

*2011 Roadway
Improvement Project
Various Locations*

East Hartford,
Connecticut

Prepared for **Town of East Hartford**
Department of Public Works
East Hartford, Connecticut

Prepared by  **Vanasse Hangen Brustlin, Inc.**
Middletown, Connecticut

**Pavement Engineering Services
PAVEMENT CONDITION
INVESTIGATION AND RECOMMENDATIONS
East Hartford, CT**

LOCATION: Forbes Street
FROM: Heritage Lane

STREET ID: FORBE1
TO: Forest Street

RECOMMENDATIONS: Due to the moderate weather/block and alligator cracking, combined with an average of 6.5" of fair hot mix asphalt (HMA) and its structural adequacy, this pavement is recommended for **MILLING & RESURFACING**.

Alternative #1, for an estimated 20- year service life, plan to mill the existing HMA to a 3" to 3.5" depth, make local patch repairs, seal major cracks and tack coat, prior to paving with 1.75" of 0.50 SuperPave Level 2 intermediate course and 1.5" of 0.375 inch SuperPave Level 2 surface.

Alternative #2, for an estimated 12 to 15- year service life, plan to mill the existing HMA to a 2" depth, make local patch repairs, seal major cracks and tack coat, prior to a leveling course and 1.5" of 0.375 inch SuperPave Level 2 surface.

NOTE: On the milled surface apply an undiluted RS-1 or CRS-1 tack coat, at 0.10 ± 0.02 gal./s.y. and at 0.07 ± 0.02 gal./s.y., between the HMA paving courses.

NOTE: The information furnished by VHB is based on selected representative sample areas and were relied upon to make engineering judgments, assumptions, deductions and to form conclusions for this report. No assurance is given that they have remained unchanged since the field data were obtained, nor are the samples necessarily typical of other locations.

EXISTING CONDITIONS

FUNCTIONAL CLASSIFICATION:	Major/Minor Arterial	ZONE:	Resi-Through
RIDING COMFORT:	Fair	DISTRICT:	07
DRAINAGE CONDITION INDEX:	Good	STRUCTURE:	HMA on Silty Processed Gravel
RATER:	AMB	DATE:	8/5/2009
CURB:	6 inches	TYPE:	Bit. Lip
LENGTH:	5169 ft.	WIDTH:	36 ft.
		SECTION ID:	2023, 2608 & 3926
		AVERAGE DAILY TRAFFIC (ADT)	8420
		2010 BUS & TRUCK TRAFFIC:	3.85%

DISTRESS LEVEL INVESTIGATION

<i>DISTRESS IDENTIFICATION</i>	<i>SEVERITY</i>		
	<i>LOW</i>	<i>MODERATE</i>	<i>HIGH</i>
Potholes & Non-Utility Patches	<input checked="" type="checkbox"/>		
Alligator Cracking		<input checked="" type="checkbox"/>	
Distortion/Depressions	<input checked="" type="checkbox"/>		
Rutting (Wheelpath)			
Weathering/Oxidation/Block Cracking		<input checked="" type="checkbox"/>	
Transverse/Longitudinal Cracking	<input checked="" type="checkbox"/>		
Bleeding/Polished Aggregate			
Surface Wear & Raveling	<input checked="" type="checkbox"/>		
Corrugations, Shoving & Slippage			

PAVEMENT CONDITION INDEX

**PCI
79**

REMARKS:

The distress level investigation results indicate there is moderate weather/block and alligator cracking. Minor pothole/patching, distortions and transverse & longitudinal cracking were evident. Localized light to heavy raveling was also noted. The data indicates that the average base index is 78 and the average surface index is 88. An index of 0 indicates nearly impassible extremely poor pavement condition index, while a newly paved, perfect pavement would exhibit a condition of 100.

The laboratory evaluation of the test pit (TP) materials & the pavement cores revealed from 4.75" to 8.75" (average 6.5") of fair HMA having only 13% of the samples without bond between layers. There is 4" to 12" of silty processed gravel base on subbases/subgrades of poorly and uniformly graded silty sands. The silty sand subgrades are fair to poor foundations when not subjected to frost action, having a moderate frost potential and exhibiting fair drainage characteristics.

Based on the materials evaluation and traffic, this pavement section was found to be structurally adequate.



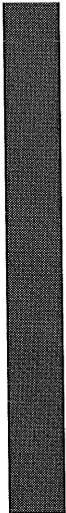
54 Tuttle Place
Middletown
Connecticut 06457
860 632 1500
FAX 860 632 7879

TEST REFERENCE

LOCATION: Forbes St
AREA: 360' S of Maple St, 14' off E curb

DATE SAMPLED: 6/9/2010
DATE TESTED: 6/19/2010

TEST PIT # 1

	DEPTH		CLASSIFICATION with Field Comments
	ENGLISH	METRIC	
	9"	229 mm	Hot Mix Asphalt (HMA)
	2"	51 mm	Well Graded Silty Gravel (GW-GM)
	7"	178 mm	Poorly Graded Silty Gravel (GP-GM) Refusal @ 18" due to large cobbles

Test Pit # 1

Base Well Graded Silty Gravel (GW-GM)

SIEVE SIZE	PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm (5")	100	
90 mm (3-1/2")	100	100
38.1 mm (1-1/2")	91	55-100
19 mm (3/4")	77	
12.5 mm (1/2")	72	
6.3 mm (1/4")	60	25-60
2 mm (#10)	40	15-45
0.425 mm (#40)	19	5-25
0.3 mm (#50)	16	
0.25 mm (#60)	15	
0.15 mm (#100)	12 a	0-10
0.075 mm (#200)	10 a	0-5

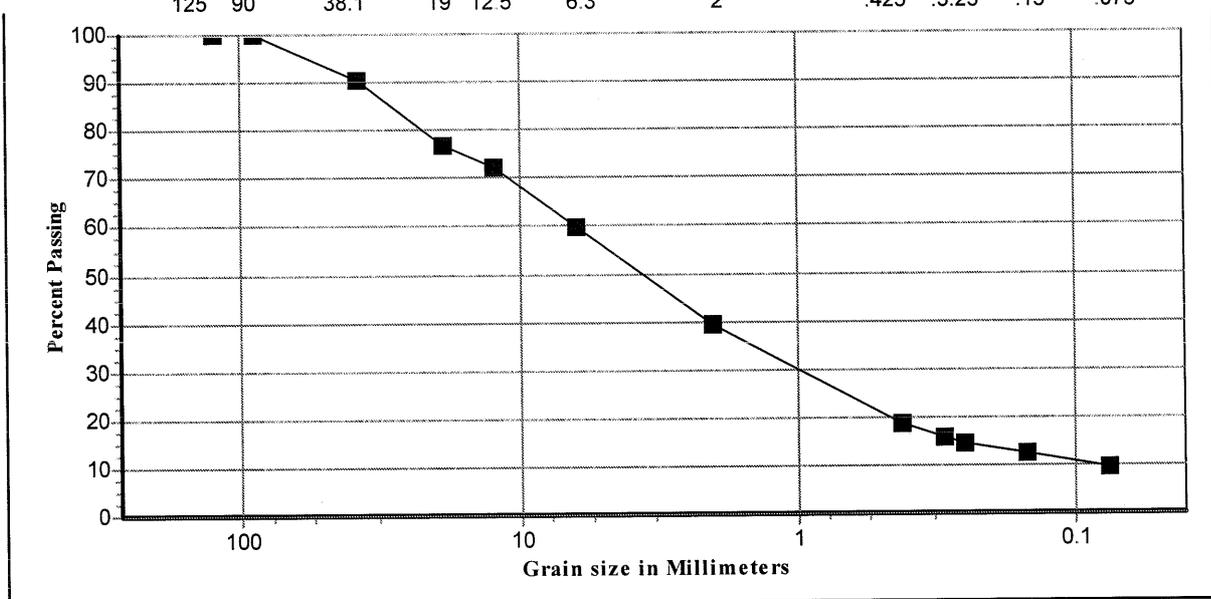
REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT
	Coarse	Fine	Coarse	Medium	Fine	
	3 1/2"	3/4"	#4	#10	#40	#200

125 90 38.1 19 12.5 6.3 2 .425 .325 .15 .075



Test Pit # 1

SubGrade I Poorly Graded Silty Gravel (GP-GM)

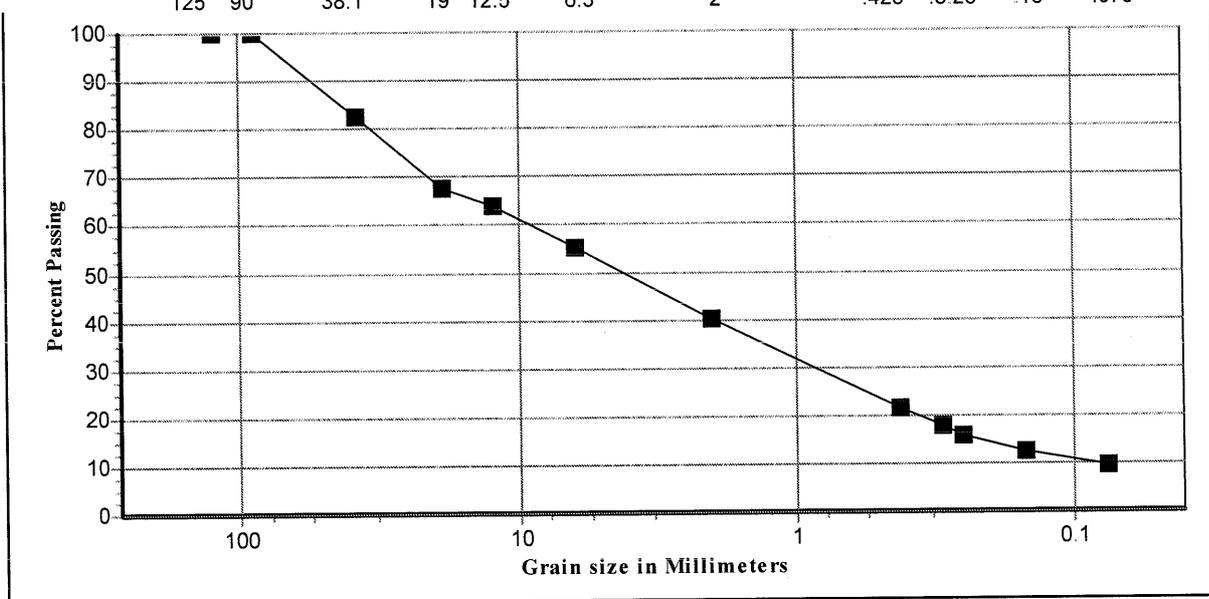
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	82	55-100
19 mm	(3/4")	68	
12.5 mm	(1/2")	64	
6.3 mm	(1/4")	55	25-60
2 mm	(#10)	40	15-45
0.425 mm	(#40)	21	5-25
0.3 mm	(#50)	18	
0.25 mm	(#60)	16	
0.15 mm	(#100)	13 a	0-10
0.075 mm	(#200)	10 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT					
	Coarse	Fine	Coarse	Medium	Fine						
	3 1/2"	3/4"	#4	#10	#40	#200					
	125	90	38.1	19	12.5	6.3	2	.425	.325	.15	.075



Test Pit # 1

CLASSIFICATIONS:

UNIFIED = GP-GM

AASHTO = A-1-a

% PASSING #200 (Silt or Clay) = 9.5

% PASSING #4 (Sand) = 47.7

LIQUID LIMIT=0

PLASTICITY INDEX =0

GRAIN SIZE ANALYSIS:

D10= 0.08

D30= 0.86

Cu= 110

D60= 9.2

D85= 43

Cc= 1.0

greater than 6 & Well-Graded
between 1 & 3 Sands & Gravels

FROST POTENTIAL: slight to moderate

DESCRIPTION: This poorly graded silty gravel is a good foundation when not subject to frost action, having a slight to moderate frost potential and exhibiting fair to good drainage characteristics.



