



# DATA CAPTURE TECHNOLOGY

## for Water/Wastewater Facility Management

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Presented by Spotts, Stevens and McCoy



# Unmanned Aerial Vehicles (Drones)

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# Who, What, When, Where and Why?

- Criteria for “Pilot in Charge”
  - FAA Licensed Commercial UAS Pilot
  - Insured Consultant
  - Familiar with Flight Requirements



# What will you be flying?

Quadcopter Fixed Wing



Air Craft may not exceed weight limitations of **0.55 to 55 pounds** including payload.





# Drone Flight Path Comparison

## QUAPCOPTER FLIGHT PATH FOR FULL TOPOGRAPHY



## FIXED WING FLIGHT PATH FOR VIDEO LOG



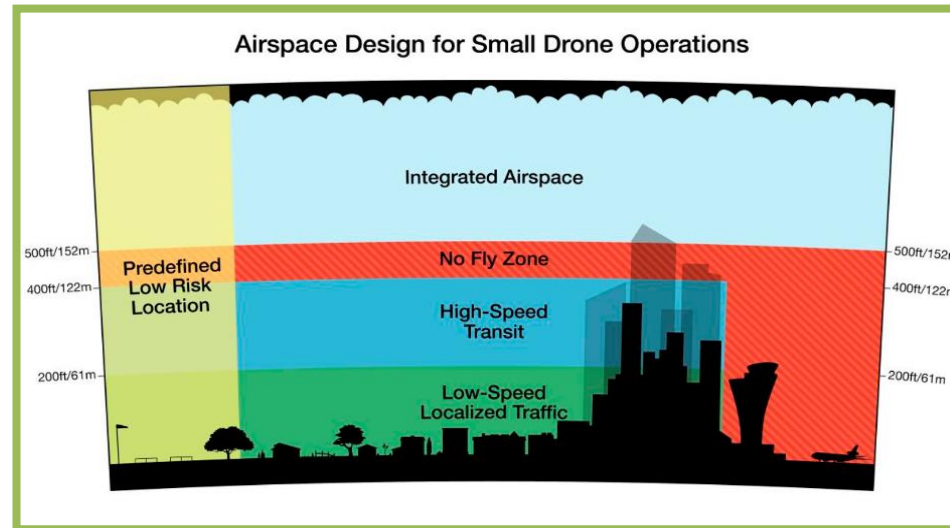
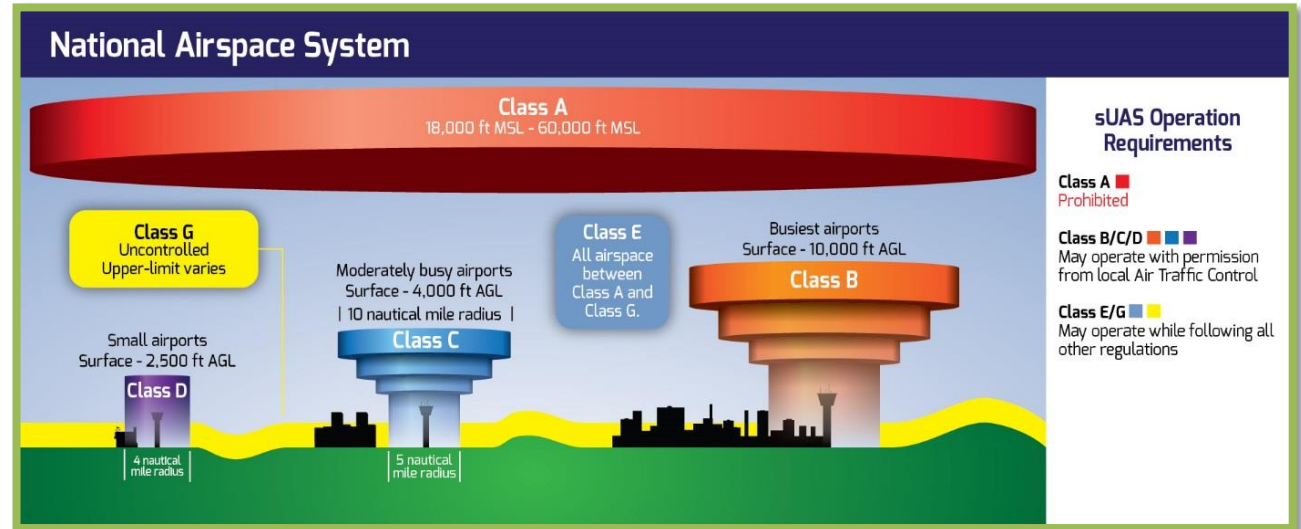
Project Scope, Population Restrictions and Desired Deliverable dictate best choice of aircraft for the data collection.



