

ZONE MANAGEMENT PROJECT DELIVERY PROCESS

LAND, BUILDINGS AND REAL ESTATE
STANFORD UNIVERSITY

JUNE 2013





ZONE MANAGEMENT
TOTAL GROSS SQUARE FEET OF ACADEMIC BUILDINGS
JUNE 2013

BUILDING USAGE	QUANTITY	BUILDING GSF
Office	114	2.2M
Parking Structures	5	1.8M
Classroom	35	1.7M
Laboratory - High Intensity	31	1.1M
Laboratory - Low Intensity	16	1.0M
Library	7	0.8M
Food Service	4	0.2M
Auditorium	6	0.2M
Museum	2	0.2M
Other	123	0.4M
TOTALS	343	9.6M

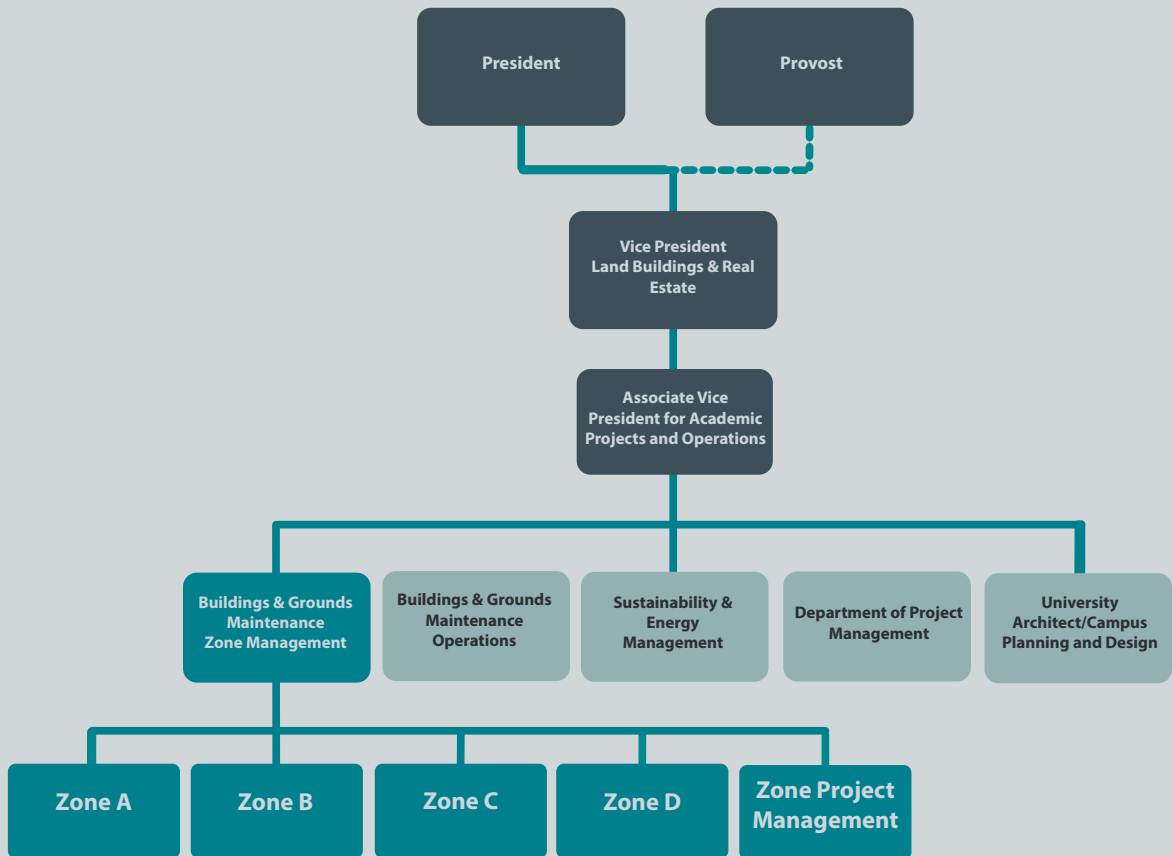
Design (Zone Management PDP): Karin Moriarty
Photography: Karin Moriarty and Greg Spinali
Cover Photo: Skylight, Cantor Arts Center, by Karin Moriarty
Printing: Pat Brito, Design Print Services
<http://bgm.stanford.edu/groups/zones/index>



TABLE OF CONTENTS

I.	INTRODUCTION	3
	Department of Zone Management	3
II.	INVESTMENT IN PLANT: STRATEGIC PLANNING	7
	Project Identification	10
	Scoping Considerations	12
	Review and Validation	13
	Project Classification	14
	IIP Budget Allocation Types	15
	Project Prioritization	16
	Project Form 1 Review and Approval	17
III.	PROJECT TEAM AND COMMUNICATIONS	19
	Project Heartbeat	20
	Zone Management/Project Team Communications	21
	Project Team Roles and Responsibilities	22
IV.	APPROVALS AND FUNDING	25
	Approvals and Funding	27
V.	SUSTAINABILITY	29
	Sustainable Building at Stanford	30
VI.	PROCESS PHASES	33
	Planning	34
	Design	35
	Bid	36
	Permitting	37
	Construction	38
	Closeout	39
VII.	PROJECT CONTROLS	41
	Project Administration	42
	Financial Reviews and Reporting	43
	Budget Development	44
	Special Cost Considerations	45
	Schedule Development	46
	Funding	47

ZONE MANAGEMENT - ADMINISTRATIVE STRUCTURE WITHIN STANFORD



I. INTRODUCTION

Buildings and Grounds Maintenance (BGM) is responsible for the delivery of facilities maintenance services in support of teaching, research, and business programs at Stanford University. BGM's goal is to provide timely and cost-effective maintenance services with minimal disruption to building occupants. BGM is responsible for the maintenance of approximately 400 academic buildings, totaling 10 million gross square feet (gsf). BGM's fundamental principles for optimum maintenance include:

1. Keeping buildings free of deferred maintenance
2. Maintaining proper life safety standards
3. Ensuring facilities are compliant with applicable building codes
4. Ensuring facilities meet current program requirements

Building facilities require regular maintenance to meet program needs and operate efficiently. Without this continual maintenance, the reliability and efficiency of building systems gradually decline and eventually fail. To avoid this, the university funds Preventive and Reactive Maintenance Programs to keep buildings, grounds, and outdoor structures operating as designed, and an Investment in Plant (IIP) facilities renewal program that proactively replaces systems near the end of their predicted service life.

BGM is comprised of Zone Management and Operations. The role of Zone Management is to provide customer service, facilities renewal, facilities engineering, property management, and emergency preparedness services.

ZONES MANAGEMENT PRIMARY SERVICES



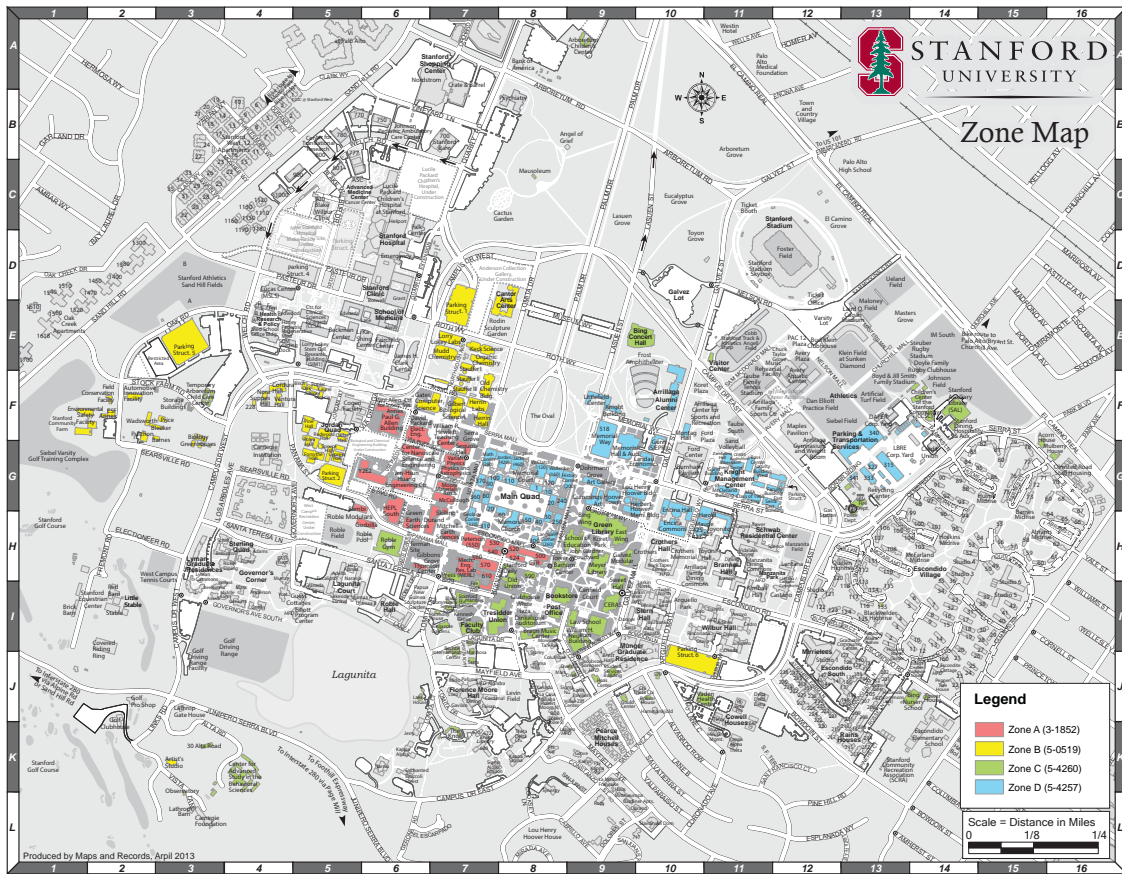
Zone Management serves as a central point of contact between school and building facilities management, Land, Buildings and Real Estate (LBRE) departments, and other university service departments. Zone Management is responsible for management and implementation of the IIP Program.

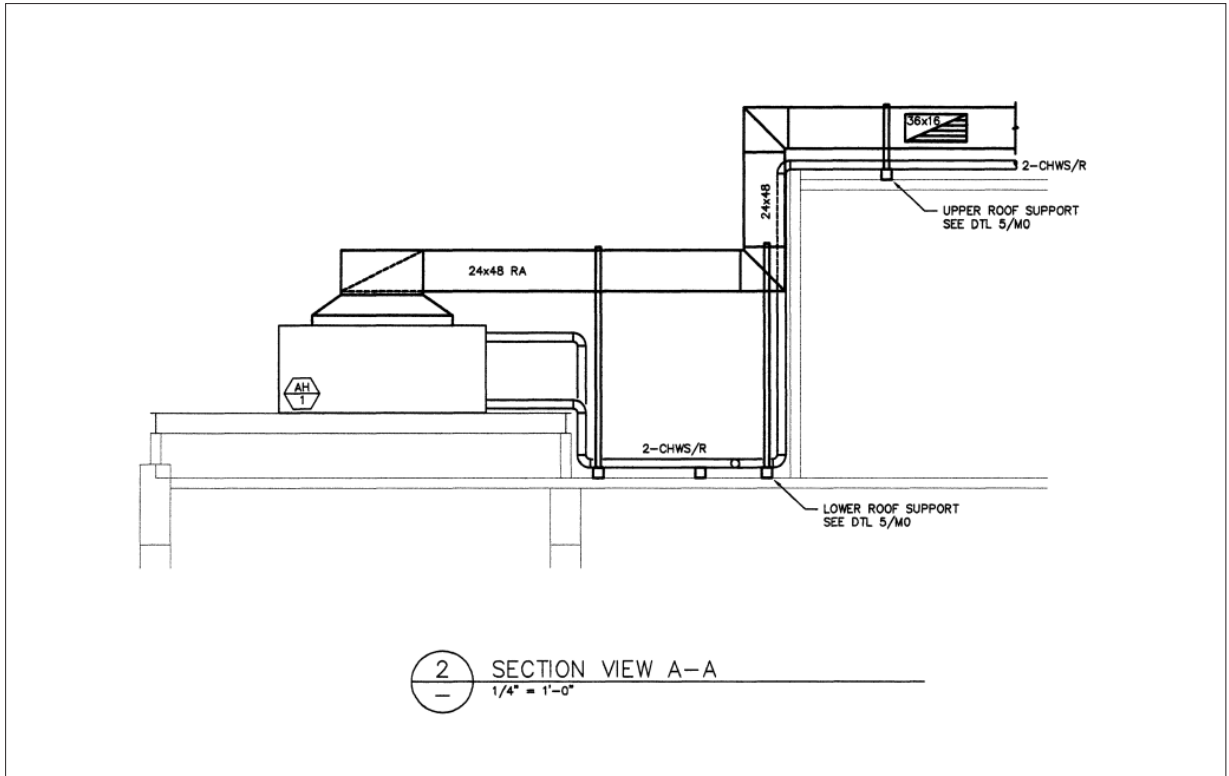
IIP is a part of the New Structures budget calculation, which is funded through General Funds. The IIP Program forecasts the annual facilities renewal funding required to preserve and optimize Stanford's existing buildings. IIP projects proactively repair, replace, and/or upgrade facilities in existing academic buildings to address current or potential maintenance deficiencies. The purpose of these projects is to ensure that the university operates at an optimal level while maintaining its physical plant and preventing a backlog of Deferred Maintenance. Deferred Maintenance is defined as overdue facilities renewal delayed due to insufficient funding, access, or staff resources. Deferred Maintenance generally results in the loss of system reliability, higher maintenance and operating costs, asset failure, impact to teaching and research, and in some cases, impact to health and safety. Deferred Maintenance is significantly more expensive than Planned Maintenance, due to deterioration of underlying infrastructure and associated systems. Facilities renewal that is intentionally delayed by Zone Management due to scheduled building demolition or renovation is not considered Deferred Maintenance and is excluded from the IIP forecast.

