Precast prestressed concrete... the ultimate in versatility for industrial, food processing and warehouse facilities
A neighboring golf course dictated that this pretreatment and waste disposal facility maintain a low profile and blend with the surrounding terrain.

Precast concrete met the owner’s esthetic requirement. Attractive architectural precast concrete wall panels in a variety of ribbed, curved and flat surfaces, were chosen for the basin complex building and the two smaller structures. Because of the high humidity in this treatment facility, a material was needed that would not only be attractive, but durable enough to withstand the corrosive conditions, as well as an occasional wayward golf ball.

Prestressed concrete roof slabs allowed for long clear spans to accommodate the installation and removal of the basin equipment. Construction was completed within the tight schedule determined by the owner in order to minimize the interference of golf course operations.
Mill building is corrosion resistant with prestressed concrete

The design and construction of this mill building demonstrates the important cost and maintenance advantages of precast concrete in buildings for heavy industries. A precast facility of this type can meet all of the owner’s needs in terms of economy, adaptability, schedule and staged installation of equipment while still providing long-term durability and fire resistance.

Economy, a fast-track schedule, and the need to withstand corrosive conditions and heavy loads were decisive factors in selecting precast prestressed concrete components for the $400 million modernization of this pulp and paper mill.

The fast-track schedule was met by easily installed connections and vertical front erection. Hidden structural connections, a smooth inside finish and use of stainless steel and a special paint system for exposed bracing enhanced the inherent corrosion resistance of the prestressed concrete structural elements.

The entire structure provides extra load-carrying capacity allowing the owner to easily relocate heavy equipment. Future expansion will be economical because existing walls are removable.
Success = standard components + technical innovations

Engineer/General Contractor:
Cominco Engineering Services Ltd.
Trail, British Columbia

Owner:
Cominco Ltd.
Vancouver, British Columbia

Zinc Electrolytic and Melting Plant, Trail, British Columbia
Technical innovations incorporating standard precast prestressed concrete components were used to successfully build this $9 million automated zinc electrolytic and melting plant.

Because of the potential for severe corrosion and other manufacturing requirements, several special design features were built into the structure. Standard commercial building and bridge components were used to produce heavy industrial structures resistant to sulphuric acid mist exposure. Other considerations were the detailing of precast units, connections and attachments to minimize acid corrosion.

A fast-track construction schedule required a straightforward design which would permit rapid erection within the tight constraints of this construction schedule. All structures were designed for low maintenance and a minimum 50-year service life in potential sulphuric acid mist exposures ranging from low to severe.

A total of 8819 precast concrete components (mostly prestressed) were used, including beams, AASHTO girders, columns, double tee wall panels, floor and roof slabs, special components and tank cells.

Precast concrete has produced a maintenance-free building of good esthetic appearance at a cost competitive with alternative methods.
Precast concrete achieves strong corporate image with design flexibility

Architect:
Beckstoffer & Associates
Boston, Massachusetts

Structural Engineer:
James MacDonald Associates
Boston, Massachusetts

General Contractor:
Phase I
Dimeo Construction Co.
Providence, Rhode Island

Phase II
R. W. Granger & Sons, Inc.
Shrewsbury, Massachusetts

Owner:
Prime Computer, Inc.
Natwick, Massachusetts

Architectural precast concrete panels convey the strong corporate image required by the owner of this computer research and development facility. Construction of these three buildings was completed in two phases, on schedule with the ease of factory manufactured panels delivered to the site as needed.

The repetitive, structural bays-sized panels were economical to produce and fast to erect. The precast concrete panel system permitted the desired design flexibility for each building to be a different size to satisfy program and site requirements.

In addition, tolerances were easy to control and insulation (exceeding minimum State Energy Code Requirements) was inexpensive.
Precast prestressed concrete enabled construction to begin, even before designs were finalized for this fuel injector assembly plant. Coordinating site preparation and erection is easy to accomplish when using plant manufactured prestressed concrete. Since the contractor realized how fast these panels could be erected, he started grading another area of the site before the first section of the building was complete. This allowed the contractor to stay within a very tight construction schedule.

