The Use of Green Building Materials in Construction and their Impact on Rating Systems

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Green Technologies FZCO
M&E AND SUSTAINABILITY SOLUTIONS – CONCEPT TO COMPLETION
THE GLOBAL GREEN DRIVE

World Initiative

UN Secretary General Ban Ki-moon: "Sustainability is the most promising path forward...

Corporate Initiatives

- Wal-mart
- Starbucks
- Timberland
- Microsoft
- WIPRO
- Tesco
- Samsung

UAE Initiative

"The fact that a separate category has been introduced for Corporate Social Responsibility is testimony to our leadership's commitment to make social and environmental sustainability an integral part of business excellence."

- Sheik Mohammad.
KEY ENVIRONMENTAL CHALLENGES

- Anomalous Climate Change
- Natural Resource Depletion
- Atmospheric Pollution and Acid Rain
- Contamination of Freshwater Resources
- Soil Erosion and Degradation
- Loss of Biodiversity
GREEN BUILDING
AN IMPORTANT PART OF THE SOLUTION
ENVIRONMENTAL IMPACT MATERIALS

- Embodied Energy
- Material Performance
ENVIRONMENTAL IMPACT MATERIALS

- Embodied Energy
- Material Performance
- Waste Management
- Recycled Content
- Regional Material
- Rapidly Renewable Material
- Certified Wood
- Low VOC Materials
### Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable Sites</td>
<td>21</td>
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<tr>
<td>Water Efficiency</td>
<td>11</td>
</tr>
<tr>
<td>Energy &amp; Atmosphere</td>
<td>37</td>
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<tr>
<td>Materials &amp; Resources</td>
<td>14</td>
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<tr>
<td>Indoor Environmental Quality</td>
<td>17</td>
</tr>
<tr>
<td>Innovation &amp; Design Process</td>
<td>6</td>
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<tr>
<td>Regional Priority Credits</td>
<td>4</td>
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</tbody>
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## Estidama Points Distribution

<table>
<thead>
<tr>
<th>Category</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Integrated Development Process</td>
<td>13</td>
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<td>Natural Systems</td>
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<tr>
<td>Livable Buildings: Outdoors</td>
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<tr>
<td>Livable Buildings: Indoors</td>
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<tr>
<td>Precious Water</td>
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<tr>
<td>Resourceful Energy</td>
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</tr>
<tr>
<td>Stewarding Materials</td>
<td>28</td>
</tr>
<tr>
<td>Innovative Practice</td>
<td>3</td>
</tr>
</tbody>
</table>
% of Credits for Material Component for LEED

- **2000**
  - Kandalama Hotel, Dambulla, Sri Lanka - LEED Bronze; 2000
  - Sabah Al Ahmad International Financial Center, Kuwait - LEED Pre-Certified
  - DIFC Lighthouse, Dubai, UAE

- **2006**
  - WAFI City DCCP One, Dubai, UAE - LEED Gold; 2008
  - Dubai Trade Centre District Phase 1, Dubai, UAE - LEED Pre-Certified
  - Qatar Foundation Student Housing; Doha, Qatar

- **2012**
  - Doha, Qatar
  - 3M Customer Technical Centre, Dubai, UAE - LEED Gold
  - RBS Middle East Shared Service Centre, Interiors, Dubai, UAE - LEED Gold; 2006
  - BAFCO Head Quarters and Showroom, Dubai, United Arab Emirates Pursuing LEED Platinum

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MATERIALS AND RESOURCES (14 POINTS)

- Prerequisite 1: Storage & Collection of Recyclables
- Credit 1: Building Reuse (4)
- Credit 2: Construction Waste Management (2)
- Credit 3: Materials Reuse (2)
- Credit 4: Recycled Content (2)
- Credit 5: Regional Materials (2)
- Credit 6: Rapidly Renewable Materials (1)
- Credit 7: Certified Wood (1)
Objective

To divert construction and demolition waste from disposal in landfills and incinerators with a view of achieving 50-75% diversion for the project scope.
Objective

To use building materials with high recycled content with a view to achieving 20% recycled content by cost for the scope of work.

Methodology and Systems

• Identify civil & architectural building materials (CSI Master Format 1995 division 2-10 only) cost. Focus on the high value items; need to have high recycled content (post consumer and pre-consumer)

• Refer to contract specification with regard to specification for related items to ensure compliance to project requirements including LEED requirements.

• Confirm availability of materials with procurement schedule.

