	3 9	S-7 15'-17'	3	4	5	7		S-7: Dk. Gray/Olive/Brown Clayey Silt, and(-) f Sand,				
	<u>. n</u>	10 17						ntte(-) T Gravel, (Mottled).				
-20 -		S-8	4	5	7	7		S-8: Same as S-7, (Moist).				
		20'-22'	ļ									
			.		<u> </u>							
							₹ at 24.0					
		S-9 25'-27'	4	6	9	10		S-9: Dk. Gray Clayey SILT, some(+) mf(+) Sand, Micaceous, Silt Decreases with Depth, Small Clay Content at Top, (Wet).				
								Silt Decreases with Depth, Small Clay Content at Top, (Wet).				
			<u> </u>	<u> </u>	<u> </u>							
- 30 -		S~10	6	8	12	_11		S-10: Same as S-9.				
		30'-32'	 									
L _		-	ł									
		<u>S-11</u> 35'-37'	6	9	13	16		S-11: UK. Gray T Sana, and(-) Clayey Silt.				
					<u> </u>			End Of Test Boring • 37 Feet				
						<u> </u>		-				
- 40	nineer	James J.	Serpico		L			Contractor: Granese Drillina, Inc.				
Drilling	laspector	John Beze	erra Jr.				· <u> </u>	Driller: Mike Granese				
						Palai	VISUAL IDENTIFICA	TION TERMS USED				
		<u>Clayey Soils</u>	At Boll	Moistu	ire	Gron	ulor Soils	Consistency of Clayey Soils Proportions Used				
Cla Sil	yey Sill	slight PI. 1 low PI. 1 modium Di	lhread Ihread	1/4		Very Loos	loose 0-1 e 15-	X soft (S) 0.1-0.5 tsf trace = 1-10 X 55 firm (F) 0.5-1.0 tsf little = 10-20 X				
Silt	Y CLAY	high Pl. 1 very high Pl. 1	ihreod ihreod	1/32		Dens Verv	e 65-6 Dense 85-6	5.5% [mea.norg (Mn) 1.0-2.0 isi [some = 20-35%] 5.5% [hard (H) 2.0-4.0 isi [ond = 35-50%] 100% very hard (VH) Over 4.0 isi				
				.,		,						

Consulting Planners), Municipal 8 • Surveyors	Environmental Engineer	A. ers tts	<u>R</u> 0 3 8 F E	ED BAN Ine River 31 Newn Ied Bank Inone (73 iax (732 Imail - g	K OFFIC Centre nan Sprir , N.J. 07 32) 383-19 sotech@	E Building Two ygs Road 701 950 90 masarconsulting.com	PROJECT N. Bo PROJECT	Hightstown Mill Dev. Project Main St. & N. Academy St. rough of Hightstown NO. 04-0073A	SHEET 1 OF 2 BORING NO. TB-12
DEPTH DEPTH	OF WATER OF WATER	RFT. 1	W/ W/ ALL	FT . Casin	r. casi Ig out	NG OU ON	T ON 07/16/04	DATE ST. DATE FIN	ARTED 07/16/04 IISHED 07/16/04	GROUND ELEV
WEIGHT	OF HAMM	ier: Casing DF Sampler:	24	LE	BS SAN	ipler	140 LBS	CASING: SAMPLER COUPLIN	0.D I.D 8: 0.D I.D. <u>1-3/8</u> * 6: 0.D I.D	HAMMER FALL ON: CASING SAMPLER 30"
DEPTH BELOW	CASING BLOWS	SAMPLE NUMBER	BLOWS	per 6" Er	ON		PROFILE CHANGE DEPTH			
- 0	РЪК F001	DEPTHS BELUW SURFACE, FT.	0-6"	6-12"	12-18"	18-24*	ELEV.	E_1.		
	0	0'-2'	1 10	12	11	<u> ''</u>		5-1:	lop: Gravel, (FILL). Bot: Olive Brown c(-)mf SAND,	little Silt, little f Gravel.
	L	S-2	7	9	6	5		<u> </u>	0" Des - (Orange of)mt CAM	
		2'-4'	<u> </u>	<u> </u>				3-2;	Utive Brown/Urange c(-)mi akiy	D, some(-) Silt, little(+) m(-)i Gravei.
	W	4'-6'		<u>+-</u>	<u> </u>	4		S-3:	No Recovery.	
		S-4	3	4	2	19				
		6-8 S-5	4	5	5	6	Auger Cuttion	2-4:	Ulive Brown c(-)mt SAND, Some	Clayey Silt, little mi Gravei.
_ 10	E	8'-10'		Ľ			Through Hard	۲_۶.	Di Cray/Crasa Clayay SILT con) of) mf Soud transl-) f Crowal
-10-	M	S-6	6	7	7	8	Moved Over 5'.	3-5.	Slightly Glauconitic.	ie(-) c(-)mi Sano, race(-) i Gravei,)
		10-12		 -				S-6;	Dk. Grav/Green Clavey SILT, little	e(+) f Sand. Slightly Micaceous.
	<u> </u>	- <u></u>				<u>† </u>		-	More Firm than S-5.	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
┠──	G	6.7	—	Ļ	-	- -				
	R	15'-17')	4		<u> </u>		S-/:	Dk. Gray/Green Clayey SILI, son Slightly Micaceous, Sand Increas	ne f Sand, Slightly Glauconitic, ing with Depth.
									- , , .	
]			
-20		S-8	4	5	6	8		S-8:	Dk Grav Clavev SILT, and(-) m	f Sand trace f Gravel Micaceous.(Wet).
		20'-22'			_			• •		Dulla, trace i oraren, menesenegresy.
				<u> </u>	- 					
	<u> </u>		•							
		S-9	3	3	5	7]	S-9:	Dk. Gray Clayey SILT, and(—) m	(-)f Sand, Micaceous.
		25'-27		 		 		1		
				├──		<u> </u>				
L 20 _										
-30		S-10	4	6	7	8		S-10:	Same as S-9.	
		30-32	-	┼──		-				
┠──			<u> </u>	<u> </u>				• • • •	Di Carri & Sand Land Clavor Si	n
}		<u>5-11</u> 35'-37'	5	7	9	9		2-11:	DK. Gray i Sana, and Clayey Si	R, Micaceous.
1										
				 						
- 40		lamon		- 17						
Soils Er	ngineer:	James J.	Serpice), Jr.				Contracto	r: Granese Drilling, Inc.	
Drilling	Inspector:	John Bez	zero Jr.					Driller: _	Mike Gronese	
							VISUAL IDENTIFICA	ATION TERM	S USED	
		Olaman Calla	· · Dall	Malak		Rela	tive Density(Dr) of			
Clayey Sill slight Pl. Thread 1/4" Very loose 0-									Consistency of Clayey Soils	Proportions Used
SILT	T & CLAY	low Pl. medium Pl.	Thread	1/8 1/16		Loos	ium 35-	35 % 65 %	firm (F) 0.5-1.0 t med.hard (MH) 1.0-2.0 t	sf $10000 = 1000$ sf $10000 = 10000$ sf some $= 20-35$ %
CLA	Silty CLAY high Pl. Thread 1/32" Dense 6 CLAY very high Pl. Thread 1/64" Very Dense 8								hard (H) 2.0-4.0 t very hard (VH) Over 4.0	sf and = 35-50 % tsf

