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PRECAST-PRESTRESSED BUILDING
SYSTEMS AND ELEMENTS

by

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A MASTER'S REPORT

submitted in partial fulfillment of the
requirements for the degree

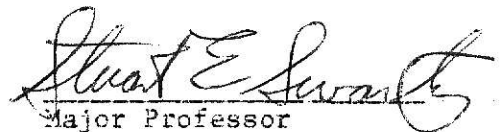
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CHAPTER I - BACKGROUND

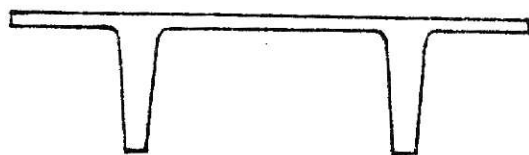
The Precast industry probably started in the United States in 1950, with one plant producing precast-prestressed products. In 1954, there were 34 plants, and a survey by the Prestressed Concrete Institute indicated at least 229 plants were operating in 1961 (19). Now, precast plants are operating in virtually every geographic area of the United States, making the accessible use of precast products economical for many structures.

Starting in the early sixties, building and construction costs have escalated at a considerably faster rate than those of most industrialized products. One of the main reasons for these high building costs is the large amount of site labor involved in the traditional construction processes. The demand for skilled, on-site building labor is quickly out-running the supply and will increasingly do so in most industrialized and developed nations. This trend can be slowed or halted only through greater utilization of centralized plant production, or greater industrialization of construction; and the maximum replacement of expensive mobile skilled construction labor, by centralized local unskilled labor and a few skilled workers.

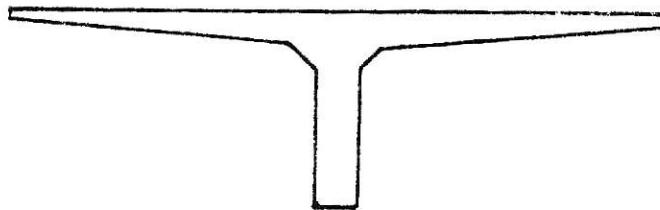
Precast-concrete construction has answered this need for industrialization by mass producing repetitive and standardized units which include beams, columns, floor and roof elements, and wall panels. See Figure 1 for typical standardized precast sections. These elements are produced in precasting yards under factory conditions with closer tolerances and higher quality than can be achieved with cast-in-place concrete. Precast concrete construction is used in all major types of structures; industrial buildings, office buildings, both low rise and high rise type, residential applications and also bridges. Precast concrete utilizes both

**THIS BOOK
CONTAINS
NUMEROUS PAGES
WITH DIAGRAMS
THAT ARE CROOKED
COMPARED TO THE
REST OF THE
INFORMATION ON
THE PAGE.**

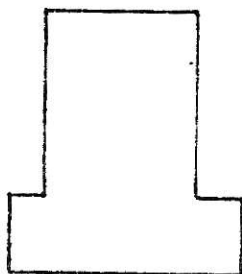
**THIS IS AS
RECEIVED FROM
CUSTOMER.**



Double Tee



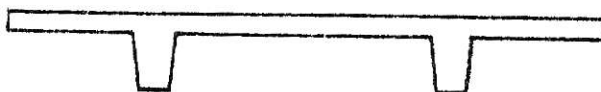
Single Tee



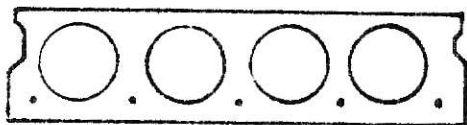
Inverted Tee



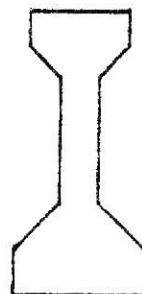
"L" Beam



Double Tee Wall Panel



Hollow Core Slab



AASHTO Beam

Figure 1: Standard Elements