




American Concrete Institute  
*Always advancing*

**Conservation of Historic Concrete**


ACI Fall 2013 Convention  
October 20 - 24, Phoenix, AZ

ACI  
WEB SESSIONS




**Sidney Freedman**, Director, Architectural Systems at PCI for 40 years and author of many publications on architectural precast concrete.


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**Conservation of Concrete**  
Development of Architectural Precast  
by John J. Earley  
October 20, 2013



National Historic Preservation Act  
(NHPA) of 1966

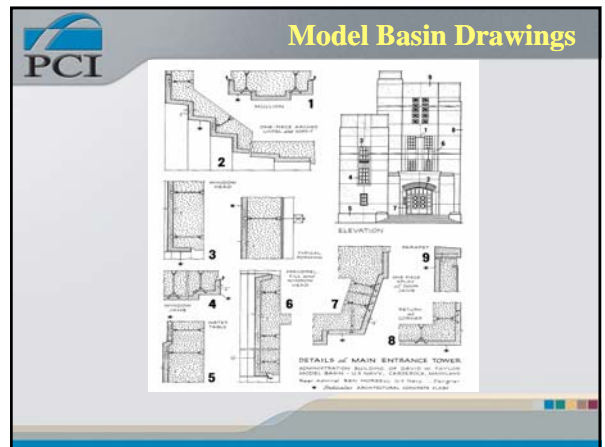
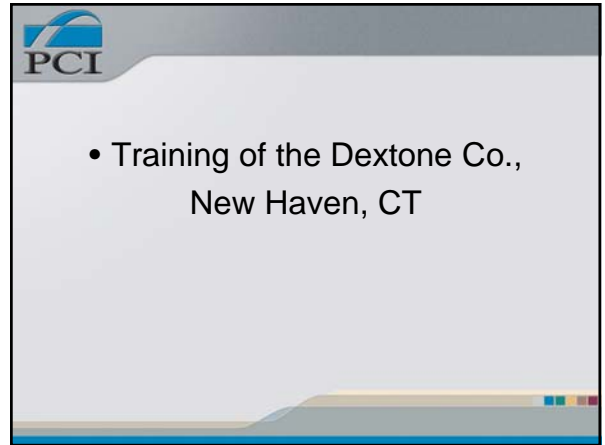
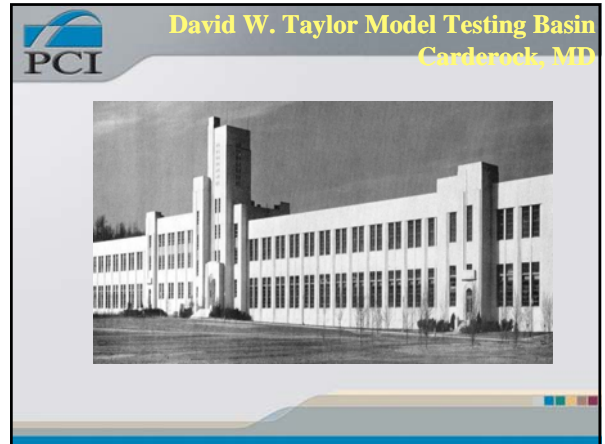
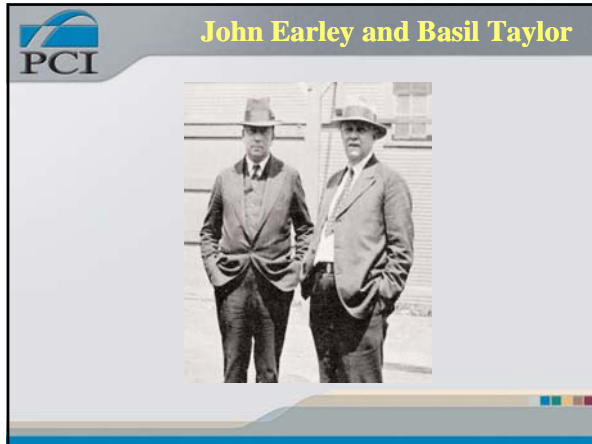


Between The Years 1913 and 1935

- The Rise and Fall of Cast Stone



- Developments in Late 1930's



**PCI**

- Formation of Mo-Sai Associates (1940)
- Mo-Sai Institute (1958)


**PCI**

- Shared Technical Information


**PCI** **Basic Information on Mo-Sai Panels**

- Thickness – 2 inches
- Size – 20 to 100 sq. ft.
- Reinforcement – 4 in. by 4 in., 3/8 dia. Galv.
- Anchor loops – 1 in. wide x 3/3 2 thick galv. strap iron hooked at 2 ft. intervals
- Facing and Backing – 1 in. thick each with 5/8 in. aggregate
- Compressive Strength – 7500 psi cube strength
- Absorption – less than 5%


