Leveraging Geospatial Technologies to Expedite Fiber Network Expansion

Presented to Mountain Connect – August 7, 2024

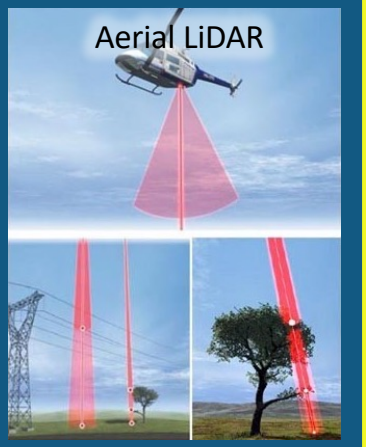
What you will Learn Today…

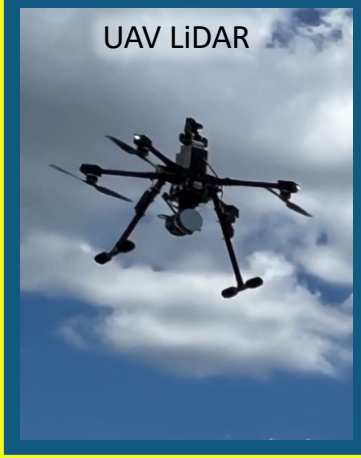
- Better ways of **mapping your assets** to **expedite** design & construction
- How to reduce **time to completion** on your projects
- Better **Data** = Better **Design** = Faster **Builds**

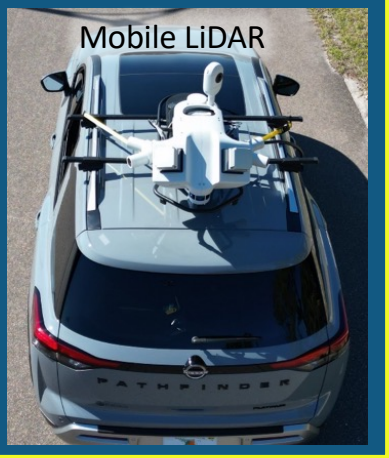
Intro to Geospatial Technologies

LiDAR or **Li**ght **D**etection **a**nd **R**anging is a remote sensing method that uses light in the form of a pulsed laser to measure ranges or distances.

LiDAR sensors or "**laser scanners**" come in various forms and can be used on different platforms to perform mapping functions.





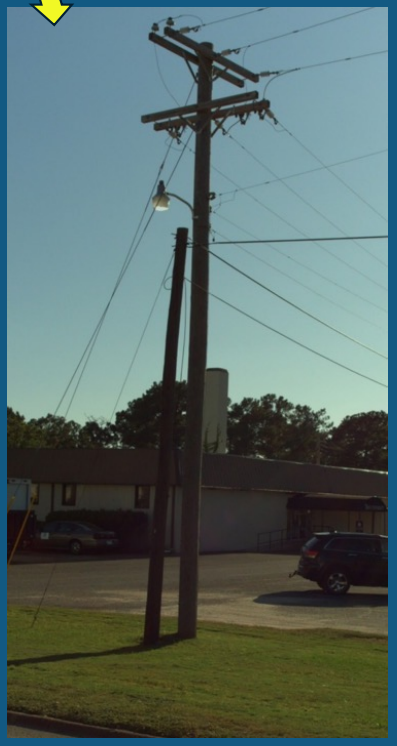


Intro to Geospatial Technologies

LiDAR Sensors can be paired with camera systems to assist with data processing and mapping efforts

