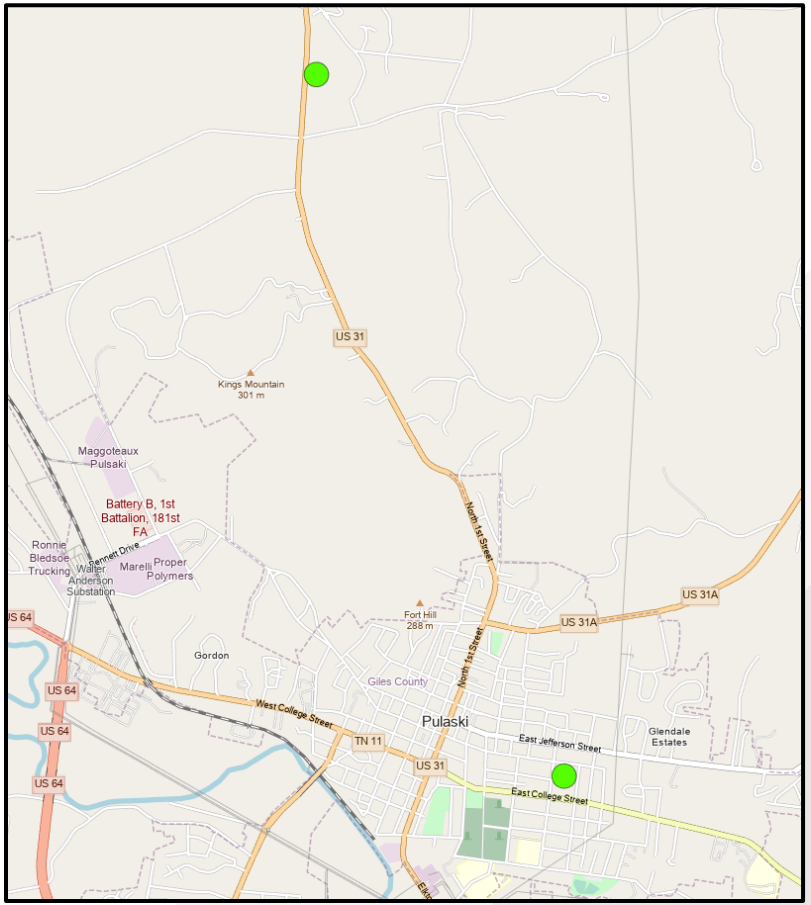
New 911 Dispatch Center

Preliminary Analysis

Giles County E911

OHM Advisors was contracted to perform a preliminary analysis for a new 911 Dispatch Center. OHM was advised to consider two locations owned by Giles County. OHM analyzed the following options:

- **Addition to Existing Facility**
  - Located at 131 S Cedar Lane
- **Addition to OEM Building**
  - Located on 3750 Columbia Highway
  - Add on to east end of building
- **New Building at OEM Property**
  - Located at 3750 Columbia Highway
  - Construct behind existing OEM Building



Existing Facility Condition Assessment

Civil / Infrastructure

- Located at 131 S. Cedar Lane on a 3-acre parcel which also contains the Giles County Archives building, the Giles County Health Department building, and the Giles County Ambulance Service building.
- The 1,500 square foot 911 Center is served by utility service lines on the west, north, and east sides of the building.
- The underground telecommunication lines, water meter, water service line, and propane gas tank on the west side of the building would need to be relocated prior to any future addition or new construction on the west side of the existing 911 Center.
- An existing sanitary sewer service line runs from the north side of the existing 911 Center to the west.
- The existing gas service line continues from the east side of the building around to the north side of the building.
- An existing asphalt parking lot on the south side of the building provides 9 parking spaces for the building's employees.
- Two pole-mounted lights provide site lighting for the parking lot area.
- Most of the property slopes gently from east to west at roughly 2%-3% slopes.
- An existing swale approximately 60' west of the 911 Center drains to a culvert pipe which directs stormwater under the asphalt driveway to the south.
- Based on the USDA soil survey, this site contains Armour silt loam and Mimosa silt loam. Bedrock is not expected to be found within the top 4.5' of these soil types.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EXISTING
911 CENTER

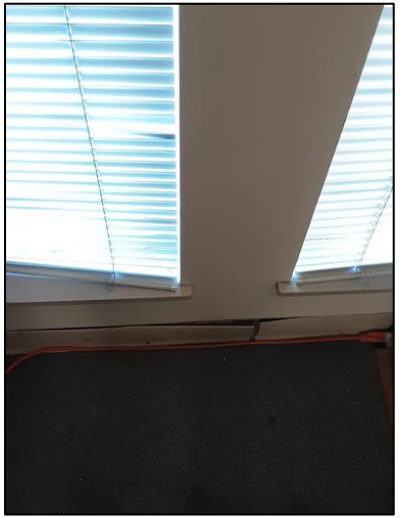
Existing Facility Condition Assessment

Architectural

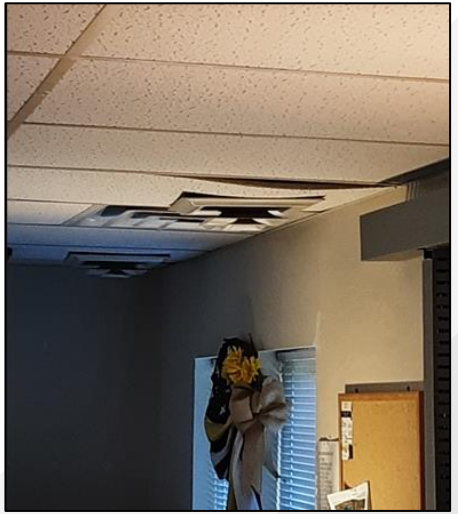
The existing 911 dispatch center is dated and worn.

Example of Water Damaged Ceiling Tile

Example of Worn and Stained Carpet



Example of Vinyl Wall Base Damage



Example of Ceiling Tile Deflection

Existing Facility Condition Assessment

Mechanical

- The Existing 911 Center is served by two separate outdoor packaged air handlers
- Each packaged air handler is served by an indoor thermostat.
- At the time of the site visit, it was noted that one was providing cold air to the building while the other was providing hot air.
- These units are battling each other due to the thermostat settings (one providing hot air while the other is providing cold air)

Existing Facility Condition Assessment

Plumbing

- One restroom exists in this building to serve all employees.
- Contains a floor mounted flush tank toilet and a wall mounted lavatory.
- The lavatory is served by a 2.4-gallon electric water heater with a 1.44 kW heating element.
- The restroom does not appear to contain an exhaust fan. An exhaust fan should be added and interlocked to the light switch to remove dirty air from the restroom as it is occupied.

Existing Facility Condition Assessment

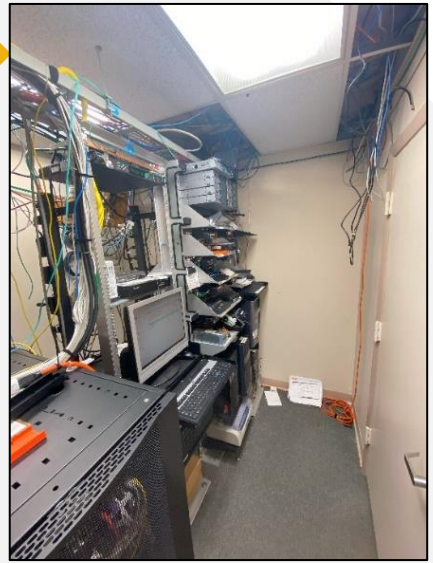
Electrical

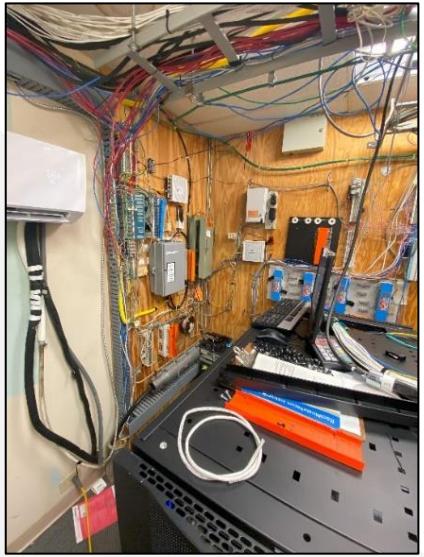
- The building is served by a Cummins generator manufactured in 2008.
- Per discussions with 911 staff, the generator has been frequently repaired over the years and is not reliable.
- Next to the automatic transfer switch is the main electrical panel.
- The panel is a 200-amp panel, and the building contains single phase power only.
- This panel feeds power to the entire building.
- The existing electrical service is near its max capacity; a new power feed and additional panel will be required to handle any increase in load.

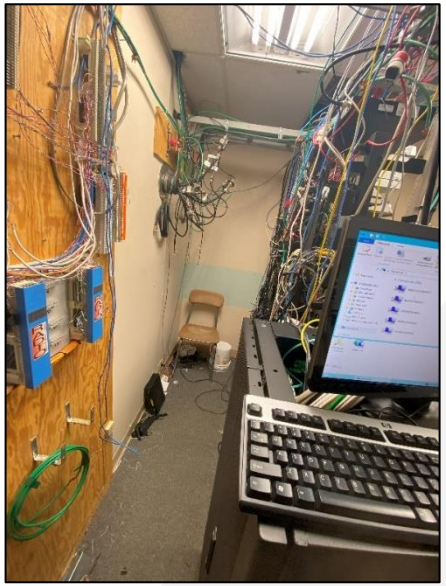
Existing Facility Condition Assessment

Communications

The Main Distribution Panel feeds power to the Radio Communications room located in the northwest corner of the building. This room contains radio equipment and communications wiring to the exterior radio tower.







Existing Facility Condition Assessment

Structural

- Building was not intended as an emergency communication center since it doesn't meet the basic structural or building code requirements for such a facility.
- Building envelope was built mainly using brick on three sides and one side with vinyl siding and the structure is wood.
- Building would not be able to be economically rehabbed for expansion on site given the more strict building codes that would apply.
- The distance a new structure would need to be sited from the existing building, adjustments to utilities, and potential interruption of current 911 services do not allow for it to be suitable for reuse or expansion

OEM Building Condition Assessment

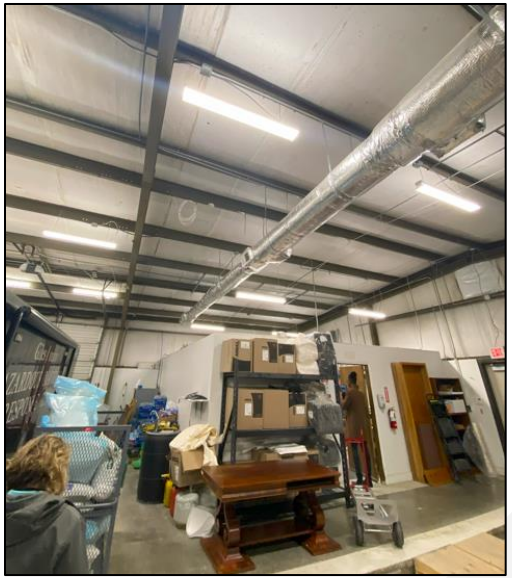
Civil / Infrastructure

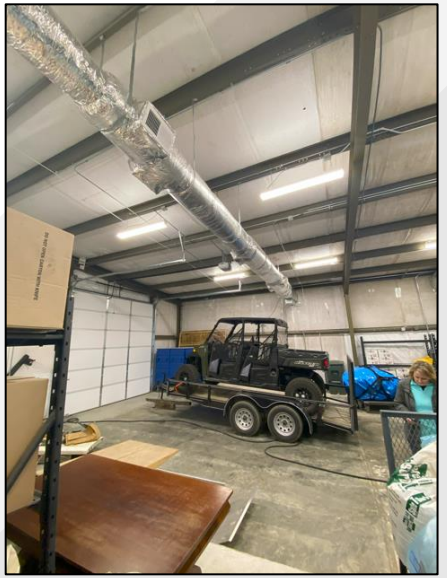
- The property is located at 3750 Columbia Highway.
- The 1.5-acre site contains an asphalt parking lot and approximate 7,000 SF Emergency Management building.
- The front of the property drains to an existing ditch along Columbia Highway and the remainder of the property drains south to an adjacent farm field.
- The existing building is served by a water service line which enters the site from the west side of the property.
- A gas service line runs along the south property line and provides service to the existing building.
- The existing building is served by a septic field on the west side of the property between the building and Columbia Highway.
- Overhead electric and telecommunication lines enter the building from a utility pole at the NW corner of the property.
- Parking lot lighting is provided by building mounted floodlights
- Bedrock is not expected to be found within the top 5’ of these soil types. A geotechnical study is needed to confirm the soil conditions on site.

OEM Building Condition Assessment

Architectural

- This building was purchased by the county in 2013 and renovated in 2020.
- This option focused on construction of an addition to the back of the building. This area is currently used as a garage and contains vehicles and various storage items.
- This portion of the building does not contain any finished walls or finished ceilings.
- The floor is exposed concrete slab.
- The building exterior is prefabricated metal with exposed interior insulation.





OEM Building Condition Assessment

Mechanical and Electrical

- The garage bays are currently heated and cooled by packaged outdoor air handlers with direct expansion (DX) cooling and natural gas heating.
- Space currently uses shop light fixtures for lighting.
- No emergency generator on this site for any power outages.
- This space is not setup for occupiable use and would require extensive work to make it usable.

OEM Building Condition Assessment

Structural

- The garage bays are currently heated and cooled by packaged outdoor air handlers with direct expansion (DX) cooling and natural gas heating.
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IBC Code Analysis

- “Essential Facilities” are structures that house “mission critical” functions such as police, fire, ambulance, 911 dispatch, emergency vehicle garages, etc and fall under Risk Category IV.
- Risk Category IV facilities face the most stringent structural design requirements.
- Buildings are required to be substantially built and must comply with specific structural requirements to resist high winds, seismic activity, flooding and other disasters.

TABLE 1604.5
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY	NATURE OF OCCUPANCY
I	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to: • Agricultural facilities. • Certain temporary facilities. • Minor storage facilities.
II	Buildings and other structures except those listed in Risk Categories I, III and IV
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to: • Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300. • Buildings and other structures containing elementary school, secondary school or day care facilities with an occupant load greater than 250. • Buildings and other structures containing adult education facilities, such as colleges and universities, with an occupant load greater than 500. • Group I-2 occupancies with an occupant load of 50 or more resident care recipients but not having surgery or emergency treatment facilities. • Group I-3 occupancies. • Any other occupancy with an occupant load greater than 5,000[a]. • Power-generating stations, water treatment facilities for potable water, waste water treatment facilities and other public utility facilities not included in Risk Category IV. • Buildings and other structures not included in Risk Category IV containing quantities of toxic or explosive materials that: Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the *International Fire Code*; and Are sufficient to pose a threat to the public if released [b].
IV	Buildings and other structures designated as essential facilities, including but not limited to: • Group I-2 occupancies having surgery or emergency treatment facilities. • Fire, rescue, ambulance and police stations and emergency vehicle garages. • Designated earthquake, hurricane or other emergency shelters. • Designated emergency preparedness, communications and operations centers and other facilities required for emergency response. • Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category IV structures. • Buildings and other structures containing quantities of highly toxic materials that: Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the *International Fire Code*; and Are sufficient to pose a threat to the public if released [b]. • Aviation control towers, air traffic control centers and emergency aircraft hangars. • Buildings and other structures having critical national defense functions. • Water storage facilities and pump structures required to maintain water pressure for fire suppression.

IBC Code Analysis

IV	Buildings and other structures designated as essential facilities, including but not limited to: • Group I-2 occupancies having surgery or emergency treatment facilities. • Fire, rescue, ambulance and police stations and emergency vehicle garages. • Designated earthquake, hurricane or other emergency shelters. • Designated emergency preparedness, communications and operations centers and other facilities required for emergency response • Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category IV structures. • Buildings and other structures containing quantities of highly toxic materials that: Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the *International Fire Code*; and Are sufficient to pose a threat to the public if released [b]. • Aviation control towers, air traffic control centers and emergency aircraft hangars. • Buildings and other structures having critical national defense functions. • Water storage facilities and pump structures required to maintain water pressure for fire suppression.

Both the existing 911 center and the existing OEM Building do not comply with Risk Category IV code requirements. An Addition to either building would require the existing buildings to be brought into compliance with Risk Category IV requirements which would be cost prohibitive.

New Construction at OEM Property

Civil / Infrastructure

- The grass field in the rear of the existing Giles County Emergency Management building provides a feasible location for a new 3,000 square foot 911 Center building.
- To prepare a building pad, a minimal amount of grading would be needed in the northwest corner of the grass field where the existing slopes are about 5%.
- The existing asphalt parking lot is large enough to accommodate parking spaces for 911 Center staff along the east side of the paved area.
- Water service to the new building will be provided by tapping the existing waterline in Columbia Highway and installing a new water service line and water meter.
- It appears that the grass field has appropriate soils and is large enough to accommodate a septic field, but a more detailed soils analysis and septic design is required.

New Construction at OEM Property

Structural

When designing a project to meet Risk Category IV, the design team must meet requirements for wind resistance, heavy and driving rain, seismic activity, flooding and fire resistance.

The structures are more robust than a typical building.

Costs associated with a more robust structure and foundations, specialty architectural and Mechanical Electrical and Plumbing (MEP) components, and emergency MEP systems can add up quickly.

Other considerations regarding the location of the building include topography, elevation (flood plain or low-lying area), wind exposure (open areas receive higher winds than sheltered areas) and soil conditions due to the requirements for foundation anchorage.

New Construction at OEM Property

The following was initial information requested by representatives of the 911 dispatch center. The proposed facility was initially requested to include the following spaces:

Functional:	Room area	Qty	Total Area
• Dispatch area workstations	100 sq.ft	5	500 sq.ft
• IT/Radio Room	200 sq.ft	1	200 sq.ft
• Private Office Space	400 sq.ft	2	800 sq.ft
• Employee Breakroom	200 sq.ft	1	200 sq.ft
• Decompression Room	100 sq.ft	1	100 sq.ft
• File/Storage Room	200 sq.ft	1	200 sq.ft
• Restrooms	50 sq.ft	3	150 sq.ft
• Janitor Closet	50 sq.ft	1	50 sq.ft
• Circulation/Mechanical	35%		770 sq.ft
Number of employees – 10			**Total: 2,970 sq.ft**

New Construction at OEM Property

The below opinion of probable construction cost is based on a 3,000 square foot new 911 facility located at the OEM site. The Fixture, Furniture, and Equipment costs include equipment for four (4) dispatch stations. These numbers are considered a high-level approach and should only be used for broad planning purposes.

Item:	Notes:	Cost:
Building Construction Cost	$700/SQFT	$2,100,000
Site/Infrastructure	Lump Sum	$ 200,000
Fixtures, Furniture, and Equipment	$50/SQFT	$ 150,000
Design Fees	15%	$ 370,000
Contingency	15%	$ 425,000
	Total:	$3,245,000

Summary

The overriding factor when considering all three options for an expanded or new 911 center is the requirement within the building code that the facility will need to be designed as a Risk Category IV Essential Facility and be able to withstand a variety of natural and human caused hazards. This requirement would extend to an existing building expansion to accommodate a new 911 center. The current 911 center and the OEM building would have to be extensively modified making the two expansion options not viable.

Building a new building to proper code requirements is the most feasible and cost effective option. A new 911 Center will need to include the proper number of dispatch stations, space for a secure radio/IT room, mechanical/electrical room, secure file storage and restrooms, a break room, a quiet room, janitorial and storage spaces. All spaces must be designed keeping the specific 911 Center needs. Spaces will need to consider dispatcher comfort in the HVAC system design, space acoustics, station lighting, safety and security ad well as backup system as has been described. Following these recommendations will result in a well performing space for the County 911 staff well into the future.