

TITLE REPORT

ON

ELECTRICAL SITE UTILITIES DISTRIBUTION

REPORT TO STANFORD LINEAR ACCELERATOR CENTER - NO. ABA-47  
STANFORD UNIVERSITY - ABA SUBCONTRACT S-128  
UNDER STANFORD - AEC CONTRACT AT(04-3)-363

SLAC AHO 1991-012B14

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TITLE I REPORT  
ON  
ELECTRICAL SITE UTILITIES DISTRIBUTION

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## I. INTRODUCTION

### SCOPE:

This report presents the Title I work performed for the underground electrical utilities consisting of the power, communication, and fire alarm systems in both the Shop Complex and Main Building areas. It is intended to supplement A-B-A Report No. 40 covering the wet utilities. The construction of the electrical duct system only is included at this time so that the excavation for installation and final grading can be accomplished simultaneously with all of the underground work.

The Pacific Telephone and Telegraph Co. will supply the telephone conduits to a point 15 feet inside of the property line as shown on SK 11-02-614-701.

Electrical cables will be pulled to the various buildings as required and energized from a temporary line to the 60 kv substation at a later date.

Both communications and power duct runs to buildings under construction will be connected to the conduits stubbed out by each building electrical Contractor. Provisions will be made for connections to future buildings either from manholes or capped duct runs terminated 5 feet outside the building.

## II. BASIS FOR DESIGN

The facilities described herein have been so located as to service the various buildings from the same side as the wet utilities, thus enabling future expansion of the individual sites. Since adequate space is available this has been accomplished with little or no congestion.

III OUTLINE SPECIFICATIONS1. ELECTRICAL

The electrical work shall include the underground duct system complete with manholes and all appurtenances as shown on drawing SK 11-02-614-701.

A. Ducts shall be made of fiber in accordance with Federal Specification No. W-C-581, Type I for use with concrete envelope. A duct size of 4-inch diameter has been chosen as a standard. The concrete encasement is to be poured with concrete having a red oxide coloring added in order to identify all electrical ducts. Steel reinforcing bars are to be used in the concrete envelope for duct runs installed under areas of high surface loading.

B. Manholes are of sizes shown on drawing SK 11-02-614-701 and are to be complete with covers, sumps, pulling irons, provisions for cable racks and a ground rod.

C. A ground wire consisting of a 4/0 AWG, stranded, bare copper cable shall be installed in conjunction with each duct run. The ground wire is to be embedded in the concrete envelope.

2. COMMUNICATIONS

The communication facilities consist of underground ducts encased in concrete and wireway trays installed in the underground utility trench. The required number of ducts were based on the following assumptions:

- A. Four 4-inch ducts to A & E building.
- B. Six 4" ducts to the Central Lab Building.
- C. Four 2-inch ducts to the Test Lab, Utility Bldg. A", and each building in the shop complex including the ABA construction office building.

The four ducts in each group are nominally assigned the following activity:

- 1) Telephone - Top duct located to South or West
- 2) Fire Signal " " " " North or East
- 3) Intercommunication - Bottom duct located to North or East
- 4) Public Address - " " " " South or West

Pull wires will be installed in all ducts.

### 3. FIRE ALARM SYSTEM

The fire alarm unit in each building operates a local energy master fire alarm box outside the building which transmits a coded electrical signal. The signal is received and recorded at the main fire alarm cabinet and is retransmitted to the Control Building and to the responsible fire department.

IV SCHEDULE

|   | <u>Time</u> | <u>Completion Date</u> |
|---|-------------|------------------------|
| Title I Submittal                         |             | 6/28/62                |
| Review and Approval by SLAC               | 1 week      | 7/5/62                 |
| Start of Title II Work                    |             | 6/14/62                |
| Title II 50% Submittal                    |             | 7/6/62                 |
| Title II 90% Submittal                    |             | 7/20/62                |
| Review                                    | 2 weeks     | 8/3/62                 |
| Review by ABA and make required revisions | 2 weeks +   | 8/22/62                |
| Reproduction of Contract Documents        | 1 week      | 8/29/62                |
| Bidding Period                            | 4 weeks +   | 9/27/62                |
| Analysis of Bids & Award of Contract      | 3 weeks +   | 10/31/62               |
| Construction Period                       | 4 months    | 3/4/63                 |

V LIST OF DRAWINGS

| <u>Drawing Number</u> | <u>Date</u> | <u>Title</u>                          |
|-----------------------|-------------|---------------------------------------|
| SK 11-02-614-701      | 6/14/62     | Initial Site Underground Duct Systems |

VI TITLE I COST ESTIMATE

|   |               |
|---|---------------|
| 12 Kv Ducts & Manholes                      | \$23,100      |
| Communications, Ducts, Manholes & Handholes | <u>23,200</u> |
| TOTAL                                       | <u>46,300</u> |

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