Engineers Planners Surveyors Landscape Architects Environmental Scientists

MASER CONSULTING P. A.

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

Prepared For

Mr. Ryan Cowell
R. Black Global
900 Broadway, Suite 202
New York, NY 10003

Prepared By

Maser Consulting P.A.
Corporate Headquarters
331 Newman Springs Road, Suite 203
Red Bank, NJ 07701
732.383.1950

Michael Carnivale, III, P.E.
Senior Project Manager, Geotechnical Services
Professional Engineer
New Jersey License No. 45357

MC Project No. 16001094A

TABLE OF CONTENTS

FIGURES

APPENDICES

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,

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 ½ 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 pre-bid 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.

2. 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 ¼-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 ¾-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 ¾-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 well-graded 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. 1 below provides compaction requirements for the coarse-grained soils.

TABLE NO. 1
COMPACTION RECOMMENDATIONS

Location	Percent of Maximum Dry Density (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%

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.

FLEXIBLE ASPHALT PAVEMENT

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

RIGID CONCRETE PAVEMENT

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

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.

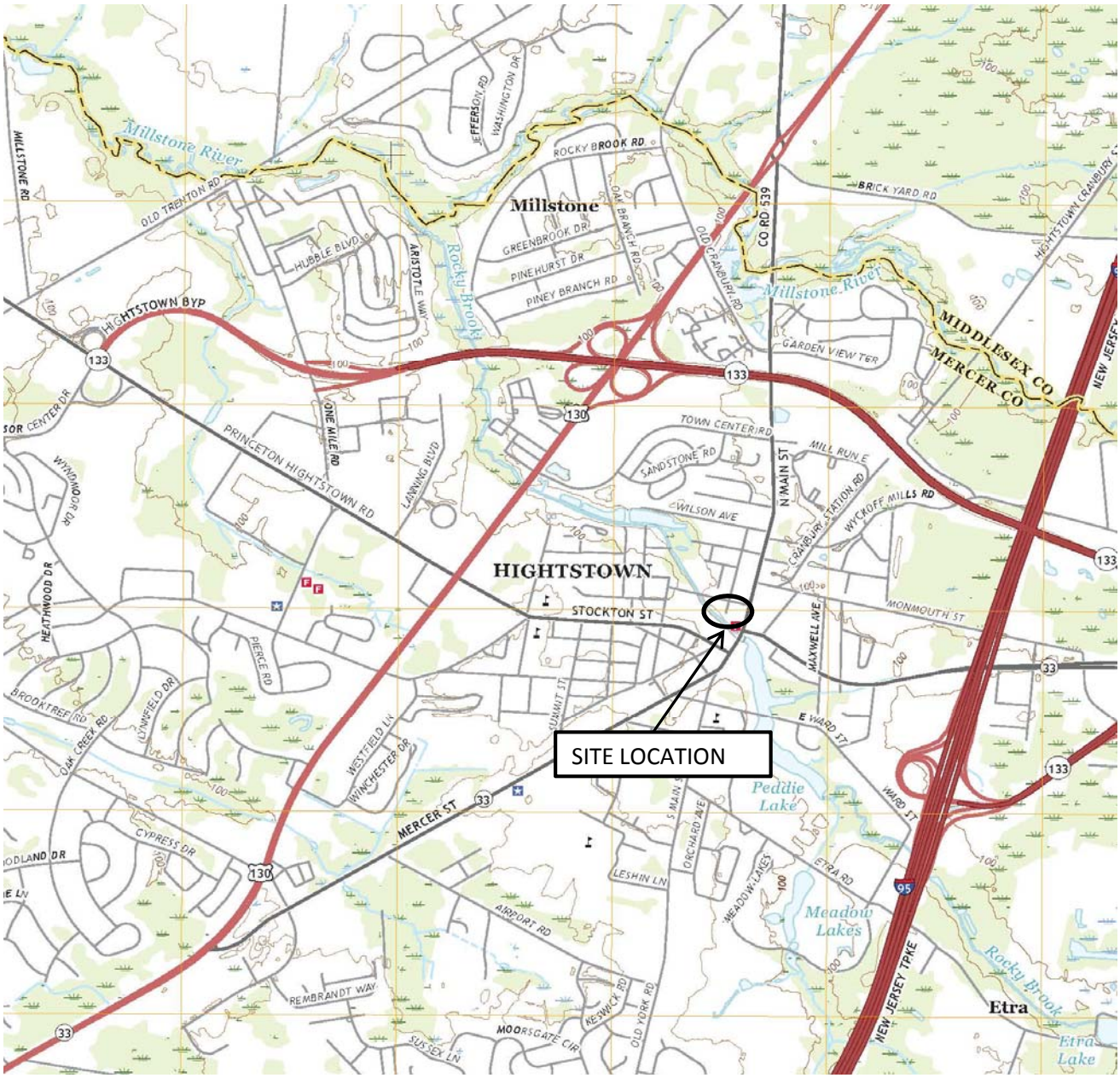
The conclusions and recommendations contained in this report are based upon the subsurface data obtained during this exploration and on details stated in this report. The validity of the projections, conclusions and recommendations contained in this report is necessarily limited by the scope of field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

\\maserconsulting.com\ren\general\projects\2016\16001094a\reports\geotechnical\180313_mc_subexpevalrpt.docx



NOTE:

1.) *SITE MAP OBTAINED FROM USGS TOPOGRAPHIC MAP, HIGHTSTOWN, NEW JERSEY QUADRANGLE, DATED 2016.

MASER CONSULTING P.A.

Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

New Jersey New York Pennsylvania Virginia
Customer Loyalty *through* Client Satisfaction

Title: SITE LOCATION MAP

Project:
HIGHTSTOWN REDEVELOPMENT
Block 30, Lots 1-7 and 10
Mercer County
Hightstown, NJ

Drawn By:	Checked By:	Project No.:
*	MC	16001094A
Scale:	**Date:**	**Figure No.:**
N.T.S.	3/12/2018	1

LEGEND:

TB-1 TEST BORING LOCATION (APPROX.)

NOTES:

1.) *BASE PLAN OBTAINED FROM GOOGLE EARTH IMAGE, REVISED AUGUST 24, 2017.

2.) THIS DRAWING IS PART OF MASER's GEOTECHNICAL REPORT (PROJECT NO. 16001094A) DATED MARCH 2018 AND SHOULD ONLY BE USED IN CONJUNCTION WITH THE REPORT.

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects
New Jersey New York Pennsylvania Virginia
Customer Loyalty *through* Client Satisfaction

Title: EXPLORATION LOCATION PLAN

Project: ***HIGHTSTOWN REDEVELOPMENT***
Block 30, Lots 1-7 and 10
Mercer County
Hightstown, NJ

Drawn By:	PA	Checked By:	MC	Project No.:	16001094A
Scale:	N.T.S.	Date:	03-08-2018	Figure No.:	2

LEGEND:

TP-101 TEST PIT LOCATION (APPROX.)

NOTES:

1.) *BASE PLAN OBTAINED FROM GOOGLE EARTH IMAGE, REVISED AUGUST 24, 2017.

2.) THIS DRAWING IS PART OF MASER's GEOTECHNICAL REPORT (PROJECT NO. 16001094A) DATED MARCH 2018 AND SHOULD ONLY BE USED IN CONJUNCTION WITH THE REPORT.

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects
New Jersey New York Pennsylvania Virginia
Customer Loyalty *through* Client Satisfaction

Title: EXPLORATION LOCATION PLAN

Project: ***HIGHTSTOWN REDEVELOPMENT***
Block 30, Lots 1-7 and 10
Mercer County
Hightstown, NJ

Drawn By:	PA	Checked By:	MC	Project No.:	16001094A
Scale:	N.T.S.	Date:	03-12-2018	Figure No.:	3

100 0 100 200

SCALE IN FEET
(1"=100')

TB-14
TB-9
TB-10
TB-12
TB-13
TB-11
TB-7
TB-8
TB-1
TB-2
TB-6
TB-15
TB-5
TB-3
TB-4
TB-16

BANK STREET
GRANT AVENUE
NORTH ACADEMY STREET
NORTH MAIN STREET
MECHANIC STREET
1 STORY STEEL BUILDING ON CONC. FOUNDATION
3 STORY BLOCK AND BRICK BUILDING
2 STORY STEEL BUILDING
2 STORY BRICK
1 STORY
3 STORY BLOCK & BRICK BUILDING
STEEL BUILDING
STOCK PILE
PARKING
GARAGE
POLICE BUILDING
FIRE HOUSE
1 STORY
2 STORY
LOT 1

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects
State of N.J. Certificate of Authorization: 24GA27986500

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1984
E-mail - solutions@maserconsulting.com

Regional Offices
Clinton, N.J.
Hackettstown, N.J.
Hamilton, N.J.
West Nyack, N.Y.
Newburgh, N.Y.

LEGEND

TB-1 TEST BORING LOCATION

TEST BORING LOCATION PLAN

FOR

HIGHTSTOWN MILL DEVELOPMENT

BOROUGH OF HIGHTSTOWN MERCER COUNTY NEW JERSEY

JOB NUMBER: 04-0073A	DATE: JAN 7, 2005
SCALE: 1"=100'	LATEST REVISION:
INDEX NUMBER:	DESIGN BY:
SHEET NUMBER: 1 of 1	

APPENDIX A

TEST BORING LOGS (2017)

VISUAL IDENTIFICATION OF SAMPLES
(Burmister Soil Classification System)

I. Definition of Soil Components and Fractions

Material	Symbol	Fraction	Sieve Size	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 made to exhibit plasticity and clay qualities within a certain range of moisture content, and which exhibits considerable strength when air-dried.
CLAY & SILT	C & $	Medium (M)	10 to 20	
Silty CLAY	$yC	High (H)	20 to 40	
CLAY	C	Very High (VH)	40 Plus	
Organic Silt	(O$)			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

Component	Written	Proportions	Symbol	Percentage Range by Weight*
Principal	CAPITALS	---		50 or more
Minor	Lower Case	and	a.	35 to 50
		some	s.	20 to 35
		little	l.	10 to 20
		trace	t.	1 to 10

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

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-101
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	4.0	8/14/17
End of Drilling (0 hrs.) ▼	4.0	8/14/17
After Drilling (>24 hrs.) ◧	N.A.	

DATE STARTED 8/14/17
DATE FINISHED 8/14/17

GROUND ELEV. 81.0+/-
GROUND WATER ELEV. 77.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1	11	13	14	18	12			S-1: Brown cmf Sand, and cmf Gravel, little(+) Silt. Frequent Brick and Concrete fragments. (Fill) (Dry).
	0'-2'								
	S-2	6	3	5	7	14			S-2: Top 10": Dk. Greenish Gray mf Sand, and Silt & Clay. (Moist). Bot 4": Lt. Green-Brown cmf SAND, trace(+) Silt. (Moist).
	2'-4'								
	S-3	5	2	1	1	12			S-3: Top 8": Lt. Green-Brown cmf SAND, little Silt. Occasional Silt and Clay pockets. (Wet). Bot 4": Green-Gray Organic Silt & Clay, some f Sand. Frequent Fine Roots. (Wet).
	4'-6'								
	S-4	4	3	2	2	6			S-4: Top 4": Orange-Brown mf Sand, and Clayey Silt, little f Gravel. (Wet). Bot 2": Gray CLAY & SILT, trace f Sand. (Micaceous) (Wet).
	6'-8'								
	S-5	2	2	3	3	16			S-5: Gray Silt & Clay, and f Sand. Frequent Lt. Gray pockets. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	2	1	3	5	18			S-6: Gray f Sand, and Clayey Silt. (Micaceous) (Wet).
	13'-15'								
	S-7	3	4	6	7	16			S-7: Same as S-6.
	18'-20'								
20									
	S-8	3	3	4	5	14			S-8: Gray f Sand, and Silt & Clay. Occasional Lt. Gray Sand seams. (Micaceous) (Wet).
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight Pl.
SILT & CLAY	low Pl.
CLAY & SILT	medium Pl.
Silty CLAY	high Pl.
CLAY	very high Pl.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-102
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	5.0	8/14/17
End of Drilling (0 hrs.) ▼	5.0	8/14/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/14/17
DATE FINISHED 8/14/17

GROUND ELEV. 81.0+/-
GROUND WATER ELEV. 75.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1	6	13	16	12	12			S-1: Brown cmf Sand, and cmf Gravel, little Silt. Frequent Concrete fragments. (Fill) (Moist).
	0'-2'								
	S-2	6	7	7	7	12			S-2: Green-Brown mf Sand, and Silt & Clay, little f Gravel. Occasional Dk. Gray Fine Roots. (Moist).
	2'-4'								
	S-3	3	3	3	3	10			S-3: Orange-Brown CLAY & SILT, little mf Sand, little(-) f Gravel. Frequent Gray seams. (Wet).
	4'-6'								
	S-4	3	3	4	3	20			S-4: Gray Silt & Clay, and f Sand. (Micaceous) (Wet).
	6'-8'								
	S-5	2	3	2	3	14			S-5: Gray Silt & Clay, and f Sand. trace f Gravel. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	2	3	3	4	20			S-6: Gray f Sand, and Silt & Clay. (Micaceous) (Wet).
	13'-15'								
	S-7	2	3	5	7	20			S-7: Gray f Sand, and Silt & Clay. (Micaceous) (Wet).
	18'-20'								
20									
	S-8	3	4	5	9	18			S-8: Gray f Sand, and Silt & Clay. Occasional Lt. Gray Silt & Clay pockets. (Micaceous) (Wet).
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight Pl.
SILT & CLAY	low Pl.
CLAY & SILT	medium Pl.
Silty CLAY	high Pl.
CLAY	very high Pl.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-103
PAGE 1 OF 2
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	4.5	8/14/17
End of Drilling (0 hrs.) ▼	4.5	8/14/17
After Drilling (>24 hrs.) ◧	N.A.	

