ACI Web Sessions

ACI is bringing you this Web Session in keeping with its motto of “Advancing Concrete Knowledge.” The ideas expressed, however, are those of the speakers and do not necessarily reflect the views of ACI or its committees.

Please adjust your audio to an appropriate level at this time.

ACI Web Sessions

ACI Web Sessions are recorded at ACI conventions and other concrete industry events. At regular intervals, a new set of presentations can be viewed on ACI’s website free of charge. After one week, the presentations will be temporarily archived on the ACI website or made part of ACI’s Online CEU Program, depending on their content.

ACI Online CEU Program

ACI offers an easy-to-use Online CEU Program for anyone who needs to earn Continuing Education credits. Once registered, you can download and study reference material. After passing a 10-question exam on the material, you will receive a certificate of completion that you can present to local licensing agencies.

Visit www.concrete.org/education/edu_online_CEU.htm for more information.

ACI Conventions

ACI conventions provide a forum for networking, learning the latest in concrete technology and practices, renewing old friendships, and making new ones. At each of ACI’s two annual conventions, technical and educational committees meet to develop the standards, reports, and other documents necessary to keep abreast of the ever-changing world of concrete technology.

With over 1,300 delegates attending each convention, there is ample opportunity to meet and talk individually with some of the most prominent persons in the field of concrete technology. For more information about ACI conventions, visit www.aciconvention.org.

Advancements in the Use of Building Information Modeling (BIM) Systems

ACI Fall 2012 Convention
October 21 – 24, Toronto, ON

Thomas Strong is EllisDon Construction’s Director of Virtual construction. Mr. Strong is responsible for the strategic direction and management of the EllisDon’s Virtual Construction Services group. Strong builds relationships in technology with business partners and guides the adoption of new innovative solutions to ensure EllisDon continues to meet the evolving needs of its clients.

Mr. Strong has been active in the construction industry for 10 years, working in R&D and Construction Management. His educational background includes Architectural technology & Plastic injection Mold Making in the automotive sector.
Who Are We…

- 3D Analysis
- 3D Coordination & submissions
- 4D Scheduling
- 3D Quantity Estimating
- 3D As-builts & Point Cloud Surveying
- XYZ project control
- 3D Database for FM & Asset Management

Agenda

- WCMHC Profile
- Main Design Challenges
- BIM Goals
- BIM Implementation Strategy
- CAD & BIM Models Integration
- NavisWork Presentation

Waypoint Center for Mental Health Care - wcmhc

- A new forensic hospital
- Overall 312-bed psychiatric hospital located on Georgian Bay in the Town of Penetanguishene, Ontario
- For treatment and care people with mental health disorders who have had involvement with the criminal justice system.
- Steel Structure
- External Precast Panels (Envelope)
- Geothermal Field renewable energy
- Maximum Security forensic hospital

Waypoint Center for Mental Health Care - wcmhc

- P3 - Lump Sum - DB Project
- 350,000 sq ft
- 447 M $
- Targeting LEED Gold
Main Design Challenges

Design-Build
- Continuous Design revisions
- Continuous shop drawings updates
- Conceptual Fabrication Models

Existing Conditions
- Construction sequence consideration
- Existing services consideration

Struct / Mech Challenges
- Secure mental health facility
- Fabrication requirements

Design Challenges

- Revit Models
- 2D CAD
- PDF files

Design Development Meetings

ED-BIM
Main Design Challenges

Structural / Mechanical

BIM Goals

Master Model
- Used for design development
- Design coordination
- Clash Detection
- Detect early issues

Quantities take off
- Monitor material quantities as design progresses

Generate Fabrication Models
- Upgrade 200 LOD design models to 400 LOD fabrication models
- Generate missing BIM Components
- Integrate 2D CAD with 3D models

3D Design Coordination
- Generate missing BIM Components
- Integrate 2D CAD with 3D models
BIM Goals

Fabrication Model

BIM Goals

Design Coordination

BIM Implementation Strategy

BIM Champion

BIM Implementation Strategy

Full Time BIM Specialist

BIM Execution Plan

Develop a Process for Sub-Contractors

Reporting & Communication

**Proactive** [prəʊˈæktɪv]

*adj*

- Acting in advance to deal with an expected difficulty; anticipatory
- Tending to initiate change rather than reacting to events

http://www.thefreedictionary.com

BIM Implementation Strategy

Contact Info

- Software Info
- FTP Server Info
- Naming Convention
- Model Scope by System
- Missing yet needed objects

Integrate All BIM /3D models

Issue the problem

Recommend a solution

Follow Up

Update Master Model

Confirm Resolved Issue

Coordinate the Design with Sub-Contractors

Integrate All BIM /3D models

Issue the problem

Recommend a solution

Follow Up

Update Master Model

Confirm Resolved Issue

Maintain an updated Master model

Report constructability issues

Contact Info

- Software Info
- FTP Server Info
- Naming Convention
- Model Scope by System
- Missing yet needed objects
BIM Implementation Strategy

Develop a Process for Contractors

**Mechanical Designer**

- Program Design Model
  - Design Phase
  - Construction Phase

**Mechanical Contractor**

- Mechanical Contractor
  - ED-BIM Issue Reports & Update Issue 2
  - Mechanical Contractor
  - Fabrication Model
  - Fabrication / Installation

**BIM Implementation Strategy**

Reporting & Communication via pdf

**BIM Implementation Strategy**

Reporting & Communication via NavisWorks

**CAD & BIM Integration**

Concrete Coordination with Site Duct Banks

**CAD & BIM Integration**

Concrete Coordination with Site Utilities
**CAD & BIM Integration**

Concrete Coordination with Shoring Piles

Excavation Layouts

Concrete Coordination with Shoring Piles

**Site Services**

2D CAD overall of site services with Building structure

Illustration of Z-components facilitates site services coordination

**Precast Panels**

**Mechanical Sub-Contractor**

- Developed 3D shared coordinate grid system
- Linked 2D architectural & structural backgrounds
- Generated 3D fabrication models
- Integrated with NavisWorks
- Clashes were demonstrated thru *.dwg clash report
- Updated 3D Mech CAD Model
- Issue IFC

Export Clash in XML Format

Convert XML report to 2D format

Link CAD Clash report to 2D CAD model
CAD & BIM Integration

Mechanical Sub-Contractor

1. 3D CAD
2. 3D NavisWorks
3. 2D CAD

Findings & Conclusion

Reduce risk
More productive design meetings
Facilitates decision-making
Proactive trade coordination
Massive Reduction of RFI's and SI's

Findings & Conclusions

Startup
100% DD
IFC

100% CD

Construction

"The Best Way to Predict the Future is to Create It"
Peter F. Drucker

EllisDon
"We build of great relationships"