Digital Asset Benefits –
LiDAR and BIM for Asset Management & Design

ANTARCTIC ADVENTURES

National Science Foundation (NSF) Large Facilities Workshop

April 3, 2019

MERRICK®

www.merrick.com

WELCOME to
ANTARCTICA

Antarctica is the coldest, windiest, harshest continent. With roughly 2” of precipitation a year, it is the driest place on Earth. It is roughly 5.4 million square miles, has an average elevation of 6,500 feet, and 98% of the landmass is covered by an ice sheet estimated to be 7 million cubic miles.

- United States Antarctic Program
www.usap.gov

US ANTARCTIC **STATIONS**

Research Station and Position	Summer Staff	Winter Staff	Occupied	Use	Average Summer High Temps	Average Winter High Temps
Amundsen-Scott South Pole Station, South Pole 90° S, 0° E	200 max	50	1956 - present	Year round	-18° F	-76° F
McMurdo Station, Ross Island, Ross Sea 77° 50'43.4"S, 166° 40'11.2"E	1,258 max	200	1955 - present	Year round	24° F	-1° F
Palmer Station, Anvers Island, Antarctic Peninsula 64° 46'27.1"S, 64° 03'11"W	46 max	15-20	1965 - present	Year round	36° F	14° F

How to get there.
R/V Lawrence M Gould
R/V Nathaniel B Palmer
Polar Star / Polar Sea
LC-130 ski equipped turboprop
C17 Globemaster

