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Introduction

Just google “benefits of BIM” and one will find over 16million search results.


If the benefit of BIM is so well documented and if it is so well known, then **why** isn’t every stakeholder in the Malaysian construction industry bought into implementing BIM on their projects?

In Haskell, an industrial leader in design-build construction method, we have used BIM in our projects for over 10 years.

One of quickest **ways** to realize the benefits of BIM on a project is to **implement BIM during pre-construction stage**.


This responsibility is undertaken by Haskell’s **virtual construction team**.

This talk focuses on the roles and responsibilities of Haskell’s virtual construction team.


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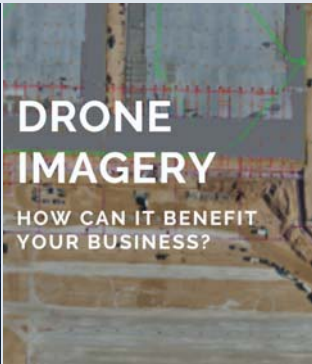
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BIM and its corresponding technologies




VIRTUAL REALITY

HOW CAN IT BENEFIT YOUR BUSINESS?




DRONE IMAGERY

HOW CAN IT BENEFIT YOUR BUSINESS?




LASER SCANNING


HOW CAN IT BENEFIT YOUR BUSINESS?



AUTODESK® REVIT®




AUTODESK® NAVISWORKS®




3D PRINTING

HOW CAN IT BENEFIT YOUR BUSINESS?





DRONE IMAGERY HELPS TRACK CONSTRUCTION PROGRESS

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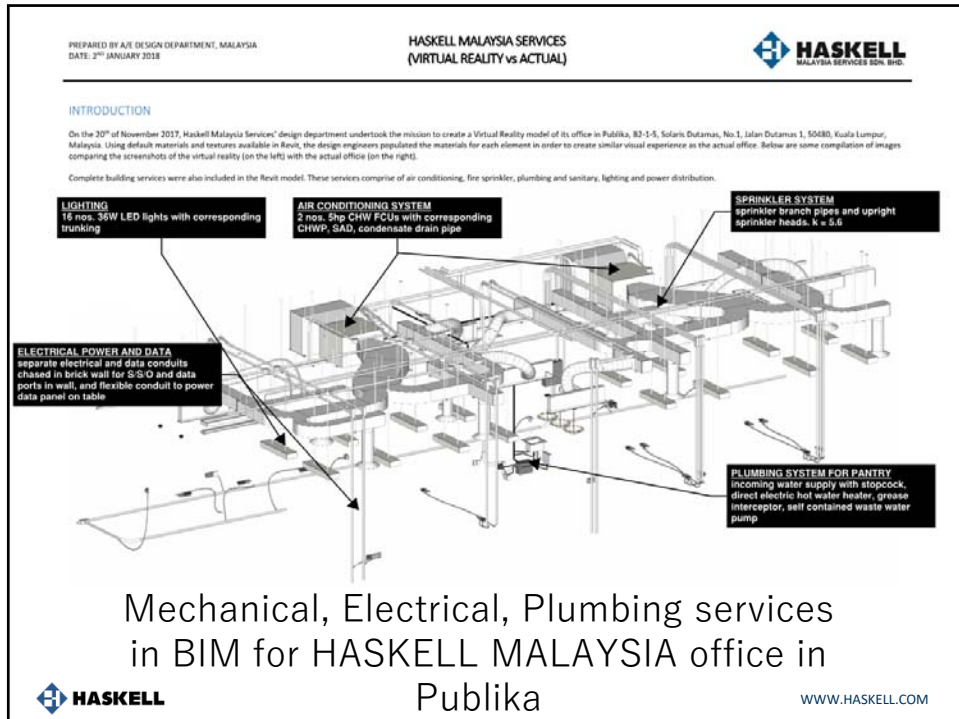
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Laser Scanning and Revit Model – by Haskell Malaysia

