



Appendix 2.2-2

Updated Preliminary SWPPP

**PRELIMINARY STORMWATER
POLLUTION PREVENTION PLAN
(SWPPP) FOR STORMWATER
CONSTRUCTION PERMIT**

**LAS VEGAS SANDS CORPORATION
SANDS NEW YORK INTEGRATED
RESORT**

Town of Hempstead
Nassau County, New York

H2M Project No.
LVSC 2301

March 2025

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**PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN (SWPPP)
FOR STORMWATER CONSTRUCTION PERMIT**

**Sands New York Integrated Resort
Town of Hempstead
Nassau County, New York**

1. EROSION AND SEDIMENT CONTROL

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared in accordance with the specifications put forth in the New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-25-001). Erosion and sediment control practices are designed in conformance with the New York State Standards and Specifications for Erosion and Sediment Control.

A. PROJECT DESCRIPTION AND SCOPE

The Sands New York Integrated Resort is a proposed redevelopment project located on the site of the Nassau Veterans Memorial Coliseum property which is located within the hamlet of Uniondale in the Town of Hempstead, Nassau County, NY (see location map in Appendix A). Nassau County is the property Owner, while Las Vegas Sands will serve as the leaseholder and Operator. The project site is bounded to the south by Hempstead Turnpike (NY 24), to the west by Earle Ovington Boulevard, to the north by Charles Lindbergh Boulevard, and to the east by Thomas Doolittle Boulevard, exclusive of the Memorial Sloan Kettering Cancer Center site. The project site is 86.3 acres in area. The proposed area of disturbance encompasses approximately 75.1 acres of the project site, which is inclusive of only on-site areas. Upon advancement of the design of off-site improvements (i.e. traffic mitigation / right-of-way improvements, well construction), the SWPPP should be amended to be incorporate these additional areas of disturbance into the report and SPDES permit coverage.

The project proposes construction of a new integrated resort with approximately 1,670 hotel rooms, casino gaming, retail stores and restaurants, meeting halls and ballrooms, a 4,500 seat entertainment venue, structured parking garages and central utility plants totaling approximately 7.3 million square feet of gross floor area. The project also includes appurtenant walks and drives, surface parking lots, public plazas and landscaped areas, new drainage collection and stormwater

management systems, sewage collection and water supply infrastructure improvements, and other associated infrastructure improvements.

The primary potential source of pollution from construction activity associated with this project is sediment resulting from soil disturbance and stormwater runoff. Fuel from equipment used during construction activities and/or stored on-site is another potential source of pollution from this project.

Endangered or Threatened Species: The project site is in the vicinity of Rare Animals and/or Rare Plants according to the NYSDEC Environmental Resource Mapper. There are Significant Natural Communities located at the site according to the NYSDEC Environmental Resource Mapper. However, the project site is fully developed in the existing condition and does not provide suitable habitat for such rare animals or plants. Construction activity and/or discharges from construction activity are not anticipated to adversely affect endangered or threatened species. A map developed using the NYSDEC Environmental Resources Mapper is included in Appendix A.

Wetlands and Surface Waters: According to the NYSDEC Environmental Resources mapper and the US Fish and Wildlife Service National Wetlands Inventory mapper, there are wetlands or surface waters on or within 1,000 feet of the project site. The East Meadow Brook is located roughly 800 ft east of the project site at its closest point. The East Meadow Brook is located along the West side of the Meadowbrook Parkway and is separated from the project site by Thomas Doolittle Boulevard and the Francis T. Purcell Preserve. A pond is located roughly 925 feet south of the project site, namely Nassau County recharge basin no. 537, which is a man-made stormwater recharge basin designed to accept stormwater runoff from the watershed which includes the subject project site. Nassau County recharge basin no. 537 is located along the west side of Glenn Curtiss Boulevard and is separated from the project site by Hempstead Turnpike and a school site. In no case will the project involve soil disturbance within 100 feet of a State regulated wetland. A map developed using the NYSDEC Environmental Resources Mapper and US Fish and Wildlife Service National Wetlands Inventory mapper is included in Appendix A.

Historic Places: According to the NYS Historic Preservation Office Cultural Resource Information System (CRIS), there are no historic sites located within 100 feet of the proposed construction site. A map developed using the NYS Historic Preservation Office CRIS mapper is included in Appendix A.

The project includes a new permanent building on the construction site within 100 feet of a building that is more than 50 years old. However, the building has not been determined to be historically or archeologically significant according to the OPRHP, the local Historic Preservation Commission, or a qualified preservation professional.

Floodplain/Floodway: According to FEMA FIRM Panel No. 36059C0227G, dated 9/11/2009, the project site is not located within a mapped floodplain or floodway. A FIRMette obtained from the FEMA Flood Map Service Center is included in Appendix A.

B. SOILS

According to the Soil Survey of Nassau County, New York (USDA-NRCS, Web Soil Survey), the soils found at the project site are comprised of He (Hempstead silt loam), and Ug (Urban land). Soils at this site belong to Hydrologic Soil Group B. A USDA soils report for this site is included in Appendix B of this report, and the Geotechnical Memorandum prepared by Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. in Appendix K.

C. CONSTRUCTION SCHEDULE

The Sands New York Integrated Resort will be built in multiple stages over the course of several years. In general, the disturbance areas for each phase will typically be greater than 5 acres, and approval from the DEC will be obtained prior to disturbing 5 or more acres at any one time.

The final construction schedule has not been developed at this time. However, due to the phased nature of the project, the Erosion and Sediment Control Plan will be a working document that will be updated prior to each phase to represent accurate locations of each Erosion and Sediment Control practice. In general, each practice shall be installed as follows:

- Concrete Truck Washout stations should be installed on site prior to any concrete work being performed and shall be maintained until all concrete pouring is complete.
- Stabilized Construction Access should be installed at all points of construction ingress and egress prior to any soil disturbance activity and maintained until the vehicular surface for construction traffic is stabilized.
- Silt fence shall be installed in areas where the site grades towards the project limits prior to any soil disturbance activity and shall be maintained until the site is stabilized.
- Storm Drain Inlet Protection should be installed in all existing inlets on site and in the Right-of-Way prior to any soil disturbance activity and on proposed storm drain inlets as soon as they are installed. Existing inlets that will be removed should have protection installed and

maintained until removal or disconnection from the drainage system., All other inlets should have protection maintained until the area tributary to the inlet is stabilized.

These practices should be maintained in accordance with the New York State Standards and Specifications for Erosion and Sediment Control (NYSDEC, November 2016). The Standards and Specifications Sheets for these practices are included in Appendix J of the SWPPP.

The following general construction schedule provides the anticipated sequence of the proposed construction activities for each stage that may result in soil disturbance. Stabilization of disturbed areas shall be performed as the project progresses in order to minimize the potential for contamination of stormwater runoff.

Sequence of Construction

- 1) Installation of silt fencing, inlet protection, and stabilized construction access located as shown on the Erosion & Sediment Control Plan;
- 2) Clearing and grubbing of the project site areas indicated for development and removal of existing site features as necessary for the installation of the proposed improvements;
- 3) Rough grading of the site;
- 4) Installation of the new drainage drywells, frames & grates, field inlets, and the associated drainage piping. Immediately install inlet protection on all new catch basins and field inlets with grates.
- 5) Installation of the new sewage collection and water supply systems and new service connections. Installation of remaining site utilities and facilities;
- 6) Construction of new structures;
- 7) Final grading of disturbed areas to finished grade.
- 8) Installation of new aggregate base course in areas of new pavement. Installation of new concrete curb, concrete sidewalk, concrete driveway and concrete pads;
- 9) Installation of new concrete and asphalt pavements.
- 10) Installation of new plant material.
- 11) Seeding of disturbed areas and other final landscaping measures.
- 12) Following final stabilization of disturbed areas, removal of remaining temporary erosion and sediment controls.
- 13) Silt removal and cleaning of inlets protected during construction.

D. TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL PRACTICES

Temporary and permanent erosion and sediment control measures shall be installed and maintained by the general contractor (or subcontractor) in accordance with the engineering plans and details, and the New York State Standards and Specifications for Erosion and Sediment

Control (NYS Soil and Water Conservation Committee, 2016). Standard specifications for erosion and sediment control practices anticipated for this project have been included in Appendix J.

E. MAINTENANCE AND INSPECTION

Installation and maintenance of all temporary and permanent erosion and sediment control measures will be the responsibility of the general contractor. The general contractor shall ensure that a copy of the approved SWPPP is present on-site and that all sub-contractors are aware of the terms of the approved SWPPP and have signed the proper Certification Form.

The contractor shall have a trained contractor (as defined by GP-0-25-001) inspect the erosion and sediment control practices and pollution prevention measures within the active work area daily to ensure that they are being maintained in effective operating conditions at all times. If deficiencies are identified, the contractor shall begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame. The trained contractor may stop conducting the maintenance inspections in accordance with the provisions of Part IV.B of GP-0-25-001.

A qualified inspector shall conduct regular site inspections of all erosion and sediment control practices and pollution prevention measures, post construction stormwater management practices, areas of disturbance, points of discharge to surface waters within or immediately adjacent to the construction site, and points of discharge from the construction site. Specifically, the qualified inspector shall inspect all sediment barriers, inlet protection, silt fencing, concrete washout areas, and stabilized construction access; catch basins and field inlets for accumulation of sediments; any un-stabilized, disturbed areas, mulch, and permanent vegetative controls; and staging areas and storage areas for construction materials, waste materials, and construction chemicals. The inspector shall notify the general contractor of any necessary repairs to damaged or ineffective measures, and any necessary corrective action, including, but not limited to the removal of sediment, stabilization of disturbed areas, or placement of additional measures to ensure proper functioning of the erosion and sediment control practices. The general contractor shall be responsible for immediate implementation of the corrective actions. The inspections shall be conducted at least once every seven days. For construction sites that disturb greater than five (5) acres of soil at any one time, the inspections shall be conducted at least twice every seven days with the two inspections separated by a minimum of two days. The qualified inspector may reduce the frequency of or stop conducting the inspections in accordance with the provisions of Part IV.C.2 of GP-0-25-001. The qualified inspector shall prepare an inspection report for each

inspection. An example SWPPP inspection form is provided in Appendix C. All inspection reports shall be maintained on site with the SWPPP.

SWPPP inspections must continue and erosion and sediment control practices shall be maintained until the project site achieves final stabilization. Final stabilization is defined as the cessation of all soil disturbance activities and establishment of a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

F. SOLID WASTE MANAGEMENT

Construction debris and waste expected to be generated during the project include concrete compounds, wood, cardboard, metals, masonry, PVC, packing material, and domestic waste (*i.e.* beverage containers, coffee cups, plastic bags and wrappers, etc.). Temporary waste containers (*i.e.* roll-off containers) of sufficient size and number shall be placed within the equipment/material storage areas, to be determined by the general contractor, and accessible on the project site in order to facilitate disposal of construction debris. Waste containers shall have lids or shall be covered during periods of rain to prevent accumulation of water within the containers and to prevent loss of debris from wind. Waste containers shall have watertight bottoms. Waste containers shall not be cleaned or hosed out on the project site. Solid waste containers shall be removed bi-weekly or more frequently as needed. No on-site disposal of any construction materials shall be permitted.

Work areas shall be maintained in an orderly and clean manner to prevent windblown litter from exiting the site. Littering on the project site shall be prohibited. Trash receptacles shall be placed in locations where workers congregate for lunches and breaks. Litter shall be bagged before placement in large waste containers.

Potential toxic and hazardous materials, if any, shall not be disposed of in solid waste containers and shall be segregated in separate containers for transport to an approved off-site receiving area.

G. CHEMICAL STORAGE AND SPILL PREVENTION/RESPONSE

The general contractor is responsible for proper storage of potentially hazardous chemicals on-site and enforcement of proper spill prevention and control measures. Proper storage, clean-up,

and spill reporting instructions will be present in the project trailer and will be posted in a conspicuous and accessible location.

Potentially hazardous chemicals and materials that may be used on site include solvents, adhesives, lubricants, gasoline, diesel fuel, asphalt and concrete compounds. All chemicals shall be stored in their original containers, and according to manufacturer's specifications. Materials shall be stored in covered storage with an impervious lined bottom to prevent leaching of chemicals into the ground. The storage shall be secured to prevent unauthorized entry during non-working hours. An ample supply of appropriate absorbent spill clean-up material will be kept in or near the storage area. The storage area is to be kept clean and well-organized.

In the event of a chemical spill, the contractor should contain the spill in accordance with the manufacture's recommended methods and must report the spill to the NYS Spill Hotline (1-800-457-7362) within 2 hours of discovery.

H. STORMWATER DISCHARGES FROM INDUSTRIAL ACTIVITY

There are no stormwater discharges associated with industrial activity at the construction site (i.e. asphalt plants and/or concrete plants) proposed as part of this project.

2. POST-CONSTRUCTION STORMWATER MANAGEMENT

The post-construction stormwater management practices for this project have been designed in conformance with applicable sizing criteria of the New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-25-001) and the performance criteria of the technical standards of the NYSDEC Stormwater Management Design Manual (NYSDEC, dated July 31, 2024).

A. STORMWATER MANAGEMENT PRACTICES

In accordance with chapter 9.2.1(A) of the NYSDEC Stormwater Design Manual, redevelopment activities resulting in no change to the hydrology that increases the discharge rate from the project site are not required to provide channel protection, overbank flood and/ or extreme flood controls. The primary post-construction SMPs incorporated into the design for this site are sized to provide runoff reduction capacity for 100% of the WQv criteria as defined in the NYSDEC Stormwater Design Manual.

Construction drawings indicating the quantity, dimensions, material specifications, and installation details for the proposed SMP's are provided in Appendix H.

B. STORMWATER ANALYSIS

Pre-Development Conditions

A Pre-Development Drainage Area Map is provided in Appendix I identifying watershed boundaries, flow paths and design points. The subject property is an 86.3-acre parcel located in a 269-acre overall watershed. The site, as well as the remainder of the watershed, is tributary to an existing Nassau County stormwater infiltration basin (#537) located just south of Hempstead Turnpike (NYS Route 24), on the west side of Glenn Curtiss Boulevard.

There is an extensive existing storm drainage collection system traversing the subject property that exits the site via twin 60-inch diameter pipes on the north side of Hempstead Turnpike, opposite Glenn Curtiss Boulevard. From there, the twin 60-inch diameter drain lines connect to twin 72-inch culverts, which connect to a 6' x 10' box culvert system located in Glenn Curtiss Boulevard. The 6' x 10' box culvert system conveys stormwater from the watershed to Nassau County Basin No. 537. Other properties that comprise the 269-acre watershed include a large portion of the Hofstra University campus (west side of Earle Ovington Boulevard), the Mitchell Ballpark and Omni office building properties, and a portion of the Nassau Community College property (north side of Charles Lindbergh Boulevard). In addition, there are several properties located on the south side of Hempstead Turnpike that are also tributary to Nassau County Basin No. 537. Based on information obtained from NCDPW, Basin No. 537 was designed to store the runoff from a 5-inch rain event (2,085,000 cubic feet of storage). In addition, the County basin is equipped with an emergency overflow to the East Meadow Brook.

The United States Geological Survey Long Island Depth to Water Viewer indicates that the groundwater table ranges from 27' to 34' below the existing grade across the site, with the greatest depth to groundwater in the immediate vicinity of the existing Coliseum building.

Post-Development Conditions

A Post-Development Drainage Area Map is provided in Appendix I identifying watershed boundaries, flow paths, design points and SMP's. The post-development site has been analyzed as one watershed, which is collectively made up of six sub-watersheds. The overall watershed generally drains toward and discharges across the south property boundary and into Hempstead Turnpike, ultimately leading to Basin No. 537.

Watershed DA-DEV is made up of sub-watersheds DA-PROP, DB-PROP, DC-PROP, DD-PROP, DE-PROP, & DF-PROP. Sub-watersheds DA-PROP, DC-PROP, DD-PROP, and DE-PROP represent drainage areas that have added drywell capacity with an overflow to the overall site drainage system. Sub-watershed DB-PROP represents the bus depot ramp and associated leaching galleys. Sub-watershed DF-PROP represents the remainder of the site, which will be collected in a positive stormwater conveyance system that is directly tributary to Nassau County Basin No. 537.

The project proposes construction of a variety of new stormwater management practices with the redevelopment of the subject property to mitigate impacts to existing drainage systems, neighboring properties, and nearby waterways. Stormwater management practices associated with the project are subject to review and approval by Nassau County Department of Public Works (NCDPW) under New York State Municipal Law [GML§239-f] and the Town of Hempstead as part of a 305 Site Plan review.

Stormwater management practices have been designed to meet the specifications put forth in the New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-25-001) in the following ways:

A reduction in impervious surfaces:

The proposed development will result in a decrease of impervious surface on the Subject Property from 77.9 acres to 68.1 acres. As such, the amount of stormwater runoff generated on-site will decrease.

Soil restoration practices in accordance with Table 5.3 of the NYS Stormwater Management Design Manual will be applied across areas of soil disturbance to be vegetated under post-development conditions in order to recover the original properties and porosity of the soil. All soils at this site belong to Hydrologic Soil Group B.

Reduce stormwater runoff by increasing local infiltration:

The development proposes an increase in the amount of landscaped area at the site, which will promote local infiltration. In addition, new drywells and leaching galleys are proposed for installation, which will also increase the amount of local infiltration. The project also a significant amount of rooftop open spaces in the form of roof top gardens.

Pretreatment of stormwater runoff prior to infiltration practices:

The development proposes to introduce pretreatment structures as required by the New York State Stormwater Design Manual. The project intends to treat 50% of the WQv for areas tributary to drywell systems by utilizing Contech Stormceptor systems (or approved equal) downstream of catch basins. Stormwater runoff will further be treated by installing Fabco StormBasin (or approved equal) filters in each catch basin on the site.

Continued connection to (and use of) Nassau County Recharge Basin No. 537:

The proposed development will continue to utilize the existing positive drainage network on the subject property. Several existing drainage lines will be rerouted/reconstructed to accommodate the proposed integrated resort; however the stormwater collection system will continue to outfall to the existing Glenn Curtiss Boulevard conveyance system, and ultimately to Nassau County Basin No. 537. The decrease in impervious area at the subject property and the addition of on-site infiltration will cause a corresponding reduction to the stormwater load imposed on the County basin.

Exclusion of direct discharges to surface waters:

The stormwater management system will ensure that stormwater runoff is properly captured and conveyed, precluding stormwater from running overland and potentially impacting adjacent properties or nearby surface waters.

Stormwater Modeling

Stormwater runoff from watershed areas in the pre and post-development conditions and the post-construction stormwater management practices have been modeled for the 1, 10 and 100-year, 24-hour storm events using the SewerGEMS V8i software. Time of Concentration (Tc) values for pre and post-development conditions were determined using the TR-55 methodology. A minimum Tc value of 5 minutes was used for each tributary area. Runoff rates have been calculated using the SCS Unit Hydrograph method.

Stormwater data was downloaded for the project site from the Northeast Regional Climate Center (NRCC) database and is provided in Appendix G. In accordance with Section 4.9 of the NYSSDM (2024), the NRCC "Extreme Precipitation Tables" for this site were used to create site specific IDF curves for the 1,10, and 100-year 24-hour storm events. These IDF curves were converted into rainfall distribution curves and applied to the pre & post-development stormwater models for this site.

In SewerGEMS, infiltration systems are modeled as ponding volumes with an average rate of infiltration. Infiltration tests were performed at multiple areas of the site, and the infiltration test data can be found in Appendix K. For the purposes of modeling the infiltration SMPs, an infiltration rate of 9 inches per hour was used for the proposed drywells and proposed leaching galley system.

Post-development peak runoff and overflow rates for watershed areas draining to the same design point are summed for the purpose of comparison with pre-development conditions.

Table 01 – Stormwater Modeling Summary

Design Point/ Watershed ID	Sub-Watershed ID	Runoff Volume (cf)			Peak Runoff/SMP Overflow Rate (cfs)		
		1-Yr	10-Yr	100-Yr	1-Yr	10-Yr	100-Yr
		Pre-Development Condition					
1/DA-EX	DA-EX	689,818	1,443,153	2,357,256	295.80	593.08	944.72
		Post-Development Condition					
1/DA-DEV	DA-PROP	67,844	144,703	238,363	25.78	51.19	88.12
	DB-PROP	2,962	5,735	9,063	1.03	1.89	3.17
	DC-PROP	33,272	73,774	123,619	12.88	26.64	46.51
	DD-PROP	44,826	99,391	166,545	17.35	35.89	62.66
	DE-PROP	41,818	98,356	169,193	16.47	36.39	65.10
	DF-PROP	432,552	940,625	1,562,686	182.66	386.12	648.55
	TOTAL	623,274	1,362,584	2,269,469	256.17	538.12	914.11

SMP Sizing Criteria

In accordance with chapter 9.2.1(A) of the NYSDEC Stormwater Design Manual, redevelopment activities resulting in no change to the hydrology that increases the discharge rate from the project site are not required to provide channel protection, overbank flood and/ or extreme flood controls. Given the reduction in impervious surfaces, the continued connection to the existing recharge basin, and the increase in local infiltration, there will be no increase in either discharge volume or peak discharge rates from this project from the 1-, 10- or 100-year storm events.

Post-construction SMPs have been designed in conformance with the sizing criteria included in the NYS Stormwater Management Design Manual. Specifically post-construction SMPs have been designed to achieve the Water Quality Volume (WQv) sizing requirements of the Design Manual.

1) Water Quality Volume (WQv)

In accordance with Section 4.2 of the Design Manual, the WQv is defined as the volume of runoff generated from the 90th percentile rain event, which, for this site, equates to a 1.5 inch rainfall event. The WQv is calculated as follows:

$$WQv = \frac{[(P)(Rv)(A)]}{12}$$

Where:

P = 90% Rainfall Event Number (1.5 inches)

R_v = 0.05 + 0.009 (I), where I is percent impervious cover

A = site area in acres (Contributing area)

A summary of the required WQv for the overall post-development watershed along with the volume provided by the associated SMP can be found in Table 02 below.

Table 02 – WQv Summary

Watershed ID	Watershed Area 'A' (ac)	Impervious Area (ac)	Percent Impervious (%)	Rv	WQv Required (ft³)	Infiltration Volume Provided (ft³)
DA-DEV	86.3	68.1	0.79	0.76	357,127	2,281,224

As indicated in Table 02 above, the SMP's proposed will reduce 100% of the WQv for the post-development condition, and the RRv objectives of the Design Manual will be satisfied.

C. SOIL TESTING RESULTS AND LOCATIONS

Test boring locations and the reported boring log information from soil testing performed for this site are provided in the Geotechnical Engineering Report prepared by Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C., dated September 14, 2023, in Appendix K.

D. OPERATIONS AND MAINTENANCE PLAN

As the Operator, Las Vegas Sands will be the responsible party for operation and maintenance of the stormwater control measures. If the Operator changes, the new Operator will be responsible for operation and maintenance of the stormwater control measures. If a new Operator is not designated, the Owner will be responsible for operation and maintenance responsibility of the stormwater control measures.

The Operator shall maintain, clean, repair, replace and continue the stormwater control measures depicted in the project site plan as necessary to ensure optimum performance of the measures to design specifications. The stormwater control measures shall include, but shall not be limited to, the following: drainage ditches, swales, infiltrators, drain inlets, leaching pools, catch basins, pipes, culverts, headwalls, recharge basins and all other stormwater control measures depicted in the project site plan.

Maintenance of all permanent stormwater management controls and drainage structures will be performed by the Operator upon the completion of construction activities. Regular monitoring of the drainage inlets will be conducted every two years and after particularly large storm events. Drainage grates will be kept free from obstructions of leaves, trash and other debris. Maintenance of leaching pools and catch basins should be performed as necessary to remove sediment and debris whenever their capacity has been reduced by 50 percent. All seeded areas should be maintained, reseeded and mulched as necessary to maintain a dense vegetative cover. Swales and ponding areas should be routinely inspected for erosion and deposition of sediments or other obstructions. Upon construction project completion, the Operator will also be responsible for the upkeep of landscaping and maintenance of the roof draining leaders and gutters.

The Operator shall be responsible for all expenses related to the maintenance of the stormwater control measures.

The Operator shall provide for the periodic inspection of the stormwater control measures, not less than once every five-year period, to determine the condition and integrity of the measures. Such inspection shall be performed by a Professional Engineer licensed by the State of New York or duly authorized representatives, or other qualified personnel. The engineer shall prepare and submit to the Operator within 30 days of the inspection, a written report of the findings including recommendations for those actions necessary for the continuation of the stormwater control measures. The Operator shall also provide access to the facility to the MS4 for periodic inspection of the stormwater control measures, to ensure that the facility is maintained in proper working condition to meet design standards and any other provisions established by local law.

The Operator shall not authorize, undertake or permit alteration, abandonment, modification or discontinuation of the stormwater control measures except in accordance with written approval of the agencies having jurisdiction.

The Operator shall undertake all necessary repairs and replacement of the stormwater control measures in accordance with the recommendations of the engineer.

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Appendix A

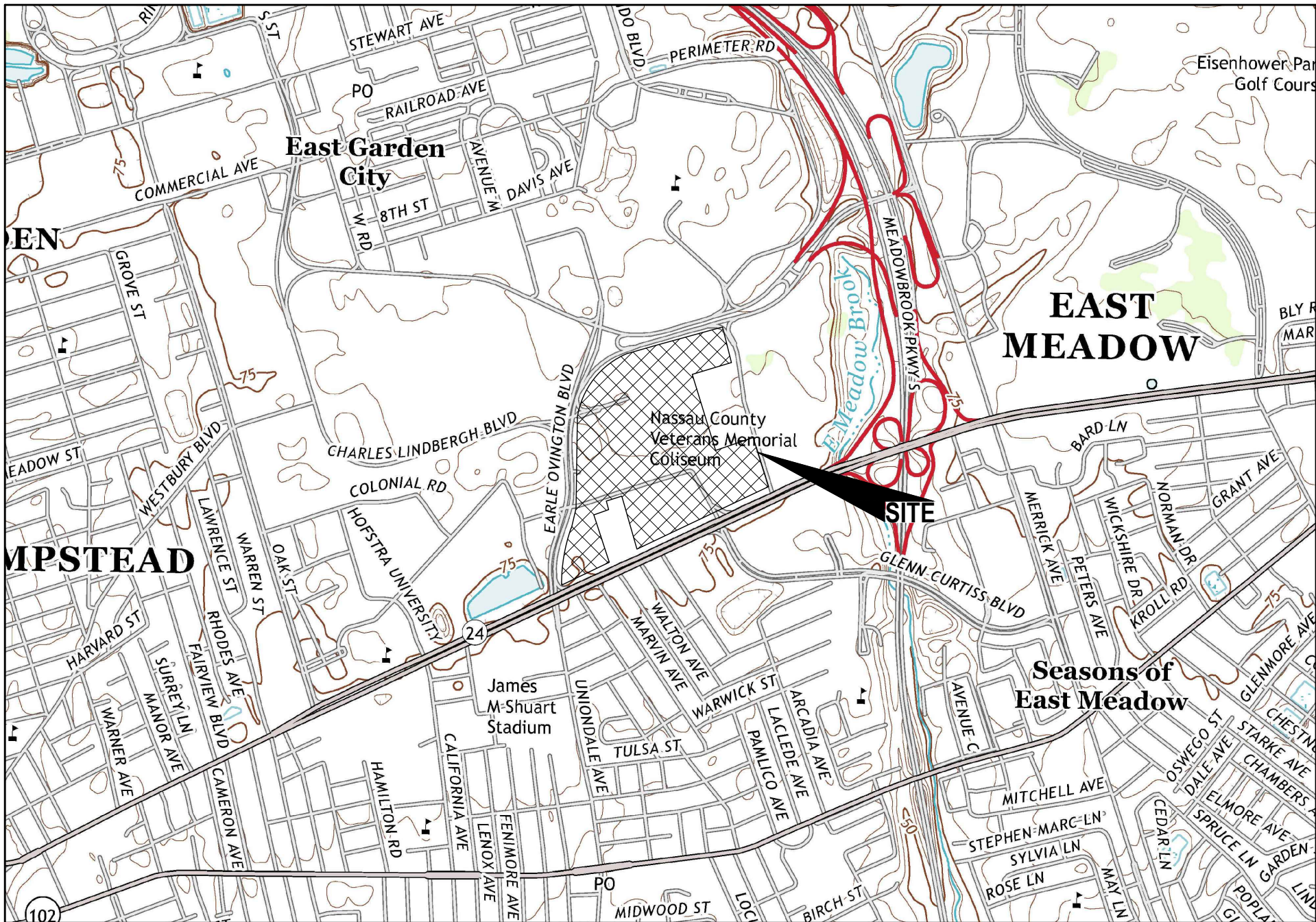
Location Map

FEMA FIRMette

NYS DEC Environmental Resource Map

US Fish and Wildlife Service Wetland Map

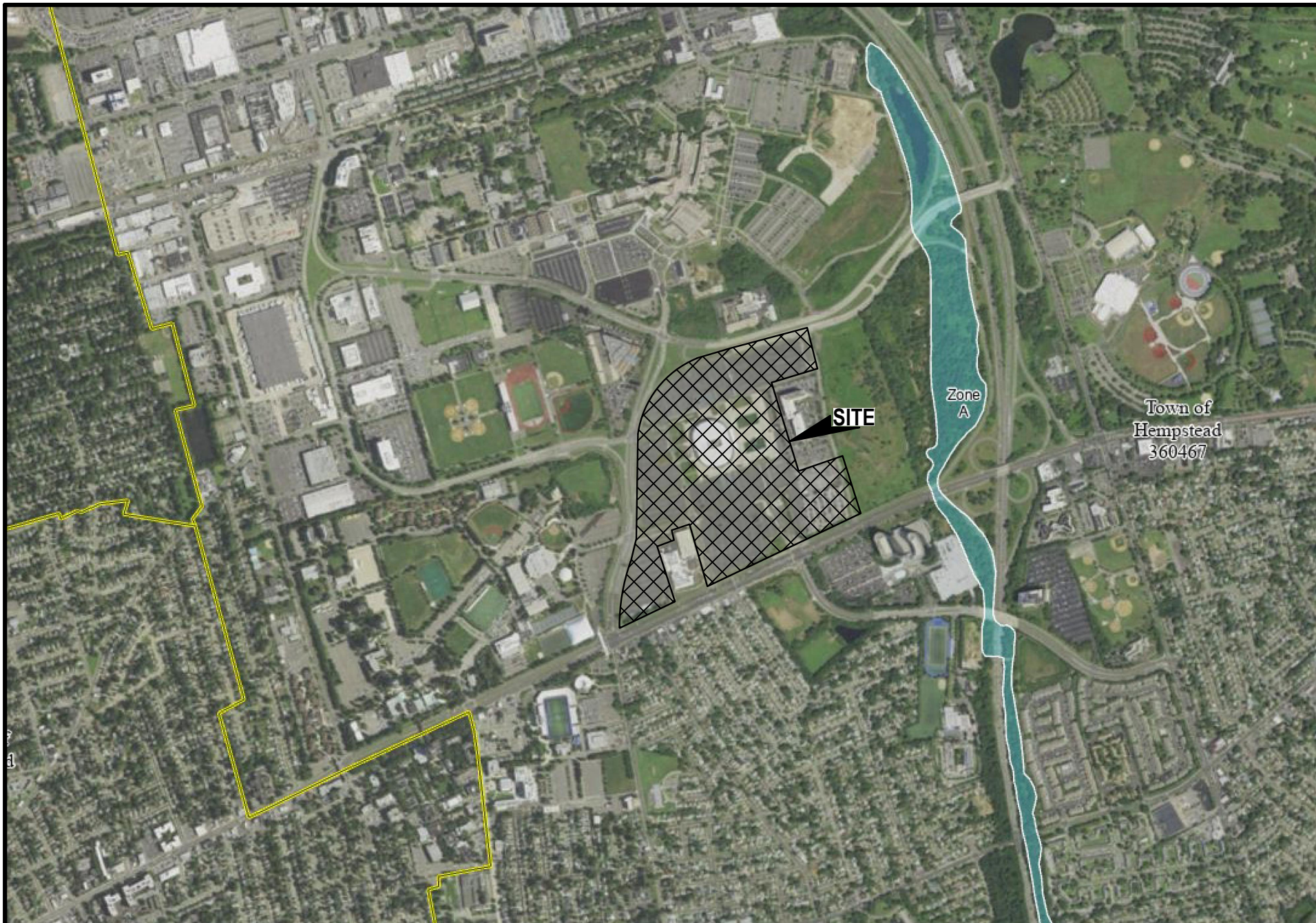
Historic Sites Map



LOCATION MAP

Sands NY Integrated Resort



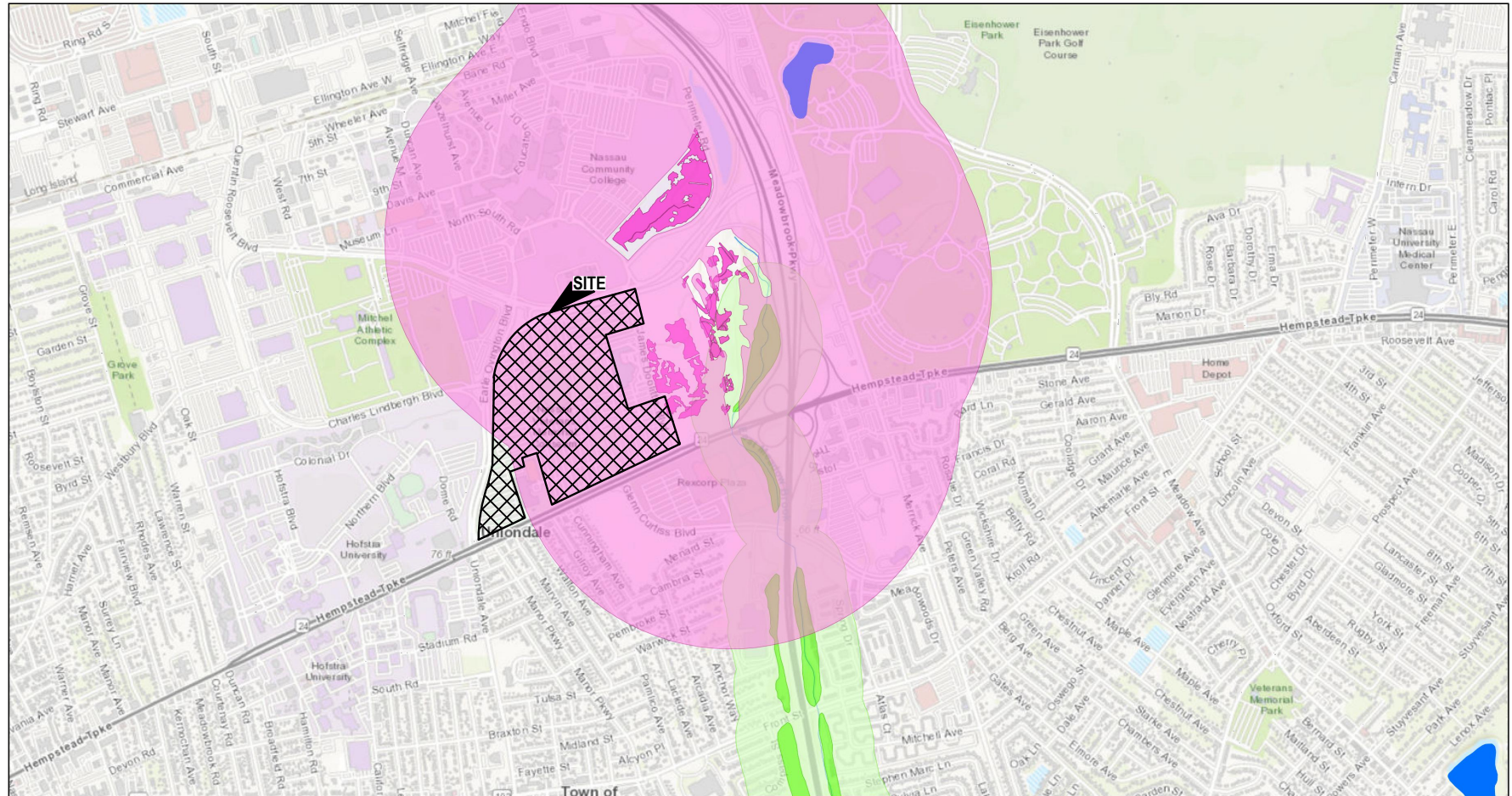


FEMA FIRMETTE

Sands NY Integrated Resort

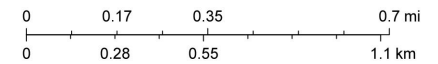


LVSC 2301 Pink



October 2, 2023

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Nassau County, Esri, HERE, Garmin, INCREMENT P, USGS, METI/
NASA, EPA, USDA

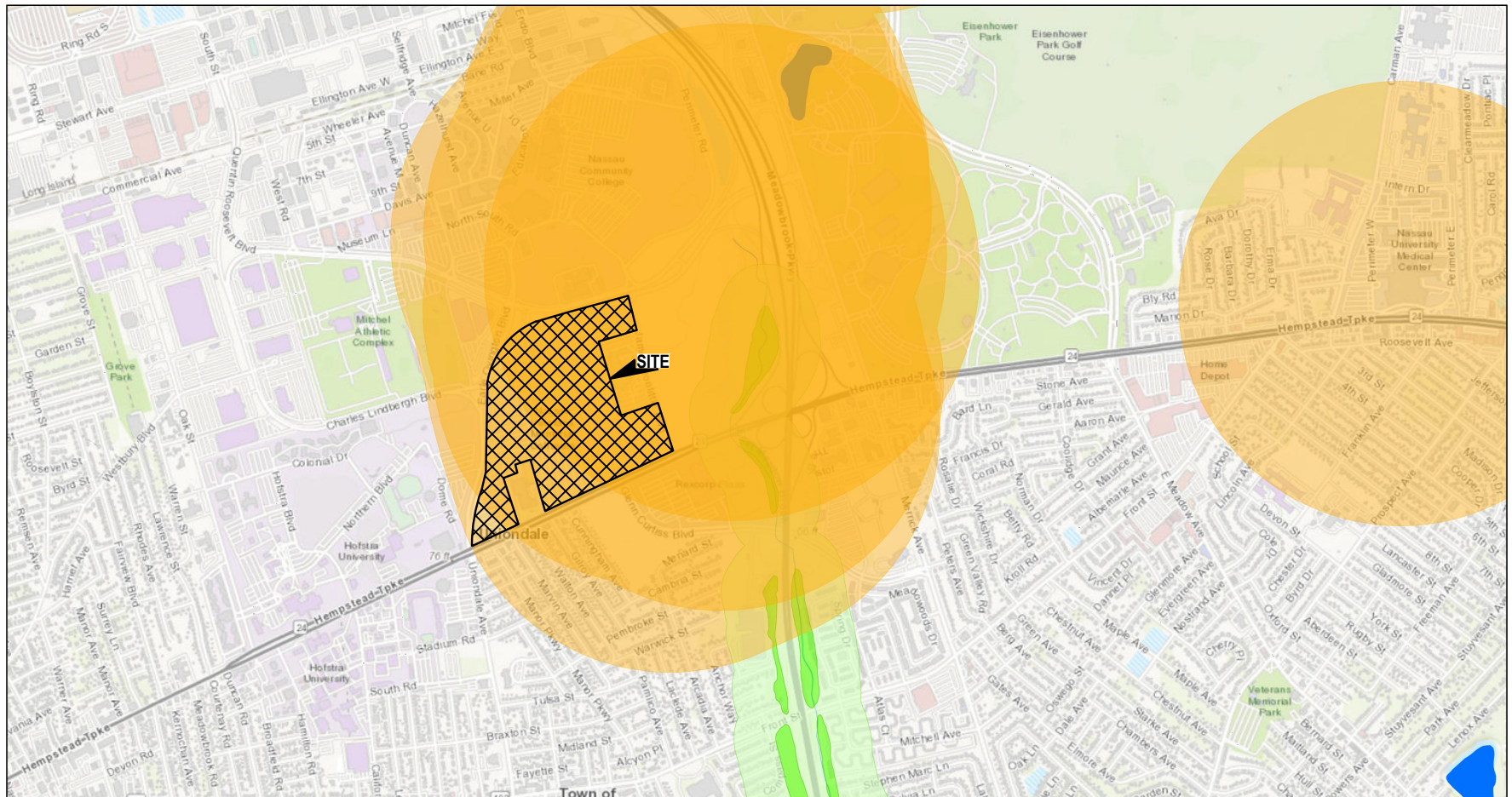
NYS Department of Environmental Conservation
Not a legal document

DEC MAP - SIGNIFICANT NATURAL COMMUNITIES

Sands NY Integrated Resort

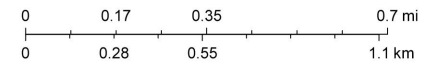


LVSC 2301 Orange



October 2, 2023

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Nassau County, Esri, HERE, Garmin, INCREMENT P, USGS, METI/
NASA, EPA, USDA

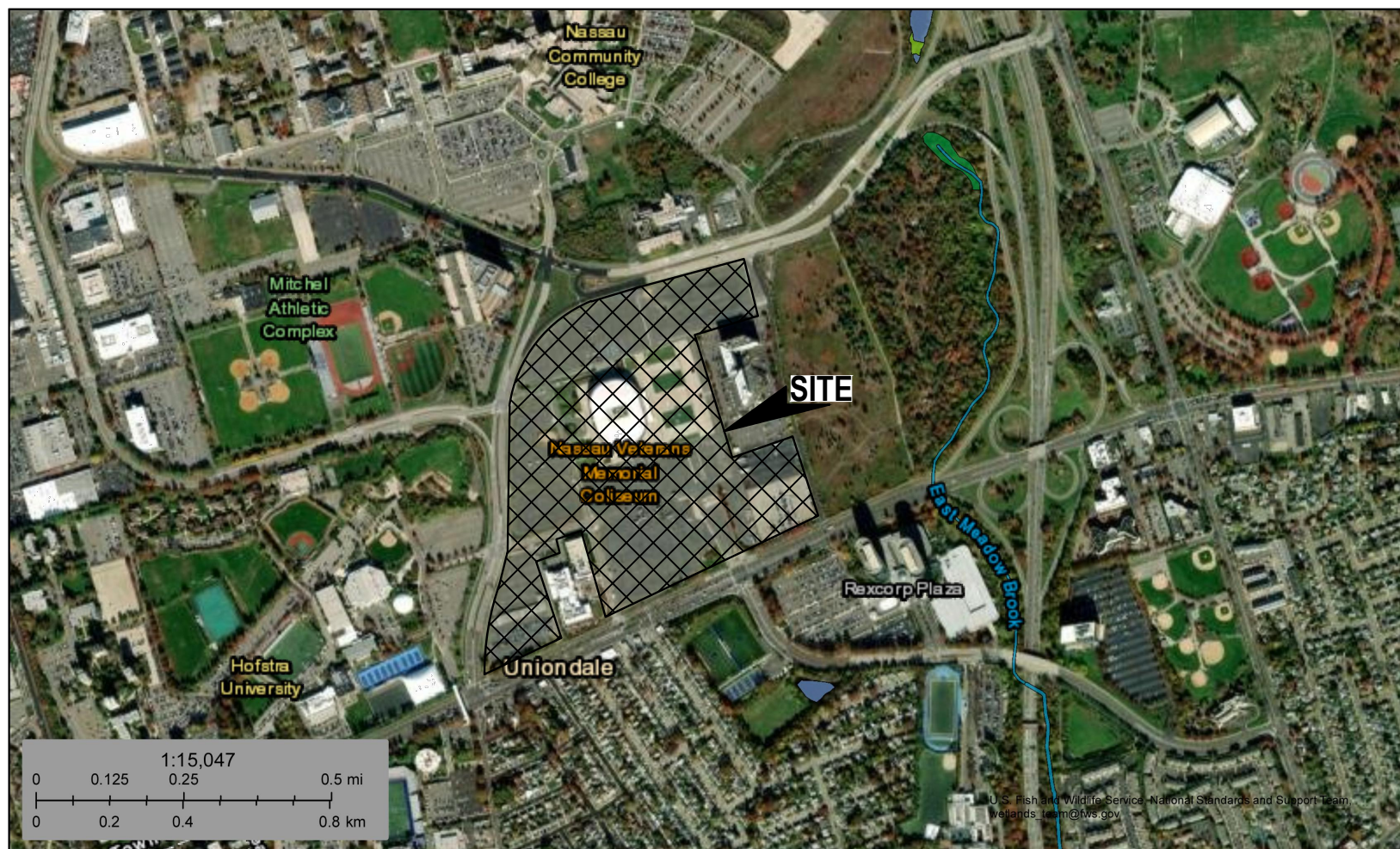
NYS Department of Environmental Conservation
Not a legal document





U.S. Fish and Wildlife Service
National Wetlands Inventory

LVSC 2301



October 2, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

WETLAND MAP

Sands NY Integrated Resort



USN Building Points (View)

- Eligible
- Listed
- Not Eligible
- Not Eligible - Demolished
- Undetermined

Consultation Projects (View)



National Register Building Sites (View)