ZONE MANAGEMENT CONTACTS



ZONE MANAGEMENT MAP





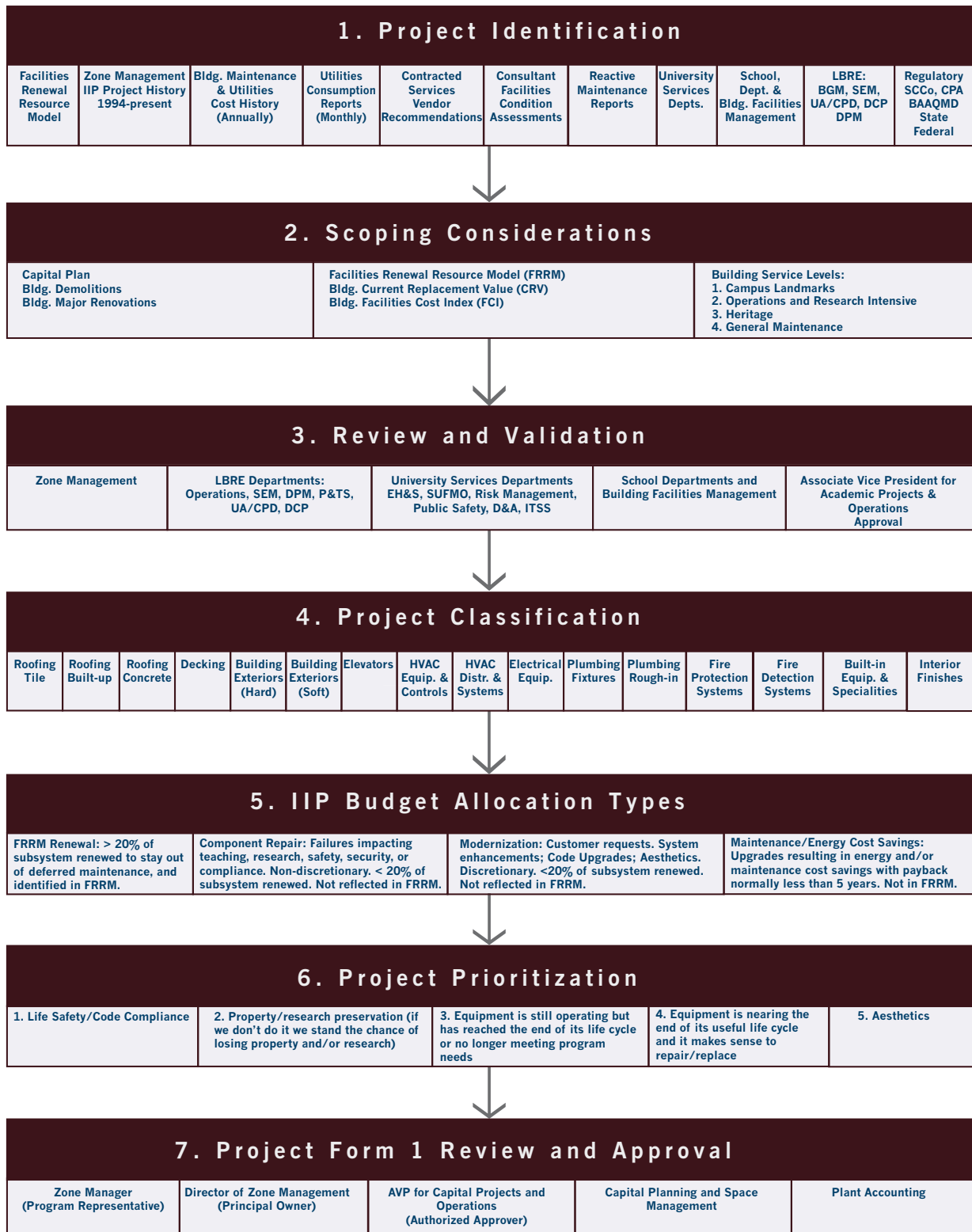
Forsythe Data Center - HVAC Renewal



Forsythe Data Center - HVAC Renewal

II. INVESTMENT IN PLANT: STRATEGIC PLANNING





INVESTMENT IN PLANT: STRATEGIC PLANNING

The goal of Zone Management's Investment in Plant project delivery process is to maintain an inclusive, informed, objective, and transparent process for the identification, scoping, prioritization, budgeting, and approval of IIP facilities renewal projects. The process includes input and approval from applicable university stakeholders. The process integrates information from the Facilities Renewal Resource Model (FRRM), Projecto project planning and management application, Capital Plan, Building Maintenance and Utilities Cost History, and other campus facilities related databases. Zone Management annually submits an IIP program management plan consisting of a One-Year Budget, Three-Year Plan, and Ten-Year Forecast of IIP projects.

Zone Management's IIP One-Year Budget and Three-Year Plan are based on specific IIP projects identified and estimated by Zone Management and entered into Projecto (a project database). The IIP Ten-Year Forecast is estimated and scheduled through the Facilities Renewal Resource Model application. The FRRM calculates building subsystem renewal dates and costs based on a life cycle planning model that utilizes standard building subsystem life expectancies, area construction costs, actual last renewal dates, and other building considerations. FRRM calculates both deferred and planned maintenance costs for building subsystems. When 20% or more of a building's subsystem is renewed, FRRM is updated to reflect the actual last renewal date and renewal percentage of the subsystem. This portion of the subsystem is considered "renewed" and its estimated next renewal date is reset based on the standard life cycle of the subsystem.

Zone Management's IIP project planning process includes the following steps as illustrated on the table on the opposite page and described on the following pages.

1. Project Identification
2. Scoping Considerations
3. Review and Validation
4. Project Classification
5. IIP Budget Allocation
6. Project Prioritization
7. Project Form 1 Review and Approval



Keck - Atrium Interior Renewal

1. Project Identification

Zone Management reviews a multitude of resources to identify potential facilities renewal projects.

Facilities Renewal Resource Model (FRRM): The FRRM database application utilizes building square footage (sf), facilities subsystem renewal dates, standard sub-system life cycles, and \$/sf construction cost data to document and create the IIP Ten-Year Forecast of annual funding required for on-going facility renewal. The FRRM is a long-range planning tool that attempts to forecast when building systems will require replacement or major renovation based on historical average subsystem life cycles. Project costs are based on national averages adjusted for local conditions. These costs are based on total system replacement costs.

Zone Management IIP Project History: Zone Management has maintained a facilities renewal project planning and management database application (ACCESS) since 1996. Zone Management currently uses the Projecto application to plan, prioritize, scope, schedule, budget, and manage projects scheduled for implementation during the current year and following three years to produce the IIP Three-Year Plan. Historical reference data from these databases is used to help scope, schedule, and budget future renewal projects.

Building Maintenance and Utilities Cost History: This annual report tracks annual Preventive and Reactive Maintenance costs and utilities consumption by building since 1997. This report is used to identify building subsystems potentially requiring facilities renewal or upgrade due to excessive reactive maintenance or operating costs.

Utilities Consumption Reports: Zone Management receives monthly building Utilities Consumption Reports and daily ITRON exception reports of building utilities consumption. These reports indicate variations in utilities consumption relative to normal historical building base-line data. These reports are used to identify building facilities potentially requiring reactive maintenance, preventive maintenance, or facilities renewal/upgrades.

Contracted Services Vendor Recommendations: Vendors provide Zone Management with recommendations regarding required facilities renewal in support of contracted services such as: custodial; lighting re-lamping and re-ballasting; elevator maintenance; waste and recycling services; pest control; rain gutter, storm lateral, and roof cleaning and inspection; fire and automatic door maintenance; deionized water service; and other contracted services.

Consultant Facilities Condition Assessments: Since 1997, Zone Management has contracted with ISES Corporation and others to perform facilities condition assessments on selected academic buildings each year. Buildings are selected for assessment based on renewal dates as indicated by FRRM, Building Maintenance and Utilities Cost History, and other reference data. The facilities condition assessments are used to validate FRRM predicted facilities renewal and justify scope and budget for any required work.

Monthly Reactive Maintenance Reports from Oracle eAM: Oracle eAM is Buildings and Grounds Maintenance's asset management application. BGM uses eAM to inventory facilities equipment and manage preventive, reactive, and planned maintenance work requests. Zone Management runs periodic eAM reports to identify buildings with excessive reactive maintenance, indicating a potential need for facilities renewal or upgrade.

University Service Departments: Zone Management coordinates with other University Service Departments to identify building facilities subsystems in need of renewal or upgrade. Environmental Health & Safety (EH&S) conducts periodic building inspections and provides feedback regarding industrial hygiene, hazardous materials, and other safety related building issues. The Stanford University Fire Marshal's Office (SUFMO) completes annual building fire inspections and maintains building fire protection and alarm systems. Risk Management conducts annual building insurance inspections of buildings with high cost assets. Public Safety coordinates with Building Management to identify potential building security and safety exposures. Zone Management coordinates with these Departments to justify, prioritize, scope, schedule, and implement IIP projects to address building safety, security, code, liability, and cost issues.

School, Department, and Building Facilities Management: Zone Management serves as a central point of contact between LBRE departments and building management. By maintaining close relationships and frequent communications with school and department management, Zone Management can proactively identify and implement required IIP facilities renewal projects and minimize impact to building teaching, research, and business activities.

LBRE Operations, SEM, UA/CPD, DCP and DPM: Zone Management works closely with other departments within LBRE to identify, plan, design, review, and construct IIP projects. BGM Operations shop technicians provide hands-on maintenance feedback regarding building equipment in need of replacement or upgrade. Sustainability and Energy Management (SEM) provides utilities, energy, sustainability, and controls engineering support and conservation (energy and water) rebate funding for building facilities renewal and upgrade projects. The University Architect/Campus Planning and Design provides architectural, planning, and historical feedback and support regarding required facilities renewal, preservation, and upgrade projects. Capital Planning (DCP) coordinates with Zone Management to ensure that IIP projects are coordinated with projects identified in the Capital Plan. Zone Management works closely with the Department of Project Management (DPM) to coordinate scope, schedule, and sometimes jointly fund Zone IIP facilities renewal projects with DPM construction projects.

Regulatory Agencies (County, Palo Alto, BAAQMD, State, and Federal): Zone Management receives periodic feedback from regulatory agencies regarding building code and compliance issues resulting from periodic building inspections or inspections related to building construction and renovation projects. IIP facilities renewal and upgrade projects are implemented to address applicable regulatory issues.

FACILITIES RENEWAL RESOURCE MODEL (FRRM) BUILDING PROFILE

BUILDING MAINTENANCE AND UTILITIES COST HISTORY

Individual Building Maintenance Expense Summary

Building Name: DAVID PACKARD ELECTRICAL ENG.
 Building Number: 04-030 Building Type: Classroom
 OGSF: 122,509 Age (in Years): 12
 Net USF: 105,276 Zone: A

Expenditures	All Systems			Mechanical			Electrical			Plumbing			All Other			Utility Consumption			
	Preventive	Reactive	Total	Preventive	Reactive	Total	Preventive	Reactive	Total	Preventive	Reactive	Total	Preventive	Reactive	Total	Electricity (kWh)	Steam (lbs)	Dom Water (gpi)	Chilled Wtr (ton/yr)
2002	\$24,627	\$23,414	\$48,041	\$17,244	\$2,300	\$19,544	\$3,861	\$7,243	\$11,104	\$2,532	\$3,346	\$5,878	\$991	\$10,525	\$11,516	1,464,168	4,796,231	637,745	314,318
2003	\$26,724	\$31,704	\$58,428	\$19,380	\$4,959	\$24,339	\$3,600	\$6,958	\$10,558	\$1,643	\$3,917	\$5,561	\$2,100	\$15,870	\$17,970	1,460,273	4,545,626	552,548	329,913
2004	\$24,365	\$24,477	\$48,841	\$15,257	\$5,382	\$20,639	\$4,750	\$5,733	\$10,483	\$2,769	\$4,237	\$7,006	\$1,589	\$9,124	\$10,713	1,502,473	4,431,594	532,105	351,263
2005	\$23,835	\$22,900	\$46,735	\$13,979	\$11,838	\$25,817	\$4,865	\$2,294	\$7,159	\$2,601	\$3,826	\$6,427	\$2,391	\$4,942	\$7,333	1,486,110	4,129,058	432,591	425,852
2006	\$33,011	\$43,090	\$76,102	\$21,719	\$18,665	\$40,384	\$4,846	\$4,263	\$9,109	\$2,414	\$9,701	\$12,116	\$4,032	\$10,461	\$14,493	1,626,806	4,611,626	474,456	436,251
2007	\$27,979	\$51,385	\$79,364	\$19,461	\$15,570	\$35,030	\$3,965	\$8,623	\$12,588	\$3,103	\$16,418	\$19,520	\$1,451	\$10,775	\$12,226	1,588,308	4,512,296	512,941	442,669
2008	\$30,089	\$48,847	\$78,936	\$21,181	\$7,221	\$28,402	\$4,911	\$12,350	\$17,261	\$2,612	\$16,262	\$18,874	\$1,385	\$13,013	\$14,399	1,535,636	4,878,815	522,553	436,266
2009	\$38,206	\$50,098	\$88,303	\$27,126	\$9,449	\$36,575	\$5,874	\$7,896	\$13,772	\$2,740	\$19,315	\$22,056	\$2,465	\$13,436	\$15,901	1,515,435	4,971,632	531,566	446,351
2010	\$46,329	\$103,801	\$150,130	\$26,796	\$15,385	\$42,181	\$6,379	\$7,479	\$13,858	\$8,628	\$44,205	\$52,833	\$4,527	\$36,732	\$41,259	1,604,608	5,561,656	542,150	451,130
2011	\$36,477	\$62,815	\$99,292	\$27,220	\$25,352	\$52,573	\$3,674	\$13,198	\$16,872	\$5,029	\$11,262	\$16,291	\$554	\$13,002	\$13,556	1,575,677	4,212,614	498,744	466,276

2. Scoping Considerations

After identifying potential facilities renewal projects, Zone Management reviews applicable planning, construction, and maintenance references for scoping considerations.

