



# Invictus Brewing

## Invictus Brewing



### Participant information

Panelworks Plus, Inc.

Curtis L Stendel

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### Category

Commercial/Industrial/Institutional Buildings under 10,000 sq. ft.

High Performance: No

### Project information

Invictus Brewing / Topsy Steer

2025 105th Ave NE

Blaine, MN 55449

Date Completed: May 2018

Dimensions of building (all floors of multi-story building): 80' x 104' x 20'

Total sq. ft. of conditioned space: 8,200 Sq. Ft.

Built By (if different than applicant)

GCM Construction

Ben Meints

2201 107th Lane NE

Blaine, MN 55449

Panels Manufactured By

Company Name (members only): Panel Setters Plus, Andover, MN



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Designed By (if different than applicant - SIPA will only recognize members)

Wilkus Architects

Kevin Green

15 9th Ave North

Hopkins, MN 55343

Describe the end use of the building: Craft brewery and restaurant

How did SIP construction help you get this job? When we were initially contacted by the client, they had already started the design process and were looking at steel frame building structures. The MN energy code requires certain R values for all walls and roof. With a steel frame building, there would be several steps needed to provide the required insulation. Our firm suggested using SIPs which would take several of those steps out of the installation process and provide an R value that would far exceed the code requirement. Our proposal to the client offered exceptional insulation properties of the building along with a time line that would be decreased with negligible cost increase.

SIP wall thickness and core material: 8-1/4" and 10-1/4" SIPs with Expanded Polystyrene Insulation

SIP roof thickness and core material: 10-1/4" SIPs with Expanded Polystyrene Insulation

Describe the benefits of using SIPs on this project. Did SIPs help save time, labor, construction costs, or energy? The project was initiated late in the fall of 2017 and winter construction was inevitable. Using SIPs benefited the project in several ways. First and foremost was the speed in which the building was erected. We estimate that we saved roughly 30 days as compared to a steel building. Once the shell was completed, we needed to heat the inside in order to pull the frost out of the ground. By having a complete SIP envelope, we were able to complete this process more quickly than normal. This not only saved time and sped up the project, it resulted in considerable savings in the cost of heating during the construction process.

Describe any innovative design elements or structural engineering involved: One of the project requirements was to have an open structure with clear span trusses. In order to accomplish this, we installed cathedral style LamPly trusses. This gave the client an open structure that complimented the interior design features. In addition, we installed an ICF foundation system to help with energy conservation.

Please list any certifications the project received, such as ENERGY STAR, LEED, National Green Building Standard, WELL, Passive House, Green Globes or local green building programs. Only list certifications that are completed: n/a

Blower door test results (ACH50) (required only for High Performance Category and recommended for residential projects): 1.39 ACH50

Describe the HVAC system used on the project: The building environmental system includes three high efficiency 10 Ton gas heat/ electric cool units that provide heating and cooling. There is a full kitchen space which has a PRV for the exhaust hood along with heated make up air unit. For the brewery area, we designed and install a mechanical damper system that exhausts hot air from the boiler in the summer and in the winter pulls the warm air from the boiler into the building to reduce the amount of heating from the heat/cool units.

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Describe any other energy-saving materials used in the building envelope other than SIPs. List U-values of windows used and the U or R-value of any insulation materials. (judged only for High Performance Category) As mentioned previously, the building foundation is constructed with 6" ICF form which provides an insulation value of R- 24 for the foundation. This provides exceptional insulation below grade especially in MN where frost depths can reach over 48" below grade. We also installed aluminum frame windows with 1" OA clear glass which provides a U value of 0.47.

Please list any energy-efficient products or design features, such as lighting, hot water heating, appliances, passive solar (judged only for High Performance Category): In addition to the building envelope and foundation, we designed the interior lighting system with all LED fixtures. The lighting system is controlled by dimmers and automatic sensors to shut lights down when no one is present. Exterior lighting follows the same with all LED fixtures. During the design process, considerations were made to provide space for a future solar array on the south and west facing roof pitches. This included designing the load requirements to allow for the panels and having no roof penetrations on those roof slopes. The electrical system was also designed to integrate the future solar array. The client is currently negotiating with the local utility company to install the solar system. Several of the parking spaces provide charging stations for use by customers with electric vehicles.

Were any solar panels installed on the project? If so, indicate the size of the system (judged only for High Performance Category): No, but planned for later

Please list any sustainable materials or design features not listed above, such as recycled materials, low-VOC finishes, landscaping, etc. (judged only for High Performance Category): The owners of Invictus / Topsy Steer used recycled barnwood for much of the interior wall finishes and repurposed corrugated steel from an old agricultural grain bin for use in the ceilings of the rest rooms. The parking areas were prepped with recycled concrete. Invictus / Topsy Steer received a grant from Anoka County for their recycling program. All disposable serving products are compostable. Invictus / Topsy Steer also participates in the county's source separated organics recycling program to reduce the amount of refuse that goes into the landfill.

Any additional comments on the project: Panelworks Plus is proud to have been part of this great building project. Since the building layout was complete before our involvement, several changes were needed to adapt SIPs into the design. Careful coordination was required to make best use of panels. By using Starwood LamPly roof trusses set at 8' O.C. and covering with 8' x 24' SIP roof panels, there was virtually no waste generated in the production of the roof panels. Sidewall panels were also 8' wide with support columns for the LamPly trusses being incorporated into the wall panels. Due to the height of the end walls at about 32', there was a considerable amount of glulam beams within the 10- 1/4" SIPs required to provide adequate wind loading. In addition, one end wall also had large windows located high and glass overhead doors below that open from the tap room to an exterior dining area. The exterior was finished with Nova Brick and colored steel on the sidewalls, and a standing seam steel roof, ready for addition of PV panels in the future.

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### Additional comments:

Another feature of the sustainable design is a rain garden where Invictus will be growing their own hops. While all ingredients for the brewing process cannot be sourced locally, some of the grain and hops are local. Honey and maple syrup used in some of their recipes are from local producers. Topsy Steer also uses the rain garden to grow fresh vegetables and herbs used in their menu items and uses local sources for their meat, dairy and vegetables as much as possible.

Ben Meints, Co-owner  
GCM Construction

### Note from the owner:

The heat produced by the brewing process along with that from the kitchen and pizza oven make up much of the required heat to maintain the building. When I first enter the building on these cold January mornings, I find that the temperature is usually around 68 degrees F even though the thermostat is set back to 60 degrees F overnight. This is testament to a well insulated and tight building envelope made possible by SIPs.

For more information, photos and the story of Invictus Brewing and the Topsy Steer, please visit our website:

<http://invictusbrewingco.com/>.

Previn Solberg, President  
Invictus Brewing Company



Exterior front view

**Invictus Brewing**





Interior view

**Invictus Brewing**





Interior view

**Invictus Brewing**

