

ProConcrete

Gernot Jeromin
Product Manager



ProConcrete

- 3D CAD Software for Concrete and Reinforcement

What is ProConcrete

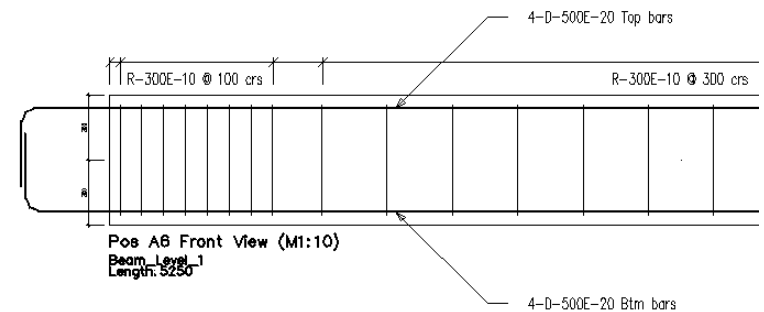
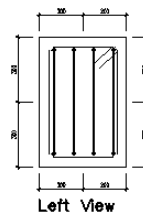
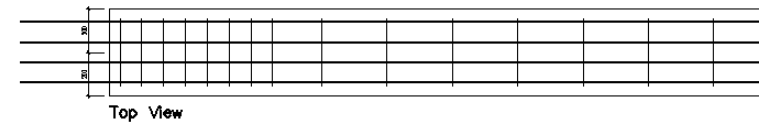
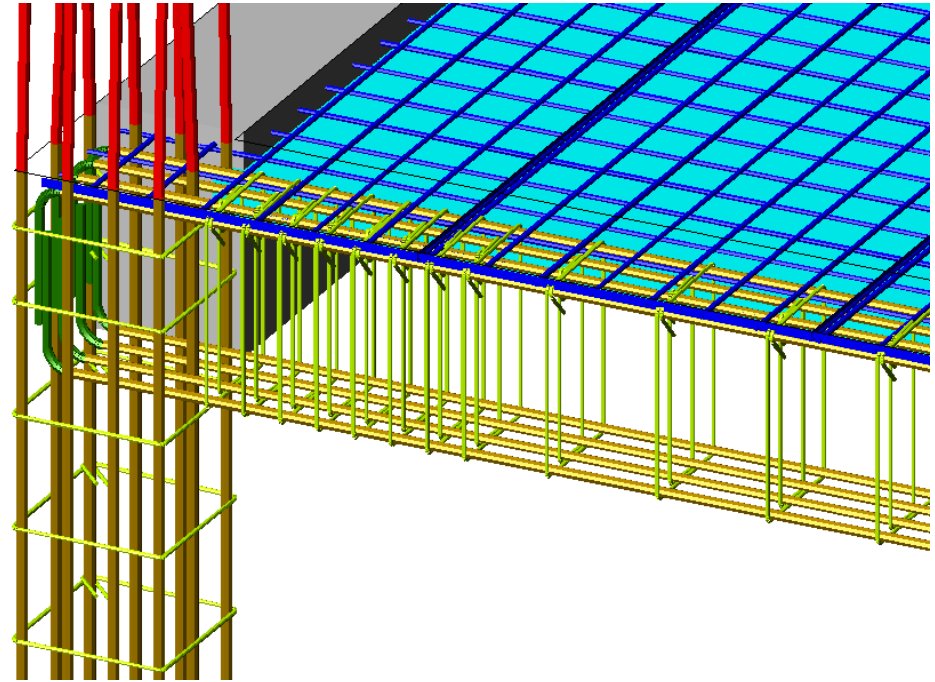
- AutoCAD Application
- MicroStation V8i version will be available early 2009
- ProConcrete models, details and quantifies all materials and elements used in either Precast, Insitu and Masonry Concrete construction
- ProConcrete is based on ProSteel

Who can use ProConcrete

- Can be used by
 - Consulting Engineers
 - Structural Draftspeople
 - Concrete Detailers
 - Reinforcing Steel Detailers
 - Manufacturers of Concrete products & elements

What does it do

- Model Concrete and Reinforcement bars
- Place fixtures and inserts
- Extract Concrete Volumes and Rebar information
- Produce Concrete Element and Bar Bending Schedules from databases



Why use ProConcrete

- Fast Modelling of Concrete Elements
- Fast Modelling of Reinforcing Steel in either 2D or 3D, reduce time to produce plans and elevations
- Complete verification of Reinforcement Geometry, eliminate mistakes and design flaws
- Automatic Bar Bending Schedules and BOM derived from 3D Model, reduce large amounts of time when compared to current methods used
- Integration with other disciplines – Arch, Steel, Plant & Process, HVAC and Services

Confirms to Standards

ProConcrete is standards based. All bar bending, laps, development length ... values are based on the following codes:

- Australian/New Zealand
- EuroCode
- British
- North American



- Database driven and easy to edit tables using Microsoft Excel or Access
- More templates and drawing standards will be provided once the integration of Bentley REBAR comes through in beginning 2009

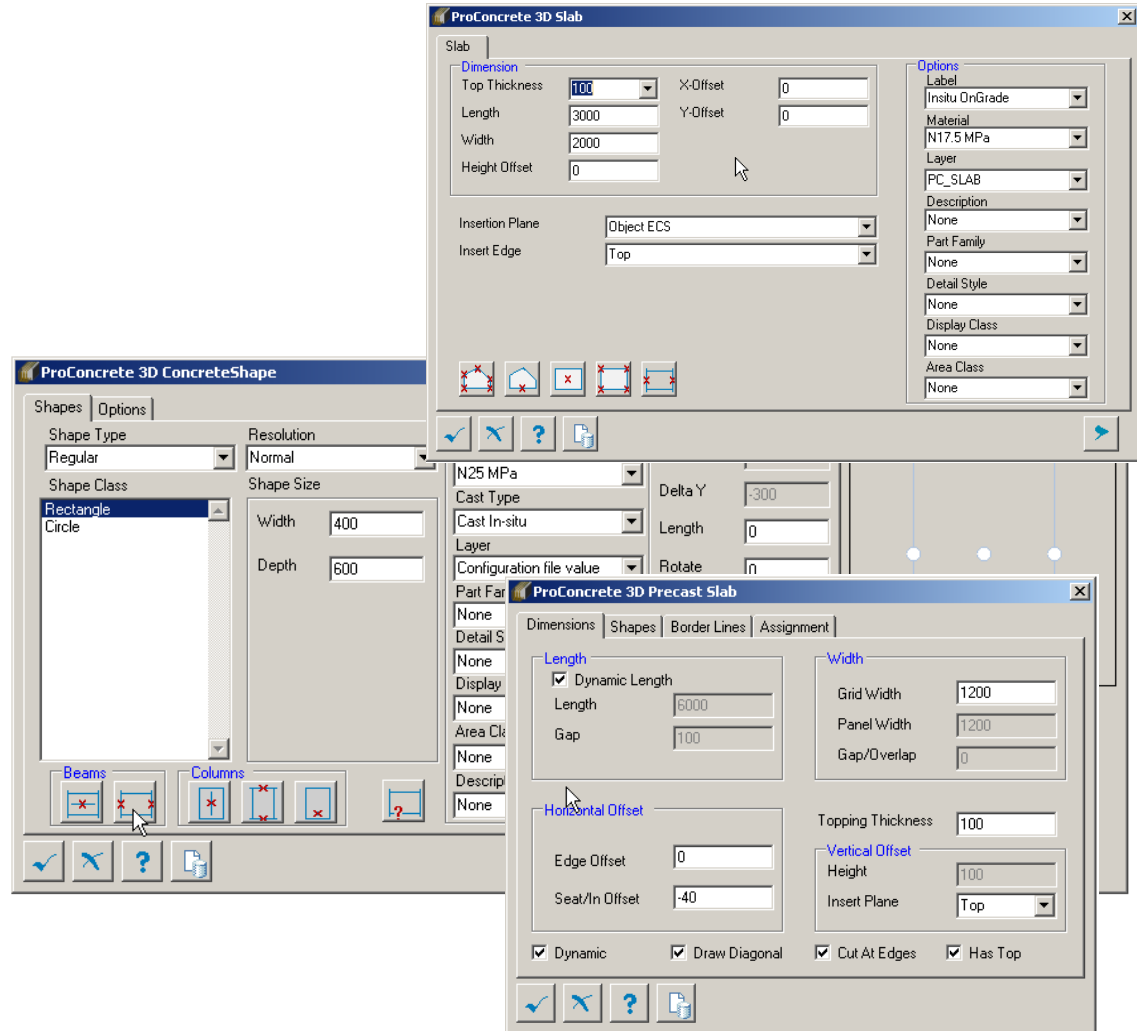
Types of Structures

- Buildings
 - Commercial
 - Industrial
 - Stadiums
- Civil
 - Retaining Walls
 - Culverts
- Bridging



