PART 1 GENERAL

1.01 COMMUNICATIONS PROJECT DESCRIPTION

A. Description: The project includes the construction of telecommunications pathways within the building. This project consists of the installation of all infrastructure for the pathways. No optical fiber, network cabling or network devices are required for this project.

B. Contacts: Communications contact coordination shall be handled through the appropriate contact names and phone numbers as follows:

Primary: James R. Van Dyke 303-497-1251 vandyke@ucar.edu
Secondary: Marla Meehl 303-497-1301 marla@ucar.edu
Engineering: Del Harris 303-497-1257 harrisd@ucar.edu
Ed Snyder 303-497-1255 edsnyder@ucar.edu
Technical: Fabian Guerrero 303-497-1277 guerrero@ucar.edu

1.02 SECTION INCLUDES

A. The Contractor’s communications construction work involves but is not limited to the furnishing and installing of communication pathways, conduit, boxes, and outlet boxes. The Contractor is not responsible for network cabling or devices.

B. All network cabling in the project, which will be installed by the Owner, will be contained in conduit. Some original telephone and other conduits may be reused as specified in the construction drawings. Various cable pull boxes will be located in the conduit paths to provide access for the cables pulls. Individual communications outlet conduits will feed to distribution areas on each floor or adjoining floors. The Contractor is not responsible for the installation of any telecommunication cable or network equipment.

1.03 OWNER SUPPLIED AND INSTALLED EQUIPMENT

A. The Contractor shall install telecommunications infrastructure as displayed in the telecom drawings for the project. The Owner shall provide, install, and activate all network cabling and networking devices. The contractor is not responsible for any network cabling or network devices as specified in this division.

1.04 DEFINITIONS
A. Telecommunications Room – A room that feeds work areas with communications pathways.

B. Interior Communication Pathways – Conduit, raceway, outlets that are used to develop the infrastructure of communications.

C. Backbone Cabling – provides the interconnection between the horizontal cabling in the telecommunications room to the entrance cabling.

D. Horizontal Cabling – extends from the telecommunications outlet/connector in the work area to the telecommunications room.

1.05 WORK SEQUENCE

A. Complete the entire electrical installation in accordance with schedules as determined for the general completion of the entire project.

B. Schedule the progress of work so as to conform to the schedule of the work of other trades and to allow for future telecommunications conduit installations.

C. Cooperate with all other trades so that the installation of all electrical equipment may be properly coordinated and located.

D. Carefully check the location of communication infrastructure after the installation of materials and equipment by other trades.

E. Do not block or hinder the access or installation of materials for any other trades.

F. Coordinate communications installation with the Owner’s designated communications representative.

G. The Contractor shall complete or closeout Owner designated communication phases of the project before moving on to the next phase.

1.06 WORK RESTRICTIONS

A. The Contractor shall follow the Owner’s security procedures for access to the building and special areas.

B. All of the Contractor’s workers shall be registered with security and given access badges.

C. Access badges shall be worn by all the Contractor’s workers at all times while they are at the site.

D. The Contractor shall clean all locations of the work area and path to the area at the end of each day.

E. Loud and excessive noise shall be minimized. The Owner shall reserve the right to possibly stop work in an area to minimize impact.
F. The Contractor shall minimize strong odors or chemical smells from their work.

G. The Contractor shall control dust and debris from going into other areas.

H. The building shall be maintained in an orderly fashion during construction.

I. The Contractor’s workers shall be accompanied by designated Owner personnel during access to specific restricted areas.

J. It is the Contractor’s responsibility to contact the Owner’s personnel as required for access into restricted areas.

K. The Contractor shall maintain an active list of workers for the construction site and shall give to the specified Owner representative.

L. The Contractor shall provide a current and ongoing list of emergency contacts during the construction of the project.

M. The Contractor shall provide safety equipment for the visitors to the construction site and shall post them in the entrance to the construction site.

1.07 CONTRACTOR USE OF PREMISES

A. The Contractor will not be provided any staging area or office. However unoccupied Owner areas, as included in the schedule, may be used during the stages of the project.

