

## Mitigation Alleviates Economic Impact of Flooding at Airport

**ERIE, CO** – The existing crossing at Coal Creek, located at Erie Municipal Airport (EMA), was in desperate need of repair and unable to withstand an annual storm event. The city replaced the culvert through a grant funded by the Federal Emergency Management Agency's (FEMA) Pre-Disaster Mitigation Program (PDM).

The culvert system consists of two parallel precast reinforced concrete box culverts, each measuring approximately ten feet in height and twenty feet in width. The ends of both culvert sides were anchored and poured in concrete wing walls approximately 30 feet long and tapered to meet the creek bank. The new system was in place during the September 12, 2013, flood disaster that devastated the state of Colorado. The airport was able to operate during the event, since Coal Creek Crossing was not overwhelmed by the rushing flood waters.

The project was initiated on December 12, 2008, and completed on June 6, 2011. The total cost of the project was \$417,082.85.

PDM pays up to 75 percent of approved projects that will prevent or reduce damage from storms and other natural hazards. PDM funds are designed to assist state and local communities with implementing long-term mitigation measures.

EMA is owned by the town of Erie and is strategically located in the Denver-Boulder Metropolitan Area on Colorado Highway 7, three miles west of Interstate 25. The culvert system connects the airport's 4,700-foot-long paved runway to several maintenance facilities.

Damages from the annual flood events had deteriorated Coal Creek Crossing to the point that significant repairs were required to keep it operational.

"The city was constantly using a Band-Aid approach to keeping the dilapidated system functioning," said Wendi Palmer, city engineer for the town of Erie. "Crews went out weekly to clean the culvert, and the system was repaired numerous times. I was afraid that in case of a large event, the bridge would be completely washed away, causing a temporary shutdown of the airport. It was scary and expensive."

The cost of maintenance was averaging \$6,990.00 per year. Repairs in 2004 alone totaled \$11,010.

"Thirty businesses depend on the airport, and closure would be devastating to the local economy," said Palmer.

Businesses that rely on Coal Creek Crossing for direct access to the airport provide services such as:

- Hangar rental for aircraft maintenance and repair;
- The design and manufacture of specialized equipment for aircraft;
- Full-service flight management for aerial photography;
- Mapping and surveillance projects for government and private organizations;
- Air ambulance service, as well as other hospital-related services; and
- Private flying lessons and flight training



The massive flooding of September 12 reached a height above the culvert crown and deposited a small amount of silt on the roadway, but no damage to the structure was observable. The project performed as expected and likely prevented the bridge from being washed away. There was business as usual at the airport without interruption.

For additional information, visit:

<http://www.boxculvert.com>

<http://www.erieco.gov>

<http://www.fema.gov/grants>