Consulting Planners DEPTH	G, Municipal 8	Environmental Engine Landscape Architec	ers cts W/	R 0 33 R P Fi E	ED BAN ine River 31 Newm ed Bank hone (73 ax (732 -mail - gr . CASI	K OFFIC Centre - tan Sprin N.J. 077 2) 383-19 383-19 3030-19 303-19 30 30 30 30 30 30 30 30 30 30 30 30 30	E Building Two gs Road 01 950 30 maserconsulting.com	PROJECT N. Bo PROJECT DATE ST	Hightstown Mill Dev. Project Main St. & N. Academy St. rough of Hightstown NO. 04-0073A ARTED 07/16/04 07/15/04	SHEET 2 OF 2 BORING NO. TB-12 IDCATION SEE PLAN OFFSET
DEPTH	OF WATER	R <u>22.0</u> FT. 1	W/ ALL	CASIN	G OUT	ON	0//16/04	DATE FIN	VISHED	GROUND WATER ELEV.
WEIGHT	OF HAMN	IER:		10	AI	יהירס	140	CASING:	0.D I.D	HAMMER FALL ON:
INSIDE	FNCTH C		24	LL	whic Cl INI	IFLER	LOS		R: 0.0. <u>4</u> 1.0. <u>1-3/0</u>	CASING
DEDTU	Length		DI OWS	010 6	, 					
BELOW	BLOWS	DEPTHS BELOW	SAMPLE	R		r _	DEPTH		IDENTIFICATION OF SOILS	/ REMARKS
- 40 -	F001 H	SURFACE, FT.	<u>0-6</u>	6-12° 7	12 <u>-18"</u> 10	18-24°	ELEV.	S-12:	Dk Grov f Sound and(-) Clave	v Silt Micoreous
	0	40'-42'							UK. Glog i Dana, anal y ologo	y ant, micoccous.
	W	S-13	7	10	15	16		S-13:	Dk. Groy/Green Clayey SILT, an	nd(-) mf Sand, Occasional Partings
		45'-47'							cmi Sana, some(+) Ciayey Silt	., INNE 7 Gravel.
									End of Test Boring	ot 47 Feet
- 50 -	E				_					
50	. <u> </u>				<u> </u>					
	A			 	<u> </u>					
	U									
┣ -	G F									
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-60 -										
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80 -	<u>.</u>	James J.	Serpice	b, Jr.		<u> </u>		(- Gronese Drillion Inc	· · · · ·
Soils E	ngineer:	John Ber	zera dr					Contracto	r: <u>Oranese orning, inc.</u> Mike Gronese	
Drilling	inspector:							Driller:		······
							VISUAL IDENTIFICA	ATION TERM	IS_USED	
Clayey Soils At Ball Moisture Relative Density(Dr) of Granular Soils									Consistency of Clavey Soils	Proportions Used
Cla	Clayey Silt slight Pl. Thread 1/4" Very loose 0							5 %	soft (S) 0.1-0.5 t	sf trace = $1-10$ %
SIL CU Silt CU	SILT & CLAY low PI. Thread 1/4" Loose 15 CLAY & SILT medium PI. Thread 1/16" Medium 35 Silty CLAY high PI. Thread 1/32" Dense 65 CLAY very high PI. Thread 1/64" Very Dense 85							35 % 65 % 85 % 100%	firm (F) 0.5–1.0 f med.hard (MH) 1.0–2.0 t hard (H) 2.0–4.0 t very hard (VH) Over 4.0	sf little = 10-20 % sf some = 20-35 % sf and = 35-50 % tsf

-	-		

Consulting			1. 1. 13 14	RED B. One Ri 331 Ne Red Ba Phone Fax (J F-ma ¹	ANK OFFIC ver Centre - wman Sprir nk, N.J. 07 (732) 383-1 32) 383-19 - geotechem	E Building Two rgs Road 701 950 90 maserconsulting com	PROJECT	Hightstown Mill Dev. Project Main St. & N. Academy St. rough of Hightstown NO 04-0073A	SHEET <u>1</u> BORING NO LOCATION <u>S</u>	OF TB-13 SEE PLAN		
	- Surveyors	- Lanuscape Architec		CHING	. Beorec 168	maserconsetting.com	PROJECT		Urrsti			
DEPTH	OF WATER	۲۲. ۷FT. ۷	N/	FT. C/	SING OU	IT ON	DATE ST	ARTED 07/15/04	GROUND ELEV.			
DEPTH	OF WAILE	εF1, γ	N/ ALL	CASING 0			DATE FIN	IISHED	GROUND WATER	ELEV		
WEIGHT	OF HAMM	LER: CASING		185 5		140 LBS	CASING:	0.0 1.0	HAMMER FALL	ON:		
INSIDE	LENGTH C	F SAMPLER:	24	LOS S		<u></u>	COUPLIN	G: 0.0 1.00	SAMPLER	30"		
DEPTH	CASING		BLOWS P	PER 6" ON	•	PROFILE CHANGE						
BELOW SURFACE	BLOWS PER FOOT	DEPTHS BELOW	SAMPLER	2	<u></u>	DEPTH		IDENTIFICATION OF SOILS	/ REMARKS			
- 0	H	SURFACE, FI.	9	<u>6-12 12-1</u> 9 7	6		S-1:	Black mf SAND, little(+) mf Gro	ivel, little Silt, (F	ILL).		
	0	0'-2']						
		S-2	6	4 5	4	4	S-2: Same as S-1, (1" Recovery), Rock in Tip.					
	0	<u>S-3</u>	3	2 3	5	1						
Γ -	W	4'-6'					S-3:	Dk. Gray Clayey SILT, some(+)	f Sand, Micaceou	s.		
	<u> </u>	6'-8'	3	2 3	7	-	J-J. UK. OLUY CIUYEY SILT, SUITE(+) I SUITA, MICOCEOUS.					
	T	S-5	2	3 4	. 5	-	S-4:	Brown Clayey SILT, some f San	d, little mf Grove	l.		
<u> </u>	E	8'-10'					S-5:	Same as S-4.				
	м	10'-12'	5	_54	4	-						
	A					1	S−6: Dk. Gray Clayey Silt, and(-) f Sand, Micaceous.					
	U					-						
	G F	S-7	4	5 5	9	-	S-7: Dk. Gray Clayey SILT, some(+) mf(+) Sond, Micoceous.					
	R	15'-17'		····]	5 //	DR. Oldy Glayey Sici, Some(+)	нн(т) зоно, мно	JC6005.		
						-						
		<u> </u>				-						
- 20		S-8	5	7 9	11	1	S-8:	Same as S-7.				
		20'-22'			-	-						
		<u> </u>	<u> · · · · </u>									
]						
		25'-27'	4	5 /	8		S-9: Same as S-7.					
			- 		-	-						
- 30 -		S-10	5	8 9	13	4	S-10-	Dk Crow Clover SILT and (-)	mf(=) Sand			
		30'-32'					5 10.	ok. Glay Glayey Sict, ana(-) f	an(†) 3000.			
		<u> </u>		<u> </u>	_							
┣ ─		S-11	11	8 7	3	1	S-11:	Same as S-10.				
		35'-37'						<u></u>				
			- -					End Of Test Borin	g 🛛 37 Feet			
						-						
40 - Soils Fr	naineer:	James J.	Serpico	Jr.			Contracto	r: Granese Drilling, Inc.				
Drilling	Inspector	John Beze	erra Jr.				Driller	Mike Granese				
						VISUAL IDENTIFIC	ATION TERM	IS USED	<u> </u>			
		Cloyey Soils	At Boll I	Moisture	Gror	nuve Density(Dr) of Jular Soils		Consistency of Clayey Soils	Propo	intions Used		
Cto Sil	yey Sill I & CLAY	slight PI.	Thread Thread	1/4"	Very	loose 0-1 se 15-	5 % 35 %	soft (S) 0.1-0.5 (firm (E) 0.5-1.0	sf troce	= 1-10 % = 10-20 %		
ČL/ Silt	AY & SILT Y CLAY	medium PI. high PI.	Thread Thread	1/16" 1/32	Med	ium 35- se 65-	65 % 85 %	med.hard (MH) 1.0-2.0 (hard (H) 2.0-4.0 (sf some	= 20-35 % = 35-50 %		
CL/	CLAY very high Pt. Thread 1/64" Very Dense 85-							very hard (VH) Over 4.0	tsf			

