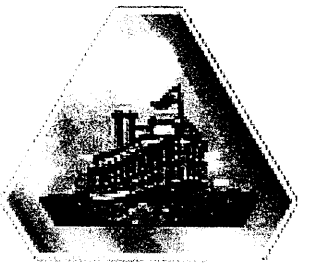
SAN JOAQUIN DELTA COMMUNITY COLLEGE DISTRICT



FINAL PROJECT PROPOSAL

SAFETY-ELECTRICAL SYSTEM REPLACEMENT

February 15, 2000

Keithley Consulting Group
Granite Bay, Ca

Lionakis-Beaumont Design Group
Sacramento, Ca

1.1 Final Project Proposal Checklist

District: San Joaquin Delta Community College District
College: San Joaquin
Project: Safety - Electrical System Replacement
Prepared by: Keithley Consulting Group and Lionakis Beaumont Date: Feb. 15, 2000

Section	Description	Status	Date
1.1	Final Project Proposal Checklist	Complete	2/15/00
2.1	Final Project Proposal	Complete	2/15/00
3.1	Approval Page - Final Project Proposal (with original signatures)	Complete	2/15/00
3.2	Project Terms and Conditions	Complete	2/15/00
4.1	Electrical System Analysis and Budget Report	Complete	2/15/00
5.1	Cost Estimate Summary - JCAF 32	Complete	2/15/00
5.2	Quantities and Unit Costs supporting the JCAF 32 (Insert additional cost analyses into this section.)	Complete	2/15/00
6.1	California Energy Commission Approved Audit	Complete	2/15/00
7.1	Responses to Specific Requirements -- State Administrative Manual	Complete	2/15/00
8.1	California Environmental Quality Act: Environmental Impact Report or Exemption Notice	Complete	2/15/00
9.1	Outline of Specifications	Complete	5/15/99
10.1	Federal Funds Detail	Complete	2/15/00
11.1	Analysis of Future Costs	Complete	2/15/00
12.1	Campus Plot Plan	N/A	
13.1	Diagrams of Building Areas (Floor plans with building area verified) (Insert half-sized scaled drawings into the FPP)	N/A	
13.2	Site Plans	N/A	
13.3	Floor Plans	N/A	
13.4	Exterior Elevations	N/A	
13.5	Electrical Plans (as needed)	N/A	
13.6	Mechanical Plans (as needed)	N/A	
13.7	Building Cross-Sections (as needed)	N/A	
14.1	Guideline-Based Group II Equipment Cost Estimates - JCAF 33	N/A	
15.1	Justification of Additional Costs exceeding Guidelines (as needed)	N/A	
16.1	Detailed Equipment List	N/A	

2.1 Final Project Proposal (FPP)

California Community Colleges
Initial Project Proposal

District	San Joaquin Delta		
College / Center	San Joaquin Delta		
Project Name	Safety - Electrical System Replacement		
Acquisition	$	Budget Year	2000-01
Prelim. Plans	$ 130,000	ENR	6117
Working Draw.	$ 150,000	5 yr. Plan Priority	2
Construction	$ 2,693,000	ASF	0
Equipment	$		
Total Cost	$ 2,973,000		

Check All That Apply

- Site Acquisition ☐
- New Construction ☐
- Reconstruction ☒
- Replacement ☒
- Infrastructure ☒
- Study ☐
- Other _____ ☐

PROJECT DESCRIPTION (Including total WSCH and growth WSCH):
Inspection of the electrical distribution system within the five major instruction buildings on the Delta College campus reveals that the systems are inadequate to serve existing and near-term future demands for electrical power. Transformers and circuit breaker panels are loaded to maximum capacities. There are insufficient outlets in the classrooms to handle an ever increasing number of computers. Moreover, electrical systems are not designed for dangerous harmonic currents caused by overloaded circuits. This has and will result in overheating of equipment and possible fire hazards. There are unsafe working conditions for maintenance workers and students face potential electrical hazards when working on computers.

Describe how this project supports the district's/college's educational and facility Master Plan and Five-Year Construction Plan.
The 1999 Delta College Master Plan calls for a steady increase in the number of computers on the campus. The Master Plan (Volume III, pages 7 and 14) recommends implementation of the Safety-Electrical System Replacement Project.

Provide the CEQA status of the project. Check all that apply.

	Project Under Review	Hearings Underway	Approved District/Filed Clearinghouse	Not Required
Notice of Exemption	☒	☐	☐	☐
Initial Study	☐	☐	☐	☐
Negative Declaration	☒	☐	☐	☐
Draft EIR	☐	☐	☐	☐
Final EIR	☐	☐	☐	☐

District Contact:	Robert Yribarren	Phone No.:	209-954-5021
Date:	February 15, 2000	FAX No.:	byribarren@sjdccd.cc.ca.us
Prepared by:	Keithley Consulting Group/ Lionakis-Beaumont Design Group	E mail Address:	209-954-5644

The district approves and verifies that this proposal presents the basic scope and cost of the project.

Approved by: Robert Yribarren, V.P. Business Services

Name / Title

Signature / Date 2-14-00

2.1 Final Project Proposal (FPP)

California Community Colleges
Initial Project Proposal

District Name: San Joaquin Delta Project Title: Safety-Electrical System Replacement

TYPE OF PROJECT AND QUALIFYING INFORMATION

Please answer all questions. Unanswered questions will be considered not applicable.

Yes	No	N/A	
			Life Safety Project
	X		Required supporting report is attached to establish imminent danger.
			Project Design
X			Construction and equipment design conform with State design and cost guidelines.
			Infrastructure
X			Loss or failure of infrastructure is imminent.
X			Other funding sources have been considered (i.e. Sch. Maint., Haz. Sub., other)
			Master Planning or Project Planning
	X		District's general fund's unrestricted ending balance is less than 5% of the total general fund expenditures (refer to the CCFS 311).

Project Type

- ❑ Instructional Space
- ❑ Academic Support, Student Service or Administrative Space
- ❑ Other Facility Projects, specifically ❑ physical education, ❑ performing arts, ❑ child development, ❑ maintenance, ❑ warehouse, ❑ cafeteria, and/or ❑ other facilities to complete a balanced campus.

Capacity/Load Ratio Analysis: Refer to District's Five-Year Construction Plan

Primary ASF ❑ Classroom, ❑ Teaching Labs, ❑ Library/Learning Resources ❑ AVTV, ❑ Office

		N/A	If the capacity/load ratio of any existing space is greater that 110%, this project considered remodeling existing space for efficiency.
		N/A	This project will cause ASF in at least one space category to exceed 110% of capacity/load ratio as confirmed by calculations in the Five-Year Construction Plan.

Supplemental Information and Alternatives Explored.

X			There is an existing facility in use for proposed project.
		N/A	Cost to reconstruct existing building is more than 50% of cost of a new building.
X			Usage in new building will be the same as usage in the building replaced
		N/A	Replaced building will be demolished and costs are included in the project.
		N/A	Regional or joint use project with: other college(s), agency, private developer.
		N/A	Scheduling alternatives in existing facilities (Saturdays, year-round, etc.)
		N/A	Alternative instructional delivery systems, distance learning, other such means.
		N/A	District or private funding sources.
			Other _____

Total construction period in number of months is 24.

Additional Forms/Pages Enclosed

X			District Five-Year Construction Plan or project-related pages from said document (Required).
	X		Critical life-safety third party justification (Optional)
X			Engineering tests or other related documents (Optional
X			JCAF 32, Cost Estimate Summary and Anticipated Time Schedule (Optional)
			Other FPP Forms _____

3.1 APPROVAL PAGE

Final Project Proposal

Budget Year 2000-2001

District: San Joaquin Delta

Project Location: Delta College Delta College
(College, campus, or center)

Project Name: Safety Electrical System Replacement

The district proposes funds for inclusion in the State capital outlay budget (check items):
site acquisition ☐, preliminary plans ☒, working drawings ☒, construction ☒, equipment ☐

District Certification

Approved for submission: Dr. Edward O. Gould **Date:** February 15, 2000
(Chancellor/President/Superintendent Signature)

Contact Person: Robert Yribarren **Telephone:** (209) 954-5021
(Facilities, Planning and Development)

E-Mail Address: byribarren@sjdccd.cc.ca.us **Fax:** (209) 954-5644

District Board of Trustees Certification

The Governing Board of the District approves the submission of this application to the Board of Governors of the California Community Colleges and promises to fulfill the succeeding list of Project Terms and Conditions.

(President of the Board of Trustees Signature and Date)

(Secretary of the Board of Trustees Signature and date)

Attach a copy of the Board Resolution which substantiates approval of the application and promises to fulfill the Project Terms and Conditions.

Submit proposal to:
Facilities Planning and Utilization
Chancellor's Office
California Community Colleges
1107 Ninth Street, Suite 500
Sacramento, CA 95814-3607

Chancellor's Office Certification

Reviewed by: _____

Date Completed: _____

3.2 PROJECT TERMS AND CONDITIONS

District: San Joaquin Delta **College**: San Joaquin Delta
Project: Safety - Electrical System Replacement **Budget Year:** 2000-2001

1. The applicant hereby requests State funds in the amount prescribed by law for the project named herein. All parts and exhibits contained in or referred to in this application are submitted with and made part of this application.

2. The applicant hereby assures the Board of Governors of the California Community Colleges that:

   a. Pursuant to the provisions of Section 57001.5 of Title 5 no part of this application includes a request for funding the planning or construction of dormitories, stadia, the improvement of sites for student or staff parking, single-purpose auditoriums or student centers other than cafeterias. The facilities included in the proposed project will be used for one or more of the purposes authorized in 57001.5 of Title 5.

   b. Any State funds received pursuant to this application shall be used solely for defraying the development costs of the proposed project.

      If the application is approved, the construction covered by the application shall be undertaken in an economical manner and will not be of elaborate or extravagant design or materials.

   c. Pursuant to the provisions of Section 81837 of the *Education Code*, approval of the final plans and specifications for construction will be obtained from the Board of Governors of the California Community Colleges before any contract is let for the construction.

   d. No changes in construction plans or specifications made after approval of final plans which would alter the scope of work, function assignable and/or gross areas, utilities, or safety of the facility will be made without prior approval of the Chancellor's Office of the California Community Colleges.

   e. Pursuant to the provisions of Section 57001 of Title 5, an adequate and separate accounting and fiscal records and accounts of all funds received from any source to pay the cost of the proposed construction will be maintained, and audit of such records and accounts will be permitted at any reasonable time, during the project, at the completion of the project, or both.

   f. Architectural or engineering supervision and inspection will be provided at the construction site to ensure that the work was completed in compliance with the provisions of Section 81130 of the *Education Code* and that it conforms with the approved plans and specifications.

   g. Pursuant to the provisions of Section 8 of the *Budget Act*, no contract will be awarded prior to the allocation of funds to the Board of Governors by the Public Works Board.

3. It is understood by the applicant that:

   a. No claim against any funds awarded on this application shall be approved which is for work or materials not a part of the project presented in this application as it will be finally allocated by the Public Works Board.

Project Terms and Conditions (Continued)

b. The failure to abide by each of the assurances made herein entitles the Board of Governors of the California Community Colleges to withhold all or some portion of any funds awarded on this application.

c. Any fraudulent statement which materially affects any substantial portion of the project presented in this application, as it may be finally approved, entitles the Board of Governors of the California Community Colleges to terminate this application or payment of any funds awarded on the project presented in this application.

4. It is further understood that:

a. The appropriation which may be made for the project presented in this application does not make an absolute grant of that amount to the applicant.

b. The appropriation is made only to fund the project presented in this application, as it is finally approved, regardless of whether the actual cost is less than or equals the appropriation.

c. A reduction in the scope of the project or assignable areas shall result in a proportionate reduction in the funds available from the appropriation.

4.1

ELECTRICAL SYSTEM ANALYSIS AND BUDGET REPORT

FOR

SAN JOAQUIN DELTA COLLEGE

Prepared by:

Lionakis Beaumont Design Group

and

Ken Rubitsky & Associates

January 25, 2000

Lionakis Beaumont Design Group Inc.

1919 Nineteenth Street
Sacramento, CA 95814
Phone: 916-558-1900
Fax: 916-558-1919
Web: www.lbdg.com

January 25, 2000

ELECTRICAL SYSTEM ANALYSIS AND BUDGET REPORT FOR SAN JOAQUIN DELTA COLLEGE

EXECUTIVE SUMMARY:

In January 1999 the team of Lionakis Beaumont Design Group (Architects and Engineers) and Ken Rubitsky and Associates (Electrical Engineers) were asked to perform an analysis of the existing electrical systems in each of the major buildings on campus containing classrooms. The buildings under investigation and consideration are Budd Center, Cunningham Center, Holt Center, Locke Center, and Shima Center. These buildings contain the majority of classrooms that require the electrical upgrades. The Forum building, Danner Hall and Goleman Library were also analyzed. These buildings do not have significant electrical problems or are not overloaded. No corrective measures are necessary for these three buildings at this time.

Over the years the college has been adding technology and program required equipment into the classrooms to maintain program needs. The College was aware that the electrical service and distribution system in each building was at or above rated capacity within the system and that there was very little capacity left to upgrade classrooms with equipment to meet the education needs of today's classrooms.

Over the last year research has been aided by two independent tests performed on the electrical system of the buildings. In June of '99, Electro-Test Inc. performed a load test on the main service that feeds each of the buildings in review. The test results indicated that there was adequate power supplied to each of the buildings to support the total expected load for the building.

Thermotest Incorporated performed another test in September of '99. They performed an Infrared test and load test on individual transformers and panels within each building that are served by the main service and distribution system. The results indicated that although the main services had adequate power there were potential overload situations and installation problems at the individual step-down transformers and sub panels in the buildings. Based on these test and analysis there is a potential for loss of vital electrical infrastructure due to overloading. This may result in power failures and loss of valuable data. Upon review and analysis of the existing conditions the following was determined.

Existing Conditions:

The electrical system for each major building is served by a unit substation, transformers and distribution section. Each unit substation is approximately 25 years old. The typical distribution system for each building feeds two primary electrical rooms on most floors of the buildings. Each electrical room will usually contain distribution boards, subpanels and transformers. Most of the electrical rooms are undersized for the equipment contained in the room. These rooms do not meet the current and past California Electric Codes and present unsafe working conditions for the maintenance staff. Most of the panels providing normal power (120/208V) appear to be fully loaded to capacity or overloaded and have very little space available for new branch circuit breakers. In addition the electrical rooms are so cramped it is very difficult to add new conduits in the rooms. There is currently and continually a demand to upgrade equipment in the classrooms and labs, which requires power as well as data cabling for computers. Much of this data cabling is being run into these electric rooms further impacting the electric rooms. The electric rooms also contain asbestos in at least 3 of the materials in and around the room. There is asbestos noted in the fireproofing, drywall mud and exterior stucco. Any renovation of the rooms will have to consider this hazardous material.

