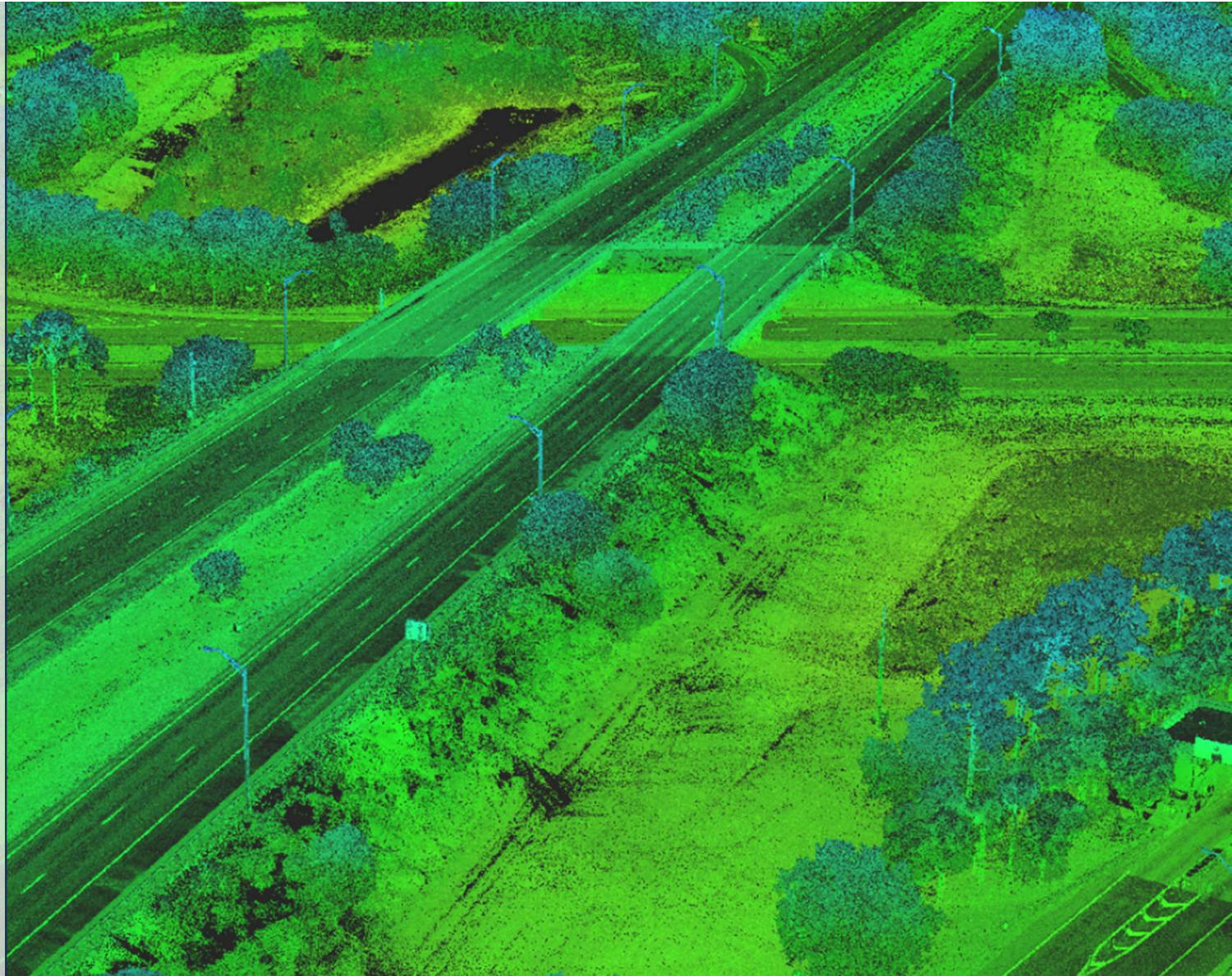


**PRECISION IN MOTION:
ADVANCING MILITARY
ENGINEERING DESIGN
WITH MOBILE LiDAR**

**Randy Tompkins, PSM, PLS, PS
Federal Survey Manager**

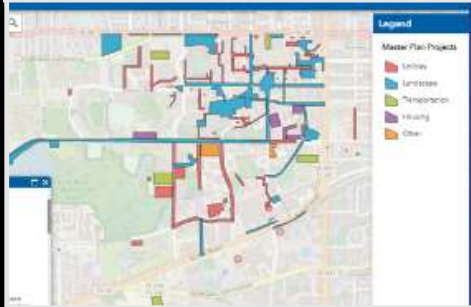
**Bryant King, CST1
Mobile LiDAR Group Leader**





GEOSPATIAL SERVICES DIVISION

GEOGRAPHIC INFORMATION SYSTEMS (GIS)



MOBILE LiDAR SYSTEMS (MLS)

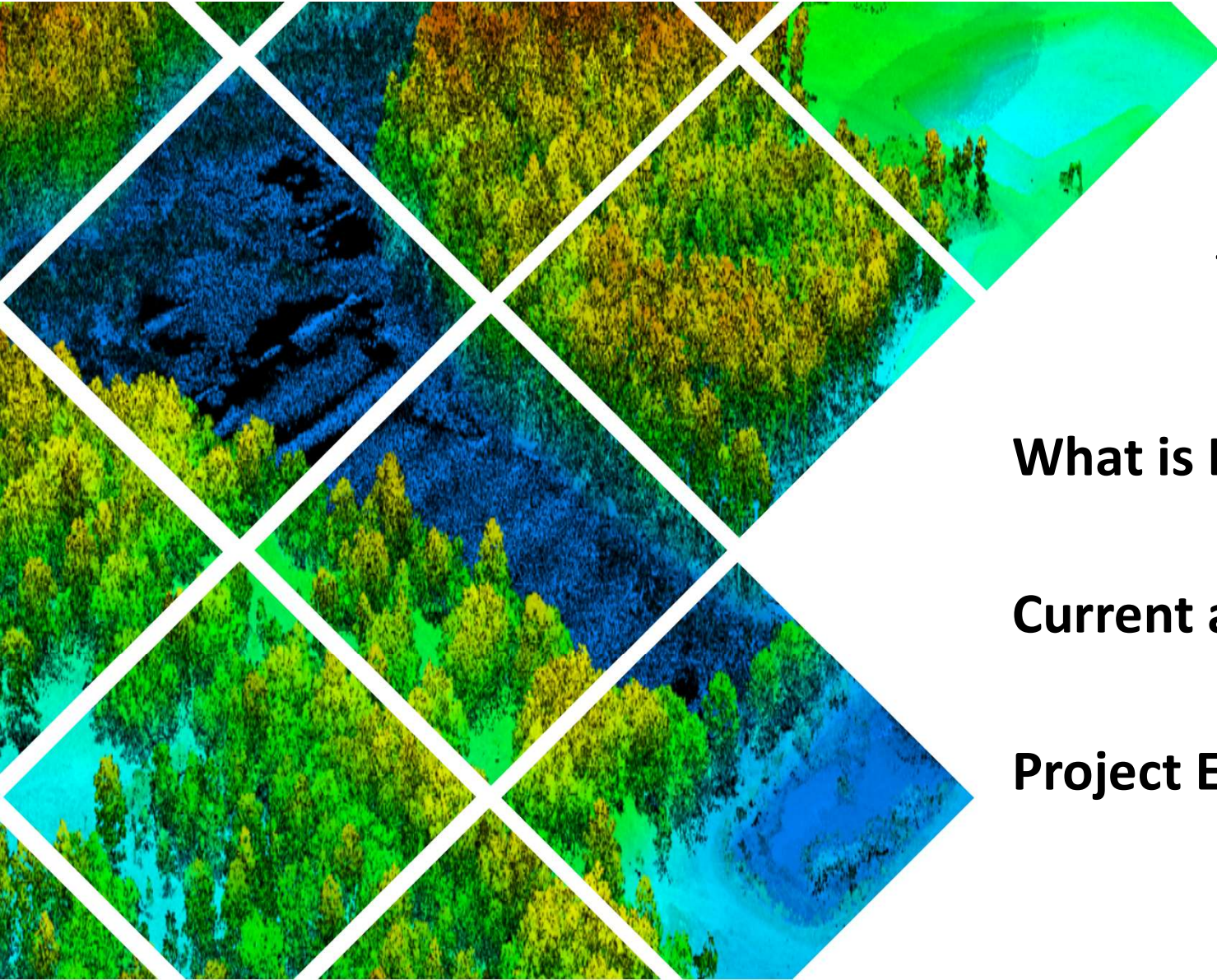


UNMANNED AERIAL SYSTEMS (UAS)



HYDROGRAPHIC MAPPING SYSTEMS (HMS)





