**Statement of Work**

**HVAC System Replacement for USGS Boulder Magnetic Observatory**

## A. Background

The United States Geological Survey operates and maintains a magnetic observatory near Boulder, CO (BOU). The observatory was established in 1963, is 57 years in age, and consists of seven buildings on Table Mountain. The buildings of interest for this project are the Office Building, Coil Control Building, and Coil Building (Figure 1).

The existing heat pump split systems and HVAC systems that serve the Office Building, Coil Control Building, and Coil Building need to be replaced and relocated (Figures 2 – 4).

## B. Objective

The objective of this project is to replace the existing HVAC system at the observatory Office Building with a new heat pump system, relocate the heat pump system attached to the Coil Control Building, replace the broken cement slab behind the Coil Building, and to replace the HVAC system supplying the Coil building.

## C. Project Location

***USGS Boulder Magnetic Observatory***
8600 N. 39th St.
Longmont, CO 80503

## D. USGS Points of Contact (POC)

**Contracting Officer:** TBD

**Facility Manager (acting):** Krissy Lewis
USGS Geomagnetism Program Facility Manager, Acting
720-450-0295
klewis@usgs.gov

**Site Representative:** TBD

## E. Requirements

Minimum requirements for the Office Building heat pump split system:

- 208/230 volts, single phase, 60 Hz
- High efficiency
    - Maintain 71°F/22°C with ±4°F/±2°C
    - Seasonal Energy Efficiency Ratio 2: 15 (15 SEER 2)
    - Peak Hours Energy efficiency
    - Quiet or reduced noise operation from sunset to sunrise
    - Auto-Off energy waste prevention.

- Cooling capacity: 24,000 BTU
- Heating capacity: 24,000 BTU
- 5-year minimum full parts and labor warranty.

Minimum requirements for the Coil Building HVAC system:

- 208/230 volts, single phase, 60 Hz
- High efficiency
    - Maintain 71°F/22°C with ±4°F/±2°C
    - Seasonal Energy Efficiency Ratio 2: 13.4 (13.4 SEER 2)
    - Peak Hours Energy efficiency
    - Quiet or reduced noise operation from sunset to sunrise
    - Auto-Off energy waste prevention.
- Cooling capacity: 24,000 BTU
- Heating capacity: 24,000 BTU
- 5-year minimum full parts and labor warranty.

Any necessary accessories for installation and operation shall also be included.

**F. Tasks**

The contractor shall complete the following:

1. Tasks – Office Building
    a. Deliver, uncrate, and assemble new unit.
    b. Remove and dispose of old HVAC unit.
    c. Install new outdoor mini-split condenser unit on pad or bracket within the same location as the previously existing HVAC unit.
    d. Install new indoor mini-split head unit to interior wall opposite the location of the exterior condenser unit.
    e. Coordinate routing of refrigerant line set, electrical, and condensate drainage.
    f. Install equipment per manufacturer's specifications and local mechanical/electrical codes.
    g. Maintain required service clearances at all equipment.
    h. Check system to ensure it operates within manufacturer’s guidelines.
2. Tasks – Coil Control Building
    a. Remove existing HVAC unit and stand from building.
    b. Remove existing mini-split condenser and associated line set.
    c. Remove existing ductwork, base stand, and seal supply/return holes in wall.
    d. Pour new concrete pad for equipment placement.

e. Install new HVAC unit that services the Coil Building on new pad.

f. HVAC side discharge with two 10” supply and return ducts routed underground 60 feet to the Coil Building.

g. Cover underground ductwork to prevent contaminates and wildlife from entering system.

h. Install new mini-split condenser on stand on pad.

i. Install new mini-split indoor head unit centered on interior wall.

j. Install line set with line hide, communications wire from outside unit to inside unit.

k. Install per manufacturer requirements and applicable mechanical/electrical code.

l. Check system to ensure it operates within manufacturer’s guidelines.

