

# An Owner's Use of BIM/VDC

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# Crate&Barrel

## *Company Information*

- Founded in 1962
- Headquartered in Northbrook, IL
- 145 Stores
- \$1.4 Billion Annual Sales
- 7,000 Employees
- Retailers of Housewares & Furniture
- Emphasis on People, Product and Presentation



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*Times are changing...fast*

- Our rents are increasing
- Our allowances are decreasing
- Construction cost are increasing
- We are getting “kicked out” of malls
- New deals have dropped 30%
- Our growth is through new stores
- Our maximum development is 9-10 stores per year.



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*And we raise the bar...*

- We don't use prototypes
- Complex articulation in plan and elevation
- Neo-Modernist approach to design and detailing
- Difficult materials to source
- High sensitivity to delivered facility
- End users have powerful voices.



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*And we raise the bar a bit higher...*

- 34,000 SF, Two Stories
- Steel Frames
- 5-6 Exterior Materials
- 7-8 Interior Materials
- Exterior to Interior Alignment
- All Track Lighting
- Complex Lighting Controls
- We never turn on the heat...
- Complex HVAC Controls
- Security, Data, the Bridal Registry....



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*Even higher...*

- Projects cannot open between November 15 and March 15.
  - Focus on selling
  - No staff
- Opening dates cannot slide
  - Lost sales (\$1 Million/month)
  - Storage of merchandise
  - Salaries of staff not working
  - Lost advertising
- Pro Forma Budgets have a cap. If construction costs increase too much, then,
  - No profit at the store level
  - Managers may quit



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## *Our process*

- In House Architecture and Design produces Schematic Design package
- In House Construction Department acts as CMA
- Outsourced Associate Architecture (CDs & CA), Structural Engineering, MEP Engineering
- GC/CM at Risk, negotiated award
- Large Amount of Owner Furnished Materials



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## *Our schedules*

- 6 week conceptual design phase
  - 24 week document schedule
  - 32 – 42 week construction schedule
  - 4 week commissioning period
- 
- Start after January 15<sup>th</sup>
  - Finish before November 15<sup>th</sup>
  - Only open on a Thursday
  - One opening per week



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## *Our costs*

A/E:	\$450,000
CM@Risk	\$9,000,000
OFM	\$1,500,000
FF&E	\$1,500,000
<u>Misc</u>	<u>\$550,000</u>
Total	\$13,000,000



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*Our tasks...mandates...marching orders*

1. Open more stores per year
2. Reduce costs
3. Reduce schedules

All while

1. AEC cannot find enough staff
2. Subtrades cannot find enough labor
3. Low Cap Rates produced a high volume of projects
4. Low Dollar Value has turned domestic raw materials into a global commodity



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## *Why We Use BIM/VDC*

We cannot influence the retail leasing markets

We cannot influence the cost of materials

We cannot influence the shortage of labor

We can improve the overall process that consumes labor and materials with a reducing margin

Can we dry-in the Exteriors faster?

Can we close up the Interior ceilings faster?



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*Where We Use BIM/VDC*

## Design

- Visualization

- Design Options

- Contract Documents

## Construction

- Clash Detection

- Constructability Review

## Owner Furnished Materials

- Quantities

## Financial

- Cost Segregation Reports

- Asset Management



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## *Where We See Value*

### Design

- Visualization

  - Improved Proof of Concept

- Design Options

  - Better Design Quality

- Contract Documents

  - More Content, Improved  
Coordination, Less Fee

### Construction

- Clash Detection

  - Reduced Change Orders

- Constructability Review

  - Reduced Head Scratching

### Owner Furnished Materials

- Quantities

  - Pre-Ordering Options

### Financial

- Cost Segregation Reports

  - A Happy IRS

- Asset Management

  - Avoiding a starring role on 60 Minutes...



