

BIM: Present and Future Virtual Technology for Higher Education

April 2015



**Lend Lease**

1. Introduction – What is BIM? Who is Lend Lease?
 - *Damon Ranieri, BIM Integration Manager – LL*
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BIM

“Building Information Model is a digital representation of **physical and functional characteristics** of a facility. As such, it serves as a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life cycle from inception onward.

-Whole Building Design Guide, <http://www.wbdg.org/bim/bim.php>

by Dana K. (Deke) Smith, FAIA - Executive Director, buildingSMART alliance, and Alan Edgar, Chair -National BIM Standard Project Committee

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- Community Colleges are faced with limited capital, but are challenged with deferred maintenance and potential renovation obstacles
- New HVAC & technology systems & equipment = more stuff above the ceiling

**Address
design &
construction
challenges
with BIM &
Virtual
Technology**

- New BAS systems require more sophisticated skills from Building Maintenance
- Need for electronic management of as-builts, product data and warranty information once an asset is turned over for operations
- FM use of an electronic database for asset tagging and asset harvesting.

**BIM & Virtual
technology
will help
facilities
management
operate the
building**

Introduction – Who is Lend Lease?



PRESENCE IN CHICAGO FOR OVER 35 YEARS

Albert Einstein
College of Medicine • Alfred
State College • Allen University • Appalachian
University • Arizona State University Polytechnic • Atlanta Junior College •
Street College of Education • Barber Scotia College • Barnard College • Bloomsburg University • Brooklyn
• **ACADEMIC** • Buffalo State College • California State University East Bay • California State University Northridge •
University • Catholic University • Central Piedmont Community College • Cerritos College • City College of San Francisco • The
Clafin University • Clark College • Clarkson University • Clayton Junior College • College of Charleston • College of William & Mary •
LIBRARIES • Columbus State University • Cornell University • County College of Morris • Delta State University • Duke University • Duke
• East Carolina University • East Stroudsburg University • El Camino Community College District • Elon University • Emory University •
Erie Community College • Florida International University • Gallaudet University • George Washington University • **PERFORMING ARTS** •
Georgia Southern University • Georgia State University • Georgia Tech • Grambley State University • Harding University • Hartwick College •
College • Holyoke Community College • Indiana University of Pennsylvania • Illinois Institute of Technology • Institute for Advanced Study • James
Madison University • John Jay
College • Johns Hopkins University • Lafayette College • Le Cordon Bleu College of Culinary Arts • Lehman College * Lock Haven University • Long Beach Community College
District • Long Island University • Los Angeles City College • Los Rios Community College • Loyola University of Chicago • Manhattan College • Manhattan School of Music
• **MEDICAL** • Marietta Cobb City Junior College • Mars Hill College • Massachusetts Institute of Technology • Mercer University • Meredith College • Middle Tennessee
State University • **FOOD SERVICE** • Middlesex County College • Montclair State University • Montgomery College Germantown • Montgomery College Silver Spring •
Mt. San Antonio College • New York City Technical College • New York College of Osteopathic Medicine • New York University • North Carolina State University • The
Ohio State University • Old Dominion University • Onondaga Community College • Pace University • Paducah Junior College • Peralta Community College District •
Pfeiffer College • Philadelphia College of Osteopathic Medicine Philadelphia • **RESEARCH** • Philadelphia College of Osteopathic Medicine Suwanee • Pratt Institute
• Princeton University • Queens College • Rensselaer Polytechnic Institute • Richard Stockton College of New Jersey Egg Harbor • Richard Stockton College of
New Jersey Pomano • Rockefeller University • Rowan University • Rutgers University • **RESIDENCE HALLS** • Salisbury State University • Shaw University • St.
Andrews Presbyterian College • St. John's College • Stanford University • State University College of Agriculture and Technology Morrisville • State University
College of Environmental Science and Forestry at Syracuse • State University of New York Alfred • State University of New York Albany • State University of New
York Binghamton • State University of New York Buffalo • State University of New York Canton • State University of New York Fredonia • State University of
New York Geneseo • State University of New York Plattsburg • State University of New York Brockport • **SPORTS** • State University of New York
Institute of Technology Utica • Swarthmore College • Syracuse University • The Thomas Jefferson School of Law • Trinity College • U.S. Military
Academy • U.S. Naval Academy • University of Alabama • University of California Davis • University of California Los Angeles • University of
California Irvine • University of California San Francisco • University of Chicago • University of Cincinnati • University of Delaware • University
of Florida • University of Georgia • University of Houston • University of Kentucky • University of Maryland Adelphi • University
of Maryland Baltimore • University of Maryland Princess Anne • University of Miami • **STUDENT CENTERS** • University
of Minnesota • University of North Carolina Chapel Hill • University of North Carolina Greensboro • University of
North Carolina Wilmington • University of North Carolina Winston-Salem • University of Pennsylvania
• University of Scranton • University of South Carolina • University of South Florida • University of
Southern Maine • University of Tennessee • University of West
• University of Virginia • University
of
Georgia
Washington
Polytechnical
SCHOOLS
University
Medical

NATIONAL PRESENCE

Our work totals in excess of \$8.4 Billion
and approximately 30 Million square feet.