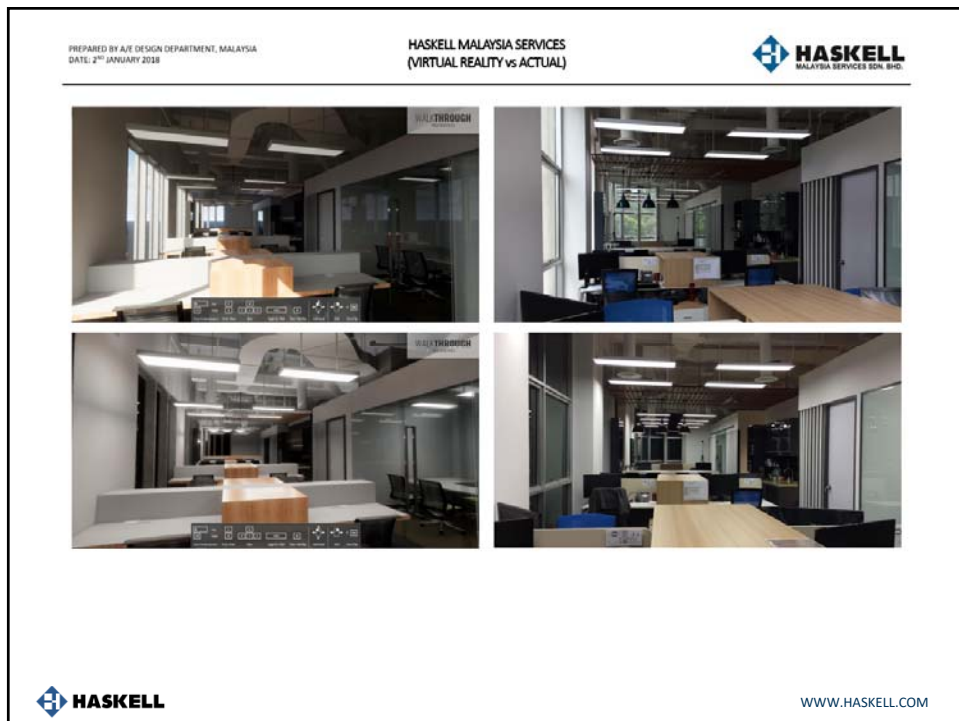


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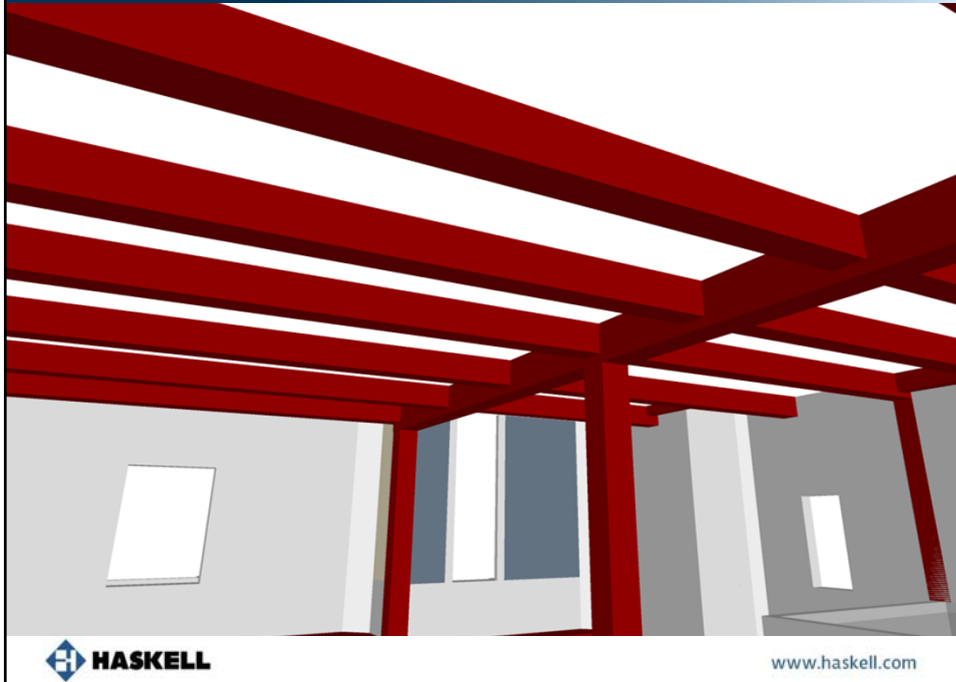
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Virtual Reality versus Actual