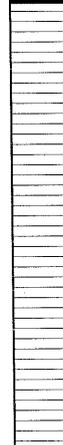
54 Tuttle Place
Middletown
Connecticut 06457
860 632 1500
FAX 860 632 7879

TEST REFERENCE

LOCATION: Forbes St
AREA: 500' N of Maple St, 5' of W curb

DATE SAMPLED: 6/9/2010
DATE TESTED: 6/19/2010

TEST PIT # 2

	DEPTH		CLASSIFICATION <i>with Field Comments</i>
	ENGLISH	METRIC	
	7"	178 mm	Hot Mix Asphalt (HMA)
	10"	254 mm	Poorly Graded Silty Gravel (GP-GM)
	13"	330 mm	Silty Sand (SM / A-2-4)

Test Pit # 2

Base Poorly Graded Silty Gravel (GP-GM)

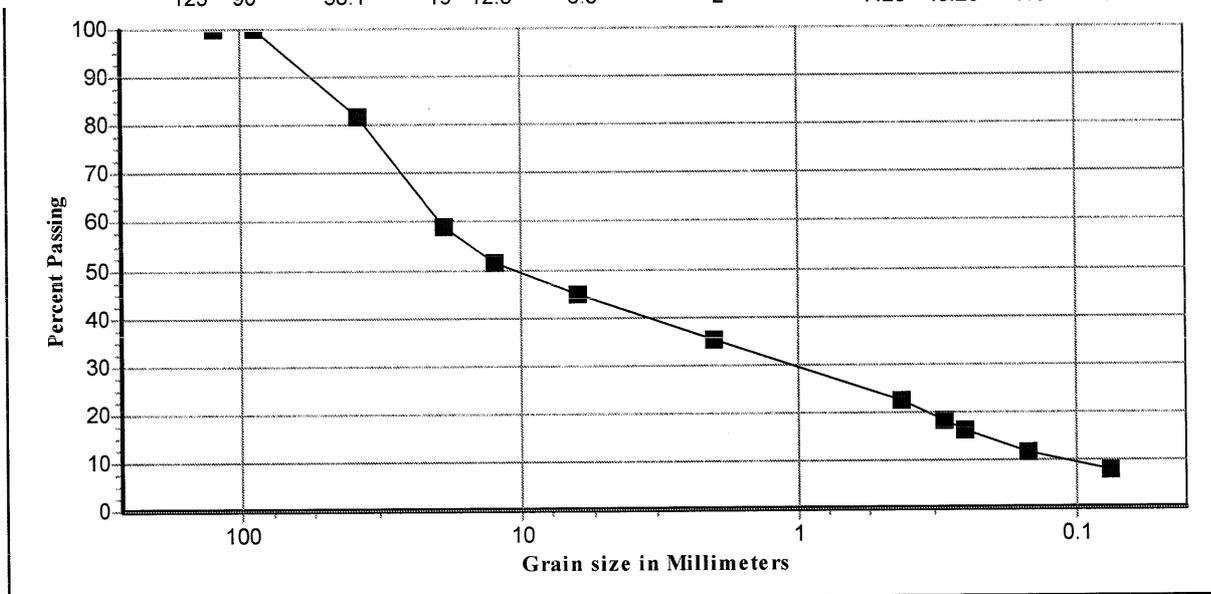
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	82	55-100
19 mm	(3/4")	59	
12.5 mm	(1/2")	52	
6.3 mm	(1/4")	45	25-60
2 mm	(#10)	35	15-45
0.425 mm	(#40)	23	5-25
0.3 mm	(#50)	18	
0.25 mm	(#60)	16	
0.15 mm	(#100)	12 a	0-10
0.075 mm	(#200)	8 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT					
	Coarse	Fine	Coarse	Medium	Fine						
	3 1/2"	3/4"	#4	#10	#40	#200					
	125	90	38.1	19	12.5	6.3	2	.425	.325	.15	.075



Test Pit # 2

SubGrade I Silty Sand (SM / A-2-4)

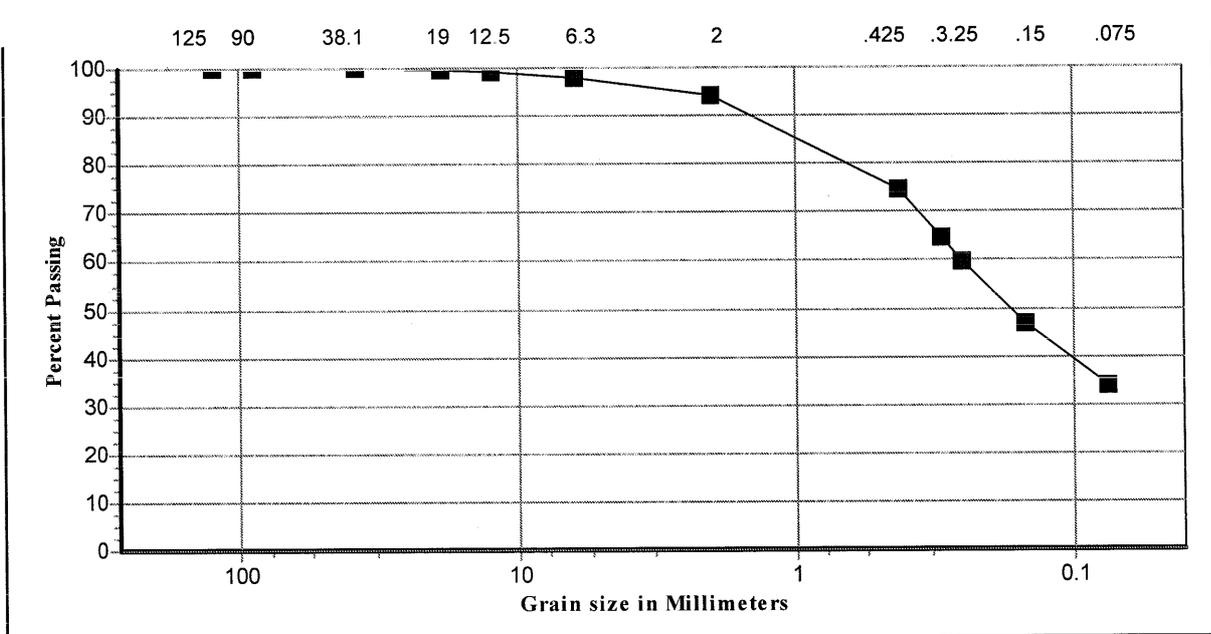
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	100	55-100
19 mm	(3/4")	99	
12.5 mm	(1/2")	99	
6.3 mm	(1/4")	98 a	25-60
2 mm	(#10)	94 a	15-45
0.425 mm	(#40)	75 a	5-25
0.3 mm	(#50)	65	
0.25 mm	(#60)	60	
0.15 mm	(#100)	47 a	0-10
0.075 mm	(#200)	34 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT
	Coarse	Fine	Coarse	Medium	Fine	
	3 1/2"	3/4"	#4	#10	#40	#200



Test Pit # 2

CLASSIFICATIONS:

UNIFIED = SM

AASHTO = A-2-4

% PASSING #200 (Silt or Clay) = 33.8

% PASSING #4 (Sand) = 96

LIQUID LIMIT=0

PLASTICITY INDEX =0

GRAIN SIZE ANALYSIS:

D10= 0.02

D30= 0.0

Cu= 12

D60= 0.3

D85= 1

Cc= 0.0

greater than 6 & Well-Graded
between 1 & 3 Sands & Gravels

FROST POTENTIAL: moderate to high

DESCRIPTION: This silty sand is a fair to poor foundation when not subject to frost action, having a moderate to high frost potential and exhibiting poor drainage characteristics.



54 Tuttle Place
Middletown
Connecticut 06457
860 632 1500
FAX 860 632 7879

TEST REFERENCE

LOCATION: Forbes St
AREA: 106' S of Spruce Dr, 4' off E curb

DATE SAMPLED: 6/9/2010
DATE TESTED: 6/19/2010

TEST PIT # 3

	DEPTH		CLASSIFICATION with Field Comments
	ENGLISH	METRIC	
	8"	203 mm	Hot Mix Asphalt (HMA)
	12"	305 mm	Poorly Graded Silty Gravel (GP-GM)
	10"	254 mm	Silt (SM / A-4)

Test Pit # 3

Base Poorly Graded Silty Gravel (GP-GM)

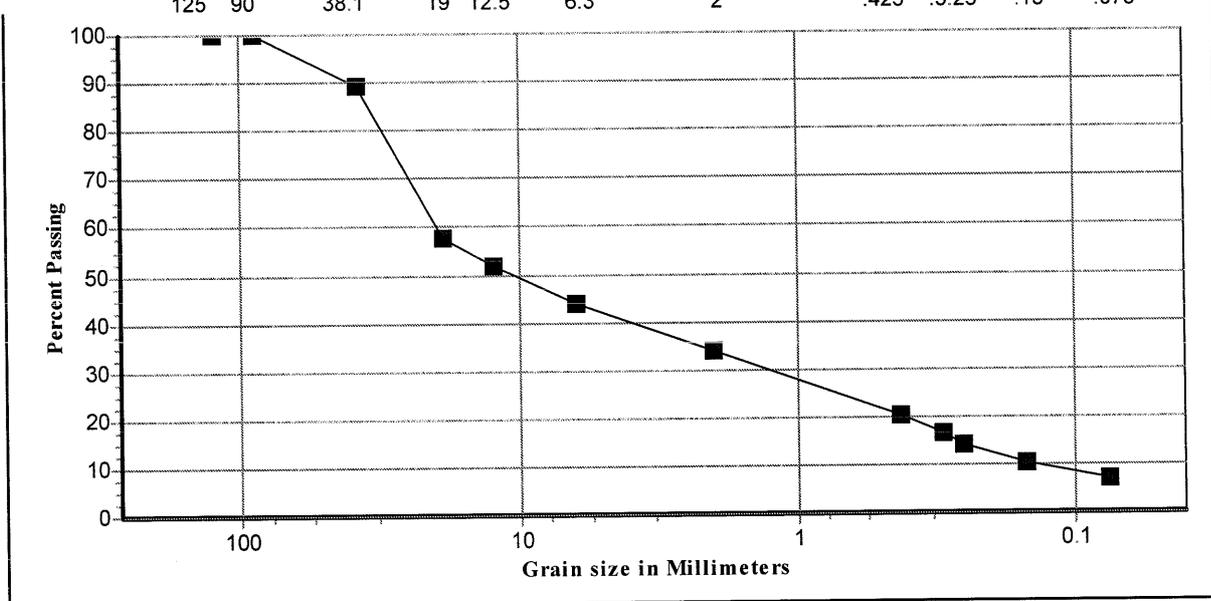
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	89	55-100
19 mm	(3/4")	58	
12.5 mm	(1/2")	52	
6.3 mm	(1/4")	44	25-60
2 mm	(#10)	34	15-45
0.425 mm	(#40)	20	5-25
0.3 mm	(#50)	16	
0.25 mm	(#60)	14	
0.15 mm	(#100)	10 a	0-10
0.075 mm	(#200)	7 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT					
	Coarse	Fine	Coarse	Medium	Fine						
	3 1/2"	3/4"	#4	#10	#40	#200					
	125	90	38.1	19	12.5	6.3	2	.425	.325	.15	.075



