Green restaurant design

Business, Industries

Environmentfriendly green building products and construction methods is a growing segment within the construction trade and focuses on products and techniques that promotehealth, safety, energy conservation, waste management and recycling. Businesses of all sizes are discovering the financial, personal and community benefits of being green. Needless of say the type of businesses includes restaurants too. There are two main ways how restaurants can claim to be green in their operation: construction & maintenance, andfoodsupply. The first is the reduction in energy consumption and using environment friendly construction products.

The second is the food itself as the present world is seeing that the food is increasingly becoming processed and removed from its origins. A restaurant planning to be green has to focus its energy on both these areas. There are guidelines helping business owners in their efforts to go green. This paper focuses on the various aspects of green restaurant design. The paper is divided into three parts. The first part deals with the various ways in which restaurant owners can go green concentrating on the energy saving and food supply aspects.

This part will also mention the various organizations that facilitate the designing of green restaurants and their corresponding guidelines. The second part deals with the various popular certifications available that would prove that a restaurant is indeed green. The third part gives a personalized restaurant plan focusing on the ‘ green’ aspects. PART I Design and operation of Green Restaurants Going green for restaurant initially meant that there would be only organic dumplings available on the menu. This is not the case presently. Food can be eco-friendly in other formats as well.

Vaughan Lazar and Michael Gordon have developed Pizza Fusion of Fort Lauderdale, Florida, as an organic green pizza restaurant. In addition to pizzas, the menu features sandwiches, salads and other food from organic components. Lazar and Gordon are making the operation as green as possible to build a solid green brand from the start. It is not just food either. Their buildings are certified by LEED, their delivery vehicles are hybrid, their power is wind, their utensils are bio plastic, and their countertops are made from recycled materials. The restaurant is so successful that they have now started selling franchises (Croston?

2008, p. 197). A major part of the green restaurants is however the food itself. The strategies used above are just some which the restaurants can use to boost their sales and at the same time maintain a clean operation that is eco friendly and also healthy This section deals with the entire set of operations that a commercial green kitchen can have to make their operations cleaner. The health issue is tackled first, then the organic food option is reviewed, and finally the equipments and other accessories that can be used in the green restaurants are examined in detail.

The section also has tips which restaurants can use to keep their operations eco-friendly. Greening of the Kitchen Kitchen is the heart of any restaurant. The use of organic products is one of the aspects of greening the kitchen, which is discussed in the next section. However, there are many other issues that need to taken care of inside the kitchen itself to make the restaurant green. There is no sustainable definition of a eco-friendly green restaurant. Some of the strategies that can be used are choosing low VOC paints,

replacing incandescent with fluorescent light bulbs and selecting energy efficient appliances.

The other strategies are capital intensive such as using only FSC certified wood or reclaimed wood, consciously choosing to simplify or downsize and using a professional green architect for the purpose. This section presents some of the basic principles of a green kitchen which restaurants can use as a basic guideline: o Choosing high performance windows – If possible, the windows should be good quality insulation, typically double pane or triple pane. They must have an appropriate low e-coating for the climate to kept inside the kitchen the winder and keep sun’s heat ou tin the summers.

The Efficient Windows collaboration has helpful information in this regard o Good Insulation – The insulation of perimeter walls and ceiling must be good. Some options are using batts made from denim and other textile scrap, spray-in or loose-fill cellulose insulation made from recycled newspapers and recycled content fiberglass batts with not added formaldehyde. o Prevent air leaks that waste energy – This can be done with easy to install weather-stripping products.

Cracks around the windows must be caulked and heating and cooling systems must be checked to make sure all joints of the ductwork are connected and well sealed with a mastic sealant. o Choose energy and water efficient appliances – Since the kitchen accounts for the maximum portion of energy consumption in a restaurant, the appliances used must be extremely efficient. They must have rating such as ENERGY STAR o Provide good day lighting – The kitchen must be well illuminated by daylight even on the cloudiest days as it will save the electricity used during the day time

o Choose energy efficient lighting – Effective kitchen lighting is paramount for comfortably and safely preparing food and also saves energy. High quality fluorescent lighting for general lighting and task lighting must be chosen o Provide summer shade – The hot summer sun striking west or south facing windows can drive air conditioning costs through the roof. Hence it is best to plant shades on the west and south sides with awnings or overhangs. o Conserve water – Protect freshwater supplies and reducestresson wastewater treating systems by reducing water consumption.

Either wash dishes by hand or use water-efficient dish washer and low-flow faucets and consider reusing gray water. Some of the methods of water conservation are given in the figure below Figure – 1 Water treatment devices (Roberts, Svendsen, 2006, p. 139) o Choose recyclable and recycled products – Recycling reduces the need to extract or harvest virgin resources and reduces the need to buy new landfills or incinerators to deal with ever growing quantities of waste. Hence such products must be chosen o Chose rapidly renewable resources – These are resources grown, harvested and replanted on a relatively short rotation compared to trees.

They include bamboo and other grasses, cork, soy, hemp and cotton. They also include agricultural waste products such as particle board type panels made with straw instead of wood. o Choose reclaimed wood or FSC certified wood – Salvaged wood taken out of dismantled buildings or other structures such as water tanks and wine barrels must be the first choice of wood to be used in the restaurant. Where possible, use wood certified by Forest

Stewardship Council, FSC, an independent international organization that has established voluntary standard for responsible forestry management.

Also do not buy tropical hardwoods unless FSC certified. Avoid using hazardous materials – This means the lead based paint, asbestos and radon must be avoided. o Keep pollutants out of the restaurant – Avoid building materials, finishes, and furnishings that emit noxious chemicals such as formaldehyde. Use zero or very low VOC paints, stains,. , finishes and glues. Avoid Polyvinyl chloride PVC products is possible and do not use pesticides inside the kitchen o Buy local products – They lust be given preference since it would reduce transportation energy and also supports organic products and local enterprises in turn.

The figure below shows some of the popular equipment certification organizations Figure – 2 Energy saving equipment certification bodies (Roberts, Svendsen, 2006, p. 23) Public health issues In the developed word, foods has increasingly become processed and removed from its origins, and cut loose from its cultural moorings. The United States continues setting records forobesityanddiabetes, and as the American lifestyle spreads, so do American dietary patterns, and the resultant health problems. As the awareness of this epidemic has increased, the opportunity for change has also increased simultaneously.

The food that is eaten effects the environment as well as individual health. How food is produced has changed rapidly in the last 100 years, with farms becoming progressively larger, more industrialized, more reliant on chemicals and fertilizers, and ever more removed form natural systems. Farm chemicals filter though ecosystems, water supplies and food, causing

problems at many levels. Conventional agriculture and the food distribution systems are also heavily dependent on fossil fuels and contribute topollutionandclimate change(Croston? 2008, p.

190-191). Farmers and entrepreneurs working at every stage of the supply chain are now working to change how food is grown and delivered to reduce it environmental impact. Some conventionally grown produce has been demonstrated to contain significant residues of chemical pesticides and other chemicals that consumers would not know on their own, leaving them to mistrust inspectors and regulators to ensure the food is safe. Meanwhile the FDA has finds to inspect only a small portion of food and is hard pressed to find hazards before they reach the market.

Green restaurants can have test kits either bought or designed according to their requirements to check on such health hazards (Croston? 2008, p. 191). Food consumption trends The greening of food supply is confirmed by the rapid growth in the sales of organic foods. According to the US Department of Agriculture, USDA, the acreage in United States growing organic food increased 40% from2000 to 2005, and sales of organic food have grown between 15 and 21 percent a year. The reduced figures of sales are because much of the organic food is imported.

The growth in organics and the willingness of people to pay more for organic foods, indicate that consumers are more concerned about how food is affecting their bodies and also our plant (Croston? 2008, p. 192). Local Sourcing The food in the local grocery store as well as the one which the restaurants buy has usually traveled a long way. Produce is usually

transported across the country and even globally traveling between 1500 to 2500 miles on average in the United States, and sometimes much farther.

The types of food grown are usually selected as much for their durability in transportation as doe their nutritional value or taste. To withstand the journey, produce is often picked before it is ripe and then ripened at its destination using artificial means, such a gassing with the plant hormone ethylene. The result can be food that is not the best tasting or the most nutritious. Also the transporting of foods over such long distances burns fossil fuels that contribute to climate change. Purchasing local food is a green business answer that hits home (Croston? 2008, p. 193).

Buying local produce has rapidly developed into a major trend. The growth in farmers' markets is one sign of this trend. According to the FDA, the number of farmers' markets has grown from 7155 in 1994 to 4385 in 2006. The food at farmers' markets reflects the changing seasons, and is quite varied as compared with larger grocery stores. The food is not processed and is picked ripe. For vendors, chiefly restaurant owners, this presents an opportunity to purchase food at lower price since the farmers' markets cut down costs both due to the transportation costs as well as the middlemen.

With small scale local food distribution the trip from farm to market and in turn the restaurant can be measure din hours rather than days resulting in higher quality (Croston? 2008, p. 195). Organic produce was at one time synonymous with local food grown by small farmers, but as such food has grown in popularity it has also scaled up and has become industrialized and resembles in some ways to the non-organic food system. Hence the bulk requirements of the restaurants can also be taken care by the farm produce.

Restaurants need to be extremely careful of the purchases as just being organic does not solve all the problems automatically.

The produce also needs to be checked for quality and the internal storage is just as important. PART II Certification Systems The possession of a reputed independent body’s certificate is a majormotivationin achieving the required standards. Green restaurants are no different in this case. Building environmental assessment systems are the medium for creating interest in an focus on building environmental issues. These assessment systems promote higher environmental expectations and influence building performance by providing a means to demonstrate such performance.

They also encourage the discussion of building performance by offering a simple structure for the complex issues involved. The initial objective of the building environmental assessment was to provide an objective evaluation of the resource use, ecological loadings, and indoor environmental quality of buildings so that buildings with a higher performance could be evaluated. There are many environmental assessment schemes for buildings in use internationally, with issues being assessed at various depths.

Since the introduction of the Building Research Establishment Environmental Assessment Method, BREEAM, in 1990, a number of techniques that can be used by practitioners in various contexts and life stages of buildings have been developed. Notable techniques include theLeadershipun Energy and Environmental Design LEED and ENERGY STAR label for commercial buildings in United States, the National Australian Built Environmental Rating System NABERS, Comprehensive Assessment System for Building Environmental

Efficiency CASBEE, Comprehensive Environmental Performance Assessment Scheme SEPAS, Ecoeffect and GBTool.

Assessment schemes developed in individual countries do however suffer from their unsuitability for comparing between the countries. Among the schemes mentioned above, GBTool is a common method used for performance evaluation of a range of buildings in various countries participating in the Green Building Challenge (Mithraratne et al. , 2007, p. 106). Building assessment techniques can be divided into two distinct types: tools and methods. A too is basically an assessment technique which estimates one or more environmental performance characteristics, such as embodies and operating energy use, and greenhouse gas emission.

The use of tools is generally voluntary. Some examples are ATHENA, and Envest. A method also involves the use of assessment, but may need third party confirmation to achieve a rating or weighting. Generally methods are managed and operated in an organizational context. Some examples are BREEAM, and LEED (Mithraratne et al. , 2007, p. 107). This section presents the two most popular certification schemes LEED and ENERGY STAR. The use of these certification schemes is not directly meant for restaurants.

However, the guidelines and checklists given by the certification programs will ensure that the restaurant is conserving energy and is using environment friendly materials during construction and maintenance. Also the certifications can be obtained, if o required, in a roundabout way. For instance LEED does not have any particular certification scenario for an restaurant, but thei warehouse, supermarket and hotels provide certain

features that are extremely close to what are the conditions inside a restaurant.

Similar is the case with ENERGY STAR program, where the criteria extends to buildings, equipments used inside the buildings and even food processing units. The Leadership in Energy and Environmental Design System Since its founding in 1991, the US Green Building Council, USGBC, has emerged as a recognized and respected leader among green professionals. The US Green Building Council, which is a non-profitcoalitionrepresenting the building industry, has created a comprehensive system for building green called LEED, which is short for Leadership in Energy and Environmental Design (Freed, 2007, p.

68). This is the USGBC’s Green Building Rating System, and it defines a voluntary guideline for developing high-performance sustainable buildings. The LEED program provides investors, architects and designers, construction personnel, and building managers with information on green building techniques and strategies. At the same time, LEED also certifies buildings that meet the highest standards of economic and environmental performance, and offers professionaleducation, training and accreditation (Binggeli, 2003, p.

8) . USGBC introduced the LEED rating system in the year 2000 for public use. LEEd was the first rating system in the United States to hold commercial projects up to scrutiny for the full range of their effects on energy and water use, municipal infrastructure, transportation energy use, resource conservation, land use, and environmental quality/ Prior to LEED, most

evaluation systems, such as the Environmental Protection Agency’s Energy Star program, has concentrated exclusively on energy use.

Perhaps the greatest advantage of LEED is its ability to focus the owner and design team on energy and environmental considerations early in the design process. LEED certification program is credited by people with almost single-handedly catapulting the green building into the mainstream and has attracted many builders, designers and clients (Haselbach, 2008, p. 5). LEED has quickly become the industry standard for green building in the United States. Today, LEED buildings can be found in 24 countries and all 50 states.

LEED has been adopted by 9 federal agencies, 20 states, and 49 US city and country governments as the green standard in the construction of all municipal facilities (Freed, 2007, p. 68). The LEED profession Accreditation Examination establishes minimum competency and training programs are available to prepare for the exam. Currently there are over 30, 000 LEED Accredited Professionals trained in this rating system and nearly 3, 000 buildings are on their way to certification.

This represents about 8 percent to 10 percent of the US new construction market and this number is growing rapidly (Freed, 2007, p. 69). LEED addresses a variety of types of construction but all with one purpose – to define high-performance green buildings that are environmentally responsible, healthy, and profitable. (Levy, 2006, p. 199) The LEED systems works by dividing the building into six categories: o Sustainable sites o Water consumption o Energy and atmosphere o Materials and Resources o Indoor environmental quality o Green design innovations (Levy, 2006, p. 199)