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AUG. 27-29

2019

Estimating for Concrete

Trimble

Estimating for Concrete: Techniques and workflow tools affecting estimating and winning jobs

- General ‘Tips’ for setup/estimating/QC
- Reporting tools
  - Template Editor
  - Organizer
- Supplemental tools for ‘winning’ jobs
  - Visualizer
  - Construction Sequencer
  - Design-to-cost Tool

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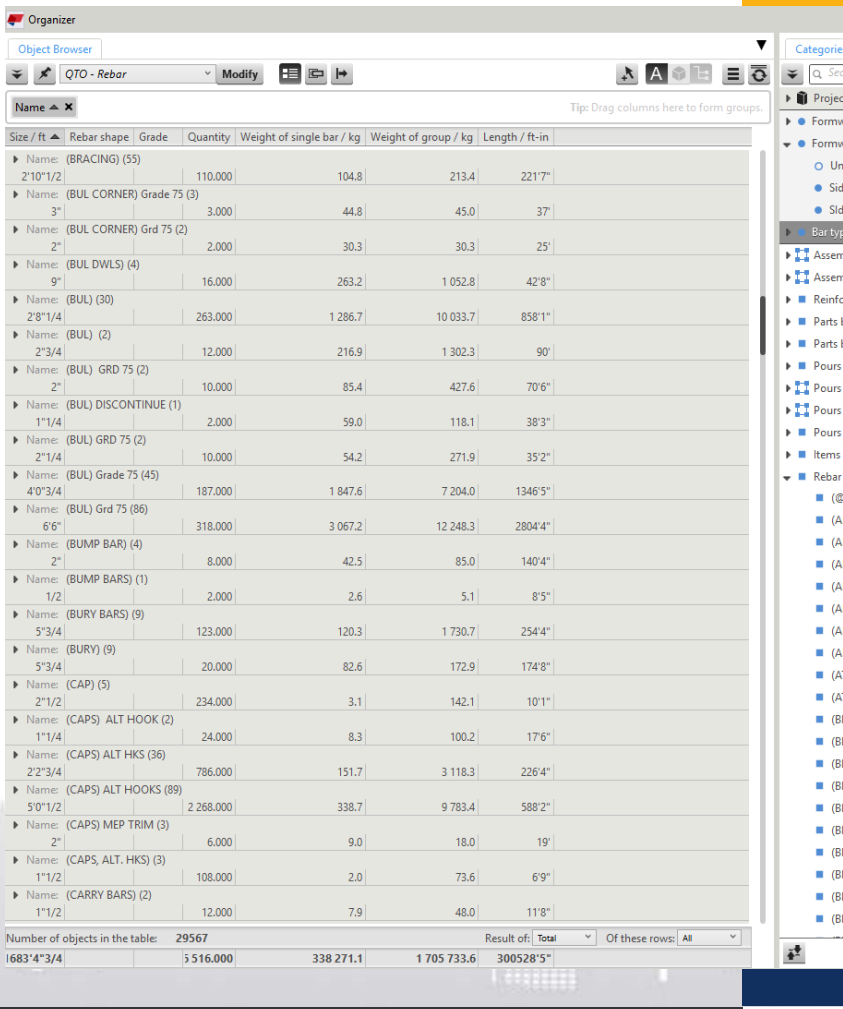
Tips for Success

- Definition document of ‘standards’
- Personalize setup for company
- Consider downstream effect
- Information management
- Keep refining ‘number of clicks’
- FIRM
  - 2019i updates



Tool	Save As	Ext	Profile	Name	Class	CU Type	CU Prefix	CU Start No
Concrete Column	standard	.ccl	32"*32"	CORNER COLUMN	13	Precast	CN	100
Concrete Column	Precast_Exterior_Column	.ccl	24"*32"	EXTERIOR COLUMN	27	Precast	CX	100
Concrete Column	Precast_Interior_Column	.ccl	24"*24"	INTERIOR COLUMN	41	Precast	CI	100
Concrete Column	Cip_Column	.ccl	24"*24"	COLUMN	8	Cast in Place	GC	1
Concrete Column	Cip_Pier	.ccl	36"*36"	PIER	3	Cast in Place	GP	1
Concrete Column	Cip_Circular	.ccl	D36"	COLUMN	8	Cast in Place	GC	1
Concrete Beam	standard	.cbm	32"X20"	RECTANGULAR BEAM	9	Precast	BR	100
Concrete Beam	Precast_ItBeam	.cbm	ITBEAM24"*12"*12"*12"*12"*36"*0"	IT BEAM	7	Precast	BT	100
Concrete Beam	Precast_LedgeBeam	.cbm	LSPAN84"*8"*8"*12"*0"	LEDGE BEAM	18	Precast	BL	100
Concrete Beam	Precast_DoubleTee	.cbm	XDT3"3/4*1"*2"*1/4*60"*28"*30"*30"	DOUBLE TEE	10	Precast	DT	100
Concrete Beam	Precast_LB_Spandrel	.cbm	LSPAN84"*8"*8"*12"*0"	SPANDREL	11	Precast	LS	100
Concrete Beam	Precast_NLB_Spandrel	.cbm	RSPAN84"*8"	SPANDREL	25	Precast	NS	100
Concrete Beam	Precast_Stair	.cbm	2"*12"	STAIR	14	Precast	Z	100
Concrete Beam	Precast_Corbel	.cbm	CORBEL20"*8"*8"*1*3/4*3/4	CORBEL	900	Precast	CBL	1
Concrete Beam	Precast_Haunch	.cbm	12"*8"	HAUNCH	901	Precast	HNC	1
Concrete Beam	Precast_Ridge	.cbm	2"*12"	RIDGE	22	Precast	SD	1
Concrete Beam	Precast_Stringer	.cbm	2"*12"	STRINGER	23	Precast	SR	1
Concrete Beam	Cip_Beam	.cbm	32"*20"	BEAM	6	Cast in Place	CB	1
Concrete Slab	standard	.csl	8"	FLAT SLAB	5	Precast	FS	100
Concrete Slab	Precast_Stair	.csl	8"	STAIR	14	Precast	Z	100
Concrete Slab	Precast_Corbel	.csl	24"	CORBEL	900	Precast	CBL	1
Concrete Slab	Precast_Haunch	.csl	8"	HAUNCH	901	Precast	HNC	1
Concrete Slab	Precast_Landing	.csl	8"	LANDING	21	Precast	LP	1
Concrete Slab	Precast_Ridge	.csl	4"	RIDGE	22	Precast	SD	1
Concrete Slab	Precast_Stringer	.csl	4"	STRINGER	23	Precast	SR	1
Concrete Slab	Cip_Wash	.csl	8"	WASH	15	Cast in Place	FW	1
Concrete Slab	Cip_Topping	.csl	8"	TOPPING	16	Cast in Place	FT	1
Concrete Slab	Cip_Slab	.csl	8"	SLAB	4	Cast in Place	FC	1
Concrete Panel	standard	.cpn	120"X12"	HORIZONTAL WALL	2	Precast	WH	100
Concrete Panel	Precast_VerticalWall	.cpn	510"*8"	VERTICAL WALL	36	Precast	WV	100
Concrete Panel	Precast_RampWall	.cpn	420"*10"	RAMP WALL	55	Precast	WR	100
Concrete Panel	Precast_ShearWall	.cpn	150"*8"	SHEAR WALL	47	Precast	WS	100
Concrete Panel	Precast_SandwichWall	.cpn	78*4	SANDWICH WALL	51	Precast	WW	100
Concrete Panel	Cip_Wall	.cpn	135*10	WALL	38	Cast in Place	RC	1
Concrete Panel	Cip_RetainingWall	.cpn	120"X12"	RETAINING WALL	52	Cast in Place	RW	1
Concrete Panel	Cip_ShearWall	.cpn	120"X12"	SHEAR WALL	66	Cast in Place	RS	1
Concrete Panel	Insulation	.cpn	78*2	INSULATION	42	Insulation	SW	1
Concrete Spiralbeam	standard	.csb	28"*20"	BEAM	37	Precast	BS	100
Strip Footing	standard	.csf	12"*24"	STRIP FOOTING	1	Cast in Place	SF	1
Pad Footing	standard	.cpf	70"*70"	PAD FOOTING	1	Cast in Place	FT	1

Definition Document of standards

Clearly define presets and settings that affect numbering, filters, reports, drawings...

