CONSTRUCTION ENGINEERING MANAGEMENT

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COMPANY PROFILE

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I. ABOUT US

Established by a team of seasoned professionals with broad industry exposure, CEM consistently delivers reliable support and consultancy across diverse roles—be it as an executive partner or contractor. Our innovative approach enables us to rapidly identify project risks and offer practical, data-driven strategies for mitigation.

At CEM, our success is founded on nurturing dynamic, enduring client relationships built on trust, reliability, and transparency. We are committed not only to lean construction and process optimization but also to creating intuitive dashboards and robust, high-level construction management systems. By bridging the gap between technical experts and non-technical stakeholders, we ensure that every solution enhances decision-making, drives efficiency, and meets project goals on time and within budget.

CEM is a BIM-based engineering firm, software developer, and project management consultancy headquartered in Qatar. We drive digital transformation in modern construction by merging advanced building information modeling with innovative project management solutions. Our in-house developed product suit, works in tandem with our deep expertise in engineering and digital technologies to provide comprehensive management tools.

The key to CEM's success is through maintaining a dynamic and adjoining working relationship with clients. Hence ensuring the best possible qualifications and value delivery, spread over lean construction processes to sustain the ideal project needs. The rm's philosophy is based on building long-term business partnerships with clients where interpersonal relationship, reliability, assured quality and target oriented modern technology are the major building blocks.

CEM is where professionals with management, engineering and functional fields group together for the objective of providing appropriate added value. The firm realizes the importance of high quality and its impact in achieving projects objectives and clientele strategies.

The primary focus on project management grants the firm exemption of any potential conflicts of interest regarding design or contracting. The sole purpose to be pursued is protecting clients' needs, managing any potential risks, and delivering projects on time and within budget.

II.
Values

| VISION

Maximize data accessibility and use in the Project Management domain with contemporary data-centric solutions while seeking continuous waves of futuristic innovative solutions development.

| MISSION

Our mission is to forge long-term partnerships by delivering tailored engineering, software, and project management solutions that optimize efficiency, mitigate risks, and support sustainable growth.

| QUALITY

CEM is committed to delivering exceptional standards, ensuring every deliverable is meticulously crafted and thoroughly tested to meet precise performance and design criteria, thereby fostering excellence across all projects.

| SIMPLISTIC INNOVATION

CEM maintains simplism and ease of use as pivotal concepts to bringing about innovation to the construction industry. We embrace cutting-edge methodologies by integrating emerging technologies with traditional practices, transforming complex challenges into streamlined and modern solutions that redefine industry benchmarks.

| SINGLE TRUTH

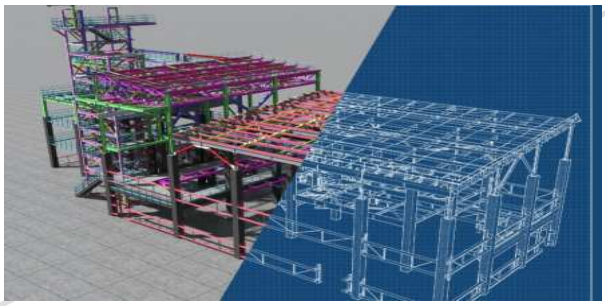
One of CEM's core values is integrity & transparency in reporting. The in-house developed solution product suit by the firm are architectured to relay data accurately. Thus, allowing for an authentic representation of current status quo and future outlook. Traveling back in time and future forecasting is only one click away.

III.

BIM SERVICES

BIM is a process used to design and construct modern buildings. The process encompasses several different design tools as such, Revit, ArchiCAD, or Vectorworks with an objective of making every phase of construction and design as efficient, safe, and cost-effective as possible.

Building Information Modeling (BIM) is much more than a technology. It is a complex design and construction process that helps in creating innovative buildings of the future.



BIM helps structural engineers optimize and automate designs, reduce errors and risk, and bolster accuracy and constructibility, while improving overall project delivery.

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The collaborative nature of the BIM process not only allows the project team to coordinate better, but also process better design decisions can be locked using the data driven business model.

