DelDOT

Delaware Department of Transportation

Lewes Transit Center

Lewes, Delaware

Geotechnical Report

October 2013

WHITMAN, REQUARDT & ASSOCIATES, LLP

ENGINEERS · ARCHITECTS · PLANNERS

EST. 1915

DELDOT
LEWES TRANSIT CENTER

LEWES, DELAWARE

GEOTECHNICAL REPORT

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DELDOT
LEWES TRANSIT CENTER

LEWES, DELAWARE

GEOTECHNICAL REPORT

I. Introduction

Whitman, Requardt and Associates, LLP, has performed a subsurface investigation for the Delaware Department of Transportation (DelDOT) to determine the on-site soil conditions and to provide foundation recommendations for the proposed Transit Center to be constructed in Lewes, Delaware. The site is located close to the intersection of Delaware State Rt. 1 and Delaware State Rt. 9. The site is trapezoidal in shape, oriented northwest to southeast, bounded by Lowes home improvement store to the west, Delaware State Route 1 to the north, Mariner Plaza to the east, and Shady Road to the south. The northern two-fifths of the project area is the site of a former car dealership. The southern three-fifths of the area is grassed and partially wooded. A small area that contained housing trailers is located at the southwest corner of the site along the former Shady Nook Drive.

The project consists of a Transit Center facility, fueling station, a canopied bus stop, stormwater management, new porous concrete pavement, and paved areas for commuters and bus parking/maintenance. The Transit Center facility will be located in the southern section of the site and will consist of two buildings. The northern building will be a one-story structure that will house offices, lockers, kitchenette, and utility rooms. The southern building will be for maintenance, including high bay work areas and a bus wash bay. Bus storage will be between the Transit Center maintenance building and Shady Road

II. Geologic Setting

WR&A obtained information about the geology at the Lewes Transit Center site from the "Geologic Map of the Fairmount and Rehoboth Beach Quadrangles, Delaware" (2011) by K.W. Ramsey of the Delaware Geological Survey. The project site is located in the Atlantic Coastal Plain physiographic province, which has an eastward-thickening wedge of sediments that rests on bedrock at more than 6,000 feet below sea level.

The uppermost geologic formation at the site is the Lynch Heights Formation, which was deposited in the Pleistocene Epoch. The Lynch Heights Formation consists of clean, white to pale-yellow, well-sorted, fine to coarse sand with scattered very coarse to pebble laminae and silty clay laminae, overlying light-gray to greenish-gray silty clay. The estimated regional thickness of the Lynch Heights Formation is 10 to 20 feet.

Underneath the Lynch Heights Formation is the Beaverdam Formation, which formed in the Pliocene Epoch. The Beaverdam Formation is a heterogeneous unit ranging from very coarse

sand with pebbles, to silty clay. The estimated regional thickness of the Beaverdam Formation is 50 to 100 feet.

III. Subsurface Investigation

Several soil borings were taken for the project by Walton Corporation of Newark, Delaware. Two CME 55 tracked ATV drill rigs were used to do the work. Ten borings, designated TC-1 through TC-10, were taken for the Transit Center building, bus stop canopy, and fueling station. These borings were 75 feet in depth, except for boring TC-10, which was 30 feet in depth. Fourteen (14) borings, designated P-1 through P-14, were taken for pavement design. This includes two borings, designated P-4 and P-6, which were taken in Shady Road to determine existing pavement thickness and subgrade condition of Shady Road in the project area. Twenty-five (25) borings, designated SW-1 through SW-25, were taken for stormwater management facilities. The "SW" and "P" borings were 10 feet in depth. Staked boring location coordinates and elevations are located in the Appendix with the boring logs. Several borings were offset for access. A field representative from Walton Corporation located all final boring locations by GPS. The offset location coordinates are included in the boring logs section of the Appendix, and also on the boring logs. Offset location elevations were not recorded, but elevation differences were less than one foot based on the topography.

Samples were taken and standard penetration tests (SPT's) were performed using a 2-inch O.D. split spoon sampler driven by a 140-pound safety hammer falling freely for a distance of 30 inches. The hammer was operated using a rope and cathead in accordance with ASTM D1586. Blow counts were recorded for each 6-inch increment for a total penetration of 24 inches. The SPT 'N' value is the sum of the second and third 6-inch increments, while blows from the first 6-inch increment are referred to as the seating blows.

Borings TC-1 through TC-4, TC-6, TC-8, and TC-9 were advanced using hollow stem augers to a depth of 26 feet, at which point mud rotary drilling techniques were used to complete these borings in order to prevent material from flowing into the augers from the bottom because of unbalanced head pressure. Borings TC-5, TC-7 and TC-10 were advanced using hollow stem augers for their entire depth. Three samples were taken in the first 11 feet of these borings, then at five foot intervals to the bottom of each boring. The "TC" borings were grouted at completion. The "SW" and "P" borings were advanced using hollow stem augers to the bottom of each of these borings. These borings were sampled continuously for their full depth, with auger refusal occurring at a depth of 9.5 feet in boring P-4. The "SW" and "P" borings were backfilled will auger cuttings at completion, and bentonite was placed in the top of each completed boring. Borings taken in pavement were topped off with tamped cold patch.

Infiltration tests were performed at the "SW" boring locations, except at borings SW-1, 3, 20, 22, 23, and 25. Test locations in paved areas were first excavated using the drill augers. Thereafter and in non-paved areas, the test holes were advanced using a hand auger to a depth of 18 inches below surface grade. A test pipe was inserted, the annulus sealed with bentonite, and the hole pre-wetted. Infiltration tests were run the following day.

A copy of the project boring plan, driller's typed logs, and results of the infiltration tests are included in the Appendix.

Grain size analyses were performed on all samples by DelDOT Materials and Research Laboratory. Each sample was classified using the Unified Soil Classification System (USCS) and AASHTO. The AASHTO classifications are included on the boring logs. Copies of the grain size analyses are also included in the Appendix.

IV. Discussion of Borings

The site gently slopes to the east and northeast. Staked elevations range from a high of El. 28.8 at boring P-3 to a low of El. 21.7 at borings P-10 and TC-9. As-staked and drilled boring locations are found in the Appendix under Boring Logs.

"TC" Borings

The surface at borings TC-7 and TC-8 consisted of two inches of asphalt with no stone base. Topsoil was encountered at the remaining "TC" boring locations at thicknesses that ranged from four inches at borings TC-1, TC-3, and TC-5 to eight inches at boring TC-2. Following the surface materials were moist, brown and tan, loose, to some medium dense, silty fine sand with varying amounts of medium to coarse sand and traces of gravel to a depth of approximately eight to nine feet. Some of this material was noted as fill. Blow counts from the standard penetration tests in these materials ranged from 2 blows per foot (bpf) in borings TC-2 and TC-3, to 12 bpf in boring TC-8. The average 'N' value in these materials was 7 bpf.

Below these materials to the bottom of the borings were moist to wet, tan, some brown, gray, and orange, medium dense and loose, trace dense, fine to coarse sand with varying amounts of silt and gravel. Slightly more medium to coarse sand and gravel were encountered in borings TC-7 through TC-10. A 5-inch thick layer of medium to coarse sand and fine gravel was encountered in boring TC-4 at a depth of approximately 25 feet. The 'N' values in these materials in the vicinity of the Transit Center building, borings TC-1 through TC-6, ranged from one bpf to 42 bpf, with an average blow count of 14 bpf. The 'N' values in these materials in the vicinity of the bus stop canopy, borings TC-7 through TC-9, and fuel tank, boring TC-10, ranged from 4 bpf to 62 bpf, with an average blow count of 18 bpf. The actual average blow counts in both areas might be slightly higher since the low blow counts obtained between depths of 15 to 20 feet were more likely the result of a loose condition caused by the proximity of the water table.

"P" Borings

Borings P-1, P-2, and P-4 through P-7 encountered existing asphalt in thicknesses ranging from one inch in boring P-5 to four inches in borings P-4 and P-6. An aggregate base course was only found in borings P-4 and P-6, which were taken in Shady Road adjacent to the property. The pavement section at these locations was four inches of asphalt on three inches of aggregate base in boring P-4 and two inches of aggregate base in boring P-6. Surface materials in the remaining 'P' borings consisted of three inches of topsoil, except two inches in boring P-10.

Beneath the surface materials were layers of moist, some wet, brown with some gray, loose to dense materials comprised of various amounts of fine to coarse sand, with a trace to some fine

gravel, and sandy silt. The 'N' values of these materials ranged from 2 bpf to 40 bpf, with an average just over 13 bpf. The materials having 'N' values less than 10 bpf were generally encountered in the upper two to six feet of the borings. The exception was boring P-4, which was loose through its entire depth. It is believed that the boring was taken in a backfill area with auger grinding and refusal occurring at a depth of 9.5 feet.

"SW" Borings

Borings SW-1 through SW-6 and SW-9 encountered asphalt ranging in thickness from 1.5 inches at boring SW-9 to three inches at borings SW-1 and SW-2. Pavement thickness tends to diminish southward from Delaware Route 1. The remaining "SW" borings, except borings SW-17 and SW-19, encountered topsoil ranging in depth from two inches in borings SW-16 and SW-24 to four inches in borings SW-18 and SW-20. Surface material was not noted in the logs for borings SW-17 and SW-19, but is expected to be topsoil based on their location.

Generally, the surface materials were underlain with four feet of moist, brown with some gray, loose, poorly graded silty sands, followed by moist to wet, medium dense to dense sands with gravel. Variable amounts of fine to coarse sand, gravel, silt and clay were found throughout these borings. The denser materials were located in borings SW-9 through SW-17 and SW-25 between depths of four to ten feet. Blow counts ranged from 3 bpf within the first four feet of borings SW-8, SW-10, SW-23, and SW-24, to 39 bpf in boring SW-16 at a depth of eight feet. The average 'N' value for the "SW" borings was 14 bpf.

Ground Water

Ground water was not encountered in the 'SW' and 'P' borings. Ground water was encountered at depths below the ground surface ranging from 12.5 feet in boring TC-3 to 18.5 feet in boring TC-4. Based on the staked elevations, this places ground water between El. 5.5 and El. 11. The FEMA maps place the 100 year flood elevation at El. 8. If more exact ground water levels are required, piezometers should be installed. Ground water levels are expected to vary based on seasonal precipitation rates, however, the ground water level and 100 year flood level are not expected to affect construction.

V. Foundation Considerations

Site Preparation

The former car dealership building and pavement still exist at the site. The building should be removed in its entirety along with the existing pavement. Several trees and shrubs exist on the property. The area should be cleared and grubbed, with all root balls removed. Topsoil should be stripped in its entirety and stockpiled for use in stormwater management facilities. Any holes or depressions left after the building removal and clearing and grubbing operations should be filled with compacted Borrow Type C.

Transit Center Building

Borings TC-1 through TC-6 were taken for the Transit Center Building. These borings indicate loose sands to depths of approximately eight to nine feet below existing ground elevation. Column loads are estimated to be approximately 140 kips in the high bay region due to the 60-foot spans anticipated in the bay areas, and approximately 75 kips everywhere else. A bearing

capacity analysis indicates that an allowable bearing capacity of 3,000 pounds per square foot (psf) is obtainable with a minimum footing width of 4.25 feet, placed at least 36 inches below finished grade.

A settlement analysis was performed using Schmertmann's method of estimating settlement of footings on sand. Using the above loading of 140 kips, settlement is estimated to be approximately 1.2 inches. Settlement of approximately 0.8 inches is expected beneath the 75 kip loaded columns. The majority of the expected settlement will occur in the top six feet below bottom of footings.

The estimated settlement may be reduced to tolerable levels by densifying the sands located within the top eight to nine feet below the ground surface. With footings located three feet below finished grade, an additional four feet of material should be excavated. At a minimum, the undercut widths should equal the footing width plus the depth of undercut below footing subgrade. The excavation subgrades should then be densified using a minimum of six passes of a large vibratory roller capable of exerting a dynamic load of at least 10 tons. Soft areas should be removed under the direction of a geotechnical engineer and replaced with controlled, compacted fill. The undercuts should then be brought back to subgrade using suitable material from the excavations. Borrow Type C should be used for backfill if sufficient quantities of suitable material from the excavations are not available. Backfill should be placed in loose lifts no thicker than eight inches, and compacted to at least 95% of maximum dry density as determined by AASHTO T-180.

Another option to densify the underlying loose sands is rapid impact compaction (RIC). After pavement removal, clearing, grubbing, and initial grading, a 7.5-ton weight is hydraulically dropped as many as 40 to 60 times per minute, densifying loose soils to depths up to 20 feet. This operation would minimize the expected settlement in the loose sands at, and below, proposed footing subgrade without the time and cost of a deep undercut and backfill operation. Normal excavations for footings may then be performed and footings constructed.

Provided that the building area has been prepared as stated above, building slabs may be designed using a modulus of subgrade reaction, k, of 125 pounds per square inch per inch of deflection (pci) for a 1'x1' area, corrected for slab size.

The existing house east of the proposed Transit Center structures should be a sufficient distance from the Transit Center location such that it won't be affected by vibrations from RIC work. A vibration monitoring program should be established to verify this.

Bus Stop Canopy

The bus stop canopy will be located at the northern section of the project, just off of Route 1. The canopy will be designed and constructed as part of a future phase of the project. Future renderings of the project indicate that reactions from the canopy should be fairly light. The canopy area should be excavated to subgrade, estimated at this time to be 30 inches below finished grade, and proof rolled with a minimum of three passes of a large vibratory roller capable of exerting a dynamic force of at least 10 tons. Soft areas should be removed un under

the direction of a geotechnical engineer and replaced with controlled, compacted fill. Footings may then be designed for an allowable bearing capacity of 2,500 psf.
Uplift forces, especially those from hurricane winds, are not known at this time. When developed, these forces will need to be restrained, either by bulk weight of concrete or some type of tie-down/anchorage system. Helical anchors would be one type of system that could be suitable for this loading scenario.

Fuel Tanks
After stripping, the area should be cut to slab subgrade and proof rolled with a minimum of three passes of a large vibratory roller capable of exerting a dynamic force of at least 10 tons. Soft areas should be removed under the direction of a geotechnical engineer, and replaced with controlled, compacted fill comprised of suitable material from on-site excavations or Type C borrow if sufficient quantities of on-site material are not available. The fuel tank slabs may then be designed for a modulus of subgrade, k, of 125 pci for a 1'x1' square area, corrected for slab size.

Pavement
Two types of pavement systems are planned for the project: porous concrete pavement in the parking area in the northern section of the site and bituminous concrete for the site entrance and exit roadways and the maintenance yard adjacent to the Transit Center Building in the southern section of the site.

Rigid concrete pavement – The rigid concrete pavement will be used in the bus stop lane in front of the bus stop canopy, and adjacent to the maintenance facility buildings. After site preparation, the areas should be fine graded and then proof rolled with a minimum of five passes of a large vibratory roller capable of exerting a dynamic force of at least 10 tons to densify the subgrade and to locate soft or unstable areas. Material that weaves or pumps under the action of the roller should be removed under direction of a geotechnical engineer or qualified soils technician, and replaced with compacted suitable material from project excavations or Borrow Type C. The following rigid pavement section is recommended for the project:

10 inches Portland cement concrete
12 inches Type B graded aggregate base

Porous concrete pavement – The porous concrete pavement will be used for stormwater management. After site preparation, the area should be fine graded using lightly loaded, wide tracked equipment to keep compaction of the subgrade to a minimum. Wheeled vehicles should be kept off the subgrade or only allowed to travel in specified areas to minimize subgrade compaction. The following porous concrete pavement section is recommended:

10 inches porous concrete, placed in two 5-inch layers
5 inches #57 stone subbase
12 inches #2 stone

The above pavement section should also be bedded on six inches of sand, however, the section subgrade consists of several feet of sand. The #57 stone subbase and #2 stone

should be spread using light, wide tracked equipment as mentioned above. The porous concrete pavement should be installed by a contractor experienced in constructing porous concrete pavements, and maintained on a regular basis to prevent clogging of the pores.

Bituminous concrete pavement – After site preparation, the area should be fine graded, then proof rolled with a minimum of five passes of a large vibratory roller capable of exerting a dynamic force of at least 10 tons to densify the subgrade and to locate soft or unstable areas. Material that weaves or pumps under the action of the roller should be removed under direction of a geotechnical engineer or qualified soils technician, and replaced with compacted suitable material from project excavations or Borrow Type C. Provided that subgrades have been prepared as mentioned above, the following pavement section is recommended for the project:

2 inches Warm Mix, Type C, 160 Gyrations, PG 64-22
3 inches Warm Mix, Type B, 160 Gyrations, PG 64-22
4.5 inches BCBC, 160 Gyrations, PG 64-22
12 inches dense graded aggregate

Stormwater Management

Infiltration tests were performed at 19 of the 25 "SW" boring locations. The infiltration tests were performed by Walton Corporation personnel. The table below summarizes the infiltration test results, indicating the lowest and highest infiltration readings obtained during each test, after discounting the first reading, and the average infiltration rate for each test. A gravel layer exists at the location of the SWM-11 test, resulting in extremely high infiltration rates.

Infiltration Test Summary						
Test No.	**Low/High Reading (In. / Hr)**	**Average**		**Test No.**	**Low/High Reading (In. / Hr)**	**Average**
SWM-2	3 / 5.5	3.92		SWM-13	8 / 16	9.23
SWM-4	2 / 4	2.42		SWM-14	4 / 12	5.69
SWM-5	1 / 4	1.65		SWM-15	4 / 60	17.0
SWM-6	0.5 / 8	2.04		SWM-16	6 / 14	9.31
SWM-7	1 / 3	2.04		SWM-17	1 / 4	1.96
SWM-8	4 / 16	8.69		SWM-18	7 / 17	10.81
SWM-9	0.25 / 4	1.27		SWM-19	4 / 10	6.46
SWM-10	3 / 11	4.77		SWM-21	5 / 12	7.54
SWM-11	96 / 288	148		SWM-24	5 / 7	5.79
SWM-12	4.5 / 16	9.25				

DelDOT requires a minimum infiltration rate of 1.02 inches per hour. The above test results indicate that stormwater best management practices (BMPs) may safely be designed for infiltration. As stated above, porous concrete pavement will be used in order to infiltrate stormwater beneath the parking area. Because of the high infiltration rates encountered throughout the site, the stormwater management pond proposed for the northern end of the site was removed from the project.

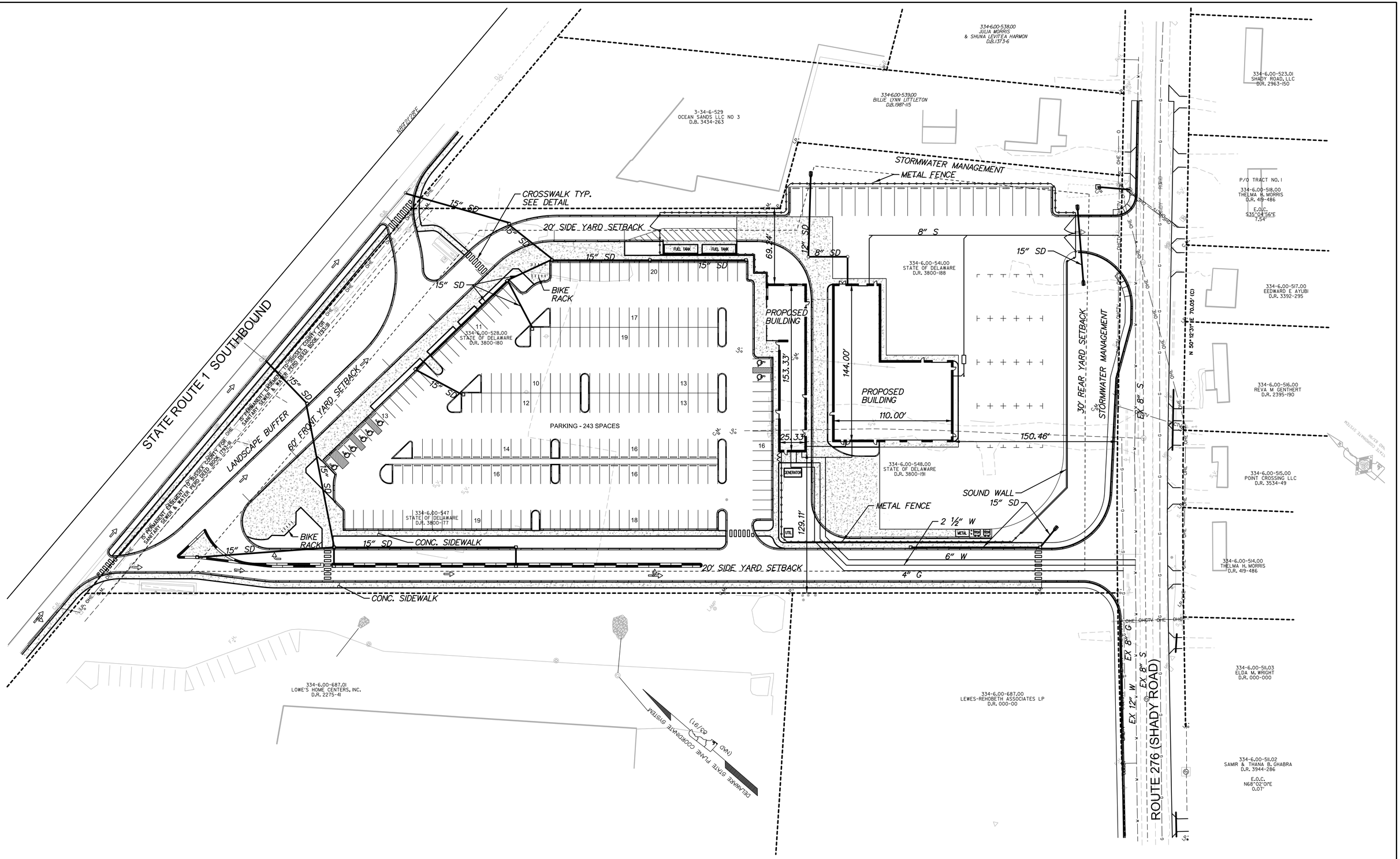
The test results for each boring location are included in the Appendix.

VI. Seismic Site Classification

The site classification for seismic design was determined using the Standard Penetration Resistance Method of the International Building Code. In its present state, the site meets the requirements for Site Classification E. Provided that the upper sands have been densified to minimize settlement, a Site Classification of D may be used in designing the Transit Center facility.

APPENDIX

SITE PLAN



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DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE 0 40 80 120 FEET	DELAWARE LEWES TRANSIT CENTER	CONTRACT T200612502	BRIDGE NO.	SITE PLAN	C-102
				COUNTY SUSSEX	DESIGNED BY: PMG		SHEET NO. 5
					CHECKED BY: PMG		TOTAL SHTS. 133

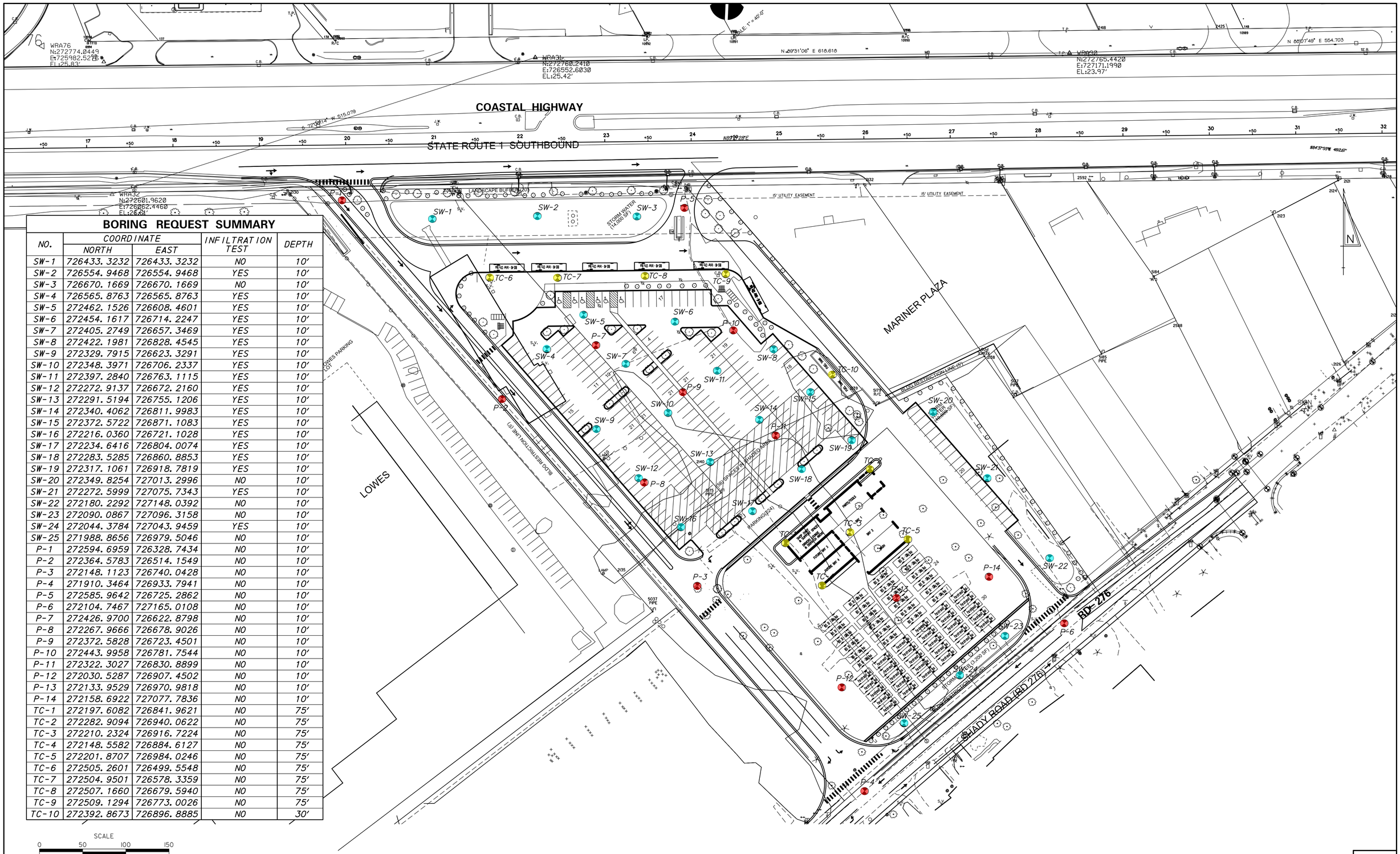
BORING LOCATION PLAN AND STAKEOUT INFORMATION

TABLE 1

LEWES TRANSIT CENTER BORING STAKEOUT

STAKED COORDINATES				ACTUAL LOCATION TAKEN		
BORING	NORTHING	EASTING	ELEVATION	BORING	NORTHING	EASTING
TC-1	272198.09	726841.93	26.29	TC-1	272198.61	726840.39
TC-2	272282.97	726939.94	22.71	TC-2	272280.71	726939.24
TC-3	272210.04	726917.04	23.66	TC-3	272208.38	726920.03
TC-4	272148.94	726885.05	26.11	TC-4	272138.27	726868.84
TC-5	272201.89	726983.96	23.19	TC-5	272188.62	726989.47
TC-6	272230.49	726849.01	25.42	TC-6	272223.42	726825.85
TC-7	272505.01	726578.01	23.81	TC-7	272504.95	726578.34
TC-8	272506.98	726680.00	22.30	TC-8	272507.19	726636.28
TC-9	272509.00	726773.00	21.70	TC-9	272509.13	726773.00
TC-10	272393.02	726897.09	22.42	TC-10	272387.81	726909.06
P-1	272595.00	726329.01	25.69	P-1	272594.70	726328.74
P-2	272365.02	726513.99	26.29	P-2	272364.58	726514.15
P-3	272149.58	726737.20	28.75	P-3	272167.15	726727.11
P-4	271910.01	726934.03	24.95	P-4	271904.04	726936.04
P-5	272586.00	726725.00	21.88	P-5	272585.96	726725.29
P-6	272104.99	727165.01	23.92	P-6	272103.70	727169.02
P-7	272426.99	726623.00	24.71	P-7	272426.97	726622.88
P-8	272268.07	726678.84	26.28	P-8	272242.60	726714.28
P-9	272373.01	726722.97	23.31	P-9	272372.58	726723.45
P-10	272444.03	726781.98	21.66	P-10	272444.00	726781.75
P-11	272321.98	726831.04	23.31	P-11	272321.42	726830.17
P12	272031.00	726907.01	26.55	P12	272030.53	726907.45
P13	272133.64	726971.76	23.16	P13	272133.95	726970.98
P-14	272159.01	727078.00	23.06	P-14	272158.69	727077.78
SW-1	272573.93	726436.72	25.76	SW-1	272573.13	726433.32
SW-2	272577.00	726554.99	23.02	SW-2	272576.53	726554.95
SW-3	272576.03	726670.00	22.62	SW-3	272576.01	726670.17
SW-4	272421.99	726566.00	25.85	SW-4	272422.10	726565.88
SW-5	272461.98	726607.99	23.99	SW-5	272462.15	726608.46
SW-6	272454.00	726714.00	22.18	SW-6	272454.16	726714.22
SW-7	272405.02	726657.00	23.97	SW-7	272401.56	726675.73
SW-8	272421.98	726827.99	21.99	SW-8	272422.20	726828.45
SW-9	272329.98	726622.99	25.89	SW-9	272329.79	726623.33
SW-10	272348.00	726706.05	23.77	SW-10	272351.08	726706.63
SW-11	272395.61	726751.40	22.54	SW-11	272397.28	726763.11
SW-12	272279.54	726634.13	26.27	SW-12	272272.91	726672.22

SW-13	272291.99	726755.00	24.99		SW-13	272301.108	726759.58
SW-14	272340.00	726812.00	23.28		SW-14	272340.41	726812.00
SW-15	272373.00	726871.00	22.34		SW-15	272376.80	726869.16
SW-16	272216.00	726720.95	27.47		SW-16	272200.30	726725.92
SW-17	272235.01	726804.01	26.07		SW-17	272234.64	726804.01
SW-18	272283.99	726860.97	23.35		SW-18	272234.64	726860.89
SW-19	272317.00	726918.98	22.33		SW-19	272317.11	726918.78
SW-20	272350.04	727012.97	21.77		SW-20	272349.83	727014.00
SW-21	272272.92	727076.07	22.21		SW-21	272287.40	727047.22
SW-22	272179.98	727148.02	23.45		SW-22	272175.22	727123.82
SW-23	272089.95	727096.02	23.50		SW-23	272090.09	727096.32
SW-24	272043.99	727044.00	23.53		SW-24	272044.38	727043.95
SW-25	271989.07	726979.90	24.95		SW-25	271988.87	726979.51



BORING REQUEST SUMMARY

NO.	COORDINATE		INFILTRATION TEST	DEPTH
	NORTH	EAST		
SW-1	726433.3232	726433.3232	NO	10'
SW-2	726554.9468	726554.9468	YES	10'
SW-3	726670.1669	726670.1669	NO	10'
SW-4	726565.8763	726565.8763	YES	10'
SW-5	272462.1526	726608.4601	YES	10'
SW-6	272454.1617	726714.2247	YES	10'
SW-7	272405.2749	726657.3469	YES	10'
SW-8	272422.1981	726828.4545	YES	10'
SW-9	272329.7915	726623.3291	YES	10'
SW-10	272348.3971	726706.2337	YES	10'
SW-11	272397.2840	726763.1115	YES	10'
SW-12	272272.9137	726672.2160	YES	10'
SW-13	272291.5194	726755.1206	YES	10'
SW-14	272340.4062	726811.9983	YES	10'
SW-15	272372.5722	726871.1083	YES	10'
SW-16	272216.0360	726721.1028	YES	10'
SW-17	272234.6416	726804.0074	YES	10'
SW-18	272283.5285	726860.8853	YES	10'
SW-19	272317.1061	726918.7819	YES	10'
SW-20	272349.8254	727013.2996	NO	10'
SW-21	272272.5999	727075.7343	YES	10'
SW-22	272180.2292	727148.0392	NO	10'
SW-23	272090.0867	727096.3158	NO	10'
SW-24	272044.3784	727043.9459	YES	10'
SW-25	271988.8656	726979.5046	NO	10'
P-1	272594.6959	726328.7434	NO	10'
P-2	272364.5783	726514.1549	NO	10'
P-3	272148.1123	726740.0428	NO	10'
P-4	271910.3464	726933.7941	NO	10'
P-5	272585.9642	726725.2862	NO	10'
P-6	272104.7467	727165.0108	NO	10'
P-7	272426.9700	726622.8798	NO	10'
P-8	272267.9666	726678.9026	NO	10'
P-9	272372.5828	726723.4501	NO	10'
P-10	272443.9958	726781.7544	NO	10'
P-11	272322.3027	726830.8899	NO	10'
P-12	272030.5287	726907.4502	NO	10'
P-13	272133.9529	726970.9818	NO	10'
P-14	272158.6922	727077.7836	NO	10'
TC-1	272197.6082	726841.9621	NO	75'
TC-2	272282.9094	726940.0622	NO	75'
TC-3	272210.2324	726916.7224	NO	75'
TC-4	272148.5582	726884.6127	NO	75'
TC-5	272201.8707	726984.0246	NO	75'
TC-6	272505.2601	726499.5548	NO	75'
TC-7	272504.9501	726578.3359	NO	75'
TC-8	272507.1660	726679.5940	NO	75'
TC-9	272509.1294	726773.0026	NO	75'
TC-10	272392.8673	726896.8885	NO	30'

SCALE
0 50 100 150
FEET

N:\30181-001\CADD\BG00_LEWES.dgn
3/15/2013 3:07:37 PM

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

CONTRACT

COUNTY

BRIDGE NO.

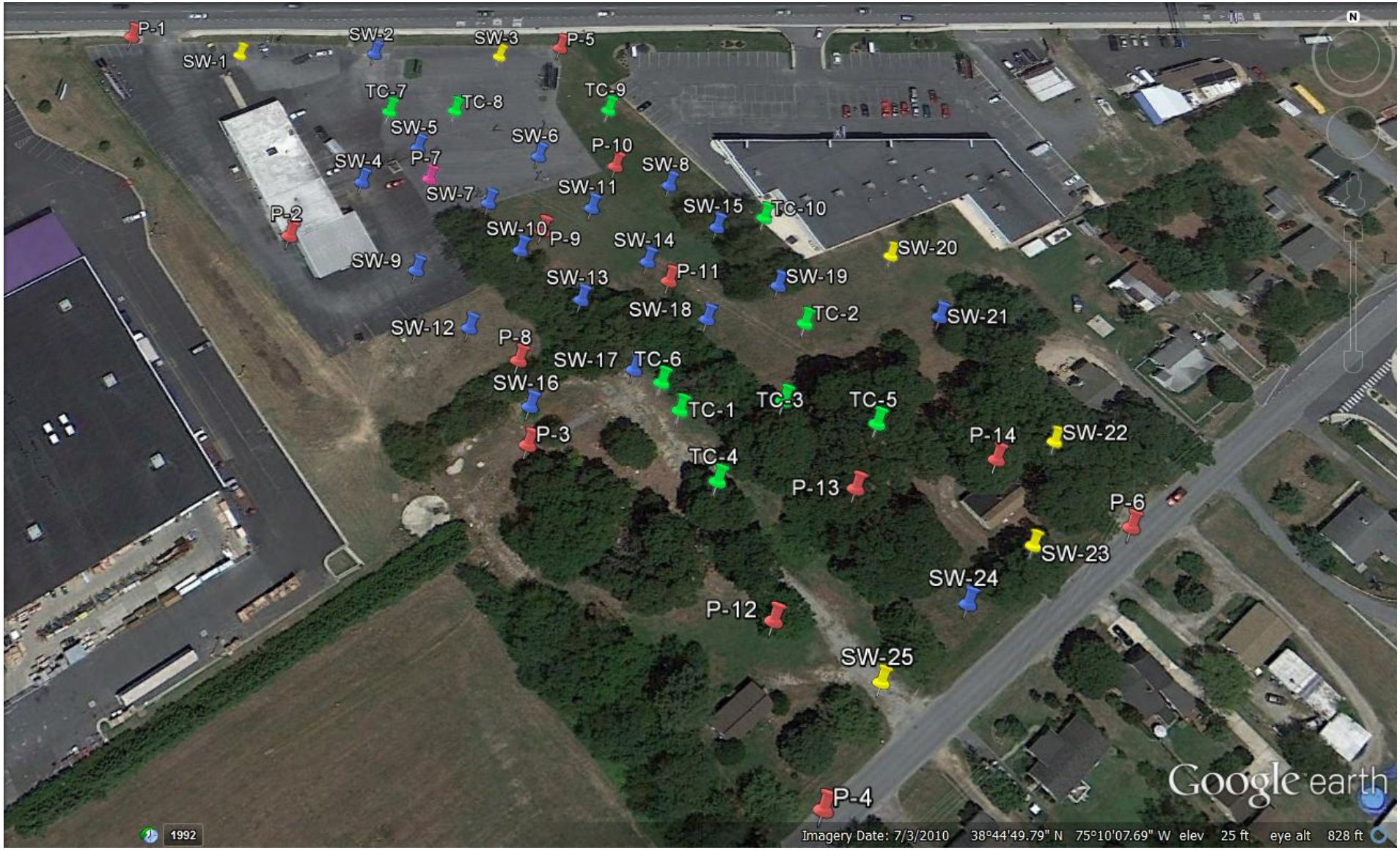
DESIGNED BY: BPG

CHECKED BY: JDC

BORING LOCATION PLAN

SHEET NO. X

TOTAL SHTS.



DelDOT
Lewes Transit Center
Lewes, Delaware

WR&A

Yellow Pins: 'SW' Borings
Blue Pins: 'SW' Borings Infiltrated
Red Pins: 'P' Borings
Green Pins: 'TC' Borings

Figure 1 – As-Drilled Boring Locations

BORINGS LOGS

“TC” BORINGS

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING TC-1

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272198.606
Easting: 726840.387
Boring Surface Elev.:
Reference:
Date Started: 7/9/13
Date Completed: 7/10/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 26.0
From Depth of: 26.0 **To:** 75.0

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/9/13	15.9	
7/9/13		5

Boring Contractor: Walton Coroporation
Equipment/Rig Type: CME 55 ATV
Driller: Billy Holden
Logged By: GTA

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	4 5 5 4	Moist loose brown silty fine to coarse sand w/ trace of fine gravel.	A-2-4(0)	Topsoil 4"
			2.0'		22" RECOVERY		
2.53							
		2	4.0'	4 2 5 7	Moist loose brown silty coarse to fine sand w/ trace of fine gravel.	A-2-4(0)	
5.06			6.0'		18" RECOVERY		
7.59							
		3	9.0'	5 11 12 16	Moist medium dense brown fine sand w/some coarse sand and silt.	A-2-4(0)	
10.12			11.0'		13" RECOVERY		
12.65							

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-1
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
15.18	■	4	14.0' – 16.0'	4 7 6 12	Wet medium dense tan fine sand w/some silt, trace of coarse sand. 18" RECOVERY	A-2-4(0)	
17.71							
20.24		5	19.0' – 21.0'	20 1 2 1	Wet very loose tan fine sand w/some silt and coarse sand, trace of fine gravel. 24" RECOVERY	A-2-4(0)	
22.77							
25.3		6	24.0' – 26.0'	4 5 13 21	Wet medium dense tan fine to coarse sand w/ some silt and fine gravel. 18" RECOVERY	A-2-4(0)	
27.83							
30.36		7	28.0' – 30.0'	11 21 22 12	Wet dense gray fine gravelly coarse sand w/ some fine sand, trace of silt. 14" RECOVERY	A-1-b	
32.89							
35.42		8	33.0' – 35.0'	4 6 7 6	Wet medium dense tan coarse to fine sand w/ some fine gravel, trace of silt. 12" RECOVERY	A-1-b	
37.95							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-1
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		9	38.0'	5 7 6 8	Wet medium dense tan coarse to fine sand w/ trace of fine gravel and silt.	A-1-b	
			40.0'		18" RECOVERY		
40.48							
43.01							
		10	43.0'	3 4 4 5	Wet loose tan coarse to fine sand w/some silt, trace of fine gravel.	A-1-b	
			45.0'		19" RECOVERY		
45.54							
48.07							
		11	48.0'	4 2 4 3	Wet loose tan fine sand w/some coarse sand and silt.	A-2-4(0)	
			50.0'		20" RECOVERY		
50.6							
53.13							
		12	53.0'	5 7 6 11	Wet medium dense tan coarse sand w/some fine sand, trace of silt and fine gravel.	A-1-b	
			55.0'		16" RECOVERY		
55.66							
58.19							
		13	58.0'	10 10 14 13	Wet medium dense tan coarse sand and fine gravel w/some fine sand, trace of silt.	A-1-b	
			60.0'		11" RECOVERY		
60.72							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-1
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
63.25		14	63.0' 65.0'	4 7 7 10	Wet medium dense tan fine to coarse sand w/ trace of fine gravel and silt. 14" RECOVERY	A-3	
65.78							
68.31		15	68.0' 70.0'	4 8 18 10	Wet medium dense tan fine to coarse sand w/ some fine gravel, trace of silt. 14" RECOVERY	A-3	
70.84							
73.37		16	73.0' 75.0'	8 9 13 12	Wet medium dense tan fine gravelly coarse sand w/some fine sand, trace of silt. 13" RECOVERY	A-1-b	
75.9					End Boring		
78.43							
80.96							
83.49							

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Well graded gravels and sands
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING TC-2

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272280.708
Easting: 726939.243
Boring Surface Elev.:
Reference:
Date Started: 7/1/13
Date Completed: 7/1/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 29.0
From Depth of: 29.0 **To:** 75.0

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/1/13	13.5	
7/1/13	Dry	10.4

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 ATV
Driller: Billy Holden
Logged By: GTA

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
2.53		1			Moist brown silty coarse to fine sand w/some fine gravel.	A-2-4(0)	Topsoil 9"
5.06		2	4.0'	4 4 3 7	Moist loose tan fine sand w/some coarse sand, trace of silt.	A-3	
7.59			6.0'		16" RECOVERY		
10.12		3	9.0'	7 7 7 8	Moist medium dense tan fine sand w/some coarse sand, trace of silt.	A-3	
12.65			11.0'		18" RECOVERY		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-2

State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
15.18		4	14.0' – 16.0'	4 WH WH WH	Wet very loose orange fine sand w/some coarse sand and silt, trace of fine gravel. 24" RECOVERY	A-2-4(0)	
17.71							
20.24		5	19.0' – 21.0'	WH 4 13 19	Wet medium dense orange silty fine sand w/ some coarse sand, trace of fine gravel. 22" RECOVERY	A-2-4(0)	
22.77							
25.3		6	24.0' – 26.0'	6 6 7 6	Wet medium dense tan coarse to fine sand w/ some silt, trace of fine gravel. 22" RECOVERY	A-2-4(0)	
27.83							
30.36		7	29.0' – 31.0'	4 5 6 4	Wet medium dense tan coarse sand w/some fine gravel and fine sand, trace of silt. 22" RECOVERY	A-1-b	
32.89							
35.42		8	34.0' – 36.0'	3 3 4 5	Wet loose tan fine to coarse sand w/some silt, trace of fine gravel. 21" RECOVERY	A-3	
37.95							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-2
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		9	39.0' 41.0'	4 4 5 5	Wet loose tan fine to coarse sand w/some silt, trace of fine gravel. 17" RECOVERY	A-2-4(0)	
40.48							
43.01							
		10	44.0' 46.0'	4 4 5 7	Wet loose tan coarse to fine sand w/trace of silt. 17" RECOVERY	A-1-b	
45.54							
48.07							
		11	49.0' 51.0'	4 5 7 8	Wet medium dense tan coarse to fine sand w/ trace of fine gravel and silt. 19" RECOVERY	A-1-b	
50.6							
53.13							
		12	54.0' 56.0'	8 12 11 8	Wet medium dense tan coarse to fine sand and fine gravel w/trace of silt. 17" RECOVERY	A-1-b	
55.66							
58.19							
		13	59.0' 61.0'	4 4 5 9	Wet loose tan fine sand w/some silt, trace of coarse sand. 21" RECOVERY	A-2-4(0)	
60.72							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-2
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
63.25							
65.78		14	64.0' 66.0'	21 15 14 11	Wet medium dense brown fine gravel w/some coarse to fine sand, trace of silt. 7" RECOVERY	A-1-a	
68.31							
70.84		15	69.0' 71.0'	10 10 13 14	Wet medium dense brown coarse to fine sand w/some fine gravel, trace of silt. 12" RECOVERY	A-1-b	
73.37		16	73.0' 75.0'	14 10 106 7	Wet medium dense tan fine to coarse sand w/ some silt and fine gravel. 16" RECOVERY	A-2-4(0)	
75.9					End Boring		
78.43							
80.96							
83.49							

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand
	Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING TC-3

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272208.384
Easting: 726920.034
Boring Surface Elev.:
Reference:
Date Started: 7/3/13
Date Completed: 7/3/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 26.0
From Depth of: 26.0 **To:** 75.0

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/2/13	12.5	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Jason Truver
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	1 2 1 1	Moist very loose brown silty coarse to fine sand w/some clay, trace of fine gravel.	A-2-4(0)	Topsoil 4"
			2.0'		12" RECOVERY		
2.53							
		2	4.0'	2 3 3 7	Moist loose tan fine to coarse sand w/trace of fine gravel and silt.	A-3	
5.06							
			6.0'		20" RECOVERY		
7.59							
		3	9.0'	4 6 6 7	Moist medium dense tan fine sand w/trace of silt.	A-3	
10.12							
			11.0'		15" RECOVERY		
12.65	■						

Remarks: Boring offset 13.5' east due to trees

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-3
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
15.18		4	14.0' – 16.0'	2 2 2 2	Wet very loose tan fine sand w/some silt and coarse sand, trace of fine gravel. 22" RECOVERY	A-2-4(0)	
17.71							
20.24		5	19.0' – 21.0'	1 1 10 13	Wet medium dense tan fine to coarse sand w/ some silt and fine gravel. 22" RECOVERY	A-2-4(0)	
22.77							
25.3		6	24.0' – 26.0'	8 7 7 17	Wet medium dense tan coarse to fine sand w/ some silt, trace of fine gravel. 17" RECOVERY	A-2-4(0)	
27.83							
30.36		7	29.0' – 31.0'	5 5 6 5	Wet medium dense tan coarse to fine sand w/ trace of fine gravel and silt. 16" RECOVERY	A-1-b	
32.89							
35.42		8	34.0' – 36.0'	4 5 5 5	Wet loose tan fine to coarse sand w/some silt, trace of fine gravel. 12" RECOVERY	A-2-4(0)	
37.95							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-3
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		9	39.0' 41.0'	3 3 3 3	Wet loose tan coarse to fine sand w/trace of silt and fine gravel. 21" RECOVERY	A-1-b	
40.48							
43.01							
		10	44.0' 46.0'	2 3 3 4	Wet loose tan fine to coarse sand w/some silt. 23" RECOVERY	A-2-4(0)	
45.54							
48.07							
		11	49.0' 51.0'	4 6 6 5	Wet medium dense tan coarse to fine sand w/ trace of fine gravel and silt. 15" RECOVERY	A-1-b	
50.6							
53.13							
		12	54.0' 56.0'	4 6 7 8	Wet medium dense tan fine to coarse sand w/ trace of fine gravel and silt. 21" RECOVERY	A-3	
55.66							
58.19							
		13	59.0' 61.0'	5 4 4 6	Wet loose tan fine sand w/some silt, trace of coarse sand and fine gravel. 19" RECOVERY	A-2-4(0)	
60.72							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-3
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
63.25							
65.78		14	64.0' 66.0'	5 7 8 11	Wet medium dense tan fine to coarse sand w/ trace of fine gravel and silt. 16" RECOVERY	A-3	
68.31							
70.84		15	69.0' 71.0'	9 11 12 9	Wet medium dense tan coarse to fine sand w/ some fine gravel, trace of silt. 14" RECOVERY	A-1-b	
73.37		16	73.0' 75.0'	12 12 15 15	Wet medium dense brown fine gravelly coarse sand w/some fine sand, trace of silt 15" RECOVERY	A-1-b	
75.9					End Boring		
78.43							
80.96							
83.49							

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand
	Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING TC-4

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272138.267
Easting: 726868.842
Boring Surface Elev.:
Reference:
Date Started: 7/11/13
Date Completed: 7/11/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 26.0
From Depth of: 26.0 **To:** 75.0

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/11/13	18.5	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 ATV
Driller: Billy Holden
Logged By: GTA

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	4 6 5 3	Moist medium dense brown silty fine to coarse sand w/trace of fine gravel and clay.	A-2-4(0)	Topsoil 4"
			2.0'		20" RECOVERY		
2.53							
		2	4.0'	5 4 5 5	Moist loose brown fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	
5.06							
			6.0'		16" RECOVERY		
7.59							
		3	9.0'	8 6 9 12	Moist medium dense tan fine sand w/trace of coarse sand and silt.	A-3	
10.12							
			11.0'		14" RECOVERY		
12.65							

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-4
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
15.18		4	14.0' – 16.0'	7 7 9 16	Wet medium dense tan fine sand w/some coarse sand, trace of silt. 16" RECOVERY	A-3	
17.71	■						
20.24		5	19.0' – 21.0'	2 1 WH 1	Wet very loose tan fine sand w/some silt and coarse sand, trace of fine gravel. 19" RECOVERY	A-2-4(0)	
22.77							
25.3		6	24.0' – 26.0'	4 18 17 10	Wet dense tan fine gravel and coarse to fine sand w/some silt. 24" RECOVERY	A-1-b	
27.83							
30.36		7	29.0' – 31.0'	6 5 5 4	Wet loose tan coarse sand w/some fine sand, trace of fine gravel and silt. 12" RECOVERY	A-1-b	
32.89							
35.42		8	34.0' – 36.0'	5 5 9 7	Wet medium dense orange coarse sand w/some fine gravel and fine sand, trace of silt. 14" RECOVERY	A-1-b	
37.95							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-4
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		9	39.0' 41.0'	3 4 4 6	Saturated loose tan fine to coarse sand w/trace of silt and fine gravel. 18" RECOVERY	A-3	
40.48							
43.01							
		10	44.0' 46.0'	3 4 5 6	Saturated loose tan coarse to fine sand w/trace of fine gravel and silt. 16" RECOVERY	A-1-b	
45.54							
48.07							
		11	49.0' 51.0'	5 8 7 8	Saturated medium dense tan coarse sand w/ some fine sand, trace of silt. 13" RECOVERY	A-1-b	
50.6							
53.13							
		12	54.0' 56.0'	5 8 8 8	Saturated medium dense tan coarse sand w/ some fine sand and fine gravel, trace of silt. 14" RECOVERY	A-1-b	
55.66							
58.19							
		13	59.0' 61.0'	4 6 9 12	Saturated medium dense tan fine to coarse sand w/trace of fine gravel and silt. 16" RECOVERY	A-3	
60.72							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-4
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
63.25							
65.78		14	64.0' 66.0'	4 4 9 13	Saturated medium dense tan fine sand w/some coarse sand and silt, trace of fine gravel. 20" RECOVERY	A-2-4(0)	
68.31							
70.84		15	69.0' 71.0'	7 8 7 8	Saturated medium dense tan coarse to fine sand w/some silt, trace of fine gravel. 15" RECOVERY	A-2-4(0)	
73.37		16	73.0' 75.0'	7 12 12 11	Saturated medium dense tan fine gravelly coarse sand w/some fine sand, trace of silt. 13" RECOVERY	A-1-b	
75.9					End Boring		
78.43							
80.96							
83.49							

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand
	Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING TC-5

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272201.87
Easting: 726984.02
Boring Surface Elev.:
Reference:
Date Started: 7/2/13
Date Completed: 7/2/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 75.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/2/13	13.3	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Jason Truver
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 1 2 1	Moist very loose brown silty coarse sand w/ some fine sand, trace of fine gravel.	A-1-b	Topsoil - 4"
			2.0'		14" RECOVERY		
2.53							
		2	4.0'	4 2 3 2	Moist loose brown fine to coarse sand w/trace of fine gravel and silt.	A-3	
5.06							
			6.0'		17" RECOVERY		
7.59							
		3	9.0'	4 5 5 5	Moist loose tan fine sand w/trace of coarse sand and silt.	A-3	
10.12							
			11.0'		17" RECOVERY		
12.65							

Remarks: Boring offset 7' south and 4' east.

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-5
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
15.18		4	14.0' – 16.0'	1 1 1 1	Wet very loose orange fine sand w/some silt, trace of coarse sand. 19" RECOVERY	A-2-4(0)	
17.71							
20.24		5	19.0' – 21.0'	2 8 10 11	Wet medium dense tan fine sand w/some coarse sand and fine gravel, trace of silt. 17" RECOVERY	A-3	
22.77							
25.3		6	24.0' – 26.0'	4 5 6 8	Wet medium dense tan coarse sand w/some fine sand, trace of silt and fine gravel. 24" RECOVERY	A-1-b	
27.83							
30.36		7	29.0' – 31.0'	5 4 5 6	Wet loose tan coarse sand w/some fine sand, trace of fine gravel and silt. 16" RECOVERY	A-1-b	
32.89							
35.42		8	34.0' – 36.0'	3 3 5 5	Wet loose tan fine to coarse sand w/trace of fine gravel and silt. 19" RECOVERY	A-3	
37.95							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-5

State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		9	39.0' – 41.0'	3 4 5 5	Wet loose tan fine to coarse sand w/trace of silt and fine gravel. 16" RECOVERY	A-3	
40.48							
43.01							
		10	44.0' – 46.0'	3 3 4 4	Wet loose tan coarse to fine sand w/trace of silt. 21" RECOVERY	A-1-b	
45.54							
48.07							
		11	49.0' – 51.0'	4 4 5 6	Wet loose tan coarse sand w/some fine sand, trace of fine gravel and silt. 18" RECOVERY	A-1-b	
50.6							
53.13							
		12	54.0' – 56.0'	5 6 6 8	Wet medium dense tan coarse to fine sand w/ trace of silt. 17" RECOVERY	A-1-b	
55.66							
58.19							
		13	59.0' – 61.0'	3 3 6 7	Wet loose tan fine sand w/some silt, trace of coarse sand. 24" RECOVERY	A-2-4(0)	
60.72							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-5

State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
63.25							
65.78		14	64.0' 66.0'	11 11 13 12	Wet medium dense orange coarse to fine sand w/some fine gravel, trace of silt. 14" RECOVERY	A-1-b	
68.31							
70.84		15	69.0' 71.0'	4 7 9 9	Wet medium dense orange coarse sand w/some fine sand, trace of fine gravel and silt. 19" RECOVERY	A-1-b	
73.37		16	73.0' 75.0'	13 10 10 10	Wet medium dense orange coarse to fine sand w/some fine gravel, trace of silt. 14" RECOVERY	A-1-b	
75.9					End Boring		
78.43							
80.96							
83.49							

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Well graded gravels and sands
	Clean sand & gravelly sand
	Poorly graded, silty or clayey sands and gravel

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING TC-6

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272505.26
Easting: 726499.55
Boring Surface Elev.:
Reference:
Date Started: 7/10/13
Date Completed: 7/10/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 26.0
From Depth of: 26.0 **To:** 75.0

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/10/13	17.7	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 ATV
Driller: Billy Holden
Logged By: GTA

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	3 7 8 5	Moist medium dense brown fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	Topsoil 4"
			2.0'		13" RECOVERY		
2.53							
		2	4.0'	4 2 4 8	Moist loose brown coarse to fine sand w/trace of fine gravel and silt.	A-1-b	
5.06							
			6.0'		14" RECOVERY		
7.59							
		3	9.0'	7 11 13 14	Moist medium dense tan fine to coarse sand w/ trace of silt and fine gravel.	A-3	
10.12							
			11.0'		15" RECOVERY		
12.65							

Remarks: Boring offset 18' to the west due to overhead trees.

