

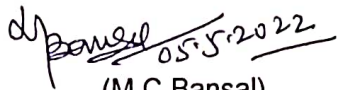
Recommendations

25th Annual Convention and National Seminar of IBC on "Sustainable Built Environment for Future"

1. To prevent environmental damage during construction, environmental impact assessment should be done in initial stage rather than attempting to restore degraded environmental resources subsequently.
2. Delay in permission to start infrastructure projects under the disguise of environmental clearances should be avoided and efforts should be made to give single window clearance.
3. Building projects should be planned within easy access of public transport, medical facilities, shopping and recreational facilities resulting in saving of energy and reduction of pollution. Walking and Bicycling should be encouraged by providing pedestrian friendly paths.
4. To provide sustainable eco-friendly landscape, attempt should be made to use existing land profile/ site features by avoiding excessive cutting & filling and using site depressions for creating water bodies coupled with rainwater harvesting.
5. Keeping in view the requirements for a minimum next 50 years, all public buildings including housing projects in Government as well as in Private sector, should be mandatorily planned as distantly placed high rise energy efficient buildings with lesser foot print area by using the principles of solar passive architectures, having few lower floors dedicated for marketing facilities, health centre, Gym, Spa, duly provided with parking and services below Ground and large open spaces around for landscaping, to function as small township itself and to achieve comfort of users.
6. Resource conservation and waste management of materials which are important component of environment protection, should be implemented under the principle of 'Reduce', 'Recycle' and 'Reuse' by adopting an integrated systematic approach.
7. While selecting materials for buildings, the aspects of embodied energy, associated health hazards, life cycle cost and its potential for reuse or future recycling should be mandatorily considered.
8. Due to large deficit in demand and supply of coarse and fine aggregate, steel slag aggregate and recycled aggregate (RCA) from C&D waste (coarse as well as fine) which meets all important physical characteristics of aggregates having higher potential to reduce impact on the environment due to its resource-conservation and energy saving effects, should be encouraged.
9. Use of self compacting concrete by optimized use of OPC by replacing up to 50% of the OPC content by ground granulated blast furnace slag should be encouraged resulting in reduction of carbon footprint due to less use of natural resources.

10. Use of construction materials compatible with green buildings such as carbon negative cement, nano materials, autoclave aerated concrete blocks, low VOC paints, green concrete made by partial replacement of OPC with fly ash and ground granulated blast furnace slag and construction products manufactured out of industrial waste etc. should be made mandatory in all public buildings and should be encouraged by the Government.
11. For construction in adverse atmospheric conditions like air containing salts/ near sea shore, in decomposed filled up soils, in extremely cold and hot climates, suitability of type of cement and reinforcing bars shall be got tested before use. The Special Purpose Cement and reinforcement compatible with such adverse conditions shall be used instead of normal OPC/PPC and normal TMT bars. In areas having salt in air/ near sea shores and in filled up decomposed soil, High Alumina, Blast furnace Slag cement and fibre reinforced polymer (FRP) bars have been found compatible and sustainable.
12. The plastic recovered from non biodegradable domestic waste can be gainfully used either in hot mix plant for construction of flexible pavements or for generation of fuel oil in pyrolysis plants.
13. Waste material like coalmine overburden and flyash mixed with 4 to 7% of cement can be utilized gainfully as a stabilised pavement material for construction of embankments.
14. For effective water management, use of dual plumbing to utilise gray water, water efficient low flow or dual flush toilets, waterless urinals, low flow shower heads / faucet aerators and integrated installations to check leakage should be made mandatory in all public buildings.
15. In all public building complexes, segregation of waste at source into biodegradable, hazardous, e-waste etc. along with scope of recycling should be made mandatory so as to reduce landfill area requirement.
16. Recycled plastic could replace traditional building material as 'Polli Bricks' as used in a green building 'ECOPARK' at Taiwan.
17. A building's heating; cooling, lighting and equipment system all interact with each other and also with building envelope and building site in complex ways. All these variables must be integrated with computer modelling and simulation tools to produce a sustainable energy efficient building.
18. While planning and designing of high rise energy efficient buildings sited distant apart, the target should be construction of net zero or energy positive building for its complete life cycle through conservation and generation of energy by way of non-conventional sources. Facade of buildings shall be finished with solar panels for generation of energy.

19. Government should support research, education at university level and awareness campaign through press and audio-visuals media to enable the masses about environment protection during building construction as well as during maintenance.
20. Environment protection during construction and maintenance should be encouraged by Government by giving suitable tax benefits to owners as well as developers.
21. Appropriate pricing mechanism should be aimed at, so as to encourage reduction in waste generation by households. Tax exemption should be given for products made of recycled waste so as to encourage recycling.


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