

S.E.K. # 16 8.5.4.4.(4) (, INTAKE A5
URS/BLUME

130 Jessie Street (at New Montgomery)
San Francisco, California 94105

SUPPLEMENT

SHEET NO. 1

JOB NO. 0902-26 JOB

DIABLO INTAKE

BY DAL

DATE 8.1.78

CLIENT P.G. & E. SUBJECT

STABILITY

CHK'D

DATE

SUPPLEMENT TO STABILITY ANALYSIS 3/31/78

IN THE PREVIOUS STABILITY ANALYSIS FOR THE INTAKE STRUCTURE, DATED 3/31/78, AN ASSUMED FRACTURE SURFACE FOR THE ROCK WAS USED TO CALCULATE THE RESISTING FORCES TO SLIDING. THAT FRACTURE SURFACE ASSUMED A 45° SURFACE NEAR THE CENTER OF THE STRUCTURE WHERE THE SHEAR KEY IS NON-EXISTANT. THIS ASSUMED FRACTURE SURFACE IS SHOWN ON SHEET 3 OF THE REFERENCED CALCULATIONS.

THE ENCLOSED PAGES PRESENT A REVISED PROCEDURE FOR CALCULATING SLIDING RESISTANCE. THIS PROCEDURE UTILIZES THE "PATH OF LEAST RESISTANCE" AS AN ASSUMED FRACTURE SURFACE. THE RESULT IS A LOWER VALUE FOR TOTAL SLIDING RESISTANCE OF THE STRUCTURE.

AT THE SAME TIME, THE CONSERVATIVE ASSUMPTION OF THE WATER TABLE AT THE TOP OF THE STRUCTURE WAS REVISED TO REFLECT THE ACTUAL ELEVATION OF THE WATER TABLE. THE RESULT IS A LOWER SLIDING FORCE. THE CALCULATED FACTORS OF SAFETY AGAINST SLIDING ARE UNCHANGED FROM THE PREVIOUS ANALYSES.

URS/BLUME

130 Jessie Street (at New Montgomery)

San Francisco, California 94105

SHEET NO. 2

JOB NO. 0902-26 JOB

DIABLO INTAKE

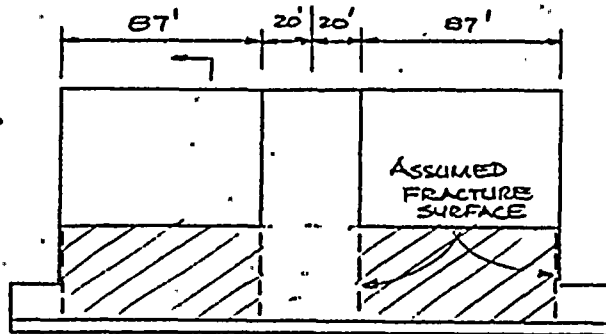
BY DAL DATE 8.1.78

CLIENT P.G. & E. SUBJECT

STABILITY

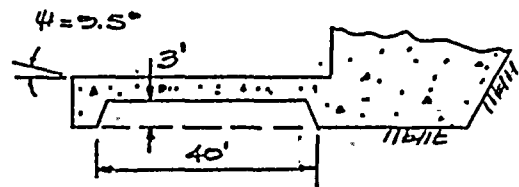
CHK'D DATE

SLIDING



Section →

PLAN



Section

RESISTING FORCES

- 1) $W' \tan \phi = 38,450^k (\tan 30^\circ) = 22,199^k$
 - 2) $S_u \times \text{AREA FRACT} = (3.0 \text{ ksf}) (2 \times 87 \times 40 + 4 \times 40 \times 3) = 22,320^k$
 - 3) $\frac{1}{2} \tan 9.5^\circ (W') = \frac{1}{2} (\frac{1}{6}) (38,450) = 320.4^k$
 - 4) $\text{PASS. PRESS.} = (6 \text{ ksf}) (7') (239.33') = 10,052^k$
 - 5) $\text{SOIL FRICTION ON SIDES (NO DYN. SOIL IN N-S DIRECTION)} = 2 (\tan \phi) (0.09 (\frac{1}{2}) 52^2 \times 105) = 14,753^k$
- TOTAL = 72,528^k

URS/BLUME

130 Jessie Street (at New Montgomery)

San Francisco, California 94105

SHEET NO. 3

JOB NO. 0902.26 JOB

DIABLO INTAKE

BY DAL DATE 8-1-78

CLIENT P.G. & E. SUBJECT

STABILITY

CHK'D DATE

BASE SHEAR

BASE SHEAR FROM EQ

BLUME	23536 ^k	+	6820 ^k	=	30356 ^k → 30356 ^k
NEWMARK	21077 ^k (pedestal)	+	6535 ^k (walls)	=	27612 ^k

SOIL PRESSURES

STATIC :	$P = 0.090 (1/2) (36)^2 \times 238'$	=	13880 ^k
SEISMIC :	$P = (0.086) (36)^2 \times 238'$	=	26526 ^k
	$(0.014) (18.5)^2 \times 238'$	=	<u>1140^k</u>

TOTAL = 71902^k

FACTOR OF SAFETY

AGAINST SLIDING = $\frac{72528}{71902} = 1.01$

URS/BLUME

130 Jessie Street (at New Montgomery)

San Francisco, California 94105

SHEET NO. 4

JOB NO. 0902-26 JOB

DIABLO INTAKE

BY DAL

DATE 9.1.78

CLIENT P.G. & E. SUBJECT

STABILITY

CHK'D

DATE

SLIDING

AT THE SUGGESTION OF DR. NEWMARK, AND COMPLYING WITH THE OBJECTIONS OF THE NRC STAFF REGARDING THE USE OF SKIN FRICTION AS A RESISTING FORCE, THE ANALYSIS WAS REVISED TO INCLUDE A 40% VALUE OF THE VERTICAL ACCELERATION ($0.4 \times 0.5g = 0.2g$) AND NEGLECTING THE EFFECT OF SKIN FRICTION FROM EARTH PRESSURE.

$$\text{NET WEIGHT} = 76,897^k$$

$$W' = 0.8W = 0.8(76,897) = 61,518^k$$

RESISTING FORCES

$$1) W' \tan \phi = 61,518^k (\tan 30^\circ) = 35,517^k$$

$$2) S_u \times \text{AREA FRACT} = (3.0 \text{ KSF}) (2 \times 87' \times 40' + 4 \times 40' \times 3') = 22,320^k$$

$$3) \frac{1}{2} \tan 9.5^\circ (W') = \frac{1}{2} (\frac{1}{6}) (61,518^k) = 5,126^k$$

$$4) \text{PASS. PRESS} = 6 \text{ KSF} (7') (239.33') = 10,052^k$$

$$\text{TOTAL} = 73,015^k$$

SLIDING FORCES

$$71,902^k \text{ (FROM SHEET 3)}$$

FACTOR OF SAFETY

$$\text{AGAINST SLIDING} = \frac{73,015^k}{71,902^k} = 1.02$$