UAV LiDAR System

Mobile LiDAR System

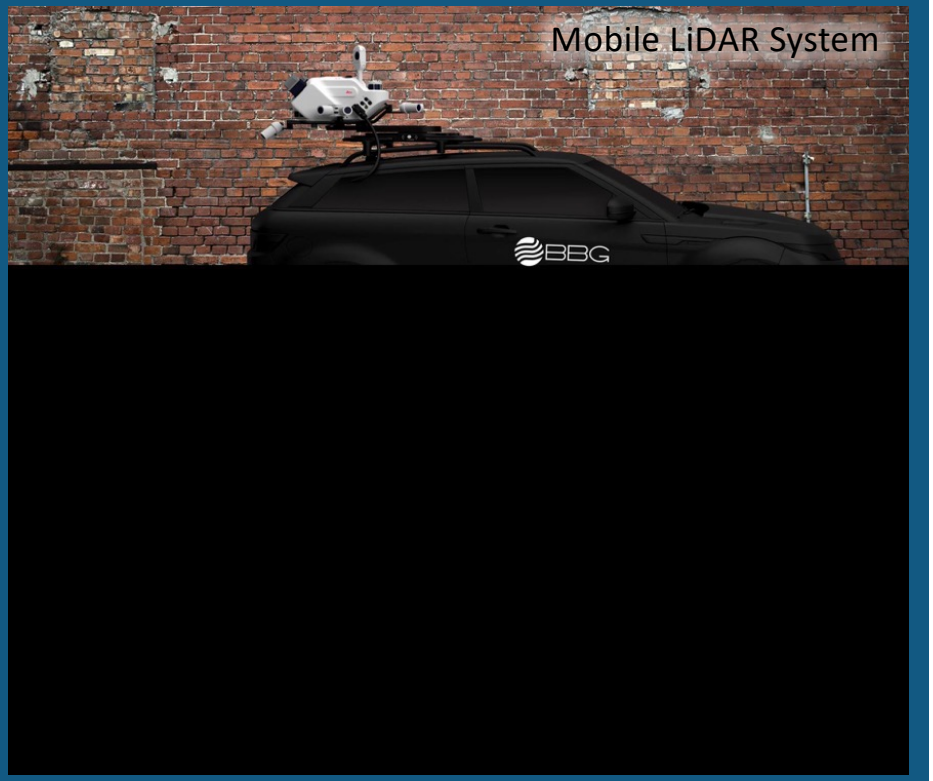


Mobile LiDAR Systems

- Collection process produces a combination of LiDAR, still photos and immersive imagery
- Up to 50 route miles per day
- Mapping outputs available in about a week

Mobile LiDAR Key Benefits:

- Rapid collection of 360° scan and image data
- Ideal for both aerial and buried fiber routes
- Expedited design from rapid base mapping
- Well suited for metro / long haul projects
- Complimentary with other geospatial tools



Mobile LiDAR System Data

- The data collected is processed into a point cloud file that has real world coordinates
- The point cloud data is analyzed in CAD software
- Assets and road base information can be extracted into a variety of forms (DWG, CSV, GDB, etc.)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UAV LiDAR Systems

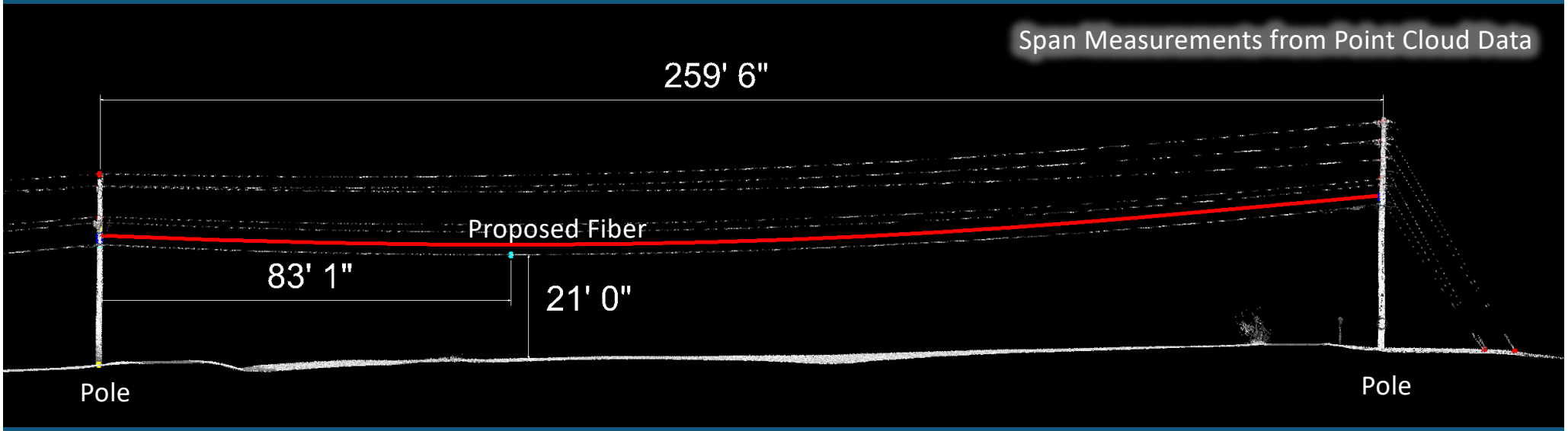
- LiDAR captured from a drone system
- Useful for off-road pole applications
- Both LiDAR & hi-res image capture
- Up to 6-8 miles per day
- Mapping available in about a week

