

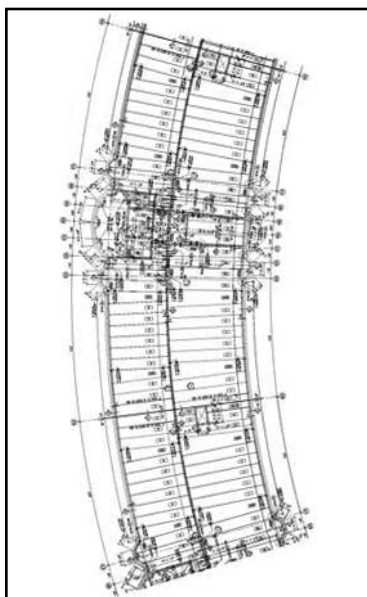
Focus of This Issue: Systems Building, Hollow Core Slabs

Hollow-Core Plank on Curved Building Footprint, Quinnipiac University, Hamden, CT



2 Hr. Fire Rated Hollow-core plank installation on curved building footprint

Approximately 282,000 sq ft of 8" thick x 4'-0" wide Elematic planks were cut and fit to form the floors and roof for two new dormitories for Quinnipiac College in Hamden, CT. Almost 500 8" thick wedge-shaped solid slabs were used to accommodate the geometry, as well as the same number of precast beams to facilitate erection on the masonry bearing walls. The project team overcame many challenges with coordinating trades on a very tight construction schedule to deliver the first 600 beds for fall classes. The Architect is Centerbrook Architects, Essex, CT; Structural Engineer is Gilsanz Murray Steficek, New York, NY; GC is O & G Industries, precaster Oldcastle Building Systems.



Precast & Sustainability with Total Precast – Melrose 5 Affordable Housing

Oldcastle Building Systems supplied and installed hollow core slabs, exterior and interior walls, columns, spandrels, and precast stairs and landings for this 5-story, urban, affordable residential housing in Bronx, NY. The use of all precast cut 30% from the original construction schedule. Using precast walls with fewer joints, potential air leakage was minimized, and the insulation was more continuous. This more efficient building envelop permitted larger windows to be used.

The project has been LEED Platinum Certified and is Energy Star Compliant. The precast concrete system was chosen for many sustainability features, including: (a) the thin brick exterior uses only 15% of the materials for typical brick, (b) offsite casting and storage minimizes job site activity and debris, (c) there is 100% thermal separation between the exterior brick skin and the supporting concrete wall, (d) in addition to precast plank's advantages of fire rating and sound deadening, the cores were used to exhaust bathroom and kitchen air, saving on ductwork, (e) ten 6' diameter roof top low speed wind turbines provide electricity for all outside lighting, and (f) use of local/regional materials earns additional LEED credits.



Melrose 5 Affordable Housing

6800 SF Landscaped Recreation Space



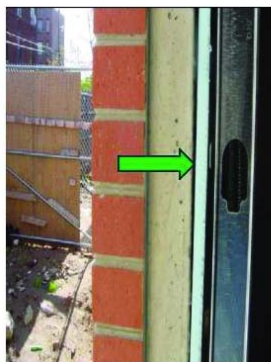
Urban sites with very limited space for construction

Melrose 5 Affordable Housing

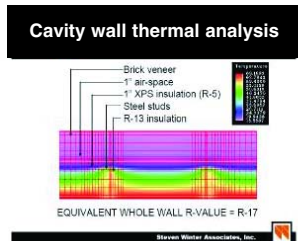


[10] 1 kW low speed wind turbines mounted on precast parapets help generate up to 90% of the building's electrical needs during the evenings.

Melrose 5 Affordable Housing



1" continuous XPS insulation between precast wall & steel studs doubles effective "R"

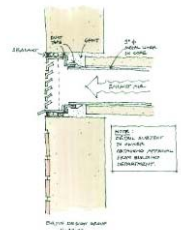


(Note: the above thermal imaging is not Melrose 5, but is similar to thin brick in a precast wall with the 1" XPS.)

