UNIQUE CHALLENGES FOR MEP DESIGN TEAMS IN THE BIM PROCESS

@WSP_Global
UNDERSTANDING THE IMPORTANCE OF MEP SPACE ALLOCATION IN EARLY DESIGN USING BIMs.

SPATIAL COORDINATION REQUIREMENTS OF MEP EQUIPMENT AND SYSTEMS IN BIMs.

SCHEMATIC REPRESENTATIONS VS. FULLY MODELED SYSTEMS IN BIMs.

LOD 350

PERSISTENCE OF MEP META-DATA BEYOND THE DESIGN PHASE.
UNDERSTANDING THE IMPORTANCE OF MEP SYSTEMS SPACE ALLOCATIONS IN EARLY DESIGN, USING BIM.

- BIM IS A PROGRAMMING TOOL
- CLIENT EXPECTATIONS CAN SOMETIMES BE UNREALISTIC.
- GIVE ARCHITECT 3D INFORMATION TO CLAIM REQUIRED SPACE, MECHANICAL ROOMS AND SHAFTS FOR EXAMPLE
- Right-sizing equipment gives the owner more sellable space.
- Allows design team to make changes in design.
- Beam penetrations. Cost vs. time.
- Saving $$$ for the owner can lead to repeat business.
MEP SPATIAL COORDINATION REQUIREMENTS IN BIM

- THE STRUCTURE IS THE STRUCTURE. MEP MUST WORK AROUND THE ARCHITECTURAL AND STRUCTURAL MODELS.
- THE MECHANICAL ENGINEER WILL USUALLY OCCUPY THE MOST SPACE.
- SOME TEAMS WILL GIVE AREAS TO CERTAIN TRADES, PLBG WILL RUN ON THE RIGHT SIDE OF THE CORRIDOR, ETC.
- CEILING SANDWICHES
- ALLOWS STRUCTURAL ENGINEER TIME TO MAKE CHANGES DURING DESIGN PHASE
SCHEMATIC REPRESENTATION

- NOT SHOWING EVERY PIPE IN MEP MODEL
- NOT A CONSTRUCTION MODEL
- CONTRACTOR REQUIRED MEANS AND METHODS VS. DESIGN INTENT
- GRAPHIC REPRESENTATION
- SUB-CONTRACTOR USE OF THE DESIGN MODEL
- THE DESIGN BIM IS NOT A CONSTRUCTION BIM.
  COMMUNICATION CHANNELS ARE IMPORTANT
ONE LINE PIPING VS. DOUBLE LINE PIPING
### LOD 350

- **WHAT DO WE NEED TO SHOW?**
  - Modeled as actual size, shape, spacing, and location of lighting fixtures.
  - Actual size, shape, spacing, and location for supports and seismic control.

- **WHO ARE WE TRYING TO IMPRESS?**

- **350 IS THE TRANSITION BETWEEN DESIGN AND CONSTRUCTION**

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<tr>
<th>LOD</th>
<th>Description</th>
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<tbody>
<tr>
<td>350</td>
<td>Modeled as actual size, shape, spacing, and location of lighting fixtures. Actual size, shape, spacing, and location for supports and seismic control.</td>
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<tr>
<td>300</td>
<td>Modeled as design-specified size, shape, spacing, and location of lighting fixtures; approximate allowances for spacing and clearances required for all specified hangers, supports and seismic control; actual access/code clearance requirements modeled.</td>
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| 300 | Modeled as design specified size, shape, spacing, and location of equipment;

approximate allowances for spacing and clearances required for all specified anchors, supports, vibration and seismic control that are utilized in the layout of equipment;

actual access/code clearance requirements modeled. |
| 350 | Actual size, shape, spacing, and clearances required for all specified anchors, supports, vibration and seismic control that are utilized in the layout of equipment;

actual access/code clearance requirements modeled. |
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<tr>
<td>300</td>
<td>Modeled as design-specified size, shape, spacing, and location of duct, dampers, fittings, and insulation for risers, mains, and branches; approximate specified allowances for spacing and clearances required for all hangers, supports, vibration and seismic control that are to be utilized in the layout of all risers, mains, and branches; actual access/code clearance requirements modeled.</td>
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<tr>
<td>350</td>
<td>Modeled as actual size, shape, spacing, and location/connections of duct, dampers, fittings, and insulation for risers, mains, and branches; actual size, shape, spacing, and clearances required for all hangers, supports, vibration and seismic control that are utilized in the layout of all risers, mains, and branches; actual floor and wall penetrations modeled.</td>
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| 300 | Modeled as design-specified size, shape, spacing, and location of tank(s);
approximate allowances for spacing and clearances required for all specified anchors, supports, vibration and seismic control that are utilized in the layout of tanks(s);
actual access/code clearance requirements modeled. |
| 350 | Modeled as actual construction elements *size and shape, spacing, and location/connections of tank(s)*
actual size and shape, spacing, and clearances required for all specified anchors, supports, vibration and seismic control that are utilized in the layout of tanks(s). |
META-DATA

- TBD - LOT OF DATA NOT OF USE TO CONTRACTOR BUT MAY BE OF USE TO THE OWNER IN THE FUTURE
TAKE AWAYS

- A BETTER UNDERSTANDING OF THE MEP DESIGN WORKFLOW AND HOW OTHER BUILDING DESIGN AND CONSTRUCTION ACTIVITIES INFORM/IMPACT THE MEP DESIGN.
- MEP BIMS RELY ON SOME SCHEMATIC REPRESENTATION OF MEP SYSTEMS.
- THERE IS A LEVEL OF PARAMETRIC INFORMATION INHERENT IN MEP SYSTEMS THAT MAY BE OF POSSIBLE USE LATER IN THE BUILDING LIFECYCLE.
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THANK YOU