Ministry of Transportation and Infrastructure

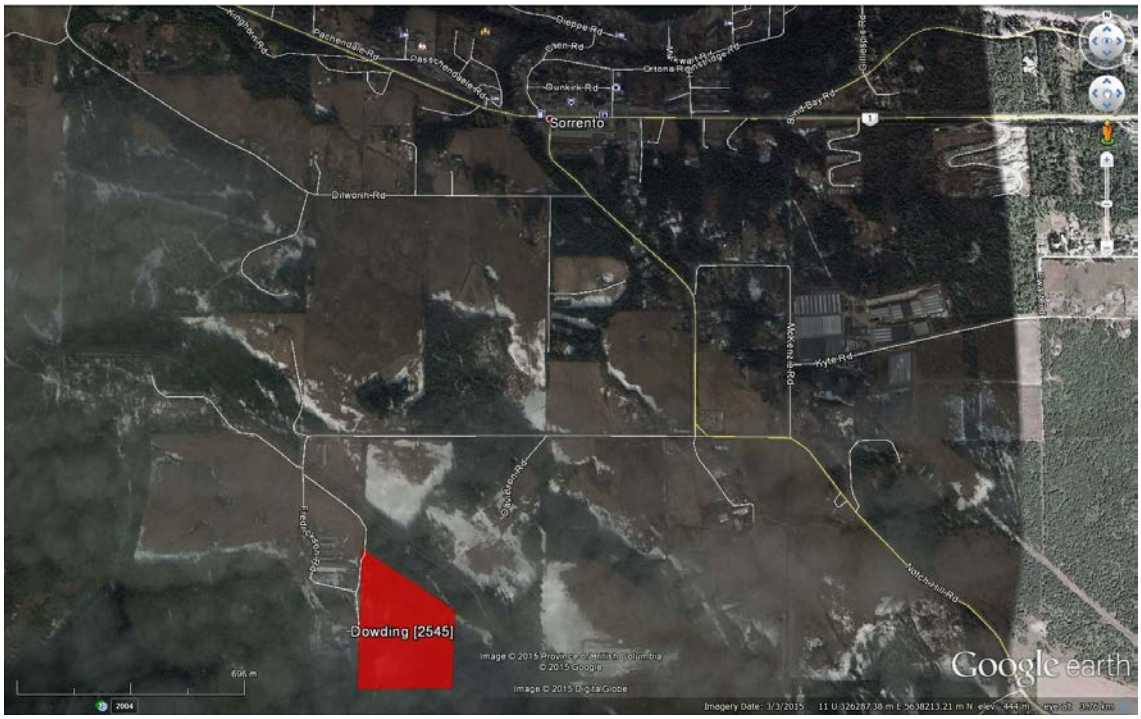
Geotechnical and Materials Engineering

Southern Interior Region
231-447 Columbia Street
Kamloops, BC, V2C 2T3
Telephone: (250) 371-3789
Fax: (250) 828-4083

Dowding Pit No. 2545

2017 Technical Information Report

Location: The pit is located south of Sorrento on Fredrickson Road (south of the Canadian Pacific Railway), approximately 2 km southwest of the intersection of Fredrickson and Notch Hill Roads. Notch Hill Road is accessed via the Trans-Canada Highway.



Legal Description: Ministry of Transportation and Infrastructure owned property legally described as Lot 1 Plan 40107, Township 22, Range 11, West of the Sixth Meridian, Kamloops Division of the Yale District, containing approximately 11 ha. UTM coordinates are Grid Zone 11, 5,637,500 Northing, 325,600 Easting.

