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PROJECTPROFILE

U.S. Bank Stadium

Minneapolis, Minnesota, USA

ARCHITECTS
HKS Inc.
Dallas, Texas, USA
Studio Five Architects
Minneapolis, Minnesota, USA

GENERAL CONTRACTOR
M.A. Mortenson Co.
Minneapolis, Minnesota, USA

CUSTOMER / INSTALLER
Egan Co. / InterClad
Brooklyn Park, Minnesota, USA

CERTIFICATION
Seeking LEED® Certification

FEATURED PRODUCTS
1600 SS Curtain Wall System
1600 Wall System™3 Curtain Wall
350 Tuffline™ Entrances

FINISHES
Anodize #17 CLEAR – 1600 SS Curtain Wall System, 350 Tuffline™ Entrances
Anodize #40 DARK BRONZE – 1600 Wall System™3 Curtain Wall in office areas

GLASS TYPE
Viracon VRE1-59 Argon-filled insulating glass in 1", 1-1/16" and 1-5/16" overall thicknesses

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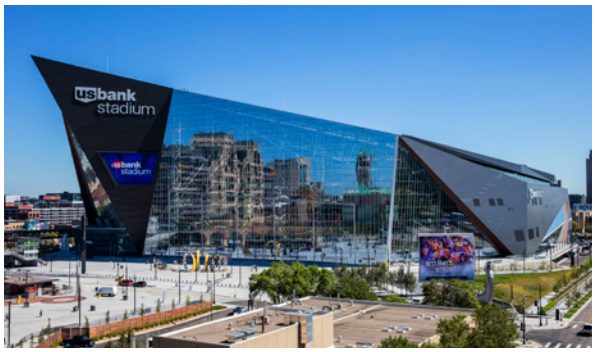

Photography © Bob Perzel

One of just 32 NFL stadiums, the jagged, 270-foot-high glass and steel building was designed to reflect the strong and diverse heritage of Minneapolis, and promote openness and an outdoor feel, while also offering fans breathtaking views of the city's downtown skyline.

The goal of U.S. Bank Stadium, according to Dallas-based HKS Inc. which developed the design along with Studio Five Architects in Minneapolis, is to "create a resource that welcomes all the people of the Twin Cities and the state of Minnesota. The design's attention to craft and value, to texture, detail, clean lines and elegant functionality evoke the early, founding influence of Nordic cultures, while the use of distinctive pattern, texture and finishes provides a palette for recognizing the rich range of cultures and nationalities in the Twin Cities region."

To help meet the design intent, the multipurpose stadium façades include approximately 200,000 square feet of Kawneer curtain wall systems – each elevation unique in shape, height and slope – and heavy-duty Tuffline™ entrances throughout the venue.

Design Highlights

The stadium is 1.75 million square feet, can seat more than 65,000 fans and features seven levels with two 360˚ concourses and a translucent roof to further tie together the indoors and outdoors. ArchDaily.com noted: "One thing is certain: this is *not* your average stadium. Between the wide concourses, high-tech lounges, turf-side suites, a section of telescoping seating and the world's largest pivoting doors, the venue is groundbreaking – and exemplary."

Challenges

- Construction of the stadium began in December 2013 with a very definitive timeline in place. The design, which features walls of varying shapes, angles and sizes, required products that were versatile, would look sleek, offered high performance and were able to be installed within the allotted time frame.
- The high range of distinctive shapes posed a challenge due to hard-to-access work areas.
- Protecting stadium occupants from the harsh Minnesota winters was a critical component in the design.
- The large pivoting doors that open onto the stadium's plaza needed to further enhance views and offer a direct sightline to the city's downtown skyline, yet remain sleek and provide thermal protection when closed.
- Visitors also needed to enter and exit the stadium when the large doors were not open.

Solutions

- A majority of the stadium's vast façade utilizes Kawneer's 1600 SS Curtain Wall System. The curtain wall system features screw spline joinery, which allows the product to be pre-assembled, joint sealed and delivered to the job site and installed as larger units, minimizing installation time in the field.
- In a Glass Magazine article, officials from InterClad noted that the project featured nearly 5,260 pieces of glass. To have the glass and curtain wall delivered and installed in these complex areas, InterClad had to fabricate custom gantries to set the glass and use complex rigging equipment for the curtain wall.
- The 1600 Wall System™3 Curtain Wall used for the punched openings in office areas incorporates inside glazing and an IsoStrut™ thermal barrier to provide outstanding thermal performance and installation economies.
- The immense doors were custom designed by Hardesty & Hanover as well as HKS and manufactured by Industrial Door Contractors Inc. Each door stands 75 to 95 feet tall and 55 feet wide, weighs between 160,000 and 180,000 lbs. and is outfitted with Kawneer 1600 SS Curtain Wall enhancing the stadium's sleek aesthetic while providing the ultimate in thermal performance.
- Kawneer's 350 Tuffline™ Entrances are used throughout the stadium and within the large pivoting doors for visitors to enter and exit the stadium. Ideal for applications where traffic is high, the 350 Tuffline™ Entrances are a complete system of door, frame and hardware, designed and engineered to create total performance.

In June 2016, general contractor Mortenson Construction turned over the stadium to the Minnesota Sports Facilities Authority with a commemorative key. The project, which lasted 30 months, was completed 45 days ahead of deadline. The distinct and innovative stadium is home to the NFL's Minnesota Vikings and will host the 2018 Super Bowl as well as other marquee events. The stadium is sure to have a lasting impact on players, owners, fans and the entire Twin Cities community for a long time to come. In July 2016, the design was recognized as the 2016 Most Innovative Curtain Wall Project: Public by Glass Magazine. Architects and owners are currently seeking Leadership in Energy and Environmental Design (LEED) certification.

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