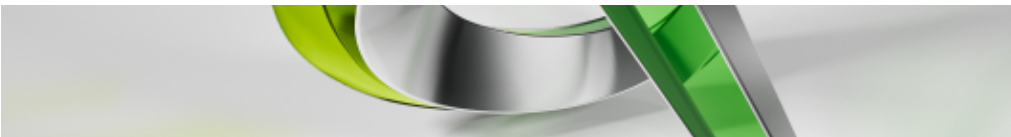## Modeling Complex Shapes in Autodesk® Revit® Structure

Jeremiah Bowles Black & Veatch Engineering
Using the Conceptual Massing Environment
*@THErevitcoach on Twitter*

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## This is a LAB not a lecture!

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## Who am I?

- Work out of CIO Group at Black & Veatch Engineering
- Corporate BIM Design & Construction Technology Manager
- Leader in innovation & Productivity Solutions
- 5th Year Presenting at Autodesk University
- Working on MS in Project Management at University of Kansas with previous undergraduate work in Construction Management, Architectural Engineering and Business.
- Using BIM in Construction & Design since 2001
- Revit user since Release 5.5 in 2004

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## Class Summary

**SE1511-L** This hands-on lab focuses on using the conceptual massing environment in Revit Structure software to create complex roofs and walls and other complex shapes, such as a transmission tower or even a battleship. We walk through creating the mass framework and then get into the project. We explore advanced techniques to make trusses, complex beams, and columns that host the mass constructs. We also explore the workflow of how to manage change with these tools and how to master these techniques.

## Key learning objectives

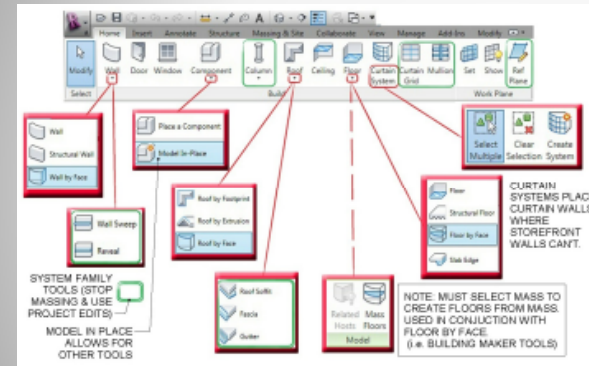At the end of this class, you will be able to:
- List key tools and describe key strategies in conceptual massing
- Model complex shapes, including roofs, walls, and complex framing
- Create an optimized workflow for using conceptual massing and structural layout
- Use conceptual massing as a change management tool for complex geometry exploration

## Agenda

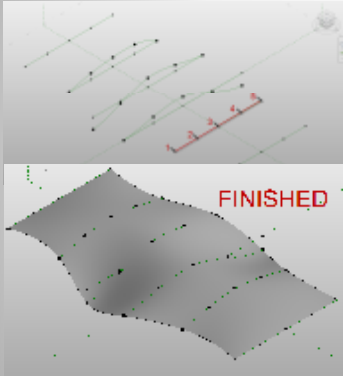| | | |
|---|---|---|
| 1 | 1:15 – 10:20 (10 min) | **Introduction** |
| | | Overview of the Lab |
| 2 | 10:20 – 10:30 (40 Min) | **Creating a Mass Surface** |
| | | Conceptual Modeling Basics, Massing Forms, Building Maker, Roof From Surface, Structure From Surface |
| 3 | 10:30 – 11:00 (40 Min) | **Newer Massing tools** |
| | | Tower mass form and other complex shapes. Dividing Forms, hosting structure to these forms. (Bonus Lab if we have time) |

# Creating a Mass Surface
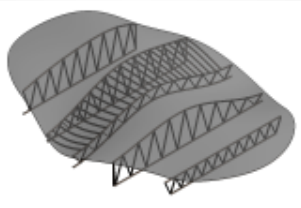
## Massing Tools 101



**Workflow**
- **Create Mass Form**
  - **In place / family**
- **Create Mass Floors**
  - **Floor by face**
- **Wall By Face**
- **Roof By Face**
- **Curtain walls vs. surface components.**
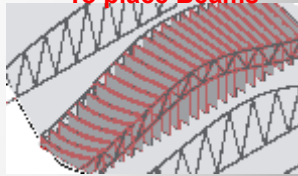
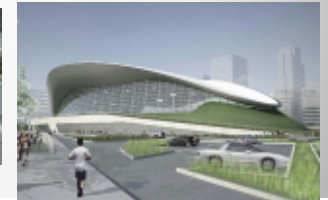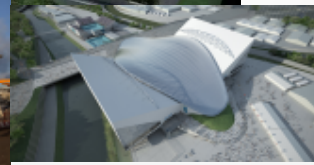## Complex Structure 3 Easy Steps
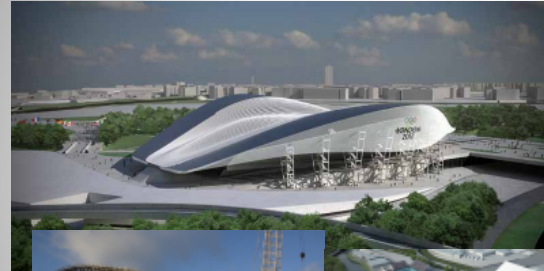
**Surface**

**Structural Trusses**

FINISHED

**Place Holder Walls
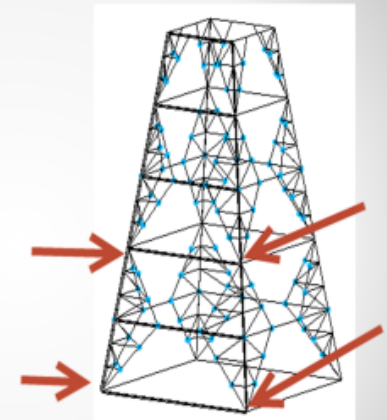To place Beams**

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## Samples of NURB Roofs

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# New Massing tools
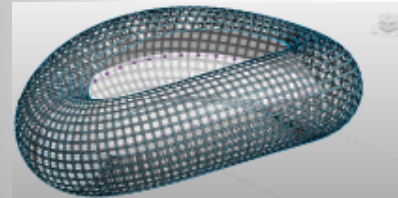
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## Creating a Tower

- Build Mass
- Divide Mass
    - Reference Planes
    - Constraints
    - Labels
    - Points
    - Reference Lines (Trick)
- Bring into Project
    - Load into Project
    - Host to strawman

Millennium Park
The "Bean" as a Football Stadium"

## Bonus Lab

## Don't forget to do the surveys!