AT&T SPECIAL DISTRICT AWARDS – 2018
FBCLID #2 SUBMITTAL

Technology Innovation: Operations
FBCLID2 Technology Initiative

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Description:
Fort Bend County Levee Improvement District No. 2 (District) provides flood protection for approximately 5,300 acres in Sugar Land, Texas. The District protects over 9,000 homes and hundreds of businesses with an appraised taxable value that exceeds $5 billion. Important public infrastructure located inside the District includes the major transportation arteries of US Interstate 69 and State Highway 6, multiple hospital complexes, and Sugar Land City Hall. The District currently operates and maintains 11 miles of levee, 8 miles of drainage ditches and 2 storm water pump stations capable of removing 330,000 gallons of water per minute.

The District strives to be an industry-leader in the field of levee operations. One goal to accomplish that mission is incorporating new technologies that make operations more efficient, effective, and secure. Over the past few years this led to several technology project initiatives that have streamlined routine operations, increased resiliency during emergency operations, and enhanced security. The District completed a comprehensive GIS survey of all assets that is also used to track all maintenance and repairs. The two pump stations also serve as emergency operations centers during a flood. To increase resiliency of communications, both stations have separate high-speed internet connections that are directly linked by the District's own private fiberoptic line. The camera and security systems at both facilities are also linked through the private fiber line and are accessible on any mobile device. The District has also created its own cloud-based file server as a more secure location to store and distribute documents. Recently the

District programmed an operations iPad with access to all the technology listed above as well as the ability to remotely monitor and control both pump stations.

Demonstrated Excellence Example One (200 words):

Over a two-year period, the District inventoried all assets using a GIS database that maps locations and includes descriptions, photos, and record drawings. The District then purchased a work order system from CityWorks which incorporates GIS to track all maintenance and repairs. The work order system has been implemented for over 3 years and has now tracked thousands of tasks. Past work history and future preventive maintenance items can now quickly be identified. The work order system was so effective at tracking the location of repairs and maintenance within the District that it was expanded to also include all permit and easement requests. A field version of the work order system also allows inspectors to easily reference open work orders and submit new requests remotely.

GIS data is mapped for a variety of uses by the District. Printed maps are used to improve situational awareness during emergencies or as a great reference exhibit for public meetings. The ability to quickly show something on a map is far more efficient than trying to describe it in words. Electronic maps were also created for inspectors to use on mobile devices to easily identify their location and District assets in the field.

Demonstrated Excellence Example Two (200 words):

The District has invested in redundant internet communications at both pump stations that also serve as Emergency Operation Centers. Both stations use a different internet provider and the District installed its own private fiber optic cable between the two facilities. If the internet service goes down at one station, the provider from the other station will serve as a back-up so both stations can remain online. The District security camera system mentioned below also benefit from this redundant communication and private fiber optic link. Should the video server go down at one pump station, the video feed will automatically switch to the video server at the other pump station and continue recording images.

Another long-term goal for the District is to become as paperless as possible so as part of this process the District began hosting its own file server. Previously a dozen 200-300 page books were prepared for each meeting of the Board of Directors, sometimes twice each month. All that documentation and information is now transmitted in a single file that can be opened on any electronic device. The file server also provides an easily accessible warehouse for District records and plans.

Demonstrated Excellence Example Three (200 words):

The District CCTV camera system is not only used for standard security and monitoring but is also an essential tool for emergency operations. Over 30 cameras are installed around the two main pump stations and flood gates. The CCTV system was originally installed to simply monitor the pump stations when the Operator was not present. However, as video technology improved, the cameras allowed emergency operations to be conducted in a much safer manner. All cameras now capture high-definition video, and many are equipped to pan, tilt, and zoom. This allows the Operator to easily monitor flood levels both inside and outside the levee from the safety of the pump station. The Operator no longer has to climb the levee to inspect during the heaviest storms and hurricanes. Furthermore, the CCTV video server also includes a mobile application, so District management can check on facilities day or night during normal or emergency operations. Several cameras are pointed at gauges that measure water

depth, and these recordings also provide great data to study flooding and emergency operations after events. Following Hurricane Harvey, and other recent floods, this gauge video helped provide an accurate account of drainage and flood protection system performance.

Demonstrated Excellence Example Four (200 words)

The District recently setup a new field iPad that is the culmination of several years of technology implementation. This single device provides remote access to all the technology and information mentioned above. The iPad also has its own mobile data plan, so it can even work in the field, away from the redundant internet connection at the pump stations. The GIS maps and work order system are combined into a single application. Because the iPad is a mobile device, the maps also display the user's location when working in the field, so they know exactly where they are and what asset they are looking at. The fileserver application provides the Operator quick access to any drawings or exhibits, and the CCTV security system provides a quick look at all facilities from any location.

Finally, the iPad was recently assigned a static IP address and can now securely login into the SCADA program that controls the operation of both pump stations. This means both emergency facilities can be remotely operated from this particular mobile device anywhere a mobile data connection is available.