



Pima County Community College District Administrative Procedure

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Capital Project Management

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PURPOSE

A facilities project is fundamentally characterized by three, interrelated elements: 1) scope (or size and quality), 2) time, and 3) budget. Project management is the art and science of balancing the conflicting pressures of the three elements of the project to provide a facility "on time and in budget" while meeting the customer's needs. The development of a facility is a complex process of translating educational goals into facilities requirements. This process involves the interaction of 20 to 30 people with different areas of expertise and agendas on a project team. The project team has four major components: 1) the customer, 2) the consulting architect, 3) Facilities Planning, and later in the project, 4) the contractor.

The customer is the group of people who will use the facility when the project is complete: students, faculty, staff, administrators and the public. The customer is responsible for clearly stating the requirements for the project through academic plans, campus master plans and educational specifications. During the project

development, the customer is generally concerned with the scope or size and quality of the facility: more and better. Secondarily, the customer is concerned with the final completion date of the project.

The consulting architect is a team of architects and engineers selected based on qualifications. The consulting architect is responsible for developing a facilities solution which meets the customer's cope requirements.

Facilities planning is charged with managing the project so that the customer's requirements are met, within the budget and on time. The Facilities Planning project manager acts as the team leader. As team leader, the project manager assists the customer in stating the requirements. The project manager monitors the team's progress compared to the schedule and ensures the project is within budget.

The contractor is a late member of the team who constructs the facility.

This AP is directed towards two audiences: The customers of Facilities Planning and the Facilities Planning Project Managers. This AP provides the general guidelines for project development and steps to follow when a project's development varies from the general guidelines. These general guidelines allow routine project approvals to be delegated to the lowest possible level within the College's administrative hierarchy on both the customer's side and the Facility Planning side of the project team. This in turn allows for the most rapid project development possible within the college's participative management culture. By delegating to the lowest possible level and developing the project as rapidly as possible, the College minimizes the cost of project development.

Twelve steps for the facilities development process are outlined:

| | |
|------------------------------|---------------------------|
| 1. Facility Master Plan | 7. Construction Documents |
| 2. Budgeting | 8. Bidding |
| 3. Facility Specifications | 9. Construction |
| 4. Architectural Programming | 10. Commissioning |
| 5. Schematic Design | 11. Move In |
| 6. Design Development | 12. Warranty Period |

In each step of the project development process, specific outcomes and approvals are outlined. Approvals external to the College, such as State Fire Marshal and City of Tucson, are not listed. Each step has a "Variance" section which describes how much the project can vary from prior approvals in each of the three project

elements: 1) scope (or size and quality), 2) time, and 3) budget. Projects which exceed the "Variance" must proceed with the additional approvals and steps outlined in the Variance section.

Time is a key element in project development. Inflation affects the future buying power of the project budget. Escalation is included in the project budget to anticipate the future cost of construction. Escalation is calculated based on an assumed rate of inflation and the project schedule. If a \$5 million project is delayed one month, the cost of the project (based on an escalation factor of 5%) is increased by \$23,000. Or, if the budget is already fixed, 200 to 250 less square feet will not be built due to the delay. While the actual effect of inflation on a particular project is hard to pinpoint, the overall effect of inflation can be generally predicted.

This SPG does not list all the tasks required for facilities development. Facilities Planning is responsible for many other tasks in addition to the general interaction with the customer described in the twelve steps. Project schedules list from 50 to 100 general tasks and many of these tasks have multiple parts.

SECTION 1: Facility Master Plan

Prerequisite: Academic Plan (or the educational or administrative goals and objectives for the project.)

Outcomes: The facility master plan provides a broad outline for the physical development of the campus to provide for the campus academic objectives. The facility master plan has a narrative statement which summarizes the facts of the academic plan which affect the facilities such as program sizes and types. The master plan develops a strategy for locating the program components in facilities on the site and a plan for phasing in the facilities.

Approvals: Chancellor's Cabinet, Chancellor, Governing Board.

Variance

Scope: Revision of the academic plan, such as a new program, may require a new facility master planning effort. Increases in overall FTSE of more than 15% require new master planning. Relocation of program components on the site which effect vehicle and pedestrian circulation or infrastructure requires new master planning.

- Budget: Master planning is the first step in developing a budget. Normally there are no constraints on budget in this step.
- Schedule: Master planning is the first step in developing a project and outlines phasing strategies. Normally there are no constraints on the schedule in this step.

SECTION 2: Budgeting

Prerequisite: Facility Master Plan

Note: the preferred order is to reverse steps two (Budgeting) and three (Fac Specs). In practice this rarely happens. The consequence is that the Fac Specs are constrained by the budget.