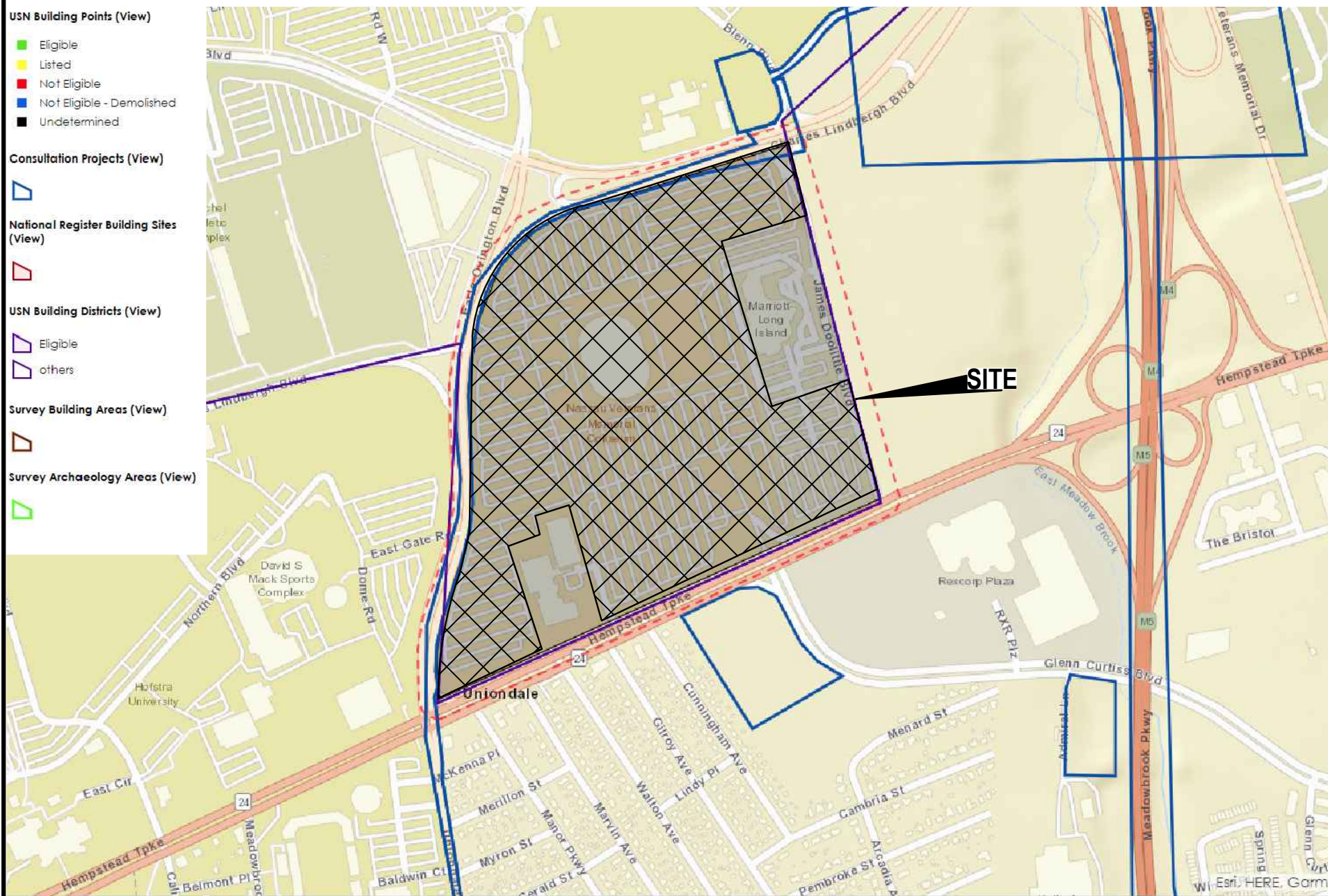
USN Building Districts (View)

- Eligible
- others

Survey Building Areas (View)



Survey Archaeology Areas (View)



Appendix B
USDA Soils Report



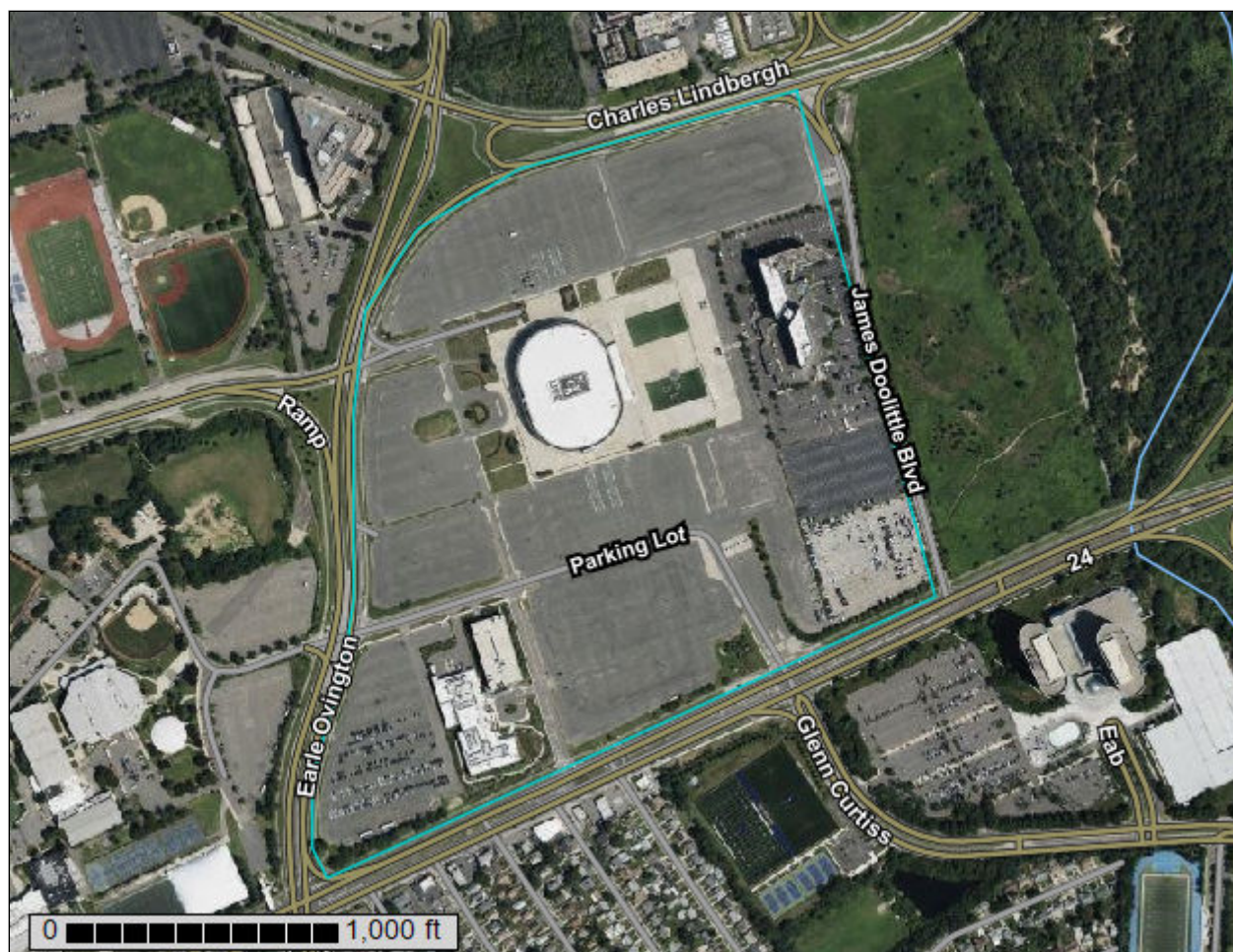
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Nassau County, New York**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Ug—Urban land.....	14
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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Nassau County, New York
Survey Area Data: Version 21, Sep 5, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 13, 2021—Sep 14, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
He	Hempstead silt loam	15.7	16.4%
Ug	Urban land	80.1	83.6%
Totals for Area of Interest		95.9	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Nassau County, New York

He—Hempstead silt loam

Map Unit Setting

National map unit symbol: 9tsr
Elevation: 50 to 210 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 190 to 230 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hempstead and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hempstead

Setting

Landform: Outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: A silty mantle over highly siliceous stratified sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 29 inches: silt loam
H3 - 29 to 33 inches: very gravelly loamy sand
H4 - 33 to 60 inches: stratified very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F149BY006NY - Well Drained Outwash
Hydric soil rating: No

Minor Components

Enfield

Percent of map unit: 10 percent

Hydric soil rating: No

Udipsamments

Percent of map unit: 5 percent

Hydric soil rating: No

Mineola

Percent of map unit: 5 percent

Hydric soil rating: No

Ug—Urban land

Map Unit Setting

National map unit symbol: 9ttq

Mean annual precipitation: 42 to 46 inches

Mean annual air temperature: 50 to 54 degrees F

Frost-free period: 190 to 230 days

Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Enfield

Percent of map unit: 2 percent

Hydric soil rating: No

Riverhead

Percent of map unit: 2 percent

Hydric soil rating: No

Hempstead

Percent of map unit: 2 percent

Hydric soil rating: No

Udipsamments

Percent of map unit: 2 percent

Hydric soil rating: No

Udorthents

Percent of map unit: 2 percent

Hydric soil rating: No

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Custom Soil Resource Report

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Appendix C

Example SWPPP Inspection Report

CONSTRUCTION STORMWATER INSPECTION REPORT

SECTION A: Site Information

Permit No.:	Date of Inspection:	Time of Inspection:	Date of Last Inspection:
Project Name:		Stage of Construction	Weather Conditions
Site Location:		Site Description:	
Contact at Site:		Title:	
Phone No.:		e-mail:	

SECTION B: Applicant's Information

Name:	e-mail:
Phone No.	Fax No.:
Address:	

SECTION C: General Contractor's Information

Name:	e-mail:
Phone No.	Fax No.:
Address:	

SECTION D: Engineer's Information

Name:	e-mail:
Phone No.	Fax No.:
Address:	

SECTION E: Document Verification

Criteria	NA	YES	NO	Comments
NOI posted at construction site				
SPDES General Permit retained at construction site				
SWPPP retained at construction site				
Updated as site conditions change				
Contains monthly/quarterly written summaries of compliance status				

SECTION F: Area of Disturbance

Criteria	NA	YES	NO	Comments
Less than 5 acres of disturbed soil				
• If no, was there prior written approval?				
Disturbance within limits of approved plans				

SECTION G: Water Quality

Polluted discharges	NA	No	Yes	Comments:
Discharges show visible signs of:	__ Sediment __ Floatables __ Oil/Grease __ Turbidity __ Other_____			
Receiving waters impacted:	__ Lake __ Bay __ Stream __ Wetland __ Other_____			

SECTION H: General Site Conditions

Criteria	Condition*				Comments
	NA	S	M	U	
Litter/debris management					
Sediment and erosion control facilities					
Impact on adjacent property					
Dust control					

* NA=Not Applicable; S=Satisfactory; M=Marginal; U=Unsatisfactory

SECTION I: Temporary Stream Crossings

Criteria	Condition*				Comments
	NA	S	M	U	
Pipe size spanning creeks					
Non-woven geotextile fabric installed beneath approaches					
Aggregate fill					
Rock on approaches removes sediment from vehicles and prevents Sediment from entering streams					

* NA=Not Applicable; S=Satisfactory; M=Marginal; U=Unsatisfactory

SECTION J: Runoff Control Practices

Criteria	Condition*				Comments
	NA	S	M	U	
Excavation dewatering					
Upstream berms (one-foot min. freeboard)					
Downstream berms					
Clean water from upstream pool pumped to downstream pool					
Sediment-laden water discharged to silt trapping device					
Level spreader installation (constructed on undisturbed soil)					
Flow sheets do not erode downstream edge					
Interceptor dikes and swales installation					
Side slopes 2:1 or flatter					
Stabilized by geotextile fabric, seed or mulch					
Sediment-laden runoff is directed to sediment trapping device					
Stone check dams installation					
Stable channel					
Lack of a permanent pool behind dam					
Regular removal of accumulated sediment					
Rock outlet protection installation					
Installed concurrently with pipe installation					

* NA=Not Applicable; S=Satisfactory; M=Marginal; U=Unsatisfactory

SECTION K: Soil Stabilization

Criteria	Condition*				Comments
	NA	S	M	U	
Topsoil and stockpiles					
With vegetation					
With mulch					
Sediment control installed at toe of slope					
Revegetation					
Temporary seeding and mulch applied to idle areas					
Minimum of 4 inches topsoil applied under permanent seedings					

* NA=Not Applicable; S=Satisfactory; M=Marginal; U=Unsatisfactory

SECTION L: Sediment Control Practices

Criteria	Condition*				Comments
	NA	S	M	U	
Stabilized construction access installation					
Drainage prevents ponding					
Stone removes mud from vehicles					
All traffic uses the entrance					
Silt fence installation					
On contour and 10' from toe of slope					
Not across conveyance channels					
End stakes wrapped together at joints					
Fabric is buried min 6"					
Posts are stable, fabric is tight and not damaged					
Sediment accumulation (note % of design capacity in comments)					
Storm drain inlet protection					
Drainage area is less than 1 acre					
Sediment accumulation (note % of design capacity in comments)					
Excavated drop inlet protection					
- 900 cu. ft. per acre of disturbed land					
- 2:1 side slopes					
Stone and block drop inlet protection					
- Concrete blocks installed lengthwise					
- Wire screen placed between #3 crushed stone & concrete blocks					
Filter fabric drop inlet protection					
- 2"x4" frame					
- Posts (stable; spaced max. 3' apart)					
- Fabric *undamaged; embedded 1' to 1.5' below ground; stapled to frame/posts at max. spacing of 8"					
Curb drop inlet protection					
- 2"x4" frame					
- Continuous wire mesh across throat (30" min. width, 4' longer than throat) shaped and nailed to 2"x4" weir					
- Weir nailed to 2"x4" spacers (9" long, 6' max. apart)					
- Placed across inlet and secured by 2"x4"					

* NA=Not Applicable; S=Satisfactory; M=Marginal; U=Unsatisfactory

SECTION L: Sediment Control Practices (Con't)

Criteria	Condition*				Comments
	NA	S	M	U	
Temporary sediment trap installation					
Geotextile fabric placed beneath rock fill					
Sediment accumulation (note % of design capacity in comments)					
Temporary sediment basin installation					
Side slopes stabilized with seed or mulch					
Structure flushed and surface restored upon removal of facility					
Sediment accumulation (note % of design capacity in comments)					
Inspections occur at least every 7 calendar days					
Inspections occur twice per week if disturbance>5 ac.					
Effectiveness of erosion and sediment control practices is evaluated at time of inspection and documented					
Inspection reports maintained in log book at site and are available for review					
Sediment is removed from traps/ponds when design capacity is reduced by 50%					
Site inspections are being performed by a qualified inspector					
Reports are properly signed/certified					

* NA=Not Applicable; S=Satisfactory; M=Marginal; U=Unsatisfactory

SECTION N: Additional Comments/Notes

SECTION O: Overall Inspection Rating

☐ Satisfactory
 ☐ Marginal
 ☐ Unsatisfactory

Form Completed By:

Name (Print):	Signature:	Date:
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Appendix D
Draft Notice of Intent

Construction General Permit (CGP) Electronic Notice of Intent (eNOI) GP-0-25-001

version 1.3

(Submission #: HQA-BG3T-VGQDJ, version 1)

Details

Originally Started By Justin Tomkins

Alternate Identifier Sands New York—Region 1

Submission ID HQA-BG3T-VGQDJ

Status Draft

Form Input

Eligibility

Disturbance Threshold

1. Will the construction activity involve soil disturbances listed in Part I.A.1 of GP-0-25-001?

Yes

1.a. Will any runoff from the site enter a sewer system classified as a combined sewer?

No

1.b. Is this a remediation project being done under a Department approved work plan (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) with a SWPPP which meets the substantive requirements of GP-0-25-001?

No

1.c. Is the construction activity related to a stormwater discharge that does not require a permit as described in 40 CFR 122.3(e), e.g. non-point source agriculture or silviculture activities?

No

Other SPDES Permits

2. Will the discharge from the construction activity meet all conditions listed in Part I.A.2 of GP-0-25-001?

Yes

Threatened and Endangered Species

3. Will the construction activity potentially adversely affect a species that is endangered or threatened per Part I.A.3.?

No

State Historic Preservation Act (SHPA)

4. Is the construction activity designated by the Commissioner of the Office of Parks, Recreation and Historic Preservation (OPRHP), pursuant to 9 NYCRR §§428.12 or 428.13 as exempt from the SHPA review (see Attachment 2 of the Letter of Resolution between NYSDEC and OPRHP, dated January 9, 2015)?

No

4.a. Will the construction activity:

- a) occur within an archeologically sensitive area indicated on the sensitivity map, or
- b) have the potential to affect a property that is listed or determined to be eligible for listing on the National or State Registers of Historic Places, or
- c) include a new permanent building on the construction site within the following distances from a building, structure, or object that is more than 50 years old and OPRHP, a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined historically/archeologically significant building, structure, or object:
 - 1-5 acres of disturbance—20 feet
 - 5-20 acres of disturbance—50 feet
 - 20+ acres of disturbance—100 feet?

No

4.b. Is there documentation at the construction site demonstrating:

- a) that the construction activity is not within an archeologically sensitive area indicated on the sensitivity map, and that the construction activity is not immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and
- b) that there is no new permanent building to be built on the construction site within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the construction site within those parameters that OPRHP, a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined the building, structure, or object more than 50 years old is not historically/archeologically significant:
 - 1-5 acres of disturbance – 20 feet
 - 5-20 acres of disturbance – 50 feet
 - 20+ acres of disturbance – 100 feet?

Yes

State Environmental Quality Review (SEQR)

5. Is the construction activity subject to SEQR (Part I.A.5.), or the equivalent environmental review from another NYS or federal agency (Part I.A.6.)?

Yes

5.a. Has the owner/operator obtained documentation that the project review pursuant to SEQR, or the equivalent, has been satisfied per Part I.A.5. or I.A.6. of GP-0-25-001?

Yes

Uniform Procedures Act (UPA) Permits

6. Has the owner/operator obtained all necessary UPA permits from NYSDEC, or the equivalent from another NYS or federal agency per Part I.A.7.a. of GP-0-25-001?

Yes

Steep Slope

7. Is the construction activity within the watershed of surface waters of the State classified as AA or AA-S identified utilizing the Stormwater Interactive Map on NYSDEC's website?

No

Owner/Operator Information

8. Owner/Operator Name

LVS NY HOLDCO 2, LLC

9. Owner/Operator Contact Person Information

First and Last Name	Phone	E-mail
Michael Levoff	702-923-9000	Michael.Levoff@Sands.com

10. Owner/Operator Mailing Address

5420 S DURANGO DR
LAS VEGAS, NV 89113-1849
USA

11. Is the billing contact different from the Owner/Operator Contact?

No

12. What type of organization is the owner/operator?

LLC

12.b. Is the owner/operator registered with the Department of State to do business in New York State?

Yes

12.b.i. Department of State ID #

6732297

The Department of State ID can be found using the following link:

[Department of State | Division of Corporations](#)

Site Information

13. Project/Site Name

Sands New York

14. Site Address

1255 HEMPSTEAD TPKE
UNIONDALE, NY 11553-1260
Nassau

DEC Region

1

15. Site Latitude & Longitude

40.7228919,-73.5905136

Project Details**16. This eNOI submission is for:**

An entire common plan of development or sale in accordance with Part I.D.1.b.

17. Does the project type fall under Table 1 or Table 2 of Appendix B of GP-0-25-001? If any portion of the construction activity falls under Table 2, regardless of the size of the disturbance, select "Table 2".

Table 2

18. Consistent with Part III.B.1.c.i. of GP-0-25-001, provide a concise overview of the project. Describe existing and proposed conditions, and include any other relevant information.

The existing site at 1255 Hempstead Turnpike is an entertainment venue, with a hotel on a separate lot, that is surrounded by parking areas and roadways. The proposed development consists of an integrated resort and surrounding roadways, parking structures, parking areas, new drainage and utility infrastructure, and increased landscaped areas.

Enter the total project site acreage, the acreage to be disturbed, and the future impervious area (acreage) within the disturbed area, rounded to the nearest tenth of an acre.

19. Total Site Area (acres)

86.3

20. Total Area to be Disturbed (acres)

78.2

21. Existing Impervious Area to be Disturbed (acres)

70.5

22. Future Impervious Area Within Disturbed Area (acres)

60.7

Nature of the project:

Redevelopment with no increase in impervious area

23. Do you plan to disturb more than 5 acres of soil at any one time?

Yes

The owner/operator must meet the requirements in Part I.E.6. before disturbing greater than five acres

at any one time.

24. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)

0

B (%)

100

C (%)

0

D (%)

0

25. Enter the planned start and end dates of the disturbance activities.

Start Date

01/01/2026

End Date

12/31/2030

26. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Nassau County Recharge Basin No. 537

27. Type of waterbody identified in question 26?

Other Type Off Site

Other Waterbody Type Off Site Description

Recharge basin

28. Has the surface waterbody in question 26 been identified as a 303(d) segment in Appendix D of GP-0-25-001?

Yes

29. Is this project located in one of the Watersheds identified in Appendix C of GP-0-25-001?

No

30. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?

No

31. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?

Yes

31.a. What is the name of the municipality/entity that owns the separate storm sewer system? If the separate sewer system is owned by an MS4 Operator, enter the MS4 Operator name.

Nassau County

32. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?

No

33. Is this property owned by a state authority, state agency, federal government or local government?

Yes

Required SWPPP Components

General SWPPP Requirements

34. Has a SWPPP been developed in conformance with the requirements in Part III. of GP-0-25-001?

Yes

35. Does the SWPPP demonstrate consideration of the future physical risks due to climate change pursuant to the CRRA, 6 NYCRR Part 490, and associated guidance per Part III.A.2. of GP-0-25-001?

Yes

36. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?

Yes

37. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the NYS Stormwater Management Design Manual?

Yes

37.a. Which version of the NYS Stormwater Management Design Manual was used to develop the SWPPP?

2024

38. Has the post-construction stormwater management practice component of the SWPPP been developed by a qualified professional per Part III.A.4.?

Yes

SWPPP Preparer

39. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

Professional Engineer (P.E.)

40. Name of the person who prepared the SWPPP

Justin Tomkins P.E.

41. SWPPP Preparer Organization Name

H2M architects + engineers

42. SWPPP Preparer Contact Information

First and Last Name	Phone	E-mail
Justin Tomkins P.E.	631-756-8000	jtomkins@h2m.com

43. SWPPP Preparer Address

538 BROADHOLLOW RD # 4

MELVILLE, NY 11747-3676

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form:

- 1) Click on the link below to download a blank certification form
- 2) The certified SWPPP preparer should sign this form
- 3) Upload the completed form

[Download SWPPP Preparer Certification Form](#)

44. Please upload the SWPPP Preparer Certification

NONE PROVIDED

Comment

NONE PROVIDED

44.a. Has the SWPPP Preparer Certification Form been signed by the SWPPP preparer in accordance with Part VII.J of GP-0-25-001?

Yes

Erosion & Sediment Control Criteria

45. Has a construction sequence schedule for the planned management practices been prepared?

Yes

Post-Construction Criteria

Site Planning and Soil Restoration

46. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

Parking Reduction

47. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6 ("Soil Restoration") of the Design Manual.

All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

Water Quality Criteria

48. Is the reduction in impervious area greater than 25%?

No

49. Water Quality Sizing Criteria

Total WQv required (acre-feet)	Total RRv provided (acre-feet)	Minimum RRv (acre-feet)	Total WQv provided (acre-feet)	Sum of RRv and WQv provided
8.2	0	0	52.4	52.4

Water Quantity Criteria

50. Per Section 9.2.1.C.VI and VII of the 2024 Design Manual, is there 0% change to hydrology that increases the discharge rate and volume from the project site?

Yes

Operation and Maintenance

53. Has a long-term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?

Yes

53.a. Identify the entity responsible for the long-term Operation and Maintenance.

LVS NY HOLDCO 2, LLC

Post-Construction SMP Identification

54. Post-Construction RR Techniques and Standard SMPs

RR Techniques and SMPs	Contributing Impervious Area (acres)	Total Contributing Area (acres)
Infiltration Basin (I-2)	68.100	

55. Alternative SMPs

Type of Alternative SMP	Manufacturer of the Alternative SMP	Name of the Alternative SMP	Contributing Impervious Area (acres)
Hydrodynamic	Contech	STC450i	21.55

Other Permits

56. Identify other permits, existing and new, that are required for this project/facility.

None

57. Is this NOI for a change in owner/operator per Part I.G.?

No

MS4 SWPPP Acceptance

59. Is the construction activity located within the municipal boundaries of a regulated, traditional land use control MS4?

Yes

59.a. Which form is required per Part I.D.2.b.ii.?

MS4 SWPPP Acceptance Form

MS4 SWPPP Acceptance Form Download

Download the MS4 SWPPP Acceptance Form from the link below.

[MS4 SWPPP Acceptance Form](#)

60. MS4 Acceptance or No Jurisdiction Form Upload

NONE PROVIDED

Comment

NONE PROVIDED

60.a. Has the form been signed by the principal executive officer or ranking elected official—or duly authorized representative of that person—in accordance with Part VII.J. and submitted along with this NOI?

Yes

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the Owner/Operator Certification Form by clicking the link below.

[Owner/Operator Certification Form](#)

61. Upload Owner/Operator Certification Form

NONE PROVIDED

Comment

NONE PROVIDED

61.a. Has the Owner/Operator Certification Form from Appendix J been signed by the owner/operator, or a representative of the owner/operator in accordance with Part VII.J of GP-0-25-001 and uploaded to the eNOI?

Yes

Additional Project Information

62. Enter any additional pertinent project information in the text box below.

NONE PROVIDED

Appendix E
Signatory Requirements

Signatory Requirements:

Pursuant to NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-25-001), signatory requirements for all NOIs, NOTs, SWPPPs, MS4 SWPPP Acceptance forms, reports, certifications or information required by the aforementioned permit are as follows:

- 1) All NOIs and NOTs shall be signed as follows:
 - a) For a corporation. By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
 - i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for Notice of Intent or Notice of Termination requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

Note: NYSDEC does not require specific assignments or delegations of authority to responsible corporate officers identified in 40 CFR §122.22(a)(1)(i). NYSDEC will presume that these responsible corporate officers have the requisite authority to sign the Notice of Intent or Notice of Termination unless the corporation has notified NYSDEC to the contrary. Corporate procedures governing authority to sign a Notice of Intent or Notice of Termination may provide for assignment or delegation to applicable corporate positions under 40 CFR §122.22(a)(1)(ii) rather than to specific individuals.

- b) For a partnership or sole proprietorship. By a general partner or the proprietor, respectively.
 - c) For a municipality, State, Federal, or other public agency. By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

- i) the chief executive officer of the agency, or
 - ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g. Regional Administrators of EPA).
- 2) All reports required by this permit, and other information requested by NYSDEC, must be signed by a person described in Part VII.J.1., or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a) The authorization is made in writing by a person described in Part VII.J.1. or using the Duly Authorized Form, found on the DEC website; and,
 - b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and,
 - c) The written authorization is submitted to NYSDEC.
- 3) Changes to authorization. If an authorization under Part VII.J.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the construction activity, a new authorization satisfying the requirements of Part VII.J.2. must be submitted to NYSDEC prior to or together with any reports, information, or applications to be signed by an authorized representative.
- 4) Certification. Any person signing a document under Part VII.J.1. or 2. must make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.
- 5) Electronic reporting. If documents described in Part VII.J.1. or 2. are submitted electronically by or on behalf of the *construction activity* with coverage under this permit, any person providing the electronic signature for such documents must meet all relevant requirements of this section, and must ensure that all of the relevant requirements of 40 CFR Part 3 (including, in all cases,

subpart D to Part 3) (Cross-Media Electronic Reporting) and 40 CFR Part 127 (NPDES Electronic Reporting Requirements) are met for that submission.

- 6) All inspection reports shall be signed by the *qualified inspector* that performs the inspection.
- 7) The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4*, or by a duly authorized representative of that person.

It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

Appendix F

Contractor & Subcontractor Certification **Statements**

Contractor or Subcontractor Certification Statement

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Contractor Name: _____

Address: _____

Telephone number: _____

Contractor Representative:

Name: _____ Title: _____

Signature: _____ Date: _____

Trained Contractor (if different from above):

Name: _____ Title: _____

Signature: _____ Date: _____

SWPPP Responsibilities

Elements of SWPPP above contractor is responsible for implementing:

Contractor or Subcontractor Certification Statement

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Contractor Name: _____

Address: _____

Telephone number: _____

Contractor Representative:

Name: _____ Title: _____

Signature: _____ Date: _____

Trained Contractor (if different from above):

Name: _____ Title: _____

Signature: _____ Date: _____

SWPPP Responsibilities

Elements of SWPPP above contractor is responsible for implementing:

Contractor or Subcontractor Certification Statement

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Contractor Name: _____

Address: _____

Telephone number: _____

Contractor Representative:

Name: _____ Title: _____

Signature: _____ Date: _____

Trained Contractor (if different from above):

Name: _____ Title: _____

Signature: _____ Date: _____

SWPPP Responsibilities

Elements of SWPPP above contractor is responsible for implementing:

Appendix G

Stormwater Modeling Results

Calculation Detailed Summary

Pre-Developed
1 Year Storm

<General>			
Label	Base Calculation Options	Output Increment	0.050 hours
Calculation Time Step	0.025 hours	Duration	24.000 hours
Implicit Engine			
Virtual Flow Depth	0.040 ft	NR Weighting Coefficient	0.700
Y Iteration Tolerance	0.03 ft	Relaxation Weighting Coefficient	0.600
LPI Coefficient	1.000	Computation Distance	50.00 ft
Inlets			
Neglect Side Flow?	False	Active Components for Combination Inlets In Sag	Grate and Curb
Neglect Gutter Cross Slope For Side Flow?	False	Active Components for Combination Inlets on Grade	Grate and Curb

Catchment Calculation Summary

Label	Runoff Method	Loss Method	Total Rainfall Depth (in)
DA-EX	Unit Hydrograph	SCS CN	2.8
Area (User Defined) (acres)	Volume (Total Runoff) (ft ³)	Flow (Maximum) (cfs)	Time (Maximum Flow) (hours)
86.300	689,818.0	275.94	12.100

General Calculation Summary

Label	Element Type	Branch	Time (Maximum Flow) (hours)
CH-A	Channel	1	12.100
DA-CROSS-SECTION	Cross Section	1	---
Flow (Maximum) (cfs)	Velocity (Maximum Calculated) (ft/s)	Hydraulic Grade (Maximum) (ft)	
273.98	2.90	400.50	
---	---	400.50	

Node Calculation Summary

Label	Element Type	Branch	Time to Maximum Inflow (hours)	Flow (Total In Maximum) (cfs)
DA-POINT-OF-ANALYSIS	Outfall	1	12.100	295.80
Time To Maximum Inlet Flow (hours)	Flow (Surface Maximum) (cfs)	Time To Maximum Captured Flow (hours)	Flow (Captured Maximum) (cfs)	Time to Maximum Overflow (hours)
---	---	---	---	---
Flow (Overflow Maximum) (cfs)				

Node Calculation Summary

Flow (Overflow Maximum) (cfs)

Gutter Calculation Summary

Label	Gutter Shape	Flow (Maximum) (cfs)	Time (Maximum Flow) (hours)
Velocity (Maximum Calculated) (ft/s)			

Calculation Detailed Summary

Pre-Developed
10 Year Storm

<General>			
Label	Base Calculation Options	Output Increment	0.050 hours
Calculation Time Step	0.025 hours	Duration	24.000 hours
Implicit Engine			
Virtual Flow Depth	0.040 ft	NR Weighting Coefficient	0.700
Y Iteration Tolerance	0.03 ft	Relaxation Weighting Coefficient	0.600
LPI Coefficient	1.000	Computation Distance	50.00 ft
Inlets			
Neglect Side Flow?	False	Active Components for Combination Inlets In Sag	Grate and Curb
Neglect Gutter Cross Slope For Side Flow?	False	Active Components for Combination Inlets on Grade	Grate and Curb

Catchment Calculation Summary

Label	Runoff Method	Loss Method	Total Rainfall Depth (in)
DA-EX	Unit Hydrograph	SCS CN	5.3
Area (User Defined) (acres)	Volume (Total Runoff) (ft ³)	Flow (Maximum) (cfs)	Time (Maximum Flow) (hours)
86.300	1,443,153.0	540.67	12.100

General Calculation Summary

Label	Element Type	Branch	Time (Maximum Flow) (hours)
CH-A	Channel	1	12.100
DA-CROSS-SECTION	Cross Section	1	---
Flow (Maximum) (cfs)	Velocity (Maximum Calculated) (ft/s)	Hydraulic Grade (Maximum) (ft)	
543.89	3.46	400.95	
---	---	400.95	

Node Calculation Summary

Label	Element Type	Branch	Time to Maximum Inflow (hours)	Flow (Total In Maximum) (cfs)
DA-POINT-OF-ANALYSIS	Outfall	1	12.100	593.08
Time To Maximum Inlet Flow (hours)	Flow (Surface Maximum) (cfs)	Time To Maximum Captured Flow (hours)	Flow (Captured Maximum) (cfs)	Time to Maximum Overflow (hours)
---	---	---	---	---
Flow (Overflow Maximum) (cfs)				

Node Calculation Summary

Flow (Overflow Maximum) (cfs)

Gutter Calculation Summary

Label	Gutter Shape	Flow (Maximum) (cfs)	Time (Maximum Flow) (hours)
Velocity (Maximum Calculated) (ft/s)			

Calculation Detailed Summary

Pre-Developed
100 Year Storm

<General>			
Label	Base Calculation Options	Output Increment	0.050 hours
Calculation Time Step	0.025 hours	Duration	24.000 hours
Implicit Engine			
Virtual Flow Depth	0.040 ft	NR Weighting Coefficient	0.700
Y Iteration Tolerance	0.03 ft	Relaxation Weighting Coefficient	0.600
LPI Coefficient	1.000	Computation Distance	50.00 ft
Inlets			
Neglect Side Flow?	False	Active Components for Combination Inlets In Sag	Grate and Curb
Neglect Gutter Cross Slope For Side Flow?	False	Active Components for Combination Inlets on Grade	Grate and Curb

Catchment Calculation Summary

Label	Runoff Method	Loss Method	Total Rainfall Depth (in)
DA-EX	Unit Hydrograph	SCS CN	8.2
Area (User Defined) (acres)	Volume (Total Runoff) (ft ³)	Flow (Maximum) (cfs)	Time (Maximum Flow) (hours)
86.300	2,357,256.0	850.23	12.100

General Calculation Summary

Label	Element Type	Branch	Time (Maximum Flow) (hours)
CH-A	Channel	1	12.100
DA-CROSS-SECTION	Cross Section	1	---
Flow (Maximum) (cfs)	Velocity (Maximum Calculated) (ft/s)	Hydraulic Grade (Maximum) (ft)	
861.83	3.89	401.47	
---	---	401.47	

Node Calculation Summary

Label	Element Type	Branch	Time to Maximum Inflow (hours)	Flow (Total In Maximum) (cfs)
DA-POINT-OF-ANALYSIS	Outfall	1	12.100	944.72
Time To Maximum Inlet Flow (hours)	Flow (Surface Maximum) (cfs)	Time To Maximum Captured Flow (hours)	Flow (Captured Maximum) (cfs)	Time to Maximum Overflow (hours)
---	---	---	---	---
Flow (Overflow Maximum) (cfs)				

Node Calculation Summary

Flow (Overflow Maximum) (cfs)

Gutter Calculation Summary

Label	Gutter Shape	Flow (Maximum) (cfs)	Time (Maximum Flow) (hours)
Velocity (Maximum Calculated) (ft/s)			

Calculation Detailed Summary

Post-Developed
1 Year Storm

<General>			
Label	Base Calculation Options	Output Increment	0.050 hours
Calculation Time Step	0.025 hours	Duration	24.000 hours
Implicit Engine			
Virtual Flow Depth	0.040 ft	NR Weighting Coefficient	0.700
Y Iteration Tolerance	0.03 ft	Relaxation Weighting Coefficient	0.600
LPI Coefficient	1.000	Computation Distance	50.00 ft
Inlets			
Neglect Side Flow?	False	Active Components for Combination Inlets In Sag	Grate and Curb
Neglect Gutter Cross Slope For Side Flow?	False	Active Components for Combination Inlets on Grade	Grate and Curb

Catchment Calculation Summary

Label	Runoff Method	Loss Method	Total Rainfall Depth (in)
DC-PROP	Unit Hydrograph	SCS CN	2.8
DD-PROP	Unit Hydrograph	SCS CN	2.8
DE-PROP	Unit Hydrograph	SCS CN	2.8
DA-PROP	Unit Hydrograph	SCS CN	2.8
DF-PROP	Unit Hydrograph	SCS CN	2.8
DB-PROP	Unit Hydrograph	SCS CN	2.8
Area (User Defined) (ft ²)	Volume (Total Runoff) (ft ³)	Flow (Maximum) (cfs)	Time (Maximum Flow) (hours)
207,025.410	33,272.0	14.27	12.100
278,912.690	44,826.0	19.22	12.100
298,278.150	41,818.0	18.14	12.100
386,280.210	67,844.0	28.65	12.100
2,574,042.680	432,552.0	184.24	12.100
13,587.360	2,962.0	1.15	12.100

General Calculation Summary

Label	Element Type	Branch	Time (Maximum Flow) (hours)
CH-F	Channel	1	12.100
DA-CROSS-SECTION	Cross Section	1	---
PO-C	Pond	6	---
PO-E	Pond	5	---
PO-D	Pond	4	---
PO-A	Pond	3	---
PO-B	Pond	2	---
Flow (Maximum) (cfs)	Velocity (Maximum Calculated) (ft/s)	Hydraulic Grade (Maximum) (ft)	
165.14	1.79	400.36	

General Calculation Summary

Flow (Maximum) (cfs)	Velocity (Maximum Calculated) (ft/s)	Hydraulic Grade (Maximum) (ft)
---	---	400.36
---	---	65.44
---	---	62.90
---	---	65.39
---	---	80.00
---	---	56.84

Node Calculation Summary

Label	Element Type	Branch	Time to Maximum Inflow (hours)	Flow (Total In Maximum) (cfs)
DF-POINT-OF-ANALYSIS	Outfall	1	12.100	182.66
PO-C	Pond	6	12.100	12.88
PO-E	Pond	5	12.100	16.47
PO-D	Pond	4	12.100	17.35
PO-A	Pond	3	12.100	25.78
PO-B	Pond	2	12.100	1.03

Time To Maximum Inlet Flow (hours)	Flow (Surface Maximum) (cfs)	Time To Maximum Captured Flow (hours)	Flow (Captured Maximum) (cfs)	Time to Maximum Overflow (hours)
---	---	---	---	---
---	---	---	---	0.000
---	---	---	---	0.000
---	---	---	---	0.000
---	---	---	---	12.800
---	---	---	---	0.000

Flow (Overflow Maximum) (cfs)

0.00
0.00
0.00
2.97
0.00

Gutter Calculation Summary

Label	Gutter Shape	Flow (Maximum) (cfs)	Time (Maximum Flow) (hours)
Velocity (Maximum Calculated) (ft/s)			

Calculation Detailed Summary

Post-Developed
10 Year Storm

<General>			
Label	Base Calculation Options	Output Increment	0.050 hours
Calculation Time Step	0.025 hours	Duration	24.000 hours
Implicit Engine			
Virtual Flow Depth	0.040 ft	NR Weighting Coefficient	0.700
Y Iteration Tolerance	0.03 ft	Relaxation Weighting Coefficient	0.600
LPI Coefficient	1.000	Computation Distance	50.00 ft
Inlets			
Neglect Side Flow?	False	Active Components for Combination Inlets In Sag	Grate and Curb
Neglect Gutter Cross Slope For Side Flow?	False	Active Components for Combination Inlets on Grade	Grate and Curb

Catchment Calculation Summary

Label	Runoff Method	Loss Method	Total Rainfall Depth (in)
DC-PROP	Unit Hydrograph	SCS CN	5.3
DD-PROP	Unit Hydrograph	SCS CN	5.3
DE-PROP	Unit Hydrograph	SCS CN	5.3
DA-PROP	Unit Hydrograph	SCS CN	5.3
DF-PROP	Unit Hydrograph	SCS CN	5.3
DB-PROP	Unit Hydrograph	SCS CN	5.3
Area (User Defined) (ft ²)	Volume (Total Runoff) (ft ³)	Flow (Maximum) (cfs)	Time (Maximum Flow) (hours)
207,025.410	73,774.0	29.71	12.100
278,912.690	99,391.0	40.02	12.100
298,278.150	98,356.0	40.46	12.100
386,280.210	144,703.0	57.17	12.100
2,574,042.680	940,625.0	375.37	12.100
13,587.360	5,735.0	2.11	12.100

General Calculation Summary

Label	Element Type	Branch	Time (Maximum Flow) (hours)
CH-F	Channel	1	12.100
DA-CROSS-SECTION	Cross Section	1	---
PO-C	Pond	6	---
PO-E	Pond	5	---
PO-D	Pond	4	---
PO-A	Pond	3	---
PO-B	Pond	2	---
Flow (Maximum) (cfs)	Velocity (Maximum Calculated) (ft/s)	Hydraulic Grade (Maximum) (ft)	
351.40	1.62	400.87	

General Calculation Summary

Flow (Maximum) (cfs)	Velocity (Maximum Calculated) (ft/s)	Hydraulic Grade (Maximum) (ft)
---	---	400.87
---	---	76.32
---	---	72.44
---	---	77.68
---	---	80.00
---	---	57.37

Node Calculation Summary

Label	Element Type	Branch	Time to Maximum Inflow (hours)	Flow (Total In Maximum) (cfs)
DF-POINT-OF-ANALYSIS	Outfall	1	12.100	386.12
PO-C	Pond	6	12.100	26.64
PO-E	Pond	5	12.100	36.39
PO-D	Pond	4	12.100	35.89
PO-A	Pond	3	12.100	51.19
PO-B	Pond	2	12.100	1.89
Time To Maximum Inlet Flow (hours)	Flow (Surface Maximum) (cfs)	Time To Maximum Captured Flow (hours)	Flow (Captured Maximum) (cfs)	Time to Maximum Overflow (hours)
---	---	---	---	---
---	---	---	---	0.000
---	---	---	---	0.000
---	---	---	---	0.000
---	---	---	---	12.100
---	---	---	---	0.000
Flow (Overflow Maximum) (cfs)				

0.00				
0.00				
0.00				
53.80				
0.00				

Gutter Calculation Summary

Label	Gutter Shape	Flow (Maximum) (cfs)	Time (Maximum Flow) (hours)
Velocity (Maximum Calculated) (ft/s)			

Calculation Detailed Summary

Post-Developed
100 Year Storm

<General>			
Label	Base Calculation Options	Output Increment	0.050 hours
Calculation Time Step	0.025 hours	Duration	24.000 hours
Implicit Engine			
Virtual Flow Depth	0.040 ft	NR Weighting Coefficient	0.700
Y Iteration Tolerance	0.03 ft	Relaxation Weighting Coefficient	0.600
LPI Coefficient	1.000	Computation Distance	50.00 ft
Inlets			
Neglect Side Flow?	False	Active Components for Combination Inlets In Sag	Grate and Curb
Neglect Gutter Cross Slope For Side Flow?	False	Active Components for Combination Inlets on Grade	Grate and Curb

Catchment Calculation Summary

Label	Runoff Method	Loss Method	Total Rainfall Depth (in)
DC-PROP	Unit Hydrograph	SCS CN	8.2
DD-PROP	Unit Hydrograph	SCS CN	8.2
DE-PROP	Unit Hydrograph	SCS CN	8.2
DA-PROP	Unit Hydrograph	SCS CN	8.2
DF-PROP	Unit Hydrograph	SCS CN	8.2
DB-PROP	Unit Hydrograph	SCS CN	8.2
Area (User Defined) (ft²)	Volume (Total Runoff) (ft³)	Flow (Maximum) (cfs)	Time (Maximum Flow) (hours)
207,025.410	123,619.0	47.76	12.100
278,912.690	166,545.0	64.34	12.100
298,278.150	169,193.0	66.82	12.100
386,280.210	238,363.0	90.50	12.100
2,574,042.680	1,562,686.0	598.65	12.100
13,587.360	9,063.0	3.26	12.100

General Calculation Summary

Label	Element Type	Branch	Time (Maximum Flow) (hours)
CH-F	Channel	1	12.100
DA-CROSS-SECTION	Cross Section	1	---
PO-C	Pond	6	---
PO-E	Pond	5	---
PO-D	Pond	4	---
PO-A	Pond	3	---
PO-B	Pond	2	---
Flow (Maximum) (cfs)	Velocity (Maximum Calculated) (ft/s)	Hydraulic Grade (Maximum) (ft)	
613.92	2.64	401.09	

General Calculation Summary

Flow (Maximum) (cfs)	Velocity (Maximum Calculated) (ft/s)	Hydraulic Grade (Maximum) (ft)
---	---	401.09
---	---	80.00
---	---	80.00
---	---	80.00
---	---	80.00
---	---	58.17

Node Calculation Summary

Label	Element Type	Branch	Time to Maximum Inflow (hours)	Flow (Total In Maximum) (cfs)
DF-POINT-OF-ANALYSIS	Outfall	1	12.100	648.55
PO-C	Pond	6	12.100	46.51
PO-E	Pond	5	12.100	65.10
PO-D	Pond	4	12.100	62.66
PO-A	Pond	3	12.100	88.12
PO-B	Pond	2	12.100	3.17
Time To Maximum Inlet Flow (hours)	Flow (Surface Maximum) (cfs)	Time To Maximum Captured Flow (hours)	Flow (Captured Maximum) (cfs)	Time to Maximum Overflow (hours)
---	---	---	---	---
---	---	---	---	12.250
---	---	---	---	13.650
---	---	---	---	12.200
---	---	---	---	12.100
---	---	---	---	0.000
Flow (Overflow Maximum) (cfs)				

11.23				
4.73				
26.60				
88.92				
0.00				

Gutter Calculation Summary

Label	Gutter Shape	Flow (Maximum) (cfs)	Time (Maximum Flow) (hours)
Velocity (Maximum Calculated) (ft/s)			

Point precipitation frequency estimates (inches)

NOAA Atlas 14 Volume 10 Version 3

Data type: Precipitation depth

Time series type: Partial duration

Project area: Northeastern States

Location name (ESRI Maps): Uniondale New York USA

Station Name: -

Latitude: 40.7229 Degree

Longitude: -73.5907 Degree

Elevation (USGS): 83 ft

PRECIPITATION FREQUENCY ESTIMATES

by duration for ARI (years):

