



**City of Monterey
Green Building Program**

Green Building Glossary

June, 2008

There are a number of terms in the Green Building Check Lists that you may not be familiar with. Use this glossary for an explanation of terms for both residential and non-residential applications.

Adhesive: Any substance that is used to bond one surface to another surface by attachment. Adhesives include adhesive bonding primers, adhesive primers, adhesive primers for plastics, and any other primer.

Advanced Framing Techniques: Also, called Optimum Value Engineering (OVE), is a methodology of construction designed to conserve construction materials by using alternative framing methods. Concepts include framing on 24” centers, modular layout, single top plates, individually sized (right sized) headers or no headers or double rim joists in lieu of headers, framing ladders at T-intersections and open corner framing. Some methods may not work in engineered structures, but many will. The overall savings in framing materials and associated costs can be significant. An excellent website that describes in detail the concept is www.toolbase.org.

AFUE: Annual Fuel Utilization Efficiency. The higher the percentage the greater the efficiency of the appliance. Standard efficiencies run in the mid 70% range. Higher efficiency furnaces run between 82 and 90+ %AFUE.

Alternative Fuel Vehicle: Vehicles which utilize fuel other than gasoline or diesel fuels. Vehicles may be electric, LPG, natural gas, bio-diesel or a hybrid of these fuels.

ASHRAE: American Society of Heating, Refrigeration and Air Conditioning Engineers. This organization writes many of the standards for installation of these systems.

Balancing Dampers: Regulate fresh air flows to specific rates.

Bedroom: For the purposes of the home size adjuster, any room or space that could be used or is intended to be used for sleeping purposes and meets local fire and building code requirements.

Build It Green: Build It Green is a non-profit membership organization whose mission is to promote healthy, durable, energy and resource-efficient building practices in California. Visit www.builditgreen.org.

Borate: Borate is used as a wood preservative that is non-toxic to humans but highly toxic for wood boring insects like termites.

Brownfield: Abandoned, idle or underused industrial or commercial buildings where expansion or development is complicated by real or perceived environmental contamination.

Built Environment: The man-made creation of, or alterations to, a specific area, including the environment where those changes are made. On a home site, this includes everything that has been disturbed during construction.

Charrette: An intensive, collaborative session in which the project team discusses various design options related to all aspects of home construction.

Chlorofluorocarbons: (CFCs) are hydrocarbons that deplete the stratospheric ozone layer.

CIR (Credit Interpretation Requests): A request for the clarification on certain credits the design team may have questions about. The CIRs should be submitted to the Provider who will then bring them to the attention of a TASC (Technical Advising Sub-Committee).

Circulation Loop: A system that loops cold water back to the water heater (instead of down the drain) until hot water reaches the faucet. This is the primary component of a structured plumbing system.

Central Vacuum System: Network of tubing with inlets throughout the house designed to remove debris to an out of the way receptacle. A central vacuum system is more efficient at the removal of dust and debris than traditional vacuums.

Closed Combustion: A design for combustion equipment (e.g. furnaces, water heaters) in which the air provided to the combustion equipment is ducted from the outside, and all exhaust gases are ducted directly to the outdoors. All elements of the system are sealed to prevent leakage of combustion exhaust into the home.

Combustion Exhaust Gases: The most common gases resulting from fossil fuel combustion include carbon dioxide, sulfur dioxide, and a number of sulfur dioxides. These gases can be dangerous if allowed to build up indoors.

Compensating Shower Valves: compensating valves are designed to keep bathing water temperature in the shower fairly constant when other appliances such as a washing machine or toilet are in use and when the hot or cold water supply pressures change or the bathing water outlet temperatures changes.

These types of valves are available:

Thermostatic Compensating Valves are designed to keep bathing water temperatures in the shower fairly constant when other appliances such as a washing machine or toilet are in use and when the hot or cold water supply pressures change or the bathing water outlet temperatures changes. The response of this type of mechanism is different to that of a pressure balance compensating valve.

Pressure Balance Compensating Valves are designed to keep bathing water temperature fairly constant when other appliances such as a washing machine or toilet are in use and when the hot or cold water supply pressures change.

Conventional, Non-Compensating Valves are completely dependent on the user to adjust the temperature at all times by changing the adjustment.

Composite Wood: A product consisting of wood or plant particles or fibers bonded together by a synthetic resin or binder. Examples include plywood, particle-board, OSB, MDF, and composite door cores.

Conditional Space: An interior space that utilizes any method or air conditioning or heating to control the temperature and/or humidity levels. CFA is generally used to determine a building's habitable floor area.

Conventional Turf: Grass that requires considerable watering, mowing, and/or fertilizers. What is considered conventional may vary by region, but turf should be classified as 'conventional' if it

is a monoculture and requires regular irrigation, chemicals, or significant mowing.

Cool Roof: Specialized roofing materials designed to reflect the heat of the sun away from building this reducing the cooling load and associated air conditioning costs. In Santa Cruz, because of our moderate climate there is less need for cool roofs than in a place like the central valley, however larger buildings can benefit from these roofing systems. The California Energy Code requires a cool roof to have a reflectance of .7 and an emissivity of .75.

Demand Controlled Circulation Pump: circulation pumps use looped systems to ensure hot water is immediately available while keeping unused cold water in the system. The demand controlled circulation pumps uses a switch or motion sensor to automatically activate the circulation of water, thus it saves water and energy.

Designed Landscape: traditional landscape features that have been incorporated into the home site. Designed landscape features may include soft-scapes (e.g. grass, shrubs) or hard-scapes (e.g. rocks, fountains), but do not include driveways or areas under roof. Designed landscape also does not include preserved natural areas.

Disturbed Lot Area: Area of the lot that is directly affected by construction activity, including any activity that would lead to soil compaction or damage to vegetation.

Diverted Waste: Waste from construction or demolition that is not sent to a landfill or incinerator. Strategies for diverting waste include reclamation, recycling, or for certain materials mulching.

Drip Irrigation System: An irrigation system that slowly applies water to the root system of plants to maximize transpiration while minimizing wasted water and topsoil runoff. Drip irrigation usually involves a network of pipes and valves that rest on the soil or underground at the root zone.

Drywall Clips: Provide support for drywall at corners while eliminating the need for excessive wood backing.

Dual-Flush Toilet: Toilets that have two different settings, usually 0.8 gallons for liquid removal and 1.6 gallons for full flush solid removal. On the average they use about 2500 gallons per year compared to a 1.6 single flush that uses about 4500 gallons per year.

Durability: The ability of building or any of its components to perform its required function in its service environment over the period of time without unforeseen cost for maintenance or repair.

Earthen Flooring: Earth that has been compacted with straw or other fibers and conditioned with various oils to form a hard surface. Fairly labor intensive, but relatively easy to repair and usually very low bodied energy and inexpensive materials.

EER- (see SEER)

Energy Heel Truss: An engineered roofing truss with an elevated portion at the wall plate line to provide for full depth insulation.

Engineered Lumber: Generally engineered lumber is construction materials designed to reduce the amount of material needed for framing a building. By designing away from full dimension

sawn lumber, less large growth trees need to be cut and smaller dimension lumber can be assembled in various configurations to span long distances with equal or superior strength. Trusses have always been a good example of engineered lumber by using smaller dimension lumber and distributing forces more efficiently, the materials needed are a fraction of that required to span the same distances with sawn lumber.

Energy Star: Introduced in 1992 by the U.S. Environmental Protection Agency (EPA) as a voluntary labeling program designed to identify and promote energy efficient products to help reduce greenhouse emissions by identifying energy efficient products. Originally designed for computers and monitors, it has now expanded to include office products, major appliances, lighting, home electronics and more. New expanded programs now also include complete buildings such as homes, commercial and industrial buildings.

Energy Star Home: Homes built to a high standard of energy efficiency (at least 15% more efficient than the International Energy Conservation Code). For more information, visit www.energystar.gov/homes.

Energy Star with Indoor Air Package (IAP): A certification that recognizes homes with systems to ensure high standards of indoor air quality and rated as an Energy Star Qualified Home.

Engineered Studs: A little different than engineered lumber, usually smaller diameter stock is shredded and reassembled by forming them into nominal sized framing materials. The material is combined with a binder and compressed into large billets that are then cut to dimensional size. Similar products have been around for many years in the form of oriented strand board (OSB) and other laminated wood beam products. An advantage of engineered studs is that they are dimensionally stable and less susceptible to warping. These studs are considerably heavier than sawn wood, cost about twice as much and may be subject to water damage.

