



# ASPE BIM

2009-2013 | Bradley BIM Initiative

**1000 Revit Models | 3 Million Downloads** (2012)

Supporting Designers, Contractors & Owners

[www.bradleybim.com](http://www.bradleybim.com)




# ASPE BIM

## How BIM Changes Everything

### Where Are We Going Today?

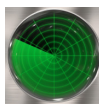
1. BIM Model Defined
2. BIM Process
3. BIM Team: Redefining the Project Team
4. BIM Project Deliverables
5. BIM Mandates
6. BIM Technologies
7. BIM Implementation
8. BIM Education
9. BIM Manufacturer Models
10. BIM Business Value

A photograph of a young child with brown hair, wearing a light green shirt, holding black binoculars to their eyes and looking towards the right. The background is a soft-focus green, suggesting an outdoor setting.

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### BIM Vocabulary - Process Awareness



1. Review the new building project delivery process that uses **Building Information Modeling (BIM)**
2. BIM uses an **Integrated Project Delivery (IPD)** process to save design & construction time, meet or reduce the construction budget and building's management costs.
3. How **Manufacturer Product BIM Models** are proven tools for to reduce a project's BIM modeling costs for architect, engineer & contractor.



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### Defining BIM --The Moving Target



- What's My BIM Deliverable?
- Level of Detail for Model?
- Which BIM Software is Used?
- Do we Embed or Link Building Information to a model?
- How Do We Collaborate?
- Who Defines (IPD) Roles?
- Who Benefits: Plan? Design? Construction? Manage?

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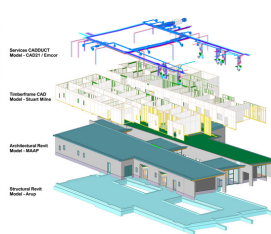
### Design Team: Who Uses BIM Process?

- Architects
- Interior Designers
- MEP Engineers
- Contractors
- Owners
- Manufacturer / Vendors

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### Disciplines Link Their BIM Models

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### BIM Mandates & Standards: USACE

In February 2011, Bradley BIM Library was submitted to US Army Corps of Engineers BIM Practice Group for Review

7-8 USACE District Offices Reviewed Bradley BIM Revit Library

Bradley BIM Revit Library Met & Exceeded Quality Expectations



US Army Corps of Engineers

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### BIM Mandates (Private/Public)

- Top 300 Giant Architectural Firms
- Top 300 Giant Engineering Firms
- Top 300 Giant Construction Firms
- Federal, State, GSA, VA, Texas, Ohio, Wisconsin, USACE



**BUILDING DESIGN + CONSTRUCTION**

**2012 Giants 300 Special Report**  
Ranking the leading firms in Architecture, Engineering, and Construction by R+D Spent

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### BIM Finally Starting to Pay Off for AEC Firms™

Is BIM paying off—through cost savings, higher quality, or client satisfaction? Here's what they told us.

#### 2012 Giants 300 Special Report

Ranking the leading firms in Architecture, Engineering, and Construction by 2011 Revenue

##### TOP 25 BIM ARCHITECTURE FIRMS

Rank	Firm	2011 BIM Revenue (\$)
1	HOK	388,217,341
2	HKS Architecture	307,990,000
3	Parsons	
4	Sidman, Orange & Merrill	
5	HKS	
6	Carroll Design	
7	Skidmore, OWing, Merrill	
8	KTHL Associates	
9	Hornum, Green and Associates	
10	ETP Architects & Engineering	
11	Corgan Associates	

##### TOP 25 BIM ENGINEERING FIRMS

Rank	Firm	2011 BIM Revenue (\$)
1	Jacobs	255,521,026
2	URS Corp.	225,330,000
3	Stantec	
4	SSS&C Group	
5	Science Applications International Corp.	
6	Thomson	
7	AMEC	
8	Burns & McDonnell	
9	AMEC Engineering Consultants	
10	Bent, Ross & Wilson Consulting Engineers	
11	HKS Architecture & Engineers	

