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Cincinnati, Ohio

Courtesy of Bernard Tschumi Architects

Structural Concepts/Structural Existing Conditions Report
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Executive Summary

This report investigates the structural concepts used to design the University of Cincinnati Athletic Center in Cincinnati, Ohio. It is broken down into four sections:

Building Description

The UC Athletic Center is an 8 story, 220,000 ft^2 multi-use sports facility. It has a unique curved shape and "diagrid" exterior. The floor and roof systems are composite steel wide flange beams with composite slab-on-deck. Typical bays are about 27'x27', thought the layout is highly varied by floor. Interior columns are full height. Exterior "V" columns support the rigid diagrid enclosure, transferring load into spread footings and piers below grade. Lateral bracing is composed of the diagrid structure, braced frames, and foundation shear walls.

Design Codes and Standards

The 1998 Ohio Basic Building Code is the model code. Loading is determined with ASCE 7-98.

Calculations

Gravity (structure self weight, superimposed dead and live) and Lateral (wind and seismic) loads were derived and summed. Total dead weight per above-grade floor varied from 2300-2800 kips. Critical unfactored wind base shear (408.3k) is greater than unfactored seismic base shear (392.0k).

Spot checking will be done for one floor framing element and one lateral frame. These calculations have not been performed yet.

Additional Considerations