Test Pit # 3

SubGrade I Silt (SM / A-4)

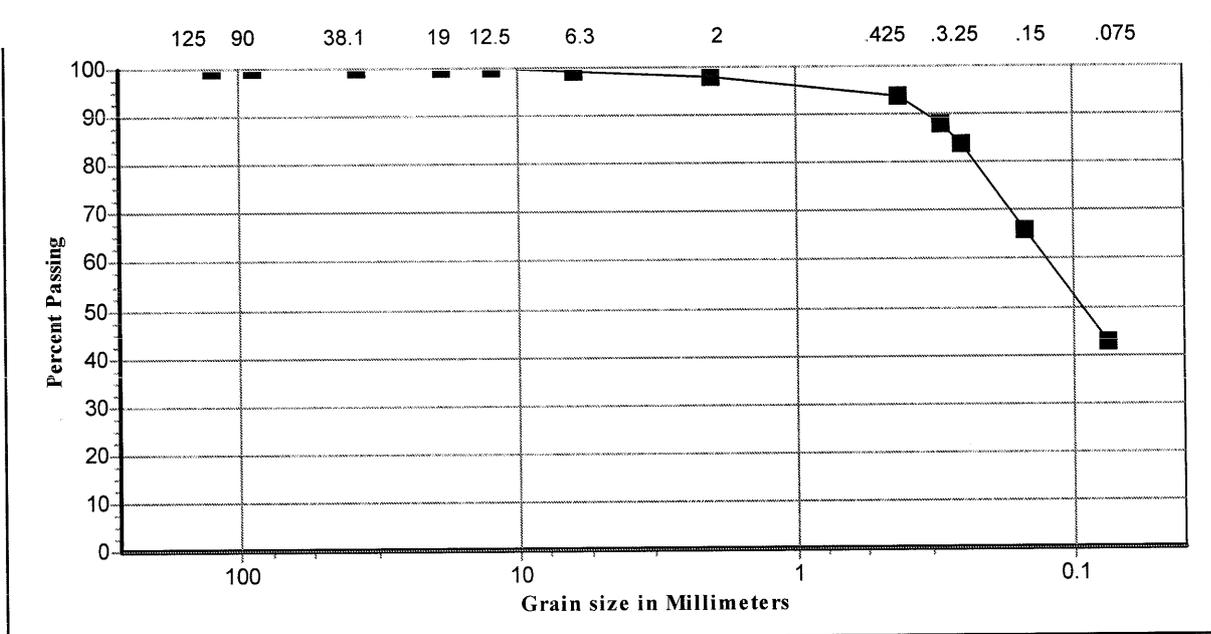
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	100	55-100
19 mm	(3/4")	100	
12.5 mm	(1/2")	100	
6.3 mm	(1/4")	99 a	25-60
2 mm	(#10)	98 a	15-45
0.425 mm	(#40)	94 a	5-25
0.3 mm	(#50)	88	
0.25 mm	(#60)	84	
0.15 mm	(#100)	66 a	0-10
0.075 mm	(#200)	43 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT
	Coarse	Fine	Coarse	Medium	Fine	
	3 1/2"	3/4"	#4	#10	#40	#200



Test Pit # 3

CLASSIFICATIONS:

UNIFIED = SM

AASHTO = A-4

% PASSING #200 (Silt or Clay) = 42.6

% PASSING #4 (Sand) = 98.6

LIQUID LIMIT = 0

PLASTICITY INDEX = 0

GRAIN SIZE ANALYSIS:

D10 = 0.03

D30 = 0.0

Cu = 4

D60 = 0.1

D85 = 0

Cc = 0.0

greater than 6 & Well-Graded
between 1 & 3 Sands & Gravels

FROST POTENTIAL: moderate to high

DESCRIPTION: This silty sand is a fair to poor foundation when not subject to frost action, having a moderate to high frost potential and exhibiting poor drainage characteristics.



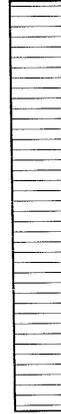
54 Tuttle Place
Middletown
Connecticut 06457
860 632 1500
FAX 860 632 7879

TEST REFERENCE

LOCATION: Forbes St
AREA: 200' N of Hills St, 5' off W curb

DATE SAMPLED: 6/9/2010
DATE TESTED: 6/19/2010

TEST PIT # 4

	DEPTH		CLASSIFICATION with Field Comments
	ENGLISH	METRIC	
	7"	178 mm	Hot Mix Asphalt (HMA)
	11"	279 mm	Poorly Graded Silty Gravel (GP-GM)
	12"	305 mm	Silt (SM / A-4)

Test Pit # 4

Base Poorly Graded Silty Gravel (GP-GM)

SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	89	55-100
19 mm	(3/4")	58	
12.5 mm	(1/2")	52	
6.3 mm	(1/4")	44	25-60
2 mm	(#10)	34	15-45
0.425 mm	(#40)	20	5-25
0.3 mm	(#50)	16	
0.25 mm	(#60)	14	
0.15 mm	(#100)	10 a	0-10
0.075 mm	(#200)	7 a	0-5

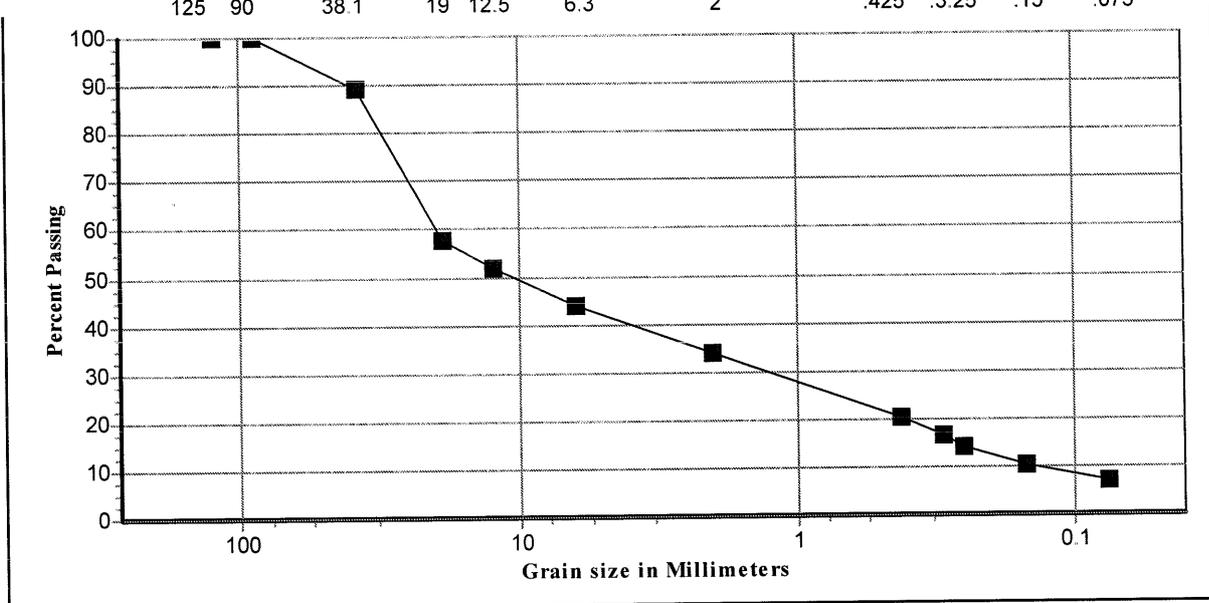
REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT
	Coarse	Fine	Coarse	Medium	Fine	
	3 1/2"	3/4"	#4	#10	#40	#200

125 90 38.1 19 12.5 6.3 2 .425 .325 .15 .075



Test Pit # 4

SubGrade I Silt (SM / A-4)

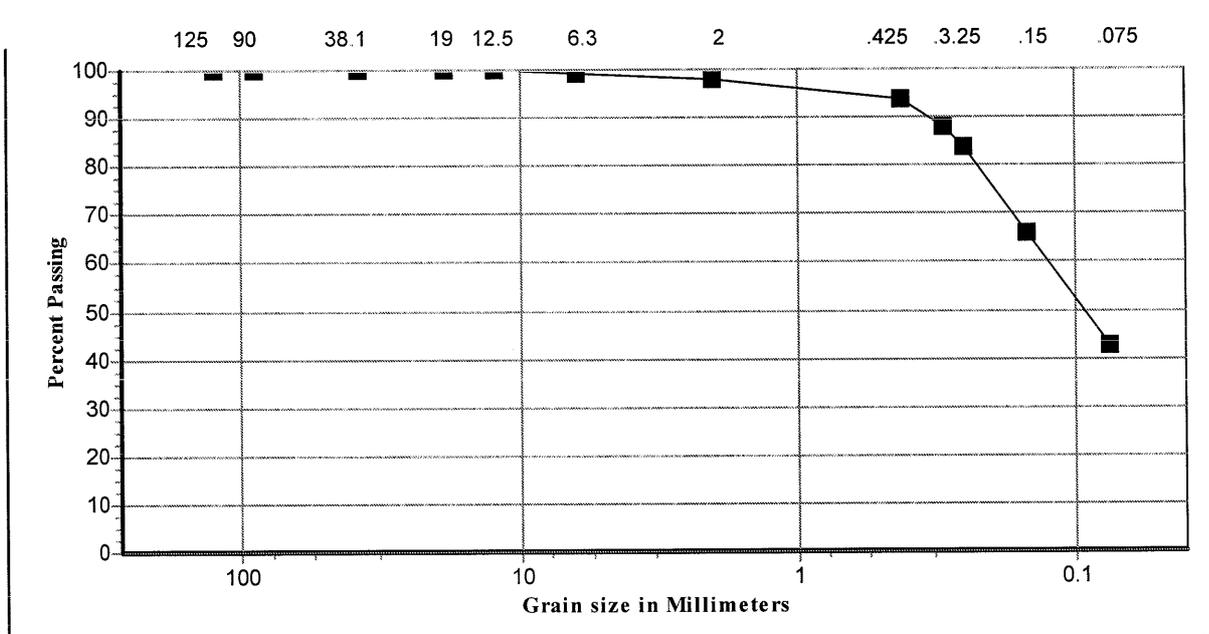
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	100	55-100
19 mm	(3/4")	100	
12.5 mm	(1/2")	100	
6.3 mm	(1/4")	99 a	25-60
2 mm	(#10)	98 a	15-45
0.425 mm	(#40)	94 a	5-25
0.3 mm	(#50)	88	
0.25 mm	(#60)	84	
0.15 mm	(#100)	66 a	0-10
0.075 mm	(#200)	43 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT
	Coarse	Fine	Coarse	Medium	Fine	
	3 1/2"	3/4"	#4	#10	#40	#200



Test Pit # 4

CLASSIFICATIONS:

UNIFIED = SM

AASHTO = A-4

% PASSING #200 (Silt or Clay) = 42.6

% PASSING #4 (Sand) = 98.6

LIQUID LIMIT = 0

PLASTICITY INDEX = 0

GRAIN SIZE ANALYSIS:

D10 = 0.03

D30 = 0.0

Cu = 4

D60 = 0.1

D85 = 0

Cc = 0.0

greater than 6 & Well-Graded
between 1 & 3 Sands & Gravels

FROST POTENTIAL: moderate to high

DESCRIPTION: This silty sand is a fair to poor foundation when not subject to frost action, having a moderate to high frost potential and exhibiting poor drainage characteristics.



