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Case Study

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NANAIMO MEMORY CARE: A CASE STUDY OF A MULTI-RESIDENTIAL CONSTRUCTION PROJECT

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1 NANAIMO MEMORY CARE PROJECT

1.1 Project Overview

Nanaimo Memory Care (NMC) is a 4-stories (79-suite) Memory Care residence situated on the Long Lake in Nanaimo, British Columbia (Figure 1). The Residence is the first stand-alone Memory Care facility available to seniors living with dementia on the Vancouver Island with a gross floor area of 48,541 sq. ft. The owner, Sussex Retirement Living, awarded CANAM group to supply and erect the project super structure including structural steel columns, beams, load bearing steel stud walls, Hambro joists and forms, open web steel joists, and steel decking.

Figure 1: Nanaimo Memory Care residence located on Long Lake in Nanaimo, BC

Project constraints were delivery distance, transportation means, compressed schedule, and environmental conditions. Steel components were supplied and fabricated in different locations. D500 Hambro Joists were fabricated in St. Gédéon, QC; Deck and conventional joists were fabricated in Calgary; structural steel was supplied from the islands BC; steel studs were supplied from Spokane, WA; and load bearing stud walls were assembled near construction site in BC. The longest delivery distance was 4,921 km from St-Gédéon, QC, to Nanaimo, BC, passing through United-States, which includes 2.5 hours ferry ride to the site.

1.2 Innovations

From building location and application to technologies employed, design approach, project coordination, and delivery methods, NMC was a unique project. NMC project has a design-build delivery method in which complete design and drawings were provided along with BuildMaster™ construction service. This project was our first RMR project in which project coordination was conducted via BIM Data Center.

1.2.1 BuildMaster™ Approach

BuildMaster™ approach, developed in 2010 based on lean project management, relies on master scheduling and look ahead planning (www.buildmaster.com). This approach makes site coordination and project erection, faster, safer and leaner. Through applying BuildMaster™ approach, NMC building construction launched on mid-April 2016 and completed by late June 2016 (less than 3 months).

1.2.2 BIM Data Center

BIM Data Center is a monitoring and design coordination system which screens project's information. Building information modeling (BIM) is the core of this center, which significantly improves internal and external communications, and also helps design and management team to stay on budget and schedule. The project was devided in four zones for BIM clash detection: Z1, Z2, Z3, Z4, and a total of 54 clashes were detected amongst structural steel components, which have been revised and repaired before delivery to the site. Figure 2 shows zones and examples of detected clashes. A bussiness case study conducted by BIM department to evaluate BIM application on the overall project, confirmed that BIM clash detection caused a significant saving on project's costs and schedule.

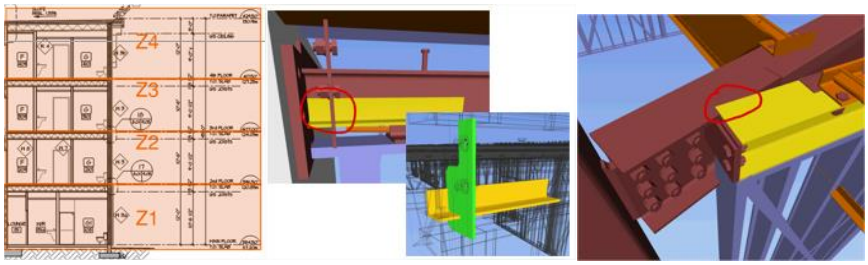

Figure 2: Project zoning: Z1, Z2, Z3, Z4 (left picture), BIM detected clashes on the 1st to 4th floors (middle and right pictures)

1.3 Lessons Learned

Challenges faced during the course of this project were: (a) unpredictable weather and road conditions; (b) transportation limitations, such as permit requirements for passing through the borders, or cost and size limitations (max 11') for using ferry to ship material to the island; (c) damaged material replacement time and cost due to supply/fabrication origin located far away from the site. Lesson learned for future projects are: to have alternative transportations means, to choose fabrication plants closer to the site, and to increase the application of BIM Date Center for coordinating similar projects.

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References

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