

KERR ADDISON MINES LTD.

GRUM PROJECT Y.T.

1975 - UNDERGROUND EXCAVATION

1975 - UNDERGROUND DIAMOND DRILLING

1975 - SURFACE DIAMOND DRILLING

PROGRAM PLANS & COST ESTIMATES

014929

I N D E X

1. Covering letter
2. General commentary
3. Summary of expenses
4. Monthly distribution of work & expenses
5. Summary of work quantities
6. Cost estimates (detailed)

Covering
Letter





Telephone: (604) 253-5251
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CANADIAN MINE SERVICES LTD.

745 CLARK DRIVE, VANCOUVER, B.C. V5L 3J3

January 31, 1975.

Kerr Addison Mines Ltd.
P.O. Box 91
Commerce Court West
Toronto, Ontario

Attention: Mr. M. D. Rowswell
Executive Vice-President

Dear Sir:

In accordance with recent discussions and direction from you, we are pleased to submit herewith a program for underground exploration of the Grum deposit in Yukon, to be undertaken during 1975.

Based upon the layouts and work quantities outlined, we have estimated the required expenditure by months for the duration of the project. This includes surface and underground diamond drilling, underground excavation and bulk sampling.

Cost estimates essentially represent a "Turn Key" package, as developed by our mine and diamond drilling contract estimating personnel, directed by our Mr. George Vooro, and based upon our contracting experience and to the greatest extent possible upon firm quotations from outside parties and suppliers.

In addition to cost estimates we have arbitrarily provided for excess ground support and ground water costs, and for management expense in the amount of 20% of total estimated cost.

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The entire program is scheduled for completion within a period of ten to twelve months, at an estimated cost of \$4,600,000. The projected time and cost will of course vary in accordance with any changes made in work quantities, and with the actual underground operating conditions to be experienced.

We are available at your convenience for further discussion on the project.

Yours very truly,



A. D. McCutcheon, P. Eng.

ADMc:kb

GENERAL COMMENTARY

The cost estimates provided herein are based upon a program of underground excavation and diamond drilling designed to explore the Grum deposit between sections 6200 West and 8200 West, and from 3600 level upwards. Upon completion of the program it is anticipated that some 8,600,000 tons or 38% of the currently stated ore reserve will then be in the proven category.

In addition to underground investigations, provision is made for surface "fill in" diamond drilling adjacent to, and for surface exploration diamond drilling west of the designated underground area.

The significant surface features at the Grum environment and plan relationship of the 1975 exploration areas of activity and related facilities are shown on a 400 scale "Site General Arrangement Plan" appended. The basic scheme is to gain access to the mineralized zones by means of a decline; the location of which has been fixed on the basis of entering the desired exploration zone at the lateral or plan centre on the required elevation, and collared in the most suitable location with respect to topography, depth of overburden and roadway grade limitation of 16%.

Mine openings have been planned to accommodate the size and type of equipment required for the most economical execution of the project, together with the related ventilation requirements, continued usage for further exploration and access and with due regard to ground conditions.

The appended "Cross Sectional Sizing of Headings" illustrates the size and shape of standard openings, and the service installations and equipment configuration.

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The appended drawings "Portal Layout Plan" and "Portal Layout-Section" illustrate the use of fabricated circular steel sections used for the construction of the portal in the zone of overburden and surface-influenced rocks.

Headings up and down the plunge have been laid out to be contained within the massive mineralization of the "A" zone as indicated by current surface diamond drill intersections. These are illustrated on the appended longitudinal sections as "best fit" headings at a constant grade of 16%.

Cross cuts and raises are laid out on the various cross sections to investigate conditions between foot and hanging wall of mineralized regions, and to provide convenient access for diamond drill exploration and definition.

It is important to note that headings in the mineralized zones are essentially schematic at this stage and should be considered subject to revisions in detail as required to remain substantially in ore grade material and in competent rocks insofar as possible. This will require detailed checking of pertinent drill core and the exercise of constant geological control concurrent with excavation.

In general, the massive sulfides can be expected to be competent. Geological sections indicate fairly extensive shearing and somewhat incompetent rocks in some instances, particularly on the hanging and foot walls of mineralized zones. Consequently, some provision must be made for ground support. Assuming that heading control will be exercised to favor massive sulfides, provision has been made for support of about 10% of the lateral footage or say a length of 600 feet. In addition, it is assumed that

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rock bolts will be installed on the basis of one bolt per linear foot of heading.

Regarding ground water, there is no evidence to indicate the order of flow to be anticipated, nor any reason to expect a serious problem. However, provision has been made for handling up to 300 gallons per minute with pumps on hand, and planned electrical installations are adequate for substantially increased pumping capacity. Provision of pumping facilities however will not prevent loss in efficiency if substantial water flows are encountered. Consequently, provision is made for say one month lost time for excessive water control.

Provision has been made to bulk sample every other development round of ore type material. This involves the separate storing of each round in bins (total of 4 required) ahead of the crushing plant. Some 45,000 tons of sulfides will be crushed to minus 1/2 inch size and passed through a sampling plant for reduction in quantity for testing purposes. In addition provision is made to ship a 150 ton sample to the metallurgical plant at Lakeview, Ontario.

Concurrent with excavations within the mineralized zones, provision is made for underground diamond drilling (scheduled quantity 28,600 feet). It should be noted here that the program as presently laid out requires the extension of diamond drilling for some time beyond the completion of excavation. However, no provision has been made for the increased cost which this would dictate, on the basis that the drilling program can be modified. It should be noted that the use of a mobile diesel powered diamond drill such as illustrated in the appendix "Diesel Drill Mark Two Operational Envelope" should facilitate geological control and contribute to overall co-ordination of operations.

Surface plant and camp facilities are illustrated on the appended "Camp Complex and Repair Shop Layout".

The camp complex is designed to accommodate all personnel on site during the 1975 exploration program, and is suitable for year round operation.

The surface repair shop and stationary mining plant facilities are designed for the efficient execution of the 1975 program and are suitable for year round operation.

It should be noted that cost estimates include the rental-purchase payments for the camp facilities and stationary power and compressor plants. Consequently a substantial equity (\$23,400) paid monthly (of which 85% is applicable to purchase) will be established during the execution of the program.

Other substantial items purchased and charged to mobilization include the shop building (\$28,850.00) and underground pumps (\$33,639.00).

In connection with surface plant installations and facilities, no provision has been made for environmental costs, other than for the installation of a domestic septic tank system and the orderly workmanlike planning of construction, ore and waste stockpiling etc. Consequently any requirements such as disposal of mine drainage or rehandling of ore or waste materials from the vicinity of the portal to alternative locations would necessitate separate considerations.

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OPEN PIT CONSIDERATION

A preliminary open pit design is appended. Although not specifically called for in this project, this design was undertaken to illustrate the spatial relationship of the ultimate pit brow to the main access decline as laid out in the hanging wall zone.

Summary of expenses

I. Summary of Expense

	<u>Excavation</u>	<u>Diamond Drilling</u>		<u>Bulk</u>	<u>Total</u>
		<u>Underground</u>	<u>Surface</u>	<u>Sampling</u>	
Mobilization	\$ 425272.	\$ 4000		\$150000	\$ 579272
De-mobilization	36133	4000		27000.	67133
Indirect expense					539540
Direct expense	1309687	211926	335700	438044	2295357
Contingency - Ground support					150000
Water control					<u>200000</u>
Management - say 20%					3,831,302

766,260

\$4,597,562

MONTHLY-WORK
expenses

KERR ADDISON MINES LTD.

GRUM DEPOSIT, Y.T.

MONTHLY DISTRIBUTION OF WORK AND EXPENSES

PROGRAM SUMMARY	TOTALS	M O N T H														
		1	2	3	4	5	6	7	8	9	10	11	12			
a) Mobilize (Overburden excavation, ft.)	200	200														
b) Excavation																
Waste decline @ -16%, ft.	2,639		150	829	830	830										
Ore decline @-16%, ft.	1,669						419	626	471	153						
Ore incline @ +16%, ft.	2,378					100	663	771	478	366						
Cross cut, ft.	1,200								530	670						
Raise - ventilation, ft.	427					36	391									
Raise - ore, ft.	360							30	180	150						
c) Underground Diamond Drilling, ft.	28,600						2,000	5,000	5,400	5,400	5,400	5,400				
d) Surface Diamond Drilling, ft.	30,000			5,000	10,000	10,000	5,000									
e) Bulk Sampling, tons	91,500					2,450	15,268	25,625	34,162	13,995						
f) Personnel on site																
Excavation		19	23	24	24	24	32	32	34	34	7	7				5
U/G Diamond Drilling							3	6	6	6	6	6				
Surface Diamond Drilling				12	24	24	12									
Bulk Sampling					2	4	5	5	5	5						
Camp accomodation & cooking		3	5	9	10	10	11	10	10	10	4	4				2
Total crew per month		22	28	45	60	62	63	53	55	55	17	17				7
g) Estimated Project Expense	\$4,600,000	323,000	348,000	394,000	490,000	540,000	686,000	585,000	489,000	484,000	114,000	99,000				48,000

SUMMARY OF WORK QUANTITIES

(a) Excavation

Description	Inclination	Section	Length			Provision for Ground Support In cost estimates
			Ore	Waste	Total	
Access Decline-Hanging wall	-16%	18 dia.		220	220 *	Circular Steel Section from Portal
Access Decline-Hanging wall	-16%	14 x 14		2639	2639	Bolt & strap as required
Access Decline-Ore Zone	-16%	14 x 14		3836	3836	Bolt & strap as required
	+16%	14 x 14				
Sump-Muck Storage	-30%	14 x 14			175	Bolt & strap as required
Access to Vent. Raise	+ 3%	14 x 14			36	Bolt & strap as required
Cross-Cut	+ 3%	9 x 9	1200		1200	Bolt & strap as required
Raise - Alimak Vent	70°	6 x 6		427	427	Bolt & strap as required
Raise - Alimak Ore		6 x 6	230		230	Bolt & strap as required
Raise - Open		6 x 6	130		130	Bolt & strap as required
					<u>8673</u>	

*Note - included in "mobilization" cost

(b) Diamond Drilling

Surface	30,000 ft.
Underground	28,600 ft.

(c) Bulk Sampling - Tons ore	Excavated - Say 90,000.	
Tons ore	Crushed - Say 45,000	(every other round)
Tons ore	Shipped - Say 150	(Metallurgical sample to Lakeview, Ontario)

COST ESTIMATE

- I. Summary of Expense
- II. Mobilization
 - (a) Excavation phase
 - (b) Underground diamond drilling
 - (c) Bulk sampling
- III. Demobilization
 - (a) Excavation phase
 - (b) Underground diamond drilling
 - (c) Bulk sampling
- IV. Direct
 - Surface mining plant and camp expense
- V. Direct
 - Excavation expense
- VI. Direct
 - Surface diamond drilling expense
- VII. Direct
 - Underground diamond drilling
- VIII. Direct
 - Bulk sampling
- IX. Contingency
 - Ground support
- X. Contingency
 - Water control

II. Mobilization - (a) Excavation phase

Assemble for shipping	\$ 1650	
Freight - 435 tons	47601	
Air fares - 42 men	5040	
Site preparation	<u>2050</u>	\$ 56341
Portal preparation		
- Excavate overburden & collar	24230	
- Install steel support	10267	
- 220 feet Multiplate	48400	
- 50 feet Linerplate	<u>12800</u>	\$ 95697
Camp erection		
- Install trailers	22038	
- Dry construction	15000	
- Install office	<u>1580</u>	\$ 38618
Shop		
- Purchase & installation		\$ 37058
Surface services		
- Water supply	8674	
- Sewage system	12036	
- Surface air lines	2530	
- Water discharge lines	3131	
- Fuel storage facilities	3132	
- Compressor installation	789	
- Radio installation	<u>250</u>	\$ 30542
Electrical installation		
- Shop	1464	
- Surface lights	830	
- Camp wiring	4298	
- Power distribution	10934	
- Transformers	1977	
- Compressor wiring	1580	

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II. Mobilization - (a) Excavation phase (continued)

Electrical installation(continued)

- Pump power line	\$ 7600	
- High voltage distribution U/G	13728	
- Insulating switch U/G	3800	
- Sub station U/G	9200	
- Transformers U/G	7600	
- Pump lines U/G	2106	
- Miscellaneous material	9821	
- Installation of power plant	4800	
- Installation labour	<u>6243</u>	
		\$ 102981
Storage of supply inventory		1102
		\$ 29294
Supervision & administration		
Underground pumps		
- Primary	19611	
- Secondary	<u>14028</u>	
		\$ <u>33639</u>
Total		\$425272

II. Mobilization - (b) Underground diamond drilling phase

Lump Sum	\$ 4000
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II. Mobilization - (c) Bulk sampling

Move in & set up plant		\$ 50000
Construct ore bins		
- Freight	\$ 4000	
- Steel	60000	
- Timber	8000	
- Labour	4000	
- Equipment operation	<u>4000</u>	
		\$ 80000
Sample plant		
- Purchase	10000	
- Installation	<u>10000</u>	
		<u>20000</u>
		\$ 150000

III. Demobilization - (a) Excavation phase

Assemble for shipping	\$ 6195
Freight	23248
Unload	1650
Air fares	<u>5040</u>
	\$36133

(b) Underground diamond drilling

Lump sum	\$4000
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(c) Crushing and bulk sampling

Lump sum	\$27000
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IV. Indirect - Surface Mining and plant & camp expense

	<u>Cost/month</u>	<u>Project cost</u> (10 months)
Rental purchase payments		
- Compressors & generators	\$ 14050	
- Camp accomodation	8700	
- Office Trailer	800	
Fuel, oil & lubricants	19673	
Repairs	2475	
Operating labour	<u>8256</u>	
	\$ 53954	\$ 539540

VI. Direct - Surface Diamond Drilling Expense

	<u>Cost/Ft.</u>
Labour & board	\$ 6.24
Diamonds	1.41
Rods	0.30
Corebarrels	0.35
Miscellaneous	0.10
Fuel & lubricants	0.46
Core Boxes	0.20
Mud	0.68
Equipment repair	0.17
Equipment rental	0.53
Expediter	0.26
Freight & communication	0.11
Mobilize & demobilize	<u>0.38</u>
	11.19
Scheduled footage	30,000
Direct Cost	\$335700

VII. Direct - Underground Diamond Drilling

	<u>Cost/Ft.</u>
Labour & board	\$ 3.50
Diamonds	1.41
Rods	0.30
Corebarrels	0.35
Miscellaneous	0.10
Fuel & lubricant	0.28
Core Boxes	0.20
Equipment repair	0.35
Equipment rental	0.81
Freight & communication	<u>0.11</u>
	7.41
Scheduled footage	28,600
Direct Cost	\$211926

VIII. Direct - Bulk Sampling

Rental	\$ 15000	
Maintenance	159880	
Supervision	32500	
Service Vehicle	2000	
Winterize & heat	19300	
Fuel & lubricants	43625	
Labour	103339	
Front end loaders	<u>62400</u>	
Total		\$438044

IX. Contingency - Ground Support

(a) Rock Bolting

Cost/bolt installed	Material	\$3.76
	Freight	0.35
	Labour	4.50
	Plant	2.40
	Drilling	<u>0.72</u>
	Total	11.73

(b) Screen

Cost/sq. ft. installed	Material \$	0.34
	Freight	0.03
	Labour etc.	<u>0.34</u>
	Total	0.71

(c) Supporting (timber or steel)
of lateral headings, cost
in excess of normal unsupported
excavation

say \$100.00/ft

Summary Cost/6000 ft.

(a) Bolts - assume average of one bolt/ft.
lateral

Amount = $11.73 \times 6000 =$ \$ 70380.00

(b) Screen - assume average one square ft./
lateral ft.

Amount = $0.71 \times 6000 =$ \$ 4260.000

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IX. Contingency - Ground Support (continued)

(c) Timber or steel support

Assume 10% of lateral footage
(600 feet) requires support.

Amount = \$100.00 x 600 = \$ 60,000.00

Total \$134,640.00

Say \$150,000.00

X. Contingency - Water Control

	<u>Standby Cost</u>		
	<u>Hour</u>	<u>Day</u>	<u>Month</u>
Underground plant	\$28.00	\$870.00	\$20000.00
Crew & staff	311.00	2488.00	75000.00
Surface plant & camp			54000.00
Material for grout etc.			<u>50000.00</u>
Assuming one month lost due to water in waste decline cost would be - say			\$200000.00

PRELIMINARY OPEN PIT DESIGN AT THE GRUM ORE ZONE

Based on a preliminary design for a proposed open pit at the Grum Ore Zone there are 4,818,900 ton of 4.41 Pb 8.25 Zn and 1.93 Ag. ore available at a strip ratio of 1: 3.10.

Overburden is divided into two classifications 7,139,430 tons of overburden and 7,815,840 tons waste rock.

Pit slopes have been kept to 45° in rock and 38° in overburden. An alternative design based on 50° rock slopes is also attached.

No mining or geological control has been superimposed but an allowance of 15% has been made for the inclusion of initial pit development roads, berms, etc.

Detailed calculations of sections and grades are attached.

General

(1) Location - size - depth: -

The open pit design locates the surface extremities of the pit between 76+00W and 58+00W, 10+00 north and 5+00 south of the base line. Overall dimensions of the proposed pit would be 1650 ft. x 1200 ft. with max. height between headwall and pit floor of 525 ft.

(2) Pit slopes: - Two differing slopes have been used to design a preliminary pit.

(a) Rock slopes of 45°

(b) Rock slopes of 50°

Slopes in overburden have remained at 38° for both pit designs. As the rock type is phyllite it is thought prudent to use the 45° slope for overall design. Individual bench slopes which have not been included here would probably be at a max. of 70° .

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(3) Geology: - No detailed geological control has been imposed on the pit design. i.e. Fault zones which intersect headwalls, as it is felt that this is outside the scope of a preliminary design.

(4) Reserves: - Ore reserves have been calculated from D.D.H. information. Total pit reserves are based on Holes A-13, A-23, A-45, A-28 and A-26.

Projections from each hole was made

- (a) $\frac{1}{2}$ way to nearest hole if less than:-
- (b) 200 ft. each side of section line on east west sections
- (c) 100 ft. each side of D.D. hole in a north south direction.

Due to these large projection distances and the fact that total ore reserves are based on 5 drill holes, the mineable ore reserves should be treated with caution until more fill in information is available.

(5) Volume factors: -

3 factors have been used in calculating the tonnages

- (a) Ore estimated at 8.0 ft.³/ton
- (b) Waste rock estimated at 12.0 ft.³/ton
- (c) Overburden calculated at 18.0 ft.³/ton

Methods of design and calculation of tonnages

- (1) A basic pit was laid out on sections 68+00W and 64+00W.
- (2) Pit bottom elevations calculated
- (3) Using either 45° or 50° pit slopes, intercepts calculated for rock-overburden contacts and using 38° slope, intercepts calculated for overburden-surface contacts.
- (4) These calculated intercepts transferred to plans and sections giving apparent pit slopes on sections.
- (5) Total volumes in ft.³ calculated from sections projecting 200 ft. east-west from section line except 60+00W which was projected 200' east and 100' west.

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- (6) Total volume in ft.³ calculated for overburden using same projection data as for rock above. Overburden volumes calculated into tons at this point.
- (7) Ore volumes calculated from sections using data from drill holes and areas of influence as outline above. Vols. also calculated into tons at this point.
- (8) Total ore volume subtracted from total rock volume in pit to get volume of waste rock. This volume then calculated as tons.
- (9) Using ore tons calculate strip ratios for
 - (a) Total rock & OB
 - (b) Total rock only
- (10) Using a factor of 15% increase waste volumes to allow for inclusion of pit roads - extra berms - smoothing of pit outlines due to geological considerations.
- (11) Recalculate ore waste ratios.
- (12) Calculate ore grades using volumes and tons from (7) and grades from D.D. holes to give overall ore grade.

Summary

(1) Pit rock slope	45 ⁰			
Overburden slope	38			
Total tons ore	4,818,900 tons	1,427,822 Yd.		³
Grade	4.41 PB	8.25 Zn	1.93 Ag.	
Tons overburden (calculated)	6,208,200 tons	4,138,800 yd.		³
Tons overburden + 15%	7,139,430 tons			

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Tons waste rock (calculated)	6,796,383 tons	3,020,614 yd. ³
Tons waste rock +15%	7,815,840 tons	
Total tons OB + rock calc.	13,004,583 tons	
Tons OB + rock + 15%	14,955,270 tons	

Ore	:	Waste	(calculated)	1:	2.70
Ore	:	Waste	(+15%)	1:	3.10

(2) Pit rock slope 50°
overburden 38°

Total tons ore	4,818,900 tons	1,427,822 Yd. ³
Grade	4.41 Pb 8.25 Zn 1.93 Ag	

Total tons overburden (calc)	5,900,950 tons	3,933,966 Yd. ³
Total tons overburden + 15%	6,786,092 tons	

Tons waste rock calculated	3,966,266 tons
Tons rock + 15%	4,561,205 tons

Total tons OB + waste (calc)	9,867,216 tons
Total tons OB + waste + 15%	11,347,298 tons

Ore	:	Waste	(calculated)	1:	2.05
Ore	:	Waste	(+ 15%)	1:	2.35

Total Pit Volumes

Ore-waste calculations using differing pit slopes.

(A) Pit Slopes at 45° in rock
38° in overburden

Following factors used

Ore 8.0 Ft.³/ton
Waste 12.0 Ft.³/ton
Overburden 18.0 Ft.³/ton

Pit Slopes Rock 45°
 Overburden 38°

No pit roads or detailed berm design

Ore calculations -

Grades and tonnages projected

- 1) 100 Ft N-S from D.D.H. intersections ,
- 2) 200 Ft. East-West from section lines
- 3) ½ way to nearest D.D.H. if less than above

Volume Calculations

(a) Rock Section: -

Total Pit

<u>Section</u>	<u>Volume</u>	<u>Ft.³</u>
72+00W	$\frac{305 \times 225 \times 400}{2}$	13,725,000
	$\frac{348 \times 215 \times 400}{2}$	14,964,000

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<u>Section</u>	<u>Volume</u>	<u>Ft.</u> ³	
68+00W	A. $\frac{300 \times 68 \times 400}{2}$	4,070,000	
	B. $1/2 \times 318 \times 258 \times 400$	16,408,800	
	C. $102 \times 310 \times 400$	12,648,000	
	D. $1/2 \times 310 \times 318 \times 400$	19,716,000	
	E. $1/2 \times 290 \times 58 \times 400$	3,364,000	
64+00W	A. $1/2 \times 190 \times 180 \times 400$	6,840,000	
	B. $190 \times 212 \times 400$	16,112,000	
	C. $1/2 \times 245 \times 250 \times 400$	12,250,000	
60+00W	Nil		
	Total	120,107,800 Ft. ³	= 4,448,437 Yd

(b) Overburden

<u>Section</u>	<u>Volume</u>	<u>Ft.</u> ³	<u>Tons</u>
72+00W	$\frac{100 \times 20 \times 400}{2}$	400,000	
	$100 \times 25 \times 400$	1,000,000	
	$\frac{200 \times 28 + 44 \times 400}{2}$	2,880,000	

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<u>Section</u>	<u>Volume</u>	<u>Ft.</u> ³	<u>Tons</u>
72+00W	$200 \times \frac{44 + 59}{2} \times 400$	4,120,000	
	$200 \times \frac{59 + 86}{2} \times 400$	5,800,000	
	$\frac{1}{2} \times 70 \times 180 \times 400$	2,520,000	
68+00W	$\frac{1}{2} \times 60 \times 74 \times 400$	8,880,000	
	$238 \times \frac{60 + 108}{2} \times 400$	7,996,800	
	$200 \times \frac{108 + 152}{2} \times 400$	10,400,000	
	$200 \times \frac{152 + 144}{2} \times 400$	11,840,000	
	$200 \times \frac{144 + 125}{2} \times 400$	10,760,000	
	$56 \times 125 \times 400$	2,800,000	
	$\frac{1}{2} \times 130 \times 184 \times 400$	4,784,000	
64+00W	$\frac{1}{2} \times 165 \times 195 \times 400$	6,435,000	
	$54 \times 163 \times 400$	3,520,800	
	$200 \times 155 \times 400$	12,400,000	
	$200 \times 130 \times 400$	10,400,000	
	$60 \times 110 \times 400$	2,640,000	
	$\frac{1}{2} \times 175 \times 124 \times 400$	4,340,000	

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<u>Section</u>	<u>Volume</u>	<u>Ft.³</u>
60+00W	$\frac{1}{2} \times 68 \times 240 \times 300$	2,448,000
	$\frac{1}{2} \times 90 \times 250 \times 300$	3,375,000
		<hr/>
		111,747,600 @ 18 Ft. ³ /ton= <u>6,208,200 tons</u>
	=	4,138,800 Yd. ³

(C) Ore Volumes

<u>Section</u>	<u>Volume</u>	<u>Ft.³</u>	<u>Grade</u>	<u>D.D.H.#</u>
72+00W	Nil			
68+00W	158 x 38 x 400	2,401,600	2.78 4.69 2.23	A-13
	159 x 20 x 400	1,272,000	4.52 4.11 2.25	A-13
	$60 \times \frac{100 + 190}{2} \times 400$	3,480,000		A-23
	$40 \times \frac{190 + 205}{2} \times 400$	3,152,000	3.92 7.64 1.80	A-23
	$100 \times \frac{201 + 203}{2} \times 400$	8,080,000		A-23
	$\frac{105 + 110}{2} \times 45 \times 400$	1,926,000	5.16 10.00 2.10	A-45
	105 x 45 x 400	1,890,000	" " "	A-45
	100 x 76 x 400	3,040,000	4.09 7.06 1.58	A-45
	$110 \times \frac{74 + 54}{2} \times 400$	2,816,000	" " "	A-45
64+00W	$\frac{80 \times 49}{2} \times 400$	784,000	4.08 6.92 2.32	A-28
	$67 \times \frac{102 + 135}{2} \times 400$	3,162,400	5.47 10.71 2.13	A-26
	24 x 134 x 400	1,267,200	" " "	A-26

.....continued.....

<u>Section</u>	<u>Volume</u>	<u>Ft.³</u>	<u>Grade</u>	<u>D.D.H.#</u>
64+00W	100 x 132 x 400	5,280,000	5.47 10.71 2.13	A-26

$$38,551,200 @ 8.0 \text{ Ft.}^3 / \text{ton} = 4,818,900 \text{ tons}$$

$$= 1,427,822 \text{ Yd.}^3$$

Vol. pit total rock	=	120,107,800	Ft. ³	
Vol. pit ore		<u>38,441,200</u>	Ft. ³	
Vol. pit waste	=	81,556,600	Ft. ³	@ 12.0 Ft. ³ / ton = 6,796,383 tons

Ratio ore to waste rock = only

$$4,818,900 : 6,796,383$$

$$= 1:1.41$$

Ratio ore to total waste & OB

$$4,818,900 : 6,796,383 + 6208200$$

$$4,818,900 : 13,004,583$$

$$= 1: 2.70$$

Allow 15% extra waste for development of roads and berms.

∴ Total waste = 13,004,583 x 1.15

$$= 14,955,270 \text{ tons}$$

i.e. 7,815840 waste rock and 7,139430 tons O.B.

∴ Ratio = 4,818,900 : 14,955,270

$$= 1 : 3.10$$

..... continued

- (B) Pit slopes at 50° in rock
 38° in overburden

Following factors used:

Ore 8.0 Ft.³/ton
 Waste 12.0 Ft.³/ton
 Overburden 18.0 Ft.³/ton

Pit slopes Rock 50°
 Overburden 38°

No pit roads or detailed berm desing

Ore calculations

Grades and tonnages projected

- (1) 100 Ft. N-S from D. D. intersections
- (2) 200 Ft. East-West from section line
- (3) $\frac{1}{2}$ way to nearest D.D.H. if less than above

Volume calculations

(a) Rock section total pit

<u>Section</u>	<u>Volume</u>	<u>Ft.³</u>
72+00W	$\frac{70 \times 210 \times 400}{2}$	2,940,000
	$\frac{70 \times 240 \times 400}{2}$	3,360,000
68+00W	$\frac{180 \times 165 \times 400}{2}$	5,940,000
	$\frac{120 + 310}{2} \times 158 \times 400$	13,588,000
	$\frac{1}{2} \times 40 \times 200 \times 400$	1,600,000

...continued.....

<u>Section</u>	<u>Volume</u>	<u>Ft.</u> ³
68+00W	100 x 312 x 400	12,480,000
	$\frac{1}{2}$ x 190 x 146 x 400	5,548,000
	135 x 128 x 400	6,912,000
	70 x 141 x 400	3,948,000
	$\frac{1}{2}$ x 168 x 134 x 400	4,502,400
64+00W	$\frac{1}{2}$ x 160 x 130 x 400	4,160,000
	175 x 160 x 400	11,200,000
	$\frac{1}{2}$ x 178 x 208 x 400	9,968,000
60+00W	Nil	_____
		86,146,400 Ft. ³

Overburden

<u>Section</u>	<u>Volume</u>	<u>Ft.</u> ³
72+00W	30 x $\frac{95}{2}$ x 400	570,000
	$\frac{30 + 42}{2}$ x 200 x 400	2,880,000
	$\frac{42 + 58}{2}$ x 200 x 400	4,000,000
	38 x 58 x 400	881,600
	$\frac{1}{2}$ x 80 x 250 x 400	4,000,000
68+00W	$\frac{1}{2}$ x 70 x 85 x 400	1,190,000
	$\frac{105 + 149}{2}$ x 200 x 400	10,160,000
	$\frac{105 + 70}{2}$ x 167 x 400	5,845,000

.....continued.....

<u>Section</u>	<u>Volume</u>	<u>Ft.</u> ³
68+00W	$\frac{149 + 145}{2} \times 200 \times 400$	11,760,000
	$\frac{145 + 130}{2} \times 200 \times 400$	11,000,000
	145 x 20 x 400	1,160,000
	$\frac{1}{2} \times 148 \times 195 \times 400$	5,772,000
64+00W	$\frac{1}{2} \times 240 \times 170 \times 400$	7,140,000
	30 x 170 x 400	2,040,000
	200 x 155 x 400	12,400,000
	200 x 135 x 400	10,800,000
	37 x 110 x 400	1,628,000
	181 x 128 x 400	9,267,200
60+00W	$\frac{1}{2} \times 210 \times 63 \times 300$	1,984,500
	$\frac{1}{2} \times 63 \times 184 \times 300$	1,738,800

$106,217,100 \text{ Ft.}^3 @ 18 \text{ Ft.}^3/\text{ton} =$
 $5,900,950 \text{ tons} = 3,933,966 \text{ Yd.}^3$

Total tons + 15% for roads = 6,786,092 tons

Ore Volumes

<u>Section</u>	<u>Volume</u>	<u>Ft.</u>	<u>Grade</u>	<u>D.D.H.</u>
72+00W		Nil		
68+00W	158 + 38 x 400	2,401,600	2.78 4.69 2.23	A-13

.....continued.....

<u>Section</u>	<u>Volume</u>	<u>Ft.</u> ³	<u>Grade</u>	<u>D.D.H.</u>
68+00W	159 + 20 x 400	1,272,000	4.52 4.11 2.25	A-13
	60 x $\frac{100 + 190}{2}$ x 400	3,480,000	3.92 7.64 1.80	A-23
	40 x $\frac{100 + 205}{2}$ x 400	3,152,000	" " "	A-23
	100 x $\frac{202 + 203}{2}$ x 400	8,080,000	" " "	A-23
	$\frac{105 + 110}{2}$ x 45 x 400	1,926,000	5.16 10.11 2.10	A-45
	105 x 45 x 400	1,890,000	" " "	A-45
	100 + 76 x 400	3,040,000	4.09 7.06 1.58	A-45
	110 x $\frac{74 + 54}{2}$ x 400	2,816,000	" " "	A-45
64+00W	80 x $\frac{49}{2}$ x 400	78,400	4.08 6.92 2.32	A-28
	67 x $\frac{102 + 135}{2}$ x 400	3,162,400	5.47 10.71 2.13	A-26
	24 x 132 x 400	1,267,200	" " "	A-26
	100 x 132 x 400	5,280,000	" " "	A-26

38,551,200 @ 8.0 Ft.³/ton = 4,818,900 tons

Volume Total pit rock =

Total rock	86,146,400 Ft. ³
Ore	<u>38,551,200 Ft.³</u>
Waste	47,595,200 Ft. ³

47,595,200 Ft.³ @ 12.0 Ft.³/ton = 3,966,266 tons

.....continued.....

Ratio Ore : Waste rock only

4,818,900 : 3,966,266

1 : 0.82

Ratio Ore to total waste (rock & OB)

= 4,818,900 : 3,966,266 + 5,900,950

4,818,900 : 9,867,216 tons

= 1 : 2.05

Allow 15% extra waste rock & OB for development of roads and berms

Total waste = 9,867,216 x 1.15

= 11,347,298

∴ Ore, waste ratio becomes

4,818,900 : 11,347,298

= 1 : 2.35

Ore Grades

Same for both pit designs

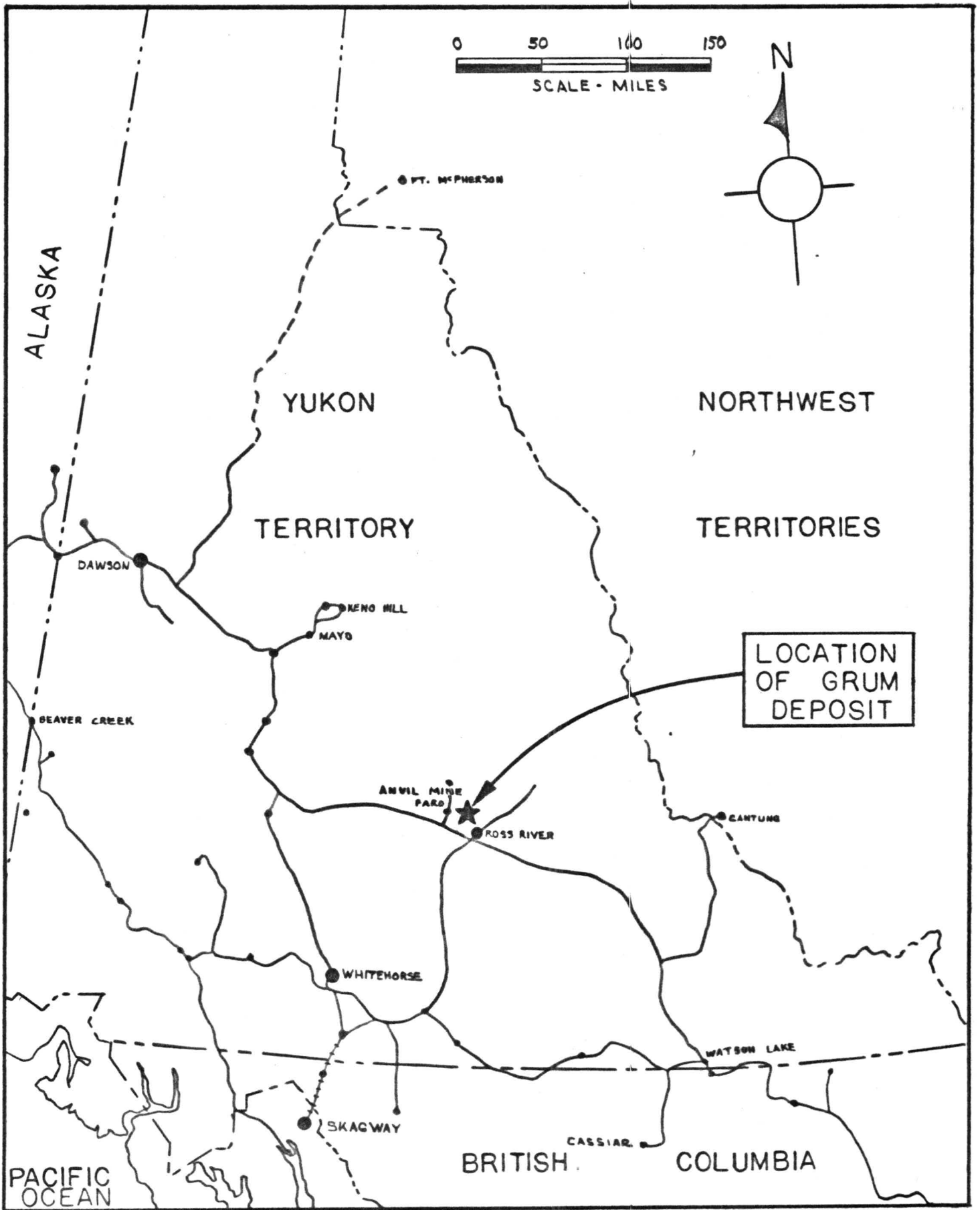
<u>Tons</u>	<u>Grade</u>			<u>Tons + Grade</u>			<u>D.D. #</u>
300,200	2.78	4.69	2.23	834,556	1,407,938	669,446	A-13
159,000	4.52	4.11	2.25	718,608	653,490	357,750	A-13
1,839,000	3.92	7.64	1.80	7,208,880	14,049,960	3,310,200	A-23
477,000	5.16	10.11	2.10	2,461,320	4,822,470	1,001,700	A-45
732,000	4.09	7.06	1.58	2,993,880	5,167,920	1,156,560	A-45

.....continued.....

<u>Tons</u>	<u>Grade</u>			<u>Tons + Grade</u>			<u>D.D.#</u>
98,000	4.08	6.92	2.32	399,840	678,160	227,360	A-28
1,213,700	5.47	10.71	2.13	6,638,939	12,998,727	2,585,181	A-26
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	
4,818,900	<u>4.41</u>	<u>8.25</u>	<u>1.93</u>	21,256,095	39,778,665	9,308,197	

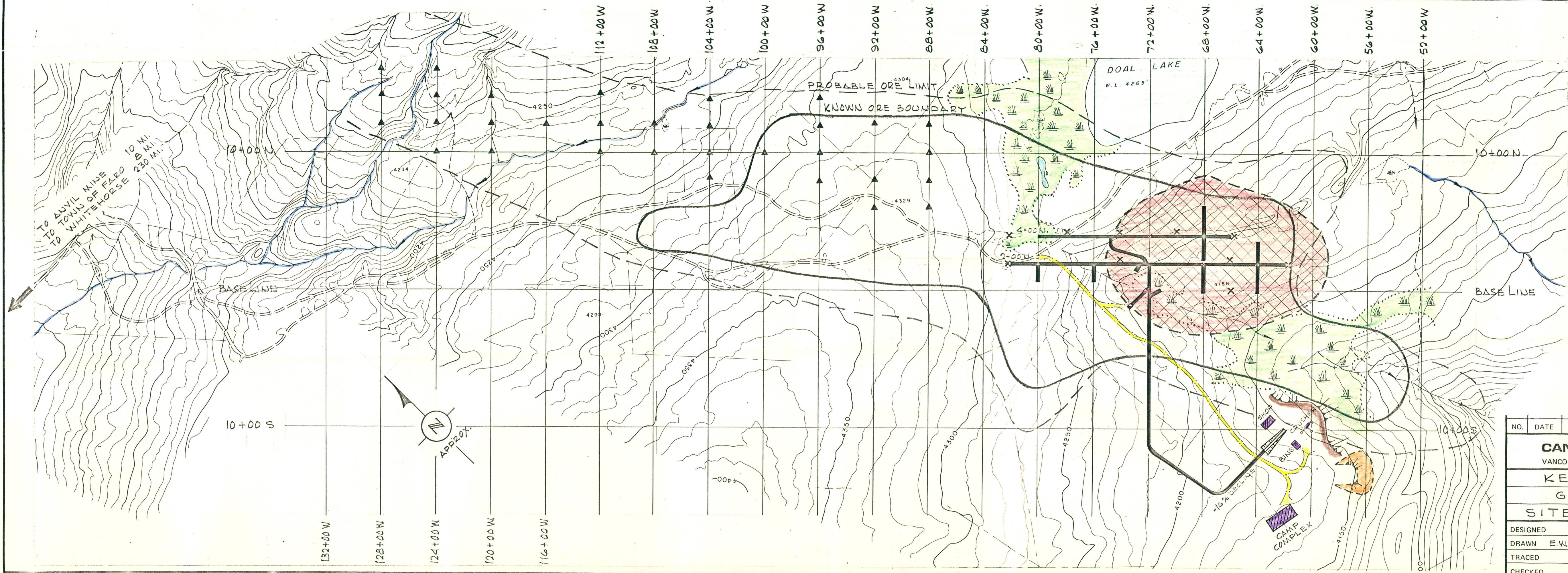
I L L U S T R A T I O N S

Location map	
Site general arrangement	
Cross sectional size of headings	
Portal layout - Plan	
Portal layout - Sections	
Composite plan	
Longitudinal section	2 +00N
Longitudinal section	4 +00N
Section	64+00W
	68+00W
	72+00W
	76+00W
	80+00W
Diesel drill operational envelope	
Diamond drill station in decline	
Main sump general arrangement	
Camp complex and repair shop layout	
Electrical schematic layout	
Work schedule	
Plant & crew contingent	
Open pit plan	45° layout
Open pit plan	50° layout
Open pit section	2+00W
Open pit section	60+00W
Open pit section	64+00W
Open pit section	68+00W
Open pit section	72+00W



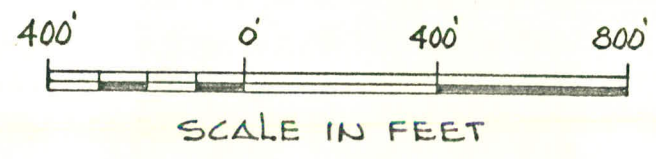
LOCATION MAP

A-1549

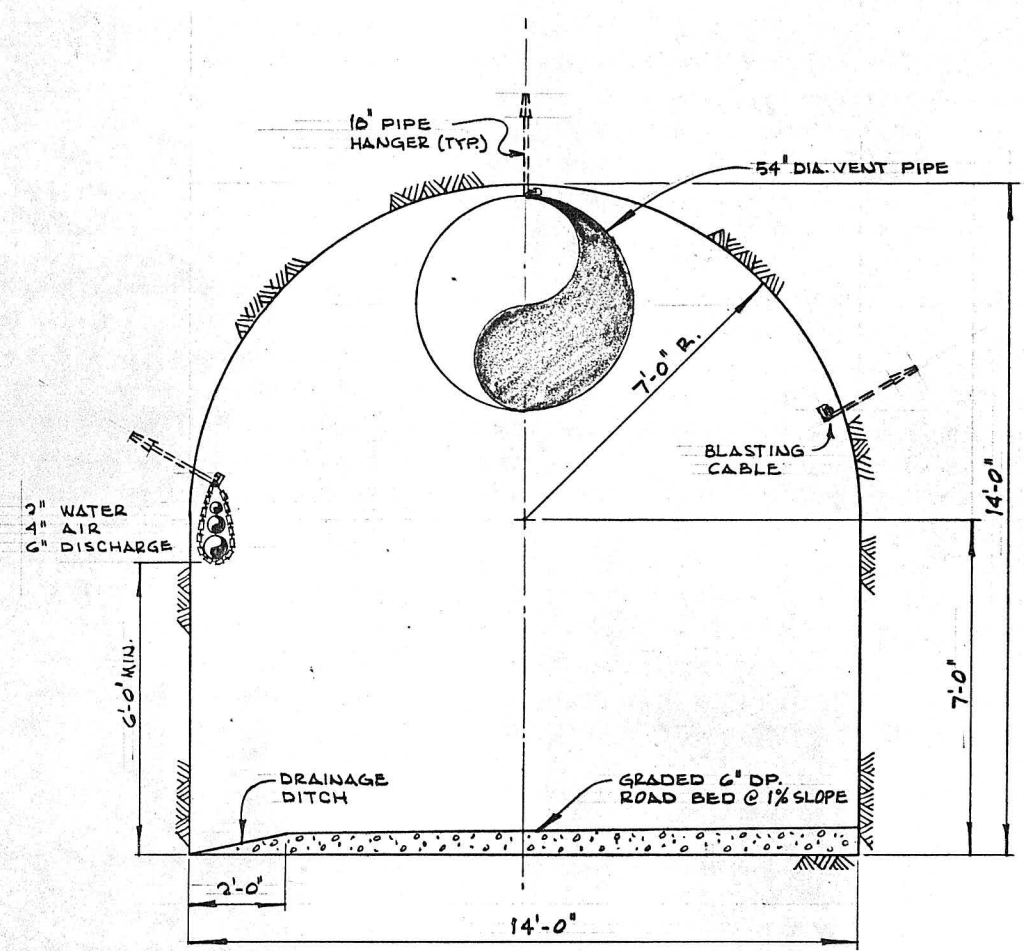


LEGEND

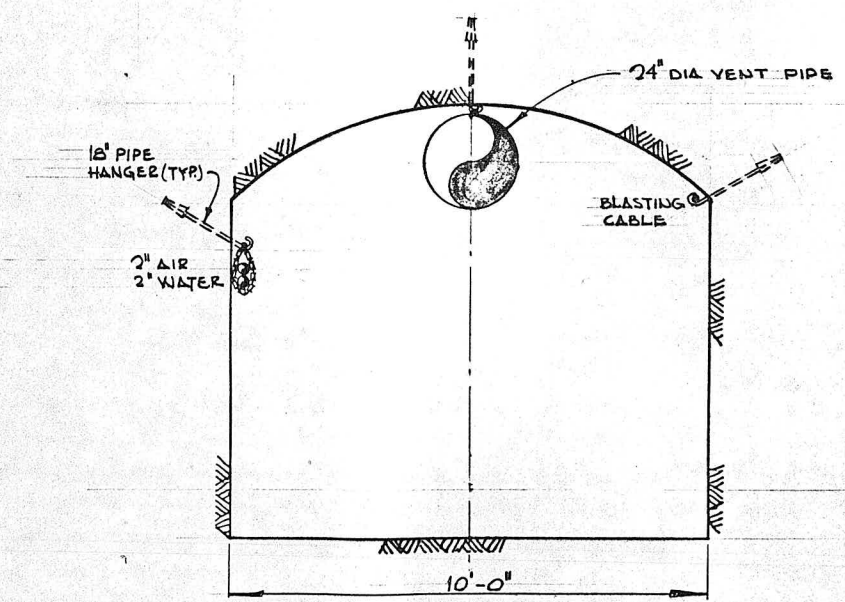
- === EXISTING ROADS
- +— CAMP & PORTAL ACCESS ROAD
- ▨ OPEN PIT AREA
- ORE STOCK PILE AREA
- ⌘ SPOILS DISPOSAL AREA
- UNDERGROUND DEVELOPMENT
- VENTILATION RSE. @ SURFACE
- ▨ SURFACE PLANT BUILDINGS
- ▲ SURFACE EXPLORATORY DIAMOND DRILL HOLES
- × SURFACE EXPLORATORY O.D. HOLES IN DEVELOPMENT AREA
- KNOWN ORE BOUNDARY
- - - PROBABLE ORE LIMIT
- MARSH



NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD.			
VANCOUVER, B.C.		CANADA	
KERR - ADDISON MINES LTD.			
GRUM DEPOSIT, Y.T.			
SITE GENERAL ARRANGEMENT			
DESIGNED	BILL OF MAT'L	DATE JAN. 29, 1975	
DRAWN E.W.M.	JOB. NO.	SCALE AS SHOWN	
TRACED	CLIENT	Dwg. No.	Rev.
CHECKED	APPROVED	1550	0

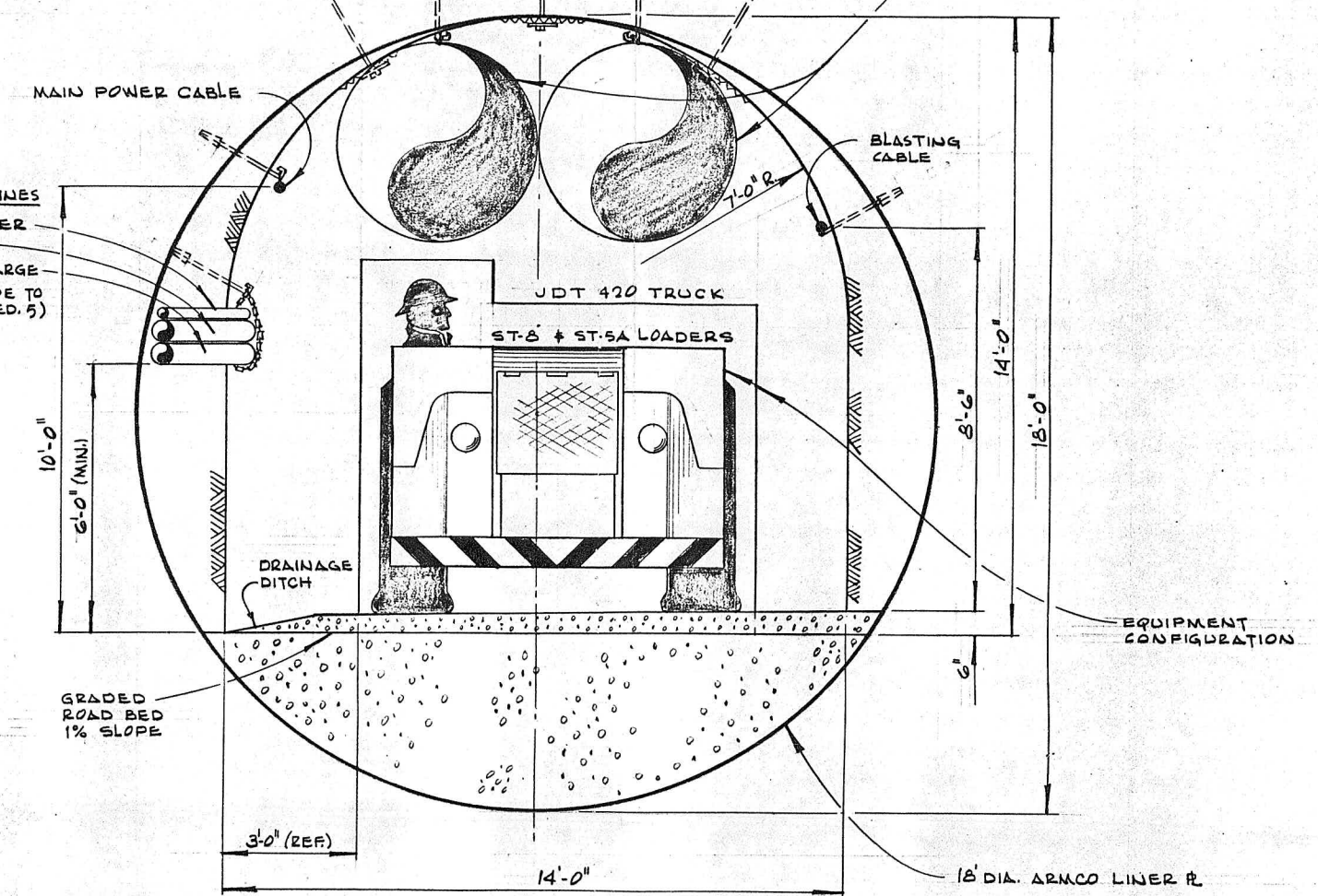


TYPICAL SECTION THRU 16% HEADINGS IN ORE

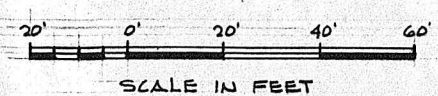


TYPICAL SECTION THRU X-CUTS NOMINAL 8' x 10' HEADING

5/8" + ROCK BOLTS x 6'-0" LG
 C/W 1 1/2" EXPANSION SHELL & SCREENING IF REQUIRED.
 4' x 4' PATTERN



SECTION B
 TRANSITION FROM 18'-0" DIA. CONDUIT PORTAL ENCLOSURE TO 14' x 14' ARCHED -16% ACCESS DECLINE IN WASTE.

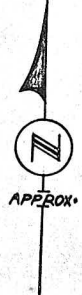
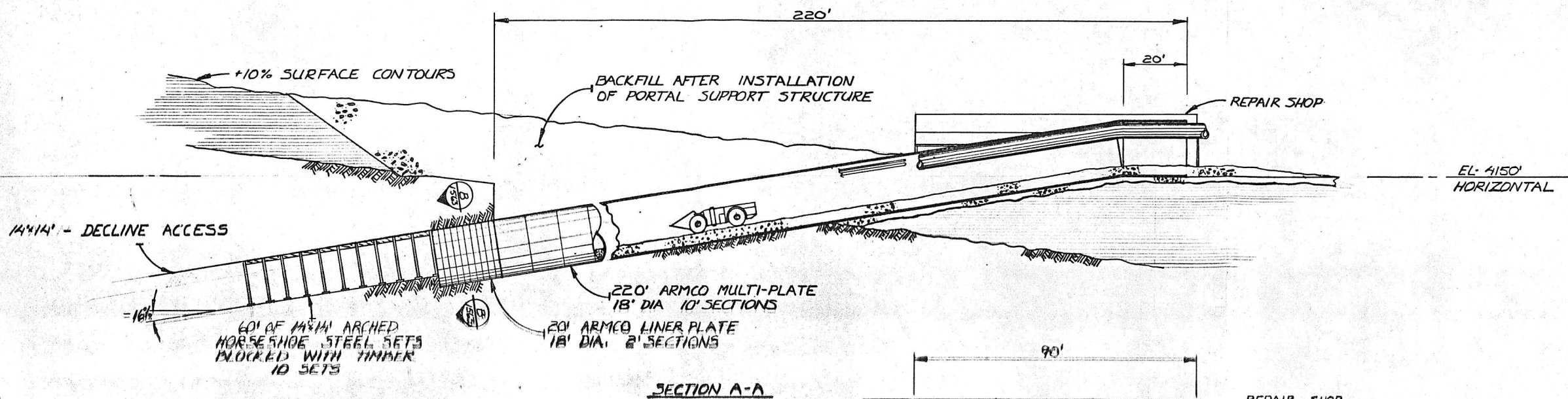


1562	PORTAL LAYOUT X-SECS.
1561	PORTAL LAYOUT
1551	COMPOSITE PLAN
DWG. NO.	REFERENCE DRAWINGS

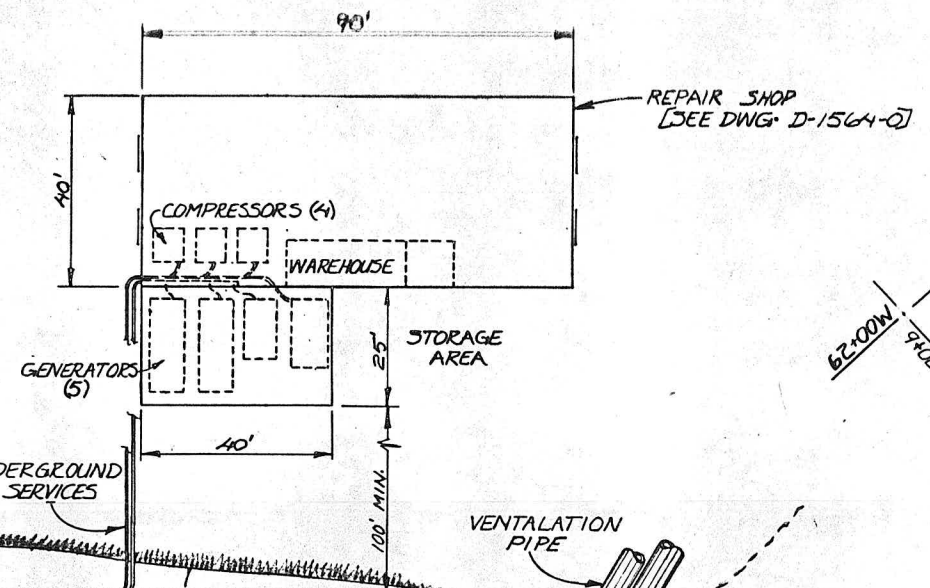
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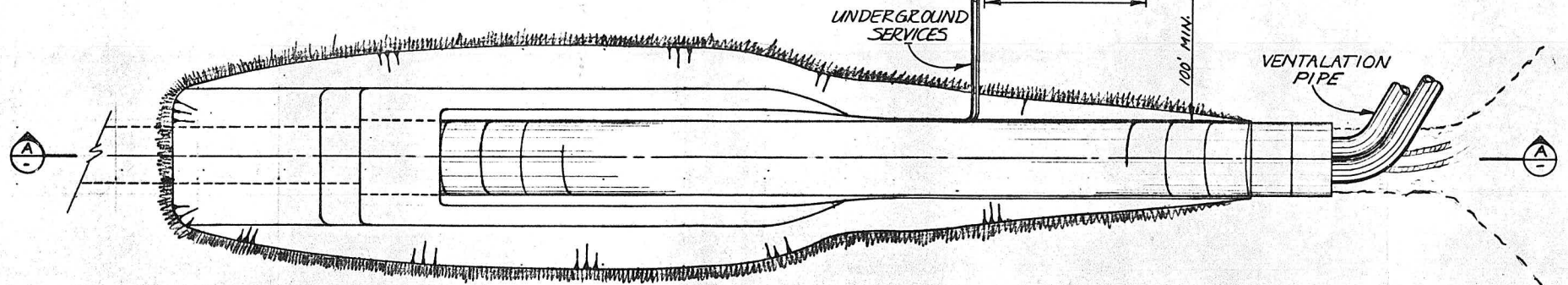
NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD. GRUM DEPOSIT, Y.T.			
CROSS SECTIONAL SIZING OF HEADINGS			
DESIGNED	BILL OF MAT'L	DATE	JAN 30 '75
DRAWN E.W.M.	JOB. NO.	SCALE	AS SHOWN
TRACED	CLIENT	Dwg. No.	Rev.
CHECKED	APPROVED	D. 1559	0



64+00W / 11+00S



62+00W / 9+00S



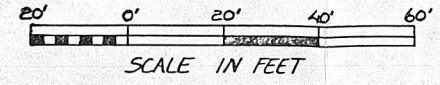
64+00W / 13+00S

**PLAN
PROPOSED PORTAL COLLAR
AND SUPPORT STRUCTURE**

62+00W / 11+00S

LEGEND

- OVER BURDEN
- SOLID ROCK
- ROCK FILL

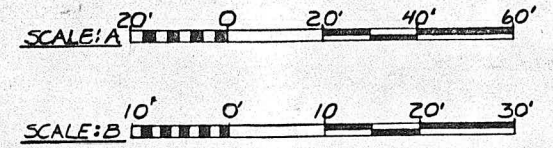
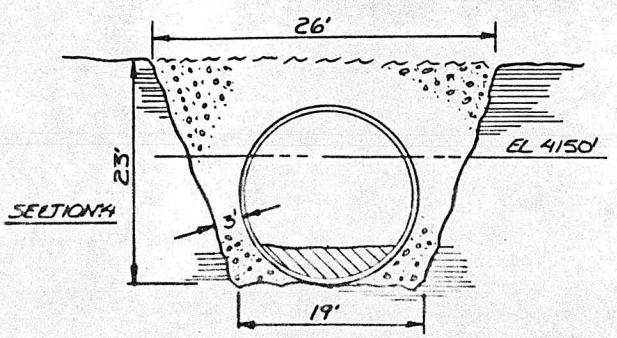
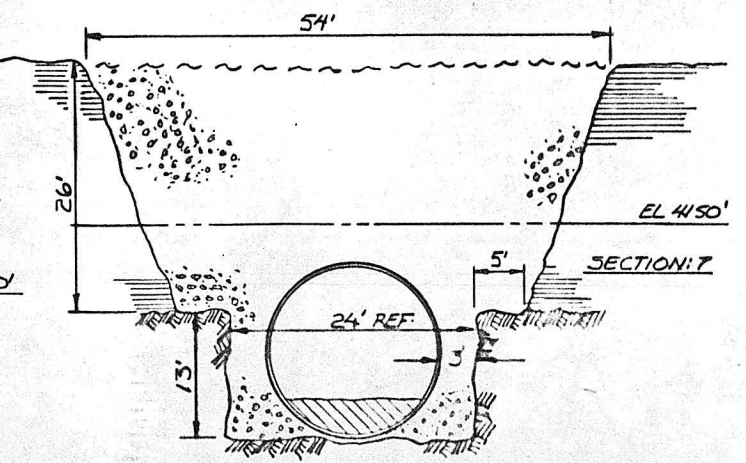
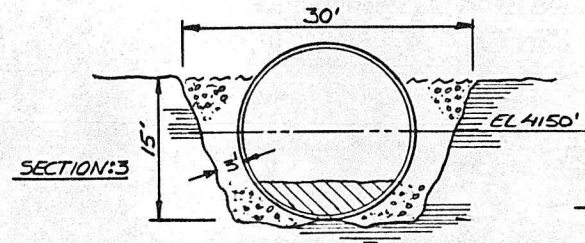
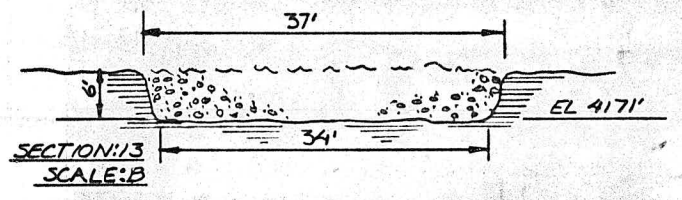
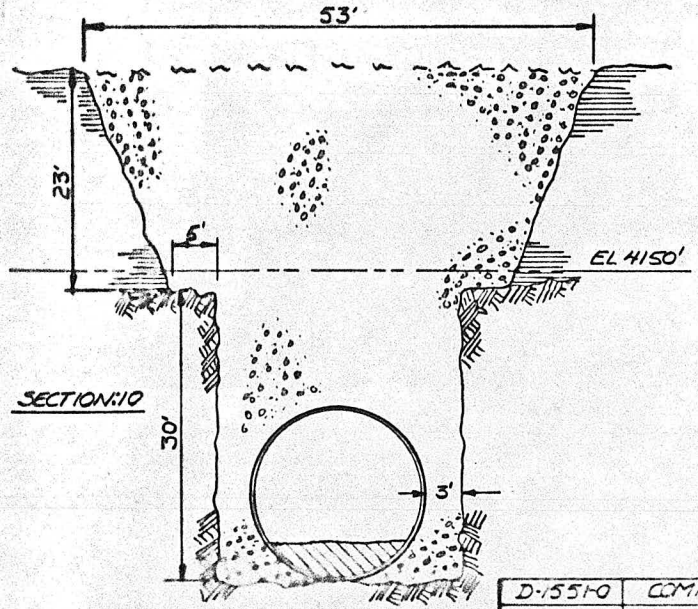
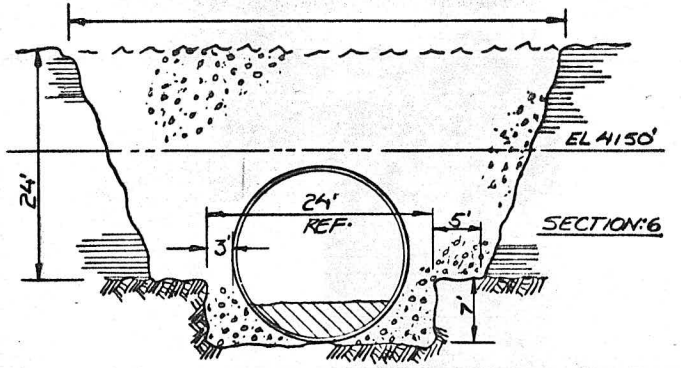
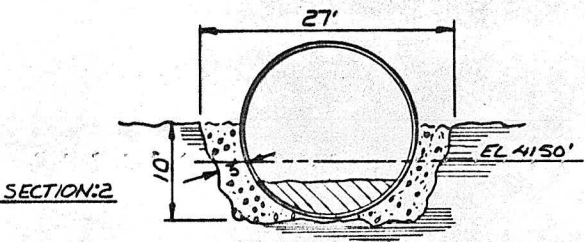
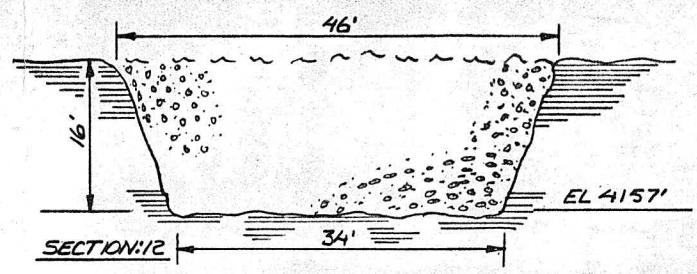
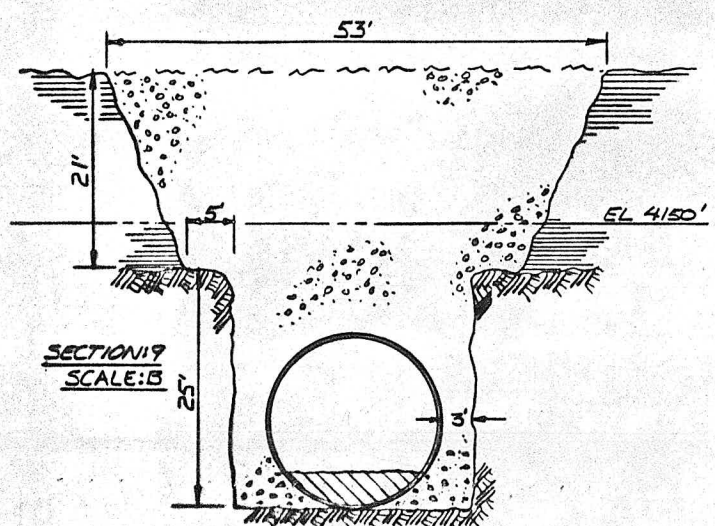
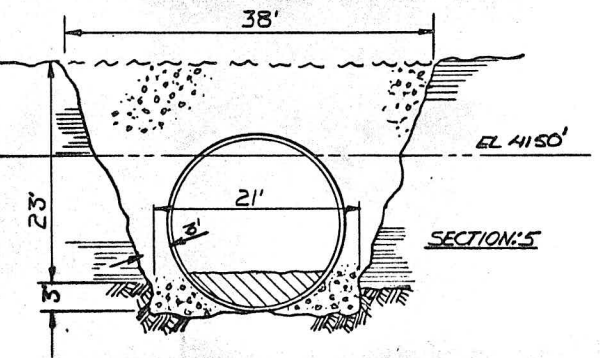
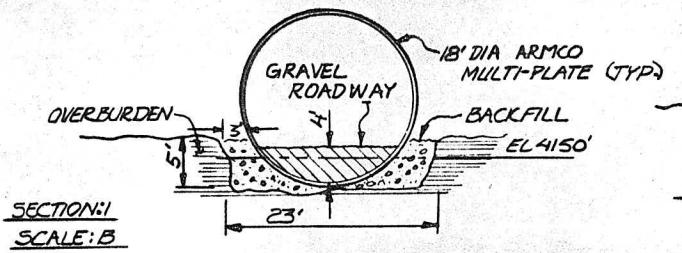
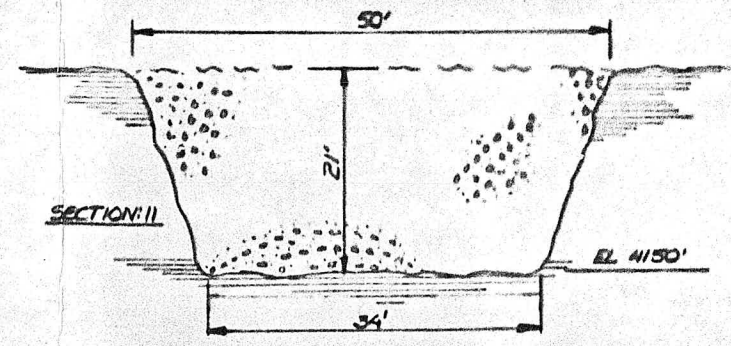
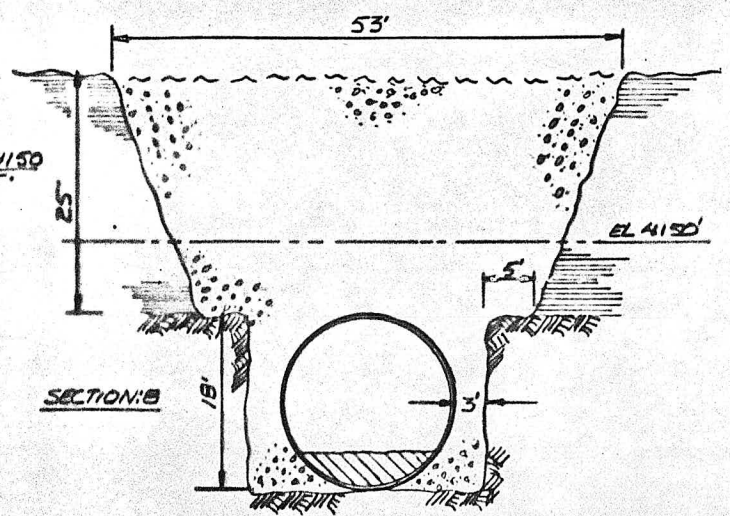
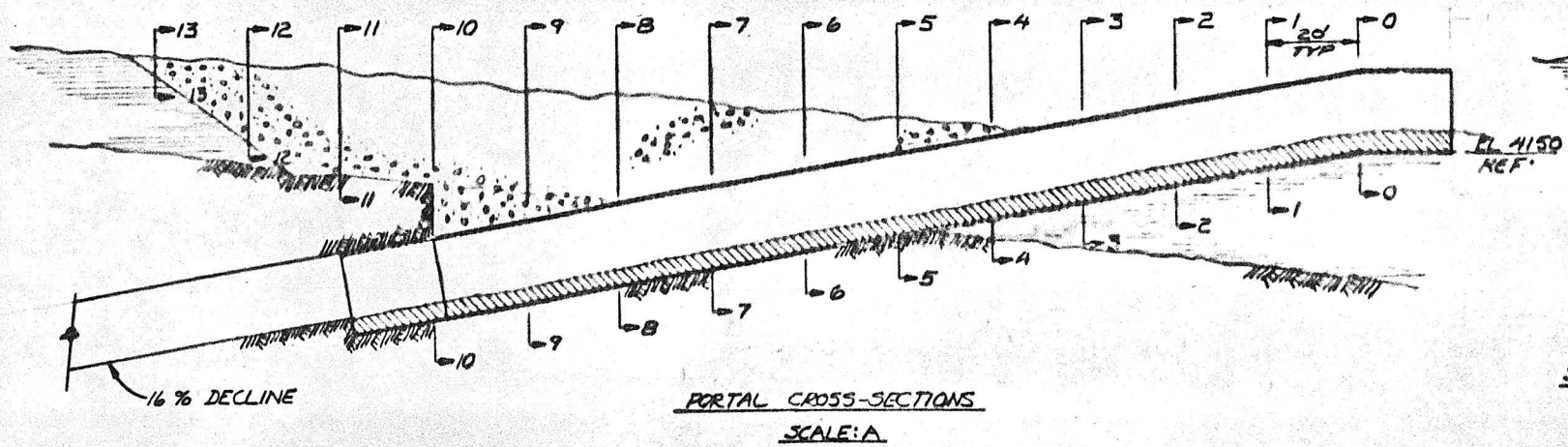


D-1562-0	PORTAL LAYOUT SECTIONS
D-1551-0	COMPOSITE PLAN
DWG. NO.	REFERENCE DRAWINGS

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CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD. GRUM DEPOSIT PORTAL LAYOUT			
DESIGNED	BILL OF MAT'L	DATE JAN 28/75	
DRAWN J.D.	JOB. NO.	SCALE AS SHOWN	
TRACED	CLIENT	Dwg. No.	Rev.
CHECKED	APPROVED	D.1561	0











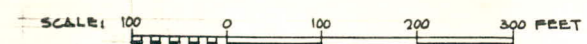
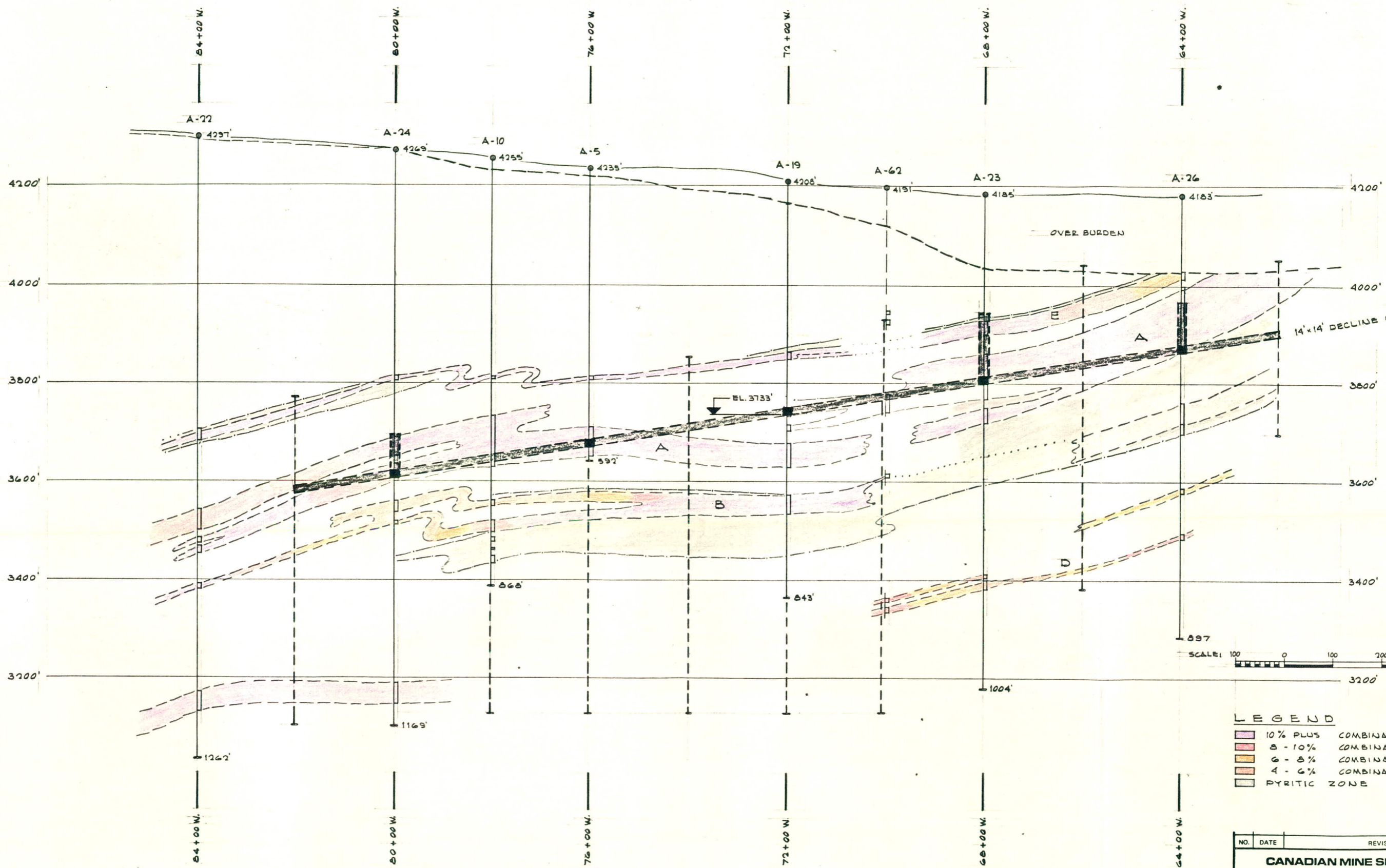
D-15510 COMPOSITE PLAN
D-15610 PORTAL LAYOUT
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NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD. GRUM PROJECT			
PORTAL LAYOUT CROSS-SECTIONS			
DESIGNED	BILL OF MAT'L	DATE JAN 29/75	
DRAWN T.V.	JOB NO.	SCALE AS SHOWN	
TRACED	CLIENT	Dwg. No.	Rev.
CHECKED	APPROVED	D. 1562	0

ADVANCE BY MONTH

LEGEND

	2nd Month
	3rd Month
	4th Month
	5th Month
	6th Month
	7th Month
	8th Month
	9th Month



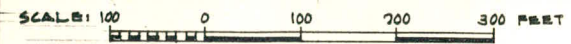
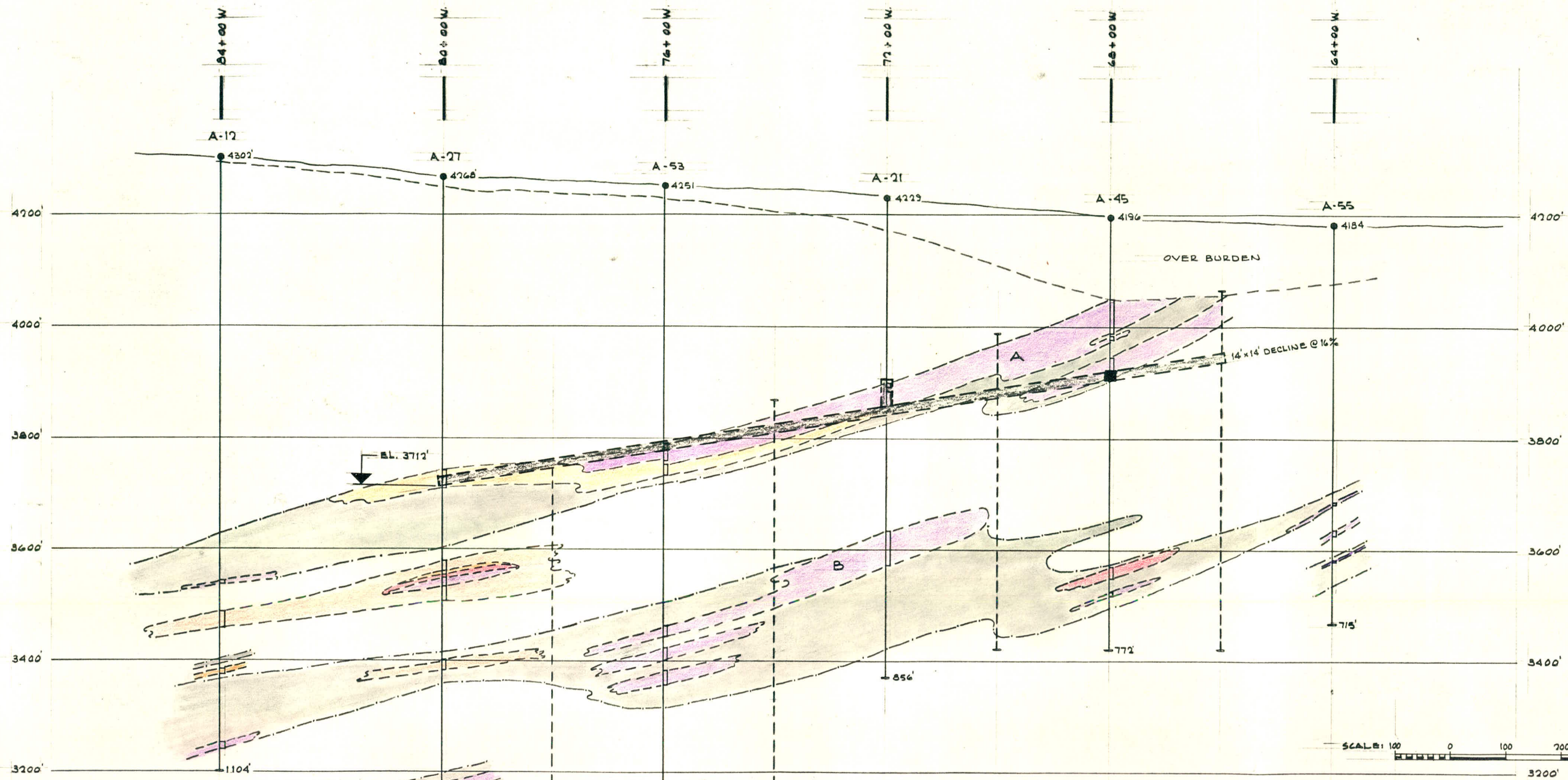
- LEGEND**
- 10% PLUS COMBINATION Pb + Zn.
 - 8 - 10% COMBINATION Pb + Zn.
 - 6 - 8% COMBINATION Pb + Zn.
 - 4 - 6% COMBINATION Pb + Zn.
 - PYRITIC ZONE

NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD.			
VANCOUVER, B.C.		CANADA	
KERR-ADDISON MINES LTD.			
GRUM DEPOSIT, Y.T.			
LONGITUDINAL SECTION 2+00 N			

DWG. NO.	REFERENCE DRAWINGS	DESIGNED	BILL OF MAT'L	DATE
				JAN. 15 '75
		E.W.M.		SCALE AS SHOWN
			CLIENT	Dwg. No.
			APPROVED	D. 1552
				Rev. 0

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- LEGEND**
- 10% PLUS COMBINATION Pb+Zn
 - 8 - 10% COMBINATION Pb+Zn
 - 6 - 8% COMBINATION Pb+Zn
 - 4 - 6% COMBINATION Pb+Zn
 - PYRITIC ZONE

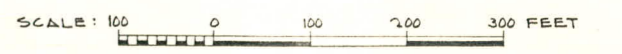
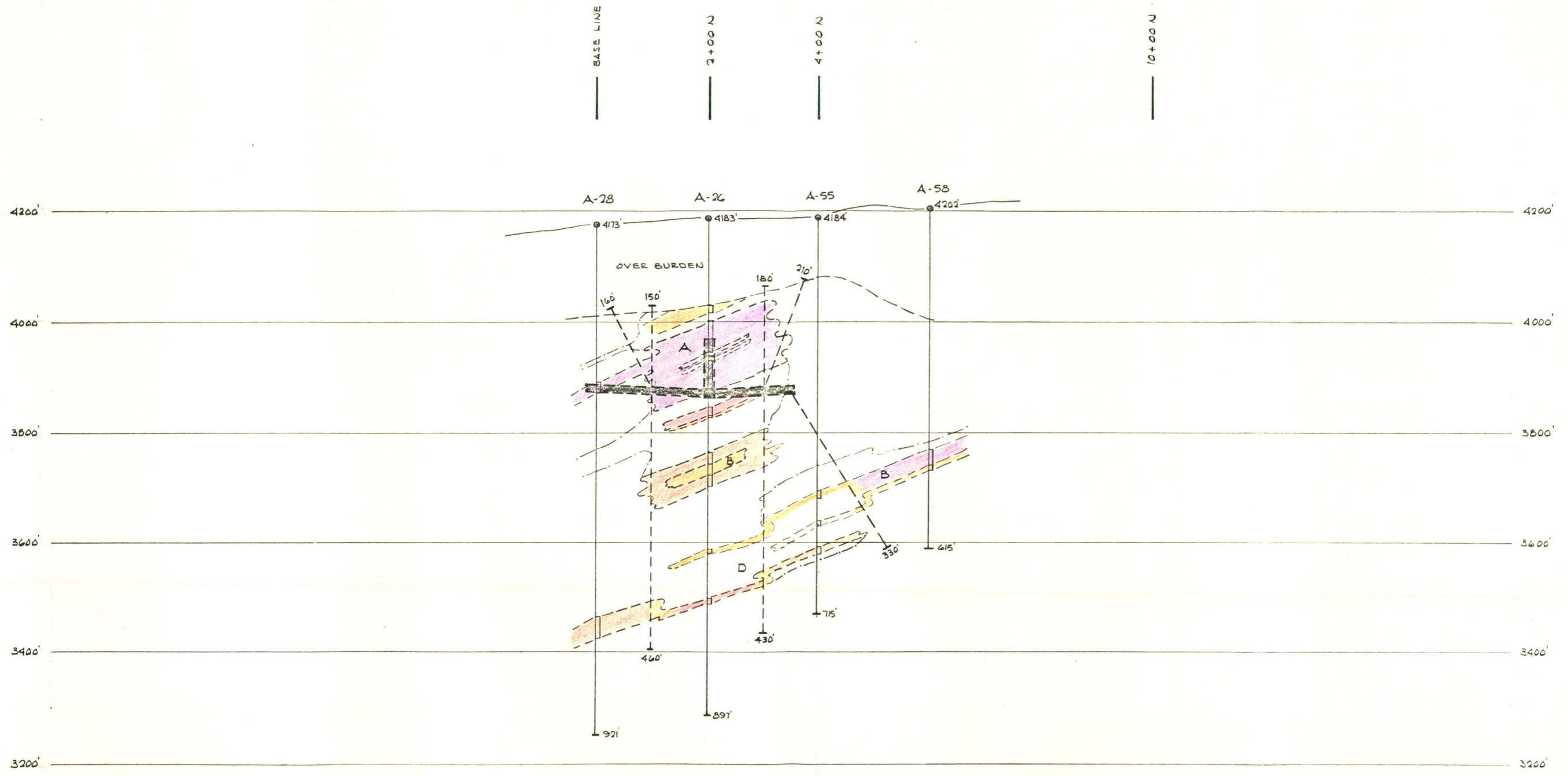
NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD.			
VANCOUVER, B.C.		CANADA	
KERR-ADDISON MINES LTD.			
GRUM DEPOSIT, Y.T.			
LONGITUDINAL SECTION 4+00 N.			

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 FRACTIONAL + 1/64" DECIMAL + .010" ANGULAR + 1/2°

DESIGNED	BILL OF MAT'L	DATE	JAN 15 '75
DRAWN E.W.M.	JOB. NO.	SCALE AS SHOWN	
TRACED	CLIENT	Dwg. No.	Rev.
CHECKED	APPROVED	D. 1553	0

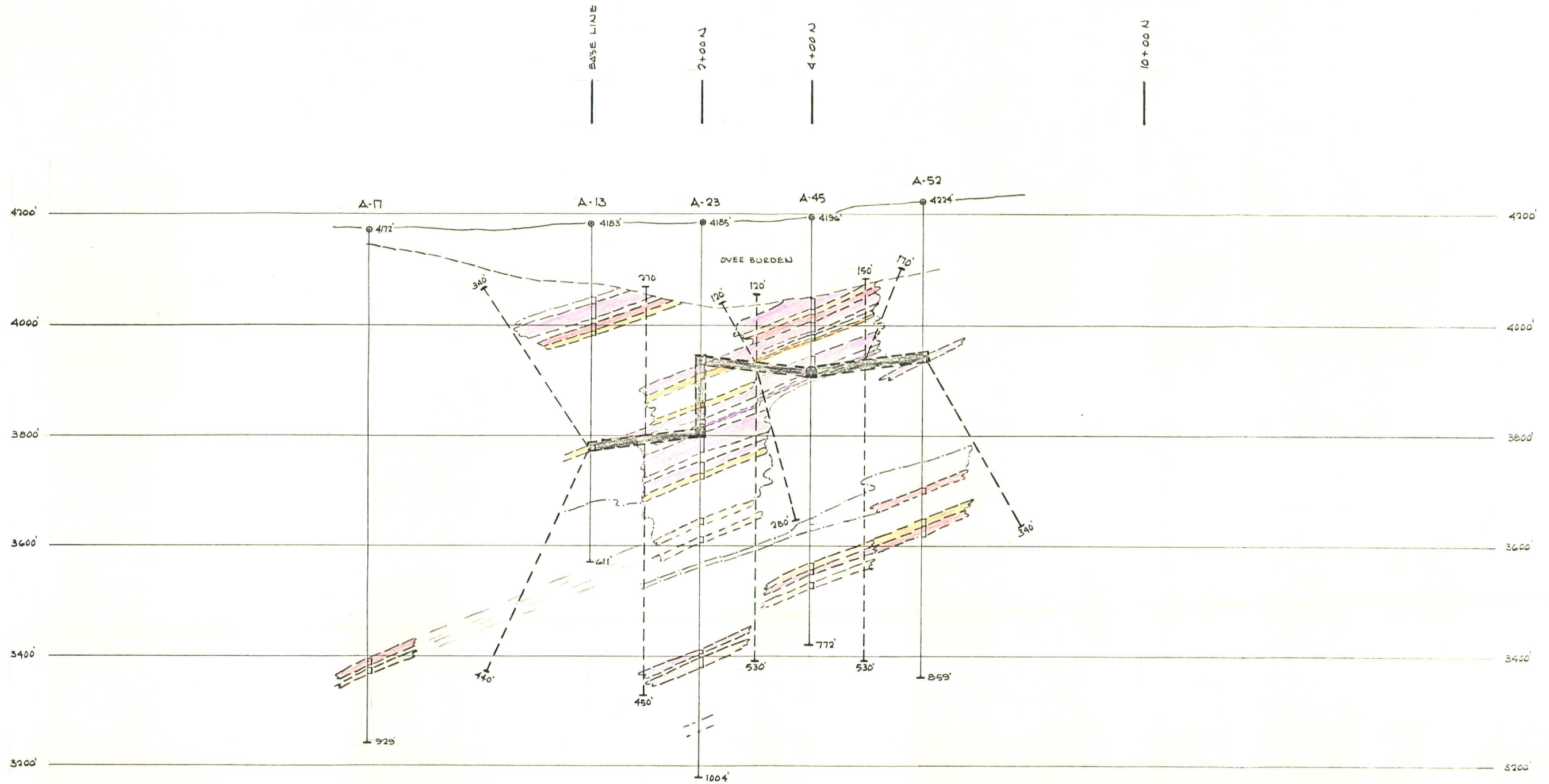


NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD.			
GRUM DEPOSIT, Y.T.			
SECTION 64+00 W.			
DESIGNED	BILL OF MAT'L	DATE	JAN. 16 '75
DRAWN E.W.M.	JOB. NO.	SCALE	AS SHOWN
TRACED	CLIENT	Dwg. No.	1554
CHECKED	APPROVED	Rev.	0

DWG. NO. REFERENCE DRAWINGS

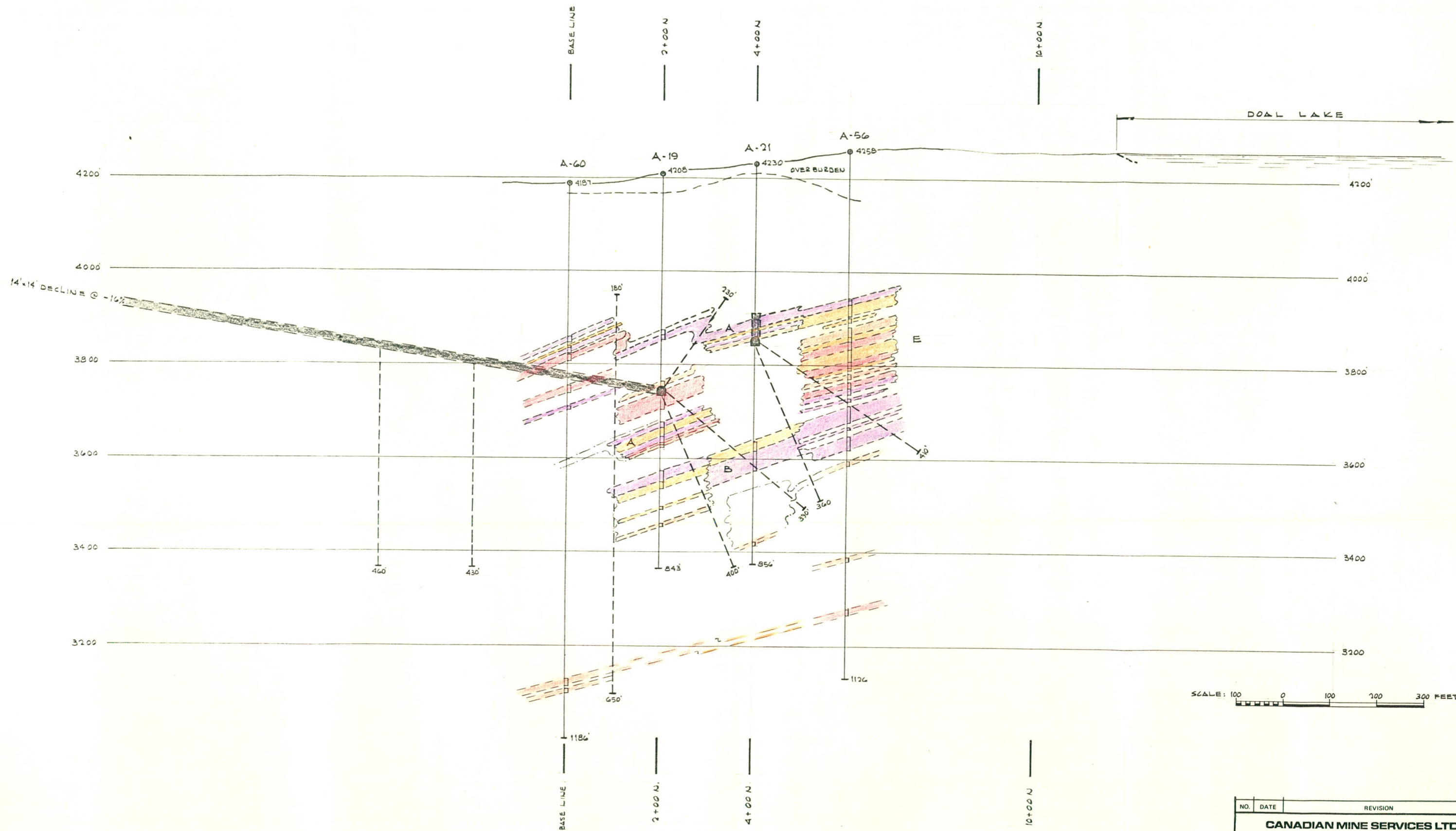
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FRACTIONAL + 1/64" DECIMAL + .010" ANGULAR + 1/2°



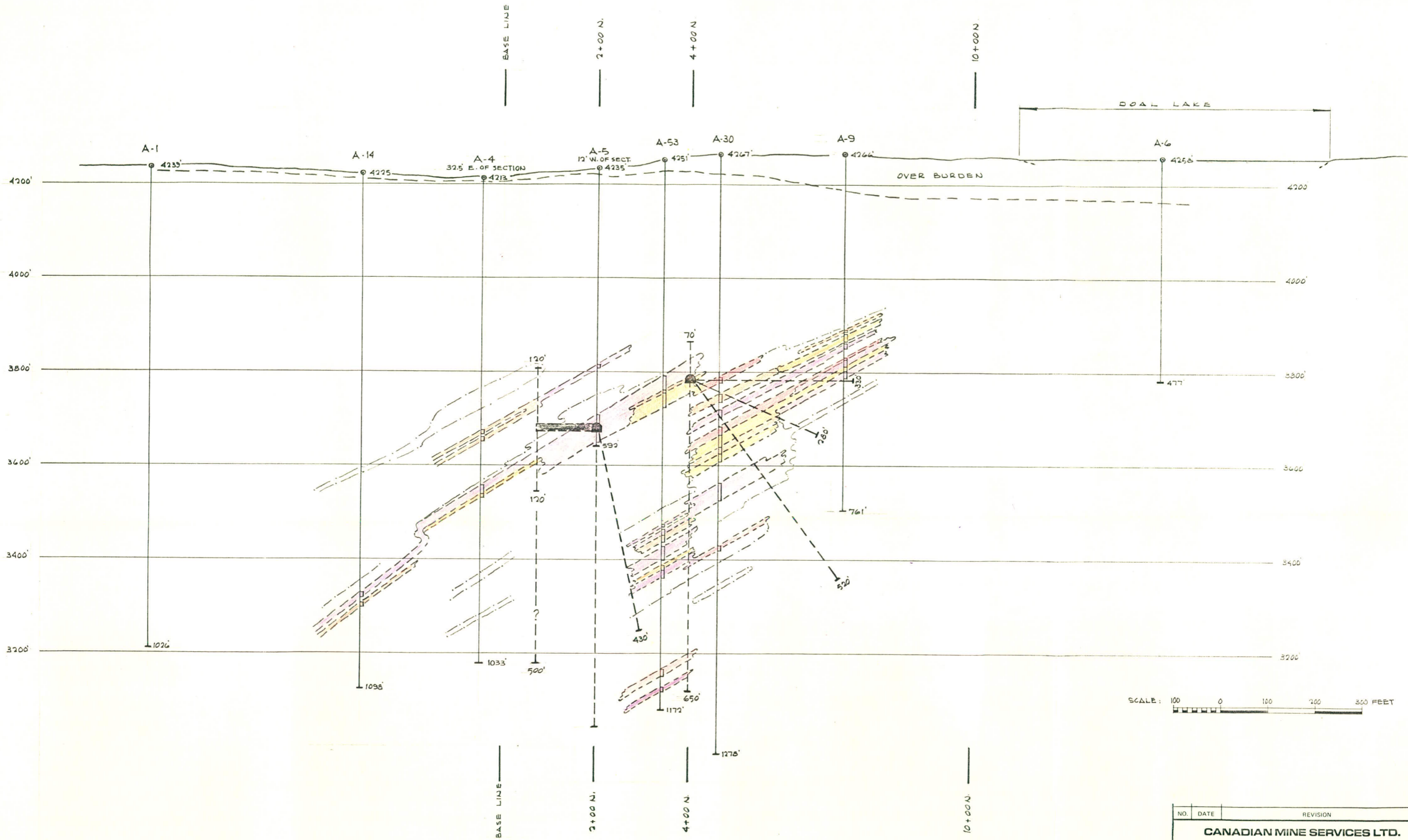
SCALE: 100 0 100 200 300 FEET

NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD.			
VANCOUVER, B.C.		CANADA	
KERR-ADDISON MINES LTD.			
GRUM DEPOSIT, Y.T.			
SECTION 68+00 W.			
DWG. NO.	REFERENCE DRAWINGS	DESIGNED	BILL OF MAT'L
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		TRACED	CLIENT
<small>MECHANICAL LIMITS, UNLESS OTHERWISE NOTED: FRACTIONAL + 1/64" DECIMAL + .010" ANGULAR + 1/2°</small>		CHECKED	APPROVED
		DATE JAN 16 '75	SCALE AS SHOWN
		Dwg. No.	Rev.
		D. 1555	0



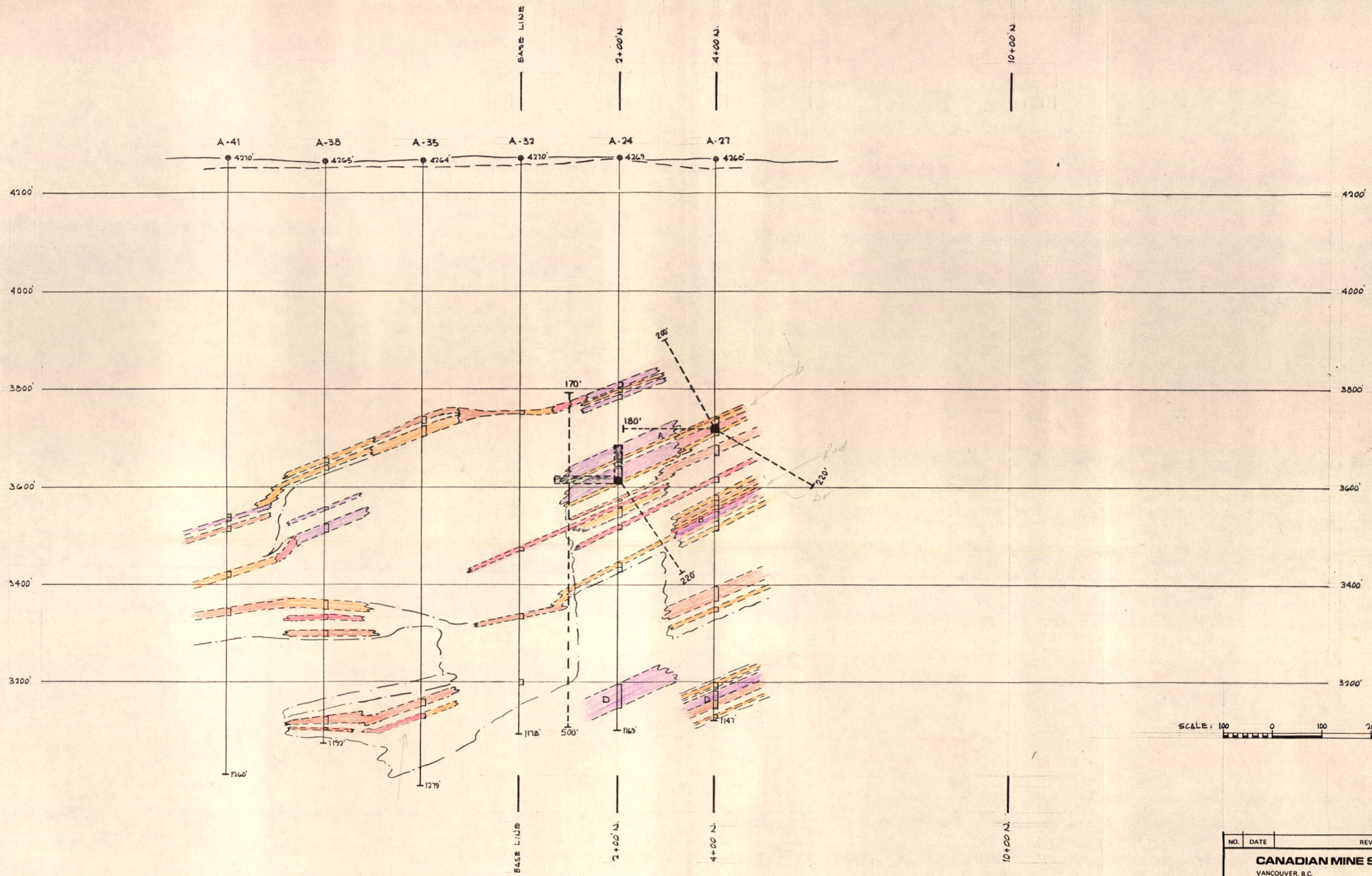
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NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD.			
VANCOUVER, B.C.		CANADA	
KERR-ADDISON MINES LTD.			
GRUM DEPOSIT, Y.T.			
SECTION 72+00 W			
DESIGNED	BILL OF MAT'L	DATE JAN. 16 '75	
DRAWN E.W.M.	JOB NO.	SCALE AS SHOWN	
TRACED	CLIENT	Dwg. No.	Rev.
CHECKED	APPROVED	D. 1556	0



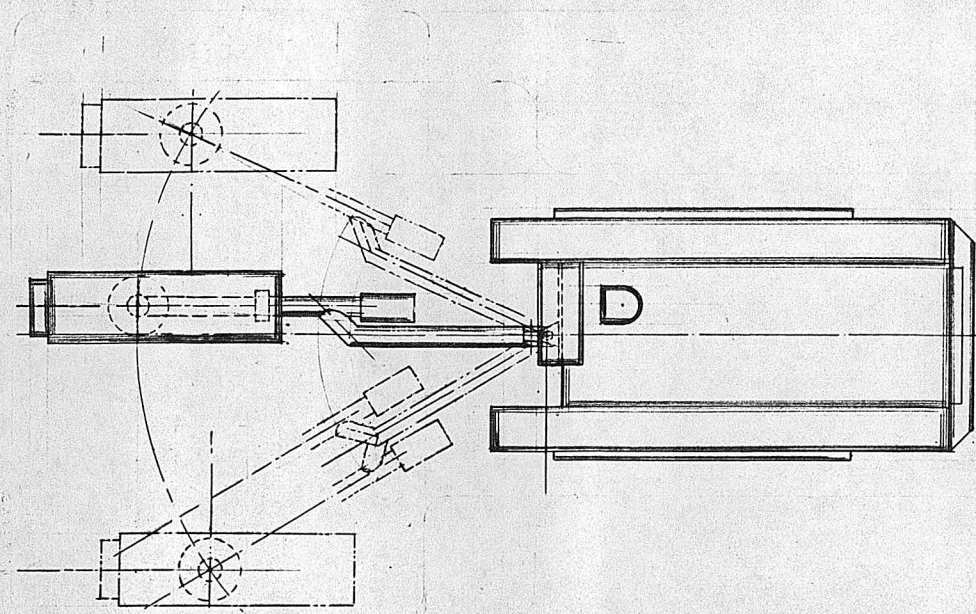
DWG. NO. REFERENCE DRAWINGS
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NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD.			
VANCOUVER, B.C.		CANADA	
KERR-ADDISON MINES LTD.			
GRUM DEPOSIT, Y.T.			
SECTION 76+00 W.			
DESIGNED	BILL OF MAT'L	DATE JAN. 18 '75	
DRAWN E.W.M.	JOB NO.	SCALE AS SHOWN	
TRACED	CLIENT	Dwg. No.	Rev.
CHECKED	APPROVED	D. 1557	0

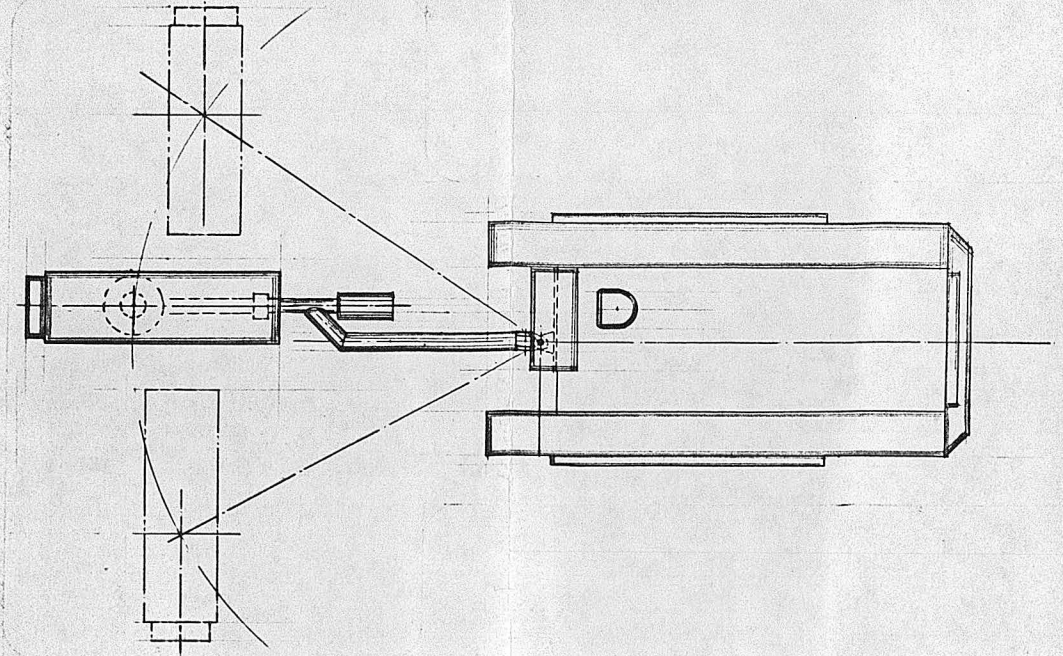


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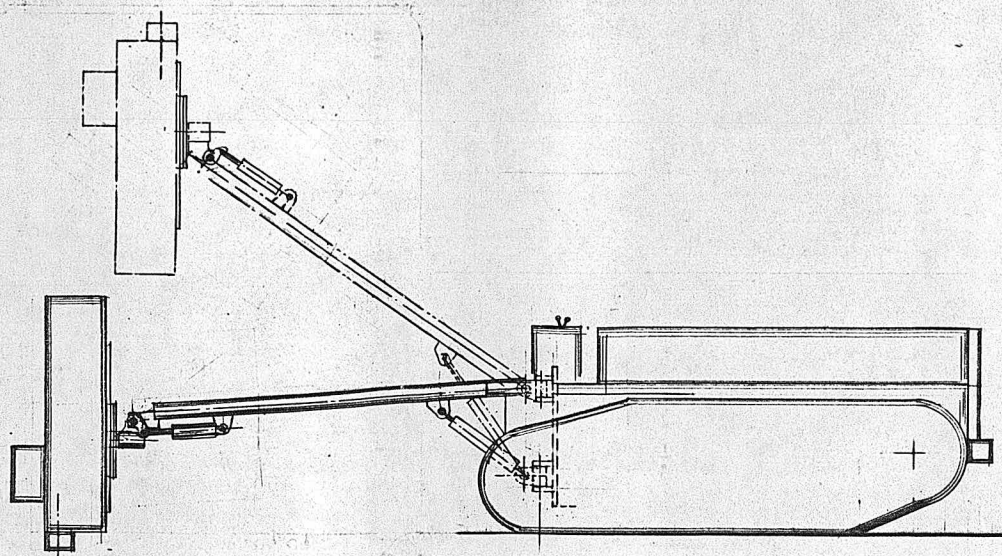
NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD GRUM DEPOSIT, Y.T. SECTION 80+00 W.			
DESIGNED	BILL OF MAT'L	DATE	JAN. 13 '75
DRAWN E. W. M.	JOB. NO.	SCALE	AS SHOWN
TRACED T.S.E.	CLIENT	Dwg. No.	Rev.
CHECKED	APPROVED	D. 1558	0



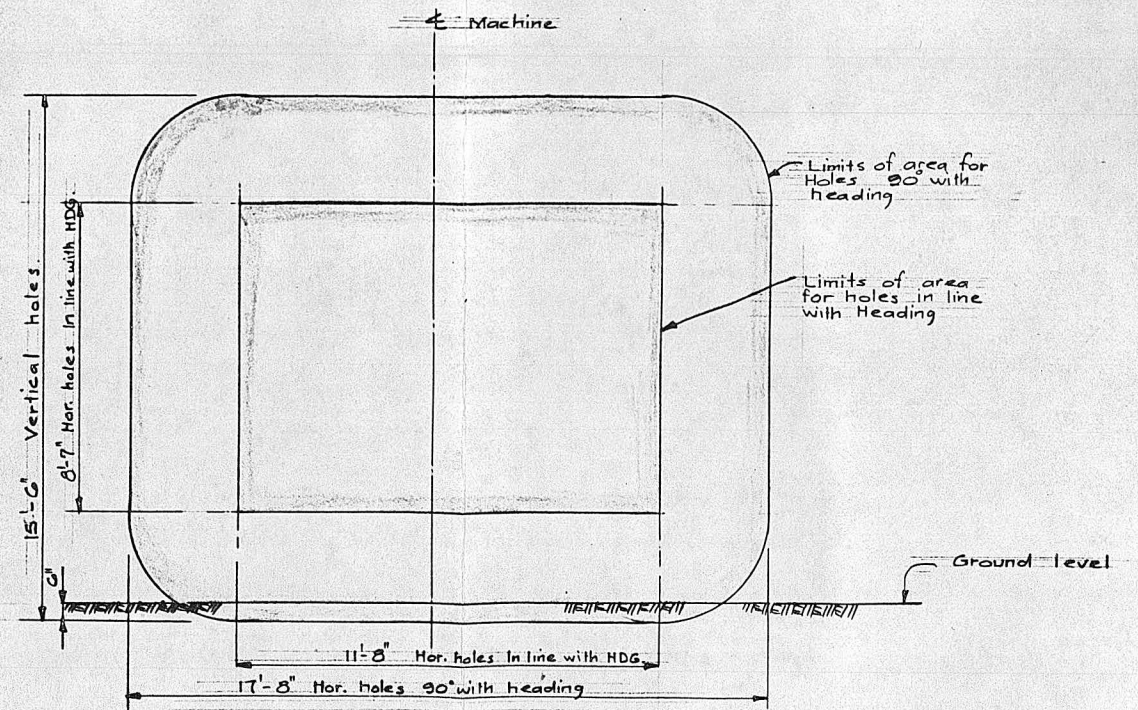
Plan View
Horizontal Holes - In line with Heading
Scale: $\frac{3}{8}''=1'-0''$



Plan View
Horizontal Holes - 90° with Heading
Scale: $\frac{3}{8}''=1'-0''$

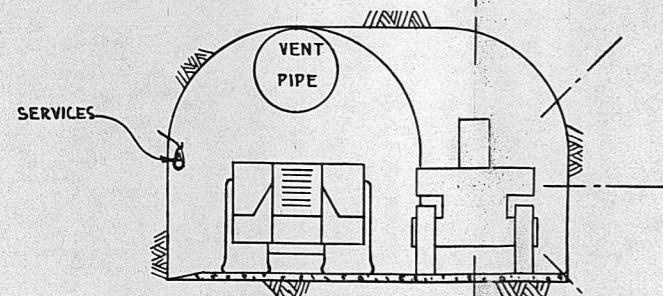
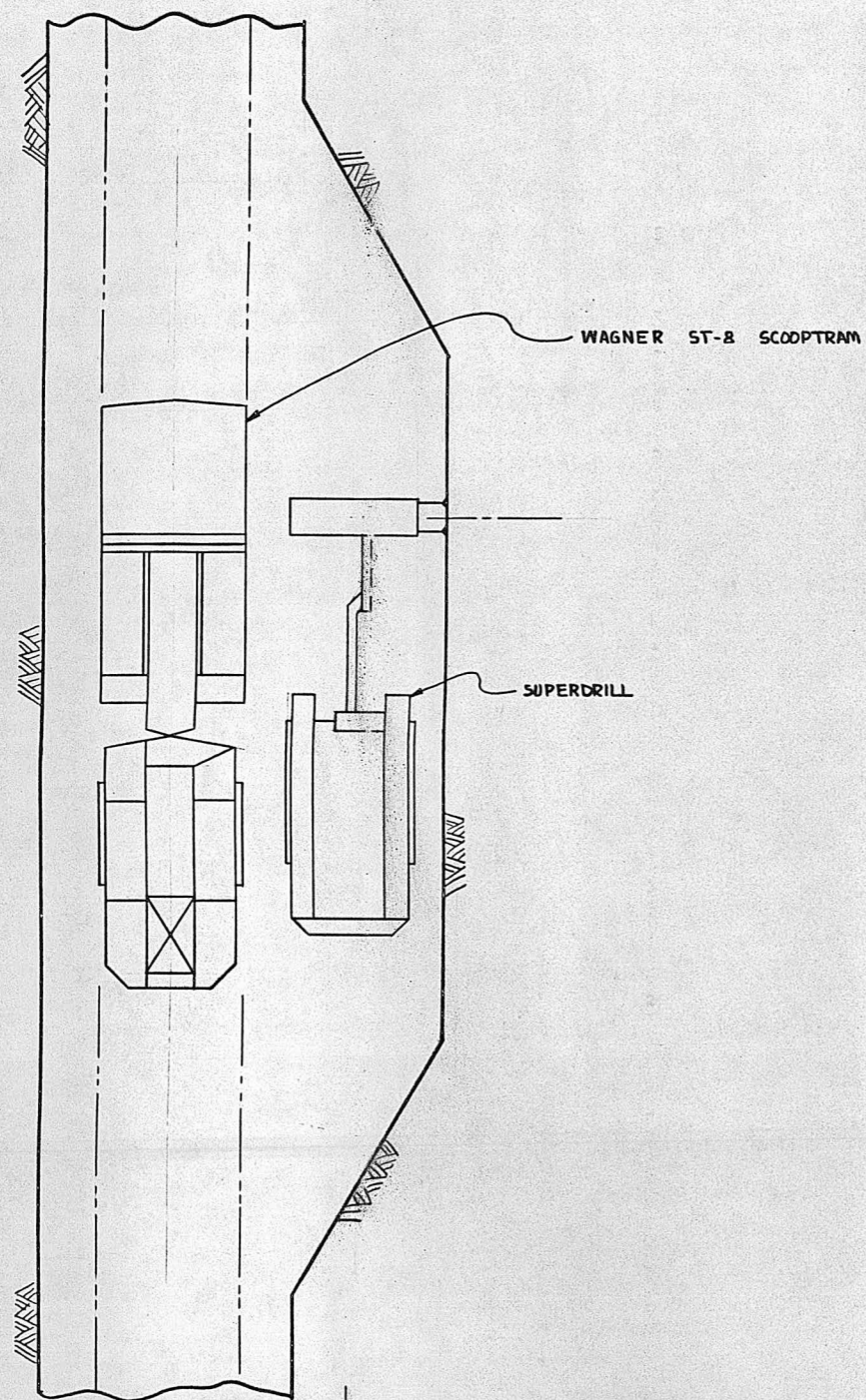


Side Elevation - Vertical Holes
Scale: $\frac{3}{8}''=1'-0''$

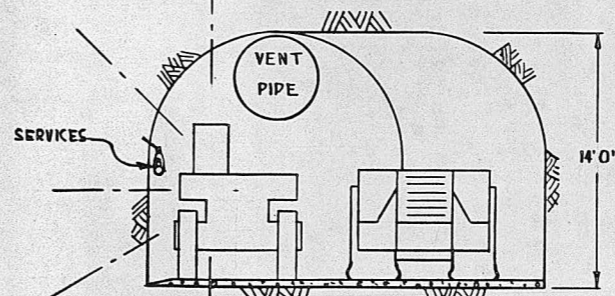
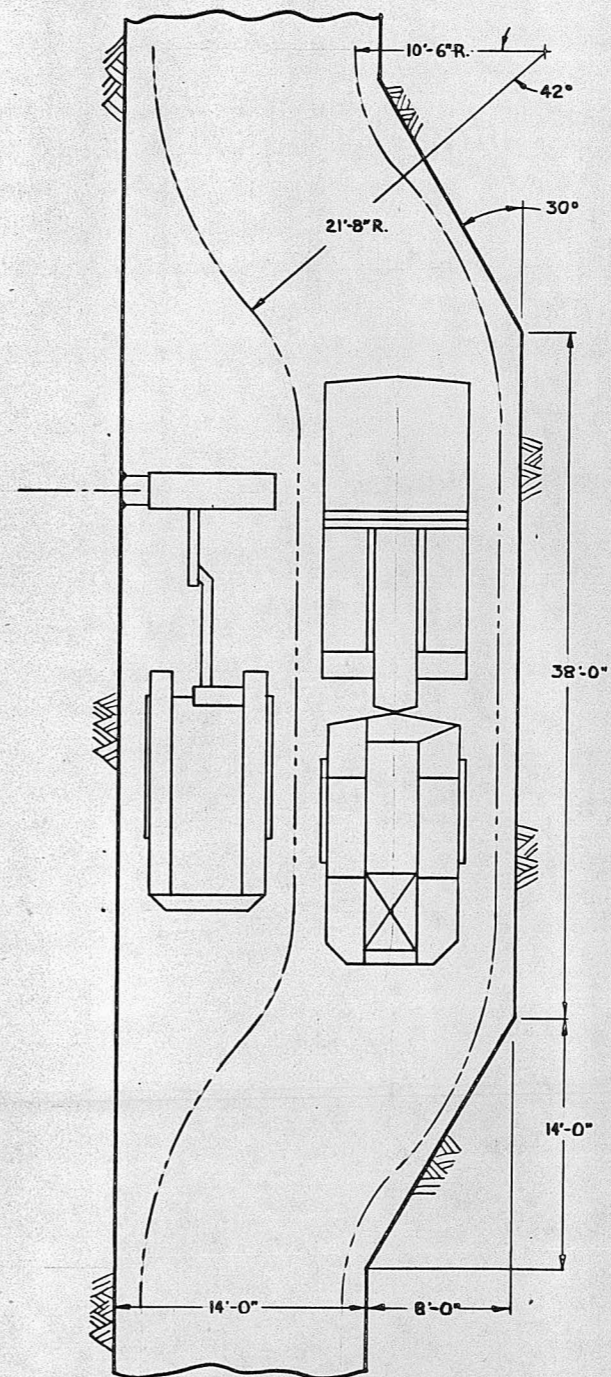


End View
Scale: $\frac{3}{8}''=1'-0''$

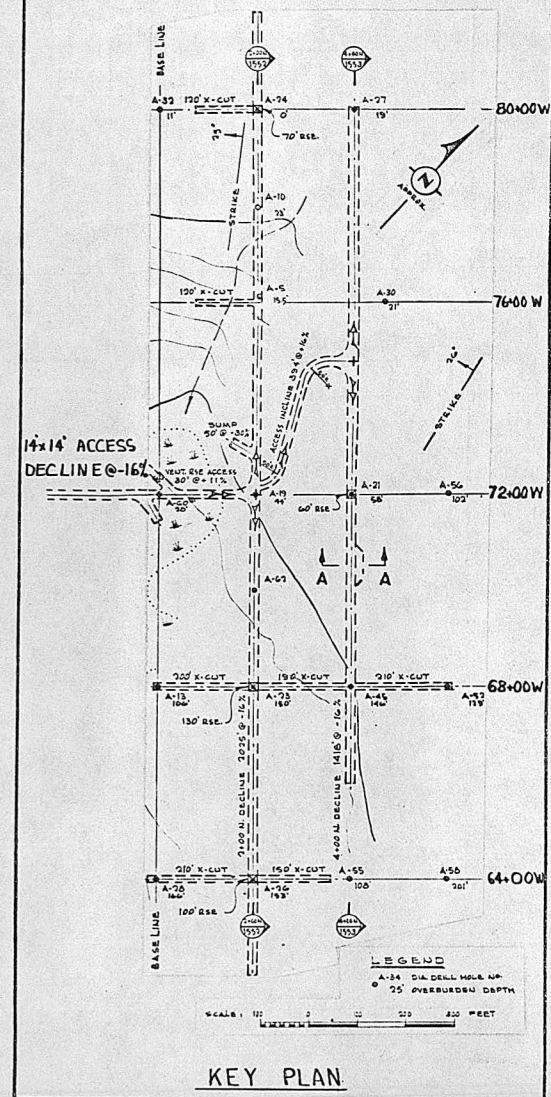
Canadian Mine Services Ltd. Vancouver, B.C.		
SCALE: $\frac{3}{8}''=1'-0''$	APPROVED BY:	DRAWN BY: Brij
DATE: April 1, 1974		REVISED
Diesel Drill Mark Two Operational Envelope.		
DRAWING NUMBER		1375-0



SECTION A-A
DRILL WORKING IN SLASH



SECTION A-A
DRILL WORKING IN DRIFT

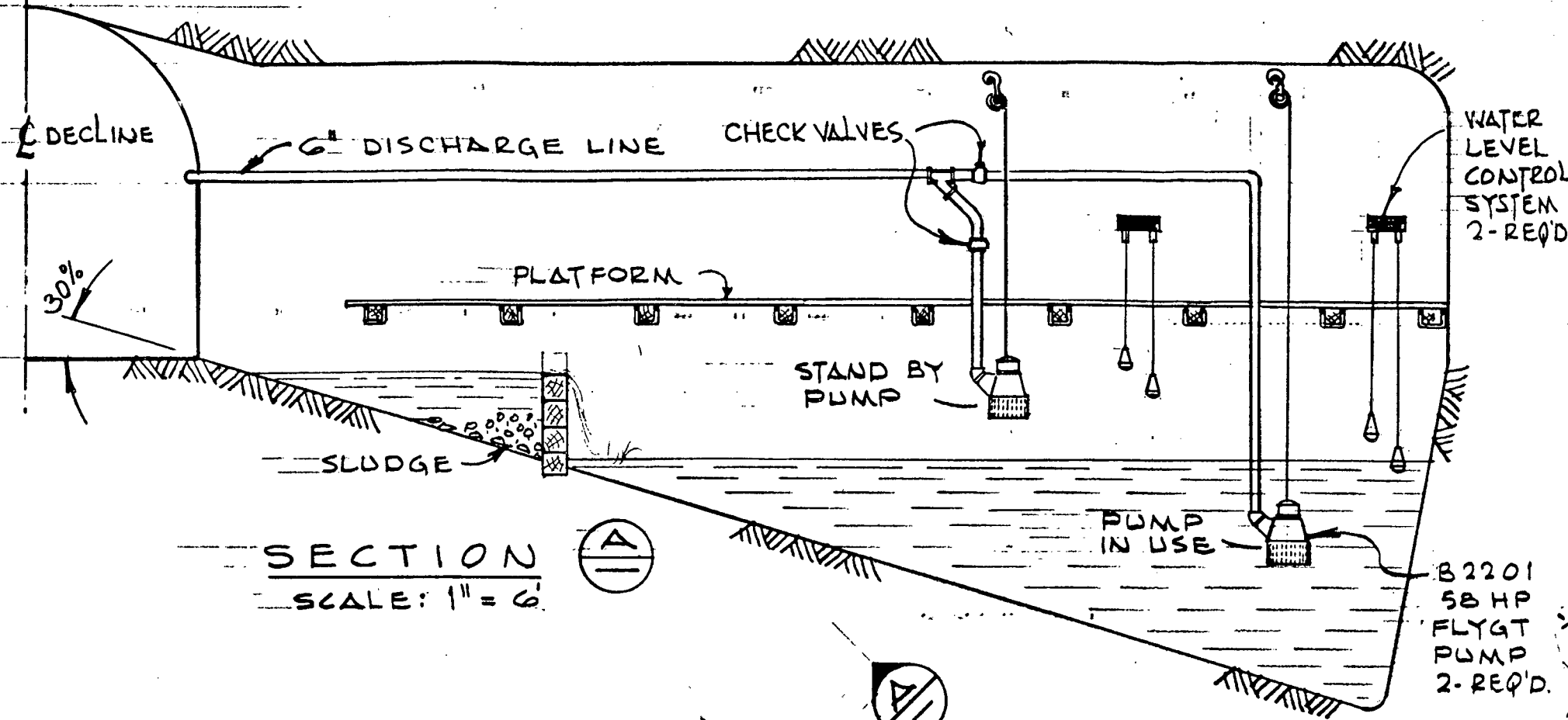


KEY PLAN

- NOTES:
1. THIS SLASH IS THE SMALLEST THAT WILL ALLOW PASSAGE OF A WAGNER ST-8 SCOOPTRAM WHEN THE SUPERDRILL IS WORKING IN THE DRIFT.
 2. VOLUME OF SLASH IS 5824 CUBIC FEET

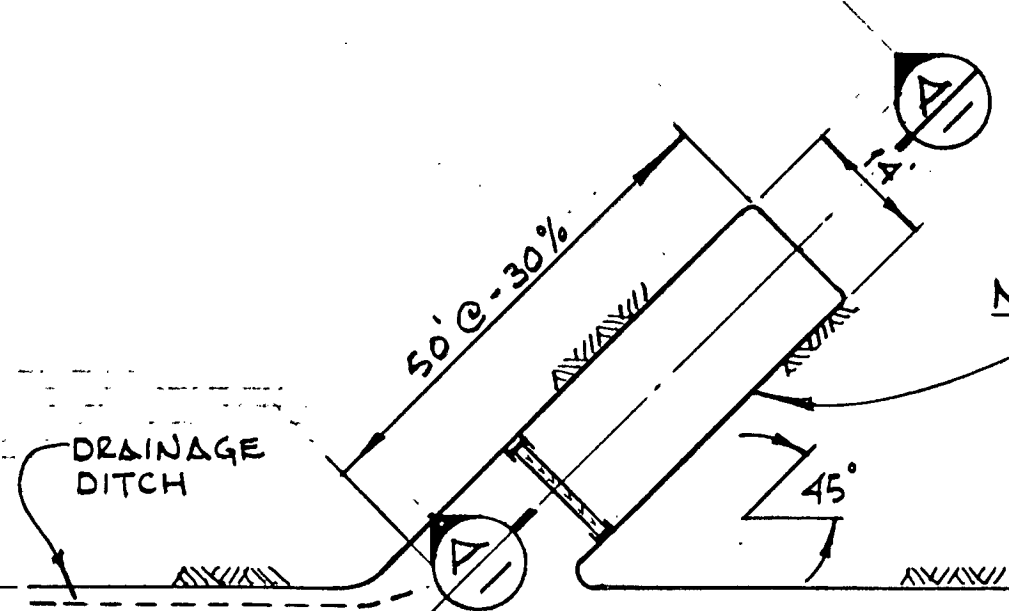
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MECHANICAL LIMITS, UNLESS OTHERWISE NOTED: FRACTIONAL ± 1/64" DECIMAL ± .010" ANGULAR ± 1/2°	

NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD. GRUM DEPOSIT Y.T. D.D. STA. IN DECLINE			
DESIGNED	BILL OF MAT'L	DATE	JAN. 31 1975
DRAWN T. S. E.	JOB. NO.	SCALE	3/16" = 1'
TRACED	CLIENT	Dwg. No.	1565
CHECKED	APPROVED	Rev.	0



SECTION
SCALE: 1" = 6'

(A)



DETAIL
SCALE 1" = 20'

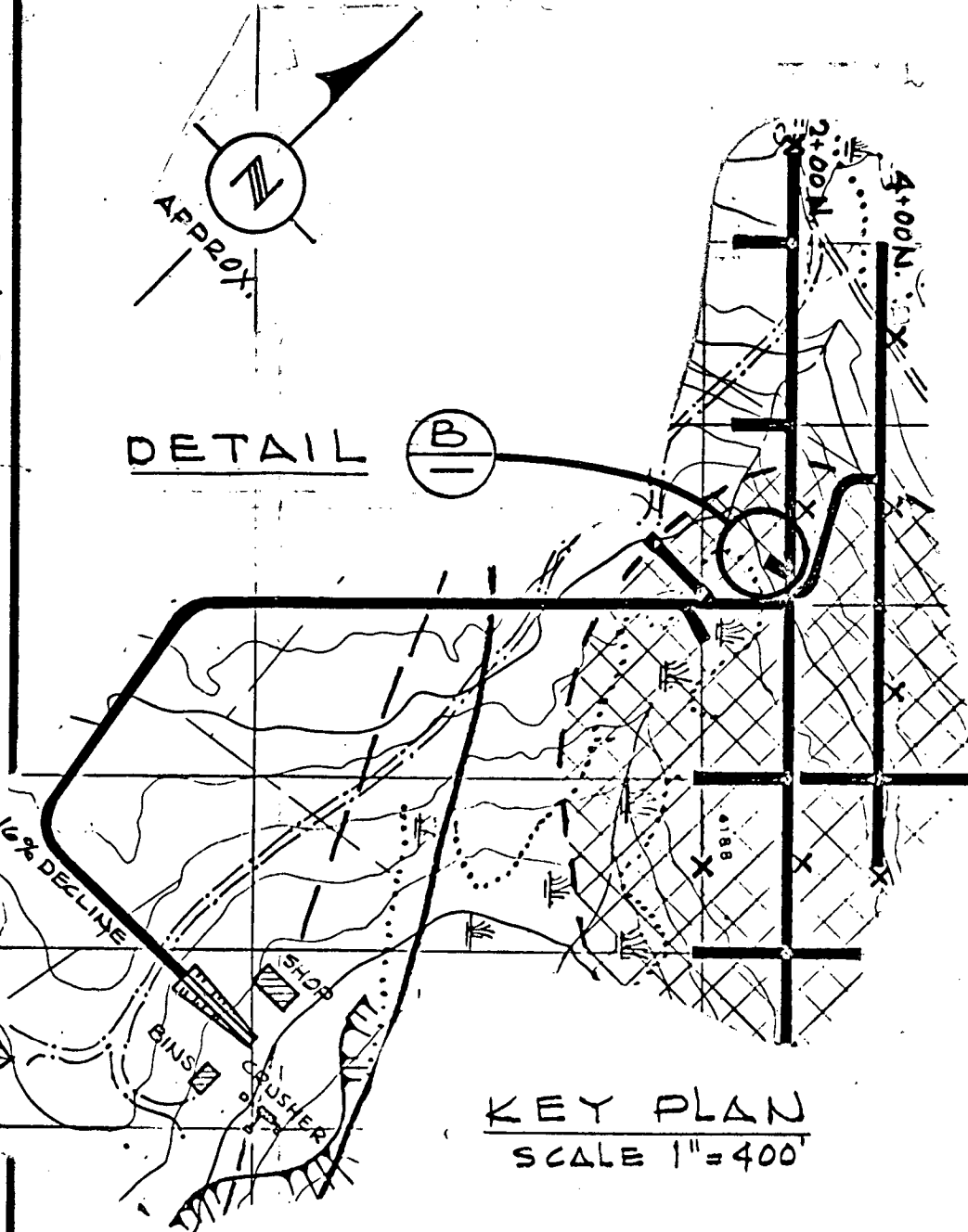
(B)

NOTE
FINAL SIZE OF SUMP SUBJECT TO WATER VOLUME

DECLINE @ -16%

WATER LEVEL CONTROL SYSTEM 2-REQ'D

B2201 58 HP FLYGT PUMP 2-REQ'D



KEY PLAN
SCALE 1" = 400'

NO.	DATE	REVISION	BY
-----	------	----------	----

CANADIAN MINE SERVICES LTD.
VANCOUVER, B.C. CANADA

KERR-ADDISON MINES LTD
GRUM DEPOSIT, Y.T.

MAIN SUMP GENERAL ARRGM'T.

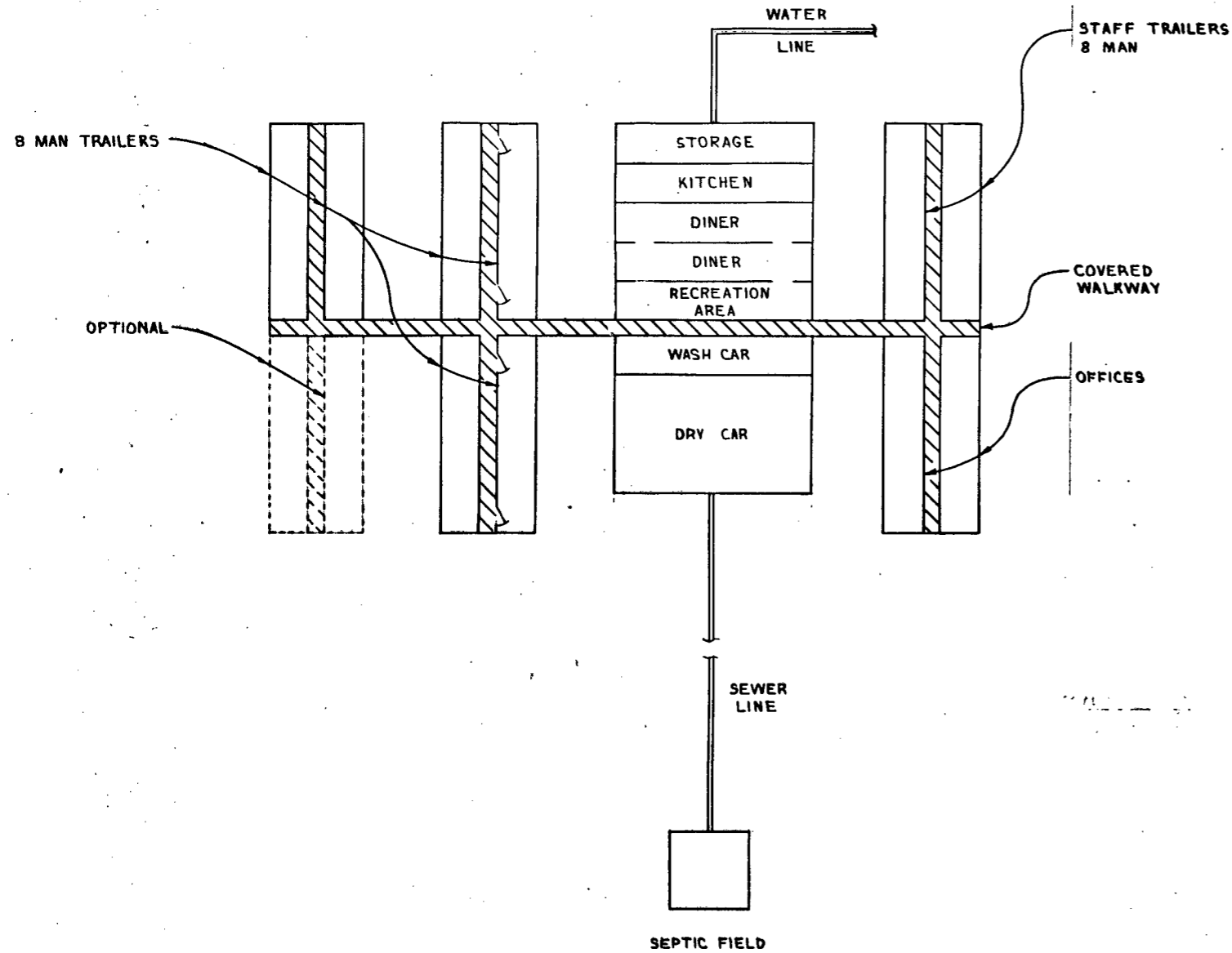
1551 COMPOSITE PLAN

DWG. NO. REFERENCE DRAWINGS

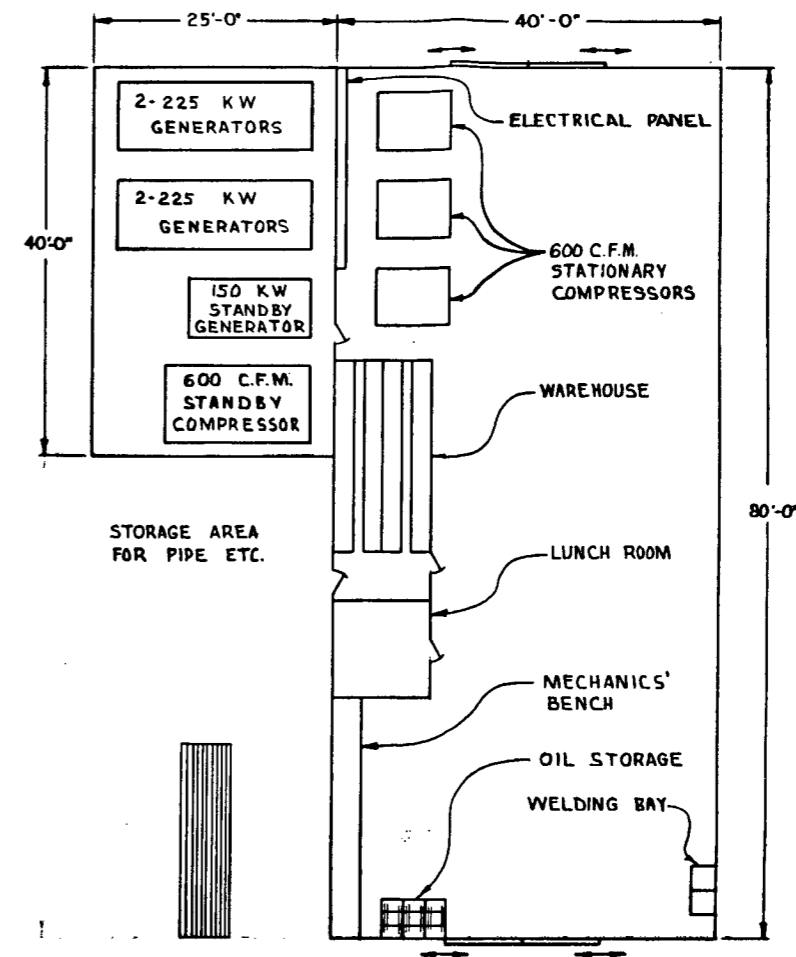
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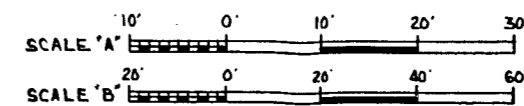
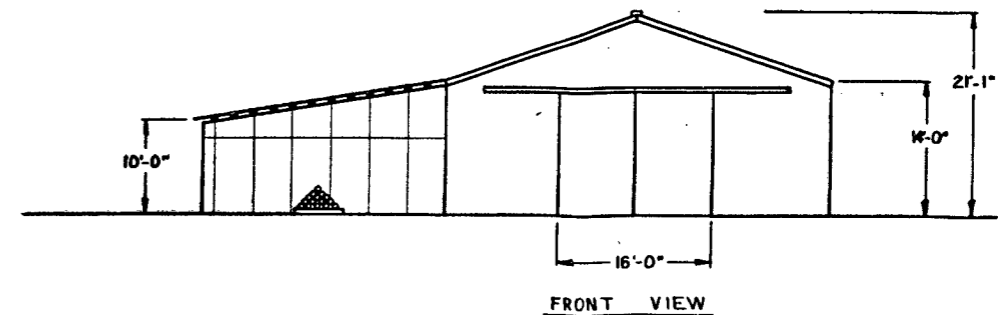
DESIGNED	BILL OF MAT'L	DATE	JAN 31 '75
DRAWN EWM.	JOB. NO.	SCALE	AS SHOWN
TRACED	CLIENT	Dwg. No.	B. 1563
CHECKED	APPROVED	Rev.	0



PLAN VIEW CAMP COMPLEX
SCALE 'B'



FLOOR PLAN
REPAIR SHOP
SCALE 'A'



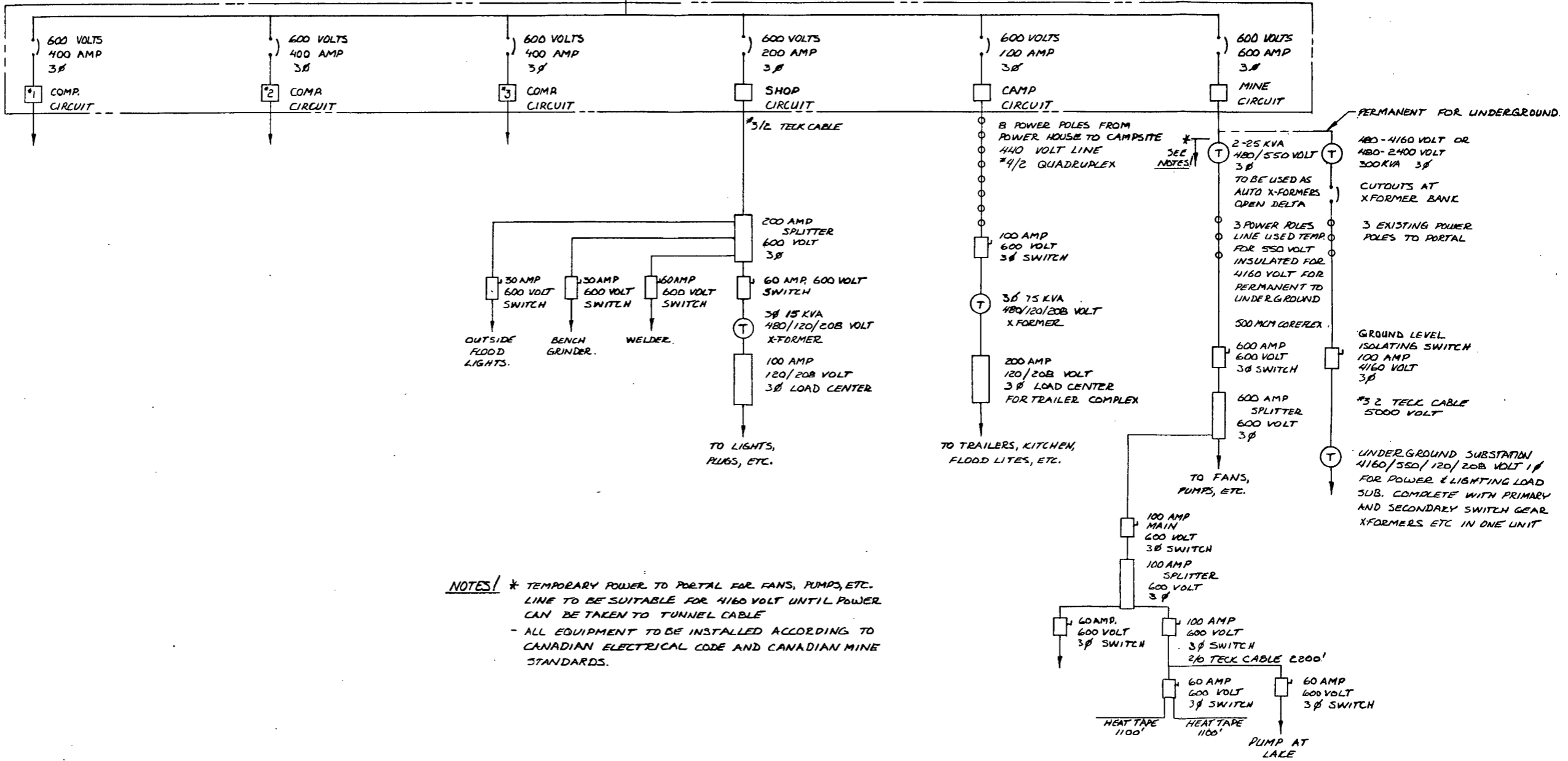
D-1561	COMPOSITE PLAN
DWG. NO.	REFERENCE DRAWINGS
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NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD. GRUM DEPOSIT Y.T.			
CAMP COMPLEX & REPAIR SHOP LAYOUT			
DESIGNED	G.V.	BILL OF MAT'L	DATE JAN. 30 1975
DRAWN	T.S.E.	JOB. NO.	SCALE NOTED
TRACED		CLIENT	Dep. No.
CHECKED		APPROVED	D. 1564 0

GENERATORS
 250 KVA 480 VOLT 3 ϕ
 TRAILER UNITS
 2 GENERATORS EACH
 COMPLETE WITH SYNC. PANELS
 BREAKERS & COMMON BUSS

2000 AMP

POWER LOAD CENTER
 WITH GROUND FAULT PROTECTION

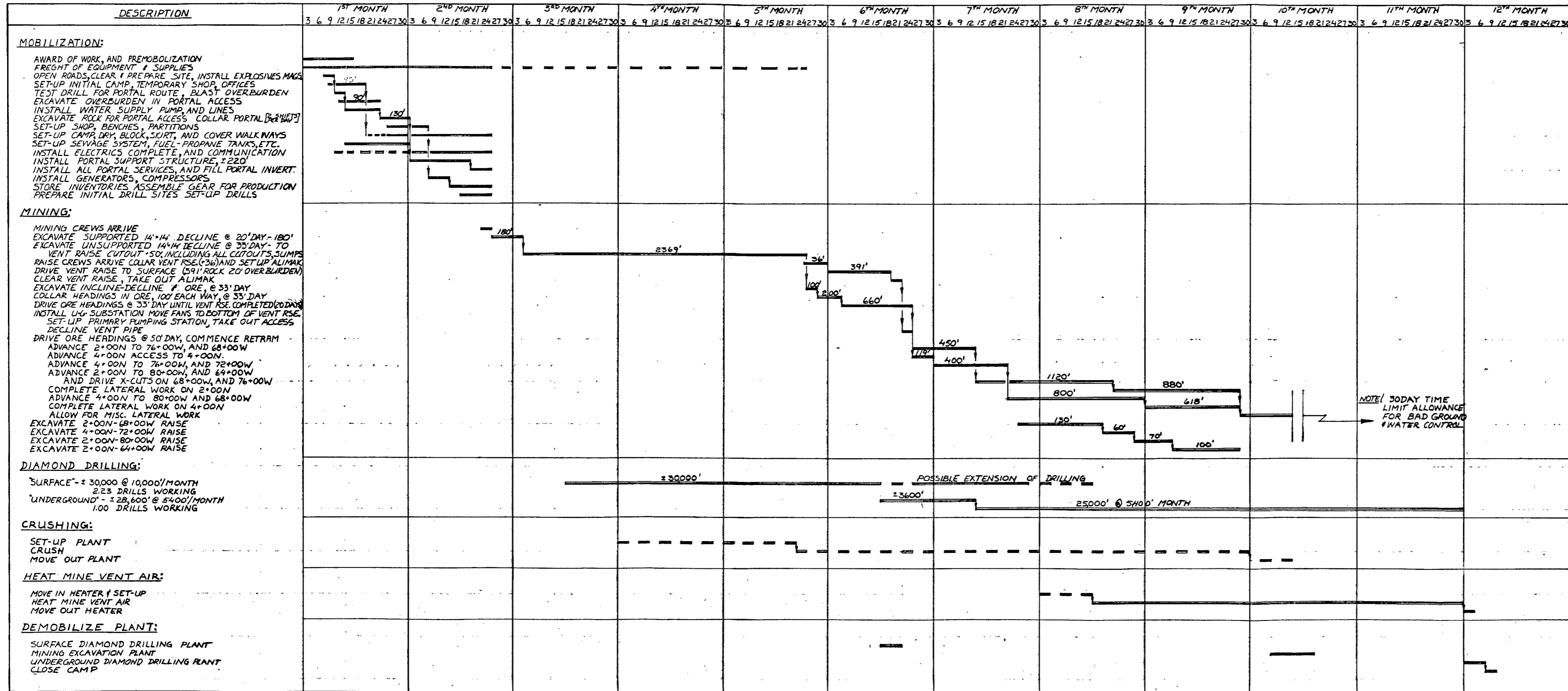


NOTES! * TEMPORARY POWER TO PORTAL FOR FANS, PUMPS, ETC.
 LINE TO BE SUITABLE FOR 4160 VOLT UNTIL POWER
 CAN BE TAKEN TO TUNNEL CABLE
 - ALL EQUIPMENT TO BE INSTALLED ACCORDING TO
 CANADIAN ELECTRICAL CODE AND CANADIAN MINE
 STANDARDS.

DWG. NO.	REFERENCE DRAWINGS	DESIGNED	BILL OF MAT'L	DATE
		TJK		JAN 26/75
MECHANICAL LIMITS, UNLESS OTHERWISE NOTED: FRACTIONAL $\pm 1/64"$ DECIMAL $\pm .010"$ ANGULAR $\pm 1/2^\circ$		TRACED	CLIENT	Dwg. No.
		CHECKED	APPROVED PRELIM.	D.1546

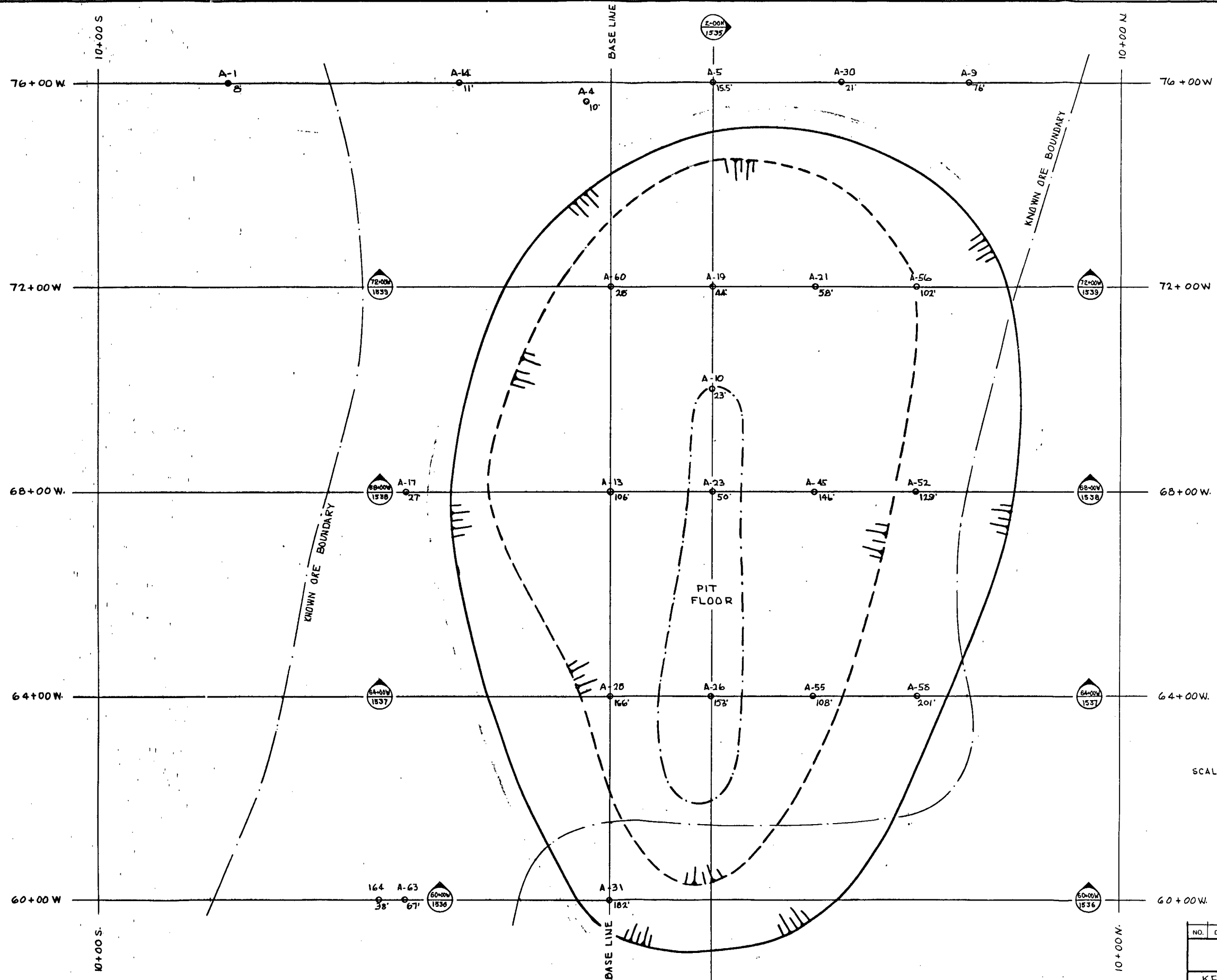
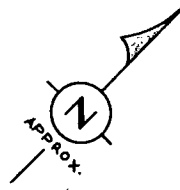
NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINE'S LTD. GRUM DEPOSIT			
ONE LINE POWER SCHEMATIC DIAGRAM			
SCALE N.T.S.			

GRUM PROJECT - PROPOSED WORK SCHEDULE

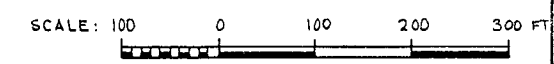


NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD. GRUM DEPOSIT			
PROPOSED WORK SCHEDULE			
DESIGNED	BILL OF MAT'L	DATE	JAN-27/75
DRAWN TV	JOB NO.	SCALE	N.T.S.
TRACED	CLIENT	Dep. No.	
CHECKED CV	APPROVED	0.1547	0

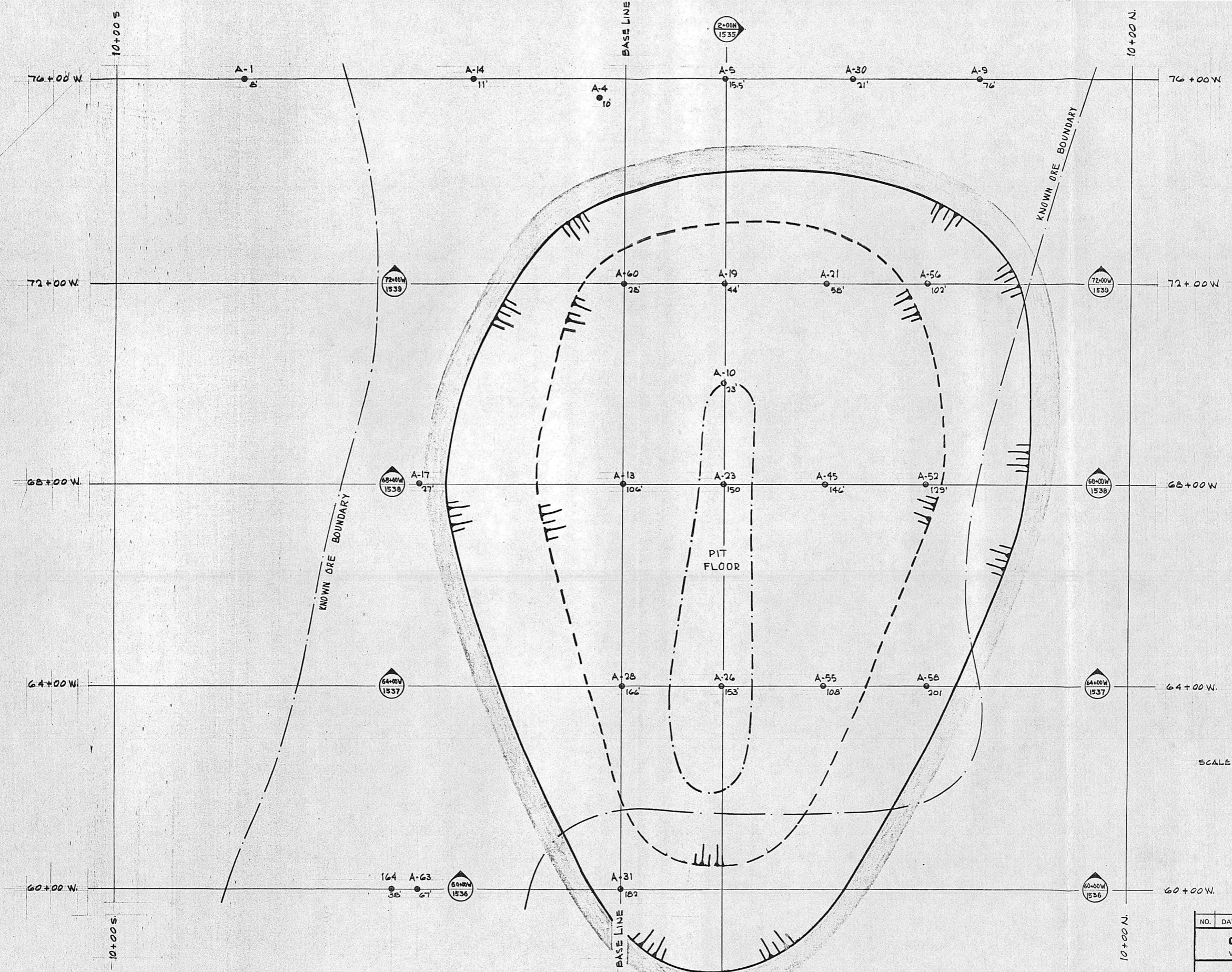
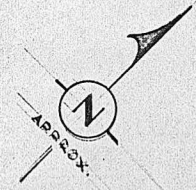
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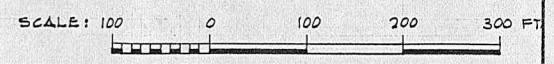
NOTE:
 PLAN VIEW: 45° ROCK SLOPES
 — SURFACE OUTLINE OF PIT
 - - - OVERBURDEN OUTLINE
 - - - PIT FLOOR OUTLINE



NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD. GRUM DEPOSIT Y.T.			
PLAN VIEW - OPEN PIT-45'			
DWG. NO.	REFERENCE DRAWINGS	DESIGNED R.A.D.	BILL OF MAT'L
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MECHANICAL LIMITS, UNLESS OTHERWISE NOTED: FRACTIONAL ± 1/64" DECIMAL ± .010" ANGULAR ± 1/2°		DATE JAN. 27 '75	SCALE AS SHOWN
TRACED	CLIENT	Dwg. No.	Rev.
CHECKED	APPROVED	1533	0

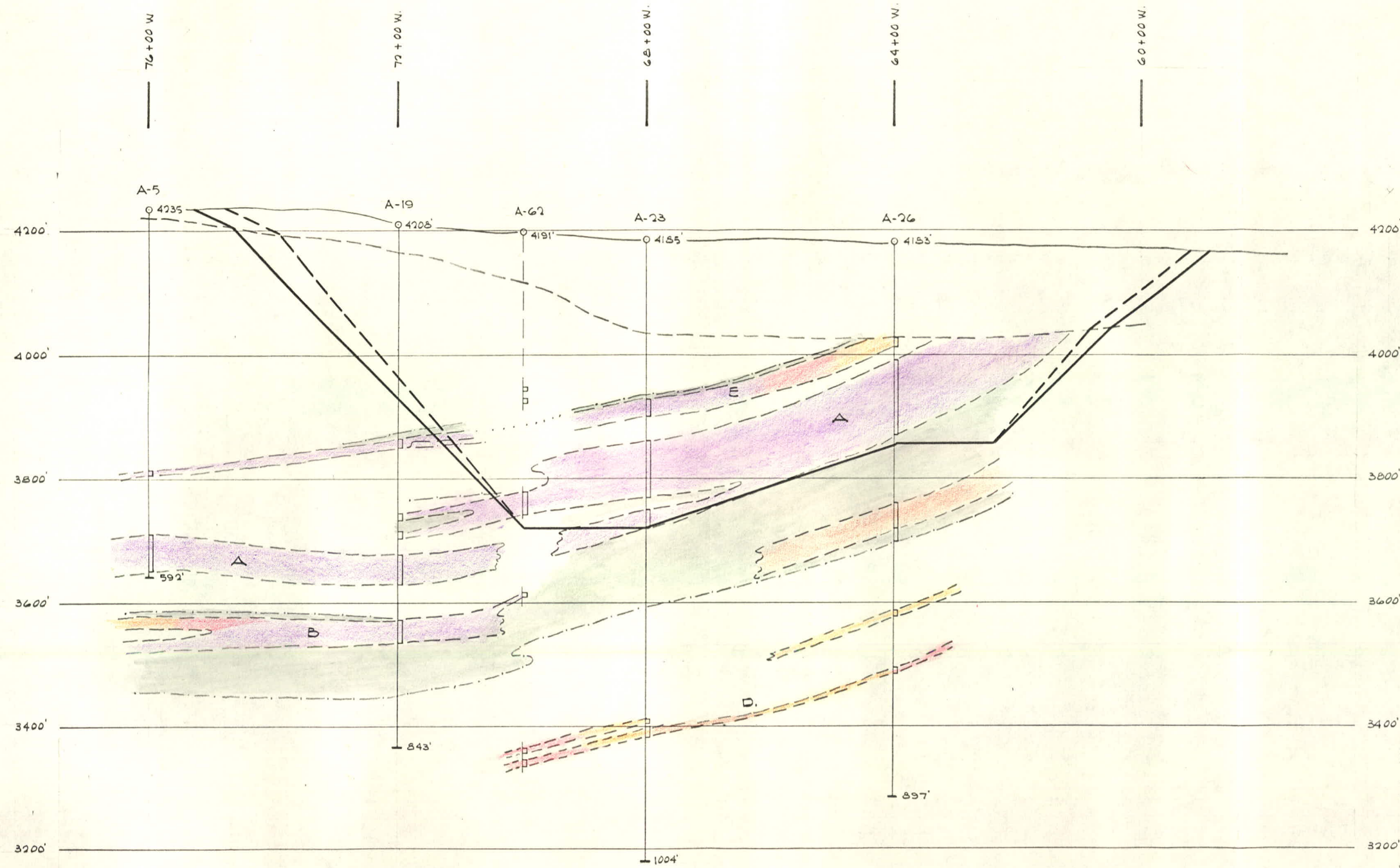


NOTE:
 PLAN VIEW 50° ROCK SLOPES
 ——— SURFACE OUTLINE OF PIT
 - - - OVERBURDEN OUTLINE
 - . - . PIT FLOOR OUTLINE



NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD. GRUM DEPOSIT Y.T.			
PLAN VIEW - OPEN PIT-50'			
DESIGNED	R.A.D.	BILL OF MAT'L	DATE JAN. 19 '75
DRAWN	E.W.N.	JOB NO.	SCALE AS SHOWN
TRACED		CLIENT	Dwg. No. D. 1534
CHECKED		APPROVED	Rev. 0

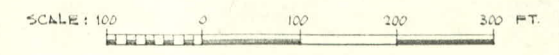
DWG. NO. REFERENCE DRAWINGS
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NOTE
 ——— PIT OUTLINE 45° ROCK SLOPE
 - - - PIT OUTLINE 50° ROCK SLOPE

LEGEND

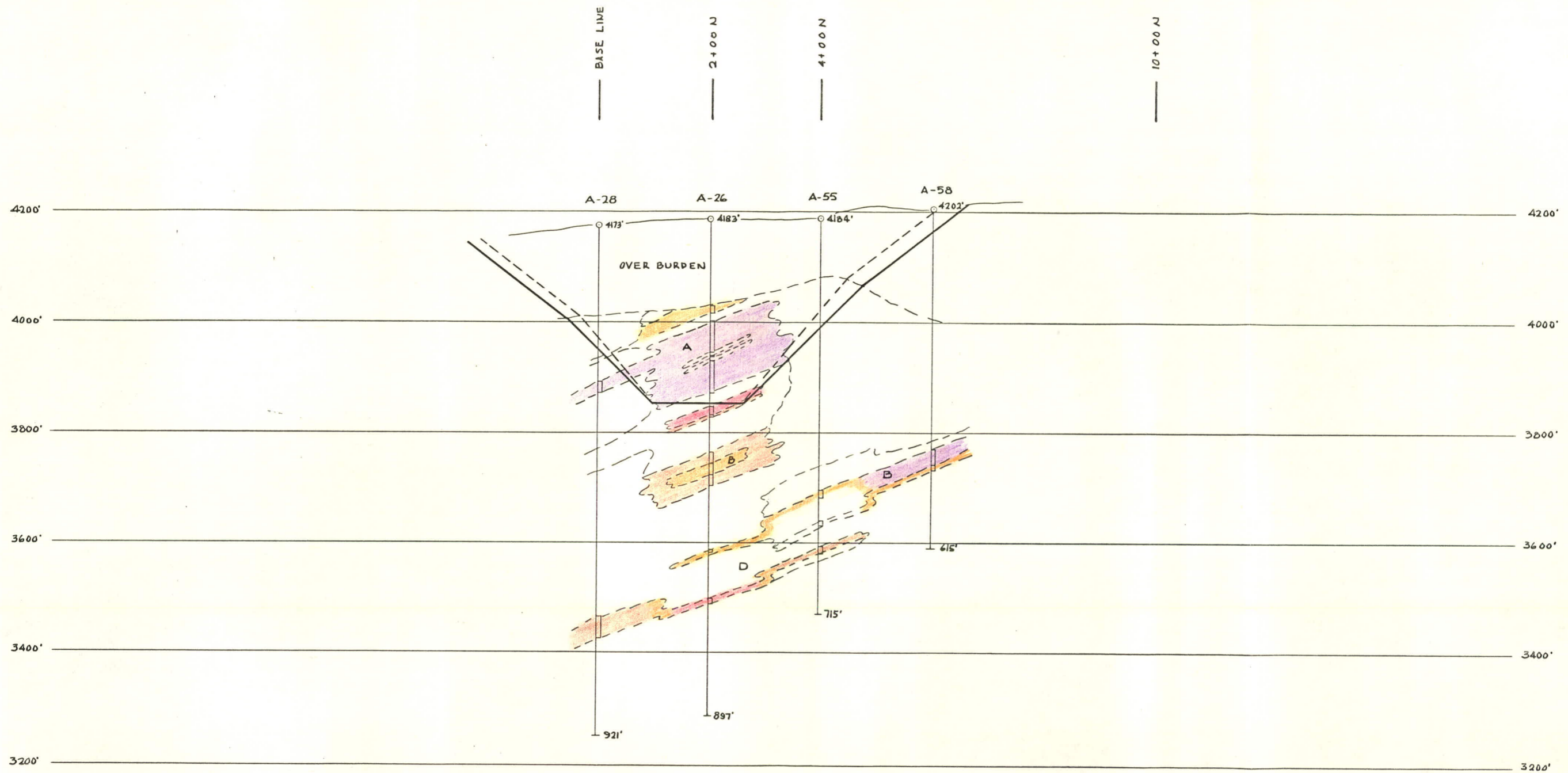
- 10% PLUS COMBINATION Pb + Zn
- 8 - 10% COMBINATION Pb + Zn
- 6 - 8% COMBINATION Pb + Zn
- 4 - 6% COMBINATION Pb + Zn
- PYRITIC ZONE



NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD. GRUM DEPOSIT, Y.T.			

DWG. NO.	REFERENCE DRAWINGS	DESIGNED	BILL OF MAT'L	DATE
		R.A.D.		JAN. 19 '75
		E.W.M.	JOB. NO.	SCALE AS SHOWN
		TRACED	CLIENT	Dwg. No. D. 1535
		CHECKED	APPROVED	Rev. 0

MECHANICAL LIMITS, UNLESS OTHERWISE NOTED:
 FRACTIONAL ± 1/64" DECIMAL ± .010" ANGULAR ± 1/2°



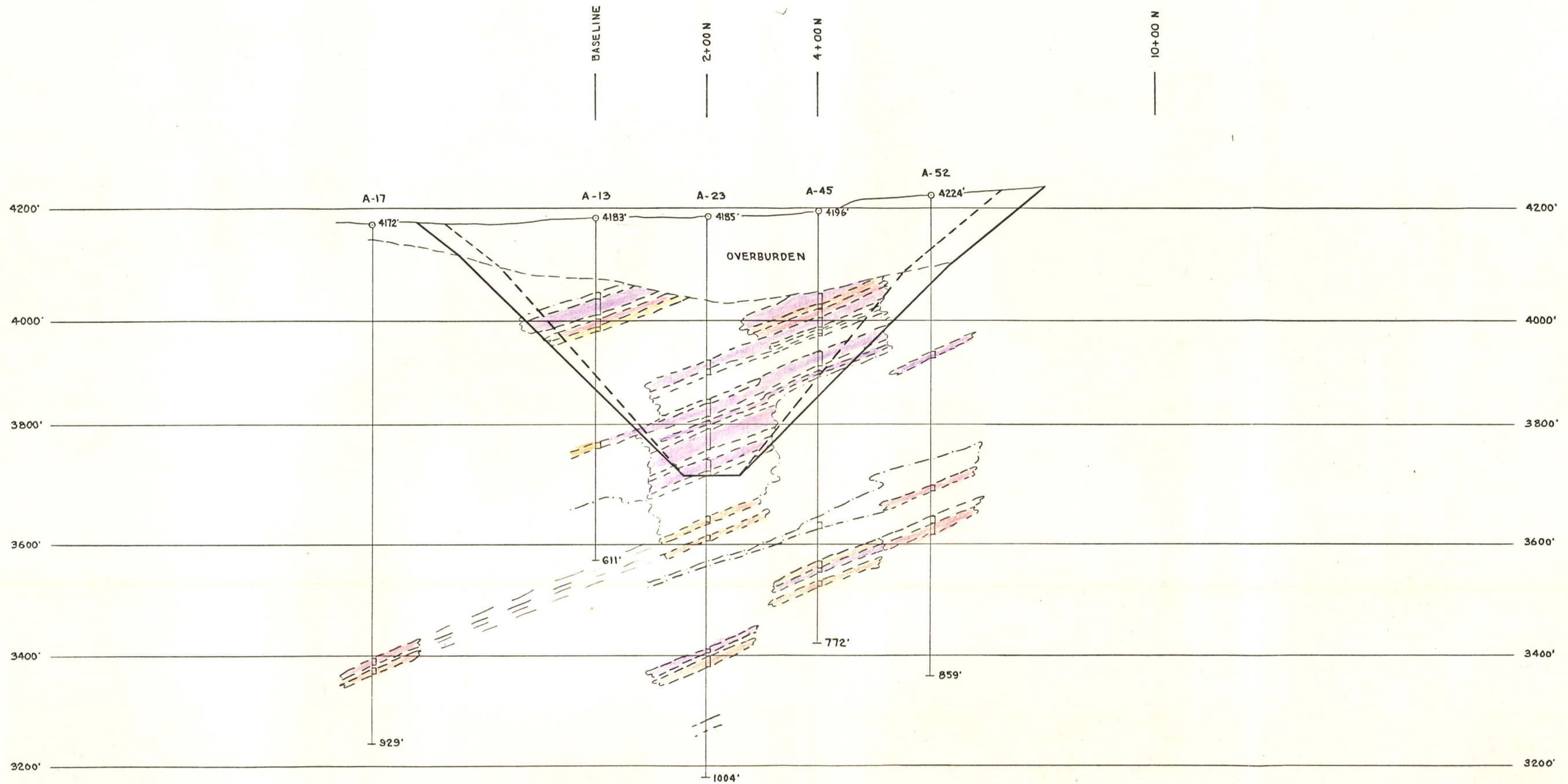
SCALE: 100 0 100 200 300 FEET

NOTE:
 ——— OPEN PIT OUTLINE 45° SLOPE
 - - - OPEN PIT OUTLINE 50° SLOPE

NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD.			
GRUM DEPOSIT Y.T.			
SECTION 64+00 W - OPEN PIT			
DESIGNED	RAD.	BILL OF MAT'L	DATE JAN-28-75
DRAWN	T.S.E.	JOB. NO.	SCALE AS SHOWN
TRACED		CLIENT	Dwg. No. D. 1537
CHECKED		APPROVED	Rev. 0

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 MECHANICAL LIMITS, UNLESS OTHERWISE NOTED:
 FRACTIONAL + 1/64" DECIMAL + .010" ANGULAR + 1/2°

BASE LINE 2+00 N 4+00 N 10+00 N



SCALE: 100 0 100 200 300 FEET

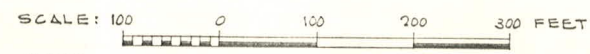
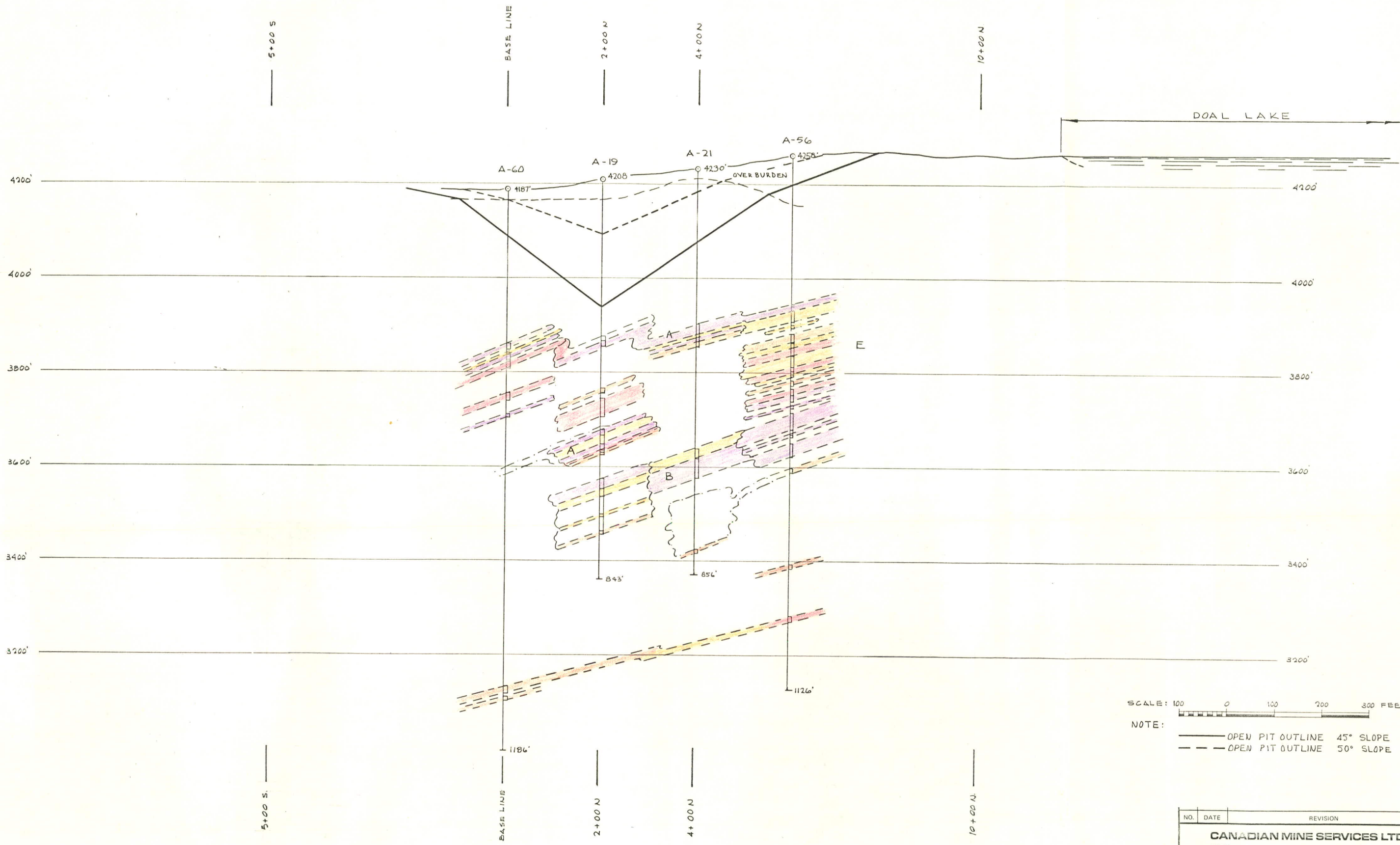
NOTE:
 — OPEN PIT OUTLINE 45° SLOPE
 - - - OPEN PIT OUTLINE 50° SLOPE

NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD			
GRUM DEPOSIT Y.T.			
SECTION 68+00W - OPEN PIT			
DESIGNED	RA.D	BILL OF MAT'L	DATE JAN 28 '75
DRAWN	T.S.E.	JOB. NO.	SCALE AS SHOWN
TRACED	CLIENT	Dwg. No.	Rev.
CHECKED	APPROVED	D. 1538	0

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 FRACTIONAL ± 1/64" DECIMAL ± .010" ANGULAR ± 1/2°

BASELINE 2+00 N 4+00 N 10+00 N

BASELINE 2+00 N 4+00 N 10+00 N



NOTE:
 — OPEN PIT OUTLINE 45° SLOPE
 - - - OPEN PIT OUTLINE 50° SLOPE

NO.	DATE	REVISION	BY
CANADIAN MINE SERVICES LTD. VANCOUVER, B.C. CANADA			
KERR-ADDISON MINES LTD GRUM DEPOSIT Y.T. SECTION 72+00 W OPEN PIT			
DESIGNED	RAD.	BILL OF MAT'L	DATE JAN 23 75
DRAWN	ENJN.	JOB NO.	SCALE AS SHOWN
TRACED		CLIENT	Dwg. No. 1539 Rev. 0
CHECKED		APPROVED	

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