# Loyola/Notre Dame Library

Baltimore, MD

**Sandra M. DiRupo** **Construction Management** **Thesis Abstract**

## PROJECT INFORMATION

Owner: Loyola/Notre Dame Library
Overall Cost Estimate: $19,604,229
Project Size:100,000 SF
Project Delivery Method: CM at Risk, GMP Budget
Dates of Construction: October 2006-August 2008
Number of Stories: Four

## THESIS ANALYSES

1. Research: Methods of Energy Conservation at Universities Across the U.S.
2. Substituting a Modular Curtain Wall System in Place of Existing Stick Built Curtain Wall System to Save on Labor Costs and Reduce Schedule Time
3. Solar shade Re-design to Optimize Daylight Distribution While Reducing Summer Cooling

## ARCHITECTURE

-Function: Four story library with enhanced spaces for teaching and scholarly and cultural programming. Open to students and the Baltimore public

-Envelope: Existing cast-in-place concrete walls, red brick façade

-New system to include an aluminum curtain wall enclosed with spandrel and fritted glass

## STRUCTURAL SYSTEM

-Existing System: Cast-in-place exterior load bearing walls with 8” square columns supporting 6” waffle slabs (typ)

-New System: 18” dia circular cast-in-place concrete columns supporting the two-way 11.5” slabs above (typ)

-New Foundation: 12” foundation wall, columns rated at 100 tons comp. a piece, covered by 1’-6” mat slab

## MECHANICAL SYSTEM

-Four Air Handling Units ranging from 2,640 to 38,000 CFM. Existing AHU are VAV systems, while the 2 new AHU are VAV and constant volume air with companion return fans

-Constant volume AHU to serve Special Collections room on 3rd floor (~1000 CFM)

-Cast-iron sectional boiler, gas fired (~50 BHP)

-Existing Chiller and cooling tower adequate capacity to support addition

-Renovation of existing duct systems

-Finned tube radiation along curtain wall glass in the new addition along storefront glass.

## ELECTRICAL SYSTEM

Building Distribution: 480 V, 3 phase , 4 wire via 13.2kV-480/277 V, 2000 kVA dry type transformer

-New 3000 amp main switchboard and 1200 amp distribution panelboards

-Distribution: Two electrical closets on each floor, each with a 480/277 V, 225 amp panel, (2) 45 kVA dry type transformers and (2) 150 amp, main circuit breaker, 208/120 V, 3 Phase, 4 wire, 42 pole panelboards

-Mechanical Penthouses: New 480 and 208 V panels and motor control center

-Emergency Power: 480/277 V 150 KW Generator

WHITING-TURNER | ARCHITECTS | WHITNEY BAILEY COX & MAGNANI, LLC | James Posey Associates, Inc. Consulting Engineers

http://www.engr.psu.edu/ae/thesis/portfolios/2008/