AGGREGATE TEST HOLE / PIT SUMMARY SHEET

CLIENT: MoT **PROJECT:** Telegraph Pit

Testpit Number	Overburden	Soil Bound. (M)	Soil Classification	Gradation of Materials									Soundness Indicator						Material at Bottom of	Watertable (m)	Remarks
				75/150 (mm)	150/225 (mm)	+ 225 (mm)	Maximum	Gravel	Sand	Fines	Fracture (%)		Degrad.	Sand Equivalen	MgSO4 (%)		Micro Duval				
											A	B			CA	FA	CA	FA			
89-1		0.0/5.5	GP					52	45	3											WSA
		5.5/16.5	SP					48	49	3									SP		WSA
89-3		0.0/7.3	SP					46	50	4											WSA
		7.3/7.9	SP					10	89	1											FVI
		7.9/16.5	SP					37	62	1	22	29							SP		WSA
89-4		0.0/4.9	GP					51	47	4											WSA
		4.9/14.0	SP					44	54	2											WSA
		14.0/16.	GP					70	30										GP		FVI
89-6		0.0/4.3	GPGM					58	37	5											WSA
		4.3/12.8	GPGM					80	20												FVI
		12.8/16	SP					33	64	3	35	42	75	70					SP		WSA
*89-6 - top 4-5 meters of material has been removed																					
89-7		0.0/7.3	GP					85	15												FVI
		7.3/16.5	SP					44	52	4									SP		WSA
89-9		0.0/7.3	GP					58	40	2	28	39	67	69							WSA
		7.3/9.1	SP					27	70	3											FVI
		9.1/16.5	GP					75	25										GP		WSA

FVI = Field Visual Identification WSA = Washed Sieve Analysis

AGGREGATE TEST HOLE / PIT SUMMARY SHEET

CLIENT: MoT **PROJECT:** Telegraph Pit

Testpit Number	Overburden	Soil Bound. (M)	Soil Classification	Gradation of Materials									Soundness Indicator						Material at Bottom of	Watertable (m)	Remarks
				75/150 (mm)	150/225 (mm)	+ 225 (mm)	Maximum	Gravel	Sand	Fines	Fracture (%) A	Fracture (%) B	Degrad.	Sand Equivalen	MgSO4 (%) CA	MgSO4 (%) FA	Micro Duval CA	Micro Duval FA			
89-15		0.0/5.2	GM1					49	37	14	42	18	48	21							WSA
		5.2/8.8	GPGM					59	35	6	76	39	69	31	2.9	6.5					WSA
		8.8/14.0	GP					54	43	2	80	26							GP		WSA
89-16		0.0/4.3	GPGM					48	47	5											WSA
		4.3/11.6	GP					85	15												FVI
		11.6/16.	GPGM					58	36	6									GPGM		WSA
89-20		0.0/12.8	GP					80	20												FVI
		12.8/14	SP					40	60												FVI
		14/16.5	GP					80	20										GP		FVI
89-23	0.6	0.0/0.6	TS																		FVI
		0.6/14.0	GP					80	20										GP		FVI
89-25		0.0/2.4	GM1					57	30	13									GM1		FVI, EXTREMELY DENSE
89-26		0.0/3.1	GC4					22	38	40											WSA
		3.1/5.5	GPGC					79	20	10											FVI
		5.5/5.8	LB					100													FVI
		5.5/6.7	GP					90	10										GP		FRVI, EXTREMELY DENSE
89-27		0.0/1.8	GPGM					60	29	11									GPGM		WSA, EXTREMELY DENSE

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Testpit Number	Overburden	Soil Bound. (M)	Soil Classification	Gradation of Materials									Soundness Indicator						Material at Bottom of	Watertable (m)	Remarks
				75/150 (mm)	150/225 (mm)	+ 225 (mm)	Maximum	Gravel	Sand	Fines	Fracture (%)		Degrad.	Sand Equivalen	MgSO4 (%)		Micro Duval				
											A	B			CA	FA	CA	FA			
						1999 TEST PITS															
99-1		0.0/3.1	GP	4	1		175	52	47	1	93		54	84							WSA
		3.1/5.9	SP	3			100	44	55	1									SP		WSA
99-2		0.0/5.8	SP	2			90	41	58	1									SP		WSA
99-3		0.0/5.5	SP	2			110	37	62	1									SP		WSA
99-4		0.0/5.8	SP	3	2		220	35	63	2									SP		WSA
99-5		0.0/5.8	SP	5	3		225	48	51	1									SP		WSA
99-6		0.0/5.9	SP	4	2		250	45	54	1									SP		WSA
99-7	1.5	0.0/1.5	FILL																		FVI, FILL MATERIAL
		1.5/5.8	SP	4	2		220	48	51	1	93		52	84					SP		WSA
99-8	1.4	0.0/1.4	FILL																		FVI, FILL MATERIAL
		1.4/5.4	SP	6	2		230	49	50	1									SP		WSA

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AGGREGATE TEST HOLE / PIT SUMMARY SHEET

CLIENT: MoT **PROJECT:** Telegraph Pit

Testpit Number	Overburden	Soil Bound. (M)	Soil Classification	Gradation of Materials									Soundness Indicator						Material at Bottom of	Watertable (m)	Remarks
				75/150 (mm)	150/225 (mm)	+ 225 (mm)	Maximum	Gravel	Sand	Fines	Fracture (%)		Degrad.	Sand Equivalen	MgSO4 (%)		Micro Duval				
											A	B			CA	FA	CA	FA			
99-9	0.8	0.0/0.8	CR																		FVI, CRUSH
		0.8/5.6	SP	4	1		210	43	56	1									SP		WSA
99-10	0.6	0.0/0.6	FILL																		FVI, FILL MATERIAL
		0.6/5.6	SP	2	1		130	42	57	1									SP		WSA
99-11	0.6	0.0/0.6	FILL																		FVI, FILL MATERIAL
		0.6/5.4	GP	6	3		225	58	41	1									GP		WSA
***99-11material has been removed**																					
99-12	0.75	0.0/0.8	FILL																		FVI, FILL MATERIAL
		0.8/5.8	GP	6	3		20	51	47	2									GP		WSA
***99-12 material has been removed**																					
99-22	0.1	0.0/0.1	TS																		FVI, TOPSOIL
		0.1/0.8	OB																		FVI, OVERBURDEN
		0.8/5.3	SP	3	3		200	53	44	3									SP		WSA
99-24	0.2	0.0/0.2	FILL																		FVI, FILL MATERIAL
		0.2/5.3	GP	3	1		200	53	45	2									GP		WSA
99-25	0.4	0.0/0.8	OB																		FVI, OVERBURDEN
		0.8/2.5	GM1	3			120	44	39	16									GM1		WSA

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AGGREGATE TEST HOLE / PIT SUMMARY SHEET

CLIENT: MoT **PROJECT:** Telegraph Pit

Testpit Number	Overburden	Soil Bound. (M)	Soil Classification	Gradation of Materials									Soundness Indicator						Material at Bottom of	Watertable (m)	Remarks
				75/150 (mm)	150/225 (mm)	+ 225 (mm)	Maximum	Gravel	Sand	Fines	Fracture (%)		Degrad.	Sand Equivalen	MgSO4 (%)		Micro Duval				
											A	B			CA	FA	CA	FA			
99-26	0.2	0.0/0.2	TS																		FVI, TOPSOIL
		0.2/1.2	OB																		FVI, OVERBURDEN
		1.2/2.8	SM2	3			140	30	45	25									SM2		FVI
99-27	0.9	0.0/0.9	OB																		FVI, OVERBURDEN
		0.9/2.6	GP	2	1		225	59	40	1											WSA
		2.6/5.4	GP	1	1		200	51	46	3									GP		WSA
99-28	0.7	0.0/0.7	OB																		FVI, OVERBURDEN
		0.7/2.7	GP	3	2		200	49	49	2											WSA
		2.7/5.4	SPSM	2	1		275	38	55	7									SPSM		FVI, OVERBURDEN
99-29	0.7	0.0/0.7	TS																		FVI, TOPSOIL
		0.7/1.8	GP	5	2		200	57	40	3											FVI, TOPSOIL
		1.8/3.4	GM2					42	35	23									GM2		FVI, TOPSOIL
99-30	0.2	0.0/0.2	TS																		FVI, TOPSOIL
		0.2/0.8	OB																		FVI, OVERBURDEN
		0.8/2.9	GPGM	3			200	54	41	5											WSA
		2.9/5.4	SP	2	1		120	45	52	3									SP		WSA

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CLIENT: MoT **PROJECT:** Telegraph Pit

Testpit Number	Overburden	Soil Bound. (M)	Soil Classification	Gradation of Materials									Soundness Indicator						Material at Bottom of	Watertable (m)	Remarks
				75/150 (mm)	150/225 (mm)	+ 225 (mm)	Maximum	Gravel	Sand	Fines	Fracture (%)		Degrad.	Sand Equivalen	MgSO4 (%)		Micro Duval				
											A	B			CA	FA	CA	FA			
99-31	1.3	0.0/1.3	OB																		FVI, OVERBURDEN
		1.3/1.6	TS																		FVI, TOPSOIL
		1.6/2.1	OB																		FVI, OVERBURDEN
		2.1/5.4	SP	2			120	41	56	3				32					SP		WSA
99-32	0.3	0.0/0.3	TS																		FVI, TOPSOIL
		0.3/0.9	OB																		FVI, OVERBURDEN
		0.9/5.4	GP	2			110	54	44	1	94		54	33					GP		WSA
99-33	1.5	0.0/1.5	OB																		FVI, OVERBURDEN
		1.5/5.4	GP	2	1		160	53	44	3									GP		WSA
99-34	0.6	0.0/0.6	OB																		FVI, OVERBURDEN
		0.6/5.6	GP	1			80	53	45	2									GP		WSA
99-35	1.2	0.0/1.2	FILL																		FVI, CONCRETE FILL MATERIAL

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Testpit Number	Overburden	Soil Bound. (M)	Soil Classification	Gradation of Materials									Soundness Indicator						Material at Bottom of	Watertable (m)	Remarks
				75/150 (mm)	150/225 (mm)	+ 225 (mm)	Maximum	Gravel	Sand	Fines	Fracture (%) A	Fracture (%) B	Degrad.	Sand Equivalen	MgSO4 (%) CA	MgSO4 (%) FA	Micro Duval CA	Micro Duval FA			
					2004 TEST PITS																
04-1		0.0/6.0	SP	3	1		200	42	56	2									SP		WSA
*04-1 material has been removed																					
04-2		0.0/1.0	SP					30	69	1											FVI
		1.0/6.0	GP	2	1		175	54	45	1			69	76					GP		WSA
*04-2 material has been removed																					
04-3	1.0	0.0/1.0	CR/AS																		FVI, CRUSH & ASPHALT WASTE
		1.0/5.0	GP	2			125	52	47	1											WSA
		5.0/6.0	SP	1			100	30	69	1									SP		FVI
					2005 TEST PITS																
05-1		0.0/2.5	GP	2	1	1	225	59	40	1											FVI
		2.5/7.5	GP	1	1		75	50	49	1									GP		FVI
*05-1 material has been removed																					
05-2		0.0/7.5	GP	2	1	1	250	57	42	1	46								GP		WSA
05-3		0.0/7.0	GP	2	1		200	59	40	1											FVI
		7.0/7.5	SP					39	60	1									SP		FVI

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Testpit Number	Overburden	Soil Bound. (M)	Soil Classification	Gradation of Materials									Soundness Indicator						Material at Bottom of	Watertable (m)	Remarks
				75/150 (mm)	150/225 (mm)	+ 225 (mm)	Maximum	Gravel	Sand	Fines	Fracture (%)		Degrad.	Sand Equivalen	MgSO4 (%)		Micro Duval				
											A	B			CA	FA	CA	FA			
05-4		0.0/7.5	GP	2	1	1	250	54	45	1									GP		FVI
05-5		0.0/2.0	GPGM					54	40	6											FVI, SOME ORGANICS(FILL)
		2.0/5.0	GP	2	1	1	250	54	45	1									GP		FVI
05-6		0.0/1.5	GP	1				59	40	1											FVI, SLOPING MATERIAL
		1.5/7.5	GP	3	2	1	250	63	35	2	32				2.5	7.3	18.6	16	GP		SG:C-2.86,F-2.79/ABS:C-0.69,F-1.23
05-7		0.0/7.5	GP	3	2	1	250	64	35	1									GP		WSA
05-8	0.3	0.0/0.3	SM4					30	30	40											FVI, PIT OVERBURDEN
		0.3/0.8	GPGM	5	3	1	300	59	35	6											FVI
		0.8/2.2	GP	2	1		200	57	35	3											FVI
		2.2/3.0	GPGM					50	40	10											FVI
		3.0/7.0	GP	3	1	1	225	57	35	3									GP		FVI
05-9	0.2	0.0/0.2	TS																		FVI, ORGANICS
		0.2/1.5	GPGM					53	40	7											FVI
		1.5/7.5	SP	1			100	42	55	3									SP		WSA
05-10	0.2	0.0/0.2	TS																		FVI, ORGANICS
		0.2/0.7	GPGM					53	40	7											FVI
		0.7/7.5	GP	2	1		175	54	45	1									GP		FVI

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				75/150 (mm)	150/225 (mm)	+ 225 (mm)	Maximum	Gravel	Sand	Fines	Fracture (%)		Degrad.	Sand Equivalen	MgSO4 (%)		Micro Duval				
											A	B			CA	FA	CA	FA			
05-11	0.3	0.0/0.3	TS																		FVI, ORGANICS
		0.3/1.2	GPGM	1			75	53	40	7											FVI
		1.2/7.0	SP	2	1		150	47	51	2	33								SP		WSA
05-12	0.3	0.0/0.3	TS																		FVI, ORGANICS
		0.3/0.8	SM1					15	70	15											FVI, ORGANICS
		0.8/2.0	GPGM	1	1		150	55	40	5											FVI
		2.0/4.0	GP	1				54	45	1											FVI
		4.0/7.0	SP	1			75	44	55	1									SP		FVI
05-13	0.3	0.0/0.3	TS																		FVI, ORGANICS
		0.3/1.0	GPGM	2				53	40	7											FVI
		1.0/7.5	GP	3	1	1	250	58	41	1									GP		FVI
05-14		0.0/4.5	GM1	4	2	1	300	50	35	15											FVI
		4.5/7.5	GP	3	1		20	56	39	1									GP		WSA
05-15		0.0/1.7	GPGM	3			100	53	40	7											FVI
		1.7/7.0	GP	3	1	1	300	56	39	3									GP		WSA
05-16	0.3	0.0/0.3	TS																		FVI, ORGANICS
		0.3/1.0	SM3					20	50	30											FVI
		1.0/1.7	GPGM	3			100	53	40	7											FVI
		1.7/5.0	GM2	3	2	1	300	55	25	20									GM2		FVI, HARDPAN LIKE

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				75/150 (mm)	150/225 (mm)	+ 225 (mm)	Maximum	Gravel	Sand	Fines	Fracture (%)		Degrad.	Sand Equivalen	MgSO4 (%)		Micro Duval				
											A	B			CA	FA	CA	FA			
05-17	0.3	0.0/0.3	TS																		FVI, ORGANICS
		0.3/1.2	SM3					20	50	30											FVI, ORGANICS
		1.2/6.0	GPGM	3	2	1	250	58	35	7									GPGM		WSA
05-18	0.3	0.0/0.3	TS																		FVI, ORGANICS
		0.3/0.6	SM3					20	50	30											FVI, ORGANICS
		0.6/2.5	GPGM	5	3	1	250	53	40	7											FVI
		2.5/6.0	GM2					55	25	20									GM2		FVI
05-19	0.3	0.0/0.3	TS																		FVI, ORGANICS
		0.3/1.2	GPGM	2	1		200	60	33	7											FVI
		1.2/6.5	GP	1	1		200	61	36	3									GP		WSA,100MM OF HARDPAN@1.2
05-20	0.3	0.0/0.3	TS																		FVI, ORGANICS
		0.3/0.5	SM3					20	50	30											FVI, ORGANICS
		0.5/1.3	GPGM	2	1		200	60	33	7											FVI
		1.3/2.4	GM2					50	25	25											FVI
		2.4/6.0	GPGM	3	2		200	61	34	5	43								GPGM		WSA

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				75/150 (mm)	150/225 (mm)	+ 225 (mm)	Maximum	Gravel	Sand	Fines	Fracture (%)		Degrad.	Sand Equivalen	MgSO4 (%)		Micro Duval				
											A	B			CA	FA	CA	FA			
05-21	0.3	0.0/0.3	TS																		FVI, ORGANICS
		0.3/0.8	SM3					30	40	30											FVI, ORGANICS
		0.8/1.5	GPGM	2	1		200	60	33	7											FVI
		1.5/3.7	GM2					50	25	25											FVI, HARDPAN
		3.7/6.0	GPGM	3	1		200	61	34	5									GPGM		WSA
05-22		0.0/1.2	CR																		FVI, CRUSH
		1.2/5.0	OB																		FVI, PIT OVERBURDEN
05-23	5.0	0.0/5.0	OB																		FVI, PIT OVERBURDEN
		5.0/6.0	GP	2	1		200	54	45	1									GP		FVI
05-24		0.0/1.2	CR																		FVI, CRUSH
		1.2/7.5	GP	2			125	54	45	1									GP		FVI
05-25		0.0/0.5	CR																		FVI, CRUSH
		0.5/2.3	GM2					50	30	20			REJECT 25MM ROCK?								FVI
		2.3/3.1	OB																		FVI, PIT OVERBURDEN
		3.1/7.5	SP	1			100	40	69	1									SP	3.0	FVI, SLIGHT FLOW

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

SAND EQUIVALENT TEST

Project TIGA GRAPH

Sta. or T.H. 09-1 Sample # X15957

Depth

Cost Code Date MAR 190

Technician B. Wood

TRIAL #	1	2	3	4
Clay Height mm	7.55"	7.70"		
Sediment Period	20 MIN	20 MIN		
Sand Height mm	3.70"	3.70"		
Sand Equivalent (SE)	47.1	48.0		