**PCI** **Production Process**





**PCI** **Production Process (Cont'd)**





**PCI** **Production Process (Cont'd)**





 **Production Process (Cont'd)**








 **Production Process (Cont'd)**








 **Production Process (Cont'd)**








 **Production Process (Cont'd)**








 **Production Process (Cont'd)**

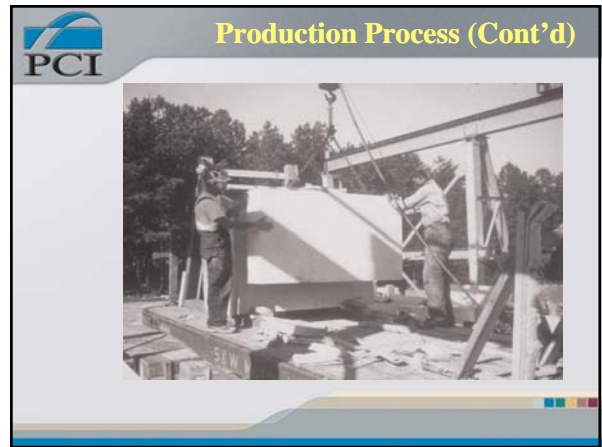
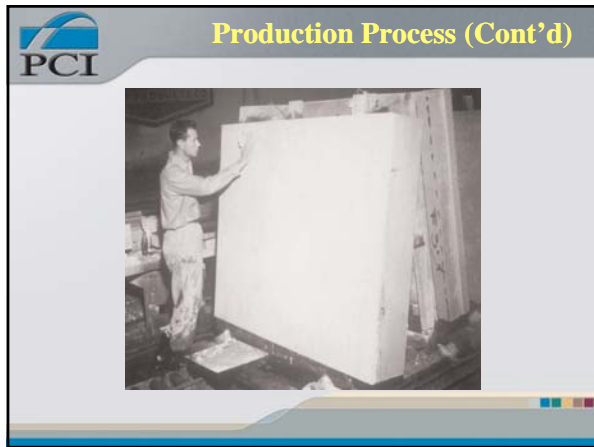
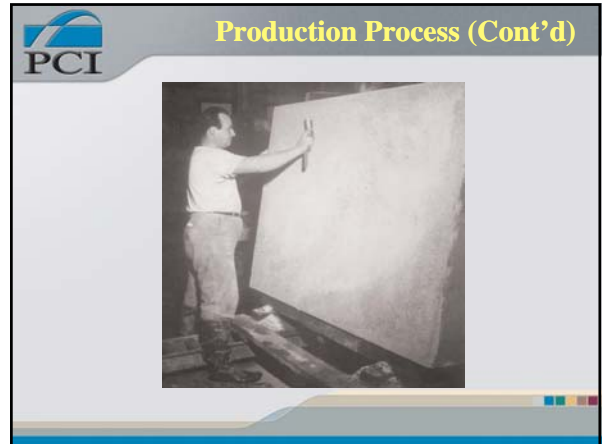
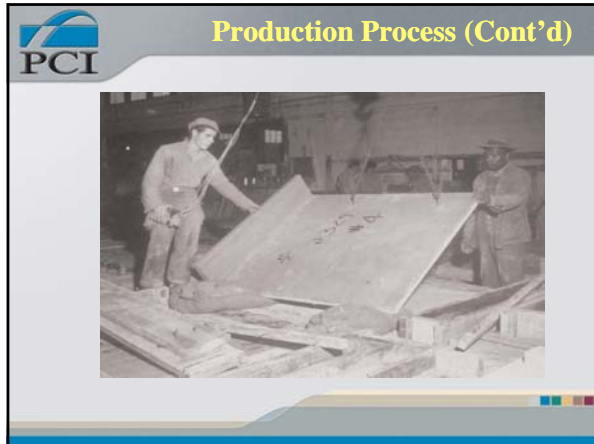





 **Production Process (Cont'd)**











- Gap Grading




### Mix Proportions

- 1 part fines to 4 to 7 parts of 2 or more sizes of coarse aggregate
- Aggregate to cement ratio – 4 to 1
- W/C ratio – 0.53
- Color pigment from aggregate
- Backup mixes – 90 lbs. sand; 306 crushed stone




- Surface Texture




### Designs and Patterns

To prevent mixtures from intermingling while they were being placed in the mold, it was accomplished -


- Using metal stripping such as is used in terrazzo;
- Using thin strips of wood or composition which are subsequently removed and the groove pointed with a colored mortar;
- By small ribs or fins on the face of plaster molds which leave a small V depression between adjacent areas of color;
- By molding recesses in the face of the concrete and afterwards inlaying the various colored mixtures;
- On panels with relief, the depressions of the mold itself provided separation for the colors.



