USING ASSEMBLE DURING PRECONSTRUCTION

AIA CES 1.0 LU

PROVIDER NUMBER 405108163
COURSE NUMBER 40106105034

Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon request.

Learning Objectives:

1. Introduce the concept of Continuous Cost Modeling or Real-Time Estimating
2. Understand the steps and tools that are necessary to create a functioning CCM (Continuous Cost Model) project
3. Discuss the relationship between team communication and technology to better facilitate the design process
4. Utilize new cloud based tools to increase collaboration and transparency in design phase

SCOTT LAWRENCE
Project Director,
McCarthy

MARK CLEVERLY
Preconstruction Director,
McCarthy

CONNOR BURKE
Senior Estimator,
McCarthy

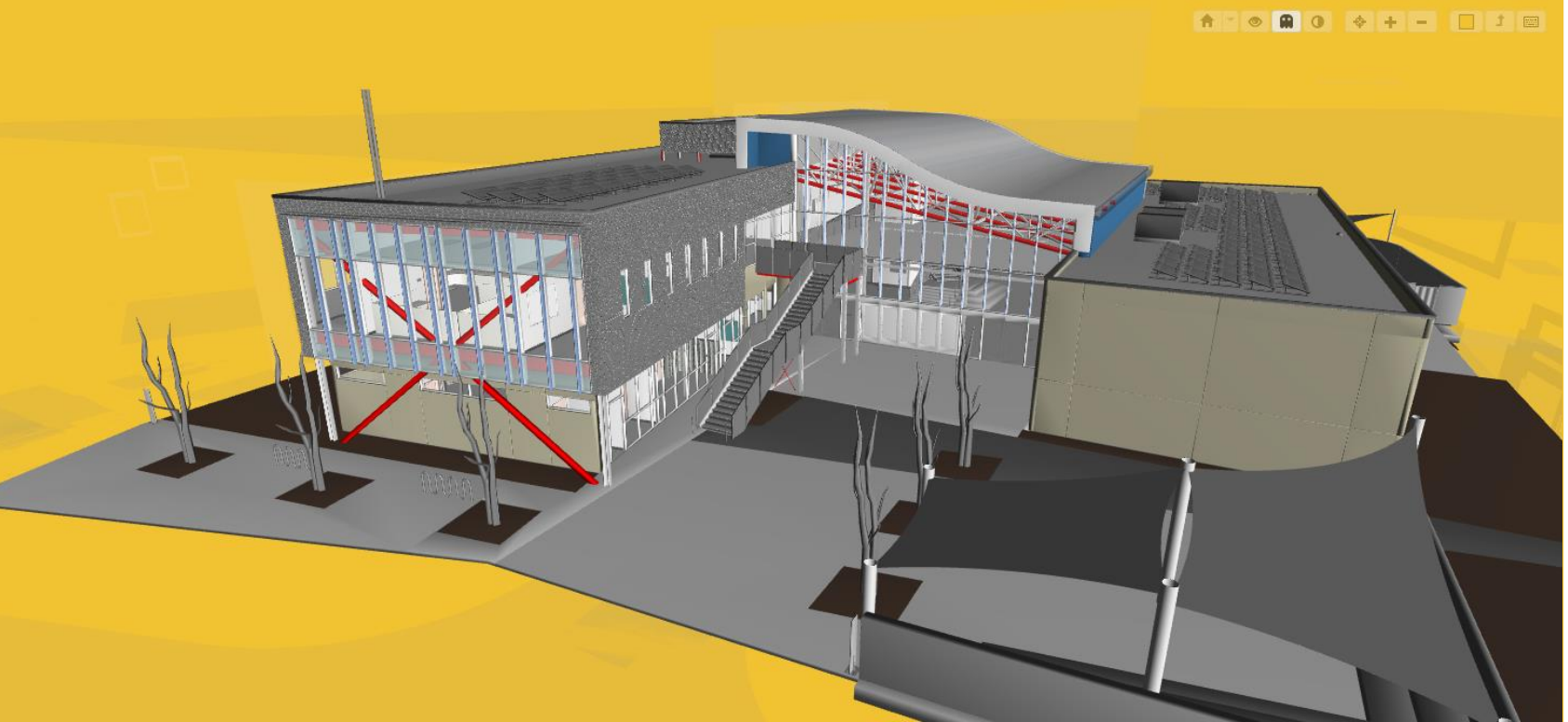
MEGAN KOCIKOWSKI
Sr. Project Manager,
GSFIC

INA BACHMANN
Director of Higher Education Studio,
Wakefield Beasley & Associates

PRESENTATION TEAM

CASE STUDY:

South Orange County Community College District Advanced Technology Education Park (ATEP)