	1	2	5	10	25	50	100	200	500
5-min:	0.363	0.438	0.56	0.661	0.8	0.904	1.01	1.14	1.33
10-min:	0.515	0.62	0.792	0.936	1.13	1.28	1.44	1.62	1.88
15-min:	0.605	0.73	0.933	1.1	1.33	1.51	1.69	1.9	2.21
30-min:	0.833	1	1.29	1.52	1.84	2.08	2.34	2.63	3.06
60-min:	1.06	1.28	1.64	1.94	2.35	2.66	2.98	3.36	3.91
2-hr:	1.43	1.7	2.15	2.52	3.04	3.42	3.83	4.28	4.93
3-hr:	1.66	1.97	2.48	2.9	3.49	3.93	4.39	4.9	5.62
6-hr:	2.05	2.44	3.08	3.61	4.34	4.89	5.46	6.11	7.03
12-hr:	2.4	2.89	3.7	4.36	5.28	5.97	6.7	7.54	8.79
24-hr:	2.72	3.34	4.35	5.18	6.33	7.19	8.11	9.21	10.9
2-day:	3.08	3.82	5.05	6.07	7.47	8.5	9.63	11	13.1
3-day:	3.36	4.17	5.49	6.59	8.1	9.22	10.4	11.9	14.2
4-day:	3.62	4.46	5.83	6.97	8.54	9.69	11	12.5	14.9
7-day:	4.3	5.19	6.63	7.83	9.48	10.7	12	13.6	16.1
10-day:	4.97	5.88	7.37	8.61	10.3	11.6	12.9	14.6	17
20-day:	7.04	8.04	9.68	11	12.9	14.3	15.8	17.4	19.7
30-day:	8.78	9.86	11.6	13.1	15.1	16.6	18.2	19.8	21.9
45-day:	11	12.1	14.1	15.7	17.8	19.5	21.2	22.8	24.9
60-day:	12.8	14.1	16.1	17.8	20.1	22	23.7	25.4	27.4

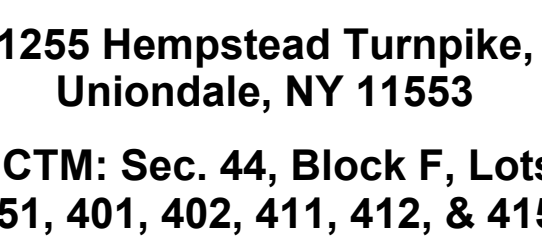
Appendix H

Engineering Plans

MARK	DATE	DESCRIPTION
------	------	-------------

R. JOEL RICHARDSON, P.E. NY PROFESSIONAL ENGINEER Lic. No. 069970 IN ACCORDANCE WITH ARTICLE 156 OF THE STATE ENGINEERING LAW AND THE JUNE 23, 2009 EDITION OF THE ENGINEERING COUNCIL OF NEW YORK STATE'S REGULATIONS			12/31/2020 EXP. DATE
DESIGNED BY: JMT	DRAWN BY: JMT/MRO	CHECKED BY: BJM	REVIEWED BY: RJR
PROJECT No.: LVSC 2301	DATE: 10/05/2024	SCALE: AS SHOWN	

Sands New York



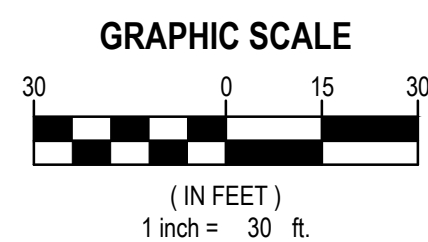
REGULATORY REVIEW

**GRADING AND
DRAINAGE PLAN -
NORTHWEST**

C 101.00



**NOTE: SEE PAGE C100.00
FOR NOTES AND LEGEND**



MARK	DATE	DESCRIPTION
------	------	-------------

R. JOEL RICHARDSON, P.E. NY PROFESSIONAL ENGINEER Lic. No. 069970 "IN ACCORDANCE WITH ARTICLE 132 OF THE NY EDUCATION LAW & SUBSECTION 4 OF THE PROFESSIONAL ENGINEERING REGULATION"			12/15/2026 EXPIR. DATE
DESIGNED BY: JMT	DRAWN BY: JMT/MRO	CHECKED BY: BJM	REVIEWED BY: RJR
PROJECT No.: LVSC 2301	DATE: 10/05/2024	SCALE: AS SHOWN	

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
--------------	-----------	-------------	--------------

JMT	JMT/MRO	BJM	RJR
PROJECT No.: LVSC 2301		DATE: 10/05/2024	SCALE: AS SHOWN

Sands New York



**NCTM: Sec. 44, Block F, Lots
351, 401, 402, 411, 412, & 415**

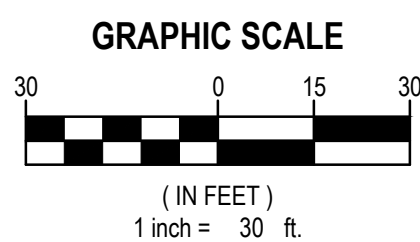
REGULATORY REVIEW

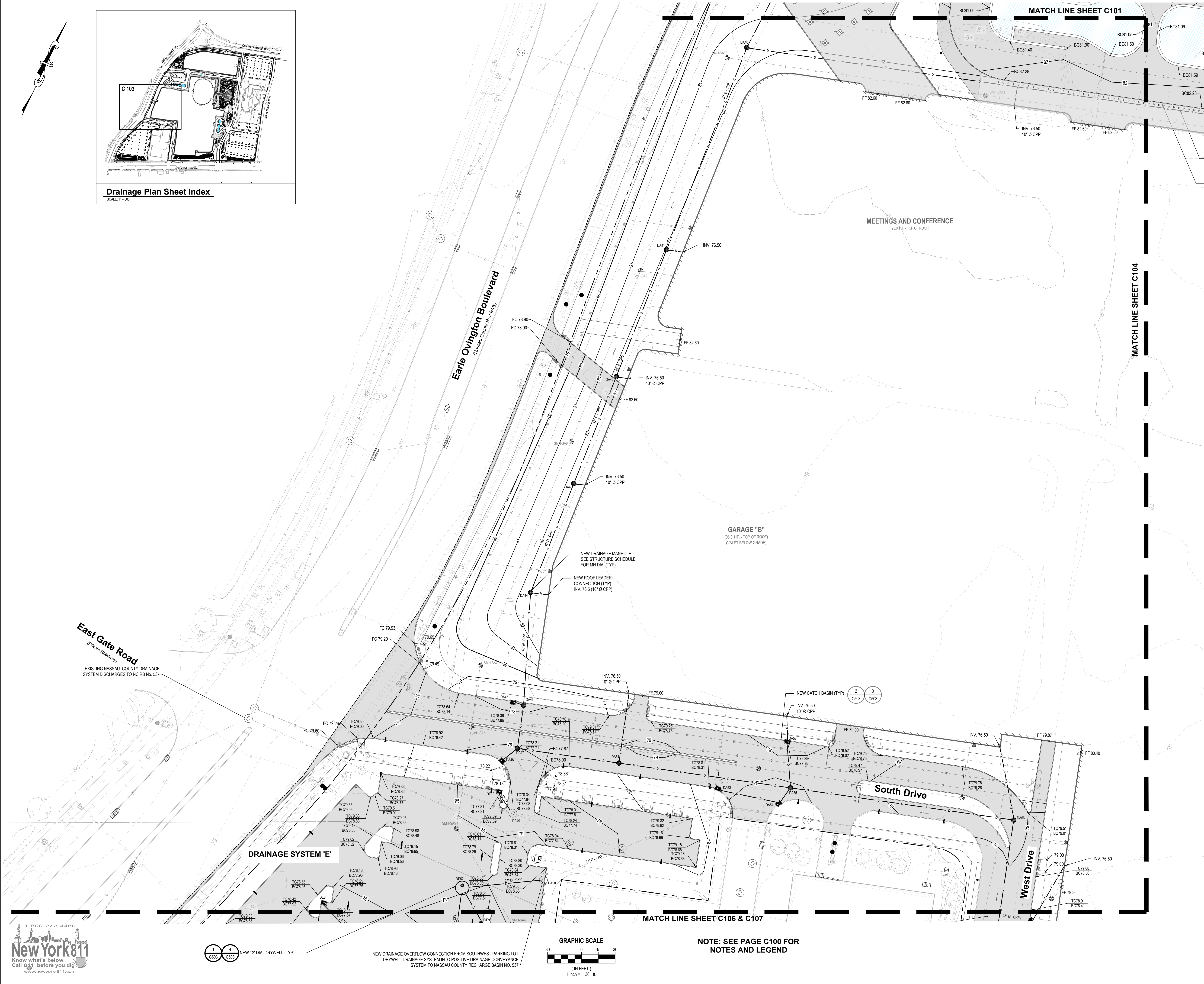
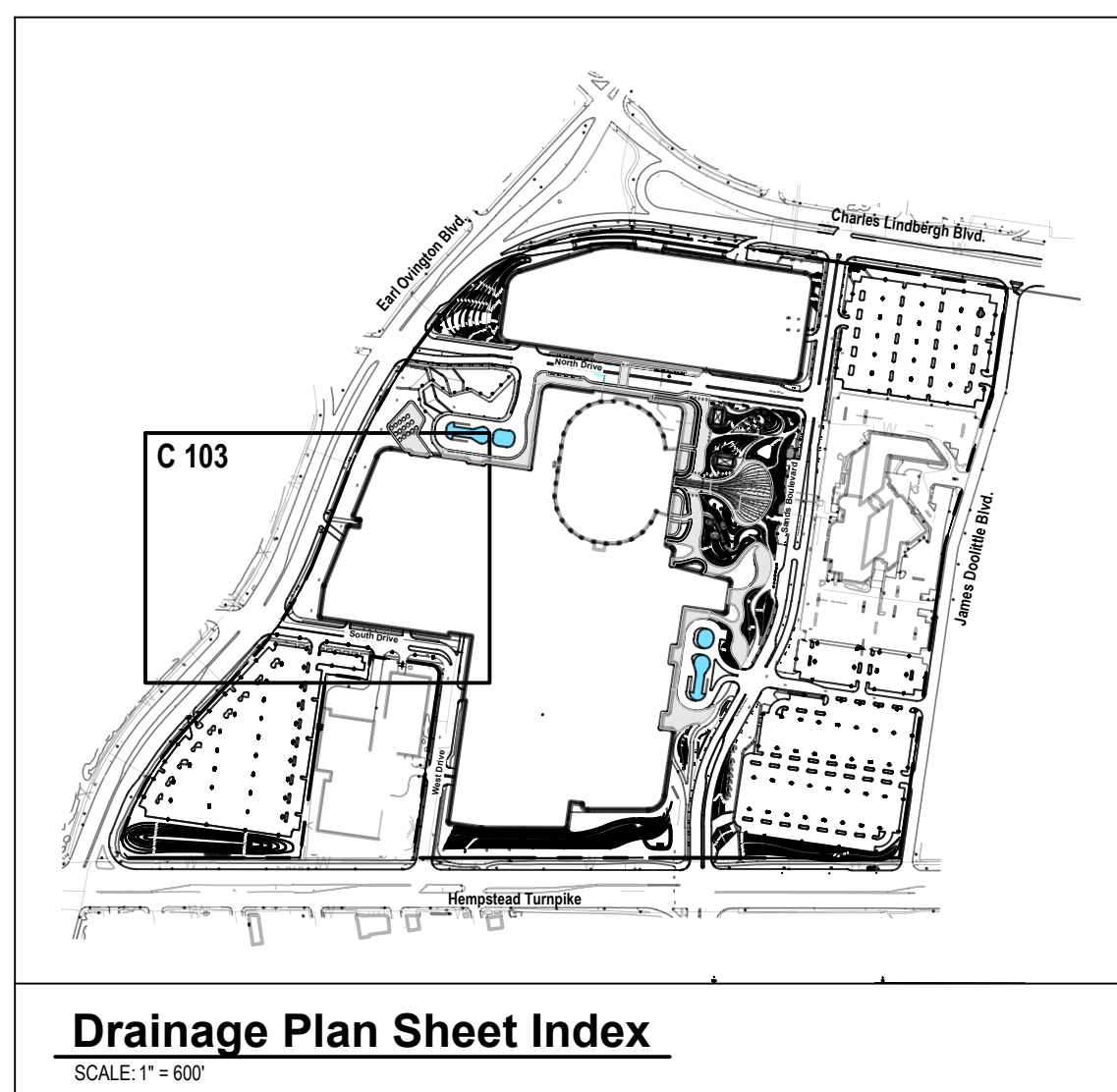
GRADING AND DRAINAGE PLAN - NORTHEAST

C 102.00



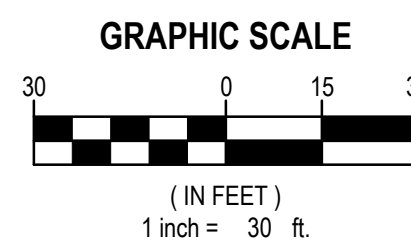
**NOTE: SEE PAGE C100 FOR
NOTES AND LEGEND**





NEW 12' DIA. DRYWELL (TYP)

NEW DRAINAGE OVERFLOW CONNECTION FROM SOUTHWEST PARKING LOT
DRYWELL DRAINAGE SYSTEM INTO POSITIVE DRAINAGE CONVEYANCE
SYSTEM TO NASSAU COUNTY RECHARGE BASIN NO. 53



**NOTE: SEE PAGE C100 FOR
NOTES AND LEGEND**

538 Broad Hollow Road, 4th Floor East
Melville, NY 11747
631.756.8000 • www.h2m.com

CONSULTANT

[illegible]

R. JOEL RICHARDSON, P.E.

DESIGNED BY: JMT	DRAWN BY: JMT/MRO	CHECKED BY: BJM	REVIEWED BY: RJR
PROJECT NO.: LVSC 2301	DATE: 10/05/2024	SCALE: AS SHOWN	

CLIENT **Las Vegas Sands Corp.**

Sands New York



**1255 Hempstead Turnpike,
Uniondale, NY 11553**

**NCTM: Sec. 44, Block F, Lots
351, 401, 402, 411, 412, & 415**

CONTRACT

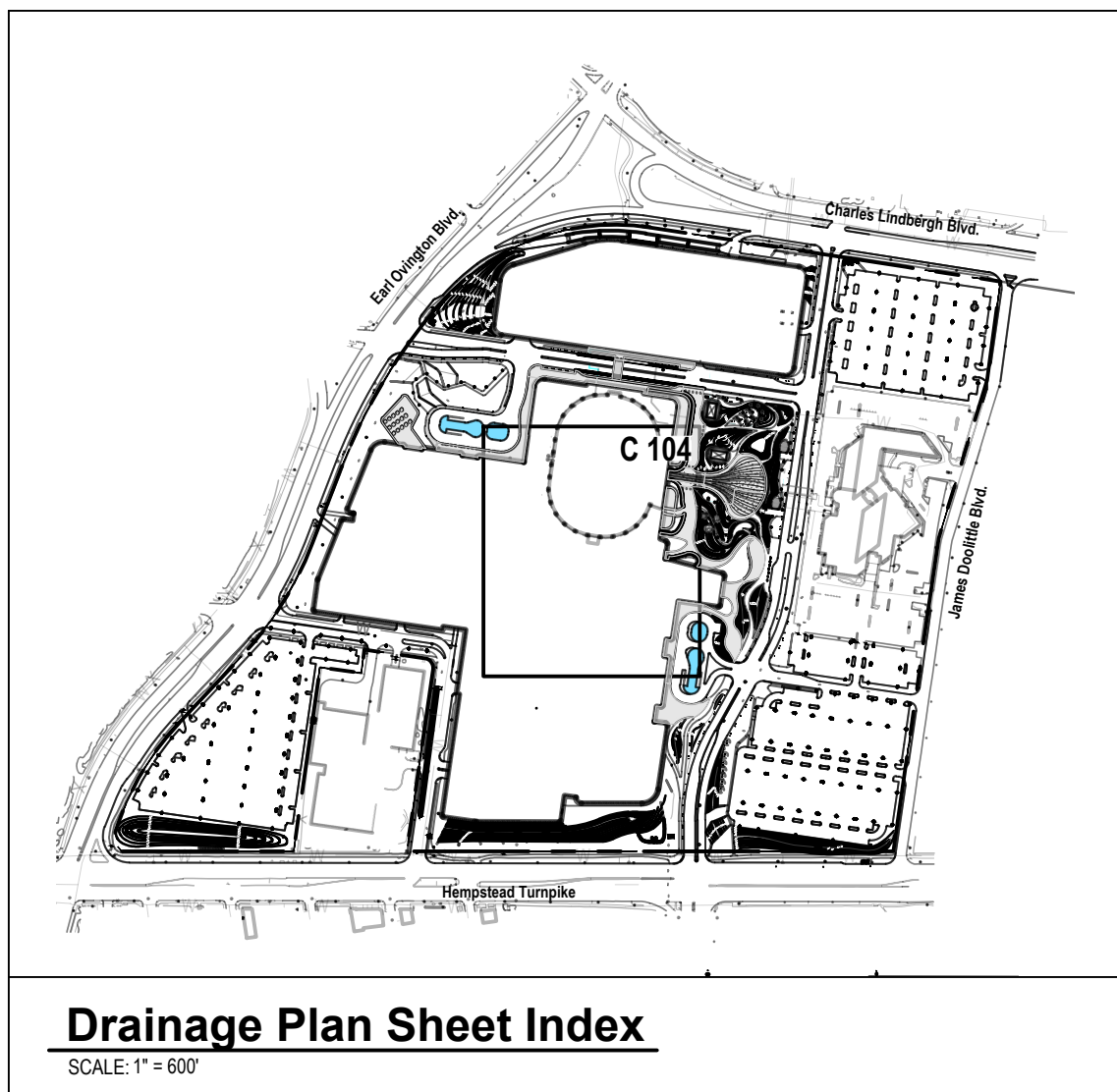
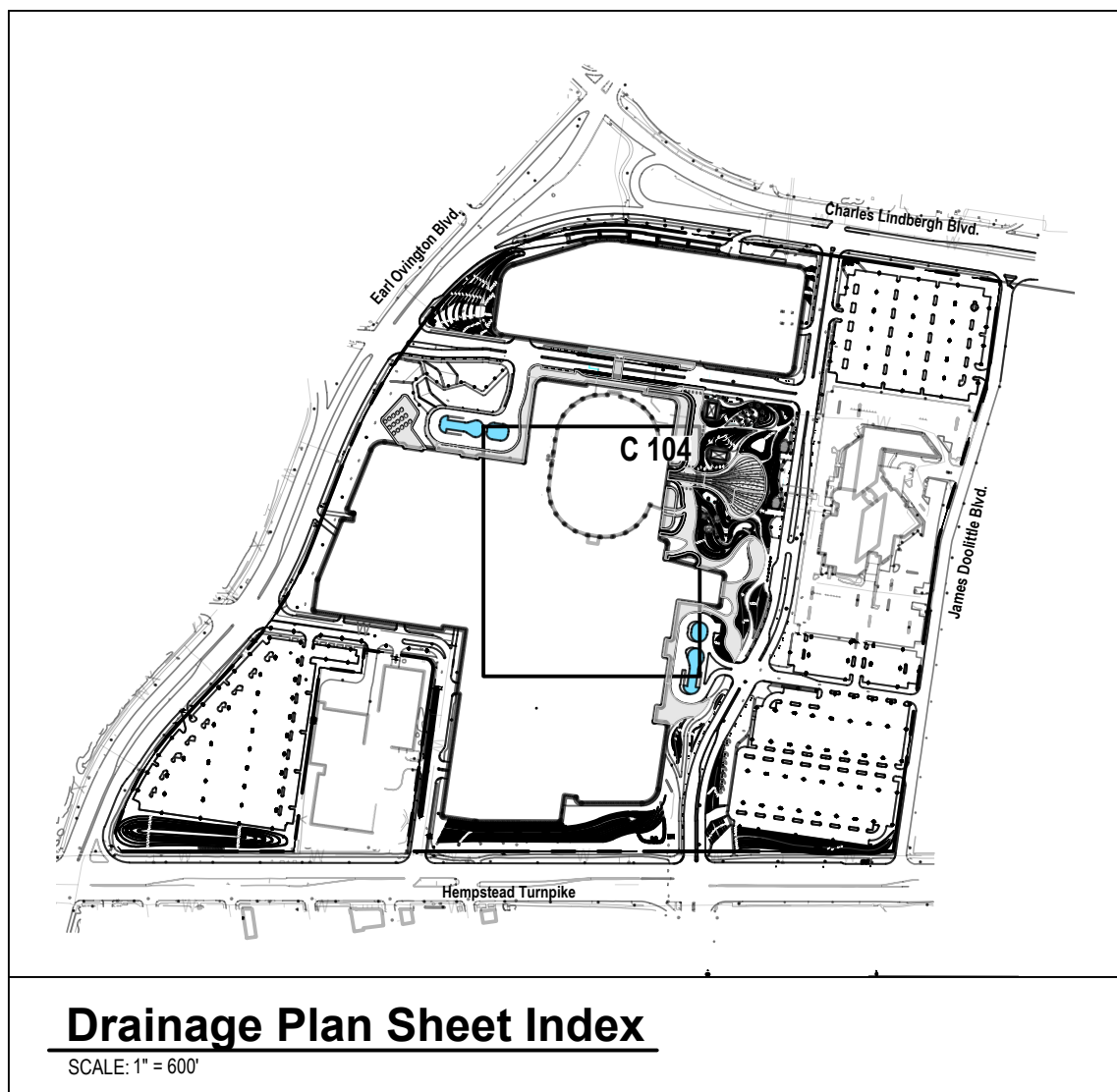
REGULATORY REVIEW

SHEET TITLE

**GRADING AND
DRAINAGE PLAN -
WEST**

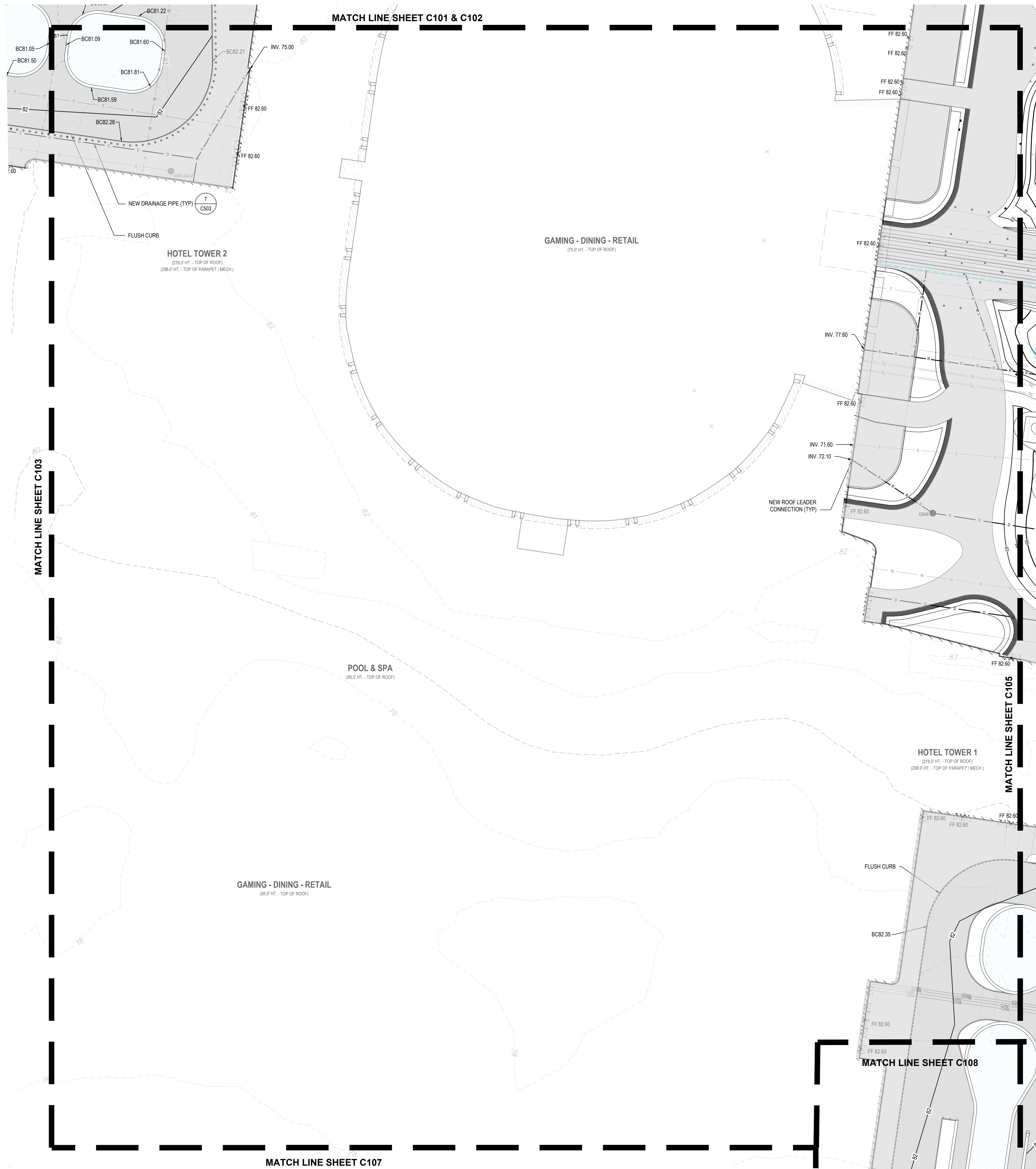
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C 103.00

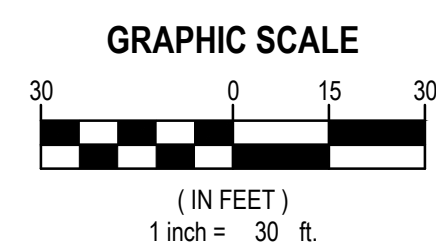


Drainage Plan Sheet Index

SCALE: 1" = 600'



**NOTE: SEE PAGE C100 FOR
NOTES AND LEGEND**

[illegible]

CONSULTANTS

[illegible]

R. JOEL RICHARDSON, P.E.
NY PROFESSIONAL ENGINEER Lic. No. 069970

"IN ACCORDANCE WITH ARTICLE 161, SECTION 12310-01 OF THE WISCONSIN EDUCATION LAW, ACTUATION OF THIS DOCUMENT EXCEPT BY LICENSED PROFESSIONAL IS ILLEGAL."			
DESIGNED BY: JMT	DRAWN BY: JMT/MRO	CHECKED BY: BJM	REVIEWED BY: RJR
PROJECT No.: LVSC 2301	DATE: 10/05/2024	SCALE: AS SHOWN	

CLIENT **Las Vegas Sands Corp.**

Sands New York



1255 Hempstead Turnpike,
Uniondale, NY 11553

**NCTM: Sec. 44, Block F, Lots
351, 401, 402, 411, 412, & 415**

CONTRACT

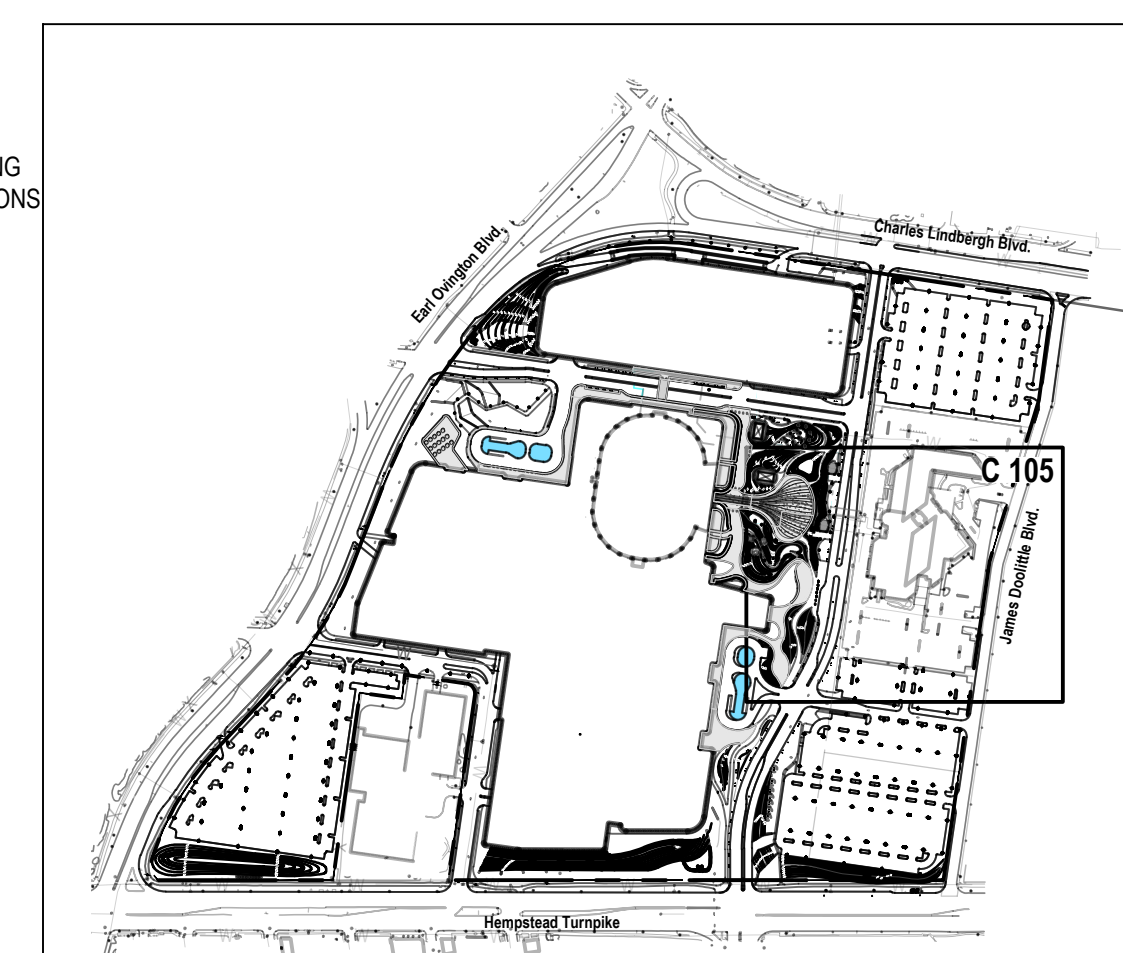
REGULATORY REVIEW

SHEET TITLE

GRADING AND DRAINAGE PLAN - EAST

DRAWING No.

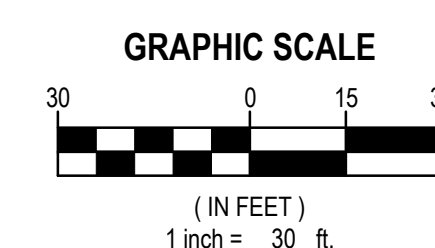
C 105.00



Drainage Plan Sheet Index

SCALE: 1" =

**NOTE: SEE PAGE C100 FOR
NOTES AND LEGEND**



MARK	DATE	DESCRIPTION
------	------	-------------

MATCH LINE SHEET C107

R. JOEL RICHARDSON, P.E.

NY PROFESSIONAL ENGINEER Lic. No. 0669970			
BECU MIL SECTION 1209 OF THE NYS EDUCATION LAW, VIOLATION OF THIS DOCUMENT SUBJECT BY LEASING			
DRAWN BY:	CHECKED BY:	REV:	

JMT	JMT/MRO	BJM	
-----	---------	-----	--

PROJECT No.: LVSC 2301	DATE: 10/05/2024	SCALE: AS S
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Las Vegas Sands Corp.

Sands New York



**1255 Hempstead Turnpike,
Uniondale, NY 11553**

**ICTM: Sec. 44, Block F, Lots
51, 401, 402, 411, 412, & 415**

CONTRACT

REGULATORY REVIEW

SHEET TITLE

**GRADING AND
DRAINAGE PLAN -
SOUTHWEST**

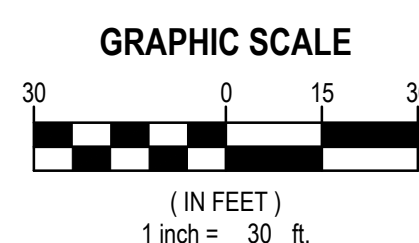
DRAWING NO.

C 106.00



SCALE: 1" = 600'

**NOTE: SEE PAGE C100 FOR
NOTES AND LEGEND**





MARK</

CLIENT **Las Vegas Sands Corp.**



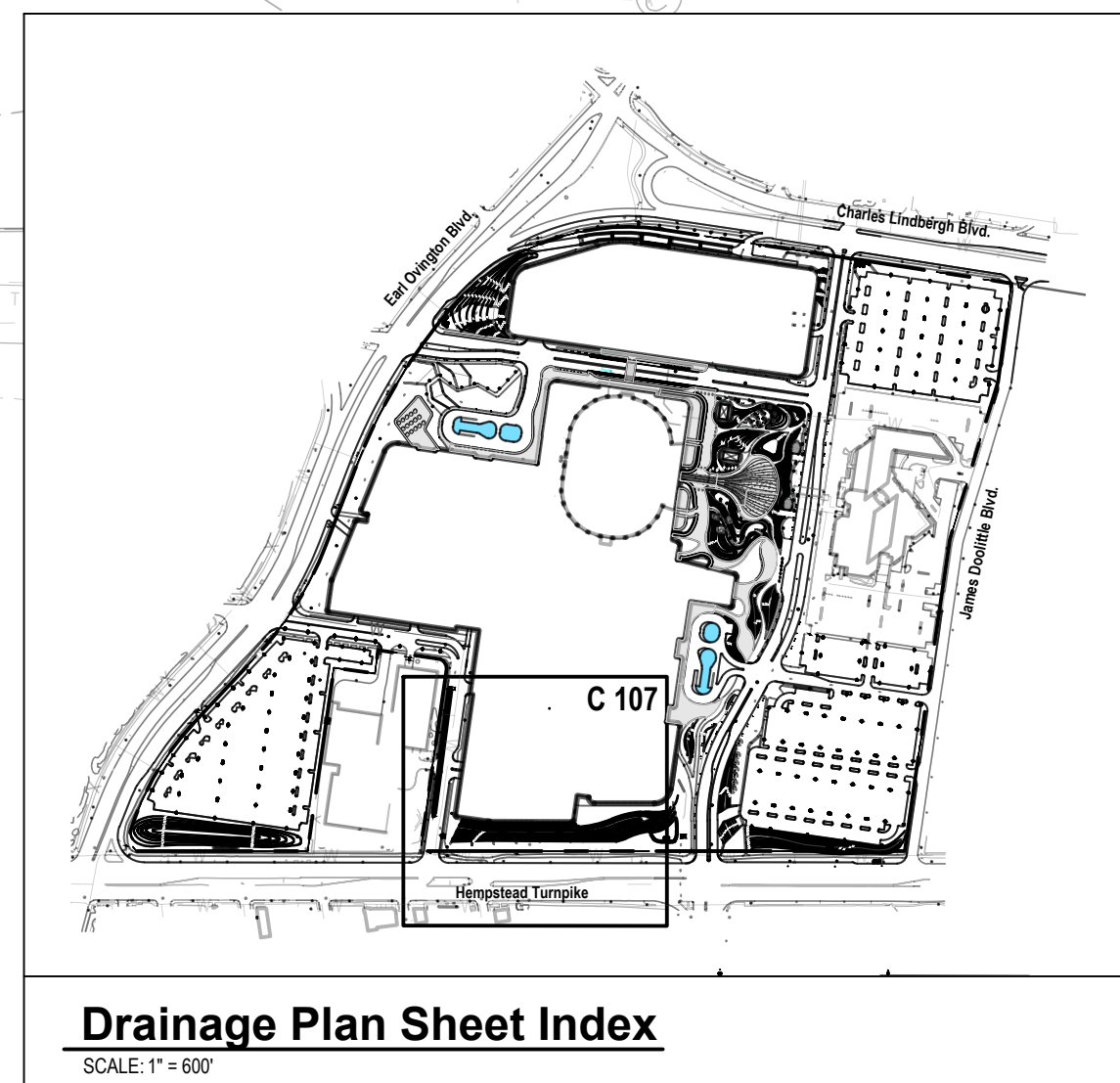
Sands
NEW YORK

CONTRACT

SHEET TITLE

**GRADING AND
DRAINAGE PLAN -
SOUTH**

DRAWING No. **C 107.00**



X:\LVSC\Las Vegas Sands\LVSC2001\Nashua\H0102-BNA\OOD\Con-Drawings\H04 - DRAINAGE AND DRAINAGE EPLAN\New\Last Modified: Sep 10, 2024 - 10:47am Printed: Sep 30, 2024 - 4:59pm By: asacmsh

DRAINAGE STRUCTURE SCHEDULE: MAIN LINE OF WEST SIDE - DRAWING C 101.00, C 103.00, C 107.00, C 108.00						
STRUCT. NUMBER	STRUCTURE TYPE	R/M/TC ELEVATION	TOP OF STRUCTURE ELEVATION	BOTTOM OF STRUCTURE ELEVATION	EFF. DEPTH	INVERT ELEVATIONS
DA1	4" Ø MH	82.00	-----	-----	-----	W 76.25 (18") E 76.35 (10")
DA2	4" Ø MH	81.00	-----	-----	-----	S 75.86 (18")
DA3	4" Ø MH	84.50	-----	-----	-----	N, E 75.50 (18") W 75.40 (18") S 76.70 (8")
DA4	4" Ø MH	87.00	-----	-----	-----	W 75.06 (18") E 75.16 (18") S 76.70 (8")
DA5	4" Ø MH	87.00	-----	-----	-----	W 74.67 (18") E 74.77 (18") S 76.70 (8")
DA6	12" Ø DRYWELL W/ SOLID COVER	84.00	82.00	59.00	14.50	NE 74.40 (18") SW 73.95 (18") S 73.95 (18")
DA7	12" Ø DRYWELL W/ OPEN GRATE	83.00	81.00	59.00	14.50	NE 73.50 (18") S 73.95 (18")
DA8	12" Ø DRYWELL W/ SOLID COVER	87.10	85.00	63.00	10.50	N 73.50 (18") S 73.95 (18")
DA9	12" Ø DRYWELL W/ SOLID COVER	82.00	80.00	59.00	14.50	N 73.50 (18") S 73.95 (18") E 73.50 (18")
DA10	12" Ø DRYWELL W/ SOLID COVER	82.30	80.00	59.00	14.50	N 73.50 (18") S 73.50 (18") W 73.95 (18") E 78.10 (10")
DA11	12" Ø DRYWELL W/ SOLID COVER	81.00	79.00	59.00	14.50	N 73.50 (18") S 73.95 (18") W 73.95 (18") W 73.50 (18") S 73.95 (18")
DA12	12" Ø DRYWELL W/ OPEN GRATE	81.30	79.00	59.00	14.50	W 73.50 (18") S 73.95 (18")
DA13	12" Ø DRYWELL W/ SOLID COVER	80.80	78.00	59.00	14.50	N 73.50 (18") S 73.95 (18") W 73.95 (18") E 73.50 (18")
DA14	12" Ø DRYWELL W/ SOLID COVER	81.00	79.00	59.00	14.50	W 73.95 (18") E 73.50 (18")
DA15	12" Ø DRYWELL W/ SOLID COVER	81.50	79.00	59.00	14.50	N 73.95 (18") S 73.50 (18") W 73.95 (18")
DA16	12" Ø DRYWELL W/ SOLID COVER	80.55	78.00	59.00	14.50	N 73.50 (18") S 73.95 (18") E 73.50 (18")
DA17	12" Ø DRYWELL W/ SOLID COVER	80.55	78.00	59.00	14.50	NW 73.50 (18") SW 73.95 (18") N 73.50 (18")
DA18	12" Ø DRYWELL W/ OPEN GRATE	80.25	78.00	59.00	14.50	SW 74.20 (24") E 73.50 (18")
DA19	12" Ø DRYWELL W/ SOLID COVER	81.75	79.00	59.00	14.50	N 73.95 (18") E 73.50 (24") W 73.95 (24")
DA20	12" Ø DRYWELL W/ SOLID COVER	81.10	79.00	59.00	14.50	W 73.95 (24") E 73.50 (24")
DA21	12" Ø DRYWELL W/ SOLID COVER	80.25	78.00	59.00	14.50	W 73.95 (24") E 73.50 (24")
DA22	12" Ø DRYWELL W/ SOLID COVER	80.75	78.00	59.00	14.50	W 74.20 (24") NE 73.50 (24")
DA23	4" Ø MH	82.09	-----	-----	-----	N 76.27 (18") E 76.30 (12") S 76.30 (12") SE 76.37 (12")
DA24	4" Ø MH	82.55	-----	-----	-----	N 76.00 (10") W 75.90 (24") S 76.00 (18") E 76.00 (12")
DA25	CATCH BASIN	81.46	-----	-----	-----	N 76.30 (18") S 76.40 (10")
DA26	CATCH BASIN	81.46	-----	-----	-----	N 75.80 (18") S 75.90 (18") S 75.69 (18")
DA27	4" Ø MH	82.12	-----	-----	-----	W 75.59 (24") E 75.69 (24")
DA28	4" Ø MH	82.40	-----	-----	-----	N 77.25 (10") W 75.20 (24") E 75.30 (24") S 75.30 (12")
DA29	CATCH BASIN	81.78	-----	-----	-----	N 76.50 (18")
DA30	CATCH BASIN	81.76	-----	-----	-----	N 75.80 (18") S 75.90 (18")
DA31	4" Ø MH	82.40	-----	-----	-----	N 76.40 (10") S 75.70 (18") W 74.40 (24") E 74.50 (24")
DA32	12" Ø DRYWELL W/ SOLID COVER	82.00	80.00	59.00	14.50	N 73.95 (24") E 73.95 (24") N 73.55 (24") W 73.65 (18") E 73.55 (24") S 73.05 (36")
DA34	CATCH BASIN	78.14	-----	-----	-----	E 74.13 (18")
DA35	CATCH BASIN	78.32	-----	-----	-----	E 73.76 (18")
DA36	5" Ø MH	79.15	-----	-----	-----	N 72.60 (36") S 72.50 (36") W 73.50 (18")
DA37	CATCH BASIN	79.96	-----	-----	-----	W 76.50 (18")
DA38	5" Ø MH	79.72	-----	-----	-----	W 71.36 (36") N 71.46 (36") E 73.00 (18")
DA39	5" Ø MH	79.89	-----	-----	-----	E 68.82 (36") S 68.72 (36") W EX. TBD E 67.7 (18") N 67.7 (36") S 67.2 (42")
DA40	5" Ø MH	81.50	-----	-----	-----	N 66.16 (42") S 66.06 (42")
DA41	5" Ø MH	82.00	-----	-----	-----	N 65.78 (42") S 65.68 (42")
DA42	5" Ø MH	82.30	-----	-----	-----	N 65.21 (42") S 65.11 (48")
DA43	5" Ø MH	82.00	-----	-----	-----	N 64.60 (48") S 64.50 (48") S 65.63 (15")
DA44	5" Ø MH	82.00	-----	-----	-----	N 64.17 (48") S 64.07 (48")
DA45	CATCH BASIN	77.92	-----	-----	-----	N 63.95 (48") E 63.85 (48") W 64.00 (18")
DA46	5" Ø MH	77.81	-----	-----	-----	N 64.72 (18")
DA48	CATCH BASIN	77.89	-----	-----	-----	NW 68.50 (18") E 62.56 (60")
DA49	EXISTING MH	77.56	-----	-----	-----	W 72.65 (24") E 69.09 (24")
DA50	EXISTING MH	78.65	-----	-----	-----	N 65.40 (15") W 63.36 (48") E 63.26 (48")
DA51	4" Ø MH	78.88	-----	-----	-----	N 73.76 (15") S 73.66 (15")
DA52	CATCH BASIN	77.86	-----	-----	-----	E 66.00 (18")
DA53	CATCH BASIN	77.72	-----	-----	-----	W 65.54 (18") E 65.64 (18")
DA54	CATCH BASIN	77.62	-----	-----	-----	N, S 65.00 (18") W 62.41 (48") E 62.31 (48")
DA55	4" Ø MH		-----	-----	-----	N 63.70 (12") W 61.20 (48") S 61.10 (48")
DA56	4" Ø MH		-----	-----	-----	W 64.00 (18") E 74.50 (10")
DA57	CATCH BASIN	78.37	-----	-----	-----	N 61.74 (7' BOX CULVERT) S 61.74 (8' BOX CULVERT)
DA58	CONNECT TO EXIST	78.75	-----	-----	-----	W 68.40 (15")
DA59	CATCH BASIN	78.47	-----	-----	-----	W 69.95 (15")
DA60	CATCH BASIN	76.79	-----	-----	-----	E 68.00 (15")
DA61	CULVERT MH	76.99	-----	-----	-----	N, S 60.07 (8' BOX VULVERT) E 68.5 (15")
DA62	CATCH BASIN	76.85	-----	-----	-----	N, S 60.04 (8' BOX VULVERT)
DA63	CULVERT MH	77.56	-----	-----	-----	W 59.65 (8' BOX CULVERT) N 67.00 (18") S 59.65 (8' BOX CULVERT) E 59.65 (60")
DA64	CULVERT MH	76.65	-----	-----	-----	