##### TOP 25 BIM CONSTRUCTION FIRMS

Rank	Firm	2011 BIM Revenue (\$)
1	Turner Corporation, The	5,438,100,812
2	URS Corp.	4,163,000,000
3	Hensel Phelps Construction	2,235,000,000
4	Skidmore	2,222,000,000
5	Balfour Beatty US	2,079,770,537
6	McCarthy Holdings	1,897,000,000
7	Heery Construction	1,851,000,000
8	Skidmore Tunnel Construction Co., The	1,282,424,919
9	Land Lease	1,284,176,151
10	Holman Corp.	1,165,887,387
11	Parsons	1,128,414,526

**BUILDING DESIGN + CONSTRUCTION**


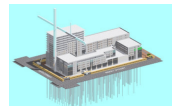
## ASPE BIM


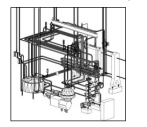

### Mandate Trend: Projects Awarded to Successful BIM Teams

- Architects
- Interior Designers
- MEP Engineers
- Contractors
- Owners
- Manufacturer / Vendors



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### BIM Authoring Software

- Autodesk | Revit (Leader in US Market)
- Graphisoft | ArchiCAD
- Nemetschek | Vectorworks
- Bentley | Microstation

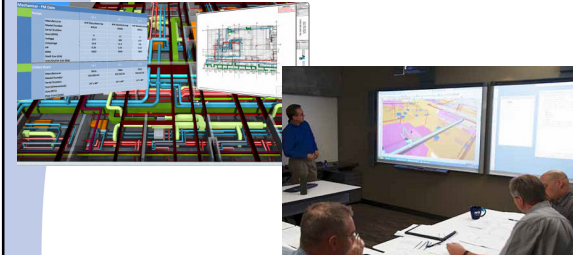
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### BIM Technology

- BIM Software (SaS) & Projects Working in the "Cloud"
- 64-bit OS and BIM Software w/16-24GB RAM
- Multi-Disciplined BIM Software w/Building Manufacturer BIM Models - Cut Costs: Time + Labor
- Pre-built Revit Manufacturer Models Expanding to Serve LT Users\Single-Source BIM Suites