Consulting Planners	Municipal / • Surveyors	AASER Environmental Engine so Landscape Architec	Lers ds	R P F E	IED BAN The River 131 Newn Ted Bank Phone (7: 1ax (732 1-mail - 9 T CASI	K OFFIC Centre - nan Sprin , N.J. 077 32) 383-19 eotach@i ING OU	E Building Two Igs Road 701 950 90 maserconsulting.com	PROJECT N. Bo PROJECT	i Hightstown Mill Dev. Project Main St. & N. Academy St. rough of Hightstown I NO. 04-0073A	SHEET 1 OF 2 BORING NO. TB-14			
DEPTH	OF WATEF	RFT. '	"/ — W/ ALL	CASIN		ON		DATE FIN	NISHED 07/16/04	GROUND WATER ELEV.			
WEIGHT	OF HAMA	MER:	,			-		CASING:	O.D I.D	HAMMER FALL ON:			
		CASING		Lf	BS SAN	IPLER	140 LBS	SAMPLER	R: 0.0. 2" I.D. <u>1-3/8</u> "	CASING			
INSIDE	LENGTH C)F SAMPLER:	24		IN.			COUPLIN	IG: 0.D I.D	SAMPLER			
DEPTH BELOW	CASING	SAMPLE NUMBER	BLOWS SAMPLI	PER 6" ER	ON		PROFILE CHANGE DEPTH		IDENTIFICATION OF SOILS / REMARKS				
		SURFACE, FT.	0-6"	6-12* Z	12-18"	18-24"	ELEV.	<u> </u>					
	0	0'-2'	+	<u> </u>	<u> </u>	+ 		5-1:	Olive Brown mt Savu, Some Gu	iyêy Silt, trace(-) t Gravei.			
	L.	S-2	3	3	3	4	4	c_2.	C C 1 Diagon of Brick				
		<u>2'-4'</u> S-3	$\frac{1}{7}$	+	15	16		3-2.	Some as 5-1, Medes of Drive.				
	W	4'-6'			<u> </u>			S-3:	Brown c(-)mf SAND, some Silt,	little(+) mf Gravel.			
	Ę	S-4	16	18	16	12		S-4: Brown cmf SAND, some(-) mf Gravel, little(+) Silt.					
		S-5	8	4	4	5		J	Brown ciru annu, aonior y mi	Gravel, mule(+) on.			
L 10	E	8'-10'						S-5:	Brown Clover SILT, some(-) (S	Sond			
	M	S-6 10'-12'	4	7	7	8		5-3: Brown Clayey SILI, some(-) (Sand.					
1	A		- <u> </u>	· <u> </u>	·	<u> </u>		S-6:	Same as S-5.				
	U		<u> </u>		<u> </u>		ļ						
┣ ─	U E	S-7	3	4	5	9		S-7:	Dk Greenish Grav Clavev SILT, s	some(-) of Sood Micaceous.			
1	R	15'-17'							UK, Oreenian every everyop = = .	2011c(-) 111 30/10, 11100000002.			
1	[]		<u> </u>	<u> </u>							
.			<u> </u>	<u> </u>	<u> </u>	<u> </u>							
		S-8	5	6	6	8	ł	S-8:	Same as S-7.				
l		20 - 22	-										
1				1	<u> </u>								
┠╴		<u> </u>		<u> </u>	 			S-9; Dk. Gray Clayey SILT, some(+) mf Sand, Micaceous,					
1		25'-27'	<u> </u>	<u> </u>	<u> </u>			2-a:	Dk. Gray Clayey SiLi, some(+) i	mf Sand, Micaceous.			
1					+								
1		 	-										
- 30		S-10	5	7	8	13		S-10:	Same as S-9.				
ł		30'-32'	<u> </u>	ļ	_		Į						
1				┨───	┨───								
L _													
1		S-11	6	7	<u> </u>	12		S-11:	Dk. Gray f Sand, and(-) Clayey	/ Silt, Micaceous.			
1		<u> </u>	<u> </u>	<u> </u>	<u> </u>								
1			<u> </u>	—	ļ								
- 40		i lamaa l		- Ir	<u> </u>	<u> </u>							
Soils E	ngineer:	John Rez	Serpiu	0, JI.	·,			Contracto	Granese Drilling, Inc.				
Drilling	Inspector:		zera or	·				Driller: _	Mike Grunese				
							VISUAL IDENTIFICA	ATION TERM	IS USED				
		Clovey Soils	At Ball	Moistu	Ire.	Relat Gran	tive Density(Dr) of		Consistency of Clayer Soils	Proportions Used			
Clo	vey Silt	slight Pt.	Thread	1/4"	<u>nc</u>	Very	loose 0-1	5 %	soft (<u>S</u>) 0.1-0.5 t	sf trace = $1-10\%$			
SiL CU Silt	T & CLAI NY & SILT	low PI. medium PI.	Thread Thread	1/16	, •	Loos Medi	e 15 um 35-1	35 %	firm (F) 0.5-1.0 c med.hard (MH) 1.0-2.0 c	sf little = $10-20$ % sf some = $20-35$ %			
ČÜ/		very high Pl.	Thread	1/64"		Very	Dense 85-	100%	very hard (VH) Over 4.0	st and = 55-50 % tsf			

				_				r		1
				R	ED BAN	K OFFIC		PROJECT	Hightstown Mill Dev. Project	SHEET 2 OF 2
		AACED)	3	31 Newπ	Centre - tan Sprin	gs Road	N.	Main St. & N. Academy St.	BORING NO TB-14
			-	R	ed Bank	N.J. 077	01	Bo	rough of Hightstown	
Consultin	o, Municipal (Environmental Engine	ers	P F	none (73 ax (732) 383-19	90			LOCATION
Planners	Surveyors	s • Landscape Archite	cts	E	-mail - ge	eotech@	maserconsulting.com	PROJECT	NO04-0073A	OFFSET
DEDTU	05 111170	, ,							NTED 07/16/04	
DEPTH	UF WATER	<+I.	*/	t	I. LASI	NG UU	I UN	DAIE SI	ARIEU07/10/04	GROUND ELEV
DEPTH	OF WATER	२ हा.	W/ ALL	. CASIN	ig out	ON		DATE FIN	ISHED	GROUND WATER ELEV.
WEIGHT	OF HAM	MER:						CASING:	0.0 1.0	HAMMER FALL ON:
		CASING		L	BS SAW	IPLER	140LBS	SAMPLER	: 0.0. <u>2</u> [*] I.D. <u>1-3/8</u> *	CASING
INSIDE	LENGTH (OF SAMPLER: _	24		IN.			COUPLIN	G: 0.0 I.0	SAMPLER 30"
	1	1								· · · · · · · · · · · · · · · · · · ·
BELOW	BLOWS	SAMPLE NUMBER	SAMPL	ER	ON		DEPTH		IDENTIFICATION OF SOILS	/ REWARKS
	FOOT	SURFACE, FT.	0-6*	6-12*	12-18"	18-24*	ELEV.			,
40	н	S-12	7	9	10	13		S-12:	Dk. Gray f Sand, and(-) Claye	y Silt, Micaceous.
	0	40'-42'			ļ					
	L.	·			<u> </u>					
			_							
- -	U W	C_13		10	13	15		S-13:	Some as S-12.	
		45'-47'	- <u> -'</u> -	10						
I	s			1				 	P. 1. 2 P. 1 P. 1	
	T	1		1					End of Test Boring	at 47 Feet
	E	1		1	1			ł		
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Solle C	noineer	James J.	Serpic	o, Jr.				Contracto	r: Granese Drillina. Inc.	
Solis E	.nymeer:	John Par	7870					Contracto	Mike Granese	
Drilling	Inspector			· ·				Driller: _	mine ordineae	
									S 11950	···· · · · · · · · · · · · · · · · · ·
						Relo	tive Density(Dr) of	ANUN IEKM		
I	Clayey Soils At Ball Moisture Granular Soils								Consistency of Clayey Soils	Proportions Used
Cle	Clayey Silt slight PI. Thread 1/4 Very loose 0- Silt & CLAY low PI. Thread 1/8 Loose 15.						loose 0-1	5 %	soft (S) 0.1-0.5	tsf trace = $1-10\%$
CL SI	CLAY & SILT medium PI. Thread 1/16 Medium 35 Silly CLAY & SILT medium PI. Thread 1/16 Medium 36						um 35-	65 %	med.hard (MH) 1.0-2.0	$s_{1} = 10 - 20 \%$ $s_{2} = 20 - 35 \%$
Sil CL	AY CLAY	nigh Pl. very high Pl.	inread Thread	1/52	•	Dens Verv	e 65- Dense 85-	100%	nara (H) 2.0−4.0 very hard (VH) Over 4.0	tsi and = 35-50 % tsi
1	CLAY very high PI. Thread 1/64 Very Dense									

