

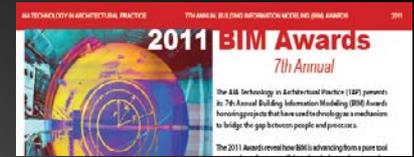
BIMFORUM



AIA TAP BIM Awards

2013 Professionals' Choice BIM Award

Award Winning BIM 2005 to 2013



2005, 2006, 2007, . . .

What's in a name?

A lot, actually.

If we didn't have BIM, we wouldn't have a National BIM Standards Committee - an important component in the

Education Thrives, Process Arrives, Design Survives

BIM Comes Alive

The 4th Annual AIA TAP BIM Awards reveal the liveliness BIM demonstrated in 2007 - a year called a tipping point for this advanced technology tool set.

The fear that institutions of higher education were not hitting their groove with BIM is allayed with four awards in the academic category.

studio that convincingly to modular housing can "rain BIM.



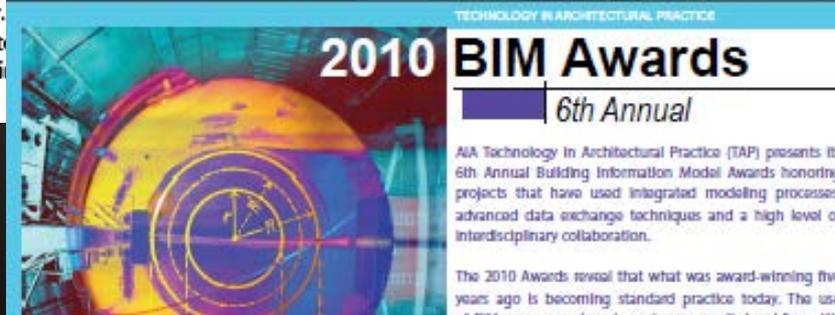
TECHNOLOGY IN ARCHITECTURAL PRACTICE

2009 BIM Awards

5th Annual

AIA Technology in Architectural Practice (TAP) presents its 5th Annual Building Information Model Awards honoring projects that have used integrated modeling processes, advanced data exchange techniques and a high level of interdisciplinary collaboration.

The 2009 Awards reveal that what was award-winning five years ago is becoming common practice today. The use of BIM processes alone is no longer worth heralding. We're able to look into process details and recognize subtle refinements and artful applications. See www.aia.org/tap for more of the Art of BIM as embodied by this year's award recipients and compare them to winners from previous years. The comparison is revealing.



Your Moderator and Hosts from AIA

- Stephen Hagan, FAIA
- Brian Skripac, Assoc. AIA
 - Upcoming 2014 Chair of AIA TAP

AIA TAP KC Leadership Team



**Kimon
Onuma**

Chair - 2013



**Brian
Skripac**

Chair - 2014



**David
Scheer**



**Calvin
Kam**



**Stephen
Hagan**



**Kristine
Fallon**



**Tony
Rinella**

Active Past Chairs



**Andy
Smith**



**Jeffrey
Ouellette**



**Karen
Kensek**



**Luciana
Burdi**



**Marty
Doscher**



**Mike
Kenig**



**Pete
Evans**

Sponsors

- The AIA TAP Leadership would especially like to thank our sponsors who help make this possible:

- Circle Member



- Benefactor



Session | Online Webinar Learning Objectives

- Learn and discover award winning team dynamics, the people and process side of BIM and its influence on architectural practice
- Identify what BIM is, and what its future could be, based on lessons learned from eight years of AIA TAP BIM awards
- Recognize how architectural excellence can be enhanced and enabled using BIM.
- Identify the interface between BIM and Integrated Project Delivery (IPD) and Process Improvement

Follow us on Twitter

- @aia_tap

The screenshot displays the Twitter profile for @aia_tap. The navigation bar at the top includes Home, Connect, Discover, Me, and a search bar. The profile header features the AIA TAP logo, the name 'AIA TAP', the handle '@aia_tap', and a bio: 'TAP Knowledge Community serves as a resource for @AIA National members, the profession, and the public in the deployment of technology in #architecture'. Below the bio is the website 'http://aia.org/tap'. The profile statistics show 1,260 tweets, 150 following, and 875 followers. The 'Tweets' section contains three tweets, all from @aia_tap, promoting the 2013 Professionals Choice #BIMAward and the BIM Forum. The 'Who to follow' section lists Ace Hardware (promoted), Meridian Systems (followed by Tekla and others), and Jonathan M. Taylor. The 'Trends' section shows #TridentNews as a promoted trend.

2013 AIA TAP BIM Awards Jury

RK Stewart FAIA
Jury Chair

Salt Lake City, UT

Harry McKinney AIA
Director of Virtual
Design | Construction

Clancy & Theys
Raleigh NC

Tom Sawyer

Engineering
News Record
New York, NY

Dennis Sheldon PhD
Chief Technology
Officer

Gehry Technologies
Santa Monica, CA

Eric Teicholz
President CEO

Graphic Systems Inc
Boston MA

- Presented at 2013 AIA Convention BIM Awards Reception and Ceremony | Denver CO | June 19 2013

We are also Live Online!

Technology in Architectural Practice

AIA Knowledge Communities



AIA TAP and AGC BIMForum 2013 Professionals Choice BIM Award

April 24, 2013 | 4-5pm ET | 1-2pm PT | Earn 1.0 AIA LU | [Learn more »](#)

This year the 9th Annual AIA TAP BIM Awards is again delighted to be partnering with the AGC BIMForum to host presentations and in-person | online voting for the 2013 Professionals Choice BIM Award.

This webinar will be broadcast live from the AGC BIMForum in Miami and the following firms and projects, already vetted by AIA to receive BIM Awards recognition at the 2013 AIA Convention in Denver on June 19, 2013, will present their projects for your vote!

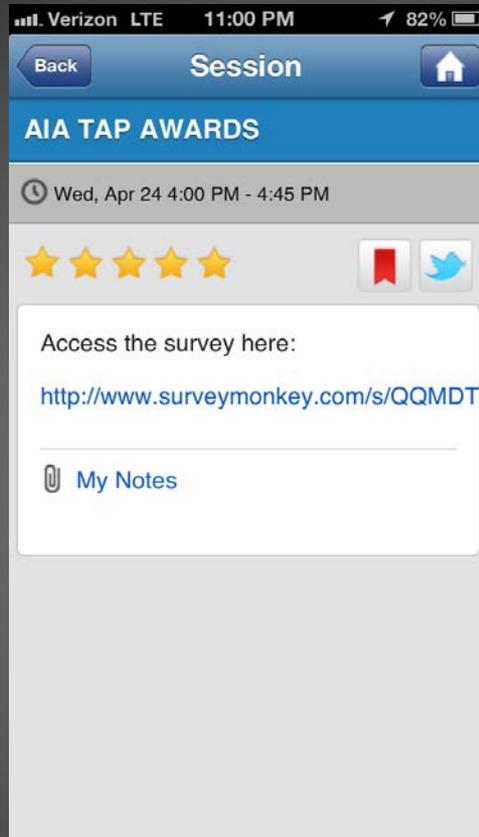
YOU are the Jury!!

- Here in person at BIMForum | Miami
- Online at AIA TAP Webinar
- Selection of Professionals' Choice will be Immediately After these Presentations
- Take Notes and Be Prepared to VOTE!

BIMForum APP and Voting!



BIMForum APP and Voting!



YOU are the Jury!!

- CollinsWoerman + GLY Construction
Group Health Cooperative Puyallup Medical Center
- Fentress Architects / Mortenson Construction
Ralph L. Carr Colorado Judicial Center
- CO Architects
Phoenix Bio-medical Campus | Health Sciences Education Building

CollinsWoerman + GLY Construction

Group Health Cooperative Puyallup Medical Center

- **Dave Burger AIA**
Integrated Design Manager | GLY





GroupHealth

GroupHealth

HEALTHCARE OF THE FUTURE

GROUP HEALTH COOPERATIVE
PUYALLUP MEDICAL CENTER

INTEGRATED CARE + FACILITY DESIGN



PRESENTING PARTNERS



GLY | INTEGRATED DESIGN MANAGER



JAMEY BARLET
COLLINSWOERMAN | SENIOR ASSOCIATE



GroupHealth

GroupHealth

HEALTHCARE OF THE FUTURE

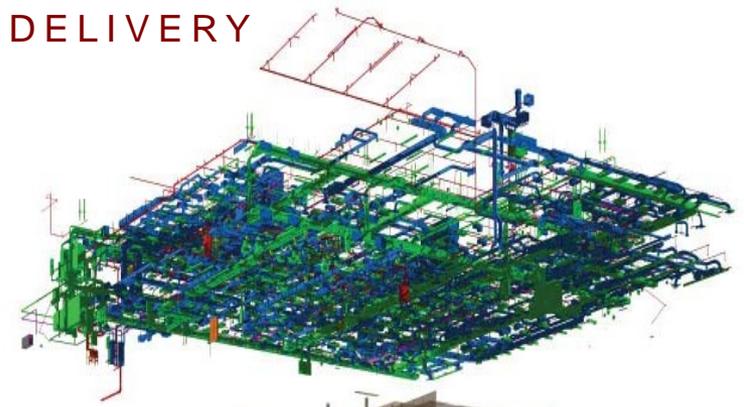
GROUP HEALTH COOPERATIVE
PUYALLUP MEDICAL CENTER

INTEGRATED CARE + FACILITY DESIGN



INTEGRATED PROJECT DELIVERY

INTEGRATED
CARE AND
FACILITY
DESIGN =
IPD/LEAN
PROGRAMMING
DESIGN +
CONSTRUCTION



MOCKUP CARE ROOM



MODELED CARE ROOM



BUILT CARE ROOM



WAREHOUSE + MOCKUPS

PODS FACILITATE FLEXIBLE PLANNING + WAS ESSENTIAL TO FORWARD-THINKING DESIGN



WAREHOUSE MOCKUP VIEW OF POD



REVIT MODEL OF POD

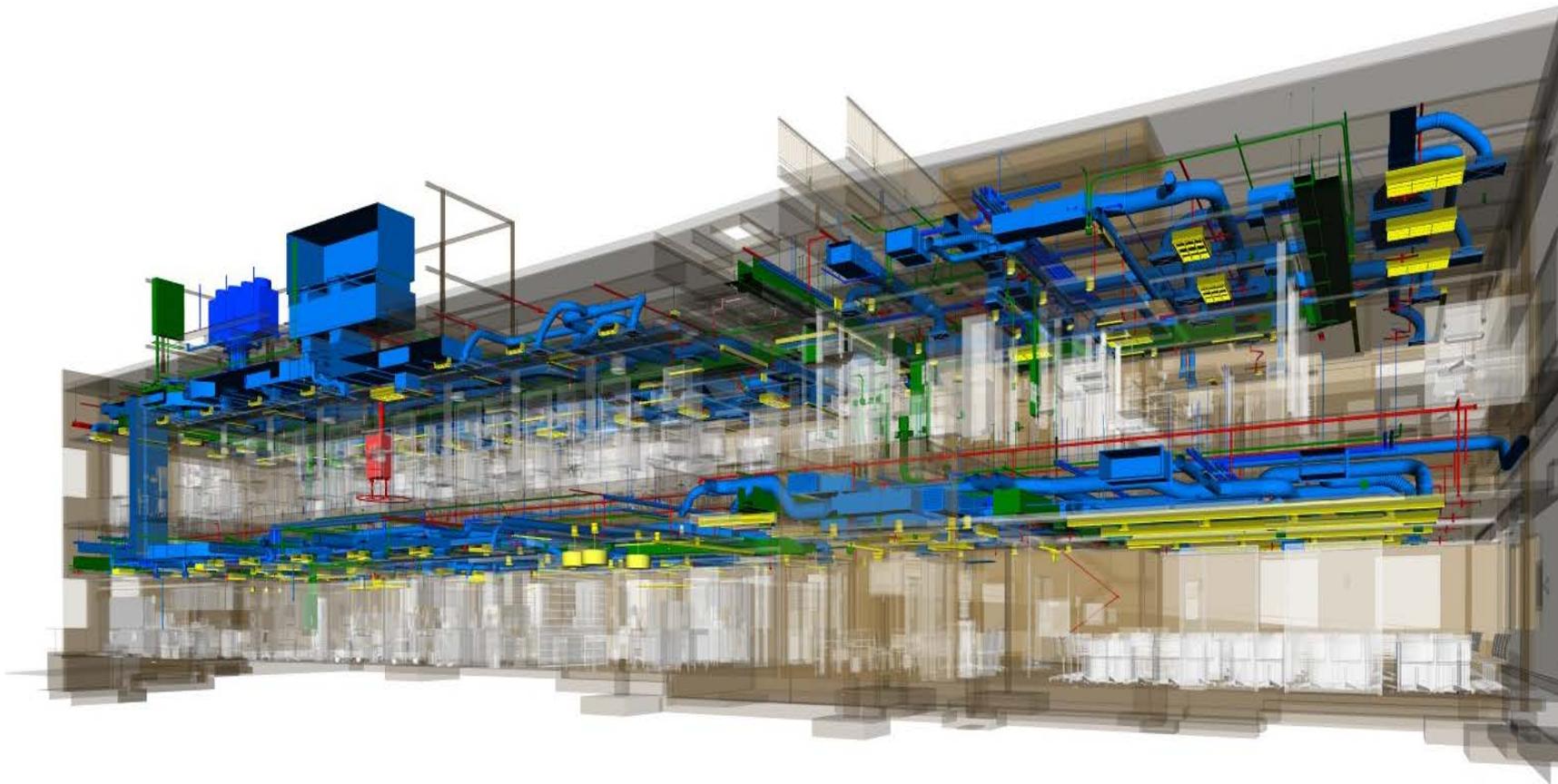
COLOCATION + SHARED MODEL

EARLY COLOCATION OF TEAM MEMBERS PROVIDED EFFICIENT COMMUNICATIONS + CONTINUAL COORDINATION + QA/QC



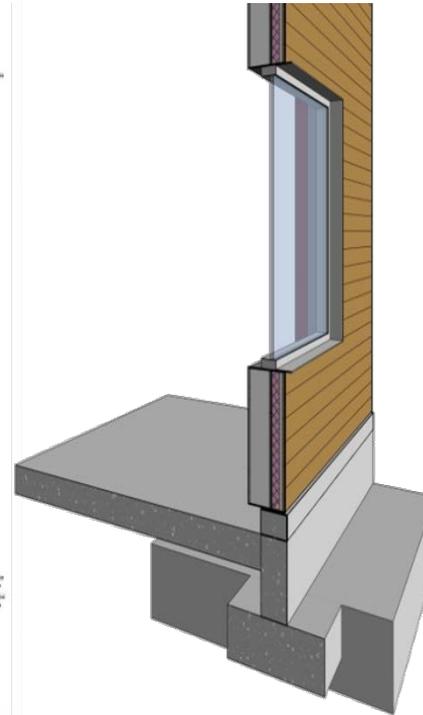
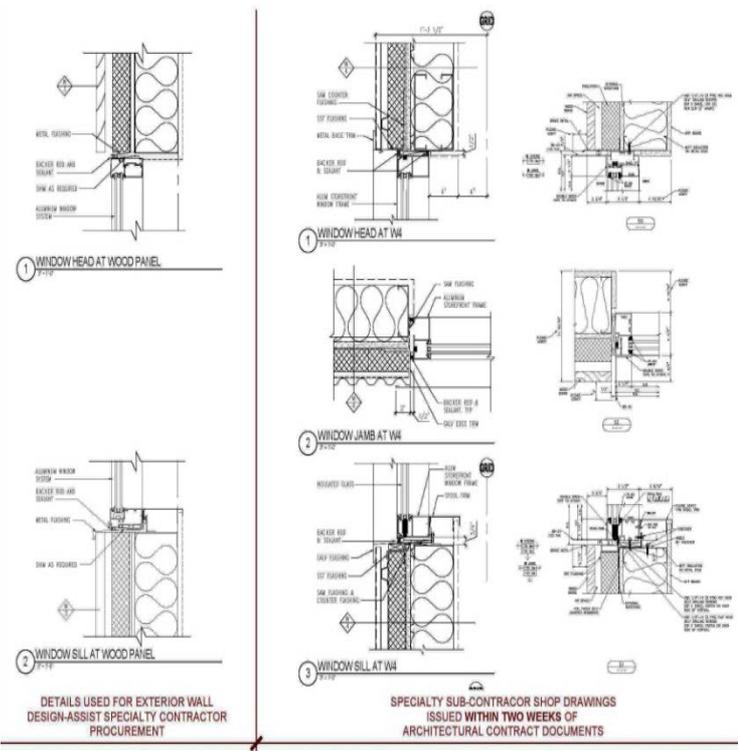
MECHANICAL SYSTEMS DESIGN, SELECTION + COORDINATION

