

# PRECAST CONCRETE EARTH-RETAINING SYSTEMS

## FUNCTIONAL, STRONG AND AESTHETICALLY PLEASING

Throughout history man has challenged the limits of nature by building roads, homes and bridges in rugged and unfavorable conditions. Whether constructing an access road through a remote mountain range, a summer home on the coast or a simple highway overpass through the plains, engineers have relied on precast concrete earth-retaining systems to help bring such projects to reality. Precast concrete earth-retaining structures provide safe, economical and aesthetically pleasing solutions for a multitude of design needs.

Precast concrete retaining structures are extremely versatile and are available in an unlimited array of shapes, sizes and colors. Smaller precast concrete earth-retaining units are ideal for residential or commercial landscaping projects, while larger precast concrete panels or blocks are the clear solution for constructing larger retaining structures. Larger retaining walls are typically used on transportation, public works or large-scale commercial, industrial and residential projects. By incorporating precast concrete face panels with a mechanically stabilized earth (MSE) system, walls can be constructed to nearly any height, assuming a properly designed backfill.

## WHY PRECAST CONCRETE?

- Quality control
- Superior strength and durability
- Availability and ease of installation
- Reduced weather dependency
- Environmentally friendly
- Aesthetically pleasing



QUALITY | VALUE | PERMANENCE

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Precast concrete earth-retaining systems have many advantages over those constructed from cast-in-place concrete, wood or metal materials.

## QUALITY CONTROL

Because precast concrete products are manufactured in a controlled environment, they exhibit high quality and uniformity. Factors affecting the quality of cast-in-place concrete retaining walls typically found on a job site – temperature, improper curing, craftsmanship, material quality, form joints and ties – are virtually eliminated in a plant environment.

## SUPERIOR STRENGTH AND DURABILITY

The strength of precast concrete gradually increases over time. Other materials can deteriorate, experience greater creep and stress relaxation, and lose strength and/or deflect. Precast concrete earth-retaining structures are designed in a number of ways – some take advantage of the physical weight of concrete to resist lateral loads induced by soil pressures, while others rely on both the weight of concrete and retained soil to resist lateral loads with the aid of an MSE system. The durability of precast concrete offers a virtually maintenance-free structure that provides exceptional service for years to come. In contrast, wood has a tendency to rot, while deicing salts will corrode steel retaining structures.

## AVAILABILITY AND EASE OF INSTALLATION

Because precast concrete retaining systems are manufactured well in advance of installation, they are ready for transportation to the job site at a moment's notice. Smaller precast concrete retaining systems are quickly installed by hand, while larger panel and block systems require the use of a crane or backhoe and small crew for installation.



## REDUCED WEATHER DEPENDENCY

Precast concrete increases efficiency because weather will not delay the manufacturing process in the precast plant. In addition, weather conditions at the job site do not significantly affect the construction schedule, assuming the backfill soil is not overly saturated or frozen. Conversely, forming and placing cast-in-place concrete retaining structures may be delayed by adverse weather conditions such as rain or cold weather.

## ENVIRONMENTALLY FRIENDLY

Precast concrete is nontoxic, environmentally safe and made from all-natural materials, eliminating the possibility of soil contamination. Systems are available with optional flowerbeds creating *green walls* that provide ample room for indigenous plant life to grow and flourish. Engineered backfill material provides ideal drainage conditions and soil erosion prevention. In addition, precast concrete retaining systems can be constructed with special noise reduction features to serve as a sound barrier, effectively dampening noise pollution.

## AESTHETICALLY PLEASING

Concrete's versatility allows one to create an unlimited array of aesthetically pleasing earth-retaining systems. With the use of colored concrete or stains and a combination of detailed formliners, it is easy to create a piece of artwork that complements surrounding buildings and landscapes. If a more rugged natural look is desired, panels are available with natural stones cast into the surface or formed stone finishes that can be stained to mimic local rock patterns and colors. Concrete surfaces can also be formed to create natural wood grains, giving the appearance of timber construction. Large panel-type walls, when used in conjunction with detailed urethane formliners, can create pleasing scenes ranging from landscapes to aquatic life.

The use of precast concrete earth-retaining systems has benefited many fast-paced highway construction projects, making it possible to retain large soil masses with aesthetically pleasing vertical wall construction. With its availability in an unlimited number of shapes, sizes and architectural finishes, precast concrete retaining systems easily meet the needs and desires of local communities while providing a superior solution compared with other materials.

For more information on precast concrete earth-retaining systems, please contact:

