Sustainable Building Materials
Sustainable building materials

Natural resource consumption

Embodyed energy  Operational energy
Production of building material consumes more than 150 million tons of coal equivalent/year and around 22% of the total CO2 emissions of the country are attributed to building materials production.

Iron and Steel production uses 19% energy produced and 25% of the industrial carbon output in India.

The Indian iron and steel sector's energy consumption of 6.6 GCal per tonne, is 50 per cent higher than the global best practice.

Ref:
Prof BVV Reddy, IISc, Bangalore
www.ebtc.eu
http://articles.economictimes.indiatimes.com/2012-06-04
criteria's used to identify sustainable building materials within a given context

Embodied energy: - sourcing, processing and transportation

Operational energy – building envelope, climate and thermal comfort

Human skill development and social equity

Environmental impact during its life-cycle
MATERIALS AND TECHNIQUES

• foundations
• beams – plinth
• walling
• lintels
• roofing
• staircases
• windows – shading and overhangs
• finishes – walls, floors and wet areas
PLINTH BEAMS WITH BRICK WORK SHUTTERING
TIES- FOUNDATIONS, PLINTH BEAM AND WALLS
WALLS IN EARTH
RAMMED EARTH WALLS
Walling with waste cuddapah stone strips
Walling with rammed earth and waste cuddapah stone strips
Walling and jack arches in low fired thin bricks with lime mortar
BUILDINGS IN CSCB

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RATTRAP BOND WALLS IN FIRED BRICKS
rat trap bond brick work in stabilized earth mortar
pointing of exposed brick work in stabilized earth mortar
VERTICAL AND HORIZONTAL TIES WITHIN THE RAT TRAP BOND BRICK WORK AS PER THE SEISMIC ZONE REGULATION
WALLS WITH AEROCON BLOCKS – INSULATION
FAÇADE ANGLED FOR MAXIMIZING SHADING
ARCHES AND CORBELLING FOR OPENINGS
ferrocement used as lost shuttering for rcc lintels
ferrocement roofing channels
applications of ferrocement technology
ferrocement doubly curved shells
Ferrocement pan shell roofing
prefabricated rcc rafters for tile roofs
prefabricated rcc rafters for tile roofs
rcc filler slabs
Vault in country bricks – 6 meters span
Vault in country bricks – 6 meters span
Domes in CSCB
Roofing in thatch
Recycled tiles
pre-fab staircases in rcc and ferrocement
pre-fab staircases in rcc and ferrocement

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staircases up-cycled wood
window shading methods and materials
shading – pergolas, fins and overhangs

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courtyard shading with fabric
FINISHES

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Thank you