Capital Plan: LBRE maintains a Ten-Year plan of university capital construction projects. The Capital Plan includes a schedule of planned building construction, demolition, and renovation projects. For buildings scheduled for demolition or renovation in the near future, Zone Management may decide to cancel or reduce scope on planned facilities renewal projects.

Facilities Renewal Resource Model (FRRM): The FRRM calculates facilities renewal statistical data for all buildings. The Facilities Cost Index (FCI) is the total Ten-Year Deferred and Planned Facilities Renewal Cost divided by the Current Replacement Value (CRV) of the building. A very large FCI may indicate that a building should be demolished or fully renovated rather than renewed by subsystem.

LBRE Maintenance Service Levels: In order to more strategically manage and direct available funding and resources, LBRE has designated four building maintenance service levels. Zone Management utilizes building service level designations to determine how IIP projects should be assessed, scoped, and implemented. Every building maintained by BGM falls into one of the following service levels:

- **Level 1 - Campus Landmarks:** Level 1 projects involve major iconic buildings that are of important historical significance to the university. These projects may include scope beyond what is required for subsystem or component maintenance in order to preserve the unique character of the building or grounds. Coordination with the University Architect/Campus Planning and Design department is required to ensure the project's scope is complete and comprehensive.
- **Level 2 - Operations and Research Intensive:** Level 2 projects have a significant research component, are operationally complex, and/or are located in high profile areas of campus. Scoping of these projects may include equipment and services beyond what is necessary to address specific maintenance deficiencies in order to minimize risk of future failure of equipment and subsystems. Additionally, Level 2 projects may be architecturally distinct, located in areas of the campus that have a similar architectural character, or abide by unique planning parameters. Coordination with UA/CPD is essential to ensure the project conforms to specific guidelines or planning principles.
- **Level 3 - Heritage:** Level 3 buildings have historic importance to the university but are not considered to be iconic, landmark structures. Scoping for these renewal projects only needs to conform to the principles of zero deferred maintenance, life safety assurance, and code compliance. However, Zone Managers should coordinate with UA/CPD to determine if additional maintenance scope should be considered to preserve the historic integrity of the building.
- **Level 4 - General Maintenance:** Level 4 General Maintenance renewal projects only include scope that is necessary to keep a building free of deferred maintenance, in conformance with life safety standards, and compliant with all codes and laws. These buildings do not have historical significance nor are they critical in support of the university's academic and research mission. Level 4 projects are scoped by the Zone Manager and do not require additional input from other university constituencies.

PROJECTO BUILDING CONSIDERATIONS

Status	Pjt Planning	Bldg Considerations	Scope	Contingency	Permit	Energy
460 - MARGARET JACKS HALL						
Planned Demolition Date	<input type="text"/>	Building Current Replacement Value (CRV - \$000s)	<input type="text" value="\$36,109"/>			
Planned Major Renovation Date	<input type="text"/>	Building Facilities Condition Index (FCI)	<input type="text" value="0.07"/>			
Service Level	<input type="text" value="1"/>	Campus Landmarks				
<p>Level 1 projects involve major iconic buildings that are of important historical significance to the University. These projects may include scope beyond what is required for subsystem or component maintenance in order to preserve the unique character of the building or grounds. Coordination with the University Architect/Campus Planning Department (UA/CPD) is required to ensure the project's scope is complete and comprehensive.</p> <p>Level 1 projects require both an assessment of the operational maintenance requirements for the building by the Zone Manager or MPC, and an historical preservation needs analysis by the UA/CPD.</p>						

3. Review and Validation

The coordination of Zone Management with all applicable campus stakeholders is required to maintain an inclusive, informed, objective, and transparent process for the review and validation of IIP facilities renewal projects:

Zone Management

- Zone Program Manager
- Zone Engineer/Planner
- Zone Administrator

LBRE Departments

- BGM Operations
- Sustainability & Energy Management (SEM)
- Parking & Transportation Services (P&TS)
- University Architect and Planning Office (UA/CPD)
- Capital Planning (DCP)
- Land Use and Environmental Planning (LUEP)
- Department of Project Management - Seismic Advisory Committee (DPM/SAC)

University Service Departments

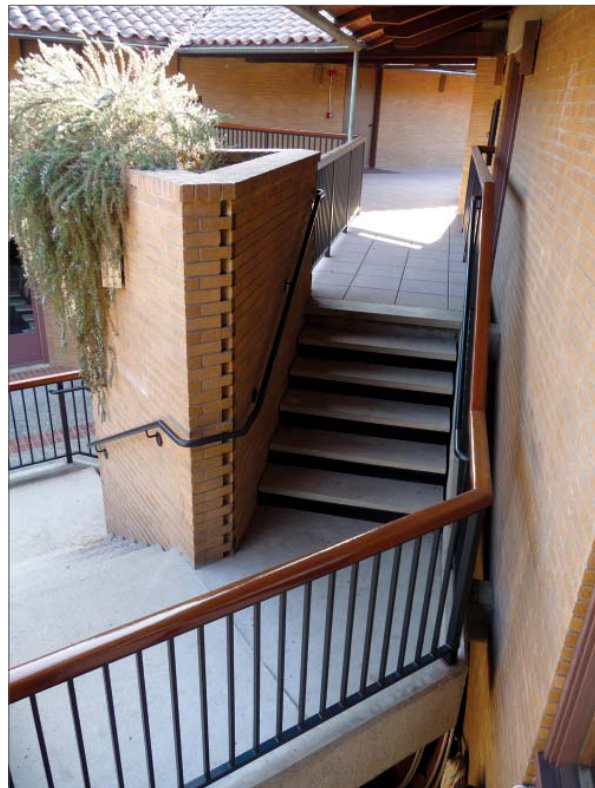
- Environmental Health & Safety (EH&S)
- Stanford University Fire Marshal's Office (SUFMO)
- Risk Management
- Public Safety
- Information and Telecommunications Services

Schools, Departments, and Building Facilities Management

Associate Vice President Land, Buildings and Real Estate



Faculty Club Main Dining Area - Lighting Energy Retrofit



Faculty Club - Railings and Paver Renewal

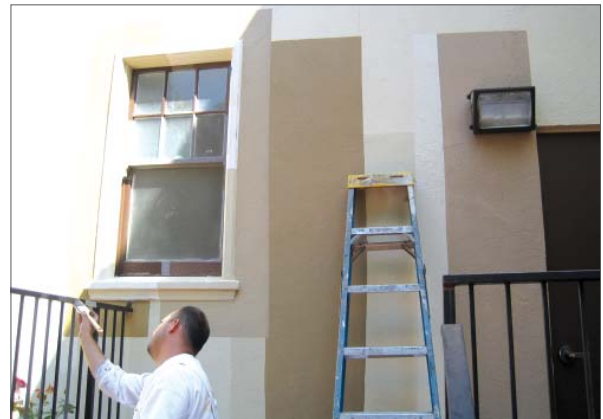
4. Project Classification

The Facilities Renewal Resource Model (FRRM) forecasts facilities renewal projects based on the last renewal dates and predicted life cycles of building subsystems. To facilitate tracking of subsystem renewal dates, Zone Management classifies IIP projects by the following FRRM building subsystem types:

- Roofing - Tile
- Roofing - Built-up/Single-Ply Membrane
- Roofing - Metal
- Roofing - Concrete
- Decking
- Building Exteriors (Hard)
- Building Exteriors (Soft)
- Elevators
- HVAC - Equipment and Controls
- HVAC - Distribution Systems
- Electrical Equipment
- Plumbing Fixtures
- Plumbing Rough-in
- Fire Protection Systems
- Fire Detection Systems
- Built-in Equipment and Specialties
- Interior Finishes



Math Corner - Mechanical Upgrade



Bechtel International Center - Exterior Color Mock-Ups



Center for Advanced Study in the Behavioral Sciences (CASBS) - Deck Replacement

5. IIP Budget Allocation Types

The Facilities Renewal Resource Model (FRRM) budgets IIP funding to replace building subsystems at the end of their predicted service life. IIP funding must also be budgeted for facilities renewal projects associated with Component Repair, Modernization, and Maintenance Cost Savings. These IIP Budget Allocation Types are defined as follows:

- FRRM Renewal - Facilities renewal projects renewing more than 20% of a building subsystem.
- Component Repair - Non-discretionary facilities renewal projects renewing less than 20% of a building subsystem and not included in the FRRM. These projects typically address facilities issues impacting teaching, research, safety, security, or compliance.
- Modernization - Discretionary facilities renewal projects addressing customer requests, system enhancements, code upgrades, and aesthetics. These projects are not included in the FRRM.
- Maintenance and Energy Cost Savings - Facilities upgrades resulting in maintenance cost savings with payback normally less than five years. These projects are not included in the FRRM.



Main Quad - Drainage Improvements

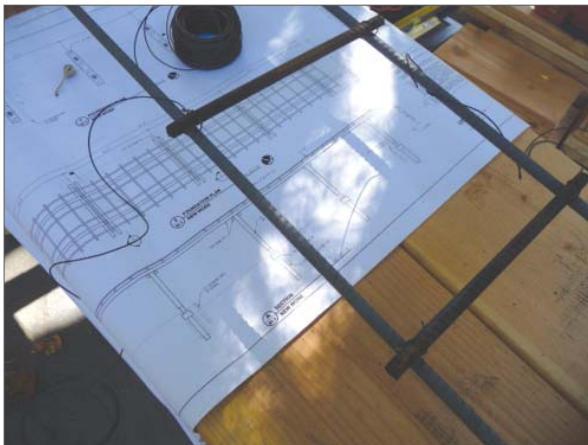


Forsythe Data Center - Roof Cat Walk Extension

6. Project Prioritization

Due to limited annual IIP funding and competing building needs, project priority types have been established to help determine if and when projects should be funded. Below are the established priority types with 1 the highest and 5 the lowest:

1. Life Safety/Code Compliance
2. Property/research preservation (if we don't do it we stand the chance of losing property and/or research)
3. Equipment is still operational but has reached the end of its life cycle or no longer meets program requirements
4. Equipment is nearing the end of its life cycle and it makes sense to repair or replace
5. Aesthetics



Bing Nursery - Landscape Structure Plans



Bing Nursery - Landscape Structure



Bing Nursery - Landscape Structure

7. Project Form 1 Review and Approval

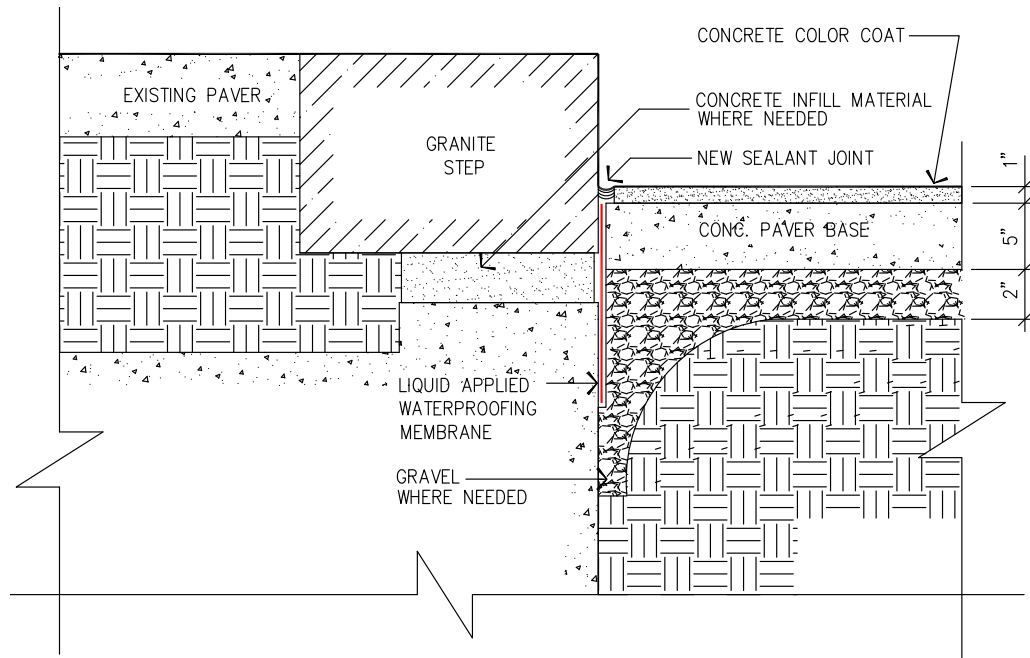
Zone Management meets regularly with the Associate Vice President for LBRE and Finance to review proposed IIP projects. Zone Management submits selected projects for funding approval via the Form 1 process. All Forms 1's are routed for approval by the Zone Manager, Director of Zone Management, the AVP for LBRE, Capital Planning, and Plant Accounting.



