HDC WICKERSHEIMER ENGINEERING

Structural Division - HDC Engineering, LLC

PROJECT PROFILE

McKinley Expansion Link
McKinley Health Center

University of Illinois
Urbana, Illinois

Client: McKinley Health Center, University of Illinois, Urbana, IL
Architect: FWAI Architects, Inc., Springfield, IL

Range of Services

- Structural consultant, including all structural services
- Structural planning for item 3

Project Overview

The structural renovation work involved the following intricate items within the fabric of the existing structure:

1. Created a new glass enclosed entrance portico on the north side of the building with a steel gable frame enclosed in masonry. Steel framing was used to support a large stone pediment. See images to the left.

2. Creation of a two-level connecting link on the south elevation between the east and west wings of the building. This was done with masonry bearing walls, open-web steel joists and metal deck filled with concrete.

3. Converted the existing roof into a second floor library and offices between the east and west building wings. This required an investigation of the existing structural system and a structural upgrade of the existing concrete slab with new steel beams. A new bar joist roof was created above the new second floor area. A full description is found on page 2.

4. A new mechanical room floor was created above the roof of the existing entry area and a new roof above that. This was done with structural steel shapes and open-web joists respectively.

integrating STRUCTURAL design *focused on* quality

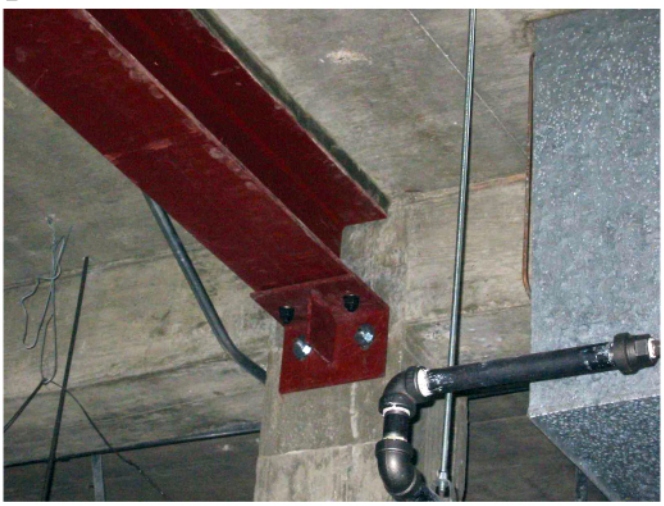
McKinley Expansion Link
McKinley Health Center

University of Illinois
Urbana, Illinois

Construction Process

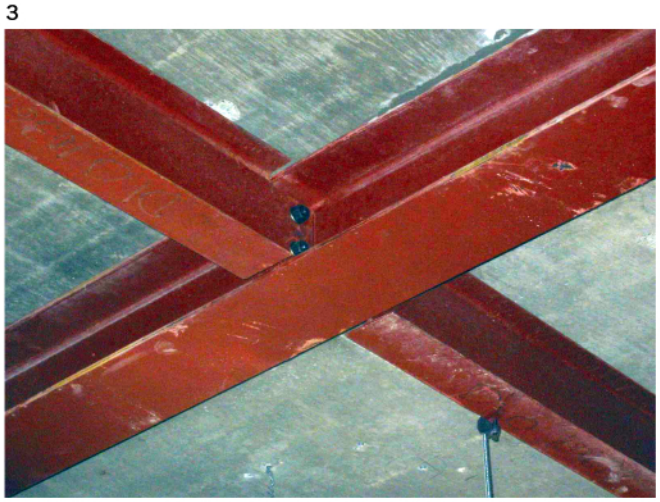
To upgrade the existing one-way concrete slabs of the roof into a new second floor capable of supporting a library live load required a structural planning exercise. The most economical solution was to shorten the spans of the one-way slab with a checkerboard of light, short, steel wide-flange beams and girders that was supported off the existing concrete columns and CMU walls where possible. Images 1 and 2 illustrate support at an existing column and CMU wall respectively. Image 3 shows the grid where beam and girder intersect. The beams filtered through the existing mechanical ductwork, piping and lighting conduits and were made to contact the slab by introducing dry-pack grout between the top flanges of the steel beams and the underside of the slab. Image 1, 2 and 3 indicate the grout. This technique allowed the present slab to support the live loads required. The steel framing was then placed on the new second floor, the exterior wall was placed with appropriate window openings and a new roof created with bar joists and metal deck. See images 4 and 5.

1



2

3



5

4

integrating STRUCTURAL design focused on quality