ATLANTIC TESTING LABORATORIES

PERMEABILITY ON GRANULAR SOIL TEST REPORT UT3510SL-09-02-11

ASTM D 2434 (using a rigid wall permeameter)

PROJECT INFORMATION

CLIENT:	Norlite Corporation	DATE :	February 21, 2011
PROJECT:	Laboratory Soils Analysis	DELIVERED BY:	Client
		DATE DELIVERED:	February 7, 2011

SAMPLE IDENTIFICATION

ATL Sample No.:	UT3510S09	Client Identification:	Not Available
Sample Location:	Norlite Corporation - Stockpile	Sample Depth:	Not Available
Maximum Particle Size:	3/8"	Oversize Material (%):	Not Applicable
Sample Classification:	Norlite Lightweight Aggregate Geotechnical Blend (75% 88/12, 25% 3/8)		

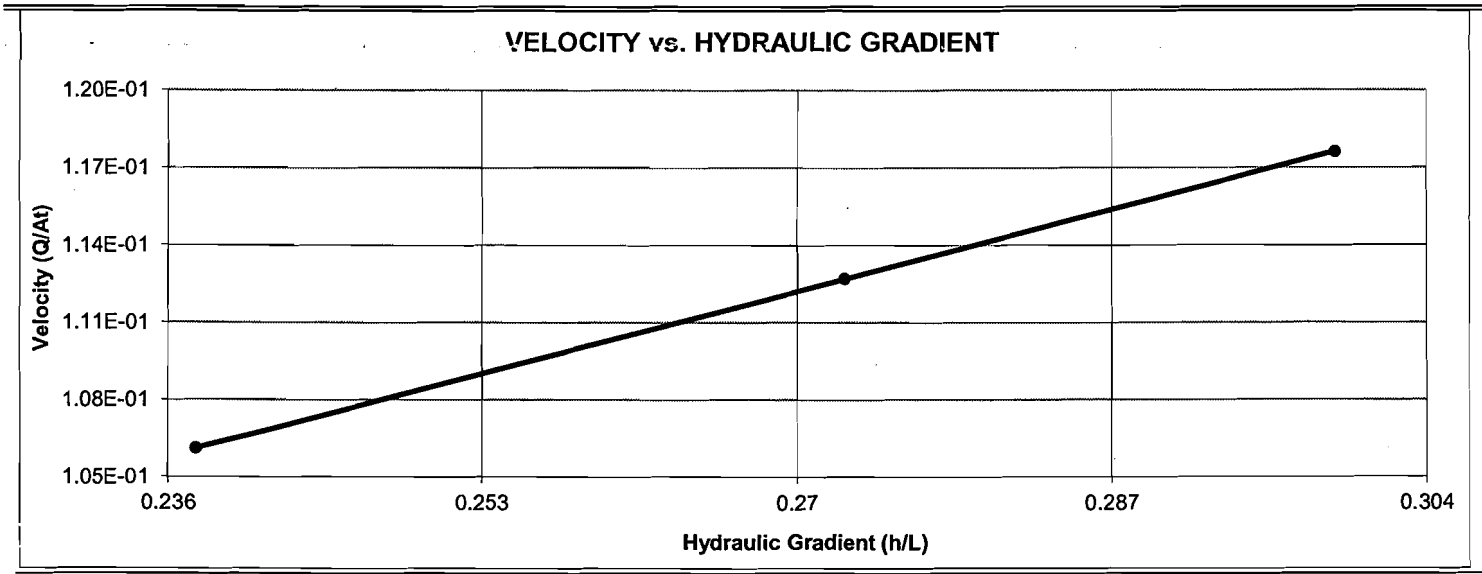
SAMPLE INFORMATION

Diameter (cm):	10.160	Minimum Index Density (pcf):	Not Applicable
Area (cm^2):	81.070	Maximum Index Density (pcf):	Not Applicable
Effective Length (cm):	11.370	Relative Density:	Not Applicable
Sample Length (cm):	17.526	Maximum Dry Unit Weight (pcf):	Not Available
Sample Weight (lbs):	3.350	Dry Unit Weight (pcf):	49.7
Moisture Content (%):	34.2	Percent Compaction (pcf):	Not Applicable
Permeant Liquid:	Water	Void Ratio:	Not Applicable

TEST DATA

Test No.	Manometers h_1	Manometers h_2	Head, h(cm)	Q(cm^3)	t(sec)	Q/At	h/L	Temp (°C)	Corrected k(cm/sec)
1	17.8	15.1	2.7	129	15	0.1061	0.2375	18.0	4.7×10^{-1}
2	20.1	17.0	3.1	137	15	0.1127	0.2726	15.0	4.7×10^{-1}
3	22.5	19.1	3.4	143	15	0.1176	0.2990	12.0	4.8×10^{-1}

Average Corrected k(cm/sec): 4.7×10^{-1} Project Specifications min k(cm/sec): ---



REMARKS

At the request of the client, this sample was immersed in water for approximately 66 hours prior to testing. The saturation water was decanted over a #200 sieve prior to placing the sample into the test mold.