INTERPRETATION OF RESULTS

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

REMARKS:

CALCULATIONS:

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

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

SAND EQUIVALENT TEST

Project TELEGRAPH

Sta. or T.H. 89-3 Sample # V15457

Depth

Cost Code Date MAR/90

Technician B. WONG

TRIAL #	1	2	3	4
Clay Height mm	6.0"	6.0"		
Sediment Period	20 MIN	20 MIN		
Sand Height mm	4.2"	4.3"		
Sand Equivalent (SE)	70	72		

INTERPRETATION OF RESULTS

SE (70)

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

REMARKS:

CALCULATIONS:

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

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

SAND EQUIVALENT TEST

Project TELEGRAPH

Sta. or T.H. 89-6 Sample # X15245

Depth

Cost Code Date MAR/90

Technician B. WONG

TRIAL #	1	2	3	4
Clay Height mm	6.0"			
Sediment Period	20 MIN			
Sand Height mm	4.2"			
Sand Equivalent (SE)	70			

INTERPRETATION OF RESULTS

SE 70

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

REMARKS:

CALCULATIONS:

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

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

SAND EQUIVALENT TEST

Project TELEGRAPH

Sta. or T.H. 89-9 Sample #X15460

Depth

Cost Code Date MAR/90

Technician B. WONG

TRIAL #	1	2	3	4
Clay Height mm	6.1"			
Sediment Period	20 min			
Sand Height mm	4.2"			
Sand Equivalent (SE)	69			

INTERPRETATION OF RESULTS

SE 69

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

REMARKS:

CALCULATIONS:

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

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

DEGRADATION TEST

Project Texada

Sta or T.H. 89-1 Sample # X15454

Depth

Cost Code Date Mar/90

Technician B. Long

TRIAL #	1	2	3	4
Sediment Height (H) mm	46			
Degradation Factor (D)	72.59			

CALCULATIONS

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

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

DEGRADATION TEST

Project Tsolum

Sta or T.H. 89-3 Sample # X15251

Depth

Cost Code Date MAR/90

Technician B. Lions

TRIAL #	1	2	3	4
Sediment Height (H) mm	36			
Degradation Factor (D)	77.02			

CALCULATIONS

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

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

DEGRADATION TEST

Project Telkwa
Sta or T.H. 89-6 Sample # X15245
Depth
Cost Code Date Mar 90
Technician B. Wood

TRIAL #	1	2	3	4
Sediment Height (H) mm	41			
Degradation Factor (D)	74.59			

CALCULATIONS

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

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

DEGRADATION TEST

Project TELEGRAPH

Sta or T.H. 89-9 Sample # X15460

Depth

Cost Code Date MAR 1990

Technician B. LOWE

TRIAL #	1	2	3	4
Sediment Height (H) mm	53			
Degradation Factor (D)	68.77			

CALCULATIONS

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

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: Telegraph-Pemberton DISTRICT: South Island

TESTHOLE/PIT: 89-11 SAMPLE NO.: ___ BAG NO.: X15369 DEPTH: 1.8-3.1 m

METHOD A (COUNT)

			COUNT		
PASSING 37.5 / RETAINED 25	UNFRACTURED	1			
	1 + FRACTURED	1	50.0	% (25 mm)	
PASSING 25 / RETAINED 19	UNFRACTURED	3			
	1 + FRACTURED	9	75.0	% (19 mm)	
PASSING 19 / RETAINED 12.5	UNFRACTURED	24			
	1 + FRACTURED	14	36.8	% (12.5 mm)	
PASSING 12.5 / RETAINED 9.5	UNFRACTURED	35			
	1 + FRACTURED	15	30.0	% (9.5 mm)	
PASSING 9.5 / RETAINED 4.75	UNFRACTURED	198			
	1 + FRACTURED	390	66.3	% (4.75 mm)	
TOTAL	UNFRACTURED	261			
	1 + FRACTURED	429	= 62.2	% FRACTURE A	
TOTAL NUMBER OF PIECES		690			

METHOD B (MASS)

			MASS		
PASSING 19 / RETAINED 13.2	UNFRACTURED	178.11			
	2 + FRACTURED	71.13	28.5	% (13.2 mm)	
PASSING 13.2 / RETAINED 9.5	UNFRACTURED	102.61			
	2 + FRACTURED	25.33	19.8	% (9.5 mm)	
ARITHMETIC AVERAGE			25.6	% FRACTURE B	

Province of British Columbia
Ministry of Transportation and Highways
Geotechnical and Materials Branch

15-3-78

Project MOTH LTS -90
Station Telegraph Ramp Road
Sample No. TH 89-11 Depth 1.8 - 3.1m
Sampled By _____ Date _____
Tested By TJB Date June 19/90

X 15369

DEGRADATION

#3 9:00

SAMPLE NUMBER	X15369	_____
SEDIMENT HEIGHT (H)	1.5	_____
DEGRADATION FACTOR (D)	77	_____

CALCULATIONS:

ENGLISH UNITS $D = \frac{15-H}{15+1.75\ H} \times 100$

S.I. UNITS $D = \frac{381-H}{381+1.75\ H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER	_____	_____
SEDIMENT HEIGHT (H)	_____	_____
DURABILITY INDEX (Dc)	_____	_____

CALCULATION:

$Dc = 30.3 + 20.8\ \mathrm{Cot}(0.29+.0059H)$

SAND EQUIVALENT

#4 9:15 4:38

SAMPLE NUMBER	X15369	_____
SEDIMENT PERIOD	_____	_____
CLAY HEIGHT	6.2	_____
SAND HEIGHT	3.8	_____
SAND EQUIVALENT	61	_____

CALCULATIONS:

$\text{SAND EQUIVALENT} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER	_____	_____
SEDIMENT PERIOD	_____	_____
CLAY HEIGHT	_____	_____
SAND HEIGHT	_____	_____
D.I. FINE	_____	_____

CALCULATION:

$\text{D.I. FINE} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: MoTH-LTS/90 DISTRICT: _____

TESTHOLE/PIT: 89-12 SAMPLE NO.: ___ BAG NO.: X15466 DEPTH: 7.9-9.1 m

METHOD A (COUNT)

			COUNT		
PASSING / RETAINED	37.5 / 25	UNFRACTURED / 1 + FRACTURED	1 / 7	87.5	% (25 mm)
PASSING / RETAINED	25 / 19	UNFRACTURED / 1 + FRACTURED	3 / 15	82.3	% (19 mm)
PASSING / RETAINED	19 / 12.5	UNFRACTURED / 1 + FRACTURED	11 / 13	54.2	% (12.5 mm)
PASSING / RETAINED	12.5 / 9.5	UNFRACTURED / 1 + FRACTURED	83 / 19	45.2	% (9.5 mm)
PASSING / RETAINED	9.5 / 4.75	UNFRACTURED / 1 + FRACTURED	202 / 280	58.1	% (4.75 mm)
TOTAL		UNFRACTURED / 1 + FRACTURED	840 / 329	= 58.2	% FRACTURE A
TOTAL NUMBER OF PIECES			1741		

METHOD B (MASS)

			MASS		
PASSING / RETAINED	19 / ~~13.2~~ 13.5	UNFRACTURED / 2 + FRACTURED	99.73 / 14.90 / 114.63	21.0	% (13.2 mm)
PASSING / RETAINED	~~13.2~~ 13.5 / 9.5	UNFRACTURED / 2 + FRACTURED	69.15 / 33.94 / 103.09	32.9	% (9.5 mm)
ARITHMETIC AVERAGE				31.8	% FRACTURE B

PROVINCE OF BRITISH COLUMBIA
Ministry of Transportation and Highways
Geotechnical and Materials Branch

15-3-78

Project MOTH LTS-90
Station TELEGRAPH PEMBERTON
Sample No. TH89-12 Depth 7.9-9.1
Sampled By _____ Date _____
Tested By TJB Date June 18/90

X15466

DEGRADATION

#1 2:32

SAMPLE NUMBER	X15466	
SEDIMENT HEIGHT (H)	3.2	
DEGRADATION FACTOR (D)	57	

CALCULATIONS:

ENGLISH UNITS $D = \frac{15-H}{15+1.75\ H} \times 100$

S.I. UNITS $D = \frac{381-H}{381+1.75\ H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER		
SEDIMENT HEIGHT (H)		
DURABILITY INDEX (Dc)		

CALCULATION:

$Dc = 30.3 + 20.8\ \mathrm{Cot}(0.29+.0059H)$

#2 11:09 → 19
21 → 41

SAND EQUIVALENT

SAMPLE NUMBER	X15466	
SEDIMENT PERIOD	20 min/hr	
CLAY HEIGHT	6.0	
SAND HEIGHT	3.8	
SAND EQUIVALENT	63	

CALCULATIONS:

$\text{SAND EQUIVALENT} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER		
SEDIMENT PERIOD		
CLAY HEIGHT		
SAND HEIGHT		
D.I. FINE		

CALCULATION:

$\text{D.I. FINE} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: MoTH Lab Testing - AP/90 DISTRICT: South Island

TESTHOLE/PIT: 90-14 SAMPLE NO.: ___ BAG NO.: X105475 DEPTH: 6.7-7.9

METHOD A (COUNT)

			COUNT		
PASSING / RETAINED	37.5 / 25	UNFRACTURED / 1 + FRACTURED	1 / 3	75	% (25 mm)
PASSING / RETAINED	25 / 19	UNFRACTURED / 1 + FRACTURED	3 / 9	75	% (19 mm)
PASSING / RETAINED	19 / 12.5	UNFRACTURED / 1 + FRACTURED	8 / 15	65.2	% (12.5 mm)
PASSING / RETAINED	12.5 / 9.5	UNFRACTURED / 1 + FRACTURED	11 / 31	73.8	% (9.5 mm)
PASSING / RETAINED	9.5 / 4.75	UNFRACTURED / 1 + FRACTURED	151 / 389 / 538	71.9	% (4.75 mm)
TOTAL		UNFRACTURED / 1 + FRACTURED	174 / 446	= 71.9	% FRACTURE A
TOTAL NUMBER OF PIECES			620		

METHOD B (MASS)

			MASS		
PASSING / RETAINED	19 / 13.2	UNFRACTURED / 2 + FRACTURED	97.87 / 84.07 / 181.94	48.9	% (13.2 mm)
PASSING / RETAINED	13.2 / 9.5	UNFRACTURED / 2 + FRACTURED	22.84 / 59.56 / 82.4	64.1	% (9.5 mm)
ARITHMETIC AVERAGE				54.2	% FRACTURE B

Province of British Columbia
Ministry of Transportation and Highways
Geotechnical and Materials Branch

15-3-78

Project MOTH LTS-90
Station TELEGRAPH REMBERTON
Sample No. TH89-14 Depth 6.7-7.9 m
Sampled By ____ Date ____
Tested By TJB Date June 18/90

X15475

DEGRADATION

#1

9:35
9:59

SAMPLE NUMBER	X15475	
SEDIMENT HEIGHT (H)	1.5	
DEGRADATION FACTOR (D)	77	

CALCULATIONS:

ENGLISH UNITS $D = \frac{15-H}{15+1.75\ H} \times 100$

S.I. UNITS $D = \frac{381-H}{381+1.75\ H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER		
SEDIMENT HEIGHT (H)		
DURABILITY INDEX (Dc)		

CALCULATION:

$Dc = 30.3 + 20.8\ \mathrm{Cot}(0.29+.0059H)$

SAND EQUIVALENT

#2

9:10
9:32

SAMPLE NUMBER	X15475	
SEDIMENT PERIOD	20 min	
CLAY HEIGHT	9.2	
SAND HEIGHT	3.1	
SAND EQUIVALENT	34	

CALCULATIONS:

SAND EQUIVALENT = $\frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER		
SEDIMENT PERIOD		
CLAY HEIGHT		
SAND HEIGHT		
D.I. FINE		

CALCULATION:

D.I. FINE = $\frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: MoTH Lab Testing : AP190 DISTRICT: South Island

TESTHOLE/PIT: 89-15 SAMPLE NO.: ___ BAG NO.: V16471 DEPTH: 1.8-3.1

METHOD A (COUNT)

			COUNT		
PASSING	37.5	UNFRACTURED	1		
RETAINED	25	1 + FRACTURED	1	50.0	% (25 mm)
PASSING	25	UNFRACTURED	7		
RETAINED	19	1 + FRACTURED	8	53.3	% (19 mm)
PASSING	19	UNFRACTURED	27		
RETAINED	12.5	1 + FRACTURED	10	27.0	% (12.5 mm)
PASSING	12.5	UNFRACTURED	32		
RETAINED	9.5	1 + FRACTURED	16	33.3	% (9.5 mm)
PASSING	9.5	UNFRACTURED	327		
RETAINED	4.75	1 + FRACTURED	251 / 578	43.4	% (4.75 mm)
TOTAL		UNFRACTURED	394		
		1 + FRACTURED	286	= 42.1	% FRACTURE A
TOTAL NUMBER OF PIECES			680		

METHOD B (MASS)

			MASS		
PASSING	19	UNFRACTURED	193.94		
RETAINED	13.2	2 + FRACTURED	35.176 / 229.11	15.4	% (13.2 mm)
PASSING	13.2	UNFRACTURED	96.96		
RETAINED	9.5	2 + FRACTURED	27.85 / 124.81	22.3	% (9.5 mm)
ARITHMETIC AVERAGE				17.8	% FRACTURE B

15-3-78

PROVINCE OF BRITISH COLUMBIA
Ministry of Transportation and Highways
Geotechnical and Materials Branch

Project MOTH LTS-90
Station TELEGRAPH PENETRATION
Sample No. TH89-5 Depth 1.8 - 3.1m
Sampled By _____ Date _____
Tested By TJB Date June 18/90

X 15471

DEGRADATION

#1 342

SAMPLE NUMBER	X 15471	_____
SEDIMENT HEIGHT (H)	4.2	_____
DEGRADATION FACTOR (D)	98	_____

CALCULATIONS:

ENGLISH UNITS $D = \frac{15-H}{15+1.75\ H} \times 100$

S.I. UNITS $D = \frac{381-H}{381+1.75\ H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER	_____	_____
SEDIMENT HEIGHT (H)	_____	_____
DURABILITY INDEX (Dc)	_____	_____

CALCULATION:

$Dc = 30.3 + 20.8\ \mathrm{Cot}(0.29+.0059H)$

SAND EQUIVALENT

#1 11:13 → 23 25 - 45

SAMPLE NUMBER	X15471	_____
SEDIMENT PERIOD	20min.	_____
CLAY HEIGHT	11.4	_____
SAND HEIGHT	2.4	_____
SAND EQUIVALENT	21	_____

CALCULATIONS:

SAND EQUIVALENT = $\frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER	_____	_____
SEDIMENT PERIOD	_____	_____
CLAY HEIGHT	_____	_____
SAND HEIGHT	_____	_____
D.I. FINE	_____	_____

CALCULATION:

D.I. FINE = $\frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: Telegraph - Remediation DISTRICT: South Island

TESTHOLE/PIT: 89-15 SAMPLE NO.: ___ BAG NO.: x15472 DEPTH: 5.5 - 6.7m

METHOD A (COUNT)

			COUNT		
PASSING 37.5 / RETAINED 25	UNFRACTURED	4			
	1 + FRACTURED	2	33.3	% (25 mm)	
PASSING 25 / RETAINED 19	UNFRACTURED	2			
	1 + FRACTURED	7	77.8	% (19 mm)	
PASSING 19 / RETAINED 12.5	UNFRACTURED	16			
	1 + FRACTURED	22	57.9	% (12.5 mm)	
PASSING 12.5 / RETAINED 9.5	UNFRACTURED	24			
	1 + FRACTURED	28	53.8	% (9.5 mm)	
PASSING 9.5 / RETAINED 4.75	UNFRACTURED	83			
	1 + FRACTURED	352	80.9	% (4.75 mm)	
TOTAL	UNFRACTURED	129			
	1 + FRACTURED	411	= 76.1	% FRACTURE A	
TOTAL NUMBER OF PIECES		540			

METHOD B (MASS)

			MASS		
PASSING 19 / RETAINED 13.2	UNFRACTURED	159.50			
	2 + FRACTURED	106.28	40.0	% (13.2 mm)	
PASSING 13.2 / RETAINED 9.5	UNFRACTURED	72.77			
	2 + FRACTURED	42.79	37.0	% (9.5 mm)	
ARITHMETIC AVERAGE			39.1	% FRACTURE B	

PROVINCE OF BRITISH COLUMBIA
Ministry of Transportation and Highways
Geotechnical and Materials Branch

Project MOTH LAB TESTING
Station TH 89-15 @ 5.5 - 6.7 m
Sample No. _____ Depth _____
Sampled By _____ Date _____
Tested By DM Date July 3/90
X15472

DEGRADATION

SAMPLE NUMBER	X15472	
SEDIMENT HEIGHT (H)	2.1	
DEGRADATION FACTOR (D)	69	

CALCULATIONS:

ENGLISH UNITS $D = \frac{15 - H}{15 + 1.75\ H} \times 100$ 109

S.I. UNITS $D = \frac{381 - H}{381 + 1.75\ H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER	X15472	
SEDIMENT HEIGHT (H)	0.8	
DURABILITY INDEX (Dc)	78	

CALCULATION:

$Dc = 30.3 + 20.8\ \mathrm{Cot}(0.29 + .0059H)$

SAND EQUIVALENT

#2 3:39 4:01

SAMPLE NUMBER	X15472	
SEDIMENT PERIOD	20min	
CLAY HEIGHT	11.0	
SAND HEIGHT	3.4	
SAND EQUIVALENT	31	

CALCULATIONS:

$\text{SAND EQUIVALENT} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER	X15472	
SEDIMENT PERIOD	20min	
CLAY HEIGHT	5.5	
SAND HEIGHT	3.7	
D.I. FINE	67.3	

CALCULATION:

$\text{D.I. FINE} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

Ministry of Transportation and Highways
GEOTECHNICAL AND MATERIALS BRANCH

PROJECT TELEGRAPH - PEMBERTON LAB TESTING SERVICES

Station or T.H. TH 89-15 Sample No. _____

Depth 5.5 - 6.7 M Cost Code 316 X15472

Date JUNE 28/90

Technician A.G.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	42.1	992.8	1505.3	1471.0	2.3	1.0
25.0 mm	19.0 mm		512.5				
19.0 mm	12.5 mm	36.5	664.5	995.3	957.31	3.8	1.4
12.5 mm	9.5 mm		330.8				
9.5 mm	4.75 mm	21.4		300.3	293.82	2.4	0.5
TOTALS		100.0					2.9
SOUNDNESS TEST OF FINE AGGREGATE							
★9.5 mm	4.75 mm						
4.75 mm	2.36 mm	28.7		100.00	92.20	7.8	2.2
2.36 mm	1.18 mm	20.9		100.06	91.54	8.5	1.8
1.18 mm	.600 mm	15.6		100.00	87.99	12.0	1.9
.600 mm	.300 mm	13.6		100.00	95.30	4.7	0.6
.300 mm	.150 mm	6.0					
.150 mm	PAN	15.2					
TOTALS		100.0					6.5

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

% Of Initial Sample Passing 4.75 mm Sieve = 39.7 %

REMARKS:- * 1 particle split and there was some flaking.