In most classrooms, labs and offices the number of electric outlets is minimal with normal convenience outlets located on walls and above counters. Multiple power strips and utility extension cords are plugged into the few outlets exiting in the classrooms. With the addition of computers and other electrical equipment to the classrooms, the added load to the existing circuit breaker becomes overloaded and trips the breaker resulting in a power outage and disruption of class. Adding new circuits to the classroom is not possible due to the lack of spare capacity and panel space in the sub-panels. Based on this information and analysis there is a potential for loss of vital electrical infrastructure due to overloading.

In an effort to correct the deficiencies and life safety hazards noted in the existing conditions, we recommend the following corrective measures.

Recommendations:

The ultimate goal of this project is to install additional outlets in classrooms to adequately and safely support the installation of current technology and program required equipment into the classrooms. To accomplish this goal the following steps will be taken.

In the basement of each building, create a new transformer and distribution panel room by removing the obsolete and unused boiler from the current boiler room. This room is located adjacent to the main service and building switchgear. New larger transformers will be installed in this room to replace the units located overhead in the satellite electrical rooms. The existing transformers will be removed eliminating a code deficiency and safety issue. New distribution panels will be installed in the first and third floor satellite electric rooms. New panel boards will be installed remote and centrally located in or near classrooms on each floor. These new panels will be connected to the new distribution panels located in the electrical rooms.

New electric circuits will be run to each classroom and lab to increase capacity and offset current shortages. New outlets will be installed to support the demand for electricity from computers and other electrical equipment that has been added to these rooms or projected for future installation.

With continual growth and need for computers and computerized equipment the concern of harmonic disturbance is a reality. The overloading of the systems and the original installation can all lead to problems of operation for very sensitive equipment and computers. The increased capacity and new equipment will help decrease the potential problems of harmonic disturbances. Each of the new transformers will be harmonic load rated, eliminating potential hazards.

Another concern of electronic equipment is the loss of power during operation of the equipment. Loss of power during operation of equipment frequently results in the loss of some data that has not been recorded. The common solution to prevent the loss of data is to install a UPS unit (uninterrupted power supply). This UPS unit will maintain power to the unit when the electricity fails allowing the user adequate time to "save" their current work and shut down the unit without loss of data. Small portable UPS units should be supplied for the selected key equipment to provide the "backup" protection for the equipment. This method will provide flexibility in the system and put the resources only where the need is.

The recommended solution includes very little demolition of materials containing hazardous materials. There will be cutting and patching of these materials that will require special handling. There will be some

displacement of fireproofing that will also need to be patched. However, it is not the intention of this project to remove the hazardous materials that are located with in the construction area.

Construction Sequence and Funding:

In order to maintain campus operations and minimize building power outages, a sequential construction process is proposed to complete the recommendations. The construction will address the most urgent needs first with the greatest potential of danger. In an effort to address urgent problems immediately the college has requested and received scheduled maintenance funding this year 1999/2000 in the amount of $283,296. The approved scheduled maintenance funding for this year is not included in the scope and total cost of this project. The college has also requested scheduled maintenance funding in the following years.

Included in the following report is the detailed description of the existing conditions and recommended solutions for the stated problems. We have also included the projected construction budgets, preliminary drawings for a typical proposed new transformer room and outline specifications.

Electrical Report for San Joaquin Delta College

January 19, 2000

This report addresses the existing electrical distribution systems, outlets and electrical loads for all major classroom buildings located at the San Joaquin Delta College Campus. These buildings include Shima Center, Locke Center, Holt Center, Cunningham Center and Budd Center. The existing Forum Building, Goleman Library and Danner Hall are not considered to be major classroom buildings that would require extensive electrical load increases and therefore are not included in this narrative.

An analysis is provided for the condition of the existing electrical distribution equipment with respect to existing electrical loads and capacities to adequately serve the current classroom electrical needs. Potential problem areas are identified and proposed solutions are offered for the recommended improvements.

A. Existing Conditions

Existing Electrical Distribution Systems

Each building has two satellite electrical rooms located on each floor starting at the first floors to serve classrooms, offices and common areas for the respective floor. The electrical rooms contain sub-panels on all floors with the distribution boards and transformers located in the lower two floor rooms in most cases. These satellite rooms located on floors one thru three at each building are undersized for the electrical equipment contained within each room. Clearances are not provided in accordance with the California Electrical Code requirements and present unsafe working conditions for maintenance personnel. The electrical distribution equipment contained within the electrical rooms is approximately 25 years old and is in fair condition. The high voltage, 277/480V panels, which feed lighting and mechanical equipment appear to be sized adequately for the loads served and do contain space for additional branch circuit breakers. The low voltage, 120/208V panels, which feed the 120V outlets and some 208V equipment in the classrooms, however appear to be loaded at or in excess of their rated capacities and contain inadequate space for additional branch circuit breakers to handle the current classroom electrical needs. Additionally, due to the location of the electrical rooms, access to the existing electrical panels is extremely difficult and requires extensive cutting and patching of existing soffits and walls in order to provide new conduit to classroom areas where additional circuits are needed.

Existing Classroom Electrical Outlets

In most classrooms the number of electrical outlets is minimal with normal convenience outlets located on walls and above counters. These existing outlets and associated circuits where not originally designed to accommodate the extensive use of computers which were non existent in prior years. Attempts have been made to provide additional outlets by utilizing extension cords and plug strips plugged into the existing outlets. No additional

computers, printers, copiers or other electrical equipment can be installed in most of the classrooms, labs and offices. This results in a potential fire hazard while not solving the capacity problem. When computers are plugged into these plug strips, the circuit capacities are exceeded and the branch circuit breakers at the panels become overloaded and trip. The correct method of providing additional circuits and fixed outlets is not possible due to the lack of circuit breaker mounting space and panel capacities at the existing electrical rooms.

B. Existing Electrical Needs

Current Projected Loads

With modern technologies, the need for adding computers to classrooms is inevitable and existing electrical systems must be examined for adequacy in order to safely support the perspective loads as well as other idiosyncrasies of electronic equipment. Due to harmonic currents created by the electronic loads, such as computers, many existing transformers and feeders are not sized adequately to safely support this equipment. With distribution equipment installed 25 years ago, it is safe to assume that harmonic loading was not considered during the original design and therefore these electrical systems are not rated to support present day needs. Current projected computer loads are calculated based on campus provided information for each building as follows:

Shima Center

First Floor - 8 Classrooms		
8 multi-media stations @ 1,662 W	=	13, 296 W
234 computers @ 500 W	=	117,000 W
16 printers @ 1,440 W	=	23,040 W
Subtotal		153,336 W
Second Floor - 9 Classrooms		
9 multi-media stations @ 1,662 W	=	14,958 W
202 computers @ 500 W	=	101,000 W
18 printers @ 1,440 W	=	25,920 W
Subtotal		141,878 W
Third Floor - 3 Classrooms		
3 multimedia stations @ 1,662 W	=	4,986 W
71 computers @ 500 W	=	35,500 W
6 printers @ 1,440 W	=	8,640 W
Subtotal		49,126 W
Fourth Floor - 3 Classrooms		
3 multi-media stations @ 1,662 W	=	4,986 W
113 computers @ 500 W	=	56,500 W

6 printers @ 1,440 W	=	8,640 W
Subtotal		70,126 W
Totals		
First & Second Floor total	=	295,214 W
Third & Fourth Floor total	=	119,252 W
Building total		414,466 W

Locke Center

First Floor - 4 Classrooms		
4 multi-media stations @ 1,662 W	=	6,648 W
65 computers @ 500 W	=	32,500 W
8 printers @ 1,440 W	=	11,520 W
Subtotal		50,668 W
Second Floor - 5 Classrooms		
5 multi-media stations @ 1,662 W	=	8,310 W
170 computers @ 500 W	=	85,000 W
10 printers @ 1,440 W	=	14,400 W
Subtotal		107,710 W
Third Floor - 7 Classrooms		
7 multi-media stations @ 1,662 W	=	11,634 W
169 computers @ 500 W	=	84,500 W
14 printers @ 1,440 W	=	20,160 W
Subtotal		116,294 W
Fourth Floor - 3 Classrooms		
3 multi-media stations @ 1,662 W	=	4,986 W
75 computers @ 500 W	=	37,500 W
6 printers @ 1,440 W	=	8,640 W
Subtotal		51,126 W
Totals		
First & Second Floor total	=	158,378 W
Third & Fourth Floor total	=	167,420 W
Building total		325,798 W

Holt Center

First Floor - 5 Classrooms		
5 multi-media stations @ 1,662 W	=	8,310 W
113 computers @ 500 W	=	56,500 W
10 printers @ 1,440 W	=	14,400 W
Subtotal		79,210 W

Second Floor - 2 Classrooms

2 multi-media stations @ 1,662 W	=	3,324 W
79 computers @ 500 W	=	39,500 W
4 printers @ 1,440 W	=	5,760 W
Subtotal		48,584 W
Third Floor - 6 Classrooms		
6 mufti-media stations @ 1,662 W	=	9,972 W
151 computers @ 500 W	=	75,500 W
12 printers @ 1,440 W	=	17,280 W
Subtotal		102,752 W
Fourth Floor - 3 Classrooms		
3 multi-media stations @ 1,662 W	=	4,986 W
79 computers @ 500 W	=	39,500 W
6 printers @ 1,440 W	=	8,640 W
Subtotal		53,126 W
Totals		
First & Second Floor total	=	127,794 W
Third & Fourth Floor total	=	155,878 W
Building total		283,672 W

Cunningham Center

First Floor - 5 Classrooms		
5 multi-media stations @ 1,662 W	=	8,310 W
143 computers @ 500 W	=	71,500 W
10 printers @ 1,440 W	=	14,400 W
Subtotal		94,210 W
Second Floor - 5 Classrooms		
5 multi-media stations @ 1,662 W	=	8,310 W
99 computers @ 500 W	=	49,500 W
10 printers @ 1,440 W	=	14,400 W
Subtotal		72,210 W
Third Floor - 7 Classrooms		
7 multi-media stations @ 1,662 W	=	11,634 W
204 computers @ 500 W	=	102,000 W
14 printers @ 1,440 W	=	20,160 W
Subtotal		133,794 W
Fourth Floor - 4 Classrooms		
4 multi-media stations @ 1,662 W	=	6,648 W
150 computers @ 500 W	=	75,000 W
8 printers @ 1,440 W	=	11,520 W
Subtotal		93,168 W
Totals		

First & Second Floor total	=	166,420 W
Third & Fourth Floor total	=	226,962 W
Building total		393,382 W

Budd Center

First Floor - 3 Classrooms		
3 multi-media stations @ 1,662 W	=	4,986 W
102 computers @ 500 W	=	51,000 W
6 printers @ 1,440 W	=	8,640 W
Subtotal		64,626 W
Third Floor - 4 Classrooms		
4 multi-media stations @ 1,662 W	=	6,648 W
103 computers @ 500 W	=	51,500 W
8 printers @ 1,440 W	=	11,520 W
Subtotal		69,668 W
Fourth Floor - 1 Classroom		
1 mufti-media station @ 1,662 W	=	1,662 W
29 computers @ 500 W	=	14,500 W
2 printers @ 1,440 W	=	2,880 W
Subtotal		19,042 W
Totals		
Building total	=	153,336 W

Current Electrical Equipment Needs

Additional feeders, transformers and panelboards are needed to serve the existing classrooms with the appropriate number of branch circuits and outlets to safely connect the current and projected loads. The number of panelboards required to provide this electrical service is calculated as follows:

Shima Center

First Floor	
153,336 W ÷ 1,620 W/circuit =	95 circuits
95 circuits ÷ 42 circuits/panel =	3 panels
Second Floor	
141,878 W ÷ 1,620 W/circuit =	88 circuits
88 circuits ÷ 42 circuits/panel =	3 panels

Third Floor		
49,126 W ÷ 1,620 W/circuit	=	31 circuits

31 circuits ÷ 42 circuits/panel = 1 panel

Fourth Floor

70,126 W ÷ 1,620 W/circuit = 44 circuits

44 circuits ÷ 42 circuits/panel = 2 panels

Locke Center

First Floor

50,668 W ÷ 1,620 W/circuit = 32 circuits

32 circuits ÷ 42 circuits/panel = 1 panel

Second Floor

107,710 W ÷ 1,620 W/circuit = 67 circuits

67 circuits ÷ 42 circuits/panel = 2 panels

Third Floor

116,294 W ÷ 1,620 W/circuit = 72 circuits

72 circuits ÷ 42 circuits/panel = 2 panels

Fourth Floor

51,126 W ÷ 1,620 W/circuit = 32 circuits

32 circuits ÷ 42 circuits/panel = 1 panel

Holt Center

First Floor

79,210 W ÷ 1,620 W/circuit = 49 circuits

49 circuits ÷ 42 circuits/panel = 2 panels

Second Floor

48,584 W ÷ 1,620 W/circuit = 30 circuits

30 circuits ÷ 42 circuits/panel = 1 panel

Third Floor

102,752 W ÷ 1,620 W/circuit = 64 circuits

64 circuits ÷ 42 circuits/panel = 2 panels

Fourth Floor

53,126 W ÷ 1,620 W/circuit = 33 circuits

33 circuits ÷ 42 circuits/panel = 1 panel

Cunningham Center

First Floor

94,210 W ÷ 1,620 W/circuit = 59 circuits

59 circuits ÷ 42 circuits/panel = 2 panels

Second Floor

72,210 W ÷ 1,620 W/circuit = 45 circuits
45 circuits ÷ 42 circuits/panel = 2 panels

Third Floor
133,794 W ÷ 1,620 W/circuit = 83 circuits
83 circuits ÷ 42 circuits/panel = 2 panels

Fourth Floor
93,168 W ÷ 1,620 W/circuit = 58 circuits
58 circuits ÷ 42 circuits/panel = 2 panels

Budd Center

First Floor
64,626 W ÷ 1,620 W/circuit = 40 circuits
40 circuits ÷ 42 circuits/panel = 1 panel

Third Floor
69,668 W ÷ 1,620 W/circuit = 43 circuits
43 circuits ÷ 42 circuits/panel = 2 panels

Fourth Floor
19,042 W ÷ 1,620 W/circuit = 12 circuits
12 circuits ÷ 42 circuits/panel = 1 panel

C. Summary

The existing electrical distribution systems at the San Joaquin Delta College Campus have safety concerns and are inadequate to serve the current and projected Campus electrical loads. The safety concerns relate to insufficient working clearances within the electrical rooms, overloading of existing electrical equipment and potential fire hazards created by the use of extension cords and electrical plug strips within the classrooms. Specific safety issues are as follows:

1. Satellite electrical rooms are undersized for the electrical equipment contained within each room. Working clearances for panels are not provided in accordance with the California Electrical Code requirements resulting in unsafe working conditions which could result in electrocution for maintenance personnel. Transformers within the electrical rooms appear to be loaded to maximum capacities and are not provided with adequate working clearances or ventilation.