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-6
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
15.18		4	14.0' – 16.0'	7 4 9 10	Moist medium dense tannish orange fine to coarse sand w/trace of fine gravel and silt. 16" RECOVERY	A-3	
17.71	■						
20.24		5	19.0' – 21.0'	1 2 1 WH	Wet very loose tan fine sand w/some coarse sand and silt, trace of fine gravel. 11" RECOVERY	A-2-4(0)	
22.77							
25.3		6	24.0' – 26.0'	WH 1 18 14	Wet medium dense brown fine to coarse sand w/some silt and fine gravel. 17" RECOVERY	A-2-4(0)	
27.83							
30.36		7	29.0' – 31.0'	5 3 5 7	Wet loose tan coarse to fine sand w/some silt, trace of fine gravel. 15" RECOVERY	A-1-b	
32.89							
35.42		8	34.0' – 36.0'	4 5 8 8	Wet medium dense tan coarse to fine sand w/ some fine gravel, trace of silt. 15" RECOVERY	A-1-b	
37.95							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-6
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		9	39.0' 41.0'	3 3 6 6	Wet loose tan coarse to fine sand w/trace of silt and fine gravel. 16" RECOVERY	A-1-b	
40.48							
43.01							
		10	44.0' 46.0'	5 5 4 6	Wet loose tan fine to coarse sand w/some silt, trace of fine gravel. 19" RECOVERY	A-2-4(0)	
45.54							
48.07							
		11	49.0' 51.0'	2 2 6 4	Wet loose tan fine to coarse sand w/some silt. 14" RECOVERY	A-2-4(0)	
50.6							
53.13							
		12	54.0' 56.0'	4 6 8 8	Wet medium dense tan coarse to fine sand w/ trace of silt. 15" RECOVERY	A-1-b	
55.66							
58.19							
		13	59.0' 61.0'	6 8 14 9	Wet medium dense tan fine gravelly coarse sand w/some fine sand, trace of silt. 14" RECOVERY	A-1-b	
60.72							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-6
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
63.25							
65.78		14	64.0' 66.0'	5 5 7 12	Wet medium dense tan fine sand w/some silt, trace of coarse sand. 20" RECOVERY	A-2-4(0)	
68.31							
70.84		15	69.0' 71.0'	7 5 15 9	Wet medium dense tan fine to coarse sand w/ some fine gravel, trace of silt. 15" RECOVERY	A-3	
73.37		16	73.0' 75.0'	12 12 12 13	Wet medium dense tan fine gravelly fine to coarse sand w/trace of silt. 21" RECOVERY	A-1-b	
75.9					End Boring		
78.43							
80.96							
83.49							

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Well graded gravels and sands
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING TC-7

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272504.95
Easting: 726578.34
Boring Surface Elev.:
Reference:
Date Started: 7/15/13
Date Completed: 7/15/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 75.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/15/13	12.7	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Jason Truver
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.0'	3 3	Moist loose brown fine to coarse sand w/some fine gravel and silt. 8" RECOVERY	A-2-4(0)	Hot-mix 2"
			2.0'				
2.53							
		2	4.0'	3 4 6 6	Wet medium dense brown fine sand w/trace of silt, coarse sand and fine gravel. 16" RECOVERY	A-3	
5.06							
			6.0'				
7.59							
		3	9.0'	6 9 9 7	Wet medium dense tan fine sand w/trace of silt.Wet very loose tan fine sand w/some coarse sand and silt, trace of fine gravel. 21" RECOVERY	A-3	
10.12							
			11.0'				
12.65	■						
		4	14.0'	1 2 2 2	Wet very loose tan fine sand w/some coarse sand and silt, trace of fine gravel.	A-2-4(0)	

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-7

State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
			16.0'		19" RECOVERY		
17.71							
		5	19.0'	2 10 18 16	Wet medium dense tan silty fine sand w/some coarse sand and fine gravel.	A-2-4(0)	
20.24			21.0'		20" RECOVERY		
22.77							
		6	24.0'	2 3 3 5	Wet loose tan fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	
25.3			26.0'		24" RECOVERY		
27.83							
		7	29.0'	6 5 9 6	Wet medium dense tan fine gravelly coarse sand w/some fine sand, trace of silt.	A-1-b	
30.36			31.0'		15" RECOVERY		
32.89							
		8	34.0'	10 9 10 7	Wet medium dense tan coarse sand w/some fine sand, trace of fine gravel and silt.	A-1-b	
35.42			36.0'		14" RECOVERY		
37.95							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-7
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
40.48		9	39.0' 41.0'	5 7 8 8	Wet medium dense tan coarse sand w/some fine sand, trace of fine gravel and silt. 12" RECOVERY	A-1-b	
45.54		10	44.0' 46.0'	5 6 6 5	Wet medium dense tan coarse to fine sand w/ trace of silt and fine gravel. 11" RECOVERY	A-1-b	
50.6		11	49.0' 51.0'	7 10 8 9	Wet medium dense tan coarse to fine sand w/ some silt and fine gravel. 16" RECOVERY	A-1-b	
55.66		12	54.0' 56.0'	6 8 13 9	Wet medium dense tan coarse sand w/some fine sand, trace of fine gravel and silt. 14" RECOVERY	A-1-b	
60.72		13	59.0' 61.0'	20 32 19 8	Wet dense tan fine gravel w/some fine to coarse sand, trace of silt. 12" RECOVERY	A-1-a	

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-7
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
63.25							
		14	64.0'	8 6 6 7	Wet medium dense tan coarse to fine sand w/ some fine gravel, trace of silt.	A-1-b	
65.78			66.0'		17" RECOVERY		
68.31							
		15	69.0'	10 13 11 9	Wet medium dense tan coarse to fine sand w/ some silt, trace of fine gravel.	A-1-b	
70.84			71.0'		14" RECOVERY		
73.37		16	73.0'	9 11 15 10	Wet medium dense tan coarse to fine sand w/ trace of silt.	A-3	
			75.0'		22" RECOVERY		
					End Boring		
75.9							
78.43							
80.96							
83.49							
86.02							

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand
	Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING TC-8

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272507.17
Easting: 726679.59
Boring Surface Elev.:
Reference:
Date Started: 7/11/13
Date Completed: 7/11/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 26.0
From Depth of: 26.0 **To:** 75.0

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/11/13	16.9	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
2.53		1	1.0' – 3.0'	2 2 2 2	Moist very loose brown silty fine sand w/some coarse sand, trace of fine gravel. 24" RECOVERY	A-2-4(0)	Hot-mix 2"
5.06 – 7.59		2	4.0' – 6.0'	5 4 8 14	Moist medium dense brown fine sand w/some coarse sand and silt, trace of fine gravel. 24" RECOVERY	A-2-4(0)	
10.12 – 12.65		3	9.0' – 11.0'	5 6 8 11	Wet medium dense brown fine sand w/trace of coarse sand, fine gravel and silt. 24" RECOVERY	A-3	
		4	14.0'	3 4 4 3	Wet loose brown fine sand w/some coarse sand and silt, trace of fine gravel.	A-2-4(0)	

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-8
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
			16.0'		17" RECOVERY		
17.71	■						
		5	19.0'	1 2 2 5	Wet soft brown fine sandy silt w/some fine gravel, trace of coarse sand.	A-4(0)	
20.24							
			21.0'		22" RECOVERY		
22.77							
		6	24.0'	3 8 10 11	Wet medium dense brown fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	
25.3							
			26.0'		22" RECOVERY		
27.83							
		7	29.0'	6 7 11 9	Wet medium dense brown coarse sand w/some fine sand and fine gravel, trace of silt.	A-1-b	
30.36							
			31.0'		22" RECOVERY		
32.89							
		8	34.0'	7 5 7 7	Wet medium dense brown coarse sand w/some fine sand and fine gravel, trace of silt.	A-1-b	
35.42							
			36.0'		15" RECOVERY		
37.95							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-8
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
40.48		9	39.0' 41.0'	8 8 10 8	Wet medium dense brown coarse sand w/some fine gravel, trace of fine sand and silt. 15" RECOVERY	A-1-b	
43.01							
45.54		10	44.0' 46.0'	5 7 7 12	Wet medium dense brown coarse sand w/some fine sand, trace of silt and fine gravel. 16" RECOVERY	A-1-b	
48.07							
50.6		11	49.0' 51.0'	6 6 8 7	Wet medium dense brown coarse sand w/some fine sand, trace of fine gravel and silt. 16" RECOVERY	A-1-b	
53.13							
55.66		12	54.0' 56.0'	11 10 14 16	Wet medium dense brown coarse sand w/some fine sand and fine gravel, trace of silt. 14" RECOVERY	A-1-b	
58.19							
60.72		13	59.0' 61.0'	16 11 6 7	Wet medium dense brown fine to coarse sand and fine gravel w/trace of silt. 13" RECOVERY	A-1-b	

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-8
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
63.25							
		14	64.0'	11 14 11 8	Wet medium dense brown fine gravelly coarse sand w/some fine sand, trace of silt.	A-1-b	
65.78			66.0'		14" RECOVERY		
68.31							
		15	69.0'	9 13 14 12	Wet medium dense brown fine gravelly coarse sand w/some fine sand, trace of silt.	A-1-b	
70.84			71.0'		13" RECOVERY		
73.37		16	73.0'	9 8 9 12	Wet medium dense brown fine to coarse sand w/some fine gravel, trace of silt.	A-1-b	
			75.0'		13" RECOVERY		
75.9					End Boring		
78.43							
80.96							
83.49							
86.02							

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand
	Silty soils
	Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING TC-9

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272509.129
Easting: 726773.002
Boring Surface Elev.:
Reference:
Date Started: 7/8/13
Date Completed: 7/8/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 26.0
From Depth of: 26.0 **To:** 75.0

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/8/13	13.5	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 ATV
Driller: Billy Holden
Logged By: GTA

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 2 5 3	Moist loose brown silty fine sand w/some coarse sand, trace of fine gravel.	A-2-4(0)	Topsoil 7"
			2.0'		18" RECOVERY		
2.53							
		2	4.0'	5 3 4 6	Moist loose tan fine sand w/trace of coarse sand and silt.	A-3	
5.06							
			6.0'		16" RECOVERY		
7.59							
		3	9.0'	5 6 5 5	Wet medium dense tan fine sand w/trace of coarse sand and silt.	A-3	
10.12							
			11.0'		16" RECOVERY		
12.65							

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-9
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
15.18		4	14.0' – 16.0'	2 2 2 1	Wet very loose brown fine sand w/some coarse sand and silt, trace of fine gravel. 21" RECOVERY	A-2-4(0)	
17.71							
20.24		5	19.0' – 21.0'	1 2 4 5	Wet loose gray silty fine to coarse sand w/some fine gravel. 22" RECOVERY	A-2-4(0)	
22.77							
25.3		6	24.0' – 26.0'	8 10 11 9	Wet medium dense gray silty fine to coarse sand w/trace of fine gravel. 24" RECOVERY	A-2-4(0)	
27.83							
30.36		7	29.0' – 31.0'	5 5 5 6	Wet loose tan coarse sand w/some fine sand and fine gravel, trace of silt. 14" RECOVERY	A-1-b	
32.89							
35.42		8	34.0' – 36.0'	5 3 4 6	Wet loose orange coarse to fine sand w/trace of fine gravel and silt. 15" RECOVERY	A-1-b	
37.95							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-9
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		9	39.0' 41.0'	4 5 6 7	Wet medium dense tan coarse to fine sand w/ trace of silt and fine gravel. 16" RECOVERY	A-1-b	
40.48							
43.01							
		10	44.0' 46.0'	8 11 8 8	Wet medium dense tan fine gravelly coarse sand w/some fine sand and silt. 15" RECOVERY	A-1-b	
45.54							
48.07							
		11	49.0' 51.0'	4 5 8 9	Wet medium dense tan coarse to fine sand w/ trace of fine gravel and silt. 14" RECOVERY	A-1-b	
50.6							
53.13							
		12	54.0' 56.0'	6 6 6 7	Wet medium dense tan coarse to fine sand w/ trace of silt and fine gravel. 13" RECOVERY	A-3	
55.66							
58.19							
		13	59.0' 61.0'	8 21 9 5	Wet medium dense tan coarse to fine sand w/ some fine gravel and silt. 8" RECOVERY	A-1-b	
60.72							

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-9

State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
63.25							
65.78		14	64.0' 66.0'	11 10 8 10	Wet medium dense orange coarse to fine sand w/trace of fine gravel and silt. 11" RECOVERY	A-1-b	
68.31							
70.84		15	69.0' 71.0'	10 9 8 15	Wet medium dense orange coarse to fine sand w/some fine gravel, trace of silt. 7" RECOVERY	A-1-b	
73.37		16	73.0' 75.0'	14 13 13 12	No Recovery NR" RECOVERY		
75.9					End Boring		
78.43							
80.96							
83.49							

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand
	Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING TC-10

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272387.807
Easting: 726909.062
Boring Surface Elev.:
Reference:
Date Started: 7/2/13
Date Completed: 7/2/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 30.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/2/13	15.5	
7/2/13	7.0	7.0

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	4 5 5 4	Moist loose brown silty fine to coarse sand w/ some fine gravel.	A-2-4(0)	Topsoil 3"
			2.0'		18" RECOVERY		
2.53							
		2	4.0'	5 5 4 5	Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	A-3	
5.06							
			6.0'		24" RECOVERY		
7.59	▽						
		3	9.0'	9 16 16 20	Wet dense brown fine sand w/trace of coarse sand and silt.	A-3	
10.12							
			11.0'		17" RECOVERY		
12.65							

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

Project Name: Lewes Transit Center **Boring No.:** TC-10
State Contract:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
15.18	■	4	14.0' – 16.0'	10 4 4 4	Wet loose brown fine to coarse sand w/some silt. 18" RECOVERY	A-2-4(0)	
17.71							
20.24		5	19.0' – 21.0'	8 4 4 8	Wet loose brown fine to coarse sand and fine gravel w/some silt. 20" RECOVERY	A-2-4(0)	
22.77							
25.3		6	24.0' – 26.0'	18 30 32 40	Wet very dense brown fine to coarse sand w/ some fine gravel and silt. 22" RECOVERY	A-2-4(0)	
27.83							
		7	28.0' – 30.0'	10 4 5 10	Wet loose brown coarse to fine sand w/some fine gravel and silt. 20" RECOVERY	A-1-b	
30.36					End Boring		
32.89							
35.42							
37.95							

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand
	Well graded gravels and sands
Misc. Symbols	
	Description not given for: "WATER2"

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

“P” BORINGS

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-1

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272594.695
Easting: 726328.743
Boring Surface Elev.:
Reference:
Date Started: 7/11/13
Date Completed: 7/11/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/11/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.0' 2.0'	3 3	Moist loose gray coarse to fine sand w/some silt, trace of fine gravel. 9" RECOVERY	A-1-b	Hot-mix 2"
2.53		2	2.0' 4.0'	1 3 9 12	Moist medium dense gray coarse to fine sand w/ some fine gravel and silt. 20" RECOVERY	A-1-b	
5.06		3	4.0' 6.0'	6 8 3 3	Moist medium dense brown coarse to fine sand w/trace of fine gravel and silt. 24" RECOVERY	A-1-b	
7.59		4	6.0' 8.0'	4 5 5 4	Moist loose brown coarse sand w/some fine sand and fine gravel, trace of silt. 22" RECOVERY	A-1-b	
10.12		5	8.0' 10.0'	8 6 6 8	Moist medium dense brown fine sand w/trace of coarse sand and silt. 22" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-2

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272364.578
Easting: 726514.154
Boring Surface Elev.:
Reference:
Date Started: 7/10/13
Date Completed: 7/10/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/10/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.0' 2.0'	2 3	Moist loose brown silty fine to coarse sand w/ trace of fine gravel. 11" RECOVERY	A-2-4(0)	Hot-mix 2"
2.53		2	2.0' 4.0'	3 2 2 2	Moist soft brown clayey coarse to fine sandy silt w/trace of fine gravel. 24" RECOVERY	A-4(0)	
5.06		3	4.0' 6.0'	3 2 2 2	Moist soft brown coarse to fine sandy silt w/ trace of fine gravel. 20" RECOVERY	A-2-4(0)	
7.59		4	6.0' 8.0'	3 5 11 16	Moist medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt. 20" RECOVERY	A-3	
10.12		5	8.0' 10.0'	7 8 10 16	Moist medium dense brown fine sand w/trace of coarse sand and silt. 17" RECOVERY	A-3	
12.65					End Boring.		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-3

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272148.11
Easting: 726740.04
Boring Surface Elev.:
Reference:
Date Started: 7/8/13
Date Completed: 7/8/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/8/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	5 5 3 3	Moist loose brown silty fine to coarse sand. 20" RECOVERY	A-2-4(0)	Topsoil 3"
2.53		2	2.0' 4.0'	3 3 3 3	Moist loose brown fine to coarse sand w/some silt, trace of fine gravel. 18" RECOVERY	A-2-4(0)	
5.06		3	4.0' 6.0'	7 6 5 8	Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt. 17" RECOVERY	A-3	
7.59		4	6.0' 8.0'	3 5 5 6	Moist loose brown fine to coarse sand w/some silt. 16" RECOVERY	A-2-4(0)	
10.12		5	8.0' 10.0'	11 16 19 25	Moist dense brown coarse sand w/trace of fine gravel, fine sand and silt. 14" RECOVERY	A-1-b	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-4

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 271904.037
Easting: 726936.039
Boring Surface Elev.:
Reference:
Date Started: 7/9/13
Date Completed: 7/9/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4 **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 9.5
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: GTA

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.0' 2.0'	7 11	Moist loose tan coarse to fine sand w/some silt, trace of fine gravel. 10" RECOVERY	A-1-b	Hot-mix 4", aggregate base 3"
2.53		2	2.0' 4.0'	11 10 7 7	No Sample 22" RECOVERY		
5.06		3	4.0' 6.0'	6 3 5 3	Moist loose tan coarse to fine sand w/some silt, trace of fine gravel. 18" RECOVERY	A-1-b	
7.59		4	6.0' 8.0'	2 2 4 4	Moist loose brown coarse to fine sand w/some fine gravel, trace of silt. 19" RECOVERY	A-1-b	
10.12		5	8.0' 10.0'	5 1 1	Moist very loose brown coarse to fine sand w/ some silt, trace of fine gravel. 12" RECOVERY	A-1-b	
12.65					End Boring		

Remarks: Auger Refusal at 9.5'. Boring offset 4' due to trees

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-5

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272585.96
Easting: 726725.29
Boring Surface Elev.:
Reference:
Date Started: 7/11/13
Date Completed: 7/11/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/11/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	5 2	Wet loose gray silty fine to coarse sand w/trace of fine gravel.	A-2-4(0)	Hot-mix - 1"
			2.0'		9" RECOVERY		
2.53		2	2.0'	3 3 4 4	Wet loose brown fine to coarse sand w/some fine gravel, trace of silt.	A-3	
			4.0'		24" RECOVERY		
5.06		3	4.0'	5 5 6 8	Wet medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt.	A-3	
			6.0'		24" RECOVERY		
7.59		4	6.0'	7 8 9 9	Wet medium dense brown fine sand w/trace of coarse sand, fine gravel and silt.	A-3	
			8.0'		24" RECOVERY		
10.12		5	8.0'	6 7 9 11	Wet medium dense brown fine sand w/trace of coarse sand and silt.	A-3	
			10.0'		24" RECOVERY		
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-6

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272103.698
Easting: 727169.015
Boring Surface Elev.:
Reference:
Date Started: 7/9/13
Date Completed: 7/9/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/9/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: GTA

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.0' 2.0'	8 10	Moist medium dense brown silty fine to coarse sand w/trace of fine gravel. 12" RECOVERY	A-2-4(0)	Hot-mix 4", aggregate base 2"
2.53		2	2.0' 4.0'	5 3 3 4	Moist loose brown fine to coarse sand w/trace of fine gravel and silt. 16" RECOVERY	A-3	
5.06		3	4.0' 6.0'	6 3 2 3	Moist loose orange fine to coarse sand w/trace of silt and fine gravel. 16" RECOVERY	A-3	
7.59		4	6.0' 8.0'	4 5 6 6	Moist medium dense tannish orange fine to coarse sand w/trace of silt. 20" RECOVERY	A-3	
10.12		5	8.0' 10.0'	5 5 6 8	Moist medium dense tan fine sand w/trace of coarse sand and silt. 14" RECOVERY	A-3	
12.65					End Boring.		

Remarks: Boring offset 6' due to overhead power lines.

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-7

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272426.97
Easting: 726622.879
Boring Surface Elev.:
Reference:
Date Started: 7/10/13
Date Completed: 7/10/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/10/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.0' 2.0'	6 6	Moist medium dense grayish brown fine to coarse sand w/some silt and fine gravel. 2" RECOVERY	A-2-4(0)	Hot-mix 3"
2.53		2	2.0' 4.0'	4 6 8 11	Wet medium dense grayish brown coarse to fine sand and fine gravel w/trace of silt. 6" RECOVERY	A-1-b	
5.06		3	4.0' 6.0'	5 6 10 14	Wet medium dense brown fine to coarse sand w/some fine gravel and silt. 18" RECOVERY	A-2-4(0)	
7.59		4	6.0' 8.0'	9 14 14 15	Wet medium dense brown fine to coarse sand w/some silt, trace of fine gravel. 17" RECOVERY	A-2-4(0)	
10.12		5	8.0' 10.0'	8 9 11 15	Wet medium dense brown fine sand w/trace of coarse sand, fine gravel and silt. 20" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-8

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272267.97
Easting: 726678.90
Boring Surface Elev.:
Reference:
Date Started: 7/8/13
Date Completed: 7/8/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/8/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	14 7 4 6	Moist medium dense brown silty coarse to fine sand w/trace of fine gravel. 24" RECOVERY	A-2-4(0)	Topsoil - 3"
			2.0'				
2.53		2	2.0'	6 7 6 5	Moist medium dense brown fine to coarse sand w/some silt. 18" RECOVERY	A-2-4(0)	
			4.0'				
5.06		3	4.0'	11 6 7 13	Moist medium dense brown coarse to fine sand w/some silt, trace of fine gravel. 17" RECOVERY	A-1-b	
			6.0'				
7.59		4	6.0'	11 14 26 28	Moist dense brown coarse sand w/trace of fine sand, fine gravel and silt. 18" RECOVERY	A-1-b	
			8.0'				
10.12		5	8.0'	14 16 16 18	Moist dense brown fine sand w/trace of coarse sand and silt. 15" RECOVERY	A-3	
			10.0'				
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-9

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272372.58
Easting: 726723.45
Boring Surface Elev.:
Reference:
Date Started: 7/3/13
Date Completed: 7/3/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/9/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 1 2 3	Moist soft brown coarse to fine sandy silt w/ some clay, trace of fine gravel. 18" RECOVERY	A-4(0)	Topsoil - 3"
			2.0'				
2.53		2	2.0'	2 5 6 5	Moist medium dense brown coarse to fine sand and fine gravel w/some silt. 21" RECOVERY	A-1-b	
			4.0'				
5.06		3	4.0'	5 5 6 7	Moist medium dense brown fine sand and fine gravel w/some coarse sand, trace of silt. 15" RECOVERY	A-1-b	
			6.0'				
7.59		4	6.0'	9 10 9 12	Moist medium dense brown fine sand w/trace of coarse sand and silt. 17" RECOVERY	A-3	
			8.0'				
10.12		5	8.0'	9 13 16 18	Moist medium dense brown fine sand w/trace of coarse sand and silt. 15" RECOVERY	A-3	
			10.0'				
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-10

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272444.00
Easting: 726781.75
Boring Surface Elev.:
Reference:
Date Started: 7/3/13
Date Completed: 7/3/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/9/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	3 3 4 3	Moist loose brown silty fine to coarse sand w/ trace of fine gravel. 15" RECOVERY	A-2-4(0)	Topsoil - 2"
2.53		2	2.0' 4.0'	3 4 6 5	Moist loose brown fine to coarse sand w/some silt, trace of fine gravel. 17" RECOVERY	A-2-4(0)	
5.06		3	4.0' 6.0'	5 6 5 5	Moist medium dense brown fine sand w/trace of coarse sand and silt. 20" RECOVERY	A-3	
7.59		4	6.0' 8.0'	10 9 11 11	Moist medium dense brown fine sand w/trace of coarse sand and silt. 20" RECOVERY	A-3	
10.12		5	8.0' 10.0'	6 6 8 8	Wet medium dense brown fine sand w/trace of coarse sand and silt. 18" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-11

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272322.30
Easting: 726830.89
Boring Surface Elev.:
Reference:
Date Started: 7/2/13
Date Completed: 7/2/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/2/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 2 2 2	Moist very loose brown silty coarse to fine sand w/trace of fine gravel. 18" RECOVERY	A-2-4(0)	Topsoil - 3"
			2.0'				
2.53		2	2.0'	2 3 5 5	Moist loose brown coarse to fine sand w/some silt and fine gravel. 15" RECOVERY	A-1-b	
			4.0'				
5.06		3	4.0'	7 8 10 17	Moist medium dense brown coarse to fine sand w/trace of fine gravel and silt. 17" RECOVERY	A-1-b	
			6.0'				
7.59		4	6.0'	16 17 19 21	Moist dense brown fine sand w/some coarse sand, trace of silt. 15" RECOVERY	A-3	
			8.0'				
10.12		5	8.0'	6 10 11 13	Moist medium dense brown fine sand w/trace of coarse sand and silt. 17" RECOVERY	A-3	
			10.0'				
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-12

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272030.528
Easting: 726907.450
Boring Surface Elev.:
Reference:
Date Started: 7/8/13
Date Completed: 7/8/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/8/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	3 3 3 3	Moist firm brown fine sandy silt w/some coarse sand and clay, trace of fine gravel.	A-4(0)	Topsoil 3"
			2.0'		18" RECOVERY		
2.53		2	2.0'	4 4 5 4	Moist loose brown silty fine to coarse sand w/ trace of fine gravel.	A-2-4(0)	
			4.0'		17" RECOVERY		
5.06		3	4.0'	5 3 4 3	Moist loose brown fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	
			6.0'		17" RECOVERY		
7.59		4	6.0'	7 9 18 21	Moist medium dense brown coarse sand w/some fine sand, trace of fine gravel and silt.	A-1-b	
			8.0'		17" RECOVERY		
10.12		5	8.0'	9 14 18 26		A-3	
			10.0'		17" RECOVERY		
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-13

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272133.95
Easting: 726970.98
Boring Surface Elev.:
Reference:
Date Started: 7/2/13
Date Completed: 7/2/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/2/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	1 2 1 3	Moist soft brown coarse to fine sandy silt w/ some clay, trace of fine gravel.	A-4(0)	Topsoil - 3"
			2.0'		18" RECOVERY		
2.53		2	2.0'	2 4 4 4	Moist loose brown coarse to fine sand w/trace of fine gravel and silt.	A-1-b	
			4.0'		19" RECOVERY		
5.06		3	4.0'	4 6 5 12	Moist medium dense tan fine to coarse sand w/ trace of fine gravel and silt.	A-3	
			6.0'		21" RECOVERY		
7.59		4	6.0'	9 9 10 11	Moist medium dense tan fine sand w/trace of coarse sand and silt.	A-3	
			8.0'		20" RECOVERY		
10.12		5	8.0'	9 9 11 12	Moist medium dense tan fine sand w/some coarse sand, trace of silt.	A-3	
			10.0'		16" RECOVERY		
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING P-14

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272158.69
Easting: 727077.78
Boring Surface Elev.:
Reference:
Date Started: 7/2/13
Date Completed: 7/2/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/2/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 2 3 5	Moist loose brown silty fine to coarse sand w/ trace of fine gravel. 12" RECOVERY	A-2-4(0)	Topsoil - 3"
2.53		2	2.0'	2 2 2 2	Moist very loose brown fine sand w/some coarse sand and silt, trace of fine gravel. 24" RECOVERY	A-2-4(0)	
5.06		3	4.0'	4 4 3 4	Moist loose brown coarse sand w/some fine gravel and fine sand, trace of silt. 15" RECOVERY	A-1-b	
7.59		4	6.0'	4 6 5 6	Moist medium dense brown fine sand w/some coarse sand, trace of silt. 18" RECOVERY	A-3	
10.12		5	8.0'	6 7 8 8	Moist medium dense brown fine sand w/trace of coarse sand, fine gravel and silt. 17" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Well graded gravels and sands
	Clean sand & gravelly sand
	Poorly graded, silty or clayey sands and gravel
	Silty soils

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

“SW BORINGS”

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-1

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272422.10
Easting: 726433.32
Boring Surface Elev.:
Reference:
Date Started: 7/11/13
Date Completed: 7/11/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/11/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	5 11	Moist medium dense gray fine gravelly coarse sand w/some fine sand and silt. 9" RECOVERY	A-1-b	Hot-mix 3"
2.53		2	2.0' 4.0'	11 10 9 4	Moist medium dense gray fine to coarse sand w/ some fine gravel, trace of silt. 24" RECOVERY	A-3	
5.06		3	4.0' 6.0'	3 4 4 5	Moist loose brown fine to coarse sand w/some silt, trace of fine gravel. 20" RECOVERY	A-2-4(0)	
7.59		4	6.0' 8.0'	3 3 4 3	Moist loose brown fine sand w/some coarse sand and silt, trace of fine gravel. 21" RECOVERY	A-2-4(0)	
10.12		5	8.0' 10.0'	4 5 5 6	Moist loose brown fine sand w/trace of coarse sand, fine gravel and silt. 15" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Well graded gravels and sands
	Clean sand & gravelly sand
	Poorly graded, silty or clayey sands and gravel

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-2

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272576.53
Easting: 726554.95
Boring Surface Elev.:
Reference:
Date Started: 7/10/13
Date Completed: 7/10/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/10/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.0' 2.0'	3 3	Moist loose grayish brown silty fine to coarse sand w/trace of fine gravel. 6" RECOVERY	A-2-4(0)	Hot-mix 3". Fill
2.53		2	2.0' 4.0'	2 3 4 3	Moist loose brown fine sand w/some coarse sand, fine gravel and silt. 24" RECOVERY	A-2-4(0)	
5.06		3	4.0' 6.0'	9 6 7 9	Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt. 18" RECOVERY	A-3	
7.59		4	6.0' 8.0'	9 10 11 14	Moist medium dense brown fine sand w/trace of coarse sand and silt. 18" RECOVERY	A-3	
10.12		5	8.0' 10.0'	13 9 10 11	Wet medium dense brown fine sand w/trace of coarse sand and silt. 17" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-3

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272576.01
Easting: 726670.17
Boring Surface Elev.:
Reference:
Date Started: 7/11/13
Date Completed: 7/11/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/11/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 2	Moist very loose gray fine to coarse sand w/ some silt, trace of fine gravel.	A-2-4(0)	Hot-mix - 2.5"
			2.0'		8" RECOVERY		
2.53		2	2.0'	2 3 2 3	Wet loose brown fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	
			4.0'		24" RECOVERY		
5.06		3	4.0'	6 5 4 6	Wet loose brown fine sand w/some coarse sand, trace of fine gravel and silt.	A-3	
			6.0'		18" RECOVERY		
7.59		4	6.0'	6 7 7 8	Wet medium dense brown fine sand w/trace of coarse sand and silt.	A-3	
			8.0'		20" RECOVERY		
10.12		5	8.0'	5 6 6 5	Wet medium dense brown fine sand w/trace of coarse sand, fine gravel and silt.	A-3	
			10.0'		17" RECOVERY		
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-4

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272422.10
Easting: 726565.88
Boring Surface Elev.:
Reference:
Date Started: 7/10/13
Date Completed: 7/10/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/10/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.0' 2.0'	2 9	Moist medium dense brown silty fine sand w/ some coarse sand, trace of fine gravel. 9" RECOVERY	A-2-4(0)	Hot-mix 2"
2.53		2	2.0' 4.0'	7 7 5 7	Wet medium dense brown silty fine to coarse sand w/trace of fine gravel. 24" RECOVERY	A-2-4(0)	
5.06		3	4.0' 6.0'	4 2 2 3	Wet very loose brown silty fine to coarse sand w/trace of fine gravel. 20" RECOVERY	A-2-4(0)	
7.59		4	6.0' 8.0'	5 6 5 6	Wet medium dense brown coarse to fine sand w/some fine gravel and silt. 18" RECOVERY	A-1-b	
10.12		5	8.0' 10.0'	3 8 8 14	Wet medium dense brown fine sand w/trace of coarse sand and silt. 18" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Well graded gravels and sands
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-5

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272462.15
Easting: 726608.46
Boring Surface Elev.:
Reference:
Date Started: 7/10/13
Date Completed: 7/10/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/10/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.0' 2.0'	15 3	Moist medium dense gray coarse to fine sandy fine gravel w/some silt. 6" RECOVERY	A-1-b	Hot-mix 2". Fill
2.53		2	2.0' 4.0'	8 5 3 3	Moist loose brown coarse to fine sand w/some silt, trace of fine gravel. 18" RECOVERY	A-1-b	
5.06		3	4.0' 6.0'	5 6 6 6	Moist medium dense brown coarse to fine sand w/trace of fine gravel and silt. 18" RECOVERY	A-1-b	
7.59		4	6.0' 8.0'	7 8 10 11	Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt. 18" RECOVERY	A-3	
10.12		5	8.0' 10.0'	6 7 10 12	Moist medium dense brown fine w/trace of silt. 18" RECOVERY	A-3	
12.65							

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Well graded gravels and sands
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-6

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272454.16
Easting: 726714.22
Boring Surface Elev.:
Reference:
Date Started: 7/10/13
Date Completed: 7/10/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/10/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.0' 2.0'	3 2	Moist loose grayish brown silty fine to coarse sand w/trace of fine gravel. 7" RECOVERY	A-2-4(0)	Hot-mix 2". Fill
2.53		2	2.0' 4.0'	2 2 2 2	Moist very loose brown silty fine to coarse sand w/trace of fine gravel. 24" RECOVERY	A-2-4(0)	
5.06		3	4.0' 6.0'	3 4 4 5	Moist loose brown fine sand w/trace of coarse sand and silt. 17" RECOVERY	A-3	
7.59		4	6.0' 8.0'	3 5 5 9	Wet loose brown fine sand w/trace of coarse sand and silt. 20" RECOVERY	A-3	
10.12		5	8.0' 10.0'	6 7 9 11	Wet medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt. 21" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-7

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272405.27
Easting: 726657.35
Boring Surface Elev.:
Reference:
Date Started: 7/3/13
Date Completed: 7/3/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/3/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 3 4 6	Moist loose brown silty fine to coarse sand w/ trace of fine gravel.	A-2-4(0)	Topsoil 3"
			2.0'		18" RECOVERY		
2.53		2	2.0'	4 5 6 7	Moist medium dense brown coarse to fine sand w/trace of fine gravel and silt.	A-1-b	
			4.0'		17" RECOVERY		
5.06		3	4.0'	6 9 11 10	Moist medium dense brown coarse sand w/some fine sand and silt, trace of fine gravel.	A-1-b	
			6.0'		18" RECOVERY		
7.59		4	6.0'	10 11 13 13	Moist medium dense brown fine sand w/trace of coarse sand and silt.	A-3	
			8.0'		20" RECOVERY		
10.12		5	8.0'	7 8 12 15	Moist medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt.	A-3	
			10.0'		15" RECOVERY		
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Well graded gravels and sands
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-8

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272422.20
Easting: 726828.45
Boring Surface Elev.:
Reference:
Date Started: 7/3/13
Date Completed: 7/3/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/3/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	2 2 2 2	Moist very loose brown silty fine sand w/some coarse sand, trace of fine gravel. 20" RECOVERY	A-2-4(0)	Topsoil 3"
2.53		2	2.0' 4.0'	2 1 2 3	Moist very loose brown silty fine sand w/some coarse sand, trace of fine gravel. 18" RECOVERY	A-2-4(0)	
5.06		3	4.0' 6.0'	4 5 5 6	Moist loose brown fine sand w/some coarse sand, trace of silt. 18" RECOVERY	A-3	
7.59		4	6.0' 8.0'	5 7 7 11	Moist medium dense brown fine sand w/trace of coarse sand and silt. 18" RECOVERY	A-3	
10.12		5	8.0' 10.0'	7 8 9 11	Wet medium dense brown fine sand w/trace of coarse sand and silt. 17" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-9

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272329.79
Easting: 726623.33
Boring Surface Elev.:
Reference:
Date Started: 7/10/13
Date Completed: 7/10/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/10/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.0'	11 9	Moist very stiff brown fine to coarse sandy silt w/some , trace of fine gravel.	A-4(0)	Hot-mix 1.5"
2.53		2	2.0' 3.0'	3 5 6 10	Moist stiff brown clayey fine to coarse sandy silt w/trace of fine gravel. 10" RECOVERY	A-4(0)	
			4.0'		24" RECOVERY		
5.06		3	4.0' 6.0'	5 6 8 11	Moist medium dense brown fine to coarse sand w/trace of silt and fine gravel. 20" RECOVERY	A-3	
7.59		4	6.0' 8.0'	11 14 16 16	Moist medium dense brown coarse to fine sand w/trace of fine gravel and silt. 18" RECOVERY	A-1-b	
10.12		5	8.0' 10.0'	10 11 13 16	Moist medium dense brown fine sand w/some coarse sand, trace of silt. 15" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Silty soils
	Clean sand & gravelly sand
	Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-10

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272348.40
Easting: 726706.23
Boring Surface Elev.:
Reference:
Date Started: 7/3/13
Date Completed: 7/3/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/3/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	2 6 3 4	Moist loose brown silty fine to coarse sand w/ trace of fine gravel. 18" RECOVERY	A-2-4(0)	Topsoil 3"
2.53		2	2.0' 4.0'	2 1 2 2	Moist medium dense brown silty fine to coarse sand w/trace of fine gravel. 20" RECOVERY	A-2-4(0)	
5.06		3	4.0' 6.0'	8 9 13 16	Moist medium dense brown fine sand w/trace of coarse sand and silt. 22" RECOVERY	A-3	
7.59		4	6.0' 8.0'	9 11 13 18	Moist medium dense brown fine gravelly fine sand w/some coarse sand, trace of silt. 22" RECOVERY	A-3	
10.12		5	8.0' 10.0'	7 13 16 18	Moist medium dense brown fine sand w/trace of silt. 24" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-11

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272397.28
Easting: 726120.13
Boring Surface Elev.:
Reference:
Date Started: 7/3/13
Date Completed: 7/3/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/3/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 5 6 10	Wet stiff brown coarse to fine sandy silt w/trace of fine gravel. 24" RECOVERY	A-4(0)	Topsoil 3"
			2.0'				
2.53		2	2.0'	8 9 10 11	Wet medium dense brown silty coarse to fine sand w/trace of fine gravel and clay. 20" RECOVERY	A-2-4(0)	
			4.0'				
5.06		3	4.0'	9 11 14 20	Wet medium dense brown fine to coarse sand w/trace of silt. 18" RECOVERY	A-3	
			6.0'				
7.59		4	6.0'	10 16 18 18	Wet dense brown fine to coarse sand w/trace of silt. 11" RECOVERY	A-3	
			8.0'				
10.12		5	8.0'	7 11 16 16	Wet medium dense brown fine sand w/trace of coarse sand and silt. 15" RECOVERY	A-3	
			10.0'				
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Silty soils
	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-12

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing:
Easting: 726125.35
Boring Surface Elev.:
Reference:
Date Started: 7/8/13
Date Completed: 7/8/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/8/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	5 6 7 7	Moist medium dense brown silty fine to coarse sand w/trace of fine gravel. 24" RECOVERY	A-2-4(0)	
2.53		2	2.0' 4.0'	6 8 8 7	Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt. 18" RECOVERY	A-3	
5.06		3	4.0' 6.0'	9 10 15 13	Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt. 18" RECOVERY	A-3	
7.59		4	6.0' 8.0'	16 18 18 20	Moist dense brown coarse to fine sand w/trace of fine gravel and silt. 15" RECOVERY	A-1-b	
10.12		5	8.0' 10.0'	9 9 10 11	Moist medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt. 15" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand
	Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-13

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272291.52
Easting: 726755.12
Boring Surface Elev.:
Reference:
Date Started: 7/3/13
Date Completed: 7/3/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/3/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	2 3 4 4	Moist medium dense brown silty fine to coarse sand w/trace of fine gravel. 20" RECOVERY	A-2-4(0)	Topsoil 3"
2.53		2	2.0' 4.0'	3 3 3 3	Moist loose brown fine sand w/some coarse sand, trace of fine gravel and silt. 22" RECOVERY	A-3	
5.06		3	4.0' 6.0'	5 6 8 10	Moist medium dense brown fine to coarse sandy fine gravel w/trace of silt. 24" RECOVERY	A-1-a	
7.59		4	6.0' 8.0'	8 11 16 19	Moist medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt. 24" RECOVERY	A-3	
10.12		5	8.0' 10.0'	6 11 14 16	Moist medium dense brown fine sand w/trace of coarse sand and silt. 17" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand
	Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-14

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272340.41
Easting: 726812.00
Boring Surface Elev.:
Reference:
Date Started: 7/2/13
Date Completed: 7/2/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/2/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	3 3 3 6	Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	A-3	Topsoil 3"
			2.0'		15" RECOVERY		
2.53		2	2.0'	3 2 3 3	Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	A-3	
			4.0'		18" RECOVERY		
5.06		3	4.0'	4 5 5 7	Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	A-3	
			6.0'		17" RECOVERY		
7.59		4	6.0'	5 7 9 9	Moist medium dense brown fine sand w/trace of coarse sand and silt.	A-3	
			8.0'		20" RECOVERY		
10.12		5	8.0'	6 8 14 14	Moist medium dense brown fine sand w/some coarse sand, trace of silt.	A-3	
			10.0'		18" RECOVERY		
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-15

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272372.57
Easting: 726871.11
Boring Surface Elev.:
Reference:
Date Started: 7/2/13
Date Completed: 7/2/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/2/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	2 2 3 3	Moist loose brown silty fine to coarse sand w/ trace of fine gravel and clay. 15" RECOVERY	A-2-4(0)	Topsoil 4"
2.53		2	2.0' 4.0'	4 5 8 9	Moist medium dense brown coarse sand and fine gravel w/some fine sand and silt. 18" RECOVERY	A-1-b	
5.06		3	4.0' 6.0'	5 7 9 11	Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt. 24" RECOVERY	A-3	
7.59		4	6.0' 8.0'	9 9 10 11	Moist medium dense brown fine sand w/some silt, trace of coarse sand. 24" RECOVERY	A-2-4(0)	
10.12		5	8.0' 10.0'	8 9 13 18	Wet medium dense brown fine sand w/trace of coarse sand and silt. 24" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Well graded gravels and sands
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-16

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272216.04
Easting: 726721.10
Boring Surface Elev.:
Reference:
Date Started: 7/8/13
Date Completed: 7/8/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/8/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	3 4 4 5	Moist loose brown clayey fine to coarse sand w/ some fine gravel and silt. 18" RECOVERY	A-2-4(0)	Topsoil 2"
2.53		2	2.0' 4.0'	3 3 4 5	Moist loose brown fine to coarse sand w/some silt, trace of fine gravel. 17" RECOVERY	A-2-4(0)	
5.06		3	4.0' 6.0'	7 3 5 5	Moist loose brown fine to coarse sand w/trace of silt. 15" RECOVERY	A-3	
7.59		4	6.0' 8.0'	10 15 20 20	Moist dense brown coarse sand w/some fine sand, trace of silt and fine gravel. 16" RECOVERY	A-1-b	
10.12		5	8.0' 10.0'	16 18 21 23	Moist dense brown fine to coarse sand w/trace of fine gravel and silt. 14" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand
	Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-17

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272234.64
Easting: 726804.01
Boring Surface Elev.:
Reference:
Date Started: 7/8/13
Date Completed: 7/8/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/8/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	7 8 5 3	Moist medium dense brown silty fine to coarse sand w/trace of fine gravel. 20" RECOVERY	A-2-4(0)	
2.53		2	2.0' 4.0'	3 4 4 6	Moist firm brown clayey fine to coarse sandy silt w/trace of fine gravel. 15" RECOVERY	A-4(1)	
5.06		3	4.0' 6.0'	9 4 5 7	Moist loose brown coarse to fine sand w/some silt, trace of fine gravel. 17" RECOVERY	A-1-b	
7.59		4	6.0' 8.0'	11 13 19 20	No Sample 14" RECOVERY		
10.12		5	8.0' 10.0'	15 12 19 21	Moist dense brown fine sand w/some coarse sand and fine gravel, trace of silt. 16" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Silty soils
	Well graded gravels and sands
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-18

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272283.53
Easting: 726860.89
Boring Surface Elev.:
Reference:
Date Started: 7/1/13
Date Completed: 7/1/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/1/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 2 3 4	Moist loose brown coarse sand w/some fine sand and silt, trace of fine gravel.	A-1-b	Topsoil 4"
			2.0'		15" RECOVERY		
2.53		2	2.0'	3 2 4 4	Moist loose brown coarse sand w/some fine sand, trace of fine gravel and silt.	A-1-b	
			4.0'		20" RECOVERY		
5.06		3	4.0'	4 4 5 7	Moist loose brown fine to coarse sand w/trace of fine gravel and silt.	A-3	
			6.0'		18" RECOVERY		
7.59		4	6.0'	6 6 8 9	Moist medium dense brown fine to coarse sand w/trace of silt.	A-3	
			8.0'		21" RECOVERY		
10.12		5	8.0'	8 8 9 11	Moist medium dense brown fine sand w/trace of coarse sand, fine gravel and silt.	A-3	
			10.0'		17" RECOVERY		
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Well graded gravels and sands
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-19

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272317.11
Easting: 726918.78
Boring Surface Elev.:
Reference:
Date Started: 7/1/13
Date Completed: 7/1/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/1/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 2 3 5	Moist loose brown silty coarse to fine sand w/ trace of fine gravel.	A-2-4(0)	Topsoil
			2.0'		14" RECOVERY		
2.53		2	2.0'	3 3 4 5	Moist loose brown coarse to fine sand w/some silt, trace of fine gravel.	A-2-4(0)	
			4.0'		18" RECOVERY		
5.06		3	4.0'	6 4 6 6	Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	A-3	
			6.0'		20" RECOVERY		
7.59		4	6.0'	6 7 7 10	Moist medium dense brown fine sand w/some coarse sand, trace of silt.	A-3	
			8.0'		21" RECOVERY		
10.12		5	8.0'	7 7 11 11	Moist medium dense brown fine sand w/trace of coarse sand and silt.	A-3	
			10.0'		17" RECOVERY		
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-20

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272349.83
Easting: 727013.30
Boring Surface Elev.:
Reference:
Date Started: 7/1/13
Date Completed: 7/1/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/1/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	2 3 3 5	Moist loose brown fine to coarse sand w/some silt, trace of fine gravel. 15" RECOVERY	A-2-4(0)	Topsoil 4"
2.53		2	2.0' 4.0'	3 3 4 2	Moist loose brown silty coarse to fine sand w/ trace of fine gravel. 17" RECOVERY	A-2-4(0)	
5.06		3	4.0' 6.0'	8 5 5 6	Moist loose brown fine to coarse sand w/trace of silt and fine gravel. 21" RECOVERY	A-3	
7.59		4	6.0' 8.0'	8 5 4 6	Moist loose brown fine sand w/trace of coarse sand and silt. 19" RECOVERY	A-3	
10.12		5	8.0' 10.0'	4 4 5 6	Moist loose brown fine sand w/trace of coarse sand and silt. 16" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-21

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272272.60
Easting: 727075.73
Boring Surface Elev.:
Reference:
Date Started: 7/1/13
Date Completed: 7/1/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/1/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	2 2 2 2	Moist very loose brown coarse to fine sand w/ some silt, trace of fine gravel. 18" RECOVERY	A-2-4(0)	Topsoil 3"
2.53		2	2.0' 4.0'	2 3 2 2	Moist loose brown fine to coarse sand w/trace of fine gravel and silt. 16" RECOVERY	A-3	
5.06		3	4.0' 6.0'	4 4 5 6	Moist loose brown fine sand w/some coarse sand, trace of fine gravel and silt. 14" RECOVERY	A-3	
7.59		4	6.0' 8.0'	4 5 5 7	Moist loose brown fine sand w/trace of coarse sand and silt. 13" RECOVERY	A-3	
10.12		5	8.0' 10.0'	5 6 7 10	Moist medium dense brown fine sand w/trace of coarse sand and silt. 17" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-22

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272180.23
Easting: 727148.04
Boring Surface Elev.:
Reference:
Date Started: 7/1/13
Date Completed: 7/1/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/1/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' – 2.0'	4 3 5 8	Moist loose brown silty coarse to fine sand w/ trace of fine gravel.	A-1-b	Topsoil 3"
2.53		2	2.0' – 4.0'	2 3 3 3	Moist loose brown coarse to fine sand w/some fine gravel, trace of silt.	A-1-b	
5.06		3	4.0' – 6.0'	4 5 5 10	Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	A-3	
7.59		4	6.0' – 8.0'	7 8 7 10	Moist medium dense brown fine sand w/some coarse sand, trace of silt.	A-3	
10.12		5	8.0' – 10.0'	5 6 8 10	Moist medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt.	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Well graded gravels and sands
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-23

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272090.09
Easting: 727096.32
Boring Surface Elev.:
Reference:
Date Started: 7/1/13
Date Completed: 7/1/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/1/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	1 2 1 2	Moist very loose brown silty coarse to fine sand w/trace of fine gravel.	A-2-4(0)	Topsoil 3"
			2.0'		14" RECOVERY		
2.53		2	2.0'	2 2 2 2	Moist very loose brown silty coarse to fine sand w/trace of fine gravel.	A-2-4(0)	
			4.0'		16" RECOVERY		
5.06		3	4.0'	4 4 5 6	Moist loose brown fine sand w/some coarse sand, trace of silt.	A-3	
			6.0'		18" RECOVERY		
7.59		4	6.0'	4 6 6 5	Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt.	A-3	
			8.0'		24" RECOVERY		
10.12		5	8.0'	4 6 8 9	Moist medium dense brown fine sand w/trace of coarse sand and silt.	A-3	
			10.0'		20" RECOVERY		
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description

Strata symbols

	Poorly graded, silty or clayey sands and gravel
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-24

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 272044.38
Easting: 727043.95
Boring Surface Elev.:
Reference:
Date Started: 7/1/13
Date Completed: 7/1/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/1/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' – 2.0'	1 1 2 2	Moist very loose brown silty coarse to fine sand w/some fine gravel. 15" RECOVERY	A-1-b	Topsoil 2"
2.53		2	2.0' – 4.0'	2 3 2 3	Moist loose brown fine to coarse sand w/trace of fine gravel and silt. 24" RECOVERY	A-3	
5.06		3	4.0' – 6.0'	4 6 6 7	Moist medium dense brown fine to coarse sand w/some silt, trace of fine gravel. 18" RECOVERY	A-2-4(0)	
7.59		4	6.0' – 8.0'	6 7 8 9	Moist medium dense brown fine sand w/trace of coarse sand and silt. 17" RECOVERY	A-3	
10.12		5	8.0' – 10.0'	4 5 8 10	Wet medium dense brown fine sand w/trace of coarse sand and silt. 14" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Well graded gravels and sands
	Clean sand & gravelly sand
	Poorly graded, silty or clayey sands and gravel

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

BORING SW-25

Project Name: Lewes Transit Center
Location: Lewes, DE
State Contract #: T200612502
Federal Contract #:
Station/Offset:
Northing: 271988.87
Easting: 726979.50
Boring Surface Elev.:
Reference:
Date Started: 7/8/13
Date Completed: 7/8/13

Wt. of Sample Hammer: 140 **Lbs.**
Type of: **D-Sampler:** Split Barrel **O.D.**
S-Sampler: **O.D.**
U-Sampler: **O.D.**
Core Bit: **O.D.**

Average Fall: 30 **IN.**
O.D. of Sampler: 2 **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Samp. Tube: **IN.**
O.D. of Rock Core: **IN.**

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)	Caved Depth (ft)
7/8/13	Dry	

Boring Contractor: Walton Corporation
Equipment/Rig Type: CME 55 Track Rig
Driller: Billy Holden
Logged By: Randy Ferguson

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0' 2.0'	4 5 5 6	Moist loose brown silty fine sand w/trace of coarse sand and fine gravel. 18" RECOVERY	A-2-4(0)	Topsoil - 3"
2.53		2	2.0' 4.0'	3 4 3 3	Moist loose brown silty fine to coarse sand w/ trace of fine gravel. 18" RECOVERY	A-2-4(0)	
5.06		3	4.0' 6.0'	6 14 18 13	Moist dense brown coarse sand w/some fine sand and fine gravel, trace of silt. 14" RECOVERY	A-1-b	
7.59		4	6.0' 8.0'	11 14 18 16	Moist dense brown fine to coarse sand w/trace of fine gravel and silt. 15" RECOVERY	A-3	
10.12		5	8.0' 10.0'	11 14 15 19	Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt. 14" RECOVERY	A-3	
12.65					End Boring		

Remarks:

Reviewed By: Hany Fekry
Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Poorly graded, silty or clayey sands and gravel
	Well graded gravels and sands
	Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.

2. No free water was encountered at the time of drilling or when re-checked the following day, unless recorded on 1st page.