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

SPECIFIC GRAVITY (agg.) TEST

Project MoTH LTS - 1990
Sta. or T.H. 89-15 Sample # ____
Depth 5.5 - 6.7 m (bag #X15473)
Cost Code ____ Date July 5/90
Technician BRC

COARSE AGGREGATE

Mass of Basket + S.S.D. Sample in Air			g
Mass of Basket in Air			g
Mass of S.S.D. Sample in Air	(W)	2682.9	g 2667.1
Mass of Basket + S.S.D. Sample in Water		3143.5	g
Mass of Basket in Water		1411.4	g
Mass of S.S.D. Sample in Water	(C)	1732.1	g
S.G. (S.S.D.) = $\frac{W}{W-C}$ =		2.812	
Mass of Oven Dry Sample + Container in Air			g
Mass of Container in Air			g
Mass of Oven Dry Sample in Air	(A)	2667.1	g
ABSORPTION = $\frac{W-A}{A}$ x 100 =		0.8	%
Apparent S.G. (if required) = A/(A-C) =			

FINE AGGREGATE

		1	2A	
Mass of Flask + S.S.D. Sample		454.16	532.32	g
Mass of Flask		159.47	164.30	g
Mass of S.S.D. Sample	(W)	294.69	368.02	g
Mass of Flask + Water to Mark	(B)	657.75	662.41	g
Mass of Flask + S.S.D. Sample + Water	(D)	946.41	998.28	g
S.G. (S.S.D.) = $\frac{W}{B+W-D}$ =		2.779	2.785	
Mass of Oven Dry Sample + Container		407.35	488.28	g
Mass of Container		117.01 (52)	125.51 (39)	g
Mass of Oven Dry Sample	(A)	290.34	362.77	g
ABSORPTION = $\frac{W-A}{A}$ x 100 =		1.5%	1.4	%

If Bulk S.G. is Required:

Coarse Agg. Bulk S.G. = $\frac{A}{W-C}$ Fine Agg. Bulk S.G. = $\frac{A}{B+W-D}$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: Telegraph-Pemberton DISTRICT: South Island

TESTHOLE/~~PIT~~: 89-15 SAMPLE NO.: ___ BAG NO.: X15474 DEPTH: 12.8-14.1M

METHOD A (COUNT)

			COUNT		
PASSING	37.5	UNFRACTURED	1		
RETAINED	25	1 + FRACTURED	1	50	% (25 mm)
PASSING	25	UNFRACTURED	3		
RETAINED	19	1 + FRACTURED	5	62.5	% (19 mm)
PASSING	19	UNFRACTURED	20		
RETAINED	12.5	1 + FRACTURED	13	39.4	% (12.5 mm)
PASSING	12.5	UNFRACTURED	19		
RETAINED	9.5	1 + FRACTURED	17	47.2	% (9.5 mm)
PASSING	9.5	UNFRACTURED	69		
RETAINED	4.75	1 + FRACTURED	412	84.3	% (4.75 mm)
TOTAL		UNFRACTURED	112		
		1 + FRACTURED	448	= 80.0	% FRACTURE A
TOTAL NUMBER OF PIECES			560		

METHOD B (MASS)

			MASS		
PASSING	19	UNFRACTURED	153.1		
RETAINED	13.2	2 + FRACTURED	57.8	27.4	% (13.2 mm)
PASSING	13.2	UNFRACTURED	61.6		
RETAINED	9.5	2 + FRACTURED	15.9	20.5	% (9.5 mm)

ARITHMETIC AVERAGE 25.6 % FRACTURE B

15-3-78

PROVINCE OF BRITISH COLUMBIA
Ministry of Transportation and Highways
Geotechnical and Materials Branch

Project MOTH 475-90
Station TRANS-CANADA PENTICTON
Sample No. TH89-15 Depth 12.5-14.0m
Sampled By _____ Date _____
Tested By TJB Date June 18/90
X 15474

DEGRADATION

#1 4:36

SAMPLE NUMBER	X15474	_____
SEDIMENT HEIGHT (H)	1.2	_____
DEGRADATION FACTOR (D)	81	_____

CALCULATIONS:

ENGLISH UNITS $D = \frac{15-H}{15+1.75\ H} \times 100$

S.I. UNITS $D = \frac{381-H}{381+1.75\ H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER	_____	_____
SEDIMENT HEIGHT (H)	_____	_____
DURABILITY INDEX (Dc)	_____	_____

CALCULATION:

$Dc = 30.3 + 20.8\ \mathrm{Cot}(0.29+.0059H)$

SAND EQUIVALENT

#2 3:43 3:45

SAMPLE NUMBER	X15474	_____
SEDIMENT PERIOD	20mw	_____
CLAY HEIGHT	6.4	_____
SAND HEIGHT	3.8	_____
SAND EQUIVALENT	59	_____

CALCULATIONS:

$\text{SAND EQUIVALENT} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER	_____	_____
SEDIMENT PERIOD	_____	_____
CLAY HEIGHT	_____	_____
SAND HEIGHT	_____	_____
D.I. FINE	_____	_____

CALCULATION:

$\text{D.I. FINE} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: Telegraph - Pemberton DISTRICT: South Island

TESTHOLE/PIT: 89-19 SAMPLE NO.: ___ BAG NO.: X154823 DEPTH: 1.8-3.1

METHOD A (COUNT)

			COUNT		
PASSING	37.5	UNFRACTURED	0		
RETAINED	25	1 + FRACTURED	2	100	% (25 mm)
PASSING	25	UNFRACTURED	5		
RETAINED	19	1 + FRACTURED	15	75	% (19 mm)
PASSING	19	UNFRACTURED	14		
RETAINED	12.5	1 + FRACTURED	14	50	% (12.5 mm)
PASSING	12.5	UNFRACTURED	22		
RETAINED	9.5	1 + FRACTURED	30	57.7	% (9.5 mm)
PASSING	9.5	UNFRACTURED	185		
RETAINED	4.75	1 + FRACTURED	288 / 473	60.9	% (4.75 mm)
TOTAL		UNFRACTURED	826		
		1 + FRACTURED	349	= 60.7	% FRACTURE A
TOTAL NUMBER OF PIECES			575		

METHOD B (MASS)

			MASS		
PASSING	19	UNFRACTURED	19.56		
RETAINED	13.2	2 + FRACTURED	67.63 / 87.19	77.6	% (13.2 mm)
PASSING	13.2	UNFRACTURED	67.85		
RETAINED	9.5	2 + FRACTURED	51.28 / 118.49	43.3	% (9.5 mm)
ARITHMETIC AVERAGE				57.8	% FRACTURE B

15-3-78

Province of British Columbia
Ministry of Transportation and Highways
Geotechnical and Materials Branch

Project MOTH - LTS 90
Station TELEGRAPH PEMBERTON
Sample No. TH89-19 Depth 1.8-3.1 m
Sampled By _____ Date _____
Tested By TJB Date June 19/90

× 15483

DEGRADATION

5:57

#3

SAMPLE NUMBER	15483	_____
SEDIMENT HEIGHT (H)	28	_____
DEGRADATION FACTOR (D)	61	_____

CALCULATIONS:

ENGLISH UNITS $D = \frac{15-H}{15+1.75\ H} \times 100$

S.I. UNITS $D = \frac{381-H}{381+1.75\ H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER	_____	_____
SEDIMENT HEIGHT (H)	_____	_____
DURABILITY INDEX (Dc)	_____	_____

CALCULATION:

$Dc = 30.3 + 20.8\ \mathrm{Cot}(0.29+.0059H)$

SAND EQUIVALENT

#1

8:18
8:40.4

SAMPLE NUMBER	× 15483	_____
SEDIMENT PERIOD	20 MIN	_____
CLAY HEIGHT	8.3	_____
SAND HEIGHT	3.2	_____
SAND EQUIVALENT	39	_____

CALCULATIONS:

$\text{SAND EQUIVALENT} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER	_____	_____
SEDIMENT PERIOD	_____	_____
CLAY HEIGHT	_____	_____
SAND HEIGHT	_____	_____
D.I. FINE	_____	_____

CALCULATION:

$\text{D.I. FINE} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: Telegraph - Pemberton DISTRICT: South Island
TESTHOLE/PIT: 89-19 SAMPLE NO.: ___ BAG NO.: X154184 DEPTH: 11.6-12.8m

METHOD A (COUNT)

			COUNT		
PASSING	37.5	UNFRACTURED	–		
RETAINED	25	1 + FRACTURED	5	100.0	% (25 mm)
PASSING	25	UNFRACTURED	–		
RETAINED	19	1 + FRACTURED	7	100.0	% (19 mm)
PASSING	19	UNFRACTURED	5		
RETAINED	12.5	1 + FRACTURED	12	70.6	% (12.5 mm)
PASSING	12.5	UNFRACTURED	11		
RETAINED	9.5	1 + FRACTURED	24	68.6	% (9.5 mm)
PASSING	9.5	UNFRACTURED	40		
RETAINED	4.75	1 + FRACTURED	282	87.6	% (4.75 mm)
TOTAL		UNFRACTURED	56		
		1 + FRACTURED	330	= 85.5	% FRACTURE A
TOTAL NUMBER OF PIECES			386		

METHOD B (MASS)

			MASS		
PASSING	19	UNFRACTURED	54.5		
RETAINED	13.2	2 + FRACTURED	43.3	44.3	% (13.2 mm)
PASSING	13.2	UNFRACTURED	39.1		
RETAINED	9.5	2 + FRACTURED	45.2	53.6	% (9.5 mm)
ARITHMETIC AVERAGE				48.6	% FRACTURE B

15-3-78

Province of British Columbia
Ministry of Transportation and Highways
Geotechnical and Materials Branch

Project MOTH - LTS 90
Station TELEGRAPH PEMBERTON
Sample No. TH89-19 Depth 11.6 - 12.8
Sampled By _____ Date _____
Tested By IJB Date June 19/90

× 15489

DEGRADATION

#4 9:29.9

SAMPLE NUMBER	15484	_____
SEDIMENT HEIGHT (H)	2.0	_____
DEGRADATION FACTOR (D)	70	_____

CALCULATIONS:

ENGLISH UNITS $D = \frac{15-H}{15+1.75\ H} \times 100$

S.I. UNITS $D = \frac{381-H}{381+1.75\ H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER	_____	_____
SEDIMENT HEIGHT (H)	_____	_____
DURABILITY INDEX (Dc)	_____	_____

CALCULATION:

$Dc = 30.3 + 20.8\ \mathrm{Cot}(0.29 + .0059H)$

SAND EQUIVALENT

#2 8:29 8:46

SAMPLE NUMBER	× 15484	_____
SEDIMENT PERIOD	20 min	_____
CLAY HEIGHT	5.5	_____
SAND HEIGHT	3.9	_____
SAND EQUIVALENT	71	_____

CALCULATIONS:

$\text{SAND EQUIVALENT} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER	_____	_____
SEDIMENT PERIOD	_____	_____
CLAY HEIGHT	_____	_____
SAND HEIGHT	_____	_____
D.I. FINE	_____	_____

CALCULATION:

$\text{D.I. FINE} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: TELEGRAPH - PEMBERTON DISTRICT: South Island

TESTHOLE/~~PIT~~: 89-21 SAMPLE NO.: ___ BAG NO.: X15490 DEPTH: 5.5-6.7M

METHOD A (COUNT)

			COUNT		
PASSING 37.5 / RETAINED 25	UNFRACTURED	2			
	1 + FRACTURED	3	60.0	% (25 mm)	
PASSING 25 / RETAINED 19	UNFRACTURED	2			
	1 + FRACTURED	9	81.8	% (19 mm)	
PASSING 19 / RETAINED 12.5	UNFRACTURED	7			
	1 + FRACTURED	14	66.7	% (12.5 mm)	
PASSING 12.5 / RETAINED 9.5	UNFRACTURED	14			
	1 + FRACTURED	31	68.9	% (9.5 mm)	
PASSING 9.5 / RETAINED 4.75	UNFRACTURED	100			
	1 + FRACTURED	293	73.9	% (4.75 mm)	
TOTAL	UNFRACTURED	125			
	1 + FRACTURED	340	= 73.1	% FRACTURE A	
TOTAL NUMBER OF PIECES		465			

METHOD B (MASS)

			MASS		
PASSING 19 / RETAINED 13.2	UNFRACTURED	65.2			
	2 + FRACTURED	63.4	49.3	% (13.2 mm)	
PASSING 13.2 / RETAINED 9.5	UNFRACTURED	50.9			
	2 + FRACTURED	45.5	47.2	% (9.5 mm)	
ARITHMETIC AVERAGE			48.4	% FRACTURE B	

Province of British Columbia
Ministry of Transportation and Highways
Geotechnical and Materials Branch

Project: Mott Lab Testing
Station
Sample No. X15490 Depth 5.5-6.7
Sampled By ______ Date ______
Tested By SLK Date June 05

X15490

DEGRADATION

SAMPLE NUMBER		X15490
SEDIMENT HEIGHT (H)		2.0
DEGRADATION FACTOR (D)		70

CALCULATIONS:

ENGLISH UNITS $D = \frac{15-H}{15+1.75H} \times 100$

S.I. UNITS $D = \frac{381-H}{381+1.75H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER		
SEDIMENT HEIGHT (H)		
DURABILITY INDEX (Dc)		

CALCULATION:

$Dc = 30.3 + 20.8 \cot(0.29+.0059H)$

SAND EQUIVALENT

SAMPLE NUMBER		
SEDIMENT PERIOD	20 min	
CLAY HEIGHT	8.6	
SAND HEIGHT	2.9	
SAND EQUIVALENT	34	

CALCULATIONS:

$\text{SAND EQUIVALENT} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER		
SEDIMENT PERIOD		
CLAY HEIGHT		
SAND HEIGHT		
D.I. FINE		

CALCULATION:

$\text{D.I. FINE} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: TELEGRAPH – PEMBERTON DISTRICT: South Island

TESTHOLE/PIT: 8921 SAMPLE NO.: ___ BAG NO.: X15491 DEPTH: 12.8–14.0m

METHOD A (COUNT)

			COUNT		
PASSING	37.5	UNFRACTURED	0		
RETAINED	25	1 + FRACTURED	1	100.0	% (25 mm)
PASSING	25	UNFRACTURED	1		
RETAINED	19	1 + FRACTURED	4	80.0	% (19 mm)
PASSING	19	UNFRACTURED	6		
RETAINED	12.5	1 + FRACTURED	11	64.7	% (12.5 mm)
PASSING	12.5	UNFRACTURED	13		
RETAINED	9.5	1 + FRACTURED	29	69.0	% (9.5 mm)
PASSING	9.5	UNFRACTURED	101		
RETAINED	4.75	1 + FRACTURED	313	75.6	% (4.75 mm)
TOTAL		UNFRACTURED	121		
		1 + FRACTURED	358	= 74.7	% FRACTURE A
TOTAL NUMBER OF PIECES			479		

METHOD B (MASS)

			MASS		
PASSING	19	UNFRACTURED	64.65		
RETAINED	13.2	2 + FRACTURED	75.81	54.0	% (13.2 mm)
PASSING	13.2	UNFRACTURED	43.03		
RETAINED	9.5	2 + FRACTURED	44.41	50.8	% (9.5 mm)
ARITHMETIC AVERAGE				52.8	% FRACTURE B

PROVINCE OF BRITISH COLUMBIA
Ministry of Transportation and Highways
Geotechnical and Materials Branch

Project Meth. Lab Testing 89/90
Station
Sample No. X1549 Depth 89-21 12.8-14.0
Sampled By Date
Tested By SK Date June 20

DEGRADATION

SAMPLE NUMBER		X1549/2000
SEDIMENT HEIGHT (H)		4.9
DEGRADATION FACTOR (D)		43

CALCULATIONS:

ENGLISH UNITS $D = \frac{15-H}{15+1.75\ H} \times 100$ $\frac{10.1}{10.7}$ 2.18

S.I. UNITS $D = \frac{381-H}{381+1.75\ H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER		
SEDIMENT HEIGHT (H)		
DURABILITY INDEX (Dc)		

CALCULATION:

$Dc = 30.3 + 20.8\ \mathrm{Cot}(0.29+.0059H)$

SAND EQUIVALENT

SAMPLE NUMBER	X1549	
SEDIMENT PERIOD	20 min	
CLAY HEIGHT	5.75	
SAND HEIGHT	3.7	
SAND EQUIVALENT	64	

CALCULATIONS:

$\text{SAND EQUIVALENT} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER		
SEDIMENT PERIOD		
CLAY HEIGHT		
SAND HEIGHT		
D.I. FINE		

CALCULATION:

$\text{D.I. FINE} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: TELEGRAPH - PEMBERTON DISTRICT: South Island