DATE STARTED 8/14/17
DATE FINISHED 8/14/17

GROUND ELEV. 80.0+/-
GROUND WATER ELEV. 75.5+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1	3	4	3	3	16			S-1: Brown cmf Sand, and cmf Gravel, little Silt. Frequent Concrete, Brick, and Asphalt fragments. (Fill) (Moist).
	0'-2'								
	S-2	3	2	2	2	14			S-2: Top 6": Yellow-Brown mf SAND, little Clayey Silt. (Moist). Bot 8": Gray mf Sand, and Clayey Silt, little f Gravel. (Moist).
	2'-4'								
	S-3	2	1	1	2	12			S-3: Gray-Brown cmf SAND, some Organic Silt, trace f Gravel. Frequent Lt. Brown Fine Roots. (Possible Fill) (Wet).
	4'-6'								
	S-4	3	4	8	4	14			S-4: Gray-Brown cmf SAND, some Silt, little f Gravel. Frequent Brick fragments. (Fill) (Wet).
	6'-8'								
	S-5	1	1	2	1	8			S-5: Dk. Gray-Brown mf(+) Sand, and Clayey Silt. (Wet).
	8'-10'								
10									
	S-6	2	2	4	7	12			S-6: Gray Clayey Silt, and mf Sand. Occasional Silt & Clay layers. (Micaceous) (Wet).
	13'-15'								
	S-7	2	3	5	7	20			S-7: Top 6": Same as S-6. Bot 14": Gray f Sand, and Silt & Clay. (Micaceous) (Wet).
	18'-20'								
20									
	S-8	3	3	5	6	6			S-8: Gray CLAY & SILT, some f Sand. (Micaceous) (Wet). * Coarse gravel stuck in tip.
	23'-25'								
	S-9	2	2	5	6	18			S-9: Gray SILT & CLAY, little(+)f Sand. (Micaceous) (Wet).
	28'-30'								
30									
	S-10	2	6	10	11	24			S-10: Same as S-9.
	33'-35'								
	S-11	4	6	15	12	14			S-11: Gray f Sand, and Silt & Clay. (Micaceous) (Wet).
	38'-40'								
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-103
PAGE 2 OF 2
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	4.5	8/14/17
End of Drilling (0 hrs.) ▼	4.5	8/14/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/14/17
DATE FINISHED 8/14/17

GROUND ELEV. 80.0+/-
GROUND WATER ELEV. 75.5+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
40									
	S-12 43'-45'	4	7	11	14	20			S-12: Top 18": Gray Silt & Clay, and f Sand, trace f Gravel. (Wet). Bottom 2": Gray-Brown cmf Sand, and mf Gravel, some Silt and Clay. (Wet).
	S-13 48'-50'	14	50/3"			6			S-13: Lt. Gray mf SAND, some Silt. (Wet).
50									**END OF TEST BORING AT 50.0 FEET.**
60									
70									
80									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-104
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	5.0	8/15/17
End of Drilling (0 hrs.) ▼	5.0	8/15/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/15/17
DATE FINISHED 8/15/17

GROUND ELEV. 80.0+/-
GROUND WATER ELEV. 75.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1	4	7	7	8	16			S-1: Brown-Gray cmf Sand, and cmf Gravel, some(-) Silt. Frequent Concrete, Brick and Asphalt fragments. (Fill) (Moist).
	0'-2'								
	S-2	6	4	4	3	14			S-2: Dk. Gray-Brown mf GRAVEL, some cmf Sand, little Silt. Frequent Brick and Concrete fragments. (Fill) (Dry).
	2'-4'								
	S-3	5	4	2	1	0			S-3: No Recovery. * Coarse gravel stuck in tip.
	4'-6'								
	S-4	WOH	WOH	2	3	14			S-4: Top 8": Brown m(-)f Sand, and Organic Clayey Silt. Frequent Brown Fine Roots. (Wet). Bot 6": Brown cmf SAND, little(-) Silt. (Wet).
	6'-8'								
	S-5	4	5	2	2	12			S-5: Top 6": Dk. Green cmf Sand, and mf Gravel, little Silt. (Wet). Bot 6": Green-Gray mf(+) Sand, and Silt & Clay. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	6	9	5	6	8			S-6: Green-Brown f Sand, and Clayey Silt. (Micaceous) (Wet).
	13'-15'								
	S-7	7	6	6	6	6			S-7: Gray Silt & Clay, and f Sand. Occasional Yellow seams. (Micaceous) (Wet).
	18'-20'								
20									
	S-8	8	6	4	7	12			S-8: Gray f Sand, and Clayey Silt. Frequent Dk. Gray Silt and Clay pockets. (Micaceous) (Wet).
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight Pl.
SILT & CLAY	low Pl.
CLAY & SILT	medium Pl.
Silty CLAY	high Pl.
CLAY	very high Pl.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-105
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	4.5	8/15/17
End of Drilling (0 hrs.) ▼	4.5	8/15/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/15/17
DATE FINISHED 8/15/17

GROUND ELEV. 82.0+/-
GROUND WATER ELEV. 77.5+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1		8	5	4	12			Top 6": Asphalt Pavement.
	0'-2'								S-1: Top 4": Asphalt Pavement Bot 8": Yellow mf SAND, little(+) Silt, trace f Gravel. (Moist).
	S-2	3	5	6	5	12			S-2: Top 6": Same as S-1 Bottom. Bot 6": Yellow-Brown cmf SAND, some mf Gravel, little Silt. (Moist).
	2'-4'								
	S-3	5	4	3	2	6			S-3: Same as S-2.
	4'-6'								
	S-4	2	3	3	4	0			S-4: No Recovery.
	6'-8'								
	S-5	WOH	WOH	2	2	16			S-5: Greenish Gray f Sand, and Silt & Clay. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	2	4	4	5	18			S-6: Same as S-5.
	13'-15'								
	S-7	4	5	5	8	16			S-7: Greenish Gray f Sand, and Clayey Silt. Occasional Dk. Gray Silt & Clay seams. (Micaceous) (Wet).
	18'-20'								
20									
	S-8	4	5	9	12	10			S-8: Gray f Sand, and Clayey Silt. Frequent Dk. Gray partings. (Micaceous) (Wet).
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT: Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-106
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	7.0	8/15/17
End of Drilling (0 hrs.) ▼	7.0	8/15/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/15/17
DATE FINISHED 8/15/17

GROUND ELEV. 81.5+/-
GROUND WATER ELEV. 74.5+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1		7	5	4	12			Top 8": Asphalt Pavement.
	0'-2'								S-1: Yellow-Gray cmf Sand, and mf Gravel, little(+) Silt. Frequent Concrete fragments. (Fill) (Moist).
	S-2	2	4	9	5	14			S-2: Top 8": Yellow-Brown cmf SAND, some(-) Silt, little mf Gravel. (Moist).
	2'-4'								Bot 6": Gray cmf Gravel, and cmf Sand, little Silt. (Moist).
	S-3	7	4	3	2	6			S-3: Dk. Brown cmf SAND, some(-) Silt, little mf Gravel. (Moist).
	4'-6'								
	S-4	3	26	13	7	10			S-4: Green cmf SAND, some Silt, little mf Gravel. Occasional Yellow Gravel pockets. (Wet).
	6'-8'								
	S-5	2	3	3	4	4			S-5: Greenish Brown mf Sand, and Silt & Clay. Occasional Yellow seams. (Wet).
	8'-10'								
10									
	S-6	2	3	4	5	4			S-6: Greenish Gray mf Sand, and Silt & Clay. (Micaceous) (Wet).
	13'-15'								
	S-7	3	2	5	6	12			S-7: Greenish Gray Clayey SILT, some(+) f Sand. (Micaceous) (Wet).
	18'-20'								
20									
	S-8	3	5	6	9	14			S-8: Greenish Gray f Sand, and Clayey Silt. Frequent Dk. Gray Silt & Clay partings. (Micaceous) (Wet).
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:
* Added water in augers to rinse out soils stuck inside at 13' prior to S-6.

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT: Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-107
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	5.0	8/15/17
End of Drilling (0 hrs.) ▼	5.0	8/15/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/15/17
DATE FINISHED 8/15/17

GROUND ELEV. 81.0+/-
GROUND WATER ELEV. 76.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1		4	4	3	14			Top 10": Asphalt Pavement.
	0'-2'								S-1: Top 4": Yellow-Brown cmf Sand, and mf Gravel, little Silt. Frequent Brick and Concrete fragments. (Fill) (Moist).
	S-2	2	2	3	3	10			S-2: Brown-Gray cmf Sand, and Silt & Clay, some(-) mf Gravel. (Moist).
	2'-4'								
	S-3	2	WOH	WOH	WOH	16			S-3: Orange-Gray CLAY & SILT. Frequent Brown Fine Roots. (Wet).
	4'-6'								
	S-4	WOH	WOH	WOH	WOH	20			S-4: Same as S-3.
	6'-8'								
	S-5	2	2	2	4	14			S-5: Greenish Gray Silt & Clay, some f Sand. Frequent Lt. Gray Silt & Clay Gravel pockets. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	2	3	6	8	16			S-6: Same as S-5.
	13'-15'								
	S-7	2	4	8	8	18			S-7: Top 10": same as S-6.
	18'-20'								Bot 8": Greenish Gray Clayey Silt, and f Sand. (Micaceous) (Wet).
20									
	S-8	4	3	5	7	18			S-8: Dk. Greenish Gray f Sand, and Clayey Silt. (Micaceous) (Wet).
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:
* Added water in augers to rinse out soils stuck inside at 13' prior to S-6.

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT: Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-108
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	5.0	8/16/17
End of Drilling (0 hrs.) ▼	5.0	8/16/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/16/17
DATE FINISHED 8/16/17

GROUND ELEV. 83.0+/-
GROUND WATER ELEV. 78.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1		3	2	2	16			Top 6": Asphalt Pavement.
	0'-2'								S-1: Top 4": Yellow-Brown cmf Sand, little Silt, little f Gravel. (Moist). Bot 12": Dk. Gray mf SAND, some Organic Clayey Silt. Frequent Brown Wood fragments. (Fill) (Moist).
	S-2	3	2	2	4	6			S-2: Greenish Gray Silt & Clay, and mf(+) Sand. Occasional Brown pockets (Moist).
	2'-4'								
	S-3	WOH	WOH	WOH	2	16			S-3: Orange-Gray CLAY & SILT, little f Sand. (Wet).
	4'-6'								
	S-4	2	3	4	5	20			S-4: Top 14": Lt. brown mf Sand, and Silt & Clay, little f Gravel. (Wet). Bot 6": Gray SILT & CLAY, some(+) f Sand. (Micaceous) (Wet).
	6'-8'								
	S-5	1	1	4	3	8			S-5: Gray SILT & CLAY, some f Sand. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	1	2	4	5	16			S-6: Gray SILT & CLAY, some f Sand. Frequent Lt. Gray Silt & Clay pockets. (Micaceous) (Wet).
	13'-15'								
	S-7	3	5	7	7	14			S-7: Gray Clayey SILT, some(+) f Sand. (Micaceous) (Wet).
	18'-20'								
20									
	S-8	3	5	8	8	14			S-8: Same as S-7.
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-109
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	8.0	8/16/17
End of Drilling (0 hrs.) ▼	8.0	8/16/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/16/17
DATE FINISHED 8/16/17

GROUND ELEV. 85.0+/-
GROUND WATER ELEV. 77.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1		10	8	7	6			Top 6": Asphalt Pavement.
	0'-2'								S-1: Brown cmf Sand, and cmf Gravel, little(+) Silt. (Dry).
	S-2	6	5	7	7	8			S-2: Brown cmf Gravel, and cmf Sand, little Silt. (Moist).
	2'-4'								
	S-3	7	10	19	26	0			S-3: No Recovery. * Coarse gravel stuck in tip.
	4'-6'								
	S-4	6	3	5	5	12			S-4: Green-Brown cmf SAND, some Silt, little(+) f Gravel. Occasional Green Clayey Silt pockets. (Wet).
	6'-8'								
	S-5	1	2	4	4	14			S-5: Gray SILT & CLAY, some f Sand. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	2	3	4	4	14			S-6: Gray Silt & Clay, and f Sand. Frequent Lt. Gray mf Gravel pockets. (Micaceous) (Wet).
	13'-15'								
	S-7	3	3	6	7	16			S-7: Gray Silt & Clay, and f Sand. (Micaceous) (Wet).
	18'-20'								
20									
	S-8	3	8	11	13	4			S-8: Same as S-7.
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT: Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-110
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	6.0	8/16/17
End of Drilling (0 hrs.) ▼	6.0	8/16/17
After Drilling (>24 hrs.) ◧	N.A.	

DATE STARTED 8/16/17
DATE FINISHED 8/16/17

GROUND ELEV. 84.0+/-
GROUND WATER ELEV. 78.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1		6	5	3	4			Top 6": Asphalt Pavement.
	0'-2'								S-1: Brown cmf Sand, and mf Gravel, little Silt. (Moist). * Possibly pushing a cobble.
	S-2	2	3	4	3	10			S-2: Brown cmf SAND, some m(-)f Gravel, some(-) Clayey Silt. (Moist).
	2'-4'								
	S-3	7	4	3	2	0			S-3: No Recovery. * Gravel and Clay stuck in auger, auger cleaned out.
	4'-6'								
	S-4	3	4	5	6	8			S-4: Gray SILT & CLAY, some f Sand. (Micaceous) (Wet).
	6'-8'								
	S-5	4	1	2	3	10			S-5: Gray SILT & CLAY, little f Sand. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	2	3	3	5	10			S-6: Gray CLAY & SILT, little f Sand. Frequent Lt. Gray pockets. (Micaceous) (Wet).
	13'-15'								
	S-7	5	5	8	7	8			S-7: Same as S-6.
	18'-20'								
20									
	S-8	4	5	6	8	18			S-8: Top 6": Same as S-7. Bot 12": Gray Clayey SILT, some(+) f Sand. (Micaceous) (Wet).
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-111
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	5.0	8/16/17
End of Drilling (0 hrs.) ▼	5.0	8/16/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/16/17
DATE FINISHED 8/16/17

GROUND ELEV. 83.0+/-
GROUND WATER ELEV. 78.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1		3	4	4	4			Top 6": Asphalt Pavement.
	0'-2'								S-1: Brown cmf GRAVEL, some(+) cmf Sand, little(+) Silt. (Moist).
	S-2	3	3	3	4	12			S-2: Top 6": Same as S-1. Bot 6": Orange-Gray CLAY & SILT, some f Sand, trace f Gravel. (Moist).
	2'-4'								
	S-3	1	3	3	8	6			S-3: Orange-Brown mf Sand, and Silt & Clay, little f Gravel. (Wet).
	4'-6'								
	S-4	10	7	8	5	8			S-4: Orange-Brown Silt & Clay, and m(-)f Sand, trace f Gravel. (Wet).
	6'-8'								
	S-5	2	2	3	5	16			S-5: Gray CLAY & SILT, some f Sand. Frequent Dk. Gray Clay & Silt pockets. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	2	3	5	5	14			S-6: Gray SILT & CLAY, some f Sand. Frequent Lt. Gray hard Clay. (Micaceous) (Wet).
	13'-15'								
	S-7	3	5	7	10	12			S-7: Gray Clayey Silt, and f Sand. (Micaceous) (Wet).
	18'-20'								
20									
	S-8	4	6	7	9	14			S-8: Same as S-7.
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-112
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	3.0	8/16/17
End of Drilling (0 hrs.) ▼	3.0	8/16/17
After Drilling (>24 hrs.) ◪	N.A.	

