TruePoint
Laser Scanning
Capture. Analyze. Define.

The Technology

TruePoint Laser Scanning
Capture. Analyze. Define.

Benefits of laser scanning

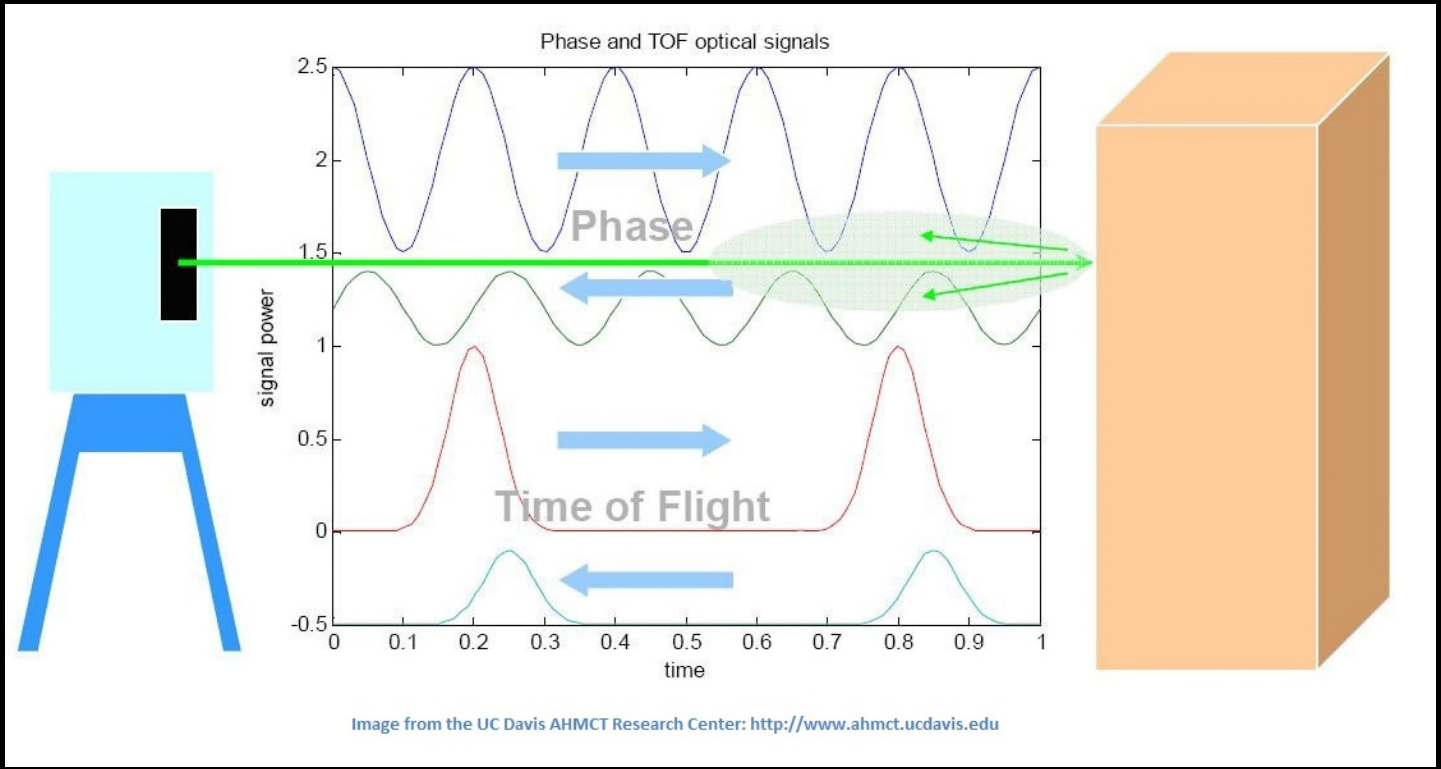
Fast:	Collects millions of data points per minute
Accurate:	Scan data is extremely accurate due to the amount of data collected
Safe:	Non-contact measurement tool used from the ground and away from hazards
Cost-effective:	Able to collect more valuable data in less time, with little or no re-visits creating greater cost savings

The Technology

TruePoint Laser Scanning
Capture. Analyze. Define.

Two type of 3D laser scanners

- LIDAR (Laser Imaging, Detection & Ranging)
- Phase-based

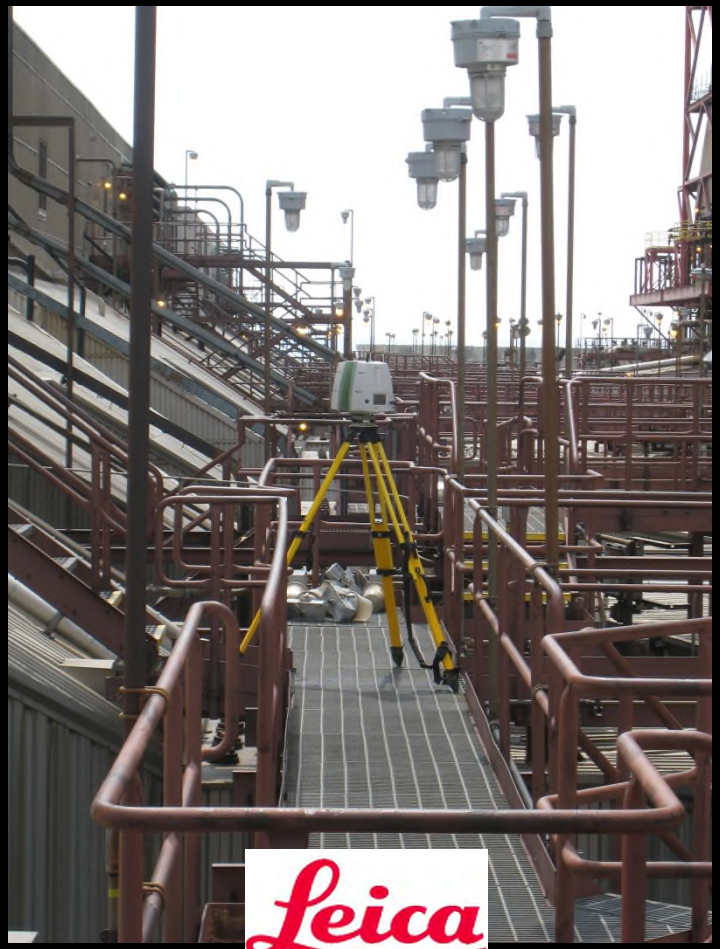


The Equipment

TruePoint Laser Scanning
Capture. Analyze. Define.

Leica C-10 ScanStation

- Uses LIDAR
- Fast – Scans 50,000 data points/second
- Accurate – to within 2mm-4mm up to 300m
- Limited to Line of Sight
- Capable of taking photographs
- Able to be used in wide range of applications



The Equipment

TruePoint Laser Scanning
Capture. Analyze. Define.

Leica P-20 ScanStation

- Uses LIDAR & Phase-based
- Fast – Scans 1,000,000 data points/second
- Accurate – to within 2mm-4mm up to 120m
- Limited to Line of Sight
- Capable of taking photographs
- Able to be used in wide range of applications

Equipment Applications

TruePoint Laser Scanning
Capture. Analyze. Define.

- "As-builts"
- New construction "verifications"
- Prefabrication
- Clash Detection
- Historical Preservation
- Overhead Clearance Verification
- Volume Calculations
- Telecommunication & Transmission Towers

Deliverables

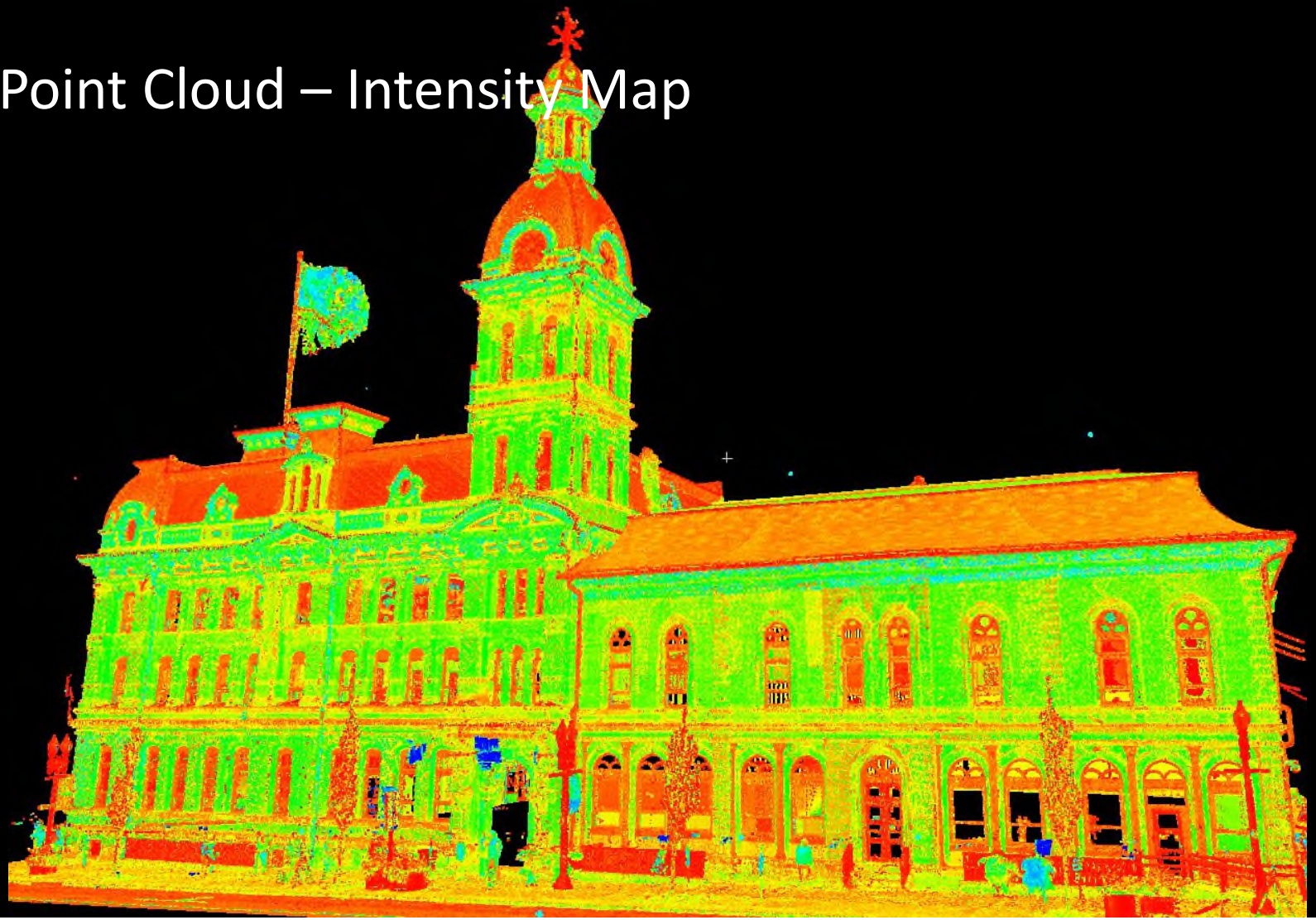
TruePoint Laser Scanning
Capture. Analyze. Define.

- Point Cloud data – Raw Data
- TruView – Free viewer w/ photos overlaid on point cloud
- “Fly-thru’s” – 3D virtual tour of point cloud or model
- 2D & 3D CAD drawings
- 3D BIM models
- Other customizable options upon request

TruePoint Laser Scanning
Capture. Analyze. Define.

Deliverables

Point Cloud – Intensity Map



Deliverables

TruePoint Laser Scanning
Capture. Analyze. Define.

TruView - Photo documentation from Scanner

Deliverables

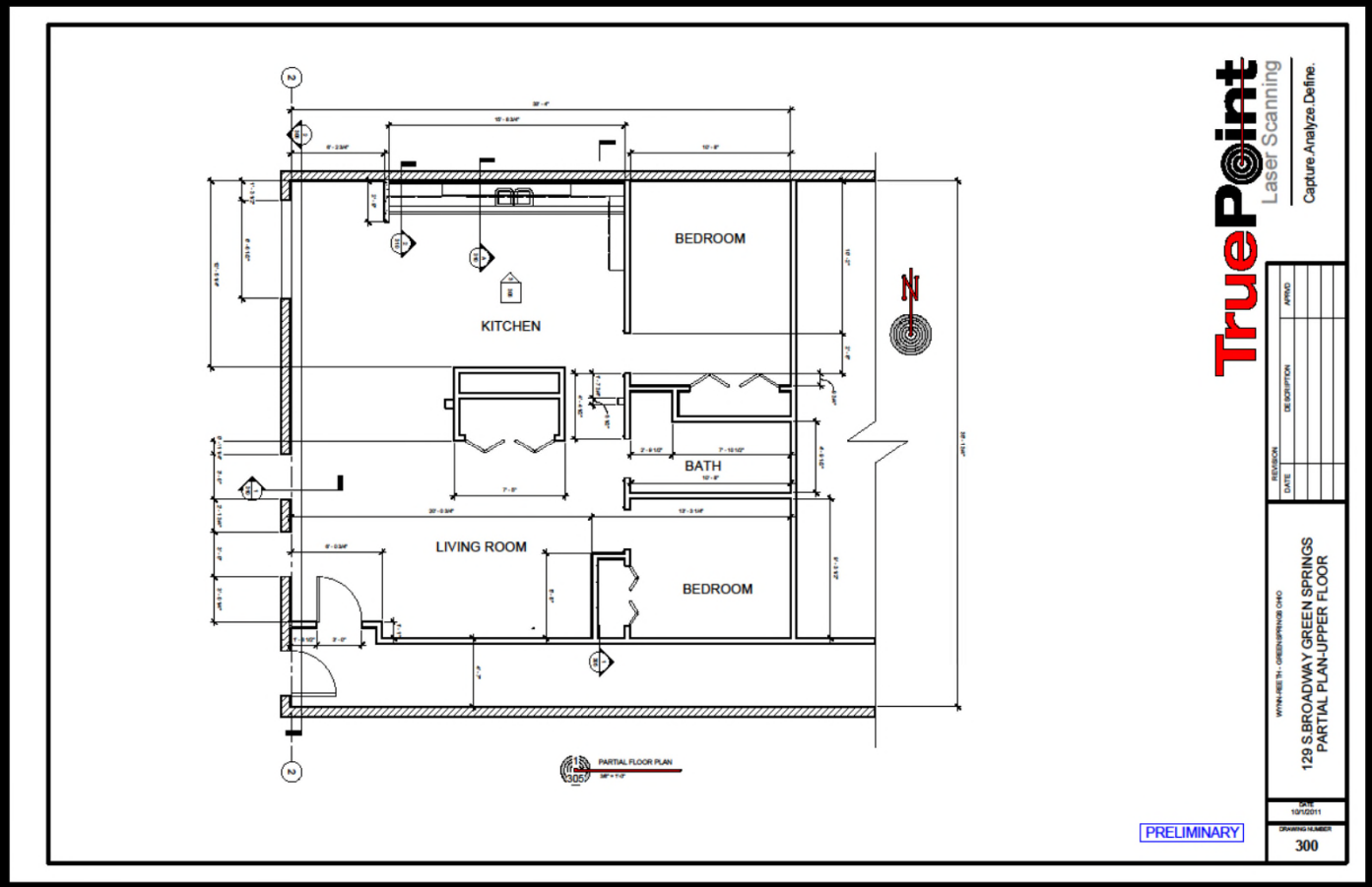
TruePoint Laser Scanning
Capture. Analyze. Define.

Point Cloud – Colorized Point Cloud

Deliverables

TruePoint Laser Scanning
Capture. Analyze. Define.

2D Drawings & Floor Plans



Deliverables

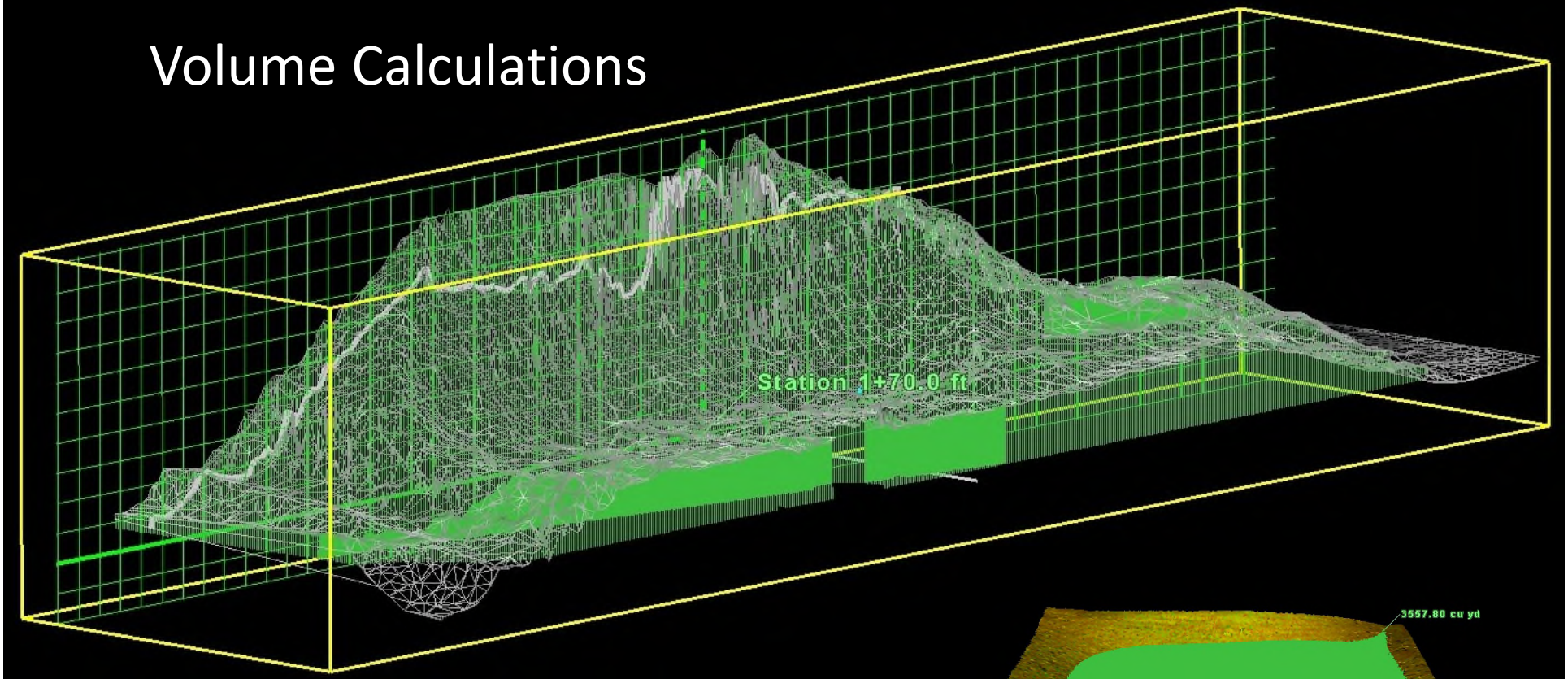
TruePoint Laser Scanning
Capture. Analyze. Define.

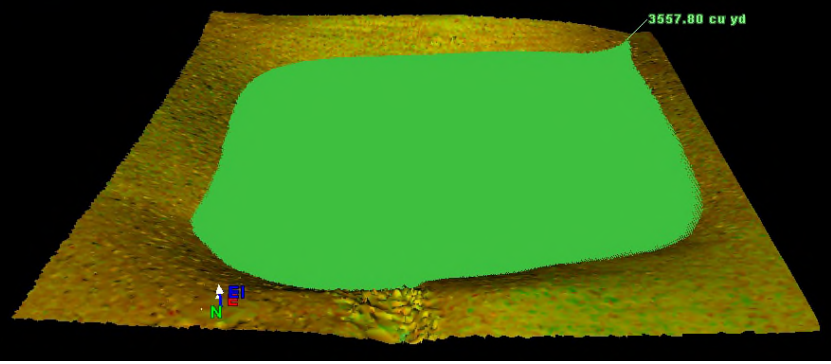
2D Elevations

TruePoint Laser Scanning
Capture. Analyze. Define.