PLUG + PLAY PODS ACCOMMODATE
FUTURE CHANGES, ALLOWING THE REST
OF THE FACILITY TO OPERATE



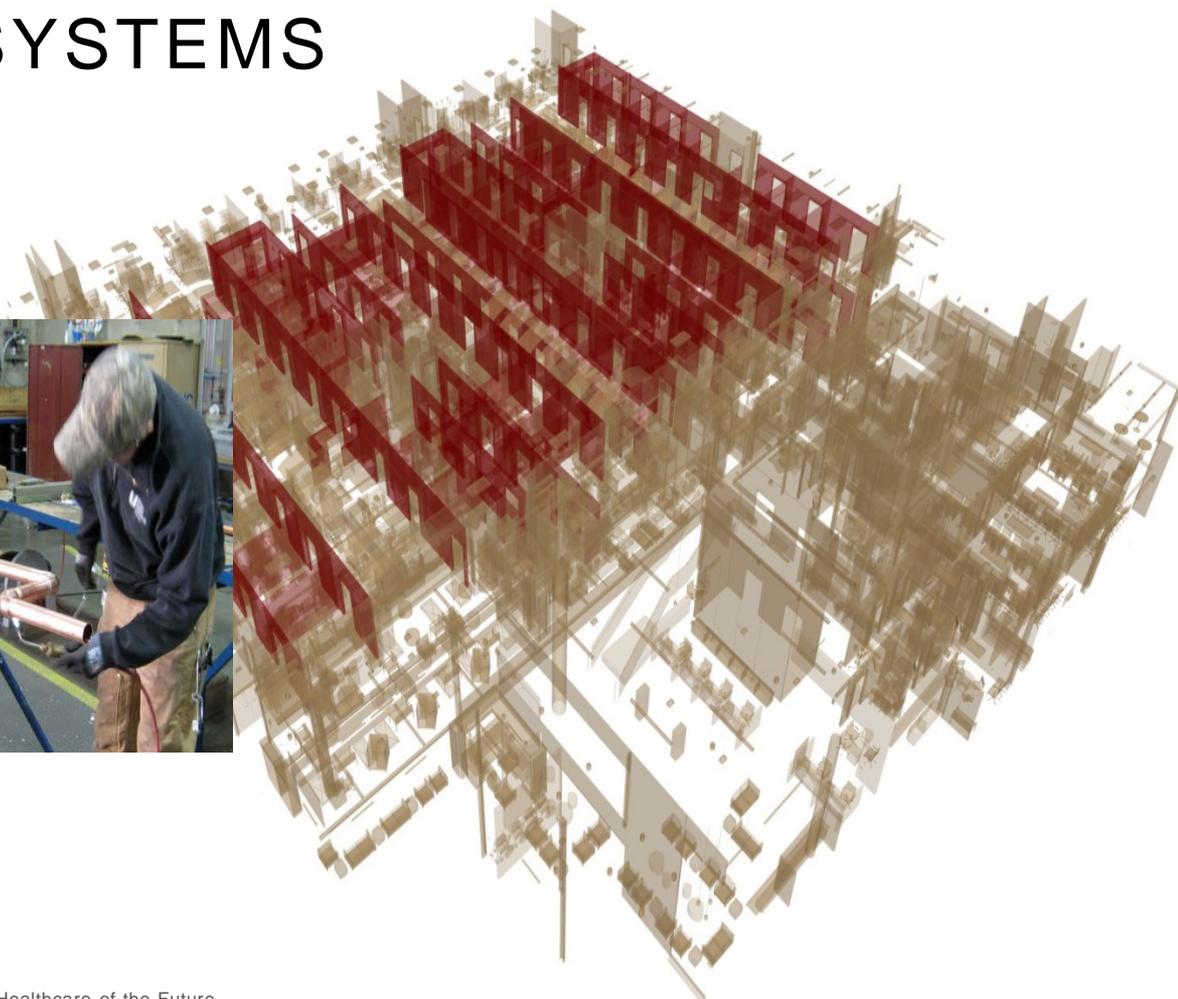
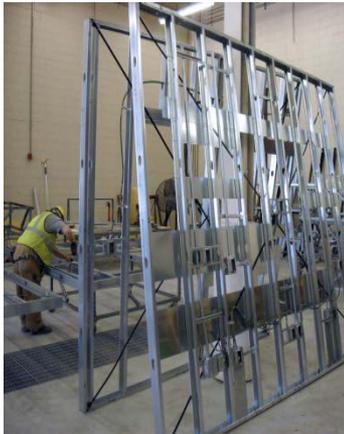
DESIGN-ASSIST EXTERIOR WALL DEVELOPMENT

DESIGN-ASSIST EXTERIOR WALL DEVELOPMENT CLARIFIED SCOPES + INCREASED COODINATION



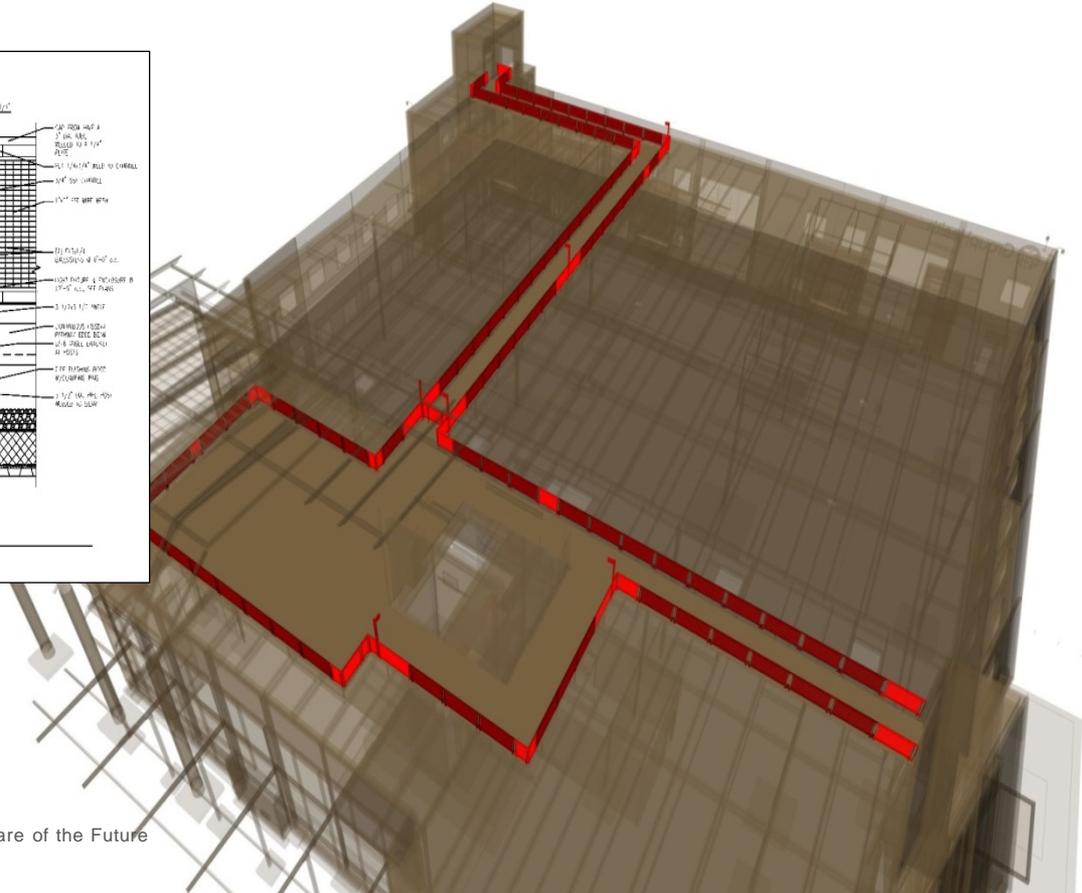
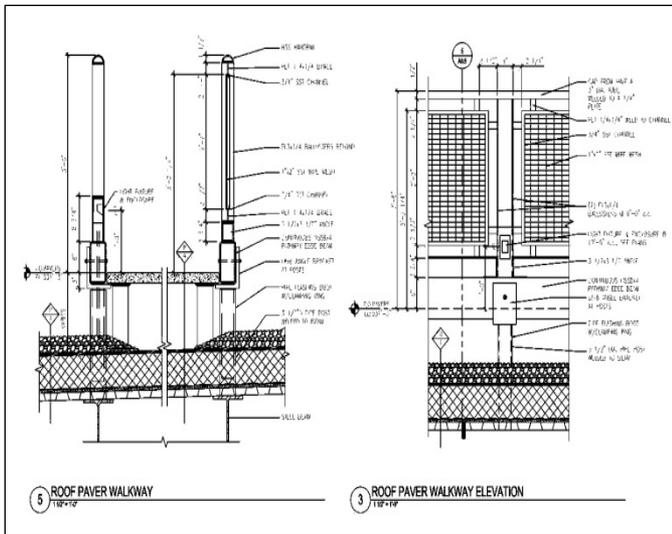
PREFABRICATION + MODELING

BIM FACILITATED PRE-MANUFACTURING 42 EXAM ROOMS WITH ALL ELECTRIC + PLUMBING SYSTEMS



DIRECT FROM BIM TO FABRICATION

RAILING 3D MODEL WAS DELIVERED DIRECTLY TO FABRICATOR WHO PRODUCED THE SHOP DRAWINGS



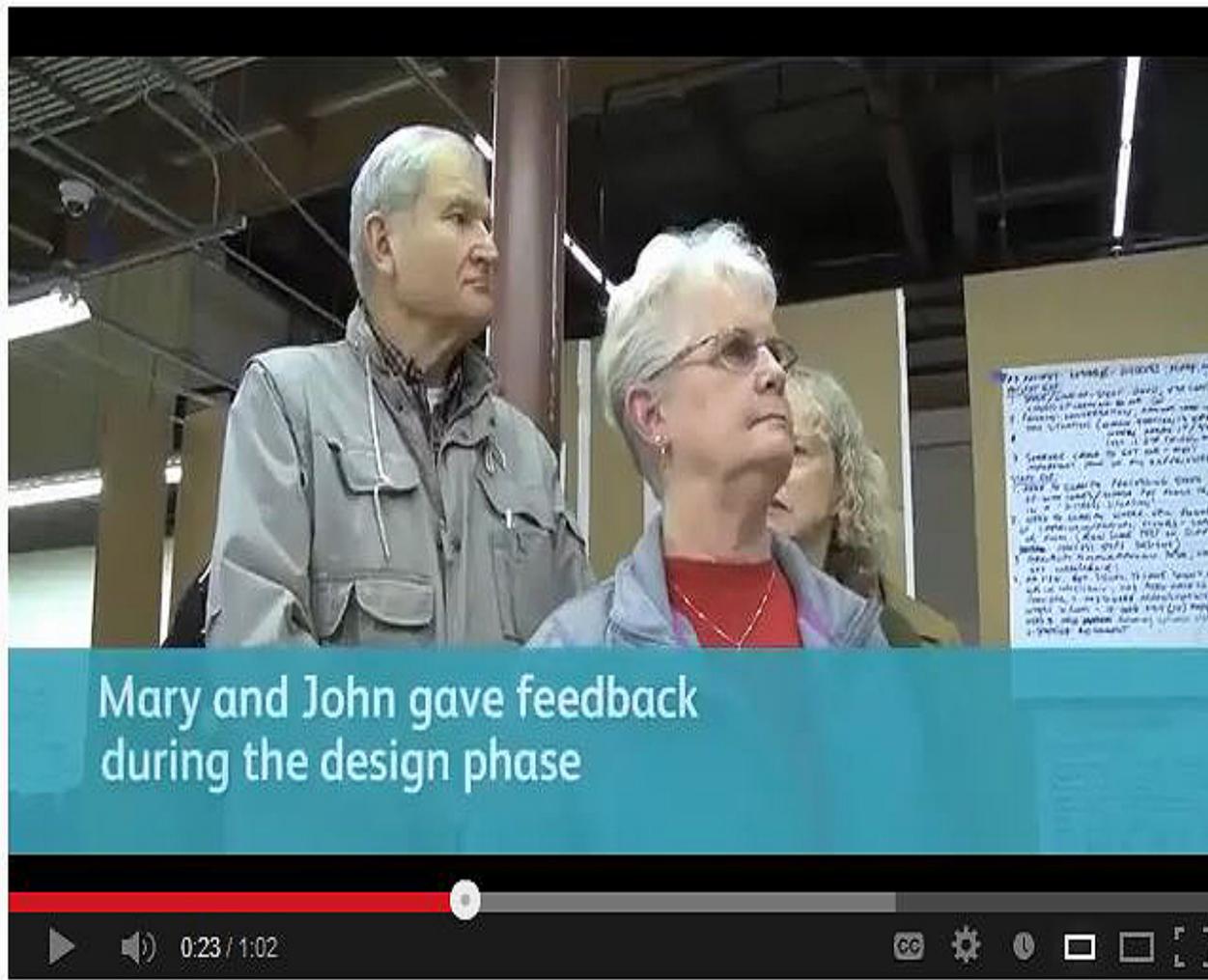
FF+E COORDINATION USING BIM

ALL EQUIPMENT + FURNITURE WAS
MODELED TO ENSURE ACCURATE ITEM
COUNTS + MATERIAL TAKE-OFFS



MODELED FF+E

ACTIVE PATIENT PARTICIPATION DURING LEAN PROGRAMMING



<https://www.youtube.com/watch?v=-nkacQke1gk>

PROJECT RESULTS

- INNOVATIVE DESIGN + CONSTRUCTION APPROACHES
- FIRST LEED-HC GOLD [HEALTHCARE] FACILITY
- SUCCESSFUL PROTOTYPE FOR 13 FUTURE CLINICS



SCHEMATIC DESIGN: SKETCHUP MODEL



CONTRACT DOCUMENTS + CONSTRUCTION: BIM [REVIT] MODEL



BUILT FACILITY



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R
M
A
N

GROUP HEALTH COOPERATIVE PUYALLUP MEDICAL CENTER

DAVE BURGER, AIA, LEED AP
GLY | INTEGRATED DESIGN MANAGER
p: 425.451.8877 | e: dave.burger@gly.com

JAMEY BARLET
COLLINSWOERMAN | SENIOR ASSOCIATE
p: 206.245.2100 | e: jbarlet@collinswoerman.com

Fentress Architects / Mortenson Construction

Ralph L. Carr Colorado Judicial Center

- Brian E. Filkins
Senior Integrated Construction Coordinator
Mortenson Construction