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'Tips' for using

Reporting tools: Template editor

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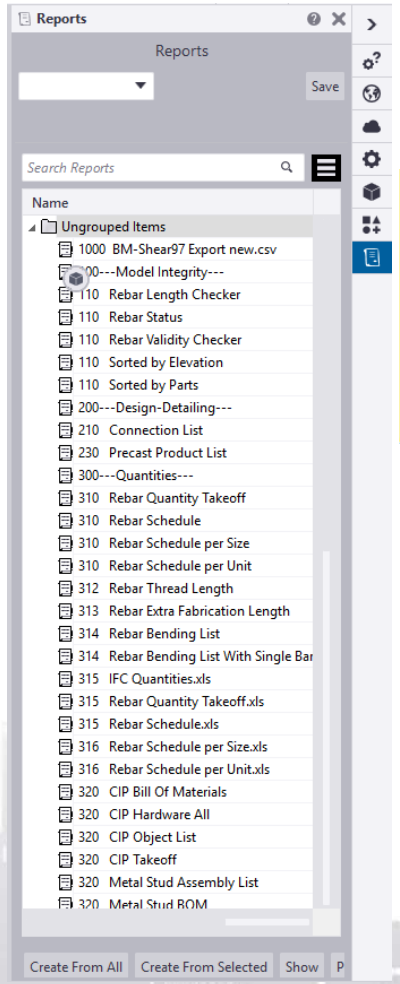
Template Editor Tips: Comparison with Organizer

- Much greater control than Organizer for:
  - Format of data (sorting, combining, calculations)
  - File type export (PDF, csv, txt...)
- Handles rebar information much better
  - Not limited to groups like organizer
  - Can identify bars within groups
- Combine existing properties
- **Warehouse tool: Reports side pane**
- Online training offering



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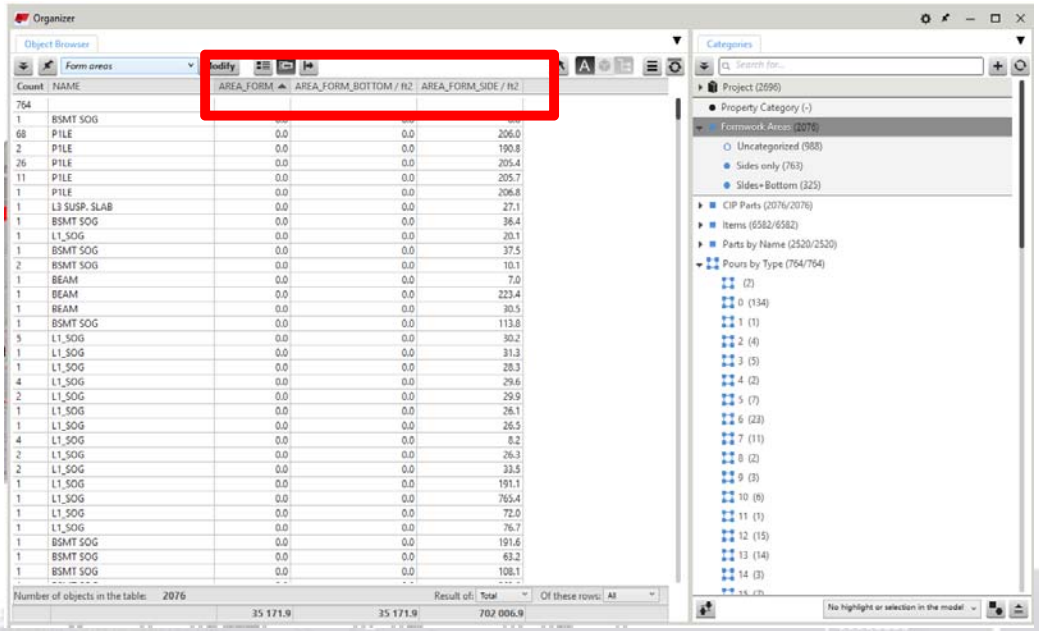
Template Editor + Organizer

- Use Organizer to write information versus creating multiple rows/formulas/rules in Template Editor
- (Live example Later)



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Quick recap of the organizer functionalities

Reporting tools: Organizer

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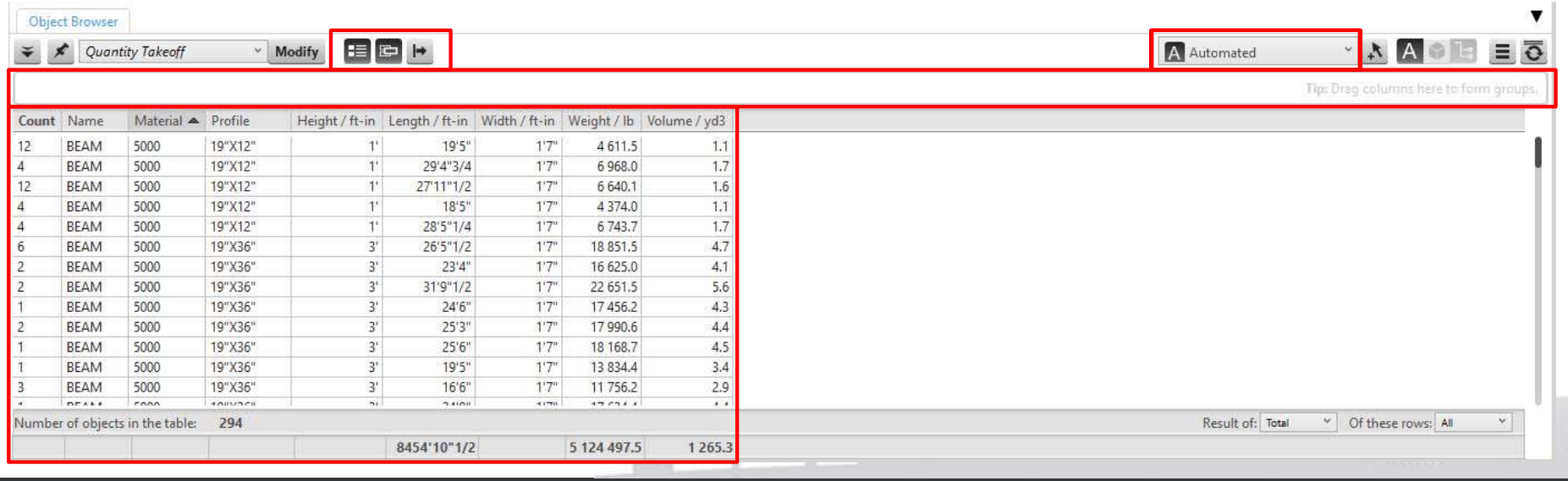
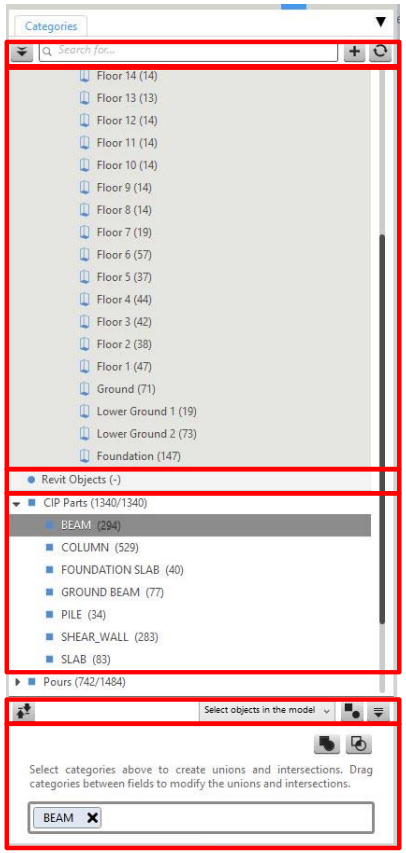
The Object Browser

- Collates information based on model selection/category selection
- Shows object information based on attributes in the template
- Grouping by Template headers
- Counts, Export to Excel and filter



Categories



- Floor breakdown of structure
- Custom breakdown of objects
- Ability to breakdown IFC data
- Combine filters for data export
- Select or highlight objects in the model
- Search for objects in the categories