DATE STARTED 8/16/17
DATE FINISHED 8/16/17

GROUND ELEV. 82.0+/-
GROUND WATER ELEV. 79.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1		10	7	3	6			Top 6": Asphalt Pavement.
	0'-2'								S-1: Brown cmf GRAVEL, some cmf Sand, trace Silt. (Moist). * Coarse gravel stuck in tip.
	S-2	2	3	4	3	12			S-2: Brown-Gray cmf SAND, some Clayey Silt, trace f Gravel. Frequent Orange pockets. (Wet bottom 6")
	2'-4'								
	S-3	1	5	2	2	4			S-3: Green-Gray cmf Sand, and Clayey Silt, trace(+) f Gravel. (Wet).
	4'-6'								
	S-4	3	3	2	3	12			S-4: Top 6": Orange-Brown CLAY & SILT, little(-) f Sand, trace cmf Gravel. (Wet).
	6'-8'								
	S-5	3	3	3	4	12			S-5: Gray SILT & CLAY, little(+) f Sand. Frequent Lt. Gray dry Silt & Clay clump pockets. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	3	3	5	8	18			S-6: Gray Silt & Clay, and f Sand. Frequent Lt. Gray dry Silt & Clay clump pockets. (Micaceous) (Wet).
	13'-15'								
	S-7	3	4	5	7	10			S-7: Same as S-6.
	18'-20'								
20									
	S-8	4	5	9	10	12			S-8: Gray Silt & Clay, and f Sand. (Micaceous) (Wet).
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-113
PAGE 1 OF 2
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	7.0	8/18/17
End of Drilling (0 hrs.) ▼	7.0	8/18/17
After Drilling (>24 hrs.) ◧	N.A.	

DATE STARTED 8/18/17
DATE FINISHED 8/18/17

GROUND ELEV. 83.0+/-
GROUND WATER ELEV. 76.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1		7	12	8	12			Top 6": Asphalt Pavement. S-1: Gray cmf SAND, some cmf Gravel, little Clayey Silt. Frequent Brick fragments. (Fill) (Moist).
	0'-2'								
	S-2	7	13	9	4	12			S-2: Top 6": Orange-Gray cmf Sand, and cmf Gravel, some(-) Clayey Silt. Bot 6": Orange-Gray CLAY & SILT, some(-) f Sand. Occasional Red pockets. (Moist).
	2'-4'								
	S-3	5	5	4	3	8			S-3: Brown-Gray SILT & CLAY, some(+) f Sand. Frequent Orange seams. Occasional Brown Fine Roots. (Moist).
	4'-6'								
	S-4	4	4	3	3	18			S-4: Top 9": Same as S-3. Bot 9": Gray SILT & CLAY, some f Sand. (Micacous) (Wet).
	6'-8'								
	S-5	2	3	4	4	0			S-5: No Recovery. * Possibly pushing a cobble.
	8'-10'								
10									
	S-6	3	3	6	6	20			S-6: Gray f Sand, and Clayey Silt. Frequent Lt. Gray Sand and Clay pockets. (Micaceous) (Wet).
	13'-15'								
	S-7	5	9	13	12	10			S-7: Greenish-Gray f Sand, and Clayey Silt. (Micaceous) (Wet).
	18'-20'								
20									
	S-8	3	3	6	7	12			S-8: Gray f Sand, and Clayey Silt. (Micaceous) (Wet).
	23'-25'								
	S-9	3	6	11	13	12			S-9: Gray f Sand, and Clayey Silt. Frequent Dk. Gray seams. (Micaceous) (Wet).
	28'-30'								
30									
	S-10	4	8	11	11	12			S-10: Gray Silt & Clay, and f Sand. (Micaceous) (Wet).
	33'-35'								
	S-11	4	8	14	18	14			S-11: Same as S-10.
	38'-40'								
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-113
PAGE 2 OF 2
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	7.0	8/18/17
End of Drilling (0 hrs.) ▼	7.0	8/18/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/18/17
DATE FINISHED 8/18/17

GROUND ELEV. 83.0+/-
GROUND WATER ELEV. 76.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
40									
	S-12 43'-45'	3	12	16	17	14			S-12: Gray SILT & CLAY, some f Sand. (Micaceous) (Wet).
	S-13 48'-50'	5	7	12	28	16			S-13: Gray f Sand, and Silt & Clay. (Micaceous) (Wet). *Crushed Lt. Brown Gravel bottom 2 inches of spoon.
50									END OF TEST BORING AT 50.0 FEET.
60									
70									
80									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT: Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-114
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	4.0	8/18/17
End of Drilling (0 hrs.) ▼	4.0	8/18/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/18/17
DATE FINISHED 8/18/17

GROUND ELEV. 82.0+/-
GROUND WATER ELEV. 78.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1		8	8	8	12			Top 6": Asphalt Pavement.
	0'-2'								S-1: Brown cmf Sand, and cmf Gravel, some(-) Clayey Silt. Occasional Brick fragments. (Fill) (Moist).
	S-2	4	3	4	4	14			S-2: Greenish Brown mf SAND, some Clayey Silt. (Moist).
	2'-4'								
	S-3	2	3	4	2	6			S-3: Gray SILT & CLAY, some f Sand. (Micaceous) (Wet).
	4'-6'								
	S-4	4	4	5	5	0			S-4: No Recovery. * Possibly pushing a cobble.
	6'-8'								
	S-5	2	3	4	3	14			S-5: Gray Silt & Clay, and f Sand. Frequent Lt. Gray Silt & Clay pockets. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	3	3	6	7	14			S-6: Gray f Sand, and Clayey Silt. (Micaceous) (Wet).
	13'-15'								
	S-7	3	3	6	6	18			S-7: Gray f Sand, and Clayey Silt. Occasional Greenish Gray layers. (Micaceous) (Wet).
	18'-20'								
20									
	S-8	3	4	7	8	16			S-8: Same as S-7.
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:
* Added water in augers to rinse out soils stuck inside at 6' prior to S-4.

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-115
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	4.0	8/18/17
End of Drilling (0 hrs.) ▼	4.0	8/18/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/18/17
DATE FINISHED 8/18/17

GROUND ELEV. 83.0+/-
GROUND WATER ELEV. 79.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1		2	2	3	12			Top 6": Asphalt Pavement.
	0'-2'								S-1: Top 4": Asphalt Pavement. Bot 8": Greenish Gray mf SAND, some Clayey Silt. (Moist).
	S-2	1	3	6	6	16			S-2: Top 10": Green-Brown m(-)f Sand, and Silt & Clay. Frequent Fine Roots. (Moist).
	2'-4'								Bot 6": Green-Brown cmf Sand, and cmf Gravel, little Clayey Silt. Frequent Orange pockets. (Wet).
	S-3	4	10	4	2	14			S-3: Orange-Brown cmf Gravel, and cmf Sand, little Silt. Frequent Red pockets. (Wet).
	4'-6'								
	S-4	2	3	4	4	14			S-4: Gray SILT & CLAY, little(+) f Sand. (Micaceous) (Wet).
	6'-8'								
	S-5	1	3	4	4	16			S-5: Gray SILT & CLAY, some f Sand. Frequent Lt. Gray pockets. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	2	3	5	7	18			S-6: Gray Silt & Clay, and f Sand. Occasional Dk. Gray seams. (Micaceous) (Wet).
	13'-15'								
	S-7	4	7	9	7	14			S-7: Greenish Gray f SAND, some Clayey Silt. (Micaceous) (Wet).
	18'-20'								
20									
	S-8	4	5	8	8	14			S-8: Greenish Gray f Sand, and Clayey Silt. (Micaceous) (Wet).
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more than one per foot of thickness

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Redevelopment
Borough of Hightstown
Mercer County, NJ
PROJECT NO. 16001094A

BORING NO. TB-116
PAGE 1 OF 1
LOCATION SEE PLAN
OFFSET

CONTRACTOR: Accurate Drilling, LLC
DRILLER: Danny
DRILLING EQUIPMENT: CME-75 Truck Mounted
METHOD: HSA x Mud Rotary ____ Other ____
HAMMER: CH ____ Safety ____ Automatic x
RODS: AW x NW ____ Other ____
INSPECTOR: Pavle Ayoub

GROUNDWATER:	DEPTH (ft.)	DATE
First Encountered ▽	3.5	8/18/17
End of Drilling (0 hrs.) ▼	3.5	8/18/17
After Drilling (>24 hrs.) ◭	N.A.	

DATE STARTED 8/18/17
DATE FINISHED 8/18/17

GROUND ELEV. 83.5+/-
GROUND WATER ELEV. 80.0+/-

DEPTH BELOW SURFACE (ft)	SAMPLE NUMBER / DEPTH (ft)	BLOWS PER 6 INCHES 0-6"	6-12"	12-18"	18-24"	RECOVERY (in)	POCKET PENETR-OMETER (tsf)	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	S-1		2	1	2	12			Top 6": Asphalt Pavement.
	0'-2'								S-1: Top 5": Asphalt Pavement. Bot 7": Grn.-Gray cmf Sand and cmf Gravel, little Clayey Silt. (Moist).
	S-2	4	11	12	7	12			S-2: Top 6": Same as S-1. Bot 6": Orange-Brown cmf Gravel, and cmf Sand, little Silt. Occasional Red pockets. (Wet).
	2'-4'								
	S-3	4	4	3	2	12			S-3: Orange-Brown cmf SAND, some(+) Clayey Silt, little f Gravel. (Wet).
	4'-6'								
	S-4	2	3	6	5	18			S-4: Dk. Gray SILT & CLAY, some(-) f Sand. (Micaceous) (Wet).
	6'-8'								
	S-5	2	1	3	3	12			S-5: Dk. Gray SILT & CLAY, little f Sand. (Micaceous) (Wet).
	8'-10'								
10									
	S-6	2	2	4	3	14			S-6: Dk. Gray Silt & Clay, and f Sand. Frequent Lt. Gray pockets. (Micaceous) (Wet).
	13'-15'								
	S-7	2	3	5	6	16			S-7: Dk. Gray Silt & Clay, and f Sand. Frequent Greenish Gray seams. (Micaceous) (Wet).
	18'-20'								
20									
	S-8	3	10	8	9	14			S-8: Same as S-7.
	23'-25'								
									END OF TEST BORING AT 25.0 FEET.
30									
40									

NOTES:

VISUAL IDENTIFICATION OF SOILS (BURMISTER CLASSIFICATION SYSTEM)

Component	Proportions	% Range (by weight)
PRINCIPAL	---	50 or more
Minor	and	35 to 50
	some	20 to 35
	little	10 to 20
	trace	1 to 10

Clayey Soils	
Clayey SILT	slight PI.
SILT & CLAY	low PI.
CLAY & SILT	medium PI.
Silty CLAY	high PI.
CLAY	very high PI.

TERMINOLOGY for STRATIFIED SOILS

Term	Definition
parting	0 to 1/16" thickness
seam	1/16" to 1/2" thickness
layer	1/2" to 12" thickness
occasional	one or less per foot of thickness
frequent	more 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

Material	Symbol	Fraction	Sieve Size	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 made to exhibit plasticity and clay qualities within a certain range of moisture content, and which exhibits considerable strength when air-dried.
CLAY & SILT	C & $	Medium (M)	10 to 20	
Silty CLAY	$yC	High (H)	20 to 40	
CLAY	C	Very High (VH)	40 Plus	
Organic Silt	(O$)			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

Component	Written	Proportions	Symbol	Percentage Range by Weight*
Principal	CAPITALS	---		50 or more
Minor	Lower Case	and	a.	35 to 50
		some	s.	20 to 35
		little	l.	10 to 20
		trace	t.	1 to 10

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

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 2
BORING NO. TB-1
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER ____ FT. W/ ____ FT. CASING OUT ON ____
DEPTH OF WATER ____ FT. W/ ALL CASING OUT ON ____

DATE STARTED 07/12/04
DATE FINISHED 07/12/04

GROUND ELEV.
GROUND WATER ELEV.

WEIGHT OF HAMMER:
CASING ____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. ____ I.D. ____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. ____ I.D. ____

HAMMER FALL ON:
CASING
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	10	18	15	9		S-1: Black cmf SAND, some Silt, some mf Gravel, Asphaltic Pavement.
	O	0'-2'						
	L	S-2	7	6	6	4		S-2: Yellow Brown mf SAND, some Silt, trace mf Gravel.
	L	2'-4'						
	O	S-3	6	4	3	4		S-3: No Recovery (rock in tip).
	W	4'-6'						
		S-4	4	6	6	7		S-4: Dk. Gray Clayey SILT, little(+) mf Sand.
	S	6'-8'						
	T	S-5	2	3	3	4		S-5: Dk. Gray Clayey SILT, little(+) mf Sand (Micaceous).
	E	8'-10'						
10	M	S-6	4	5	6	6		S-6: Same as S-5.
		10'-12'						
	A							
	U							
	G							
	E	S-7	2	3	6	6		S-7: Same as S-5.
	R	15'-17'						
20		S-8	3	5	6	8		S-8: Dk. Gray Clayey SILT, some mf Sand.
		20'-22'						
		S-9	3	5	7	8		S-9: Dk. Gray f Sand, and Clayey Silt (Micaceous).
		25'-27'						
30		S-10	5	7	9	11		S-10: Same as S-9.
		30'-32'						
		S-11	6	8	9	17		S-11: Same as S-9.
		35'-37'						
40								

Soils Engineer: James J. Serpico, Jr.
Contractor: Granese Drilling, Inc.
Drilling Inspector: Bruce Lapenta
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils

Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils

soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used

trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 2 OF 2
BORING NO. TB-1
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER _____ FT. W/ _____ FT. CASING OUT ON _____
DEPTH OF WATER 24.0' FT. W/ ALL CASING OUT ON 07/12/04

DATE STARTED 07/12/04
DATE FINISHED 07/12/04

GROUND ELEV. _____
GROUND WATER ELEV. _____

WEIGHT OF HAMMER:
CASING _____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. _____ I.D. _____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. _____ I.D. _____

HAMMER FALL ON:
CASING _____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
40	H	S-12	7	9	13	15		S-12: Dk. Gray f Sand, and Silt (Micaceous).
	O	40'-42'						
	L							
	L							
	O							
	W	S-13	13	24	38	60		S-13: Gray cmf SAND, trace Silt.
		45'-47'						
	S							
	T							
	E							
50	M	S-14	22	35	52	46		S-14: Same as S-13.
		50'-52'						
	A							**End of Test Boring at 52 Feet**
	U							
	G							
	E							
	R							
60								
70								
80								

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: Bruce Lapenta
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used	
trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 2
BORING NO. TB-2
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER _____ FT. W/ _____ FT. CASING OUT ON _____
DEPTH OF WATER _____ FT. W/ ALL CASING OUT ON _____

DATE STARTED 07/12/04
DATE FINISHED 07/12/04

GROUND ELEV. _____
GROUND WATER ELEV. _____

WEIGHT OF HAMMER:
CASING _____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. _____ I.D. _____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. _____ I.D. _____

