

# **Precast Concrete Box Culverts by: KISTNER CONCRETE PRODUCTS INC.**

## **PRECAST CONCRETE BRIDGE SYSTEM**

**The solution for short span bridges by Kistner Concrete Products, Inc.**

### ***Specifications:***

- 1.) Precast Concrete Box Culvert as Manufactured by Kistner Concrete Products, Inc.
- 2.) Producer shall be certified by the National Precast Concrete Association (NPCA) Plant Certification Program. Manufacturer shall be certified at the time of bidding.

### ***Shapes and Sizes:***

- 1.) Sections to be either 4 sided or 3 sided sections with open ends, cast monolithically with min. 8" haunches in each corner.
- 2.) Internal Dimensions: Rise \_\_\_\_\_, Span \_\_\_\_\_. Maximum lay length per section to be 7'-6".
- 3.) Roof, Base and Wall thickness to be determined by manufacturer.

### ***Joints:***

- 1.) Each section shall have a male and female shiplap joint with a minimum of 2" overlap.
- 2.) Each section shall have a 1" x 1" closed cell neoprene gasket cemented to joint surface at the time of shipment.
- 3.) Connection hardware to be provided by manufacturer and removed after installation.

### ***Engineered Drawings:***

- 1.) Shop drawings showing layout of sections and steel reinforcement and design calculations shall be submitted to design engineer.
- 2.) Shop drawings and design calculations shall be stamped by a Registered Professional Engineer.

### ***Codes and Standards:***

The Culvert System shall meet the following codes and standards:

- 1.) AASHTO Load Factor Design Method
- 2.) Box Culvert: AASHTO Chapter 17 – 17.7
- 3.) Three Sided Spans: AASHTO Chapter 17 – 17.8

### ***Material Properties and Design Loads:***

- 1.) Minimum Concrete Compressive Strength: 5,000 PSI @ 28 days
- 2.) Steel Reinforcement: ASTM A615-75, Grade 60.
- 3.) Entrained Air: 5% - 9%.

### ***Soil Data:***

- 1.) Unit Weight of Soil: 120 PCF
- 2.) Unit Weight of Concrete: 150 PCF
- 3.) Lateral Earth Pressure: 60 PCF max, 30 PCF min.

### ***Capacity Reduction Factors:***

- 1.) Shear: .90
- 2.) Moment: 1.0

### ***Loading Data:***

- 1.) Load Factors: AASHTO Article 3.22 and Table 3.22.1A Group X.  
Dead Load: 1.3  
Live Load: 2.17
- 2.) Truck Axle Load: H20, HS20, HS25. As per project requirement.
- 3.) Earth Cover: Minimum \_\_\_\_\_, Maximum \_\_\_\_\_.
- 4.) Impact: See AASHTO Article 3.8.2 modified as per NYSDOT Reinforced Concrete Box Culvert Design Guidelines
- 5.) Depth of Water in Box Section: Equal to inside height of box.

### ***Reinforcement Coverage:***

- 1.) Unless noted otherwise all concrete cover over reinforcing steel shall be 1" minimum on the walls, floor slab and roof slab. When fill heights are less than 2'-0", concrete cover on the outside face of the roof slab shall be 2" minimum.

This specification is presented as guide only. The project designer is responsible for specifying Culverts to meet project requirements. Kistner Concrete Products, Inc. design and production capabilities include, but are not limited to the above outlined specification. Please call our estimating and design staff to assist you in your project planning. Thank you for specifying Kistner Concrete Products, Inc.