Flood Mitigation in Historic Key West

Full Mitigation Best Practice Story

Monroe County, Florida

Key West, FL - The southernmost city of the United States, Key West has a population of 25,700, and the economy revolves around tourism (averages of 9,500 each day), commercial fishing, a vibrant art community, and US Navy and US Coast Guard operations. But flooding has been a fact of life in the City of Key West ever since it was founded.

Large sections of the historic Old Town District have historically flooded frequently. Most buildings were constructed in the mid-19th century. The tourist economy and cultural vitality of Key West depends on protection of these irreplaceable historic resources.

The island city is flat with the highest elevation being about seven feet above mean sea level connected to the mainland by the Overseas Highway. Hurricanes and tropical storm systems are obvious threats. A category 5 hurricane could produce storm surge that would completely cover the city. However, less dramatic events, such as heavy rainfalls and seasonally high tides, regularly produce flooding on a much smaller scale, disrupting business and daily life.

In 1997, the city began a project to alleviate the flooding from coastal storms and seasonal high tides. City engineers installed tidal control valves and stormwater quality treatment structures for outfall pipes on the city's western seawall. They also raised the height of the seawall. The duckbill type tidal control valves prevent the intrusion of seawater and allow stormwater runoff and tidal surge to flow out to the ocean. Hydrostatic pressure from the seaward side of the seawall holds the valves closed, while a couple of inches of run-off can open the valves to allow conveyance of stormwater into the ocean. On the landward side of the seawall, a pollution-reduction skimmer was installed to prevent debris from entering the check valve assembly and to reduce pollution discharge into surrounding waters.

The project has been a huge success. It has practically eliminated the tidal flooding that plagued many of the city's most important intersections. The city has not flooded since the completion of the project. The city has received compliments from local businesses and commendations from local newspapers and citizens about the project.

Previously, seventeen businesses were affected by the flooding with losses estimated at up to $68,000 total per year due to closings. Flooding events had averaged 10 times per year with cleanup and damage estimated at $7,500 per event or $75,000 for the year. Now with the elimination of flooding in this area, the city and local businesses has $143,000 in savings per year. At a total cost of $356,183, the project will pay for itself 2.5 years after the completion date.

Activity/Project Location	
Geographical Area:	**Single County in a State**
FEMA Region:	**Region IV**
State:	**Florida**
County:	**Monroe County**
City/Community:	**Key West**

Key Activity/Project Information

Sector:	**Public**
Hazard Type:	**Flooding**
Activity/Project Type:	**Flood Control**
Activity/Project Start Date:	**01/1997**
Activity/Project End Date:	**06/2000**
Funding Source:	**Local Sources**
Funding Recipient:	**Local Government**
Funding Recipient Name:	**City of Key West**

Activity/Project Economic Analysis

Cost:	**$356,183.00 (Actual)**

Activity/Project Disaster Information

Mitigation Resulted From Federal Disaster?	**No**
Value Tested By Disaster?	**Yes**
Tested By Federal Disaster #:	**No Federal Disaster specified**
Year First Tested:	**1997**
Repetitive Loss Property?	**Unknown**

Reference URLs

Reference URL 1:	**http://www.floodsmart.gov/**
Reference URL 2:	**http://floridadisaster.org/**

Main Points

- City engineers installed tidal control valves and stormwater quality treatment structures for outfall pipes on the city's western seawall.
- The duckbill type tidal control valves prevent the intrusion of seawater and allow stormwater runoff and tidal surge to flow out to the ocean.
- On the landward side of the seawall, a pollution-reduction skimmer was installed to prevent debris from entering the check valve assembly and to reduce pollution discharge into surrounding waters.