3. Tasks – Coil Building

a. Install new 10-inch plastic non-metallic supply duct with perforated air openings.

b. Attach new ductwork to incoming HVAC supply line. Supply and return ducts penetrate floor from underground (60-foot run from the Coil Control Building).

c. Provide proper supports, sealing, and insulation per code.

d. Install equipment per manufacturer's specifications and local mechanical/electrical codes.

e. Check system to ensure it operates within manufacturer’s guidelines

**General Performance and Requirements**

The contractor shall:

1. Furnish all labor, equipment, and supervision.

2. Confine operations to prevent or minimize damage to the natural surroundings, and plant material.

3. Protect existing structures and finishes, both interior and exterior, from damage during construction.

4. Coordinate with USGS regarding any required utility outages a minimum of 72 hours in advance.

5. Provide temporary weather protection to prevent damage to any interior areas.

6. Keep dust and dirt pollution to a minimum and ensure safety of persons in the work area.

7. Be responsible for the repair or replacement of damaged building material or components resulting from the demolition or installation of items under this contract. Materials and methods shall match existing structures.

8. Take all necessary precautions to prevent fires or injury to the public, building occupant(s), or

damage to property of others during the performance of this contract.

9. The Contractor shall at all times keep the work area, including storage areas, free from accumulations of waste materials. Before completing the work, the Contractor shall remove from the work and premises any rubbish, tools, equipment, and materials that are not the property of the Government. Upon completing the work, the Contractor shall leave the work area in a clean, neat, and orderly condition satisfactory to the Facility Manager or Site Representative. Train designated USGS personnel in adjustment, operation, maintenance, and safety requirements of the installed systems and other pertinent equipment.

10. All construction debris and rubbish shall be removed from the site daily and disposed of properly according to local, State, and federal guidelines.

11. The contractor shall be responsible for making all arrangements for the receipt of materials and supplies at the job site. Government personnel are not permitted to receive or sign for items delivered to the site.

**G. Hours of Operation**

Normal working hours shall be between 8 AM and 5 PM, Monday-Friday. The contractor shall not work Saturdays, Sundays, legal holidays, or other non-normal working hours, unless otherwise authorized by the Contracting Officer. Requests to work times other than normal hours shall be made in writing.

**H. Special Site Considerations**

The contractor shall be aware that all metallic (ferrous) materials used in this project will have a direct effect on the data quality of this observatory. Metal or ferrous tools that are used for the completion of the project will need to be removed from the site daily and positioned outside the exclusion zone (Figure 5). Notify the Facility Manager 24 hours prior to entering the exclusion zone. Failure to meet these criteria will be unacceptable and can result in termination of the contract. Note: The two magnetic buildings of concern are the Variations building and Absolutes building. See Figure 1.

The contractor shall be allowed to park their vehicle and perform the work required inside this zone. However, do be mindful of where you are and stay as far from the Variations and Absolutes buildings as possible.

Contractor shall provide on-site toilet facilities for workers if determined necessary; contractor will not have access to USGS lavatory facilities. Facilities (porta-johns) will be located in coordination with the Site Representative.

Contractor will have access to water from the hose bibs and power from the building's outlets, both of which will be provided at no charge. The contractor is responsible for installing and removing their own temporary connections (hoses, extension cords, etc.) and for carefully conserving Government utilities. See FAR 52.236-14, Availability and Use of Utility Services.

**I. Deliverables**

The contractor shall submit the following to the USGS Facility Manager:

1. Information Documents

a. A complete set of maintenance data and information for the newly installed HVAC systems.
    i. Training manuals
    ii. Manufacturer warranties

**J. Schedule**

The contractor shall (a) commence work under this contract once given the Notice to Proceed by the Contracting Officer, (b) prosecute the work diligently, and (c) complete the work no later than 30 days from the Notice to Proceed. The time for completion shall include final cleanup of premises.

**K. Quality Assurance**

1. The contractor shall be responsible for visiting and inspecting the site to verify measurements, ascertain the nature and quality of the work to be performed, inform themselves of the general and local conditions (which can affect the work or the cost thereof), and compare the specifications with the work to be performed. Failure to do so will not relieve the successful contractor of their responsibility for estimating properly the difficulty or cost of furnishing materials and successfully performing the work in accordance with the true meaning of the specifications without additional costs to the government. Drawings furnished may not be to scale.

2. In any case of discrepancy in the specifications, the matter shall be immediately submitted to the Contracting Officer, without whose decision said discrepancy shall not be adjusted by the contractor, save only at their own risk and expense.

3. Any changes affecting the scope of work shall originate from or be approved by the Contracting Officer in writing.

4. All materials and workmanship shall be subject to the inspection and approval of the USGS Facility Manager or Site Representative. All work unsatisfactorily performed shall be promptly corrected and made acceptable to the Government at no extra cost.