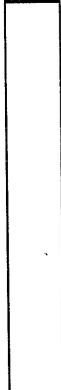
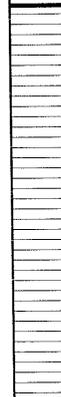
54 Tuttle Place
Middletown
Connecticut 06457
860 632 1500
FAX 860 632 7879

TEST REFERENCE

LOCATION: Forbes St
AREA: 120' N of Schaffer Dr, 12' off E curb

DATE SAMPLED: 6/9/2010
DATE TESTED: 6/19/2010

TEST PIT # 5

DEPTH		CLASSIFICATION with Field Comments
ENGLISH	METRIC	
	7" 178 mm	Hot Mix Asphalt (HMA)
	11.5" 292 mm	Well Graded Silty Gravel (GW-GM)
	11.5" 292 mm	Silty Sand (SM / A-2-4)

Test Pit # 5

Base Well Graded Silty Gravel (GW-GM)

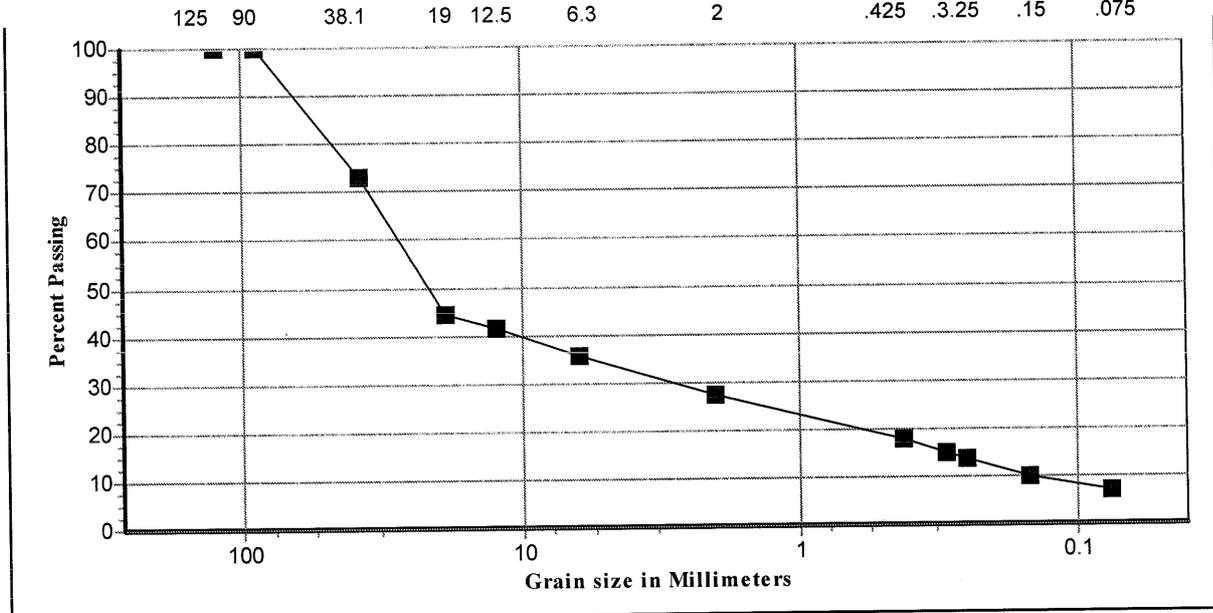
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	73	55-100
19 mm	(3/4")	44	
12.5 mm	(1/2")	42	
6.3 mm	(1/4")	36	25-60
2 mm	(#10)	28	15-45
0.425 mm	(#40)	18	5-25
0.3 mm	(#50)	15	
0.25 mm	(#60)	13	
0.15 mm	(#100)	10 a	0-10
0.075 mm	(#200)	7 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT
	Coarse	Fine	Coarse	Medium	Fine	
	3 1/2"	3/4"	#4	#10	#40	#200



Test Pit # 5

SubGrade I Silty Sand (SM / A-2-4)

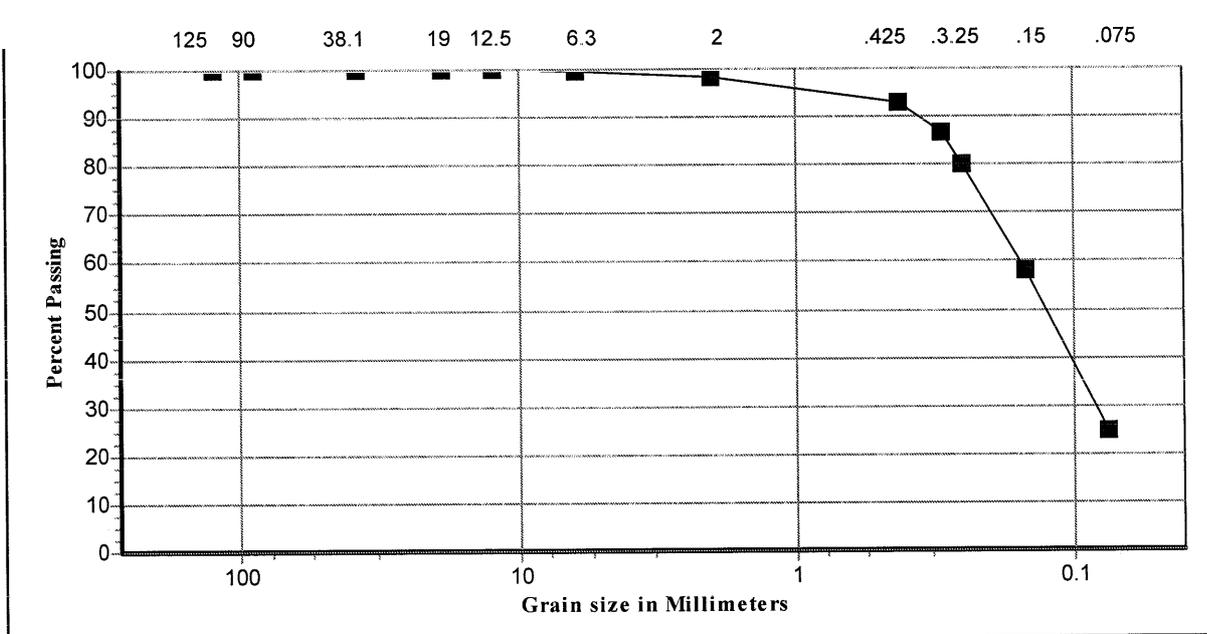
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	100	55-100
19 mm	(3/4")	100	
12.5 mm	(1/2")	100	
6.3 mm	(1/4")	100 a	25-60
2 mm	(#10)	98 a	15-45
0.425 mm	(#40)	93 a	5-25
0.3 mm	(#50)	87	
0.25 mm	(#60)	80	
0.15 mm	(#100)	58 a	0-10
0.075 mm	(#200)	25 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT
	Coarse	Fine	Coarse	Medium	Fine	
	3 1/2"	3/4"	#4	#10	#40	#200



Test Pit # 5

CLASSIFICATIONS:

UNIFIED = SM

AASHTO = A-2-4

% PASSING #200 (Silt or Clay) = 24.9

% PASSING #4 (Sand) = 98.9

LIQUID LIMIT=0

PLASTICITY INDEX =0

GRAIN SIZE ANALYSIS:

D10= 0.05

D30= 0.08

Cu= 3

D60= 0.2

D85= 0

Cc= 0.8

greater than 6 & Well-Graded
between 1 & 3 Sands & Gravels

FROST POTENTIAL: moderate to high

DESCRIPTION: This silty sand is a fair to poor foundation when not subject to frost action, having a moderate to high frost potential and exhibiting poor drainage characteristics.



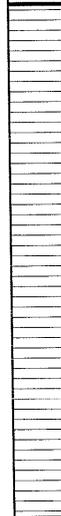
54 Tuttle Place
Middletown
Connecticut 06457
860 632 1500
FAX 860 632 7879

TEST REFERENCE

LOCATION: Forbes St
AREA: 130' N of Romar Dr, 8' off E curb

DATE SAMPLED: 6/9/2010
DATE TESTED: 6/19/2010

TEST PIT # 6

	DEPTH		CLASSIFICATION with Field Comments
	ENGLISH	METRIC	
	8"	203 mm	Hot Mix Asphalt (HMA)
	7"	178 mm	Poorly Graded Silty Sand (SP-SM)
	15"	381 mm	Poorly Graded Silty Sand (SP-SM)

Test Pit # 6

Base Poorly Graded Silty Sand (SP-SM)

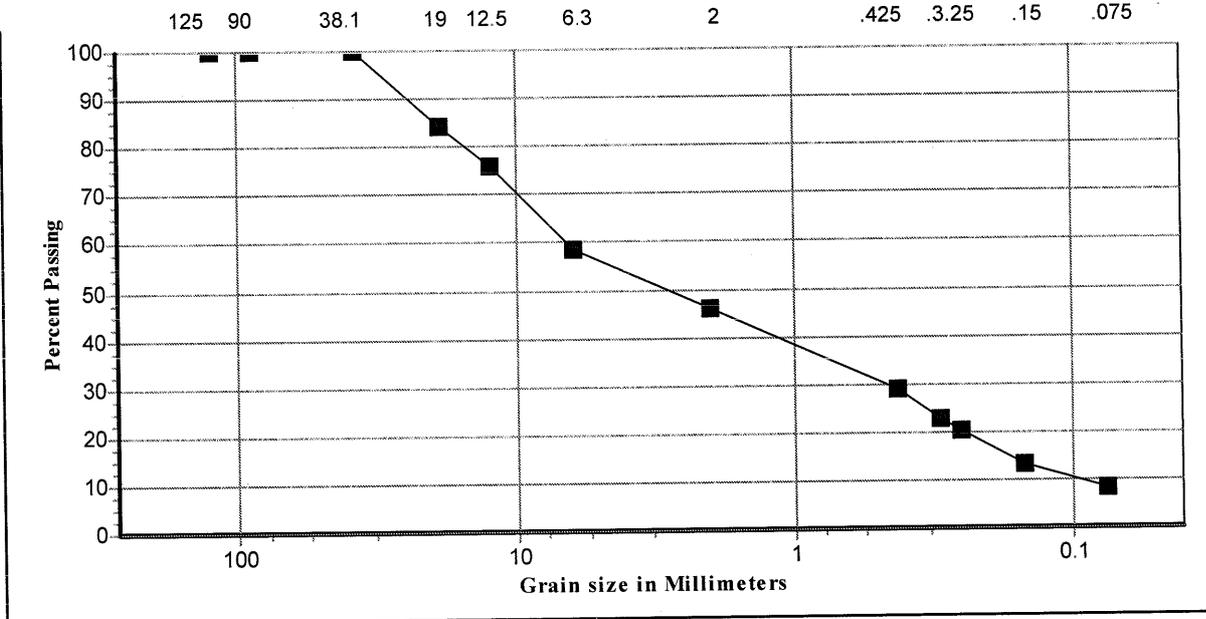
SIEVE SIZE	PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm (5")	100	
90 mm (3-1/2")	100	100
38.1 mm (1-1/2")	100	55-100
19 mm (3/4")	84	
12.5 mm (1/2")	76	
6.3 mm (1/4")	59	25-60
2 mm (#10)	46 a	15-45
0.425 mm (#40)	29 a	5-25
0.3 mm (#50)	23	
0.25 mm (#60)	20	
0.15 mm (#100)	13 a	0-10
0.075 mm (#200)	8 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT
	Coarse	Fine	Coarse	Medium	Fine	
	3 1/2"	3/4"	#4	#10	#40	#200