- Outcomes: A budget is prepared based on meetings with the customer to further define the requirements for a project described in the facility master plan. The project budget is composed of the probable costs for: 1) the facilities to support the program requirement including site work and utilities, parking, fixtures, etc; 2) the equipment and furniture to support the program requirements; and 3) the development costs. Institutional approval of the budget is secured. The customer approves the preliminary project schedule.
- Approvals: Campus President, Executive Vice Chancellor for Finance and Administration, Vice Chancellor for Facilities, Executive Vice Chancellor, Chancellor's Cabinet, Chancellor.
- Variance Scope: Project requirements which were not contemplated by the master plan such as new programs or a comprehensive change in teaching methodology from lecture to lab, may require a new facility master plan. Changes in overall program FTSE of more than 10% require a revision to the facility master plan and approvals per step one. Relocation of program components on the site which require major revision to the vehicle and pedestrian circulation or infrastructure requires a revision to the facility master plan and approvals per step one.

- Budget: The constraints on budget in this phase are institutional resources and commitments.
- Schedule: The constraints on schedule in this phase are the scope of the project and institutional commitments.

SECTION 3: Facility Specifications

Prerequisite: Academic Plan, Facility Master Plan

Note: the preferred order is to reverse steps two (Budgeting) and three (Fac Specs). In practice this rarely happens. The consequence is that the Fac Specs are constrained by the budget.

- Outcomes: The customer prepares Facility Specifications (Fac Spec) per AP 2.06.03. Facilities Planning assists by facilitating planning meetings. (Consultants may be retained to assist the customer. Funding for the consultant must be arranged by the customer. Facilities Planning will assist.) The customer projects the operating fund requirements and sources of operating funds. Central Office administration reviews the Fac Spec and reports on the impact of the Fac Specs on their areas of responsibility. The customer assigns a project administrator with authority to make decisions related to the project development. Facilities Planning assigns a project manager responsible for completing the project "on time and in budget". The customer approves a project schedule updated by progress to-date and the requirements of the Fac Spec. At the end of this step, the consulting architect is selected. The project concept and consulting architect are presented to the Governing Board and State Board of Directors.
- Approvals: Campus President (or Executive Vice Chancellor/Provost), Chancellor's Cabinet, Chancellor, Governing Board.
- Variance Scope: Overall size of facility described by the Fac Specs must be within 115% of the overall size assumed for budgeting purposes. Projects which exceed 115% of the overall size assumed for budgeting must confirm that the facility master plan will support the additional

development.

- Budget: Overall Fac Spec budget requirements must be within 110% of the budget. Educational Specifications which indicate that the furniture and equipment budget can be reduced to support the construction budget must indicate the source for the equipment and furniture. If the total Fac Spec budget requirements exceed 110% of the budget approved in step two, a revised budget must be approved per step two.
- Schedule: Presentation to the Governing Board after the date scheduled in the Budgeting step will result in a delay of the project.

SECTION 4: Architectural Programming

- Prerequisite: Fac Specs, Budget
- Outcomes: The consulting architect meets with the customer to define the project requirements in facility terms and presents concepts which will meet the requirements. The architectural program contains a narrative statement which includes tabulations of the rooms, area required, and estimated cost. The customer approves a project schedule updated by progress to-date and the requirements of the architectural program. The architectural program is the document by which the success of the project can be measured. If all the functional requirements of the architectural program are met in the completed project, then the project is functionally successful.
- Approvals: Customer project administrator, Campus President (or Executive Vice Chancellor/Provost), Executive Vice Chancellor for Finance and Administration, Vice Chancellor for Facilities.
- Variance Scope: Overall size of project described by the architectural program must be within 115% of the overall size assumed for budgeting purposes. Projects which exceed 115% of the overall size assumed for budgeting must confirm that the facility master plan will support the additional development. The architectural program must contain all the primary elements of the Fac Specs. Elimination of primary

requirements of the Fac Specs requires a new validation of the Fac Specs per step three approvals per step III before proceeding. Addition of primary program requirements requires a revision of the Fac Specs and an approval of the revision per step three before proceeding.

- Budget: Estimated cost of the program requirements must be within 115% of the budget. Estimated costs which exceed 115% of the budget must go through a new budgeting step (step two) and validation of the Fac Specs (step three) before proceeding. A budget which indicates that the furniture and equipment line items can be reduced to support the construction line must indicate the funding source for the equipment and furniture. Project contingency funds may not be transferred to other line items of the budget.
- Schedule: Customer's architectural program approval occurring more than two weeks after the date scheduled in the Fac Spec step will result in a delay of the project.