Bechtel International Center - Exterior Renewal



Bechtel International Center - Exterior Renewal



Main Quad - Paver Renovation Project

III. PROJECT TEAM AND COMMUNICATIONS



PROJECT TEAM AND COMMUNICATIONS

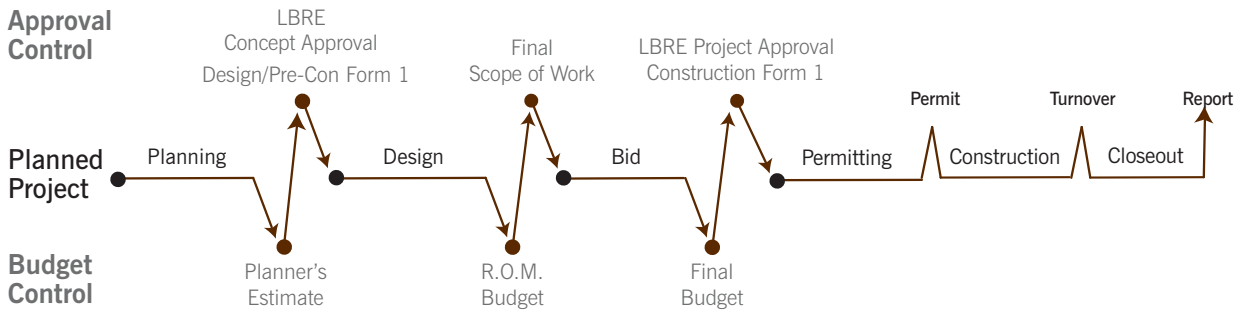
This manual provides the framework for the planning and implementation of Investment in Plant (IIP) projects overseen by Zone Management. Zone Management is overseen by the Associate Vice President (AVP) for Land, Buildings and Real Estate.

As demonstrated in the seven-step process, the Zone program managers compile and drive the initial strategic planning efforts before a project becomes justified to pursue.

Zone Management follows the streamlined Project Delivery Process (PDP) Manual with (6) distinct phases developed for short duration projects within occupied buildings.

The PDP Manual emphasizes the use of consistent, rigorous project controls during the entire process, which ensure that projects support the academic mission of the university and meet approved goals, budgets, and schedules. The PDP will guide project team members to make informed decisions, resulting in improved quality and performance and reduced risk to the university.

PROJECT HEARTBEAT



Regarding project management, Zone Management must balance the following primary goals:

- Cost** Deliver projects of long-term value within justifiable budgets
- Program** Develop and maintain spaces that support the education and research mission of the university
- Quality** Deliver building renewal and system improvements that continue the Stanford tradition of high-quality and reliability
- Schedule** Deliver projects in a timely manner
- Sustainability** Enhance environmental performance on renovation projects

ZONE MANAGEMENT / PROJECT TEAM COMMUNICATIONS

Zone Management is comprised of program managers (zone managers), project managers, and engineers (planners) who are responsible for the development, design, and construction of capital and non-capital projects. A majority of early project planning involves preliminary scoping and feasibility studies led by the program managers and planners. During this planning phase a planner's (engineer's) estimate is developed as the initial financial check-in point. Zone Management is internally supported by administrators and a project assistant. LBRE finance, Capital Planning and university departments such as Procurement, Capital and Fund Accounting make up the "Support Group", as shown on the primary communication diagram (see diagram below.)

The project manager typically leads the project delivery process, including design, construction, permitting, turn over, closeout, and account reconciliation. Project managers are empowered to make decisions with the support of process controls/tools described in the PDP and supported by university management.

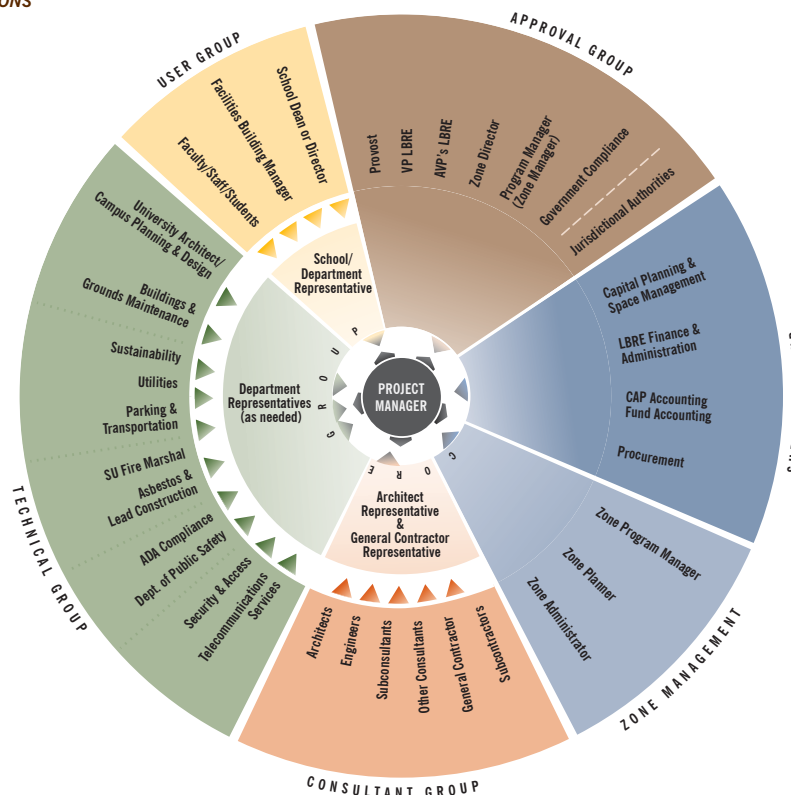
STANFORD PROJECT CORE TEAM MEMBERS

The core team consists of Zone Management, school/department user group representative(s) (if applicable), technical user group representative(s), and consultant group representative(s). Internal core team members communicate issues regarding scope, priorities, budget, and schedule from their constituents to the consultant group.

Communication among team members is the primary challenge on projects with multiple stake holders, and is critical to successful outcomes. Therefore, respecting lines of communications is vital. The project manager (PM) leads a project team of six groups formed according to function and expertise. The groups and their respective communication roles are illustrated in the Primary Communications diagram (see diagram below). This diagram is not an organizational chart. It is a guideline for the team's primary communication responsibilities, which are described in the following pages.

The school/department, consultant, technical, and support groups provide input, guidance, expertise throughout the project's design, construction, and closeout phases. The approval group includes members of the university who provide guidance and project approvals, and jurisdictional authorities from the communities where Stanford projects are located.

PRIMARY COMMUNICATIONS



PROJECT TEAM ROLES AND RESPONSIBILITIES

The roles and communication responsibilities of the six project team groups are described below.

ZONE MANAGEMENT GROUP

PROGRAM MANAGER

Program managers are responsible for identifying and approving new projects within their Zone for the IIP Program. They submit all funding requests for approved projects in the Form 1 application. Program managers work with project managers to develop and oversee the project budget and review monthly project progress and financials.

PLANNER

Planners assist program managers with identifying new IIP projects for their Zone. They are primarily responsible for developing project scope, coordinating condition assessments, and supporting design development / plan reviews. They work with program managers and project managers to ensure scope and design continuity as well as quality control, during all project phases. They act as an internal technical resource and support for the project team.

PROJECT MANAGER

As the project team leader the project manager (PM), with input from the program managers and planners, is authorized as the university representative to provide direction and communicate decisions. The project manager must balance the needs of competing priorities such as program, sustainability, aesthetics, risk, operations and maintenance with budget and schedule constraints. They communicate project status and phases, work effort percentages, permit information, and construction dates as needed to the project team. They are responsible for hiring vendors and contractors, managing, and overseeing construction.

ADMINISTRATION

Project administrators are responsible for providing administrative and financial support for projects within their Zone. They verify correct project PTA information and enter requisitions in Oracle iProcurement as directed. They manage the invoice review and payment process within Projecto. Working with program managers and project managers, they assist with project reconciliation and closeout process.

SUPPORT GROUP

The support group consists of capital planners, contract specialists from Procurement and various financial analysts.

APPROVAL GROUP

The approval group provides authorization for each phase of the project. This group is comprised of the Provost, the Vice President for LBRE, Associate Vice Presidents for LBRE, Zone Management Director, and Zone Manager. It also includes jurisdictional authorities from the communities where Stanford projects are located.

SCHOOL/DEPARTMENT USER GROUP

The School/Department user group is the program advocate throughout the project and communicates with the project team through a single designated representative. This group may be comprised of the Facility Coordinator, Facility Building Manager, school Dean or Director, faculty, staff, and/or students.

TECHNICAL USER GROUP

The technical user group consists of university departments and individuals that have developed general design and construction guidelines and standards. The group provides technical expertise and university guidance in order to define and execute the project consistently with university goals.

Role of technical user group representative: The representative is responsible for gathering, disseminating, and communicating information from the project team to their department/group, as well as communicating from the department/group back to the project team within project schedule constraints. The project manager coordinates directly with the department/group user representative. The following technical user group organizations shall assign a single point of contact to represent project scope.

University Architect/Campus Planning and Design (UA/CPD) is responsible for developing the campus master plan, along with final approval of exterior architecture/building palette, campus landscapes, and major public spaces within buildings. UA/CPD utilizes building service levels to establish scope criteria for IIP projects. Included within the UA/CPD responsibility is the university school and departments Space Management Program.

Sustainability and Energy Management (SEM) leads sustainability campus initiatives and oversees campus utilities and transportation services. Campus utilities is responsible for the coordination of campus utilities for all capital projects and the long-term ownership of all campus utility systems. SEM provides sustainability guidance for projects and the overall campus. SEM also advises the project team regarding impacts of construction on parking and transportation systems.

Buildings and Grounds Maintenance (BGM) is responsible for maintaining academic buildings and grounds on campus. BGM advises the project team on building and systems design to enhance building quality and provide long-term maintenance and operational efficiencies.

Stanford University Fire Marshal's Office (SUFMO) provides engineering, education, maintenance, inspection services, and guidance on fire safety (such as fire sprinklers, fire alarms, and emergency access). With capital and non-capital projects, SUFMO is a resource for fire/life/safety issues, though it is not a jurisdictional agency.

Information Technologies and Services (ITS) is Stanford's central information technology organization. The ITS Facilities Engineering Group (FEG) is responsible for the design and construction of telecommunication services in university buildings. FEG provides telecommunications support to campus construction projects and is responsible for design, installation, and management of communications systems for the university.

The Diversity & Access Office (D&A) advances the university's affirmative action and diversity goals, providing oversight for federal, state, and local regulations compliance concerning diversity and disability. The Diversity & Access Office works with project teams on building projects to provide input on ADA access and requirements.

The Department of Public Safety (DPS) interfaces with construction projects to provide input on campus security, pedestrian and bicycle safety, and construction impacts on roads and paths.

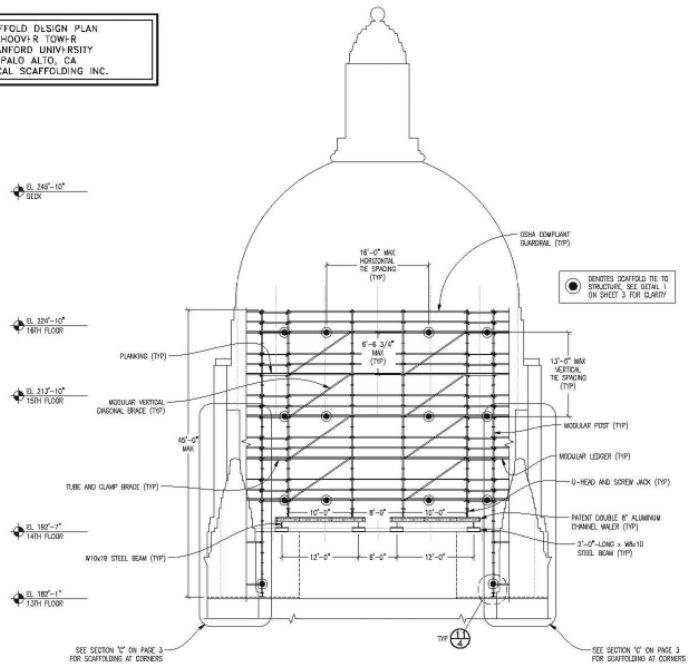
CONSULTANT GROUP

The consultant group implements the design and construction of university projects under the direction of the project manager. This group may include a range of professionals from the construction field including designers, architects, and engineers.



Main Quad Wallenberg Statues Historic Preservation Project

SCAFFOLD DESIGN PLAN
 HOOPER TOWER
 STANFORD UNIVERSITY
 PALO ALTO, CA
 NOR-CAL SCAFFOLDING INC.



