Sample No.:BC 9-2

Coordinates N:47°24'655

E:110°12'549

Denth	Type of	Color	Description	
(m)	Soil			
			Sand is very fine to fine grained.	0.20
			With some subanguler and angular gravel,	
		Dark Brown	Dark Brown ø prevailing <30mm.	Sampling
0.65	Silty Sand to Brown		With roots for the first 25cm.	09'0
			Talus deposits	
	Sand &		Gravel: Mainly consisting of anguler gravel,	
1.00	Gravel	Light Grey	Light Grey ø max: 60mm, ø prevailing <50mm.	

E.S	ding Analysis	(%)	TT	ď	Wn	Wopt	MDD	CBR-Vi	CBR-Value (%)
G	S	Ŧ	(%)		(%)	(%)	g/cm³	95%MDD	98%MDD
17	62	21	26	9	1.2	5.5	2.063	14	41

5	are frames, Samuel	(0.) 0.0		1		· · · · · · · · · · · · · · · · · · ·		(a.) amm :	/ \
G	S	Æ	(%)		(%)	(%)	g/cm³	95%MDD 98%M	M%86
17	62	21	26	9	1.2	5.5	2.063	14	41
G	Gravel content	#		Ip	Plasticity index	*			
S	Sand content			Wn	Naitonal moisture content	sture content			
Œ	Particles finer	finer than 0.075mm	e	Wopt	Opimum mois	Opimum moisture content determined by Modified Proctor test	stermined by I	Modified Proct	or test
TT	Liquid Limit			MDD	Mazimum dr	Mazimum dry density determined by Modified Proctor test	nined by Mod	ified Proctor te	ž.

Sample No.:BC 9-1

Coordinates N:47°22'836

E:110°21'462

Denth	Type of	Color	Dogwindian	
(m)	Soil		rescription	
0.30	Silty Sand	Brown	Sand is very fine grained. With roots.	0.30
	Silty Sand			
0.35	with Gravel Brown	·	Sand is very fine grained.	
			Sand is very fine grained.	Sampling
	Silty Sand		With angular to subanguler gravel.	
0.75	with Gravel Light Grey	Light Grey	ø max:150mm, ø prevailing <40mm.	♦ 0.75
	Sand with			
0.85	Gravel	Light Brown	Light Brown o max: 80mm, o prevailing <25mm.	
	Sand &		Boulder (ø 250mm) at 0.9m. With angular to	
1.00	Gravel	Brown	subanguler gravel. ø prevailing <20mm.	

Ü	Grading Analysis	(%) si	TT	ф	Wn	Wopt	MDD	CBR-V	CBR-Value (%)
ტ	S	F	(%)		(%)	(%)	g/cm³	10W%86 QUM%56	IQW%86
42	46	12	17	4	2.4	7.4	2.026	21	30
Ç	Gravel content			ď	Plasticity index	×			
S	Sand content			Wn	Naitonal moisture content	ture content			
<u></u>	Particles finer	er than 0.075mm		Wopt	Opimum mois	Opimum moisture content determined by Modified Proctor test	etermined by	Modified Proct	or test
TT	Liquid Limit			MDD	Mazimum dry	Mazimum dry density determined by Modified Proctor test	mined by Mod	ified Proctor te	st

Sample No.:BC 10-1

Coordinates N:47°21'778

E:110°29'827

Depth (m)	Type of Soil	Color	Description
0.15	Silty Sand	Dark Brown	Dark Brown With roots. Dry and hard. Sand is very fine grained.
		Light Grey	With roots up to 40cm from the ground surface.
0.50	Silty Sand to Brown	to Brown	Sand is very fine grained. Very Silty.
			Moist
			Sand is very fine to fine grained.
06.0	Silty Sand	Brown	Very silty at top.
		Brown mottled Moist	Moist
1.00	Silty Sand	Green	Sand is very fine grained.

	Gra	Grading Analysis	(%)	LL	Ip	Wn	Wopt	MDD	CBR-V	CBR-Value (%)
_	G	S	H	(%)		(%)	(%)	g/cm³	QQW %\$6	95%MDD 98%MDD
	3	47	50	36	15	5.4	8.5	2.105	1	14
Ç		Gravel content	ţ		Ip	Plasticity index	×			
Ø		Sand content			Wn	Naitonal moisture content	sture content			
<u> </u>		Particles finer	than 0.075mm	_	Wopt	Opimum mois	Opimum moisture content determined by Modified Proctor test	etermined by	Modified Proct	or test
LL		Liquid Limit			MDD	Mazimum dry	Mazimum dry density determined by Modified Proctor test	mined by Mod	ified Proctor to	15

Sample No.:BC 10-2

Coordinates N:47°19'793

E-110°37'142

Depth (m)	Type of Soil	Color	Description	
			With roots. Sand is very fine grained.	
		Dark Brown to	Dark Brown to With some fine subrounded gravel. 9=2 to 5mm.	0.25
0.35	Silty Sand Dark Grey	Dark Grey	Very silty.	
			Sand is very fine grained. Very silty.	
			Trace of subrounded fine gravel,	
0.70	Silty Sand	Light Grey	ø max=10mm, ø prevailing <5mm.	0.70
			Material is same as the upper layer, but has higher	Sampling
1.00	Silty Sand	Light Brown	Light Brown moisture conten.	

	Gra	Grading Analysis (%	(%)	TT	Пp	Wn	Wopt	aaw	CBR-Value (%)	due (%)
9	7 h	S	F	(%)		(%)	(%)	Emɔ/g	QQW%86 QQW%86	98%MDD
2.	5	48	27	28	9	4.9	9.5	2.085	4	5
Ġ		Gravel content	1		dI	Plasticity index	×			
Ø		Sand content			Wn	Naitonal moisture content	ture content			
<u> </u>		Particles finer	Particles finer than 0.075mm	_	Wopt	Opimum mois	ture content d	letermined by	Opimum moisture content determined by Modified Proctor test	or test
LL		Liquid Limit			MDD	Mazimum dry	density detern	mined by Mod	Mazimum dry density determined by Modified Proctor test	st

Material Conditions at Possible Borrow Pit

E:107°48'865 Present Status: Exising Borrow Pit (In operation) Coordinates N:47°42'995 Sample No.:599

Weathered igneous rouck

E:107°50'500 Coordinates N:47°42'208

Sample No.: BP D-5

Present Status: Exising Borrow Pit (In operation)

Max. size: 250mm, prevailing size \leq 80mm Weathered igneous rouck

Material Test Results

Jus (9%)	1100 (70)	080% MININ	JO /01/10/	4	-
CRR-Val	TOTAL AS	05% MDD	7.7 (1)	1	
MIN		o/em3	8, 51112	2.048	
Wont)) :	(%)	(6/)	9.3	
Wn	1	8		8,4	
dI	•			Non Plastic	
TT		%		Non Plastic	
(%) !		[<u>-</u> ,		∞	
ding Analysis		S		_	
Gra	(G		85	

Plasticity index Ip Wn Gravel content Sand content S S F F

Particles finer than 0.075mm Liquid Limit

Natural moisture content

Opimum moisture content determined by Modified Proctor test Maximum dry density determined by Modified Proctor test Wopt MDD