Gradation: The average and range of laboratory samples as well as oversize rock field estimates for material from the 1987 testing program at Dowding Pit, Area A (TP's 87-7 – 9, 12 – 23) are as follows:

Laboratory Samples

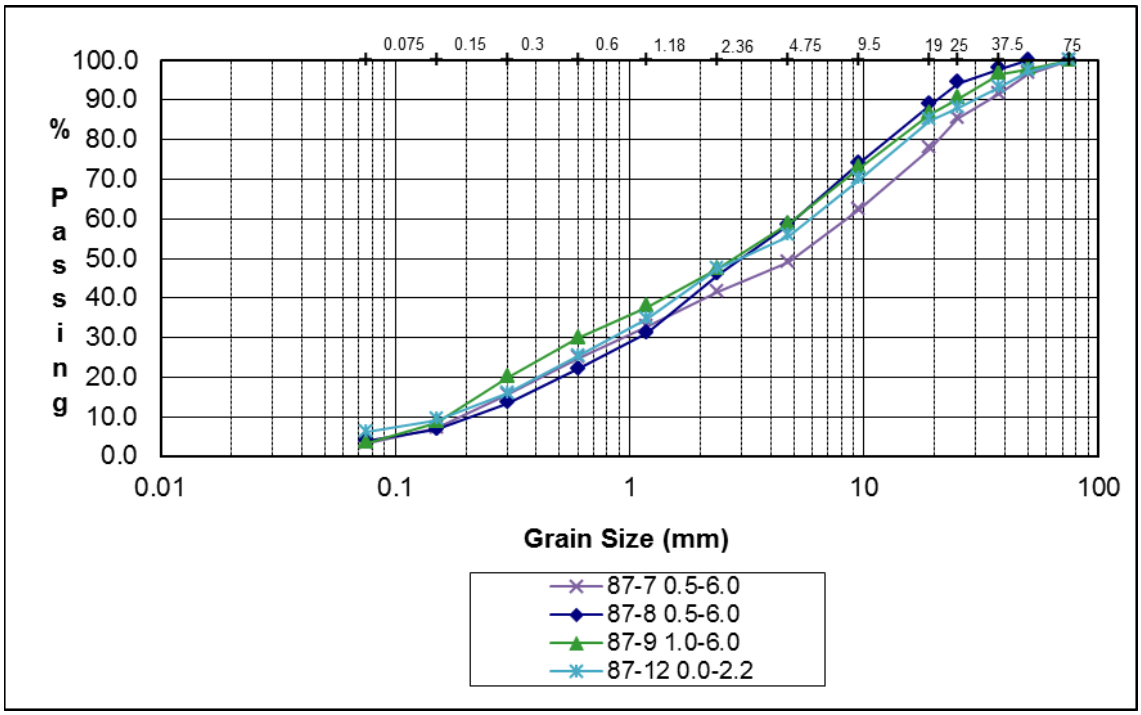
Classification:	Average (%)	Range (%)
Gravel (4.75-75mm)	48	38 – 60
Sand (0.075-4.75mm)	49	37 – 59
Fines (<0.075mm)	3	2 - 6

