

# PRECAST CONCRETE BOX CULVERTS

## STRONG, VERSATILE AND COST-EFFECTIVE

Box culverts are one of the most versatile and cost-effective precast concrete products on the market today, meeting and exceeding the needs of a multitude of fast-paced construction projects. Flexibility in design and ease of placement lead to cost savings across the board.

The uses for precast box culverts are endless, and include underpasses, service tunnels, subways, outfalls, bridges, stream culverts, material handling, utility storage, chimneys, vertical storage, watertight holding tanks and more.

Precast concrete manufacturers offer a variety of standard box culverts as well as custom designs. Additional features can be incorporated to meet the exact needs of any project: toe walls, manhole openings, headwalls, wingwalls, pipe openings, vee-bottoms, keyed ends, sloped-faced ends and watertight joints. Optional exterior coatings can also be applied at the plant, reducing on-site construction. Precast concrete box culverts can be produced in any size limited only by transportation weight.

ASTM Specification C 1433 “Standard Specification for Manufacture of Precast Reinforced Concrete Box Sections for Culverts, Storm Drains and Sewers,” specifies design and manufacturing requirements to promote quality and durability.

### WHY PRECAST CONCRETE?

- Superior strength and durability
- High degree of quality control
- Availability and ease of installation
- Reduced weather dependency
- Aesthetically pleasing
- Environmentally friendly
- Economical



QUALITY | VALUE | PERMANENCE

# PRECAST CONCRETE BOX CULVERTS

Precast concrete box culverts have many advantages over competing materials.

## **SUPERIOR STRENGTH AND DURABILITY**

The strength of precast concrete gradually increases over time. Other materials can deteriorate, experience greater creep and stress relaxation, lose strength and/or deflect over time. The load-carrying capacity of precast concrete is derived from its own structural qualities and does not rely on the strength or quality of the surrounding backfill materials. Properly designed precast concrete box culverts can easily support vehicular, aircraft and railway loads meeting AASHTO, FAA and AREMA specifications.

## **QUALITY CONTROL**

Because precast concrete products are manufactured in a controlled environment, they exhibit high quality and uniformity. Factors affecting quality typically found on a job site – temperature, improper curing, poor craftsmanship and material quality – are nearly eliminated in a plant environment. Precast concrete box culverts produced in a quality-controlled environment and installed with high-quality sealants offer a superior solution to watertightness requirements. Standard watertight sealants are specially formulated to adhere to precast concrete, making watertight multiple-seam precast concrete box culverts possible.

## **AVAILABILITY AND EASE OF INSTALLATION**

Because precast concrete box culverts are manufactured well in advance of installation, they are ready for transportation to the job site at a moment's notice. They are quickly installed in a matter of hours using a crane and a small crew. Backfilling can begin immediately rather than waiting several days or more for cast-in-place concrete to gain proper strength. Once backfilled, road construction can begin, greatly reducing the deviation of any associated lanes and congestion in the surrounding communities.

## **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 schedule. Conversely, forming and placing of concrete for cast-in-place applications can be delayed significantly due to poor weather conditions.

## **AESTHETICALLY PLEASING**

Precast concrete box culverts can also include spandrel and wingwall panels with a multitude of architectural finishes. Finishes commonly available are: colored, smooth-as-cast, textured form liner, exposed aggregate, acid etched, brick and sandblast. Each is distinctly different, providing specifiers and owners a broad choice in appearance. Architectural finishes complement the surrounding environment and comply with local aesthetic requirements.

## **ENVIRONMENTALLY FRIENDLY**

Precast concrete is nontoxic, environmentally safe and made from all-natural materials, making it an ideal material for use below grade or for the conveyance of water. Concrete has no proven ill effects on groundwater and surface water quality, which helps preserve our natural water resources.

## **ECONOMICAL**

Incorporating precast concrete box culverts into your next project can save you time and money. Fewer skilled laborers and fewer man-hours will be required for the project, making precast concrete box culverts ideal for meeting the needs of today's fast-paced construction projects.

Whether you are spanning a small creek, designing a combined sewer overflow system or housing telecommunications equipment below grade, precast concrete box culverts are the clear choice. Their versatility in design and modularity help make any project run smoothly, leading to overall cost savings.

For more information on precast concrete box culverts, please contact:



**NPCA**

Precast ... The Concrete Solution