Some Sustainable Strategies

1. **DAYLIGHTING**
   Artificial lighting is one of the major users of electricity in non-residential buildings. By the use of daylight harvesting, this use of energy can be dramatically reduced. All that is required are large window areas, narrow floor plates that allow daylight penetration from both sides of the space, and light shelves that help bounce daylight deeper into interior spaces.

2. **NATURAL VENTILATION**
   The same building characteristics that support natural daylighting also work for natural ventilation - with the addition of operable windows. Such ventilating windows work best when they are positioned low on one side of a space and high on the opposite side.

3. **GREEN ROOFS**
   One of the most potent strategies for sustainability is the green roof. Green roofs can do several things at once. They save energy, reduce run-off, offset urban heat islands, provide green open space for users, enhance views, and provide new habitat for wildlife. In the context of the Kentfield campus of the College of Marin, green roofs promote and confirm the nature of the campus as an arboretum. Green roofs are a highly visible manifestation of the College's commitment to sustainability.

Other Characteristics:
- Green roofs last twice as long as conventional roofs.
- Storm water retention rate of green roofs is up to six times greater than that of conventional roofs.
- The heat loss of a green roof as compared to a conventional roof is 18% less.
- The temperature of a conventional roof membrane on a 95°F day is 158°F. On the same day, the temperature of a green roof membrane is 77°F.
- In the context of LEED Certification, Green Roofs can aggregate up to 11 LEED points.
Green Roofs

Throughout the United States (including the Bay Area), the strategy of incorporating green roofs in sustainable architecture follows a long tradition in Europe. There are examples of current and proposed green roof projects that have or will reap the multiple benefits of green roof systems.
Concept Scheme 1

- Concept scheme 1 follows the axis of the existing Performing Arts Building and is organized as follows:

- Arts Plaza Level (ground floor)
  - An addition to the existing Performing Arts Building houses a new lobby/box office and a new, separate fine arts gallery. Together these elements create a new façade for the Performing Arts Building.
  - The ceramics studio, sculpture studios, wood and metal shops are housed in a one-story volume adjacent to a kiln and foundry yard.
  - A pedestrian path separates that sculpture/ceramics area from a smaller one story volume to the southwest which houses the Arts Department administration, the jewelry and photography studios, and the computer lab.
  - A ‘green roof’ extends over all of the one story volumes.

- Upper Levels
  - A two-story volume is arranged at the northeast side of the arts plaza. This volume is raised one story above the arts plaza to create an entry gateway from Circle Drive and to provide light and direct access to the green roof. This volume houses the Architecture and Design studios at the green roof level and the painting, drawing and printmaking studios on the level above.

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Concept Scheme 1 Analysis

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Clear organization</td>
<td>- Sub-optimal solar orientation</td>
</tr>
<tr>
<td>+ Functional layout OK</td>
<td>- Redwood trees block light &amp; view</td>
</tr>
<tr>
<td></td>
<td>- Awkward pedestrian approach from center campus</td>
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<tr>
<td></td>
<td>- Doesn’t take full advantage of redwood grove amenity</td>
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Concept Scheme 2

- Concept scheme 2 is organized as follows:

- Arts Plaza Level (ground floor) follows a similar layout to concept scheme 1
  - An addition to the existing Performing Arts Building houses a new lobby/box office and art gallery.
  - The ceramics studio, sculpture studios, wood and metal shops are housed in a one-story volume adjacent to a kiln and foundry yard.
  - A pedestrian path separates the sculpture/ceramics area from a smaller one-story volume to the southwest which houses the administration, jewelry and photography studios, and the computer lab.
  - A 'green roof' extends entirely over the one story volumes.

- Upper Levels
  - The two-story volume above is rotated to align with the preferred east-west access, allowing the studios improved southern views to Mt. Tam and improved north light.
  - This volume, similar to scheme 1, houses the architecture and design studios, and the painting, drawing and printmaking studios.

<table>
<thead>
<tr>
<th>Advantages</th>
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</tr>
</thead>
<tbody>
<tr>
<td>+ Clear organization</td>
<td>- Awkward relationship between one story volume and studio volume above</td>
</tr>
<tr>
<td>+ Functional layout OK</td>
<td>- Awkward pedestrian approach from center campus</td>
</tr>
<tr>
<td>+ Improved orientation for the studio building</td>
<td>- Relationship to redwood grove amenity improved but not optimum</td>
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<tr>
<td>+ Trees no longer block light and view</td>
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7 Concept Scheme 3

- Concept scheme 3 is organized as follows:
- Arts Plaza Level (ground floor)
  ◦ An addition to the existing Performing Arts Building houses a new lobby/box office and art gallery.
  ◦ The one-story volume housing the ceramics studio, sculpture studios, wood and metal shops, jewelry, computer, and photography areas are rotated to align with the studio volume above.
  ◦ A circular wall surrounds the one story volume and the adjacent kiln and foundry yard area with truck access from Circle Drive below the studio wing above.
  ◦ A ‘green roof’ extends entirely over the one story volumes.
- Upper Levels
  ◦ As in scheme 2, the two-story volume above is rotated to align with the preferred east-west access, allowing the studios improved southern views to Mt. Tam and improved north light.
  ◦ This volume houses the architecture and design studios and the painting, drawing and printmaking studios.

<table>
<thead>
<tr>
<th>Concept Scheme 3 Analysis</th>
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</thead>
<tbody>
<tr>
<td><strong>Advantages</strong></td>
</tr>
<tr>
<td>+ Good Orientation</td>
</tr>
<tr>
<td>+ Trees no longer block light and view</td>
</tr>
<tr>
<td>+ Good relationship between one story volume and studio volume above</td>
</tr>
<tr>
<td>+ Direct connection to center campus</td>
</tr>
<tr>
<td>+ Complementary relationship between redwood grove, plaza and new green</td>
</tr>
<tr>
<td>+ Curved wall creates a gracious campus entrance to central green</td>
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</table>
Modular Planning
Flexibility for a variety of uses
Coordination of columns, walls & partitions
Combined for large open labs
Subdivided for small instrument or special-use labs

Integrated Systems Coordination
Lab piped services
HVAC
Fume Hood Exhaust
Power & Signal Cables

2.11 Anatomy Teaching Lab - Life & Earth Sciences
1.21 Chemistry Prep Room / 1.24 Chemistry Stock Room - Physical Sciences
5.11 Skill Lab & Nursing Stations - Health Sciences
March 27, 2007
Science/Math/Central Plant Complex – Inspiration Sketch