Sample No.:BP D-3

Coordinates N:47°42'207

 $E:108^{\circ}00'510$

Present Status: No Borrow Pit

Depth	Type of	Color	Description	
(m)	Soil			
			With roots. Sand is very fine grained.	
0.15	Silty Sand	Dark Brown	Dark Brown Trace of coarse sand.	
		Brown to	Sand is very fine to coarse grained.	
0.50	Silty Sand	Dark brown	Dark brown ømax. Size 10mm	
			Snad is fine to coarse grained. Fine sand is prevailing.	
	Sandy Silt	Yellowish	Gravel: Subanguler	
0.90	with Gravel	Brown	Max. size: 50mm, Prevailing size ≤ 10mm	
	Sand &	Yellowish		-
1.00	Gravel	Brown	Max.: 100mm, Prevailing < 10mm	
	Sand &			
1.05	Gravel	Light Grey	Light Grey Consisting of rock fragments	1.05
			Gravel: Subanguler to anguler	
	Sand &		Max. size: =180mm, ω prevailing size ≤ 20 mm	
1.6	Gravel	Light Brown	Light Brown Materials derived from weathered granitic rock	9.1 ▶
				Sampling

	Grac	Grading Analysis ((%)	ון דו	ď	Wn	Wopt	MDD	CBR-Value (%)	due (%)
)	9	S	Ŧ	(%)		(%)	(%)	g/cm ³	95% MDD 98%MDD	08%WDD
7	7.7	15	6	23	8	3	7.8	2.059	14	76
G	-	Gravel content			dI	Plasticity index	×			
S		Sand content			Wn	Natural moisture content	are content			
ഥ		Particles finer t	than 0.075mm		Wopt	Opimum mois	ture content de	etermined by I	Opimum moisture content determined by Modified Proctor test	or test
TT		Liquid Limit			MDD	Maximum dry	density detern	nined by Mod	Maximum dry density determined by Modified Proctor test	st

Sample No.:BP D-4

Coordinates N:47°41'533

E:107°54'975

Present Status: Exising Borrow Pit (not used)

Material sampled is sand and gravel with boulder, consisting of weathered Abundoned borrow pit located on the slope of a small granitic rock hill. granite, talus deposits and decomposed granite. A part of the borrow pit consists of black shale.

Material Test Results

	Gra	Grading Analysis ((%)	LL	Ip	Wn	Wopt	MDD	CBR-Value (%)	ılue (%)
	g	S	F	(%)		(%)	(%)	g/cm ³	95% MDD 98%MDD	98%WDD
	99	17	17	26	9	3.1	5.9	2.045	29	32
Ö		Gravel content	ţ		d _I	Plasticity index	×			
S		Sand content			Wn	Natural moisture content	ure content			
ŢŢ.		Particles finer	Particles finer than 0.075mm		Wopt	Opimum mois	sture content de	etermined by	Opimum moisture content determined by Modified Proctor test	or test
Ľ		Liquid Limit			MDD	Maximum dry	density deterr	nined by Mod	Maximum dry density determined by Modified Proctor test	st

Sample No.:583

Coordinates N:47°41'935

E:107°55'600

Present Status: Exising Borrow Pit (not used)

Abundoned borrow pit located beside the existing road. 0-0.5 m Blak Sandy silt, 0.5-1.0m Light grey Sandy silt and 1.0-2.0m.

Light grey very Silty Sand and gravel.

E - 59

Sample No.:BP D-2

Coordinates N:47°42'454

E:108°07'173

Present Sta	Present Status: No Borrow Pit	row Pit		
Depth	Type of	Color	Description	
(m)	Soil			
			Sand is very fine grained. With roots.	
0.15	Silty Sand	Dark Brown	Dark Brown Trace of coarse sand and fine gravel.	
		Dark Brown	Dark Brown Sand is very fine grained. With gravel size rock	
	Silty Sand	to Greyish	fragments and subanguler gravel	
0.50	with Gravel	Brown	max. siz.e 30mm, prevailing size ≤ 10mm	
		Greyish	Sand is very fine grained.	
0.70	Silty Sand	Brown	Occasionally with subanguler gravel.	
		Slightly		
		Greenish &	Sand is very fine grained. Less silt content in	
06.0	Silty Sand	Greyish Brown	Greyish Brown comparison with the upper layer.	
			Sand is very fine grained. With some gravel.	
	Silty Sand	Greyish	ømax.: 150mm(Subanguler)	
1.10	& Gravel	Brown	øprevailing ≤ 10mm, (Subanguler and subrounded)	1.1
	Sand &	Greyish	Sand is very fine grained.	
1.45	Gravel	Brown	ømax.: 2.50mm (1 piece only), prevailing \le 10mm	1.45
				:

Material Test Results

Sampling

	Grad	Grading Analysis (%	- %	$\Gamma\Gamma$	d _I		√n	Wopt	MDD	CBR-Value (%)	lue (%)
	r U	S	H	(%)			(%)	(%)	g/cm³	95% MDD 98%MDD	98%MDD
4	4	41	15	26		8	5.2	5.5	2.073	-	5
				i i							
Ŋ	•	Gravel content			Ip	Pla	Plasticity index	×			
S		Sand content			Wn	Z	Natural moisture content	ire content			
<u>(</u> -	, ,	Particles finer thar	than 0.075mm		Wopt	Q	siom munic	ture content de	stermined by N	Opimum moisture content determined by Modified Proctor test	or test
TT	. 7	Liquid Limit			MDD	Ĭ	aximum dry	density deterr	nined by Mod	Maximum dry density determined by Modified Proctor test	st

Sample No.:BP D-1

Coordinates N:47°41'286

E:108°11'803

Present Status: Close to Abandoned Borrow Pit

Depth	Type of	Color	Description	
(m)	Soil			
0.10	Silty Sand	Dark Brown	Dark Brown Sand is very fine grained. With roots.	
	Silty Sand	Greyish	Sand is very fine grained. Very silty	ı
0.50		Brown	Trace of subanguler graveles throughout of the layer.	
			Very silty.	
	Silty Sand	Greyish Brown	Greyish Brown Gravel: Rock fragments and subanguler gravel	
0.75	with Gravel	mottled White	with Gravel mottled White omax.: 50mm, oprevailing < 20mm	
		Slightly	Sand is very fine grained.	
		Greenish &	Greenish & With little subanguoer to Subrounded gravel.	
0.90	Silty Sand	Greyish Brown	Greyish Brown Prevailing<20mm	
			Sand is very fine to fine grained.	00 T
			Sand becomes coarser with depth.	
		Slightly	Gravel: Subanguler	Samulino
	Silty Sand	Greyish	ømax.: 80mm in general 100 to 200mm at 1m.	
1.40	with Gravel	Light Brown	h Gravel Light Brown oprevailing < 30mm	1 40

5	Grading Analysis (%)	(%)	TT	qI	Wn	Wont	MDD	CRD Volue (9/)	(10) only
7	~			•) <u>.</u>	-	CDIN-Y	(o/) ans
او	2	.	(%)		<u></u>	(%)	fuo/a	95% MDD	98%MDD
20	30	20	23	9	5.4	10.4	2.167	~	200
									(1)
۲	Gravel content			<u>.</u>					
,	GIRTOI COIRCIN	_		ф	Flasticity index	~			
S	Sand content			Wn	Natural moisture content	re content			
Ŧ	Particles finer than	than 0.075mm		Wont	Opimum moist	hire content de	etermined by N	Onimum moisture content determined by Modified Decotor toot	4004
LL	Liquid Limit			MDD	Maximum dry	density deterr	nined by Mod	Maximum dry density determined by Modified Proctor test	זו וכאן צל

