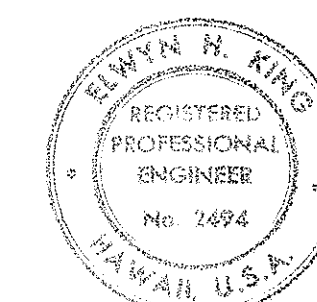
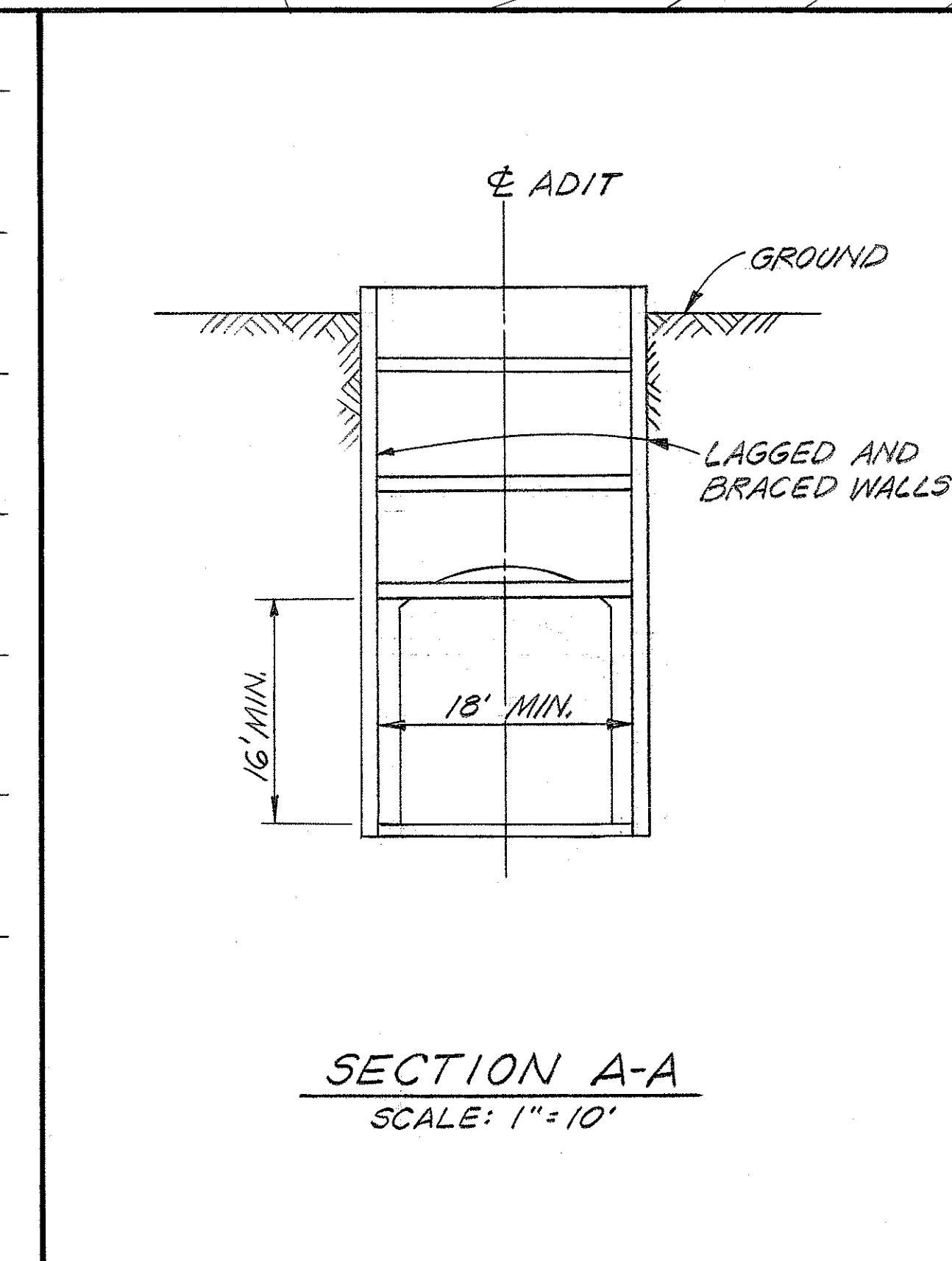
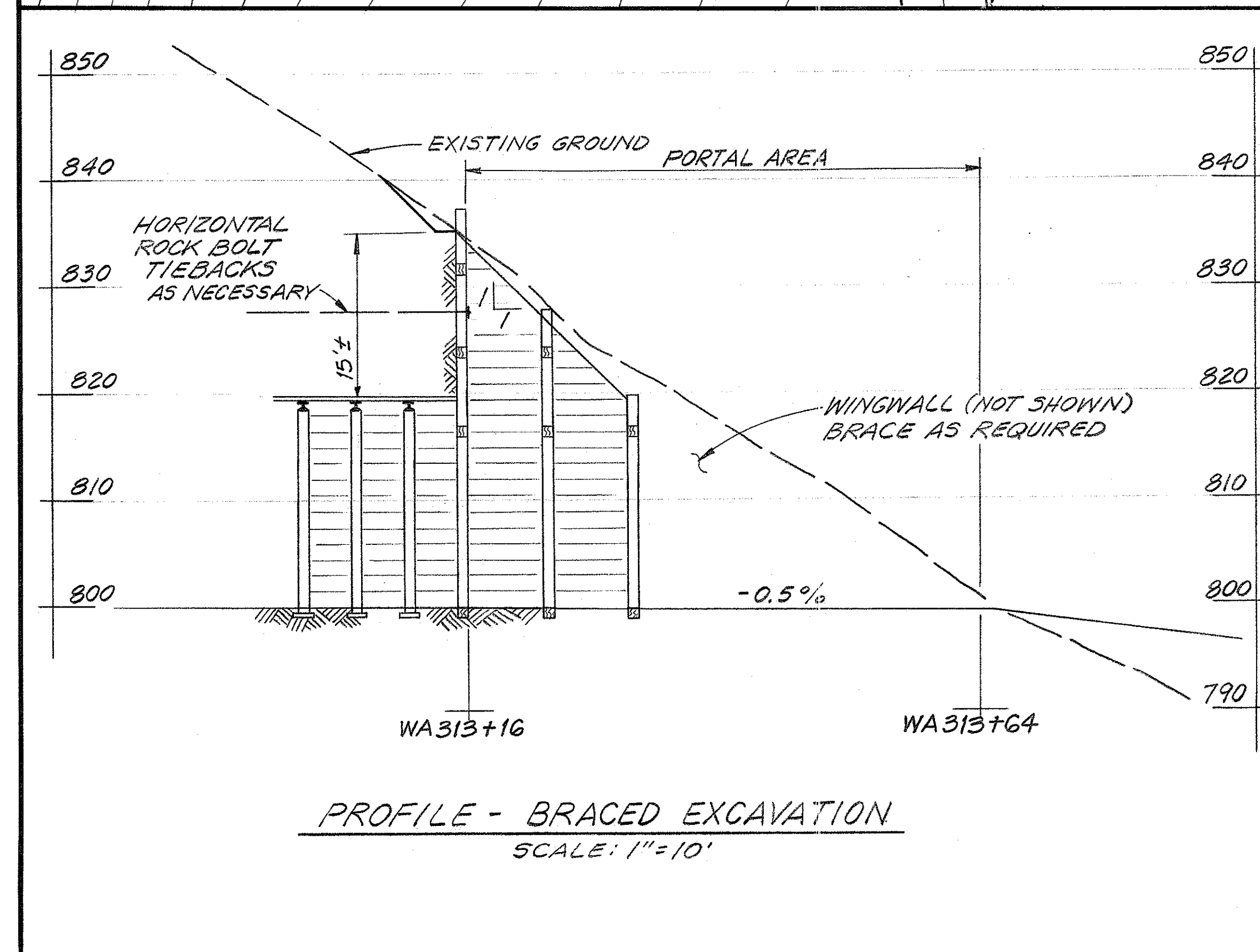
