Technical Summary

January 2024

Pit Name: Homestead Pit

Provincial Pit Number: 2440

Location: Homestead Pit is approximately 38.5 km southeast of Merritt along Highway 97C, at the Loon Lake highway exit. (Figure 1). Access to the pit can be made from Loon Lake Road.

Legal Land Description: The site is currently a Section 16 Map Reserve (LF# 3403720) held by the British Columbia Ministry of Transportation and Infrastructure (BC MoTI). The legal description of the Map Reserve is “that part of District Lot 4414 together with all that un-surveyed Crown land, Kamloops Division of Yale District, containing 45 hectares, more or less.”. The layout of the Map Reserve boundary is shown in the legal plan (Figure 2).

Subsurface Investigation: Subsurface investigations at Homestead Pit were carried out in 2019 and 1986 by Ministry of Transportation & Infrastructure.

In 2019 two (2) test pits were excavated to a depth of 4.5m and in 1986, forty-six (46) test pits were excavated to depths ranging from 2.0 to 7.0m. During the test pitting, subsurface soil and groundwater conditions were logged and representative samples of the granular materials were collected for laboratory testing and future reference. Laboratory testing was carried out on forty-eight (48) of these samples to assess the gradation and durability characteristics. The tests completed were wet sieve analysis, micro deval, sand equivalent, relative density, and absorption.

Based on the results of the 2019 and 1986 investigations, one (1) granular area was defined (Figure 3). The detailed results of the subsurface testing are provided in the Test Pit Summaries and test pit locations are shown on the Pit Development Plan (Figure 3).

Material Gradation: Table 1 shows the gradation as a percentage by weight of the fines (silts and clays), sand and gravel components as well as the Unified Soil Classification (USC [included after test pit summary]) for the samples tested.

Table 1: Pit Run Gradation

Test Pit	Depth (m)	Fines (%)* <0.075mm	Sand (%)* 0.075-4.75mm	Gravel (%)* 4.75-75mm	USC
TP19-01	2.5-4.5	1.8	42.9	55.2	GP
TP19-02	1.0-4.5	5.5	26.2	68.3	GP-GM
Average	**-**	**3.7**	**34.6**	**61.8**	**-**

Test Pit	Lab #	Sample #	Depth (m)	Max Size (mm)	> 75mm	Gravel	Sand	Fines	Crushable (25-75mm)	Sand Equivalent	Deg Factor	% Loss
86-1	8-508	11	0-6.0		25	62	35	3	21			
86-2	8-509	21	0-6.0	400	28	64	34	2	27			
86-3	8-510	31	0-6.0	400	20	60	37	3	25			
86-4	8-511	41	0-6.0	400	75	79	19	2	48			
86-5	8-512	51	0-6.5	400	40	64	31	5	29			
86-6	8-513	61	0-7.2	400	30	62	36	6	22			
86-7	8-514	71	3.0-6.0	400	25	60	36	4	29			
86-8	8-515	81	0-4.5	400	50	55	42	3	23			
86-9	8-516	91	0-5.5	400	30	59	38	3	29			
86-10	8-517	101	0-4.5	400	55	61	35	4	22			
86-11	8-518	111	0-5.0		30	58	40	2	28			
86-12	8-519	121	2.0-5.0	400	32	63	34	3	34			
86-13	8-520	131	0-6.0		25	60	37	3	22	68.9	79.3/76.6	1.1/1.2
86-14	8-521	141	0-4.0	400	30	49	41	10	24			
86-15	8-525	151	0-5.0		40	46	48	6	22			
86-16	8-526	161	0-6.0		30	54	43	3	26			
86-17	8-527	171	0-5.5	400	27	55	42	3	25			
86-18	8-528	181	2.0-6.0	400	17	56	41	3	19			
86-19	8-529	191	0-4.5	400	35	66	33	1	35	80.5	82.1/85.1	1.1/0.9
86-20	8-530	201	2.2-6.5	400	50	63	34	3	28			
86-21	8-531	211	4.5-6.5	400	27	60	37	3	25			

Test Pit	Lab #	Sample #	Depth (m)	Max Size (mm)	> 75mm	Gravel	Sand	Fines	Crushable (25-75mm)	Sand Equivalent	Deg Factor	% Loss
86-22	5-532	221	0-5.5	400	30	56	41	3	20			
86-23	8-533	231	0-6.5	400	35	56	42	2	29			
86-24	8-534	241	2.0-6.0	400	17	56	37	7	28			
86-25	8-535	251	0-6.0	400	30	54	43	3	25			
86-26	8-540	261	3.0-7.0		13	54	41	5	21	59.6	77.9/76.6	1.1/1.0
86-27	8-541	271	0-4.0	600	45	58	38	4	22			
86-27	8-542	272	4.0-7.0		15	56	40	4	22			
86-28	8-543	281	0-5.0	700	50	60	36	4	27			
86-29	8-544	291	0-5.0	700	60	64	33	3	35			
86-31	8-545	311	1.0-2.0	500	30	55	43	2	18	79.5	61.3/62.3	1.5/1.5
86-32	8-546	321	0-4.0	500	35	58	38	4	30			
86-32	8-547	322	4.0-7.0	400	16	45	52	3	20			
86-33	8-548	331	4.0-7.0		7	50	44	6	21			
86-34	8-549	341	0-5.5	400	15	56	39	5	20			
86-34	8-550	342	5.5-6.5			10	66	24				
86-35	8-551	351	0-6.0	500	50	67	29	4	26	53.6	76.6/76.6	1.3/1.6
86-36	8-552	361	0-6.0	700	50	62	35	3	27	48.4	79.3/79.3	1.0/1.0
86-37	8-553	371	1.0-2.5	500	30	42	57	1	5			
86-37	8-554	372	2.5-4.5			1	95	4				
86-38	8-555	381	2.0-6.0		5	48	44	8	20			
86-39	8-556	391	0-5.5	400	30	51	45	4	17			
86-40	8-557	401	0-5.5	400	22	72	26	2	26			
86-41	8-558	411	0-6.0	400	22	66	32	2	29			
86-42	8-559	421	0-4.5	600	30	64	34	2	25			
86-43	8-560	431	0-5.0	500	30	60	38	2	26			
86-44	8-561	441	4.0-5.5			34	62	4	12			
86-45	8-562	451	4.5-5.5	500	23	65	32	3	34	73.8	72.7/76.6	1.9/1.5
86-45	8-563	452	5.5-6.5		6	33	65	2	18			
86-46	8-564	461	4.5-6.0		13	64	33	3	28			

Classification:	1986 Averages* (%)	Range (%)
Gravel (4.75-75mm)	56.4	1 - 79
Sand (0.075-4.75mm)	40.1	19 - 95
Fines (<0.075mm)	3.6	1 - 10

*Excluding sample TP86-34b (sample #342)

Material Durability: Table 2 shows the results of the durability tests as well as the specifications as required in the Standard Specifications for Highway Construction.

Table 2: Durability Test Results

TP or Year	Micro-Deval (%) (C / F)	Sand Equivalent (%)	Bulk Relative Density (C/F)	Absorption (%) (C/F)	$MgSO_4$ (%) (C/F)
19-01	11.9 / 14.9	76	-	-	-
1986	5.7 / 8.7	62.4	2.71/2.685	1.23/1.22	5.02/15.31

BC MoTI Specifications	
Sand Equivalent	≥40 for base coarse and fine asphalt mix aggregate ≥20 for surfacing, sub-base and bridge end fill aggregates
Micro Deval	≤30% for sub-base and bridge end fill aggregates ≤25% for surfacing & base course aggregates ≤18% for Class 1 Pavement asphalt mix aggregates ≤20% for Class 2 Pavement asphalt mix aggregates
Absorption	<2.0% for coarse paving aggregates ≤1.0% for coarse and ≤1.5% for fine graded aggregate seals
Relative Density	~2.65 for all aggregate products

Material Suitability: Based on the 2019 and 1986 investigation results, the material is judged to be suitable for the following purposes:

Table 3: Suitability

	Pit Run	**Crush**
Homestead Pit Suitability Area	SGSB Bridge End Fill	25mm WGB Asphalt Mix Aggregates Graded Agg Seals

The samples tested meet the gradation, sand equivalent, and micro-deval specifications for base course, subbase course, bridge end fill and asphalt mix aggregate. Based on the absorption results the samples meet the specification for paving aggregates and coarse and fine graded aggregate seals.

Sulphate and Chloride Testing

Table 4 shows the sulphate and chloride test results for select samples from the suitability area. These results are provided for information and have not been considered for material suitability.

Table 4: Sulphate and Chloride Test Results

Test Pit	Water-Soluble Sulphate	Water-Soluble Chloride
TP19-01	<0.050	<0.010

Volume Estimates: Table 5 shows the volume estimates that can be expected for gravel from the proposed suitability area. This is based on the measured depths encountered during the subsurface investigation. The potential volumes of granular material were calculated by averaging the total thickness of granular material encountered in test pits and multiplying by the estimated surface area.

Table 5: Volume Estimates

Suitability Area ~1.6ha.	Topsoil	Overburden	Granular Material
Average Layer Thickness (m)	-	-	5
Volume (m^3)	-	-	80,000

Pit Development Notes

- All development must be carried out in accordance with the Health, Safety, and reclamation Code for Mines in British Columbia, BC Ministry of Energy, Mines and Low Carbon Innovation (2022, or later edition), the Standard Specifications for Highway Construction, BC Ministry of Transportation and Infrastructure (2020, or later edition) and the Aggregate Operators Best Management Practices Handbook for BC.

- All trees, vegetation, and overburden are to be removed within 2m of the top of the pit faces. Topsoil, overburden, and aggregate cannot be removed within five meters of the reserve boundary.

- The processing area is recommended to be located on the pit floor as identified on the Pit Development Plan (near TP19-02), with mining proceeding in a north/northwestern direction as indicated.

- Processed aggregate may be stockpiled to the south of the production site (near TP86-21), where space permits as indicated on the Pit Development Plan.

- A ‘No-Mining Buffer Zone’ exists in the southern portion of the pit and must be maintained.

- YRB (MoTI maintenance contractor) has established a maintenance facility/stockpile site to the south of the pit (adjacent to the Okanagan Connector). Vehicular access must be maintained at all times.

- Due to the high quantity of oversize present, it will be necessary to utilize a primary crusher capable of reducing material as large as 375mm x 450mm.

- No dumping of debris or petroleum products will be permitted, and the site must be left in a clean and safe condition.

- At the completion of the pit development operations, but prior to the depletion of the pit, the sides of the pit faces, waste piles, and overburden stockpiles must be trimmed to a 1.5H:1V slope. Active pit faces must be reshaped with native granular materials.

- Upon depletion of the pit, all disturbed areas are to be reclaimed. The minimum reclamation procedure should include re-sloping of the pit faces and waste piles to a 2H:1V slope, contouring the area for appropriate drainage, spreading of overburden followed by topsoil, and seeding.

- Should any of the above conditions conflict with the Health, Safety, and Reclamation Code for Mines in British Columbia, then the Code will prevail.

Closure

The findings of this report and the soil conditions noted above are inferred from the extrapolation of limited surface and subsurface data collected during the site investigation. It should be noted that different and possibly poorer soil conditions may exist between the test pit locations and volume estimates may vary from those reported in this report.