Sample No.:BP 1A-2

Coordinates N:47°38'712

E:108°16'600

Present Status: Close to Abandoned Borrow Pit

Depth	Type of	Color	Description	
(m)	Soil			
	Silty Sand	Dark Brown	y Sand Dark Brown With roots. Sand is very fine grained.	
		Light Grey to	Light Grey to Sand is very fine grained.	
	Silty Sand	Light Brown	Light Brown Very silty. Moist	0.70
			Sand is very fine grained.	
			Silt content is less than that in the upper Layer. Moist	Sampling
		Light Grey to	Light Grey to Trace of subanguler to subrounded gravels throughout	
,	Silty Sand	Light Brown	Light Brown of the layer, oprevailing < 30mm	1.10

<u>ن</u>	Grading Analysis (%	(%)	LL	dı [Wn	Wopt		CBR-Value (%)	due (%)
S	S	F	(%)		(%)	(%)	g/cm ³	95% MDD	QQW%86 QQW%56
33	56	11	20	9	5.8	3.5	2.182	5	7
Ç	Gravel content	÷:		ďI	Plasticity index	×			
S	Sand content			Wn	Natural moisture content	ure content			
Ħ	Particles finer	articles finer than 0.075mm		Wopt	Opimum mois	ture content d	etermined by I	Opimum moisture content determined by Modified Proctor test	or test
TT	Liquid Limit			MDD	Maximum dry	density deteri	mined by Mod	Maximum dry density determined by Modified Proctor test	st

Sample No.:500

Present Status: Existing Borrow Pit (not used) located beside Railway, Close to BPIA-2

Depth	Type of	Color	Description
(m)	Soil	-	
			With roots at top.
		<u>-</u>	Sand is very fine grained.
0.30	Silty Sand	Dark Brown	Silty Sand Dark Brown Thickness is variable (20 to 30cm).
		Yellowish	Sand is very fine to fine grained. Very silty.
0.50	Silty Sand Brown	Brown	Trace of fine gravel. Thickness is variable.
			Gravel: Subanguler ø prevailing < 20mm,
	Sand &	Yellowish	Thickness is variable (30 to 50cm).
1.00	Gravel	Brown	With sand with gravel portions.
		Yellowish	
06.0	Silty Sand	Brown	Moist

Sample No.:552

Coordinates N:47°40'720

E:108°19'583

Present Status: Exising Borrow Pit (not used)

orrow Pit (not used)

Abandoned borrow pit consisting of sand and gravel of fluvial deposits. Side borrow also used for construction of the existing road. (about 1.2km/section)

Material Conditions at Possible Borrow Pit

Sample No.:551

Coordinates N:47º41'933

E:108°21'739

Present Status: Coal Waste

Hill of coal waste consisting of light grey very silty fine sand. Excavated material from trench dug around mining area; very silty fine

to medium sand, brown to light grey coloured.

Materials are judged to be not so good for road construction.

Sample No.:800

Coordinates N:47°42'783

E:108°24'073

Present Status: Stock piles beside shallow pit

Consisting of sand and gravel to sand with gravel in fluvial deposits in origin. Materials are judged to be good for road construction.

Sample No.:BP 1A-1

Coordinates N:47°41'023

E:108°24'347

Present Status: No Borrow Pit

Depth	Type of	Color	Description	
(m)	Soil			
			With roots.	
0.20	Silty Sand	Dark Brown	Silty Sand Dark Brown Sand is very fine to fine grained.	
	Silty Sand			
0.30	with Gravel	Dark Brown	Gravel Dark Brown Gravel: rock fragments.	
	Sand &		Sand is very fine grained. Gravel: rock fragments.	
0.40	Gravel	Dark Brown	Dark Brown Max. size: 100mm, prevailing \le 60mm.	
	Sand &			
0.65	Gravel	Brown	Material is same as the upper layer.	
			Very silty. With little gravel.	
0.75	Silty Sand	Brown	Sand is very find grained.	0.75
			Decomposed granite?	
			Sand is very fine grained.	Sampling
		Yellowish	Occasionally with granite fragments with less than	
1.45	Silty Sand	Brown	50mm in max. dimension.	1.45

) 	Grading Analysis (%	(%)	LL		Ip		MDD	CBR-Value (%)	due (%)
Э	S	F	(%)		(%)	(%)	g/cm3	95% MDD 98%MDD	98%MDD
, 22	99	21	22	5	4.7	7.2	2.093	5	6
G	Gravel content	īt		ďΙ	Plasticity index	×			
S	Sand content			Wn	Natural moisture content	ire content			
1	Particles finer that	than 0.075mm		Wopt	Opimum mois	ture content d	etermined by I	Opimum moisture content determined by Modified Proctor test	or test
TT	Liquid Limit			MDD	Maximum dry	density detern	mined by Mod	Maximum dry density determined by Modified Proctor test	st

Sample No.:BP 3A-1

Coordinates N:47°41'907

E:108°27'102

Present Status: Existing Borrow Pit (not used)

Depth	Type of	Color	Description	 -
(m)	Soil		•	
			With roots at top.	•
0.20	Silty Sand	Dark Brown	Silty Sand Dark Brown Sand is very fine to fine grained.	
			Sand is fine to coarse grained.	
		Dark Brown to	Dark Brown to With little diorite fragments.	· · · · · ·
0.60/0.80	Silty Sand	Light Brown	Light Brown Thickness is variable, 40 to 60cm.	80
	Sand with			}
	Gravel to			-
	Sand &		Talus deposits underlain by very weathered granite.	
1.00/1.50	Gravel	Light Brown	light Brown Thickness is more than 0.5m.	
	Weathered		With many fissures.	Sampling
	Diorite		Friable to sand and gravel. Max. size: 200mm.	sand & Grave

Material Test Results

Gr	rading Analysis	(%)	LL	dI.	Wn	Wopt	MDD	CBR-V ₃	CBR-Value (%)
Ŋ	S	Ŀ	(%)	1	(%)	(%)	6/cm	04% MDD	05% MDD 08% MDD
47	30	23	17	,	2 1		0.000	7.	10.101.01
	2.5	3		7	3.1	c	7.007	2	25
Ç	Gravel content			Ip	Plasticity index	*			
				_		•			

Particles finer than 0.075mm Liquid Limit Sand content SFL

Natural moisture content Wopt MDD ٧٧n

Opimum moisture content determined by Modified Proctor test Maximum dry density determined by Modified Proctor test

Sample No.:522 Coordinates N:47°41'765 E:108°28'999

Present Status: Exising Sand Pit at Kherlen River (Mined occasionally)

Brown fine sand.

Sampling for cement stabilization test and sieving

Coordinates N:47°41'536 E:108°29'479

Sample No.:520

Present Status: Abandaned Sand Pit

Abandoned sand pit. Brown fine sand underlying the terrace developing left side of valley and Kherlen River.

Need slope protection and drainage.