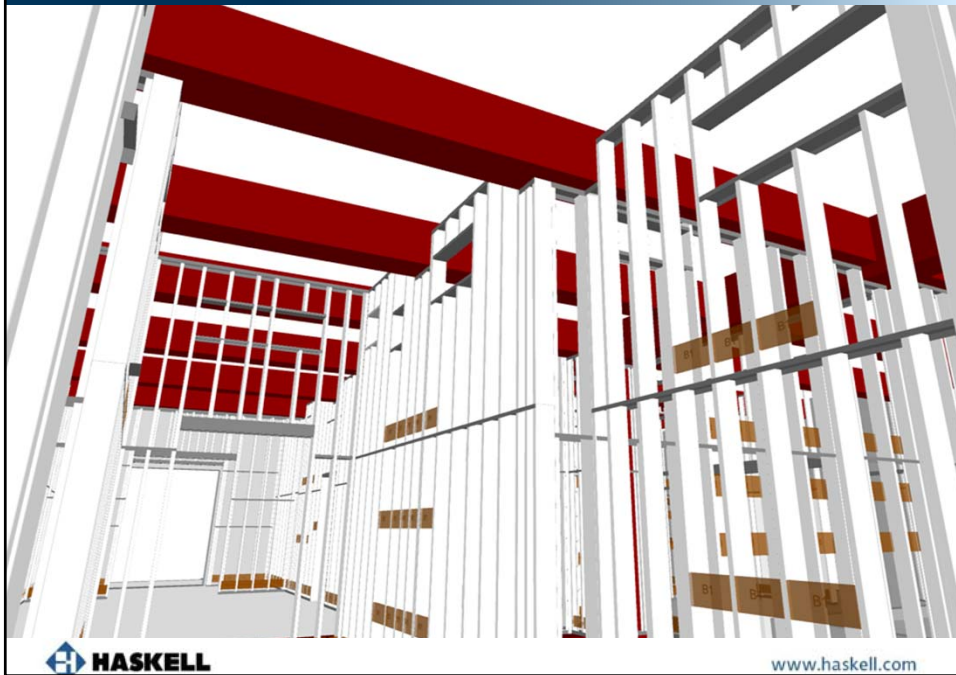


How Haskell uses 3D model to convey information to stakeholders



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How Haskell uses 3D model to convey information to stakeholders



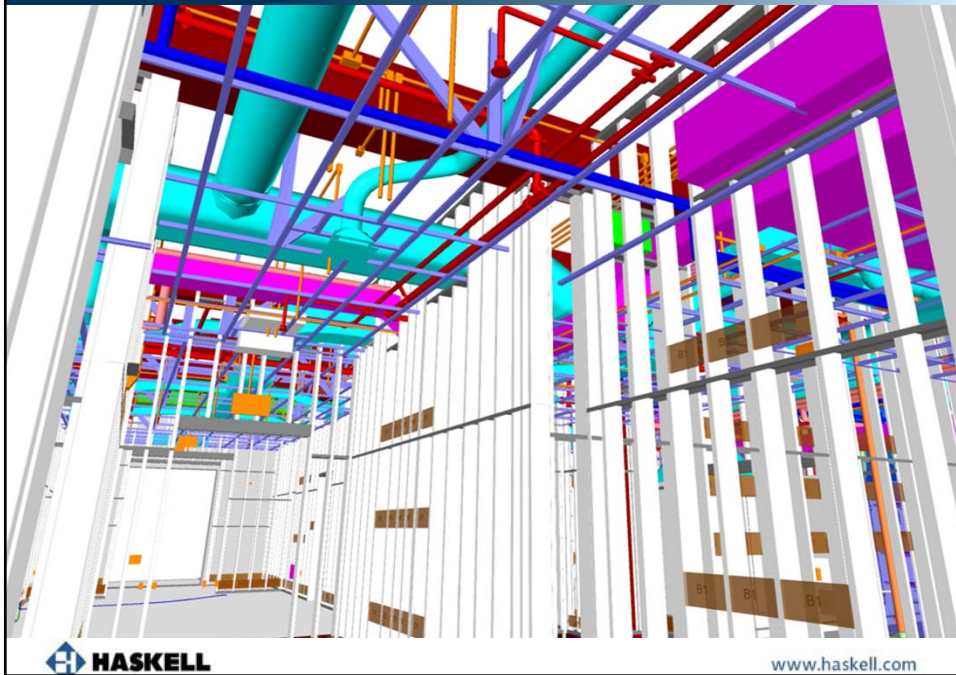
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How Haskell uses 3D model to convey information to stakeholders