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*When We started*

2001 Pilot Projects –  
Associate Architect only

2003 Accidental Integrated  
Delivery

2004 All Contract MEP in BIM

2005 Dealt with Revit

2006 Dealt with Revit MEP  
and Structure

2007 Started talking to CMs

2008 Started talking to Sub-  
Contractors



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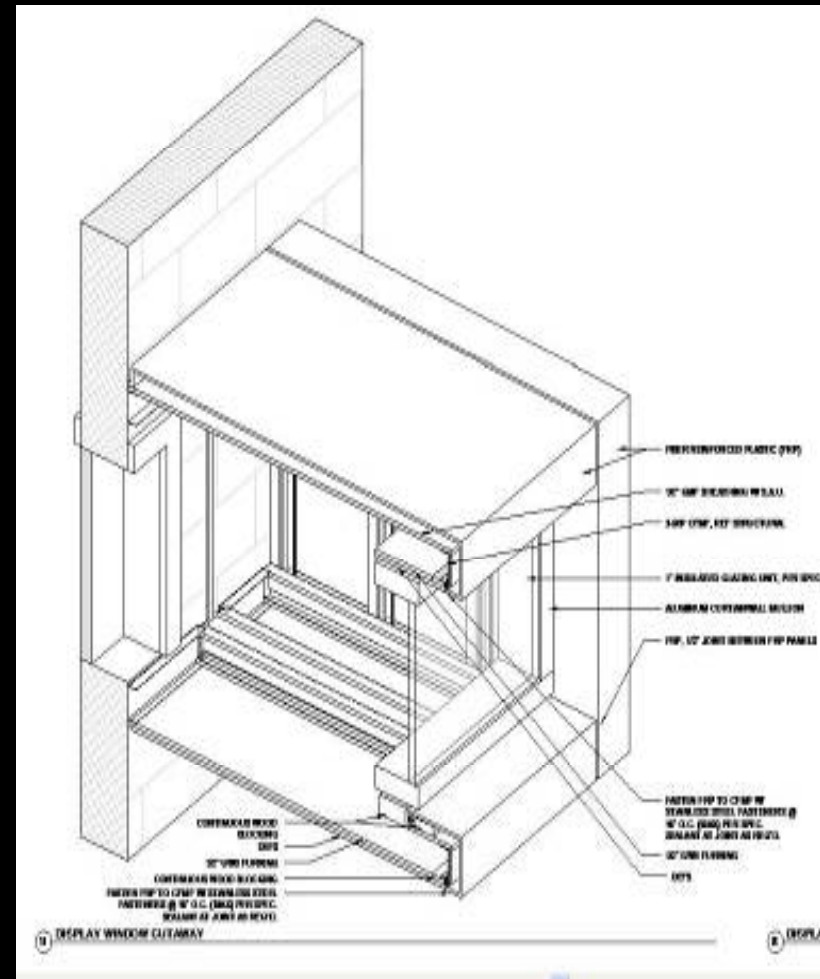
## *What We Have Seen From BIM A/Es*

2001

24 Weeks for Associate Architects to produce 250 sheets of Contract Documents with a three person team. Thirty-Somethings.

2007

8 Weeks for Associate Architects to produce 300 sheets of Contract Documents with a 1.5 person team. Twenty-Somethings



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## *What We Have Seen From non-BIM GC/CMs*

2001

32 Week Construction  
Schedules for Full Ground Up  
Projects with no Overtime and a  
Clean Turnover

2007

42 Week Construction  
Schedules for Full Ground Up  
Projects with Substantial  
Overtime in the last 25% of the  
Duration and a Sloppy Turnover

Scheduling and Planning are being  
replaced by Management



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## *Our Greatest Success: Steel, Steel, Steel*

### Benefits from:

- Good SER and Fabricator relationship;
- Mutually Beneficial Use of BIM: RAM to Tekla; and
- A Process-Oriented Fabricator

### Have been:

- 190 tons to 140 tons Average Project Weight
- Fabrication Times reduced from 6 weeks to 2 weeks.
- Shop Drawings Produced in 3 weeks instead of 6 weeks.
- Erection Times reduced to 3 weeks from 6 weeks.
- Almost Complete Elimination of Field Re-Work due to Fabricator Error



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*Our Greatest Success: Steel, Steel, Steel*

Lessons Learned:

Don't let the SER drive, let the Fabricator.

Understand all the Players: SERs, Fabricators, Detailers, Erectors and Nucor. Don't push BIM until you do.

Watch the Overall Process:

Tekla and Fabtrol may be offset by a Sharpie and UPS-Ground, poor Union relations, and rain.



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*Our Strongest BIM Partner: SteelFAB*



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*Someone We Want to Work With: Hill Mechanical*



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## *Our Implementation Strategy*

Move A/E Consultants onto BIM.

Use the Carrot and the Stick.

Find GCs/CMs effectively using  
BIM/VDC for ALL future work.

Pressure National Accounts for BIM  
adoption.

Find critical Subcontractors using  
BIM/VDC. Don't wait for the  
GCs/CMs to bring them to the  
table.

Form deliberate BIM project teams.

Model existing assets.

Brainstorm with non-AEC people  
about BIM. You will learn  
something.



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# Questions