State
Bank
Polytechnic
Campbell
Citadel •

Columbia University •
University Medical Center
Empire State College •
Georgetown University •
Harvard University • Haverford

300
HIGHER
EDUCATION
PROJECTS

29
STATES AND
DISTRICT OF
COLUMBIA

Case Study – Community College of San Francisco, Chinatown North Beach Campus



Completion

2012

Client

City College of San Francisco

Construction Value

\$104 Million

Building Size

Main – 157,000 sf

Annex – 30,000 sf

Assignment

Construction Management @ Risk – GMP

Architects

EHDD, San Francisco

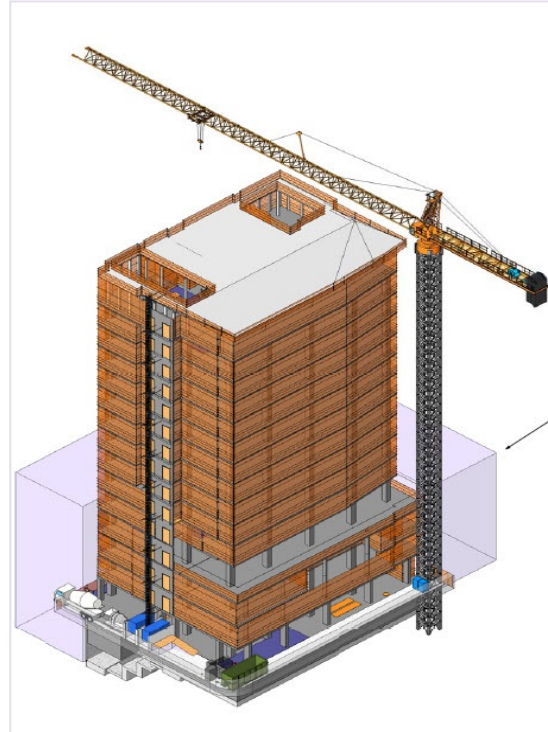
Barcelon and Jang



Case Study

BIM on CCSF

- Extensive **BIM tools** used to:
 - ✓ Plan construction logistics
 - ✓ Ensure constructability
 - ✓ Coordinate design and construction issues
 - ✓ Manage through site access, street closures, materials deliveries, safety systems, and construction
- Lend Lease's 3D documents became a facilities-management tool for maintenance and building operations after construction



Revit Model



Case Study

Live Model Demonstration



The screenshot shows a 3D BIM model of a mechanical room, likely a chiller plant, rendered in a blue and green color scheme. The model includes various components such as pipes, pumps, and chillers. A navigation menu is overlaid on the left side of the model, titled "Macromedia Flash Player 7". The menu lists several options: "Submittals", "Diagrams", "Specifications", "Cx Testing Plan", "Preventative Maintenance", and "Vendor Website". The menu also displays the project name "Shire B200 HGT" and the company logo "Bovis Lend Lease Centrifugal Chillers".

Macromedia Flash Player 7

Bovis
Lend Lease

Centrifugal Chillers

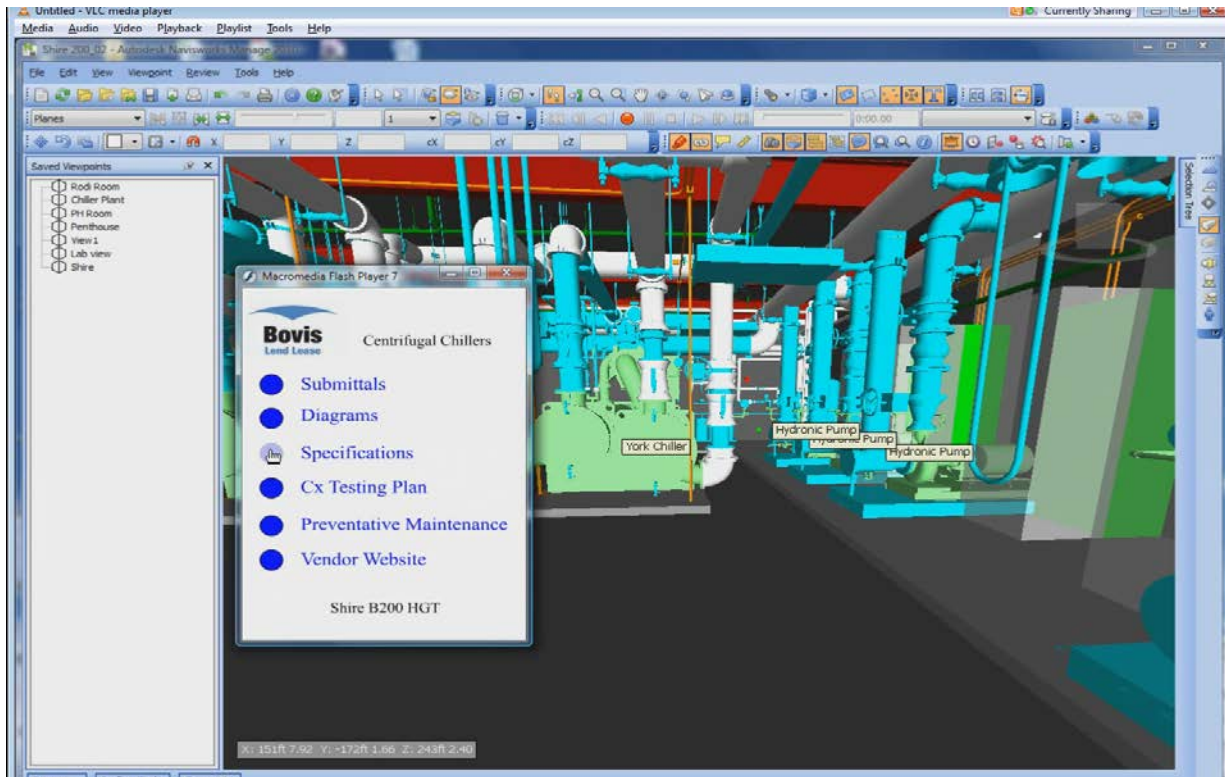
- Submittals
- Diagrams
- Specifications
- Cx Testing Plan
- Preventative Maintenance
- Vendor Website