Consulting Planners DEPTH DEPTH WEIGHT	A Municipal & • Surveyors OF WATER OF WATER OF HAMA	Landscape Architer Landscape Architer Landscape Architer FT. FT. AER: CASING	w/ W/ ALL	R 9 F E CASIN	ED BAN The River 31 Newr ted Bank Thone (73) Thone (73) Thou	IK OFFIC: r Centre - ran Sprin c, N.J. 077 32) 383-19 yeotoch@ ING OU T ON MPLER	E Building Two gs Road 701 950 90 maserconsulting.com IT ON	PROJECT Hightstown Mill Dev. Project SHEET 1 OF 2 N. Main St. & N. Academy St. BORING NO. TB-15 BORING NO. TB-15 DOCATION SEE PLAN DOCATION SEE PLAN DOFFSET DOFFSET DOFFSET DOFFSET DOFFSET DOCATION SEE PLAN DOFFSET DOFFSET <t< th=""></t<>			
INSIDE DEPTH	LENGTH O)F SAMPLER:	24 BLOWS	PER 6"	IN. * on		PROFILE CHANGE	COUPLING: O.D I.D SAMPLER30"			
SURFACE	PER FOOT	DEPTHS BELOW SURFACE, FT.	- SAMPLE	R 6-12* 7	12-18	18-24*	<u>DEPTH</u> ELEV.	IDENTIFICATION OF SOILS / REMARKS			
	0	6-2'	<u> </u>		<u> -></u>		-	S-1: No Recovery			
	L	<u>S-2</u> <u>2'-4'</u>	5	9	3	4	1	S-2: Asphalt Mixed with Black cmf SAND, little mf Gravel, trace Silt,			
┠╴╴	0 W	S-3 4'-6'	2	2	3	3	1	(4° Recovery). S-3: Orange Brown mf SAND, some Clayey Silt.			
1		S-4 5'_8'	3	4	4	4	1 -	- S-4: Dk Crov SILT & CLAY little f Sand Micaceous			
1	<u> </u>	S-5	2	2	3	4		S-4: DR. Gruy Sich a. Gent, illite i Sund, missocous.			
-10		8'-10 S-6	4	5	5	5	4	S-5: Same as S-4.			
1	A	10'-12'	+	—	—			S—6: Greenish Gray Clayey SILT, little(+) f Sand, Micaceous, Glauconitic.			
1	U		+	1-	+		- -				
┠ -	E	S-7	1	2	3	3	Water 🗢 15'6"	S-7: Greenish Gray Clayey SILT, some(-) mf(+) Sand, trace f Gravel,			
1	R		<u> </u>			-	-	Micaceous, Slightly Glauconitic.			
			<u> </u>	F							
- 20		S-8 20'-22'	1	2	4	5	• •	S-8: Dk. Gray Clayey SILT, some(+) mf Sand, Micaceous, (Wet).			
1			<u> </u>	+	+		4				
L_	<u> </u>			\vdash	<u> </u>						
ſ	—	S-9 25'-27'	<u>]</u>	5	5	9	1	S-9: Same as S-8			
1		-	+		+	<u> </u>	1				
- ₃₀	<u> </u>		<u>+</u>	Ļ	1		 				
		30'-32'	4	6	<u>+</u>]	S=10: Dk. Groy f Sand, and(+) Clayey Silt, Micoceous, Firm.			
1		[<u> </u>	<u>}</u>	+		'				
┣ -		S-11	4	5		8	1	S—11° Dk. Grav f SAND, and Clayev Silt. Micaceous.			
1		35'-37'		↓ →			1 -				
	<u> </u>				<u> </u>	-	 				
-40	<u> </u>	Jomes J.	 Serpic		<u> </u>			Cronese Drilling Inc			
Soils ci Drilling	ngineer: Inspector	John Bez	zera Jr	·				Driller: Mike Granese			
		·									
i —		Clayey Soils	At B <u>all</u>	Moistu	ure	Rela Gran	itive Density(Dr) of	Consistency of Clayey Soils Proportions Used			
	iyey Silt I & CLAY	slight Pl.	Thread Thread	1/4" 1/8"		Very	loose 0-1 se 15-	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			
Silt CL	AY & SILT AY CLAY AY	medium PI. high PI. very high PI.	Thread Thread Thread	1/10 1/32 1/64	•	Mean Dens Very	ium 55– se 65– / Dense 85–	65 % med.hard (MH) 1.0-2.0 tst some = 20-35 % 85 % hard (H) 2.0-4.0 tsf and = 35-50 % 100% very hard (VH) Over 4.0 tsf			

RED BANK OFFICE One River Centre - Building Two 31 Nowman Springs Road Red Bank, N.J. 07701 Phone (732) 383-1950 Fax (732) 383-1950 Fax (732) 383-1950 Fax (732) 383-1950 Fax (732) 383-1950 Fax (732) 383-1950								PROJECT N. Bo PROJECT	Hightstown Mill Dev. Project Main St. & N. Academy St. brough of Hightstown NO. 04-0073A	SHEET 2 OF 2 BORING NO. TB-15	
DEPTH DEPTH	OF WAILN	FL Y 15.5FT. Y	₩/ ₩/ ALI	CASIN	t. Casi Ng Out	NG OU ON	T ON 10/14/04	DATE SI. DATE FIN	ARTED 10/14/04	GROUND ELEV.	
WEIGHT	OF HAMM	IER:	<u>'/ ···</u>					CASING:	0.D I.D	HAMMER FALL ON:	
		CASING		t	BS SAN	IPLE R	140LBS	SAMPLER	R: 0.D. <u>2*</u> I.D. <u>1-3/8*</u>	CASING	
INSIDE	LENGTH U	F SAMPLER:	<u></u>		IN.			COUPLIN	IG: 0.D I.D	SAMPLER	
DEPTH BELOW SURFACE	CASING BLOWS PER	SAMPLE NUMBER	BLOWS SAMPLI	PER 6	' ON		PROFILE CHANGE DEPTH		IDENTIFICATION OF SOILS	/ REMARKS	
- 40	F001 H	SÜRFACE, FT. S-12	<u> </u>	6-12" 13	12-18" 16	18-24 16	ELEV.	S-12: /	Dreenish Grav f SAND, some	Claver Silt Micaceous, Firm,	
	0	40'-42'	1	, <u>, , , , , , , , , , , , , , , , , , </u>				⁻ i	Interbedded with Lt. Gray f Sand	d, some Silt, some f Gravel, (Cemented).	
	L	ļ	\Box	<u> </u>							
				+							
┣ -	w_	S-13	4	8	13	15		S-13:	S-13: Dk. Greenish Gray mf Sand, ond(-) Clayey Sill, Micaceous, Slightly Glauconitic.		
		45'-47'									
			<u>+</u>			 					
	Ē			<u> </u>							
- 50		S-14	99	55	50/2			S-14:	Gray mf SAND, little Silt, Sandsi	tone Fragments.	
		50 -51.2				 		·			
			<u>+</u>	 					End of Test Boring	ot 51.2 Feet	
L _	G						ł				
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-80 -		<u> </u>	<u> </u>	L				<u> </u>	· ·		
Soils E	ngineer:	Jomes J. Serpico, Jr.						Contracto	r: <u>Granese Drilling, Inc.</u>		
Drilling Inspector: John Bezzera Jr. Driller: Mike Granese										<u></u>	
Relative Density(Dr) of											
C I o		Clayey Soils /	Clayey Soils At Ball Moisture Granular Soils						Consistency of Clayey Soils	Proportions Used	
Silt CL/ Silt CL/	IYEY SIIT T & CLAY AY & SILT IY CLAY AY	slight Pl. Thread 1/4" low Pl. Thread 1/8" medium Pl. Thread 1/16" high Pl. Thread 1/32" very high Pl. Thread 1/64"				Very Loos Mediu Dens Very	loose U-11 e 15- um 35+ je 65- Dense 85-	5 % 35 % 65 % 85 % 100%	soft (S) 0.1-0.5 t firm (F) 0.5-1.0 t med.hard (MH) 1.0-2.0 t hard (H) 2.0-4.0 t very hard (VH) Over 4.0	$ \begin{array}{llllllllllllllllllllllllllllllllllll$	
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$-10 - \frac{S-4}{1} + \frac{4}{5} + \frac{5}{5} + \frac{6}{6} + \frac{5}{6}											
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$-20 - \frac{10^{-17}}{5-8} - \frac{10^{-17}}{10} - 1$											
$-20 - \frac{5-8}{20'-22'} - \frac{3}{4} + \frac{5}{6} + \frac{5}{25'-27'} - \frac{5-9}{3} + \frac{5}{6} + \frac{5}{25'-27'} - \frac{5-9}{30'-32'} - \frac{5-10}{30'-32'} - \frac{5-10}{30'-32'} - \frac{5-10}{30'-32'} - \frac{5-11}{30'-32'} - \frac{5-11}{3$											
$-20 - \frac{S-8}{20'-22'} + \frac{1}{20'-22'} + \frac{1}$											
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	aceous, (Wet).										
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$-30 - \frac{5-9}{3} + \frac{4}{6} + \frac{6}{8}$ $-30 - \frac{5-10}{3} + \frac{4}{7} + \frac{9}{9}$ $-30 - \frac{5-10}{3} + \frac{4}{7} + \frac{9}{9}$ $-30 - \frac{5-10}{3} + \frac{4}{7} + \frac{9}{9}$ $-30 - \frac{5-11}{3} + \frac{4}{5} + \frac{8}{11}$ $-35 - 37' - \frac{1}{10} + \frac{1}{10}$ $-31 - \frac{1}{10$											
-30 - 30 - 30' - 32' - 30' - 30' - 32' - 30' - 30' - 32' - 30' - 30' - 32' - 30' - 30' - 32' - 30' - 30' - 32' - 30' - 30' - 32' - 30' - 30' - 32' - 30' - 30' - 32' - 30' - 30' - 32' - 30' -											
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$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$											
$S-10 = 30 = \frac{S-10}{30'-32'} = \frac{3}{4} = \frac{7}{9}$ $S-10: Some as S-8$ $S-10: Some as S-8$ $S-11: Dk. Gray f Sand, and(+) Clayey Silt.$											
S-11: Dk. Gray f Sand, and(+) Clayey Silt.											
S-11 4 5 8 11 35'-37' 35'-37' 35'-37' 35'-37'											
S-11 4 5 8 11 35'-37' S-11: Dk. Gray f Sand, and(+) Clayey Silt.											
35'-37'											
-40											
Soils Engineer: James J. Serpico, Jr. Contractor: Granese Drilling, Inc.											
Drilling Inspector:John Bezzera JrDriller:Driller:Driller:											
VISUAL IDENTIFICATION TERMS USED											
Clavey Soils At Ball Moisture Granular Soils Consistency of Clayey Soits Propr											
Clayey Silt stight Pl. Thread 1/4" Very loose 0-15 % soft (S) 0.1-0.5 tsf trace Clayey Silt stight Pl. Thread 1/8" Loose 15-35 % firm (F) 0.5-1.0 tsf trace CLAY SILT wery high Pl. Thread 1/16" Medium 35-65 % med.hard (MH) 1.0-2.0 tsf some Silty CLAY high Pl. Thread 1/32" Dense 65-85 % hard (H) 2.0-4.0 tsf ond Clay very high Pl. Thread 1/64" Very Dense 65-85 % hard (H) 2.0-4.0 tsf ond	urlions Used										