Erosion: A combination of processes in which materials of the earth's surface are loosened, dissolved or worn away, and transported from one place to another by natural agents such as water, wind or gravity.

Finger Jointed Studs: Often the lumber being cut today is a shadow of the old growth lumber of yesterday in quality, density and overall suitability for construction. However, by conserving the shorter sections of lumber and removing the undesirable wane and knots, these sections can be fitted with special splicing techniques to form longer and more dimensionally stable lumber. The application is usually limited to vertical installation because of this splicing technique.

Flow Reducer: A device attached either just downstream from the water shutoff valve to a building or at the outlet of a fixture designed to reduce or limit the amount of water flow in relation to the delivery pressure from the street. Flow reducers can cut the flow of water dramatically saving thousands of gallons each year in a dwelling or even more in larger buildings. Flow reducers are never installed on automatic fire extinguishing systems for obvious reasons.

Flyash: A byproduct of a coal burning furnace, usually from power generation equipment. Consisting mostly of silica, alumina and iron, and fine glass like particles. When mixed with lime and water it forms a cementitious material similar to Portland cement (a bonding material in concrete). The cement produced is hard, smooth and easily worked. Other uses include fills for abandoned coal mines, sealing liners for hazardous waste sites and seaside docking areas.

Formaldehyde: A naturally occurring VOC found in small amounts in animals and plants, but is an irritant to most people when present in high concentrations—causing headaches, dizziness, mental impairment, and other symptoms. Formaldehyde may be a carcinogen.

FSC Certified Wood: The Forest Stewardship Council is a non-profit organization that certifies various forests around the world exhibiting good sustainability and management practices based on specific management criteria. Using hybrid timber and advanced forestry methods, these forests produce a renewable source of lumber. Other forests are simply carefully managed to limit the impact on the environment.

Granny Flat: Another name for an accessory dwelling unit. Granny flats are usually associated as being attached to the main dwelling unit, but may also be detached. City regulations limit the number and size of these units.

Graywater: Waste water from lavatories, laundry, showers, baths and sinks only. This water can be stored in special equipment and may then be used to water lawns, gardens or other relatively benign non-potable uses such as groundwater recharge. Graywater systems must comply with the requirements of California Plumbing Code Appendix Chapter G to qualify as a green element. Water from toilets is called black water and is not eligible for any type of reuse under this program and must be properly drained to the sewer or septic system.

Green Power: Generally this is the production of electricity from environmentally friendly sources such as photovoltaic, geothermal, hydroelectric, biomass, hydrogen fuel cells, ocean energy and wind power. As with all forms of electricity generation, there are significant costs involved and in some cases undesirable byproducts such as vane noise and unsightly appearance or diversion of wild waterways. While large scale versions of these methods are not practical within an urban environment, many homes and businesses are taking advantage of solar systems that not only make electricity but also heat water and interior environments.

Green Rater: An individual that performs field inspections and performance testing for homes.

Green Roof: Essentially this is a growing roof system utilizing a specialized undercarriage for the waterproof membrane and excess water removal. Various types of vegetation are set into a special growing media and help to replace displaced vegetation in the building footprint as well as greatly reduce the heat island effect of a roof, especially in hot climates. Green roofs regulate the flow of excessive storm water by metering the release of the water from the roof area and can be utilized for watering requirements.

Hardscapes: Defined by the American Society of Landscape Architects as “elements added to a natural landscape, such as paving stones, gravel, walkways, irrigation systems, roads, retaining walls, sculpture, street amenities, fountains, and other mechanical features.” Hardscapes are often impermeable, but they are not impermeable by definition.

Heat Island Effect: As cities replace natural landscaping with streets, buildings and other infrastructure, the average ambient temperatures within these areas begin to rise, as much as 10 degrees F higher than less developed rural areas. This increases the need for cooling energy, can exacerbate pollution problems and may be contributing to the problem of global warming. Heat islands can be effectively reduced by shading streets with trees and improving the urban forest.