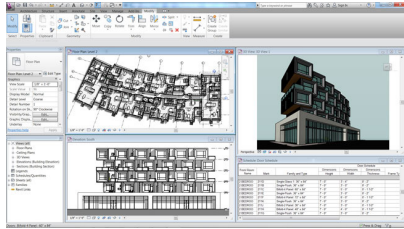
## ASPE BIM

### BIM Simultaneous File Access



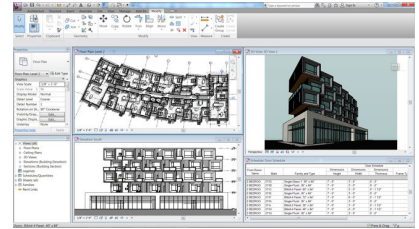
**ASPE BIM**

**BIM Project File – Multiple Views**



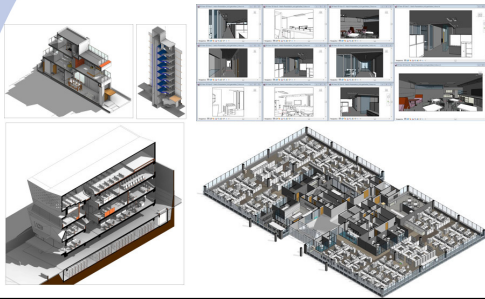
**ASPE BIM**

**BIM Project File – Multiple Users**



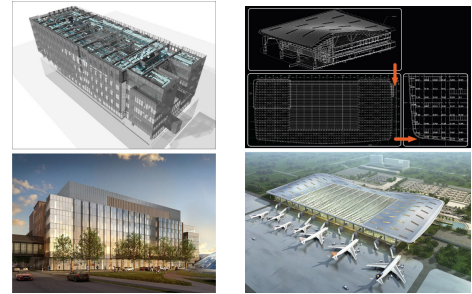
**ASPE BIM**

**BIM Live 3D Sections & Views**



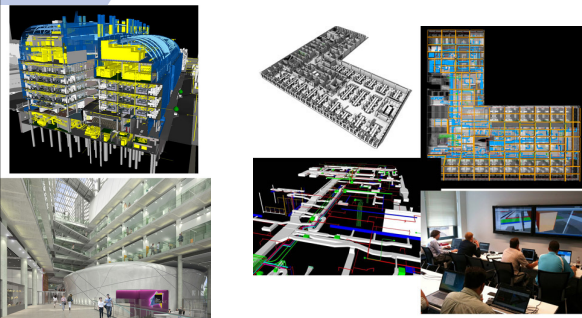
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**BIM Model Integrates w/Structural Analysis**



**ASPE BIM**

**BIM MEP Model Coordination & Analysis**

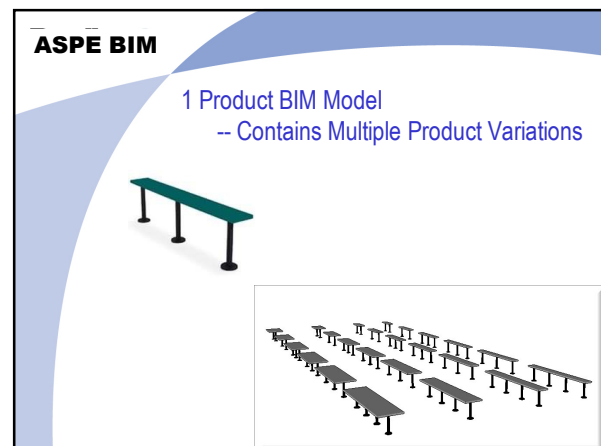
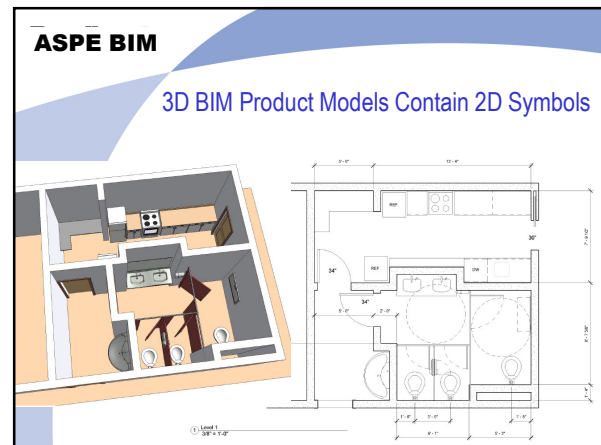
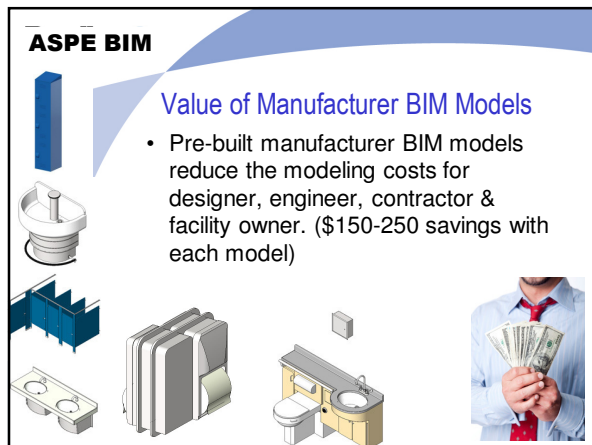
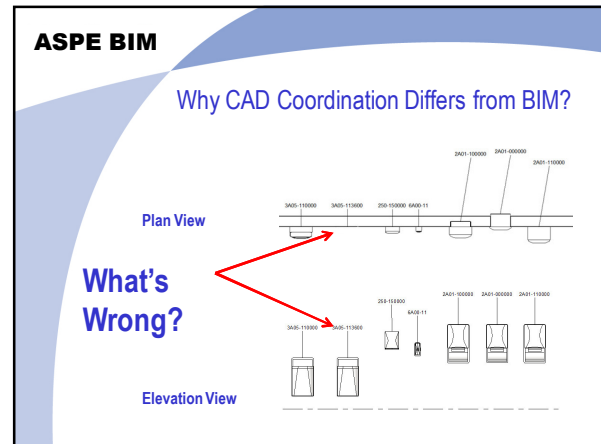