Test Pit # 6

SubGrade I Poorly Graded Silty Sand (SP-SM)

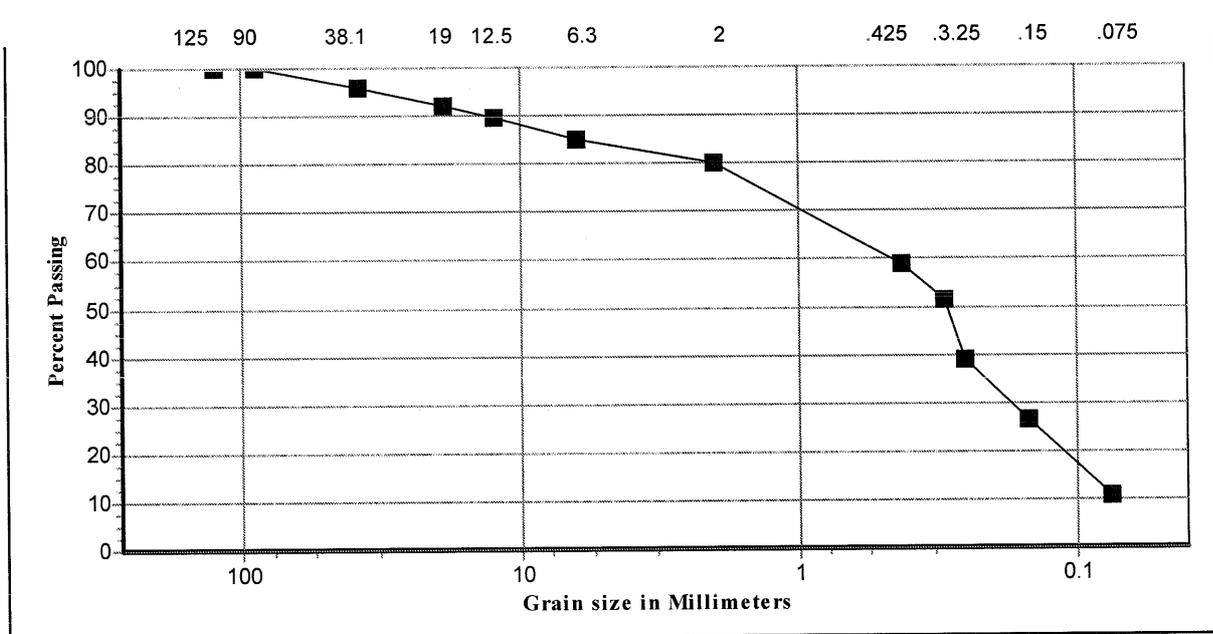
SIEVE SIZE	PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm (5")	100	
90 mm (3-1/2")	100	100
38.1 mm (1-1/2")	96	55-100
19 mm (3/4")	92	
12.5 mm (1/2")	90	
6.3 mm (1/4")	85 a	25-60
2 mm (#10)	80 a	15-45
0.425 mm (#40)	59 a	5-25
0.3 mm (#50)	52	
0.25 mm (#60)	39	
0.15 mm (#100)	26 a	0-10
0.075 mm (#200)	11 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT
	Coarse	Fine	Coarse	Medium	Fine	
	3 1/2"	3/4"	#4	#10	#40	#200



Test Pit # 6

CLASSIFICATIONS:

UNIFIED = SP-SM

AASHTO = A-2-4

% PASSING #200 (Silt or Clay) = 10.9

% PASSING #4 (Sand) = 82.6

LIQUID LIMIT=0

PLASTICITY INDEX =0

GRAIN SIZE ANALYSIS:

D10= 0.07

D30= 0.17

Cu= 6

D60= 0.5

D85= 6

Cc= 0.9

greater than 6 & Well-Graded
between 1 & 3 Sands & Gravels

FROST POTENTIAL: moderate

DESCRIPTION: This poorly graded silty sand is a fair to good foundation when not subject to frost action, having a moderate frost potential and exhibiting fair drainage characteristics.



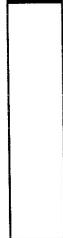
54 Tuttle Place
Middletown
Connecticut 06457
860 632 1500
FAX 860 632 7879

TEST REFERENCE

LOCATION: Forbes St
AREA: 190' N of Bradley St, 12' off W curb

DATE SAMPLED: 6/9/2010
DATE TESTED: 6/19/2010

TEST PIT # 7

	DEPTH		CLASSIFICATION with Field Comments
	ENGLISH	METRIC	
	8"	203 mm	Hot Mix Asphalt (HMA)
	7"	178 mm	Well Graded Silty Gravel (GW-GM)
	15"	381 mm	Uniformly Graded Silty Sand

Test Pit # 7

Base Well Graded Silty Gravel (GW-GM)

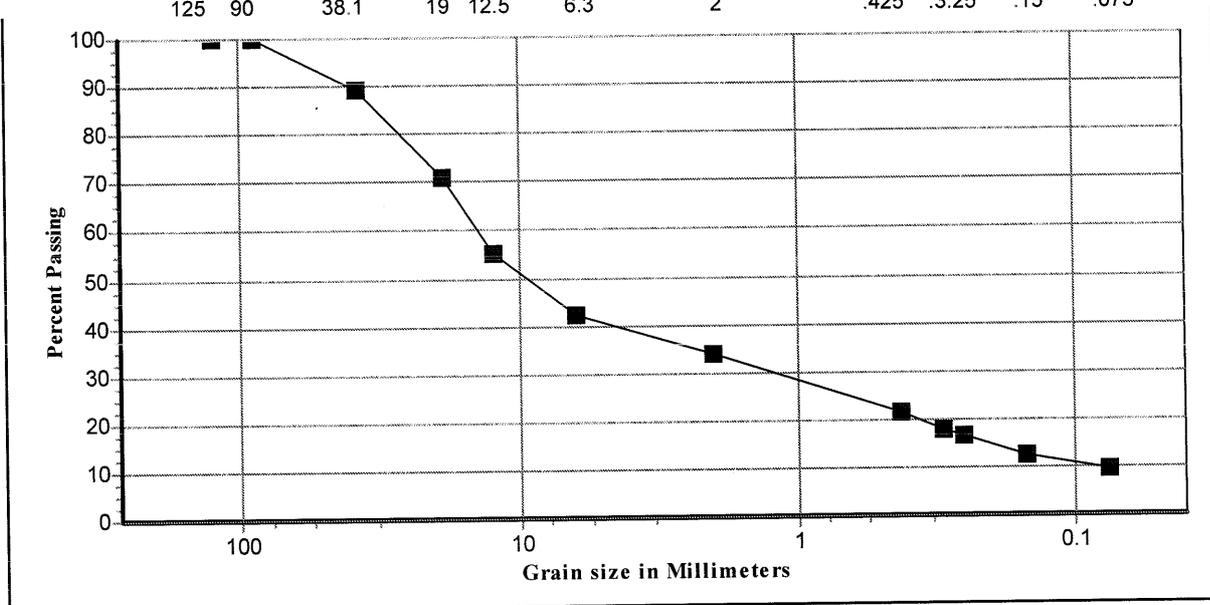
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	89	55-100
19 mm	(3/4")	71	
12.5 mm	(1/2")	55	
6.3 mm	(1/4")	42	25-60
2 mm	(#10)	34	15-45
0.425 mm	(#40)	22	5-25
0.3 mm	(#50)	18	
0.25 mm	(#60)	16	
0.15 mm	(#100)	12 a	0-10
0.075 mm	(#200)	9 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT					
	Coarse	Fine	Coarse	Medium	Fine						
	3 1/2"	3/4"	#4	#10	#40	#200					
	125	90	38.1	19	12.5	6.3	2	.425	.325	.15	.075



Test Pit # 7

SubGrade I Uniformly Graded Silty Sand

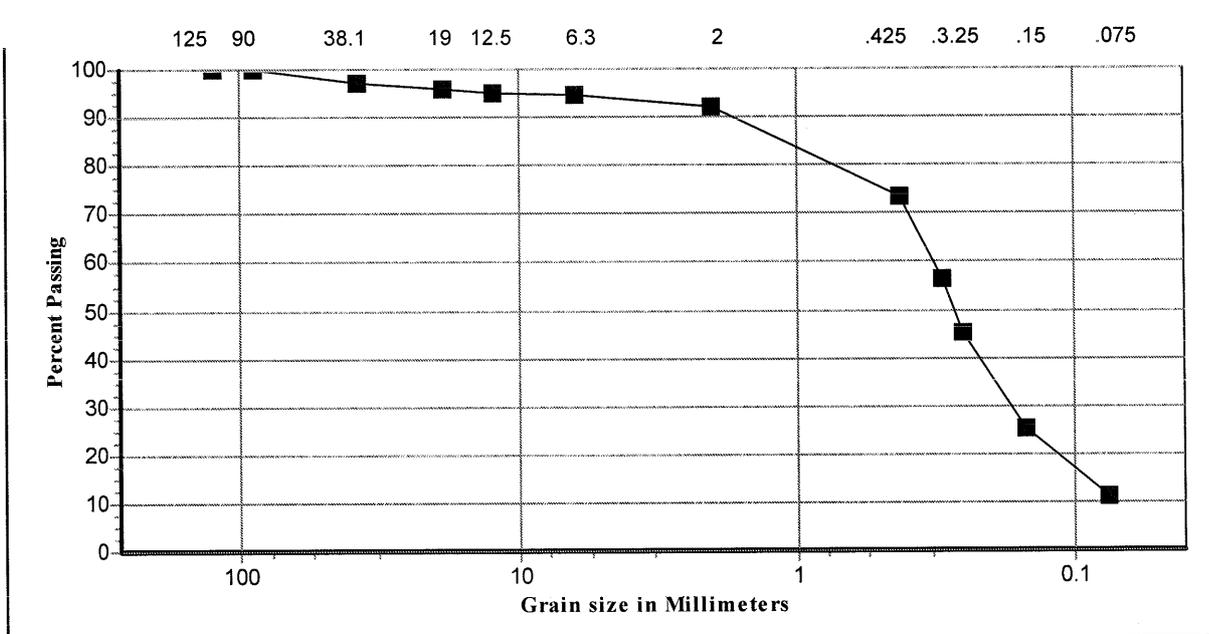
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	97	55-100
19 mm	(3/4")	96	
12.5 mm	(1/2")	95	
6.3 mm	(1/4")	94 a	25-60
2 mm	(#10)	92 a	15-45
0.425 mm	(#40)	73 a	5-25
0.3 mm	(#50)	56	
0.25 mm	(#60)	45	
0.15 mm	(#100)	25 a	0-10
0.075 mm	(#200)	11 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT
	Coarse	Fine	Coarse	Medium	Fine	
	3 1/2"	3/4"	#4	#10	#40	#200



Test Pit # 7

CLASSIFICATIONS:

UNIFIED = SU-SM

AASHTO = A-2-4

% PASSING #200 (Silt or Clay) = 11

% PASSING #4 (Sand) = 93.2

LIQUID LIMIT=0

PLASTICITY INDEX =0

GRAIN SIZE ANALYSIS:

D10= 0.07

D30= 0.17

Cu= 5

D60= 0.3

D85= 1

Cc= 1.2

greater than 6 & Well-Graded
between 1 & 3 Sands & Gravels

FROST POTENTIAL: moderate

DESCRIPTION: This uniformly graded silty sand is a fair to poor foundation when not subject to frost action, having a moderate frost potential and exhibiting fair drainage characteristics.



54 Tuttle Place
Middletown
Connecticut 06457
860 632 1500
FAX 860 632 7879

TEST REFERENCE

LOCATION: Forbes St
AREA: 350' S of Brewer St, 9' off E curb

DATE SAMPLED: 6/9/2010
DATE TESTED: 6/19/2010

TEST PIT # 8

	DEPTH		CLASSIFICATION with Field Comments
	ENGLISH	METRIC	
	11.5"	292 mm	Hot Mix Asphalt (HMA)
	9.5"	241 mm	Poorly Graded Silty Gravel (GP-GM)
	9"	229 mm	Silty Sand (SM / A-2-4)

Test Pit # 8

Base Poorly Graded Silty Gravel (GP-GM)

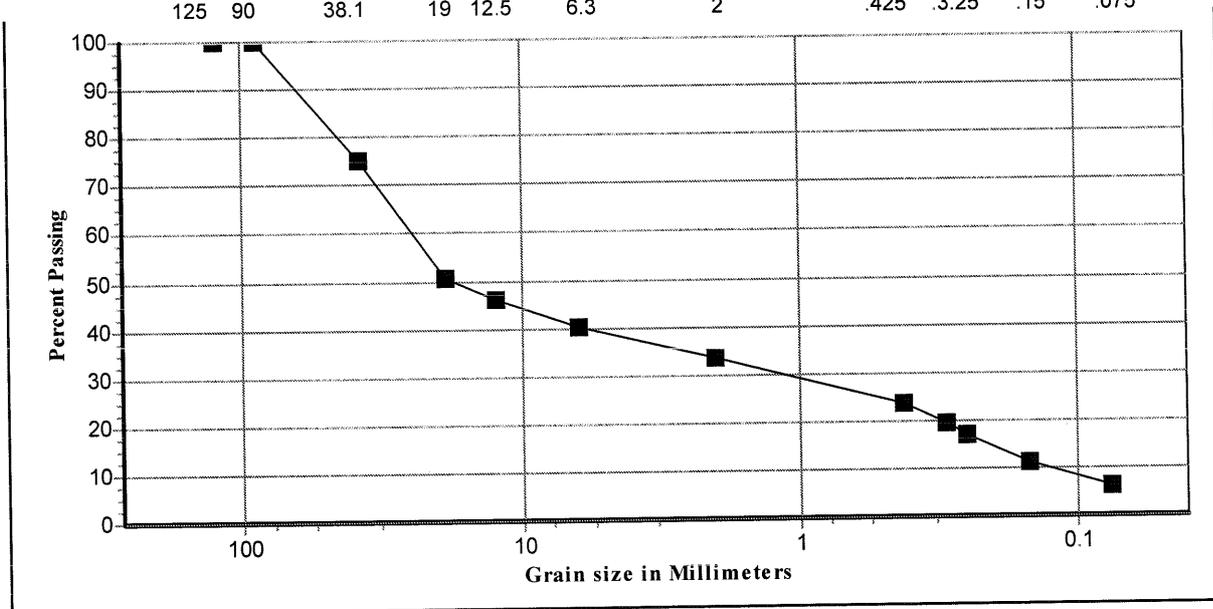
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	75	55-100
19 mm	(3/4")	51	
12.5 mm	(1/2")	46	
6.3 mm	(1/4")	40	25-60
2 mm	(#10)	34	15-45
0.425 mm	(#40)	24	5-25
0.3 mm	(#50)	19	
0.25 mm	(#60)	17	
0.15 mm	(#100)	11 a	0-10
0.075 mm	(#200)	6 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT					
	Coarse	Fine	Coarse	Medium	Fine						
	3 1/2"	3/4"	#4	#10	#40	#200					
	125	90	38.1	19	12.5	6.3	2	.425	.325	.15	.075



Test Pit # 8

SubGrade I Silty Sand (SM / A-2-4)

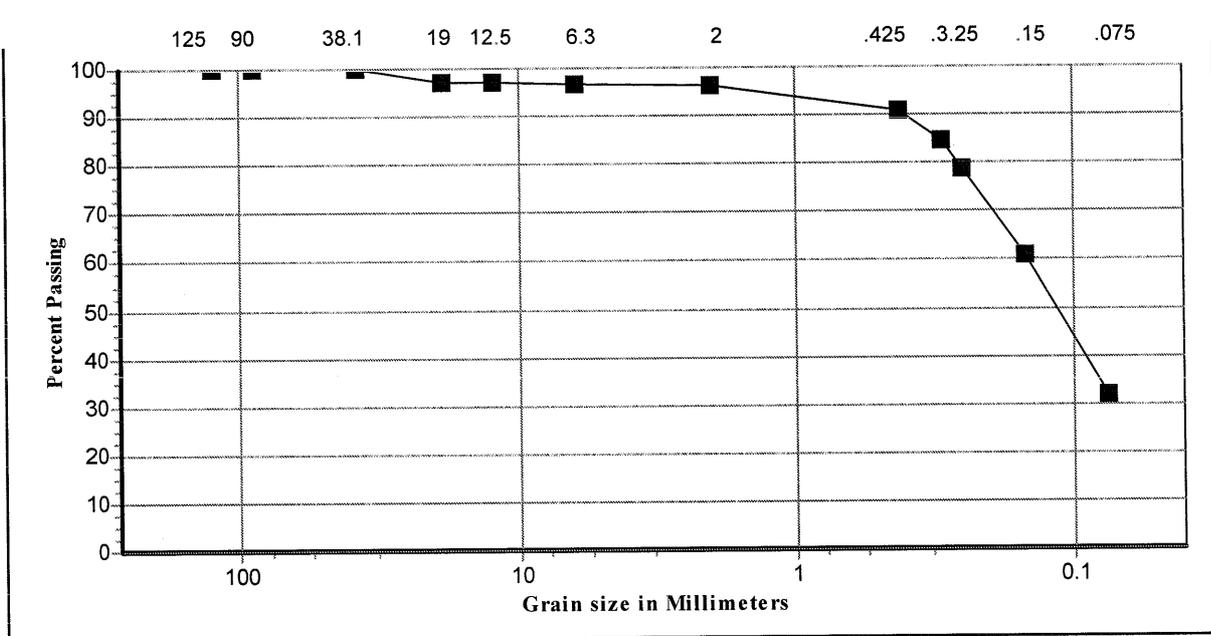
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	100	55-100
19 mm	(3/4")	97	
12.5 mm	(1/2")	97	
6.3 mm	(1/4")	97 a	25-60
2 mm	(#10)	96 a	15-45
0.425 mm	(#40)	91 a	5-25
0.3 mm	(#50)	84	
0.25 mm	(#60)	79	
0.15 mm	(#100)	61 a	0-10
0.075 mm	(#200)	32 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT
	Coarse	Fine	Coarse	Medium	Fine	
	3 1/2"	3/4"	#4	#10	#40	#200



Test Pit # 8

CLASSIFICATIONS:

UNIFIED = SM

AASHTO = A-2-4

% PASSING #200 (Silt or Clay) = 31.8

% PASSING #4 (Sand) = 96.5

LIQUID LIMIT=0

PLASTICITY INDEX =0

GRAIN SIZE ANALYSIS:

D10= 0.04

D30= 0.0

Cu= 3

D60= 0.1

D85= 0

Cc= 0.0

greater than 6 & Well-Graded
between 1 & 3 Sands & Gravels

FROST POTENTIAL: moderate to high

DESCRIPTION: This silty sand is a fair to poor foundation when not subject to frost action, having a moderate to high frost potential and exhibiting poor drainage characteristics.



54 Tuttle Place
Middletown
Connecticut 06457
860 632 1500
FAX 860 632 7879

TEST REFERENCE

LOCATION: Forbes St
AREA: 316' N of Brewer St, 5' off W curb

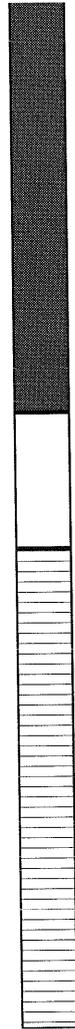
DATE SAMPLED: 6/9/2010
DATE TESTED: 6/19/2010

TEST PIT # 9

DEPTH

CLASSIFICATION with Field Comments

ENGLISH METRIC



12" 305 mm

Hot Mix Asphalt (HMA)

4" 102 mm

Poorly Graded Gravel (GP)

14" 356 mm

Poorly Graded Silty Sand (SP-SM)

Test Pit # 9

Base Poorly Graded Gravel (GP)

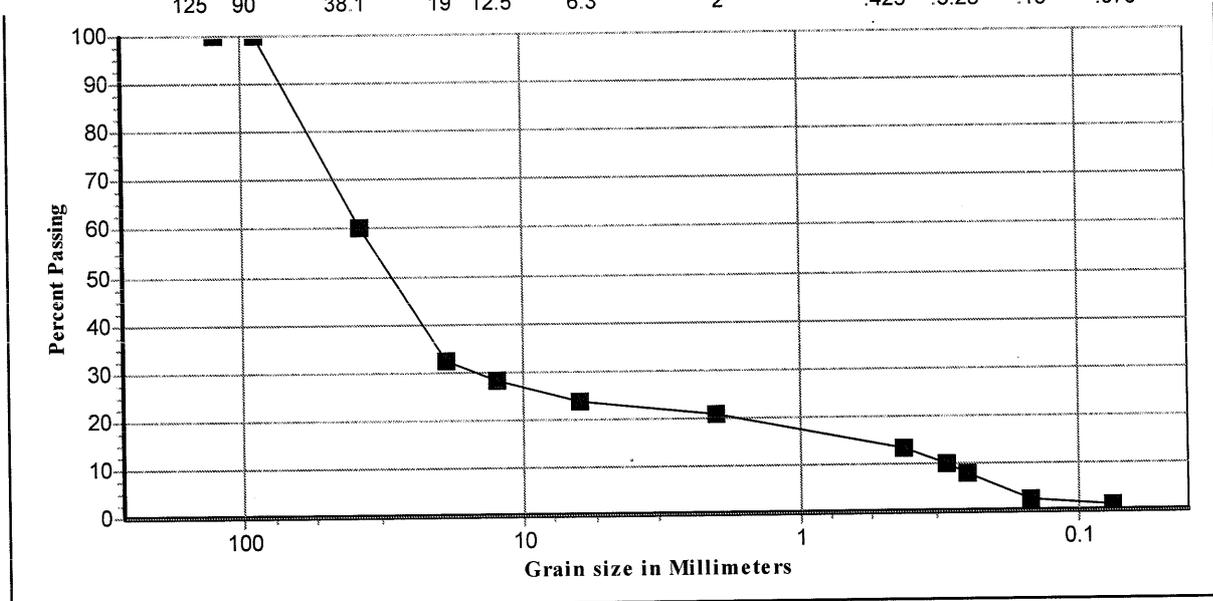
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	60	55-100
19 mm	(3/4")	32	
12.5 mm	(1/2")	28	
6.3 mm	(1/4")	24 b	25-60
2 mm	(#10)	21	15-45
0.425 mm	(#40)	13	5-25
0.3 mm	(#50)	10	
0.25 mm	(#60)	8	
0.15 mm	(#100)	3	0-10
0.075 mm	(#200)	1	0-5

REMARKS: (b) low off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT					
	Coarse	Fine	Coarse	Medium	Fine						
	3 1/2"	3/4"	#4	#10	#40	#200					
	125	90	38.1	19	12.5	6.3	2	.425	.325	.15	.075



Test Pit # 9

SubGrade I Poorly Graded Silty Sand (SP-SM)

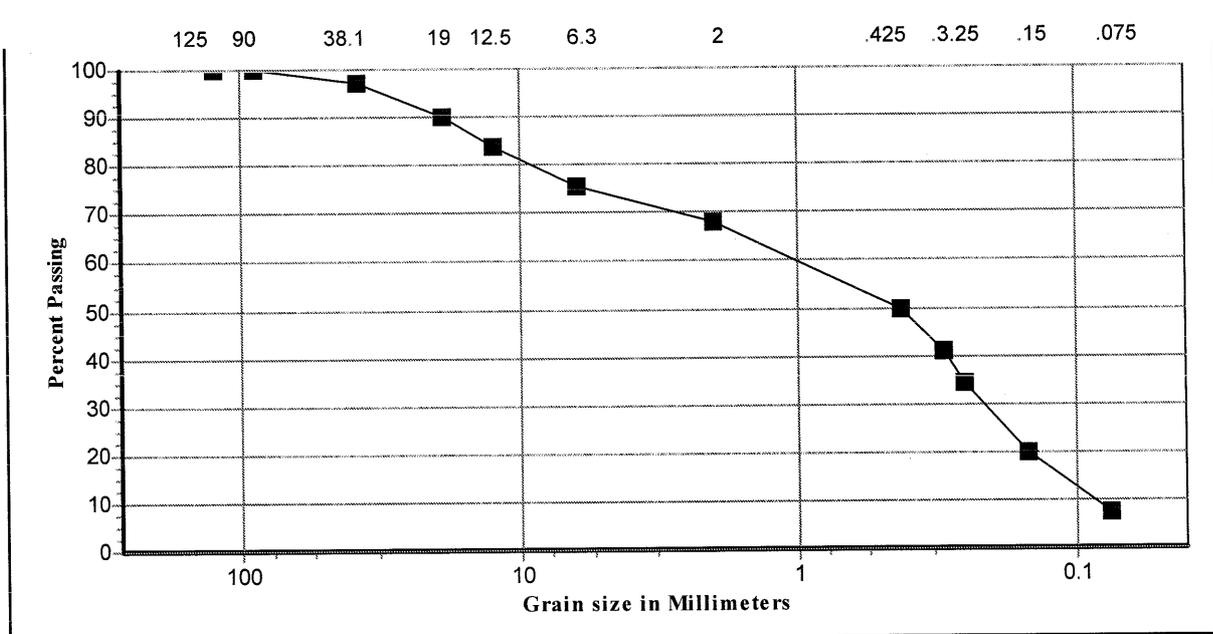
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	97	55-100
19 mm	(3/4")	90	
12.5 mm	(1/2")	84	
6.3 mm	(1/4")	76 a	25-60
2 mm	(#10)	68 a	15-45
0.425 mm	(#40)	50 a	5-25
0.3 mm	(#50)	41	
0.25 mm	(#60)	34	
0.15 mm	(#100)	20 a	0-10
0.075 mm	(#200)	8 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT
	Coarse	Fine	Coarse	Medium	Fine	
	3 1/2"	3/4"	#4	#10	#40	#200



Test Pit # 9

CLASSIFICATIONS:

UNIFIED = SP-SM

AASHTO = A-1-b

% PASSING #200 (Silt or Clay) = 7.6

% PASSING #4 (Sand) = 71.8

LIQUID LIMIT=0

PLASTICITY INDEX =0

GRAIN SIZE ANALYSIS:

D10= 0.09

D30= 0.21

Cu= 12

D60= 1.0

D85= 14

Cc= 0.5

greater than 6 & Well-Graded
between 1 & 3 Sands & Gravels

FROST POTENTIAL: moderate

DESCRIPTION: This poorly graded silty sand is a fair to good foundation when not subject to frost action, having a moderate frost potential and exhibiting fair drainage characteristics.



54 Tuttle Place
Middletown
Connecticut 06457
860 632 1500
FAX 860 632 7879

TEST REFERENCE

LOCATION: Forbes St
AREA: 125' N of Forest St, 5' off E curb

DATE SAMPLED: 6/9/2010
DATE TESTED: 6/19/2010

TEST PIT # 10

DEPTH

CLASSIFICATION with Field Comments

	ENGLISH	METRIC	
	10"	254 mm	Hot Mix Asphalt (HMA)
	6"	152 mm	Poorly Graded Gravel (GP)
	2"	51 mm	Poorly Graded Silty Sand (SP-SM) Refusal @ 18" due to large pieces of reclaim

Test Pit # 10

Base Poorly Graded Gravel (GP)

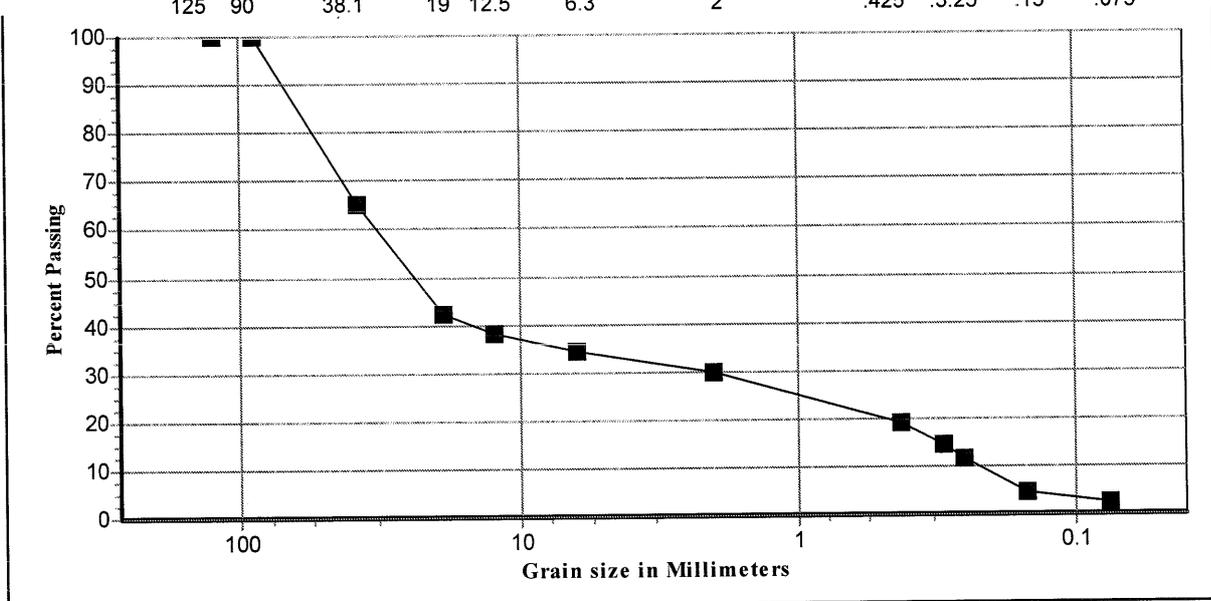
SIEVE SIZE		PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm	(5")	100	
90 mm	(3-1/2")	100	100
38.1 mm	(1-1/2")	65	55-100
19 mm	(3/4")	42	
12.5 mm	(1/2")	38	
6.3 mm	(1/4")	34	25-60
2 mm	(#10)	30	15-45
0.425 mm	(#40)	19	5-25
0.3 mm	(#50)	14	
0.25 mm	(#60)	12	
0.15 mm	(#100)	4	0-10
0.075 mm	(#200)	2	0-5

REMARKS: conforms to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT					
	Coarse	Fine	Coarse	Medium	Fine						
	3 1/2"	3/4"	#4	#10	#40	#200					
	125	90	38.1	19	12.5	6.3	2	.425	.325	.15	.075



Test Pit # 10

SubGrade I Poorly Graded Silty Sand (SP-SM)

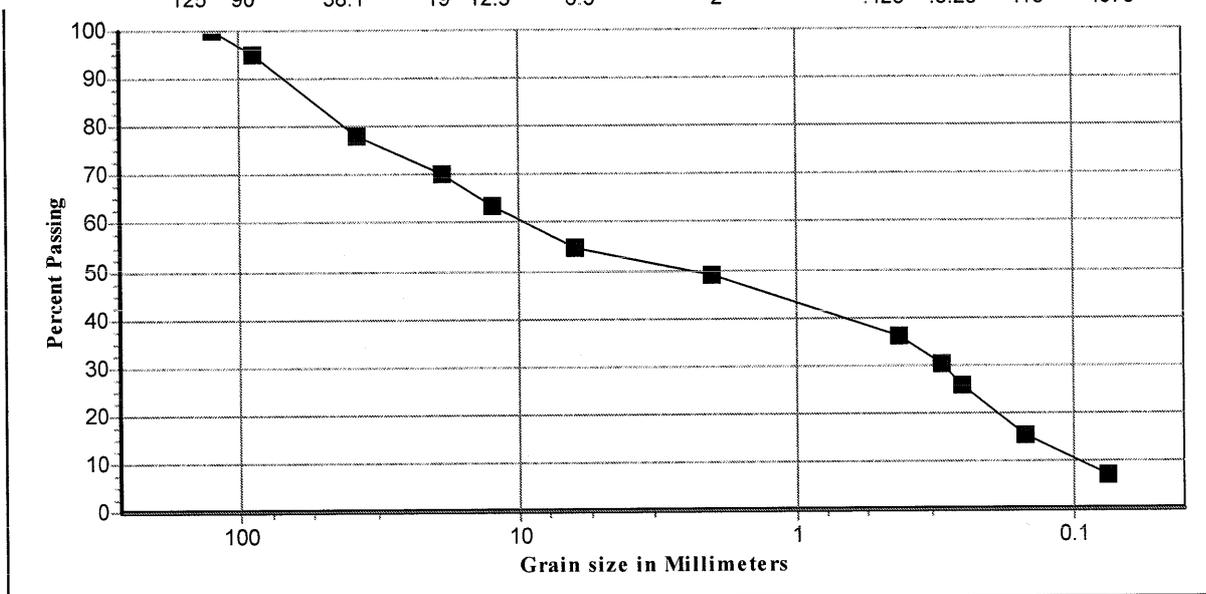
SIEVE SIZE	PERCENT PASSING	M.02.06 Gravels SPECIFICATION CDOT
125 mm (5")	100	
90 mm (3-1/2")	95 b	100
38.1 mm (1-1/2")	78	55-100
19 mm (3/4")	70	
12.5 mm (1/2")	63	
6.3 mm (1/4")	55	25-60
2 mm (#10)	49 a	15-45
0.425 mm (#40)	36 a	5-25
0.3 mm (#50)	30	
0.25 mm (#60)	26	
0.15 mm (#100)	15 a	0-10
0.075 mm (#200)	7 a	0-5

REMARKS: (a) high off specifications; does not conform to specifications
 (b) low off specifications; does not conform to specifications

COMMENTS:

Sieve Sizes:

COBBLES	GRAVEL		SAND			CLAY or SILT					
	Coarse	Fine	Coarse	Medium	Fine						
	3 1/2"	3/4"	#4	#10	#40	#200					
	125	90	38.1	19	12.5	6.3	2	.425	.3.25	.15	.075



Test Pit # 10

CLASSIFICATIONS:

UNIFIED = SP-SM

AASHTO = A-1-b

% PASSING #200 (Silt or Clay) = 6.9

% PASSING #4 (Sand) = 51.8

LIQUID LIMIT=0

PLASTICITY INDEX =0

GRAIN SIZE ANALYSIS:

D10= 0.1

D30= 0.29

Cu= 99

D60= 9.5

D85= 54

Cc= 0.1

greater than 6 & Well-Graded
between 1 & 3 Sands & Gravels

FROST POTENTIAL: moderate

DESCRIPTION: This poorly graded silty sand is a fair to good foundation when not subject to frost action, having a moderate frost potential and exhibiting fair drainage characteristics.



Vanasse Hangen Brustlin, Inc.

LOCATION: Forbes Street, East Hartford, CT
DATE SAMPLED: Thursday, July 01, 2010

FROM: Heritage Lane
TO: N. of Forest Street

<u>CORE#:</u>	<u>Area:</u>	<u>DEPTH</u>		<u>CLASSIFICATION</u>
		mm	inches	
<u>5</u>	<u>150' N. of Heritage Ln., 8' off West Curb</u>	181	7.25	Hot Mix Asphalt (2.25/1.5/2.0/1.5) Sandy Gravel
<u>6</u>	<u>75' S. of Maple St., 4 off West Curb</u>	200	8	Hot Mix Asphalt (1.75/1.50/2.0/2.75) Sandy Gravel
<u>7</u>	<u>50' N. of Maple St., 4' off East Curb</u>	125	5	Hot Mix Asphalt (1.5/1.0/2.5) Sandy Gravel
<u>8</u>	<u>200' N. of Maple St., 8' off East Curb</u>	119	4.75	Hot Mix Asphalt (1.75/1.0/2.0) Sandy Gravel
<u>9</u>	<u>375 N. of Maple St., 11' off East Curb</u>	131	5.25	Hot Mix Asphalt (1.75/1.5/2.0) Sandy Gravel

CORE PROFILE

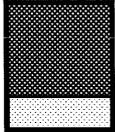
page 2

LOCATION: Forbes Street, East Hartford, CT
DATE SAMPLED: July 1, 2010

FROM: Heritage Lane
TO: N. of Forest Street

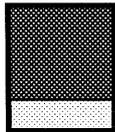
CORE#: 10

Area: 75' S. of Rivel Ct., 11' off West Curb

DEPTH		CLASSIFICATION	
mm	inches		
	138	5.5	Hot Mix Asphalt (3.5/2.0)
			Sandy Gravel

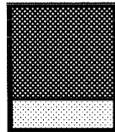
CORE#: 11

Area: 75' N. of Rivel Ct., 8' off West Curb

DEPTH		CLASSIFICATION	
mm	inches		
	138	5.5	Hot Mix Asphalt (5.50)
			Sandy Gravel

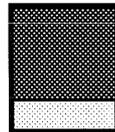
CORE#: 12

Area: 25' N. of Spruce Dr., 4' off West Curb

DEPTH		CLASSIFICATION	
mm	inches		
	169	6.75	Hot Mix Asphalt (1.0/2.5/3.25)
			Sandy Gravel

CORE#: 13

Area: 150' N. of Spruce Dr., 4' off East Curb

DEPTH		CLASSIFICATION	
mm	inches		
	150	6	Hot Mix Asphalt (3.0/3.0)
			Sandy Gravel

CORE#: 14

Area: 150' S. of Hills St., 8' off East Curb

DEPTH		CLASSIFICATION	
mm	inches		
	169	6.75	Hot Mix Asphalt (2.0/2.0/2.75)
			Sandy Gravel



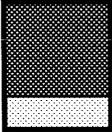
CORE PROFILE

page 3

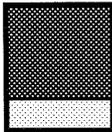
LOCATION: Forbes Street, East Hartford, CT
DATE SAMPLED: July 1, 2010

FROM: Heritage Lane
TO: N. of Forest Street

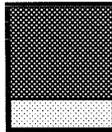
CORE#: 15 **Area: 200' S. of Schaffer Rd., 11' off East Curb**

	DEPTH		CLASSIFICATION
	mm	inches	
	188	7.5	Hot Mix Asphalt (1.5/2.5/3.5)
			Sandy Gravel

CORE#: 16 **Area: Intersection of Schaffer Dr., 11' off West Curb**

	DEPTH		CLASSIFICATION
	mm	inches	
	169	6.75	Hot Mix Asphalt (2.5/4.25)
			Sandy Gravel

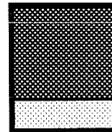
CORE#: 17 **Area: 25' N. of Woodycrest Dr., 8' off West Curb**

	DEPTH		CLASSIFICATION
	mm	inches	
	138	5.5	Hot Mix Asphalt (3.5/2.0)
			Sandy Gravel

CORE#: 18 **Area: 25' S. of Romar Dr., 4' off West Curb**

	DEPTH		CLASSIFICATION
	mm	inches	
	119	4.75	Hot Mix Asphalt (2.0/2.75)
			Sandy Gravel

CORE#: 19 **Area: 100' N. of Romar Dr., 4' off East Curb**

	DEPTH		CLASSIFICATION
	mm	inches	
	194	7.75	Hot Mix Asphalt (1.5/1.25/1.50/1.0/2.5)
			Sandy Gravel



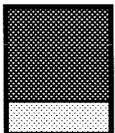
CORE PROFILE

page 4

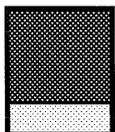
LOCATION: Forbes Street, East Hartford, CT
 DATE SAMPLED: July 1, 2010

FROM: Heritage Lane
 TO: N. of Forest Street

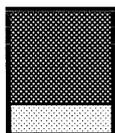
CORE#: 20 **Area:** 150' S. of Gordon Ln., 8' off East Curb

	DEPTH		CLASSIFICATION
	mm	inches	
	100	4	Hot Mix Asphalt (Poor Bond)
	50	2	Hot Mix Asphalt Sandy Gravel

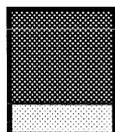
CORE#: 21 **Area:** Intersection of Gordon Ln., 11' off East Curb

	DEPTH		CLASSIFICATION
	mm	inches	
	100	4	Hot Mix Asphalt (Poor Bond)
	100	4	Hot Mix Asphalt Sandy Gravel

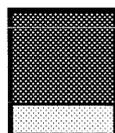
CORE#: 22 **Area:** 100' N. of Gordon Ln., 11' off West Curb

	DEPTH		CLASSIFICATION
	mm	inches	
	169	6.75	Hot Mix Asphalt (2.5/2.0/2.25)
			Sandy Gravel

CORE#: 23 **Area:** 200' N. of Gordon Ln., 8' off West Curb

	DEPTH		CLASSIFICATION
	mm	inches	
	150	6	Hot Mix Asphalt (2.0/1.75/2.25)
			Sandy Gravel

CORE#: 24 **Area:** 250' S. of Salem Rd., 4' off West Curb

	DEPTH		CLASSIFICATION
	mm	inches	
	181	7.25	Hot Mix Asphalt (2.5/1.5/3.25)
			Sandy Gravel



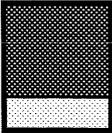
CORE PROFILE

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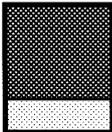
LOCATION: Forbes Street, East Hartford, CT
DATE SAMPLED: July 1, 2010

FROM: Heritage Lane
TO: N. of Forest Street

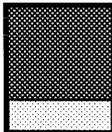
CORE#: 25 **Area:** 25' N. of Salem Rd., 4' off East Curb

	DEPTH		CLASSIFICATION
	mm	inches	
	50	2	Hot Mix Asphalt (2.0) (Poor Bond)
	88	3.5	Hot Mix Asphalt (3.5) Sandy Gravel

CORE#: 26 **Area:** 75' S. of Salem Rd., 8' off East Curb

	DEPTH		CLASSIFICATION
	mm	inches	
	194	7.75	Hot Mix Asphalt (3.0/2.5/2.25) Sandy Gravel

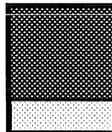
CORE#: 27 **Area:** 150' S. of Brewer St., 11' off East Curb

	DEPTH		CLASSIFICATION
	mm	inches	
	219	8.75	Hot Mix Asphalt (1.75/3.5/3.5) Sandy Gravel

CORE#: 28 **Area:** 50' S. of Brewer St., 11' off West Curb

	DEPTH		CLASSIFICATION
	mm	inches	
	150	6	Hot Mix Asphalt (1.0/1.0/4.0) (Poor Bond between each lift) Sandy Gravel

CORE#: 29 **Area:** 50' N. of Brewer St., 8' off West Curb

	DEPTH		CLASSIFICATION
	mm	inches	
	138	5.5	Hot Mix Asphalt (2.0/3.5) Sandy Gravel



CORE PROFILE

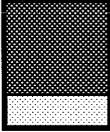
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LOCATION: Forbes Street, East Hartford, CT
DATE SAMPLED: July 1, 2010

FROM: Heritage Lane
TO: N. of Forest Street

CORE#: 30

Area: 150' N. of Brewer St., 4' off West Curb

	DEPTH		CLASSIFICATION
	mm	inches	
	169	6.75	Hot Mix Asphalt (2.25/1.5/3.0)
			Sandy Gravel