TESTHOLE/PIT: 89-29 SAMPLE NO.: ___ BAG NO.: X15352 DEPTH: 3.1-4.3m

METHOD A (COUNT)

			COUNT		
PASSING	37.5	UNFRACTURED	1		
RETAINED	25	1 + FRACTURED	2	66.7	% (25 mm)
PASSING	25	UNFRACTURED	3		
RETAINED	19	1 + FRACTURED	9	75.0	% (19 mm)
PASSING	19	UNFRACTURED	9		
RETAINED	12.5	1 + FRACTURED	11	55.0	% (12.5 mm)
PASSING	12.5	UNFRACTURED	22		
RETAINED	9.5	1 + FRACTURED	25	53.2	% (9.5 mm)
PASSING	9.5	UNFRACTURED	119		
RETAINED	4.75	1 + FRACTURED	233	66.2	% (4.75 mm)
TOTAL		UNFRACTURED	154		
		1 + FRACTURED	280	= 64.5	% FRACTURE A
TOTAL NUMBER OF PIECES			434		

METHOD B (MASS)

			MASS		
PASSING	19	UNFRACTURED	91.6		
RETAINED	13.2	2 + FRACTURED	52.8	36.6	% (13.2 mm)
PASSING	13.2	UNFRACTURED	75.0		
RETAINED	9.5	2 + FRACTURED	30.3	28.8	% (9.5 mm)
ARITHMETIC AVERAGE				33.3	% FRACTURE B

PROVINCE OF BRITISH COLUMBIA
Ministry of Transportation and Highways
Geotechnical and Materials Branch

Project MoTH Lab Testing ; AP790
Station
Sample No. X15352 Depth 3.9-4.1, 4.1-4.3
Sampled By _____ Date _____
Tested By SLP Date June 05

DEGRADATION

SAMPLE NUMBER	_____	X15352 Reco
SEDIMENT HEIGHT (H)	_____	5.5
DEGRADATION FACTOR (D)	_____	39

CALCULATIONS:

ENGLISH UNITS $D = \frac{15-H}{15+1.75\ H} \times 100$

S.I. UNITS $D = \frac{381-H}{381+1.75\ H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER	_____	_____
SEDIMENT HEIGHT (H)	_____	_____
DURABILITY INDEX (Dc)	_____	_____

CALCULATION:

$Dc = 30.3 + 20.8\ \mathrm{Cot}(0.29+.0059H)$

SAND EQUIVALENT

SAMPLE NUMBER	X15352	_____
SEDIMENT PERIOD	20 min	_____
CLAY HEIGHT	4.7	_____
SAND HEIGHT	3.6	_____
SAND EQUIVALENT	77	_____

CALCULATIONS:

$\text{SAND EQUIVALENT} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER	_____	_____
SEDIMENT PERIOD	_____	_____
CLAY HEIGHT	_____	_____
SAND HEIGHT	_____	_____
D.I. FINE	_____	_____

CALCULATION:

$\text{D.I. FINE} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: TELEGRAPH – PEMBERTON DISTRICT: South Island

TESTHOLE/PIT: 89-30 SAMPLE NO.: ___ BAG NO.: X15367 DEPTH: 1.8-3.1M

METHOD A (COUNT)

			COUNT		
PASSING 37.5 / RETAINED 25	UNFRACTURED	2			
	1 + FRACTURED	1	33.3	% (25 mm)	
PASSING 25 / RETAINED 19	UNFRACTURED	4			
	1 + FRACTURED	2	33.3	% (19 mm)	
PASSING 19 / RETAINED 12.5	UNFRACTURED	9			
	1 + FRACTURED	13	62.5	% (12.5 mm)	
PASSING 12.5 / RETAINED 9.5	UNFRACTURED	20			
	1 + FRACTURED	21	51.2	% (9.5 mm)	
PASSING 9.5 / RETAINED 4.75	UNFRACTURED	231			
	1 + FRACTURED	338	59.4	% (4.75 mm)	
TOTAL	UNFRACTURED	266			
	1 + FRACTURED	377	= 58.6	% FRACTURE A	
TOTAL NUMBER OF PIECES		643			

METHOD B (MASS)

			MASS		
PASSING 19 / RETAINED 13.2	UNFRACTURED	110.2			
	2 + FRACTURED	53.7	32.8	% (13.2 mm)	
PASSING 13.2 / RETAINED 9.5	UNFRACTURED	66.5			
	2 + FRACTURED	33.1	33.2	% (9.5 mm)	
ARITHMETIC AVERAGE			32.9	% FRACTURE B	

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: Telegraph – Pemberton DISTRICT: South Island

TESTHOLE/PIT: 89-32 SAMPLE NO.: ___ BAG NO.: X15362 DEPTH: 1.8-3.1m

METHOD A (COUNT)

			COUNT		
PASSING	37.5	UNFRACTURED	1		
RETAINED	25	1 + FRACTURED	1	50.0	% (25 mm)
PASSING	25	UNFRACTURED	4		
RETAINED	19	1 + FRACTURED	4	50.0	% (19 mm)
PASSING	19	UNFRACTURED	5		
RETAINED	12.5	1 + FRACTURED	4	44.4	% (12.5 mm)
PASSING	12.5	UNFRACTURED	10		
RETAINED	9.5	1 + FRACTURED	15	60.0	% (9.5 mm)
PASSING	9.5	UNFRACTURED	94		
RETAINED	4.75	1 + FRACTURED	134	58.8	% (4.75 mm)
TOTAL		UNFRACTURED	114		
		1 + FRACTURED	158	= 58.1	% FRACTURE A
TOTAL NUMBER OF PIECES			272		

METHOD B (MASS)

			MASS		
PASSING	19	UNFRACTURED	38.0		
RETAINED	13.2	2 + FRACTURED	17.7	31.8	% (13.2 mm)
PASSING	13.2	UNFRACTURED	31.8		
RETAINED	9.5	2 + FRACTURED	23.5	42.5	% (9.5 mm)

ARITHMETIC AVERAGE 37.2 % FRACTURE B

Province of British Columbia
Ministry of Transportation and Highways
Geotechnical and Materials Branch

Project: North LTS.
Station: TH 89-32 @ 1.8-3.1 m
Sample No. _____ Depth _____
Sampled By _____ Date _____
Tested By DJM Date July 3/90
X15362

4:55
5:20

DEGRADATION

SAMPLE NUMBER	X15362	_____
SEDIMENT HEIGHT (H)	1.9	_____
DEGRADATION FACTOR (D)	72	_____

CALCULATIONS:

ENGLISH UNITS $D = \frac{15-H}{15+1.75\ H} \times 100$ (13.1, 13.325)

S.I. UNITS $D = \frac{381-H}{381+1.75\ H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER	_____	_____
SEDIMENT HEIGHT (H)	_____	_____
DURABILITY INDEX (Dc)	_____	_____

CALCULATION:

$Dc = 30.3 + 20.8\ \mathrm{Cot}(0.29+.0059H)$

SAND EQUIVALENT

#3

3.5
4.09

SAMPLE NUMBER	_____	_____
SEDIMENT PERIOD	20 min	_____
CLAY HEIGHT	5.8	_____
SAND HEIGHT	3.9	_____
SAND EQUIVALENT	67.2	_____

CALCULATIONS:

$\text{SAND EQUIVALENT} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER	_____	_____
SEDIMENT PERIOD	_____	_____
CLAY HEIGHT	_____	_____
SAND HEIGHT	_____	_____
D.I. FINE	_____	_____

CALCULATION:

$\text{D.I. FINE} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: Telegraph - Petersen DISTRICT: South Island

TESTHOLE/~~PIT~~: 89-32 SAMPLE NO.: ___ BAG NO.: X15363 DEPTH: 7.9 - 9.1m

METHOD A (COUNT)

			COUNT		
PASSING	37.5	UNFRACTURED	—		
RETAINED	25	1 + FRACTURED	4	100.0	% (25 mm)
PASSING	25	UNFRACTURED	7		
RETAINED	19	1 + FRACTURED	8	53.3	% (19 mm)
PASSING	19	UNFRACTURED	10		
RETAINED	12.5	1 + FRACTURED	7	41.2	% (12.5 mm)
PASSING	12.5	UNFRACTURED	18		
RETAINED	9.5	1 + FRACTURED	16	47.1	% (9.5 mm)
PASSING	9.5	UNFRACTURED	141		
RETAINED	4.75	1 + FRACTURED	190	56.1	% (4.75 mm)
TOTAL		UNFRACTURED	176		
		1 + FRACTURED	215	= 55.0	% FRACTURE A
TOTAL NUMBER OF PIECES			391		

METHOD B (MASS)

			MASS		
PASSING	19	UNFRACTURED	77.6		
RETAINED	13.2	2 + FRACTURED	33.2	30.0	% (13.2 mm)
PASSING	13.2	UNFRACTURED	54.9		
RETAINED	9.5	2 + FRACTURED	22.9	29.4	% (9.5 mm)
ARITHMETIC AVERAGE				29.7	% FRACTURE B

Province of British Columbia
Ministry of Transportation and Highways
Geotechnical and Materials Branch

Project M.O.T.H LS-90
Station TH89-32 @ 7.9-9.1 m
Sample No. _____ Depth _____
Sampled By _____ Date _____
Tested By DM Date July 3/90

X 15363

DEGRADATION

SAMPLE NUMBER	X 15363	
SEDIMENT HEIGHT (H)	2.6	
DEGRADATION FACTOR (D)	63	

CALCULATIONS:

ENGLISH UNITS $D = \frac{15-H}{15+1.75\ H} \times 100$ 12.4 19.5

S.I. UNITS $D = \frac{381-H}{381+1.75\ H} \times 100$

DURABILITY INDEX COARSE

SAMPLE NUMBER		
SEDIMENT HEIGHT (H)		
DURABILITY INDEX (Dc)		

CALCULATION:

$Dc = 30.3 + 20.8\ \mathrm{Cot}(0.29+.0059H)$

SAND EQUIVALENT

SAMPLE NUMBER	X 15363	
SEDIMENT PERIOD	20 min	
CLAY HEIGHT	5.3	
SAND HEIGHT	3.6	
SAND EQUIVALENT	68	

CALCULATIONS:

$\text{SAND EQUIVALENT} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

DURABILITY INDEX FINE

SAMPLE NUMBER		
SEDIMENT PERIOD		
CLAY HEIGHT		
SAND HEIGHT		
D.I. FINE		

CALCULATION:

$\text{D.I. FINE} = \frac{\text{SAND HEIGHT}}{\text{CLAY HEIGHT}} \times 100$

FRACTURE COUNT

MINISTRY OF TRANSPORTATION AND HIGHWAYS – GEOTECHNICAL BRANCH

METHOD A – FOR CRUSHED GRANULAR SURFACING AND BASE
METHOD B – FOR CRUSHED PAVING AGGREGATE

PROJECT: Telegraph - Pemberton DISTRICT: South Island

TESTHOLE/~~PIT~~: 89-33 SAMPLE NO.: ___ BAG NO.: XL5358 DEPTH: 9.1-10.4m

METHOD A (COUNT)

			COUNT		
PASSING	37.5	UNFRACTURED	—		
RETAINED	25	1 + FRACTURED	3	100.0	% (25 mm)
PASSING	25	UNFRACTURED	3		
RETAINED	19	1 + FRACTURED	3	50.0	% (19 mm)
PASSING	19	UNFRACTURED	10		
RETAINED	12.5	1 + FRACTURED	14	58.3	% (12.5 mm)
PASSING	12.5	UNFRACTURED	18		
RETAINED	9.5	1 + FRACTURED	24	57.1	% (9.5 mm)
PASSING	9.5	UNFRACTURED	104		
RETAINED	4.75	1 + FRACTURED	275	72.6	% (4.75 mm)
TOTAL		UNFRACTURED	135		
		1 + FRACTURED	319	= 70.3	% FRACTURE A
TOTAL NUMBER OF PIECES			454		

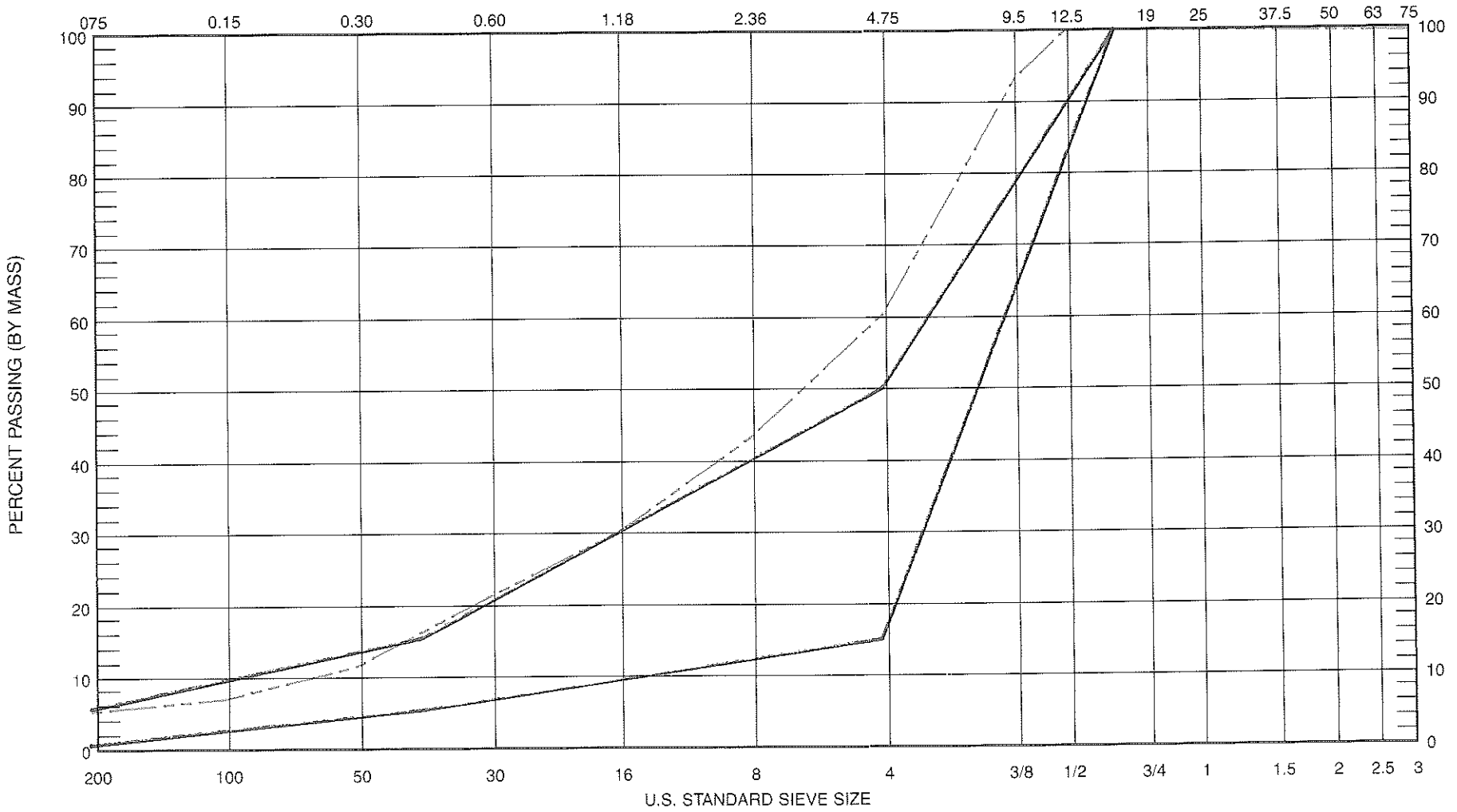
METHOD B (MASS)

			MASS		
PASSING	19	UNFRACTURED	107.2		
RETAINED	13.2	2 + FRACTURED	45.7	29.9	% (13.2 mm)
PASSING	13.2	UNFRACTURED	75.6		
RETAINED	9.5	2 + FRACTURED	33.9	31.0	% (9.5 mm)
ARITHMETIC AVERAGE				30.3	% FRACTURE B

Ministry of Transportation and Highways — Geotechnical Branch

AGGREGATE GRADATION CHART

PROJECT: TELEGRAPH 61008
DISTRICT: SOUTH ISLAND



BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
XSE39	1	STOCKPILE	UNKNOWN	16mm GRADED SEAL	SG	HAND	89.08.01	NANAIMO LAB	89.08.03

