Dar Al Riyadh Insight #99
Minimizing Construction Waste
Design Phase

Dar Al Riyadh Insights reflect the knowledge and experience of our Board, executives and staff in leading and providing PMC, design and construction management services. Dar Al Riyadh believes in the importance of broadly sharing knowledge with our clients and staff to improve project outcomes for the benefit of the Kingdom of Saudi Arabia.

Minimizing Construction Waste

***Design phase*.** Construction waste minimization begins in earnest at the design stage, with a focus on related design considerations including:

- Focusing on facility needs, not wants. Effective scope control is an essential first step in construction waste minimization
- Adaptive reuse of any existing site facilities
- Reducing the site footprint, thus limiting the site area disturbed or required to be graded. Footprint reduction reduces attendant facility infrastructure with fewer miles of roads, utilities (power, water, communication), and fencing, each with its associated waste percentages.
- Reducing material quantities and associated waste by reducing design margins.
- Detailed design simplification at the system, structure, and component levels.
- Reduction in the need for temporary works through incorporation of access during construction provisions as part of the project's design.
- Incorporation of bracing steel required for transport of major equipment, prefabricated assemblies, and modules as part of the final structural design, eliminating their removal and insertion into the project's waste stream.
- Alternative framing techniques
- Reducing the number of items of supply (SKU) to minimize overordering of parts and components.
- Increasing prefabrication and modularization to capture manufacturing efficiencies in materials management.
- Selection of environmentally friendly materials with improved waste performance properties. Examples of material selection choices to consider include:
    - Self-healing concrete
    - More carbon-friendly laminated timber
    - Natural bamboo when scaffolding is required
    - Unfired wool bricks
    - Bio-char by-product for insulation
- Use of recycled building materials.

- Development of ESG-aware specifications (see examples in the following supply chain and construction sections).
- Leveraging the power and features of building information modeling (BIM) to support and enforce the above strategies.
- Leveraging artificial intelligence (AI) enabled optimizations on many of the specific items above.