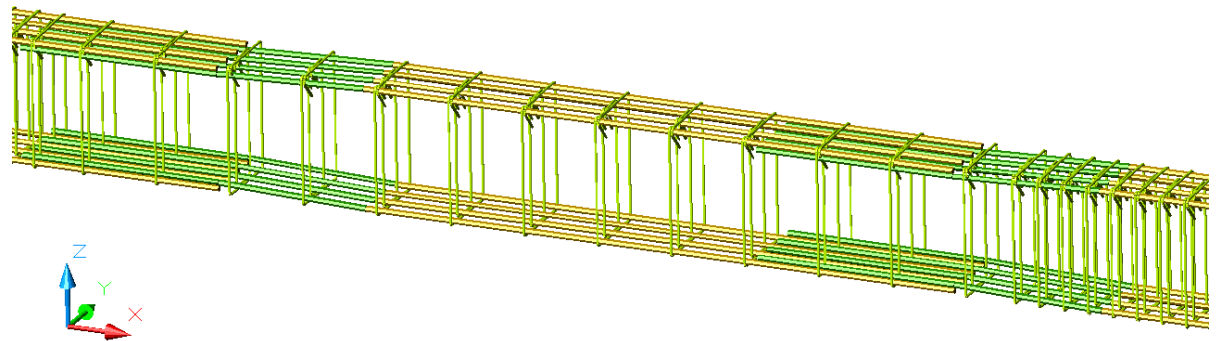
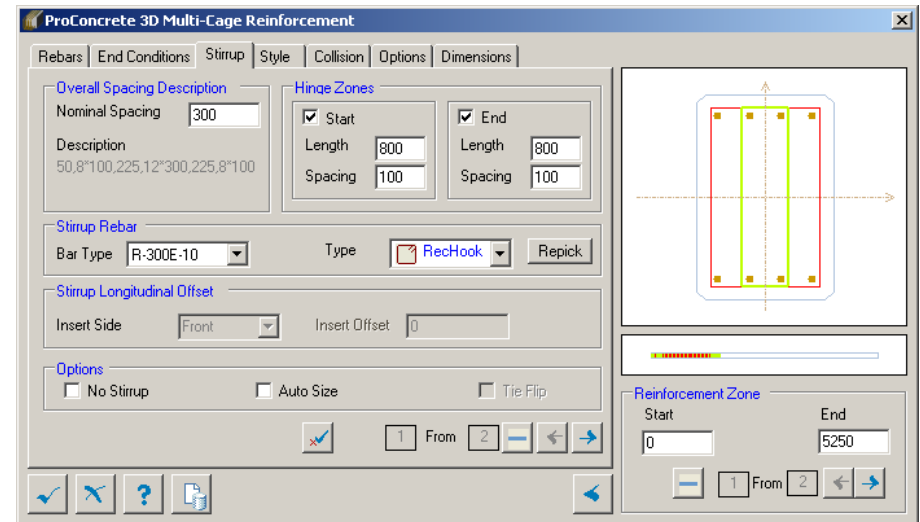
Intelligent Objects and Systems

- Foundations
- Piles, Pile Caps, Ground Beams
- Slab on Grade
- Stairs
- Suspended Floors
 - Insitu Monolithic
 - Precast
 - Composite
- Columns



Fully Parametric Beams & Columns

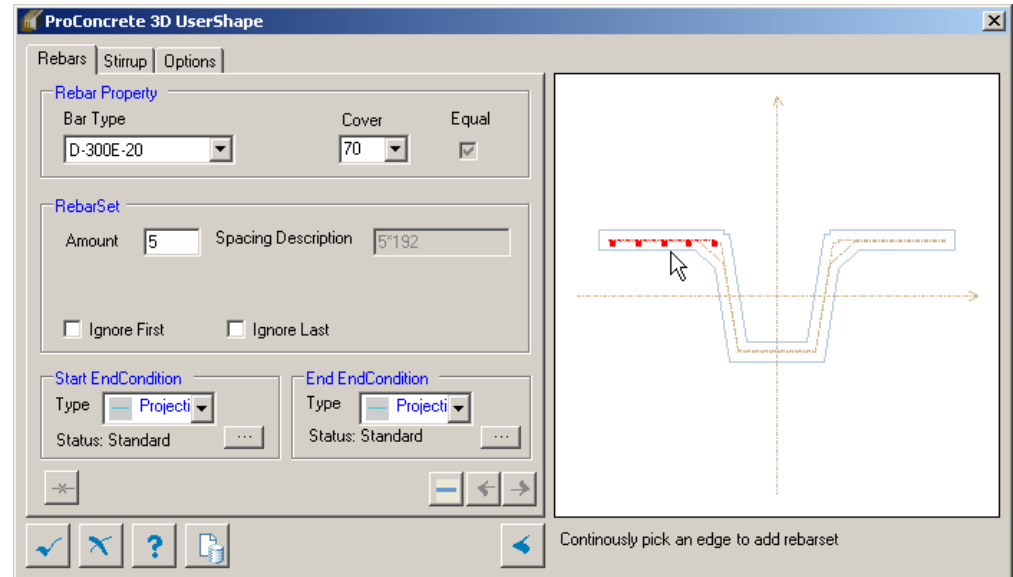
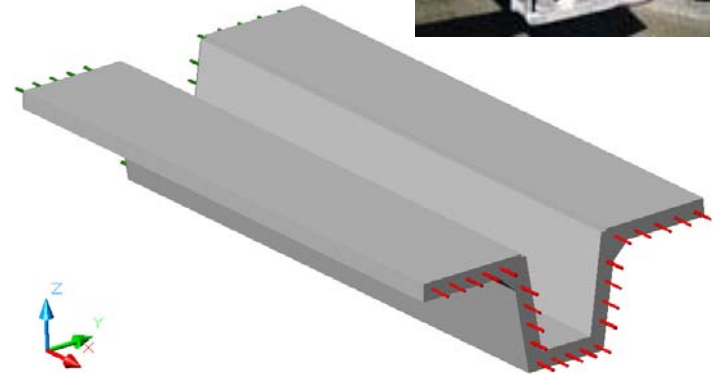
- 3D Parametric
- Standard Profiles
- User Defined Profiles
- Multiple Cages in Elements
- Multiple Hinge Zones for Beams
- Styles driven