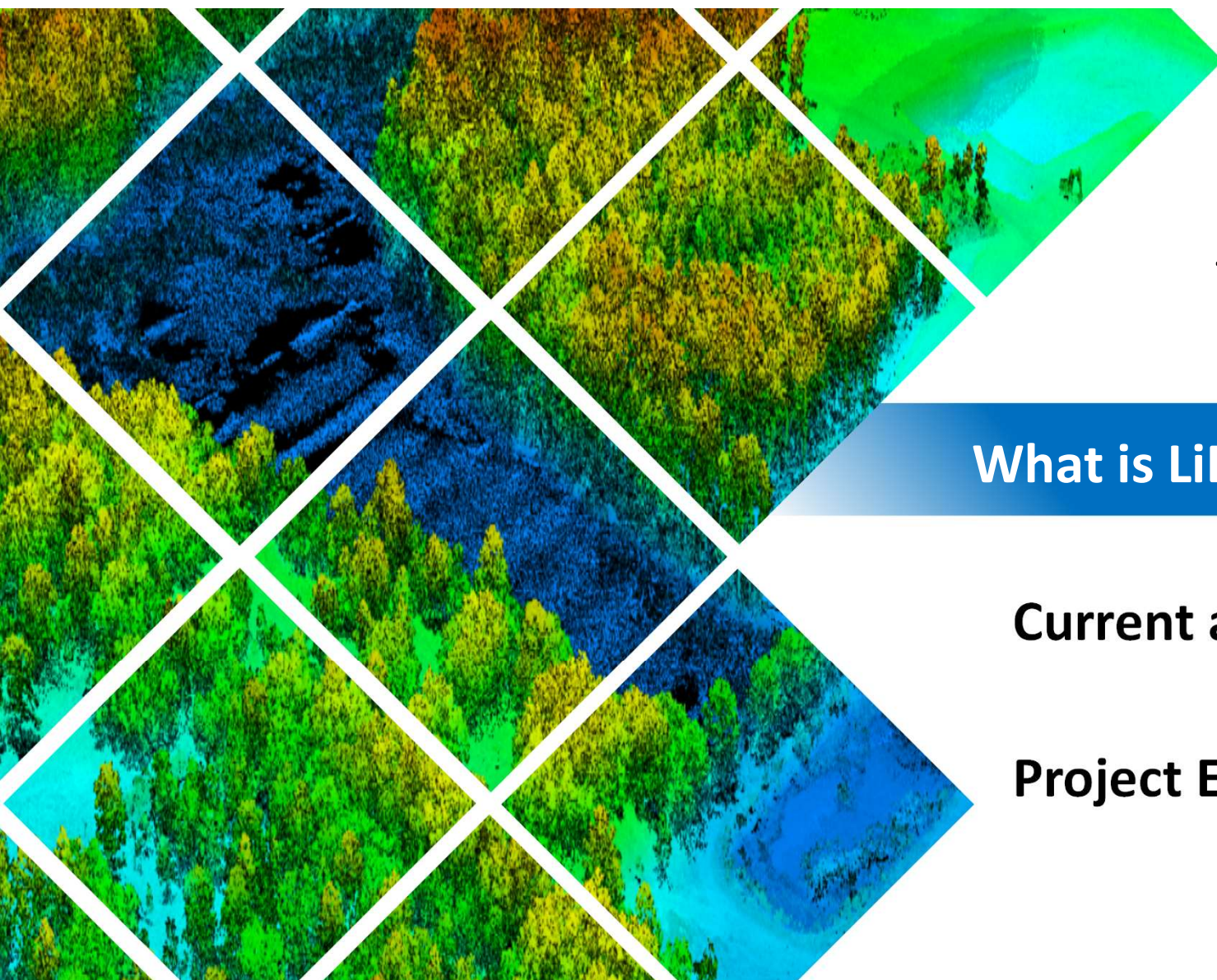
Mobile LiDAR

for Rapid Data
Collection

What is LiDAR ?

Current and Potential Uses

Project Examples



Mobile LiDAR

for Rapid Data
Collection

What is LiDAR ?

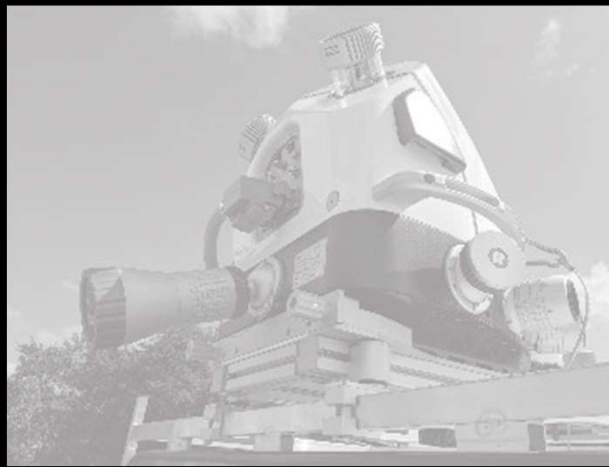
Current and Potential Uses

Project Examples

MOBILE LIDAR



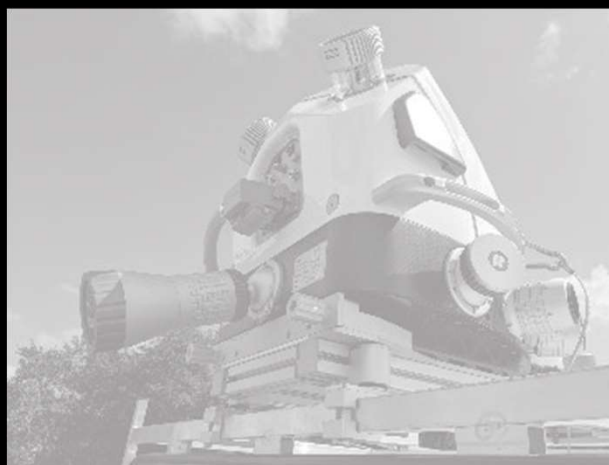
MOBILE LIDAR



MOBILE LIDAR



MOBILE LIDAR



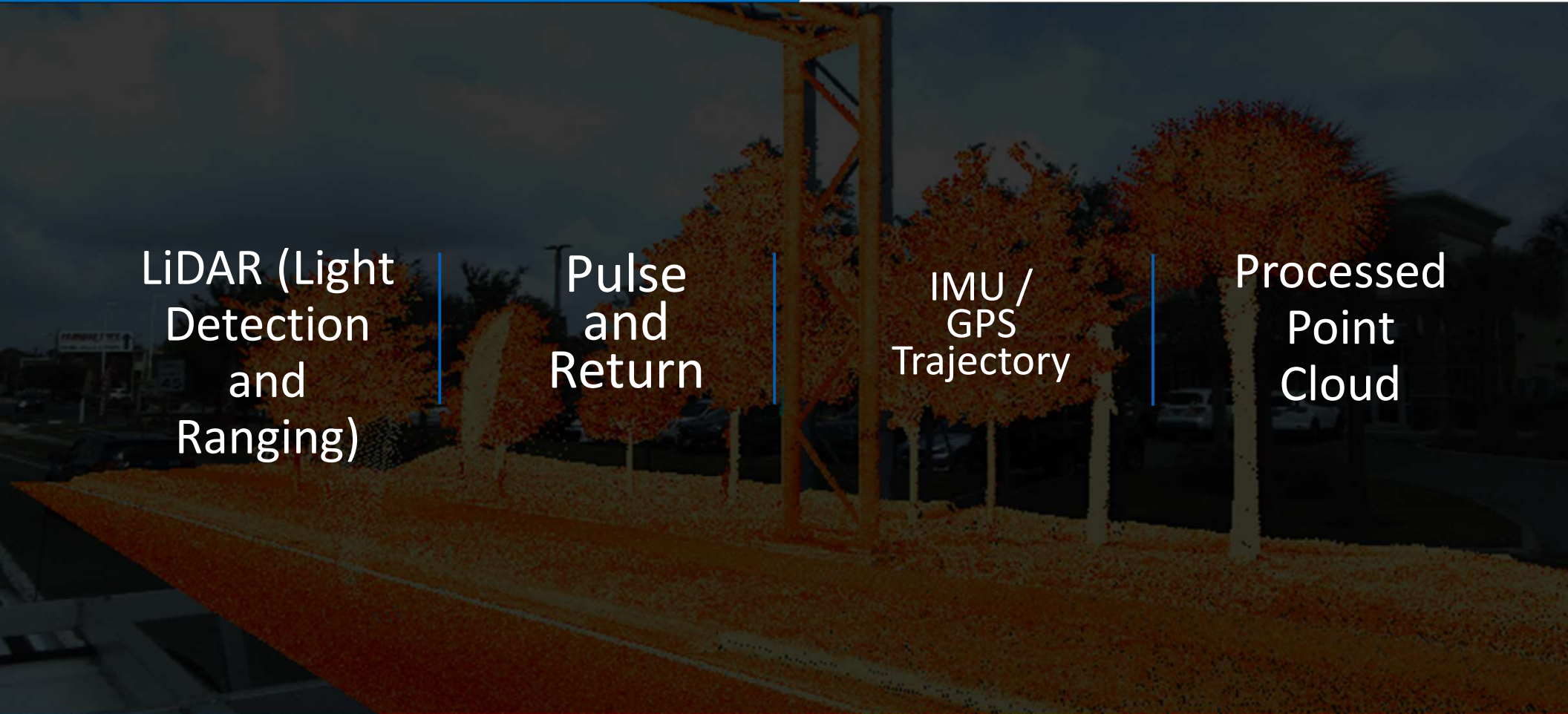
What is LiDAR ?

LiDAR (Light
Detection
and
Ranging)

Pulse
and
Return

IMU /
GPS
Trajectory

Processed
Point
Cloud



What is LiDAR ?

