

Crews work around the clock in a "Box-A-Thon" to construct a storm sewer.

## Box-A-Thon Introduces Largest Precast Box

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Benefits of [precast concrete boxes](#)<sup>1</sup> are speed and ease of installation under adverse field and weather conditions, and customized engineering. Where considerable capacity is required, multiple box sections can be placed side-by-side, or connected in rows to provide onsite stormwater detention for areas with outfall flow restrictions.

Principal Standards used for designing boxes include [ASTM C1433 - 10](#)<sup>2</sup> *Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers*; and [ASTM C1577 - 11a](#)<sup>3</sup> *Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers Designed According to AASHTO LRFD*. Precast box designs other than standard are available through American Concrete Pipe Association member companies.

The need for a tangential transition box in the middle of busy Charleston Boulevard located in the Northwest part of the Las Vegas Valley is an excellent account of the application of a unique box design. The Oakey Meadows Phase 2A contract called for cast-in-place transition structures, but such construction would disrupt commuter traffic for a prolonged period and be an inconvenience to the public and commerce.

Experienced [Las Vegas Pipe](#)<sup>4</sup> personnel devised a method of pre-casting an 18 foot long (23-foot x 8-foot to 18-foot x 8-foot) tangential transition in 5 separate segments, with the heaviest piece weighing approximately 34 tons. The 23-foot x 8-foot precast boxes were the largest ever produced using a drycast manufacturing method.

Plant personnel devised a method for pre-casting a unique transition connecting the 23-foot x 8-foot section to side-by-side 12-foot x 8-foot and 8-foot x 8-foot boxes. A one foot section on the groove end of the 23-foot x 8-foot box was hand formed to allow connection of the tongue end of a 12-foot x 8-foot box, as well as the tongue end of an 8-foot x 8-foot box. The solution allowed the contractor, [Las Vegas Paving](#)<sup>5</sup>, to perform a "Box-A-Thon" on the weekend before the 2011 Labor Day long weekend.

A "Box-A-Thon" is a 24-hour, round-the-clock operation where the contractor excavates, grades, installs the precast boxes, backfills, and paves, thereby having minimal impact to commuter traffic, the travelling public, and commerce. Las Vegas Paving closed the road Friday evening, received and installed 18 feet of transition sections, 50 feet of 23-foot x 8-foot boxes, 8 feet of 8-foot x 8-foot boxes, and approximately 170 feet of beveled 12-foot x 8-foot boxes on a curved alignment. The roadway was opened on Sunday.

Las Vegas Pipe had delivered over ¾ mile of reinforced concrete MegaBox consisting of 17,000 tons of 18-foot x 9-foot (18 foot span x 9 foot rise), 19-foot x 7-foot, and 19-foot x 8-foot product for the City of Las Vegas's Oakey Meadows Phase 1 project when Phase 2A was advertised. Phase 2A called for an additional 12,000 tons of 18-foot x 9-foot, 18-foot x 8-foot, 23-foot x 8-foot, 12-foot x 8-foot, and 7-foot x 6-foot reinforced concrete boxes.

### LINKS

1. [http://www.concrete-pipe.org/pdf/installation\\_guide.pdf](http://www.concrete-pipe.org/pdf/installation_guide.pdf)
2. <http://www.astm.org/Standards/C1433.htm>
3. <http://www.astm.org/Standards/C1577.htm>
4. <http://www.rinkerpipe.com/>
5. <http://www.lasvegaspaving.com/>

### Learn More About Buried Infrastructure

- See Box Design Tab on Home Page  
[www.concrete-pipe.org](http://www.concrete-pipe.org)
- Concrete Pipe Design Manual  
[www.concrete-pipe.org/pages/design-manual.html](http://www.concrete-pipe.org/pages/design-manual.html)
- Concrete Pipe News  
[www.concrete-pipe.org/pages/cpnews.html](http://www.concrete-pipe.org/pages/cpnews.html)

Photos: David Sterling and Mario Ramirez



23-foot x 8-foot boxes were the largest ever produced using a drycast method.



23-foot x 8-foot to 12-foot x 8-foot and 8-foot x 8-foot transition.