Hoover Tower - Exterior Renewal



Hoover Tower - Exterior Renewal

IV. APPROVALS AND FUNDING





Building 02-610, Mechanical Engineering - Dust Collector Energy Project

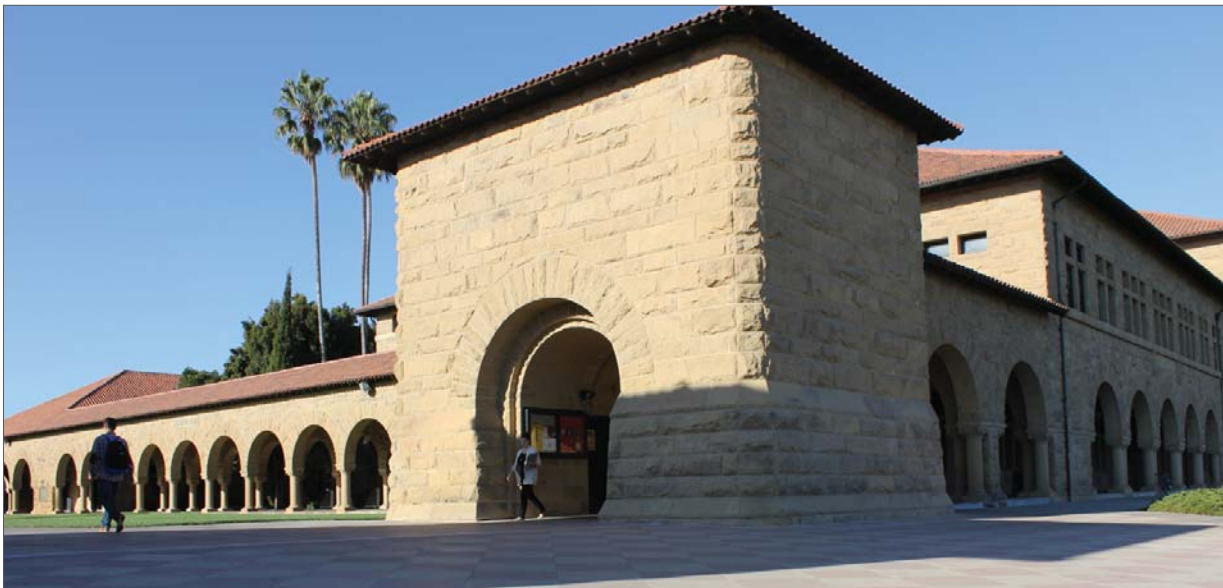
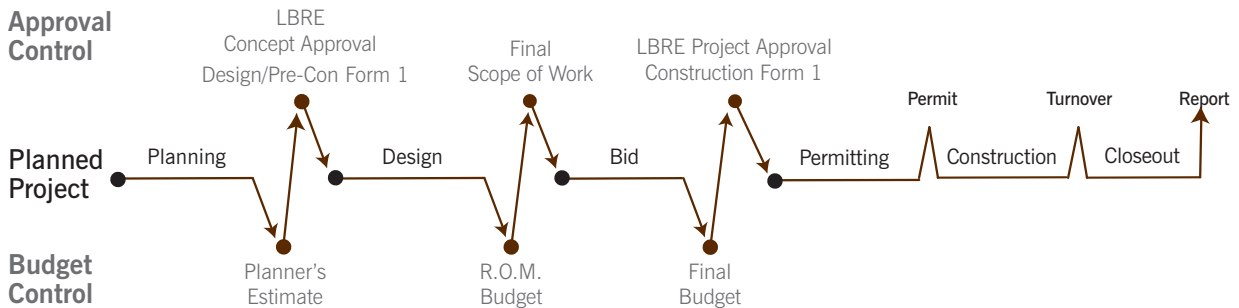
APPROVALS AND FUNDING

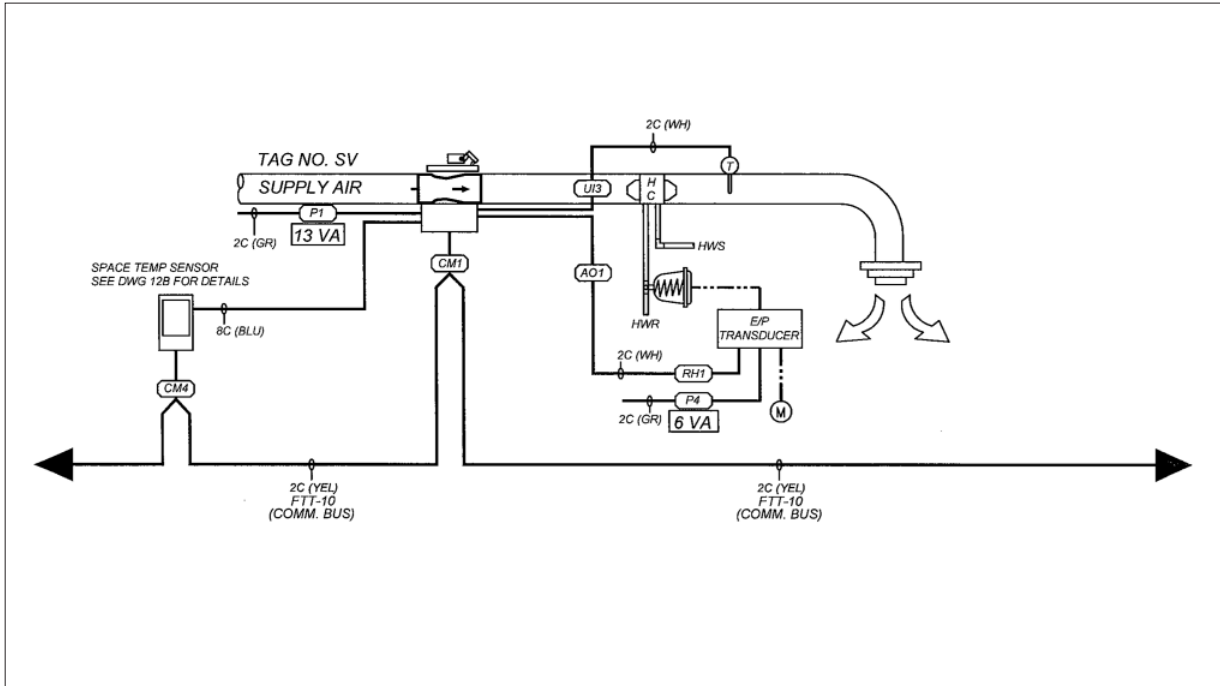
The LBRE Associate Vice President for Capital Projects, along with the Zone Management Director, is required to approve all capital and non-capital projects. LBRE facilitates the approval process with guidance from university stakeholders and project consultants.

The Project Heartbeat diagram represents Zone Management’s process to identify standard process controls in order to manage projects to desired outcomes. Each control point allows the Zone core team comprised of the program manager / planner / project manager to measure risks and constraints, and provides the discipline necessary to make informed decisions before proceeding to the next phase.

Once the planning phase has been completed, the project will be presented to the AVP of LBRE for concept approval.

RENOVATION/SMALL PROJECT HEARTBEAT





Stauffer 1 - Control Panels



Stauffer 1 - Variable Volume Supply Valve

V. SUSTAINABILITY

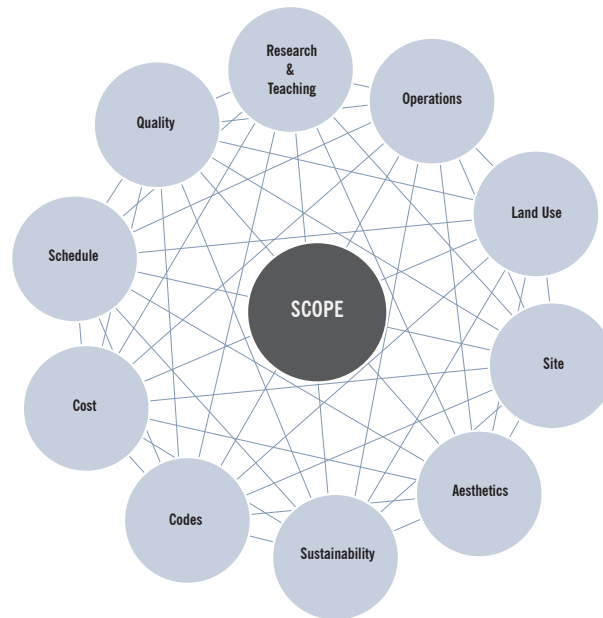


SUSTAINABLE BUILDING AT STANFORD

Stanford is committed to providing a sustainable and inspiring built environment for our students, faculty, staff, and visitors. Sustainability incorporates balanced concern for future preservation of three interdependent areas: environment, economy, and equity. At Stanford, sustainability refers to ensuring that buildings not only use energy, water, and other natural resources efficiently, but also provide a safe, productive, and educational environment. Stanford recognizes that the building industry has a tremendous impact on the natural environment, both regionally and globally, and the university has the opportunity to take a leadership role in how buildings can be built to conserve resources and inspire users. Achieving this requires an integrated process with sustainability as a base criterion for all development stages.

The sustainability principles set out in the PDP are intended to aid in planning, design, construction and maintenance of new buildings and renovations with a balanced attention to environmental, economic, and social concerns. Stanford faces the environmental, economic, and political challenges of greenhouse gas emissions reduction, water shortages, land use priorities, and rising operations and maintenance costs. Sustainability is one of many, often competing, criteria and priorities of a building project. Competing factors—such as cost, quality, schedule, and sustainability—are considered and balanced to support the program scope.

COMPETING PRIORITIES



Sustainability is one of several priorities that the project team must weigh in determining the best possible project outcome.

ENERGY USE

Reducing energy use is central to creating a sustainable campus. While Stanford is building on a decades-long commitment to energy conservation and efficiency, and benefits from a temperate climate and strong state energy codes, the university has recognized that it is increasingly important to focus on building energy usage and monitoring. Examples of energy use include: efficient building systems, effective control systems, and high-performance building envelopes.

WATER MANAGEMENT

Sustainable buildings conserve water resources with more efficient design and operating structures. Stanford practices sustainable water use by managing available resources to meet university needs while preserving ecological systems. Examples of water management include: native/drought-tolerant landscapes, the use of alternative water sources, and conservation.

MATERIALS, RESOURCES, AND WASTE

Waste is generated and transported to landfills throughout building demolition, renovation, and construction as well as throughout the life of the building. Sustainable design at all stages of building development, including plans to recycle and reuse construction waste, can help alleviate the pressure on landfills and natural resources. Examples include salvage and reuse of demolished materials, recycling and reduction of construction waste, design for recycling, and use of environmentally sensitive materials and products. The university is continually improving collection activities, identifying new markets for waste materials and recyclables, and raising awareness of opportunities for salvage, reuse, and recycling.

INDOOR ENVIRONMENTAL QUALITY

Research has shown that buildings with daylight, fresh air, and occupant controls are consistently rated as more comfortable, contributing to building occupants' performance and productivity. The benefits of pleasant indoor environmental quality extend to Stanford's students, faculty, and staff. Examples include integrating natural lighting and ventilation into building design.

SUSTAINABILITY IN THE PDP

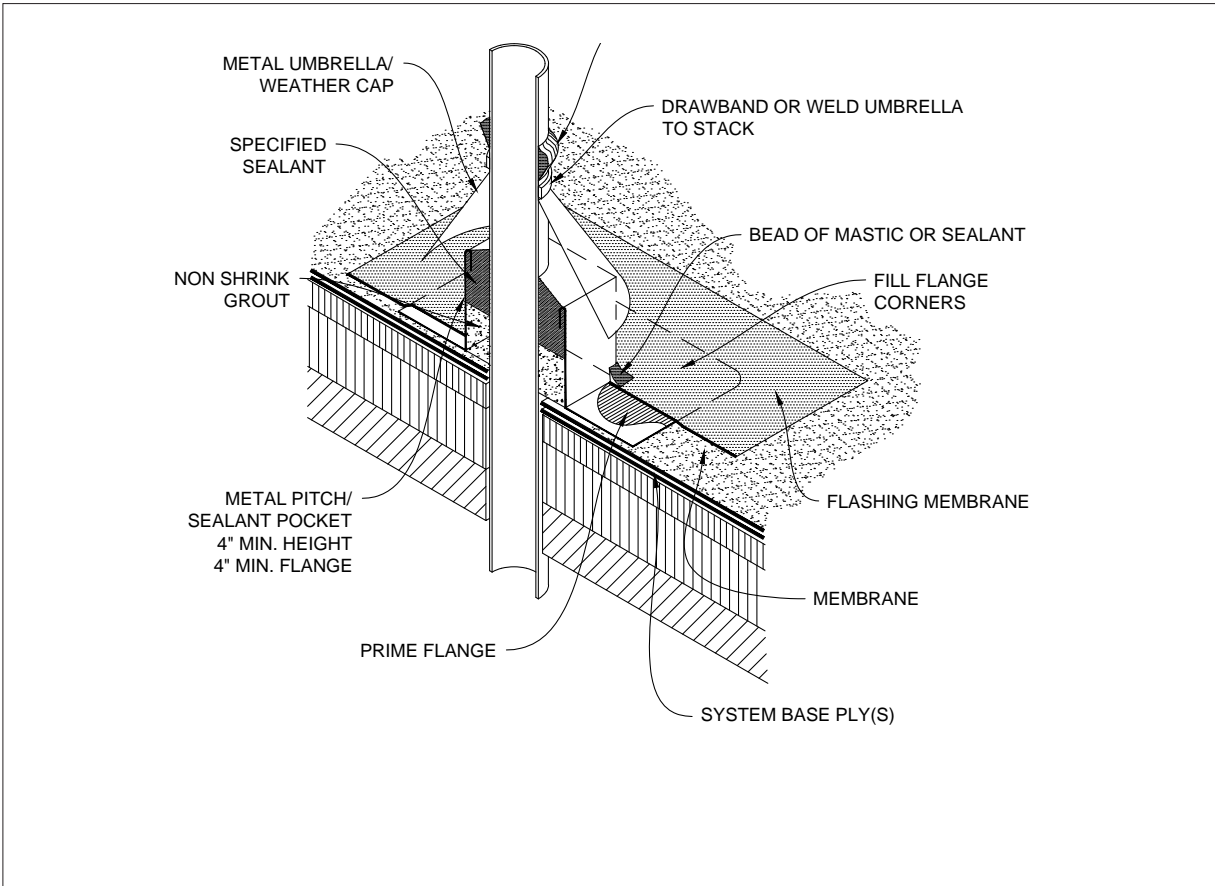
Stanford has made both responsible land use planning and natural resource conservation priorities since its founding. Starting with the Main Quad, the campus was designed and built with long-term stewardship and growth in mind. The most sustainable buildings are those that balance environment, equity, and economy. To ensure this balance, the PDP uses the following strategies throughout the process phases to allow the project team to make informed decisions regarding sustainable design:

To move toward campus sustainability goals, Stanford invests in high-performing building design and systems. The **Guidelines for Life Cycle Cost Analysis (LCCA)** instructs project teams to consider not only the "first costs" of a building (design and construction expenses) but also long-term costs, such as operations and maintenance. The LCCA is a method of evaluating project design decisions as they relate to total building life costs. The project team assesses the value to the project of life cycle cost (LCC) comparisons in six general categories: energy systems, mechanical systems, electrical systems, building envelope, siting/massing, and structural systems. The project team analyzes which specific studies are relevant to each project. Study results that show a favorable payback are included in the project scope.