HAMMER FALL ON:
CASING _____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	22	12	22	40		S-1: Black cmf SAND, some Silt, some f Gravel (Fill).
	O	0'-2'						
	L	S-2	13	7	7	9		S-2: Brown cmf SAND, trace Silt.
	L	2'-4'						
	O	S-3	6	3	4	15		S-3: Gray f Sand, and Silt.
	W	4'-6'						
		S-4	8	3	2	4		S-4: Olive Brown cmf SAND, trace Silt.
	S	6'-8'						
	T	S-5	3	3	3	4		S-5: Dark Gray Clayey SILT, some c(-)mf Sand, trace f Gravel.
	E	8'-10'						
10	M	S-6	4	5	6	7		S-6: Same as S-5.
		10'-12'						
	A							
	U							
	G							
	E	S-7	4	6	8	10		S-7: Same as S-5.
	R	15'-17'						
20		S-8	4	6	6	9		S-8: Dk. Gray Clayey SILT, smoe m(-)f Sand.
		20'-22'						
		S-9	4	6	7	13		S-9: Same as S-8.
		25'-27'						
30		S-10	4	4	7	9		S-10: Dk. Gray Clayey SILT, trace(+) m(-)f Sand.
		30'-32'						
		S-11	5	5	8	10		S-11: Dk. Gray f Sand, and Clayey Silt.
		35'-37'						
40								

Soils Engineer: James J. Serpico, Jr.
Contractor: Granese Drilling, Inc.
Drilling Inspector: Bruce Lopenta
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used	
trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 2 OF 2
BORING NO. TB-2
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER _____ FT. W/ _____ FT. CASING OUT ON _____
DEPTH OF WATER 50' FT. W/ ALL CASING OUT ON 07/12/04

DATE STARTED 07/12/04
DATE FINISHED 07/12/04

GROUND ELEV. _____
GROUND WATER ELEV. _____

WEIGHT OF HAMMER:
CASING _____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. _____ I.D. _____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. _____ I.D. _____

HAMMER FALL ON:
CASING _____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
40	H	S-12	8	10	13	16		S-12: Dk. Gray f Sand, and Silt.
	O	40'-42'						
	L							
	L							
	O							
	W	S-13	16	30	50/3"			S-13: Gray cmf SAND, trace Silt.
		45'-46.3'						
	S							
	T							
	E							
50	M							
	A							
	U							
	G							
	E							
	R							
60								
70								
80								

End of Test Boring at 46.3 Feet

Soils Engineer: James J. Serpico, Jr.
Contractor: Granese Drilling, Inc.
Drilling Inspector: Bruce Lapenta
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used	
trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 1
BORING NO. TB-3
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER 35' FT. W/ 35' FT. CASING OUT ON 07/13/04
DEPTH OF WATER _____ FT. W/ ALL CASING OUT ON _____

DATE STARTED 07/13/04
DATE FINISHED 07/13/04

GROUND ELEV. _____
GROUND WATER ELEV. _____

WEIGHT OF HAMMER:
CASING _____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. _____ I.D. _____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. _____ I.D. _____

HAMMER FALL ON:
CASING _____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	-	6	5	6		S-1: 3" Asphalt. Yellow Brown c(-)mf SAND, little Silt, trace f Gravel.
	O	0'-2'						
	L	S-2	5	6	6	15		S-2: Same as S-1 (Fill).
	L	2'-4'						
	O	S-3	17	19	6	3		S-3: Brown cmf SAND, little Silt, little mf Gravel (Little Recovery).
	W	4'-6'					at 6.0' Perched?	
		S-4	4	4	5	5		S-4: Brown cmf SAND, little cmf Gravel, trace Silt (Wet).
	S	6'-8'						
	T	S-5	2	3	3	4		S-5: Dk. Gray f Sand, and Clayey Silt.
	E	8'-10'						
10	M	S-6	5	6	7	7		S-6: Dk. Gray Clayey SILT, some mf Sand.
		10'-12'						
	A							
	U							
	G							
	E	S-7	2	4	4	6		S-7: Dk. Gray f Sand, and Silt.
	R	15'-17'						
20		S-8	3	5	7	10		S-8: Dk. Gray Clayey SILT, some(+) mf Sand.
		20'-22'						
		S-9	4	7	11	12		S-9: Same as S-8.
		25'-27'						
30		S-10	4	6	9	11		S-10: Dk. Gray Clayey SILT, little mf Sand.
		30'-32'						
		S-11	4	7	11	16		S-11: Dk. Gray f Sand, and Clayey Silt.
		35'-37'						
40								**End of Test Boring at 37 Feet**

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: Bruce Lapenta
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils

Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils

soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used

trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 1
BORING NO. TB-4
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER _____ FT. W/ _____ FT. CASING OUT ON _____
DEPTH OF WATER _____ FT. W/ ALL CASING OUT ON _____

DATE STARTED 07/13/04
DATE FINISHED 07/13/04

GROUND ELEV. _____
GROUND WATER ELEV. _____

WEIGHT OF HAMMER:
CASING _____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. _____ I.D. _____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. _____ I.D. _____

HAMMER FALL ON:
CASING _____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	2	2	2	2		S-1: Yellow Brown cmf SAND, some Silt, little mf Gravel.
	O	0'-2'						
	L	S-2	2	10	16	14		S-2: Brown cmf SAND, some cmf Gravel, little Silt.
	L	2'-4'						
	O	S-3	7	5	6	6	▼ at 5.0' Perched?	S-3: Yellow Brown c(-)mf SAND, some Silt (Wet).
	W	4'-6'						
		S-4	5	5	5	6		S-4: Dk. Gray mf Sand, and(+) Clayey Silt.
	S	6'-8'						
	T	S-5	3	4	5	6		S-5: Same as S-4.
	E	8'-10'						
10	M	S-6	7	7	7	8		S-6: Same as S-4.
		10'-12'						
	A							
	U							
	G							
	E	S-7	2	2	3	4		S-7: Dk. Gray Clayey SILT, little f Sand.
	R	15'-17'						
20		S-8	2	4	5	7		S-8: Same as S-7.
		20'-22'						
		S-9	4	6	9	11		S-9: Same as S-7.
		25'-27'						
30		S-10	6	7	12	16		S-10: Dk. Gray Clayey SILT, little(+) mf Sand.
		30'-32'						
		S-11	5	9	11	13		S-11: Same as S-10.
		35'-37'						
40								**End of Test Boring at 37 Feet**

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: Bruce Lapenta
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used	
trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 1
BORING NO. TB-5
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER ____ FT. W/ ____ FT. CASING OUT ON ____
DEPTH OF WATER ____ FT. W/ ALL CASING OUT ON ____

DATE STARTED 07/13/04
DATE FINISHED 07/13/04

GROUND ELEV. ____
GROUND WATER ELEV. ____

WEIGHT OF HAMMER:
CASING ____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. ____ I.D. ____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. ____ I.D. ____

HAMMER FALL ON:
CASING ____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	-	2	2	2		S-1: 2" Asphalt. Gray cmf SAND, some Silt.
	O	0'-2'						
	L	S-2	2	7	11	15		S-2: Olive cmf SAND, little cmf Gravel, little Silt.
	L	2'-4'						
	O	S-3	3	3	4	4		S-3: Dk. Gray Clayey SILT, trace(-) mf Sand.
	W	4'-6'						
		S-4	4	4	5	5		S-4: Same as S-3.
	S	6'-8'						
	T	S-5	5	4	6	6		S-5: Dk. Gray cmf SAND, some Silt, trace(-) f Gravel.
	E	8'-10'						
10	M	S-6	4	4	5	5		S-6: Dk. Gray f Sand, and Clayey Silt.
		10'-12'						
	A							
	U							
	G							
	E	S-7	10	11	13	13		S-7: Dk. Gray Clayey SILT, some(-) mf Sand, little(-) f Gravel.
	R	15'-17'						
20		S-8	4	4	7	9		S-8: Dk. Gray Clayey SILT, little mf Sand.
		20'-22'						
		S-9	5	4	6	8		S-9: Dk. Gray Clayey SILT, some m(-)f Sand.
		25'-27'						
30		S-10	7	3	5	8		S-10: Same as S-9
		30'-32'						
		S-11	11	7	8	11		S-11: Dk. Gray f Sand, and Silt.
		35'-37'						
40								**End of Test Boring at 37 Feet**

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: Bruce Lapenta
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used	
trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 1
BORING NO. TB-6
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER _____ FT. W/ _____ FT. CASING OUT ON _____
DEPTH OF WATER 33.0 FT. W/ ALL CASING OUT ON 07/14/04

DATE STARTED 07/14/04
DATE FINISHED 07/14/04

GROUND ELEV. _____
GROUND WATER ELEV. _____

WEIGHT OF HAMMER:
CASING _____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. _____ I.D. _____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. _____ I.D. _____

HAMMER FALL ON:
CASING _____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	–	2	2	2		S-1: 2" Asphalt. Gray cmf SAND, some Silt.
	O	0'-2'						
	L	S-2	2	7	11	15		S-2: Olive cmf SAND, little cmf Gravel, little Silt.
	L	2'-4'						
	O	S-3	3	3	4	4		S-3: Dk. Gray f Sand, and Clayey Silt.
	W	4'-6'						
		S-4	4	4	5	5		S-4: Same as S-3.
	S	6'-8'						
	T	S-5	5	4	6	6		S-5: Dk. Gray cmf SAND, some Silt.
	E	8'-10'						
10	M	S-6	4	4	5	5		S-6: Dk. Gray Clayey SILT, some mf Sand.
		10'-12'						
	A							
	U							
	G							
	E	S-7	10	11	13	13		S-7: Same as S-6.
	R	15'-17'						
20		S-8	4	4	7	9		S-8: Dk. Gray Clayey SILT, little(+) mf Sand.
		20'-22'						
		S-9	5	4	6	8		S-9: Same as S-8.
		25'-27'						
30		S-10	7	3	5	8		S-10: Dk Gray Clayey SILT, little(+) mf Sand.
		30'-32'						
		S-11	11	7	8	11		S-11: Dk. Gray f Sand, and Silt.
		35'-37'						
								End of Test Boring at 37 Feet
40								

Soils Engineer: James J. Serpico, Jr.
Contractor: Granese Drilling, Inc.
Drilling Inspector: John Bezerra Jr.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Boll Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used	
trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 1
BORING NO. TB-7
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER _____ FT. W/ _____ FT. CASING OUT ON _____
DEPTH OF WATER _____ FT. W/ ALL CASING OUT ON _____

DATE STARTED 07/14/04
DATE FINISHED 07/14/04

GROUND ELEV.
GROUND WATER ELEV.

WEIGHT OF HAMMER:
CASING _____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. _____ I.D. _____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. _____ I.D. _____

HAMMER FALL ON:
CASING
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	1	2	3	3		S-1: Top 6": Topsoil. Bot: Tan mf SAND, little(+) Silt.
	O	0'-2'						
	L	S-2	2	2	2	5		S-2: Tan mf SAND, some Clayey Silt.
	L	2'-4'						
	O	S-3	15	18	7	6		S-3: Orange Brown cmf SAND, some(-) m(-)f Gravel, little(+) Clayey Silt, One Piece Large Gravel.
	W	4'-6'						
		S-4	9	11	13	13		S-4: Orange Brown Clayey SILT, some(-) f Sand.
	S	6'-8'						
	T	S-5	5	7	8	10		S-5: Orange Brown SILT & CLAY, little(-) f Sand, trace f Gravel, Ironstone Fragments.
	E	8'-10'						
10	M	S-6	5	8	9	13		S-6: Dk. Gray and Orange Brown SILT & CLAY, little f Sand, (Mottled).
		10'-12'						
	A							
	U							
	G							
	E	S-7	2	3	4	6		S-7: Dk. Gray Clayey SILT, little(+) mf Sand, Micaceous, (Moist).
	R	15'-17'						
20		S-8	3	5	5	7		S-8: Same as S-7.
		20'-22'						
		S-9	5	7	8	9		S-9: Same as S-8, mf Gravel in Tip.
		25'-27'						
30		S-10	5	6	8	10		S-10: Dk Gray Clayey SILT, and(-) mf Sand. Micaceous.
		30'-32'						
		S-11	5	6	9	13		S-11: Same as S-10.
		35'-37'						
40								**End Of Test Boring @ 37 Feet**

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezerra Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used	
trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 1
BORING NO. TB-8
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER ____ FT. W/ ____ FT. CASING OUT ON ____
DEPTH OF WATER ____ FT. W/ ALL CASING OUT ON ____

DATE STARTED 07/13/04
DATE FINISHED 07/13/04

GROUND ELEV. ____
GROUND WATER ELEV. ____

WEIGHT OF HAMMER:
CASING ____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. ____ I.D. ____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. ____ I.D. ____

HAMMER FALL ON:
CASING ____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	3	4	11	7		S-1: Top 6": Gravel. Bot: Brown mf SAND, little(+) Silt.
	O	0'-2'						
	L	S-2	5	5	6	6		S-2: Brown mf SAND, some(-) Clayey Silt.
	L	2'-4'						
	O	S-3	3	4	7	7		S-3: Little Recovery, Rock in Tip.
	W	4'-6'						
		S-4	6	7	7	9		S-4: Orange Brown SILT & CLAY, little f Sand, (Mottled Gray).
	S	6'-8'						
	T	S-5	5	8	10	10		S-5: 4" Recovery, Some as S-4, Rock in Tip.
	E	8'-10'						
10	M	S-6	6	8	9	7		S-6: Greenish Gray Clayey SILT, some cmf Sand, some mf Gravel, Ironstone Fragments.
		10'-12'						
	A							
	U							
	G							
	E	S-7	2	3	5	7		S-7: Dk. Gray Clayey SILT, some f Sand, Micaceous.
	R	15'-17'						
20		S-8	3	8	7	9		S-8: Dk. Gray Clayey SILT, some(+) cmf Sand, (Slightly Varved Darker Gray), Occasional mf Gravel Layers, Micaceous.
		20'-22'						
		S-9	4	6	7	9		S-9: Gray Clayey SILT, some f Sand, Occasional mf Gravel Layers, Micaceous.
		25'-27'						
30		S-10	5	6	8	11		S-10: Dk Gray Clayey SILT, and mf(+) Sand, Micaceous.
		30'-32'						
		S-11	5	9	12	15		S-11: Same as S-10.
		35'-37'						
40								**End Of Test Boring @ 37 Feet**

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezerra Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used	
trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 1
BORING NO. TB-9
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER _____ FT. W/ _____ FT. CASING OUT ON _____
DEPTH OF WATER 23.0 FT. W/ ALL CASING OUT ON 07/15/04

DATE STARTED 07/15/04
DATE FINISHED 07/15/04

GROUND ELEV. _____
GROUND WATER ELEV. _____

WEIGHT OF HAMMER:
CASING _____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. _____ I.D. _____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. _____ I.D. _____