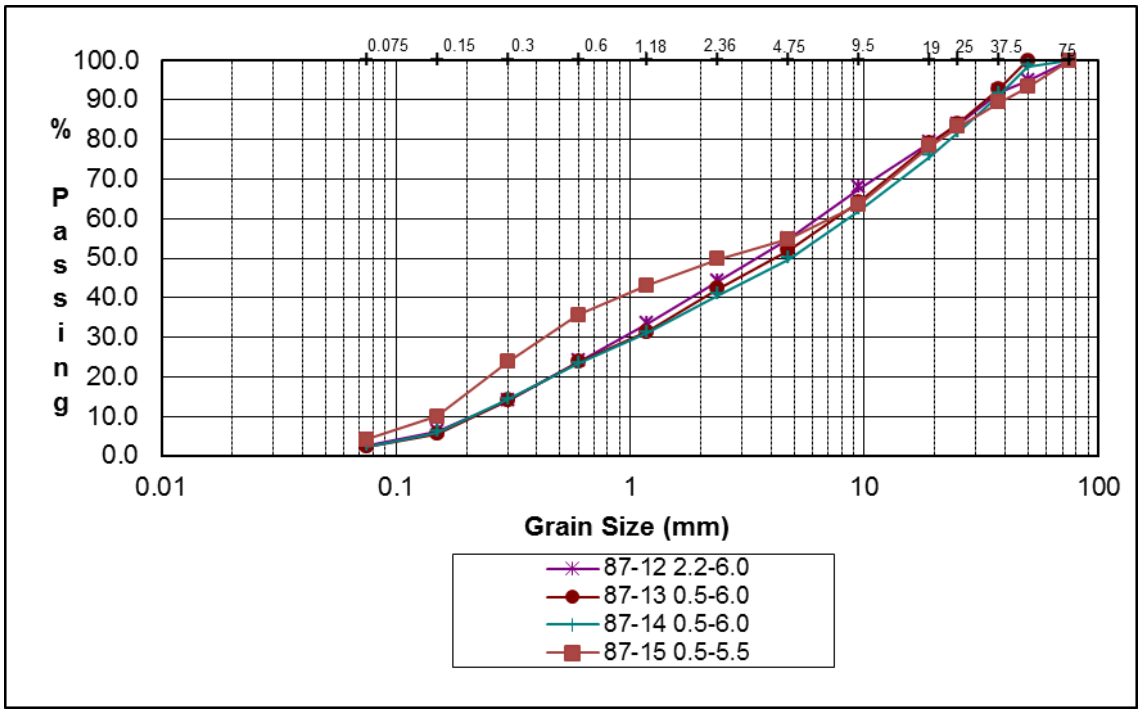
Oversize Field Estimates

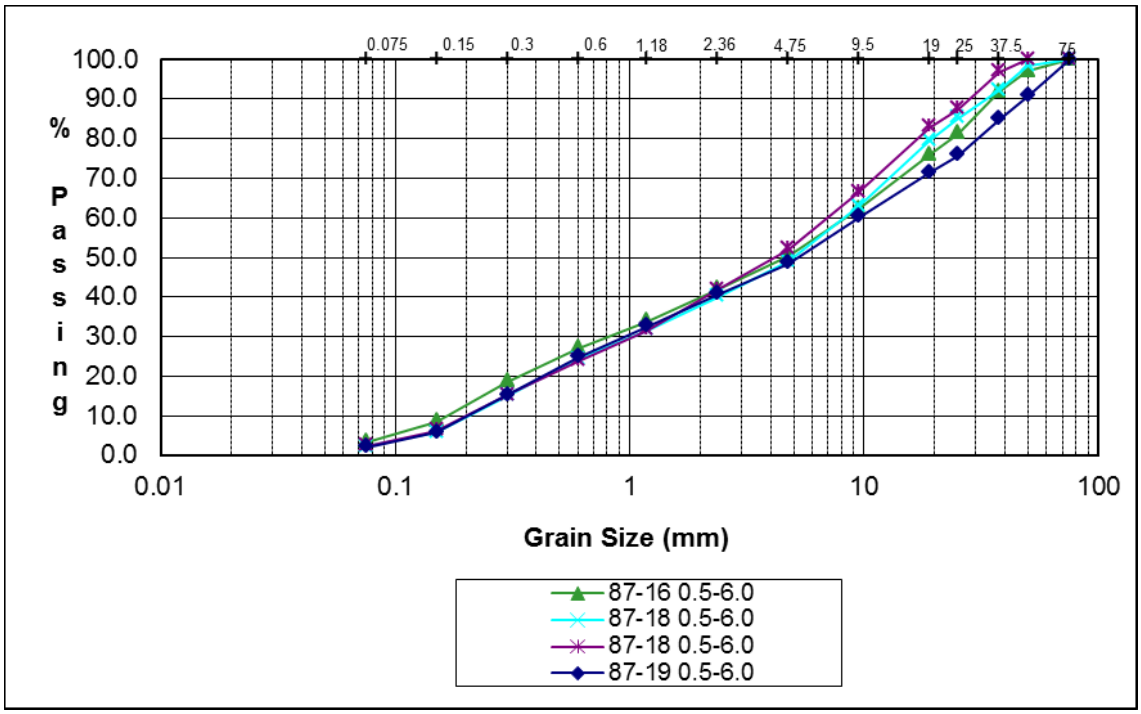
Classification:	Average (%)	Range (%)
Boulders (>375mm)	0.9	0 – 10
Cobbles (150-375mm)	2.5	0 – 10
Cobbles (75-150mm)	5.4	0 – 10