Prepared by:	Reviewed by:
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Enclosures

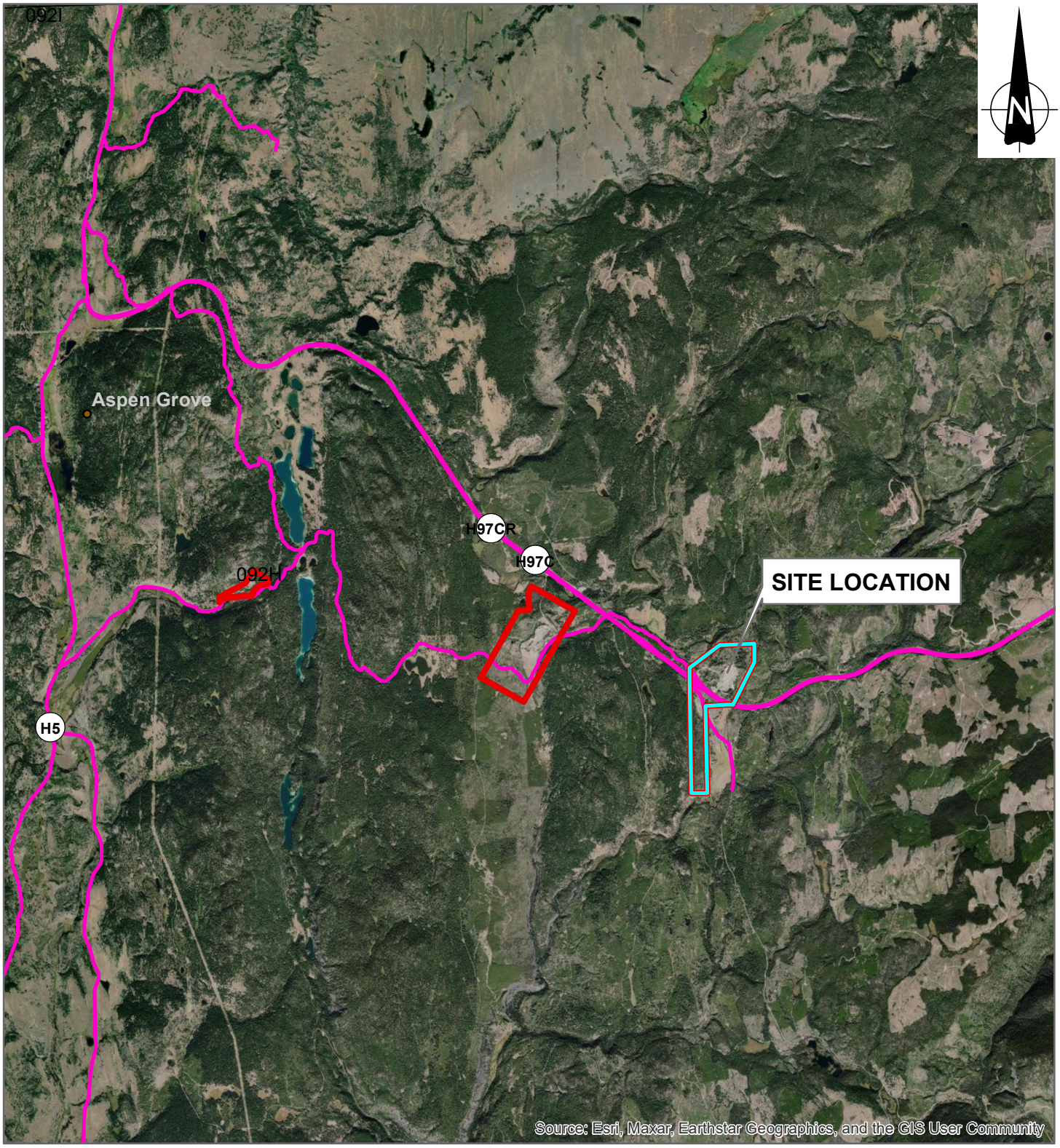
Figures:
- Figure 1 - Location Plan
- Figure 2 - Legal Plan
- Figure 3 – Pit Development Plan

Test Pit Summaries
- Test Pit Logs (2019 & 1986)
- Wet Sieve Analysis Charts
- Aggregate Gradation Charts

USC Legend

Photos

Figures



Ministry of Transportation and Infrastructure
Geotechnical and Materials Branch

LOCATION PLAN (2023)

Homestead Pit No. 2440

SA 14 - THOMPSON NICOLA DISTRICT

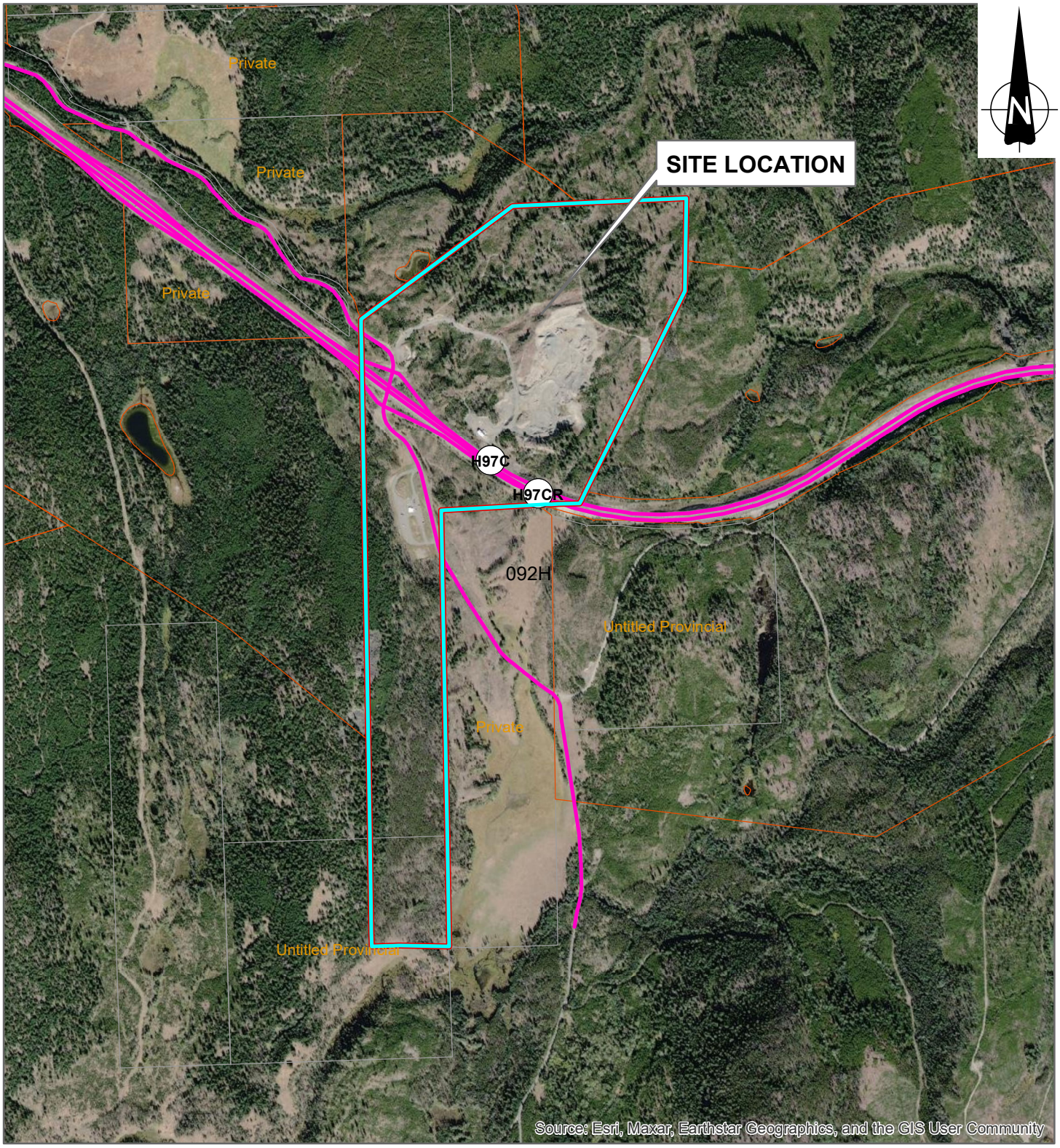
DRAWN BY: lacourte	PROJECTION: NAD 1983 UTM Zone 10N		SCALE: As Shown
CHECKED BY: A.Mitchell	DATUM: NAD 1983 UTM Zone 10N		DATE: 2023-01-09
FileName: GISTemplate_Gravel_R2_2021-11-18	Geotech Project No:	Reg: 2	Drawing No: **FIGURE 1**

0 1 2 4 6 8 Kilometers

Scale 1:100,000

This drawing was originally produced in colour.

Document Path: C:\Users\lacourte\Desktop\GISTemplate_Gravel_R2_2021-11-18.mxd



Ministry of Transportation and Infrastructure
Geotechnical and Materials Branch

LEGAL PLAN (2023)

Homestead Pit No. 2440

SA 14 - THOMPSON NICOLA DISTRICT

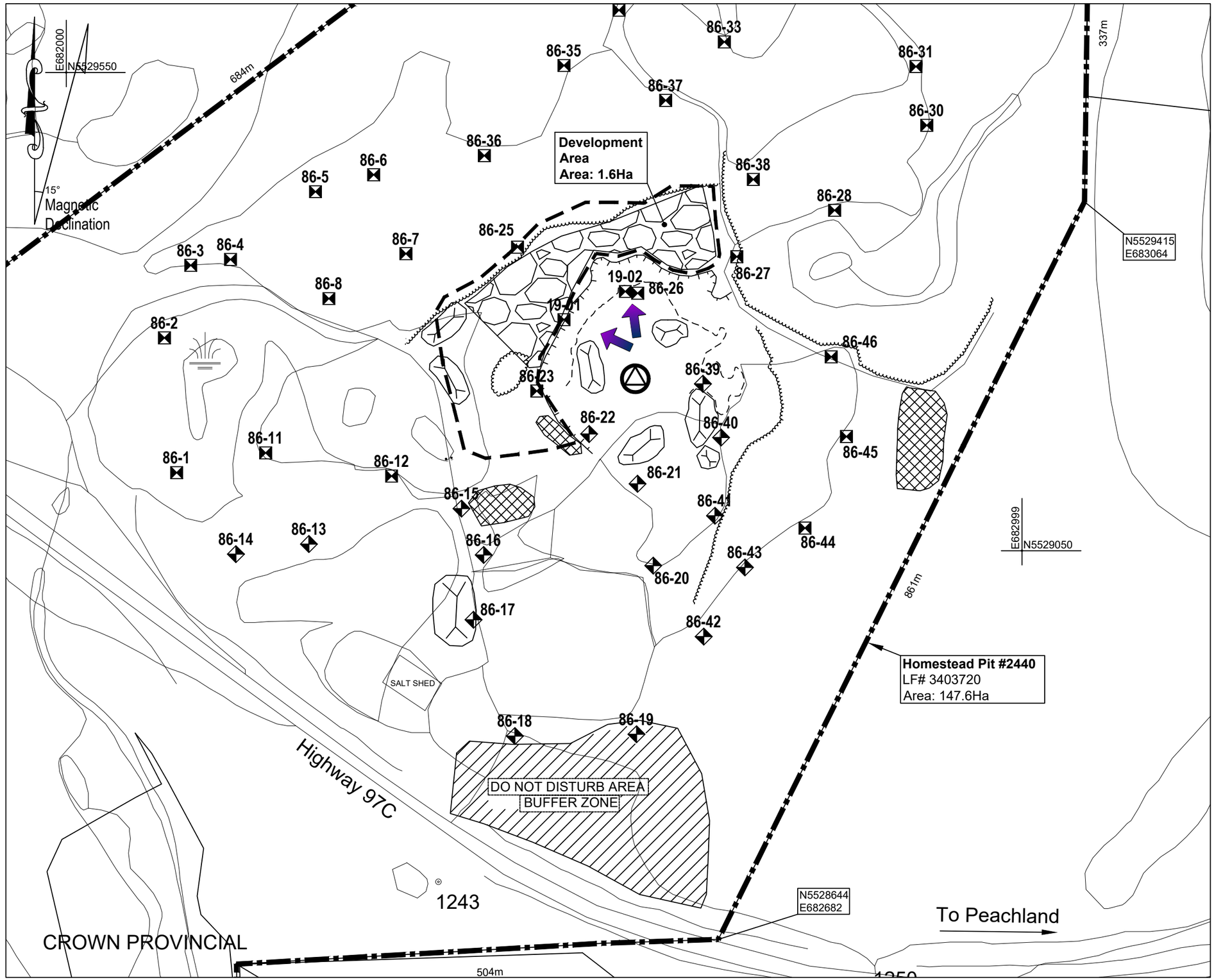
DRAWN BY: lacourte	PROJECTION: NAD 1983 UTM Zone 10N		SCALE: As Shown
CHECKED BY: A.Mitchell	DATUM: NAD 1983 UTM Zone 10N		DATE: 2023-01-09
FileName: GISTemplate_Gravel_R2_2021-11-18	Geotech Project No:	Reg: 2	Drawing No: **FIGURE 2**

0 0.2 0.4 0.8 1.2 1.6 Kilometers

Scale 1:20,000

This drawing was originally produced in colour.