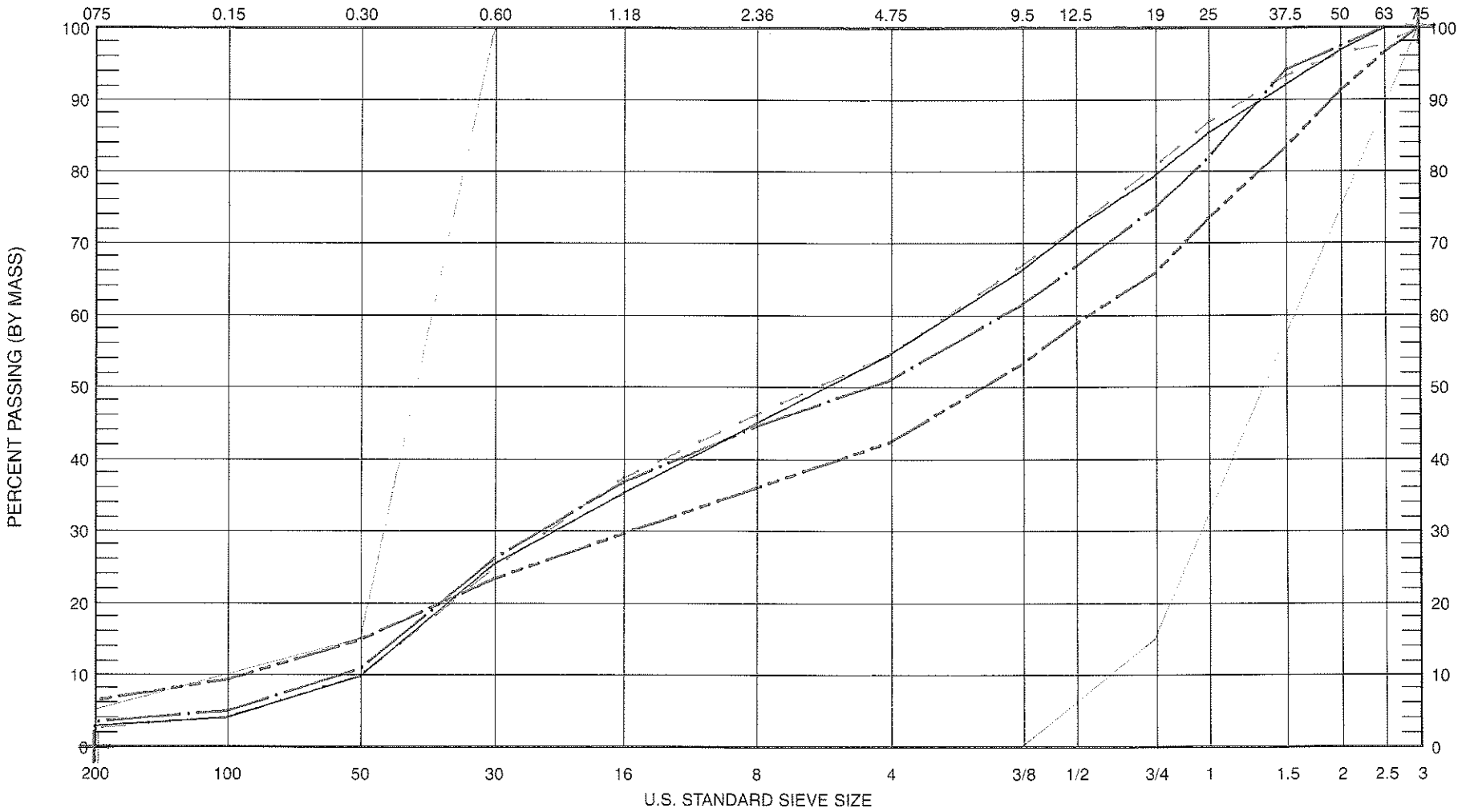
16 mm GRADED SEAL AGGREGATE

H187F

Ministry of Transportation and Highways — Geotechnical Branch

AGGREGATE GRADATION CHART

PROJECT: TELEGRAPH
DISTRICT: SOUTH ISLAND



	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
———	X15454	X15454	89-01	1.8-3.6m	PIT RUN	ES/BL	BECKER	FEB 7 89	BW	JUN 2 89
- - - -	X15455	X15455	89-01	9.1-10.4m	PIT RUN	ES/BL	BECKER	FEB 7 89	BW	JUN 2 89
———	X15452	X15452	89-02	1.8-3.1m	PIT RUN	ES/BL	BECKER	FEB 7 89	BW	JUN 2 89
———	X15453	X15453	89-02	5.5-6.7m	PIT RUN	ES/BL	BECKER	FEB 7 89	BW	JUN 2 89

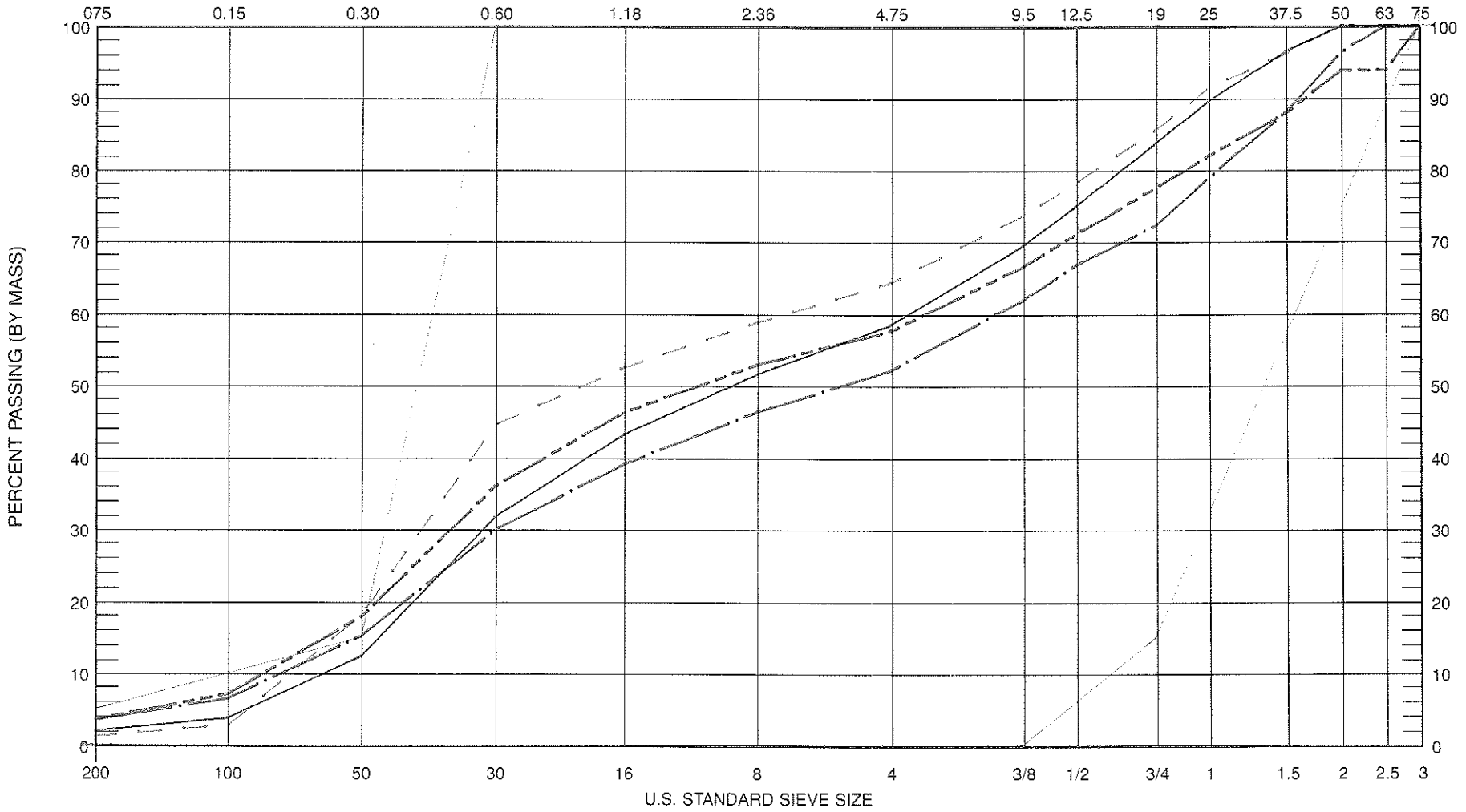
——— SELECT GRANULAR SUB-BASE

H187F

Ministry of Transportation and Highways — Geotechnical Branch

AGGREGATE GRADATION CHART

PROJECT: TELEGRAPH
DISTRICT: SOUTH ISLAND



BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
X15450	X15450	89-03	1.8-3.1m	PIT RUN	ES/BL	BECKER	FEB 7 89	BM	JUN 2 89
X15451	X15451	89-03	7.9-9.1m	PIT RUN	ES/BL	BECKER	FEB 7 89	BM	JUN 2 89
X15248	X15248	89-04	1.8-3.1m	PIT RUN	ES/BL	BECKER	FEB 7 89	BM	JUN 2 89
X15249	X15249	89-04	5.5-6.7m	PIT RUN	ES/BL	BECKER	FEB 7 89	BM	JUN 2 89

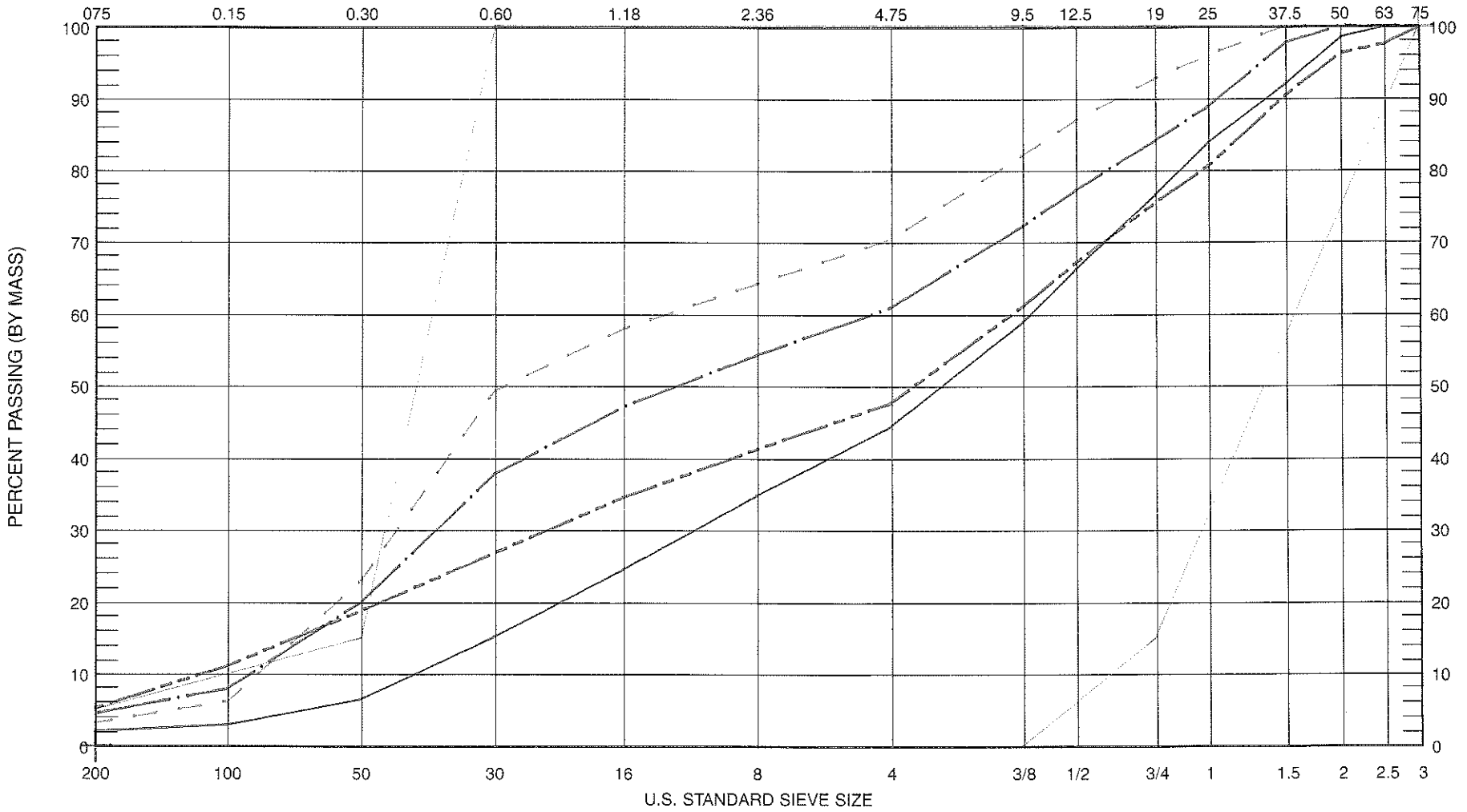
SELECT GRANULAR SUB-BASE

H187F

Ministry of Transportation and Highways — Geotechnical Branch

AGGREGATE GRADATION CHART

PROJECT: TELEGRAPH
DISTRICT: SOUTH ISLAND



BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
X15244	X15244	89-06	1.8-3.1m	PIT RUN	ES/BL	BECKER	FEB 7 89	BW	JUN 2 89
X15245	X15245	89-06	14-15.2m	PIT RUN	ES/BL	BECKER	FEB 7 89	BW	JUN 2 89
X15457	X15457	89-07	9.1-10.4m	PIT RUN	ES/BL	BECKER	FEB 7 89	BW	JUN 2 89
X15460	X15460	89-09	1.8-3.1m	PIT RUN	ES/BL	BECKER	FEB 7 89	BW	JUN 2 89

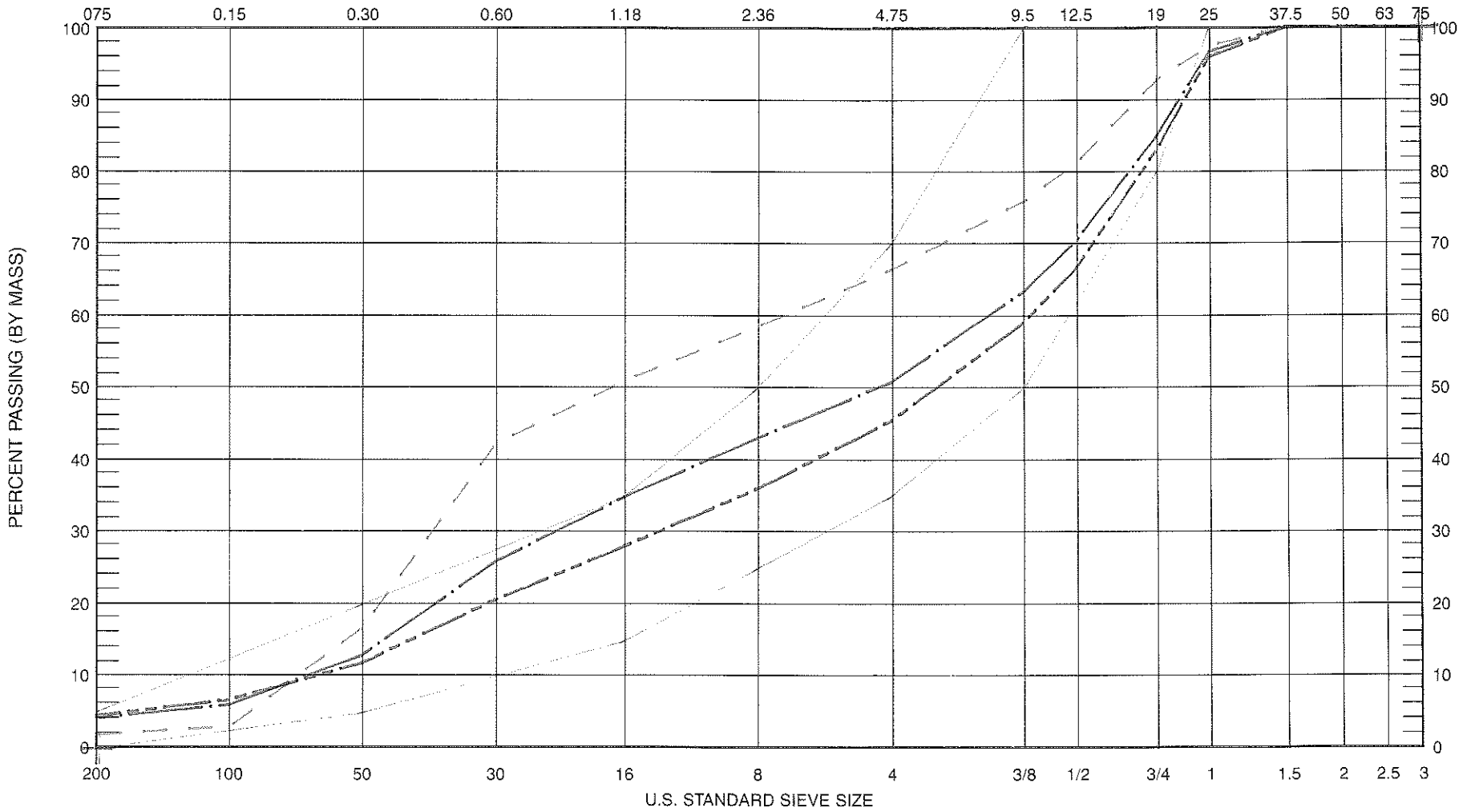
SELECT GRANULAR SUB-BASE

H187F

Ministry of Transportation and Highways — Geotechnical Branch

AGGREGATE GRADATION CHART

PROJECT: TELEGRAPH
DISTRICT: SOUTH ISLAND



BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
X15454	X15454	89-01	1.8-3.6m	LAB CRUSH	ES/BL	BECKER	FEB 7 89	BW	FEB 27 90
X15451	X15451	89-03	7.9-9.1m	LAB CRUSH	ES/BL	BECKER	FEB 7 89	BW	FEB 27 90
X15248	X15248	89-04	1.8-3.1m	LAB CRUSH	ES/BL	BECKER	FEB 7 89	BW	FEB 27 90

