ASC 2013 VIRTUAL DESIGN & CONSTRUCTION
Modeling and Drawing QC

INTRODUCTION

The Structural Engineer has prepared 100% Construction Drawings of the structural scope of a new high rise building in San Francisco. The contractor has decided to model the structure in order to QC the construction documents, use in 3D coordination of all systems, generate shop drawings and provide location-based quantities for estimating and scheduling purposes.

Below is some information that might be useful to the modeling team in order to create an accurate structural model:

- The concrete superintendent informs you that the first four (4) lifts of the core walls will be 8'-0", 12'-2", 12'-2", and 12'-0" tall, respectively. The remaining core wall construction joints will match the top of slab elevations of every level.
- The mat foundation will be placed in two (2) pours. The first pour will be the crane foundation (Refer to S6.02). The second will be the remaining foundation.
- Each deck after the mat foundation will be a single pour.

PROBLEM 1 - Modeling (Provided at 8 AM – Due at 1 PM)

Model the following elements from the structural drawings:

1. Mat Foundation
2. Concrete Basement Walls
3. Concrete Core Walls
4. Concrete Decks
5. Concrete Columns

Extract the following volume quantities from your model and enter into the provided solution sheet:

1. Mat Foundation: Pour 1 - Crane foundation
2. Mat Foundation: Pour 2 - Remaining mat foundation
3. Core Walls: Lift 1
4. Core Walls: Lift 2
5. Core Walls: Lift 3
6. Core Walls: Lift 4
7. Core Walls: Total
8. Basement Walls: Total
9. Deck: Level 22
10. Decks: Total
11. Columns: Level 32

Information Provided

1. Construction Documents – Structural and Architectural Sets
   Location: "Construction Documents" folder

2. Solution Sheet – Quantity Template
   File name: SCHOOLNAME-Modeling.xlsx

Deliverables

1. Mandatory question 1 solution sheet. Rename file structure with your school name as shown in the Excel sheet.
   File name: SCHOOLNAME-Modeling-Q1.xlsx

2. Model in native format (.RVT, .PLN, etc.)

3. Model in 2012 .NWD (Navisworks Document) format

Judging

The deliverables will be evaluated on the following criteria:

- Extracted quantities in solution sheet
- Model Setup
  - Correct File Name
  - Correct Origin
  - NWD scaled correctly
  - Layers/families, etc. well organized
- Completeness & Quality of all elements
  - All elements modeled
  - Elements modeled to match contract document dimensions and locations

PROBLEM 2 – Drawing QC (Provided at 8 AM – Due at 1 PM)

The modeling process is used as an opportunity to evaluate the constructability of the contract documents. When there are errors contained in the documents, oftentimes constructability reports are created and issued to the design team in the form of an RFI.

In the model created for Modeling Problem 1, model the concrete beams on level one between gridline 1 and 2.5, plan north of gridline U. Use the modeling process to assess the completeness and accuracy of the structural documents. Using the provided Constructability Report template, clearly define one (1) constructability issue found in this area.

Information Provided

1. Construction Documents – Structural and Architectural Sets in PDF format
   Location: "Construction Documents" folder
2. Constructability Report Template

Deliverables

1. Completed constructability report clearly defining and communicating one (1) constructability issue.

Judging

The deliverable will be evaluated on whether the constructability report demonstrates an ability to clearly and concisely communicate a valid constructability issue.