

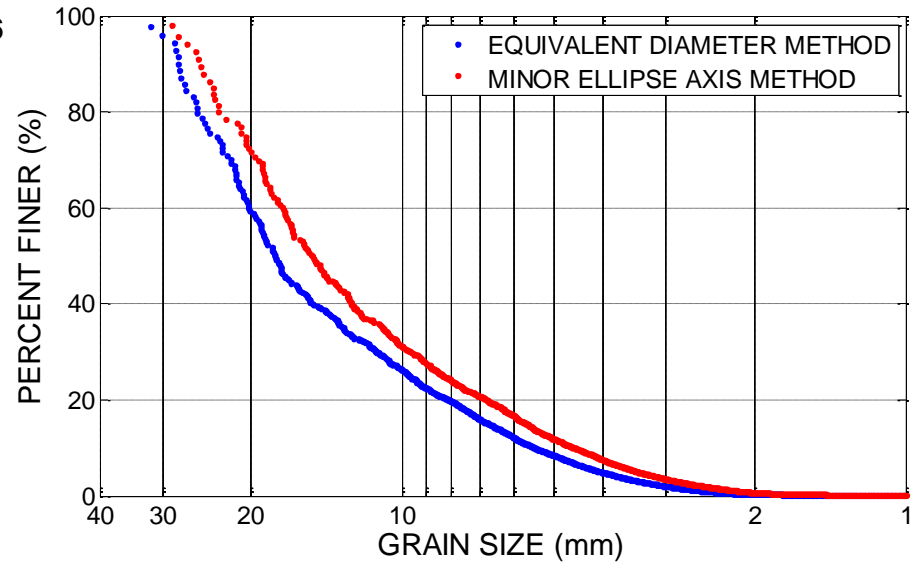
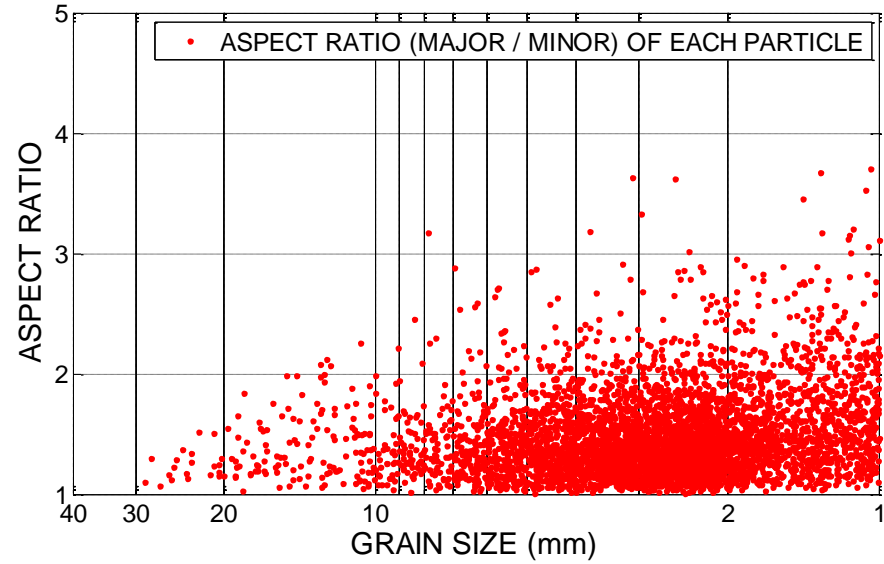
APPENDIX D

EXAMPLE TRANSLUCENT SEGREGATION TABLE (TST) TEST RESULTS



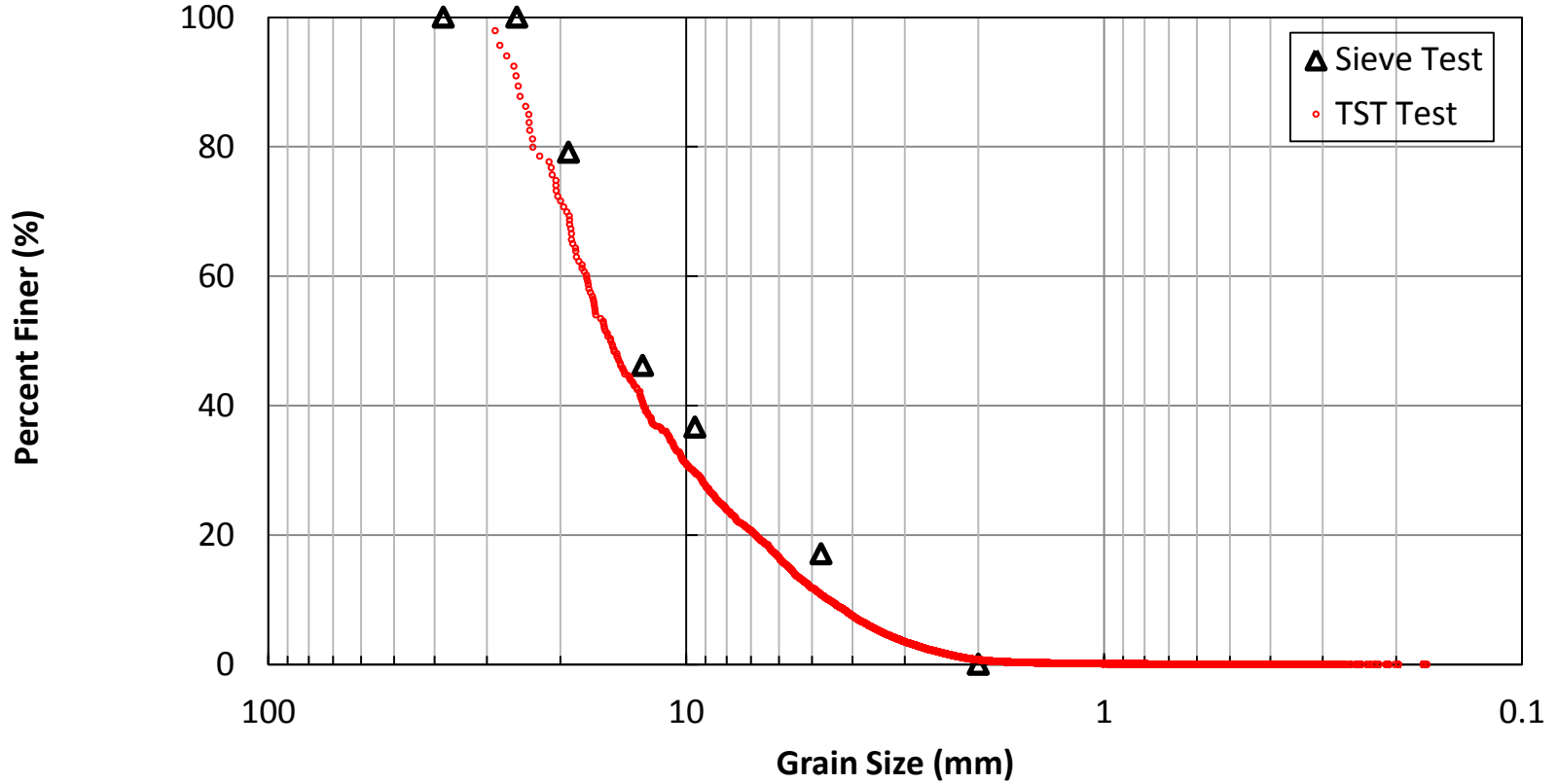
MATERIAL: Upper Peninsula
 PIT NUMBER:
 PIT NAME:
 DATE SAMPLED: 08/30/11
 SAMPLED BY: HS
 DATE TESTED: 08/30/11
 TESTED BY: HS

MAGNIFICATION (pix/mm): 5.7
 IMAGE SIZE (pix): 3264 x 4928
 IMAGE SIZE (mm): 572.6 x 864.6

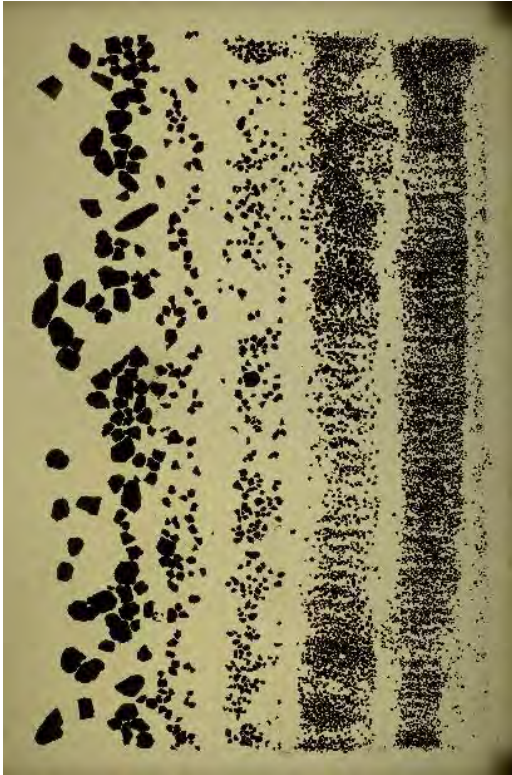


MATERIAL	PIT NUMBER	PIT NAME	
Upper Peninsula			
DATE SAMPLED	SAMPLED BY	DATE TESTED	TESTED BY
08/30/11	HS	08/30/11	HS
	FRACTIONAL % RETAINED	CUMULATIVE % RETAINED	RESULTS % PASSING
1 1/2 INCH	0	0	100
1 INCH	9	9	91
3/4 INCH	21	30	70
1/2 INCH	29.3000	59.3000	40.7000
3/8 INCH	10.9000	70.3000	29.7000
NO. 4	18.7000	89	11
NO. 10	10.3000	99.3000	0.7000

Material: Upper Peninsula

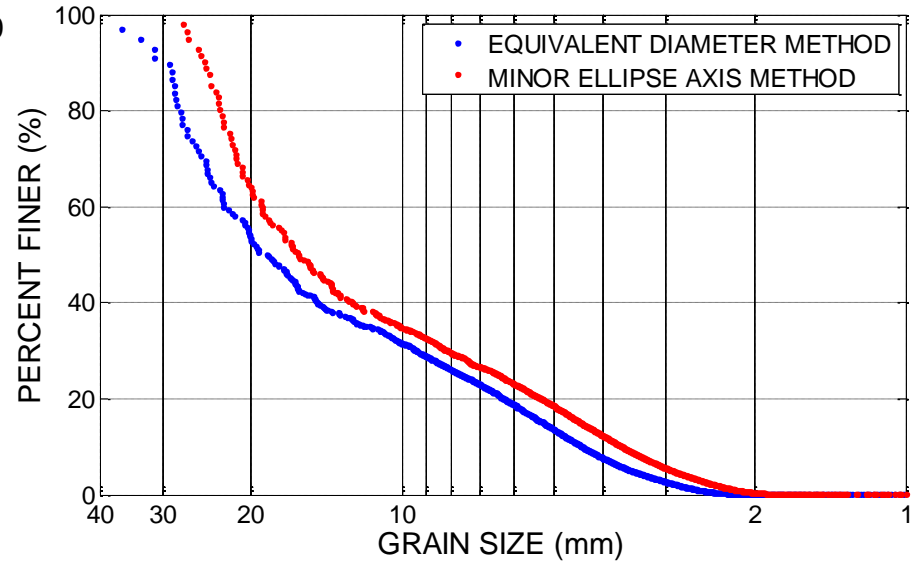
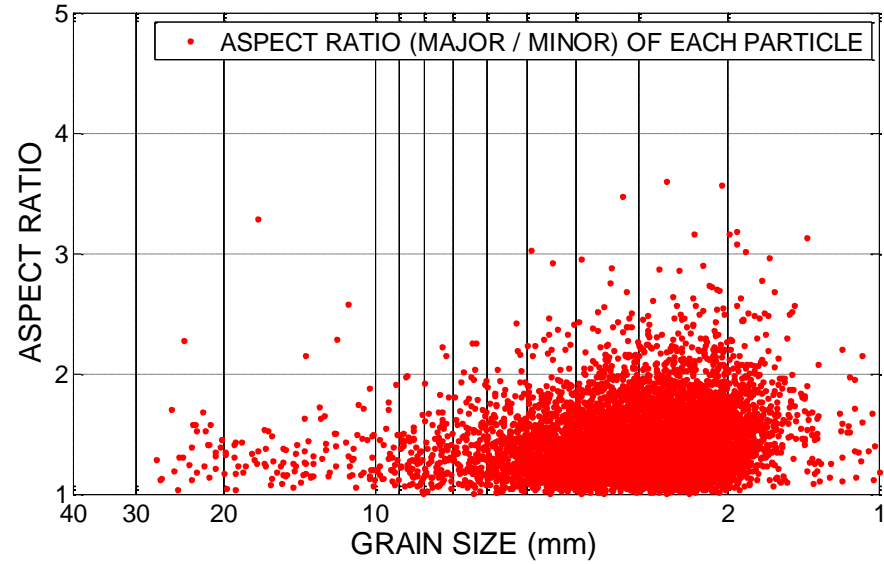


The following three test results are from a single large (3.7 kg) specimen tested in three random parts (not divided by a splitter). Although the three size distributions are distinctly different from each other, the composite distribution shown on the last page is virtually identical to the results of sieving the full specimen.

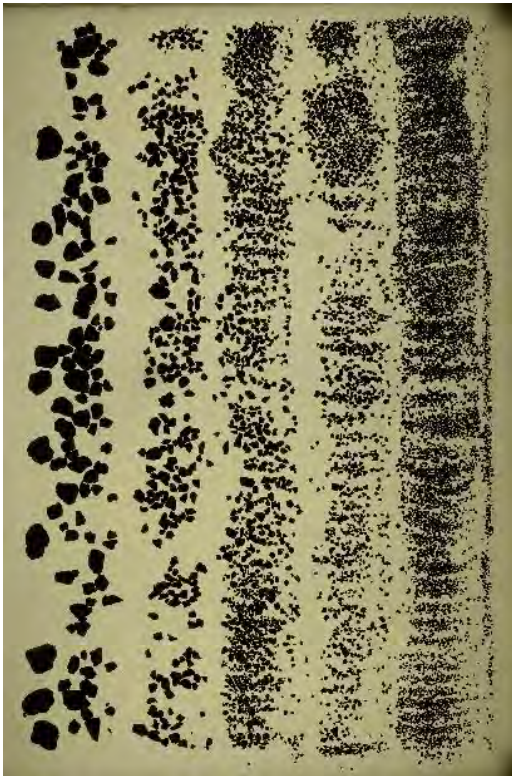


MATERIAL: 21AA 1/3
 PIT NUMBER:
 PIT NAME:
 DATE SAMPLED: 09/08/11
 SAMPLED BY: HS
 DATE TESTED: 09/08/11
 TESTED BY: HS

MAGNIFICATION (pix/mm): 5.6
 IMAGE SIZE (pix): 3264 x 4928
 IMAGE SIZE (mm): 582.9 x 880.0