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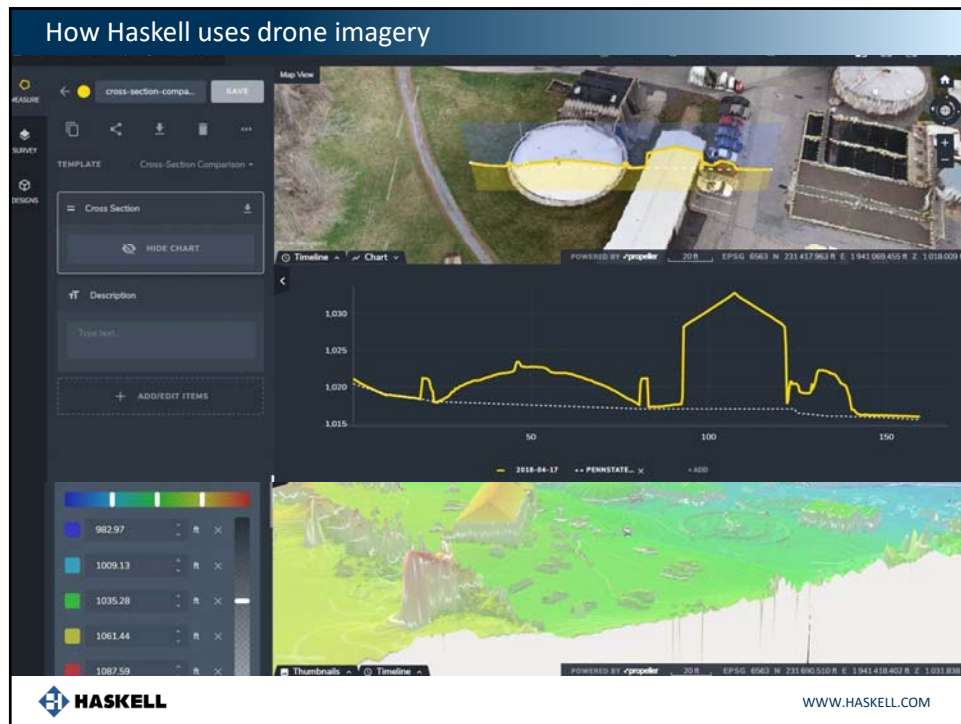


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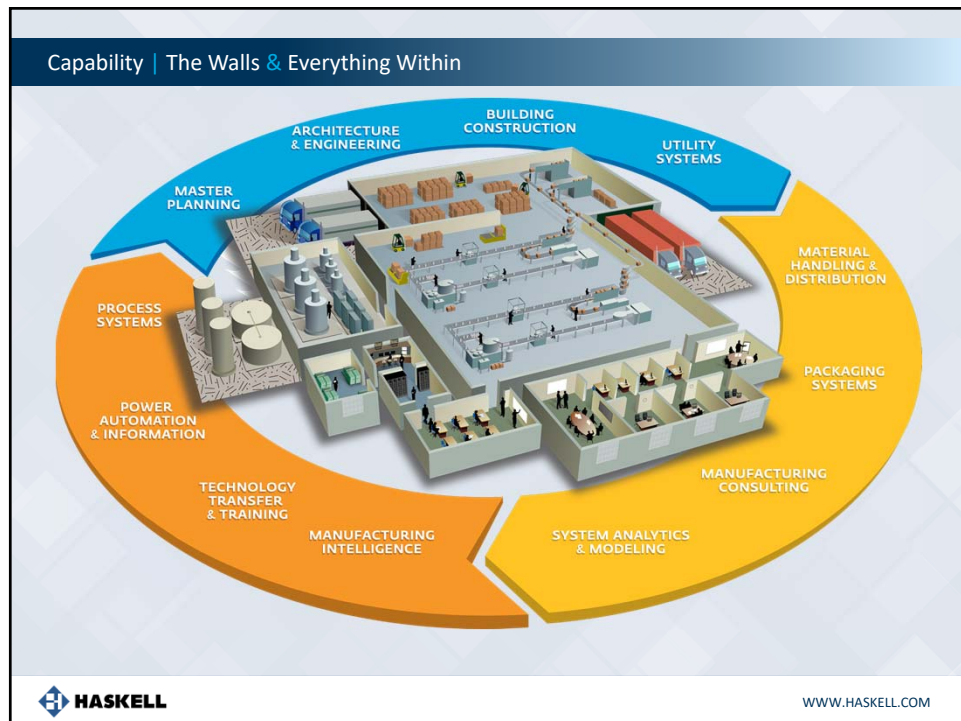
How Haskell uses 3D model to convey information to stakeholders