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**BIM 3D Site Model Integrates w/Facility**

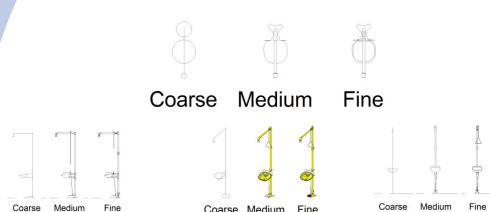






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1 Product BIM Model Contains  
-- Level Of Detail (LOD) for All Views & Scales



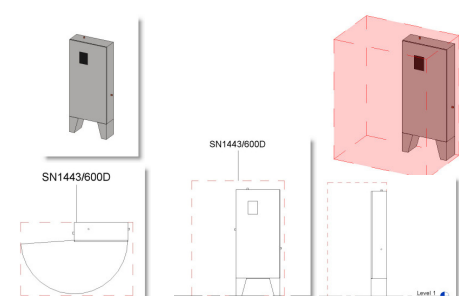
Coarse Medium Fine

Coarse Medium Fine

Coarse Medium Fine

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Clearance Box Defines Access & ADA & Maintenance Clearances



SN1443/600D

SN1443/600D

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BIM Models Contain Material Definitions



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2012 McGraw-Hill SmartMarket BIM Adoption Reports  
71% Architects – 74% Construction General Contractors  
Download Reports from [BradleyBIM.com](http://BradleyBIM.com)



SmartMarket Report

SmartMarket Report

The Business Value of BIM in North America  
Multi-Year Trend Analysis and User Ratings (2007-2012)

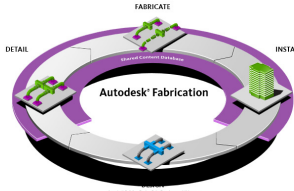
Prefabrication and Modularization:  
Streamlining Productivity in Your Construction Industry

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BIM Engineering Process  
Design > Simulation > Fabrication > Construction  
> As-Built

We recognize the value of BIM downstream and into fabrication and for that we are using Revit MEP to take our design model and the intelligent information within, and output to FABmep which we see as the standard in the UK for ductwork and pipework. By doing this we can improve our own internal work-flows and also be more prepared to meet the exact needs of our clients and extended design team

—Gary Ross  
Associate Director  
BIM Innovation  
Capita Symonds



FABRICATE

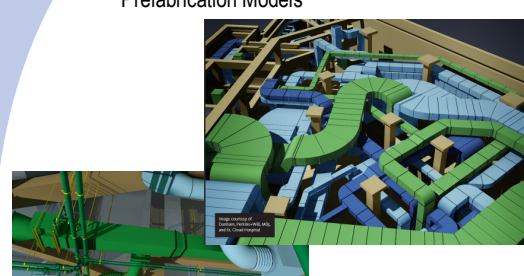
INSTALL

DETAIL

Autodesk® Fabrication

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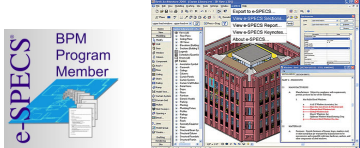
BIM Engineering  
Manufacturer BIM Models to Create  
Prefabrication Models