2. Low voltage 120/208V panels contain inadequate circuit breaker space and power capacities to serve the campus projected electrical loads. Current campus inventory includes stored computers that are to be added to classrooms as needed to accommodate increasing campus population and changing curriculum. Due to the lack of sufficient outlets in the classrooms, and space for new circuits at the existing

panels, plug strips have been used to connect several computers to the same outlet and circuit until maximum capacities have been reached. Since the original building wiring was only designed to handle the current number of outlets, the existing branch circuit breakers become overloaded and trip when the circuit capacity is exceeded. Repeated tripping of the circuit breakers over time will lead to equipment failure, fire hazards and additional computers can not be installed.

3. Existing transformers and panel feeders are not rated for the harmonic currents created by electronic loads such as computer equipment. Harmonic currents cause severe equipment overheating and can destroy a non-rated distribution transformer resulting in increased fire hazards.

E. Recommendations

The recommended electrical work is intended to increase safety, eliminate potential electrical fire hazards and provide the necessary equipment to meet the needs of the current and projected electrical loads. In general, the recommendations for all classroom buildings call for removal of the existing transformers located within the current electrical rooms to eliminate the inadequate working clearance and potential overheating conditions; provide new harmonic load rated transformers located at the basement level to serve both new and existing panels; provide new electrical panels located within classrooms to allow for easy accessibility; and provide new surface mounted wireways with the necessary outlets in each classroom for computer power. The recommended electrical work is identified for each classroom building as follows:

Shima Center

1. Electrical Distribution:
   a. Remove obsolete boiler equipment, construct a new electrical transformer room located at the basement level utilizing available space previously occupied by obsolete equipment. Provide one new 300 KVA and one new 150 KVA transformers with secondary circuit breakers at the new transformer room to feed new 120/208V panels on the upper classroom floors. Feed the new transformers from the existing main switchboard located at the basement level.
   b. Provide new 120/208V distribution panels at the first and third floor satellite electrical rooms and feed from the new basement transformers.
   c. Provide new 120/208V panels on each floor, located within the classrooms and feed from the new distribution panels installed on the first and third floors.
   d. Remove the existing transformers at the first and second floor electrical rooms, provide two new 75 KVA transformers at the new basement transformer room and refeed the existing panels from the new basement

transformers.

2. Classrooms:
   a. Provide new surface mounted two-cell wireway with receptacle outlets. Locate on each wall of each classroom.
   b. Connect new surface wireway receptacles to new panels located within classrooms. Provide adequate number of outlets and circuits to serve current and projected loads.

Locke Center

1. Electrical Distribution:
   a. Remove obsolete boiler equipment, construct a new electrical transformer room located at the basement level utilizing available space previously occupied by obsolete equipment. Provide two new 225 KVA transformers with secondary circuit breakers at the new transformer room to feed new 120/208V panels on the upper classroom floors. Feed the new transformers from the existing main switchboard located at the basement level.
   b. Provide new 120/208V distribution panels at the first and third floor satellite electrical rooms and feed from the new basement transformers.
   c. Provide new 120/208V panels on each floor, located within the classrooms and feed from the new distribution panels installed on the first and third floors.
   d. Remove the existing transformers at the first and second floor electrical rooms, provide two new 75 KVA transformers at the new basement transformer room and refeed the existing panels from the new basement transformers.

2. Classrooms:
   a. Provide new surface mounted two-cell wireway with receptacle outlets. Locate on each wall of each classroom.
   b. Connect new surface wireway receptacles to new panels located within classrooms. Provide adequate number of outlets and circuits to serve current and projected loads.

Holt Center

1. Electrical Distribution:
   a. Remove obsolete boiler equipment, construct a new electrical transformer room located at the basement level utilizing available space previously occupied by obsolete equipment. Provide one new 225 KVA and one new 150 KVA transformers with secondary circuit breakers at the new

transformer room to feed new 120/208V panels on the upper classroom floors. Feed the new transformers from the existing main switchboard located at the basement level.

b. Provide new 120/208V distribution panels at the first and third floor satellite electrical rooms and feed from the new basement transformers.

c. Provide new 120/208V panels on each floor, located within the classrooms and feed from the new distribution panels installed on the first and third floors.

d. Remove the existing transformers at the first and second floor electrical rooms, provide two new 75 KVA transformers at the new basement transformer room and refeed the existing panels from the new basement transformers.

2. Classrooms:

a. Provide new surface mounted two-cell wireway with receptacle outlets. Locate on each wall of each classroom.

b. Connect new surface wireway receptacles to new panels located within classrooms. Provide adequate number of outlets and circuits to serve current and projected loads.

Cunningham Center

1. Electrical Distribution:

a. Remove obsolete boiler equipment, construct a new electrical transformer room located at the basement level utilizing available space previously occupied by obsolete equipment. Provide one new 300 KVA and one new 225 KVA transformers with secondary circuit breakers at the new transformer room to feed new 120/208V panels on the upper classroom floors. Feed the new transformers from the existing main switchboard located at the basement level.

b. Provide new 120/208V distribution panels at the first and third floor satellite electrical rooms and feed from the new basement transformers.

c. Provide new 120/208V panels on each floor, located within the classrooms and feed from the new distribution panels installed on the first and third floors.

d. Remove the existing transformers at the first and second floor electrical rooms, provide two new 75 KVA transformers at the new basement transformer room and refeed the existing panels from the new basement transformers.

2. Classrooms:

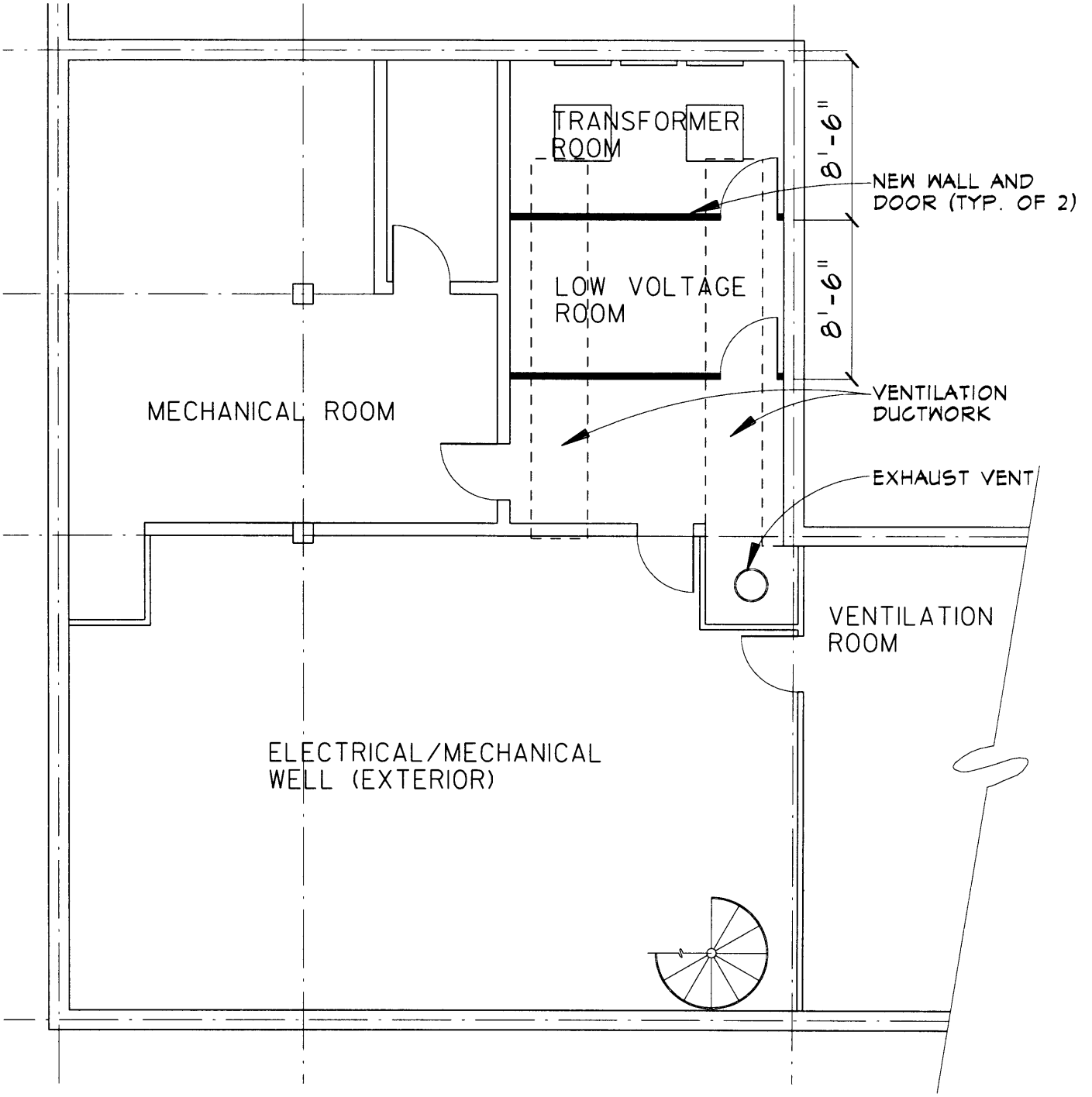
a. Provide new surface mounted two-cell wireway with receptacle outlets. Locate on each wall of each classroom.

b. Connect new surface wireway receptacles to new panels located within classrooms. Provide adequate number of outlets and circuits to serve current and projected loads.

Budd Center

1. Electrical Distribution:
   a. Remove obsolete boiler equipment, construct a new electrical transformer room located at the basement level utilizing available space previously occupied by obsolete equipment. Provide one new 225 KVA transformer with secondary circuit breaker at the new transformer room to feed new 120/208V panels on the upper classroom floors. Feed the new transformer from the existing main switchboard located at the basement level.
   b. Provide a new 120/208V distribution panel at the first floor satellite electrical room and feed from the new basement transformer.
   c. Provide new 120/208V panels on each floor, located within the classrooms and feed from the new distribution panel installed on the first floor.
   d. Remove the existing transformers at the first and second floor electrical rooms, provide two new 75 KVA transformers at the new basement transformer room and refeed the existing panels from the new basement transformers.

2. Classrooms:
   a. Provide new surface mounted two-cell wireway with receptacle outlets. Locate on each wall of each classroom.
   b. Connect new surface wireway receptacles to new panels located within classrooms. Provide adequate number of outlets and circuits to serve current and projected loads.



LIONAKIS BEAUMONT DESIGN GROUP INC

Project DELTA COLLEGE ELECT. SYST. UPGRADE #2 TYPICAL NEW TRANSFER ROOM			
Job No. 99145	Revision	Scale: 1/8" = 1'-0"	Drwg. A-1
Date 1/13/99	Reference		

Lionakis Beaumont
Design Group Inc.

1919 Nineteenth Street
Sacramento, CA 95814
Phone: 916-558-1900
Fax: 916-558-1919
Web: www.lbdg.com

San Joaquin Delta College

Electrical System Upgrades - Campus Wide
Construction Costs Summary - Project Total

Building Name / Construction Task	Budd Center	Cunning ham Center	Holt Center	Locke Center	Shima Center		Task Total
Construct Electrical Transformer Room	42,425	42,425	42,425	42,425	42,425		$ 212,125
Install New Transformers, Panels and Feeders	111,720	186,084	154,148	190,348	186,421		$ 828,721
Replace Existing Transformers	15,784	15,784	15,784	15,784	15,784		$ 78,920
Install circuits and outlets to classrooms	99,911	311,084	183,126	173,179	279,463		$ 1,046,763
Haz. Material Abatement	21,831	43,662	36,385	29,108	36,385		$ 167,371
Building Subtotal	$ 291,671	$ 599,039	$ 431,868	$ 450,844	$ 560,478		
Total Construction Cost							$ 2,333,900

NOTE: 1. All budget figures stated above include the contractor's overhead & profit,
general conditions, insurance and escalation to mid point of construction.

San Joaquin Delta College

Electrical System Upgrades - Campus Wide

Construction Costs Summary - Scheduled Maintenance Budget 1999/2000

Building Name / Construction Task	Budd Center	Cunningham Ctr.	Holt Center	Locke Center	Shima Center		Task Total
Construct Electrical Transformer R	0	0	0	0	0		$ -
Install New Transformers, Panels a	0	30,000	20,000	0	42,247		$ 92,247
Replace Existing Transformers	0	0	0	0	0		$ -
Install circuits and outlets to classr	0	49,000	50,000	0	33,574		$ 132,574
Haz. Material Abatement	0	0	0	0	0		$ -
Building Subtotal	$ -	$ 79,000	$ 70,000	$ -	$ 75,821	$ -	
Total Construction Cost							$ 224,821

NOTE 1. The amounts indicated above represent the portion of the scheduled maintenance funding attributed to this project. This amount is totally separate and independent of this Capital Outlay Request. It is supplied for reference to define the use of the scheduled maintenance funding.

NOTE 2. The cost indicated above are construction cost only and do not include soft costs which total $58,475. The total funding for this Scheduled Maintenance is $283,296.