5. The Contractor shall confine all work on the Government premises to areas authorized or approved by the USGS Facility Manager or Site Representative.

6. The USGS Facility Manager or Site Representative shall perform final inspection and acceptance with the contractor on-site upon completion of job performance.

**M. Conditions Affecting the Work**

It will be the responsibility of the contractor to inspect the site, determine the quantity of work involved, compare the specifications with the work to be done, and inform themselves as to all conditions, including other work, if any, being performed. Failure to do so will in no way relieve the successful contractor from the necessity of furnishing any materials or performing any work that may be required to carry out the contract in accordance with the true intent and meaning of the specifications without additional cost to the Government. Contractor is required to have a CURRENT contractor license issued by the state of Colorado.

## N. Licenses-Permits

The contractor shall, without additional expense to the Government, be responsible for obtaining any necessary licenses or permits, and for complying with any Federal, State, and Municipal laws, codes, and regulations in connection with the execution of the work.

## O. Indemnity

The contractor shall confine all work on Government premises to areas authorized or approved by the Contracting Officer or Facility Manager. The contractor shall save and keep harmless and indemnify the Government against any and all liability claims, and costs of whatsoever kind and nature of injury to or death of any person or persons and for loss or damage to any property (Government or otherwise) occurring in connection with or in any way incident to or arising out of the occupancy, use, service, operations, or performance of work in connection with this contract, resulting in whole or part from the negligent acts or omissions of the contractor.