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End in Mind – How can shopping mall stakeholders benefit from BIM

◆ Owners

- Virtual mall / 3D model using Free Navisworks Freedom
- Easier to communicate with prospective tenant
- Easier for marketing, option of having a digital model online
- Way finder
- More accurate as-built. Single source for all information
- More competitive construction bids

◆ Contractors

- Less risk
- Better planning
- Less rework
- Better quality
- Shorter construction schedule
- Easier communication

◆ Architects and Engineers

- Gaining more time to focus on design
- More effective coordination
- Project follows the sequence; schematic design, detailed design, construction drawings

◆ Facility Management

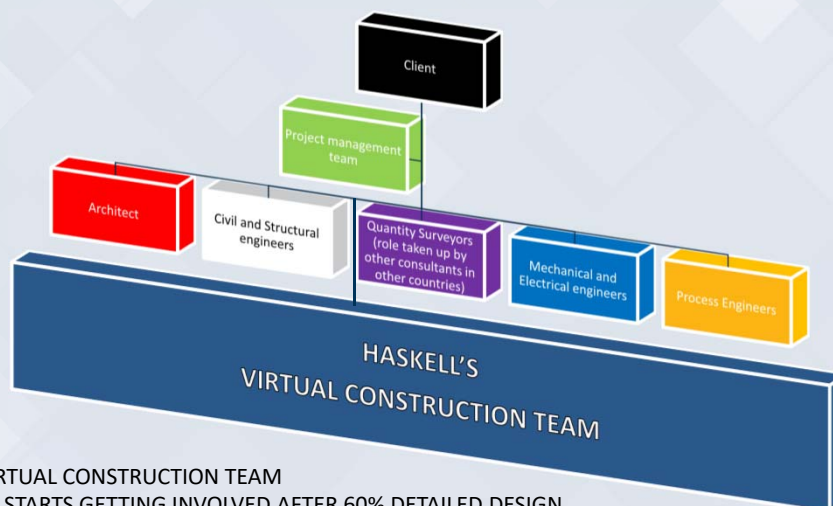
- Quicker troubleshooting
- Better graphics for BMS
- Easier to train new hires



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How Haskell implements BIM



VIRTUAL CONSTRUCTION TEAM

- STARTS GETTING INVOLVED AFTER 60% DETAILED DESIGN
- PRODUCES MEP SHOP DRAWINGS
- SKILLED IN BIM AND UNDERSTANDS CONSTRUCTION AND COMMISSIONING



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Haskell's Virtual Construction STRATEGY

- ◆ Owner Project Requirements – End in Mind
- ◆ BIM Execution Plan – set scope, responsibilities, boundaries
- ◆ Virtual Construction team starts after 60% detailed design
- ◆ BIMTrack (corporate license) – for clash detection documentation and tracking
- ◆ Resolving design and construction clashes – inputs based on engineering facts and from construction experience
- ◆ Shop drawing production of MEP with setting out
- ◆ Ensuring understanding of BIM workflow in all stakeholders, including sub con, and construction workers
 - Impossible for the guys on the ground to implement something which they do not understand
 - Cannot ignore the human element
 - Eg. Supervisor with 30 years of experience choosing to ignore BIM shop drawings (TRUE STORY!)



