Abstracts of PCI Special Publications

Manual for Quality Control for Plants and Production of Precast Prestressed Concrete Products

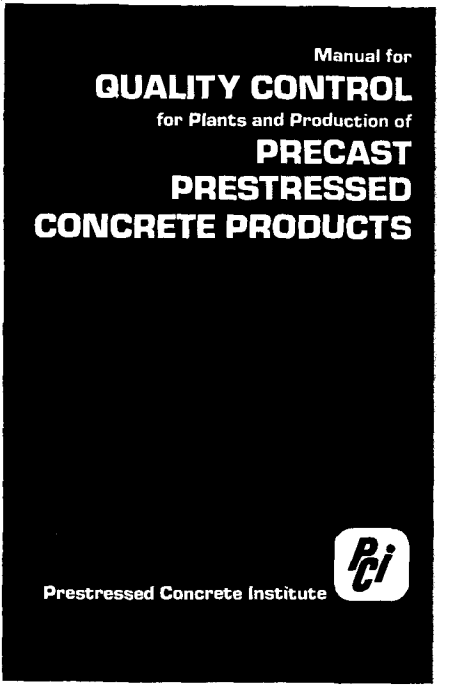
This PCI manual is intended as a production guideline for the manufacture of high quality precast prestressed concrete products. It is used by producing plants as the basic requirements for an effective in-plant quality control program; it also provides the standards for a thorough inspection program as part of the PCI Plant Certification Program.

The manual was first developed as a tentative report, then corrected and improved after 3 years of use and published as a hard-cover manual in 1970.

The current second printing retains the basic divisions: I—Prestressing; II—Concrete; III—Materials; IV—Construction and Safety; and V—Quality Control. All standards and references are up-dated. New sections were added on stud welding, grouting and detensioning of dry-mix, machine-cast products. Dimensional tolerances for products are unchanged.

The rules and recommendations given in this manual are presented only as an outline of the more important fundamentals governing prestressed concrete product quality. It is not intended as a specification document, although many requirements of a specification have been outlined.

The manual is 6 x 9 in., hard cover, and contains 90 pages. Price per copy is $8.00 (30 percent discount to PCI members). Code number: MNL-116-77.

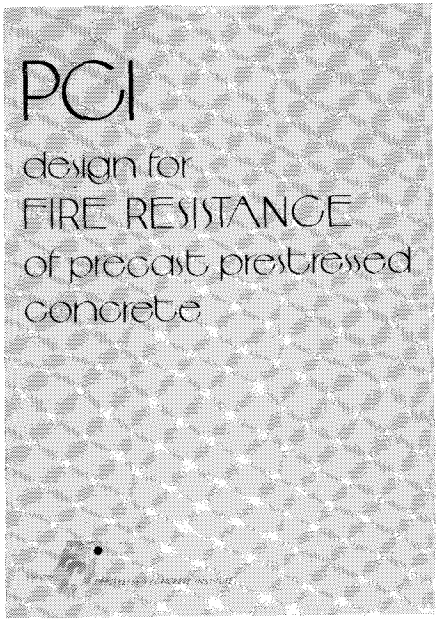


PCI Design for Fire Resistance of Precast Prestressed Concrete

By Armand H. Gustaferro and Leslie D. Martin
for the PCI Fire Committee

This new design manual provides an analytical method of evaluating the fire endurance of structures made of precast and prestressed concrete. It is based on the engineering properties of steel and concrete at high temperatures and on the temperature gradients in concrete subjected to a "standard" fire for varying time periods.

These data provide a means of predicting the fire endurance of any configuration of product, or conversely, of designing a unit to meet a code required fire resistance rating.



Furthermore, test results on combinations of materials with concrete, and on other materials, permit accurate estimates of the fire endurance of precast and prestressed concrete in combination with insulation and protesting materials, or of complete wall, floor and roof assemblies.

Also, with an accurate knowledge of the engineering properties of prestressing steel and concrete, it is possible to predict the limits of structural capacity of structural assemblies subjected to fire in either simple span, continuous or restrained conditions. By using these same engineering principles, modifications can be made to existing designs in order to improve the ratings.

In the manual are charts, graphs and tables that summarize the data. Reference is made to the tests and other studies from which data were derived. Also included are numerous design examples giving the step-by-step procedures to follow along with many design aids to simplify and speed the design procedures.

Simple span hollow-core prestressed concrete slabs and stemmed members are discussed. The effect of added non-prestressed steel to improve ratings is described. Continuous slabs and beams and the effects of restraint are analyzed. Single-course and multi-course assemblies are shown. Wall panels, both with and without insulation, and the

treatment of joints are included. Useful discussion is provided on post-fire examination. Finally, a very extensive selected bibliography is provided.

This rational design approach provides a high degree of reliability in predicting fire endurance of structures or assemblies and will replace the need for expensive testing of new products configurations, designs or assemblies.

The 88-page publication is 8½ x 11 in. in size. Cost is $6.00 per copy (30 percent discount to PCI members). Code number is MNL-124-77.

Errata

The following drawing should be substituted for Fig. A, p. 111, which appeared in a discussion of the article "Driving Stresses in Concrete Piles" (Jan.-Feb. 1977 PCI JOURNAL):

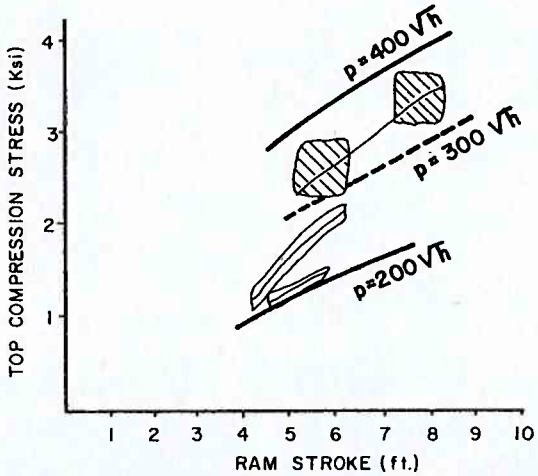


Fig. A. Relationship between compression stress and ram stroke (*P* is stress in psi, *h* is actual ram stroke in inches).

In addition to the new drawing, the discussion contributor also suggests that paragraph 5, p. 111, which begins "Fig. 11 (in author's paper)," be replaced with:

Fig. 11 (in author's paper) shows a plot of ram stroke versus maximum compression stress. In Fig. A, the writer has drawn three lines showing the relation of the measured stresses to the function of the square root of *h*, the ram stroke. The average stress is approximately on the order of 300 $\sqrt{h}$ for the 6-in. cushion used.

Errata

The following table is a replacement for Table 17, p. 89, which appeared in the article "Production Planning and Scheduling for Long Line Prestress Products" (Jan.-Feb. 1977 PCI JOURNAL):

Table 17. Record of first 9 days of production.

Day or cycle	Usable length	Cutting pattern L1	L2	L3	Loss in feet	Production efficiency
1	495.27	5	6	13	0.14	99.97 %
2	498.75	1	7	16	0.07	99.99 %
3	498.75	1	7	16	0.07	99.99 %
4	498.75	1	7	16	0.07	99.99 %
5	499.50	3	15	8	0.13	99.97 %
6	499.50	3	15	8	0.13	99.97 %
7	251.40	2	7	4	0.31	99.88 %
7	237.15	4	0	7	0.23	99.90 %
8	497.16	10	8	7	0.29	99.94 %
9	497.16	10	8	7	0.29	99.94 %
Total used up:		40	80	102	1.73 linear feet accumulated loss	

The new table also appears correctly in a current PCI reprint of this article.