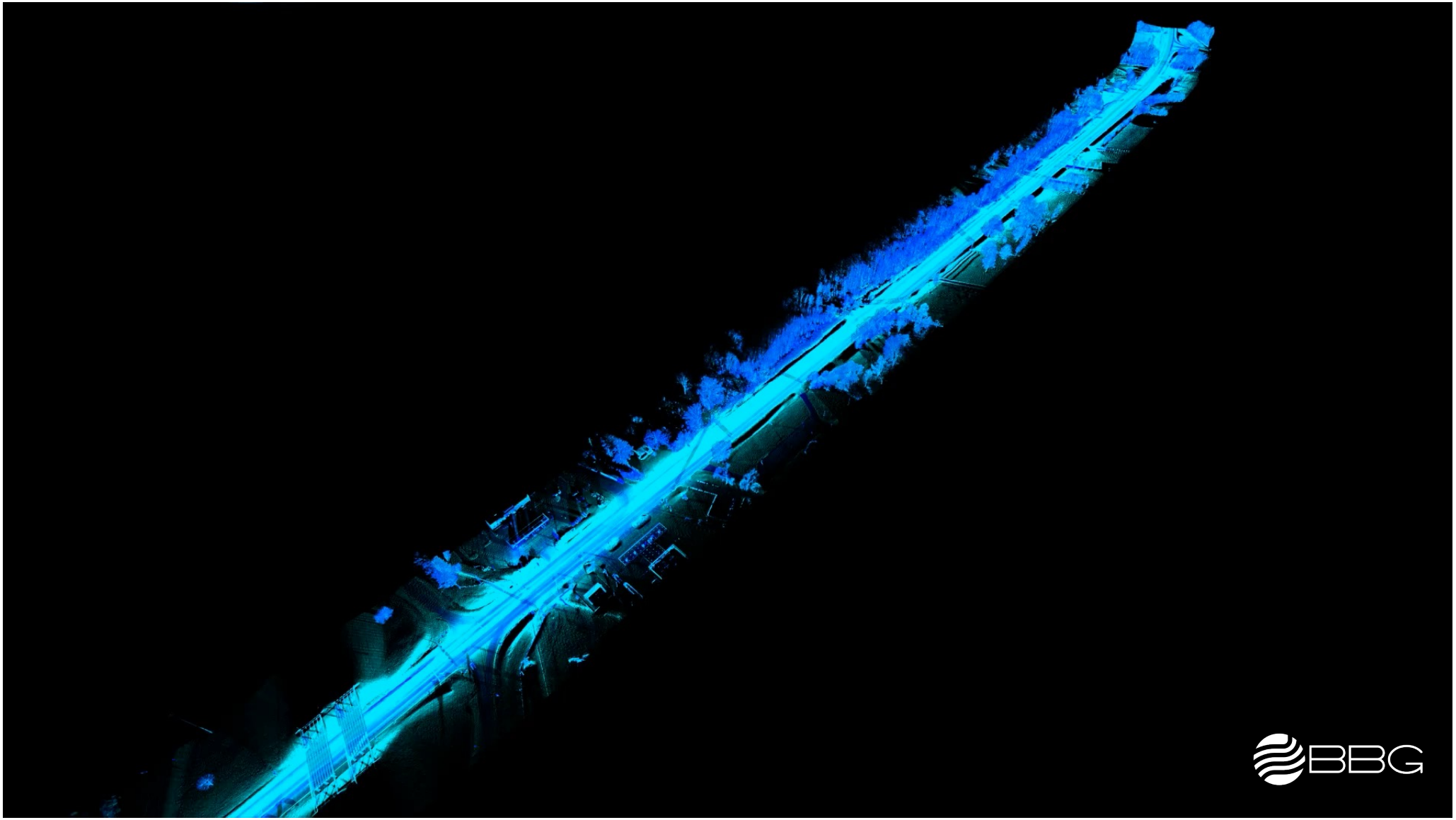
UAV LiDAR Key Benefits:

- Remote areas captured quickly and safely
- Imagery also useful for colorization and mapping activities
- Complimentary with other geospatial tools

UAV LiDAR System Data

- The UAV data collected is processed into a “point cloud” that has real world coordinates similar to mobile LiDAR
- The point cloud data is analyzed in CAD software
- Assets and measurement information can be extracted into a variety of forms (DWG, CSV, GDB, etc.)