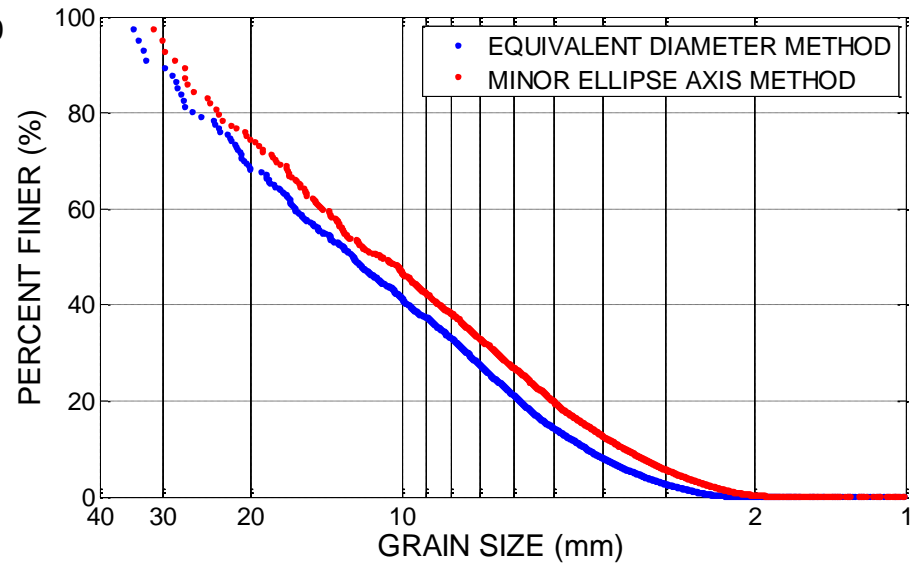
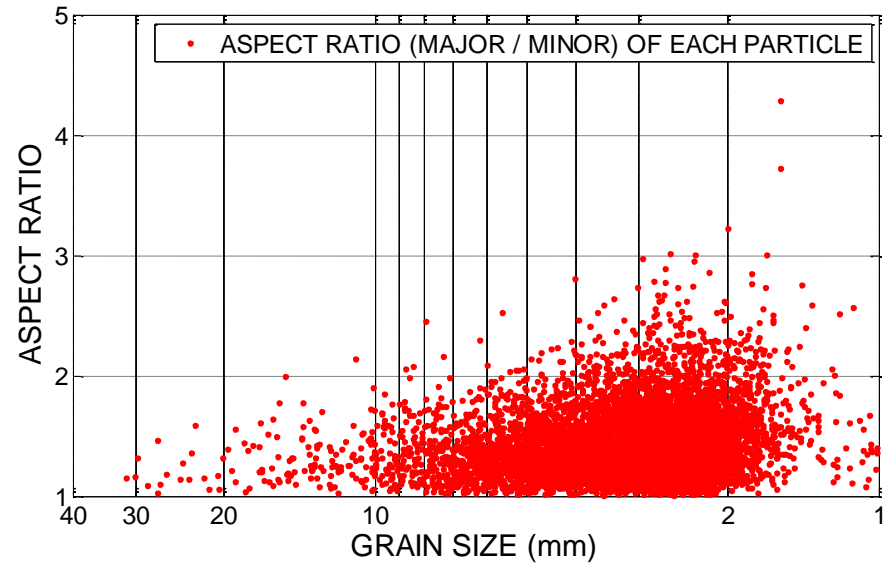


MATERIAL	PIT NUMBER		PIT NAME	
21AA 1/3				
DATE SAMPLED	SAMPLED BY	DATE TESTED	TESTED BY	
09/08/11	HS	09/08/11	HS	
	FRACTIONAL % RETAINED	CUMULATIVE % RETAINED	RESULTS % PASSING	
1 1/2 INCH	0	0	100	
1 INCH	7.2000	7.2000	92.8000	
3/4 INCH	32.3000	39.5000	60.5000	
1/2 INCH	20.1000	59.5000	40.5000	
3/8 INCH	6.4000	66	34	
NO. 4	16.7000	82.7000	17.3000	
NO. 10	16.9000	99.6000	0.4000	

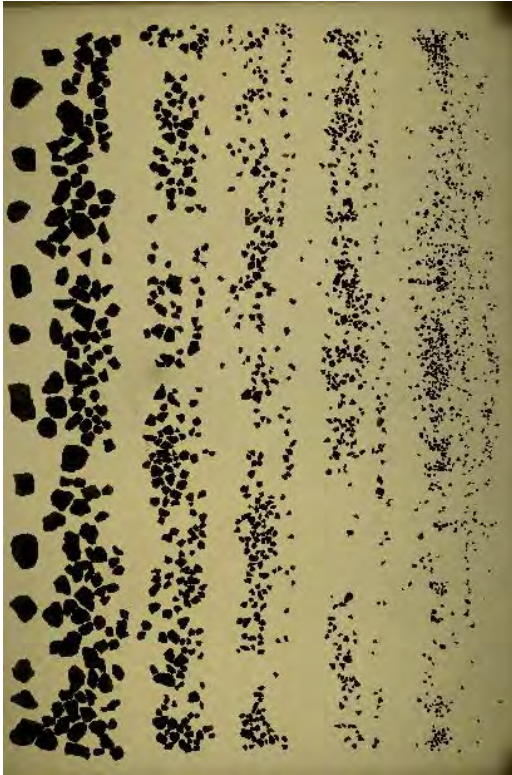


MATERIAL: 21AA 2/3
 PIT NUMBER:
 PIT NAME:
 DATE SAMPLED: 09/08/11
 SAMPLED BY: HS
 DATE TESTED: 09/08/11
 TESTED BY: HS

MAGNIFICATION (pix/mm): 5.6
 IMAGE SIZE (pix): 3264 x 4928
 IMAGE SIZE (mm): 582.9 x 880.0

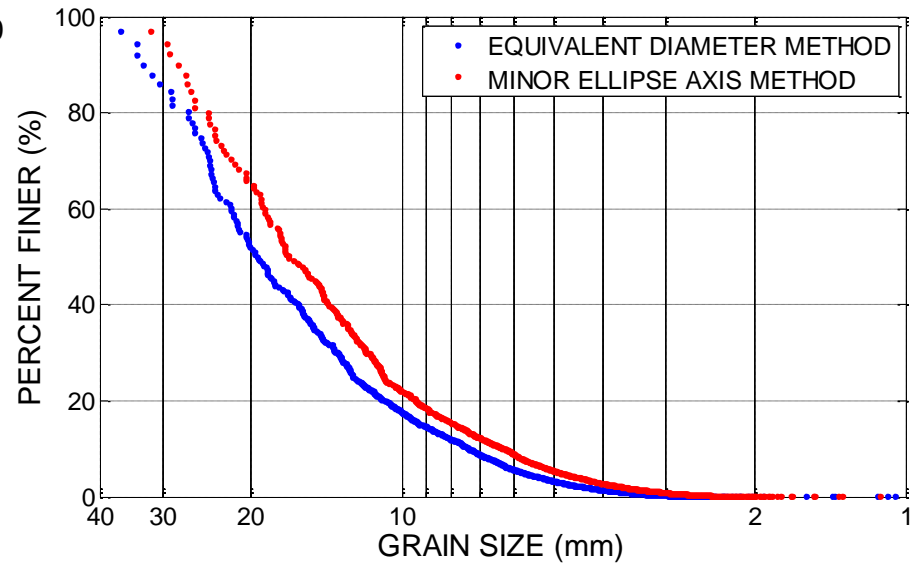
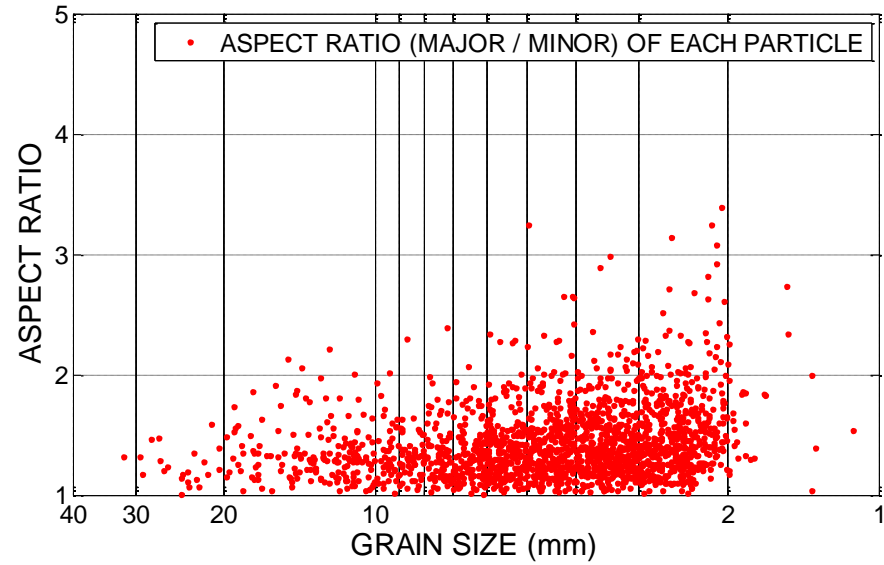


	MATERIAL	PIT NUMBER	PIT NAME	
	21 AA 2/3			
	DATE SAMPLED	SAMPLED BY	DATE TESTED	TESTED BY
	09/08/11	HS	09/08/11	HS
	FRACTIONAL % RETAINED	CUMULATIVE % RETAINED	RESULTS % PASSING	
1 1/2 INCH	0	0	100	
1 INCH	15.5000	15.5000	84.5000	
3/4 INCH	11.2000	26.7000	73.3000	
1/2 INCH	19.4000	46.2000	53.8000	
3/8 INCH	9.2000	55.4000	44.6000	
NO. 4	26.4000	81.8000	18.2000	
NO. 10	17.7000	99.6000	0.4000	



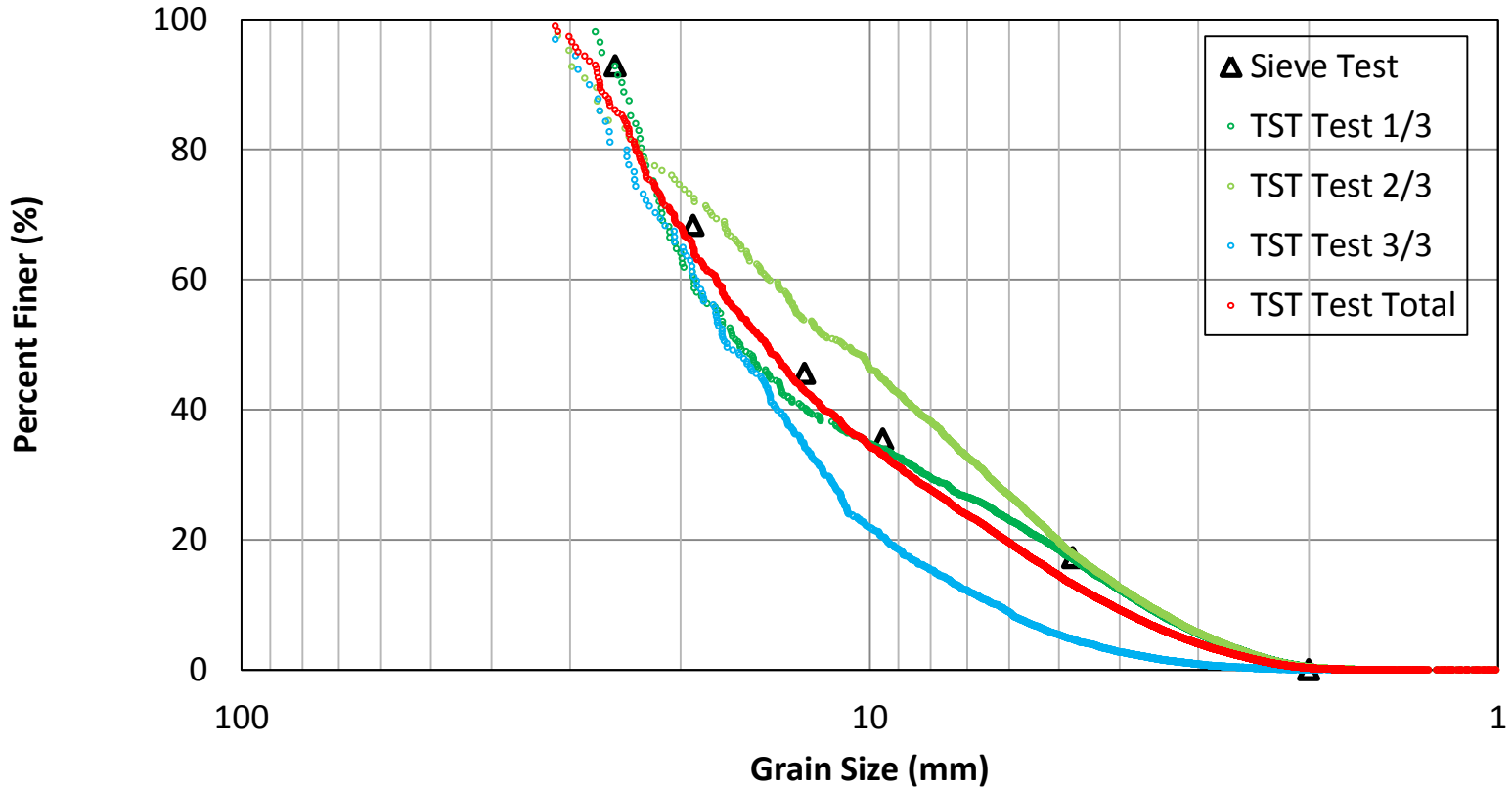
MATERIAL: 21AA 3/3
 PIT NUMBER:
 PIT NAME:
 DATE SAMPLED: 09/08/11
 SAMPLED BY: HS
 DATE TESTED: 09/08/11
 TESTED BY: HS

MAGNIFICATION (pix/mm): 5.6
 IMAGE SIZE (pix): 3264 x 4928
 IMAGE SIZE (mm): 582.9 x 880.0



MATERIAL	PIT NUMBER		PIT NAME	
21 AA 3/3				
DATE SAMPLED	SAMPLED BY	DATE TESTED	TESTED BY	
09/08/11	HS	09/08/11	HS	
	FRACTIONAL % RETAINED	CUMULATIVE % RETAINED	RESULTS % PASSING	
1 1/2 INCH	0	0	100	
1 INCH	18.8000	18.8000	81.2000	
3/4 INCH	19.9000	38.8000	61.2000	
1/2 INCH	26.7000	65.5000	34.5000	
3/8 INCH	14.1000	79.5000	20.5000	
NO. 4	15.6000	95.2000	4.8000	
NO. 10	4.8000	100	0	

Material: 21AA



Sample 1/3 : Sample 2/3 : Sample 3/3 = 1214.8 g : 1237.6 g : 1242.9 g
Total = 3695.3 g

APPENDIX E

EXAMPLE COMBINED SEDIMAGING AND TST TEST RESULTS



Soil: Upper Peninsula Soil w/ Fines

Sample Number:

Depth (ft):

Test Date:

Performed by:

D_{60} (mm): 0.32

D_{30} (mm): 0.20

D_{10} (mm): 0.00

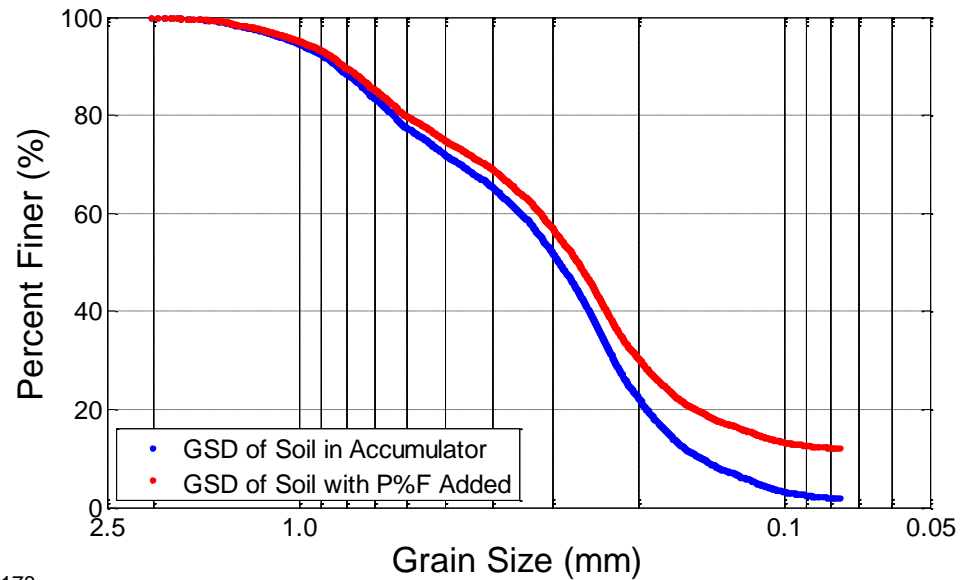
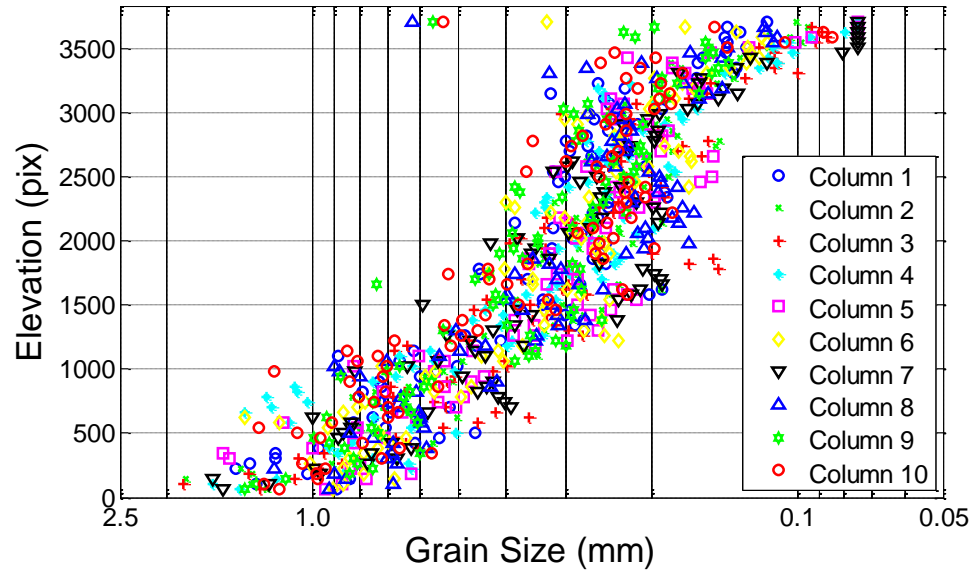
C_u : 0.00

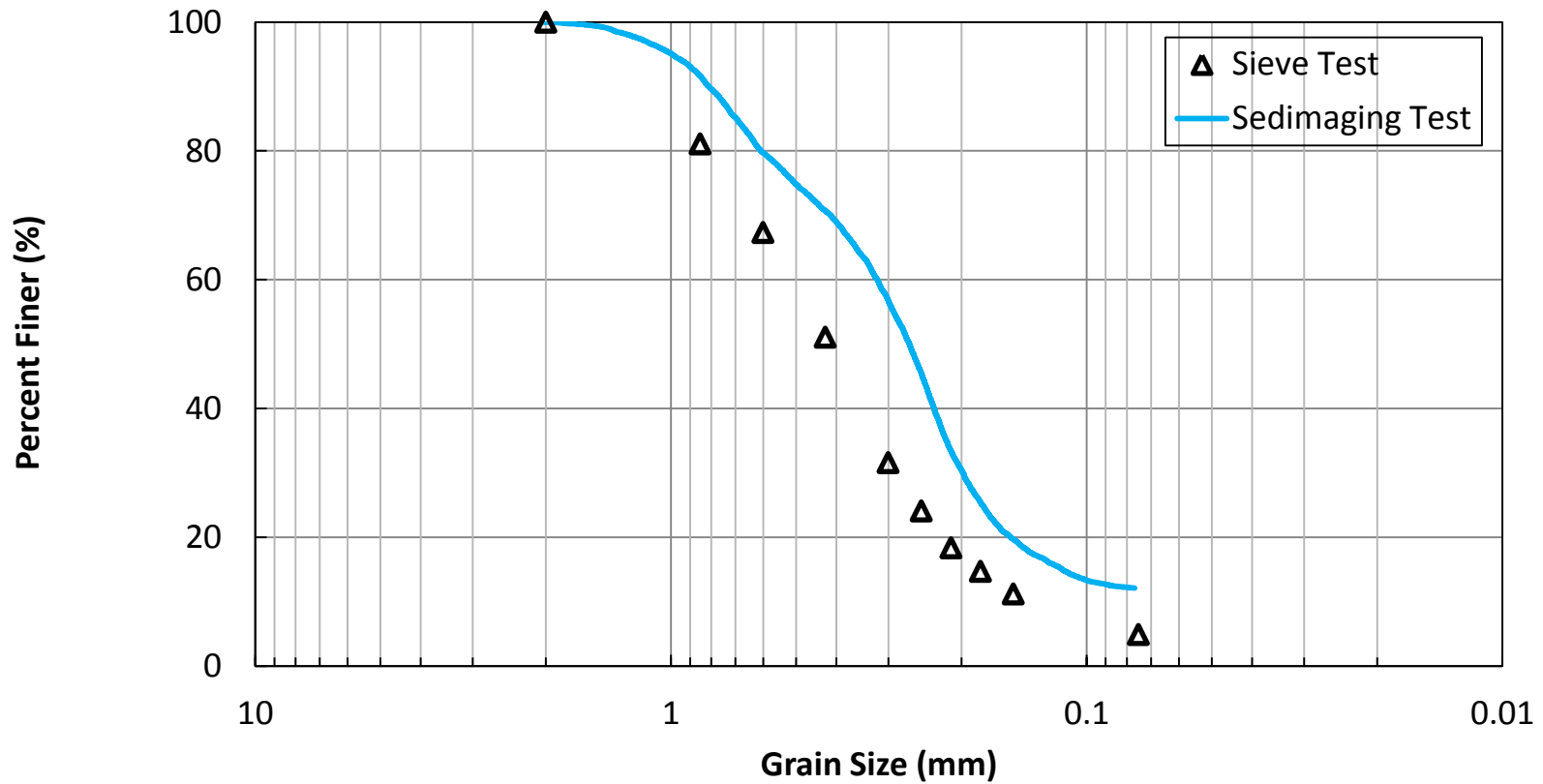
C_g : 0.00

Mag (pix/mm): 36.7

Image Size (pix): 3832 x 1280

Image Size (mm): 104.4 x 34.9







Soil: Upper Peninsula Soil

Sample Number:

Depth (ft):

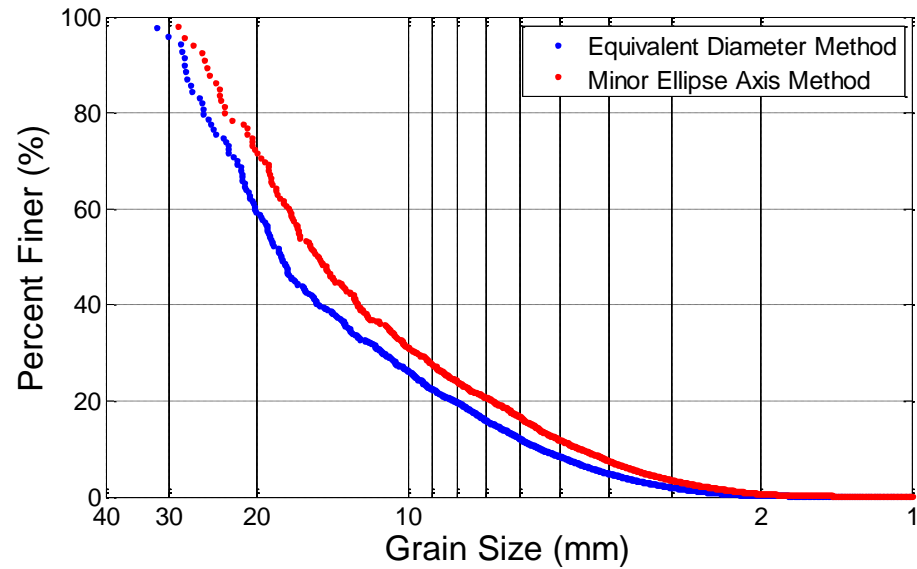
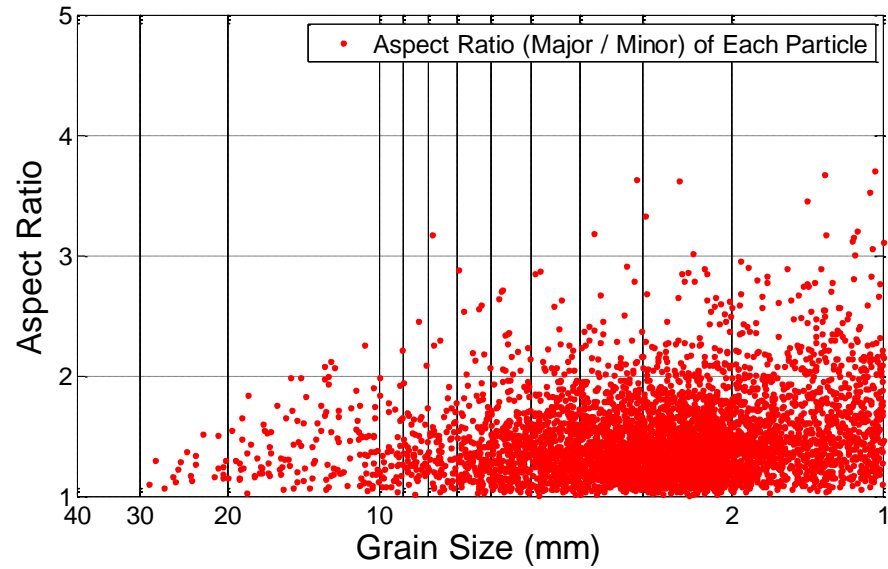
Test Date:

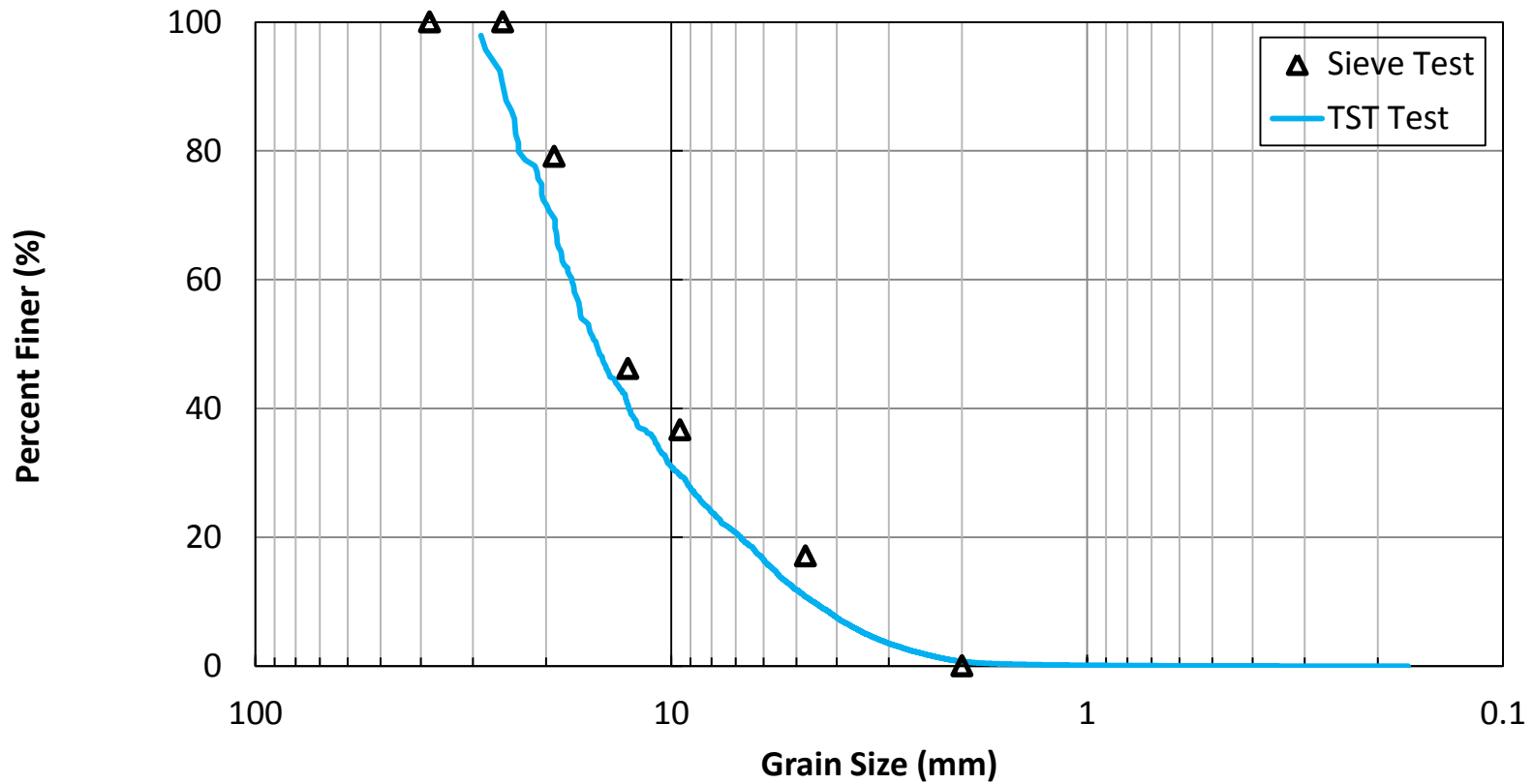
Performed by:

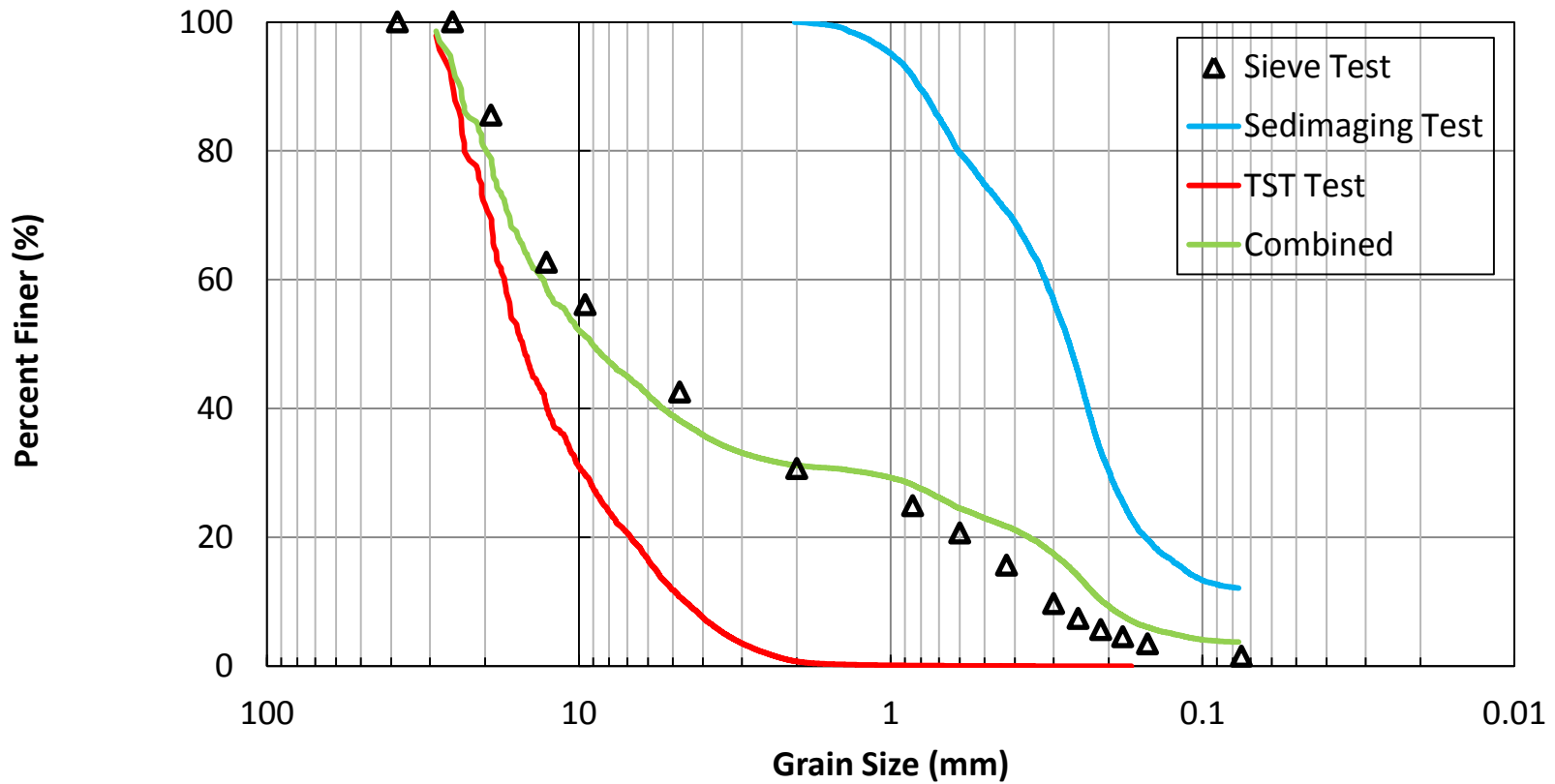
Mag (pix/mm): 5.7

Image Size (pix): 3264 x 4928

Image Size (mm): 572.6 x 864.6







Finer Materials : Coarser Materials = 1675.7 g \approx 3788.3 g

	MATERIAL	PIT NUMBER	PIT NAME	
	DATE SAMPLED	SAMPLED BY	DATE TESTED	TESTED BY
	FRACTIONAL % RETAINED	CUMULATIVE % RETAINED	RESULTS % PASSING	
1 1/2 INCH	0	0	100	
1 INCH	3.2358	3.2358	96.7642	
3/4 INCH	18.4197	21.6555	78.3445	
1/2 INCH	15.8844	37.5398	62.4602	
3/8 INCH	8.7827	46.3225	53.6775	
NO. 4	14.8046	61.1271	38.8729	
NO. 10	8.0175	69.1446	30.8554	
NO. 20	2.6372	71.7818	28.2182	
NO. 30	3.5662	75.3480	24.6520	
NO. 40	2.7530	78.1010	21.8990	
NO. 50	4.1516	82.2525	17.7475	
NO. 60	3.4584	85.7109	14.2891	
NO. 70	3.7061	89.4171	10.5829	
NO. 80	2.4945	91.9115	8.0885	
NO. 100	1.8089	93.7204	6.2796	
NO. 200	2.3437	96.0641	3.9359	

APPENDIX F

SEDIMAGING TESTING RESULTS FOR STATISTICAL ANALYSIS

SUMMARY OF SEDIMAGING TEST RESULTS FOR STATISTICAL ANALYSIS

Sieve Number	Opening Size(mm)	Sed 1	Sed 2	Sed 3	Sed 4	Sed 5	Sed 6	Sed 7	Sed 8	Sed 9	Sed 10
		Passing Percent (%)									
No. 10	2.000	99.6	98.8	98.2	99.2	98.9	98.8	98.5	98.7	98.2	98.0
No. 16	1.190	93.7	89.7	85.7	90.0	91.8	86.7	86.7	87.7	81.0	82.0
No. 20	0.841	80.6	74.6	65.5	73.2	76.1	66.7	64.6	66.5	57.2	61.3
No. 30	0.595	56.8	50.9	40.0	45.5	51.1	41.0	39.5	40.9	32.4	35.9
No. 40	0.420	30.0	24.7	19.8	24.0	25.4	18.9	17.6	21.2	13.7	17.1
No. 50	0.297	9.6	8.8	6.0	10.4	9.6	6.3	7.2	7.7	3.3	6.7
No. 60	0.250	3.9	5.4	3.2	5.4	6.1	3.1	3.7	4.2	1.3	3.3
No. 70	0.210	1.6	2.3	2.0	2.8	2.5	1.2	1.7	2.2	0.4	1.4
No. 80	0.177	0.5	1.5	1.2	1.4	1.0	0.5	0.6	0.9	0.1	0.6
No. 100	0.149	0.1	0.9	0.4	1.0	0.3	0.2	0.3	0.6	0.0	0.1
No. 200	0.074	0.0	0.2	0.0	0.8	0.0	0.1	0.1	0.0	0.0	0.0

Sieve Number	Opening Size(mm)	Sed 11	Sed 12	Sed 13	Sed 14	Sed 15	Sed 16	Sed 17	Sed 18	Sed 19	Sed 20
		Passing Percent (%)									
No. 10	2.000	98.7	94.3	99.4	98.9	97.2	99.4	97.3	99.7	99.7	96.5
No. 16	1.190	85.4	66.2	86.3	92.4	81.3	92.0	77.2	92.2	94.2	78.7
No. 20	0.841	68.9	48.6	63.3	84.2	68.9	81.9	52.6	80.8	87.2	69.1
No. 30	0.595	51.7	40.2	38.0	68.1	58.4	70.7	31.9	66.4	80.2	59.4
No. 40	0.420	36.4	31.7	28.5	45.2	51.5	59.6	19.0	51.8	74.8	45.6
No. 50	0.297	22.7	22.0	20.2	23.6	31.8	48.7	8.7	35.4	67.2	34.0
No. 60	0.250	14.0	14.9	12.7	13.7	18.7	43.6	5.3	24.8	60.3	30.2
No. 70	0.210	7.0	7.4	6.3	6.3	7.8	36.9	3.1	15.9	50.9	27.3
No. 80	0.177	2.5	2.7	2.3	2.9	2.5	29.4	1.3	10.0	40.4	25.1
No. 100	0.149	0.8	0.8	0.5	1.5	1.2	21.6	0.7	5.6	31.6	21.2
No. 200	0.074	0.4	0.5	0.0	1.2	1.0	1.9	0.5	1.3	2.8	0.5

Test #	Sed	Sieve Size				
		#16	#30	#50	#100	#200
1	MDOT	90.2	63.0	15.1	2.6	0.7
	U of M	93.7	56.8	9.6	0.1	0.0
	Difference	(3.5)	6.2	5.5	2.5	0.7
2	MDOT	85.4	57.1	13.7	2.4	0.6
	U of M	89.7	50.9	8.8	0.9	0.2
	Difference	(4.3)	6.2	4.9	1.5	0.4
3	MDOT	77.7	46.1	11.0	2.4	0.7
	U of M	85.7	40.0	6.0	0.4	0.0
	Difference	(8.0)	6.1	5.0	2.0	0.7
4	MDOT	83.3	51.6	12.7	2.5	0.6
	U of M	90.0	45.5	10.4	1.0	0.8
	Difference	(6.7)	6.1	2.3	1.5	(0.2)
5	MDOT	87.9	58.7	16.1	3.7	0.9
	U of M	91.8	51.1	9.6	0.3	0.0
	Difference	(3.9)	7.6	6.5	3.4	0.9
6	MDOT	82.7	50.4	11.3	1.9	0.5
	U of M	86.7	41.0	6.3	0.2	0.1
	Difference	(4.0)	9.4	5.0	1.7	0.4
7	MDOT	82.1	48.3	11.9	2.7	0.7
	U of M	86.7	39.5	7.2	0.3	0.1
	Difference	(4.6)	8.8	4.7	2.4	0.6
8	MDOT	81.4	48.1	12.0	2.8	0.6
	U of M	87.7	40.9	7.7	0.6	0.0
	Difference	(6.3)	7.2	4.3	2.2	0.6
9	MDOT	75.3	41.0	9.0	2.0	0.5
	U of M	81.0	32.4	3.3	0.0	0.0
	Difference	(5.7)	8.6	5.7	2.0	0.5
10	MDOT	78.2	45.2	11.2	2.6	0.6
	U of M	82.0	35.9	6.7	0.1	0.0
	Difference	(3.8)	9.3	4.5	2.5	0.6

Test samples 1 thru 10 were made by splitting one large sample into ten portions and then putting each portion through a sample splitter to create two halves. One half was sent to U of M and one half was tested by MDOT

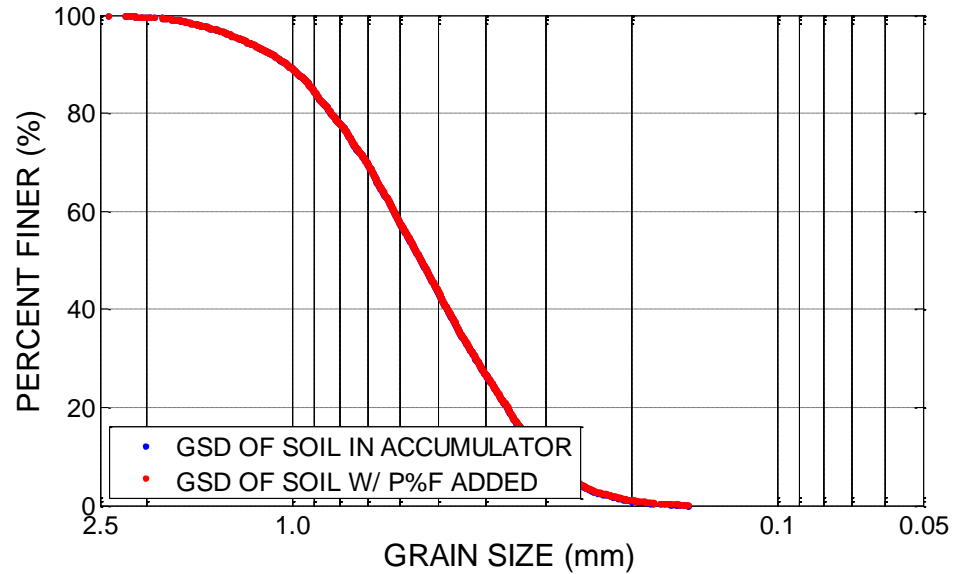
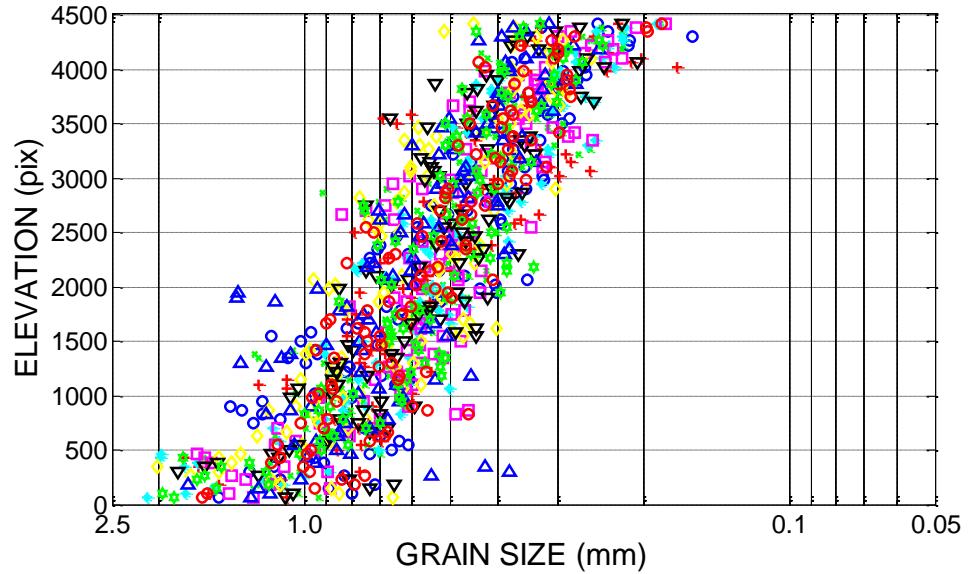
Test #	Sed	Sieve Size				
		#16	#30	#50	#100	#200
11	MDOT	75.5	52.1	27.5	3.8	1.1
	U of M	85.4	51.7	22.7	0.8	0.4
	Difference	(9.9)	0.4	4.8	3.0	0.7
12	MDOT	54.1	41.4	27.9	4.1	1.3
	U of M	66.2	40.2	22.0	0.8	0.5
	Difference	(12.1)	1.2	5.9	3.3	0.8
13	MDOT	86.5	41.4	27.3	4.0	1.4
	U of M	86.3	38.0	20.2	0.5	0.0
	Difference	0.2	3.4	7.1	3.5	1.4
14	MDOT	88.0	75.6	28.0	4.0	1.4
	U of M	92.4	68.1	23.6	1.5	1.2
	Difference	(4.4)	7.5	4.4	2.5	0.2
15	MDOT	72.6	60.5	48.5	4.2	1.1
	U of M	81.3	58.4	31.8	1.2	1.0
	Difference	(8.7)	2.1	16.7	3.0	0.1
16	MDOT	87.5	75.8	51.7	28.4	3.2
	U of M	92.0	70.7	48.7	21.6	1.9
	Difference	(4.5)	5.1	3.0	6.8	1.3
17	MDOT	69.0	38.8	16.0	4.9	3.4
	U of M	77.2	31.9	8.7	0.7	0.5
	Difference	(8.2)	6.9	7.3	4.2	2.9
18	MDOT	90.6	76.7	44.4	11.7	3.0
	U of M	92.2	66.4	35.4	5.6	1.3
	Difference	(1.6)	10.3	9.0	6.1	1.7
19	MDOT	89.4	79.5	68.3	37.7	6.6
	U of M	94.2	80.2	67.2	31.6	2.8
	Difference	(4.8)	(0.7)	1.1	6.1	3.8
20	MDOT	69.0	63.5	32.3	26.0	1.8
	U of M	78.7	59.4	34.0	21.2	0.5
	Difference	(9.7)	4.1	(1.7)	4.8	1.3

Test samples 11 thru 20 were made to specific gradations. (One large sample was sieved. The material retained on each sieve was collected. Two samples with identical gradations were created for each test (11 thru 20). One sample was sent to U of M for testing and the other one was tested by MDOT)