The project team for Melrose 5 Affordable Housing was: Blue Sea Development, Danois Architects, engi-

Melrose 5 Affordable Housing

Exterior vent thru plank hollow cores saved duct work & reduces energy use



near William Atlas Assoc, LEED consultant Stevens Winters, precast team JEM Erectors, Equus Designs, and Oldcastle Precast. Thanks to David Wan, PE, LEED AP for the input.

Fire Tests on Hollow-Core Grouted Assemblies

The US standard for these tests is ASTM E-119, "Standard Test Methods for Fire Tests of Building Construction and Materials". The standard test fire reaches a maximum temperature of 1800 degrees (F). There are three modes of failure which stop the testing

and thus sets the test time of the product: (1) Structural failure of the test assembly, (2) Leakage of hot gases through the joints or plank, and (3) reading of any thermal probe on deck above 450 degrees (F).

PCI / FIB Congress

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Load simulated by water level & weight in tanks

Thermal probes on deck placed at XX" o.c.



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Test Fire at 1,800° F max.


Deck is intact. Some loss of material under hollow core of plank



PCI / FIB Congress

PCI


Hollow-core plank and precast all weather construction
Scranton University Student Residence - Scranton, PA



PCI / FIB Congress

PCI

Hollow-core plank with 50" cored opening



Slides from "Hollow-Core in the U.S.", a presentation by David Wan and others at the PCI/FIB Congress

Many different fire ratings are available with hollow core slabs. This information is widely available from precast suppliers and design professionals. These assemblies do not require spray on materials or suspended ceiling systems for their ratings (although these could be

additive). Concrete topping, if used, will enhance fire ratings. Non-combustibility is only one of the many benefits of using precast, prestressed concrete hollow core slabs, which is greatly enhanced when combined in all-precast systems buildings.

Plant Tours

Jefferson Concrete Corporation hosted 25 first year engineering students from Jefferson Community College for a plant tour in September. The students were particularly interested in the prestressed bridge beam which was under fabrication, alongside the finished bridge beams which were ready to ship. As Jefferson's Sales Engineer Ray Cramer puts it – "Our intent is to showcase our industry to these students, and perhaps stir their interest in engineering and the advantages of precast concrete. One never knows how the seeds will germinate!" Contact any of our member plants to arrange a tour for your students, your association, or your organization. We are proud of what we have and what we do!

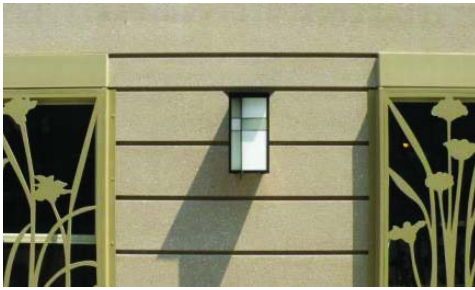
Congratulations to –

Three new PCI Fellows: Charles Magnesio, Heinrich Bonstedt, and Rita Seraderian

PCI Recognition for 5 years of Plant Certification: The L C Whitford Materials Co. Inc.

Passero Associates, named to CE News as a Top Performer

Award Winning Project: Melrose Commons Site 5



The Precast Concrete Institute (PCI) recently recognized Melrose Commons Site 5 with its Sustainable Design Award. Judges comments: ...from an overall sustainability standpoint the judges liked this project because it was nice mixture of affordable housing and affordable green. A lot of the unique aspects of the project related to precast were the fact that the precast contributed so much across so many areas of sustainability, local selection, local manufacturing, energy efficiency, everything from reduced construction waste and dealing with tight construction time lines and windows. It had three precast aspects that were well suited. One was its cost-effectiveness, the second its attractiveness, lastly it met sustainability criteria really well, and the platinum LEED certification was probably a clincher.

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