Applications - Measurements

Volume Calculations

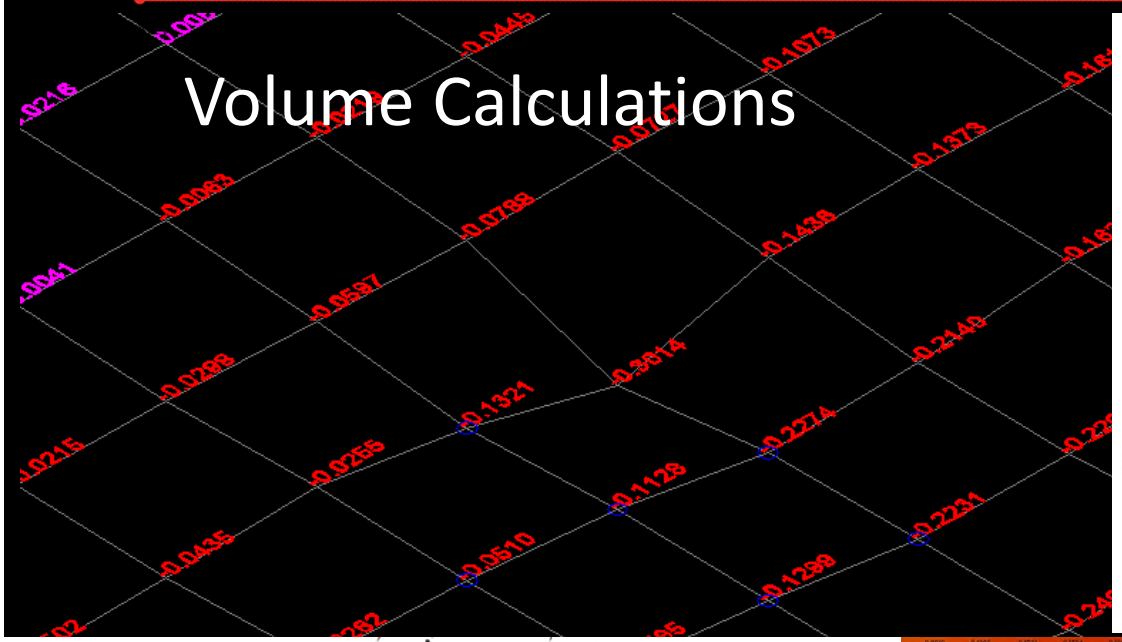


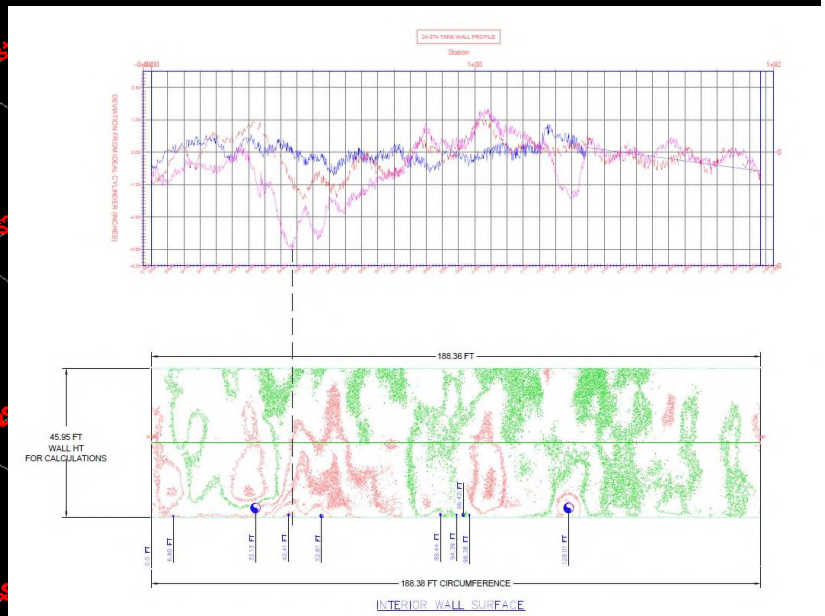


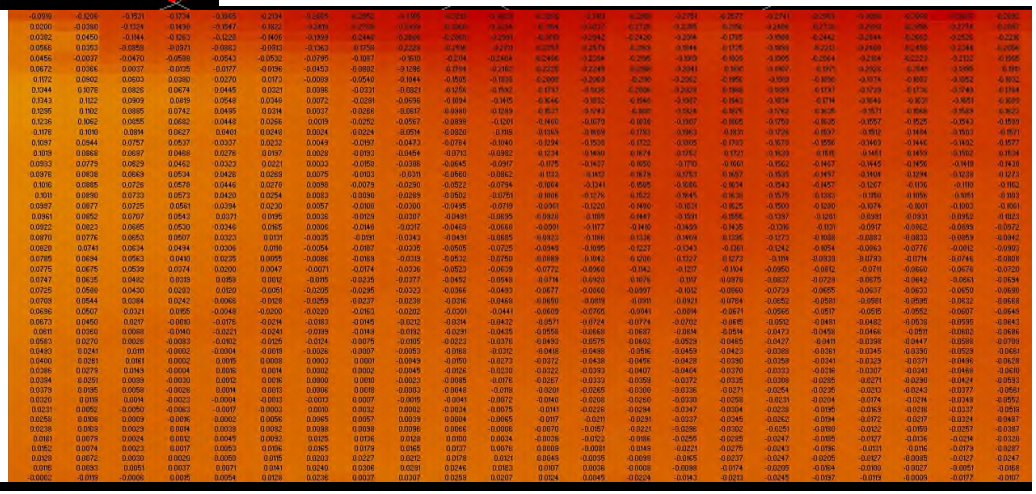
Applications - Measurements

TruePoint Laser Scanning
Capture. Analyze. Define.

Volume Calculations



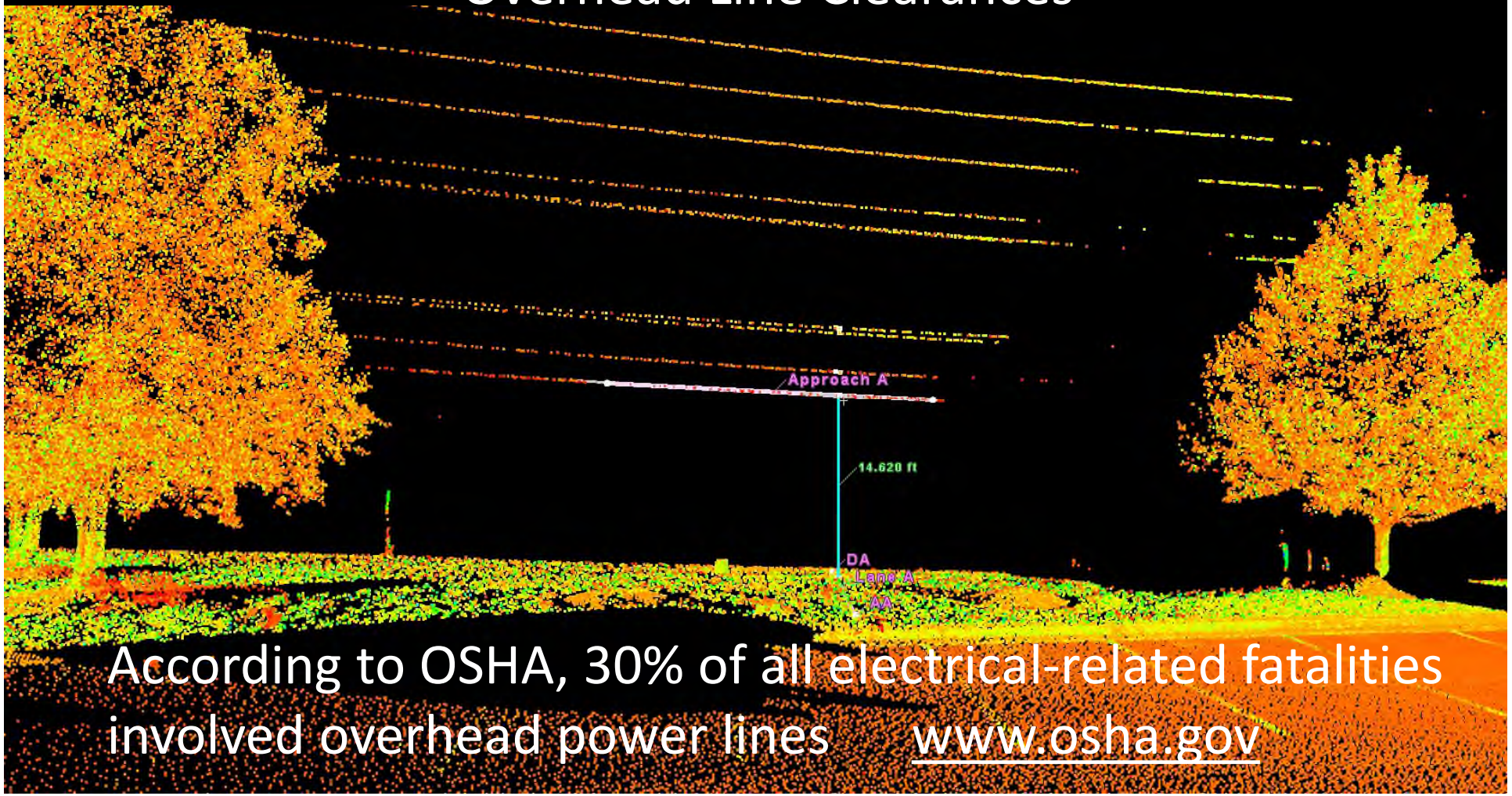




Applications - Measurements

TruePoint Laser Scanning
Capture. Analyze. Define.

Overhead Line Clearances

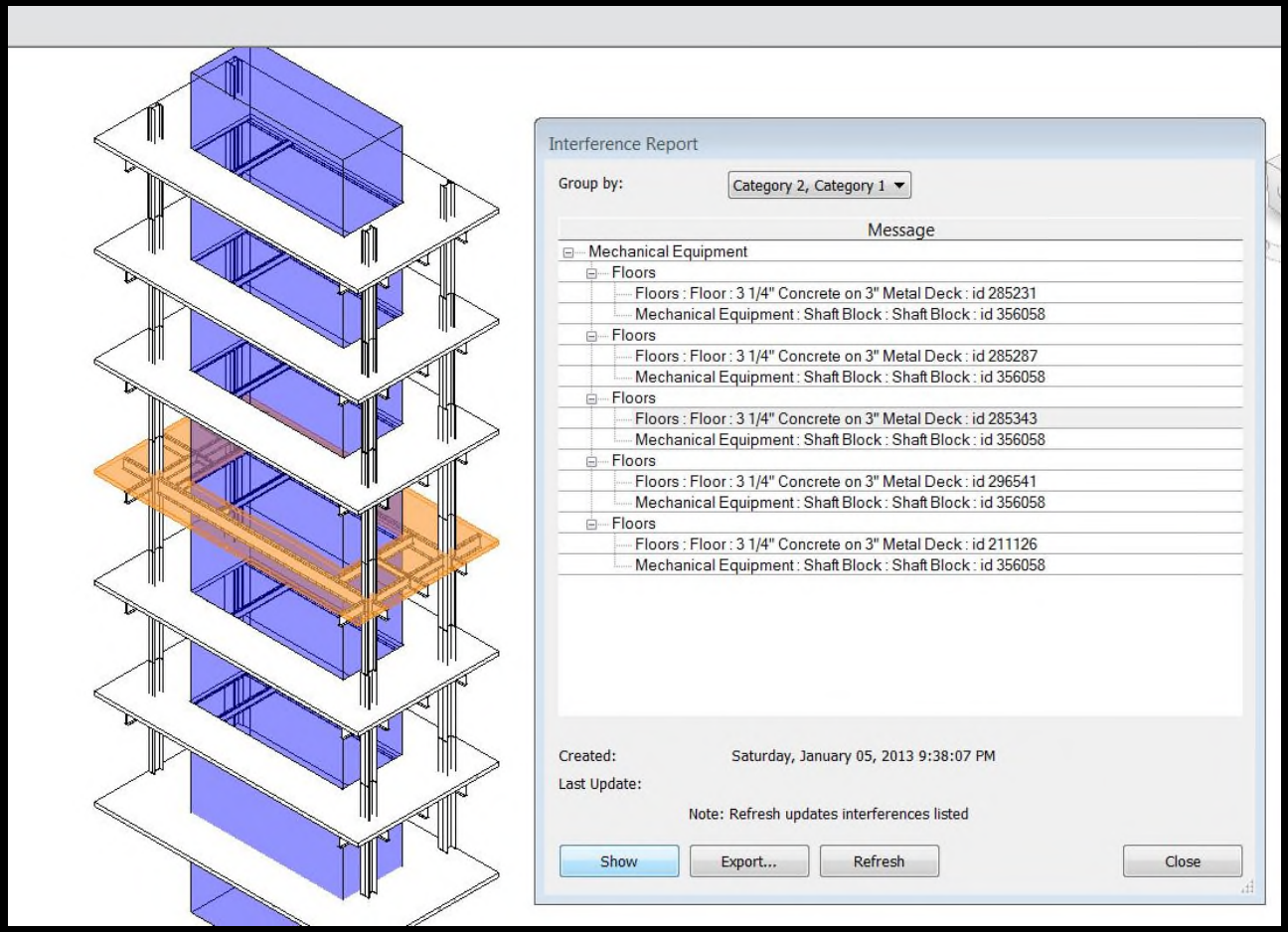


According to OSHA, 30% of all electrical-related fatalities involved overhead power lines www.osha.gov

Applications

TruePoint Laser Scanning
Capture. Analyze. Define.

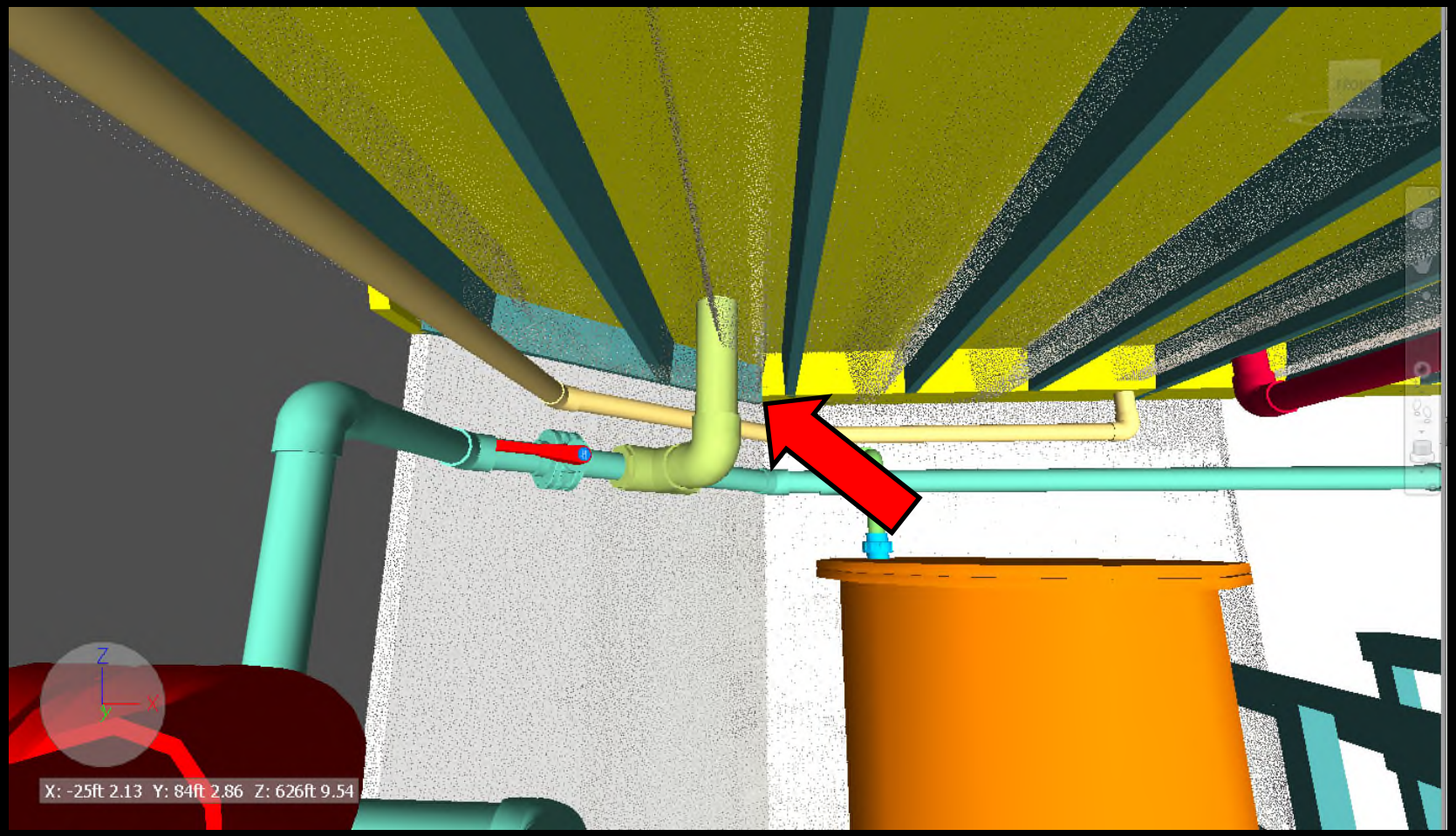
Clash Detection



Applications

TruePoint Laser Scanning
Capture. Analyze. Define.

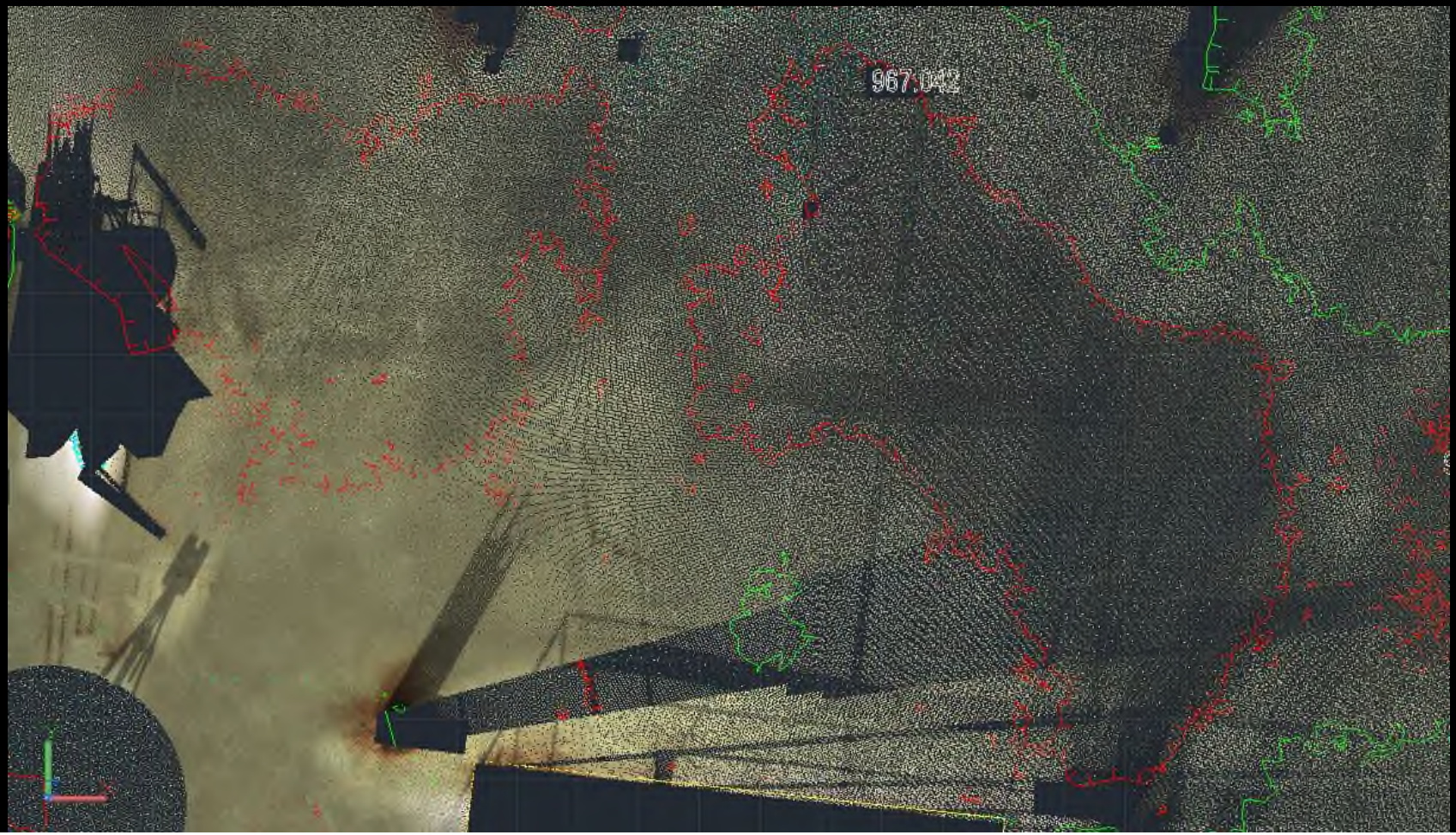
Clash Detection



Applications

TruePoint Laser Scanning
Capture. Analyze. Define.