Tustin, California

Delivery Method:
Design-Build

Stated Cost Limitation:
$16,285,000

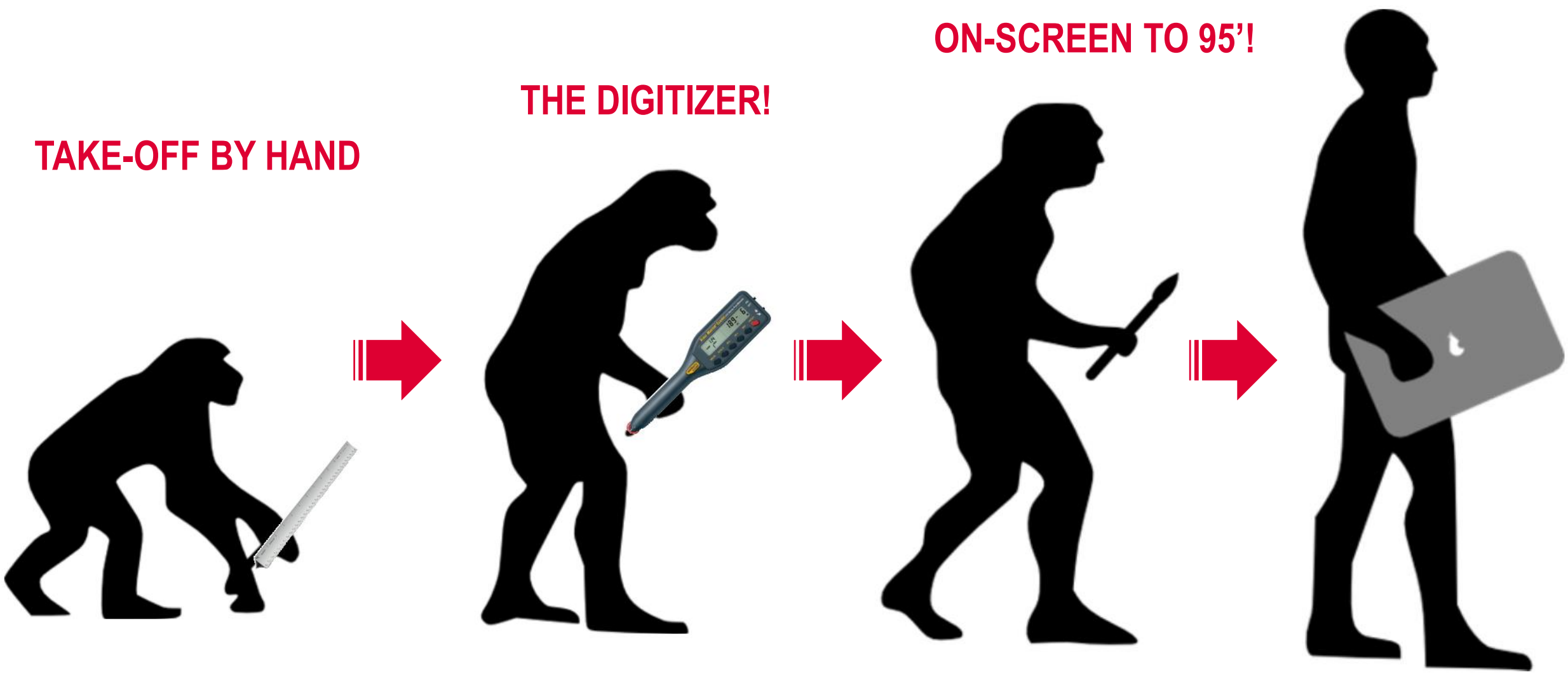
32,492 SF
2 Stories
High Tech “Living Room”

- Classrooms
- High Bay Technology Laboratories
- Open Air Forum

TAKE-OFF BY HAND

THE DIGITIZER!

ON-SCREEN TO 95'!



THE EVOLUTION OF TAKEOFF

assemble

Get the Add-in | Projects | Admin

ATEP / Central Original Model R

GUIDED TOUR | Project Settings

Views | Import

Model Inventory

Save current view

Filter instances by...

Category Name	is not	Detail Items
Category Name	is not	Furniture
Category Name	is not	Rooms
Category Name	is not	Spaces
Source Id	!=	543718
Source Id	!=	556298
Source Id	!=	586604

Add a filter

Export / Import...

Export to Microsoft Excel

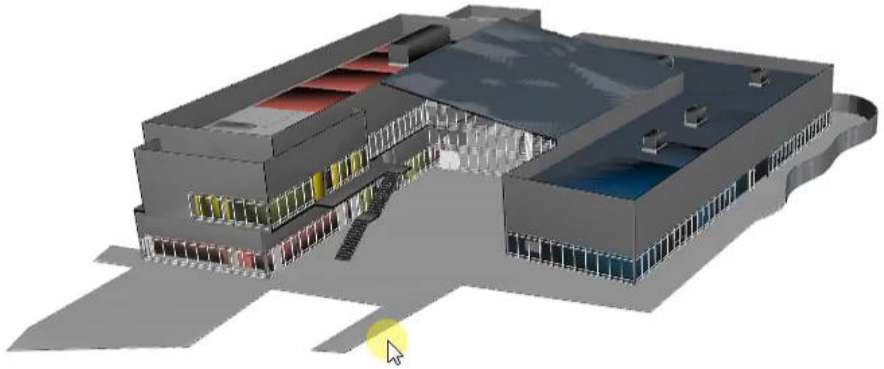
Import from Microsoft Excel

Export Navisworks Search Sets

Revision 1 | compare to...

