UC Merced Valley Terraces
LEED™ Housing Case Study

Building a Sustainable Campus Community
UC Santa Barbara June 26, 2006

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UC Merced
UC Merced

• 10\textsuperscript{TH} Campus for University of California System

• Research Campus for the Central Valley

• 25,000 Students in 25 Years

• Opened in Fall 2005 with 875 Students

• LRDP – All Projects to be LEED\textsuperscript{TM} Silver Certified

• Phase I: 100 acres, 650,000s.f. of Buildings
Campus Properties - 7000 Acres

Campus Core - 2000 acres:
  - Main Campus - 910 acres
    - (Phase One - 100 Acres)
  - Land Reserve - 340 acres
  - Natural Reserve - 750 acres
Phase I - Land Use Plan

Valley Terraces
University Community Plan

Valley Terraces
100 acre Site Plan

Valley Terraces
Campus Built to State-of-the-Art Sustainability Standards

LEED™ Silver Goal for Facilities

- Site Development
- Central Plant
- Science & Engineering
- Library & Information Technology Center
- Housing/Dining Complex
- Classroom & Office Bldg.
Campus Built to State-of-the-Art Sustainability Standards

Performance Guidelines

- LEED™ Silver
  - 10 Campus Wide Credits
  - 22 Credits Minimum per Building

- Energy Efficiency
  - 30-50% over California Title-24
  - Projected $20M Savings in 15 years
  - Utility Rates Increasing

- Campus Guidelines
  - Planning
  - Urban Design
  - Architecture
  - Building Systems
  - Landscape
Valley Terraces

- 3 Components: 150,526 s.f.
  - Housing – Commons - Dining
  - 323 Parking Spaces
  - 325,000 s.f. Total Site Development

- 602 Beds of Graduate Type Housing in 9 Buildings with Studios, 2 Bedroom and 3 Bedroom Units Totaling 143 Suites

- Design Build Contract

- Construction Cost $23,000,000
### LEED Credits - Campus Wide Credits

| SS 4.1 | 1 | Public Transportation Access |
| SS 4.4 | 1 | Parking Capacity |
| SS 5.2 | 1 | Development Foot Print |
| SS 6.1 | 1 | Storm Water Rate and Quantity |
| SS 6.2 | 1 | Storm Water Treatment |
| SS 8.0 | 1 | Light Pollution Reduction |
| WE 1.1 | 1 | Water Efficient Landscaping |
| ID 1.1 | 1 | Buildings as Teaching Tool |
| ID 1.2 | 1 | Exemplary Open Space |
| ID 2.0 | 1 | LEED™ Accredited Professional |

10 Credits
## Project Credits

<table>
<thead>
<tr>
<th>Code</th>
<th>Credit</th>
<th>Description</th>
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<tbody>
<tr>
<td>WE 3</td>
<td>2</td>
<td>31% Water Use Reduction</td>
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<tr>
<td>EA 1</td>
<td>5</td>
<td>27% below Title 24</td>
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<tr>
<td>EA 3</td>
<td>1</td>
<td>Additional Commissioning</td>
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<td>EA 4</td>
<td>1</td>
<td>Ozone Depletion</td>
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<tr>
<td>MR 2</td>
<td>2</td>
<td>Diverted 91% of Construction Waste</td>
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<tr>
<td>MR 4</td>
<td>2</td>
<td>13% Building Materials have Recycled Content</td>
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<tr>
<td>MR 5</td>
<td>2</td>
<td>48% Building Materials were Manufactured Regionally</td>
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<tr>
<td>EQ 4</td>
<td>4</td>
<td>Low Emitting Materials</td>
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<tr>
<td>EQ 6.1</td>
<td>1</td>
<td>Controllability of Systems - Perimeter Spaces</td>
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<tr>
<td>EQ 7.1</td>
<td>1</td>
<td>Thermal Comfort</td>
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<tr>
<td>EQ 8</td>
<td>2</td>
<td>Daylight and Views 90% of Spaces</td>
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<tr>
<td>ID 1.3</td>
<td>1</td>
<td>Exemplary Performance 40.3% Fly-ash in Concrete</td>
</tr>
<tr>
<td>ID 1.4</td>
<td>1</td>
<td>Exemplary Performance Local Manufacture 48.7%</td>
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25 Credits
Project Credits
**Lessoned Learned**

**Going for the Gold on the Next Project**

<table>
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<tr>
<th>EA</th>
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<th>Chilled Water from Central Plant</th>
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<tbody>
<tr>
<td>EA 5</td>
<td>1</td>
<td>Measurement &amp; Verification</td>
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<tr>
<td>EQ 1</td>
<td>1</td>
<td>Carbon Dioxide Monitoring</td>
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<tr>
<td>EQ 2</td>
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<td>Ventilation Effectiveness</td>
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<tr>
<td>EQ 3</td>
<td>2</td>
<td>IAQ Mgt. Plan, Building Flush-out</td>
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<tr>
<td>EQ 5</td>
<td>1</td>
<td>Indoor Chemical &amp; Pollutant Control</td>
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</table>

7    Sierra Terraces  
25   Valley Terraces   
10   Campus Wide       
42   Gold
Design Build Benefits

Contract Performance Requirements
- LEED Silver Required

Single Point of Contact for Performance

Contract Based Performance Management
- 01120 LEED Specification
- Monthly LEED Meetings
- LEED Matrix Showing Applied Credits
- LEED Submittal Forms
Design Build Challenges

- Contractor Experience & Competence with LEED
- Consultant Control
- Consultant Experience & Competence with LEED
- Cheap Points
- Follow up on Documentation & As-builts from Architects, Subconsultants, Contractors, Subcontractors, Vendors
Spend Time To Educate Yourself

- Get a LEED-NC Reference Guide
- USGBC Workshops
- LEED Professional Accredited Exam