Express 2012
MEET THE TEAM

JOHN DODINI
Stanford
Apprentice

CURTIS WONG
Stanford
Structural Engineer

DIANA LOUIE
Stanford
Construction Manager

SARA SUNDELIN
Stanford
Construction Manager

COURTNEY WONG
Stanford
Structural Engineer

KAROLINA OSTROWSKA
Warsaw Univ. of Tech
Architect
Albuquerque, NM, 35°06'39"N 106°36'36"W
SITE LOCATION

Albuquerque, NM, 35°06'39"N 106°36'36"W
Temperature & Precipitation
SITE CLIMATE CONDITIONS

- Annual average high temperature: 70.4 °F
- Annual average low temperature: 43.2 °F
- Annual average precipitation: 9.4 inches
- Annual average sunshine: 3418 hours
SITE CLIMATE CONDITIONS

Annual Wind Rose (Speed)

Annual Wind Rose (Frequency)
SITE CLIMATE CONDITIONS

Monthly Wind Roses
(Frequency Distribution)

Frequency distribution throughout day
BIOMIMICRY TEAM INSPIRATIONS

BIOMIMICRY WALL

MAIN GOAL:
IMPLEMENTING NATURAL VENTILATION

FACADE CONSIDERATIONS

MAIN ASSUMPTION:
WORKS BEST WITH A LOT OF SMALL VENTS THAN SMALL NUMBERS OF BIGGER ONES

SOLUTIONS:
"RIDDLE FACADE" - perforated wall
"LAYERED FACADE" - double skin facade with mobile shadings or lowers
"HIDDEN FACADE" - "single skin" facade obscured by mobile shadings

MATERIALS

MUDBRICKS
STONE VENEER
LIMESTONE
SANDSTONE
TRAVERSE
WOOD

INSULATION & GLAZING
TERMITE MOUND FEATURES

- Natural Ventilation
- Communal & Flexible Colony Home
- Termites Regulate Temperature

- Energy Efficient Buildings
- Foster Social & Collaborative Space
- Operable Vents & Fenestration
SITE LOCATION

Albuquerque, NM, 35°06'39"N 106°36'36"W
<table>
<thead>
<tr>
<th>Parameters</th>
<th>TERMITE ENTERPRISE</th>
<th>INVERTED MOUND</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Cellular beams</td>
<td>Post-tensioned</td>
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<tr>
<td>Overall Aesthetics / Impression</td>
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<tr>
<td>Effective Organization</td>
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<td>Prefabrication</td>
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<td>Constructability</td>
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<td>Sustainability</td>
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<td>Biomimicry</td>
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<td>Overall Preference</td>
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<td>Team Score</td>
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<td>75</td>
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<td>Combined Owner Score</td>
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<td>88</td>
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<td>Total Overall Score</td>
<td>95</td>
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TERMITE ENTERPRISE CONCEPT

DECISION MATRIX
# Final Decision Matrix

## Concepts Comparison

<table>
<thead>
<tr>
<th></th>
<th>Termite Enterprise</th>
<th>Inverted Mound</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Functional Efficiency</strong></td>
<td>Providing different levels of privacy in different floors</td>
<td>Providing different levels of privacy and security to different floors</td>
</tr>
<tr>
<td></td>
<td>Tucked away by columns and balconies; small area</td>
<td>Covered by mock-ups of columns and balconies; smaller scale</td>
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<tr>
<td></td>
<td>Not all the suggested affinities are met - auditorium close to faculty offices; inefficient communication - about 40% of total area; complicated communication on the top floor - zigzagging corridors, wasted space</td>
<td>About 40% saving in area (total soft: total building area x less than 27% hard soft)</td>
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<tr>
<td><strong>Egress</strong></td>
<td>Insufficient egress possibilities from auditorium - all egress paths lead to the middle of the building</td>
<td>Clear and easy egress from every zone</td>
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<tr>
<td></td>
<td>Exit points shorter than 40 feet</td>
<td>Exit points longer than 40 feet</td>
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<tr>
<td><strong>Flexibility</strong></td>
<td>Possibility of opening and rearranging spaces and functions; inflexible top floor</td>
<td>Possibility of opening and rearranging parts of the building; inflexible top floor</td>
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</tbody>
</table>