What's there.
McMurdo Station
Palmer Station
South Pole Station

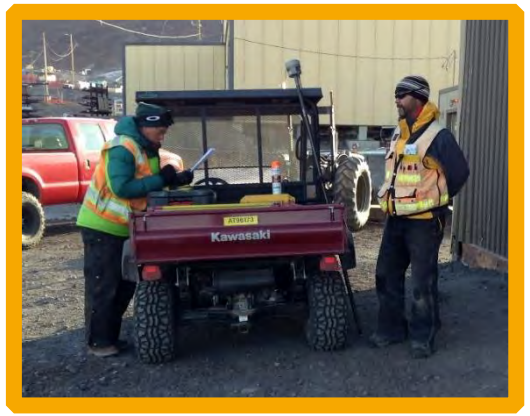
McMURDO

PALMER

POLE

McMURDO STATION

AIMS – ANTARCTIC INFRASTRUCTURE MODERNIZATION FOR SCIENCE

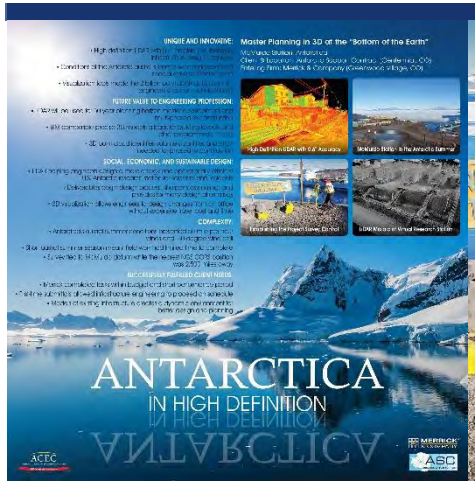


McMURDO: **LiDAR**