HAMMER FALL ON:
CASING _____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	–	–	11	7		S-1: 12" Asphalt. Miscellaneous Fill, Black cmf SAND, some(-) mf Gravel, Asphalt, Brick.
	O	1'-2'						
	L	S-2	5	5	6	6		S-2: (6" Recovery) Top: Same as S-1. Bot: Orange Brown f SAND, little(+) Silt, little mf Gravel, Ironstone Fragments.
	L	2'-4'						
	O	S-3	3	4	7	7		S-3: Orange Brown Clayey SILT, little(+) mf Sand, trace f Gravel.
	W	4'-6'						
		S-4	6	7	7	9		S-4: Dk. Gray Clayey SILT, little mf Sand, Micaceous, trace Dk. Green, Glauconite.
	S	6'-8'						
	T	S-5	5	8	10	10		S-5: Same as S-4.
	E	8'-10'						
10	M	S-6	6	8	9	7		S-6: Same as S-4.
		10'-12'						
	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. Gray Clayey SILT, some(+) mf Sand, Micaceous.
		20'-22'						
							▼ at 23.0'	
		S-9	4	6	7	9		S-9: Dk. Gray Clayey SILT, and(-) mf Sand, Micaceous.
		25'-27'						
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 @ 37 Feet
40								

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezerra Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used	
trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 1
BORING NO. TB-10
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER ____ FT. W/ ____ FT. CASING OUT ON ____
DEPTH OF WATER 23.0 FT. W/ ALL CASING OUT ON 07/15/04

DATE STARTED 07/15/04
DATE FINISHED 07/15/04

GROUND ELEV. ____
GROUND WATER ELEV. ____

WEIGHT OF HAMMER:
CASING ____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. ____ I.D. ____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. ____ I.D. ____

HAMMER FALL ON:
CASING ____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	-	-	8	5		S-1: 12" Asphalt. Miscellaneous Fill, Black mf SAND, little mf Gravel.
	O	1'-2'						
	L	S-2	5	5	7	10		S-2: Orange Brown c(-)mf SAND, some(-) Silt, little(-) f Gravel, Ironstone Fragments.
	L	2'-4'						
	O	S-3	6	5	8	8		S-3: 1" Recovery, Large Gravel in Tip. Same as S-2.
	W	4'-6'						
		S-4	7	8	10	13		S-4: Orange Brown and Gray Clayey SILT, some(-) mf Sand, (Mottled).
	S	6'-8'						
	T	S-5	4	5	7	8		S-5: Top: Same as S-4. Bot: Gray Clayey SILT, some(-) mf Sand, trace f Gravel.
	E	8'-10'						
10	M	S-6	7	8	9	11		S-6: Dk. Gray/Olive SILT & CLAY, little f Sand, Micaceous, Glauconitic.
		10'-12'						
	A							
	U							
	G							
	E	S-7	4	5	8	8		S-7: Same as S-6, Occasional Layer of Gray mf Sand, and(-) Clayey Silt, little(+) mf Gravel.
	R	15'-17'						
20		S-8	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, little(+) mf Gravel.
		20'-22'						
							▼ at 23.0'	
		S-9	4	6	7	9		S-9: Dk. GrayClayey SILT, and(-) mf Sand, Micaceous.
		25'-27'						
30		S-10	5	6	11	15		S-10: Same as S-9.
		30'-32'						
		S-11	5	7	9	14		S-11: Same as S-9.
		35'-37'						
40								**End Of Test Boring @ 37 Feet**

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezerra Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils

Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils

soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used

trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 1
BORING NO. TB-11
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER _____ FT. W/ _____ FT. CASING OUT ON _____
DEPTH OF WATER 24.0 FT. W/ ALL CASING OUT ON 07/15/04

DATE STARTED 07/15/04
DATE FINISHED 07/15/04

GROUND ELEV. _____
GROUND WATER ELEV. _____

WEIGHT OF HAMMER:
CASING _____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. _____ I.D. _____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. _____ I.D. _____

HAMMER FALL ON:
CASING _____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	8	6	7	8		S-1: Miscellaneous Fill, Black/Brown cmf SAND, some(-) mf Gravel. little(+) Silt, (12" Recovery, Rock in Tip).
	O	0'-2'						
	L	S-2	4	4	6	8		S-2: (6" Recovery), Orange Brown c(-)mf SAND, some(-) Clayey Silt, little(+) mf Gravel.
	L	2'-4'						
	O	S-3	5	6	8	8		S-3: No Recovery.
	W	4'-6'						
		S-4	6	7	7	10		S-4: (6" Recovery), Orange Brown c(-)mf SAND, some(+) Clayey Silt, little(+) mf Gravel.
	S	6'-8'						
	T	S-5	4	2	3	3		S-5: Dk. Gray/Olive f Sand, and(-) Clayey Silt, Micaceous.
	E	8'-10'						
10	M	S-6	4	2	5	6		S-6: Dk. Gray SILT & CLAY, little f Sand, Micaceous.
		10'-12'						
	A							
	U							
	G							
	E	S-7	3	4	5	7		S-7: Dk. Gray/Olive/Brown Clayey Silt, and(-) f Sand, little(-) f Gravel, (Mottled).
	R	15'-17'						
20		S-8	4	5	7	7		S-8: Same as S-7, (Moist).
		20'-22'						
							▼ at 24.0'	
		S-9	4	6	9	10		S-9: Dk. Gray Clayey SILT, some(+) mf(+) Sand, Micaceous, Silt Decreases with Depth, Small Clay Content at Top, (Wet).
		25'-27'						
30		S-10	6	8	12	11		S-10: Same as S-9.
		30'-32'						
		S-11	6	9	13	16		S-11: Dk. Gray f Sand, and(-) Clayey Silt.
		35'-37'						
40								**End Of Test Boring @ 37 Feet**

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezerra Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils

Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils

soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used

trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 2
BORING NO. TB-12
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER _____ FT. W/ _____ FT. CASING OUT ON _____
DEPTH OF WATER 22.0 FT. W/ ALL CASING OUT ON 07/16/04

DATE STARTED 07/16/04
DATE FINISHED 07/16/04

GROUND ELEV. _____
GROUND WATER ELEV. _____

WEIGHT OF HAMMER:
CASING _____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. _____ I.D. _____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. _____ I.D. _____

HAMMER FALL ON:
CASING _____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	18	12	11	11		S-1: Top: Gravel, (FILL). Bot: Olive Brown c(-)mf SAND, little Silt, little f Gravel.
	O	0'-2'						
	L	S-2	7	9	6	5		S-2: Olive Brown/Orange c(-)mf SAND, some(-) Silt, little(+) m(-)f Gravel.
	L	2'-4'						
	O	S-3	2	1	1	2		S-3: No Recovery.
	W	4'-6'						
		S-4	3	4	2	19		S-4: Olive Brown c(-)mf SAND, some Clayey Silt, little mf Gravel.
	S	6'-8'						
	T	S-5	4	5	5	6	Auger Cutting Through Hard Material. Moved Over 5'.	S-5: Dk. Gray/Green Clayey SILT, some(-) c(-)mf Sand, trace(-) f Gravel, Slightly Glauconitic.
	E	8'-10'						
10	M	S-6	6	7	7	8		S-6: Dk. Gray/Green Clayey SILT, little(+) f Sand, Slightly Micaceous, More Firm than S-5.
		10'-12'						
	A							
	U							
	G							
	E	S-7	3	4	5	5		S-7: Dk. Gray/Green Clayey SILT, some f Sand, Slightly Glauconitic, Slightly Micaceous, Sand Increasing with Depth.
	R	15'-17'						
20		S-8	4	5	6	8		S-8: Dk. Gray Clayey SILT, and(-) mf Sand, trace f Gravel, Micaceous,(Wet).
		20'-22'						
		S-9	3	3	5	7		S-9: Dk. Gray Clayey SILT, and(-) m(-)f Sand, Micaceous.
		25'-27'						
30		S-10	4	6	7	8		S-10: Same as S-9.
		30'-32'						
		S-11	5	7	9	9		S-11: Dk. Gray f Sand, and Clayey Silt, Micaceous.
		35'-37'						
40								

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezzero Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used	
trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 2 OF 2
BORING NO. TB-12
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER ____ FT. W/ ____ FT. CASING OUT ON ____
DEPTH OF WATER 22.0 FT. W/ ALL CASING OUT ON 07/16/04

DATE STARTED 07/16/04
DATE FINISHED 07/16/04

GROUND ELEV. ____
GROUND WATER ELEV. ____

WEIGHT OF HAMMER:
CASING ____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. ____ I.D. ____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. ____ I.D. ____

HAMMER FALL ON:
CASING ____
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
40	H	S-12	6	7	10	13		S-12: Dk. Gray f Sand, and(-) Clayey Silt, Micaceous.
	O	40'-42'						
	L							
	L							
	O							
	W	S-13	7	10	15	16		S-13: Dk. Gray/Green Clayey SILT, and(-) mf Sand, Occasional Partings cmf Sand, some(+) Clayey Silt, little f Gravel.
		45'-47'						
	S							
	T							**End of Test Boring at 47 Feet**
	E							
50	M							
	A							
	U							
	G							
	E							
	R							
60								
70								
80								

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezzera Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used
trace = 1-10 %
little = 10-20 %
some = 20-35 %
and = 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 1
BORING NO. TB-13
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER ____ FT. W/ ____ FT. CASING OUT ON ____
DEPTH OF WATER ____ FT. W/ ALL CASING OUT ON ____

DATE STARTED 07/15/04
DATE FINISHED 07/15/04

GROUND ELEV.
GROUND WATER ELEV.

WEIGHT OF HAMMER:
CASING ____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. ____ I.D. ____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. ____ I.D. ____

HAMMER FALL ON:
CASING
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	9	9	7	6		S-1: Black mf SAND, little(+) mf Gravel, little Silt, (FILL).
	O	0'-2'						
	L	S-2	6	4	5	4		S-2: Same as S-1, (1" Recovery), Rock in Tip.
	L	2'-4'						
	O	S-3	3	2	3	5		S-3: Dk. Gray Clayey SILT, some(+) f Sand, Micaceous.
	W	4'-6'						
		S-4	3	2	3	7		S-4: Brown Clayey SILT, some f Sand, little mf Gravel.
	S	6'-8'						
	T	S-5	2	3	4	5		S-5: Same as S-4.
	E	8'-10'						
10	M	S-6	5	5	4	4		S-6: Dk. Gray Clayey Silt, and(-) f Sand, Micaceous.
		10'-12'						
	A							
	U							
	G							
	E	S-7	4	5	5	9		S-7: Dk. Gray Clayey SILT, some(+) mf(+) Sand, Micaceous.
	R	15'-17'						
20		S-8	5	7	9	11		S-8: Same as S-7.
		20'-22'						
		S-9	4	5	7	8		S-9: Same as S-7.
		25'-27'						
30		S-10	5	8	9	13		S-10: Dk. Gray Clayey SILT, and(-) mf(+) Sand.
		30'-32'						
		S-11	11	8	7	3		S-11: Same as S-10.
		35'-37'						
40								**End Of Test Boring @ 37 Feet**

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezerra Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used	
trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 2
BORING NO. TB-14
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER _____ FT. W/ _____ FT. CASING OUT ON _____
DEPTH OF WATER _____ FT. W/ ALL CASING OUT ON _____

DATE STARTED 07/16/04
DATE FINISHED 07/16/04

GROUND ELEV.
GROUND WATER ELEV.

WEIGHT OF HAMMER:
CASING _____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. _____ I.D. _____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. _____ I.D. _____

HAMMER FALL ON:
CASING
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	1	3	3	4		S-1: Olive Brown mf SAND, some Clayey Silt, trace(-) f Gravel.
	O	0'-2'						
	L	S-2	3	3	3	4		S-2: Same as S-1, Pieces of Brick.
	L	2'-4'						
	O	S-3	7	10	15	16		S-3: Brown c(-)mf SAND, some Silt, little(+) mf Gravel.
	W	4'-6'						
		S-4	16	18	16	12		S-4: Brown cmf SAND, some(-) mf Gravel, little(+) Silt.
	S	6'-8'						
	T	S-5	8	4	4	5		S-5: Brown Clayey SILT, some(-) f Sand.
	E	8'-10'						
10	M	S-6	4	7	7	8		S-6: Same as S-5.
		10'-12'						
	A							
	U							
	G							
	E	S-7	3	4	5	9		S-7: Dk. Greenish Gray Clayey SILT, some(-) mf Sand, Micaceous.
	R	15'-17'						
20		S-8	5	6	6	8		S-8: Same as S-7.
		20'-22'						
		S-9	4	6	7	11		S-9: Dk. Gray Clayey SILT, some(+) mf Sand, Micaceous.
		25'-27'						
30		S-10	5	7	8	13		S-10: Same as S-9.
		30'-32'						
		S-11	6	7	8	12		S-11: Dk. Gray f Sand, and(-) Clayey Silt, Micaceous.
		35'-37'						
40								

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezzera Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils

Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils

soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used

trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 2 OF 2
BORING NO. TB-14
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER ____ FT. W/ ____ FT. CASING OUT ON ____
DEPTH OF WATER ____ FT. W/ ALL CASING OUT ON ____

DATE STARTED 07/16/04
DATE FINISHED 07/16/04

GROUND ELEV.
GROUND WATER ELEV.

WEIGHT OF HAMMER:
CASING ____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. ____ I.D. ____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. ____ I.D. ____

HAMMER FALL ON:
CASING
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
40	H	S-12	7	9	10	13		S-12: Dk. Gray f Sand, and(-) Clayey Silt, Micaceous.
	O	40'-42'						
	L							
	L							
	O							
	W	S-13	7	10	13	15		S-13: Same as S-12.
		45'-47'						
	S							
	T							
	E							
50	M							End of Test Boring at 47 Feet
	A							
	U							
	G							
	E							
	R							
60								
70								
80								

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezzera Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils

Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils

soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used

trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 2
BORING NO. TB-15
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER ____ FT. W/ ____ FT. CASING OUT ON ____
DEPTH OF WATER 15.5 FT. W/ ALL CASING OUT ON 10/14/04

DATE STARTED 10/14/04
DATE FINISHED 10/14/04

GROUND ELEV.
GROUND WATER ELEV.

WEIGHT OF HAMMER:
CASING ____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. ____ I.D. ____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. ____ I.D. ____

HAMMER FALL ON:
CASING
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	-	7	3	3		6" Asphalt.
	O	6"-2'						S-1: No Recovery
	L	S-2	5	9	3	4		
	L	2'-4'						S-2: Asphalt Mixed with Black cmf SAND, little mf Gravel, trace Silt, (4" Recovery).
	O	S-3	2	2	3	3		
	W	4'-6'						S-3: Orange Brown mf SAND, some Clayey Silt.
		S-4	3	4	4	4		
	S	6'-8'						S-4: Dk. Gray SILT & CLAY, little f Sand, Micaceous.
	T	S-5	2	2	3	4		
	E	8'-10'						S-5: Same as S-4.
10	M	S-6	4	5	5	5		
		10'-12'						S-6: Greenish Gray Clayey SILT, little(+) f Sand, Micaceous, Glauconitic.
	A							
	U							
	G							
	E	S-7	1	2	3	3	Water ▼ 15'6"	
	R	15'-17'						S-7: Greenish Gray Clayey SILT, some(-) mf(+) Sand, trace f Gravel, Micaceous, Slightly Glauconitic.
20		S-8	1	2	4	5		
		20'-22'						S-8: Dk. Gray Clayey SILT, some(+) mf Sand, Micaceous, (Wet).
		S-9	3	5	5	9		
		25'-27'						S-9: Same as S-8
30		S-10	4	6	7	7		
		30'-32'						S-10: Dk. Gray f Sand, and(+) Clayey Silt, Micaceous, Firm.
		S-11	4	5	6	8		
		35'-37'						S-11: Dk. Gray f SAND, and Clayey Silt, Micaceous.
40								

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezzera Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used
trace = 1-10 %
little = 10-20 %
some = 20-35 %
and = 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 2 OF 2
BORING NO. TB-15
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER _____ FT. W/ _____ FT. CASING OUT ON _____
DEPTH OF WATER 15.5 FT. W/ ALL CASING OUT ON 10/14/04

DATE STARTED 10/14/04
DATE FINISHED 10/14/04

GROUND ELEV.
GROUND WATER ELEV.