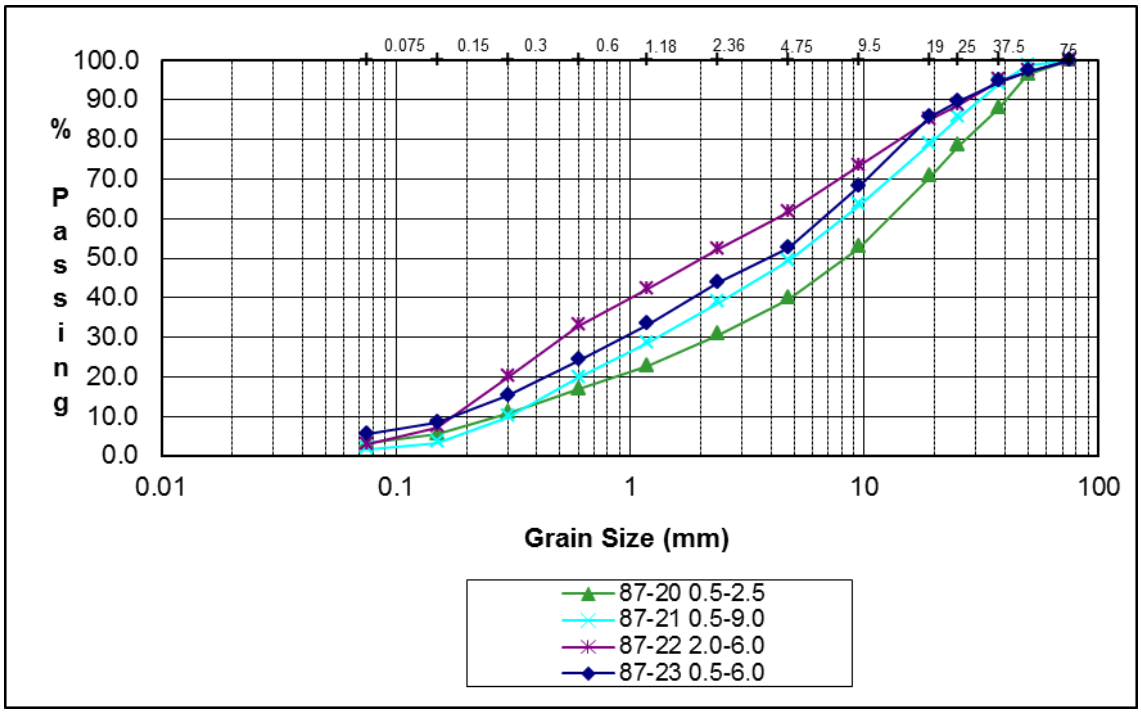
The maximum size rock observed was 375 mm.

Aggregate Gradation Chart:




0.075
0.15
0.3
0.6
1.18
2.36
4.75
9.5
19
25
37.5
75
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
% Passing
0.01
0.1
1
10
100
Grain Size (mm)
87-12 2.2-6.0
87-13 0.5-6.0
87-14 0.5-6.0
87-15 0.5-5.5


0.075
0.15
0.3
0.6
1.18
2.36
4.75
9.5
19
25
37.5
75
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
% Passing
0.01
0.1
1
10
100
Grain Size (mm)
87-16 0.5-6.0
87-18 0.5-6.0
87-18 0.5-6.0
87-19 0.5-6.0



