Benefits and lessons learned of implementing building virtual design and construction (VDC) technologies for coordination of mechanical, electrical, and plumbing (MEP) systems on a large healthcare project

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Coordination of Mechanical, Electrical and Plumbing (MEP) systems is a huge challenge for many technical projects such as Healthcare projects, Bio-tech projects and projects in the area of Advanced Technology. The use of Building Information Modeling (BIM) or Virtual Design and Construction (VDC) tools and processes promises to address the challenges of the MEP coordination process. This case study presents the use of BIM / VDC tools and processes for the coordination of MEP systems on a $96.9M healthcare project in Northern California, USA. discuss the challenges project team members faced in implementing the BIM / VDC tools and processes for MEP coordination, the specific quantitative and qualitative benefits from the use of BIM / VDC tools and processes that each project team member recognized and the lessons that the project team learned by implementing BIM / VDC tools and processes for the coordination of MEP systems. Some of the challenges we discuss include the creation and organization of the MEP coordination process using BIM / VDC tools, creation of the guidelines for the most efficient use of BIM / VDC tools for the process of conflict identification and resolution between the MEP subcontractors, and aligning the contractual interests of the coordination team to meet the overall project schedule. Some of the benefits that the project team achieved by using the BIM / VDC tools and processes for the coordination of the MEP systems include labor savings ranging from 20 to 30 % for all the MEP subcontractors, 100% pre-fabrication for the plumbing contractor, only one recorded injury throughout the installation of MEP systems over a 250,000 square feet project area, less than 0.2% rework for the whole project for the mechanical subcontractor, zero conflicts in the field installation of the systems and only a handful of requests for information for the coordination of the MEP systems between contractors and the designers, and 6 months' savings on the schedule and about $9M savings in cost for the overall project. The lessons the team learned include the level and type of details team members need to include to achieve benefits from the use of BIM / VDC tools for the coordination of MEP systems.

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