SECTION 5: Schematic Design

- Prerequisite: Architectural Programming
- Outcomes: The consulting architect presents options on the basic shape and organization of the facility. Locations of departments and major functions are determined. The footprint of the building is described. The height of the building is determined. The exterior character of the building is generally determined. The customer approves a project schedule updated by progress to-date.
- Approvals: Customer project administrator, Facilities Planning project manager, Chancellor.
- Variance
- Scope: Overall size of project described by the schematic design must be within 110% of the overall size assumed for budgeting purposes. Projects which exceed 110% of the overall size assumed for budgeting must confirm that the facility master plan will support the additional development. The schematic design must contain all the

primary elements of the Fac Specs. Elimination of primary requirements of the Fac Specs requires a revision of the Fac Specs and an approval of the revision per step three before proceeding. Addition of primary program requirements requires a revision of the Fac Specs and an approval of the revision per step three before proceeding.

- Budget: Estimated cost of the schematic design must be within 110% of the budget. Estimated costs which exceed 110% of the budget must go through a new budgeting step (step two) and validation of the Fac Specs (step three) before proceeding. A budget which indicates that the furniture and equipment line items can be reduced to support the construction line must indicate the funding source for the equipment and furniture. Project contingency funds may not be transferred to other line items of the budget.
- Schedule: Customer's schematic design approval occurring more than two weeks after the date scheduled in the architectural program step will result in a delay of the project.

SECTION 6: Design Development

- Prerequisite: Schematic Design
- Outcomes: The final scope (size and quality), relationships, forms and appearance of the project are established and approved by the customer. This includes the location of rooms and furniture and equipment in the rooms.
- Approvals: Customer project administrator, Facilities Planning project manager (The Director of Plant Operations and Maintenance reviews and approves the project for maintenance and operations standards at this time).
- Variance Scope: Changes in the elements approved in the schematic design (locations of departments and major functions, footprint, height, exterior character) may require a new schematic design step. Overall size of the project described in design development must be within 110% of

the overall size assumed for budgeting purposes. Projects which exceed 110% of the overall size assumed for budgeting must confirm that the facility master plan will support the additional development and that operating funds will support the increased area.

Budget: Estimated cost of the facility described in design development must be within 105% of the budget. Estimated costs which exceed 105% of the budget must go through a new budgeting step (step two) and validation of the Fac Specs (step three). No changes may be made to the line items of the budget which exceed plus or minus 10% of the line item. Project contingency funds may not be transferred to other line items of the budget.

Schedule: Changes in the elements approved in the schematic design (Locations of departments and major functions, footprint, height, exterior character) will result in a delay of the project. Customer's design development approval occurring more than two weeks after the date scheduled in the schematic design step will result in a delay of the project.

SECTION 7: Construction Documents

Prerequisite: Design Development

Outcomes: In this step, the customer's role is to confirm and clarify the project requirements established during design development. The consulting architect prepares contract documents describing the project so contractors can bid on and build the project.

Approvals: Customer project administrator, Facilities Planning project manager. (The Director of Plant Operations and Maintenance reviews and approves the project for maintenance and operations standards at this time).

Variance

Scope: Changes in the elements approved in design development (scope, relationships, forms, appearance, room location and furniture layout) may require a new design development step. Overall size of the project described in design development must be within 110% of the

overall size assumed for budgeting purposes. Projects which exceed 110% of the overall size assumed for budgeting must confirm that the facility master plan will support the additional development and that operating funds will support the increased area.

- Budget: Estimated cost of the project must be within the budget. Projects which exceed the budget may proceed if approved by the Assistant Vice Chancellor for Financial Operations and the Assistant Vice Chancellor for Administrative Services and Facilities. A new budgeting step (step two) and validation of the Fac Specs (step three) may be required. No changes may be made to the line items of the budget which exceed plus or minus 10% of the line item. Project contingency funds may not be transferred to other line items of the budget.
- Schedule: Changes in the elements approved in the design development (scope, relationships, forms, appearance, room location and furniture layout) will result in a delay of the project. Customer's construction document approval occurring more than two weeks after the date scheduled in the design development step will result in a delay of the project.

SECTION 8: Bidding

Prerequisite: Construction Documents

Outcomes: Facilities Planning works with Procurement to advertise and receive bids. The lowest responsible and responsive bidder is recommended to the Governing Board for contract award.

Approvals: Vice Chancellor for Finance and Administrative Services, Assistant Vice Chancellor for Administrative Services and Facilities, Chancellor, Governing Board.

Variance

Scope: If redesign is required to bring the project within budget, the project begins a new series of facility development steps at step three: Fac Specs.