# Where can I fly my Drone?

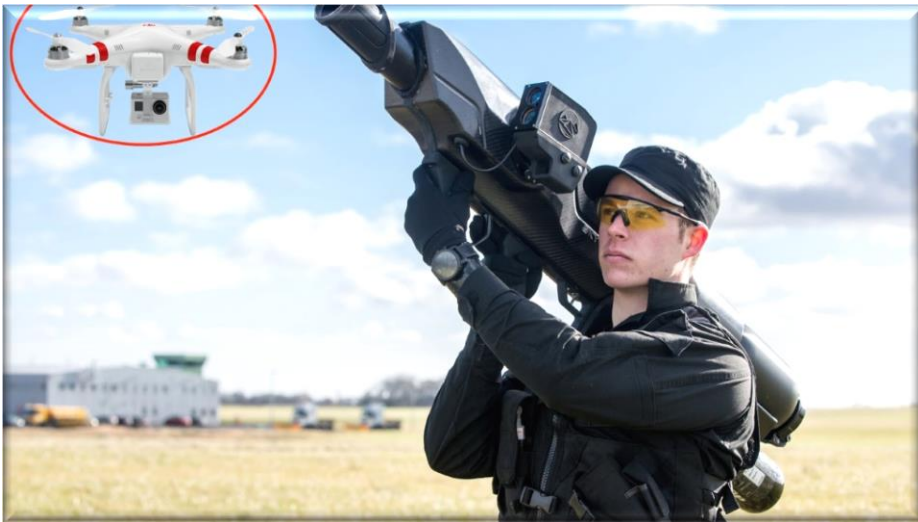
## Horizontal and Vertical Flight Restrictions

- Clear of FAA Controlled Air Space
- Clear of Dense Population
  - Homes or People
- Clear of Private Personal Space
  - Curtilage
- Only over your Project Area
  - No Speculation
- Within Line of Site



# When can I fly my Drone?

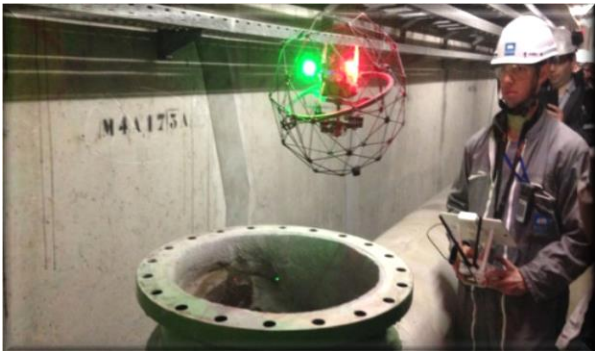
- Dawn to Dusk
  - Defined by 30 minutes after first light and 30 minutes prior to total dark (Twilight Hours)
- Clear of NOTAM Calls for Flight Restrictions
- Within guidelines of the Airspace Authorization
- Within guidelines of FAA Part 107 Waivor
- Within permission window of private land owner



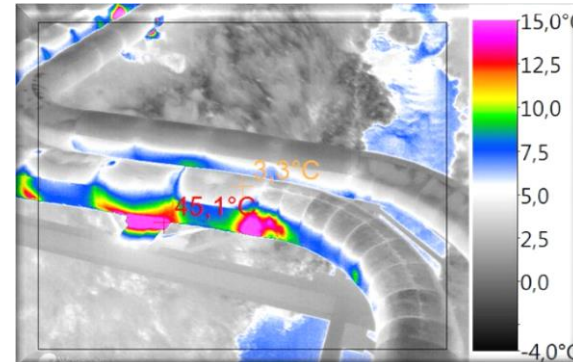


# Why Should I Use Drone Services?

Reduce Risk of Human Injury



Increase Productivity



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# What Can I Do with the Data?