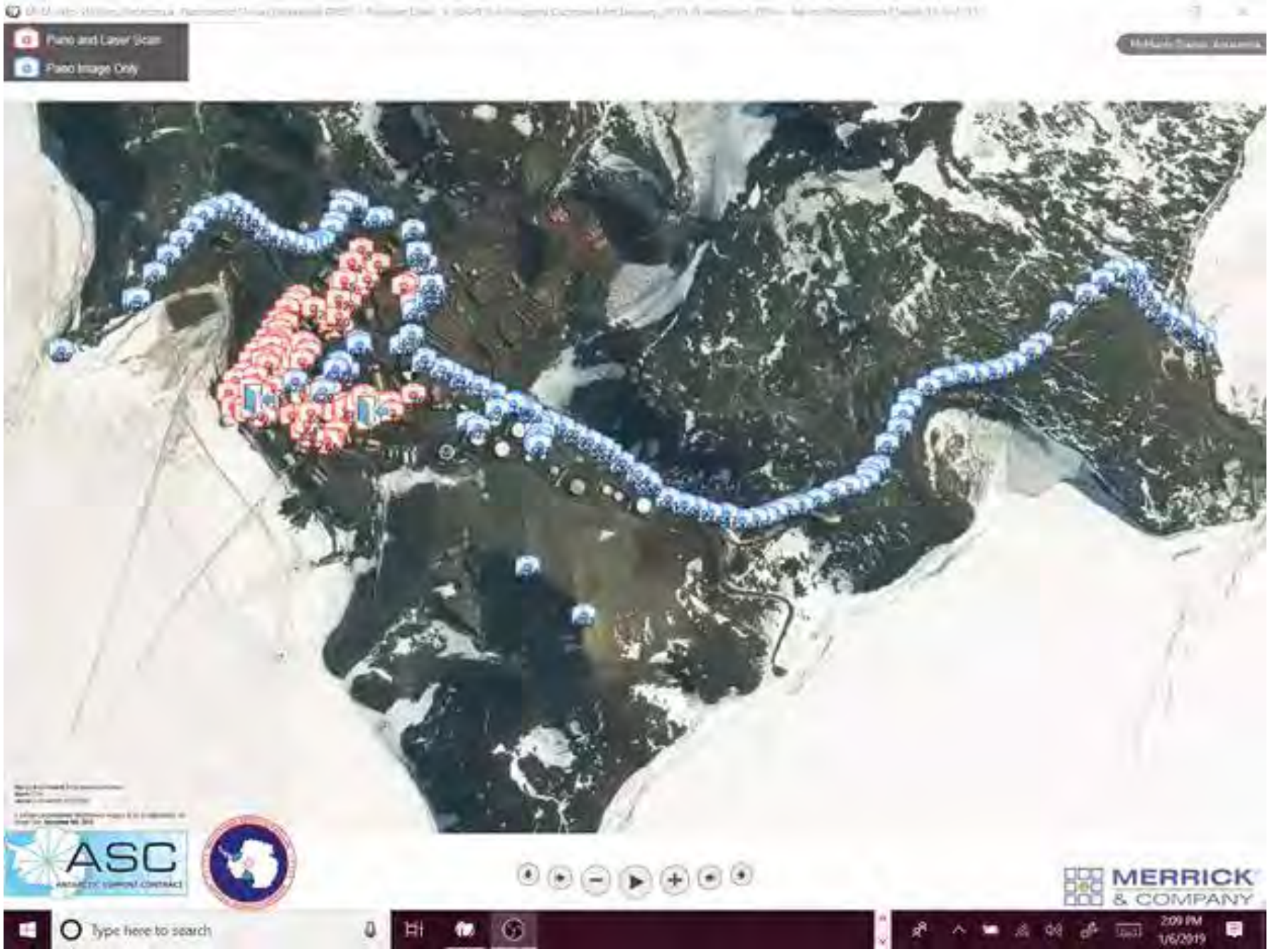
LiDAR MAGAZINE ARTICLE – 28 JUNE 2016

ACEC NATIONAL ENGINEERING EXCELLENCE AWARD 2017

ACEC
American Council of Engineering Companies
100 Years of Excellence

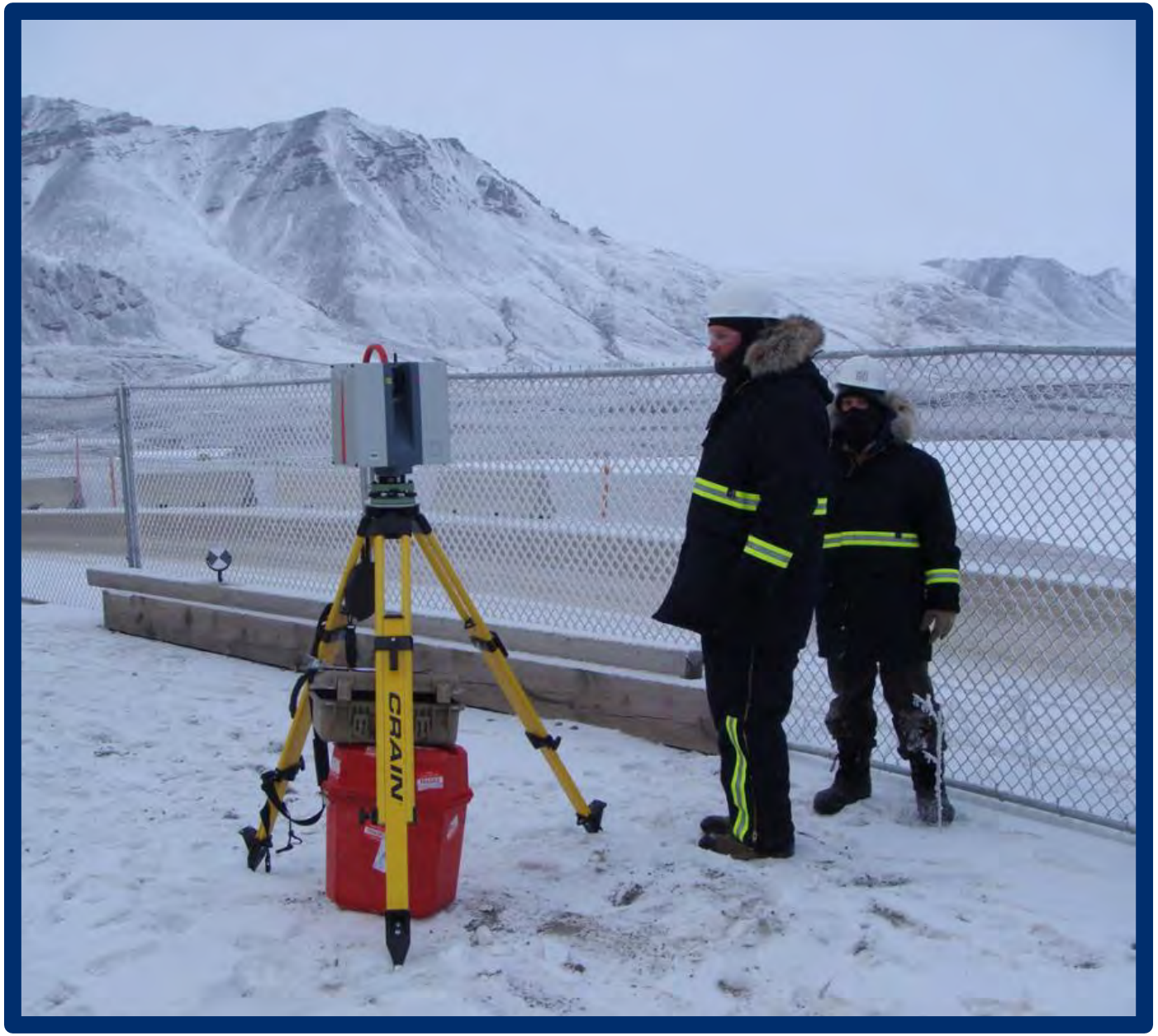


LiDAR:
PVD FILE



SAFETY:

NO - CONTACT SURVEY

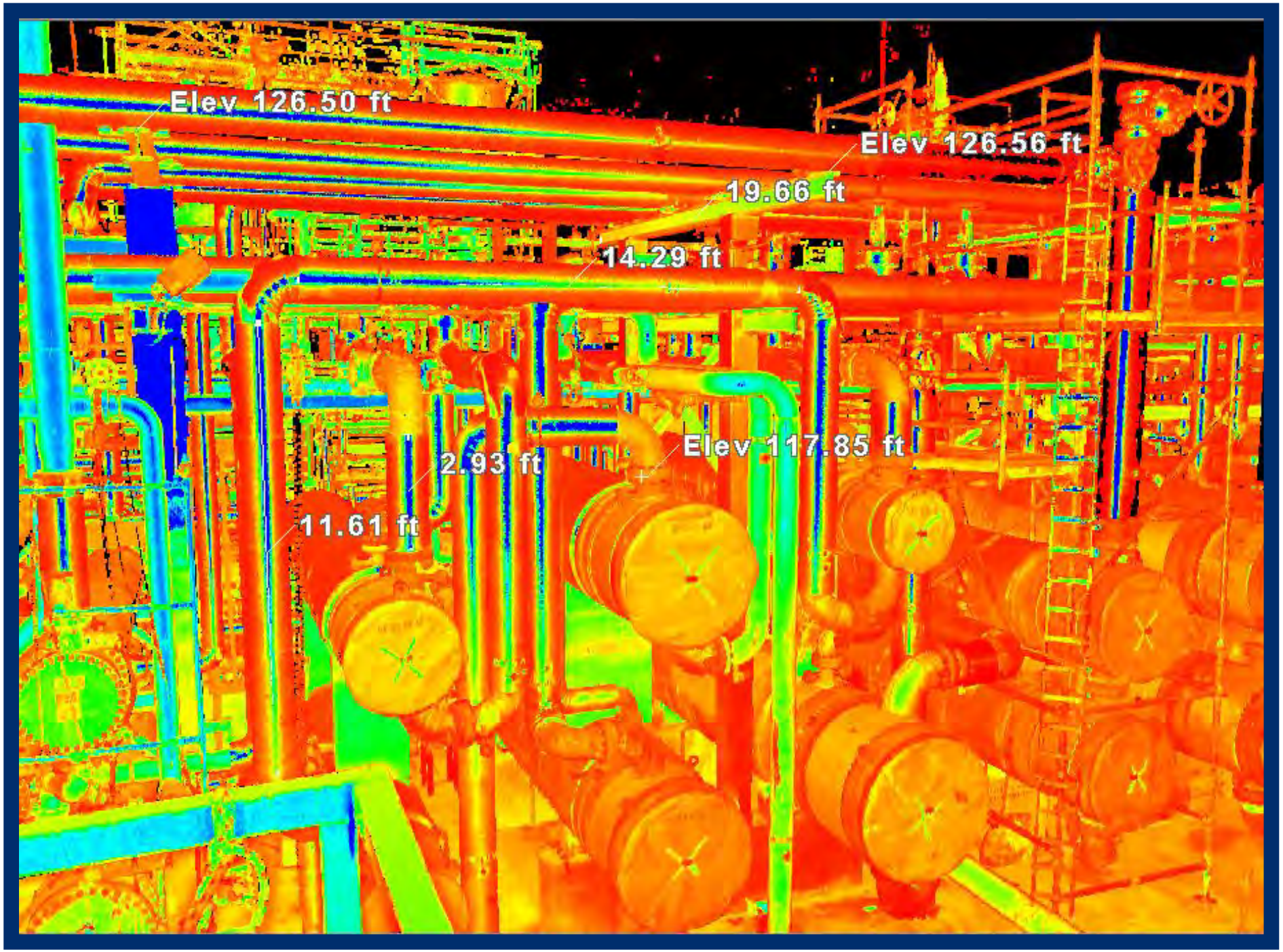


