

# PROJECT PROFILE

## IRON MAPLE CONSTRUCTORS



### CASE STUDY ANALYSIS FOR MODULAR HOTEL IN NEW BRUNSWICK

Iron Maple Constructors (Iron Maple) is a general contractor that was founded by four leaders in the construction industry who have over 100 years of combined experience. They have offices in both Nova Scotia and New Brunswick and operate with a mandate and objective to keep construction simple for their clients.

#### PROJECT BACKGROUND

In September 2020, Iron Maple began on-site works for the construction of a new hotel in Florenceville-Bristol, New Brunswick. The project was of interest to the OCRC due to the fact that the first floor of the hotel was designed to be constructed on-site, while the second, third and fourth floors of the hotel utilized off-site manufactured room modules from Sussex, New Brunswick. These room modules were to be transported and assembled at the project location. This construction project served as a case study analysis for modular hotel construction. The finalized scope of work undertaken for this project included i) reviewing the project design and construction documentation, ii) creation of a digital representation of the design (3D model) and construction processes (4D model), iii) capturing and documenting module related construction activities on-site through video and stills and iv) completing an analysis of module related construction activities.

#### RESULTS

- **PROJECT DOCUMENTATION REVIEW.** This information was provided to the OCRC by Iron Maple through their ProCore Construction Management (2020) platform and included issued for construction (IFC) drawings and shop drawings in PDF format, manufacturing and construction schedules in MS Project format, and all existing construction documentation of work progress (i.e., requests for information, crane lifting plans, module delivery records and site photos).

- **DIGITAL DESIGN REPRESENTATION.** The 3D model of the design was completed in AutoDesk Revit (2020), and the 4D model was completed in AutoDesk Navisworks (2020). The resulting 3D model is comprised of approximately 28,000 elements.
- **PROCESS DEFINITION AND DOCUMENTATION.** The scope of the process documentation and definition was limited to the delivery and installation of the manufactured modules on-site. This was completed through site visits to capture module arrivals, temporary storage of modules, and module lifting and connections through video and photos.
- **PROCESS ANALYSIS.** The process was analyzed using standard work improvement and productivity analyses techniques. This included the definition of an initial integrated work method, and subsequent analysis of the process steps and resource usage.

#### RECOMMENDATIONS

The case study resulted in a completed process definition for the lifting and placement of the hotel modules, a detailed 3D CAD model of the project design and a mock-up technology platform to apply simulation tools for process analysis purposes. The platform has been established to explore simulations of the module assembly process with the implementation of ProModel (2020) and its integration with AutoDesk products. Upon completion of the actual construction processes, a complete digital case study will be available for further exploration with Iron Maple. Additionally, upon a complete review of the process definition and analyses with Iron Maple representatives, the OCRC will further explore the implementation of the simulation analyses platform for Iron Maple's use in future projects to advance design and construction operations.