In 2008, Stanford implemented rigorous **energy and water resource reduction goals** for all new capital projects and renovations. New and significantly renovated buildings are targeted to be 30% more energy-efficient on average than current energy codes require. They are targeted to use at least 25% less potable water than similar traditional buildings.

Stanford has a comprehensive program for waste reduction. Construction waste and demolition debris make up a significant amount of solid waste. Construction projects are required to address **salvage and recycling** as fundamental parts of the project's parameters. Waste minimization planning is integral to optimize recycled and salvaged material and minimize cost and schedule impacts to a project.

Commissioning is a quality-oriented process for achieving, verifying, and documenting that the performance of facilities systems meets defined objectives/criteria. Essentially, the commissioning process formalizes review and integration of all project expectations during planning, design, construction, and occupancy phases by inspection and functional performance testing, and oversight of operator training and record documentation. Stanford's commissioning process begins early in the Design phase. Stanford, along with the mechanical, electrical, and plumbing (MEP) designer/consultant(s), define the commissioning process and scope. The design consultant provides peer review and on-site verification of conformance with the design, working with the project team. A commissioning agent provides functional performance testing and verification prior to turnover. Active participation by various Stanford entities, such as DPM, BGM, and SEM is critical to an effective turnover of high-performing building systems.



McClatchy - Roof and Skylight Renewal

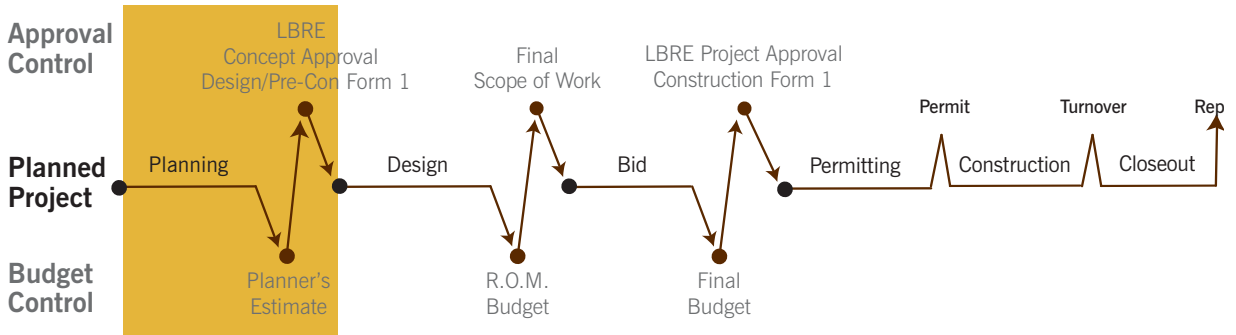


Stanford Auxiliary Library - Roof Replacement

VI. PROCESS PHASES



PLANNING



Translate academic or departmental initiatives into potential facilities needs.

During the Planning phase, the program manager(s) and planner(s) identify the initial scope of work and critical coordination/phasing items, recording the information in Projecto. Once reviewed and approved by the LBRE AVP, the program manager submits a Design / Pre-Con Form 1 in order to initiate the project. The project manager will partner with the program manager/planner and attend meetings with key stakeholders to develop the Scoping Documents.

Sustainability features should be introduced to the project team early in this phase so they can be considered, with other information, as the Scoping Document is developed.

TASKS

Project Controls & Logistics

Budget	Planner's Estimate
Funding	Submit for Design / Pre-Con Form 1 Funding
Schedule	Establish rough time line on when work can be completed with minimal impact to teaching and research
Internal Reviews	Program manager/planner/project manager agreed upon work plan
Logistics	Identify key phasing elements
Administration	Identify internal team
Jurisdictional	If permit required, determine if project qualifies for "over the counter" permit application
Outreach	Check in with Building Management with high level implementation plan

Building Program

Building	Identify and communicate existing facilities and phasing limitations
----------	--

Sustainability

Goals	Clarify sustainability goals and identify potential strategies
-------	--

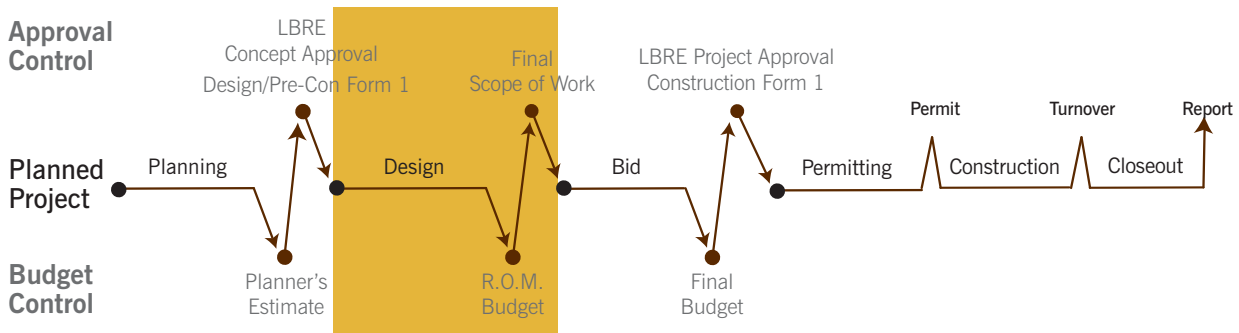
DELIVERABLES

- Scoping Document
- Planner's estimate

APPROVALS

- Program Manager
- Director, Zone Management
- Associate Vice President, LBRE

DESIGN



Prepare complete, coordinated construction documents that detail the design in order to bid, permit, and construct the project.

The consultant groups produce the contract documents, including final drawings and specifications for all components and building systems. This includes mechanical, electrical, plumbing; as well as structural and architectural when applicable. Typical drawing updates include 50%, 90% and permit (100%).

A consolidated Design phase is used to allow for the development of construction documents (CD) over shorter durations due to project size and build schedules. The designers, with input from the project team members (program manager, planner and project manager), are responsible for designing phased and constructible drawings.

When utilizing pre-construction services, the general contractor (GC) is responsible for constructability and drawing coordination, and confirming the construction budget.

At 50% drawing phase, Zone Management and BGM-Shops perform an interim review of the drawings and specifications and advise the consultant group of any conflicts or missing details/information.

Changes to the scope or program after the 90% drawings will likely incur budget impacts and schedule delays.

Upon completion of this phase, the contract documents are ready for bid. The schedule and soft costs are confirmed.

TASKS

Project Controls & Logistics

- Budget: Establish R.O.M. (rough order of magnitude) budget
- Funding: Review funding requirements
- Schedule: Prepare project baseline schedule
- Internal Reviews: Complete technical and user group reviews
- Logistics: Finalize project logistics/phasing plan
- Administration: Review proposed subcontractor bid lists
- Jurisdictional: Submit to county/CPA for plan check, completeness review
- Outreach: Initiate communication to facility managers, building managers and building occupants

Building Program

- Building: Logistics and approved phasing plans incorporated with drawings and final specifications

Sustainability

- Goals: Detail and coordinate sustainability components

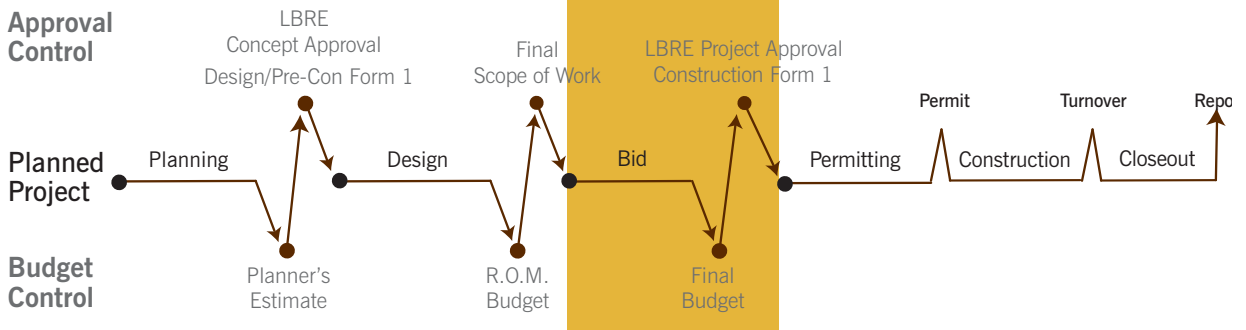
DELIVERABLES

- 100% contract documents (complete and coordinated)
- Project budget and schedule
- Construction management strategic plan
- Final scope of work

APPROVALS

- Project Manager
- Program Manager

BID



Perform competitive bidding based upon comprehensive bid package.

During the Bid phase, the project manager ensures all critical bid documents (construction drawings, project specifications, final scope of work and other support documents) are compiled as an accurate and concise bid package. The combined bid document provides a clear description of “The Work,” referencing points of tie in, limits of work, phased elements, etc.

Working in conjunction with Contracts and Procurement the necessary bid forms, bid type and associated electronic boilerplate documents are incorporated in the Invitation for Bid. The contract specialist will host bid walks for project work valued at \$250K or greater.

Based upon advertised bid due dates, appropriate written addenda will be issued in a timely manner based upon bid questions, RFI’s and clarifications.

All bids are thoroughly reviewed and qualified to establish the lowest responsible bidder. The PM and associated team members will recommend bidder selections. Responsibility for contract award remains with Procurement.

Based upon the lowest responsible bid the final budget is established and checked against the rough order of magnitude (R.O.M.) budget. The project manager provides all support documentation to the program manager for submission and review for LBRE project approval before submitting for construction Form 1 funding.

TASKS

Project Controls & Logistics

Budget	Reconcile R.O.M. and final budgets
Funding	Submit for Construction Form 1 Funding
Schedule	Compare submitted project schedules against the baseline schedule
Internal Reviews	PM reviews bid results with program manager
Logistics	Confirm project final logistics/phasing plan
Administration	Support Contracts and Procurement bid qualifications and required documents
Jurisdictional	Establish understanding of completeness review comments
Outreach	Initiate communication to facility managers, building managers, and building occupants

Building Program

Building	N/A
----------	-----

Sustainability

Detail and coordinate sustainability components as part of building systems and utilities plans; finalize commissioning plan

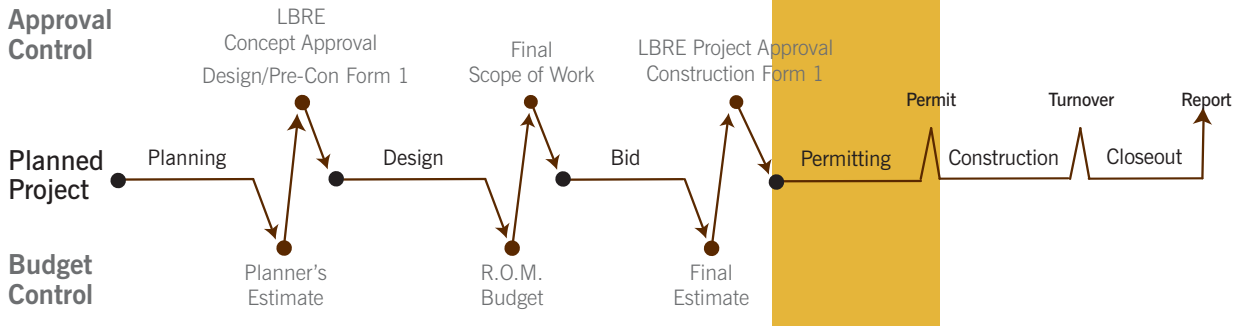
DELIVERABLES

- Contractor bid proposals with bid award recommendation
- Project final budget and schedule
- Construction management strategic plan
- Construction Form 1

APPROVALS

- Director, Zone Management
- Associate Vice President, LBRE

PERMITTING



Submit CDs to jurisdictional authorities for plan review to obtain necessary construction permits.

No significant construction activity may commence without the necessary permits and approvals. Mobilization and site preparation can commence at the discretion of the project manager. The project manager facilitates the initial permit process, including pre-submission Building Official review. The project manager and/or consultant leads all communication with the jurisdictional agency, using the resources of the project team as necessary to provide a coordinated response to comments and permit issues. The actual responsibility of obtaining a permit will be directed by the project manager to the appropriate project team member i.e., architect, engineer, or general contractor. Each project’s permitting schedule varies depending on the project’s location, complexity, and phasing.