Consuttin Planners DEPTH DEPTH WEIGHT	G. Municipal & Surveyors OF WATER OF WATER OF WATER	Environmental Engine • Landscape Archited • Landscape Archited • T.5 FT. IER: CASING	W/ W/ ALL	R P Fi E CASIN	ED BAN ine River 31 Newm ed Bank hone (73 ax (732 -mail - gr f. CASI IG OUT 35 SAM	K OFFIC Centre - tan Sprin , N.J. 077 (2) 383-19 (2) 38	E Building Two gs Road 950 90 maserconsulting.com T ON 10/14/04 140BS	PROJECT N. Bo PROJECT DATE ST DATE ST DATE FIN CASING: SAMPLEF	Hightstown Mill Dev. Project Main St. & N. Academy St. rough of Hightstown NO. 04-0073A ARTED 10/14/04 NSHED 10/14/04 0.D. 1.D. R: 0.D. 1.D.	SHEET 2 OF 2 BORING NO. TB-16 LOCATION SEE PLAN OFFSET
DEPTH BELOW	CASING	SAMPLER: _	BLOWS	PER 6	ואי. אס		PROFILE CHANGE			
SURFACE	PER FOOT	DEPTHS BELOW SURFACE, FT.	0-6	6-12	12-18	18-24"	ELEV.			/ REMARKS
	<u>н</u> 0	S-12 40'-42'	5	8	12	14		S-12: Di In	<. Greenish Gray f SAND, some(terbedded with Lt. Gray f Sand,	+) Clayey Sill, some Silt, Firm, (Cemented).
	Ĺ								•	
	L									
<u> </u>	0 w	C 13	-		10	17		S-13: D	k. Greenish Grav f SAND, somel	+) Clavey Silt Micaceous
		45'-47'	-	<u> </u>	10	<u> </u>				
	S									
	T F	S-14	15	18	60	50/1"				
-50 -	м	48 - 49.6	-					S-14: To	p: Dk. Gray f SAND, some(+) C	layey Silt, Micaceous, Slightly Glauconitic
								Bo	it: Gray f SAND, trace Silt, Rocl	: in Tip, Micaceous.
	<u>A</u>								End of Test Boring	at 49.6 Feet
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Soits E	ngineer:	Jumes J.	Serpice	υ, υΓ.				Contracto	r: <u>Granese Unilling, Inc.</u>	
Drilling	Inspector:	John Bez	zera Jr.	•				Driller: _	Mike Granese	<u> </u>
							VISUAL IDENTIFICA	ATION TERM	IS USED	······································
		Clavery Selle	A+ D-1	Malat		Rela	tive Density(Dr) of		Consistency of Olever 5.1	
Cle	ivev Silt	slight Pl	Thread	1/4"		Verv		5 %	soft (S) 01-05-	$\frac{1}{1-10.7}$
SIL SIL SIII CL	T & CLAY AY & SILT IV CLAY AY	low Pl. medium Pl. high Pl. very high Pl.	Thread Thread Thread Thread Thread	1/8 1/16 1/32 1/64		Loos Medi Dens Very	e 15- um 35- se 65- Dense 85-	35 [°] % 65 % 85 % 100%	firm (F) 0.1-0.5 firm (F) 0.5-1.0 t med.hard (MH) 1.0-2.0 t hard (H) 2.0-4.0 t very hard (VH) Over 4.0	sf little = $10 - 20 \%$ sf little = $10 - 20 \%$ sf some = $20 - 35 \%$ sf and = $35 - 50 \%$ tsf



APPENDIX C

LABORATORY TEST DATA (2005)



Moisture Profiles

TB/TP #	TB-1	TB-1	TB-1	TB-1	TB-1	TB-1	TB-1	TB-1	TB-1	TB-1	TB-1
Sample #	S-2	S-4	S-5	8-6 S	လ အ-လ	6-S	S-10	S-11	S-12	S-13	S-14
Depth (ft)	2'4'	6'-8'	8'-10'	10'-12'	20'-22'	25'-27'	30'-32'	35'-37'	40'-42'	45'-47'	50'-52'
Color	ΥB	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Gray	Gray
Tare #	P-001	P-002	P-003	P-004	P-005	P-006	P-007	P-008	P-009	P-010	P-011
Tare Wt. (g)	11.17	11.03	11.21	11	10.99	11.25	11.03	11.11	11.15	11.09	10.95
Wet Wt.+ Tare (g)	31.99	20.21	25.55	25.59	30.63	29.81	24.95	28.10	26.54	39.91	29.14
Dry Wt.+ Tare (g)	28.41	18.07	22.38	22.55	26.14	25.67	21.69	24.25	23.41	34.26	26.04
Dry Wt. (g)	17.24	7.04	11.17	11.55	15.15	14.42	10.66	13.14	12.26	23.17	15.09
Water Wt. (g)	3.58	2.14	3.17	3.04	4.49	4.14	3.26	3.85	3.13	5.65	3.10
Moisture %	20.8	30.4	28.4	26.3	29.6	28.7	30.6	29.3	25.5	24.4	20.5
TB/TP #	TB-4	TB-4	TB-4	TB-4	TB-4	TB-4	TB-4	TB-4	TB-4	TB-4	
Sample #	S-2	S-3	S-4	S-5	9-S	S-7	8-S	6-S	S-10	S-11	
Depth (ft)	2'4'	46'	6'-8'	8'-10'	10'-12'	15'-17'	20'-22'	25'-27'	30'-32'	35'-37'	
Color	Brown	ΥB	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	
Tare #	S-2	M-34	M-35	M-11	۵	M-13	WB-2	M-33	62-M	11-M	
Tare Wt. (g)	11.08	11.05	11.09	11.27	10.98	11.39	10.96	11.05	11.03	10.95	
Wet Wt.+ Tare (g)	42.43	31.15	30.28	25.21	24.16	43.61	29.13	32.09	26.71	32.61	
Dry Wt.+ Tare (g)	40.09	26.29	26.63	21.62	21.05	35.98	24.91	27.41	23.35	27.53	
Dry Wt. (g)	29.01	15.24	15.54	10.35	10.07	24.59	13.95	16.36	12.32	16.58	
Water Wt. (g)	2.34	4.86	3.65	3.59	3.11	7.63	4.22	4.68	3.36	5.08	
Moisture %	8.1	31.9	23.5	34.7	30.9	31.0	30.3	28.6	27.3	30.6	

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TEST DATE: 7/21/2004 PROJECT: Hightstown Mill Dev. PROJECT NUMBER: 04-0073A