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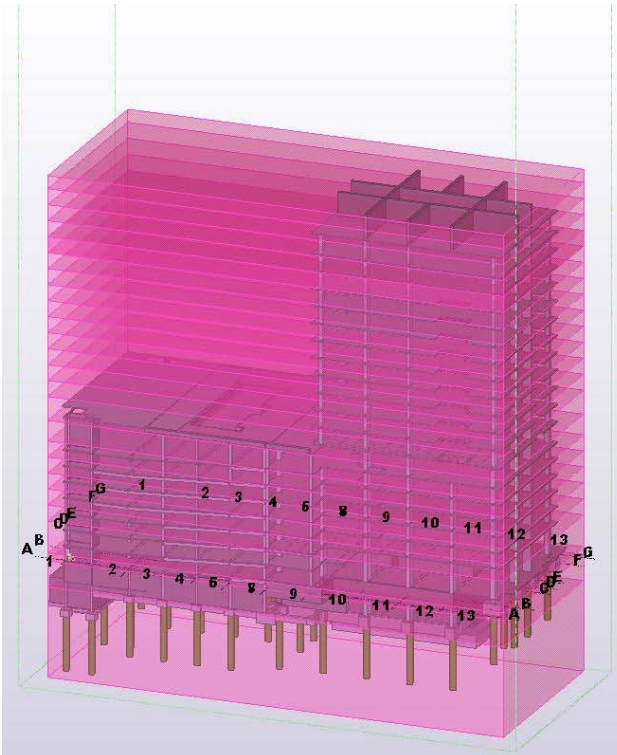
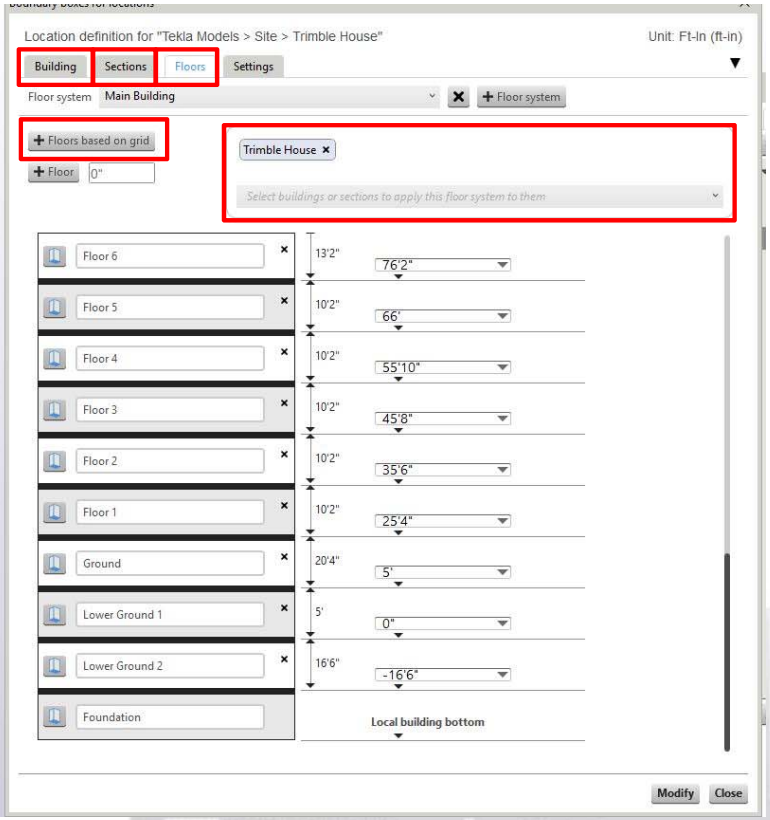
Boundary Boxes for Locations





- Multi-Project
- Building
- Sections
- Floor
- Grid Based Automation
- Multiple floor systems

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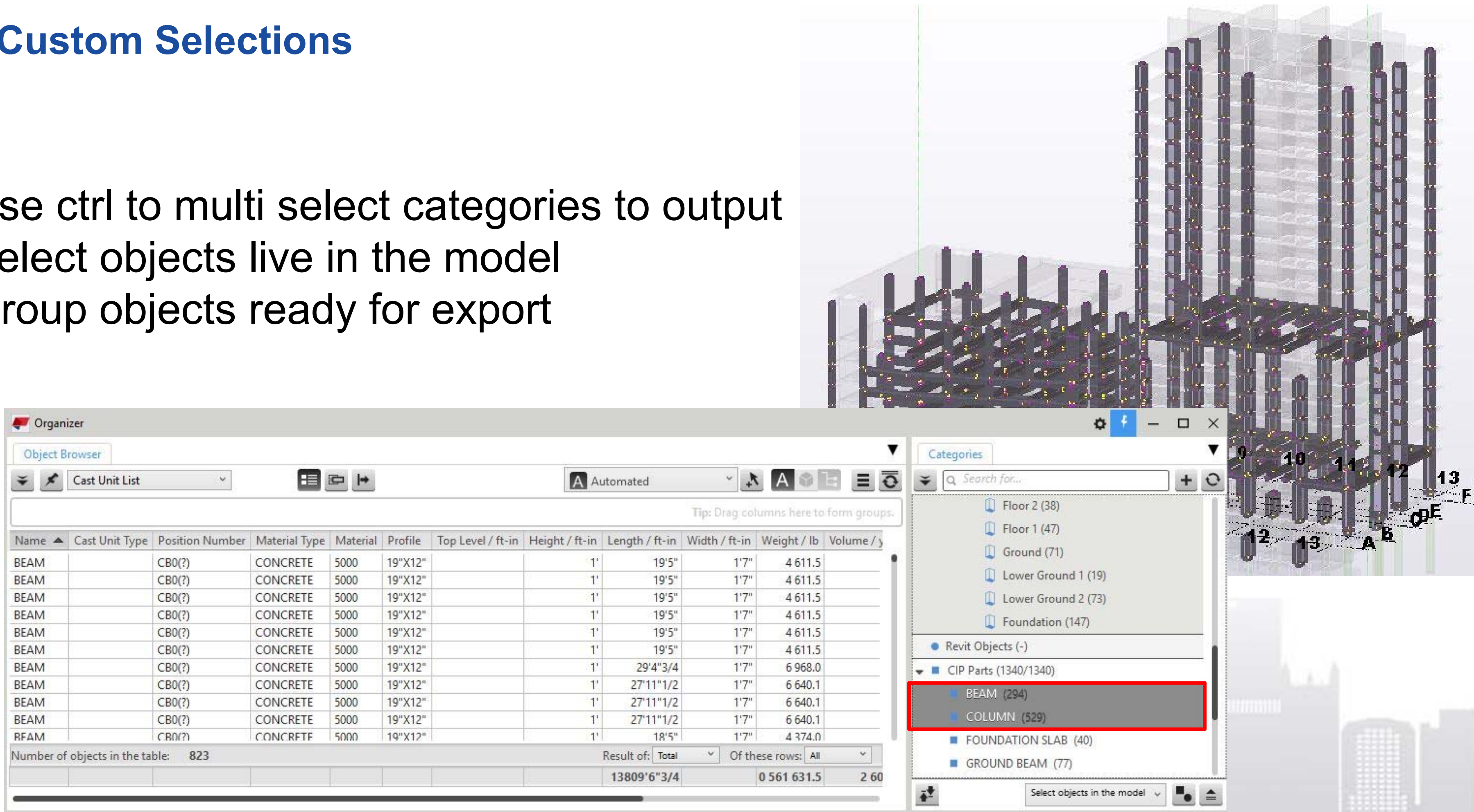
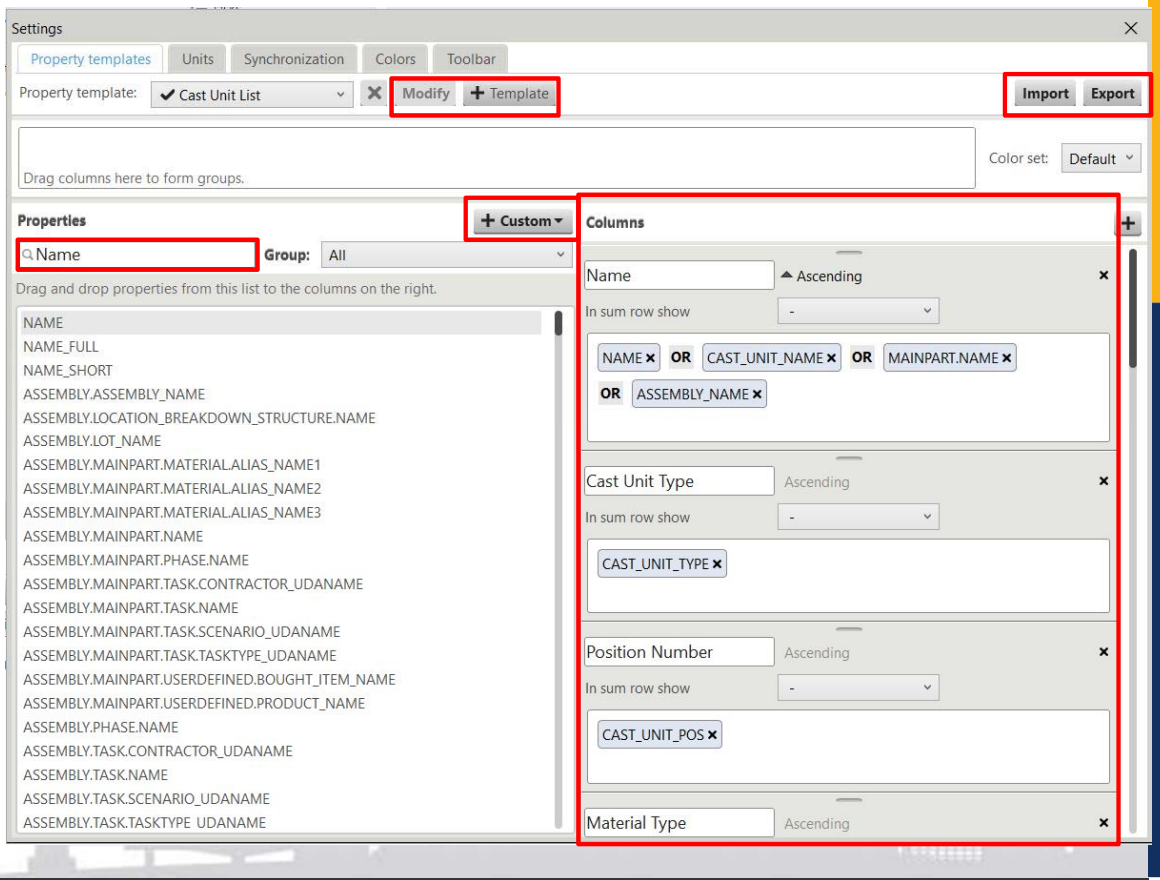
Custom Selections

