

SITE HARDSCAPING & LANDSCAPING

Build only what you need and plan for any future additions to achieve lower costs, resources, maintenance and waste.

Deconstruct instead of demolishing. Salvage and reuse materials on project or sell to salvage yards. Recycle job waste.

Use recycled aggregate for walkways, patios & driveways. Consider using permeable materials such as pavers, permeable concrete or recycled materials on a sandbed. Shade hardscaping as much as possible.

Protect native soils and existing plants & trees. Plant native drought tolerant plants and trees. Minimize turf areas that need irrigation. Plant deciduous shade trees for protection in warm climates. Use non-deciduous trees to buffer winds in cool climates. Use fire safe landscaping techniques for high-risk fire areas.

Install high efficient irrigation systems – start irrigation at top of sloped areas. Use temporary irrigation to start native drought tolerant plants.

Use on-site water catchment/retention systems or cisterns for collecting water for irrigation. Keep accumulated water from running out to the street.

PASSIVE DESIGN NATURAL HEATING & COOLING MOST IMPORTANT SUSTAINABLE DESIGN/BUILD PRINCIPLE.

Orient house on an east-west axis so longer exterior walls face north and south. Place rooms requiring heat like the living areas on south side and low heat rooms like bedrooms on north side. Locate most of the glazing between southeast, south, southwest orientation.

Design for sun penetration into the building interior in winter and reduce sun penetration in the summer with the use of eave/roof design, retractable/movable awnings/fins, exterior blinds and deciduous trees.

Use thermal massive materials like concrete, stone or thick plaster on exterior south and west walls & on interior walls & floors receiving direct sunlight to help with radiant heating.

Provide interior thermal window coverings like heavy fabric or thermal blinds on windows in winter months and at night.

Design windows to catch the prevailing breezes for cross ventilation. Provide ventilating windows or vents near floor & ceiling to move air naturally - the “thermosyphon” effect.

Install ENERGY STAR ceiling fans with CFLs (compact fluorescent lamps) in rooms for natural cooling.

Install skylights or solar tubes for more natural day-lighting. Cover at night in night-light sensitive areas & jurisdictions.

FOUNDATION

Use fly ash in concrete & recycled materials for aggregate. Reuse concrete forms. Insulate foundation before backfilling. For subterranean walls & floors, use French drains to guide water to other areas on site for irrigation.

STRUCTURAL FRAME

Use solid wall systems such as SIPs (Structural Insulated Panels), ICFs (Insulated Concrete Forms), AAC (aerated autoclaved concrete), rammed earth or straw bale.

Use recycled content steel for steel based structural systems.

Use Engineered Lumber for wood based structural systems. Use finger jointed or engineered wood studs for wall framing @ 24” OC. This also allows for more insulation.

Use web floor trusses for long span floor joists. Use energy heels on roof trusses to accommodate full height insulation installation.

Use FSC (Forest Stewardship Council) certified wood.

Use OSB (Oriented Strand Board) for sub-floor, wall and roof sheathing for less out-gassing.

Use reclaimed lumber for non-structural applications.

Create an airtight barrier between garage and house. Install solar generated garage fans.

Consider modular designs to reduce waste and traffic.

EXTERIOR FINISH

Consider recycling on-site materials that will last the lifetime of the building and/or are recyclable.

For decks and fences, use recycled plastic content or composite lumber materials.

Use treated wood that does not contain chromium, CCA or arsenic for decking and sill plates. For wood preservation use wood treated with borax.

If using siding, use composite or fiber cement siding materials. Install house wrap under siding.

If using stucco, use color integrated exterior plaster.

Select durable, non-combustible roofing materials. Use light colored roofs & reflective foil insulation for hot, sunny areas.

Create wall ventilation like rain screen wall systems between siding & wall structure to reduce rot & mold.

Consider recycled content roof tiles or a vegetation-covered roof.

INSULATION

Use recycled content, low VOC insulations such as recycled glass fiber, recycled cotton, cellulose or sprayed polyurethane foam insulations. *Recycled cotton batt and spray on foam insulation have high acoustic value.*

Install roof insulation at roof, not at ceiling level to create a conditioned attic space for ductwork. Install radiant barrier roof sheathing in warm sunny climates. Install floor insulation over crawl spaces.

Install insulation correctly – filling every cavity. Seal and caulk all penetrations in walls, floors and roofs including doors, windows, pipes and such.

WINDOWS & DOORS

Install energy efficient windows that include double-paned, low-e tints, and low-conductive frames. Use low SHGC (solar heat gain coefficient) on single pane glazing.

If using metal windows, use thermally-broken window frames to reduce heat/cold conductivity.

Use urea-formaldehyde free wood veneer doors.

Where possible, use glazed doors throughout the interior to allow natural light to penetrate through the house.

INTERIOR FINISHES

Expose the structure to eliminate the need for additional finishes. Use architectural grade beams & woodwork. Use maintenance free materials like stone, glass, & concrete.

Use low or Zero-VOC (volatile organic compounds) wood finishes, adhesives, sealants and paints. Consider recycled paints.