1D BIM

The commencement point of a BIM project. BIM documentation is fundamental at various stages of a project lifecycle. BIM-specific documents provide adequate streaming of information. The information ensures the project team is aligned with the workflow and data will be produced, managed and shared accordingly, throughout the project lifecycle.

2D CAD / BIM

CEM provides experienced CAD Draftsmen to manage basic design needs and requirements as agreed upon. Additionally, CEM delivers IFC drawing, Shop Drawing and As-Built drawing extraction services from 3D BIM coordinated models. Allowing clients to affordably outsource time consuming creation and issuance of such drawings.

The drawings generated are clash free, more reliable, and faster to generate than the standard CAD process. Design amendments or modifications that may occur will be updated, not only in the 3D model, but also on all the extracted drawings. CEM provides BIM modelers as necessitated to extract all required drawings from the models, at any stage of construction. CEM can produce any drawing set as outsourced from any BIM model.

As follows are services catering to 2D development:

- Provide experienced CAD Draftsmen
- Provide BIM modelers for drawing extraction from 3D BIM
- IFC drawings from BIM model
- Shop Drawings extraction from the BIM model
- As-Built Drawings extraction from BIM model

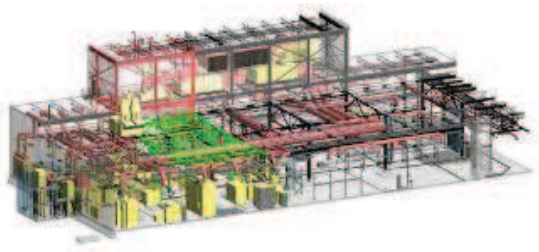
3D BIM

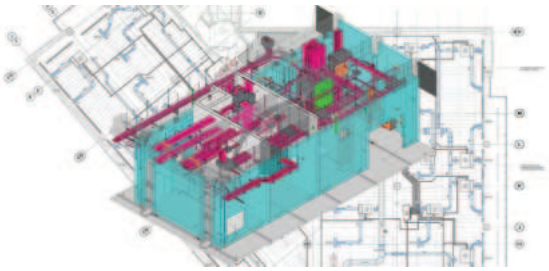
3D BIM model is not a basic visualizer tool. Rather the 3D model brings about all the various elements, as such objects, with relevant information. Such Information will be accessible in further Level of Development stages. The information is to then be extracted.

