



Best Buy Corporate Building D (4)
Richfield, MN

Final Report

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Structural Option
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Best Buy Campus

Building D

Richfield, MN

Project Team

Owner :

Best Buy Inc.

Architects:

**Opus Architects &
Engineers, Inc.**

Perkins & Will

Constructor:

Opus Northwest, LLC



Building Statistics

Size:

6 stories

304,610 sq. ft.

Delivery Method:

Design-Build

Construction Dates:

Aug 2001 - Feb 2003

Cost:

Overall - \$250 million



Electrical System

Generator Set

400KW-277/480-3Ø-4W

Panelboards

277/480-3Ø-4W

Switchboards

3000A-277/480-3Ø-4W

Mechanical System

12 Air Handling Units

2 per floor

460/3/60

2 Make-up Air Units

located on roof

460/3/60

Structural System

Exterior:

Architectural precast curtain wall

Structure

Slab on grade construction

Braced frame system

Wide flange steel columns

supported by concrete piers



Jonathan Aberts - Structural Option

<http://www.arche.psu.edu/thesis/eportfolio/2007/portfolios/JEA169/>

Executive Summary

The requirements for the engineers of Best Buy Corporate Building D are basic in that they meet the needs of economy and the future occupants of the building. This report consists of a new design of the structural system and concludes, independently of existing conditions, an alternate system for the site and conditions impacting the corporate campus.

The new structural system removes columns throughout the building thus opening the floor plan while resisting the same loadings. Increasing the bay sizes to adapt the floor plan impacted all other structural systems in the building, while having little impact on mechanical and lighting systems. Larger bays lent the design of the new building to a post-tensioned system, because PT does not become cost effective until bays reach spans of twenty or more feet. The post-tensioned cast-in-place floor slab can support the larger bay sizes without dramatically increasing the overall depth of the slab. The effectiveness of post-tensioning is judged based on the advantages it provides for the building against the costs of both the old and new system.

The lateral system was also redesigned using shear walls. The positions of the existing lateral force resisting system were considered for the placement of the new shear walls. The building currently has two cores holding stairwells, elevator shafts, and mechanical shafts. The curtain wall system with ribbon windows had to be kept intact to preserve the original look of the building. As a result, the best location for the new lateral system was clearly around the cores.

Cost analysis of the new concrete system, proved, unfortunately, that the old system was about 8% cheaper than the new. However, removal of roughly 30% of the original internal columns increased office space. The increased time to construct the new structural system also increases the cost of the project. In the end, both systems are comparable, but the original steel structure is a better solution in Richfield, MN because of the low availability of PT contractors in the area.