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VIRTUAL CONSTRUCTION – SUCCESS STORIES

DESIGN CLASH DETECTION GOALS

Resolve “Big Ticket” Items:

- Structural Conflicts
- Insufficient above ceiling or Wall Cavity Space
- Obstructed Access Panels
- Major Re-Routing of Systems
- Code Clearance Conflicts
- Consultant / Vendor Coordination

CONSTRUCTION CLASH DETECTION GOALS

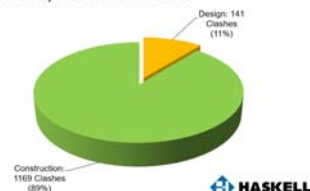
Resolve All Detailed Conflicts:

- Reduce Risk
- Resolve Conflicts Virtually rather than in field
- Maximize field efficiency
- Project schedules more predictable
- Increase opportunity for Prefab

Clash Detection Case Study #1 – Confidential client

1,310 Total Clashes

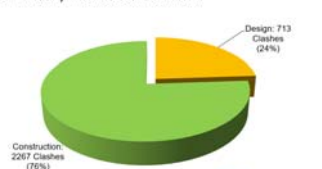
Resolved Virtually Prior to Start of Work



Clash Detection Case Study #2 – Confidential client

2,980 Total Clashes

Resolved Virtually Prior to Start of Work



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CLASH DETECTION REPORT – PAST PROJECT



194. MCF vs E -> Chipsa to Create Blockouts for Lighting Fixtures D2. Typical Throughout the Ceiling

Created	7/25/2017 3:18 PM
Due date	8/1/2017 12:00 AM
Assigned to	Bartly Mathews
Type	Chipsa - Metal Ceiling Framing
Priority	Medium
Status	Open
Zone	1-Main Level
Labels	Electrical lighting, Steel Stud Ceiling Framing
Teams	Chipsa - Metal Framing

USER / DATE	COMMENTS
Deep Patel	7/25/2017 3:24 PM
Bartly Mathews	8/6/2017 1:58 AM
Bartly Mathews	8/25/2017 1:55 PM
Bartly Mathews	9/6/2017 11:37 PM

332. M vs E -> Chipsa to provide markup for Lighting Fixture too Close to Diffuser

Created	9/7/2017 10:49 AM
Due date	9/14/2017 10:49 AM
Assigned to	Bartly Mathews
Type	Chipsa - Metal Ceiling Framing
Priority	Critical
Status	Open
Zone	1-Main Level
Labels	Electrical lighting, Mechanical Duct, Steel Stud Ceiling Framing
Teams	Chipsa - Metal Framing

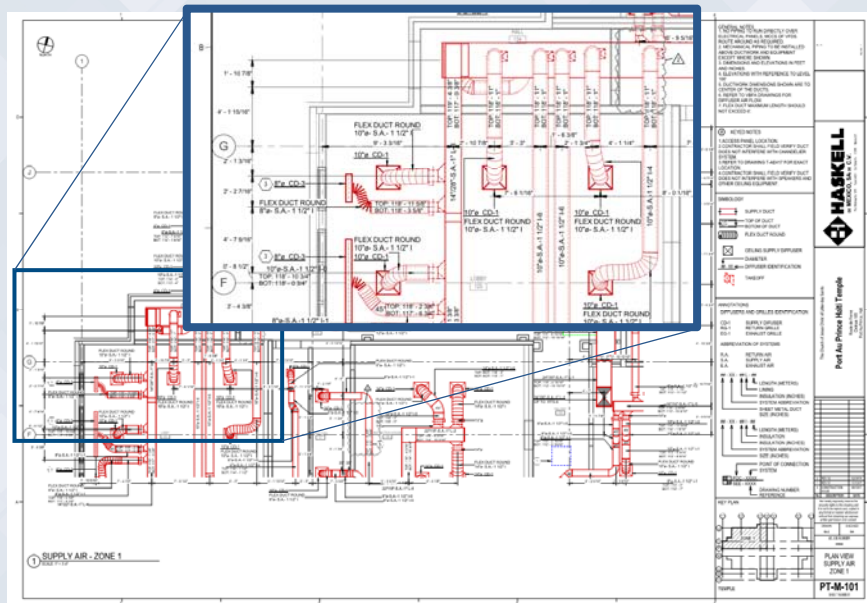
USER / DATE	COMMENTS
Bartly Mathews	9/27/2017 5:58 PM



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SHOP DRAWING – PAST PROJECT



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Q&A