


TITLE I REPORT  
ON  
SECOND STORY ADDITION TO ONE-STORY WING  
CENTRAL LABORATORY

REPORT TO STANFORD LINEAR ACCELERATOR CENTER - ABA No. 101  
STANFORD UNIVERSITY SUBCONTRACT S-136  
UNDER AEC CONTRACT AT(04-3)-400

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I INTRODUCTIONA. SCOPE

This report presents the Title I work performed for the Second Floor addition to the One-story wing of the Central Laboratory. Included are preliminary plans and elevations, schedule of work and estimates.

B. FACILITY

The Central Laboratory is located within the "Campus" area, on the Stanford Linear Accelerator site.

This second story addition is intended to be a multiple use facility housing 50 persons in 7,016 gross square feet of area. Space will be provided for Research Group offices and light laboratories.

Construction will be planned to minimize interference with scheduled occupancy of the Two-story and Three-story wings. Occupancy of the first floor may be had prior to completion of the addition.

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## II BASIS FOR DESIGN

### A. SITE

1. Location. In essence the existing second story of the Two-story wing will be extended west, over the One-story wing.

2. Preparation. Provision was made in the original design of the building to accommodate the second floor addition, thus reducing structural and utility changes to a minimum.

### B. BUILDING

1. General. This addition will be designed in accordance with the requirements of the occupant.

2. Architecture. The architectural vocabulary in the design of the additions is compatible with that already approved by the Stanford University Board of Trustees. Components include painted concrete shear walls, typical walls of pressed metal siding and standard architectural sash and doors for openings, sight barrier of metal siding around mechanical equipment, and balcony with stairs on the west side. The architectural details are similar to the existing Two-story structure.

There are no ceilings in the office or laboratory areas. Ceilings can be added if required for light or vapor-tight barriers.

3. Structure. The second story addition will be a framed structure supported by walls and columns of the first floor. The roof will be designed for conventional roof loading plus an allowance for sight screens and mechanical equipment.

4. Mechanical. Laboratory areas within the building will be heated and ventilated, and office areas air-conditioned.

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Applicable specifications will be those used for the other parts of the building. Heating and cooling will be by roof-mounted forced air units supplied with hot and chilled water from the system for the existing structure.

Demineralized cooling water, domestic water, compressed air and natural gas will be supplied from existing lines.

Tapping facilities for all of these requirements have been provided.

5. Electrical. Office and laboratory areas will be illuminated to 60 foot-candle level. All other areas will have a 25 foot-candle level.

In order to permit flexibility in location of intermediate office partitions, electrical and telephone outlets will be located in corridor partitions and exterior walls wherever possible. The convenience outlets of each office will be on separate circuit breakers. Grounding will be provided to one point in each laboratory.

Power will be brought in from the substation through a spare conduit already installed.

6. Health and Safety. All applicable codes, including the Uniform Building Code and AEC Design Criteria, have been followed regarding health, safety and fire protection.

The addition will be built of noncombustibles and will have automatic water sprinklers throughout. The fire protection system also includes an alarm system, hand extinguishers (provided by SLAC) and hose racks.

A Safety Committee has been formed to develop personnel safety policies applicable to the Central Laboratory as well as the entire Accelerator project. Among the practices to be adopted will be Color Coding of pipelines, safety aisle painting and first aid measures.

III OUTLINE SPECIFICATIONSA. GENERAL (Per Uniform Building Code, 1961 edition)

1. Occupancy. Group F-2.
2. Type of Construction. Type IV (N).
3. Number of Stories. One.
4. Location of Property. One-Story wing.
5. Area Limitations (per UBC)

Type IV (N). Fire Zone III.

Basic area 12,000 square feet allowable

Condition A (per UBC - sprinklered, without separation)

An increase of 100% allowable basic area is permitted due to location on property. No added increase in allowable area is permitted when sprinklered since building is Type IV (N), three-story.

Total building area =  $2 \times 24,000 = 48,000$  square feet allowable.

Total building area with addition = 56,688 square feet actual.

Separation required.

Condition B (per UBC - sprinklered, with two-hour separation between Three-story wing and Laboratory wings)

Three-story wing: Total area =  $2 \times 24,000 = 48,000$  square feet allowable.

Laboratory wing: Total area =  $2 \times 24,000 \times 2 = 96,000$  square feet allowable.

Total area\* = 32,220 square feet actual with addition.

\* Total two-story area.

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Condition C (per AEC)

AEC Criteria limits noncombustible separated areas to 15,000 square feet unsprinklered and 40,000 square feet sprinklered. Separation required since actual area is 56,688 square feet.

B. FOUNDATION

The second-story addition will be supported by existing foundations of One-story wing.

C. STRUCTURAL FRAME

Reinforced concrete shear walls and roof slab, with steel columns to support the roof

Live Loads:

Office areas	100 psf
Laboratory areas	150 psf
Roof	30 psf
Wind and seismic	UBC

Wind and seismic loads to be taken by reinforced concrete shear walls.

D. ROOF

The roof for the second-story addition will be 4-ply built-up tar and gravel with colored granular material on 2-inch rigid insulation.

E. EXTERIOR WALLS

Concrete and pressed metal panels similar to Mahon, or other equal, insulated. Interior finish surface of painted drywall for the Second-story addition.

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Windows will be fixed architectural projected aluminum sash with horizontal muntin bars.

F. PARTITIONS

All interior, non-load bearing, to be of drywall construction with wood studs, or 3-inch hollow drywall. All corridors to have 1-hour rating.

Interior surfaces of concrete shear walls will be smooth "sack finish" and painted.

G. FLOORS

Offices - Asphalt tile on concrete with rubber base.

Laboratories - Vinyl asbestos tile with rubber base.

H. CEILINGS

Offices and laboratories will be exposed painted concrete.

I. DOORS

Hollow core wood flush panel doors between offices. Metal and glass and solid core wood doors will be used where required for legal exits such as corridor and exit access, and through 1-hour rated partitions and separation walls. Wire glass will be provided in the upper half of all laboratory doors.

J. WINDOWS

DSB glass for typical sash with 1/4-inch plate in public entrance doors and 3/16-inch crystal in fixed entrance area sash.



K. MECHANICAL

Offices will be heated, cooled and ventilated. Laboratories heated and ventilated with 100% make-up air. Hot water and cooling water to be supplied by connecting to Two-story wing. Offices to be air conditioned.

L. ELECTRICAL

60 foot-candle illumination in office and laboratory areas, with 25 foot-candles in other areas.

Second-story Addition load requirements as follows:

	<u>Connected</u>	<u>Max. Demand</u>
Lighting	20 kva	20 kva
Convenience outlets	40 kva	16 kva
Heating, ventilating, air conditioning	30 kva	30 kva
Laboratory test power	<u>100 kva</u>	<u>50 kva</u>
	190 kva	116 kva

M. FIRE PROTECTION

Automatic water sprinkler system throughout, supplemented by alarm system and hose racks. Hand extinguishers will be furnished under another contract.

N. COMMUNICATIONS SYSTEMS

Project switchboard is located in the Administration and Engineering Building.

Telephone outlets will be located in corridor partitions and exterior walls wherever possible.

0. UTILITIES

All required utilities are available in the adjacent building.

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IV SCHEDULE

START TITLE II	31 August	1964
Complete Structural Drawings	18 September	1964
ABA-Contract/Negotiation	25 September	1964
Contractor/Order Structural Steel	28 September	1964
Submit Structural Steel Shop Drawings	7 October	1964
ABA/Drawing Approval	12 October	1964
Fabricate & Deliver Structural Steel	2 November	1964
Erect Structural Steel	6 November	1964
Form-Pour-Cure-Strip Shear Walls & Roof Slab	29 December	1964
 BALANCE OF TITLE II		
Title II 50% Production	7 October	1964
50 % Submittal	12 October	1964
50% Comments	20 October	1964
90% Production	6 November	1964
90% Submittal	16 November	1964
90% Comments	25 November	1964
Revisions	2 December	1964
Review & Reproduction	7 December	1964
Estimates (ABA & Contractor)	14 December	1964
Negotiation	21 December	1964
SLAC/ABA/Approval	28 December	1964
Notice to Proceed	29 December	1964
Construction Complete	26 April	1965
Punch List	3 May	1965

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V DRAWING LIST

SK-A-106	FLOOR PLAN
SK-A-107	ELEVATION

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VI TITLE I COST ESTIMATE  
CENTRAL LAB - SECOND FLOOR ADDITION

ACCOUNT NUMBER	ITEM	QUANTITY	COMPOSITE UNIT COST	ITEM COST	TOTAL COST
5-400-1	<u>STRUCTURE</u>				
	Concrete Work	-	LS	\$47,200	
	Structural Steel	20 T	\$750.00	15,000	
	Miscellaneous Metal	-	LS	15,200	
	Metal Siding	2,100 SF	2.00	4,200	
	Roofing	8,900 SF	0.70	6,200	
	Windows - Glasswork	700 SF	5.70	4,000	
	Doors	41 EA.	173.00	7,100	
	Drywalls & Ceiling	10,150 SF	1.25	12,700	
	Floors	7,000 SF	0.74	5,200	
	Painting Work	40,000 SF	0.16	6,400	
	Building Accessories			5,000	
				\$128,200	
	STRUCTURE, SUB TOTAL				\$128,200
5-400-1	<u>MECHANICAL</u>				
	Heating, Ventilating & Piping			\$18,200	
	Fire Protection System			4,800	
				\$23,000	
	MECHANICAL, SUB TOTAL				\$ 23,000
5-400-1	<u>ELECTRICAL</u>				
	Lighting & Power			\$17,100	
	Telephone & Fire Alarm			3,800	
				\$20,900	
	ELECTRICAL, SUB TOTAL				\$ 20,900
	TOTAL COST, ACCOUNT NO. 5-400-1				\$172,100

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