**Figure 1: Site Layout at USGS Boulder Magnetic Observatory.**

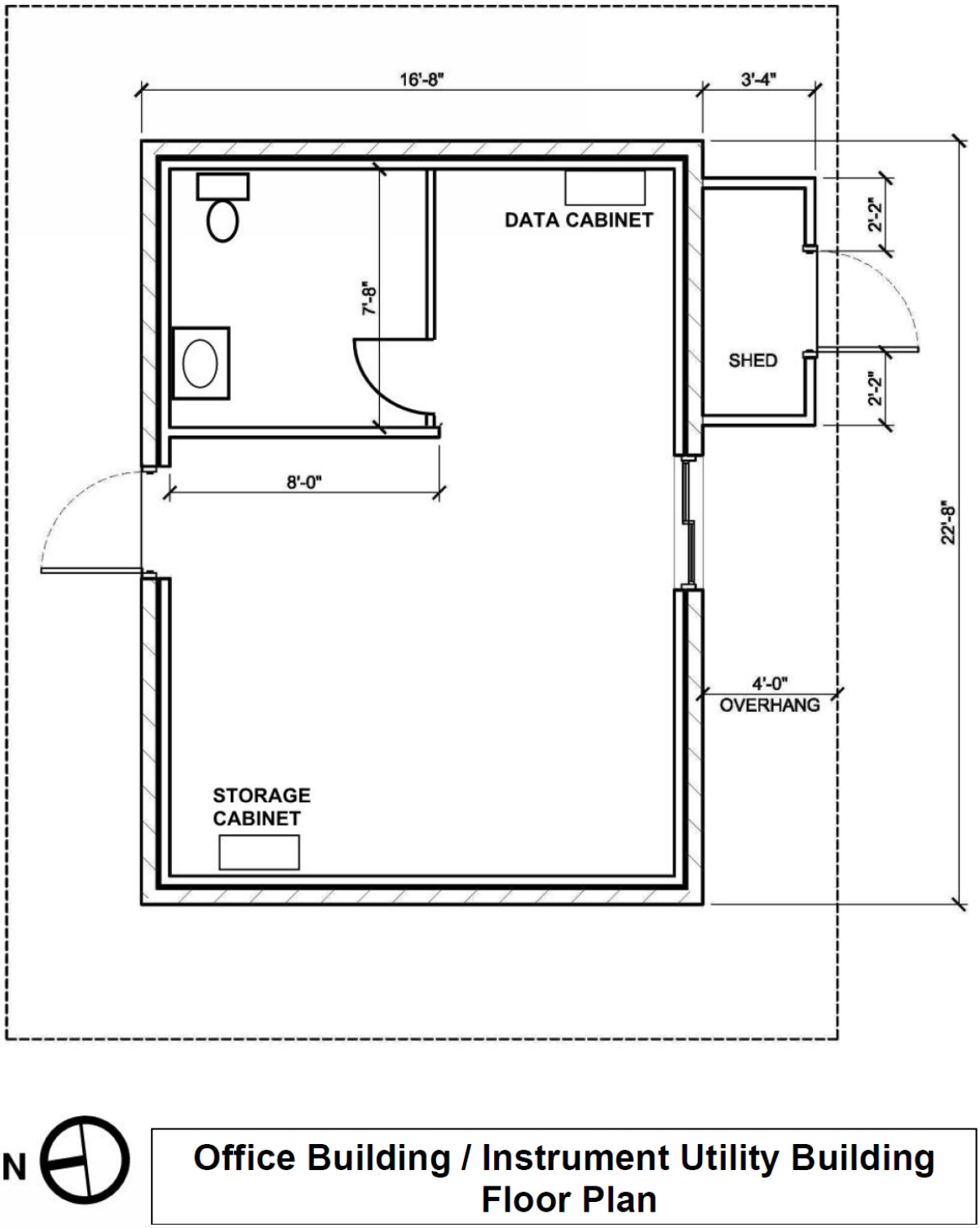


**Figure 2a: Office Building Floor Plan**

**Figure 2b: Office Building