Summary of Test Pit Logs (including Laboratory Results – bolded in red) are located below:

AGGREGATE LOG

PROJECT:	Dowding	**SAMPLED BY:**	Bryan James
PIT #:	2545	**METHOD:**	Backhoe
DISTRICT:	**Okanagan Shuswap**	**DATE:**	Sept 2 - 8, 1987

TH / TP	DEPTH		SAMPLE	SOILS CLASS	ESTIMATED GRADATION			ESTIMATED ROCK 75mm				SAND TYPE	REMARKS
	FROM	TO	BAG No.		G	S	F	MAX SIZE	75mm 150mm	150mm 375mm	375mm	F M C	(LAB RESULTS)
87-1	0.0	6.0		SM_3	0	70	30						
87-2	0.0	6.0		SM_3	0	70	30						
87-3	0.0	0.5											
	0.5	6.0		SP-SM	0	88	12						
87-4	0.0	6.0		SM_4	0	60	40						
87-5	0.0	1.0		TS									
	1.0	4.5		GP	55	41	4	150	5			F M	**GP 55/43/2**
	4.5	6.0		SM_2	20	60	20	200	5	<1		F M	**SP-SM 41/48/11**
87-6	0.0	0.5		TS									
	0.5	6.0		GP-GM	50	38	12	1000	10	5	1	F M	**GP-GM 57/37/6** Angular rocks

AGGREGATE LOG

PROJECT:	Dowding	**SAMPLED BY:**	Bryan James
PIT #:	2545	**METHOD:**	Backhoe
DISTRICT:	**Okanagan Shuswap**	**DATE:**	Sept 2 - 8, 1987

TH / TP	DEPTH		SAMPLE	SOILS CLASS	ESTIMATED GRADATION			ESTIMATED ROCK 75mm				SAND TYPE	REMARKS
	FROM	TO	BAG No.		G	S	F	MAX SIZE	75mm 150mm	150mm 375mm	375mm	F M C	(LAB RESULTS)
87-7	0.0	0.5		TS									
	0.5	6.0		GP-GM	50	45	5	150	10			F M	**GP 51/46/3**
87-8	0.0	0.5		TS									
	0.5	6.0		SP	35	61	4	200	5	<1		F M	**SP 42/54/4**
87-9	0.0	1.0		TS									
	1.0	6.0		SP-SM	35	60	5	150	<1			F M	**SP 41/56/3**
87-10	0.0	5.0		GM_3	45	20	35	200					
87-11	0.0	0.5		TS									
	0.5	3.5		GP-GM	50	45	5	200	15	2		F M	**GP 49/48/3** Roots to bottom
	3.5	6.0		SM_1	15	70	15	75				F M	**SM_1 20/60/20**
87-12	0.0	2.2		GP-GM	50	40	10	300	10	10	5	F M	**GP-GM 40/51/5**
	2.2	6.0		GP	50	46	4	200	5	2		F M	**GP 45/52/3**
87-13	0.0	0.5		TS									
	0.5	6.0		GP-GM	50	45	5	150	5			F M	**SP 43/45/2**
87-14	0.0	0.5		TS									
	0.5	6.0		GP	55	41	4	150	5			F M	**GP 51/47/2**
87-15	0.0	0.5		TS									
	0.5	5.5		SP-SM	40	53	7	200	5	10		F M	**SP 45/51/4** Angular rocks
87-16	0.0	0.5		TS									Boney at top
	0.5	6.0		GP	50	46	4	150	5			F M	**GP 50/47/3**
87-17	0.0	0.5		TS									
	0.5	6.0		GP	50	47	3	150	3			F M	**GP 51/47/2**
87-18	0.0	0.5		TS									Boney at top
	0.5	6.0		GP	50	47	3	100	3			F M	**SP 48/50/2**
87-19	0.0	0.5		TS									
	0.5	6.0		GP	50	46	4	150	5			F M	**GP 51/47/2**