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# 3D Mesh File





# High-Definition Photographs



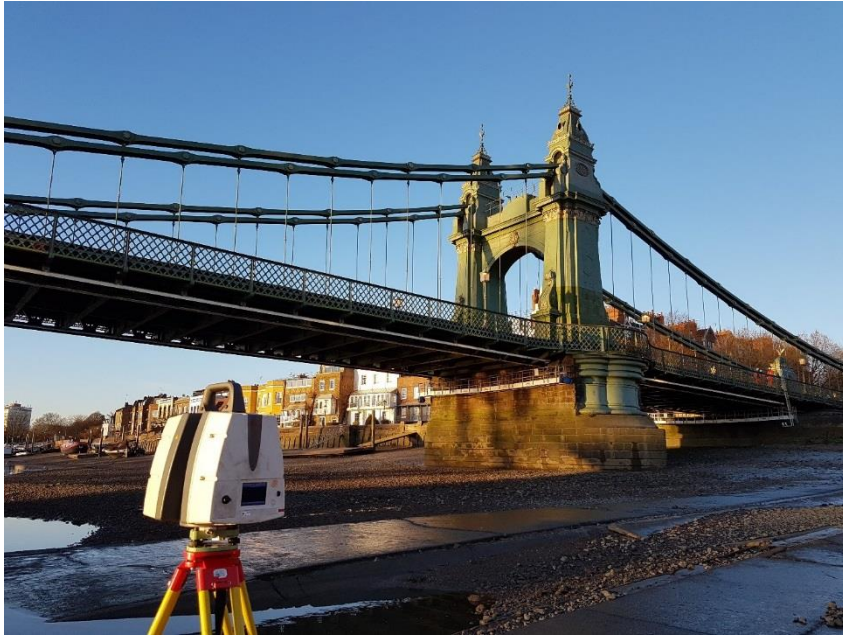




# Drone Inspection Projects







# High Definition Scanning Field to Finish

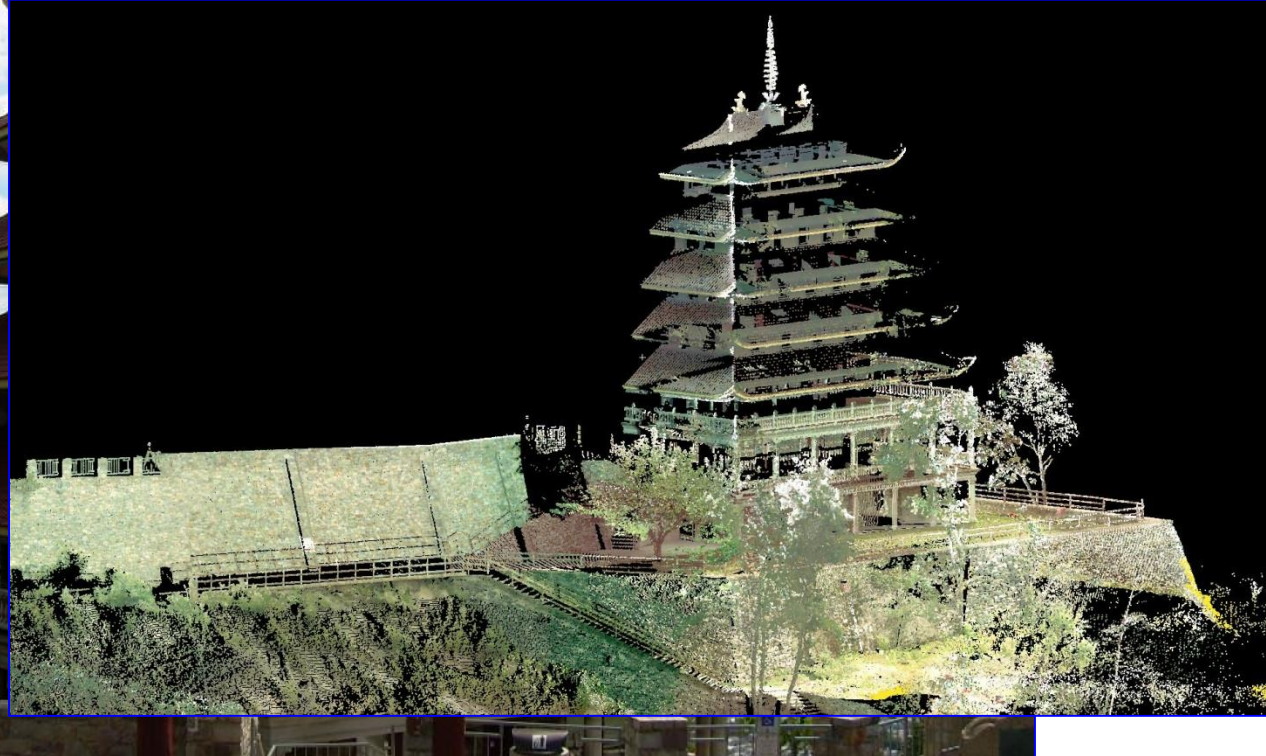
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All projects begin with collecting the raw data. ***No job is too big or too small.***