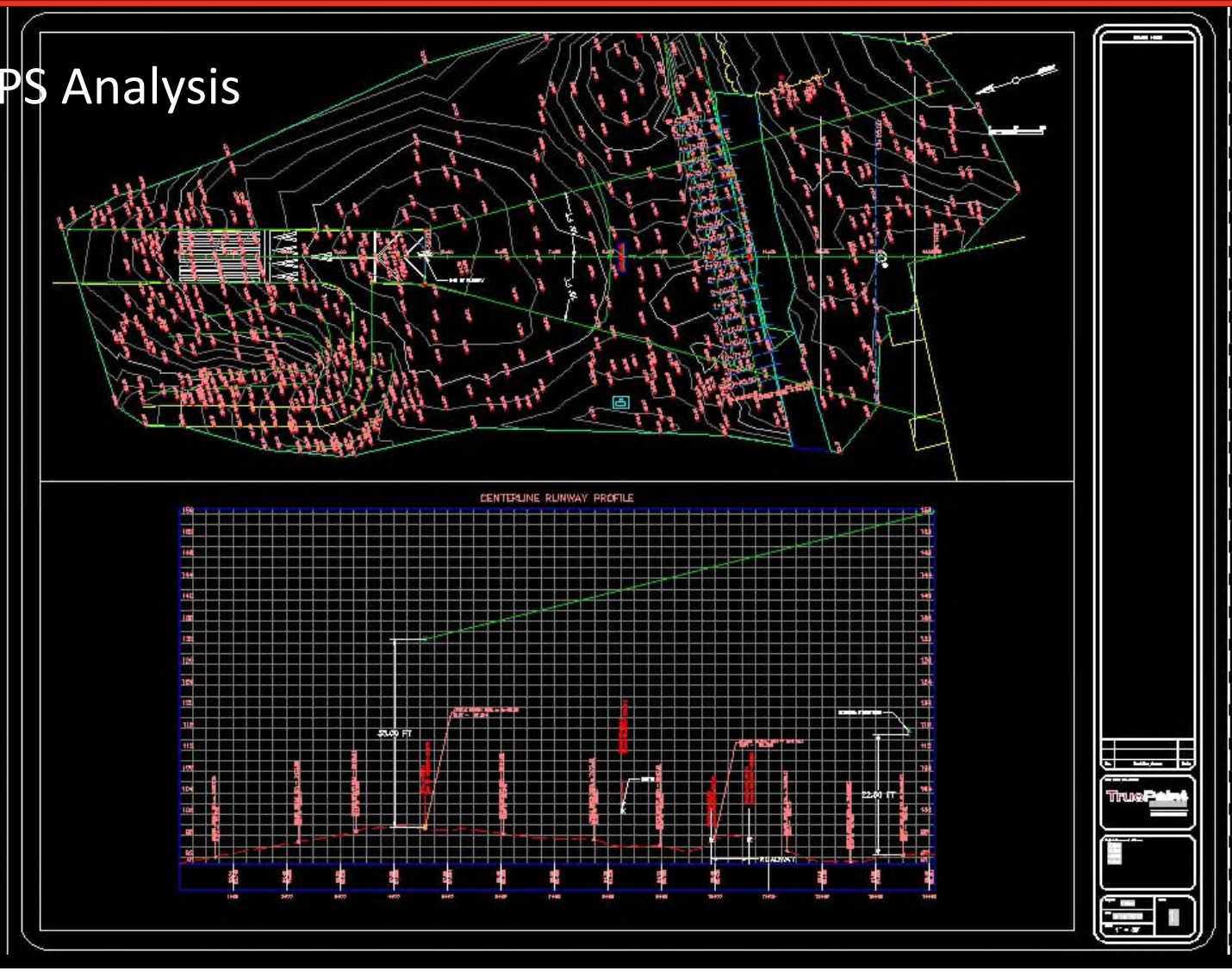
Contours of Floor Surfaces



Deliverables

TruePoint Laser Scanning
Capture. Analyze. Define.

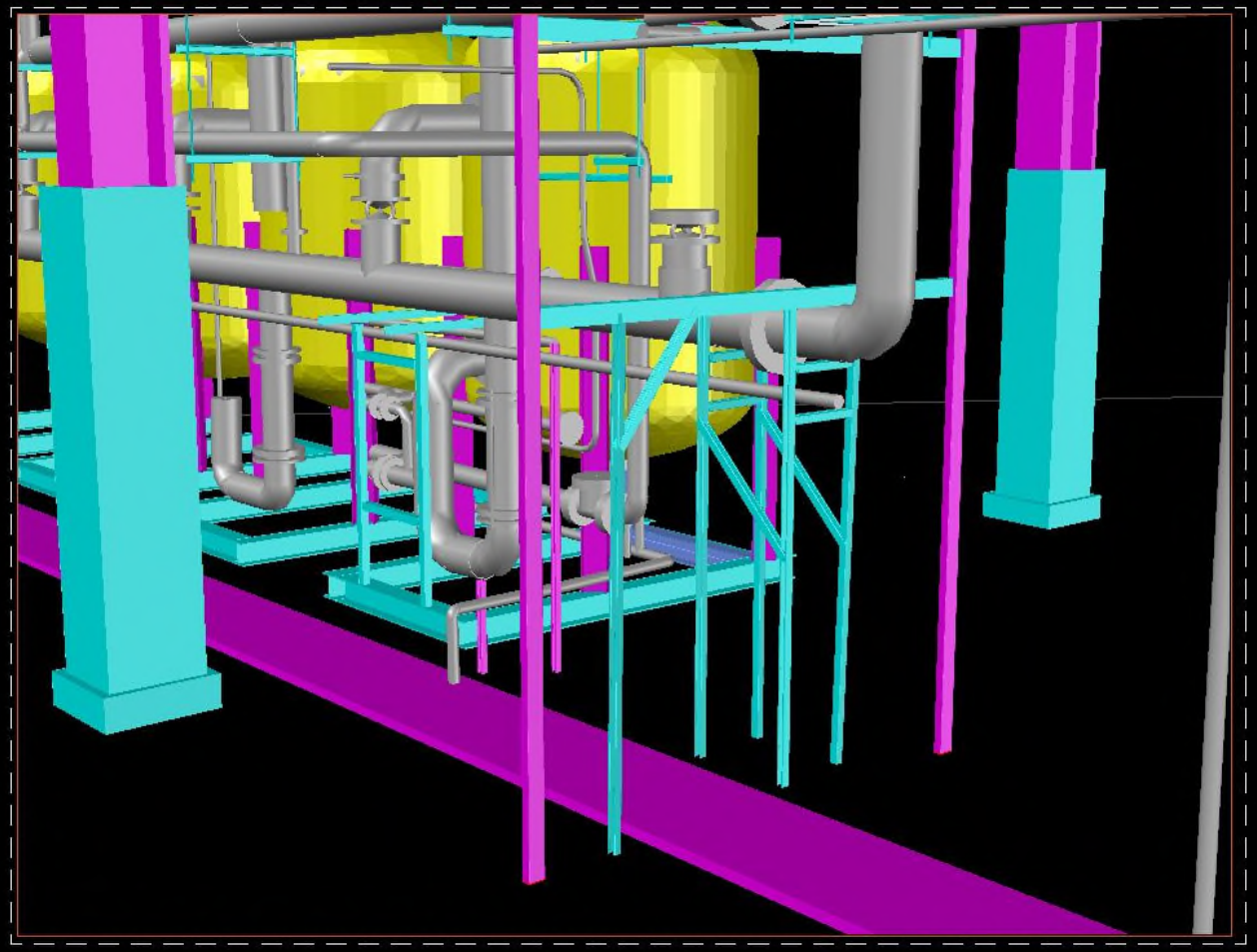
TERPS Analysis



TruePoint Laser Scanning
Capture. Analyze. Define.

Deliverables

Going from point cloud to model



Deliverables:
From Scan to Model

TruePoint Laser Scanning
Capture. Analyze. Define.

Prep and Referencing the Point Cloud

- A raw cloud format file is created and exported from the laser scanning software.
- This raw cloud file is “indexed” (by Recap, AutoCAD or Revit) into a file to be used as an external reference.
  - Indexing file times vary with raw file size.
  - 7.5 gigabyte over 2 hours to index.
  - Some clouds index over a weekend.

Deliverables:
From Scan to Model

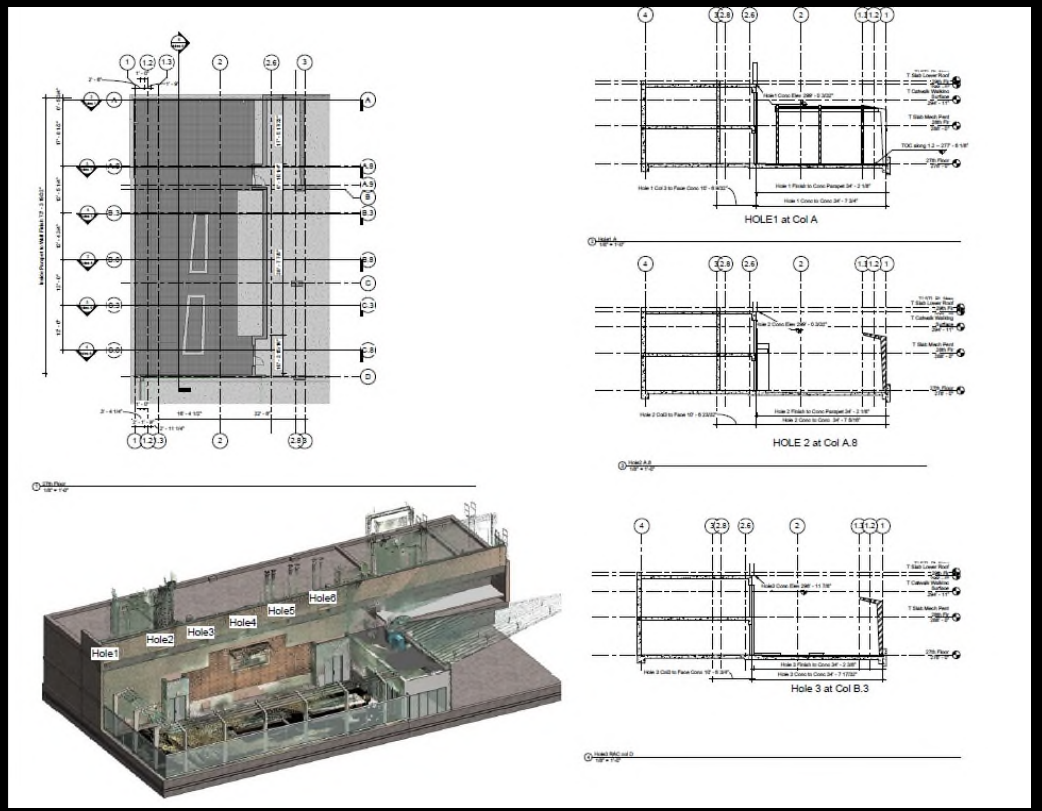
TruePoint Laser Scanning
Capture. Analyze. Define.

Steps to create design documents

- Index Raw Point Cloud File(s).
- Point Cloud is attached to design file.
- Scale and units are verified.
- Clip cloud to area of interest.
- Trace cloud (2D or 3D)

Deliverables

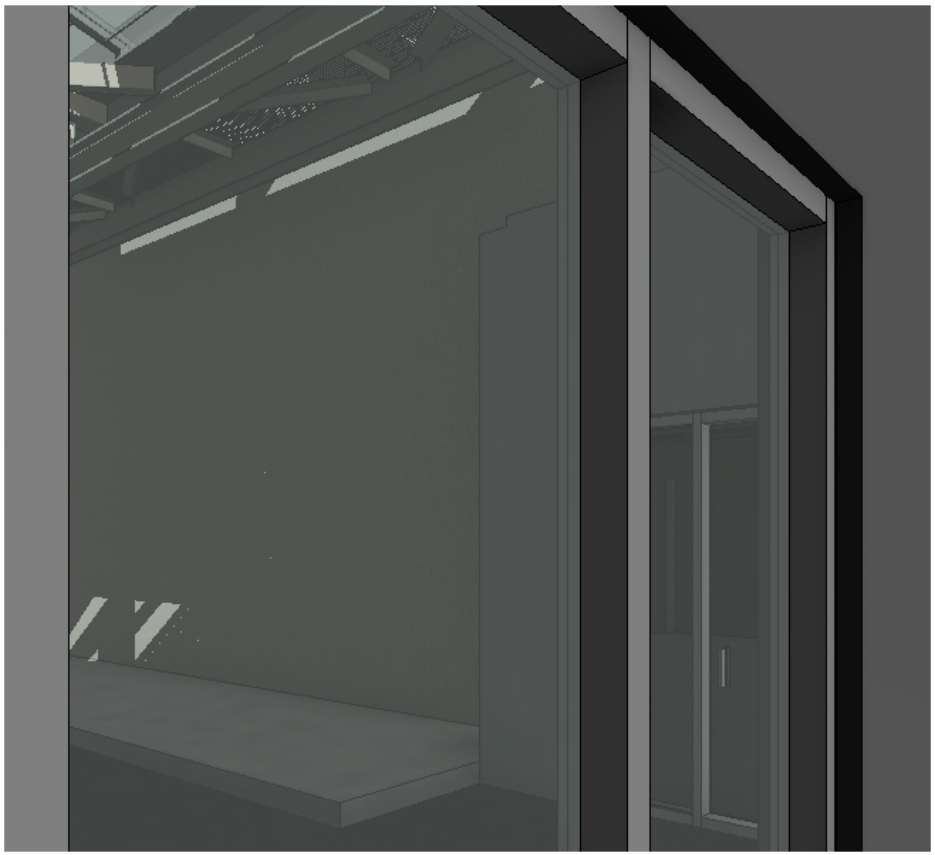
Using the point cloud, drawings and plans were created using highly accurate as-builts, avoiding costly mistakes and reducing planning phase by an estimated 3 weeks.



Deliverables

TruePoint Laser Scanning
Capture. Analyze. Define.

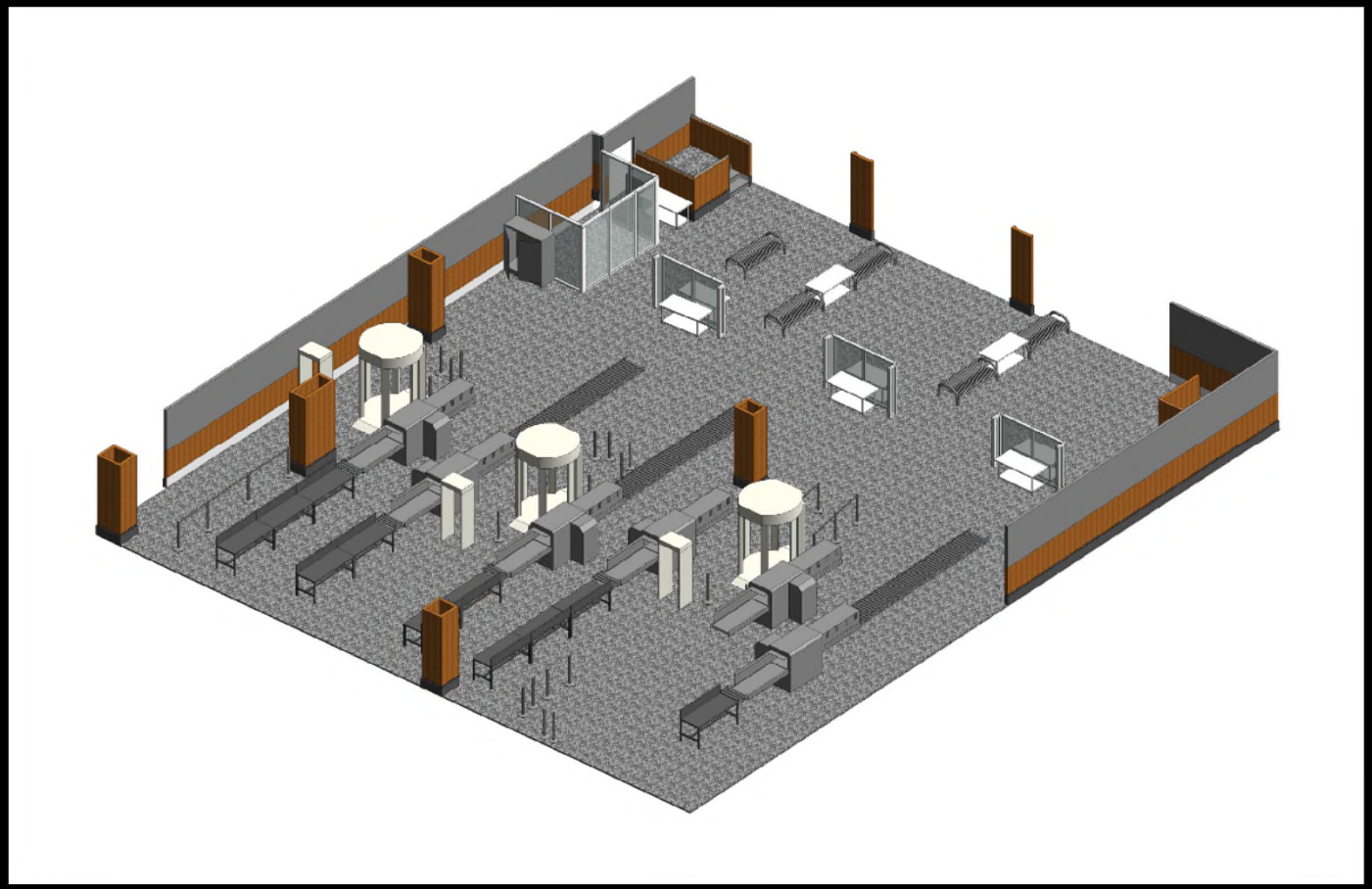
Fly-thru of Hotel model



Deliverables

TruePoint Laser Scanning
Capture. Analyze. Define.

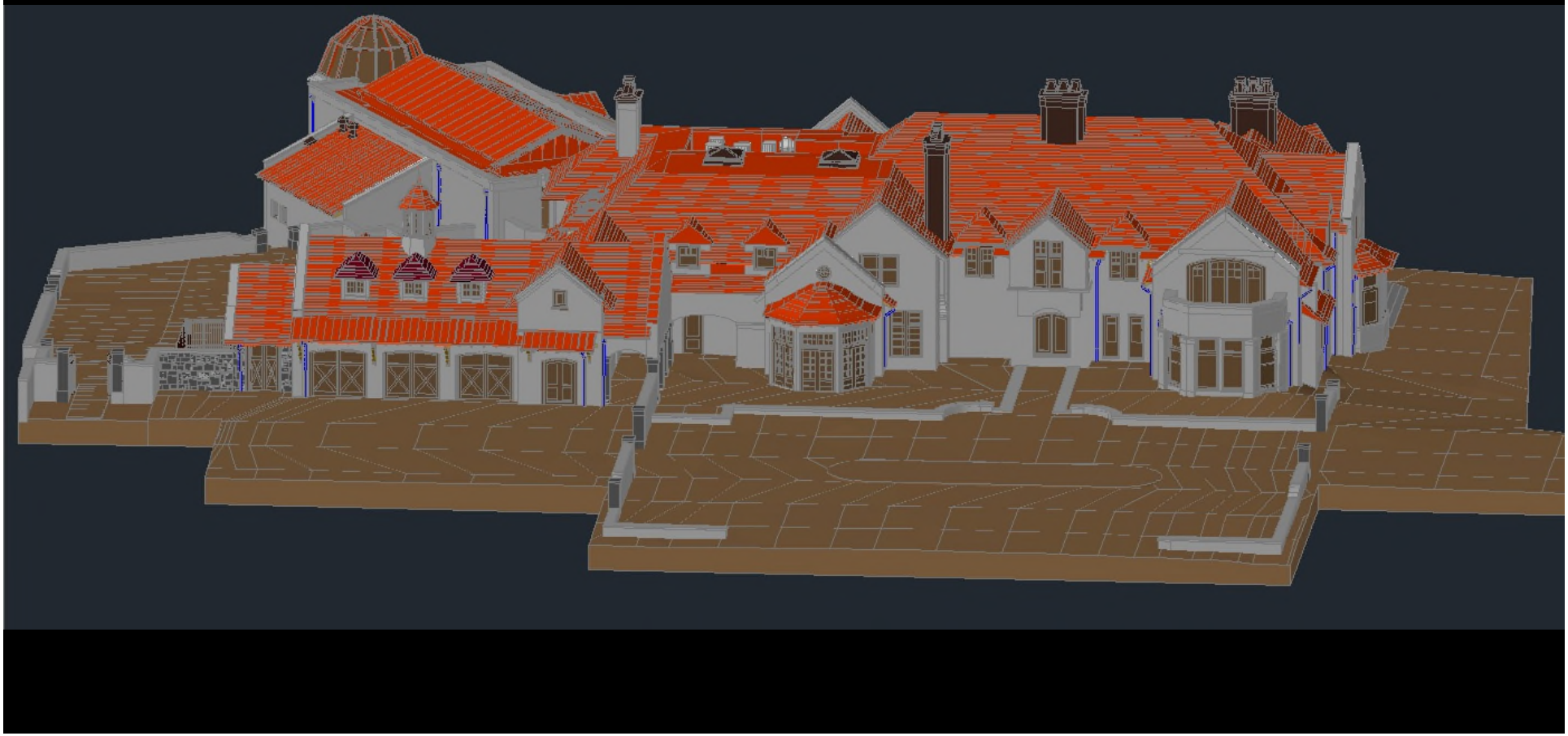
Revit Model of Airport TSA Security Checkpoints



Deliverables

TruePoint Laser Scanning
Capture. Analyze. Define.