## Biomimicry

- **North-South orientation**
- Territorial & termite mound
- Flat-looking form
- Extensive
- Low efficiency of natural ventilation
- More organic shape, that's a smooth shape arising from different directions, a very easy to catch:
- Self-shading form - self-shadowing from sun at all times
- More sustainable thanks to good ventilation organization

## Overall Impression

- Chaotic, complicated design
- Engages too many ideas
- More self-balanced look:
- Simpler, more fluid design

## Rework Needed

- Need of redesigning the entire auditorium area, which would change the whole impression of the building
- Need of decreasing communication area
- Need of redesigning the facade

## Structural Compatibility

- Stacking of large rooms
- More efficient location of large spans
- Complicated floor plans
- Complicated facade

## MEP Compatibility

- Some parts of the building unavailable for natural ventilation
- Building shape not supporting natural ventilation
- Because of building's expanse, air stack effect is impossible
- Building's expanse requires complicated MEP design
- Long distances between rooms implicate need of more wires, pipes, ducts

## Availability of stack effect

- Building shape much supporting natural ventilation
- Compact form implies easier and cheaper wiring as well as cooling
- Compact form implies less complicated MEP design
- Shorter distances between rooms that need to be simplified to certain MEP services
PHASE I - FEBRUARY
PHASE III - APRIL
FLOOR PLAN & SPACE ALLOCATION

EDUCATION

- Auditorium 3.000
- Large classrooms 1.928

TECHNICAL & STORAGE

- Server rooms 766
- Mechanical room 527
- Storage room 1.145

COMMUNICATION & LOUNGES

- Server room 458 SF
- Storage room 1145 SF

RESTROOMS

- All areas with dimensions and labels
UNDERGROUND - EGRESS

CORRIDORS
LEISURE AREAS / LOUNGES
ATRIUM

BOTTOM FLOOR EGRESS
GROUND FLOOR EGRESS
TOP FLOOR EGRESS
GROUNDFLOOR – EGRESS
Beams:
- W10x15
- W16x26
- W21x44

Columns:
- W14x53
TOP FLOOR – FLOOR PLAN

OVERALL 27,212 SqFt
TOP FLOOR – EGRESS

CORRIDORS
LEISURE AREAS / LOUNGES
ATRIUM

BOTTOM FLOOR EGRESS
GROUNDFLOOR EGRESS
TOP FLOOR EGRESS
TOP FLOOR – ATRIUM VIEW
TOP FLOOR - GRAVITY SYSTEM

Beams:
- W10x15
- W16x26
- W21x44

Columns:
- W14x53
- W10x49
ROOF - GRAVITY SYSTEM

Beams:
- W10x15
- W16x26
- W21x44

Columns:
- W14x53
- W10x49
FLOOR SANDWICH

“YELLOW” GRAVEL ROOF

DUCTWORK BETWEEN BEAMS

ROOM SPACE

FLOOR SLAB

DUCTWORK BETWEEN BEAMS
BASEMENT EXCAVATION
17 FEET DEEP
5800 CY OF SOIL
Soil Conditions:

- Bearing Capacity = 4 ksf
- Medium compact sand
- Inorganic silts

Design Parameters:

- $w_{\text{soil}} = 125 \text{ pcf}$
- $\phi = 30^\circ$
- $f = 0.45$
CONCRETE RETAINING WALL

1.5’

17’

#3 @ 12”

#7 @ 10”

#6 @ 10”

4’

20”

4’

SECTION

ELEVATION
CONCRETE RETAINING WALL – 3D VIEW

17’-0”
Columns:
- 3’ x 3’ x 2’

Shear Walls:
- Length = 12’ - 8”
- Width = 8’
- Depth = 15”
Pu = 396 kips

235 kips

114 kips

12’-8”

47’
- Moment Capacity of 10,800 kip-ft
SHEAR WALL – PLAN VIEW

#9 @ 12” O.C.

12’-8”

#11 @ 12” O.C.
Max Interstory Drift of 0.019
SUN SHADING – SPRING/AUTUMN

SOLAR RADIATION ANALYSIS

SPRING/AUTUMN EQUINOX

Sun study start date time:
3/21 7:14 AM

Sun study end date time:
3/21 7:12 PM

1934.6

967.3

BTU/ft² Cumulative

0.0
SPRING/AUTUMN SUN ANGLE
SUN SHADING - WINTER

SOLAR RADIATION ANALYSIS

WINTER SOLSTICE

Sun study start date time: 12/22 8:15 AM
Sun study end date time: 12/22 5:53 PM

1934.6
967.3
0.0
BTU/ft²
Cumulative
EXTERIOR WALL CHALLENGE

Attach double wall to structure

Organic shape
Natural Ventilation
Biomimicry Inspiration

Constructability concerns
Almost double the cost
Unique fabrication
DOUBLE EXTERIOR FAÇADE
SITE WIND CONDITIONS

Monthly Wind Roses (Frequency Distribution)

Frequency distribution throughout day

Albuquerque Intl Airport (23050)
1965-2005
Annual Average - All Hours
Average Speed = 7.18 kt

Albuquerque Intl Airport (23050)
1965-2005
Annual Average - 03:09Z
Average Speed = 7.02 kt

Albuquerque Intl Airport (23050)
1965-2005
Annual Average - 10:15Z
Average Speed = 5.77 kt

Albuquerque Intl Airport (23050)
1965-2005
Annual Average - 19:23Z
Average Speed = 8.54 kt
NATURAL VENTILATION – AIR CIRCULATION
NATURAL VENTILATION – AIR CIRCULATION

SINGLE SIDED VENTILATION

VENTILATED CAVITY
FENESTRATION – NORTH VIEW
FLOOR SANDWICH

“YELLOW” GRAVEL ROOF

DUCTWORK BETWEEN BEAMS

ROOM SPACE

FLOOR SLAB

DUCTWORK BETWEEN BEAMS
“DOUBLE WALL” PRELIMINARY SKETCHES
EXTERIOR WALL PROBLEM-SOLVING

A+E Collaboration
DESIGN OF PANEL “STRONG BACK”

CHECK WALL FOR 25 PSF LATERAL LOAD:

\[ W_L = 1.6 \times 10 \times 0.025 \times 12 = 0.2 \text{ KSF} \]

\[ L = 13' \]

Assume Simply-Supported (Conservative)

\[ M_u = \frac{W_L L^2}{8} = \frac{(0.2)(13)^2}{8} = 4.2 \text{ k'}/ft \]

\[ t = 4.2(10) = 0.9(46) = 1.2 \text{ in}^3 \]

Try HSS 2 1/2 x 2 1/2 x 3/16.

CHECK DEFLECTION LIMIT:

\[ \frac{3L^4}{8E I} = 1/120\text{ in} \]

CONSTRUCTION:

Normal wt conc = 120 pcf

Construction LL = 20 pcf

\[ W_L = 1.2 \times 8.25 \times \frac{12}{12} = 0.075 \text{ KSF} \]

\[ W_L = 16 \times 0.02 \text{ KSF} = 0.32 \text{ KSF} \]

\[ W_u = W_D + W_L = 0.107 \text{ KSF} \]

\[ M_u = \frac{0.87}{0.12} \times 12 \]

\[ \phi M_u = (0.4) \frac{12(0.25)^2}{4 \times (36)} = 6 \text{ in-FT} \]

\[ L_c = \frac{2(6)}{0.107(12)} = 3 \text{ FT} \]
FAÇADE CONSTRUCTION
FAÇADE CONSTRUCTION

HSS 5x2x3/16

HSS 2x2x3/16
“How can we make something atypical… typical?”

• DR. GREG P. LUTH
• RIGGING SYSTEM WITH COUNTERWEIGHTS
6 LABORERS
3 DAYS
27,000 SF vs. 30,000 SF

BUILDING SQUARE FOOTAGE

- SUSTAINABILITY
- EFFICIENCY
- COST
- HIGHER QUALITY
- LIFE CYCLE
BUILDING SQUARE FOOTAGE

**40% Circulation**

**30% Circulation**
EFFICIENCY OF CIRCULATION

30% circulation
- No waste of space
- Less energy for heating and cooling
- Reduce carbon footprint
- Creative & compact

40% circulation
- Less efficient use of space
- Carbon footprint greater
- High life cycle cost

27,000 SF is more efficient
HALF OF U.S. CARBON EMISSIONS ARE FROM BUILDING SECTOR

Source: Professor Gilbert Masters, Stanford
## Owner Concerns

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<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Owner's Value (Hoss)</th>
<th>Owner's Value (Sinan)</th>
<th>Owners' Average</th>
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<td>A. Substructure</td>
<td>Building Location on Site</td>
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<td>B. Shell</td>
<td><strong>Exterior Enclosure (Facade)</strong></td>
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<tr>
<td></td>
<td>Roof</td>
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<td>Exterior Enclosure (Walls)</td>
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<td>C. Interiors</td>
<td>Interior Finishes (Partitions, Floors, Doors)</td>
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<td><strong>Energy Efficiency</strong></td>
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<td>D. Services</td>
<td>Indoor Air Quality</td>
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<td>8.5</td>
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<td>Elevators</td>
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<td>Communications and Electrical Services</td>
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<td>E. Equipment and Furnishings</td>
<td>Auditorium Furnishing</td>
<td>9</td>
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<td>Classroom Furnishing</td>
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<td>F. Specialty Construction</td>
<td>Special or Distinguishing Features</td>
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<td>Landscaping</td>
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<td>H. Conditions</td>
<td>Contingency</td>
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### LEED 2009 for New Construction

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<td><strong>Total</strong></td>
<td><strong>110</strong></td>
<td><strong>60</strong></td>
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27,000 SF vs. 30,000 SF

DIRECT COST SAVINGS

SUSTAINABILITY
EFFICIENCY
COST
HIGHER QUALITY
LIFE CYCLE
Grant (in 2012 Dollars): $8,500,000

Start of Construction on August 3, 2015: $7,293,000

TARGET VALUE: $7.2 MILLION
HIGHER QUALITY BUILDING

27,000 SF vs. 30,000 SF

- Decreased Square Footage
- Decreased Building Costs
- Higher Quality Building
- Additional Building Features
ADDITIONAL BUILDING FEATURES

- Higher Quality Finishes
- PV Panels
TARGET COST: $7.2 MILLION
TARGET VALUE: $7.2 MILLION
COMPANIES NEARBY

- Structural Steel: 14 min
- Concrete Plant: 15 min
- Hospital: 5 min
- Construction Equipment: 10 min
- Cement Supplier: 11 min
SITE PLAN - EXCAVATION

2 Excavators

Crawler 56,800 Lbs.  
(Ec240Blc)  
Max digging 33’ – 8”
SITE PLAN – CRANE CAPACITY

1 Mobile Crane

Grove TM9120
120 ton
Boom 130’
Jib 58’
Reach 105’
1 Fork Lift

2 Construction Elevators

2 Excavator Trucks
BIM COORDINATION PROCESS - TRAINING

Training Team to Ensure Quality & Efficiency

Small BIM Test

Understanding of Process

Understanding of Goals

Transparency of Competencies & Knowledge
### G. Building Sitework
#### G10. Site Preparation

<table>
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<tr>
<th>G1038. SITE EARTHWORK</th>
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<tbody>
<tr>
<td>G1038210. COMMON EARTH BACKFILL</td>
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Backfill for landscaping to form tiers/layers; Haul unused soil 20 miles away

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<td>180</td>
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<td>Backfill, structural, common earth, 300 H.P. dozer, 300' haul, from existing stockpile, excludes compaction</td>
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<tr>
<td>8</td>
<td>312323240100</td>
<td>Compaction, structural, 10 tons, steel wheel tandem roller</td>
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<tr>
<td>5700</td>
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<td>Cycle hauling (wall, load/travel, unload or dump &amp; return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wall/unload, 12 C.Y. truck, cycle 20 miles, 40 MPH, excludes loading equipment</td>
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<table>
<thead>
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**Total**

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<td>$ 46,272.72</td>
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<th>QUANTITY</th>
<th>DISCIPLINE</th>
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<td>Karolina</td>
<td>Interior facade top level</td>
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<td>Curtis</td>
<td>W14x53</td>
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<td>W10x49</td>
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<td>B1010_1L_fillerbeam</td>
<td>14</td>
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<td>Curtis</td>
<td>5 W16x26, 9 W10x15</td>
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<td>B1010_1R_fillerbeam</td>
<td>42</td>
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<td>5 W16x26, 35 W10x15</td>
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<tr>
<td>B1010_2L_fillerbeam</td>
<td>45</td>
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<td>Curtis</td>
<td>23 W16x26, 22 W10x15</td>
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<tr>
<td>B1010_2R_fillerbeam</td>
<td>52</td>
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<td>Curtis</td>
<td>49 W16x26, 3 W10x15</td>
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<td>Curtis</td>
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<tr>
<td>B1010_3R_fillerbeam</td>
<td>50</td>
<td>Structural</td>
<td>Curtis</td>
<td>47 W16x26, 3 W10x15</td>
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</tbody>
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## CLASH DETECTION PROCESS

<table>
<thead>
<tr>
<th>Clash Number</th>
<th>Clash Date</th>
<th>Item 1</th>
<th>Item 2</th>
<th>Image</th>
<th>Responsible Person</th>
<th>Fixed By</th>
<th>Fixed On</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4/23/2012</td>
<td>Roof Slab</td>
<td>Beams and Girders</td>
<td><img src="image1.png" alt="Image" /></td>
<td>Curtis</td>
<td>Courtney</td>
<td>4/24/2012</td>
<td>4/25/2012</td>
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<tr>
<td>2</td>
<td>4/23/2012</td>
<td>Roof Slab</td>
<td>Skylight</td>
<td><img src="image2.png" alt="Image" /></td>
<td>Karolina</td>
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<td>4/23/2012</td>
<td>Floor Slab</td>
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<td><img src="image3.png" alt="Image" /></td>
<td>Karolina</td>
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<td>4/24/2012</td>
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<td>4</td>
<td>4/23/2012</td>
<td>Double wall exterior</td>
<td>W14x63 Column</td>
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<td>Curtis</td>
<td>Courtney</td>
<td>4/26/2012</td>
<td>4/26/2012</td>
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</tbody>
</table>
MEMBER COLOR CODING

Curtis
Courtney
John
All

Diana
Sara
Karolina
EARLY CLASH DETECTION

2000+ CLASHES!
CLASH DETECTION

Exterior double wall & beams

New exterior wall support system
“POP”! It’s what we’ve been doing all along!
### WHAT IS “POP”?

<table>
<thead>
<tr>
<th>Function</th>
<th>Product</th>
<th>Organization</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image1.png" alt="Product Function" /></td>
<td><img src="image2.png" alt="Organization Form" /></td>
<td><img src="image3.png" alt="Process Express Project" /></td>
</tr>
<tr>
<td>Form</td>
<td><img src="image4.png" alt="Product Form" /></td>
<td><img src="image5.png" alt="Organization Express Project" /></td>
<td><img src="image6.png" alt="Process Structural" /></td>
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<tr>
<td>Behavior</td>
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<td><img src="image8.png" alt="Organization Express Project" /></td>
<td><img src="image9.png" alt="Process Asynchronous" /></td>
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<tr>
<td>Product</td>
<td>Organization</td>
<td>Process</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>--------------</td>
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</tr>
<tr>
<td>Function</td>
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</tr>
<tr>
<td>Form</td>
<td><img src="image3.png" alt="Form Image" /></td>
<td><img src="image4.png" alt="Form Image" /></td>
<td></td>
</tr>
<tr>
<td>Behavior</td>
<td><img src="image5.png" alt="Behavior Image" /></td>
<td><img src="image6.png" alt="Behavior Image" /></td>
<td></td>
</tr>
</tbody>
</table>
IMPROVED PERFORMANCE - EFFICIENCY
IMPROVED PERFORMANCE - EFFICIENCY
<table>
<thead>
<tr>
<th>Function</th>
<th>Product</th>
<th>Organization</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Security</td>
<td></td>
<td>Overall Form</td>
<td></td>
</tr>
<tr>
<td>Faculty Lounges</td>
<td></td>
<td>Exterior Enclosure</td>
<td></td>
</tr>
<tr>
<td>Private Offices</td>
<td></td>
<td>Energy Efficiency</td>
<td></td>
</tr>
<tr>
<td>Public Atrium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students Spaces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Form             |         |              |         |
| Function         |         |              |         |
| Express Project  |         |              |         |
| Structural       |         |              |         |

| Behavior         |         |              |         |
| Function         |         |              |         |
| Asynchronous     |         |              |         |
| Instant          |         |              |         |
BIOMIMICRY – ORGANIC SHAPE
<table>
<thead>
<tr>
<th>Product</th>
<th>Organization</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Image of high-security faculty lounge with terms like private offices, atrium students, public need, technical]</td>
<td>[Image of a brain with Overall Form highlighted]</td>
<td>[Image of a table with categories like Exterior Enclosure (Facade), Energy Efficiency]</td>
</tr>
<tr>
<td><strong>Form</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Image of a building with palm trees]</td>
<td>[Image of a flowchart for Express Project]</td>
<td>[Image of a chart with structural load definitions]</td>
</tr>
<tr>
<td><strong>Behavior</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Image of a structural diagram]</td>
<td></td>
<td>[Image of icons for social media and project management tools like Facebook, GoToMeeting, Skype, Asynchronous, Instant, 3D LCC, Dropbox, Google Docs]</td>
</tr>
</tbody>
</table>
BUILDING PERFORMANCE VS. TARGETS
<table>
<thead>
<tr>
<th>Product</th>
<th>Organization</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>![Image of high security and need technical spaces]</td>
<td>![Diagram of Overall Form]</td>
</tr>
<tr>
<td>Form</td>
<td>![Image of architectural design]</td>
<td>![Diagram of Express Project]</td>
</tr>
<tr>
<td>Behavior</td>
<td>![Image of structural load definitions]</td>
<td>![Diagram of structural processes]</td>
</tr>
</tbody>
</table>
# Idea List

The brighter (orange) the ideas are, the more popular they are!

<table>
<thead>
<tr>
<th>#1 CourtneyWong</th>
<th>incorporating the outside/desert &quot;feel&quot; on the interior design - including furniture, walls, architectural finishes</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2 SaraSundelin</td>
<td>natural ventilation 61</td>
</tr>
<tr>
<td>#3 DianaLouie</td>
<td>native species/plants 57</td>
</tr>
</tbody>
</table>
## Idea List

The brighter (orange) the ideas are, the more popular they are!

<table>
<thead>
<tr>
<th>#</th>
<th>Name</th>
<th>Idea</th>
<th>Rank</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Courtney Wong</td>
<td>incorporating the outside/desert &quot;feel&quot; on the interior design using furniture, walls, architectural finishes</td>
<td>100</td>
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<tr>
<td>2</td>
<td>Sara Sundelin</td>
<td>natural ventilation</td>
<td>61</td>
</tr>
<tr>
<td>3</td>
<td>Diana Louie</td>
<td>native species/plants</td>
<td>57</td>
</tr>
<tr>
<td>Function</td>
<td>Product</td>
<td>Organization</td>
<td>Process</td>
</tr>
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<tr>
<td></td>
<td><img src="ProductIllustration.png" alt="Product Illustration" /></td>
<td><img src="OrganizationIllustration.png" alt="Organization Illustration" /></td>
<td><img src="ProcessIllustration.png" alt="Process Illustration" /></td>
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<tr>
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<td><img src="FormIllustration.png" alt="Form Illustration" /></td>
<td><img src="ProcessIllustration.png" alt="Process Illustration" /></td>
</tr>
<tr>
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<td><img src="BehaviorIllustration.png" alt="Behavior Illustration" /></td>
<td><img src="BehaviorIllustration.png" alt="Behavior Illustration" /></td>
<td><img src="ProcessIllustration.png" alt="Process Illustration" /></td>
</tr>
</tbody>
</table>
HOW TO ACHIEVE OUR GOALS:
FLAT HIERARCHY & “SWIFT” TEAM
HOW TO ACHIEVE OUR GOALS:
FLAT HIERARCHY & “SWIFT” TEAM
## ORGANIZATION - BEHAVIOR

<table>
<thead>
<tr>
<th>Function</th>
<th>Organization</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
<td><img src="image1.png" alt="Product Image" /></td>
<td><img src="image2.png" alt="Process Image" /></td>
</tr>
<tr>
<td><strong>Form</strong></td>
<td><img src="image3.png" alt="Form Image" /></td>
<td><img src="image4.png" alt="Process Image" /></td>
</tr>
<tr>
<td><strong>Behavior</strong></td>
<td><img src="image5.png" alt="Behavior Image" /></td>
<td><img src="image6.png" alt="Process Image" /></td>
</tr>
</tbody>
</table>
[2 hours] DIAGRAMS: Preliminary Foundation Design Concepts

Assignee: Courtney Wong
Projects: Structural
Due Date: Feb 23

John D
Completion? What date? How Long?
Feb 29 at 12:46pm
[2 hours] DIAGRAMS: Preliminary Foundation Design Concepts

Add Notes
Assignee: Courtney Wong
Projects: Structural
Due Date: Feb 23
Tags | Attach a file
Followers: Courtney W, Curtis W, Diana, John D
View earlier activity

John D
Completion? What date? How Long?
Feb 29 at 12:46pm
<table>
<thead>
<tr>
<th>Function</th>
<th>Form</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>Organization</td>
<td>Process</td>
</tr>
<tr>
<td>HIGH SECURITY FACULTY LOUNGES PRIVATE OFFICES SEMI PUBLIC ATRIUM STUDENTS PUBLIC NEED TECHNICAL</td>
<td>Overall Form</td>
<td>Exterior Enclosure (Façade)</td>
</tr>
<tr>
<td>FORMALITY ENTRANCE RECEPTION</td>
<td>Express Project</td>
<td>Energy Efficiency 10</td>
</tr>
<tr>
<td>Structural</td>
<td>Structural</td>
<td>Asynchronous</td>
</tr>
</tbody>
</table>

- **Function**
  - High security
  - Faculty lounges
  - Private offices
  - Semi-public atrium
  - Students
  - Public
  - Technical

- **Form**
  - Formality
  - Entrance
  - Reception

- **Behavior**
  - Asynchronous
  - Instant

- **Organization**
  - Overall Form
  - Express Project

- **Process**
  - Exterior Enclosure (Façade)
  - Energy Efficiency

- **Tools**
  - Facebook
  - Gotomeeting
  - Skype
  - Asynchronous
  - Instant
  - 3D LCC
  - Google Docs
WORK TOGETHER TO DELIVER VALUE

SINAN sinanmihelcic@gmail.com

yes, this is a big GO from me!

Hoss Nasseri hossnasser@gmail.com

More discussion can be done tomorrow night but as far as I am concerned this is a "go" unless Sinan has an objection. Please advise Sinan :)
WORK TOGETHER TO DELIVER VALUE

SINAN  sinanmihelcic@gmail.com
to me  

yes, this is a big GO from me!

Hoss Nasseri  hossnasseri@gmail.com

to me, Karolina, fruchter, sara.sundelin86, Chris Trzeciak, SINAN, John  

More discussion can he had but as far as I am concerned this is a "go" unless Sinan has an objection. Please advise Sinan.
<table>
<thead>
<tr>
<th>Product</th>
<th>Organization</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Form</td>
<td>Behavior</td>
</tr>
</tbody>
</table>

**Product**
- High Security Faculty Centers
- Lounges
- Private Offices
- Atrium Spaces
- Public Spaces
- No Daylight

**Organization**
- Overall Form
- Exterior Enclosure
- Energy Efficiency

**Process**
- Express Project
- Structural
- Asynchronous
- Instant

- Facebook
- GoToMeeting
- 3DLC
- Skype
- Dropbox
- Google Docs
Master Schedule as of April 10
Master Schedule as of April 25
Master Schedule as of April 25

- Naming Convention and Level of Detail Spreadsheet
- Identify top challenge for fishbowl
- Architectural model and concepts complete
- 5 min presentation prep for fishbowl
- MEP Conceptual Layout and Quantities
- Integration Test small portion of building - 1L
- BIM Integration Strategy
- First draft Structural model complete
- Fishbowl Mentoring Sessions
- New LEED Checklist
PROCESS - BEHAVIOR

<table>
<thead>
<tr>
<th>Product</th>
<th>Organization</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Form</td>
<td>Behavior</td>
</tr>
</tbody>
</table>

Product:
- Security
- Faculty
- Lounges
- Public
- Office
- Student
- Atrium
- Spaces
- Public
- Leisure
- Technical

Organization:
- Overall Form
- Express Project
- Structural

Process:
- facebook
- GoToMeeting
- Skype
- Asynchronous
- Instant
- Google Docs
IMPROVING PERFORMANCE VIA COMMUNICATION

Biomimicry Integration: How can we improve the integration of termite mound to our building features and façade?
COMMUNICATION - SOFTWARE
<table>
<thead>
<tr>
<th>WHAT IS “POP”?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Function</th>
<th>Product</th>
<th>Organization</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form</strong></td>
<td><img src="image1" alt="Product Form" /></td>
<td><img src="image2" alt="Organization Form" /></td>
<td><img src="image3" alt="Process Form" /></td>
</tr>
<tr>
<td><strong>Behavior</strong></td>
<td><img src="image4" alt="Product Behavior" /></td>
<td><img src="image5" alt="Organization Behavior" /></td>
<td><img src="image6" alt="Process Behavior" /></td>
</tr>
</tbody>
</table>
TERMITE MOUND FEATURES

Natural Ventilation

Communal & Flexible Colony Home

Termites Regulate Temperature

Energy Efficient Buildings

Foster Social & Collaborative Space

Operable Vents & Fenestration
<table>
<thead>
<tr>
<th>Natural Ventilation</th>
<th>Communal &amp; Flexible Home</th>
<th>Termites Regulate Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Checkmark" /></td>
<td><img src="image2" alt="Checkmark" /></td>
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<tr>
<td><img src="image7" alt="Checkmark" /></td>
<td><img src="image8" alt="Checkmark" /></td>
<td><img src="image9" alt="Checkmark" /></td>
</tr>
</tbody>
</table>

**BIOMIMICRY – TERMITE MOUND**
THANK YOU!
There comes a time when you have to stop making changes. You have less time than you think. We are always pushing the boundaries of what we can do. Remember the big picture! Eye on the prize! Every individual decision should benefit the team.