CAPUTO'S MARKET

NORRIDGE, IL

COMPLETION DATE

2023

REFERENCE

Jeff Montague
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PROJECT DESCRIPTION

McClure's scope involved the design of cold-formed steel prefabricated panels at the entryway, specifically focusing on cold-formed steel doubly-curved panels, spanning between structural steel with compound mitered connected to structural steel. This project showcases our expertise in innovative engineering solutions for challenging structural designs.

McClure designed 3,000 square feet of roof panels, 1,000 square feet of exterior soffit panels, and 2,000 square feet of interior field-framed soffit framing. These elements presented several challenges, including complex geometry, load requirements, and integration with other building systems. The roof panels need to support typical ASCE 7 loads for roofs (dead, live, snow, wind) as well as an increased 30psf roof live load.

Each panel is comprised of two curved beams spanning between structural steel roof beams, with roof joists spanning in the other direction. Each of these prefabricated panels needs to be able to geometrically drop in between the steel layers. Due to the doubly curved nature of the finish geometry, the straight wide-flanged steel beams' height and location had significant variation in the height relative to the panel location. The variation created conditions where the cold-formed steel beams would require connections above, below, or in the middle of the wide flange beams, as well as panel support points past the extents of the beam. To resolve these issues, the cold-formed steel panels were prefabricated by RadiusTrack to create connection points for the variations.

This panelized system with integrated beams allows for fewer–though more robust–field connections, expediting the installation process. Fewer connection points on a curved panel also expedites set time as each joist does not need to be field located in 3D space.

The interior ceiling is radiused studs at 4-feet on center with radiused hat channels to create a two-way system with discrete hanging points. To prevent this additional load from hanging from the roof system, an additional joist was added between the steel to create a secondary support system.

This detailing approach, combined with the prefabrication, BIM (building information modeling), and coordination, created a rapid installation and a bold and unique structure for the owner.