

- **Small Structures**

**US 231 over Stoddard Ditch, in Montgomery County**

**Des. No. 9608790:** The project included 1,000 feet of roadway reconstruction which include the intersection of County Line Road which fell within the construction limits of the project. A temporary runaround was installed to maintain the 7,500 vehicles per day that utilize the route. The \$600,000 project was designed to 4R standards utilizing a 20 foot clear span precast box culvert structure.



**Tippecanoe County Culvert JAC403:** The 14 ft. X 6 ft. aluminum box culvert carries a low volume (22 VPD) 18 feet wide gravel road over the Little Wea Conservancy and the Leader Newton tile. Given the low traffic volumes and isolated location it was determined that the aluminum box culvert would provide a low maintenance, long lived, long spanned alternative to multiple pipe culverts. The culvert was designed with a 35 ft. barrel length allowing for potential future roadway widening.

**US 24 over Burnett's Creek, White County, Des. No. 1005478:**

This 2012 box culvert replacement, situated between two curves at the west edge of Burnettsville, included right-of-way, a passing blister, and phased traffic maintenance. Traffic control included a **temporary signal with driveway detection**. In addition to engineering design, HSK provided DNR, 401/404, and Rule 5 permitting.



**US 24 over Tributary to Gushwa Ditch, White County, Des. No. 0200073:**

This 20 ft. concrete box culvert replacement required special design considerations due to existing right-of-way restrictions, and the structure's location immediately adjacent to an intersecting county road with adjacent tributary. **Development for this fast-track project was completed in less than 3 months**, and the structure was built in 2012 under a 15 day road closure. DNR, 401/404, and county drain permit approvals were required.

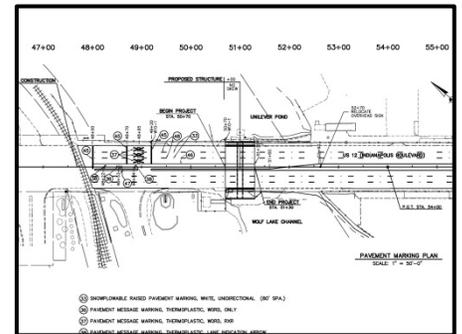


**US 41 over Feddeler Ditch, Lake County, Des. No. 0014130:** This box culvert replacement under the four lane US 41 highway involved phased construction with maintenance of two lanes per phase.

The 2009 project was constructed within exiting right-of-way and required the accommodation of adjacent water and sewer facilities, including a lift station located within the project limits.

**US 12 Culvert over Wolf Lake in East Chicago, Des. No. 9611260:** The Culvert carries over 65,000 vehicles per day along Indianapolis Boulevard.

Five phases of construction were required to maintain traffic through the site. Traffic maintenance was further complicated by the proximity of a signalized railroad crossing. The project also included relocation of multiple utilities, and pedestrian maintenance.

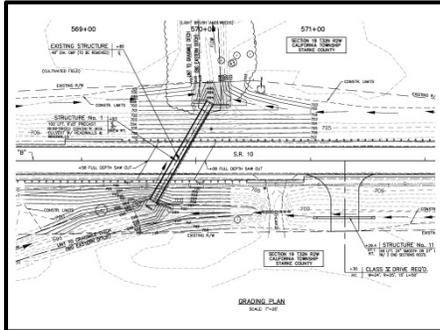


**SR 32 over Indian Camp Creek, Madison County, Des. No. 0101420:** This 2011 three-sided structure on a super elevated curve adjacent to an intersection and a cemetery included 1000 ft. of approach roadway, right-of-way, phased traffic maintenance using a temporary signal, and a new storm drain. HSK also provided 401/404 and Rule 5 permitting.

**SR 43 over Tributary to Wabash River, Tippecanoe County, Des. No. 9606780:** This 2003 box culvert replacement is situated on a super elevated portion of SR 43 and is on a steep grade due to the fact that the road is cut into the Wabash River bank.

As seen at right a **riprap velocity attenuator** was required at the culvert's outlet. The attenuation was accomplished through the construction of a stilling pond at the outlet leading to a waterfall outlet as.





**SR 10 over Tributary Craigmile Ditch, Starke County, Des. No. 0400770:** This 2012 project, which replaced an undersized pipe culvert with a concrete box culvert, was designed to fit within the existing right-of-way. The project included 950 feet of approach work with guardrail.

The project development was completed in 6 months.

**Tippecanoe County Culvert SHF502 Pipe Lining:**

Hydraulic Analysis revealed that there was enough excess capacity to allow the installation of a slip lining into this culvert.

The lining eliminated the need to construct a 28 ft. deep cut, associated reconstruction and closure of the road. The project included the design of an energy dissipater at the outlet to compensate for the increased water velocities.



**Tippecanoe County 3-Sided Culvert:** The 28 ft. structure was designed to replace an existing undersized culvert. The structure was sized and constructed as part of a new open legal drain in an urbanizing area. The barrel length and headwalls were designed to allow for the future construction of a four lane urban street with sidewalks.

**Corrugated Metal Pipe Culvert SHL504:** The culvert is a typical CMP installation. Headwalls were installed to eliminate the need for additional right-of-way on this low volume local road. Structural backfill and construction restrictions guaranteed the integrity of the pipe arch under minimum fill. A stilling pond was constructed at the outlet to correct pre-existing downstream erosion. The pond has performed well since it's installation in 2008.

