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| May 05, 2024  | COMPETE CARE AT WILLOW CREEKInterior Fitout  | Case Report 01  |
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| Key Words* Value Engineering
* Constructability
* Renovation
* Existing Structures

PROJECT OVERVIEWA single-story senior care and rehabilitation facility with big plans to provide more spacious and open amenity areas. Long clear spans free of columns and additional vertical framing while maintaining sufficient and consistent ceiling heights throughout.This can be challenging for a building with discrete existing masonry bearing walls and various roof framing components including prefabricated roof truss, conventional 2x roof rafters, and various elevations of roof framing. Additionally, roof framing frequently changes span directions.Initially, it seemed that a large portion of the roof would need to be demolished and reframed to accommodate the design’s long-spanning rooms. This would require a significant amount of work in addition to procurement of custom fabricated roof truss with long spans. The project was bound to become expensive and challenging from a constructability standpoint.THE SOLUTIONSStonecrest carefully examined the existing structure and the proposed renovation probing for alternative solutions. Meticulously mapping the load path for each existing portions of roof, Stonecrest proposed introducing strategically placed steel beams to provide optimal support for the existing roof framing while utilizing the  |  |  |
| **Figure 2 – Section showing new steel beam detailed to accommodate the existing conditions of the roof framing.** |
| capacity of the existing load bearing masonry walls. The tenacious outlook from the Stonecrest team along with a few hours of strategy planning and careful structural design approach saved the Client from replacing a large portion of the existing roof. **Figure 1** depicts new steel beams supporting multiple roof framing elements with various slopes and elevations. | constructible solutions for renovation projects can easily be overlooked. Stonecrest scrutinized each section and junction of existing framing to ensure the proposed construction was feasible and could be constructed in a reasonable fashion. Figure 2 depicts a detail section which was developed to capture the conflicts between adjacent framings. This section allowed for the support of both existing roof framing while maintaining the structural integrity of the existing framing, allowing for easy installation, and minimal alteration to the existing structure.ConclusionsA complicated renovation project with various conflicts among existing conditions could be simplified with some sound engineering thought and creativity to produce a cost-effective and constructible design.  |
| **“A few hours of strategy planning and structural design approach saved the Client from completely replacing a large portion of the existing roof.”** |
| A blue and black logo  Description automatically generatedThe new steel framing required secondary and primary beams to adequately trace the load path to the existing masonry walls.Another challenge with modification to existing structures is the detailing. Providing |
| A wooden staircase in a building  Description automatically generated | Case study written by Abraham (Avi) Rubel, P.E.Avi is a senior project engineer at Stonecrest Engineering LLCReach Avi at arubel@stonecresteng.com |
| **Figure 1 – New steel beams supporting existing roof framing.** |