Ralph L. Carr Colorado Judicial Center

2013 AIA TAP BIM Award Winner

Delivery Process Innovation



695,000 square feet
State Courthouse
12-story office tower

\$200M construction budget
27-month construction schedule
LEED-Gold target



SUCCESS FACTORS

100-year
building symbolizing the
Rule of Law

Integrating
ALL users in the design-build
process

Paying
Attention
to **detail**

Significance
of **decisions**
in the design process

Construct a building
for **today**
while
considering
the **future**



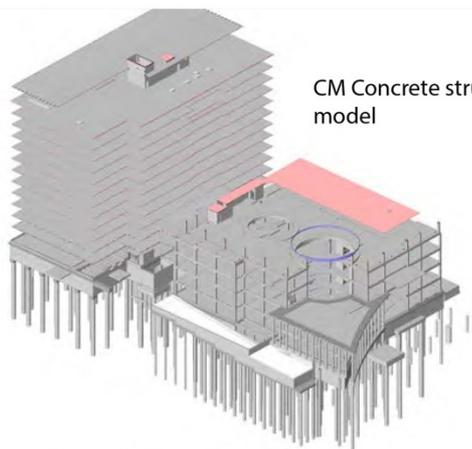


Ralph L. Carr Colorado Judicial Center

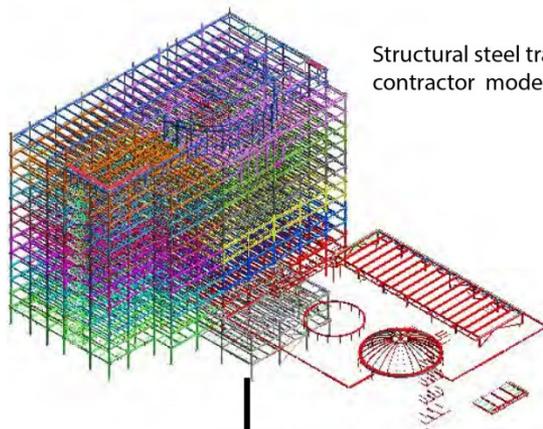


TrammellCrowCompany

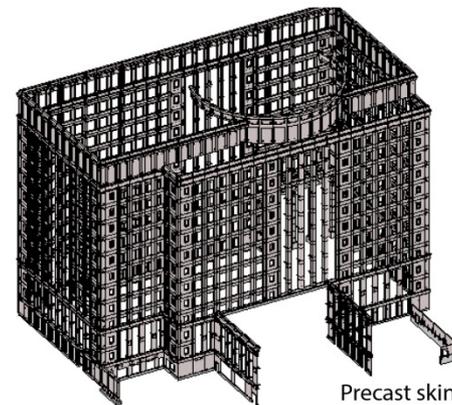




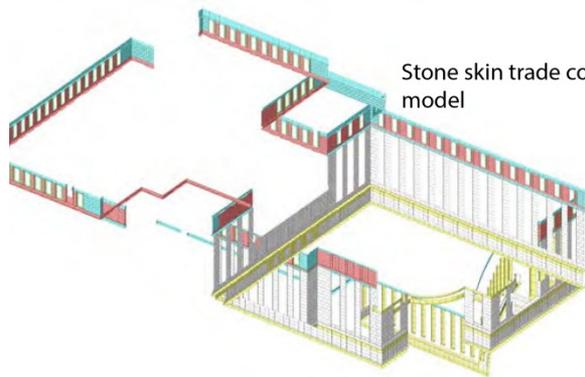
CM Concrete structural model



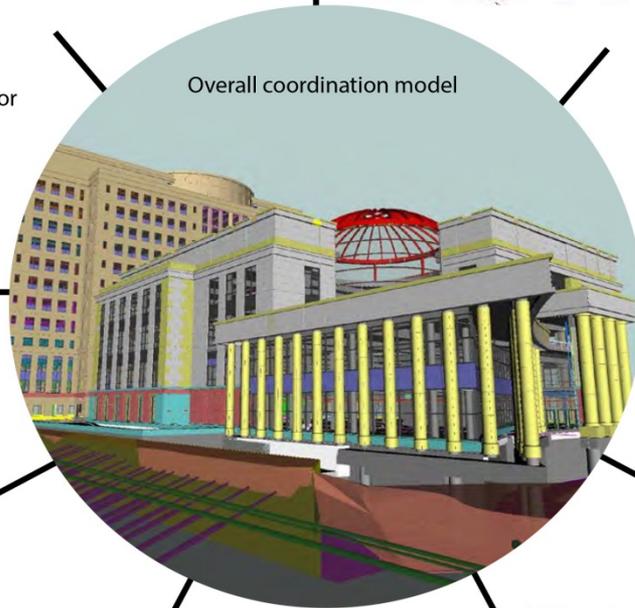
Structural steel trade contractor model



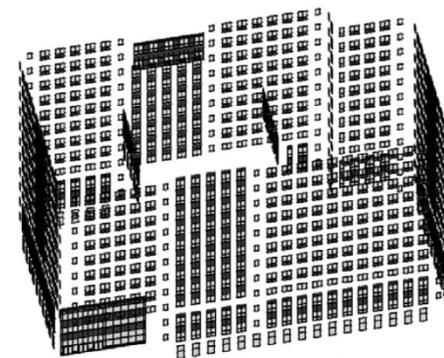
Precast skin trade contractor model



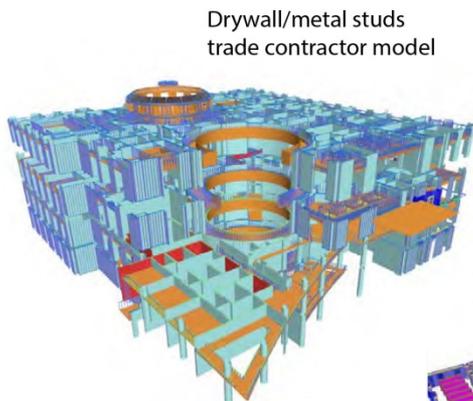
Stone skin trade contractor model



Overall coordination model



Glazing trade contractor model



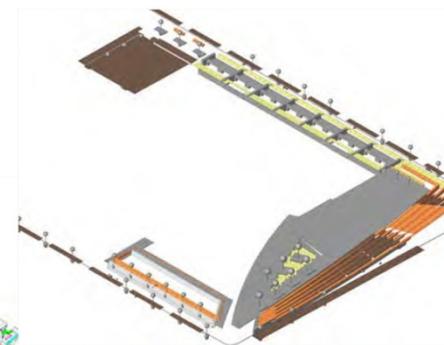
Drywall/metal studs trade contractor model



Millwork trade contractor model

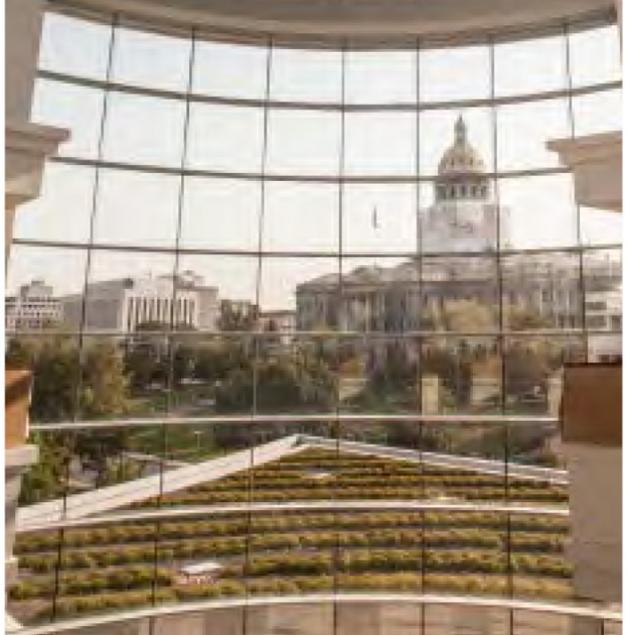
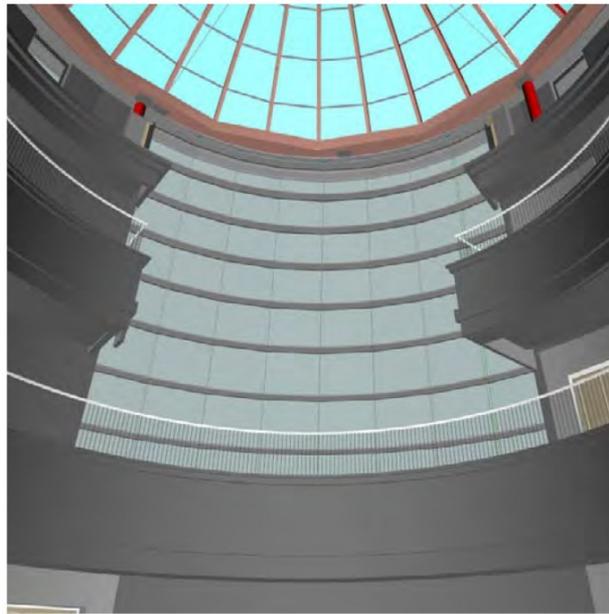
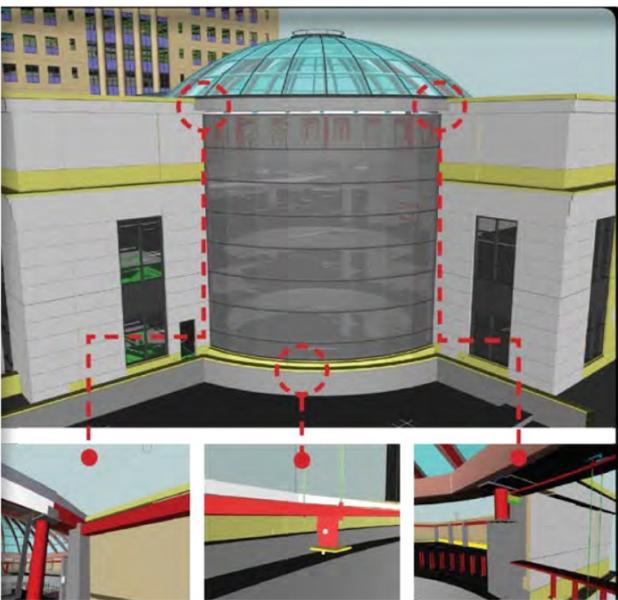
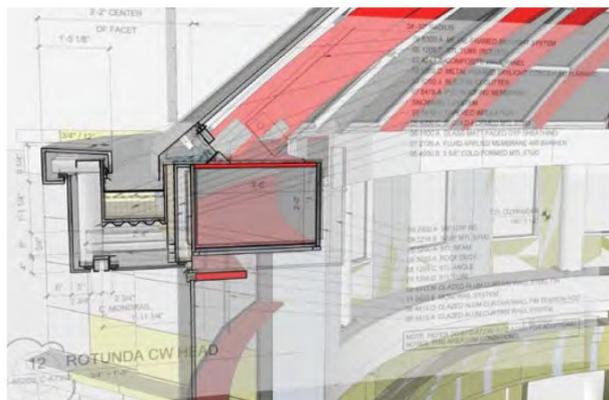
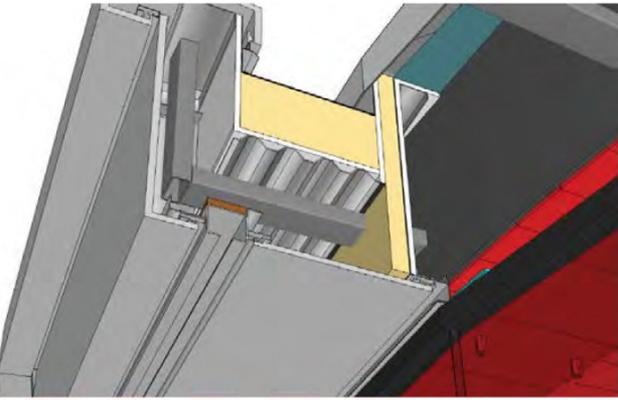


MEP trade contractor model

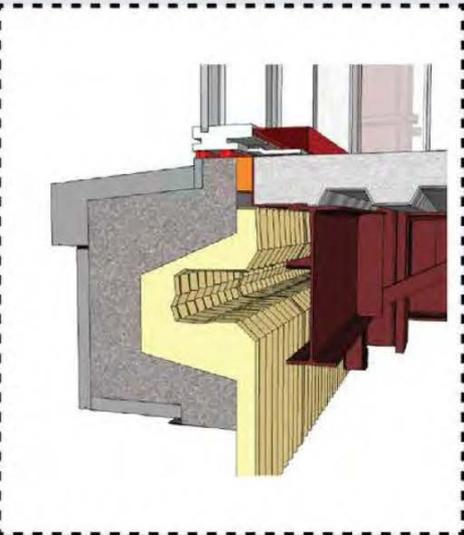
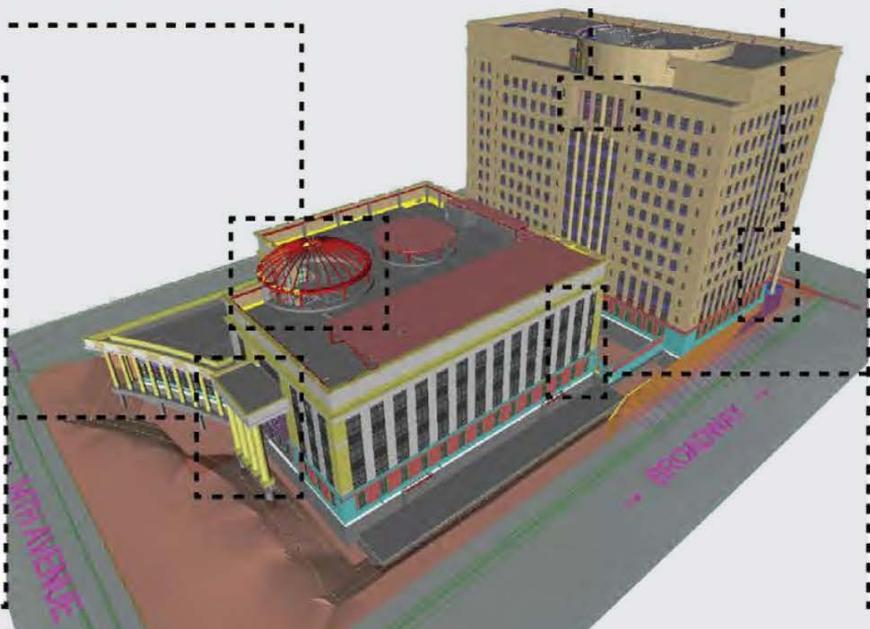
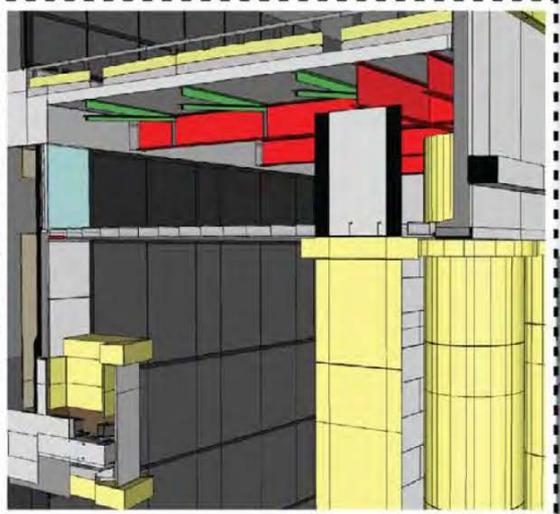
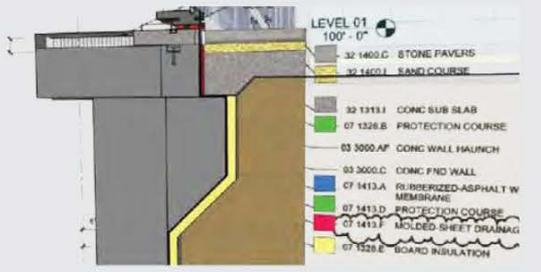
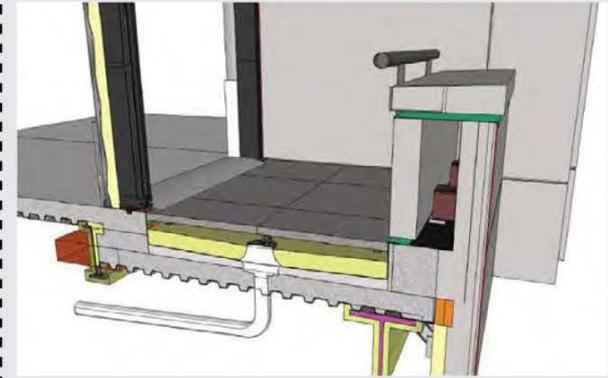
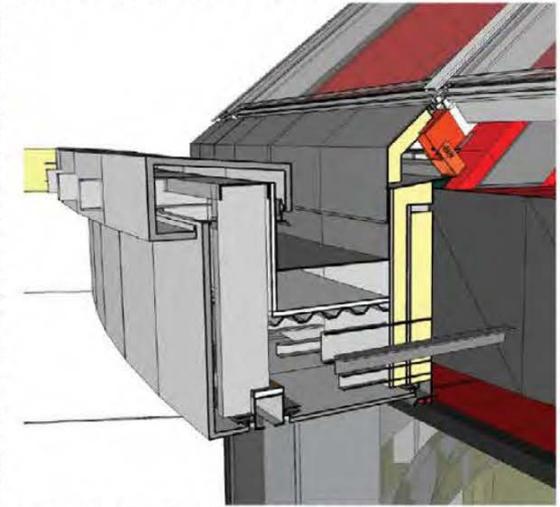