Document Path: C:\Users\lacourte\Desktop\GISTemplate_Gravel_R2_2021-11-18.mxd



PIT DEVELOPMENT LEGEND

NATURAL EMBANKMENT	TREELINE
PIT FACE	CONTOURS
TEST PIT	BUILDING (symbolic)
TEST HOLE	IRON PIN
TEST PIT (DEPLETED)	SWAMP
ROAD	STOCKPILE
CREEK	NO DISTURBANCE
TRAIL	DEVELOPMENT DIRECTION
CADASTRE	POTENTIAL DEVELOPMENT
TANTALIS	OVERBURDEN STOCKPILE
GRAVEL RESERVE BOUNDARY	DEVELOPMENT AREA A
SUITABILITY BOUNDARY	CRUSHER SET-UP AREA

TRIM NOTE:

1. Contour Interval 20 metres
2. Base Map derived from Trim Map 92H.088.

LEGAL NOTE:

District Lot Lines are derived from digital Crown Cadastral reference mapping supplied by CROWN LAND REGISTRY,Victoria

DRAWING NOTES:

1. Some testpits and/or testholes may not be representative of current conditions due to development and excavation done after testing was conducted.
2. Some extraction may have occurred since the last GPS survey of the pit was undertaken, therefore pit faces and stockpiles may not be representative of current conditions.

PIT DEVELOPMENT NOTES:

1. Pit development must be carried out in accordance with the Health, Safety, and Reclamation Code for Mines in BC, the current Standard Specifications for Highway Construction, and the Aggregate Operators Best Management Practices Handbook for BC.
2. All vegetation, topsoil and overburden is to be stripped a minimum of 2 metres back from active pit faces.
3. Topsoil and overburden is to be stockpiled and seeded with grass. Removal of this material is not permitted.
4. All reject material, resulting from aggregate production, is to be placed in neat, easily accessible stockpiles free of deleterious material (i.e. wood waste)
5. The Contractor must crush all oversize rock that will pass through 375 mm x 450 mm slotted openings.
6. When the contractor discontinues operations in the pit, all working pit faces and stockpiles must be trimmed to 1.5H:1V slope. Slopes higher than 3 m must be trimmed to 2H:1V. Working pit faces must be reshaped with native granular materials. All other permanent slopes must be re-sloped to no steeper than 2H:1V.
7. No dumping of debris or petroleum products is permitted. The pit must be left in a clean and safe condition.

0m 40 80 120 160

1 : 4000

Ministry of Transportation and Infrastructure
Southern Interior Region
Geotechnical and Materials Branch

PIT DEVELOPMENT PLAN (2024)
HOMESTEAD PIT #2440
SA14 - THOMPSON NICOLA DISTRICT

DRAWN BY: S.Ruiz	PROJECTION: UTM Zone 10	SCALE: AS SHOWN	
CHECKED BY: A.Mitchell	DATUM: NAD83	DATE: 25 January 2023	
FILE NAME: 2440_f3p_2024.dwg	REG. SIR	DRAWING NUMBER: FIGURE 3	

Q:\GEOTECHNICAL\AGGREGATE\R2_SouthernInterior\SA14_Nicola\Pit\Homestead_Pit_2440\CAD\2440_F3P_2024.dwg - Fig2 - Jan. 25, 2024 2:01pm - LACOURTE

This drawing was originally produced in colour.

Test Pit Summaries

AGGREGATE LOG

PROJECT: Homestead Pit
PIT #: 2440
DISTRICT: Thompson Nicola
SAMPLED BY: Samantha Kinniburgh
METHOD: Excavator
DATE: Dec 2nd 2019

TEST PIT NO.	DEPTH		SAMPLE BAG NO.	SOILS CLASS	ESTIMATED GRADATION			ESTIMATED ROCK 75mm				SAND TYPE	REMARKS
	FROM	TO			G	S	F	MAX SIZE	75mm - 150mm	150mm 375mm	>375mm	F M C	Lab Sieve
19-01													
	0	2.5		GP	65	32	3						Top of developed face, lots of OS
	2.5	4.5	1901	GP	57	40	3	400	15	10	5	M-C	sloughing at 2m
				GP	**55.2**	**42.9**	**1.8**						
19-02													
	0	1		GPGM	62	30	8						Dirty top layer ~ 0.5m, lots of OS
	1	4.5	1902	GPGM	60	35	5	400	12	8	1	M-C	Sloughing at 1m, gravelly with fines
				GPGM	**68.3**	**26.2**	**5.5**						

1 OF 4

AGGREGATE LOG

PROJECT: Homestead Pit **SAMPLED BY:** BBC

PIT #: 2440 **METHOD:** Excavator

DISTRICT: Nicola **DATE:** August 1986

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	
86-1	0	6	D2437	GP	65	33	2	350	15	10	0	M-C	**GP 62/35/2**
86-2	0	6		GP	70	26	4	400	15	10	3	M-C	
86-3	0	6	D2438	GP	65	32	3	400	10	8	2	M	**GP 60/37/3**
86-4	0	6	D2439	GP	82	15	3	400	50	20	5	M	**GP 79/19/2** Almost like drain rock
86-5	0	6.5	D2440	GP	70	26	4	400	25	10	5	M	**GP 64/31/5** At approx 2m shows seam fine sand dipping W-E. Coarse rock has seam of fine rock dipping N-S at approx 1m.
86-6	0	7.2	D2441	GP	60	35	5	400	15	10	5	M - F	**GP-GM 62/32/6** Rock layer 2m deep, size range approx 75mm - 200mm, 0.5m in depth.
86-7	0	2		GP	72	25	3	400	25	20	5	M	
	2	3		GP	60	36	4	75				M - F	Layer sitting on small sand seam, dipping W-E
	3	6	D2442	GP	65	32	3	400	15	8	2	M	**GP 60/36/4**
86-8	0	4.5	D2443	GP	65	31	4	400	25	20	5	M	**GP 55/42/3**
86-9	0	5.5	X331	GP	60	37	3	400	15	10	5	M - C	**GP 59/38/3**
86-10	0	4.5	X326	GP	35	30	5	400	25	25	5	M - F	**GP 61/35/4**
86-11	0	5	X327	GP	65	32	3	350	20	10	0	C	**GP 61/35/4**
86-12	0	1		GP-GM	58	35	7	350	5	2	0	F	
	1	2		GP	73	25	2	400	25	20	10	M	
	2	5	X328	GP	65	32	3	400	20	10	2	M - C	**GP 63/34/3**
86-13	0	6	X330	GP	35	31	4	350	15	10	0		**GP 60/37/3**
86-14	0	4	X329	GP-GM	54	40	6	400	15	10	5	M	**GP-GM 49/41/10**
	4	6		SP	40	56	4	150	5	0	0	F	

2 OF 4

AGGREGATE LOG

PROJECT: Homestead Pit **SAMPLED BY:** BBC

PIT #: 2440 **METHOD:** Excavator

DISTRICT: Nicola **DATE:** August 1986

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	
86-15	0	5	X332	SP	40	56	4	250	10	5	0	F - M	SP-SM 46/48/6
													Hole has sand on one side, gravel on the other. Sample was mixed due to excavation. Sand dipping N toward gulley.
				SP-SM	20	73	7	75	0	0	0	F	North half
				GP	65	34	1	250	25	15	0	M - C	South half
86-16	0	6	X333	GP	65	32	3	300	20	10	0	M - C	GP 54/43/3
													East side - fine sand approx 1m wide x 2m deep from .5m to 2.5m - no rock at all.
86-17	0	5.5	X334	GP	56	40	4	400	15	10	2	M	GP 55/42/3
86-18	0	1		GP	60	36	4	250	8	4	0	M - C	
	1	2		SP	0	95	5	25	0	0	0	F	
	2	6	X336	GP	65	32	3	400	10	5	2	M - C	GP 56/41/3
86-19	0	4.5	X337	GP	68	30	2	400	20	10	5	C - M	GP 66/33/1
86-20	0	2		GP	68	30	2	200	10	5	0	M - C	
	2	2.2		SP-SM	0	95	5					F	
	2.2	6.5	X338	GP	68	30	2	400	25	20	5	M - C	GP 63/34/3
86-21	0	1		GP-GM	65	29	6	400	15	10	2	F	
	1	4	X339	GP	68	30	2	400	15	10	2	M - C	GP 60/37/3
	4	4.5		SP	0	95	5					M	
	4.5	6.5		GP	68	30	2	400	15	10	2	M - C	
86-22	0	5.5	X340	GP	61	35	4	400	15	10	5	M	GP 56/41/3
86-23	0	6.5	X341	GP	65	34	1	400	18	12	5	C	GP 56/42/2
86-24	0	1.5		GP-GM	60	33	7	400	10	5	2	F - M	
	1.5	2		SP	0	95	5					F - M	
	2	6	X343	GP-GM	60	33	7	400	10	5	2	F - M	GP-GM 56/37/7
86-25	0	6	X342	GP	65	32	3	400	15	10	5	C	GP 54/43/3
86-26	0	3		GP-GM	70	25	5	600	20	15	10	F - M	
	3	7	X344	GP	55	43	2	200	8	5	0	M	GP 54/41/5

3 OF 4

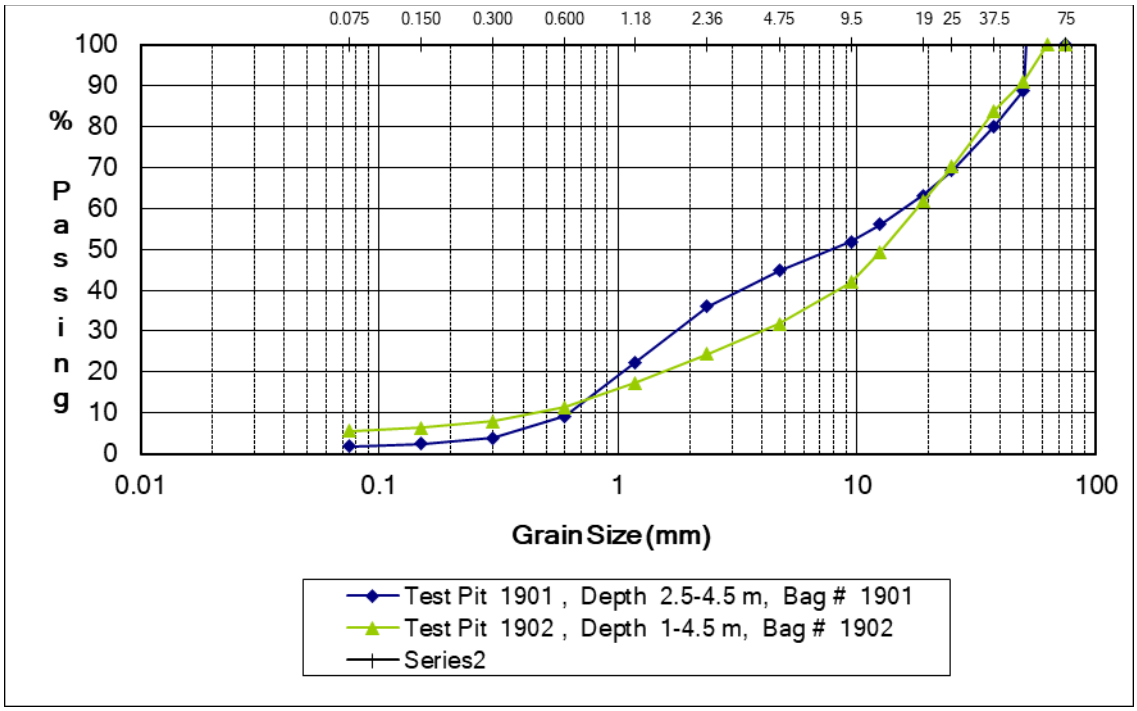
AGGREGATE LOG

PROJECT: Homestead Pit **SAMPLED BY:** BBC

PIT #: 2440 **METHOD:** Excavator

DISTRICT: Nicola **DATE:** August 1986

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	
86-27	0	4	X309	GP-GM	70	25	5	600	20	15	10	F -M	GP 58/38/4
	4	7	X310	GP-GM	62	33	5	300	10	5	0	F	GP 56/40/4
86-28	0	5	X312	GP-GM	68	25	7	700	22	20	8	M - C	GP 60/36/4
86-29	0	5	X312	GP-GM	68	26	6	700	30	20	10	M	GP 64/33/3
86-30	0	2		GP-GM	74	20	6	700	30	20	10	M - F	
	2												Bedrock?
86-31	0	1		GP-GM	68	26	6	500	15	10	5		
	1	2	X313	GP	62	35	3	300	15	10			GP 55/43/2
	2												Possible Bedrock
86-32	0	4	X315	GP-GM	68	28	6	500	20	10	5	F - M	GP 58/38/4
	4	7	X314	GP	56	40	4	400	10	5	1	M	SP 45/52/3
86-33	0	4		GP	66	30	4	400	10	5	1	M - C	
	4	7	X316	GP-GM	50	40	10	300	5	2		F	GP-GM 50/44/6
86-34	0	5.5	X317	GP	56	39	5	400	10	5	0	M	GP 56/39/5
	5.5	6	X318	SP-SM	0	94	6					F	SM_2 10/66/24
86-35	0	6	X319	GP	70	25	5	500	25	20	5	M - F	GW 67/29/4
86-36	0	6	X320	GP	60	36	4	700	25	20	5	C	GW 62/35/3
86-37	0	1		GP	62	35	3	500	15	10	5	M	
	1	2.5	X321	SP	55	65	0	50	0	0	0	M - C	SP 42/57/1
	2.5	4.5	X322	SP	0	97	3					M	SP 1/95/4
86-38	0	2		GP-GM	65	29	6	500	8	8	8	M - F	Small layer ML between (approx 150mm).
	2	6	X323	GP-GM	53	40	7	150	5			F - M	GP-GM 48/44/8
86-39	0	5.5	X324	GP	51	45	4	400	15	10	5	M - C	GP 51/45/4
86-40	0	5.5	X300	GP	66	30	4	400	12	8	2	M - C	GW 72/26/2
86-41	0	6	X301	GP	66	30	4	400	12	8	2	M - C	GW 66/32/2
86-42	0	4.5	X302	GP	68	30	2	600	15	10	5	C	GP 64/34/2
86-43	0	5	X303	GP	68	30	8	500	15	10	5	M	GP 60/38/2
86-44	0	2.5		GP	68	30	2	500	15	10	5	M	
	2.5	4		GP or SP	49	49	2	200	5	1	0	C	
	4	5.5	X304	SP	20	78	2	75				M	SP 34/62/4



PROJECT REPORT OF
SIEVE ANALYSIS SUMMARIES **PERCENT PASSING**

Project:	Homestead Pit No. 2440	Project No.:	86004
Sample Source:	0	Client:	MoTI
Material:	PIT RUN	Date:	December 2 2019

Sample Information			Percent Passing Pit Run Sieve Sizes (mm)														
Test Pit	Depth (m)	Bag #	75	63	50	37.5	25	19	12.5	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.075
19-01	2.5-4.5	1901	100.0	200.0	88.9	80.1	69.3	63.2	56.1	51.8	44.8	36.0	22.4	9.1	3.9	2.5	1.8
19-02	1-4.5	1902	100.0	100.0	91.0	83.9	70.2	61.7	49.3	42.0	31.7	24.4	17.4	11.4	8.0	6.4	5.5

GEOTECHNICAL & MATERIALS BRANCH
MINISTRY OF TRANSPORTATION AND HIGHWAYS

(by Sieve Calc -1984 (c))

AGGREGATE GRADATION CHART

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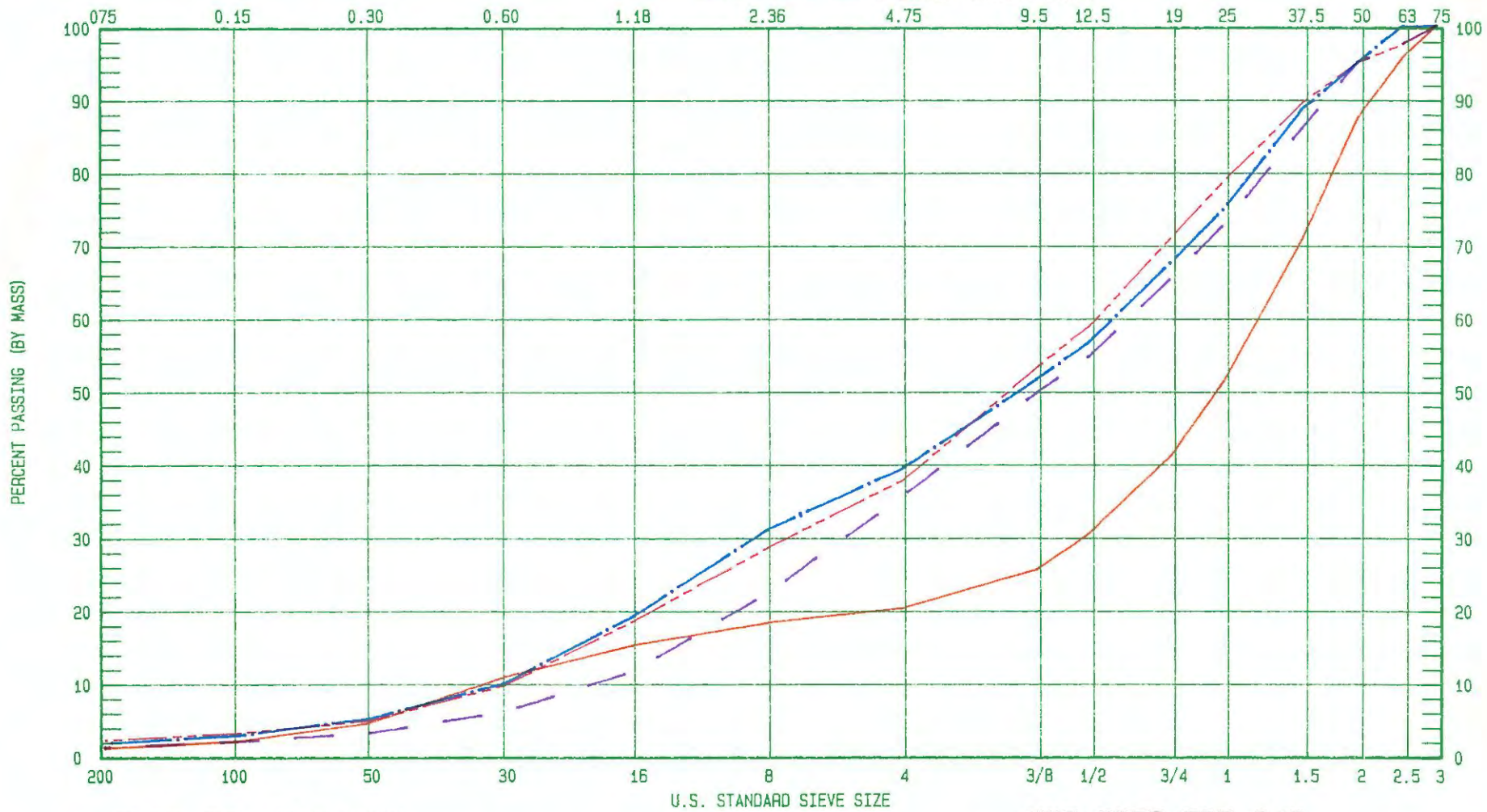
DISTRICT: MERRITT
FILE NUMBER:



PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
----------	D-2437	11	1	0.0 to 6.0	2	BC	EXCAVATOR	AUG 5 86	MERRITT	AUG 6 86
—— ——	D-2444	21	2	0.0 to 6.0	2	BC	EXCAVATOR	AUG 5 86	MERRITT	AUG 6 86
——·——·——	D-2438	31	3	0.0 to 6.0	2	BC	EXCAVATOR	AUG 5 86	MERRITT	AUG 6 86
————————	D-2439	41	4	0.0 to 6.0	2	BC	EXCAVATOR	AUG 5 86	MERRITT	AUG 6 86

———— PIT RUN

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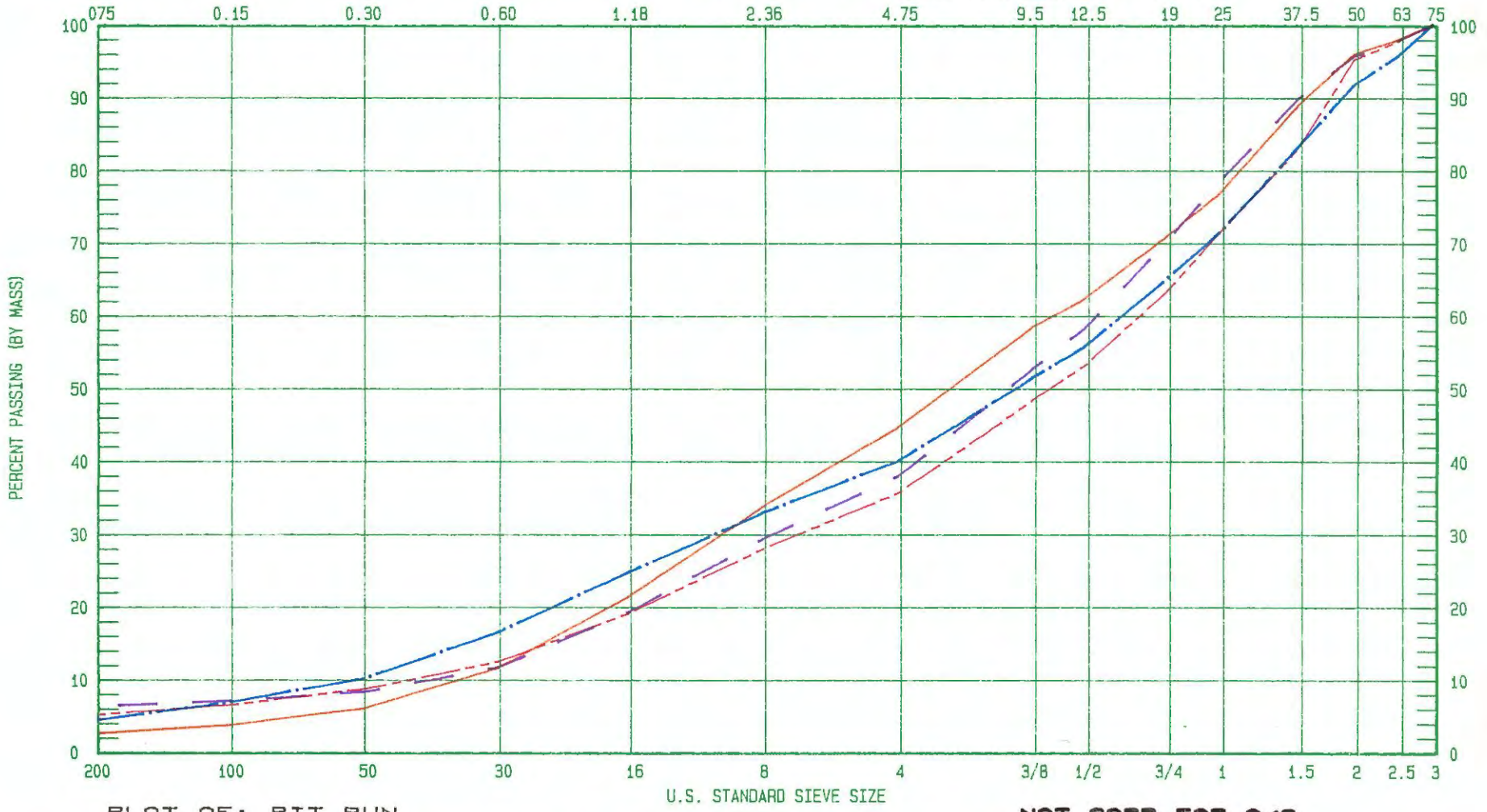

PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
- - - -	D-2440	51	5	0.0 to 6.5	2	BC	EXCAVATOR	AUG 5 86	MERRITT	AUG 6 86
— —	D-2441	61	6	0.0 to 7.2	2	BC	EXCAVATOR	AUG 6 86	MERRITT	AUG 7 86
— . —	D-2442	71	7	3.0 to 6.0	2	BC	EXCAVATOR	AUG 6 86	MERRITT	AUG 7 86
———	D-2443	81	8	0.0 to 4.5	2	BC	EXCAVATOR	AUG 6 86	MERRITT	AUG 7 86

——— PIT RUN

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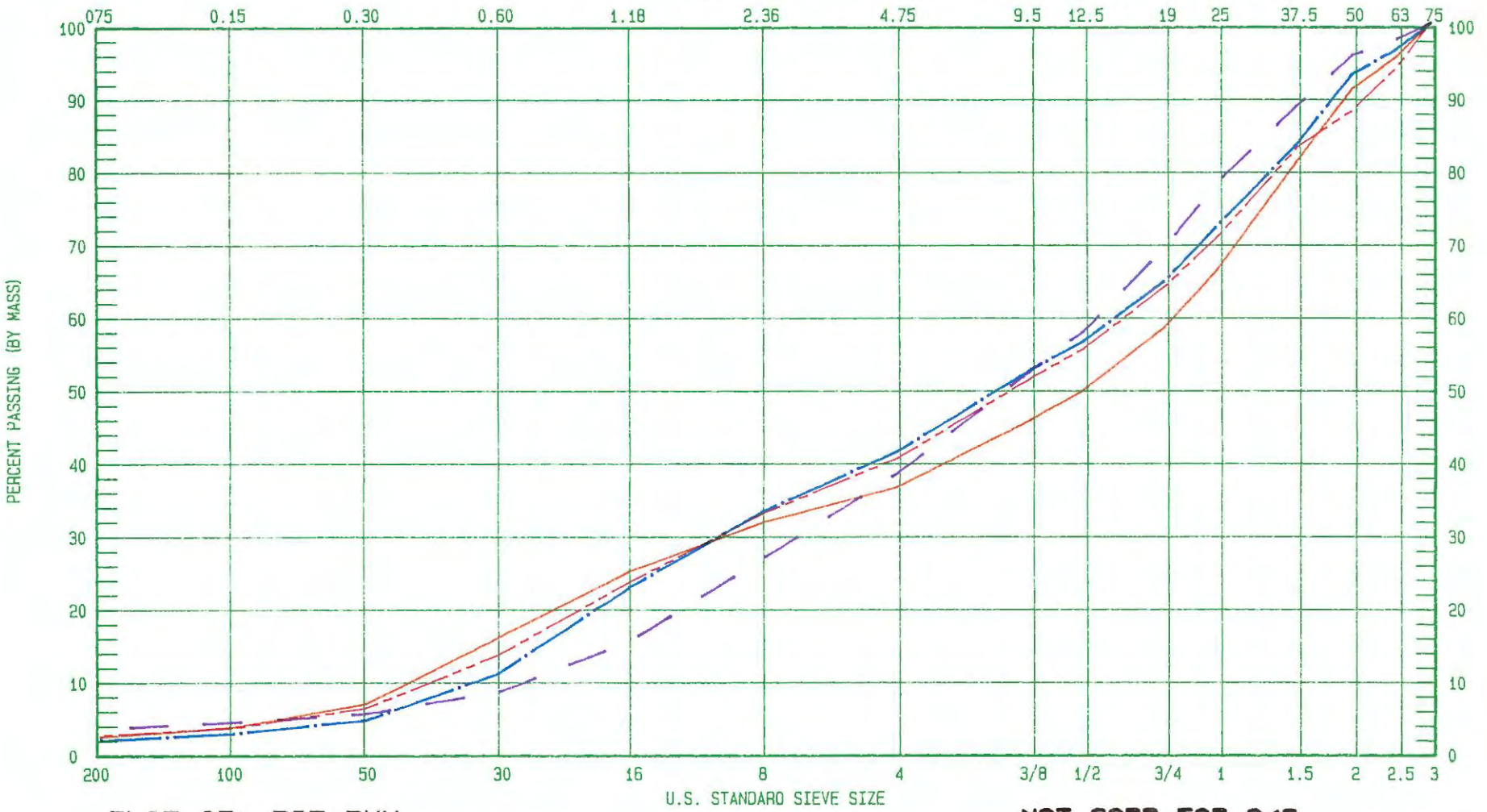

PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
———	X-331	91	9	0.0 to 5.5	2	BC	EXCAVATOR	AUG 6 86	MERRITT	AUG 7 86
— —	X-326	101	10	0.0 to 4.5	2	BC	EXCAVATOR	AUG 6 86	MERRITT	AUG 7 86
——.——	X-327	111	11	0.0 to 5.0	2	BC	EXCAVATOR	AUG 6 86	MERRITT	AUG 7 86
———	X-328	121	12	2.0 to 5.0	2	BC	EXCAVATOR	AUG 6 86	MERRITT	AUG 7 86

——— PIT RUN

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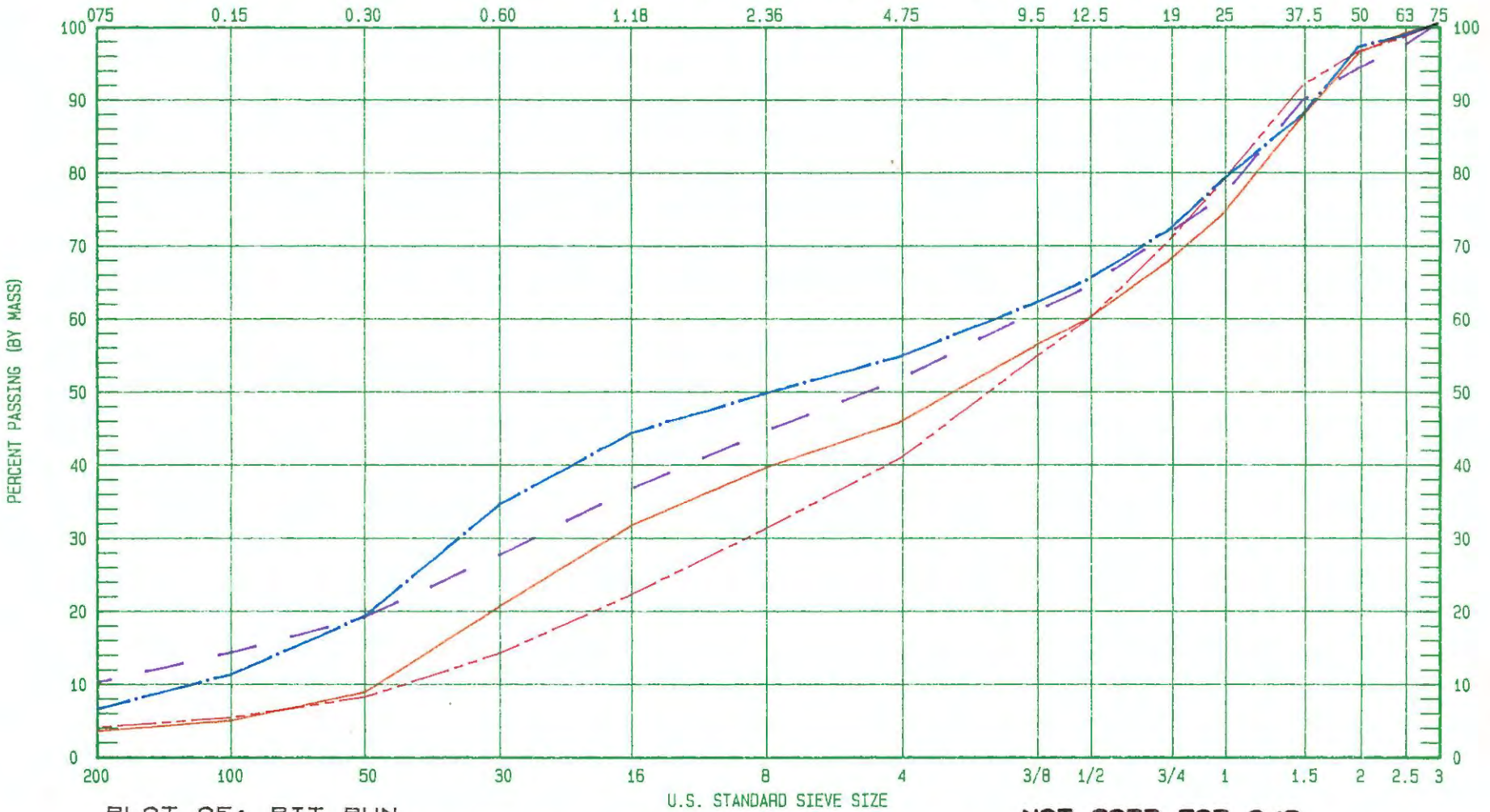

PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
----	X-330	131	13	0.0 to 6.0	2	BC	EXCAVATOR	AUG 6 86	MERRITT	AUG 7 86
— —	X-329	141	14	0.0 to 4.0	2	BC	EXCAVATOR	AUG 6 86	MERRITT	AUG 7 86
—·—	X-332	151	15	0.0 to 5.0	2	BC	EXCAVATOR	AUG 7 86	MERRITT	AUG 11 86
———	X-333	161	16	0.0 to 6.0	2	BC	EXCAVATOR	AUG 7 86	MERRITT	AUG 12 86

——— PIT RUN

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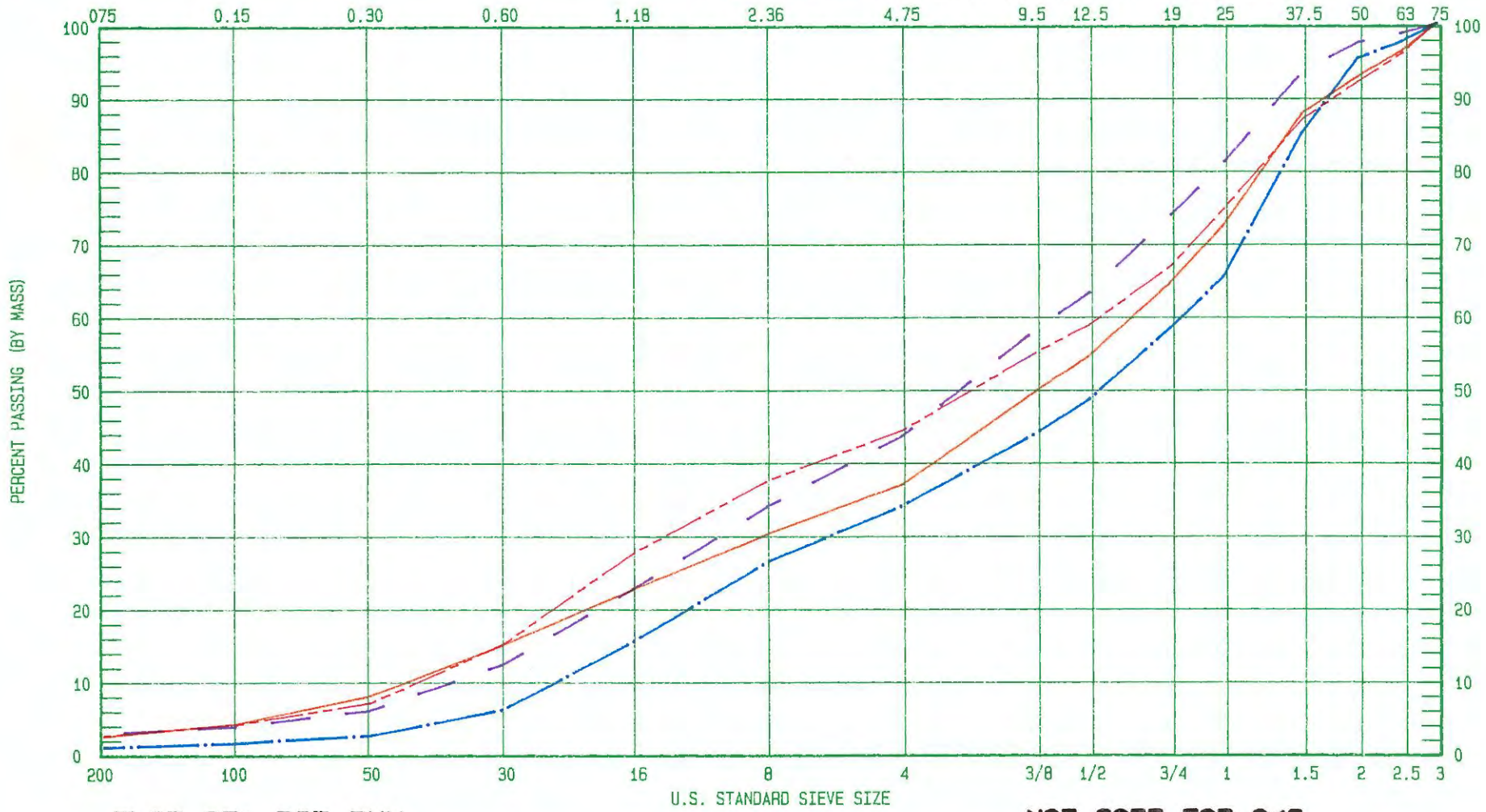

PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
———	X-334	171	17	0.0 to 5.5	2	BC	EXCAVATOR	AUG 7 86	MERRITT	AUG 11 86
— —	X-336	181	18	2.0 to 6.0	2	BC	EXCAVATOR	AUG 7 86	MERRITT	AUG 11 86
——.——	X-337	191	19	0.0 to 4.5	2	BC	EXCAVATOR	AUG 7 86	MERRITT	AUG 11 86
———	X-338	201	20	2.2 to 6.5	2	BC	EXCAVATOR	AUG 7 86	MERRITT	AUG 11 86

——— PIT RUN

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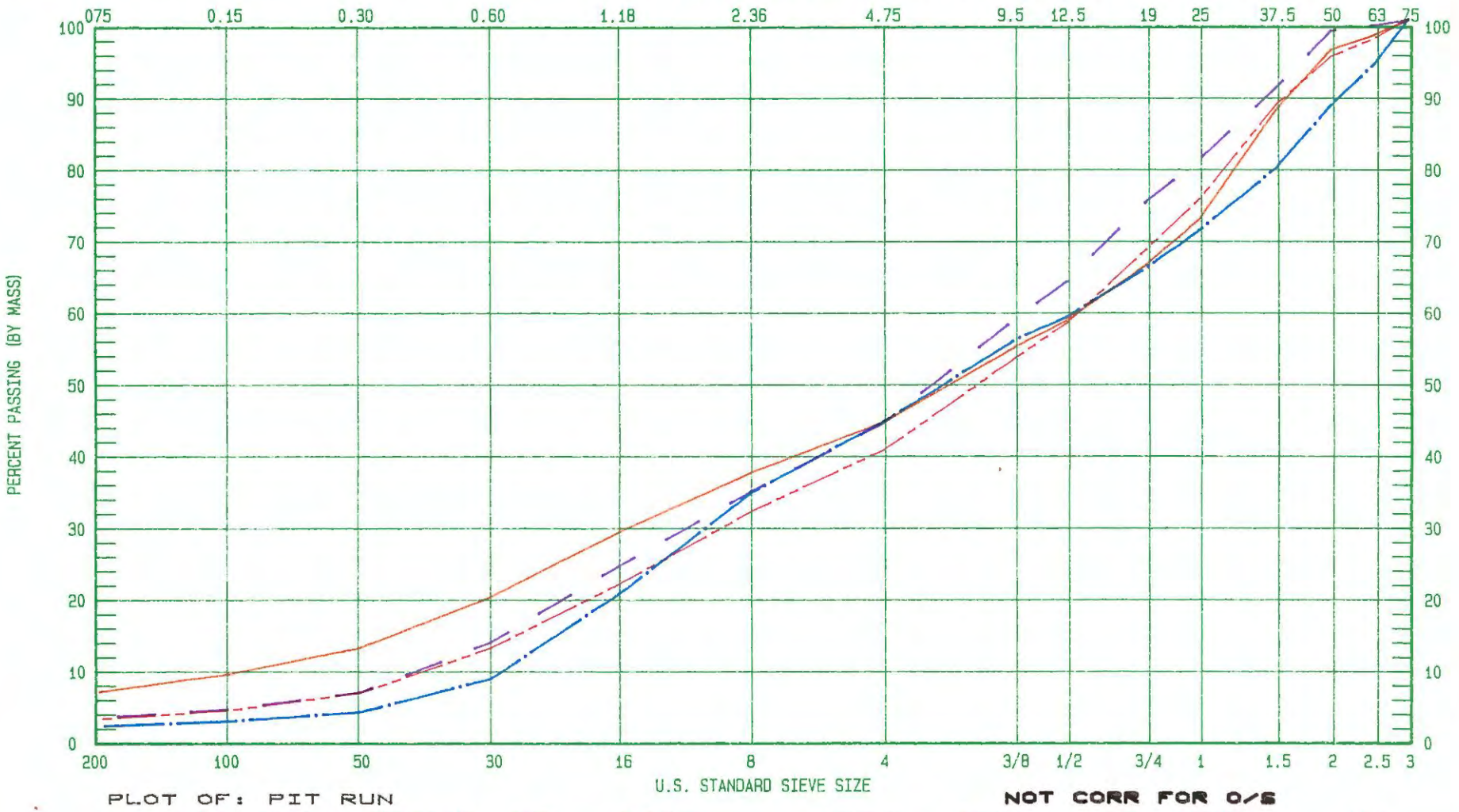

PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
———	X-339	211	21	1.0 to 4.0	2	BC	EXCAVATOR	AUG 7 86	MERRITT	AUG 11 86
— —	X-340	221	22	0.0 to 5.5	2	BC	EXCAVATOR	AUG 7 86	MERRITT	AUG 11 86
——·—·	X-341	231	23	0.0 to 6.5	2	BC	EXCAVATOR	AUG 7 86	MERRITT	AUG 11 86
———	X-343	241	24	2.0 to 6.0	2	BC	EXCAVATOR	AUG 7 86	MERRITT	AUG 11 86

——— PIT RUN

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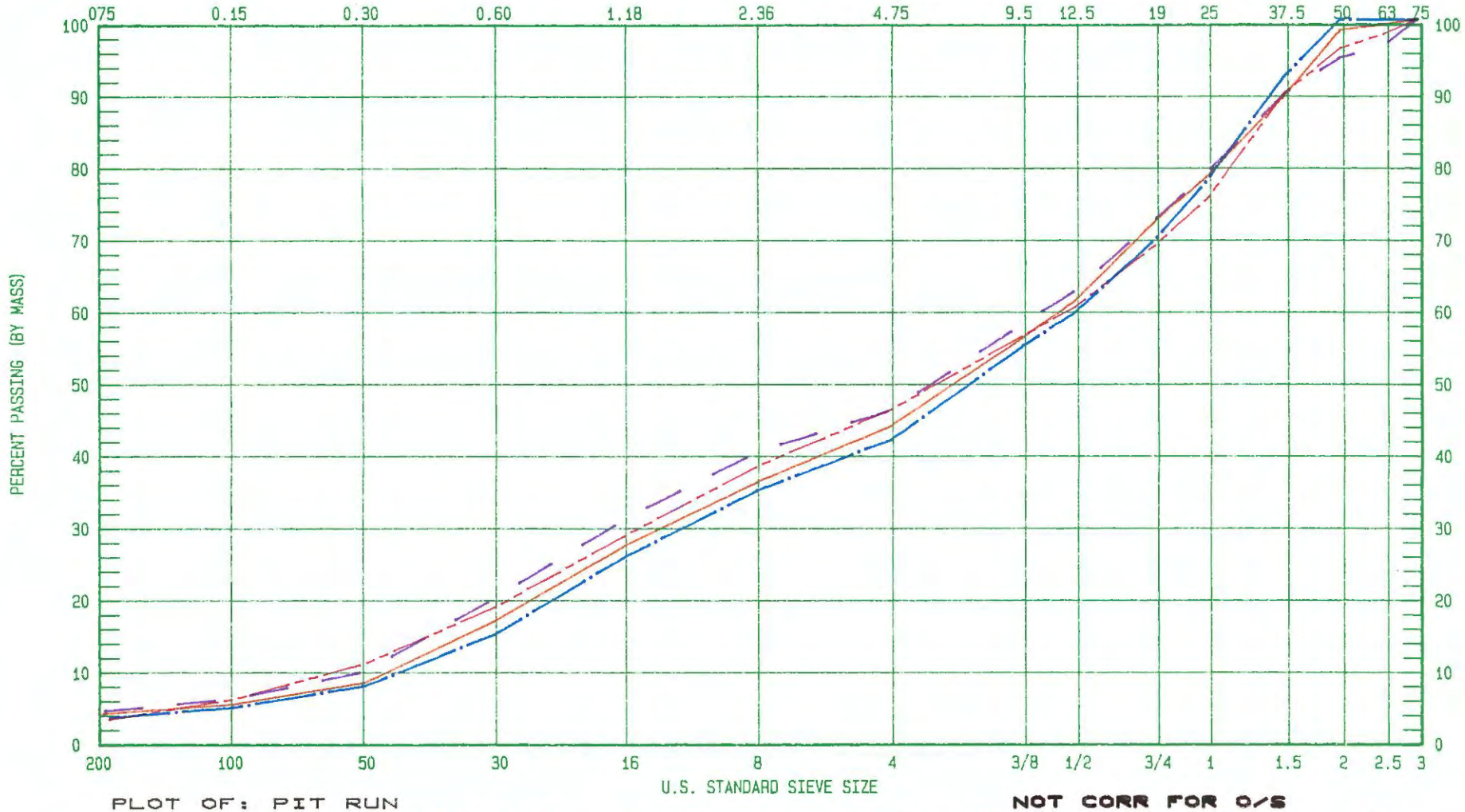

PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
———	X-342	251	25	0.0 to 6.0	2	BC	EXCAVATOR	AUG 7 86	MERRITT	AUG 11 86
— —	X-344	261	26	3.0 to 7.0	2	BC	EXCAVATOR	AUG 8 86	MERRITT	AUG 12 86
——.——	X-309	271	27	0.0 to 4.0	2	BC	EXCAVATOR	AUG 8 86	MERRITT	AUG 12 86
———	X-310	272	27	4.0 to 7.0	2	BC	EXCAVATOR	AUG 8 86	MERRITT	AUG 13 86

——— PIT RUN

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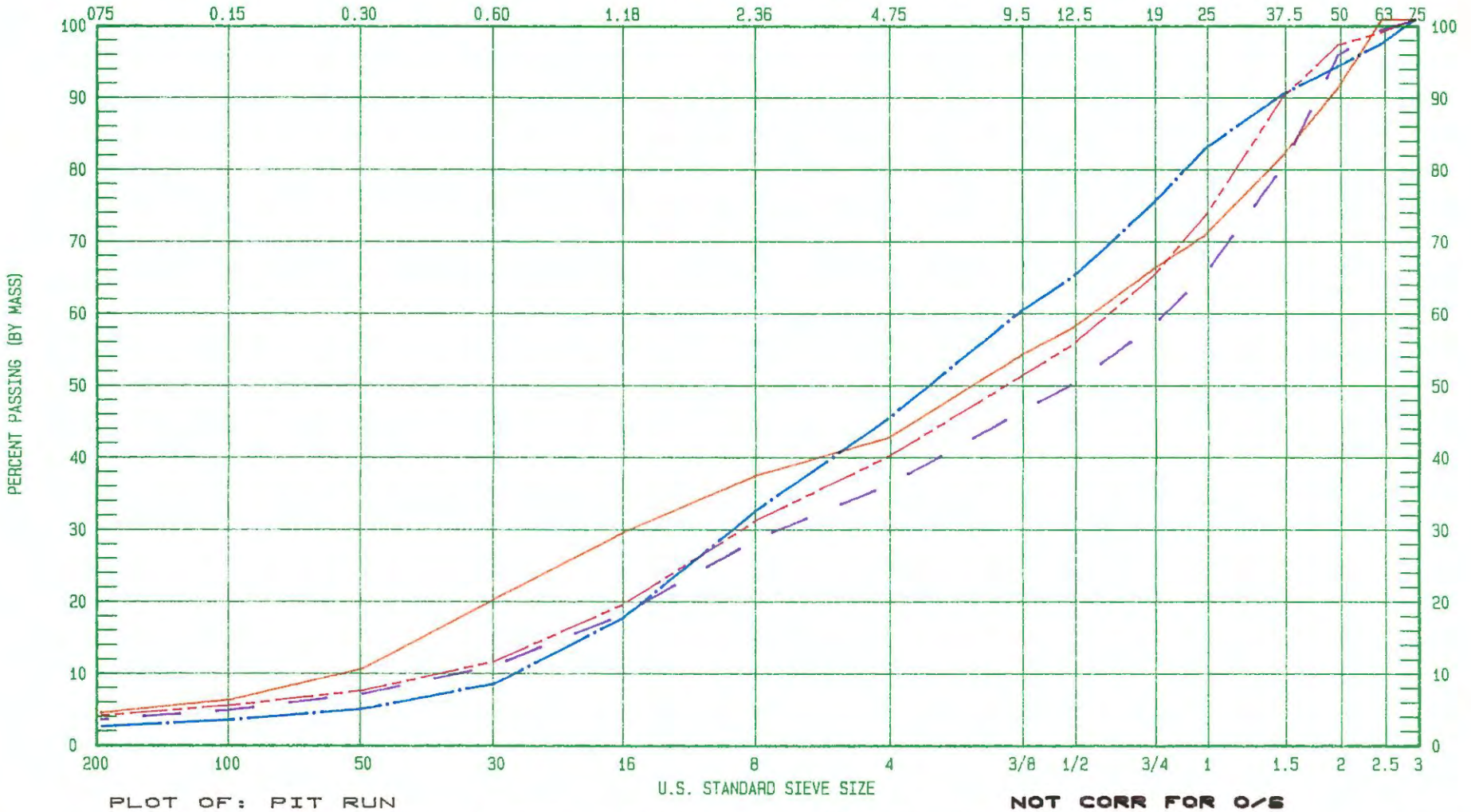

PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
———	X-311	281	28	0.0 to 5.0	2	BC	EXCAVATOR	AUG 8 86	MERRITT	AUG 13 86
— —	X-312	291	29	0.0 to 5.0	2	BC	EXCAVATOR	AUG 8 86	MERRITT	AUG 13 86
——.——	X-313	311	31	1.0 to 2.0	2	BC	EXCAVATOR	AUG 8 86	MERRITT	AUG 13 86
———	X-315	321	32	0.0 to 4.0	2	BC	EXCAVATOR	AUG 8 86	MERRITT	AUG 13 86

——— PIT RUN

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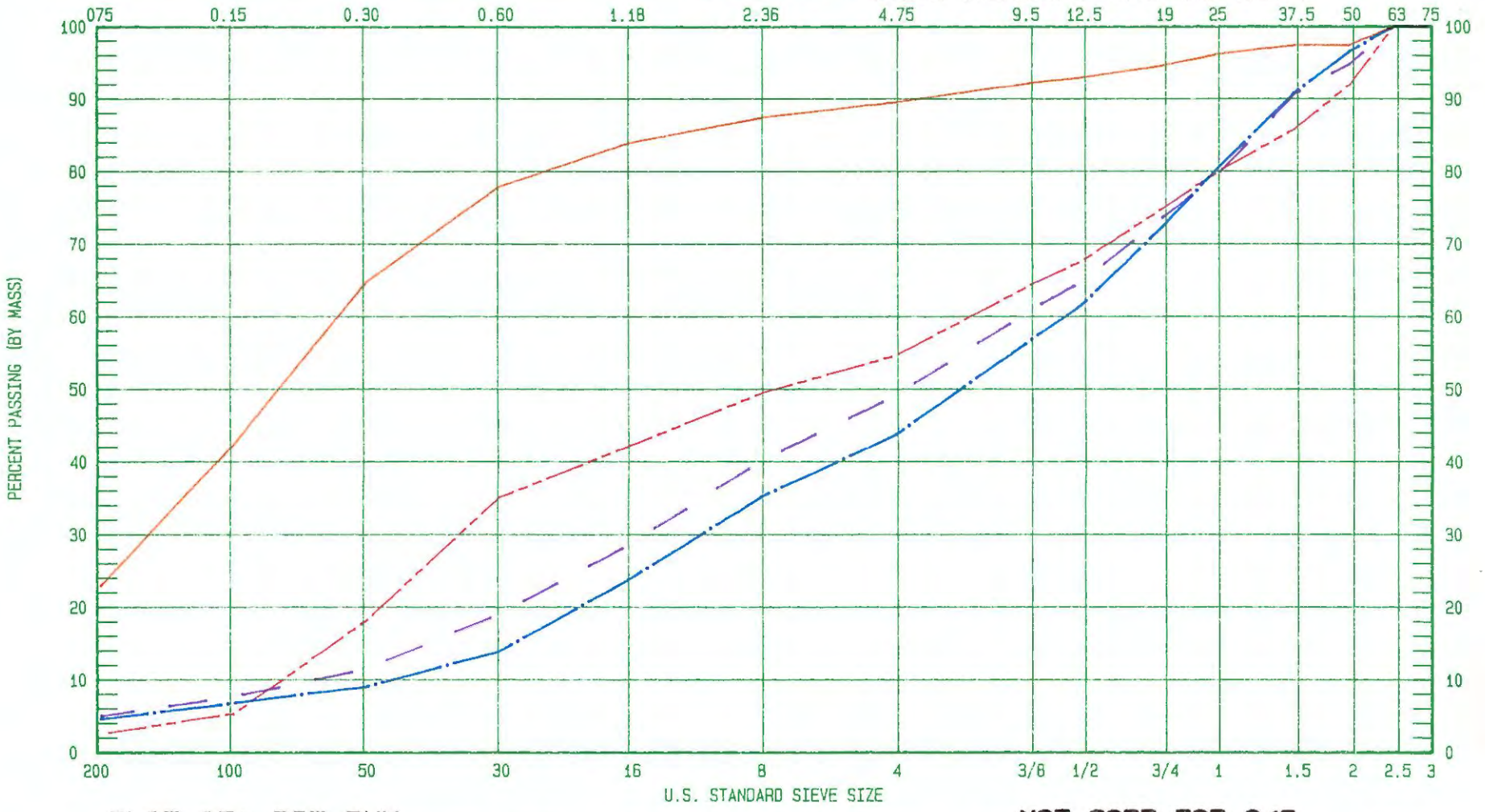

PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
———	X-314	322	32	4.0 to 7.0	2	BC	EXCAVATOR	AUG 8 86	MERRITT	AUG 13 86
— —	X-316	331	33	4.0 to 7.0	2	BC	EXCAVATOR	AUG 8 86	MERRITT	AUG 13 86
——.——	X-317	341	34	0.0 to 5.5	2	BC	EXCAVATOR	AUG 8 86	MERRITT	AUG 13 86
———	X-318	342	34	5.5 to 6.0	2	BC	EXCAVATOR	AUG 8 86	MERRITT	AUG 13 86

——— PIT RUN

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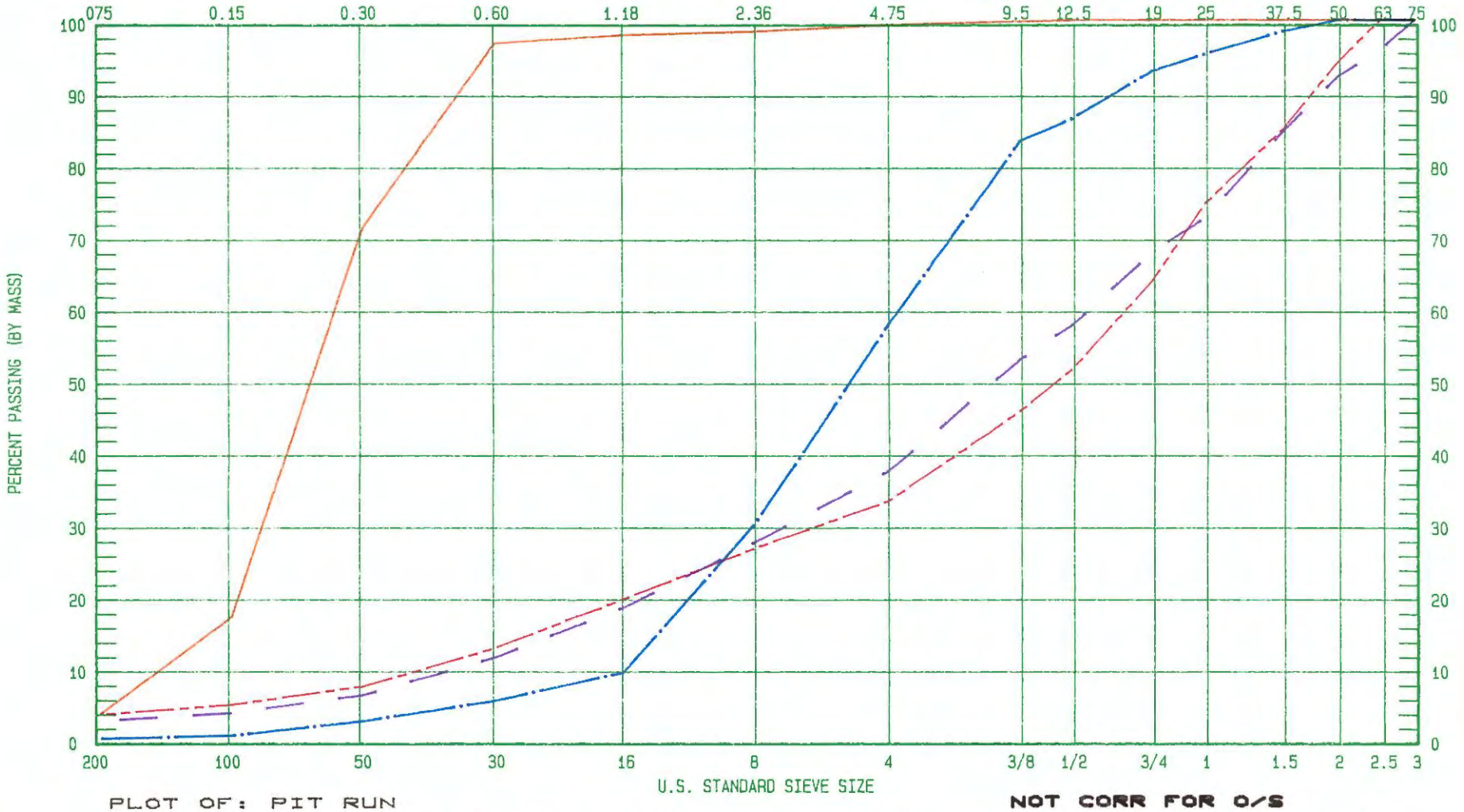

PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
——- - ——- -	X-319	351	35	0.0 to 6.0	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 13 86
—— ——	X-320	361	36	0.0 to 6.0	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86
——.——.	X-321	371	37	1.0 to 2.5	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86
————	X-322	372	37	2.5 to 4.5	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86

———— PIT RUN

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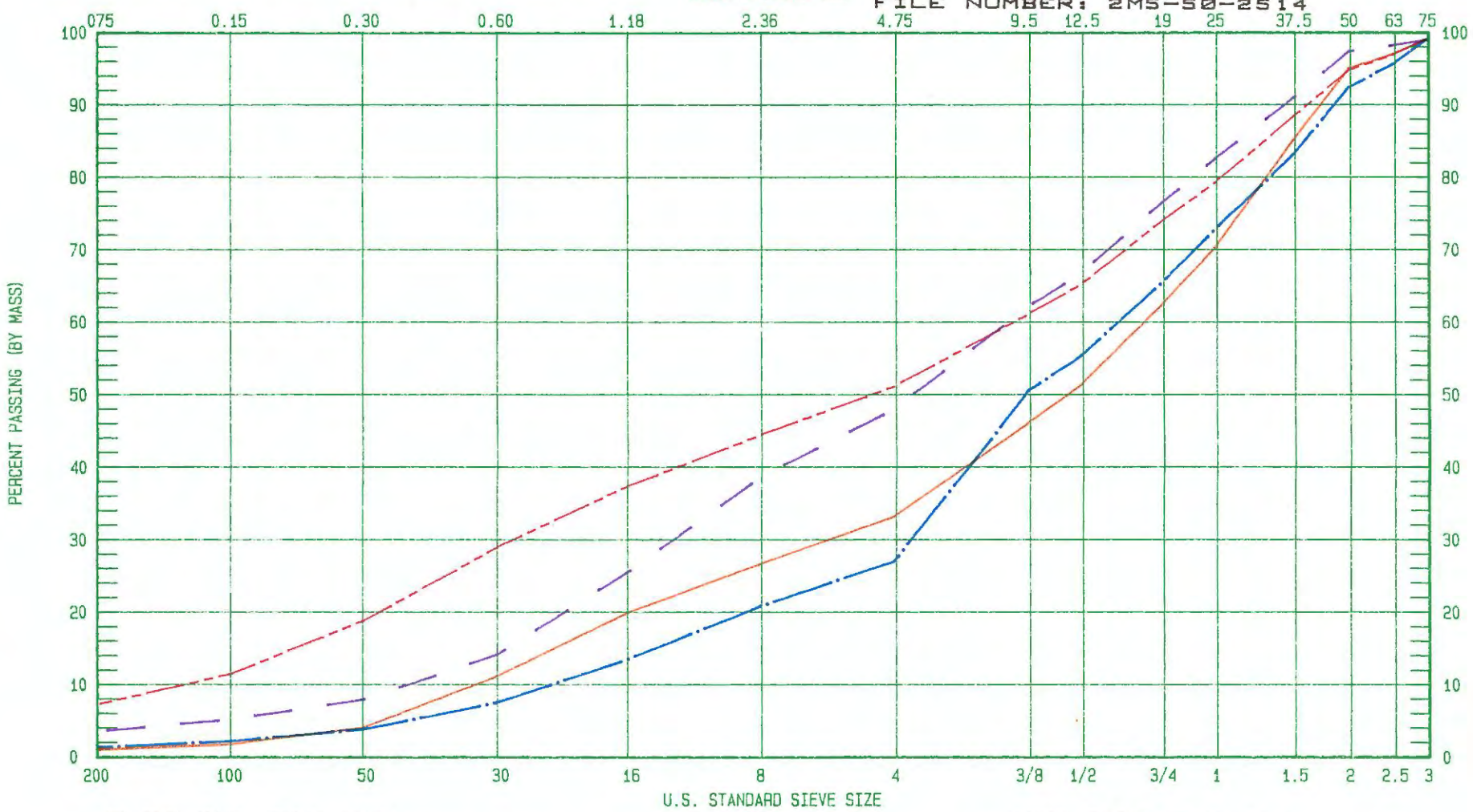

PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
——- - ——- -	X-323	381	38	2.0 to 6.0	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86
—— ——	X-324	391	39	0.0 to 5.5	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86
——·——·——	X-300	401	40	0.0 to 5.5	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86
————	X-301	411	41	0.0 to 6.0	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86

———— PIT RUN

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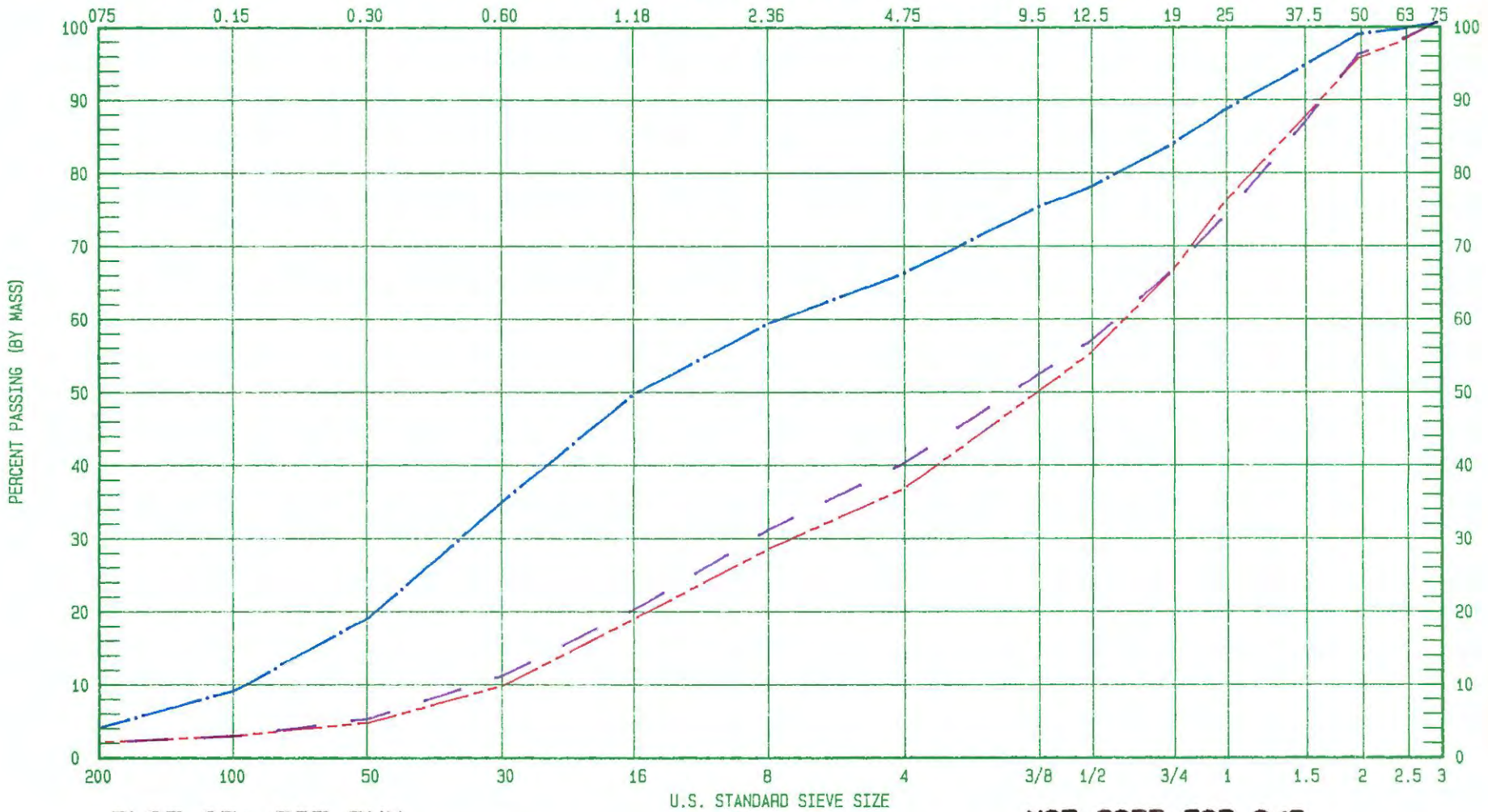

PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
———	X-302	421	42	0.0 to 4.5	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86
— —	X-303	431	43	0.0 to 5.0	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86
——.——	X-304	441	44	4.0 to 5.5	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86

——— PIT RUN

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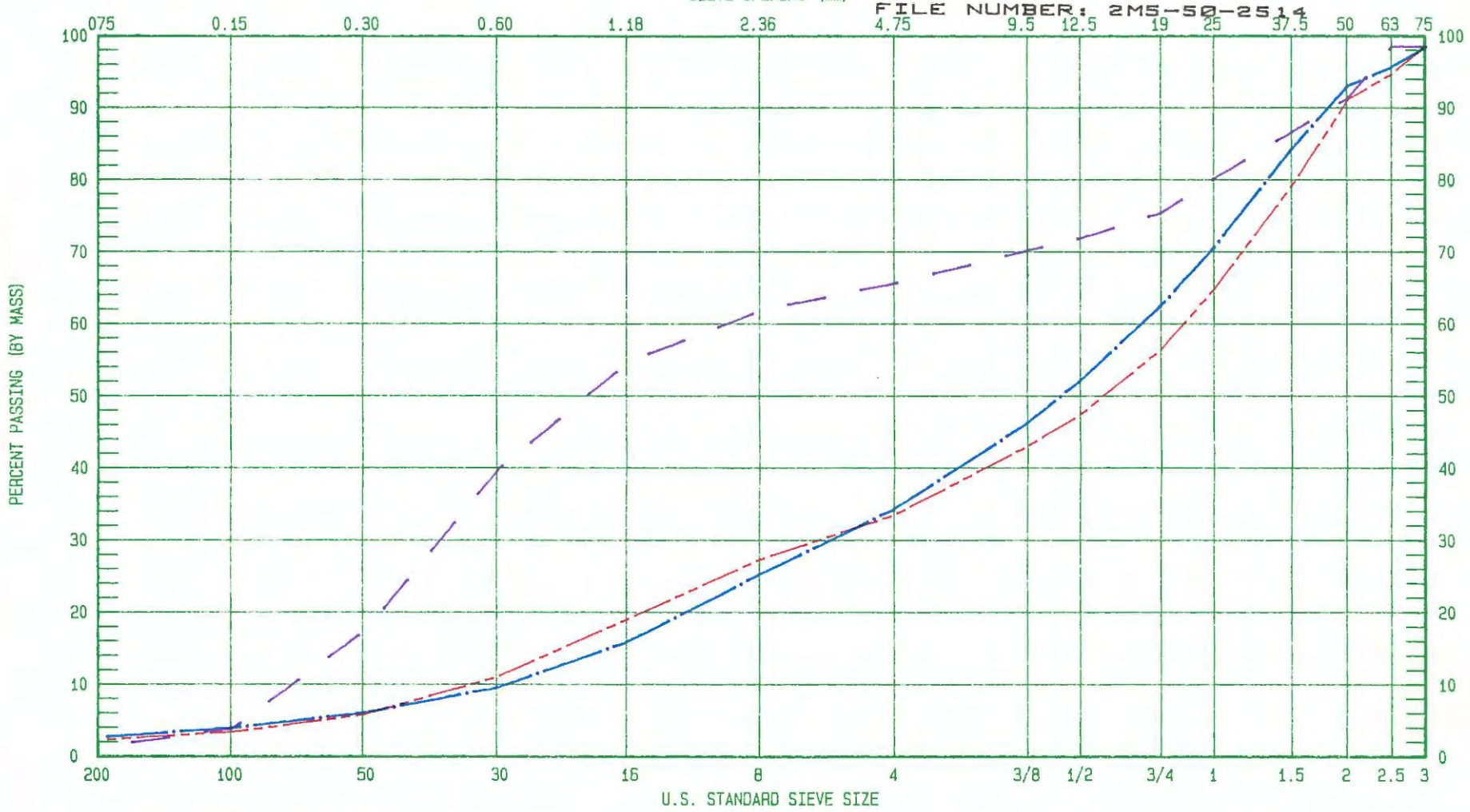

PLOT OF: PIT RUN

NOT CORR FOR O/S

	BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
——- - ——-	X-305	451	45	4.5 to 5.5	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86
—— ——	X-306	452	45	5.5 to 6.5	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86
——.——	X-308	461	46	4.5 to 6.0	2	BC	EXCAVATOR	AUG 9 86	MERRITT	AUG 14 86

—————— PIT RUN

USC Legend

MATERIALS CLASSIFICATION LEGEND

MAJOR DIVISIONS		SYMBOL	SOIL TYPE
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	WELL GRADED GRAVELS OR GRAVEL–SAND MIXTURES, < 5% FINES
		GP	POORLY–GRADED GRAVELS OR GRAVEL–SAND MIXTURES, < 5% FINES
		GM*	SILTY GRAVELS, GRAVEL–SAND–SILT MIXTURES
		GC*	CLAYEY GRAVELS, GRAVEL–SAND–CLAY MIXTURES
	SAND AND SANDY SOILS	SW	WELL–GRADED SANDS OR GRAVELLY SANDS, < 5% FINES
		SP	POORLY–GRADED SANDS OR GRAVELLY SANDS, < 5% FINES
		SM*	SILTY SANDS SAND–SILT MIXTURES
		SC*	CLAYEY SANDS SAND–CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS w_L <50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		OL	ORGANIC SILTS AND ORGANIC SILT–CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS w_L >50	MH	INORGANIC SILTS, MICACEOUS OR DIATOM–ACEOUS FINE SANDY OR SILTY SOILS, PLASTIC SILTS
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
		OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
ORGANIC SOILS		Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS
TOPSOIL		TS	TOPSOIL WITH ROOTS, ETC.
COBBLES		SB	ROCK FRAGMENTS AND COBBLES, PARTICLE SIZE 75mm TO 300mm
LARGE BOULDERS		LB	BOULDERS, PARTICLE SIZE OVER 300mm
BEDROCK		BR	BEDROCK

FOR SOILS HAVING 5 – 12% PASSING .075 SIEVE, USE DUAL SYMBOL

*GM1; GC1; SM1; SC1; 12 – 20%
GM2; GC2; SM2; SC2; 20 – 30%
GM3; GC3; SM3; SC3; 30 – 40%
GM4; GC4; SM4; SC4; 40 – 50%

} PASSING .075mm SIEVE

REV. 90–04–26

PROVINCE of BRITISH COLUMBIA
MINISTRY OF TRANSPORTATION & HIGHWAYS
Geotechnical & Materials Engineering

UNIFIED SOIL CLASSIFICATION LEGEND

Drawn: LU	Date: JULY'97	Scale:
File No.:		ACAD File: ACADSTDS C:\ACADSTDS\SOIL-APP

Photos

Photo 1 TP19-01 (December 2019).

Photo 2 TP19-02 (December 2019).

Photo 3 View: northwest. Pit face with proposed crusher and stockpile location in the foreground. Note: mining has taken place since the photo was taken (November 2022).

Photo 4 View from top of pit face, looking north at the pit face and crusher set-up area. Note: the crusher and processed aggregate piles are no longer there (September 2023).

Photo 5 Top of pit face looking north. Note: the crusher and processed aggregate stockpile are no longer there (September 2023).

Photo 6 View of the developed area on the backside of the pit face, looking west (September 2023).

Photo 7 View of the backside of the pit face, looking west (September 2023).