HERS index: A system for evaluating the energy efficiency of home using an energy simulation

model. The HERS index ranges from 0 to 100, where the index represents the percent energy use compared to a reference home that meets basic code requirements.

High Albedo Materials: Materials with a high amount of surface reflectivity.

High Efficiency Toilets (HET): Toilets that use no more than 1.3 gallons per flush.

HVAC: The acronym for Heating, Ventilation and Air Conditioning.

Hydro chlorofluorocarbons (HCFCs): Refrigerant used in building equipment that deplete the stratospheric ozone layer, but to a lesser extent than CFCs.

Hydronic System: A heating or cooling system that relies on the circulation of water as the heat transfer medium. A typical example is a boiler with hot water circulated through radiators.

Hydronic Radiant Heating: This is a system of heating a building by using a central boiler or hot water heater to distribute heat under a floor through a system of tubes just under the flooring surface. A single heater may be zoned to provide independent heat to different parts of a building as needed. The heating system is efficient and provides a comfortable conditioned room.

IAQ: The acronym for Indoor Air Quality. As buildings become tighter, indoor air quality suffers unless specific measures are taken to improve the exchange of fresh air without sacrificing heating/cooling economy.

Infiltration: This is the entrance of exterior unconditioned air to a building through various means into a building. Under the older codes, a dwelling generally had the equivalent of a fourfoot diameter hole in infiltration leakage. While newer buildings greatly improve this leakage, other problems such as poor indoor air quality and transpiration of moisture to internal stud bays can occurs and must be remedied with such items as air-to-air exchangers and specialized waterproofing techniques.

Insulated Concrete Form (ICF): Expanded polystyrene foam (EPS), high density polyethylene (HDPE), polyvinylchloride (PVC) or polycarbonate (PC) is cast or injection molded in various panel shapes and form the permanent forming method for reinforced concrete walls. These highly insulated forms have various thermal resistance values (R values) ranging from about R-22 up to about R-40. In hot or cold climates, these forms can significantly reduce heating and cooling loads. The panels are usually pre-engineered and produce a fire resistive barrier up to 4-hour rated.

Invasive: Defined by Executive Order 13112 as “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.” Not all non-native species are considered invasive. Invasive species differ by region, and can be identified through local and state agencies. A list of regional agencies is provided at www.invasivespeciesinfo.gov/unitedstates/state.shtml

Ladder Blocking: A method of framing that is used where interior partition walls meet and are reinforced by exterior walls. This eliminates unnecessary framing at these intersections.

Lean Building: Maximum performance with minimum material usage- see advanced framing technique use.

LEED: Leadership in Energy and Environmental Design. The LEED program was developed by the U.S. Green Building Council as a system for rating new and existing commercial, institutional and high-rise residential buildings. It evaluates the overall environmental performance during the lifecycle of a building and provides a tangible methodology for analyzing the standards of a green building. The version currently being used in the City of Santa Cruz Green Building Program is NC 2.1.

Light Fixture: A light system that is permanently fixed to the home, in the case of fluorescent light fixtures, the fixture includes an integrated ballast. A compact fluorescent lamp (CFL) is not a light fixture.

Light Pollution: Light pollution comes from many sources, but generally from unshielded lighting that allows light on a site to escape. Some lighting cannot be effectively reduced by shielding such as parking lot or street lights that reflect off of structures and bounce light away from the site. However, simple hooding of the “naked” light source directing the light to the ground or limiting its outward influence can significantly reduce light pollution.

Local Heat Island Effect: the incidence of higher air and surface temperatures caused by solar absorption and re-emission from roads, buildings and other structures.

Manufactured Locally: Generally this refers to products that are manufactured within a relatively short distance from the job site. Depending on who is making the definition, this can be within 100 to 1000 miles. The main intent is to be cognizant of long distance shipping and the energy expended and pollution created to move a product from greater distances.

MDF– Medium Density Fiberboard: An engineered panel product that can be used for such things as cabinets and wall panels while other MDF products can be shaped into moldings, ceiling tiles, flooring, interior doors and a variety of other uses. Exterior grades of MDF can be made into garage doors, sheds and other outdoor applications. A middle grade called “moisture resistant MDF” can be used externally but must be protected from water intrusion by sheltering.