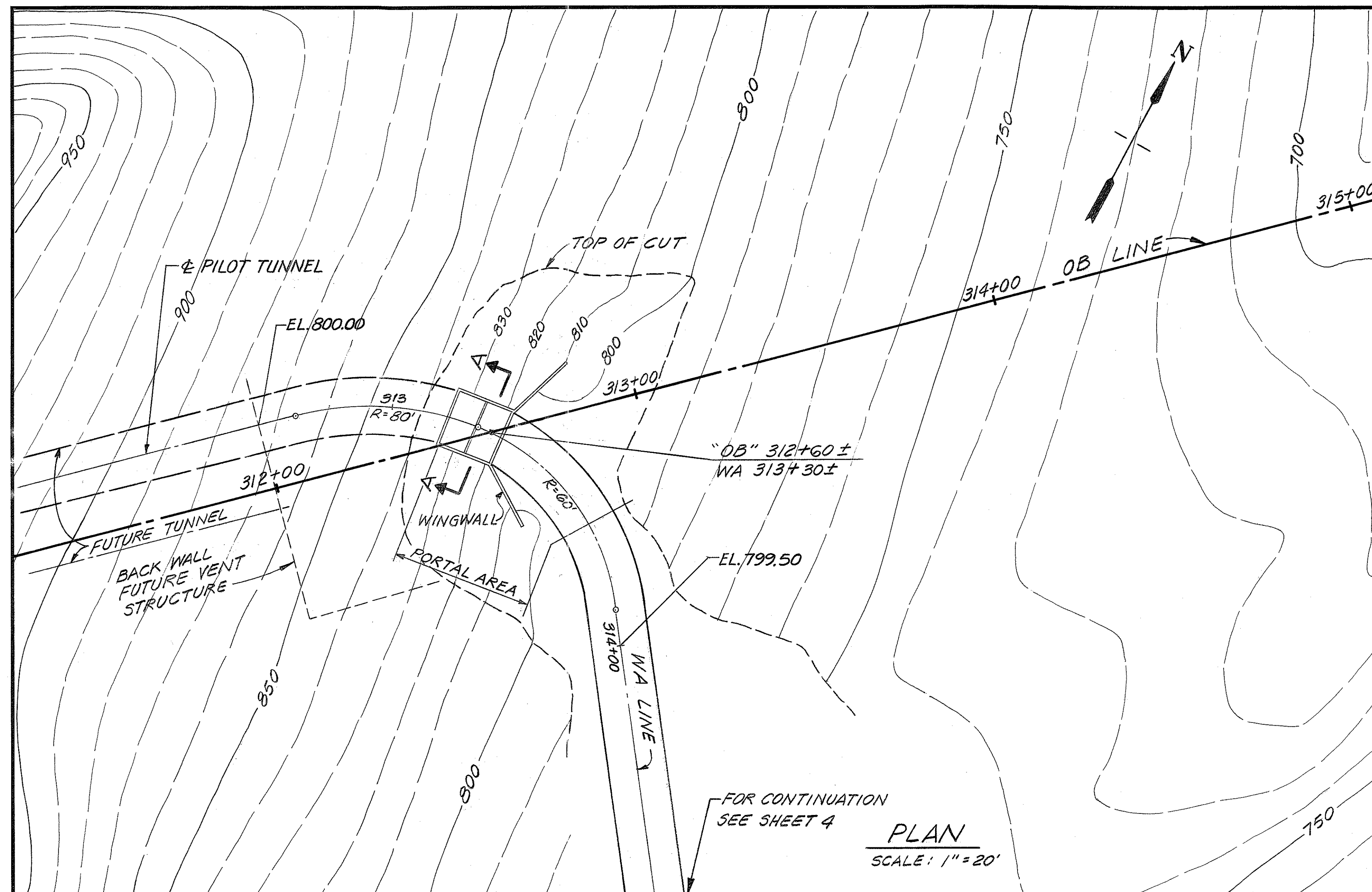


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(9)6	1975	6	17

NOTES FOR PORTAL AREAS

1. PORTAL ADITS AND ACCESS ROADS SHOWN ARE ILLUSTRATIVE ONLY.
2. CONTRACTOR TO LOCATE AND DESIGN, SUBJECT TO APPROVAL OF THE ENGINEER, AND CONSTRUCT PORTAL ADIT AND APPROACH CUT TO CRITERIA STATED IN 3, 4, 5 AND 6 BELOW.
3. FOR BOTH PORTALS:
 - a. MINIMUM RADIUS OF CURVATURE IN ADIT AND APPROACH CUT: 60 FEET ON CENTERLINE.
 - b. MINIMUM OVERBURDEN AT PORTAL FACE: 15 FEET OF RESIDUAL SOIL AND/OR ROCK.
 - c. STEEL SETS AT 4-FOOT CENTERS MAXIMUM TO BE USED FOR SUPPORT IN PORTALS AND PORTAL ADITS WITH EITHER SHOTCRETE OR TIGHT LAGGING BETWEEN SETS.
 - d. EARTH PRESSURES ON BRACED CUTS: 45 POUNDS PER CUBIC FOOT EQUIVALENT FLUID PRESSURE.
4. FOR WINDWARD PORTAL:
 - a. USE AT LEAST 10 STEEL SETS, SPACED AT NOT MORE THAN 4 FEET ON CENTER AT PORTAL.
 - b. MINIMUM CLEAR DIMENSION IN BRACED CUT, IF USED: WIDTH, 18 FEET; HEIGHT TO FIRST STRUT, 16 FEET.
 - c. MINIMUM CLEAR WIDTH AT INVERT OF OPEN CUT: 20 FEET.
 - d. MAXIMUM CUT SLOPES IN PORTAL AREA: 1:1
 - e. MINIMUM OVERBURDEN INDICATED AT THE PORTAL MAY BE REDUCED PROVIDED THERE IS AT LEAST 8 FEET OF SOUND ROCK IMMEDIATELY OVER THE PILOT CROWN.
 - f. NX SIZE EXPLORATORY BOREHOLES TO BE DRILLED AS DIRECTED BEFORE TURNING PORTAL.
5. FOR LEEWARD PORTAL
 - a. TUNNEL TO DAYLIGHT BEFORE REACHING MOANALUA STREAM.
 - b. RELATION TO MOANALUA STREAMBED: 25 FEET MINIMUM FROM STREAM CENTERLINE TO TOP OF CUT; 10 FEET MINIMUM FROM STREAMBED INVERT TO TOP OF ADJACENT CUT.
 - c. MAXIMUM GRADE IN ADIT AND APPROACH: 20 PERCENT.
 - d. MINIMUM CLEAR DIMENSIONS OF ADIT: WIDTH, 10 FEET; HEIGHT ON CENTERLINE, 12 FEET.
 - e. MINIMUM CLEAR DIMENSIONS IN BRACED CUT, IF USED: WIDTH, 10 FEET; HEIGHT TO FIRST STRUT, 12 FEET.
 - f. MINIMUM CLEAR WIDTH AT INVERT OF OPEN CUTS: 16 FEET.
 - g. MAXIMUM OPEN CUT SLOPES: 1:1
 - h. USE STEEL SETS FOR THE FULL LENGTH OF PORTAL ADIT AT 4 FEET CENTERS MAXIMUM.



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
E. W. H. King

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WINDWARD PORTAL DETAILS

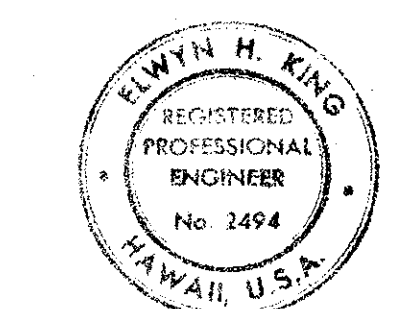
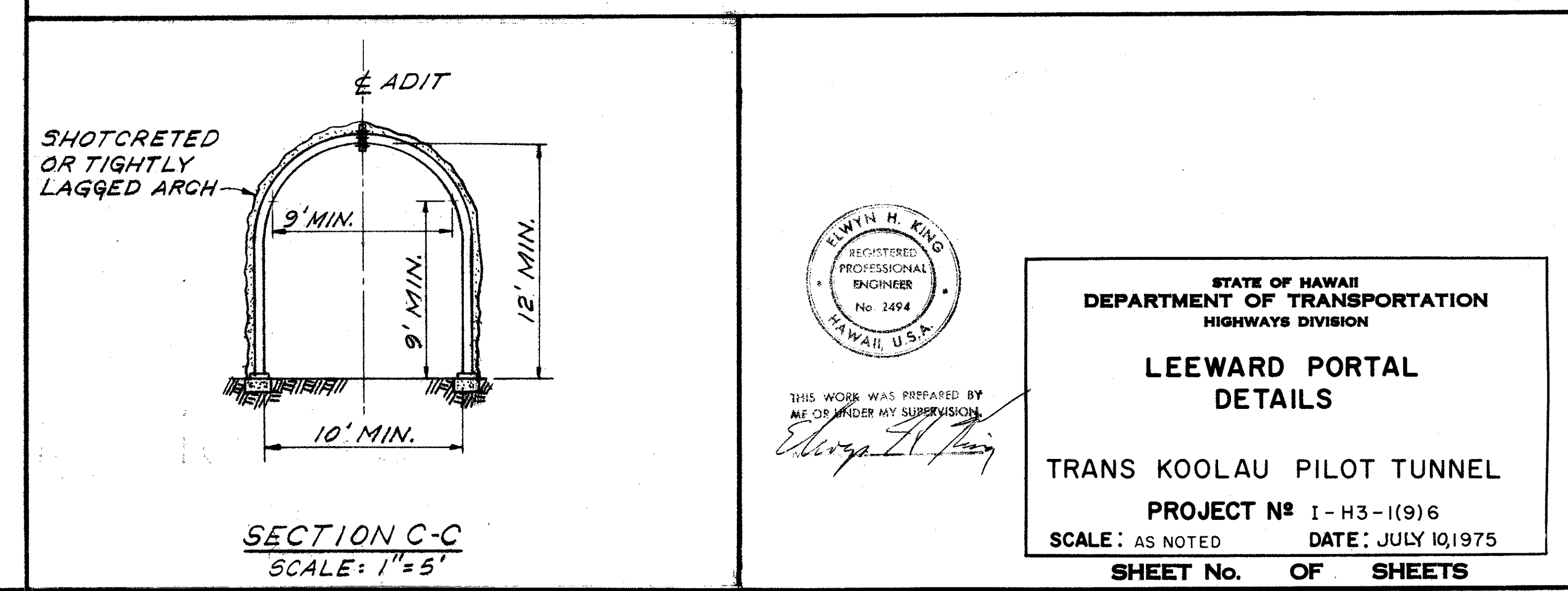
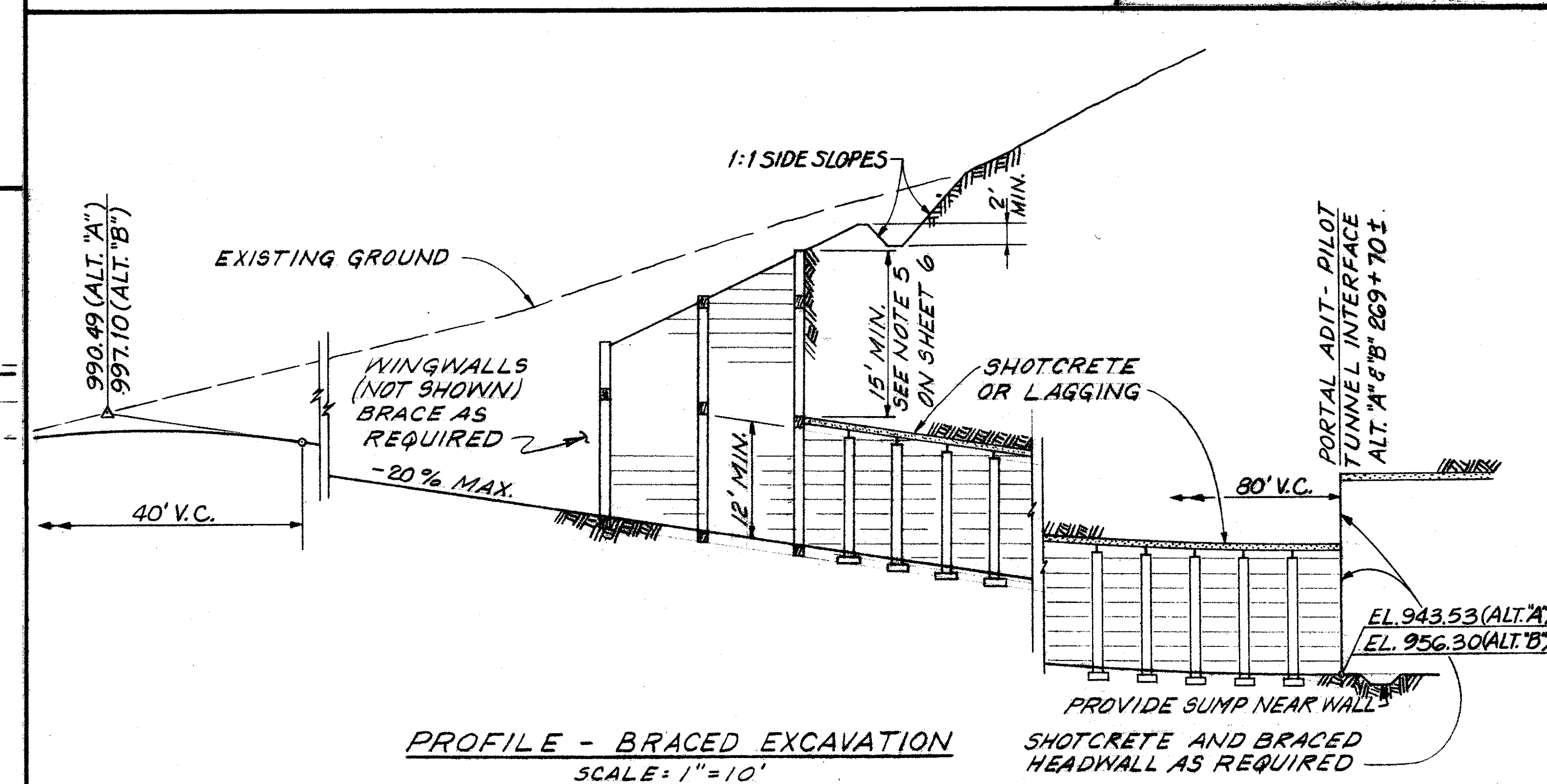
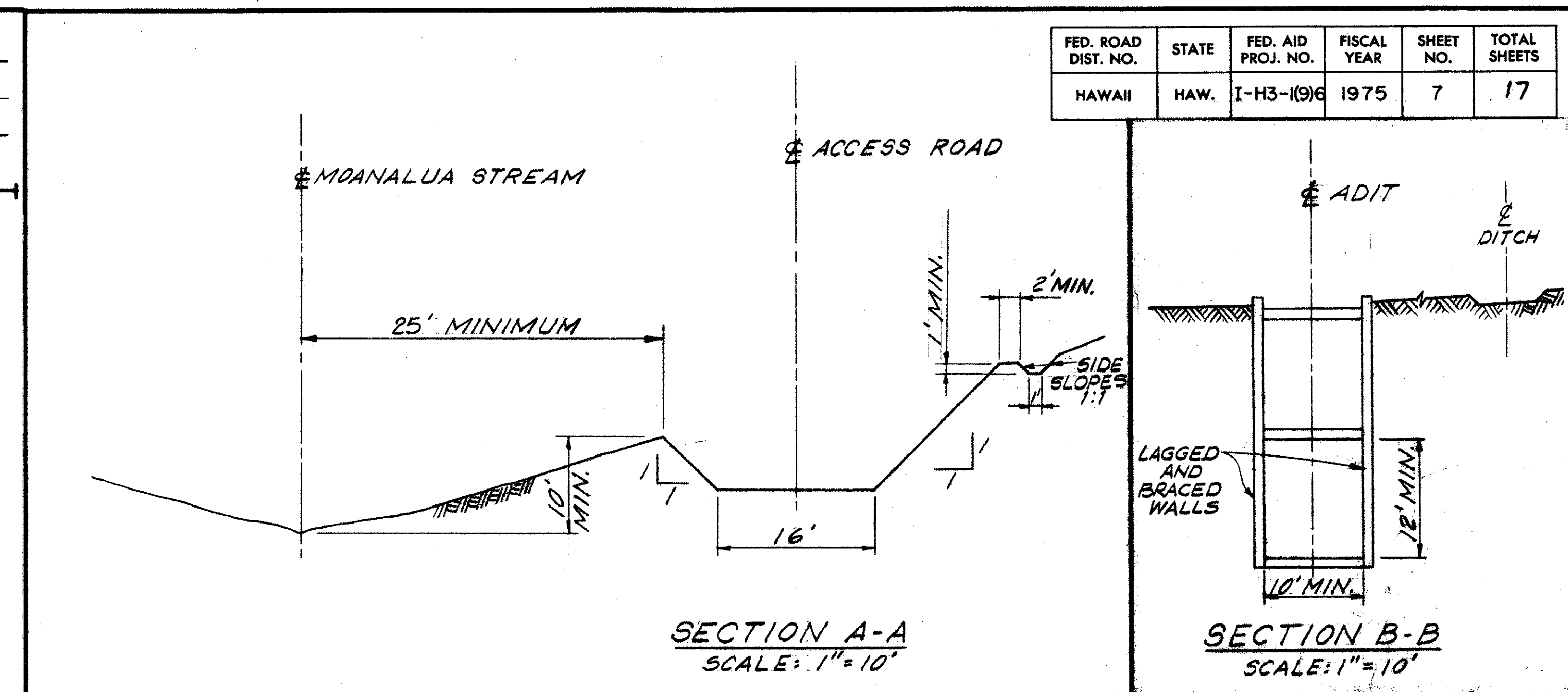
TRANS KOOLAU PILOT TUNNEL

PROJECT No I-H3-1(9)6

SCALE: AS NOTED DATE: JULY 10, 1975

SHEET No. OF SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-(9)6	1975	7	17

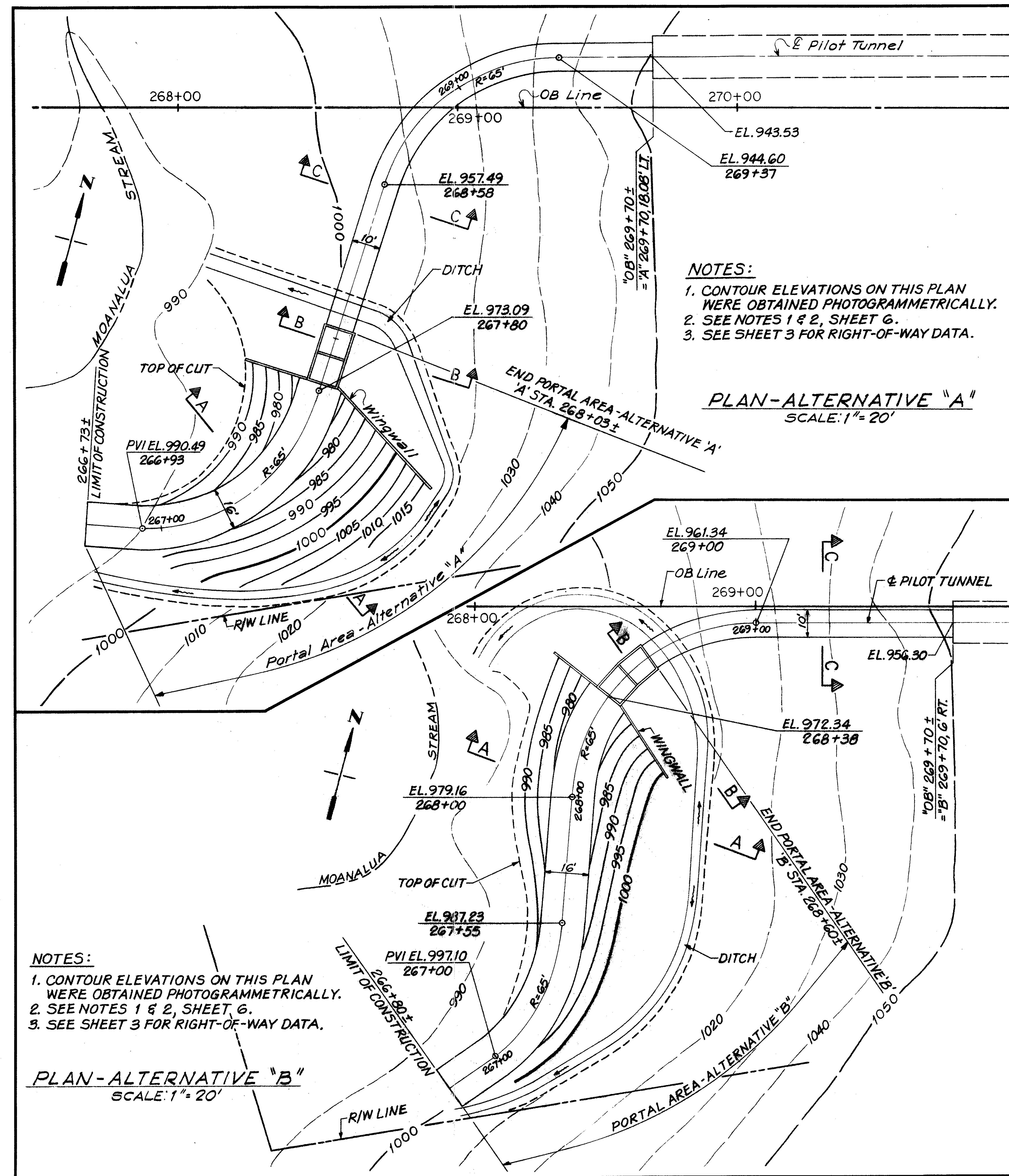


THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Edwin H. King

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LEEWARD PORTAL DETAILS

TRANS KOOLAU PILOT TUNNEL
PROJECT NO. I-H3-(9)6
SCALE: AS NOTED DATE: JULY 10, 1975
SHEET No. 7 OF 17



- NOTES:**
1. CONTOUR ELEVATIONS ON THIS PLAN WERE OBTAINED PHOTOGRAMMETRICALLY.
 2. SEE NOTES 1 & 2, SHEET 6.
 3. SEE SHEET 3 FOR RIGHT-OF-WAY DATA.

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
DESIGNED BY	_____
CHECKED BY	_____
NO.	_____