DRAINAGE STRUCTURE SCHEDULE: MAIN LINE OF EAST SIDE - DRAWING C 102.00, C 104.00, C 105.00, C 108.00						
STRUCT. NUMBER	STRUCTURE TYPE	R/M ELEVATION	TOP OF STRUCTURE ELEVATION	BOTTOM OF STRUCTURE ELEVATION	EFF. DEPTH	INVERT ELEVATIONS
DB1	4" Ø MH	81.45	-----	-----	-----	S 77.45 (10") E 77.10 (18")
DB2	4" Ø MH	81.22	-----	-----	-----	W 76.37 (18") E 76.12 (18") S 76.40 (10")
DB3	4" Ø MH	81.00	-----	-----	-----	NW 74.50 (18") W 75.00 (18") E 74.30 (24")
DB4	4" Ø MH	81.72	-----	-----	-----	S 75.45 (10") W 73.44 (24") E 73.34 (24")
DB5	4" Ø MH	81.38	-----	-----	-----	W 72.75 (24") S 72.65 (24")
DB6	TYPE 13 CATCH BASIN	81.25	-----	-----	-----	N 72.56 (24") S 72.46 (24")
DB7	CATCH BASIN	81.25	-----	-----	-----	E 76.00 (18")
DB8	4" Ø MH	81.44	-----	-----	-----	N 72.26 (24") S 72.16 (24") W 75.00 (18") N 71.00 (24") S 70.50 (36") W 73.45 (10") E 74.75 (24")
DB9	4" Ø MH	81.10	-----	-----	-----	N 70.18 (36") S 70.08 (36")
DB10	TYPE 13 CATCH BASIN	80.79	-----	-----	-----	S 74.16 (15")
DB11	CATCH BASIN	80.79	-----	-----	-----	E 77.20 (18")
DB12	CATCH BASIN	81.19	-----	-----	-----	N 76.96 (18") S 76.96 (18") W 74.45 (18") E 74.26 (24")
DB14	CATCH BASIN	81.39	-----	-----	-----	N 77.94 (18")
DB15	4" Ø MH	81.92	-----	-----	-----	W 73.89 (24") E 73.79 (24") N 74.00 (12") S 73.89 (12")
DB16	4" Ø MH	81.37	-----	-----	-----	N 69.60 (36") NW 74.50 (18") W 71.60 (24") S 69.10 (42")
DB17	CATCH BASIN	81.37	-----	-----	-----	S 76.00 (18")
DB18	TYPE 13 CATCH BASIN	80.79	-----	-----	-----	N 68.37 (36") S 68.27 (36")
DB19	4" Ø MH	81.15	-----	-----	-----	W 74.50 (10") N 67.79 (42") S 67.69 (42") NW 74.50 (18")
DB20	4" Ø MH	81.89	-----	-----	-----	W 71.00 (18") N 66.51 (42") S 66.01 (48")
DB21	4" Ø MH	81.61	-----	-----	-----	N 65.69 (48") SE 65.59 (48")
DB22	4" Ø MH	81.65	-----	-----	-----	N 65.45 (48") S 64.45 (60")
DB23	CATCH BASIN	81.67	-----	-----	-----	E 71.39 (18")
DB24	TYPE 13 CATCH BASIN	81.09	-----	-----	-----	N 64.37 (60") S 64.27 (60")
DB25	5" Ø MH	81.25	-----	-----	-----	W 70.00 (18") N 69.96 (60") S 64.04 (60") NW 69.96 (18")
DB26	5" Ø MH	80.50	-----	-----	-----	W 69.19 (18") N 63.81 (60") S 63.71 (60")
DB27	5" Ø MH	78.85	-----	-----	-----	E ~70.00 (18") N 63.30 (60") S 63.20 (60")
DB28	CATCH BASIN	78.55	-----	-----	-----	E 68.54 (18")
DB29	CATCH BASIN	78.08	-----	-----	-----	W 67.18 (18") E 67.08 (18")
DB30	5" Ø MH	78.35	-----	-----	-----	E ~70.00 (30") N 63.03 (60") S 62.93 (60") W 66.90 (18")
DB31	5" Ø MH	78.34	-----	-----	-----	W 67.00 (18") N 62.68 (60") S 62.61 (60")
DB32	4" Ø MH	77.99	-----	-----	-----	N 74.54 (18") W 74.44 (18")
DB33	CATCH BASIN	77.75	-----	-----	-----	S 74.74 (18")
DB34	4" Ø MH	78.23	-----	-----	-----	E 69.26 (18") W 68.26 (18") N 72.00 (18")
DB35	CATCH BASIN	77.90	-----	-----	-----	N 74.00 (18") S 72.46 (18")
DB36	CATCH BASIN	77.55	-----	-----	-----	S 74.16 (18")
DB37	5" Ø MH	79.59	-----	-----	-----	N 62.16 (60") S 62.06 (60") E 66.00 (18")
DB38	CATCH BASIN	79.22	-----	-----	-----	S 68.45 (18")
DB39	CATCH BASIN	79.22	-----	-----	-----	N 67.50 (18") S 67.40 (18")
DB40	CATCH BASIN	78.97	-----	-----	-----	E 65.25 (18")
DB41	4" Ø MH	79.27	-----	-----	-----	N, W 64.88 (18") E 64.78 (18")
DB42	TYPE 13 CATCH BASIN	78.54	-----	-----	-----	N 61.53 (60") S 61.43 (60") W 64.06 (18")
DB43	5" Ø MH	78.40	-----	-----	-----	N 61.31 (60") S 61.21 (60")
DB44	CATCH BASIN	75.81	-----	-----	-----	S 63.34 (18")
DB45	5" Ø MH	78.43	-----	-----	-----	N 60.15 (60") S 80.05 (60") W 63.00 (18")
DB46	CATCH BASIN	75.50	-----	-----	-----	W 71.76 (18")
DB47	4" Ø MH	78.90	-----	-----	-----	N, NW 70.28 (18") S 68.18 (18")
DB48	4" Ø MH	82.30	-----	-----	-----	W, E 74.00 (18")

DRAINAGE STRUCTURE SCHEDULE: JAMES DOOLITTLE BOULEVARD - DRAWING C 102.00						
STRUCT. NUMBER	STRUCTURE TYPE	R/M/TC ELEVATION	TOP OF STRUCTURE ELEVATION	BOTTOM OF STRUCTURE ELEVATION	EFF. DEPTH	INVERT ELEVATIONS
DF1	CATCH BASIN	81.19	-----	-----	-----	E 77.82 (18")
DF2	4" Ø MH	80.60	-----	-----	-----	W 77.68 (18") S 77.08 (15")
DF3	CATCH BASIN	79.69	-----	-----	-----	S 77.08 (15")
DF4	CATCH BASIN	80.30	-----	-----	-----	N, W, E 76.90 (15")
DF5	4" Ø MH	80.67	-----	-----	-----	S 76.47 (18") N 75.64 (18") S 75.74 (18")
DF6	4" Ø MH	81.15	-----	-----	-----	N 74.88 (18") S 74.78 (18")
DF7	4" Ø MH	80.71	-----	-----	-----	E 74.30 (18")
DF8	4" Ø MH	80.69	-----	-----	-----	

DRAINAGE STRUCTURE SCHEDULE: BUS DEPOT RAMP - DRAWING C 101.00					
STRUCT. NUMBER	STRUCTURE TYPE	R/M/TC ELEVATION	TOP OF STRUCTURE ELEVATION	BOTTOM OF STRUCTURE ELEVATION	INVERT ELEVATIONS
DG1	TRENCH DRAIN	72.00	-----	71.00	W 70.00 (6")
DG2	5' CONCRETE LEACHING GALLEY	73.00	70.00	65.00	E 69.90 (6")
DG3	TRENCH DRAIN	64.00	-----	63.00	E 60.60 (6")
DG4	TRENCH DRAIN	64.00	-----	64.00	W 60.60 (6")
DG5	TRENCH DRAIN	64.00	-----	65.00	N 60.60 (6")
DG6	5' CONCRE				

Page 10 of 10

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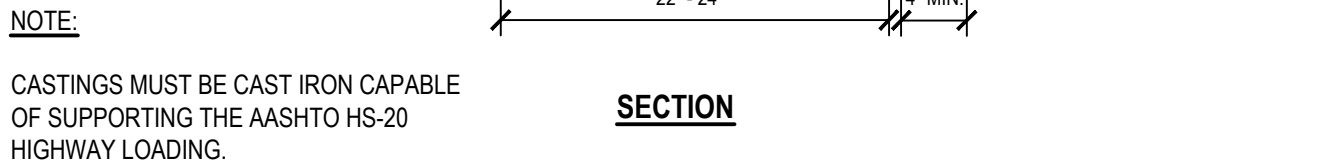
CLIENT **Las Vegas Sands Corp.**



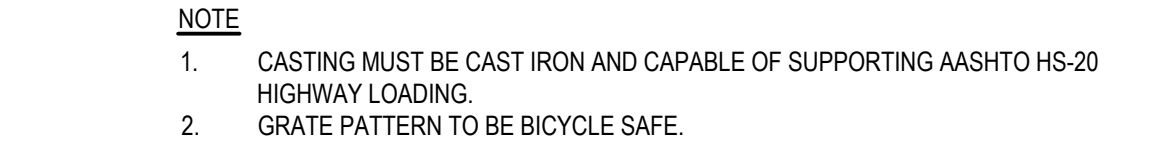
DRAWING NO.

XXL VSC (Las Vegas Sands) | L VSC2301 (Nassau Hue) | 02-BIM-CADD | Con-Docs | x/1504 - GRADING AND DRAINAGE PLAN | dwg | Last Modified: Sep 18, 2024 - 10:47am | Plotted on: Sep 30, 2024 - 4:59pm | By acucinellb

DRAINAGE STRUCTURE SCHEDULE: SOUTH EAST PARKING - DRAWING C 108.00						
STRUCT. NUMBER	STRUCTURE TYPE	RIM/T/C ELEVATION	TOP OF STRUCTURE ELEVATION	BOTTOM OF STRUCTURE ELEVATION	EFF. DEPTH	INVERT ELEVATIONS
DD1	CATCH BASIN	74.53	.....	.....		N 71.28(15')
DD2	4' Ø MANHOLE W/ SOLID COVER	74.69	.....	.....		S 71.16 (15') W 70.91 (18')
DD3	CATCH BASIN	74.53	.....	.....		N 69.96 (18')
DD4	4' Ø MANHOLE W/ SOLID COVER	74.68	.....	.....		S, E 69.73 (16') W 69.23 (24')
DD5	12' Ø DRYWELL W/ SOLID COVER	75.59	73.00	58.00	15.50	E 68.90 (24') NW 70.50 (24') W 71.00 (15')
DD6	12' Ø DRYWELL W/ SOLID COVER	76.00	74.00	58.00	15.50	E 70.80 (15')
DD7	12' Ø DRYWELL W/ SOLID COVER	76.44	74.00	58.00	15.50	N, W 71.20 (15') E, W 71.00 (15')
DD8	12' Ø DRYWELL W/ SOLID COVER	75.99	74.00	58.00	15.50	SE 70.80 (24') NW 71.00 (24') NE 71.00 (15')
DD9	12' Ø DRYWELL W/ SOLID COVER	76.46	74.00	58.00	15.50	SE 70.75 (24') NW 71.00 (24') W, NE 71.00 (15')
DD10	12' Ø DRYWELL W/ SOLID COVER	76.85	75.00	58.00	15.50	SE, E 70.80 (15') N 71.00 (15')
DD11	12' Ø DRYWELL W/ SOLID COVER	75.81	73.00	58.00	15.50	SW 70.80 (15') W 71.00 (15')
DD12	12' Ø DRYWELL W/ SOLID COVER	76.29	74.00	58.00	15.50	E, NW 70.80 (15') N, SW 71.00 (15')
DD13	12' Ø DRYWELL W/ SOLID COVER	76.94	75.00	58.00	15.50	SE 70.80 (24') NW 71.00 (24') SW, NE 71.00 (15')
DD14	12' Ø DRYWELL W/ SOLID COVER	76.36	74.00	58.00	15.50	N 71.00 (15')
DD15	12' Ø DRYWELL W/ SOLID COVER	76.75	74.00	58.00	15.50	S 70.80 (15') SW, SE 70.80 (15')
DD16	12' Ø DRYWELL W/ SOLID COVER	77.40	75.00	58.00	15.50	N, NW 71.00 (15') SE 70.80 (24')
DD17	12' Ø DRYWELL W/ SOLID COVER	76.84	75.00	58.00	15.50	NE 71.00 (24') S, SE 70.80 (15') SE 70.80 (15') W 71.00 (15')
DD18	12' Ø DRYWELL W/ SOLID COVER	77.22	75.00	58.00	15.50	N 71.00 (24') SW 70.80 (24') SE 70.80 (15') W 71.00 (15')
DD19	12' Ø DRYWELL W/ SOLID COVER	77.72	75.00	58.00	15.50	S, E 70.80 (15') N 71.00 (15')
DD20	12' Ø DRYWELL W/ SOLID COVER	76.90	75.00	58.00	15.50	S 70.80 (15') N 71.00 (15')
DD21	12' Ø DRYWELL W/ SOLID COVER	77.30	75.00	58.00	15.50	S 70.80 (24') NW 71.00 (24') SE 70.80 (15') N 71.00 (15')
DD22	12' Ø DRYWELL W/ SOLID COVER	77.40	75.00	58.00	15.50	S, SE 70.80 (15') N, NW 71.00 (15')
DD23	12' Ø DRYWELL W/ SOLID COVER	77.77	75.00	58.00	15.50	SE 70.80 (24') N 71.00 (24')
DD24	12' Ø DRYWELL W/ SOLID COVER	78.16	76.00	58.00	15.50	W 71.00 (15') N 71.00 (15')
DD25	12' Ø DRYWELL W/ SOLID COVER	77.44	75.00	58.00	15.50	S, E 70.80 (15') S 70.80 (15')
DD26	12' Ø DRYWELL W/ SOLID COVER	77.90	76.00	58.00	15.50	NW 71.00 (15') S 70.80 (24')
DD27	12' Ø DRYWELL W/ SOLID COVER	78.49	76.00	58.00	15.50	N 71.00 (24') SE 70.80 (15') S 70.80 (15') NE 71.00 (15')
DD28	12' Ø DRYWELL W/ SOLID COVER	77.68	75.00	58.00	15.50	SE 70.80 (24') NW 71.00 (24') SE 70.80 (15') N 71.00 (15')
DD29	12' Ø DRYWELL W/ SOLID COVER	78.06	76.00	58.00	15.50	SW 70.80 (15') E 71.00 (15')
DD30	CATCH BASIN	76.00	.....	.....		N 72.75 (15')
DD31	4' Ø MANHOLE W/ SOLID COVER	76.10	.....	.....		S 72.70 (15')
DD32	CATCH BASIN	76.00	.....	.....		W 72.45 (18') N 71.50 (18')
DD33	4' Ø MANHOLE W/ SOLID COVER	76.12	.....	.....		S, E 71.27 (18') W 70.77 (24')
DD34	12' Ø DRYWELL W/ SOLID COVER	77.39	75.00	58.00	15.50	E 70.44 (24') NW 71.00 (24') SE 70.80 (15')
DD35	12' Ø DRYWELL W/ SOLID COVER	77.93	76.00	58.00	15.50	S 70.80 (24') N 71.00 (24')
DD36	12' Ø DRYWELL W/ SOLID COVER	77.96	76.00	58.00	15.50	S, SE 70.80 (24') W 73.50 (24') N, NW 71.00 (15')
DD37	12' Ø DRYWELL W/ SOLID COVER	78.15	76.00	58.00	15.50	S 70.80 (15') NE 71.00 (15')
DD38	12' Ø DRYWELL W/ SOLID COVER	78.52	76.00	58.00	15.50	S 70.80 (15') N 71.00 (15')
DD39	12' Ø DRYWELL W/ SOLID COVER	78.63	76.00	58.00	15.50	S, SE 70.80 (15') N, NW 71.00 (15')
DD40	12' Ø DRYWELL W/ SOLID COVER	78.71	76.00	58.00	15.50	S 70.80 (15') W 71.00 (15')
DD41	12' Ø DRYWELL W/ SOLID COVER	79.09	77.00	58.00	15.50	E, SW 70.80 (15')



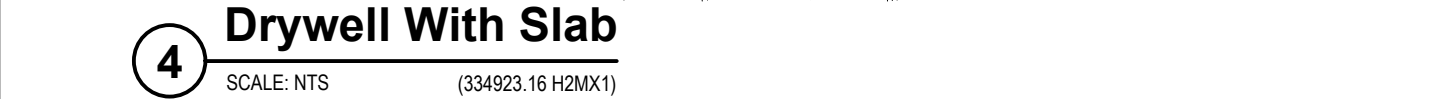
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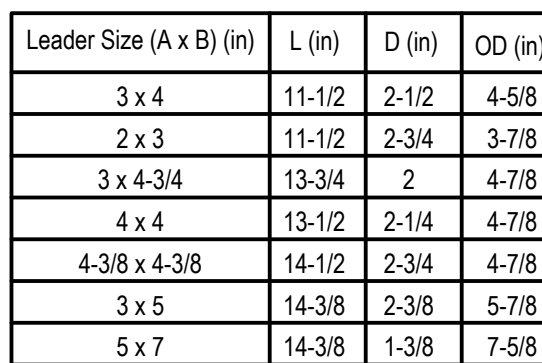
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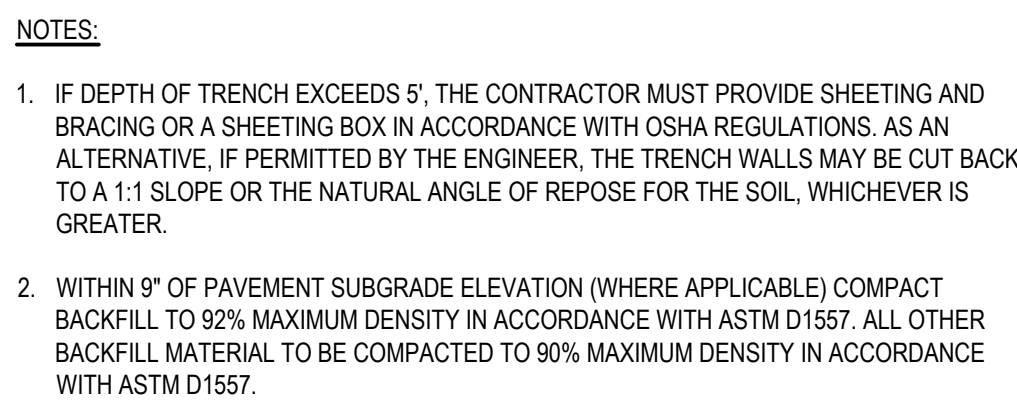
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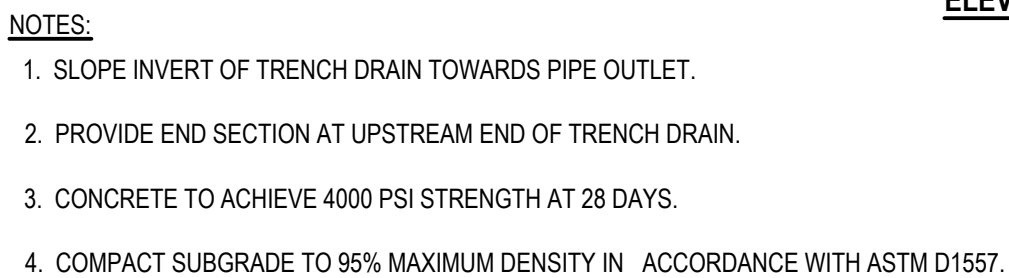
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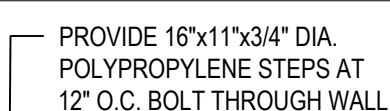
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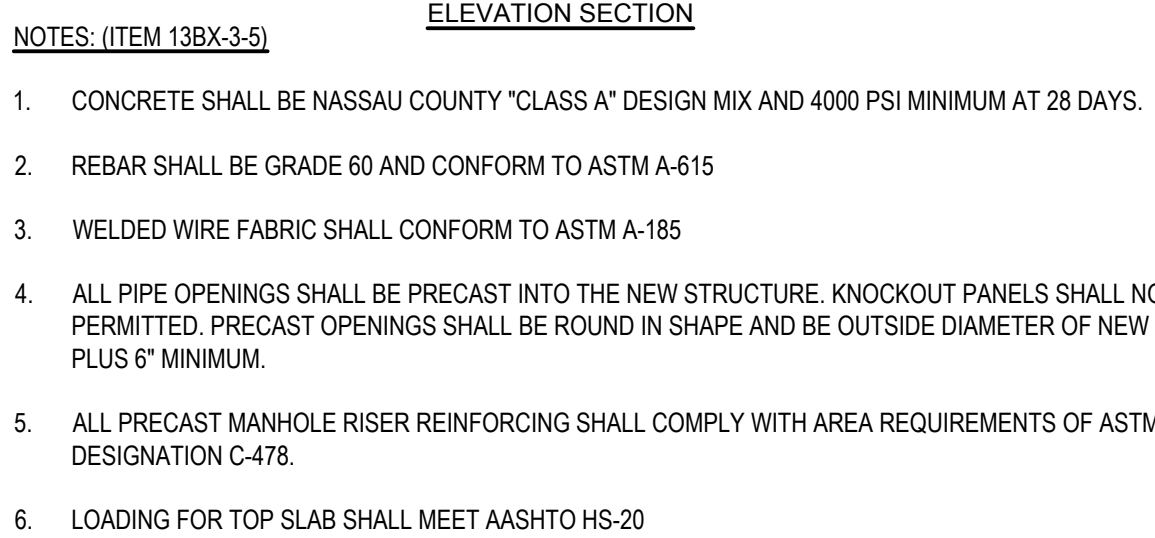
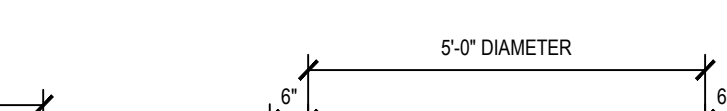
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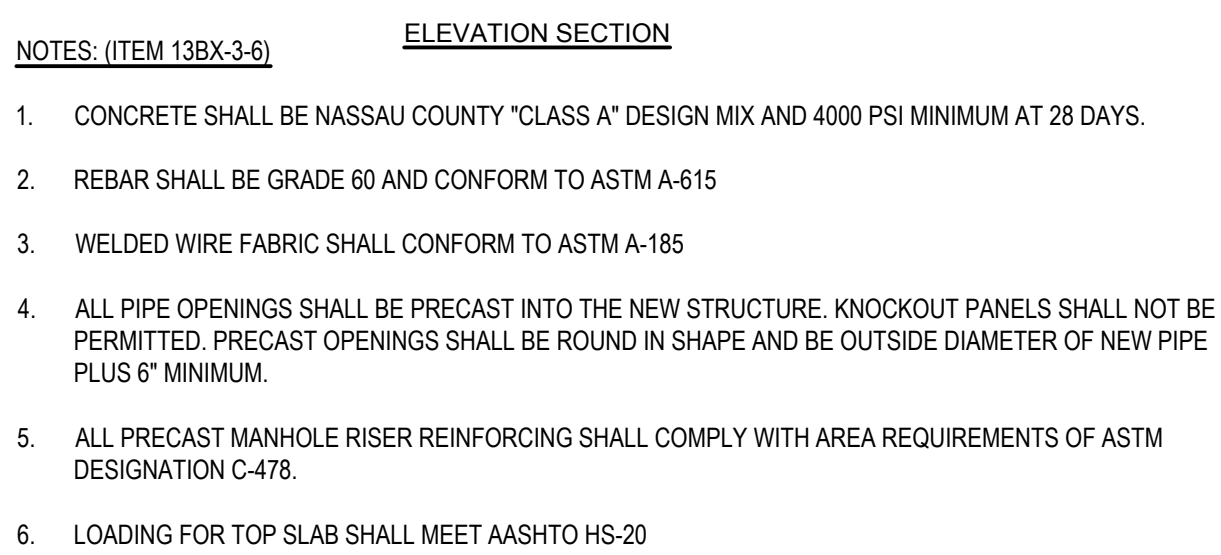
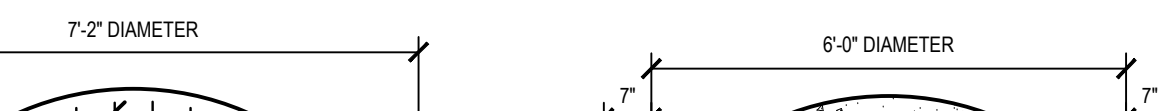
NOTES: (ITEM 138X-3-4)

1. CONCRETE SHALL BE NASSAU COUNTY "CLASS A" DESIGN MIX AND 4000 PSI MINIMUM AT 28 DAYS.
2. REBAR SHALL BE GRADE 60 AND CONFORM TO ASTM A-615
3. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185
4. ALL PIPE OPENINGS SHALL BE PRECAST INTO THE NEW STRUCTURE. KNOCKOUT PANELS SHALL NOT BE PERMITTED. PRECAST OPENINGS SHALL BE ROUND IN SHAPE AND BE OUTSIDE DIAMETER OF NEW PIPE PLUS 0" MINIMUM.
5. ALL PRECAST MANHOLE RISER REINFORCING SHALL COMPLY WITH AREA REQUIREMENTS OF ASTM DESIGNATION C-478.
6. LOADING FOR TOP SLAB SHALL MEET AASHTO HS-20

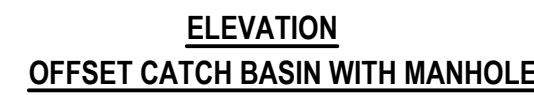
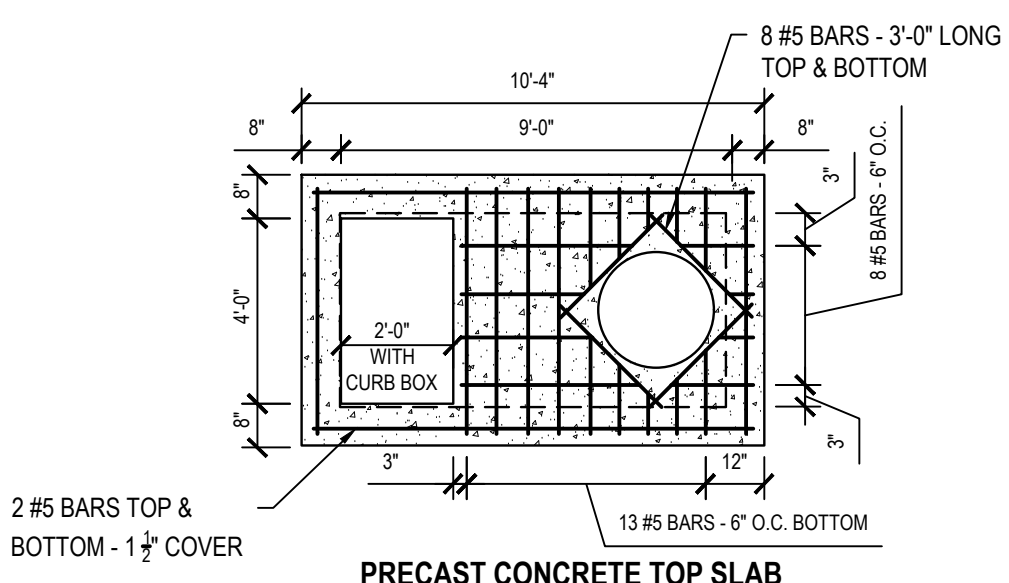
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SCALE: NTS 334913.13 HENP2



SCALE: NTS 334913.13 HEMP3



NTS (DETAIL #)



SCALE: NTS (334413.13 H2MX3

NTS (DETAIL #)

CONSULTANTS:

[illegible]

12/31/2020 EXP. DATE R. JOEL RICHARDSON, P.E. NY PROFESSIONAL ENGINEER Lic. No. 066970 "I ACCORDANCE WITH ARTICLE 17 OF THE EDUCATION AND TRAINING OF THE DOCUMENTS, I HEREBY CERTIFY THAT I AM A LICENSED PROFESSIONAL ENGINEER."			
DESIGNED BY: JMT	DRAWN BY: JMT/MRO	CHECKED BY: BJM	REVIEWED BY: RJR
PROJECT No.: LVSC 2301	DATE: 10/05/2024	SCALE: AS SHOWN	

CLIENT **Las Vegas Sands Corp.**

Sands New York



**1255 Hempstead Turnpike,
Uniondale, NY 11553**

**NCTM: Sec. 44, Block F, Lots
351, 401, 402, 411, 412, & 415**

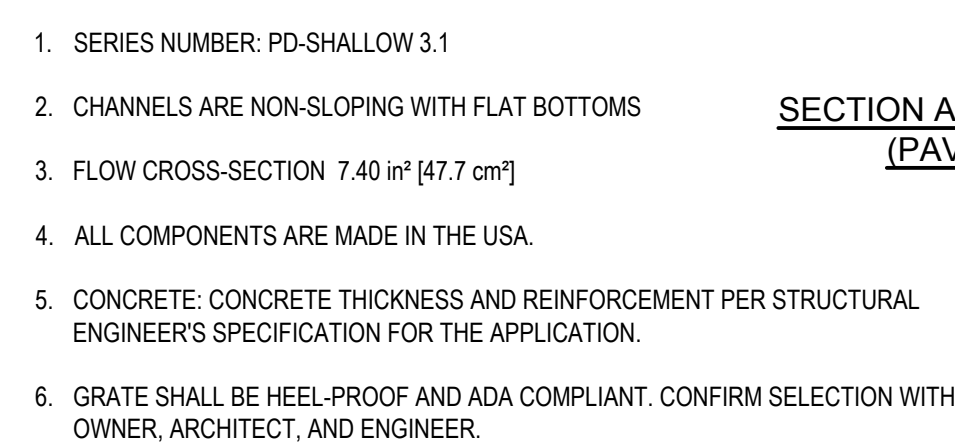
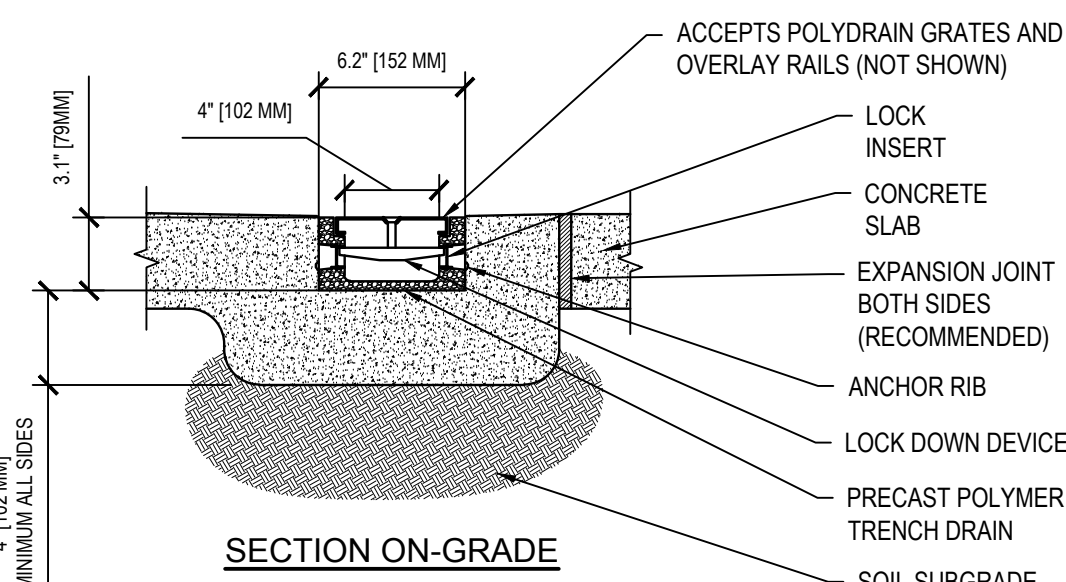
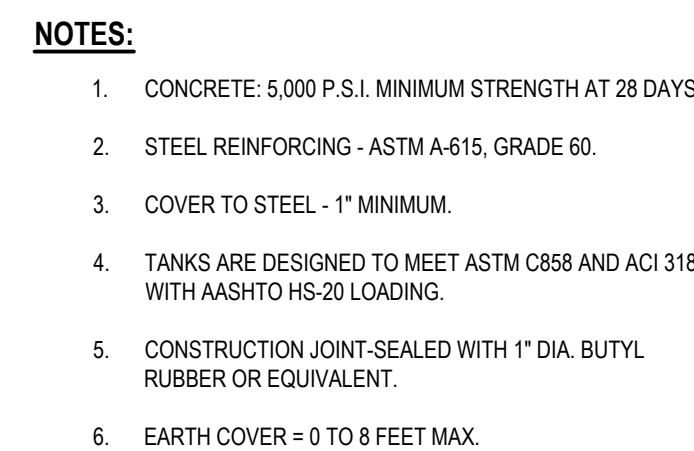
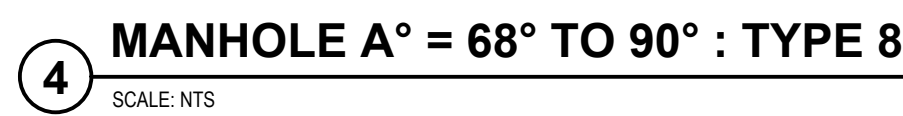
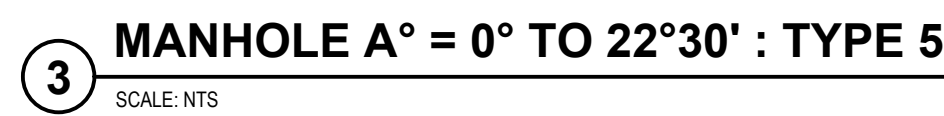
CONTRACT

STATUS	REGULATORY REVIEW
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SHEET TITLE

SITE DRAINAGE DETAILS

DRAWING No. **C 503.00**



Appendix I

Pre- & Post- Development Drainage Area **Map**

LEGEND

DESCRIPTION

SPOT ELEVATION
TOP AND BOTTOM CURB
ELEVATION
MAJOR CONTOUR
MINOR CONTOUR

SYMBOL

+121.50

TC140.00

BC139.50

240

241

BORING / TEST HOLE LOCATION

RIDGE LINE

CATCH BASIN

UTILITY MANHOLE

YARD INLET

ROOF LEADER

DRYWELL W/GRATE

DRYWELL W/ SOLID COVER

HYDRANT

UTILITY METER/VALVE

CLEAN OUT

DESCRIPTION

GROUND LIGHT
UTILITY POLE/GUY POLE
TRAFFIC SIGNAL POLE
TRAFFIC CONTROL BOX

LIGHT POLE W/FIXTURE(S)
FLOW ARROW

GAS LINE

SANITARY LINE

DRAINAGE LINE

ELECTRIC LINE

ROOF LEADER LINE

WATER LINE

SANITARY HOUSE

CONNECTION

SANITARY FORCEMAIN LINE

TELECOMMUNICATION LINE

HOT WATER LINE

CHILLED WATER LINE

SYMBOL

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DRAINAGE AREA BOUNDARY

DRAINAGE AREA
DB-PROP

DRAINAGE
AREA
DA-PROP

NEW PARKING
GARAGE

DRAINAGE
AREA
DC-PROP

EXISTING
MARRIOTT

NEW
INTEGRATED
RESORT

DRAINAGE
AREA
DF-PROP

DRAINAGE
AREA
DD-PROP

MSKCC

Glenn Curtis
Boulevard
(Nassau County Roadway)

James Doolittle Boulevard
(Nassau County Roadway)

Charles Lindbergh Boulevard
(Nassau County Roadway)

Earle Ovington Boulevard
(Nassau County Roadway)

East Gate Road
(Private Roadway)

Hempstead Turnpike
(NYS Route 24)

GRAPHIC SCALE
(IN FEET)
1 inch = 100 ft.

DESIGN POINT 1

CONSULTANTS:

MARK DATE DESCRIPTION



R. JOEL RICHARDSON, P.E.

DESIGNED BY: JMT DRAWN BY: JMT/MRO CHECKED BY: BJM REVIEWED BY: RJR
PROJECT NO: LVSC 2301 DATE: 10/05/2024 SCALE: AS SHOWN

CLIENT
Las Vegas Sands Corp.

Sands New York



1255 Hempstead Turnpike,
Uniondale, NY 11553
NCTM: Sec. 44, Block F, Lots
351, 401, 402, 411, 412, & 415

CONTRACT

STATUS

REGULATORY REVIEW

SHEET TITLE

POST - DEVELOPED
TRIBUTARY AREA MAP

DRAWING NO.

POST - DEV

Appendix J

Standards and Specifications for Soil and Erosion Control Practices

STANDARD AND SPECIFICATIONS FOR CONCRETE TRUCK WASHOUT



Definition & Scope

A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil.

Conditions Where Practice Applies

Washout facilities shall be provided for every project where concrete will be poured or otherwise formed on the site. This facility will receive highly alkaline wash water from the cleaning of chutes, mixers, hoppers, vibrators, placing equipment, trowels, and screeds. Under no circumstances will wash water from these operations be allowed to infiltrate into the soil or enter surface waters.

Design Criteria

Capacity: The washout facility should be sized to contain solids, wash water, and rainfall and sized to allow for the evaporation of the wash water and rainfall. Wash water shall be estimated at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum. The minimum size shall be 8 feet by 8 feet at the bottom and 2 feet deep. If excavated, the side slopes shall be 2 horizontal to 1 vertical.

Location: Locate the facility a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Prevent surface water from entering the structure except for the access road. Provide appropriate access with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.

Liner: All washout facilities will be lined to prevent

leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

If pre-fabricated washouts are used they must ensure the capture and containment of the concrete wash and be sized based on the expected frequency of concrete pours. They shall be sited as noted in the location criteria.

Maintenance

- All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip.
- Accumulated hardened material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of off site.
- Dispose of the hardened material off-site in a construction/demolition landfill. On-site disposal may be allowed if this has been approved and accepted as part of the projects SWPPP. In that case, the material should be recycled as specified, or buried and covered with a minimum of 2 feet of clean compacted earthfill that is permanently stabilized to prevent erosion.
- The plastic liner shall be replaced with each cleaning of the washout facility.
- Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.

STANDARD AND SPECIFICATIONS FOR DUST CONTROL



dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

Definition & Scope

The control of dust resulting from land-disturbing activities, to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the NYSDEC.

No polymer application shall take place without written approval from the NYSDEC.

Construction Specifications

A. Non-driving Areas – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of

B. Driving Areas – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access route to provide short term limited dust control.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geo-textiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS



Definition & Scope

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction access shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 2.1 on page 2.31 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be

inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties ³	Light Duty ¹ Roads Grade Sub-grade	Heavy Duty ² Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 Modified
Equivalent	40-80	40-80	US Std Sieve
Opening Size			CW-02215
Aggregate Depth	6	10	-

¹Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

²Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

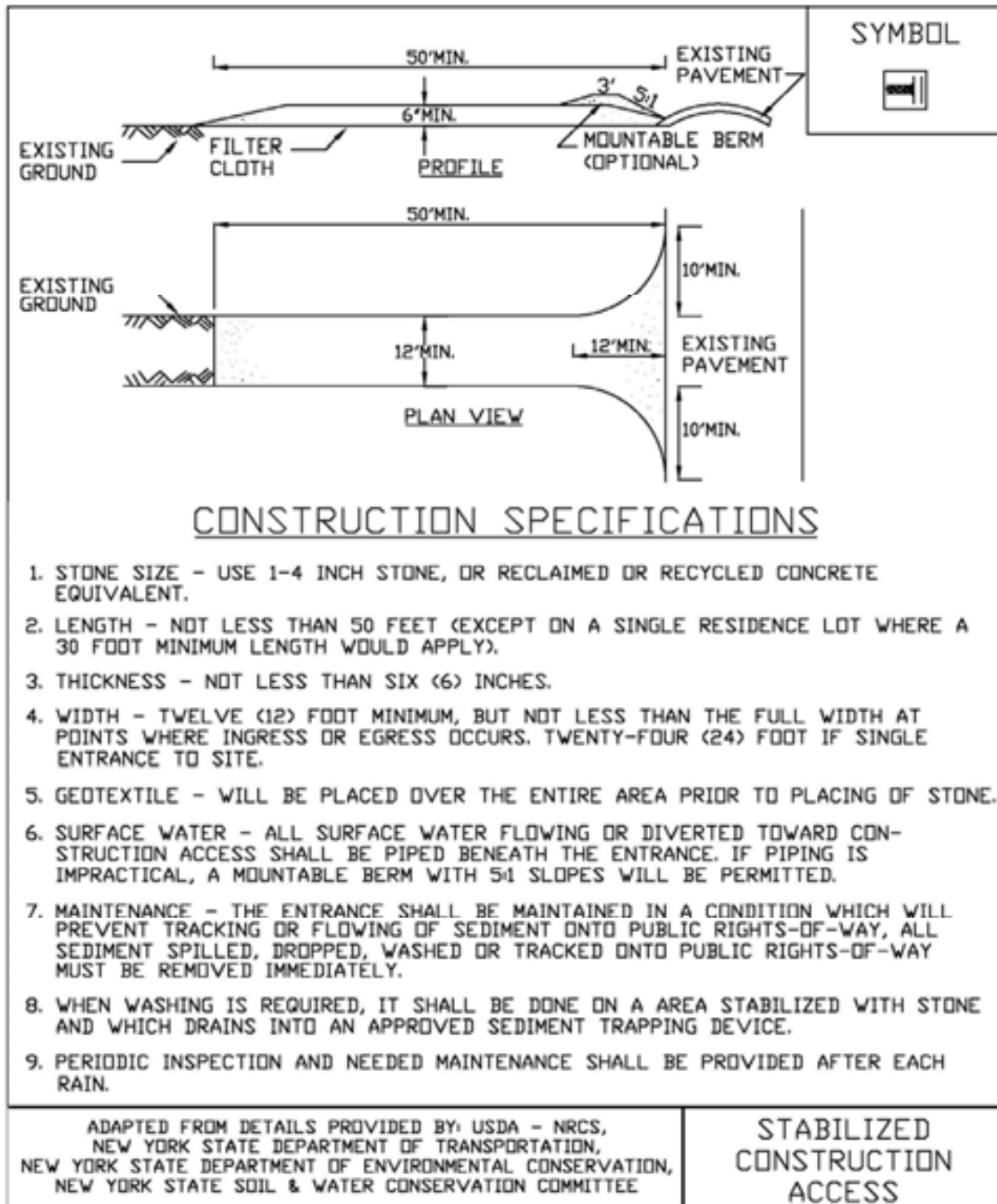
³Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

Figure 2.1
Stabilized Construction Access



STANDARD AND SPECIFICATIONS FOR SILT FENCE



Definition & Scope

A **temporary** barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and

roll down. The area beyond the fence must be undisturbed or stabilized.

3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

Super Silt Fence

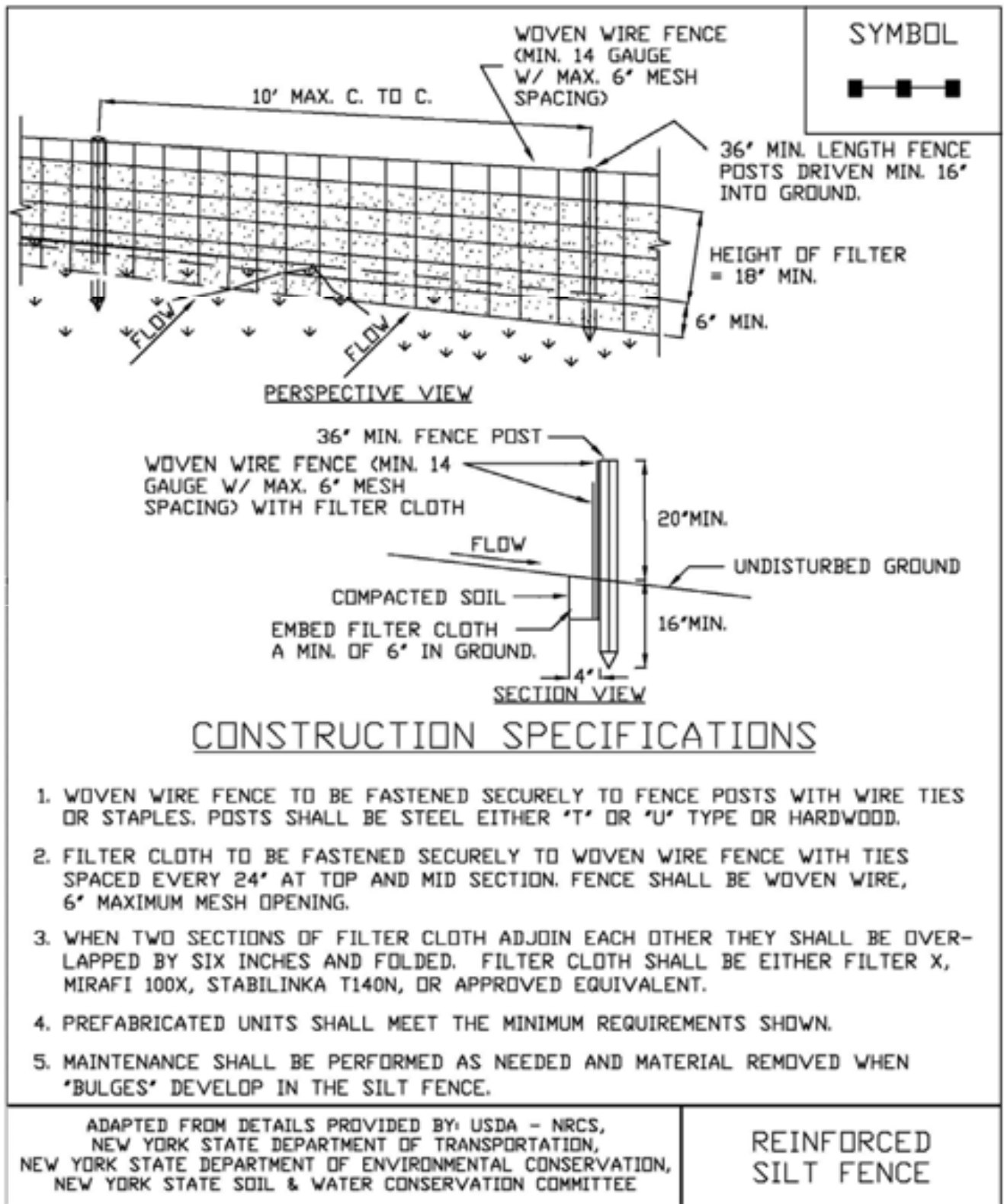


2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.
4. Prefabricated silt fence is acceptable as long as all material specifications are met.

Reinforced Silt Fence



Figure 5.30
Reinforced Silt Fence



STANDARD AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION



Definition & Scope

A **temporary** barrier with low permeability, installed around inlets in the form of a fence, berm or excavation around an opening, detaining water and thereby reducing the sediment content of sediment laden water by settling thus preventing heavily sediment laden water from entering a storm drain system.

Conditions Where Practice Applies

This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device, and watertight blocking of inlets is not advisable. **It is not to be used in place of sediment trapping devices.** This practice shall be used with an upstream buffer strip if placed at a storm drain inlet on a paved surface. It may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle.