Sample No.:BP 4A-5

Coordinates N:47°43'005

E:108°34'922

Present Status: No Borrow Pit

Depth	Type of	Color	Description	
(m)	Soil			
			With roots. Sand is very fine grained.	
0.20	Silty Sand	Dark Brown Very silty.	Very silty.	
			With roots. Sand is very fine grained.	
0.30/0.40	Silty Sand	Dark Brown	With some rock fragments.	
			Talus deposits	
			Sand is fine to medium grained.	
			With gravel size rock fragments.	
	Sand with	Yellowish	max. size: 200mm (1 piece)	
1.00	Gravel	Brown	Prevailing size ≤ 60mm	1.00
			Talus deposits	
			Sand is fine to medium grained.	
			With gravel size rock fragments.	
	Sand &	Yellowish	max. size: 100mm (1 piece)	
1.50	Gravel	Brown	Prevailing size ≤ 60mm	1.5
				Sampling

	Grading Analysis (%	is (%)	ΓΓ	Ιb	Wn	Wopt	MDD	CBR-Value (%)	ılue (%)
9	S	124	(%)		(%)	(%)	g/cm ³	95% MDD	95% MDD 98%MDD
38	50	12	30	5	5.3	4.4	2.139	-	25
									•
Ŋ	Gravel content	ent		d _I	Plasticity index	×			
S	Sand content	t.		Wn	Natural moisture content	are content			
Ŧ	Particles finer tha	er than 0.075mm		Wopt	Opimum mois	ture content d	etermined by]	Opimum moisture content determined by Modified Proctor test	or test
LL	Liquid Limit	t		MDD	Maximum dry	density deter-	mined by Mod	Maximum dry density determined by Modified Proctor test	st

Sample No.: BP 4A-4

Coordinates N:47º47'229

E:108°39'724

Present Status: No Borrow Pit

Depth	Type of	Color	Description	_
(m)	Soil			
			With roots.	
.30	Silty Sand	Dark Brown	y Sand Dark Brown Sand is very fine grained.	0.50
			Talus deposits	
			Sand is fine to medium grained.	
			With gravel size rock fragments throughout of the layer.	Sampling
	Sand with	Yellowish	Max. size: 200mm, Prevailing size ≤ 50mm	
.40	Gravel	Brown	With boulder size of rock fragments at 0.3m.	1.40

	Gra	Grading Analysis	(%)	ТТ	dI	Wn	Wopt	MDD	CBR-Value (%)	lue (%)
	G	S	F	(%)	•	(%)	· %	g/cm ³	95% MDD 98%MDD	98%MDD
	38	49	13	Non Plastic Non Plastic	Non Plastic	5.6	5.5	2.199	1	3
Ö		Gravel conten	++		d]	Plasticity index	×			
S		Sand content			Wn	Natural moisture content	are content			
Ŧ		Particles finer	than 0.075mm		Wopt	Opimum mois	ture content de	stermined by !	Opimum moisture content determined by Modified Proctor test	or test
LL		Liquid Limit			MDD	Maximum drv	density determ	nined by Mod	Maximum dry density determined by Modified Proctor test	. 5

Sample No.:BP 4A-3

Coordinates N:47º48'458

E:108°46'637

Present Status: No Borrow Pit

Depth	Type of	Color	Description	
(m)	Soil			
			With roots.	
0.20	Silty Sand	Dark Brown	Silty Sand Dark Brown Sand is very fine grained.	
			Sand is fine to medium grained.	
	Silty Sand	Brown to	Grave: Subanguler to anguler.	
	with	Yellowish	\emptyset max.: 150mm (few), prevailing size \leq 50mm	
1.20	Gravel	Brown	With roots throughout of the layer.	1.20
			Sand is fine grained.	
	Silty Sand	Yellowish	Grave: Subanguler to anguler.	Sampling
1.50	& Gravel	Brown	ø prevailing size < 50mm. Trace of roots at top.	1.50

<u>"</u>	Crading Analysis (0/)	(70)	-	12	11/2	11/2=4	MARIN	1	(, 0)
5	aums Amaiyana	(0/	1	<u>-</u>	T &	ıdax	UUIVI	CBK-Value (%)	Ine (%)
ڻ	S	Ŧ	(%)		(%)	(%)	g/cm³	95% MDD 98%MDD	98%MDD
42	45	13	21	5	4.6	8.4	2.104	-	20
Ç	Gravel content			Ip	Plasticity index	×			
\mathbf{s}	Sand content			Wn	Natural moisture content	are content			
Ŧ	Particles finer than	than 0.075mm		Wopt	Opimum mois	ture content d	etermined by]	Opimum moisture content determined by Modified Proctor test	or test
TT	Liquid Limit			MDD	Maximum dry	density detern	mined by Mod	Maximum dry density determined by Modified Proctor test	st

Sample No.:BP 4A-2

Coordinates N:47°45'287

E:108°54'323

Present Status: No Borrow Pit

Depth	Type of	Color	Description	
(m)	Soil		•	
	Silty Sand		With roots. Sand is very fine to fine grained.	
0.40	with Gravel	Dark Brown	with Gravel Dark Brown With rock fragments. Very silty.	
0.50	Silty Sand	Dark Brown	Silty Sand Dark Brown Sand is fine grained.	0.50
			Materials are derived from weathered granite.	
			Sand is fine grained.	
	Sand &		Grave: rock fragments max. size=150mm	sampling
	Gravel	Yellowish	Prevailing size ≤ 15mm	
1.35	with Silt	Brown	Encountered boulder layer at 1.35m.	1.35

	Gra	Grading Analysis (%	(%)	ΓΓ	dr	Wn	Wopt	MDD	CBR-Value (%)	lue (%)
	G	S	F	(%)		(%)	(%)	g/cm ³	95% MDD	3% MDD 98%MDD
3	34	48	18	91	Non Plastic	4.9	6.1	2.178	18	26
Ö		Gravel content			ď	Plasticity index	×			
S		Sand content			Wn	Natural moisture content	ire content			
<u> </u>		Particles finer than	han 0.075mm		Wopt	Opimum mois	ture content de	etermined by 1	Opimum moisture content determined by Modified Proctor test	or test
TT		Liquid Limit			MDD	Maximum dry	density deterr	nined by Mod	Maximum dry density determined by Modified Proctor test	st

E:108°54'146 Coordinates N:47°45'658 Sample No.:536

Present Status: No Borrow Pit (Head of gully eched on a low lying area)

Consisting of Sand and gravel with boulder. 8 Max. size: 250mm.

ø Prevailing < 40mm.

Coordinates N:47°45'254 E:108°56'194

Present Status: No Borrow Pit

Sample No.:601

Area underlain by highly weathered granite

Sample No.:602 Coordinates N:47°45'435 E:108°57'044

Present Status: No Borrow Pit

A small hill underlain by highly weathered granite.

