Trimble

Model, Produce and Erect All Precast Structures – Faster and with Better Quality

Tekla Software for Precast Concrete Industry

Trimble Ltd

REVENUE 2015

$2.3B

(25% EUROPE, $ 1 B FROM SOFTWARE)

8000+

EMPLOYEES

FOUNDED IN

1978

>2,000

DEVELOPERS WORLDWIDE

ENGINEERING & CONSTRUCTION

55%+

OF TOTAL REVENUE

>1,000

UNIQUE PATENTS

CUSTOMERS IN

>150

COUNTRIES

PUBLICLY TRADED ON THE

NASDAQ

SINCE 1990

OFFICES IN

35

COUNTRIES

Industries

Construction & Operations

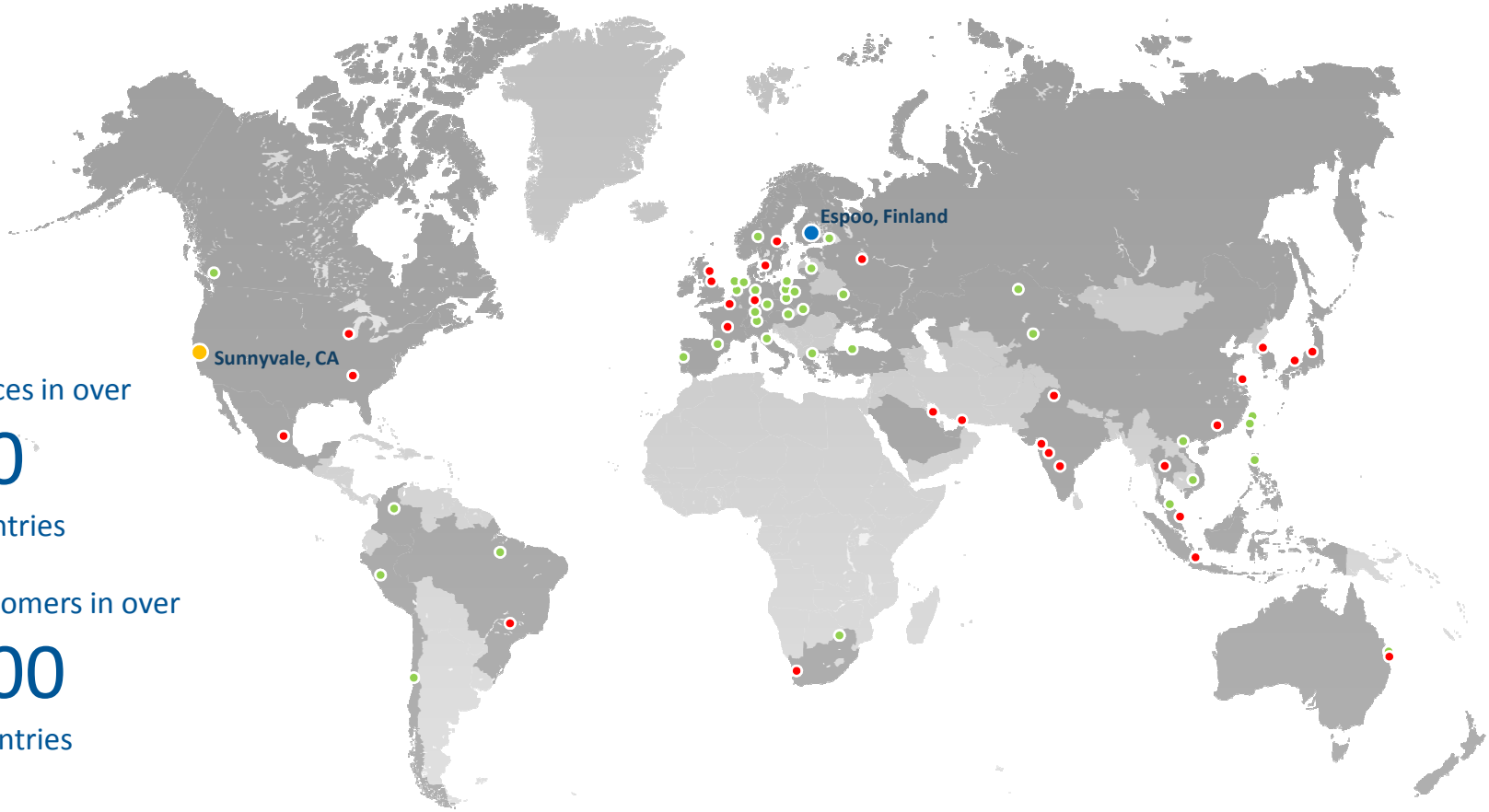
- *Building Construction*
- *Civil Construction*

Agriculture

Transportation & Logistics

Geospatial

Trimble global network for structures



Offices in over

20

countries

Customers in over

100

countries

Australia
Brazil
China
Denmark
Finland
France
Germany
India
Indonesia
Italy
Japan
Malaysia
Mexico
Russia
Saudi Arabia
Singapore
South Africa
South Korea
Sweden
Thailand
UAE
UK
USA

Trimble Solutions- design-build-operate (DBO) lifecycle

Cost Planning — 5D — Cost Control

Schedule Planning — 4D — Production Control

Design to Build — 2D/3D — Build to Design

Biz Dev | Preconstruction | Construction

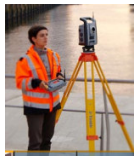
Cost Modeling | 2D/3D Design | Visual Prez | Change Mgmt | Constructability Analysis | Quantity Takeoff | Cost Estimating | Project Scheduling | Bid Mgmt | 3D BIM Layout | Production Control | 3D Laser Scanning | Cost Control | Mobility Apps

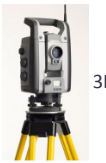
TEKLA Structures

VICO SOFTWARE Integrating Construction

Trimble Connect

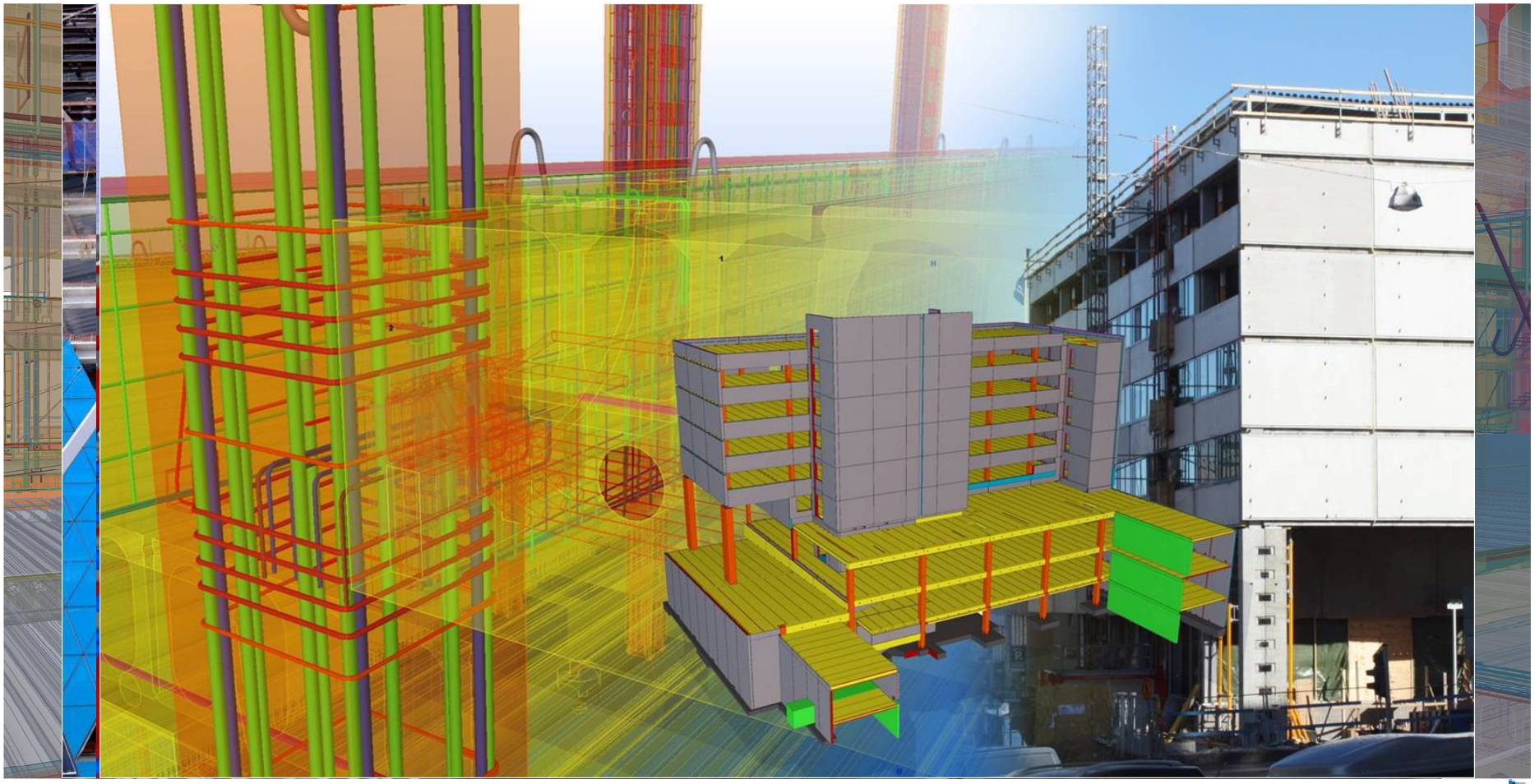
Trimble Robotic Total Station





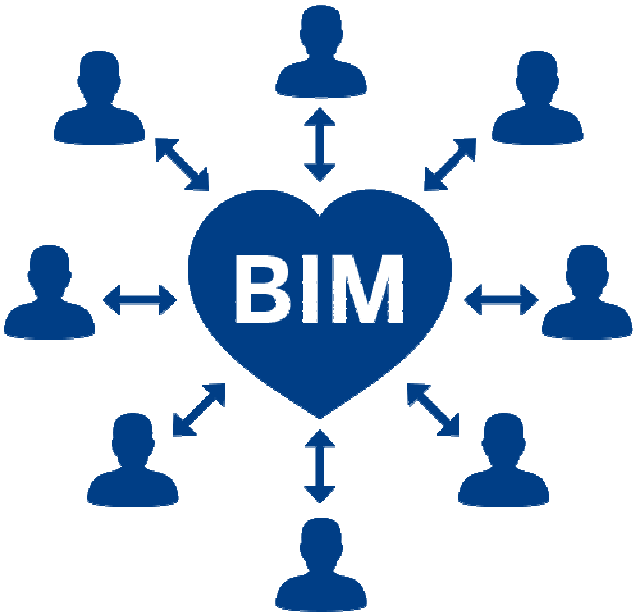
3D Laser Scanner

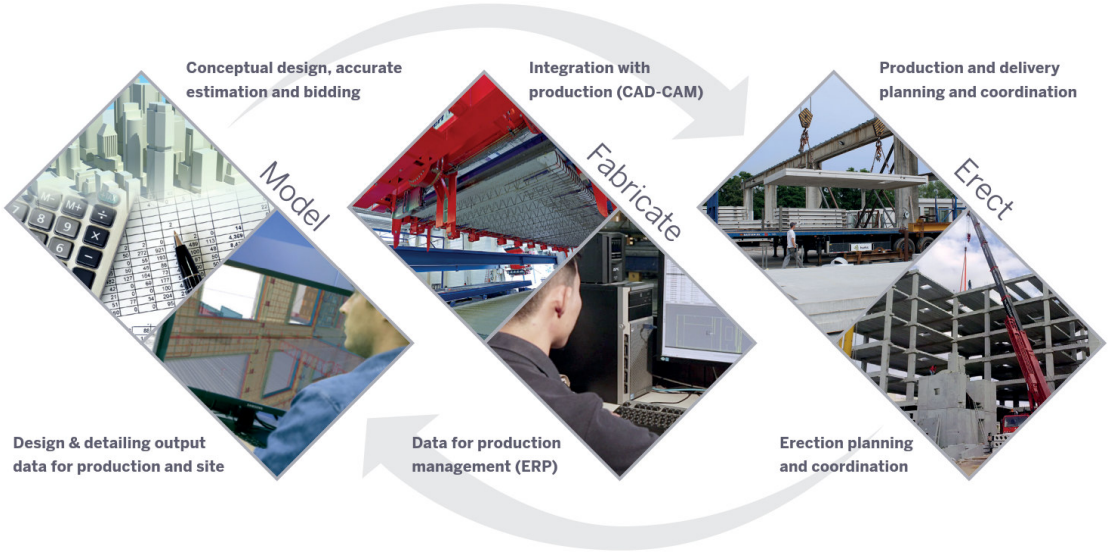
BIM Software for free flow of information, constructible models and collaboration



Trimble

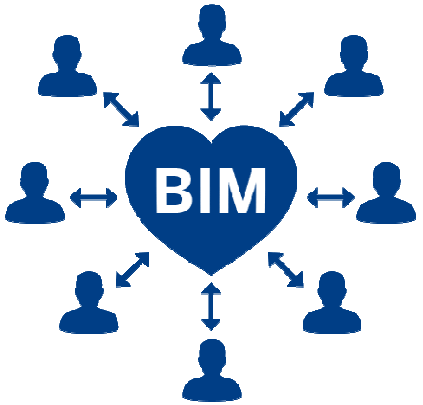
Model based process enhances collaboration and enables efficient creation and transfer of information





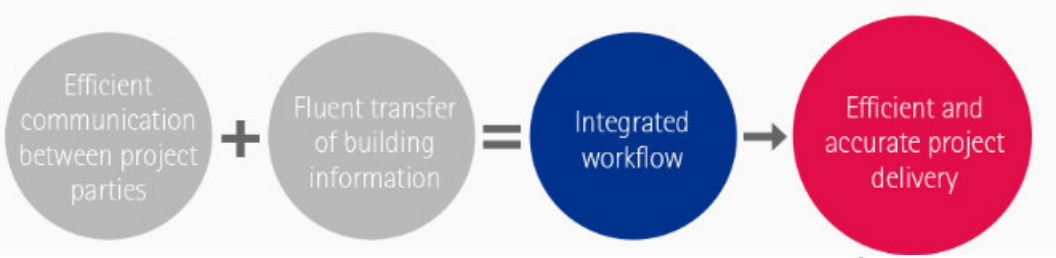
openBIM

- openBIM means that BIM operations and BIM data is not tied to any specific tool, software or vendor.
  - Freedom to choose the tools best suited for the purpose
  - Freedom to transfer data between tools
  - Freedom to develop very purpose specific tools independent of any platform
- Open standard data formats
  - IFC, Industry Foundation Classes is most commonly used standard for communication

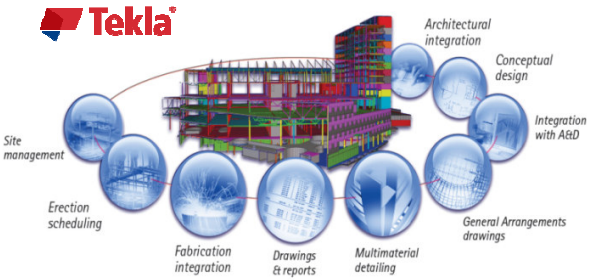


buildingSMART International Alliance for Interoperability

OPEN BIM™



Trimble's software solutions for structures



Tekla Structures

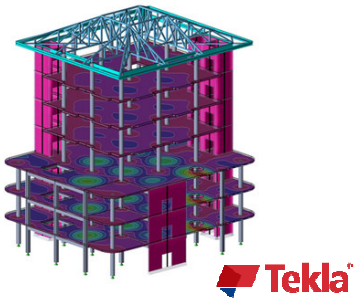
Creation and management of 3D structural models

- Accurate, constructible models with high level of detail and information
- Not restricted by material / structural complexity
- From conceptual design to detailing, fabrication, erection and construction management

Trimble Connect

Construction platform, coordination & collaboration

- Combine and review models
- Check for conflicts
- Communicate and share
- Information available anywhere at anytime

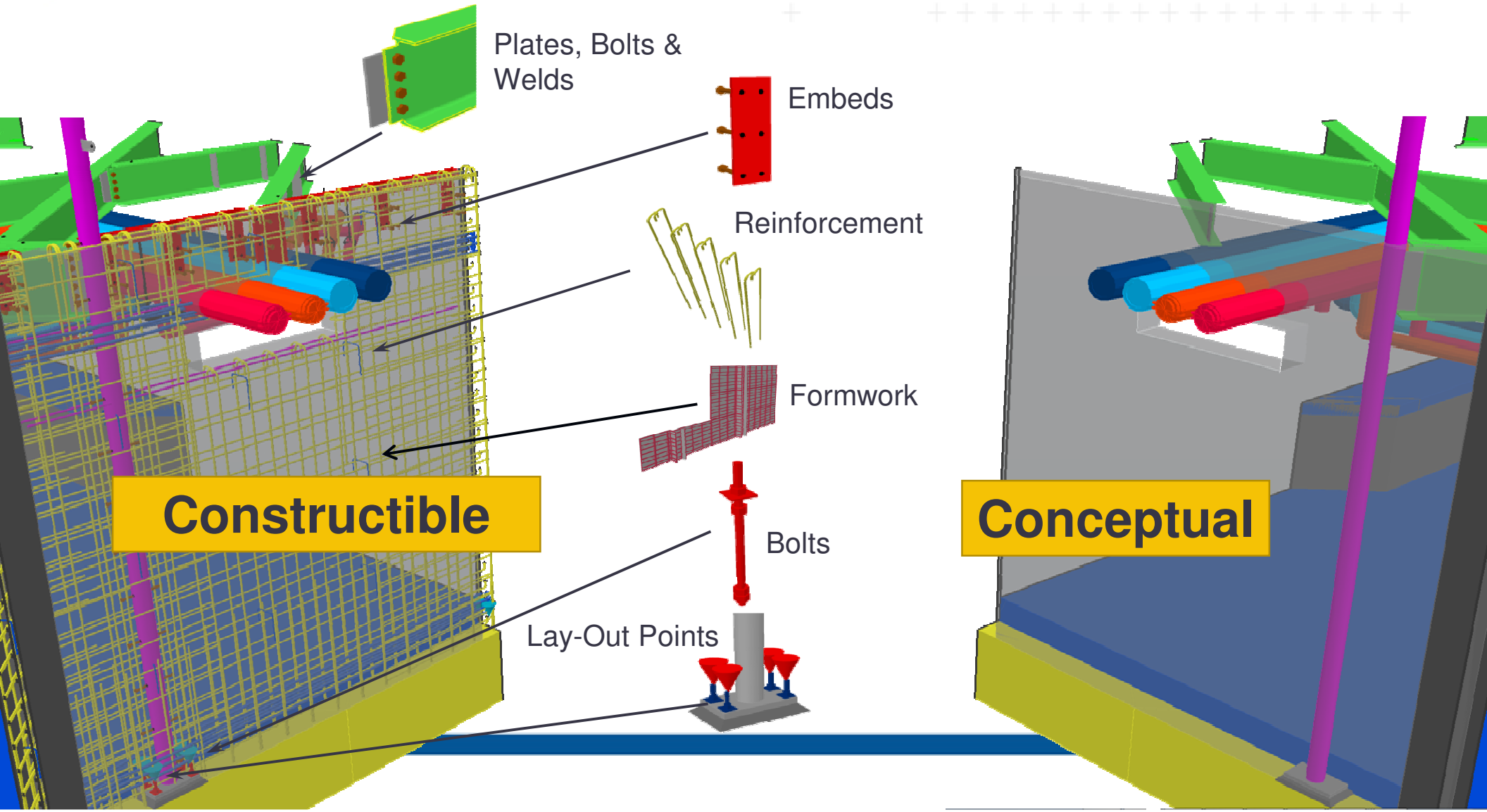


Tekla Structural Designer & Tedds

Analyze and design buildings

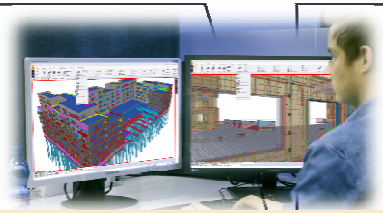
- Analyze and design buildings
- Optimized concrete and steel design
- Modeling, load analysis, design, documentation
- Tedds to automate repetitive structural calculations

The Trimble Difference



Model-based manufacturing process helps to streamline and optimize whole value chain

Conceptual Design, Estimation QTYs, Sales & Bidding



Design & detailing, Documents and data for production and site

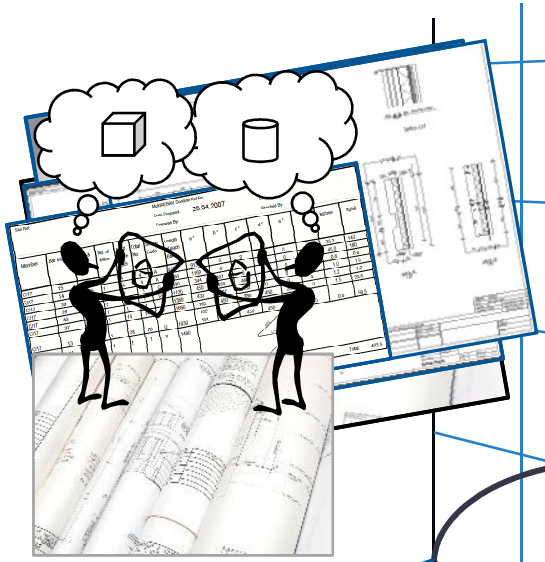
Integrate production (CAD-CAM), Data for production management (ERP), planning & coordination

Data for storage management, Delivery coordination

Erection planning, management and project coordination

MODEL **FABRICATE** **ERECT**

Amount of information



Accumulation of information

Conceptual Design

Sales&bidding

General design

Detailing, output data creation

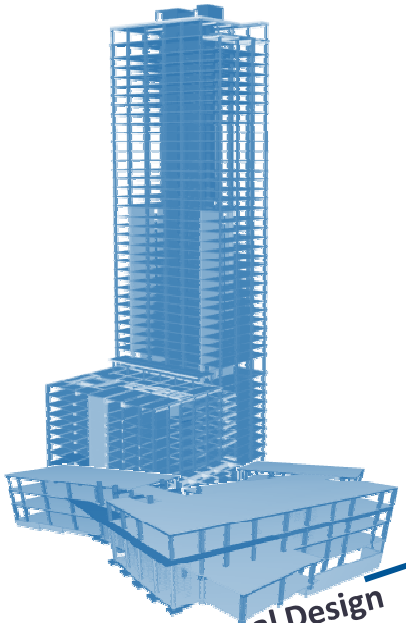
Production Management

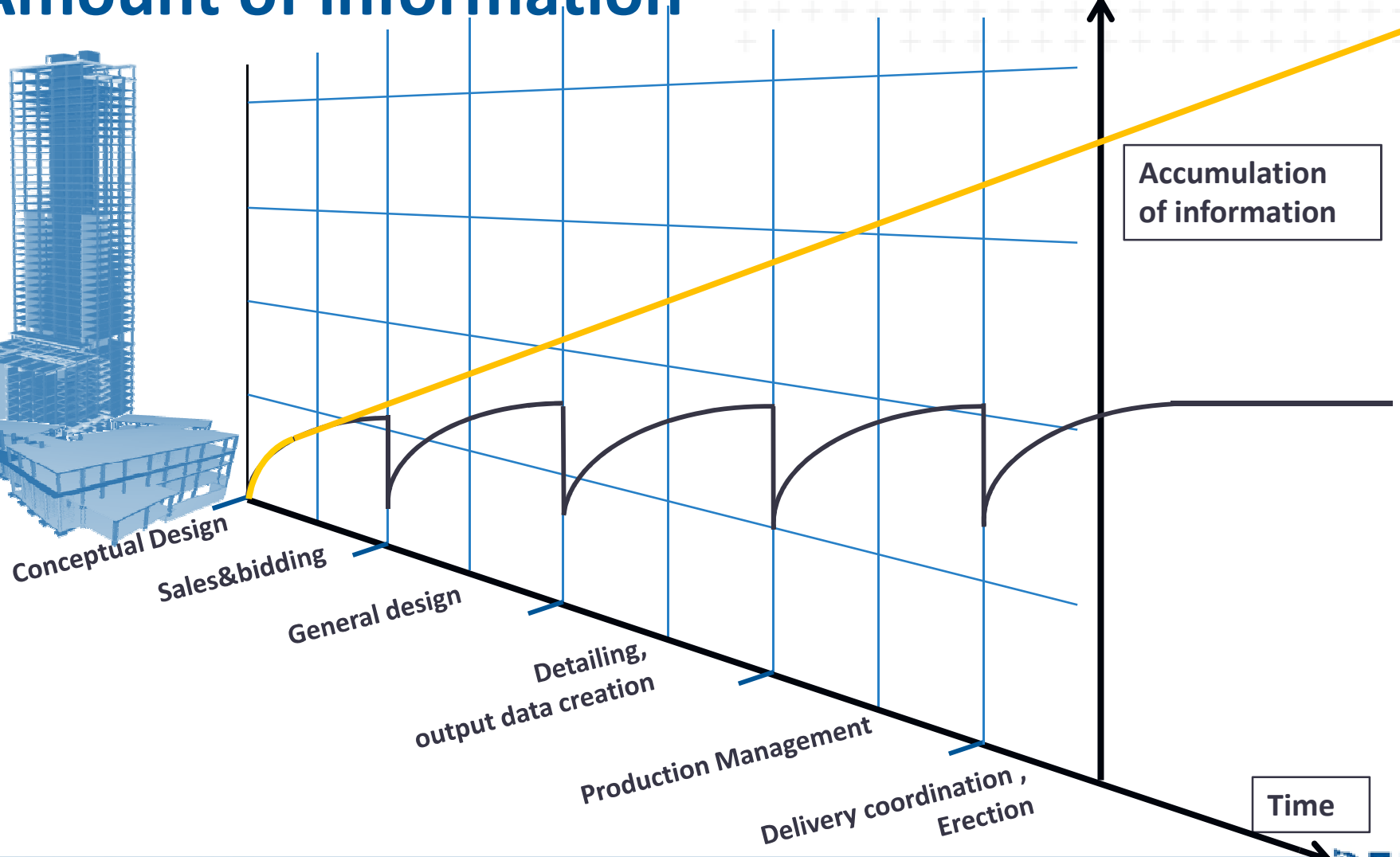
Delivery coordination , Erection

Time

Trimble

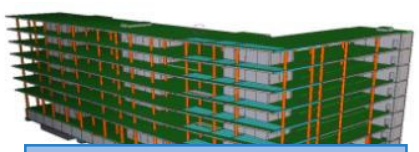
Amount of information



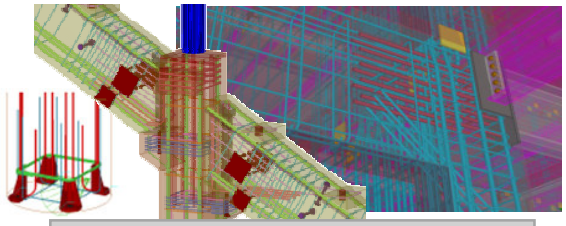


Trimble

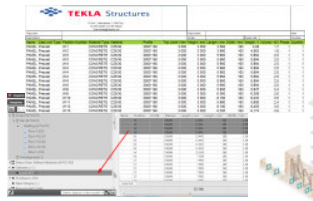
Minimize costly surprises and rework, enhance information transfer and coordination

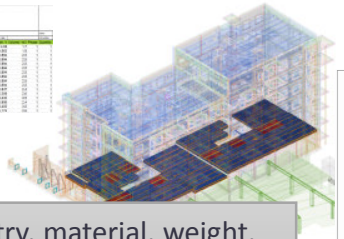


Value engineering,
Estimation qty's,
3D visualizations & 4D animations

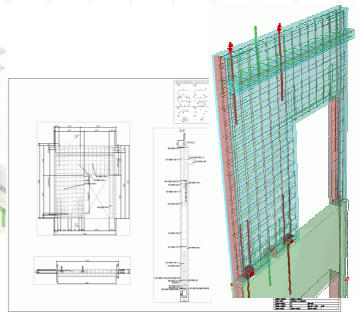


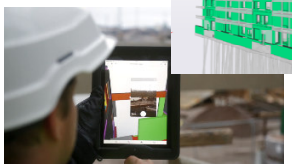
Intelligent detailed connections, reinforcements, embeds

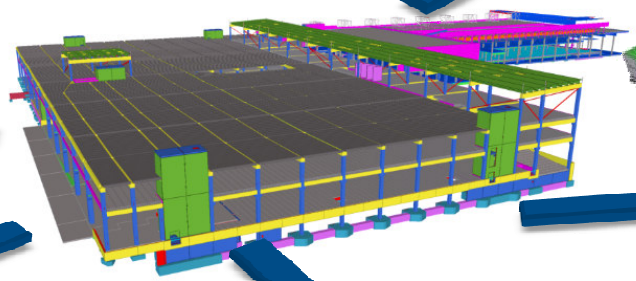


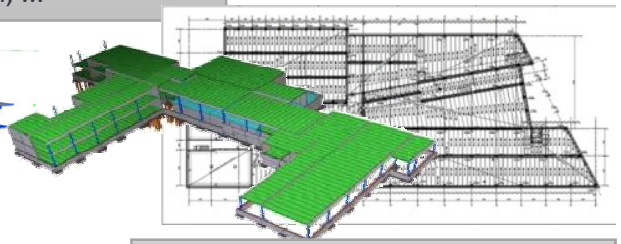


Quantity, geometry, material, weight, location, attributes, process information, ...







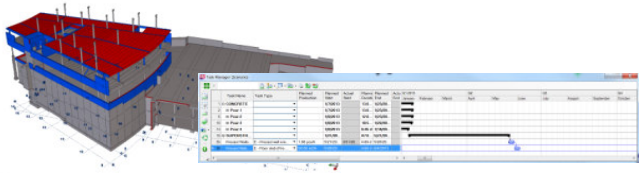


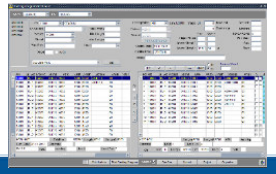
GA and fabrication drawings, reports and bending schedules, 3D visualization

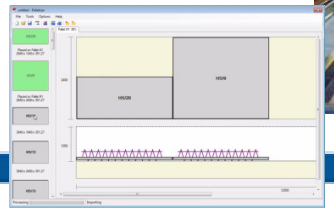
Project progress follow-up, coordination & communication

Erection planning and sequencing
Delivery sets and scheduling

Data for production planning & management, output to ERP- and CAM-solutions

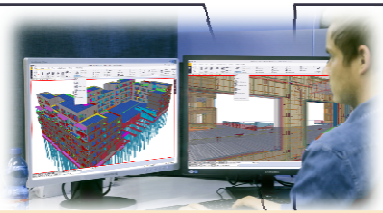






Trimble

Model-based working supports users through the fabrication process



Conceptual Design, Estimation QTYs, Sales & Bidding

Design & detailing, Documents and data for production and site

Integrate production (CAD-CAM), Data for production management (ERP), planning & coordination

Data for storage management, Delivery coordination

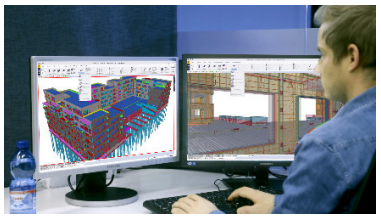
Erection planning, management and project coordination

MODEL

FABRICATE

ERECT

Estimator,
Sales manager

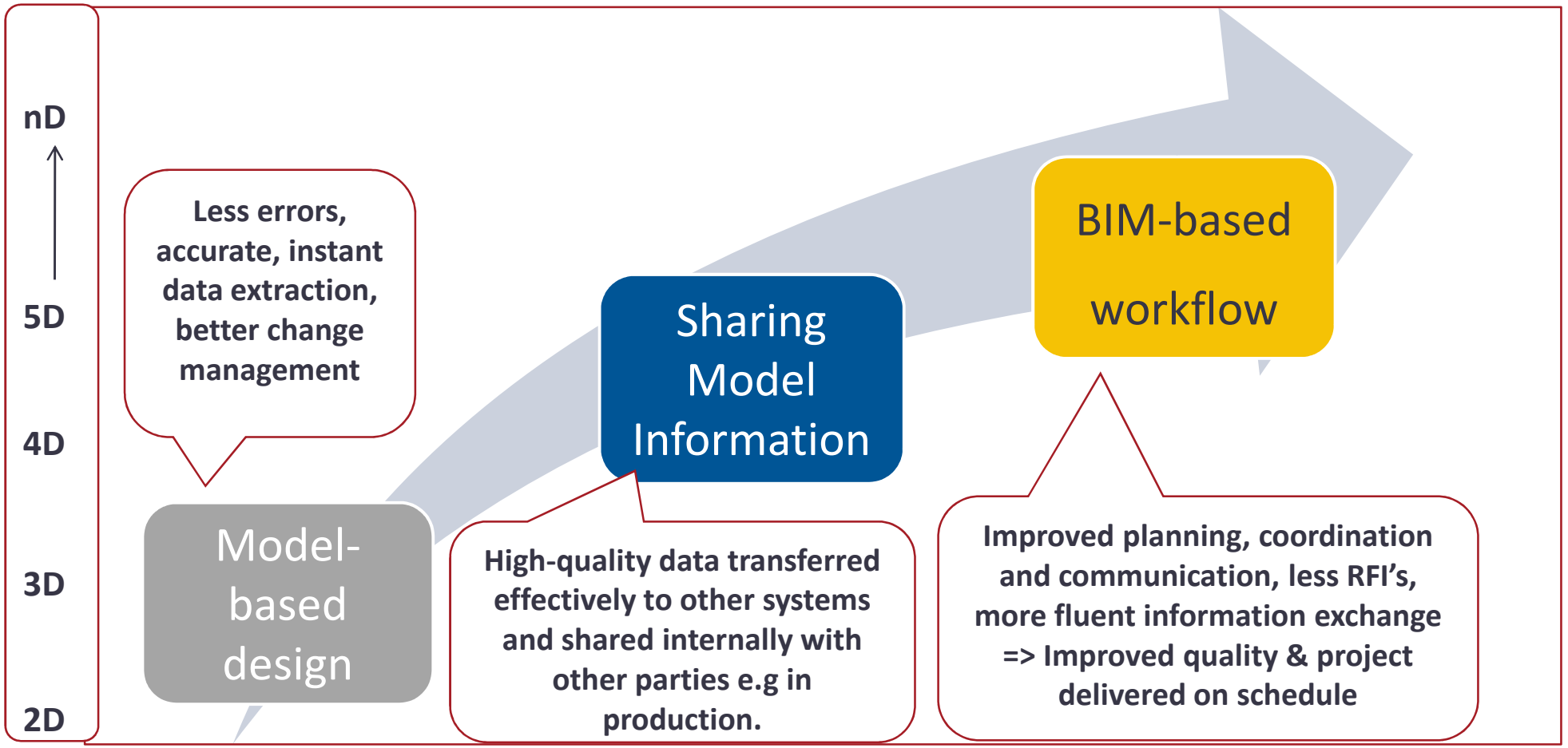


Detailer, Drafter

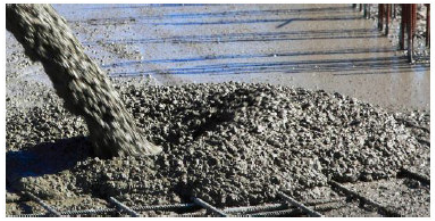
Production Planner,
Purchaser
Delivery coordinator

Installation manager/
- coordinator

Towards BIM-based workflow



Tekla Structure software provides solutions for



Concrete Contractors

General Contractors

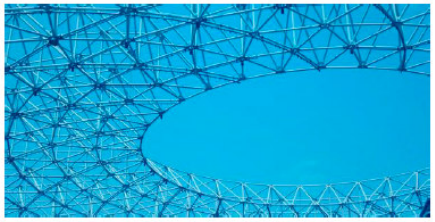
Rebar Fabricators

Offshore

EPC

Steel Fabricators

Precast Fabricators

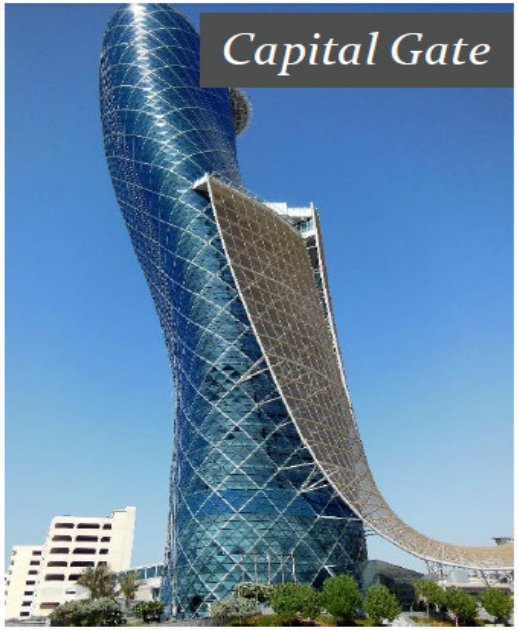


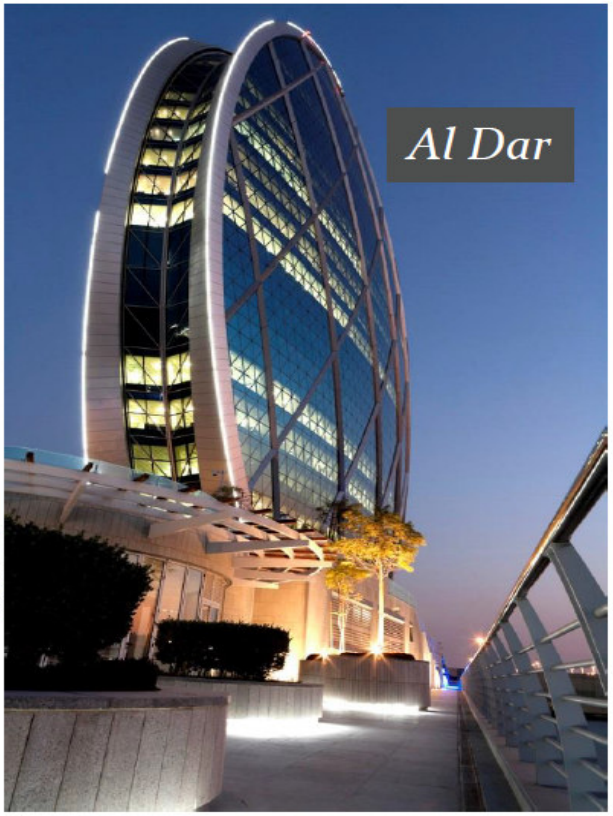
Structural Engineers

Students

Trimble
Tekla

Projects in TeklaStrucures Software


Capital Gate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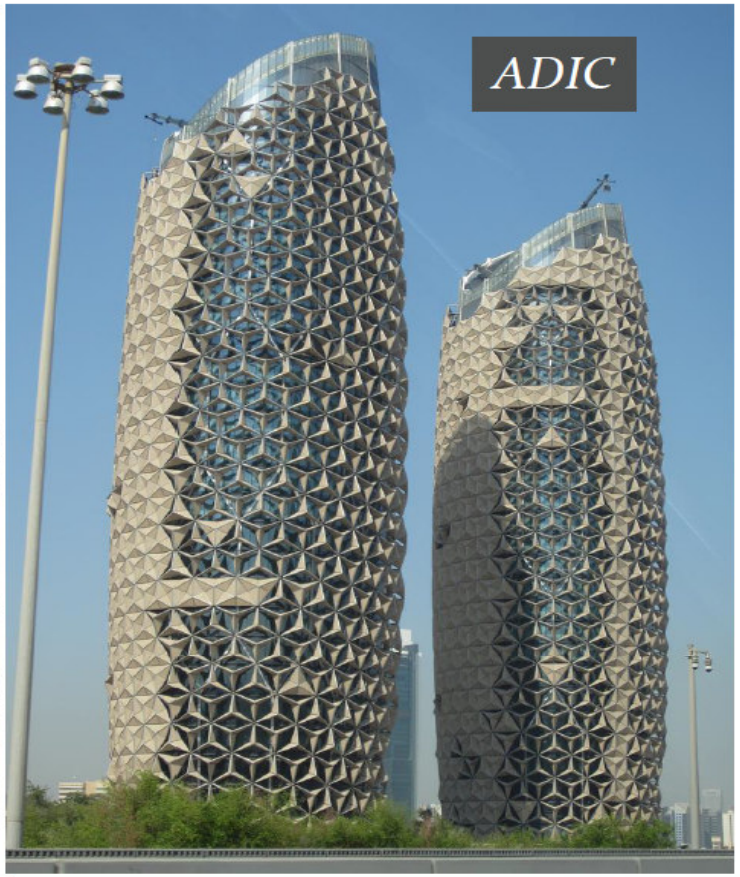
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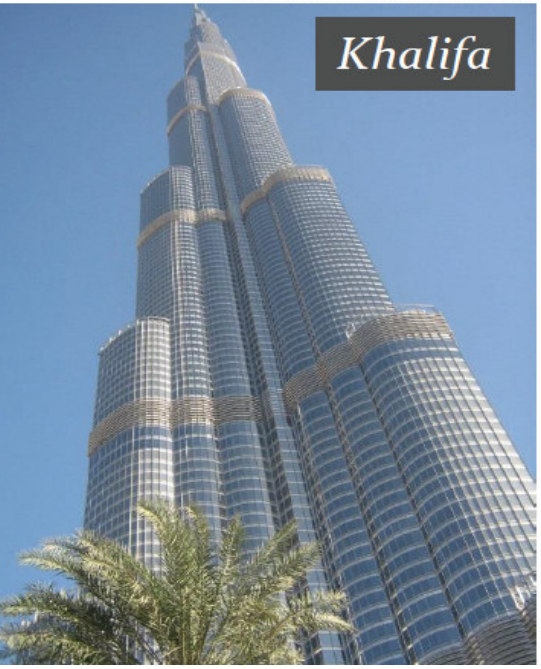

Khalifa

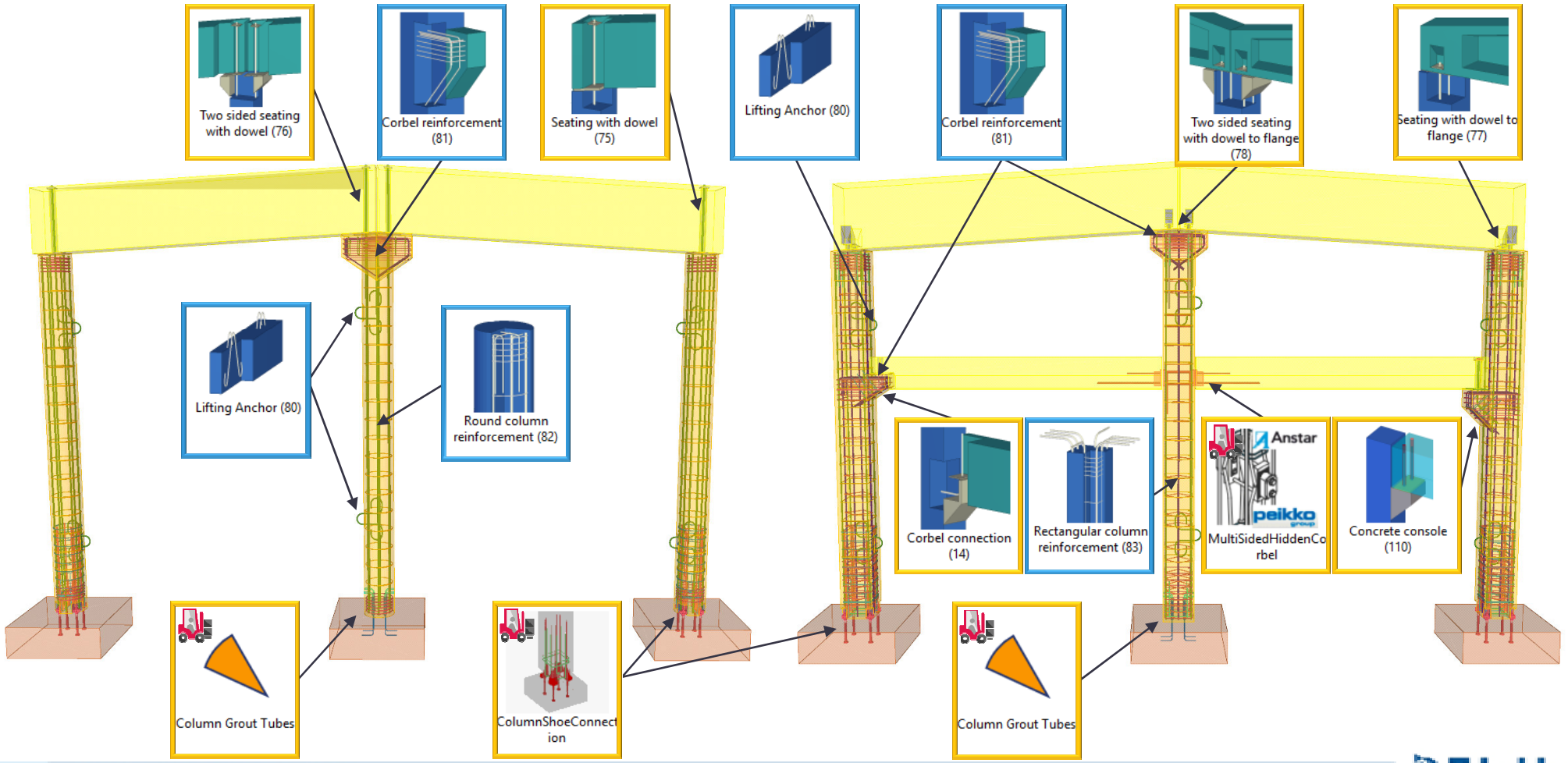
Louvre Museum

Gate Towers

TeklaStructures as BIM Tool

Foundation | Frame | Wall | Slab | Special | Rebars

Columns | Beams

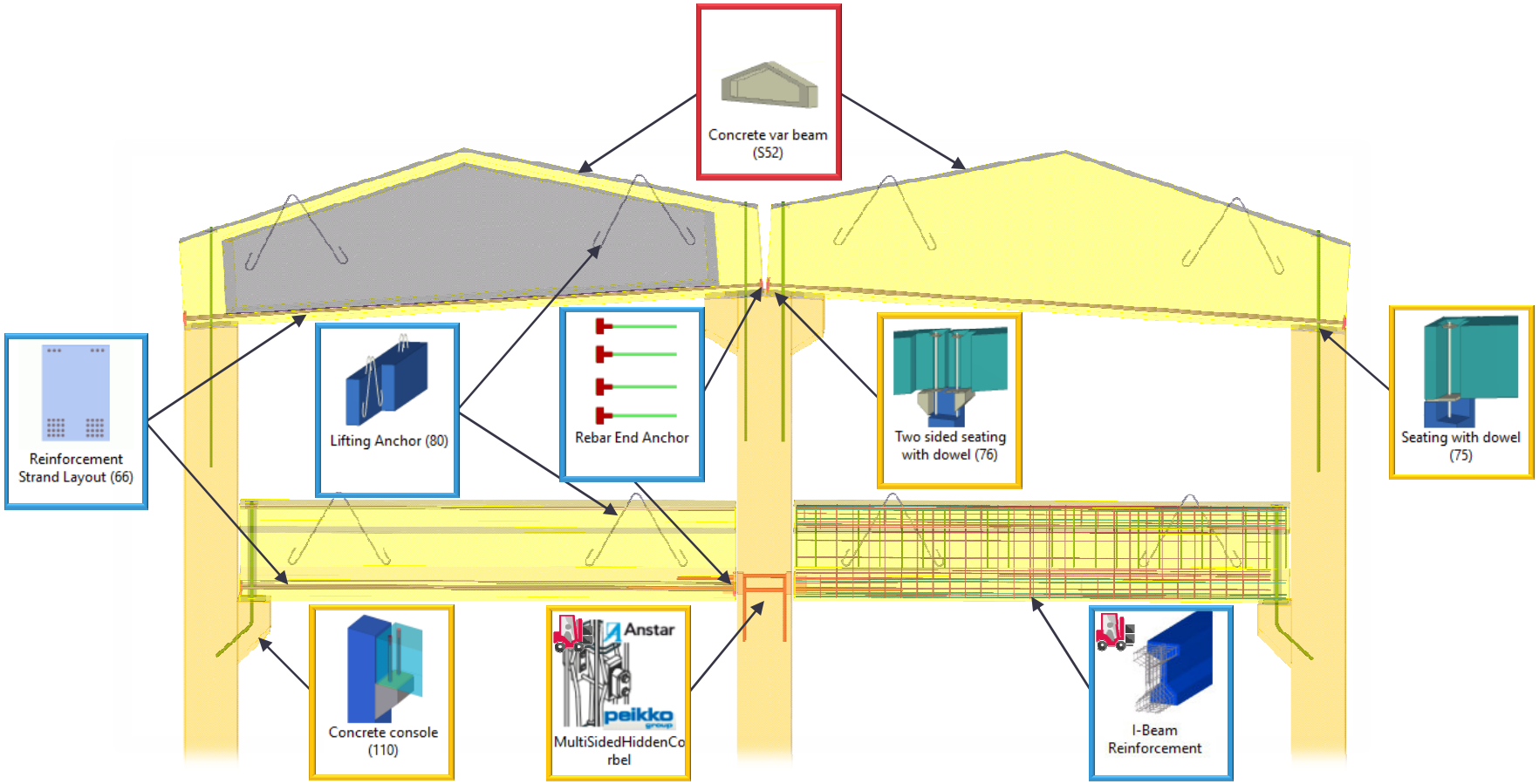


Trimble

Foundation | Frame | Wall | Slab | Special | Rebars

Columns | Beams

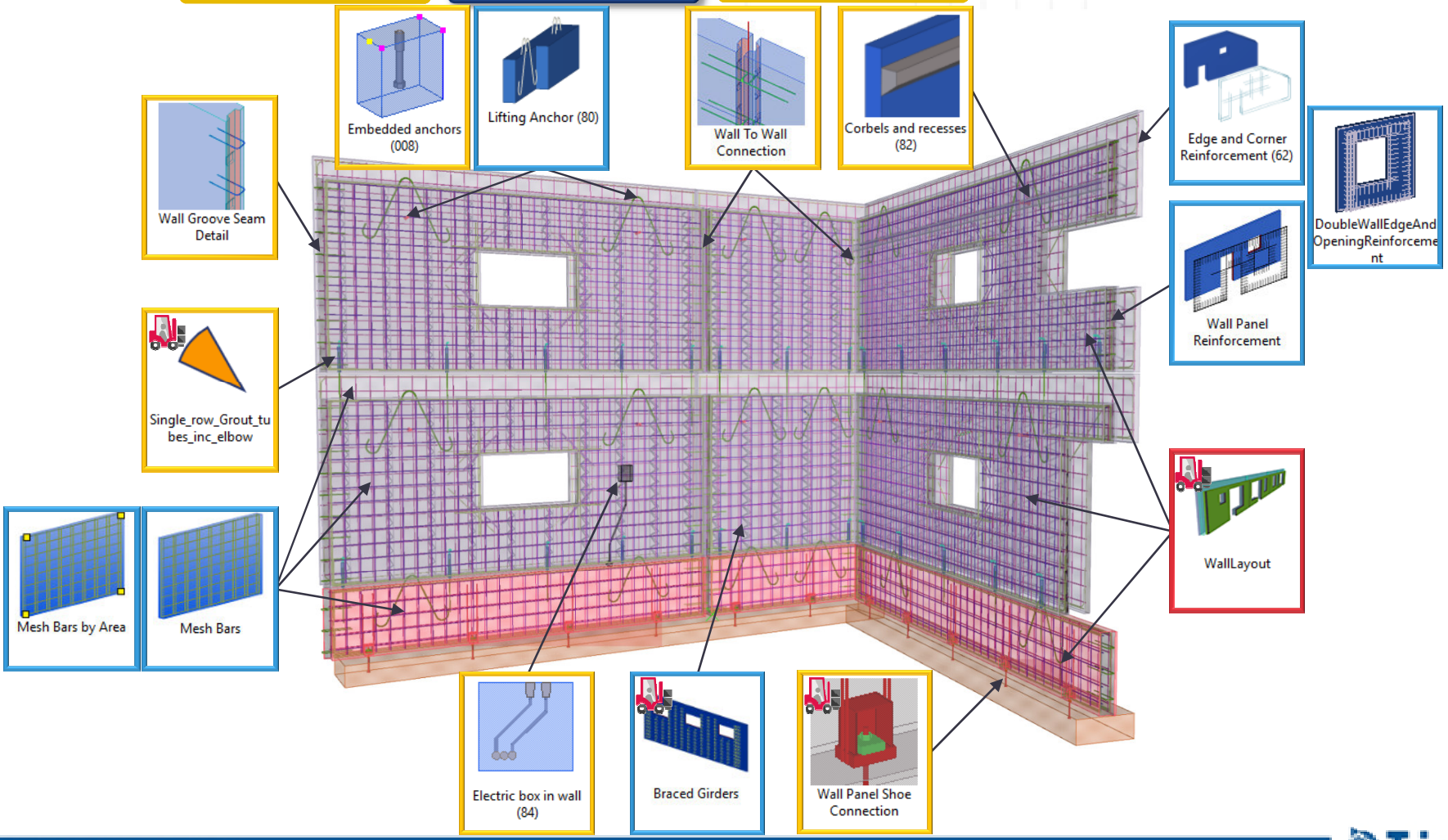
Rectangular | I | L/T



Trimble

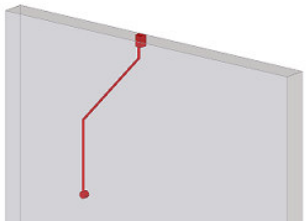
Foundation | Frame | Wall | Slab | Special | Rebars

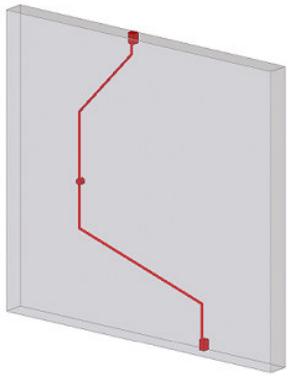
Solid | Double | Sandwich

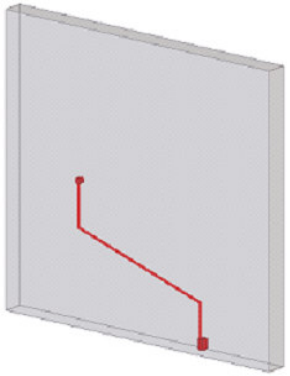


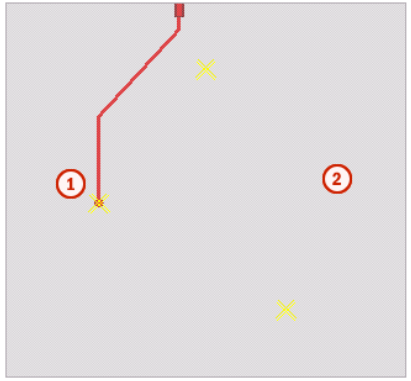
Trimble

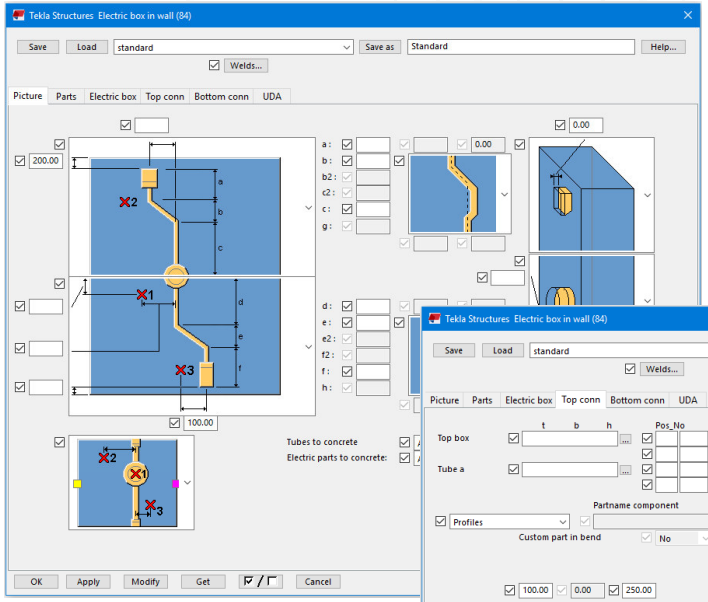
Electric Box In Wall (84)

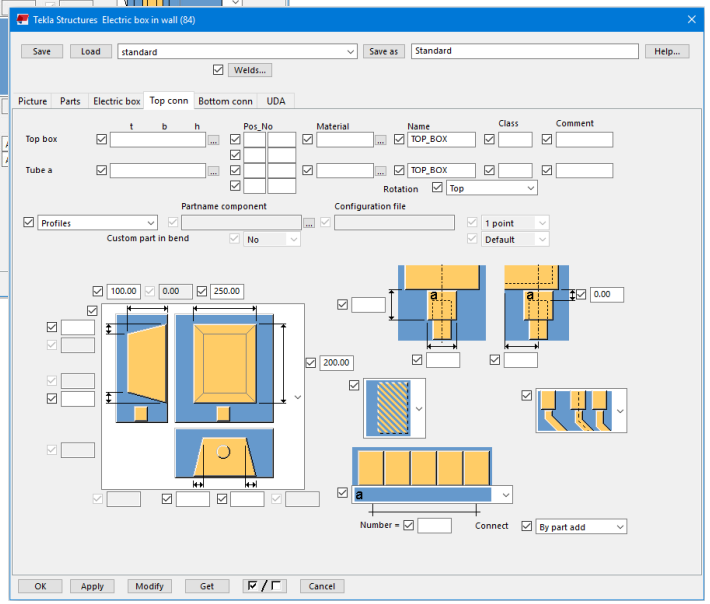


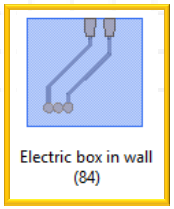




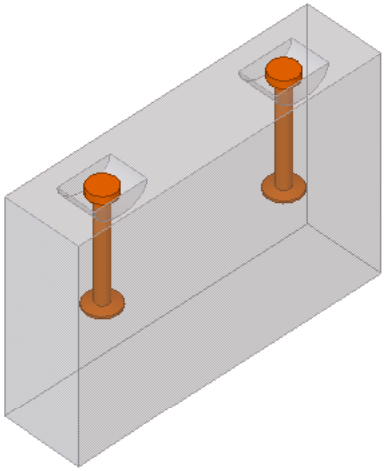


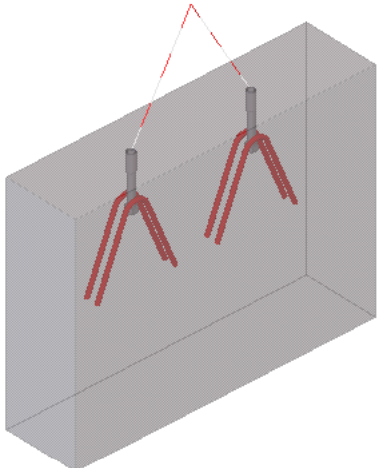


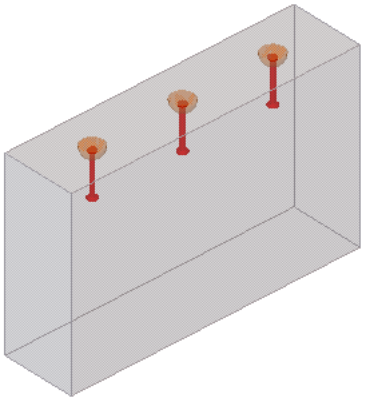


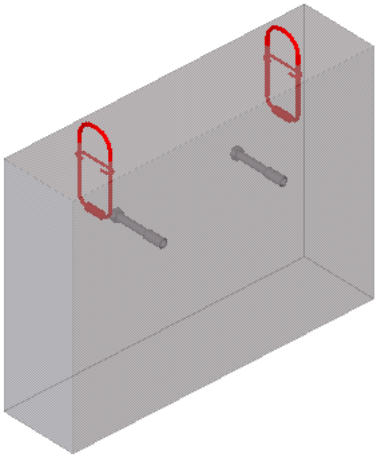


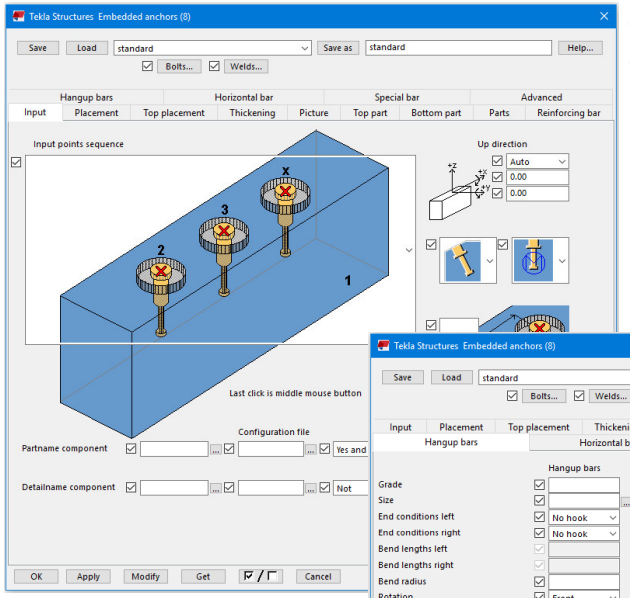
Embedded Anchors (8)

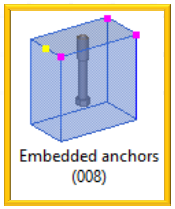


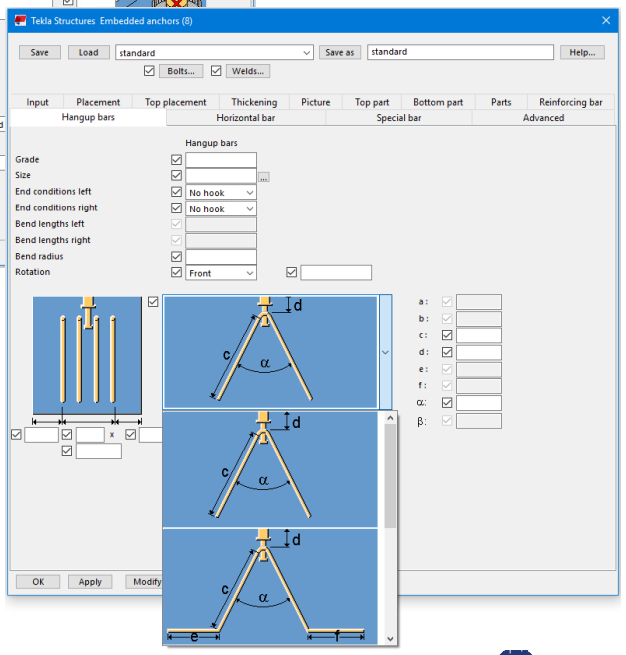






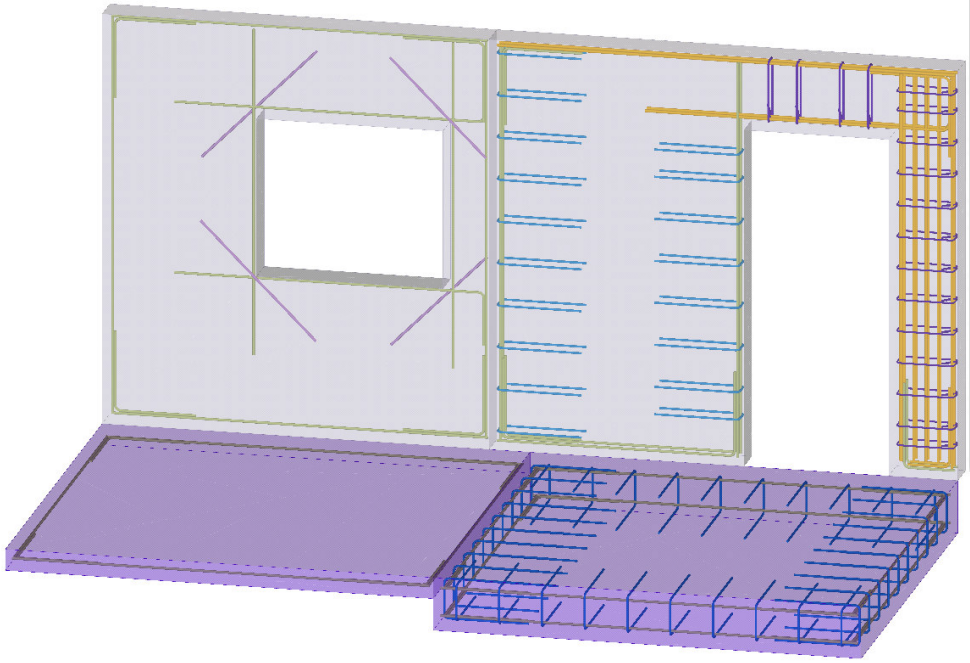


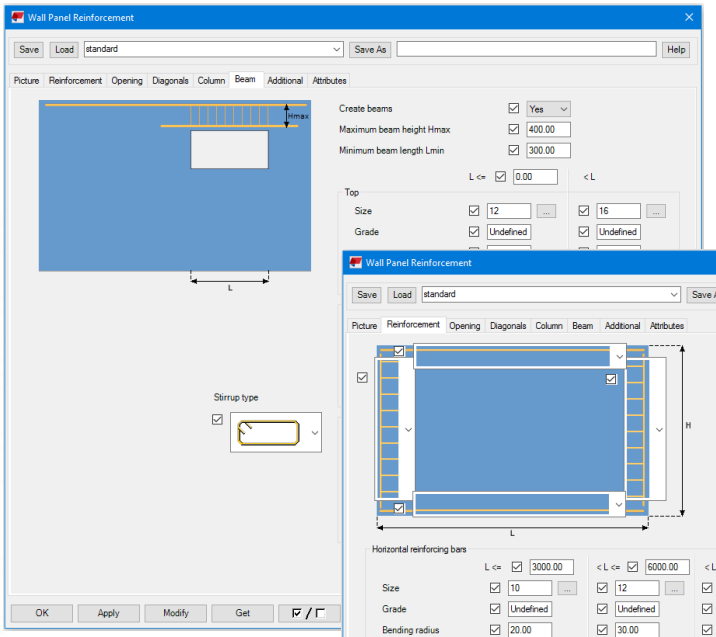


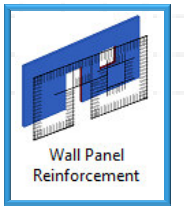


Trimble

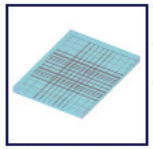
Wall Panel Reinforcement



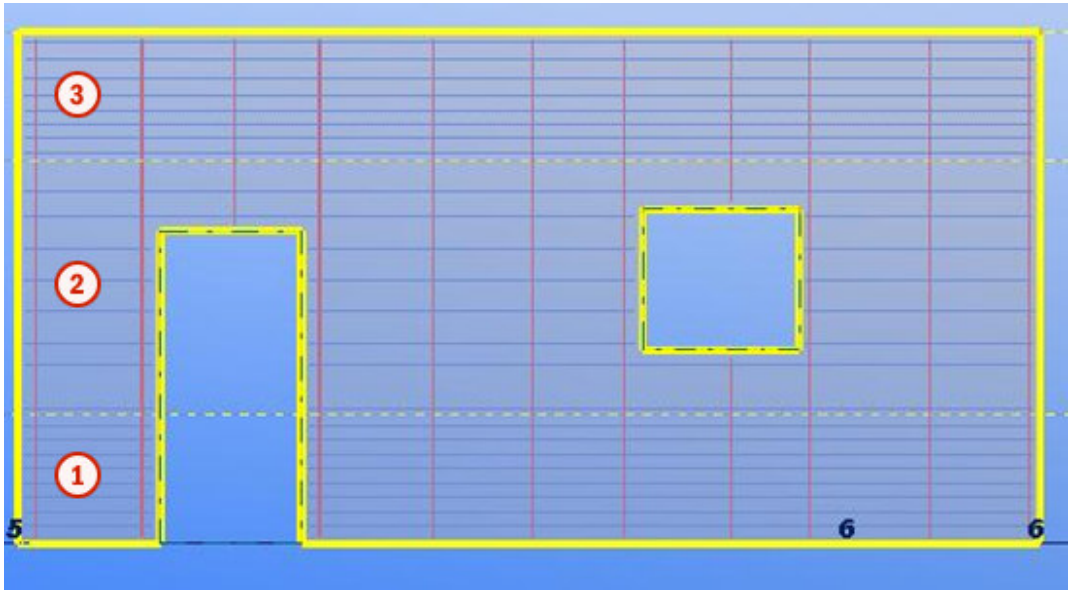


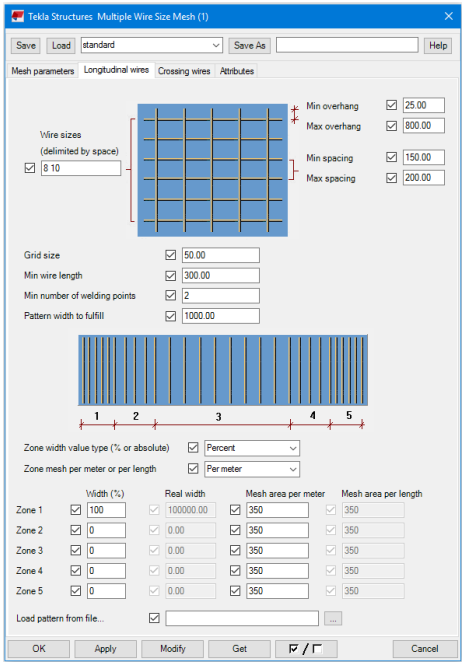


Multiple Wire Size Mesh



Multi Wire Size Me
sh



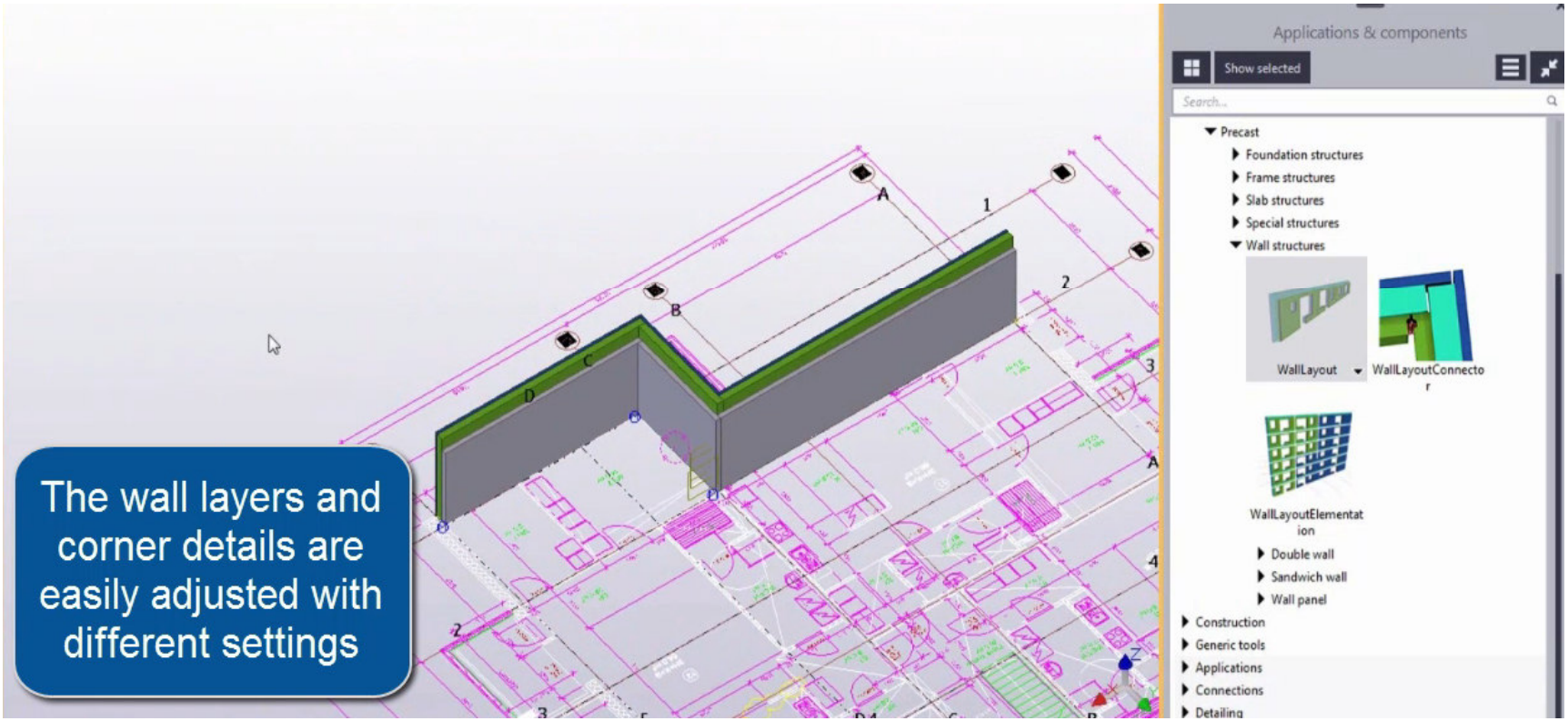


Parametric Modeling

- Very Efficient Modeling tools
- Automatic rules based detailing

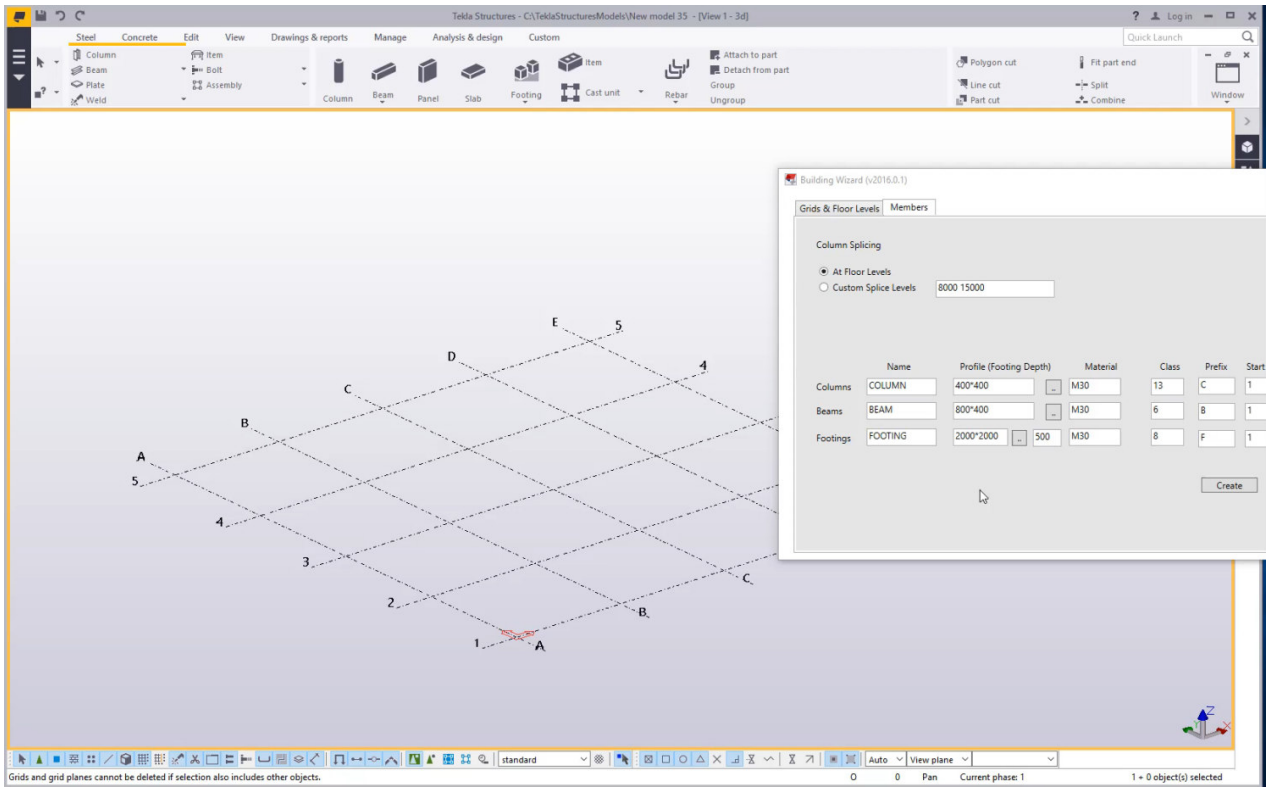
Parametric Modeling

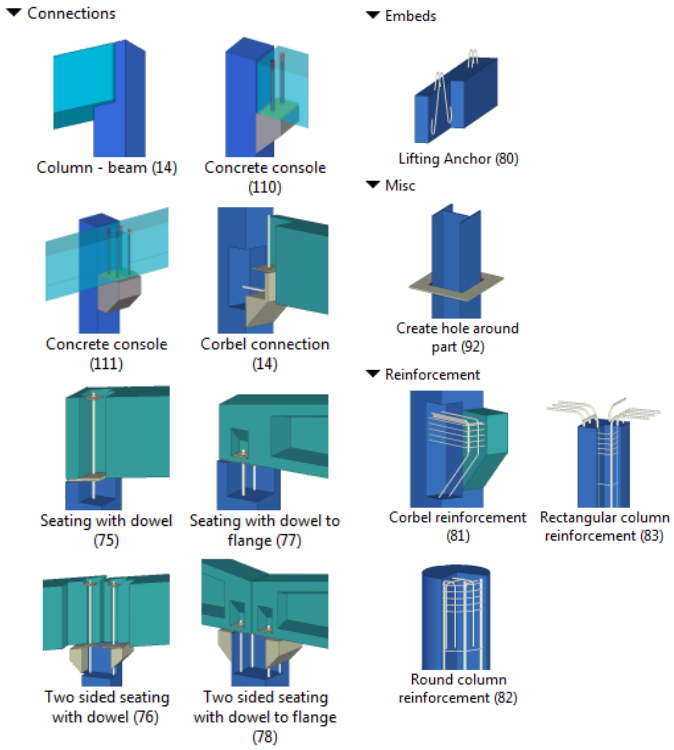
- Very Efficient Modeling tools



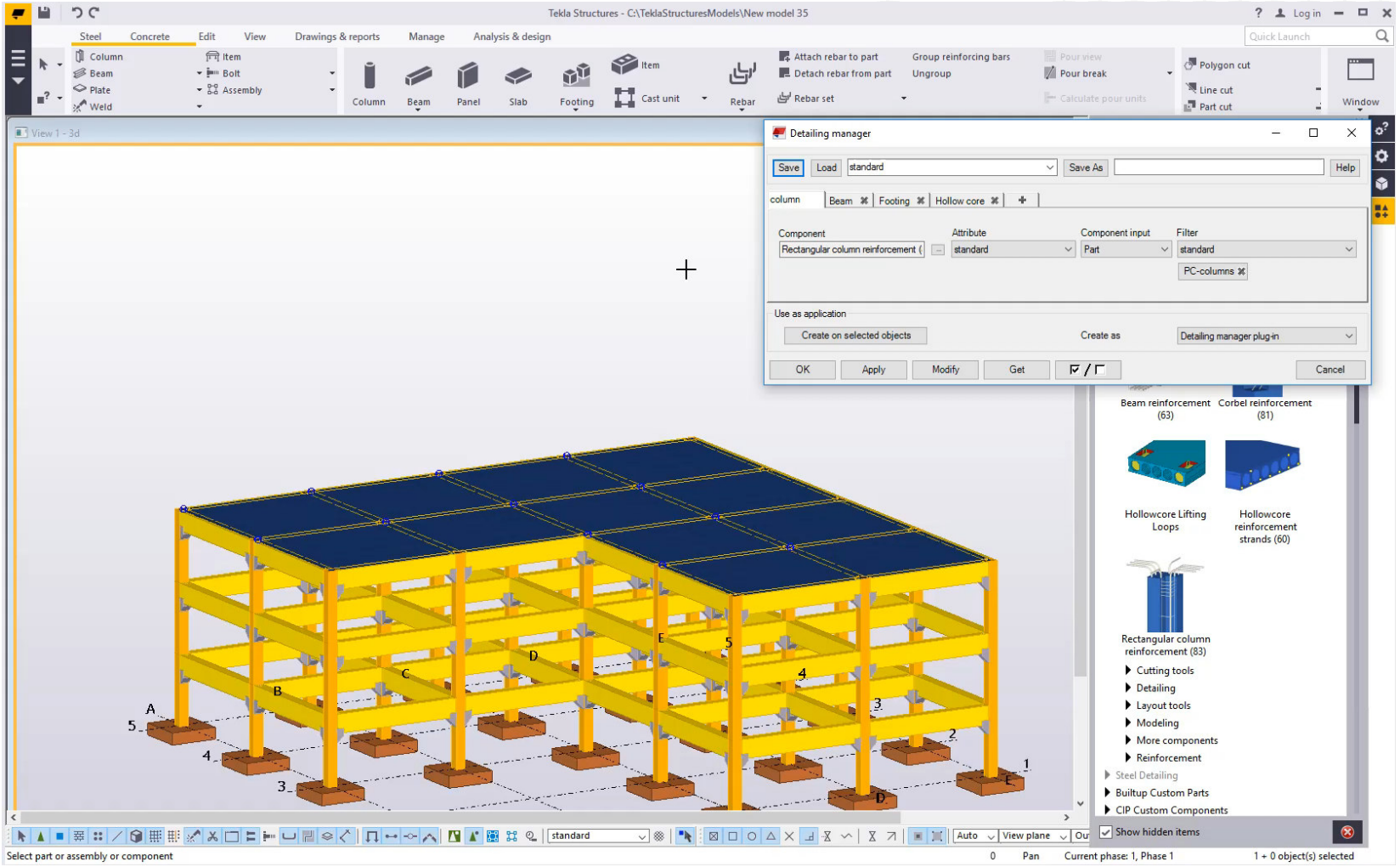
Parametric Modeling

- Very Efficient Modeling tools

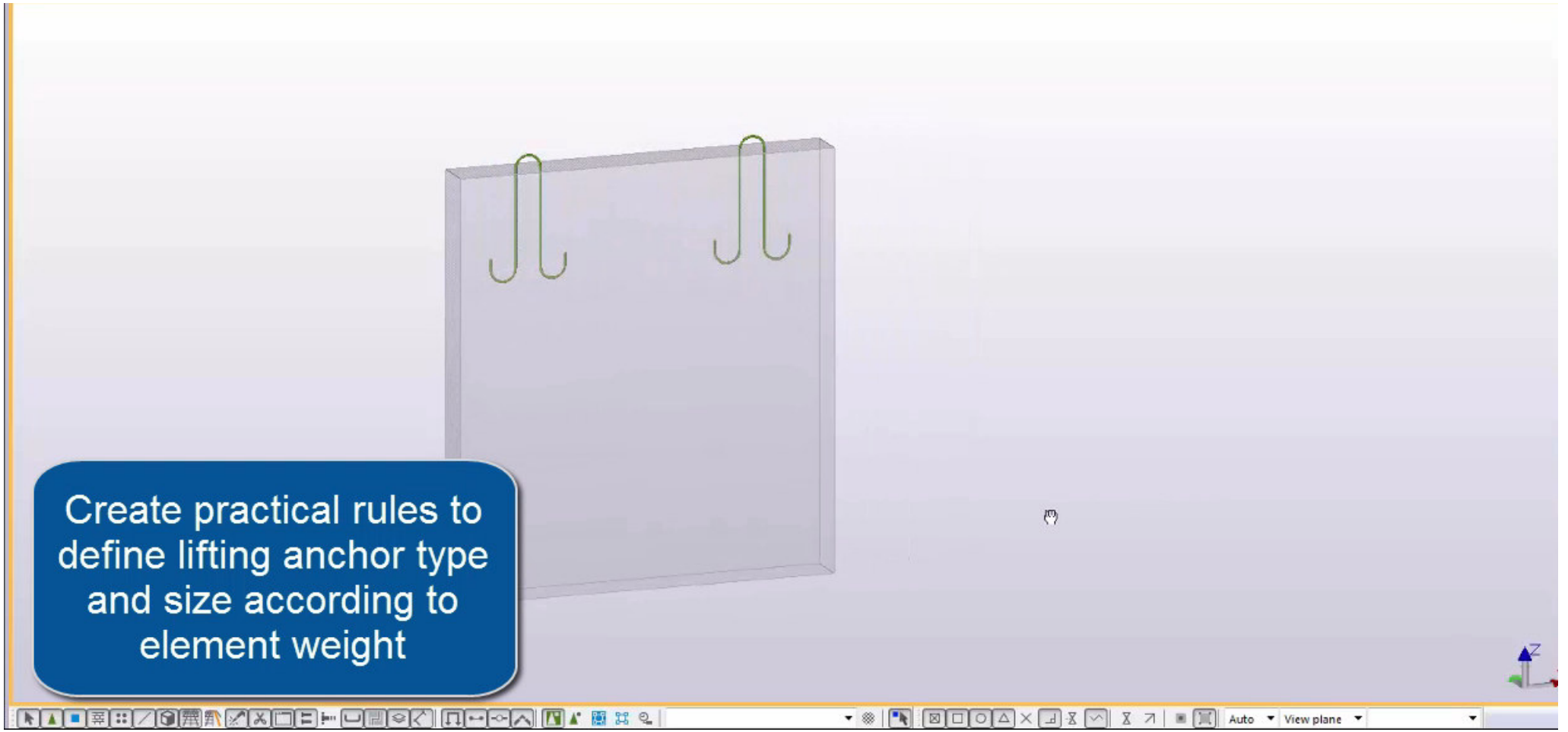




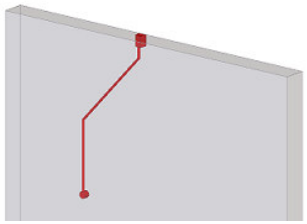
Automatic rules based detailing

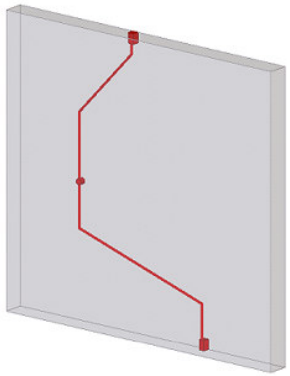


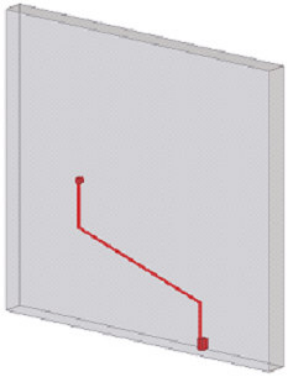
Automatic rules based detailing

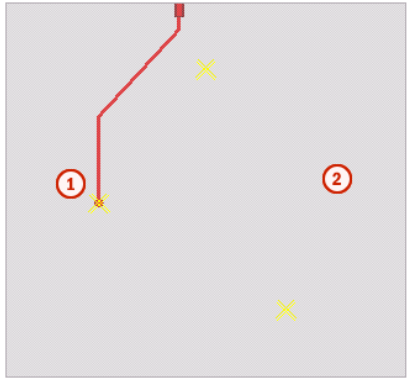


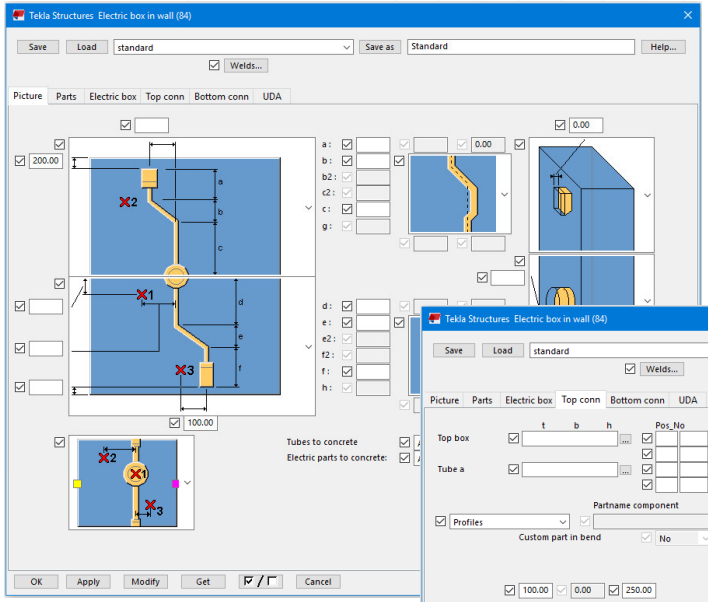
Electric Box In Wall (84)

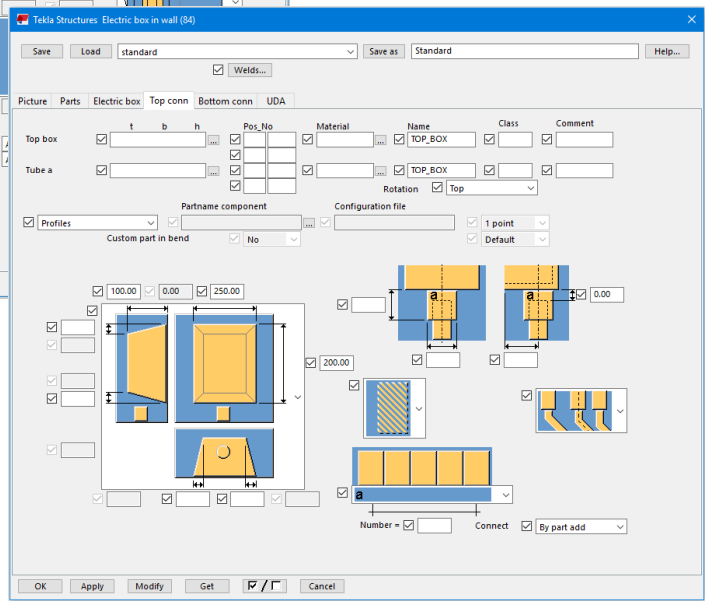


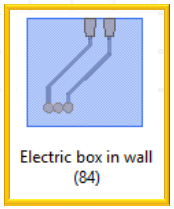




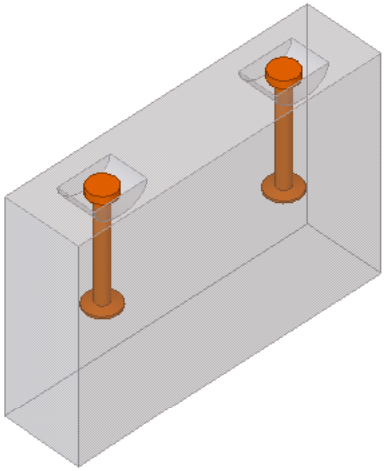


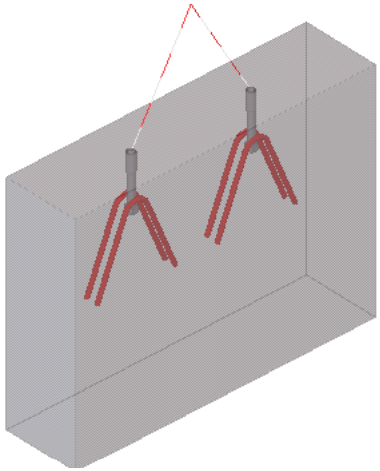


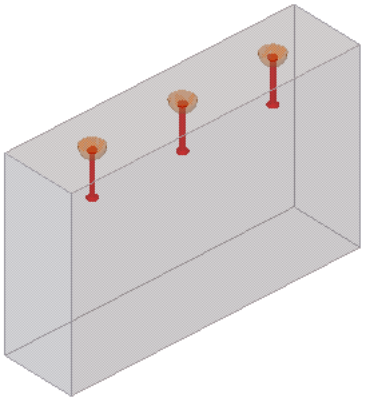


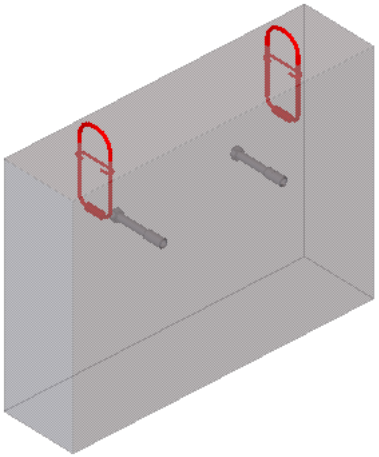


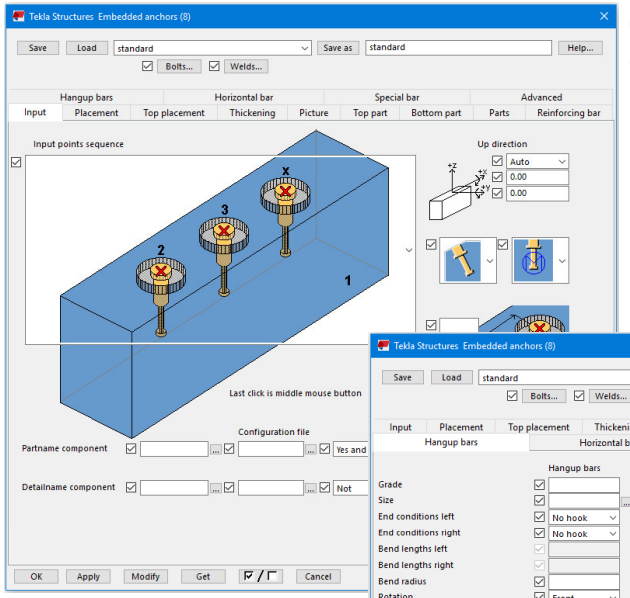
Embedded Anchors (8)

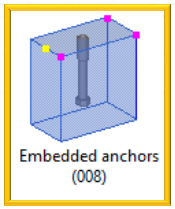


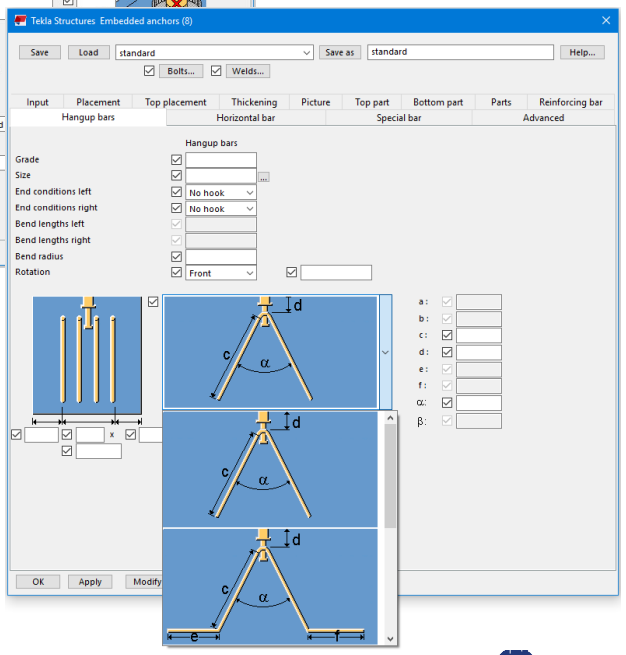








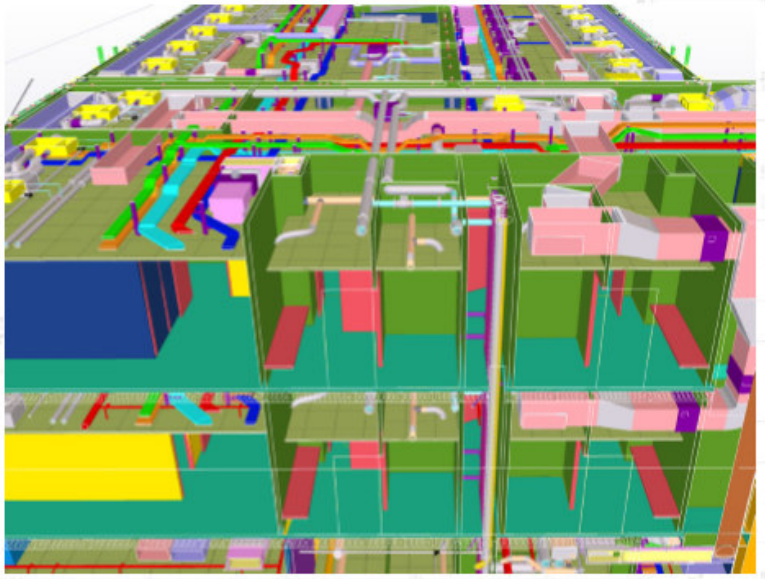




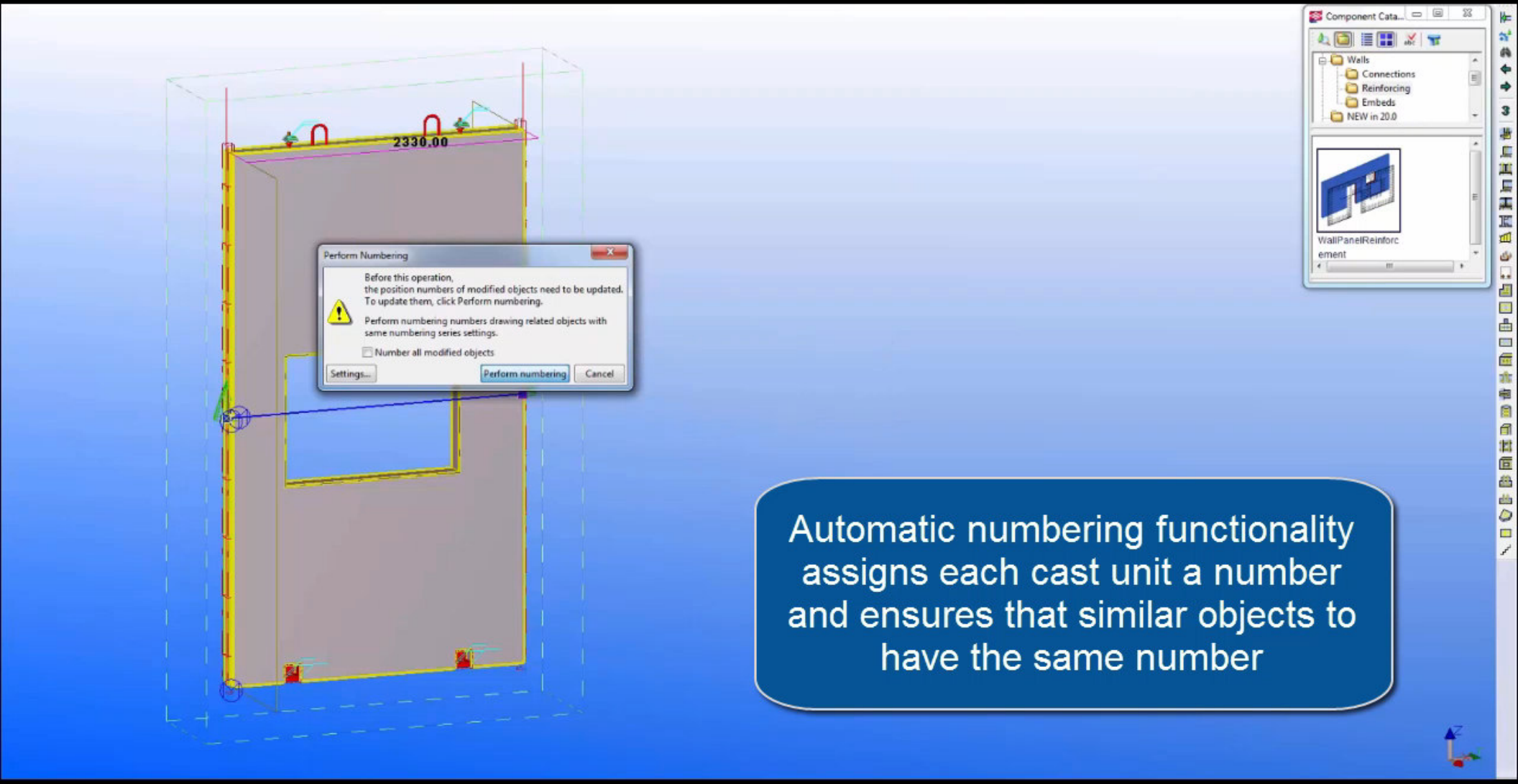
Trimble

Requirements in Precast Projects

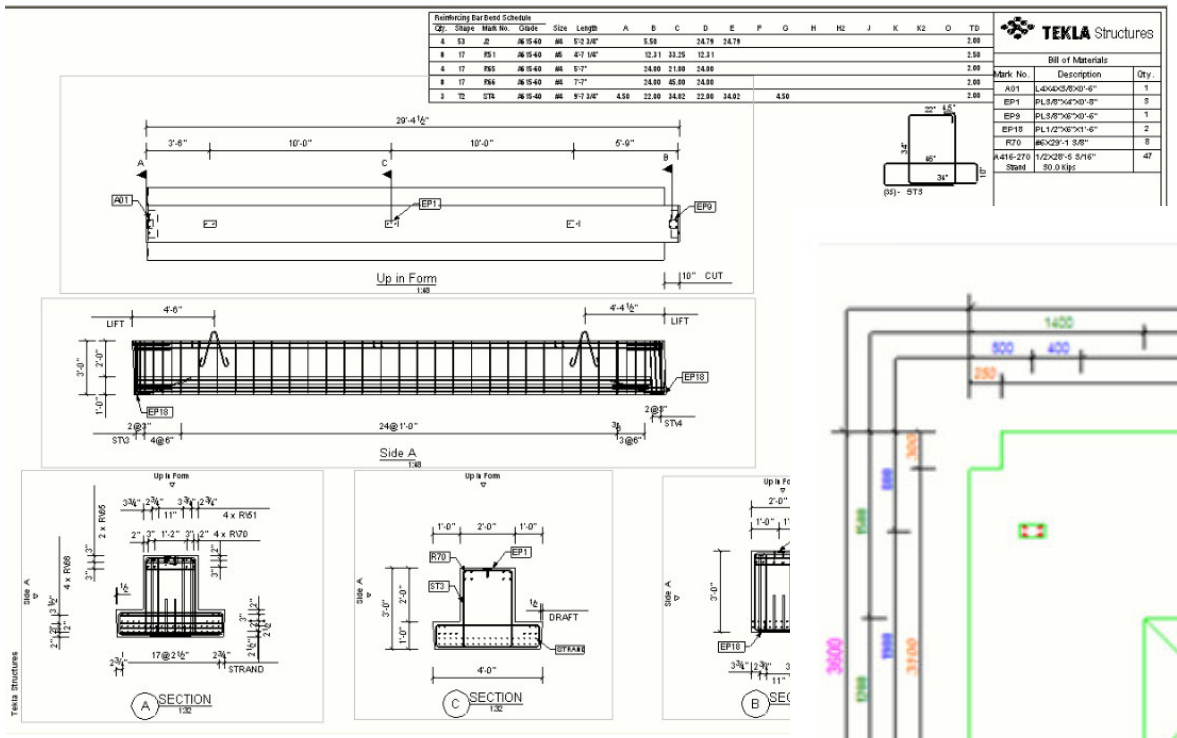
- Numbering Similar Elements
  - Shop/Form drawings
  - Mould Allotment
  - Embeds and other utility services
  - Cutting Lists for Slabs
- Stacking , Lifting & Transportation
  - Lifting Based on Element types
  - Lotting
- Erection
  - Tracking Element Status
  - Dependency of elements /Erection sequencing

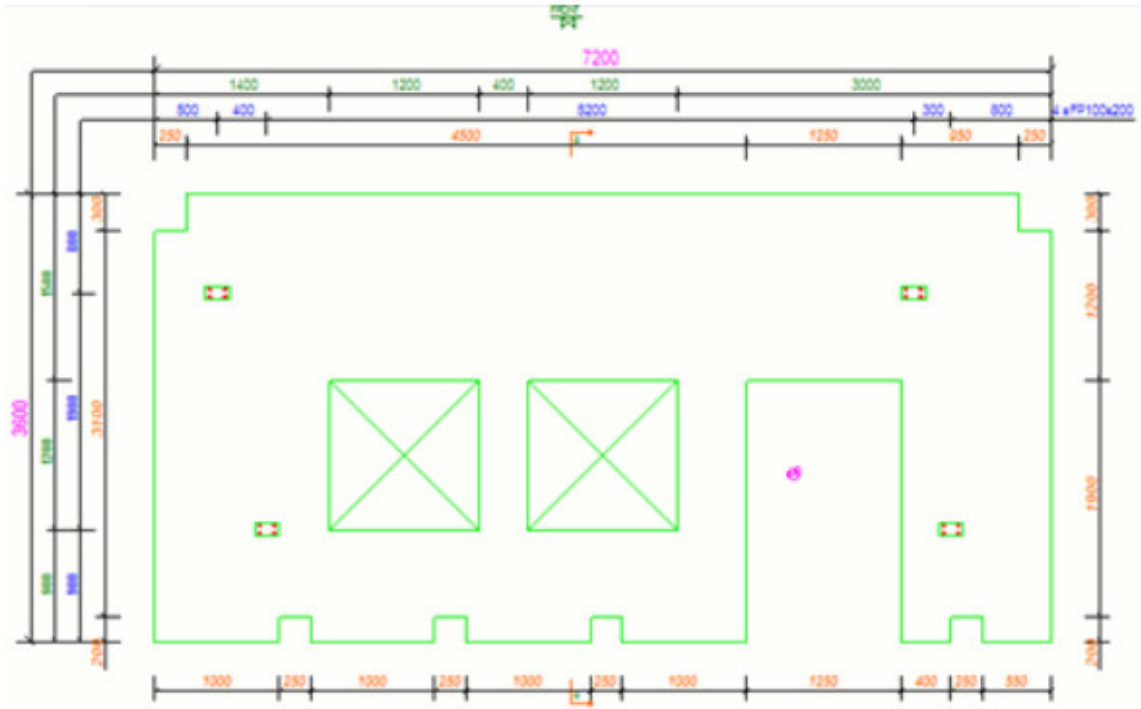


Error-Free Documentation

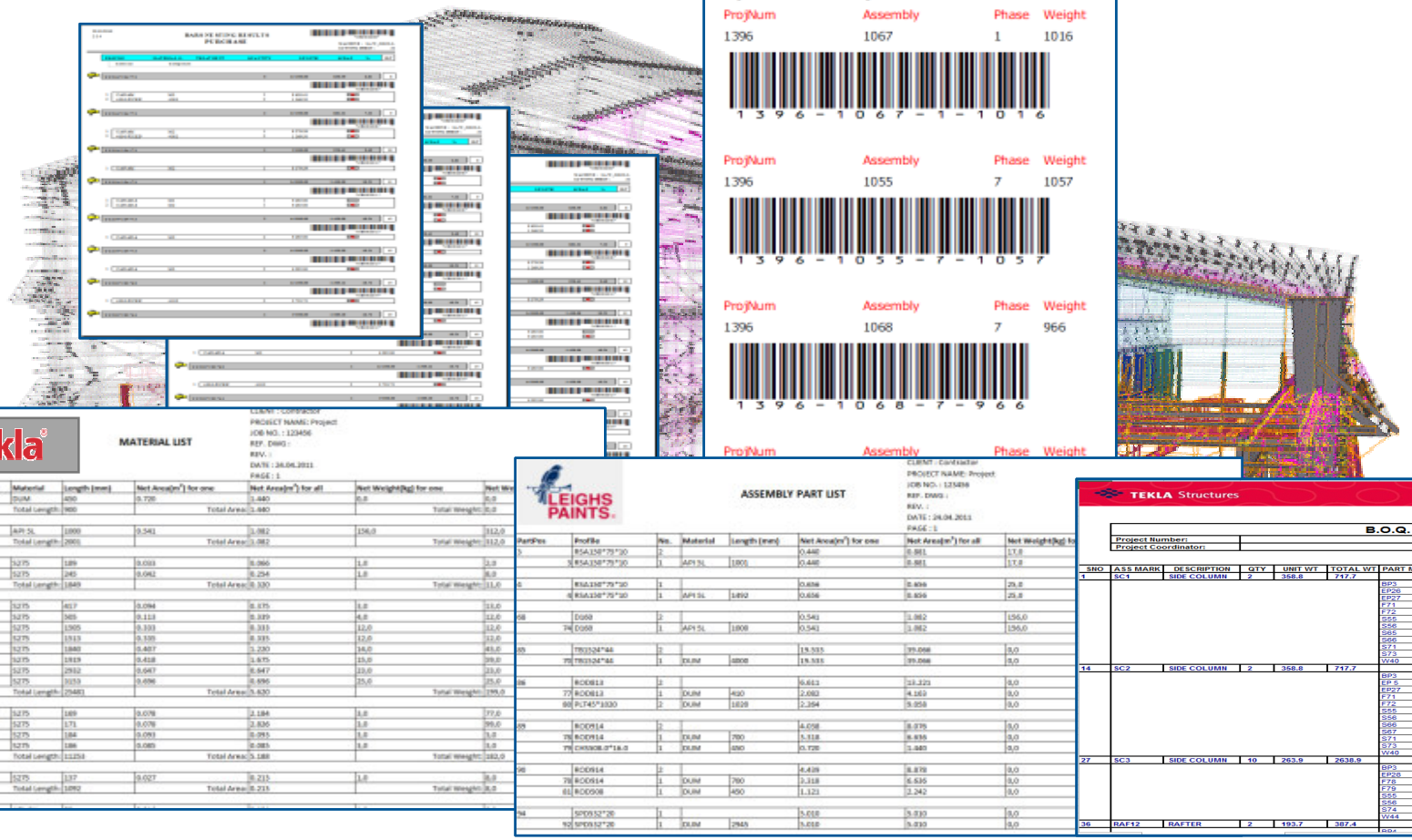

2330.00
Perform Numbering
Before this operation,
the position numbers of modified objects need to be updated.
To update them, click Perform numbering.
Perform numbering numbers drawing related objects with same numbering series settings.
Number all modified objects
Settings...
Perform numbering
Cancel
Component Cata...
Walls
Connections
Reinforcing
Embeds
NEW in 20.0
WallPanelReinforc
ement
Automatic numbering functionality assigns each cast unit a number and ensures that similar objects to have the same number

Automatic Extraction of Shop & Form Drawings





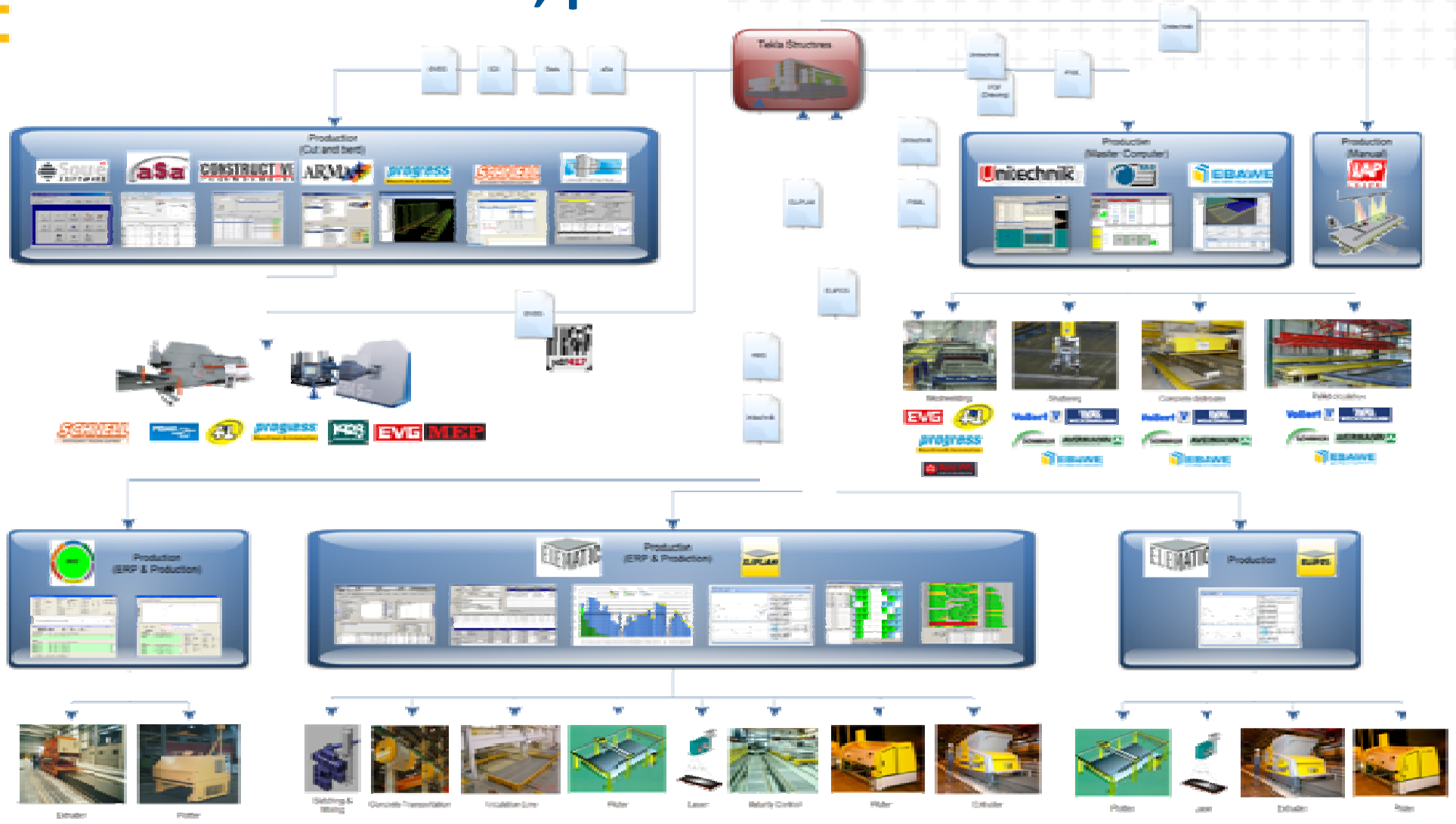
Tekla Structures listings



Trimble

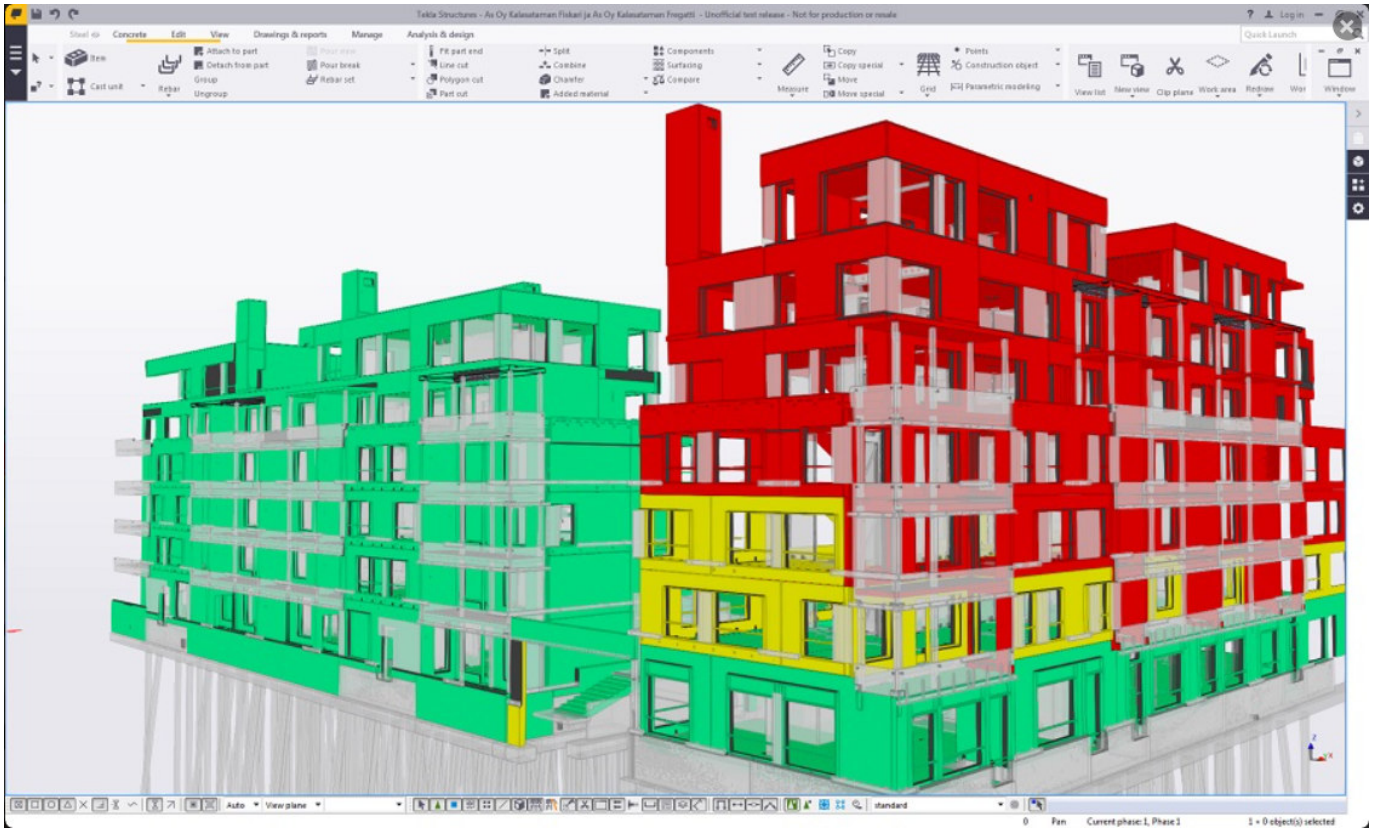
Precast Automation

Precast Workflow, production & formats



Progress Monitoring and Tracking

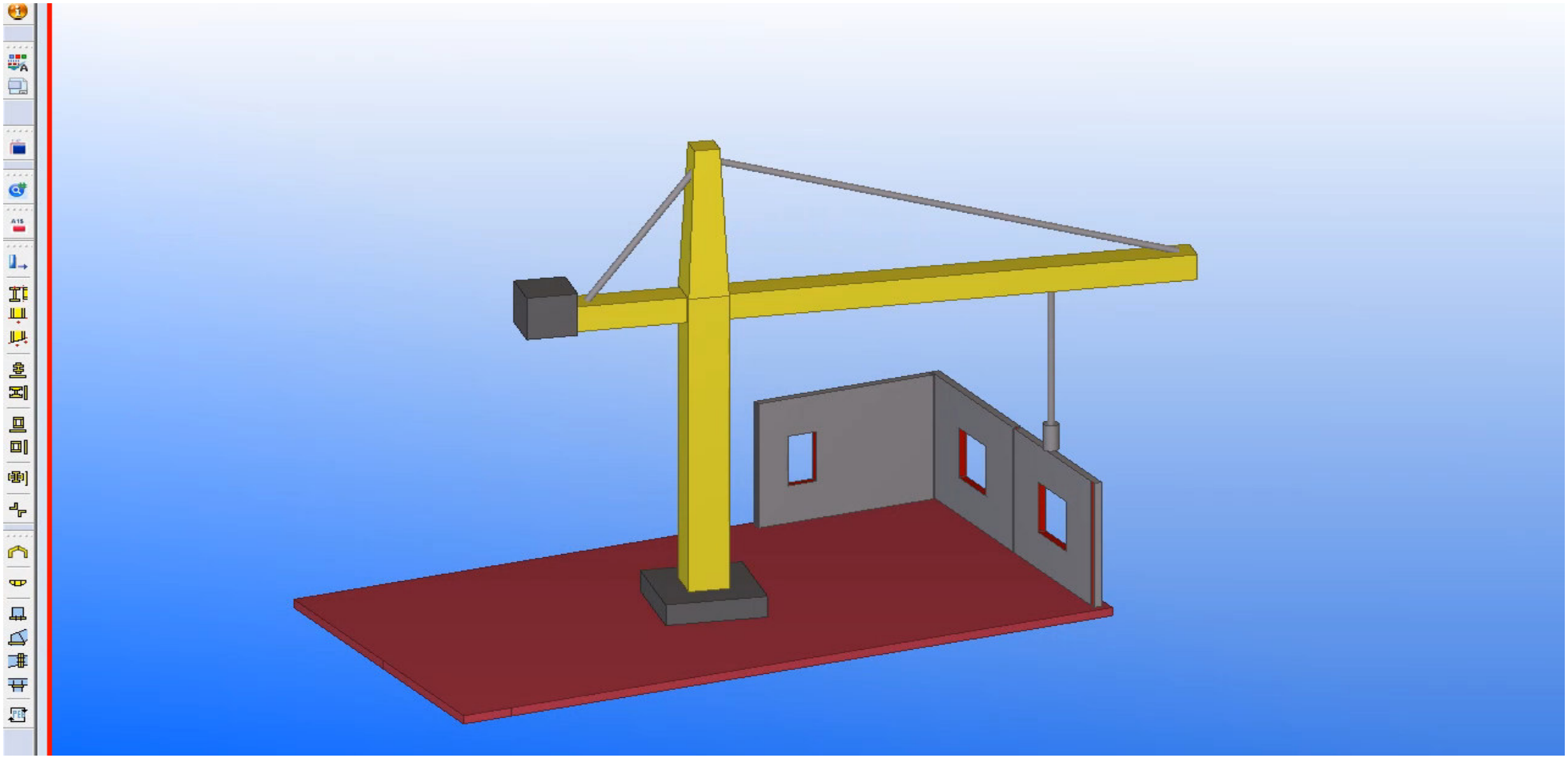
Progress Tracking



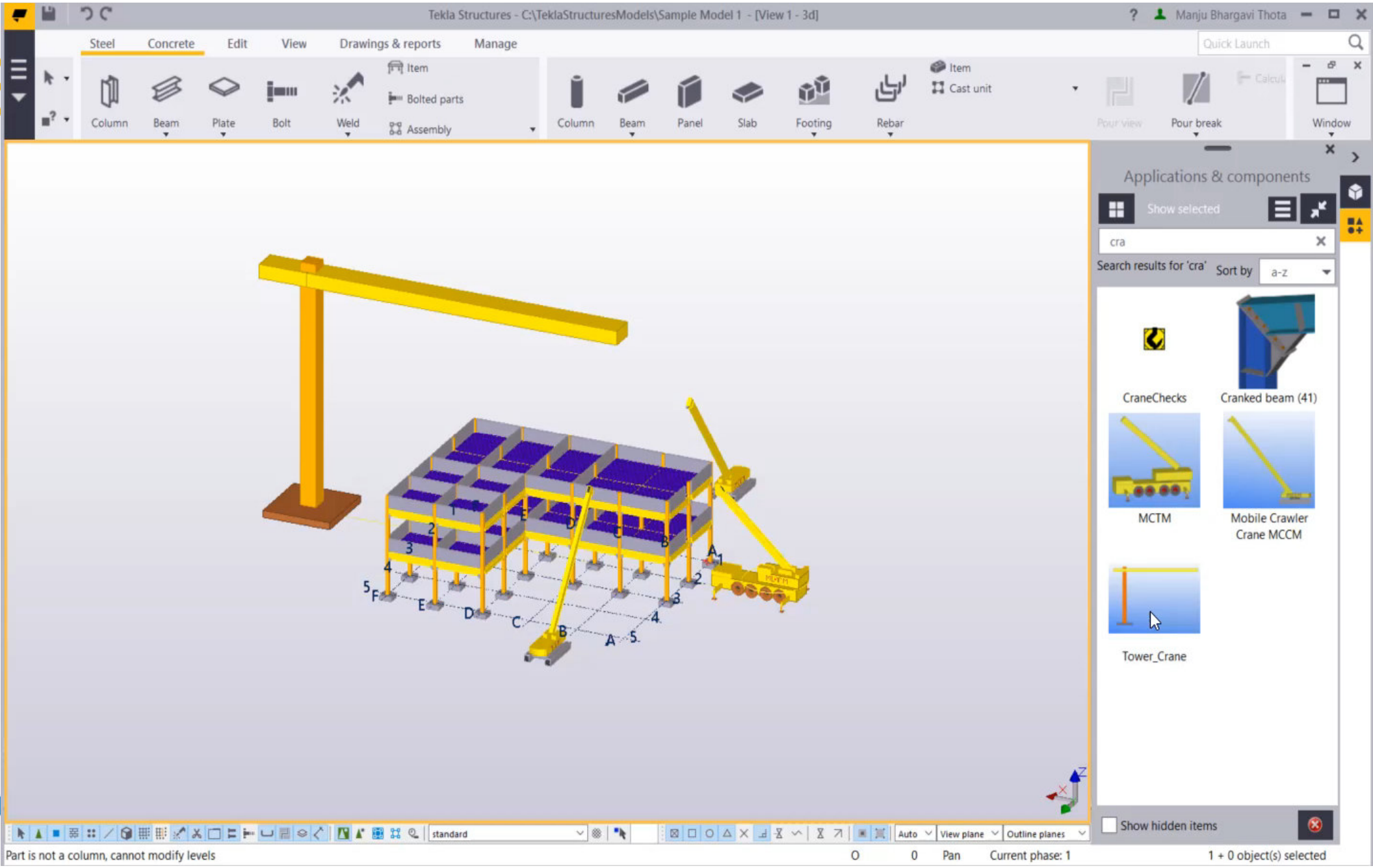
Status colors and texts

- Not started
- In progress
- Complete
- Changed
- In fabrication

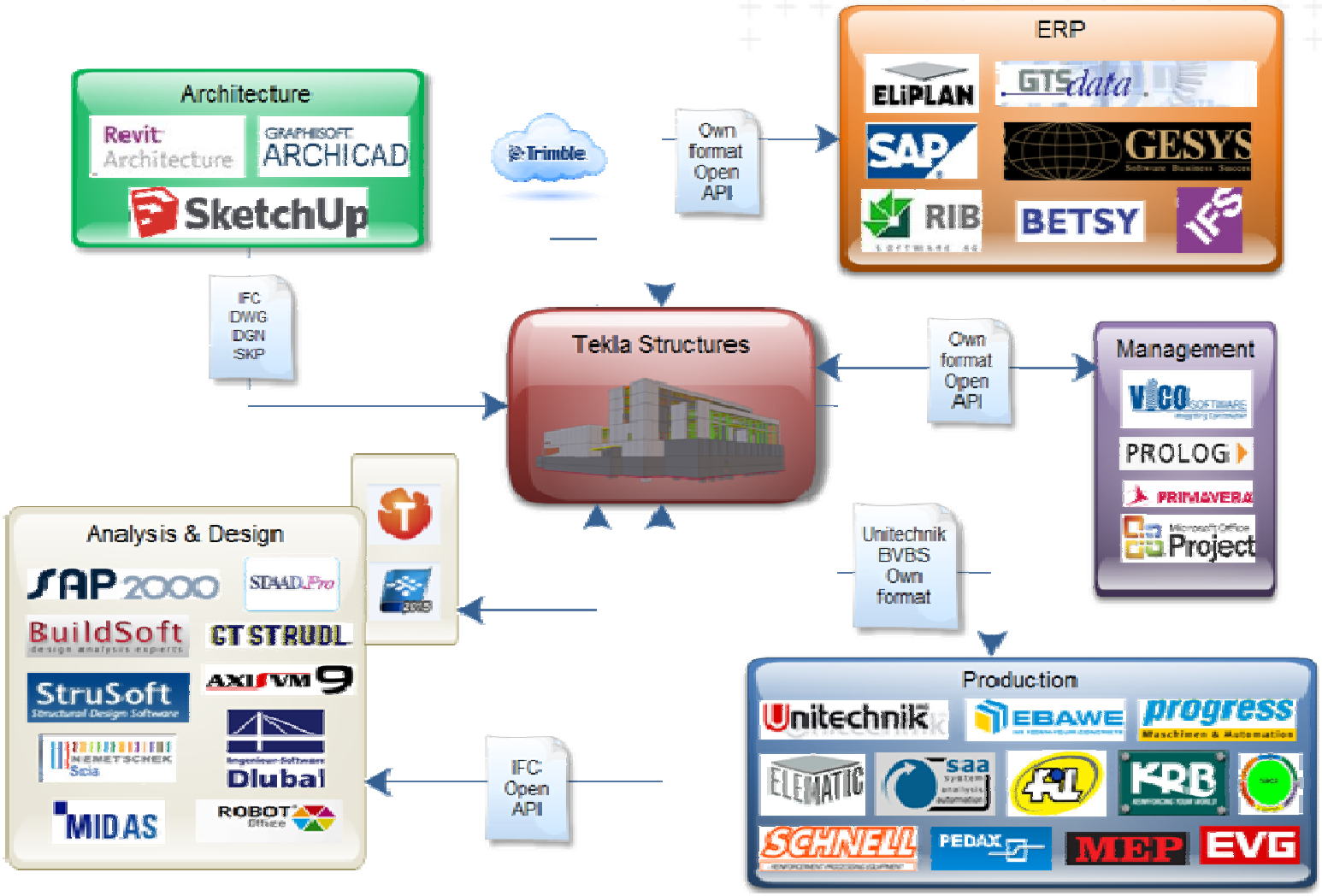
Erection Sequence



Site Planning


Tekla Structures - C:\TeklaStructuresModels\Sample Model 1 - [View 1 - 3d]
Manju Bhargavi Thota
Steel
Concrete
Edit
View
Drawings & reports
Manage
Quick Launch
Column
Beam
Plate
Bolt
Weld
Item
Bolted parts
Assembly
Column
Beam
Panel
Slab
Footing
Rebar
Item
Cast unit
Pour view
Pour break
Calculate
Window
Applications & components
Show selected
cra
Search results for 'cra'
Sort by
a-z
CraneChecks
Cranked beam (41)
MCTM
Mobile Crawler Crane MCCM
Tower_Crane
Show hidden items
standard
Auto
View plane
Outline planes
Part is not a column, cannot modify levels
0
0
Pan
Current phase: 1
1 + 0 object(s) selected

Precast Workflow, phase & formats



Tekla Precast Users in India

PRECAST INDIA INFRASTRUCTURES PVT. LTD

SHIRKE B. G. Shirke Construction Technology Pvt. Ltd...

PAN GULF TECHNOLOGIES STRUCTURING QUALITY

L&T Construction Buildings & Factories

Rightserve

PRECISION PRECAST GROUP

Prothious ENGINEERING SERVICES

WBK engineering

SOBHA PASSION AT WORK

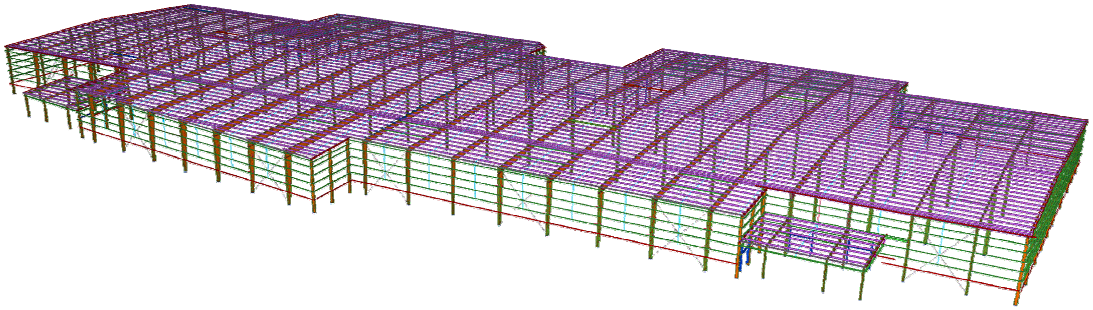
TEEMAGE PRECAST IN

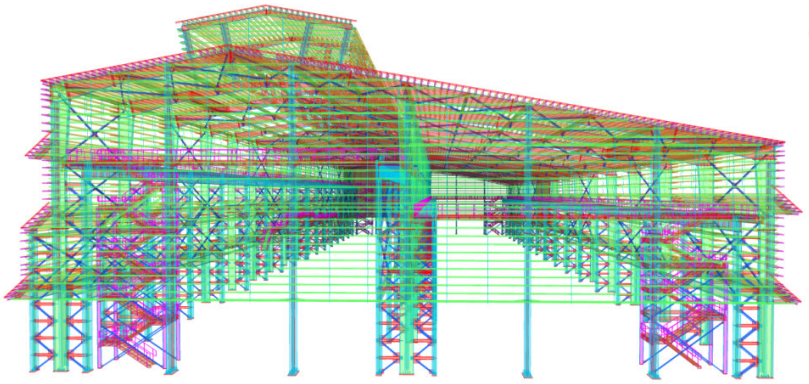
ELEMATIC

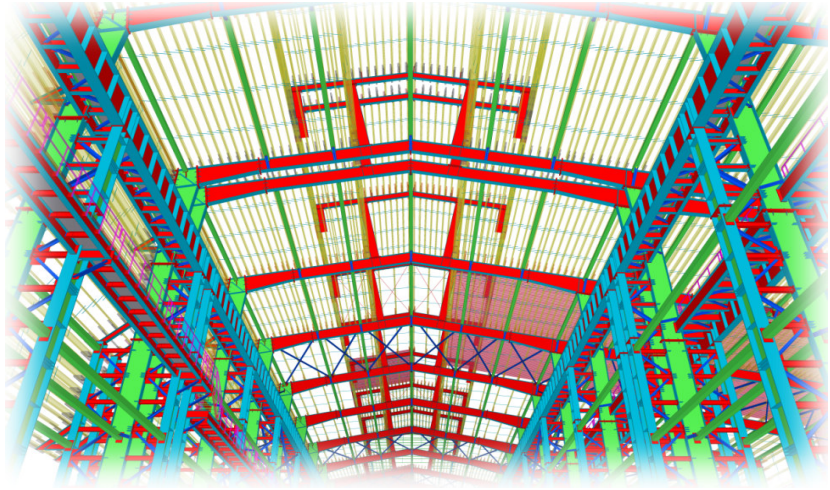
TRC Results you can rely on

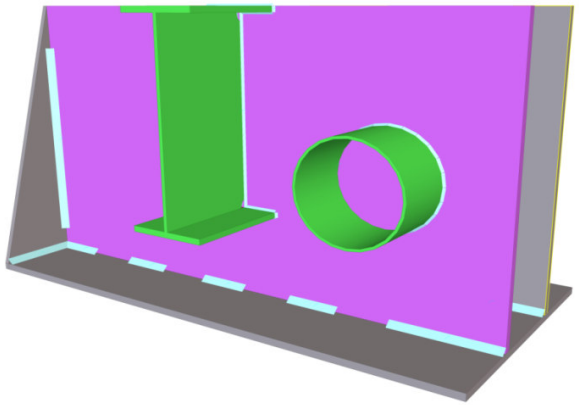
TeklaStructures For Pre-Engineered Buildings

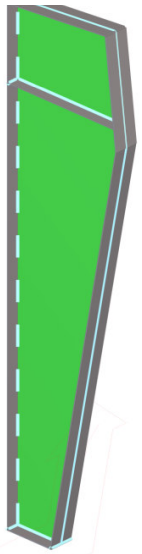
Pre-Engineered Buildings







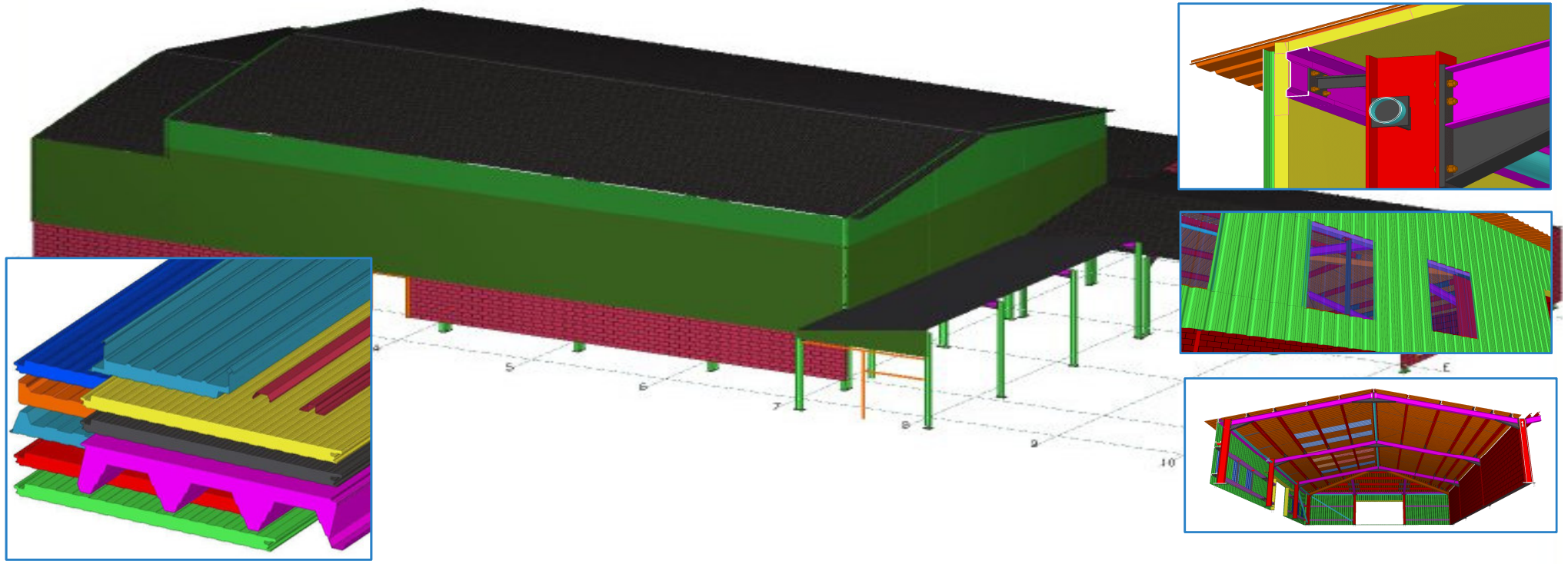




Trimble

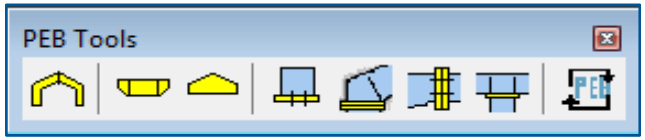
Tekla Structures PEMB modelling Cladding

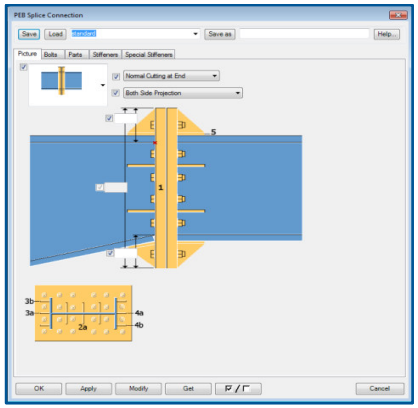
Suite of cladding tools and profiles, all customisable

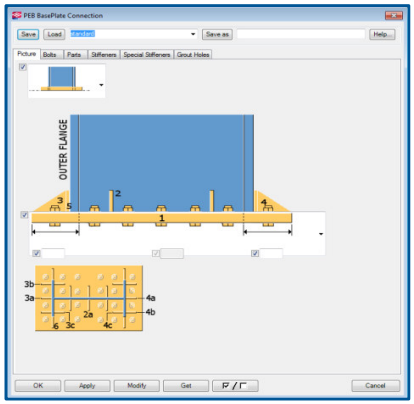


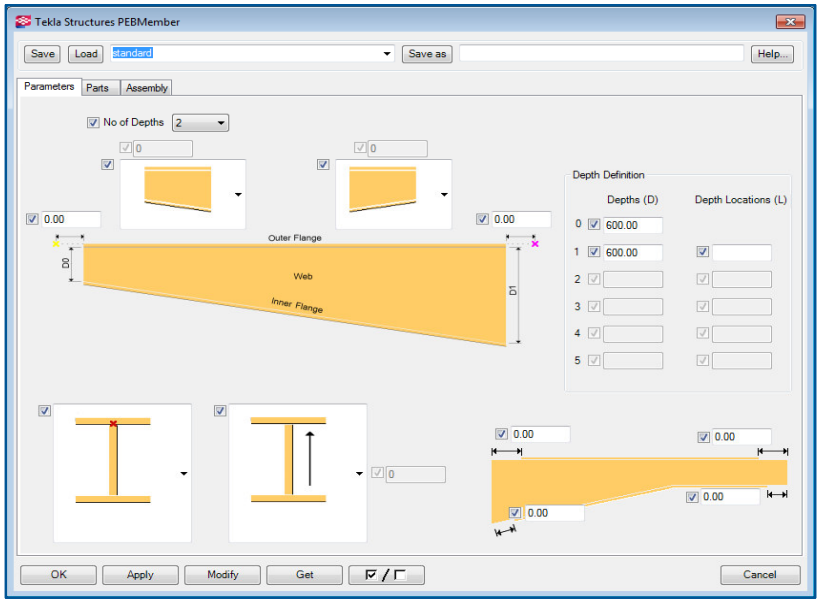
Trimble

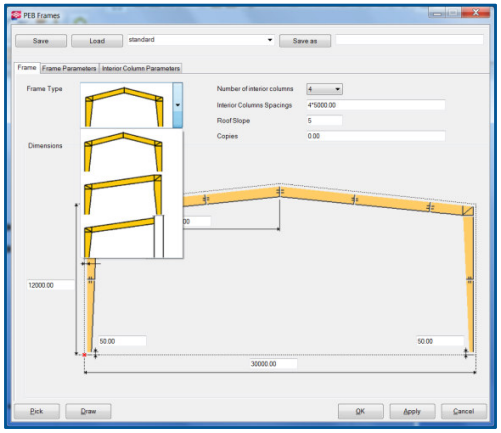
Tekla Structures PEB component library

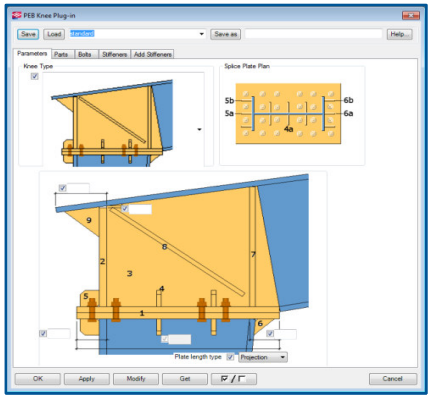






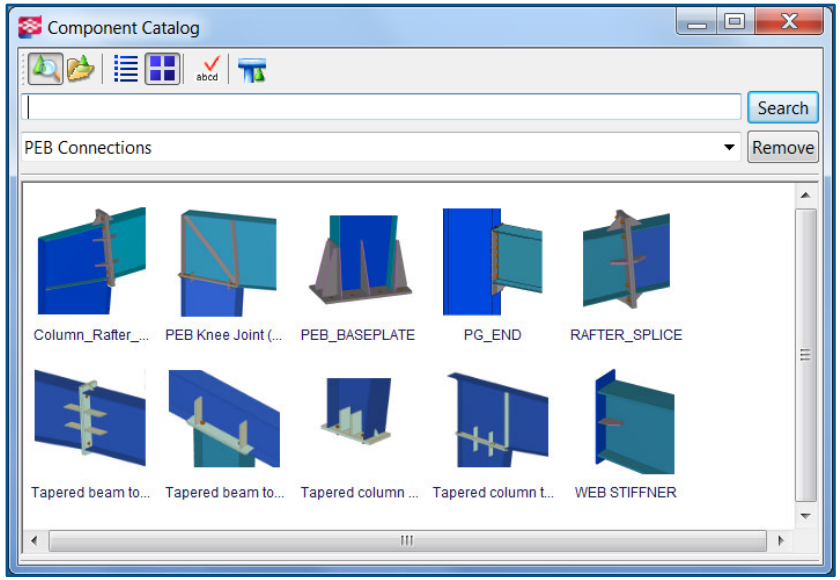


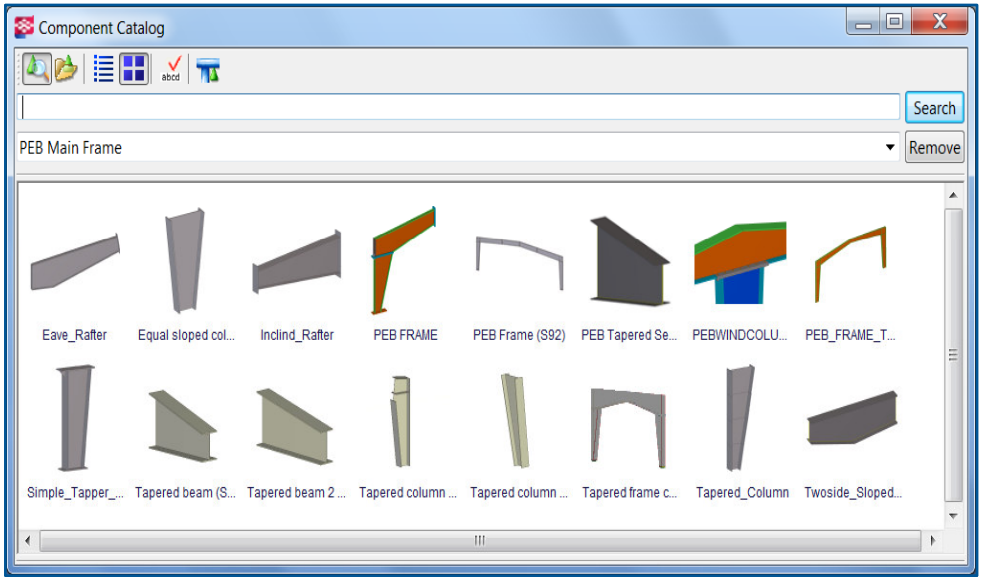




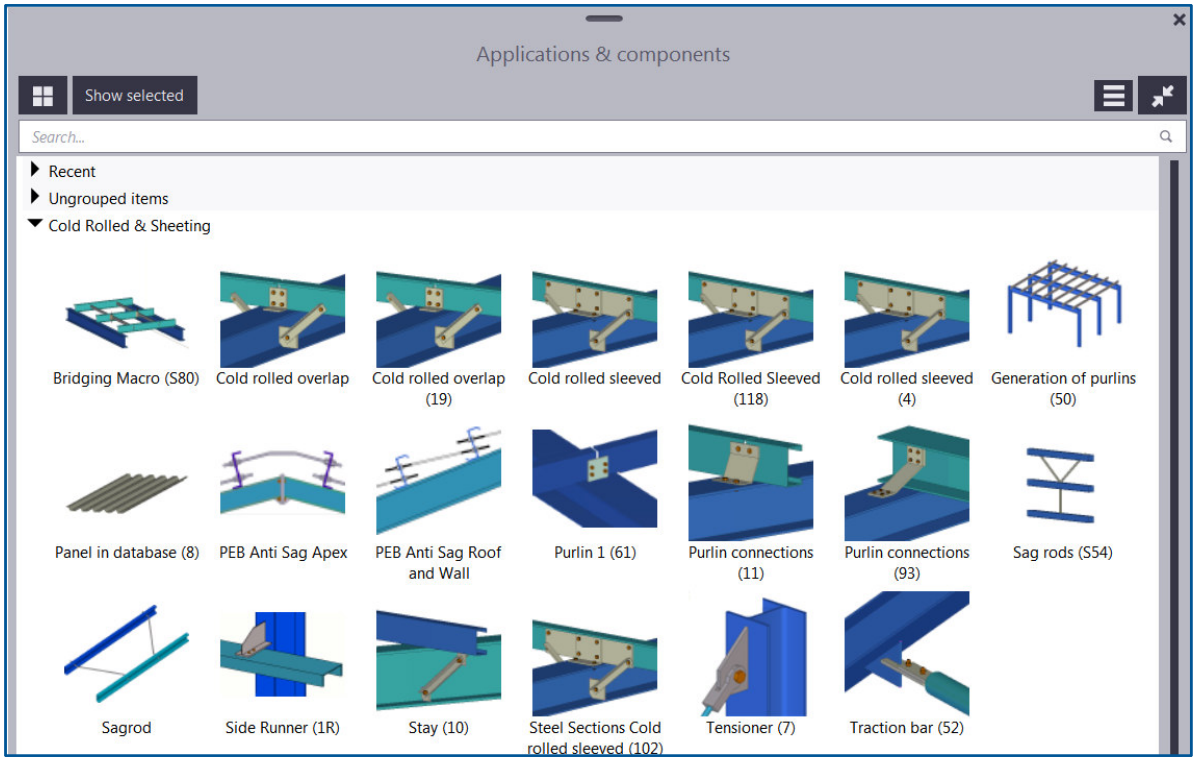
Trimble

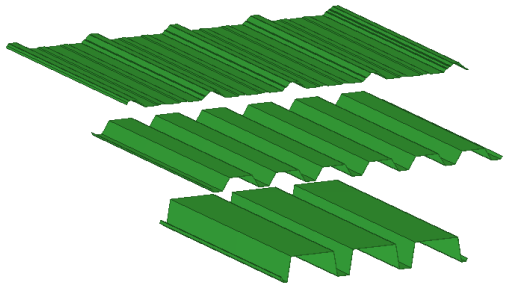
Build your own Connections..without programming !!!!

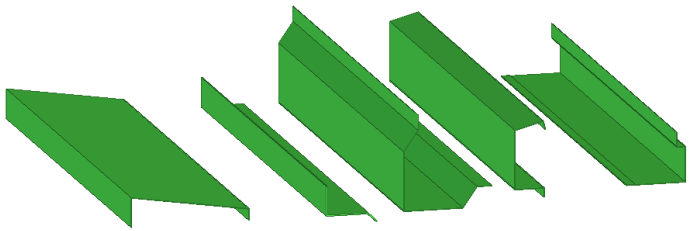




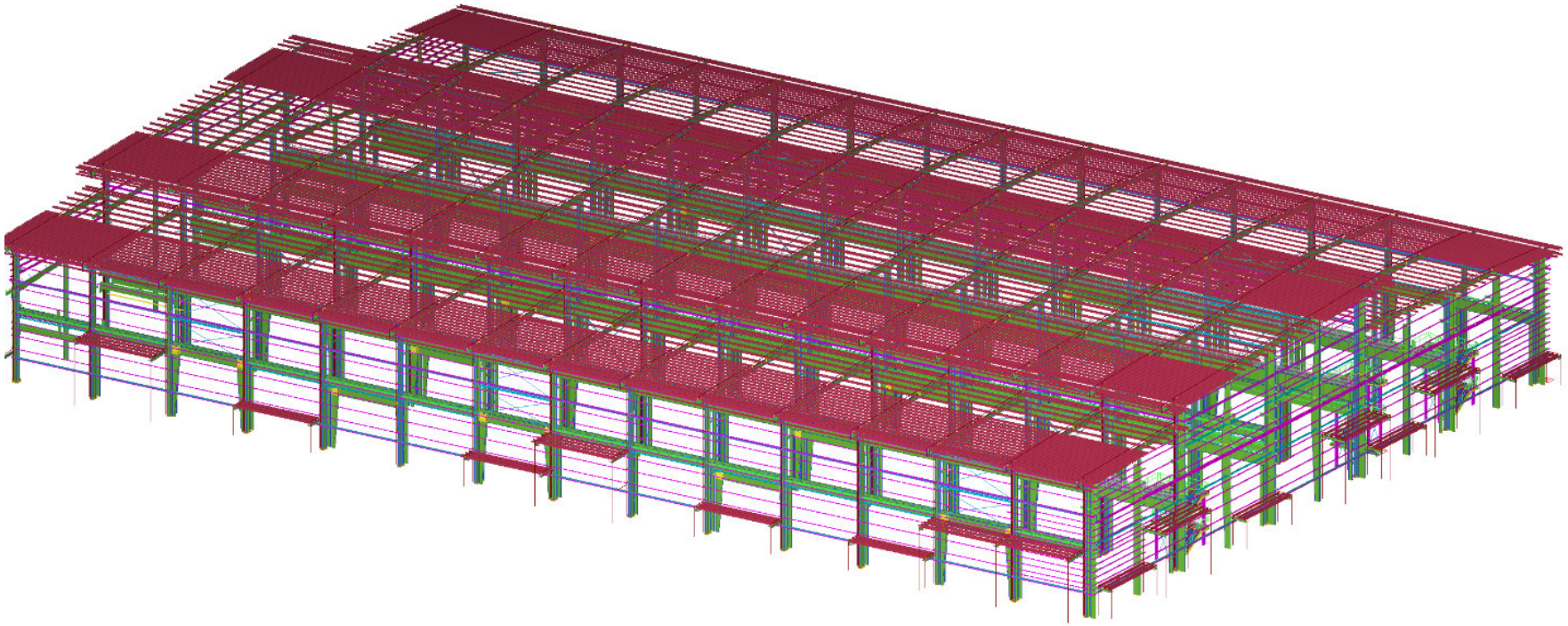
Tool Box for Cold rolled & Sheeting



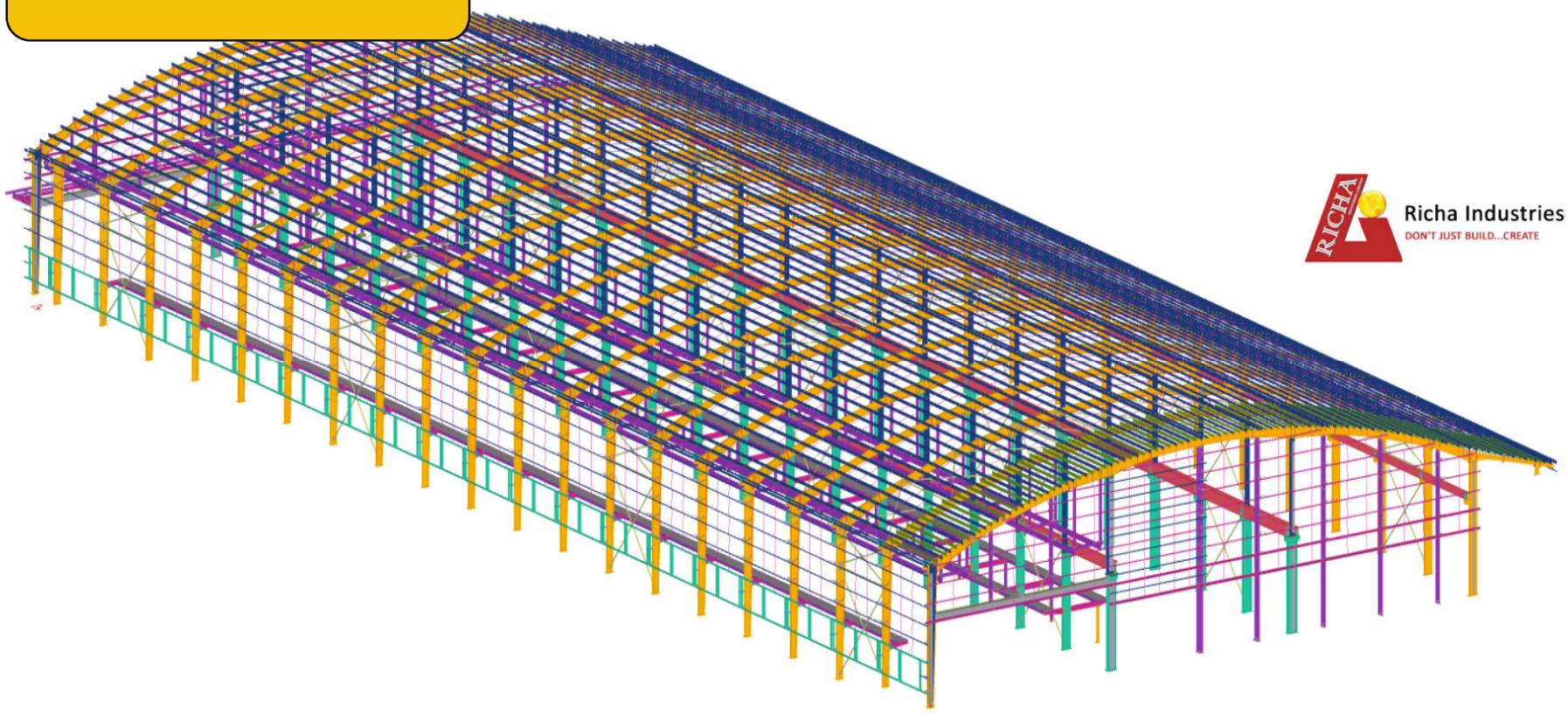




Tata BlueScope Building Solutions



Lucknow Metro Rail
India



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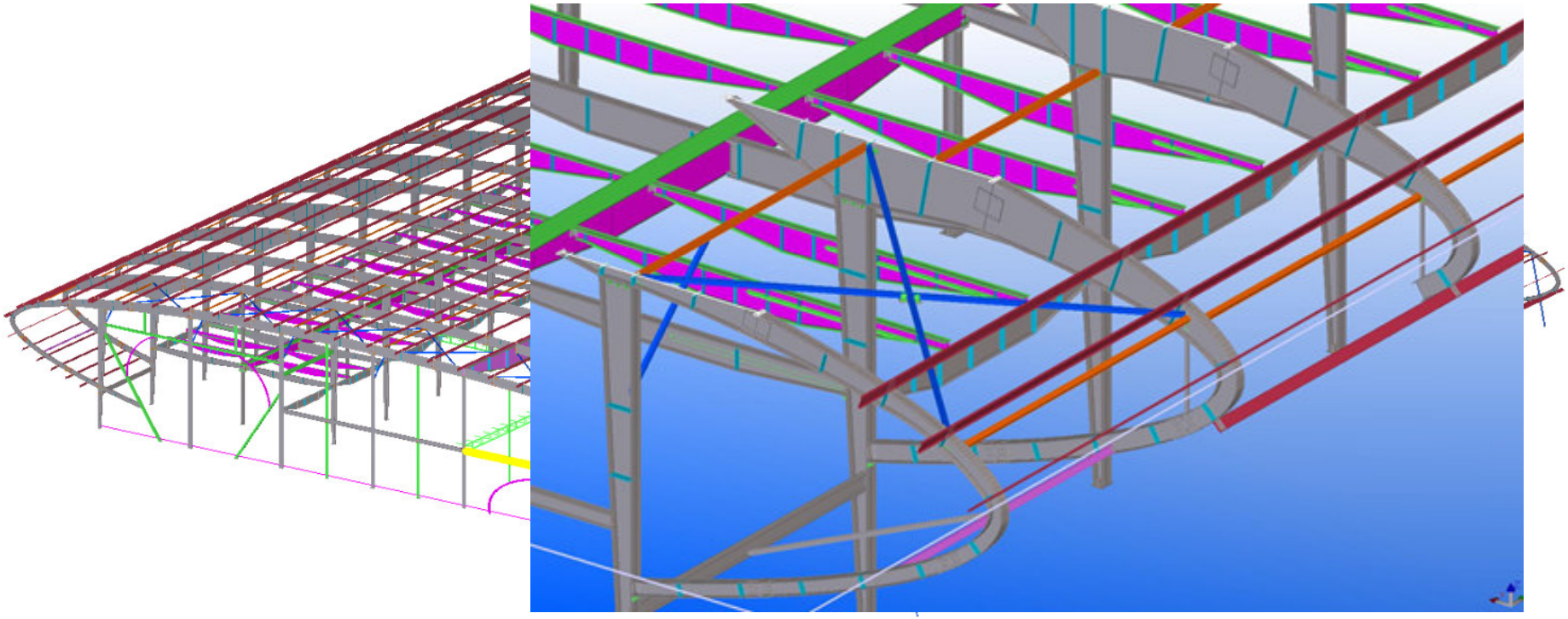

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