MERV: The Minimum Efficiency Reporting Value is used to describe worst case performance of air filters.

Native Plants: Plants that have evolved within their own ecological habitats, and are not invasive within their own native ranges. Native plants provide food and shelter to indigenous wildlife, stabilize shorelines and fields, ect..., growing in balance with surrounding plant and animal species.

No-Disturbance Zones: An area that has no alterations or construction byproducts located within it, and has been designated to be preserved during construction.

Non-Residential: This project classification refers to commercial projects as well as residential projects consisting of three or more units, as defined in the California Building Code. Under Monterey’s Green Building Program, Non-Residential projects will utilize the U.S. Green Building Council’s LEED New Construction v2.2 guidelines for compliance.

Oriented Strand Board (OSB): a manufactured wood structural panel generally cut to the size of standard plywood sheets and in various thicknesses. It is made by chipping very specific species of wood from smaller growth trees and “orienting” the grain of these chips into a pattern that provides optimum strength in the panel. The chips are then saturated with glue and pressed

into production sizes.

Ozone Depletion: Destruction of the earth's ozone layer by the photolytic breakdown of chlorine and/or bromine containing compounds (chlorofluorocarbons or CFC's) which catalytically decomposes ozone molecules. Commonly used as refrigerants, CFC's have been found to damage the stratospheric ozone layer, creating holes and allowing harmful ultraviolet radiation to leak through.

Permeable Paving: Pavement that allows the passage of water into the ground. There are a variety of permeable pavement methods including spaced pavers with soil infill and newer specialized asphalt and concrete applications that actually allow rainwater to pass through the surface and help to keep the water table from being depleted.

Photovoltaic Panel: These are panels that are typically roof or ground mounted that collect solar energy and through the use of special solar voltaic cells, convert the energy to direct current electricity. A special controller called an inverter then converts this electricity to alternating current, making it usable in most residential and commercial applications. Electricity made in this fashion can be stored in batteries for later use, consumed as it is made to help offset the overall electrical use of a building, or placed into the commercial electrical grid for use in other locations. These panels only work when there is light, but can effectively produce electricity even on cloudy days.

Post-Consumer Recycled Content: Material used and then recalled by consumers. This is distinguished from by-products of the manufacturing process that are recycled (pre-consumer recycling)

Post-Consumer Waste: Material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes returns of materials from the distribution chain. Examples of this include construction and demolition debris materials collected through curbside and drop-off recycling programs, broken pallets (if from a pallet refurbishing company, not a pallet making company), discarded products (e.g. furniture, cabinetry and decking) and urban maintenance waste (leaves, grass, clippings and tree trimmings).

Potable Water: water suitable for drinking, generally supplied by the municipal water systems.

Power Vented Exhaust: A design that uses active exhaust to pull the products of combustion out of the home. Combustion equipment with power venting can use indoor air as the combustion supply air.

Pre-Consumer Content: Previously referred to as Post-Industrial Content, this is material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process that generated and capable of being reclaimed within the same process that generated it. Examples include planer shavings, plytrim, sawdust, chips, bagasse, sunflower seed hulls, walnut shells, culls, trimmed materials, print over-runs, over-issue publications and obsolete inventories.

Pressed Earthen Block: Like adobe, pressed (or compressed) earthen block is made from a mixture of soil and aggregate with no chemical additives. Often machine manufactured at the construction site. Because there is relatively no quality control routine compared to other types of manufactured block, its use may be limited, especially in high seismic zones. Careful engineering

will be required to use this material in structural applications.

Previously Developed: Having pre-existing paving, construction or altered landscapes. This does not apply to altered landscapes resulting from current agricultural use, forestry use, or use as preserved natural area.

Previously Developed Site: A site consisting of at least 75% previously developed land.

Prime Farmland: Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops.

Public Transit Stop: A neighborhood or business area location where public transportation such as a bus can be accessed. To be effective, public transit stops need to be conveniently located so people do not have to walk long distances (generally less than 1/4 mile), weather protected in severe climates and inter-connected to either transit hubs or continuation lines.

