

**GREENVALE TOWNSHIP  
ROAD IMPROVEMENT PROJECT  
SUMMARY AND REPORT FOR WORK  
COMPLETED IN THE 2014  
CONSTRUCTION SEASON**

**PREPARED BY:  
Gregory Langer  
Greenvale Township Supervisor**

**March 9, 2015**

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April 25, 2014

## Greenvale Township Road Improvement Committee

The Greenvale Township Road Improvement Committee, the Township Supervisors and our Road Maintenance Contractor toured the Township to view the roads and discuss the work to be done during the 2014 construction season.

Road Improvement Committee Members that attended:

Jerry Bolton, Mark Malecha, Chuck Van Eeckhout and Richard Moore

Township Supervisors that attended:

Duane Fredrickson, David Roehl and Gregory Langer

Road Maintenance Contractors:

Bryce Otte and Jason Otte of Otte Excavating

## **2014 Road Improvement Committee meeting dates**

January 6, 2014 at 4:00 PM at the Town Hall.

March 25, 2014 at 4:00 PM at the Town Hall.

April 25, 2014 at 8:00 AM at the Town Hall for the annual road inspection tour with the Town Board.

April 25, 2014 at 11:00 AM at the Town Hall for a committee meeting.

May 5, 2014 at 4:15 PM at the Town Hall.

July 1, 2014 at 3:45 PM at the Town Hall.

September 23, 2014 at 4:00 PM at the Town Hall.

October 9, 2014 at 4:30 PM at the Town Hall.

Copies of the meeting minutes are available at your request.

In the spring of 2014, the Road Improvement Committee suggested the requirement of an access permit for the construction or modification of driveways in the Township to assure the property owners that attention would be given to concerns of safety and water flow. A letter was written for Town Board approval to be used to inform property owners of concerns regarding the use of the Township road Right of Way areas. The access permit requirement and the Application for Access Form were approved by the Town Board on May 15, 2014. The Right of Way use letter was approved for use by the Town Board on June 19, 2014. Copies of the Application for Access and the Right of Way letter are on the following two pages.

**GREENVALE TOWNSHIP  
31800 Guam Avenue  
Northfield, MN 55057**

Permit No: \_\_\_\_\_

Phone: 507-663-9049 Email: Greenvale@greenvaletwp.org

**APPLICATION FOR ACCESS**

**The Township Clerk shall be notified at least 48 hours in advance of the actual start of work.  
The project must be completed by the completion date or a delay penalty may apply.**

Application is hereby made for permission to excavate, grade and construct an access onto:

Road Name (#) \_\_\_\_\_ from / at \_\_\_\_\_

in accordance with the attached sketch. The project is located in Greenvale Township and the Legal Description of the Property or PID# is: \_\_\_\_\_

Purpose of Access: \_\_\_\_\_ Residential \_\_\_\_\_ Agricultural \_\_\_\_\_ Other

Is a culvert necessary? \_\_\_\_\_ Yes \_\_\_\_\_ No what size? \_\_\_\_\_

Is the property \_\_\_\_\_ Platted \_\_\_\_\_ Un-platted Approved Anticipated Plat Name \_\_\_\_\_

Work to start on \_\_\_\_\_ and be completed by \_\_\_\_\_

The applicant in carrying out any and all of the work mentioned or referred to in this permit application, shall strictly conform to and agree to be bound by the terms of the permit, Special Provisions, Construction Specifications and regulations in applicable codes and/or Ordinances all of which are made a part of this Permit. The applicant shall comply with the regulations of all other government agencies for the protection of the public as they apply to the work performed. The work shall be accomplished in a way that will not be detrimental to the right of way and that will safeguard the public. The applicant must obtain a copy of any specifications that Dakota County may have for this proposed work.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

Work being done for ( owner ) \_\_\_\_\_

Contact Name \_\_\_\_\_ Telephone Number \_\_\_\_\_

Address \_\_\_\_\_ City: \_\_\_\_\_ Zip: \_\_\_\_\_

Contractor Name: \_\_\_\_\_ Contact Name: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State \_\_\_\_\_ Zip: \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Cell Phone Number: \_\_\_\_\_

Name and phone number of person in charge of construction: \_\_\_\_\_

Applicant's signature: \_\_\_\_\_ Date: \_\_\_\_\_

Non-refundable Inspection Fee: \$150.00, Escrow: \$100.00

**TOTAL: \$250.00**

**A COPY OF THIS PERMIT IS REQUIRED TO BE ON THE JOBSITE AND IS NOT VALID UNTIL IT IS APPROVED AND SIGNED.**

**Greenvale Township**  
31800 Guam Avenue  
Northfield, Minnesota 55057

RE: Use of Township Road Right of way

Dear Township Property Owner,

Greenvale Township needs your help in protecting travelers and improving safety. The Township has been seeing an increase in improper uses of the right of way such as the planting of crops. This type of activity can reduce visibility and cause traffic accidents and other serious consequences. Disturbing the vegetation along the road contributes to erosion, which can affect runoff water quality, drainage and plug culverts. Plowing or tilling could also damage utility lines buried in the right of way and create a potentially dangerous situation or interrupt service.

Township right of way is defined as the roadway, shoulders and ditches up to the property or easement lines. Generally the right of way is 33 feet on each side of the road's centerline.

Greenvale Township prohibits plowing and/or planting of crops in the right of way. Fencing and other objects must be removed or the Township may remove them at the owner's expense.

Thank you for your help in maintaining the roadway safety and improving the environment along the roadsides in Greenvale Township. If you have any questions or need more information, please call the Township office at 507-663-9049 or email us at [greenvale@greenvaletwp.org](mailto:greenvale@greenvaletwp.org).

Sincerely,

*The Greenvale Township Board of Supervisors*

## Greenvale Township Road Improvement Project

### Road Aggregate Material Delivery Information Summary

May 15, 2014: Needed areas on Guam Avenue, 5-loads, .....	117.30 tons.
May 15, 2014: Needed areas on 307 <sup>th</sup> Street, 5-loads, .....	113.65 tons.
May 15, 2014: Needed areas on 315 <sup>th</sup> Street, 2-loads, .....	47.70 tons.
May 15, 2014: Needed areas on 285 <sup>th</sup> Street, 3-loads, .....	69.00 tons.
May 15, 2014: Needed areas on 290 <sup>th</sup> Street, 4-loads, .....	93.15 tons.
May 15, 2014: Needed areas on Garrett Avenue, 3-loads, .....	68.80 tons.
May 15, 2014: Needed areas on Jamaica Avenue, 4-loads, .....	91.30 tons.
May 15, 2014: Needed area on Eveleth Avenue, 1-load, .....	24.00 tons.
June 30, 2014: Needed areas on Dunbar Avenue and Drexel Avenue, 12-loads, .....	277.40 tons.
July 17, 2014: 290 <sup>th</sup> Street, Foliage Avenue to Eveleth Avenue, 35-loads, .....	810.05 tons.
July 18, 2014: 290 <sup>th</sup> Street, Foliage Avenue to Eveleth Avenue, 32-loads, .....	747.93 tons.
July 22, 2014: 290 <sup>th</sup> Street, east of Eveleth Avenue, 39-loads, .....	909.50 tons.
July 23, 2014: 290 <sup>th</sup> Street, east of Eveleth Avenue, 24-loads, .....	556.60 tons.
July 23, 2014: Eveleth Avenue, northern area, 18-loads, .....	351.80 tons.
July 24, 2014: Eveleth Avenue, southern area, 38-loads, .....	884.90 tons.
July 28, 2014: Eveleth Avenue, mid-section, 307 <sup>th</sup> St. area, 38-loads, .....	883.60 tons.
Total tons:	6046.68

**Greenvale Township Road Improvement Project**  
**Road Aggregate Material Delivery Information Summary**

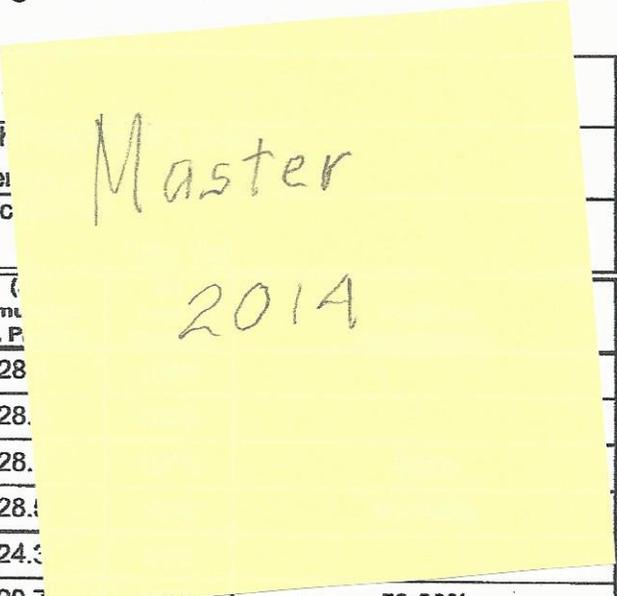
July 29, 2014: Eveleth Avenue, mid-section to 300 <sup>th</sup> Street, 50-loads, .....	1171.70 tons.
July 29, 2014: 300 <sup>th</sup> Street, east end area, 1-load, .....	24.70 tons.
July 30, 2014: Eveleth Avenue, northern area, 41-loads, .....	961.20 tons.
July 30, 2014: 300 <sup>th</sup> Street, east end area, 1-load, .....	24.50 tons.
July 30, 2014: 1-load, east end of 290 <sup>th</sup> St., 1-load on 300 <sup>th</sup> St., 5-loads on the north end of Eveleth Avenue.....	161.60 tons.
Total tons:	2343.70



# Work Sheet for Sieve Analysis of Granular Material

See Grading & Base Manual, Fig. 1 5-692.215

Project No: Greenvale	Date: 5/15/2014	Test No: 1
Material Type: CL-5 Mod.	Station: 285 th st @ Holyoke	Depth: Under
Total Wt. of Sample: 29.0	lbs (kg)	Tester Name or Certificate



Coarse Sieves:				(1) Indiv. Weights	(2) Sieve Size	(3) Cumulative Wts. Passing	(4) Total % Passing	(5) Gradation Requirements
*Pass	Sieve, Ret.	1 1/2" ▼	Sieve	0.0		28.8		
*Pass 1 1/2" ▼	Sieve, Ret.	1" ▼	Sieve	0.0	1 1/2"	28.8		
*Pass 1" ▼	Sieve, Ret.	3/4" ▼	Sieve	0.3	1"	28.5		
*Pass 3/4" ▼	Sieve, Ret.	1/2" ▼	Sieve	4.2	3/4"	28.3		
*Pass 1/2" ▼	Sieve, Ret.	3/8" ▼	Sieve	3.6	1/2"	24.7		
*Pass 3/8" ▼	Sieve, Ret.	#4 ▼	Sieve	8.4	3/8"	20.7	72%	50-90%
*Pass #4 ▼	Sieve, Ret.	Bottom		12.4	#4	12.4	43%	35-70%
Check Total -				28.8	- Shall Check Total Wt. Within 0.2lbs (0.1 kg)			

\*Enter necessary sieve sizes for class of material to be tested.  
 Column (1) Enter weights of material between each set of sieves individually.  
 Column (2) Enter the passing sieves size.  
 Column (3) Add column (1) from the bottom up to get cumulative weights passing each sieve.  
 Column (4) Divide column (3) by check total of sample to get total % passing.

**Fine Sieves:**

- (A) Take two samples identical in condition and damp weight from "passing         #4         material".
- (B) Dry one sample and record weight.         553.1
- (C) Wash and dry other sample and record weight.         462.0
- (D) Loss in washing (B-C) (Enter Below)         91.1

				(5) Indiv. Weights	(6) Sieve Size	(7) Cumulative Wts. Passing	(8) Cum. % Passing	(9) % Passing of Total Pass.	Gradation Requirements
*Pass #4 ▼	Sieve, Ret.	#10 ▼	Sieve	288.0	#4	552.6	100.0%	43%	35-70%
*Pass #10 ▼	Sieve, Ret.	#16 ▼	Sieve	74.7	#10	264.6	47.9%	21%	20-55%
*Pass #16 ▼	Sieve, Ret.	#30 ▼	Sieve	47.4	#16	189.9	34.4%	15%	
*Pass #30 ▼	Sieve, Ret.	#40 ▼	Sieve	15.8	#30	142.5	25.8%	11%	
*Pass #40 ▼	Sieve, Ret.	#50 ▼	Sieve	10.0	#40	126.7	22.9%	10%	15-35%
*Pass #50 ▼	Sieve, Ret.	#100 ▼	Sieve	11.0	#50	116.7	21.1%	9%	
*Pass #100 ▼	Sieve, Ret.	#200 ▼	Sieve	9.4	#100	105.7	19.1%	8%	
*Pass #200 ▼	Sieve, Ret.	Bottom		5.2	#200	96.3	17.4%	7.5%	10-15%
Loss by washing-				91.1					
Check Total -				552.6	- Shall Check total Wt. Within 5.0 grams				
Percent Passing #200 Sieve Divided by Percent Passing 1 in. Sieve (if specified)									

Column (5) Enter weights of material between each set of sieves and loss by washing (DO NOT OVERLOAD SIEVES)  
 Column (6) Enter the passing sieve size.  
 Column (7) Add column (5) from bottom up to get cumulative weights passing each sieve. Be sure to add loss by washing to weight of material passing #200 sieve to get first entry at bottom of column (7).  
 Column (8) Divide column (7) by check total dry weight of fine sample (Column 5) to get cumulative % passing.  
 Column (9) Multiply column (8) by % passing final sieve from column (4) to get "Percent Passing" based on total sample.



# Work Sheet for Sieve Analysis of Granular Material

See Grading & Base Manual, Fig. 1 5-692.215

Project No: Greenvale	Date: 5/15/2014	Test No: 2
Material Type: CL-5 Mod.	Station: Guam Ave	Depth From Grading Grade: Cannon Falls (Anderson)
Total Wt. of Sample: 40.8 lbs (kg)		Tester Name or Certification No: Greg Viall

Coarse Sieves:				(1) Indiv. Weights	(2) Sieve Size	(3) Cumulative Wts. Passing	(4) Total % Passing	Gradation Requirements
*Pass	Sieve, Ret.	1 1/2" ▼	Sieve	0.0		40.6	100%	
*Pass 1 1/2" ▼	Sieve, Ret.	1" ▼	Sieve	0.0	1 1/2"	40.6	100%	
*Pass 1" ▼	Sieve, Ret.	3/4" ▼	Sieve	1.0	1"	40.6	100%	100%
*Pass 3/4" ▼	Sieve, Ret.	1/2" ▼	Sieve	11.4	3/4"	39.6	98%	90-100%
*Pass 1/2" ▼	Sieve, Ret.	3/8" ▼	Sieve	6.8	1/2"	28.3	70%	
*Pass 3/8" ▼	Sieve, Ret.	#4 ▼	Sieve	10.2	3/8"	21.5	53%	50-90%
*Pass #4 ▼	Sieve, Ret.	Bottom		11.3	#4	11.3	28%	35-70%
Check Total -				40.6	- Shall Check Total Wt. Within 0.2lbs (0.1 kg)			

\*Enter necessary sieve sizes for class of material to be tested.  
 Column (1) Enter weights of material between each set of sieves individually.  
 Column (2) Enter the passing sieves size.  
 Column (3) Add column (1) from the bottom up to get cumulative weights passing each sieve.  
 Column (4) Divide column (3) by check total of sample to get total % passing.

**Fine Sieves:**

- (A) Take two samples identical in condition and damp weight from "passing \_\_\_\_\_ #4 \_\_\_\_\_ material".
- (B) Dry one sample and record weight. \_\_\_\_\_ 530.4
- (C) Wash and dry other sample and record weight. \_\_\_\_\_ 417.8
- (D) Loss in washing (B-C) (Enter Below) \_\_\_\_\_ 112.6

				(5) Indiv. Weights	(6) Sieve Size	(7) Cumulative Wts. Passing	(8) Cum. % Passing	(9) % Passing of Total Pass.	Gradation Requirements
*Pass #4 ▼	Sieve, Ret.	#10 ▼	Sieve	248.9	#4	528.9	100.0%	28%	35-70%
*Pass #10 ▼	Sieve, Ret.	#16 ▼	Sieve	65.5	#10	280.0	52.9%	15%	20-55%
*Pass #16 ▼	Sieve, Ret.	#30 ▼	Sieve	44.1	#16	214.5	40.6%	11%	
*Pass #30 ▼	Sieve, Ret.	#40 ▼	Sieve	17.1	#30	170.4	32.2%	9%	
*Pass #40 ▼	Sieve, Ret.	#50 ▼	Sieve	10.6	#40	153.3	29.0%	8%	15-35%
*Pass #50 ▼	Sieve, Ret.	#100 ▼	Sieve	13.0	#50	142.7	27.0%	8%	
*Pass #100 ▼	Sieve, Ret.	#200 ▼	Sieve	11.0	#100	129.7	24.5%	7%	
*Pass #200 ▼	Sieve, Ret.	Bottom		6.1	#200	118.7	22.4%	6.3%	10-15%
Loss by washing-				112.6					
Check Total -				528.9	- Shall Check total Wt. Within 5.0 grams				
Percent Passing #200 Sieve Divided by Percent Passing 1 in. Sieve (if specified)									

Column (5) Enter weights of material between each set of sieves and loss by washing (DO NOT OVERLOAD SIEVES)  
 Column (6) Enter the passing sieve size.  
 Column (7) Add column (5) from bottom up to get cumulative weights passing each sieve. Be sure to add loss by washing to weight of material passing #200 sieve to get first entry at bottom of column (7).  
 Column (8) Divide column (7) by check total dry weight of fine sample (Column 5) to get cumulative % passing.  
 Column (9) Multiply column (8) by % passing final sieve from column (4) to get "Percent Passing" based on total sample.



# Work Sheet for Sieve Analysis of Granular Material

See Grading & Base Manual, Fig. 1 5-692.215

Project No: Greenvale	Date: 7/18/2014	Test No: 4
Material Type: CL-5 Mod.	Station: sample #2	Depth From Grading Grade: Cannon Falls (Anderson)
Total Wt. of Sample: 33.7	lbs (kg) Tester Name or Certification No: Greg Viall	

Coarse Sieves:				(1) Indiv. Weights	(2) Sieve Size	(3) Cumulative Wts. Passing	(4) Total % Passing	Gradation Requirements
*Pass	Sieve, Ret.	1 1/2" ▼	Sieve	0.0		33.5	100%	
*Pass 1 1/2" ▼	Sieve, Ret.	1" ▼	Sieve	0.0	1 1/2"	33.5	100%	
*Pass 1" ▼	Sieve, Ret.	3/4" ▼	Sieve	0.1	1"	33.5	100%	100%
*Pass 3/4" ▼	Sieve, Ret.	1/2" ▼	Sieve	3.1	3/4"	33.4	100%	90-100%
*Pass 1/2" ▼	Sieve, Ret.	3/8" ▼	Sieve	2.9	1/2"	30.3	91%	
*Pass 3/8" ▼	Sieve, Ret.	#4 ▼	Sieve	8.6	3/8"	27.5	82%	50-90%
*Pass #4 ▼	Sieve, Ret. Bottom			18.9	#4	18.9	57%	35-70%
Check Total -				33.5	- Shall Check Total Wt. Within 0.2lbs (0.1 kg)			

\*Enter necessary sieve sizes for class of material to be tested.  
 Column (1) Enter weights of material between each set of sieves individually.  
 Column (2) Enter the passing sieves size.  
 Column (3) Add column (1) from the bottom up to get cumulative weights passing each sieve.  
 Column (4) Divide column (3) by check total of sample to get total % passing.

**Fine Sieves:**

- (A) Take two samples identical in condition and damp weight from "passing \_\_\_\_\_ #4 \_\_\_\_\_ material".
- (B) Dry one sample and record weight. 456.9
- (C) Wash and dry other sample and record weight. 348.3
- (D) Loss in washing (B-C) (Enter Below) 108.6

				(5) Indiv. Weights	(6) Sieve Size	(7) Cumulative Wts. Passing	(8) Cum. % Passing	(9) % Passing of Total Pass.	Gradation Requirements
*Pass #4 ▼	Sieve, Ret.	#10 ▼	Sieve	180.3	#4	457.1	100.0%	57%	35-70%
*Pass #10 ▼	Sieve, Ret.	#16 ▼	Sieve	56.9	#10	276.8	60.6%	35%	20-55%
*Pass #16 ▼	Sieve, Ret.	#30 ▼	Sieve	42.5	#16	219.9	48.1%	27%	
*Pass #30 ▼	Sieve, Ret.	#40 ▼	Sieve	18.2	#30	177.4	38.8%	22%	
*Pass #40 ▼	Sieve, Ret.	#50 ▼	Sieve	13.1	#40	159.2	34.8%	20%	15-35%
*Pass #50 ▼	Sieve, Ret.	#100 ▼	Sieve	16.6	#50	146.1	32.0%	18%	
*Pass #100 ▼	Sieve, Ret.	#200 ▼	Sieve	13.1	#100	129.5	28.3%	16%	
*Pass #200 ▼	Sieve, Ret. Bottom			7.8	#200	116.4	25.5%	14.5%	10-15%
Loss by washing-				108.6					
Check Total -				457.1	- Shall Check total Wt. Within 5.0 grams				
Percent Passing #200 Sieve Divided by Percent Passing 1 in. Sieve (if specified)									

Column (5) Enter weights of material between each set of sieves and loss by washing (DO NOT OVERLOAD SIEVES)  
 Column (6) Enter the passing sieve size.  
 Column (7) Add column (5) from bottom up to get cumulative weights passing each sieve. Be sure to add loss by washing to weight of material pas of material passing #200 sieve to get first entry at bottom of column (7).  
 Column (8) Divide column (7) by check total dry weight of fine sample (Column 5) to get cumulative % passing.  
 Column (9) Multiply column (8) by % passing final sieve from column (4) to get "Percent Passing" based on total sample.



# Work Sheet for Sieve Analysis of Granular Material

See Grading & Base Manual, Fig. 1 5-692.215

Project No: Greenvale	Date: 7/22/2014	Test No: 5
Material Type: Cl 1 Mod	Station:	Depth From Grading Grade: Cannon Falls (Anderson)
Total Wt. of Sample: 35.1 lbs (kg)		Tester Name or Certification No: Greg Viall

Coarse Sieves:				(1) Indiv. Weights	(2) Sieve Size	(3) Cumulative Wts. Passing	(4) Total % Passing	Gradation Requirements
*Pass	Sieve, Ret.	1 1/2" ▼	Sieve	0.0		34.9	100%	
*Pass 1 1/2" ▼	Sieve, Ret.	1" ▼	Sieve	0.0	1 1/2"	34.9	100%	
*Pass 1" ▼	Sieve, Ret.	3/4" ▼	Sieve	0.2	1"	34.9	100%	100%
*Pass 3/4" ▼	Sieve, Ret.	1/2" ▼	Sieve	6.1	3/4"	34.7	99%	90-100%
*Pass 1/2" ▼	Sieve, Ret.	3/8" ▼	Sieve	4.8	1/2"	28.6	82%	
*Pass 3/8" ▼	Sieve, Ret.	#4 ▼	Sieve	8.7	3/8"	23.9	68%	50-90%
*Pass #4 ▼	Sieve, Ret.	Bottom		15.2	#4	15.2	44%	35-70%
Check Total -				34.9	- Shall Check Total Wt. Within 0.2lbs (0.1 kg)			

\*Enter necessary sieve sizes for class of material to be tested.  
 Column (1) Enter weights of material between each set of sieves individually.  
 Column (2) Enter the passing sieves size.  
 Column (3) Add column (1) from the bottom up to get cumulative weights passing each sieve.  
 Column (4) Divide column (3) by check total of sample to get total % passing.

**Fine Sieves:**

- (A) Take two samples identical in condition and damp weight from "passing \_\_\_\_\_ #4 \_\_\_\_\_ material".
- (B) Dry one sample and record weight. 584.8
- (C) Wash and dry other sample and record weight. 444.6
- (D) Loss in washing (B-C) (Enter Below) 140.2

				(5) Indiv. Weights	(6) Sieve Size	(7) Cumulative Wts. Passing	(8) Cum. % Passing	(9) % Passing of Total Pass.	Gradation Requirements
*Pass #4 ▼	Sieve, Ret.	#10 ▼	Sieve	194.7	#4	584.2	100.0%	44%	35-70%
*Pass #10 ▼	Sieve, Ret.	#16 ▼	Sieve	74.9	#10	389.5	66.7%	29%	20-55%
*Pass #16 ▼	Sieve, Ret.	#30 ▼	Sieve	62.2	#16	314.6	53.9%	24%	
*Pass #30 ▼	Sieve, Ret.	#40 ▼	Sieve	29.3	#30	252.4	43.2%	19%	
*Pass #40 ▼	Sieve, Ret.	#50 ▼	Sieve	19.9	#40	223.1	38.2%	17%	15-35%
*Pass #50 ▼	Sieve, Ret.	#100 ▼	Sieve	26.4	#50	203.2	34.8%	15%	
*Pass #100 ▼	Sieve, Ret.	#200 ▼	Sieve	22.8	#100	176.8	30.3%	13%	
*Pass #200 ▼	Sieve, Ret.	Bottom		13.8	#200	154.0	26.4%	11.6%	10-15%
Loss by washing-				140.2					
Check Total -				584.2	- Shall Check total Wt. Within 5.0 grams				
Percent Passing #200 Sieve Divided by Percent Passing 1 in. Sieve (if specified)									

Column (5) Enter weights of material between each set of sieves and loss by washing (DO NOT OVERLOAD SIEVES)  
 Column (6) Enter the passing sieve size.  
 Column (7) Add column (5) from bottom up to get cumulative weights passing each sieve. Be sure to add loss by washing to weight of material pas of material passing #200 sieve to get first entry at bottom of column (7).  
 Column (8) Divide column (7) by check total dry weight of fine sample (Column 5) to get cumulative % passing.  
 Column (9) Multiply column (8) by % passing final sieve from column (4) to get "Percent Passing" based on total sample.



# Work Sheet for Sieve Analysis of Granular Material

See Grading & Base Manual, Fig. 1 5-692.215

Project No: Greenvale	Date: 7/23/2014	Test No: 6
Material Type: CI 1 Mod	Station:	Depth From Grading Grade: Cannon Falls (Anderson)
Total Wt. of Sample: 39.3	lbs (kg)	Tester Name or Certification No: Greg Viall

Coarse Sieves:				(1) Indiv. Weights	(2) Sieve Size	(3) Cumulative Wts. Passing	(4) Total % Passing	Gradation Requirements
*Pass	Sieve, Ret.	1 1/2" ▼	Sieve	0.0		38.8	100%	
*Pass 1 1/2" ▼	Sieve, Ret.	1" ▼	Sieve	0.0	1 1/2"	38.8	100%	
*Pass 1" ▼	Sieve, Ret.	3/4" ▼	Sieve	0.0	1"	38.8	100%	100%
*Pass 3/4" ▼	Sieve, Ret.	1/2" ▼	Sieve	2.7	3/4"	38.8	100%	90-100%
*Pass 1/2" ▼	Sieve, Ret.	3/8" ▼	Sieve	3.5	1/2"	36.1	93%	
*Pass 3/8" ▼	Sieve, Ret.	#4 ▼	Sieve	10.8	3/8"	32.7	84%	50-90%
*Pass #4 ▼	Sieve, Ret.	Bottom		21.9	#4	21.9	56%	35-70%
Check Total -				38.8	- Shall Check Total Wt. Within 0.2lbs (0.1 kg)			

\*Enter necessary sieve sizes for class of material to be tested.  
 Column (1) Enter weights of material between each set of sieves individually.  
 Column (2) Enter the passing sieves size.  
 Column (3) Add column (1) from the bottom up to get cumulative weights passing each sieve.  
 Column (4) Divide column (3) by check total of sample to get total % passing.

**Fine Sieves:**

- (A) Take two samples identical in condition and damp weight from "passing \_\_\_\_\_ #4 \_\_\_\_\_ material".
- (B) Dry one sample and record weight. 585.4
- (C) Wash and dry other sample and record weight. 466.6
- (D) Loss in washing (B-C) (Enter Below) 118.8

				(5) Indiv. Weights	(6) Sieve Size	(7) Cumulative Wts. Passing	(8) Cum. % Passing	(9) % Passing of Total Pass.	Gradation Requirements
*Pass #4 ▼	Sieve, Ret.	#10 ▼	Sieve	228.0	#4	584.9	100.0%	56%	35-70%
*Pass #10 ▼	Sieve, Ret.	#16 ▼	Sieve	77.7	#10	356.9	61.0%	34%	20-55%
*Pass #16 ▼	Sieve, Ret.	#30 ▼	Sieve	61.1	#16	279.2	47.7%	27%	
*Pass #30 ▼	Sieve, Ret.	#40 ▼	Sieve	25.1	#30	218.1	37.3%	21%	
*Pass #40 ▼	Sieve, Ret.	#50 ▼	Sieve	17.4	#40	193.0	33.0%	18%	15-35%
*Pass #50 ▼	Sieve, Ret.	#100 ▼	Sieve	22.1	#50	175.6	30.0%	17%	
*Pass #100 ▼	Sieve, Ret.	#200 ▼	Sieve	21.7	#100	153.5	26.2%	15%	
*Pass #200 ▼	Sieve, Ret.	Bottom		13.0	#200	131.8	22.5%	12.6%	10-15%
Loss by washing-				118.8					
Check Total -				584.9	- Shall Check total Wt. Within 5.0 grams				
Percent Passing #200 Sieve Divided by Percent Passing 1 in. Sieve (if specified)									

Column (5) Enter weights of material between each set of sieves and loss by washing (DO NOT OVERLOAD SIEVES)  
 Column (6) Enter the passing sieve size.  
 Column (7) Add column (5) from bottom up to get cumulative weights passing each sieve. Be sure to add loss by washing to weight of material passing #200 sieve to get first entry at bottom of column (7).  
 Column (8) Divide column (7) by check total dry weight of fine sample (Column 5) to get cumulative % passing.  
 Column (9) Multiply column (8) by % passing final sieve from column (4) to get "Percent Passing" based on total sample.



# Work Sheet for Sieve Analysis of Granular Material

See Grading & Base Manual, Fig. 1 5-692.215

Project No: Greenvale	Date: 7/25/2014	Test No: 7	
Material Type: CL-1 Mod	Station: 42nd & 138th st	Depth From Grading Grade: Cannon Falls (Anderson)	
Total Wt. of Sample: 26.0 lbs (kg)		Tester Name or Certification No: Greg Viall	

Coarse Sieves:				(1) Indiv. Weights	(2) Sieve Size	(3) Cumulative Wts. Passing	(4) Total % Passing	Gradation Requirements
*Pass	Sieve, Ret.	1 1/2" ▼	Sieve	0.0		25.8	100%	
*Pass 1 1/2" ▼	Sieve, Ret.	1" ▼	Sieve	0.0	1 1/2"	25.8	100%	
*Pass 1" ▼	Sieve, Ret.	3/4" ▼	Sieve	0.0	1"	25.8	100%	100%
*Pass 3/4" ▼	Sieve, Ret.	1/2" ▼	Sieve	3.9	3/4"	25.8	100%	90-100%
*Pass 1/2" ▼	Sieve, Ret.	3/8" ▼	Sieve	3.4	1/2"	22.0	85%	
*Pass 3/8" ▼	Sieve, Ret.	#4 ▼	Sieve	6.6	3/8"	18.6	72%	50-90%
*Pass #4 ▼	Sieve, Ret.	Bottom		12.0	#4	12.0	47%	35-70%
Check Total -				25.8	- Shall Check Total Wt. Within 0.2lbs (0.1 kg)			

\*Enter necessary sieve sizes for class of material to be tested.  
 Column (1) Enter weights of material between each set of sieves individually.  
 Column (2) Enter the passing sieves size.  
 Column (3) Add column (1) from the bottom up to get cumulative weights passing each sieve.  
 Column (4) Divide column (3) by check total of sample to get total % passing.

**Fine Sieves:**

- (A) Take two samples identical in condition and damp weight from "passing \_\_\_\_\_ #4 \_\_\_\_\_ material".
- (B) Dry one sample and record weight. 648.0
- (C) Wash and dry other sample and record weight. 519.6
- (D) Loss in washing (B-C) (Enter Below) 128.4

				(5) Indiv. Weights	(6) Sieve Size	(7) Cumulative Wts. Passing	(8) Cum. % Passing	(9) % Passing of Total Pass.	Gradation Requirements
*Pass #4 ▼	Sieve, Ret.	#10 ▼	Sieve	243.5	#4	611.3	100.0%	47%	35-70%
*Pass #10 ▼	Sieve, Ret.	#16 ▼	Sieve	82.4	#10	367.8	60.2%	28%	20-55%
*Pass #16 ▼	Sieve, Ret.	#30 ▼	Sieve	59.8	#16	285.4	46.7%	22%	
*Pass #30 ▼	Sieve, Ret.	#40 ▼	Sieve	26.2	#30	225.6	36.9%	17%	
*Pass #40 ▼	Sieve, Ret.	#50 ▼	Sieve	21.6	#40	199.4	32.6%	15%	15-35%
*Pass #50 ▼	Sieve, Ret.	#100 ▼	Sieve	39.5	#50	177.8	29.1%	14%	
*Pass #100 ▼	Sieve, Ret.	#200 ▼	Sieve		#100	138.3	22.6%	11%	
*Pass #200 ▼	Sieve, Ret.	Bottom		9.9	#200	138.3	22.6%	10.6%	10-15%
Loss by washing-				128.4					
Check Total -				611.3	- Shall Check total Wt. Within 5.0 grams				
Percent Passing #200 Sieve Divided by Percent Passing 1 in. Sieve (if specified)									

Column (5) Enter weights of material between each set of sieves and loss by washing (DO NOT OVERLOAD SIEVES)  
 Column (6) Enter the passing sieve size.  
 Column (7) Add column (5) from bottom up to get cumulative weights passing each sieve. Be sure to add loss by washing to weight of material passing #200 sieve to get first entry at bottom of column (7).  
 Column (8) Divide column (7) by check total dry weight of fine sample (Column 5) to get cumulative % passing.  
 Column (9) Multiply column (8) by % passing final sieve from column (4) to get "Percent Passing" based on total sample.



# Work Sheet for Sieve Analysis of Granular Material

See Grading & Base Manual, Fig. 1 5-692.215

Project No: Greenvale	Date: 7/24/2014	Test No: 7 #2
Material Type: CL-5mod	Station:	Depth From Grading Grade: Foss Pit
Total Wt. of Sample: 35.3	lbs (kg)	Tester Name or Certification No: Greg Viall

Coarse Sieves:				(1) Indiv. Weights	(2) Sieve Size	(3) Cumulative Wts. Passing	(4) Total % Passing	Gradation Requirements
*Pass	Sieve, Ret.	1 1/2" ▼	Sieve	0.0		35.2	100%	
*Pass 1 1/2" ▼	Sieve, Ret.	1" ▼	Sieve	0.0	1 1/2"	35.2	100%	
*Pass 1" ▼	Sieve, Ret.	3/4" ▼	Sieve	0.0	1"	35.2	100%	100%
*Pass 3/4" ▼	Sieve, Ret.	1/2" ▼	Sieve	3.3	3/4"	35.2	100%	90-100%
*Pass 1/2" ▼	Sieve, Ret.	3/8" ▼	Sieve	3.3	1/2"	31.9	91%	
*Pass 3/8" ▼	Sieve, Ret.	#4 ▼	Sieve	11.1	3/8"	28.6	81%	50-90%
*Pass #4 ▼	Sieve, Ret.	Bottom		17.5	#4	17.5	50%	35-70%
Check Total -				35.2	- Shall Check Total Wt. Within 0.2lbs (0.1 kg)			

\*Enter necessary sieve sizes for class of material to be tested.  
 Column (1) Enter weights of material between each set of sieves individually.  
 Column (2) Enter the passing sieves size.  
 Column (3) Add column (1) from the bottom up to get cumulative weights passing each sieve.  
 Column (4) Divide column (3) by check total of sample to get total % passing.

**Fine Sieves:**

- (A) Take two samples identical in condition and damp weight from "passing #4 material".
- (B) Dry one sample and record weight. 623.9
- (C) Wash and dry other sample and record weight. 474.6
- (D) Loss in washing (B-C) (Enter Below) 149.3

				(5) Indiv. Weights	(6) Sieve Size	(7) Cumulative Wts. Passing	(8) Cum. % Passing	(9) % Passing of Total Pass.	Gradation Requirements	
*Pass #4 ▼	Sieve, Ret.	#10 ▼	Sieve	252.9	#4	623.4	100.0%	50%	35-70%	
*Pass #10 ▼	Sieve, Ret.	#16 ▼	Sieve	76.6	#10	370.5	59.4%	30%	20-55%	
*Pass #16 ▼	Sieve, Ret.	#30 ▼	Sieve	52.8	#16	293.9	47.1%	24%		
*Pass #30 ▼	Sieve, Ret.	#40 ▼	Sieve	26.6	#30	241.1	38.7%	19%		
*Pass #40 ▼	Sieve, Ret.	#50 ▼	Sieve	15.2	#40	214.5	34.4%	17%	15-35%	
*Pass #50 ▼	Sieve, Ret.	#100 ▼	Sieve	19.9	#50	199.3	32.0%	16%		
*Pass #100 ▼	Sieve, Ret.	#200 ▼	Sieve	21.0	#100	179.4	28.8%	14%		
*Pass #200 ▼	Sieve, Ret.	Bottom		9.1	#200	158.4	25.4%	12.7%	10-15%	
Loss by washing-				149.3						
Check Total -				623.4	- Shall Check total Wt. Within 5.0 grams					
Percent Passing #200 Sieve Divided by Percent Passing 1 in. Sieve (if specified)										

Column (5) Enter weights of material between each set of sieves and loss by washing (DO NOT OVERLOAD SIEVES)  
 Column (6) Enter the passing sieve size.  
 Column (7) Add column (5) from bottom up to get cumulative weights passing each sieve. Be sure to add loss by washing to weight of material pas of material passing #200 sieve to get first entry at bottom of column (7).  
 Column (8) Divide column (7) by check total dry weight of fine sample (Column 5) to get cumulative % passing.  
 Column (9) Multiply column (8) by % passing final sieve from column (4) to get "Percent Passing" based on total sample.



# Work Sheet for Sieve Analysis of Granular Material

See Grading & Base Manual, Fig. 1 5-692.215

Project No: Greenvale	Date: 7/28/2014	Test No: 8
Material Type: CI-5 mod	Station: Eveleth&307th	Depth From Grading Grade: Foss Pit
Total Wt. of Sample: 35.7 lbs (kg)		Tester Name or Certification No: Greg Viall

Coarse Sieves:				(1) Indiv. Weights	(2) Sieve Size	(3) Cumulative Wts. Passing	(4) Total % Passing	Gradation Requirements
*Pass	Sieve, Ret.	1 1/2" ▼	Sieve	0.0		35.5	100%	
*Pass	1 1/2" ▼	Sieve, Ret.	1" ▼	0.0	1 1/2"	35.5	100%	
*Pass	1" ▼	Sieve, Ret.	3/4" ▼	0.6	1"	35.5	100%	100%
*Pass	3/4" ▼	Sieve, Ret.	1/2" ▼	6.0	3/4"	34.9	98%	90-100%
*Pass	1/2" ▼	Sieve, Ret.	3/8" ▼	4.5	1/2"	28.9	81%	
*Pass	3/8" ▼	Sieve, Ret.	#4 ▼	9.4	3/8"	24.4	69%	50-90%
*Pass	#4 ▼	Sieve, Ret.	Bottom	15.0	#4	15.0	42%	35-70%
Check Total -				35.5	- Shall Check Total Wt. Within 0.2lbs (0.1 kg)			

\*Enter necessary sieve sizes for class of material to be tested.  
 Column (1) Enter weights of material between each set of sieves individually.  
 Column (2) Enter the passing sieves size.  
 Column (3) Add column (1) from the bottom up to get cumulative weights passing each sieve.  
 Column (4) Divide column (3) by check total of sample to get total % passing.

**Fine Sieves:**

- (A) Take two samples identical in condition and damp weight from "passing \_\_\_\_\_ #4 \_\_\_\_\_ material".
- (B) Dry one sample and record weight. 620.7
- (C) Wash and dry other sample and record weight. 453.7
- (D) Loss in washing (B-C) (Enter Below) 167.0

				(5) Indiv. Weights	(6) Sieve Size	(7) Cumulative Wts. Passing	(8) Cum. % Passing	(9) % Passing of Total Pass.	Gradation Requirements
*Pass	#4 ▼	Sieve, Ret.	#10 ▼	212.1	#4	620.2	100.0%	42%	35-70%
*Pass	#10 ▼	Sieve, Ret.	#16 ▼	74.3	#10	408.1	65.8%	28%	20-55%
*Pass	#16 ▼	Sieve, Ret.	#30 ▼	59.6	#16	333.8	53.8%	23%	
*Pass	#30 ▼	Sieve, Ret.	#40 ▼	24.6	#30	274.2	44.2%	19%	
*Pass	#40 ▼	Sieve, Ret.	#50 ▼	17.8	#40	249.6	40.2%	17%	15-35%
*Pass	#50 ▼	Sieve, Ret.	#100 ▼	24.4	#50	231.8	37.4%	16%	
*Pass	#100 ▼	Sieve, Ret.	#200 ▼	27.1	#100	207.4	33.4%	14%	
*Pass	#200 ▼	Sieve, Ret.	Bottom	13.3	#200	180.3	29.1%	12.2%	10-15%
Loss by washing-				167.0					
Check Total -				620.2	- Shall Check total Wt. Within 5.0 grams				
Percent Passing #200 Sieve Divided by Percent Passing 1 in. Sieve (if specified)									

Column (5) Enter weights of material between each set of sieves and loss by washing (DO NOT OVERLOAD SIEVES)  
 Column (6) Enter the passing sieve size.  
 Column (7) Add column (5) from bottom up to get cumulative weights passing each sieve. Be sure to add loss by washing to weight of material pas of material passing #200 sieve to get first entry at bottom of column (7).  
 Column (8) Divide column (7) by check total dry weight of fine sample (Column 5) to get cumulative % passing.  
 Column (9) Multiply column (8) by % passing final sieve from column (4) to get "Percent Passing" based on total sample.



# Work Sheet for Sieve Analysis of Granular Material

See Grading & Base Manual, Fig. 1 5-692.215

Project No: Greenvale	Date: 7/28/2014	Test No: 10
Material Type: CI-5 mod	Station: Eveleth&307th	Depth From Grading Grade: Foss Pit
Total Wt. of Sample: 35.7 lbs (kg)	Tester Name or Certification No: Greg Viall	

Coarse Sieves:				(1) Indiv. Weights	(2) Sieve Size	(3) Cumulative Wts. Passing	(4) Total % Passing	Gradation Requirements
*Pass	Sieve, Ret.	1 1/2" ▼	Sieve	0.0		35.5	100%	
*Pass 1 1/2" ▼	Sieve, Ret.	1" ▼	Sieve	0.0	1 1/2"	35.5	100%	
*Pass 1" ▼	Sieve, Ret.	3/4" ▼	Sieve	0.6	1"	35.5	100%	100%
*Pass 3/4" ▼	Sieve, Ret.	1/2" ▼	Sieve	6.0	3/4"	34.9	98%	90-100%
*Pass 1/2" ▼	Sieve, Ret.	3/8" ▼	Sieve	4.5	1/2"	28.9	81%	
*Pass 3/8" ▼	Sieve, Ret.	#4 ▼	Sieve	9.4	3/8"	24.4	69%	50-90%
*Pass #4 ▼	Sieve, Ret.	Bottom		15.0	#4	15.0	42%	35-70%
Check Total -				35.5	- Shall Check Total Wt. Within 0.2lbs (0.1 kg)			

\*Enter necessary sieve sizes for class of material to be tested.

Column (1) Enter weights of material between each set of sieves individually.

Column (2) Enter the passing sieves size.

Column (3) Add column (1) from the bottom up to get cumulative weights passing each sieve.

Column (4) Divide column (3) by check total of sample to get total % passing.

### Fine Sieves:

(A) Take two samples identical in condition and damp weight from "passing \_\_\_\_\_ #4 \_\_\_\_\_ material".

(B) Dry one sample and record weight.

620.7

(C) Wash and dry other sample and record weight.

453.7

(D) Loss in washing (B-C) (Enter Below)

167.0

				(5) Indiv. Weights	(6) Sieve Size	(7) Cumulative Wts. Passing	(8) Cum. % Passing	(9) % Passing of Total Pass.	Gradation Requirements
*Pass #4 ▼	Sieve, Ret.	#10 ▼	Sieve	212.1	#4	620.2	100.0%	42%	35-70%
*Pass #10 ▼	Sieve, Ret.	#16 ▼	Sieve	74.3	#10	408.1	65.8%	28%	20-55%
*Pass #16 ▼	Sieve, Ret.	#30 ▼	Sieve	59.6	#16	333.8	53.8%	23%	
*Pass #30 ▼	Sieve, Ret.	#40 ▼	Sieve	24.6	#30	274.2	44.2%	19%	
*Pass #40 ▼	Sieve, Ret.	#50 ▼	Sieve	17.8	#40	249.6	40.2%	17%	15-35%
*Pass #50 ▼	Sieve, Ret.	#100 ▼	Sieve	24.4	#50	231.8	37.4%	16%	
*Pass #100 ▼	Sieve, Ret.	#200 ▼	Sieve	27.1	#100	207.4	33.4%	14%	
*Pass #200 ▼	Sieve, Ret.	Bottom		13.3	#200	180.3	29.1%	12.2%	10-15%
Loss by washing-				167.0					
Check Total -				620.2	- Shall Check total Wt. Within 5.0 grams				
Percent Passing #200 Sieve Divided by Percent Passing 1 in. Sieve (if specified)									

Column (5) Enter weights of material between each set of sieves and loss by washing (DO NOT OVERLOAD SIEVES)

Column (6) Enter the passing sieve size.

Column (7) Add column (5) from bottom up to get cumulative weights passing each sieve. Be sure to add loss by washing to weight of material passing #200 sieve to get first entry at bottom of column (7).

Column (8) Divide column (7) by check total dry weight of fine sample (Column 5) to get cumulative % passing.

Column (9) Multiply column (8) by % passing final sieve from column (4) to get "Percent Passing" based on total sample.

CC: Project File



# Work Sheet for Sieve Analysis of Granular Material

See Grading & Base Manual, Fig. 1 5-692.215

Project No: Greenvale	Date: 7/17/2014	Test No: 3	
Material Type: CL-5 Mod.	Station: sample#1	Depth From Grading Grade: Cannon Falls (Anderson)	
Total Wt. of Sample: 36.7 lbs (kg)		Tester Name or Certification No: Greg Viall	

Coarse Sieves:				(1) Indiv. Weights	(2) Sieve Size	(3) Cumulative Wts. Passing	(4) Total % Passing	Gradation Requirements
*Pass	Sieve, Ret.	1 1/2" ▼	Sieve	0.0		36.6	100%	
*Pass 1 1/2" ▼	Sieve, Ret.	1" ▼	Sieve	0.0	1 1/2"	36.6	100%	
*Pass 1" ▼	Sieve, Ret.	3/4" ▼	Sieve	0.1	1"	36.6	100%	100%
*Pass 3/4" ▼	Sieve, Ret.	1/2" ▼	Sieve	3.1	3/4"	36.5	100%	90-100%
*Pass 1/2" ▼	Sieve, Ret.	3/8" ▼	Sieve	3.1	1/2"	33.4	91%	
*Pass 3/8" ▼	Sieve, Ret.	#4 ▼	Sieve	9.2	3/8"	30.4	83%	50-90%
*Pass #4 ▼	Sieve, Ret.	Bottom		21.2	#4	21.2	58%	35-70%
Check Total -				36.6	- Shall Check Total Wt. Within 0.2lbs (0.1 kg)			

\*Enter necessary sieve sizes for class of material to be tested.  
 Column (1) Enter weights of material between each set of sieves individually.  
 Column (2) Enter the passing sieves size.  
 Column (3) Add column (1) from the bottom up to get cumulative weights passing each sieve.  
 Column (4) Divide column (3) by check total of sample to get total % passing.

**Fine Sieves:**

- (A) Take two samples identical in condition and damp weight from "passing \_\_\_\_\_ #4 \_\_\_\_\_ material".
- (B) Dry one sample and record weight. 584.0
- (C) Wash and dry other sample and record weight. 441.4
- (D) Loss in washing (B-C) (Enter Below) 142.6

				(5) Indiv. Weights	(6) Sieve Size	(7) Cumulative Wts. Passing	(8) Cum. % Passing	(9) % Passing of Total Pass.	Gradation Requirements
*Pass #4 ▼	Sieve, Ret.	#10 ▼	Sieve	227.7	#4	583.3	100.0%	58%	35-70%
*Pass #10 ▼	Sieve, Ret.	#16 ▼	Sieve	73.3	#10	355.6	61.0%	35%	20-55%
*Pass #16 ▼	Sieve, Ret.	#30 ▼	Sieve	56.2	#16	282.3	48.4%	28%	
*Pass #30 ▼	Sieve, Ret.	#40 ▼	Sieve	23.1	#30	226.1	38.8%	22%	
*Pass #40 ▼	Sieve, Ret.	#50 ▼	Sieve	16.1	#40	203.0	34.8%	20%	15-35%
*Pass #50 ▼	Sieve, Ret.	#100 ▼	Sieve	20.1	#50	186.9	32.0%	19%	
*Pass #100 ▼	Sieve, Ret.	#200 ▼	Sieve	16.4	#100	166.8	28.6%	17%	
*Pass #200 ▼	Sieve, Ret.	Bottom		7.8	#200	150.4	25.8%	15.0%	10-15%
Loss by washing-				142.6					
Check Total -				583.3	- Shall Check total Wt. Within 5.0 grams				
Percent Passing #200 Sieve Divided by Percent Passing 1 in. Sieve (If specified)									

Column (5) Enter weights of material between each set of sieves and loss by washing (DO NOT OVERLOAD SIEVES)  
 Column (6) Enter the passing sieve size.  
 Column (7) Add column (5) from bottom up to get cumulative weights passing each sieve. Be sure to add loss by washing to weight of material pas  
 of material passing #200 sieve to get first entry at bottom of column (7).  
 Column (8) Divide column (7) by check total dry weight of fine sample (Column 5) to get cumulative % passing.  
 Column (9) Multiply column (8) by % passing final sieve from column (4) to get "Percent Passing" based on total sample.