WEIGHT OF HAMMER:
CASING _____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. _____ I.D. _____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. _____ I.D. _____

HAMMER FALL ON:
CASING
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
40	H	S-12	8	13	16	16		S-12: Dk. Greenish Gray f SAND, some Clayey Silt, Micaceous, Firm, Interbedded with Lt. Gray f Sand, some Silt, some f Gravel, (Cemented).
	O	40'-42'						
	L							
	L							
	O							
	W	S-13	4	8	13	15		S-13: Dk. Greenish Gray mf Sand, and(-) Clayey Silt, Micaceous, Slightly Glauconitic.
		45'-47'						
	S							
	T							
	E							
50	M	S-14	99	55	50/2"			S-14: Gray mf SAND, little Silt, Sandstone Fragments.
		50'-51.2'						
	A							
	U							
	G							
	E							
	R							
60								
70								
80								

End of Test Boring at 51.2 Feet

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezzera Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils

Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils

soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used

trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 1 OF 2
BORING NO. TB-16
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER ____ FT. W/ ____ FT. CASING OUT ON ____
DEPTH OF WATER 17.5 FT. W/ ALL CASING OUT ON 10/14/04

DATE STARTED 10/14/04
DATE FINISHED 10/14/04

GROUND ELEV.
GROUND WATER ELEV.

WEIGHT OF HAMMER:
CASING ____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. ____ I.D. ____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. ____ I.D. ____

HAMMER FALL ON:
CASING
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
0	H	S-1	-	6	6	4		6" Asphalt.
	O	6"-2'						S-1: Dk. Orange/Olive mf SAND, some(-) Silt.
	L	S-2	4	7	8	4		
	L	2'-4'						S-2: Same as S-1.
	O	S-3	2	2	3	4		
	W	4'-6'						S-3: Dk. Gray CLAY & SILT, trace f Sand, Micaceous.
		S-4	4	5	5	6		
	S	6'-8'						S-4: Same as S-3, (4" Recovery).
	T	S-5	3	3	3	4		
	E	8'-10'						
10	M	S-6	4	5	4	6		S-5: Dk. Greenish Gray Clayey SILT, little f Sand, Micaceous.
		10'-12'						
	A							S-6: Same as S-5, trace of Glauconite.
	U							
	G							
	E	S-7	3	3	5	5		
	R	15'-17'						S-7: No Recovery.
							Water ▼ 17'6"	
20		S-8	3	3	4	5		S-8: Dk. Gray Clayey SILT, some(+) mf(+) Sand, Micaceous, (Wet).
		20'-22'						
		S-9	3	4	6	8		S-9: Same as S-8
		25'-27'						
30		S-10	3	4	7	9		S-10: Same as S-8
		30'-32'						
		S-11	4	5	8	11		S-11: Dk. Gray f Sand, and(+) Clayey Silt.
		35'-37'						
40								

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezzera Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils	
Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils		
soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used	
trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

MASER CONSULTING P.A.
Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

RED BANK OFFICE
One River Centre - Building Two
331 Newman Springs Road
Red Bank, N.J. 07701
Phone (732) 383-1950
Fax (732) 383-1990
E-mail - geotech@maserconsulting.com

PROJECT Hightstown Mill Dev. Project
N. Main St. & N. Academy St.
Borough of Hightstown
PROJECT NO. 04-0073A

SHEET 2 OF 2
BORING NO. TB-16
LOCATION SEE PLAN
OFFSET

DEPTH OF WATER ____ FT. W/ ____ FT. CASING OUT ON ____
DEPTH OF WATER 17.5 FT. W/ ALL CASING OUT ON 10/14/04

DATE STARTED 10/14/04
DATE FINISHED 10/14/04

GROUND ELEV.
GROUND WATER ELEV.

WEIGHT OF HAMMER:
CASING ____ LBS SAMPLER 140 LBS
INSIDE LENGTH OF SAMPLER: 24 IN.

CASING: O.D. ____ I.D. ____
SAMPLER: O.D. 2" I.D. 1-3/8"
COUPLING: O.D. ____ I.D. ____

HAMMER FALL ON:
CASING
SAMPLER 30"

DEPTH BELOW SURFACE	CASING BLOWS PER FOOT	SAMPLE NUMBER / DEPTHS BELOW SURFACE, FT.	BLOWS PER 6" ON SAMPLER 0-6"	6-12"	12-18"	18-24"	PROFILE CHANGE DEPTH / ELEV.	IDENTIFICATION OF SOILS / REMARKS
40	H	S-12	5	8	12	14		S-12: Dk. Greenish Gray f SAND, some(+) Clayey Silt, Interbedded with Lt. Gray f Sand, some Silt, Firm, (Cemented).
	O	40'-42'						
	L							
	L							
	O							
	W	S-13	5	8	10	13		S-13: Dk. Greenish Gray f SAND, some(+) Clayey Silt, Micaceous.
		45'-47'						
	S							
	T	S-14	15	18	60	50/1"		S-14: Top: Dk. Gray f SAND, some(+) Clayey Silt, Micaceous, Slightly Glauconitic
	E	48'-49.6'						Bot: Gray f SAND, trace Silt, Rock in Tip, Micaceous.
50	M							
	A							
	U							**End of Test Boring at 49.6 Feet**
	G							
	E							
	R							
60								
70								
80								

Soils Engineer: James J. Serpico, Jr.
Drilling Inspector: John Bezzera Jr.
Contractor: Granese Drilling, Inc.
Driller: Mike Granese

VISUAL IDENTIFICATION TERMS USED

	Clayey Soils	At Ball Moisture
Clayey Silt	slight Pl.	Thread 1/4"
SILT & CLAY	low Pl.	Thread 1/8"
CLAY & SILT	medium Pl.	Thread 1/16"
Silty CLAY	high Pl.	Thread 1/32"
CLAY	very high Pl.	Thread 1/64"

Relative Density(Dr) of Granular Soils

Very loose	0-15 %
Loose	15-35 %
Medium	35-65 %
Dense	65-85 %
Very Dense	85-100%

Consistency of Clayey Soils

soft	(S)	0.1-0.5 tsf
firm	(F)	0.5-1.0 tsf
med.hard	(MH)	1.0-2.0 tsf
hard	(H)	2.0-4.0 tsf
very hard	(VH)	Over 4.0 tsf

Proportions Used

trace	= 1-10 %
little	= 10-20 %
some	= 20-35 %
and	= 35-50 %

APPENDIX C

LABORATORY TEST DATA (2005)

MASER CONSULTING P.A.

Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

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

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	S-6	S-8	S-9	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	YB	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	S-6	S-7	S-8	S-9	S-10	S-11	
Depth (ft)	2'-4'	4'-6'	6'-8'	8'-10'	10'-12'	15'-17'	20'-22'	25'-27'	30'-32'	35'-37'	
Color	Brown	YB	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	B	M-13	WB-2	M-33	M-29	M-17	
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	

MASER CONSULTING P.A.

Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

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

Moisture Profiles

TB/TP #	TB-2	TB-2	TB-2	TB-2	TB-2	TB-2	TB-2	TB-2	TB-2	TB-2	TB-2
Sample #	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	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
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	S-8	S-9	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

MASER CONSULTING P.A.

Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

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

Moisture Profiles

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

MASER CONSULTING P.A.

Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

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

Moisture Profiles

TB/TP #	TB-7	TB-7	TB-7	TB-7	TB-7	TB-7	TB-7	TB-7	TB-7	TB-7	
Sample #	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10	S-11	
Depth (ft)	2'-4'	4'-6'	6'-8'	8'-10'	10'-12'	15'-17'	20'-22'	25'-27'	30'-32'	35'-37'	
Color	Tan	OB	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	
Tare #	P-004	M-9	M-25	P-011	M-5	P-009	M-28	P-006	P-001	M-37	
Tare Wt. (g)	11.03	11.31	11.34	10.96	11.46	11.15	11.29	11.25	11.17	11.08	
Wet Wt.+ Tare (g)	32.86	42.47	29.53	37.61	25.68	33.56	31.11	28.80	34.48	32.75	
Dry Wt.+ Tare (g)	30.49	40.26	24.51	30.47	21.9	27.9	26.18	24.83	28.9	28.05	
Dry Wt. (g)	19.46	28.95	13.17	19.51	10.44	16.75	14.89	13.58	17.73	16.97	
Water Wt. (g)	2.37	2.21	5.02	7.14	3.78	5.66	4.93	3.97	5.58	4.70	
Moisture %	12.2	7.6	38.1	36.6	36.2	33.8	33.1	29.2	31.5	27.7	
TB/TP #	TB-8	TB-8	TB-8	TB-8	TB-8	TB-8	TB-8	TB-8			
Sample #	S-2	S-4	S-6	S-7	S-8	S-9	S-10	S-11			
Depth (ft)	2'-4'	6'-8'	10'-12'	15'-17'	20'-22'	25'-27'	30'-32'	35'-37'			
Color	Brown	OB	Grn. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray	Dk. Gray			
Tare #	A	M-20	M-41	M-6	P-005	M-3	M-36	M-18			
Tare Wt. (g)	11.26	11.08	11.04	11.4	10.99	11.4	11.08	11.1			
Wet Wt.+ Tare (g)	37.16	34.95	29.65	30.99	31.6	36.5	34.04	38.5			
Dry Wt.+ Tare (g)	34.05	28.26	25.34	26.48	27.52	31.13	29.03	32.65			
Dry Wt. (g)	22.79	17.18	14.30	15.08	16.53	19.73	17.95	21.55			
Water Wt. (g)	3.11	6.69	4.31	4.51	4.08	5.37	5.01	5.85			
Moisture %	13.6	38.9	30.1	29.9	24.7	27.2	27.9	27.1			

MASER CONSULTING P.A.

Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

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

Moisture Profiles

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

MASER CONSULTING P.A.

Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

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

Moisture Profiles

TB/TP #	TB-11	TB-11	TB-11	TB-11	TB-11	TB-11	TB-11	TB-11	TB-11		
Sample #	S-2	S-4	S-5	S-6	S-7	S-8	S-9	S-10	S-11		
Depth (ft)	2'-4'	6'-8'	8'-10'	10'-12'	15'-17'	20'-22'	25'-27'	30'-32'	35'-37'		
Color											
Tare #	S-2	P-004	M-26	M-4	WB-2	M-8	P-012	M-16	M-22		
Tare Wt. (g)	11.11	11.07	10.98	11.37	10.99	11.4	11.13	11.18	11.17		
Wet Wt.+ Tare (g)	38.23	36.71	31.08	40.97	32.51	32.76	35.78	45.76	38.6		
Dry Wt.+ Tare (g)	30.66	32.17	26.46	34.21	26.89	27.98	30.09	38.4	32.9		
Dry Wt. (g)	19.55	21.10	15.48	22.84	15.90	16.58	18.96	27.22	21.73		
Water Wt. (g)	7.57	4.54	4.62	6.76	5.62	4.78	5.69	7.36	5.70		
Moisture %	38.7	21.5	29.8	29.6	35.3	28.8	30.0	27.0	26.2		
TB/TP #	TB-12	TB-12	TB-12	TB-12	TB-12	TB-12	TB-12	TB-12	TB-12	TB-12	TB-12
Sample #	S-2	S-4	S-5	S-6	S-7	S-8	S-9	S-10	S-11	S-12	S-13
Depth (ft)	2'-4'	6'-8'	8'-10'	10'-12'	15'-17'	20'-22'	25'-27'	30'-32'	35'-37'	40'-42'	45'-47'
Color											
Tare #	P-010	M-29	M-22	M-38	P-008	M-17	M-11	P-002	M-31x	M-19	WB-5
Tare Wt. (g)	11.13	11.07	11.45	11.14	11.15	10.99	11.30	11.09	11.13	11.48	11.47
Wet Wt.+ Tare (g)	34.37	39.26	24.23	46.08	32.17	41.12	32.38	39.19	32.64	45.32	41.48
Dry Wt.+ Tare (g)	31.79	36.31	21.17	37.49	26.98	34.51	27.32	32.83	27.39	37.68	34.5
Dry Wt. (g)	20.66	25.24	9.72	26.35	15.83	23.52	16.02	21.74	16.26	26.20	23.03
Water Wt. (g)	2.58	2.95	3.06	8.59	5.19	6.61	5.06	6.36	5.25	7.64	6.98
Moisture %	12.5	11.7	31.5	32.6	32.8	28.1	31.6	29.3	32.3	29.2	30.3

MASER CONSULTING P.A.

Consulting, Municipal & Environmental Engineers
Planners • Surveyors • Landscape Architects

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

Moisture Profiles

TB/TP #	TB-13	TB-13	TB-13	TB-13	TB-13	TB-13	TB-13	TB-13	TB-13		
Sample #	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10	S-11		
Depth (ft)	4'-6'	6'-8'	8'-10'	10'-12'	15'-17'	20'-22'	25'-27'	30'-32'	35'-37'		
Color											
Tare #	M-15	M-33	WB-4	M-9	P-009	P-007	M-7	M-35	P-003		
Tare Wt. (g)	10.98	11.1	11.38	11.37	11.2	11	11.39	11.09	11.22		
Wet Wt.+ Tare (g)	29.02	30.18	49.25	37.29	32.8	45.2	40.72	31.55	30.99		
Dry Wt.+ Tare (g)	24.36	26.03	37.69	30.33	27.83	37.55	34.19	27.04	26.36		
Dry Wt. (g)	13.38	14.93	26.31	18.96	16.63	26.55	22.80	15.95	15.14		
Water Wt. (g)	4.66	4.15	11.56	6.96	4.97	7.65	6.53	4.51	4.63		
Moisture %	34.8	27.8	43.9	36.7	29.9	28.8	28.6	28.3	30.6		
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 %											

MASER CONSULTING P.A.