3. Boring locations were taped from existing features and elevations extrapolated from survey unless otherwise reported.

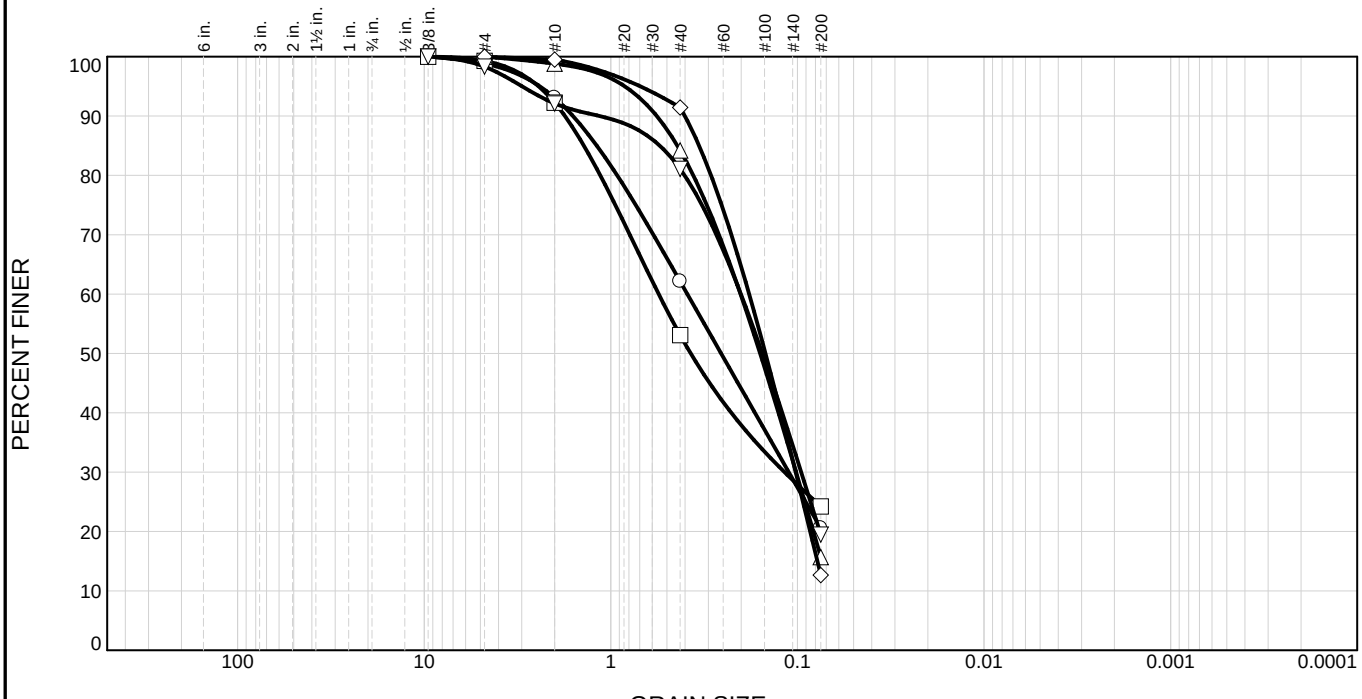
4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

6. All blow counts are uncorrected.

GRAIN SIZE ANALYSES

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	6.9	31.0	41.5	20.6	
□	0.0	7.7	39.2	28.9	24.2	
△	0.0	1.2	14.6	68.5	15.7	
◇	0.0	0.5	8.1	78.7	12.7	
▽	0.0	7.9	11.0	61.6	19.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.1893	0.3890	0.2563	0.1113				
□	NV	NP	1.3935	0.5539	0.3729	0.1171				
△	NV	NP	0.4398	0.2017	0.1584	0.1016				
◇	NV	NP	0.3365	0.1814	0.1483	0.1021	0.0782			
▽	NV	NP	0.5460	0.2008	0.1541	0.0954				

Material Description	USCS	AASHTO
○ Moist loose brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist loose brown silty coarse to fine sand w/trace of fine gravel.	SM	A-2-4(0)
△ Moist medium dense brown fine sand w/some coarse sand and silt.	SM	A-2-4(0)
◇ Wet medium dense tan fine sand w/some silt, trace of coarse sand.	SM	A-2-4(0)
▽ Wet very loose tan fine sand w/some silt and coarse sand, trace of fine gravel.	SM	A-2-4(0)

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-1 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** TC-1 **Depth:** 4.0 **Sample Number:** 2

△ **Source of Sample:** TC-1 **Depth:** 9.0 **Sample Number:** 3

◇ **Source of Sample:** TC-1 **Depth:** 14.0 **Sample Number:** 4

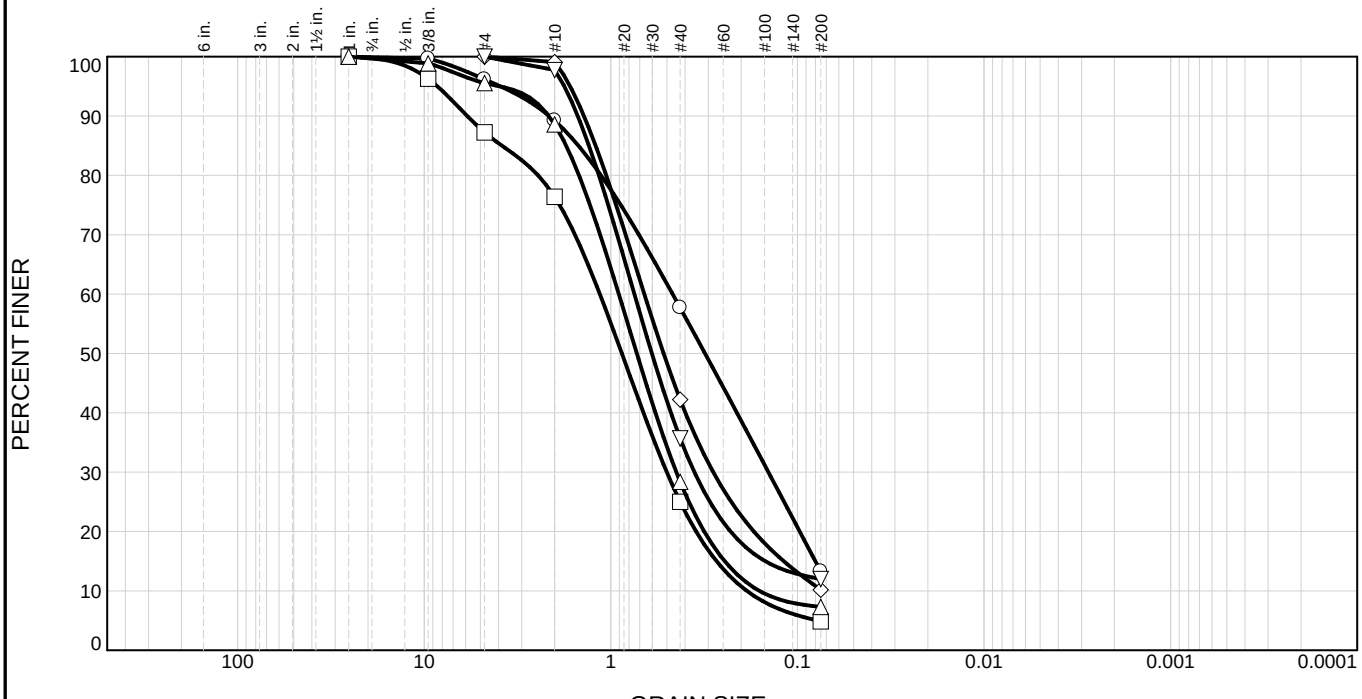
▽ **Source of Sample:** TC-1 **Depth:** 19.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-26

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	10.8	31.5	44.4	13.3	
□	0.0	23.6	51.4	20.1	4.9	
△	0.0	11.4	60.2	21.1	7.3	
◇	0.0	0.9	56.9	32.0	10.2	
▽	0.0	2.3	62.0	23.7	12.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.4913	0.4666	0.3127	0.1430	0.0802			
□	NV	NP	3.8312	1.1454	0.8729	0.5012	0.2713	0.1868	1.17	6.13
△	NV	NP	1.7337	0.9065	0.7257	0.4457	0.2453	0.1598	1.37	5.67
◇	NV	NP	1.2060	0.6615	0.5214	0.2825	0.1183			
▽	NV	NP	1.3098	0.7478	0.6026	0.3566	0.1488			

Material Description	USCS	AASHTO
○ Wet medium dense tan fine to coarse sand w/some silt and fine gravel.	SM	A-2-4(0)
□ Wet dense gray fine gravelly coarse sand w/some fine sand, trace of silt.	SW	A-1-b
△ Wet medium dense tan coarse to fine sand w/some fine gravel, trace of silt.	SP-SM	A-1-b
◇ Wet medium dense tan coarse to fine sand w/trace of fine gravel and silt.	SP-SM	A-1-b
▽ Wet loose tan coarse to fine sand w/some silt, trace of fine gravel.	SP-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-1 **Depth:** 24.0 **Sample Number:** 6

□ **Source of Sample:** TC-1 **Depth:** 28.0 **Sample Number:** 7

△ **Source of Sample:** TC-1 **Depth:** 33.0 **Sample Number:** 8

◇ **Source of Sample:** TC-1 **Depth:** 38.0 **Sample Number:** 9

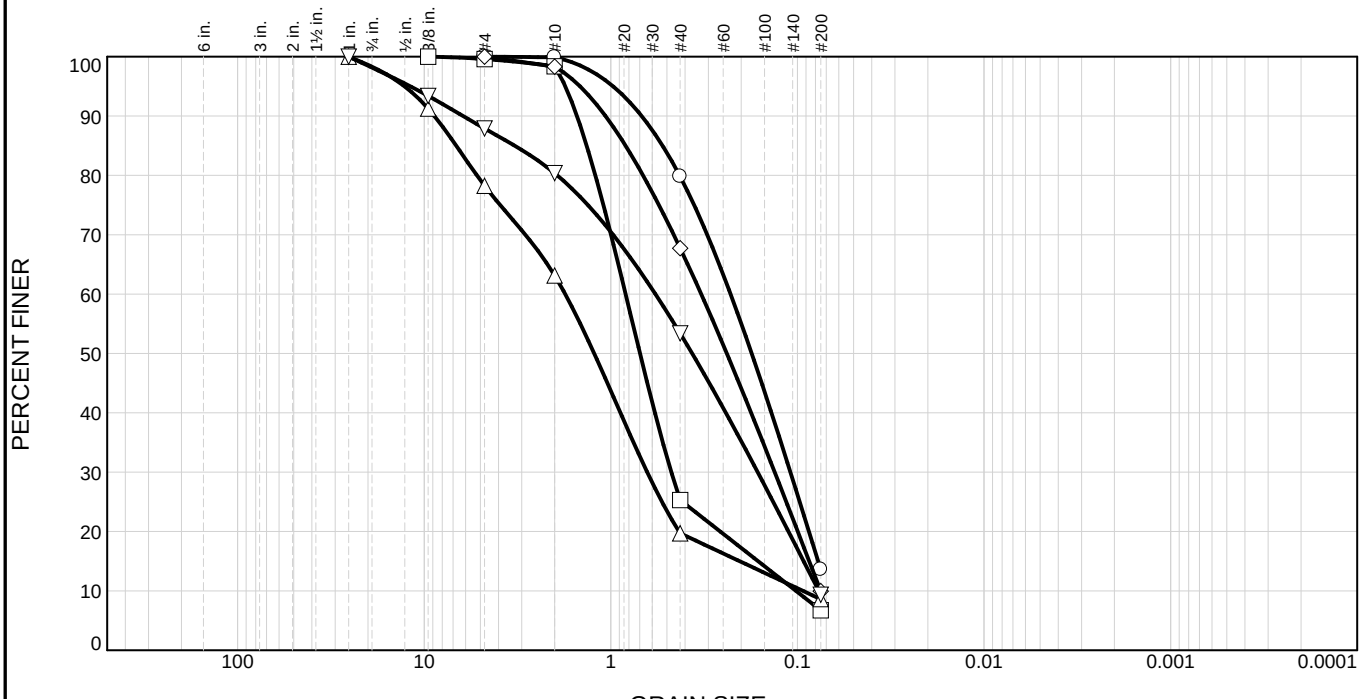
▽ **Source of Sample:** TC-1 **Depth:** 43.0 **Sample Number:** 10

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-27

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	0.1	20.1	66.2	13.6	
□	0.0	1.6	73.1	18.6	6.7	
△	0.0	36.9	43.4	11.1	8.6	
◇	0.0	1.7	30.6	57.8	9.9	
▽	0.0	19.6	27.0	44.0	9.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.5280	0.2281	0.1758	0.1090	0.0775			
□	NV	NP	1.3463	0.8333	0.6977	0.4739	0.1623	0.1018	2.65	8.19
△	NV	NP	6.7412	1.7544	1.2277	0.6383	0.2039	0.0933	2.49	18.80
◇	NV	NP	0.8338	0.3278	0.2390	0.1323	0.0865	0.0751	0.71	4.36
▽	NV	NP	3.2744	0.5769	0.3665	0.1633	0.0926	0.0768	0.60	7.51

Material Description	USCS	AASHTO
○ Wet loose tan fine sand w/some coarse sand and silt.	SM	A-2-4(0)
□ Wet medium dense tan coarse sand w/some fine sand, trace of silt and fine gravel.	SW-SM	A-1-b
△ Wet medium dense tan coarse sand and fine gravel w/some fine sand, trace of silt.	SW-SM	A-1-b
◇ Wet medium dense tan fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
▽ Wet medium dense tan fine to coarse sand w/some fine gravel, trace of silt.	SP-SM	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-1 **Depth:** 48.0 **Sample Number:** 11

□ **Source of Sample:** TC-1 **Depth:** 53.0 **Sample Number:** 12

△ **Source of Sample:** TC-1 **Depth:** 58.0 **Sample Number:** 13

◇ **Source of Sample:** TC-1 **Depth:** 63.0 **Sample Number:** 14

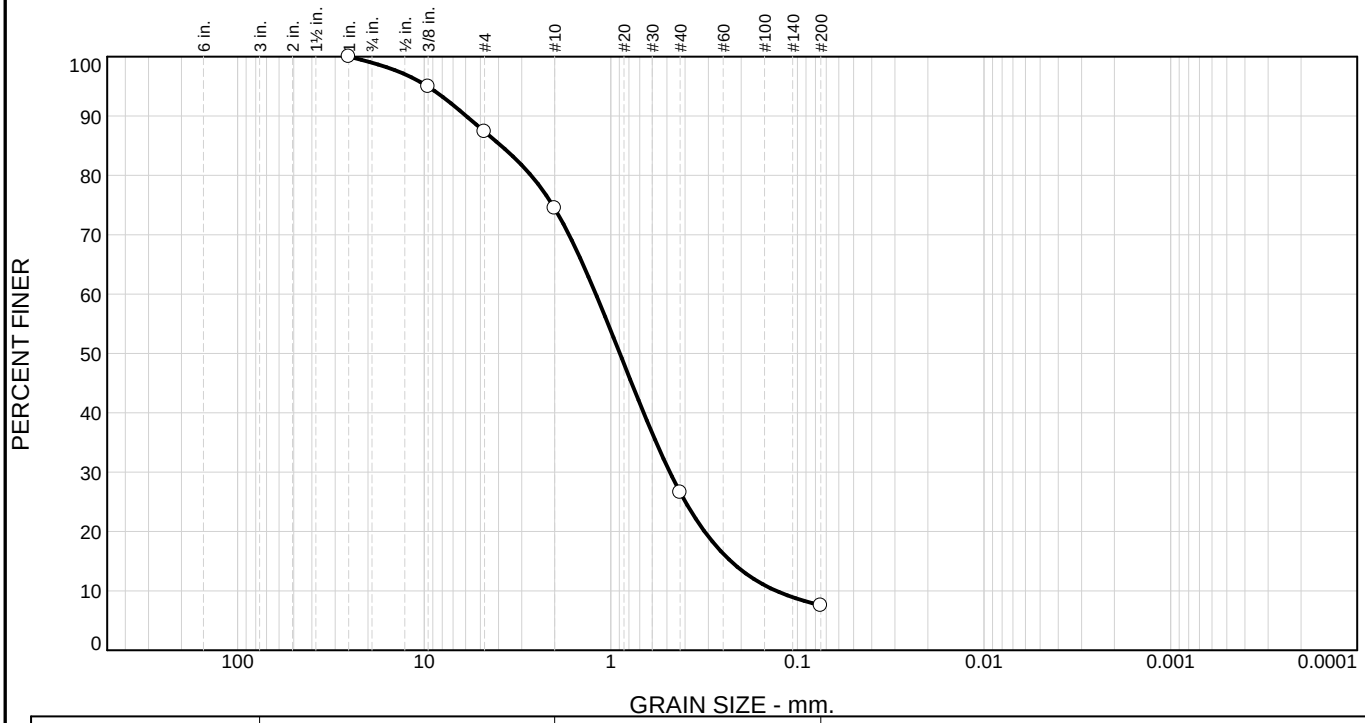
▽ **Source of Sample:** TC-1 **Depth:** 68.0 **Sample Number:** 15

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-28

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	25.6	47.8	19.1	7.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	3.8743	1.2035	0.8949	0.4827	0.2274	0.1298	1.49	9.27

Material Description	USCS	AASHTO
○ Wet medium dense tan fine gravelly coarse sand w/some fine sand, trace of silt.	SW-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

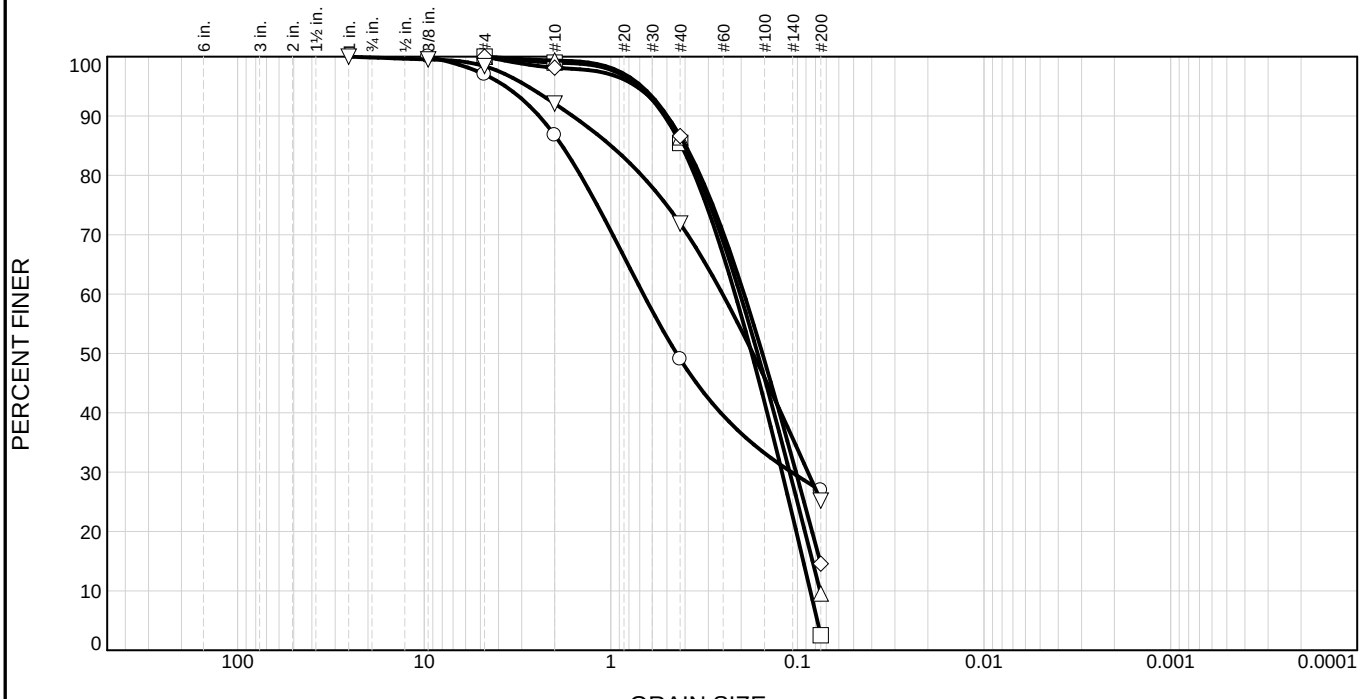
○ **Source of Sample:** TC-1 **Depth:** 73.0 **Sample Number:** 16

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-29

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	13.2	37.8	22.1	26.9	
□	0.0	1.0	13.5	83.0	2.5	
△	0.0	0.6	13.0	76.9	9.5	
◇	0.0	1.9	11.5	72.0	14.6	
▽	0.0	7.9	20.2	46.7	25.2	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.8239	0.6697	0.4444	0.1075				
□	NV	NP	0.4178	0.2157	0.1757	0.1210	0.0930	0.0853	0.80	2.53
△	NV	NP	0.4028	0.2028	0.1634	0.1100	0.0830	0.0756	0.79	2.68
◇	NV	NP	0.3972	0.1930	0.1541	0.1018	0.0756			
▽	NV	NP	0.9992	0.2517	0.1731	0.0878				

Material Description	USCS	AASHTO
○ Moist brown silty coarse to fine sand w/some fine gravel.	SM	A-2-4(0)
□ Moist loose tan fine sand w/some coarse sand, trace of silt.	SP	A-3
△ Moist medium dense tan fine sand w/some coarse sand, trace of silt.	SP-SM	A-3
◇ Wet very loose orange fine sand w/some coarse sand and silt, trace of fine gravel.	SM	A-2-4(0)
▽ Wet medium dense orange silty fine sand w/some coarse sand, trace of fine gravel.	SM	A-2-4(0)

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-2 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** TC-2 **Depth:** 4.0 **Sample Number:** 2

△ **Source of Sample:** TC-2 **Depth:** 9.0 **Sample Number:** 3

◇ **Source of Sample:** TC-2 **Depth:** 14.0 **Sample Number:** 4

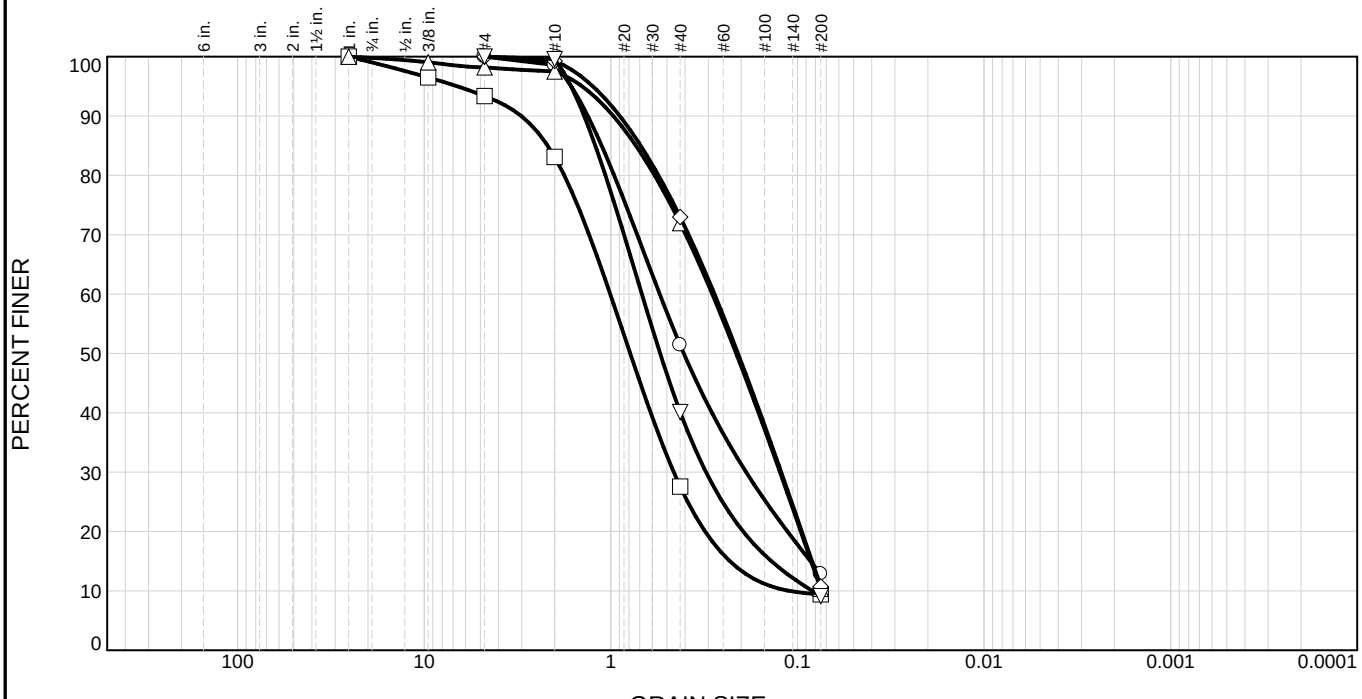
▽ **Source of Sample:** TC-2 **Depth:** 19.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-30

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.4	47.2	38.6	12.8	
□	0.0	16.9	55.5	18.2	9.4	
△	0.0	2.5	25.5	61.7	10.3	
◇	0.0	0.7	26.3	62.3	10.7	
▽	0.0	0.4	59.5	31.0	9.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.1194	0.5470	0.4065	0.1883	0.0851			
□	NV	NP	2.1789	1.0076	0.7872	0.4602	0.2301	0.1105	1.90	9.12
△	NV	NP	0.7338	0.2859	0.2128	0.1240	0.0844			
◇	NV	NP	0.6917	0.2783	0.2082	0.1221	0.0835			
▽	NV	NP	1.2104	0.6819	0.5442	0.3089	0.1378	0.0833	1.68	8.18

Material Description	USCS	AASHTO
○ Wet medium dense tan coarse to fine sand w/some silt, trace of fine gravel.	SM	A-2-4(0)
□ Wet medium dense tan coarse sand w/some fine gravel and fine sand, trace of silt.	SW-SM	A-1-b
△ Wet loose tan fine to coarse sand w/some silt, trace of fine gravel.	SP-SM	A-3
◇ Wet loose tan fine to coarse sand w/some silt, trace of fine gravel.	SP-SM	A-2-4(0)
▽ Wet loose tan coarse to fine sand w/trace of silt.	SW-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-2 **Depth:** 24.0 **Sample Number:** 6

□ **Source of Sample:** TC-2 **Depth:** 29.0 **Sample Number:** 7

△ **Source of Sample:** TC-2 **Depth:** 34.0 **Sample Number:** 8

◇ **Source of Sample:** TC-2 **Depth:** 39.0 **Sample Number:** 9

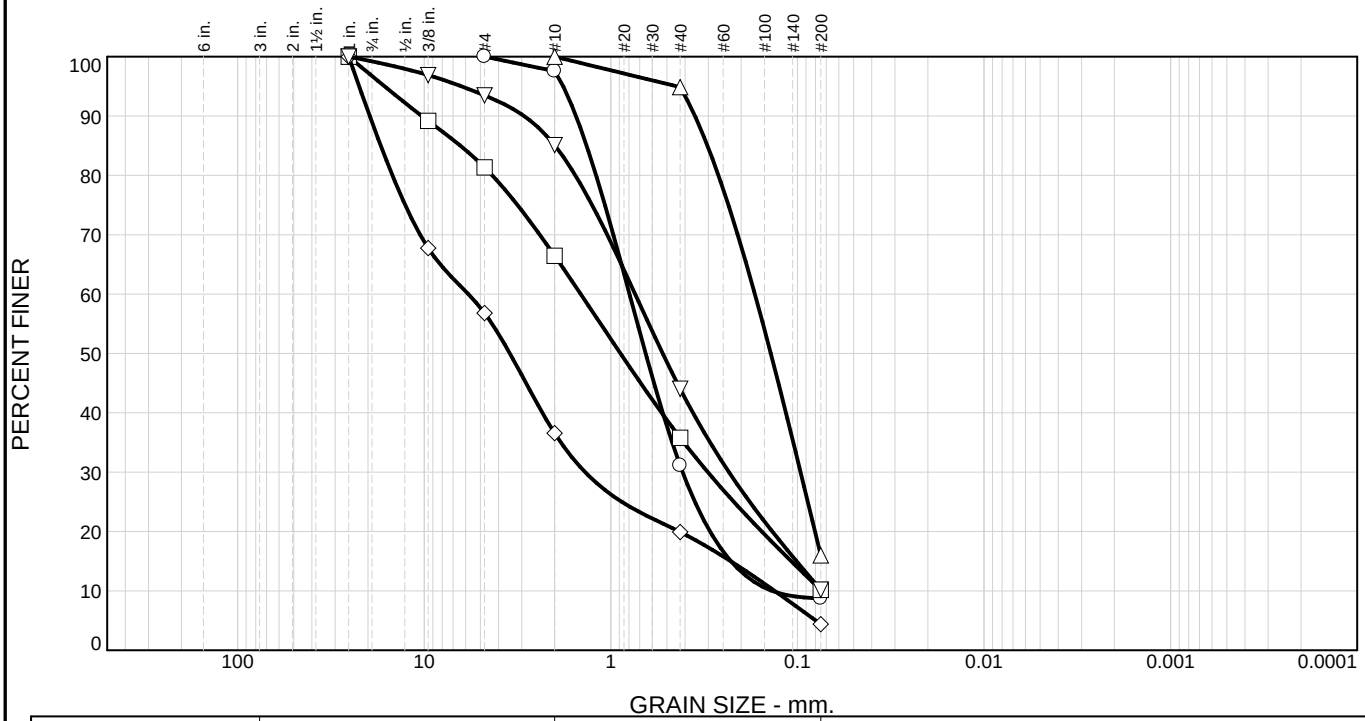
▽ **Source of Sample:** TC-2 **Depth:** 44.0 **Sample Number:** 10

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-31

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	2.4	66.5	22.4	8.7	
□	0.0	33.5	30.7	25.6	10.2	
△	0.0	0.0	5.1	78.9	16.0	
◇	0.0	63.4	16.7	15.5	4.4	
▽	0.0	14.9	41.1	33.8	10.2	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.3478	0.7942	0.6506	0.4123	0.2273	0.1367	1.57	5.81
□	NV	NP	6.4048	1.4492	0.8877	0.3021	0.1078			
△	NV	NP	0.3034	0.1690	0.1389	0.0962				
◇	NV	NP	17.0979	5.8047	3.4751	1.3726	0.2276	0.1324	2.45	43.84
▽	NV	NP	1.9898	0.7410	0.5271	0.2326	0.1011			

Material Description	USCS	AASHTO
○ Wet medium dense tan coarse to fine sand w/trace of fine gravel and silt.	SP-SM	A-1-b
□ Wet medium dense tan coarse to fine sand and fine gravel w/trace of silt.	SP-SM	A-1-b
△ Wet loose tan fine sand w/some silt, trace of coarse sand.	SM	A-2-4(0)
◇ Wet medium dense brown fine gravel w/some coarse to fine sand, trace of silt.	SW	A-1-a
▽ Wet medium dense brown coarse to fine sand w/some fine gravel, trace of silt.	SP-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-2 **Depth:** 49.0 **Sample Number:** 11

□ **Source of Sample:** TC-2 **Depth:** 54.0 **Sample Number:** 12

△ **Source of Sample:** TC-2 **Depth:** 59.0 **Sample Number:** 13

◇ **Source of Sample:** TC-2 **Depth:** 64.0 **Sample Number:** 14

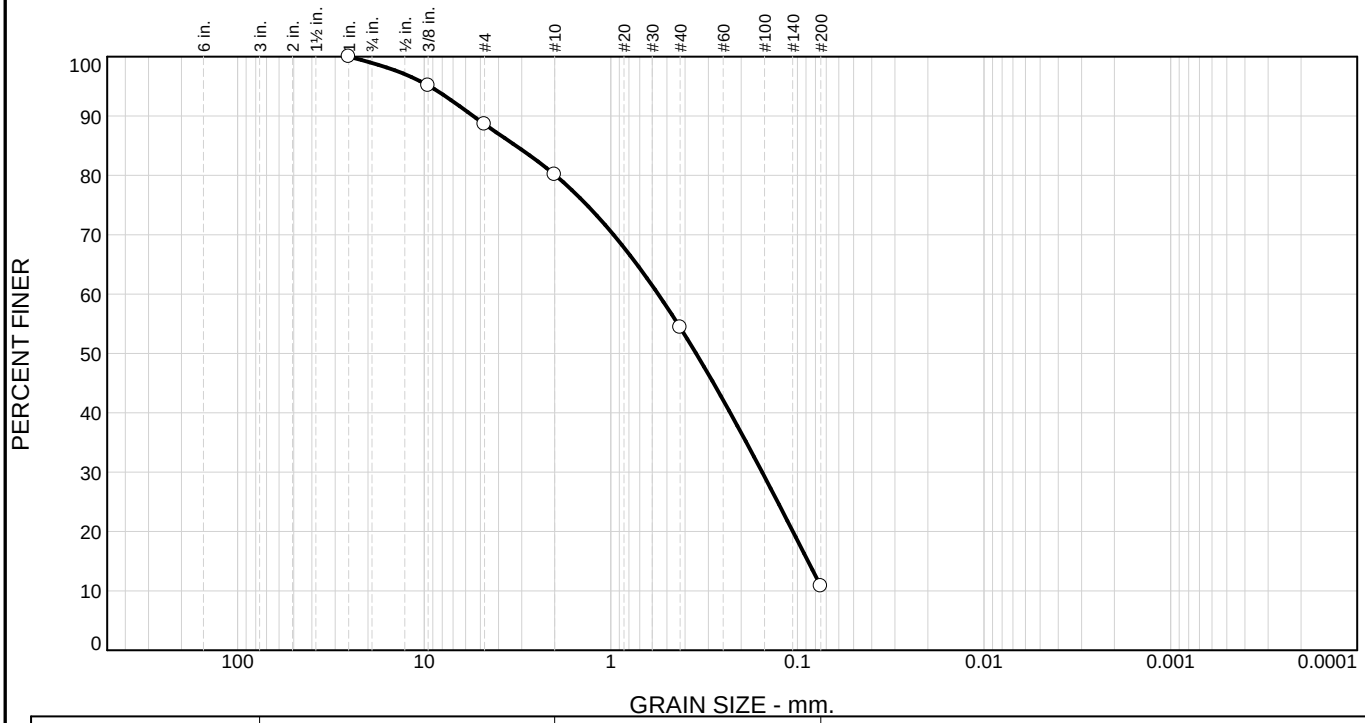
▽ **Source of Sample:** TC-2 **Depth:** 69.0 **Sample Number:** 15

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-32

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	19.9	25.7	43.6	10.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	3.2291	0.5577	0.3491	0.1545	0.0877			

Material Description	USCS	AASHTO
○ Wet medium dense tan fine to coarse sand w/some silt and fine gravel.	SP-SM	A-2-4(0)

Project No. **Client:**

Project: Lewes Transit Center

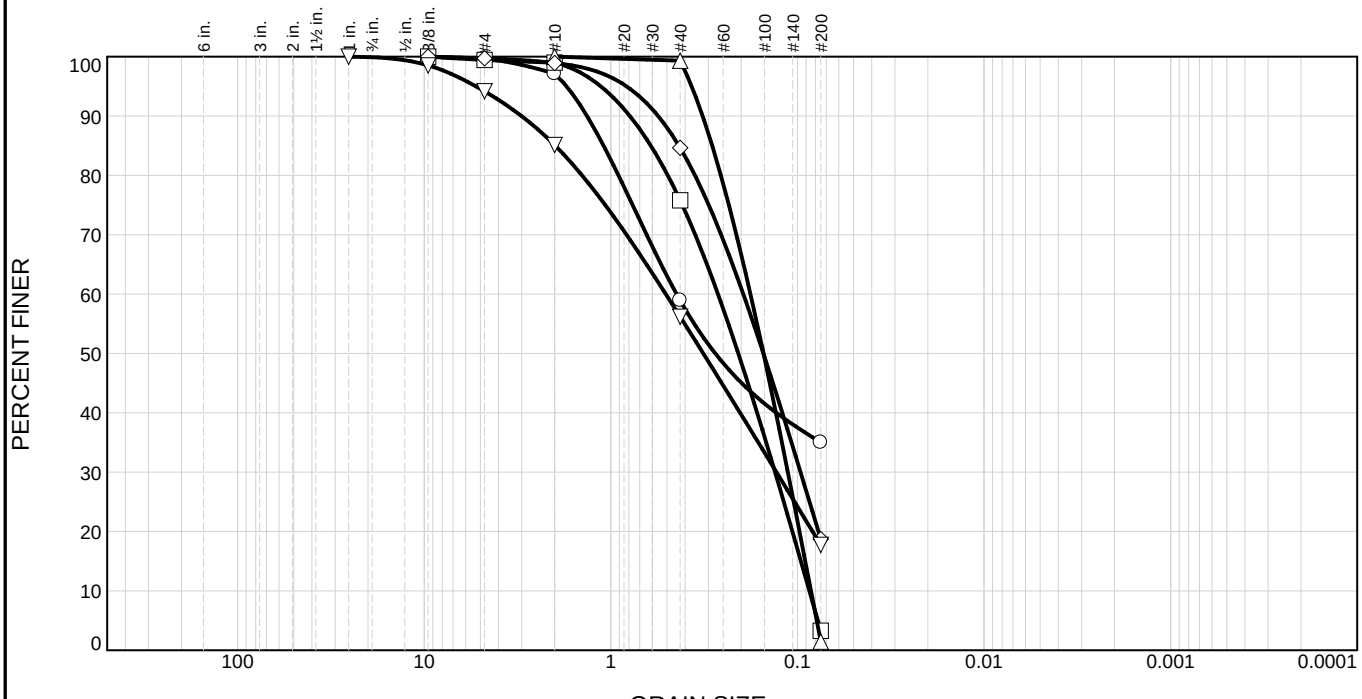
○ **Source of Sample:** TC-2 **Depth:** 73.0 **Sample Number:** 16

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-33

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	2.9	38.2	23.9	35.0	
□	0.0	1.0	23.2	72.5	3.3	
△	0.0	0.0	0.7	97.8	1.5	
◇	0.0	1.1	14.3	65.9	18.7	
▽	0.0	14.9	28.9	38.4	17.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	23.4	18.8	1.0940	0.4444	0.2755					
□	NV	NP	0.6103	0.2665	0.2074	0.1317	0.0958	0.0863	0.75	3.09
△	NV	NP	0.2862	0.1785	0.1520	0.1125	0.0908	0.0846	0.84	2.11
◇	NV	NP	0.4316	0.1950	0.1521	0.0962				
▽	NV	NP	1.9839	0.5076	0.3195	0.1295				

Material Description	USCS	AASHTO
○ Moist very loose brown silty coarse to fine sand w/some clay, trace of fine gravel.	SC-SM	A-2-4(0)
□ Moist loose tan fine to coarse sand w/trace of fine gravel and silt.	SP	A-3
△ Moist medium dense tan fine sand w/trace of silt.	SP	A-3
◇ Wet very loose tan fine sand w/some silt and coarse sand, trace of fine gravel.	SM	A-2-4(0)
▽ Wet medium dense tan fine to coarse sand w/some silt and fine gravel.	SM	A-2-4(0)

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-3 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** TC-3 **Depth:** 4.0 **Sample Number:** 2

△ **Source of Sample:** TC-3 **Depth:** 9.0 **Sample Number:** 3

◇ **Source of Sample:** TC-3 **Depth:** 14.0 **Sample Number:** 4

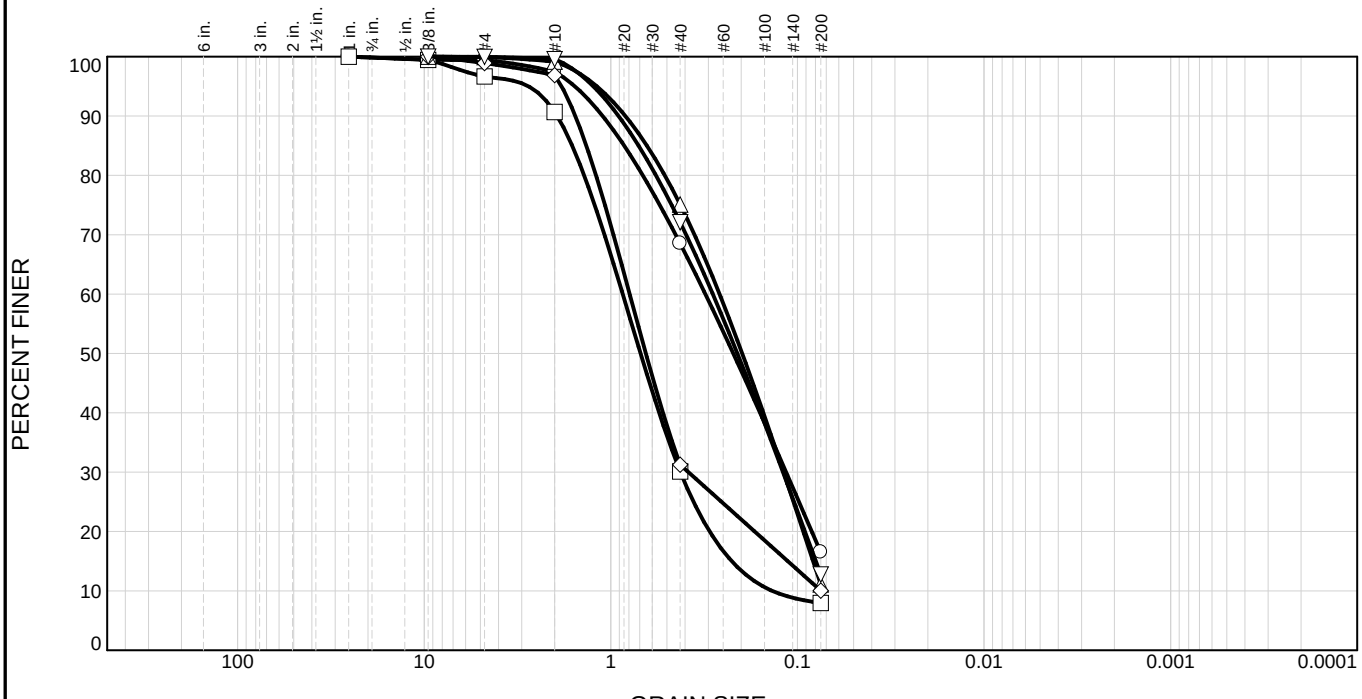
▽ **Source of Sample:** TC-3 **Depth:** 19.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-34

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	2.6	28.9	52.0	16.5	
□	0.0	9.3	60.6	22.1	8.0	
△	0.0	0.8	24.1	64.0	11.1	
◇	0.0	3.1	65.7	21.2	10.0	
▽	0.0	0.4	27.5	59.3	12.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.8481	0.3114	0.2206	0.1150				
□	NV	NP	1.6102	0.8636	0.6929	0.4235	0.2250	0.1365	1.52	6.33
△	NV	NP	0.6407	0.2614	0.1977	0.1186	0.0824			
◇	NV	NP	1.3523	0.7926	0.6491	0.3838	0.1125			
▽	NV	NP	0.7101	0.2841	0.2099	0.1195	0.0797			

Material Description	USCS	AASHTO
○ Wet medium dense tan coarse to fine sand w/some silt, trace of fine gravel.	SM	A-2-4(0)
□ Wet medium dense tan coarse to fine sand w/trace of fine gravel and silt.	SW-SM	A-1-b
△ Wet loose tan fine to coarse sand w/some silt, trace of fine gravel.	SP-SM	A-2-4(0)
◇ Wet loose tan coarse to fine sand w/trace of silt and fine gravel.	SP-SM	A-1-b
▽ Wet loose tan fine to coarse sand w/some silt.	SM	A-2-4(0)

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-3 **Depth:** 24.0 **Sample Number:** 6

□ **Source of Sample:** TC-3 **Depth:** 29.0 **Sample Number:** 7

△ **Source of Sample:** TC-3 **Depth:** 34.0 **Sample Number:** 8

◇ **Source of Sample:** TC-3 **Depth:** 39.0 **Sample Number:** 9

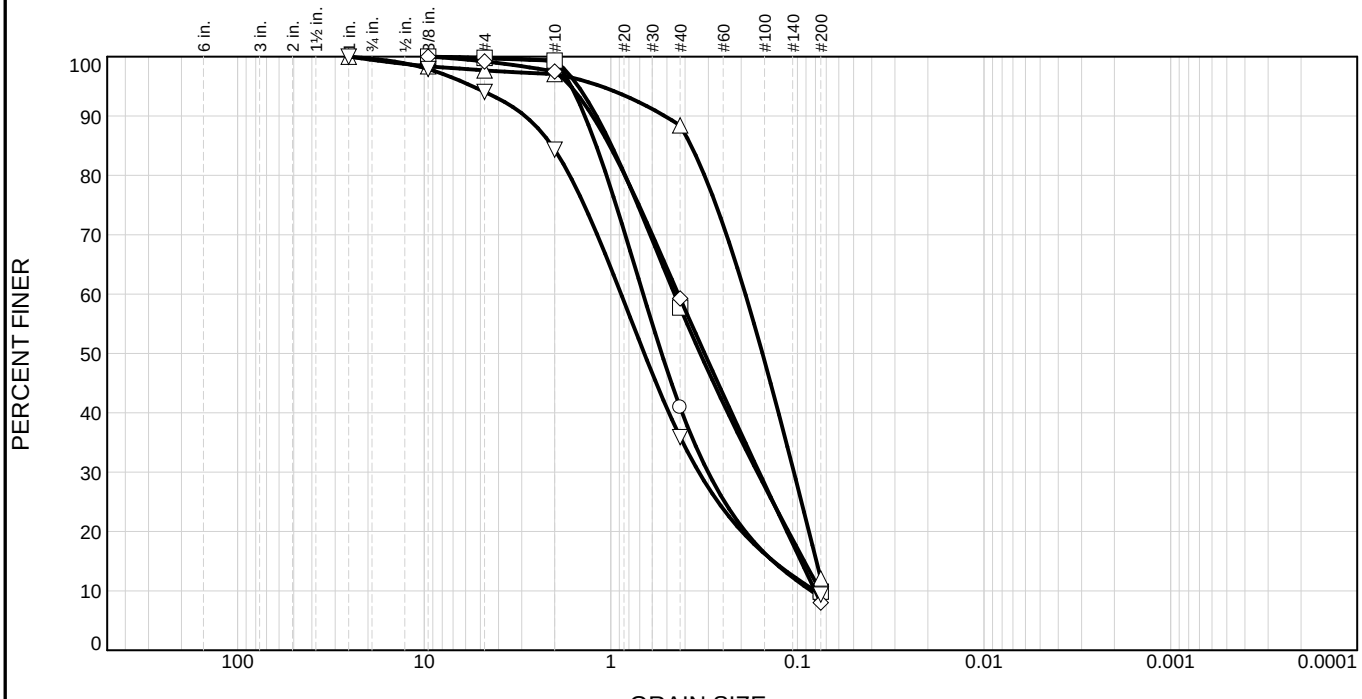
▽ **Source of Sample:** TC-3 **Depth:** 44.0 **Sample Number:** 10

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-35

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	0.7	58.4	32.0	8.9	
□	0.0	0.7	41.6	47.8	9.9	
△	0.0	2.9	8.7	76.3	12.1	
◇	0.0	2.5	38.2	51.3	8.0	
▽	0.0	15.7	48.4	26.5	9.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.1971	0.6706	0.5342	0.3012	0.1351	0.0843	1.61	7.96
□	NV	NP	0.9912	0.4556	0.3319	0.1639	0.0919	0.0754	0.78	6.04
△	NV	NP	0.3714	0.1901	0.1539	0.1044	0.0791			
◇	NV	NP	1.0135	0.4351	0.3144	0.1604	0.0956	0.0803	0.74	5.42
▽	NV	NP	2.0671	0.8811	0.6618	0.3376	0.1345	0.0804	1.61	10.96

Material Description	USCS	AASHTO
○ Wet medium dense tan coarse to fine sand w/trace of fine gravel and silt.	SW-SM	A-1-b
□ Wet medium dense tan fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
△ Wet loose tan fine sand w/some silt, trace of coarse sand and fine gravel.	SM	A-2-4(0)
◇ Wet medium dense tan fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
▽ Wet medium dense tan coarse to fine sand w/some fine gravel, trace of silt.	SW-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-3 **Depth:** 49.0 **Sample Number:** 11

□ **Source of Sample:** TC-3 **Depth:** 54.0 **Sample Number:** 12

△ **Source of Sample:** TC-3 **Depth:** 59.0 **Sample Number:** 13

◇ **Source of Sample:** TC-3 **Depth:** 64.0 **Sample Number:** 14

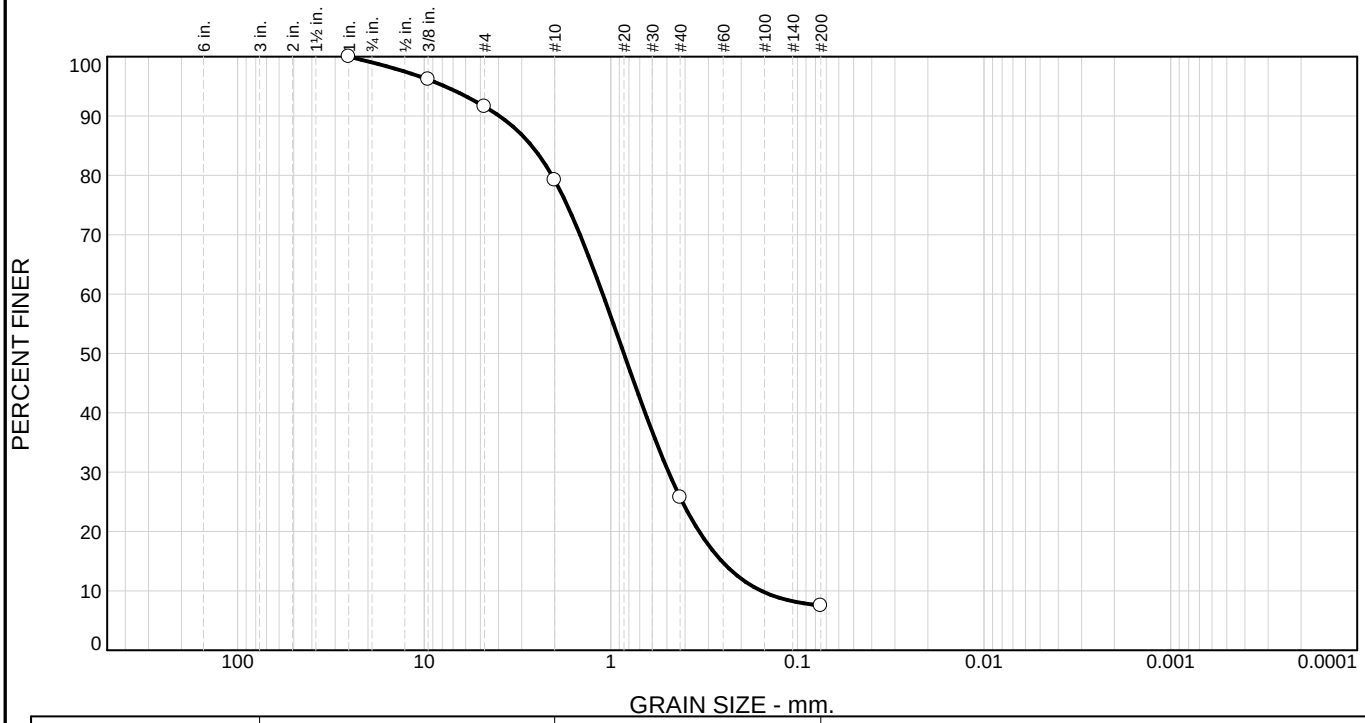
▽ **Source of Sample:** TC-3 **Depth:** 69.0 **Sample Number:** 15

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-36

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	20.8	53.5	18.2	7.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	2.6573	1.1056	0.8519	0.4903	0.2541	0.1562	1.39	7.08

Material Description	USCS	AASHTO
○ Wet medium dense brown fine gravelly coarse sand w/some fine sand, trace of silt	SW-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

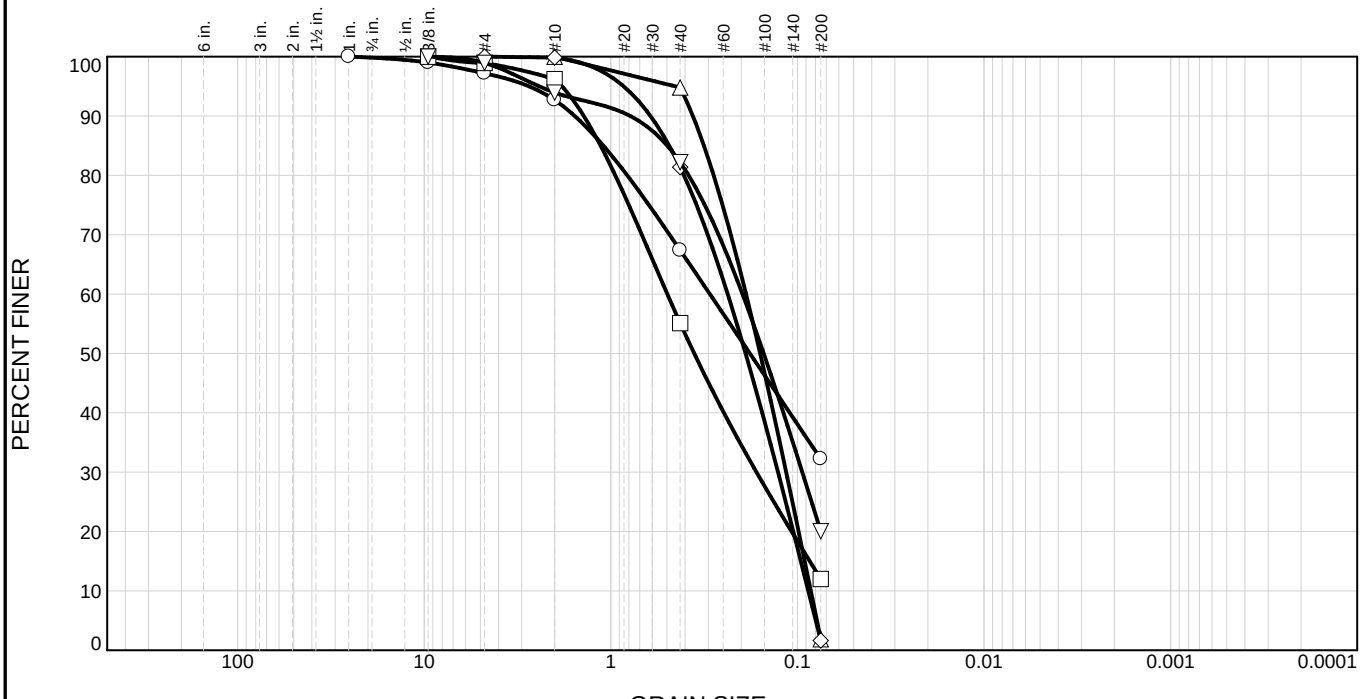
○ **Source of Sample:** TC-3 **Depth:** 73.0 **Sample Number:** 16

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-37

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	7.3	25.3	35.2	32.2	
□	0.0	3.8	41.1	43.1	12.0	
△	0.0	0.0	5.2	92.9	1.9	
◇	0.0	0.2	18.4	79.8	1.6	
▽	0.0	6.0	11.8	62.2	20.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	19.3	16.4	1.0963	0.2945	0.1797					
□	NV	NP	1.1342	0.4979	0.3574	0.1657	0.0859			
△	NV	NP	0.3169	0.1885	0.1584	0.1148	0.0913	0.0847	0.83	2.22
◇	NV	NP	0.4866	0.2364	0.1896	0.1270	0.0959	0.0874	0.78	2.70
▽	NV	NP	0.4976	0.1969	0.1516	0.0942				

Material Description	USCS	AASHTO
○ Moist medium dense brown silty fine to coarse sand w/trace of fine gravel and clay.	SM	A-2-4(0)
□ Moist loose brown fine to coarse sand w/some silt, trace of fine gravel.	SP-SM	A-2-4(0)
△ Moist medium dense tan fine sand w/trace of coarse sand and silt.	SP	A-3
◇ Wet medium dense tan fine sand w/some coarse sand, trace of silt.	SP	A-3
▽ Wet very loose tan fine sand w/some silt and coarse sand, trace of fine gravel.	SM	A-2-4(0)

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-4 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** TC-4 **Depth:** 4.0 **Sample Number:** 2

△ **Source of Sample:** TC-4 **Depth:** 9.0 **Sample Number:** 3

◇ **Source of Sample:** TC-4 **Depth:** 14.0 **Sample Number:** 4

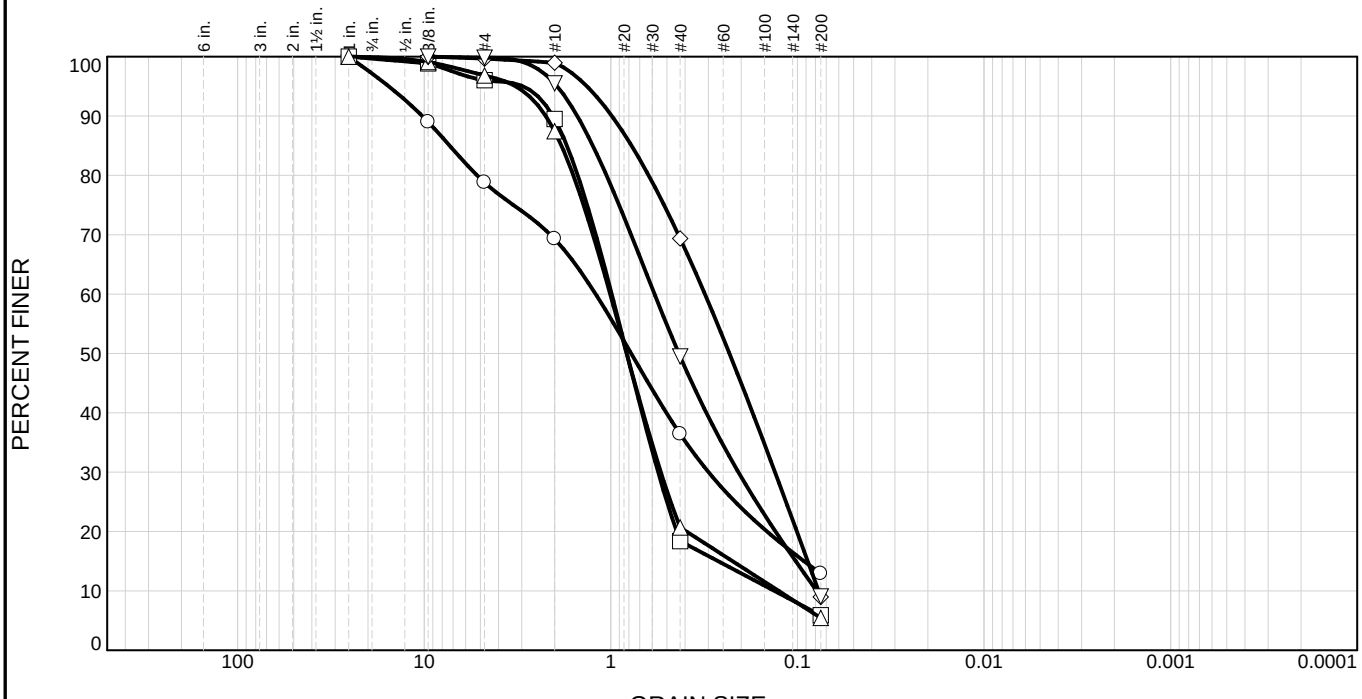
▽ **Source of Sample:** TC-4 **Depth:** 19.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-38

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	30.7	32.9	23.5	12.9	
□	0.0	10.5	71.1	12.5	5.9	
△	0.0	12.6	66.7	15.3	5.4	
◇	0.0	1.0	29.6	60.4	9.0	
▽	0.0	4.5	46.0	40.5	9.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	7.3031	1.2060	0.7781	0.2995	0.0921			
□	NV	NP	1.7179	0.9893	0.8207	0.5577	0.2656	0.1328	2.37	7.45
△	NV	NP	1.8370	1.0082	0.8235	0.5396	0.2226	0.1260	2.29	8.00
◇	NV	NP	0.7742	0.3132	0.2315	0.1318	0.0881	0.0771	0.72	4.06
▽	NV	NP	1.2479	0.5831	0.4319	0.2072	0.1020	0.0788	0.93	7.40

Material Description	USCS	AASHTO
○ Wet dense tan fine gravel and coarse to fine sand w/some silt.	SM	A-1-b
□ Wet loose tan coarse sand w/some fine sand, trace of fine gravel and silt.	SW-SM	A-1-b
△ Wet medium dense orange coarse sand w/some fine gravel and fine sand, trace of silt.	SW-SM	A-1-b
◇ Saturated loose tan fine to coarse sand w/trace of silt and fine gravel.	SP-SM	A-3
▽ Saturated loose tan coarse to fine sand w/trace of fine gravel and silt.	SP-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-4 **Depth:** 24.0 **Sample Number:** 6

