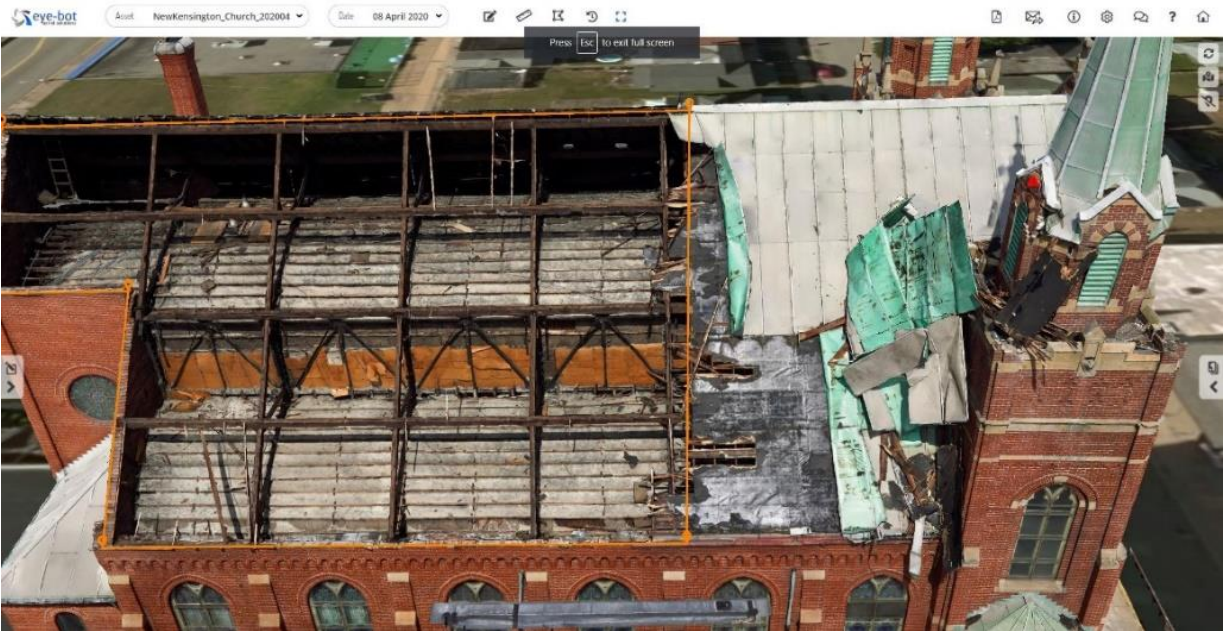


# St Mary of Czestochowa



## Project Case Study

April 8, 2020, shortly after 1 a.m., an EF-1 tornado with up to 100mph winds ripped through the town of New Kensington, Pennsylvania causing damage to buildings, vehicles, and the surrounding infrastructure. One of the buildings damaged was the 109-year-old, St Mary of Czestochowa Church which sustained damage to the roof and one of the two bell towers. Luckily, due to the time of the storm, the church and surrounding area were vacant, and no one was hurt.



*3D Model capture and processed by Eye-bot Aerial Solutions shown in Trendspek*

The morning after the storm, and in co-operation with the church and emergency response crews, Eye-bot was able to document the post-storm exterior conditions of the church by mapping the area using a survey control network and unmanned aerial system (UAS/drone). Then, by combining the survey data and images gathered by the Eye-bot Aerial Solutions team, an accurate 3D model of the exterior damage was processed and delivered to the church facilities coordinator and other interested parties. **The data was shared in under 24 hours** from capture using Trendspek, a web-based data delivery tool that allows users to measure, collaborate, annotate, and view every image used to create the 3D model.

As initial site clean-up was completed and the church was deemed safe to enter, plans began on how to ensure the church could be restored, but as with most older buildings, existing drawings were either non-existent or not up to date.

# Project Solution



## Interior and Exterior 3D Data Capture

To properly assess the damage and begin planning the repair, the Diocese of Greensburg contracted Hayes Design Group (HDG), a full-service architectural firm offering pre-design services through construction administration, to assist in developing the church drawings for repair planning. The facilities director at the Diocese then put HDG and Eye-bot in contact with each other to determine if the survey and drone data previously collected by Eye-bot could be of any assistance.

After a brief meeting between the two companies, it was determined that the exterior data previously collected could be converted into a Revit compatible file which was being used by HDG to develop the proposed drawings for the repair improvements to the Church. Because all of the exterior data had been collected using proper surveying methodologies, HDG could proceed with confidence in having accurate, field-verified, visual data to extract the pertinent elevations and dimensions to assist in the development of their CAD drawings.

In addition to the exterior data captured via drone, Eye-bot was tasked with interior 3D laser scanning services to properly document the conditions of the church's interior to further assist HDG. Using a combination of traditional surveying and mapping methodologies, along with the 3D laser scanning and drone technologies, Eye-bot was able to provide HDG with **a comprehensive interior and exterior, visual, as-built data set to inform the project without the incurring the exhaustive cost and time of taking unreliable hand measurements for their drawings.**



*Interior 3D Point Cloud*



*Interior 360-degree image*

# Project Success



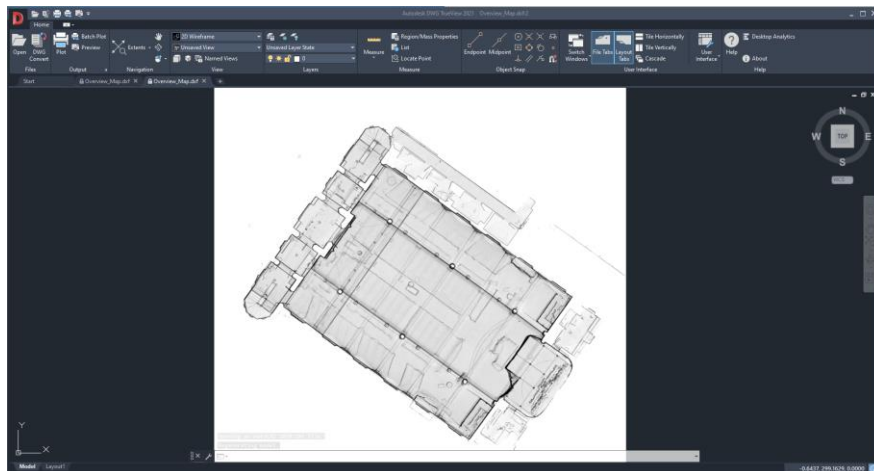
Accuracy, Efficiency, Safety

Through the combination of the survey, drone, and 3D laser scanning services, Eye-bot was able to deliver a colorized, 3D point cloud in .rcp format compatible for use in Revit, ReCAP and the Autodesk suite of products. Additional 2D and 3D software file types and delivery options were also made available throughout the project.

The interior and exterior data deliverables were accurate under 2cm to meet the client requested specification. All 2D and 3D data **was collected, processed, and delivered in less than 2 weeks from start to finish** and helped to enable restoration and construction work which began in March of 2021, less than 1 year from the incident.



Exterior drawings developed by HDG using Eye-bot data



2D Floor Plan via AutoCAD DWG TrueView

“The models (both interior and exterior) have been extremely helpful, especially for this project when

1. The amount of detail in the building is really hard to capture efficiently, just through drawings and
2. The height of the building makes it almost impossible to see some of these things.”

**Randy Hunter** – Project Architect  
**Hayes Design Group**