Types of Storm Drain Inlet Practices

There are five (5) specific types of storm drain inlet protection practices that vary according to their function, location, drainage area, and availability of materials:

- I. Excavated Drop Inlet Protection
- II. Fabric Drop Inlet Protection
- III. Stone & Block Drop Inlet Protection
- IV. Paved Surface Inlet Protection
- V. Manufactured Insert Inlet Protection

Design Criteria

Drainage Area – The drainage area for storm drain inlets shall not exceed one acre. Erosion control/temporary stabilization measures must be implemented on the disturbed

drainage area tributary to the inlet. The crest elevations of these practices shall provide storage and minimize bypass flow.

Type I – Excavated Drop Inlet Protection

This practice is generally used during initial overlot grading after the storm drain trunk line is installed.

Limit the drainage area to the inlet device to 1 acre. Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm. Sediment should be removed when 50 percent of the storage volume is achieved. This material should be incorporated into the site in a stabilized manner.

Type II – Fabric Drop Inlet Protection



This practice is generally used during final elevation grading phases after the storm drain system is completed.

Limit the drainage area to 1 acre per inlet device. Land area slope immediately surrounding this device should not exceed 1 percent. The maximum height of the fabric above the inlet crest shall not exceed 1.5 feet unless reinforced.

The top of the barrier should be maintained to allow overflow to drop into the drop inlet and not bypass the inlet to

unprotected lower areas. Support stakes for fabric shall be a minimum of 3 feet long, spaced a maximum 3 feet apart. They should be driven close to the inlet so any overflow drops into the inlet and not on the unprotected soil. Improved performance and sediment storage volume can be obtained by excavating the area.

Inspect the fabric barrier after each rain event and make repairs as needed. Remove sediment from the pool area as necessary with care not to undercut or damage the filter fabric. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the adjacent area of the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Type III – Stone and Block Drop Inlet Protection

This practice is generally used during the initial and intermediate overlot grading of a construction site.

Limit the drainage area to 1 acre at the drop inlet. The stone barrier should have a minimum height of 1 foot and a maximum height of 2 feet. Do not use mortar. The height should be limited to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block openings perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to dewater the basin area.

The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth of wire mesh with ½ inch openings over all block openings to hold stone in place.

As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet (“doughnut”). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be used as necessary to prevent bypass flow.

The barrier should be inspected after each rain event and repairs made where needed. Remove sediment as necessary to provide for accurate storage volume for subsequent rains. Upon stabilization of contributing drainage area, remove all

materials and any unstable soil and dispose of properly.

Bring the disturbed area to proper grade, smooth, compact and stabilize in a manner appropriate to the site.

Type IV – Paved Surface Inlet Protection



This practice is generally used after pavement construction has been done while final grading and soil stabilization is occurring. These practices should be used with upstream buffer strips in linear construction applications, and with temporary surface stabilization for overlot areas, to reduce the sediment load at the practice. This practice includes sand bags, compost filter socks, geo-tubes filled with ballast, and manufactured surface barriers. Pea gravel can also be used in conjunction with these practices to improve performance. When the inlet is not at a low point, and is offset from the pavement or gutter line, protection should be selected and installed so that flows are not diverted around the inlet.



The drainage area should be limited to 1 acre at the drain inlet. All practices will be placed at the inlet perimeter or beyond to maximize the flow capacity of the inlet. Practices shall be weighted, braced, tied, or otherwise anchored to prevent movement or shifting of location on paved surfaces. Traffic safety shall be integrated with the use of this practice. All practices should be marked with traffic safety cones as appropriate. Structure height shall not cause flooding or by-pass flow that would cause additional erosion.

The structure should be inspected after every storm event. Any sediment should be removed and disposed of on the site. Any broken or damaged components should be replaced. Check all materials for proper anchorage and secure as necessary.

Type V - Manufactured Insert Inlet Protection



The drainage area shall be limited to 1 acre at the drain inlet. All inserts will be installed and anchored in accordance with the manufacturers recommendations and design details. The fabric portion of the structure will equal or exceed the performance standard for the silt fence fabric. The inserts will be installed to preserve a minimum of 50 percent of the open, unobstructed design flow area of the storm drain inlet opening to maintain capacity for storm events.

Figure 5.31
Excavated Drop Inlet Protection

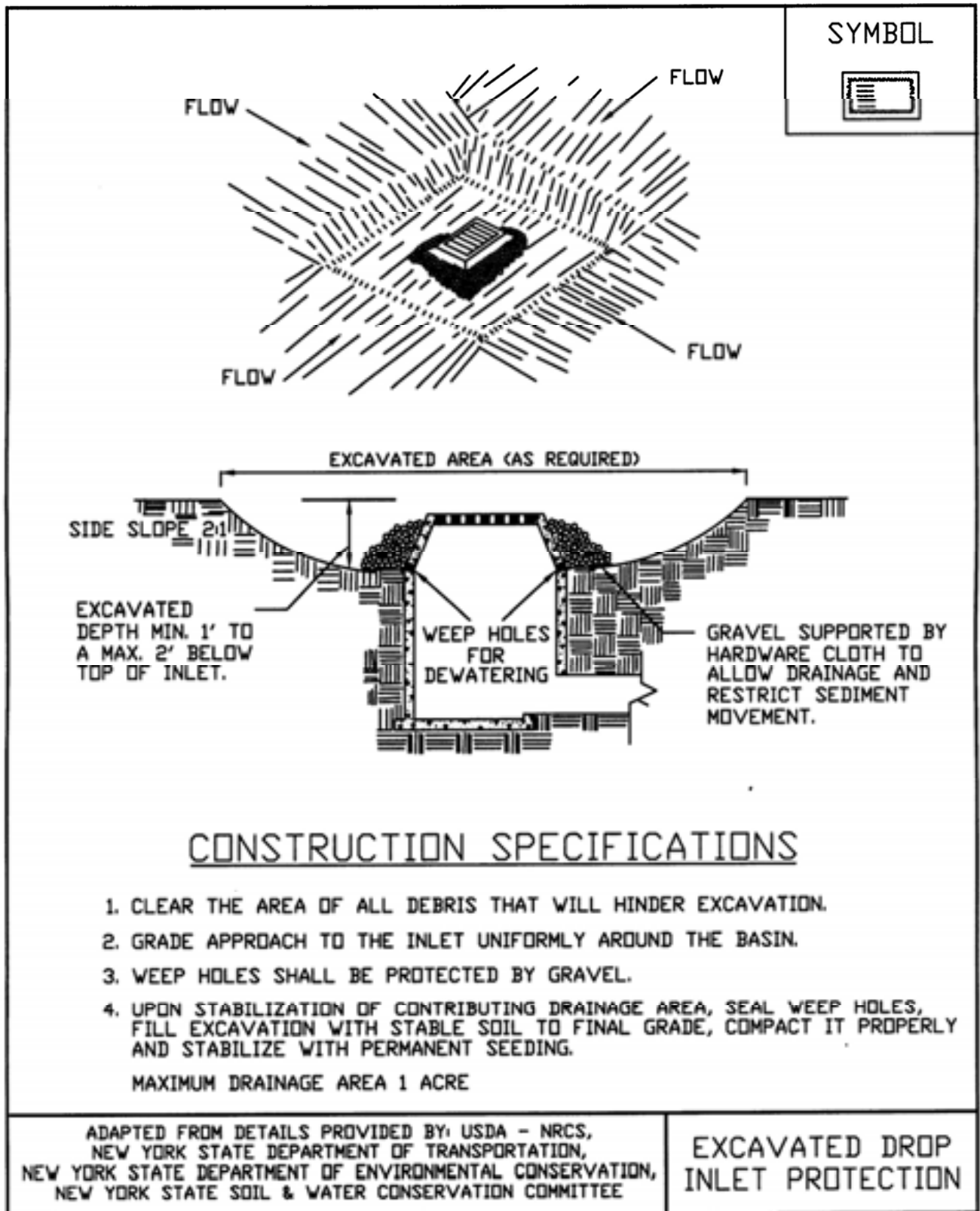


Figure 5.32
Fabric Drop Inlet Protection

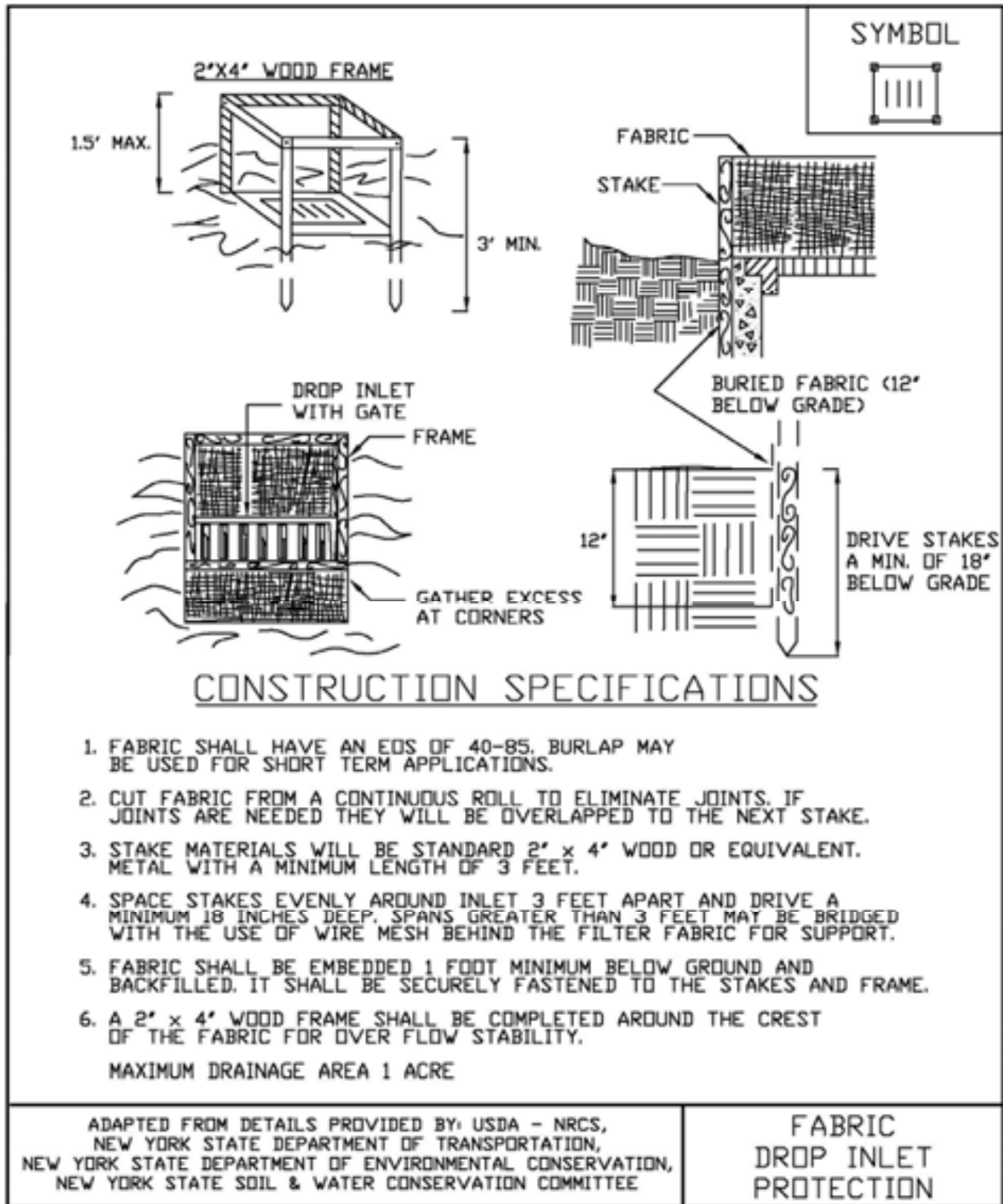
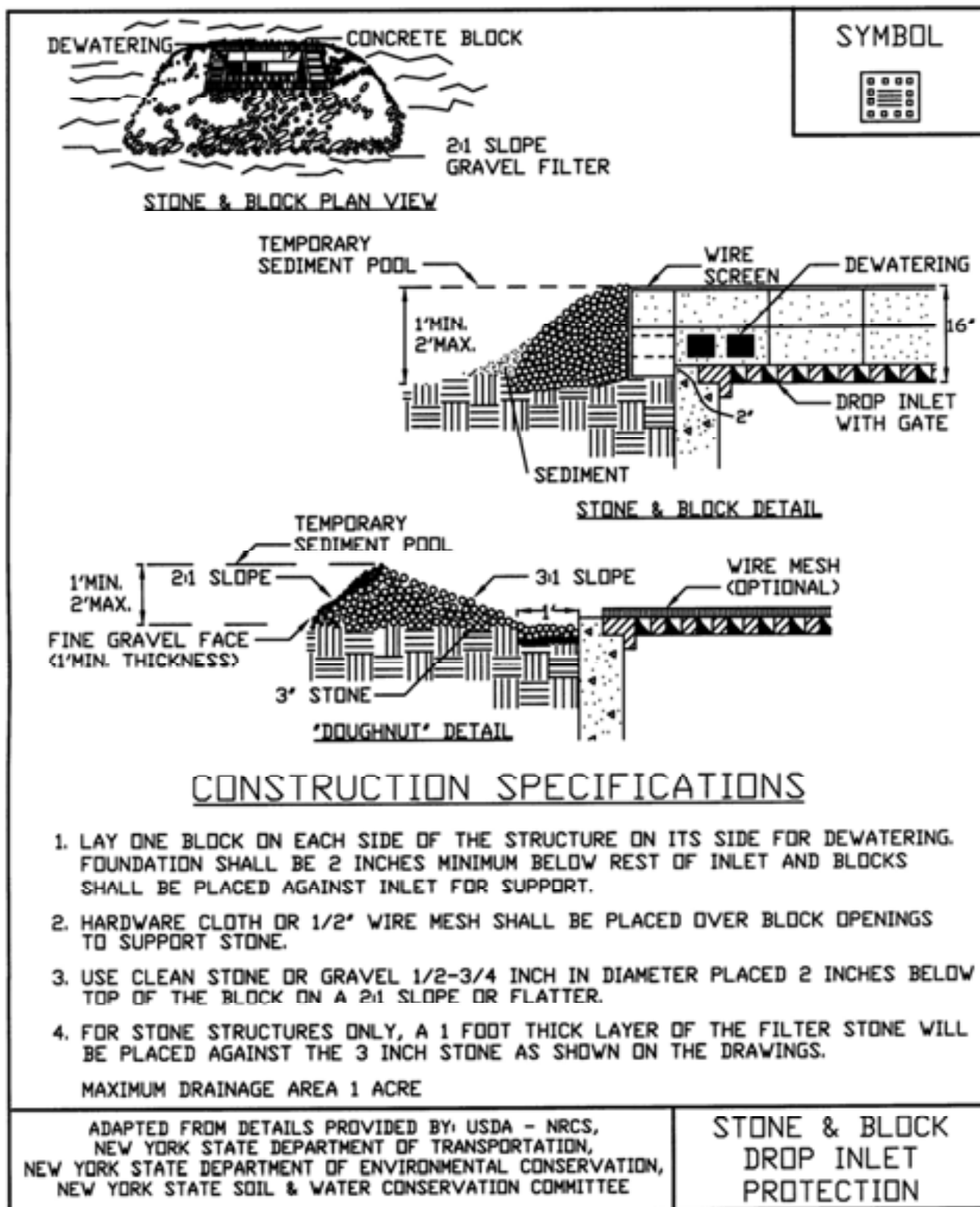


Figure 5.33
Stone & Block Drop Inlet Protection



Appendix K
Geotechnical Memorandum

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444

To: Joel Richardson, Brian Murell - H2M
Marc Gross, Michael Levoff - Las Vegas Sands Corp

From: Saul Shapiro, P.E.

Info: Julia Langewis, P.E. - Langan
File

Date: 14 September 2023

Re: Preliminary Infiltration Testing - Summary Memorandum
Project Maximus - Confidential
Hempstead, New York
Langan Project No. 170754501

We have prepared this memorandum to summarize the findings of the drainage structure borings and infiltration testing performed at the project site for the purpose of establishing preliminary design parameters for stormwater management systems. The following sections provide a brief description of the project site, as well as observations from the subsurface investigation program and infiltration testing.

Elevations were taken from the project survey titled "ALTA/NSPS Land Title Survey," Sheet VL103, prepared by Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C., dated 14 March 2023 and updated 22 May 2023. All elevations contained herein are considered approximate and reference the North American Vertical Datum of 1988 (NAVD88)¹.

SITE DESCRIPTION

The project site consists of Nassau Coliseum and surrounding parking lots located at 1255 Hempstead Turnpike in Uniondale, New York and is comprised of multiple parcels referenced on the Nassau County Tax Maps as Section F, Block 44, Lots 351, 411, 412, and 415. The site is generally bound by Charles Lindbergh Boulevard to the north, James Doolittle Boulevard to the east, Hempstead Turnpike to the south, and Earle Ovington Boulevard to the west.

Surface grades in the general area are relatively flat, varying from about el 79.3 ft and el 82.5 ft. A site location map is presented in Figure 1.

¹ Elevations are with respect to the North American Vertical Datum of 1988 (NAVD88), which is reported to be 1.092 feet above the Mean Sea Level at Sandy Hook, New Jersey, 1929 (NGVD 1929) and the Nassau County Datum.

SUBSURFACE INVESTIGATION AND OBSERVED CONDITIONS

The subsurface investigation included: (1) drilling eight borings with in situ testing and sampling of soil; (2) conducting infiltration testing in four of the borings; and (3) laboratory testing of recovered soil samples.

Geotechnical Test Borings

Eight geotechnical test borings identified as LBD-01 to LBD-08 were drilled by Craig Geotechnical Drilling Co. Inc. of Mays Landing, New Jersey on 17 and 18 August and 6 September 2023. All borings were drilled using a CME75 truck-mounted drill rig. Langan provided full-time special inspection of all drilling operations in accordance with the NYSBC. The borings were generally advanced to depths between 20 feet and 25 feet below grade. The approximate locations of the borings are shown on the subsurface investigation plan in Figure 2 and Figure 3.

The borings were advanced through soil by continuous sampling and by using mud-rotary drilling techniques and a tri-cone roller bit. Temporary flush-joint steel casing was used to stabilize the boreholes and facilitate performance of infiltration testing. The first 5 feet of all borings were hand cleared. The Standard Penetration Test (SPT)² was performed in general accordance with ASTM D1586. SPT N-values³, visual soil classifications, and other field observation were recorded by Langan's engineers. Soils were sampled using a 2-inch outer-diameter split-spoon sampler and all recovered soil samples were visually classified in the field in accordance with ASTM D2487 and the Unified Soil Classification System (USCS). Boring logs are presented in Appendix A.

Infiltration Testing

Four infiltration tests were conducted within boreholes LBD-02, LBD-05, LBD-07, and LBD-08 in general accordance with the procedures outlined in Appendix D of the Draft New York State Stormwater Management Design Manual (New York State Department of Environmental Conservation, 2022). Four trials were conducted within each borehole at about 20 feet below grade corresponding to about el 61.6 ft, el 56.5 ft, el 57.3 ft, and el 57.5 ft in LBD-02, LBD-05, LBD-07, and LBD-08, respectively. The infiltration test data is included in Appendix B.

Laboratory Testing

Laboratory testing was performed on select soil samples to evaluate engineering properties and parameters of the soils within the drainage structure design borings. Laboratory testing of soil samples included:

- Particle Size Distribution – ASTM D6913 (32 tests)

² The Standard Penetration Test is a measure of soil density and consistency. The testing involves driving a 2-inch outer-diameter split-spoon sampler, using a 140-lb hammer free falling from a height of 30 inches.

³ N-value – The number of blows required to drive a 2-inch diameter split-spoon sampler 12 inches after an initial “seating” penetration of 6 inches, using a 140-pound hammer falling freely from a drop height of 30 inches.

- Atterberg Limits – ASTM D4318 (4 tests)

The laboratory test results are provided in Appendix C.

SUBSURFACE CONDITIONS

The general subsurface stratigraphy encountered in the borings consists of fill underlain by sand with variable concentrations of gravel and silt; in some cases a layer of sand and silt and clay was present within the sand layer. Bedrock is known to be at great depth in the vicinity of the site. A brief description of each layer is presented below in order of increasing depth.

Stratum 1 - Fill

Fill was observed in all borings and generally consists of medium to fine sand with variable concentrations of gravel and silt. The fill layer generally extended to depths of about 5 feet to 9 feet below the ground surface, corresponding to about el 76.6 ft and el 71.6 ft. SPT N-values typically varied from 26 to 46 bpf (blows per foot). The fill layer is generally considered to be in a medium dense to dense condition and appears to generally be reworked native soil materials.

One particle size distribution analysis was performed on a selected sample from the fill layer. The sample had a fines content (material passing a No. 200 US sieve) of 6.8 percent and an effective size (D_{10}) of 0.18 mm.

The fill generally classifies as SP-SM (poorly graded sands with gravel and silt) in accordance with ASTM D2487 and the USCS.

Stratum 2 – Granular Soil

A layer of granular soil was generally observed below the fill layer and extended through the depth of exploration in each of the borings. The granular soil stratum was generally comprised of medium to fine or coarse to fine sand with variable concentrations of gravel and silt. We note that a layer of silt and clay was interspersed sporadically within the granular soil layer. SPT N-values varied from 3 to 94 bpf and were typically greater than 30 bpf. The granular soils are generally considered to be in a dense to very dense condition.

Thirty-one particle size distribution analyses were performed on selected samples from the granular soil layer. The samples had fines contents varying from 2.6 percent to 18.6 percent and effective sizes (D_{10}) varying from 0.08 mm to 0.35 mm.

The granular soil layer generally classifies as SP-SM (poorly graded sands with gravel and silt) in accordance with ASTM D2487 and the USCS.

Stratum 2a – Silt and Clay

As noted prior, a thin layer of silt and clay was observed sporadically within granular soils of Stratum 2. Where present, these soils generally consist of silt and clay with variable concentrations of coarse to fine sand and gravel. The top of the silt and clay layer was

encountered as shallow as 5 feet and as deep as 8 feet below existing grade, corresponding to about el 76.6 ft and el 72.9 ft. Where observed, the silt and clay layer thickness varied from about 0.8 feet to 2 feet. SPT N-values varied from 21 to 53 bpf within the silt and clay soils. The soil stratum is generally considered to be in a stiff to very stiff condition for clay rich soils and in a medium dense to very dense condition for silt rich soils.

Four Atterberg Limits tests were performed on selected samples from the silt and clay layer. The samples had Liquid Limits varying from 25 percent to 27 percent, Plastic Limits varying from 17 percent to 18 percent, and Plasticity Indices varying from 6 to 10.

The silt and clay layer generally classifies as ML (non-plastic silt to medium plastic clayey silt) or CL (inorganic clays of low to medium plasticity) in accordance with ASTM D2487 and the USCS.

Groundwater

Groundwater was not encountered in the drainage structure borings. Based on data from nearby monitoring wells and review of historic boring data, the groundwater elevation is expected to be present at about 25 feet to 30 feet below the ground surface, corresponding to elevations varying from about el 52 to el 56 ft. Please note that the groundwater level may vary seasonally and with changes in precipitation.

Infiltration Testing

Infiltration rates varied from 48 in/hr to 19.2 in/hr in LBD-02, 3.6 in/hr to 1.2 in/hr in LBD-05, and 17.5 in/hr to 13.1 in/hr in LBD-08. During infiltration testing in LBD-07, the water in the casing drained faster than was possible to measure at regular intervals and the water level dropped more than 6 inches in 1 minute. The testing at LBD-07 was considered anomalous based on the typical soil properties observed in the borehole and as such the test at LBD-07 was considered invalid. A copy of the field infiltration test data is included in Appendix B.

Permeability rates were also estimated using the Allen Hazen formula for soils sampled from the drainage structure borings. The effective size (D_{10}) was obtained from laboratory gradation testing and the empirical coefficient (C) was assumed as 100. The estimated permeability rates varied from a high of 177 in/hr to a low 9 in/hr. The permeability rates estimated using Hazen's formula are also included in Appendix B.

LIMITATIONS

This memorandum has been prepared to assist the project team in the design process and is only applicable to the envisioned project discussed herein. Langan cannot assume responsibility for use of this memorandum for any areas beyond the limits of this study or for any projects not specifically discussed herein.

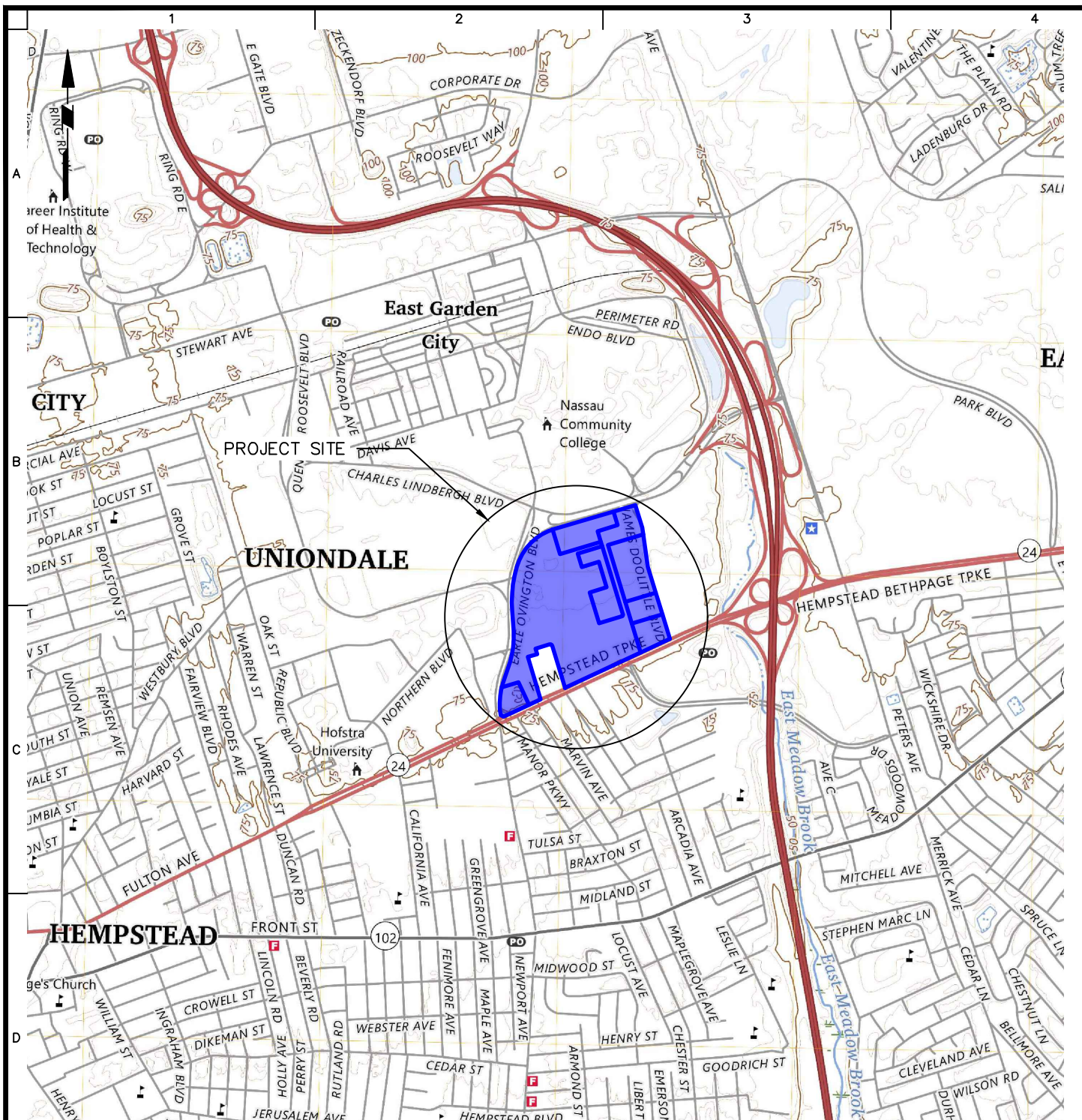
Information on subsurface strata provided herein and in the attached appendices represent conditions encountered only at the locations indicated and at the time of investigation. If different

MEMO

Preliminary Infiltration Testing - Summary Memorandum
Project Maximus - Confidential
Hempstead, New York
Langan Project No. 170754501
14 September 2023 - Page 5 of 5

conditions are encountered during construction, they should immediately be brought to our attention for evaluation.

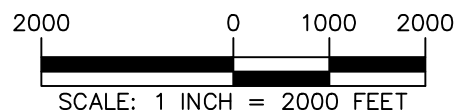
FIGURES



SOURCE: "FREEPORT QUADRANGLE MAP, NEW YORK-NASSAU COUNTY 7.5-MINUTE SERIES", U.S. GEOLOGICAL SURVEY, 2023.

NOTE: ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.



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Project

PROJECT MAXIMUS

SECTION No. 44, BLOCK F
LOTS No. 326, 401, 402, 411, 412, 415, AND 351
TOWN OF HEMPSTEAD

NASSAU COUNTY

NEW YORK

Figure Title

**SITE LOCATION
MAP**

Project No.
170754501

Date
08/21/2023

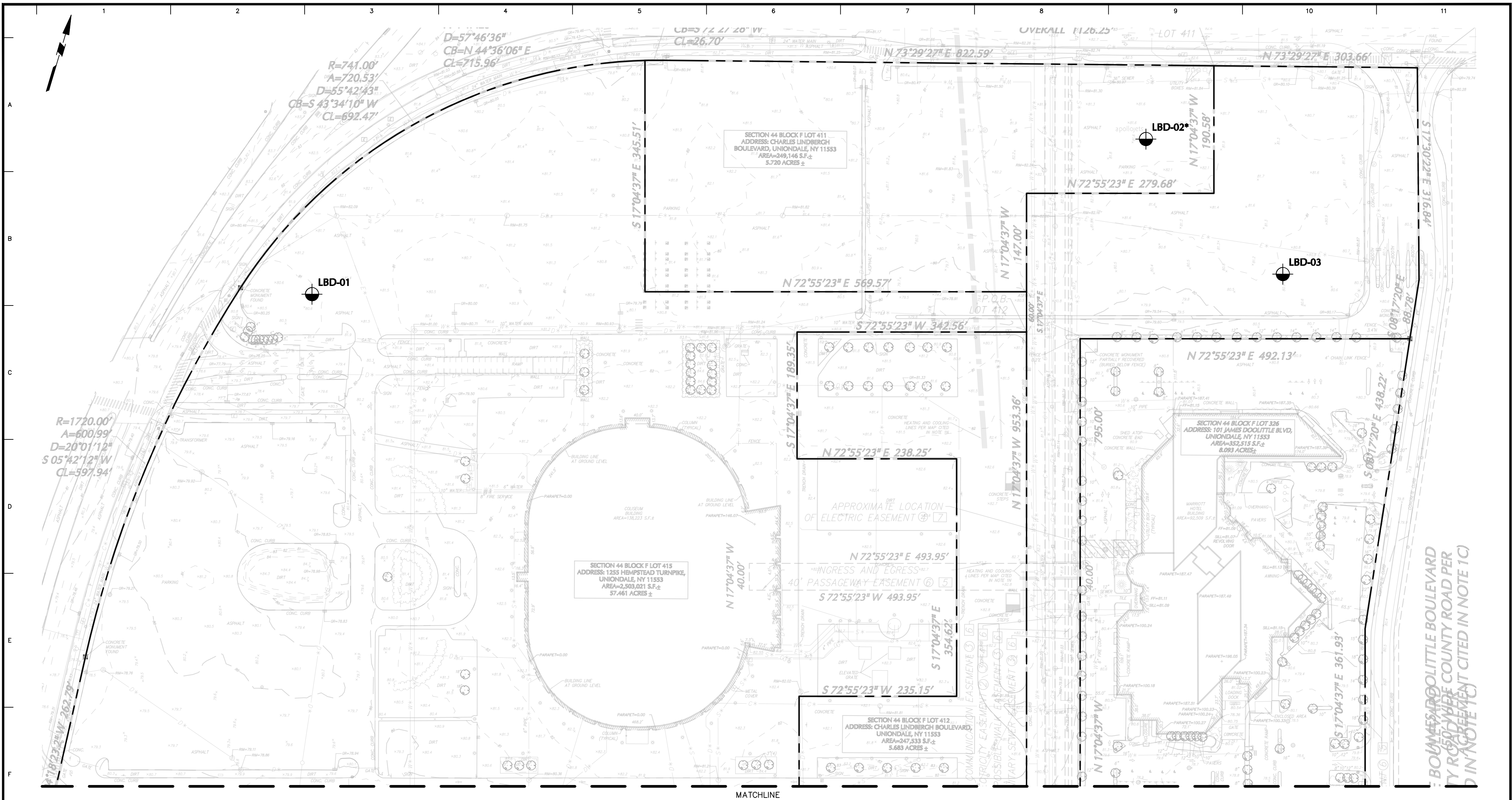
Drawn By
MG/TK

Checked By
JUL

Figure

1

Sheet 1 of 3

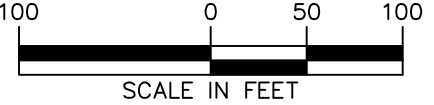


GENERAL NOTES:

- ALL ELEVATIONS SHOWN HEREIN ARE WITH RESPECT TO THE NORTH AMERICAN VERTICAL DATUM (NAVD88). TYPICAL DATUM CONVERSIONS ARE AS FOLLOWS:
NGVD = NAVD88 + 1.1 FEET
NASSAU COUNTY DATUM = NAVD88 + 1.1 FEET
- SURVEY BASE MAP TAKEN FROM SURVEY TITLED "ALTA/NSPS LAND TITLE SURVEY, PROJECT MAXIMUS, SECTION NO. 44, BLOCK F, LOTS NO. 326, 401, 402, 411, 412, 415 AND 351, TOWN OF HEMPSTEAD, NASSAU COUNTY, NEW YORK", PREPARED BY LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING, LANDSCAPE ARCHITECTURE AND GEOLOGY, D.P.C., DATED 22 MAY 2023.
- ALL LANGAN BORINGS WERE DRILLED UNDER THE FULL-TIME INSPECTION OF A LANGAN REPRESENTATIVE. ALL DRAINAGE BORING DRILLING WAS PERFORMED BY CRAIG GEOTECHNICAL DRILLING CO. INC. ON 17 AND 18 AUGUST AND 6 SEPTEMBER 2023.
- DISTURBED SAMPLES WERE TAKEN USING A 2-INCH DIAMETER SPLIT-SPOON SAMPLER DRIVEN BY A 140-LB AUTOMATIC HAMMER FREE-FALLING 30-INCHES.
- ALL BORING LOCATIONS WERE LAID OUT BY LANGAN REPRESENTATIVES BY MEASURING FROM EXISTING SITE FEATURES. ALL LOCATIONS SHOULD BE CONSIDERED APPROXIMATE.

LEGEND:

- LBD-#**
LANGAN DRAINAGE BORING
- *
DENOTES PERCOLATION TEST LOCATION
- PROPERTY LINE



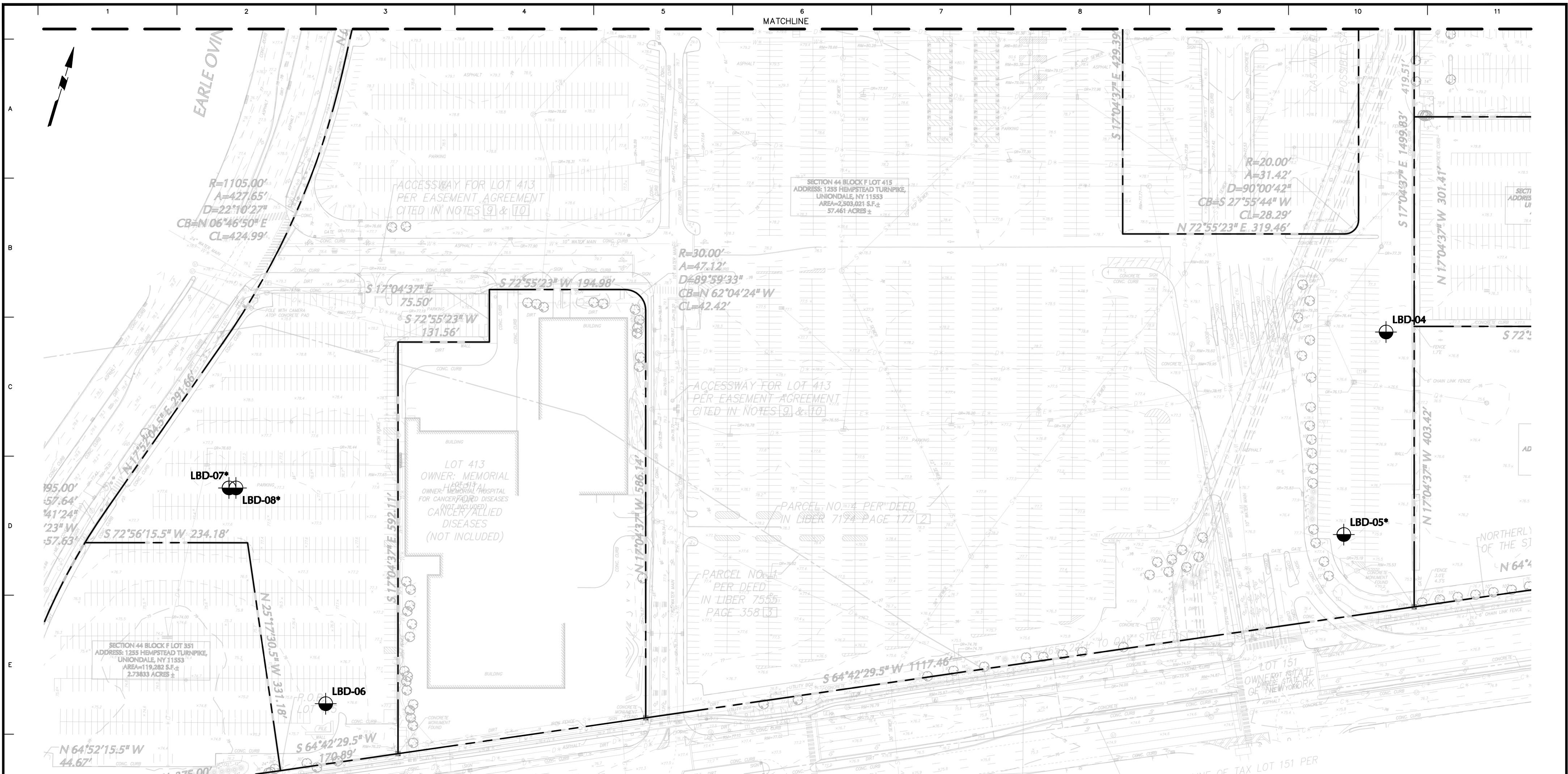
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Project
PROJECT MAXIMUS
SECTION No. 44, BLOCK F
LOTS No. 326, 401, 402, 411, 412, 415 AND 351
TOWN OF HEMPSTEAD
NASSAU COUNTY NEW YORK

Figure Title
SUBSURFACE INVESTIGATION PLAN - PART A

Project No. 170754501	Figure 2 Sheet 2 of 3
Date 09/06/2023	
Drawn By JUL	
Checked By SS	

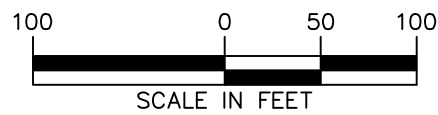


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LEGEND:

- LBD-#**
LANGAN DRAINAGE BORING
- *
DENOTES PERCOLATION TEST LOCATION
- PROPERTY LINE



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Project

PROJECT MAXIMUS

SECTION No. 44, BLOCK F
LOTS No. 326, 401, 402, 411, 412, 415 AND 351
TOWN OF HEMPSTEAD

NASSAU COUNTY

NEW YORK

Figure Title

**SUBSURFACE
INVESTIGATION PLAN -
PART B**

Project No.