NOTE 3. All budget figures stated above include the contractor's overhead & profit, general conditions, insurance and escalation to mid point of construction

5.1 COST ESTIMATE SUMMARY AND ANTICIPATED TIME SCHEDULE - JCAF 32

District: San Joaquin Delta Community College District **Date Prepared:** January 25, 2000

College: San Joaquin Delta College **Budget Ref. No.:**

Project Name: Electrical System Improvements **CFIS Ref. No.:**

Prepared by: Lionakis Beaumont Design Group **CCI Index:** 3909

Request for: A ☐ P ☑ W ☑ C ☑ E ☐

1.	**Site Acquisition** Acres: Existing			
	A. Purchase Price of Property	$ -		
	B. Appraisals	$ -		
	C. Costs Incurred in Escrow	$ -		
	D. Surveys	$ -		
	E. Other Costs	$ -	$	-
2.	**Plans and Working Drawings** *(Total may not exceed 13% of construction)*			12.0%
	A. Architectural Fee for Preliminary Plans	$ 81,687		
	B. Architectural Fee for Working Drawings	$ 105,026		
	C. Project Management	$ 23,339		
	D. Office of the State Architect Plan check fee	$ 16,203		
	E. Community College Plan check fee	$ 3,334		
	F. Preliminary Tests *(soil tests)*	$ 8,800		
	G. Other Costs	$ 41,800	$	**280,189**
3.	**Construction**			
	A. Utility Service	$ -		
	B. Site Development, Service	$ -		
	C. Site Development, General	$ -		
	D. Other Site Development	$ -		
	E. Reconstruction	$ 2,333,900		
	F. New Construction *(building) (w/Group I equipment)*	$ -		
	G. Other	$ -	$	**2,333,900**
4.	**Tests and Inspections**		$	149,339
5.	**Contingency**		$	163,373
6.	**Construction Management** *(if justified)*		$	-
7.	**Architectural and Engineering Oversight**		$	46,678
8.	**Total Construction Costs** *(items 3 through 7 above)*		$	**2,693,290**
9.	**Furniture and Group II Equipment**		$	-
10.	**Total Project Cost** *(items 1, 2, 8, and 9)*		$	**2,973,479**

11.	**Project Data**	**Outside Gross Square Feet**	**Assignable Square Feet**	**Ratio ASF/GSF**	**Unit Cost Per ASF**	**Unit Cost Per GSF**
	Construction	-	-			
	Reconstruction	N/A	N/A	N/A	N/A	N/A

12.	**Anticipated Time Schedule**			
	Start Preliminary Plans	8/1/01	Advertise Bid for Construction	10/1/02
	Start Working Drawings	1/1/02	Award Construction Contract	12/1/02
	Complete Working Drawings	6/1/02	Advertise Bid for Equipment	-
	State Architect (ORS) Final Approval	9/1/02	Complete Project	6/1/04

S:/1999/99145 SJDC Electrical Upgrades/General/Cost Estimates/CCC-JCAF Forms 1-25-00.xls

5.2 QUANTITIES AND UNIT COSTS SUPPORTING THE JCAF 32

District: San Joaquin Delta Community College District — **Date Prepared:** January 25, 2000
College: San Joaquin Delta College — **Budget Ref. No.:**
Project Name: Electrical System Improvements — **CFIS Ref. No.:**
Prepared by: Lionakis Beaumont Design Group — **CCI Index:** 3909

1. SITE ACQUISITION

A. No Property Acquisition Required

TOTAL - SITE ACQUISITION ..... = **$0**

2. PLANS

A. Architectural Fee for Preliminary Plans

(1) Construction

$2,333,900 x 10% x 35% = $81,687

Total - Preliminary Plans ..... = **$81,687**

B. Architectural Fee for Working Drawings

(1) Construction

$2,333,900 x 10% x 45% = $105,026

Total - Working Drawings ..... = **$105,026**

C. Project Administration

(1) Project administration

$2,333,900 x 1% = $23,339

Total - Project Administration ..... = **$23,339**

D. Office of State Architect, Plan Check Fees

(1) Plan Check Fee

$1,000,000 x 0.7% = $7,000
$1,333,900 x 0.5% = $6,670

Total - DSA Plan Check Fee ..... = **$13,670**

(2) Physical Handicapped Fee

$500,000 x 0.20% = $1,000
$1,500,000 x 0.10% = $1,500
$333,900 x 0.01% = $33

Total - DSA Handicapped Fee ..... = **$2,533**

Total - DSA Fees ..... = **$16,203**

E. Community College Fees

(1) Plan Check Fee

$2,333,900 x 0.143% = $3,334

Total - Community College Fees ..... = **$3,334**

F. Preliminary Tests

(1) Soil Test

1 LS. x $8,800 = $8,800

Total - Preliminary Tests ..... = **$8,800**

G. Other Costs

(1) Environmental Impact Report

1 LS. x $6,600 = $6,600

(2) Design data development costs (geotechnical investigation, surveys, etc.)

1 LS. x $8,800 = $8,800

(3) Contract document development costs (legal, advertising, printing)

1 LS. x $26,400 = $26,400

Total - Other Costs..... = **$41,800**

TOTAL - PLANS ..... = **$280,189**

3. CONSTRUCTION

A. UTILITY SERVICE

(1) Electrical Utilities

Total - Electrical Utilities ..... = **$0**

(2) Mechanical / Plumbing

Total - Mechanical / Plumbing Utilities ..... = **$0**

Total - Utility Service ..... = **$0**

B. Site Development, Service

Total - Site Development Service ..... = **$0**

C. Site Development, General

Total - Site Development, General ..... = **$0**

D. Other Site Development

(1) No other construction

Total - Other Site Development ..... = **$0**

E. Reconstruction

(1) Electrical Infrastructure Improvements

a.	Construct Electrical Transformer Rooms	1 ASF.	x $212,125	=	$212,125
b.	Transformers, Panels & feeders	1 ASF.	x $828,721	=	$828,721
c.	Replace existing Transformers	1 ASF.	x $78,920	=	$78,920
d.	Circuits and Outlets in Classrooms	1 ASF.	x $1,046,763	=	$1,046,763
d.	Haz. Material Abatement	1 ASF.	x $167,371	=	$167,371
Total				=	**$2,333,900**

Total - Reconstruction ..... = **$2,333,900**

F. Building Construction

Total - Building Construction ..... = **$0**

G. Other

(1) None

Total - Other ..... = **$0**

TOTAL - CONSTRUCTION CONTRACTS ..... = **$2,333,900**

4. TESTS & INSPECTION

A. Tests

(1) Materials & soils testing

$2,333,900 x 1% = $23,339

B. Inspection

(1) Construction Inspector

$7,000 x 18 months = $126,000

TOTAL - TESTS & INSPECTION ..... = **$149,339**

5. CONTINGENCY

A. Contingency

(1) Construction contingency

$2,333,900 x 7% = $163,373

TOTAL - CONTINGENCY ..... = **$163,373**

6. OTHER CONSTRUCTION COSTS

A. Construction Management

(1) Construction Management

$0 x 2% = $0

Total - Construction Management ..... = **$0**

TOTAL - OTHER CONSTRUCTION COSTS ..... = **$0**

7. ARCHITECTURAL & ENGINEERING OVERSIGHT

A. Architectural Fee for Construction Oversight

(1) Construction Oversight

$2,333,900 x 10% x 20% = $46,678

TOTAL - ARCHITECTURAL & ENGINEERING OVERSIGHT ..... = **$46,678**

8. TOTAL CONSTRUCTION COSTS ..... (items 3 through 7) ..... = **$2,693,290**

9. FURNITURE & MOVABLE EQUIPMENT ..... = **$0**

10. TOTAL PROJECT COST ..... (items 2, 8, and 9) ..... = **$2,973,479**

S:/1999/99145 SJDC Electrical Upgrades/General/Cost Estimates/CCC-JCAF Forms 1-25-00.xls

6.1 California Energy Commission Approved Audit

Please include required reports or certifications in lieu of this sheet. If this project is already covered by an energy audit, please so state.

The Safety-Electrical System Replacement Project will fully conform with Title 24 Energy Conservation requirements that will greatly improve energy efficiencies and savings in five major instructional buildings on the Delta College Campus. An energy audit will not be needed for several years.

7.1 Response to Specific Requirements – State Administrative Manual

STATE OF CALIFORNIA CAPITAL OUTLAY BUDGET CHANGE PROPOSAL (COBCP) COVER PAGE (REV 11//98)	DEPARTMENT OF FINANCE 915 L Street Sacramento, CA 95814 IMS Mail Code: A15
BUDGET YEAR 2000-01	

ORG CODE: _____ COBCP NO:_____ PRIORITY:____ PROJECT ID :_____

DEPARTMENT: **San Joaquin Community College District**

PROJECT TITLE: **Electrical Systems Replacement**

TOTAL REQUEST (DOLLARS IN THOUSANDS): $_____ MAJOR/MINOR:_____

PHASE(S) TO BE FUNDED: _____ PROJ CAT: _____ CCCI/EPI: _____

SUMMARY OF PROPOSAL:

HAS A BUDGET PACKAGE BEEN COMPLETED FOR THIS PROJECT? (E/U/N/?): _____

REQUIRES LEGISLATION (Y/N): _(13)_IF YES, LIST CODE SECTIONS: _____

REQUIRES PROVISIONAL LANGUAGE (Y/N) _____

IMPACT ON SUPPORT BUDGET: ONE-TIME COSTS (Y/N):__ FUTURE COSTS (Y/N):__
FUTURE SAVINGS (Y/N):__ REVENUE (Y/N):__

DOES THE PROPOSAL AFFECT ANOTHER DEPARTMENT (Y/N): ____ IF YES, ATTACH COMMENTS OF AFFECTED DEPARTMENT SIGNED BY ITS DIRECTOR OR DESIGNEE.

SIGNATURE APPROVALS:

_____ _____
PREPARED BY DATE REVIEWED BY DATE

_____ _____
DEPARTMENT DIRECTOR DATE AGENCY SECRETARY DATE

****

DOF ANALYST USE

DOF ISSUE #_____ PROGRAM CAT:___ PROJECT CAT:___ BUDG PACK STATUS:____
ADDED REVIEW: SUPPORT:____ TIRU:____ FSCU:____ OSAE:___ CALSTARS: ____

****

7.1 Response to Specific Requirements – State Administrative Manual

STATE OF CALIFORNIA	**DEPARTMENT OF FINANCE**
CAPITAL OUTLAY	**915 L Street**
BUDGET CHANGE PROPOSAL (COBCP)	**Sacramento, CA 95814**
COVER PAGE (REV 11//98)	**IMS Mail Code: A15**
BUDGET YEAR 2000-01	

Using the attached page, follow the format outlined below and fully address all of the items. Use addition pages as needed. Certain projects may require additional information. Questions should be referred to DOF.

A. PURPOSE OF THE PROJECT: (problem, program need, infrastructure deficiency)

The college has been adding technology and program required equipment into their classrooms to maintain program needs. In most classrooms, labs and offices the number of electric outlets is minimal with normal convenience outlets located on walls and above counters. Multiple power strips and utility extension cords are plugged into the few outlets existing in the classrooms. With the addition of computers and other electrical equipment to the classrooms, the added load to the existing circuit breaker becomes overloaded and trips the breaker resulting in a power outage and disruption of class. The College was aware that the electrical service and distribution system in each building was at or above rated capacity within the system and that there was very little electrical capacity left to upgrade classrooms with equipment to meet the education needs of today's classrooms. Adding new circuits to the classroom is not possible due to the lack of spare capacity and panel space in the sub-panels. Based on this information and analysis there is a potential for loss of vital electrical infrastructure due to overloading.

In January 1999 the team of Lionakis Beaumont Design Group (Architects and Engineers) and Ken Rubitsky and Associates (Electrical Engineers) were asked to perform an analysis of the existing electrical system in each of the major buildings on campus containing classrooms. The buildings under investigation and consideration are Budd Center, Cunningham Center, Holt Center, Locke Center, and Shima Center. These buildings contain the majority of classrooms that require the electrical upgrades. The Forum building, Danner Hall and Goleman Library were also analyzed. These buildings do not have significant electrical problems or are not overloaded. No corrective measures are necessary for these three buildings at this time.

Over the last year, research has been aided by two independent tests performed on the electrical system of the buildings. In June of '99, Electro-Test Inc. performed a load test on the main service of each of the buildings in review. The test results indicated that there was adequate power supplied to each of the buildings to support the total expected load for the building. Thermotest Incorporated performed another test in September of '99. They performed an Infra-red test and load test on individual transformers and panels within each building. The results indicated that although the main service had adequate power there were potential overload situations and installation problems at the individual step down transformers and sub-panels in the building. Upon review and analysis of the existing conditions it was determined that with the addition of computers and other electrical equipment to the classrooms, the added load to the existing circuit breaker trips the breaker resulting in a power outage and disruption of class. Adding new circuits

STATE OF CALIFORNIA	DEPARTMENT OF FINANCE
CAPITAL OUTLAY	915 L Street
BUDGET CHANGE PROPOSAL (COBCP)	Sacramento, CA 95814
COVER PAGE (REV 11//98)	IMS Mail Code: A15
BUDGET YEAR 2000-01	

to the classroom is not possible due to the lack of spare capacity and panel space in the sub-panels.

The District goal of this project is to install additional outlets in classrooms to adequately and safely support the installation of current technology and program required equipment into the classrooms.

B. RELATIONSHIP TO THE STRATEGIC PLAN: (relevance of problem/need to mission and goals)

The 1999 Delta College Master Plan calls for a steady increase in the number of computers on the campus. The Master Plan (Volume III, pages 7 and 14) recommends implementation of the Safety-Electrical Replacement Project.

C. ALTERNATIVES: (for each, describe the proposed alternative and provide a brief summary of scope, cost, funding source, program benefits, facility management benefits, and impact on support budget)

The alternatives under consideration for this project include the following:

a. Add new transformers, distribution panels, and sub-panels within each existing building and basement space. Install new outlets in each of the classrooms. This is the recommended solution and represents the scope of work for the proposed project.

b. Construct two (2) new electrical rooms on each floor in each building providing additional space for transformers, and electric panels. Install electrical outlets in each room.

c. Construct new classroom buildings to replace the existing.

d. Replace classrooms with new modular classroom buildings.

e. Perform Alternate 1 in phases funded by scheduled maintenance funds.

Alternative 1: This alternative proposes the use of existing unused space in the basement to install new transformers to replace existing transformers in the remote electrical rooms. Removing the transformers from the remote electrical rooms corrects one of the building code deficiencies. New distribution panels and sub-panels will be installed in the electrical rooms and in classrooms. New outlets will be installed in the classrooms and connected to the new sub-panels. These new electrical outlets will satisfy the need to install new electrical equipment in the classrooms to meet program requirements. Construction will have to be sequenced to not disrupt the classes.

This alternative will provide the needed electrical outlets in each classroom. It will also utilize the existing unused boiler room and make the existing classrooms safe and viable well into the future. No new space will be created by this alternative. A limited amount

STATE OF CALIFORNIA CAPITAL OUTLAY BUDGET CHANGE PROPOSAL (COBCP) COVER PAGE (REV 11//98)	DEPARTMENT OF FINANCE 915 L Street Sacramento, CA 95814 IMS Mail Code: A15
BUDGET YEAR 2000-01	

of asbestos abatement will be necessary. The total project cost for this alternative will be $3,047,000.

Alternative 2: This alternative proposes to construct new electrical rooms adjacent to existing electrical rooms in the courtyards of the existing buildings. New transformers, distribution panels and sub-panels will be installed in the new electrical rooms. Electrical outlets will be installed in the classrooms and connected to the sub-panels. Construction will have to be sequenced to not disrupt classes.

This alternative has many of the same benefits, as Alternative 1, however, there will be more construction and asbestos abatement. This results in a higher cost ($6,249,000) and potentially longer schedule.

Alternative 3: Construct new permanent classroom buildings to replace the existing classrooms that can't be upgraded to meet the program equipment needs. The new classroom buildings will need to replace approximately 87 classrooms affected by the limited electrical service. In addition, the campus configuration is not conducive to adding large classroom buildings without major impact to the campus, infrastructure and central plant. This alternative would also result in an excessive capacity/load ratio for classrooms and labs. The cost to construct new permanent classrooms to replace the existing would be approximately $27.91mil. This is not a viable alternative.

Alternative 4: This alternative proposes to replace the existing 87 classrooms with modular classrooms around the perimeter of the campus. This alternative has the same basic results as Alternative 3. The cost would be substantially less, approximately $8,085,000 and could be completed in a reasonably short time. However, the total cost is high and would result in an excessive capacity/ load ratio for classrooms and labs. This is not a viable alternative.

Alternative 5: This alternative proposes to do the scope of work described in Alternative 1, but phased in small increments and funded over a series of years through scheduled maintenance funding. This results in the same benefits as Alternative 1 with the following exceptions; the potential length of the project would grow from 4-years to approximately 8-years which could result in higher costs than Alternative 1 due to project management costs and inflation. The overall length of the project may create some difficulty in utilizing the remaining uncorrected classrooms. There is no assurance that the scheduled maintenance funding will be available for the duration of years required. Due to the uncertainty of the funding, higher costs and duration of the project, this alternative is not as advantageous as Alternative 1. The total project cost for this alternative will be$4,497,000.

STATE OF CALIFORNIA CAPITAL OUTLAY BUDGET CHANGE PROPOSAL (COBCP) COVER PAGE (REV 11//98)	DEPARTMENT OF FINANCE 915 L Street Sacramento, CA 95814 IMS Mail Code: A15
BUDGET YEAR 2000-01	

D. RECOMMENDED SOLUTION:

1. Which alternative and why?

The following criteria were used to analyze the alternatives to make a recommendation.

a. Is the proposed alternative a cost-effective solution?

b. Is the proposed alternative consistent with the 5-year masterplan?

c. Does the proposal mitigate the life safety issues in a timely manner?

d. Does the proposed alternative integrate the classrooms into a cohesive campus plan?

e. Is the proposed alternative a long-term permanent solution?

f. Cost

CRITERIA ANALYSIS

Criteria	Altern. 1 Transformers in Basement	Altern. 2 New Electric Rooms	Altern. 3 Build new Classrooms	Altern. 4 Modular Classrooms	Altern. 5 Scheduled Maintenance
Cost Effective Solutions	YES	NO	NO	NO	NO
Consistent with Masterplan	YES	YES	NO	NO	YES
Mitigate Life – Safety Issues	YES	YES	YES	YES	NO
Cohesive Campus Plan	YES	YES	NO	NO	YES
Long-Term Permanent Solution	YES	YES	YES	NO	YES
Economic Analysis					
Utility Service	0	0	1,309,000	574,000	0
Site Dev. Service	0	0	595,000	261,000	0
Site Dev. General	0	0	476,000	209,000	0
Other Site Dev.	0	0	0	0	0
Reconstruction	2,334,000	5,008,000	0	0	0
New Construction	0	0	19,836,000	5,220,000	3,417,000
Other	0	0	0	0	0
Total Construct. Cost	2,334,000	5,008,000	22,216,000	6,264,000	3,417,000
Construct. Soft Cost	640,000	1,141,000	5,394,000	1,521,000	830,000
Subtotal Project Cost	2,974,000	6,149,000	27,610,000	7,785,000	4,247,000
Local Budget Cost (1)	100,000	100,000	300,000	300,000	250,000
Total Project Cost	$3,074,000	$6,249,000	$27,910,000	8,085,000	4,497,000

(1) Local budget costs includes swing space and relocation expenses.

STATE OF CALIFORNIA	DEPARTMENT OF FINANCE
CAPITAL OUTLAY	915 L Street
BUDGET CHANGE PROPOSAL (COBCP)	Sacramento, CA 95814
COVER PAGE (REV 11//98)	IMS Mail Code: A15
BUDGET YEAR 2000-01	

Alternative I is the recommended solution. It satisfies all the criteria and is the most cost-effective solution. Alternatives 2 and 5 are viable alternatives. Both renovate the existing infrastructure and utilize the existing classrooms but are not as cost-effective as Alternative I. Alternative 3 & 4 are not viable alternatives because they greatly increase the cost, the amount of lab and classroom space and are not consistent with the 5-year masterplan.

2. Detail scope description.

The scope will consist of the use of existing unused boiler room in the basement of each building to install new transformers to replace existing transformers in the remote electrical rooms. Removing the transformers from the remote electrical rooms corrects one of the building code deficiencies. New distribution panels and sub-panels will be installed in the electrical rooms and in classrooms. New outlets will be installed in the classrooms and connected to the new sub-panels. These new electrical outlets will satisfy the need to install new electrical equipment in the classrooms to meet program requirements. Construction will have to be sequenced to not disrupt the classes.

This alternative will provide the needed electrical outlets in each classroom. It will also utilize the existing unused utility space and make the existing classrooms safe and viable well into the future. No new space will be created by this alternative. A limited amount of asbestos abatement will be necessary.

3. Basis for cost information.

The basis for cost information on this project was generated by the Architect and Engineer, based upon the scope of work and their familiarity of projects with similar scope.

4. Factors/benefits for recommended solution other than the least expensive alternative.

The least expensive alternative is recommended.

5. Complete description of impact on support budget.

The proposed project will result in new electrical infrastructure for a majority of buildings on campus that currently are requiring frequent maintenance and service calls because of the power shortages and failing equipment. The project will reduce maintenance cost and provide minor savings on power consumption because new transformers are more efficient than those installed 25 years ago. Many of the old distribution panels have been out of production for a number of years and repair parts are expensive, hard to obtain, and can result in delays since they are not available

locally. New electrical infrastructure will result in lower maintenance cost, less power consumption because of new energy efficient equipment and lower repair costs.

6. **Identify and explain any project risks.**

   The recommended alternative consists of a renovation of existing infrastructure. The project risks would include the discovery of unknown conditions that may be uncovered during the process of the project. Such conditions are undocumented results of previous construction projects.

7. **List requested interdepartmental coordination and/or special project approval (including mandatory reviews and approvals, e.g. technology proposals).**

   Not applicable.

8.1 California Environmental Quality Act Environmental Impact Report

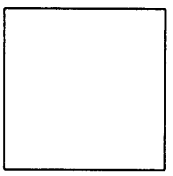
(Reference: California Code of Regulations, Title 5 Section 57121)

Please include required reports or certifications in lieu of this sheet. If this project is already covered by an EIR of record, please so state.

The safety-electrical system replacement project will qualify for a statutory exemption under the California Environmental Quality Act (CEQA) - California Code of Regulations, Title 14, Section 15301 and 15307. The Categorical Exemption will be filed with the State Clearing House prior to completion of the preliminary plans..

9.1 OUTLINE OF SPECIFICATIONS FOR

SAN JOAQUIN DELTA COLLEGE
ELECTRICAL SYSTEM REPLACEMENT



99145

TABLE OF CONTENTS

OUTLINE SPECIFICATIONS
FOR
SAN JOAQUIN DELTA COLLEGE
SAFETY – ELECTRICAL SYSTEM REPLACEMENT

END OF TABLE OF CONTENTS

SECTION 01145

CUTTING AND PATCHING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Requirements and limitations for cutting and patching of Work.

1.2 RELATED SECTIONS

A. Section 01890 – Alteration Project Procedures: Cutting and patching for alterations work.

B. Individual Product Specification Sections:

1. Cutting and patching incidental to work of the section.
2. Advance notification to other sections of openings required in work of those sections.
3. Limitations on cutting structural members.

1.3 SUBMITTALS

A. Submit written request in advance of cutting or alteration which affects:

1. Integrity of weather exposed or moisture resistant element
2. Efficiency, maintenance or safety of any operational element.
3. Visual qualities of sight exposed elements.
4. Work of Owner or separate contractor.

B. Include in request:

1. Identification of Project.
2. Location and description of affected Work.
3. Necessity for cutting or alteration.
4. Description of proposed Work and Products to be used.
5. Alternatives to cutting and patching.
6. Effect on work of Owner or separate contractor.
7. Written permission of affected separate contractor.
8. Date and time the work will be executed.

PART 2 PRODUCTS

2.1 MATERIALS

A. Primary Products: Those required for original installation.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.

B. After uncovering existing Work, assess conditions affecting performance of work.

C. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

A. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.

B. Provide protection from elements for areas which may be exposed by uncovering work.

3.3 CUTTING

A. Execute cutting and fitting to complete the Work.

B. Uncover work to install improperly sequenced work.

C. Remove and replace defective or non-conforming work.

D. Remove samples of installed work for testing when requested.

E. Provide openings in the Work for penetration of mechanical and electrical work.

F. Employ experienced installer to perform cutting for weather exposed and moisture resistant elements and sight-exposed surfaces.

G. Cut rigid materials in straight, true and parallel or perpendicular lines using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

3.4 PATCHING

A. Execute patching to complement adjacent Work.

B. Fit products together to integrate with other Work.

C. Execute work by methods to avoid damage to other Work and which will provide appropriate surfaces to receive patching and finishing.

D. Employ experienced installer to perform patching for weather exposed and moisture resistant elements and sight-exposed surfaces.

E. Restore work with new products in accordance with requirements of Contract Documents.

F. Fit work to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

G. At penetrations of fire rated walls, partitions, ceiling or floor construction, completely seal voids with fire rated material to full thickness of the penetrated element. Refer to Section 07840, Firestopping.

H. Refinish surfaces to match adjacent finish in all respects (type, texture, thickness, color, etc.). For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

I. Roof Patching. The roof patch system shall be compatible with and identical to the existing roofing system. Roof patching shall be performed per roofing manufacturer's and NRCA's written instructions, procedures and details, which ever is more stringent. Roof patching shall be installed with the same roofing system as the existing roofing so as not to void any warranties on the existing roofing system. Contractor shall submit all materials and procedures proposed to be used for roof patching for review by the Architect prior to any roof patching work.

END OF SECTION

SECTION 01890

ALTERATION PROJECT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Products and installation for patching and extending Work.

B. Transition and adjustments.

C. Repair of damaged surfaces, finishes and cleaning.

1.2 RELATED SECTIONS

A. Section 01145 – Cutting and Patching.

1.3 ALTERATIONS, CUTTING AND PROTECTION

A. Assign the work of moving, removal, cutting and patching, to trades qualified to perform the work in manner to cause least damage to each type of work and provide means of returning surfaces to appearance of new work.

B. Perform cutting and removal work to remove minimum necessary and in a manner to avoid damage to adjacent work.

1. Cut finish surfaces such as concrete, masonry, drywall, plaster or metals, by methods to terminate surfaces in a straight line at a natural point of division or where indicated.

C. Protect existing finishes, equipment and adjacent work, which is scheduled to remain, from damage.

1. Protect existing and new work from extremes of temperature.

a. Maintain existing interior work above 60°F.

b. Provide heat and humidity control as needed to prevent damage to remaining existing work and to new work.

D. Provide temporary enclosures to separate work areas from existing building and from areas occupied by Owner.

PART 2 PRODUCTS

2.1 PRODUCTS FOR PATCHING AND EXTENDING WORK

A. New Materials: As specified in product Sections; match existing Products and work for patching and extending work.

1. Provide same products or types of construction as that in existing structure, as needed to patch, extend or match existing work.

2. Presence of a product, finish or type of construction, requires that patching, extending or matching shall be performed as necessary to Work complete and consistent to identical standards of quality.

B. Type and Quality of Existing Products: Determine by inspection and testing Products where necessary, referring to existing Work as a standard.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that demolition is complete and areas are ready for installation of new Work.

B. Beginning of restoration Work means acceptance of existing conditions.

3.2 PREPARATION

A. Cut, move or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

B. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as required for finished Work.

C. Remove debris and abandoned items from area and from concealed spaces.

D. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.

3.3 INSTALLATION

A. Coordinate work of alterations and renovations to expedite completion and to accommodate Owner occupancy. Patch and extend existing work using skilled mechanics who are capable of matching existing quality of workmanship. Quality of patched or extended work shall be not less than that specified for new work.

B. Room Finishes: Complete in all respects including operational mechanical and electrical work.

C. Remove, cut and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to specified condition.

D. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.

E. In addition to specified replacement of equipment and fixtures restore existing plumbing, heating, ventilation, air conditioning, electrical systems to full operational condition.

F. Install Products as specified in individual Sections or to match existing product and finishes.

3.4 TRANSITIONS

A. Where new Work abuts or aligns with existing, perform a smooth and even transition.

B. Patch Work to match existing adjacent Work in texture and appearance, without breaks, steps or bulkheads.

C. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.

3.5 ADJUSTMENTS

A. Where change of plane of 1/4" or more occurs, submit recommendation for providing a smooth transition for Architect.

1. Where extreme change of plane of 2" or more occurs, request instructions from Architect as to method of making transition.

B. Trim existing doors as necessary to clear new floor finish. Refinish trimmed area as required to match door finish.

C. Fit work at penetrations of surfaces as shown on drawings.

3.6 REPAIR OF DAMAGED SURFACES

A. Patch or replace portions of existing surfaces that are damaged, lifted, discolored or showing other imperfections.

B. Repair substrate prior to patching finish.

3.7 FINISHES

A. Finish surfaces as specified in individual Product Sections.

B. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

3.8 CLEANING

A. Clean adjacent Owner occupied areas of work soiled by work of this contract.

END OF SECTION

SECTION 03100

CONCRETE FORMWORK

PART 1 GENERAL

PART 2 PRODUCTS

2.1 WOOD FORM MATERIALS

A. Smooth concrete exposed or concealed from view – Plywood: 5/8 inch minimum thickness APA Plyform; sound undamaged sheets with clean, true edges.

B. Smooth concrete concealed from view: 2 x 12 D.F. construction grade lumber.

2.2 FORMWORK AND ACCESSORIES

A. Cylindrical Fibre Forms: Sonotube Fiber Form "A" as manufactured by Sonoco Products Company.

B. Form Ties: Snap-off type, galvanized metal, adjustable length, cone type, one inch back break dimension, free of defects that could leave holes larger than one inch in concrete surface.

C. Form Release Agent: FS TT-W-572: Non-grain raising and non-staining types of form coating that will not leave a residual matter on the face of the concrete or adversely affect proper bonding of any subsequent paint or other surface applications.

1. Form coating containing mineral oils or other non-drying materials will not be permitted for any concrete work.

D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

E. Form Clamps: Burke standard assembly or Superior tilt lock assembly, complete with waler rods, nut washers and threaded inner tie rod.

F. Spreaders: Metal (no wood permitted).

G. Expansion Joint Filler (Preformed): 1/2" thick; Flexcell by Celotex Corporation, Elastic fiber Expansion Joint by Philip Carey Mfg. Co., or Sealtight Fiber Expansion Joint by W.R. Meadow, Inc.

H. Construction Joint: "Burke" Keyed Kold Joint form, or approved substitute, or 24 gage galvanized steel shapes to form tongue and groove joint.

I. Chamfer Strips: Wood or Rubber.

J. Foam Board Separation: Expanded Polystyrene in size and thickness to suit application.

PART 3 EXECUTION

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

PART 2 PRODUCTS

2.1 REINFORCEMENT

A. Reinforcing Steel: ASTM A615 marked "S:" Grade 60; deformed billet steel bars, unless otherwise indicated on Drawings.

1. Bar reinforcement to be welded shall meet chemical requirements of ASTM A706.

B. Welded Wire Fabric: 6 x 6 – W1.4 x W1.4, conforming to ASTM A185. Provide and install flat sheet fabric only; roll goods will not be allowed.

C. Stirrup Steel: Same grade as for reinforcement bars.

D. Steel dowels: Same grade as bars to which dowels are connected.

E. Ties: ASTM A615, Grade 60.

2.2 ACCESSORY MATERIALS

A. Tie Wire: FS-QQ-W-461; Minimum 16 gauge annealed type-steel.

B. Chairs, Bolsters, Bar Supports, Spacers: CRSI Class 2; Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor barrier puncture.

1. Do not use wood, brick or other objectionable materials.

2. Do not use galvanized supports.

C. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces: CRSI Class 1; Plastic coated steel type; size and shape as required.

D. Where support is no closer to concrete surface than 1/2"; CRSI Class 3 wire supports.

E. Supports placed against ground: Precast concrete blocks not less than 4" square with embedded wire.

F. Welding electrodes: AWS D1.4, low hydrogen, E7093054 series.

2.3 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI Manual of Practice and to meet drawing requirements.

B. Weld reinforcement in accordance with ANSI/AWS D1.4.

C. Fabricate reinforcement in accordance with the requirements of ACI 315 where specific details are not shown or where Drawings and Specifications are not more demanding.

D. Steel reinforcement shall not be bent or straightened in a manner that will injure the material. Bars with kinks or bends not shown on the Drawings shall not be used. Heating of bars for bending will not be permitted.

E. Shop Assembled Cages: Provide spacers, bracing and ties sufficient to prevent deformation of cages during transportation, placement and pouring of concrete.

PART 3 EXECUTION

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

A. Cement: UBC Standard 19-1, ASTM C150, Type I – Normal; all cement used shall be of one manufacturer. All cement shall contain not more than 0.6% total alkali when calculated as sodium oxide, as determined by the "Methods of Chemical Analysis of Portland Cement," ASTM C-114.

B. Fine and Coarse Aggregates: ASTM C33. All aggregates shall be nonreactive, nondegenerative, and shall consist of sound crushed rock, washed gravel, or a combination of both.

1. Grading of combined aggregates shall comply with CBC Title 24 Table 19A-J. Maximum aggregate size shall be 1".

2. Aggregate sources shall be approved by Architect. Aggregates shall result in shrinkage of concrete not exceeding .048% at 28 days.

3. Sand cushion over vapor barrier shall comply with ASTM C33.

C. Water: Clean and not detrimental to concrete.

D. Concrete for thrust blocks, fire hydrant pads and other minor work shall be Class B and may be mixed at the job location when approved by Engineer.

2.2 ADMIXTURES

A. Air Entrainment: Conform to ASTM C260.

1. "Darex AEA" – W.R.Grace

B. Chemical: ASTM C494, Type D – Water Reducing admixture manufactured by:

1. "Eucon WR-75" – The Euclid Chemical Company

2. "Pozzolith 322N" – Master Builders

3. "Plastocrete 160" – The Sika Chemical Corporation

C. High Range Water Reducing Admixture (Superplasticizer): Conform to ASTM C494, type F or G. Acceptable products are:

1. "Eucon 37" – The Euclid Chemical Company

2. "Sikament" – The Sika Chemical Corporation

D. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.05 percent chloride ions.

E. Certification: Written conformance to the above-mentioned requirements and chloride ion content of the admixture will be required from the admixture manufacturer prior to mix design review by the Architect.

2.3 ACCESSORIES

A. Bonding Agent: Polyvinyl Acetate, rewettable type (use only in areas not subject to moisture). Acceptable products are:

1. "Euco Weld" – The Euclid Chemical Company.
2. "Weldcrete" – The Larsen Company.
3. "Thorobond" – Standard Dry Wall Products.

B. Bonding Admixture: The compound shall be a latex, non-wettable type. Acceptable products are:

1. "SBR Latex" – or "Flex-Con" – The Euclid Chemical Company.
2. "Daraweld C" – W.R. Grace.

C. Structural Bonding Epoxy Adhesive: The compound shall be a two-component, 100% solids, 100% reactive compound suitable for use on dry or damp surfaces. Acceptable products are:

1. "Euco Epoxy #452 MV or #620" – The Euclid Chemical Company.
2. "Sikadur Hi-Mod" – The Sika Chemical Corporation.
3. "Concresive 1001" – Adhesive Engineering Company.
4. "Sealtight Rezi-Weld 1000 or gel paste" – W.R. Meadows.

D. Patching Mortar: The compound shall be epoxy type, 100% solids, suitable for use on dry or damp surfaces. Acceptable products are:

1. "Euco epoxy #456 Mortar – The Euclid Chemical Company
2. "Sikadur Lo-Mod" – The Sika Chemical Corporation

E. Patching Compound: Free-flowing, polymer-modified cementitious coating. Acceptable products are:

1. "Euco Thin Coat" – The Euclid Chemical Company
2. "Sika Top 121" – The Sika Chemical Corporation
3. "Vulkem 2300" – Mameco International

F. Epoxy Joint Filler: Shall be a two-component, 100% solids compound with a minimum shore A hardness of 80. Acceptable products are:

1. "Euco Epoxy #700 – The Euclid Chemical Company
2. "Sikadur Lo-Mod Mortar" – The Sika Chemical Corporation

G. Underlayment compound: Free-flowing, self-leveling, pumpable cementitious base compound; "Flo-top" – The Euclid Chemical Company, or approved equal.

H. Drypack: Euco-Dry Pack Grout; natural aggregate, high strength, non-shrink. "Pac-It" – W.R. Meadows.

I. Bonding Compound: Polymer modified, non-rewettable bonding compound; "Euco-bond" – The Euclid Chemical Company, or approved equal.

J. Expansion Joint Filler (preformed): Acceptable products are:

1. "Flexcell" – Celotex Corporation

2. "Elastic Fiber Expansion Joint" – Philip Carey Manufacturing Company

3. "Sealtight Fiber Expansion Joint" – W.R. Meadow, Incorporated

K. Curing and Sealing Compound: Shall meet or exceed the requirements of ASTM C309, and shall be an acrylic emulsion type. The curing compound shall meet the California Air Regulation Board regulations. Acceptable products are:

1. "Aqua-Cure Vox" – The Euclid Chemical Company

2. "Vocomp 20" – W.R. Meadows, Inc.

L. Bond Breaker: Non-staining seekure, manufactured by Sisalkraft Corporation, or approved equal. Material shall consist of reinforced waterproof paper bonded with an adhesive of blended latex to prevent staining.

M. Evaporation Retarder: Acceptable products are:

1. "Euco-Bar" – The Euclid Chemical Company

2. "Confilm" – Master Builders

N. Waterproof sheet Curing compound: Conform to ASTM C171. Acceptable products are:

1. "6 mil polyethylene"

2. "Bur-lene" – Max Katz Bag Company

3. "Orange Label Sisalkraft" – Fortifiber Corporation

O. Cone Hole Plugs:

1. Precast high strength cement compound plugs matching size and shape of tie cone used and matching color of poured-in-place concrete. Provide flush type unless reveal type is indicated. Provide waterproof neoprene adhesive for fastening.

2. Coordinate with tie cones specified in Section 03100. Provide plugs of same manufacture as tie cones.

P. Vapor Barrier: "Moistop" as manufactured by Fortifiber-Sisalkraft Products. The vapor barrier shall consist of a top layer of 2 mil black polyethylene film extruded on a sheet of high quality kraft. This combination shall be laminated to fungus resistant kraft with asphalt laminate, having embedded steel-like reinforcing fibers in two directions.

2.4 JOINT DEVICES AND FILLER MATERIALS

A. Expansion Joint Filler at sidewalks: ASTM D994 Asphalt expansion joint filler, 1/2" thick, W.R. Meadows.

2.5 CONCRETE MIX

A. Concrete of various types required shall be comprised of cement, course and fine aggregates, water and admixtures proportioned as specified herein. Concrete shall attain 28-day compressive strengths as indicated. Concrete shall have a water-cement ratio not to exceed 0.50.

Location	Req'd 28-day Compressive Strength, PSI	Air Content
Footings, piers, grade beams and all other below grade concrete	3,000	Not required
All concrete slabs on grade	3,000	Not required

B. Proportions for concrete mixes shall be selected by ACI 301, Section 3.9. All mixes must be designed by a Testing Laboratory approved by Architect prior to use on the job. No deviations from the approved mixes will be permitted without prior approval of the Architect. Design mix based on laboratory tests shall be per Method C, Section 1905A2.3 of the CBC, Title 24.

C. Where the concrete production facility can establish the uniformity of its production for concrete of similar strength and materials based on recent test data, the average strength used as a basis for determining mix design proportions shall exceed the specified design strength by the requirements of Method B, Section 1905A2.3 of the CBC, Title 24.

D. Slump Limits: Concrete mix proportions and design shall result in concrete at point of discharge of proper consistency as determined by the Standard Method of Test for Slump of Portland Cement, ASTM C143. The slump limits for all concrete shall be as follows:

1. All concrete: 3-1/2" plus or minus 1/2".

2. Concrete containing the high-range water-reducing admixture (super-plasticizer) shall have a maximum slump of 8" unless otherwise approved by the Architect. The concrete shall arrive at the job site at a slump of 2" to 3", be verified, then the high-range water-reducing admixture added to increase the slump to the approved level. This maximum slump may not be exceeded except by the job-site addition of the specified high-range water-reducing admixture (Superplasticizer). In those portions of the structures where member dimensions and/or congestion due to reinforcing steel prevent the proper placement and consolidation of the concrete at the maximum slump specified, superplasticizer shall be used by the Contractor in lieu of increasing the slump of non-superplasticized concrete by the addition of water.

E. All concrete shall contain the specified water-reducing or water-reducing retarding admixture and/or high-range water-reducing admixture (superplasticizer). All concrete slabs, placed at air temperatures below 50°F. shall contain the specified non-corrosive non-chloride accelerator. All concrete required to be air-entrained shall contain an approved air-entraining admixture. All pumped concrete, architectural concrete, concrete required to be watertight and concrete with

a water-cement ratio below 0.45 shall contain the specified high-range water-reducing admixture (superplasticizer).

F. If pumping of concrete is selected and approved, the Contractor shall engage a testing laboratory to design concrete mixes for pumping.

1. The quality and proportioning of aggregates for pumping conditions shall be determined in accordance with ACI. Recommended practice 613 aggregate proportioning must be tailored to the particular pump intended for use.

2.6 CONCRETE MIXING

A. All concrete shall be mixed until there is a uniform distribution of materials and shall be discharged completely before mixer is recharged.

B. Ready-mixed concrete: Transmit-mixed concrete shall be mixed for a period of not less than 10 minutes at a peripheral drum speed of approximately 200' per minute and mixing shall be continued until discharge is complete. At least 3 minutes of the mixing period shall be at the job. Transmit mixers shall be equipped with water measuring devices consisting of either accurately calibrated water tanks or water meters.

C. Job Mixing: The capacity of the mixer shall be such that it will handle one or more full sack batches. No split sack batches shall be permitted except when all materials are weighed. The rated capacity of the mixer shall not be exceeded. The mixing drum shall have a peripheral speed of approximately 200' per minute. The mixer shall be equipped with an automatic timing and locking device and with an accurate water gauge for measuring the amount of water used. Mixing time of each batch shall be at least 5 minutes after all the ingredients are in the mixer.

D. Mixing of integrally colored concrete – concrete color admixture shall be added at the concrete batch plant. The same brand of cement, source of sand, and water/cement ratio must be maintained for each load of the same color. The batching procedures shall be as follows: Before adding color-conditioning admixture, the mixing drum must be thoroughly cleaned and wetted with approximately 40 gallons of the mix water and/or a portion of the aggregates. One bag of the color admixture correctly packaged for the mix design shall be added per yard of concrete. Proceed with normal batching of balance of ingredients. After loading is complete, mix at mixing speed for a minimum of 15 minutes. No water should be added after a portion of the load has been discharged.

2.7 SOURCE QUALITY CONTROL

A. The Owner's Testing Laboratory will:

1. Review mix designs and certificates of compliance for materials Contractor proposes to use.

2. Provide continuous batch plant inspections per CBC Section 1928A.4. Obtain sample of aggregates when it appears they may not conform to requirements specified.

PART 3 EXECUTION

END OF SECTION

SECTION 07210

BUILDING INSULATION

PART 1 GENERAL

PART 2 PRODUCTS

2.1 MANUFACTURERS–INSULATION MATERIALS

A. Owens-Corning Fiberglass.

B. Certainteed

C. Johns Manville.

D. United States Gypsum.

2.2 MATERIALS

A. Batt Insulation: ASTM C665; preformed glass fiber batt; conforming to the following:

1. Thermal Resistance: R-19.

2. Facing: Faced on one side with foil reinforced kraft face at exposed locations; kraft facing at locations where insulation will be covered.

3. Flame Spread and Smoke Density Properties: 25/50 in accordance with ASTM E84.

a. Attic insulation with vapor barrier shall meet the above Flame/Smoke Properties.

B. Staples: Steel wire; galvanized; type and size to suit application.

C. Tape: Polyester self-adhering type, mesh reinforced, 2 inch wide.

PART 3 EXECUTION

END OF SECTION

SECTION 07620

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

PART 2 PRODUCTS

2.1 SHEET MATERIALS

A. Galvanized Steel: ASTM A525, G90; 24 gage core steel, unless noted otherwise on the drawings.

2.2 ACCESSORIES

A. Fastener: Galvanized steel or Stainless steel with soft neoprene washers at exposed fasteners. Finish exposed fasteners same as flashing metal.

B. Protective Backing Paint: FS TT-C-494A. Bituminous.

C. Sealant: Type specified in Section 07920.

D. Bedding Compound: Rubber-asphalt type.

E. Plastic Cement: FS SS-C-153, Type I-asphaltic base cement.

F. Solder: ASTM B32; 95-5 Tin Antimony type.

G. Flux: As recommended by sheet metal manufacturer.

H. Strainers: Provide and install strainers at downspouts and continuously along all gutters per SMACNA manual, latest edition.

I. Reglets: Superior; Fry; or substitution. Type as shown on Drawings.

2.3 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Fabricate cleats and starter strips of same material as sheet, interlockable with sheet.

C. Form pieces in longest practical lengths.

D. Hem exposed edges on underside 1/2 inch (13 mm); miter and seam corners.

E. Form material with flat lock seam.

F. Solder and seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean.

G. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.

H. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

I. Expansion-contraction of sheet metal runs: Provide flat, loose locking slip joint at maximum of ten (10) foot intervals.

2.4 FINISH

A. Back-paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

B. Touch-up Paint: "Galvalloy" or "Galvweldalloy."

PART 3 EXECUTION

END OF SECTION

SECTION 07840

FIRESTOPPING

PART 1 GENERAL

PART 2 PRODUCTS

2.1 GENERAL

A. Provide and install firestopping materials to meet applicable codes and installation requirements for each firestopping application. Products using caulking, putty, wrap strips, mortar, composite boards and/or mechanical devices shall be used as appropriate for the specific condition.

B. When caulking is used, provide and install flexible caulking materials. Cured firestop materials 1/8" thick shall be able to bend around a 1" mandrel without breaking.

C. Do not use any firestop products that re-emulsify on leach active intumescent.

D. Provide materials that can be reused (pillows or non-curing putty) for all telephone and data penetrations.

E. Provide firestopping composed of components that are compatible with each other, the substrates forming openings and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.

F. Provide components for each firestopping system that is needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance rated systems.

G. Provide a firestop system with an "F" rating as determined by UL 1479 or ASTM E814 that is equal to the time rating of construction being penetrated.

H. Provide a firestop system with an Assembly Rating as determined by UL 2079 that is equal to the time rating of construction being penetrated.

2.2 MINERAL WOOL INSULATION

A. Through penetrations: Provide 4 pcf mineral wool per tested system.

B. Head of wall construction gaps: Provide 4 pcf mineral wool per tested system.

C. Perimeter safing slot: Provide 4 pcf mineral wool batt insulation per tested system.

D. Accessories: Provide all accessories and anchors for installation as recommended by the manufacturer.

2.3 FIRESTOP SEALANT – For penetrations by noncombustible items including steel pipe, copper pipe, rigid steel conduit and electrical metallic tubing (EMT), the following materials are acceptable:

A. Manufacturers:

1. Hilti. Product: FS-One.

2. STI, Spec Seal. Product: Series 100 Sealant.

3. 3M. Product: Fire Barrier CP25WB+.

4. Tremco. Product: Tremstop Fyre-Sil Sealant.

B. Sealant shall be a one-part intumescent latex compound. The sealant when exposed to high heat or flame shall be capable of expanding to seal off annular spaces created. Range of continuing expansion shall be from 230°F to greater than 1,000°F. The sealant shall be thixotropic and shall be capable of caulking or troweling onto vertical surfaces or overhead. The sealant shall be UL Classified (UL 1479) and tested to the requirements of ASTM E814. Penetrations in fire rated assemblies shall be protected and sealed in accordance with CBC Chapter 7.

2.4 FIRESTOP PUTTY – For penetrations by combustible items (penetrants consumed by high heat and flame) including insulated metal pipe, PVC jacketed flexible cable, or cable bundles and plastic pipe (closed piping systems), the following materials are acceptable:

A. Manufacturers:

1. Hilti. Product: CP617 and CP618.

2. STI, Spec Seal. Product: Putty.

3. 3M. Product: Fire Barrier Moldable Putty +.

4. Tremco. Product: Tremstop WB Intumescent Firestop Sealant.

B. Putty shall be a one-part intumescent, non-hardening compound. The putty, when exposed to high heat or flame shall be capable of expanding to seal off annular spaces created. Range of continuing expansion shall be from 230°F to greater than 1,000°F. The putty shall be soft and pliable with aggressive adhesion. The putty shall be UL Classified (UL 1479) and tested to the requirements of ASTM E814. Penetrations in fire rated assemblies shall be protected and sealed in accordance with CBC Chapter 7.

2.5 ELASTOMERIC FIRESTOP SEALANT – For openings between structurally separate sections of wall and floors. At top-of-walls, the following materials are acceptable:

A. Manufacturers:

1. Hilti. Product: CP601S.

2. STI, Spec Seal. Product: Series ES100 Elastomeric Sealant.

3. 3M. Products: Fire Barrier Sealants 1000, 1003, 2000, 2003, 2000+ and 2001.

B. Elastomeric sealant shall be a non-halogenated, latex-based, highly flexible caulk. The sealant shall be thixotropic for high-build application using standard caulking equipment or by troweling onto vertical surfaces or overhead. The sealant shall be UL Classified (UL 2079) and tested to the requirements of ASTM E814. Closures in fire rated assemblies shall be protected and sealed in accordance with CBC Chapter 7.

2.6 FLEXIBLE FIRESTOP SPRAY – For fire-rated construction joints and other gaps, the following materials are acceptable:

A. Manufacturers:

1. Hilti. Product: CP672.

2. 3M. Products: Firedam Spray and Fire Barrier Spray.

3. STI, SpecSeal.

4. Tremco. Product: Tremstop Fyre-Sil Sealant.

B. Spray shall be flexible, sprayable water-based coating that dries in ambient conditions to form a flexible seal that will compress/extend with the intended range of the joint. The spray shall be UL classified (UL 2079) and tested to the requirements of ASTM E1399 and ASTM E1966. Closures in fire rated assemblies shall be protected and sealed in accordance with CBC Chapter 7.

2.7 FIRESTOP COLLARS – For penetrations by combustible plastic pipe (opening piping systems), the following materials are acceptable:

A. Manufacturers:

1. Hilti. Product: CP642/CP643 Firestop Jacket.

2. 3M. Products: Fire Barrier PPD Plastic Pipe Device and Ultra Plastic Pipe Device.

B. Firestop collar shall be made of a galvanized steel housing and shall contain section of intumescent material. The material shall be designed to expand when exposed to fire. The collars shall be UL classified (UL 1479) and tested to the requirements of ASTM E814. Closures in fire rated assemblies shall be protected and sealed in accordance with CBC Chapter 7.

2.8 LARGE OPENINGS – For large size, complex penetrations made to accommodate cable trays, multiple steel and copper pipes and electrical busways in raceways, the following materials are acceptable:

A. Manufacturers:

1. Hilti. Product: Fire Block.

2. 3M. Product: Fire Barrier CS-195+ and Composite Sheet.

B. For large openings, install intumescent compound. The intumescent compound, when exposed to high heat or flame, shall be capable of expanding to seal off annular spaces created. Product shall be UL classified (UL 1479) and tested to the requirements of ASTM E814. Closures in fire rated assemblies shall be protected and sealed in accordance with CBC Chapter 7.

2.9 ACCESSORIES

A. Installation Accessories: Clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

PART 3 EXECUTION

END OF SECTION

SECTION 07920

JOINT SEALERS

PART 1 GENERAL

PART 2 PRODUCTS

2.1 SEALANT

A. Silicone Sealant: Silcone Sealant (use at concrete, masonry, or glazing applications): FS TT-S-01543, Class A, low modulus type; Spectrum I as manufactured by Tremco, Inc.

B. Acrylic Sealant (use at interior applications): FS TT-S-00230, Type II, Class A; "Mono" as manufactured by Tremco, Inc.

C. Polyurethane Sealant (use at exterior or interior applications): FS TT-S-00227, Type II – non-sag, Class A; "Dymeric" as manufactured by Tremco, Inc.

D. Interior Building Sealant: Acrylic-emulsion; one-part, nonsag, mildew-resistant. Complying with ASTM C834, formulated to be paintable; Pecora Corp. "AC-20", Sonneborn "Sonolac", Tremco, Inc. "Tremco Acrylic Latex 834" or approved equal.

E. Sanitary Sealant: One-part mildew-resistant silicone; ASTM C920 Type S; Grade NS Class 25; Uses NT, G, A, and O; formulated with fungicide for sealing interior joints with nonporous substrates around ceramic tile, showers, sinks and plumbing fixtures; Dow Corning Corp. "786 Mildew Resistant", General Electric Co. "Sanitary 1700", Sonneborn Building Product Div. "Sonolastic Omniplus" or approved equal.

F. Acoustical Sealant for Concealed Joints: Nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound; Pecora Corp. "BA-98", Tremco, Inc. "Tremco Acoustical Sealant" or approved equal.

G. Acoustical Sealant for Exposed Joints: Nonoxidizing, skinnable, paintanle, gunnable sealant recommended for sealing interior exposed joints to reduce transmission of airborne sound; Pecora Corp. "AC-20 DTR Acoustical and Insulation Sealant", USG "Sheetrock Acoustical Sealant" or approved equal.

H. Color of sealant shall be as selected by Architect.

2.2 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Non-staining, compatible with sealant and primer; such as round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width. Materials impregnated with oil, bitumen or similar materials shall not be used. Sealant shall not adhere to back-up material.

PART 3 EXECUTION

END OF SECTION

SECTION 08110

STEEL DOORS AND FRAMES

PART 1 GENERAL

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Steelcraft Manufacturing Co.

B. Republic Builders Products Corp.

C. Ceco Door Products.

2.2 MATERIALS

A. Hot-Rolled Steel Sheets and Strip for Frames: Commercial quality carbon steel, complying with ASTM A569.

B. Cold-Rolled Steel Sheets for Doors: Commercial quality carbon steel, complying with ASTM A366.

C. Factory Applied Primer Paint: TNEMEC Azeron FD-88 red metal primer or accepted equal.

2.3 METAL DOOR FABRICATION

A. General: Fabricate to sizes shown, providing necessary clearances and bevels to permit operation without binding. Door shall be free from warp, wave, buckle or other defect.

B. Flush Door Construction: Door shall be Grade III, Model 2, fabricated with face sheets of 16 gauge steel in accordance with SDI-100 and galvanized to ASTM A653/A653M A60. Door shall be flush with edge seams weld filled and ground smooth. Bevel lock and hinge edges 1/8" in 2". Door shall be provided with top and bottom inverted 14 gauge steel channels welded within the door. Door shall be reinforced, stiffened and sound deadened with impregnated kraft honeycomb core completely filling inside of door and laminated to the inside faces of panels.

1. All exterior doors shall be insulated with an expanded polystyrene core completely filling the inside of the door using 1 lb. density PCF regular grade expanded polystyrene core per ASTM C578, Types 1 and 2.

C. Preparation of Hardware: Door shall be mortised, reinforced, drilled and tapped at the factory from templates for all mortise hardware listed in the hardware schedule. Door shall be reinforced only for surface applied hardware such as closers, checks, escutcheons and kickplates, the drilling and tapping for which is to be done in the field by the door erector. Reinforcement shall consist of 12 gauge for locksets and latchsets, and 14 gauge for surface applied hardware, except butts, which shall have 3/16" thick plate. Door shall be provided with reinforcing unit as recommended by lock manufacturer.

D. Hardware Mounting Heights and Door Clearances: In accordance with ANSI Industry Standards.

2.4 METAL FRAME FABRICATION

A. General: Pressed metal frames shall be formed to shapes and sizes shown. Head and jambs are to be notched, mitered, welded and finished to present a smooth surface for painting.

1. Frames shall be fabricated from 16 gauge steel, and shall be designed with integral stop and trim. Mitered corners shall be reinforced with 18 gauge channel shaped reinforcements.

2. Reinforce frames wider than 48" with roll formed steel channels fitted tightly into frame head, flush with top.

B. Anchors: Frame shall be anchored to structure with anchors as indicated on the drawings. Where anchorage is not specifically delineated, anchorage shall be as for a similar assembly, or approved manufacturer's standard type, to securely fasten frames to wall construction involved (wire anchors not acceptable); also provide adjustable floor anchor at bottom of each door jamb. Provide minimum three anchors at jamb end of frames. Anchors shall provide stiffness and rigidity to keep frames square, in accurate position without twisting, buckling or warping.

C. Preparation for Hardware: Frame shall be prepared at the factory for all hardware using templates furnished by hardware supplier. Locations of miscellaneous hardware shall conform to the recommendations for the Door & Hardware Institute. Mortise, reinforce, drill and tap for all mortise type hardware. Reinforce for surface applied hardware, the drilling and tapping for which is to be done in the field by door erector.

1. All hardware cutouts shall have steel plate reinforcements with tapped holes welded to frame. Reinforcement shall include 3/16" butt reinforcement; 12 gauge lock strike; 14 gauge for surface applied items.

2. Provide strike stops at frames to receive metal doors with holes for three rubber door silencers. On double doorframes, provide for two silencers per door at head. Omit holes at frames to receive unitized weather-stripping; refer to Section 08710.

D. Removable Spreaders: Provide removable metal spreader for frame to prevent damage during shipment and handling.

E. Fire-Rated Doors and Frames: All fire rated doors and frames shall have a metal label permanently fastened to the jamb indicating the fire rating and Test Agency name. Do not apply primer or paint over fire rating labels.

2.5 FINISH

A. Doors and frames shall be leveled and welds ground smooth. Apply mineral filler to eliminate weld scars and other blemishes.

B. Shop Priming: All surfaces shall be cleaned, phosphatized, and given one coat baked-on rust-inhibiting prime paint in accordance with the Steel Door Institute Specification "Test Procedure and Acceptance Criteria for Primer Painted Steel Doors and Frames". All exterior doors and frames shall be galvanized and prime coat painted.

C. Coat inside of frame profile at doorframes in contact with concrete or masonry with bituminous coating to a thickness of 1/16".

D. All exterior doors and frames shall be galvanized and prime painted.

PART 3 EXECUTION

END OF SECTION

SECTION 09100

NON-LOAD-BEARING METAL FRAMING SYSTEM

PART 1 GENERAL

PART 2 PRODUCTS

2.1 METAL FRAMING SYSTEM

A. Manufacturers:

1. Clark Steel Framing Systems
2. Dietrich Industries, Inc.
3. Harrison Manufacturing Co.
4. Marino/Ware
5. Unimast Incorporated
6. Cemco

2.2 COMPONENTS

A. Framing System Components: ASTM C645.

B. Studs: ASTM A653/A653M non-load bearing rolled steel, channel shaped, punched for utility access, depths and thicknesses as indicated on the drawings.

C. Tracks and Headers: Same material and thickness as studs, bent leg retainer notched to receive studs. Ceiling Runners: With extended leg retainer.

D. Furring and Bracing Members: Of same material as studs; thickness to suit purpose.

E. Fasteners: ASTM C1002, self-drilling, self -tapping screws.

F. Sheet Metal Backing: 0.03 inch.

G. Anchorage Devices: As indicated on the drawings.

H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type II Organic zinc rich.

PART 3 EXECUTION

END OF SECTION

SECTION 09250

GYPSUM BOARD

PART 1 GENERAL

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS – GYPSUM BOARD SYSTEM

A. U.S. Gypsum Co.

B. Pabco Gypsum Co.

C. Domtar America, Inc.

D. Gold Bond Building Products.

E. G-P Gypsum Corporation.

2.2 GYPSUM BOARD MATERIALS

A. Standard Gypsum Board: ANSI/ASTM C36; 5/8" thick, type `X', maximum permissible length; ends square cut, tapered edges.

2.3 ACCESSORIES

A. Acoustical Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board; "Acoustical Sealant" manufactured by Tremco.

B. Corner Beads: Metal.

C. Edge Trim: GA 201 and GA 216; Type J bead.

D. Joint Materials: GA 201 and GA 216; reinforcing tape, joint compound, adhesive, water and fasteners.

E. Fasteners: Screws, Type S, conforming to ANSI/ASTM C954, self-drilling and self-tapping steel screws with double-lead thread design as approved by system manufacturer for standard and heavier gauge load bearing steel framing.

F. Electrical Box Sealer: "Electrical Box Pads", by 3M or approved substitution; 6" x 8" x 1-1/8" resilient sealer pads.

G. Fire-Rated Control Joints: Zinc coated control joint No. 093; U.S. Gypsum or approved substitute to meet required UL listing.

PART 3 EXECUTION

END OF SECTION

SECTION 09900

PAINTING

PART 1 GENERAL

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS – PAINT

A. ICI.

B. Sherwin-Williams.

C. Dunn-Edwards.

D. Kelly-Moore.

2.2 ACCEPTABLE MANUFACTURERS – PRIMER SEALERS

A. ICI.

B. Sherwin-Williams.

C. Dunn-Edwards.

D. Kelly-Moore.

2.3 MATERIALS

A. Coatings: Ready mixed. Process pigments to a soft paste consistency capable of being readily and uniformly dispersed to a homogeneous coating.

B. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.

C. Accessory Materials: All other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

D. All paint materials shall be provided from a single manufacturer unless noted otherwise in this section.

2.4 FINISHES

A. Refer to schedule at end of Section for surface finish schedule. Refer to drawings for color schedule.

B. Product numbers listed are as manufactured by ICI unless indicated otherwise (equivalent products of other manufacturers listed hereinbefore are also acceptable).

2.5 SCHEDULE

A. EXTERIOR SURFACES

Galvanized Metal
1st coat – Eco-Prime 100 by DISSCO
2nd coat – 3210xxxx Gripper Acrylic Primer
3rd and 4th coats – 2406xxxx Acrylic Semi-Gloss

B. INTERIOR SURFACES

Gypsum Board
1st coat – 1030-xxxx PVA Primer Sealer
2nd and 3rd coats – 1407xxxx Latex Semi-Gloss Enamel

Metal
1st coat – 4160xxxx Multi-Purpose Primer
2nd and 3rd coats – 1407xxxx Latex Semi-Gloss Enamel
Typical paint system at all hollow metal doors and pressed metal frames.

PART 3 EXECUTION

END OF SECTION

SECTION 15010

MECHANICAL WORK - GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 CODES

A. Provide all work and materials in full accordance with the latest rules and regulations of the California Code of Regulations (CCR), Title 21, Title 22, and Title 24, as applicable, Safety Orders of the Division of Industrial Safety, (Cal OSHA); the California Electric Code; the California Plumbing Code; the California Building Code; California Mechanical Code; State Fire Marshal; and other applicable laws or regulations. Nothing in the plans or specifications is to be construed to permit work not conforming to these codes. Furnish without extra charge, any additional material and labor required to comply with these rules and regulations.

B. Where material or equipment is specified to conform to standards such as American Society of Testing and Materials (ASTM), Underwriters' Laboratories, Inc., (UL), American National Standards Institute (ANSI) and the like, it shall be assumed that the most recent edition of the standard in effect at the time of bid shall be used.

PART 2 - PRODUCTS (OR MATERIALS)

2.1 GENERAL

A. Materials or equipment of the same type shall be of the same brand wherever possible. All materials shall be new and in good condition.

2.2 DUCT INSULATION

A. Wrap all unlined concealed supply and return ducts with O.C. Fiberglas All-Service duct wrap with a reinforced foil Kraft vapor barrier facing 2" thick and 3/4# per cubic foot density. Wrap insulation entirely around duct and wire securely in place with #16 wire 12" o.c. and each side of each standing seam and over each insulation joint. Lap all insulation joints 3" minimum. Insulate ducts installed tight against other work before hanging in place.

B. All ducts and plenums in Fan Room shall be insulated with 1-1/2" (2" outside building) thick Fiberglas 705 insulating board with factory-applied foil facing. Insulation shall be adhered to ducts with Type B STICKLIPS at 18" o.c. cemented in place. Wrap insulation with 8 ounce canvas sized with Foster's Seal-fas mastic. Apply one final undiluted coating of Foster's 30-76 white insulation coating.

C. Install acoustical lining in all supply, return and mixed air ducts and plenums exposed in the Equipment Room or outside the building and where marked; and additional length as necessary to provide, in all cases, a minimum of 10'-0" in each direction from the fan, fan casing, or unit casing. Line exhaust ducts for a minimum of 10'-0" from fan inlet and 10'-0" downstream from each register or grille. Line all transfer ducts. Lining shall be 1" thick vinyl face black matt Fiberglas Aeroflex Type 150, 1-1/2# per cubic foot, J-M, or equal. Cement the lining in place with 100% coverage of Foster's 85-20, 3M #38, or equal, and coat all edges and joints. In addition, all lining shall be fastened with Sticklips or welded pins spaced at 18" maximum centers both ways. No bare fiberglass shall be left exposed to air stream.

D. Seal airtight all seams of all supply, return and exhaust ducts except those exposed in the conditioned space with Hardcast Inc. FTA-20 adhesive and Hardcast DT-Tape installed in accordance with manufacturer's directions.

E. Seal watertight all joints of all ductwork exposed to the weather with 6 ounce canvas dipped in Arabol; cover the canvas with a heavy coat of Foster's 30-76, or equal, no dilution.

2.3 EQUIPMENT IDENTIFICATION:

A. Identify each piece of equipment with an engraved brass tag fastened with screws. For example - EXHAUST FAN 2.

PART 3 - EXECUTION

3.1 ELECTRICAL REQUIREMENTS

A. Provide adequate working space around electrical equipment in compliance with the California Electric Code. Coordinate Mechanical Work with Electrical Work to comply.

B. Furnish and set in place all motors. Furnish necessary control diagrams and instructions for controls. Before permitting operation of any equipment which is furnished, installed or modified under this section, review all associated electrical work including overload protection devices and assume complete responsibility for correctness of electrical connections and protective devices.

C. Motors and control equipment shall conform to Standards of National Electrical Manufacturer's Association. All equipment and connections exposed to the weather shall be NEMA IIIR with factory wired strip heaters in each starter enclosure, and temperature control panel to inhibit condensation.

D. All power wiring, conduit, fuses, thermal overloads, and disconnect switches, and connection of all motors are under electrical work, Division 16. All wiring and conduit associated with the temperature control and indicating system is included in this section. Run all wiring in conduit in accordance with Division 16.

E. Electric Motors: All motors shall be rated for continuous operation at 115% of nameplate amperage throughout the entire operating cycle. Motors found exceeding the nameplate amperage shall be promptly replaced at not cost to the Owner. Horsepowers shown are minimum and shall be increased as necessary to comply with above requirements.

F. Motor Starters: Furnish magnetic motor starter for all equipment furnished under this section except those shown in motor control centers.

G. Provide OSHA label indicating device starts automatically.

END OF SECTION

SECTION 15800

VENTILATING

PART 1 - GENERAL

PART 2 - PRODUCTS (OR MATERIALS)

2.1 FANS

A. All fans AMCA labeled with self aligning, enclosed ball bearings, accessible for lubrication, unless specified otherwise.

B. Roof Mounted:

1. Provide bird guard and disconnect switch.
2. Fan wheels shall be centrifugal, non-overloading, all aluminum.
3. Curb cap and orifice inlet shall be one piece aluminum.
4. Shaft and motor bearings shall be relubricable ball bearings for belt-drive.
5. Wheel configuration shall be as scheduled on the drawings.
6. Hood fans shall be all aluminum with horizontal discharge, access door for cleaning, belts and drive system shall be completely out of air stream. Motor shall be mounted in completely enclosed compartment with positive ventilation.

2.2 FAN DRIVES

A. Drive Design: The design horsepower rating of each drive shall be at least 1.5 times, single belt drives 2 times, the name plate rating of the motor with proper allowances for sheave diameters, speed ratio, arcs of contact and belt length.

1. All drives shall be variable speed, Dayco, Browning or Woods. Allow for replacement of fan drive and belt as required to suite the balance requirements of the project.
2. All drives for 5 horsepower motors and larger shall have a minimum of 2 belts.
3. Belts shall be within 1 degree 30 minutes of true alignment in all cases.
4. All variable speed drives shall be selected to allow an increase or decrease of minimum of 10% of design fan speed.
5. Motors of 25 HP and less shall have adjustable pitch sheaves; sheaves on motors above 25 HP may be non-adjustable. Change, at no extra cost to Owner, the non-adjustable sheaves to obtain desired air quantities.

B. Sheaves: Sheaves shall be cast or fabricated, bored to size or bushed with fully split tapered bushings to fit properly on the shafts. All sheaves shall be secured with keys and set screws.

C. Belts: All belts shall be furnished in matched sets.

2.3 DUCT WORK

A. Construct and install all sheet metal in accordance with latest SMACNA recommendations for 2" static pressure. Provide variations in duct size, and additional duct fittings as required to clear obstructions and maintain clearances, as approved by the Architect, at no extra cost to Owner.

B. Provide drive slip or equivalent flat seams for ducts exposed in the conditioned space or where necessary due to space limitations. On ducts with flat seams, provide standard reinforcing on inside of duct. Duct connection to outlet on exposed duct shall be full size of outer perimeter of outlet flange.

1. Ducts exposed in the conditioned space shall be free of dents and blemishes and be mounted tight against adjacent surface with flat hangers.

2. All ductwork, adhesives, lining, sealants, flex duct and the like shall have a flame spread of 25 or less and developed smoke rating of 50 or less when tested in accordance with ASTM E84.

C. Round ducts with equivalent effective cross sectional area as determined by ASHRAE Guide, latest edition, may be used in lieu of concealed rectangular ducts shown, space permitting. Round and oval sheet metal ducts shall be spiral lock seam or longitudinal construction seam construction. Fittings shall be continuous weld or spot weld and seal. United Sheet Metal, SEMCO, or equal.

D. The throat radius of all bends shall be 1-1/2 times the width of the duct wherever possible and in no case shall the throat radius be less than one width of the branch duct. Provide square elbows with Titus or HEP double thickness turning vanes where space does not permit the above radius, or where square elbows are shown.

E. The slopes of transitions shall be approximately one to five unless shown otherwise, and no abrupt changes or offsets of any kind in the duct system shall be permitted.

F. Provide sheet metal angle frame at all duct penetrations to wall, floor, or ceiling. Seal ductwork watertight at equipment room floor.

G. All round ductwork shall be United Sheet Metal spiral duct and fittings. Assemble with USM duct sealer and sheet metal screws.

H. Provide lateral bracing.

I. Ducts shall clear combustible construction by 1" minimum.

J. Seal airtight transverse seams of all supply and return ducts with 6 oz. canvas dipped in Arabol; seal insulated ducts before insulating.

K. Provide Ventlok #699 test hole fittings where indicated or specified.

L. All materials except sheet metal including duct liner shall be approved before installation.

PART 3 - EXECUTION

3.1 EQUIPMENT START-UP:

A. Initial start-up of exhaust fan systems shall be under the direct supervision of the Testing and Balancing Contractor.

3.2 EQUIPMENT CHECK, TEST AND START

A. The check, test and start of fan shall be performed by a specialized company, Aircon Service, Commercial Air, or equal, acting as a subcontractor to the air conditioning contractor. The company selected shall have had experience on similar projects and shall have demonstrated by past performance that the personnel are qualified to do such work. The firm selected shall have approval of the Architect prior to start of work.

B. The company shall provide all personnel, test instruments, and equipment to properly perform the check, test and start.

C. The check, test and start of each item of equipment shall be in accordance with manufacturer's printed instructions. Three (3) copies of the completed check, test and start report of each item of equipment shall be bound with the operating and maintenance instructions.

D. Upon completion of the work, provide a schedule of planned maintenance indicating frequency of service for all equipment components. Post schedule where directed under plastic.

3.3 TESTING AND BALANCING

A. Testing and balancing agency, as a part of its contract, shall act as authorized inspection agency and shall report any discrepancies or items not installed in accordance with Contract Drawings and/or Specifications pertaining to air and water distribution, and exhaust systems.

B. Contractor shall provide for adjustments and/or additions or modifications to fan and motor sheaves, belts, damper linkages and the like to achieve proper air balance at no additional cost.

C. Instruments used for testing and balancing of systems shall have been calibrated within a period of six (6) months and shall be checked for accuracy prior to start of work.

D. Three (3) copies of complete test report shall be submitted prior to final acceptance of project.

E. Measure the ampere reading of each motor input after final adjustments have been made.

3.4 EQUIPMENT MOUNTING

A. Mounting and anchorage of equipment shall be in strict compliance with drawings details. Alternate anchorage methods will not be considered for roof mounted equipment.

END OF SECTION

San Jaoquin Delta College
Outline Electrical Specifications

1.01 Distribution Transformers
- A. Ratings
  1. Dry type
  2. 480V-3 Phase delta primary
  3. 120/208V-3 Phase-4 Wire secondary
  4. K4 rated for harmonic loads
  5. Floor mounted

1.02 Panelboards
- A. Ratings
  1. 120/208V-3 Phase-4 Wire
- B. Buss Assembly
  1. Copper Bus
  2. 22,000 AIC rated for 208V
- C. Branch Devices
  1. Circuit breaker branch circuit devices
  2. Series rated system

1.03 Surface Raceways
- A. Construction
  1. Metallic wireway
  2. Multi-cell with dividers
  3. Surface mounted
- B. Accessories
  1. Corner assemblies
  2. Tee assemblies
  3. Receptacle outlets
  4. Data outlets

1.04 Wiring Devices
- A. Receptacles
  1. Specification grade
  2. Nema L5-20R

1.05 Overcurrent Protection Devices
- A. Molded case circuit breakers
  1. Series rated
- B. Fused switches
  1. Nema 1 enclosures

2. Current limiting fuses

1.06 Conduit
- A. Rigid galvanized steel
- B. Electrical metallic conduit (EMT)
- C. Flexible metallic
- D. Weatherproof flexible metallic

1.07 Wire
- A. Stranded copper
- B. 600V THW/THWN insulation

10.1 FEDERAL FUNDS DETAIL

NO FEDERAL FUNDS WILL BE REQUESTED FOR THE SAFETY-ELECTRICAL SYSTEM REPLACEMENT PROJECT.

11.1 Analysis of Future Costs

Provide an economic analysis of additional instructional, administrative, and maintenance cost resulting from the proposed project, including personnel years. Disclose all new courses or programs to be housed in the project that may need Chancellor's Office review.

Personnel Costs **Safety-Electrical System Replacement Project**

Certificated:

No budget changes are foreseen

Classified:

No budget changes are foreseen

Depreciation, Maintenance, and Operation

Following completion of the project, the maintenance and operational costs should be reduced. The electrical systems in the five major instructional buildings will be replaced with new energy efficient systems that will reduce maintenance and electrical utility costs.