How to design and build a high performance, sustainable, donor funded building in two years.
Owner: Scott Shackleton
Assistant Dean
College of Engineering, UC Berkeley

Contractor: Hathaway Dinwiddie Construction Company

Architect: Leddy Maytum Stacy Architects
Introduction

**Project Perspective**
Cultivate philanthropy for capital project campaigns & align donor priorities with the institutional mission.

Foster collaboration between university review entities, design team & construction team to streamline review processes & foster positive working relationships.

**Collaborative Design**
Establish successful design processes for donor funded projects that integrate campus master plans, educational curricula and existing urban contexts

**Contractor Value**
Use innovate project delivery methods to conform to limited budgets while meeting aggressive schedules.

**Conclusion / Q&A**
“The line between ideas and things is becoming blurred… To remove that line will enable greater collaboration.”

Paul Jacobs, Clinton Global Initiative 2013
EXPLORER
a space where design conversations, classes and clubs collide.

PLAY
in one of our walk-in spaces with all the tools you need to tinker.

LEARN
design by doing design. Take a class, join a team, find a project.
Site Context
Simplicity & Clarity
Project Timeline : Project Origin

06 / 2013
Project Timeline: Schematic Design

09 / 2013
Project Timeline : Working Drawings

03 / 2014
03 / 2015

Project Timeline : Structural Steel
Project Timeline: Construction Complete

08 / 2015
Let’s get started

Owner’s Perspective
Identify Themes:

- Appropriate for the college
- Resonate with the donor

Frequent meetings to build excitement.

Request seed money to develop concepts.
Agree upon key criteria before engaging with the donor:

- Program
- Budget
- Design Criteria
- Schedule

Develop realistic budgets.

Develop schedule meeting expectations of key stakeholders.

*Develop milestone schedule for donor contributions.*
<table>
<thead>
<tr>
<th>Number</th>
<th>Milestone Event</th>
<th>Default Date</th>
<th>Gift Installment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The later of (i) favorable review by UC Berkeley Capital Projects Committee (CPC) of initial building concept (meeting date: March 28, 2013), as certified by the campus architect for the Project, and (ii) April 15, 2013.</td>
<td>June 15, 2013</td>
<td>$</td>
</tr>
<tr>
<td>2</td>
<td>The later of (i) commencement of the space programming and initial exterior design for the Project, as certified by the campus architect for the Project, and (ii) June 30, 2013.</td>
<td>August 30, 2013</td>
<td>$</td>
</tr>
<tr>
<td>3</td>
<td>The later of (i) completion of schematic design for the Project, as certified by the campus architect for the Project, and (ii) August 30, 2013.</td>
<td>October 30, 2013</td>
<td>$</td>
</tr>
<tr>
<td>4</td>
<td>The later of (i) completion of design development for the Project, as certified by the campus architect for the Project, and (ii) November 30, 2013.</td>
<td>January 30, 2014</td>
<td>$</td>
</tr>
<tr>
<td>5</td>
<td>The later of (i) the date of submission of the construction documents for review and approval by both the Division of the State Architect and the Campus Fire Marshall, as certified by the campus architect for the Project, and (ii) December 15, 2013.</td>
<td>February 15, 2014</td>
<td>$</td>
</tr>
<tr>
<td>6</td>
<td>The later of (i) receipt of all necessary UC Office of the President, UC Berkeley campus, and State approvals to commence excavation and demolition for the Project, as certified by the campus architect for the Project, and (ii) June 30, 2014.</td>
<td>August 30, 2014</td>
<td>$</td>
</tr>
<tr>
<td>7</td>
<td>The later of (i) commencement of construction on telecommunication lines, temporary utilities, preliminary site work and other &quot;make-ready&quot; projects, as certified by the campus architect for the Project, and (ii) July 1, 2014.</td>
<td>September 1, 2014</td>
<td>$</td>
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<tr>
<td>8</td>
<td>The later of (i) completion of preliminary site work and commencement of construction of foundation for the Project, as certified by the campus architect for the Project, and (ii) August 1, 2014.</td>
<td>October 1, 2014</td>
<td>$</td>
</tr>
<tr>
<td>9</td>
<td>The later of (i) completion of construction of foundation and commencement of steel framing for the Project, as certified by the campus architect for the Project, and (ii) October 1, 2014.</td>
<td>December 1, 2014</td>
<td>$</td>
</tr>
<tr>
<td>10</td>
<td>The later of (i) completion of steel framing and commencement of the construction of the interior decking for the Project, as certified by the campus architect for the Project, and (ii) December 1, 2014.</td>
<td>February 1, 2015</td>
<td>$</td>
</tr>
<tr>
<td>11</td>
<td>The later of (i) commencement of construction of the roof for the Project, as certified by the campus architect for the Project, and (ii) December 1, 2014.</td>
<td>April 1, 2015</td>
<td>$</td>
</tr>
<tr>
<td>12</td>
<td>The later of (i) completion of interior decking and commencement of the construction of the exterior skin for the Project, as certified by the campus architect for the Project, and (ii) February 15, 2015.</td>
<td>April 15, 2015</td>
<td>$</td>
</tr>
<tr>
<td>13</td>
<td>The later of (i) commencement of the mechanical, electrical, plumbing (MEP) and heating, ventilation, air conditioning (HVAC) systems for the Project, as certified by the campus architect for the Project, and (ii) February 15, 2015.</td>
<td>April 30, 2015</td>
<td>$</td>
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<tr>
<td>14</td>
<td>The later of (i) completion of exterior skin and commencement of all interior improvements and final finishes for the Project, as certified by the campus architect for the Project, and (ii) June 1, 2015.</td>
<td>August 1, 2015</td>
<td>$</td>
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<tr>
<td>15</td>
<td>The later of (i) completion of construction and commencement of occupancy certifications for the Project, as certified by the campus architect for the Project, and (ii) August 15, 2015.</td>
<td>October 15, 2015</td>
<td>$</td>
</tr>
</tbody>
</table>

