



Mitigated Roads Endure

Full Mitigation Best Practice Story

Holmes County, Florida



Holmes County, FL - Away from the Florida Panhandle's urban areas, residents travel on dirt roads. The red clay roads of Holmes County, quietly located between Pensacola and Tallahassee, pass by country homes and farmsteads and through woods and pastures. When Hurricane Earl dumped 20 inches of rain on the Panhandle in 1998, these roads were severely flooded and washed out. Through a State of Florida and Federal Emergency Management Agency (FEMA) initiative, the dirt roads were upgraded to withstand years of use and rainstorms.

The area is known for its springs and has a high water table. Severe weather causes flooding and raises the water table, which causes seasonal springs in the roadways. The moving water washes out the roads.

After Earl's substantial rainfall, the dirt roads turned into mud, and were rendered impassable by cavernous ditches and flowing water. Holmes County residents became isolated. They were unable to get out of the area, and fire, medical, and police emergency service vehicles could not travel into the neighborhoods.

Holmes County Commissioner Jim King surveyed the road conditions in the fall of 1998 after Earl's heavy rainfall. He found that close to 30 gravel roads had considerable washout problems. The majority were impassable at the time.

Because Holmes County was declared a federal disaster area, FEMA and the Florida Department of Community Affairs were able to provide funds through FEMA's Public Assistance program to repair and mitigate damaged roadways in the county.

Under FEMA's Public Assistance Program, grants are made available to local governments to replace or repair damaged infrastructure, such as road systems, to pre-disaster conditions. Additional funding may be available from the Public Assistance program for cost-effective measures that would reduce or eliminate the threat of future damage to a facility or roadway damaged during the disaster. Mitigating the repetitively washed out roads in Holmes County was an eligible project under the program.

To repair the roads in Holmes County, affected roadbeds were excavated into trenches measuring two feet deep by 18 feet wide by 10 feet long. A layer of geotextile fabric, or special screen mesh, was laid at the bottom of the trench. Then a coarse crushed stone aggregate base was laid over the fabric mesh. The aggregate, composed of two to four inches of crushed stone, allows water to pass through. Another layer of geotextile fabric was then laid on top of the coarse aggregate. An eight-inch thick sand and clay mixture topped the second layer of fabric as the finishing layer.

In addition to the basic road repairs, a final mitigation measure was to stabilize the road surface to prevent erosion by placing a layer of lime-rock over the layer of sand and clay.

The mitigation measure was a success. The repaired roads were not affected by subsequent heavy rain incidents, including Hurricanes Ivan and Dennis. The project was funded under the Public Assistance program, and totaled \$91,252.00. Losses avoided from Ivan and Dennis are estimated at \$182,504.00.

Activity/Project Location

Geographical Area: **Single County (County-wide)**

FEMA Region: **Region IV**

State: **Florida**

County: **Holmes County**

Key Activity/Project Information

Sector: **Public**

Hazard Type: **Hurricane/Tropical Storm**

Activity/Project Type: **Flood-proofing**

Activity/Project Start Date: **05/2000**

Activity/Project End Date: **Ongoing**

Funding Source: **Hazard Mitigation Grant Program (HMGP)**

Application/Project Number: **9999**

Activity/Project Economic Analysis

Cost: **\$91,252.00 (Actual)**

Activity/Project Disaster Information

Mitigation Resulted From Federal
Disaster? **Yes**

Federal Disaster #: **1241 , 09/04/1998**

Federal Disaster Year: **1998**

Value Tested By Disaster? **Yes**

Tested By Federal Disaster #: **No Federal Disaster specified**

Year First Tested: **2004**

Repetitive Loss Property? **Unknown**

Reference URLs

Reference URL 1: <http://www.fema.gov/government/grant/pa/index.shtm>

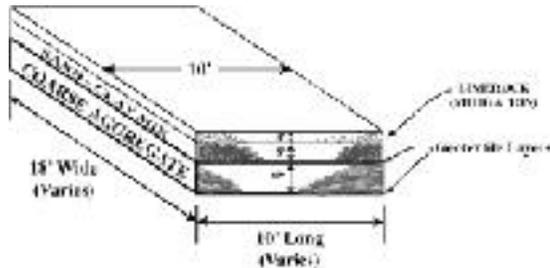
Reference URL 2: <http://www.dca.state.fl.us>

Main Points

- After Hurricane Earl struck, a survey of dirt roads in Holmes County found that nearly 30 had considerable washout problems and were impassable.
- Holmes County residents were isolated as a result of the damaged roads.
- FEMA's Public Assistance program provided funding to repair and mitigate damaged roadways.
- The repaired roads withstood subsequent heavy rain incidents, including Hurricanes Ivan and Dennis.



Mitigated road in Holmes County.



Typical rural road mitigation measure design