170754501

Date

09/06/2023

Drawn By

JUL

Checked By

SS

Figure

3

Sheet 3 of 3

LANGAN

PROJECT NO. 170754501

APPENDIX A

(LANGAN BORING LOGS)

Project				Project No.			
Project Maximus				170754501			
Location				Elevation and Datum			
Nassau Coliseum				Approx. el. 80.6 ± (NAVD 88)			
Drilling Company				Date Started		Date Finished	
Craig Geotechnical Drilling				8/18/2023		8/18/2023	
Drilling Equipment				Completion Depth		Rock Depth	
CME75				25.0 ft		N/E	
Size and Type of Bit				Number of Samples		Disturbed	
3-7/8in Tricone Roller Bit				10		0	
Casing Diameter (in)				First		Completion	
4 Flush Joint Steel			Casing Depth (ft)	N/A	N/A	24 HR.	N/A
			14.0	▽	▼	▼	N/A
Casing Hammer		Automatic		Weight (lbs)		Drop (in)	
		140		30		Drilling Foreman	
Sampler				Shane Frick			
2in OD Split Spoon				Field Engineer			
Sampler Hammer		Automatic		Weight (lbs)		Drop (in)	
		140		30		Michael Gillooley	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data						Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)									
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft)											
								10	20		30	40							
	+80.6																		
▲▲▲▲	+80.1	3" ASPHALT	0																8/18/2023
▲▲▲▲		FILL	1																Hand clear to 5ft.
		Brown medium to fine SAND, trace coarse Sand, trace Silt, trace fine Gravel (dry) [FILL]	2																Collect Grab Sample G-1 from 0.5ft to 4ft.
			3																
			4																
			5	S-1	SS	14	13												
			6				13												
		Brown medium to fine SAND, some fine Gravel. some coarse Sand trace Silt (dry) [FILL]	7					18											Take S-1 from 4ft to 6ft. -#4 = 83.1% -#200 = 6.8%
			8	S-2	SS	20	24												
			9				29												
	10		S-3	SS	10	15													
	11					15													
	Brown medium to fine SAND, trace Silt, trace coarse Sand (moist) [SP-SM]	12	S-4	SS	11	14												Take S-2 from 7ft to 9ft.	
		13				16													
		14	S-5	SS	9	13													
		15				18													
		16	S-6	SS	9	18													
	Brown medium to fine SAND, trace Silt, trace coarse Sand, trace fine Gravel (moist) [SP-SM]	17					18											Take S-3 from 9ft to 11ft.	
		18	S-7	SS	4	17													
		19				18													
		20				14													
		21				14													
	Brown to light brown medium to fine SAND, some fine Gravel, some coarse Sand, trace Silt (moist) [SP]	22																Take S-4 from 11ft to 13ft.	
		23																	
		24																	
		25																	
		26																	
	Brown medium to fine SAND, trace Silt, trace coarse Sand, trace fine Gravel (moist) [SP-SM]	27																Take S-5 from 13ft to 15ft.	
		28																	
		29																	
		30																	
		31																	
	Brown to light brown medium to fine SAND, some fine Gravel, some coarse Sand, trace Silt (moist) [SP]	32																Take S-6 from 15ft to 17ft. -#4 = 65.2% -#200 = 4.2%	
		33																	
		34																	
		35																	
		36																	
	Light brown to gray coarse to fine SAND, some Gravel, trace Silt (moist) [SP-SM]	37																Take S-7 from 17ft to 19ft.	
		38																	
		39																	
		40																	
		41																	
	Brown coarse to medium SAND, some fine Gravel, some fine Sand, trace Silt (moist) [SP-SM]	42																Drill to 19ft. Smooth drilling, brown wash.	
		43																	
		44																	
		45																	
		46																	
		47																Take S-8 from 19ft to 21ft. -#4 = 79.3% -#200 = 5.3%	
		48																	
		49																	
		50																	
		51																	

Project			Project No.								
Project Maximus			170754501								
Location			Elevation and Datum								
Nassau Coliseum			Approx. el. 80.6 ± (NAVD 88)								
Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)		
				Number	Type	Recov. (in)	Penet- resist BL/6in	N-Value (Blows/ft)			
	+60.6	Light brown coarse to fine SAND, some fine Gravel, trace Silt (moist) [SP-SM]	20	S-8		10	17				
			21				11	19			
			22	S-9		7	19				
			23				17	19			
	+55.6	Light brown medium to fine SAND, trace Silt, trace fine Gravel, trace coarse Sand (moist) [SP-SM]	24	S-10		8	18				
			25				18	36			
			26								
			27								
		End of Boring at 25ft.	28								
			29								
			30								
			31								
			32								
			33								
			34								
			35								
			36								
			37								
			38								
			39								
			40								
			41								
			42								
43											
44											
45											

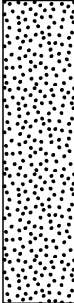
Project	Project Maximus			Project No.	170754501		
Location	Nassau Coliseum			Elevation and Datum	Approx. el. 81.6 ± (NAVD 88)		
Drilling Company	Craig Geotechnical Drilling			Date Started	8/17/2023	Date Finished 8/17/2023	
Drilling Equipment	CME75			Completion Depth	20.0 ft	Rock Depth N/E	
Size and Type of Bit	3-7/8in Tricone Roller Bit			Number of Samples	Disturbed 7	Undisturbed 0	Core 0
Casing Diameter (in)	4 Flush Joint Steel		Casing Depth (ft)	20.0		Water Level (ft.)	First N/A
Casing Hammer	Automatic	Weight (lbs)	140	Drop (in)	30	Completion	N/A
Sampler	2in OD Split Spoon			Drilling Foreman Shane Frick			
Sampler Hammer	Automatic	Weight (lbs)	140	Drop (in)	30	Field Engineer Michael Gillooley	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)	
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft)		
								10 20 30 40		
	+81.6		0							
▲▲▲▲	+81.1	3" ASPHALT	0							8/17/2023
▲▲▲▲		FILL	1							Hand clear to 5ft.
			2							Collect Grab Sample G-1 from 0.5ft to 3ft.
		Brown medium to fine SAND, trace fine Gravel, trace Silt (moist) [FILL]	3							
			4							Collect Grab Sample G-2 from 3ft to 5ft.
	+76.6		5				5			Take S-1 from 5ft to 7ft. LL = 25 PL = 17 PI = 8
▨▨▨▨		Brown to gray SILT and CLAY, trace fine Gravel, trace coarse to fine Sand (moist) [CL]	6	S-1	SS	14	11		18	
			7				10			Take S-2 from 7ft to 9ft.
	+74.6	Brown medium to fine SAND, trace Silt, trace coarse Sand (moist) [SP-SM]	8	S-2	SS	15	15		37	Drive casing to 9ft. Drill to 9ft. Smooth drilling, brown wash.
			9				15			Take S-3 from 9ft to 11ft. -#4 = 85.1% -#200 = 2.6%
		Brown coarse to fine SAND, trace some Gravel, trace Silt (moist) [SP]	10	S-3	SS	10	10		18	
			11				9			Take S-4 from 11ft to 13ft.
		Brown medium to fine SAND, trace fine Gravel, trace coarse Sand, trace Silt (moist) [SP-SM]	12	S-4	SS	15	17		32	
			13				14			Take S-5 from 13ft to 15ft. -#4 = 61.4% -#200 = 2.9%
		Brown coarse to fine SAND, some fine Gravel, trace Silt (moist) [SP]	14	S-5	SS	15	14		27	Drive casing to 15ft. Drill to 16ft. Smooth drilling, brown wash.
			15				13			
			16							Take S-6 from 16ft to 18ft. -#4 = 53.3% -#200 = 3.1%
		Brown gravelly coarse to fine SAND, trace Silt (moist) [SP]	17	S-6	SS	10	15		27	
			18				13			Take S-7 from 18ft to 20ft.
		Brown coarse to fine SAND, trace fine Gravel, trace Silt (moist) [SP-SM]	19	S-7	SS	14	21		43	Drive casing to 20ft. Clean out casing. Soak casing for infiltration test.
	+61.6		20				20			

Project			Project No.						
Project Maximus			170754501						
Location			Elevation and Datum						
Nassau Coliseum			Approx. el. 81.6 ± (NAVD 88)						
Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft)	
	+61.6	End of Boring at 20ft.	20						Bottom of boring at 20ft.
			21						8/18/2023
			22						Perform infiltration test. Extract casing.
			23						Backfill hole, patch to match existing
			24						surface.
			25						
			26						
			27						
			28						
			29						
			30						
			31						
			32						
			33						
			34						
			35						
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			42						
			43						
			44						
			45						

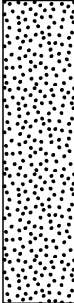
Project				Project No.			
Project Maximus				170754501			
Location				Elevation and Datum			
Nassau Coliseum				Approx. el. 80.9 ± (NAVD 88)			
Drilling Company				Date Started		Date Finished	
Craig Geotechnical Drilling				8/18/2023		8/18/2023	
Drilling Equipment				Completion Depth		Rock Depth	
CME75				25.0 ft		N/E	
Size and Type of Bit				Number of Samples		Disturbed	
3-7/8in Tricone Roller Bit				10		Undisturbed	
Casing Diameter (in)				First		Core	
4 Flush Joint Steel				N/A		0	
Casing Depth (ft)				Completion		24 HR.	
14.0				N/A		N/A	
Casing Hammer		Weight (lbs)		Water Level (ft.)			
Automatic		140		First			
		Drop (in)		N/A			
30				Completion			
				N/A			
				24 HR.			
				N/A			
Drilling Foreman				Shane Frick			
Field Engineer				Michael Gillooley			

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)	
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft) 10 20 30 40		
	+80.9		0							
▲▲▲▲	+80.4	3" ASPHALT								8/18/2023
		FILL	1							Hand clear to 5ft.
			2							
		Brown medium to fine SAND, trace fine Gravel, trace coarse Sand, trace Silt (dry) [FILL]	3							Collect Grab Sample G-1 from 0.5ft to 5ft.
			4							
	+75.9		5							Take S-1 from 5ft to 7ft.
		Brown coarse to medium SAND, some fine Gravel, trace Silt, trace fine Sand (dry) [SP-SM]	6	S-1	SS	14	11	21		-#4 = 68.9%
							10			-#200 = 5.7%
			7				12			
		Light brown medium to fine SAND, trace fine Gravel, trace coarse Sand, trace Silt (dry) [SP-SM]	8	S-2A	SS		12			Take S-2 from 7ft to 9ft.
							11			LL = 27
	+72.9	Gray to brown SILT and CLAY, some coarse to fine Sand (moist) [CL]	9	S-2B	SS	14	6	17		PL = 17
										PI = 10
		Gray to brown sandy SILT and CLAY, some fine Gravel (moist) [CL]	10	S-3A	SS		9			Drive casing to 9ft. Drill to 9ft. Smooth drilling, brown wash.
							9			Take S-3 from 9ft to 11ft.
	+70.9	Light brown medium to fine SAND, trace Silt (moist) [SP-SM]	11	S-3B	SS	17	15	24		-#4 = 85.9%
							20			-#200 = 41.6%
		Brown medium to fine SAND, trace Silt, trace fine Gravel, trace coarse Sand (moist) [SP-SM]	12	S-4	SS		5			Take S-4 from 11ft to 13ft.
							9			-#4 = 92.3%
			13				20	25		-#200 = 5.1%
		Brown medium to fine SAND, some fine Gravel, trace coarse Sand, trace Silt (moist) [SP-SM]	14	S-5	SS	7	17	37		Take S-5 from 13ft to 15ft.
							20			-#4 = 80.9%
			15				21			-#200 = 6.4%
		Brown medium SAND, trace Silt, trace coarse Sand, trace Gravel (moist) [SP-SM]	16	S-6	SS	5	10	21		Drive casing to 14ft. Drill to 15ft. Smooth drilling, brown wash.
							11	21		Take S-6 from 15ft to 17ft.
			17				13			
		Brown to light brown coarse to fine SAND, some fine Gravel, trace Silt (moist) [SP-SM]	18	S-7	SS	9	15	39		Take S-7 from 17ft to 19ft.
							18			-#4 = 78.8%
			19				22			-#200 = 8.9%
		Light brown coarse to fine SAND, trace Silt, trace fine Gravel (moist) [SP-SM]	20		SS		20			Take S-8 from 19ft to 21ft.
							23			

Project			Project No.						
Project Maximus			170754501						
Location			Elevation and Datum						
Nassau Coliseum			Approx. el. 80.9 ± (NAVD 88)						
Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft)	
	+60.9	Light brown gravelly coarse to fine SAND, trace Silt (moist) [SP-SM] Brown to light brown medium to fine SAND, trace Silt, trace fine Gravel, trace coarse Sand (moist) [SP-SM]	20	S-8		5	29		Drill to 21ft. Smooth drilling, brown wash. Take S-9 from 21ft to 23ft. -#4 = 62.4% -#200 = 6.2% Take S-10 from 23ft to 25ft. -#4 = 87.3% -#200 = 6.1% Bottom of boring at 25ft. Extract casing. Backfill hole with cuttings. Patch to match existing surface.
	21					17			
	22		S-9		7	18			
	23				16				
	24		S-10		8	17			
	25				20				
	26				23				
	27								
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Project				Project No.			
Project Maximus				170754501			
Location				Elevation and Datum			
Nassau Coliseum				Approx. el. 76.7 ± (NAVD 88)			
Drilling Company				Date Started		Date Finished	
Craig Geotechnical Drilling				8/18/2023		8/18/2023	
Drilling Equipment				Completion Depth		Rock Depth	
CME75				25.0 ft		N/E	
Size and Type of Bit				Number of Samples		Undisturbed	
3-7/8in Tricone Roller Bit				Disturbed 10		Core 0	
Casing Diameter (in)			Casing Depth (ft)	Water Level (ft.)		First	
4 Flush Joint Steel			14.0	N/A		Completion	
Casing Hammer			Weight (lbs)	Drop (in)		24 HR.	
Automatic			140	30		N/A	
Sampler				Drilling Foreman			
2in OD Split Spoon				Shane Frick			
Sampler Hammer				Field Engineer			
Automatic				Michael Gillooley			
Weight (lbs)				Drop (in)			
140				30			

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data						Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)		
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft)				
								10	20		30	40
	+76.7		0									
▲▲▲▲	+76.2	3" ASPHALT									8/18/2023	
▲▲▲▲		FILL									Hand clear to 5ft.	
			2								Collect Grab Sample G-1 from 0.5ft to 3ft.	
			3									
		Brown medium to fine SAND, trace Silt, trace fine Gravel, trace coarse Sand (dry) [FILL]	4								Collect Grab Sample G-2 from 3ft to 5ft.	
			5									
	+71.7	Brown medium to fine SAND, trace Silt, trace fine Gravel, trace coarse Sand (dry) [SP-SM]	6	S-1	SS	13	17				Take S-1 from 5ft to 7ft.	
			7				14					
			8				12					
			9				10					
	+69.2	Brown medium to fine SAND, trace Silt, trace fine Gravel, trace coarse Sand (dry) [SP-SM]	10	S-2A	SS		11				Take S-2 from 7ft to 9ft.	
		Brownish gray SILT, some Clay, some coarse to fine Sand, trace fine Gravel (moist) [ML]	11	S-2B	SS	20	16				LL = 26 PL = 18 PI = 8	
			12	S-2C	SS		18				Drive casing to 9ft. Drill to 9ft. Smooth drilling, brown wash.	
	+68.2	Brown medium to fine SAND, trace coarse Sand, trace fine Gravel, trace Silt (moist) [SP-SM]	13				16				Take S-3 from 9ft to 11ft.	
		Light brown medium to fine SAND, trace Silt, trace coarse Sand (moist) [SP-SM]	14	S-3	SS	7	8					
			15				16					
			16				18					
		Light brown medium to fine SAND, some coarse Sand, trace fine Gravel, trace Silt (moist) [SP]	17	S-4	SS	6	14				Take S-4 from 11ft to 13ft.	
			18				20				-#4 = 92.5% -#200 = 4.9%	
			19				18					
		Light brown coarse to fine SAND, trace Silt, some fine Gravel (moist) [SP-SM]	20	S-5A	SS		20				Take S-5 from 13ft to 15ft.	
			21				43					
		Light brown medium to fine SAND, trace Silt, trace coarse Sand (moist) [SP-SM]	22	S-5B	SS	16	26				Drive casing to 14ft. Drill to 15ft. Smooth drilling, brown wash.	
		Light brown medium to fine SAND, trace Silt, trace coarse Sand, trace fine Gravel (moist) [SP-SM]	23				22				Take S-6 from 15ft to 17ft.	
			24				24					
			25	S-6	SS	8	20				Drill to 17ft. Smooth drilling, brown wash.	
			26				23					
			27				22					
		Light brown medium to fine SAND, trace Silt, trace coarse Sand (moist) [SP-SM]	28				23				Take S-7 from 17ft to 19ft.	
			29	S-7	SS	8	27					
			30				30					
			31				29					
		Light brown to dark brown coarse to fine SAND, some fine Gravel, trace Silt (moist) [SP-SM]	32				29				Take S-8 from 19ft to 21ft.	
			33				9				-#4 = 66.1% -#200 = 9.7%	
			34				15					

Project			Project No.								
Project Maximus			170754501								
Location			Elevation and Datum								
Nassau Coliseum			Approx. el. 76.7 ± (NAVD 88)								
Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)		
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft)			
	+56.7	Light brown medium to fine SAND, trace Silt (moist) [SP-SM] Light brown medium to fine SAND, trace Silt, trace fine Gravel (moist) [SP-SM]	20	S-8		10	23		38	Drill to 21ft. Smooth drilling, brown wash.	
	21						26				
	22		S-9		3	15		31	Take S-9 from 21ft to 23ft.		
	23									16	
	24		S-10		7	16		32	Take S-10 from 23ft to 25ft. -#4 = 92.0% -#200 = 5.4%		
	25									17	
			+51.7	End of Boring at 25ft.	26						Bottom of boring at 25ft. Extract casing. Backfill with cuttings. Patch to match existing surface.
					27						
					28						
					29						
			30								
			31								
			32								
			33								
			34								
			35								
			36								
			37								
			38								
			39								
			40								
			41								
			42								
			43								
			44								
			45								

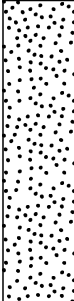
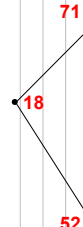
Project				Project No.			
Project Maximus				170754501			
Location				Elevation and Datum			
Nassau Coliseum				Approx. el. 76.2 ± (NAVD 88)			
Drilling Company				Date Started		Date Finished	
Craig Geotechnical Drilling				8/17/2023		8/17/2023	
Drilling Equipment				Completion Depth		Rock Depth	
CME75				20.0 ft		N/E	
Size and Type of Bit				Number of Samples		Disturbed	
3-7/8in Tricone Roller Bit				7		Undisturbed	
						0	
						Core	
						0	
Casing Diameter (in)			Casing Depth (ft)	Water Level (ft.)		First	
4 Flush Joint Steel			20.0	N/A		Completion	
						24 HR.	
						N/A	
Casing Hammer		Automatic	Weight (lbs)	Drop (in)	Drilling Foreman		
			140	30	Shane Frick		
Sampler		2in OD Split Spoon			Field Engineer		
					Michael Gillooley		
Sampler Hammer		Automatic	Weight (lbs)	Drop (in)			
			140	30			

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data						Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft)		
	+76.2								10 20 30 40	
▲▲▲▲	+75.7	3" ASPHALT	0							8/17/2023
▲▲▲▲		FILL	1							Hand clear to 6ft.
		Brown medium to fine SAND, trace Silt, trace coarse Sand, trace fine Gravel (moist) [FILL]	2							Collect Grab Sample G-1 from 0.5ft to 3ft.
			3							
			4							Collect Grab Sample G-2 from 3ft to 6ft.
	5									
	+70.2	Orangish brown coarse to fine SAND, some fine Gravel, trace Silt (dry) [SP-SM]	6				11			Take S-1 from 6ft to 8ft.
●●●●	+69.0	Grayish brown SILT and CLAY, trace coarse to fine Sand, trace fine Gravel (dry) [CL]	7	S-1A	SS	16	12			1A: -#4 = 74.6% -#200 = 10.5%
||||			8	S-1B	SS		8			1B: LL = 24 PL = 18 PI = 6
	+68.2	Orangish brown coarse to fine SAND, some fine Gravel, trace Silt (dry) [SP-SM]	9				10			Take S-2 from 8ft to 10ft.
		Light brown medium to fine SAND, some fine Gravel, trace Silt (moist) [SP-SM]	10	S-2	SS	18	20			-#4 = 81.7% -#200 = 9.2%
			11	S-3	SS	11	16			Drive casing to 10ft. Drill to 10ft. Smooth drilling, brown wash.
			12				12	18		Take S-3 from 10ft to 12ft. Drill to 12ft. Smooth drilling, orangish brown wash.
		Light brown gravelly coarse to medium SAND, trace Silt (moist) [SP]	13				17			Take S-4 from 12ft to 14ft.
		Light brown coarse to fine SAND, trace Silt (moist) [SP-SM]	14	S-4	SS	11	13			-#4 = 52.6% -#200 = 2.8%
			15	S-5A	SS		20			Take S-5 from 14ft to 16ft.
		Tannish brown medium to fine SAND, trace fine Gravel, trace Silt (moist) [SP-SM]	16				14			
		Tannish brown medium to fine SAND, trace fine Gravel, trace Silt (moist) [SP-SM]	17	S-5B	SS	15	23			Drive casing to 15ft. Drill to 16ft. Smooth drilling, brown wash.
			18	S-6A	SS		9	21		Take S-6 from 16ft to 18ft.
		Tannish brown coarse to fine SAND, trace fine Gravel, trace Silt (moist) [SP-SM]	19	S-6B	SS	10	23			
		Light brown coarse to fine SAND, some fine Gravel, some Silt (moist) [SM]	20				25			Take S-7 from 18ft to 20ft.
			21	S-7	SS	17	36			-#4 = 79.4% -#200 = 18.6%
	+56.2		22				29			Drive casing to 20ft. Clean out casing. Soak casing for infiltration test.

Project			Project No.						
Project Maximus			170754501						
Location			Elevation and Datum						
Nassau Coliseum			Approx. el. 76.2 ± (NAVD 88)						
Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft)	
	+56.2	End of Boring at 20ft.	20						Bottom of boring at 20ft.
			21						8/18/2023
			22						Perform infiltration test. Extract casing.
			23						Backfill hole, patch to match existing
			24						surface.
			25						
			26						
			27						
			28						
			29						
			30						
			31						
			32						
			33						
			34						
			35						
			36						
			37						
			38						
			39						
			40						
			41						
			42						
			43						
			44						
			45						

Project				Project No.			
Project Maximus				170754501			
Location				Elevation and Datum			
Nassau Coliseum				Approx. el. 76.2 ± (NAVD 88)			
Drilling Company				Date Started		Date Finished	
Craig Geotechnical Drilling				8/18/2023		8/18/2023	
Drilling Equipment				Completion Depth		Rock Depth	
CME75				25.0 ft		N/E	
Size and Type of Bit				Number of Samples		Disturbed	
3-7/8in Tricone Roller Bit				10		Undisturbed	
				0		Core	
				0			
Casing Diameter (in)			Casing Depth (ft)	Water Level (ft.)		First	Completion
4 Flush Joint Steel			14.0			N/A	N/A
						24 HR.	N/A
Casing Hammer		Automatic		Weight (lbs)		Drop (in)	
		140		30		Drilling Foreman	
Sampler				Shane Frick			
2in OD Split Spoon				Field Engineer			
Sampler Hammer		Automatic		Weight (lbs)		Drop (in)	
		140		30		David Mcveety	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)		
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft)			
										10	20	30	40
	+76.2		0								08/18/2023
▲▲▲	+75.7	3" ASPHALT	1								Hand clear to 5ft.
▨		FILL	2								Collect Grab Sample G-1 from 0.5ft to 3ft.
		Dark brown medium to fine SAND, some fine Gravel, trace Silt (wet) [FILL]	3								Collect Grab Sample G-2 from 3ft to 5ft.
			4								
	+71.2	Brown medium to fine SAND, some fine Gravel, trace Silt (moist) [SP]	5				5				Take S-1 from 5ft to 7ft. -#4 = 83.8% -#200 = 3.9%
			6	S-1	SS	16	12			29	
			7				17				
		Brown medium to fine SAND, trace fine Gravel, trace Silt (moist) [SP]	8				18				Take S-2 from 7ft to 9ft. -#4 = 94.2% -#200 = 4.9%
			9	S-2	SS	11	21			59	Drive casing to 9ft. Drill to 9ft. Smooth drilling, brown wash.
			10				28				
		Brown medium to fine SAND, trace Silt, trace fine Gravel (moist) [SP]	11				24				Take S-3 from 9ft to 11ft. -#4 = 90.5% -#200 = 4.1%
			12	S-3	SS	8	10			20	
			13				10				
		Light brown medium SAND, trace Silt, trace fine Gravel (moist) [SP-SM]	14				10				Take S-4 from 11ft to 13ft.
			15	S-4	SS	11	11			22	
			16				11				
		Light brown coarse to fine SAND, some fine Gravel, trace Silt (moist) [SP]	17				13				Take S-5 from 13ft to 15ft. -#4 = 75.3% -#200 = 4.2%
			18	S-5	SS	8	13			26	Drive casing to 14ft. Drill to 15ft. Smooth drilling, brown wash.
			19				11				
		Brown coarse to fine SAND, some fine Gravel, trace Silt (moist) [SP-SM]	20				22				Take S-6 from 15ft to 17ft. -#4 = 71.3% -#200 = 6.9%
		21	S-6	SS	9	19			38		
		22				19					
	Brown medium SAND, trace Silt, some fine Gravel, trace coarse Sand (moist) [SP-SM]	23				18				Take S-7 from 17ft to 19ft.	
		24	S-7	SS	8	18					
		25				23			41		
		26				20					
		27				27				Take S-8 from 19ft to 21ft. -#4 = 55.7% -#200 = 5.8%	
		28				38					

Project			Project No.									
Project Maximus			170754501									
Location			Elevation and Datum									
Nassau Coliseum			Approx. el. 76.2 ± (NAVD 88)									
Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)			
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft)				
	+56.2	Light brown coarse SAND, trace Silt, some fine Gravel (wet) [SP-SM] Light brown coarse to fine SAND, some fine Gravel, trace Silt (moist) [SP-SM]	20	S-8		8	33		71	Drill to 21ft. Smooth drilling, brown wash.		
			21				3			30	Take S-9 from 21ft to 23ft.	
			22	S-9	SS	3	13	5	18	52	Take S-10 from 23ft to 25ft. -#4 = 75.1% -#200 = 8.4%	
			23				13	32				
			24	S-10	SS	10	30	22				
			25				18		Bottom of boring at 25ft. Extract casing. Backfill hole with cuttings. Patch to match existing surface.			
					End of Boring at 25ft.	26						
						27						
						28						
						29						
			30									
			31									
			32									
			33									
			34									
			35									
			36									
			37									
			38									
			39									
			40									
			41									
			42									
			43									
			44									
			45									

Project				Project No.			
Project Maximus				170754501			
Location				Elevation and Datum			
Nassau Coliseum				Approx. el. 77.2 ± (NAVD 88)			
Drilling Company				Date Started		Date Finished	
Craig Geotechnical Drilling				8/17/2023		8/17/2023	
Drilling Equipment				Completion Depth		Rock Depth	
CME75				20.0 ft		N/E	
Size and Type of Bit				Number of Samples		Disturbed	
3-7/8in Tricone Roller Bit				7		Undisturbed	
						Core	
						0	
Casing Diameter (in)				Casing Depth (ft)		Water Level (ft.)	
4 Flush Joint Steel				20.0		First	
						N/A	
						Completion	
						N/A	
						24 HR.	
						N/A	
Casing Hammer				Drilling Foreman			
Automatic		Weight (lbs)		Shane Frick			
140		Drop (in)					
30							
Sampler				Field Engineer			
2in OD Split Spoon				Michael Gillooley			
Sampler Hammer							
Automatic		Weight (lbs)					
140		Drop (in)					
30							

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)	
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft) 10 20 30 40		
	+77.2		0							8/17/2023
▲▲▲▲	+76.7	3" ASPHALT								Hand clear to 6ft.
▨▨▨▨		FILL	1							
		Dark brown medium to fine SAND, trace Silt, trace coarse Sand, trace fine Gravel (moist) [FILL]	2							Collect Grab Sample G-1 from 0.5ft to 3ft.
			3							
			4							Collect Grab Sample G-2 from 3ft to 6ft. Creosote odor detected.
			5							
	+71.0	Dark brown medium to fine SAND, trace Silt, trace coarse Sand, trace fine Gravel (moist) [FILL]	6	S-1A	SS		40			Take S-1 from 6ft to 8ft. Creosote odor detected.
		Tannish brown medium to fine SAND, trace Silt, trace coarse Sand, trace fine Gravel (moist) [SP-SM]	7	S-1B	SS	6	6		14	
		Tannish brown medium to fine SAND, trace Silt, trace coarse Sand, trace fine Gravel (moist) [SP-SM]	8				4		6	Take S-2 from 8ft to 10ft.
			9	S-2	SS	4	8		14	Drive casing to 10ft. Drill to 10ft. Smooth drilling, brown wash.
		Tannish brown medium to fine SAND, trace Silt, trace coarse Sand, trace fine Gravel (moist) [SP]	10				10		16	Take S-3 from 10ft to 12ft. -#4 = 93.3% -#200 = 4.1% Drill to 12ft. Smooth drilling, brown wash.
			11	S-3	SS	7	11		9	
		Tannish brown medium to fine SAND, trace Silt, trace coarse Sand, trace fine Gravel (moist) [SP-SM]	12				11		10	Take S-4 from 12ft to 14ft.
			13	S-4	SS	12	11		12	
		Tannish brown gravelly medium to fine SAND, trace Silt, trace coarse Sand (wet) [SP-SM]	14	S-5A	SS		7		12	Take S-5 from 14ft to 16ft. -#4 = 89.0% -#200 = 4.0% Drive casing to 15ft. Drill to 16ft. Smooth drilling, brown wash.
		Tannish brown medium to fine SAND, trace Silt, trace coarse Sand, trace fine Gravel (wet) [SP]	15	S-5B	SS		13		7	
		Tannish brown medium to fine SAND, trace Silt, trace coarse Sand, trace fine Gravel (wet) [SP-SM]	16				6		13	Take S-6 from 16ft to 18ft.
			17	S-6	SS	11	11		7	
		Tannish brown gravelly coarse to fine SAND, trace Silt (wet) [SP-SM]	18	S-7A	SS		14		12	Take S-7 from 18ft to 20ft. 7A: -#4 = 64.2% -#200 = 7.5% 7B: -#4 = 96.6%
		Light brown medium to fine SAND, trace fine Gravel, trace Silt (moist) [SP]	19	S-7B	SS	17	13		13	
	+57.2		20				12			

Project			Project No.							
Project Maximus			170754501							
Location			Elevation and Datum							
Nassau Coliseum			Approx. el. 77.2 ± (NAVD 88)							
Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)	
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft)		
	+57.2	End of Boring at 20ft.	20							-#200 = 4.1% Drive casing to 20ft. Clean out casing. Soak casing for infiltration test. Bottom of boring at 20ft. 8/18/2023 Perform infiltration test. Extract casing. Backfill hole, patch to match existing surface.
			21							
			22							
			23							
			24							
			25							
			26							
			27							
			28							
			29							
			30							
			31							
			32							
			33							
			34							
			35							
			36							
			37							
			38							
			39							
			40							
			41							
			42							
			43							
			44							
			45							

Project Project Maximus				Project No. 170754501			
Location				Elevation and Datum Approx. el. 77.5 ± (NAVD 88)			
Drilling Company Craig Geotechnical Drilling				Date Started 9/6/2023		Date Finished 9/6/2023	
Drilling Equipment CME75				Completion Depth 20.0 ft		Rock Depth N/E	
Size and Type of Bit 3-7/8in Drag Bit				Number of Samples	Disturbed 7	Undisturbed 0	Core 0
Casing Diameter (in) 4 Flush Joint Steel			Casing Depth (ft) 20.0	Water Level (ft.)	First ▽ N/A	Completion ▼ N/A	24 HR. ▼ N/A
Casing Hammer Automatic		Weight (lbs) 140	Drop (in) 30	Drilling Foreman Shane Frick			
Sampler 2in OD Split Spoon							
Sampler Hammer Automatic		Weight (lbs) 140	Drop (in) 30	Field Engineer Thomas Keane			

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data						Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)				
				Number	Type	Recov. (in)	Penetr- resist BL/6in	N-Value (Blows/ft) 10 20 30 40						
	+77.5													
	+77.2	3" ASPHALT FILL	0										9/6/2023 Hand clear to 6ft. Collect Grab Sample G-1 from 0.5ft to 3ft. Collect Grab Sample G-2 from 3ft to 6ft.	
			1											
			2											
			3											
4														
	+71.5	Gray to tan GRAVEL, some coarse Sand, trace Silt (moist) [GP] Light brown coarse to medium SAND, trace Silt, trace fine Gravel (moist) [SP-SM] Light brown medium to fine SAND, trace Silt, trace fine Gravel (moist) [SP-SM] Light brown medium to fine SAND, trace Silt (moist) [SP-SM] Light brown medium to fine SAND, trace Silt, trace fine Gravel (moist) [SP-SM] Light brown medium to fine SAND, trace Silt (moist) [SP-SM] Light brown medium to fine SAND, trace Silt, trace fine Gravel (moist) [SP-SM] Light brown medium to fine SAND, trace Silt, trace fine Gravel (moist) [SP-SM] Light brown gravelly fine to medium SAND, trace Silt (moist) [SP-SM]	6				1						Take S-1 from 6ft to 8ft. Take S-2 from 8ft to 10ft. Drive casing to 10ft. Drill to 10ft. Smooth drilling, brown wash. Take S-3 from 10ft to 12ft. Take S-4 from 12ft to 14ft. Take S-5 from 14ft to 16ft. Drive casing to 15ft. Drill to 15ft. Smooth drilling, brown wash. Take S-6 from 16ft to 18ft. Take S-7 from 18ft to 20ft. Drive casing to 20ft. Clean out casing. Soak casing for infiltration test.	
			7	S-1	SS	22		2						3
			8					1						
			9	S-2	SS	16		16						31
			10					15						
			11	S-3	SS	12		6						14
			12					9						
			13	S-4	SS	14		15						31
			14					14						
			15	S-5	SS	9		8						20
			16					15						
			17	S-6	SS	15		18						33
			18					14						
			19	S-7	SS	14		15						37
				+57.5		20								

Project		Project No.							
Project Maximus		170754501							
Location		Elevation and Datum							
		Approx. el. 77.5 ± (NAVD 88)							
Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov (in)	Penetr- resist BL/6in	N-Value (Blows/ft)	
	+57.5	End of Boring at 20ft.	20						Bottom of boring at 20ft.
			21						9/7/2023 Perform infiltration test. Extract casing. Backfill hole, patch to match existing surface.
			22						
			23						
			24						
			25						
			26						
			27						
			28						
			29						
			30						
			31						
			32						
			33						
			34						
			35						
			36						
			37						
			38						
			39						
			40						
			41						
			42						
			43						
			44						
			45						

APPENDIX B

(LANGAN INFILTRATION TEST DATA)

LBD-02

Test 1	
<i>Start Time</i>	9:28 AM
Time (min)	Drop (in)
5	2.4
10	4.8
15	7.2
20	8.4
30	12
40	14.4
50	16.8
60	19.2
Overall (in/hr)	19.2

Test 2	
<i>Start Time</i>	10:56 AM
Time (min)	Drop (in)
5	2.4
10	3.6
15	4.8
20	6
30	9.6
40	14.4
50	19.2
60	19.2
Overall (in/hr)	19.2

LBD-02, Continued

Test 3	
<i>Start Time</i>	12:00 PM
Time (min)	Drop (in)
5	4.8
10	8.4
15	12
20	18
30	24 (bottom of casing)
40	-
50	-
60	-
Overall (in/hr)	48

Test 4	
<i>Start Time</i>	12:40 PM
Time (min)	Drop (in)
5	1.2
10	2.4
15	7.2
20	9.6
30	15.6
40	16.8
50	24 (bottom of casing)
60	-
Overall (in/hr)	29

LBD-05

Test 1	
<i>Start Time</i>	<i>10:19 AM</i>
Time (min)	Drop (in)
5	0
10	0
15	0
20	1.2
30	1.2
40	1.2
50	1.2
60	1.2
Overall (in/hr)	1.2

Test 2	
<i>Start Time</i>	<i>11:19 AM</i>
Time (min)	Drop (in)
5	0
10	0
15	1.2
20	1.2
30	1.8
40	1.8
50	3.6
60	3.6
Overall (in/hr)	3.6

LBD-05, Continued

Test 3	
<i>Start Time</i>	<i>12:21 PM</i>
Time (min)	Drop (in)
5	0
10	0
15	0
20	1.2
30	1.2
40	1.2
50	1.8
60	2.4
Overall (in/hr)	2.4

Test 4	
<i>Start Time</i>	<i>1:15 PM</i>
Time (min)	Drop (in)
5	0
10	0
15	1.2
20	3.6
30	3.6
40	3.6
50	3.6
60	3.6
Overall (in/hr)	3.6

LBD-07

Test 1	
<i>Start Time</i>	<i>2:00 PM</i>
Time (min)	Drop (in)
0.82	6*
10	-
15	-
20	-
30	-
40	-
50	-
60	-
Overall (in/hr)	-

* Water in casing draining too fast to measure in regular intervals, test considered invalid

Test 2	
<i>Start Time</i>	<i>2:05 PM</i>
Time (min)	Drop (in)
0.77	6*
10	-
15	-
20	-
30	-
40	-
50	-
60	-
Overall (in/hr)	-

* Water in casing draining too fast to measure in regular intervals, test considered invalid

LBD-07, Continued

Test 3	
<i>Start Time</i>	<i>2:10 PM</i>
Time (min)	Drop (in)
0.77	6*
10	-
15	-
20	-
30	-
40	-
50	-
60	-
Overall (in/hr)	-

* Water in casing draining too fast to measure in regular intervals, test considered invalid

Test 4	
<i>Start Time</i>	<i>2:15 PM</i>
Time (min)	Drop (in)
0.80	6*
10	-
15	-
20	-
30	-
40	-
50	-
60	-
Overall (in/hr)	-

* Water in casing draining too fast to measure in regular intervals, test considered invalid

LBD-08

Test 1	
<i>Start Time</i>	11:30 AM
Time (min)	Drop (in)
5	2.25
10	3.75
15	5.25
20	6.75
30	9.5
40	12.5
50	15.25
60	17.5
Overall (in/hr)	17.5

Test 2	
<i>Start Time</i>	12:30 PM
Time (min)	Drop (in)
5	2
10	3.25
15	4
20	4.75
30	7.5
40	10.25
50	12.75
60	15.125
Overall (in/hr)	15.1

LBD-08, Continued

Test 3	
<i>Start Time</i>	<i>1:30 PM</i>
Time (min)	Drop (in)
5	1.875
10	2.5
15	4
20	4.75
30	7
40	9.5
50	11.75
60	13.75
Overall (in/hr)	13.75

Test 4	
<i>Start Time</i>	<i>2:30 PM</i>
Time (min)	Drop (in)
5	2
10	2.5
15	3.5
20	4.5
30	6.75
40	9.125
50	11
60	13.125
Overall (in/hr)	13.1

Estimated Permeability Rate from Hazen's Formula

$$k = 100 (D_{10})^2 \text{ Hazen's Formula}$$

where: k is the estimated permeability rate
 D_{10} is the effective diameter in centimeters

Boring ID	Sample #	Sample mid-pt. Depth (feet)	D_{10} (cm)	k (in/hr)	Percent Passing No. 200 Sieve (%)	USCS Class
LBD-01	S-1	5	0.01833	48	6.8	SP-SM
LBD-01	S-6	16	0.02498	88	4.2	SP
LBD-01	S-8	20	0.01924	52	5.3	SP-SM
LBD-01	S-9	22	0.0099	14	8.6	SP-SM
LBD-02	S-3	10	0.02924	121	2.6	SP
LBD-02	S-5	14	0.03197	145	2.9	SP
LBD-02	S-6	17	0.03259	151	3.1	SP
LBD-03	S-1	6	0.02553	92	5.7	SP-SM
LBD-03	S-3A	10	NA	NA	41.6	SM
LBD-03	S-4	12	0.01713	42	5.1	SP-SM
LBD-03	S-5	14	0.01633	38	6.4	SP-SM
LBD-03	S-7	18	0.01002	14	8.9	SP-SM
LBD-03	S-9	22	0.02003	57	6.2	SP-SM
LBD-03	S-10	24	0.01838	48	6.1	SP-SM
LBD-04	S-4	12	0.02057	60	4.9	SP
LBD-04	S-8B	20	0.00791	9	9.7	SP-SM
LBD-04	S-10	24	0.01834	48	5.4	SP-SM
LBD-05	S-1A	7	NA	NA	10.5	SP-SM
LBD-05	S-2	9	0.00978	14	9.2	SP-SM
LBD-05	S-4	13	0.03534	177	2.8	SP
LBD-05	S-7	19	NA	NA	18.6	SM
LBD-06	S-1	6	0.02232	71	3.9	SP
LBD-06	S-2	8	0.02048	59	4.9	SP
LBD-06	S-3	10	0.0222	70	4.1	SP
LBD-06	S-5	14	0.02216	70	4.2	SP
LBD-06	S-6	16	0.01466	30	6.9	SP-SM
LBD-06	S-8	20	0.01937	53	5.8	SP-SM
LBD-06	S-10	24	0.01057	16	8.4	SP-SM
LBD-07	S-3	11	0.02249	72	4.1	SP
LBD-07	S-5B	15	0.024	82	4	SP
LBD-07	S-7A	19	0.01307	24	7.5	SP-SM
LBD-07	S-7B	19	0.01885	50	4.1	SP

APPENDIX C

(LANGAN LABORATORY TESTING RESULTS)



1017 Greeley Ave N
Union, NJ 07083
908-964-0786
www.RSAGEolab.com

Letter of Transmittal

Date: 9-5-23

Job No.: 869

Lab Log: 23-2893

Attention: Julia Langewis
Langan Engineering & Environmental Services
360 West 31st Street, 8th Floor
New York, New York 10001

CC:

Re: Project Maximus, Hempstead, NY
Langan# not provided

Sample(s) ID: **LBD-01 S-1 thru LBD-07 S-7B** (36 samples)

Dear Ms. Langewis,

Please find attached results for the samples referenced above. The following lab testing was performed:

- ASTM D422 Washed Sieve Analysis (32 tests)
- ASTM D4318 Atterberg Limits (4 tests)

Regards,
RSA Geolab, LLC

Remarks: If you have any questions, please call 908-964-0786.

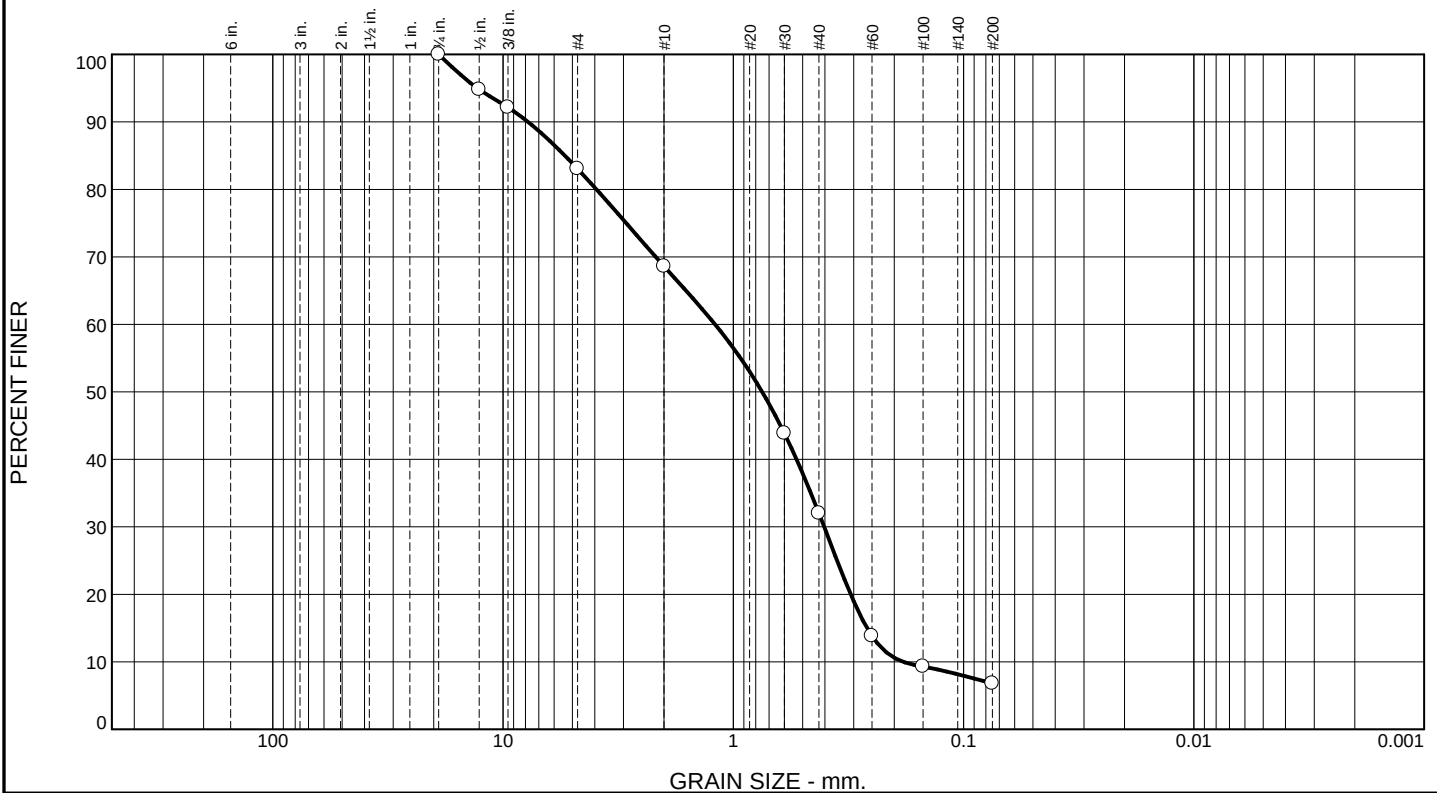
Signed: _____

A handwritten signature in black ink, appearing to read "Raza S. Ahmed", written over a horizontal line.