# Pagoda | Reading PA

- Topographical survey project.
- Scanned area around the building for new gardens, landscaping, and parking.

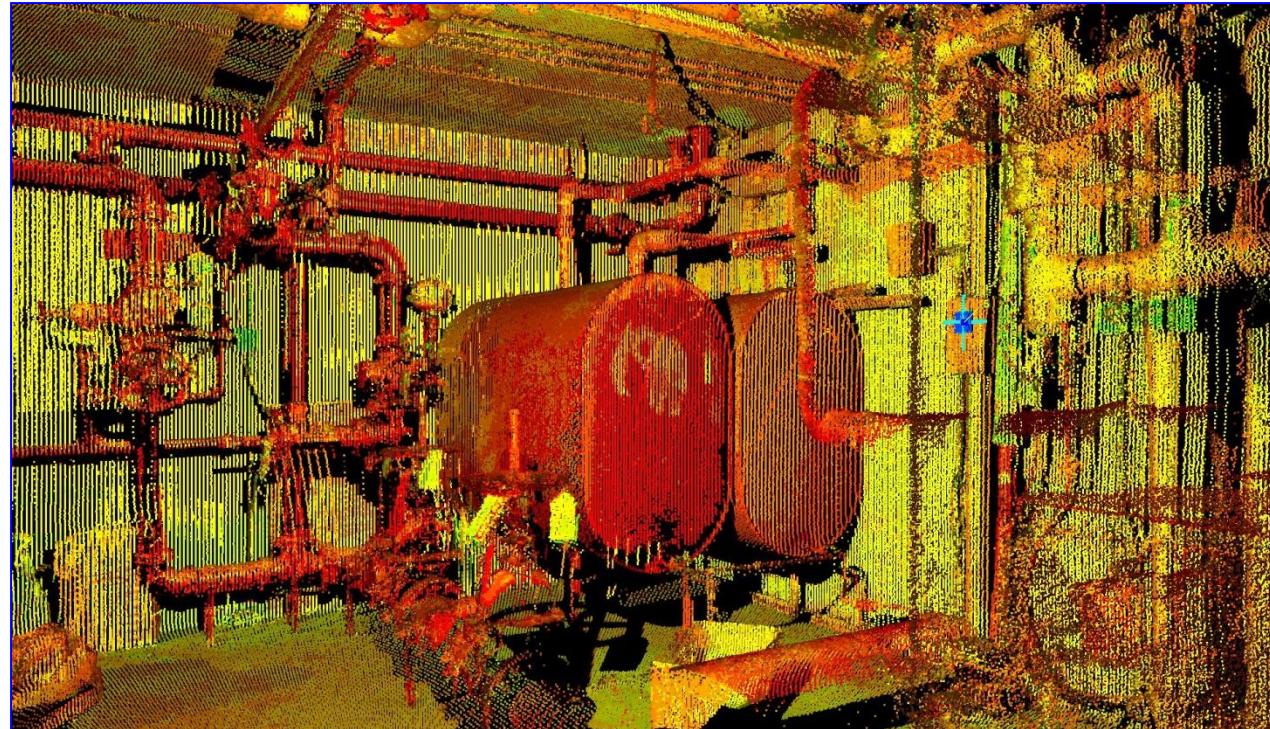




