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Tall and narrow precast corridors connect on the new Essex County prison

Precast wall panels and floor slabs are used for two unique, tall and narrow corridor structures on the new Essex County Correctional Facility in Newark, New Jersey.

In addition to the precast corridors, the state-of-the-art facility contains 1000 precast cells units in four housing structures to accommodate 2000 inmates. The project is currently under erection and is expected to be completed in 2 years.

The corridor structures connect a central support hub with the housing structures. The corridors are typically 11' wide and 54' high. Wall panels are 8' x 30' x 10" thick.

Post-tensioned floor slabs are 8' x 10' x 5" thick. They receive a 9" cast-in-place composite slab with negative reinforcing threaded to inserts in the wall panels. The underside of the slabs contains anchor slots for hanging of utilities.

Bracing and guying of the panels is critical until the composite floor slab is cast, and the moment connections are complete. Two adjustable braces are used with each panel.

The slope and height of the floor slabs inside the corridors varies to meet intersecting floors. One corridor is 110' long and the other 155' long with a 110' extension on one end. A total of 194 wall panels and 211 floor slabs will be required.

Rotondo Precast Modular Group is casting the 1000 precast modular cells at their plant in Telford, PA, and is the prime precaster. Jefferson Concrete is casting the corridor wall panels and floor slabs at their plant in Watertown, NY. H Wildon & Associates with offices in Allentown, PA is the Specialty Engineer.
Precast corridors are located between stacks of cell modules to connect housing units with a central hub. photo by Jefferson Concrete
The **PCANY** Annual Meeting with business, technical and committee sessions is scheduled for February 22nd at the Turf Inn on Wolf Road in Albany. The schedule is as follows:

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:00 am</td>
<td>Coffee and Check In</td>
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<tr>
<td>8:30 am</td>
<td>Business Meeting</td>
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<td>10:15 am</td>
<td>Technical Presentations;</td>
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<td>* MMNF Steel, Harold Yerusalim</td>
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<td>* Sika Corp., Curt Badman</td>
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<td>* Dayton-Richmond, Don VanGerve</td>
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<td>12:00 pm</td>
<td>Buffet Lunch</td>
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<td>1:00 pm</td>
<td>First Committee Session;</td>
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<td>* Membership and Special Events</td>
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<td>* Materials (re: NYSDOT Materials)</td>
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<td></td>
<td>* Technical (re: engr, drafting, QC)</td>
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<td>1:30 pm</td>
<td>Second Committee Session:</td>
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<td>* Marketing</td>
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<td>* Structures (re: NYSDOT Structures)</td>
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<tr>
<td>2:00 pm</td>
<td>Reconvene, Summaries and Discussion</td>
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<tr>
<td>2:15 pm</td>
<td>Implementation of DOT PC/QA Program</td>
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<td></td>
<td>* Discussion of NYSDOT Checklist</td>
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<td></td>
<td>* Development of Generic QA Plan</td>
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<td>* NPCA Course Fundamentals of PC</td>
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<tr>
<td>3:00 pm</td>
<td>Adjournment</td>
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Harold Yerusalim, from MMFX Steel Corp will report on status of corrosion resistant steels recently developed by his company. Curt Badman from Sika will talk on product finishes with retarders, and Don VanGerve from Dayton-Richmond will present an update on new product developments. Of particular note will be discussion of the new Materials Procedure No. 00-01M. Details of which were noted in the December **PCANY** newsletter.
ACI Presentation on three sided and BEBO arch bridges

The advantages of precast three sided and BEBO arch bridge systems were explained by Larry Abatiell, Northeast Sales Manager for Oldcastle Precast, at the ACI Breakfast Meeting held on January 10th at the Century House in Latham.

Three sided bridges are a competitive alternative to conventional types of small bridges. They are quick and easy to install with little impact on waterways, thereby protecting marine life.

Overfilled precast arch structures eliminate deck maintenance and reduce icing conditions on roadway surfaces. Over 30 attended the presentation.
"Train and Gain" short courses in concrete technology

"Grow the people who grow your business of Train and Gain", is the title of six practical short courses in concrete technology offered by the Portland Cement Association.

Topics include; Fundamentals in Concrete Technology, Aggregates and Admixtures in Mix Design, Materials Dispatching, Troubleshooting Field Problems, Repair Methods and Materials, and Petrography. To learn more about the courses call 847-966-6200 ext 407 or visit the PCA site at www.portcement.org.
Precast concrete utility buildings

Precast concrete buildings are an attractive, high security, low maintenance and economical solution for the installation of controls and equipment used by many utilities.

