

PRECAST CONCRETE STORMWATER TREATMENT SYSTEMS

INTRODUCTION

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INTRODUCTION

Stormwater Treatment Systems

The rain will come;
and sometimes it
will be a deluge.
Your task is to
make it go away
quickly and
efficiently – through
an underground
stormwater system.



INTRODUCTION

Stormwater Treatment Systems

With all things considered, one material stands out as the clear choice for stormwater treatment systems: precast concrete.



APPLICATIONS

- **Stormwater detention** – hold water until it can be otherwise diverted.
- **Stormwater retention** - hold water until it can dissipate into the ground.
- **Stormwater filtration** – collect debris and sediment prior to drainage into surface or ground water.
- These systems can consist of manholes, catch basins, pipe, box culverts, specialty structures and more.

BENEFITS OF PRECAST

Superior Strength

- Strength gradually increases over time.
- Load-carrying capacity is derived from its own structural qualities.
- Does not deteriorate, experience creep and stress relaxation, lose strength and/or deflect over time.

BENEFITS OF PRECAST

Durability

- Studies have shown that precast concrete can provide service life in excess of 100 years.
- For severe conditions, design options are available that can extend service life.
- Precast concrete is a permanent solution.



BENEFITS OF PRECAST

High Level of Quality & Uniformity

- Precast concrete products are manufactured in a controlled environment and exhibit high quality and uniformity.
- Problems affecting quality typically found on a job site – temperature, curing conditions, poor craftsmanship and material quality – are nearly eliminated in a plant environment.

BENEFITS OF PRECAST

Ease of Installation

- Setting precast concrete structures into place is easy, because they do not require special rigging (such as fabric slings) to avoid structural damage.
- Other materials such as fiberglass and plastic can suffer structural damage during compaction.
- Precast is less susceptible to vibratory damage while the surrounding soil is backfilled, speeding up the installation process.

BENEFITS OF PRECAST

Reduced Weather Dependency

- Precast concrete increases operating efficiency, because weather will not delay production.
- Weather conditions have a reduced effect on the schedule, because precast requires less time to install than alternative methods such as cast-in-place.
- Installations can be immediately backfilled – no waiting for concrete to cure.

BENEFITS OF PRECAST

Buoyancy

- With a specific gravity of 2.40, precast concrete products resist the buoyant forces associated with underground construction.
- Alternative materials such as fiberglass and HDPE have specific gravities of 1.86 and 0.97, respectively. Additional labor-intensive and time-consuming on-site preparation may be required to anchor structures made of more buoyant materials.

BENEFITS OF PRECAST

Corrosion Resistant

- Precast concrete is resistant to most substances.
- While no material is completely immune to corrosion, the mix design used to produce precast concrete can be adjusted to help withstand anticipated corrosive conditions and elements.



BENEFITS OF PRECAST

Watertightness

- Precast concrete products manufactured in a quality-controlled environment are watertight.
- Standard watertight sealants and gaskets are available that are specifically designed for precast concrete, making multiple-seam precast structures very simple to construct.



BENEFITS OF PRECAST

Environmentally Friendly

- Besides water, concrete is the most frequently used material on earth.
- It is nontoxic, environmentally safe and composed of natural materials.
- Precast concrete products are buried throughout the world as part of the stormwater treatment systems of nearly every modern city, but do not themselves contribute to poor water quality.

BENEFITS OF PRECAST



Modularity

- Because of the modular nature of many precast concrete products, structures or systems of nearly any size can be accommodated.
- Precast products are designed and manufactured for simple connection to reduce installation time.

BENEFITS OF PRECAST

Availability

- With thousands of manufacturers throughout North America, precast concrete products can be ordered from most cities and regions.
- Products are made in advance and readily available when needed at the job site.
- Ensures a competitive market and a ready supply.

BENEFITS OF PRECAST

Efficiency

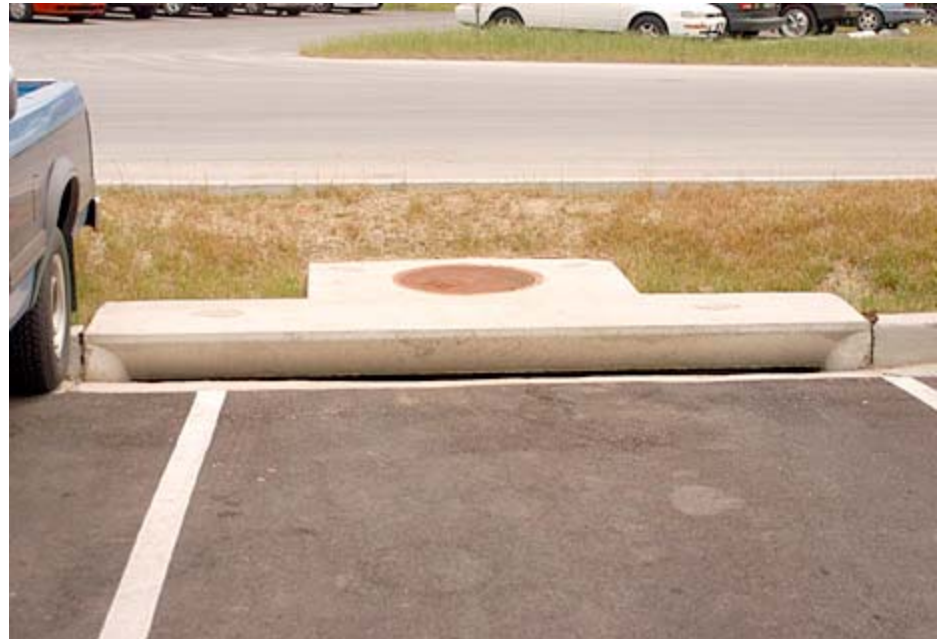
- Precast products arrive at the job site ready to install.
- No waste in the time schedule for setting forms, placing concrete and waiting on concrete curing.



BENEFITS OF PRECAST

Low Maintenance

- Precast concrete requires little or no maintenance, which makes it the ideal choice for nearly any design solution.



CONCLUSION

- Underground stormwater systems are designed to control and sometimes treat heavy rain before channeling to nearby bodies of water. The components of these systems must withstand not only the volumes of water flowing through them, but the extreme external loading as well.
- Precast concrete steps up to these challenges.
- Precast is the concrete solution.