

The Sterling & Francine Clark Art Institute Williamstown, MA.

General Building Data

- Location: Williamstown, MA
- Occupancy: C-1, C-2 Art Museum
- Size: 78,800 SF – First Floor & Basement
- Schedule: Jan 2011 – Sep 2013
- Cost: \$28 Million – GMP

Architecture

The First floor of the Clark's new addition was designed by the Japanese Architect 'Tadao Ando.' The new addition would be an open area with glass walls all over to allow light to enter the building except the south side which would be a concrete cast-in-place reinforced walls. The stairs in the center of the first floor leads to the basement. The north extension of the building will hold the utilities such as the electrical room and mechanical rooms.

Structure

- Foundation: 2 way reinforced cast in place (CIP) mat slab, and concrete CIP walls.
- Columns: 18" x 18" concrete cast in place.
- Curtain Wall: glazed aluminum wall (low-e coated, triple insulating laminate glass). Pre-formed intumescent fireproofing will be used, and fluid applied membrane air barrier will be placed in between the concrete and rigid insulation.

Electrical

- Distributed as 3 Phase 480Y/277V via dry type 2000kVA transformer.
- Emergency generator: 1500KW/1875 KVA.
- Luminaires Used: Mostly 20 V for CFL and T4's 277V for T8, MH, LED lighting and Par 38.

Mechanical

- 2 main Hot Water Boilers supplying heat @ 150 HP to supply of 5,021MBH per boiler.
- 6 heat exchanger units.
- 2 main chillers: Capacity: 290 Tons, 696 GPM

Sustainability

- The Sterling and Francine Clark Art Institute is committed to build a sustainable building to line up with the surrounding environment. It is built with recycled, regional, and even some renewable materials.
- The Building is aiming a LEED® SILVER Certification.

Analyses Performed

• Analysis 1: MEP Prefabrication

- Increased efficiency and safety.
- Less congestion.
- Utilizing 3D BIM model aids coordination.
- Saves time and money.
 - 3.5 days of critical path.
 - \$14,611 of general conditions.
 - \$35,840 of labor.
- **Total: \$57,771.**

• Analysis 2: BIM – Virtual Mockup

- Increased coordination and efficiency.
- Less RFI's & COR's.
- Beneficial for all project parties.
- Costs \$240 only.

• Analysis 3: Precast Roof Planks

- Saves time and money.
 - 18 days of the critical path.
 - \$47,662.
- Applied on 21,450 SF using 4'x20' planks.
- Disadvantages impeded the analysis.
 - Architectural implications.
 - Town size.

• Analysis 4: PV Panels

- System size: 392 (240 watt – DC) panels producing 105,383 kWh/year – AC
- System gross cost: \$781,580
- System net cost: \$227,646
- Feasibility was possible due to the governmental monetary supports.
- Payback period of 6 years.
- Cumulative savings over 25 years: \$544,520



PENNSTATE



Turner

THE CLARK

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<http://www.engr.psu.edu/ae/thesis/portfolios/2012/MSA5097/index.html>