



Columbia University Northwest Science Building

Broadway & 120th St. New York, NY

ARCHITECTURE:

- Building, when completed in October 2010, will house classrooms, faculty offices, and research facilities for chemistry, biology, engineering, and physics.
- The facade is aluminum-cladded. The structural system also serves as a key architectural facade design. See the structure section below.
- Street entrance on corner of Broadway and West 120th Street allows for easy pedestrian access and provides a link to upper campus.
- Cafe, which has exterior glazing, is located above the lobby entrance and provides great views of Manhattan city life.

STRUCTURE:

Framing system:

- Steel bay framing system used (W shapes).
- Building has a 126-foot clear span over an existing structure, the Dodge Physical Fitness Center. Three giant heavy-duty trusses are used for the span. Trusses use diagonal members ranging from W14x90 up to W14x550.

Lateral system:

- Diagonal wind bracing can be seen up and down the building facade. Composite floor system helps transfer lateral loads.

Floor system:

- Composite (shear studs, concrete slab, steel decking) floor system used. Diagonal members used on level 4 and below to increase diaphragm stiffness.

Foundation:

- Concrete piers near building perimeter; column spread footings (minimum bearing capacity of 20 tons/ft), and grade beams used to resist lateral column base movement.

M.E.P. SYSTEMS:

Mechanical:

- Four 46,000 CFM air handling units to be installed on the penthouse, serving laboratories.
- 33,200 CFM air handling unit to be installed on level 6, serving the library.
- 12,500 CFM air handling unit to be installed on level 4, serving the cafeteria.

Electrical:

- 3 Phase, 3 Wire 265Y/460V; 3 Phase, 4 Wire 265Y/460V; 3 Phase, 4 Wire 120Y/208V electrical systems all used.

Lighting:

- 12 different emergency lighting fixtures used throughout the building's stair wells, mechanical rooms, electrical rooms, exterior, elevators, and roof.
- 32 different architectural lighting fixtures used throughout the building's laboratories, lecture halls, cafe, library, lobby, etc.

Sprinklers:

- Automatic wet fire suppression system used.



CAFE



PLAZA
FACADE



LIBRARY



GENERAL BUILDING DATA:

Size:	188,000 Square Feet
Height:	14 Stories above Grade Max Height 226' 0"
Occupancy:	Educational
Cost:	\$250,000,000 Total Construction Cost

PROJECT TEAM:

Owner	Columbia University Facilities
Lead Design Architect	Rafael Moneo Arquitecto
Project Design Architect	Moneo Brock Studio
Architect of Record	Davis Brody Bond
General Contractor	Turner Construction
Structural/MEP/Fire Engineers	Ove Arup & Partners Consulting Engineers

Jonathan Torch - Penn State Architectural Engineering, Structural Option