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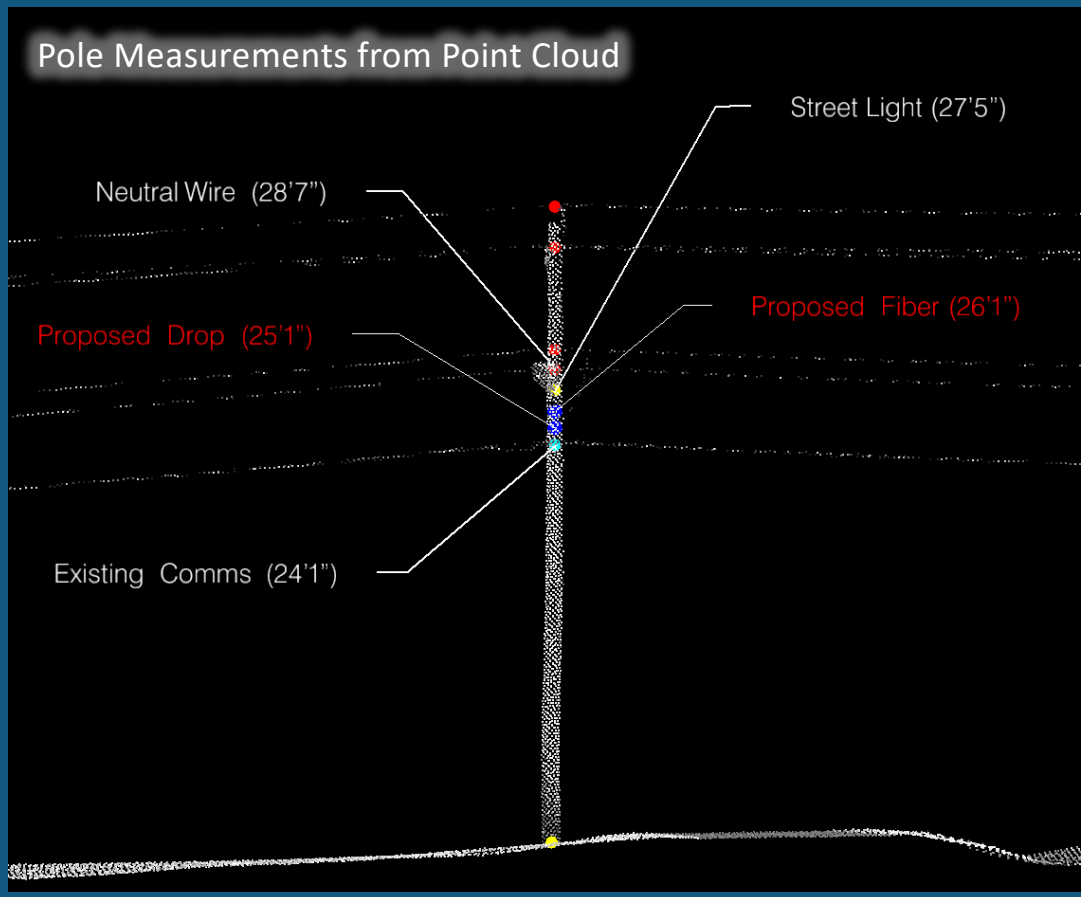
Using LiDAR to Expedite Design

The **point cloud** can be used for the following functions:

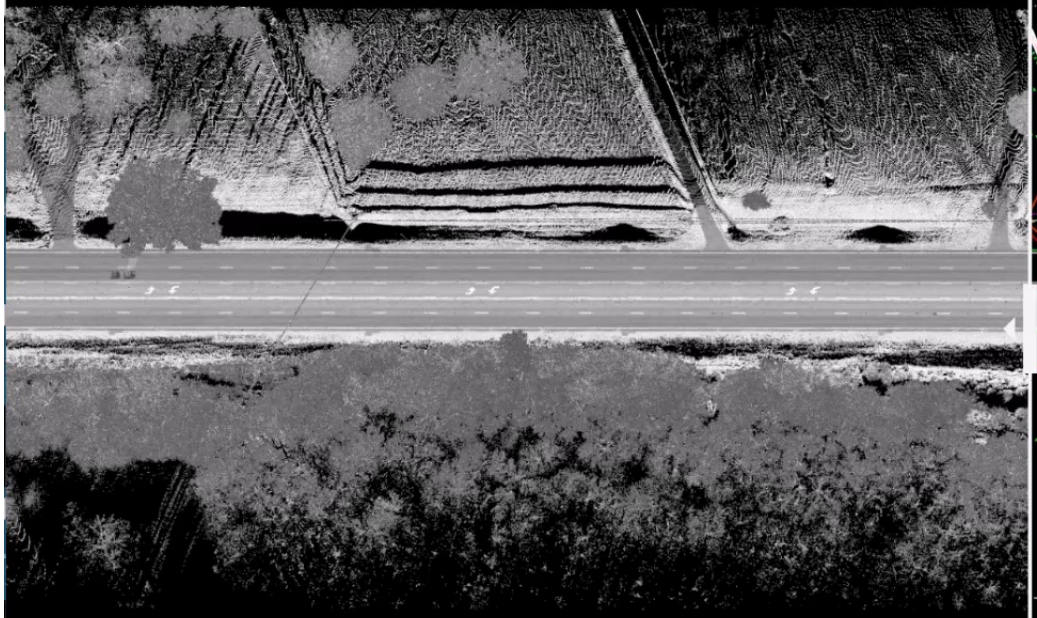
- Road base mapping
- Surface utility identification
- **Pole attachment and wire measurements**
- Right of Way alignment/racking

The **images** can be used for the following functions:

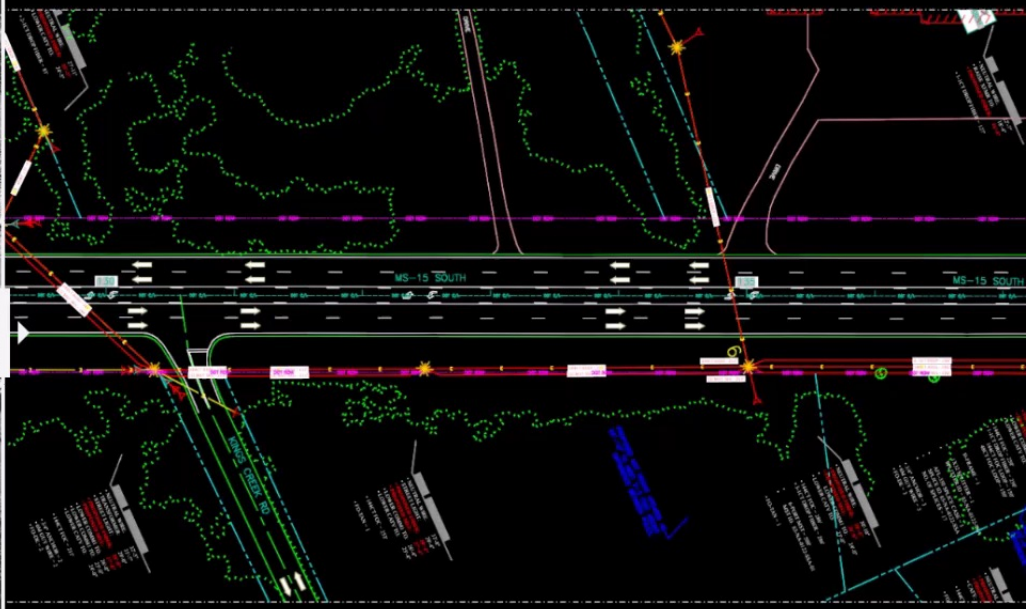
- High level design assessment
- Site verification
- Current conditions vs. Google Street View



Mobile LiDAR Point Cloud Data



Resulting OSP Aerial Design



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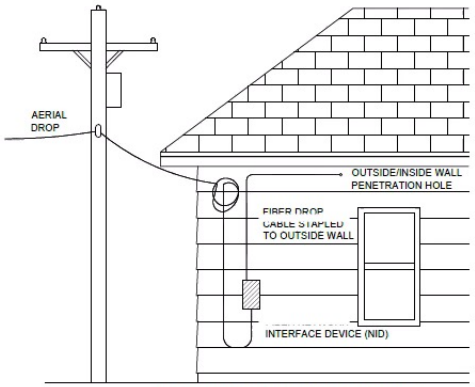
AERIAL DESIGN SYMBOLS KEY

DIRECTIONAL BORE — DB — DB
PROPOSED AERIAL CABLE — XXXCT ADSS-XXX'
PROPOSED AERIAL DROP FIBER — X'
PROPOSED BURIED DROP FIBER — X'
PROPOSED OVERHEAD GUY — XXX' 10M OHG
EXISTING BURIED FIBER OPTIC CABLE — EXISTING FOC
EXISTING OVERHEAD POWER — E — E
EXISTING BURIED POWER — PWR — PWR
CITY/COUNTY RIGHT OF WAY
HIGHWAY RIGHT OF WAY — DOT ROW
RAILROAD RIGHT OF WAY — RR ROW
PROPERTY LINE
CITY LIMIT BOUNDARY
COUNTY LINE BOUNDARY
CITY/COUNTY ROAD CENTERLINE
HIGHWAY CENTERLINE — DOT C/L
EDGE OF PAVEMENT
RAILROAD TRACKS
FENCE
GUARDRAIL
VEGETATION LINE
EDGE WATER/CENTERLINE DITCH
TOP/TOE OF SLOPE
BUILDING
TREE — BUSH
EXIST. NALGW POLE — JOINT-USE TELECO & POWER ANCHOR/GUY
PROP. NALGW POLE — EXIST. 3RD PARTY PWR ANCHOR & GUY
EXIST. 3RD PARTY POLE — EXIST. 3RD PARTY COMM ANCHOR & GUY
EXISTING NALGW ANCHOR & GUY — PROP. MGNV (MULTI-GROUND NEUTRAL VERTICAL WIRE)
PROPOSED NALGW ANCHOR & GUY



FIBER NID AT CUSTOMER HOME

TRAFFIC CONTROL NOTES:

ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH PART 6 OF THE 2009 EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

ALL TRAFFIC CONTROL MARKINGS AND STRIPINGS TO BE CLASS 2 TYPE A THERMOPLASTIC.

GENERAL NOTES:

1. ALL WORK TO BE DONE WITH EXTREME CAUTION. FIBER OPTIC CABLE IS CARRYING TRAFFIC. LOSS OF SERVICE WILL RESULT IN LOSS OF REVENUE.
2. ALL WORK TO BE PERFORMED IN STRICT ACCORDANCE WITH THE APPLICABLE CODES OR REQUIREMENTS OF ANY REGULATING GOVERNMENTAL AGENCY, NALGW, OR THE RIGHT-OF-WAY GRANTOR.
3. LOCATIONS OF SOME OF THE PHYSICAL FEATURES WERE OBTAINED FROM DATED RAILROAD EVALUATION MAPS OR OTHER DRAWINGS, AND MAY BE AS SHOWN OR DEPICTED ON THESE DRAWINGS.
4. UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE RECORDS AND FIELD OBSERVATIONS, BUT ARE NOT NECESSARILY EXACT. THEREFORE, UTILITY LOCATIONS WILL BE VERIFIED AT LEAST 100 FEET IN ADVANCE OF TRENCHING OR PLOWING, SO THAT CHANGES IN CABLE PLACEMENT CAN BE MADE IN EVENT OF CONFLICTS.
5. FOR BURIED DESIGN: ALL KNOWN BURIED OBSTRUCTIONS ARE SHOWN ON THE CONSTRUCTION DRAWINGS. ANY AND ALL OTHERS ENCOUNTERED ARE ALSO THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE, PROTECT, AND REPAIR, IF DAMAGED.
6. ANY AND ALL IMPROVEMENTS SUCH AS ASPHALT OR CONCRETE PAVEMENT, CURBS, GUTTERS, WALKS, DRAINAGE DITCHES, EMBANKMENTS, SHRUBS, TREES, GRASS SOD, ETC., IF DAMAGED, SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
7. EQUIPMENT TYPES SPECIFIED HEREIN (I.E. "BACKHOE, "SWAMP PLOW", ETC.) ARE SUGGESTIONS ONLY AND ARE NOT INTENDED AS REQUIREMENTS. CONTRACTOR WILL BE NOTIFIED AS TO EXCEPTIONS.