Budget: Low bid which exceeds the construction budget may proceed if

funds can be transferred from other line items of the budget without jeopardizing the functionality of the project. Approval of the Assistant Vice Chancellor for Financial Operations and the Assistant Vice Chancellor for Administrative Services and Facilities is required for line item transfers. The contingency line item of the budget must be a minimum of 10% of the construction line item. Low bids which exceed the budget and which cannot be accommodated by the above mentioned fund transfer require a new budgeting step (step two), including Governing Board approval of an increased budget. If redesign to bring the project within budget is required through no fault of the consulting architect, additional fees will be due.

Schedule: Bids which are over budget may delay the project as additional approvals to proceed are secured. If redesign is required to bring the project within budget, additional time will be required.

SECTION 9: Construction

Prerequisite: Bidding

Outcomes: The customer confirms the requirements of the program as questions arise during the construction phase of the project. Regular tours of the progress are scheduled by Facilities Planning for the customer. For safety and liability, the customer is not allowed on the construction site except on the regular tours. To ensure proper contract management, the customer is not authorized to meet or discuss the construction progress or changes with the contractor without the Facilities Planning project manager. Changes requested by the customer per the scope variance below are designed and documented by the consulting architect. Meetings may be arranged by the Facilities Planning project manager with the customer, consulting architect and contractor to discuss changes.

Approvals: Customer project administrator, Facilities Planning project manager.

Variance

Scope: Design based change orders to the construction contract may be considered under two circumstances: 1) the change order is for elements omitted by error or budget cutting during design phase, or

2) there is a compelling functional reason for the change based on the customer's new understanding of the project from the tour of the progress of the work. Design based change orders must be approved by the customer project administrator and the Director, Facilities Planning.

- Budget: Construction cost cannot exceed BOG approved contract and contingency. After demolition and earth work, design based change orders may be authorized up to 25% of remaining contingency amount. Design based change orders may also result in additional fees from the consulting architect to document the changes. These fees are part of the change order cost.
- Schedule: The construction schedule is the responsibility of the contractor. Actions by the College may allow the contractor an extension of time. Liquidated damages are assessed against the contractor to compensate the College for late completion (if the College did not contribute to the delays). Change orders, including design based change orders, may cause delays.

SECTION 10: Commissioning

- Prerequisite: Construction
- Outcomes: The systems of the project (HVAC, data network, etc.) are started and tested to make sure they meet the requirements of the construction documents. Work to be performed by the College is completed at this time, such as installing signage. The facility is also inspected by the user groups to ensure it meets their requirements. Minor adjustments, such as changing a door swing, to make the facility work better may be considered. The addition of minor elements, such as phone and data outlets, which were missed may be considered. The project is "substantially complete" when only administrative contract requirements remain. The contractor's warranty period begins on date of substantial completion begins.
- Approvals: Customer project administrator, Facilities Planning project manager, Director, Plant Operations and Maintenance.

Variance

- Scope: Minor adjustments/additions to the facility may be considered. The adjustments/additions must be to improve functionality of elements in the Fac Specs. Program changes require new project approval and new funding. Minor adjustments/addition must be approved by the Customer project administrator and the Director of Facilities Planning.
- Budget: Minor changes may be authorized up to 25% of remaining contingency amount.
- Schedule: Minor changes may delay the start of move-in.

SECTION 11: Move-In

- Prerequisite: Commissioning
- Outcomes: The customer moves in and begins using the facility.
- Approvals: Customer project administrator, Facilities Planning project manager.
- Variance
- Scope: Construction work is complete. Further minor adjustments/additions to the facility are new work and must be funded by the customer.
- Budget: 1% of the construction budget is carried forward during the warranty period for one year after substantial completion. All new work requires new funding.
- Schedule: Project complete accept for warranty items. Warranty period continues for two years after substantial completion.

SECTION 12: Warranty Period

- Prerequisite: Move-In
- Outcomes: The standard construction warranty period is two years from the date of substantial completion. Some elements of the work may have a longer warranty. Facilities Planning will respond to all requests by the customer for warranty service. The contractor will be notified to

correct all issues which are contract related. Facilities Planning will forward all non-contract issues to Plant Operations and Maintenance and inform the customer. Non-contract related issues may be new work and require new funding. The consulting architect, Facilities Planning and the Customer project administrator will participate in a warranty walk through eleven months after substantial completion. Facilities Planning will send out surveys to the users of the project as part of a post occupancy evaluation (P.O.E.).

Approvals: Customer project administrator, Facilities Planning project manager.

Variance

Scope: Construction work is complete. Further minor adjustments/additions to the facility are new work and must be funded by the customer. No new work may be started within the project area until one year after substantial completion. Work which begins after the one year period but prior to the end of the warranty period may void portions of the warranty.

Budget: At least 1% of construction budget is carried forward during the warranty period for one year after substantial completion. All new work requires new funding.

Schedule: Project complete except for warranty items. Warranty period continues for two years after substantial completion.