Sample No.:BP 5-1

Coordinates N:47°44'648

E:108°59'570

Present Status: No Borrow Pit

Depth	Type of	Color	Description	
(m)	Soil			
			With roots at top. Sand is fine grained.	
	Silty Sand	Dark Brown	Silty Sand Dark Brown Gravel mainly consists of rock fragments.	
0.30/0.50	with Gravel to Brown		Prevailing size < 30mm	
			Sand is fine grained.	
	Sand with		Gravel consists of subanguler and anguler gravel.	
0.30/0.50	Gravel	Light Brown	Light Brown ø max. size: 150mm (few), ø prevailing \le 30mm	0.00
		Greenish	Sand is fine grained.	
	Silty Sand	Grey to	Gravel mainly consists of rock fragments, flaky.	sampling
1.00	& Gravel	Brownish Grey	Brownish Grey Max, size:150mm Prevailing size < 50mm	1.00

G	Grading Analysis (%	(%)	LL	dΙ	Wn	Wopt	aaw	CBR-Value (%)	ılue (%)
9	S	F	(%)		(%)	(%)	g/cm³	95% MDD	35% MDD 98%MDD
95	34	10	25	10	2.1	5.4	2.23	-	61
	:								
g	Gravel content	+		Ip	Plasticity index	*			
S	Sand content			Wn	Natural moisture content	ure content			
ĬŦ,	Particles finer tha	than 0.075mm		Wopt	Opimum mois	ture content d	etermined by I	Opimum moisture content determined by Modified Proctor test	or test
LL	Liquid Limit			MDD	Maximum dry	density deter	nined by Mod	Maximum dry density determined by Modified Proctor test	st

Sample No.: Tin mine 2

Coordinates N:47°43'299

E:109°03'973

Present Status: Stock Pile of Sand Tailins at Tsenkhermandal

Tailings at abandoned tin mine (Fluvial deposits in origin)

Brown fine sand with gravel

Gravel: Subrounded to subanguler

ø Max: 150mm (few)

ø Prevailing \leq 50mm.

Material Test Results

	9		
due (%)	08%WDD	13	
CBR-Value	95% MDD	6	
MDD	g/cm ³	2.081	
Wopt	· (%)	2.9	
Wn	%)	2	
dI	•	Non Plastic	
TT	(%)	Non Plastic	
(%)	Ŧ	9	
ding Analysis	S	63	
Gra	9	31	

Plasticity index Ip Wn Gravel content G S F LL

Particles finer than 0.075mm Sand content

Liquid Limit

Opimum moisture content determined by Modified Proctor test Natural moisture content Wopt MDD

Maximum dry density determined by Modified Proctor test

Sample No.: Tin mine 1

Coordinates N:47°40'640

E:109°07'966

Present Status: Stock Pile of Gravel Tailings at Tsenkhermandal

Tailings at abandoned tin mine (Fluvial deposits in origin)
Sand and gravel with boulder

ø Max: 150mm (few)

ø Prevailing ≤ 50mm.

Material Test Results

F (%) (%) (%) g/cm³ 95% MDI 2 Non Plastic 1.8 6 2.134 9	g Analysis	(%)		dI	Wn	Wopt	aaw	CBR-V	Value (%)
Non Plastic Non Plastic 1.8 6		H	(%)		(%)	(%)	g/cm ³	95% MDD	08%WDD
		2	Non Plastic	ı Pl	1.8	9	2.134	6	13

Opimum moisture content determined by Modified Proctor test Maximum dry density determined by Modified Proctor test Natural moisture content Plasticity index Wopt MDD Ip Wn Particles finer than 0.075mm Gravel content Sand content Liquid Limit

S S F L

Coordinates N:47°42'481 Sample No.:488

E:109°03'129

Present Status: Existing Borrow Pit (not used)

Fluvial deposits

Consisting of subrounded to subanguler sand & gravel with boulder

No so good quality as road construction materials

Coordinates N:47°44'650 Sample No.:485

E:108°59'574

Present Status: Existing Borrow Pit (not used)

Abandoned big borrow pit

Top soil: Brown silty very fine to fine sand with thickness of 30 to 60cm

silty Sand and gravel; silty sand with gravel, brown to reddish brown in colour, underline the top soil. Gravel mainly consists of anguler rock fragments.

Sample No.: 495

Coordinates N:47º40'413

E:109°07'028

Present Status: Exising Borrow Pit (Not used)

Abandoned borrow pit

Occupied by gel Not much minable reserve

Materials consist of talus deposits and weathered rock

Sample No.:BP 6-3

Coordinates N:47°38'853

E:108°09'469

Present Status: Garbage Dumping ground (Ex-borrow Pit)

Depth	Type of	Color	Description	
(m)	Soil			
			With roots. Sand is very fine grained.	
			Trace ofgravel (rock fraagmetns)	
0.20	Silty Sand	Silty Sand Dark Brown size<10mm	size<10mm	
	Sandy Silt		Sand is very fine grained. Gravel consists of diorite fragments.	
0:30	with Gravel	Dark brown	with Gravel Dark brown max. size: 50mm	0.30
			Talus deposits	
	Sandy Silt		Material consists of diorite fragments.	
1.50	& Gravel	Brown	max. size: 200mm, prevailing size \leq 50mm	1.50
				Sampling

CBR-value (%)	QQW %86	14	
CBR-va	95%MDD	-	
Wn Wopt MDD CBR-	g/cm3	2.15	
Wopt	(%)	5	
Wn	(%)	2.2	
dΙ		6	
TT	(%)	29	
(%)	Ħ	14	
ding Analysis	S	26	
Gra	Ð	09	

_	σ2 25	E	(%)		(%)	(%)	g/cm3	g/cm3 95%MDD 98%M	M%86
9	0 26	14	59	6	2.2	\$	2.15	-	14
Ç	Gravel content	int		Ip	Plasticity index	X			
Ø	Sand content	_		Wn	Natural moisture content	ure content			
E	Particles fine	finer than 0.075mm	Д	Wopt	Opimum moi	Opimum moisture content determined by Modified Proctor test	letermined by	Modified Proct	or test
$\Gamma\Gamma$	Liquid Limit	_		MDD	Maximum dr	Maximum dry density determined by Modified Proctor test	mined by Moc	lified Proctor to	st

Sample No.: Gold Mine Coordinates

Coordinates N:47°34'967

E:108°11'832

Present Status: Sand Tailings at Gold Mine

Tailing depostis

Brown sand and gravel Sand is very fine to coarse grained.

Sample No.:603

Coordinates N: -

园 .

Present Status: Abandoned Borrow Pit at Khamar Pass

Depth	Type of	Color	Description
(m)	Soil		
	Silty Sand		
0.10	& Gravel	Dark Brown With roots	With roots
	Sandy Silt		With granite rock fragments.
0.30	with Gravel Brown	Brown	max, size: 50mm, prevailing size < 20mm.
			Desomposed granitic rock
	Sandy Silt		max. size: 200mm
1.50	& Gravel	Brown	Thickness is variable.
	Sand with		Desomposed granitic rock
1.50	Gravel	Brown	sand is coarse grained.