The majority of Stanford lands are in Santa Clara County, with the County Building Inspection Office responsible for plan checks and issuing building permits. Santa Clara County Fire Department is the jurisdiction for fire and life safety plan review and inspections. For some projects, the City of Palo Alto has jurisdiction.

Some Stanford lands are located in San Mateo County, with the San Mateo County Building Inspection Office responsible for plan checks and issuing building permits.

TASKS

Project Controls & Logistics

Budget	Incorporate approved permit comments in final budget (within a contingency allocation)
Funding	N/A
Schedule	Complete final, detailed project schedule
Internal Reviews	Submit final plans to user representative and technical team for reference only
Logistics	Review with internal stakeholders/core team
Administration	Track permit issuance
Jurisdictional	Obtain required permits
Outreach	Communicate building logistics to building managers, neighbors (if applicable), and university stakeholders

Building Program

Building	N/A
----------	-----

Sustainability

Sustainability components have been incorporated in the final documents

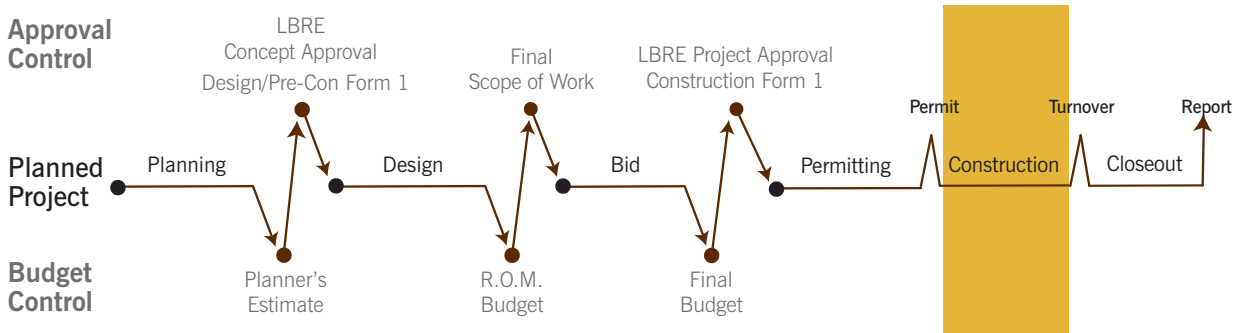
DELIVERABLES

- 100% permit documents (complete and coordinated)
- Updated budget and schedule (including permit impacts)
- Construction permit(s)

APPROVALS

Jurisdictional agencies

CONSTRUCTION



Safely construct project in accordance with contract documents, and within budget and schedule.

Throughout the course of construction, the owner, engineer and/or architect, and contractor meet periodically to report on the construction progress, submittal approvals, budget, and schedule; and resolve field conflicts and drawing discrepancies. On larger renewal projects, the contractor's project manager leads these OAC meetings, sets the agenda, and documents decisions and outcomes. The contractor reports on the project's safety program and site logistical concerns, and provides weekly updates to the construction schedule.

The general contractor is tasked with coordinating the delivery and installation, and facilitating the inspection process to allow for final sign-off/occupancy. The project manager and planner provide regular inspection of the site in order to ensure quality and conformance with the contract documents. Towards the end of construction, the contractor begins commissioning the building systems according to the commissioning plan.

OAC meeting attendees are the project manager, architect, and/or engineer and general contractor/prime mechanical contractor. The user and technical team representatives are copied on meeting minutes and attend OAC meetings as needed to assist in resolving field issues. The PM will route relevant submittals and RFIs to user and technical team representatives for review. All Stanford stakeholders must direct questions or comments about the construction to the project manager. The project manager provides all direction to the GC and design team.

TASKS

Project Controls & Logistics

Budget	Track project costs and report status monthly
Funding	100% of project funding must be available
Schedule	Track project schedule and report status
Internal Reviews	Conduct periodic construction walkthroughs; submittal reviews as required
Logistics	Notify stakeholder of changes to site logistics
Administration	Conduct weekly OAC/team meetings
Jurisdictional	Conduct jurisdictional, special inspections, and quality assurance inspections
Outreach	Maintain site notification with neighbors, building managers, and critical buildings

Building Program

The building program is complete and has been incorporated into the final drawings.

Sustainability

Perform building commissioning for mechanical based projects. Ensure identified sustainable: recycled materials, new building materials are incorporated into the project build out.

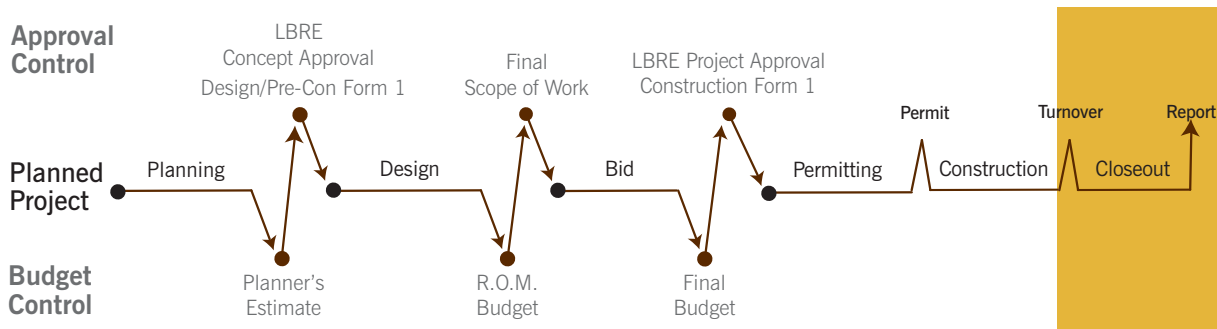
DELIVERABLES

- Contractor rolling schedules
- Contractor RFI, submittal, and change request logs
- A&E site observations
- Completed punch list
- Signed permits

APPROVALS

- Jurisdictional agencies

CLOSEOUT



Facilitate administrative financial closeout of the complete and fully commissioned project.

The Closeout phase commences with achieving substantial completion, receiving signed permit cards, and the processing of project change orders.

Another critical part of the Closeout phase involves project turnover and system commissioning. During turnover, impacted systems and/or modified overlaying components are restored and put back into service. Commissioning involves the testing of systems to ensure their proper operation and compliance with applicable design/specification requirements.

The project manager works with the appropriate project administrator to coordinate the completion of the critical project work flow. Original copies of all permit cards, “as-built” CAD drawings and associated O&M Manuals are issued to the Maps and Records Department with an itemized transmittal(s).

The project should be financially closed within six months after the project is complete. Financial closure requires that all contract work be completed, as-built documents received and submitted to Maps & Records, lien releases filed, final invoices submitted and paid, and project accounting reconciled with the university’s financial system.

TASKS

Project Controls & Logistics

Budget	Closeout project contracts; reconcile final project costs; work with Finance to close capital or non-capital account(s)
Funding	Capital Accounting to report remaining funding to be returned
Schedule	N/A
Internal Reviews	If needed, conduct post occupancy/permit sign off evaluation
Logistics	Demobilize and restore building/site
Administration	Submit complete as-built drawings and O&Ms to Maps & Records
Jurisdictional	Submit signed off permit or “certificate of completion” to Capital Accounting
Outreach	N/A

Building Program All system improvements are fully functional and meeting requirements

Sustainability

Complete final commissioning and post-occupancy evaluation

DELIVERABLES

- Signed permit(s)
- Certificate of Completion
- Completed punch list
- As-built CAD drawings and O&M manuals
- Commissioning report, if applicable
- Close Project project record

APPROVALS

- Project Manager
- Zone Manager
- Director of Zone Management
- Associate Vice President, LBRE
- Director of Finance, LBRE

VII. PROJECT CONTROLS



PROJECT CONTROLS

PROJECT ADMINISTRATION

CONTRACTS

In order to execute a contract, Stanford must have the consultant or contractor's response to a request for proposal (RFP) or some other document describing the scope and nature of the project, the type of professional services required, the cost of work, the schedule, and the deliverables necessary to complete the project. The RFP package should include a copy of the standard contract so that the consultant or contractor will be able to respond with an understanding of the terms of the proposed contract.

Zone Management thoroughly reviews (but does not sign) each proposal to ensure that it addresses all work required and includes appropriate fees for all services that have been requested. All exclusions and allowances in the proposal must be stated clearly and fully understood. Stanford does not allow the use of vendor contract forms; Stanford contract forms are used exclusively. The Procurement Department reviews the proposal to make sure it is consistent with the stipulations in the standard contract. For time-sensitive proposals, Zone Management and Procurement reviews should happen concurrently to ensure that all required modifications are identified quickly. After this review, and prior to beginning work, the terms surrounding the scope of work must be documented in a unilaterally or bilaterally executed contract.

If there are areas of concern over contract language that cannot be resolved or if any significant alterations are made to the contract, Procurement or Zones may involve Stanford legal advisors. Procurement will handle tasks required to finalize contract terms, review proposed changes with the project manager, and send the contract to the consultant/contractor for signature. The project manager must ensure that communications between Procurement and the consultant continue, and that contract terms are settled quickly, as no work may commence without an executed contract.

INVOICES AND PAYMENT APPLICATIONS

Zone Management's policy is to pay all invoices promptly and according to the terms of the contract. We have a staff of project administrators, assigned by zone, who manage the processing of invoices and payment applications. We also have the support of a project assistant and financial analyst included in our project team.

All invoices and payment applications must be sent to the attention of the project administrator at the appropriate Zone office. Each invoice and payment application is logged and time-stamped in LBRE's Zone Management Database as they are received. They are stamped with a proof of payment that includes the project account number and project number.

The invoices are first reviewed by the project administrator supporting the project. The project administrator reviews the invoice to ensure it is accurate, complete, and in compliance with the contract (e.g., that all necessary supporting documentation is included). Invoice irregularities and questions are forwarded to the project assistant for further review as required. Once the project administrator completes the review and follows up on any irregularities, the invoice is forwarded to the project manager for approval.

The project manager reviews the invoice or payment application in accordance with completed work or services and follows up with the vendor on any discrepancies. Once discrepancies are resolved, the project manager approves the invoice by signing the proof of payment stamp and routes it back to the project administrator for payment.

The project administrator logs the project manager's approval into Projecto. They upload the approved invoice in Oracle iProcurement for processing by the Controller's Office for payment.

The project assistant produces a monthly Invoice Aging Report with a total for each zone and a breakdown of outstanding invoices by project manager, invoice receipt date, vendor name, etc. Each project manager receives a copy of the report for their projects.

The Zone project assistant and project administrators review a summary of all outstanding invoices, including a list of invoices outstanding for more than 60 days, the reason each invoice has not been paid or is on hold, and the action being taken to pay the vendor.

FINANCIAL REVIEWS AND REPORTING

Project managers have monthly financial reviews to monitor the status of their critical projects. Participants normally include the manager of Zone Project Management and program managers (Zone Managers). The Zone Management Director and the LBRE Associate Vice President also meet monthly to review the Zone Executive Summary Report.

The purpose of the review is to discuss the status of each project and assist the project manager in resolving outstanding issues. Information reviewed includes the Project Status Report and the Invoice Aging Report. In addition to these detailed reports, the team reviews financial status (including change orders), schedule milestones, risks to budget, risks to schedule, phasing and logistics, specialty shutdowns, abatement removal plans, contract status, and contingency status.

Zone project administrators are responsible for providing financial support for projects within their Zone. They verify correct project PTA information and issue purchase requisitions. They manage the invoice review and payment process within the Invoice Tracking Log. Working with program managers and project managers, they assist with project reconciliation and run Oracle financial reports.

The financial analyst will provide financial reports as needed to track funding, commitments, expense, and unspent funds for the IIP program. As requested by the program manager, the financial analyst coordinates project closure with Capital and Fund Accounting. They also track when funds are returned (this occurs separately from the project closure) and record the information in Projecto.

Zone Management and LBRE Finance also generate the following reports:

Zone Executive Summary to LBRE Management

Project Status Report on all active Zone projects

Quarterly Accrual

Zone IIP Fund Report

PROJECTO - GENERAL PROJECT INFORMATION

Stanford University - Zones
GENERAL PROJECT INFORMATION - ZONE

Project # **98310** Name **Margaret Jacks SF1 Renewal** Created 07/08/10 By admin

Status Category **Retired** Dept **ZONE** Oracle Project # **1117995** Task **100.101** EQ DB

#	Project	Task	Award	Date	Amount
1	1117995	100.101	XIBJV		\$ 432,421
	1117995	100.101	XIBFW		\$ 0

Project Type **HVAC - Equipment and Controls**
 Form 1 # 17945 View Prepare
 Original Record # 3240 Other Pjt # 96074

Program Mgr **Hardin-Stauter**
 Planner **Adams**
 Project Manager **Yeung**
 Project Admin

Location - Quad **01** Bldg **460** Zone **D**
 Building Name **MARGARET JACKS HALL**
 Parcel **142-07-086**

Projected \$ **\$ 510,000** Capitalization Cap Non
 Project GSF Budget \$ / GSF ?

Constr Start **06/14/10** Complete **09/15/10**
 TCO Email

Current Status 6/2/11 -- email to larry
 Last Updated 5/27/11 Project docs are complete and in Docs. Folder given to JHS for closure.
 11/8/10 -- In-Service date updated to 9/15/10 to reflect final permit. PM has notified Cap Acctg.
 9/15/10 -- Waiting for Therma to replace doors and Couler to replace fixtures. Schedule balancing with shops on a weekend to minimize disruption of program. Complete by end of October then provide report of findings.
 7/30/10 -- AH replaced and running. Installation of controls in progress. Annex duct work completed. Couler will complete halfway ceiling and lights mid next week.
 6/4/10 -- Temporary cool test O.K.'d. Annex area HVAC improvement approved & funded by

Find ... Pjt Info Workflow Budget Schedule Team Actions Meetings Docs

BUDGET DEVELOPMENT

Developing and tracking the project budget is one of the planner’s/project manager’s key responsibilities. The planner develops the planner’s (engineer’s) estimate during the planning phase. The project manager refines it through succeeding phases. It is imperative that all elements of the budget are clearly defined, captured, and developed throughout each phase.