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### BIM Auto-Writes Construction Specifications

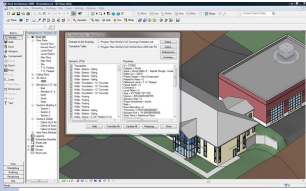
- **e-SPECS:** BIM Facility model helps writes the project's construction specifications based on the manufacturer product BIM models.
- **E-SPECS:** MasterSpec, DoD SpecsIntact, Revit & ArchiCAD
- **BSD SpecLinks / LinkMan**



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### BIM Cost Estimating Technologies

**WINEST®**



50%-80% of cost estimating is spent on **quantification**.

Immediate availability of **area, volume, quantity takeoffs**.

**Quantities are accurate and will remain current with the model.**

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### Simple Discipline Coordination

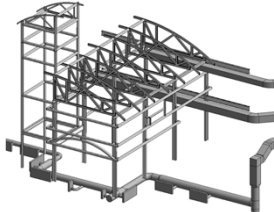


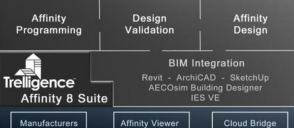
Image Source: Excel Engineering, Inc., Fond du Lac, WI

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### Programming & Conceptual Design

#### Trelligence Affinity for Revit

**Trelligence**  
Architectural Programming and Schematic Design

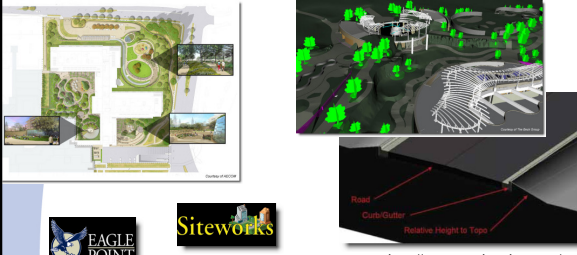


http://www.trelligence.com/

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### Site Design With Civil Design

#### Siteworks for Revit

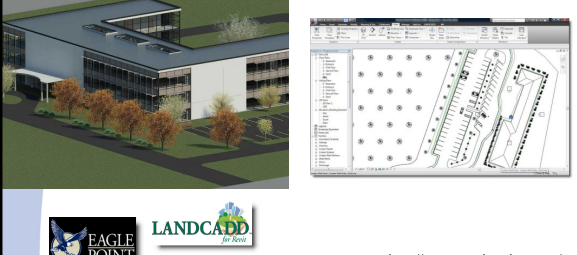


http://www.eaglepoint.com/

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### Landscape Architecture & Site Assets


#### LandCADD for Revit



http://www.eaglepoint.com/

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Laser Scanning (point cloud) + BIM

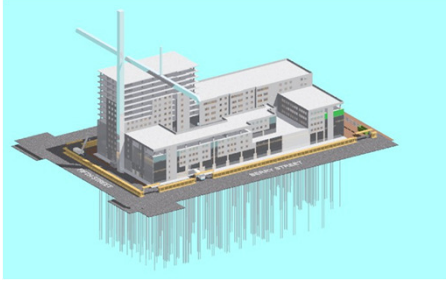


Hybrid BIM

Image Source: Excel Engineering, Inc., Fond du Lac, WI

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Simulate Construction Phasing



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Construction Phase: Sequencing Trades

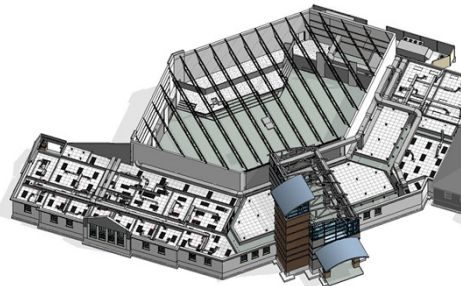
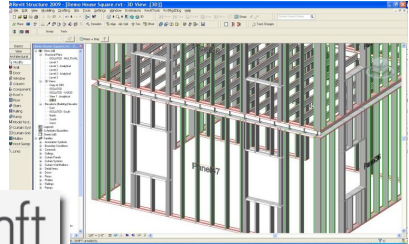