Sample No.:BP 6-2

Coordinates N:47°33'955

 $E:108^{\circ}19'720$

Present Status:

Depth	Type of	Color	Description	
(m)	Soil			
			Sand is very fine to fine grained.	
			With large rock fragments occasionally	
0.40	Silty Sand	Dark Brown	Dark Brown max_size: 100mm, With roots at top.	
			Residual soil of granitic rock	
	Silty Sand		Sand is fine grained.	
0.55	with Gravel Brown	Brown	Grvel: rock fragments	0.55
			Residual soil of granitic rock	
		Slightly	Sand is fine to coarse grained.	-
		Greenish	With fragments of dyke rock occasionally,	
1.00	Sand	Green	prevailing size ≤ 50mm	1.00

Sampling

	Gra	Grading Analysis	(%)	ΓΓ	$^{ m Ip}$	Wn	Wopt	MDD	CBR-value (%)	lue (%)
	G	S	<u>1</u>	(%)		(%)	(%)	g/cm³	95%MDD	95%MDD 98%MDD
	39	37	24	Non Plastic	Non Plastic Non Plastic	2.5	8.2	1.965	·	25
9		Gravel content	.		Ip	Plasticity index	×			
S		Sand content			Wn	Natural moisture content	ure content			
ī		Particles finer	Particles finer than 0.075mm		Wopt	Opimum mois	ture content de	stermined by N	Opimum moisture content determined by Modified Proctor test	or test
LL		Liquid Limit			MDD	Maximum dry	density determ	nined by Mod	Maximum dry density determined by Modified Proctor test	Xt

Sample No.: BP 6-1

Coordinates N:47°32'376

E:109°23'126

Present Status:

						1		0.90	Sampling		1.70	1	
Description		With roots and boulder size rock fragments.	Sand is very fine grained.		Material is same as the upper layer.	Sand is fine grained.	Gravel: rock fragments, prevailing size \leq 10mm	With rock fragments.		Gravel: rock fragments	Prevailitn size≤ 30mm.	Rock fragmetns, max.size: 150mm.	Prevailitn size< 60mm.
Color			Dark Brown	Dark Brown	to Brown			White	Slightly	Greenish	Grey		
Type of	Soil		Silty Sand	Gravelly	Silty Sand	Silty Sand	with Gravel Light Grey	Sandy Silt		Silty Sand	& Gravel		Gravel
Depth	(m)		0.15		0.50		0.85	06.0			1.70		

9	Grading Analysis	lysis (%)	ΓΓ	ď	Wn	Wopt	MDD	CBR-va	CBR-value (%)	
ტ	S	Ŧ	(%)		(%)	(%)	g/cm³	95%MDD 98%MDD	08%WDD	
43	30	27	20	3	2.3	7	2.246	•	9	
Ö	Gravel content	tent		ď	Plasticity index	dex				
S	Sand content	ınt		Wn	Natural moi	Natural moisture content				
[Particles finer	ner than 0.075mm	mm	Wopt	Opimum mo	sisture conter	Opimum moisture content determined by Modified Proctor test	Andified Proct	or test	
TT	Liquid Limit	nit		MDD	Maximum c	lry density de	Maximum dry density determined by Modified Proctor test	fied Proctor te	şţ	

Sample No.:BP 7-1

Coordinates N:47°28'185

E:109°32'330

Present Status:

		0.5	·	Sampling		2.00
Description	With roots. With shale fragments.	0.35/0.50 with Gravel Dark Brown Prevailitn size<30mm, Thickness is variable.	Talus deposits to Weathered Shale	Material consists of flaky shale fragmetns.	max. size: 250mm,	prevailign size≤75mm.
Color		Dark Brown				Grey
Type of Soil	Silty Sand	with Gravel			Silty Sand	with Gravel Grey
Depth (m)		0.35/0.50				0.85

-Gr	Grading Analysis (%	(%)	ГГ	ď	Wn	Wopt	MDD	CBR-va	CBR-value (%)
9	S	H	(%)		(%)	(%)	g/cm ³	95%MDD	95%MDD 98%MDD
20	11	19	31	9	2.1	5.4	2.334	16	21
:									
G	Gravel content	.		dI.	Plasticity index	X			
S	Sand content			Wn	Natural moisture content	ure content			
	Particles finer	articles finer than 0.075mm		Wopt	Opimum mois	sture content c	letermined by	Opimum moisture content determined by Modified Proctor test	or test
TT	Liquid Limit			MDD	Maximum dr	y density deter	mined by Moc	Maximum dry density determined by Modified Proctor test	sst

Sample No.: 604 Coordi

Coordinates N:47°28'303

E:109°33'926

Present Status: No Borrow Pit

A hill consisting of shale, sandstone and quartzite.

Shale is predominate and is not so falky.

Soil layer covering the weathered rock formation

may be thick.

Material Conditions at Possible Borrow Pit

Coordinates N:47°26'511

Sample No.: 605

E:109°44'026

Present Status: No Borrow Pit

A hill consisting of weathered shale and sandstone.

Shale is predddominant and is not so flaky.

Sample No.:BP 7-2

Coordinates N:47°27'193

E:109°39'934

Present Status: Existing Borrow Pit (not used)

Depth	Type of	Color	Description
(m)	Soil		
			With roots. Sand is very fine grained.
			With some rock fragmetns.
0.30	Silty Sand	Silty Sand Dark Brown Very silty.	Very silty.
			Heterogeneous
			Material changes to silt with gravel and silty sand
			and gravel in the borrow pit.
0.60	Silty Sand	Silty Sand Light Grey	The layer is absent in some places.
		Reddish	Material changes to silty sand and gravel at some
	Silty Sand Brown to		places. Gravel: rock fragments.
1.00	with Gravel	Light Brown	with Gravel Light Brown max, size: 200mm, prevailign size<30mm.

Sampling

09'0

1.00

Ğ	Grading Analysis	(%)	LL	ďΙ	Wn	Wopt	aaw	CBR-value (%)	lue (%)
G	S	F	(%)	1	(%)	(%)	g/cm ³	95%MDD	95%MDD 98%MDD
50	16	34	25	6	3.3	5.9	2.189	8	6
ڻ	Gravel content	ıt		Ιp	Plasticity index	×			
ω	Sand content			Wn	Natural moisture content	ure content			
Ŧ	Particles finer	than 0.075mm	_	Wopt	Opimum mois	Opimum moisture content determined by Modified Proctor test	etermined by]	Modified Proct	or test
ΓΓ	Liquid Limit			MDD	Maximum dr	Maximum dry density determined by Modified Proctor test	mined by Mod	ified Proctor to	st

Sample No.: 452

Coordinates N:47°27'010

E:109°40'724

Present Status: Existing Borrow Pit (not used)

	ption		:				gments	ign size<70mm.		
	Description	With roots.	Silty Sand Dark Brown Sand is very fine grained.	Very silty.	With rock fragments.	Talus deposits	Gravel consists of rock fragments	max. size: 150mm, prevailign size<70mm	Weathered rock	Friable 20 to 50 fragments
	Color		Dark Brown							Light Grey
	Type of Soil		Silty Sand	Silty Sand	with Gravel Light Grey		Silty Sand	with Gravel Light Grey	Silty Sand	& Gravel
	Depth (m)		0.30		0.50/0.70			2.50		

Sample No.: BP7-3

Coordinates N:47°26'642

E:109°44'519

Present Status: No Borrow Pit

Depth	Type of	Color	Description	
(m)	Soil			
			With roots.	T
	Silty Sand		Sand is very fine grained. With rock fragmetns.	
0.20	with Gravel	Dark Brown	h Gravel Dark Brown max. size: 80mm, prevailign size 50mm.	
•	Silty Sand		Sand is very fine grained.	
0.30/0.40	& Gravel	Dark Brown	Dark Brown With gravel size rock fragments.	0.50
	Silty Sand		Sand is very fine grained.	
0.80	with Gravel		With gravel size rock fragments.	0.80
	Sand &			Sampling
	Gravel with		Gravel: rock fragmetns	
1.20	Silt		max. size: 150mm, prevailign size<60mm.	