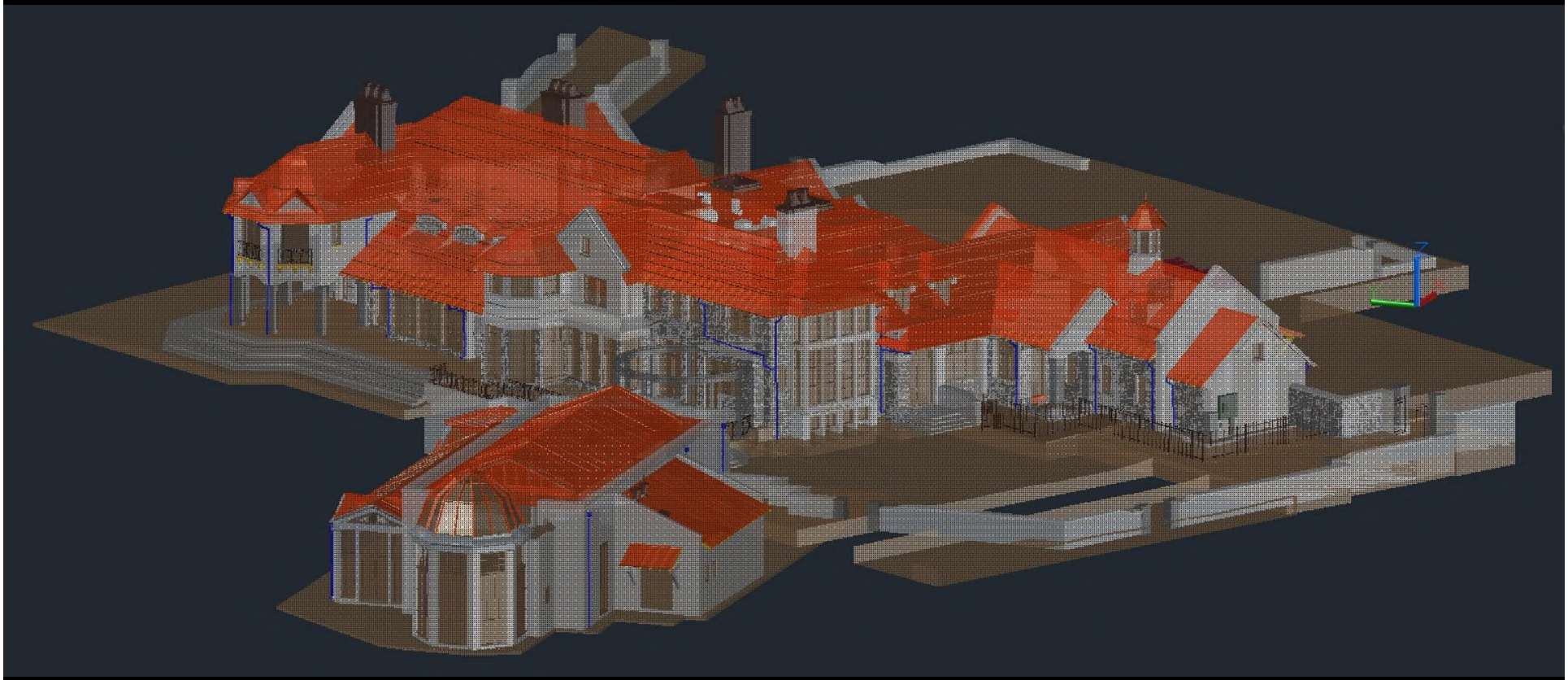
3D CAD Model – Front View of Residence



Deliverables

TruePoint Laser Scanning
Capture. Analyze. Define.

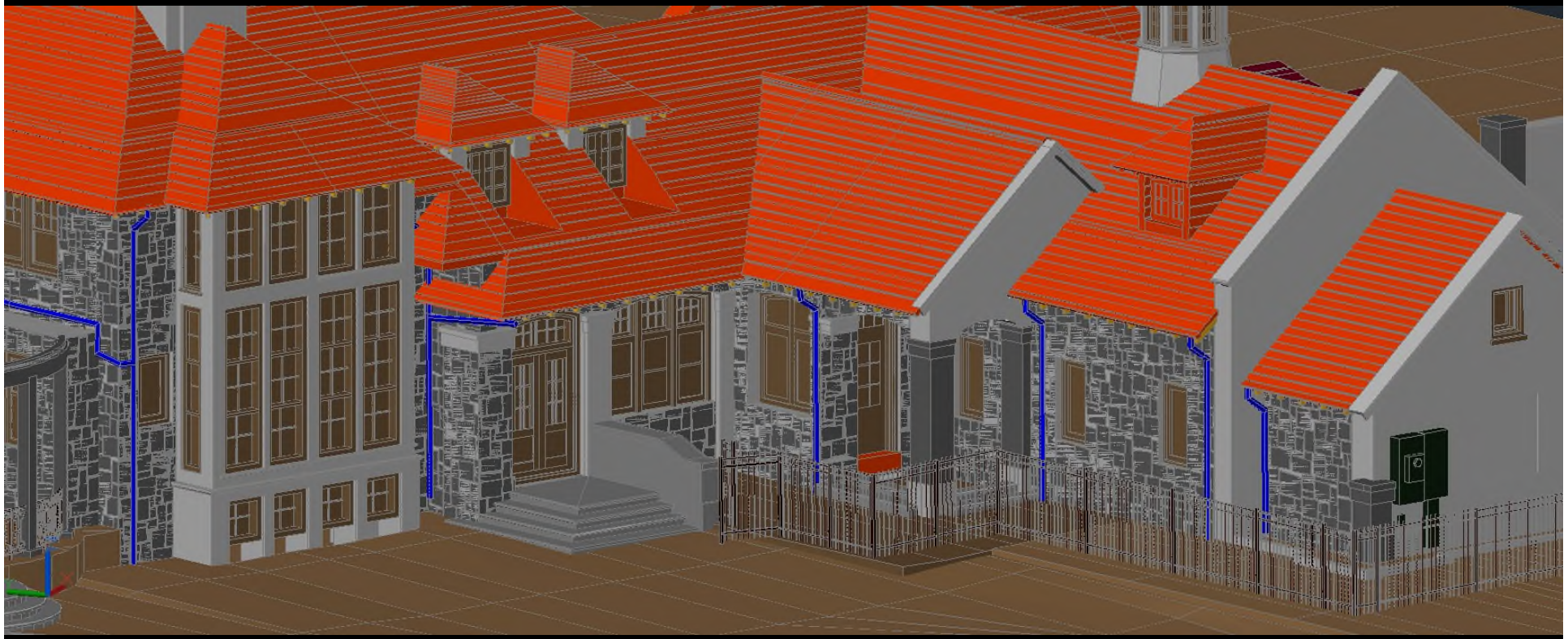
3D CAD Model – Back View of Residence



Deliverables

TruePoint Laser Scanning
Capture. Analyze. Define.

3D CAD Model – Masonry Detail of Residence



Deliverables

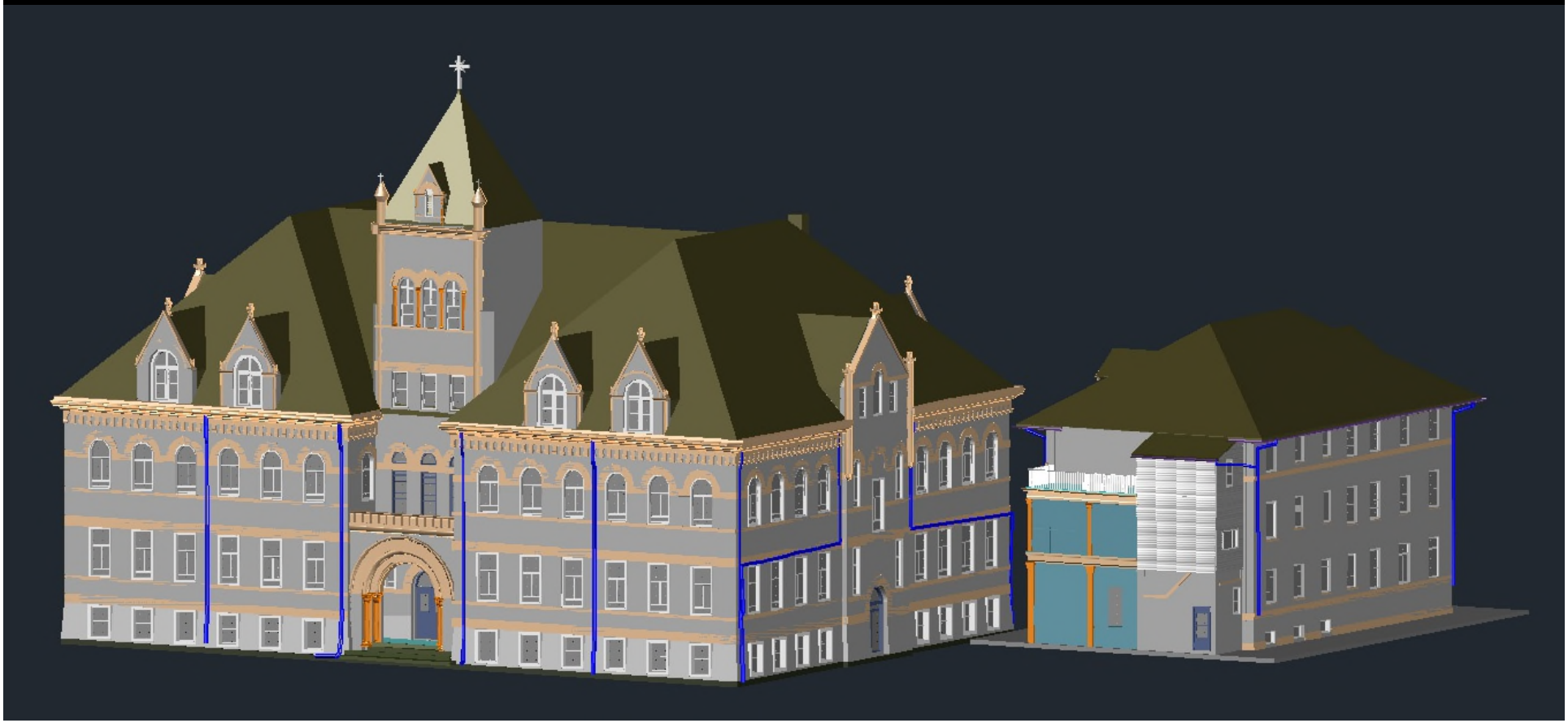
TruePoint Laser Scanning
Capture. Analyze. Define.

3D Wireframe of Exterior of Church

Deliverables

TruePoint Laser Scanning
Capture. Analyze. Define.

3D Axonometric View of Church



Deliverables

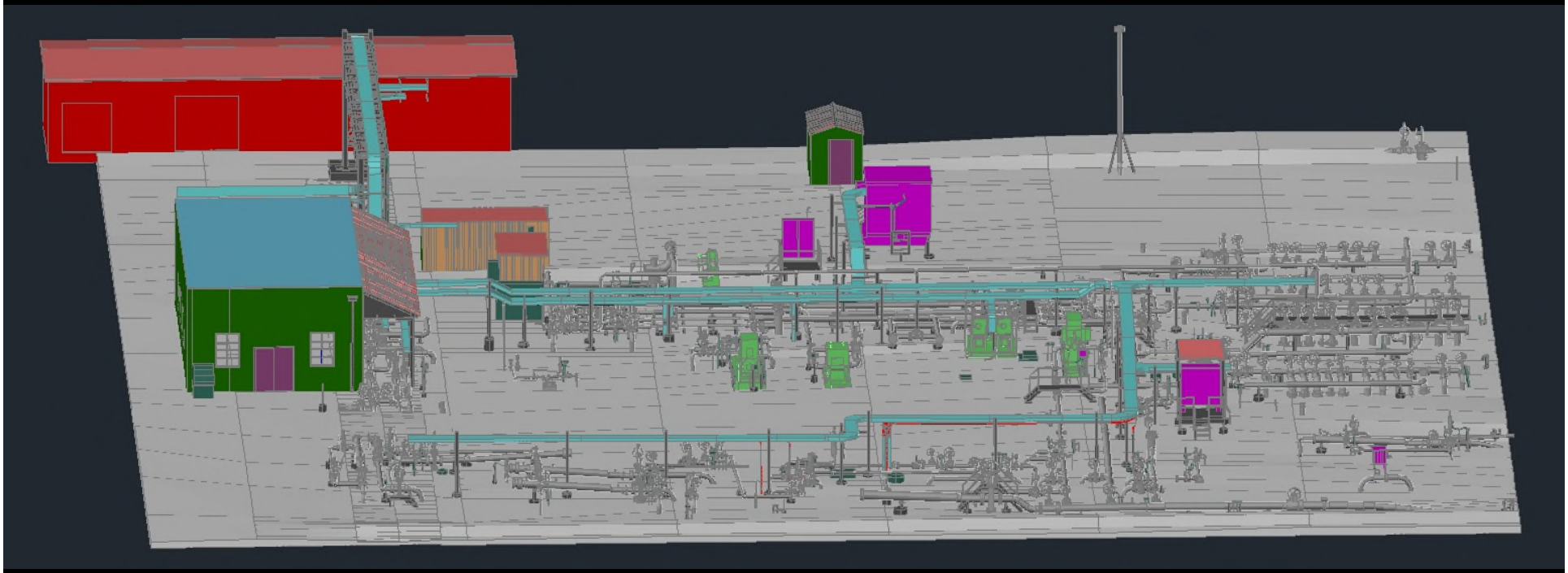
TruePoint Laser Scanning
Capture. Analyze. Define.

Key Plan with Google Maps overlay

Deliverables

TruePoint Laser Scanning
Capture. Analyze. Define.

3D CAD Model - Overview



Deliverables

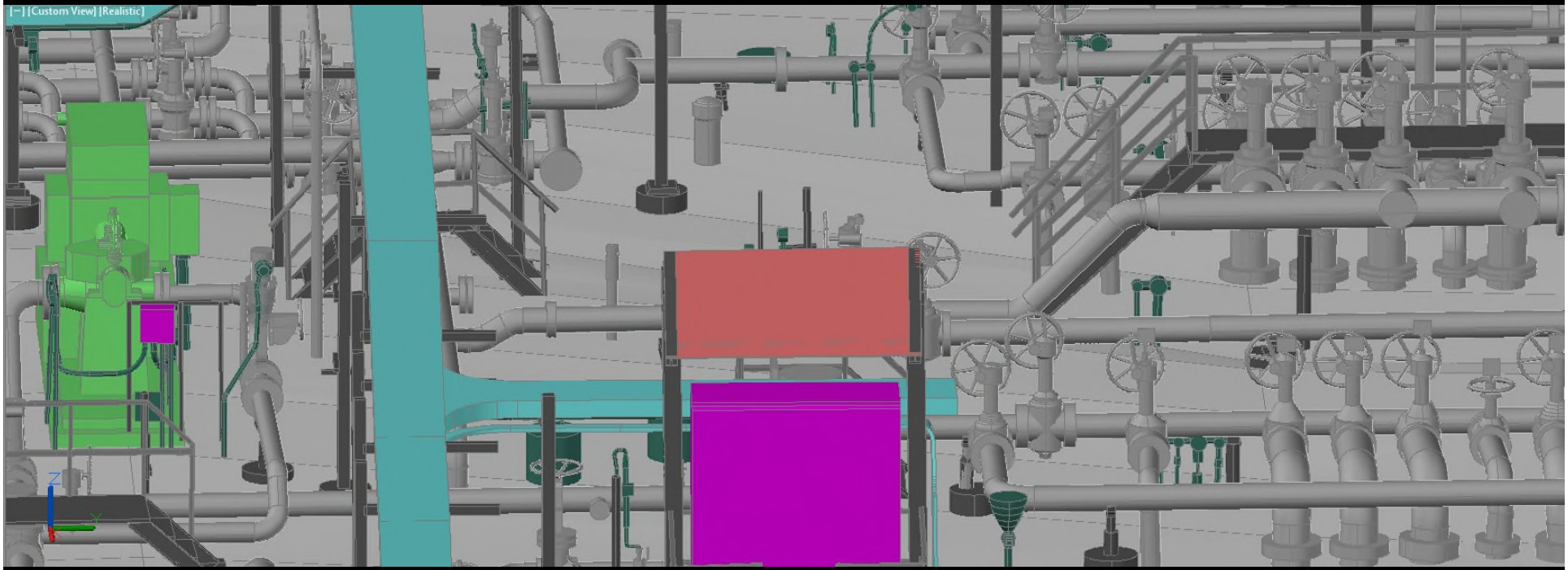
TruePoint Laser Scanning
Capture. Analyze. Define.

3D CAD Model – Overview (Zoomed In)

Deliverables

TruePoint Laser Scanning
Capture. Analyze. Define.

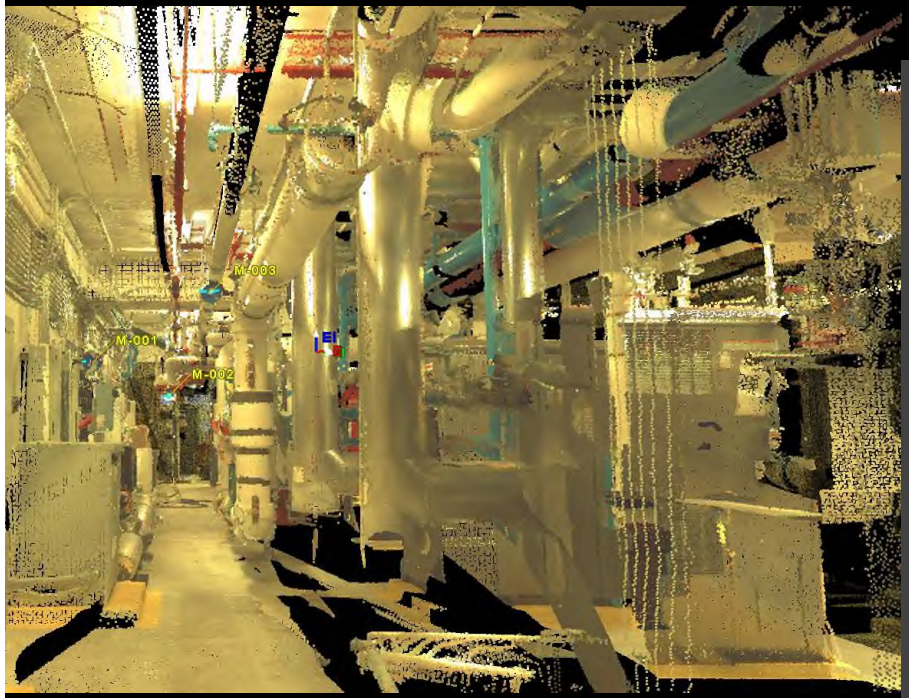
3D CAD Model – Close Up

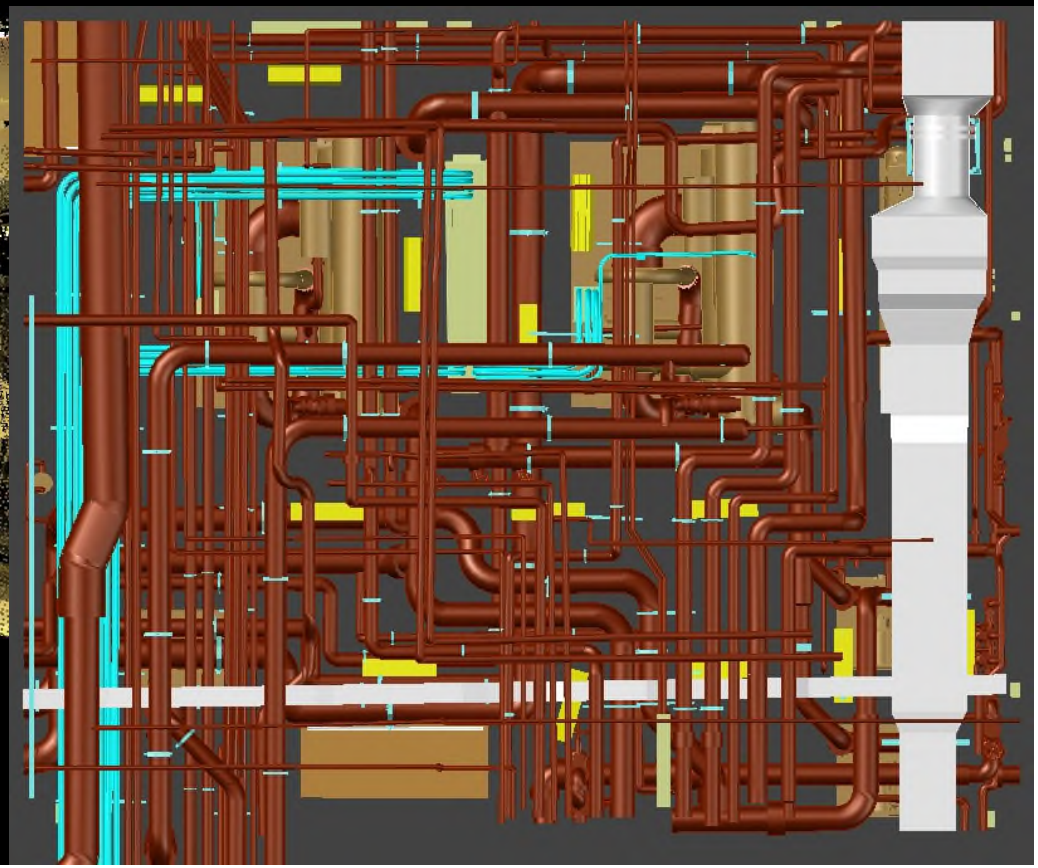


Deliverables

TruePoint Laser Scanning
Capture. Analyze. Define.

