AETRON-BLUME-ATKINSON

INTEROFFICE MEMORANDUM

October 6, 1964

To: G. G. Bawden

From: W. B. Biebesheimer

Subject: Area Lighting - Title I Report - ABA-95

Attached are 20 copies of the subject report for distribution to SLAC and four additional copies for your use. This report has been revised as of October 5, 1964.

W. B. Biebesheimer
Project Engineer

WBB/cb

cc: R. L. Sharpe
L. W. Swanson
R. G. Kitson
G. L. Johnson
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W. N. Harris
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TITLE I REPORT
FOR
AREA LIGHTING

REPORT TO STANFORD LINEAR ACCELERATOR CENTER - NO. ABA-95
STANFORD UNIVERSITY - ABA SUBCONTRACT S-136
UNDER STANFORD - AEC CONTRACT AT(04-2)-400

Submitted by W. B. Biebesheimer Approved by Roland L. Sharpe

W. B. Biebesheimer

Roland L. Sharpe

AETRON-BLUME-ATKINSON
A Joint Venture
ARCHITECT-ENGINEER-MANAGER
Palo Alto, California

October 5, 1964

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I. INTRODUCTION

A. SCOPE

This report presents the design criteria and master plan for the entire SLAC Area Lighting program exclusive of lights supported from buildings and other structures. The drawings presented herein are compatible with the latest site improvement and landscaping drawings associated with the campus and Klystron Gallery areas. The criteria has been developed jointly by ABA and SLAC with advice and recommendations from C. L. Luckman and Associates, architectural consultants, and Royston, Hanamoto, Mayes and Beck, landscape architects. Included are a cost estimate and sketches of the proposed luminaires.

B. CRITERIA

The basic criteria for the Area Lighting were established in the following documents:

1. Area Lighting - Memorandum Crisp to Sharpe, dated March 1, 1963.
2. Area Lighting - Memorandum Crisp to Swanson, dated November 1, 1963.
3. Area Lighting - Memorandum Crisp to Swanson, dated February 26, 1964.
4. Print of SK 04103-A, Landscaping Master Plan with luminaire locations superimposed by SLAC.
5. Landscaping - Memorandum Crisp to Biebesheimer, dated April 23, 1964.

II. BASIS FOR DESIGN

In general, provisions have been made for supply of power and control of lighting from buildings adjacent to the areas to be lighted. Some conduits have already been stubbed out from the buildings to parking and planting areas, and under roadways to allow access to isolated areas.

For areas close to buildings, power will be supplied at 120 volts. For areas at greater distances where voltage drops may be substantial, power will be supplied at 480 volts with a 480 to 120 volt transformer mounted at the base of the luminaire.

In general, control of lighting will be by photoelectric cells. The number and location of the photoelectric cells, manual controls, or time clocks will be determined during Title II design based on the circuitry, the arrangement of the features, and economics.

It is anticipated that lighting of the Target Area yard will be provided by means of portable light standards which will support vapor-tight floodlights similar to Wide-Light fixtures equipped with 400 watt color corrected mercury vapor lamps. Provisions will be made for power to four areas of approximately 2500 square feet each for illumination to an intensity of approximately 20 foot candles. Illumination power for simultaneous use in these areas will be distributed to handholes at 480 volts, 3 phase from End Stations "A" and "B". The 480 volt service will serve a dual purpose in that it will also be available for miscellaneous applications.

Direct burial cable will be used along perimeter roads, in parking lots, and other areas away from buildings and other utilities. In paved areas, areas adjacent to buildings and utility systems, conductors in conduit will be used.

III. OUTLINE SPECIFICATIONS

LUMINAIRES

1. Luminaires for roadways and parking areas shall be of the post type, mounted on a metal pole at a height of approximately 10 feet. Luminaire shall be approximately 28 inches in diameter and be equipped with photoelectric control where applicable. Luminaire shall be Line Material Industries Type LC 19, General Electric Company, Type PMA-115, or approved equal. Finish shall be as selected.
2. Luminaire for pedestrian ways shall be of the low mushroom type mounted on a metal pole at a height of 40 to 48 inches. Reflector shall be approximately 22 inches in diameter. Luminaire shall be Wagner-Woodruff Cat. No. 32606H, Line Material Industries Stylette type, or approved equal. Finish shall be as selected.
3. Tree mounted luminaire will be used wherever possible to eliminate post supports and shall consist of an 8-inch diameter by 24-inch deep tube, mounting straps and recessed light source assembly for 75-300 watt PAR-38 lamp. Luminaire shall be Stonco Cat. No. P6780, Shaper Lighting Products #4858X adapted for exterior use, or approved equal. Finish shall be as selected.
4. Direct burial cable shall be NEC Type TW Insulated 600 volt, with cable tape, corrugated bronze tape with PVC jacket. Okonite type CM-PF construction, or approved equal.
5. Nonmetallic conduit shall be fibre conduit conforming to Federal Spec. W-C-00581a, or plastic conduit conforming to Federal Spec. L-C0740c. Conduit shall be Type I with 3-inch concrete envelope.
6. Metallic conduit shall be heavy wall rigid steel galvanized conduit conforming to Federal Spec. WW-C-581d(3).

IV. PROPOSED METHOD OF ACCOMPLISHMENT

It is proposed that the work will be accomplished in three increments as defined below;

INCREMENT I - That area west of the Utility tunnel and north of the Shops Complex. Estimated cost: $21,000.

INCREMENT II - Balance of the campus area, and the areas adjacent to the Control Building, Construction Office Building and Shops Complex. Estimated cost: $20,400.

INCREMENT III - Target Area and balance of Shops Complex east of Heavy Assembly Building. Estimated cost: $11,000.

V. AREA LIGHTING

TITLE I-ESTIMATE

ACCT. NO.	ITEM	QUANTITY	UNIT COST	ITEM COST	TOTAL COST
6-150	LIGHTING FIXTURES				
	Post Type Fixtures	65 EA	$184.00	$11,960	
	Conc. Pads	65 EA	42.00	2,730	
	Mushroom Type Fixtures	33 EA	112.00	3,700	
	Conc. Foundations	33 EA	20.00	660	
	Tree Type Fixtures	13 EA	96.00	1,250	
	SUB TOTAL, LIGHTING FIXTURES				$20,300
6-150	Conduit Under Roadway				11,600
6-150	Direct Burial Cable Boxes and Fittings				13,400
6-150	Conduits within Buildings, Panels Relays, Photo Electric Cells and Controls				7,100
	TOTAL COST, ACCOUNT NO. 6-150				$52,400

VI. SCHEDULE

INCREMENT I

Start Title II	19 October 1964	834
50% Progress Submittal	9 November 1964	849
90% Submittal	23 November 1964	859
SLAC-AEC/Comments	2 December 1964	865
ABA/Revisions	9 December 1964	870
100% Review	10 December 1964	871
Reproduction	14 December 1964	873
100% Submittal	14 December 1964	873
Bid Opening	6 January 1965	888
ABA/Review and Recommendation	11 January 1965	891
SLAC-AEC/Approval	18 January 1965	896
ABA/Notify Contractor	19 January 1965	897
Contractor/Obtain Bonds	26 January 1965	902
ABA/Issue Notice to Proceed	27 January 1965	903
Construction (75 C.D.)	12 April 1965	955

VII. DRAWINGS

Area Lighting Master Plan	SKE-106
Typical Post Type Fixture	Exhibit A
Typical Aluminum Post	Exhibit B
Typical Mushroom Type Fixture	Exhibit C
Typical Tree Type Fixture	Exhibit D