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Moisture Profiles

	τR.2	TB-2	TR.2	TR 2	TR.7	TR.2	TR.2	TR.2	TR-2	TR-2	TR-2
Sample #	S-2	S-3	S-4	S-5	-9-S	S-7	S-8	- 6-S	S-10	S-11	S-12
Depth (ft)	2'4'	4'-6'	6'-8'	8'-10'	10'-12'	15'-17'	20'-22'	25'-27'	30'-32'	35'-37'	40'-42'
Color	Brown	Gray	Olive Brn.	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray
Tare #	P-012	M-42	M-21	M-37	M-8	M-26	M-41	M-2	M-38	M-5	M-40
Tare Wt. (g)	11.08	11.06	11.05	11.07	11.36	10.94	11.05	11.4	11.09	11.45	11.07
Wet Wt.+ Tare (g)	27.82	35.82	35.34	27.73	30.97	24.38	30.89	27.33	33.47	34.12	33.97
Dry Wt.+ Tare (g)	25.67	30.01	29.86	24.08	26.76	21.34	26.65	23.57	28.31	28.84	29.5
Dry Wt. (g)	14.59	18.95	18.81	13.01	15.40	10.40	15.60	12.17	17.22	17.39	18.43
Water Wt. (g)	2.15	5.81	5.48	3.65	4.21	3.04	4.24	3.76	5.16	5.28	4.47
Moisture %	14.7	30.7	29.1	28.1	27.3	29.2	27.2	30.9	30.0	30.4	24.3
							i				
5											
TB/TP #	TB-2		TB-3	TB-3	TB-3	TB-3	TB-3	TB-3	TB-3	TB-3	TB-3
Sample #	S-13		S-3	S-4	S-5	S-6	S-7	8-S	6-S	S-10	S-11
Depth (ft)	45'-47'		4-6'	6'-8'	8'-10'	10'-12'	15'-17'	20'-22'	25'-27'	30'-32'	35'-37'
Color	Gray		Brown	Brown	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray
Tare #	M-3		M-7	M-24	M-27	M-23	M-16	WB-5	WB-3	M-22	M-19
Tare Wt. (g)	11.38		11.38	11.04	11.41	10.99	11.13	11.41	11.32	11.12	11.43
Wet Wt.+ Tare (g)	30.95		32.26	31.74	30.86	25.58	29.88	35.93	40.4	26.51	34.44
Dry Wt.+ Tare (g)	26.99		30.75	29.3	25.8	21.76	25.28	30.63	34.25	23.26	29.16
Dry Wt. (g)	15.61		19.37	18.26	14.39	10.77	14.15	19.22	22.93	12.14	17.73
Water Wt. (g)	3.96		1.51	2.44	5.06	3.82	4.60	5.30	6.15	3.25	5.28
Moisture %	25.4		7.8	13.4	35.2	35.5	32.5	27.6	26.8	26.8	29.8

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Moisture Profiles

TB.6	S-11	35'-37'	Dk. Gray	P-012	11.09	26.08	22.56	11.47	3.52	30.7													
TDE	S-10	30'-32'	Dk. Gray	P-007	11.02	31.45	26.67	15.65	4.78	30.5			TB-6	S-11	35'-37'	Dk. Gray	M-4	11.35	30.14	25.75	14.40	4.39	30.5
TD 5	6-S	25'-27'	Dk. Gray	P-010	11.08	35.35	30.11	19.03	5.24	27.5			TB-6	S-10	30'-32'	Dk. Gray	M-14	11.11	29.83	25.73	14.62	4.10	28.0
TDE	S-8-2	20'-22	Dk. Gray	P-002	11.04	36.39	30.44	19.40	5.95	30.7			TB-6	8-2 2	20'-22'	Dk. Gray	P-003	11.21	30.76	26.35	15.14	4.41	29.1
TDE	S-7	15'-17'	Dk. Gray	M-8	11.36	24.59	21.36	10.00	3.23	32.3			TB-6	S-7	15'-17'	Dk. Gray	M-26	10.95	30.51	25.8	14.85	4.71	31.7
TDE	S-6-2	10'-12'	Dk. Gray	M-38	11.09	25.7	21.6	10.51	4.10	39.0			TB-6	9-S	10'-12'	Dk. Gray	M-10	11.36	27.61	23.8	12.44	3.81	30.6
TDE	S-5	8'-10'	Dk. Gray	M-40	11.07	24.77	22.32	11.25	2.45	21.8			TB-6	S-5	8'-10'	Dk. Gray	P-008	11.12	28.28	23.8	12.68	4.48	35.3
TOF	S4	6-8		M-31x	11.07	30.06	24.97	13.90	5.09	36.6			TB-6	S-4	6'-8'	Dk. Gray	M-2	11.41	30	25.12	13.71	4.88	35.6
TD C	S-3	4-6'		M-31	11.15	30.36	25.31	14.16	5.05	35.7			TB-6	S-3	4'-6'	Dk. Gray	WB-4	11.32	23.53	20.22	8.90	3.31	37.2
70 5	S-2	2.4.		M-1	11.36	32.85	31.24	19.88	1.61	8.1			TB-6	S-2	2'-4'	Dk. Gray	M-15	10.92	36.59	32.82	21.90	3.77	17.2
	Samole #	Depth (ft)	Color	Tare #	Tare Wt. (g)	Wet Wt.+ Tare (g)	Dry Wt.+ Tare (g)	Dry Wt. (g)	Water Wt. (g)	Moisture %			ТВ/ТР #	Sample #	Depth (ft)	Color	Tare #	Tare Wt. (g)	Wet Wt.+ Tare (g)	Dry Wt.+ Tare (g)	Dry Wt. (g)	Water Wt. (g)	Moisture %

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TB-7	S-11	35'-37'	Dk. Gray	M-37	11.08	32.75	28.05	16.97	4.70	27.7													
TB-7	S-10	30'-32'	Dk. Gray	P-001	11.17	34.48	28.9	17.73	5.58	31.5													
TB-7	6-S	25'-27'	Dk. Gray	P-006	11.25	28.80	24.83	13.58	3.97	29.2			TB-8	S-11	35'-37'	Dk. Gray	M-18	11.1	38.5	32.65	21.55	5.85	27.1
TB-7	S-8	20'-22'	Dk. Gray	M-28	11.29	31.11	26.18	14.89	4.93	33.1			TB-8	S-10	30'-32'	Dk. Gray	M-36	11.08	34.04	29.03	17.95	5.01	27.9
TB-7	S-7	15'-17'	Dk. Gray	P-009	11.15	33.56	27.9	16.75	5.66	33.8			TB-8	6-S	25'-27'	Dk. Gray	8-M	11.4	36.5	31.13	19.73	5.37	27.2
TB-7	S-6	10'-12'	Dk. Gray	M-5	11.46	25.68	21.9	10.44	3.78	36.2			TB-8	8-S	20'-22'	Dk. Gray	500-d	10.99	31.6	27.52	16.53	4.08	24.7
TB-7	S-5	8'-10'	Dk. Gray	P-011	10.96	37.61	30.47	19.51	7.14	36.6			TB-8	S-7	15'-17'	Dk. Gray	9-W	11.4	30.99	26.48	15.08	4.51	29.9
TB-7	8 4	6'-8'	Dk. Gray	M-25	11.34	29.53	24.51	13.17	5.02	38.1			TB-8	9-S	10'-12'	Grn. Gray	M-41	11.04	29.65	25.34	14.30	4.31	30.1
TB-7	S-3	4'-6'	80	6-W	11.31	42.47	40.26	28.95	2.21	7.6			TB-8	54 8	6'-8'	80	M-20	11.08	34.95	28.26	17.18	6.69	38.9
TB-7	S-2	2-4	Tan	P-004	11.03	32.86	30.49	19.46	2.37	12.2			TB-8	S-2	2.4	Brown	۷	11.26	37.16	34.05	22.79	3.11	13.6
ТВ/ТР #	Sample #	Depth (ft)	Color	Tare #	Tare Wt. (g)	Wet Wt.+ Tare (g)	Dry Wt.+ Tare (g)	Dry Wt. (g)	Water Wt. (g)	Moisture %			TB/TP #	Sample #	Depth (ft)	Color	Tare #	Tare Wt. (g)	Wet Wt.+ Tare (g)	Dry Wt + Tare (g)	Dry Wt. (g)	Water Wt. (g)	Moisture %