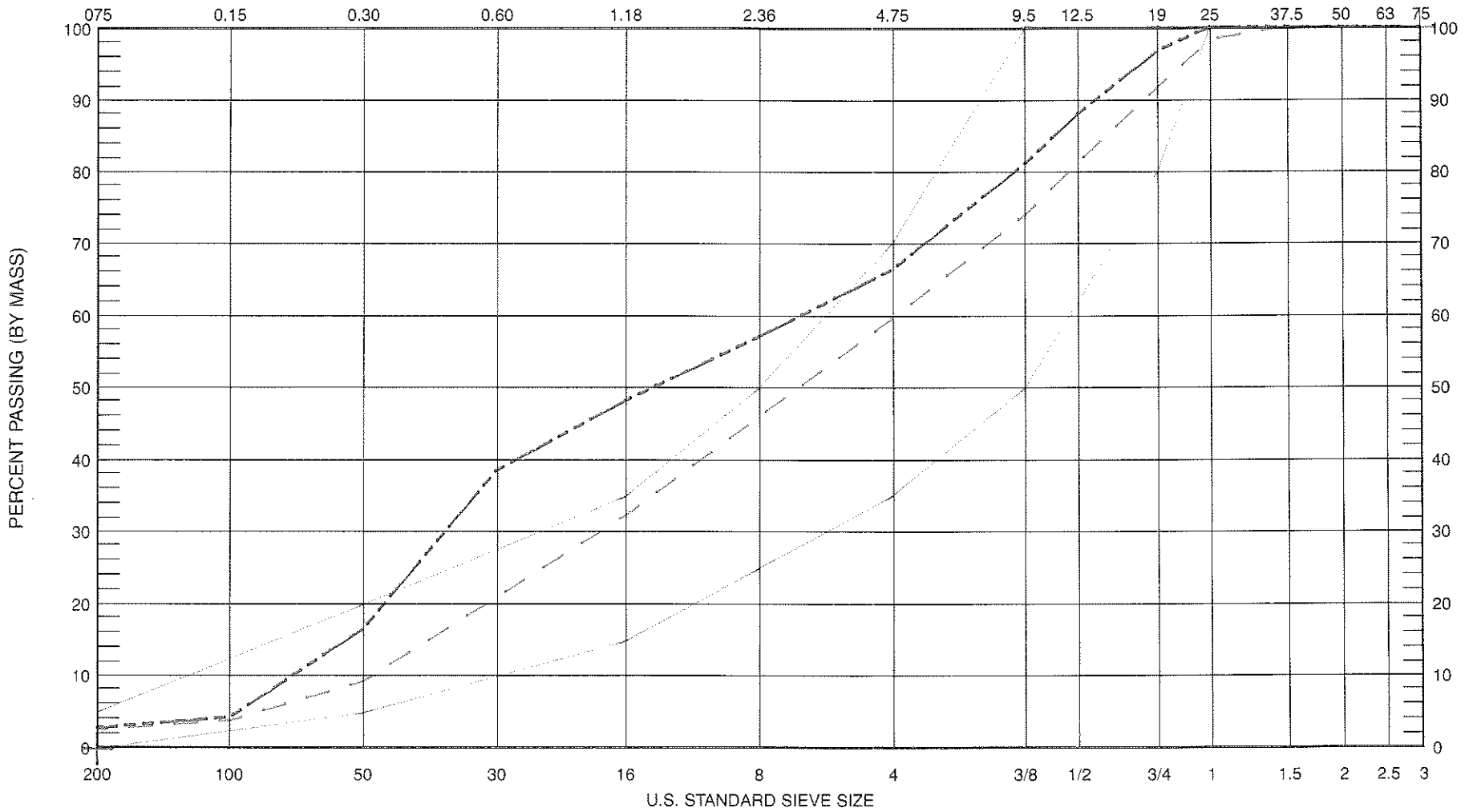
25mm WELL GRADED BASE

H187F

Ministry of Transportation and Highways — Geotechnical Branch

AGGREGATE GRADATION CHART

PROJECT: TELEGRAPH
DISTRICT: SOUTH ISLAND



	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
———	X15245	X15245	89-06	14-15.2m	LAB CRUSH	ES/BL	BECKER	FEB 7 89	BW	FEB 27 90
- - - -	X15460	X15460	89-09	1.8-3.1m	LAB CRUSH	ES/BL	BECKER	FEB 7 89	BW	FEB 27 90

25mm WELL GRADED BASE

H187F

Hardy BBT Limited
CONSULTING ENGINEERING & ENVIRONMENTAL SERVICES

SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

Mr. Wayne Janusson

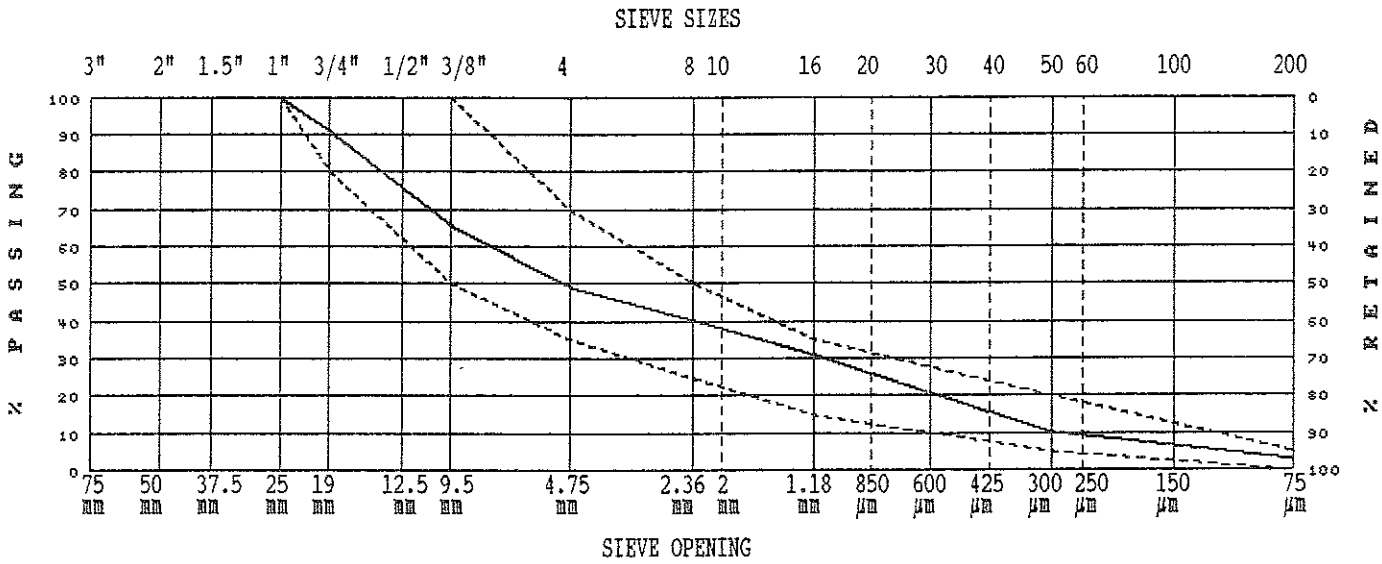
Ministry of Transportation & Highways
Geotechnical and Materials,
3260 Norwell Drive,
Nanaimo, B.C., V9T 1X5

PROJECT NO: NX00666
DATE: 90.Nov.02
CLIENT P.O.: A09,A12,D26-1
CC:

PROJECT: 1990 Miscellaneous Testing
Nanaimo, B.C.

TESTNO: 1 SOURCE: Telegraph Creek Pit SAMPLE TYPE: 25mm WGBC

DATE SAMPLED: 90.Nov.01 BY: Client DATE TESTED: 90.Nov.02



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	91.0	80 - 100
1/2"	12.5 mm		
3/8"	9.5 mm	65.8	50 - 100

SAND SIZES AND FINES		PERCENT PASSING	GRADATION LIMITS
No. 4	4.75 mm	49.3	35 - 70
No. 8	2.36 mm	40.1	25 - 50
No. 16	1.18 mm	31.1	15 - 35
No. 30	600 µm		
No. 50	300 µm	10.5	5 - 20
No. 100	150 µm		
No. 200	75 µm	3.1	0 - 5

COMMENTS: PERCENT CRUSHED IS 40%, ONE FACE FRACTURED

HARDT BBT LIMITED - PER: R.W.S.

Reporting of these test results constitutes a testing service only.
Engineering interpretation or evaluation of the test results is provided only on written request.

Hardy BBT Limited
CONSULTING ENGINEERING & ENVIRONMENTAL SERVICES

SIEVE ANALYSIS REPORT
8 16 30 50 SERIES

Mr. Wayne Janusson

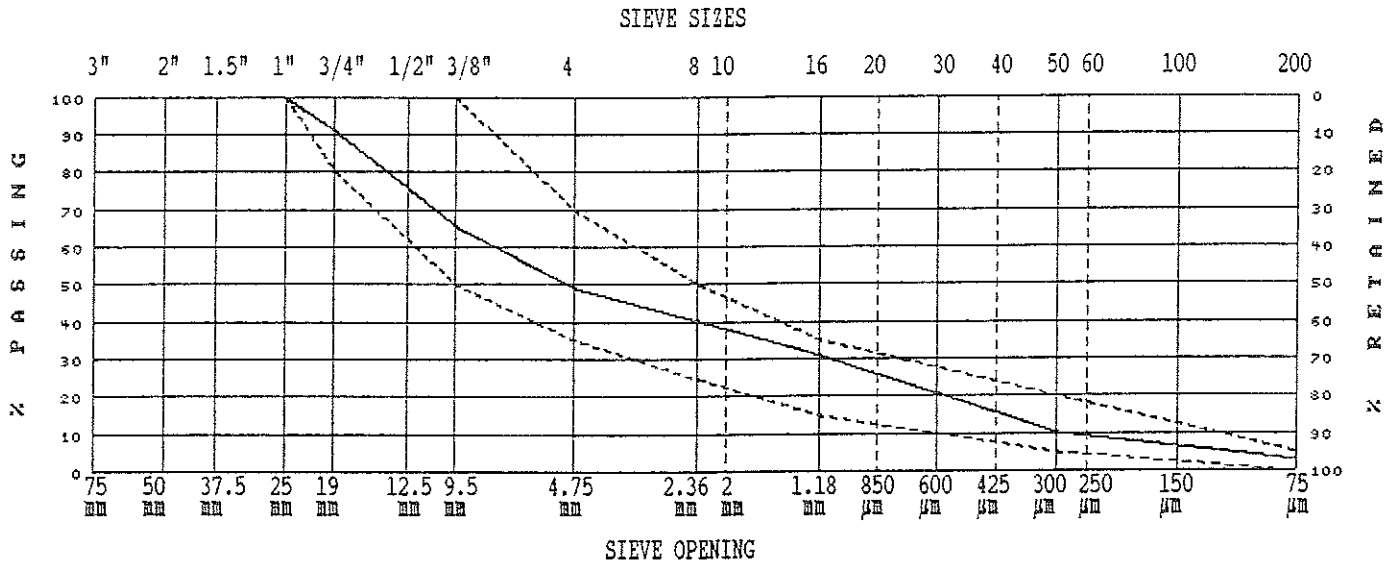
Ministry of Transportation & Highways
Geotechnical and Materials,
3260 Norwell Drive,
Nanaimo, B.C., V9T 1X5

PROJECT NO: NX00666
DATE: 90.Nov.02
CLIENT P.O.: A09,A12,D26-1
CC:

PROJECT: 1990 Miscellaneous Testing
Nanaimo, B.C.

TESTNO: 1 SOURCE: Telegraph Creek Pit SAMPLE TYPE: 25mm WGBC

DATE SAMPLED: 90.Nov.01 BY: Client DATE TESTED: 90.Nov.02



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	91.0	80 - 100
1/2"	12.5	mm		
3/8"	9.5	mm	65.8	50 - 100

SAND SIZES AND FINES			PERCENT PASSING	GRADATION LIMITS
No. 4	4.75	mm	49.3	35 - 70
No. 8	2.36	mm	40.1	25 - 50
No. 16	1.18	mm	31.1	15 - 35
No. 30	600	µm		
No. 50	300	µm	10.5	5 - 20
No. 100	150	µm		
No. 200	75	µm	3.1	0 - 5

COMMENTS: PERCENT CRUSHED IS 40%, ONE FACE FRACTURED

HARDT BBT LIMITED - PER: R.W.S.

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE

ASTM C 136

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
7818 - 6th Street
Burnaby, BC V3N 4N8

November 29, 2012
Project Number: 10-1417-0009-2097

ATTENTION: Mr. Steve Likness

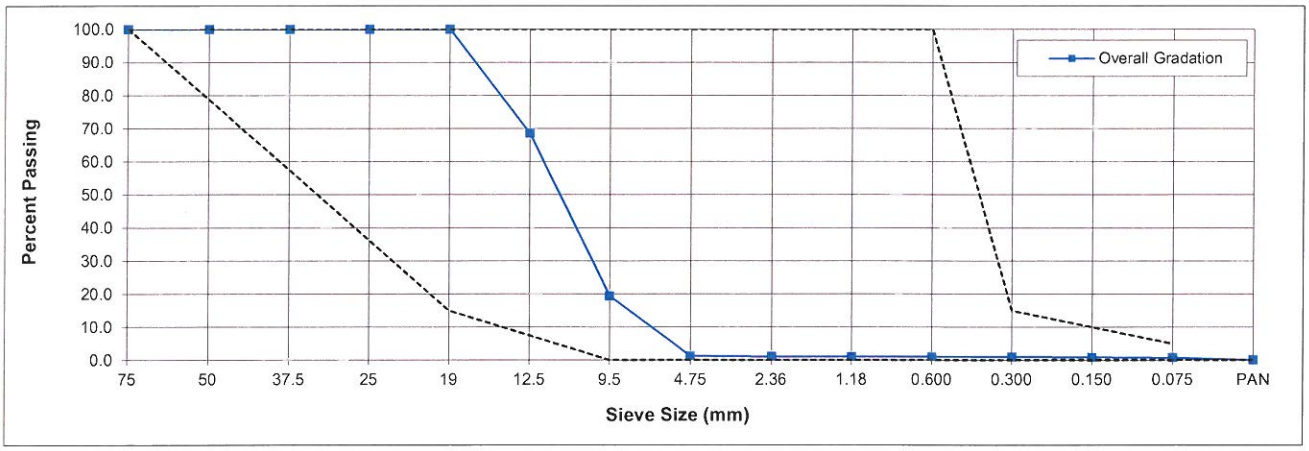
PROJECT: Telegraph Pit, Vancouver Island District

Sample:	**STPL 2, Bag 361, SA#1**
Source:	**Telegraph Pit**

DATE SAMPLED: November 22, 2012
DATE TESTED: November 27, 2012

SAMPLED BY: Client
TESTED BY: VN/IC

SIEVE ANALYSIS						MATERIAL SPECIFICATION : BCH, SELECT GRANULAR SUB-BASE	
Sieve Size (mm)	Mass Ret. (g)	% Retained	% Passing	Individual % Retained (Split values)			
				+ 4.75	- 4.75		
75	0	0.0	100.0	0.0		100.0	100.0
50	0	0.0	100.0	0.0			
37.5	0	0.0	100.0	0.0			
25	0	0.0	100.0	0.0			
19	0	0.0	100.0	0.0		15.0	100.0
12.5	856.8	31.4	68.6	31.8			
9.5	1341.2	49.2	19.4	49.8		0.0	100.0
4.75	495.7	18.2	1.3	18.4			
2.36	3.7	0.1	1.1		10.8		
1.18	0.8	0.0	1.1		2.3		
0.600	0.8	0.0	1.1		2.3	0.0	100.0
0.300	1.9	0.1	1.0		5.5	0.0	15.0
0.150	3.3	0.1	0.9		9.6		
0.075	4.2	0.2	0.7		12.2	0.0	5.0
PAN	19.6	0.7	0		57.1		
Total		100.0		100.0	100.0		



Note: Tested sample represents entirety of sample provided by client.

Total mass + 4.75mm:	2693.7 g	Mass before wash:	2728.0 g
Total mass - 4.75mm:	34.3 g	Mass after wash:	2708.7 g
Total mass of sample:	2728 g	Wash loss fines:	19.3 g
		Fines from pan:	0.3 g

Reported by: S. John, AScT

Reviewed by: _____
L. Hu, M. Sc. E.

Notice: The test data given herein pertain to the sample provided, and may not be applicable to material from other zones/depths. This report constitutes a testing service only. Interpretation of the data given here may be provided upon request.

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE

ASTM C 136

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
7818 - 6th Street
Burnaby, BC V3N 4N8

November 29, 2012
Project Number: 10-1417-0009-2097

ATTENTION: Mr. Steve Likness

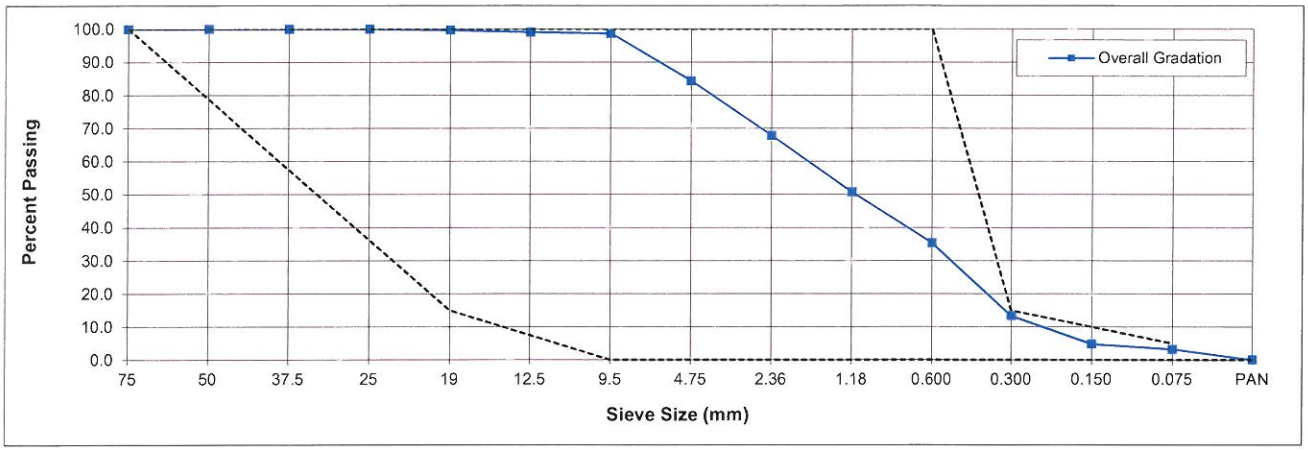
PROJECT: Telegraph Pit, Vancouver Island District

Sample:	**STPL 3, Bag 362, SA#1**
Source:	**Telegraph Pit**

DATE SAMPLED: November 22, 2012
DATE TESTED: November 27, 2012

SAMPLED BY: Client
TESTED BY: VN/IC

SIEVE ANALYSIS						MATERIAL SPECIFICATION : BCH, SELECT GRANULAR SUB-BASE	
Sieve Size (mm)	Mass Ret. (g)	% Retained	% Passing	Individual % Retained (Split values)			
				+ 4.75	- 4.75		
75	0	0.0	100.0	0.0		100.0	100.0
50	0	0.0	100.0	0.0			
37.5	0	0.0	100.0	0.0			
25	0	0.0	100.0	0.0			
19	40	0.3	99.7	2.0		15.0	100.0
12.5	85	0.7	99.0	4.2			
9.5	49	0.4	98.7	2.4		0.0	100.0
4.75	1863	14.4	84.3	91.5			
2.36	94.8	16.5	67.8		19.5		
1.18	98.3	17.1	50.8		20.2		
0.600	88.8	15.4	35.4		18.3	0.0	100.0
0.300	126.9	22.0	13.3		26.1	0.0	15.0
0.150	49	8.5	4.8		10.1		
0.075	9.1	1.6	3.2		1.9	0.0	5.0
PAN	18.6	3.2	0		3.8		
Total		100.0		100.0	100.0		



Note: Tested sample represents entirety of sample provided by client.