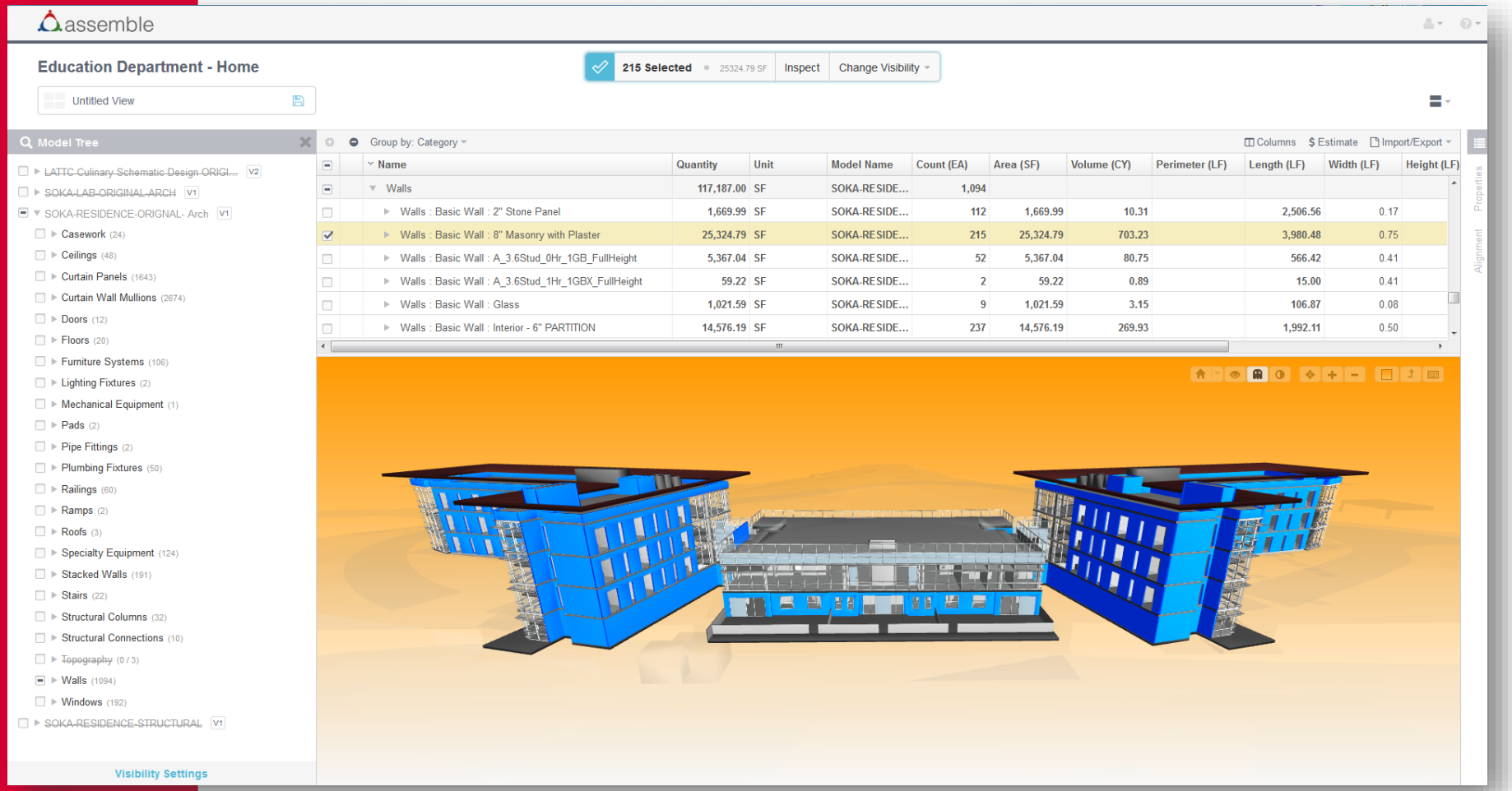
Group By: Category | Add/Remove Columns...

Name	Quantity	Unit	Count (EA)	Area (SF)	Volume (CY)	Perimeter (LF)	Length (LF)	Width (LF)	Height (LF)	Thickness (LF)	Depth (LF)



ASSEMBLE OVERVIEW

- Change in Preconstruction Structure
- A/E Team
  - Similar Roles
- Preconstruction Manager
  - Overall Project Design Manager
- Estimator(s)
  - Package-Design Managers