□ **Source of Sample:** TC-4 **Depth:** 29.0 **Sample Number:** 7

△ **Source of Sample:** TC-4 **Depth:** 34.0 **Sample Number:** 8

◇ **Source of Sample:** TC-4 **Depth:** 39.0 **Sample Number:** 9

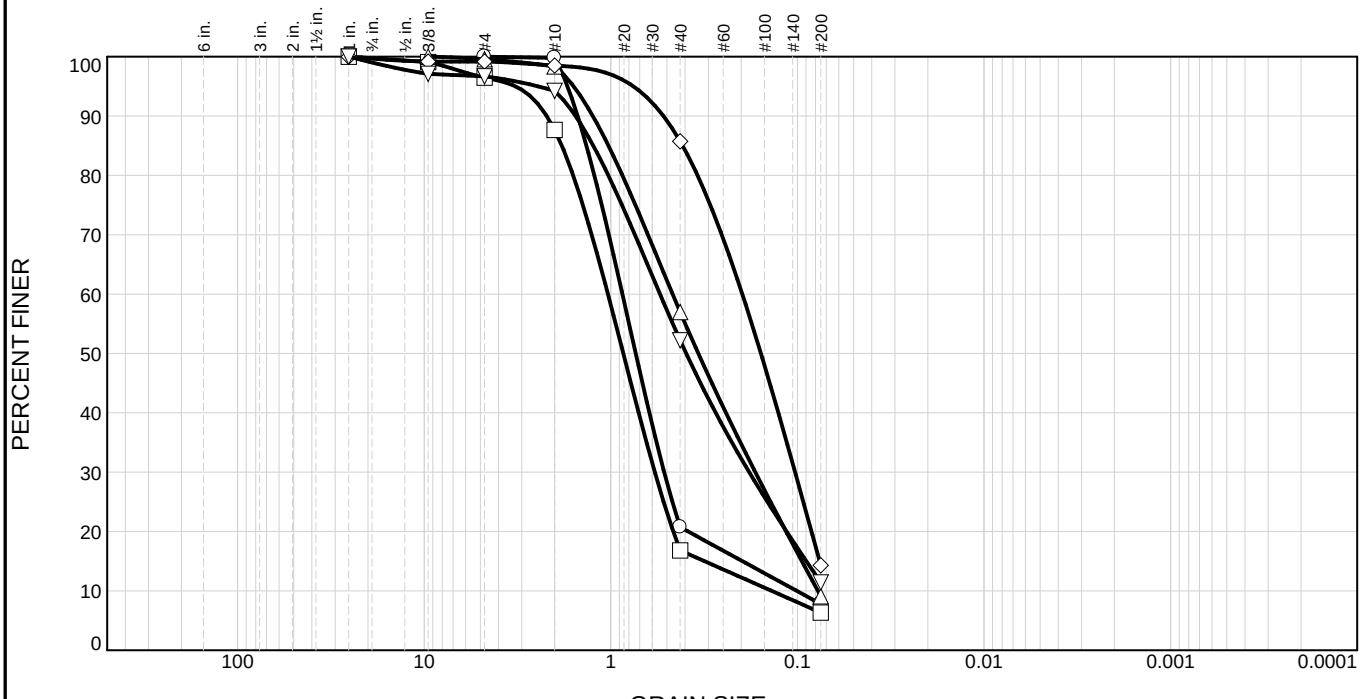
▽ **Source of Sample:** TC-4 **Depth:** 44.0 **Sample Number:** 10

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-39

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	0.2	79.1	12.9	7.8	
□	0.0	12.3	70.9	10.5	6.3	
△	0.0	1.6	41.4	47.9	9.1	
◇	0.0	1.5	12.8	71.4	14.3	
▽	0.0	5.8	42.0	40.8	11.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.3507	0.8672	0.7356	0.5178	0.1971	0.1008	3.07	8.60
□	NV	NP	1.8290	1.0364	0.8574	0.5810	0.3145	0.1374	2.37	7.54
△	NV	NP	1.0295	0.4667	0.3397	0.1681	0.0946	0.0777	0.78	6.01
◇	NV	NP	0.4122	0.1974	0.1569	0.1029	0.0761			
▽	NV	NP	1.2407	0.5452	0.3945	0.1813	0.0895			

Material Description	USCS	AASHTO
○ Saturated medium dense tan coarse sand w/some fine sand, trace of silt.	SP-SM	A-1-b
□ Saturated medium dense tan coarse sand w/some fine sand and fine gravel, trace of silt.	SW-SM	A-1-b
△ Saturated medium dense tan fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
◇ Saturated medium dense tan fine sand w/some coarse sand and silt, trace of fine gravel.	SM	A-2-4(0)
▽ Saturated medium dense tan coarse to fine sand w/some silt, trace of fine gravel.	SP-SM	A-2-4(0)

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-4 **Depth:** 49.0 **Sample Number:** 11

□ **Source of Sample:** TC-4 **Depth:** 54.0 **Sample Number:** 12

△ **Source of Sample:** TC-4 **Depth:** 59.0 **Sample Number:** 13

◇ **Source of Sample:** TC-4 **Depth:** 64.0 **Sample Number:** 14

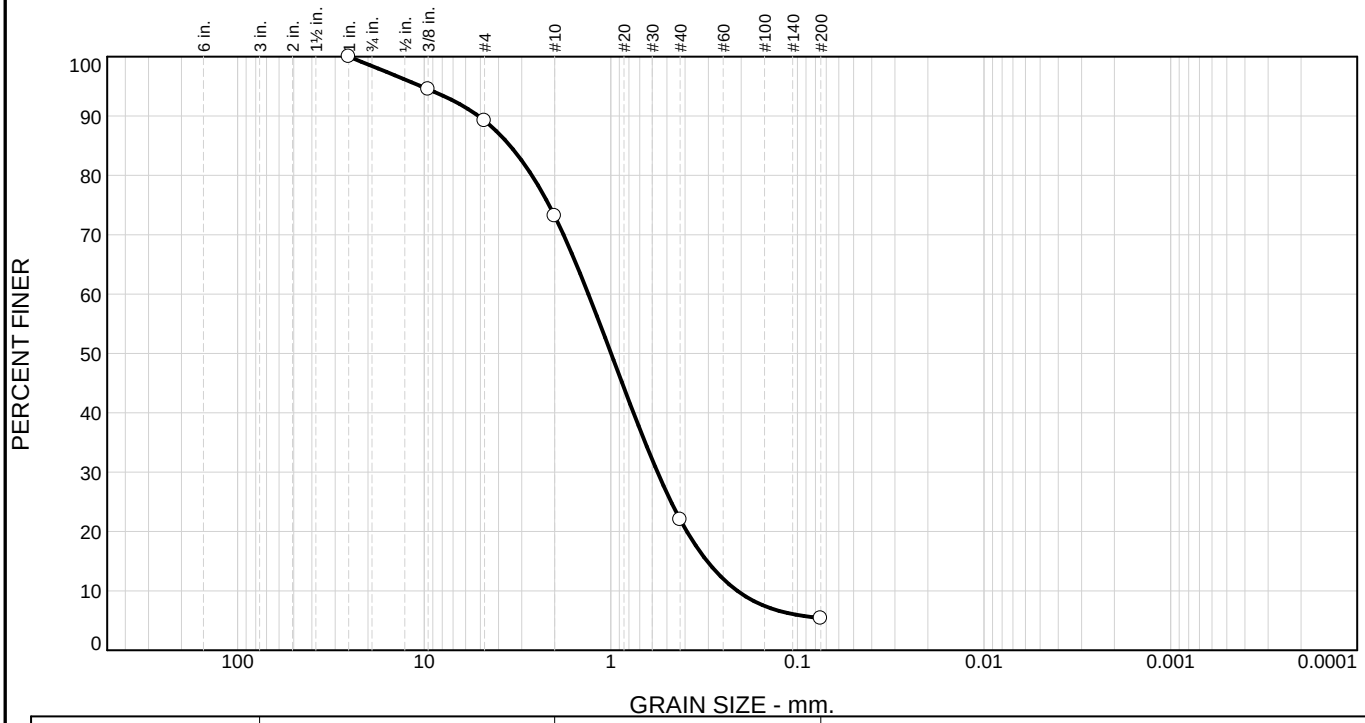
▽ **Source of Sample:** TC-4 **Depth:** 69.0 **Sample Number:** 15

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-40

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	26.8	51.2	16.6	5.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	3.4678	1.3190	0.9974	0.5620	0.3047	0.2097	1.14	6.29

Material Description	USCS	AASHTO
○ Saturated medium dense tan fine gravelly coarse sand w/some fine sand, trace of silt.	SW-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

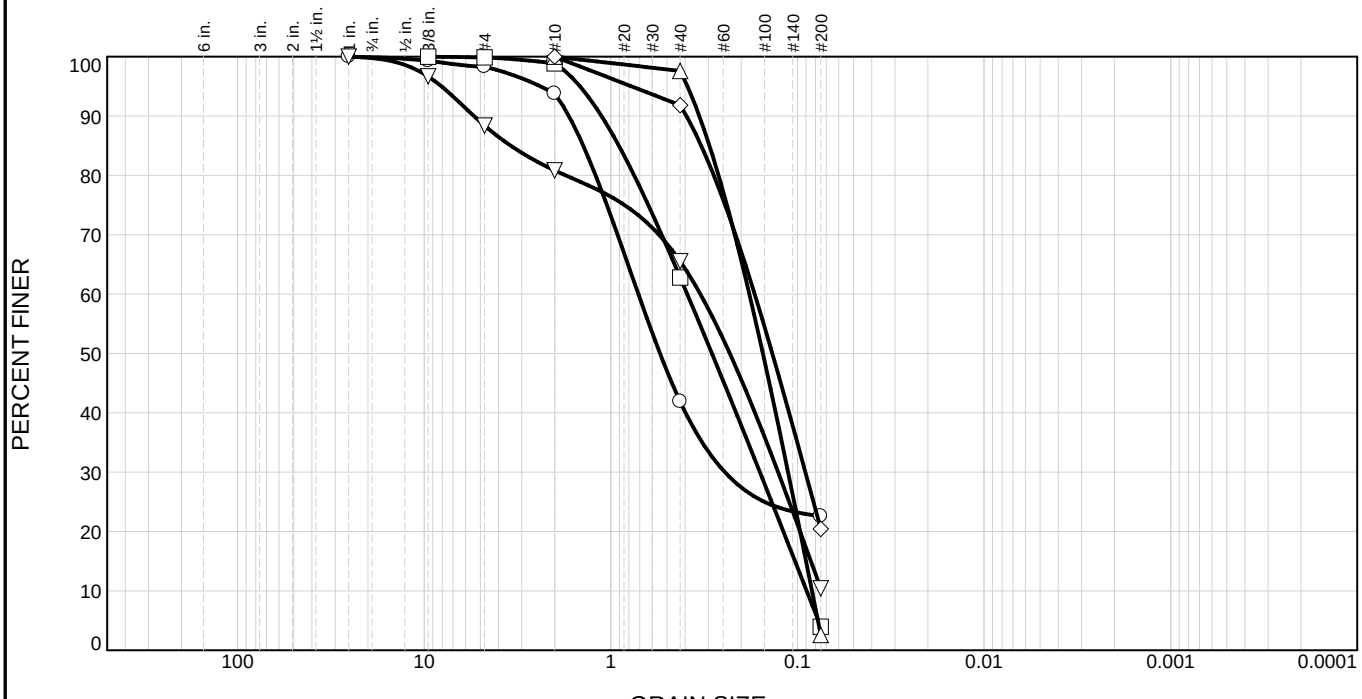
○ **Source of Sample:** TC-4 **Depth:** 73.0 **Sample Number:** 16

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-41

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	6.2	51.9	19.3	22.6	
□	0.0	1.1	36.1	58.8	4.0	
△	0.0	0.0	2.4	95.0	2.6	
◇	0.0	0.0	8.2	71.4	20.4	
▽	0.0	19.2	15.3	55.1	10.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.4041	0.7119	0.5451	0.2451				
□	NV	NP	0.9060	0.3897	0.2872	0.1589	0.1030	0.0892	0.73	4.37
△	NV	NP	0.2960	0.1809	0.1531	0.1122	0.0899	0.0836	0.83	2.17
◇	NV	NP	0.3277	0.1694	0.1363	0.0906				
▽	NV	NP	3.4401	0.3313	0.2303	0.1269	0.0847			

Material Description	USCS	AASHTO
○ Moist very loose brown silty coarse sand w/some fine sand, trace of fine gravel.	SM	A-1-b
□ Moist loose brown fine to coarse sand w/trace of fine gravel and silt.	SP	A-3
△ Moist loose tan fine sand w/trace of coarse sand and silt.	SP	A-3
◇ Wet very loose orange fine sand w/some silt, trace of coarse sand.	SM	A-2-4(0)
▽ Wet medium dense tan fine sand w/some coarse sand and fine gravel, trace of silt.	SP-SM	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-5 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** TC-5 **Depth:** 4.0 **Sample Number:** 2

△ **Source of Sample:** TC-5 **Depth:** 9.0 **Sample Number:** 3

◇ **Source of Sample:** TC-5 **Depth:** 14.0 **Sample Number:** 4

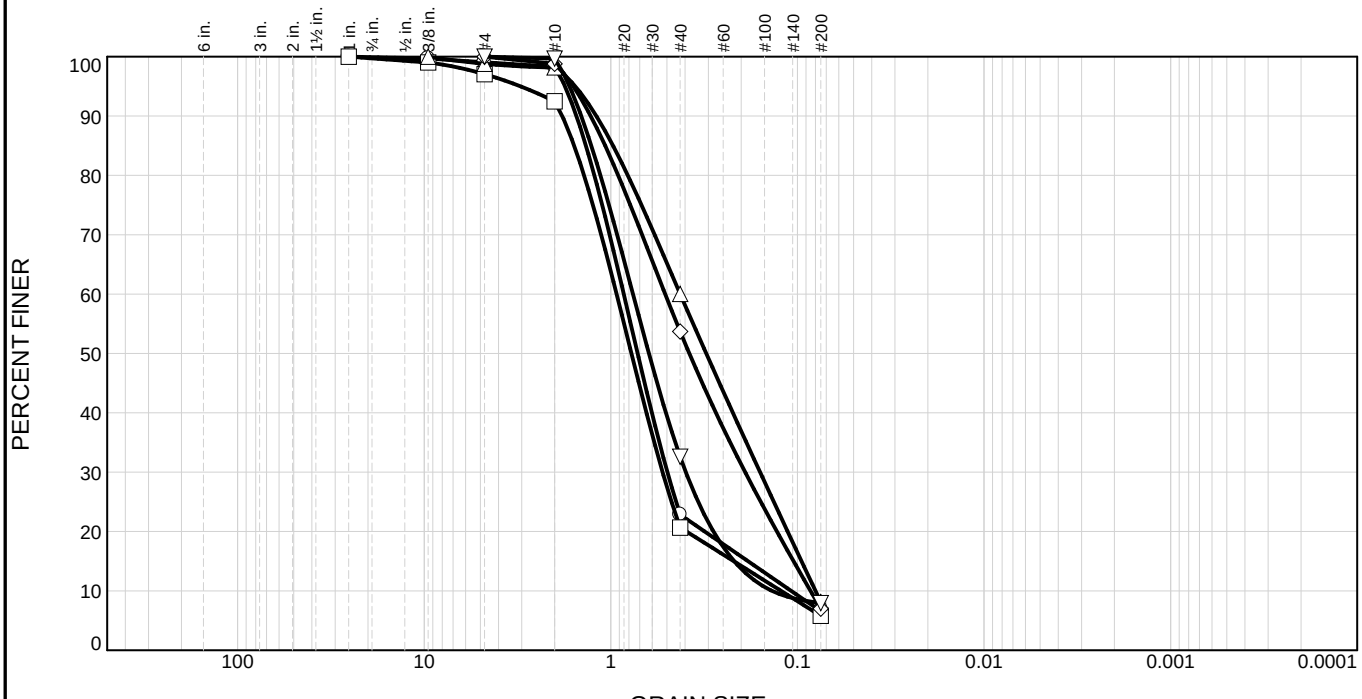
▽ **Source of Sample:** TC-5 **Depth:** 19.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-42

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.7	75.5	16.2	6.6	
□	0.0	7.5	71.8	14.9	5.8	
△	0.0	1.8	38.2	51.9	8.1	
◇	0.0	1.2	45.1	46.7	7.0	
▽	0.0	0.3	67.1	24.7	7.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.3588	0.8527	0.7185	0.4978	0.1840	0.1079	2.69	7.90
□	NV	NP	1.5710	0.9313	0.7755	0.5279	0.2194	0.1223	2.45	7.61
△	NV	NP	0.9731	0.4247	0.3081	0.1585	0.0950	0.0800	0.74	5.31
◇	NV	NP	1.0723	0.5113	0.3795	0.1906	0.1049	0.0851	0.83	6.01
▽	NV	NP	1.2718	0.7608	0.6249	0.3964	0.2183	0.1368	1.51	5.56

Material Description	USCS	AASHTO
○ Wet medium dense tan coarse sand w/some fine sand, trace of silt and fine gravel.	SW-SM	A-1-b
□ Wet loose tan coarse sand w/some fine sand, trace of fine gravel and silt.	SW-SM	A-1-b
△ Wet loose tan fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
◇ Wet loose tan fine to coarse sand w/trace of silt and fine gravel.	SP-SM	A-3
▽ Wet loose tan coarse to fine sand w/trace of silt.	SP-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-5 **Depth:** 24.0 **Sample Number:** 6

□ **Source of Sample:** TC-5 **Depth:** 29.0 **Sample Number:** 7

△ **Source of Sample:** TC-5 **Depth:** 34.0 **Sample Number:** 8

◇ **Source of Sample:** TC-5 **Depth:** 39.0 **Sample Number:** 9

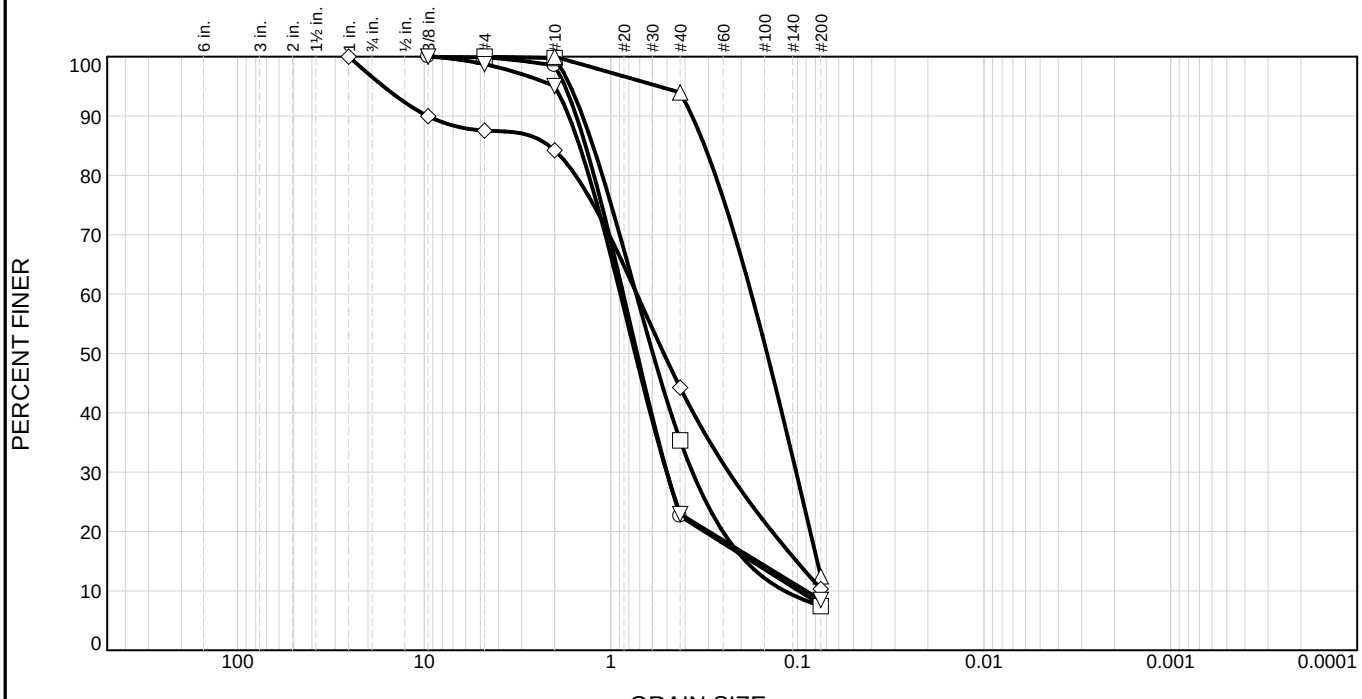
▽ **Source of Sample:** TC-5 **Depth:** 44.0 **Sample Number:** 10

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-43

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.5	75.9	14.9	7.7	
□	0.0	0.2	64.4	28.0	7.4	
△	0.0	0.0	6.0	81.5	12.5	
◇	0.0	15.8	40.0	33.9	10.3	
▽	0.0	5.0	72.1	14.4	8.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.3635	0.8577	0.7230	0.5010	0.1758	0.0982	2.98	8.73
□	NV	NP	1.2465	0.7314	0.5954	0.3654	0.1893	0.1172	1.56	6.24
△	NV	NP	0.3145	0.1763	0.1454	0.1015	0.0783			
◇	NV	NP	2.1411	0.7252	0.5203	0.2334	0.1009			
▽	NV	NP	1.4701	0.8889	0.7413	0.5022	0.1641	0.0901	3.15	9.86

Material Description	USCS	AASHTO
○ Wet loose tan coarse sand w/some fine sand, trace of fine gravel and silt.	SW-SM	A-1-b
□ Wet medium dense tan coarse to fine sand w/trace of silt.	SW-SM	A-1-b
△ Wet loose tan fine sand w/some silt, trace of coarse sand.	SM	A-2-4(0)
◇ Wet medium dense orange coarse to fine sand w/some fine gravel, trace of silt.	SP-SM	A-1-b
▽ Wet medium dense orange coarse sand w/some fine sand, trace of fine gravel and silt.	SP-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-5 **Depth:** 49.0 **Sample Number:** 11

□ **Source of Sample:** TC-5 **Depth:** 54.0 **Sample Number:** 12

△ **Source of Sample:** TC-5 **Depth:** 59.0 **Sample Number:** 13

◇ **Source of Sample:** TC-5 **Depth:** 64.0 **Sample Number:** 14

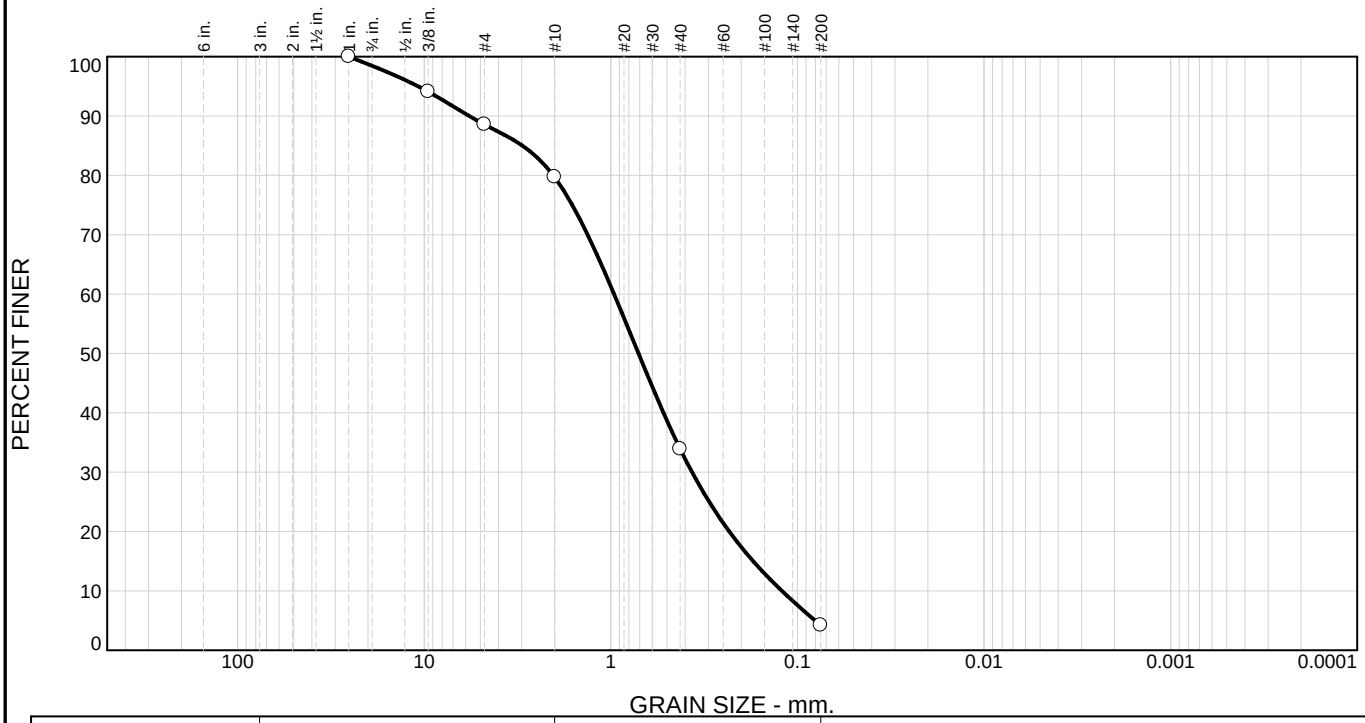
▽ **Source of Sample:** TC-5 **Depth:** 69.0 **Sample Number:** 15

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-44

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	20.3	45.8	29.7	4.2	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	2.9739	0.9612	0.7108	0.3671	0.1726	0.1211	1.16	7.94

Material Description	USCS	AASHTO
○ Wet medium dense orange coarse to fine sand w/some fine gravel, trace of silt.	SW	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

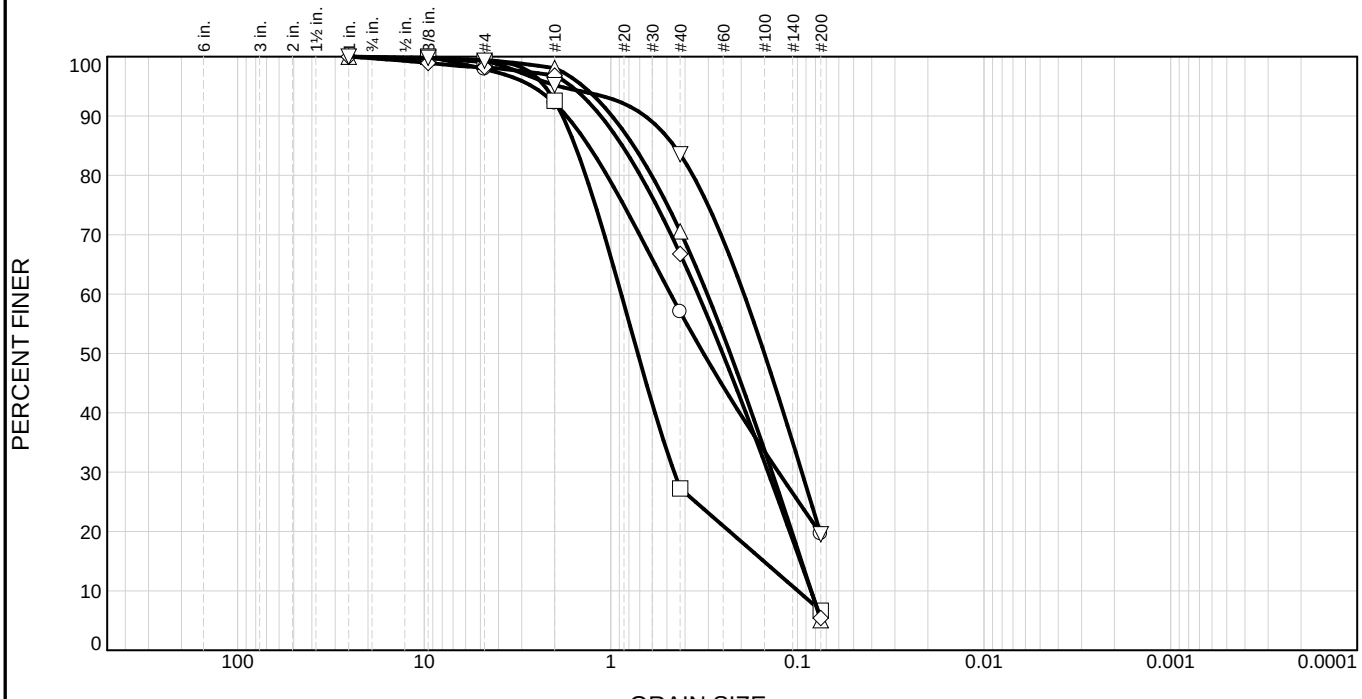
○ **Source of Sample:** TC-5 **Depth:** 73.0 **Sample Number:** 16

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-45

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	7.8	35.2	37.4	19.6	
□	0.0	7.4	65.3	20.6	6.7	
△	0.0	1.9	27.5	65.5	5.1	
◇	0.0	3.2	30.0	61.4	5.4	
▽	0.0	4.8	11.6	64.1	19.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.3154	0.4780	0.3185	0.1264				
□	NV	NP	1.5529	0.8798	0.7170	0.4577	0.1515	0.0994	2.39	8.85
△	NV	NP	0.7554	0.3042	0.2291	0.1368	0.0951	0.0844	0.73	3.61
◇	NV	NP	0.8684	0.3409	0.2515	0.1436	0.0964	0.0845	0.72	4.03
▽	NV	NP	0.4581	0.1934	0.1503	0.0946				

Material Description	USCS	AASHTO
○ Moist medium dense brown fine to coarse sand w/some silt, trace of fine gravel.	SM	A-2-4(0)
□ Moist loose brown coarse to fine sand w/trace of fine gravel and silt.	SW-SM	A-1-b
△ Moist medium dense tan fine to coarse sand w/trace of silt and fine gravel.	SP-SM	A-3
◇ Moist medium dense tannish orange fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
▽ Wet very loose tan fine sand w/some coarse sand and silt, trace of fine gravel.	SM	A-2-4(0)

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-6 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** TC-6 **Depth:** 4.0 **Sample Number:** 2

△ **Source of Sample:** TC-6 **Depth:** 9.0 **Sample Number:** 3

◇ **Source of Sample:** TC-6 **Depth:** 14.0 **Sample Number:** 4

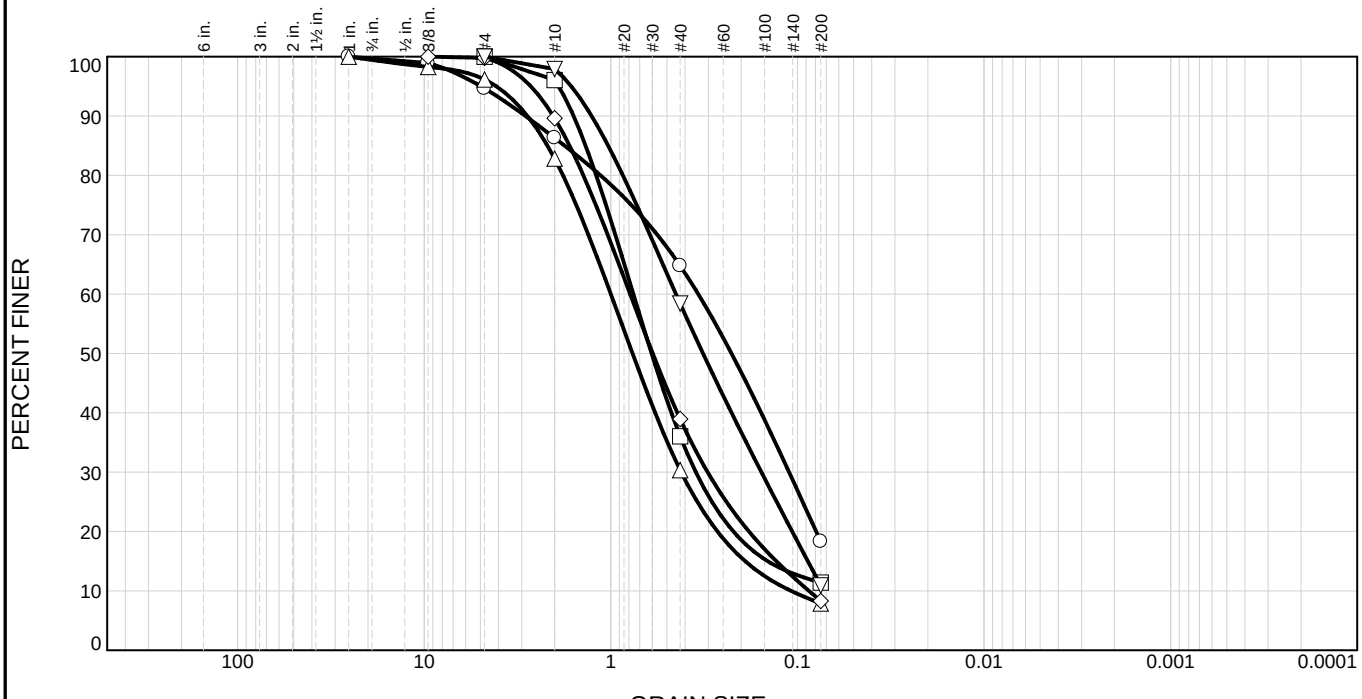
▽ **Source of Sample:** TC-6 **Depth:** 19.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-46

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	13.7	21.5	46.5	18.3	
□	0.0	3.9	60.1	24.6	11.4	
△	0.0	17.2	52.5	22.4	7.9	
◇	0.0	10.4	50.7	30.6	8.3	
▽	0.0	2.1	39.5	47.5	10.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.7695	0.3399	0.2256	0.1108				
□	NV	NP	1.3644	0.7574	0.6050	0.3502	0.1444			
△	NV	NP	2.1843	1.0001	0.7649	0.4198	0.1905	0.1081	1.63	9.25
◇	NV	NP	1.6631	0.7879	0.5961	0.3030	0.1297	0.0867	1.34	9.08
▽	NV	NP	1.0337	0.4477	0.3206	0.1559	0.0879			

Material Description	USCS	AASHTO
○ Wet medium dense brown fine to coarse sand w/some silt and fine gravel.	SM	A-2-4(0)
□ Wet loose tan coarse to fine sand w/some silt, trace of fine gravel.	SP-SM	A-1-b
△ Wet medium dense tan coarse to fine sand w/some fine gravel, trace of silt.	SW-SM	A-1-b
◇ Wet loose tan coarse to fine sand w/trace of silt and fine gravel.	SW-SM	A-1-b
▽ Wet loose tan fine to coarse sand w/some silt, trace of fine gravel.	SP-SM	A-2-4(0)

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-6 **Depth:** 24.0 **Sample Number:** 6

□ **Source of Sample:** TC-6 **Depth:** 29.0 **Sample Number:** 7

△ **Source of Sample:** TC-6 **Depth:** 34.0 **Sample Number:** 8

◇ **Source of Sample:** TC-6 **Depth:** 39.0 **Sample Number:** 9

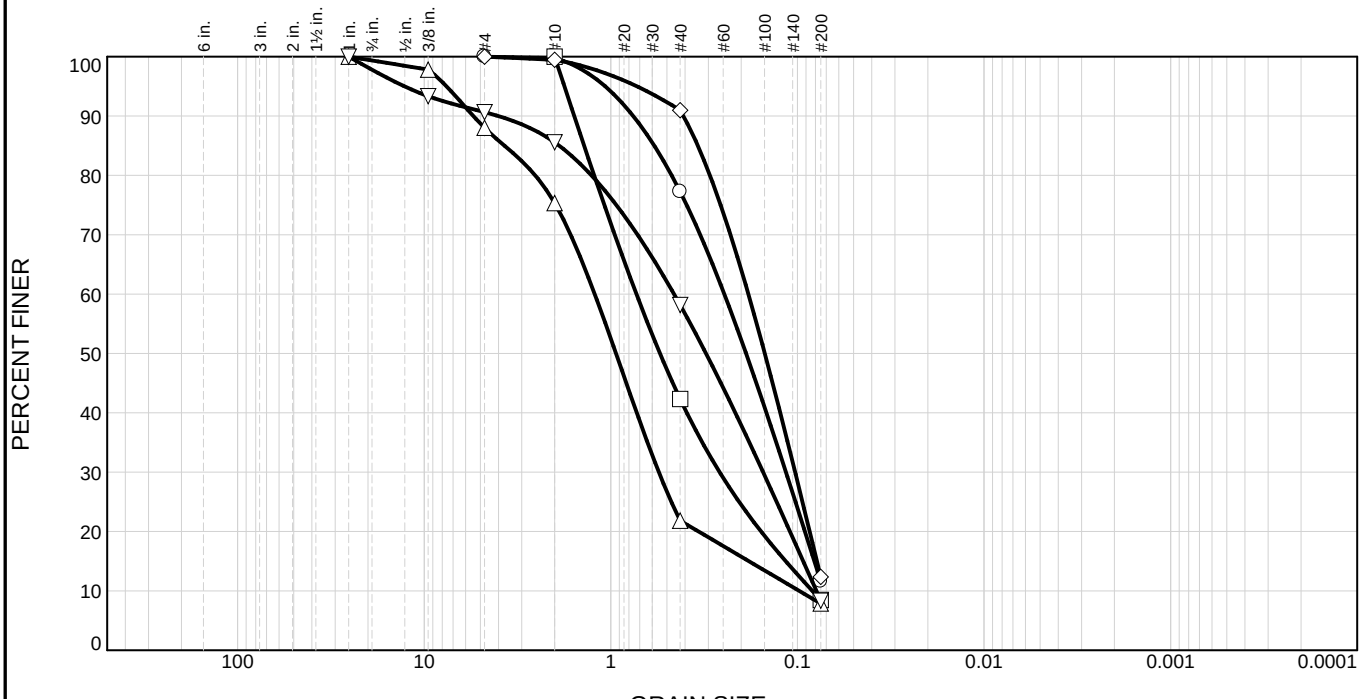
▽ **Source of Sample:** TC-6 **Depth:** 44.0 **Sample Number:** 10

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-47

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	0.2	22.5	65.7	11.6	
□	0.0	0.0	57.7	33.8	8.5	
△	0.0	24.7	53.5	13.9	7.9	
◇	0.0	0.5	8.5	78.6	12.4	
▽	0.0	14.4	27.4	49.9	8.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.5850	0.2464	0.1884	0.1152	0.0811			
□	NV	NP	1.3895	0.7292	0.5453	0.2611	0.1155	0.0832	1.12	8.77
△	NV	NP	3.7130	1.2197	0.9384	0.5529	0.1820	0.0978	2.56	12.47
◇	NV	NP	0.3417	0.1831	0.1496	0.1028	0.0786			
▽	NV	NP	1.8897	0.4584	0.3090	0.1527	0.0931	0.0791	0.64	5.79

Material Description	USCS	AASHTO
○ Wet loose tan fine to coarse sand w/some silt.	SP-SM	A-2-4(0)
□ Wet medium dense tan coarse to fine sand w/trace of silt.	SW-SM	A-1-b
△ Wet medium dense tan fine gravelly coarse sand w/some fine sand, trace of silt.	SW-SM	A-1-b
◇ Wet medium dense tan fine sand w/some silt, trace of coarse sand.	SM	A-2-4(0)
▽ Wet medium dense tan fine to coarse sand w/some fine gravel, trace of silt.	SP-SM	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-6 **Depth:** 49.0 **Sample Number:** 11

□ **Source of Sample:** TC-6 **Depth:** 54.0 **Sample Number:** 12

△ **Source of Sample:** TC-6 **Depth:** 59.0 **Sample Number:** 13

◇ **Source of Sample:** TC-6 **Depth:** 64.0 **Sample Number:** 14

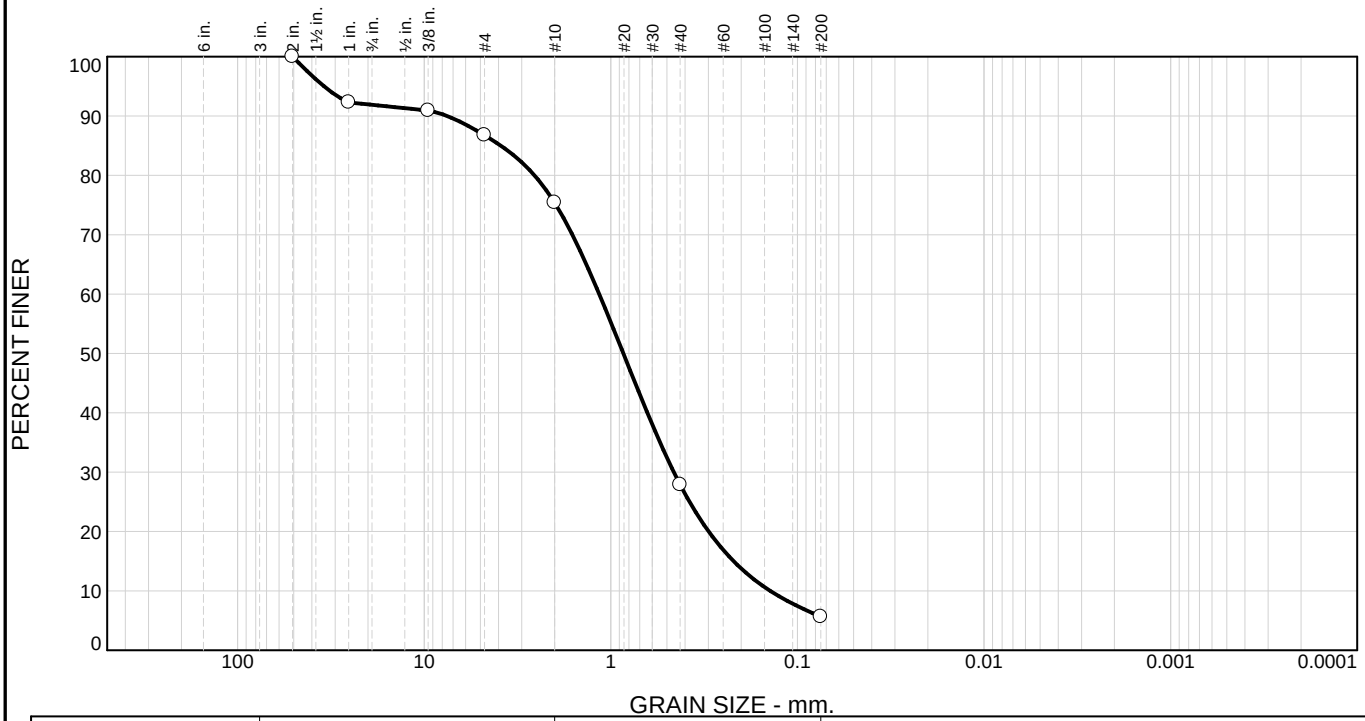
▽ **Source of Sample:** TC-6 **Depth:** 69.0 **Sample Number:** 15

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-48

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	24.6	47.5	22.3	5.6	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	3.8836	1.1541	0.8570	0.4597	0.2198	0.1399	1.31	8.25

Material Description	USCS	AASHTO
○ Wet medium dense tan fine gravelly fine to coarse sand w/trace of silt.	SW-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

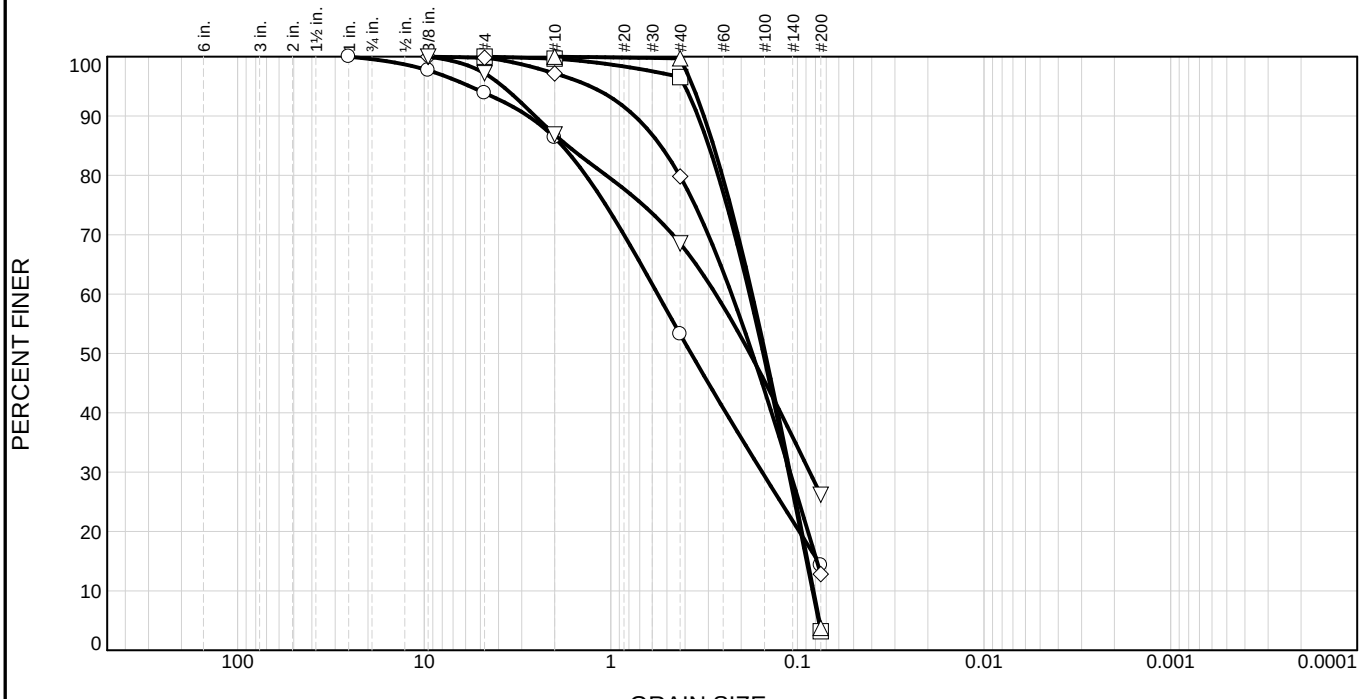
○ **Source of Sample:** TC-6 **Depth:** 73.0 **Sample Number:** 16

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-49

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	13.6	33.2	38.9	14.3	
□	0.0	0.3	3.1	93.4	3.2	
△	0.0	0.0	0.3	95.9	3.8	
◇	0.0	2.8	17.4	67.0	12.8	
▽	0.0	13.1	18.4	42.3	26.2	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.8199	0.5608	0.3713	0.1544	0.0774			
□	NV	NP	0.2988	0.1804	0.1524	0.1114	0.0891	0.0828	0.83	2.18
△	NV	NP	0.2816	0.1749	0.1486	0.1096	0.0881	0.0820	0.84	2.13
◇	NV	NP	0.5409	0.2252	0.1743	0.1095	0.0787			
▽	NV	NP	1.7040	0.2739	0.1796	0.0858				

Material Description	USCS	AASHTO
○ Moist loose brown fine to coarse sand w/some fine gravel and silt.	SM	A-2-4(0)
□ Wet medium dense brown fine sand w/trace of silt, coarse sand and fine gravel.	SP	A-3
△ Wet medium dense tan fine sand w/trace of silt.Wet very loose tan fine sand w/some coarse sand and silt,	SP	A-3
◇ Wet very loose tan fine sand w/some coarse sand and silt, trace of fine gravel.	SM	A-2-4(0)
▽ Wet medium dense tan silty fine sand w/some coarse sand and fine gravel.	SM	A-2-4(0)

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-7 **Depth:** 1.0 **Sample Number:** 1

□ **Source of Sample:** TC-7 **Depth:** 4.0 **Sample Number:** 2

△ **Source of Sample:** TC-7 **Depth:** 9.0 **Sample Number:** 3

◇ **Source of Sample:** TC-7 **Depth:** 14.0 **Sample Number:** 4

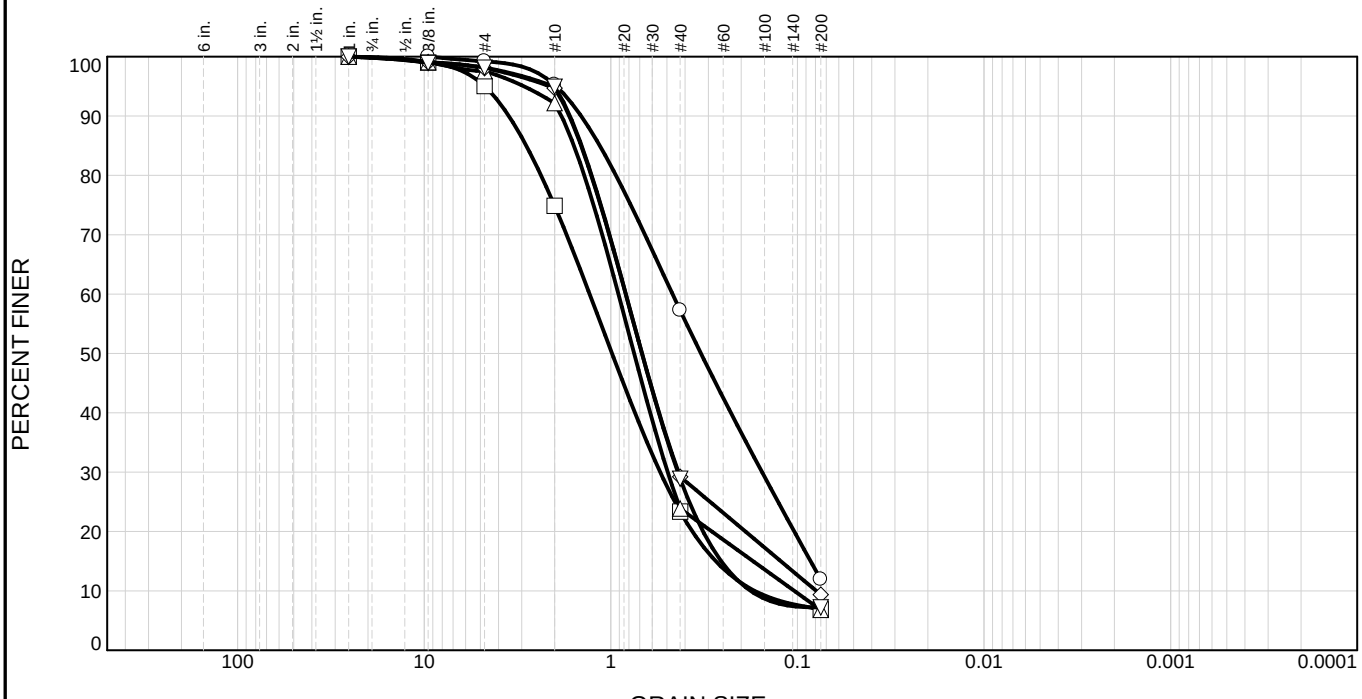
▽ **Source of Sample:** TC-7 **Depth:** 19.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-50

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	4.7	38.0	45.4	11.9	
□	0.0	25.1	51.5	16.5	6.9	
△	0.0	7.8	68.3	17.1	6.8	
◇	0.0	5.3	65.5	19.8	9.4	
▽	0.0	5.1	66.0	21.7	7.2	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.1458	0.4669	0.3289	0.1546	0.0850			
□	NV	NP	2.8381	1.2982	0.9854	0.5437	0.2740	0.1697	1.34	7.65
△	NV	NP	1.5753	0.9105	0.7502	0.4957	0.1728	0.1039	2.60	8.76
◇	NV	NP	1.4417	0.8322	0.6807	0.4340	0.1227	0.0793	2.85	10.50
▽	NV	NP	1.4331	0.8311	0.6810	0.4375	0.2562	0.1783	1.29	4.66

Material Description	USCS	AASHTO
○ Wet loose tan fine to coarse sand w/some silt, trace of fine gravel.	SP-SM	A-2-4(0)
□ Wet medium dense tan fine gravelly coarse sand w/some fine sand, trace of silt.	SW-SM	A-1-b
△ Wet medium dense tan coarse sand w/some fine sand, trace of fine gravel and silt.	SW-SM	A-1-b
◇ Wet medium dense tan coarse sand w/some fine sand, trace of fine gravel and silt.	SW-SM	A-1-b
▽ Wet medium dense tan coarse to fine sand w/trace of silt and fine gravel.	SP-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-7 **Depth:** 24.0 **Sample Number:** 6

□ **Source of Sample:** TC-7 **Depth:** 29.0 **Sample Number:** 7

△ **Source of Sample:** TC-7 **Depth:** 34.0 **Sample Number:** 8

◇ **Source of Sample:** TC-7 **Depth:** 39.0 **Sample Number:** 9

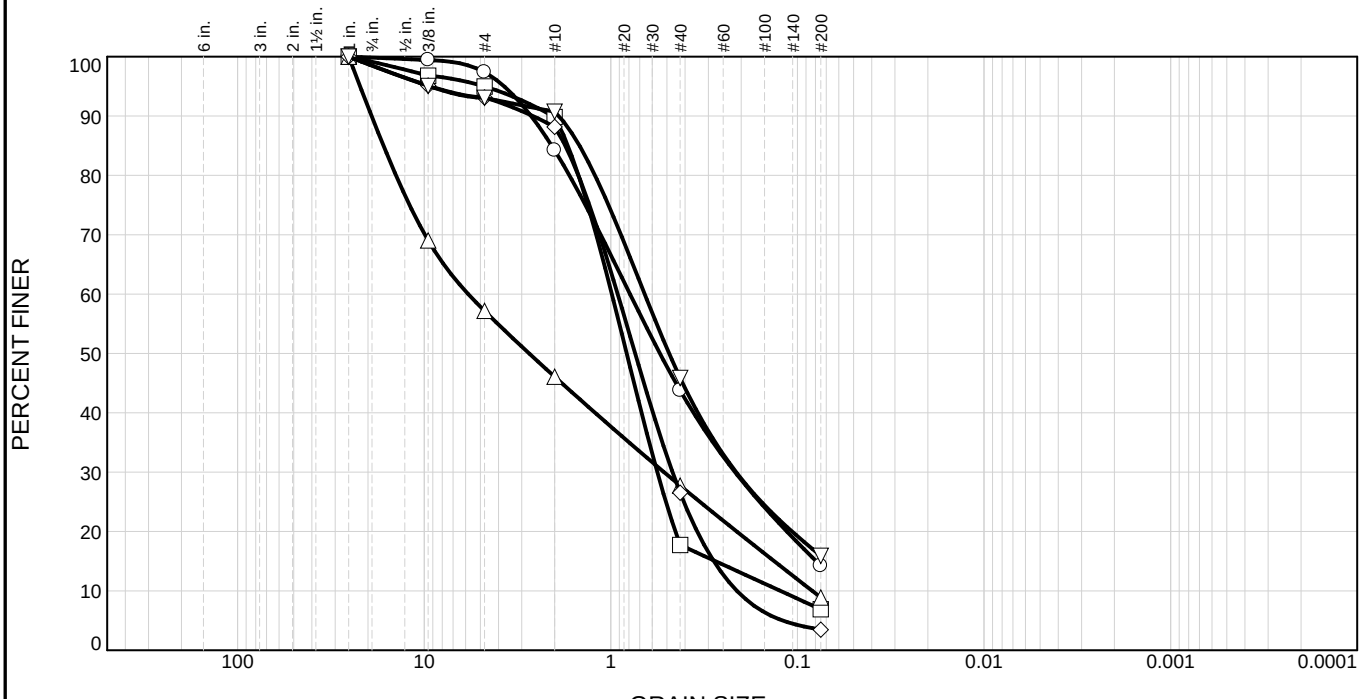
▽ **Source of Sample:** TC-7 **Depth:** 44.0 **Sample Number:** 10

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-51

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	15.8	40.4	29.6	14.2	
□	0.0	10.2	72.1	10.8	6.9	
△	0.0	53.9	18.4	18.8	8.9	
◇	0.0	11.8	61.7	23.0	3.5	
▽	0.0	9.3	44.8	30.0	15.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	2.0731	0.7893	0.5457	0.2159	0.0794			
□	NV	NP	1.6986	0.9877	0.8223	0.5634	0.2748	0.1233	2.61	8.01
△	NV	NP	16.5335	5.8115	2.7391	0.5186	0.1330	0.0833	0.56	69.79
◇	NV	NP	1.7530	0.9190	0.7407	0.4672	0.2806	0.2109	1.13	4.36
▽	NV	NP	1.4708	0.6585	0.4870	0.2130				

Material Description	USCS	AASHTO
○ Wet medium dense tan coarse to fine sand w/some silt and fine gravel.	SM	A-1-b
□ Wet medium dense tan coarse sand w/some fine sand, trace of fine gravel and silt.	SW-SM	A-1-b
△ Wet dense tan fine gravel w/some fine to coarse sand, trace of silt.	SP-SM	A-1-a
◇ Wet medium dense tan coarse to fine sand w/some fine gravel, trace of silt.	SP	A-1-b
▽ Wet medium dense tan coarse to fine sand w/some silt, trace of fine gravel.	SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-7 **Depth:** 49.0 **Sample Number:** 11