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													TB-10	S-11	35'-37'		WB-3	11.34	35.12	30.15	18.81	4.97	26.4
TB-9	S-11	35'-37'	Dk. Gray	P-011 (L)	4.41	27.94	22.97	18.56	4.97	26.8			TB-10	S-10	30'-32'		M-23	11.01	34.85	29.89	18.88	4.96	26.3
TB-9	S-10	30'-32'	Dk. Gray	P-006 (L)	4.39	22.19	18.20	13.81	3.99	28.9			TB-10	6-S	25'-27'		P-011	10.96	40.18	33.76	22.80	6.42	28.2
TB-9	6-S	25'-27'	Dk. Gray	M-16 (L)	4.29	28.89	23.26	18.97	5.63	29.7			TB-10	۰ 8-۵	20'-22'		M-40	11.08	34.42	29.02	17.94	5.40	30.1
TB-9	8-S	20'-22'	Dk. Gray	M-29 (L)	4.28	22.98	18.07	13.79	4.91	35.6			TB-10	S-7	15'-17'		M-1	11.36	27.07	23.27	11.91	3.80	31.9
TB-9	S-7	15'-17'	Dk. Gray	M-42	11.06	31.37	26.48	15.42	4.89	31.7			TB-10	9-S	10'-12'		2-M	11.46	32.55	27.84	16.38	4.71	28.8
TB-9	S.6	10'-12'	Dk. Gray	M-21	11.05	31.88	26.93	15.88	4.95	31.2			TB-10	S-5	8'-10'		M-34	11.05	37.99	32.62	21.57	5.37	24.9
TB-9	S-5	8'-10'	Dk. Gray	M-32b	11.06	28.09	24.11	13.05	3.98	30.5			TB-10	S-4	6'-8'	ОВ	P-005 (L)	4.33	27.3	21.37	17.04	5.93	34.8
TB-9	S-3	4'-6'	OB	M-32	11.08	31.55	25.73	14.65	5.82	39.7			TB-10	S-2	2'-4'	OB	P-009 (L)	4.44	17.79	14.89	10.45	2.90	27.8
TB/TP #	Sample #	Depth (ft)	Color	Tare #	Tare Wt. (g)	Wet Wt.+ Tare (g)	Dry Wt.+ Tare (g)	Dry Wt. (g)	Water Wt. (g)	Moisture %			TB/TP #	Sample #	Depth (ft)	Color	Tare #	Tare Wt. (g)	Wet Wt.+ Tare (g)	Dry Wt.+ Tare (g)	Dry Wt. (g)	Water Wt. (g)	Moisture %

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													TB-12	S-13	45'-47'		WB-5	11.47	41.48	34.5	23.03	6.98	30.3
													TB-12	S-12	40'-42'		M-19	11.48	45.32	37.68	26.20	7.64	292
TB-11	S-11	35'-37'		M-22	11.17	38.6	32.9	21.73	5.70	26.2			TB-12	S-11	35'-37'		M-31x	11.13	32.64	27.39	16.26	5.25	32.3
TB-11	S-10	30'-32'		M-16	11.18	45.76	38.4	27.22	7.36	27.0			TB-12	S-10	30'-32'		P-002	11.09	39.19	32.83	21.74	6.36	29.3
TB-11	6-S	25'-27'		P-012	11.13	35.78	30.09	18.96	5.69	30.0	-		TB-12	6-S	25'-27'		M-11	11.30	32.38	27.32	16.02	5.06	316
TB-11	8-S	20'-22'		8-8 M	11.4	32.76	27.98	16.58	4.78	28.8			TB-12	ۍ 8-2	20'-22'		M-17	10.99	41.12	34.51	23.52	6.61	28.1
TB-11	S-7	15'-17'		WB-2	10.99	32.51	26.89	15.90	5.62	35.3			TB-12	S-7	15'-17'		P-008	11.15	32.17	26.98	15.83	5.19	32.8
TB-11	S-6	10'-12'		A 4	11.37	40.97	34.21	22.84	6.76	29.6			TB-12	9 СР	10'-12'		M-38	11.14	46.08	37.49	26.35	8.59	32.6
TB-11	S-5	8'-10'		M-26	10.98	31.08	26.46	15.48	4.62	29.8			TB-12	S-5	8'-10'		M-22	11.45	24.23	21.17	9.72	3.06	315
TB-11	S-4	6'-8'		P-004	11.07	36.71	32.17	21.10	4.54	21.5			TB-12	S4	6'-8'		M-29	11.07	39.26	36.31	25.24	2.95	117
TB-11	S-2	2'-4'		S-2	11.11	38.23	30.66	19.55	7.57	38.7			TB-12	S-2	2'-4'		P-010	11.13	34.37	31.79	20.66	2.58	12 5
TB/TP #	Sample #	Depth (ft)	Color	Tare #	Tare Wt. (g)	Wet Wt.+ Tare (g)	Dry Wt.+ Tare (g)	Dry Wt. (g)	Water Wt. (g)	Moisture %			ТВ/ТР #	Sample #	Depth (ft)	Color	Tare #	Tare Wt. (g)	Wet Wt.+ Tare (g)	Dry Wt.+ Tare (g)	Dry Wt. (g)	Water Wt. (g)	Moisture %

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TB-13	S-11	35'-37'		P-003	11.22	30.99	26.36	15.14	4.63	30.6													
TB-13	S-10	30'-32'		M-35	11.09	31.55	27.04	15.95	4.51	28.3													
TB-13	S-9	25'-27'		M-7	11.39	40.72	34.19	22.80	6.53	28.6													
TB-13	S-8	20'-22'		P-007	11	45.2	37.55	26.55	7.65	28.8													
TB-13	S-7	15'-17'		600-d	11.2	32.8	27.83	16.63	4.97	29.9													
TB-13	S-6	10'-12'		6-W	11.37	37.29	30.33	18.96	6.96	36.7													
TB-13	S-5	8'-10'		WB-4	11.38	49.25	37.69	26.31	11.56	43.9												ī	
TB-13	S4	6'-8'		M-33	11.1	30.18	26.03	14.93	4.15	27.8													
TB-13	S-3	4'-6'		M-15	10.98	29.02	24.36	13.38	4.66	34.8													
TB/TP #	Sample #	Depth (ft)	Color	Tare #	Tare Wt. (g)	Wet Wt.+ Tare (g)	Dry Wt.+ Tare (g)	Dry Wt. (g)	Water Wt. (g)	Moisture %			TB/TP #	Sample #	Depth (ft)	Color	Tare #	Tare Wt. (g)	Wet Wt.+ Tare (g)	Dry Wt.+ Tare (g)	Dry Wt. (g)	Water Wt. (g)	Moisture %

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TB-14	S-11	35'-37'		P-006	11.27	43.58	36.95	25.68	6.63	25.8													
TB-14	S-10	30'-32'		M-25	11.35	39.39	32.35	21.00	7.04	33.5													
TB-14	6-S	25'-27'		A	11.27	35.25	29.62	18.35	5.63	30.7													
TB-14	S-8	20'-22'		M-32b	11.06	38.04	31.53	20.47	6.51	31.8	:												
TB-14	S-7	15'-17'		P-005	11	33.06	26.79	15.79	6.27	39.7													
TB-14	S-6	10'-12'		M-21	11.06	33.05	27.29	16.23	5.76	35.5													
TB-14	S-5	8'-10'		M-41	11.05	36.65	31.01	19.96	5.64	28.3													
TB-14	\$4 8	6'-8'		M-3	11.38	41.2	38.91	27.53	2.29	8.3													
TB-14	S-3	4'-6'		9-W	11.4	34.61	32.24	20.84	2.37	11.4													
TB-14	S-2	2'4'		M-14	11.1	45.08	41.06	29.96	4.02	13.4			TB-14	S-13	45'-47'		P-001	11.18	41.52	34.75	23.57	6.77	28.7
TB-14	S-1	0'-2'		M-24	11.02	28.93	27.05	16.03	1.88	11.7			TB-14	S-12	40'-42'		M-37	11.08	43.46	36.21	25.13	7.25	28.8
TB/TP #	Sample #	Depth (ft)	Color	Tare #	Tare Wt. (g)	Wet Wt.+ Tare (g)	Dry Wt.+ Tare (g)	Dry Wt. (g)	Water Wt. (g)	Moisture %			TB/TP #	Sample #	Depth (ft)	Color	Tare #	Tare Wt. (g)	Wet Wt.+ Tare (g)	Dry Wt.+ Tare (g)	Dry Wt. (g)	Water Wt. (g)	Moisture %