Site concrete and stone trade contractor model

Delivering Design Intent Through Virtual Mockups



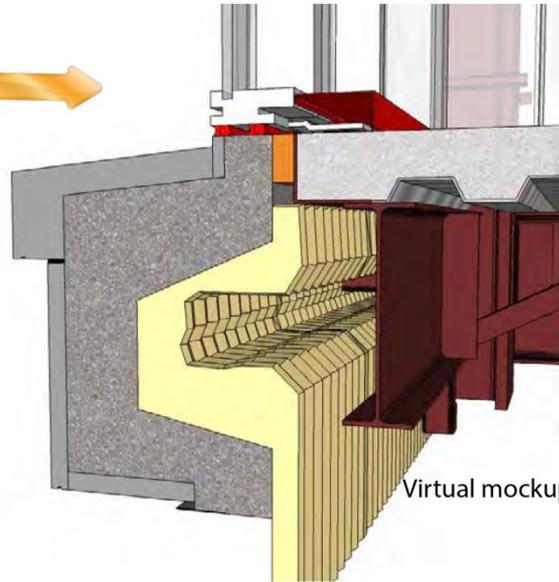
Expedited Detail Resolution Reduces Project Risk



Improving Building Performance - Proof of Concept



Risk areas identified



Virtual mockup



Physical mockup assembly instructions



Physical mockup

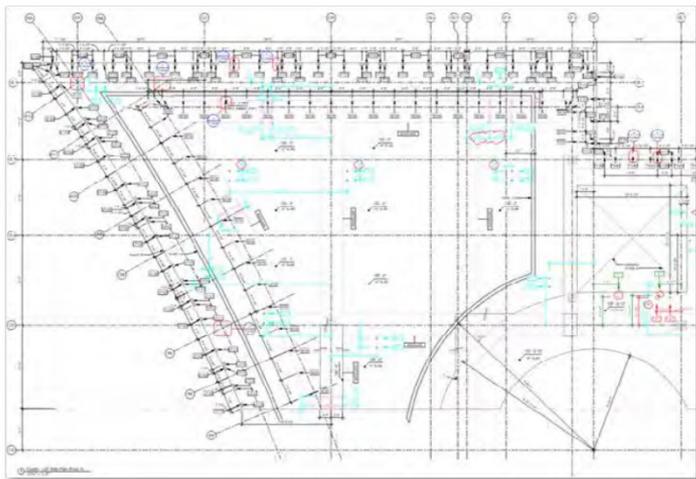


Destructive testing

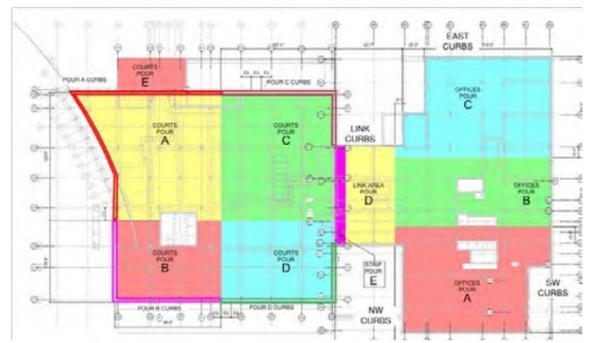


02.01.2011 09:24

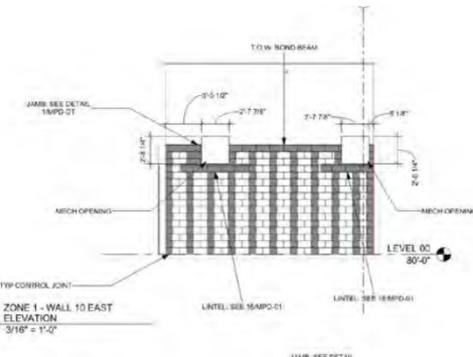
Improving Construction Efficiency, Delivering Cost Savings



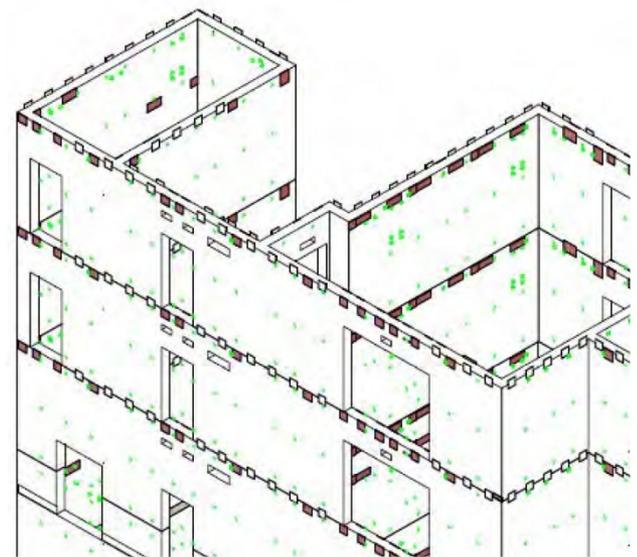
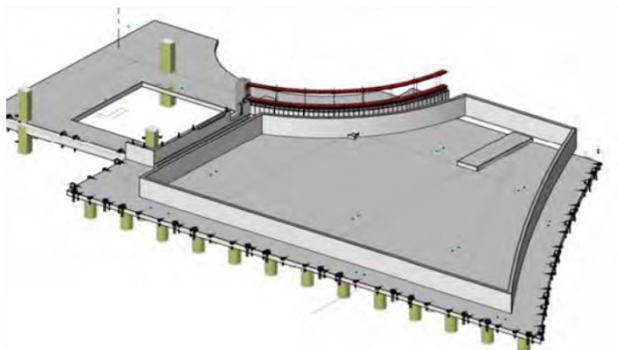
Concrete deck lift drawings



Phasing plans

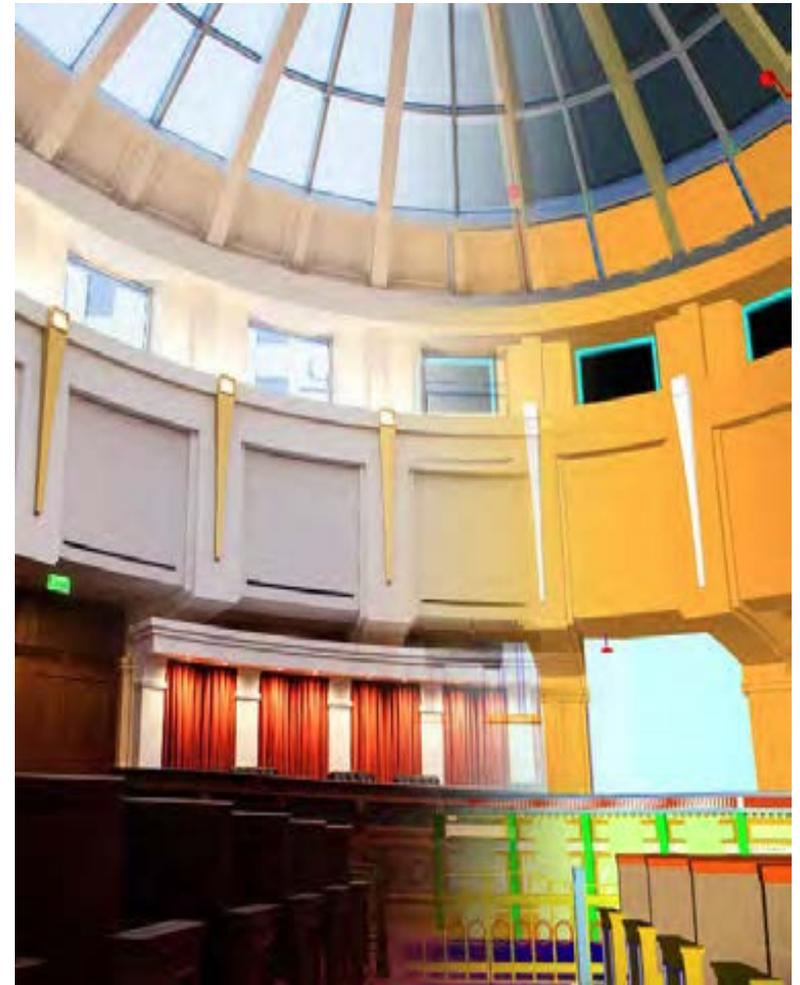


CMU lift drawings



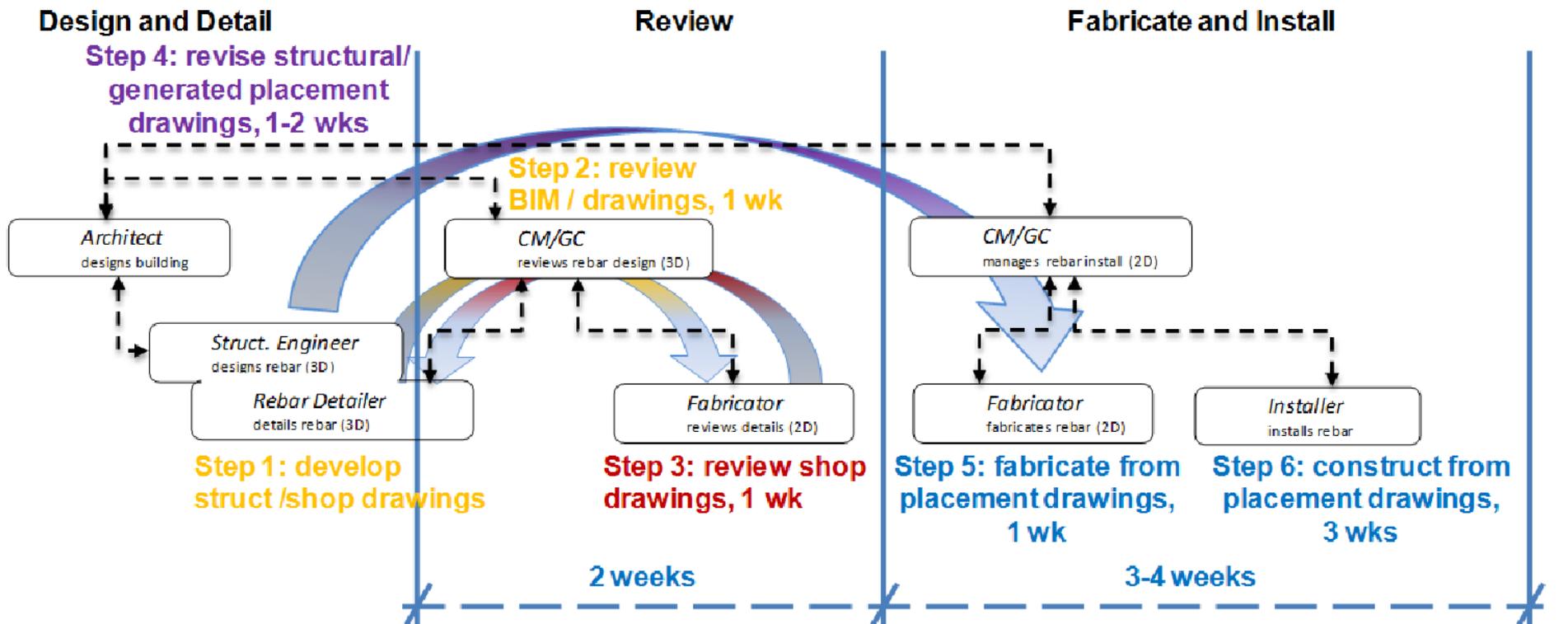
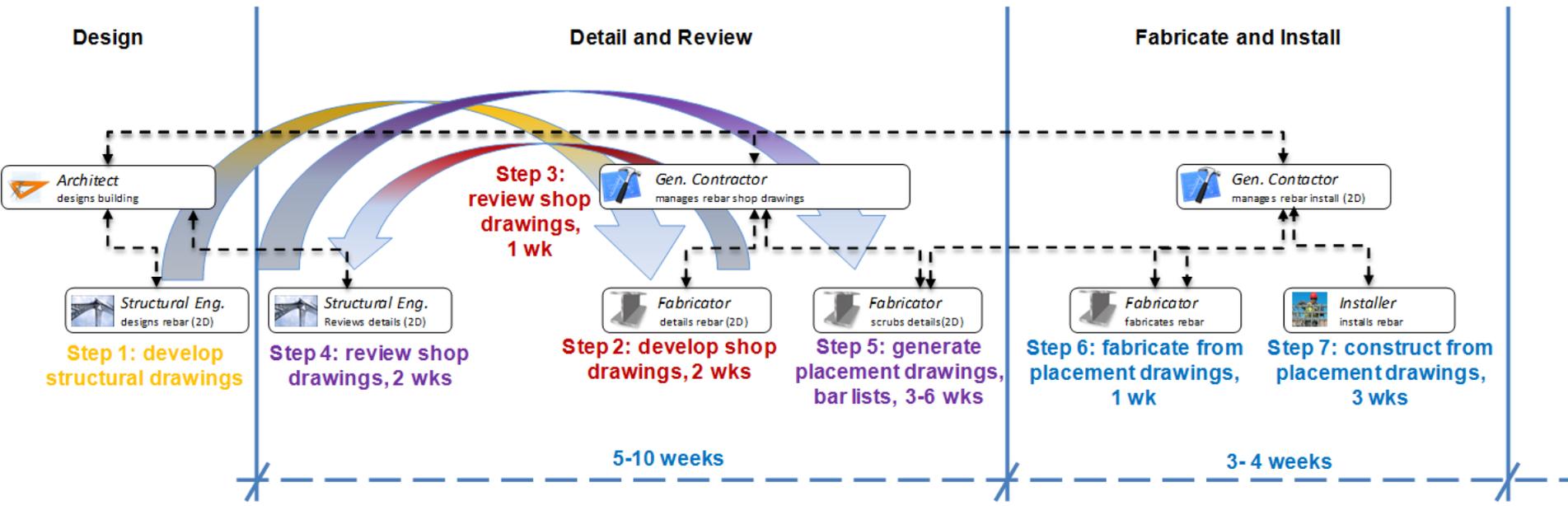
Concrete elevator core model

Process Improvement: Construction Phase



"This was the beauty of the BIM process to us. For a subcontractor to have that level of influence, well that was just unheard of before."

Project Architect



Developing Processes that Connect People to Information



Plan room computer dashboard interface



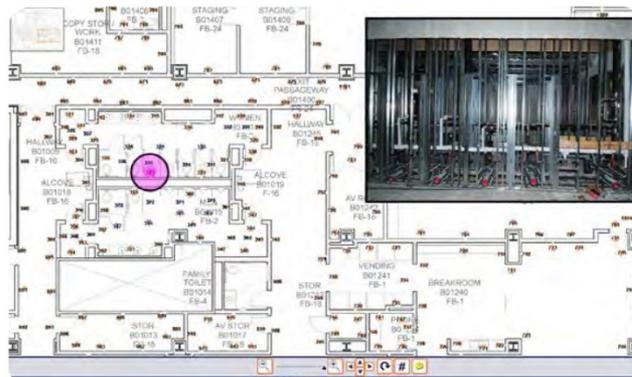
Touch screen plan room computers replace paper drawings



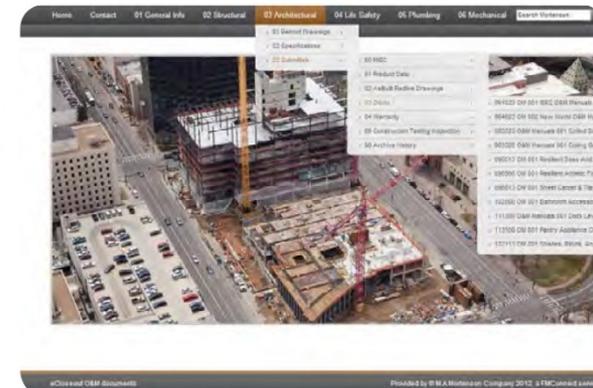
Field tablets connect directly to the cloud



Field computer dashboard interface

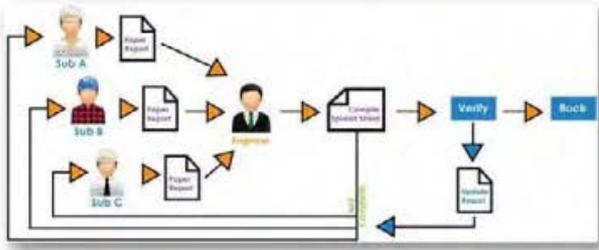


In-wall documentation for facilities maintenance

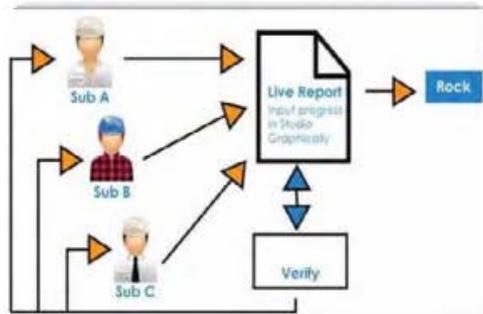


Electronic closeout and O&M interface for facilities maintenance

Leveraging the Cloud to Share and Streamline



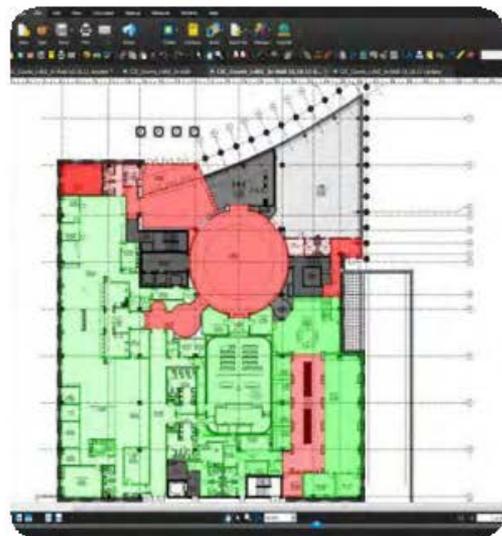
Typical inspection sign off process



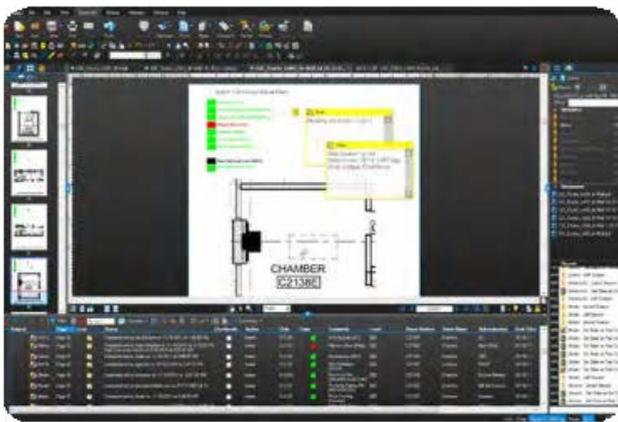
Streamlined team inspection sign off process



Courtroom millwork viewed on site through augmented reality



Interactive graphical interface representing tabular data on inspection sign-off status

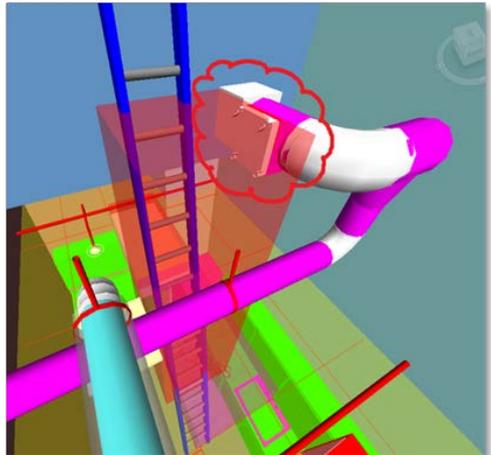
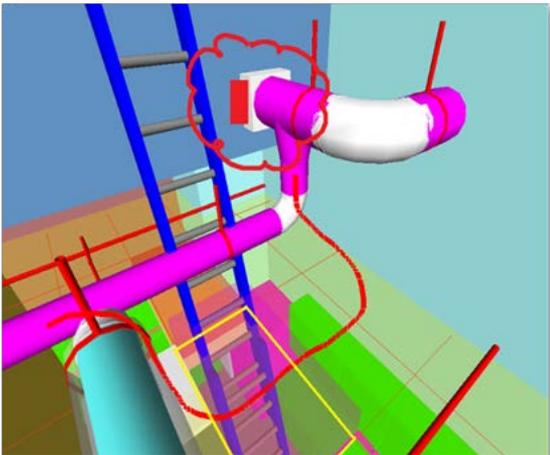
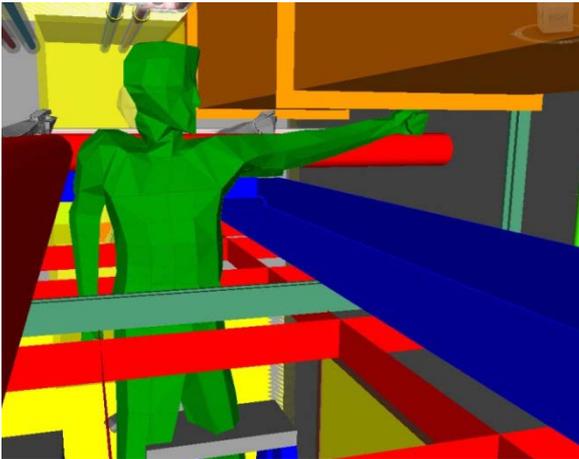


Detailed room status interface linked to plan view (as shown at left)

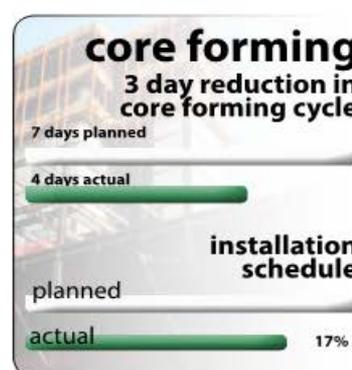
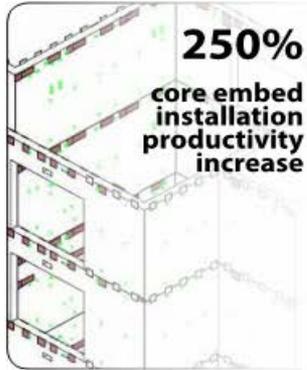


Interactive graphic material tracking and installation status interface

Beyond Typical MEP Clash Detection to Owner FM



Measured Return on Investment



Owner Quotes

*"[The team members] are experts at creating and maintaining the spirit of **teamwork and collaboration** between all parties."*

*"BIM coordination between design team and construction groups has been **exceptional**."*

*"**This has been one of the best projects I have worked on!** From preconstruction through nearing the finish line [the team] has dedicated the resources, ensured the highest level of quality and safety, and maintained the **highest level of professionalism and teamwork**."*

"Your company totally understands customer service. I am extremely pleased with each and every person that I have dealt with. What a classy firm. Knowledge of the work and commitment is very high. Great job!"

SUCCESS FACTORS

100-year

building symbolizing the

Rule of Law

Integrating
ALL users in the design-build
process

Paying
Attention
to **detail**

Significance
of **decisions**
in the design process

Construct a building

for **today**
while
considering
the **future**



Ralph L. Carr Colorado Judicial Center

2013 AIA TAP BIM Award Winner

Delivery Process Innovation



CO Architects

Phoenix Bio-medical Campus | Health Sciences Education Building

- Jenna Knudsen AIA LEED AP
Associate Principal
CO Architects

TWO UNIVERSITIES, TWO OWNERS, TWO ARCHITECTS, TWO CONTRACTORS:

HEALTH SCIENCES EDUCATION BUILDING – PHOENIX BIOMEDICAL CAMPUS



CO ARCHITECTS





1

BUILDING DESIGN & CONTEXT



Team

Arizona Board of Regents

Owner

CO Architects

Design + Executive Architect

Ayers Saint Gross

Associate Architect + Master Planner

DPR Construction • Sundt Construction, Inc., Joint Venture

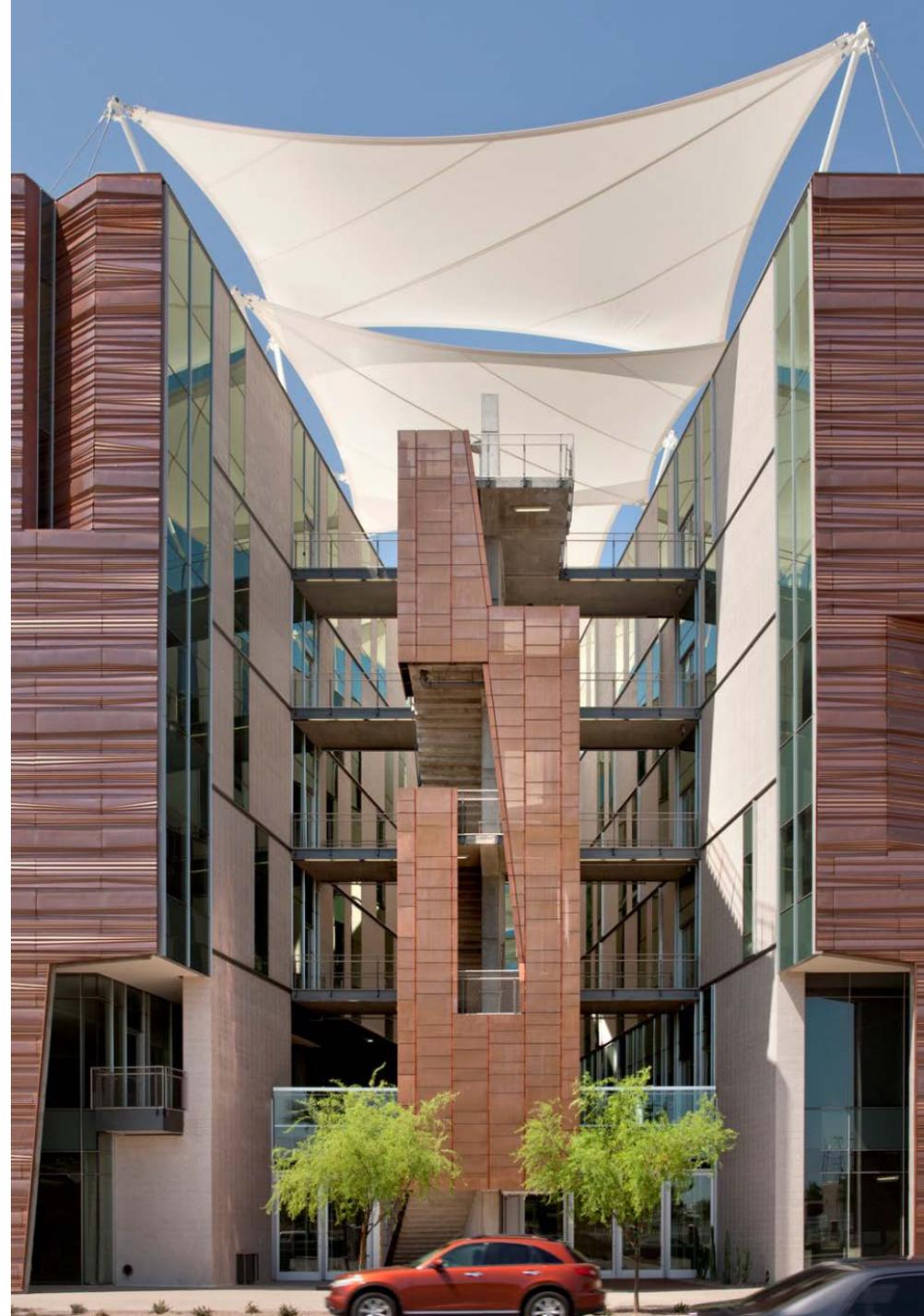
Construction Manager/General Contractor

Description

- 268,000 GSF
- \$99 million
- Completed July 2012

Contract/Delivery Method

- CM at Risk
- Design Assist





PARKING GARAGE

ABC II

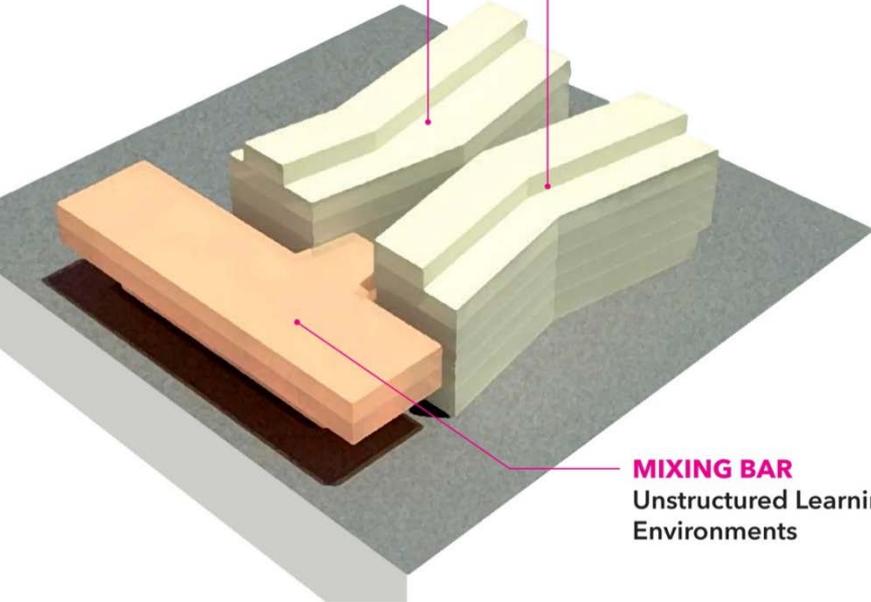
**UNDERGROUND
RESEARCH FACILITY**

HSEB

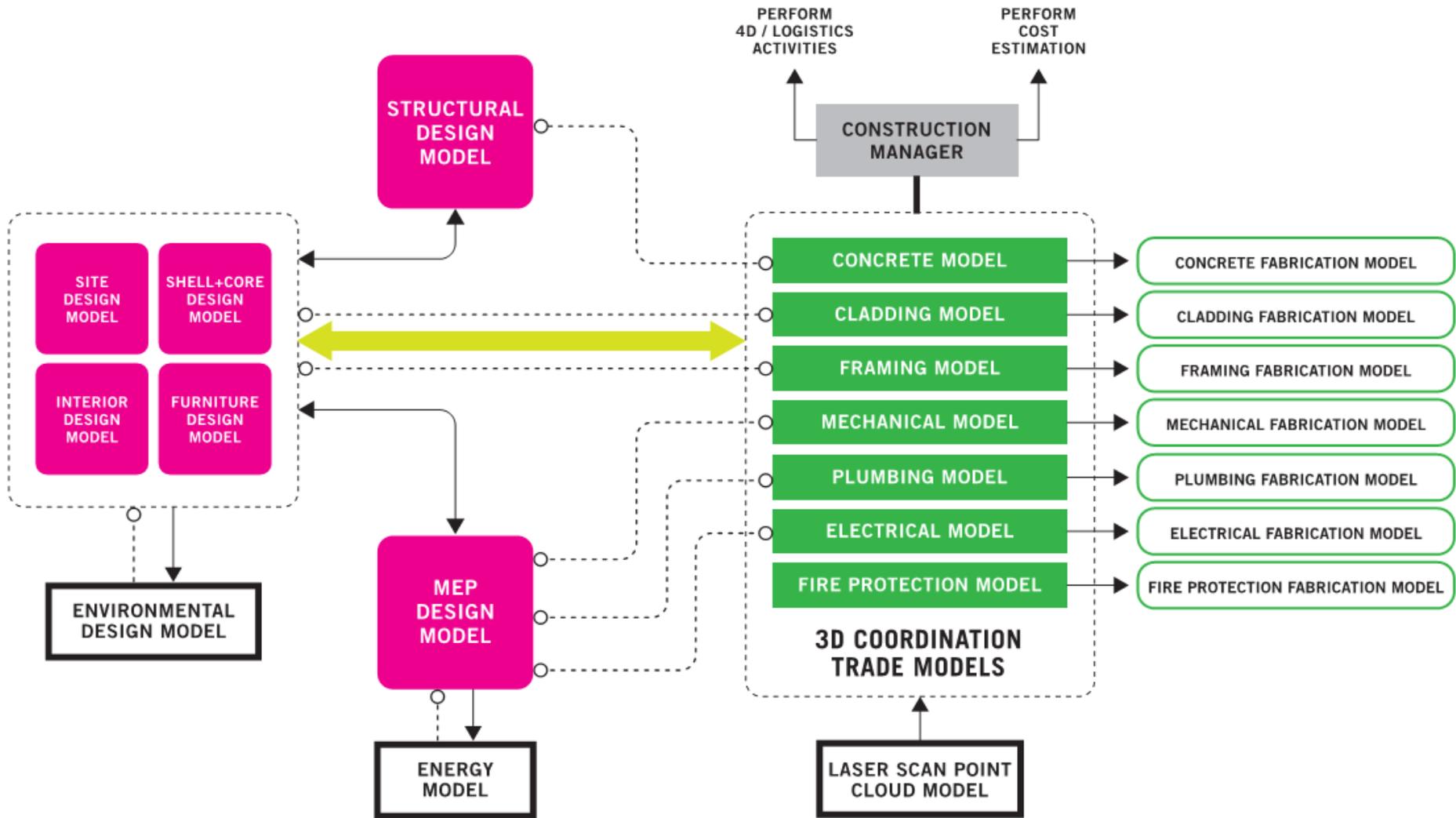
NORTH BAR
Structured Learning
Environments

SOUTH BAR
Structured Learning
Environments

MIXING BAR
Unstructured Learning
Environments



BIM Flow Diagram



→ Indicates Model Transfer
- - - ○ Indicates Model Feedback

2.

COPPER SKIN



Copper Skin Conceptual Studies

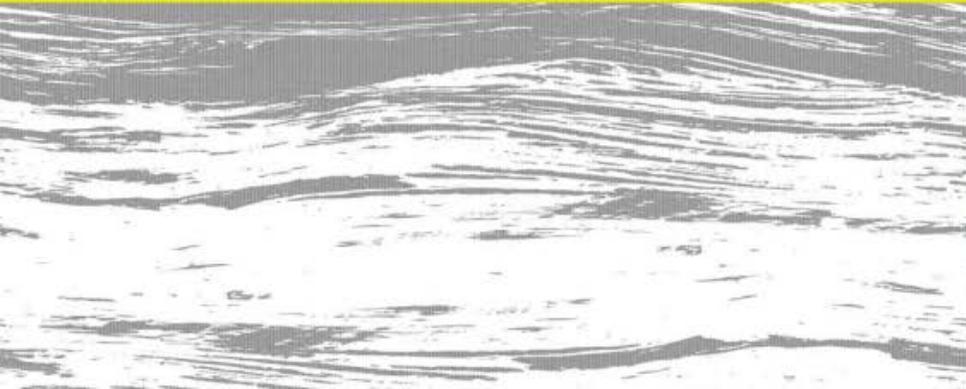
1. CANYON IMAGE



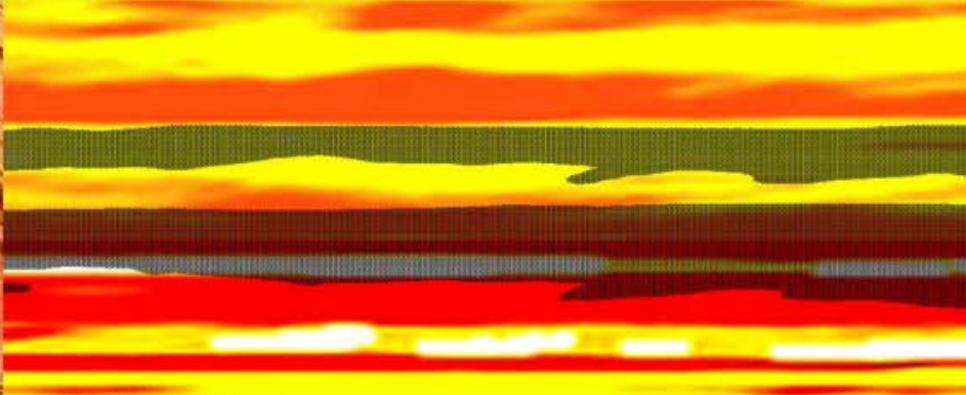
2. IMAGE DISTORTION



3. POSITIVE/NEGATIVE BITMAP



4. PANEL MAP – SOLID, VOID, PERFORATION



5. 2D PANEL MAP



6. ELEVATION STUDY



Copper Panel Mock Ups

1ST



2ND

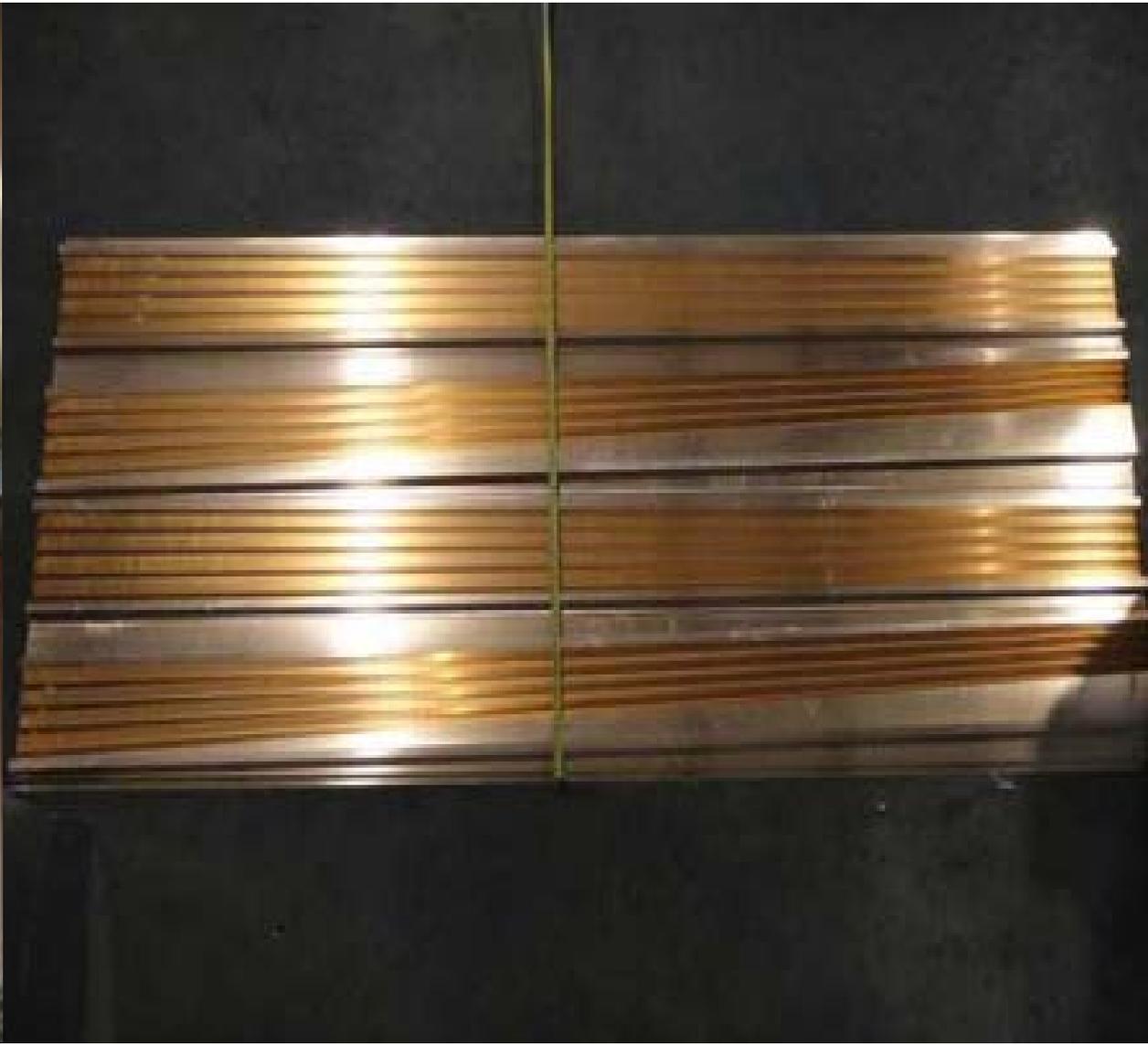


3RD



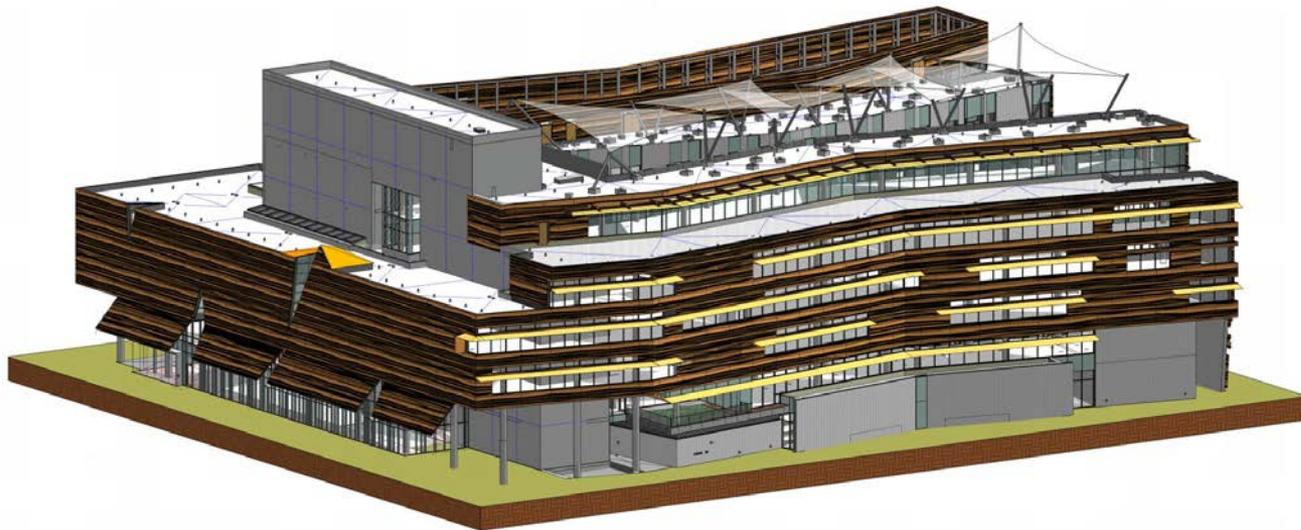
4TH



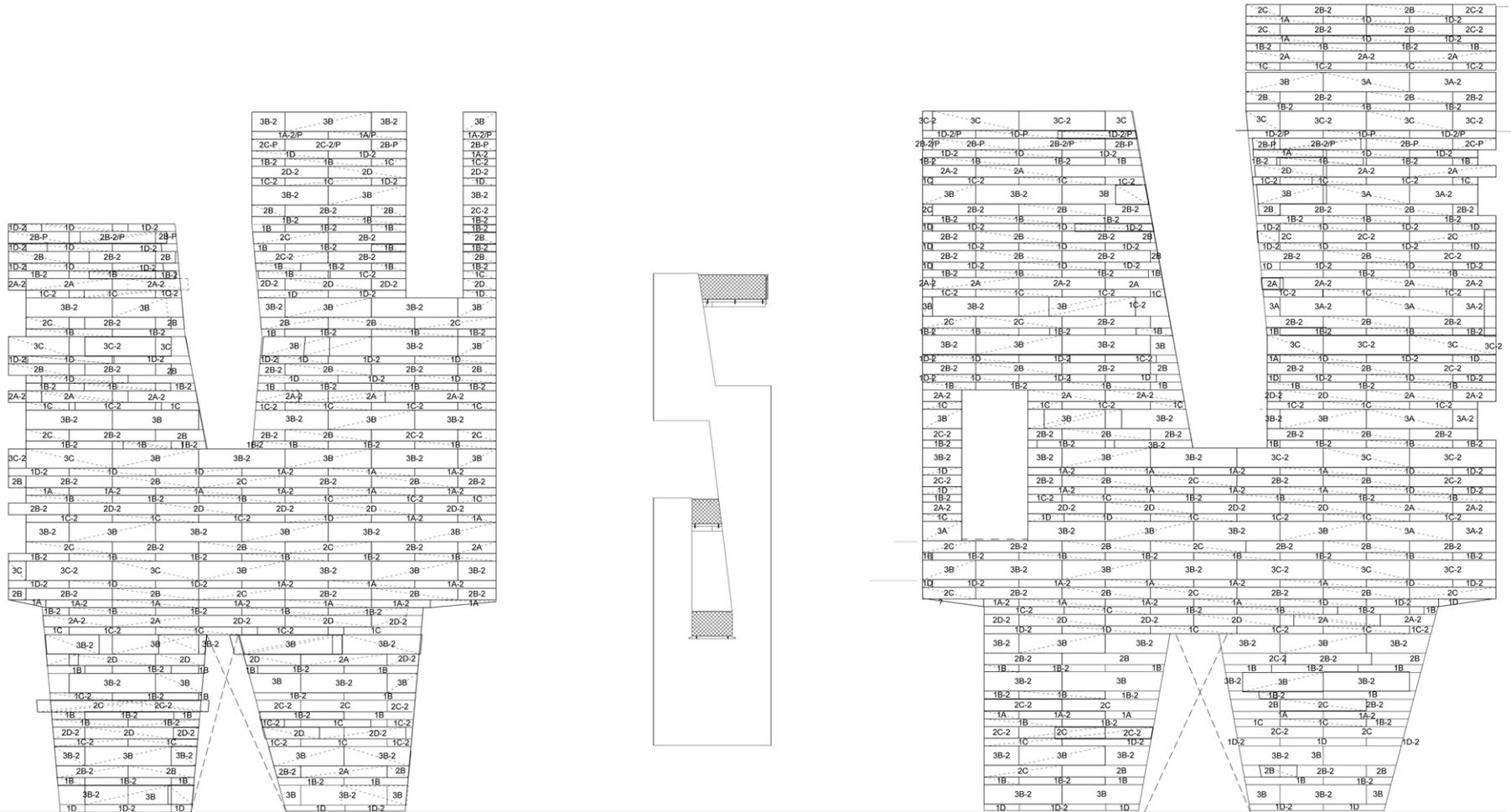




Model Panels



Document Panel Elevation





Building Form





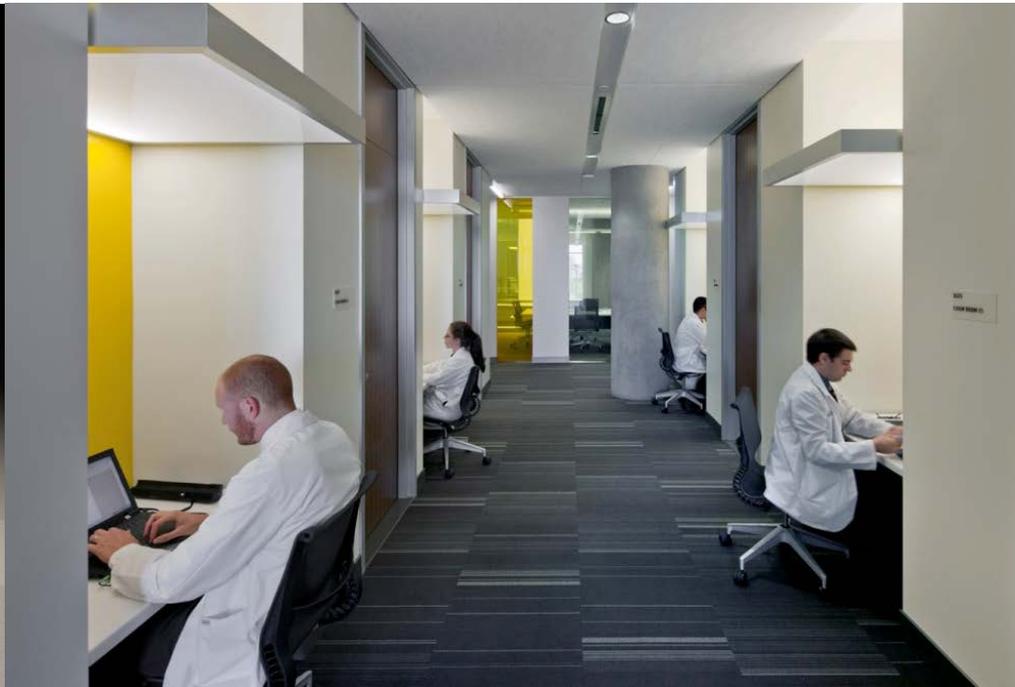
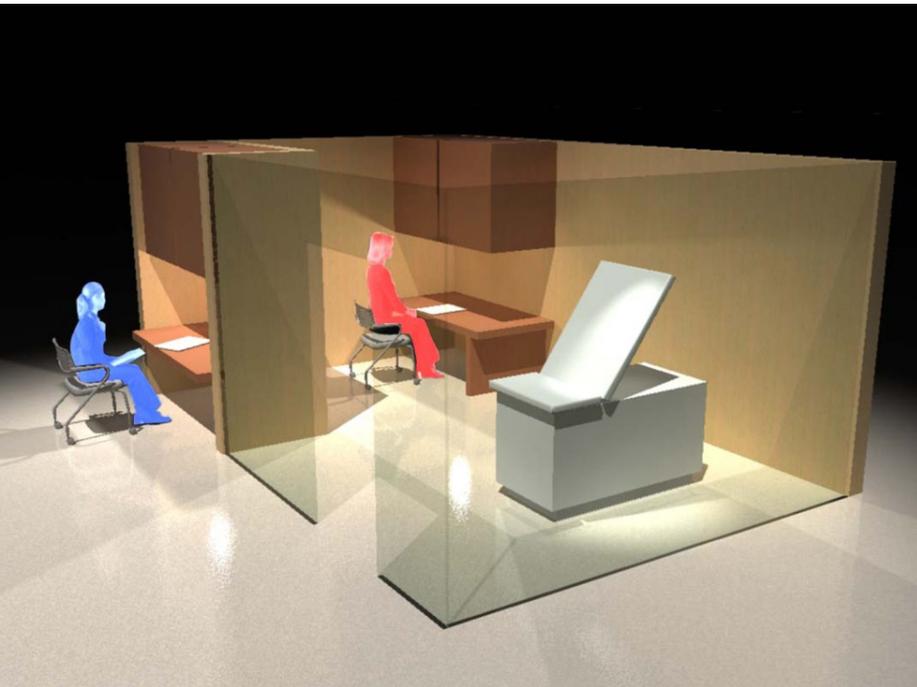
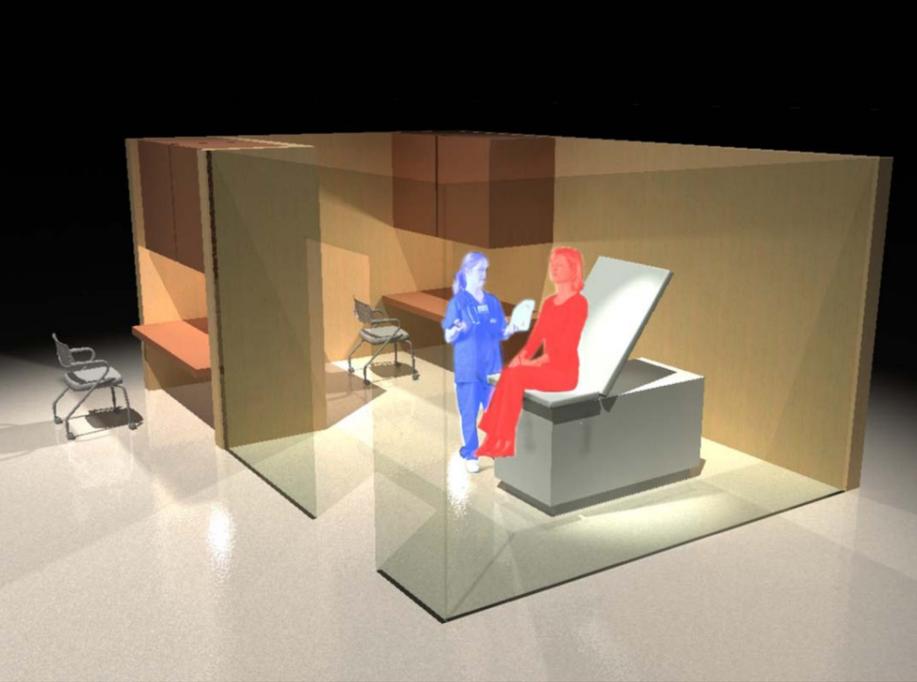
The final copper cladding cost was a 48% reduction over the schematic cost estimate, a result that was achieved through a series of intense work sessions, virtual and physical mock-ups, and weekly model exchanges.

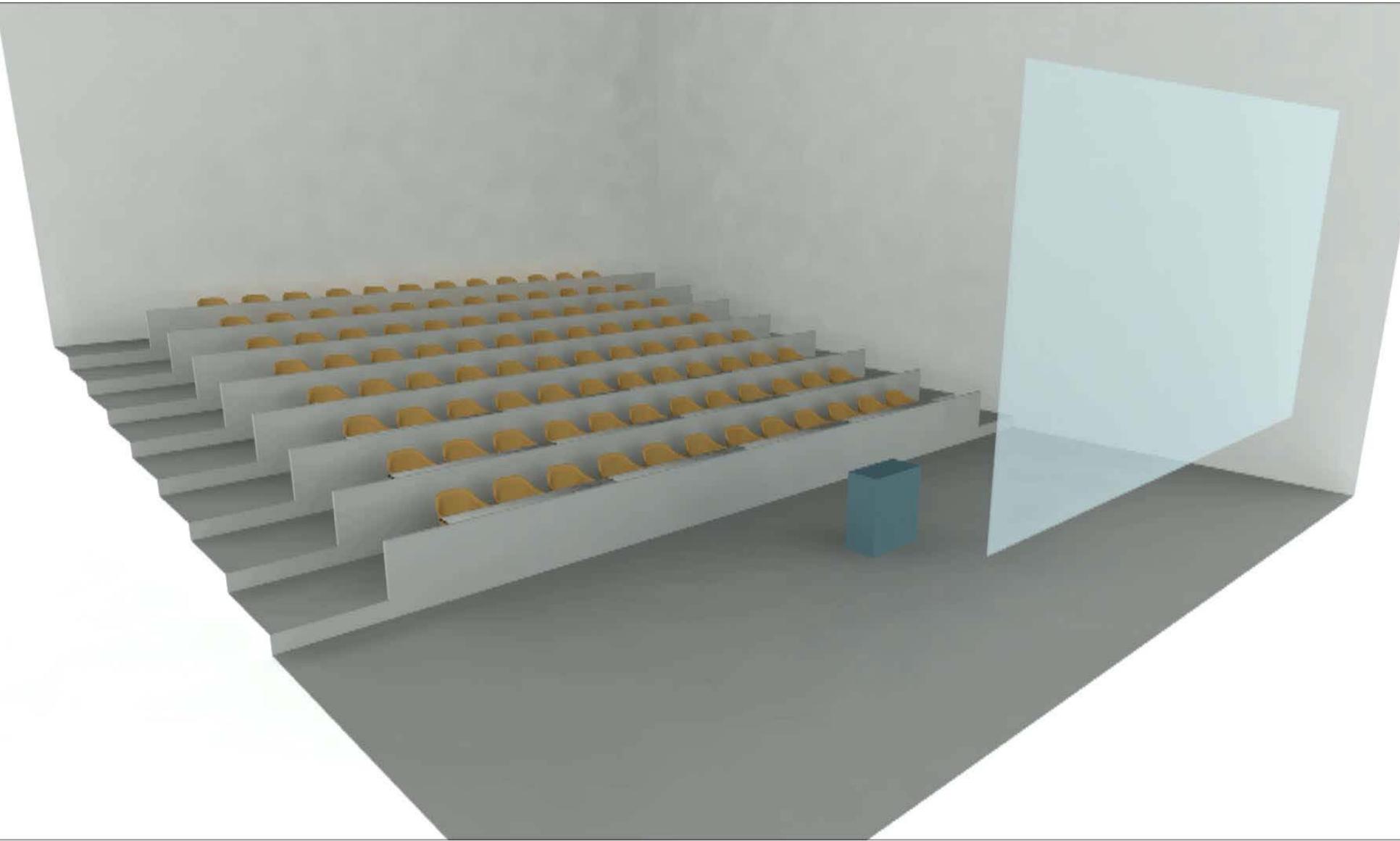


3.

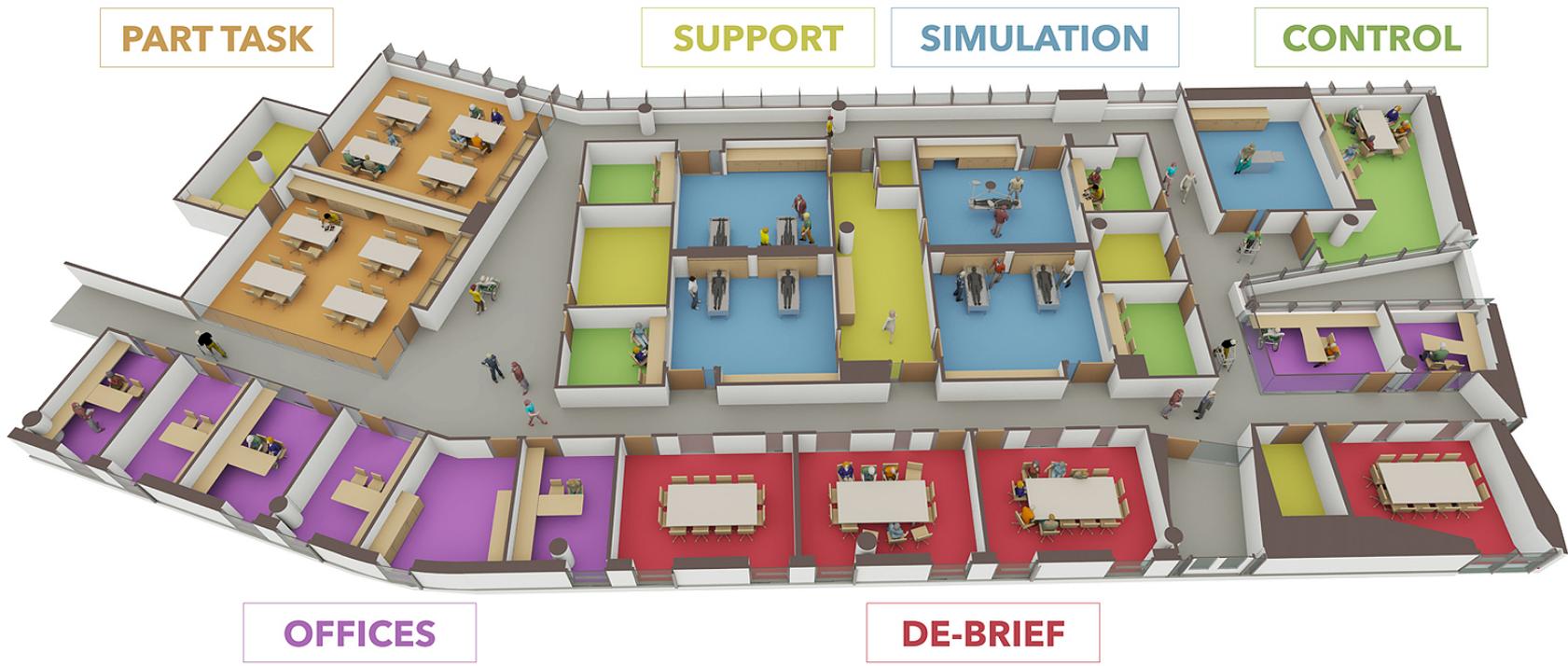
INTERACTIVE USER EXPERIENCE





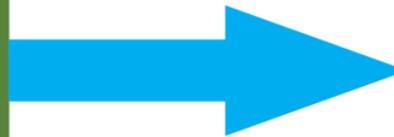






MEDICINE ONLY

644 ASF



INTERDISCIPLINARY

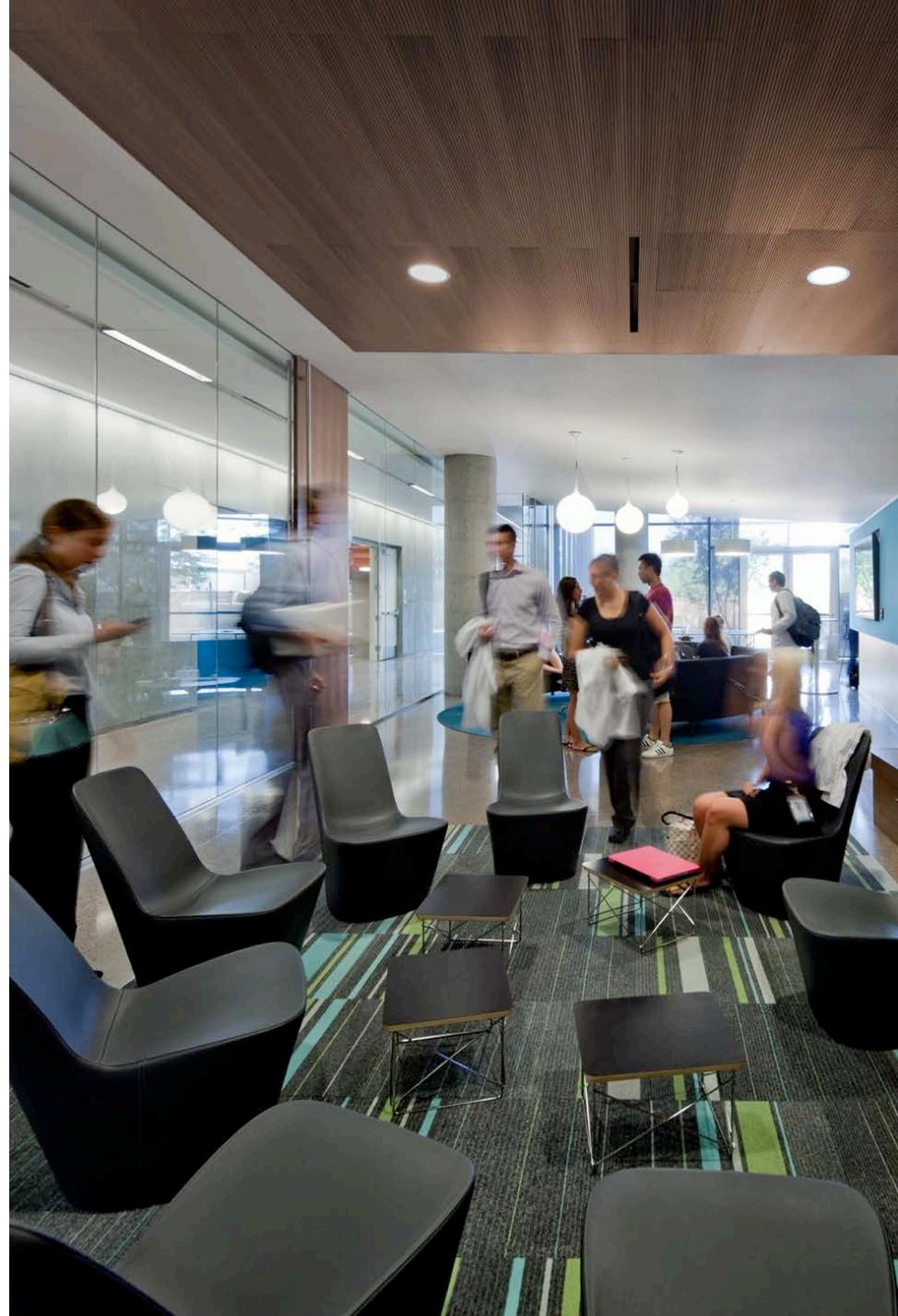
470 ASF



ASF PER STUDENT REDUCTION DUE TO SHARED SPACE

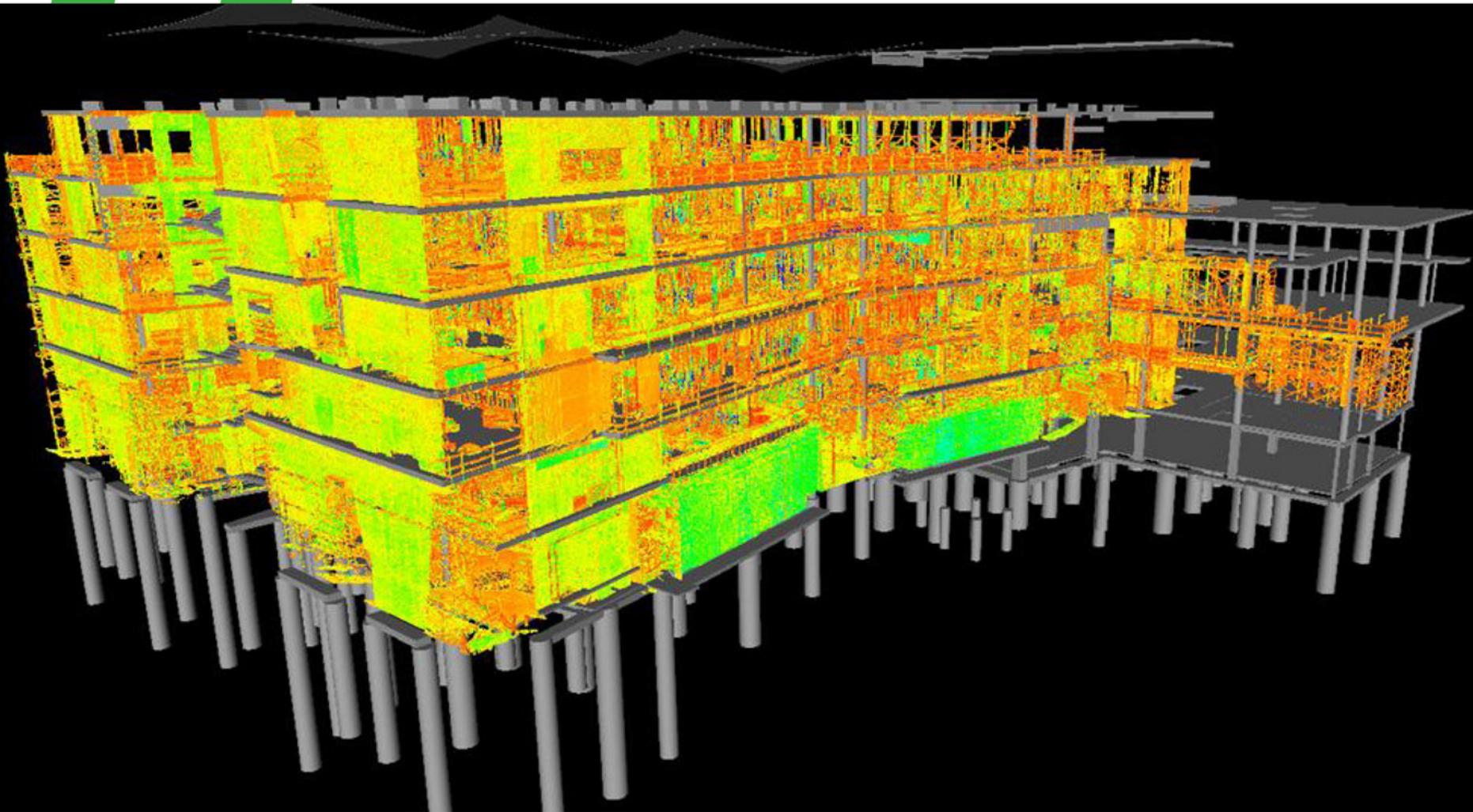
OWNER'S STATEMENT

The BIM design process expedited the programming process and resulted in the universities' ability to contribute to the building, which resulted in an overall reduction of program area. The BIM process for this project is a model for future projects we undertake.

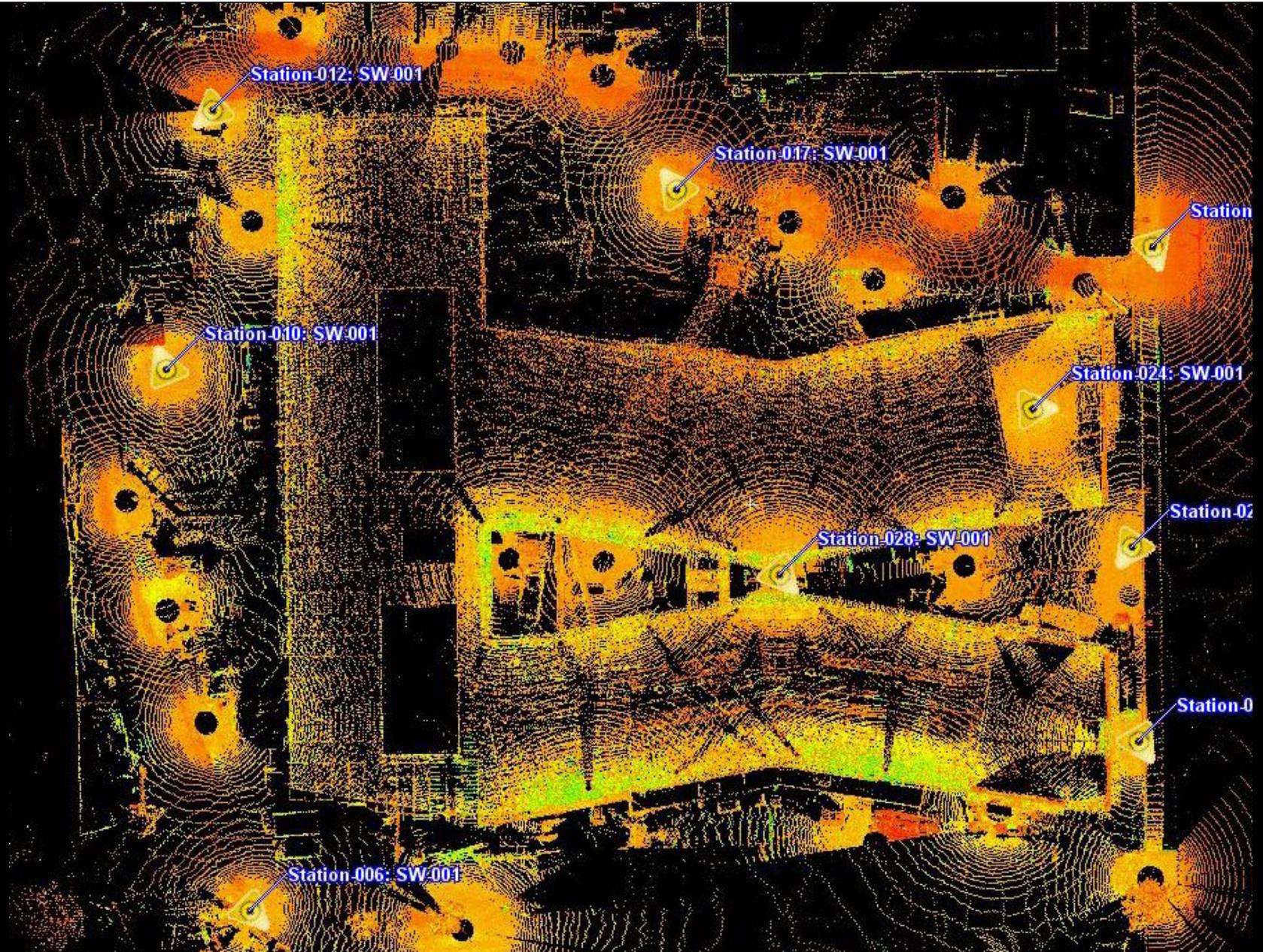


4

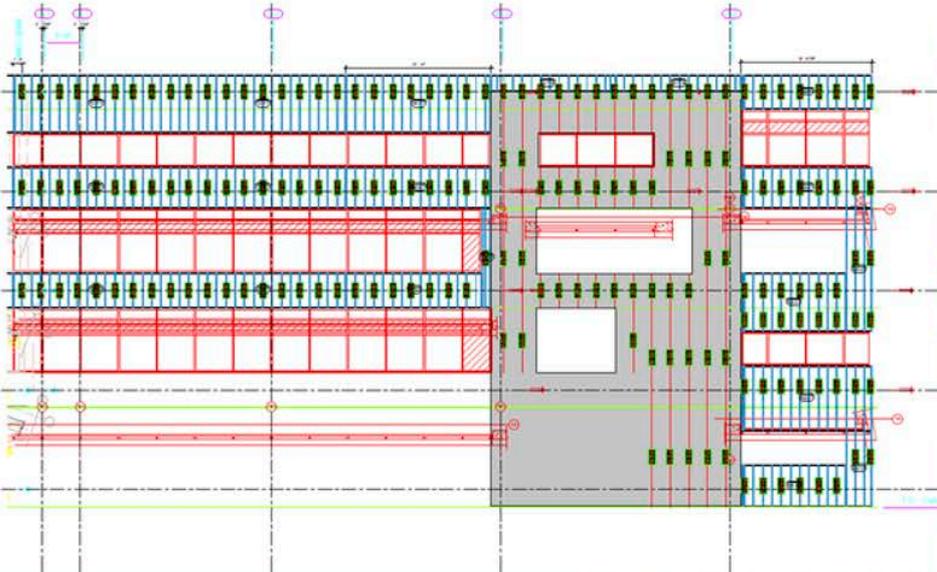
VERTICAL BIM INTEGRATION



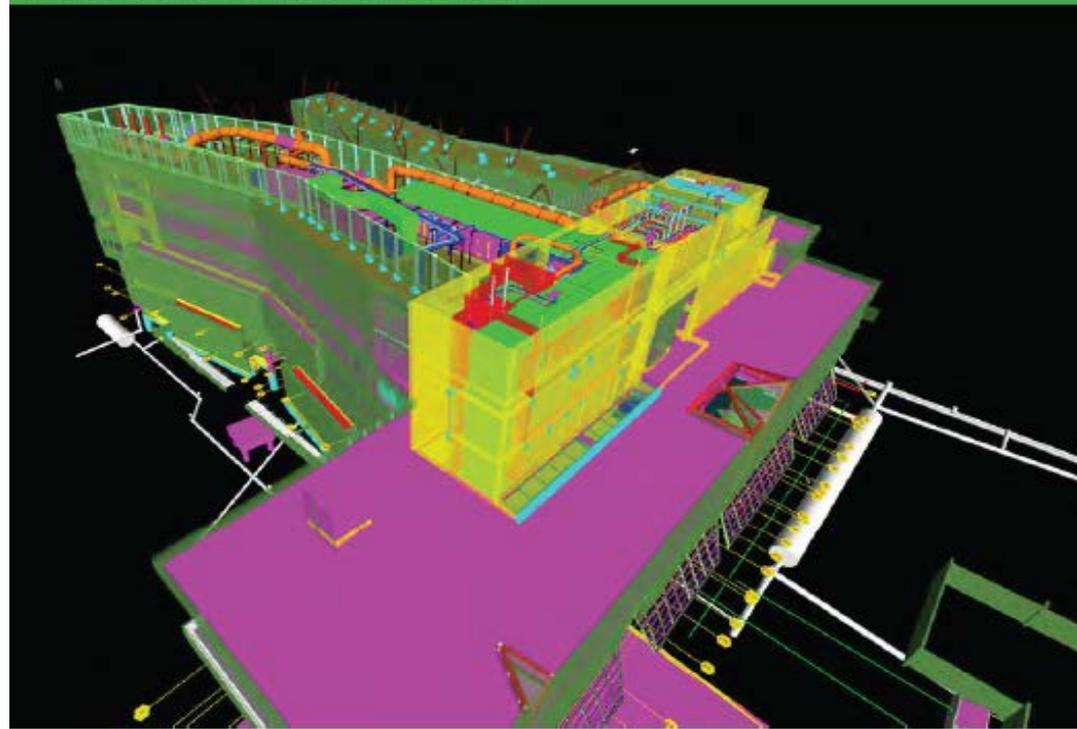
Slab Deck Edge Surface Extraction



Exterior Back-up Wall Prefab



EXTERIOR BACK-UP WALL ERECTION DRAWING AND INSTALLATION



- Freeing BIM from the ivory tower (trailer)
- Democratizing the 3D model



John A. Martin & Associates

Structural Engineer

AEI Engineers

MEP Engineer

Kaplan Gehring McCarroll Lighting

Lighting Engineer

JJR

Landscape Architect

Dibble Engineering

Civil Engineer

Transsolar

Climate Engineer

Professional Service Industries

Geotechnical Engineer

Rolf Jensen & Associates

Fire Protection/Code Consultant

Lerch Bates

Loading/Vertical Transportation
Consultant

The Sextant Group

Audiovisual Technology

Davis Langdon

Cost Estimator

Sundt Heavy Civil

Sundt Concrete

Sun Valley Masonry

Kovach Building Enclosures

Metal Cladding

KT Fabrication

Curtain Wall

University Mechanical

Cannon & Wendt Electric

DPR Drywall

Western States Fire Protection



CONTRACTOR'S STATEMENT

The most important advantage BIM delivered to the HSEB project was dramatic cost savings and schedule reduction. Construction contingency was drawn down only 25% for construction-related purposes, allowing the client to use the remaining contingency for program and equipment purchases they otherwise would not have been able to fund.

TWO UNIVERSITIES, TWO OWNERS, TWO ARCHITECTS, TWO CONTRACTORS:

HEALTH SCIENCES EDUCATION BUILDING – PHOENIX BIOMEDICAL CAMPUS



CO ARCHITECTS



YOU are the Jury!!

- CollinsWoerman + GLY Construction
Group Health Cooperative Puyallup Medical Center
- Fentress Architects / Mortenson Construction
Ralph L. Carr Colorado Judicial Center
- CO Architects
Phoenix Bio-medical Campus | Health Sciences Education Building

Thank You!

- Stephen Hagan, FAIA
- Brian Skripac, Assoc. AIA
 - Upcoming 2014 Chair of AIA TAP

JOIN US IN DENVER ON Wednesday, June 19 for
the 2013 BIM Awards Ceremony and Reception

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