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Boiler Room



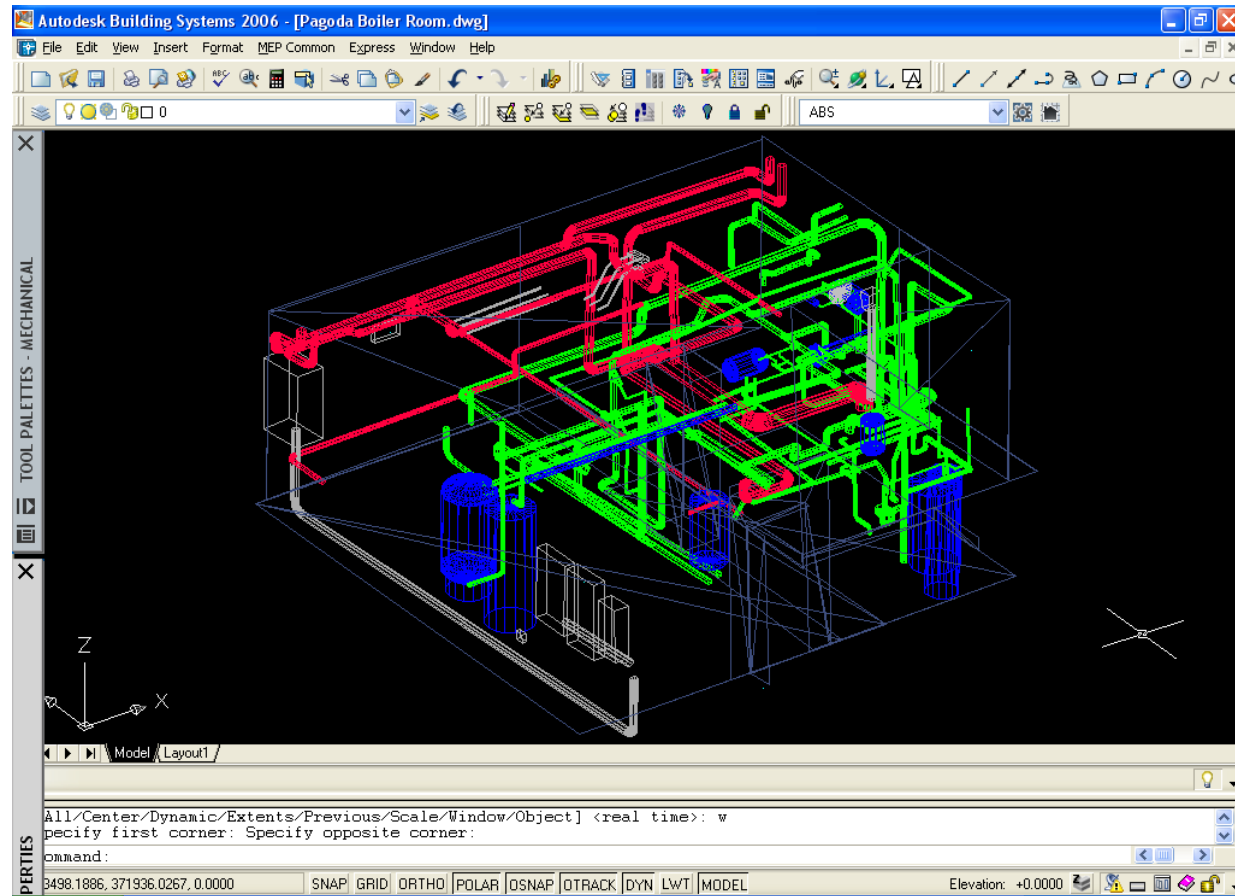


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- Imported piping from Cyclone Model.