Dr. Raza S. Ahmed
President RSA Geolab, LLC

RSA's Geolab's Geotechnical Laboratory testing was performed and results reported in accordance with ASTM standards and accepted industry standards. No other representations or warranties either express or implied are given. RSA Geolab, LLC neither accepts responsibility for nor makes claim to the final use and

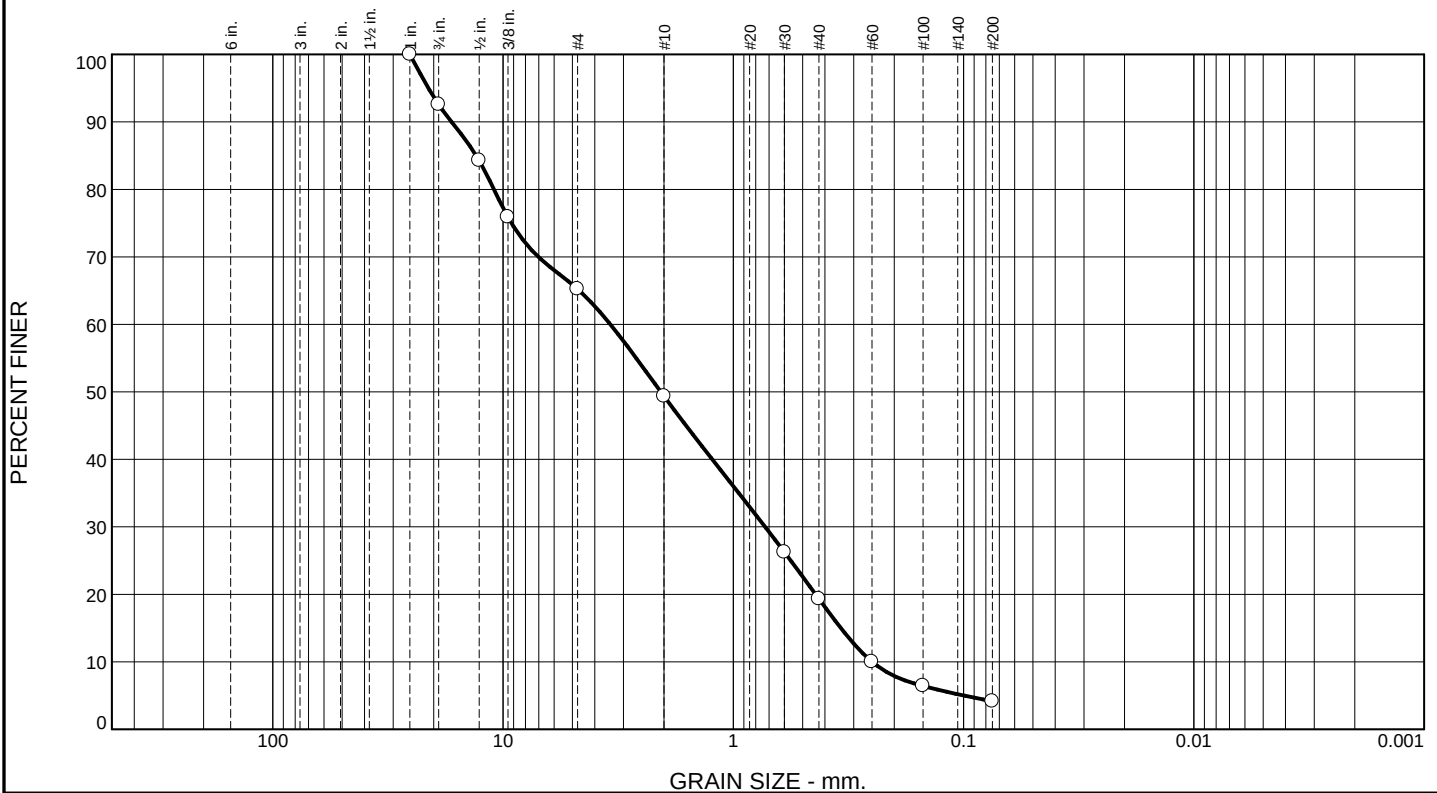
Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	16.9	14.5	36.6	25.2	6.8	

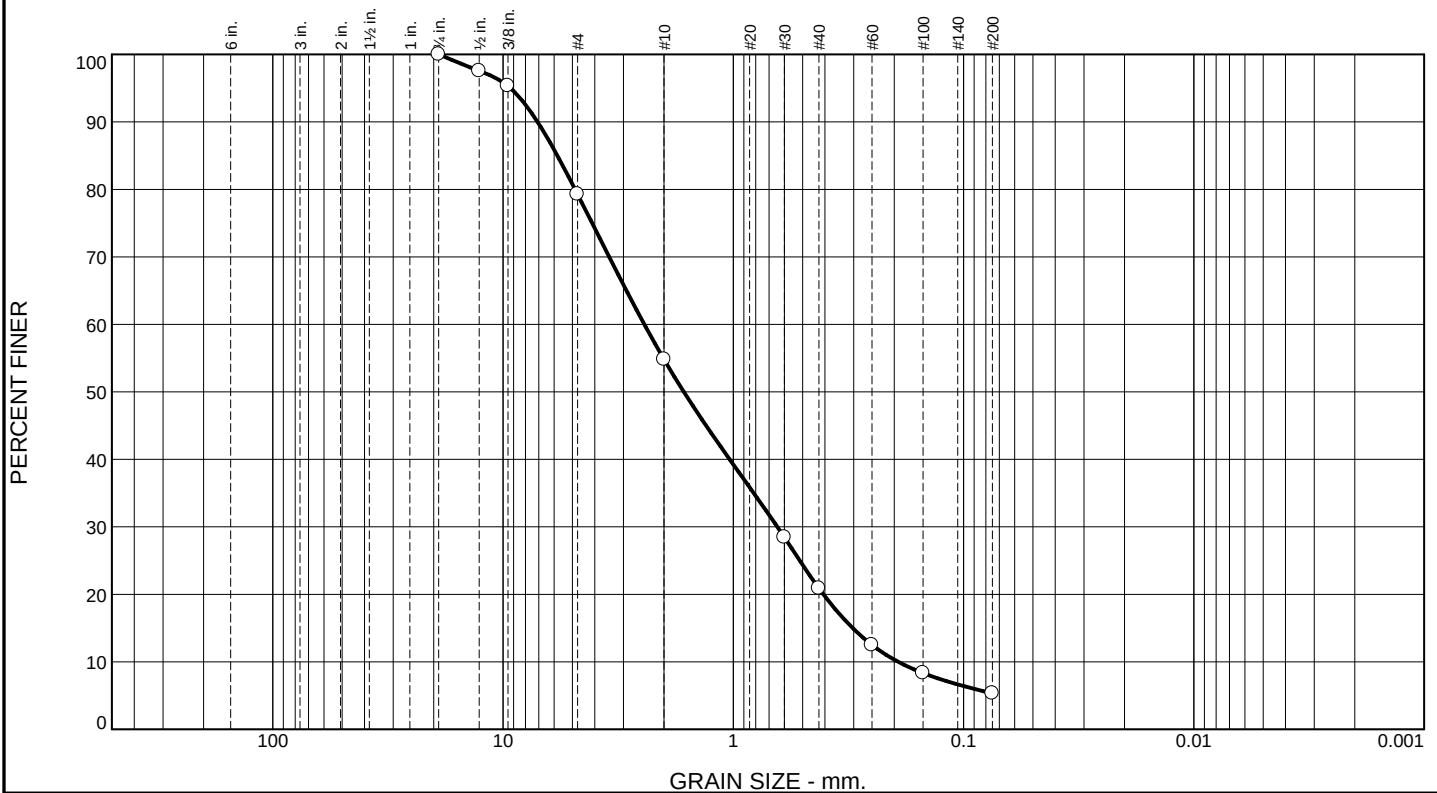
SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		

Particle Size Distribution Report



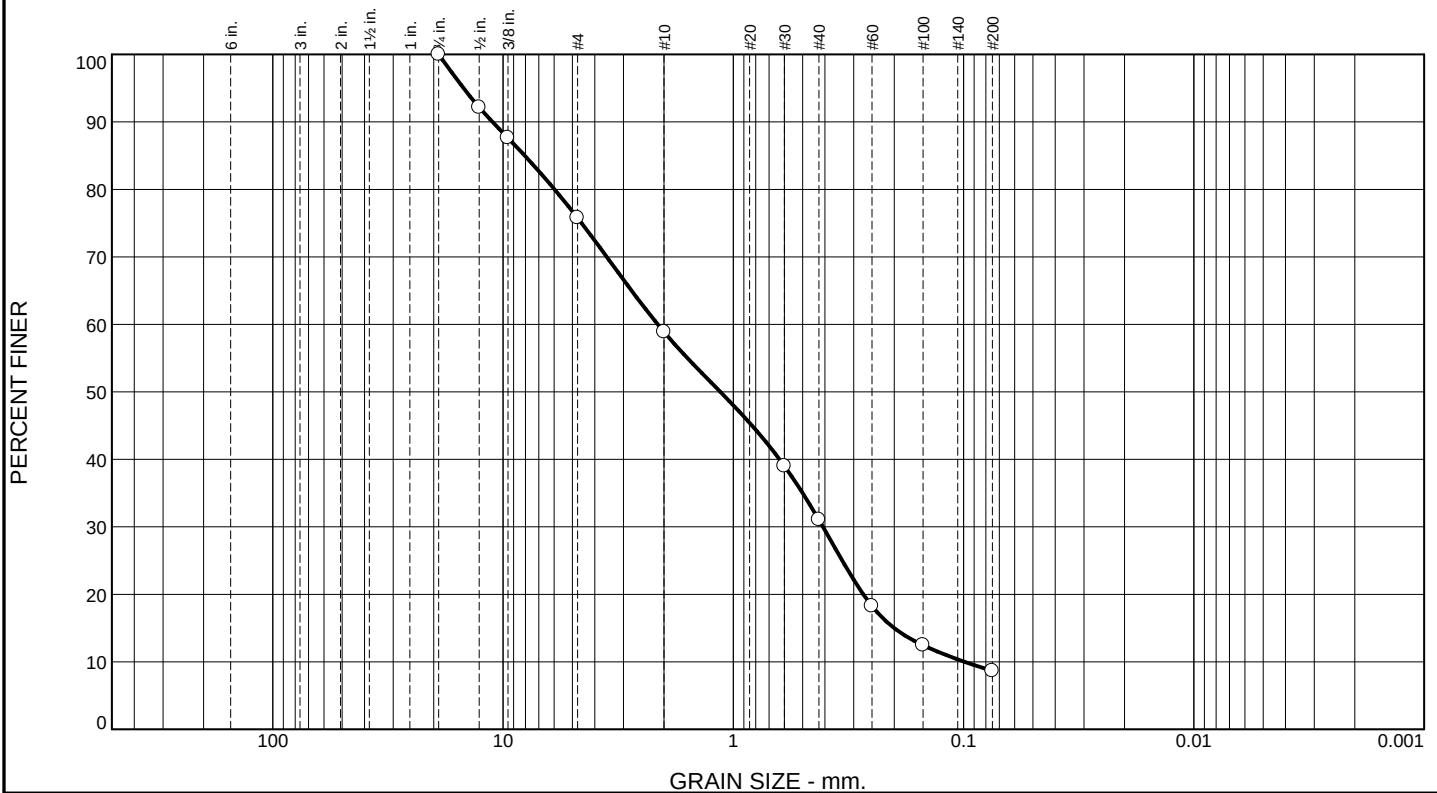
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	7.4						

Particle Size Distribution Report



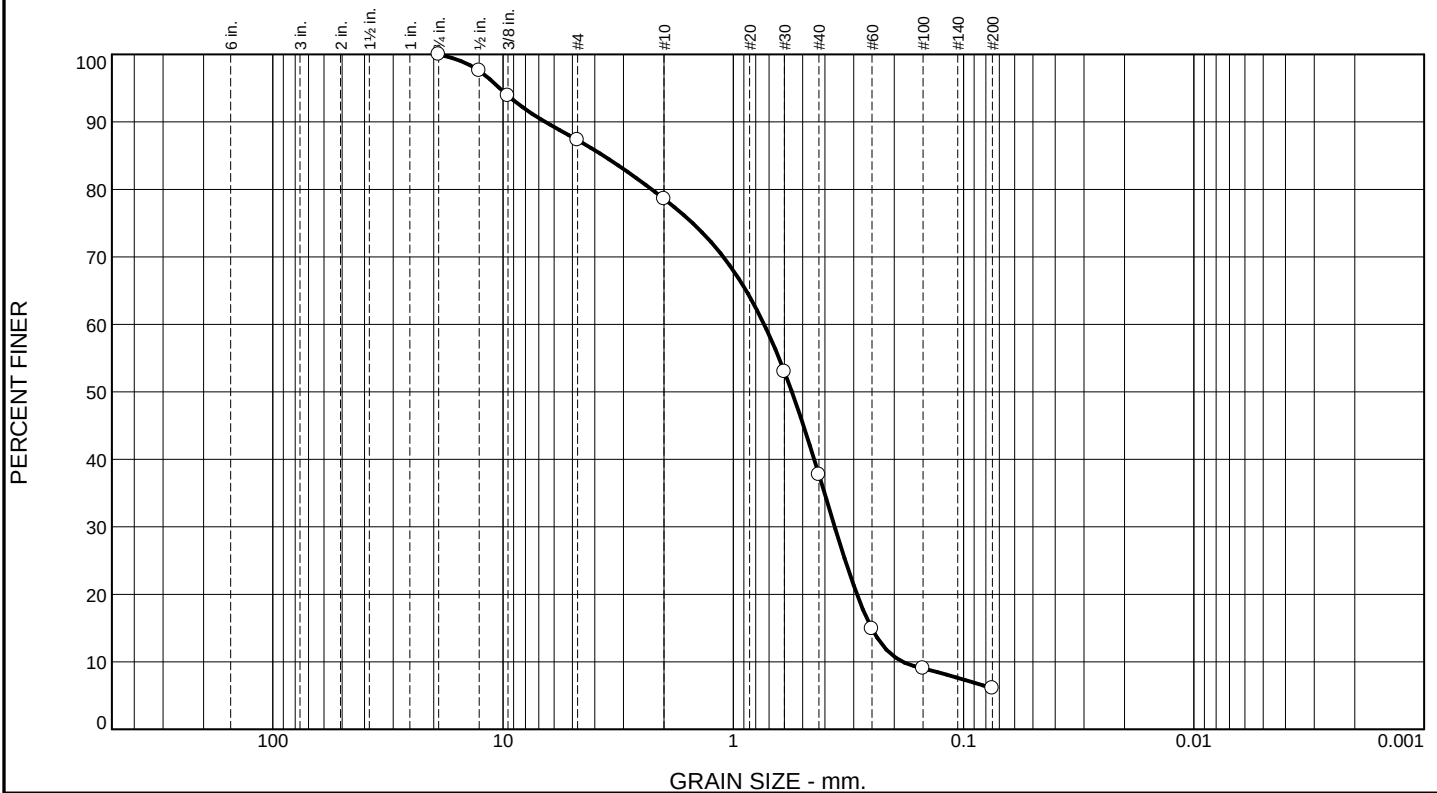
% +3"

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Cl

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	12.7	8.7	40.9	31.6	6.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	97.6		
.375	93.9		
#4	87.3		
#10	78.6		
#30	53.0		
#40	37.7		
#60	14.9		
#100	9.0		
#200	6.1		

* (no specification provided)

Material Description

Brownish Yellow

PL= **Atterberg Limits** PI=

LL=

Coefficients

D₉₀= 6.5615 D₈₅= 3.6704 D₆₀= 0.7352

D₅₀= 0.5568 D₃₀= 0.3629 D₁₅= 0.2510

D₁₀= 0.1838 C_u= 4.00 C_c= 0.97

Classification

USCS= AASHTO=

Remarks

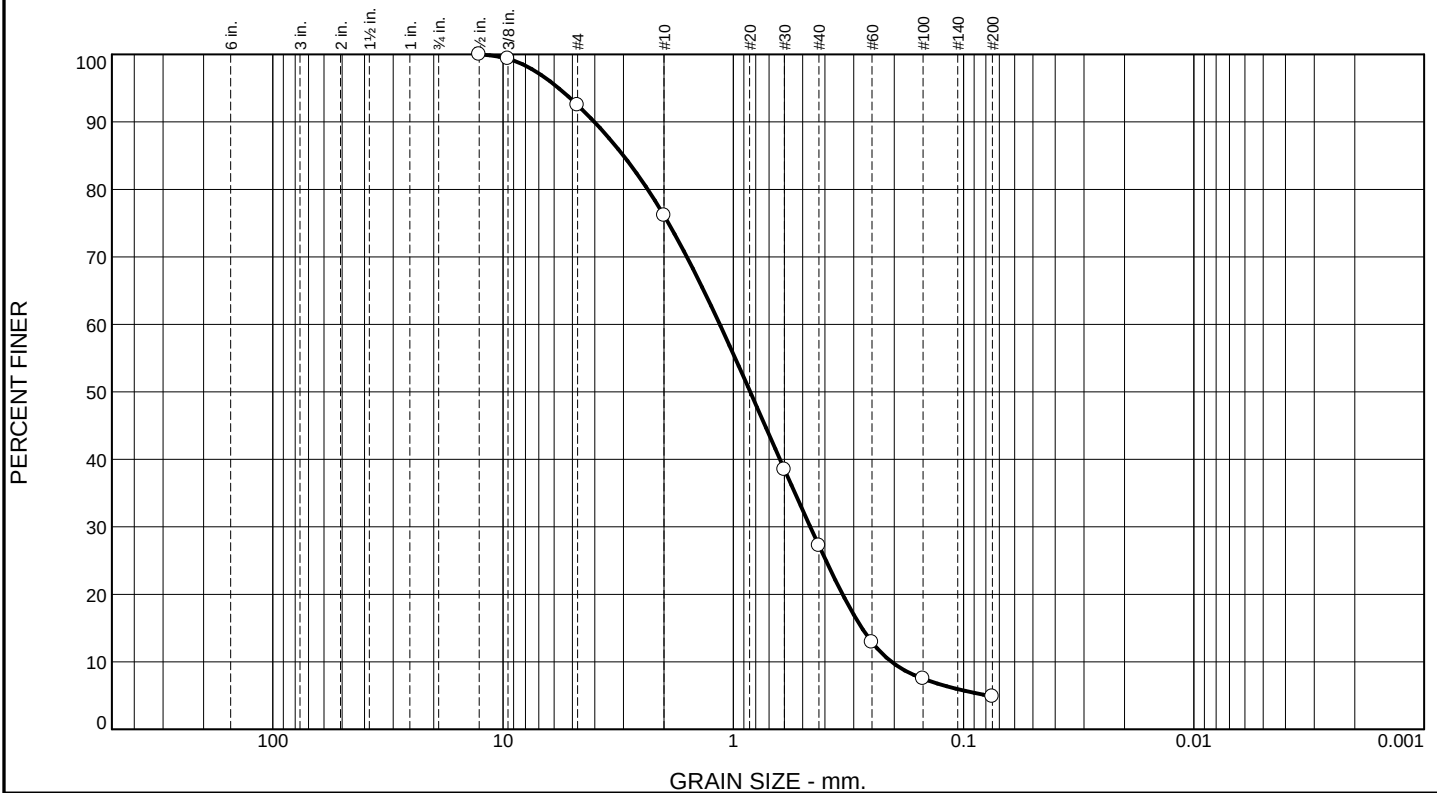
Sample Number: LBD-03 S-10 23-25

Date: 9-5-23

RSA Geolab Union, New Jersey	Client: Langan Engineering Project: Project Maximus, Hempstead, NY Project# not provided
	Project No: 869 Figure

Tested By: ER/OH Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	7.5	16.4	48.9	22.3	4.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.5	100.0		
.375	99.4		
#4	92.5		
#10	76.1		
#30	38.5		
#40	27.2		
#60	12.9		
#100	7.5		
#200	4.9		

* (no specification provided)

Material Description
Brownish Yellow

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 4.0147 D₈₅= 3.0020 D₆₀= 1.1452
 D₅₀= 0.8448 D₃₀= 0.4634 D₁₅= 0.2765
 D₁₀= 0.2057 C_u= 5.57 C_c= 0.91

Classification
 USCS= SP AASHTO=

Remarks

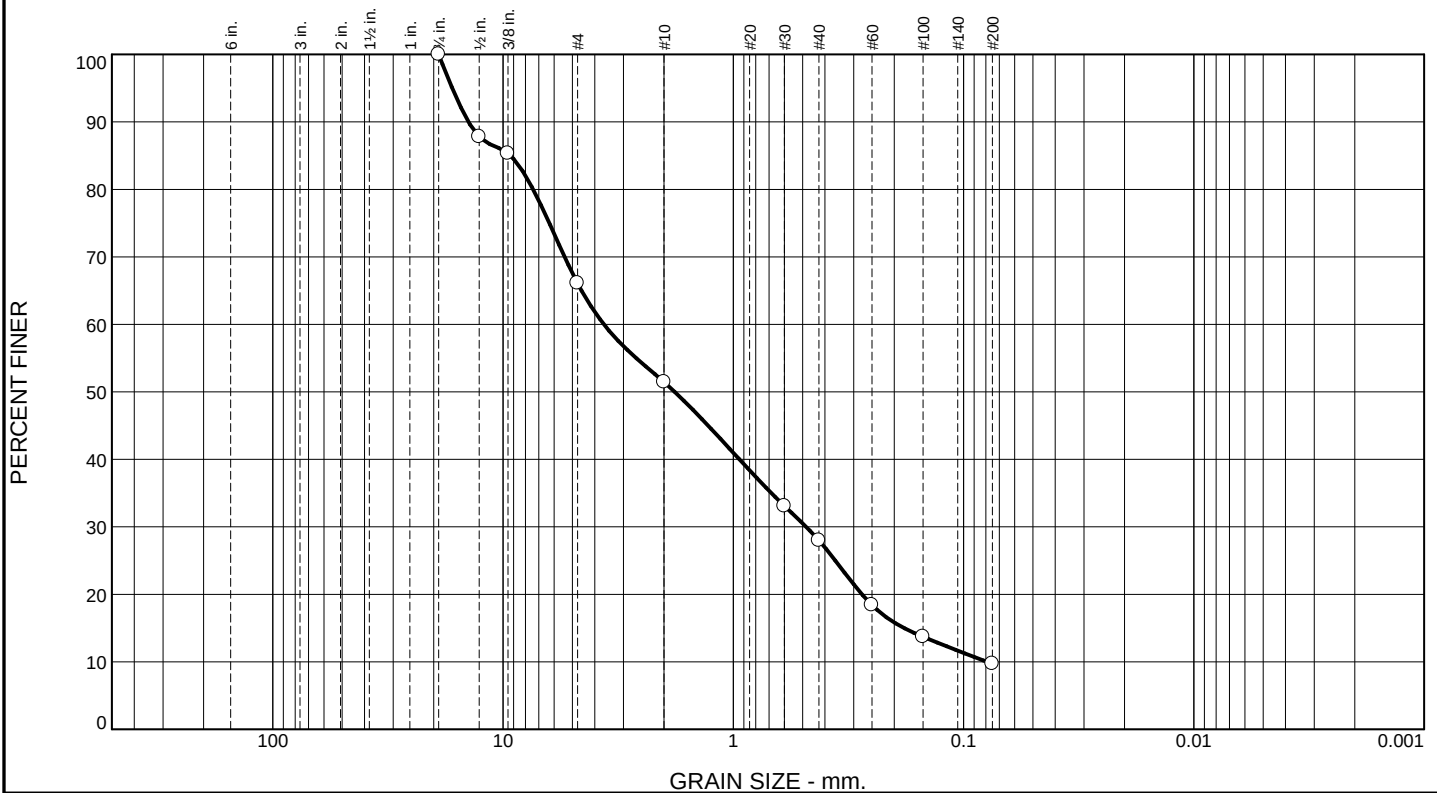
Sample Number: LBD-04 S-4 11-13

Date: 9-5-23

RSA Geolab Union, New Jersey	Client: Langan Engineering Project: Project Maximus, Hempstead, NY Project# not provided
	Project No: 869 Figure

Tested By: ER/OH Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	33.9	14.6	23.5	18.3	9.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	87.8		
.375	85.3		
#4	66.1		
#10	51.5		
#30	33.1		
#40	28.0		
#60	18.4		
#100	13.7		
#200	9.7		

* (no specification provided)

Sample Number: LBD-04 S-8B 19-21

Date: 9-5-23

Material Description

Brownish Yellow

PL=

Atterberg Limits

LL=

PI=

Coefficients

D₉₀= 14.1345

D₈₅= 9.2906

D₆₀= 3.6499

D₅₀= 1.7977

D₃₀= 0.4830

D₁₅= 0.1812

D₁₀= 0.0791

C_u= 46.13

C_c= 0.81

Classification

USCS=

AASHTO=

Remarks

RSA Geolab

Union, New Jersey

Client: Langan Engineering

Project: Project Maximus, Hempstead, NY
Project# not provided

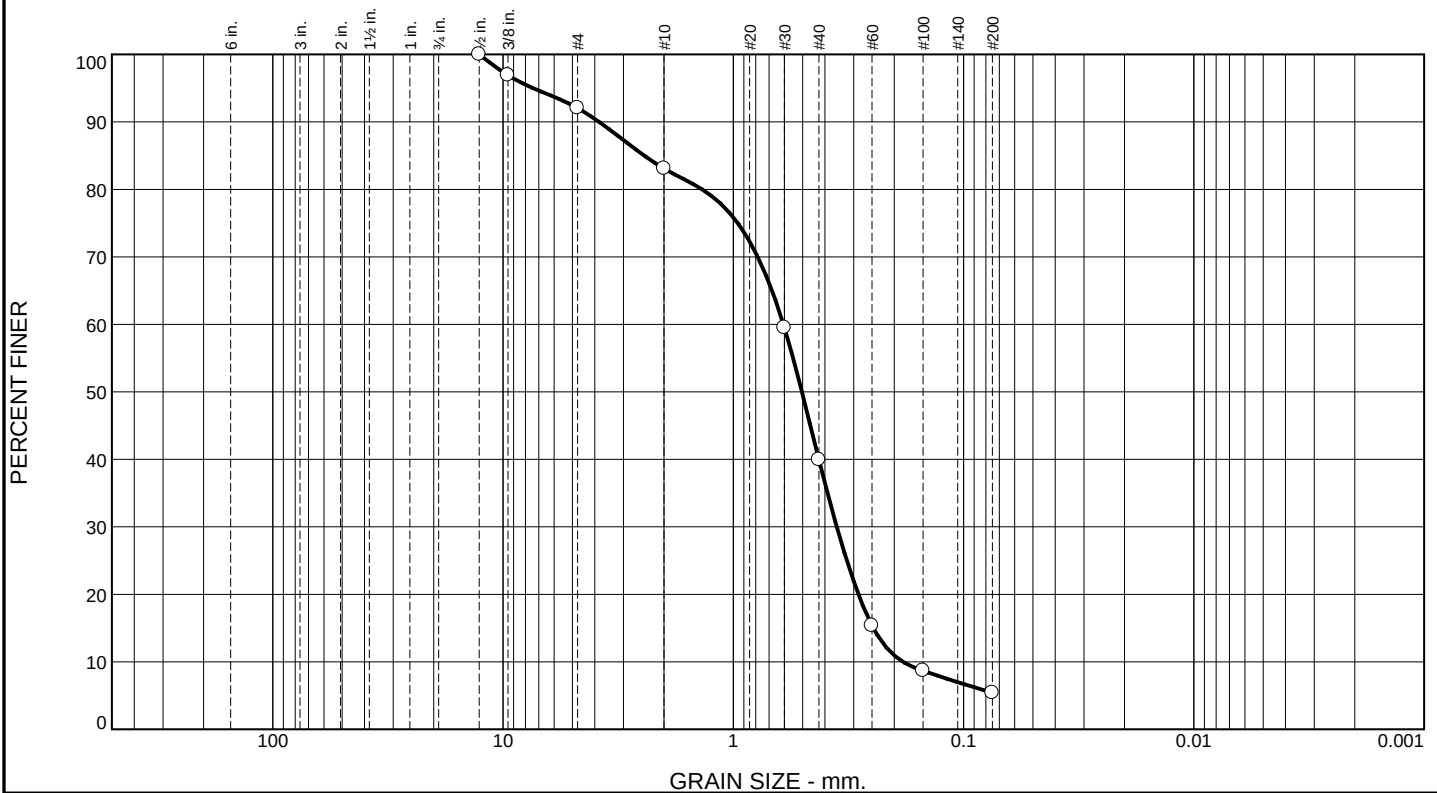
Project No: 869

Figure

Tested By: ER/OH

Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	8.0	8.9	43.2	34.5	5.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.5	100.0		
.375	96.9		
#4	92.0		
#10	83.1		
#30	59.5		
#40	39.9		
#60	15.4		
#100	8.7		
#200	5.4		

* (no specification provided)

Sample Number: LBD-04 S-10 23-25

Date: 9-5-23

Material Description

Brownish Yellow

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₉₀= 3.8278

D₈₅= 2.4346

D₆₀= 0.6061

D₅₀= 0.5038

D₃₀= 0.3555

D₁₅= 0.2466

D₁₀= 0.1834

C_u= 3.31

C_c= 1.14

Classification

USCS=

AASHTO=

Remarks

RSA Geolab

Union, New Jersey

Client: Langan Engineering

Project: Project Maximus, Hempstead, NY
Project# not provided

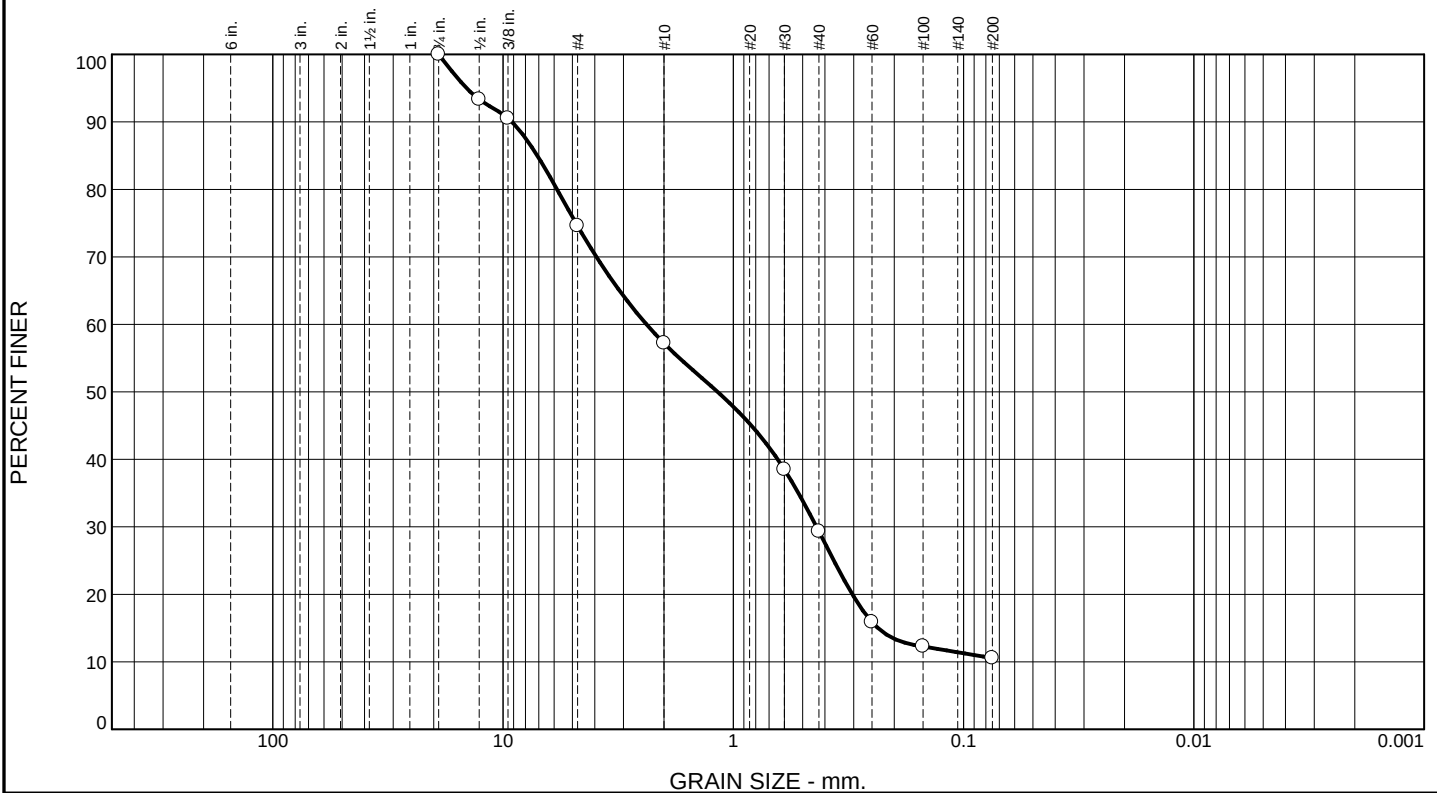
Project No: 869

Figure

Tested By: ER/OH

Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	25.4	17.4	27.9	18.8	10.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	93.3		
.375	90.5		
#4	74.6		
#10	57.2		
#30	38.5		
#40	29.3		
#60	15.9		
#100	12.3		
#200	10.5		

* (no specification provided)

Sample Number: LBD-05 S-1A 6-8

Date: 9-5-23

Material Description

Brownish Yellow

PL=

Atterberg Limits

LL=

PI=

Coefficients

D₉₀= 9.1601

D₈₅= 7.0993

D₆₀= 2.3831

D₅₀= 1.1711

D₃₀= 0.4352

D₁₅= 0.2353

D₁₀=

C_u=

C_c=

Classification

USCS=

AASHTO=

Remarks

RSA Geolab

Union, New Jersey

Client: Langan Engineering

Project: Project Maximus, Hempstead, NY
Project# not provided

Project No: 869

Figure

Tested By: ER/OH

Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.3	16.0	18.0	34.6	19.9	9.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	97.7		
.5	96.4		
.375	93.0		
#4	81.7		
#10	63.7		
#30	38.1		
#40	29.1		
#60	16.4		
#100	11.7		
#200	9.2		

* (no specification provided)

Sample Number: LBD-05 S-2 8-10

Date: 9-5-23

Material Description

Strong Brown

PL=

Atterberg Limits

LL=

PI=

Coefficients

D₉₀= 7.7631

D₈₅= 5.7000

D₆₀= 1.6731

D₅₀= 1.0205

D₃₀= 0.4392

D₁₅= 0.2271

D₁₀= 0.0978

C_u= 17.11

C_c= 1.18

Classification

USCS=

AASHTO=

Remarks

RSA Geolab

Union, New Jersey

Client: Langan Engineering

Project: Project Maximus, Hempstead, NY
Project# not provided

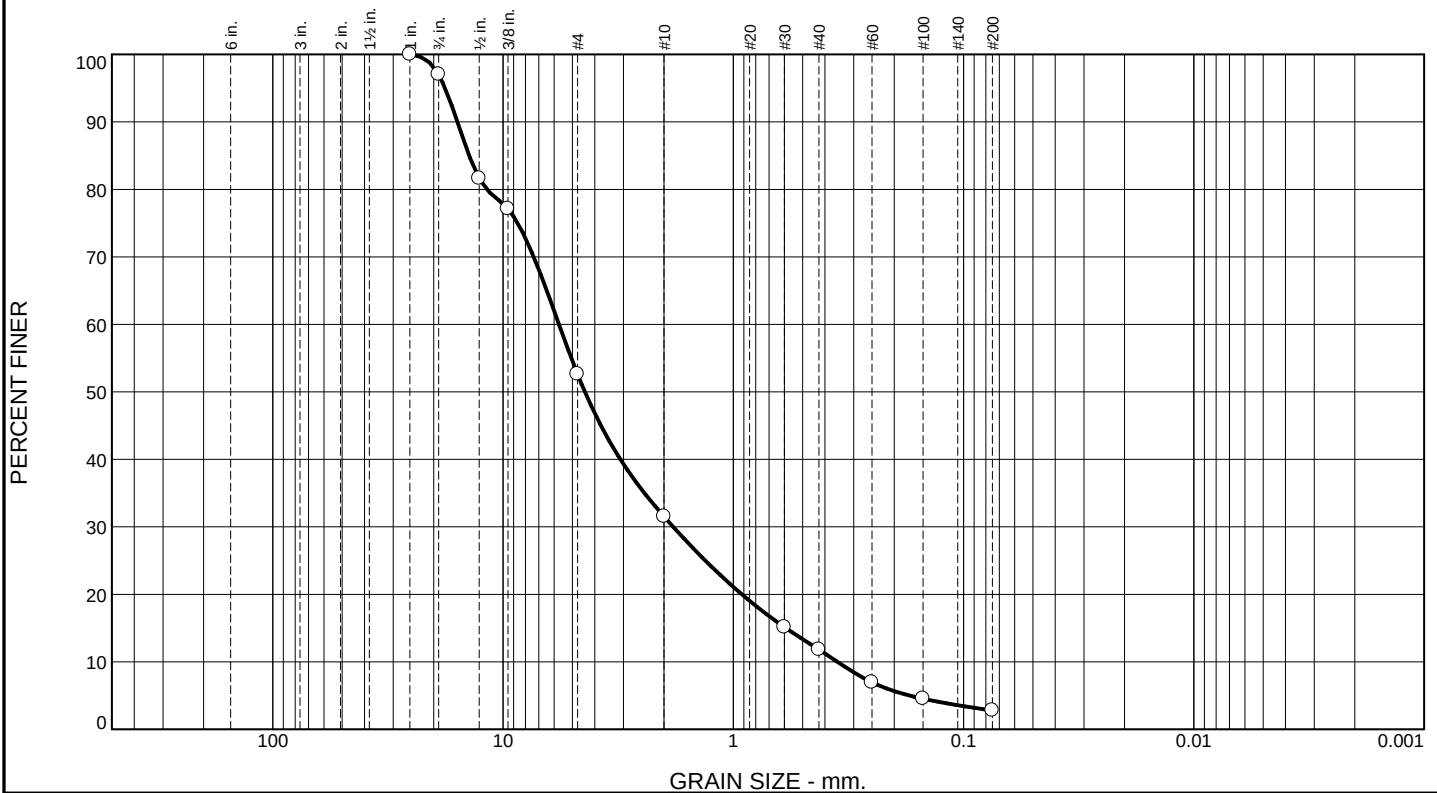
Project No: 869

Figure

Tested By: ER/OH

Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.0	44.4	21.1	19.7	9.0	2.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	97.0		
.5	81.6		
.375	77.1		
#4	52.6		
#10	31.5		
#30	15.1		
#40	11.8		
#60	7.0		
#100	4.5		
#200	2.8		

* (no specification provided)

Material Description

Brownish Yellow

PL= **Atterberg Limits** PI=

LL=

Coefficients

D₉₀= 15.7895 D₈₅= 14.0331 D₆₀= 5.7196

D₅₀= 4.4124 D₃₀= 1.8246 D₁₅= 0.5918

D₁₀= 0.3534 C_u= 16.18 C_c= 1.65

Classification

USCS= SW AASHTO=

Remarks

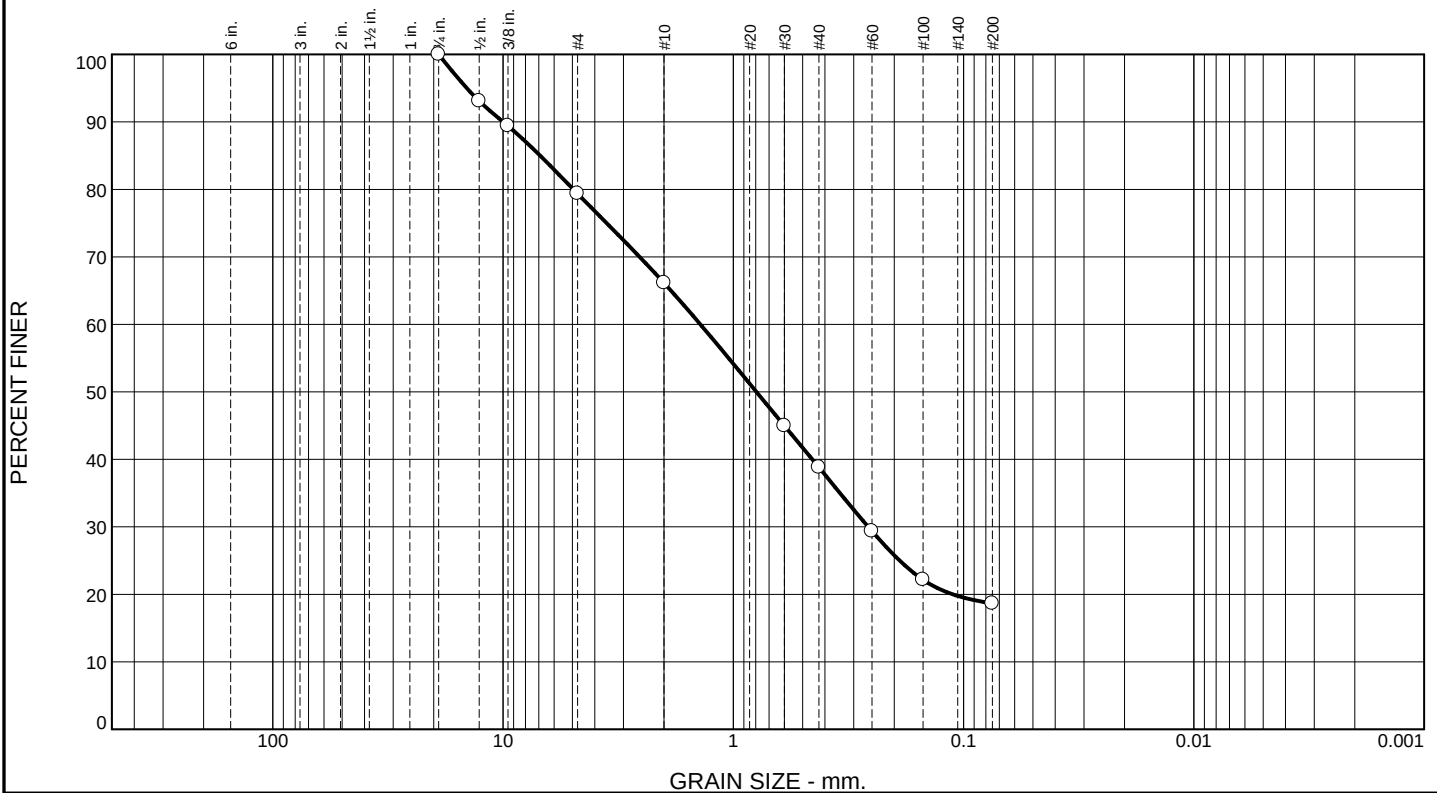
Sample Number: LBD-05 S-4 12-14

Date: 9-5-23

RSA Geolab Union, New Jersey	Client: Langan Engineering Project: Project Maximus, Hempstead, NY Project# not provided
	Project No: 869 Figure

Tested By: ER/OH Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	20.6	13.3	27.3	20.2	18.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	93.1		
.375	89.4		
#4	79.4		
#10	66.1		
#30	45.0		
#40	38.8		
#60	29.4		
#100	22.2		
#200	18.6		

* (no specification provided)

Material Description
 Brownish Yellow

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 9.9877 D₈₅= 6.9062 D₆₀= 1.3906
 D₅₀= 0.7942 D₃₀= 0.2597 D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= AASHTO=

Remarks

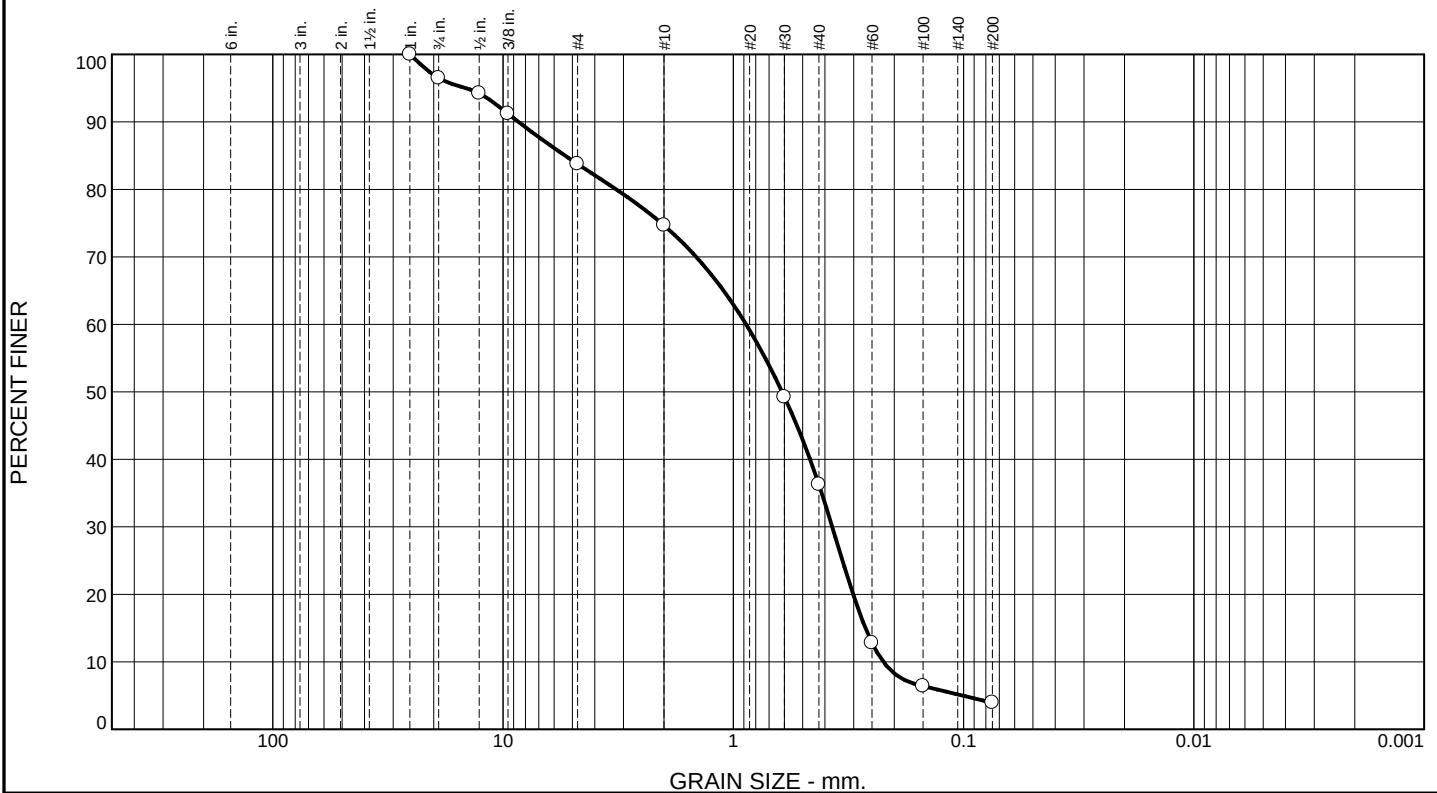
Sample Number: LBD-05 S-7 18-20

Date: 9-5-23

RSA Geolab Union, New Jersey	Client: Langan Engineering Project: Project Maximus, Hempstead, NY Project# not provided
	Project No: 869 Figure

Tested By: ER/OH Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.5	12.7	9.1	38.4	32.4	3.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	96.5		
.5	94.2		
.375	91.2		
#4	83.8		
#10	74.7		
#30	49.2		
#40	36.3		
#60	12.8		
#100	6.4		
#200	3.9		

* (no specification provided)

Material Description

Yellow

PL= **Atterberg Limits** PI=

LL=

Coefficients

D₉₀= 8.5766 D₈₅= 5.3735 D₆₀= 0.8803

D₅₀= 0.6144 D₃₀= 0.3721 D₁₅= 0.2670

D₁₀= 0.2232 C_u= 3.94 C_c= 0.70

Classification

USCS= SP AASHTO=

Remarks

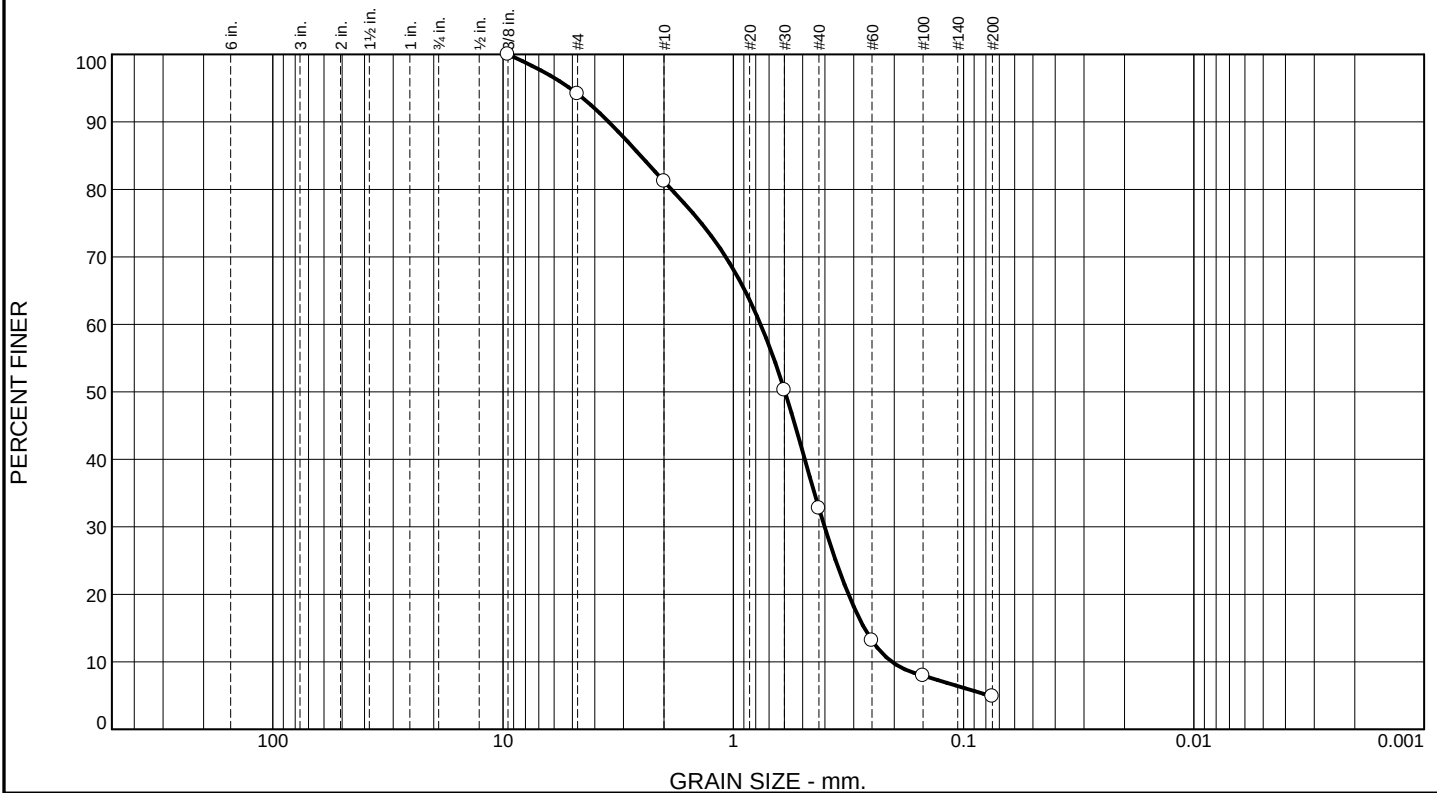
Sample Number: LBD-06 S-1 5-7

Date: 9-5-23

RSA Geolab Union, New Jersey	Client: Langan Engineering Project: Project Maximus, Hempstead, NY Project# not provided
	Project No: 869 Figure

Tested By: ER/OH Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.8	13.0	48.4	27.9	4.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375	100.0		
#4	94.2		
#10	81.2		
#30	50.3		
#40	32.8		
#60	13.2		
#100	7.9		
#200	4.9		

* (no specification provided)