	Grading Analysis	is (%)	ТТ	dI	Wn	Wopt	MDD	CBR-v ₈	CBR-value (%)
Ŋ	S	F	(%)		(%)	(%)	g/cm ³	95%MDD	95%MDD 98%MDD
74	15	11	72	5	4.9	9.8	2.125	1	
Ŋ	Gravel conter	cut		dI.	Plasticity index	Xe			
σ _Ω	Sand content	+1		Wn	Natural moisture content	ure content			
[Particles finer	er than 0.075mm	E	Wopt	Opimum moi	Opimum moisture content determined by Modified Proctor test	etermined by	Modified Proct	or test
ΓΓ	Liquid Limi	.		MDD	Maximum dr	Maximum dry density determined by Modified Proctor test	mined by Moc	lified Proctor to	est

Coordinates N:47°26'552 Sample No.: 300

E:109°46'036

Existing Borrow Pit at Dutt Pass (occasionally used) Present Status:

Weathered slate/shale Too flaky

Sample No.: BP8-1

Coordinates N:47°27'095

E:109°47'594

Present Status: Existing Borrow Pit (not used)

						•	1.90		2.00	Sampling
Description		With roots.	Sand is very fine grained,	with Gravel Dark Brown With rock fragmetns, size<50mm	Silty Sand Brown to With rock fragmetns.	with Gravel Dark Brown prevailing size<50mm	With relatively flaky rock fragments	max. size: 150mm, prevailign size<80mm	Material is same as th unner layer but silt content	is higher.
Color				Dark Brown	Brown to	Dark Brown				
Type of	IIOS	_	Silty Sand	with Gravel	Silty Sand	with Gravel	Sand &	Gravel	Silty Sand	& Gravel
Depth				0.43/0.60		1.00		2.00		3.00

ſ		2	- 40	Γ									
	CBR-value (%)	1000 NAT	70 70 IVII	10	2							or test	i ts
	CBR-v	050/ MIDD 000/ MIDD	COMPLEX CO	1								Modified Proct	ified Proctor te
	dum	o/cm ³		1.759							. 11	etermined by r	mined by Mod
11/11/11	idow	(%)		9.5			X		lire content	are comen	L tucture contract	Opinium moisture content determined by Modified Proctor test	Maximum dry density determined by Modified Proctor test
11/12	17 AA	<u></u>		2.2			Plasticity index		Natural mojeture content	CION MISSES	Onimum mos	Opinium more	Maximum dry
<u>«</u>	- -			4		-	dī	' !	W.		Wont	2	MDD
II		% %	-	61									
(%)		F	13	CI		•	_				than 0.075mm		
Grading Analysis (%)	,	2	7	2		Grand gontone	Olavei collien	Complete	Sand content		Particles tiner than		Lıquıd Limit
er.			-	•		9)	v	2		ı	1.	Ţ,

Sample No.: BP9-3

Coordinates N:47°24'313

E:110°01'365

Present Status: Existing Borrow Pit (not used)

							0.70		Sampling	•	96
Description		With roots. Sand is very fine grained.	Gravel consists of rock fragments.	with Gravel Dark Brown size 100 to 150mm.	Very silty.	Gravel consists of rock fragments and subanguler gravel.	ø max: 200mm	Moist	Gravel: Subanguler and anguler	ømax. 200mm, ø Prevailing<50mm	
Color				Dark Brown			Light Gray		Purplish	Grey	
Type of	Soil	:	Silty Sand	with Gravel		Silty Sand	with Gravel Light Gray		Silty Sand Purplish	& Gravel	
Depth	(m)			0.15			0.70				

CBR-value (%)	98%MDD 98%MDD	13
CBR-	95%WDD	1
MDD	g/cm³	1.839
Wopt	(%)	16.6
Wn	(%)	2.4
ďI		1
$\Gamma\Gamma$	(%)	26
(%)	¥	21
ding Analysis	S	22
Grae	9	57

Plasticity index	Natural moisture content	of Opimum moisture content determined by Modified Proctor	D Maximum dry density determined by Modified Proctor test
$\mathbf{d}\mathbf{I}$	Wn	Wop	MDD
Gravel content	Sand content	Particles finer than 0.075mm	Liquid Limit

Sample No.: 604

Coordinates N:47°25'120

E:109°55'929

Present Status: Existing Borrow Pit (not used)

Depth (m)	Type of	Color	Description
			With roots. Sand is very fine grained.
0.30	Silty Sand	Dark Brown	Silty Sand Dark Brown Trace of fine gravel
	Silty		
09.0	with Gravel	Light Grey	with Gravel Light Grey With subrounded gravel
	1 -,		Very silty
	Silty Sand Reddish	Reddish	Gravel is subrounded type.
1.20	and Gravel Brown	Brown	ø max. 100mm, ø Prevailing ≤20mm

Sample No.: BP-9-2 Coordinates N:47°24'239 E:110°14'123

Present Status: Existing Borrow Pit (not used)

Abandoned borrow pit, very deep.

Material mainly consisits of brown sand.

Sand with subanguler sedimentary rock gravel ovelies the brown sand layer.

The sample taken for the material tests was mixed with two layers.

The sample for the cement stabilization test was taken from the sand layer.

Material Test Results

ılue (%)	MDD 88	13	
CBR-value (95%MDD	1	
MDD	g/cm ³	1.957	
Wopt	(%)	5.6	
Wn	(%)	2.2	
dJ		Non Plastic	
TT	(%)	Non Plastic	
(%)	F	8	
ding Analysis	S	71	
Gra	G	21	

Opimum moisture content determined by Modified Proctor test Maximum dry density determined by Modified Proctor test Natural moisture content Plasticity index Ip Wn Wopt MDD Particles finer than 0.075mm Gravel content Sand content Liquid Limit

> G S F LL

E:110°15'286 Coordinates N:47°23'306 Sample No.: 604

Present Status: Existing Borrow Pit (not used)

underlies a 30 to 40cm thick dark brown silty very fine sand layer Decomposed granitic rock (corse sand to sand with gravel)

Material Conditions at Possible Borrow Pit

E:110°16'188 Coordinates N:47°23'252 Sample No.: Murun Sand

Present Status: Gully developed the toe of mountain

Brown fine to medium sand with trace of hard grano-diorite bouldens

Sand may be same deposite as No. BP9-2

Sample No.: BP9-1

Coordinates N:47°23'190

E:110°20'311

Present Status: Existing Borrow Pit (not used)

Depth	Type of	Color	Description	_
(m)	Soil		•	
			With roots.	1
	Silty Sand		Sand is very fine grained.	
0.25	with Gravel	Dark Brown	with Gravel Dark Brown With subanguler gravel.	
			Terace deporites	
	Silty Sand		Gravel: Subrounded_	0.50
	& Gravel	Light Grey	Light Grey a max. 150mm, a Prevailing <60mm	
08.0			Gravel contents is variable.	
			Terace deporites	1.00
	Silty Sand		Gravel: Anguler and subrounded.	Sampling
1.30	& Gravel		ø max. 150mm, Gravel constet is variable.	
	Sand &		Terace deporites	
	Gravel		Gravel contents is variable.	

Material Test Results

)	Grading Analysis (%	(%)	ΓΓ	dI	Wn	Wopt	MDD	CBR-value (%)	lue (%)
G	S	Ŧ	(%)		(%)	(%)	g/cm ³	95%MDD	95%MDD 98%MDD
30	48	22	17	4	2.4	6.1	2.217	-	12
G	Gravel content	ıt		Ip	Plasticity index	×			
S	Sand content			Wn	Natural moisture content	are content			
Ŧ	Particles finer	articles finer than 0.075mm		Wopt	Opimum mois	ture content de	etermined by P	Opimum moisture content determined by Modified Proctor test	or test
$\Gamma\Gamma$	Liquid Limit			MDD	Maximum dry	density deterr	nined by Mod	Maximum dry density determined by Modified Proctor test	st

Maximum dry density determined by Modified Proctor test

Sample No.: BP10-2 Coo

Coordinates N:47°23'083

E:110°27'021

Present Status: Existing Borrow Pit (not used)

Depth	Type of	Color	Description	_
(m)	Soil			
			With roots.	
-			Sand is very fine grained.	
_ -	Silty Sand	_	Gravel: Subanguler to anguler.	
0.20	with Gravel	Dark Brown	1 Gravel Dark Brown @ Prevailing < 20mm	_
	Silty Sand		Material is same as the upper layer, but contains	
0.30	with Gravel	n Gravel Dark Brown more gravel.	more gravel.	
			Fluvial deposits	_
	Silty Sand	Light Brown	Light Brown Gravel: Subrounded to subanguler.	
0.90	with Gravel	Gravel to Brown	ø max. 80mm, With very silty portions.	
			Fluvial deposits	
_	Silty Sand		Gravel: Subrounded	
1.80	& Gravel	Brown	ø max. 80mm, ø Prevailing<30mm	₩ 1.80

5	Grading Analysis (%	(0/n)	LL	dī	ΜM	Wopt	MDD	CBK-value (%)	lue (%)	
Ð	S	T	(%)		(%)	(%)	g/cm ³	95%MDD 98%MDD	00W%86	
58	14	28	25	1	4.7	11.8	2.11	_	11	
			l							
G	Gravel content			ďI	Plasticity index	×				
S	Sand content			Wn	Natural moisture content	are content				
T	Particles finer than 0.075mm	than 0.075mm		Wopt	Opimum mois	ture content de	termined by N	Opimum moisture content determined by Modified Proctor test	or test	
TT	Liquid Limit			MDD	Maximum dry	density detern	nined by Modi	Maximum dry density determined by Modified Proctor test	st	

Sample No.: BP10-1

Coordinates N:47°21'581

E:110°36'300

Present Status: Existing Borrow Pit (In operation)

Depth	Type of	Color	Description	
(m)	Soil			
			With roots.	
			Sand is very fine grained.	
0.20	Silty Sand	Dark Brown	Dark Brown With some rock fragments.	
	Silty Sand		Talus deposits	
	with Gravel			
	to Sand &			
0.40	Gravel	Light Brown	Light Brown Gravel consisits of rock fragmetns.	0.40
			Weathered diorite	
	Silty Sand		Gravel consists of rock fragmetns.	_
08.0	& Gravel	Light Brown	Light Brown Max. size: 100mm, Prevailing size 50mm	
		Greenish	Weathered diorite	
	Silty Sand	Grey to	Gravel consisits of rock fraagmetns.	
1.60	& Gravel	Brown	Max. size: 200mm, Prevailing size<20mm	1.60
	Sand &	Greenish	Weathered diorite	Sampling
	Gravel	Grey	Gravel consisits of rock fraagmetns.	

	Grading Analysis (%	(%) si	LL	dI	Wn	Wopt	MDD	CBR-value (%)	lue (%)
S	S	Ŧ	(%)		(%)	(%)	g/cm ³	05%MDD 98%MDD	98%WDD
48	36	16	22	4	4.8	6.2	2.304	ı	20
G	Gravel content	ınt		d I	Plasticity index	×			
S	Sand content			Wn	Natural moisture content	ure content			
Œ	Particles finer than	er than 0.075mm		Wopt	Opimum mois	ture content d	etermined by]	Opinum moisture content determined by Modified Proctor test	or test
$\Gamma\Gamma$	Liquid Limit			MDD	Maximum dry	density deten	mined by Mod	Maximum dry density determined by Modified Proctor test	st

Record of Test Pit for Bulk Soil Sampling

Sample No.:468

Coordinates N:47°20'508

E:110°34'790

Present Status: Status Existing Borrow Pit (Not used)

Depth	Type of	Color	Description
(m)	Soil		
·		Reddish	Sand is very fine to medium grained.
		Brown	With some gravel.
0.20	Silty Sand	to Brown	Roots at top.
		Slightly	Residual soil of diorite
		Greenish	
0.40	Silty Sand	Grey	
			Residual soil to weathered diorite
	Silty Sand	Slightly	Sand is very fine to coarsegrained.
	to Sand &	Greenish	Rock is friable to sand or sand and gravel.
	Gravel	Grey	With light strike of hummer.

Sample No.:474

Coordinates N:47°20'393

 $E:110^{0}36'100$

Present Status: Grarbage Dumping Ground (ex-borrow pit)

Depth	Type of	Color	Description
(m)	Soil		
	Silty Sand		Sand is very fine to fine grained.
0.20	with Gravel	Dark Brown	with Gravel Dark Brown With roots. Very silty.
			Very silty.
			Sand is fine grained.
	Silty Sand		With subanguler to subrounded gravel.
0.50	with Gravel Light Gray		ø max: 150mm, ø prevailing ≤ 30mm
•	Clayey		Gravel mainly consists of subrounded gravel.
	Sand &		<i>в</i> max: 60mm,
1.50	Gravel	Brown	ø prevailing < 30mm

Sample No.: Undrukhaan Sand Pit

Coordinates N:47°26'633

 $E:110^{\circ}40'159$

Present Status: Existing Sand Pit (In operation occasionally)

Approximately 10m thick alluvial brown fine sand underlain by weathered rock

Sample No.: BP 4-1

Coordinates N:47°46'726

E:108°57'184

Present Status: Existing Borrow Pit (not used)

Top soil: Dark borwn, silty very fine sand with roots, 30 cm in thickness.

Terrace deposits: Underlying the top soil and overlying residual soil of granitic rock.

Material consist of yellowish brown silty sand and gravel.

Gravel: ø Max. 250mm, ø Prevailing size \leq 50mm. Flaky

Thickness of layer is 0.5 to 1.2m

Residual soil of granite: Material consist of yellowish brown very silty sand

and coarse sand.

Total thickness of sand layer exceed 1.1m.

Sample No.: 4001 Coordinates N:47°48'880

s N:47°48'880 E:108°53'744

Present Status: No Borrow Pit

Underlain by silty fine to coarse sand and sand with gravel calssified to talus deposits, granitic rock in origin

Sample No.: 4002 Coordinates N:47°49'203

E:108°51'229

Present Status: Existing Borrow Pit (not used)

Top soil: Sand with granite fragments, less than 50cm in thickness Decomposed granite: Silty coarse sand with fine gravel.

te: Silty coarse sand with fine gravel.

With rich in gravel size rock fragments at a few location of pit,

Max. size 200mm