Zone Management utilizes Projecto (a project database) to create, develop, and monitor budgets. This program is linked to Stanford’s accounting systems to track actual project commitments and expenditures. Project managers create budgets according to the categories below.

1. Construction
 - a) Basic Construction (prime contractor’s scope, including building, equipment in contract, site work and construction escalation)
 - b) Other Construction (hazardous materials, utilities, work orders, etc.)
2. Design Services
 - a) Architectural Services
 - b) Other Professional Services
3. Stanford Costs
 - a) Stanford Internal Costs
 - b) Fixture, Furniture & Equipment (not in construction contract)
 - c) Agency and External Fees including permits
 - d) Activation (moving, signage, telephone/data, etc.)
 - e) Stanford Infrastructure Program
 - f) Financing Costs
4. Project Contingency

PROJECTO - PROJECT BUDGET STATUS

CATS Cost Category	A	B	C	D	E	F = D + E	G = C - F	F	
	Approved Budget	Budget Revisions	Projected Budget			\$ / SF	Current Committed		Anticipated Total Cost
1A Construction	\$ 395,880+	\$ 47,000+	\$ 442,880	\$ 0.00	\$ 398,184	\$ 0	\$ 398,184	\$ 44,696	\$ 398,184
1B Other Construction	5,000+	5,209+	10,209	0.00	10,209	0	10,209	1	10,209
2A Architect	26,000+	(26,000)+	0	0.00	0	0	0	0	0
2B Other Consultants	0+	0+	0	0.00	0	0	0	0	0
3A SU Internal Costs	16,520+	0+	16,520	0.00	5,003	0	5,003	11,517	5,003
3B FF&E	0+	0+	0	0.00	0	0	0	0	0
3D Agency / Ext Fees	0+	0+	0	0.00	0	0	0	0	0
3E Activation	0+	0+	0	0.00	0	0	0	0	9
3F SIP	20,000+	0+	20,000	0.00	19,017	0	19,017	983	19,017
3G GUP Entitlement	0+	0+	0	0.00	0	0	0	0	0
3H Financing	0+	0+	0	0.00	0	0	0	0	0
4 Contingency	46,600+	(26,209)+	20,391	0.00	0	0	0	20,391	0
5 Risk To Escalation	0+	0+	0	0.00	0	0	0	0	0
Suspense					0	0	0	0	0
Totals	\$ 510,000	\$ 0	\$ 510,000	\$ 0.00	\$ 432,413	\$ 0	\$ 432,413	\$ 77,587	\$ 432,421
Post Balance 05/18/11	\$ 510,000	\$ 0	\$ 510,000	\$ 0.00	\$ 432,413	\$ 0	\$ 432,413	\$ 77,587	\$ 432,421

Budget Approved 05/18/11 Snapshots ... Import Col A
 Total Funded - Cap \$510,000 NonCap Balance of Available Funding \$77,587

As indicated by the diagram below (also see page 20), three of the process phases include budgetary control points.

The planner's (engineer's) estimate is generated in the planning phase based upon database costing. Zone Management maintains a database of archived projects, which is used in the Three-Year Plan to provide early cost forecasts.

The R.O.M. budget is generated concurrently during the design phase based upon preliminary pricing efforts and available benchmark costs.

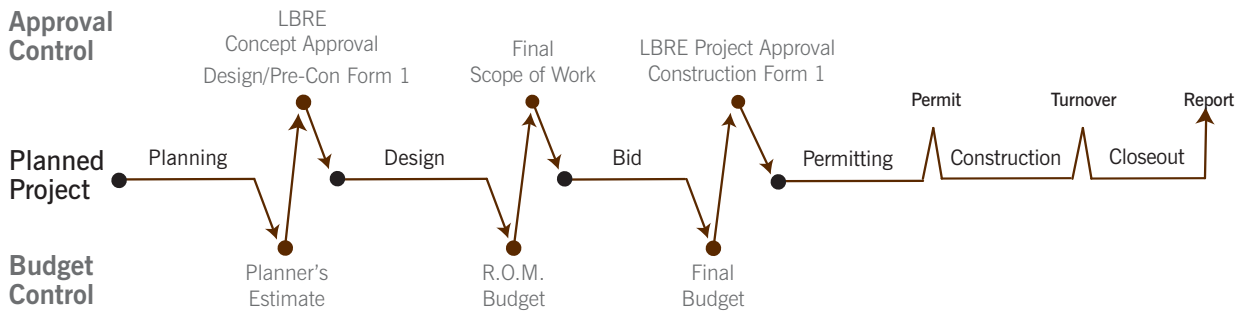
The final budget is produced at the end of the bid phase. Some allowances are utilized to accommodate minor permit comments that may need to be addressed. The total budget is presented to the Associate Vice President for Capital Projects and Operations, and the Director of Zone Management for Construction Form 1 approval.

SPECIAL COST CONSIDERATIONS

Contingencies in the project budget represent the degree of risk within the estimate. Each budget carries a project contingency that represents risks in the completeness of the design, the degree of unknown conditions at the site/structure, and other unknown areas such as professional fees, telecommunications, and hazardous materials. Contingencies may not be used to pay for scope or program changes requested by the user group. Project contingency funds must be authorized by the project manager prior to their commitment.

Stanford Infrastructure Program (SIP) provides funding for auxiliary projects that further develop the university's academic community and improve the university's physical plant. The infrastructure will be developed as necessary to improve public safety and service, and to promote conservation in land use and resources. A SIP assessment of 4.6% on all project costs applies to all capital projects (including new buildings, renovations, deferred maintenance projects, and the Capital Utilities Program) regardless of size, funding, and management. No assessments will be taken on projects funded through SIP or the GUP Entitlement Fee. The SIP tax percentage may be reevaluated periodically. Projects located off the main campus e.g., Hopkins Marine Station, Hillview, etc. are exempt from SIP charges.

Allowances are similar to contingencies in that they are intended to reserve funds for an event that is not clearly defined; they are rare thus more prevalent in the earlier design phases, when project uncertainties are greatest. Unlike contingencies, however, allowances typically are identifiable single items or issues that are carried in budgets as line items. Allowances can also be carried by the general contractor (with the project manager's approval) within their budgets and estimates to cover identifiable items. Allowances to the General Contractor should be minimal and not exceed 1 to 2% of the total contract. The project manager carries allowances in the project budget for construction and non-construction items as necessary.



SCHEDULE DEVELOPMENT

The project schedule identifies and organizes project tasks into a sequence of events that form a project management plan. The process of building the schedule enables the project manager to identify potential risks and understand the proper linkage of events; it also assists in resource planning and allows the project manager to establish goals for the team and project.

The schedule is a tool that assists the project manager in achieving a desired outcome, and it provides a means to measure team performance. A quality schedule includes control points that help to ensure project success. Specific control points that must be inserted and honored include, but are not limited to:

- Budget development and cost checks. This includes time to redesign in order to realign the scope with the budget
- Stanford approvals (LBRE Concept Approval, LBRE Construction Approval)
- Jurisdictional approval process (Permitting)

The overall project schedule should be the starting point for all projects at Stanford. The schedule is structured according to the process phases, but does not detail specific design and construction tasks for each phase; instead, it highlights the overall organization, logic, and control points. The durations listed are typical and are dependent on numerous variables unique to each project.

The project manager oversees the management schedule, which should be monitored and updated as the project moves through the design, agency approval, and construction.

The sample schedule below can be used as a template for Stanford projects. It outlines the Zones process and lists many project milestones, including LBRE approval phases and permitting.

The contractor is responsible for the construction schedule.

PROJECTO - PROJECT SCHEDULE

Stanford University - Zones
PROJECT SCHEDULE
 Default: weeks
 Week Start: Monday
 Project List | Reports | Exit
 Print Sched | Help
 Project #: Z11138 | Name: HVAC Replacement Project | Pjt Manager: DeWan

Phase # / Name	Curr %	Start	Input Qty / Periods	Link	End	Projected Start	Projected End	Baseline Start	Baseline End
1 Planning	P	01/03/11	6 weeks			01/03/11	02/14/11		
2 Engineers Estimate	P		2 weeks	1		02/14/11	02/28/11		
3 LBRE Concept Approval	P		2 weeks	2		02/28/11	03/14/11		
4 Design / PreCon Form 1	P		3 weeks	3		03/14/11	04/04/11		
5 Design	D		3 months	4		04/04/11	07/04/11		
6 R.O.M. Budget	D		5 days	5		07/04/11	07/09/11		
7 Final Scope of Work	D		2 weeks	6		07/09/11	07/23/11		
8 Bid	D		3 weeks	7		07/23/11	08/13/11		
9 Final Estimate	D		2 weeks	8		08/13/11	08/27/11		
10 Permitting	D		3 months	9		08/27/11	11/26/11		
11 LBRE Const Approval	C		2 weeks	10		11/26/11	12/10/11		
12 Construction Form 1	C		3 weeks	11		12/10/11	12/31/11		
13 Construction	C		4 months	12		12/31/11	05/01/12		
14 Turnover	C		2 weeks	13		05/01/12	05/15/12		
15 Closeout	C		3 months	14		05/15/12	08/14/12		

FUNDING

During the Planning phase, prior to any Form 1 funding, Zone Management typically sets up the project in the financial and project management database (Projecto), which creates a unique project number for early tracking purposes.

Most Zone projects begin with submission of a Form 1 (available at <http://form1.stanford.edu>). Smaller project work under \$15,000 is funded by operating accounts. The program manager submits the Form 1. The Form 1 includes a project description, programmatic justification, and deliverables along with budget and schedule constraints.

The Form 1 also provides a forecasted project cost and identifies associated funding. The approved Form 1 is forwarded to the Controller's Office, which assigns a capital / non-capital account number and funds the project as specified.

Projects funded by debt have additional cost associated with them. The project is responsible for the cost of financing until "Substantial Completion" has been officially submitted to Capital Accounting.

No work may begin on a capital / non-capital project without Form 1 approval. Project approvers typically include the Program Manager, Director of Zone Management, and LBRE management.

Form 1 Reports		STANFORD UNIVERSITY LAND, BUILDINGS & REAL ESTATE	
Project Title: 04-510 Hewlett Teaching Center Roof Upgrade			
Form 1: 19808		Date: 03-Apr-12	
Approved: 03-Apr-12			
Project Information:			
Sponsor (School/Dept): Facilities Operations	Project: Z12025		
Initiator: Hoang, Khoa / khoah	Other Project: Z12025		
Program Rep: Hoang, Khoa / khoah	PTA: 1003479-12025-BAELI		
Telephone: (650) 725-9089	Managing Department: ZPM		
eMail: khoah@bonair.stanford.edu	Location (Quad/Blgd): 04-510		
Project Principal Owner: Sandoval, George / gesandov	Building Name: WILLIAM R. HEWLETT TEACHING CENTER		
Project Owning Org: GYHY	Other Building:		
Task Principal Owner: Spinalli, Gregory / gspinalli	Project Phase: Study		
Task Owning Org: GYHY	Task Completion Date: 09/30/2012		
Task Manager (Project Manager): Spinalli, Gregory / gspinalli	Project Category: Zones Planned Maint		
Total funded to date: \$ 0			
Total this request: \$ 30,000			
Total current funding: \$ 30,000			
Forecasted project cost: \$ 120,000			
Capital Project: no	Plant Approval Source: Form1		
Included in Plan: no	Principal Recovery PTAED:		
Space Charge: no	Interest Recovery PTAED:		
Capital Plan GSF: 0	Debt allocation:		
GUP GSF: 0	SIP Charges Apply: N		
Population Increase: 0	GUP Charges Apply: N		

Form 1 19808 Project Information
Page 1 of 3

Utilities Projects Only	
Asset Life:	
Amortization accounts and percentage:	
Source of funds year:	
<i>Note: All capital projects are subject to the Stanford Infrastructure Program / See policy on introduction page for further details</i>	
Project Description: The scope of work is to inspect all the roof issues, do the necessary testing to define the problems, and provide a detailed scope of work for construction bidding.	
Programmatic Justification / Need: The roof is 15 years old and has developed many roof leaks at the failing seams and roof penetrations. This upgrade is necessary to repair all the problem areas and lengthen the life of the roof.	
Schedule Constraints: This work needs to be coordinated with the Building Manager.	
Deliverables: Project deliverables include a detailed scope of work for construction bidding, and a construction schedule and budget.	
Funding This Request:	
Funding Type	Award Amount PTAO
Dept	\$30,000 1003479-1-BAELI-GSCZ
Authorized Signer Jack Cleary	
Comments:	
School / Department: Work to be managed by Zones Project Manager Greg Spinalli and performed by a roof consultant.	
Land and Buildings / Controller's Office: Apr 2 2012 5:16PM - Craig K. Tanaka: Per Capital Accounting (M. Trammel), this project is non-capital. Apr 2 2012 1:30PM - Craig K. Tanaka: LBRE contacted Capital Accounting to confirm if a capital or non-capital PTA should be established for this project.	
Provost:	

Form 1 19808 Project Information
Page 2 of 3