AGGREGATE LOG

PROJECT:	Dowding	**SAMPLED BY:**	Bryan James
PIT #:	2545	**METHOD:**	Backhoe
DISTRICT:	**Okanagan Shuswap**	**DATE:**	Sept 2 - 8, 1987

TH / TP	DEPTH		SAMPLE	SOILS CLASS	ESTIMATED GRADATION			ESTIMATED ROCK 75mm				SAND TYPE	REMARKS
	FROM	TO	BAG No.		G	S	F	MAX SIZE	75mm 150mm	150mm 375mm	375mm	F M C	(LAB RESULTS)
87-20	0.0	0.5		TS									
	0.5	2.5		GP	58	37	5	375	10	10	10	F M	**GP 60/34/3**
	2.5	6.0		GP	50	46	4	150	5			F M	
87-21	0.0	0.5		TS									
	0.5	9.0		GP	50	49	1	200	5	2		F M	**GP 51/47/2**
87-22	0.0	2.0		GM_1	50	35	15	200	5	2		F M	
	2.0	6.0		SP	30	65	5	75				F M	**SP 38/59/3**
87-23	0.0	0.5		TS									
	0.5	6.0		GP-GM	50	40	10	200	5	5		F M	**GP-GM 47/47/6** Angular rocks
87-24	0.0	0.5		TS									
	0.5	6.0		GP-GM	50	40	10	200	10	15		F M	**GP-GM 56/38/6** Angular rocks
87-25	0.0	0.5		TS									
	0.5	6.0		GM_2	50	30	20	400	10	10	5	F M	**GP-GM 51/39/10** Angular rocks
87-26	0.0	0.5		TS									
	0.5	4.5		GP-GM	50	40	10	375	10	10	5	F M	
87-27	0.0	2.0		GM_2	50	30	20	200	10	5		F M	
	2.0	6.0		GP-GM	55	35	10	75				F M	**GP-GM 52/42/6**

Aggregate Quality: A summary of aggregate quality tests performed on pit run samples from the tested area are as follows:

TP	Micro-Deval C/F (%)	Deg	SE (%)	Bulk Relative Density C/F	Absorption (%) C/F	Soundness MgSO4 C/F
87-9		77.9	83.3			
87-15		68.2	71.5			
87-17		76.6	85.7			
87-19						8.1/11
87-21		80.7	85.3			
87-23		79.3	64.3			
2007 Grab	17.2					

TP	Micro-Deval C/F (%)	Deg	SE (%)	Bulk Relative Density C/F	Absorption (%) C/F	Soundness MgSO4 C/F
Average	17.2	76.5	78.0			8.1/11

Granular Volume:

Estimated Volume 165,000 m^3

- The estimated volume has been determined by multiplying the surface area of the suitability boundary by an average depth of 5.0 metres.

Pit Development and Recommendations:

- The mining area has been previously developed by the Ministry of Transportation and Infrastructure (MoTI). Any additional development will be the responsibility of the contractor and shall be completed as per the pit development plan or as directed by the Ministry Representative.

- The crusher is recommended to be located at the base of slope as identified on the Pit Development Plan, with mining proceeding in a southerly direction.

- Processed aggregate may be stockpiled to the west of the crusher location, where space permits. Catchment ponds have been constructed, they will need to be left in place, or re-established at the completion of any pit works.

- Some minor stripping may be required prior to mining and aggregate stockpiling. If additional development is required it shall conform to the requirements of the pit development plan or be completed as directed by the Ministry Representative.

- At the completion of mining, active pit faces shall be sloped to a minimum of 1 ½:1 with granular material.

- **All reject materials resulting from aggregate production are to be placed in separate stockpiles free from deleterious material and in an easily accessible location. No stockpiling against the pit face is permitted without the permission from the Aggregate Resource Manager.**

Samantha Kinniburgh
Senior Aggregate Resource Specialist