Total mass + 4.75mm:	2037 g	Mass before wash:	485.5 g
Total mass - 4.75mm:	10944 g	Mass after wash:	467.5 g
Total mass of sample:	12981 g	Wash loss fines:	18.0 g
		Fines from pan:	0.6 g

Reported by: S. John, AScT

Reviewed by: _____
L. Hu, M. Sc. E.

Notice: The test data given herein pertain to the sample provided, and may not be applicable to material from other zones/depths. This report constitutes a testing service only. Interpretation of the data given here may be provided upon request.

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE

ASTM C 136

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
7818 - 6th Street
Burnaby, BC V3N 4N8

November 29, 2012
Project Number: 10-1417-0009-2097

ATTENTION: Mr. Steve Likness

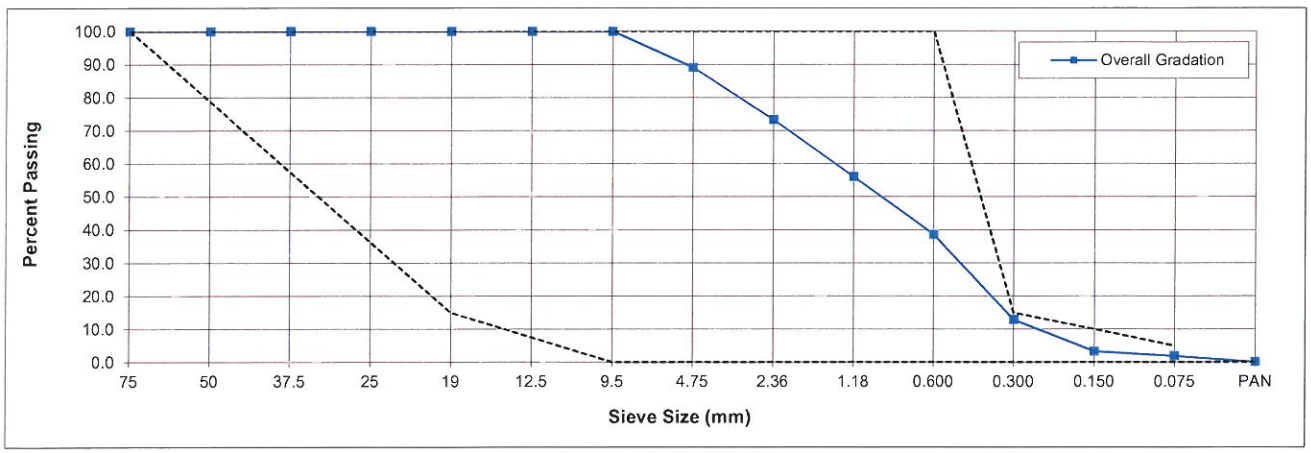
PROJECT: Telegraph Pit, Vancouver Island District

Sample:	**STPL 4, Bag 363, SA#1**
Source:	**Telegraph Pit**

DATE SAMPLED: November 20, 2012
DATE TESTED: November 27, 2012

SAMPLED BY: Client
TESTED BY: VN/IC

SIEVE ANALYSIS						MATERIAL SPECIFICATION : BCH, SELECT GRANULAR SUB-BASE	
Sieve Size (mm)	Mass Ret. (g)	% Retained	% Passing	Individual % Retained (Split values)			
				+ 4.75	- 4.75		
75	0	0.0	100.0	0.0		100.0	100.0
50	0	0.0	100.0	0.0			
37.5	0	0.0	100.0	0.0			
25	0	0.0	100.0	0.0			
19	0	0.0	100.0	0.0		15.0	100.0
12.5	0	0.0	100.0	0.0			
9.5	0	0.0	100.0	0.0		0.0	100.0
4.75	49.8	10.9	89.1	100.0			
2.36	72	15.8	73.3		17.7		
1.18	78.8	17.2	56.1		19.4		
0.600	80	17.5	38.6		19.7	0.0	100.0
0.300	117.6	25.7	12.8		28.9	0.0	15.0
0.150	43.8	9.6	3.3		10.8		
0.075	6.1	1.3	1.9		1.5	0.0	5.0
PAN	8.8	1.9	0		2.2		
Total		100.0		100.0	100.0		



Total mass + 4.75mm:	49.8 g	Mass before wash:	456.9 g
Total mass - 4.75mm:	407.1 g	Mass after wash:	448.7 g
Total mass of sample:	456.9 g	Wash loss fines:	8.2 g
		Fines from pan:	0.6 g

Reported by: S. John, AScT

Reviewed by: L. Hu, M. Sc. E.

Notice: The test data given herein pertain to the sample provided, and may not be applicable to material from other zones/depths. This report constitutes a testing service only. Interpretation of the data given here may be provided upon request.

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE

ASTM C 136

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
7818 - 6th Street
Burnaby, BC V3N 4N8

November 29, 2012
Project Number: 10-1417-0009-2097

ATTENTION: Mr. Steve Likness

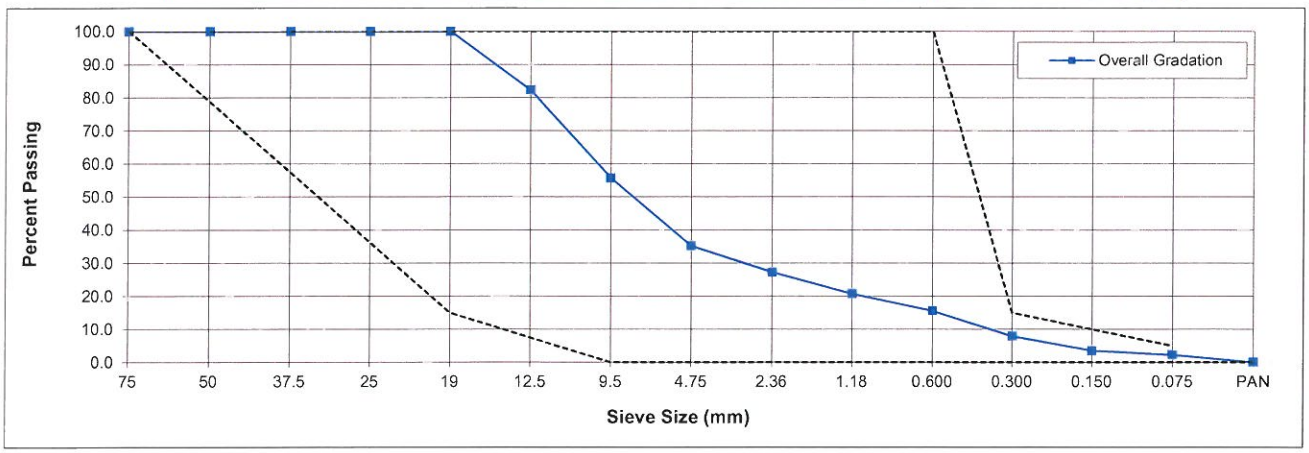
PROJECT: Telegraph Pit, Vancouver Island District

Sample:	**STPL 5, Bag 364, SA#1**
Source:	**Telegraph Pit**

DATE SAMPLED: November 22, 2012
DATE TESTED: November 27, 2012

SAMPLED BY: Client
TESTED BY: VN/IC

SIEVE ANALYSIS						MATERIAL SPECIFICATION : BCH, SELECT GRANULAR SUB-BASE	
Sieve Size (mm)	Mass Ret. (g)	% Retained	% Passing	Individual % Retained (Split values)			
				+ 4.75	- 4.75		
75	0	0.0	100.0	0.0		100.0	100.0
50	0	0.0	100.0	0.0			
37.5	0	0.0	100.0	0.0			
25	0	0.0	100.0	0.0			
19	0	0.0	100.0	0.0		15.0	100.0
12.5	959	17.7	82.3	27.3			
9.5	1443	26.6	55.7	41.1		0.0	100.0
4.75	1111	20.5	35.2	31.6			
2.36	90.2	8.0	27.3		22.6		
1.18	75.3	6.6	20.6		18.8		
0.600	57.4	5.1	15.6		14.4	0.0	100.0
0.300	86.9	7.7	7.9		21.7	0.0	15.0
0.150	50.4	4.4	3.5		12.6		
0.075	13.3	1.2	2.3		3.3	0.0	5.0
PAN	26.2	2.3	0		6.6		
Total		100.0		100.0	100.0		



Note: Tested sample represents entirety of sample provided by client.

Total mass + 4.75mm:	3513 g	Mass before wash:	399.7 g
Total mass - 4.75mm:	1911 g	Mass after wash:	375.0 g
Total mass of sample:	5424 g	Wash loss fines:	24.7 g
		Fines from pan:	1.5 g

Reported by: S. John, AScT

Reviewed by: L. Hu, M. Sc. E.

Notice: The test data given herein pertain to the sample provided, and may not be applicable to material from other zones/depths. This report constitutes a testing service only. Interpretation of the data given here may be provided upon request.

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE

ASTM C 136

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
7818 - 6th Street
Burnaby, BC V3N 4N8

November 29, 2012
Project Number: 10-1417-0009-2097

ATTENTION: Mr. Steve Likness

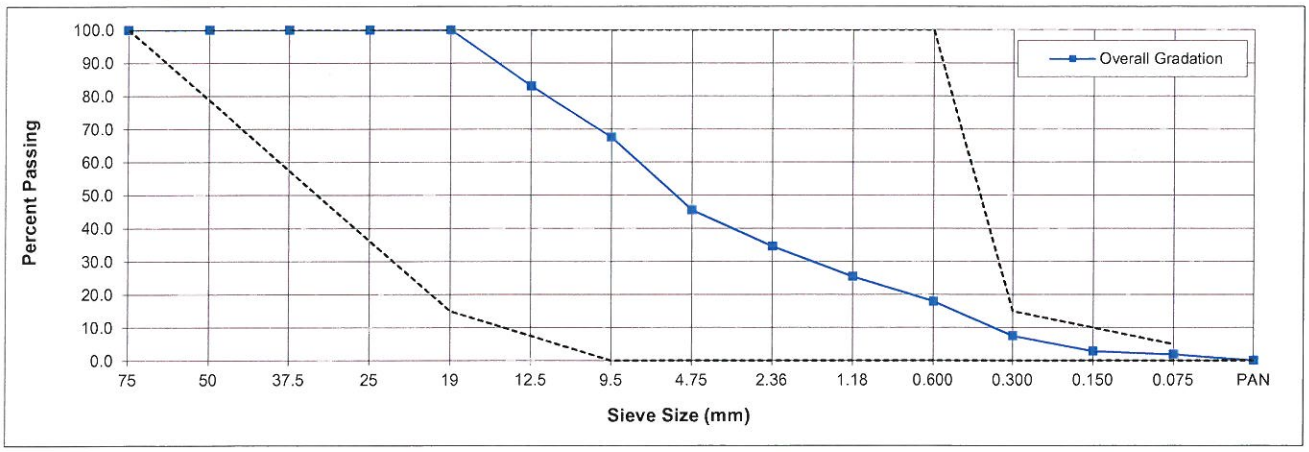
PROJECT: Telegraph Pit, Vancouver Island District

Sample:	**STPL 6, Bag 365, SA#1**
Source:	**Telegraph Pit**

DATE SAMPLED: November 22, 2012
DATE TESTED: November 27, 2012

SAMPLED BY: Client
TESTED BY: VN/IC

SIEVE ANALYSIS						MATERIAL SPECIFICATION : BCH, SELECT GRANULAR SUB-BASE	
Sieve Size (mm)	Mass Ret. (g)	% Retained	% Passing	Individual % Retained (Split values)			
				+ 4.75	- 4.75		
75	0	0.0	100.0	0.0		100.0	100.0
50	0	0.0	100.0	0.0			
37.5	0	0.0	100.0	0.0			
25	0	0.0	100.0	0.0			
19	0	0.0	100.0	0.0		15.0	100.0
12.5	898	16.9	83.1	31.1			
9.5	823	15.5	67.5	28.5		0.0	100.0
4.75	1168	22.0	45.5	40.4			
2.36	87.8	10.9	34.6		24.0		
1.18	73.5	9.1	25.4		20.1		
0.600	60.2	7.5	18.0		16.4	0.0	100.0
0.300	83.9	10.4	7.5		22.9	0.0	15.0
0.150	37.4	4.6	2.9		10.2		
0.075	8.1	1.0	1.9		2.2	0.0	5.0
PAN	15.2	1.9	0		4.2		
Total		100.0		100.0	100.0		



Note: Tested sample represents entirety of sample provided by client.

Total mass + 4.75mm:	2889 g	Mass before wash:	366.1 g
Total mass - 4.75mm:	2409 g	Mass after wash:	351.6 g
Total mass of sample:	5298 g	Wash loss fines:	14.5 g
		Fines from pan:	0.7 g

Reported by: S. John, AScT

Reviewed by: L. Hu, M. Sc. E.

Notice: The test data given herein pertain to the sample provided, and may not be applicable to material from other zones/depths. This report constitutes a testing service only. Interpretation of the data given here may be provided upon request.

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE

ASTM C 136

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
7818 - 6th Street
Burnaby, BC V3N 4N8

November 29, 2012
Project Number: 10-1417-0009-2097

ATTENTION: Mr. Steve Likness

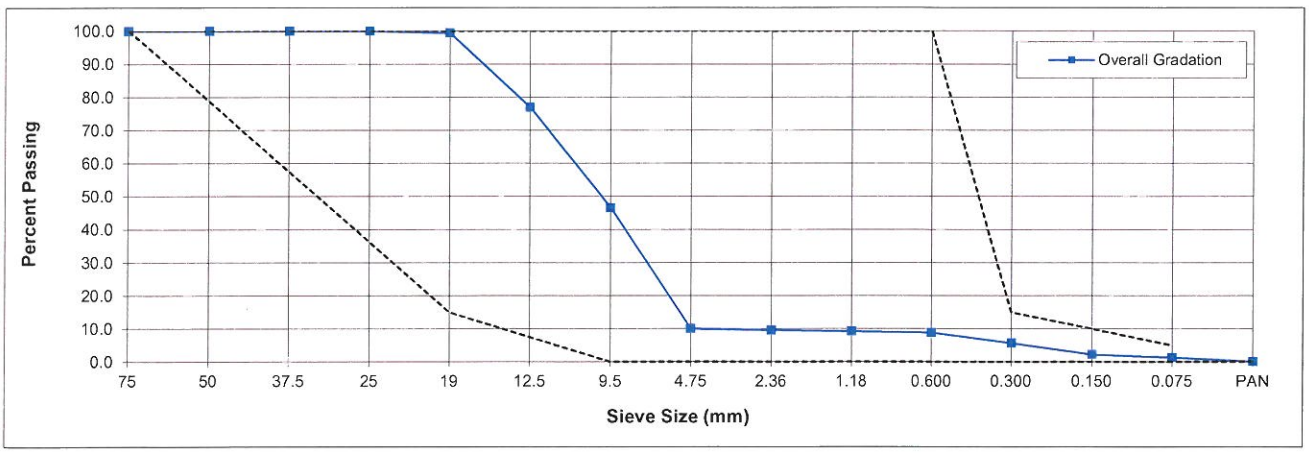
PROJECT: Telegraph Pit, Vancouver Island District

Sample:	**STPL 7, Bag 366, SA#1**
Source:	**Telegraph Pit**

DATE SAMPLED: November 22, 2012
DATE TESTED: November 27, 2012

SAMPLED BY: Client
TESTED BY: VN/IC

SIEVE ANALYSIS						MATERIAL SPECIFICATION : BCH, SELECT GRANULAR SUB-BASE	
Sieve Size (mm)	Mass Ret. (g)	% Retained	% Passing	Individual % Retained (Split values)			
				+ 4.75	- 4.75		
75	0	0.0	100.0	0.0		100.0	100.0
50	0	0.0	100.0	0.0			
37.5	0	0.0	100.0	0.0			
25	0	0.0	100.0	0.0			
19	17.3	0.6	99.4	0.7		15.0	100.0
12.5	619.7	22.4	77.0	24.9			
9.5	841.4	30.4	46.6	33.8		0.0	100.0
4.75	1014.3	36.6	10.0	40.7			
2.36	10.9	0.4	9.6		3.9		
1.18	10.4	0.4	9.2		3.8		
0.600	9.9	0.4	8.9		3.6	0.0	100.0
0.300	88	3.2	5.7		31.8	0.0	15.0
0.150	97.2	3.5	2.2		35.2		
0.075	24	0.9	1.3		8.7	0.0	5.0
PAN	35.9	1.3	0		13.0		
Total		100.0		100.0	100.0		



Note: Tested sample represents entirety of sample provided by client.

Total mass + 4.75mm:	2492.7 g	Mass before wash:	2769.0 g
Total mass - 4.75mm:	276.3 g	Mass after wash:	2734.2 g
Total mass of sample:	2769 g	Wash loss fines:	34.8 g
		Fines from pan:	1.1 g

Reported by: S. John, AScT

Reviewed by: L. Hu, M. Sc. E.