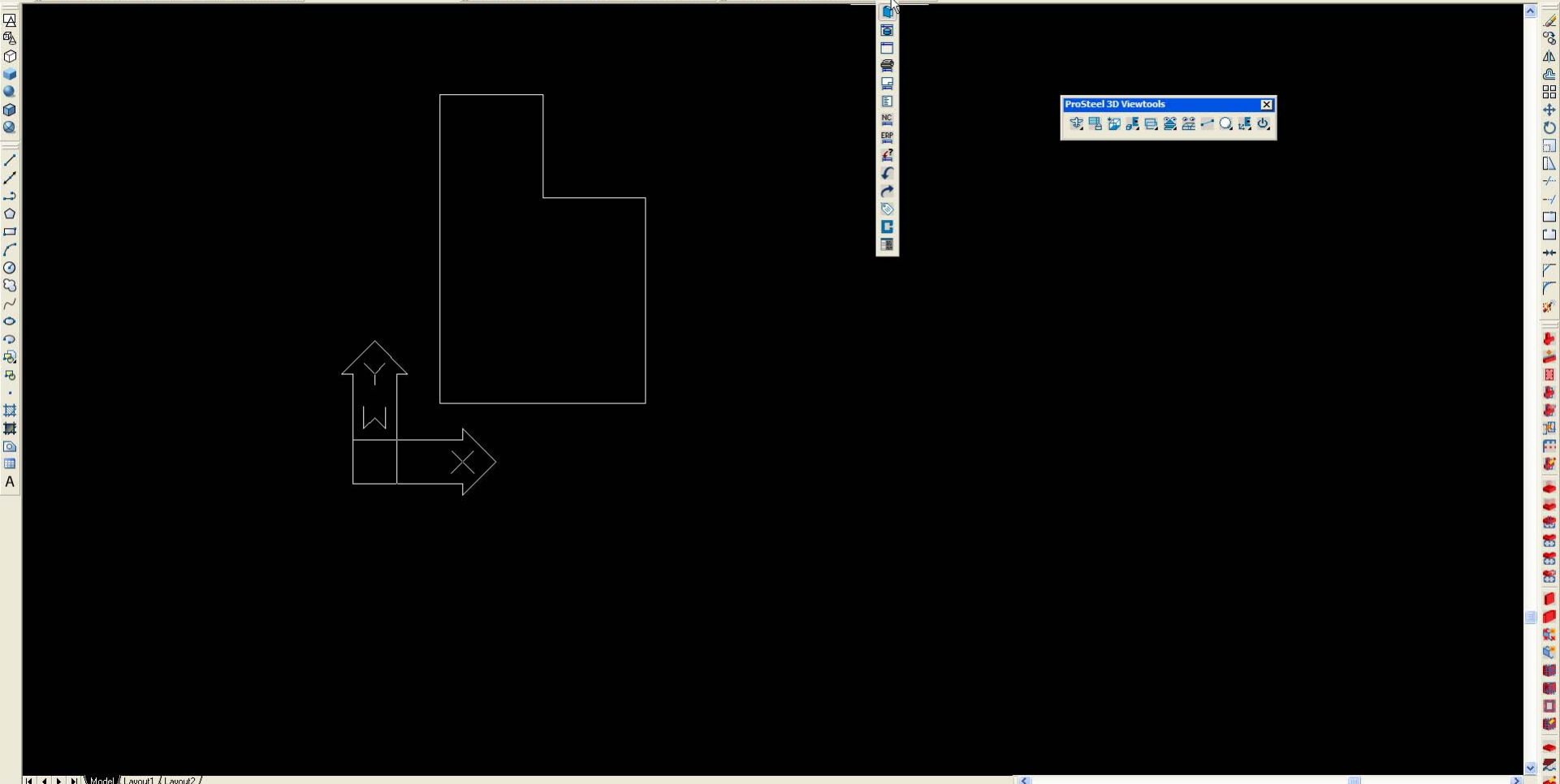


User Shapes

User Shapes allow any polyline to be used

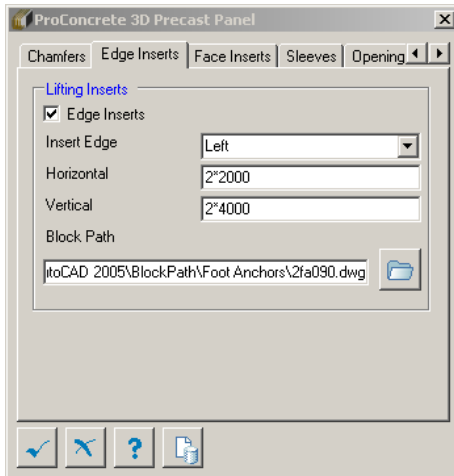
- Use in complex non regular beam and column geometry
- Bridge Beams
- Spanderal panels, Detailed walls, precast floor systems ...





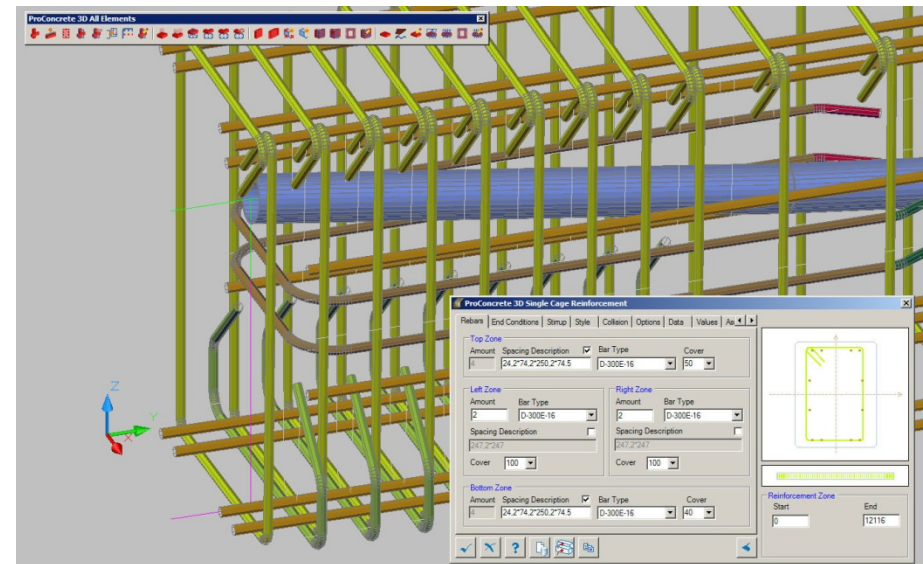
Precast Panel Generator

- Models Precast Panel systems quickly
- Interacts with Footings
- Inserts – Lifting and Cast-in components



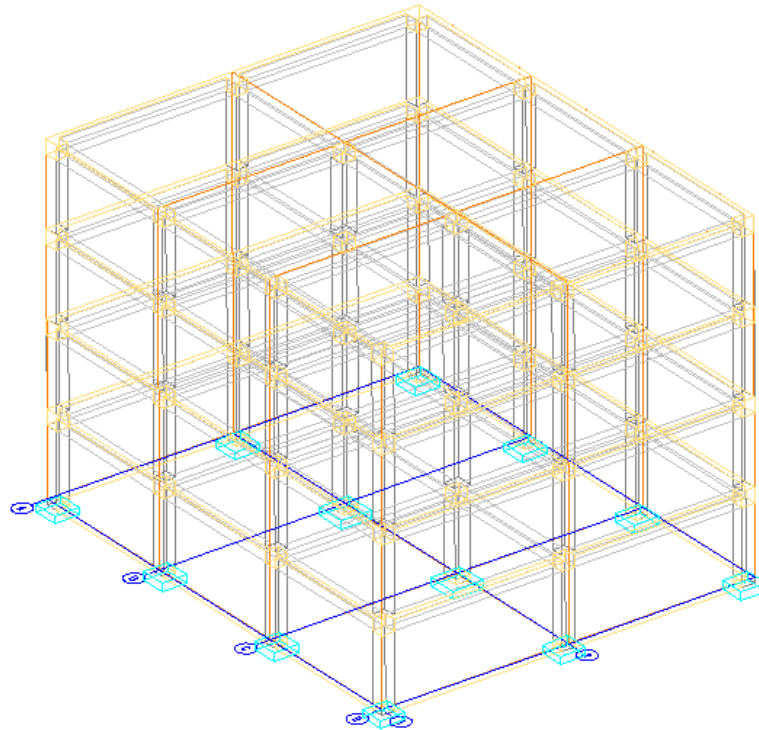
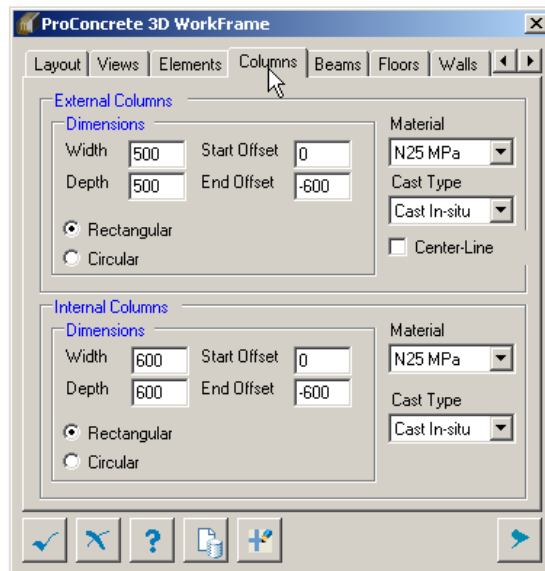
ProStructures – Standard of Interoperability

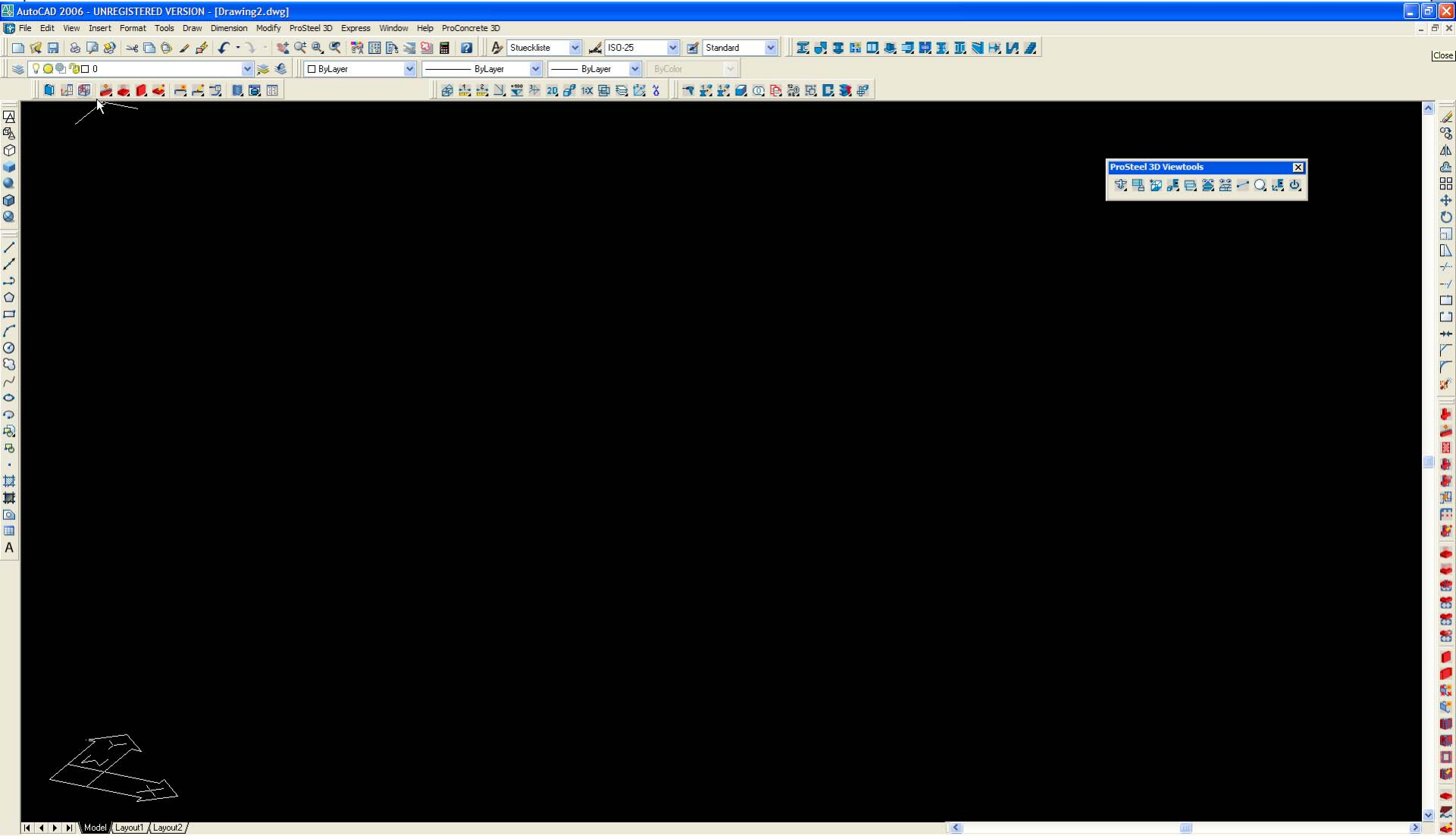
- True multi-material 3D modeling and detailing environment integrated to both ACAD and MicroStation platforms
- Truly bi-directional integration of engineering AND detailed drawings
- Completely integrated with Bentley's Analysis and Design packages including STAAD.Pro keeping physical, analytical and documentation models in sync



Workframe

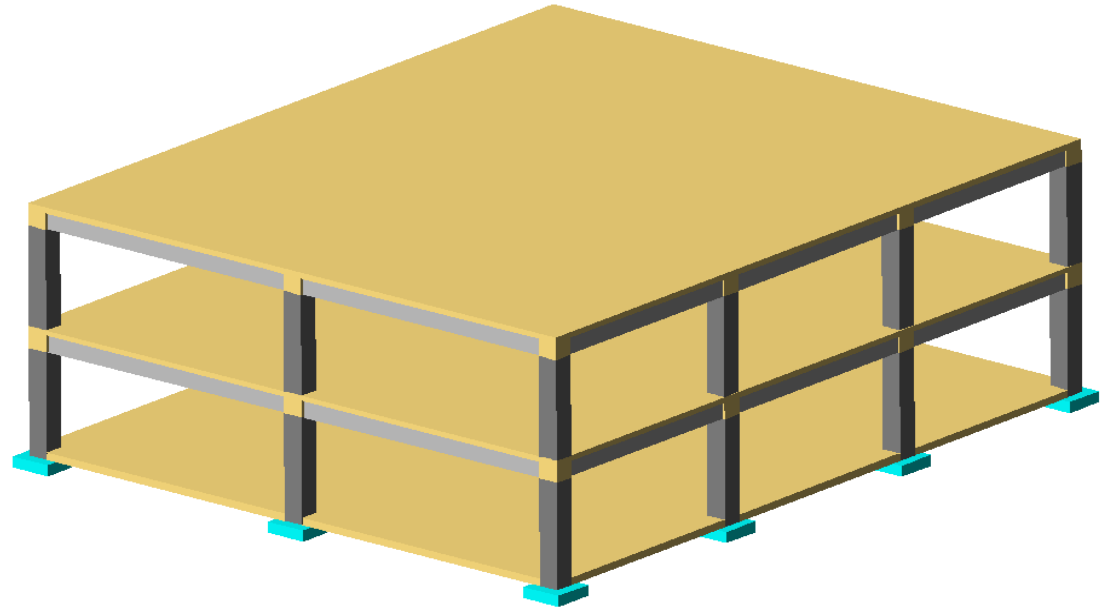
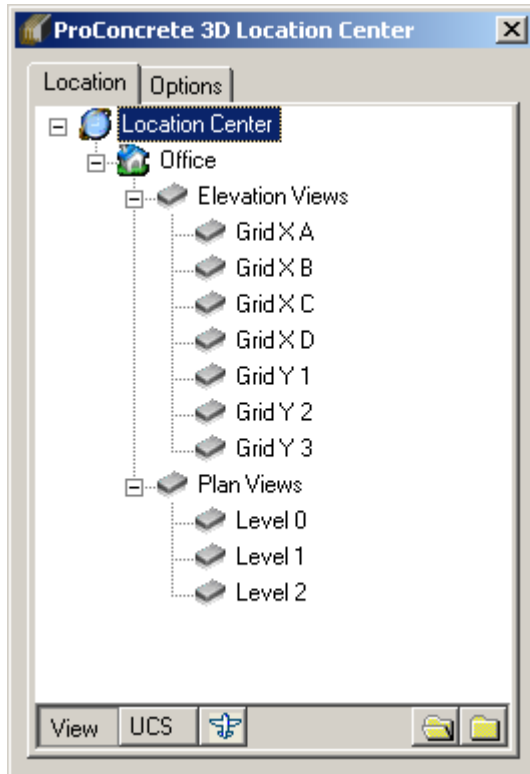
The ProConcrete Workframe allows Beams, Columns, Slabs, Walls, and Foundations to be linked to the building grid.





Location Center

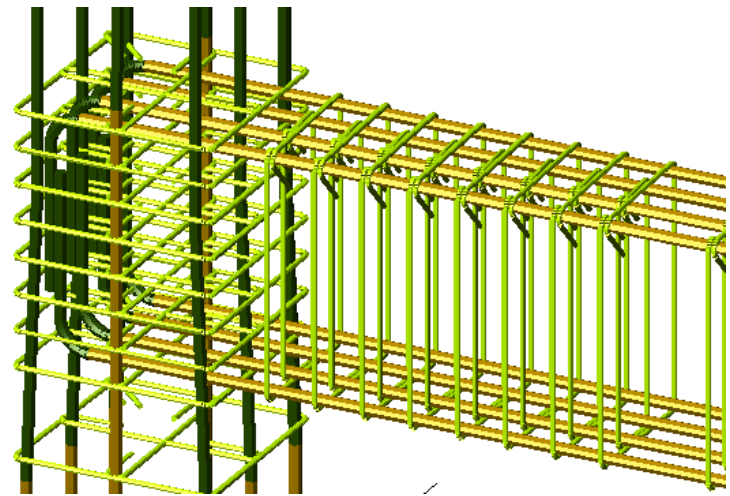
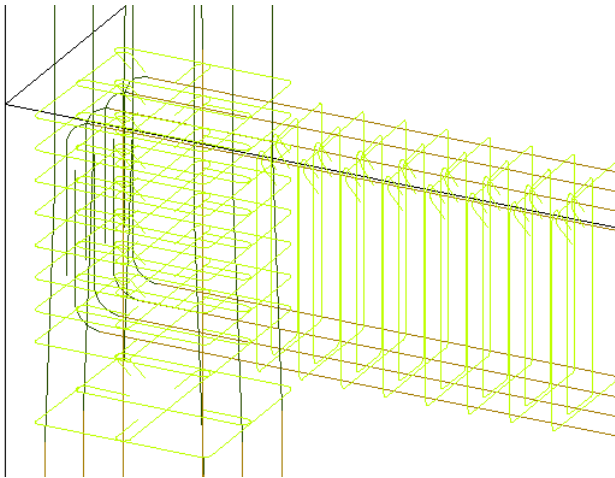
Location Center is an easy to use navigation tool that controls view direction and UCS



Display Modes

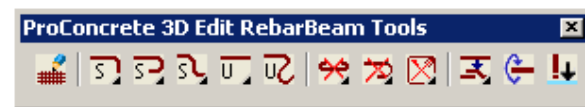
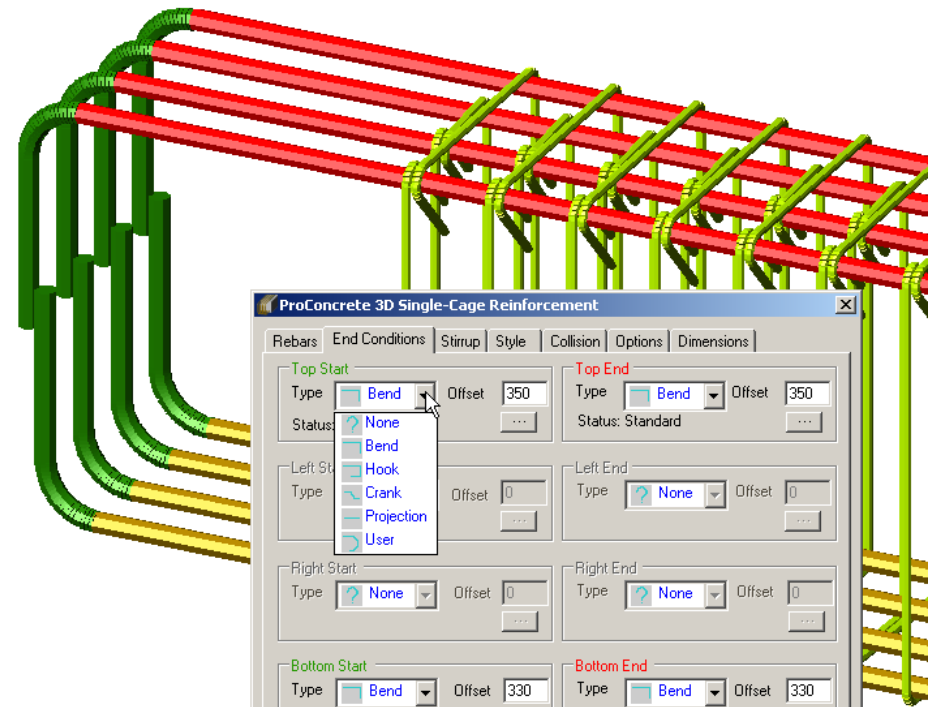
Easy Control of Display Modes to speed processing and visualise better

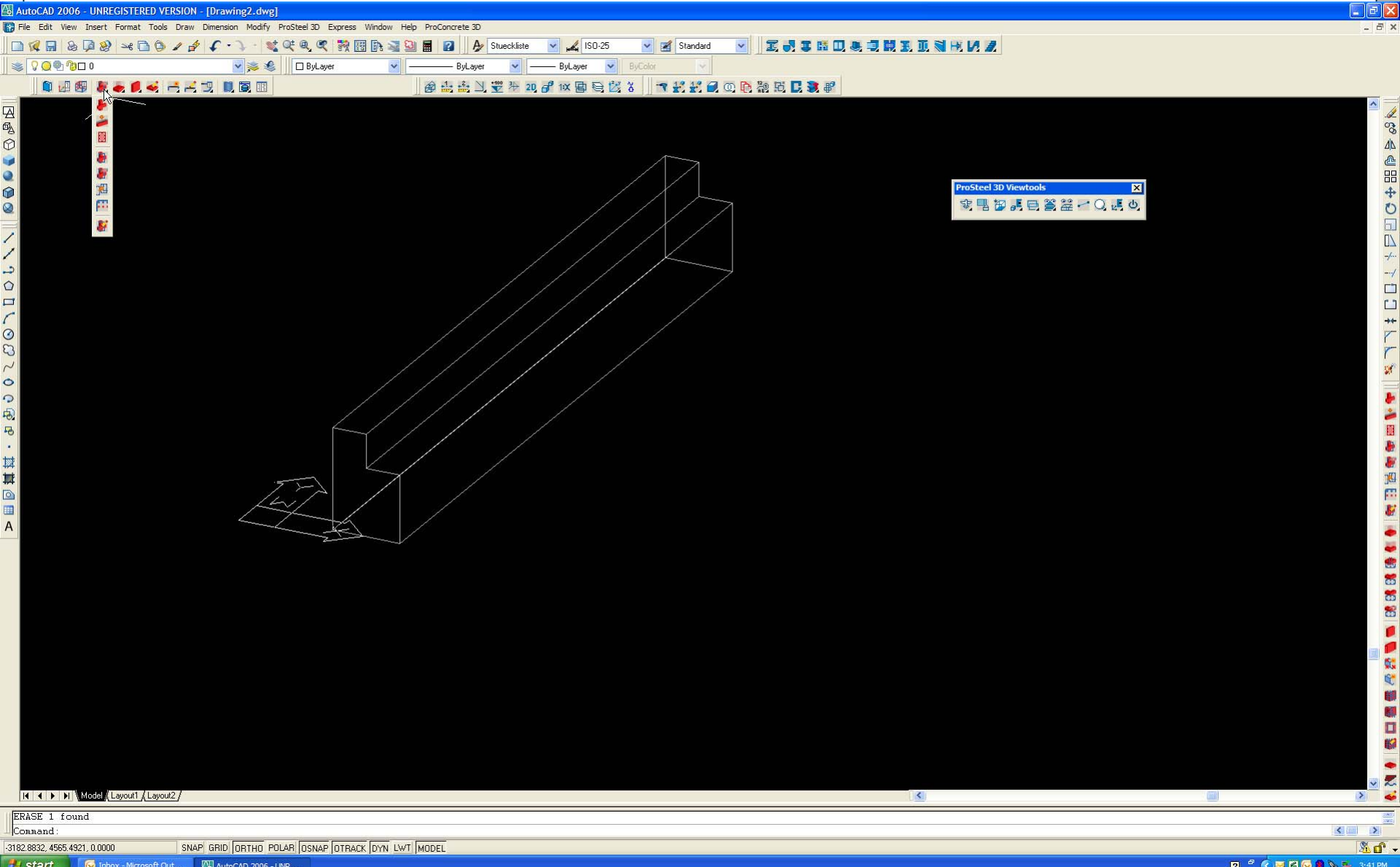
- Line Mode
- Cylinder Mode
- Sketch Mode

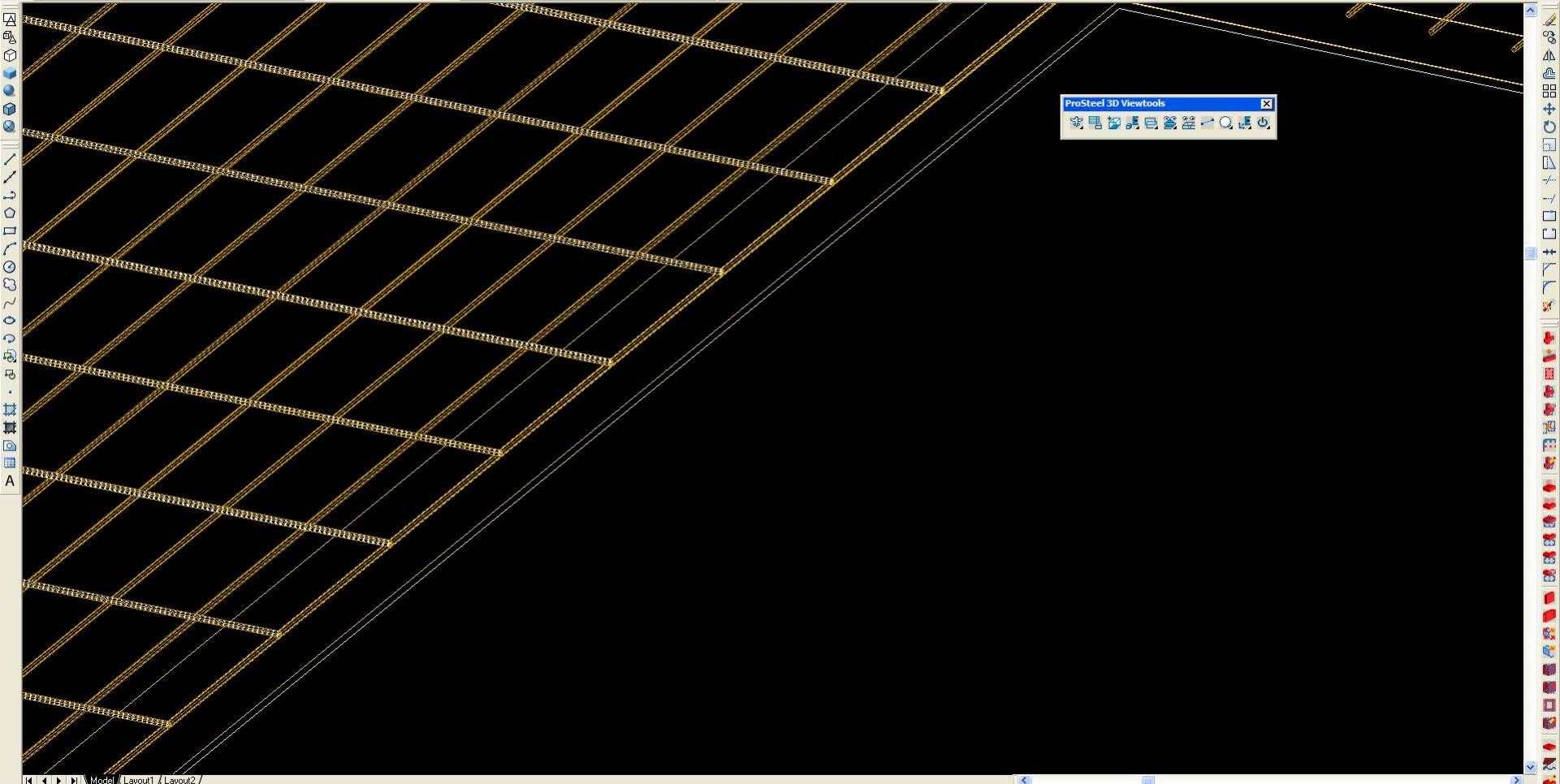


Easy Editing in 3D

- Flexible End Conditions
 - Hook
 - Bend
 - Projection
 - Crank
 - User Angle
- Individual Rebar editing for each end condition without exploding cage
- Alter any Rebar with Ease



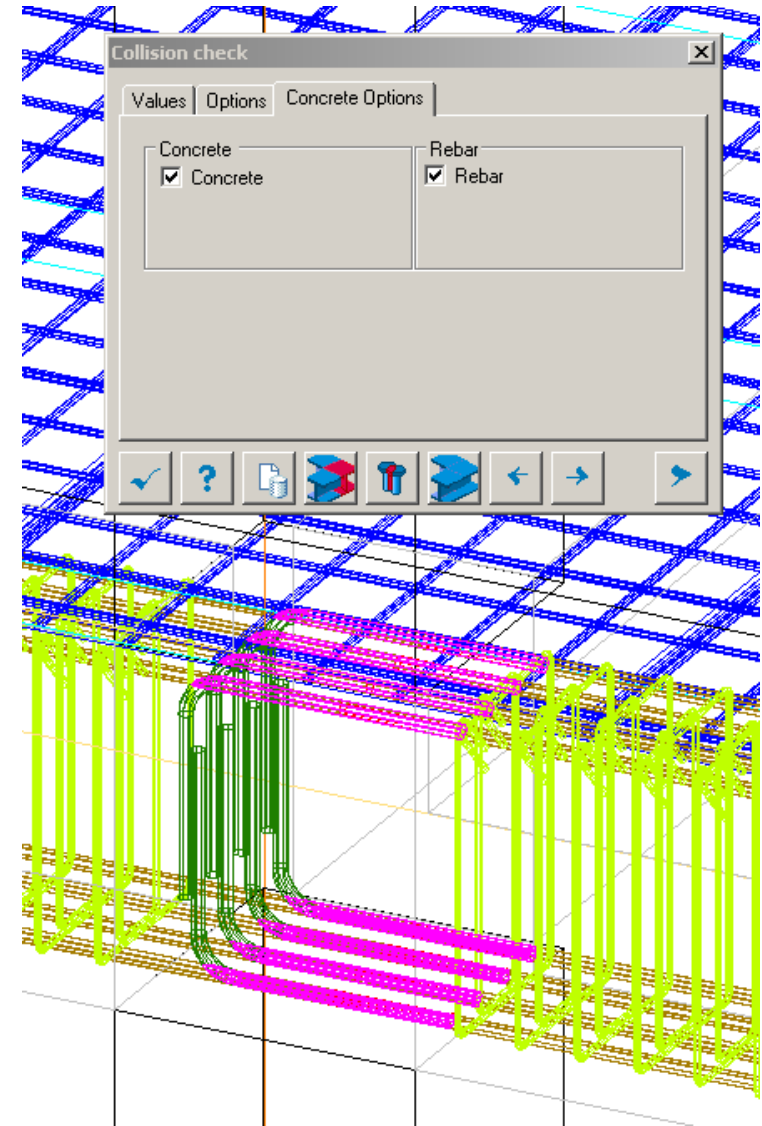




Collision Detection

Easy to use collision detection of:

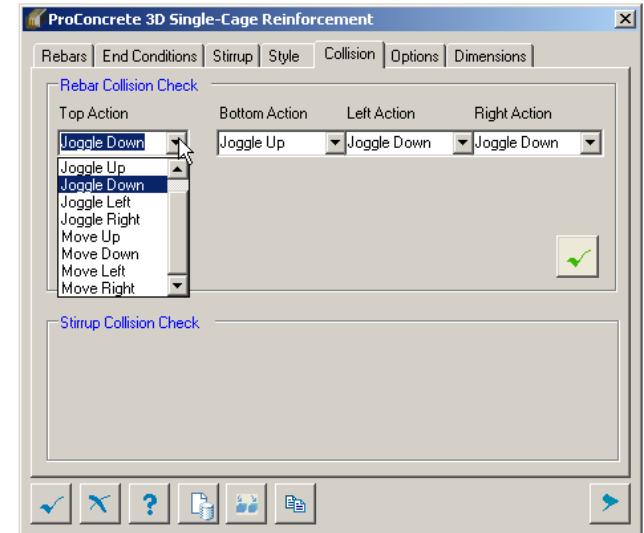
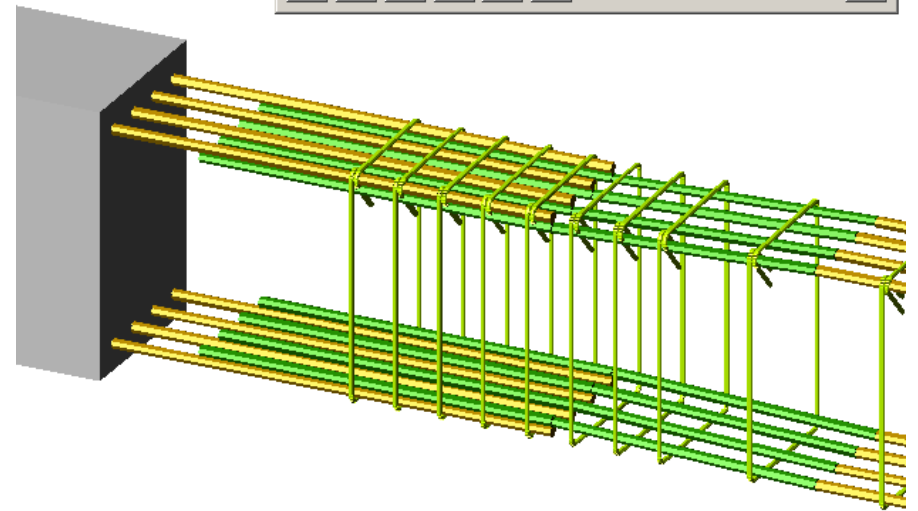
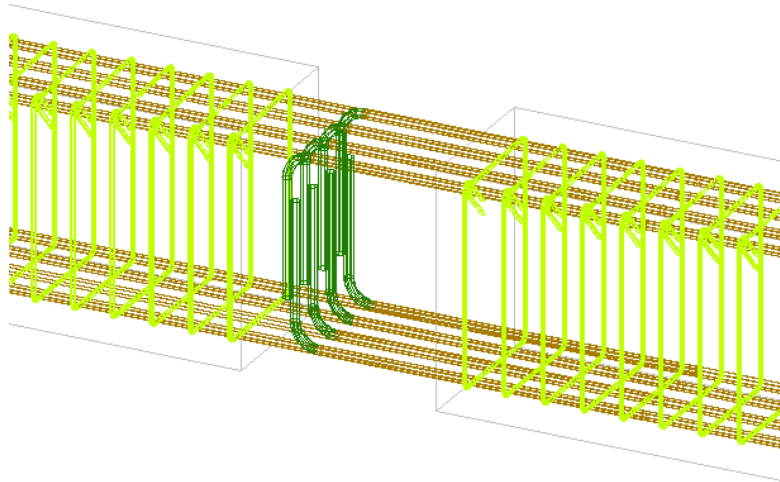
- Concrete to Concrete Elements
- Concrete to Steel Elements
- Rebar to Rebar Elements
- Rebar to Steel Elements
i.e. Cast Plates ...



Rebar Collision Solver

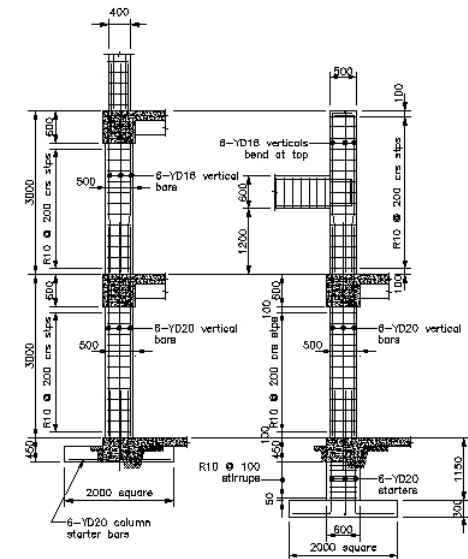
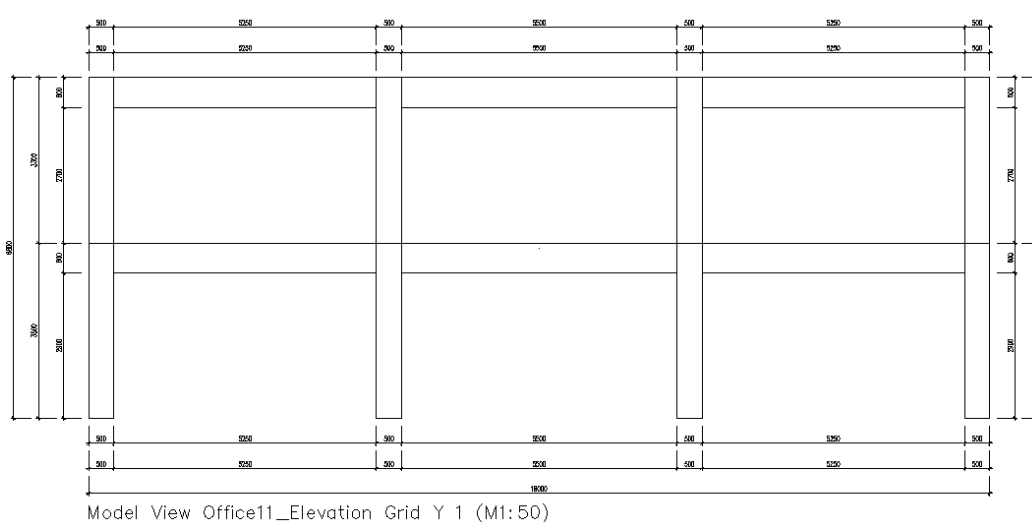
Easy to use tool solving collision of rebar's in all joints

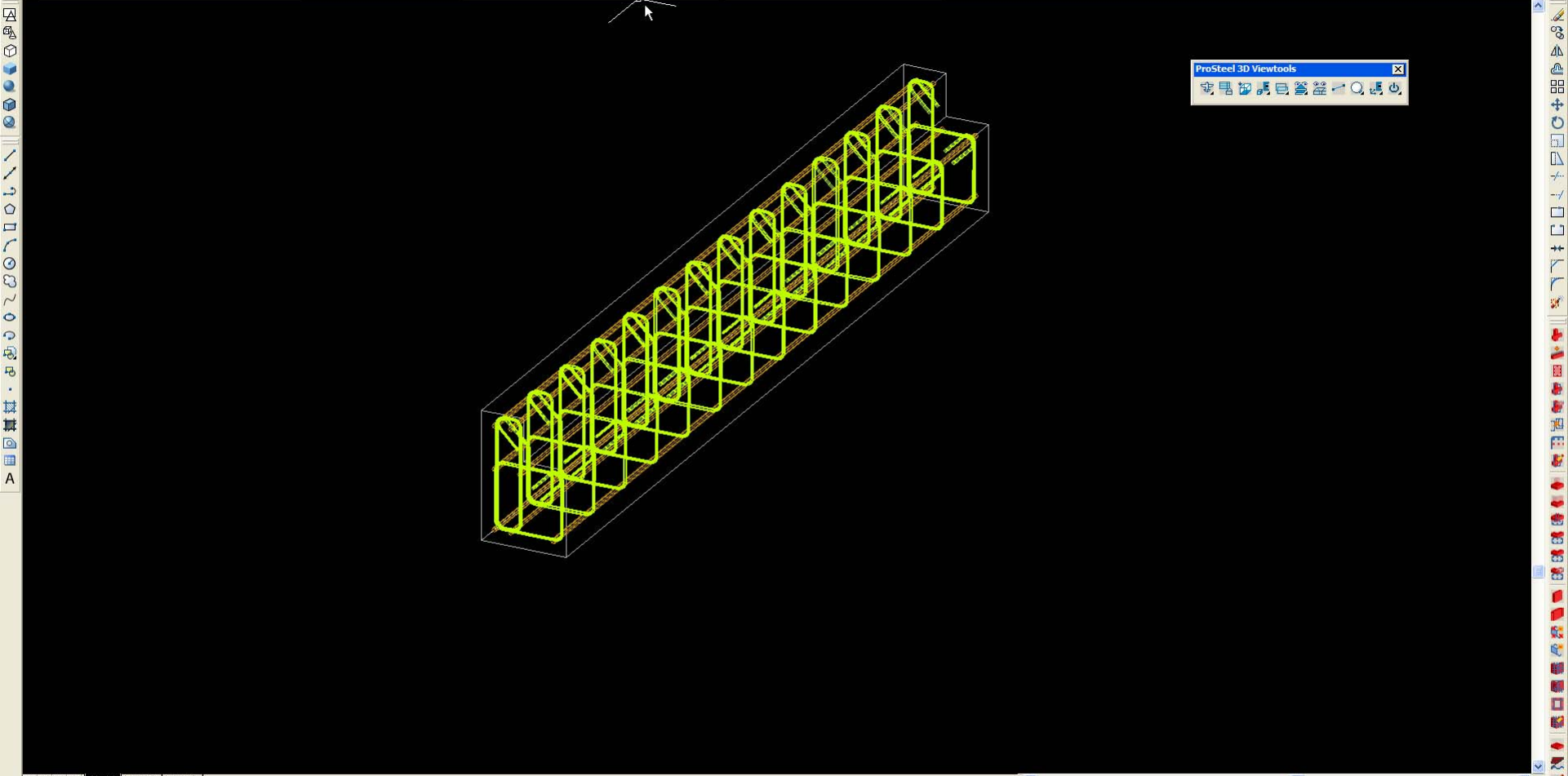
- Makes intelligent decisions on rebar arrangement
- Styles Driven



2D Detail Drawings

- Dynamically Linked to Model
- Style Based
- Plan, Elevations, Cross Sections and Element Views
- Material Lists





Bar Bending Schedules


- Standards Driven Type Table, i.e. BS8666

or

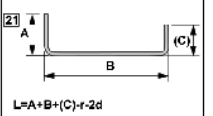
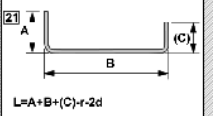
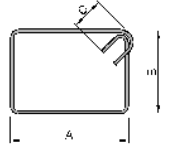
- Dimensioned Diagram Drawing Based Method

Bar Bending Schedule

Page 1

Client Name:		Project Name:		Project Number:	
Client Reference Number:		Model File Name:			
Site Location:		Drawn By:	Date: 9.3.2006 Time: 21:36 h		

Comment:

Colour	Bar Mark	Qty	Product	A	B	C	D	E/R	Length	Bar Type	Remarks	Item Weight
	5	4	D-500E-20	373	17806	273	0	61.5	18354	 $L=A+B+(C)-r-2d$		59.9
	1	4	D-500E-20	373	17846	273	0	61.5	18394	 $L=A+B+(C)-r-2d$		60
	1	68	R-300E-10	320	520	121.5	0	16.5	1956			1.2

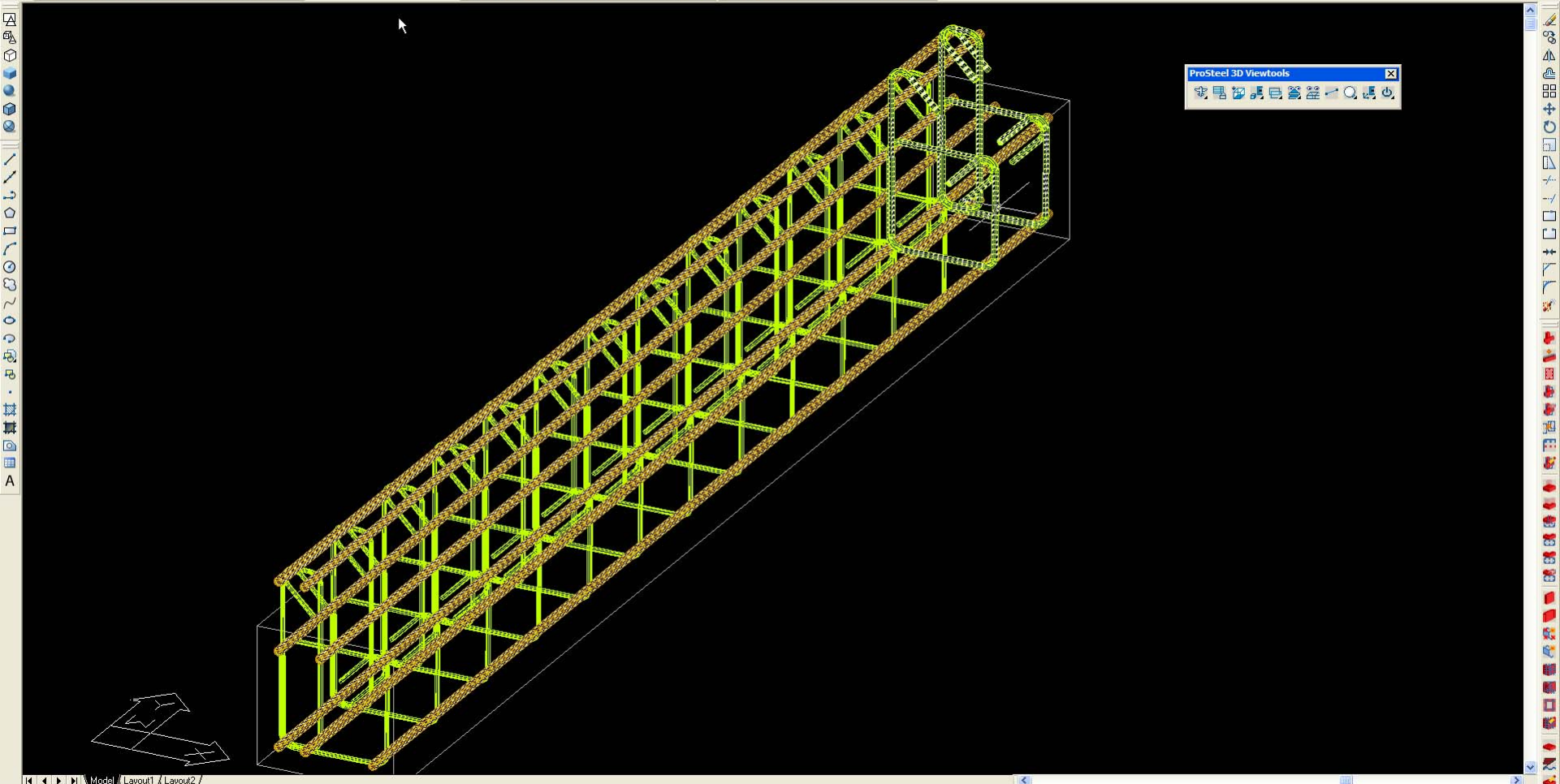
Result:

Quantity:	76.0	Parts
Weight:	561.2	kg



Concrete Modelling and Detailing Software





ProSteel 3D Viewtools

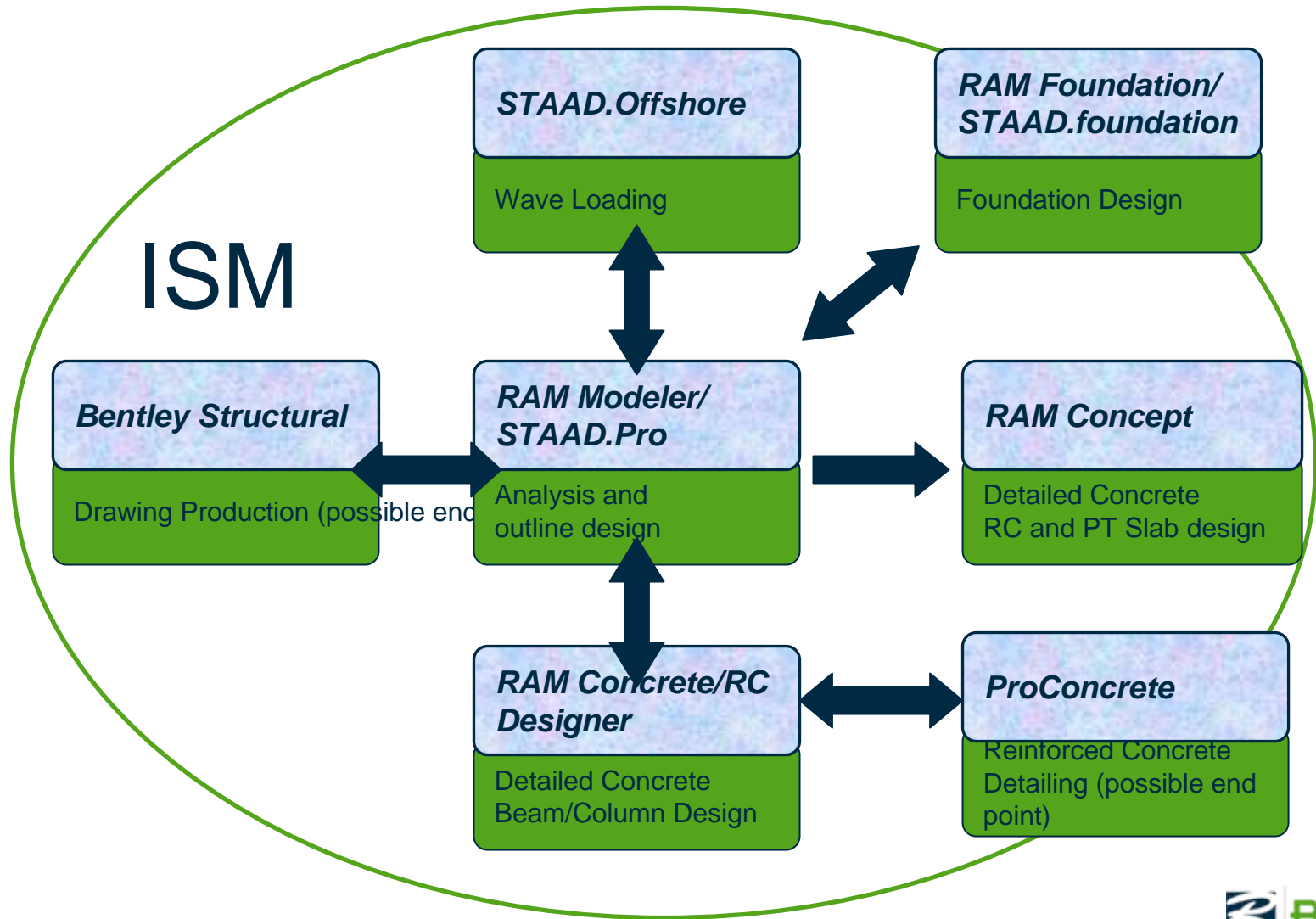
A palette of icons for ProSteel 3D Viewtools, including options for view manipulation and rendering.

Model/Layout1/Layout2

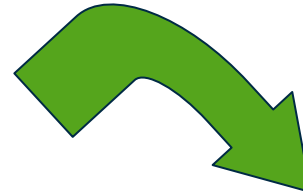
Command: Specify opposite corner:
Command:

541.1071, 4103.1012, 0.0000 SNAP GRID ORTHO POLAR OSNAP OTRACK DYN LWT MODEL

Concrete Model Interoperability



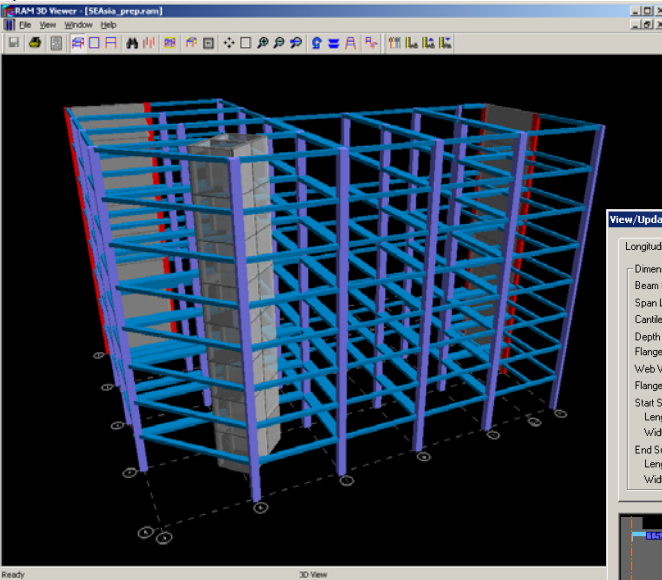
An Example of Interoperability of Concrete Building Structures with RAM*



Design beams
& columns

Design RC/PT
slabs

Send geometry
and rebar info
to ProConcrete



View/Update - Story 7th - Beam Line # 3

Longitudinal Reinforcement | Transverse Reinforcement | Section/Material Properties | Deflections | Design Warnings

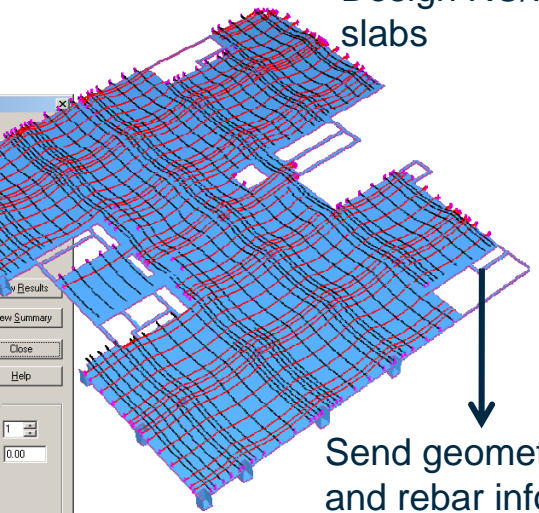
Dimensions
Beam # 8 Span 1 7.000
Span Length (m) 7.000
Cantilevers (m) L: 0.00, R: 0.00
Depth (mm) 300.000
Flange Width (mm) -----
Web Width (mm) 900.000
Flange Thickness (mm) -----
Start Support Col #10
Length Parallel (mm) 600.000
Width (mm) 600.000
End Support Col #11
Length Parallel (mm) 600.000
Width (mm) 600.000

Top Reinforcement Bottom Reinforcement

No.	Support	Qty.	Bar Size	Start (m)	End (m)	Reinf Layer	Hooked	Left	Right
1	1	15	F16	0.00	1.90	Upper	Hooked	Straight	
2	2	10	F20	-2.41	2.41	Upper	Straight	Straight	
3	3	15	F16	-1.90	-0.00	Upper	Straight	Hooked	
4									

Envelope Data
Support: 1
Location (m): 0.00

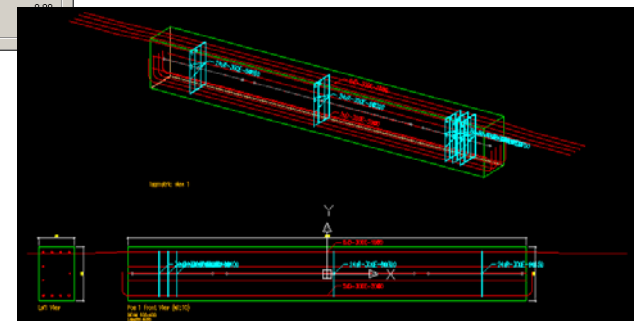
Capacity:
Prov (kNm):
Req (kNm):
Reinforcement Area:
Prov (mm²): 3016.50
Req (mm²):



Update the
optimized
model

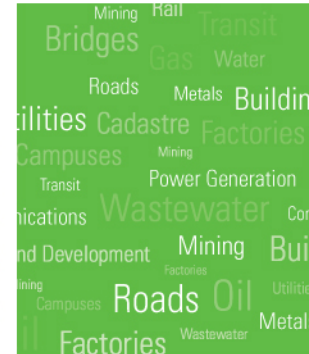
... interoperability with RSS, RAM
Concrete

Send geometry
and rebar info
to ProConcrete



*Data exchange through
ISM





Thank you