



INDOOR FOOTBALL PRACTICE FACILITY

at the University of Illinois—Urbana/Champaign

Champaign-Urbana, Illinois

Roger H. Reckers S.E., and Brian M. Spencer



The University of Illinois' Indoor Football Practice Facility is a building conceived not only from its internal function but also from an awareness of the adjacent

buildings and open space. The result is a building design that is unique in its form and yet contextually responsive with its scale and materiality.

The project site is located adjacent the Intramural Physical Education

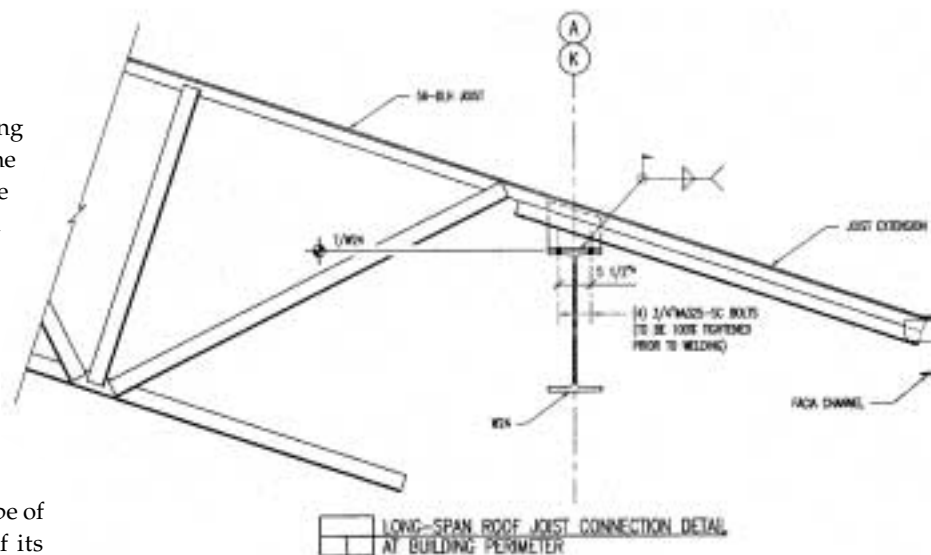
Building (IMPE) and the historic Memorial Stadium. In considering the impact of the building on this location, it was determined that the building would be limited in area, as well as height. These parameters were estab-

lished in the interest of not impacting the historic stadium adversely. The height was limited such that the cornice of the new facility could not exceed the top of the fascia of the adjacent IMPE Building; the roof however could extend above this limit. It was determined that the building would be composed of an 80-yard football field and one end zone.

As the building mass for this type of facility is in large part a result of its roof forms and structural systems were investigated, beginning with conventional gable and arch roofs, then considering hip roof forms, both straight, sloped and curved, finally arriving at a hybrid form.

The hybrid form, the semi-parabolic dome, is composed of an arched form combined with a gable. Rather than spanning the field in the short dimension with a series of trusses, a large single-arched box truss spans the length of the field and supports 1/2 of the total roof load. The box truss assembly is composed of two identical trusses tied together with horizontal and diagonal bracing in the top and bottom chords. To help with fabrication, the chord members and the web members were composed of W14 rolled sections.

The arched box truss assembly is 10' deep by 30' wide and spans approximately 320'. It is supported on the north by two concrete buttresses and on the south by a two concrete buttresses that incorporates a stair tower



and two observation decks. The center truss is arranged asymmetrically so that its spring point is higher at the end zone and lower at the opposite end. Open web steel joists compose the balance of the roof structure spanning east west from the center long-span truss to steel girders at the perimeter of the building. These primary and secondary structural elements support 3" wide rib metal roof decking.

The gravity loads supported by the spandrel girders are transmitted to the perimeter columns spaced at 20' on center. These columns then transmit the gravity loads into the foundation and the wind loads into the foundation and roof diaphragm.

The foundation system for the facility utilizes reinforced cast-in-place concrete drilled piers 5' in diameter to about 25' in depth. A single drilled pier and pier cap is located beneath each column along the perimeter of the building. A grade beam spans between the drilled pier foundations and supports the masonry building enclosure above. At each reinforced concrete buttress, a group of three drilled piers are utilized to resist lateral movement (sliding) caused by the large thrust from the long-span arch.

The construction cost of the facility is \$ 12,000,000.

Roger H. Reckers S.E., Principal, and Brian M. Spencer, Project Engineer, are both with Tylk Gustafson Reckers Wilson Andrews, LLC, in Chicago.

OWNER:

Division of Intercollegiate Athletics, University of Illinois at Urbana - Champaign

STRUCTURAL ENGINEER:

Tylk Gustafson Reckers Wilson Andrews, LLC, Chicago, IL

ARCHITECT OF RECORD:

Isaksen Glerum, P.C., Urbana, IL
Severns Reid and Associates, Champaign, IL

DESIGN ARCHITECT:

Ratio Architect, Inc., Indianapolis, IN

GENERAL CONTRACTOR:

Ore W. Vacketta & Sons, Danville, IL

FABRICATOR:

United Steel Fabricators, Inc., Indianapolis, IN (AISC member)

ERECTOR:

Crevac Inc., Danville, IL

DETAILER:

AED Inc., San Diego, CA

SOFTWARE

Eagle Point Frame Analysis and Design and RAM Analysis—RAM S-Beam

