

DESIGN CRITERIA REPORT
FOR
FOUNDATION GRADING AND CROSS DRAINAGE
FOR THE
ACCELERATOR HOUSING

REPORT TO SLAC NO. ABA - 42
STANFORD UNIVERSITY SUBCONTRACT S-128
UNDER AEC CONTRACT AT(04-3)-363

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I INTRODUCTION

This report lists design criteria and other pertinent information to be utilized in performing Title I design for the development of the accelerator housing foundation from the west end to Station 100+00. The construction will consist of excavation to a suitable foundation, the placement of foundation fill, and the installation of cross drainage culverts under the housing.

II DESIGN CRITERIA

General

The definite alignment, elevations, and grade for the accelerator housing will be determined from the total earthwork study along the accelerator housing, beam switchyard and end stations. The cut and fill quantities will be balanced. Therefore, in addition to the requirements for the accelerator housing grading, there is included in this report the necessary basic data to compute earthwork quantities in the beam switchyard and end stations.

Cross Section, Accelerator Housing (See Drawings SKC-03222-B and C)

Concrete structure - The interior dimension of the housing will be 11 feet wide by 10 feet high, except for portions adjacent to the beam stub-out housing and mid-point horizontal access.

Shielding fill- Fill compacted to a dry density of at least 115 pcf will be placed over the housing to give a minimum shielding thickness (including concrete) of 35 feet.

Top width of embankment at klystron floor level- The top width of embankment will be 90 feet. The longitudinal centerline will be 12'-3" south of the accelerator housing centerline.



These basic layout dimensions will be used in the total earthwork balance study.

Alignment and Grade (See Drawing SKC-0322-A)

The alignment and grade will be determined from the following requirements:

Balanced earthwork quantities - The cut and fill quantities will be balanced for the earthwork for the accelerator housing, beam switchyard and end station areas. See Drawings SKC-03222=D and E for layout of beam switchyard and end station areas.

Grade - The accelerator housing will have a grade of approximately 0.5 percent-sloping downward from west to east.

Elevation - The top of fill at klystron floor level will be considerably above the maximum water surface (El. 297) expected in the reservoir impounded by the proposed Ladera Dam.

Settlement Tolerances

The designs and specifications will be based on the assumption that the floor of the accelerator housing will be within 2 inches of a straight line by October 1, 1965.

Geologic and Soils Data

The Title I designs will be based on data presently available as contained in the Blume IV report and information revealed from the shallow trench excavated along the accelerator alignment, plus geologic field mapping performed during the past year. If the presently planned soils investigation reveals substantially different soil properties than those presently assumed, designs will be modified accordingly. There is also a possibility that actual soil conditions may vary from those indicated by the soils investigation. Therefore, close control and inspection of the earthwork construction will be exercised.

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III STORM DRAINAGE

Location

Culverts will be designed in order to maintain the drainage channels which exist at the following approximate centerline stations: 21+50, 32+50, 47+00 and 61+00.

Design Capacity

Normal design criteria will be used allowing for a 10-year storm with head capacity for a 100 year storm. The "culvert" at Station 61+00 will be designed as an "equalizer" for reservoir water of the proposed Ladera Dam Water Conservation Project, in order to limit the head differential on either side of the accelerator. Flow capacity requirements will be reviewed by the Corps of Engineers, San Francisco District.

Alignment

Based on present information from SLAC, culverts will be on straight alignments. Although the culverts will cross in close proximity to the accelerator housing, There will be no direct line radiation exposure.

Erosion Control

Berms and/or paved ditches at tops of cuts will be utilized to minimize runoff on cut banks. Similarly, runoff will be drained along roads to downdrains at specific intervals by ditches and/or curbs along the paved road on the accelerator embankment.

Disposal

The ultimate disposal of all drainage is along existing ground and channels to San Francisquito Creek

IV COST ESTIMATES

A summary of construction costs is as follows:

Earthwork	\$1,750,000
Culverts (4)	193,000
Bench drains	<u>17,000</u>
	\$ 1,960,000

V DESIGN AND CONSTRUCTION SCHEDULE

See Drawing SKC-03222-F for general bar schedules for the design and construction phases. The schedule is based on starting earthwork construction as early as practicable, October 1, 1962, so that three sectors (1000 feet) of klystron gallery are sufficiently completed to start installing equipment by September 1963.

The design schedule required to accomplish this date is tight and, therefore, all design data should be available for design use at the beginning of each design phase. Once the design phase is started, any major change in design criteria will necessarily result in extension of the schedules. The detailed sequence of events prior to start of earthwork construction is as follows:

<u>Event</u>	<u>Date</u>	<u>Time</u>
Interim report including supplemental geology and soils information obtained by borings and testing at critical locations. Data to be used as basis of Title II design	3/26 - 5/14/62	7 weeks
Submit design criteria	3/26/62	
Design criteria approved	3/30/62	

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<u>Event</u>	<u>Date</u>	<u>Time</u>
Title I Design		
Foundation data contained in Blume IV report and findings from surface trench to be utilized	4/2 - 5/4/62	5 weeks
Submit Title I	5/4/62	
Title I approved <i>revised</i>	5/11/62	
Interim report on geology and soils completed	5/11/62	
Title II design	5/14 - 7/27/62	11 weeks
Submit Title II documents	7/27/62	
Title II documents reviewed	7/27 - 8/3/62	1 week
Title II documents revised	8/3 - 8/10/62	1 week
Title II documents reproduced	8/10 - 8/17/62	1 week
Title II documents, bidding	8/17 - 9/14/62	4 weeks
Bid analysis	9/14 - 9/28/62	2 weeks
Award construction contract	10/1/62	

FHM/pcw