In a typical casting procedure, the sides are cast in a four sided box mold, followed by secondary cast for the roof and floor. Outfitting of the buildings includes installation of a variety of electronic and mechanical controls and the necessary heating, cooling or humidity controls depending on the end use.

Multiple boxes can be connected, end to end where additional space is required. A wide variety of interior and exterior finish treatments are available, depending on the application. The exterior walls for the building pictured above were cast using a simulated brick liner and painted. This building will be delivered to location, set on a gravel sub base and plugged in, ready for use.

For details on precast concrete utility buildings, contact Rotondo Precast at 860-673-3291.
Call for Entries, Annual PCI Design Awards Program

A "Call for Entries" for the Annual PCI Design Awards Program, has recently been issued. Projects can be recognized in three distinct areas. They are Best in Class, Industry Advancement, and All Precast Structures.

Awards will be made in five categories for the Best in Class. These categories are:

- Commercial Buildings
- Industrial Structures
- Housing Structures
- Specialized Structures
- Transportation Structures

The Industry Advancement award recognizes new technology for materials, products, processes and applications. The All Precast Structure award is limited to projects where both the structural frame and cladding are precast concrete.

Entries must be made by an architect or engineer of record and must be submitted by April 27, 2001. Winners will be named in July. For more information including procedures for submitting a project, visit [www.pci.org](http://www.pci.org).
“704-14 Precast Concrete Panel Units”, has recently been issued by the Materials Bureau of NYSDOT to cover the material and quality requirements for precast concrete panel units used to construct a mechanically stabilized earth system.

Included under Fabrication and Drawing requirements, the specification notes that only one copy of each working drawing must be submitted when panel types are proposed that have been previously approved by the Department.
The effect of concrete and air temperature, relative humidity and wind velocity on the rate of evaporation of surface moisture from concrete is shown above. The probability of surface drying, plastic shrinkage cracking and other defects when placing concrete in these exposed conditions, is illustrated below. See commentary with further views from the editor.

Relative Humidity: The evaporation rate is five times greater when the humidity changes from 90 to 50%, and six times greater when the humidity changes an additional 10%.

Wind Speed: The evaporation rate is four times greater when the wind speed increases from 0 to 10 mph and nine times greater when the wind velocity increases to 25 mph.

Concrete and Air Temperature: The evaporation rate is doubled when the temperature increases from 50 to 70 F, and four times greater when the temperature increases to 90 F.
Early surface drying of concrete: views by the Editor

Materials illiteracy of concrete carries a high cost. It results in structures that perform poorly in their service environment, in misdiagnosis of field problems, in inappropriate selection of materials to solve specific problems, and in slow acceptance of new methods.

Many quality problems with cast-in-place bridge or parking decks, relate to evaporation or early surface drying of concrete. These include craze cracking, plastic shrinkage cracking and other defects which affect durability. The nomograph illustrates the effect of concrete and air temperature, relative humidity and wind velocity on the evaporation of surface moisture from concrete when it is exposed in the typical job environment. Section 555 - Structural Concrete of the NYSDOT Standard Specifications incorporates this nomograph.

The Bad News is that it's one of those details everyone seems to ignore. We have never seen wind breaks, sun shields or water foggers used on any jobsite under any conditions. A recent editorial in Academic News, published by PCA, notes that most structural engineers, when it comes to concrete, are only interested in values of $f'_c$ and $E$. Plastic cracking is a mystery or accepted as a given. How you prevent it, is something they never learned in school.

The Good News is that precasting in a plant environment solves the early surface drying problem. Wind, sun, and temperature change are gone. Plant production is another reason why precast concrete offers superior quality for the construction industry.
Calendar of Coming Events

February 8 - 12, 2001 MCX & NPCA Convention
Charlotte Convention Center, Charlotte, NC
Info: NPCA @ 800-366-7731
Registration: NPCA @ 513-621-4439

February 13, 16, Engineers’ Week 2001, The Core of Civilization
Albany Marriott, Albany, NY
Exhibits and Program
Info: 518-465-7386

February 22, PCANY Annual Meeting, (8:30 AM - 3:00 PM)
Turf Inn, Albany, NY
Accommodations: 518-458-7250

February 27 - March 2, World of Concrete Exhibits and Seminars
Las Vegas, NV
Info: 800-837-0870 ext. 2653
email woc@hanleywood.com