- Use ctrl to multi select categories to output
- Select objects live in the model
- Group objects ready for export

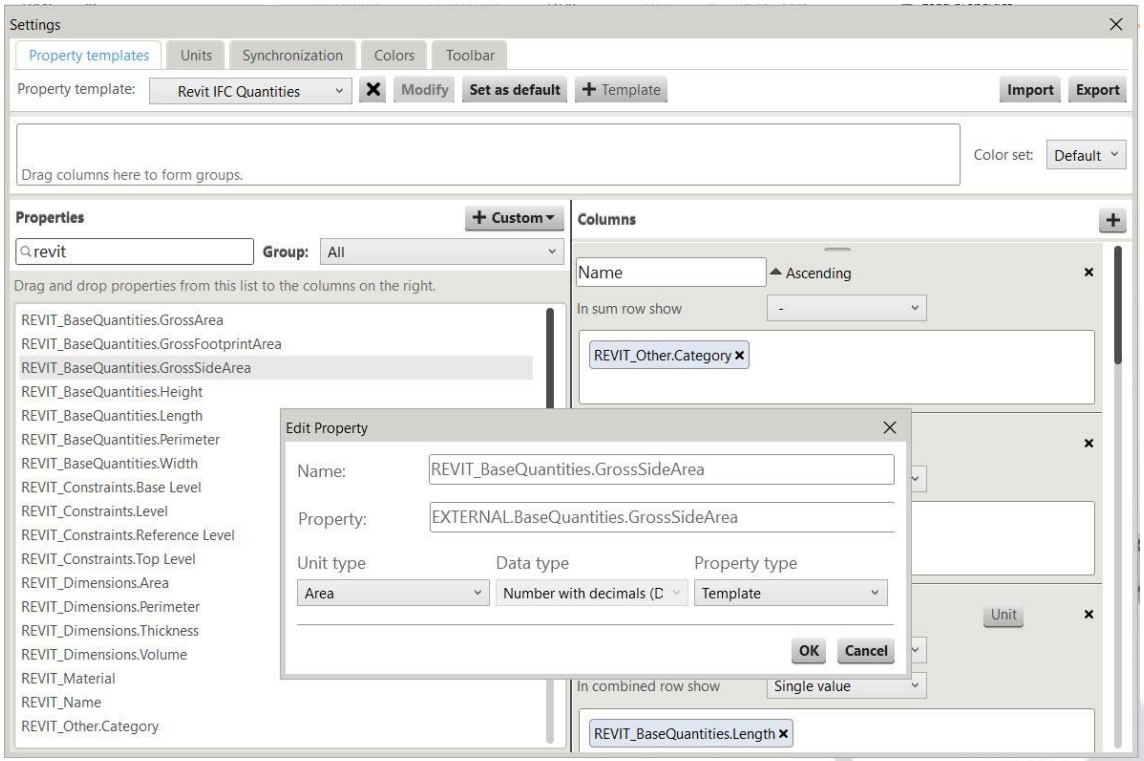


Report Templates

- Customize export templates
- Type any property to see all the values
- Create new based on old
- Import/Export templates
- Add custom properties
- Add custom formula



Custom Properties



- Create properties from company objects.inp/ components/new developments
- External reference files

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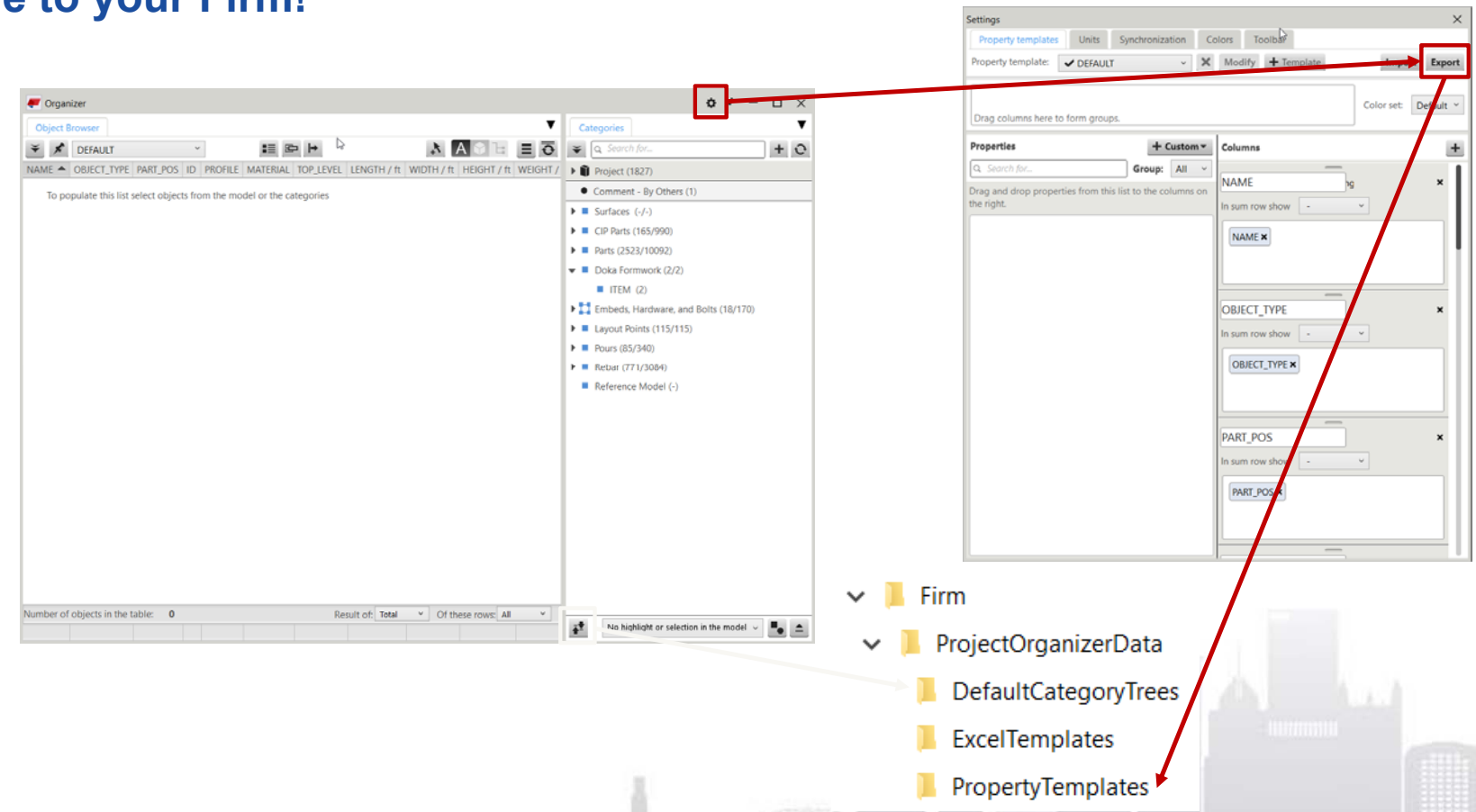
Save to your Firm!



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Organize model info, assign properties, and report

Organizer & Template Reports (Live)

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Customize Tekla based on your needs

Setup and Customization

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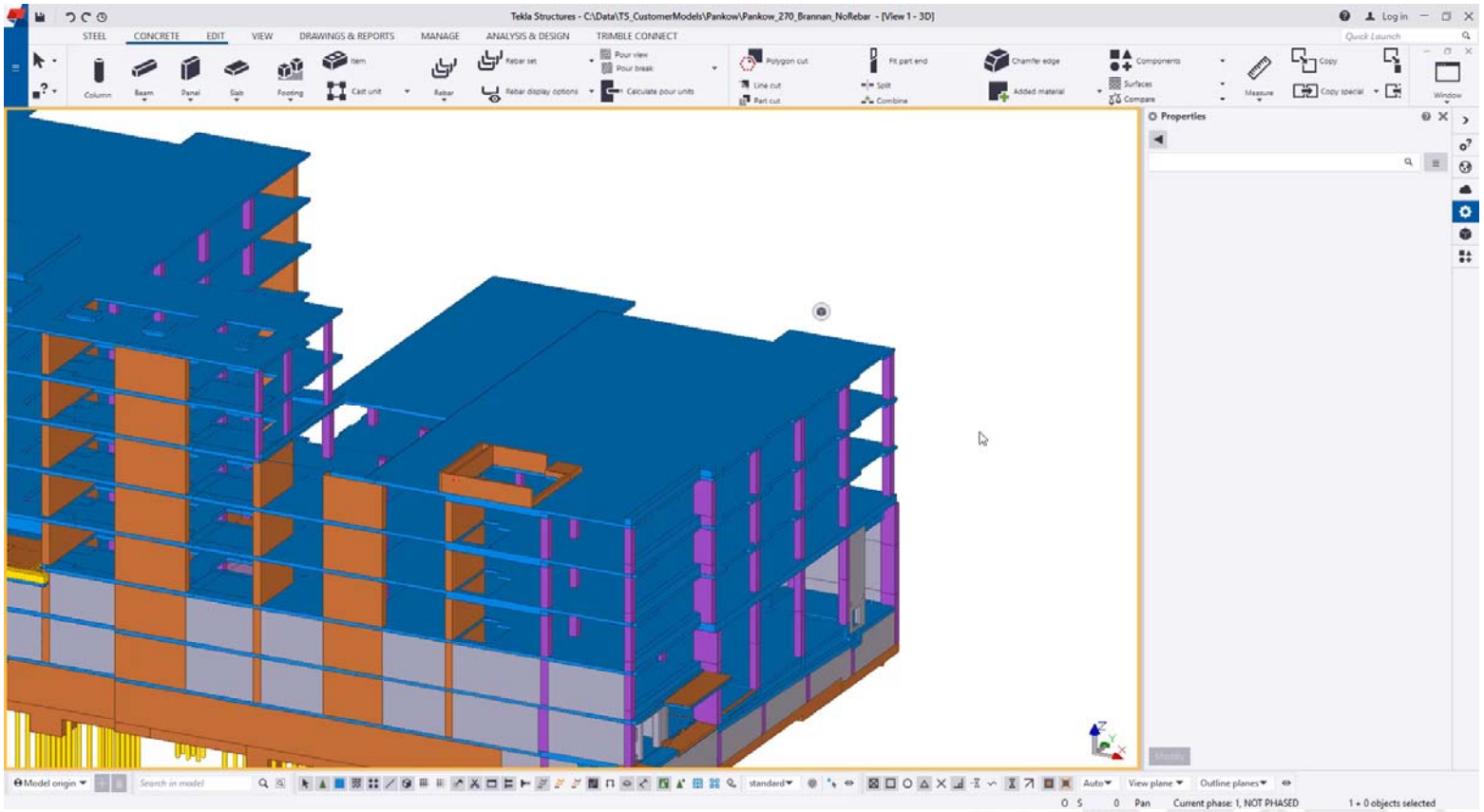

Customize UI

- Add common or custom attributes to property pane
- Localization changes in 2019i
- Instructions for Project/Firm: https://teklastructures.support.tekla.com/2019/en/cus_add_custom_property_panes_using_firm_folder

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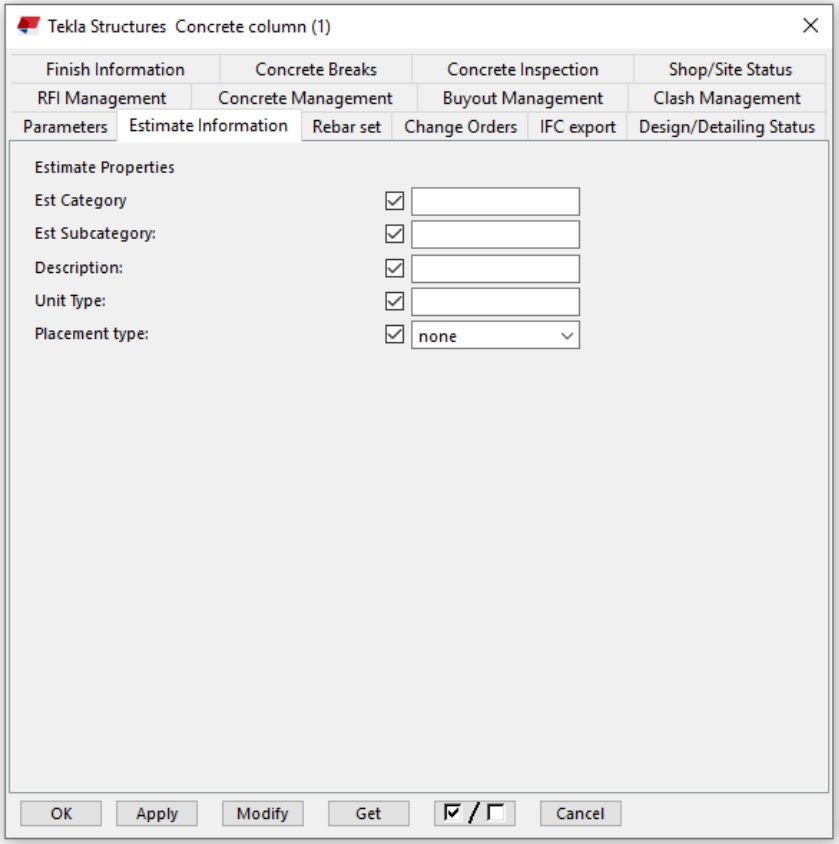
Custom attributes (objects.inp files)

- Review and utilize existing UDAs
- Specify custom attributes for each objects type
  - Beam, Concrete Column, Items...
- Value Types
  - String, number, length, option...
- Example



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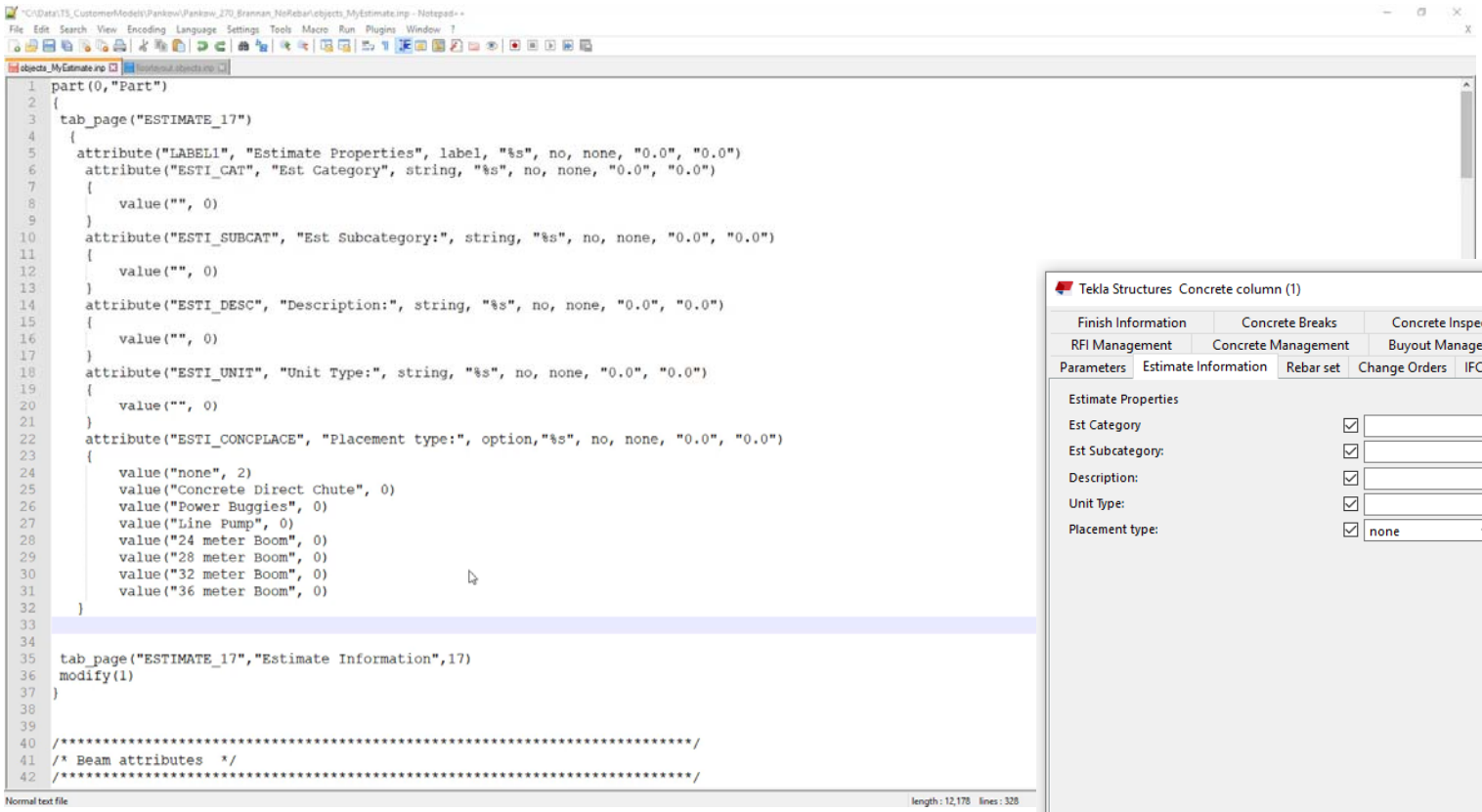
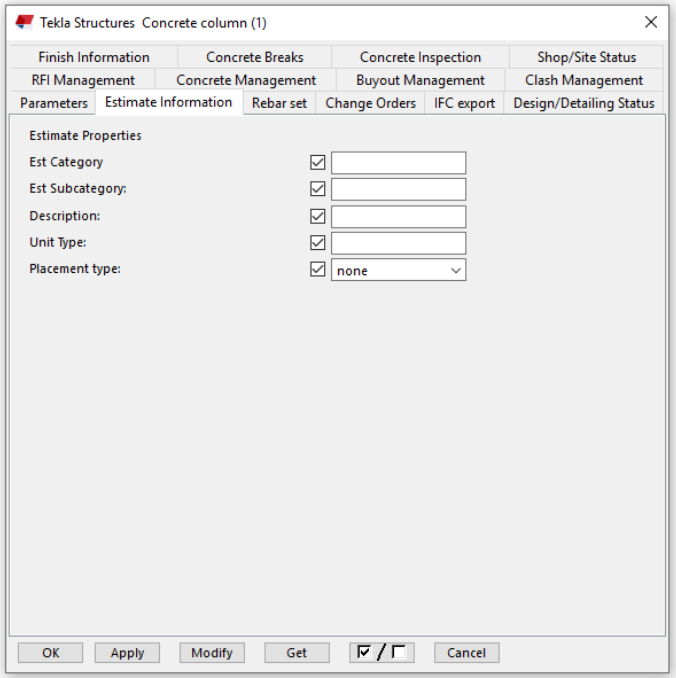
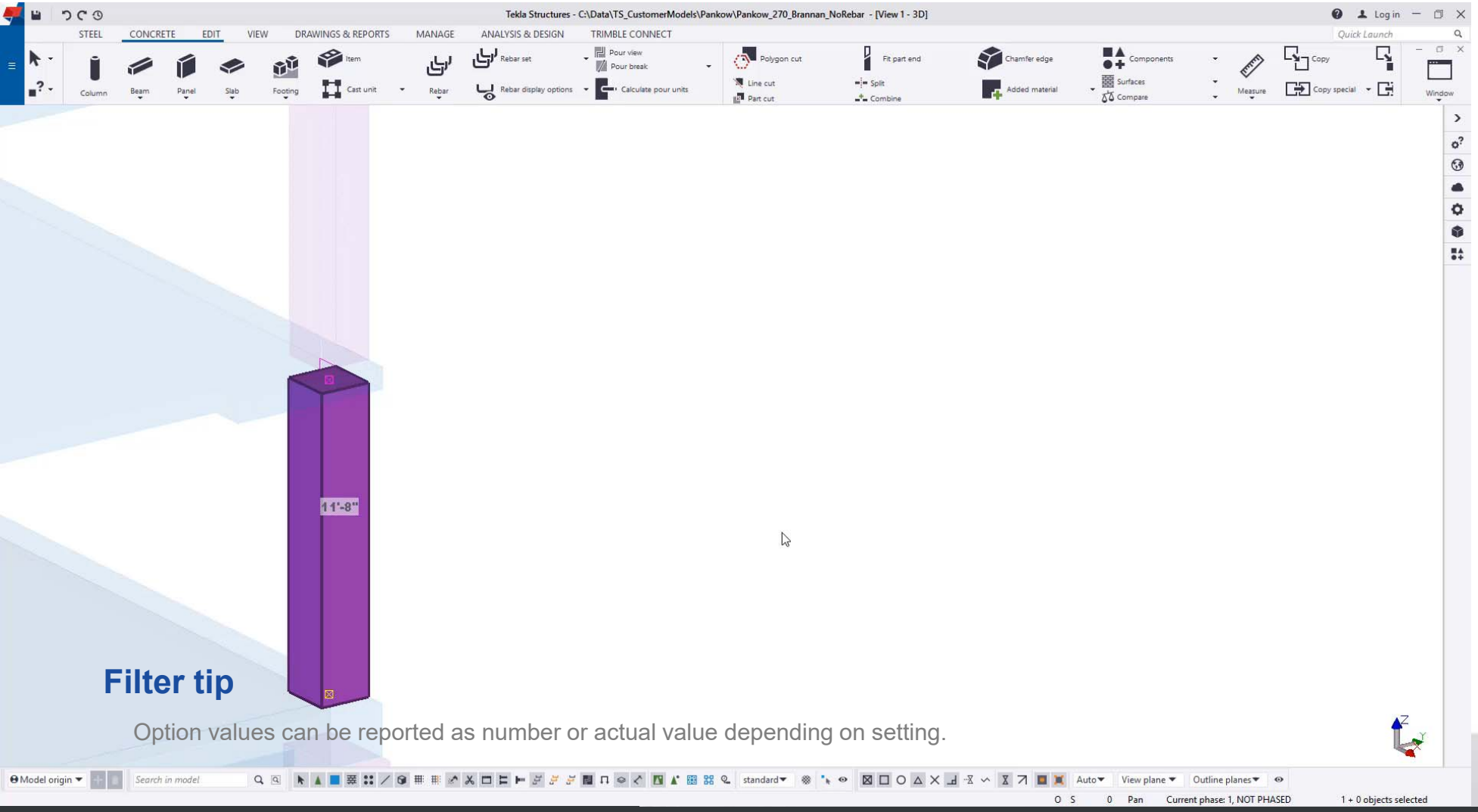


```
part(0,"Part")
{
 tab_page("ESTIMATE_17")
  {
   attribute("LABEL1", "Estimate Properties", label, "%s", no, none, "0.0", "0.0")
    attribute("ESTI_CAT", "Est Category", string, "%s", no, none, "0.0", "0.0")
    {
        value("", 0)
    }
    attribute("ESTI_SUBCAT", "Est Subcategory:", string, "%s", no, none, "0.0", "0.0")
    {
        value("", 0)
    }
    attribute("ESTI_DESC", "Description:", string, "%s", no, none, "0.0", "0.0")
    {
        value("", 0)
    }
    attribute("ESTI_UNIT", "Unit Type:", string, "%s", no, none, "0.0", "0.0")
    {
        value("", 0)
    }
    attribute("ESTI_CONCPLACE", "Placement type:", option,"%s", no, none, "0.0", "0.0")
    {
        value("none", 2)
        value("Concrete Direct Chute", 0)
        value("Power Buggies", 0)
        value("Line Pump", 0)
        value("24 meter Boom", 0)
        value("28 meter Boom", 0)
        value("32 meter Boom", 0)
        value("36 meter Boom", 0)
    }

 tab_page("ESTIMATE_17","Estimate Information",17)
 modify(1)
}

/*****************************************************************************/
/* Beam attributes  */
/*****************************************************************************/
```



Tips for custom objects.inp files

- Utilize notepad++ for editing *.inp files
- TUA: https://teklastructures.support.tekla.com/2019/en/sys_example_creating_and_updating_uda



Filter tip

Option values can be reported as number or actual value depending on setting.

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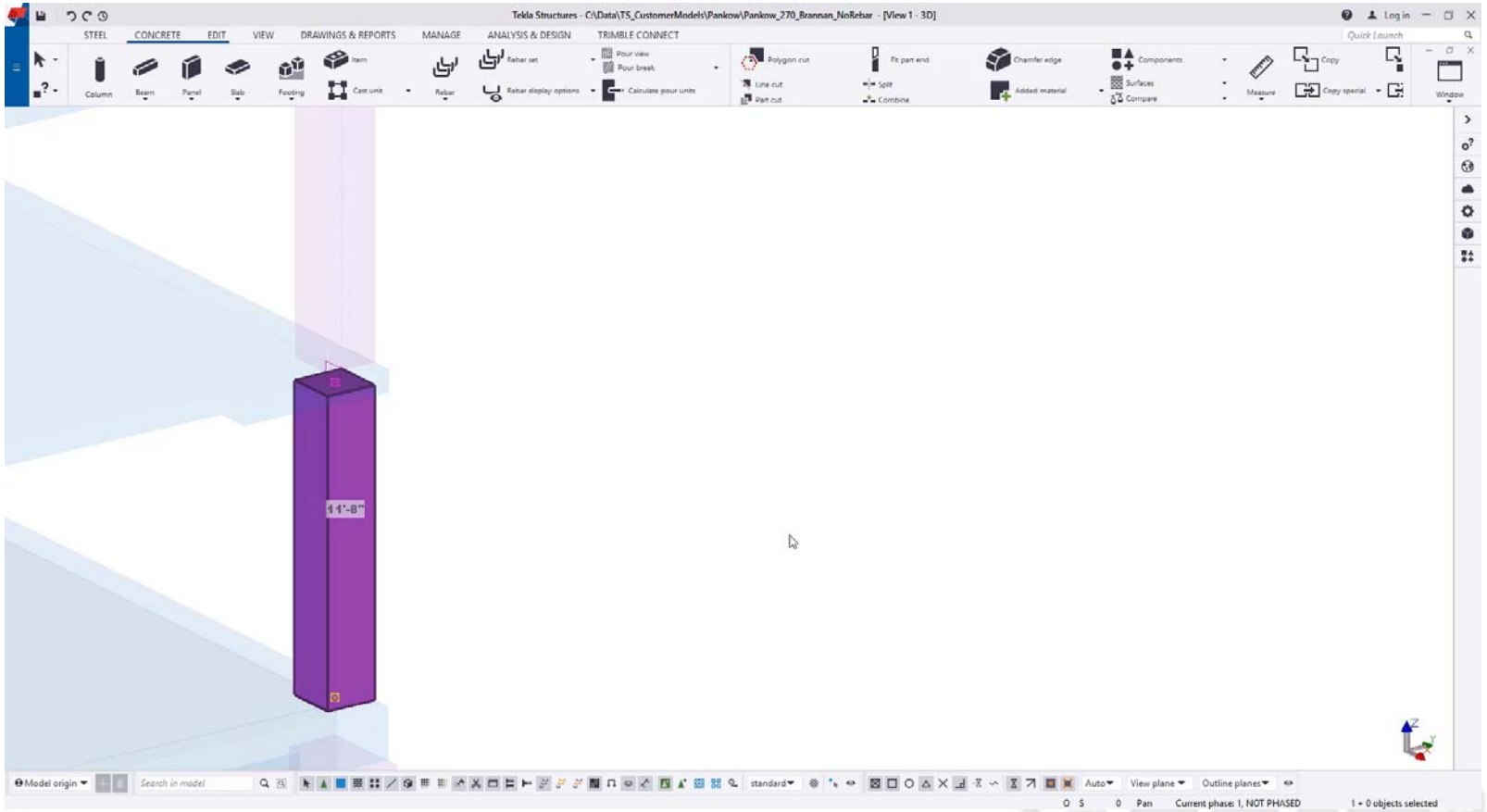

Using in Organizer

If template attribute file is not modified, you need to create an additional property.

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2019

Tools and techniques for detailing fast and efficiently

Estimate and Model Fast (Live)

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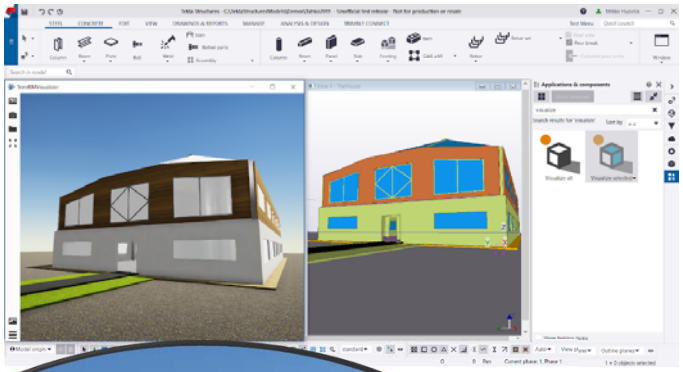
Tools that go along with an estimate ‘package’

Benefits for sales

Visualizer

- Create rendered images to show your delivery
- How to get it
  - 2019 (Warehouse extension)
  - 2019i (Model Ribbon, view tab)
  - Trimble Connect (download)



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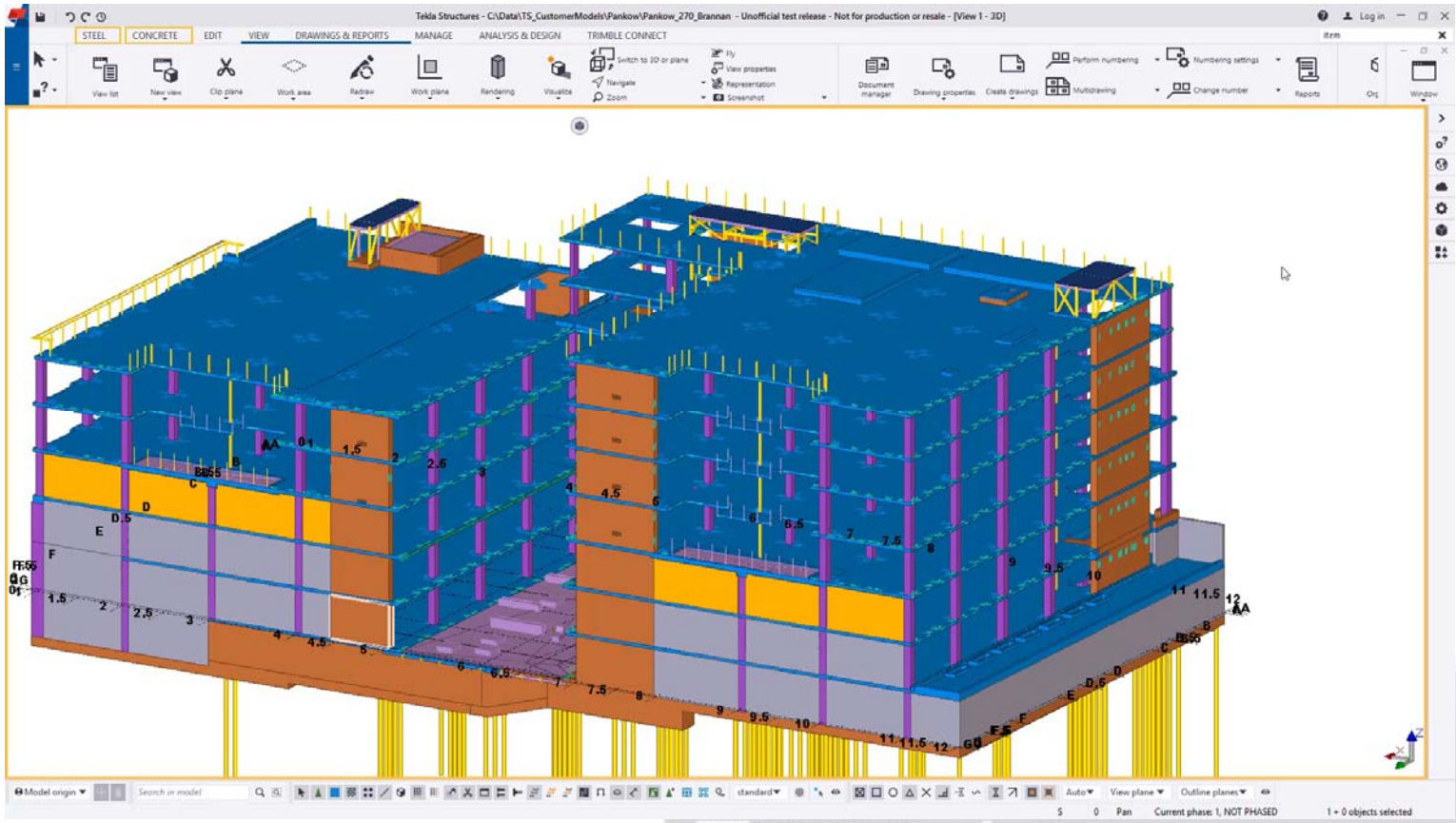
Visualizer



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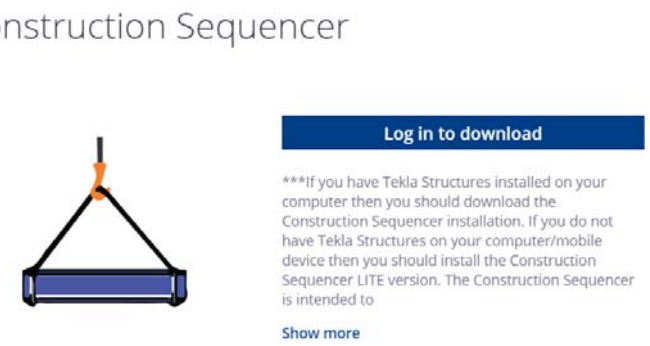
Construction Sequencer

- Warehouse Extension
- Assist with planning and executing onsite activities
- TUA



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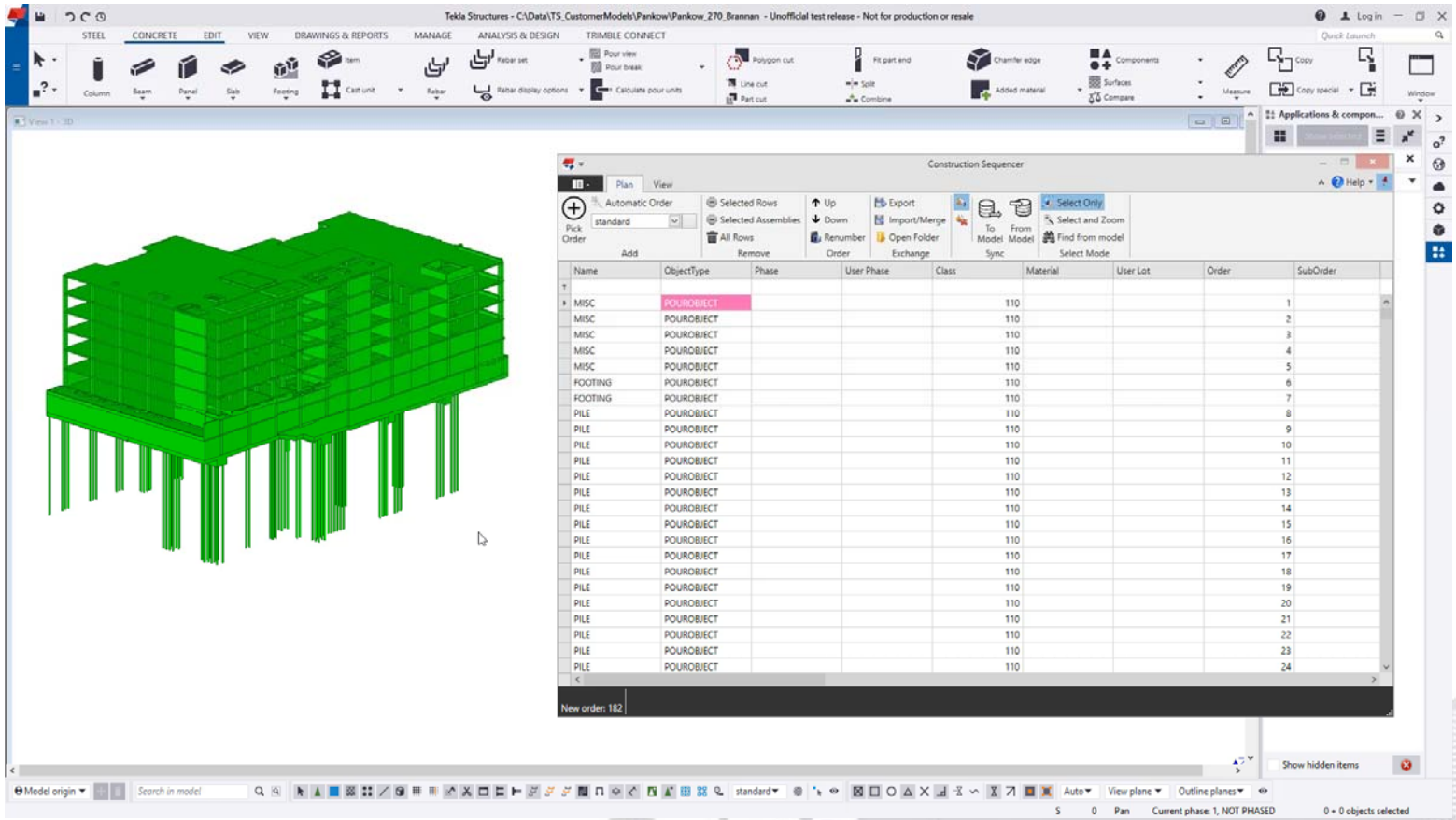
Construction Sequencer



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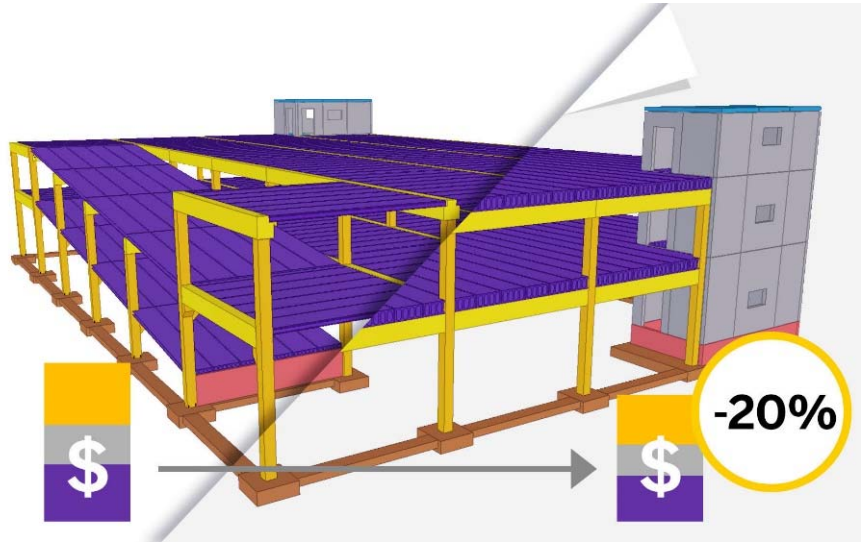
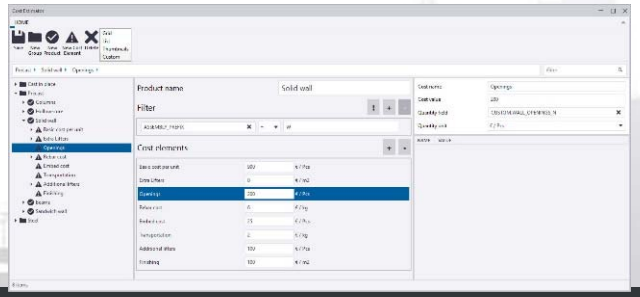
Benefits for sales: Design-to-cost –tool

- Calculate unit costs dynamically in the model
  - Modeler can make more economical decisions
- Calculated cost can be used as any property in:
  - Report, IFC property, model label, drawings, etc.





2019

2019

Q&A

Thank you!

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