In addition to speed of construction, esthetics and versatility of materials were important to the designer. A combination of ribbed and flat panels lend scale to the structure and also save energy by providing shade with precast concrete window panels. And these panels may be relocated if future expansion is necessary.
Prestressed concrete goes underground, provides catalyst for 90-acre development

Prestressed concrete provided the catalyst for redeveloping a 90-acre landfill in Multnomah County, Oregon. The inherent durability and strength of prestressed concrete allowed the county to bury a 186,000 sq. ft. (17,280 m²) vehicle maintenance and operations facility 30 ft. (9 m) in the ground and begin the massive reclamation project. This solution also minimized the visual impact in a neighborhood of existing and proposed residential and open space uses.

Unique double tee wall panels, weighing up to 65,000 lb. (29 t), provided the stability needed in this substantially below-grade facility. The 44 ft. (13 m) high panels were designed for 42 lb. per. cu. ft. (680 kg/m³) equivalent fluid pressure, as required by the soils consultant’s specifications. Double tees used in the second floor accommodate a specified live load of HS20 highway loading or 250 psf (12 kPa). Hollow-core slabs were used in the roof system. Solar panels on the south side of the roof provide almost all the facility’s air conditioning needs and about half of its heating and hot water requirements.
Construction time reduced, easy expansion guaranteed

Construction of this computer manufacturing, testing and assembly facility was completed three months early by using plant manufactured architectural precast concrete panels. Each of the seven structures can be easily expanded by simply resetting the precast panels which make up the exterior walls.

Beginning with a three-story administration building, single-story test and assembly modules follow in sequence of manufacturing operations. The modules, interconnected by service cores, create a production floor that covers six acres. Insulated precast concrete panels were the most economical choice for this project.

Quality control is assured with panels that are produced at the plant and transported to the construction site in sequence. The vertical ribbed texture of the architectural precast panels creates a distinct look when contrasted by bands of horizontal glass.
Increase fire resistance, cut construction costs with precast prestressed concrete

Precast prestressed concrete met the owner's requirement for a natural material that would complement the environment and be a showplace in keeping with his reputation as a leader in the industry. It was also a system with inherent construction cost savings.

Additional fire protection required in many industrial buildings was not a cost factor to the owner of this facility. Hollow-core floors in the manufacturing areas feature built-in fire resistance and easily met local fire codes. These components also eliminate the need for scaffolding and much of the on-site labor costs associated with other building systems, thus reducing the owner's overall construction costs.

Manufacturing areas were clad with 10 ft. (3.05 m) wide, double tee panels with a 24 in. (609.6 mm) deep tee for dramatic effect. Double tees allowed exterior construction to proceed quickly, so that interior finishing could continue during the winter months. The wall panels featured an interior core of insulation providing an overall 'U' value of less than 0.10. As with any structure, and certainly a manufacturing facility, durability and maintenance costs are major considerations. Durable precast prestressed concrete will require little maintenance to retain its interior and exterior surfaces.
Ten days after construction began, the precast concrete exterior walls of this office and bottling plant were erected. These durable panels were manufactured off site and were ready to erect just as they were delivered.

By using load-bearing insulated precast panels, the owner saved on more costly site-cast building systems. The insulated core of the load-bearing prestressed elements could not have been economically achieved using site-cast methods.

Minimal maintenance and reduced energy costs will continue to save the owner money for years to come. And, fire resistant precast concrete provided the owner with a fire rating that also saved him money on insurance costs.
Combine exterior beauty with energy efficiency

David Crystal, J. G. Distribution Center, Reading, Pennsylvania

Architect/Engineer:
Facilities Design Department,
General Mills, Inc
Minneapolis, Minnesota

General Contractor:
Burkey Construction Co.
Reading, Pennsylvania

Owner:
Izod, Ltd.
New York, New York

This single-story warehouse and distribution center features exposed aggregate panels combined with the energy efficiency of insulated prestressed double tees.

In just eight months, precast prestressed concrete construction was completed. The exterior walls are prestressed double tees with a central core of insulation which keeps energy costs down. Stems of the double tees face outward, providing interesting contrast to the flat exposed aggregate panels. The smooth side of the double tee facing the interior of the building are easy to clean and will require little maintenance in the future.

Combining exterior beauty with energy efficiency is easy to achieve using standard precast prestressed concrete components.