3D BIM Model of Structure & MEP

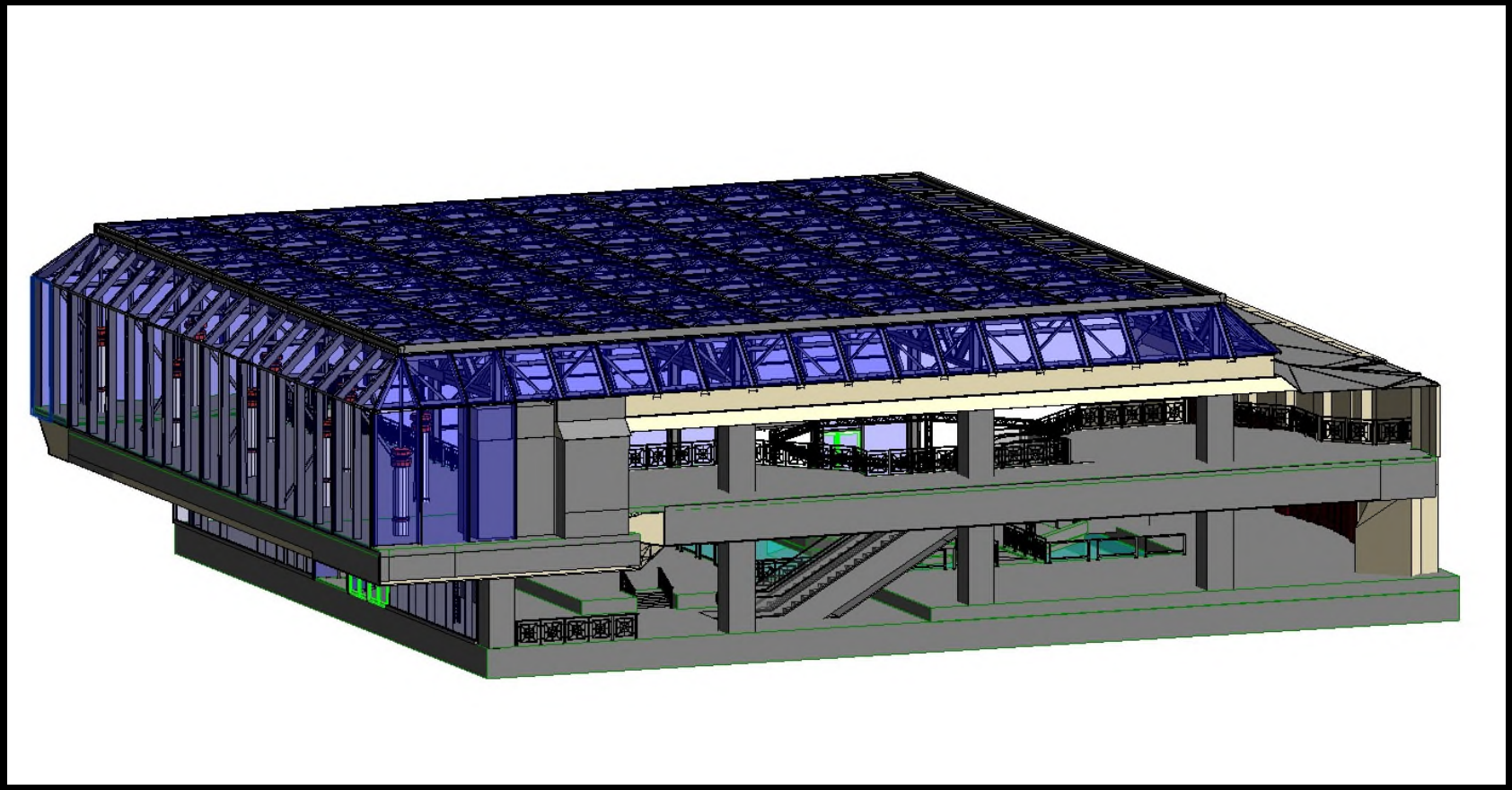




Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

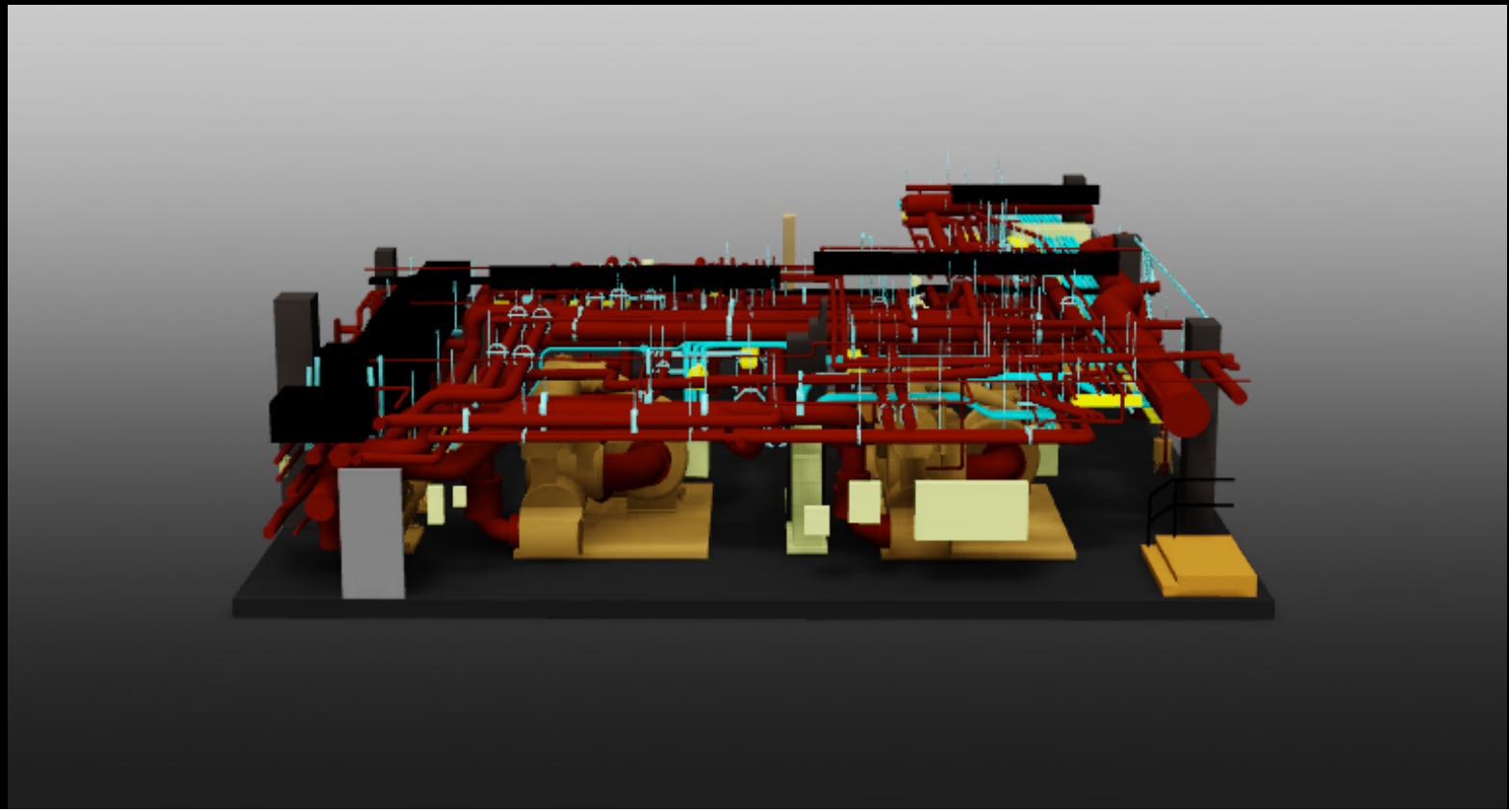
Hyatt Regency – Chicago, IL.



Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

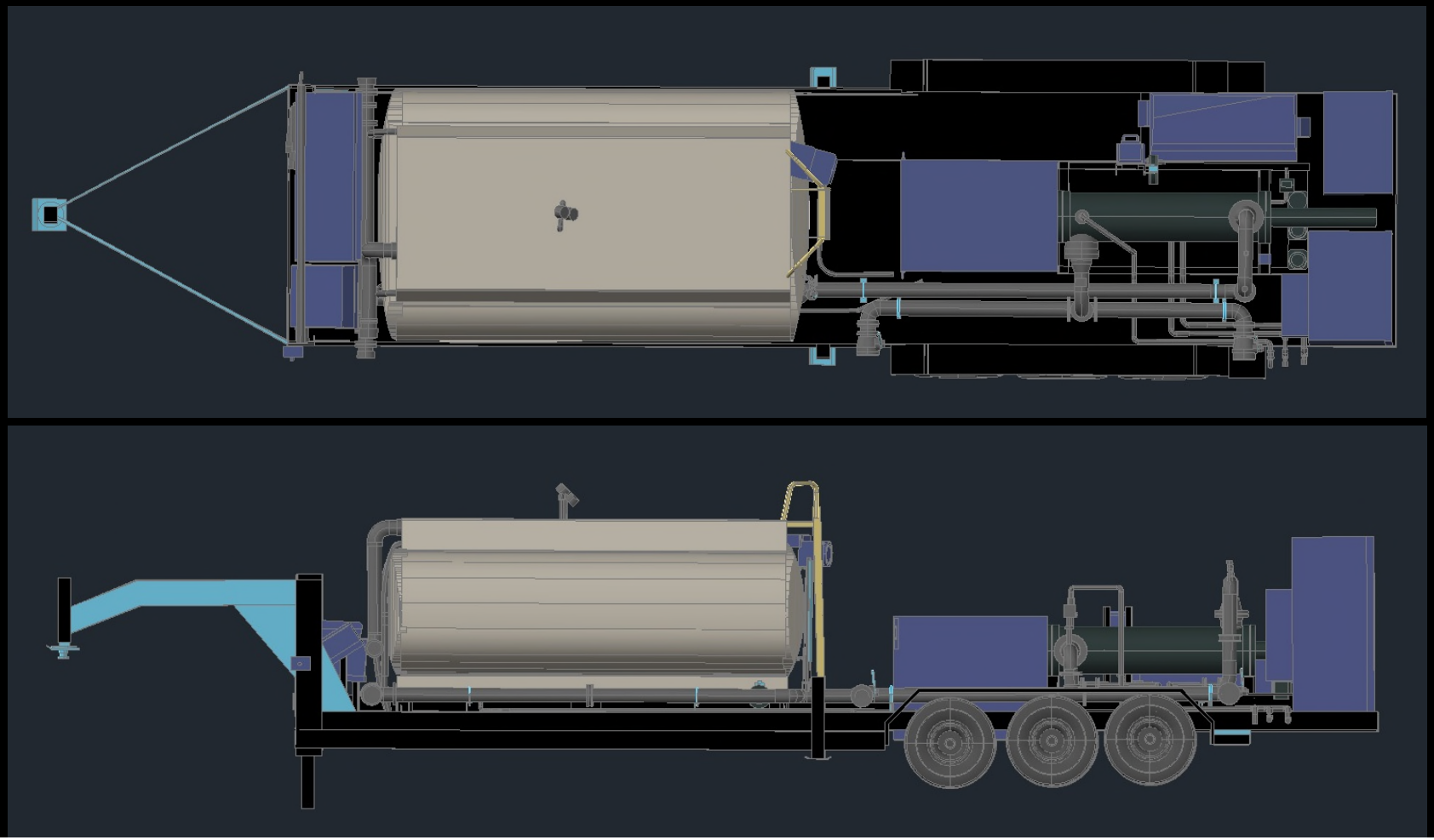
Ohio State University Medical Center Mechanical Room – Columbus, OH.



Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

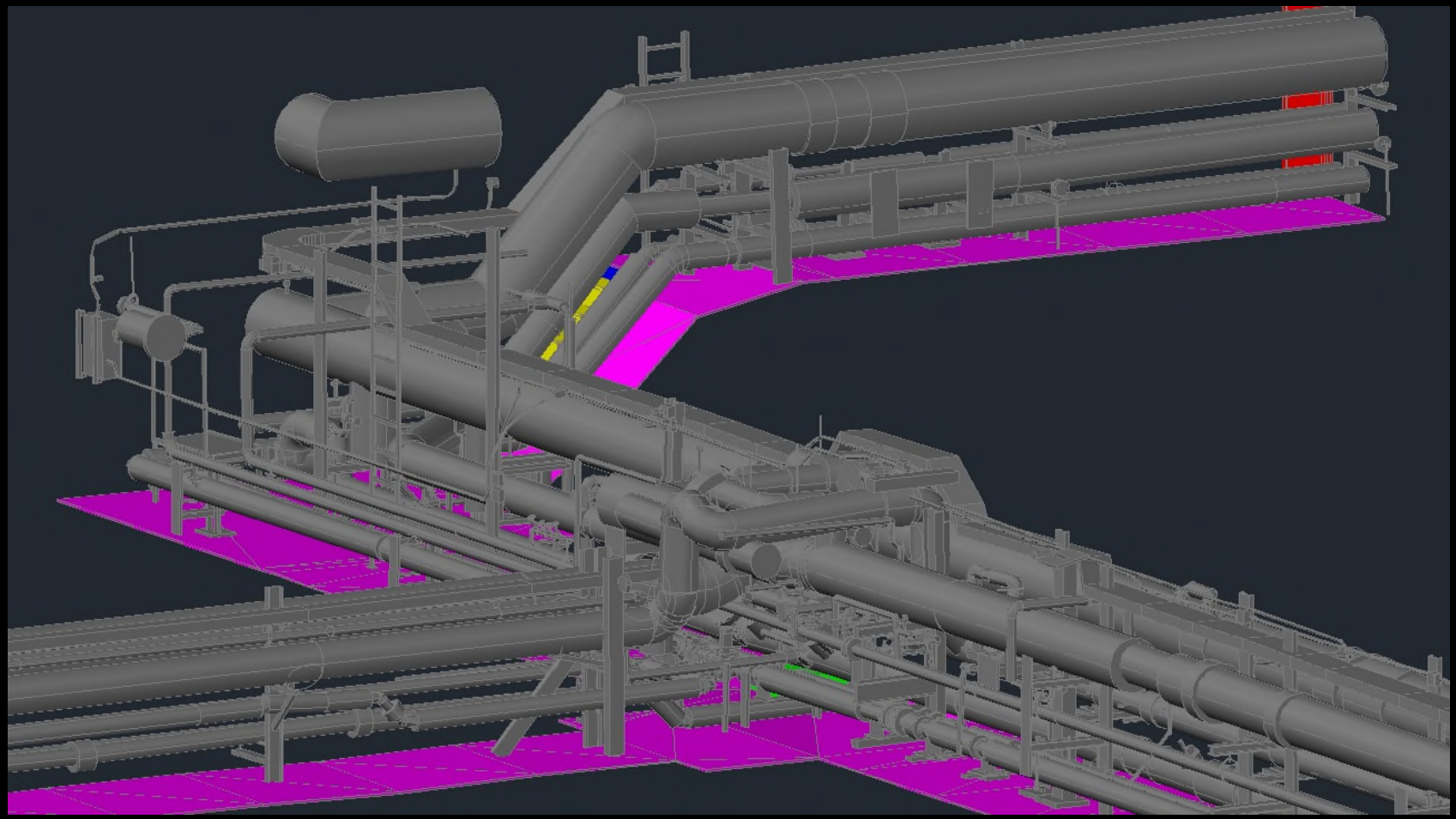
Marathon Petroleum Company – Cincinnati, OH.



Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

University of Michigan – Ann Arbor, MI.

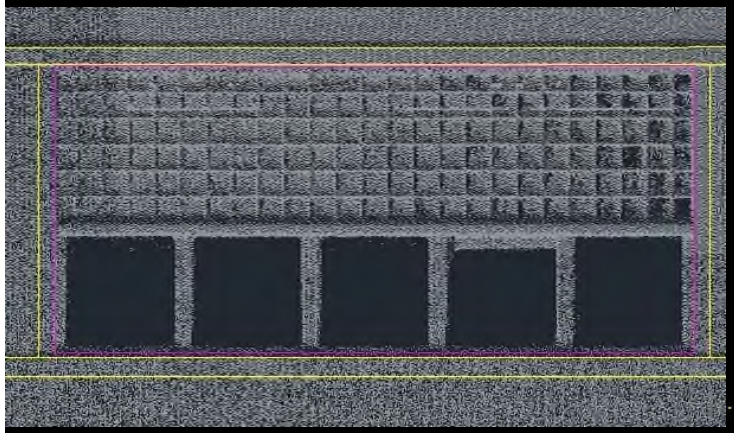


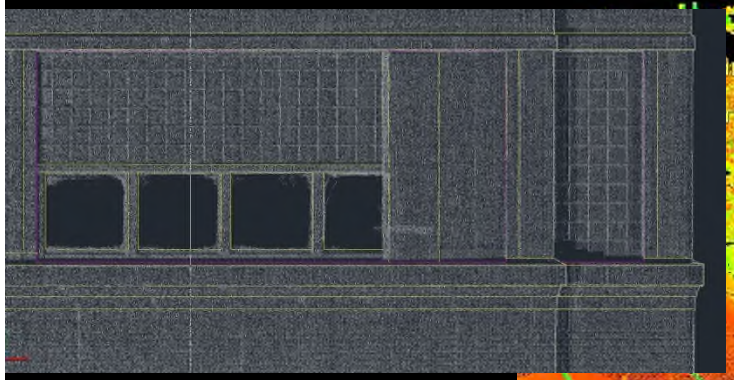
TruePoint Laser Scanning

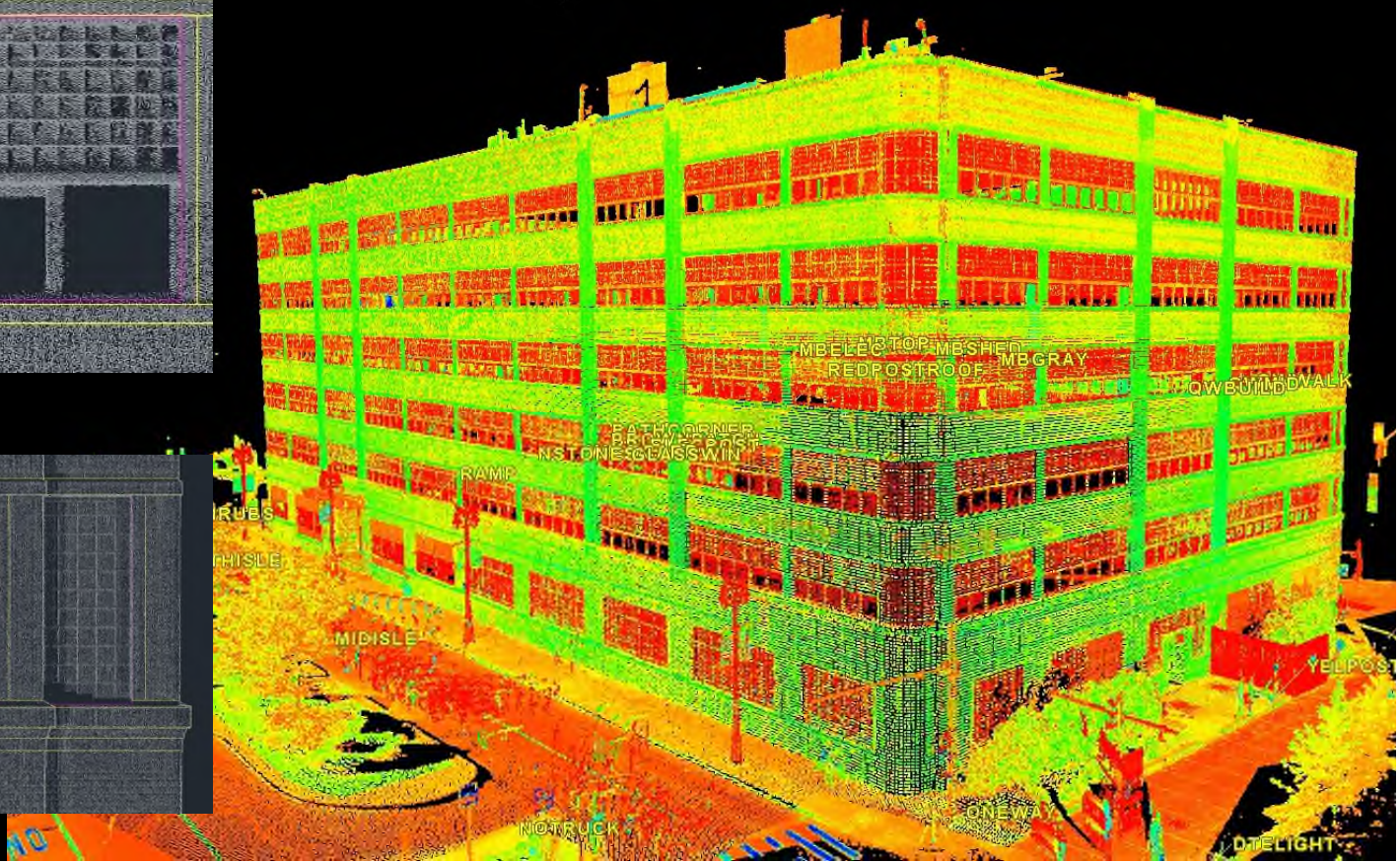
Capture. Analyze. Define.