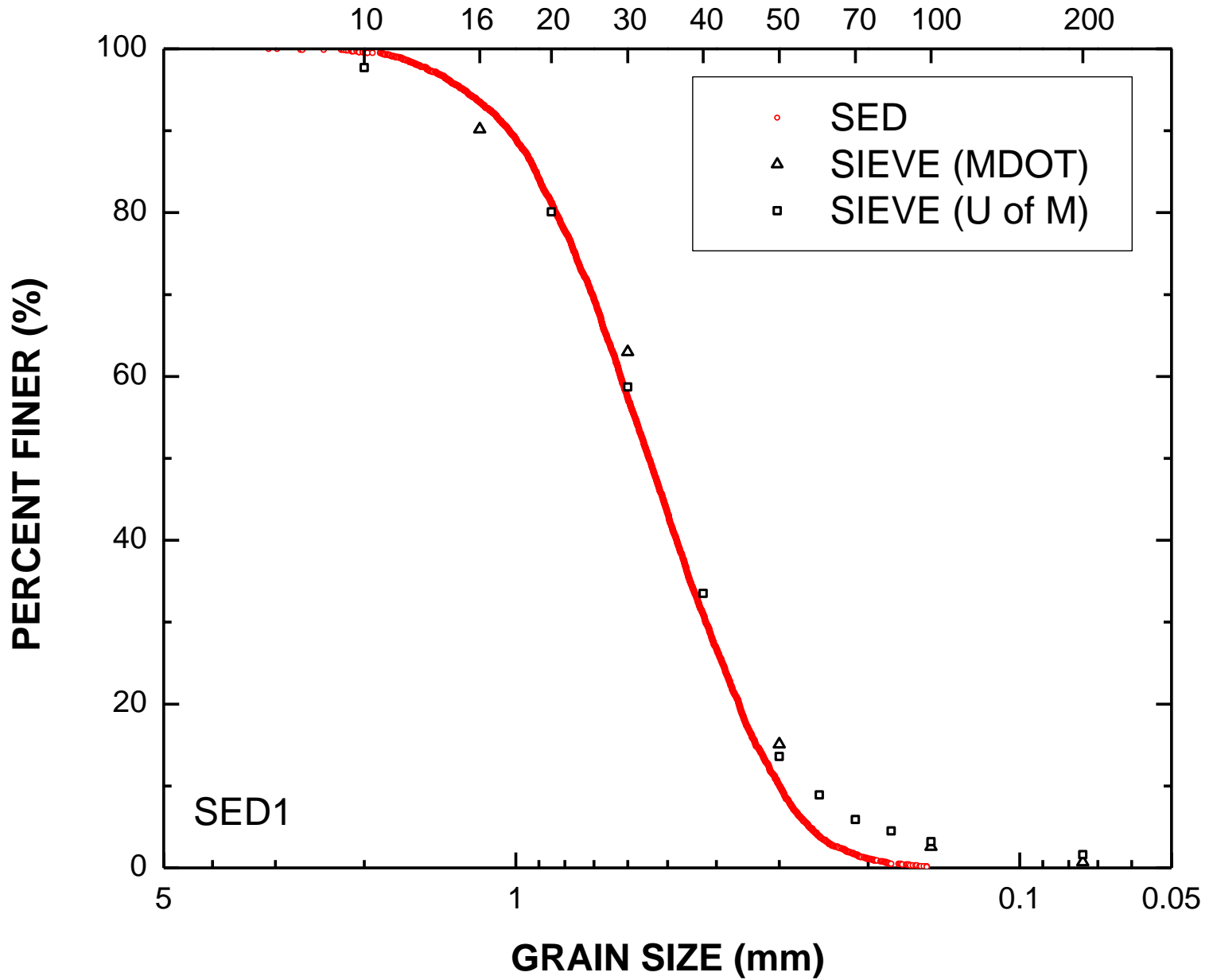
MATERIAL: Sed 1 U of M
PIT NUMBER:
PIT NAME:
DATE SAMPLED:
SAMPLED BY:
DATE TESTED: 09/21/11
TESTED BY: HS

D_{60} (mm): 0.62
 D_{30} (mm): 0.42
 D_{10} (mm): 0.30
 C_u : 2.07
 C_g : 0.95

MAGNIFICATION (pix/mm): 36.9
IMAGE SIZE (pix): 4520 x 1280
IMAGE SIZE (mm): 122.5 x 34.7



U. S. STANDARD SIEVE NUMBERS





MATERIAL: Sed 2 U of M

PIT NUMBER:

PIT NAME:

DATE SAMPLED:

SAMPLED BY:

DATE TESTED: 09/22/11

TESTED BY: HS

D_{60} (mm): 0.67

D_{30} (mm): 0.45

D_{10} (mm): 0.31

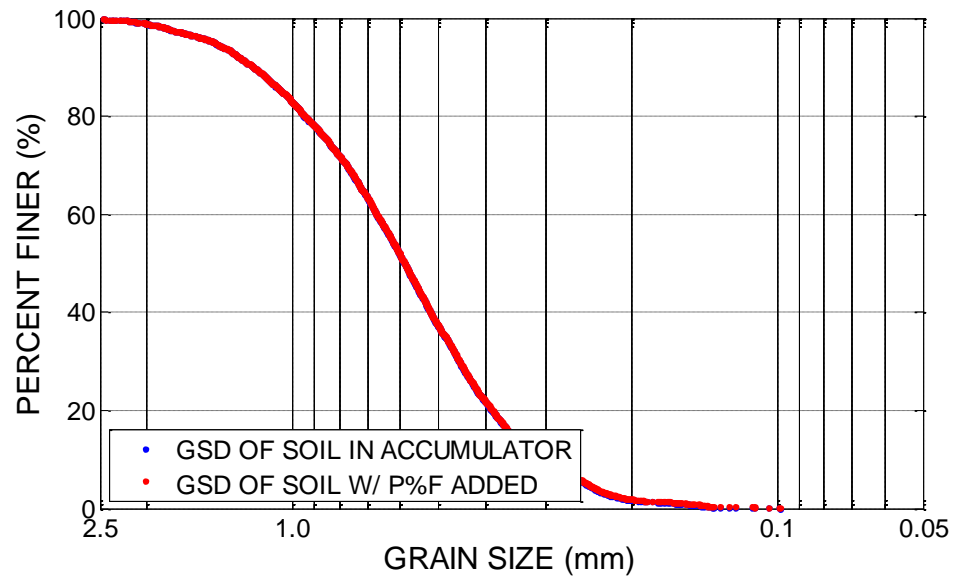
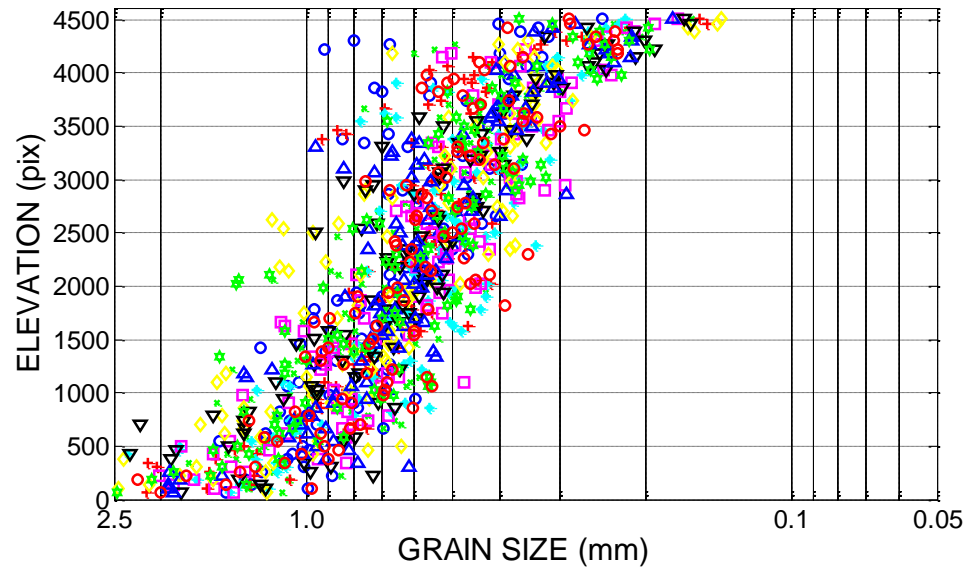
C_u : 2.18

C_g : 0.99

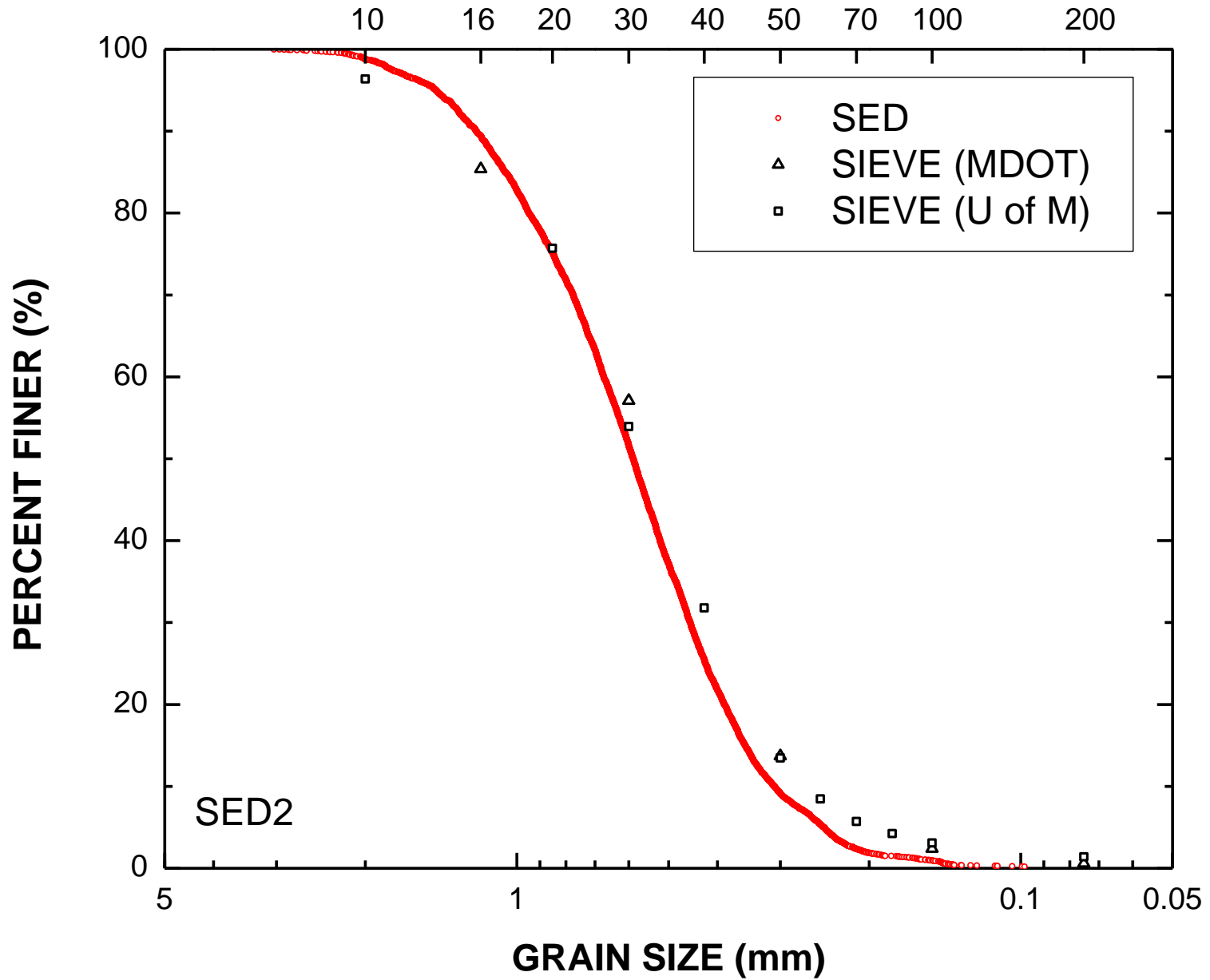
MAGNIFICATION (pix/mm): 36.9

IMAGE SIZE (pix): 4608 x 1280

IMAGE SIZE (mm): 124.9 x 34.7



U. S. STANDARD SIEVE NUMBERS

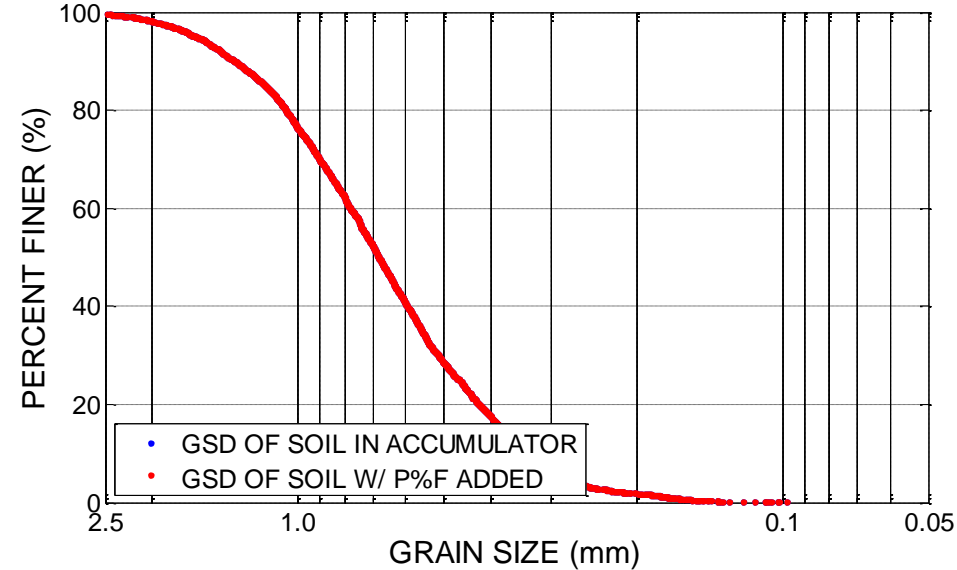
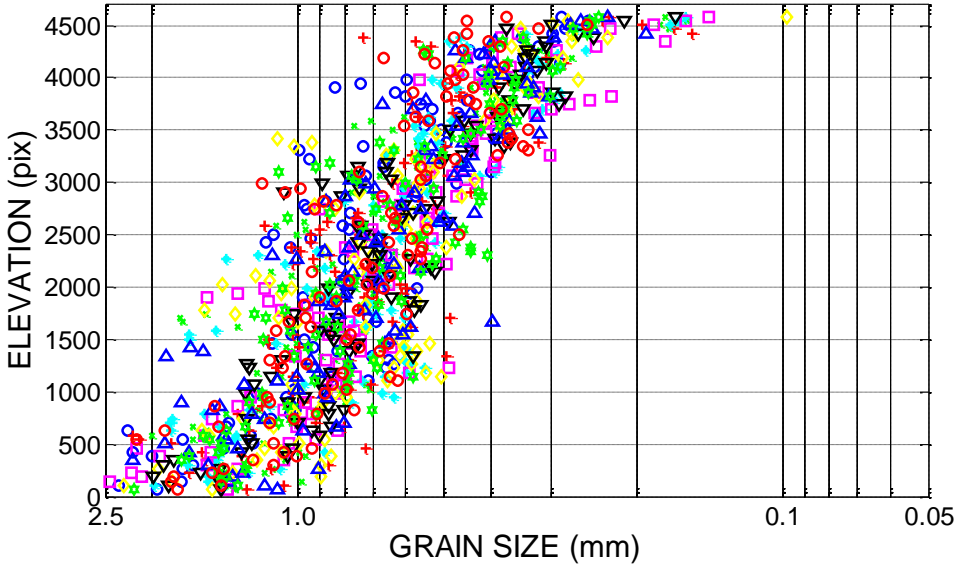




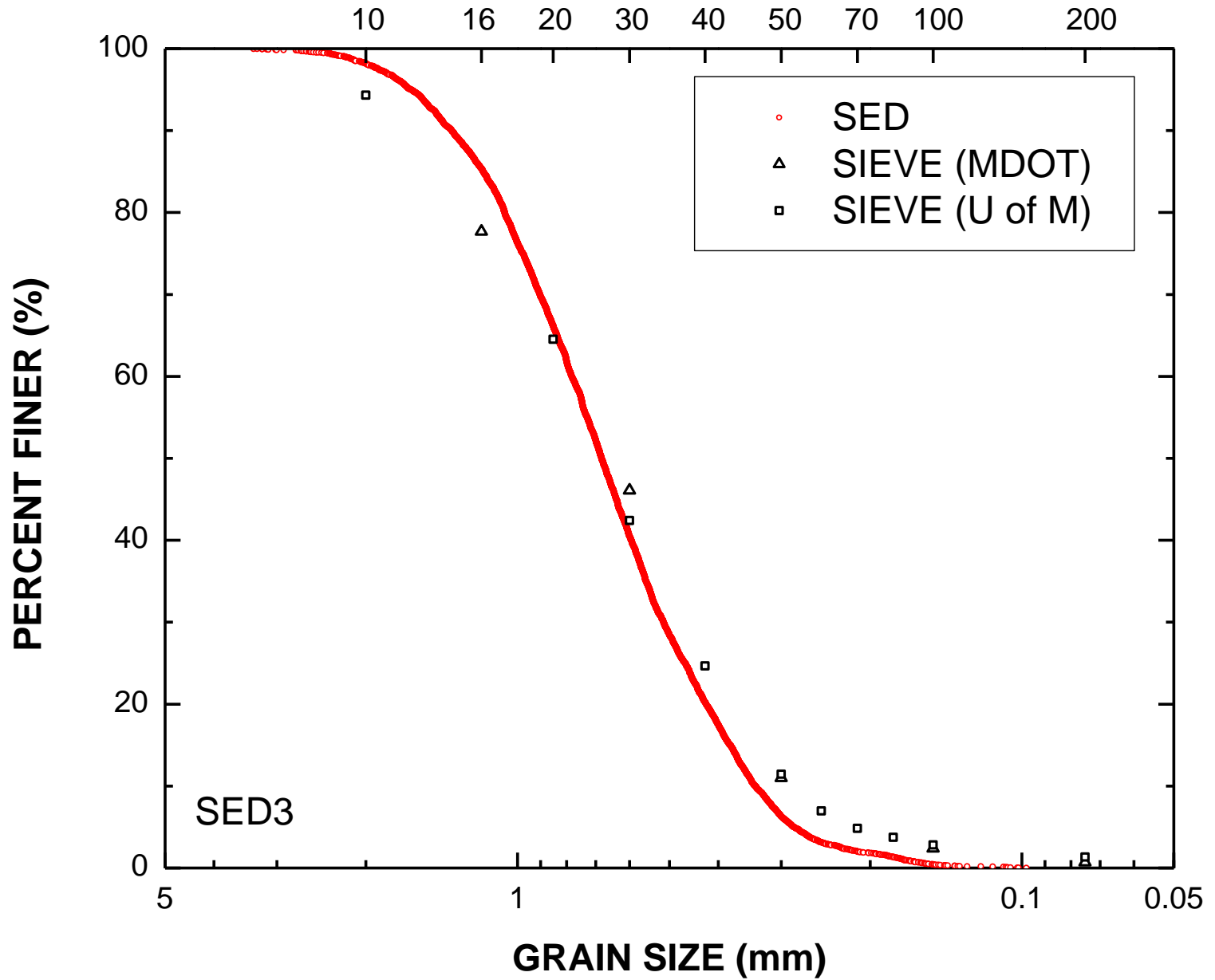
MATERIAL: Sed 3 U of M
PIT NUMBER:
PIT NAME:
DATE SAMPLED:
SAMPLED BY:
DATE TESTED: 09/23/11
TESTED BY: HS

D_{60} (mm): 0.78
 D_{30} (mm): 0.51
 D_{10} (mm): 0.34
 C_u : 2.31
 C_g : 1.00

MAGNIFICATION (pix/mm): 36.9
IMAGE SIZE (pix): 4696 x 1280
IMAGE SIZE (mm): 127.3 x 34.7



U. S. STANDARD SIEVE NUMBERS





MATERIAL: Sed 4 U of M
PIT NUMBER:
PIT NAME:
DATE SAMPLED:
SAMPLED BY:
DATE TESTED: 09/23/11
TESTED BY: HS

D_{60} (mm): 0.70

D_{30} (mm): 0.47

D_{10} (mm): 0.29

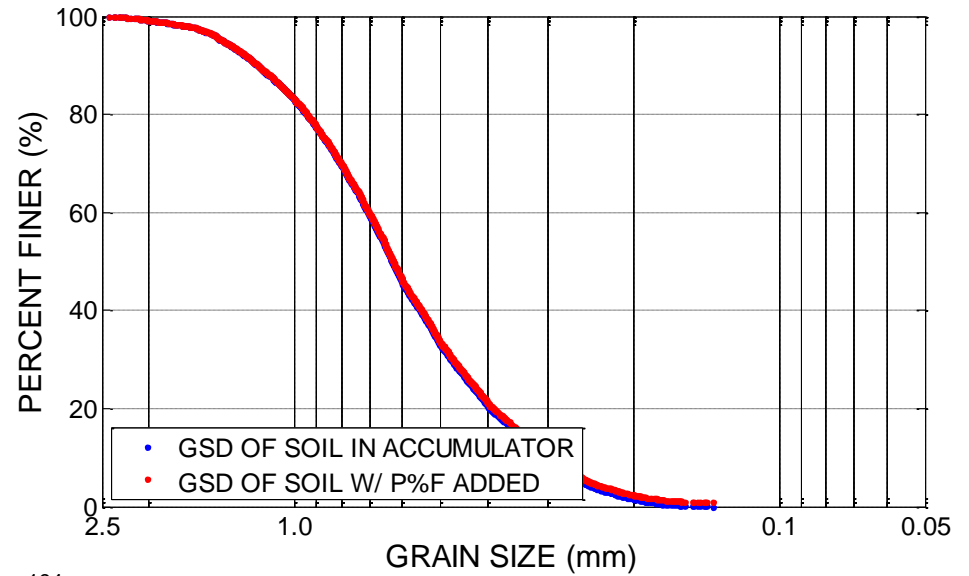
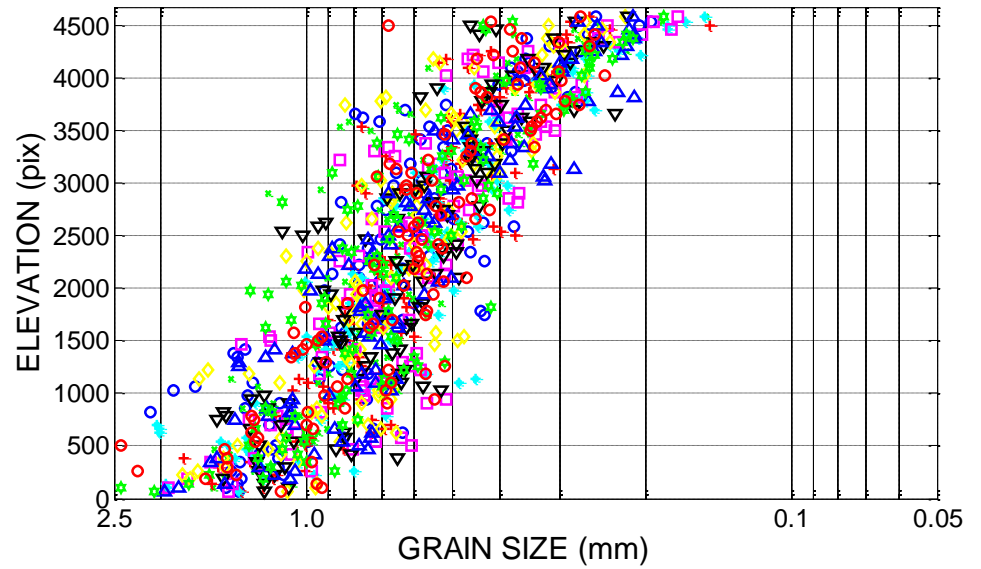
C_u : 2.39

C_g : 1.07

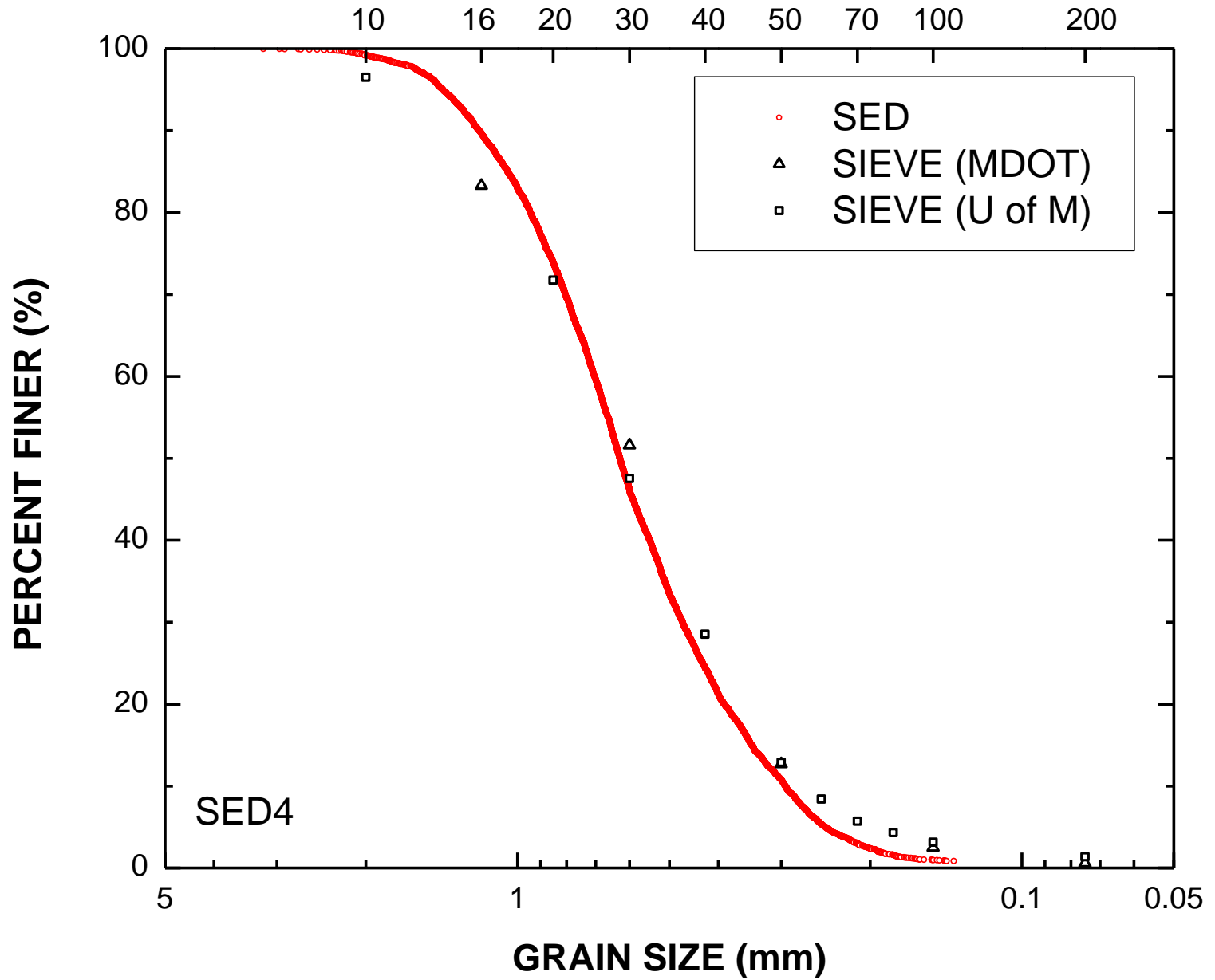
MAGNIFICATION (pix/mm): 36.9

IMAGE SIZE (pix): 4680 x 1280

IMAGE SIZE (mm): 126.8 x 34.7



U. S. STANDARD SIEVE NUMBERS

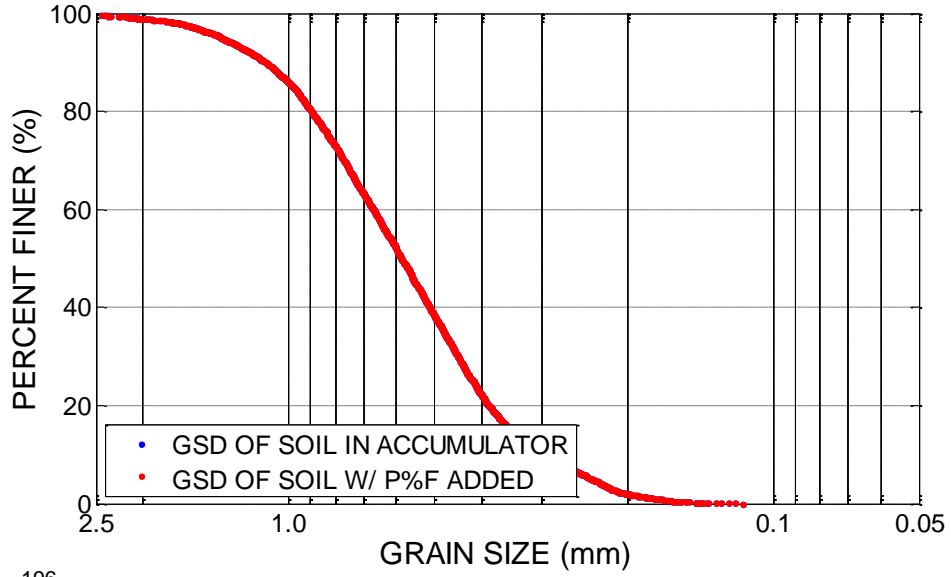
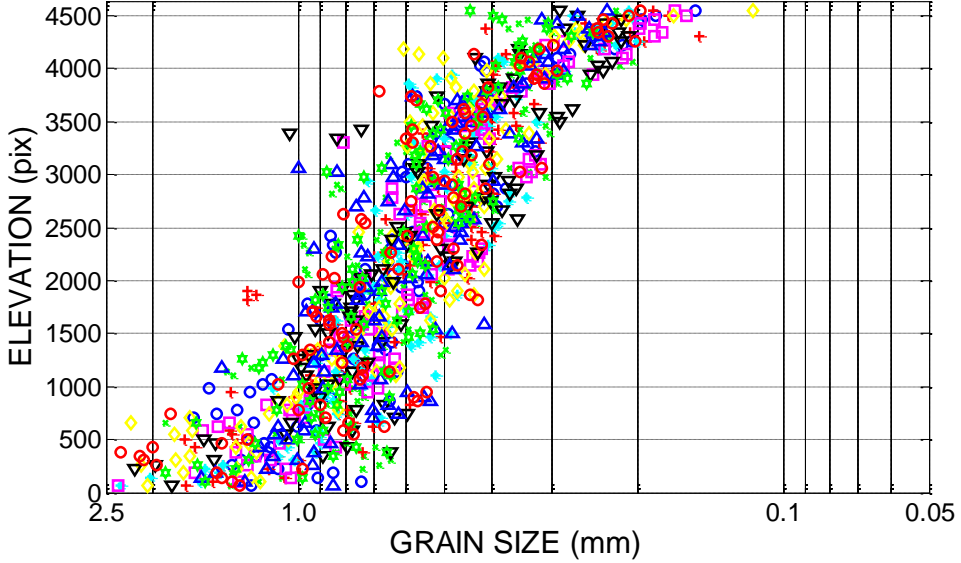




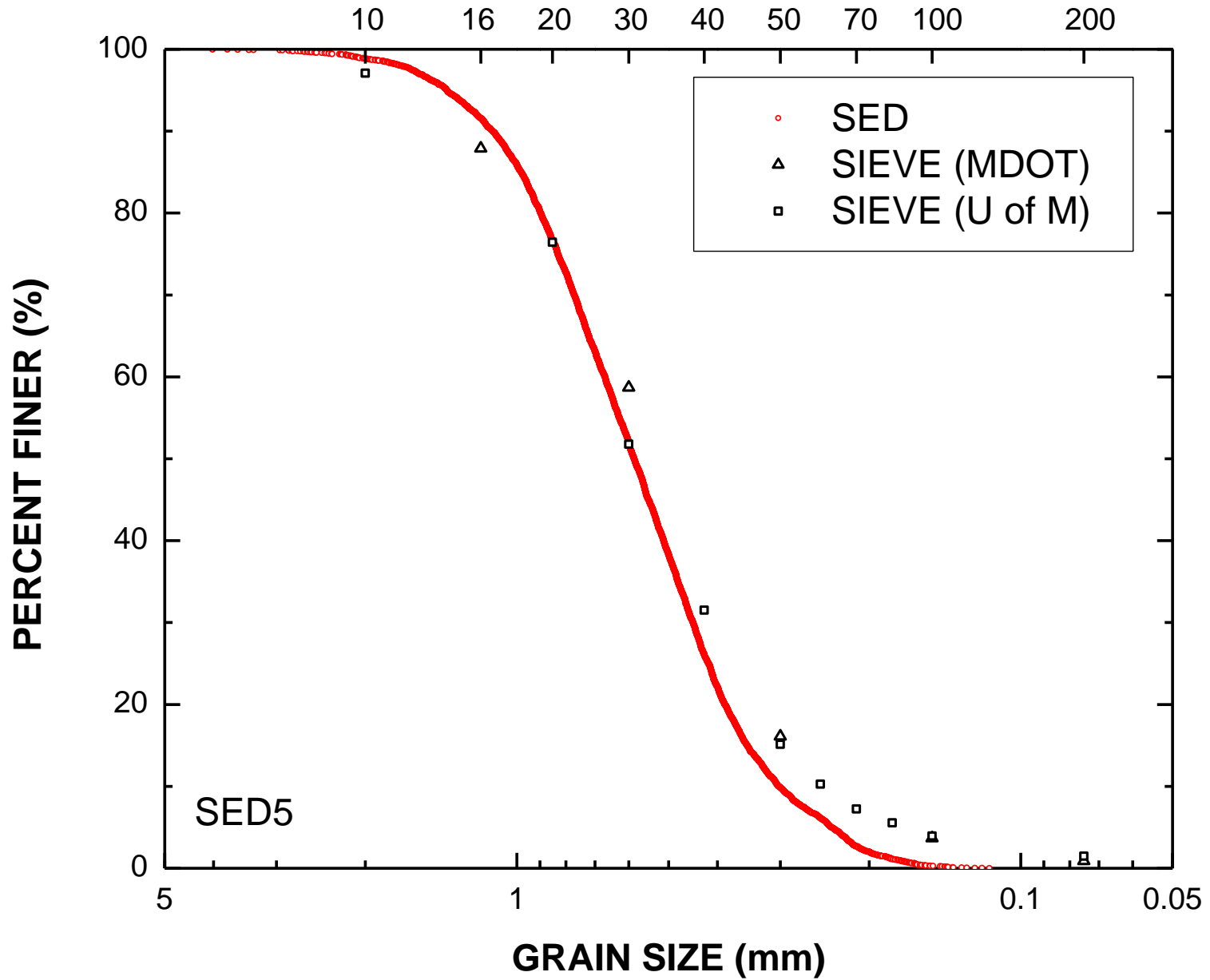
MATERIAL: Sed 5 U of M
PIT NUMBER:
PIT NAME:
DATE SAMPLED:
SAMPLED BY:
DATE TESTED: 09/22/11
TESTED BY: HS

D_{60} (mm): 0.67
 D_{30} (mm): 0.45
 D_{10} (mm): 0.30
 C_u : 2.22
 C_g : 0.99

MAGNIFICATION (pix/mm): 36.9
IMAGE SIZE (pix): 4640 x 1280
IMAGE SIZE (mm): 125.7 x 34.7



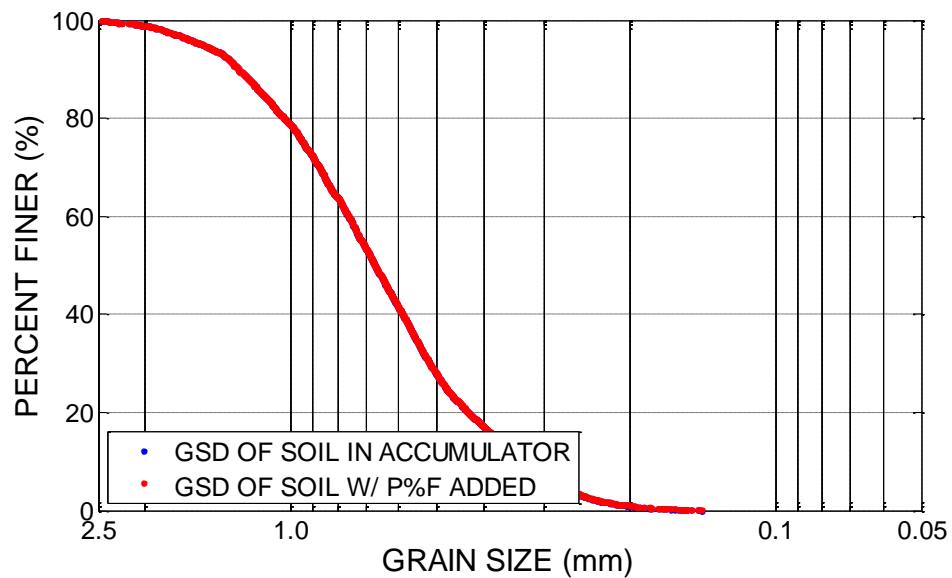
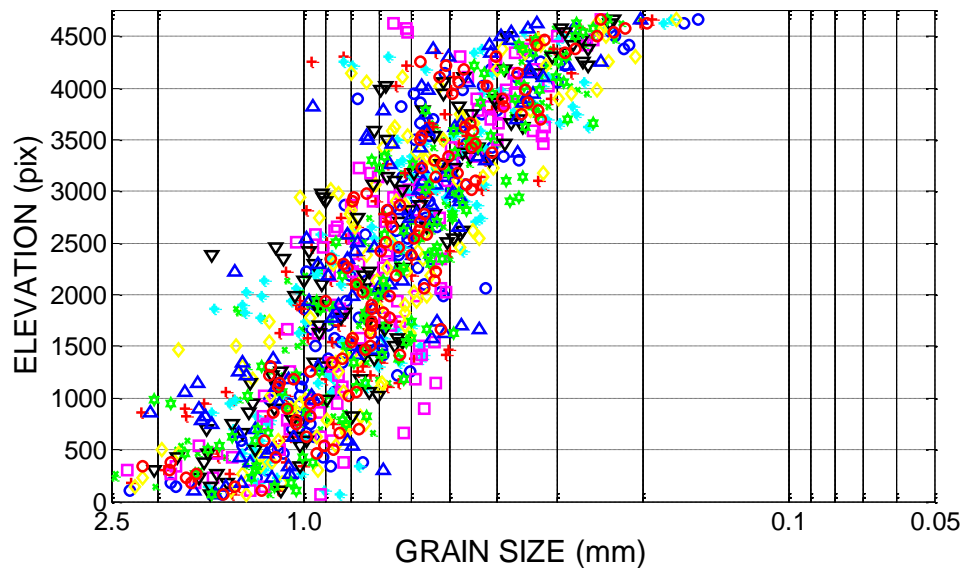
U. S. STANDARD SIEVE NUMBERS



MATERIAL: Sed 6 U of M
 PIT NUMBER:
 PIT NAME:
 DATE SAMPLED:
 SAMPLED BY:
 DATE TESTED: 09/23/11
 TESTED BY: HS

D_{60} (mm): 0.76
 D_{30} (mm): 0.52
 D_{10} (mm): 0.33
 C_u : 2.31
 C_g : 1.06

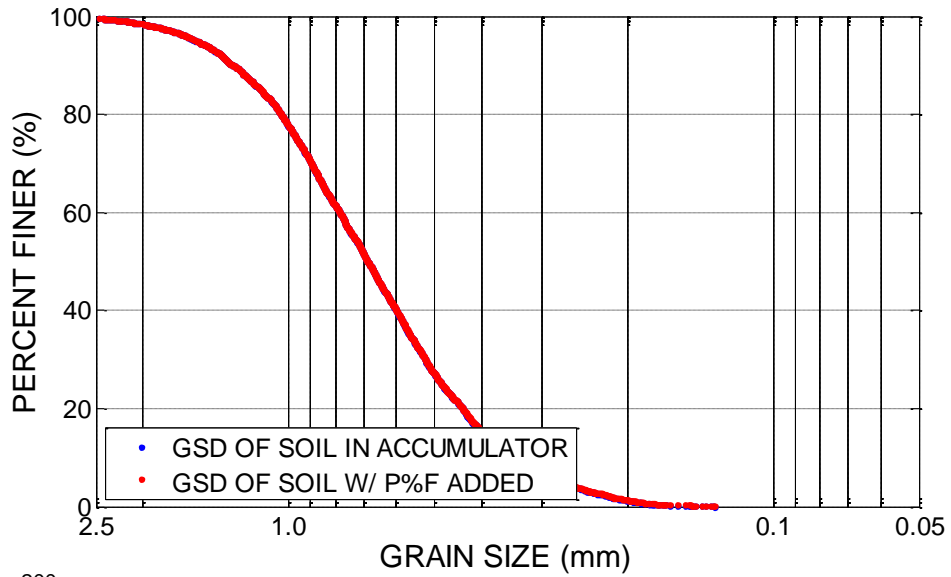
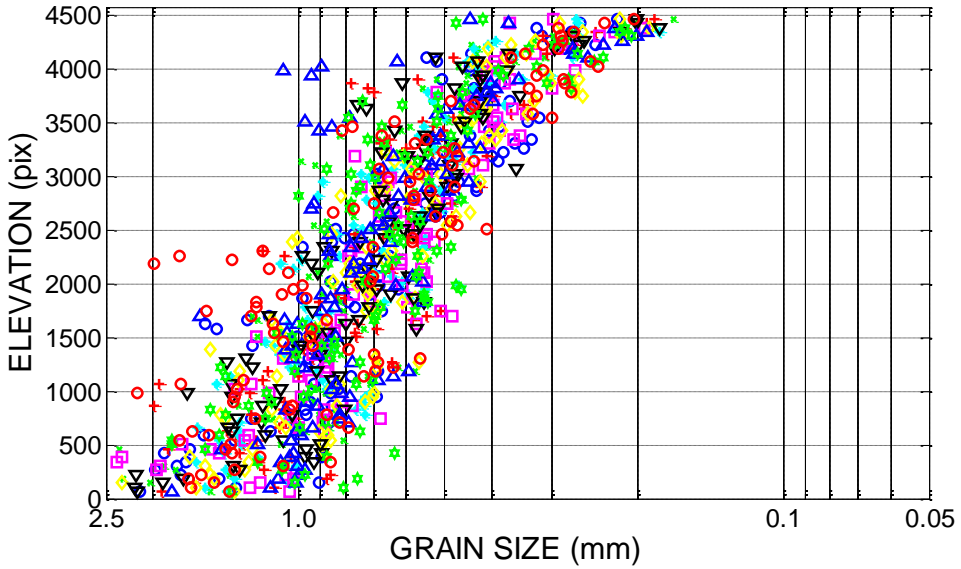
MAGNIFICATION (pix/mm): 36.9
 IMAGE SIZE (pix): 4760 x 1280
 IMAGE SIZE (mm): 129.0 x 34.7



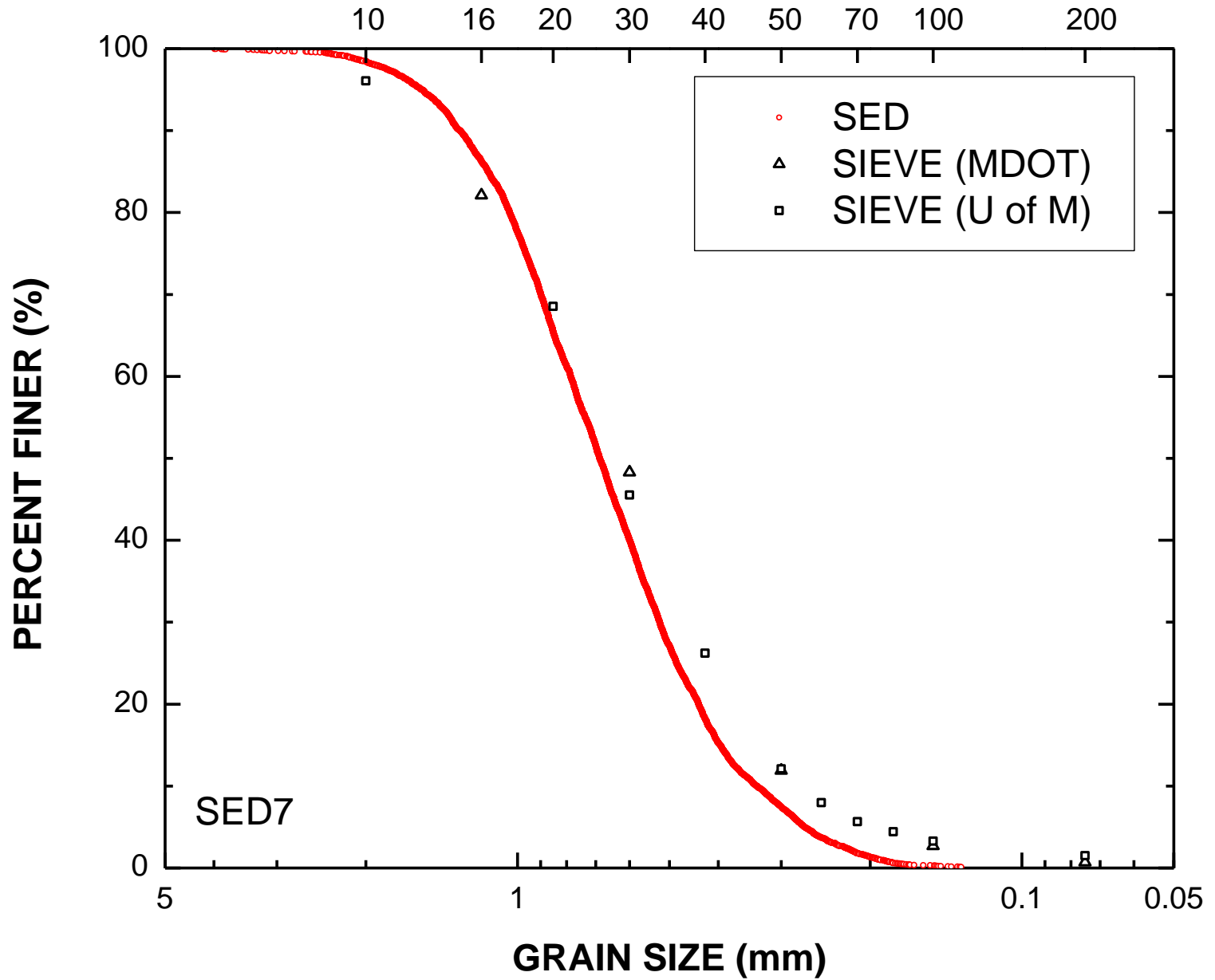
MATERIAL: Sed 7 U of M
PIT NUMBER:
PIT NAME:
DATE SAMPLED:
SAMPLED BY:
DATE TESTED: 09/22/11
TESTED BY: HS

D_{60} (mm): 0.78
 D_{30} (mm): 0.52
 D_{10} (mm): 0.33
 C_u : 2.34
 C_g : 1.04

MAGNIFICATION (pix/mm): 36.9
IMAGE SIZE (pix): 4576 x 1280
IMAGE SIZE (mm): 124.0 x 34.7



U. S. STANDARD SIEVE NUMBERS

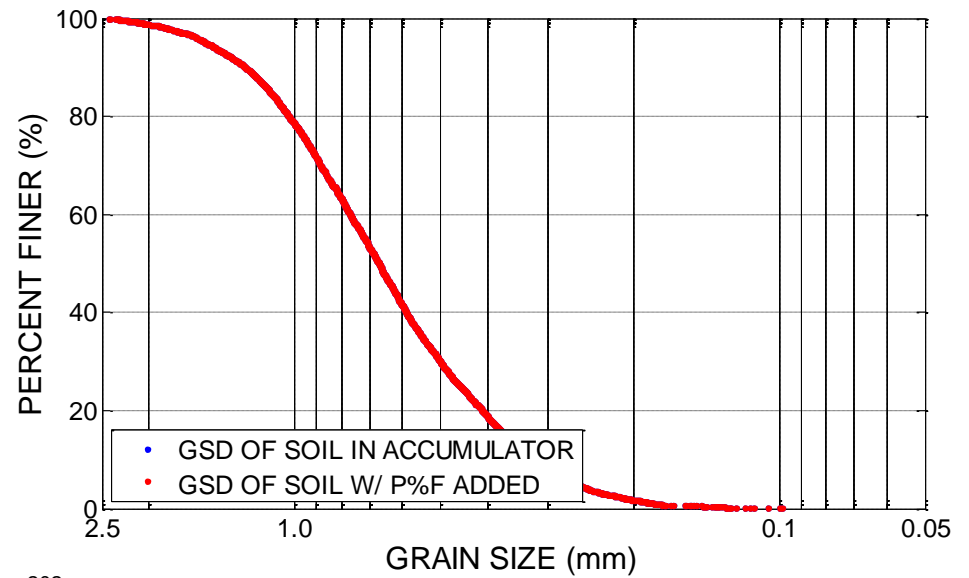
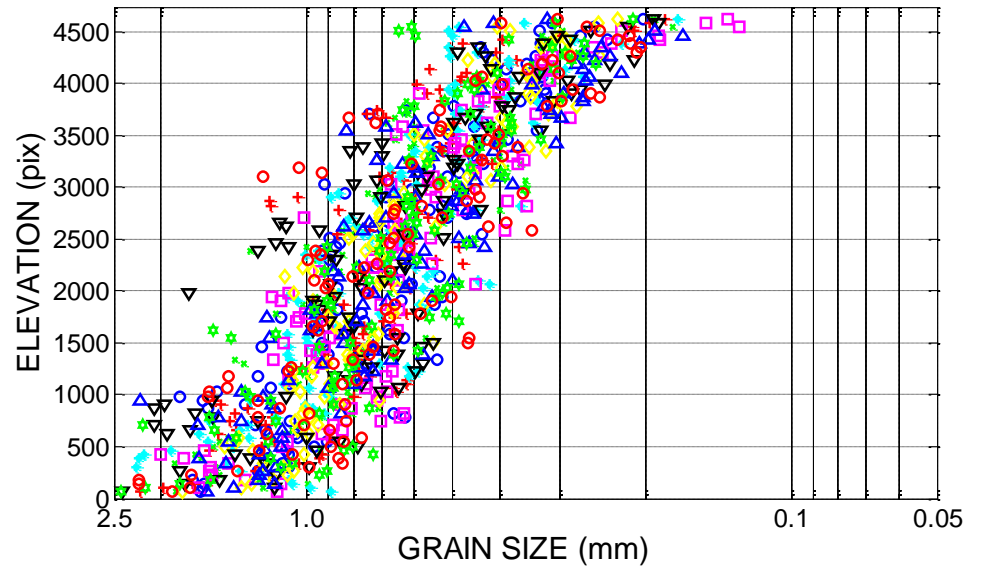




MATERIAL: Sed 8 U of M
PIT NUMBER:
PIT NAME:
DATE SAMPLED:
SAMPLED BY:
DATE TESTED: 09/23/11
TESTED BY: HS

D_{60} (mm): 0.77
 D_{30} (mm): 0.50
 D_{10} (mm): 0.32
 C_u : 2.40
 C_g : 1.02

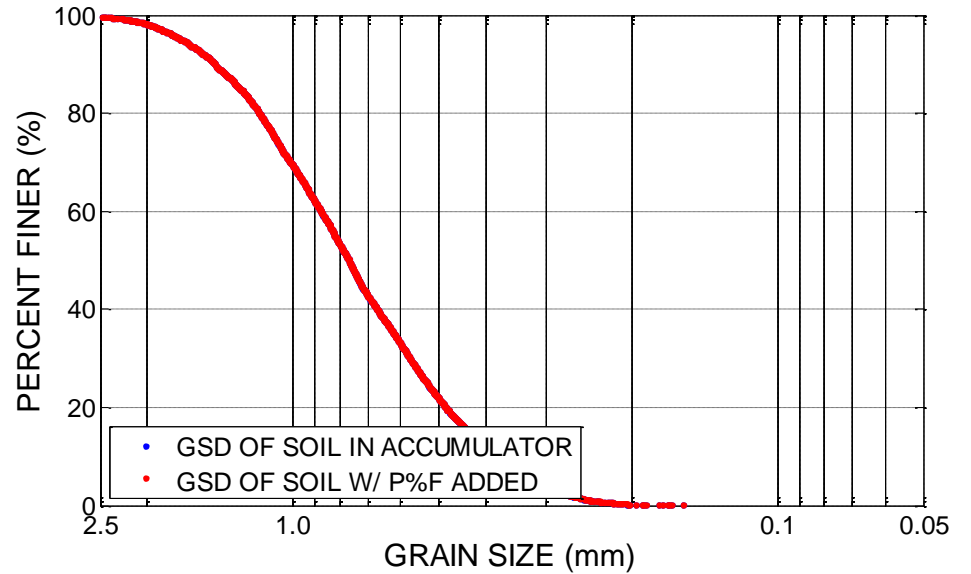
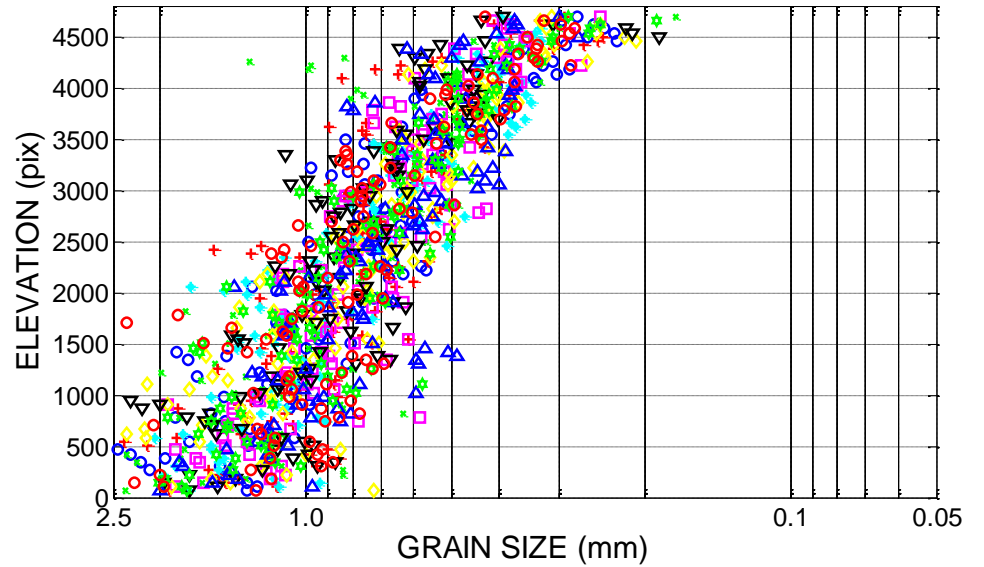
MAGNIFICATION (pix/mm): 36.9
IMAGE SIZE (pix): 4736 x 1280
IMAGE SIZE (mm): 128.3 x 34.7



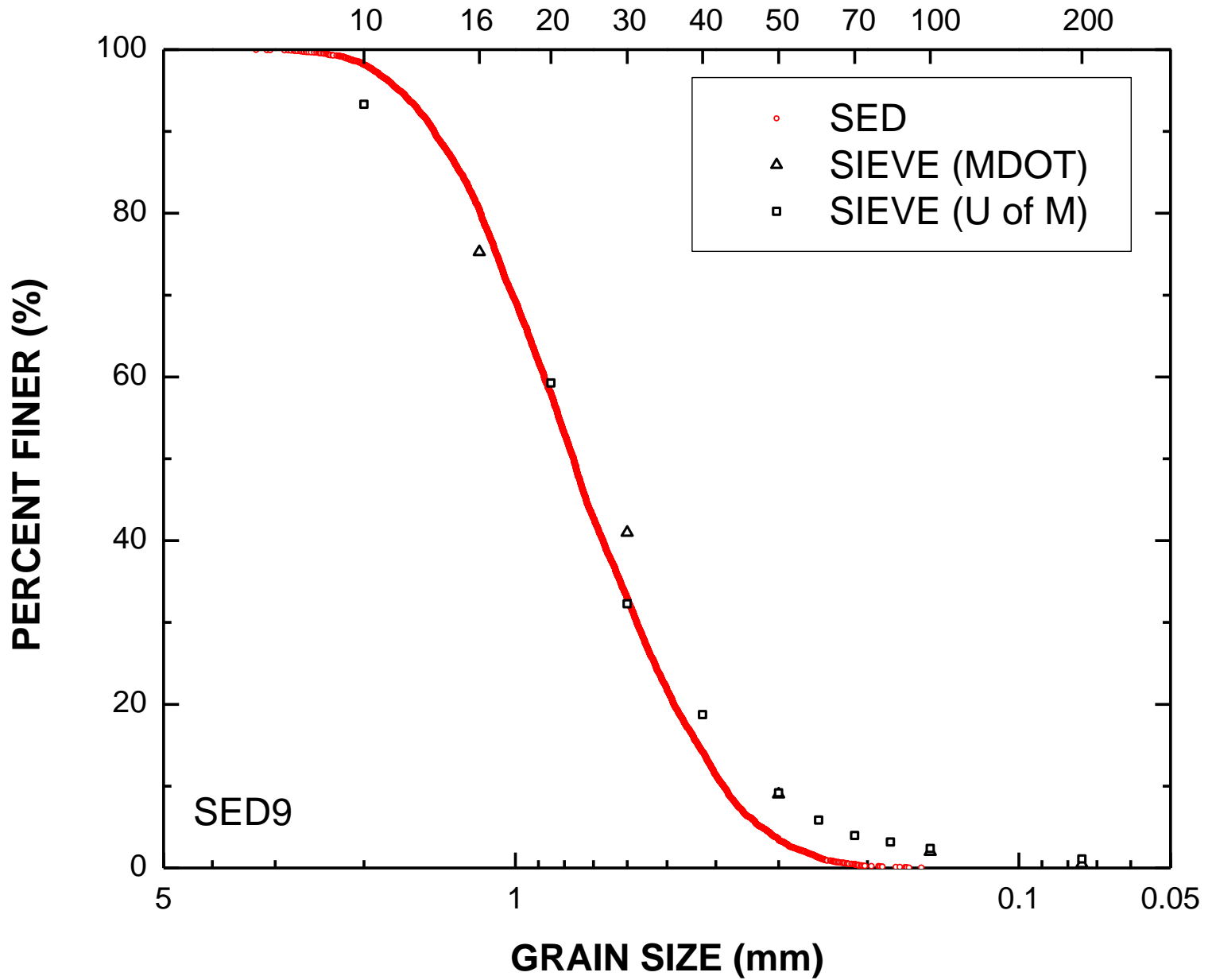
MATERIAL: Sed 9 U of M
 PIT NUMBER:
 PIT NAME:
 DATE SAMPLED:
 SAMPLED BY:
 DATE TESTED: 09/23/11
 TESTED BY: HS

D_{60} (mm): 0.88
 D_{30} (mm): 0.57
 D_{10} (mm): 0.39
 C_u : 2.27
 C_g : 0.97

MAGNIFICATION (pix/mm): 36.9
 IMAGE SIZE (pix): 4808 x 1280
 IMAGE SIZE (mm): 130.3 x 34.7



U. S. STANDARD SIEVE NUMBERS



MATERIAL: Sed 10 U of M

PIT NUMBER:

PIT NAME:

DATE SAMPLED:

SAMPLED BY:

DATE TESTED: 09/21/11

TESTED BY: HS

D_{60} (mm): 0.82

D_{30} (mm): 0.55

D_{10} (mm): 0.34

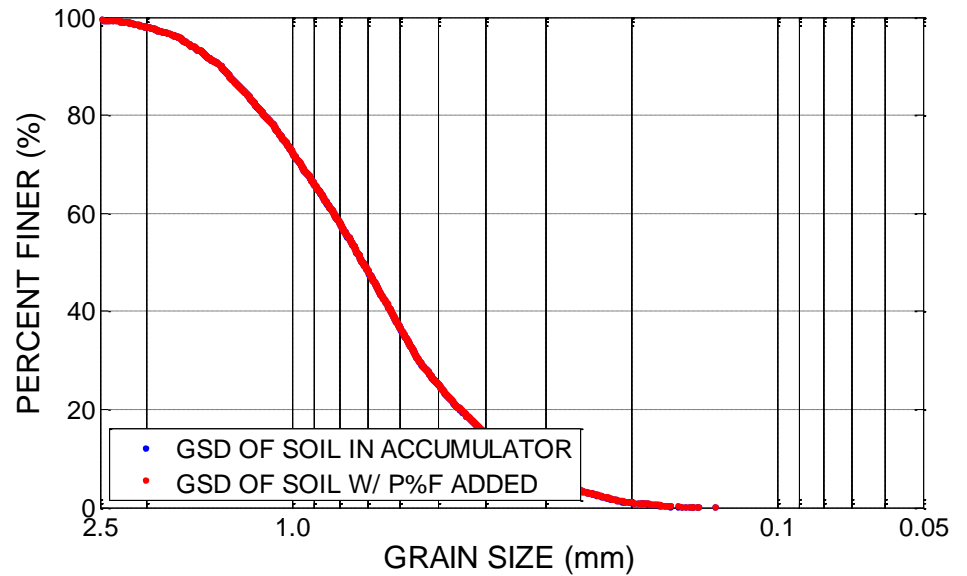
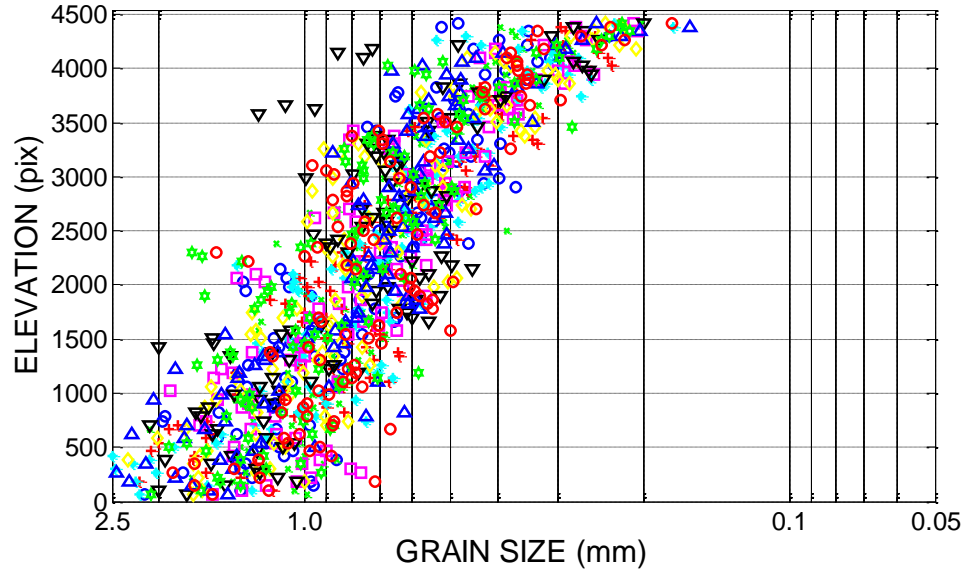
C_u : 2.43

C_g : 1.08

MAGNIFICATION (pix/mm): 36.9

IMAGE SIZE (pix): 4544 x 1280

IMAGE SIZE (mm): 123.1 x 34.7



U. S. STANDARD SIEVE NUMBERS