Reviewed by: Gary Nipple Date: 2/21/11

ATLANTIC TESTING LABORATORIES

PERMEABILITY ON GRANULAR SOIL TEST REPORT UT3510SL-10-02-11

ASTM D 2434 (using a rigid wall permeameter)

PROJECT INFORMATION

CLIENT:	Norlite Corporation	DATE :	February 21, 2011
PROJECT:	Laboratory Soils Analysis	DELIVERED BY:	Client
		DATE DELIVERED:	February 7, 2011

SAMPLE IDENTIFICATION

ATL Sample No.:	UT3510S10	Client Identification:	Not Available
Sample Location:	Norltie Corporation - Stockpile	Sample Depth:	Not Available
Maximum Particle Size:	3/8"	Oversize Material (%):	Not Applicable
Sample Classification:	Norlite Lightweight Aggregate Geotechnical Blend (50% 88/12, 50% 3/8)		

SAMPLE INFORMATION

Diameter (cm):	10.160	Minimum Index Density (pcf):	Not Applicable
Area (cm^2):	81.070	Maximum Index Density (pcf):	Not Applicable
Effective Length (cm):	11.370	Relative Density:	Not Applicable
Sample Length (cm):	17.526	Maximum Dry Unit Weight (pcf):	Not Available
Sample Weight (lbs):	3.350	Dry Unit Weight (pcf):	50.5
Moisture Content (%):	32.1	Percent Compaction (pcf):	Not Applicable
Permeant Liquid:	Water	Void Ratio:	Not Applicable

TEST DATA

Test No.	Manometers h_1	Manometers H_2	Head, h(cm)	Q(cm^3)	t(sec)	Q/At	h/L	Temp (°C)	Corrected k(cm/sec)
1	15.9	15.5	0.4	113	15	0.0929	0.0352	14.5	3.0
2	15.9	15.5	0.4	111	15	0.0913	0.0352	14.5	3.0
3	15.9	15.5	0.4	111	15	0.0913	0.0352	14.5	3.0
4	21.4	20.5	0.9	132	15	0.1085	0.0792	15.0	1.6
5	21.4	20.5	0.9	138	15	0.1135	0.0792	15.0	1.6
6	21.4	20.5	0.9	137	15	0.1127	0.0792	15.0	1.6
7	26.9	25.8	1.1	156	15	0.1283	0.0967	11.0	1.7
8	26.9	25.8	1.1	162	15	0.1332	0.0967	11.0	1.7
9	26.9	25.8	1.1	154	15	0.1206	0.0967	11.0	1.6

Average Corrected k(cm/sec): 2.1 Project Specifications min k(cm/sec): ---

REMARKS

At the request of the client, this sample was immersed in water for approximately 67 hours prior to testing. The saturation water was decanted over a #200 sieve prior to placing the sample into the test mold.

Reviewed by: Gary Grippe Date: 2/21/11

ATLANTIC TESTING LABORATORIES

PERMEABILITY ON GRANULAR SOIL TEST REPORT UT3510SL-11-02-11

ASTM D 2434 (using a rigid wall permeameter)

PROJECT INFORMATION

CLIENT:	Norlite Corporation	DATE :	February 21, 2011
PROJECT:	Laboratory Soils Analysis	DELIVERED BY:	Client
		DATE DELIVERED:	February 7, 2011

SAMPLE IDENTIFICATION

ATL Sample No.:	UT3510S11	Client Identification:	Not Available
Sample Location:	Norltie Corporation - Stockpile	Sample Depth:	Not Available
Maximum Particle Size:	1/2"	Oversize Material (%):	Not Applicable
Sample Classification:	Norlite Lightweight Aggregate Geotechnical Blend (75% 88/12, 25% 3/4)		

SAMPLE INFORMATION

Diameter (cm):	22.860	Minimum Index Density (pcf):	Not Applicable
Area (cm^2):	410.400	Maximum Index Density (pcf):	Not Applicable
Effective Length (cm):	24.200	Relative Density:	Not Applicable
Sample Length (cm):	30.480	Maximum Dry Unit Weight (pcf):	Not Available
Sample Weight (lbs):	31.70	Dry Unit Weight (pcf):	52.4
Moisture Content (%):	37.1	Percent Compaction (pcf):	Not Applicable
Permeant Liquid:	Water	Void Ratio:	Not Applicable

TEST DATA

Test No.	Manometers h_1	Manometers H_2	Head, h(cm)	$Q(cm^3)$	t(sec)	Q/At	h/L	Temp (°C)	Corrected k(cm/sec)
1	17.7	17.0	0.7	146	15	0.0237	0.0289	18.0	8.6×10^{-1}
2	17.7	17.0	0.7	148	15	0.0240	0.0289	18.0	8.7×10^{-1}
3	17.7	17.0	0.7	148	15	0.0240	0.0289	18.0	8.7×10^{-1}
4	20.1	19.4	0.7	174	15	0.0283	0.0289	16.0	1.1
5	20.1	19.4	0.7	178	15	0.0289	0.0289	16.0	1.1
6	20.1	19.4	0.7	177	15	0.0288	0.0289	16.0	1.1
7	23.0	22.1	0.9	206	15	0.0335	0.0372	12.5	1.1
8	23.0	22.1	0.9	206	15	0.0335	0.0372	12.5	1.1
9	23.0	22.1	0.9	207	15	0.0336	0.0372	12.5	1.1

Average Corrected k(cm/sec): 1.0 Project Specifications min k(cm/sec): ---

REMARKS

At the request of the client, this sample was immersed in water for approximately 70 hours prior to testing. The saturation water was decanted over a #200 sieve prior to placing the sample into the test mold.

Reviewed by: Gary Griffith Date: 2/21/11