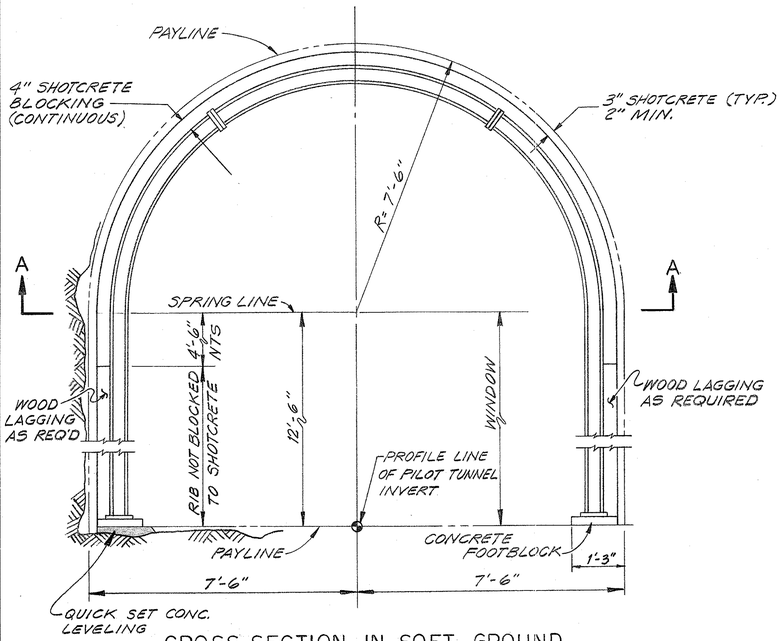
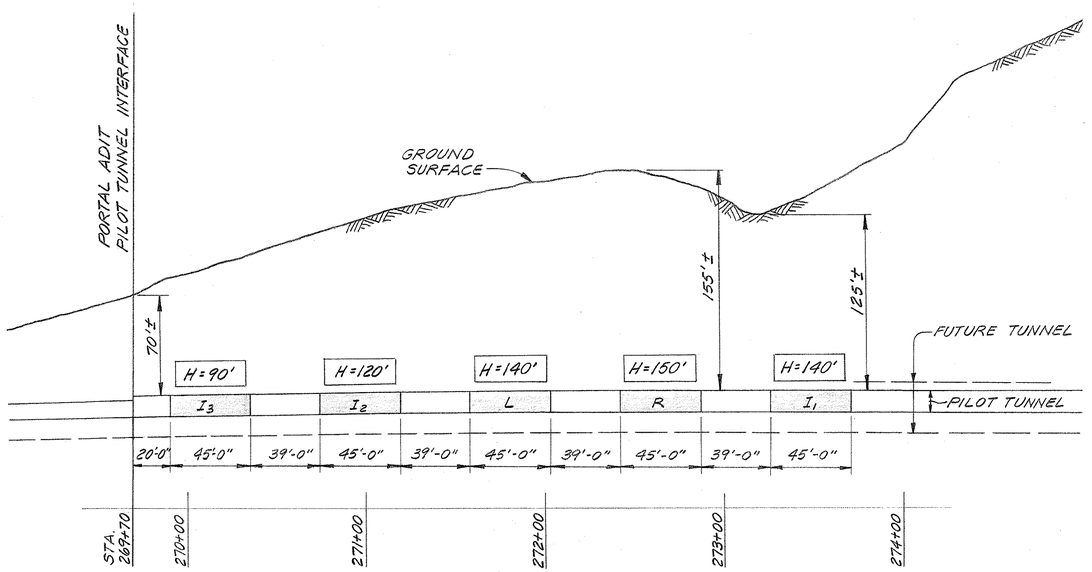
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(9)6	1975	11	17



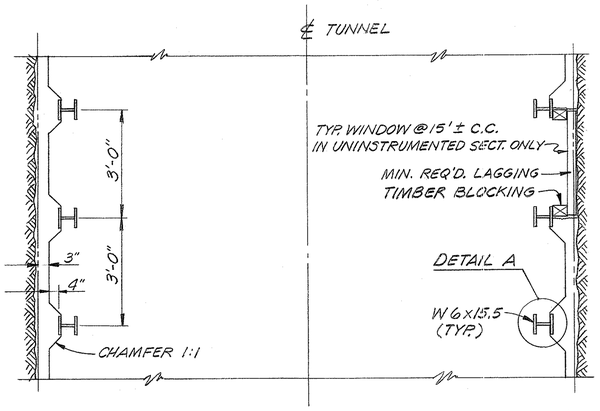
CROSS SECTION IN SOFT GROUND
SCALE: 1/2" = 1'-0"



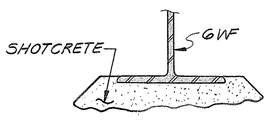
LOCATION OF TEST SECTIONS
PROFILE

TYPE A - STANDARD - NO INSTRUMENTATION
TYPE B - HAS 10" WHITTEMORE GAGE POINTS ON EACH LEG. SEE SHEET 12.
TYPE C - HAS BOTH GAGE POINTS AND PROVISION FOR LOAD CELLS.
H —— AVERAGE OVERBURDEN
I —— INSTRUMENTATION SECTION
L —— CONTROL SECTION (WOODEN LAGGING)
R —— RE-BAR RIB SECTION. SEE SHEET 13.

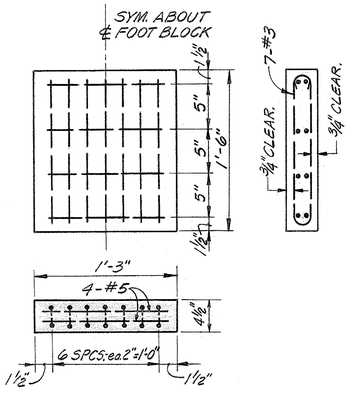
SECTION	NO. & TYPE OF SET			
	A	B	C	RE-BAR
I_1	—	6	9	—
I_2	—	10	5	—
L	—	10	5	—
R	—	—	—	15
I_3	—	10	5	—
OTHERS	80	—	—	—



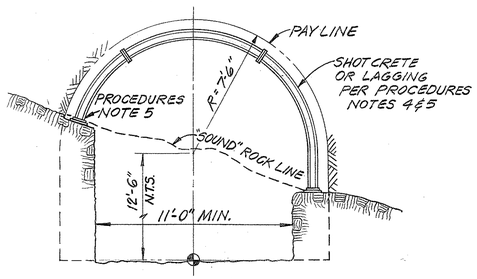
SECTION A-A
SCALE: 1/2" = 1'-0"



DETAIL A
NO SCALE



TYPICAL FOOT BLOCK DETAIL
SCALE: 1½" = 1'-0"



SECTION IN MIXED FACE
SHOWING PERMISSIBLE SECTION MODIFICATION
SCALE: 1/4" = 1'-0"

NOTES

1. LOCATION OF TEST SECTIONS APPROXIMATE; TO BE DETERMINED IN FIELD BASED ON ADDITIONAL BORING DATA BY OTHERS.
2. PROVIDE 140 STEEL SETS AS INDICATED ABOVE.
3. STEEL SETS TO BE SPACED AT 3'-0" CENTERS MAXIMUM THROUGHOUT SOFT GROUND AREA.
4. USE QUICKSET CONCRETE FOR FOOTBLOCK LEVELING; PLACE ON FIRMEST MATERIAL AVAILABLE.
5. CONCRETE FOOTBLOCKS TO BE USED UNDER ALL SOFT GROUND STEEL SETS AND INSTRUMENTED ROCKSETS IF ANY.
6. DRAIN CHANNELS TO CLEAR CONCRETE FOOTBLOCKS 18" MINIMUM.
7. BACKFILL AROUND AND ABOVE FOOTBLOCK TO DRAIN.
8. I_2 TEST SECTION TO HAVE RIBS LIGHTLY BLOCKED TO SHOTCRETE LINING IN LIEU OF SHOTCRETE BLOCKING IF SO DIRECTED.
9. SEE SHEET 12 FOR STEEL SET DETAILS. SEE SHEET 13 FOR RE-BAR RIBS.

PROCEDURES IN TRANSITION FROM ROCK TO SOFT GROUND SECTIONS

1. NX SIZE EXPLORATORY BOREHOLES SHALL BE DRILLED TO 100' ABOVE PILOT CROWN AT 100' INTERVALS BEGINNING AT STA. 280+00, REDUCE HOLE LENGTH TO 60' WHEN TRANSITION COMPLETED.
2. CONTINOUS ROOF SUPPORT CONSISTING OF PATTERNED PRETENSIONED ROCK BOLTING TO BEGIN 200' AFTER BEGINNING ALTERNATIVE B, UNLESS DIRECTED OTHERWISE. ROCK CROSS SECTION TO BE MAINTAINED.
3. WHEN HEADING NEARS ANTICIPATED ROCK TRANSITION AREA, A RECORD SHALL BE KEPT OF THE RATE OF DRILL ADVANCE IN THE ROCK BOLT HOLES AS A MEANS OF ANTICIPATING THE LESS COMPETENT MATERIAL.
4. WHEN THE STANDARD LENGTH ROCK BOLTS CANNOT BE ANCHORED AND TENSIONED SATISFACTORILY, THE CROSS SECTION SHALL BE CHANGED TO SOFT GROUND TYPE AND STEEL SETS INSTALLED AT 3'-0" CENTER MAXIMUM WITH LAGGING OR SHOTCRETE.
5. WHILE THE HEADING IS IN MIXED FACE, STEEL SETS SHALL BE SITE MODIFIED TO STAND ON "SOUND" ROCK; ROCK PILLARS OR WALLS MAY PROJECT INTO TUNNEL PROVIDED THERE IS TRANSVERSE CLEAR SPACE OF 11'-0", AT LEAST THE CENTRAL 120 DEGREES OF ARCH ROOF SHALL BE SHOTCRETED.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

ELWYN H. KING
REGISTERED PROFESSIONAL ENGINEER
No. 2496
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SOFT GROUND SECTIONS

TRANS KOOLAU PILOT TUNNEL

PROJECT Nº I-H3-1(9)6

SCALE: AS NOTED DATE: JULY 10, 1975

SHEET No. OF SHEETS