□ **Source of Sample:** TC-7 **Depth:** 54.0 **Sample Number:** 12

△ **Source of Sample:** TC-7 **Depth:** 59.0 **Sample Number:** 13

◇ **Source of Sample:** TC-7 **Depth:** 64.0 **Sample Number:** 14

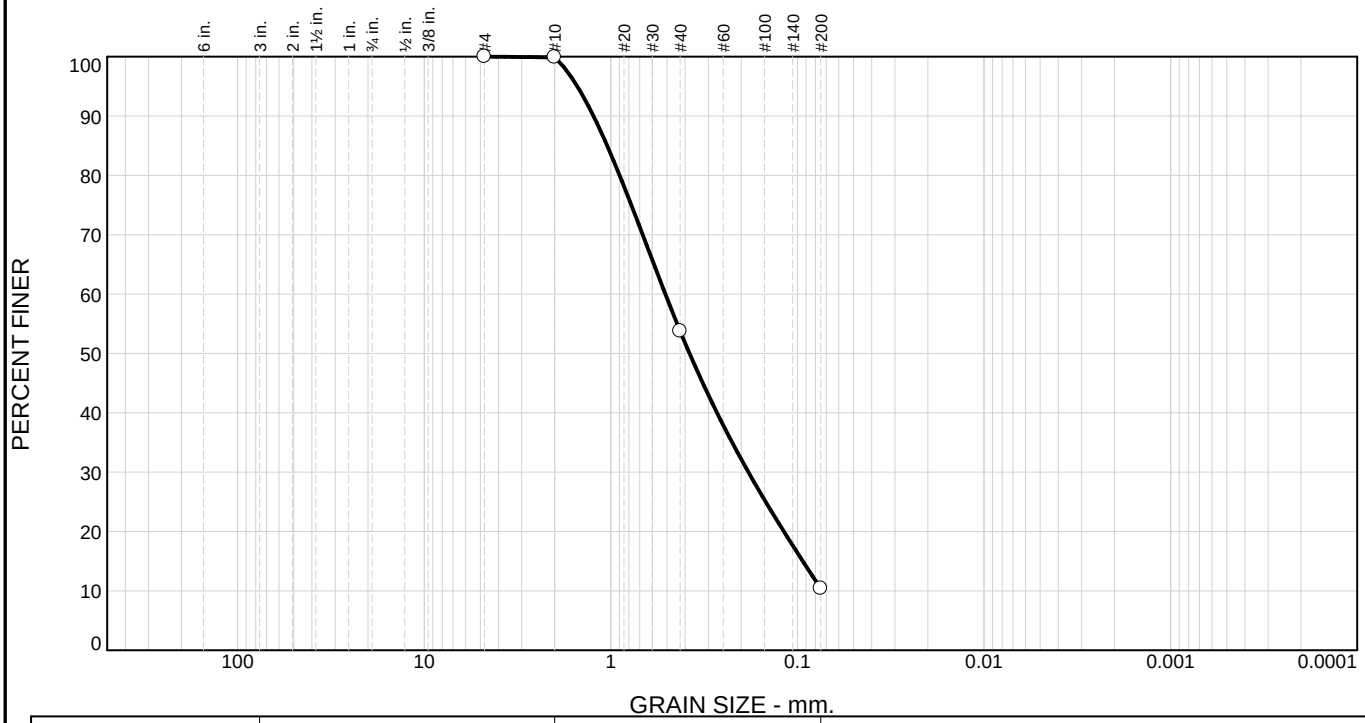
▽ **Source of Sample:** TC-7 **Depth:** 69.0 **Sample Number:** 15

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-52

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	0.1	46.2	43.3	10.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.0463	0.5102	0.3786	0.1830	0.0935			

Material Description	USCS	AASHTO
○ Wet medium dense tan coarse to fine sand w/trace of silt.	SP-SM	A-3

Project No. **Client:**

Project: Lewes Transit Center

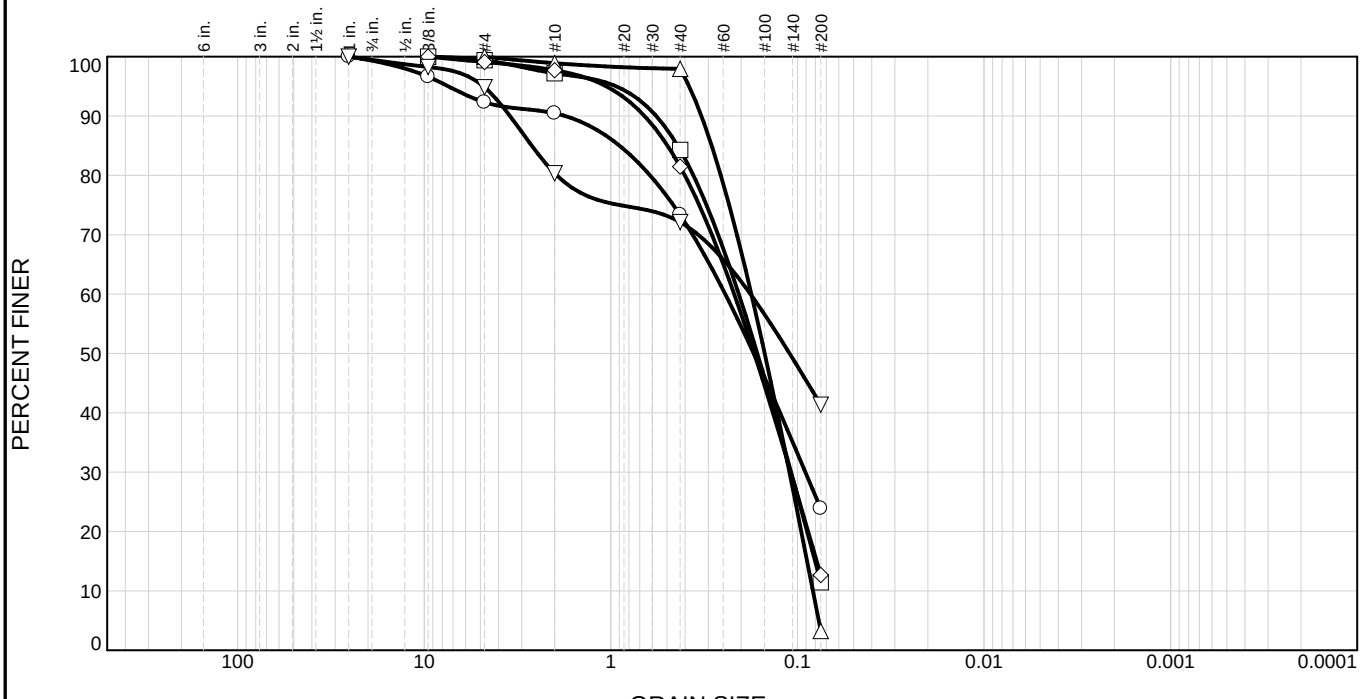
○ **Source of Sample:** TC-7 **Depth:** 73.0 **Sample Number:** 16

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-53

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	9.5	17.2	49.4	23.9	
□	0.0	2.8	12.9	72.9	11.4	
△	0.0	1.1	1.0	94.7	3.2	
◇	0.0	2.3	16.2	68.8	12.7	
▽	0.0	19.7	8.2	30.7	41.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.8980	0.2437	0.1715	0.0906				
□	NV	NP	0.4384	0.2061	0.1640	0.1081	0.0804			
△	NV	NP	0.2880	0.1765	0.1497	0.1103	0.0887	0.0826	0.83	2.14
◇	NV	NP	0.4965	0.2181	0.1703	0.1086	0.0788			
▽	NV	NP	2.6506	0.1785	0.1101					

Material Description	USCS	AASHTO
○ Moist very loose brown silty fine sand w/some coarse sand, trace of fine gravel.	SM	A-2-4(0)
□ Moist medium dense brown fine sand w/some coarse sand and silt, trace of fine gravel.	SP-SM	A-2-4(0)
△ Wet medium dense brown fine sand w/trace of coarse sand, fine gravel and silt.	SP	A-3
◇ Wet loose brown fine sand w/some coarse sand and silt, trace of fine gravel.	SM	A-2-4(0)
▽ Wet soft brown fine sandy silt w/some fine gravel, trace of coarse sand.	SM	A-4(0)

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-8 **Depth:** 1.0 **Sample Number:** 1

□ **Source of Sample:** TC-8 **Depth:** 4.0 **Sample Number:** 2

△ **Source of Sample:** TC-8 **Depth:** 9.0 **Sample Number:** 3

◇ **Source of Sample:** TC-8 **Depth:** 14.0 **Sample Number:** 4

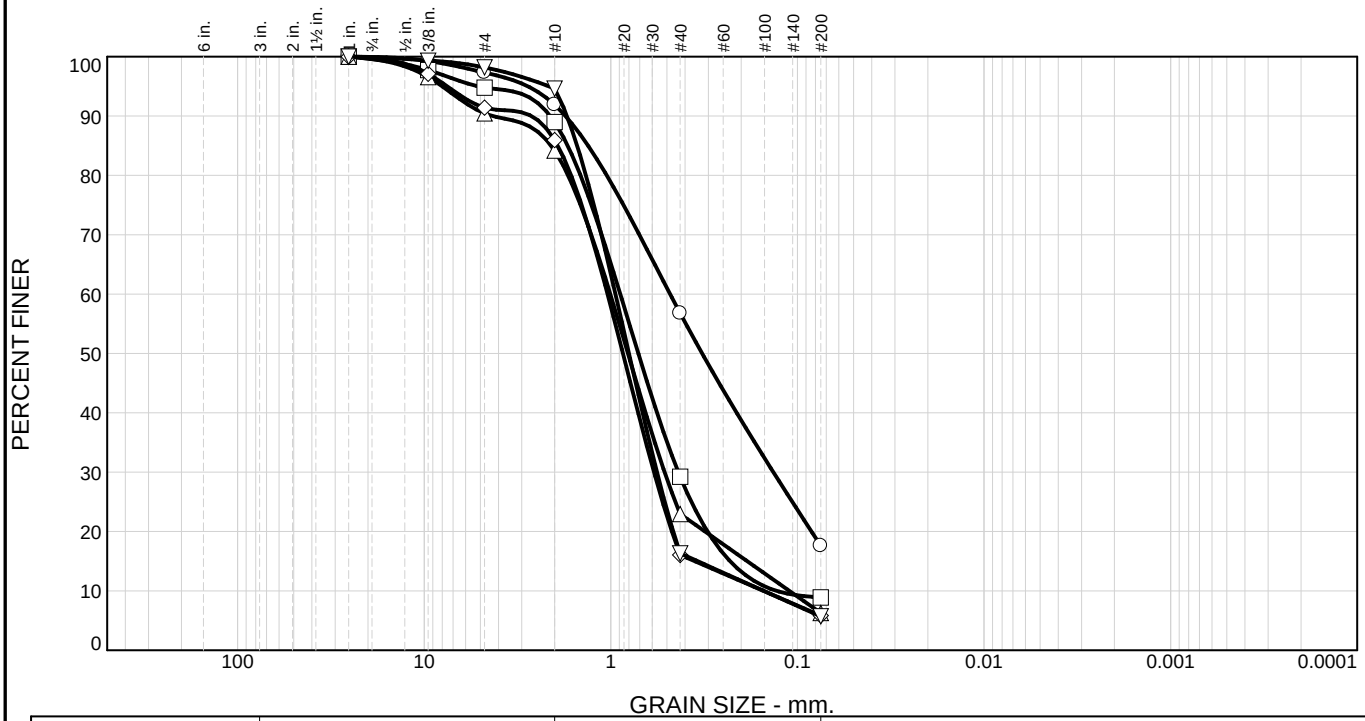
▽ **Source of Sample:** TC-8 **Depth:** 19.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-54

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	8.1	35.1	39.2	17.6	
□	0.0	11.0	59.8	20.3	8.9	
△	0.0	15.8	61.3	16.6	6.3	
◇	0.0	14.1	69.8	10.3	5.8	
▽	0.0	5.4	78.3	10.6	5.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.3232	0.4813	0.3240	0.1345				
□	NV	NP	1.7016	0.8902	0.7124	0.4348	0.2297	0.1292	1.64	6.89
△	NV	NP	2.0879	1.0069	0.8097	0.5150	0.1860	0.1105	2.38	9.11
◇	NV	NP	1.9226	1.0418	0.8615	0.5869	0.3554	0.1521	2.17	6.85
▽	NV	NP	1.5143	0.9447	0.7995	0.5659	0.3426	0.1513	2.24	6.24

Material Description	USCS	AASHTO
○ Wet medium dense brown fine to coarse sand w/some silt, trace of fine gravel.	SM	A-2-4(0)
□ Wet medium dense brown coarse sand w/some fine sand and fine gravel, trace of silt.	SW-SM	A-1-b
△ Wet medium dense brown coarse sand w/some fine sand and fine gravel, trace of silt.	SW-SM	A-1-b
◇ Wet medium dense brown coarse sand w/some fine gravel, trace of fine sand and silt.	SW-SM	A-1-b
▽ Wet medium dense brown coarse sand w/some fine sand, trace of silt and fine gravel.	SW-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-8 **Depth:** 24.0 **Sample Number:** 6

□ **Source of Sample:** TC-8 **Depth:** 29.0 **Sample Number:** 7

△ **Source of Sample:** TC-8 **Depth:** 34.0 **Sample Number:** 8

◇ **Source of Sample:** TC-8 **Depth:** 39.0 **Sample Number:** 9

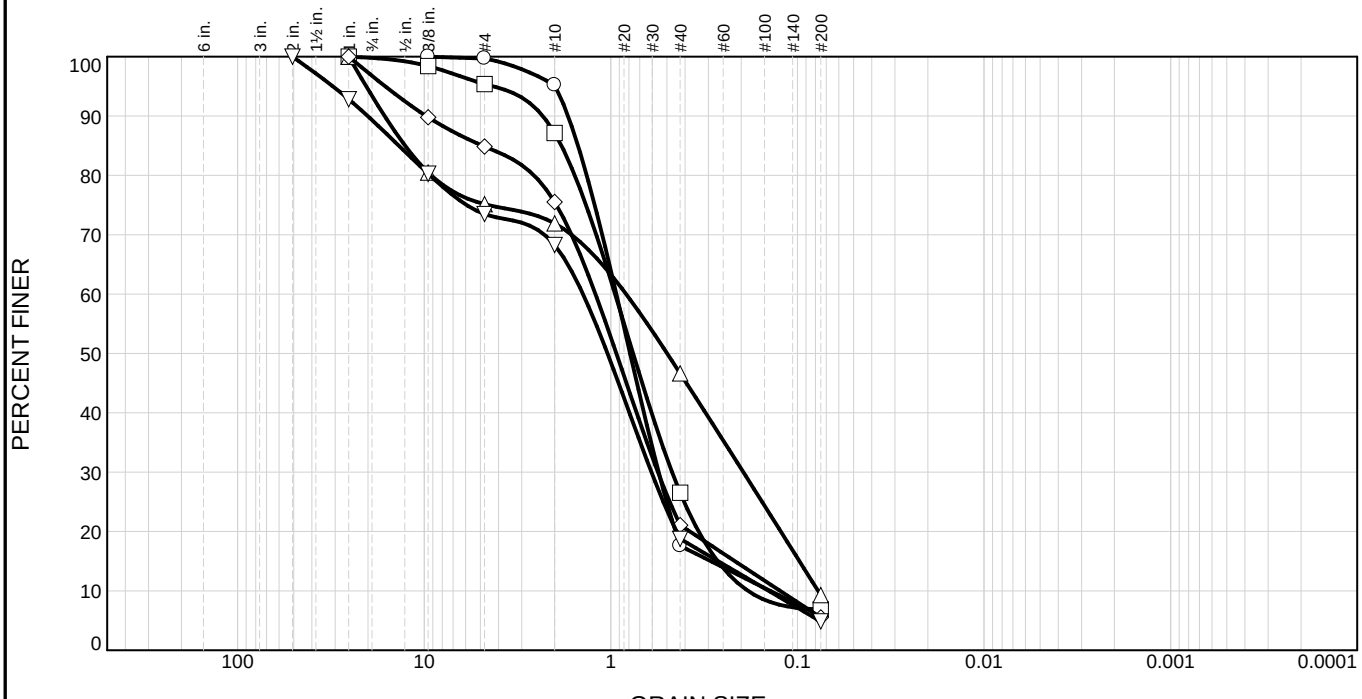
▽ **Source of Sample:** TC-8 **Depth:** 44.0 **Sample Number:** 10

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-55

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	4.8	77.6	11.8	5.8	
□	0.0	12.9	60.6	19.6	6.9	
△	0.0	28.1	25.3	37.3	9.3	
◇	0.0	24.5	54.4	15.6	5.5	
▽	0.0	31.7	49.5	13.9	4.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.4981	0.9341	0.7888	0.5543	0.2911	0.1398	2.35	6.68
□	NV	NP	1.8373	0.9490	0.7596	0.4698	0.2677	0.1839	1.26	5.16
△	NV	NP	12.6662	0.8284	0.4991	0.1949	0.0975	0.0775	0.59	10.69
◇	NV	NP	4.8672	1.2084	0.9341	0.5594	0.2160	0.1237	2.09	9.77
▽	NV	NP	13.6777	1.4092	1.0420	0.6057	0.2658	0.1425	1.83	9.89

Material Description	USCS	AASHTO
○ Wet medium dense brown coarse sand w/some fine sand, trace of fine gravel and silt.	SW-SM	A-1-b
□ Wet medium dense brown coarse sand w/some fine sand and fine gravel, trace of silt.	SP-SM	A-1-b
△ Wet medium dense brown fine to coarse sand and fine gravel w/trace of silt.	SP-SM	A-1-b
◇ Wet medium dense brown fine gravelly coarse sand w/some fine sand, trace of silt.	SW-SM	A-1-b
▽ Wet medium dense brown fine gravelly coarse sand w/some fine sand, trace of silt.	SW	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-8 **Depth:** 49.0 **Sample Number:** 11

□ **Source of Sample:** TC-8 **Depth:** 54.0 **Sample Number:** 12

△ **Source of Sample:** TC-8 **Depth:** 59.0 **Sample Number:** 13

◇ **Source of Sample:** TC-8 **Depth:** 64.0 **Sample Number:** 14

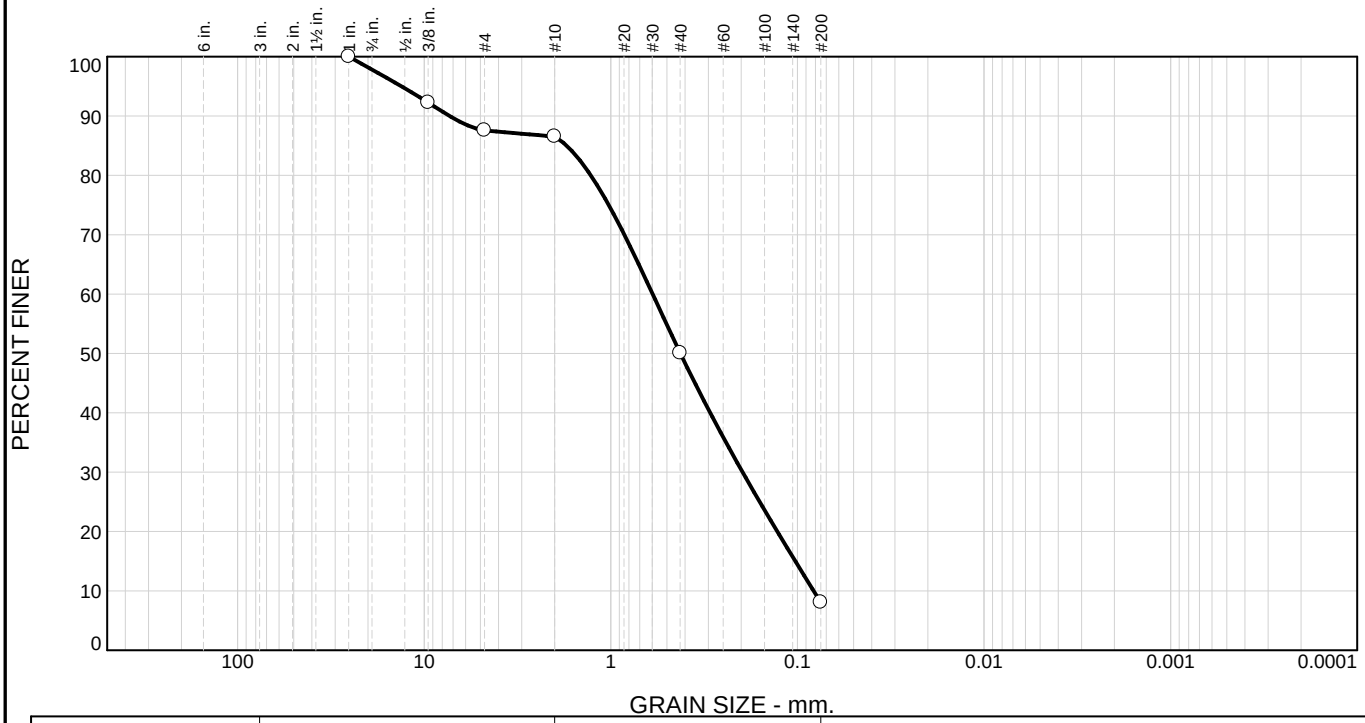
▽ **Source of Sample:** TC-8 **Depth:** 69.0 **Sample Number:** 15

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-56

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	13.5	36.4	42.0	8.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.7242	0.5969	0.4238	0.1967	0.1026	0.0819	0.79	7.29

Material Description	USCS	AASHTO
○ Wet medium dense brown fine to coarse sand w/some fine gravel, trace of silt.	SP-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

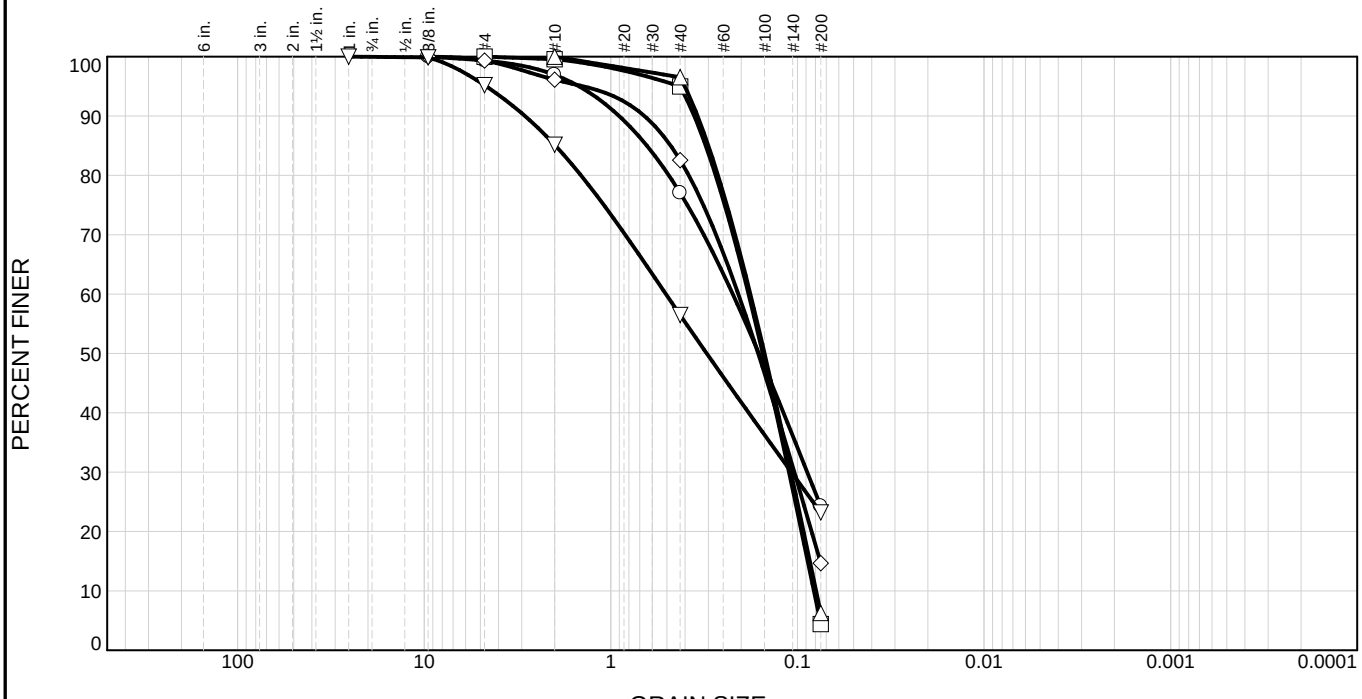
○ **Source of Sample:** TC-8 **Depth:** 73.0 **Sample Number:** 16

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-57

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	3.1	19.9	52.7	24.3	
□	0.0	0.4	4.6	90.6	4.4	
△	0.0	0.0	3.5	90.2	6.3	
◇	0.0	3.9	13.5	67.9	14.7	
▽	0.0	14.8	28.7	33.3	23.2	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.6411	0.2221	0.1608	0.0886				
□	NV	NP	0.3100	0.1828	0.1534	0.1109	0.0881	0.0816	0.83	2.24
△	NV	NP	0.3000	0.1787	0.1500	0.1083	0.0858	0.0794	0.83	2.25
◇	NV	NP	0.4776	0.2073	0.1622	0.1038	0.0755			
▽	NV	NP	1.9785	0.5067	0.3061	0.1076				

Material Description	USCS	AASHTO
○ Moist loose brown silty fine sand w/some coarse sand, trace of fine gravel.	SM	A-2-4(0)
□ Moist loose tan fine sand w/trace of coarse sand and silt.	SP	A-3
△ Wet medium dense tan fine sand w/trace of coarse sand and silt.	SP-SM	A-3
◇ Wet very loose brown fine sand w/some coarse sand and silt, trace of fine gravel.	SM	A-2-4(0)
▽ Wet loose gray silty fine to coarse sand w/some fine gravel.	SM	A-2-4(0)

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-9 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** TC-9 **Depth:** 4.0 **Sample Number:** 2

△ **Source of Sample:** TC-9 **Depth:** 9.0 **Sample Number:** 3

◇ **Source of Sample:** TC-9 **Depth:** 14.0 **Sample Number:** 4

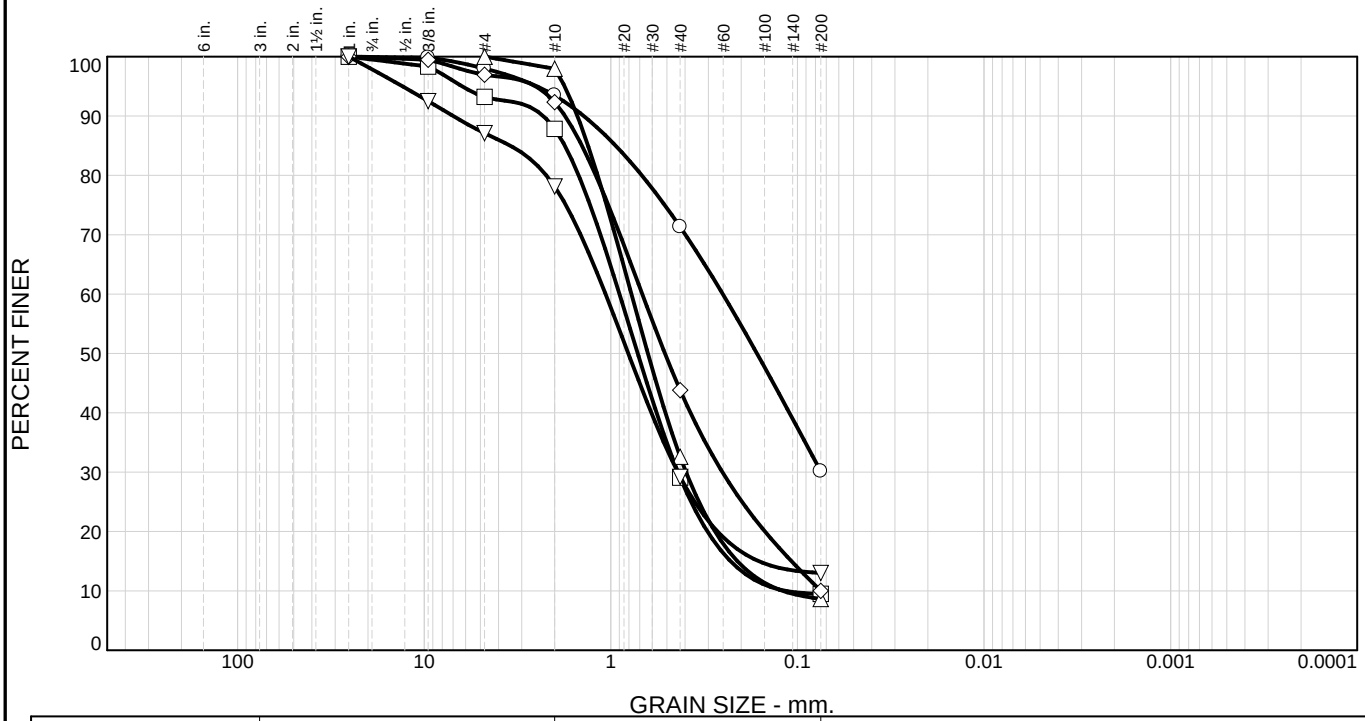
▽ **Source of Sample:** TC-9 **Depth:** 19.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-58

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	6.6	22.1	41.2	30.1	
□	0.0	12.2	58.7	19.6	9.5	
△	0.0	2.0	65.4	24.0	8.6	
◇	0.0	7.7	48.5	33.8	10.0	
▽	0.0	21.9	48.9	16.2	13.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.9425	0.2512	0.1648					
□	NV	NP	1.7629	0.8989	0.7177	0.4369	0.2283	0.1155	1.84	7.78
△	NV	NP	1.3236	0.7754	0.6329	0.3954	0.2099	0.1199	1.68	6.47
◇	NV	NP	1.4274	0.6785	0.5128	0.2523	0.1076			
▽	NV	NP	3.4570	1.0674	0.8063	0.4378	0.1613			

Material Description	USCS	AASHTO
○ Wet medium dense gray silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Wet loose tan coarse sand w/some fine sand and fine gravel, trace of silt.	SW-SM	A-1-b
△ Wet loose orange coarse to fine sand w/trace of fine gravel and silt.	SW-SM	A-1-b
◇ Wet medium dense tan coarse to fine sand w/trace of silt and fine gravel.	SP-SM	A-1-b
▽ Wet medium dense tan fine gravelly coarse sand w/some fine sand and silt.	SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-9 **Depth:** 24.0 **Sample Number:** 6

□ **Source of Sample:** TC-9 **Depth:** 29.0 **Sample Number:** 7

△ **Source of Sample:** TC-9 **Depth:** 34.0 **Sample Number:** 8

◇ **Source of Sample:** TC-9 **Depth:** 39.0 **Sample Number:** 9

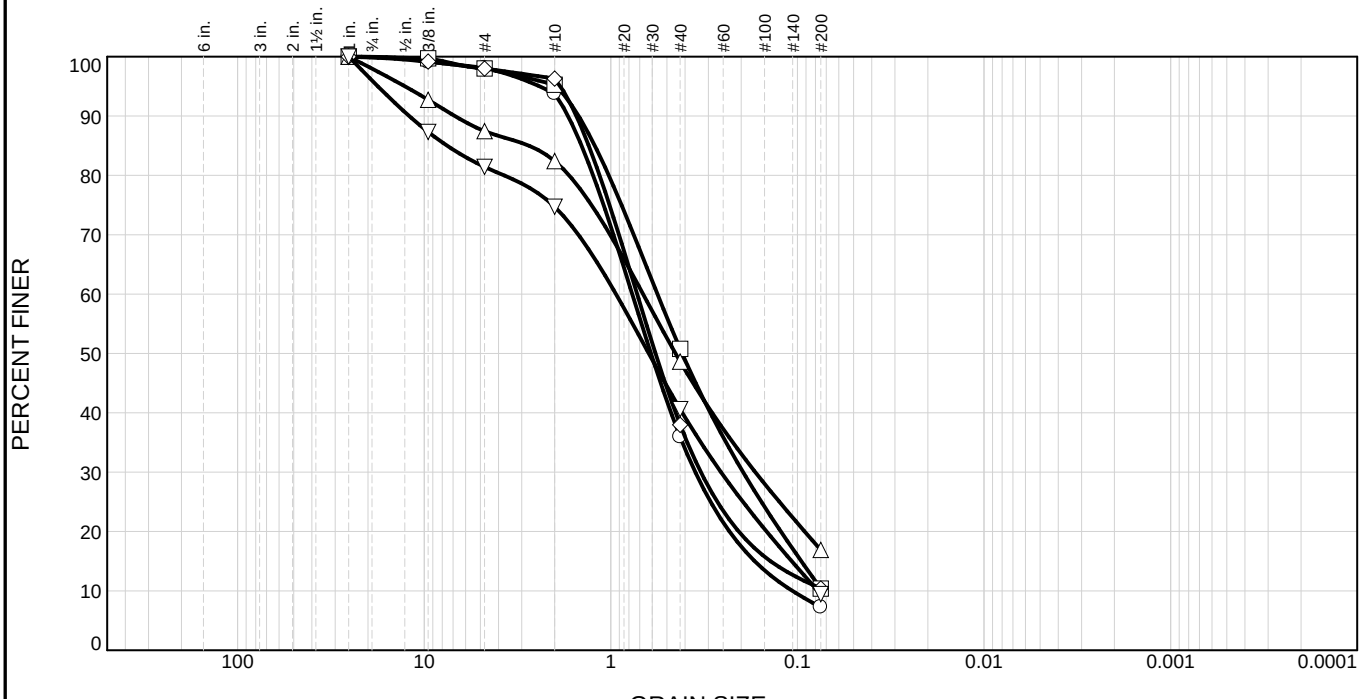
▽ **Source of Sample:** TC-9 **Depth:** 44.0 **Sample Number:** 10

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-59

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	6.2	57.9	28.7	7.2	
□	0.0	4.7	44.5	40.4	10.4	
△	0.0	17.6	33.8	31.7	16.9	
◇	0.0	3.7	58.3	27.6	10.4	
▽	0.0	25.3	34.1	31.1	9.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.4334	0.7679	0.6094	0.3526	0.1695	0.1064	1.52	7.22
□	NV	NP	1.2181	0.5626	0.4145	0.1955	0.0952			
△	NV	NP	2.7476	0.6719	0.4503	0.1681				
◇	NV	NP	1.3122	0.7230	0.5762	0.3292	0.1393			
▽	NV	NP	7.5424	0.9383	0.6258	0.2567	0.1072	0.0777	0.90	12.07

Material Description	USCS	AASHTO
○ Wet medium dense tan coarse to fine sand w/trace of fine gravel and silt.	SW-SM	A-1-b
□ Wet medium dense tan coarse to fine sand w/trace of silt and fine gravel.	SP-SM	A-3
△ Wet medium dense tan coarse to fine sand w/some fine gravel and silt.	SM	A-1-b
◇ Wet medium dense orange coarse to fine sand w/trace of fine gravel and silt.	SP-SM	A-1-b
▽ Wet medium dense orange coarse to fine sand w/some fine gravel, trace of silt.	SP-SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-9 **Depth:** 49.0 **Sample Number:** 11

□ **Source of Sample:** TC-9 **Depth:** 54.0 **Sample Number:** 12

△ **Source of Sample:** TC-9 **Depth:** 59.0 **Sample Number:** 13

◇ **Source of Sample:** TC-9 **Depth:** 64.0 **Sample Number:** 14

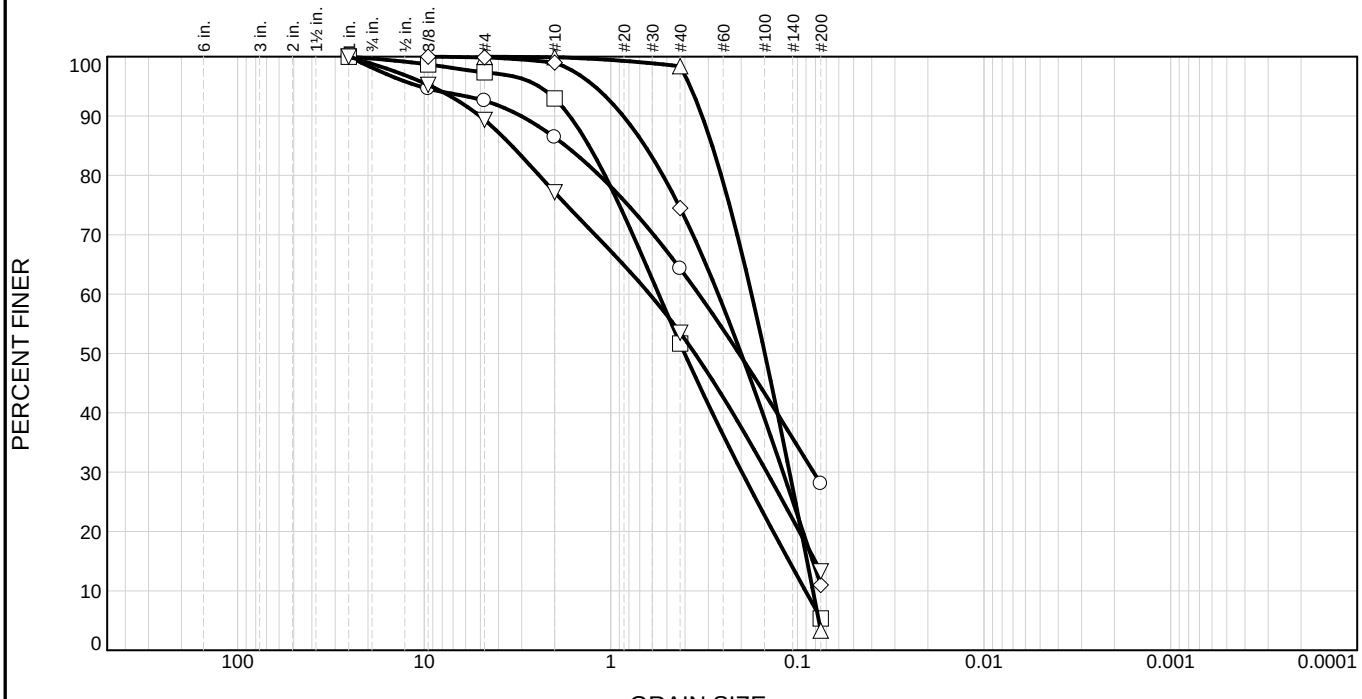
▽ **Source of Sample:** TC-9 **Depth:** 69.0 **Sample Number:** 15

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-60

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	13.6	22.1	36.3	28.0	
□	0.0	7.0	41.3	46.3	5.4	
△	0.0	0.1	1.5	95.1	3.3	
◇	0.0	1.0	24.5	63.5	11.0	
▽	0.0	22.9	23.6	40.2	13.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.7470	0.3381	0.2055	0.0819				
□	NV	NP	1.3093	0.5544	0.4023	0.1984	0.1106	0.0905	0.78	6.13
△	NV	NP	0.2862	0.1761	0.1495	0.1102	0.0886	0.0825	0.84	2.13
◇	NV	NP	0.6571	0.2658	0.2004	0.1195	0.0827			
▽	NV	NP	3.3966	0.6198	0.3547	0.1459	0.0802			

Material Description	USCS	AASHTO
○ Moist loose brown silty fine to coarse sand w/some fine gravel.	SM	A-2-4(0)
□ Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	SP-SM	A-3
△ Wet dense brown fine sand w/trace of coarse sand and silt.	SP	A-3
◇ Wet loose brown fine to coarse sand w/some silt.	SP-SM	A-2-4(0)
▽ Wet loose brown fine to coarse sand and fine gravel w/some silt.	SM	A-2-4(0)

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-10 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** TC-10 **Depth:** 4.0 **Sample Number:** 2

△ **Source of Sample:** TC-10 **Depth:** 9.0 **Sample Number:** 3

◇ **Source of Sample:** TC-10 **Depth:** 14.0 **Sample Number:** 4

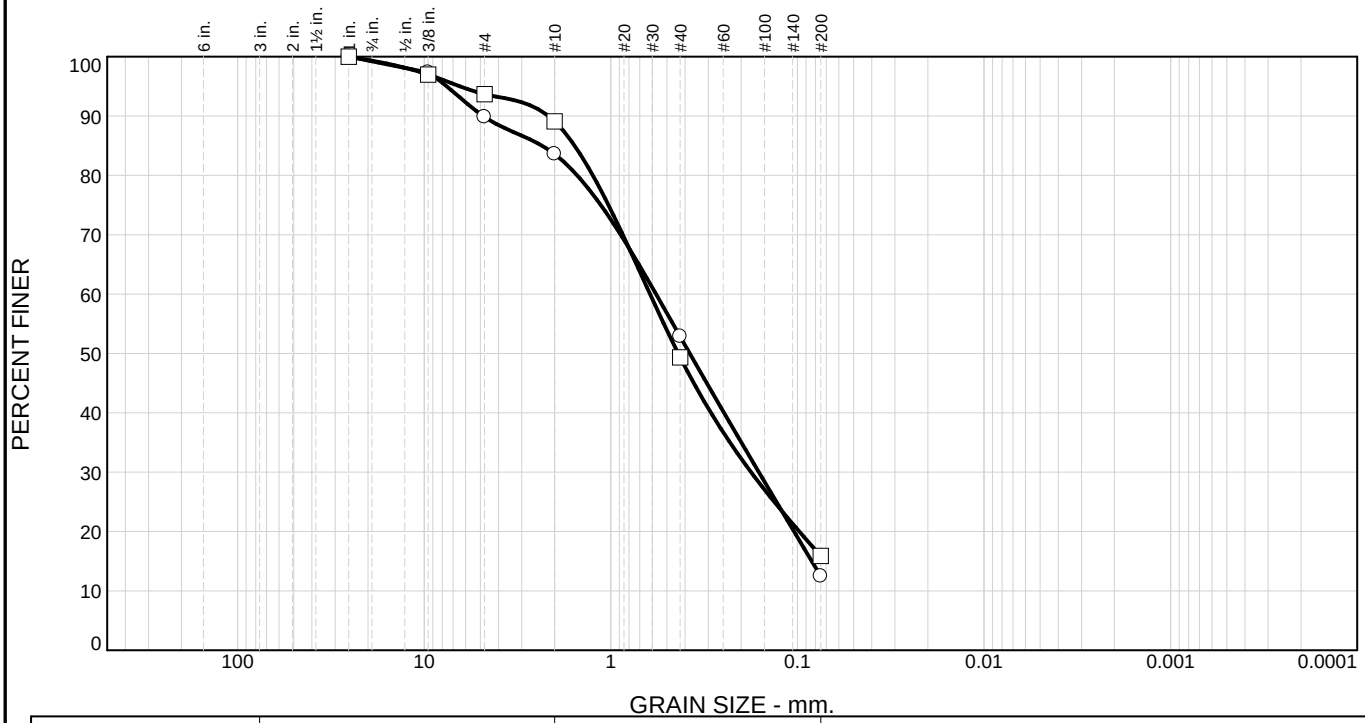
▽ **Source of Sample:** TC-10 **Depth:** 19.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-61

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	16.4	30.8	40.3	12.5	
□	0.0	10.9	39.8	33.4	15.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	2.3365	0.5723	0.3776	0.1609	0.0838			
□	NV	NP	1.5624	0.6164	0.4355	0.1772				

Material Description	USCS	AASHTO
○ Wet very dense brown fine to coarse sand w/some fine gravel and silt.	SM	A-2-4(0)
□ Wet loose brown coarse to fine sand w/some fine gravel and silt.	SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** TC-10 **Depth:** 24.0 **Sample Number:** 6

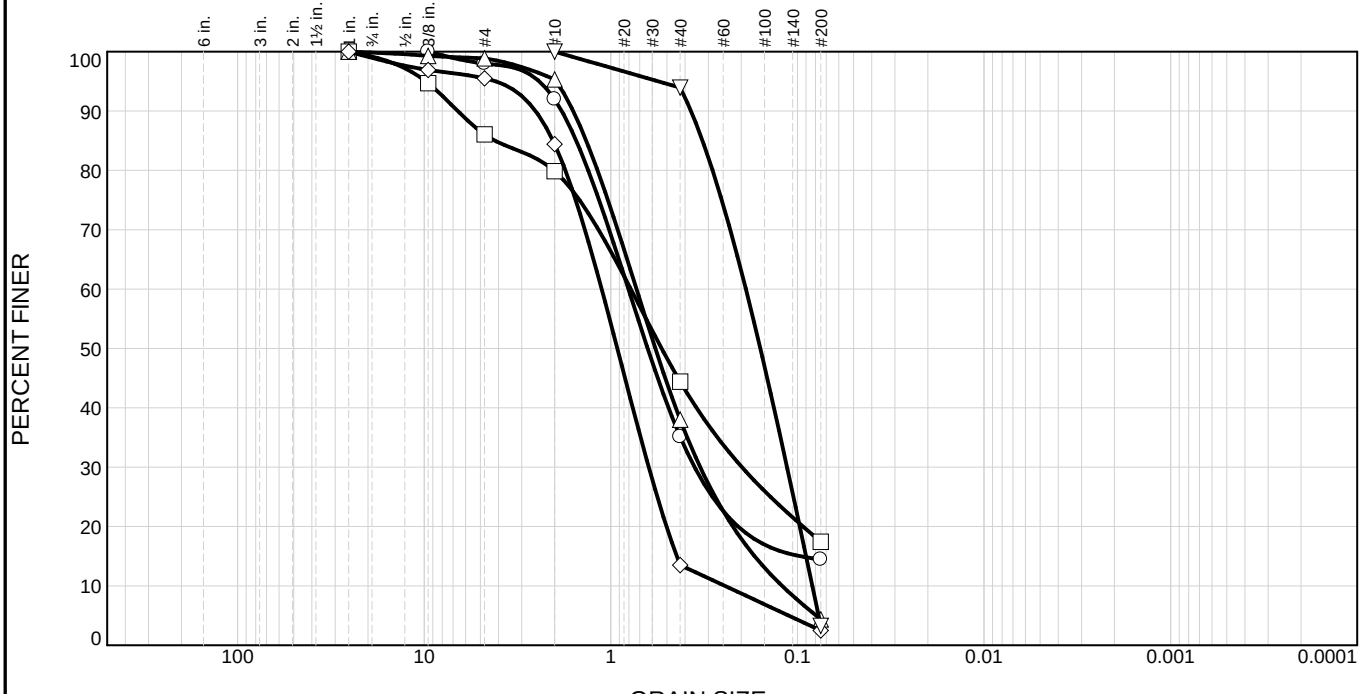
□ **Source of Sample:** TC-10 **Depth:** 28.0 **Sample Number:** 7

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-62

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	8.0	56.9	20.7	14.4	
□	0.0	20.1	35.5	27.0	17.4	
△	0.0	4.7	57.3	33.6	4.4	
◇	0.0	15.6	70.9	11.0	2.5	
▽	0.0	0.0	6.1	90.6	3.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.5319	0.8049	0.6346	0.3557	0.0966			
□	NV	NP	4.1737	0.7816	0.5341	0.1983				
△	NV	NP	1.3543	0.7285	0.5771	0.3319	0.1696	0.1207	1.25	6.03
◇	NV	NP	2.0404	1.1197	0.9232	0.6261	0.4433	0.2450	1.43	4.57
▽	NV	NP	0.3227	0.1889	0.1580	0.1136	0.0899	0.0832	0.82	2.27

Material Description	USCS	AASHTO
○ Moist loose gray coarse to fine sand w/some silt, trace of fine gravel.	SM	A-1-b
□ Moist medium dense gray coarse to fine sand w/some fine gravel and silt.	SM	A-1-b
△ Moist medium dense brown coarse to fine sand w/trace of fine gravel and silt.	SW	A-1-b
◇ Moist loose brown coarse sand w/some fine sand and fine gravel, trace of silt.	SP	A-1-b
▽ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-1 **Depth:** 1.0 **Sample Number:** 1

□ **Source of Sample:** P-1 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-1 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-1 **Depth:** 6.0 **Sample Number:** 4

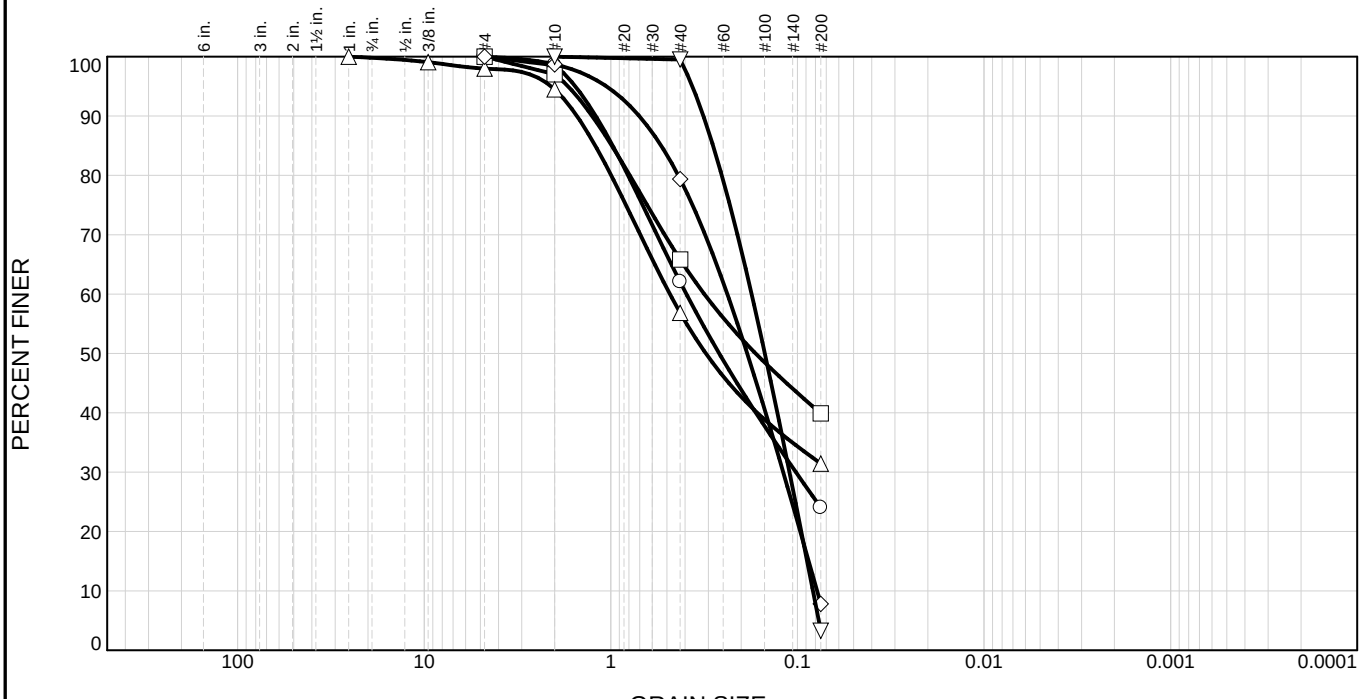
▽ **Source of Sample:** P-1 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-63

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.5	36.5	38.0	24.0	
□	0.0	3.0	31.2	25.9	39.9	
△	0.0	5.5	37.7	25.4	31.4	
◇	0.0	1.3	19.3	71.6	7.8	
▽	0.0	0.0	0.5	96.2	3.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.9773	0.3935	0.2626	0.1019				
□	22.5	16.2	0.9876	0.3154	0.1675					
△	NV	NP	1.2113	0.4823	0.3095					
◇	NV	NP	0.5373	0.2374	0.1858	0.1191	0.0870	0.0785	0.76	3.03
▽	NV	NP	0.2832	0.1759	0.1495	0.1103	0.0887	0.0826	0.84	2.13

Material Description	USCS	AASHTO
○ Moist loose brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist soft brown clayey coarse to fine sandy silt w/trace of fine gravel.	SC-SM	A-4(0)
△ Moist soft brown coarse to fine sandy silt w/trace of fine gravel.	SM	A-2-4(0)
◇ Moist medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt.	SP-SM	A-3
▽ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-2 **Depth:** 1.0 **Sample Number:** 1

□ **Source of Sample:** P-2 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-2 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-2 **Depth:** 6.0 **Sample Number:** 4

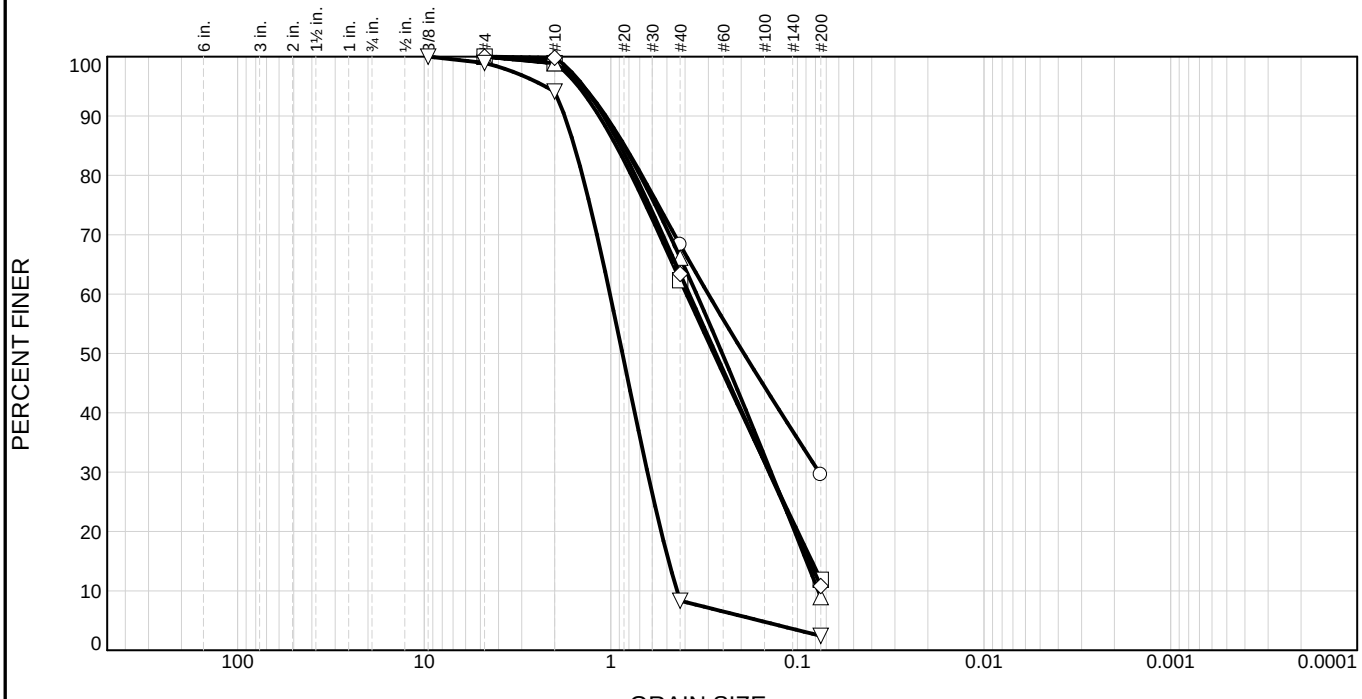
▽ **Source of Sample:** P-2 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-64

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	0.7	31.0	38.7	29.6	
□	0.0	1.1	36.6	50.4	11.9	
△	0.0	1.1	32.8	57.1	9.0	
◇	0.0	0.2	36.4	52.6	10.8	
▽	0.0	5.9	85.8	5.9	2.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.8437	0.3005	0.1936	0.0766				
□	NV	NP	0.9357	0.3931	0.2807	0.1411	0.0837			
△	NV	NP	0.8534	0.3472	0.2530	0.1384	0.0894	0.0773	0.71	4.49
◇	NV	NP	0.8906	0.3803	0.2741	0.1417	0.0862			
▽	NV	NP	1.5703	1.0109	0.8670	0.6363	0.4895	0.4414	0.91	2.29

Material Description	USCS	AASHTO
○ Moist loose brown silty fine to coarse sand.	SM	A-2-4(0)
□ Moist loose brown fine to coarse sand w/some silt, trace of fine gravel.	SP-SM	A-2-4(0)
△ Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
◇ Moist loose brown fine to coarse sand w/some silt.	SP-SM	A-2-4(0)
▽ Moist dense brown coarse sand w/trace of fine gravel, fine sand and silt.	SP	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-3 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** P-3 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-3 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-3 **Depth:** 6.0 **Sample Number:** 4

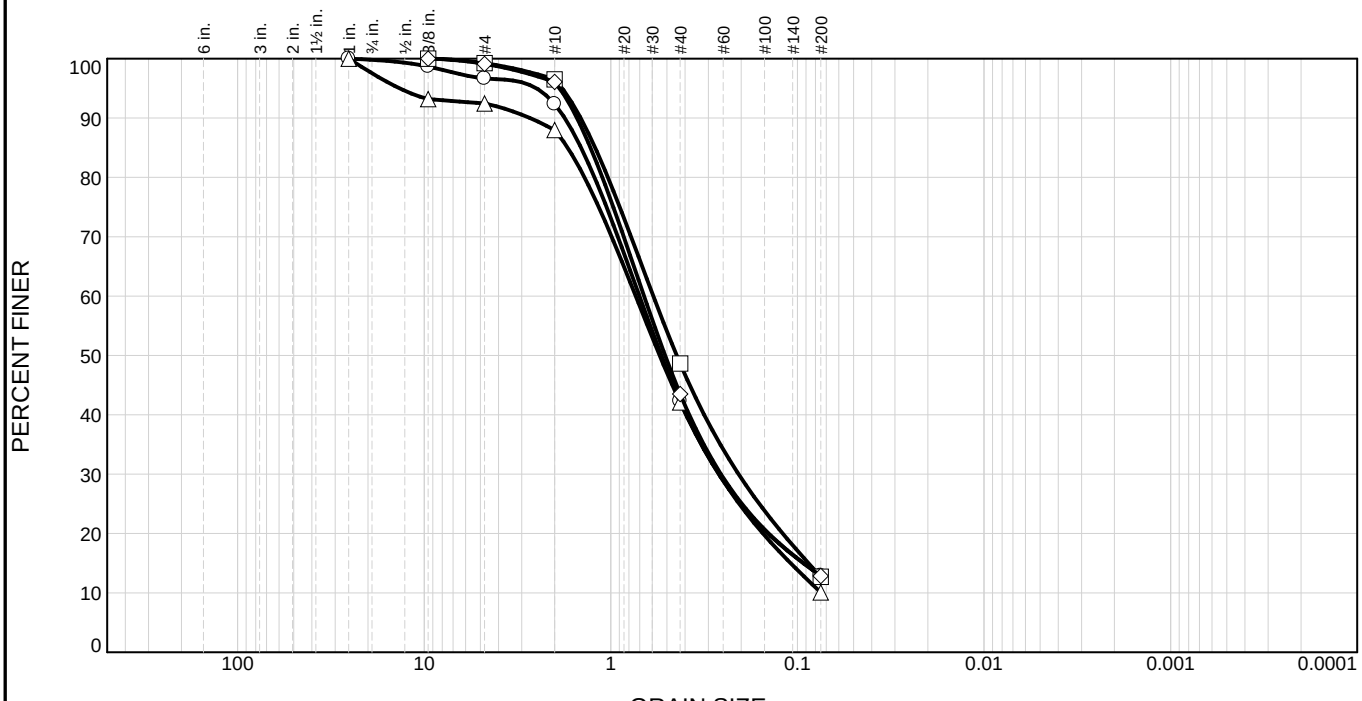
▽ **Source of Sample:** P-3 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-65