Notable Projects

DTE Energy – Detroit, MI.







Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

Franklin Conaway & Associates & Heritage Ohio
Historical Trautman Building – Columbus, OH.

Notable Projects

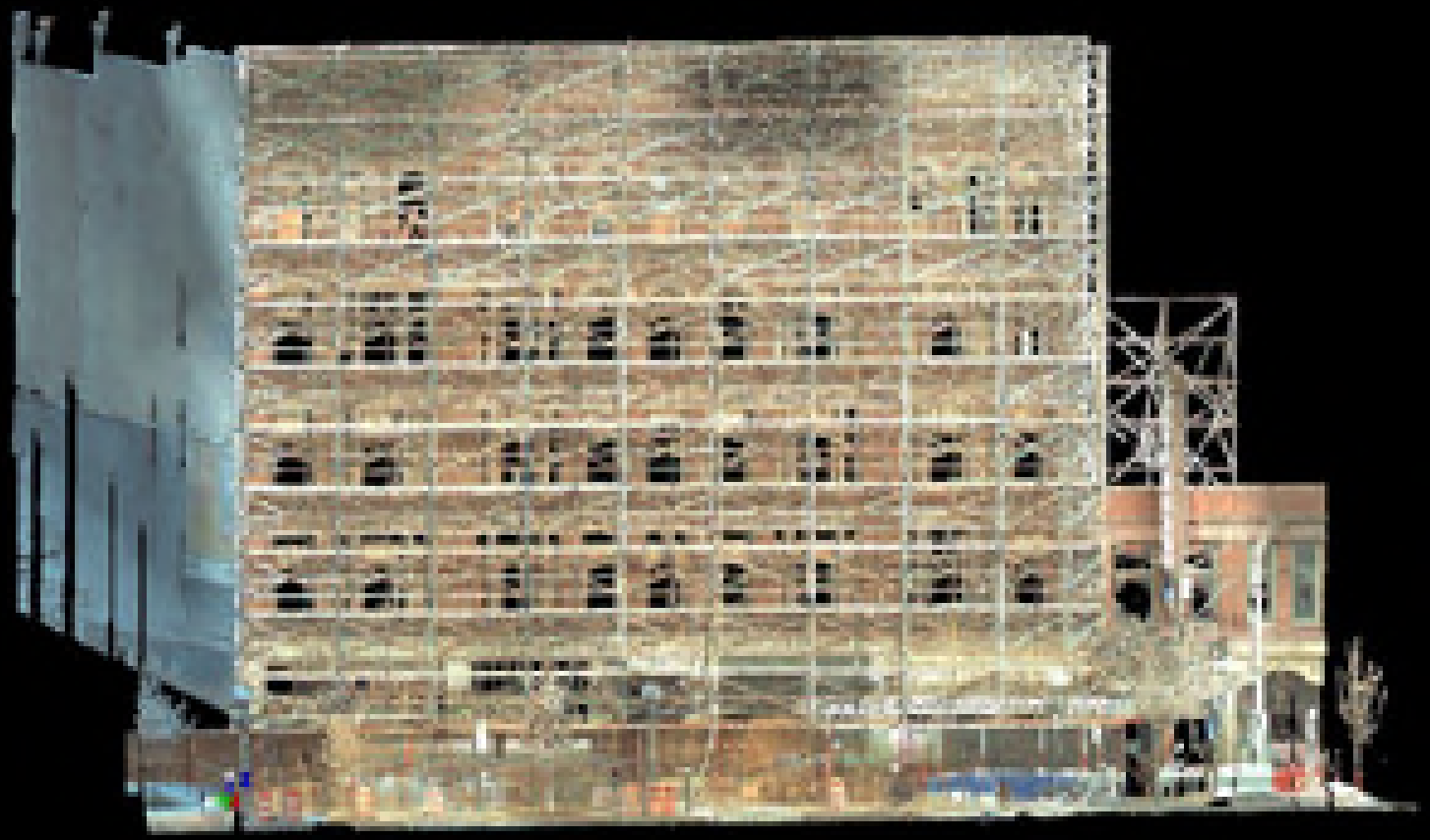
TruePoint Laser Scanning
Capture. Analyze. Define.

Franklin Conaway & Associates & Heritage Ohio
Historical Trautman Building – Columbus, OH.

Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

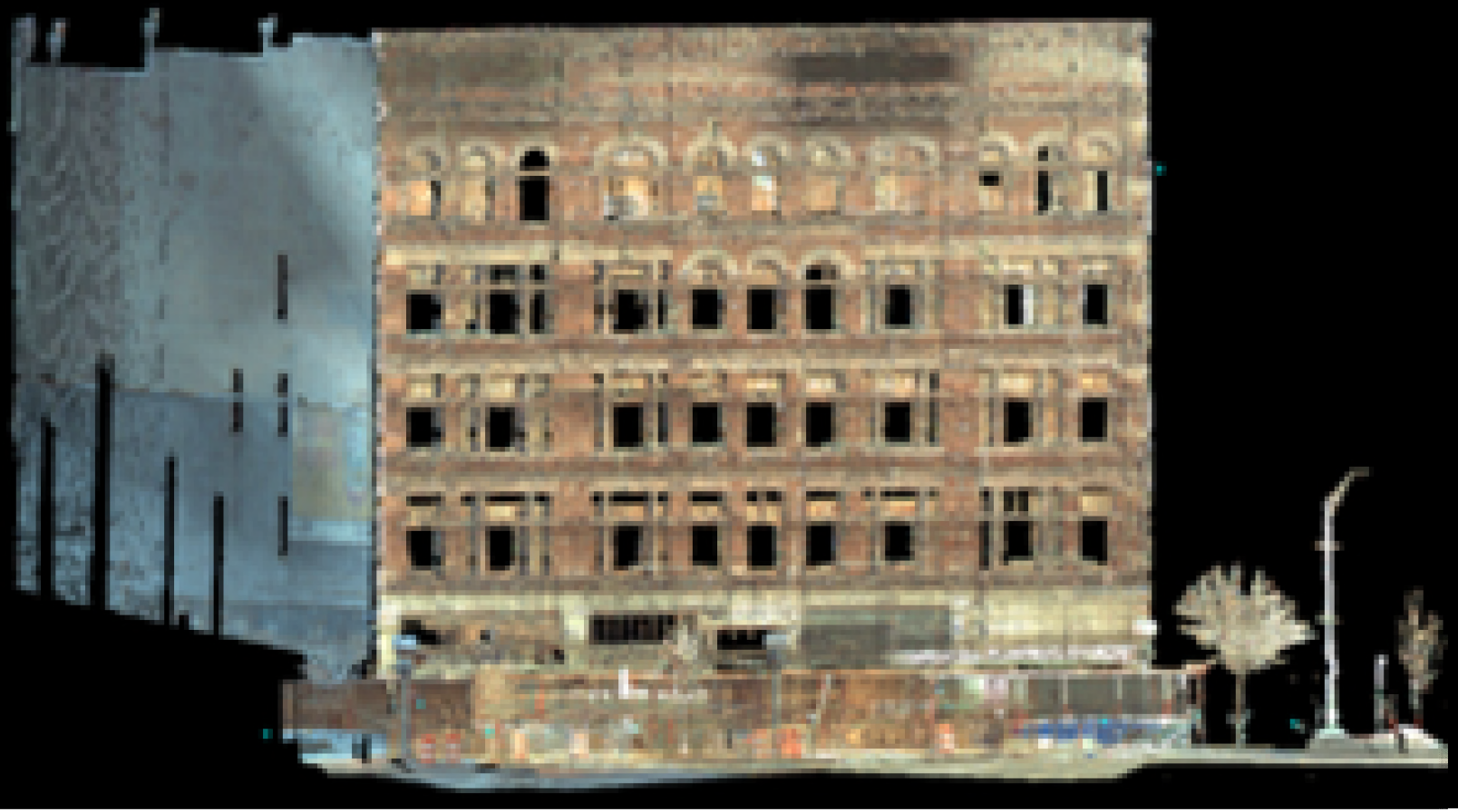
Franklin Conaway & Associates & Heritage Ohio
Historical Trautman Building – Columbus, OH.



TruePoint Laser Scanning
Capture. Analyze. Define.

Notable Projects

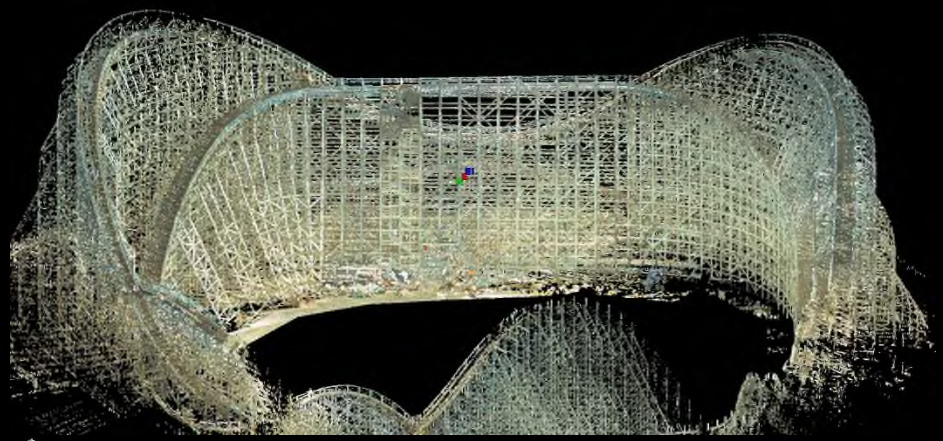
Franklin Conaway & Associates & Heritage Ohio
Historical Trautman Building – Columbus, OH.



Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

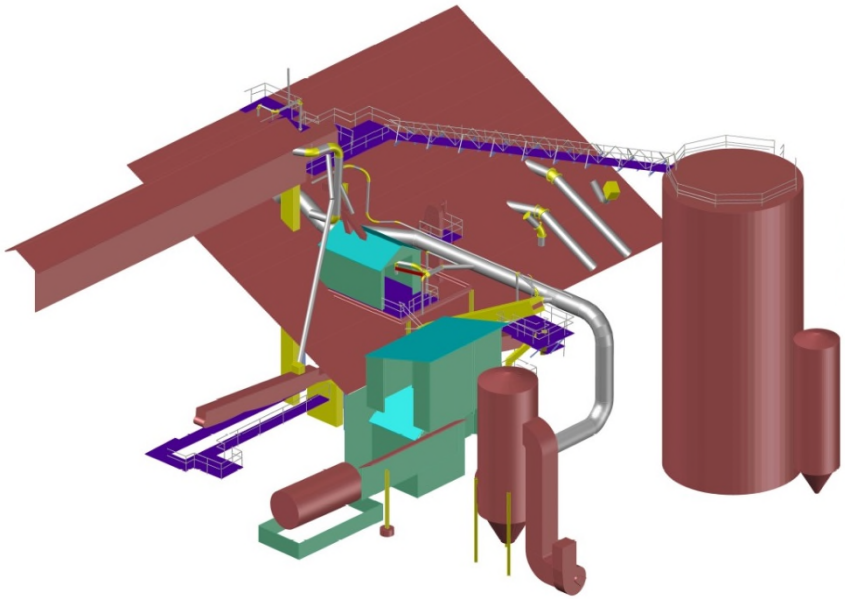
Cedar Point Amusement Parks
Sandusky, OH.

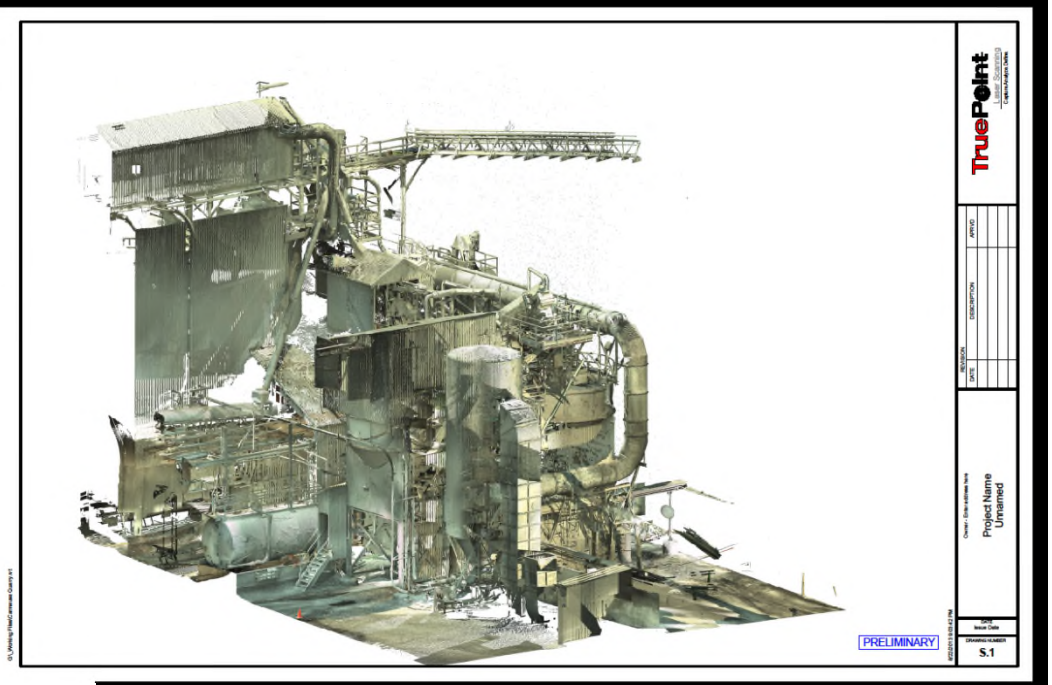


Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

Carmeuse Lime & Stone

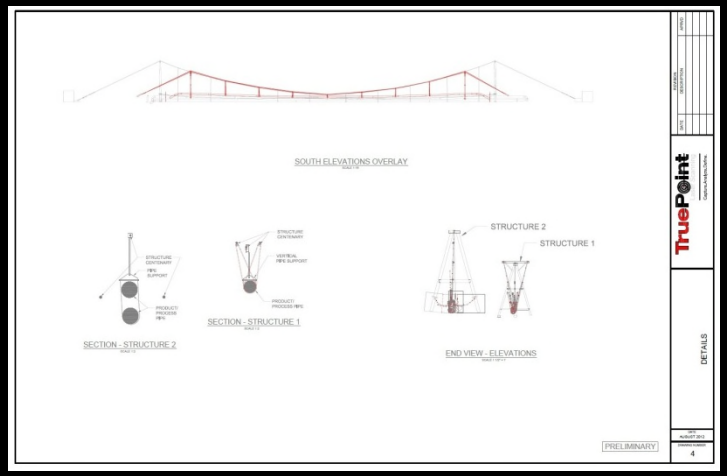


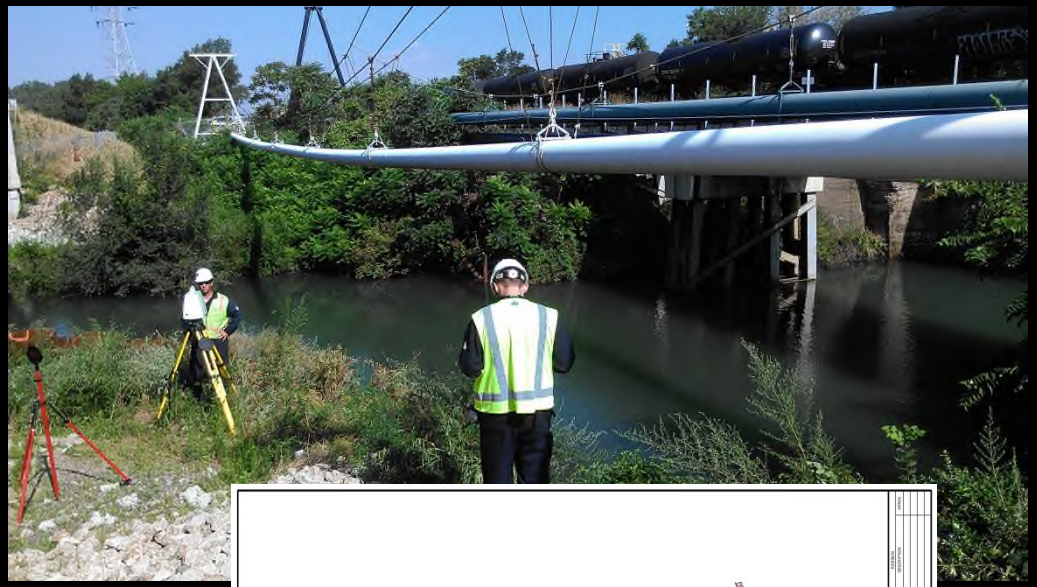


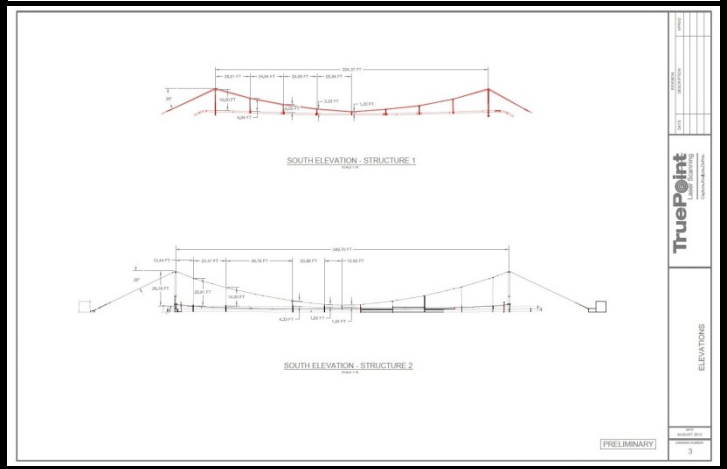
Notable Projects

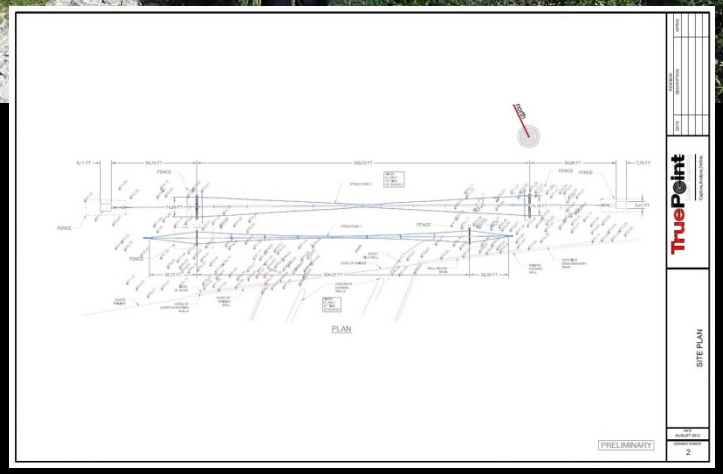
TruePoint Laser Scanning
Capture. Analyze. Define.

