TRANSCEND

JAMES BLANCHARD, LILIAN CAO, NICHOLAS HORANEOY, HUNTER MOSIER, CORY PETERMAN.

ARCH 452_ARCE415

CALIFORNIA POLYTECHNIC STATE UNIVERSITY
SAN LUIS OBISPO, CALIFORNIA 2018.
01 SITE ANALYSIS
02 BUILDING DESIGN
03 LIGHTING DESIGN
04 STRUCTURAL ANALYSIS
05 CONCEPTS
06 CONSTRUCTION
07 MODEL IMAGES
Driven by the site’s environment and culture, our design intent is to embrace the people’s belief in the spiritual marriage of the surrounding mountains and the volcanically heated onsen.
TOPOGRAPHICAL POINTS OF SITE
SHIFT CONTROL POINTS ACCORDING TO DESIGN
APEX DETERMINED CORRESPONDING TO PROGRAM
CREATE LEVELED FOOTING
DRAPED SURFACE OVER CURVES
SMOOTH SURFACE

FORM GENERATION
MCNEEL RHINOCEROS

FLOOR PLAN

1. ENTRY LOBBY
2. MEN’S CHANGING ROOM
3. MEN’S OUTDOOR BATH
4. MEN’S INDOOR BATH
5. WOMEN’S CHANGING ROOM
6. WOMEN’S INDOOR BATH
7. WOMEN’S OUTDOOR BATH

0' 25' 50'

ENTRY LOBBY
MEN’S CHANGING ROOM
MEN’S OUTDOOR BATH
MEN’S INDOOR BATH
WOMEN’S CHANGING ROOM
WOMEN’S INDOOR BATH
WOMEN’S OUTDOOR BATH

1 2 3 4 5 6 7
SECTION 02

WOMEN’S BATHS
WOMEN’S CHANGING ROOM
MEN’S BATHS
MEN’S CHANGING ROOM

02 SECTION PERSPECTIVE

VIEW TO MOUNT ASAMA
TRANSCENDING CEILING HEIGHTS TO VIEWS
VIEW TO MOUNT HAKONE
THIN OCULUS EDGE

LIP TO REROUTE RAINWATER

LIGHTING DESIGN

OCULUS

03

OCULUS DETAIL

WIRE MESH REINFORCEMENT

SCREW CONNECTION TO CONCRETE SHELL

ACRYLIC OCULUS COVER

CONTINUOUS REINFORCEMENT AROUND OCULUS CIRCUMFERENCE
OCULUS CONNECTION DETAIL

1. THREADED BOLT CONNECTION WITH TWISTING HEADS
2. ACRYLIC OCULUS COVER

SOL GROTTO
RAEL SAN FRATELLO
BERKELEY BOTANICAL GARDEN
LIGHTING DESIGN

PLAN VIEW

03

1'-6" S.O.G.

METAL GRATING FOR DRAINAGE

RESTING BED OF GRAVEL WITH L.E.D. LIGHTING EMBEDDED

2" DIAMETER TRANSPARENT TUBES

Indicates 6' Clear Head Space

Acrylic Lighting Tubes

Scale: 1" = 2'
COMPRESSED SAND

COMPRESSED GRAVEL

SLAB

FOOTING AT MIN. 8'-0" FROM TO.G.
04 STRUCTURAL ANALYSIS

GRAVITY ANALYSIS

Avg. Gravity Shell Stresses ~ 30 PSI

MESH
BUCKLING ANALYSIS
SAFETY FACTOR: 11.49

*ALL NUMERICAL VALUES IN PSI

RESPONSE SPECTRUM ANALYSIS
SDS: 1.52
STRUCTURAL ANALYSIS
TIME HISTORY

TIME HISTORY ANALYSIS
NORTHRIDGE EARTHQUAKE GROUND MOTION

NORTH RIDGE EARTHQUAKE GROUND MOTION

CONCEPTS
EXTERIOR BATHS

MEN’S CHANGING ROOM
<table>
<thead>
<tr>
<th>Material</th>
<th>Amount</th>
<th>Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot; plywood sheet</td>
<td>1,500 sq ft</td>
<td>$340</td>
</tr>
<tr>
<td>5mm roofing membrane</td>
<td>14,800 sq ft</td>
<td>$784</td>
</tr>
<tr>
<td>Recycled material</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Aluminum scaffolding (rental)</td>
<td>50 qty</td>
<td>$42,300</td>
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<tr>
<td>Soil</td>
<td>750 cy</td>
<td>N/A</td>
</tr>
<tr>
<td>Concrete</td>
<td>400 cy</td>
<td>$26,000</td>
</tr>
<tr>
<td>Glass tubes</td>
<td>400 ct</td>
<td>$2,400</td>
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</tbody>
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**Hakone Construction**

<table>
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<tr>
<th>Material</th>
<th>Amount</th>
<th>Cost Estimate</th>
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<tbody>
<tr>
<td>4'x8' cardboard</td>
<td>28 sheets</td>
<td>DONATED</td>
</tr>
<tr>
<td>3.5 mm plastic membrane</td>
<td>100 sq ft</td>
<td>DONATED</td>
</tr>
<tr>
<td>Sand</td>
<td>2 cy</td>
<td>DONATED</td>
</tr>
<tr>
<td>Concrete</td>
<td>0.5 cy</td>
<td>DONATED</td>
</tr>
<tr>
<td>2x3 lumber (formwork)</td>
<td>8</td>
<td>$30</td>
</tr>
<tr>
<td>2x6 lumber (formwork)</td>
<td>8</td>
<td>$76</td>
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**Cal Poly Construction**
1. MEMBRANE
2. CONCRETE SHELL
3. SOIL
4. PLATFORM

HAKONE CONSTRUCTION
PROPOSED METHOD
Pallet Substitution for Scaffolding

Cardboard Waffle Grid Substitution for Plywood

Filling Waffle Voids with Sand

Attached Edges to Retain Sand
SMOOTHED SAND SURFACE

APPLICATION OF PLASTIC MEMBRANE

CONCRETE IS APPLIED WITH WIRE MESH AS REINFORCEMENT

CONCRETE IS SMOOTHED AND FINISHED FOR CURING
CURED CONCRETE SHELL

FORMWORK REMOVAL

FORMWORK REMOVED AND SUPPORT BEAMS ARE PLACED

LIGHTING PREPARED FOR INSTALLATION

MODELS
CAL POLY SCALE

07

MODEL
CAL POLY SCALE

07