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	7.7	50.0	29.4	12.9	
□	0.0	3.5	47.9	35.9	12.7	
△	0.0	12.0	45.9	32.0	10.1	
◇	0.0	3.9	52.6	30.7	12.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.4431	0.7025	0.5354	0.2636	0.0929			
□	NV	NP	1.2134	0.5920	0.4434	0.2067	0.0872			
△	NV	NP	1.7032	0.7355	0.5474	0.2634	0.1087			
◇	NV	NP	1.2847	0.6635	0.5118	0.2571	0.0926			

Material Description	USCS	AASHTO
○ Moist loose tan coarse to fine sand w/some silt, trace of fine gravel.	SM	A-1-b
□ Moist loose tan coarse to fine sand w/some silt, trace of fine gravel.	SM	A-1-b
△ Moist loose brown coarse to fine sand w/some fine gravel, trace of silt.	SP-SM	A-1-b
◇ Moist very loose brown coarse to fine sand w/some silt, trace of fine gravel.	SM	A-1-b

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-4 **Depth:** 1.0 **Sample Number:** 1

□ **Source of Sample:** P-4 **Depth:** 4.0 **Sample Number:** 3

△ **Source of Sample:** P-4 **Depth:** 6.0 **Sample Number:** 4

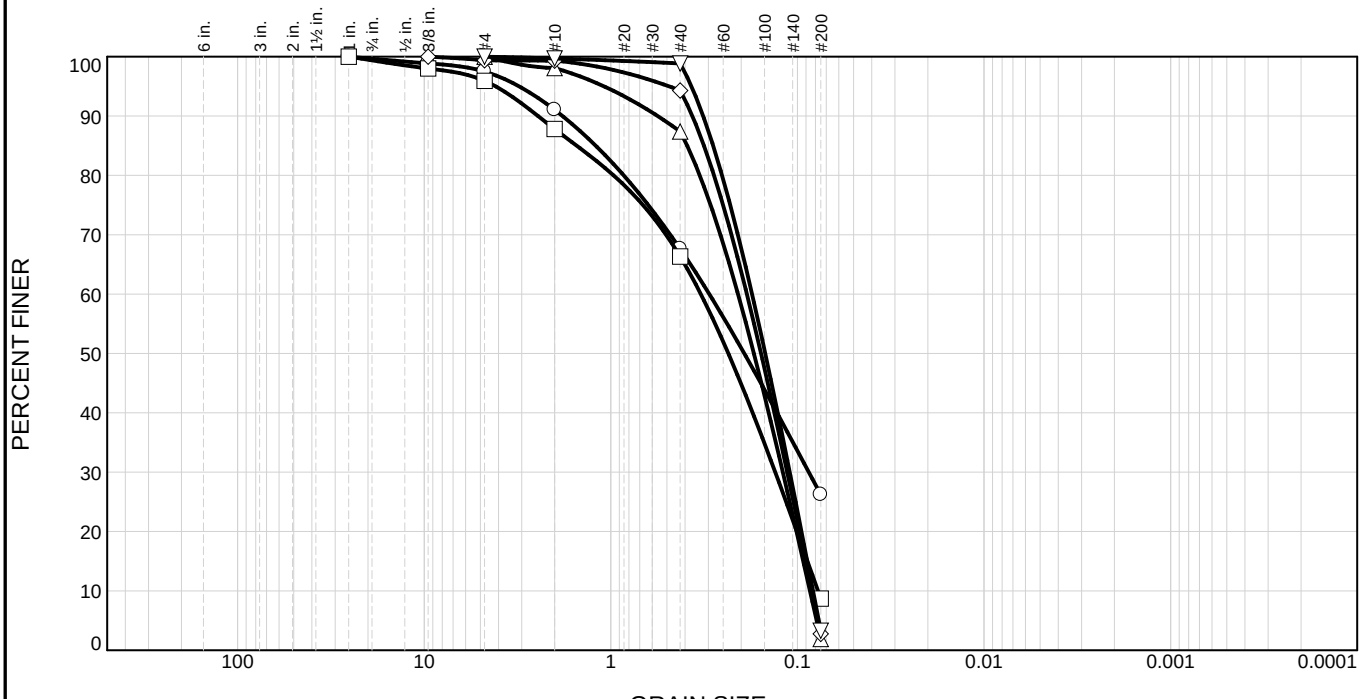
◇ **Source of Sample:** P-4 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-66

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	9.0	23.4	41.4	26.2	
□	0.0	12.2	21.5	57.6	8.7	
△	0.0	1.9	10.7	85.5	1.9	
◇	0.0	0.7	5.0	91.5	2.8	
▽	0.0	0.3	0.8	95.6	3.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.2047	0.2966	0.1927	0.0869				
□	NV	NP	1.5229	0.3295	0.2345	0.1315	0.0884	0.0776	0.68	4.25
△	NV	NP	0.3898	0.2081	0.1711	0.1197	0.0930	0.0857	0.80	2.43
◇	NV	NP	0.3169	0.1865	0.1566	0.1134	0.0902	0.0836	0.82	2.23
▽	NV	NP	0.2830	0.1750	0.1487	0.1099	0.0886	0.0825	0.84	2.12

Material Description	USCS	AASHTO
○ Wet loose gray silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Wet loose brown fine to coarse sand w/some fine gravel, trace of silt.	SP-SM	A-3
△ Wet medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt.	SP	A-3
◇ Wet medium dense brown fine sand w/trace of coarse sand, fine gravel and silt.	SP	A-3
▽ Wet medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-5 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** P-5 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-5 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-5 **Depth:** 6.0 **Sample Number:** 4

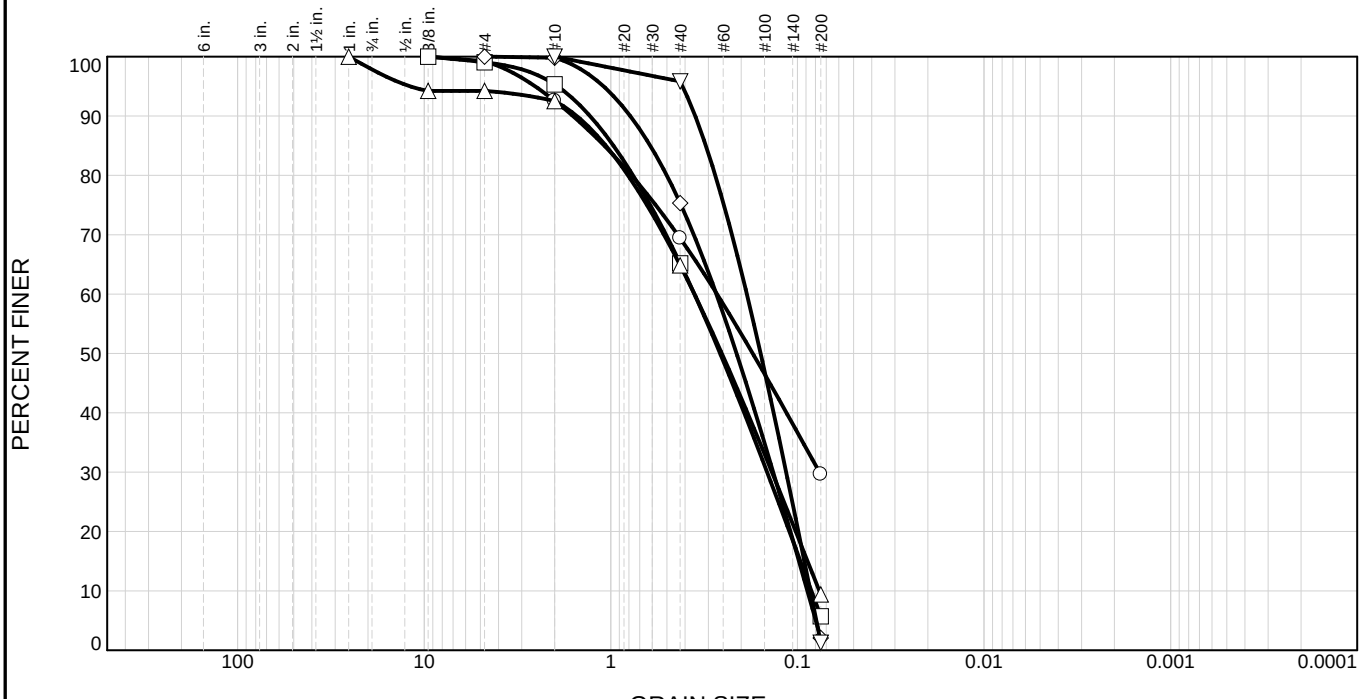
▽ **Source of Sample:** P-5 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-67

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	7.4	23.2	39.8	29.6	
□	0.0	4.7	30.1	59.5	5.7	
△	0.0	7.5	27.7	55.4	9.4	
◇	0.0	0.2	24.5	73.2	2.1	
▽	0.0	0.0	4.2	94.5	1.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.0841	0.2697	0.1736	0.0762				
□	NV	NP	0.9678	0.3564	0.2595	0.1453	0.0963	0.0842	0.70	4.23
△	NV	NP	1.0633	0.3565	0.2542	0.1369	0.0882	0.0763	0.69	4.67
◇	NV	NP	0.6146	0.2719	0.2118	0.1348	0.0981	0.0884	0.76	3.08
▽	NV	NP	0.3096	0.1866	0.1575	0.1149	0.0918	0.0853	0.83	2.19

Material Description	USCS	AASHTO
○ Moist medium dense brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist loose brown fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
△ Moist loose orange fine to coarse sand w/trace of silt and fine gravel.	SP-SM	A-3
◇ Moist medium dense tannish orange fine to coarse sand w/trace of silt.	SP	A-3
▽ Moist medium dense tan fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-6 **Depth:** 1.0 **Sample Number:** 1

□ **Source of Sample:** P-6 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-6 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-6 **Depth:** 6.0 **Sample Number:** 4

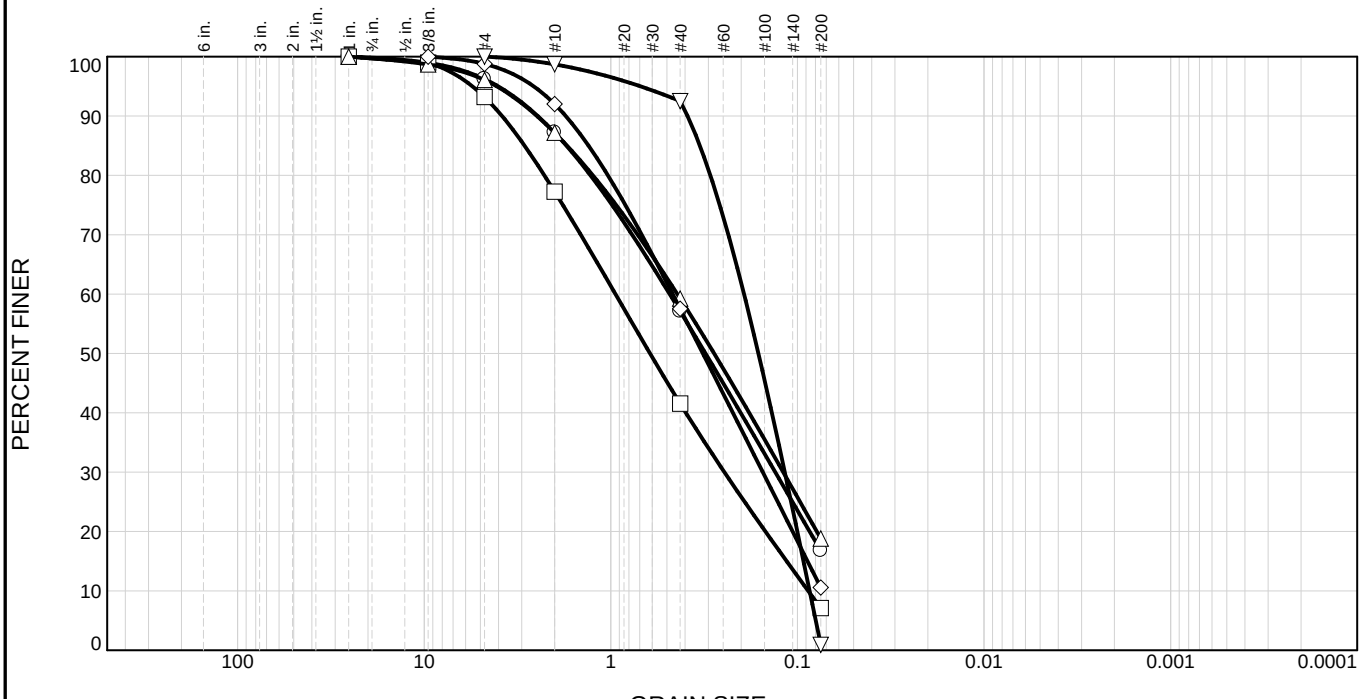
▽ **Source of Sample:** P-6 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-68

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	12.8	30.1	40.3	16.8	
□	0.0	22.7	35.8	34.4	7.1	
△	0.0	12.8	28.0	40.4	18.8	
◇	0.0	8.0	34.5	46.9	10.6	
▽	0.0	1.3	6.2	91.6	0.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.7280	0.4839	0.3108	0.1314				
□	NV	NP	2.8981	0.9443	0.6166	0.2462	0.1142	0.0876	0.73	10.79
△	NV	NP	1.7154	0.4402	0.2795	0.1191				
◇	NV	NP	1.3159	0.4662	0.3212	0.1533	0.0883			
▽	NV	NP	0.3332	0.1932	0.1618	0.1168	0.0928	0.0860	0.82	2.25

Material Description	USCS	AASHTO
○ Moist medium dense grayish brown fine to coarse sand w/some silt and fine gravel.	SM	A-2-4(0)
□ Wet medium dense grayish brown coarse to fine sand and fine gravel w/trace of silt.	SP-SM	A-1-b
△ Wet medium dense brown fine to coarse sand w/some fine gravel and silt.	SM	A-2-4(0)
◇ Wet medium dense brown fine to coarse sand w/some silt, trace of fine gravel.	SP-SM	A-2-4(0)
▽ Wet medium dense brown fine sand w/trace of coarse sand, fine gravel and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-7 **Depth:** 1.0 **Sample Number:** 1

□ **Source of Sample:** P-7 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-7 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-7 **Depth:** 6.0 **Sample Number:** 4

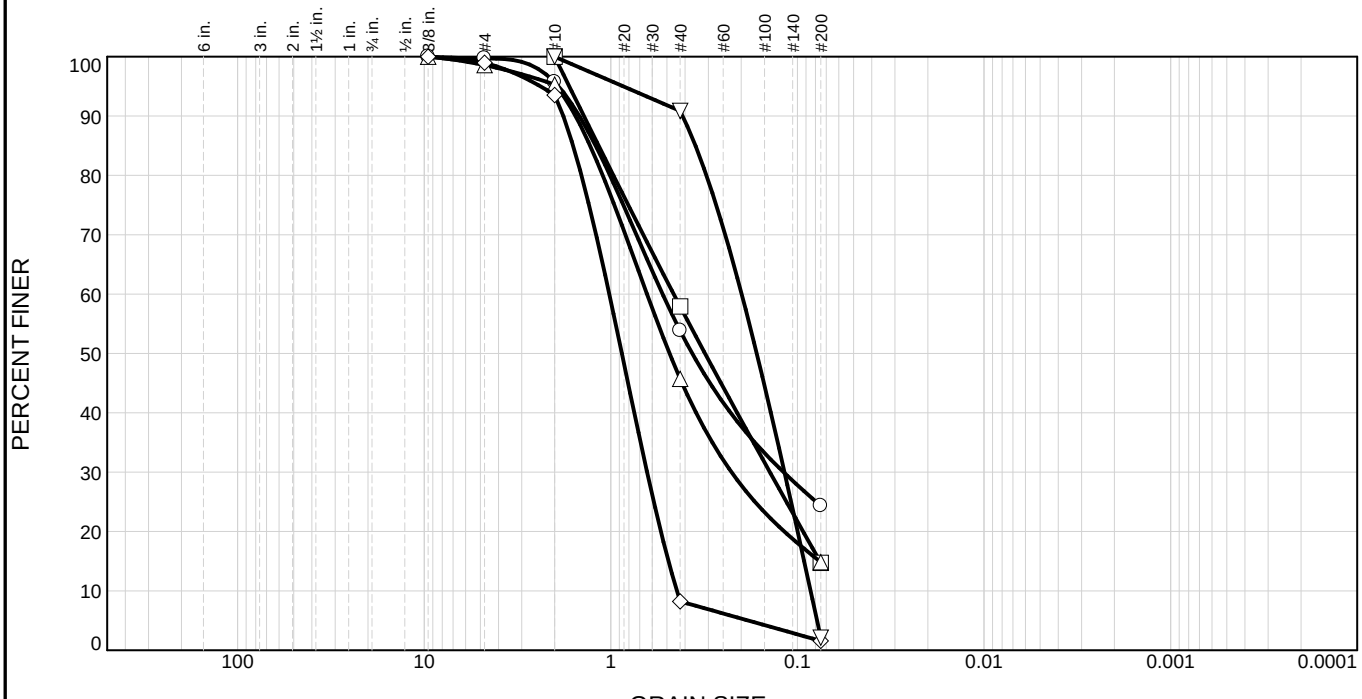
▽ **Source of Sample:** P-7 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-69

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	4.3	41.9	29.5	24.3	
□	0.0	0.0	42.1	43.2	14.7	
△	0.0	4.7	49.6	30.9	14.8	
◇	0.0	6.5	85.3	6.6	1.6	
▽	0.0	0.0	9.1	88.8	2.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.2065	0.5279	0.3662	0.1186				
□	NV	NP	1.1625	0.4603	0.3128	0.1404	0.0758			
△	NV	NP	1.2911	0.6398	0.4843	0.2256	0.0761			
◇	NV	NP	1.5924	1.0193	0.8730	0.6392	0.4910	0.4426	0.91	2.30
▽	NV	NP	0.3518	0.1989	0.1652	0.1173	0.0920	0.0850	0.81	2.34

Material Description	USCS	AASHTO
○ Moist medium dense brown silty coarse to fine sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist medium dense brown fine to coarse sand w/some silt.	SM	A-2-4(0)
△ Moist medium dense brown coarse to fine sand w/some silt, trace of fine gravel.	SM	A-1-b
◇ Moist dense brown coarse sand w/trace of fine sand, fine gravel and silt.	SP	A-1-b
▽ Moist dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-8 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** P-8 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-8 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-8 **Depth:** 6.0 **Sample Number:** 4

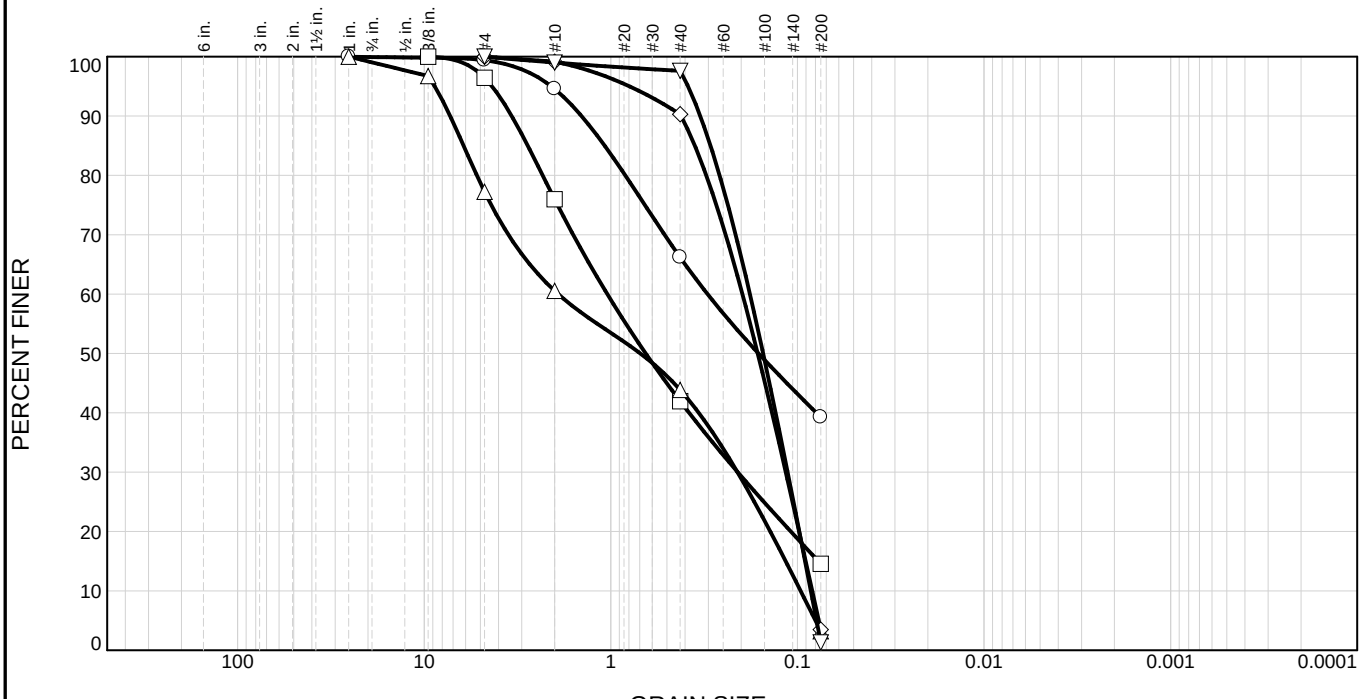
▽ **Source of Sample:** P-8 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-70

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	5.4	28.4	26.9	39.3	
□	0.0	24.0	34.0	27.4	14.6	
△	0.0	39.5	16.6	40.7	3.2	
◇	0.0	0.9	8.8	86.8	3.5	
▽	0.0	1.0	1.4	96.3	1.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	20.3	15.8	1.0794	0.3031	0.1616					
□	NV	NP	2.7873	1.0448	0.6505	0.2089	0.0773			
△	NV	NP	6.1526	1.9135	0.6952	0.2095	0.1156	0.0961	0.24	19.92
◇	NV	NP	0.3546	0.1971	0.1632	0.1154	0.0903	0.0833	0.81	2.37
▽	NV	NP	0.2922	0.1797	0.1526	0.1128	0.0910	0.0847	0.84	2.12

Material Description	USCS	AASHTO
○ Moist soft brown coarse to fine sandy silt w/some clay, trace of fine gravel.	SC-SM	A-4(0)
□ Moist medium dense brown coarse to fine sand and fine gravel w/some silt.	SM	A-1-b
△ Moist medium dense brown fine sand and fine gravel w/some coarse sand, trace of silt.	SP	A-1-b
◇ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3
▽ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-9 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** P-9 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-9 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-9 **Depth:** 6.0 **Sample Number:** 4

▽ **Source of Sample:** P-9 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
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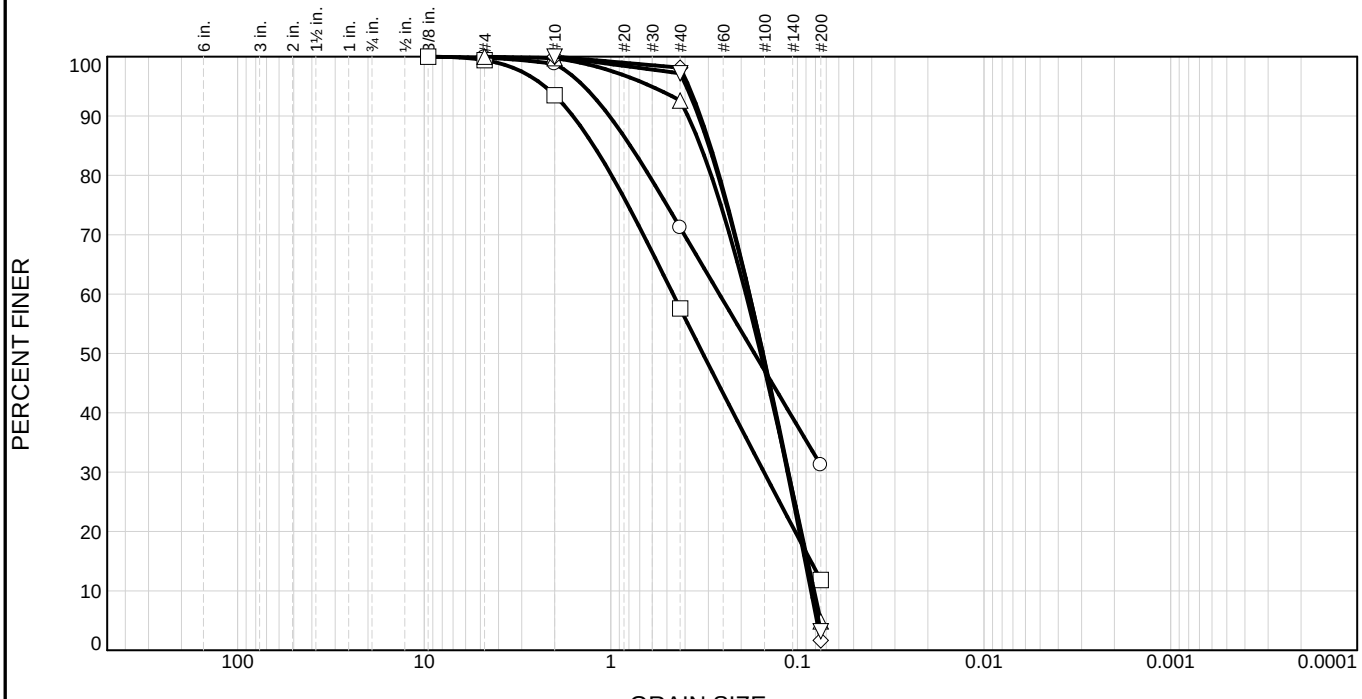
Figure C-71

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.2	27.6	40.0	31.2	
□	0.0	6.5	35.9	45.8	11.8	
△	0.0	0.3	7.1	87.7	4.9	
◇	0.0	0.0	1.9	96.4	1.7	
▽	0.0	0.0	2.8	94.0	3.2	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.7871	0.2620	0.1698					
□	NV	NP	1.2354	0.4641	0.3215	0.1510	0.0848			
△	NV	NP	0.3309	0.1889	0.1572	0.1120	0.0881	0.0813	0.82	2.32
◇	NV	NP	0.2933	0.1808	0.1534	0.1130	0.0908	0.0845	0.84	2.14
▽	NV	NP	0.2982	0.1811	0.1529	0.1117	0.0892	0.0829	0.83	2.18

Material Description	USCS	AASHTO
○ Moist loose brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist loose brown fine to coarse sand w/some silt, trace of fine gravel.	SP-SM	A-2-4(0)
△ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3
◇ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3
▽ Wet medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-10 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** P-10 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-10 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-10 **Depth:** 6.0 **Sample Number:** 4

▽ **Source of Sample:** P-10 **Depth:** 8.0 **Sample Number:** 5

Remarks:

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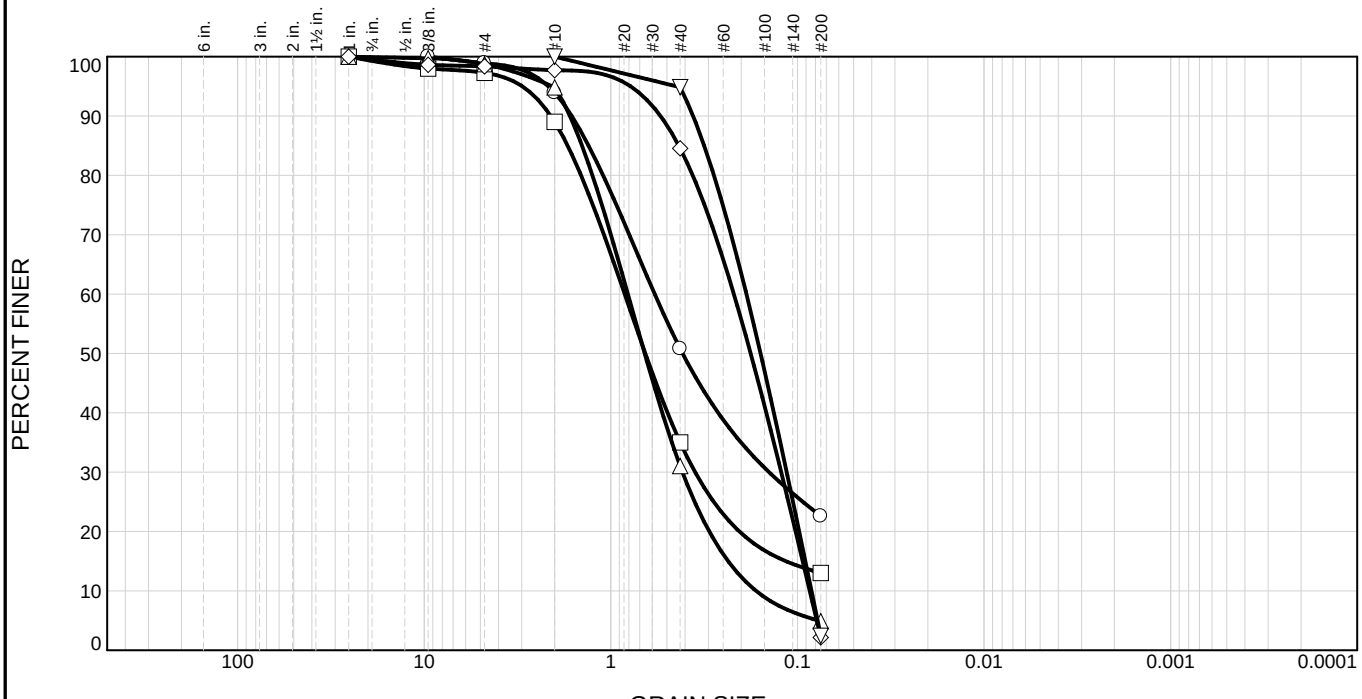
Figure C-72

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	6.1	43.1	28.2	22.6	
□	0.0	11.0	54.0	22.0	13.0	
△	0.0	5.2	63.8	26.1	4.9	
◇	0.0	2.3	13.1	82.4	2.2	
▽	0.0	0.0	5.1	92.5	2.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.3155	0.5817	0.4125	0.1419				
□	NV	NP	1.7026	0.8429	0.6535	0.3536	0.1153			
△	NV	NP	1.4256	0.8103	0.6585	0.4133	0.2352	0.1666	1.26	4.86
◇	NV	NP	0.4322	0.2191	0.1780	0.1221	0.0937	0.0859	0.79	2.55
▽	NV	NP	0.3160	0.1876	0.1576	0.1141	0.0907	0.0841	0.83	2.23

Material Description	USCS	AASHTO
○ Moist very loose brown silty coarse to fine sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist loose brown coarse to fine sand w/some silt and fine gravel.	SM	A-1-b
△ Moist medium dense brown coarse to fine sand w/trace of fine gravel and silt.	SP	A-1-b
◇ Moist dense brown fine sand w/some coarse sand, trace of silt.	SP	A-3
▽ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-11 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** P-11 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-11 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-11 **Depth:** 6.0 **Sample Number:** 4

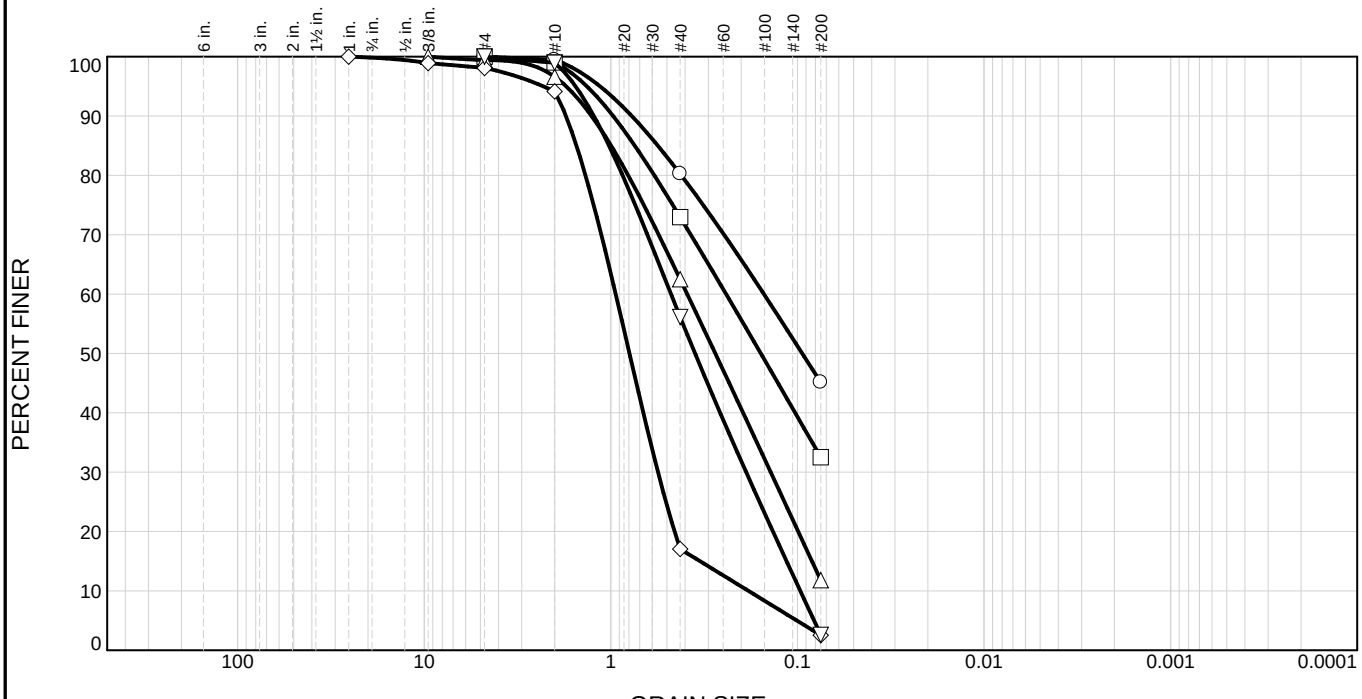
▽ **Source of Sample:** P-11 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-73

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	0.6	19.2	35.1	45.1	
□	0.0	1.0	26.0	40.5	32.5	
△	0.0	3.4	34.1	50.7	11.8	
◇	0.0	5.9	77.1	14.5	2.5	
▽	0.0	1.0	42.9	53.5	2.6	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	19.2	15.4	0.5597	0.1512	0.0942					
□	NV	NP	0.7441	0.2410	0.1570					
△	NV	NP	0.9963	0.3896	0.2755	0.1390	0.0836			
◇	NV	NP	1.5265	0.9421	0.7946	0.5588	0.3327	0.1831	1.81	5.15
▽	NV	NP	1.0224	0.4759	0.3537	0.1882	0.1143	0.0965	0.77	4.93

Material Description	USCS	AASHTO
○ Moist firm brown fine sandy silt w/some coarse sand and clay, trace of fine gravel.	SC-SM	A-4(0)
□ Moist loose brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
△ Moist loose brown fine to coarse sand w/some silt, trace of fine gravel.	SP-SM	A-2-4(0)
◇ Moist medium dense brown coarse sand w/some fine sand, trace of fine gravel and silt.	SP	A-1-b
▽	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-12 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** P-12 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-12 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-12 **Depth:** 6.0 **Sample Number:** 4

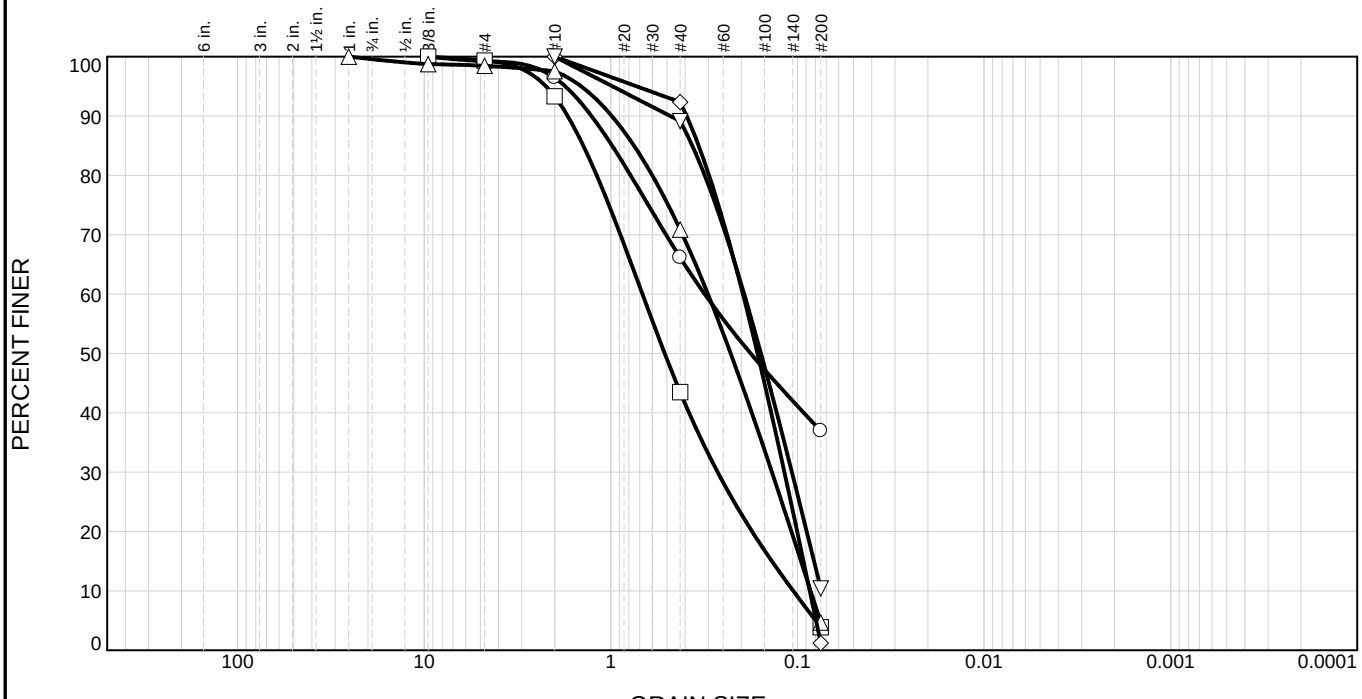
▽ **Source of Sample:** P-12 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-74

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	3.5	30.3	29.2	37.0	
□	0.0	6.7	49.8	39.6	3.9	
△	0.0	2.5	26.6	66.2	4.7	
◇	0.0	0.0	7.7	91.1	1.2	
▽	0.0	0.0	10.9	78.7	10.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	20.9	16.1	0.9842	0.3140	0.1780					
□	NV	NP	1.4029	0.6767	0.5142	0.2676	0.1370	0.1053	1.01	6.43
△	NV	NP	0.7510	0.3017	0.2279	0.1369	0.0956	0.0850	0.73	3.55
◇	NV	NP	0.3382	0.1958	0.1636	0.1174	0.0928	0.0859	0.82	2.28
▽	NV	NP	0.3658	0.1928	0.1568	0.1070	0.0815			

Material Description	USCS	AASHTO
○ Moist soft brown coarse to fine sandy silt w/some clay, trace of fine gravel.	SC-SM	A-4(0)
□ Moist loose brown coarse to fine sand w/trace of fine gravel and silt.	SW	A-1-b
△ Moist medium dense tan fine to coarse sand w/trace of fine gravel and silt.	SP	A-3
◇ Moist medium dense tan fine sand w/trace of coarse sand and silt.	SP	A-3
▽ Moist medium dense tan fine sand w/some coarse sand, trace of silt.	SP-SM	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-13 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** P-13 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-13 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-13 **Depth:** 6.0 **Sample Number:** 4

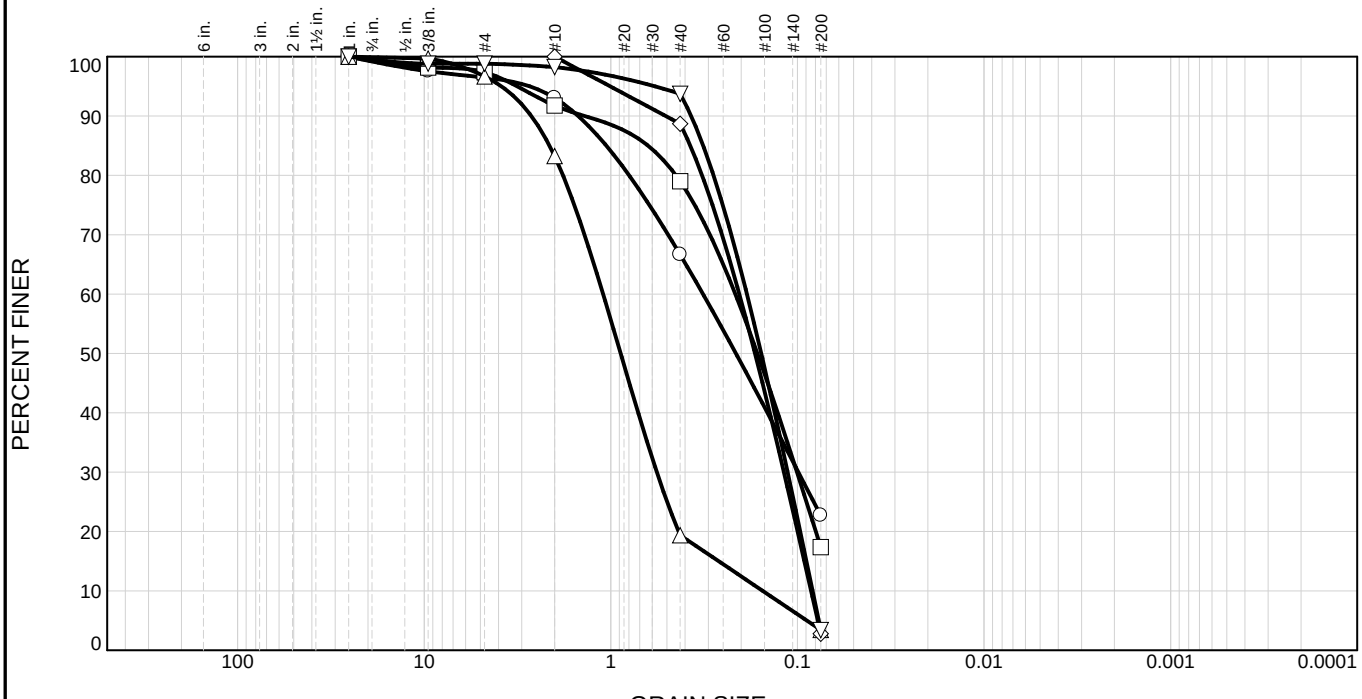
▽ **Source of Sample:** P-13 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-75

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	7.0	26.4	43.9	22.7	
□	0.0	8.2	12.8	61.6	17.4	
△	0.0	16.8	63.8	16.0	3.4	
◇	0.0	0.0	11.3	85.9	2.8	
▽	0.0	1.8	4.5	90.3	3.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.0576	0.3205	0.2136	0.0988				
□	NV	NP	0.6318	0.2151	0.1638	0.1005				
△	NV	NP	2.1301	1.0999	0.8859	0.5667	0.2643	0.1534	1.90	7.17
◇	NV	NP	0.3751	0.2049	0.1687	0.1181	0.0918	0.0845	0.81	2.42
▽	NV	NP	0.3198	0.1864	0.1562	0.1128	0.0895	0.0829	0.82	2.25

Material Description	USCS	AASHTO
○ Moist loose brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist very loose brown fine sand w/some coarse sand and silt, trace of fine gravel.	SM	A-2-4(0)
△ Moist loose brown coarse sand w/some fine gravel and fine sand, trace of silt.	SW	A-1-b
◇ Moist medium dense brown fine sand w/some coarse sand, trace of silt.	SP	A-3
▽ Moist medium dense brown fine sand w/trace of coarse sand, fine gravel and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** P-14 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** P-14 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** P-14 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** P-14 **Depth:** 6.0 **Sample Number:** 4

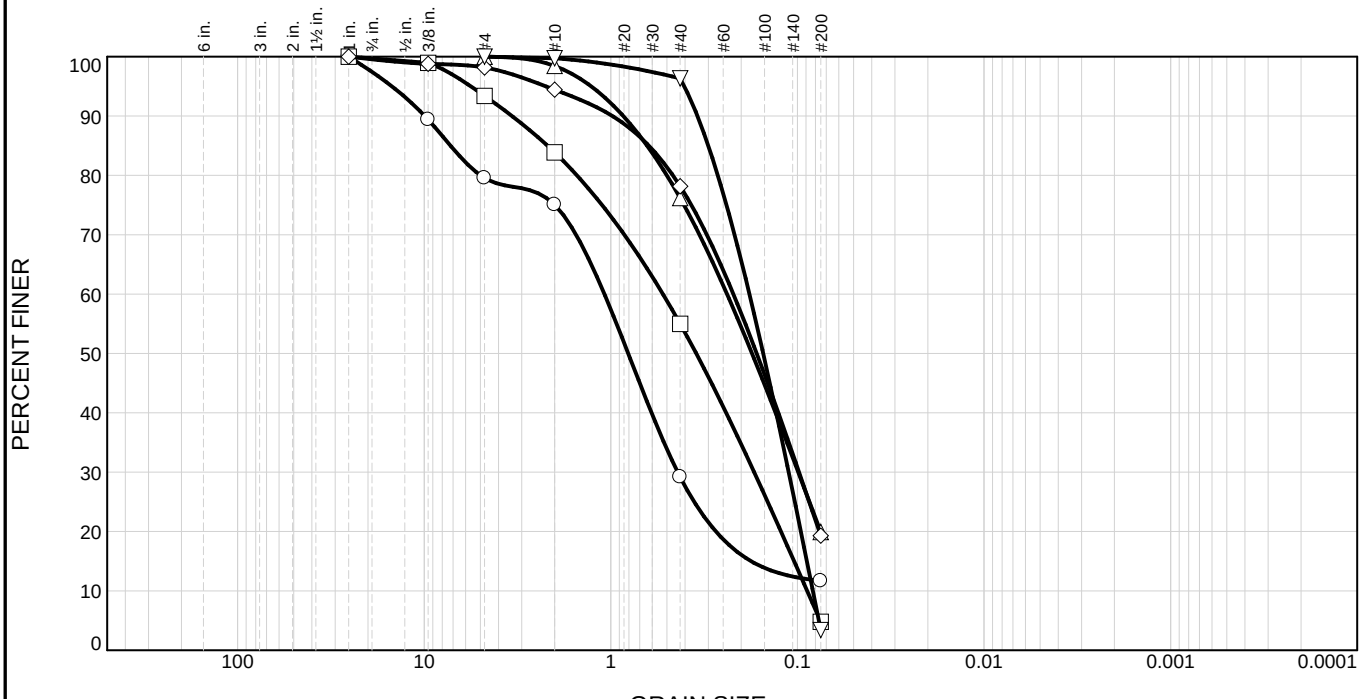
▽ **Source of Sample:** P-14 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-76

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	25.0	45.8	17.5	11.7	
□	0.0	16.1	28.9	50.2	4.8	
△	0.0	1.6	22.2	56.3	19.9	
◇	0.0	5.6	16.2	58.9	19.3	
▽	0.0	0.3	3.4	92.9	3.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	7.2282	1.0824	0.8071	0.4381	0.1772			
□	NV	NP	2.1837	0.5256	0.3487	0.1706	0.1041	0.0886	0.62	5.93
△	NV	NP	0.6389	0.2383	0.1750	0.0990				
◇	NV	NP	0.6255	0.2204	0.1652	0.0980				
▽	NV	NP	0.3004	0.1807	0.1525	0.1113	0.0890	0.0826	0.83	2.19

Material Description	USCS	AASHTO
○ Moist medium dense gray fine gravelly coarse sand w/some fine sand and silt.	SP-SM	A-1-b
□ Moist medium dense gray fine to coarse sand w/some fine gravel, trace of silt.	SP	A-3
△ Moist loose brown fine to coarse sand w/some silt, trace of fine gravel.	SM	A-2-4(0)
◇ Moist loose brown fine sand w/some coarse sand and silt, trace of fine gravel.	SM	A-2-4(0)
▽ Moist loose brown fine sand w/trace of coarse sand, fine gravel and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-1 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-1 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-1 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-1 **Depth:** 6.0 **Sample Number:** 4

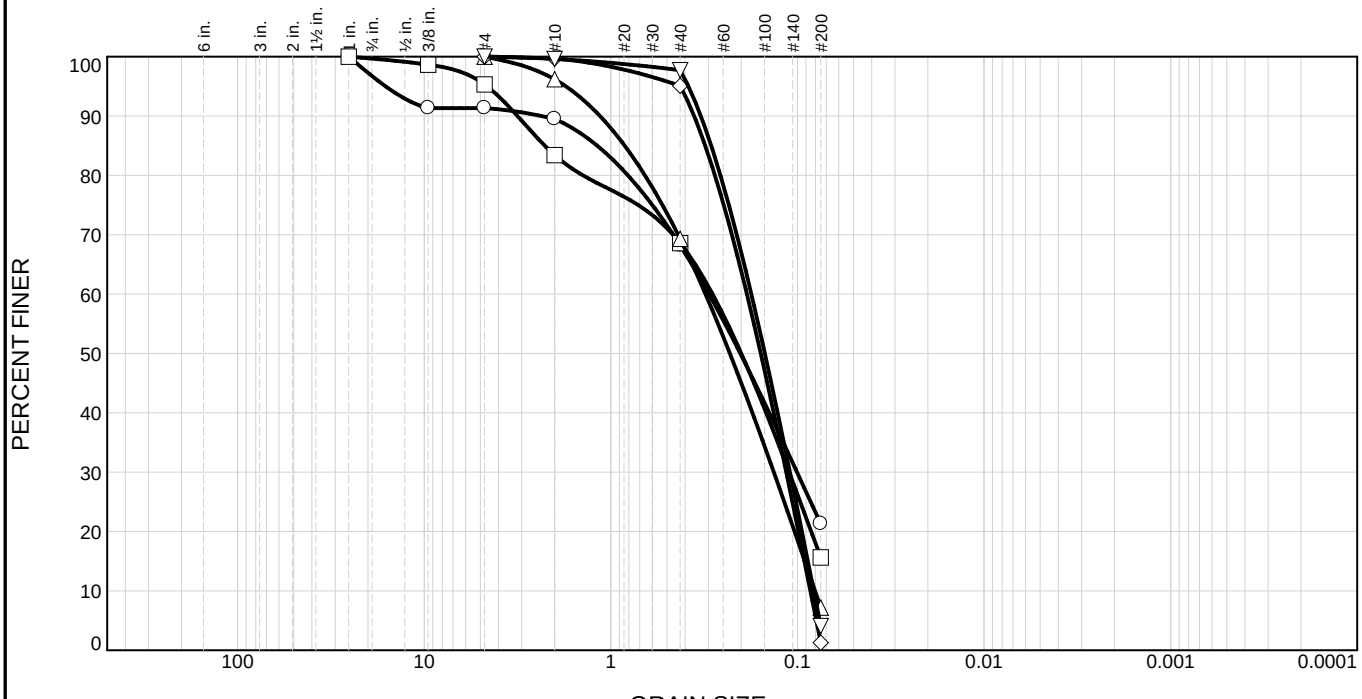
▽ **Source of Sample:** SW-1 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-1

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	10.5	21.3	46.9	21.3	
□	0.0	16.6	14.8	53.0	15.6	
△	0.0	3.8	26.9	62.1	7.2	
◇	0.0	0.3	4.6	93.8	1.3	
▽	0.0	0.4	1.9	93.6	4.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.1826	0.2977	0.2023	0.1005				
□	NV	NP	2.2589	0.2849	0.1999	0.1108				
△	NV	NP	0.8425	0.3108	0.2302	0.1338	0.0913	0.0805	0.72	3.86
◇	NV	NP	0.3119	0.1865	0.1572	0.1147	0.0917	0.0852	0.83	2.19
▽	NV	NP	0.2897	0.1765	0.1494	0.1097	0.0879	0.0817	0.83	2.16

Material Description	USCS	AASHTO
○ Moist loose grayish brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist loose brown fine sand w/some coarse sand, fine gravel and silt.	SM	A-2-4(0)
△ Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
◇ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3
▽ Wet medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-2 **Depth:** 1.0 **Sample Number:** 1

□ **Source of Sample:** SW-2 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-2 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-2 **Depth:** 6.0 **Sample Number:** 4

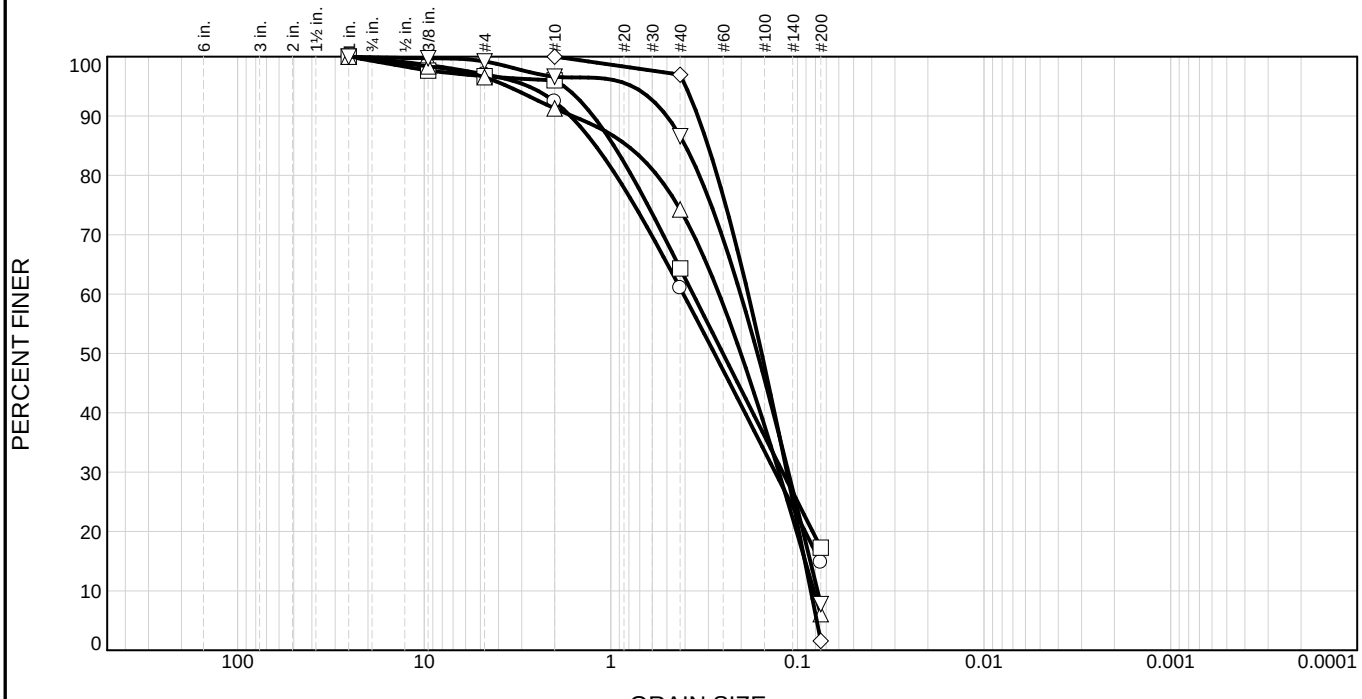
▽ **Source of Sample:** SW-2 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-2

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	7.6	31.4	46.2	14.8	
□	0.0	4.0	31.7	47.0	17.3	
△	0.0	8.7	17.0	68.2	6.1	
◇	0.0	0.0	3.0	95.4	1.6	
▽	0.0	3.4	10.0	78.8	7.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.2070	0.4084	0.2783	0.1316	0.0756			
□	NV	NP	0.9632	0.3625	0.2507	0.1199				
△	NV	NP	0.8147	0.2628	0.2011	0.1257	0.0907	0.0815	0.74	3.22
◇	NV	NP	0.3013	0.1836	0.1553	0.1138	0.0912	0.0848	0.83	2.17
▽	NV	NP	0.3987	0.2017	0.1636	0.1117	0.0853	0.0780	0.79	2.59

Material Description	USCS	AASHTO
○ Moist very loose gray fine to coarse sand w/some silt, trace of fine gravel.	SM	A-2-4(0)
□ Wet loose brown fine to coarse sand w/some silt, trace of fine gravel.	SM	A-2-4(0)
△ Wet loose brown fine sand w/some coarse sand, trace of fine gravel and silt.	SP-SM	A-3
◇ Wet medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3
▽ Wet medium dense brown fine sand w/trace of coarse sand, fine gravel and silt.	SP-SM	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-3 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-3 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-3 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-3 **Depth:** 6.0 **Sample Number:** 4