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SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE

ASTM C 136

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
7818 - 6th Street
Burnaby, BC V3N 4N8

December 5, 2012
Project Number: 10-1417-0009-2097

ATTENTION: Mr. Steve Likness

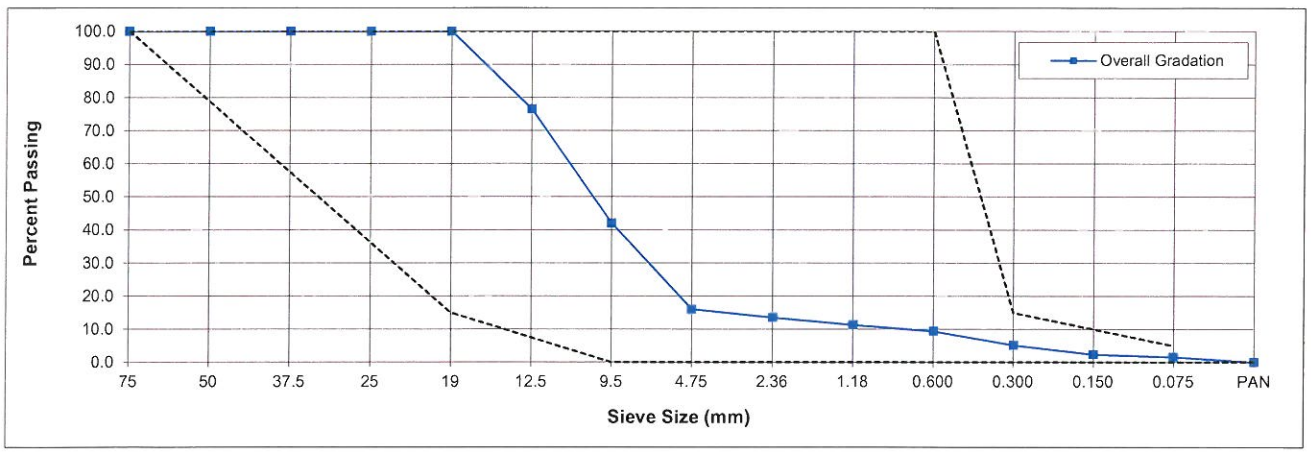
PROJECT: Telegraph Pit, Vancouver Island District

Sample:	**STPL 8, Bag 367, SA#1**
Source:	**Telegraph Pit**

DATE SAMPLED: November 22, 2012
DATE TESTED: November 29, 2012

SAMPLED BY: Client
TESTED BY: VN/DC

SIEVE ANALYSIS						MATERIAL SPECIFICATION : BCH, SELECT GRANULAR SUB-BASE	
Sieve Size (mm)	Mass Ret. (g)	% Retained	% Passing	Individual % Retained (Split values)			
				+ 4.75	- 4.75		
75	0	0.0	100.0	0.0		100.0	100.0
50	0	0.0	100.0	0.0			
37.5	0	0.0	100.0	0.0			
25	0	0.0	100.0	0.0			
19	0	0.0	100.0	0.0		15.0	100.0
12.5	584.2	23.5	76.5	27.9			
9.5	860	34.5	42.0	41.1		0.0	100.0
4.75	647.6	26.0	16.0	31.0			
2.36	62	2.5	13.5		15.6		
1.18	55.5	2.2	11.3		13.9		
0.600	47.7	1.9	9.4		12.0	0.0	100.0
0.300	103.4	4.2	5.2		26.0	0.0	15.0
0.150	69.9	2.8	2.4		17.6		
0.075	19	0.8	1.6		4.8	0.0	5.0
PAN	40.7	1.6	0		10.2		
Total		100.0		100.0	100.0		



Note: Tested sample represents entirety of sample provided by client.

Total mass + 4.75mm:	2091.8 g	Mass before wash:	2490.0 g
Total mass - 4.75mm:	398.2 g	Mass after wash:	2450.1 g
Total mass of sample:	2490 g	Wash loss fines:	39.9 g
		Fines from pan:	0.8 g

Reported by: S. John, AScT

Reviewed by: _____
L. Hu, M. Sc. E.

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SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE

ASTM C 136

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
7818 - 6th Street
Burnaby, BC V3N 4N8

December 5, 2012
Project Number: 10-1417-0009-2097

ATTENTION: Mr. Steve Likness

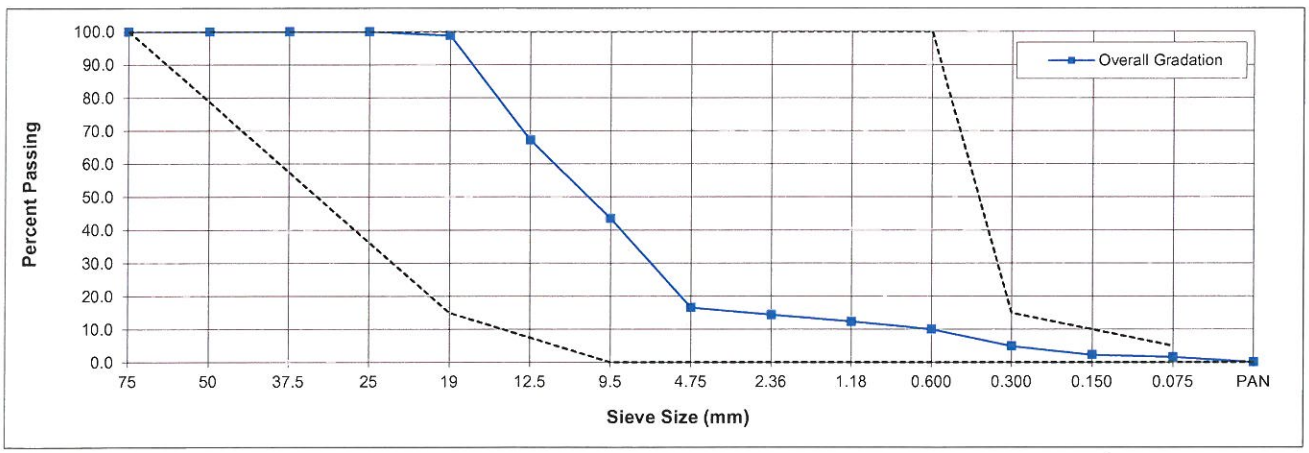
PROJECT: Telegraph Pit, Vancouver Island District

Sample:	**STPL 10, Bag 368, SA#1**
Source:	**Telegraph Pit**

DATE SAMPLED: November 22, 2012
DATE TESTED: November 29, 2012

SAMPLED BY: Client
TESTED BY: VN/DC

SIEVE ANALYSIS						MATERIAL SPECIFICATION : BCH, SELECT GRANULAR SUB-BASE	
Sieve Size (mm)	Mass Ret. (g)	% Retained	% Passing	Individual % Retained (Split values)			
				+ 4.75	- 4.75		
75	0	0.0	100.0	0.0		100.0	100.0
50	0	0.0	100.0	0.0			
37.5	0	0.0	100.0	0.0			
25	0	0.0	100.0	0.0			
19	30.4	1.2	98.8	1.5		15.0	100.0
12.5	792.1	31.6	67.2	37.8			
9.5	597.2	23.8	43.4	28.5		0.0	100.0
4.75	674.1	26.9	16.5	32.2			
2.36	54.6	2.2	14.4		13.2		
1.18	51.4	2.0	12.3		12.4		
0.600	57.6	2.3	10.0		13.9	0.0	100.0
0.300	128	5.1	4.9		30.8	0.0	15.0
0.150	67.5	2.7	2.2		16.3		
0.075	16	0.6	1.6		3.9	0.0	5.0
PAN	40.1	1.6	0		9.7		
Total		100.0		100.0	100.0		



Note: Tested sample represents entirety of sample provided by client.

Total mass + 4.75mm:	2093.8 g	Mass before wash:	2509.0 g
Total mass - 4.75mm:	415.2 g	Mass after wash:	2469.7 g
Total mass of sample:	2509 g	Wash loss fines:	39.3 g
		Fines from pan:	0.8 g

Reported by: S. John, AScT

Reviewed by: _____
L. Hu, M. Sc. E.

Notice: The test data given herein pertain to the sample provided, and may not be applicable to material from other zones/depths. This report constitutes a testing service only. Interpretation of the data given here may be provided upon request.

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE

ASTM C 136

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
7818 - 6th Street
Burnaby, BC V3N 4N8

December 5, 2012
Project Number: 10-1417-0009-2097

ATTENTION: Mr. Steve Likness

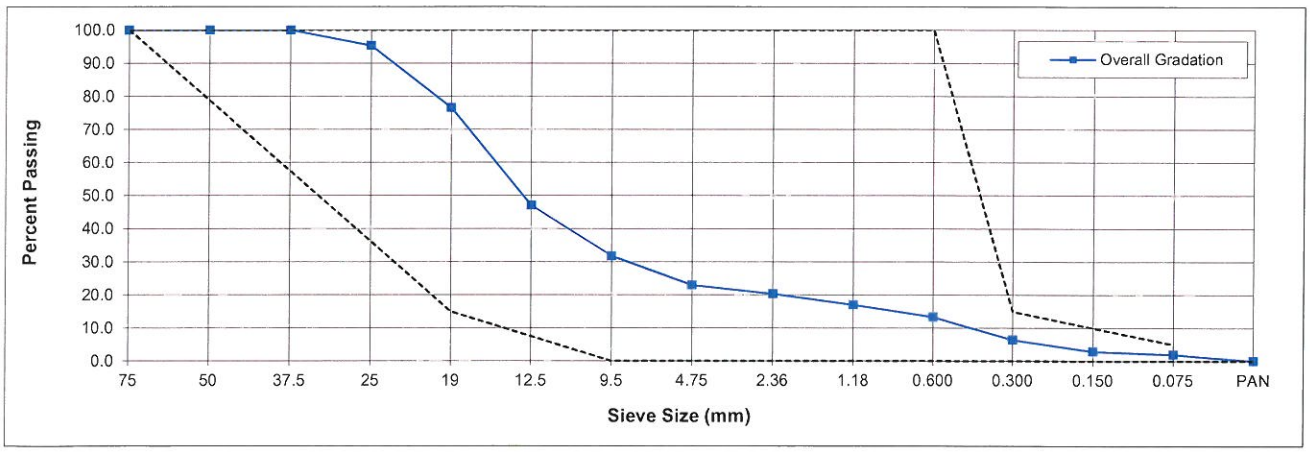
PROJECT: Telegraph Pit, Vancouver Island District

Sample:	**STPL 11, Bag 369, SA#1**
Source:	**Telegraph Pit**

DATE SAMPLED: November 22, 2012
DATE TESTED: November 29, 2012

SAMPLED BY: Client
TESTED BY: VN/DC

SIEVE ANALYSIS						MATERIAL SPECIFICATION : BCH, SELECT GRANULAR SUB-BASE	
Sieve Size (mm)	Mass Ret. (g)	% Retained	% Passing	Individual % Retained (Split values)			
				+ 4.75	- 4.75		
75	0	0.0	100.0	0.0		100.0	100.0
50	0	0.0	100.0	0.0			
37.5	0	0.0	100.0	0.0			
25	517	4.7	95.3	6.1			
19	2081	18.8	76.5	24.4		15.0	100.0
12.5	3260	29.5	47.0	38.3			
9.5	1693	15.3	31.7	19.9		0.0	100.0
4.75	969	8.8	22.9	11.4			
2.36	37.8	2.7	20.3		11.6		
1.18	47.4	3.3	17.0		14.5		
0.600	51.9	3.6	13.3		15.9	0.0	100.0
0.300	98.6	6.9	6.4		30.1	0.0	15.0
0.150	49.9	3.5	2.9		15.3		
0.075	13.2	0.9	2.0		4.0	0.0	5.0
PAN	28.4	2.0	0		8.7		
Total		100.0		100.0	100.0		



Note: Tested sample represents entirety of sample provided by client.

Total mass + 4.75mm:	8520 g	Mass before wash:	327.2 g
Total mass - 4.75mm:	2537 g	Mass after wash:	299.3 g
Total mass of sample:	11057 g	Wash loss fines:	27.9 g
		Fines from pan:	0.5 g

Reported by: S. John, AScT

Reviewed by: L. Hu, M. Sc. E.

Notice: The test data given herein pertain to the sample provided, and may not be applicable to material from other zones/depths. This report constitutes a testing service only. Interpretation of the data given here may be provided upon request.

RESISTANCE OF COARSE AGGREGATE TO DEGRADATION BY ABRASION IN THE MICRO-DEVAL APPARATUS

ASTM D6928-10

December 5, 2012
Project Number: 10-1417-0009-2097

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
7818 – 6th Street
Burnaby, BC
V3N 4N8

ATTENTION: Mr. Steve Likness

PROJECT: Telegraph Pit, Vancouver Island District

Sample:	**STPL 11, Bag 369, SA#1, Coarse portion**
Source:	**Telegraph Pit**

Date sampled: November 22, 2012
Date tested: November 30, 2012

Sampled by: Client
Tested by: OA

Grading	Section 8.2 – 19 x 16, 16 x 12.5, 12.5 x 9.5 mm
Loss at Conclusion of Test (%)	**6.9**

Validation Test Data: Control Aggregate (Drain Brothers Stone)	
Test Date	November 7, 2012
Percent Loss	12.9 %
Validation Range	11.4 - 14.8 %

Reported by: _____
S. John, AScT

Reviewed by: _____
L. Hu, M. Sc. E.

Notice: The test data given herein pertain to the sample provided, and may not be applicable to material from other zones/depths. This report constitutes a testing service only. Interpretation of the data given here may be provided upon request.

RESISTANCE OF FINE AGGREGATE TO DEGRADATION BY ABRASION IN THE MICRO-DEVAL APPARATUS

ASTM D 7428

December 6, 2012
Project Number: 10-1417-0009-2097

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
7818 – 6th Street
Burnaby, BC
V3N 4N8

ATTENTION: Mr. Steve Likness

PROJECT: Telegraph Pit, Vancouver Island District

Sample:	**STPL 11, Bag 369, SA#1, Fine portion**
Source:	**Telegraph Pit**

Date sampled: November 22, 2012
Date tested: December 5, 2012

Sampled by: Client
Tested by: DC

Grading	4.75 x 0.075mm
Loss at conclusion of test (%)	**10.1**

Validation Test Data: Control Aggregate (Sutherland Sand)	
Test Date	November 8, 2012
Percent Loss	16.8 %
Validation Range	15.2 - 18.4 %

Reported by: _____
S. John, AScT

Reviewed by: _____
L. Hu, M. Sc. E.

Notice: The test data given herein pertain to the sample provided, and may not be applicable to material from other production zones/periods. This report constitutes a testing service only. Interpretation of the data given here may be provided upon request.

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATE

ASTM C 136

MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE
7818 - 6th Street
Burnaby, BC V3N 4N8

December 5, 2012
Project Number: 10-1417-0009-2097

ATTENTION: Mr. Steve Likness

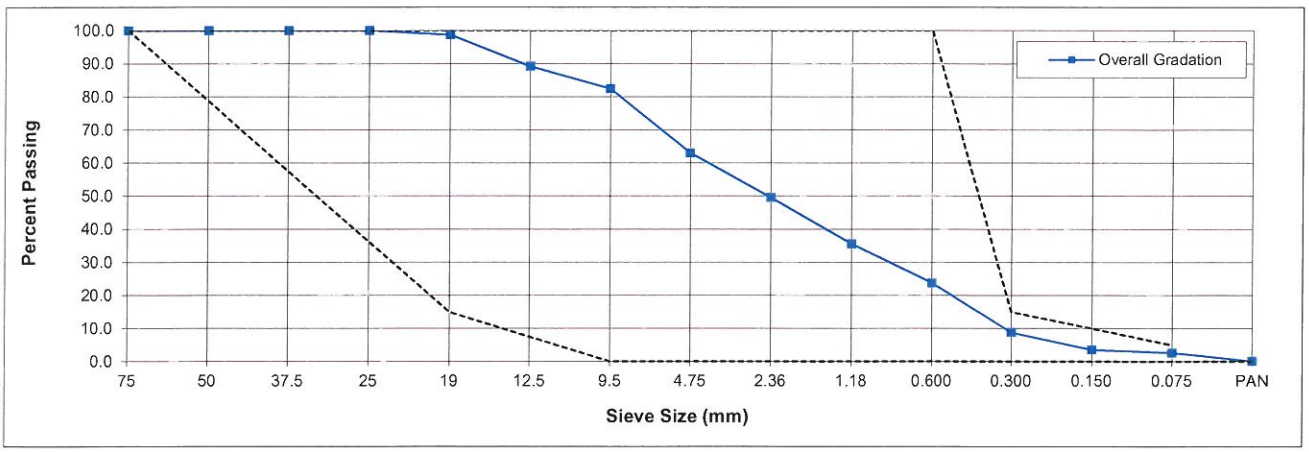
PROJECT: Telegraph Pit, Vancouver Island District

Sample:	**STPL 12, Bag 370, SA#1**
Source:	**Telegraph Pit**

DATE SAMPLED: November 22, 2012
DATE TESTED: November 29, 2012

SAMPLED BY: Client
TESTED BY: VN/DC

SIEVE ANALYSIS						MATERIAL SPECIFICATION : BCH, SELECT GRANULAR SUB-BASE	
Sieve Size (mm)	Mass Ret. (g)	% Retained	% Passing	Individual % Retained (Split values)			
				+ 4.75	- 4.75		
75	0	0.0	100.0	0.0		100.0	100.0
50	0	0.0	100.0	0.0			
37.5	0	0.0	100.0	0.0			
25	0	0.0	100.0	0.0			
19	65	1.3	98.7	3.5		15.0	100.0
12.5	474	9.5	89.2	25.6			
9.5	338	6.8	82.4	18.3		0.0	100.0
4.75	972	19.5	63.0	52.6			
2.36	84.5	13.4	49.6		21.3		
1.18	88	14.0	35.6		22.2		
0.600	74.2	11.8	23.8		18.7	0.0	100.0
0.300	94.1	15.0	8.8		23.8	0.0	15.0
0.150	32.9	5.2	3.5		8.3		
0.075	5.9	0.9	2.6		1.5	0.0	5.0
PAN	16.4	2.6	0		4.1		
Total		100.0		100.0	100.0		



Note: Tested sample represents entirety of sample provided by client.

Total mass + 4.75mm:	1849 g	Mass before wash:	396.0 g
Total mass - 4.75mm:	3148 g	Mass after wash:	380.1 g
Total mass of sample:	4997 g	Wash loss fines:	15.9 g
		Fines from pan:	0.5 g

Reported by: S. John, AScT

Reviewed by: L. Hu, M. Sc. E.

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