• A preliminary cost base with the available BOQ. Exclude labour and MEP component to get the baseline. For consistency, we propose using the LEED default value of 0.45 (hardcost for CSI Master Format 1995 division 2-10 only)
MRc5: Regional Materials (2 Points)

Objective
To use building materials with high regional content (both extracted and manufactured) with a view to achieving 20% regional content by cost for the scope of work.

Methodology and Systems

• Identify civil & architectural building materials (CSI Master Format 1995 division 2-10 only) cost. Focus on the high value items; need to have high regional content.

• Refer to contract specification 1-? with regard to specification for related items to ensure compliance to all project requirements including LEED requirements.

• Confirm availability of materials with procurement schedule.
MRC6: Rapidly Renewable Materials (1 Point)

Objective

To use building materials with high rapidly renewable materials and achieve 2.5% rapidly renewable contents by cost as per LEED criteria for works within for the scope of work.

Methodology and Systems

- Design team from Qatar Foundation to specify application and use of rapidly renewable materials.
- Identify and use rapidly renewable materials from the design documents in the project.
- Refer to contract specification 1- with regard to specification for related items to ensure compliance to all project requirements including LEED requirements.
- Confirm availability of materials with procurement schedule.
Objective

To use 50% wood-based materials and products certified by FSC by cost in the building materials for the scope of work.

Methodology and Systems

- The Design team from Qatar Foundation to specify use of FSC certified wood.
- Identify use of wood and wood-based products which are FSC certified in the building material wherever possible, as pertaining to the material used in the permanent works.
- Refer to contract specification 1-? with regard to specification for related items to ensure compliance to all project requirements including LEED requirements.
- Confirm availability of materials with procurement schedule.
INDOOR ENVIRONMENTAL QUALITY (15 POINTS)

Prerequisite 1: Minimum IAQ Performance
Prerequisite 2: Environmental Tobacco Smoke Control
Credit 1: Outdoor Air Delivery Monitoring (1)
Credit 2: Increased Ventilation (1)
Credit 3: Construction IAQ Management Plan (2)
Credit 4: Low-Emitting Materials (4)
Credit 5: Indoor Chemical & Pollutant Source Control (1)
Credit 6: Controllability of Systems (2)
Credit 7: Thermal Comfort (2)
Credit 8: Daylight and Views (2)
Objective

To use low-emitting adhesives and sealants for interior application, reduce indoor air contaminants for achieving EQc4.1 credit.

Methodology and Systems

- Identify all adhesives and sealants requirements for indoor applications. This includes requirements for civil, architectural and MEP items.
- Verify with VOC Master Log page 131-154 of for products identification and their corresponding VOC limits in g/L.
- All interior applied materials must be compliant.
- Obtain confirmation from vendors in cut sheet or letter of product’s VOC content to demonstrate compliance.
Objective

To use low-emitting paints and coatings for interior application, reduce indoor air contaminants for achieving EQc4.2 credit.

Methodology and Systems

• Identify all paints and coatings requirements for indoor applications. This includes requirements for civil, architectural and MEP items.

• Verify with VOC Master Log page 131-154 of for products identification and their corresponding VOC limits in g/L.

• All interior applied materials must be compliant.

• Obtain confirmation from vendors in cut sheet or letter of product’s VOC content to demonstrate compliance.
EQc4.3: Low Emitting Materials – Carpet System (1 Point)

Objective

To use low-emitting carpet system for interior application, reduce indoor air contaminants for achieving EQc4.3 credit.

Methodology and Systems

- Identify all carpet system requirements for indoor applications. This includes requirements for civil, architectural and MEP items.
- Verify with VOC Master Log page 131-154 of for products identification and their corresponding VOC limits in g/L for carpet adhesives.
- All interior carpet system must be compliant to CRI Green Label plus program
- Obtain confirmation from vendors in cut sheet or letter of CRI Green Label plus compliance of carpet system and carpet adhesives’ VOC content to demonstrate compliance.
Objective
To use low-emitting composite wood and agrifiber products, with no added urea formaldehyde for interior application, to achieve EQc4.4 credit.

Methodology and Systems

- Identify all composite wood and agrifiber products for indoor applications.
- Verify with VOC Master Log page 131-154 of for products identification.
- All interior applied materials must be compliant.
- Obtain confirmation from vendors in cut sheet or letter that products do not contain any added urea formaldehyde.
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Thank You

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