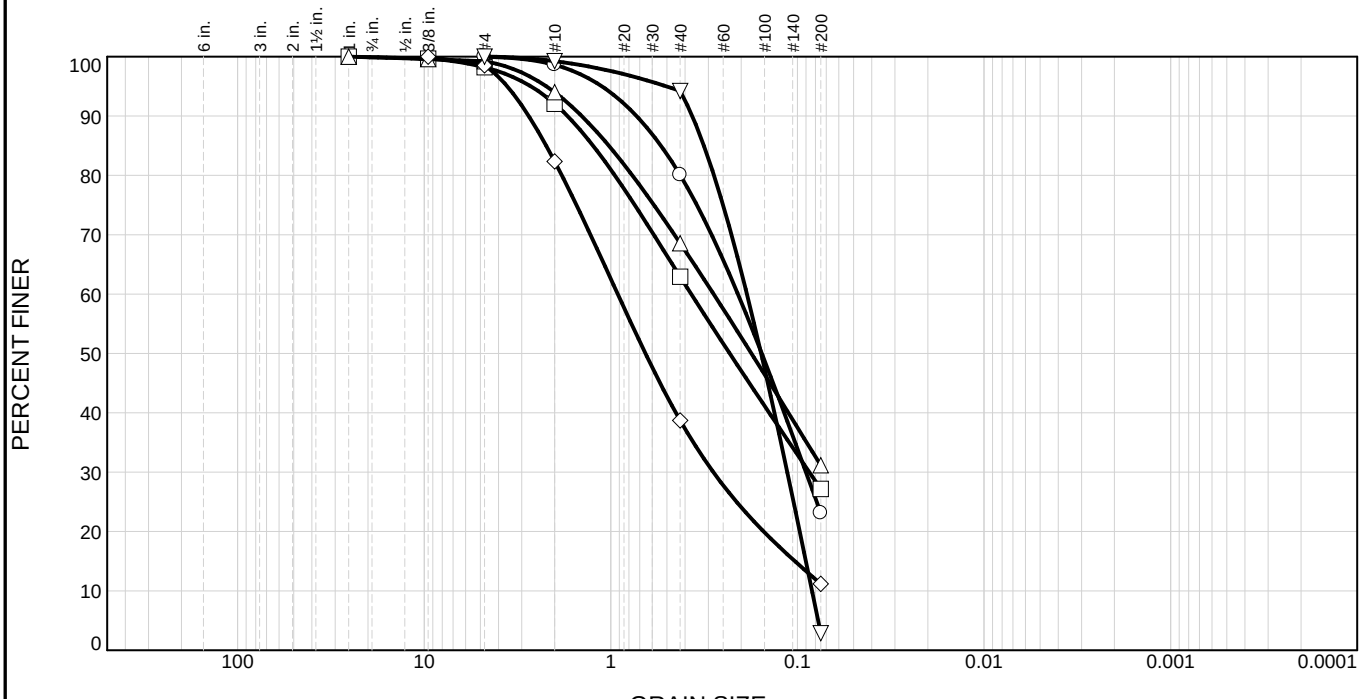
▽ **Source of Sample:** SW-3 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-3

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.4	18.5	57.0	23.1	
□	0.0	7.9	29.2	35.7	27.2	
△	0.0	6.0	25.4	37.4	31.2	
◇	0.0	17.6	43.7	27.5	11.2	
▽	0.0	0.8	5.0	91.3	2.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.5388	0.2084	0.1552	0.0900				
□	NV	NP	1.2448	0.3709	0.2306	0.0863				
△	NV	NP	1.0252	0.2811	0.1764					
◇	NV	NP	2.2193	0.9183	0.6522	0.2822	0.1031			
▽	NV	NP	0.3172	0.1865	0.1565	0.1133	0.0900	0.0835	0.82	2.23

Material Description	USCS	AASHTO
○ Moist medium dense brown silty fine sand w/some coarse sand, trace of fine gravel.	SM	A-2-4(0)
□ Wet medium dense brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
△ Wet very loose brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
◇ Wet medium dense brown coarse to fine sand w/some fine gravel and silt.	SP-SM	A-1-b
▽ Wet medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-4 **Depth:** 1.0 **Sample Number:** 1

□ **Source of Sample:** SW-4 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-4 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-4 **Depth:** 6.0 **Sample Number:** 4

▽ **Source of Sample:** SW-4 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
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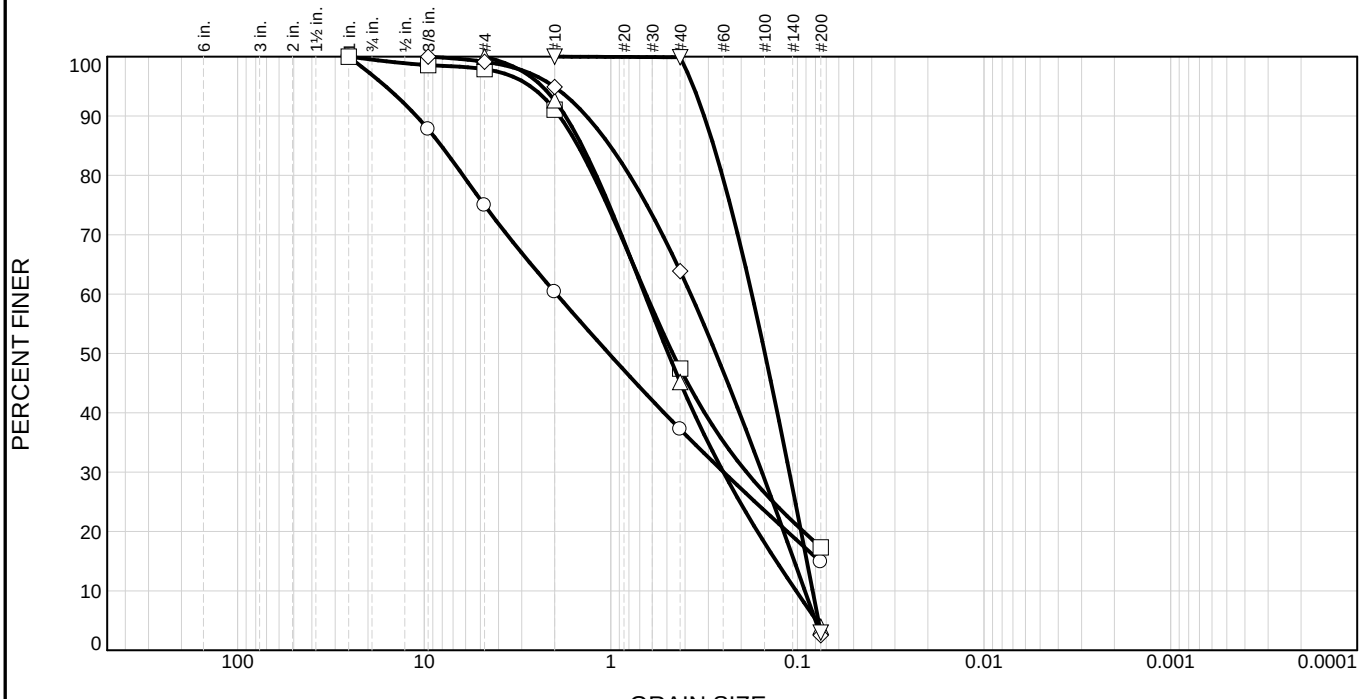
Figure C-4

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	39.6	23.2	22.3	14.9	
□	0.0	8.9	43.7	30.1	17.3	
△	0.0	7.4	47.4	41.2	4.0	
◇	0.0	5.1	31.0	61.4	2.5	
▽	0.0	0.0	0.1	96.9	3.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	8.1066	1.9547	1.0252	0.2485	0.0758			
□	NV	NP	1.4994	0.6479	0.4658	0.1873				
△	NV	NP	1.4255	0.6587	0.4927	0.2493	0.1297	0.1016	0.93	6.48
◇	NV	NP	1.0104	0.3735	0.2733	0.1550	0.1039	0.0912	0.71	4.10
▽	NV	NP	0.2812	0.1755	0.1493	0.1104	0.0890	0.0829	0.84	2.12

Material Description	USCS	AASHTO
○ Moist medium dense gray coarse to fine sandy fine gravel w/some silt.	SM	A-1-b
□ Moist loose brown coarse to fine sand w/some silt, trace of fine gravel.	SM	A-1-b
△ Moist medium dense brown coarse to fine sand w/trace of fine gravel and silt.	SP	A-1-b
◇ Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt.	SP	A-3
▽ Moist medium dense brown fine w/trace of silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-5 **Depth:** 1.0 **Sample Number:** 1

□ **Source of Sample:** SW-5 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-5 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-5 **Depth:** 6.0 **Sample Number:** 4

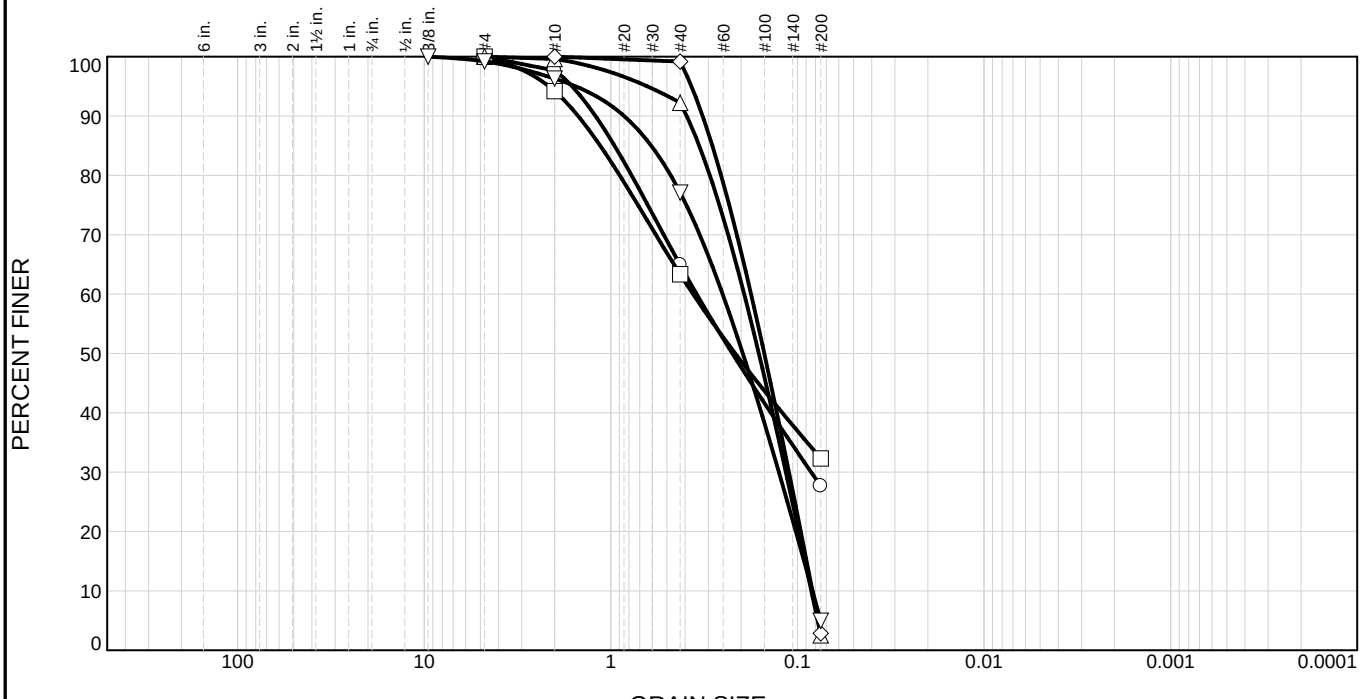
▽ **Source of Sample:** SW-5 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-5

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	2.3	32.8	37.3	27.6	
□	0.0	5.8	30.9	31.0	32.3	
△	0.0	0.4	7.4	89.7	2.5	
◇	0.0	0.0	0.8	96.4	2.8	
▽	0.0	3.7	19.2	72.1	5.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.9561	0.3469	0.2231	0.0844				
□	NV	NP	1.1396	0.3625	0.2155					
△	NV	NP	0.3360	0.1928	0.1609	0.1153	0.0910	0.0842	0.82	2.29
◇	NV	NP	0.2857	0.1772	0.1505	0.1110	0.0892	0.0831	0.84	2.13
▽	NV	NP	0.6073	0.2516	0.1962	0.1257	0.0920	0.0831	0.76	3.03

Material Description	USCS	AASHTO
○ Moist loose grayish brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist very loose brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
△ Moist loose brown fine sand w/trace of coarse sand and silt.	SP	A-3
◇ Wet loose brown fine sand w/trace of coarse sand and silt.	SP	A-3
▽ Wet medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt.	SP-SM	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-6 **Depth:** 1.0 **Sample Number:** 1

□ **Source of Sample:** SW-6 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-6 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-6 **Depth:** 6.0 **Sample Number:** 4

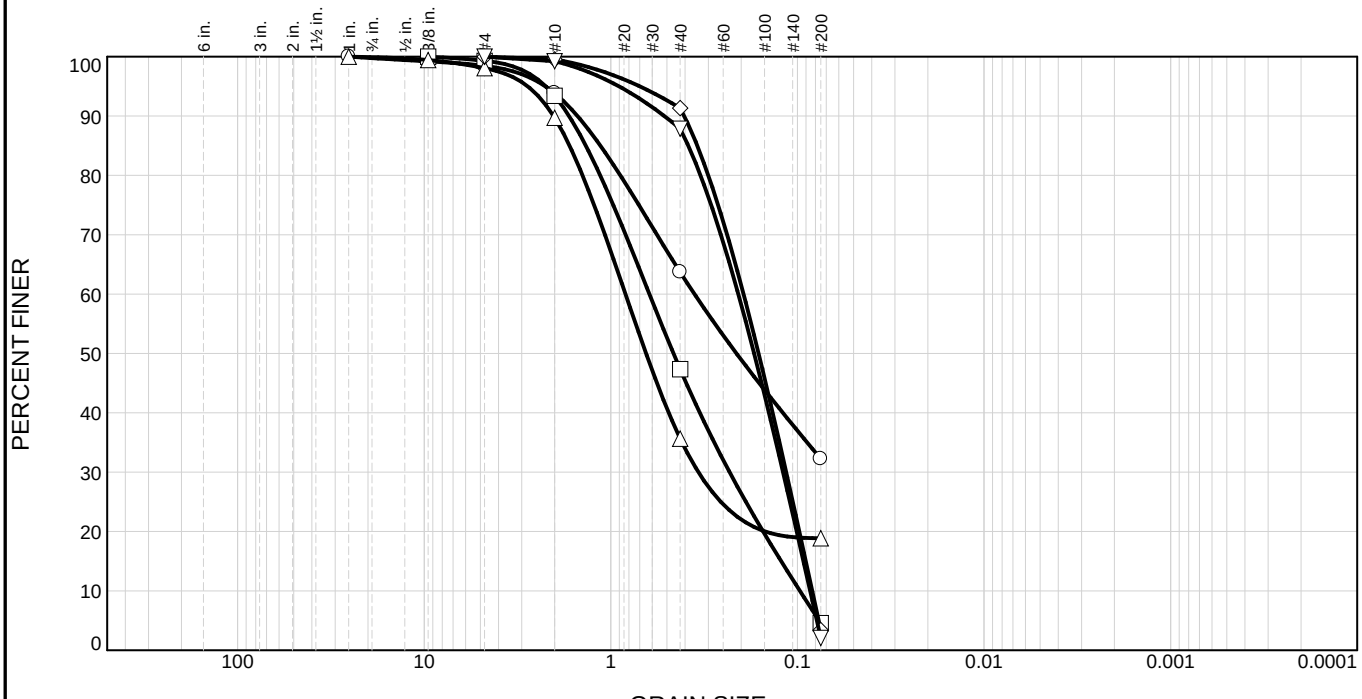
▽ **Source of Sample:** SW-6 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-6

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	6.2	30.1	31.5	32.2	
□	0.0	6.6	46.1	42.7	4.6	
△	0.0	10.3	54.1	16.7	18.9	
◇	0.0	0.5	8.2	87.9	3.4	
▽	0.0	0.8	11.3	85.8	2.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.1373	0.3562	0.2121					
□	NV	NP	1.3607	0.6212	0.4615	0.2309	0.1221	0.0969	0.89	6.41
△	NV	NP	1.6637	0.8347	0.6472	0.3395				
◇	NV	NP	0.3442	0.1943	0.1615	0.1148	0.0902	0.0833	0.81	2.33
▽	NV	NP	0.3845	0.2074	0.1706	0.1194	0.0928	0.0855	0.80	2.43

Material Description	USCS	AASHTO
○ Moist loose brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist medium dense brown coarse to fine sand w/trace of fine gravel and silt.	SP	A-1-b
△ Moist medium dense brown coarse sand w/some fine sand and silt, trace of fine gravel.	SM	A-1-b
◇ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3
▽ Moist medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-7 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-7 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-7 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-7 **Depth:** 6.0 **Sample Number:** 4

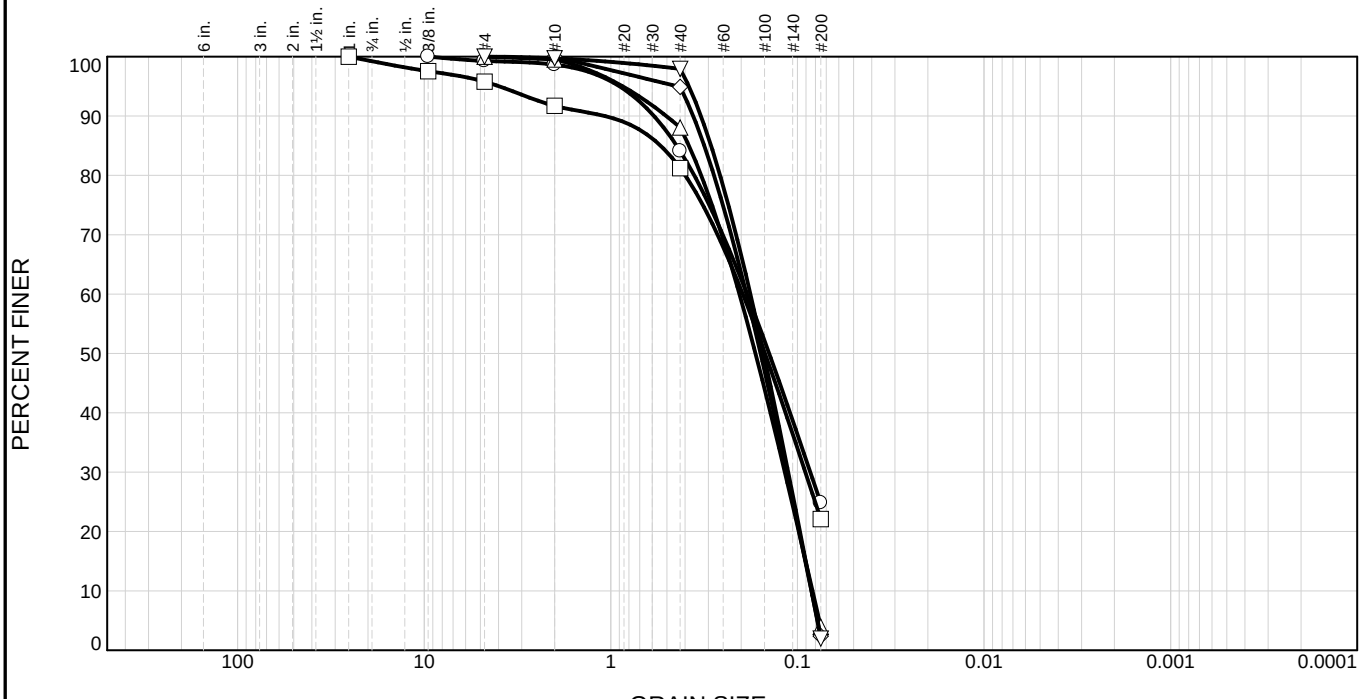
▽ **Source of Sample:** SW-7 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-7

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.4	14.5	59.3	24.8	
□	0.0	8.3	10.5	59.1	22.1	
△	0.0	0.5	11.4	84.2	3.9	
◇	0.0	0.0	5.1	92.5	2.4	
▽	0.0	0.3	1.8	95.9	2.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.4438	0.1862	0.1417	0.0853				
□	NV	NP	0.5408	0.1962	0.1492	0.0907				
△	NV	NP	0.3814	0.2045	0.1677	0.1167	0.0903	0.0830	0.80	2.46
◇	NV	NP	0.3157	0.1875	0.1576	0.1141	0.0907	0.0841	0.83	2.23
▽	NV	NP	0.2902	0.1786	0.1517	0.1120	0.0902	0.0840	0.84	2.13

Material Description	USCS	AASHTO
○ Moist very loose brown silty fine sand w/some coarse sand, trace of fine gravel.	SM	A-2-4(0)
□ Moist very loose brown silty fine sand w/some coarse sand, trace of fine gravel.	SM	A-2-4(0)
△ Moist loose brown fine sand w/some coarse sand, trace of silt.	SP	A-3
◇ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3
▽ Wet medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-8 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-8 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-8 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-8 **Depth:** 6.0 **Sample Number:** 4

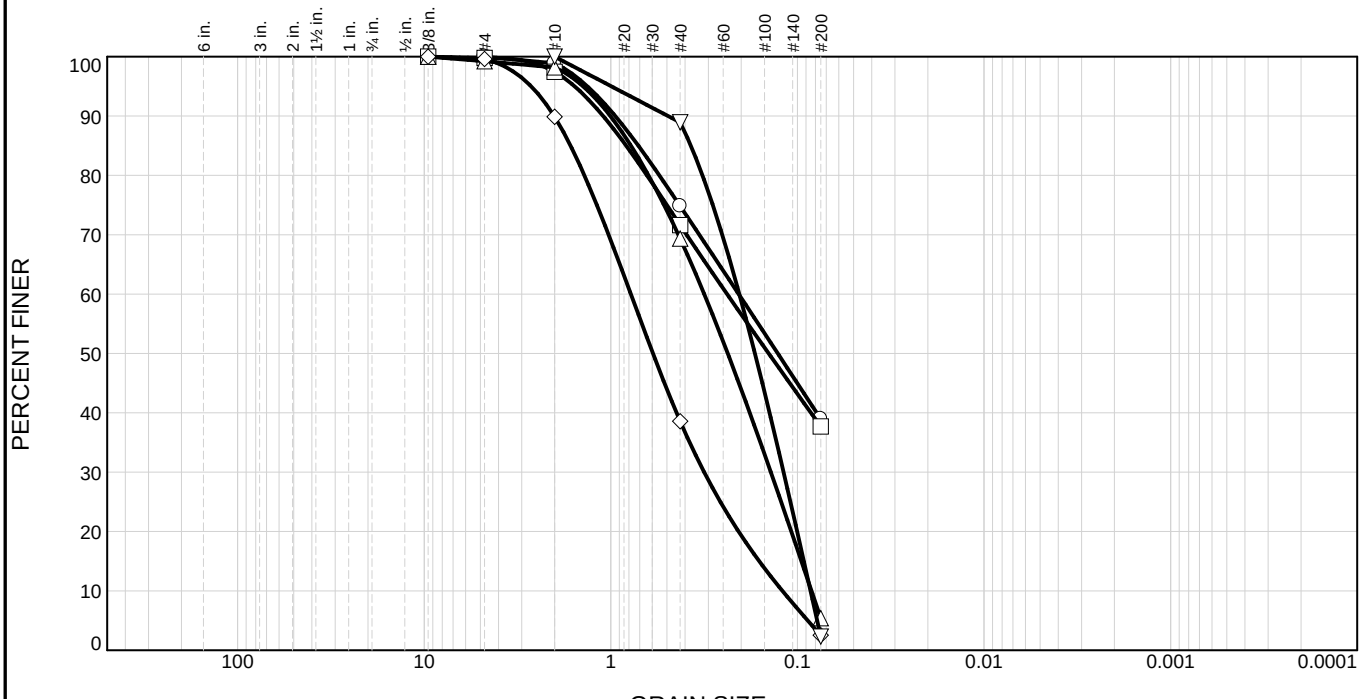
▽ **Source of Sample:** SW-8 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-8

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.1	24.1	35.8	39.0	
□	0.0	2.5	25.9	33.9	37.7	
△	0.0	1.8	28.9	63.9	5.4	
◇	0.0	10.1	51.3	36.1	2.5	
▽	0.0	0.0	11.1	86.6	2.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	18.4	14.2	0.7123	0.2064	0.1274					
□	21.3	15.2	0.8274	0.2382	0.1426					
△	NV	NP	0.7799	0.3158	0.2363	0.1388	0.0952	0.0841	0.73	3.76
◇	NV	NP	1.6429	0.7811	0.5945	0.3160	0.1602	0.1203	1.06	6.49
▽	NV	NP	0.3726	0.2047	0.1689	0.1186	0.0923	0.0851	0.81	2.41

Material Description	USCS	AASHTO
○ Moist very stiff brown fine to coarse sandy silt w/some , trace of fine gravel.	SC-SM	A-4(0)
□ Moist stiff brown clayey fine to coarse sandy silt w/trace of fine gravel.	SC-SM	A-4(0)
△ Moist medium dense brown fine to coarse sand w/trace of silt and fine gravel.	SP-SM	A-3
◇ Moist medium dense brown coarse to fine sand w/trace of fine gravel and silt.	SW	A-1-b
▽ Moist medium dense brown fine sand w/some coarse sand, trace of silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-9 **Depth:** 1.0 **Sample Number:** 1

□ **Source of Sample:** SW-9 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-9 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-9 **Depth:** 6.0 **Sample Number:** 4

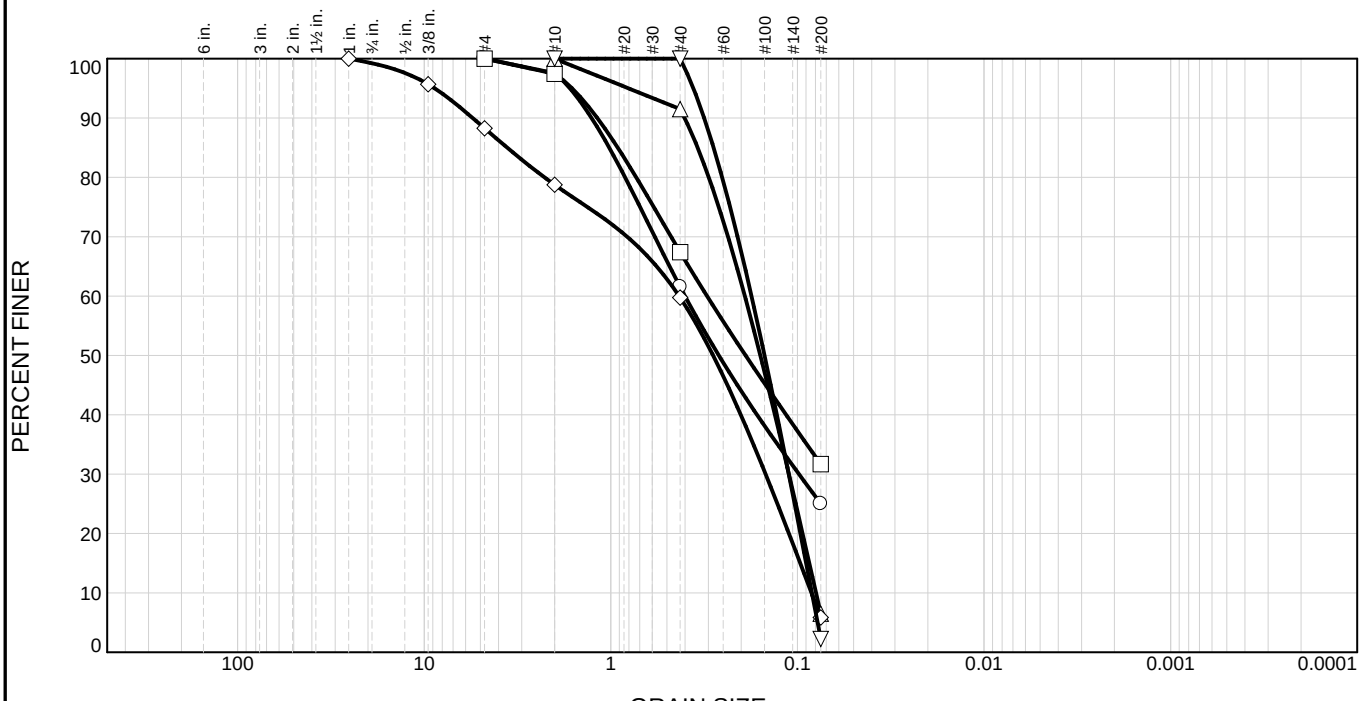
▽ **Source of Sample:** SW-9 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-9

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	2.4	36.1	36.5	25.0	
□	0.0	2.5	30.1	35.7	31.7	
△	0.0	0.0	8.5	85.0	6.5	
◇	0.0	21.2	19.1	53.8	5.9	
▽	0.0	0.0	0.0	97.8	2.2	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.0199	0.4005	0.2638	0.0980				
□	NV	NP	0.9181	0.3050	0.1895					
△	NV	NP	0.3425	0.1913	0.1580	0.1110	0.0863	0.0795	0.81	2.41
◇	NV	NP	3.5889	0.4303	0.2830	0.1480	0.0965	0.0841	0.61	5.12
▽	NV	NP	0.2814	0.1762	0.1501	0.1112	0.0898	0.0836	0.84	2.11

Material Description	USCS	AASHTO
○ Moist loose brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist medium dense brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
△ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP-SM	A-3
◇ Moist medium dense brown fine gravelly fine sand w/some coarse sand, trace of silt.	SP-SM	A-3
▽ Moist medium dense brown fine sand w/trace of silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-10 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-10 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-10 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-10 **Depth:** 6.0 **Sample Number:** 4

▽ **Source of Sample:** SW-10 **Depth:** 8.0 **Sample Number:** 5

Remarks:

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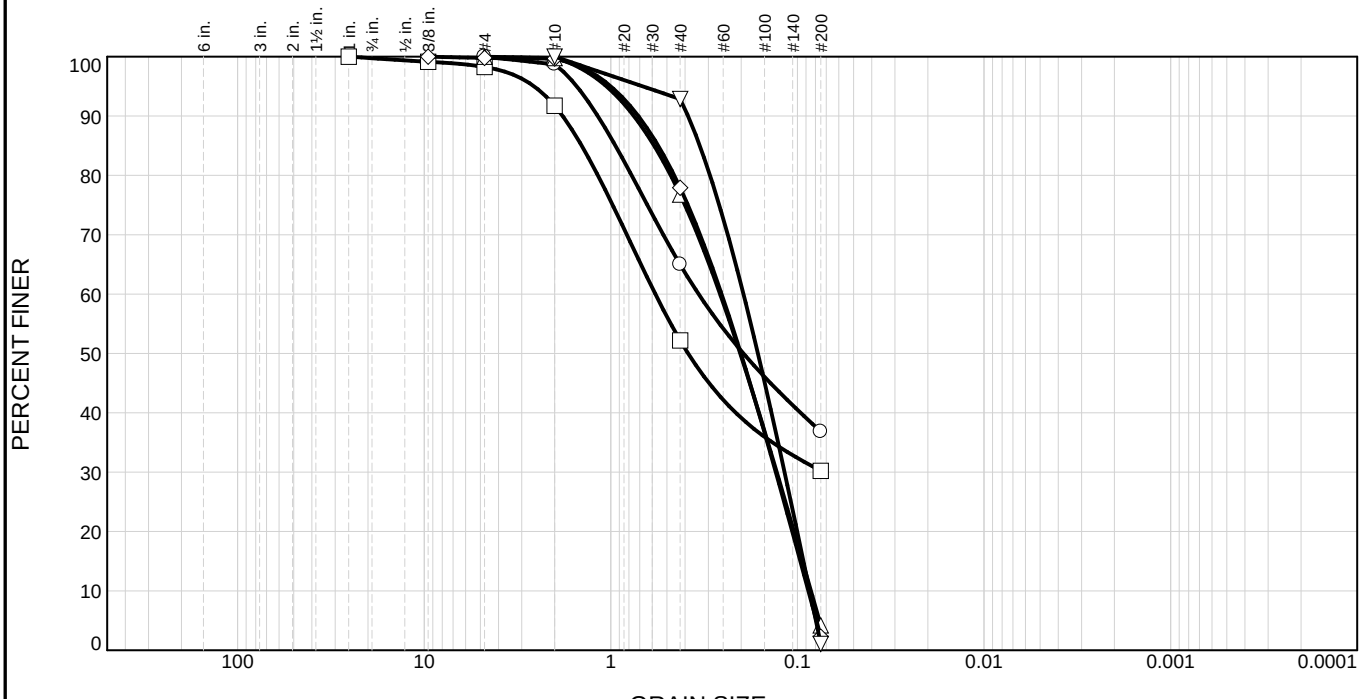
Figure C-10

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.3	33.7	28.2	36.8	
□	0.0	8.3	39.5	22.0	30.2	
△	0.0	0.2	23.0	72.6	4.2	
◇	0.0	0.3	21.8	75.6	2.3	
▽	0.0	0.0	7.1	91.8	1.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.9450	0.3386	0.1947					
□	20.4	17.1	1.4313	0.5771	0.3852					
△	NV	NP	0.5855	0.2596	0.2025	0.1290	0.0939	0.0846	0.76	3.07
◇	NV	NP	0.5575	0.2549	0.2009	0.1306	0.0964	0.0873	0.77	2.92
▽	NV	NP	0.3336	0.1945	0.1628	0.1172	0.0928	0.0859	0.82	2.26

Material Description	USCS	AASHTO
○ Wet stiff brown coarse to fine sandy silt w/trace of fine gravel.	SM	A-4(0)
□ Wet medium dense brown silty coarse to fine sand w/trace of fine gravel and clay.	SM	A-2-4(0)
△ Wet medium dense brown fine to coarse sand w/trace of silt.	SP	A-3
◇ Wet dense brown fine to coarse sand w/trace of silt.	SP	A-3
▽ Wet medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-11 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-11 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-11 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-11 **Depth:** 6.0 **Sample Number:** 4

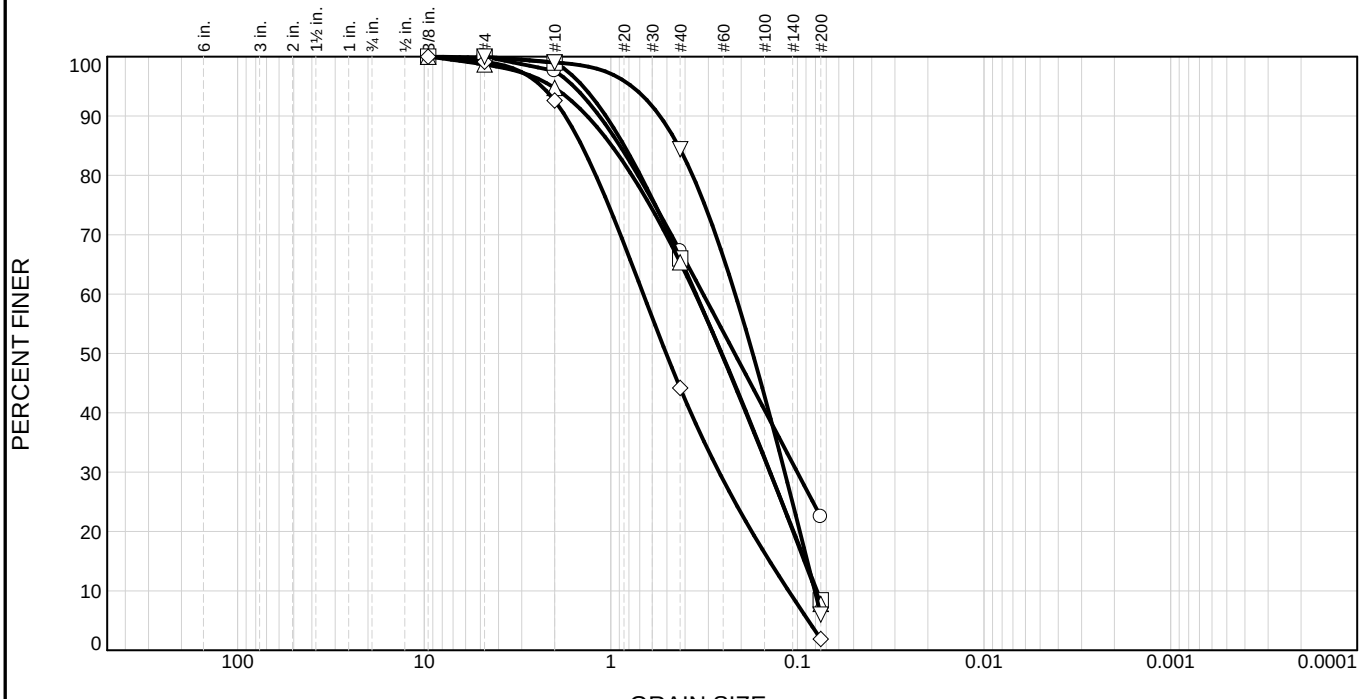
▽ **Source of Sample:** SW-11 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-11

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	2.4	30.4	44.7	22.5	
□	0.0	1.0	33.0	57.6	8.4	
△	0.0	5.3	29.3	57.6	7.8	
◇	0.0	7.4	48.4	42.3	1.9	
▽	0.0	1.0	14.6	78.4	6.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.8946	0.3201	0.2168	0.1002				
□	NV	NP	0.8480	0.3496	0.2555	0.1403	0.0907	0.0785	0.72	4.45
△	NV	NP	0.9892	0.3523	0.2542	0.1400	0.0916	0.0797	0.70	4.42
◇	NV	NP	1.4297	0.6699	0.5052	0.2628	0.1408	0.1114	0.92	6.01
▽	NV	NP	0.4350	0.2155	0.1736	0.1169	0.0884	0.0807	0.79	2.67

Material Description	USCS	AASHTO
○ Moist medium dense brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
△ Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
◇ Moist dense brown coarse to fine sand w/trace of fine gravel and silt.	SP	A-1-b
▽ Moist medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt.	SP-SM	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-12 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-12 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-12 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-12 **Depth:** 6.0 **Sample Number:** 4

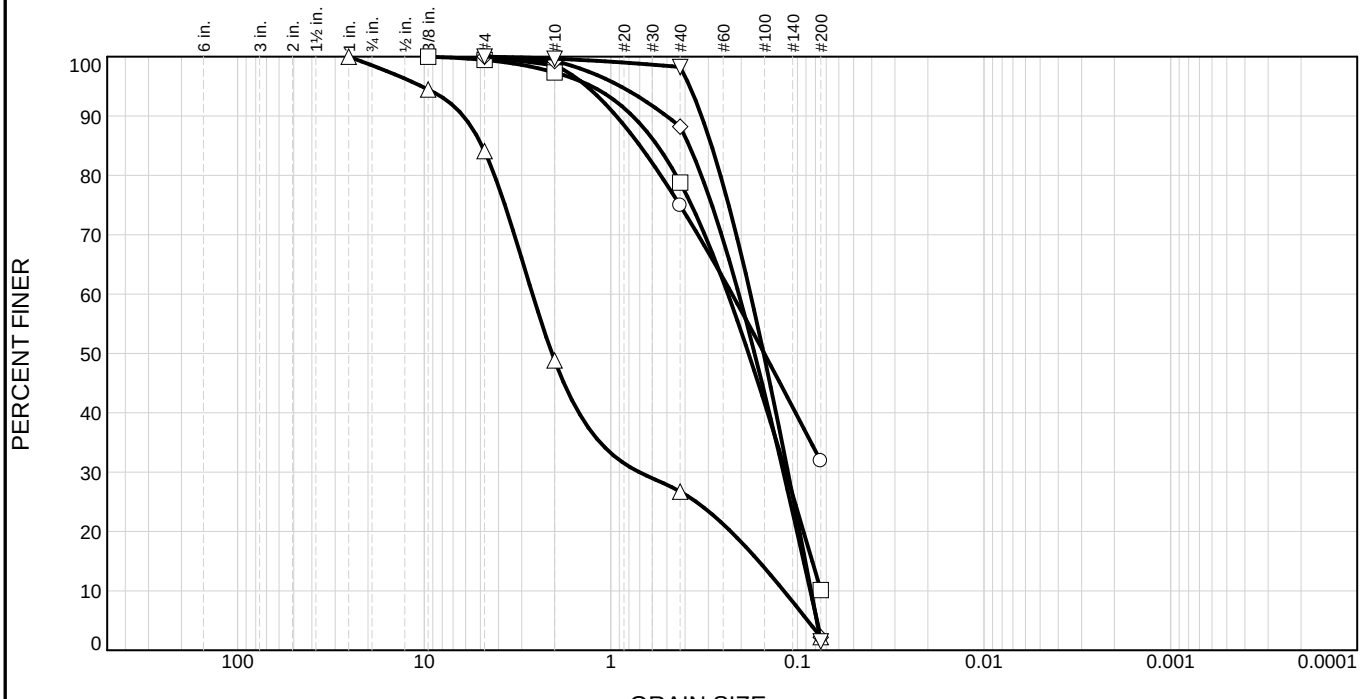
▽ **Source of Sample:** SW-12 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-12

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.4	23.7	43.0	31.9	
□	0.0	2.7	18.5	68.7	10.1	
△	0.0	51.2	22.1	24.5	2.2	
◇	0.0	0.8	11.0	86.0	2.2	
▽	0.0	0.3	1.5	96.7	1.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.6985	0.2241	0.1504					
□	NV	NP	0.5619	0.2357	0.1828	0.1153	0.0833			
△	NV	NP	4.9023	2.6287	2.0658	0.7032	0.1611	0.1182	1.59	22.24
◇	NV	NP	0.3800	0.2060	0.1696	0.1189	0.0926	0.0852	0.81	2.42
▽	NV	NP	0.2885	0.1784	0.1517	0.1123	0.0907	0.0845	0.84	2.11

Material Description	USCS	AASHTO
○ Moist medium dense brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist loose brown fine sand w/some coarse sand, trace of fine gravel and silt.	SP-SM	A-3
△ Moist medium dense brown fine to coarse sandy fine gravel w/trace of silt.	SW	A-1-a
◇ Moist medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt.	SP	A-3
▽ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-13 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-13 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-13 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-13 **Depth:** 6.0 **Sample Number:** 4

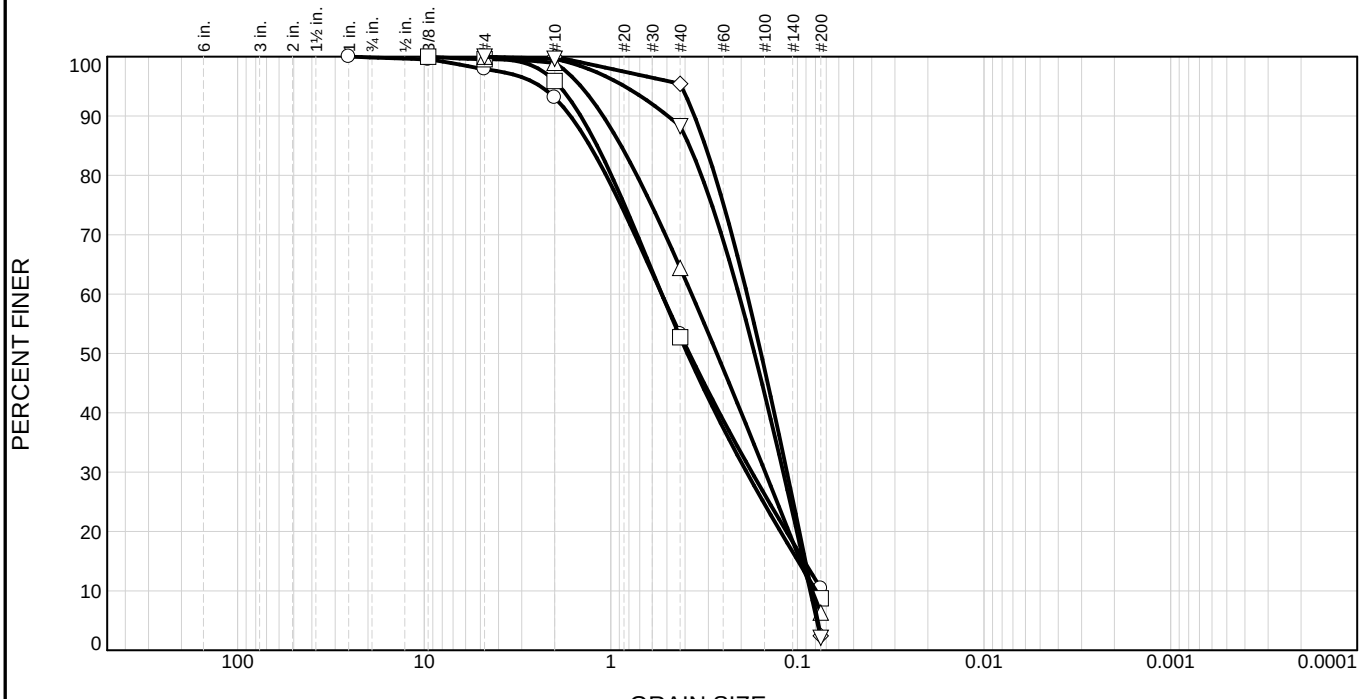
▽ **Source of Sample:** SW-13 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-13

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	6.9	39.9	42.8	10.4	
□	0.0	4.1	43.2	44.0	8.7	
△	0.0	1.0	34.6	58.1	6.3	
◇	0.0	0.0	4.6	93.0	2.4	
▽	0.0	0.4	11.3	86.2	2.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.2945	0.5334	0.3794	0.1755	0.0919			
□	NV	NP	1.1846	0.5331	0.3889	0.1871	0.0990	0.0793	0.83	6.72
△	NV	NP	0.8818	0.3690	0.2703	0.1488	0.0963	0.0833	0.72	4.43
◇	NV	NP	0.3116	0.1862	0.1567	0.1137	0.0905	0.0840	0.83	2.22
▽	NV	NP	0.3793	0.2061	0.1698	0.1191	0.0927	0.0854	0.81	2.42

Material Description	USCS	AASHTO
○ Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	SP-SM	A-3
□ Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	SP-SM	A-3
△ Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	SP-SM	A-3
◇ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3
▽ Moist medium dense brown fine sand w/some coarse sand, trace of silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-14 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-14 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-14 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-14 **Depth:** 6.0 **Sample Number:** 4

▽ **Source of Sample:** SW-14 **Depth:** 8.0 **Sample Number:** 5

Remarks:

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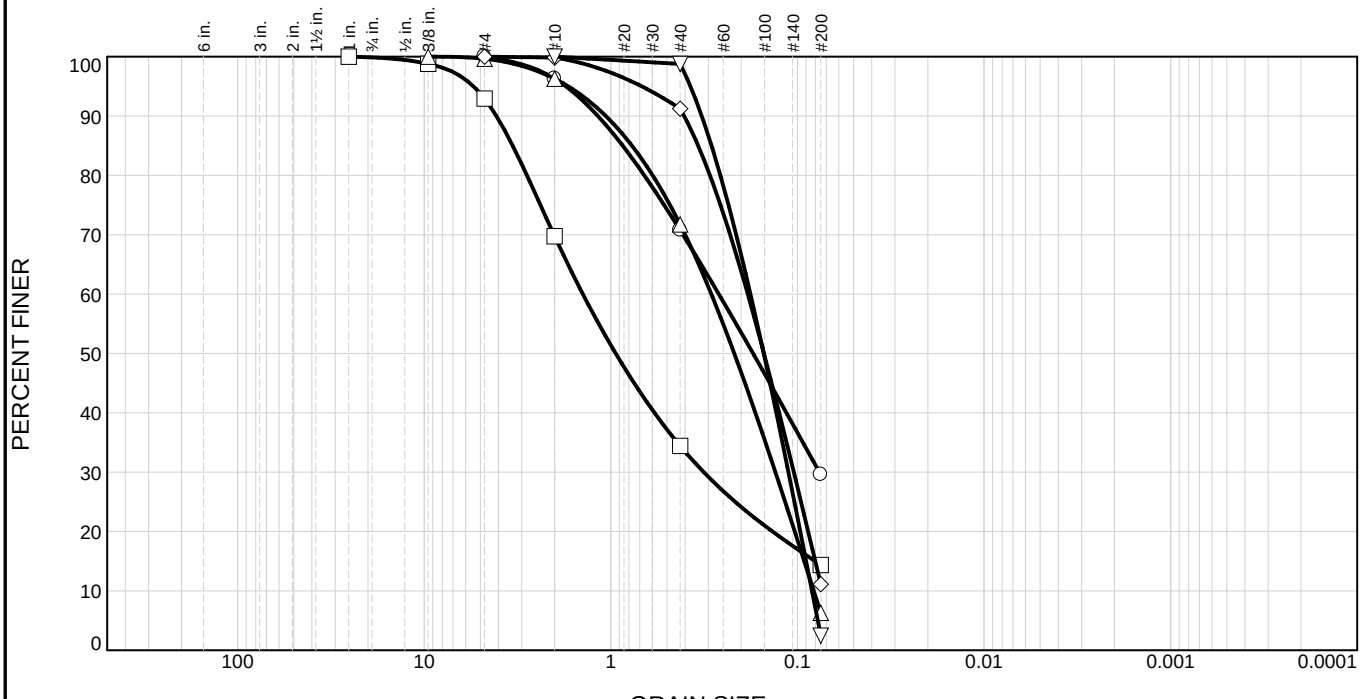
Figure C-14

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	3.7	25.5	41.2	29.6	
□	0.0	30.3	35.3	20.0	14.4	
△	0.0	3.7	24.6	65.4	6.3	
◇	0.0	0.2	8.6	80.1	11.1	
▽	0.0	0.0	1.2	96.4	2.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	16.0	13.2	0.8637	0.2638	0.1728	0.0763				
□	NV	NP	3.3562	1.4119	0.9416	0.3177	0.0803			
△	NV	NP	0.7701	0.2894	0.2180	0.1312	0.0919	0.0818	0.73	3.54
◇	NV	NP	0.3403	0.1845	0.1511	0.1045	0.0803			
▽	NV	NP	0.2885	0.1785	0.1515	0.1117	0.0898	0.0836	0.84	2.14

Material Description	USCS	AASHTO
○ Moist loose brown silty fine to coarse sand w/trace of fine gravel and clay.	SM	A-2-4(0)
□ Moist medium dense brown coarse sand and fine gravel w/some fine sand and silt.	SM	A-1-b
△ Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
◇ Moist medium dense brown fine sand w/some silt, trace of coarse sand.	SP-SM	A-2-4(0)
▽ Wet medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-15 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-15 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-15 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-15 **Depth:** 6.0 **Sample Number:** 4

▽ **Source of Sample:** SW-15 **Depth:** 8.0 **Sample Number:** 5

Remarks:

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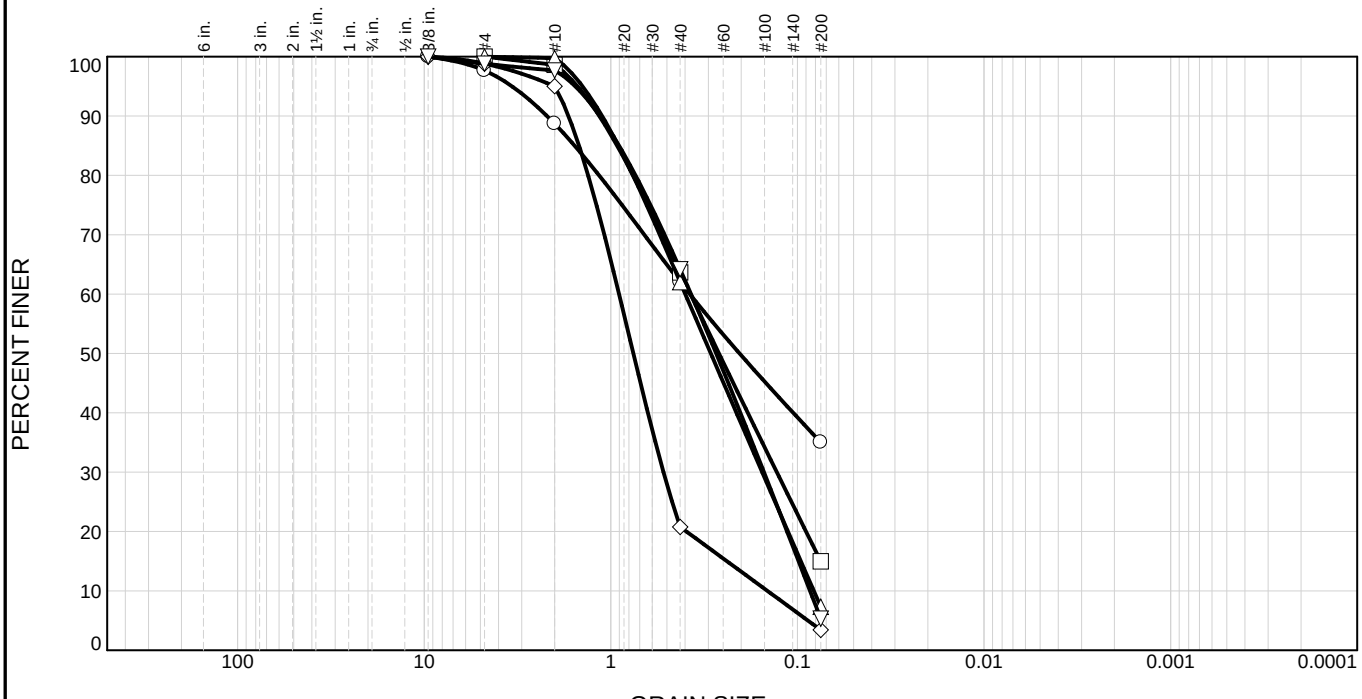
Figure C-15

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	11.3	26.6	27.1	35.0	
□	0.0	1.4	35.0	48.6	15.0	
△	0.0	0.2	37.8	54.7	7.3	
◇	0.0	5.0	74.2	17.4	3.4	
▽	0.0	2.3	33.5	58.9	5.3	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	23.9	14.1	1.5625	0.3775	0.2042					
□	NV	NP	0.9253	0.3743	0.2633	0.1289	0.0751			
△	NV	NP	0.9112	0.3990	0.2912	0.1545	0.0958	0.0817	0.73	4.88
◇	NV	NP	1.4797	0.9037	0.7574	0.5221	0.2387	0.1448	2.08	6.24
▽	NV	NP	0.9035	0.3717	0.2726	0.1511	0.0986	0.0856	0.72	4.34

Material Description	USCS	AASHTO
○ Moist loose brown clayey fine to coarse sand w/some fine gravel and silt.	SC	A-2-4(0)
□ Moist loose brown fine to coarse sand w/some silt, trace of fine gravel.	SM	A-2-4(0)
△ Moist loose brown fine to coarse sand w/trace of silt.	SP-SM	A-3
◇ Moist dense brown coarse sand w/some fine sand, trace of silt and fine gravel.	SW	A-1-b
▽ Moist dense brown fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-16 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-16 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-16 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-16 **Depth:** 6.0 **Sample Number:** 4

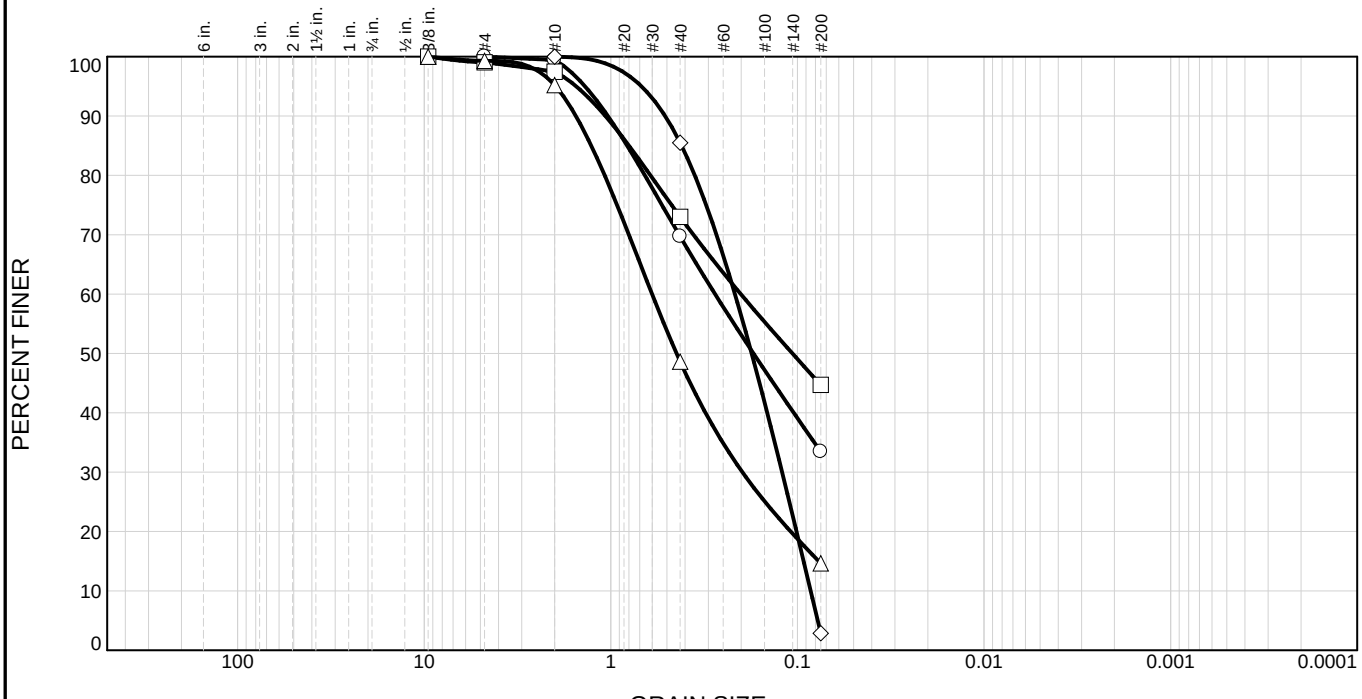
▽ **Source of Sample:** SW-16 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-16