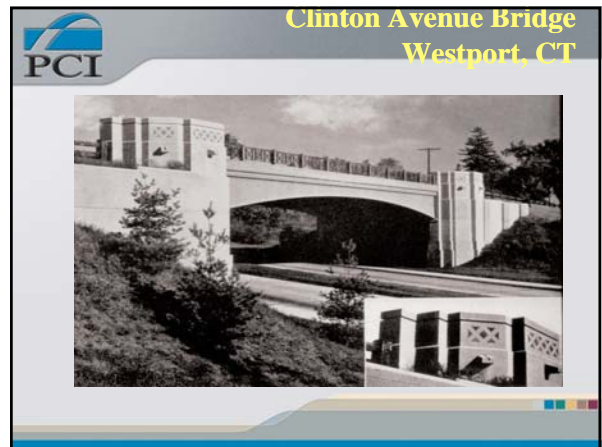
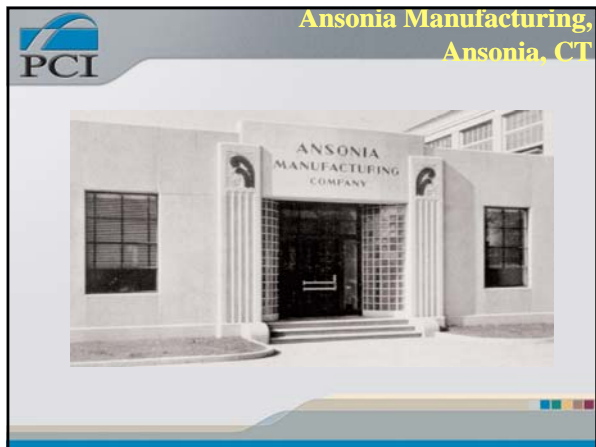
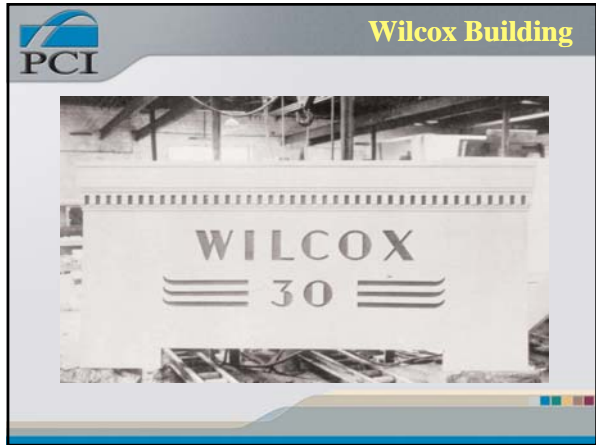
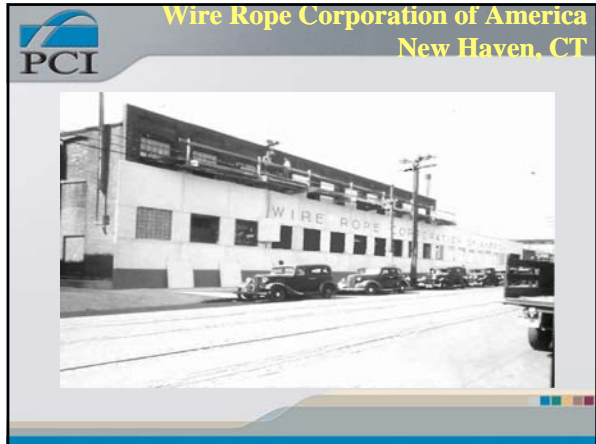
- Mo-Sai Panels By The Dextone Co.




### Dixwell Playhouse, Hamden, CT








 **Summary**

The creation of quality exposed aggregate architectural components is both an art and a science. For over four decades, Mo-Sai Institute members pooled their technical expertise and craftsmanship to produce a product whose singular beauty and quality enhanced the value of outstanding buildings worldwide. The Mo-Sai members were not only pioneer producers, but industry leaders and innovators. Unfortunately, they were too wrapped up in their attempt to keep information within their organization that they failed to see that the precast industry had acquired similar knowledge and techniques. Mo-Sai faded out of the picture in the mid 1980's but the sharing of information by Earley Studio laid the foundation for the growth of the architectural precast concrete industry that we enjoy today!






 **Blue Cross-Blue Shield Office Building  
Richmond, VA**



 **Blue Cross-Blue Shield Building  
Boston, MA**



 **Holy Rosary Church, Ansonia, CT**



 **Pet Plaza, St. Louis, MO**



 **Armstrong Rubber Company Corporate  
Headquarters, New Haven, CT**