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						_ _												CLAY						_	_			
						_ _																6 WN						
port	HYDROMETER															0.01	% FINES	SILT	46.9	59 0 59 0		FERIAL DESCRIPTION	LT, some cmf Sand, some mf Gravel.	some(+) cmf Sand, some(-) mf Gravel.	Clayey Silt, and m(-)f Sand.	<u>0 C</u>		
ibution Rep	IEVE NUMBERS			/													QN	FINE	20.0	40.6	IFICATION SYSTEM	MAT	Dk Gray Clayey SII	Dk. Gray Clayey Silt,	Dk. Gray (
Size Distr	U.S. STANDARD S															GRAIN SIZE IN MI	% SA		5.1	0.4	STER SOIL CLASS	USCS						
icle					_//													COARS	4.8	4.7	BURMI	AMPLED	5/04	5/04	5/04	 		
Part	CHES			_[-INE	15.8	0.0	5	DATE S	8/2	8/2	1 8/2	9		4
				1										-			% GRAVEL	iE 1				DEPTH/ELEV	10-12'	20-22'	30-32'			igure
	J.S. SIEVE OP																	COARS	7.4			SAMPLE #	S-6	S-8	S-10			
			06		08	20		8	20	40		30	20		10			% COBBLES	0.0	0.0		SOURCE	TB-8	TB-8	TB-8	ient	oject Hightstown	oiect No. 04-0073A
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APPENDIX D

DCPT RESULTS

TP-103 – Stairway DCP Test Results:

- Floor slab thickness: 5 inches
- Stone layer thickness: 3 inches
- DCP Test start at 8 inches below top of floor slab (blow-counts in increments of 1.75 inches)

Depth	Blow-counts
8.0" – 9.75"	3
9.75" – 11.5"	3
11.5" – 13.25"	5
13.25" – 15.0"	5
15.0" – 16.75"	5
16.75" – 18.5"	4
18.5" – 20.25"	5
20.25" – 22.0"	6
22.0" – 23.75"	6
23.75" – 25.5"	4
25.5" – 27.25"	5
27.25" – 29.0"	6
29.0" – 30.75"	5

TP-104 – Elevator Shaft DCP Test Results:

- Floor slab thickness: 5 inches
- Stone layer thickness: 7 inches
- DCP Test start at 12 inches below top of floor slab (blow-counts in increments of 1.75 inches)

Depth	Blow-counts
12.0" – 13.75"	5
13.75" – 15.5"	6
15.5" – 17.25"	10
17.25" – 19.0"	10
19.0" – 20.75"	10
20.75" – 22.5"	15
22.5" – 24.25"	23
24.25" – 26.0"	26



APPENDIX E

SEISMIC INFORMATION

EUSGS Design Maps Summary Report

User-Specified Input

Report Title Hightstown Redevelopment

Thu March 8, 2018 15:49:11 UTC

Building Code Reference Document ASCE 7-10 Standard

(which utilizes USGS hazard data available in 2008)

Site Coordinates 40.2693°N, 74.524°W

Site Soil Classification Site Class D - "Stiff Soil"

Risk Category I/II/III



USGS-Provided Output

\mathbf{S}_{s} =	0.231 g	S _{мs} =	0.370 g	S _{DS} =	0.247 g
S ₁ =	0.065 g	S _{м1} =	0.155 g	S _{D1} =	0.104 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.



For PGA_M, T_L , C_{RS} , and C_{R1} values, please <u>view the detailed report</u>.

EUSGS Design Maps Detailed Report

ASCE 7-10 Standard (40.2693°N, 74.524°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_s) and 1.3 (to obtain S_i). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From <u>Figure 22-1</u> ^[1]	$S_{s} = 0.231 \text{ g}$
From <u>Figure 22-2</u> ^[2]	$S_1 = 0.065 g$

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Site Class	- Vs	\overline{N} or \overline{N}_{ch}	_ <i>S</i> u				
A. Hard Rock	>5,000 ft/s	N/A	N/A				
B. Rock	2,500 to 5,000 ft/s	N/A	N/A				
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf				
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf				
E. Soft clay soil	<600 ft/s	<15	<1,000 psf				
	10 ft of soil have 20, $\ge 40\%$, and rength $\overline{s}_u < 500$	ving the characteristics:					
F. Soils requiring site response	See Section 20.3.1						

Table	20.3-1	Site	Classification

analysis in accordance with Section

21.1

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk-Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Site Class	Mapped MCE $_{\mbox{\tiny R}}$ Spectral Response Acceleration Parameter at Short Period											
	S _s ≤ 0.25	$S_{s} = 0.50$	$S_{s} = 0.75$	$S_{s} = 1.00$	S _s ≥ 1.25							
А	0.8	0.8	0.8	0.8	0.8							
В	1.0	1.0	1.0	1.0	1.0							
С	1.2	1.2	1.1	1.0	1.0							
D	1.6	1.4	1.2	1.1	1.0							
E	2.5	1.7	1.2	0.9	0.9							
F		See Section 11.4.7 of ASCE 7										

Table 11.4–1: Site Coefficient F_a

Note: Use straight-line interpolation for intermediate values of $S_{\mbox{\scriptsize s}}$

For Site Class = D and $S_s = 0.231 \text{ g}$, $F_a = 1.600$

Site Class	Mapped MCE	Mapped MCE $_{R}$ Spectral Response Acceleration Parameter at 1–s Period										
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \ge 0.50$							
А	0.8	0.8	0.8	0.8	0.8							
В	1.0	1.0	1.0	1.0	1.0							
С	1.7	1.6	1.5	1.4	1.3							
D	2.4	2.0	1.8	1.6	1.5							
Е	3.5	3.2	2.8	2.4	2.4							
F	See Section 11.4.7 of ASCE 7											

Table 11.4–2: Site Coefficient $F_{\scriptscriptstyle v}$

Note: Use straight–line interpolation for intermediate values of $\mathsf{S}_{\scriptscriptstyle 1}$

For Site Class = D and $S_1 = 0.065 \text{ g}$, $F_v = 2.400$

Equation (11.4–1):	$S_{MS} = F_a S_s = 1.600 \times 0.231 = 0.370 \text{ g}$
Equation (11.4–2):	$S_{M1} = F_v S_1 = 2.400 \times 0.065 = 0.155 \text{ g}$
Section 11.4.4 — Design Spectral Acceleration	on Parameters
Equation (11.4–3):	$S_{\text{DS}} = \frac{2}{3} S_{\text{MS}} = \frac{2}{3} \times 0.370 = 0.247 \text{ g}$
Equation (11.4–4):	S _{D1} = ⅔ S _{M1} = ⅔ x 0.155 = 0.104 g

Section 11.4.5 — Design Response Spectrum

From Figure 22-12^[3]

 $T_{L} = 6$ seconds



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE $_{\!\scriptscriptstyle R})$ Response Spectrum

The $MCE_{\scriptscriptstyle R}$ Response Spectrum is determined by multiplying the design response spectrum above by



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7^[4]

PGA = 0.132

Equation (11.8–1): $PGA_{M} = F_{PGA}PGA = 1.536 \times 0.132 = 0.203 \text{ g}$

	Table 11.8–1: Site Coefficient F_{PGA}										
Site	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA										
Class	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50						
А	0.8	0.8	0.8	0.8	0.8						
В	1.0	1.0	1.0	1.0	1.0						
С	1.2	1.2	1.1	1.0	1.0						
D	1.6	1.4	1.2	1.1	1.0						
Е	2.5	1.7	1.2	0.9	0.9						
F See Section 11.4.7 of ASCE 7											

Note: Use straight-line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.132 g, F_{PGA} = 1.536

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From <u>Figure 22-17</u>^[5]

 $C_{RS} = 0.879$

From Figure 22-18^[6]

 $C_{R1} = 0.908$

Section 11.6 — Seismic Design Category

	RISK CATEGORY			
	I or II	III	IV	
S _{DS} < 0.167g	A	А	А	
$0.167g \le S_{DS} < 0.33g$	В	В	С	
$0.33g \le S_{DS} < 0.50g$	С	С	D	
0.50g ≤ S _{DS}	D	D	D	

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

For Risk Category = I and S_{DS} = 0.247 g, Seismic Design Category = B

Table 11.6-2 Seismic De	esign Category	Based on 1	-S Period Respons	e Acceleration Parameter
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VALUE OF S_{D1}	RISK CATEGORY			
	I or II	III	IV	
S _{□1} < 0.067g	А	А	А	
$0.067g \le S_{D1} < 0.133g$	В	В	С	
$0.133g \le S_{D1} < 0.20g$	С	С	D	
0.20g ≤ S _{D1}	D	D	D	

For Risk Category = I and S_{D1} = 0.104 g, Seismic Design Category = B

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category \equiv "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = B

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

- 1. Figure 22-1:
- https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf 2. *Figure 22-2*:

https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf

- Figure 22-12: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
 Figure 22-7:
- https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
- Figure 22-17: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
- Figure 22-18: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf