

# Permanent Improvement Policy and Procedures

May 2000

Clemson University Facilities

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# **PERMANENT IMPROVEMENT PROJECTS**

## **University Facilities**

### **POLICY 1.0**

**Last Modified Date:** \_\_\_\_\_

It is the responsibility of University Facilities to coordinate the development, planning, design and construction of Permanent Improvement Projects. Annually a Permanent Improvement Plan is submitted to the Commission on Higher Education for E&G activities and the Budget and Control Board for Public Service Activities. This Plan is to include all permanent improvement projects (those costing \$100,000 or more) that are being considered by the campus in the next year.

When a permanent improvement project is identified (renovation or new) the initiating department shall contact Campus Planning Services in University Facilities for assistance in the development of a Permanent Improvement Project. Once Campus Planning Services has made an initial evaluation, and if it is confirmed that the project will cost \$100,000 or more, the initiating department must get the approval of the appropriate Vice President before further evaluation can continue.

Approval of the Vice President indicates that funding had been identified and the project is consistent with program priorities.

If the project is estimated to cost \$250,000 or more, or funding has not been identified, then the initiating department must provide to the Administrative Council who may at their discretion request additional information or require approval before additional planning efforts are expended. (Note: any project with bids valued at \$250,000 or more must be approved by the Board of Trustees prior to construction.)

For the project to be successful, it is imperative that the building program and final design are in alignment with the available funding. Therefore, the project cannot proceed to the next program or design phase until this alignment has been achieved. For a further description of the process of planning, design, and construction of a Permanent Improvement Project, see the accompanying University Facilities Procedure 1.

For those projects anticipated to cost less than \$100,000, the initiating department shall submit a University Facilities Job Requisition (Form CUBO 700) to the Minor Projects Section at University Facilities. The Minor Projects Section will assign a project manager to administer the design and construction of minor projects.

# PERMANENT IMPROVEMENT PROJECTS

## University Facilities

### PROCEDURE 1.0

Last Modified Date: \_\_\_\_\_

## Introduction

The planning, design, and construction of major projects, or “Permanent Improvements” within the South Carolina state system is a highly complex and resource intensive endeavor. Below is a brief synopsis of the entire process followed by a more descriptive presentation of each phase. This set of procedures is designed to be a roadmap to guide users and administrators through the permanent improvement process and to provide a guideline that is to be followed by the staff chartered to execute this work.

The process of developing a major project (a Permanent Improvement) essentially begins with an idea for development. The idea may be one that springs from a longstanding or cyclical need such as roof replacement, the expansion or development of a University program, or it may be an idea that could come from alumni or friends of the University.

Once the idea gathers support and is endorsed by the appropriate Vice President or by the Administrative Council, it moves into a **planning phase**. The planning phase is the period during which the idea is fleshed out to a point where the users and the staff have confidence that the key functional, programmatic, site, budgetary, and schedule issues are balanced. As the planning of a project comes to a close, an A-1 form is submitted to the State to establish a project.

Once the planning phase is complete, and an A-1 form is approved, an Architect (see **A/E Selection**) is selected and the project moves into design. The **design phase** includes schematic, design development, and construction document elements and involves the investment of a substantial amount of time on the part of the ultimate users of the project as well as the staff, and representatives of the Office of the State Engineer. During the design phase the project is developed in detail through discussion, design, and ever increasing levels of specifics. The design process leads to the bidding of the project.

**Bidding** involves public advertisement, receiving bids from contractors, and analyzing bids to ensure the contractors who have bid are qualified and responsible.

Once a bid is approved, the contract is signed and the **construction phase** gets underway. At this point the University works with the Architect to observe the construction process, resolve problems that arise, and ensure that the quality of the facility that is eventually turned over to the University is as specified in the contract documents.

Upon completion of construction, the project is turned over to the University for occupancy. After the warranty period is over (usually one year) the capital improvement project is closed out, concluding the permanent improvement process.

## Planning

The planning of a permanent improvement project involves the creation of a “program” for the project. A written program is a planning tool most useful in establishing what is needed in a proposed facility. A program normally addresses fundamental aspects of a project, and becomes increasingly detailed as it approaches the point at which design is initiated. A clear and thorough program accomplishes several key objectives: it defines the University’s dreams for a building; it forms a basis for the initial project cost estimate; it gives the approval agencies a verbal picture of what the project is to include; it serves as the basis for the design architect’s conceptual layout of the building; and it provides a reference point through the development process. The programming process is typically accomplished in two stages, the preliminary program stage, and the final program stage.

### **Preliminary Program.**

The user group (or a planning committee in the case of a large project), in conjunction with Campus Planning Services develops the preliminary program. The preliminary program allows for a contract to be developed between the University and the architect, and allows the architect to begin further program refinements and conceptual design by defining:

- People and programs to be housed in the facility
- Space requirements
- Spatial relationships
- Desired flexibility
- Future trends
- Priority of needs
- Foreseeable problems
- Preliminary budget
- Site

To assist in drafting a preliminary program, Campus Planning Services researches historical data from universities around the country and compares these with local historical construction costs and trends. The research is also used to determine what potential spaces may be needed for the type of building being planned, net and gross square footage needs, and a program cost estimate. When determined to be beneficial, the planning committee initiates site visits to representative projects.

In cases where there is to be a great deal of detailed renovation, it may not be practical to develop a full preliminary program. In these cases, a write up that addresses budget, priorities, goals, and objectives will be required to get an architect on board to initiate a detailed program.

### **Final Program**

The final program, written by the architect, is very detailed and provides explanations of the requirements of each space that is to be in the facility. This provides a clear

understanding of expectations for the users, project manager and the architect. Information typically included in the final program includes the information included in the preliminary program, and the next level of detailed information. Information such as ceiling heights, lighting qualities, number of people per space, minimum dimensions, heating, ventilation and air-conditioning requirements, and so on is typically included.

The final program is to be signed by the Users representatives, the representative of Campus Planning Services, the Project Manager, the Vice President(s) for the respective areas, and the President in order to proceed into schematic design.

### **Site Selection**

Site selection will be incorporated into the preliminary program and will adhere to the latest edition of the Long-Range Master Plan. In most instances, multiple sites will be investigated for new developments. It is the responsibility of Campus Planning Services to investigate, analyze, and recommend sites to the University Administrative Council.

The qualities of the sites to be investigated include physical characteristics, infrastructure availability, image/character needs, parking needs, proximity needs, service requirements, access needs, potential effects on future development, and master plan compliance. In all cases, the users will be involved in the identification of appropriate characteristics that will form a basis for a site selection recommendation. The consideration of need and cost of relocating existing facilities and/or programs that will be affected by new construction will be included in the planning and selection of a site. Departments in buildings adjacent to a proposed site and administrators of facilities occupying a proposed site such as existing buildings, parking lots or open spaces are to be advised of the possible placement of the new building and their comments are to be included in the site selection recommendation report.

## **Architect/ Engineer Selection**

Major Permanent Improvement Projects exceeding \$1,000,000 in value will utilize the following process for hiring an Architecture/ Engineering firm and shall conform to the Office of the State Engineers requirements.

1. An advertisement for A/E services will be placed in South Carolina Business Opportunities.
2. Qualification Statements will be received by Campus Planning Services.
3. The Qualification Statements will be distributed to the Selection Committee along with a brief analysis and reference check on the submitting firms.
4. A Short List for interviews will be arrived at through a meeting of the full selection committee.
5. Interviews will be held with at least five firms if five or more firms submit qualifications. The five firms will be priority ranked by the committee.
6. The number one priority firm will be contacted and contract negotiations will be initiated. Should negotiations fail with the number one firm, negotiations will be terminated, and reinitiated with the number two firm as per Office of the State Engineer requirements.

The membership of the selection committee will be comprised of the following:

- ◆ Member, Board of Trustees (appointed by Board Chairman)
- ◆ Chief Financial Officer (chair)
- ◆ End Users of the project: End User V.P. and End User selected by the V.P. If more than 1 V.P. is an End User of the project, each area will participate as noted.
- ◆ Director, Construction Services
- ◆ Director, Campus Planning Services (selection coordinator)
- ◆ Project Manager

Minor Permanent Improvement Projects (under \$1,000,000) will use Architects hired through small contracts, Indefinite Delivery Contracts, or through other selection processes managed by Campus Planning Services. The Chief Financial Officer retains the ability to review both the short list and the final priority order of IDC and other selections. In the event that an IDC consultant is proposed by the staff to be contracted for a major project, a recommendation to this effect will be sent to the Chief Financial Officer, the end user V.P. and the Trustees representative for approval. The selection of architects and engineers for minor permanent improvement projects shall conform to the requirements of the Office of the State Engineer.

Reference:

- ◆ Board of Trustees minutes, February 4, 1994.
- ◆ Manual for Planning and Execution of State Permanent Improvements, Part II

## Project Design

Once the final program, the site, and the budget have been officially approved, the design architect, under the direction of the Construction Services Project Manager, and in conjunction with the Building Committee (as appropriate) proceeds with the plans in the three phases: Schematic Design, Design Development, and Construction Documents. Large projects with construction budgets in excess of \$1M and/or complicated renovation and HVAC projects of any value will have an independent cost estimate completed at each of these design phases prior to moving into the next design phase or into the bidding process. The Project Manager shall be responsible for budgeting and hiring the independent cost estimating firm through appropriate mechanisms.

### **Schematic Design**

In this phase of work, a site plan, floor plans, and exterior building elevations are sketched to illustrate functional and aesthetic characteristics of the project. Mechanical and electrical equipment rooms are shown, toilets and fixture layouts are indicated, and other facilities for the physically disabled are shown that are to be incorporated into the building. Life safety items such as exits, exit corridors, rated walls and floors, etc. are shown in schematic design documents. The architect also develops an estimate of construction cost along with any proposed alternates.

The schematic design, once complete, is reviewed on and off campus by those people who have an obligation or a vested interest in the project. See “project review” section below. Once these documents are reviewed, comments are forwarded to the architect through the project manager for review and incorporation into the project as appropriate. If budget, design, and schedule issues are in alignment the project manager may give the architect permission to proceed into the next phase of work. **If the budget, design, and schedule issues are not in alignment, the Project Manager will take appropriate action to resolve the imbalance. At a minimum, and depending on the magnitude of the issue, the Project Manager will hold a meeting with the Building Committee and will document in the meeting minutes the nature and extent of the problem and will seek guidance and provide counsel in the resolution of the issue. The project cannot progress to the next design phase until these issues are resolved.**

At the completion of Schematic Design, presentation documents are submitted to the Administrative Council for information and comment. A verbal presentation by the Architect will be arranged if requested.

### **Design Development**

In this phase of work the schematic plans are increased in scale and detail with direction from regular meetings and design conferences presided over by the Project Manager. In this process, technical decisions are made regarding the building's structural design, mechanical & electrical systems design, fixed equipment layouts, typical wall section characteristics, finished floor elevations, etc.

Outline specifications for construction materials and methods are prepared in this phase of design that coordinate with the scope and approach to the project that is anticipated.

A refined estimate of construction cost is developed in this phase and is to reflect current market conditions. The A/E may choose to hire an outside cost consultant to augment their cost estimating ability. Comments are then solicited from reviewers regarding the project.

**If the budget, design, and schedule issues are not in alignment, the Project Manager will take appropriate action to resolve the imbalance. At a minimum, and depending on the magnitude of the issue, the Project Manager will hold a meeting with the Building Committee and will document in the meeting minutes the nature and extent of the problem and will seek guidance and provide counsel in the resolution of the issue. The project cannot progress to the next design phase until these issues are resolved.**

Once approved in writing, the architect is authorized to proceed into the Construction Documents phase of the project.

### **Construction Documents**

This phase of work is comprised of the development of detailed working drawings and specifications for construction. A very high level of detail is developed to fully illustrate

the design and construction intent of the architect and owner. The product of the Construction Documents phase is a set of bid documents that includes drawings and a project manual that contains the Office of the State Engineers front-end documents and technical specifications, all appropriate Architectural and Engineering seals, a rough draft of the AIA 101-1987 “Standard Form of Agreement Between Owner and Contractor”, and written responses to previous Office of the State Engineer comments.

The project is then fully reviewed for the last time before the project is advertised for bid.

**If the budget, design, and schedule issues are not in alignment, the Project Manager will take appropriate action to resolve the imbalance. At a minimum, and depending on the magnitude of the issue, the Project Manager will hold a meeting with the Building Committee and will document in the meeting minutes the nature and extent of the problem and will seek guidance and provide counsel in the resolution of the issue. The project cannot progress to the next phase of work until these issues are resolved.**

### **Project Review**

As a major project is developed, numerous individuals and agencies review it. At the end of Schematic Design, Design Development, and Construction Document phases, the Project Manger distributes the documents to the appropriate groups, including:

- Campus Planning Services
- University Facilities Shops
- User groups
- Office of Access and Equity
- Office of the State Engineer
- Fire Marshall
- Telecommunications
- Environmental Health and Safety
- Department of Computer and Information Technology
- Police Department
- Others as appropriate

### **References**

1. The work described above shall conform to the Office of the State Engineers Requirements. See the “Manual for Planning and Execution of State Permanent Improvements, Part II”
2. A detailed list of requirements and expectations of commissioned professionals is described in the “Instructions and Information for Commissioned Engineers and Architects at Clemson University” (the Green Book).

## **Bidding a Project**

A bid date is set by the Project Manager in conjunction with the architect and the Office of the State Engineer. The architect handles the bidding process and the Project Manager coordinates any actions required of the University during the bidding process. In the

event of an unacceptable bid, the architect will assist the using department and the Project Manager with an analysis of the alternative means for bringing the project scope into line with the funds available. This is done within the regulations provided by the Office of the State Engineer.

Once all parties concur regarding scope, cost and the validity and viability of the contract, the Board of Trustees are requested to approve award of the contract for projects of \$250,000 and greater. For projects under \$250,000, the President approves award of the contract.

## Construction

The process of building the structure and preparing it for occupancy takes between six months and three years depending on the size of the project. The using department during this phase may request only minor changes. The Project Manager will coordinate the many administrative functions associated with construction including:

- Approval of the Construction Contract
- Contractor's proof of insurance and performance bonds
- Pre-construction meeting - all parties review:
  - Contract documents
  - Limits of construction
  - Staging and parking areas
  - Other administrative factors
  - Permission for University personnel to enter the construction site

The Project Manager oversees the construction phase of the project as it progresses through the following stages:

- Clearing the site and locating the contractor's temporary offices
- Temporary utilities
- Unknown sub-surface conditions (rock, unsuitable soil)
- Resident Engineer Inspector reports
- Checking and processing pay requests
- Processing change orders
- Coordinating requests for information
- Ordering, scheduling and receiving loose equipment
- Coordinating utility interruptions
- Coordinating temporary traffic and parking issues
- Attending the final inspection and building acceptance

## Occupancy

Once a project achieves Substantial Completion as determined by the Architect, the user group can begin to occupy the building. Substantial Completion occurs when the facility is ready for its intended use and all life safety systems have been tested and approved.

The declaration of Substantial Completion is formalized by a Certificate of Substantial Completion which includes a “punch list” of outstanding items that the contractor needs to complete or repair. The contractor has a maximum of 30 days to complete the punch list.

All projects have a one-year warranty period from the date of Substantial Completion. During this period, problems with building finishes and systems often develop. When problems do occur, the building coordinator should contact the Project Manager who will coordinate problem resolution.

Near the end of the warranty period, the Architect is responsible for scheduling a final project inspection. Attendees should be the building coordinator, the Architect, the Project Manager and the Office of the State Engineer’s project representative. The Project Manager may invite additional people to the inspection. The Architect must document any and all outstanding issues, and a resolution plan should be discussed prior to the expiration of the warranty period.

## **Other Information**

### **Permanent Improvement Project Committees**

**Introduction:** As a major Permanent Improvement project in excess of \$4,000,000 begins to coalesce, it is important that it has the correct guidance and continues to be stewarded until completion. To meet these objectives, two committees are to be formed over the life of the project.

#### **Planning Committee**

- A Planning Committee shall be appointed and charged by the President with advice and counsel from the appropriate Vice President.
- The President shall name a committee chair. The Chair of the committee shall call and preside over meetings and achieve consensus on relevant issues.
- The composition of the Planning Committee may vary with the complexity and scope of a project and in some cases may not be required (i.e. infrastructure projects may not need a committee). Appointments shall be made to the Planning Committee to meet the administrative needs of the university and to include the expertise required to develop a clear, concise, and comprehensive facility program document.
- The Planning Committee shall include as members the Director of Campus Planning Services and a representative from Construction Services.
- The facility program document shall address fundamental aspects of the proposed project including concept statement, use of the proposed facility, a list of space needs, impact of the proposed facility on the campus master plan, campus infrastructure and maintenance, expansion requirements, a preliminary project schedule, a statement of

probable construction and project costs, identification of potential problems, and identification of trends that may affect the program.

- Upon completion of the program document, the Planning Committee Chair and University Facilities shall review and verify that the document is a reasonable statement of need and has been developed in accordance with the requirements specified above. The Planning Committee Chair, the Chief Facilities Officer, the Vice President, and the President shall approve the program document.
- In the event that project approval is delayed beyond the preliminary project schedule target date, the program of requirements and the project budget will be reevaluated by the planning committee and resubmitted for approval.

### **Building Committee**

- ◆ The President with advice and counsel from the appropriate Vice President(s) shall appoint a Building Committee after approval of (1) the program document and (2) the Permanent Improvement Project Request (an A-1 form). The Director of Campus Planning shall serve as an ad hoc member of the committee.
- ◆ The Committee Chair shall be the Project Manager assigned to the project by Construction Services.
- ◆ Appointments shall be made to the Building Committee with expertise to perform the following duties:
  - Develop a suitable schedule for design and construction of the project;
  - Review design submittals provided by the A/E;
  - Respond to the project manager in a timely fashion regarding program issues in need of resolution;
  - Provide substantive ideas, opinions, and perspectives to the project manager as refinements to the project develop;
  - Communicate issues arising from discussions with the project manager and the A/E to the constituent groups which the Building Committee members represent;
  - Ensure that the scope of work and the project budget are balanced and accurately reflect the intent of the program document approved by the President.
  - Ensure that the project stays within the approved budget throughout the design phase
- ◆ The Vice President in conjunction with the Building Committee and the A/E will make a presentation to the President on the progress of the design at the conclusion of schematic design. The presentation shall cover current project design, schedule, and budget framework.. The project shall not move into the next design phase without the approval of the President. Subsequent presentations to the Administration will be initiated at the discretion of the Directors of Campus Planning Services and/or Construction Services.
- ◆ Upon completion of the design phase, the Building Committee may be called upon by the Vice President to resolve major scope or design issues that arise after the bid phase or during the course of construction.

## **Change Orders**

Change Orders should be kept to a minimum. Although no set of Construction Documents is perfect and unforeseen conditions may exist, especially in renovation projects; change orders that affect the project program, scope or duration are discouraged.

The University Administration views the total project budget as the maximum funding amount allocated to address a given programmatic need. Change orders should not be utilized to exhaust the project budget as excess funds can be reassigned to other University needs.

The Director of Construction Services has the authority to execute Change Orders of \$25,000 or less. This authority shall not exceed a cumulative total of \$100,000 on any given project. The Chief Financial Officer executes all other change orders. The Clemson University Board of Trustees must approve significant change orders prior to execution by the Chief Financial Officer. Change orders requiring Board approval are as follows:

Change orders in excess of \$250,000 or 10% of project budgets for projects exceeding \$1,250,000;

Change orders in excess of 20% of project budget for projects exceeding \$250,000 but less than \$1,250,000; and

Change orders which increase small project budgets to \$250,000 or more.

Reference: Clemson University Board of Trustees meeting 20 September 1991

## Planning Framework

### **Campus Master Plan**

The design of all Permanent Improvement Projects shall be executed in accordance with the Master Plan. Specific planning and design guidelines are provided in the Long Range Master Plan manual and Phase 3: Design Guidelines document.

### **Development Plan -**

A biennial Development Plan is to be maintained by the University Administration that identifies the priority and funding of major capital projects for the next five years. The plan is to be developed by the President in conjunction with the Board of Trustees, industry leaders, and the University Vice Presidents.

### **Annual Permanent Improvement Plan**

The Annual Permanent Improvement Plan is updated annually. These updates are initiated by the Commission on Higher Education and are coordinated on campus by University Facilities. *Each Vice Presidential area is to maintain an internal five-year improvement plan that will drive the request for APIP projects, and that will inform the review and evolution of the Development Plan identified above.*

## Process Flow Chart

See following page.

# Permanent Improvement Project Approval and Implementation Process