AERIAL CONSTRUCTION:

MULTI-SERVICE TERMINAL (MST) AFL TITAN RTD MULTI-PORT TERMINAL
RTD - 04 - XXX - DD - 0100F
(#PORTS, CABLE END, CABLE TYPE*, TAIL LENGTH)
CABLE TYPES:
DD = DIELECTRIC FLAT DROP
TD = TONEABLE FLAT DROP
AD = TITAN ADSS CABLE
PD = PUSHABLE MICRODROP
AN = ARMORED DROP

SPLICE ENCLOSURE
1. AFL FC000009-PS LG-350-U-0 DOME CLOSURE REQUIRED FOR ALL LOCATIONS WITH SPLITTERS, ANY BUTT-SPLICE LOCATIONS, AND ANY SPLICE LOCATION WITH LATERALS
2. AFL FC000002-PS LG-250-U-0 DOME CLOSURE FOR SMALLER SPLICE COUNT LOCATIONS INVOLVING RING CUTS

SPLITTER AFL FC001681
PLC 1X32 SPLITTER WITH 2-METER TAILS
LL-4896

POLE ATTACHMENT ABBREVIATIONS:

CAP BANK	CAPACITOR BANK	**NALGW**	NEW ALBANY LIGHT GAS WATER
CATV	COMMUNITY ANTENNA TV	**OHG**	OVERHEAD GUY
CATV DIP	CATV DIP	**PWR**	POWER
CLTCKT	FIRE ALARM CIRCUIT	**PWR DIP**	POWER DIP
COMM	COMMUNICATIONS	**SL**	STREET LIGHT
COMM DIP	COMMUNICATIONS DIP	**TEOP**	TRAFFIC LIGHT
DG	DOWN GUY	**TGUY**	TRAFFIC GUY
FL	FLOOD LIGHT	**TRI**	TRIPLEX
GND	GROUND ROD	**TSIG**	TRAFFIC SIGNAL
MDW	MULTI-DROP WIRE	**TOP**	TOP OF POLE
MS	MID-SPAN	**SEC**	SECONDARY NEUTRAL
MST	MULTI-STREAM TRANSPORT	**WH**	WEATHER HEAD
NEU	NEUTRAL	**XFMR**	TRANSFORMER

PROJECT: NEW ALBANY DISTRIBUTION AREA
ROUTE: NA03-001
DATE 7/25/23 | DESCRIPTION Construction
SHEET T-01 | SCALE N/A

PREPARED BY
BBG
43 Town Center Square, Suite 203
Hattiesburg, MS 39402
Office phone: (601) 402-9149
Email: designservices@bbgcomatics.com
20230024

PREPARED FOR

MAP NUMBER

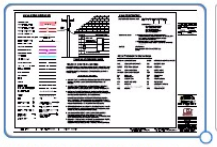
NOTIFY MDOT 2 WEEKS PRIOR TO CONSTRUCTION ACTIVITY. CONTACT JEFF BURKES @ 601-953-4184

NOTIFY ALL UTILITIES 72 HOURS PRIOR TO CONSTRUCTION ACTIVITY. ONE CALL SYSTEM @ 1-800-227-6477

[1] 2023-07-25 NA03-001 Design-Cover


[2] 2023-07-25 NA03-001 Design-Index Ma


[3] 2023-07-25 NA03-001 Design-Route Ma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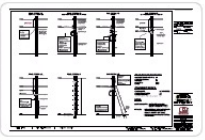
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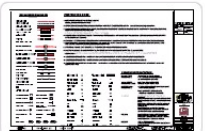

Summary

- **Geospatial technology** can be leveraged to improve project performance for **Fiber Network Builds**
- Better **Data** = Better **Design** = Faster **Builds**
- **Visit us** in our booth to learn more

Thank You

Q&A and Discussion

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BROADBAND DEVELOPMENT CONFERENCE
TRANSFORMATIVE INNOVATION

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