HVAC**

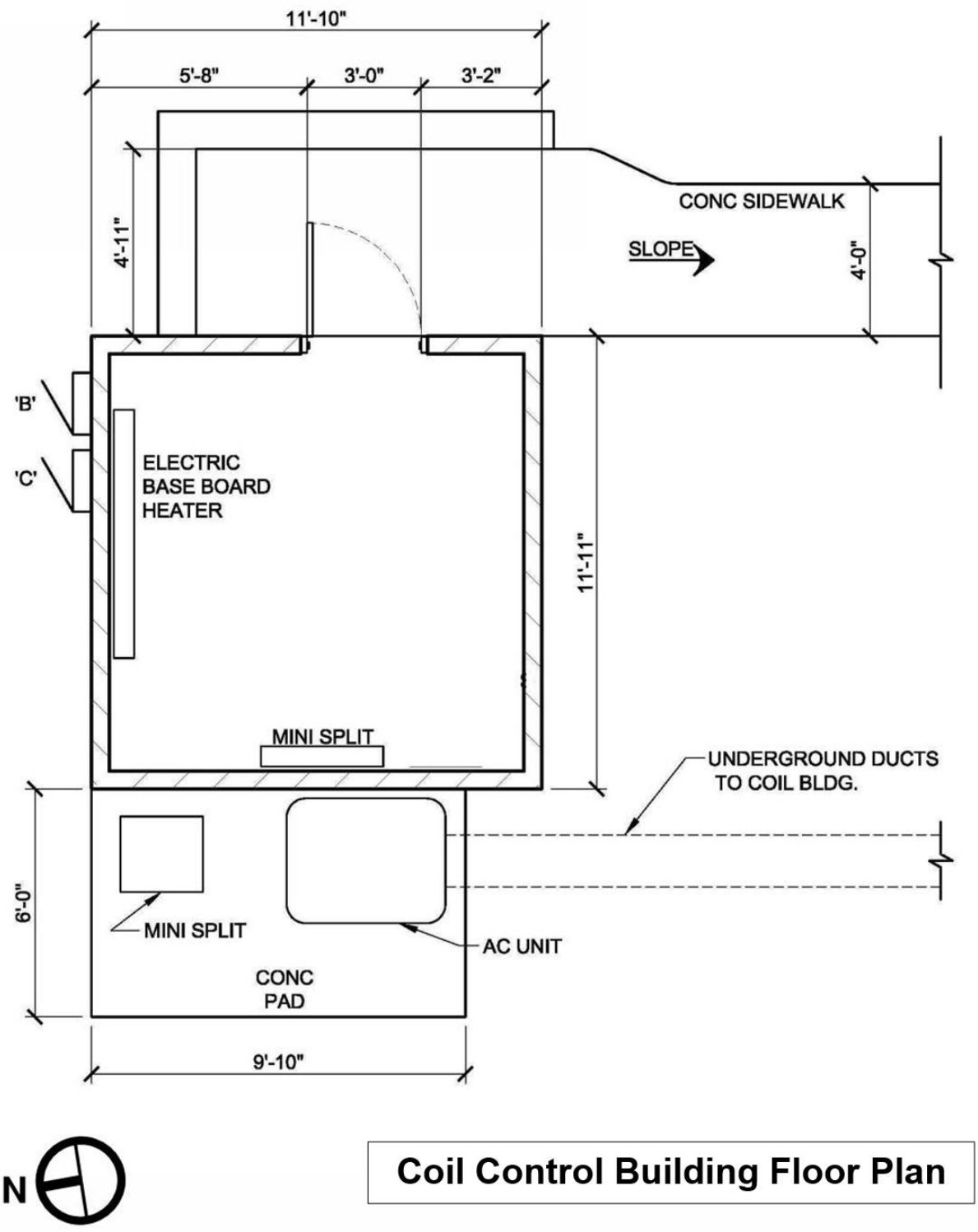


**Figure 3a: Coil Control Building Floor Plan**

**Figure 3b: Coil Control Building Mini-Split and Coil Building HVAC**