Sample Number: LBD-06 S-2 7-9

Date: 9-5-23

Material Description

Brownish Yellow

PL=

Atterberg Limits

LL=

PI=

Coefficients

D₉₀= 3.4772

D₈₅= 2.5291

D₆₀= 0.7618

D₅₀= 0.5965

D₃₀= 0.4015

D₁₅= 0.2698

D₁₀= 0.2048

C_u= 3.72

C_c= 1.03

Classification

USCS= SP

AASHTO=

Remarks

RSA Geolab

Union, New Jersey

Client: Langan Engineering

Project: Project Maximus, Hempstead, NY
Project# not provided

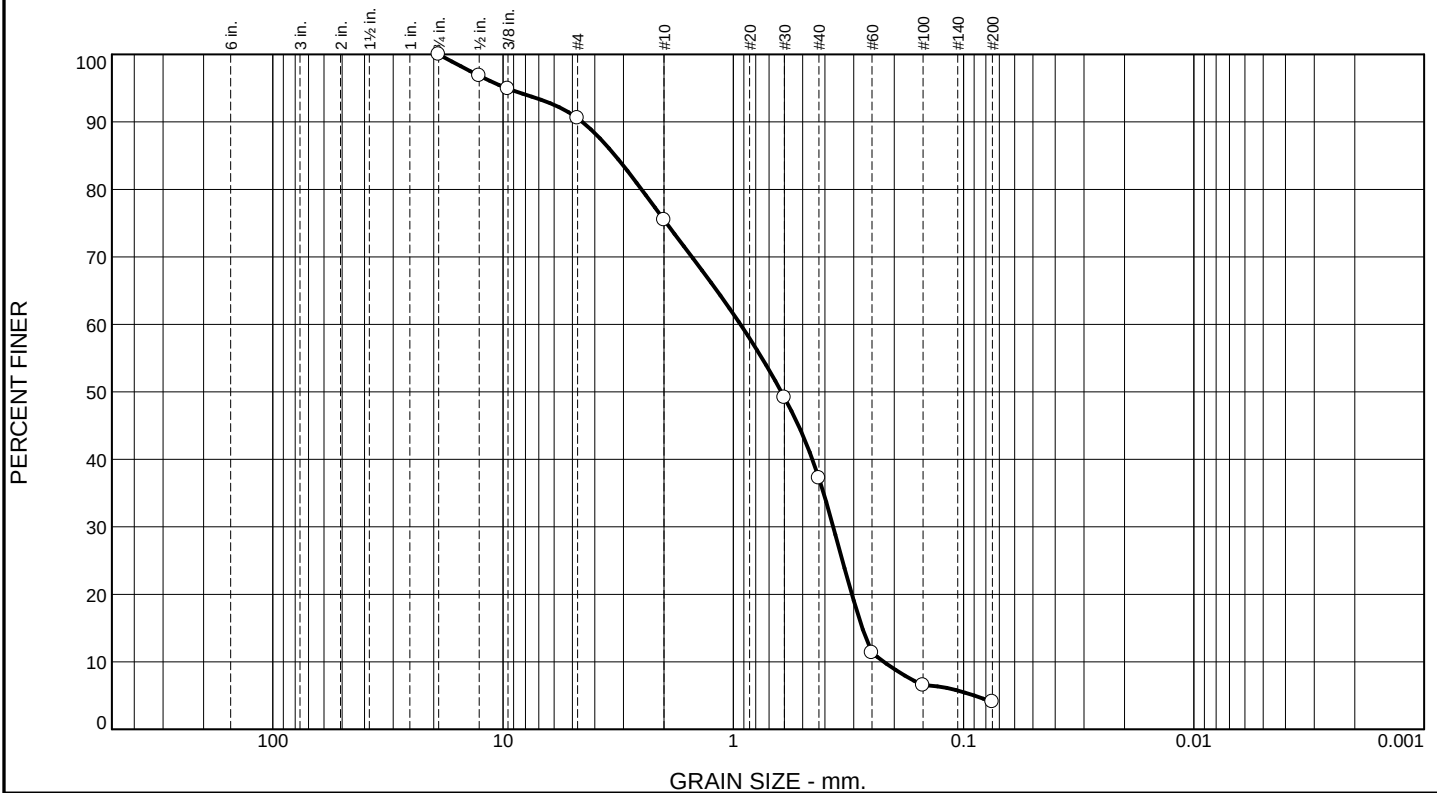
Project No: 869

Figure

Tested By: ER/OH

Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	9.5	15.0	38.3	33.1	4.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	96.8		
.375	94.9		
#4	90.5		
#10	75.5		
#30	49.1		
#40	37.2		
#60	11.4		
#100	6.5		
#200	4.1		

* (no specification provided)

Sample Number: LBD-06 S-3 9-11

Date: 9-5-23

Material Description

Yellowish Brown

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₉₀= 4.5293

D₈₅= 3.2579

D₆₀= 0.9314

D₅₀= 0.6189

D₃₀= 0.3683

D₁₅= 0.2753

D₁₀= 0.2220

C_u= 4.20

C_c= 0.66

Classification

USCS= SP

AASHTO=

Remarks

RSA Geolab

Union, New Jersey

Client: Langan Engineering

Project: Project Maximus, Hempstead, NY
Project# not provided

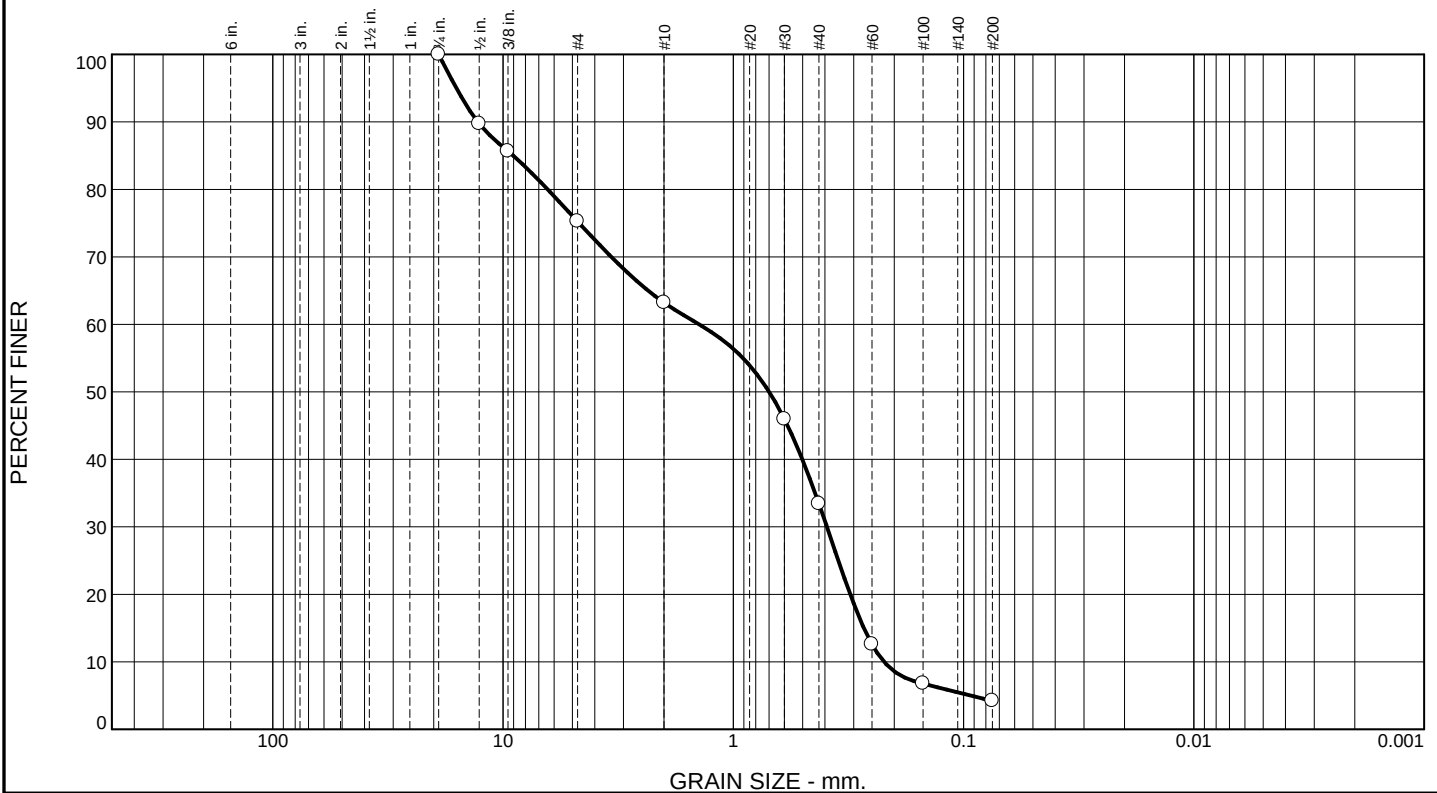
Project No: 869

Figure

Tested By: ER/OH

Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	24.7	12.1	29.8	29.2	4.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	89.7		
.375	85.7		
#4	75.3		
#10	63.2		
#30	46.0		
#40	33.4		
#60	12.6		
#100	6.8		
#200	4.2		

* (no specification provided)

Material Description

Yellow

PL= **Atterberg Limits** PI=

LL=

Coefficients

D₉₀= 12.8897 D₈₅= 9.0375 D₆₀= 1.4076

D₅₀= 0.6991 D₃₀= 0.3924 D₁₅= 0.2712

D₁₀= 0.2216 C_u= 6.35 C_c= 0.49

Classification

USCS= SP AASHTO=

Remarks

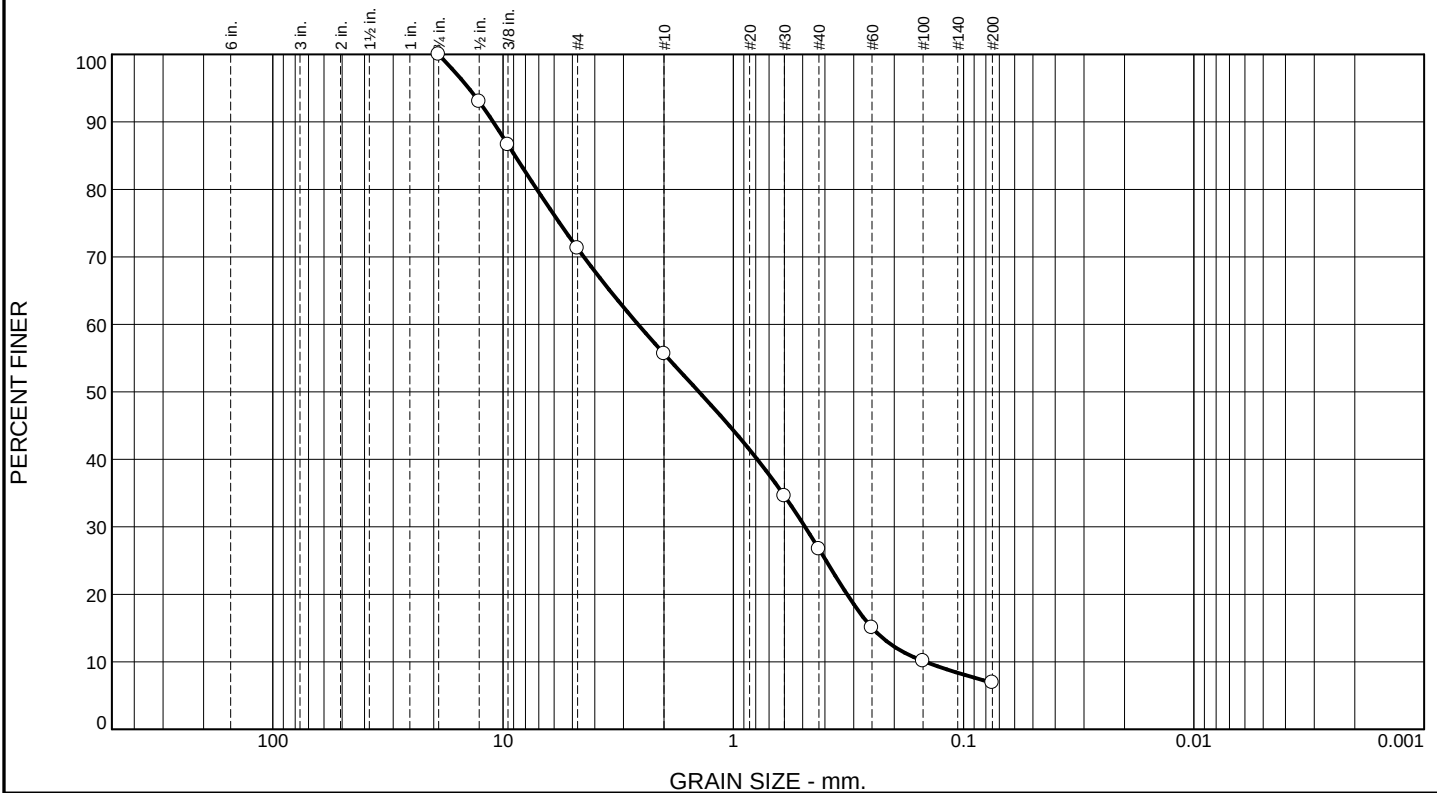
Sample Number: LBD-06 S-5 13-15

Date: 9-5-23

RSA Geolab Union, New Jersey	Client: Langan Engineering Project: Project Maximus, Hempstead, NY Project# not provided
	Project No: 869 Figure

Tested By: ER/OH Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	28.7	15.7	28.9	19.8	6.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	93.0		
.375	86.6		
#4	71.3		
#10	55.6		
#30	34.6		
#40	26.7		
#60	15.1		
#100	10.1		
#200	6.9		

* (no specification provided)

Sample Number: LBD-06 S-6 15-17

Date: 9-5-23

Material Description

Brownish Yellow

PL=

Atterberg Limits

LL=

PI=

Coefficients

D₉₀= 11.0432

D₈₅= 8.8855

D₆₀= 2.5927

D₅₀= 1.4101

D₃₀= 0.4882

D₁₅= 0.2490

D₁₀= 0.1466

C_u= 17.68

C_c= 0.63

Classification

USCS=

AASHTO=

Remarks

RSA Geolab

Union, New Jersey

Client: Langan Engineering

Project: Project Maximus, Hempstead, NY
Project# not provided

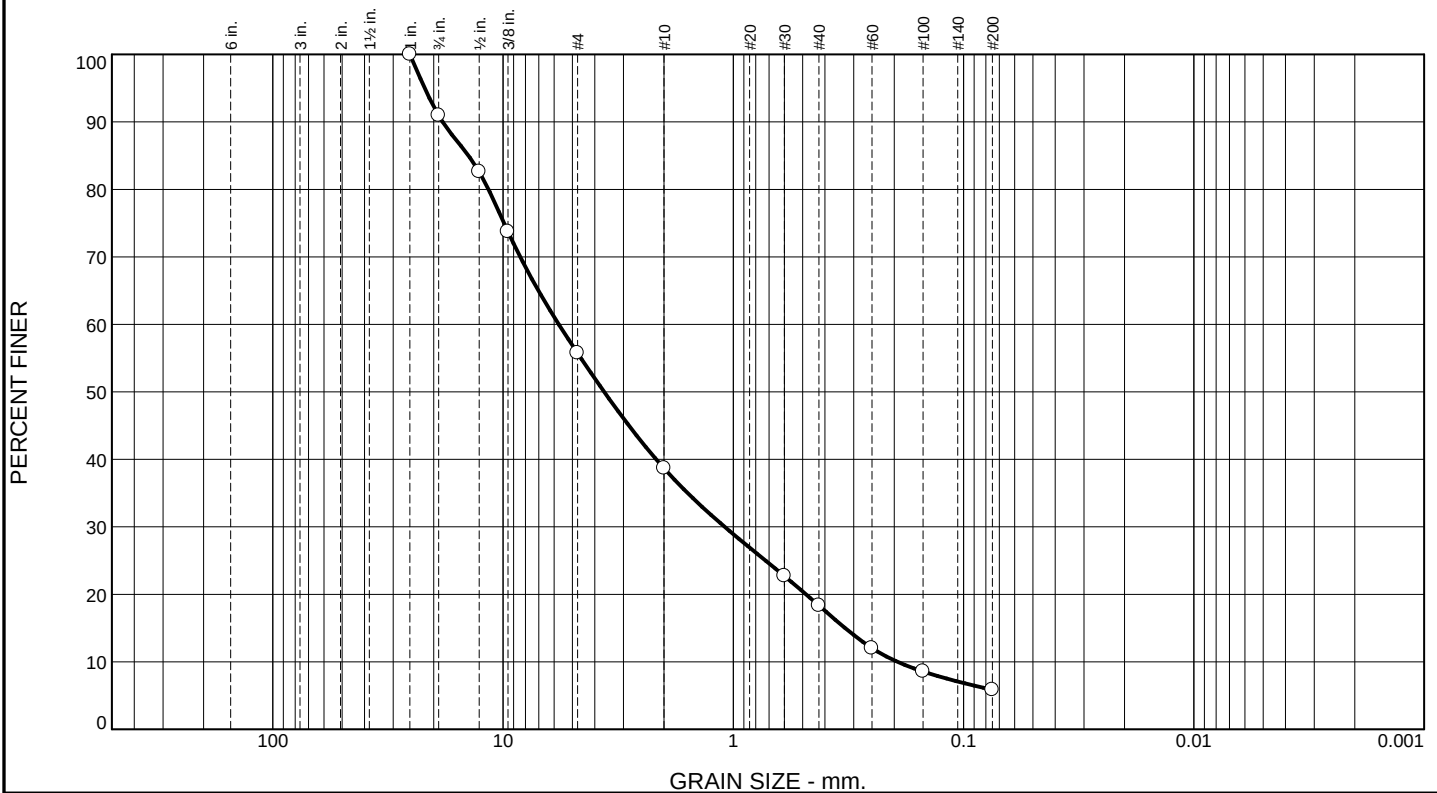
Project No: 869

Figure

Tested By: ER/OH

Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.0	35.3	17.0	20.4	12.5	5.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	91.0		
.5	82.6		
.375	73.7		
#4	55.7		
#10	38.7		
#30	22.7		
#40	18.3		
#60	12.0		
#100	8.6		
#200	5.8		

* (no specification provided)

Sample Number: LBD-06 S-8 19-21

Date: 9-5-23

Material Description

Pale Brown

PL=

Atterberg Limits

LL=

PI=

Coefficients

D₉₀= 18.2951

D₈₅= 14.1357

D₆₀= 5.7288

D₅₀= 3.6393

D₃₀= 1.0906

D₁₅= 0.3270

D₁₀= 0.1937

C_u= 29.58

C_c= 1.07

Classification

USCS=

AASHTO=

Remarks

RSA Geolab

Union, New Jersey

Client: Langan Engineering

Project: Project Maximus, Hempstead, NY
Project# not provided

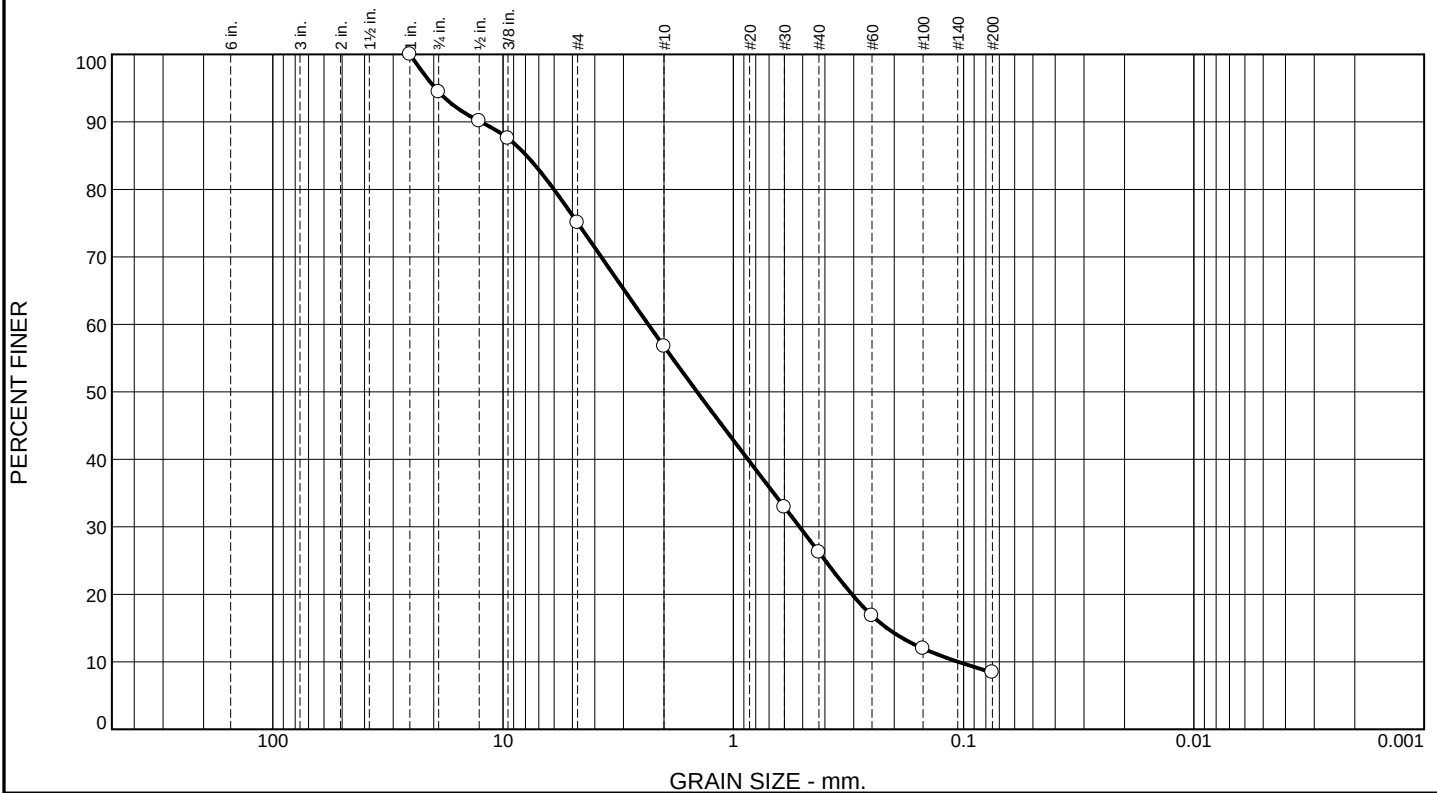
Project No: 869

Figure

Tested By: ER/OH

Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.6	19.3	18.4	30.5	17.8	8.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	94.4		
.5	90.1		
.375	87.6		
#4	75.1		
#10	56.7		
#30	32.9		
#40	26.2		
#60	16.8		
#100	12.0		
#200	8.4		

* (no specification provided)

Sample Number: LBD-06 S-10 23-25

Date: 9-5-23

RSA Geolab

Union, New Jersey

Client: Langan Engineering
 Project: Project Maximus, Hempstead, NY
 Project# not provided
 Project No: 869

Figure

Tested By: ER/OH Checked By: KP

Material Description

Very Pale Brown

PL=

Atterberg Limits

LL=

PI=

Coefficients

D₉₀= 12.4959
 D₅₀= 1.4364
 D₁₀= 0.1057

D₈₅= 7.9043
 D₃₀= 0.5159
 C_u= 22.15
 D₆₀= 2.3413
 D₁₅= 0.2153
 C_c= 1.08

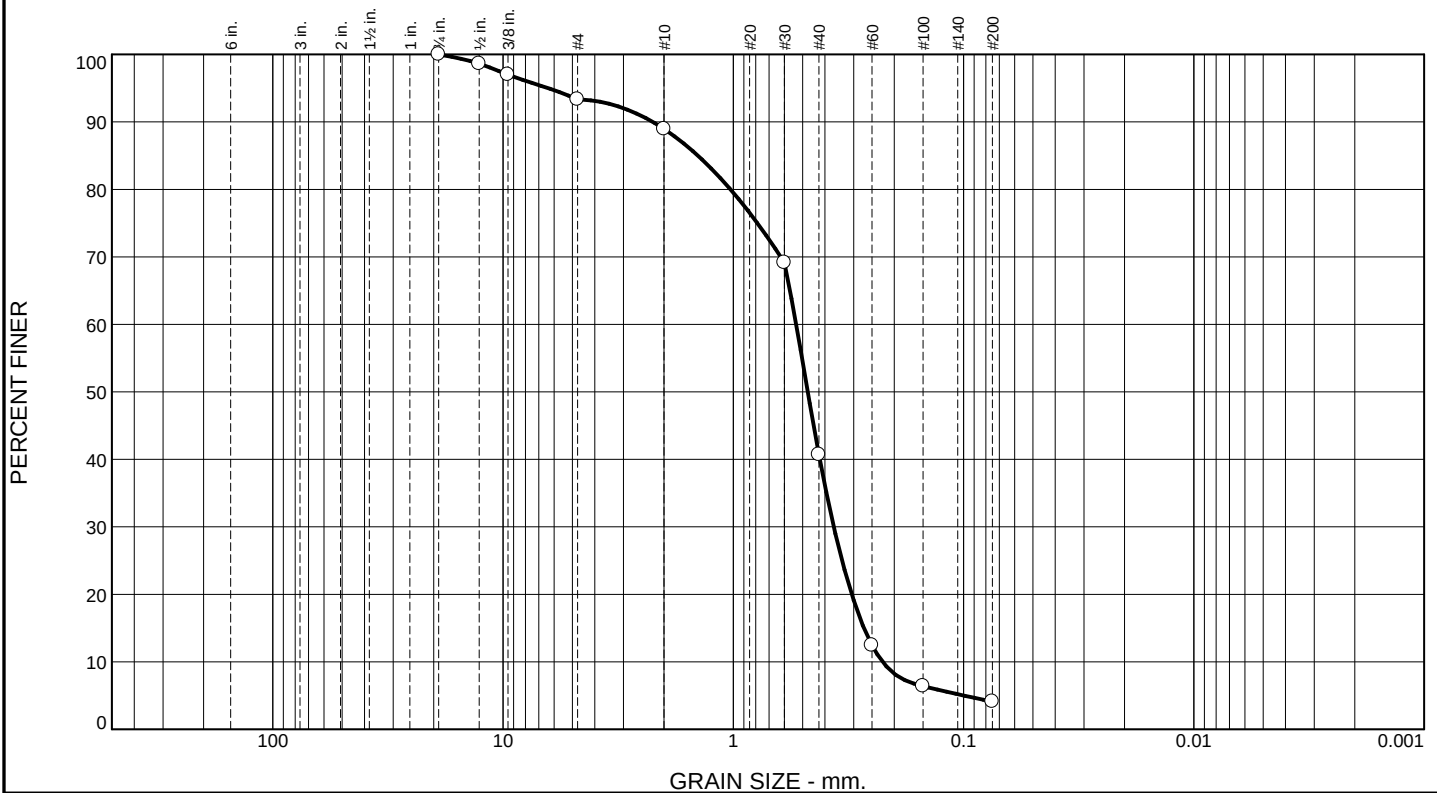
Classification

USCS=

AASHTO=

Remarks

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	6.7	4.3	48.3	36.6	4.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	98.6		
.375	97.0		
#4	93.3		
#10	89.0		
#30	69.1		
#40	40.7		
#60	12.5		
#100	6.4		
#200	4.1		

* (no specification provided)

Sample Number: LBD-07 S-3 10-12

Date: 9-5-23

RSA Geolab Union, New Jersey	Client: Langan Engineering Project: Project Maximus, Hempstead, NY Project# not provided
	Project No: 869 Figure

Tested By: ER/OH Checked By: KP

Material Description

Yellowish Brown

Atterberg Limits

PL=

LL=

PI=

Coefficients

D₉₀= 2.2401

D₈₅= 1.4255

D₆₀= 0.5338

D₅₀= 0.4750

D₃₀= 0.3663

D₁₅= 0.2710

D₁₀= 0.2249

C_u= 2.37

C_c= 1.12

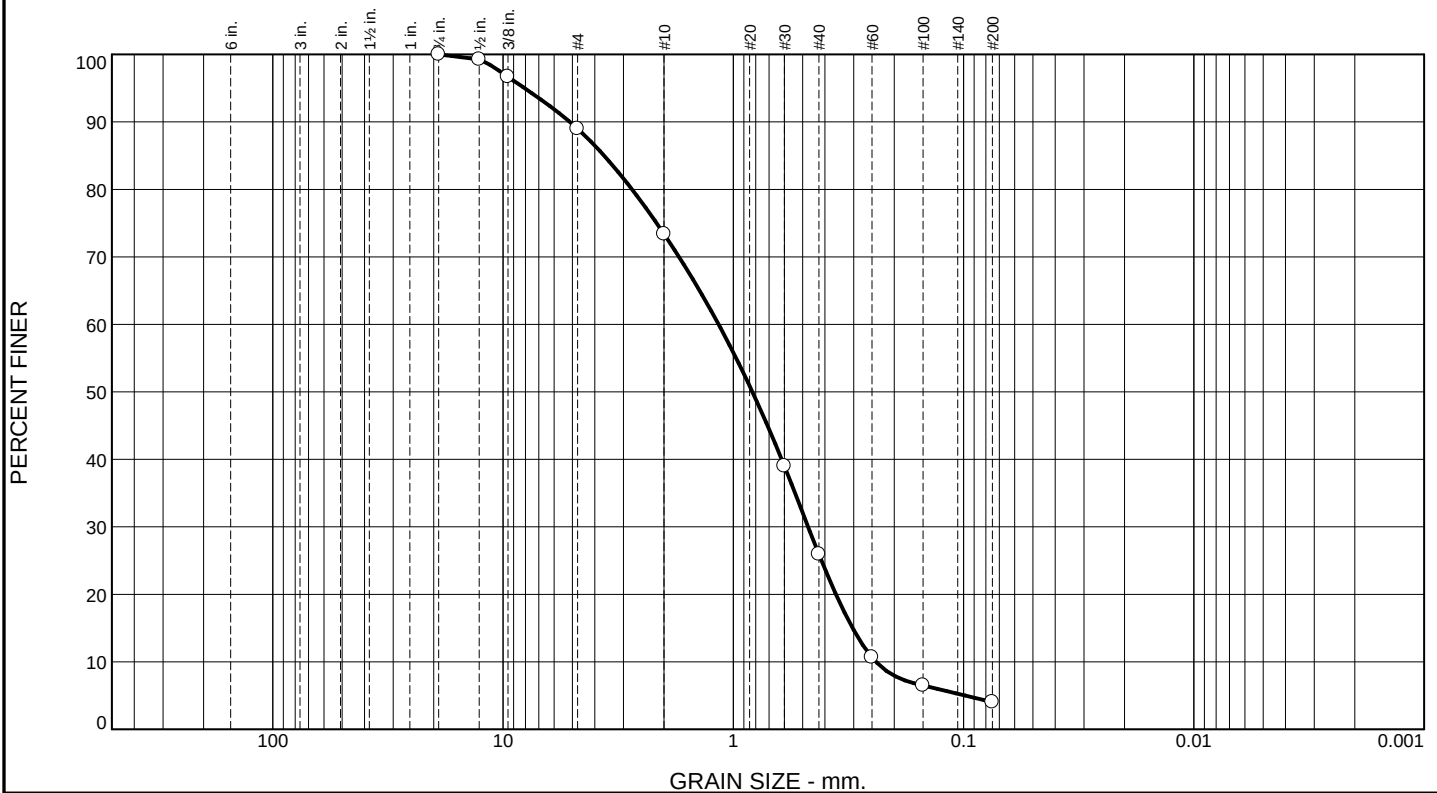
Classification

USCS= SP

AASHTO=

Remarks

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	11.0	15.6	47.5	21.9	4.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	99.3		
.375	96.7		
#4	89.0		
#10	73.4		
#30	39.0		
#40	25.9		
#60	10.7		
#100	6.5		
#200	4.0		

* (no specification provided)

Sample Number: LBD-07 S-5B 14-16

Date: 9-5-23

Material Description

Pale Brown

PL=

Atterberg Limits

LL=

PI=

Coefficients

D₉₀= 5.1317

D₈₅= 3.6419

D₆₀= 1.1591

D₅₀= 0.8267

D₃₀= 0.4736

D₁₅= 0.3034

D₁₀= 0.2400

C_u= 4.83

C_c= 0.81

Classification

USCS= SP

AASHTO=

Remarks

RSA Geolab

Union, New Jersey

Client: Langan Engineering

Project: Project Maximus, Hempstead, NY
Project# not provided

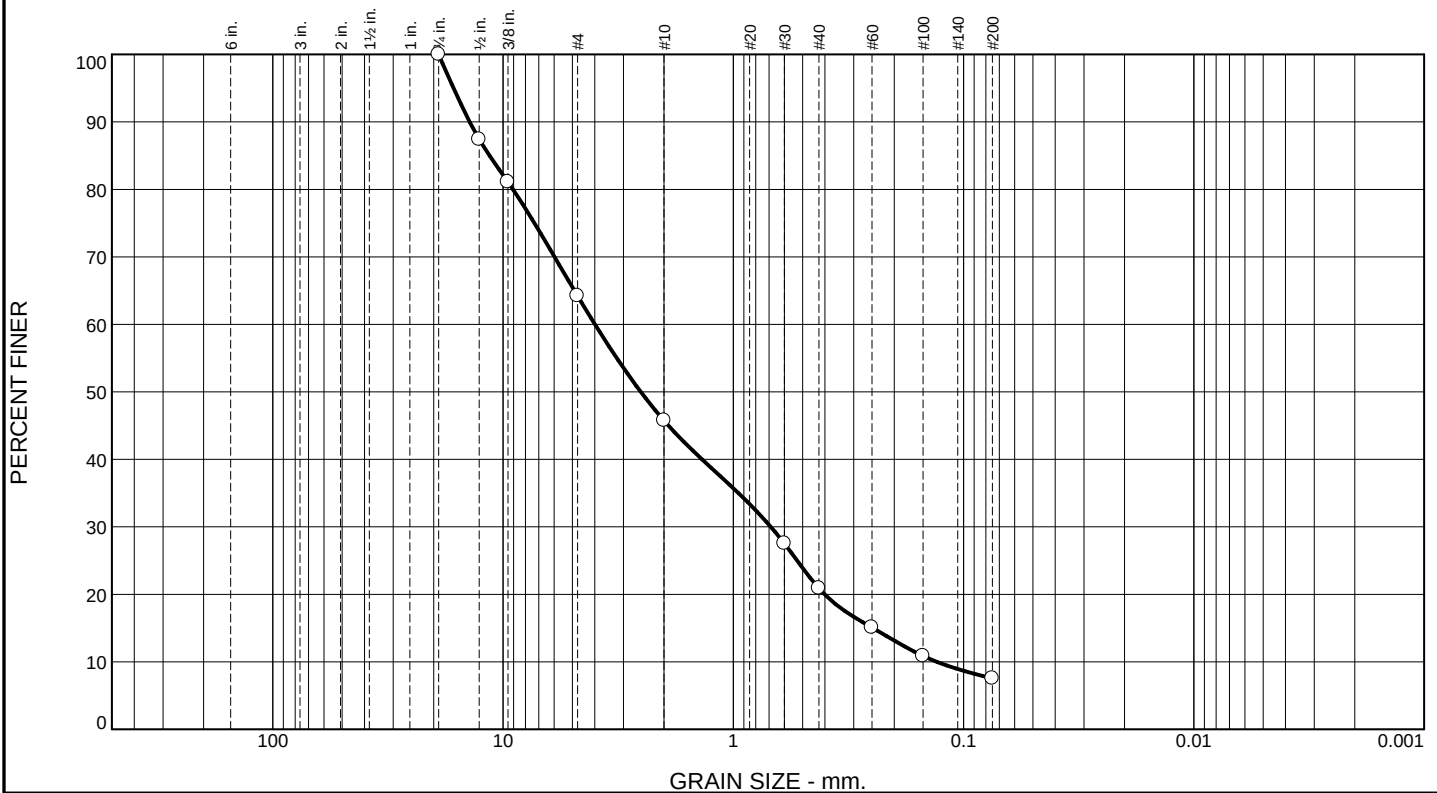
Project No: 869

Figure

Tested By: ER/OH

Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	35.8	18.5	24.8	13.4	7.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.5	87.4		
.375	81.1		
#4	64.2		
#10	45.7		
#30	27.5		
#40	20.9		
#60	15.1		
#100	10.9		
#200	7.5		

* (no specification provided)

Material Description
Pale Brown

PL= **Atterberg Limits** PI=

LL=

Coefficients

D₉₀= 13.9682 D₈₅= 11.4588 D₆₀= 3.9901
D₅₀= 2.5233 D₃₀= 0.6877 D₁₅= 0.2476
D₁₀= 0.1307 C_u= 30.53 C_c= 0.91

Classification
USCS= AASHTO=

Remarks

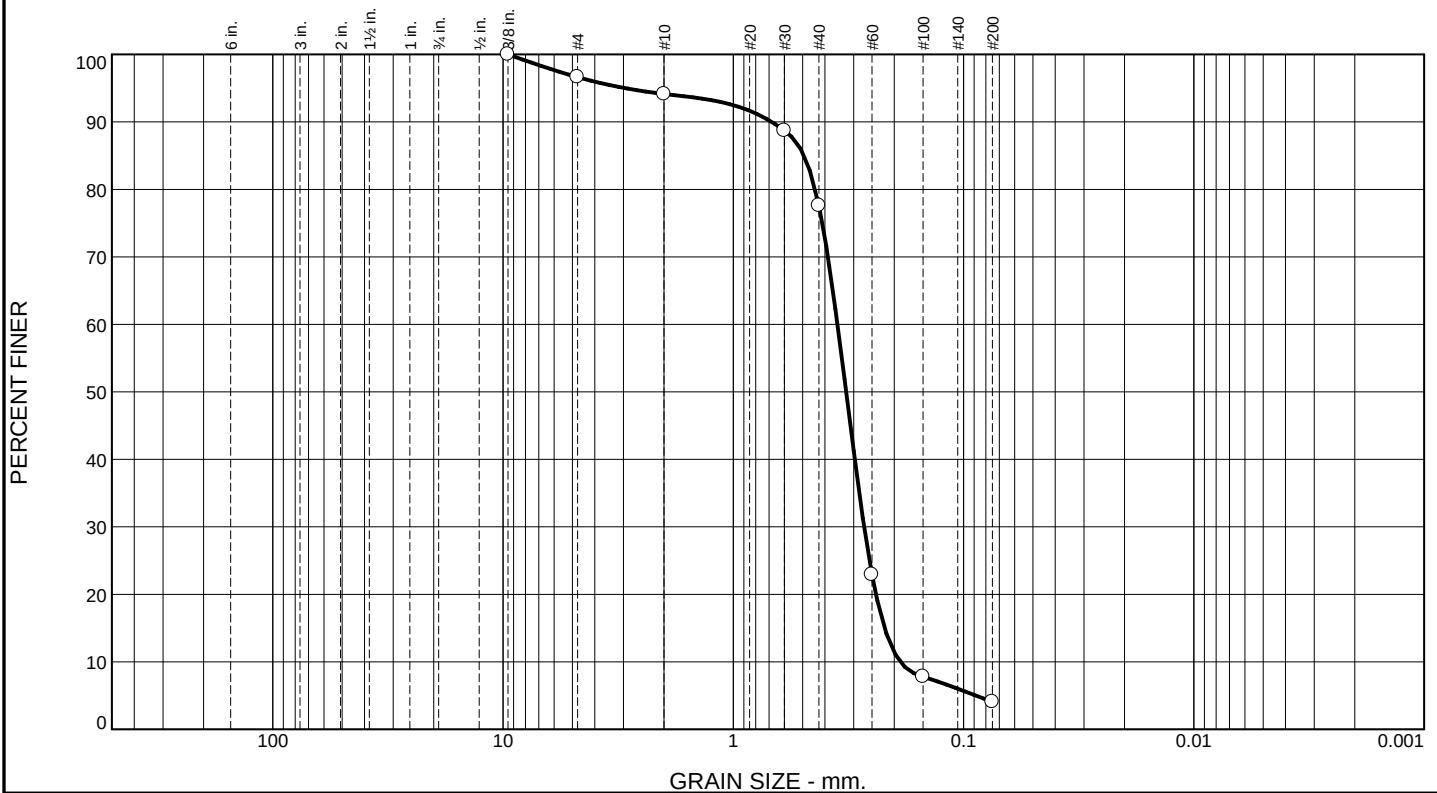
Sample Number: LBD-07 S-7A 18-20

Date: 9-5-23

RSA Geolab Union, New Jersey	Client: Langan Engineering Project: Project Maximus, Hempstead, NY Project# not provided
	Project No: 869 Figure

Tested By: ER/OH Checked By: KP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.4	2.5	16.5	73.5	4.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375	100.0		
#4	96.6		
#10	94.1		
#30	88.7		
#40	77.6		
#60	22.9		
#100	7.8		
#200	4.1		

* (no specification provided)

Sample Number: LBD-07 S-7B 18-20

Date: 9-5-23

Material Description

Yellow

PL=

Atterberg Limits

LL=

PI=

Coefficients

D₉₀= 0.6818

D₈₅= 0.4929

D₆₀= 0.3530

D₅₀= 0.3237

D₃₀= 0.2704

D₁₅= 0.2203

D₁₀= 0.1885

C_u= 1.87

C_c= 1.10

Classification

USCS= SP

AASHTO=

Remarks

RSA Geolab

Union, New Jersey

Client: Langan Engineering

Project: Project Maximus, Hempstead, NY
Project# not provided

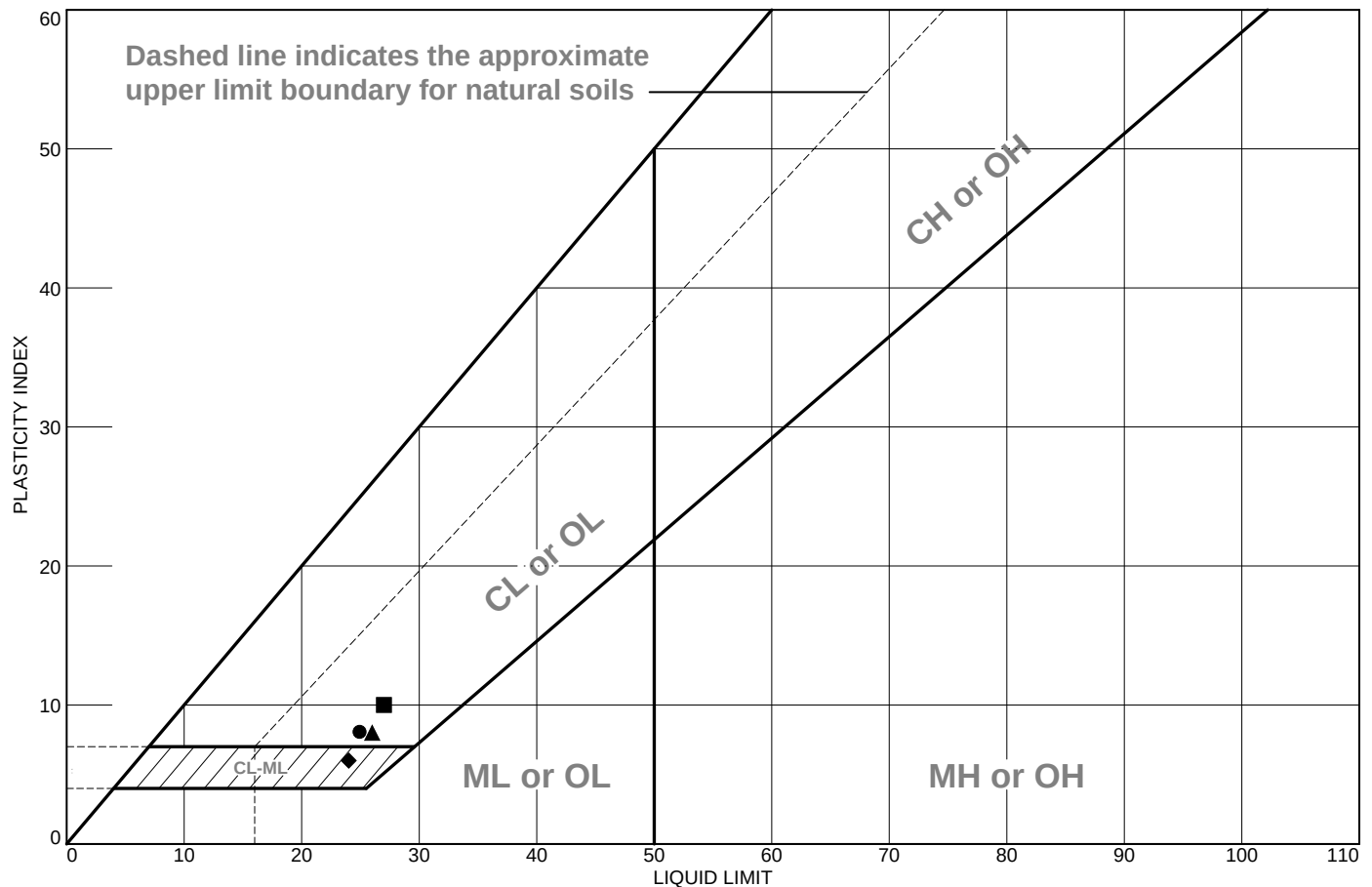
Project No: 869

Figure

Tested By: ER/OH

Checked By: KP

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Yellowish Brown Clay & Silt, little cmf Sand (visual)	25	17	8			
■	Brownish Yellow Clay & Silt, trace cmf Sand (visual)	27	17	10			
▲	Yellowish Brown Clay & Silt, little cmf Sand (visual)	26	18	8			
◆	Very Pale Brown Clay & Silt little, f Gravel, trace cmf Sand (visual)	24	18	6			

Project No. 869 **Client:** Langan Engineering

Project: Project Maximus, Hempstead, NY

Project# not provided

● **Sample Number:** LBD-02 S-1 5-7

■ **Sample Number:** LBD-03 S-2B 7-9

▲ **Sample Number:** LBD-04 S-2B 7-9

◆ **Sample Number:** LBD-05 S-1B 6-8

Remarks:

● 9-5-23

RSA Geolab

Union, New Jersey

Figure

Tested By: VS **Checked By:** KP



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