1.08 OWNER FURNISHED PRODUCTS

A. The Owner will not provide the Contractor with any products needed for their project work.

1.09 QUALITY ASSURANCE

A. Conform to the requirements of ANSI/NFPA 70 - National Electrical Code (NEC®).

B. Conform to the requirements of the following communications standards.


   d. ANSI/TIA/EIA-607, *Commercial Building Grounding and Bonding Requirements.*

   e. National Electrical Code (NEC®) – Article 250 *Grounding.*

C. The Owner shall perform whatever testing and other inspection as required to determine that an acceptable level of specification adherence has been achieved by the Subcontractor.

D. All installed systems will be evaluated for both systematic and random error.

E. An error is defined as an instance of non-compliance with the contract document requirements.

F. Systematic error is defined as a procedural non-compliance.

G. Random error is defined as an occasional non-compliance on a random (non-systematic) basis.

H. Systematic non-compliance and/or an unacceptably high level of random error will result in the rejection of an entire lot of submitted work. Notice of rejection will be issued by the Owner’s Project Manager and the Subcontractor shall be given one week to remedy the situation and resubmit.

I. Work may be resubmitted a maximum of two times at which time the Owner may elect to cancel the contract for non-performance.

J. Quality control shall be the responsibility of the Subcontractor.

K. The Subcontractor shall supply samples of testing reports from similar installations.

L. The Subcontractor shall provide all materials necessary to demonstrate each installer’s ability to perform their assigned task as necessary.

M. The Subcontractor’s installers may be examined on site in project locations to demonstrate their own individual skills in project installation requirements.

1.10 REGULATORY REQUIREMENTS

A. All applicable state building, mechanical, electrical and any other local or state codes are required to be conformed to by the Contractor.

B. Electrical or other permits may be required for work at the project site.

C. The Contractor shall follow all applicable safety codes while on the project site.

D. The Contractor shall comply with Uniform Building Code, NFPA, and fire codes.

1.11 SUBMITTALS

Furnish submittals for review by the Owner’s staff at least one week prior to installation in accordance with Division 1. Refer to other sections for specific requirements.
A. Product Data – All product data and technical information shall be submitted to the designated Owner communication representative. Any product data submitted shall be included in the O&M manual.

C. Product Sample – Product samples may be requested for specified items. All items are to be of new condition and contain the manufacturer’s full documentation label. All samples shall be submitted to the Owner’s Communications Infrastructure Engineers. All samples shall become the property of the Owner and shall not be used in the project.

1. At least one sample shall be given to the owner. The owner shall retain all samples and will not be used in the project.

2. Submittals shall include but not be limited to:
   
   a. Each Outlet Box Type
   b. Pull Boxes
   c. Surface Raceway
   d. Wireway and Auxiliary Gutters
   e. Fasteners
   f. Connectors

D. Shop Drawings – Drawings are required in this division. The contractor shall furnish the drawings in both paper “D” size and AutoCAD version 2000 or above electronic form. The Contractor shall minimally provide “as-built” or close-out drawings and files of the project and communications effected work.

E. Bid Drawings - The Contractor shall provide a complete set of bid drawings to the Owner at the project inception. The drawings shall be submitted in both electronic and hard copy form.

F. All shop and bid drawings, product data, and detailed materials and suppliers lists shall be included in a O&M manual and given to the Owner. The O&M manual shall be given to the Owner in both paper and electronic form.

1.12 COMMUNICATIONS COSTS AND CHANGE ORDER PROCEDURES

A. Communications related costs at bid time and change order costs shall contain full and complete price breakdown information when submitted. Any costs or change orders shall display at a minimum the following information:

   a. Project Title and Number.
   b. Date Submitted to UCAR Contracts.
   c. A list of pathways as designated by telecom outlet label.
d. Each pathway will list the estimated Costs broken down by individual pathway.

e. In all cases costs shall be broken down as: labor name, hourly cost, hours estimated, total labor and a complete materials list. Each individual material shall be listed separately and include: material name, material price each, material quantity, material total. A total cost shall be given for both labor and materials.

f. A line listing project management and overhead cost for the work.

g. A total line consisting of total labor, materials, overhead, and grand total.