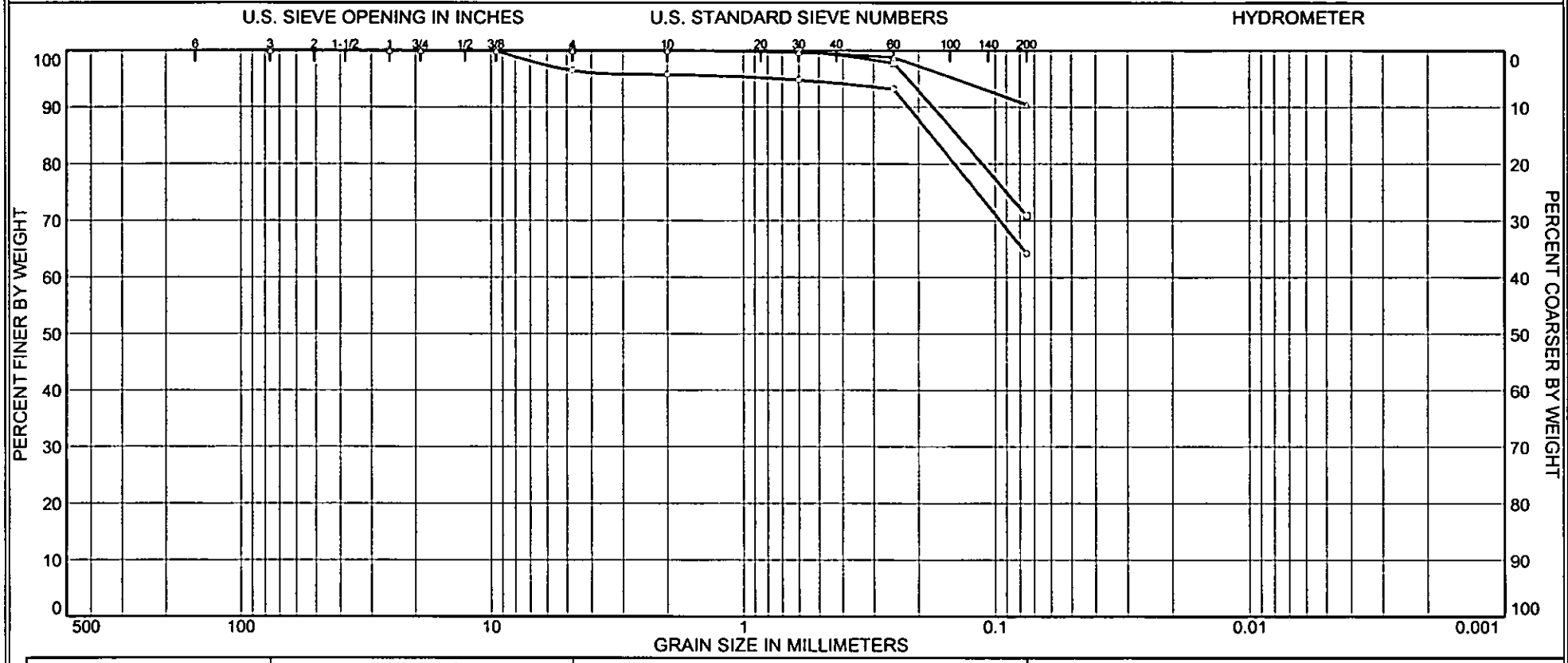
Consulting, Municipal & Environmental Engineers
Planners ▪ Surveyors ▪ Landscape Architects

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

Moisture Profiles

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

Particle Size Distribution Report



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	3.5	0.8	1.4	30.1	64.2	
□	0.0	0.0	0.0	0.0	0.7	28.4	70.9	
△	0.0	0.0	0.0	0.0	0.6	8.9	90.5	

BURMISTER SOIL CLASSIFICATION SYSTEM

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	TB-2	S-5	8-10'	8/25/04		Dk. Gray Clayey SILT, some c(-)m(-)f Sand, trace f Gravel.			
□	TB-2	S-8	20-22'	8/25/04		Dk Gray Clayey SILT, some m(-)f Sand.			
△	TB-2	S-10	30-32'	8/25/04		Dk Gray Claye SILT, trace(+) m(-)f Sand.			

Client

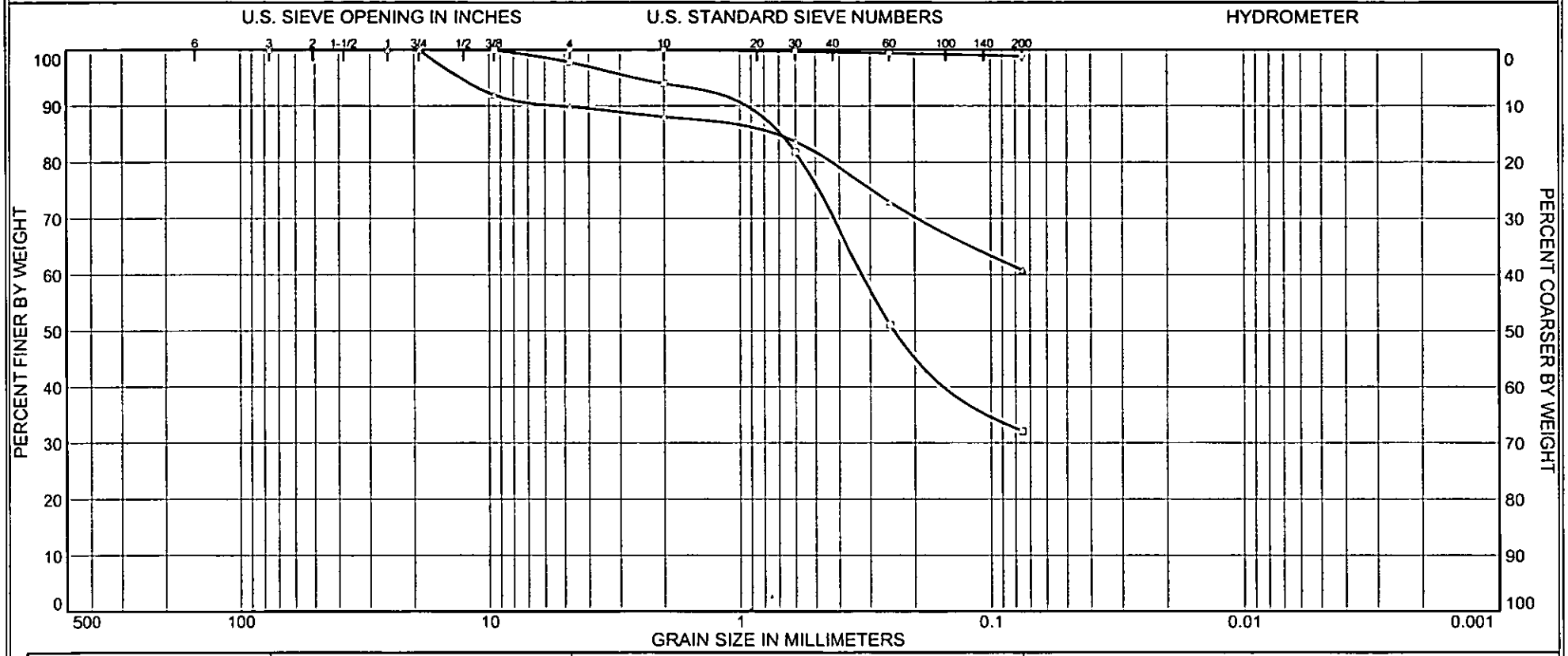
Project Hightstown

Project No. 04-0073A

Figure 1

○
□
△

Particle Size Distribution Report



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.0	0.0	0.4	0.7	98.9	
□	0.0	0.0	2.2	3.8	23.7	38.2	32.1	
△	0.0	0.0	10.1	1.8	8.2	19.0	60.9	

BURMISTER SOIL CLASSIFICATION SYSTEM

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	TB-5	S-3	4-6'	8/25/04		Dk. Gray Clayey SILT, trace(-) mf Sand.			
□	TB-5	S-5	8-10'	8/25/04		Dk. Gray cmf SAND, some Silt, trace(-) f Gravel.			
△	TB-5	S-7	15-17'	8/25/04		Dk Gray Clayey SILT, some c(-)mf Sand, little(-) f Gravel.			

Client

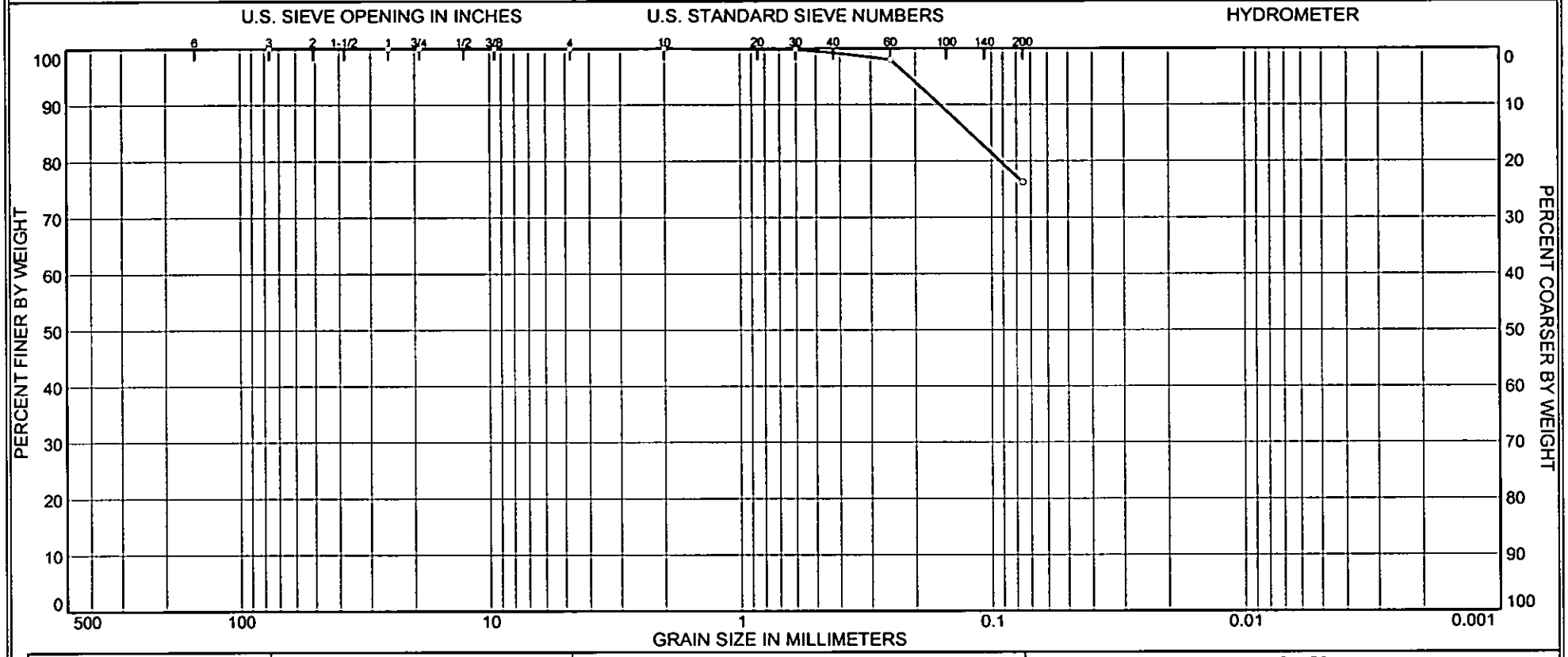
Project Hightstown

Project No. 04-0073A

Figure 2

○
□
△

Particle Size Distribution Report



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.0	0.0	0.7	23.1	76.2	

BURMISTER SOIL CLASSIFICATION SYSTEM

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	TB-5	S-9	25-27'	8/25/04		Dk Gray Clayey SILT, some m(-)f Sand.			

Client

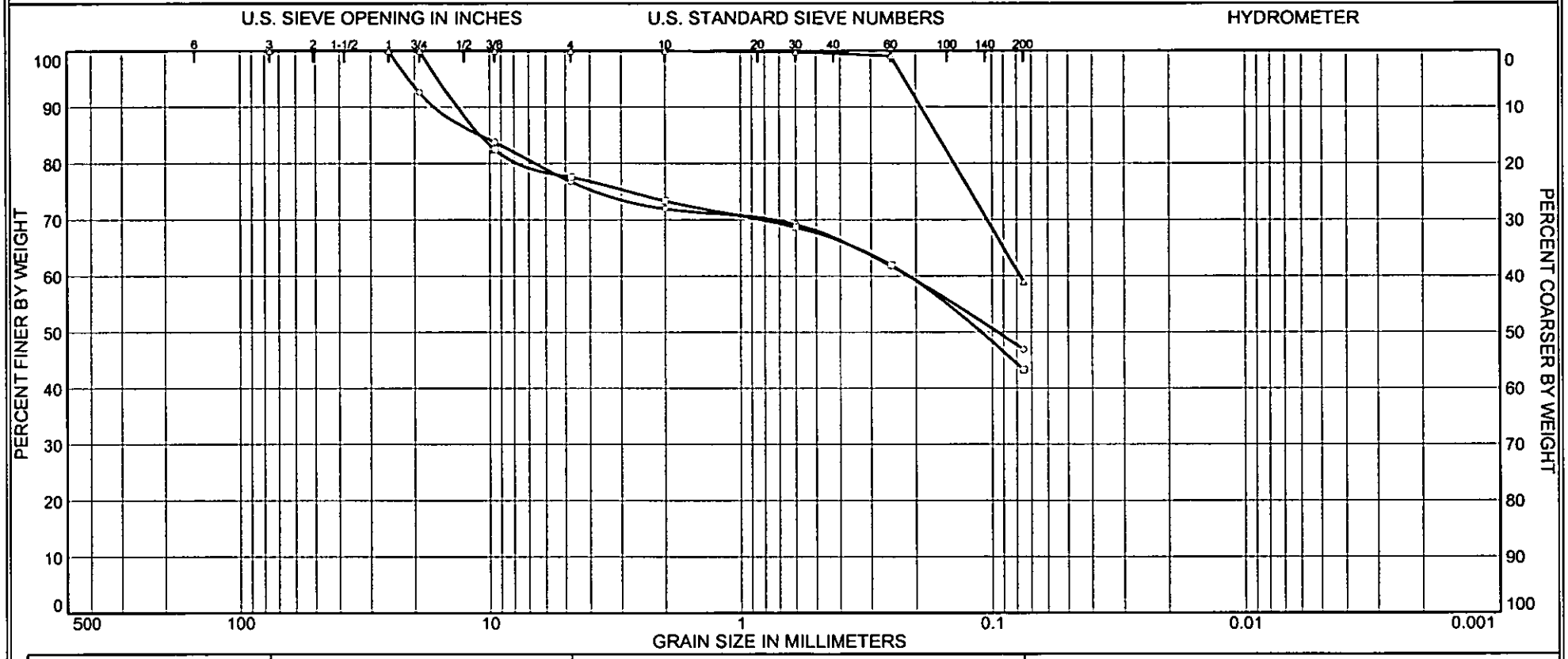
Project Hightstown

Project No. 04-0073A

Figure 3

○

Particle Size Distribution Report



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	7.4	15.8	4.8	5.1	20.0	46.9	
□	0.0	0.0	22.4	4.2	6.7	23.4	43.3	
△	0.0	0.0	0.0	0.0	0.4	40.6	59.0	

BURMISTER SOIL CLASSIFICATION SYSTEM

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	TB-8	S-6	10-12'	8/25/04		Dk Gray Clayey SILT, some cmf Sand, some mf Gravel.			
□	TB-8	S-8	20-22'	8/25/04		Dk. Gray Clayey Silt, some(+) cmf Sand, some(-) mf Gravel.			
△	TB-8	S-10	30-32'	8/25/04		Dk. Gray Clayey Silt, and m(-)f Sand.			