Processing Mobile LiDAR

General
Processing Steps

01

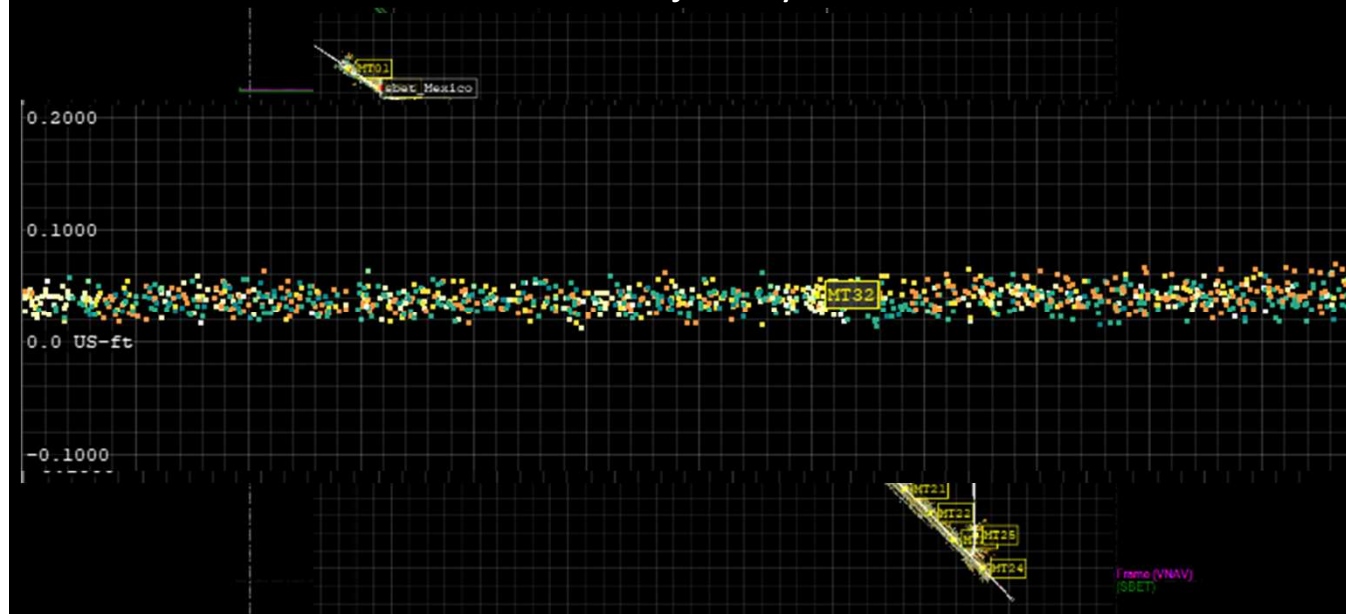
Post
Process
Trajectory

02

Import
LiDAR and
assign to
Trajectory

03

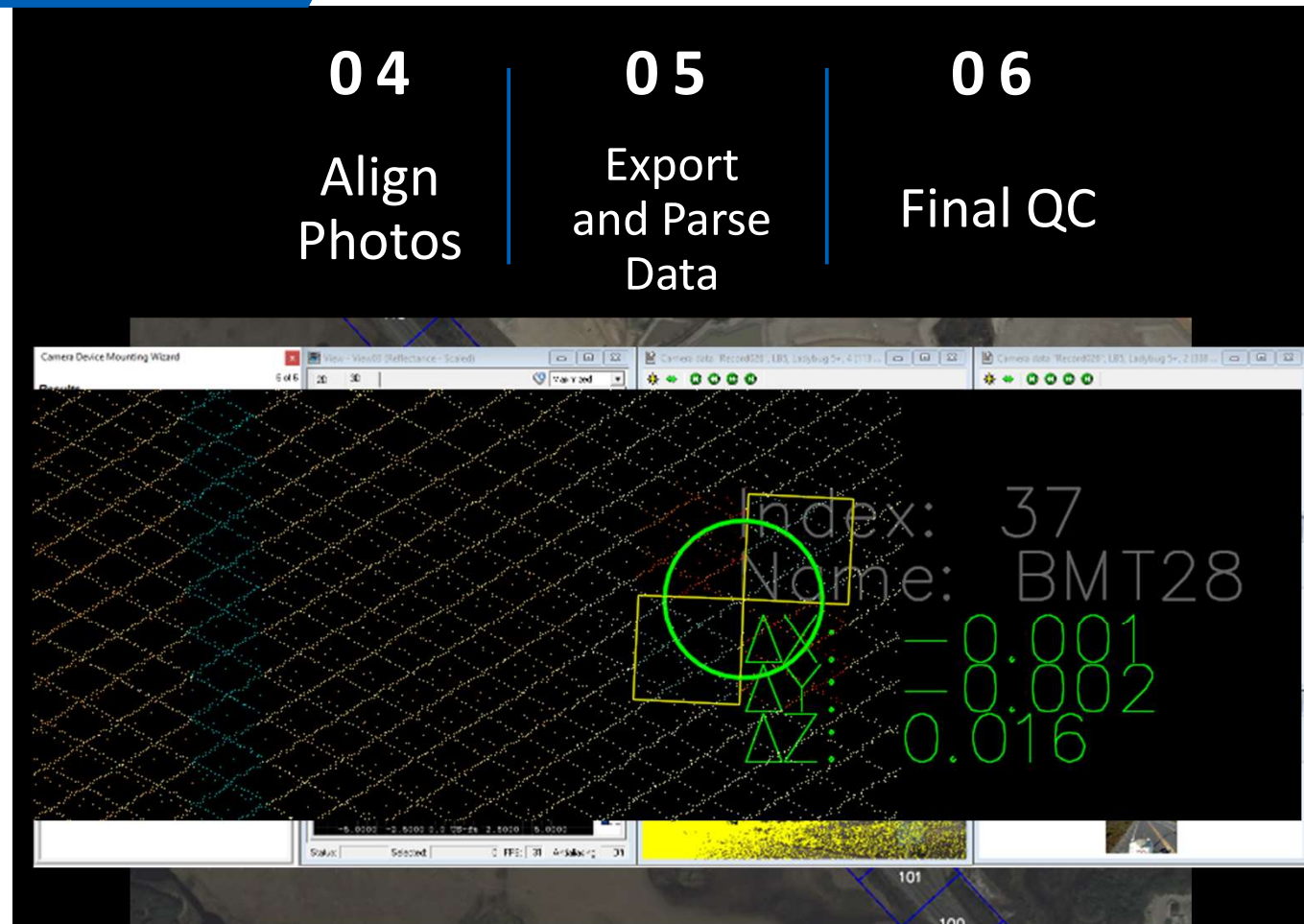
Adjust
Point
Cloud



What is LiDAR ?

Processing Mobile LiDAR

General
Processing Steps





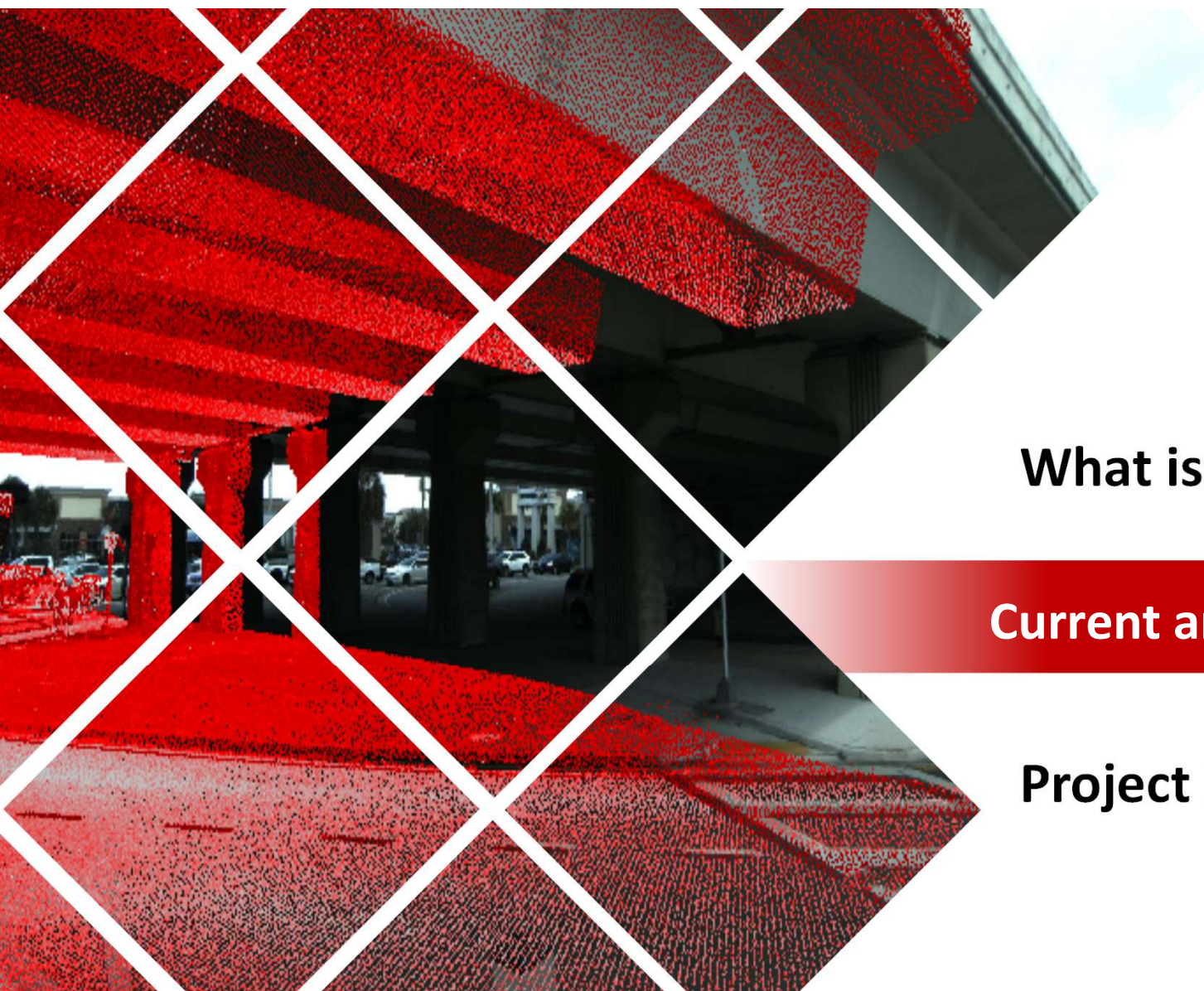
Mobile LiDAR

for Rapid Data
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What is LiDAR ?

Current and Potential Uses

Project Examples



Mobile LiDAR

for Rapid Data
Collection

What is LiDAR ?

Current and Potential Uses

Project Examples

Advantages of Mobile LiDAR



Safety



Speed



Accuracy



Density

GENERAL MEASUREMENTS

Lane and
Sidewalk
Widths

Building
Dimensions

Vertical
Clearances

CORRIDOR ANALYSIS

Digital
Terrain
Models

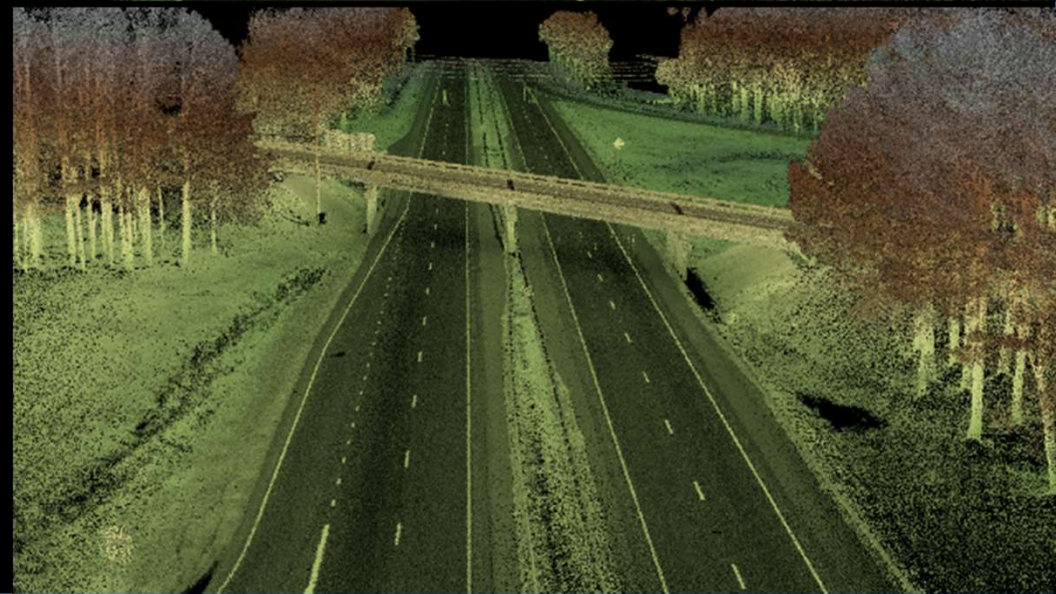
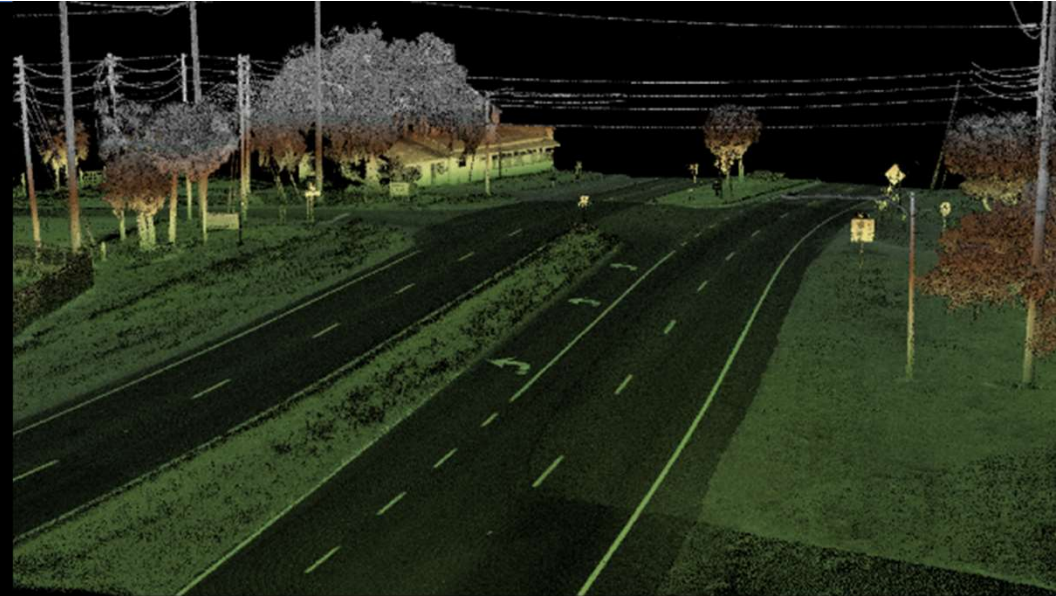
Cross
Slope
Correction

ADA
Compliance

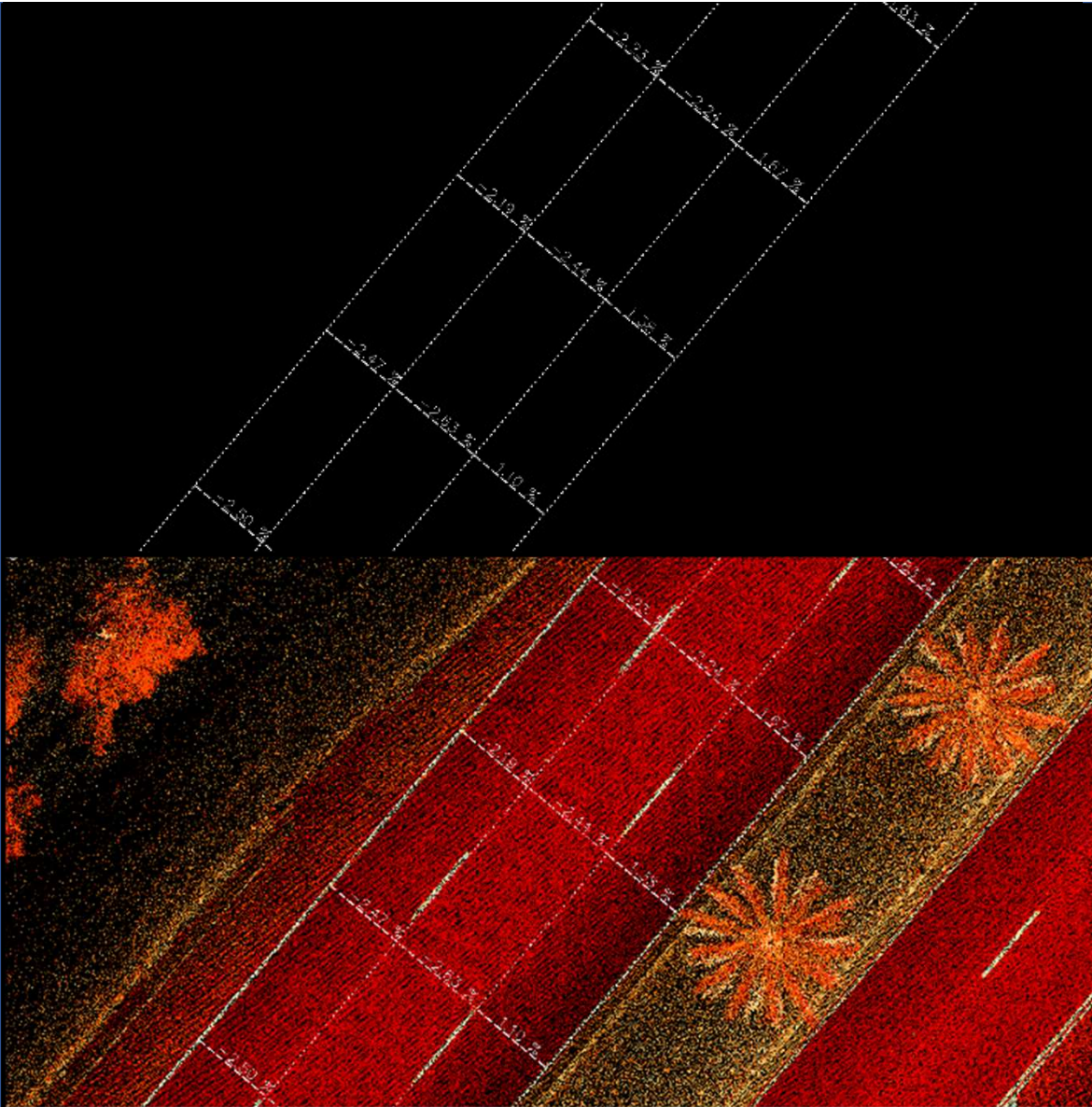
Pavement
Condition

Cross
Sections

DESIGN SURVEY



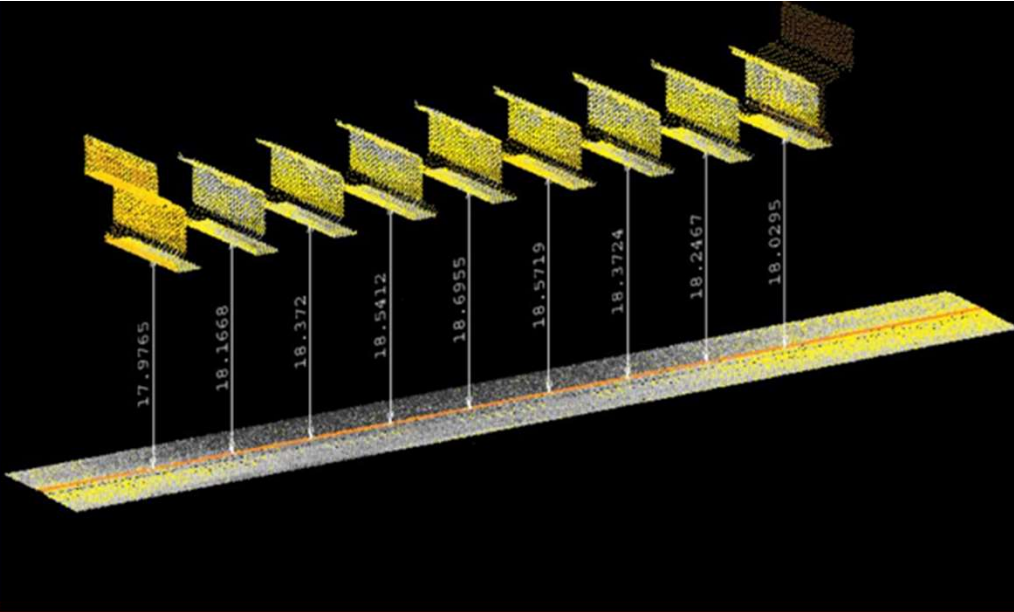
CROSS SLOPE ANALYSIS



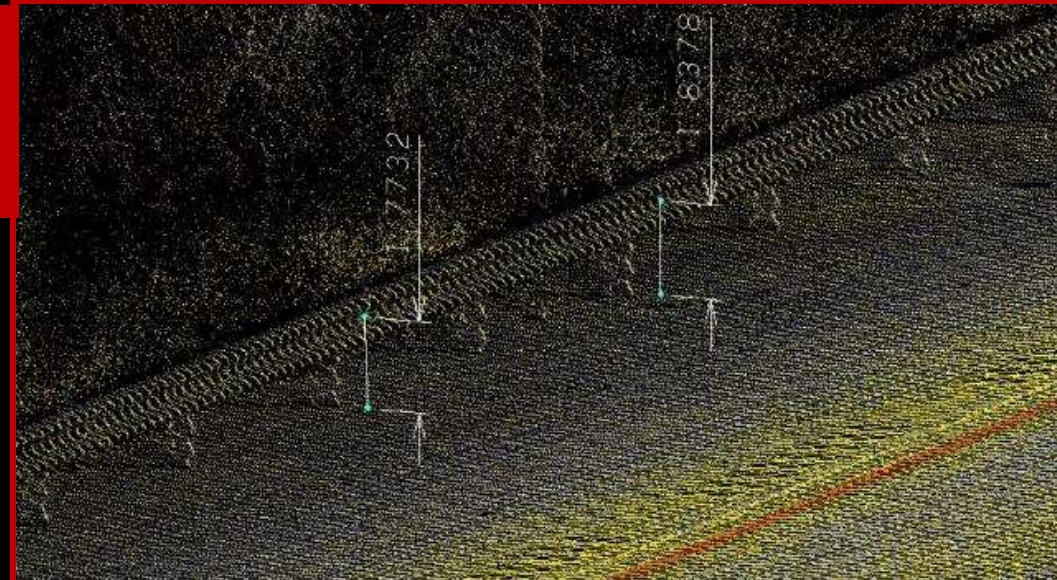
CROSS SLOPE ANALYSIS

MP 227 to MP 235								
STATION	Left				Right			
	LANE 1		LANE 2		LANE 1		LANE 2	
	WIDTH	SLOPE PERCENT	WIDTH	SLOPE PERCENT	WIDTH	SLOPE PERCENT	WIDTH	SLOPE PERCENT
3867+00	12.05	-2.47%	12.16	-3.15%	11.85	-0.78%	11.96	-1.52%
3867+25	12.34	-2.49%	11.98	-2.74%	11.80	-1.10%	11.89	-1.38%
3867+50	12.40	-2.41%	11.83	-2.03%	11.78	-1.78%	11.88	-2.12%
3867+75	12.42	-2.09%	11.92	-2.10%	11.72	-1.58%	11.88	-2.04%
3868+00	12.45	-1.95%	12.03	-2.33%	11.71	-1.77%	11.88	-2.02%
3868+25	12.44	-1.98%	11.94	-2.46%	11.73	-1.99%	11.88	-2.45%
3868+50	12.15	-2.22%	11.93	-2.47%	11.69	-2.08%	11.88	-2.65%
3868+75	12.16	-2.17%	11.93	-2.26%	11.61	-2.00%	11.88	-2.34%
3869+00	12.07	-2.17%	11.93	-2.06%	11.63	-1.93%	11.88	-2.25%
3869+25	11.99	-2.13%	11.90	-2.07%	11.72	-1.84%	11.88	-2.11%
3869+50	11.84	-2.19%	11.91	-1.90%	11.82	-1.75%	11.88	-1.96%
3869+75	12.06	-2.15%	11.90	-1.79%	11.92	-1.73%	11.88	-1.90%
3870+00	12.12	-2.19%	11.84	-1.76%	11.97	-1.74%	11.88	-2.02%

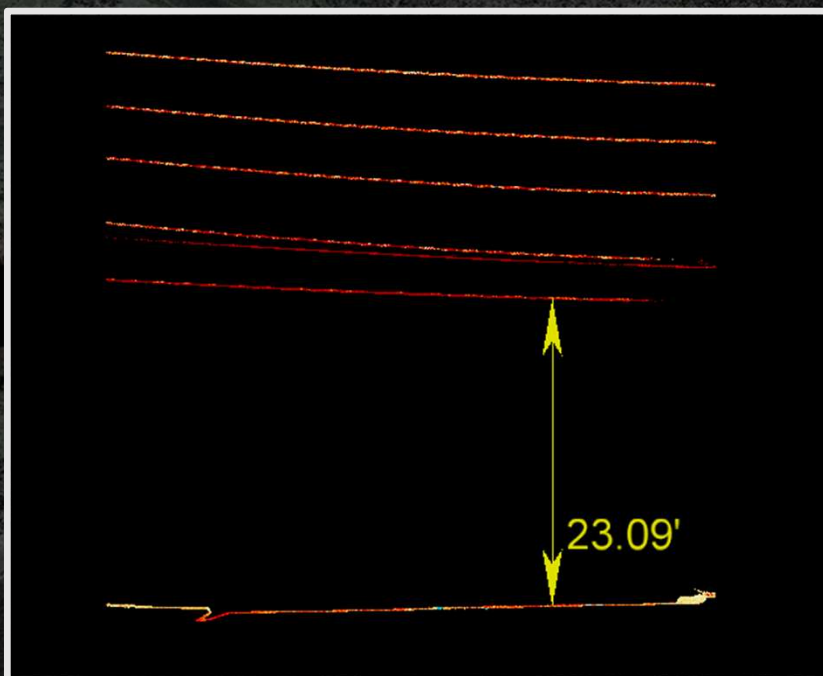
Structure Clearances



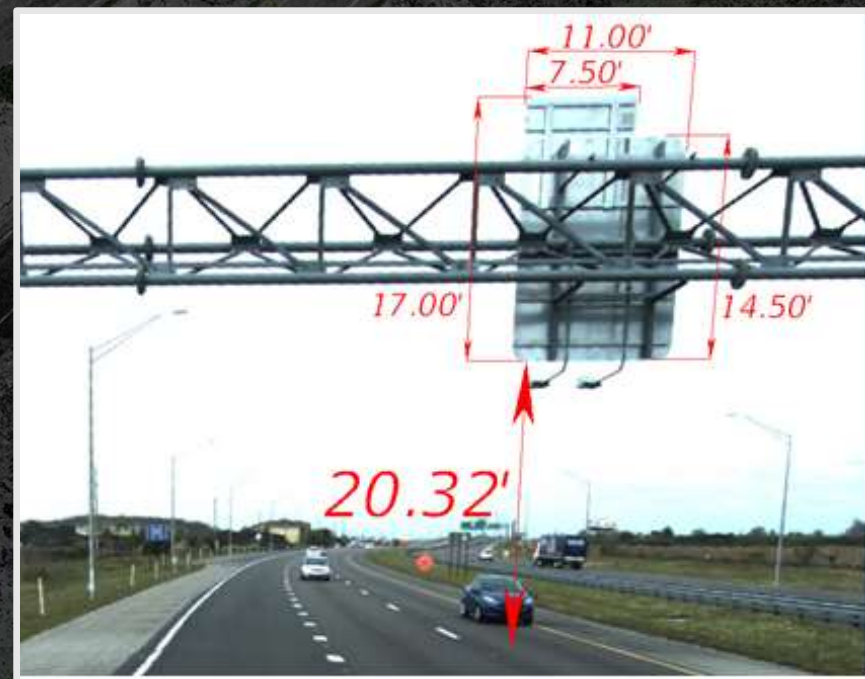
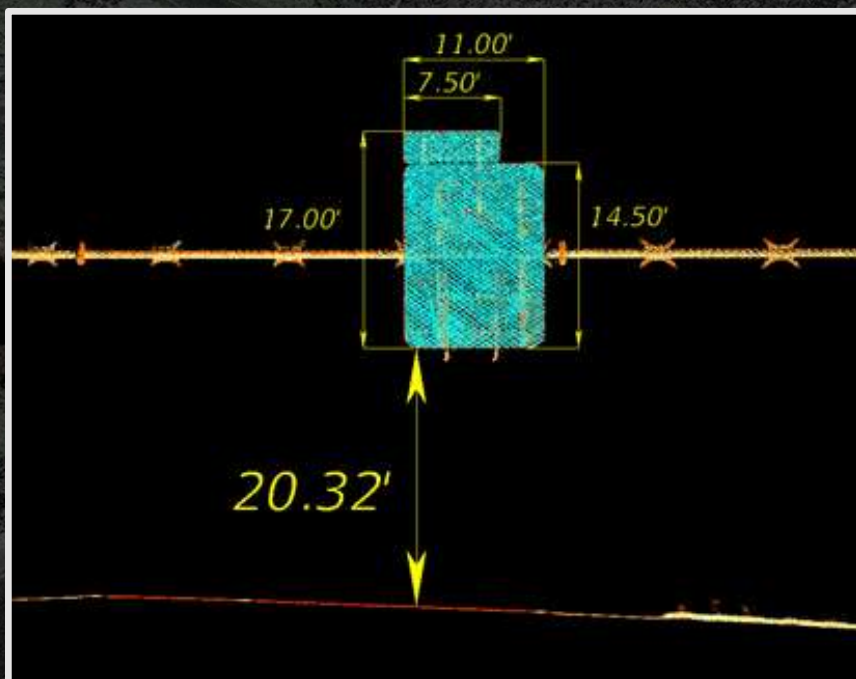
Guardrail Heights



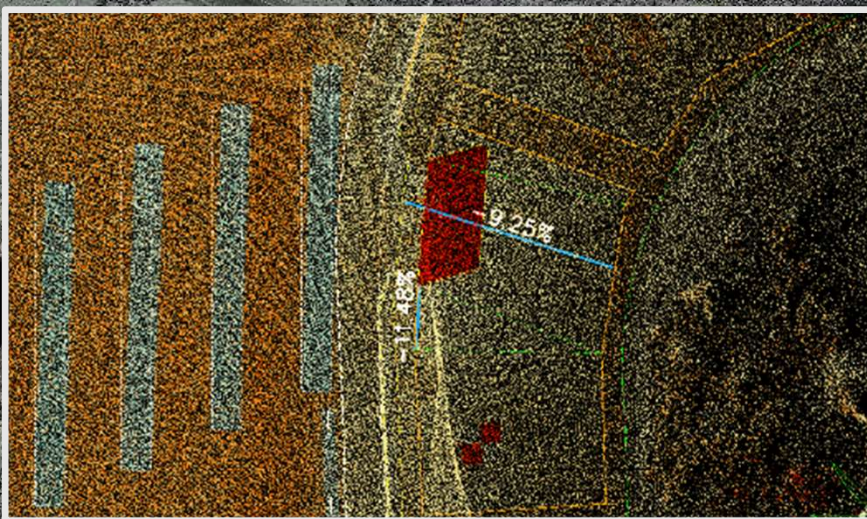
UTILITY CLEARANCES



OVER HEAD CLEARANCES



ADA COMPLIANCE

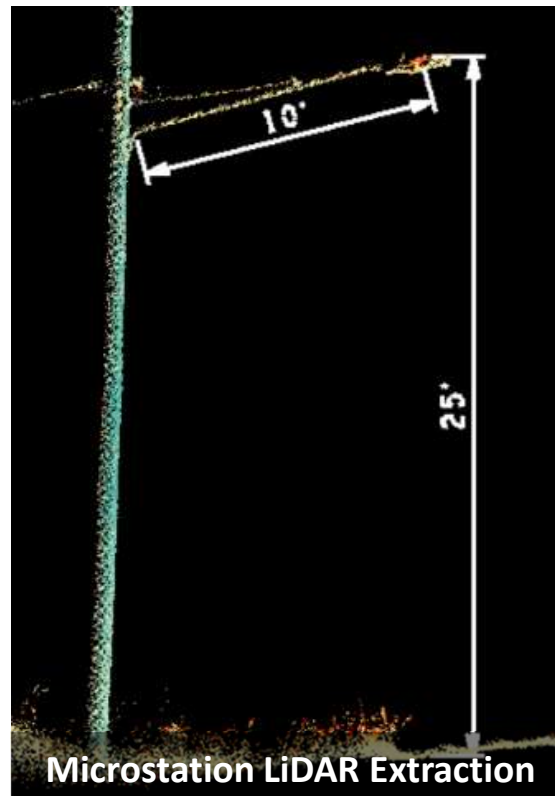


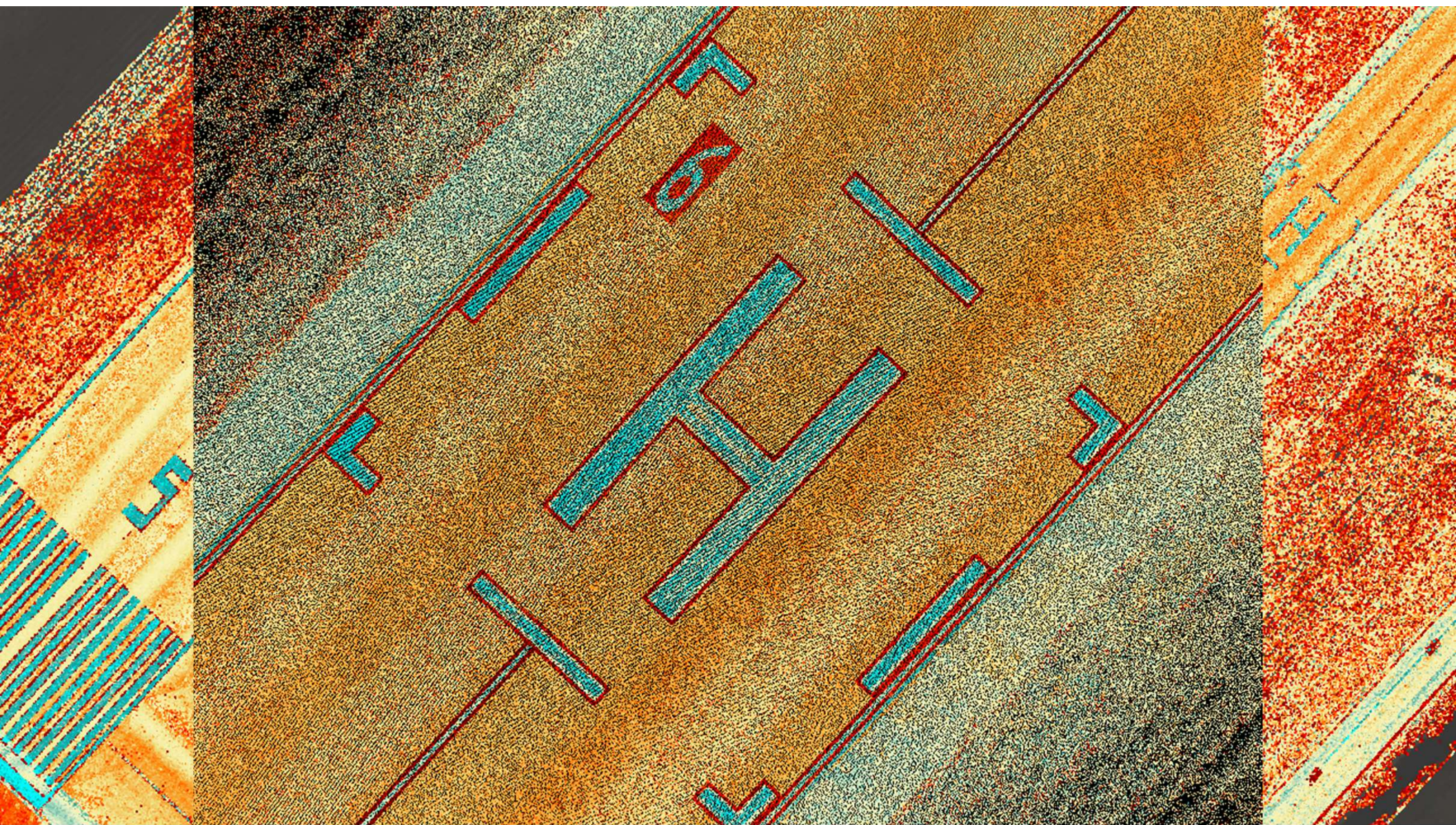
Design Builds and As-Builts

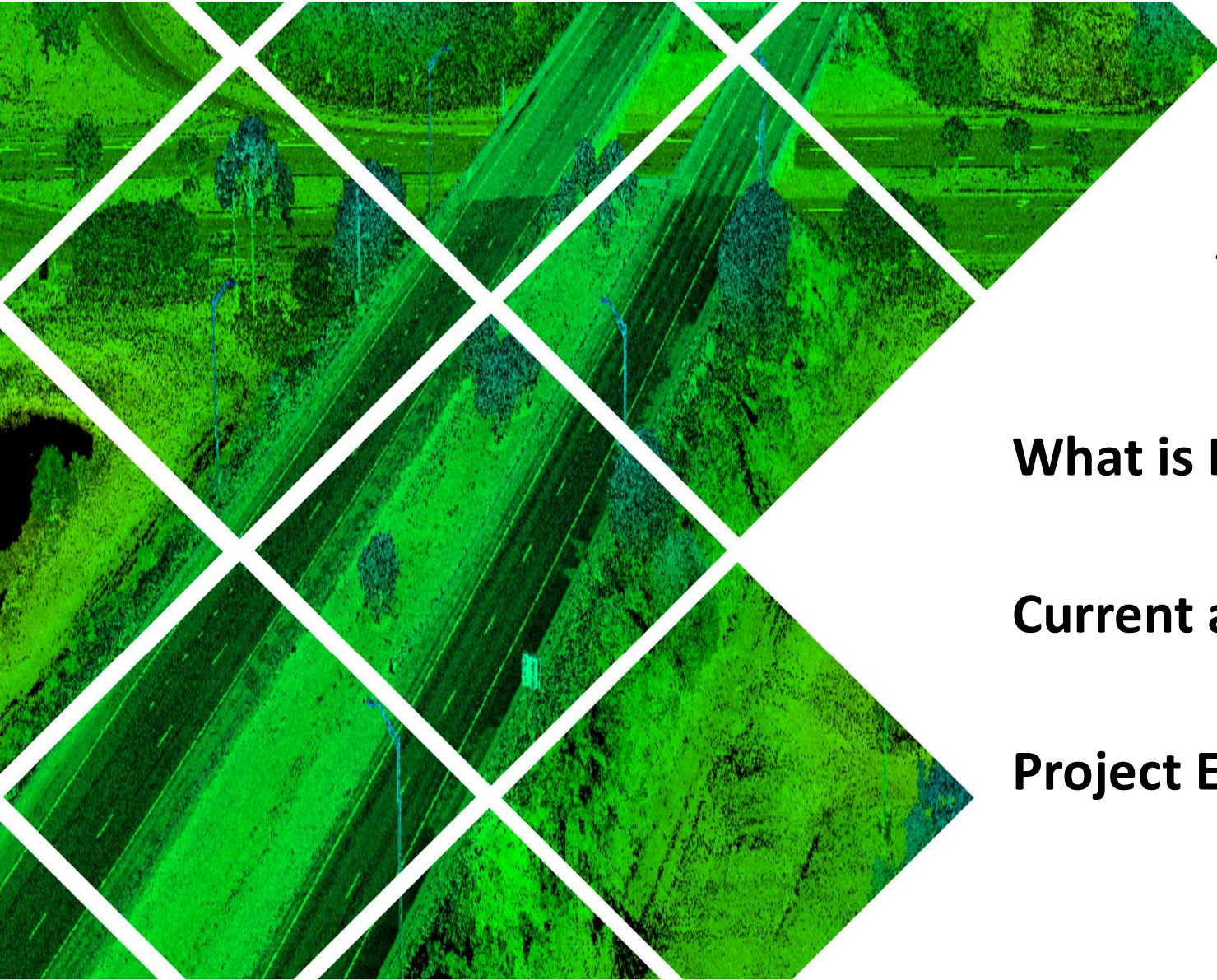




INTEGRATION WITH GIS







Mobile LiDAR

for Rapid Data
Collection

What is LiDAR ?

Current and Potential Uses

Project Examples



Mobile LiDAR

for Rapid Data
Collection

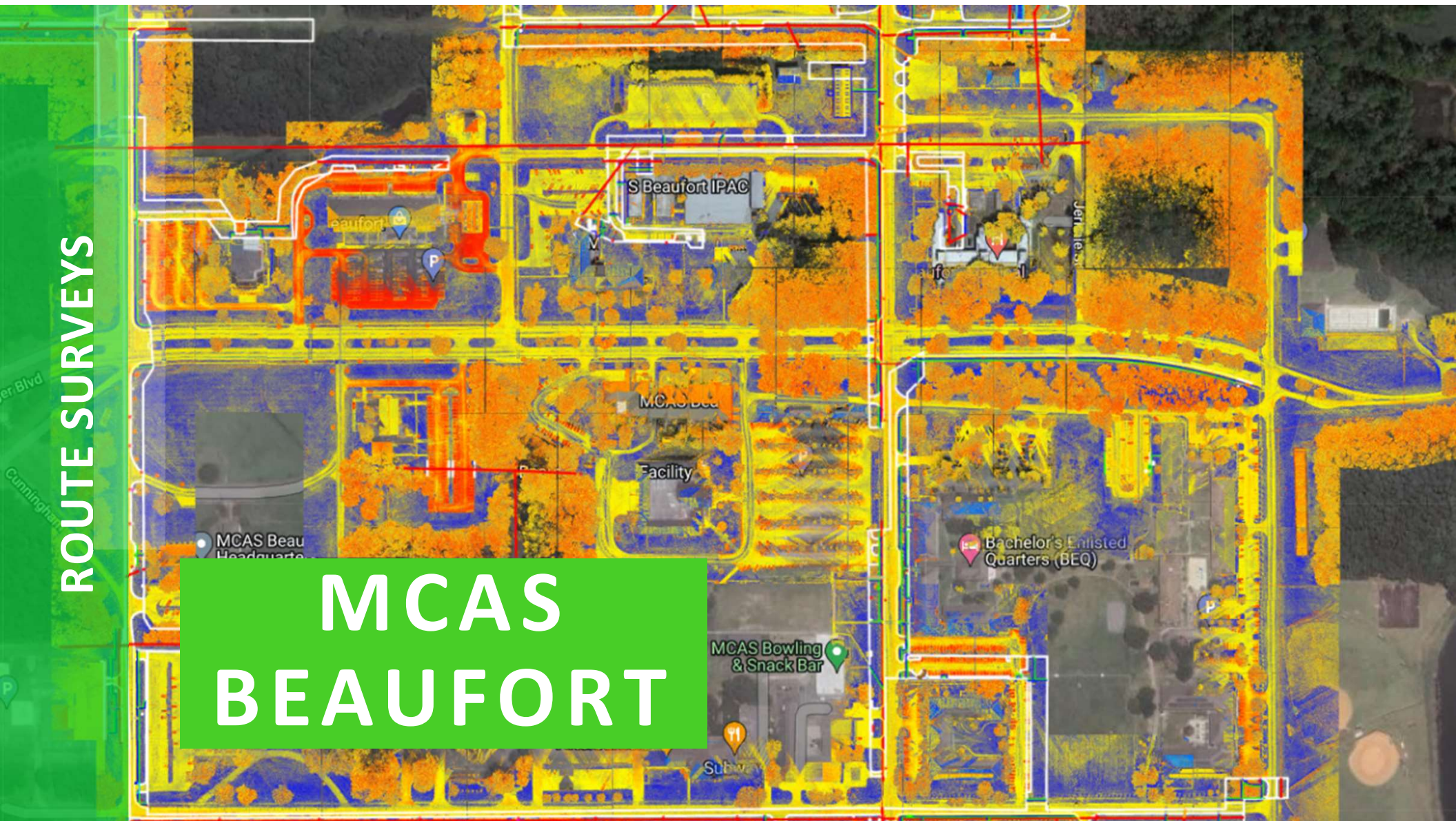
What is LiDAR ?

Current and Potential Uses

Project Examples

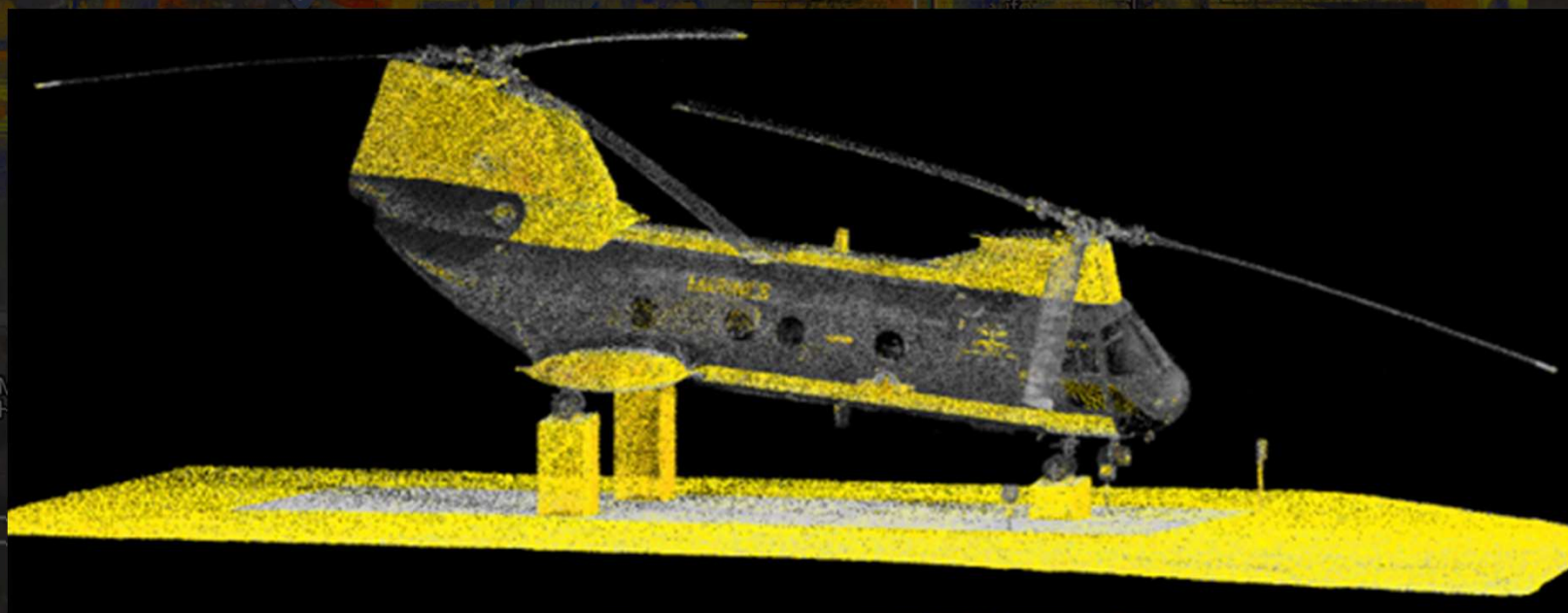
ROUTE SURVEYS

MCAS BEAUFORT

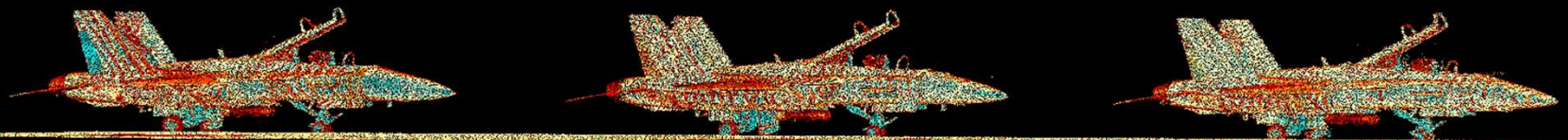


MCAS BEAUFORT

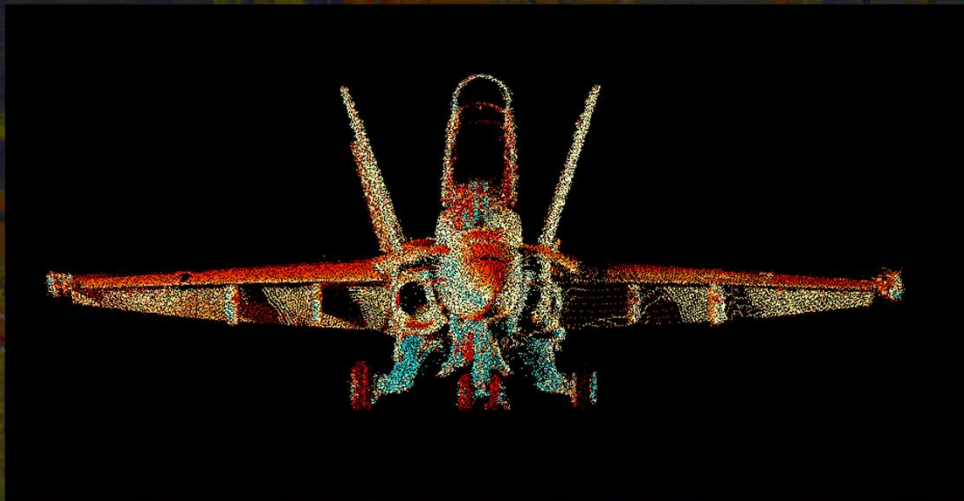
12 CORRIDOR MILES
OF MOBILE LIDAR
COLLECTIONS IN TWO
DAYS



DIRECT
COMMUNICATION
WITH TOWER FOR
RUNWAY AND
FLIGHT LINE DATA
COLLECTION



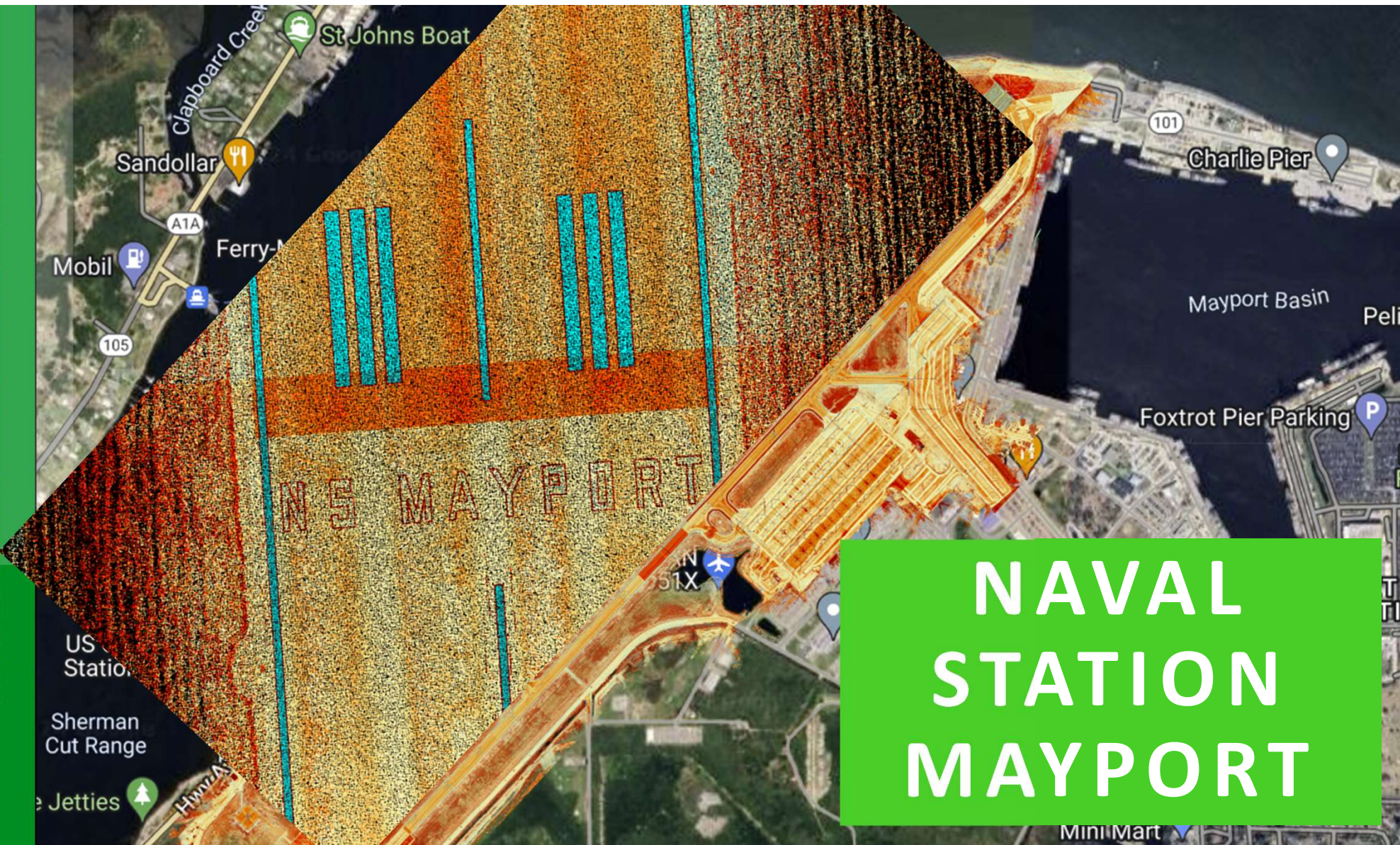
MCAS BEAUFORT



INTERIM
SUBMITTALS BY
PRIORITY

MCAS BEAUFORT





NAVAL STATION MAYPORT



PERIMETER ROAD



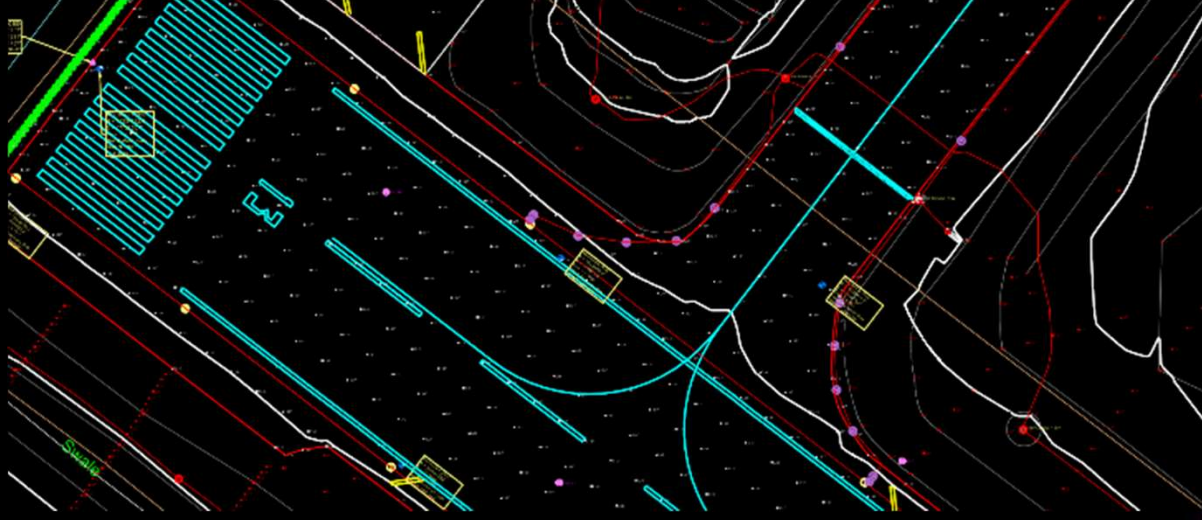
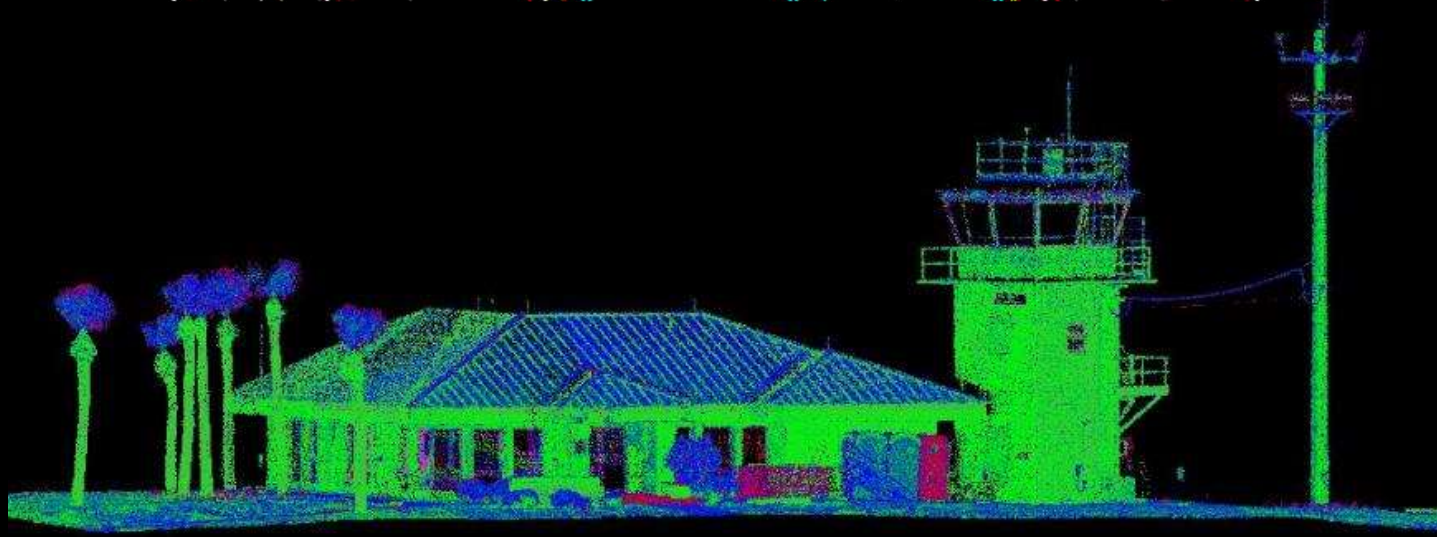
PERIMETER ROAD



CCSFB SKID STRIP



CCSFB SKID STRIP



