



# The Cornerstone

A quarterly newsletter from the Appraisal Department of Catholic Mutual Group



COMMITMENT \* EXPERTISE \* STABILITY

## The Construction Drone

*D*rones, also known as Unmanned Aerial Vehicles (UAV's), are having a significant impact on the construction industry. As a tool, drones can offer many advantages when used on a construction project and capturing real time data. Here's a look at some of the ways drones are being utilized at the job site.

### Surveying

Drones can offer real time aerial imagery of large tracts of land, much more accurate and realistic than aerial photography. Their use has grown rapidly in the surveying field, reducing labor and time involved in producing accurate land surveys. Human error is reduced as well, due to the drone capturing data in much less time than traditional methods would take.

### Inspections

With the advantage of sending drones to reach locations which may be inaccessible or require additional manpower, equipment, etc., work is being completed faster and in a safer environment. Drones are being used to inspect bridges and skyscrapers, completing the process with less risk to manpower and equipment that would typically be involved. In addition, the savings in cost is significant, for example the Department of Transportation of Minnesota noted that previous inspections of bridges that would take over a week to complete with costs of \$60,000, were now being completed typically in 5 days at a cost of \$20,000; a savings of 66%.

### Real Time Information

Drone technology has evolved to the point of instant communication on the job site. Superintendents are using drones to stay in constant contact with workers, and as a means to track day to day progress with real time data. Companies utilizing drones are reporting significant increases in efficiency to complete projects, worker safety, as well as a reduction in theft.

With the construction industry evolving at a rapid rate, drones have provided the ability to manage workflow 24/7, and is certain to have even a greater impact on the construction process in the years to come.

# Building Spotlight—The Pentagon

In 1940, the construction branch of the U.S. Army Quartermasters Corps was asked to find a permanent solution to the lack of office space for the war department. At that time, the department was scattered across Washington D.C. in 17 different buildings.

By July of 1941, architects were given just a few days to design a structure that would accommodate 40,000 employees, and parking space for 10,000 cars. The structure was required to be no taller than five stories, with two additional stories underground, it would be primarily constructed of reinforced concrete in order to conserve steel for the ongoing war.

Ground was broken on the Pentagon September 11, 1941 (60 years to the day of the 9/11 terrorist attack). More than 15,000 workers worked at the site 24 hours a day. Construction was completed in January of 1943; completed in 18 months at a cost of \$63 million (\$28 million over original budget of \$35 million). In today's normal conditions, it is estimated that the structure would take over four years to build, at a cost of over \$900 million.

The complex sits on 28.7 acres west of the Potomac River. With over 6.6 million square feet of office space, the building is considered as one of the world's largest. The interior has 17 miles of hallway, and over 280 bathrooms. Concrete

ramps were built between floors in place of elevators, windows are made of two inch thick glass. The complex has multiple restaurants, a pharmacy, and Starbucks Coffee.

It is difficult to understand the enormity of the building, for example, the U.S. Capitol would fit into one of the five sides of the structure, the Empire State Building has less than half of the square footage, and due to the size of the complex, the U.S. Post Office has assigned six zip codes to the complex.



## Construction Trends



As we enter 2018, it's still a good time to be in the construction industry. Both commercial and residential sectors continue to be strong. Public construction has remained stalled for over a year now, as promised initiatives from Washington DC have never materialized.

Material costs continue to show steady increases of 4-5% over the past year. Some, such as aluminum posted nearly a 15% increase in the last 12 months. Wage increases over the past year increased in correlation with materials, posting a 4-5% increase.

One aspect of material and labor costs not fully recognized yet, is how the natural disasters of 2017, will have an overall impact on these costs. A continued analysis by construction experts will need to be completed for this to be better understood.



**Fun fact:** The average dump truck with a diesel engine may weight up to 25,000 lbs.

Catholic Mutual Group was established as The Catholic Mutual Relief Society of America in 1889 by a group of Midwest Catholic bishops who were unable to obtain reasonably priced, reliable insurance on their churches. The bishops worked together to form a mutually protective organization which would help repair or rebuild damaged church properties. From these humble beginnings, Catholic Mutual Group has grown to be the largest provider to the Catholic dioceses, religious orders and other Catholic institutions, including schools, retirement facilities, counseling centers and human service programs in North America.

## 2017 the year of the Natural Disaster



According to the National Oceanic and Atmospheric Administration, 2017 turned out to be the costliest year on record for natural disasters in the United States, with an estimated cost of \$306 billion in damage. 16 separate events had damages exceed \$1 billion each. This year's \$306 billion broke the record set in 2005 of \$215 billion, which included Hurricane Katrina.

Three, category 4 hurricanes, made landfall causing over \$265 billion in damages. Hurricane Harvey made landfall with 130 mph winds, and dumped over 4' of rain on Houston. According to Scripps Institution of Oceanography, preliminary analysis indicated over 30 trillion gallons of rain fell over the Houston area, actually depressing the land due to the weight of it.

Wildfires began to ignite in western states over the summer causing record damage. Fires in the Los Angeles area alone accounted for over 280,000 acres being burned, in all, over 9.5 million acres were damaged in the U.S. due to wildfires, with damages estimated at \$18 billion. 2017 turned out to be the second worst year in terms of area damaged.

In addition to the hurricanes and wild fires, out breaks of other severe weather had a major impact on the total disaster costs. Tornado outbreaks occurred in the southeast and the plains during the year accounting for over \$7 billion in damage. Hailstorms from Colorado in May to Minnesota in June caused over another \$7 billion in damages. Flooding, from heavy rain not associated with hurricanes, caused another \$3 billion in damages in California, Missouri, and Arkansas.

Once the cleanup and demolition efforts are completed from the disasters, the task of rebuilding homes, businesses, and infrastructure begins. This process has an enormous effect on material and labor costs. The California wildfires will have a major impact on material associated with residential construction, as thousands of residents look to rebuild. In Texas, builders prior to Hurricane Harvey were having trouble finding enough workers to fill jobs for new construction. With the rebuilding process, wage surge is now expected, as out of state workers flood the area to benefit from increased demand. All of these events will have a lasting impact on the affected areas, for some, many, many years.

**Fun fact:** According to the EM-DAT, the total number of natural disaster reported each year has been steadily increasing in recent decades, from 78 in 1970 to 348 in 2004.