BP Pipeline







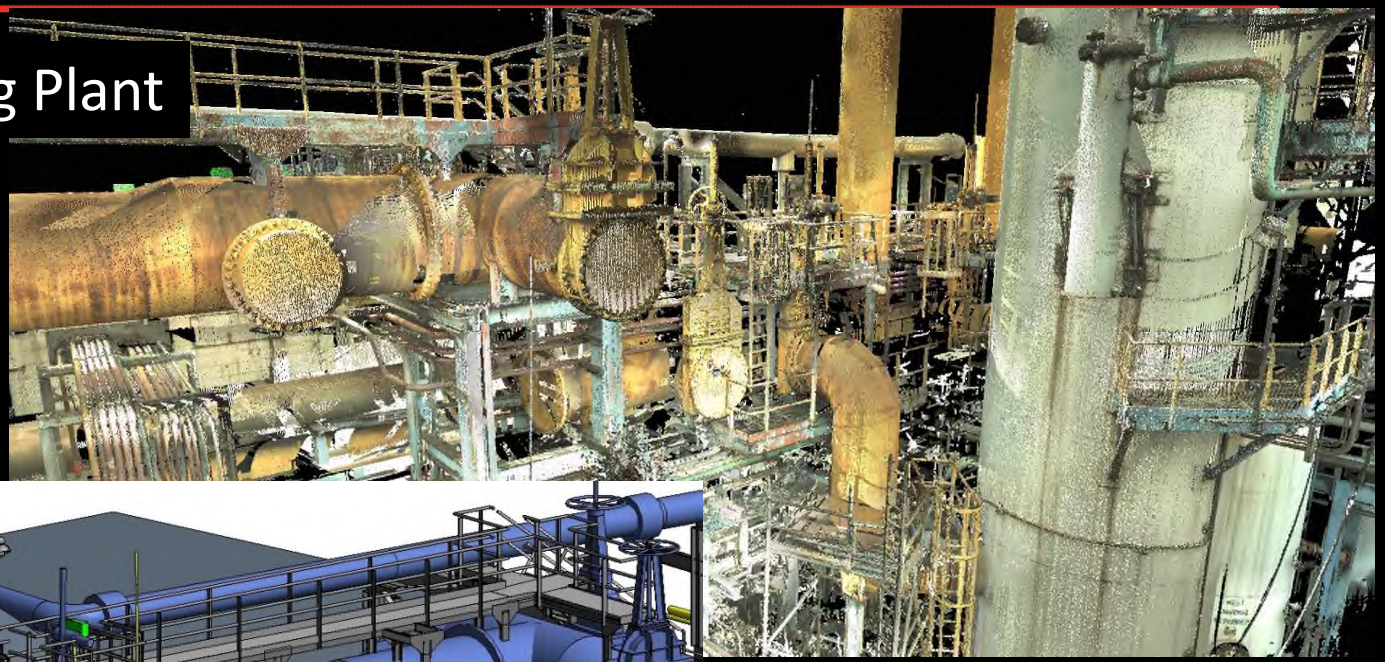


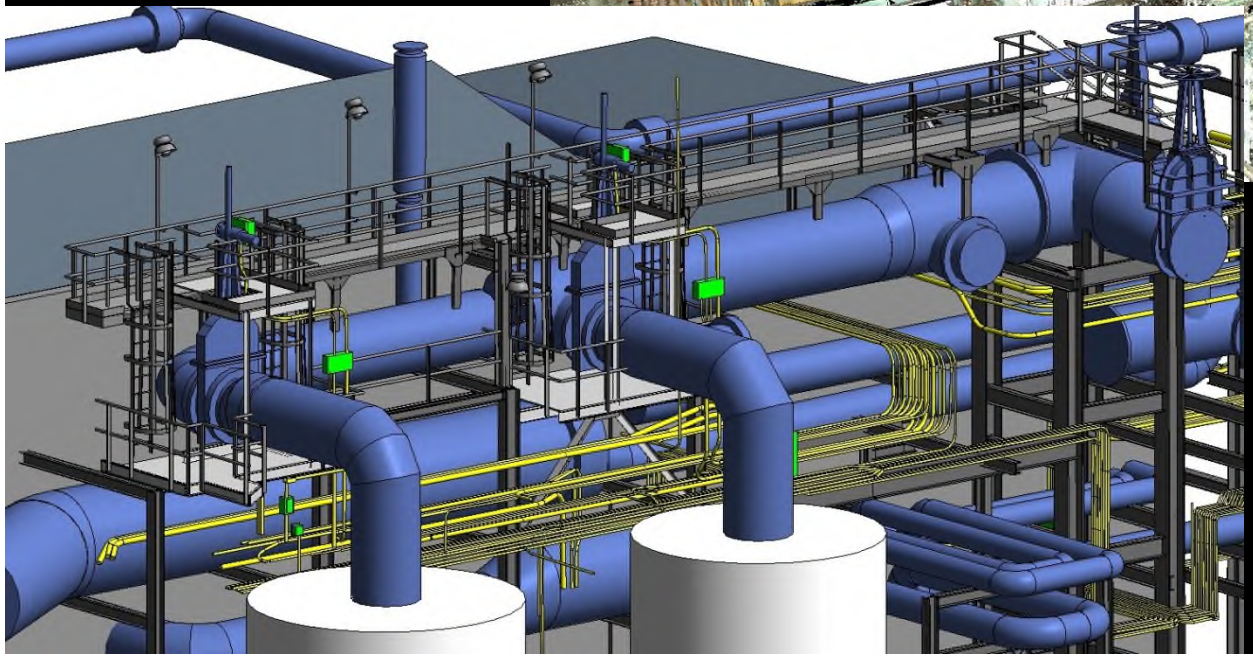
Notable Projects

TruePoint Laser Scanning

Capture. Analyze. Define.

US Steel Coking Plant

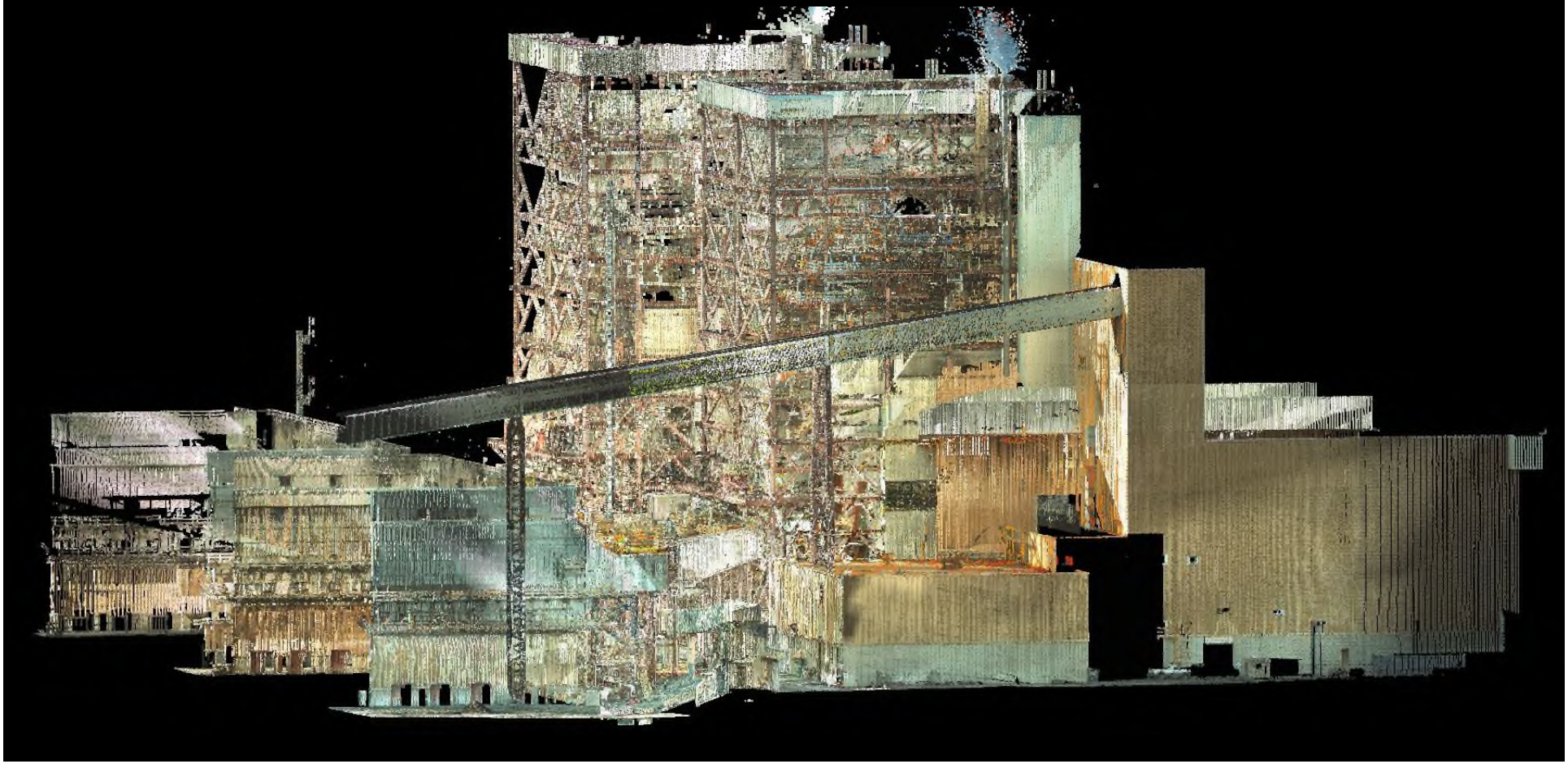




TruePoint Laser Scanning
Capture. Analyze. Define.

Notable Projects

Bridger Power Plant – Rock Springs, Wyoming



TruePoint Laser Scanning
Capture. Analyze. Define.

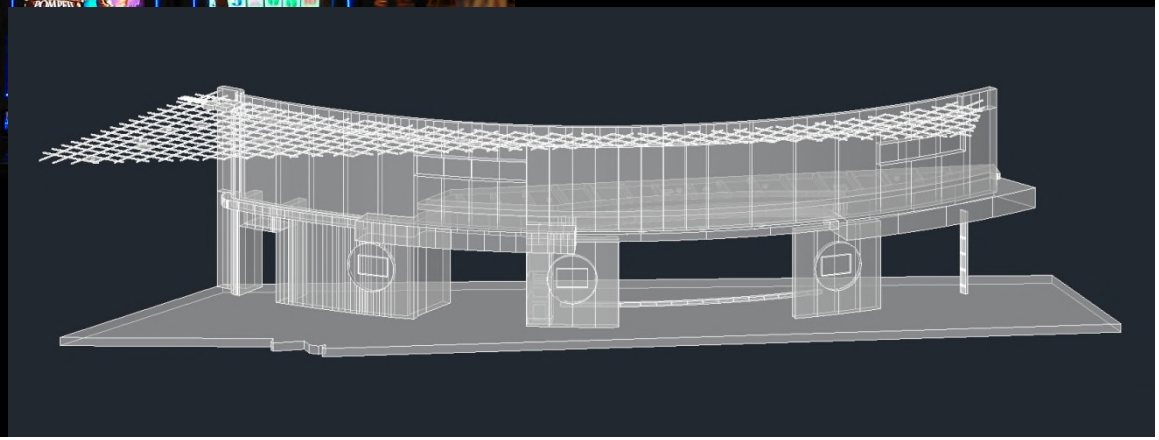
Notable Projects

Arcadis – Elgin MGP Substation

TruePoint Laser Scanning
Capture. Analyze. Define.

Notable Projects

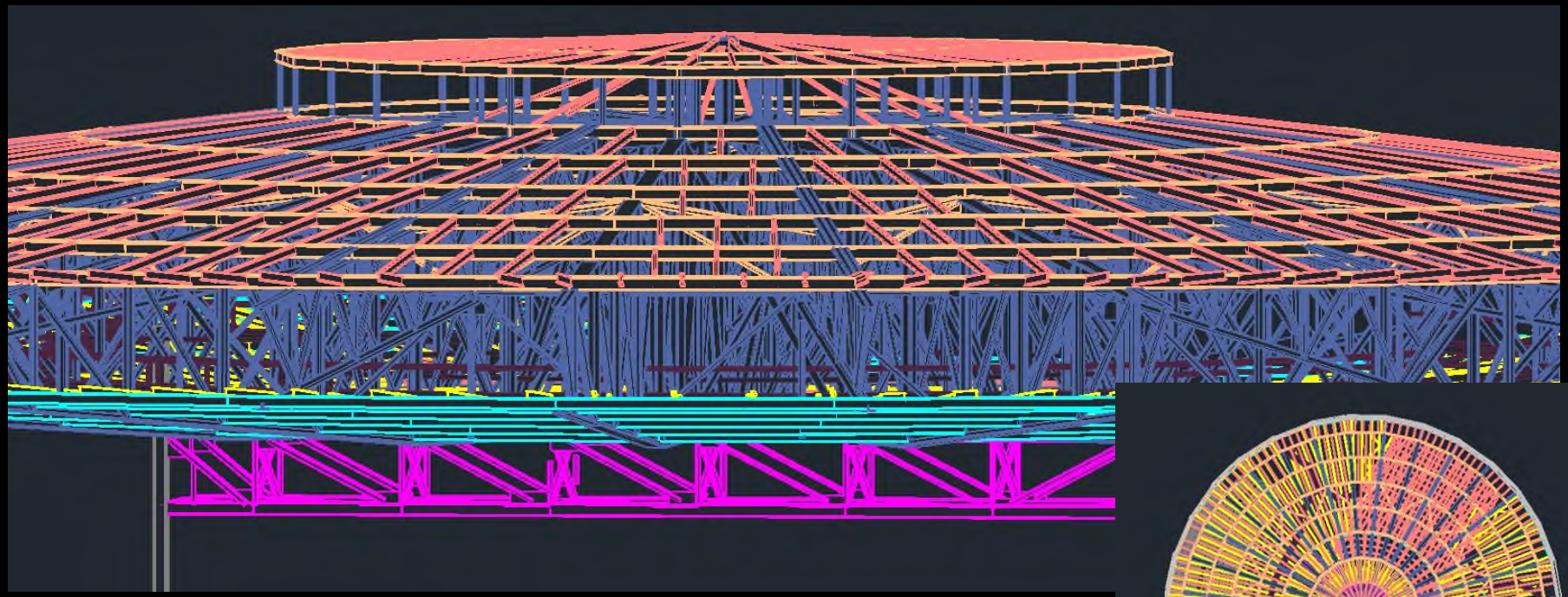
Hollywood Casino – Columbus, Ohio



Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

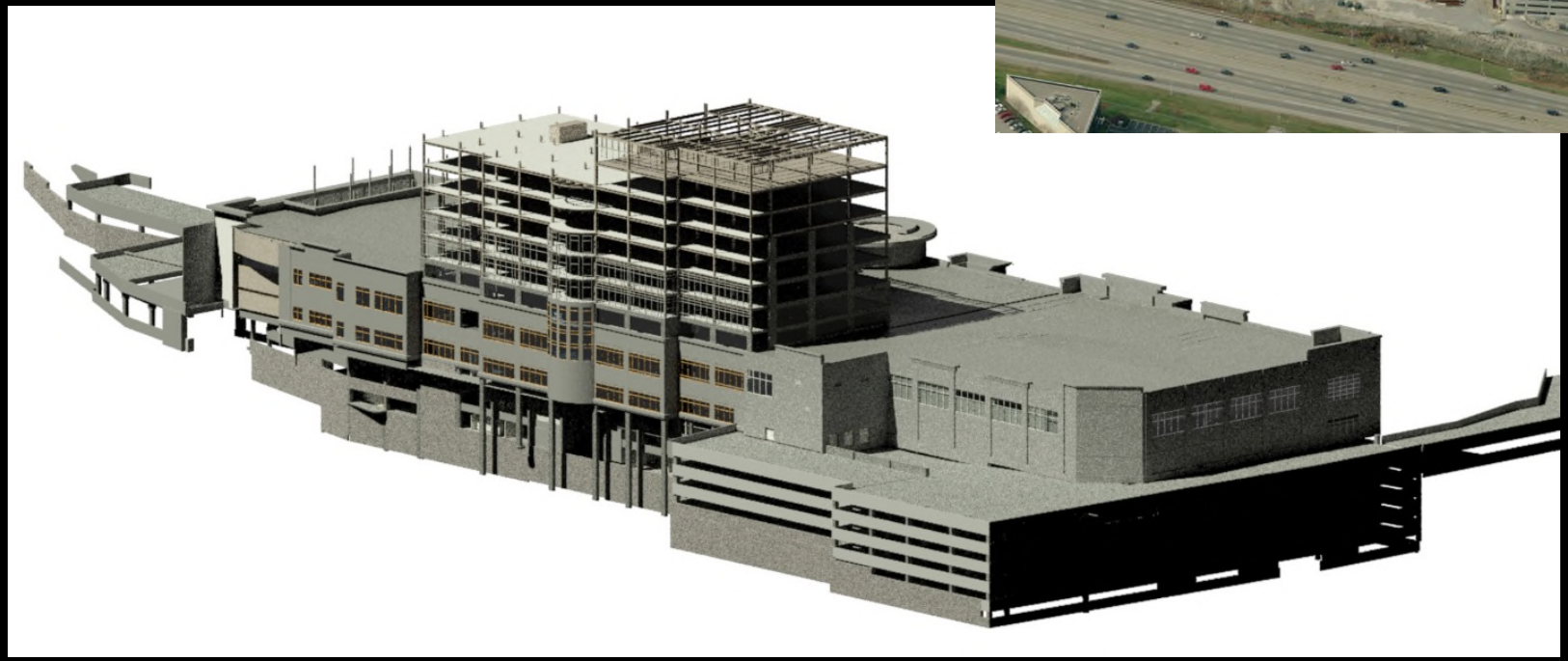
Cobo Hall Arena - Detroit, MI.



Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

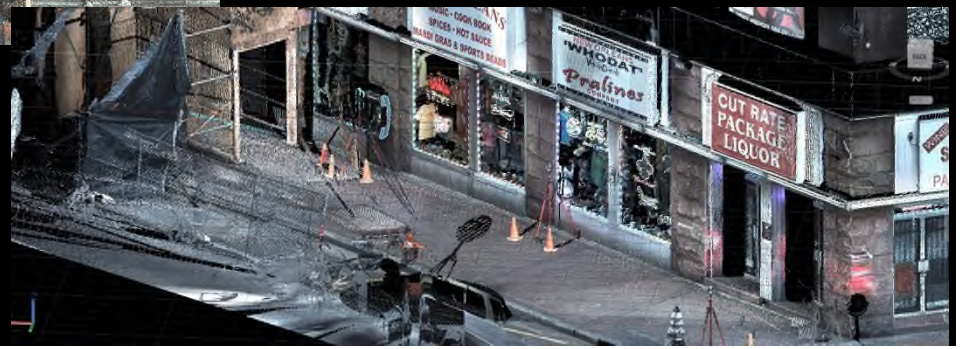
Kenwood Multipurpose Tower – Cincinnati, OH



Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

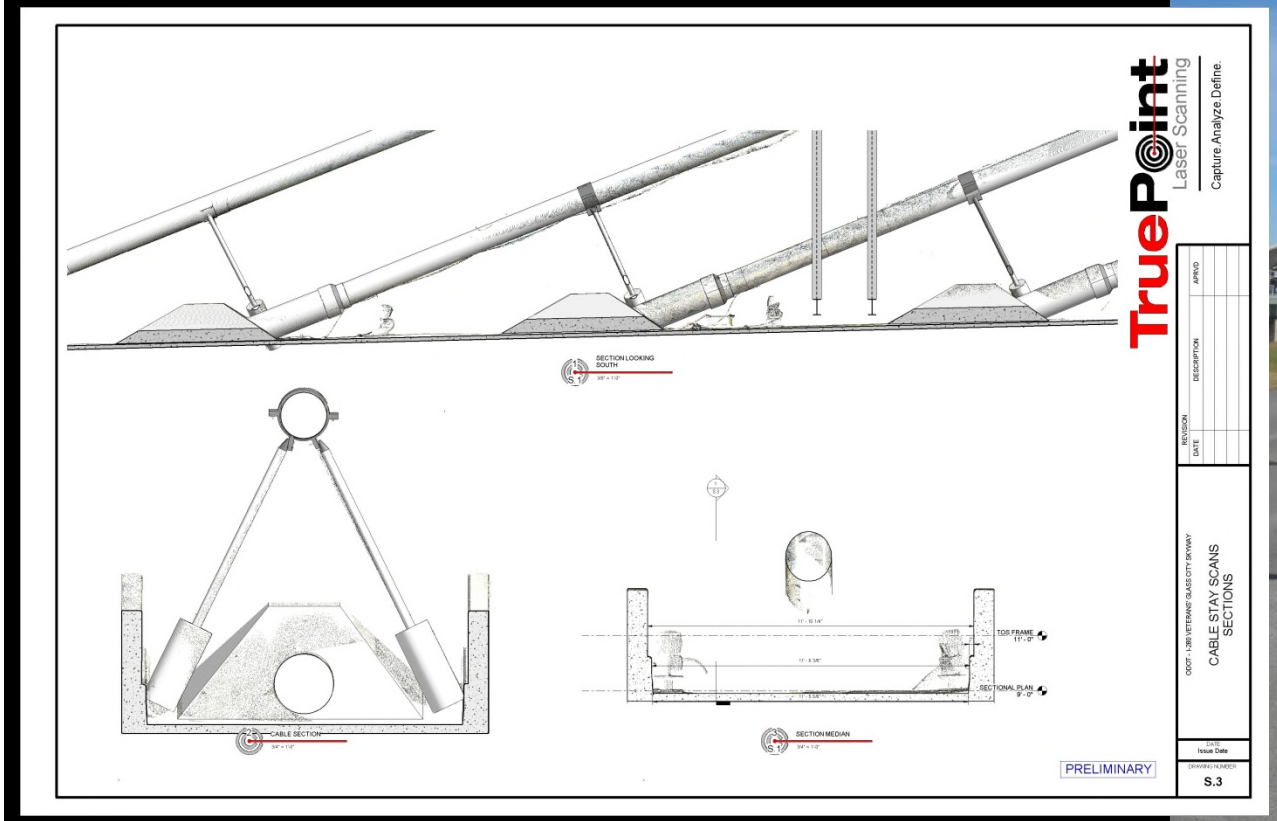
600 Canal Street – New Orleans, LA



Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

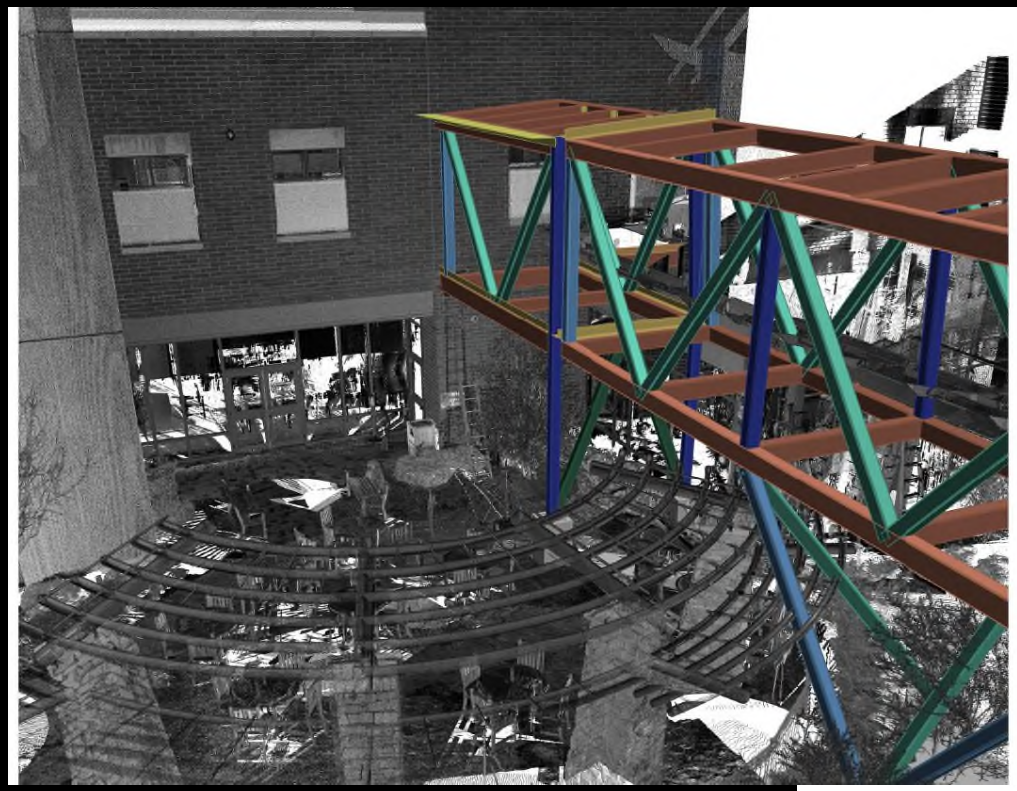
Ohio Department of Transportation & University of Toledo – Toledo, OH.

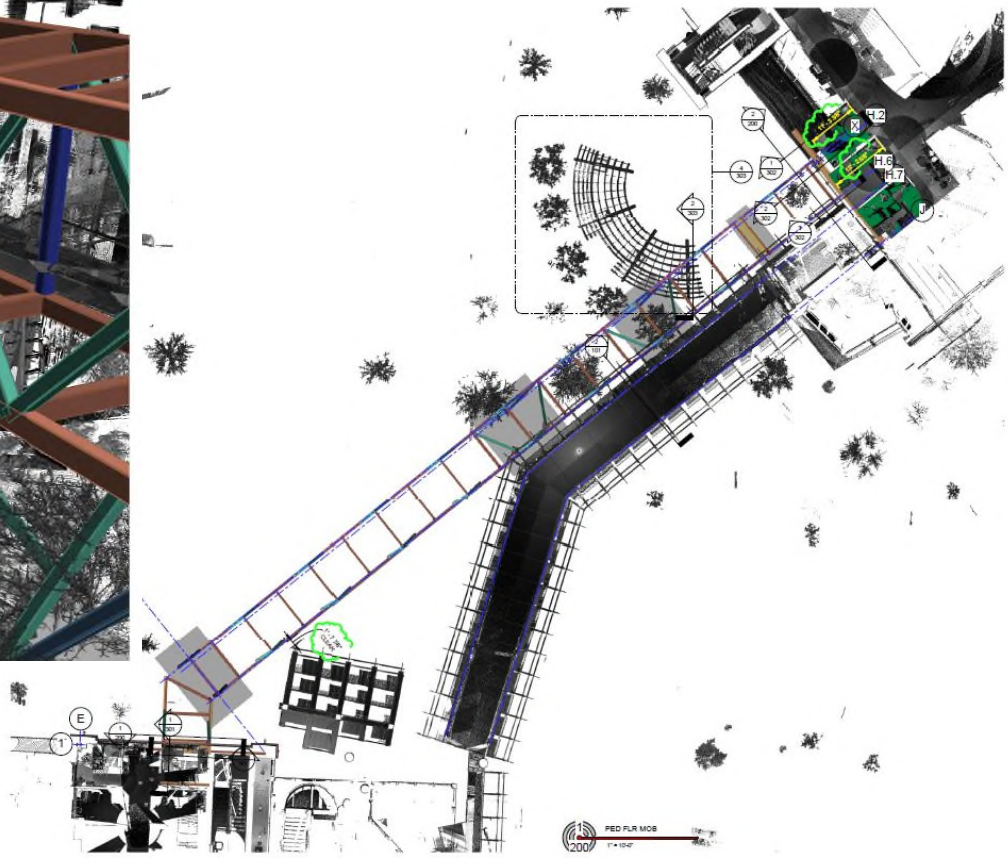


Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

Norton-Brownsboro Hospital – Louisville, KY.

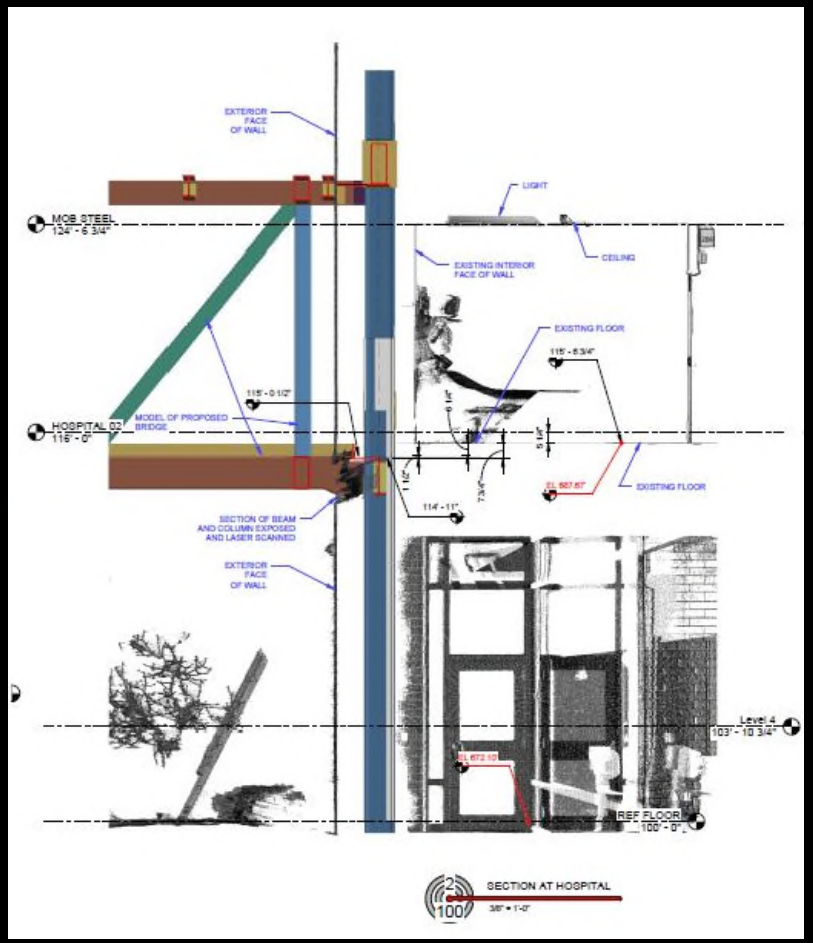


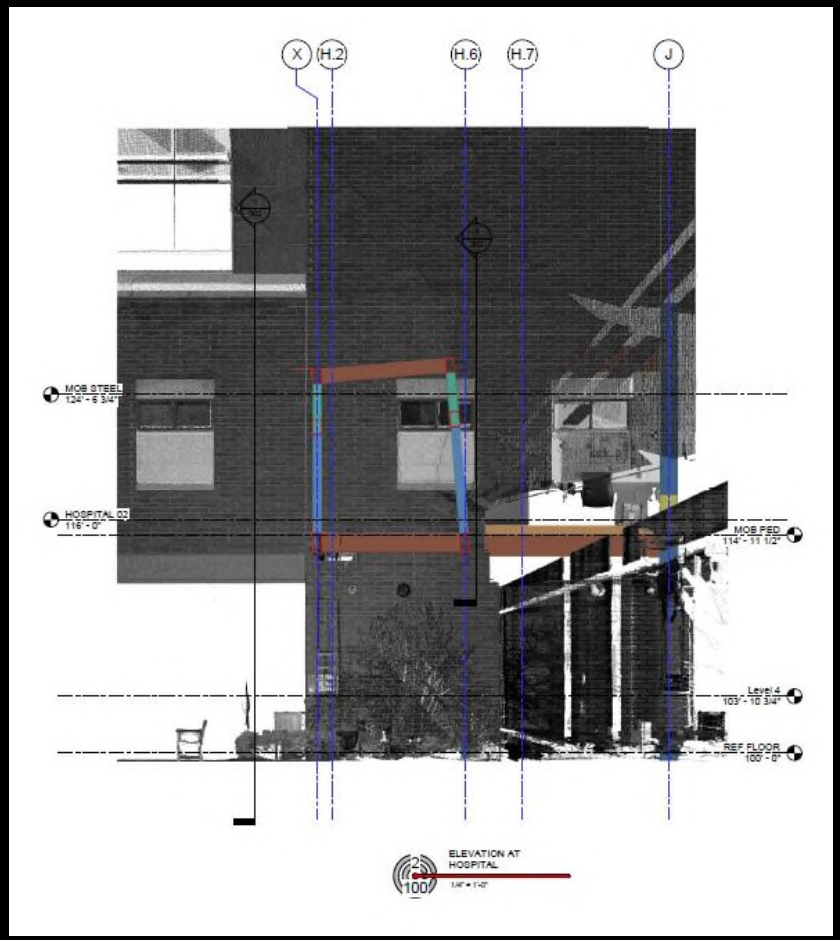


Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

Norton-Brownsboro Hospital – Louisville, KY.

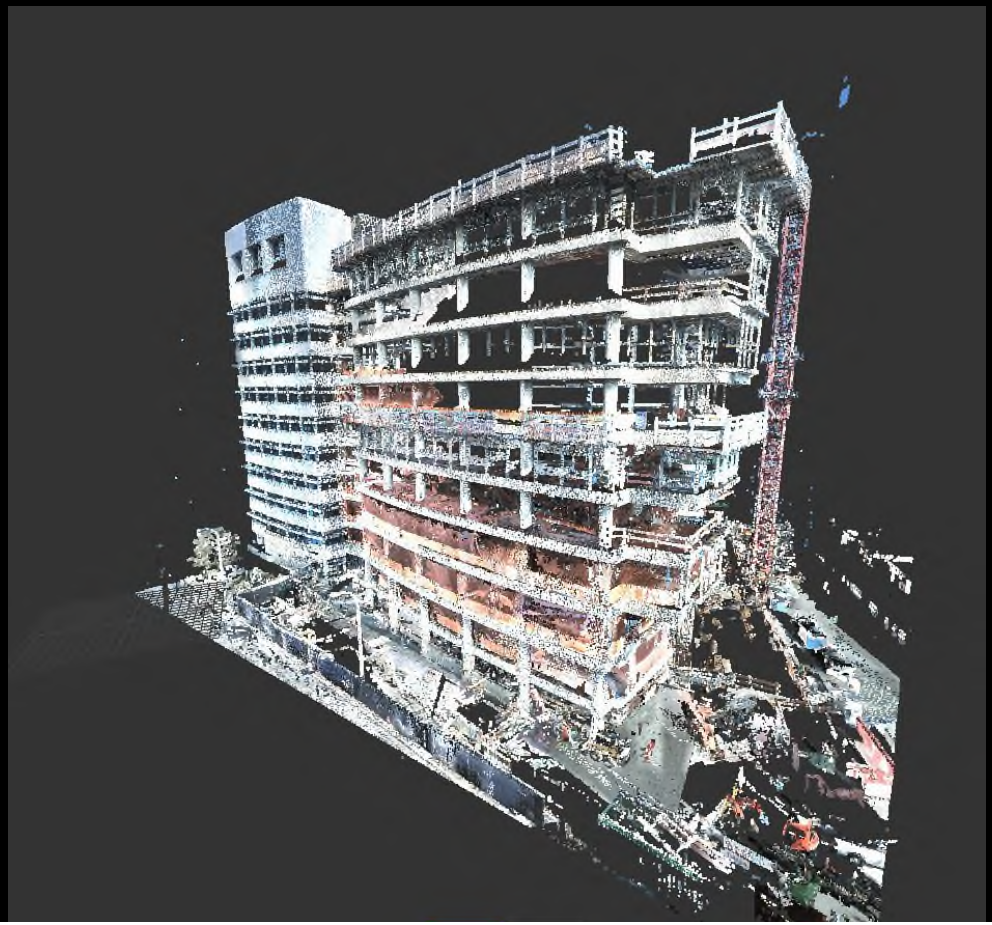




Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

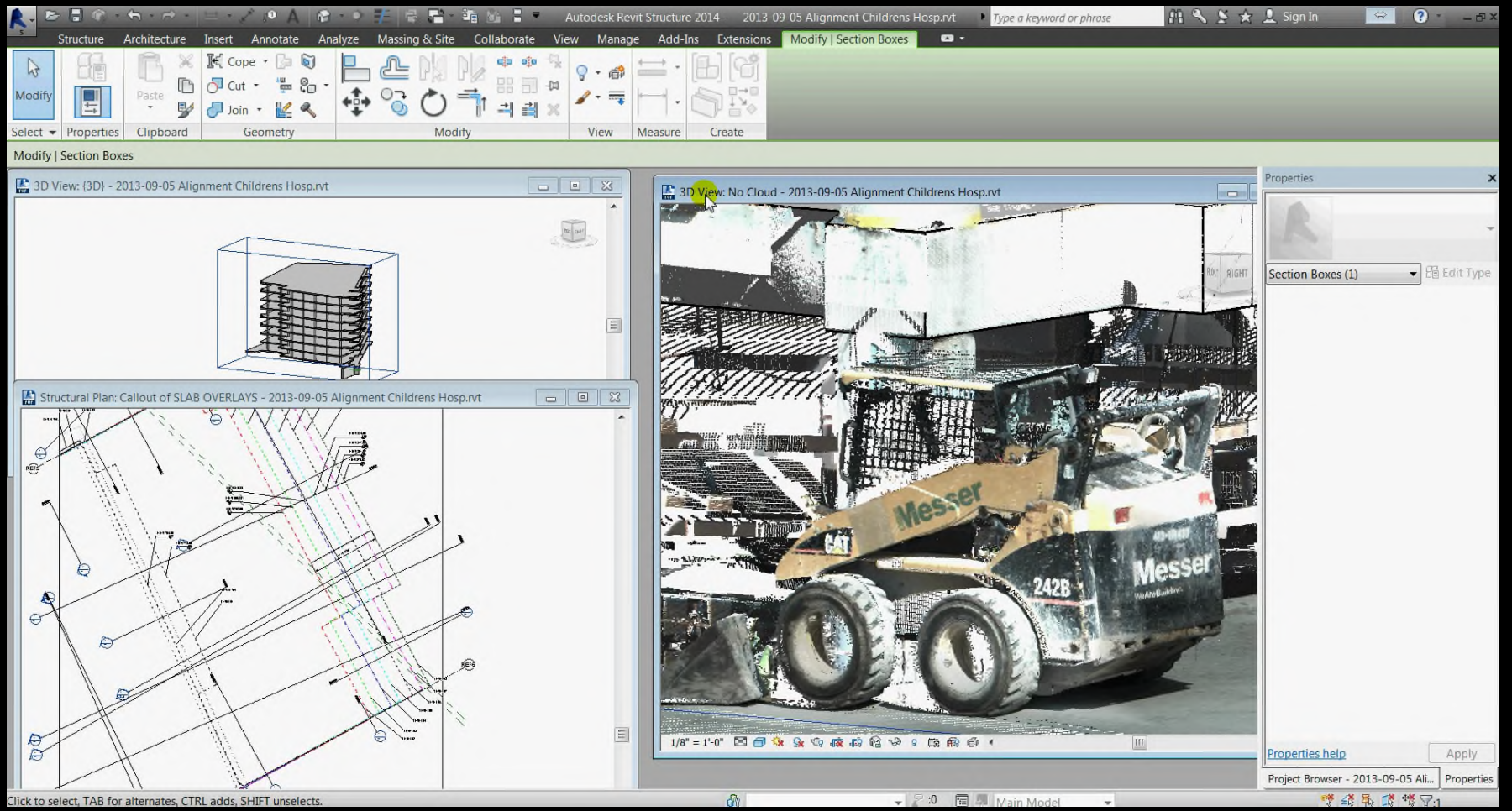
Cincinnati Children's Hospital – Cincinnati, OH



Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

Cincinnati Children's Hospital – Cincinnati, OH



Notable Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

Wayne County Courthouse

Benefits for Projects

TruePoint Laser Scanning
Capture. Analyze. Define.

- Limit Change Orders
  - Typically 3-5% project cost in change orders
    - 1/3 Owner Requested
    - 1/3 Errors and Omissions
    - 1/3 Field Conditions
  - Limit E/O and Field Conditions Change Orders
- More info for design teams early = better design

How to best see value

TruePoint Laser Scanning
Capture. Analyze. Define.

- Contract Directly
  - Most Value and control for owner
- Add Laser Scanners to Project Team
  - Owners ultimately pay for scanning plus markup
- Suggest Project Team use Laser Scanning
  - Owners ultimately pay for scanning plus markup
  - Owners expose themselves to Field Condition Change Order Costs

Contact Information

TruePoint Laser Scanning
Capture. Analyze. Define.

TruePoint Laser Scanning, LLC.
6800 W. Central Avenue, Suite E-1
Toledo, Ohio 43617
419-843-SCAN (7226)

www.TruePointScanning.com

Ryan Hacker
rhacker@truepointscanning.com

Ann Arbor/Detroit – 734-807-0117
Chicago – 312-448-1509
Cincinnati – 513-609-7244
Cleveland – 216-470-7262
Columbus – 614-800-0378

Dallas, TX. – 214-551-6201
Indianapolis, IN. - 317-560-1565
Orlando, FL. – 407-558-9716
Pittsburgh – 412-639-7564
Washington D.C. – 703-517-5773