Image Source: Excel Engineering, Inc., Fond du Lac, WI

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BIM for Construction: Prefabrication  
\* StructSoft Light Gauge Framing for Revit



**StrucSoft**  
SOLUTIONS

<http://www.strucsoftsolutions.com/>

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BIM for Construction – Onsite Portable BIM Lab

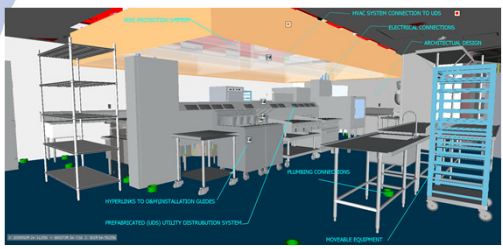


**BIM for Construction**  
As-Built BIM Models are created onsite daily and turned over to the owner at the end of the project.

Images Courtesy of Turner Construction

**ASPE BIM**

BIM for Construction – Trade Coordination

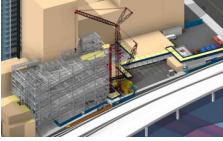


Images Courtesy of Turner Construction



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**BIM for Construction – Jobsite Safety**



**New York City Department of Buildings Approves First 3-D BIM Site Safety Plans**  
Images Courtesy of Turner Construction

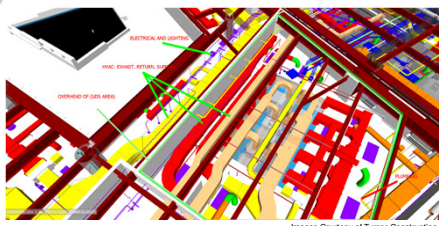
**Fort Benning Hospital – Installing Duct Hanger Inserts**

The GPS \ BIM-enabled process, empowers a crew of 3 workers to install (From top of metal deck and walking with no ladder needed–Safer) to install 750 hanger inserts/day.

Previously, one worker could install approximately 20 holes a day.

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**Navisworks | Neutral BIM Viewer Software**




**BIM for Construction**  
Navisworks is neutral BIM viewer that allows contractors to view BIM models from several BIM authoring software vendors.

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**Data Toolsets for Embedded BIM Data**


1. **RevitExpressTools.com**
2. **Revit Family Processor** - Single or Batch Update Parameter Editor
3. **Revit Excel Link** | Bi-directional Parameter Edits via Revit & Excel
4. **WaterMark for Revit Families**
5. **Excel2Revit – DotSoft.com** | Spreadsheet linking to Revit – Edit Content in Excel



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**BIM Project Clouds – Promising Benefits**

1. **Centralized & Complete Web Project Storage**
2. **Access Project Files Anywhere | Anytime**
3. **Real-time Access Project Files - Any Device**
4. **Infinite Computing: Big Files, Rendering**
5. **Permission-based, user activities traceable**



**AUTODESK 360**

**Advance 2000**  
Your productivity. Optimized.

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**CSI – BIM Practice Group**

**Located on CSINET.org**  
Home > Communities > Practice Groups > **BIM**

**BIM Practice Group**




**CSI BIM Practice Group**



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**AGC – Construction Management | BIM**



**4 Classes In Course**

- #1: Cultural & Mindset
- #2: Technology – Workflow Processes
- #3: Legal – Contractual BIM: ConsensusDocs
- #4: Implementation - Practice

**Industry Instructors:**

- Architects, Engineers, Contractors, Lawyers

**Post Class Exam & Certification**