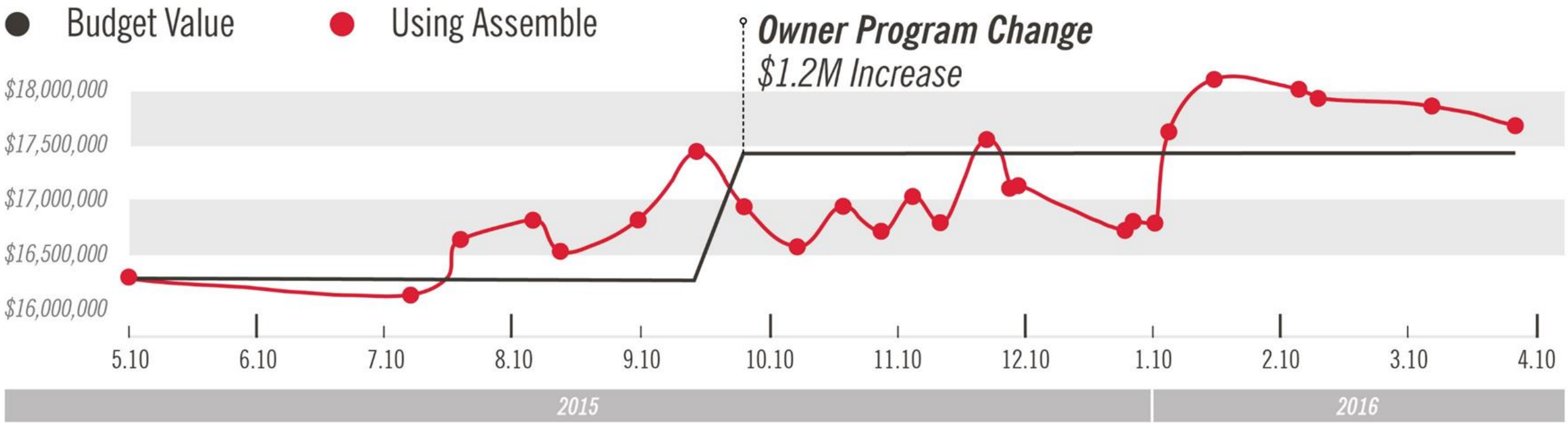
SHIFT IN RESPONSIBILITIES

1. Preconstruction BIM Exhibit Plan
   - Internal Document for Design team
2. Modeled-Property Naming Conventions
   - “Universal Language”
3. Precon Design Coordination Meeting
4. Weekly Follow-Ups
5. Estimate Iterations

PACKAGE	OST TIME	ASSEMBLE TIME	TIME SAVINGS (% BASED)
Site	2-4 Hours	5 Minutes	95%
Structural Steel	4-5 Days	2 Hours	94% - 3.8 Days
Roofing	4-6 Days	2 Minutes	98%
Curtain Walls/Glazing	3-4 Days	30 Minutes	96%
Drywall	4-6 Days	1-2 Hours	93%
Flooring- All Finishes	2-3 Days	5 Minutes	99.8% - 2.8 Days
Ceiling- All Finishes	1-2 Days	5 Minutes	98% - 1.8 Days
Metal Panels	2-3 Days	30 Minutes	98%
Plaster	2-3 Days	45 Minutes	95%
Mechanical Screens	4 Hours	5 Minutes	93%
Masonry	1-2 Days	30 Minutes	93%
Metal Decking	8 Hours	5 Minutes	99%
Visual Display Surfaces	2 Hours	5 Minutes	96%
Wall Protection – Only Corner Guards	4 Hours	15 Minutes	93%

TOOLS & STEPS TO CREATE CCM PROCESS

25 ESTIMATES IN 10 MONTHS



ATEP CONTINUOUS COST MODELING

CASE STUDY: TCSG-314

Chattahoochee Technical College
Health Science Building

Marietta, Georgia

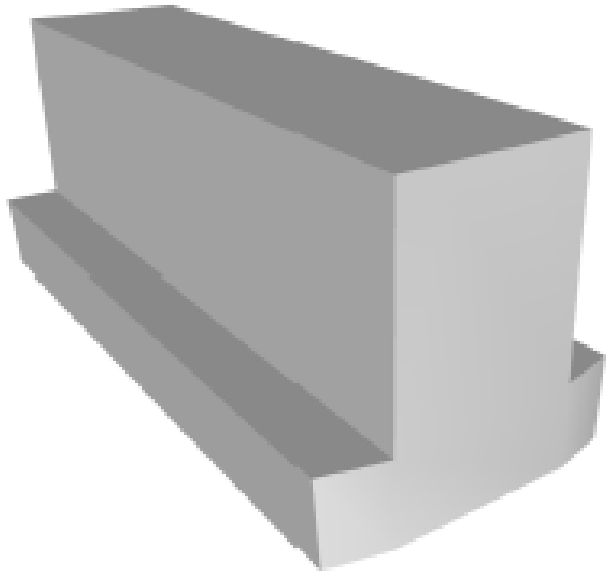
Delivery Method:
CM at-Risk

Stated Cost Limitation:
$19,253,250

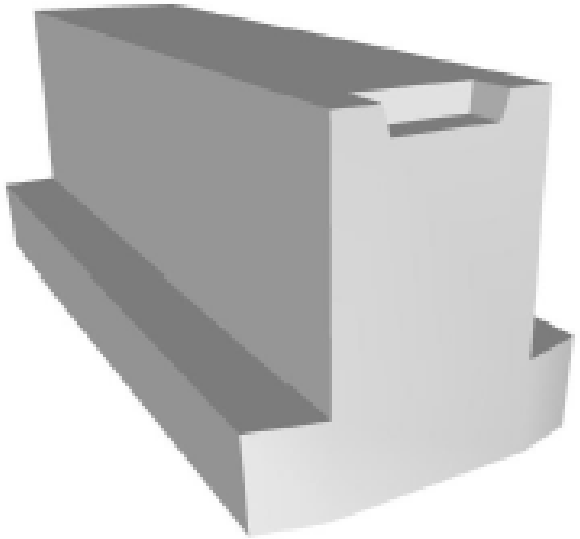
70,678 SF
3 Stories
Health Science Building

- Nursing
- Dental
- Laboratory Space
- Faculty
- Classrooms
- Electroneurodiagnostic Technology (ENDT)

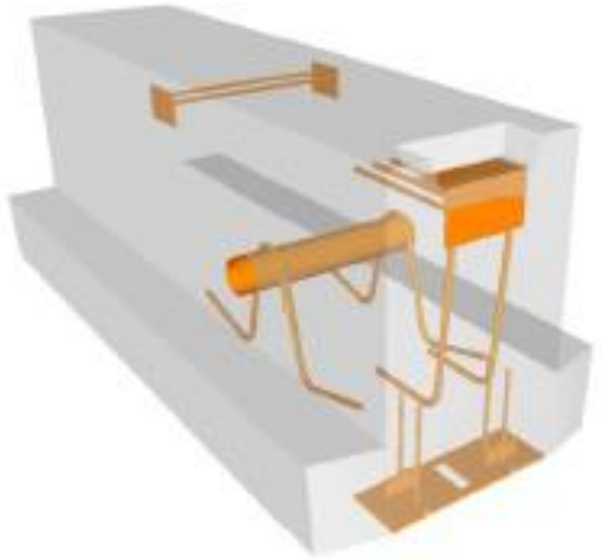
SCHEMATIC DESIGN



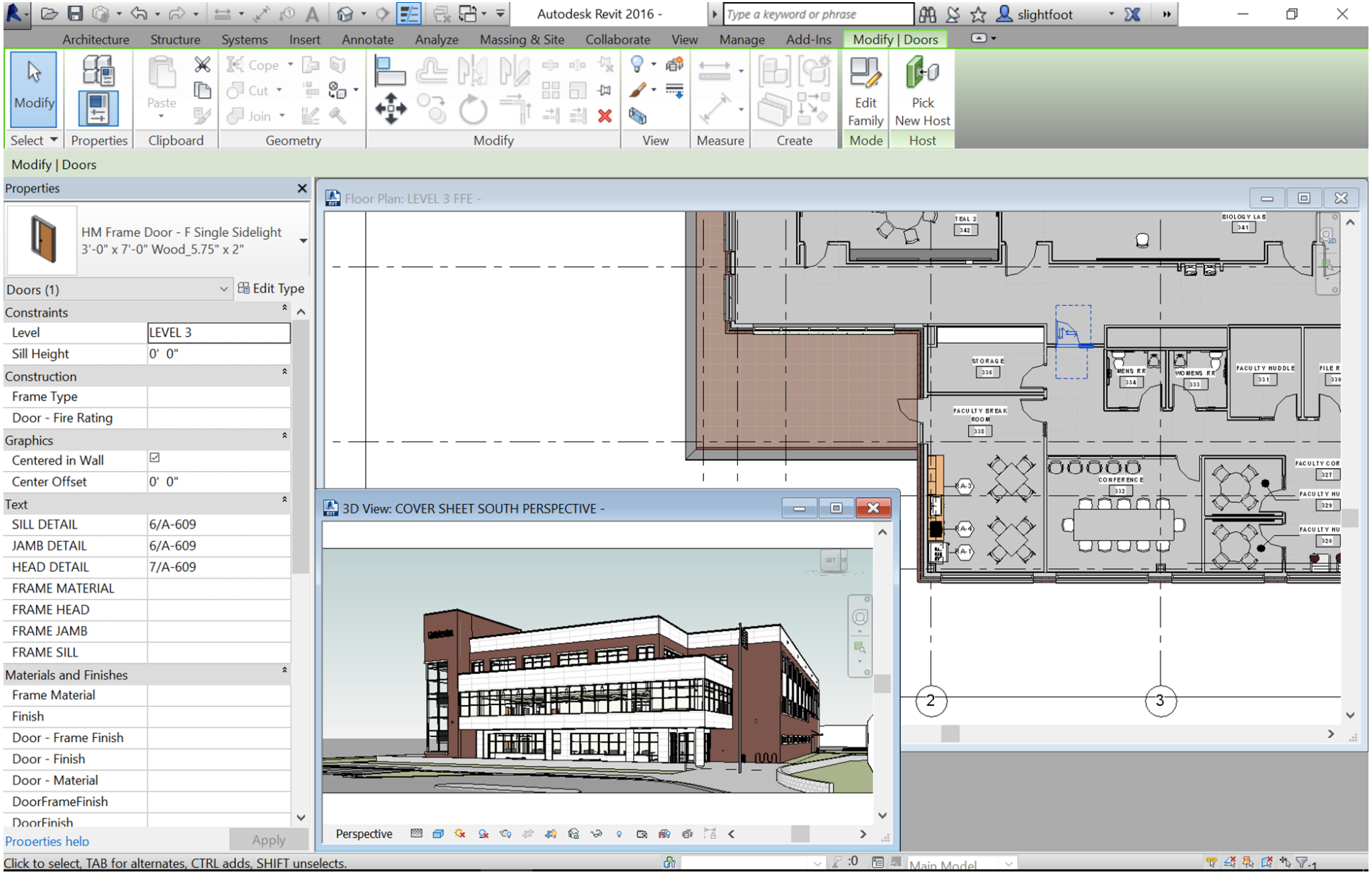
DESIGN DEVELOPMENT



CONSTRUCTION DOCUMENTS



TRADITIONAL PRECONSTRUCTION PROCESS



REVIT REQUIREMENTS

assemble

Chattahoochee Tech - Health Science Bldg TCSG-314

Untitled View

Model Tree

- ~~15470_Chattahoochee Tech_MEP~~ V1
- ~~3 20909_TCSG_AV_2016~~ V1
- ~~TCSG 314 CTC_STRUCT~~ V1
- TCSG-314-1507008_ARCH-CENTRAL V1
  - Casework (112)
  - Ceilings (147)
  - Curtain Panels (238)
  - Curtain Wall Mullions (587)
  - Doors (166)
  - Floors (33)
  - Furniture Systems (3)
  - Generic Models (234)
  - Lighting Fixtures (772)
  - Plumbing Fixtures (89)
  - Railings (17)
  - Roofs (7)
  - Site (10)
  - Specialty Equipment (502)
  - Stairs (5)
  - Wall Sweeps (1036)
  - Walls (770)
  - Windows (74)
- ~~TCSG 314 1507008_ARCH NEW~~ V3
- ~~TCSG 314 1507008_LAB~~ V1

Visibility Settings

Group by: Category

Columns | $ Estimate | Import/Export

Name	Quantity	Unit	Model Name	Count (EA)	Area (SF)	Volume (CY)	Perimeter (LF)	Length (LF)	Width (LF)	Height (LF)
Casework	112	EA	TCSG-314-150...	112						
Ceilings	29,541.35	SF	TCSG-314-150...	147						
Curtain Panels	2,506.83	SF	TCSG-314-150...	238						
Curtain Wall Mullions	2,124.66	LF	TCSG-314-150...	587						
Doors	166	EA	TCSG-314-150...	166						
Floors	537,638.70	SF	TCSG-314-150...	33						
Furniture Systems	3	EA	TCSG-314-150...	3						
Generic Models	234	EA	TCSG-314-150...	234						

Properties

Alignment

assemble

MODELS

15470 - Chattahoochee Tech - MEP
15148 objects 2016-11-08

3-20909_TCSG_AV_2016
578 objects 2016-11-08

TCSG-314 CTC_STRUCT
1169 objects 2016-11-08

TCSG-314-1507008_ARCH-CENTRAL
7835 objects 2016-09-30

TCSG-314-1507008_ARCH-NEW
9517 objects 2016-11-08

TCSG-314-1507008_LAB
1842 objects 2016-11-08

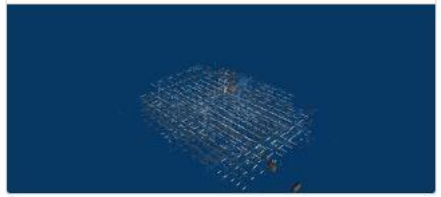
VIEWS by visible model

Multiple Models

This project doesn't have any views with multiple visible models yet. Learn More

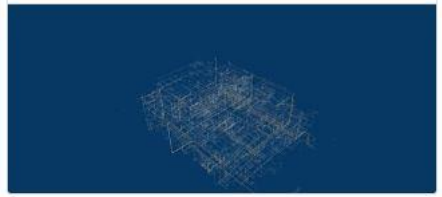
15470 - Chattahoochee Tech - MEP

Electrical



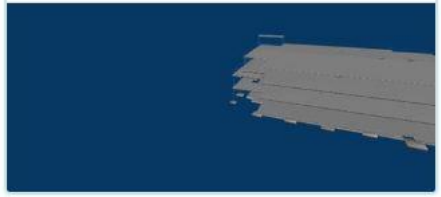
HVAC

Plumbing



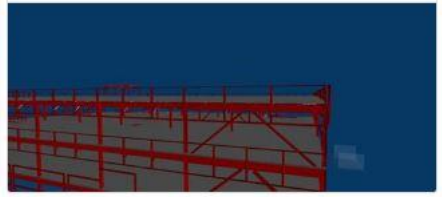
TCSG-314 CTC_STRUCT

Concrete



Floor Area

Steel



TCSG-314-1507008_ARCH-NEW

Drywall

Glass and Glazing

assemble

Chattahoochee Tech - Health Science Bldg TCSG-314

4 Selected • 511.55 SF | Inspect | Change Visibility

Drywall

Model Tree

- ~~15470_Chattahoochee Tech_MEP~~ V1
- ~~3-20909_TCSG_AV_2016~~ V1
- ~~TCSG-314-CTC_STRUCT~~ V1
- ~~TCSG-314-1507008_ARCH-CENTRAL~~ V1
- TCSG-314-1507008_ARCH-NEW V3
  - ~~Casework~~ (0 / 123)
  - Ceilings (130 / 132)
  - ~~Curtain Panels~~ (0 / 257)
  - ~~Curtain Wall Mullions~~ (0 / 633)
  - ~~Doors~~ (0 / 151)
  - ~~Floors~~ (0 / 36)
  - ~~Furniture Systems~~ (0 / 254)
  - ~~Generic Models~~ (0 / 210)
  - ~~Lighting Fixtures~~ (0 / 766)
  - ~~Plumbing Fixtures~~ (0 / 89)
  - ~~Railings~~ (0 / 18)
  - ~~Roofs~~ (0 / 6)
  - ~~Site~~ (0 / 15)
  - ~~Specialty Equipment~~ (0 / 511)
  - ~~Stairs~~ (0 / 5)
  - ~~Structural Columns~~ (0 / 4)
  - ~~Wall Sweeps~~ (0 / 1019)
  - Walls (689 / 749)
  - ~~Windows~~ (0 / 80)
- ~~TCSG-314-1507008_LAB~~ V1

Visibility Settings

Group by: Category | Columns | $ Estimate | Import/Export

Name	Quantity	Unit	Model Name	Count (EA)	Area (SF)	Volume (CY)
Walls : Basic Wall : A1 - 3-5/8" MTL STUD - 6" ABV 10' CEIL	924.11	SF	TCSG-314-150...	18	924.11	13.9
Walls : Basic Wall : A1 - 3-5/8" MTL STUD - 6" ABV 9' CEIL	9.74	SF	TCSG-314-150...	1	9.74	0.1
Walls : Basic Wall : A1 - 3-5/8" MTL STUD - 6" ABV CEIL	1,438.48	SF	TCSG-314-150...	18	1,438.48	21.6
Walls : Basic Wall : B1 - 3-5/8" MTL STUD TO DECK	11,596.09	SF	TCSG-314-150...	86	11,596.09	174.4
Walls : Basic Wall : B2 - 6" MTL STUD TO DECK	55.21	SF	TCSG-314-150...	1	55.21	1.2
Walls : Basic Wall : C1 - 3-5/8" MTL STUD - SMOKE BARRIER	511.55	SF	TCSG-314-150...	4	511.55	7.7
Walls : Basic Wall : D1 - 3-5/8" MTL STUD - 1 HR TO DECK	4,722.55	SF	TCSG-314-150...	11	4,722.55	71.0
Walls : Basic Wall : F0 - 3-5/8" FURRING TO DECK	1,946.20	SF	TCSG-314-150...	11	1,946.20	25.5
Walls : Basic Wall : F0 - 3-5/8" MTL STUD - STC 50	101.58	SF	TCSG-314-150...	8	101.58	1.3
Walls : Basic Wall : F1 - 3-5/8" MTL STUD - STC 50	32,382.01	SF	TCSG-314-150...	166	32,382.01	536.9
Walls : Basic Wall : F2 - 6" MTL STUD - STC 50	613.42	SF	TCSG-314-150...	1	613.42	13.7
Walls : Basic Wall : G3 - 4" SHAFTWAL - 1 HR	4,210.69	SF	TCSG-314-150...	18	4,210.69	60.0
Walls : Basic Wall : Generic - 4" Brick	546.79	SF	TCSG-314-150...	2	546.79	6.1
Walls : Basic Wall : H0 - 2-1/2" FURRING - 6" ABV 10' CEIL	4,114.10	SF	TCSG-314-150...	93	4,114.10	39.6
Walls : Basic Wall : H0 - 2-1/2" FURRING - at windows	0.94	SF	TCSG-314-150...	4	0.94	0.0
Walls : Basic Wall : H1 - 3-5/8 FURRING - 6" ABV CEIL	10.21	SF	TCSG-314-150...	1	10.21	0.1
Walls : Basic Wall : J0 - 2-1/2" FURRING TO DECK	501.15	SF	TCSG-314-150...	16	501.15	4.8
Walls : Basic Wall : J1 - 3-5/8" FURRING TO DECK	1,862.34	SF	TCSG-314-150...	14	1,862.34	24.4
Walls : Basic Wall : J1 - 3-5/8" FURRING TO DECK STC 50	550.52	SF	TCSG-314-150...	2	550.52	7.2
Walls : Basic Wall : K1 - 3-5/8 MTL STUD - CHASEWALL TO DECK	944.46	SF	TCSG-314-150...	2	944.46	48.1
Walls : Basic Wall : L1 - 3-5/8" MTL STUD - STC 50/SMOKE BARRIER	6,700.33	SF	TCSG-314-150...	42	6,700.33	111.0
Walls : Basic Wall : L2 - 6" MTL STUD - STC 50/SMOKE BARRIER	640.23	SF	TCSG-314-150...	3	640.23	15.2
Walls : Basic Wall : M1 - 3-5/8" MTL STUD - SMOKE PARTITION	7,177.05	SF	TCSG-314-150...	43	7,177.05	107.9
Walls : Basic Wall : N1 - 3-5/8" MTL STUD - 42" AFF	50.98	LF	TCSG-314-150...	12	171.91	2.5
Walls : Basic Wall : N2 - 3-5/8" MTL STUD - 7' AFF	7.74	LF	TCSG-314-150...	2	52.65	0.7

Assemble Properties

Activity ID	
Bid Package	
Cost Code	
Issues/Comments	
Location	
VE Option	
WinEst Code 1	
WinEst Code 2	
WinEst Code 3	
WinEst Code 4	
WinEst Code 5	
Zone/Area	
Quantity	Area (SF)
Unit Cost	
Total Cost	
Color Override	

Model Properties

Instance | Type

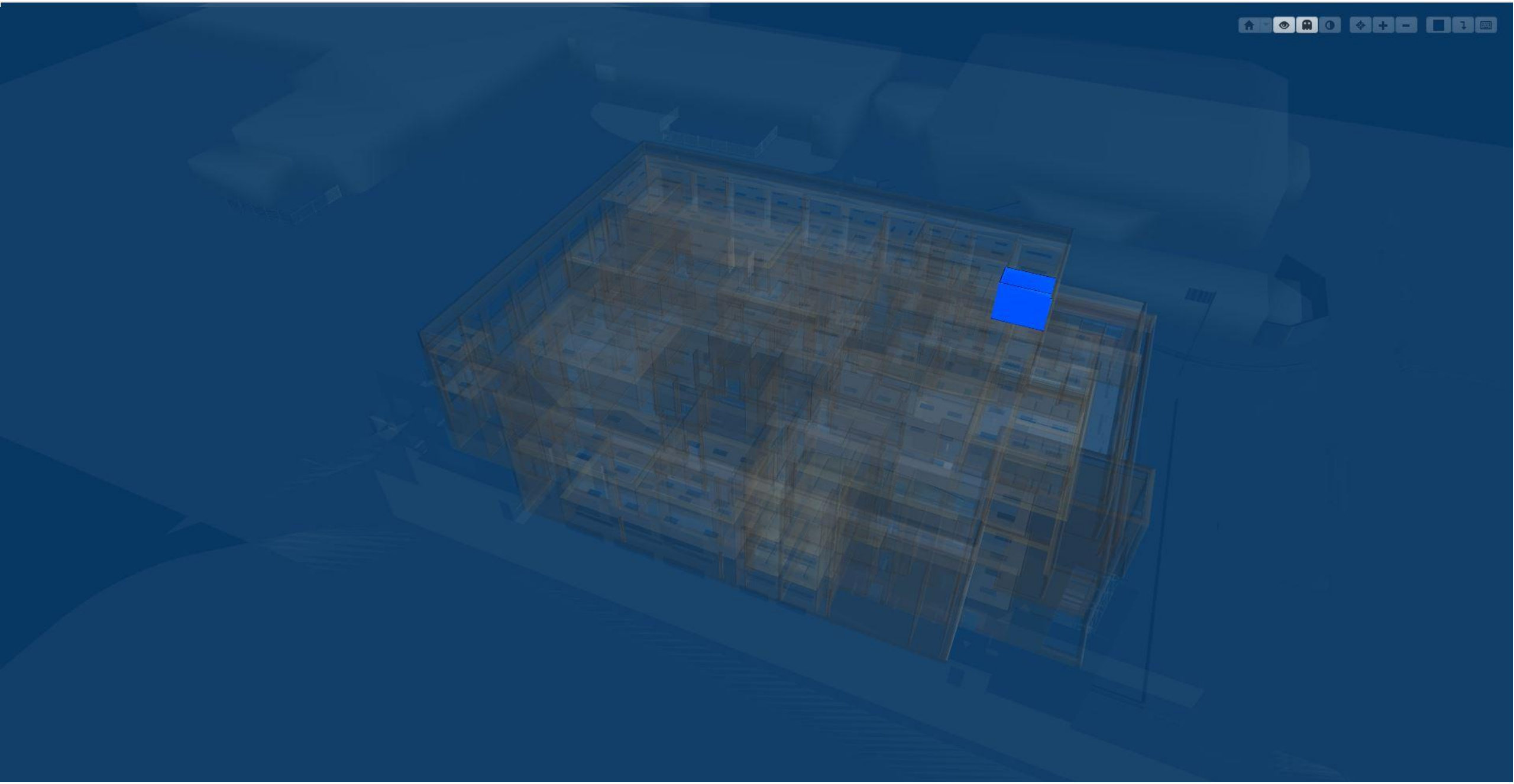
Assemble

File Name	TCSG-314-1507008_ARCH-CEN

Constraints

Base Constraint	LEVEL 3
Base Extension Distance (LF)	0.00
Base is Attached	

Cancel | Save



PACKAGE	OST TIME	ASSEMBLE TIME	TIME SAVINGS (% BASED)
Site	2-4 Hours	5 Minutes	95%
Structural Steel	4-5 Days	2 Hours	94% - 3.8 Days
Roofing	4-6 Days	2 Minutes	98%
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Ceiling- All Finishes	1-2 Days	5 Minutes	98% - 1.8 Days
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Plaster	2-3 Days	45 Minutes	95%
Mechanical Screens	4 Hours	5 Minutes	93%
Masonry	1-2 Days	30 Minutes	93%
Metal Decking	8 Hours	5 Minutes	99%
Visual Display Surfaces	2 Hours	5 Minutes	96%
Wall Protection – Only Corner Guards	4 Hours	15 Minutes	93%

TIME SAVINGS


Q&A