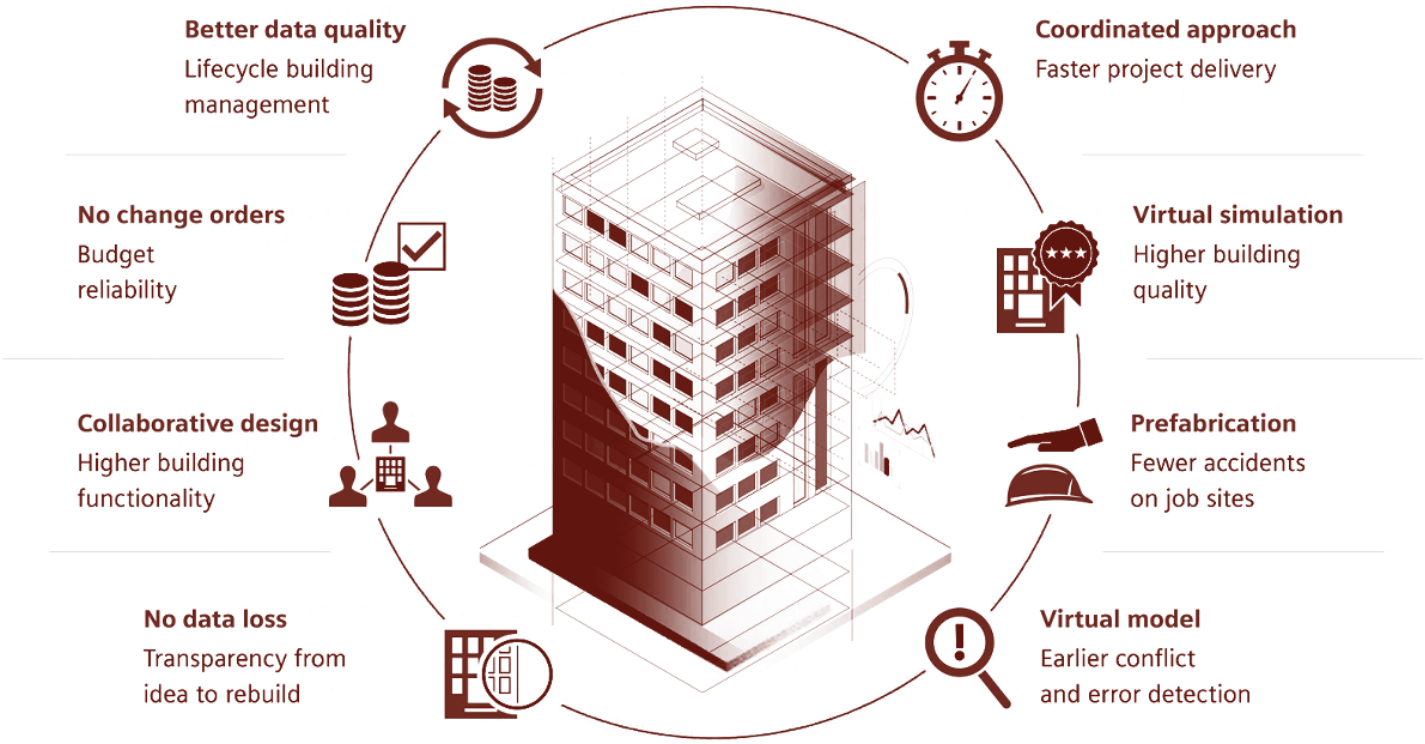
The steps are to be attended to by CEM while creating the BIM. The BIM will be created in a Common Data Environment (CDE), ensuring engagement, and coordination between the different teams.

3D BIM is perhaps the Level of Development one is most familiar with - the process of creating graphical, and non-graphical information. Sharing of such information and as the project Lifecyle progresses, the information becomes ever richer in detail. Up to a certain point in time, at which the project data is handed over to a client at completion for facility and operations management.

LOD is a measure of the amount of information provided in the model. The measurement enables the practitioners in the industry to articulate with a high level of clarity the content and reliability of BIM at various stages in the design and construction stages.







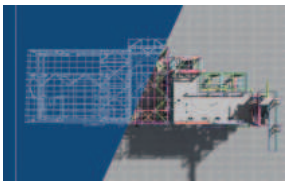
CLASH DETECTION

Clash detection allows for the effective identification, inspection and reporting of interferences in a virtual environment, typically based on 3D models. Identification and clearance of such clashes in a virtual environment optimizes the overall cost and time required for actual real-life construction amendments on site. Thus, bringing risk of reworks due to design co-ordination errors to zero. A clash occurs when different elements occupy the same space. Clashes may occur due to design mistakes or amendments/modifications not yet applied to drawings.

Clashes are categorized into two main types; hard clashes and soft clashes. A hard clash refers to two objects occupying the same space. e.g. a column bearing through a wall or a pipework bumping into a steel beam. Such clashes are time-consuming and costly if discovered onsite.

A soft clash refers to elements that do not have the required geometric tolerance. e.g., an air conditioning unit may require certain clearances to allow for access and maintenance that a steel beam would not tolerate. Other kinds of clash might involve the scheduling of contractors, the delivery of equipment materials, and general timeline conflicts. These are often referred to as “workflow clashes or 4D clashes”.

4D BIM



4D development is based on the site construction works program. The Level of Development evolves and will be updated whenever the construction program is revised. 4D BIM adds an extra dimension of information to a project information model, in the form of scheduling data. Such data is added to components which evolve in detail as the project progresses.
The information can be used to obtain accurate program information and visualization techniques. Allowing to show how the project will develop sequentially.

Time-related information for a particular element might include information on lead time, construction time, the time needed till a project operational, the sequence in which components should be installed, and dependencies on other areas of the project.

With time information combined in the shared information model, planners should be able to develop an accurate project program. With the data linked to the graphical representation of components, it becomes easy to understand project information. It is also possible to illustrate how construction will develop, sequentially over-time.

5D BIM

The Bill of quantities is traditionally a time-consuming process. Bill of Quantities commonly known as BOQ is a statement of work, prices, dimensions and various details required for the construction of a billing by contract. The bill of quantities is a document prepared by the cost consultant (often a quantity surveyor**)**.

BOQ provides project specific measured quantities of the items of work identified by the drawings and specifications in the tender documentation. The quantities may be measured in number, length, area, volume, weight or time. Preparing a Bill of Quantities require that the design is complete, and a specification has been prepared.

LEVEL OF DEVELOPMENT (LOD)

LOD 100

Conceptual Phase: Elements are indicative of area, height, volume, location and orientation. Non-geometric information will not be attached to elements. Elements Will be placed in the model as a 3D element, will appear in views, sheets and schedules but might not necessarily appear in the 3D View.

LOD 200

Schematic Design Phase Elements have approximate quantities size, shape, location and of orientation. Non-geometric information may be attached to elements.

LOD 300

Issued For Construction (IFC) Phase. Elements have accurate quantities, size, shapes, locations and orientations.

LOD 400

Construction Phase, Elements have accurate quantities, size shapes, locations and orientations. Required fabrication, assembly, detailing and Installation Information is attached to the element.

LOD 500

As-Bult Conditions; Elements modelled as constructed assembles actual and accurate in terms of size shape location, quantities and orientation. Required operation and maintenance information Is attached to the documents.

IV.
INTEGRATED PIMS

At CEM, we are broadening our digital capabilities with our PIMS platform—a single source of truth that integrates document management, real-time dash-boarding, and advanced analytics. Designed specifically for construction, our PIMS platform bridges the gap between technical and non-technical users, delivering an intuitive user experience for all stakeholders.

Key Features Include:

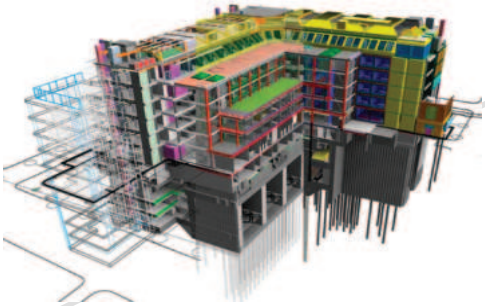
- User Access Management: Granular permission settings for roles such as viewer and editor to ensure data security and tailored access.
- Interactive Dashboarding: High-level dashboards offering insightful, customizable data visualization for proactive decision-making across management layers.
- Timeline & Update Tracking: Weekly updates with historical tracking, ensuring users can easily monitor project progress and changes over time.
- 3D BIM & 4D/5D Simulation: Advanced integration of BIM and simulation technologies to enhance both planning and execution.
- Cloud-Based Data Environment: A secure, centralized repository for seamless document management and collaboration.
- Advanced Modules: Incorporation of AI/ML tools (like chatbots),
- Blockchain-based tracking, and mobile applications to drive innovation and operational efficiency.
- API Connectivity: Robust integration capabilities with tools such as Primavera, Acconex, Autodesk BIM 360 and Revit to ensure interoperability and data consistency.

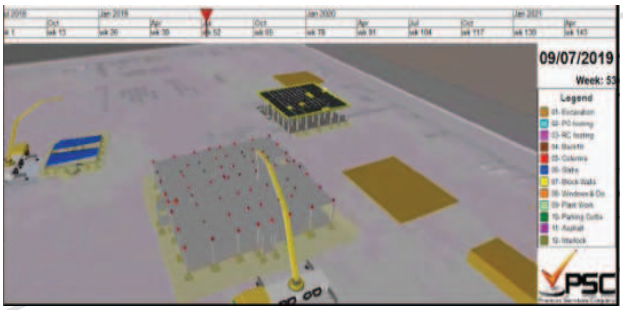
This ecosystem is complemented by our focus on high-level construction management—providing strategic oversight and real-time control over project execution—and by our commitment to bridge cross-functional gaps between technical experts and business managers. Through continuous customer journey validation and iterative development, our platform not only meets today's challenges but is also primed for future innovations.

V.
4D/5D SIMULATION

The 4th Dimension of BIM refers to time and enables efficient œ nstruction scheduling. It helps in streamlining the activities which need to be carried out on the construction site. The 5th Dimension of BIM links the cost data together for accurate estimation of cost and planning.

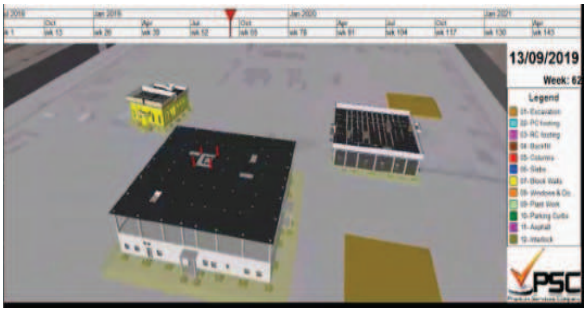
3D BIM is a digital geometric model that constitutes an X, Y and Z axis associated with further information. The model is extracted from LoD 300, post 2D CAD phase.

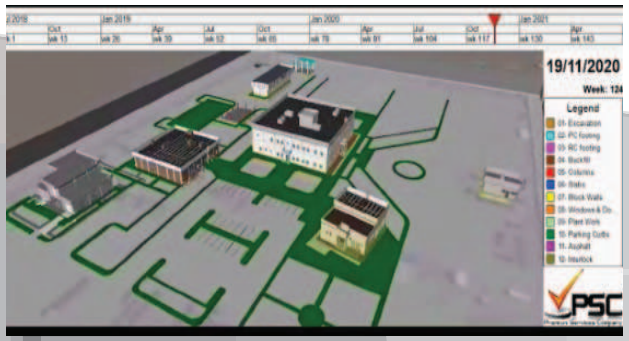




4D BIM is adding scheduling information to model construction sequences. Adding a dimension of time allows the project team to better visualize how the construction will be sequenced.

5D BIM is generally considered to be adding cost information to a model. Data is provided in real time as the model is developed or changed, while owner and project team can see the cost and other data unfold instantaneously.





Civil engineering improves coordination and delivery with BIM through virtual design and construction.

VI.
RECENT PROJECTS

Panda Enclosure
Project Location: Al Khor, Qatar
CEM Scope: BIM Service – DashPro SaaS

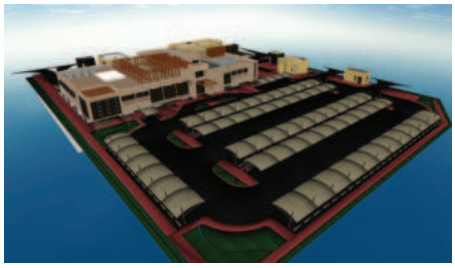
Material Research Center
Project Location: Doha, Qatar
CEM Scope: BIM Services

Al Uqda Racing Track
Project Location: Doha, Qatar
CEM Scope: BIM Services

Vendome Mall Roads & Bridges
Project Location: Lusail, Qatar
CEM Scope: DashPro SaaS

Water Park - Qetaifan Island North
Project Location: Doha, Qatar
CEM Scope: DashPro SaaS

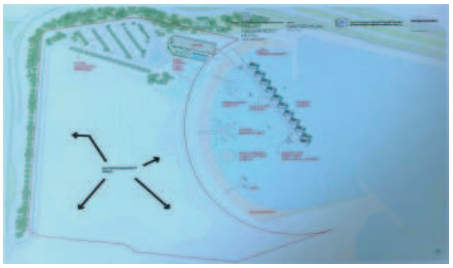
Majlis Grand Mercure
Project Location: Doha, Qatar
CEM Scope: PMC – DashPro SaaS



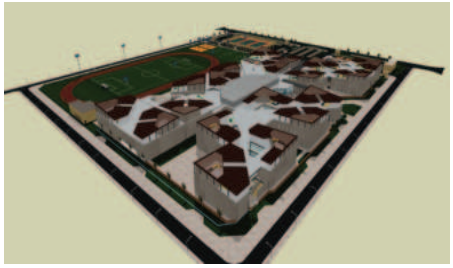
Health Center
Project Location: Al Wakrah, Qatar
CEM Scope: DashPro SaaS

Al Khor Beach Resort
Project Location: Al Khor, Qatar
CEM Scope: Concept Design

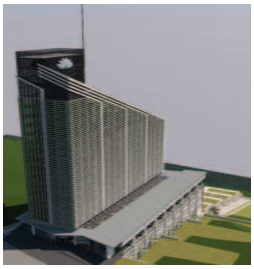
Novotel Hotel & Residential Building
Project Location: Al Wakra, Qatar
CEM Scope: DashPro SaaS



Qutaifia Waterfront
Project Location: Doha, Qatar
CEM Scope: DashPro SaaS



New Academy
Project Location: Doha, Qatar
CEM Scope: DashPro SaaS



Lotus Tower Istanbul
Project Location: Istanbul, Turkey
CEM Scope: PMC - DashPro SaaS

VII.
ACCREDITATIONS

DGC
Doha Group Trading & Contracting
مجموعة الدوحة

Ref: # DGC/BIM/P0043/0001

01st January 2023

M/s: BIM Consultancy Service
Doha, Qatar

Attn. : Dr. Ahmed Fayad
CEO

Project : Design & Build of Al Zubarah Site

Subject : Letter of Recommendation

Dear Sir

Construction Engineering Management, CEM, is a subcontractor to Doha Group Trading and Contracting Co. W.L.L on the Design and Build of Zubarah Project in Qatar. Our subcontract scope of works with CEM included the development and delivery of the Construction BIM scope for the Buildings, Landscape and external networks. This includes LOD 350, LOD 400 as well as LOD 500 in the project end.

CEM has been performing their scope of works in a timely and professional manner with high level of cooperation with the project stakeholders and teams on- and offsite.

We look forward to future opportunities to work with CEM on other BIM projects

Yours faithfully,

For **Doha Group Trading & Co.**

AD 1/1/23

Ahmed Daoud
Project Manager

Attached: As Stated Above

Cc: Mr. Mohammed Shafik – Operations Manager (DGC)
File.

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ISO 9001: 2015 | ISO 14001: 2015 | ISO 45001: 2018

ACCREDITATIONS

BR CK STONE
TRADING & CONTRACTING

LETTER OF RECOMMENDATION

January 1st., 2023

To whome it may concern:

Construction Engineering Management, CEM, is a subcontractor to Brick Stone Trading and Contracting Co. on the Design and Build of Grandstand for Al Uqda Equestrian Complex Project in Qatar. Our subcontract scope of works with CEM included the development and delivery of the Construction BIM scope for the Buildings, Landscape and external networks. This includes LOD 350, LOD 400 as well as LOD 500 in the project end.

CEM has been performing their scope of works in a timely and professional manner with high level of cooperation with the project stakeholders and teams on- and offsite.

We look forward to future opportunities to work with CEM on other BIM projects.

Sincerely

Doha Group Trading and Contracting Co.

Eng. Galal Gadelrab

Technical Director

01/01/23

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ACCREDITATIONS

BRICK STONE
TRADING & CONTRACTING

LETTER OF RECOMMENDATION

January 1st., 2023

To whome it may concern:

Construction Engineering Management, CEM, is a subcontractor to Brick Stone Trading and Contracting Co. on the Design and Build of Material Research Center Project in Qatar. Our subcontract scope of works with CEM included the development and delivery of the Construction BIM scope for the Buildings, Landscape and external networks. This includes LOD 350, LOD 400 as well as LOD 500 in the project end.

CEM has been performing their scope of works in a timely and professional manner with high level of cooperation with the project stakeholders and teams on- and offsite.

We look forward to future opportunities to work with CEM on other BIM projects.

Sincerely

Doha Group Trading and Contracting Co.

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01/01/23

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VIII.
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