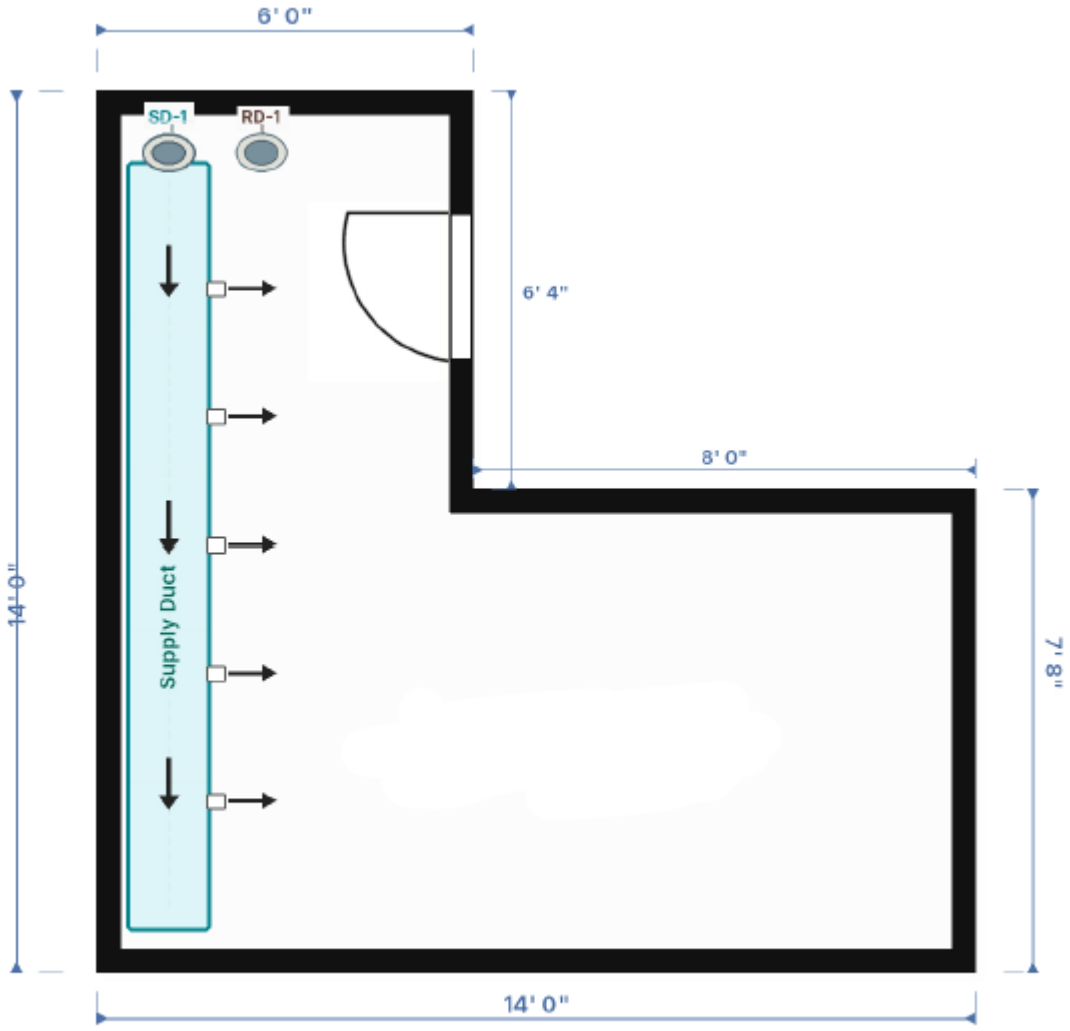


**Figure 4: Coil Building Floor Plan with Planned Air Duct**

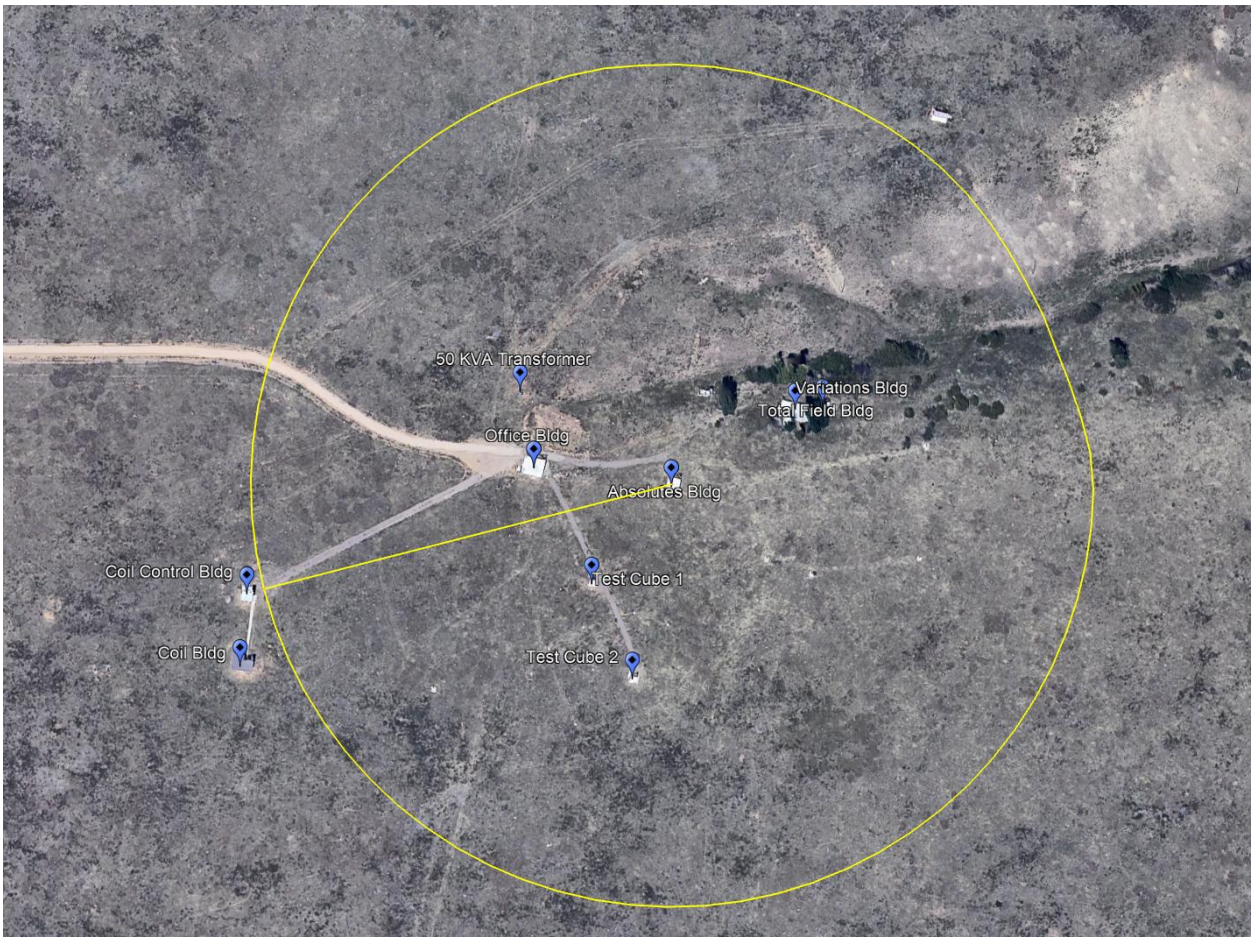


**Figure 5: Exclusion Zone**