B. The costing information shall be provided both in hard copy format as well as electronically. The electronic format shall be presented to the Owner in at least Microsoft Excel version 9 format. The Owner can provide a sample of the format as requested.

C. A change order request shall not be considered submitted until the electronic version of the cost breakdown is submitted to the Owner's contract personnel.

1.13 RECORD CONSTRUCTION DRAWINGS

A. The Subcontractor shall provide all labor, tools, materials, and meters as required to prepare record construction drawings, “as-built drawings”, from the Owner provided pre-construction drawings.

B. Record Construction Drawings shall be maintained and submitted by the subcontractor.

C. The owner shall be provided copies of the Record Construction Drawings as requested and during significant milestones of the project.

D. The Contractor shall provide to the Owner the "as-built" drawings electronically in AutoCAD format at Owner designated milestones.

1.14 TEMPORARY WIRING

A. No power service is to be provided for electric welders or other special trades.

B. No special task lighting is to be provided for tradesmen by the owner.

C. Power extensions are to be provided individually by trade.

D. The subcontractor may not connect temporary wiring to UPS or special outlet power without consent from the owner before attachment.

PART 2 PRODUCTS

2.01 MATERIALS

A. All material used in this project shall be new and installed in accordance with manufacturer’s instructions.
B. All material shall be listed and labeled by UL, ETL, CSA and be suitable for the application.

C. The material purchased must be of original manufacturer’s quality, no outdated, “seconds”, or substandard parts may be used.

D. Substitutions: Permitted on written consent from the owner on an as-equal basis under the provisions of Division 1.

E. Material deliveries to the Owner’s sites must be made directly to a Subcontractor’s representative. The Owner’s shipping and receiving personnel will not accept Subcontractor deliveries.

F. The site loading docks shall not be used for material deliveries.

G. Loading areas shall be cleared with reasonable haste to avoid disrupting normal shipping and receiving, or general operations.

H. Project materials and supplies shall be properly stored in a Subcontractor provided space.

I. Hazardous or flammable materials shall be stored in accordance with health and safety procedures detailed in the Subcontractors approved Health and Safety plan.

J. Storage requirements for hazardous materials used by the Subcontractor shall be the responsibility of the Subcontractor.

K. The Subcontractor shall supply Material Safety Data Sheets (MSDS) for all chemical materials to be brought on site at least one day before the materials are delivered to the site.

L. A list, updated at least one day before new items are delivered to the site, of all materials requiring ventilation during drying or curing shall be presented to the Owner’s Project Manager. Materials such as but not limited to paints, plasters, glues, and cleaners shall be included in the list.

M. The Subcontractor shall keep a labeled folder containing all MSDS documentation in the on site field office.

PART 3 EXECUTION

3.01 WORKMANSHIP

A. Install work in a neat and work person like manner using procedures defined in relevant standards, manufacturer's recommendations, and industry standards.

B. All equipment and labeling shall be straight, plumb and centered with the intent of presenting a visually neat, professional looking installation.

C. All work areas including paths to the construction area shall be cleaned at the end of each day. This includes the organization of material, disposal of trash, and general cleaning of surfaces and the floor.
3.02 SAFETY

A. Comply with all OSHA requirements, relevant standards, and industry standards.

3.03 CUTTING AND PATCHING

A. All cutting and patching required to install electrical items under this Subaward shall be done according to Division 1 and subsequent divisions.

3.04 REMODEL WORK

A. Coordinate the routing of all conduits with the existing mechanical and plumbing systems in order to avoid conflicts with ducts, pipes, etc. Where existing electrical boxes, conduit, or equipment interfere with installation of new pathways or boxes the Subcontractor shall resolve the conflict by consulting with the Owner’s designated staff prior to installation.

B. All equipment removed shall be delivered to the Owner. All items which are removed and not wanted by the Owner and which are not reused shall become the property of the Subcontractor and shall be removed from the site.