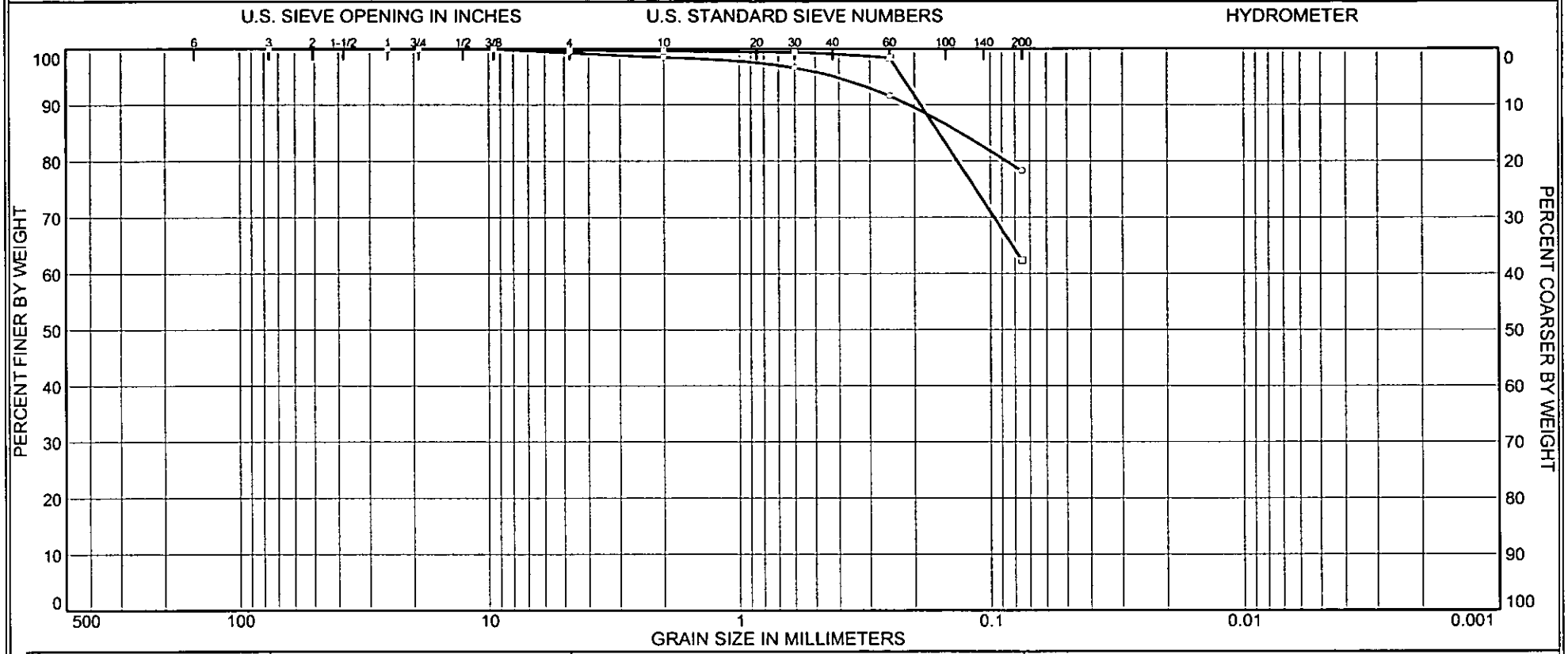
Client

Project Hightstown

Project No. 04-0073A | Figure 4

○
□
△

Particle Size Distribution Report



	% COBBLES	% GRAVEL		% SAND			% FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.7	0.8	3.4	16.8	78.3	
□	0.0	0.0	0.3	0.1	0.5	36.7	62.4	

BURMISTER SOIL CLASSIFICATION SYSTEM

	SOURCE	SAMPLE #	DEPTH/ELEV.	DATE SAMPLED	USCS	MATERIAL DESCRIPTION	NM %	LL	PL
○	TB-12	S-5	8-10'	8/25/04		Dk Gray Clayey SILT, some(-) c(-)mf Sand, trace(-) f Gravel.			
□	TB-12	S-8	20-22'	8/25/04		Dk Gray Clayey Silt, and(-) c(-)m(-)f Sand, trace(-) f Gravel.			

Client

Project Hightstown

Project No. 04-0073A Figure 5

○
□

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

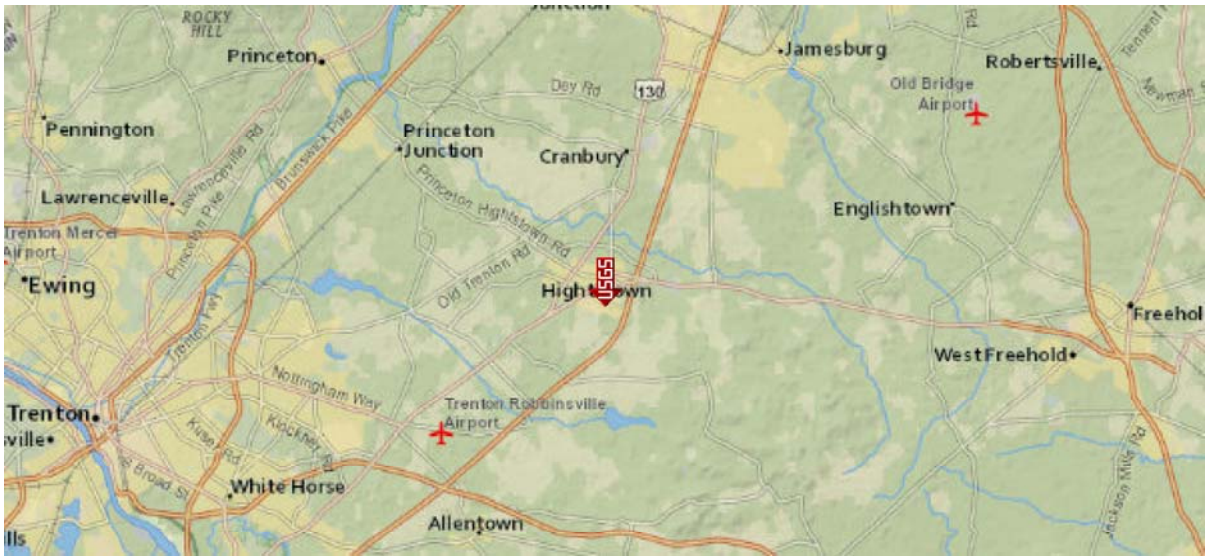
APPENDIX E

SEISMIC INFORMATION

USGS Design Maps Summary Report

User–Specified Input

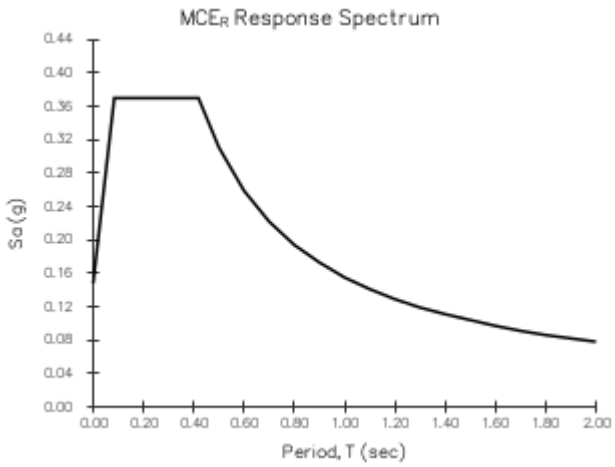
Report Title	Hightstown Redevelopment Thu March 8, 2018 15:49:11 UTC
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	40.2693°N, 74.524°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

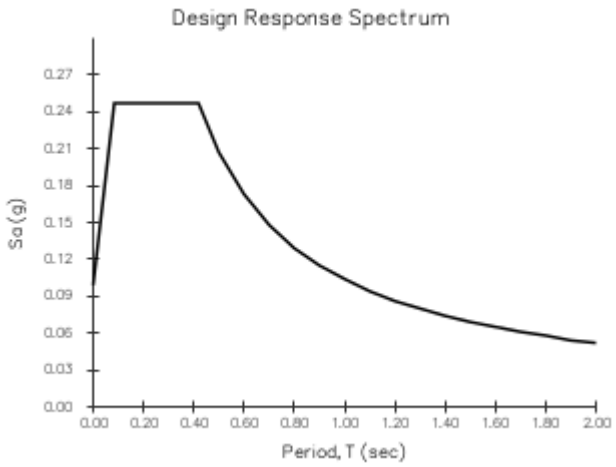


USGS–Provided Output

S_S =	0.231 g	S_{MS} =	0.370 g	S_{DS} =	0.247 g
S_1 =	0.065 g	S_{M1} =	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 view the detailed report.

USGS 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_1). 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 Figure 22-1 [1]	S_S = 0.231 g
From Figure 22-2 [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.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
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
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index *PI* > 20, • Moisture content *w* ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

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

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \le 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \ge 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	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				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_s = 0.231 g, F_a = 1.600

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \le 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \ge 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.065 g, F_v = 2.400

Equation (11.4–1): $S_{MS} = F_a S_S = 1.600 \times 0.231 = 0.370$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 2.400 \times 0.065 = 0.155$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

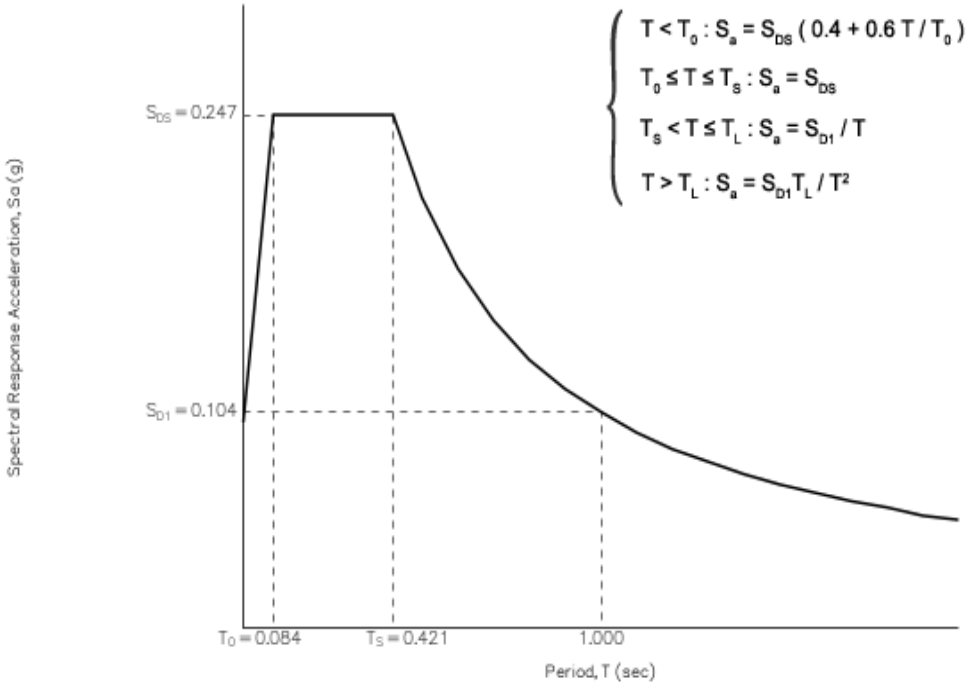
Equation (11.4–3): $S_{DS} = ⅔ S_{MS} = ⅔ \times 0.370 = 0.247$ g

Equation (11.4–4): $S_{D1} = ⅔ S_{M1} = ⅔ \times 0.155 = 0.104$ g

Section 11.4.5 — Design Response Spectrum

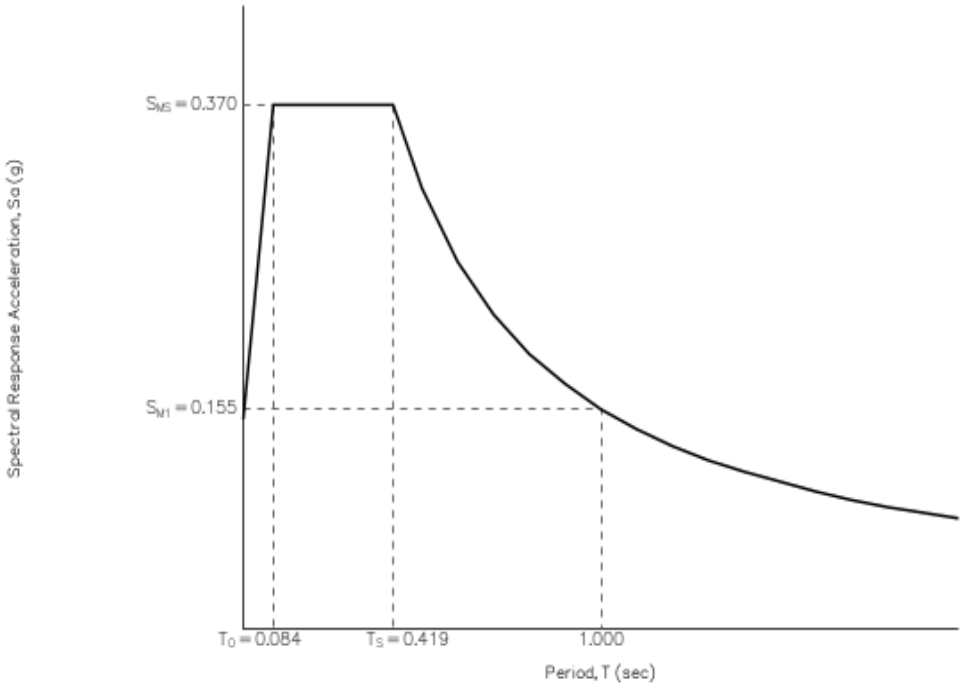
From Figure 22-12 [3] $T_L = 6$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



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): $PGA_M = F_{PGA}PGA = 1.536 \times 0.132 = 0.203$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	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				

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 Figure 22-17 [5] C_{RS} = 0.879

From Figure 22-18 [6] C_{R1} = 0.908

Section 11.6 — Seismic Design Category

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

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

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

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	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 ≡ "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
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf