

GRADATION SUMMARY

GROUP 1

PIT: Othello
 NOT CORRECTED FOR OVERSIZE

TH	SA	CLASS	FACT	+225	+150	+75	GRAV	SAND	FINE	75.0	63.0	50.0	37.5	25.0	19.0	12.5	9.50	4.75	2.36	1.18	.600	.300	.150	.075
97-01	1	GM1	1.000	0	0	0	56	27	17	100	100	100	86	76	68	61	56	44	36	30	26	22	20	17.2
97-02	1	GW	1.000	0	0	0	68	27	5	100	100	100	98	83	73	60	51	32	21	14	9	6	5	4.6
97-05	1	GW	1.000	0	0	0	69	28	3	100	100	96	90	78	68	56	47	31	22	15	10	6	4	3.5
97-06	1	GP	1.000	0	0	0	64	33	3	100	100	98	83	69	61	53	48	36	29	21	12	6	4	3.3
97-07	1	SP	1.000	0	0	0	42	56	2	100	100	100	88	81	75	70	66	58	52	44	30	11	4	2.3
97-08	1	GW	1.000	0	0	0	71	28	1	100	100	81	72	58	51	42	38	29	24	18	10	4	2	1.4
97-09	1	SP	1.000	0	0	0	34	64	2	100	96	94	90	84	81	77	74	66	59	49	30	8	3	2.1
97-10	1	GP	1.000	0	0	0	59	40	1	100	100	96	90	76	68	60	54	41	30	21	11	4	2	1.4
97-12	1	GP	1.000	0	0	0	48	48	4	100	100	98	96	87	81	73	66	52	40	31	21	11	6	4.3
97-14	1	GP	1.000	0	0	0	56	43	1	100	100	100	83	76	72	63	57	44	36	28	16	4	1	0.8
97-16	1	GP	1.000	0	0	0	59	40	1	100	100	99	86	75	66	56	50	41	36	31	22	7	2	1.1
AVERAGE		GP		0	0	0	57	39	4	100	100	97	87	77	70	61	55	43	35	27	18	8	5	3.8

PAGE 1

GRADATION SUMMARY

GROUP 2

PIT: Othello
NOT CORRECTED FOR OVERSIZE

TH	SA	CLASS	FACT	+225	+150	+75	GRAV	SAND	FINE	75.0	63.0	50.0	37.5	25.0	19.0	12.5	9.50	4.75	2.36	1.18	.600	.300	.150	.075
97-01	2	GM1	1.000	0	0	0	49	33	18	100	100	100	100	99	93	76	66	51	41	33	27	23	20	17.8
97-02	2	GP GM	1.000	0	0	0	64	31	5	100	100	100	100	100	93	72	59	37	23	16	11	7	6	5.1
97-05	2	GW	1.000	0	0	0	64	32	4	100	100	100	100	100	94	70	57	36	25	17	11	7	5	3.7
97-06	2	GW	1.000	0	0	0	56	40	4	100	100	100	100	100	92	70	60	44	32	23	15	8	5	3.9
97-07	2	SP	1.000	0	0	0	40	58	2	100	100	100	100	99	92	78	71	61	54	44	29	11	4	2.5
97-08	2	GW	1.000	0	0	0	60	38	2	100	100	100	100	100	92	69	57	40	31	22	13	6	3	2.1
97-09	2	SP	1.000	0	0	0	32	66	2	100	100	100	100	100	96	85	78	69	61	50	29	7	3	2.4
97-10	2	GP	1.000	0	0	0	55	43	2	100	100	100	100	99	92	73	62	45	36	27	15	5	2	1.7
97-12	2	SP	1.000	0	0	0	44	51	5	100	100	100	100	100	97	84	73	56	42	33	23	12	7	4.7
97-14	2	GP	1.000	0	0	0	50	49	1	100	100	100	100	99	95	77	67	50	38	27	15	4	2	1.1
97-16	2	GP	1.000	0	0	0	53	46	1	100	100	100	100	100	94	73	62	47	37	30	20	7	2	1.4
AVERAGE		GP		0	0	0	52	44	4	100	100	100	100	100	94	75	65	49	38	29	19	9	6	4.2

Ministry of Transportation and Highways
 GEOTECHNICAL AND MATERIALS BRANCH

PROJECT OTHELLO PIT
 Station or T.H. 90-10 Sample No. 21989
 Depth _____ Cost Code _____
 Date Nov. 5, 1990
 Technician J.W.

SOUNDNESS TEST (A.S.T.M. C88)

Sieve Size		Grading of Original Sample (%)	Mass of Test Fractions Before Test (g)	After 5 Cycles		Weighted Percentage Mass Loss (%)
Passing	Retained			Mass Remaining (g)	Loss (%)	
SOUNDNESS TEST OF COARSE AGGREGATE						
63 mm	50 mm	}	}			
50 mm	37.5 mm					
37.5 mm	25.0 mm	} 6.76	}			
25.0 mm	19.0 mm					
19.0 mm	12.5 mm	} 59.76	} 701.6	1004.8	954.0	5.06
12.5 mm	9.5 mm					
9.5 mm	4.75 mm	} 33.48	} 303.2	300.5	279.2	7.09
TOTALS		100.0	MAX 20			5.39

SOUNDNESS TEST OF FINE AGGREGATE						
★9.5 mm	4.75 mm					
4.75 mm	2.36 mm	32.25		100.1	82.7	17.38
2.36 mm	1.18 mm	25.78		100.0	87.1	12.90
1.18 mm	.600 mm	20.19		100.0	88.1	11.90
.600 mm	.300 mm	14.18		100.1	90.2	9.89
.300 mm	.150 mm	4.34				
.150 mm	PAN	1.71				
TOTALS		100.0	MAX 25			12.74

★ This Fraction is not used When Sample Contains Both Coarse and Fine Portions

% Of Initial Sample Passing 4.75 mm Sieve = 42.3%

REMARKS:-- _____

PROVINCE OF BRITISH COLUMBIA
MINISTRY OF TRANSPORTATION & HIGHWAYS
GEOTECHNICAL & MATERIALS BRANCH

Project OTHELLO PIT
Sta or T.H. _____ Sample # _____
Depth _____
Cost Code _____ Date Nov. 30 '90
Technician J.W.

DEGRADATION TEST

TRIAL #	21971	21988	21973	24077
	¹	²	³	⁴
	✓ T.H.9	✓ T.H.8	✓ T.H.3	✓ T.A.22
Sediment Height (H) mm	<u>80</u>	<u>194</u>	<u>84</u>	<u>53</u>
Degradation Factor (D)	<u>✓57.77</u>	<u>✓25.95</u>	<u>✓56.25</u>	<u>✓69.24</u>

CALCULATIONS

$$D = \frac{381 - H}{381 + 1.75 H} \times 100$$

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MINISTRY OF TRANSPORTATION & HIGHWAYS
GEOTECHNICAL & MATERIALS BRANCH

Project OTHELLO PIT
Sta or T.H. _____ Sample # _____
Depth _____
Cost Code _____ Date _____
Technician _____

DEGRADATION TEST

TRIAL #	✓24068	✓24082	24079	21987
	✓ ¹ T.H#9	T.H#26	✓ ³ T.H#25	✓T.H#11
Sediment Height (H) mm	<u>40</u>	<u>71</u>	<u>54</u>	<u>37</u>
Degradation Factor (D)	<u>✓75.61</u>	<u>✓61.24</u>	<u>68.77</u>	<u>✓76.84</u>

CALCULATIONS

$$D = \frac{381 - H}{381 + 1.75 H} \times 100$$

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 GEOTECHNICAL AND MATERIALS BRANCH

Project OTHELLO PIT
 Sta. or T.H. _____ Sample # _____
 Depth _____
 Cost Code _____ Date _____
 Technician _____

SAND EQUIVALENT TEST

TRIAL #	<u>24079</u> 1 ✓ T.H.25	<u>21973</u> 2 T.H.3	<u>21988</u> 3 T.H.8	<u>24068</u> 4 T.H.#19
Clay Height mm	<u>106</u>	<u>4.60</u>	<u>4.70</u>	<u>119</u>
Sediment Period	<u>20 MINS</u>	<u>20 MINS</u>	<u>20 MINS</u>	<u>20 MINS.</u>
Sand Height mm	<u>101</u>	<u>3.95</u>	<u>3.05</u>	<u>112</u>
Sand Equivalent (SE)	<u>95.3</u>	<u>✓85.9</u>	<u>✓67.0</u>	<u>✓94.1</u>

INTERPRETATION OF RESULTS

SE	50	40	30	20	
	absence of plastic material		possible plastic material		plastic material

REMARKS:

CALCULATIONS:

$$\text{Sand Equivalent (SE)} = \frac{\text{Sand Height}}{\text{Clay Height}} \times 100$$

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 GEOTECHNICAL AND MATERIALS BRANCH

Project OTHELLO PIT.
 Sta. or T.H. _____ Sample # _____
 Depth _____
 Cost Code _____ Date _____
 Technician _____

SAND EQUIVALENT TEST

TRIAL #	21987	24077	21971	24082
	1	2	3	4
	T.H.11	T.H.22	T.H.#9	T.H.26
Clay Height mm	<u>4.45</u>	<u>4.45</u>	<u>143</u>	<u>460</u>
Sediment Period	<u>20MINS.</u>	<u>20MINS.</u>	<u>20MINS.</u>	<u>20MINS.</u>
Sand Height mm	<u>4.25</u>	<u>4.25</u>	<u>85</u>	<u>4.45</u>
Sand Equivalent (SE)	<u>95.5</u>	<u>95.5</u>	<u>89.4</u>	<u>96.7</u>

INTERPRETATION OF RESULTS

SE	50	40	30	20
	absence of plastic material		possible plastic material	plastic material

REMARKS:

CALCULATIONS:

$$\text{Sand Equivalent (SE)} = \frac{\text{Sand Height}}{\text{Clay Height}} \times 100$$



PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

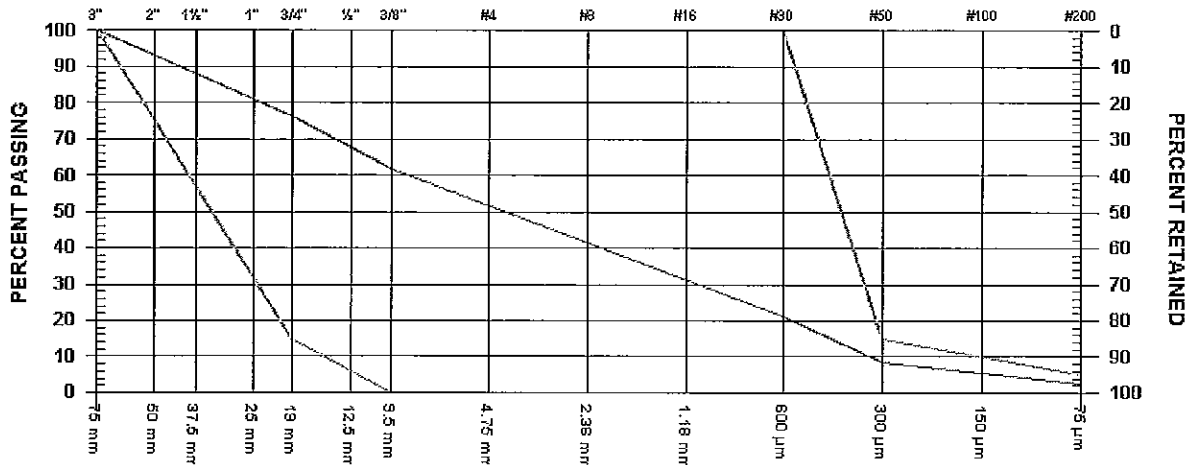
TO
BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 1 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 16, 2009 DATE SAMPLED NOV 05, 2009

SUPPLIER	BC MoT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	D. MEMBREVE
SPECIFICATION	MoT SELECT GRANULAR SUB-BASE	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, SAND & GRAVEL		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	95.5	
1 1/2" 37.5 mm	90.7	
1" 25 mm	80.7	
3/4" 19 mm	76.3	15 - 100
1/2" 12.5 mm	68.5	
3/8" 9.5 mm	61.8	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	49.4	
No. 8 2.36 mm	40.9	
No. 16 1.18 mm	32.8	
No. 30 600 µm	21.3	0 - 100
No. 50 300 µm	8.7	0 - 15
No. 100 150 µm	4.1	
No. 200 75 µm	2.7	0 - 5

COMMENTS
TP09-1, BAG 484. SAMPLE AS RECEIVED.

PER.



Trow Associates Inc.
7025 Greenwood Street
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604-874-1245

Kamloops Branch
250-372-5321

SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

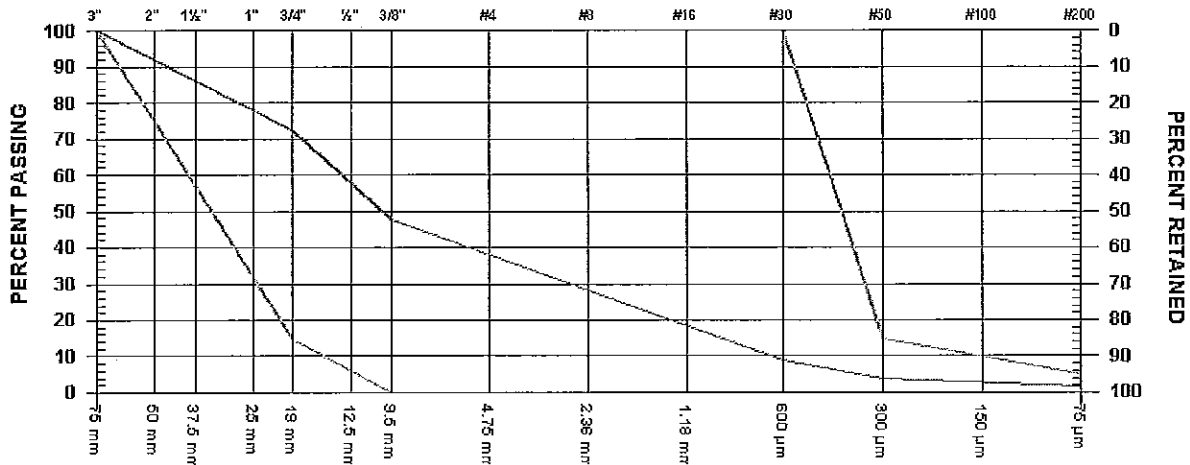
TO
BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 2 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 16, 2009 DATE SAMPLED NOV 05, 2009

SUPPLIER BC MoT SAMPLED BY CLIENT
SOURCE OTHELLO PIT, HOPE TESTED BY D. MEMBREVE
SPECIFICATION MoT SELECT GRANULAR SUB-BASE TEST METHOD WASHED
MATERIAL TYPE TEST PIT, SAND & GRAVEL



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	97.1	
1 1/2" 37.5 mm	90.8	
1" 25 mm	80.6	
3/4" 19 mm	72.2	15 - 100
1/2" 12.5 mm	58.2	
3/8" 9.5 mm	47.9	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	31.8	
No. 8 2.36 mm	22.9	
No. 16 1.18 mm	15.9	
No. 30 600 µm	8.8	0 - 100
No. 50 300 µm	3.7	0 - 15
No. 100 150 µm	2.2	
No. 200 75 µm	1.7	0 - 5

COMMENTS
TP09-2, BAG 483. SAMPLE AS RECEIVED.



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SIEVE ANALYSIS REPORT
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PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

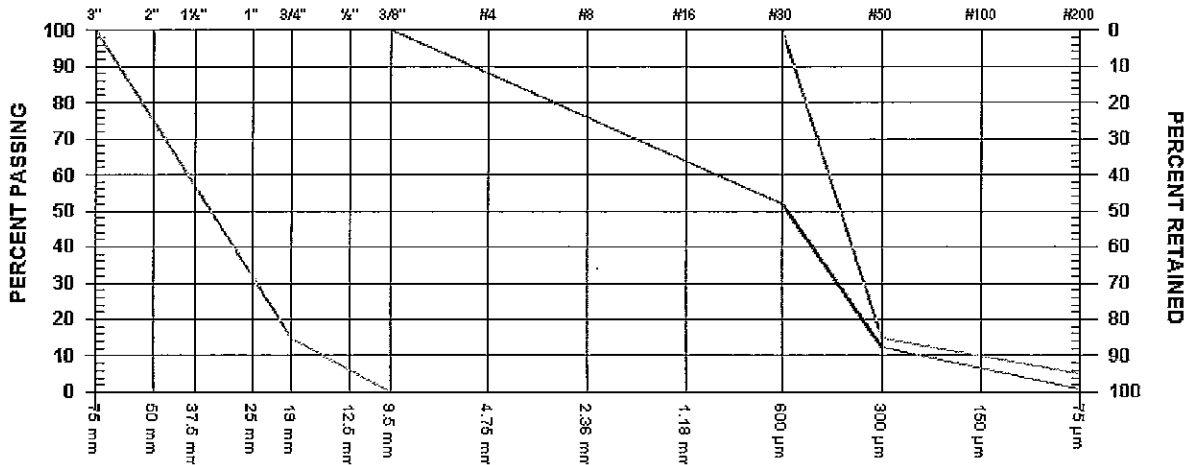
TO
BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 3 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 16, 2009 DATE SAMPLED NOV 05, 2009

SUPPLIER BC MoT SAMPLED BY CLIENT
SOURCE OTHELLO PIT, HOPE TESTED BY D. MEMBREVE
SPECIFICATION MoT SELECT GRANULAR SUB-BASE TEST METHOD WASHED
MATERIAL TYPE TEST PIT, SAND



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm		100 - 100
2" 50 mm		
1 1/2" 37.5 mm		
1" 25 mm		
3/4" 19 mm		15 - 100
1/2" 12.5 mm		
3/8" 9.5 mm	100.0	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	99.6	
No. 8 2.36 mm	97.9	
No. 16 1.18 mm	88.7	
No. 30 600 µm	51.9	0 - 100
No. 50 300 µm	12.3	0 - 15
No. 100 150 µm	2.3	
No. 200 75 µm	0.9	0 - 5

COMMENTS
TP09-4, BAG 482. SAMPLE AS RECEIVED.



PROJECT NO. 091-02050-7

CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

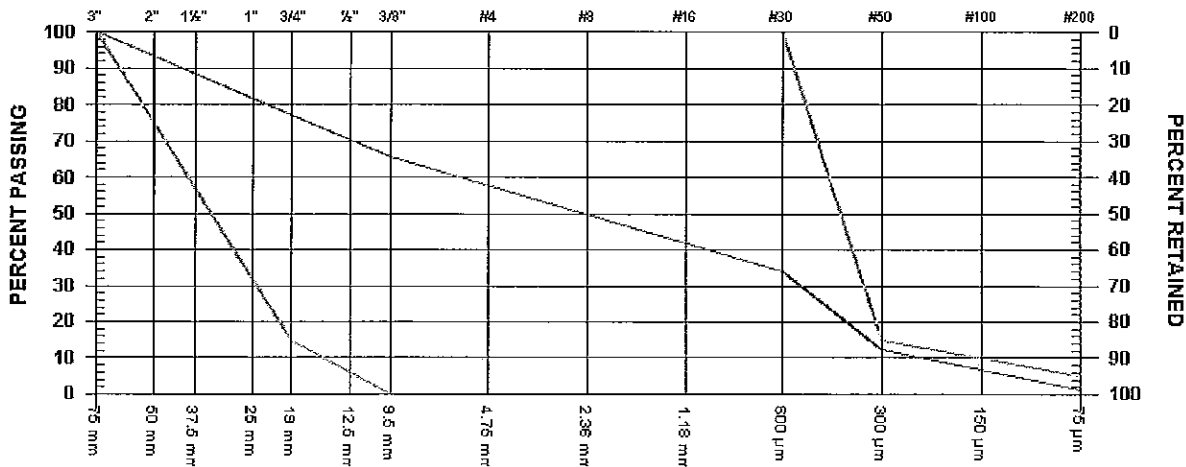
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COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 4 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 16, 2009 DATE SAMPLED Nov 05, 2009

SUPPLIER	BC MoT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	D. MEMBREVE
SPECIFICATION	MoT SELECT GRANULAR SUB-BASE	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, GRAVELLY SAND		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	94.9	
1 1/2" 37.5 mm	90.0	
1" 25 mm	81.4	
3/4" 19 mm	76.9	15 - 100
1/2" 12.5 mm	69.9	
3/8" 9.5 mm	65.6	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	57.8	
No. 8 2.36 mm	51.9	
No. 16 1.18 mm	45.8	
No. 30 600 µm	34.0	0 - 100
No. 50 300 µm	12.3	0 - 15
No. 100 150 µm	3.4	
No. 200 75 µm	1.4	0 - 5

COMMENTS
TP09-5, BAG 481. SAMPLE AS RECEIVED.



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SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7
CLIENT BC MOT, GEO & MATERIALS ENG.
C.C.

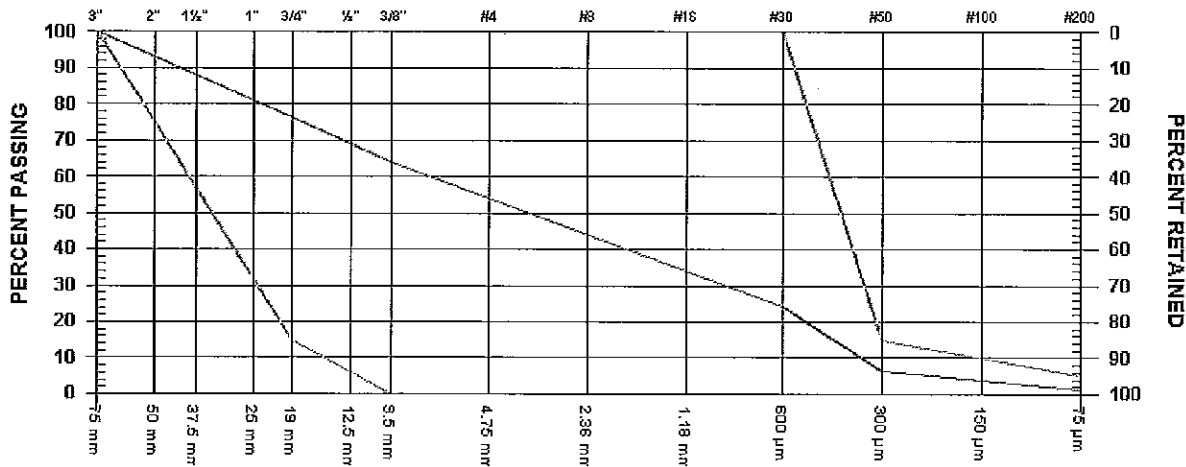
TO
BC MOT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 5 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 16, 2009 DATE SAMPLED NOV 05, 2009

SUPPLIER	BC MOT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	D. MEMBREVE
SPECIFICATION	MOT SELECT GRANULAR SUB-BASE	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, GRAVELLY SAND		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	98.8	
1 1/2" 37.5 mm	90.1	
1" 25 mm	83.0	
3/4" 19 mm	76.2	15 - 100
1/2" 12.5 mm	69.8	
3/8" 9.5 mm	63.9	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	52.9	
No. 8 2.36 mm	45.4	
No. 16 1.18 mm	37.7	
No. 30 600 µm	24.2	0 - 100
No. 50 300 µm	6.6	0 - 15
No. 100 150 µm	1.8	
No. 200 75 µm	1.1	0 - 5

COMMENTS
TP09-6, BAG 480. SAMPLE AS RECEIVED.

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SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

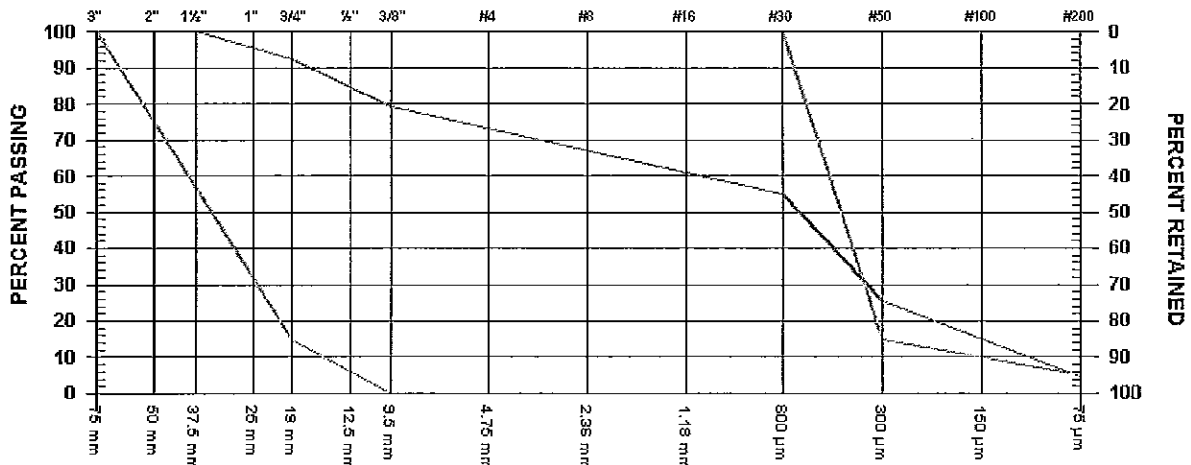
TO
BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 6 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 18, 2009 DATE SAMPLED NOV 05, 2009

SUPPLIER	BC MoT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	D. MEMBREVE
SPECIFICATION	MoT SELECT GRANULAR SUB-BASE	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, GRAVELLY SAND		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm		100 - 100
2" 50 mm		
1 1/2" 37.5 mm	100.0	
1" 25 mm	95.2	
3/4" 19 mm	92.5	15 - 100
1/2" 12.5 mm	83.7	
3/8" 9.5 mm	79.3	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	74.2	
No. 8 2.36 mm	71.3	
No. 16 1.18 mm	67.3	
No. 30 600 µm	55.0	0 - 100
No. 50 300 µm	25.7	0 - 15
No. 100 150 µm	10.2	
No. 200 75 µm	4.7	0 - 5

COMMENTS
TP09-7, BAG 479. SAMPLE AS RECEIVED.



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SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7
CLIENT BC MOT, GEO & MATERIALS ENG.
C.C.

TO
BC MOT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

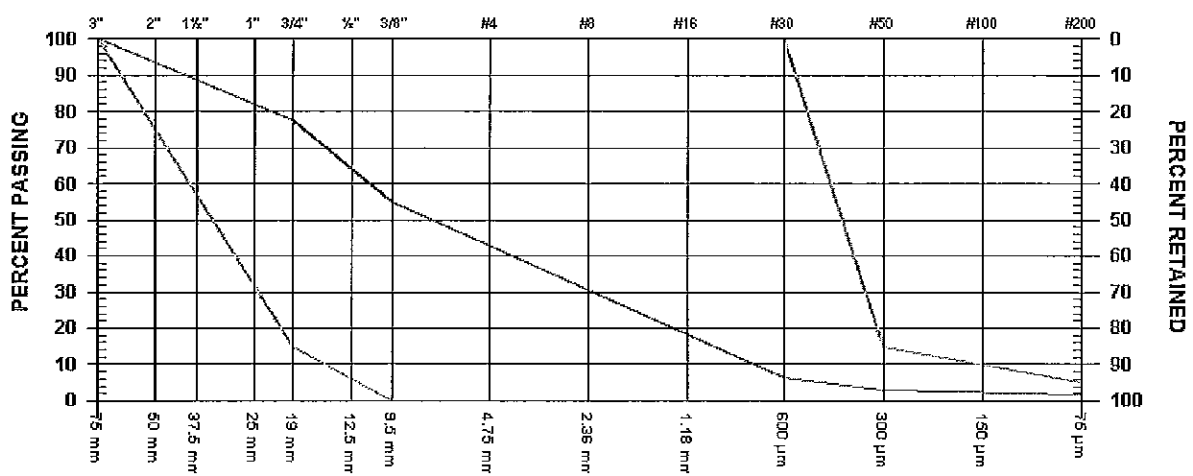
ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 7 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 18, 2009 DATE SAMPLED Nov 05, 2009

SUPPLIER BC MOT
SOURCE OTHELLO PIT, HOPE
SPECIFICATION MOT SELECT GRANULAR SUB-BASE
MATERIAL TYPE TEST PIT, SAND & GRAVEL

SAMPLED BY CLIENT
TESTED BY D. MEMBREVE
TEST METHOD WASHED



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	95.1	
1 1/2" 37.5 mm	91.0	
1" 25 mm	80.9	
3/4" 19 mm	77.3	15 - 100
1/2" 12.5 mm	65.3	
3/8" 9.5 mm	55.1	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	35.5	
No. 8 2.36 mm	21.8	
No. 16 1.18 mm	12.7	
No. 30 600 µm	6.4	0 - 100
No. 50 300 µm	2.9	0 - 15
No. 100 150 µm	2.1	
No. 200 75 µm	1.7	0 - 5

COMMENTS
TP09-8, BAG 478. SAMPLE AS RECEIVED.



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SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7

CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

TO
BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

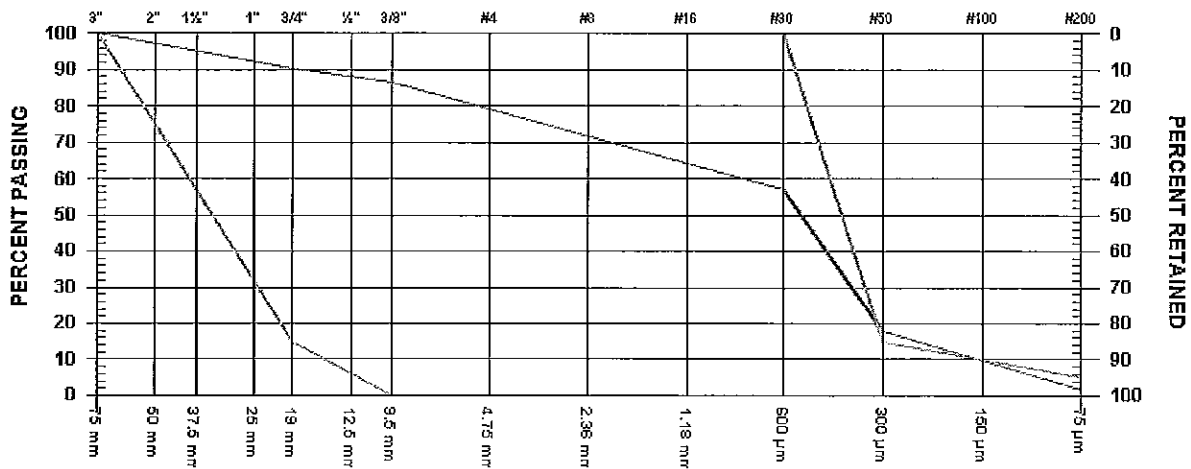
ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 8 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 18, 2009 DATE SAMPLED Nov 05, 2009

SUPPLIER BC MoT
SOURCE OTHELLO PIT, HOPE
SPECIFICATION MoT SELECT GRANULAR SUB-BASE
MATERIAL TYPE TEST PIT, GRAVELLY SAND

SAMPLED BY CLIENT
TESTED BY D. MEMBREVE
TEST METHOD WASHED



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	97.4	
1 1/2" 37.5 mm	95.5	
1" 25 mm	91.6	
3/4" 19 mm	90.4	15 - 100
1/2" 12.5 mm	88.0	
3/8" 9.5 mm	86.5	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	83.4	
No. 8 2.36 mm	80.9	
No. 16 1.18 mm	76.0	
No. 30 600 µm	57.2	0 - 100
No. 50 300 µm	17.8	0 - 15
No. 100 150 µm	3.7	
No. 200 75 µm	1.5	0 - 5

COMMENTS

TP09-9, BAG 476. SAMPLE AS RECEIVED.



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SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

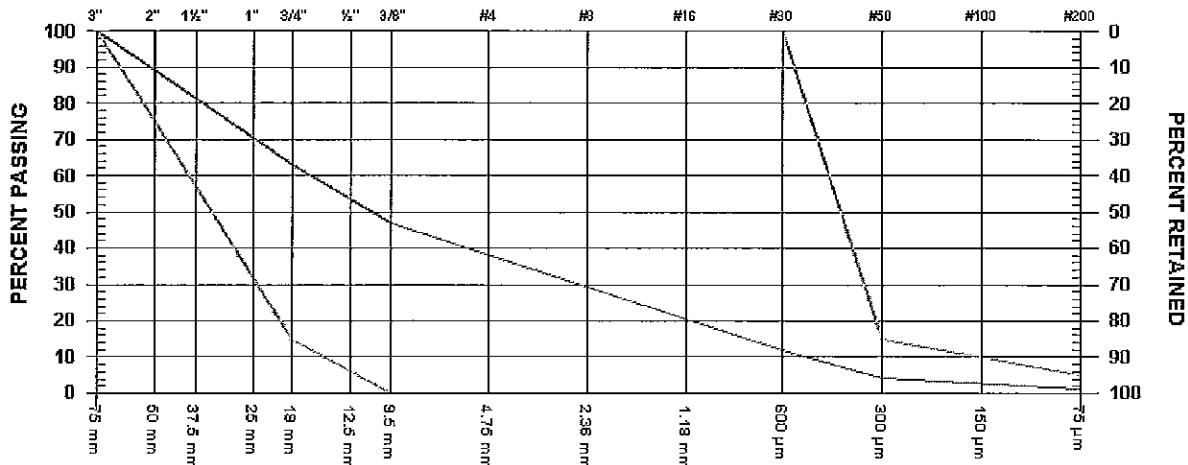
TO
BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 9 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 18, 2009 DATE SAMPLED Nov 05, 2009

SUPPLIER	BC MoT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	D. MEMBREVE
SPECIFICATION	MoT SELECT GRANULAR SUB-BASE	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, GRAVELLY SAND		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	90.7	
1 1/2" 37.5 mm	80.1	
1" 25 mm	70.1	
3/4" 19 mm	62.9	15 - 100
1/2" 12.5 mm	52.6	
3/8" 9.5 mm	46.9	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	34.4	
No. 8 2.36 mm	26.5	
No. 16 1.18 mm	19.7	
No. 30 600 µm	11.7	0 - 100
No. 50 300 µm	4.1	0 - 15
No. 100 150 µm	2.0	
No. 200 75 µm	1.3	0 - 5

COMMENTS
TP09-10, BAG 475. SAMPLE AS RECEIVED.



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SIEVE ANALYSIS REPORT
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PROJECT NO. 091-02050-7
CLIENT BC MOT, GEO & MATERIALS ENG.
C.C.

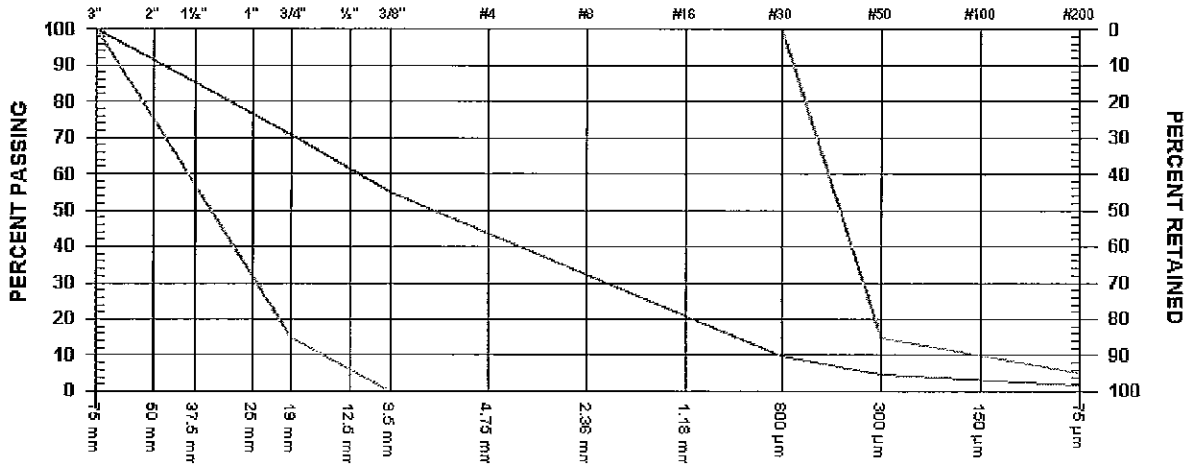
TO
BC MOT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 13 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 18, 2009 DATE SAMPLED Nov 12, 2009

SUPPLIER	BC MOT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	E. RELAO
SPECIFICATION	MOT SELECT GRANULAR SUB-BASE	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, GRAVELLY SAND		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	94.2	
1 1/2" 37.5 mm	86.1	
1" 25 mm	75.7	
3/4" 19 mm	70.7	15 - 100
1/2" 12.5 mm	62.4	
3/8" 9.5 mm	55.1	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	41.2	
No. 8 2.36 mm	30.7	
No. 16 1.18 mm	21.5	
No. 30 600 µm	9.9	0 - 100
No. 50 300 µm	4.5	0 - 15
No. 100 150 µm	2.6	
No. 200 75 µm	1.8	0 - 5

COMMENTS
TP09-14, BAG 458. SAMPLE AS RECEIVED.

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of test results is provided only on written request.
Report System Software Registered to: Trow Associates Inc., Burnaby



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CLIENT BC MoT, GEO & MATERIALS ENG.
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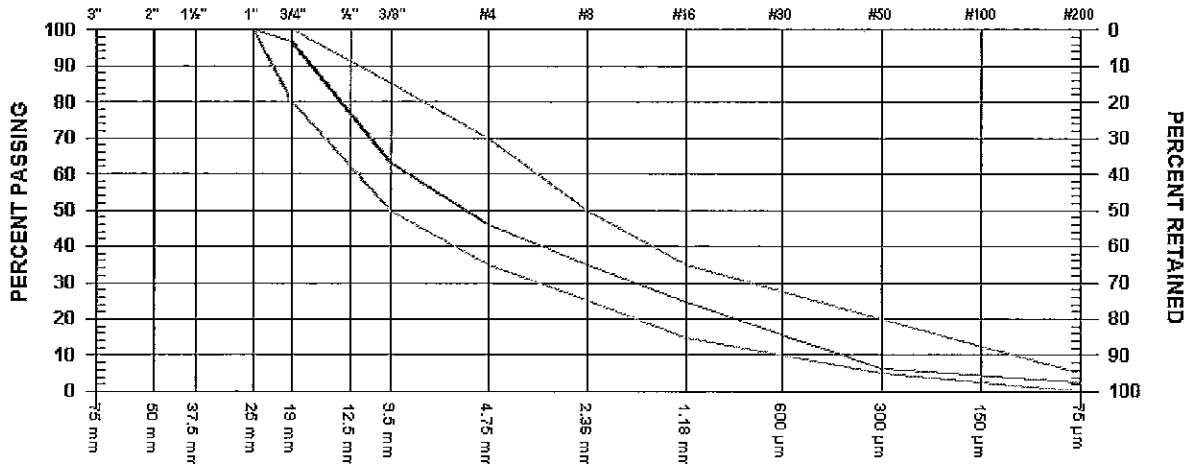
TO
BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
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ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 14 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 30, 2009 DATE SAMPLED NOV 12, 2009

SUPPLIER	BC MoT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	D. MEMBREVE
SPECIFICATION	MoT 25mm WGB (2006)	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, GRAVELLY SAND (CRUSHED)		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm		
2" 50 mm		
1 1/2" 37.5 mm		
1" 25 mm	100.0	100 - 100
3/4" 19 mm	96.5	80 - 100
1/2" 12.5 mm	73.5	
3/8" 9.5 mm	62.8	50 - 85

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	46.1	35 - 70
No. 8 2.36 mm	34.9	25 - 50
No. 16 1.18 mm	24.9	15 - 35
No. 30 600 μm	12.9	
No. 50 300 μm	6.5	5 - 20
No. 100 150 μm	3.9	
No. 200 75 μm	2.7	0 - 5

COMMENTS

TP09-14, BAG 458. SAMPLE LAB CRUSHED. FRACTURE A = 56%, FRACTURE B = 44%.
SE = 77.



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SIEVE ANALYSIS REPORT
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PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

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COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

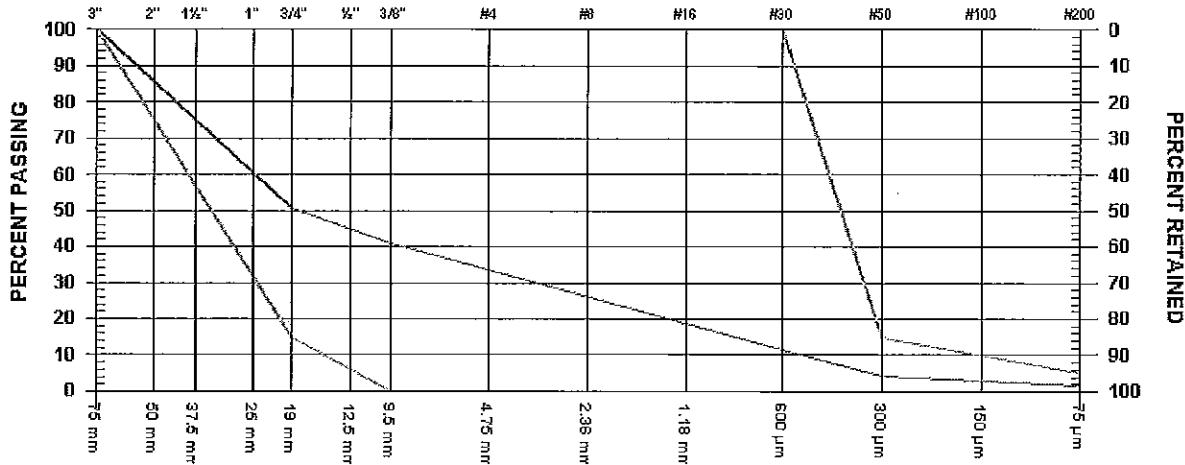
ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 15 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 18, 2009 DATE SAMPLED Nov 12, 2009

SUPPLIER BC MoT
SOURCE OTHELLO PIT, HOPE
SPECIFICATION MoT SELECT GRANULAR SUB-BASE
MATERIAL TYPE TEST PIT, SAND & GRAVEL

SAMPLED BY CLIENT
TESTED BY E. RELAO
TEST METHOD WASHED



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	86.5	
1 1/2" 37.5 mm	69.0	
1" 25 mm	55.5	
3/4" 19 mm	50.6	15 - 100
1/2" 12.5 mm	44.0	
3/8" 9.5 mm	40.8	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	33.8	
No. 8 2.36 mm	27.6	
No. 16 1.18 mm	20.7	
No. 30 600 µm	11.4	0 - 100
No. 50 300 µm	4.2	0 - 15
No. 100 150 µm	2.6	
No. 200 75 µm	1.9	0 - 5

COMMENTS

TP09-15, BAG 457. SAMPLE AS RECEIVED. MICRO-DEVAL; C AGG = 8.5% LOSS, F AGG = 15.0% LOSS.



PROJECT NO. 091-02050-7

CLIENT BC MoT, GEO & MATERIALS ENG.
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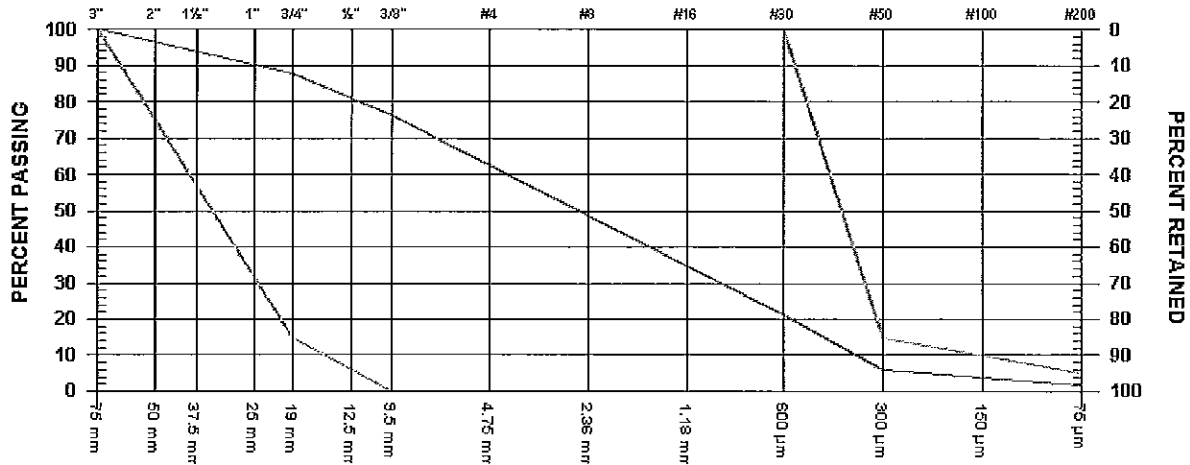
ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 16 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 18, 2009 DATE SAMPLED NOV 12, 2009

SUPPLIER BC MoT
SOURCE OTHELLO PIT, HOPE
SPECIFICATION MoT SELECT GRANULAR SUB-BASE
MATERIAL TYPE TEST PIT, GRAVELLY SAND

SAMPLED BY CLIENT
TESTED BY E. RELAO
TEST METHOD WASHED



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	98.8	
1 1/2" 37.5 mm	96.0	
1" 25 mm	90.8	
3/4" 19 mm	87.5	15 - 100
1/2" 12.5 mm	80.5	
3/8" 9.5 mm	76.4	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	69.1	
No. 8 2.36 mm	62.9	
No. 16 1.18 mm	52.2	
No. 30 600 µm	21.4	0 - 100
No. 50 300 µm	6.0	0 - 15
No. 100 150 µm	2.6	
No. 200 75 µm	1.8	0 - 5

COMMENTS
TP09-16, BAG 456. SAMPLE AS RECEIVED.



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PROJECT NO. 091-02050-7
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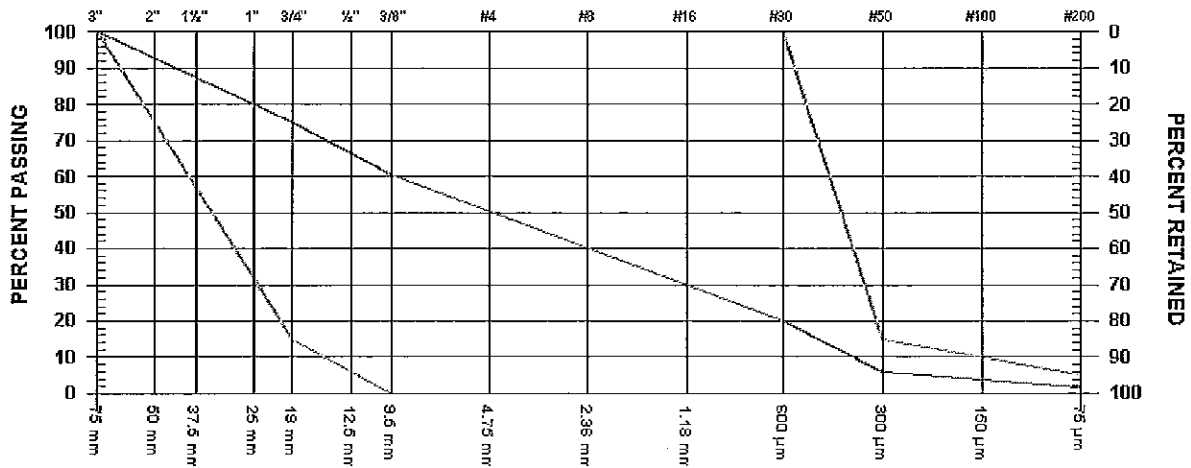
TO
BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
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BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 18 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 18, 2009 DATE SAMPLED Nov 12, 2009

SUPPLIER	BC MoT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	D. MEMBREVE
SPECIFICATION	MoT SELECT GRANULAR SUB-BASE	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, GRAVELLY SAND		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3"	75 mm	100 - 100
2"	50 mm	90.9
1 1/2"	37.5 mm	87.0
1"	25 mm	78.6
3/4"	19 mm	74.9
1/2"	12.5 mm	66.6
3/8"	9.5 mm	60.5

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4	4.75 mm	51.0
No. 8	2.36 mm	43.4
No. 16	1.18 mm	34.6
No. 30	600 µm	20.2
No. 50	300 µm	6.0
No. 100	150 µm	2.4
No. 200	75 µm	1.6

COMMENTS
TP09-17, BAG 455. SAMPLE AS RECEIVED.



PROJECT NO. 091-02050-7

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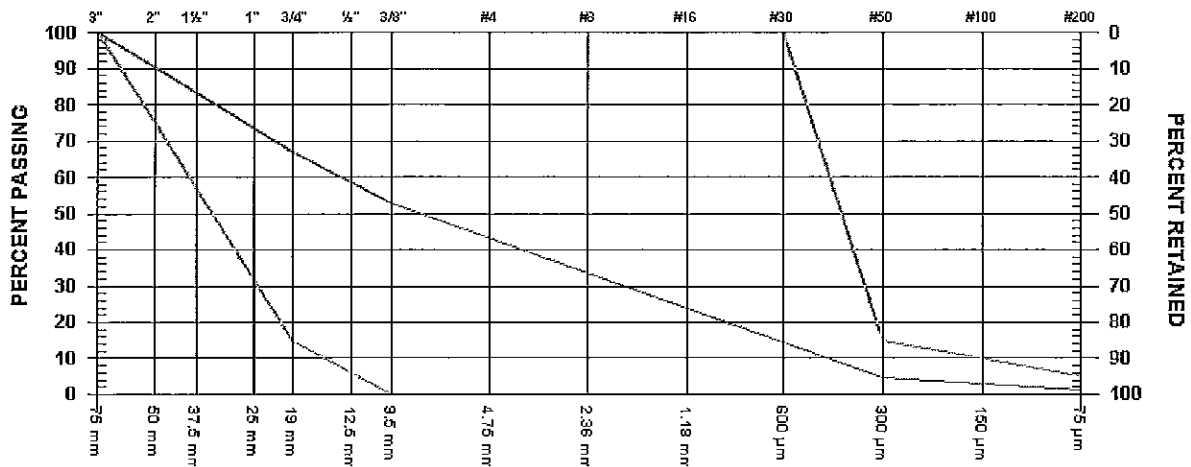
TO
BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
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ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 20 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 18, 2009 DATE SAMPLED Nov 12, 2009

SUPPLIER	BC MoT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	D. MEMBREVE
SPECIFICATION	MoT SELECT GRANULAR SUB-BASE	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, GRAVELLY SAND		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	93.5	
1 1/2" 37.5 mm	83.9	
1" 25 mm	74.1	
3/4" 19 mm	66.8	15 - 100
1/2" 12.5 mm	57.2	
3/8" 9.5 mm	52.8	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	42.9	
No. 8 2.36 mm	34.1	
No. 16 1.18 mm	26.0	
No. 30 600 µm	14.4	0 - 100
No. 50 300 µm	4.6	0 - 15
No. 100 150 µm	2.1	
No. 200 75 µm	1.4	0 - 5

COMMENTS
TP09-18, BAG 477. SAMPLE AS RECEIVED.



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SIEVE ANALYSIS REPORT
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PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
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TO
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COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

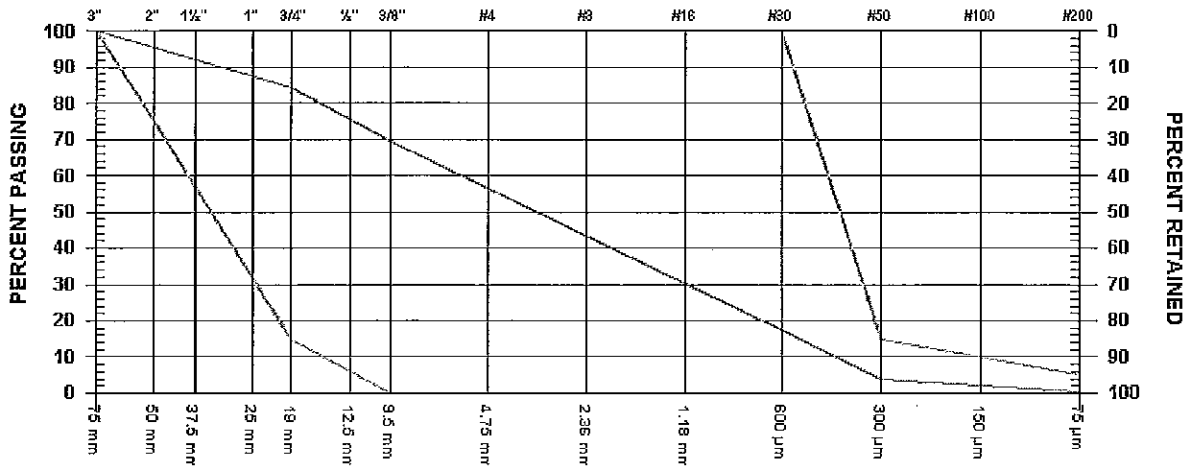
ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 21 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 18, 2009 DATE SAMPLED NOV 12, 2009

SUPPLIER BC MoT
SOURCE OTHELLO PIT, HOPE
SPECIFICATION MoT SELECT GRANULAR SUB-BASE
MATERIAL TYPE TEST PIT, GRAVELLY SAND

SAMPLED BY CLIENT
TESTED BY E. RELAO
TEST METHOD WASHED



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3"	75 mm	100.0
2"	50 mm	97.2
1 1/2"	37.5 mm	94.5
1"	25 mm	88.3
3/4"	19 mm	84.3
1/2"	12.5 mm	75.3
3/8"	9.5 mm	69.2
		100 - 100
		15 - 100
		0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4	4.75 mm	56.3
No. 8	2.36 mm	46.1
No. 16	1.18 mm	34.4
No. 30	600 µm	17.3
No. 50	300 µm	3.9
No. 100	150 µm	1.1
No. 200	75 µm	0.6
		0 - 100
		0 - 15
		0 - 5

COMMENTS
TP09-20, BAG 448. SAMPLE AS RECEIVED.



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PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

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COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

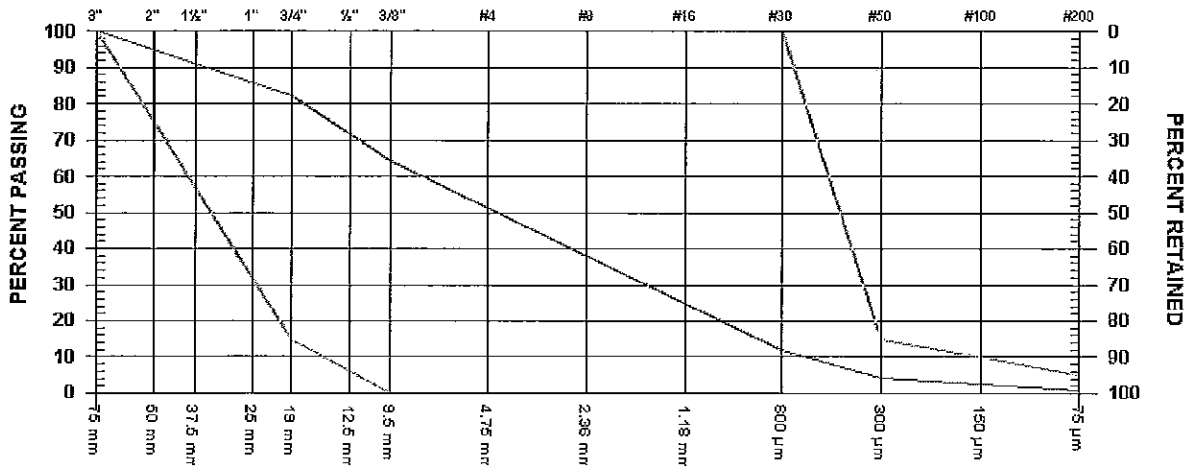
ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 23 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 18, 2009 DATE SAMPLED NOV 12, 2009

SUPPLIER BC MoT
SOURCE OTHELLO PIT, HOPE
SPECIFICATION MoT SELECT GRANULAR SUB-BASE
MATERIAL TYPE TEST PIT, GRAVELLY SAND

SAMPLED BY CLIENT
TESTED BY D. MEMBREVE
TEST METHOD WASHED



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3"	100.0	100 - 100
2"	97.3	
1 1/2"	93.7	
1"	87.1	
3/4"	82.0	15 - 100
1/2"	72.5	
3/8"	64.5	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4	46.9	
No. 8	32.3	
No. 16	21.7	
No. 30	12.1	0 - 100
No. 50	4.2	0 - 15
No. 100	1.7	
No. 200	1.0	0 - 5

COMMENTS
TP09-21, BAG 473. SAMPLE AS RECEIVED.



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PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
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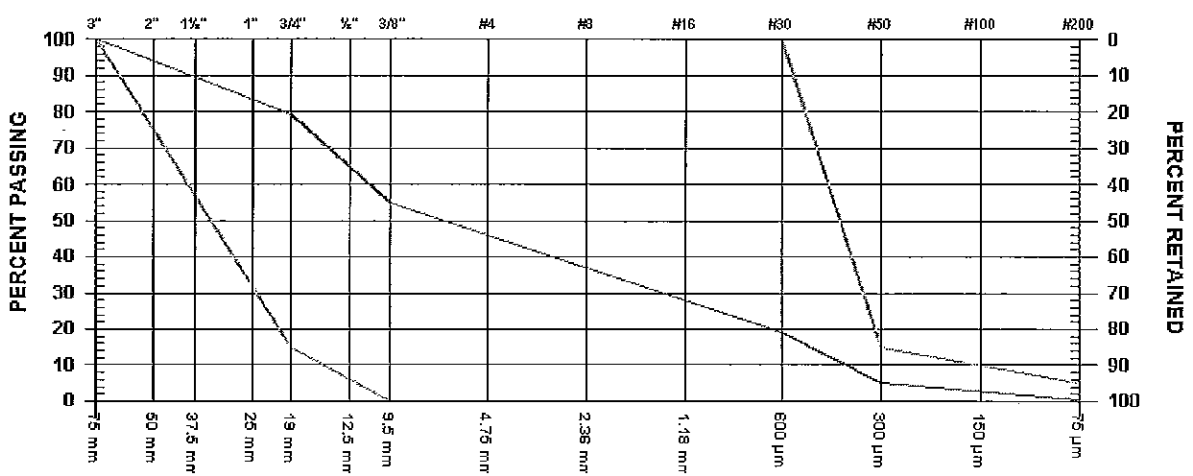
TO
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COAST
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V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 24 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 18, 2009 DATE SAMPLED NOV 12, 2009

SUPPLIER	BC MoT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	E. RELAO
SPECIFICATION	MoT SELECT GRANULAR SUB-BASE	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, GRAVELLY SAND		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	94.8	
1 1/2" 37.5 mm	90.8	
1" 25 mm	83.6	
3/4" 19 mm	79.0	15 - 100
1/2" 12.5 mm	66.5	
3/8" 9.5 mm	54.8	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	43.3	
No. 8 2.36 mm	36.3	
No. 16 1.18 mm	29.7	
No. 30 600 µm	19.0	0 - 100
No. 50 300 µm	5.1	0 - 15
No. 100 150 µm	1.1	
No. 200 75 µm	0.5	0 - 5

COMMENTS
TP09-22, BAG 472. SAMPLE AS RECEIVED.



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SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7

CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

TO
BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

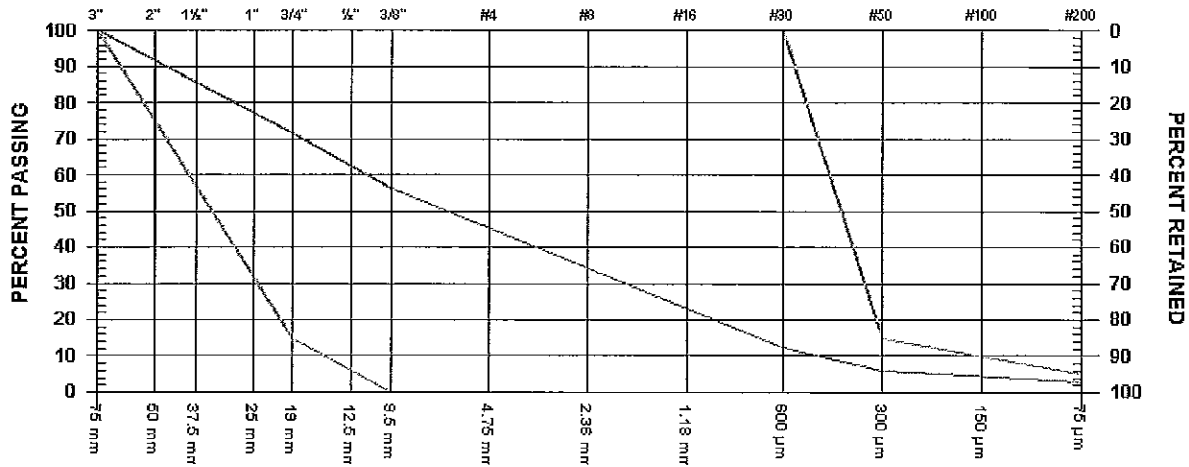
ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 26 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 18, 2009 DATE SAMPLED Nov 12, 2009

SUPPLIER BC MoT
SOURCE OTHELLO PIT, HOPE
SPECIFICATION MoT SELECT GRANULAR SUB-BASE
MATERIAL TYPE TEST PIT, GRAVELLY SAND

SAMPLED BY CLIENT
TESTED BY E. RELAO
TEST METHOD WASHED



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	94.3	
1 1/2" 37.5 mm	88.6	
1" 25 mm	77.4	
3/4" 19 mm	71.4	15 - 100
1/2" 12.5 mm	63.7	
3/8" 9.5 mm	56.2	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	41.6	
No. 8 2.36 mm	30.1	
No. 16 1.18 mm	21.3	
No. 30 600 µm	12.4	0 - 100
No. 50 300 µm	6.1	0 - 15
No. 100 150 µm	4.0	
No. 200 75 µm	3.1	0 - 5

COMMENTS
TP09-24, BAG 471. SAMPLE AS RECEIVED.



PROJECT NO. 091-02050-7

CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

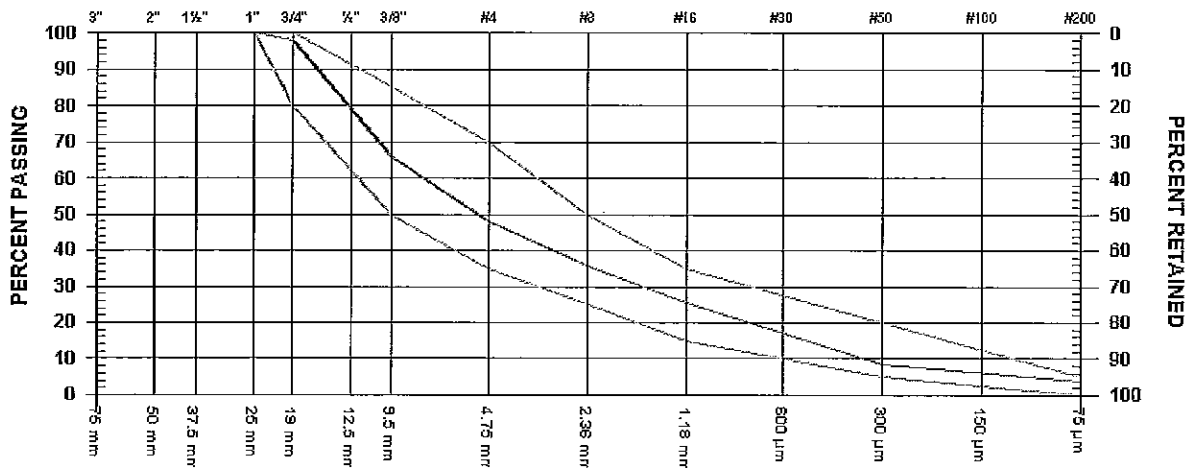
TO
BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 27 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 30, 2009 DATE SAMPLED Nov 12, 2009

SUPPLIER	BC MoT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	D. MEMBREVE
SPECIFICATION	MoT 25mm WGB (2006)	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, GRAVELLY SAND (CRUSHED)		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3"	75 mm	
2"	50 mm	
1 1/2"	37.5 mm	
1"	25 mm	100 - 100
3/4"	19 mm	80 - 100
1/2"	12.5 mm	77.3
3/8"	9.5 mm	65.8
		50 - 85

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4	4.75 mm	48.0
No. 8	2.36 mm	35.7
No. 16	1.18 mm	25.7
No. 30	600 µm	16.1
No. 50	300 µm	8.4
No. 100	150 µm	5.4
No. 200	75 µm	4.0
		0 - 5

COMMENTS

TP09-24, BAG 471. SAMPLE LAB CRUSHED. FRACTURE A = 83%, FRACTURE B = 63%.
SE = 79.



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SIEVE ANALYSIS REPORT
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PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

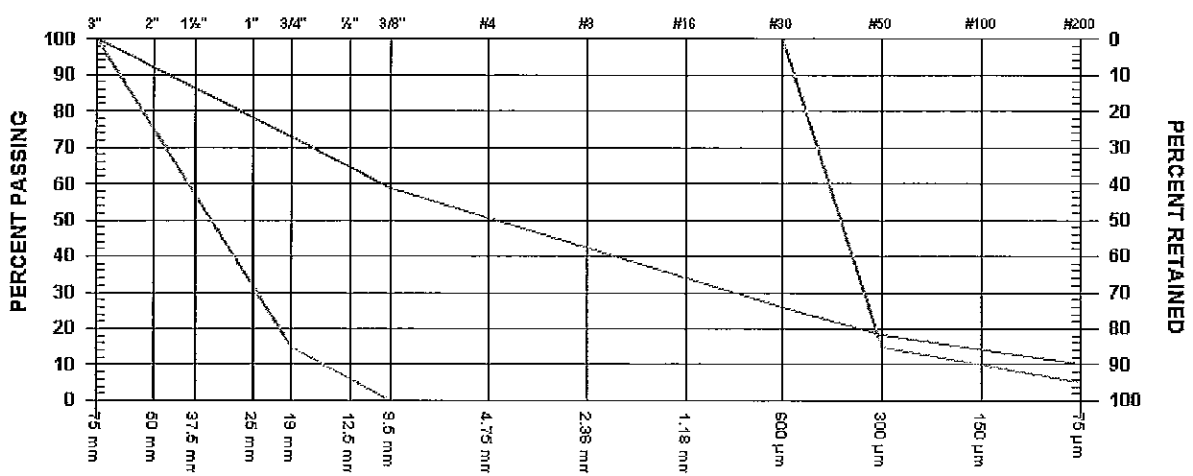
TO
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COAST
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BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 28 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 18, 2009 DATE SAMPLED NOV 12, 2009

SUPPLIER	BC MoT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	D. MEMBREVE
SPECIFICATION	MoT SELECT GRANULAR SUB-BASE	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, GRAVELLY SAND		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	96.0	
1 1/2" 37.5 mm	89.9	
1" 25 mm	78.9	
3/4" 19 mm	72.8	15 - 100
1/2" 12.5 mm	63.9	
3/8" 9.5 mm	58.7	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	49.3	
No. 8 2.36 mm	41.5	
No. 16 1.18 mm	33.9	
No. 30 600 µm	25.9	0 - 100
No. 50 300 µm	18.1	0 - 15
No. 100 150 µm	13.4	
No. 200 75 µm	10.3	0 - 5

COMMENTS
TP09-26, BAG 449.



Trow Associates Inc.
7025 Greenwood Street
Burnaby, BC V5A 1X7
604-874-1245

Kamloops Branch
250-372-5321

SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

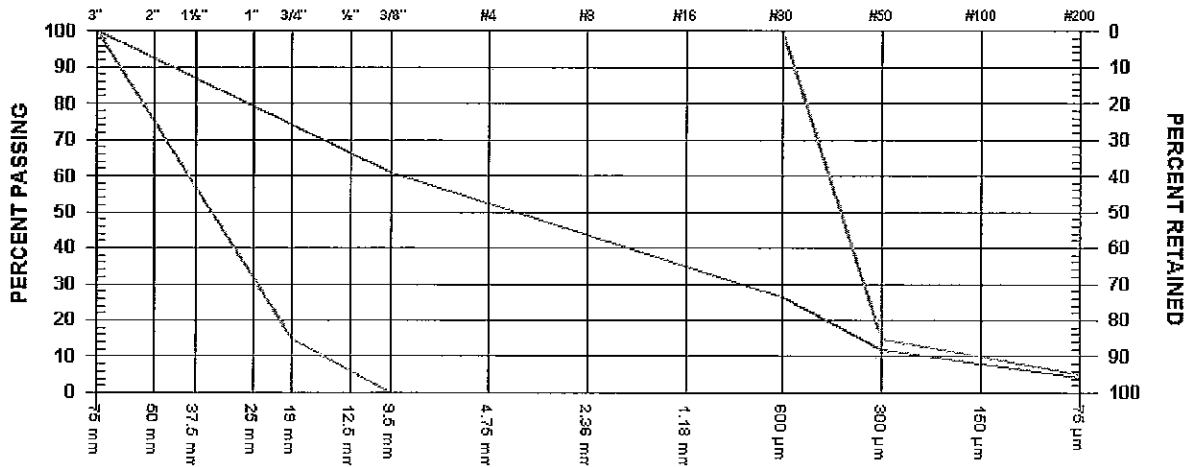
TO
BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 31 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 18, 2009 DATE SAMPLED NOV 12, 2009

SUPPLIER	BC MoT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	D. MEMBREVE
SPECIFICATION	MoT SELECT GRANULAR SUB-BASE	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT. GRAVELLY SAND		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	94.1	
1 1/2" 37.5 mm	87.6	
1" 25 mm	79.8	
3/4" 19 mm	74.0	15 - 100
1/2" 12.5 mm	65.8	
3/8" 9.5 mm	60.8	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	51.5	
No. 8 2.36 mm	44.8	
No. 16 1.18 mm	37.7	
No. 30 600 µm	26.4	0 - 100
No. 50 300 µm	12.1	0 - 15
No. 100 150 µm	6.2	
No. 200 75 µm	4.3	0 - 5

COMMENTS
TP09-28, BAG 453. SAMPLE AS RECEIVED.

PER.



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SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

TO
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COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

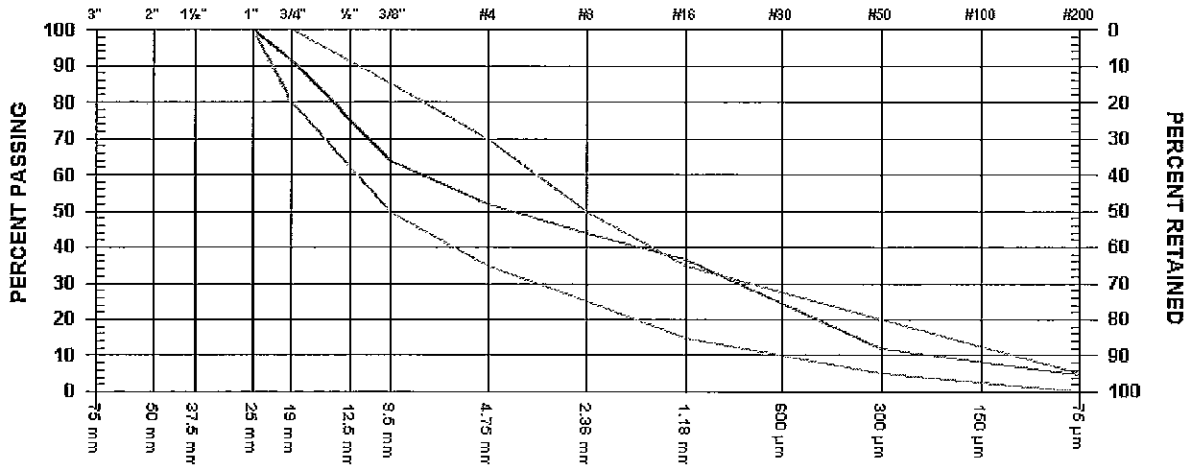
ATTN: MR. STEVE LIKNESS

PROJECT OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 32 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 30, 2009 DATE SAMPLED Nov 12, 2009

SUPPLIER BC MoT
SOURCE OTHELLO PIT, HOPE
SPECIFICATION MoT 25mm WGB (2006)
MATERIAL TYPE TEST PIT, GRAVELLY SAND (CRUSHED)

SAMPLED BY CLIENT
TESTED BY D. MEMBREVE
TEST METHOD WASHED



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm		
2" 50 mm		
1 1/2" 37.5 mm		
1" 25 mm	100.0	100 - 100
3/4" 19 mm	91.4	80 - 100
1/2" 12.5 mm	72.0	
3/8" 9.5 mm	63.9	50 - 85

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	51.9	35 - 70
No. 8 2.36 mm	43.8	25 - 50
No. 16 1.18 mm	36.4	15 - 35
No. 30 600 µm	25.1	
No. 50 300 µm	12.1	5 - 20
No. 100 150 µm	6.6	
No. 200 75 µm	4.5	0 - 5

COMMENTS

TP09-28, BAG 453. SAMPLE LAB CRUSHED. FRACTURE A = 85%, FRACTURE B = 62%.



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SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7

CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

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BC MoT, GEO & MATERIALS ENG. SOUTH
COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

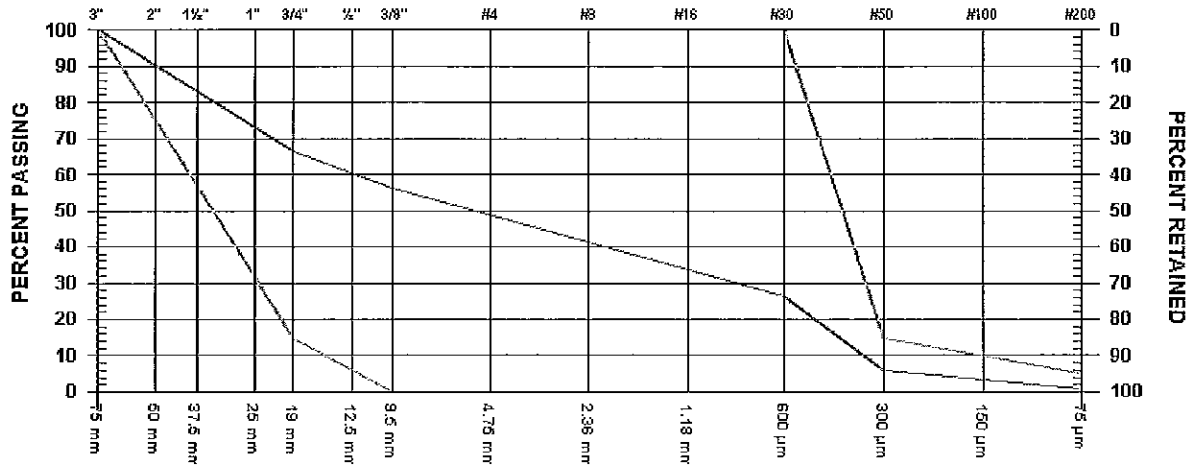
ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 34 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 18, 2009 DATE SAMPLED Nov 12, 2009

SUPPLIER BC MoT
SOURCE OTHELLO PIT, HOPE
SPECIFICATION MoT SELECT GRANULAR SUB-BASE
MATERIAL TYPE TEST PIT, GRAVELLY SAND

SAMPLED BY CLIENT
TESTED BY D. MEMBREVE
TEST METHOD WASHED



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	89.2	
1 1/2" 37.5 mm	80.1	
1" 25 mm	70.9	
3/4" 19 mm	66.6	15 - 100
1/2" 12.5 mm	59.9	
3/8" 9.5 mm	56.4	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	51.4	
No. 8 2.36 mm	47.8	
No. 16 1.18 mm	42.6	
No. 30 600 µm	26.6	0 - 100
No. 50 300 µm	6.1	0 - 15
No. 100 150 µm	1.5	
No. 200 75 µm	0.8	0 - 5

COMMENTS

TP09-31, BAG 450. SAMPLE AS RECEIVED. MICRO-DEVAL; C AGG = 9.7% LOSS, F AGG = 8.8% LOSS.



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SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

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COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

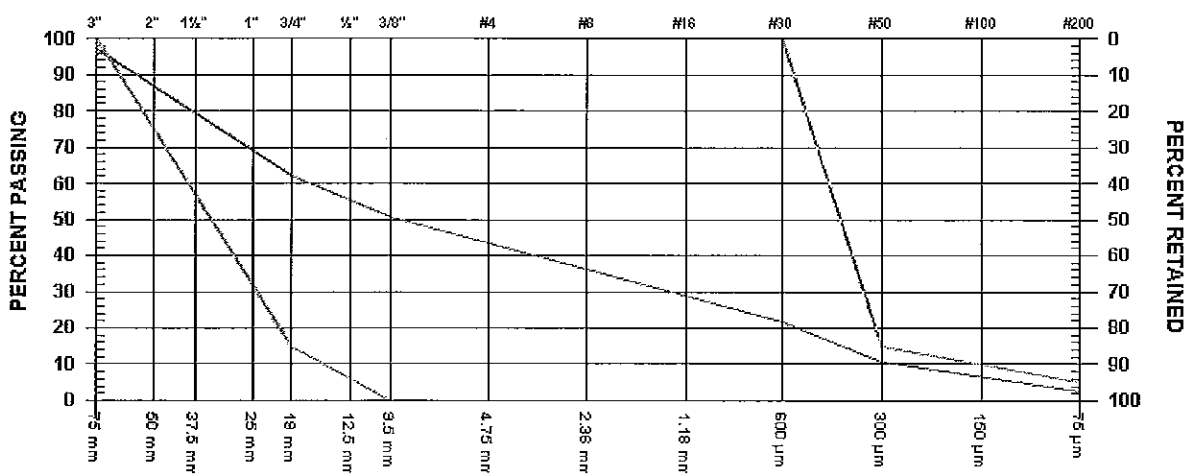
ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 35 DATE RECEIVED Nov 12, 2009 DATE TESTED Nov 18, 2009 DATE SAMPLED Nov 12, 2009

SUPPLIER BC MoT
SOURCE OTHELLO PIT, HOPE
SPECIFICATION MoT SELECT GRANULAR SUB-BASE
MATERIAL TYPE TEST PIT, GRAVELLY SAND

SAMPLED BY CLIENT
TESTED BY D. MEMBREVE
TEST METHOD WASHED



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3"	75 mm	100 - 100
2"	50 mm	100 - 100
1 1/2"	37.5 mm	100 - 100
1"	25 mm	100 - 100
3/4"	19 mm	15 - 100
1/2"	12.5 mm	15 - 100
3/8"	9.5 mm	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	42.8	0 - 100
No. 8 2.36 mm	36.7	0 - 15
No. 16 1.18 mm	30.4	0 - 15
No. 30 600 µm	21.7	0 - 5
No. 50 300 µm	10.7	0 - 5
No. 100 150 µm	4.8	0 - 5
No. 200 75 µm	2.6	0 - 5

COMMENTS
TP09-32, BAG 447. SAMPLE AS RECEIVED. 100% PASSING 100MM SIEVE SCREEN.



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SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7
CLIENT BC MOT, GEO & MATERIALS ENG.
C.C.

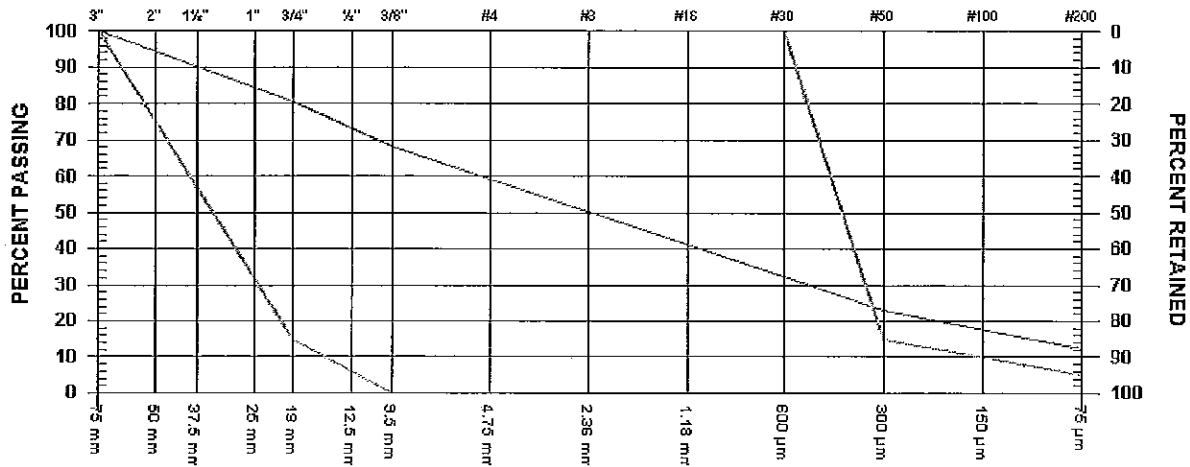
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COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 36 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 18, 2009 DATE SAMPLED NOV 12, 2009

SUPPLIER	BC MOT	SAMPLED BY	CLIENT
SOURCE	OTHELLO PIT, HOPE	TESTED BY	D. MEMBREVE
SPECIFICATION	MOT SELECT GRANULAR SUB-BASE	TEST METHOD	WASHED
MATERIAL TYPE	TEST PIT, GRAVELLY SAND		



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	97.3	
1 1/2" 37.5 mm	93.8	
1" 25 mm	86.1	
3/4" 19 mm	80.3	15 - 100
1/2" 12.5 mm	73.4	
3/8" 9.5 mm	68.3	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	57.2	
No. 8 2.36 mm	48.7	
No. 16 1.18 mm	40.8	
No. 30 600 µm	32.2	0 - 100
No. 50 300 µm	22.9	0 - 15
No. 100 150 µm	16.4	
No. 200 75 µm	12.4	0 - 5

COMMENTS
TP09-33, BAG 446. SAMPLE AS RECEIVED.



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Kamloops Branch
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SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

PROJECT NO. 091-02050-7
CLIENT BC MoT, GEO & MATERIALS ENG.
C.C.

TO
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COAST
7818 6TH STREET
BURNABY, BC
V3N 4N8

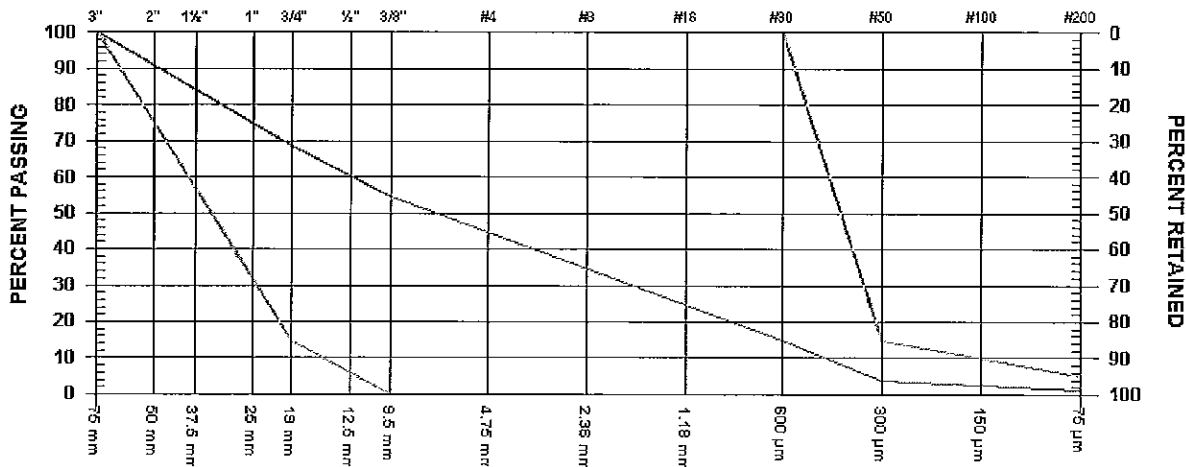
ATTN: MR. STEVE LIKNESS

PROJECT
OTHELLO PIT
CONTRACTOR HOPE, BC

SIEVE TEST NO. 38 DATE RECEIVED NOV 12, 2009 DATE TESTED NOV 18, 2009 DATE SAMPLED NOV 12, 2009

SUPPLIER BC MoT
SOURCE OTHELLO PIT, HOPE
SPECIFICATION MoT SELECT GRANULAR SUB-BASE
MATERIAL TYPE TEST PIT, GRAVELLY SAND

SAMPLED BY CLIENT
TESTED BY D. MEMBREVE
TEST METHOD WASHED



GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3" 75 mm	100.0	100 - 100
2" 50 mm	94.5	
1 1/2" 37.5 mm	85.6	
1" 25 mm	74.4	
3/4" 19 mm	68.4	15 - 100
1/2" 12.5 mm	61.3	
3/8" 9.5 mm	54.6	0 - 100

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm	43.0	
No. 8 2.36 mm	34.8	
No. 16 1.18 mm	26.7	
No. 30 600 µm	14.8	0 - 100
No. 50 300 µm	4.0	0 - 15
No. 100 150 µm	1.7	
No. 200 75 µm	1.1	0 - 5

COMMENTS

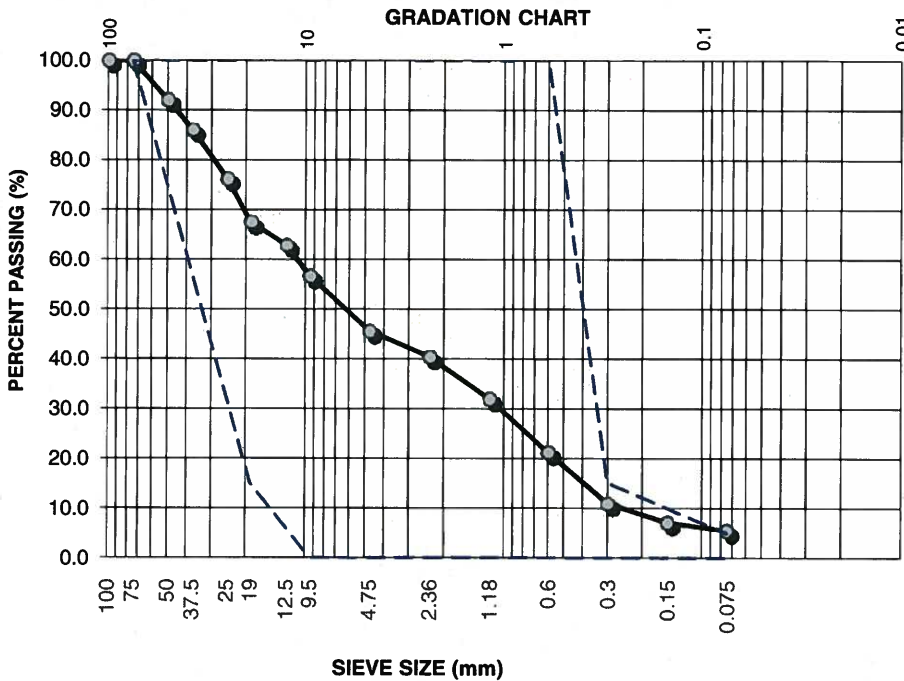
TP09-35, BAG 445. SAMPLE AS RECEIVED. MICRO-DEVAL; C AGG = 8.8% LOSS, F AGG = 11.5% LOSS.

SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.:

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4955

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 2-Apr-14
Sampled By: MOTI
Tested By: William M.

TP/TH No.: TH14-1
Bag No.: 728
Material Type: Pit Run
Sample No.: 1

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	92	-	-
37.5	86	-	-
25	76	-	-
19	68	15	100
12.5	63	-	-
9.5	57	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	46	-	-
2.36	40	-	-
1.18	32	-	-
0.6	21	0	100
0.3	10.9	0	15
0.15	7.1	-	-
0.075	5.5	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

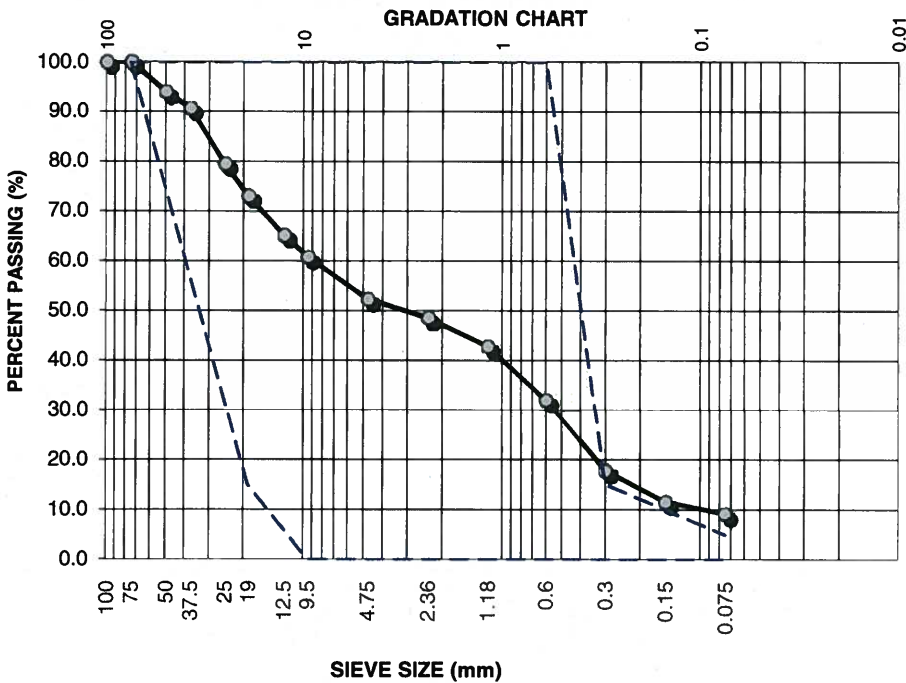


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.:

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4946

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 1-Apr-14
Sampled By: MOTI
Tested By: William M.

TP/TH No.: TH14-1
Bag No.: 719
Material Type: Pit Run
Sample No.: 2

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	94	-	-
37.5	91	-	-
25	80	-	-
19	73	15	100
12.5	65	-	-
9.5	61	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	52	-	-
2.36	49	-	-
1.18	43	-	-
0.6	32	0	100
0.3	17.8	0	15
0.15	11.6	-	-
0.075	9.2	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

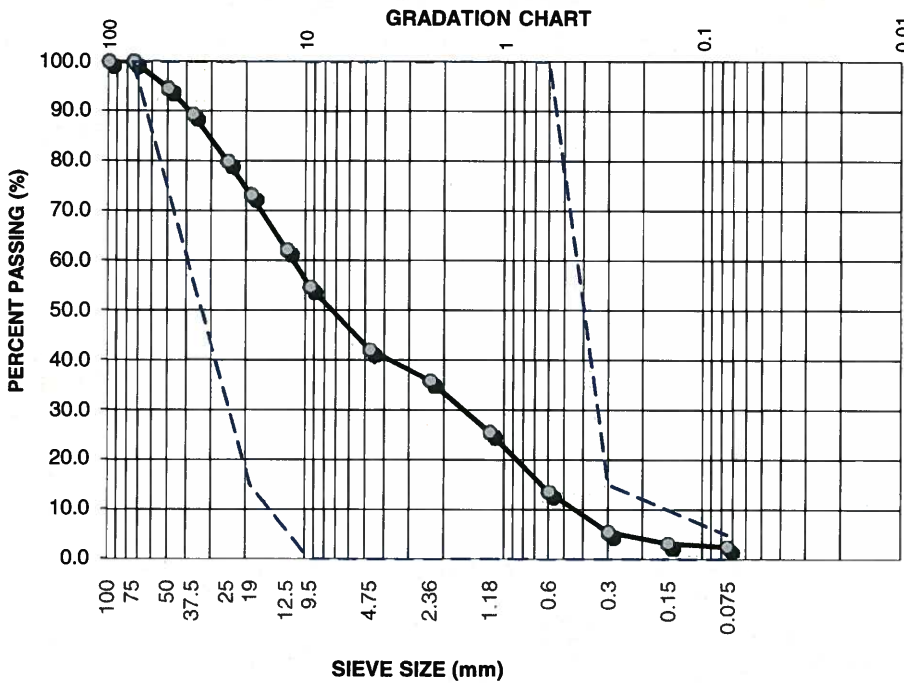


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4963

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 27-Mar-14
Sampled By: MOTI
Tested By: William M.


TP/TH No.: TH14-1
Bag No.: 769
Material Type: Pit Run
Sample No.: 3

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	95	-	-
37.5	89	-	-
25	80	-	-
19	73	15	100
12.5	62	-	-
9.5	55	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	42	-	-
2.36	36	-	-
1.18	26	-	-
0.6	14	0	100
0.3	5.5	0	15
0.15	3.2	-	-
0.075	2.5	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

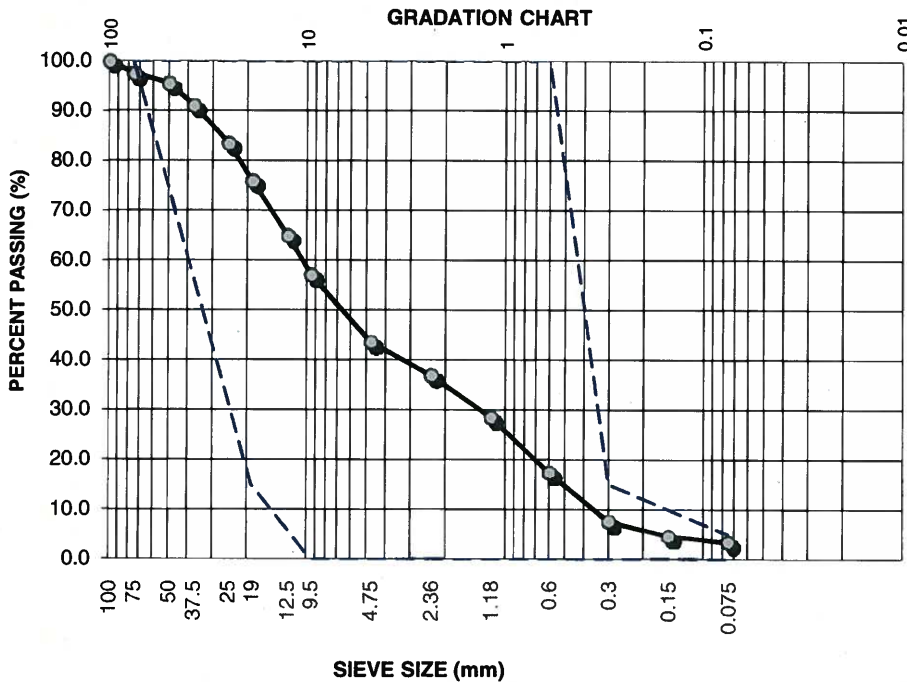


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4954

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 27-Mar-14
Sampled By: MOTI
Tested By: William M.


TP/TH No.: TH14-1
Bag No.: 205
Material Type: Pit Run
Sample No.: 4

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	97	100	100
50	95	-	-
37.5	91	-	-
25	84	-	-
19	76	15	100
12.5	65	-	-
9.5	57	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits		
		Lower	Upper	
4.75	44	-	-	
2.36	37	-	-	
1.18	29	-	-	
0.6	17	0	-	100
0.3	7.6	0	-	15
0.15	4.6	-	-	
0.075	3.5	0	-	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

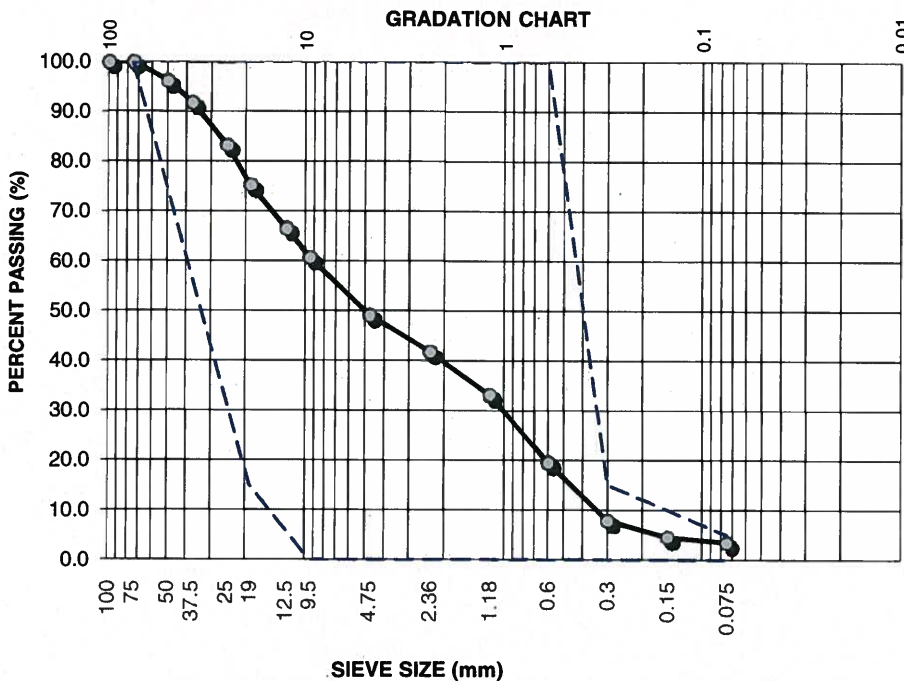


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4947

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 27-Mar-14
Sampled By: MOTI
Tested By: William M.


TP/TH No.: TH14-1
Bag No.: 206
Material Type: Pit Run
Sample No.: 5

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	96	-	-
37.5	92	-	-
25	83	-	-
19	75	15	100
12.5	67	-	-
9.5	61	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	49	-	-
2.36	42	-	-
1.18	33	-	-
0.6	20	0	100
0.3	7.9	0	15
0.15	4.5	-	-
0.075	3.5	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

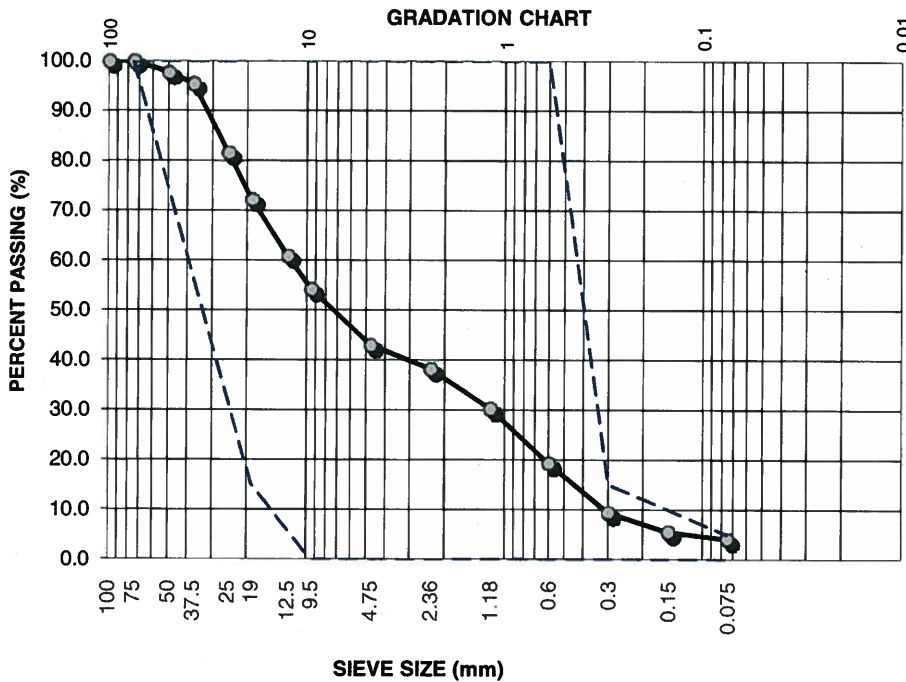


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4956

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 29-Mar-14
Sampled By: MOTI
Tested By: William M.


TP/TH No.: TH14-2
Bag No.: 207
Material Type: Pit Run
Sample No.: 1

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	98	-	-
37.5	95	-	-
25	82	-	-
19	72	15	100
12.5	61	-	-
9.5	54	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	43	-	-
2.36	38	-	-
1.18	30	-	-
0.6	19	0	100
0.3	9.4	0	15
0.15	5.5	-	-
0.075	4.1	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

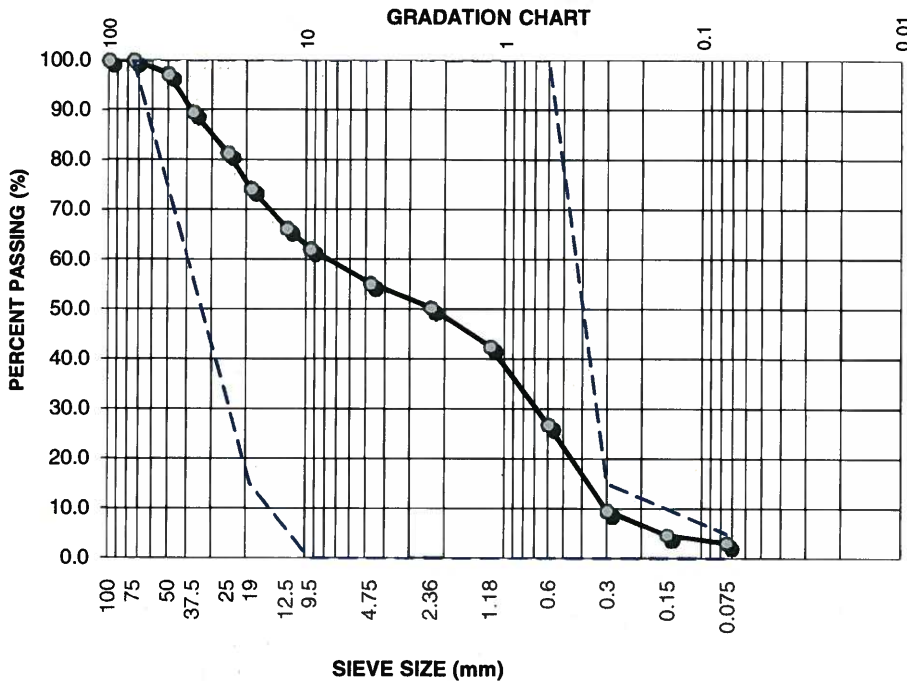


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4950

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 29-Mar-14
Sampled By: MOTI
Tested By: William M.


TP/TH No.: TH14-2
Bag No.: 208
Material Type: Pit Run
Sample No.: 2

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	97	-	-
37.5	90	-	-
25	81	-	-
19	74	15	100
12.5	66	-	-
9.5	62	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	55	-	-
2.36	50	-	-
1.18	43	-	-
0.6	27	0	100
0.3	9.6	0	15
0.15	4.7	-	-
0.075	3.1	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

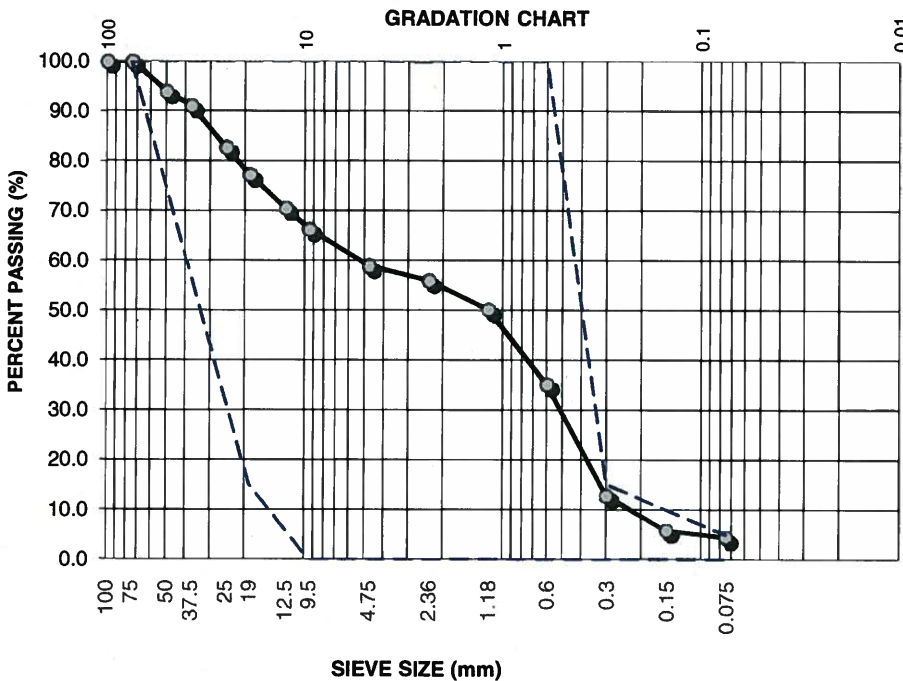


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4949

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 26-Mar-14
Sampled By: MOTI
Tested By: William M.

TP/TH No.: TH14-2
Bag No.: 209
Material Type: Pit Run
Sample No.: 3

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	94	-	-
37.5	91	-	-
25	83	-	-
19	77	15	100
12.5	71	-	-
9.5	66	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	59	-	-
2.36	56	-	-
1.18	50	-	-
0.6	35	0	100
0.3	13	0	15
0.15	5.8	-	-
0.075	4.4	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By:
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

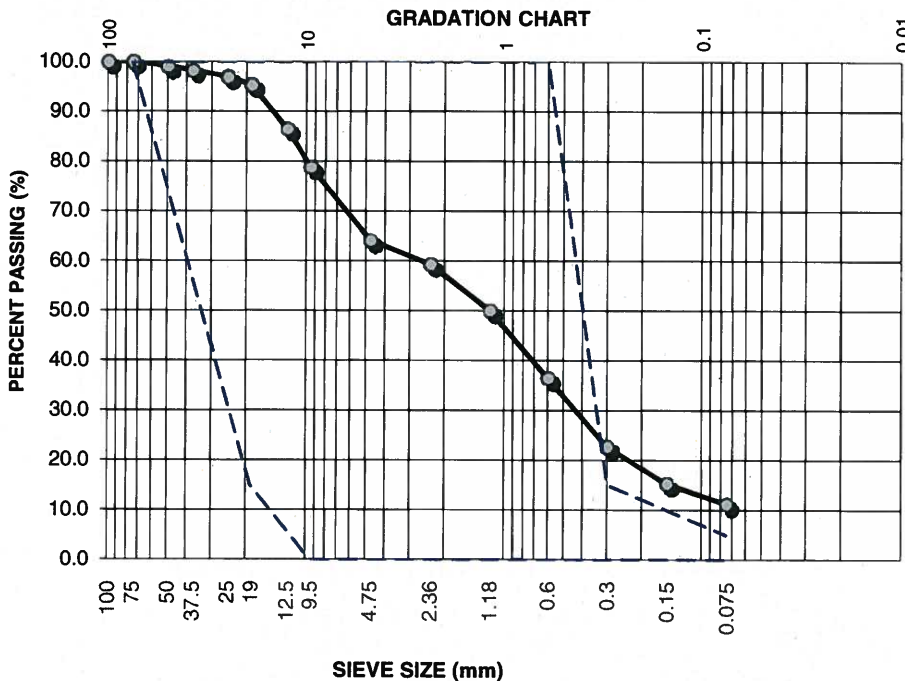


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4957

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 7-Apr-14
Sampled By: MOTI
Tested By: William M.


TP/TH No.: TH14-3
Bag No.: 210
Material Type: Pit Run
Sample No.: 1

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	99	-	-
37.5	98	-	-
25	97	-	-
19	95	15	100
12.5	87	-	-
9.5	79	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	64	-	-
2.36	59	-	-
1.18	50	-	-
0.6	37	0	100
0.3	23	0	15
0.15	15	-	-
0.075	11	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

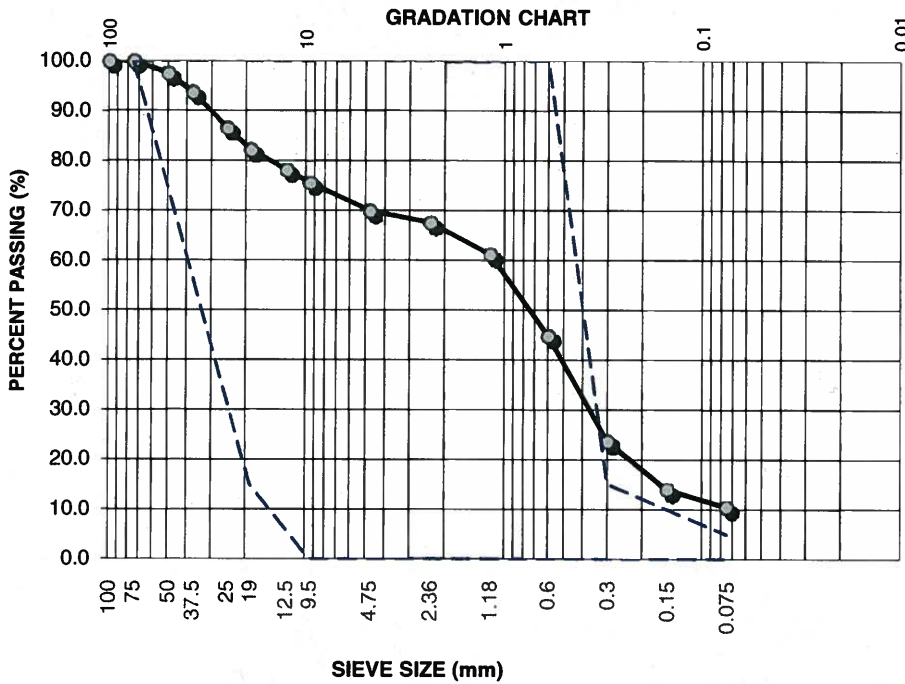


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4948

Date Sampled: Sampled by MOTI
Date Received: 25-Mar-14
Date Tested: 7-Apr-14
Sampled By: MOTI
Tested By: William M.


TP/TH No.: TH14-3
Bag No.: 680
Material Type: Pit Run
Sample No.: 2

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	98	-	-
37.5	94	-	-
25	87	-	-
19	82	15	100
12.5	78	-	-
9.5	76	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	70	-	-
2.36	68	-	-
1.18	61	-	-
0.6	45	0	100
0.3	24	0	15
0.15	14	-	-
0.075	10	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

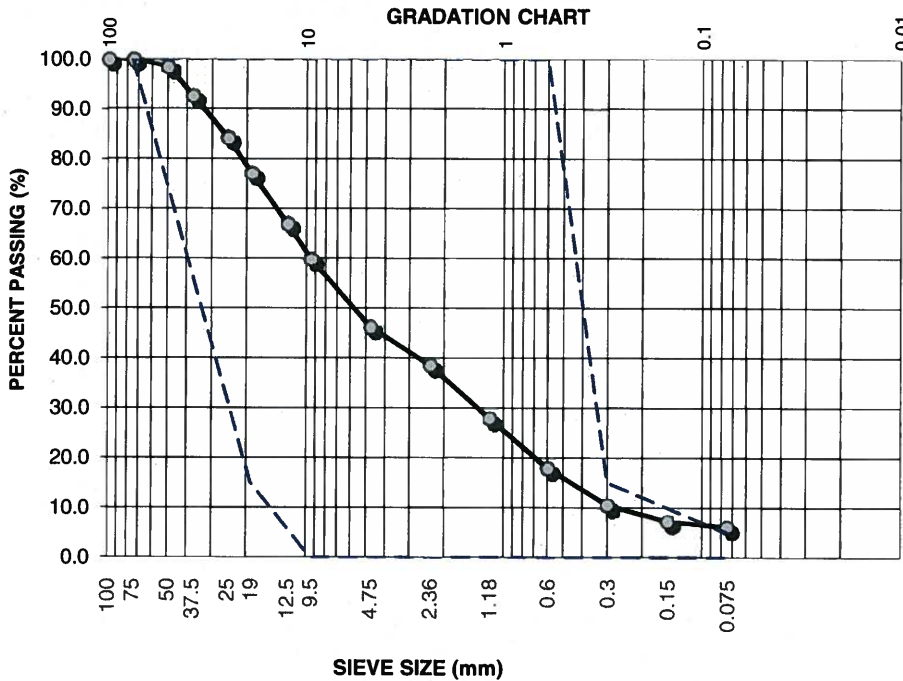


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4951

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 25-Mar-14
Sampled By: MOTI
Tested By: William M.


TP/TH No.: TH14-3
Bag No.: 682
Material Type: Pit Run
Sample No.: 3

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	99	-	-
37.5	93	-	-
25	84	-	-
19	77	15	100
12.5	67	-	-
9.5	60	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	46	-	-
2.36	39	-	-
1.18	28	-	-
0.6	18	0	100
0.3	11	0	15
0.15	7.2	-	-
0.075	6.1	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

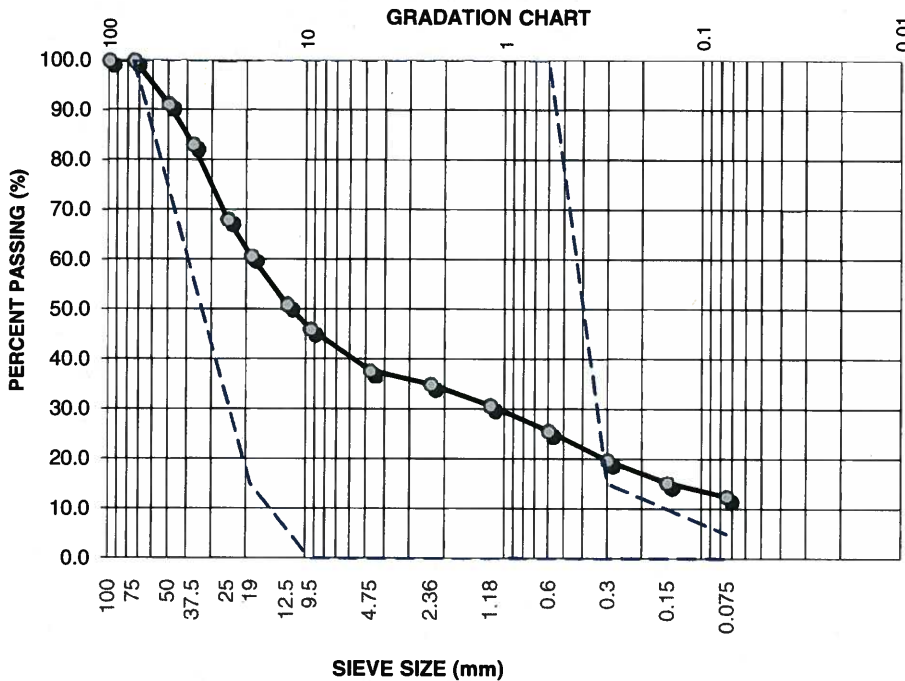


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 14, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4958

Date Sampled: Sampled by MOTI
Date Received: 25-Mar-14
Date Tested: 2-Apr-14
Sampled By: MOTI
Tested By: William M.


TP/TH No.: TH14-3
Bag No.: 683
Material Type: Pit Run
Sample No.: 4

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	91	-	-
37.5	83	-	-
25	68	-	-
19	61	15	100
12.5	51	-	-
9.5	46	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	38	-	-
2.36	35	-	-
1.18	31	-	-
0.6	26	0	100
0.3	20	0	15
0.15	15	-	-
0.075	12	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

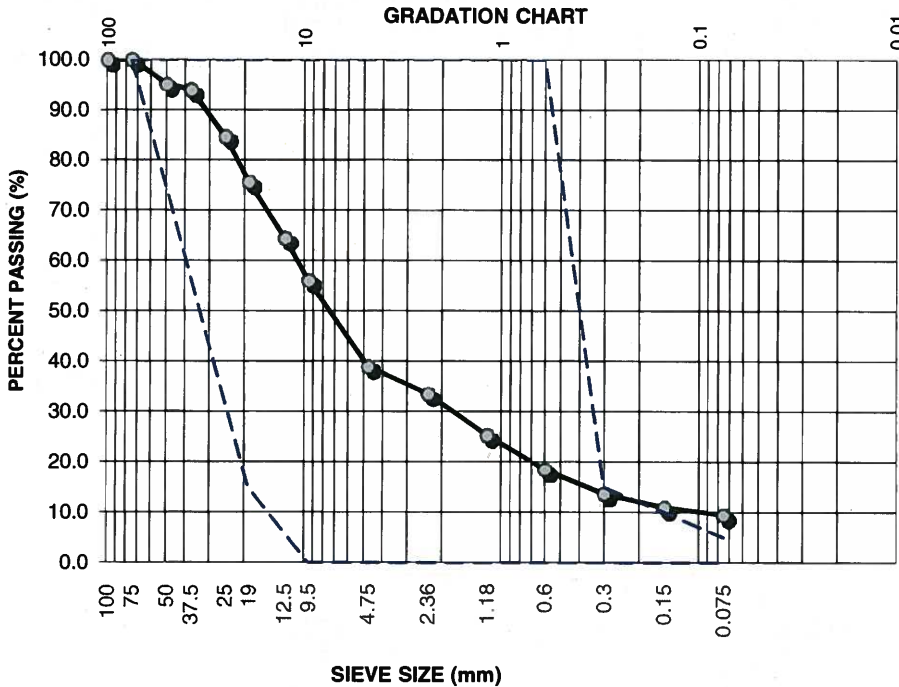


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4959

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 25-Mar-14
Sampled By: MOTI
Tested By: William M.

TP/TH No.: TH14-4
Bag No.: 684
Material Type: Pit Run
Sample No.: 1

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	95	-	-
37.5	94	-	-
25	85	-	-
19	76	15	100
12.5	64	-	-
9.5	56	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	39	-	-
2.36	34	-	-
1.18	25	-	-
0.6	18	0	100
0.3	14	0	15
0.15	11	-	-
0.075	9.5	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

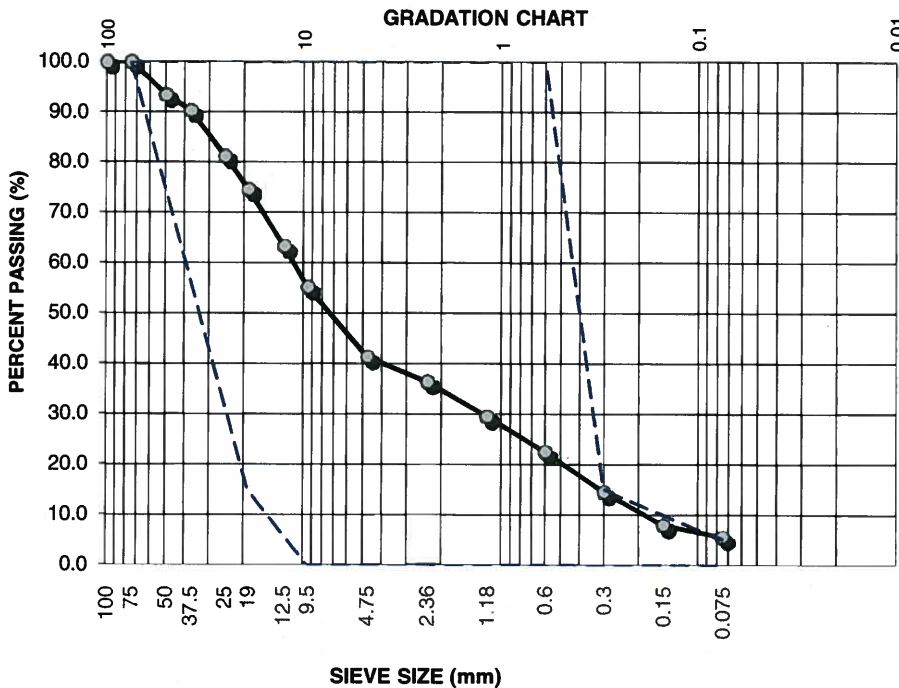


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 11, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4960

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 25-Mar-14
Sampled By: MOTI
Tested By: William M.


TP/TH No.: TH14-4
Bag No.: 685
Material Type: Pit Run
Sample No.: 2

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	93	-	-
37.5	90	-	-
25	81	-	-
19	75	15	100
12.5	63	-	-
9.5	55	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	41	-	-
2.36	36	-	-
1.18	30	-	-
0.6	22	0	100
0.3	14	0	15
0.15	8.0	-	-
0.075	5.6	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

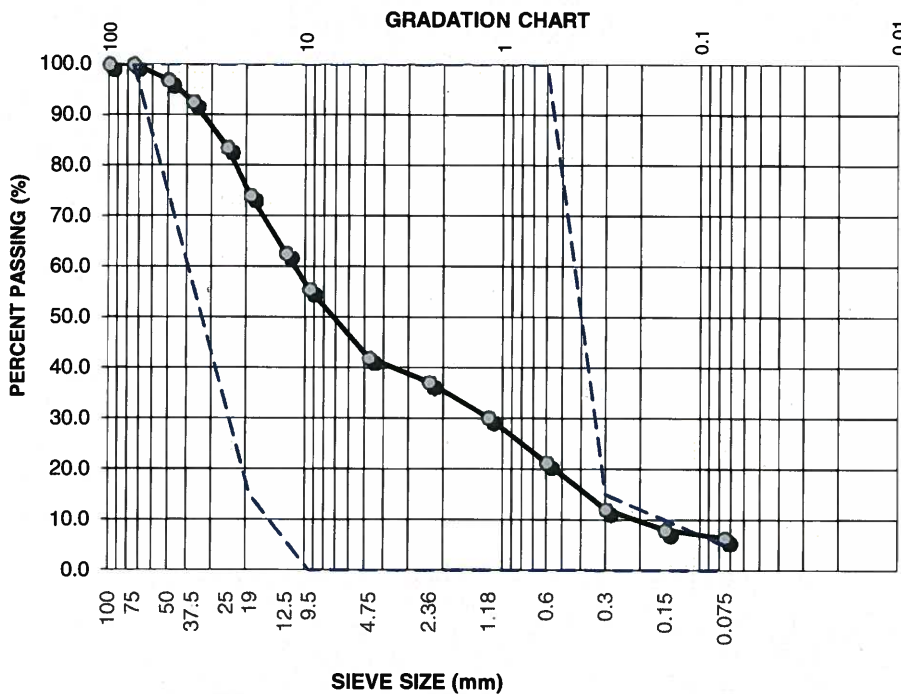


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 14, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District



Lab Number: L4961

Date Sampled: Sampled by MOTI
Date Received: 25-Mar-14
Date Tested: 27-Mar-14
Sampled By: MOTI
Tested By: William M.

TP/TH No.: TH14-4
Bag No.: 689
Material Type: Pit Run
Sample No.: 3

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	100	100
50	97	-	-
37.5	93	-	-
25	84	-	-
19	74	15	100
12.5	63	-	-
9.5	55	0	100

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	42	-	-
2.36	37	-	-
1.18	30	-	-
0.6	21	0	100
0.3	12	0	15
0.15	8.0	-	-
0.075	6.4	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C SGSB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

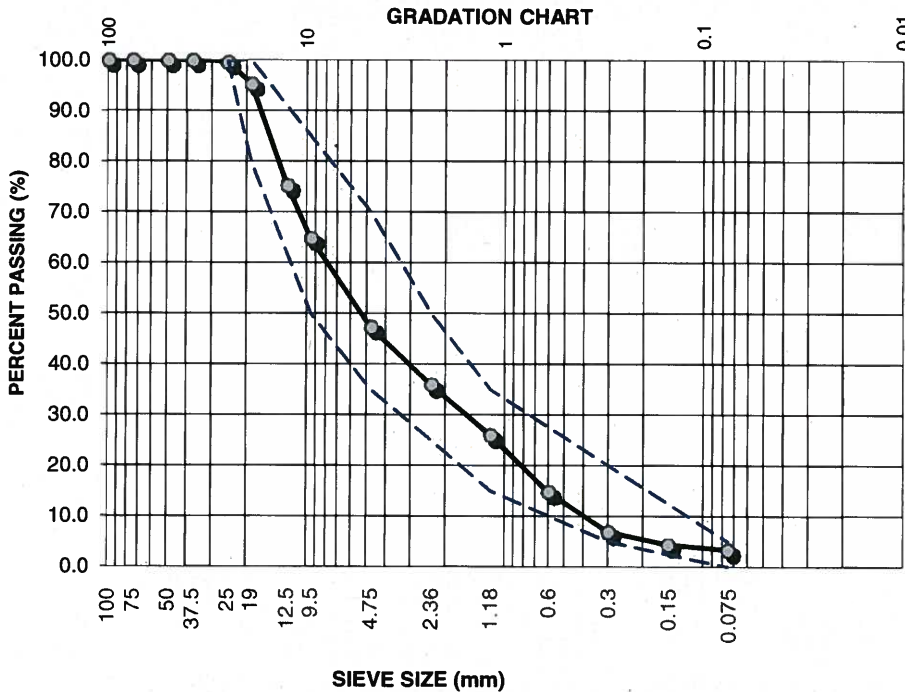


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: 11-Apr-2014
Client P.O.:

PROJECT: Haney Pit -Lower Mainland District



Lab Number: L4963

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 10-Apr-14
Sampled By: MOTI
Tested By: Rodrigo L./Theodore A.

TP/TH No.: TH14-1
Bag No.: 769
Material Type: Crushed
Sample No.: 3

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	-	-
50	100	-	-
37.5	100	-	-
25	100	100	100
19	95	80	100
12.5	75	-	-
9.5	65	50	85

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	47	35	70
2.36	36	25	50
1.18	26	15	35
0.6	15	-	-
0.3	6.9	5	20
0.15	4.3	-	-
0.075	3.3	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C WGB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By:
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

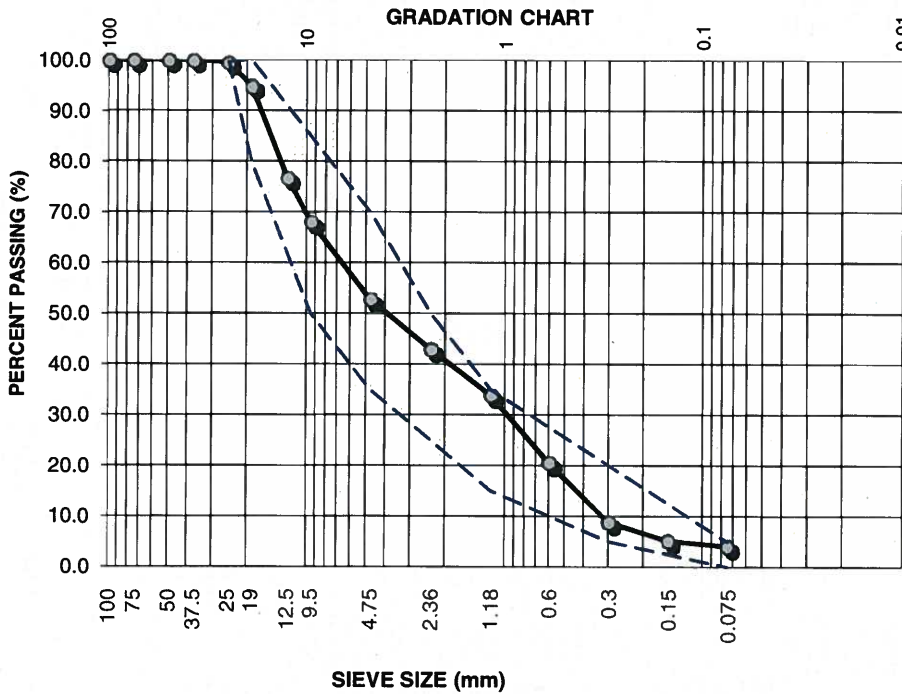


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: 11-Apr-2014
Client P.O.:

PROJECT: Haney Pit -Lower Mainland District



Lab Number: L4947

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 10-Apr-14
Sampled By: MOTI
Tested By: Theodore A.


TP/TH No.: TH14-1
Bag No.: 206
Material Type: Crushed
Sample No.: 5

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	-	-
50	100	-	-
37.5	100	-	-
25	100	100	100
19	95	80	100
12.5	77	-	-
9.5	68	50	85

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	53	35	70
2.36	43	25	50
1.18	34	15	35
0.6	20	-	-
0.3	8.8	5	20
0.15	5.1	-	-
0.075	4.0	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C WGB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

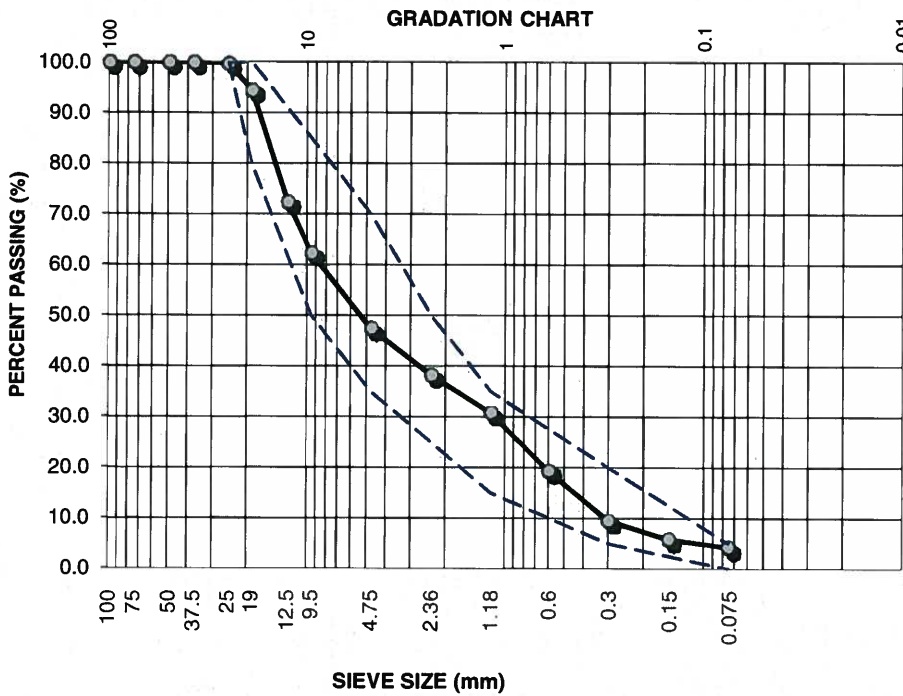


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: 11-Apr-2014
Client P.O.:

PROJECT: Haney Pit -Lower Mainland District



Lab Number: L4956

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 10-Apr-14
Sampled By: MOTI
Tested By: Theodore A./G.G.

TP/TH No.: TH14-2
Bag No.: 207
Material Type: Crushed
Sample No.: 1

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	-	-
50	100	-	-
37.5	100	-	-
25	100	100	100
19	95	80	100
12.5	72	-	-
9.5	62	50	85

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	47	35	70
2.36	38	25	50
1.18	31	15	35
0.6	19	-	-
0.3	9.5	5	20
0.15	5.8	-	-
0.075	4.3	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C WGB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By:
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

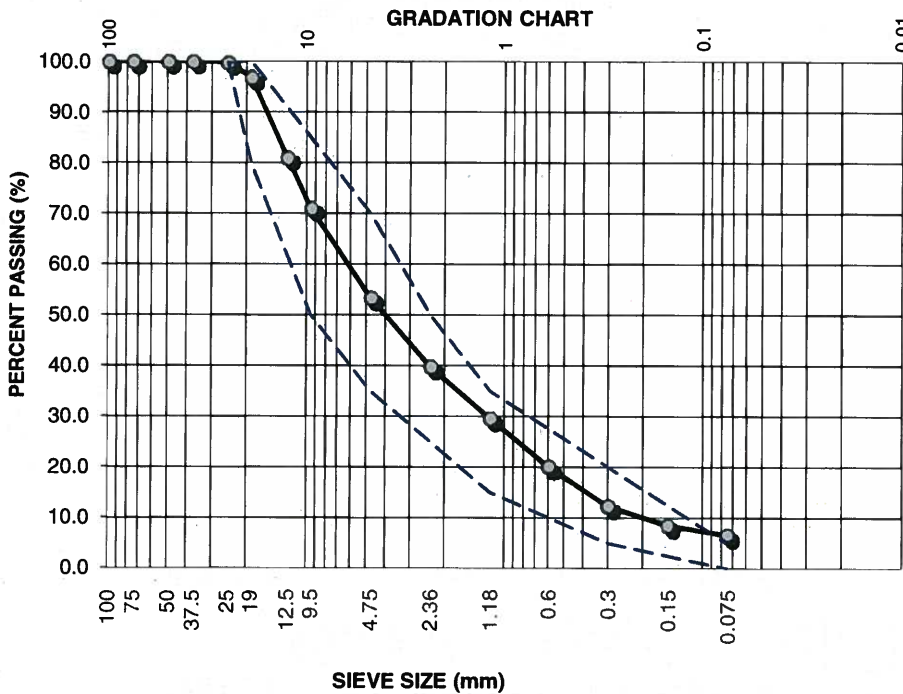


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: 11-Apr-2014
Client P.O.: 156CS0670

PROJECT: Haney Pit -Lower Mainland District



Lab Number: L4951

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 10-Apr-14
Sampled By: MOTI
Tested By: Theodore A./G.G.

TP/TH No.: TH14-3
Bag No.: 682
Material Type: Crushed
Sample No.: 3

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	-	-
50	100	-	-
37.5	100	-	-
25	100	100	100
19	97	80	100
12.5	81	-	-
9.5	71	50	85

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	53	35	70
2.36	40	25	50
1.18	30	15	35
0.6	20	-	-
0.3	12	5	20
0.15	8.5	-	-
0.075	6.6	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C WGB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By:
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

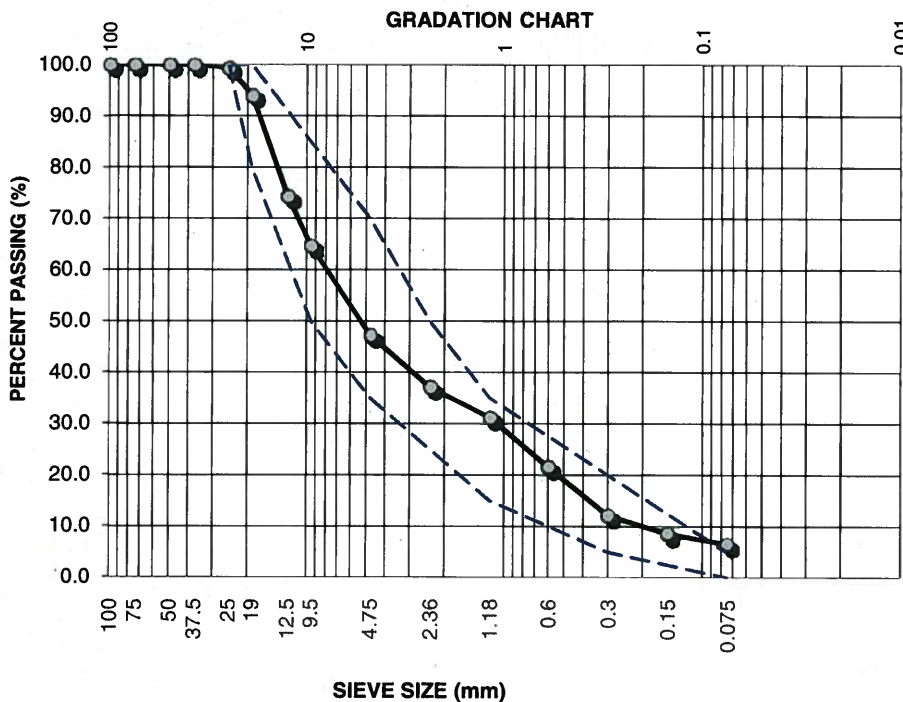


SIEVE ANALYSIS REPORT

CLIENT: Ministry of Transportation & Infrastructure
 310 - 1500 Woolridge St.
 Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: 11-Apr-2014
Client P.O.: 156CS0670

PROJECT: Haney Pit -Lower Mainland District



Lab Number: L4961

Date Sampled: Sampled by MOTI
Date Received: 24-Mar-14
Date Tested: 10-Apr-14
Sampled By: MOTI
Tested By: Theodore A./G.G.


TP/TH No.: TH14-4
Bag No.: 689
Material Type: Crushed
Sample No.: 3

Gravel Sizes (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
100	100	-	-
75	100	-	-
50	100	-	-
37.5	100	-	-
25	99	100	100
19	94	80	100
12.5	74	-	-
9.5	65	50	85

Sand Sizes And Fines (mm)	Percent Passing	Gradation Limits	
		Lower	Upper
4.75	47	35	70
2.36	37	25	50
1.18	31	15	35
0.6	22	-	-
0.3	12	5	20
0.15	8.5	-	-
0.075	6.5	0	5

Comments: Sieve analysis test was conducted in accordance with ASTM C136 and C117
 Plotted to Table 202-C WGB gradation specification

Prepared By: Giti Ghorbanian
 Senior Materials Technologist

Reviewed By: 
 Daniel St-Pierre, M.Sc., PE, P.Eng.
 Senior Civil Materials Engineer

AMEC Environment &
Infrastructure
#110 - 18568 - 96th Avenue
Surrey British Columbia
Canada, V4N 3P9
Tel: 604-295-8657
Fax: 604-295-8658



FRACTURE COUNT FOR COARSE AGGREGATE (BCH 1-13)

CLIENT: Ministry of Transportation & Infrastructure
310 - 1500 Woolridge St.
Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 14, 2014
Client P.O.: 156CS0670


PROJECT: Othello Pit- Fraser Valley District

Sample Source & ID: TH14-1 Bag #769 - SA #3 - Crushed
Lab No.: L4963

Sieve Size (mm)	Total No. of Particles	No. of Fractured Particles	No. of Non Fractured Particles	% Fracture per Sieve	Total % Fracture
50 to 37.5					
37.5 to 25.0					
25.0 to 19.0	91	79	12	87	
19.0 to 12.5	280	224	56	80	
12.5 to 9.5	472	343	129	73	
9.5 to 4.75	460	353	107	77	
Totals	1303	999			77

Comments: Fracture Particles in Coarse Aggregate tests were conducted in accordance with BCH 1-13 Method A

Prepared By: Giti Ghorbanian
Senior Materials Technologist

Reviewed By: 
Daniel St-Pierre, M.Sc., PE, P.Eng.
Senior Civil Materials Engineer

AMEC Environment &
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Surrey British Columbia
Canada, V4N 3P9
Tel: 604-295-8657
Fax: 604-295-8658

FRACTURE COUNT FOR COARSE AGGREGATE (BCH 1-13)



CLIENT: Ministry of Transportation & Infrastructure
310 - 1500 Woolridge St.
Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 14, 2014
Client P.O.: 156CS0670


PROJECT: Othello Pit- Fraser Valley District

Sample Source & ID: TH14-1 Bag #769 - SA #3 - Crushed
Lab No.: L4963

Sieve Size (mm)	Original Weight (g)	Fractured Particles (g)	Non- Fractured Particles (g)	% Fracture
50 to 37.5				
37.5 to 25.0				
25.0 to 19.0	1235.8	981.6	254.2	
19.0 to 13.2	1186.7	875.7	311.0	
13.2 to 9.5	1317.8	931.6	386.2	
Totals	3740.3	2788.9	951.4	75

Comments: Fracture Particles in Coarse Aggregate tests were conducted in accordance with BCH 1-13 Method B

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Senior Materials Technologist

Reviewed By: 
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FRACTURE COUNT FOR COARSE AGGREGATE (BCH 1-13)

CLIENT: Ministry of Transportation & Infrastructure
310 - 1500 Woolridge St.
Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 14, 2014
Client P.O.:

PROJECT: Othello Pit- Fraser Valley District

Sample Source & ID: TH14-3 Bag #682- SA #3 - Crushed
Lab No.: L4951

Sieve Size (mm)	Total No. of Particles	No. of Fractured Particles	No. of Non Fractured Particles	% Fracture per Sieve	Total % Fracture
50 to 37.5					
37.5 to 25.0					
25.0 to 19.0	31	27	4	87	
19.0 to 12.5	199	156	43	78	
12.5 to 9.5	472	347	125	74	
9.5 to 4.75	506	401	105	79	
Totals	1208	931			77

Comments: Fracture Particles in Coarse Aggregate tests were conducted in accordance with BCH 1-13 Method A

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FRACTURE COUNT FOR COARSE AGGREGATE (BCH 1-13)



CLIENT: Ministry of Transportation & Infrastructure
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Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 14, 2014
Client P.O.:

PROJECT: Othello Pit- Fraser Valley District

Sample Source & ID: TH14-3 Bag #682- SA #3 - Crushed
Lab No.: L4951

Sieve Size (mm)	Original Weight (g)	Fractured Particles (g)	Non- Fractured Particles (g)	% Fracture
50 to 37.5				
37.5 to 25.0				
25.0 to 19.0	416.0	329.1	86.9	
19.0 to 13.2	982.4	676.7	305.7	
13.2 to 9.5	1213.0	849.9	363.1	
Totals	2611.4	1855.7	755.7	71

Comments: Fracture Particles in Coarse Aggregate tests were conducted in accordance with BCH 1-13 Method B

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FRACTURE COUNT FOR COARSE AGGREGATE (BCH 1-13)

CLIENT: Ministry of Transportation & Infrastructure
310 - 1500 Woolridge St.
Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 14, 2014
Client P.O.: 156CS0670


PROJECT: Othello Pit- Fraser Valley District

Sample Source & ID: TH14-4 Bag #689 - SA #3 - Crushed
Lab No.: L4961

Sieve Size (mm)	Total No. of Particles	No. of Fractured Particles	No. of Non Fractured Particles	% Fracture per Sieve	Total % Fracture
50 to 37.5					
37.5 to 25.0					
25.0 to 19.0	66	50	16	76	
19.0 to 12.5	258	180	78	70	
12.5 to 9.5	401	241	160	60	
9.5 to 4.75	472	378	94	80	
Totals	1197	849			71

Comments: Fracture Particles in Coarse Aggregate tests were conducted in accordance with BCH 1-13 Method A

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FRACTURE COUNT FOR COARSE AGGREGATE (BCH 1-13)



CLIENT: Ministry of Transportation & Infrastructure
310 - 1500 Woolridge St.
Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 14, 2014
Client P.O.: 156CS0670


PROJECT: Othello Pit- Fraser Valley District

Sample Source & ID: TH14-4 Bag #689 - SA #3 - Crushed
Lab No.: L4961

Sieve Size (mm)	Original Weight (g)	Fractured Particles (g)	Non- Fractured Particles (g)	% Fracture
50 to 37.5				
37.5 to 25.0				
25.0 to 19.0	935.1	586.7	348.4	
19.0 to 13.2	1234.7	789.2	445.5	
13.2 to 9.5	1271.2	797.6	473.6	
Totals	3441.0	2173.5	1267.5	63

Comments: Fracture Particles in Coarse Aggregate tests were conducted in accordance with BCH 1-13 Method B

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Test Results for Resistance of Aggregate to Degradation by Abrasion in the Micro-Deval



CLIENT: Ministry of Transportation & Infrastructure
310 - 1500 Woolridge St.
Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 14, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District

Sample Source & ID: TH14-1 Bag #769 SA #3 - Pit Run
Lab No.: L4963

Coarse and Fine Aggregate

Grading	Initial Mass (g)	Final Mass (g)	Loss of Mass (g)	% Loss
	A	B	A - B	(A-B)*100/A
Coarse	1500.1	1403.4	96.7	6.4
Fine	500.7	460.6	40.1	8.0

Comments:

Maximum size of aggregate is 50.0 mm.

Resistance of materials to Degradation by Abrasion in the Micro-Deval Apparatus was conducted in accordance with ASTM D6928 for Coarse aggregate and ASTM D7428 for Fine aggregate

Grading for coarse aggregate used for test is: 19-16 mm, 16-12.5 mm, 12.5-9.5 mm


Drain Brothers- Stony Lake Quarry was used as calibration coarse materials and percent loss is 15.0%. Southerland Sand was used as calibration fine materials and percent loss is 17.7%.

MOTI Standard:

Maximum acceptable value of any base material is 25 or less

Maximum acceptable value of any Sub-base material is 30 or less

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Test Results for Resistance of Aggregate to Degradation by Abrasion in the Micro-Deval



CLIENT: Ministry of Transportation & Infrastructure
310 - 1500 Woolridge St.
Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 14, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District

Sample Source & ID: TH14-3 Bag #682 SA #3 - Pit Run
Lab No.: L4951

Coarse and Fine Aggregate

Grading	Initial Mass (g)	Final Mass (g)	Loss of Mass (g)	% Loss
	A	B	A - B	(A-B)*100/A
Coarse	1501.3	1402.7	98.6	6.6
Fine	500.1	464.0	36.1	7.2

Comments:

Maximum size of aggregate is 50.0 mm.

Resistance of materials to Degradation by Abrasion in the Micro-Deval Apparatus was conducted in accordance with ASTM D6928 for Coarse aggregate and ASTM D7428 for Fine aggregate

Grading for coarse aggregate used for test is: 19-16 mm, 16-12.5 mm, 12.5-9.5 mm


Drain Brothers- Stony Lake Quarry was used as calibration coarse materials and percent loss is 15.0%. Southerland Sand was used as calibration fine materials and percent loss is 17.7%.

MOTI Standard:

Maximum acceptable value of any base material is 25 or less

Maximum acceptable value of any Sub-base material is 30 or less

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Test Results for Resistance of Aggregate to Degradation by Abrasion in the Micro-Deval



CLIENT: Ministry of Transportation & Infrastructure
310 - 1500 Woolridge St.
Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 14, 2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District

Sample Source & ID: TH14-4 Bag #689 SA #3 - Pit Run
Lab No.: L4961

Coarse and Fine Aggregate

Grading	Initial Mass (g)	Final Mass (g)	Loss of Mass (g)	% Loss
	A	B	A - B	$(A-B)*100/A$
Coarse	1497.1	1398.8	98.3	6.6
Fine	500.4	459.0	41.4	8.3

Comments:

Maximum size of aggregate is 50.0 mm.

Resistance of materials to Degradation by Abrasion in the Micro-Deval Apparatus was conducted in accordance with ASTM D6928 for Coarse aggregate and ASTM D7428 for Fine aggregate

Grading for coarse aggregate used for test is: 19-16 mm, 16-12.5 mm, 12.5-9.5 mm

Drain Brothers- Stony Lake Quarry was used as calibration coarse materials and percent loss is 15.0%. Southerland Sand was used as calibration fine materials and percent loss is 17.7%.

MOTI Standard:

Maximum acceptable value of any base material is 25 or less

Maximum acceptable value of any Sub-base material is 30 or less

Prepared By: Giti Ghorbanian
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SOUNDNESS OF AGGREGATE

CLIENT: Ministry of Transportation & Infrastructure
310 - 1500 Woolridge
Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: 04/14/2014
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District
Sample Id.: TH14-1 Bag # 205 SA #4 - Pit Run
Sample No.: SA4

Lab No.: L4954

Specimen: Coarse


Sieve Size (mm)	Original Weight (g)	Grading of Original Sample (%)	Wt. Of Test Fraction Before Test (g)	Wt. Of Test Fraction After Test (g)	Percentage Passing Designated Sieve After Test	Weighted Percentage Loss
63 to 37.5	2756.8	15.9	2744.8	2735.8	0.3	0.1
37.5 to 19	4639.3	26.7	1509.9	1489.2	1.4	0.4
19 to 9.5	5801.5	33.4	1002.3	969.8	3.2	1.1
9.5 to 4.75	4155.9	23.9	302.0	289.3	4.2	1.0
Totals						2.5

Specimen: Fine

Sieve Size (mm)	Original Weight (g)	Grading of Original Sample (%)	Wt. Of Test Fraction Before Test (g)	Wt. Of Test Fraction After Test (g)	Percentage Passing Designated Sieve After Test	Weighted Percentage Loss
4.75 to 2.36	111.4	18.5	100.0	94.3	5.7	1.1
2.36 to 1.18	139.9	23.3	100.0	94.8	5.2	1.2
1.18 to 0.6	185.8	30.9	100.0	94.4	5.6	1.7
0.6 to 0.3	163.8	27.3	100.0	93.8	6.2	1.7
Totals						5.7

Comments: Soundness of aggregate by use of Magnesium Sulfate tests were conducted in accordance with ASTM C88

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RELATIVE DENSITY AND ABSORPTION OF AGGREGATE REPORT



CLIENT: Ministry of Transportation & Infrastructure
310 - 1500 Woolridge St.
Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: April 14, 2014
Client P.O.: 156CS0670

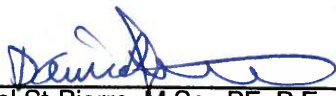
PROJECT: Othello Pit- Fraser Valley District

Lab No : L4954

Sample Number & Type		Relative density (Oven Dry)	Apparent Relative Density	Relative density (SSD)	Absorption %
TH 14-1, Bag # 205, SA # 4	Coarse	2.63	2.69	2.65	0.8
	Fine	2.56	2.69	2.61	2.0

Comments: Relative density and absorption of coarse and fine aggregate were conducted in accordance with ASTM C127 and C128

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Reporting of these test results constitutes a testing service only.

Engineering interpretation or evaluation of the test results is provided only on written request.

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Sand Equivalent Value of Soils and Fine Aggregate



CLIENT: Ministry of Transportation & Infrastructure
310 - 1500 Woolridge St.
Coquitlam, BC V3K 0B8
ATTN: Terence Lai

Project Number: VA06707-114
Date: 14-Apr-14
Client P.O.: 156CS0670

PROJECT: Othello Pit- Fraser Valley District

Sample type and No.: TP14-1, Bag #205, SA#4

Lab No.: L4954

Sample Source: Sampled and Submitted by MOTI

Trial #	1	2	3
Sand Height, mm	97	97	91
Clay Height, mm	145	145	145
Sand Equivalent Value= 100*Sand Height/Clay Height	67	67	63
Average Sand Equivalent	65		

Comments: Sand Equivalent test was conducted in accordance with ASTM D2419

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