CCSFB SKID STRIP

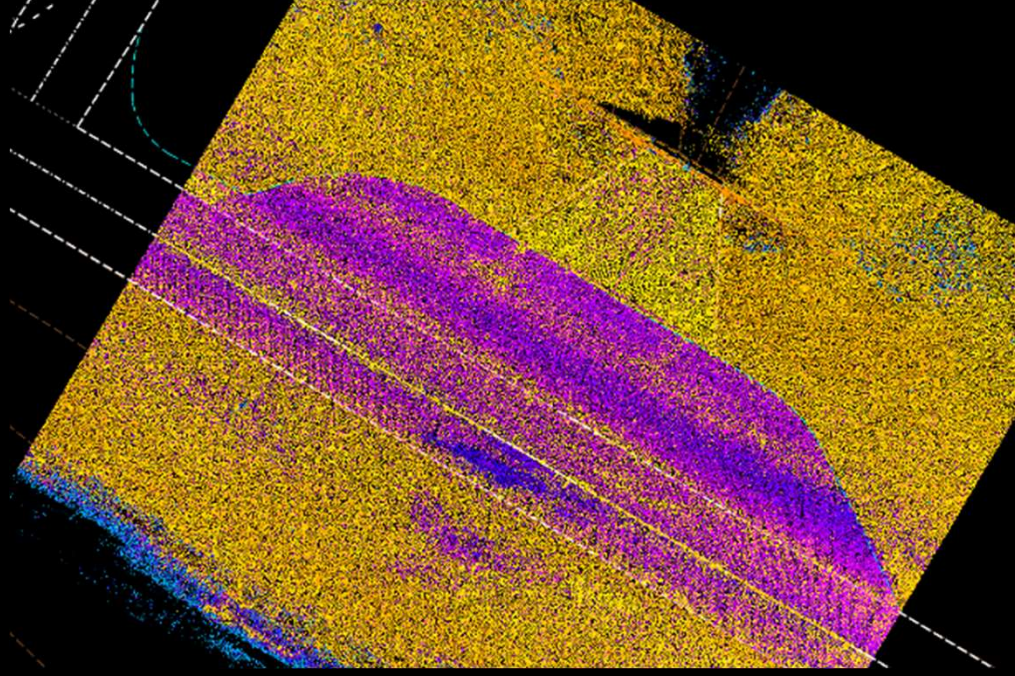


TOPOGRAPHIC SURVEYS

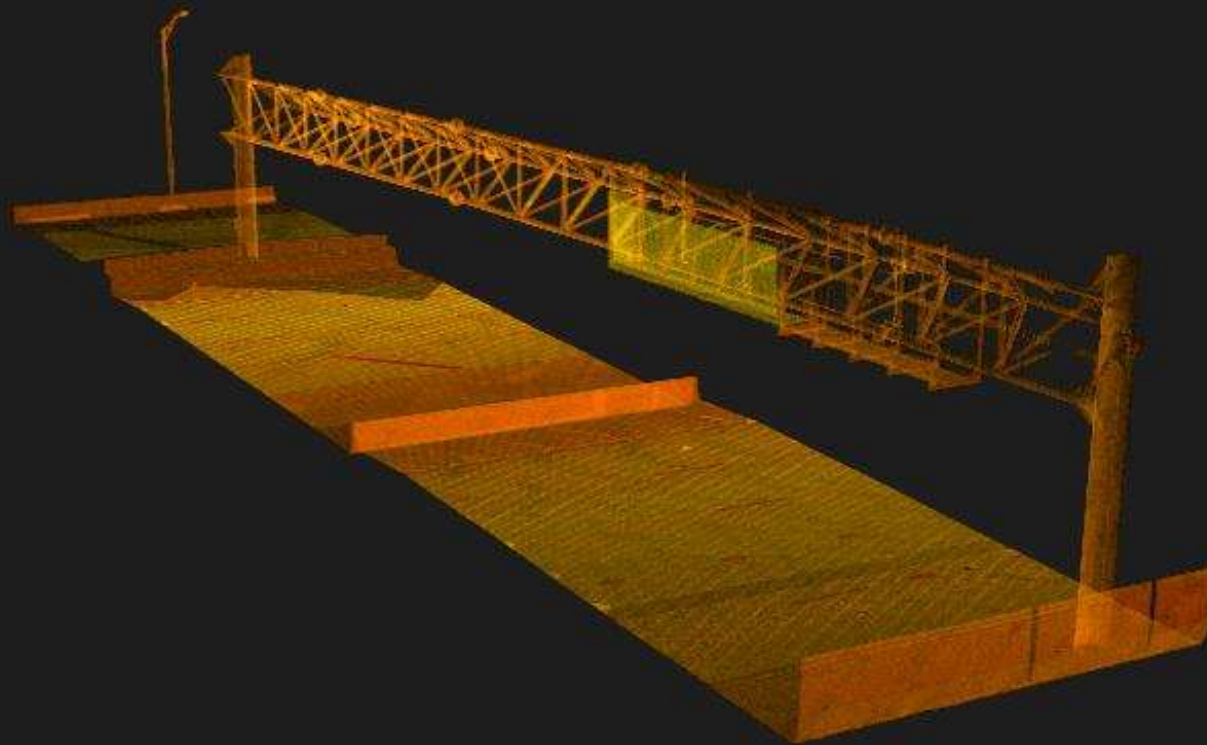


TYNDALL AIR FORCE BASE

TYNDALL AIR FORCE BASE



THINKING OUT OF THE BOX





SURVEYING* AND *MAPPING/GEOSPATIAL



Static LiDAR | Mobile LiDAR | UAS LiDAR



- Boundary Surveying
- Construction Surveying
- Control Surveying
- GIS Services

- Hydrographic Mapping Systems
- Subsurface Utility Engineering (SUE)
- Expert Witness Testimony/Services
- Unmanned Aerial Systems (UAS)

- Right-of-Way Mapping
- Terrestrial Laser Scanning
- Topographic Surveying



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