Radiant Barrier Roof Sheathing: Usually a foil faced plywood manufactured with proprietary methods that is used as the roof sheathing under the roofing material itself. The reflective surface of the material reflects heat away from the roof back through the shingles without significantly increasing the thermal load on the material, usually only 2 to 5 degrees. Other methods are rolled materials that are applied after the regular plywood or OSB sheathing is applied. Both materials can reduce attic and subsequent living area cooling loads significantly. Some manufacturers claim up to 97% effectiveness.

Radon: A radioactive gas that naturally vents from the ground. It can be dangerous if certain areas of the home like basements are not properly sealed and ventilated. Areas with potentially elevated indoor radon levels can be found at <http://www.epa.gov/radon/zonemap.html>.

Rain Garden: Low tracts of land that water flows to with vegetation designed to absorb rain water in ways that reduce stress on storm drains and replenish ground water.

Rammed Earth: Essentially, this is a soil-cement mixture that is rammed into forms to create walls that are generally 18 to 24 inches thick. The screened soil is usually engineered to assure the correct clay to sand ratio and is mixed with about 3% cement and sprinkled with water to provide cohesion and is compacted in 5 or 6 inch lifts to a relative density of around 120 to 130 pounds per cubic foot. Often concrete tie beams are incorporated to help stabilize the lateral strength of the material. The material is relatively labor intensive and the cost of a rammed earth house can be significant. One company in Arizona sets the price at around \$375,000 for a 2000 square foot house. In California, the costs would be even higher due to labor costs and the necessary engineering for high seismic zones.

Rastra®: Rastra is a commercially manufactured insulated concrete form (ICF). It is manufactured from recycled, post-consumer plastics and according to the manufacturer offers the structural strength of concrete paired with high insulation values, sound attenuation and fire resistance.

Reclaimed Lumber: Exactly as the term implies, this is lumber that is reclaimed by “deconstruction” of a building or structure. This lumber can be used for non-structural applications such as paneling and flooring and if re-graded can be used in structural applications. Major advantages include usually higher quality surface characteristics (it often came from tight grained old growth lumber), less cost than new lumber and reduction in landfill wastes (although

it can easily be mulched). Major disadvantages are that it is fairly labor intensive to “clean up”, is often very hard to nail after many years of drying and may need to be predrilled, increasing installation cost.

Reclaimed Material: Also referred to as salvaged, reclaimed or reused material consists of building components (wood) that has been recovered from demolition site, but is used in its original state (i.e. not recycled).

Recycling: The collection, processing, marketing and use of materials that were diverted or recovered from the solid waste stream.

Recycled Content Aggregate: Often concrete salvaged from demolition projects can be crushed and reused. Some can be introduced as a percentage of the aggregate in new concrete, while some can be used for roadbed underlayment. The actual use of the product is limited only to the imagination and structural requirements of the project. Use of the material also reduces the amount of new aggregate that must be mined from quarries and the associated environmental concerns associated with the operation.

Recycled Content Material: As the name implies, many products can be manufactured using “post consumer” materials such as plastic, fiber, wood, glass and so on. Deconstruction of various structures can also produce a variety of “raw” materials to create new products from, everything from tiles to carpeting to composite flooring materials and beyond. Recycled content materials help to reduce the need for new raw materials and the accumulation and manufacturing processes involved.

Recycled Content Steel Studs: Most new light gauge metal studs are manufactured from a combination of new and recycled steel. About 66% of the total make up is recycled content. Considering that the production of new steel is one of the highest embodied energy manufacturing processes, the use of recycled steel not only redirects a continuously reusable resource, but significantly can reduce the impact on other environmental concerns. The use of light gauge metal studs on interior infill and demising walls lessens the amount of wood studs needed for construction; however more specialized skills are needed to install the material properly.

Refrigerants: The working fluids of refrigeration cycles that absorb heat from a reservoir at low temperatures and reject heat at higher temperatures.

Residential: This project classification refers to single family dwellings and two-unit duplexes. Under Monterey’s Green Building Program, Residential projects will utilize Build It Green’s New Home Construction guidelines for compliance.

Return Air Flow: The differing air pressure throughout a home can potentially cause problems with the building envelope, thus it is important to ensure that pressure is equalized throughout the home by allowing for vents (usually return of transfer grills) to “return” air.

Reuse: A strategy to return materials to active use in the same or a related capacity.

R-values: A measure of thermal resistance (the number of watts that will be lost per square meter at a given temperature difference). The inverse of the U value (i.e. $R=1/U$).

Roofing Material

Safe and Durable: This can have a variety of definitions depending on one's point of view but essentially these are roofing systems designed to last a significantly longer time to delay having to remove them and sending them to the landfill. Modern fiberglass roofing materials now carry warranties between 20 and 40 years. Of course slate, concrete and fired clay tiles can last significantly longer. Additionally, a safe roof generally refers to a fire safe roof and with modern roofing systems, various degrees of fire resistance ranging from class C to class A define the fire retardance of a roof. As a result of the firestorms of recent years, in which literally hundreds of homes were destroyed by flying brands from untreated wooded shingles and shakes, the State Fire Marshal has mandated that all roofs in California shall be at least Class B or better in fire retardance.

SEER: Most air conditioners use electricity to produce cooling. The efficiency at which they produce cooling is referred to as a SEER or EER number. SEER stands for Seasonal Energy Efficiency Ratio, and is a ratio of the amount of cooling produced (BTU) divided by the amount of electricity (watts) used. The higher the SEER, the greater the efficiency.

SHGC (Solar Heat Gain Coefficient): A measure of how well a window blocks heat from sun as a fraction of the sun that enters the window.

Softscapes: Natural elements of a landscape such as a plant materials and the soil. Softscapes can include hard elements, such as rocks and stone.

Solar Window Screens: A mesh screen that is used to block insects as well as light and heat from the sun.

Solar Water Heating: Generally, this is a method of heating domestic water by allowing ground or rooftop mounted panels to collect solar rays as the water flows slowly through a series of small tubes. The heat transfer is then stored either in a potable drinking water vessel (your water heater) or introduced into a closed loop transport system to provide environmental space heating.

Straw Bale: This is a methodology developed to use special tightly bound straw bales as either bearing or infill walls in a variety of structures including homes. The straw bale system was an offshoot of the Nebraska straw house where their construction over a hundred years ago solved the basic problem of no lumber. The bales provide a substantial increase in insulation value but their installation can be rather labor intensive. The State of California has set down very specific criteria for construction of straw bale houses in the Health and Safety Code. All straw bale structures built in the city must meet Seismic Design Category D engineering requirements.

Structural Bamboo: Bamboo as a construction material has many uses. Because the material is very hard it has recently found a niche as flooring material. However, the material is also very strong and with new methods of handling the material, structural uses of bamboo are finding their way into the construction industry. They can be derived into trusses, supporting poles and simple beams. However most building departments are not familiar with the capacity of the material and builders will have to supply significant engineering and detailing to satisfy plan check requirements.

Sustainable Deck Materials: Most of us are familiar with the wooden deck. However, new materials on the market are making a dramatic impact in the form of recycled content decking and railing systems. Usually manufactured with recycled plastics, wood chips and binders, the materials hold up well to hostile environments and generally outlast even naturally durable woods

such as redwood and cedar. The intent is to select materials that are sustainable or easily replaced with limited effect on the ecology. These new materials are easily worked similar to wood, however are considerably more expensive. The trade off is the longevity of the material.

Tankless Water Heater: Most of us have a 30 or 40 gallon storage water heater in our house. Modern advances in storage tank water heaters reduces the amount of times it must fire to maintain temperature, but the basic operation remains the same. Tankless water heaters are designed to wait until you actually need the hot water to fire up, raising the water temperature very quickly to operating level. The term instantaneous is often used for these heaters and generally by the time the water clears the heat exchanger inside, it's ready for use. These water heaters take up less space than a storage tank type, but the amount of fuel needed to reach temperature quickly usually exceeds most storage types, but in a lot less time and a lot less often.

Technical Advisory Sub-Committee: The TASCs rule on Credit Interpretation Requests (CIRs) and Innovative Design Requests (IDRs).

Thermal Bridge: Areas in a building envelope that have a high heat conductance lowering the average R value.

Thermal Envelope: The thermal enclosure created by the building exterior and insulation. Improving the thermal envelope is one of the most important aspects to creating an energy efficient home.

Topsoil: The uppermost layer of soil with high levels of nutrients and organic matter. Healthy topsoil is essential for the survival of trees and plants.

Tree/Plant Preservation Plan: A formal assessment of the lot and a development of a landscaping plan that seeks to preserve the most trees and native plants. This is important to do as one of the first steps in the design process to ensure the developed area takes into account the preservation plan.

Title 24: Title 24 is contained in the California Code of Regulations (CCR) and is the embodiment of most of the construction and energy conservation requirements for the state. All cities and counties are mandated to enforce the requirements of Title 24.

Treated Wood:

CCA-Chromated Copper Arsenate. As the name implies the chemicals used to treat wood to prevent attacks by wood destroying organisms such as boring insects, fungi and dry rot contains arsenic, a rather nasty poison. Since December 31, 2003, the distribution of CCA has been severely limited and is generally not available to the average homeowner anymore once existing stocks are depleted. It can still be manufactured for very specific commercial applications such as underwater saltwater pilings and cross member materials, but not for the decking, above water bracing or railings.

ACQ-Alkaline Copper Quaternary (or Quat). This method of treatment uses copper as the primary active ingredient. While the material is effective for direct contact and above ground protection, it is highly corrosive to fasteners and fittings and special precautions must be taken in the selection (usually hot dipped galvanized or stainless steel) and the handling of the material.

CA-Copper Azole. Like ACQ, the primary active ingredient is copper. While not quite

as corrosive as ACQ, the material does have a tendency to migrate into the soil. Again special care in selection of fasteners and handling is required.

DOT-Disodium Octaborate Tetrahydrate. DOT or simply borate or boron preserved wood is the least corrosive of the treatments. The material is intended for interior or protected use only and must be protected from direct water exposure which can leach the material out of the wood. Protected in dry conditions, the borates will migrate into the wood even deeper than the initial pressure injection application over time. The material is very effective against many wood pests including the voracious Formosan termite.

TXV: Thermostatic Expansion Valve – (also **TEV**): A TXV installed on an air conditioning system can dramatically improve the efficiency of the unit. When cooling demand is high, the valve opens up and lets more coolant pass through the indoor coils. When demand is low, the valve closes to reduce the refrigerant flow. AC units not equipped with TXV's have either a fixed orifice or capillary tube system. Because they are not very efficient, they are generally not sold in California, because they cannot meet the CA Energy Commission requirements.

U Value (U-Factor): A measure, (often used for windows), of thermal conductivity that is the inverse of R value. A lower U value means a more energy efficient window.

Vegetated Roof: A roof partially or fully covered by vegetation. By creating roofs with a vegetated layer, the roof can counter-act the heat island effect as well as provide additional insulation.

Volatile Organic Compound (VOC): Many of the products that we buy are made with materials that off-gas VOC's usually in the form of formaldehyde gas, a by-product of hydrocarbon based materials. Building materials such as particle board, plywood, adhesives, paints, varnishes, carpet, drapes and furniture are often made with formaldehyde products. Other sources include some you may not think of like tobacco, burning gas, perfume, cleaning agents, hairspray and even copy and printing machines. Degrees of exposure to VOC's can cause everything from mild symptoms like irritated eyes, ears and throat to more severe reactions like wheezing and lung, memory and anxiety problems. By using low-VOC products, exposures are reduced and indoor air quality is improved.

Walk-Off Mats: Interior mats designed to reduce dust and debris. Walk off mats should be placed at the entrances and allow for a few strides on the mat to be most effective.

Whole House Fan: Essentially a large fan that draws hot air out of a building and replaces it with cooler exterior air as opposed to attic fans that only remove the hot air from the attic. Compared to an air conditioner that can draw up to 6000 watts, whole house fans use about the same amount of electricity as a couple of light bulbs, or around 120 watts for smaller units up to about 700 watts for larger units. New homes of especially tight construction may need to have barometric vents installed a distance away from the exhaust intake to prevent negative pressure problems in the house that could have an adverse effect on fuel burning appliances (or simply open a couple of screened windows). A good whole house fan can reduce the interior temperature of a house by 10 to 15 degrees within about 20 minutes as well as create a "sensible" feeling that the moving air is cooler. The exhaust intake is usually located in the highly heated attic air space and many homes use a gravity damper system in the ceiling that opens automatically as the systems operates and then seals closed upon shut down