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1588 West North Temple  
Salt Lake City, Utah 84116  
(801) 533-5771

May 21, 1981

Mr. Kerry A. Frame  
Chief Engineer  
Southern Utah Fuel Company  
P. O. Box P  
Salina, Utah 84654

RE: Disposal of Excess Material  
Convulsion Canyon Mine  
ACT/041/002

Dear Mr. Frame:

The Division has reviewed your plans submitted May 7, 1981 for the extension of your upper pad and representatives of the Division have recently inspected the fill structure in the field. Mr. Davis of your organization has assured the Division that the material was emplaced in lifts of less than 2 feet and that he will grade the top of the fill to drain, so that water will not impound. The outslope of this fill appeared to be sloped approximately 1.5h:1v (18ft v: 28 ft. h).

The Division requires that the fill be placed in accordance with UMC 817.71. Since this fill has been placed on top and adjacent to pre-existing fill and the slope is similar to pre-existing fill slopes, the stability by cursory examination is assured. The Division has examined the stability assuming an angle of internal friction of 29°, cohesion as 100 psf and no water pressure. With a failure surface assumed circular running through the toe and crest of the fill, a 1.96 Factor of Safety was calculated (see attached). Please be advised that the Division has approved your fill structure with the condition that it will be maintained in a non-impounding state. The overland flow must be directed so that water will drain away from the fill. A large pore pressure must not be allowed to build up in the fill. In addition, Southern Utah Fuel Company must revegetate the outslope of the fill to prevent excessive erosion.

Sincerely,

JAMES W. SMITH, JR.  
COORDINATOR OF MINED LAND DEVELOPMENT

JWS/LCS:te  
Attachments  
cc: Don Crane, O. S. M.

$\phi = 29.3^\circ$   $c = 100 \text{ psf}$

SLICE NO	TOTAL WT W lbs	SIN $\alpha$	TANGENTIAL COMP OF WT		COS $\alpha$	NOR COMP OF WT N'	FRIC RES N'tan $\phi$	ARC LENGTH L	COHESIVE RESIST. cL
			DRIVING	RESISTING					
1	150	-.070		10.5	.998	149.7	84.0	2.9	
2	439	.035	15.4		.999	438.6	246.1	2.8	
3	663	.140	92.8		.990	656.4	368.4	2.9	
4	856	.259	221.7		.966	852.6	478.5	3.0	
5	995	.375	373.2		.927	922.4	517.6	3.0	
6	1081	.470	508.1		.883	954.5	535.6	3.2	
7	1081	.588	635.6		.809	874.5	490.7	3.5	
8	995	.695	691.5		.719	715.4	401.5	4.0	
9	818	.809	657.7		.588	478.0	268.2	4.9	
10	342.	.921	315.0		.391	133.7	75.0	6.6	

$\Sigma W \sin \alpha = 3500.5 \text{ lbs}$

$\Sigma N = 6175.8 \text{ lbs}$

33.9'

$\Sigma cL = 3390$

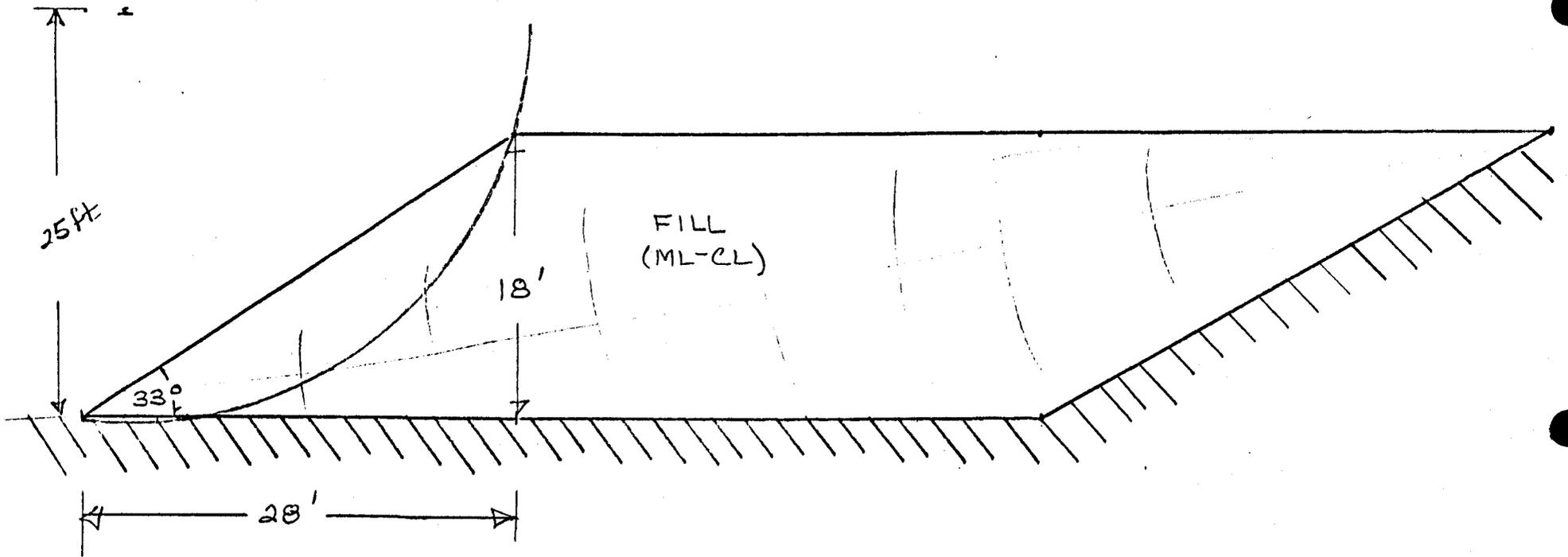
$\Sigma N' \tan \phi = 3465.6$

$$FS = \frac{\Sigma (n' - \mu l) \tan \phi + \Sigma cL}{\Sigma W \sin \alpha} = \underline{\underline{1.96}}$$

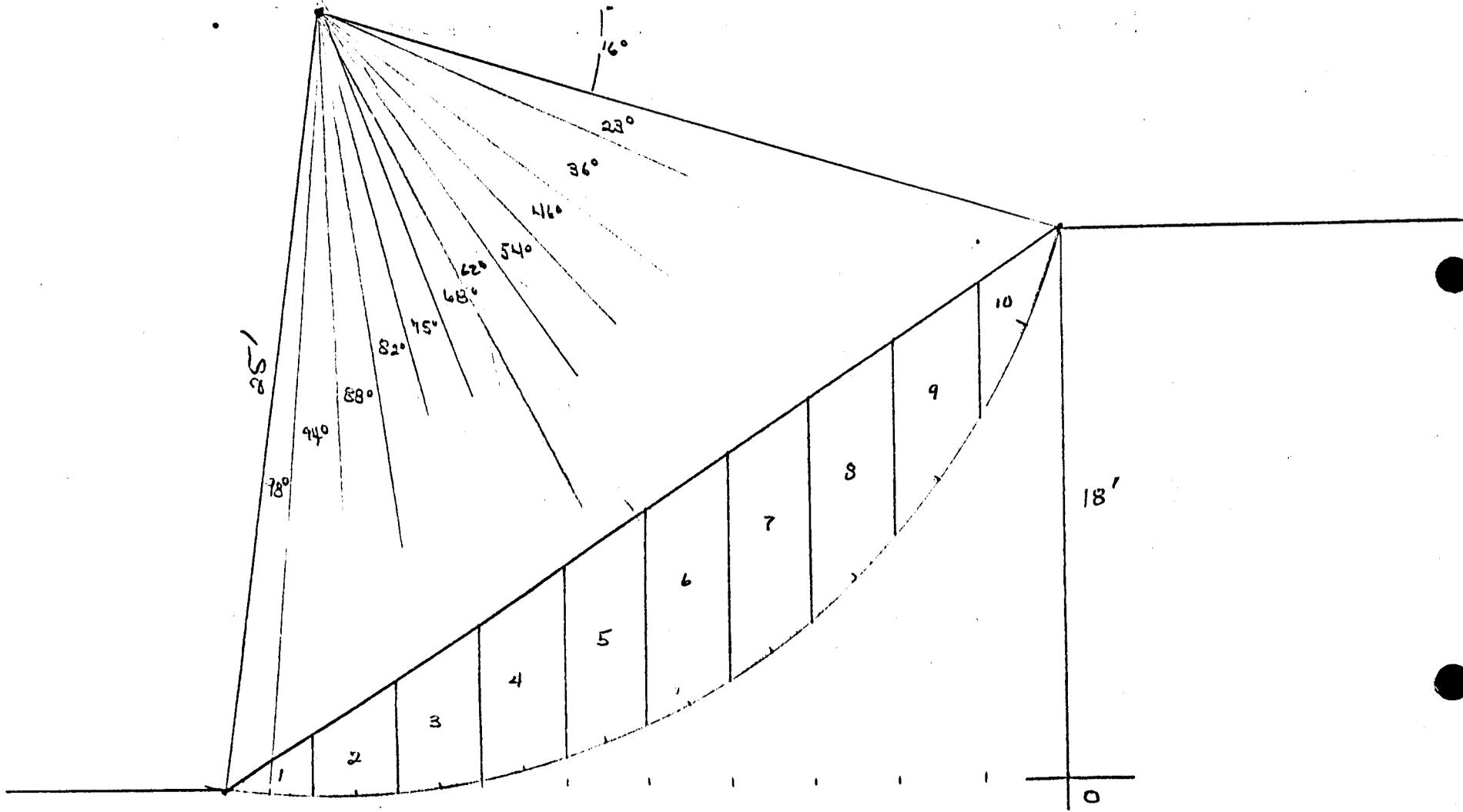
ASSUME DRY

$\mu = \text{PORE PRESSURE} = 0$

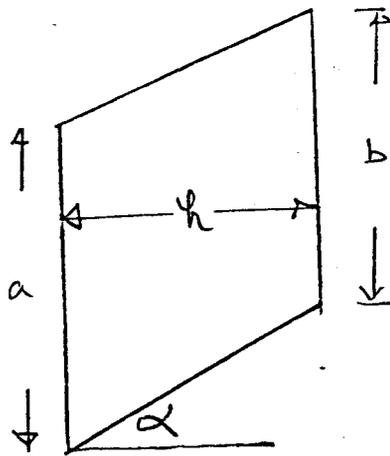
SURFO EXCESS SPOIL FILL



$\phi =$   $c_o = 6.8 \text{ psi}$  USE  $100 \text{ psf}^*$   
 $c_{\text{sat}} = 3.2 \text{ psi}$   $461 \text{ psf}$   
 $\phi = 29.3^\circ$   
 $\gamma = 107 \text{ pcf}$



WEIGHT OF SLICE



AREA OF TRAPEZOID  
 $\frac{1}{2}(a+b)h$

SLICE NO	a	b	h	AREA	γ	WEIGHT
1	0	2'	1.4'	1.4	107	149.8 lbs
2	2'	3.8'	1.4'	4.1	107	438.7 lbs
3	3.8'	5.1'	1.4'	6.2	107	663.4 lbs
4	5.1'	6.3'	1.4'	8.0	107	856 lbs
5	6.3'	7.0'	1.4'	9.3	107	995 lbs
6	7.0'	7.4'	1.4'	10.1	107	1,080.7 lbs
7	7.4'	7.0'	1.4'	10.1	107	1,080.7 lbs
8	7.0	6.3'	1.4'	9.3	107	995 lbs
9	6.3'	4.5'	1.4'	7.6	107	813.2 lbs
10	4.5	0'	1.4'	3.2	107	342.4 lbs

ANGLE α	ε	90-ε	SIN α	COS α	arc length
1	94°	-4°	-0.070	.998	2.9'
2	88°	2°	.035	.999	2.8'
3	82°	8°	.140	.990	2.9'
4	75°	15°	.259	.966	3.0'
5	68°	22°	.375	.927	3.0'
6	62°	28°	.470	.883	3.2'
7	54°	36°	.588	.809	3.5'
8	46°	44°	.695	.719	4.0'
9	36°	54°	.809	.588	4.9'
10	23°	67°	.921	.391	6.6'