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	0.6	29.7	36.3	33.4	
□	0.0	2.5	24.5	28.3	44.7	
△	0.0	4.8	46.6	34.0	14.6	
◇	0.0	0.0	14.5	82.7	2.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.8175	0.2763	0.1720					
□	25.8	17.3	0.7997	0.2011	0.1063					
△	NV	NP	1.2725	0.6011	0.4445	0.1972	0.0769			
◇	NV	NP	0.4175	0.2162	0.1759	0.1208	0.0926	0.0849	0.79	2.55

Material Description	USCS	AASHTO
○ Moist medium dense brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist firm brown clayey fine to coarse sandy silt w/trace of fine gravel.	SC	A-4(1)
△ Moist loose brown coarse to fine sand w/some silt, trace of fine gravel.	SM	A-1-b
◇ Moist dense brown fine sand w/some coarse sand and fine gravel, trace of silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-17 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-17 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-17 **Depth:** 4.0 **Sample Number:** 3

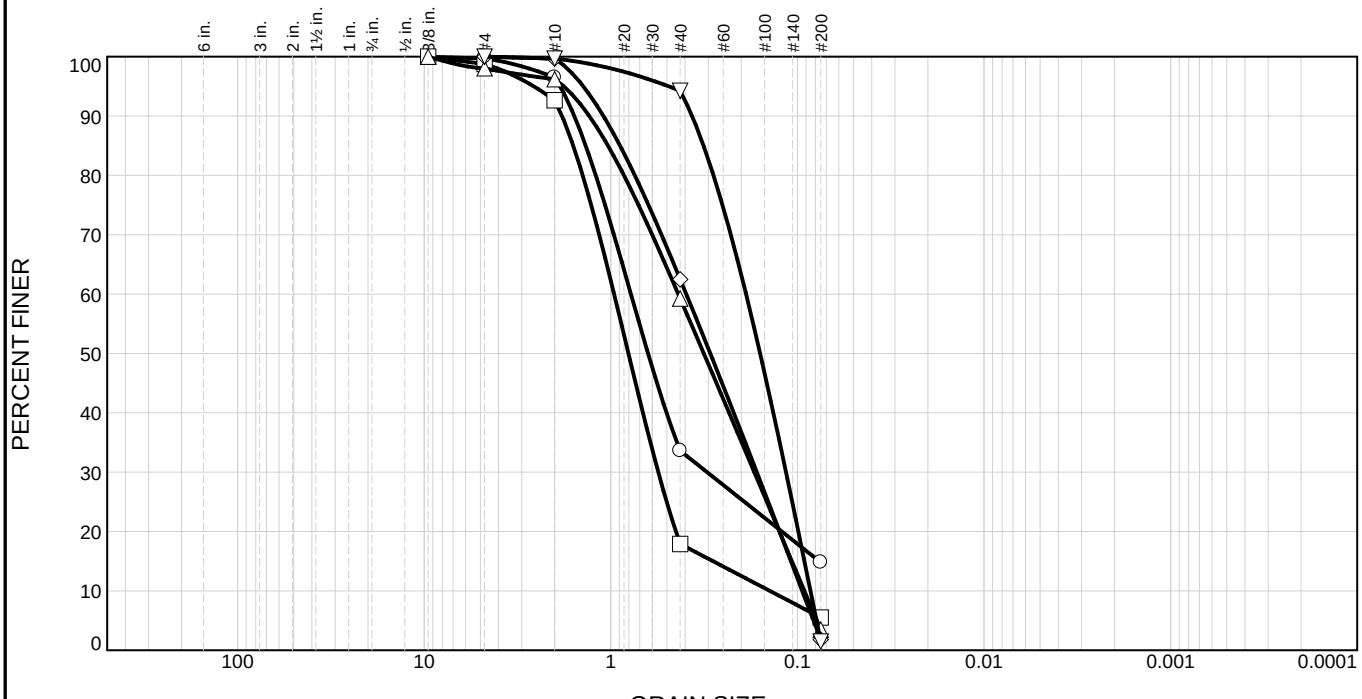
◇ **Source of Sample:** SW-17 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-17

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	3.5	62.9	18.8	14.8	
□	0.0	7.3	74.8	12.4	5.5	
△	0.0	3.8	36.9	55.8	3.5	
◇	0.0	0.3	37.2	60.7	1.8	
▽	0.0	0.3	5.5	92.7	1.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.3628	0.7804	0.6317	0.3049	0.0764			
□	NV	NP	1.5895	0.9606	0.8047	0.5568	0.2832	0.1406	2.30	6.83
△	NV	NP	1.0361	0.4352	0.3176	0.1702	0.1070	0.0917	0.73	4.74
◇	NV	NP	0.8929	0.3943	0.2932	0.1651	0.1083	0.0942	0.73	4.18
▽	NV	NP	0.3186	0.1884	0.1585	0.1151	0.0917	0.0851	0.83	2.21

Material Description	USCS	AASHTO
○ Moist loose brown coarse sand w/some fine sand and silt, trace of fine gravel.	SM	A-1-b
□ Moist loose brown coarse sand w/some fine sand, trace of fine gravel and silt.	SW-SM	A-1-b
△ Moist loose brown fine to coarse sand w/trace of fine gravel and silt.	SP	A-3
◇ Moist medium dense brown fine to coarse sand w/trace of silt.	SP	A-3
▽ Moist medium dense brown fine sand w/trace of coarse sand, fine gravel and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-18 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-18 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-18 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-18 **Depth:** 6.0 **Sample Number:** 4

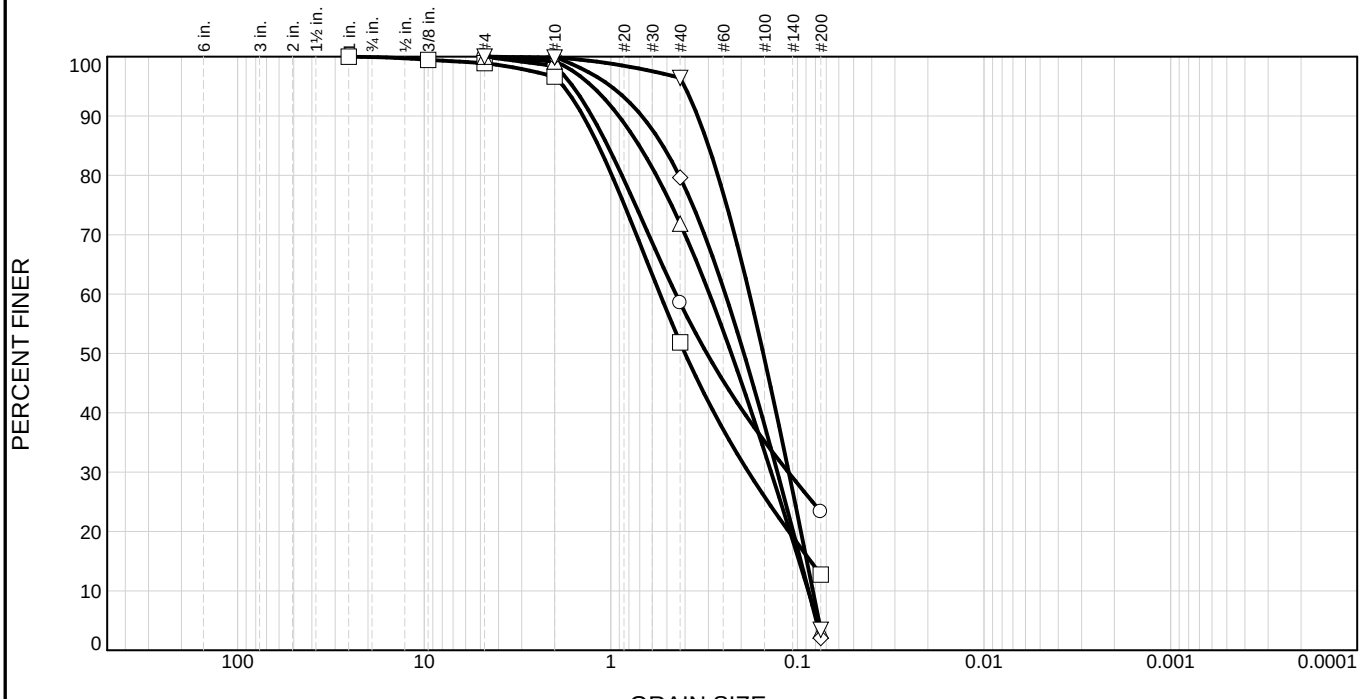
▽ **Source of Sample:** SW-18 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-18

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.6	39.9	35.2	23.3	
□	0.0	3.4	44.7	39.2	12.7	
△	0.0	0.8	27.3	68.6	3.3	
◇	0.0	0.0	20.4	77.5	2.1	
▽	0.0	0.1	3.5	93.0	3.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.0403	0.4482	0.3057	0.1119				
□	NV	NP	1.1648	0.5450	0.4000	0.1828	0.0849			
△	NV	NP	0.7044	0.2961	0.2260	0.1383	0.0978	0.0873	0.74	3.39
◇	NV	NP	0.5262	0.2434	0.1935	0.1280	0.0958	0.0871	0.77	2.79
▽	NV	NP	0.2999	0.1806	0.1524	0.1113	0.0889	0.0826	0.83	2.19

Material Description	USCS	AASHTO
○ Moist loose brown silty coarse to fine sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist loose brown coarse to fine sand w/some silt, trace of fine gravel.	SM	A-2-4(0)
△ Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	SP	A-3
◇ Moist medium dense brown fine sand w/some coarse sand, trace of silt.	SP	A-3
▽ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-19 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-19 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-19 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-19 **Depth:** 6.0 **Sample Number:** 4

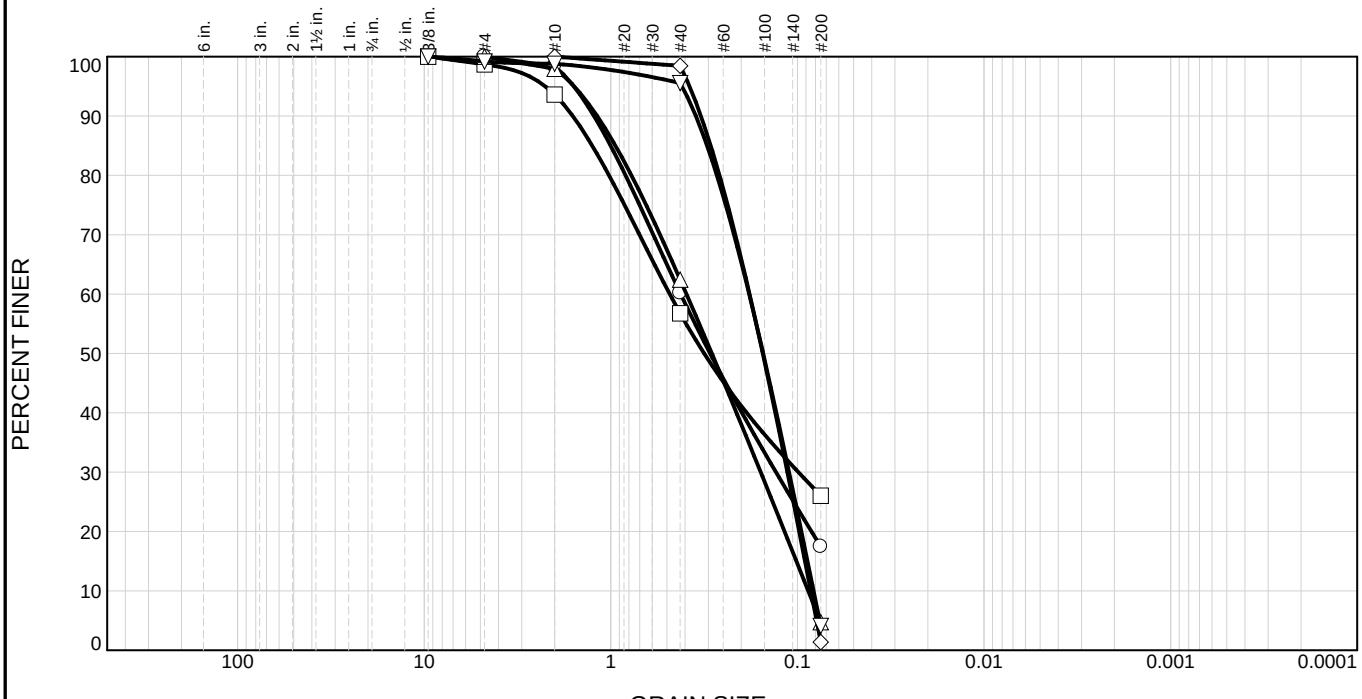
▽ **Source of Sample:** SW-19 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-19

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.6	38.2	42.8	17.4	
□	0.0	6.4	36.8	30.8	26.0	
△	0.0	2.0	35.6	57.7	4.7	
◇	0.0	0.0	1.5	97.1	1.4	
▽	0.0	1.2	3.3	91.4	4.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.0026	0.4223	0.2938	0.1302				
□	NV	NP	1.2574	0.4835	0.3161	0.0988				
△	NV	NP	0.9452	0.3933	0.2876	0.1573	0.1012	0.0875	0.72	4.50
◇	NV	NP	0.2916	0.1805	0.1533	0.1131	0.0911	0.0848	0.84	2.13
▽	NV	NP	0.3048	0.1813	0.1525	0.1108	0.0883	0.0819	0.83	2.21

Material Description	USCS	AASHTO
○ Moist loose brown fine to coarse sand w/some silt, trace of fine gravel.	SM	A-2-4(0)
□ Moist loose brown silty coarse to fine sand w/trace of fine gravel.	SM	A-2-4(0)
△ Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	SP	A-3
◇ Moist loose brown fine sand w/trace of coarse sand and silt.	SP	A-3
▽ Moist loose brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-20 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-20 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-20 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-20 **Depth:** 6.0 **Sample Number:** 4

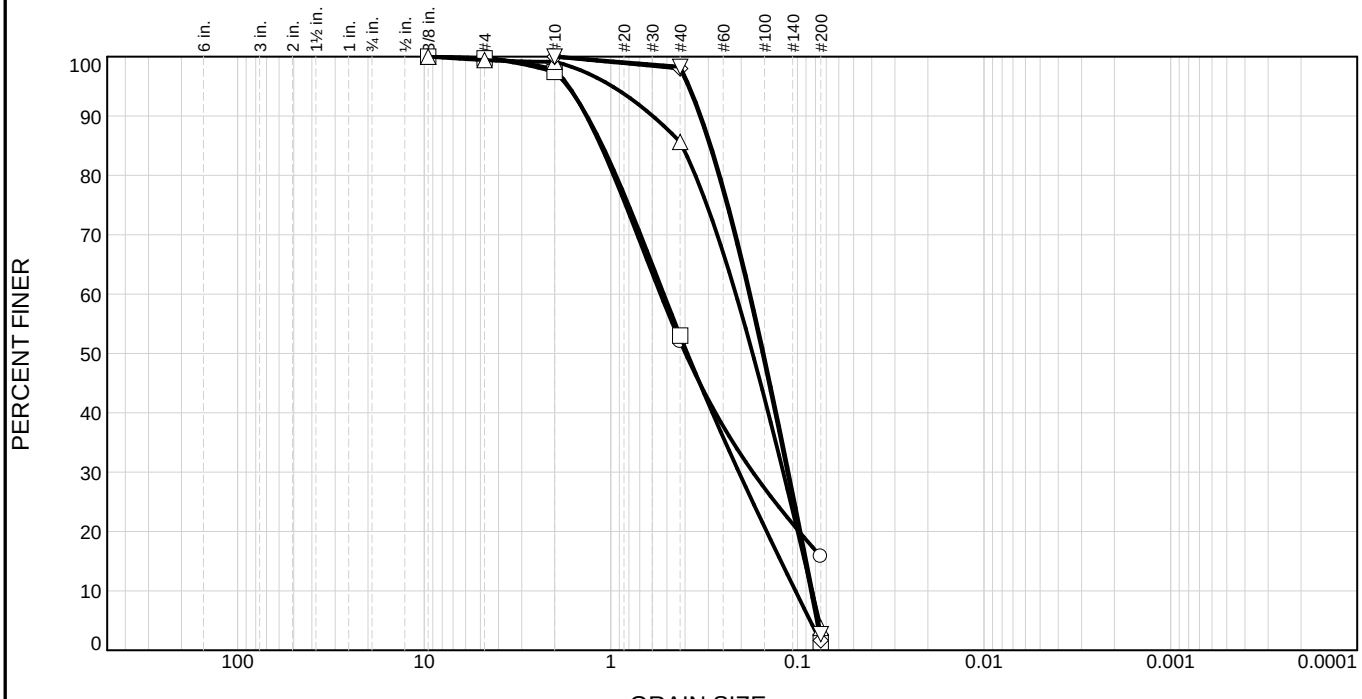
▽ **Source of Sample:** SW-20 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-20

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	2.1	45.9	36.2	15.8	
□	0.0	2.6	44.4	51.6	1.4	
△	0.0	0.9	13.5	81.8	3.8	
◇	0.0	0.0	2.0	96.4	1.6	
▽	0.0	0.0	1.7	95.6	2.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.1318	0.5419	0.3979	0.1734				
□	NV	NP	1.1087	0.5201	0.3887	0.2059	0.1224	0.1024	0.80	5.08
△	NV	NP	0.4152	0.2138	0.1738	0.1191	0.0912	0.0836	0.79	2.56
◇	NV	NP	0.2942	0.1811	0.1536	0.1131	0.0908	0.0845	0.83	2.14
▽	NV	NP	0.2914	0.1792	0.1519	0.1116	0.0896	0.0833	0.83	2.15

Material Description	USCS	AASHTO
○ Moist very loose brown coarse to fine sand w/some silt, trace of fine gravel.	SM	A-2-4(0)
□ Moist loose brown fine to coarse sand w/trace of fine gravel and silt.	SP	A-3
△ Moist loose brown fine sand w/some coarse sand, trace of fine gravel and silt.	SP	A-3
◇ Moist loose brown fine sand w/trace of coarse sand and silt.	SP	A-3
▽ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-21 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-21 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-21 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-21 **Depth:** 6.0 **Sample Number:** 4

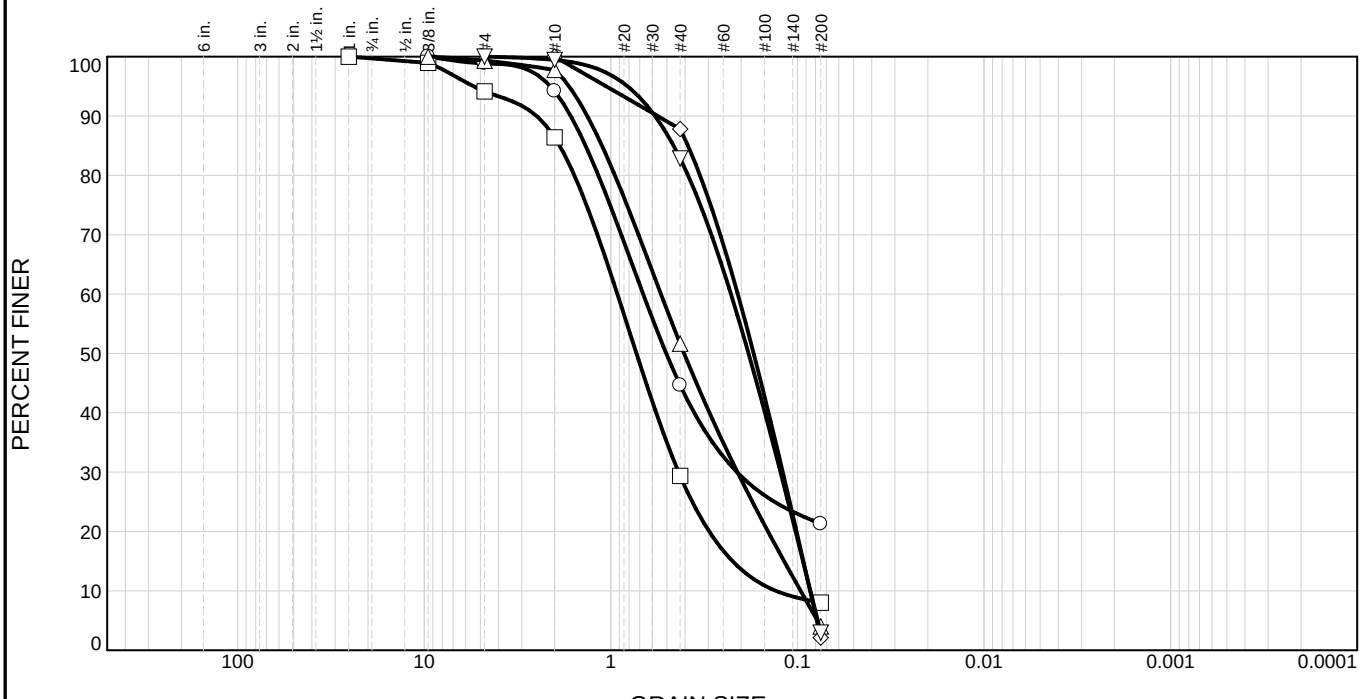
▽ **Source of Sample:** SW-21 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-21

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	5.8	49.6	23.3	21.3	
□	0.0	13.6	57.0	21.4	8.0	
△	0.0	2.2	46.2	47.6	4.0	
◇	0.0	0.0	12.2	85.7	2.1	
▽	0.0	0.6	16.5	79.9	3.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.3652	0.6710	0.5048	0.2107				
□	NV	NP	1.8791	0.9226	0.7287	0.4335	0.2228	0.1305	1.56	7.07
△	NV	NP	1.1155	0.5388	0.4049	0.2096	0.1178	0.0961	0.85	5.61
◇	NV	NP	0.3860	0.2087	0.1715	0.1198	0.0929	0.0855	0.80	2.44
▽	NV	NP	0.4610	0.2271	0.1827	0.1232	0.0933	0.0852	0.78	2.66

Material Description	USCS	AASHTO
○ Moist loose brown silty coarse to fine sand w/trace of fine gravel.	SM	A-1-b
□ Moist loose brown coarse to fine sand w/some fine gravel, trace of silt.	SW-SM	A-1-b
△ Moist loose brown fine to coarse sand w/trace of silt and fine gravel.	SP	A-3
◇ Moist medium dense brown fine sand w/some coarse sand, trace of silt.	SP	A-3
▽ Moist medium dense brown fine sand w/some coarse sand, trace of fine gravel and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-22 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-22 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-22 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-22 **Depth:** 6.0 **Sample Number:** 4

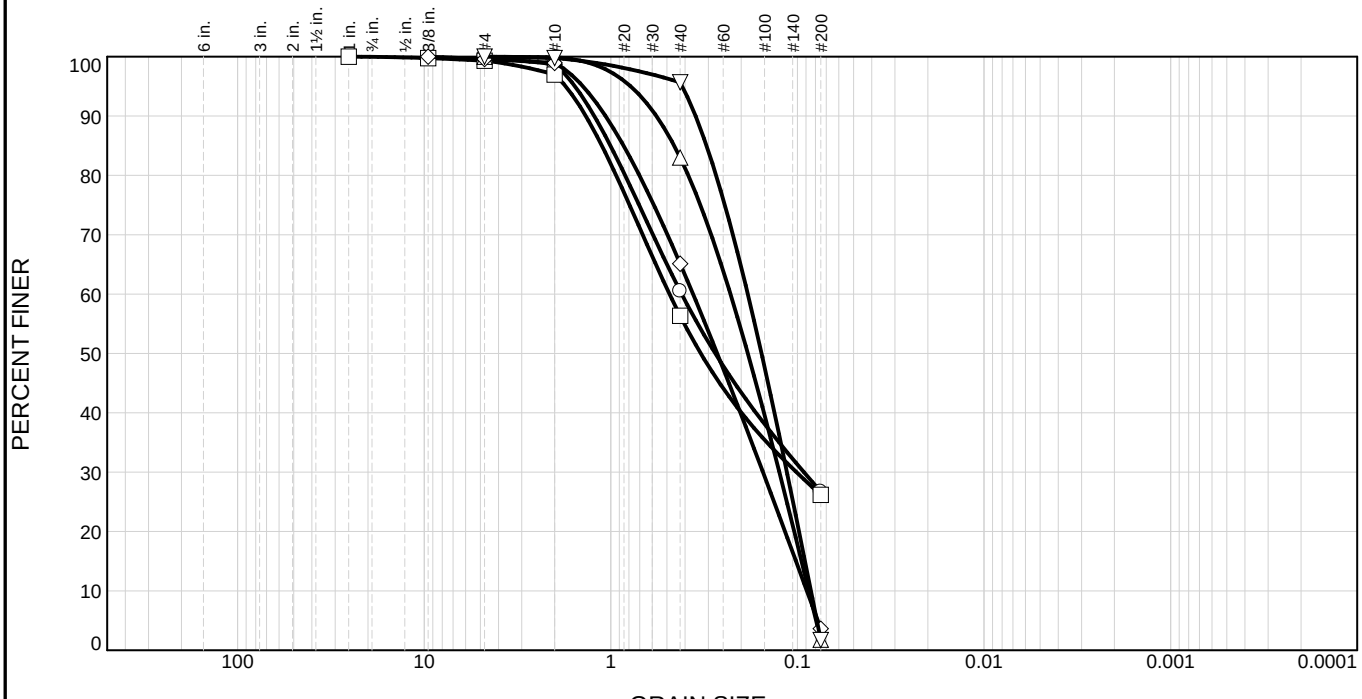
▽ **Source of Sample:** SW-22 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-22

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	1.3	38.2	33.8	26.7	
□	0.0	3.0	40.7	30.1	26.2	
△	0.0	0.1	16.9	81.2	1.8	
◇	0.0	1.1	33.8	61.5	3.6	
▽	0.0	0.2	4.1	94.0	1.7	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	1.0049	0.4171	0.2755	0.0923				
□	NV	NP	1.1172	0.4846	0.3296	0.1012				
△	NV	NP	0.4575	0.2284	0.1844	0.1250	0.0950	0.0869	0.79	2.63
◇	NV	NP	0.8545	0.3626	0.2691	0.1530	0.1018	0.0890	0.73	4.08
▽	NV	NP	0.3070	0.1845	0.1557	0.1138	0.0911	0.0846	0.83	2.18

Material Description	USCS	AASHTO
○ Moist very loose brown silty coarse to fine sand w/trace of fine gravel.	SM	A-2-4(0)
□ Moist very loose brown silty coarse to fine sand w/trace of fine gravel.	SM	A-2-4(0)
△ Moist loose brown fine sand w/some coarse sand, trace of silt.	SP	A-3
◇ Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt.	SP	A-3
▽ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-23 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-23 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-23 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-23 **Depth:** 6.0 **Sample Number:** 4

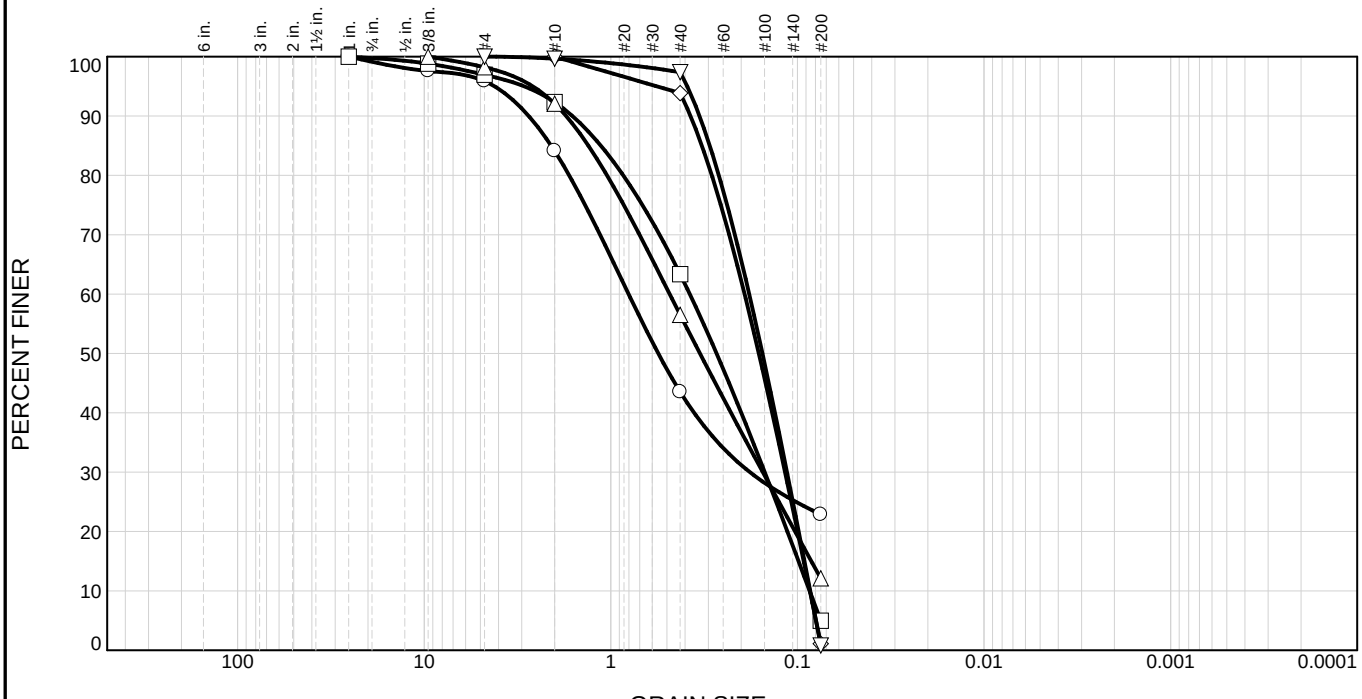
▽ **Source of Sample:** SW-23 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-23

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	15.9	40.6	20.7	22.8	
□	0.0	7.7	29.0	58.3	5.0	
△	0.0	7.9	35.6	44.4	12.1	
◇	0.0	0.0	6.1	92.8	1.1	
▽	0.0	0.3	2.3	96.6	0.8	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	2.0872	0.8030	0.5568	0.1798				
□	NV	NP	1.1307	0.3774	0.2712	0.1497	0.0986	0.0860	0.69	4.39
△	NV	NP	1.3185	0.4837	0.3330	0.1533	0.0842			
◇	NV	NP	0.3251	0.1918	0.1610	0.1164	0.0925	0.0858	0.82	2.24
▽	NV	NP	0.2950	0.1812	0.1539	0.1137	0.0916	0.0854	0.84	2.12

Material Description	USCS	AASHTO
○ Moist very loose brown silty coarse to fine sand w/some fine gravel.	SM	A-1-b
□ Moist loose brown fine to coarse sand w/trace of fine gravel and silt.	SP-SM	A-3
△ Moist medium dense brown fine to coarse sand w/some silt, trace of fine gravel.	SM	A-2-4(0)
◇ Moist medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3
▽ Wet medium dense brown fine sand w/trace of coarse sand and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-24 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-24 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-24 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-24 **Depth:** 6.0 **Sample Number:** 4

▽ **Source of Sample:** SW-24 **Depth:** 8.0 **Sample Number:** 5

Remarks:

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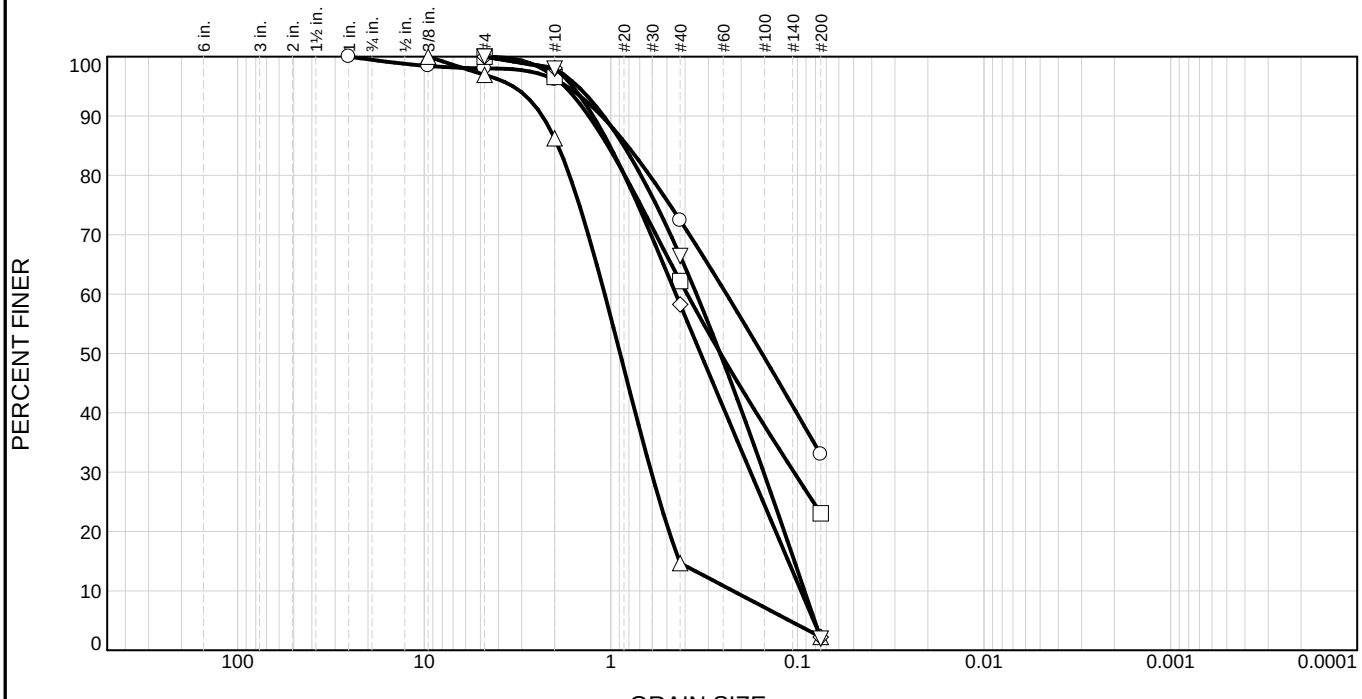
Figure C-24

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	3.9	23.7	39.4	33.0	
□	0.0	3.4	34.4	39.1	23.1	
△	0.0	13.8	71.5	12.5	2.2	
◇	0.0	1.9	39.8	56.1	2.2	
▽	0.0	2.0	31.6	64.4	2.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	NV	NP	0.8148	0.2400	0.1549					
□	NV	NP	1.0371	0.3899	0.2582	0.1043				
△	NV	NP	1.9197	1.0787	0.8921	0.6069	0.4289	0.2214	1.54	4.87
◇	NV	NP	1.0131	0.4481	0.3303	0.1782	0.1118	0.0956	0.74	4.69
▽	NV	NP	0.8528	0.3475	0.2595	0.1517	0.1037	0.0916	0.72	3.79

Material Description	USCS	AASHTO
○ Moist loose brown silty fine sand w/trace of coarse sand and fine gravel.	SM	A-2-4(0)
□ Moist loose brown silty fine to coarse sand w/trace of fine gravel.	SM	A-2-4(0)
△ Moist dense brown coarse sand w/some fine sand and fine gravel, trace of silt.	SP	A-1-b
◇ Moist dense brown fine to coarse sand w/trace of fine gravel and silt.	SP	A-3
▽ Moist medium dense brown fine to coarse sand w/trace of fine gravel and silt.	SP	A-3

Project No. **Client:**

Project: Lewes Transit Center

○ **Source of Sample:** SW-25 **Depth:** 0.0 **Sample Number:** 1

□ **Source of Sample:** SW-25 **Depth:** 2.0 **Sample Number:** 2

△ **Source of Sample:** SW-25 **Depth:** 4.0 **Sample Number:** 3

◇ **Source of Sample:** SW-25 **Depth:** 6.0 **Sample Number:** 4

▽ **Source of Sample:** SW-25 **Depth:** 8.0 **Sample Number:** 5

Remarks:

Delaware Department of Transportation
Materials and Research Laboratory

Figure C-25

INFILTRATION TEST RESULTS

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	6-Jul-13
Project Number:	T200612502		
Run By:	John	Boring:	SWM- 2
Description:	See Boring Log	Test Depth:	24.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
6:00	15	24.00	2.00	8.00
6:15		22.00		
6:15	30	22.00	1.50	3.00
6:30		20.50		
6:30	30	24.00	2.75	5.50
7:00		21.25		
7:00	30	21.25	2.25	4.50
7:30		19.00		
7:30	30	24.00	1.75	3.50
8:00		22.25		
8:00	30	22.25	2.00	4.00
8:30		20.25		
8:30	30	24.00	2.00	4.00
9:00		22.00		
9:00	30	22.00	2.00	4.00
9:30		20.00		
9:30	30	24.00	1.75	3.50
10:00		22.25		
10:00	30	22.25	2.00	4.00
10:30		20.25		
10:30	30	24.00	2.00	4.00
11:00		22.00		
11:00	30	22.00	1.50	3.00
11:30		20.50		
11:30	30	24.00	2.00	4.00
12:00		22.00		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	12-Jul-13
Project Number:	T200612502		
Run By:	Rick	Boring:	SWM- 4
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
7:00	15	24.00	1.00	4.00
7:15		23.00		
7:15	15	23.00	0.00	0.00
7:30		23.00		
7:30	15	23.00	0.50	2.00
7:45		22.50		
7:45	15	22.50	0.50	2.00
8:00		22.00		
8:00	30	22.00	2.00	4.00
8:30		20.00		
8:30	30	20.00	2.00	4.00
9:00		18.00		
9:00	30	18.00	1.00	2.00
9:30		17.00		
9:30	30	17.00	2.00	4.00
10:00		15.00		
10:00	30	24.00	1.75	3.50
10:30		22.25		
10:30	30	22.25	1.75	3.50
11:00		20.50		
11:00	30	20.50	1.00	2.00
11:30		19.50		
11:30	30	19.50	1.25	2.50
12:00		18.25		
12:00	30	18.25	1.00	2.00
12:30		17.25		
12:30	30	17.25	1.00	2.00
13:00		16.25		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	11-Jul-13
Project Number:	T200612502		
Run By:	David	Boring:	SWM- 5
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
7:05	15	24.00	2.00	8.00
7:20		22.00		
7:20	15	22.00	1.00	4.00
7:35		21.00		
7:35	15	21.00	0.50	2.00
7:50		20.50		
7:50	15	20.50	0.50	2.00
8:05		20.00		
8:05	30	20.00	1.00	2.00
8:35		19.00		
8:35	30	19.00	0.50	1.00
9:05		18.50		
9:05	30	18.50	0.50	1.00
9:35		18.00		
9:35	30	18.00	0.75	1.50
10:05		17.25		
10:05	30	24.00	1.00	2.00
10:35		23.00		
10:35	30	23.00	1.00	2.00
11:05		22.00		
11:05	30	22.00	0.50	1.00
11:35		21.50		
11:35	30	21.50	0.50	1.00
12:05		21.00		
12:05	30	21.00	0.50	1.00
12:35		20.50		
12:35	30	20.50	0.50	1.00
13:05		20.00		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	11-Jul-13
Project Number:	T200612502		
Run By:	David	Boring:	SWM- 6
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
7:00	15	24.00	2.50	10.00
7:15		21.50		
7:15	15	21.50	0.50	2.00
7:30		21.00		
7:30	15	21.00	2.00	8.00
7:45		19.00		
7:45	15	19.00	0.50	2.00
8:00		18.50		
8:00	30	18.50	1.00	2.00
8:30		17.50		
8:30	30	24.00	1.50	3.00
9:00		22.50		
9:00	30	22.50	1.00	2.00
9:30		21.50		
9:30	30	21.50	1.00	2.00
10:00		20.50		
10:00	30	20.50	0.75	1.50
10:30		19.75		
10:30	30	19.75	0.25	0.50
11:00		19.50		
11:00	30	19.50	0.25	0.50
11:30		19.25		
11:30	30	19.25	0.50	1.00
12:00		18.75		
12:00	30	18.75	0.50	1.00
12:30		18.25		
12:30	30	18.25	0.50	1.00
13:00		17.75		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	9-Jul-13
Project Number:	T200612502		
Run By:	John	Boring:	SWM- 7
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
6:45	15	24.00	2.00	8.00
7:00		22.00		
7:00	15	22.00	0.50	2.00
7:15		21.50		
7:15	15	21.50	0.75	3.00
7:30		20.75		
7:30	15	20.75	0.50	2.00
7:45		20.25		
7:45	30	24.00	1.50	3.00
8:15		22.50		
8:15	30	22.50	1.00	2.00
8:45		21.50		
8:45	30	21.50	1.00	2.00
9:15		20.50		
9:15	30	24.00	1.00	2.00
9:45		23.00		
9:45	30	23.00	1.00	2.00
10:15		22.00		
10:15	30	22.00	1.00	2.00
10:45		21.00		
10:45	30	24.00	1.00	2.00
11:15		23.00		
11:15	30	23.00	0.75	1.50
11:45		22.25		
11:45	30	22.25	1.00	2.00
12:15		21.25		
12:15	30	21.25	0.50	1.00
12:45		20.75		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	10-Jul-13
Project Number:	T200612502		
Run By:	David	Boring:	SWM- 8
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
6:50	15	24.00	3.50	14.00
7:05		20.50		
7:05	15	20.50	2.50	10.00
7:20		18.00		
7:20	15	18.00	2.50	10.00
7:35		15.50		
7:35	15	24.00	3.00	12.00
7:50		21.00		
7:50	30	21.00	5.00	10.00
8:20		16.00		
8:20	30	24.00	4.50	9.00
8:50		19.50		
8:50	30	19.50	8.00	16.00
9:20		11.50		
9:20	30	24.00	4.50	9.00
9:50		19.50		
9:50	30	19.50	3.00	6.00
10:20		16.50		
10:20	30	24.00	4.00	8.00
10:50		20.00		
10:50	30	20.00	2.00	4.00
11:20		18.00		
11:20	30	18.00	3.50	7.00
11:50		14.50		
11:50	30	14.50	2.50	5.00
12:20		12.00		
12:20	30	24.00	3.50	7.00
12:50		20.50		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	12-Jul-13
Project Number:	T200612502		
Run By:	David	Boring:	SWM- 9
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
7:10	15	24.00	3.00	12.00
7:25		21.00		
7:25	15	21.00	0.50	2.00
7:40		20.50		
7:40	15	20.50	1.00	4.00
7:55		19.50		
7:55	15	19.50	0.50	2.00
8:10		19.00		
8:10	30	24.00	1.00	2.00
8:40		23.00		
8:40	30	23.00	1.00	2.00
9:10		22.00		
9:10	30	22.00	0.50	1.00
9:40		21.50		
9:40	30	21.50	0.50	1.00
10:10		21.00		
10:10	30	21.00	0.25	0.50
10:40		20.75		
10:40	30	20.75	0.25	0.50
11:10		20.50		
11:10	30	20.50	0.25	0.50
11:40		20.25		
11:40	30	20.25	0.25	0.50
12:10		20.00		
12:10	30	20.000	0.13	0.25
12:40		19.88		
12:40	30	19.88	0.13	0.25
13:10		19.75		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	9-Jul-13
Project Number:	T200612502		
Run By:	Billy	Boring:	SWM- 10
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
9:30	15	24.00	3.00	12.00
9:45		21.00		
9:45	15	21.00	2.75	11.00
10:00		18.25		
10:00	15	18.25	1.50	6.00
10:15		16.75		
10:15	15	16.75	1.25	5.00
10:30		15.50		
10:30	30	24.00	3.00	6.00
11:00		21.00		
11:00	30	21.00	2.50	5.00
11:30		18.50		
11:30	30	18.50	2.50	5.00
12:00		16.00		
12:00	30	16.00	2.00	4.00
12:30		14.00		
12:30	30	24.00	1.50	3.00
13:00		22.50		
13:00	30	22.50	1.50	3.00
13:30		21.00		
13:30	30	21.00	1.50	3.00
14:00		19.50		
14:00	30	19.50	1.50	3.00
14:30		18.00		
14:30	30	18.00	1.50	3.00
15:00		16.50		
15:00	30	16.50	2.50	5.00
15:30		14.00		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	10-Jul-13
Project Number:	T200612502		
Run By:	David	Boring:	SWM- 11
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
7:00	5	24.00	24.00	288.00
7:05		0.00		
7:05	5	24.00	24.00	288.00
7:10		0.00		
7:10	5	24.00	12.50	150.00
7:15		11.50		
7:15	5	24.00	13.00	156.00
7:20		11.00		
7:20	5	24.00	8.00	96.00
7:25		16.00		
7:25	5	24.00	11.50	138.00
7:30		12.50		
7:30	5	24.00	11.00	132.00
7:35		13.00		
7:35	5	24.00	12.00	144.00
7:40		12.00		
7:40	5	24.00	10.50	126.00
7:45		13.50		
7:45	5	24.00	11.00	132.00
7:50		13.00		
7:50	10	24.00	24.00	144.00
8:00		0.00		
8:00	10	24.00	24.00	144.00
8:10		0.00		
8:10	10	24.00	24.00	144.00
8:20		0.00		
8:20	10	24.00	24.00	144.00
8:30		0.00		
8:30	10	24.00	24.00	144.00
8:40		0.00		
8:40	10	24.00	24.00	144.00
8:50		0.00		

8:50	**10**	24.00	24.00	144.00
9:00		0.00		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	12-Jul-13
Project Number:	T200612502		
Run By:	David	Boring:	SWM- 12
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
7:15	15	24.00	9.00	36.00
7:30		15.00		
7:30	15	24.00	4.00	16.00
7:45		20.00		
7:45	15	20.00	2.50	10.00
8:00		17.50		
8:00	15	24.00	3.00	12.00
8:15		21.00		
8:15	30	21.00	4.50	9.00
8:45		16.50		
8:45	30	24.00	7.50	15.00
9:15		16.50		
9:15	30	24.00	4.75	9.50
9:45		19.25		
9:45	30	24.00	7.50	15.00
10:15		16.50		
10:15	30	24.00	4.25	8.50
10:45		19.75		
10:45	30	19.75	3.00	6.00
11:15		16.75		
11:15	30	16.75	2.50	5.00
11:45		14.25		
11:45	30	14.25	2.50	5.00
12:15		11.75		
12:15	30	11.75	2.25	4.50
12:45		9.50		
12:45	30	9.50	2.25	4.50
13:15		7.25		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	9-Jul-13
Project Number:	T200612502		
Run By:	Billy	Boring:	SWM- 13
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
9:30	15	24.00	4.00	16.00
9:45		20.00		
9:45	15	20.00	4.00	16.00
10:00		16.00		
10:00	15	16.00	2.50	10.00
10:15		13.50		
10:15	15	13.50	2.50	10.00
10:30		11.00		
10:30	30	24.00	5.50	11.00
11:00		18.50		
11:00	30	18.50	4.50	9.00
11:30		14.00		
11:30	30	14.00	4.00	8.00
12:00		10.00		
12:00	30	10.00	4.00	8.00
12:30		6.00		
12:30	30	24.00	4.00	8.00
13:00		20.00		
13:00	30	20.00	4.00	8.00
13:30		16.00		
13:30	30	16.00	4.00	8.00
14:00		12.00		
14:00	30	12.00	4.00	8.00
14:30		8.00		
14:30	30	24.00	4.00	8.00
15:00		20.00		
15:00	30	20.00	4.00	8.00
15:30		16.00		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	11-Jul-13
Project Number:	T200612502		
Run By:	Rick	Boring:	SWM- 14
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
6:55	15	24.00	4.00	16.00
7:10		20.00		
7:10	15	20.00	3.00	12.00
7:25		17.00		
7:25	15	17.00	1.00	4.00
7:40		16.00		
7:40	15	24.00	2.00	8.00
7:55		22.00		
7:55	30	22.00	3.00	6.00
8:25		19.00		
8:25	30	19.00	3.00	6.00
8:55		16.00		
8:55	30	24.00	3.50	7.00
9:25		20.50		
9:25	30	20.50	2.50	5.00
9:55		18.00		
9:55	30	18.00	2.00	4.00
10:25		16.00		
10:25	30	16.00	2.00	4.00
10:55		14.00		
10:55	30	14.00	2.00	4.00
11:25		12.00		
11:25	30	24.00	3.00	6.00
11:55		21.00		
11:55	30	21.00	2.00	4.00
12:25		19.00		
12:25	30	19.00	2.00	4.00
12:55		17.00		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	11-Jul-13
Project Number:	T200612502		
Run By:	Rick	Boring:	SWM- 15
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
6:45	15	24.00	9.00	36.00
7:00		15.00		
7:00	15	15.00	7.00	28.00
7:15		8.00		
7:15	15	24.00	15.00	60.00
7:30		9.00		
7:30	15	24.00	2.00	8.00
7:45		22.00		
7:45	30	22.00	6.00	12.00
8:15		16.00		
8:15	30	24.00	4.00	8.00
8:45		20.00		
8:45	30	20.00	4.00	8.00
9:15		16.00		
9:15	30	16.00	2.00	4.00
9:45		14.00		
9:45	30	24.00	3.00	6.00
10:15		21.00		
10:15	30	21.00	9.00	18.00
10:45		12.00		
10:45	30	24.00	16.50	33.00
11:15		7.50		
11:15	30	24.00	7.00	14.00
11:45		17.00		
11:45	30	24.00	6.50	13.00
12:15		17.50		
12:15	30	17.50	4.50	9.00
12:45		13.00		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	9-Jul-13
Project Number:	T200612502		
Run By:	David	Boring:	SWM- 16
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
7:10	15	24.00	5.00	20.00
7:25		19.00		
7:25	15	19.00	2.50	10.00
7:40		16.50		
7:40	15	24.00	3.50	14.00
7:55		20.50		
7:55	15	20.50	3.00	12.00
8:10		17.50		
8:10	30	24.00	6.00	12.00
8:40		18.00		
8:40	30	18.00	5.00	10.00
9:10		13.00		
9:10	30	24.00	5.00	10.00
9:40		19.00		
9:40	30	19.00	4.00	8.00
10:10		15.00		
10:10	30	24.00	4.50	9.00
10:40		19.50		
10:40	30	19.50	4.00	8.00
11:10		15.50		
11:10	30	24.00	4.00	8.00
11:40		20.00		
11:40	30	20.00	3.50	7.00
12:10		16.50		
12:10	30	16.50	3.50	7.00
12:40		13.00		
12:40	30	13.00	3.00	6.00
13:10		10.00		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	9-Jul-13
Project Number:	T200612502		
Run By:	David	Boring:	SWM- 17
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
7:00	15	24.00	2.50	10.00
7:15		21.50		
7:15	15	21.50	1.00	4.00
7:30		20.50		
7:30	15	20.50	0.50	2.00
7:45		20.00		
7:45	15	20.00	0.50	2.00
8:00		19.50		
8:00	30	19.50	1.75	3.50
8:30		17.75		
8:30	30	24.00	0.75	1.50
9:00		23.25		
9:00	30	23.25	1.25	2.50
9:30		22.00		
9:30	30	22.00	1.00	2.00
10:00		21.00		
10:00	30	21.00	0.75	1.50
10:30		20.25		
10:30	30	20.25	0.75	1.50
11:00		19.50		
11:00	30	19.50	0.50	1.00
11:30		19.00		
11:30	30	19.00	1.00	2.00
12:00		18.00		
12:00	30	18.00	0.75	1.50
12:30		17.25		
12:30	30	17.25	0.75	1.50
13:00		16.50		

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	3-Jul-13
Project Number:	T200612502		
Run By:	David	Boring:	SWM- 18
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
7:50	15	24.00	5.50	22.00
8:05		18.50		
8:05	15	18.50	3.50	14.00
8:20		15.00		
8:20	15	15.00	3.50	14.00
8:35		11.50		
8:35	15	24.00	4.25	17.00
8:50		19.75		
8:50	30	19.75	7.50	15.00
9:20		12.25		
9:20	30	24.00	8.00	16.00
9:50		16.00		
9:50	30	24.00	5.50	11.00
10:20		18.50		
10:20	30	18.50	4.00	8.00
10:50		14.50		
10:50	30	24.00	4.75	9.50
11:20		19.25		
11:20	30	19.25	4.00	8.00
11:50		15.25		
11:50	30	24.00	3.50	7.00
12:20		20.50		
12:20	30	20.50	3.50	7.00
12:50		17.00		
12:50	30	24.00	3.50	7.00
13:20		20.50		
13:20	30	20.50	3.50	7.00
13:50		17.00		

average infiltration rate:	7.0	in/hr
maximum infiltration rate to use for design:	3.5	**in/hr**

* Does meet minimum 1.02 inches per hour

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	3-Jul-13
Project Number:	T200612502		
Run By:	David	Boring:	SWM- 19
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
7:55	15	24.00	3.75	15.00
8:10		20.25		
8:10	15	20.25	2.75	11.00
8:25		17.50		
8:25	15	17.50	2.00	8.00
8:40		15.50		
8:40	15	24.00	2.50	10.00
8:55		21.50		
8:55	30	21.50	3.00	6.00
9:25		18.50		
9:25	30	24.00	3.50	7.00
9:55		20.50		
9:55	30	20.50	3.50	7.00
10:25		17.00		
10:25	30	24.00	3.00	6.00
10:55		21.00		
10:55	30	21.00	2.50	5.00
11:25		18.50		
11:25	30	18.50	2.00	4.00
11:55		16.50		
11:55	30	24.00	2.25	4.50
12:25		21.75		
12:25	30	21.75	2.25	4.50
12:55		19.50		
12:55	30	24.00	2.25	4.50
13:25		21.75		
13:25	30	21.75	3.25	6.50
13:55		18.50		

average infiltration rate:	4.5	in/hr
maximum infiltration rate to use for design:	2.3	**in/hr**

* Does meet minimum 1.02 inches per hour

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	8-Jul-13
Project Number:	T200612502		
Run By:	David	Boring:	SWM- 21
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
7:15	15	24.00	4.75	19.00
7:30		19.25		
7:30	15	19.25	2.00	8.00
7:45		17.25		
7:45	15	24.00	1.00	4.00
8:00		23.00		
8:00	15	23.00	3.00	12.00
8:15		20.00		
8:15	30	20.00	3.00	6.00
8:45		17.00		
8:45	30	24.00	4.00	8.00
9:15		20.00		
9:15	30	20.00	4.00	8.00
9:45		16.00		
9:45	30	24.00	5.00	10.00
10:15		19.00		
10:15	30	24.00	2.50	5.00
10:45		21.50		
10:45	30	21.50	4.50	9.00
11:15		17.00		
11:15	30	24.00	4.00	8.00
11:45		20.00		
11:45	30	20.00	4.00	8.00
12:15		16.00		
12:15	30	24.00	3.00	6.00
12:45		21.00		
12:45	30	21.00	3.00	6.00
13:15		18.00		

average infiltration rate:	6.0	in/hr
maximum infiltration rate to use for design:	3.0	**in/hr**

* Does meet minimum 1.02 inches per hour

Borehole Infiltrometer Test Calculations

Project Name:	Lewes Transit Center	Date Tested:	8-Jul-13
Project Number:	T200612502		
Run By:	David	Boring:	SWM- 24
Description:	See Boring Log	Test Depth:	18.0 inch
Presoak:	No Presoak		

4-Inch Diameter Casing

Clock times (min)	Delta T (hours)	Readings (in)	Incremental Drop (in)	Incremental Infiltration Rate (inch/hr)
7:35	15	24.00	2.50	10.00
7:50		21.50		
7:50	15	21.50	1.50	6.00
8:05		20.00		
8:05	15	20.00	1.50	6.00
8:20		18.50		
8:20	15	24.00	2.00	8.00
8:35		22.00		
8:35	30	22.00	2.50	5.00
9:05		19.50		
9:05	30	24.00	3.00	6.00
9:35		21.00		
9:35	30	21.00	2.50	5.00
10:05		18.50		
10:05	30	24.00	3.00	6.00
10:35		21.00		
10:35	30	21.00	2.50	5.00
11:05		18.50		
11:05	30	24.00	2.50	5.00
11:35		21.50		
11:35	30	21.50	3.50	7.00
12:05		18.00		
12:05	30	24.00	3.00	6.00
12:35		21.00		
12:35	30	21.00	2.50	5.00
13:05		18.50		
13:05	30	18.50	2.50	5.00
13:35		16.00		

average infiltration rate:	5.0	in/hr
maximum infiltration rate to use for design:	2.5	**in/hr**

* Does meet minimum 1.02 inches per hour

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