Use recycled content drywall.

Use formaldehyde-free medium density fiberboard or wheat board for cabinet boxes.

Use FSC certified materials or bamboo for cabinetry and interior woodwork. Use finger jointed material for painted wood finishes. Use recycled content materials for bathroom and kitchen counters and walls

Use exterior grade plywood for interior walls and floors for less off gassing. Seal all particleboard and MDF Board to reduce formaldehyde off gassing.

Install whole house vacuum system & vent dust to outside.

FLOORING

Provide walk-off mats and shoe storage at building entrances to keep interiors cleaner.

Install sustainable materials like bamboo, cork, recycled content tiles, rubber, natural linoleum, wool carpet or low-VOC recycled content carpet. Use low-VOC recycled content for under carpet pad/underlayment. Use low VOC & low-formaldehyde products, adhesives, sealants & finishes.

Consider exposed concrete as the finished floor.

For wood floors use FSC certified products.

APPLIANCES

Install ENERGY STAR appliances. Check for rebates.

Install Low-Sone (noise) Range Hood, vented to the outside.

ELECTRICAL

Use LED (light emitting diodes) lighting or lighting fixtures that can accommodate compact fluorescent light bulbs.

Use air-tight recessed lighting fixtures with CFLs (compact fluorescent lamps) to lessen loss of heat to attic.

Install lighting controls such as dimmers and timers. Use door hinge switches for storage rooms and closets.

Consider pre-wiring for Photovoltaic panels.

PLUMBING

Use water heaters with an energy factor >0.62 or use on-demand hot water circulating water system or locate water heater within 25 feet of fixtures or use an engineered parallel piping water system. Distribute hot water efficiently.

Install a tankless water heater for low use or vacation homes.

Insulate all hot water pipes and water heaters (water heater jacket)

Install whole house water filter and faucets & showerheads with flow reducers and water chlorine/mineral filters.

Consider heat reclamation GFX exchangers on all high use showers.

Use high efficiency toilets. Some come with a dual flush system.

Consider pre-plumbing for solar water heating

H V A C – Heating, Ventilating & Air Conditioning

Install zoned, hydronic or electric radiant heating with slab edge insulation. Use renewable solar energy if possible.

If considering wall heaters, use through-the-wall heat pumps instead of wall-mounted electric or gas heaters.

Design and install effective and efficient ductwork. Clean, seal and insulate all ductwork. Maintain pressure balance in ductwork.

Install sealed combustion (direct vent) furnaces & water heaters..

Install high efficiency furnace of AFUE (annual fuel utilization efficiency) of 90% or higher.

Design and install HAVC systems to ACCA (Air Conditioning Contractors of America) recommendations.

Install high efficiency HVAC filters. Change or clean often. Place equipment so it is easy to access filters.

Install efficient gas fireplaces that meet the Natural Resources Canada efficiency standards. Use EPA certified wood stoves instead of wood burning fireplaces.

Try passive ventilations systems before installing air-conditioning. Use whole house fans in temperate climates. If AC is needed, install a high efficiency air conditioner with a SEER (seasonal energy efficiency ratio) of >13 and EER (energy efficient ratio) of 11 with a TXV (thermostatic-expansion valve. Install air-conditioning with non-HCFC (hydrochlorofluorocarbon) refrigerants.

RENEWABLE ENERGY SYSTEMS

Install solar PV (photovoltaic) panels.

Install a wind turbine. There are many kinds that are small.

Install a solar water heater.

Install a Geo-Exchange System to transfer heat to and from the earth.

Federal, state, and local incentives are typically available to either directly reduce the initial cost of a renewable energy system, or provide for tax savings, or provide rebates, or a combination of these incentives.

RESOURCES:

Monterey Bay Chapter of the American Institute of Architects
www.aiamontereybay.org

United States Green Building Council – Northern California Chapter
www.usgbc-ncc.org

Build It Green
www.builditgreen.org

Forest Stewardship Council
www.fscus.org

Building Material Reuse Association
www.buildingreuse.org

Monterey Regional Waste Management Dist.
www.mrwmd.org

Monterey Water Management District
www.mpwmd.dst.ca.us

State of California Energy Commission
www.energy.ca.gov

PG&E Pacific Energy Center
www.pge.com/pec

Monterey Bay Chapter of the American Institute of Architects

THE “GREEN” SHEET

SUSTAINABLE “GREEN” RECOMMENDATIONS FOR NEW AND EXISTING RESIDENCES LOCATED IN

MONTEREY COUNTY

Sustainable Residential Design & Building:

Providing the residential needs of the present generation with out compromising the needs of future generations.

5 CONSIDERATIONS OF BUILDING MATERIALS:

How much energy & pollution is expended in the manufacturing or harvesting of the material?

How much energy & pollution is expended in transporting the material to the project site?

How much of a health hazard is the material to install and/or to live with?

How much longevity & durability does the material have during the lifetime of the building?

How much energy & pollution is expended to break the material down or to recycle it when it has finished its life?

Check with local building jurisdictions and prevailing codes before implementing any of these recommendations