## CAD 3D Piping Plan





# Raw Data Point Cloud

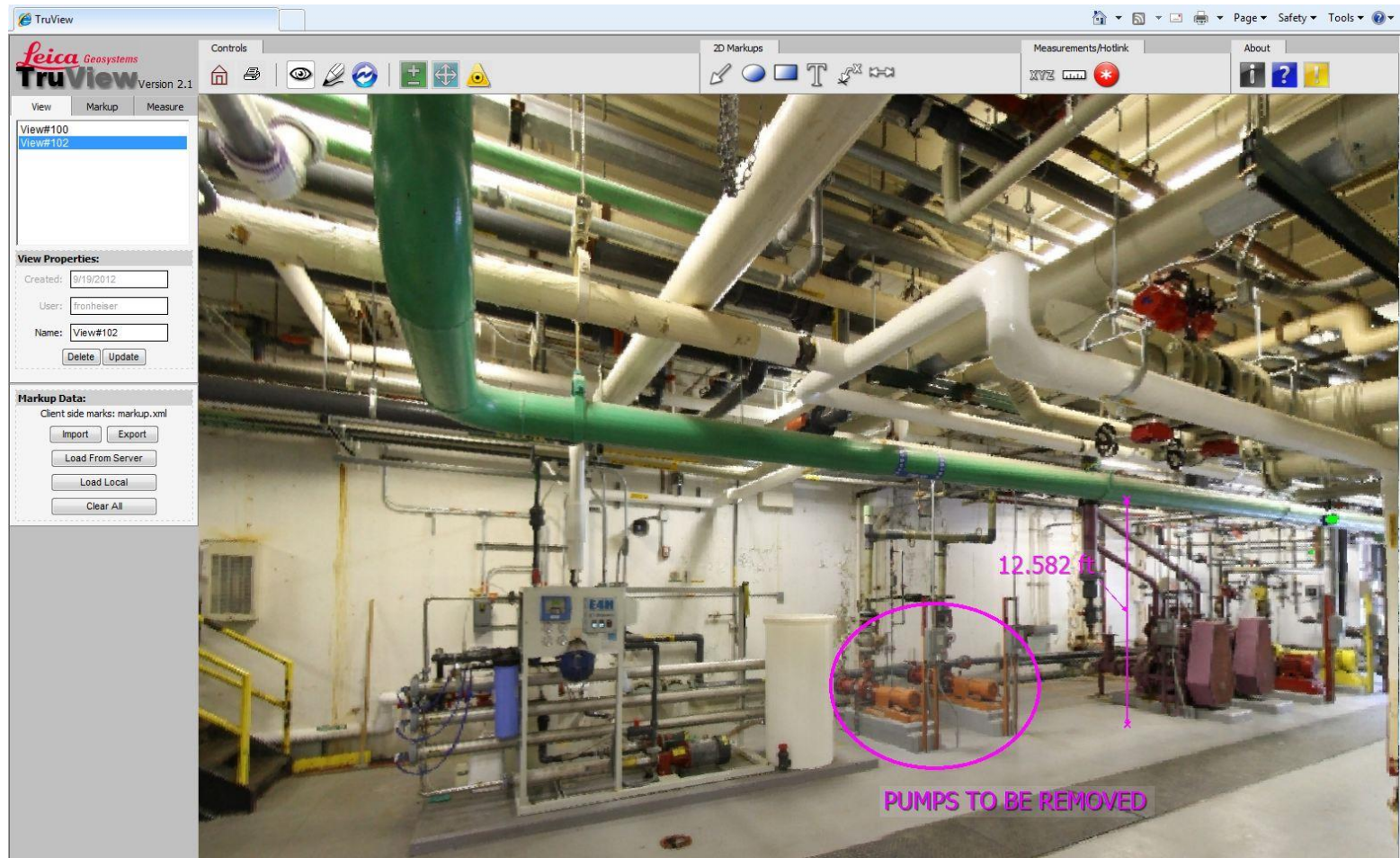




# Finished 3D Revit Model

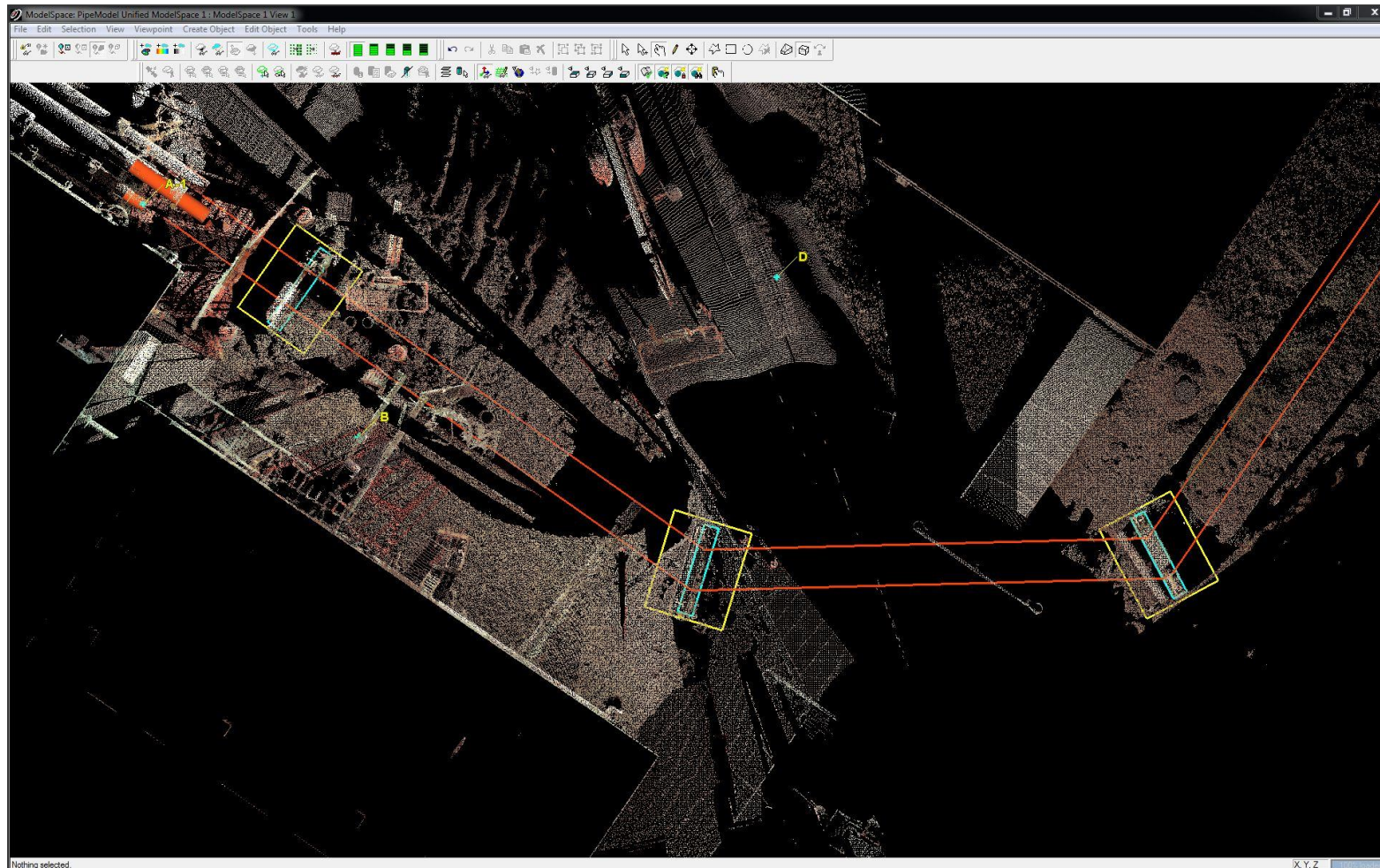


# Leica "Tru View" Data

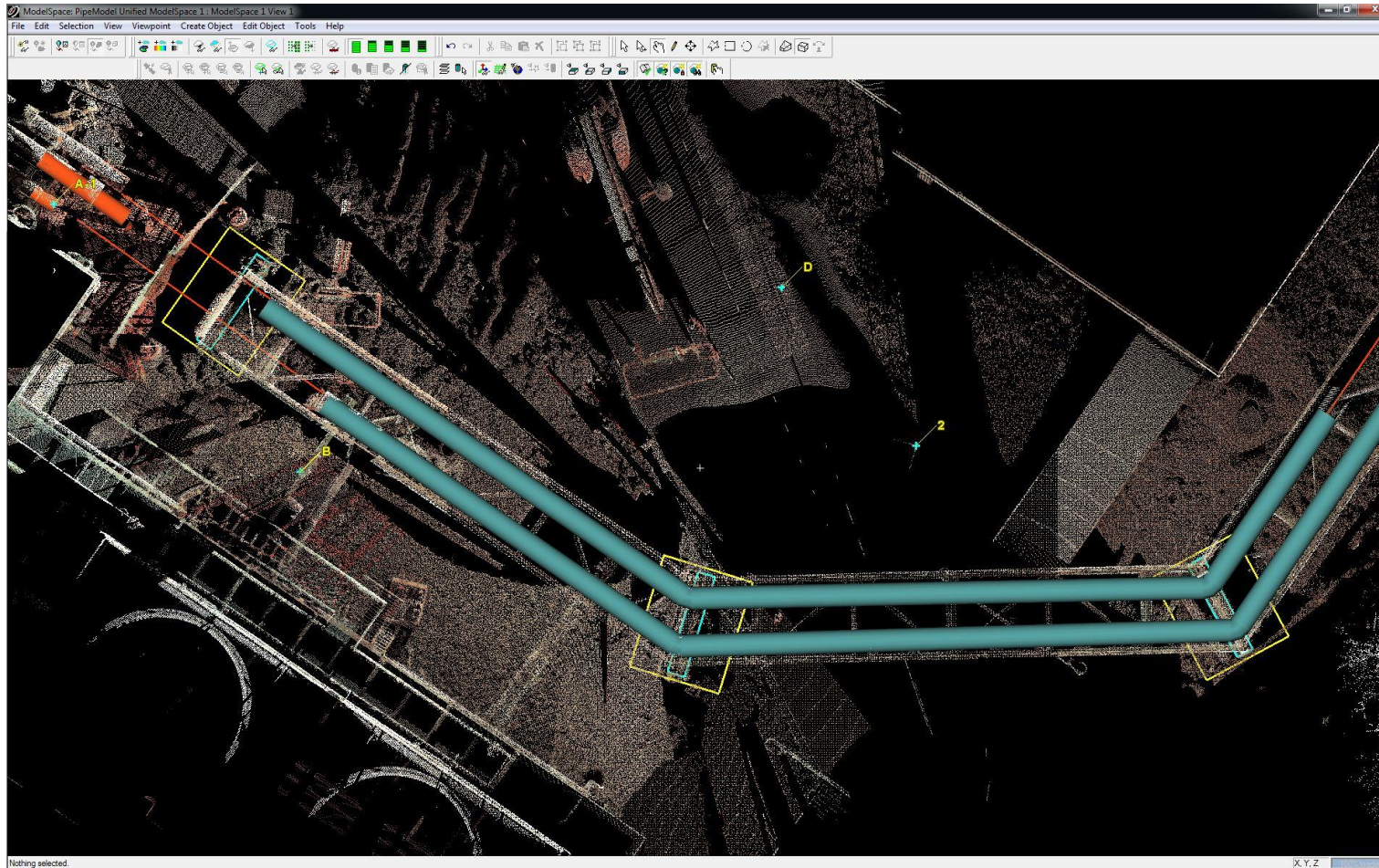




# Point Cloud Pipe Route Design



# Pipe Design Clearance Check





# Questions



## **Steve Smith** | Senior Project Manager, Surveying and Data Capture

Mr. Smith has over 30 years of experience in the surveying field and has been responsible for all aspects of Boundary and Topographical surveying, Aerial Mapping, Utility and Route surveys, ALTA/ASCM survey and all phases of construction stakeout. His technical skills include robotic instrumentation, High Definition Scanning, UAS Drone Flight operations, AUTOCAD and Microsoft operating systems.

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