**Total** $
Identify key stakeholders:

- Engage campus planners to understand expectations
- Engage architect with donor.
Understand campus leadership and planners’ priorities & processes:

- Budget / bridge loan discussions
- Identify critical campus required approvals
- Negotiate and agree upon accelerated review processes
- Set clear expectations for comment delivery schedule

Identify and engage with any required outside agencies having jurisdiction.
Engage key stakeholders
We shape our buildings, thereafter they shape us.

- Winston Churchill
Program Goals
Boldly Sustainable – Oriented for Maximum Solar and Natural Ventilation
High-density, Low Carbon living & learning for students
Identify Key trades where design build approach can add value:

• Accelerate Schedule
• Reduce Costs
• Improve Building Performance

Exterior Skin / MEPFP / Misc. Metals / PV Array

- Identify best fit of firms for the project
- Accepting low bid not mandatory
- Design a fair selection process
- Equal representation for voting entities / members

Team dynamics is critical to the success of the project.
Transparency, forthright & clear communication for project duration:

- Efficient OAC meetings / work sessions
- Budget and schedule as key discussion items
- Clear roles and expectation of each entity
- Resolve change orders efficiently and in a timely manner
Innovative Construction Methods
Advanced modeling and BIM documentation advantages:

- Reduce errors in documents.
- Better coordination of disciplines, identify conflicts easily.
- Improved workflow and increased collaboration between design team and construction trades.
Implement BIM to allow fluid transition between phases:

- **Design**: schematic / working drawings
- **Preconstruction**: quantity & area takeoffs for costing / GMP
- **Subcontractors**: coordination, shop, fabrication drawings
- **Field**: implementation, inspections, close-out

Precision Planning : BIM Collaboration
Ensure a collaborative workflow with design team and owner:

- Performance specifications
- Basis of design
- Detail design intent of key items
- Work sessions
- Concurrent scheduling / File sharing
Identify trades which affect critical path schedule:

- Accelerate schedule with early start of key trades
- Reduce cost & exposure to budget risk.
- Ensure comprehensive scope coverage through GMP

Demo.+Exc. / Ext. Skin / Found.+Struct. / Conc.+WP
Components for successful early bid process:

- Work with design team for appropriate documentation for each bid package.
- Allow contingency for ongoing design / review processes.
- Track changes clearly and efficiently, issue construction set once all trades are bid and before GMP is set.
Sustainable Results

- 24,023 sq/ft – design space for up to 2000 students per semester
- Bioclimatic Design – oriented for maximum solar and natural ventilation.
- High Performance envelope with integrated sunshades manages external building load
- 100% of instructional spaces are above the basement and 85% of all occupied spaces are naturally ventilated.
- 75 kWh PV system provides over 65% of the building power needs, energy efficiency exceeds Title 24 by 31%
- Project exceeds AIA 2030 targets, using 90% less energy than the national median.
- 100% of roof drainage is piped to landscape bio-swale and rain garden
- Drought tolerant landscaping with sub-surface drip irrigation
- 17% of all Building Materials are recycled
- Currently tracking LEED Platinum
- Delivered on time & budget
- Design to delivery 24 months
Mission Driven
Inclusive Design
Inclusive Design
Inclusive Design
Questions?
Thank You!