PVD

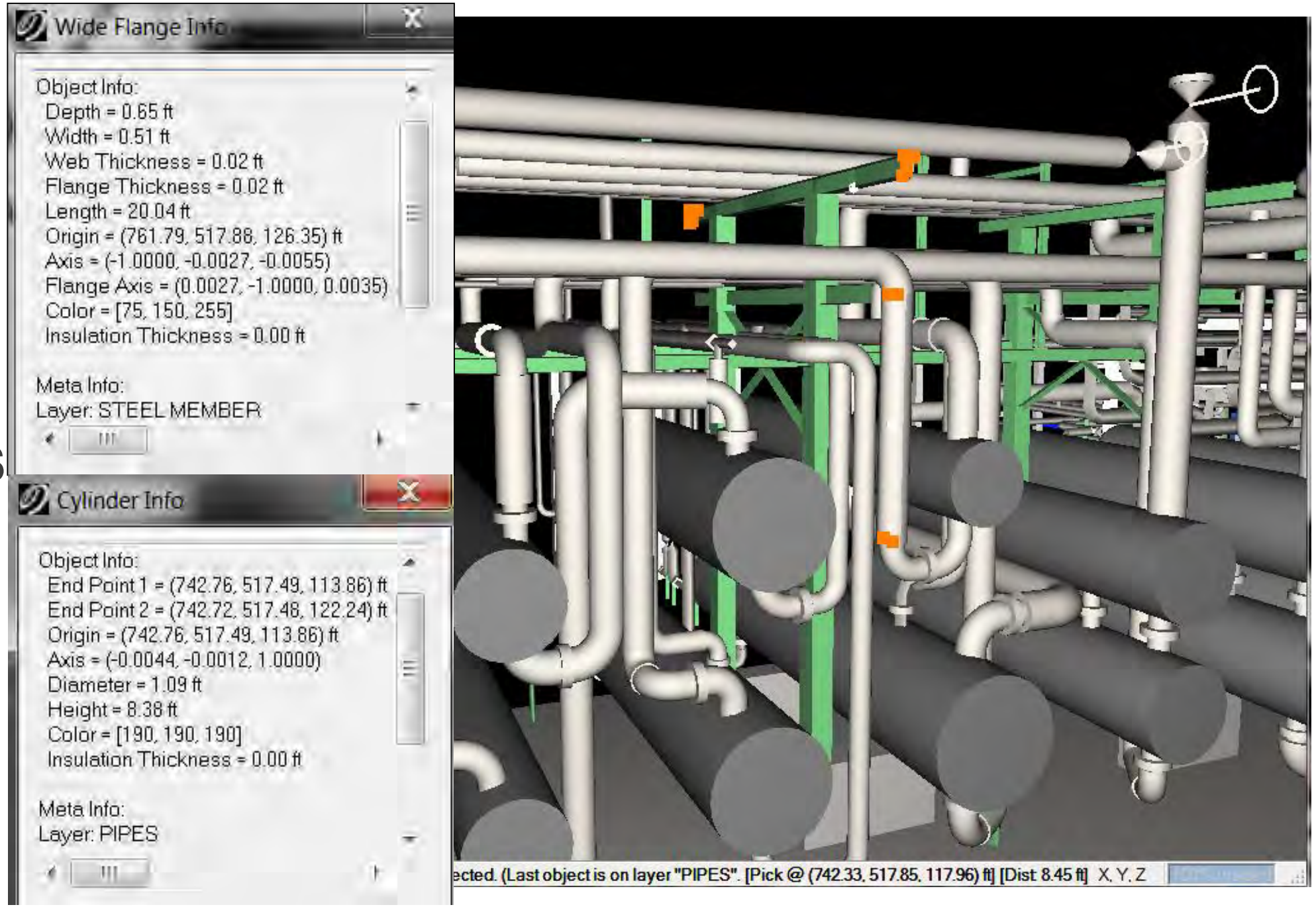
PHOTO IMAGE

IMAGE:

POINT CLOUD

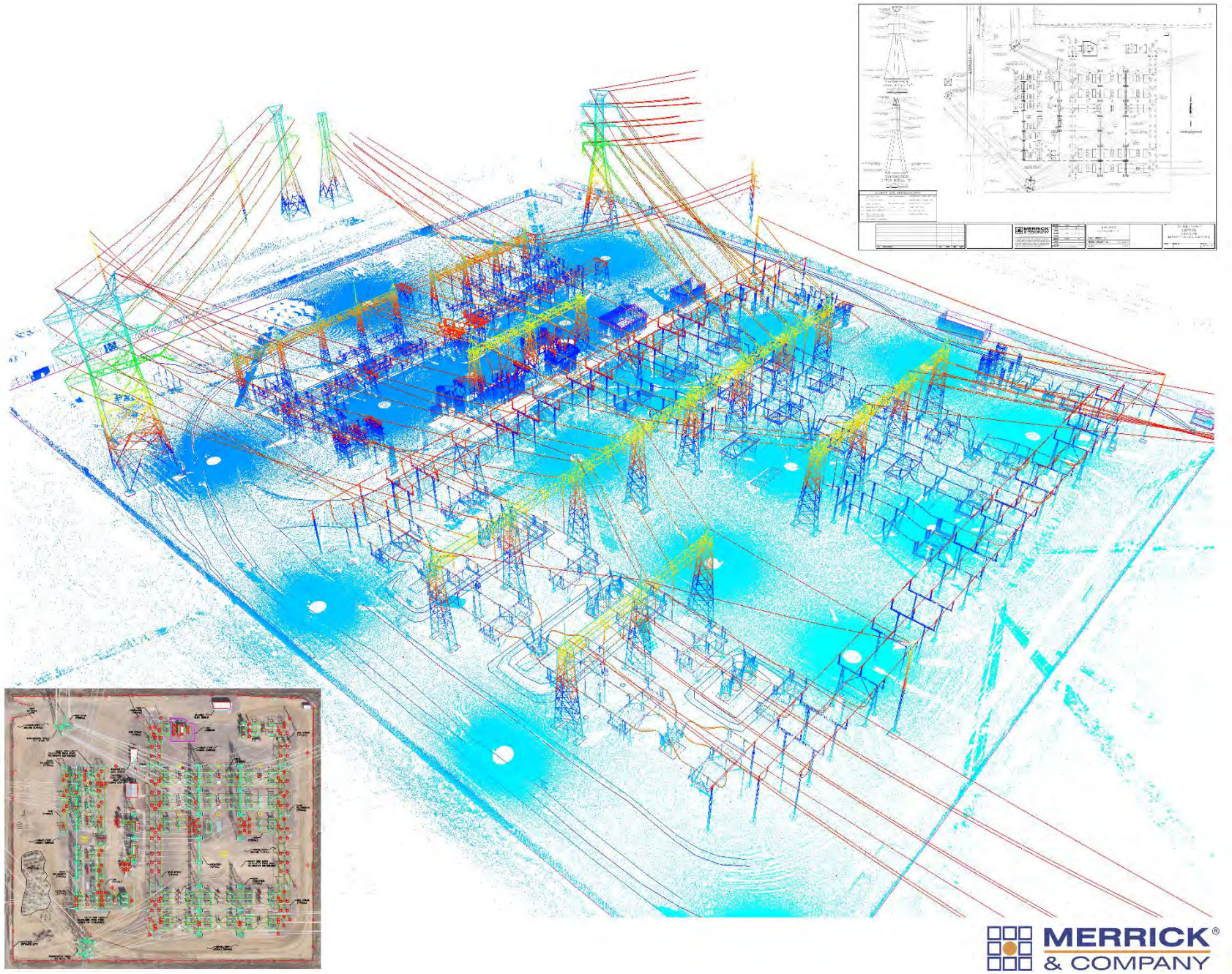


MODELING **PROGRAMS**



PROJECT:

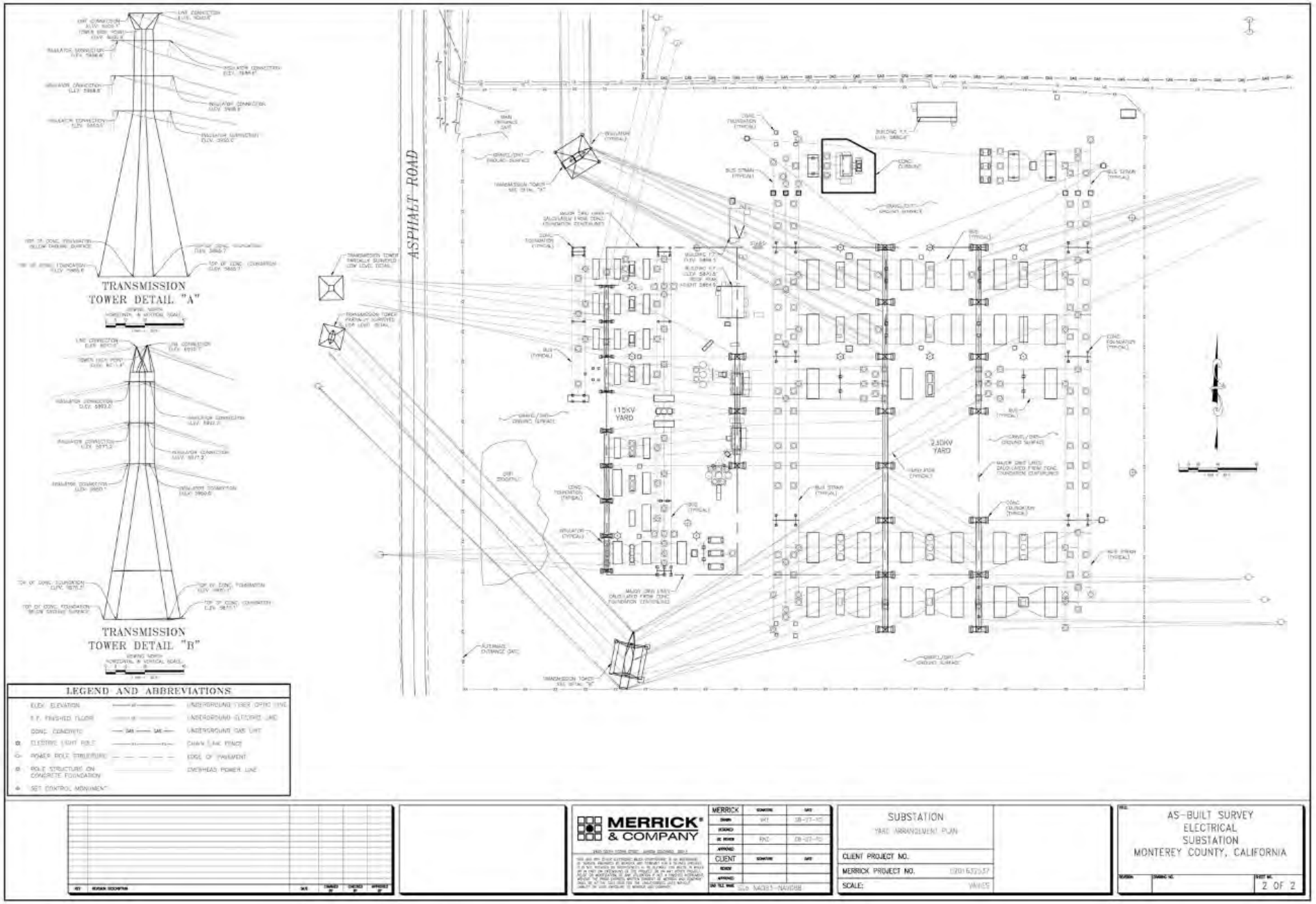
EXAMPLE



MERRICK & COMPANY

EXAMPLE

OUTPUT



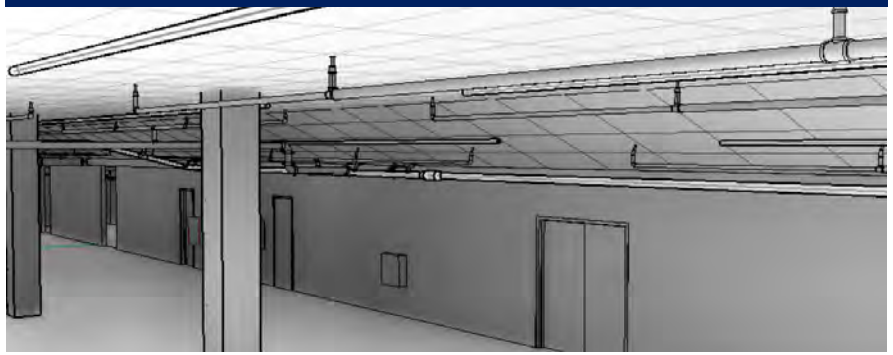
FUTURE:
USES

Import/convert point cloud to Revit model for use during design

Compare daily construction to Revit design model (VR and AR also)

Update Revit model to as-built condition and utilize the data for asset management / O&M database

Photograph

Point Cloud Scan

Revit Model