

Sustainable Construction Practices



Introduction

On October 2017, a Contractor-focused technical workshop was held to discuss the implementation of Sustainable Construction Practices, addressing the conformance to local and international Green Building Rating Systems such as USGBC LEED, Estidama, and Dubai Municipality Al Sa'fat Rating System. Participants were invited from the field of Construction to discuss their overall experience with meeting green building mandates specific to sourcing materials as well as complementing overarching projects deliverables. The session was facilitated by Tushant Suri and Yohaana Cama from Multiplex Middle East.

Complexity in Construction

Meeting sustainability targets during design is a factor that can be met with a level of ease, but adhering to them all throughout the construction process is another challenge altogether, given that the construction process is complex, nonlinear, and a dynamic aspect which can often exist on the edge of chaos.

An integrated involvement of all disciplines during the construction is essential to ensuring sustainability goals are met with accurate compliance having minimal effect on the overall construction timeline and budget.

If not managed successfully, complexity can lead to a focus on Problem Solving versus Problem Seeking, and eventually has the potential to lead to an erosion of profit.

Identifying the Contractor's Role in Green Building

Early engagement of the contractor and sub-contractor is crucial to ensure that design requirements are clearly understood and met consistently. When problems are not foreseen during early stages of a project, it may lead to bigger issues such as delays, incidents, and defects that may require involvement from the top management. Therefore, early engagement is vital and allows for effective due-diligence and better interdisciplinary collaboration.

Contractual Delivery Methods

In order to streamline the process of construction, it is important to understand existing project management systems, Design & Build, and Build-Only systems in place to optimize the process of compliance with sustainability targets.

For international compliance such as the LEED rating systems, the latest version of the rating systems stipulates stringent building material selection requirements particularly in line with Cradle-to-Cradle Certifications, recycled content and regional materials.

To best address these requirements, when a comparison was drawn between the two delivery systems, the Design & Build was noted as the preferred delivery method, given that design and construction responsibilities are handled by a single entity, the Main Contractor, as opposed to the Build-Only delivery method which is a tiered approach from Design up until Construction.

In a Design & Build delivery system, construction challenges are more likely to be identified early in the construction process specifically in line with meeting sustainability goals, hence the procurement process is best complemented with the design process.

Management Systems

Whilst taking a closer look at the construction documentation process, the tender document review involves the identification of design and construction credits within a typical Green Building Rating System, particularly addressing recycled content, re-usability and regional procurement requirements, assigning roles and responsibilities of the Green Building Coordinator, specifically in line with the contractor requirements to help streamline the procurement process.

In order to effectively conform to a construction process, it is essential to have a management system in place which comprises of a framework of policies, processes and procedures, along with the transparency of roles and responsibilities, that can effectively address accountability.

Furthermore, management systems are increasingly important to address legal obligations, employer requirements, organization requirements, project objectives, targets and green building rating systems applicable within a project.

An iterative four step management procedure used in business for control and continual improvement of processes includes Plan, Do, Check and taking Action (P-D-C-A);

1. Plan – Establish the objectives and processes to deliver results in accordance with customer requirements and organization policies

2. Do – Implement the processes
3. Check – Monitor and measure processes and product against policies, objectives and requirements of the product
4. Act – Take actions to continually improve process performance

Taking leadership is one of the most crucial elements that addresses policies, objectives, targets, resources, roles, responsibilities and commitment to continual improvement.

Challenges

Design Performance versus (vs.) Green Building Requirements

During the construction process, contractors are often faced with making a choice between the overall design versus green building requirements. For instance, contractors may have to address overarching design performance requirements that conflict with Green Building design features, such as varying glass thicknesses specified for the glazing units resulting in contrasting effects on Safety and Thermal Performance (U-values).

Construction & Demolition (C&D) Waste Management

Availability of effective construction waste recycling infrastructure sets limitation in contractors meeting waste targets, particularly in line with concrete waste recycling within the Emirate of Dubai. Sourcing effective recycling facilities, particularly with respect to the Construction & Demolition Waste Management, present unique challenges which contractors must try to overcome.

Conclusion

During the construction stage, project design requirements often takes precedent over green building requirements, hence it really is about setting a balance through seeking alternatives within the Green Building Rating System. Implementing solutions in terms of waste reuse is an opportunity to balance and apply sustainability best practice, particularly with respect to utilizing the existing waste infrastructure, and collaborating closely with contractors and sub-contractors about reusing the waste generated.

It is therefore paramount for contractors to have a solution-oriented approach, wherein construction challenges can be anticipated at the initial stages of construction and lessons learnt from past projects are applied to address any snags that can be foreseen early in the construction.