Shire B200 HGT

Labels in the model: York Chiller, Hydraulic Pump, Hydraulic Pump, Hydraulic Pump

Coordinates: X: 151R 7.92 Y: -172R 1.66 Z: 243R 2.40

Contractors Have Accurate As-built Equipment Info... Use It!

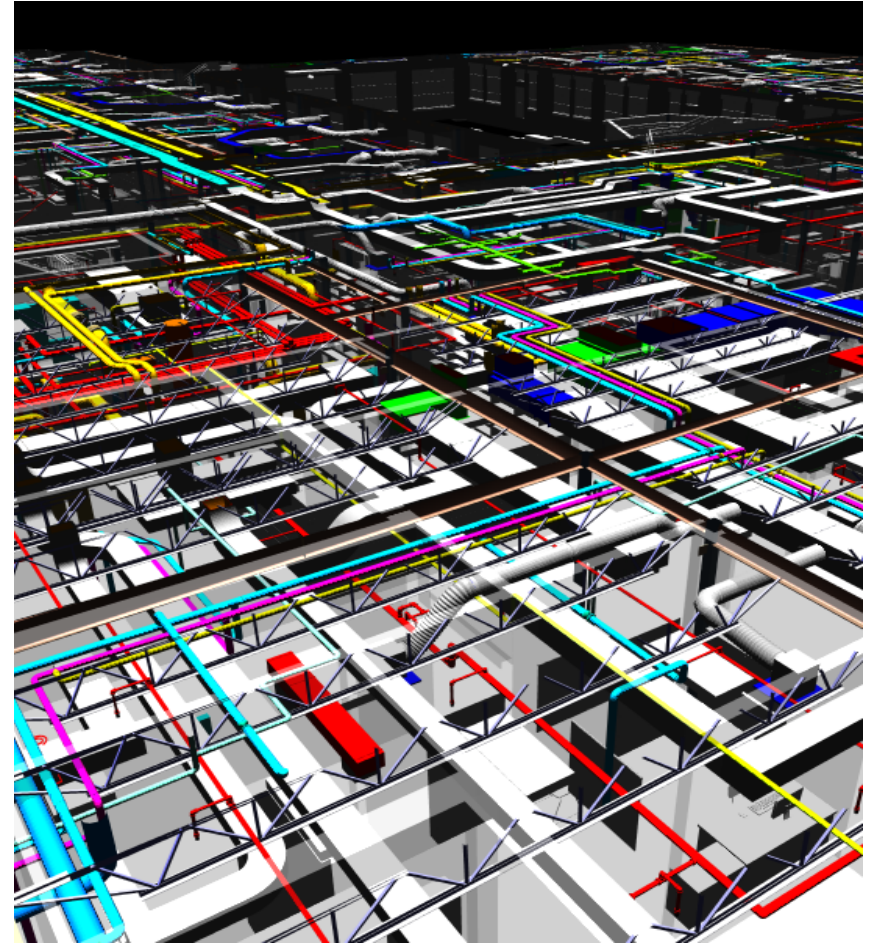


Added Value:

- Time Savings
- Cost Savings
- New Personnel Training
- Visualization & Improved Decision Making

BIM and Benefits to Owners, Architects, Contractors

- Build Twice: once virtually, once physically – and pay once
- Free Value Engineering “gimmies”
- Cuts Down on “Oops” Field Situations
- More Efficient Facility Management



Higher Education Projects for the Future



- Include BIM requirements in RFPs for Architects/Engineers at a minimum for multi-discipline collaboration at design phase
- Include BIM requirements in RFPs for Construction Managers / General Contractors at a minimum for clash detection of MEPFP systems
- Engage Facility Management and discuss future utilization of 3D models for building operations



Thank You

