REQUEST FOR PROPOSAL
MIDWESTERN STATE UNIVERSITY
PURCHASING & CONTRACT MANAGEMENT DEPARTMENT
3410 Taft Blvd., Daniel Bldg., Rm. 202
Wichita Falls, TX. 76308

BID NUMBER	BID TITLE
735-18-8197	**New Fiber Installation for Relocation on IT Servers**

BIDS WILL BE RECEIVED BY SEALED BID OR EMAIL UNTIL:
2:00 P.M.,
March 30, 2018:
the office's of the Director of Purchasing & Contract Management,
3410 Taft Blvd., Daniel Bldg., Rm. 202
Wichita Falls, TX. 76308

GENERAL TERMS AND CONDITIONS

These General Terms and Conditions apply to all offers made to Midwestern State University (herein after referred to as "University") by all prospective vendors (herein after referred to as "Bidders") on behalf of Solicitations including, but not limited to, Invitations to Bid and Request for Quotes.

INSTRUCTIONS FOR SUBMITTING BIDS

Review this document in its entirety. Be sure your bid is complete, and double check your bid for accuracy.

Questions requiring only clarification of instructions or specifications will be handled through the email process. If any questions results in a change or addition to this Bid, the change(s) and addition(s) will be addressed to all vendors involved as quickly as possible in the form of an addendum. It is the responsibility of the bidder to view the posting on the MSU purchasing web page located at http://mwsu.edu/purchasing/.

Sign the **Vendor's Affidavit Notice** and return with your bid.

BIDDERS SHALL SUBMIT BID ON THE FORM PROVIDED, SIGN THE VENDOR AFFIDAVIT, AND RETURN ENTIRE BID PACKET. In the event of inclement weather and the University Offices are officially closed on a bid opening day, bids will be received until 2:00 p.m. of the next business day. At which time said bids will be privately opened.

BIDS SUBMITTED AFTER THE SUBMISSION DEADLINE SHALL BE RETURNED UNOPENED AND WILL BE CONSIDERED VOID AND UNACCEPTABLE.

SUCCESSFUL VENDOR WILL BE NOTIFIED BY EMAIL OR MAIL. All responding vendors will receive written notification regarding the outcome of the award. Bid tabulations will be posted to the MSU Purchasing we page.

PLEASE NOTE CAREFULLY

THIS IS THE ONLY APPROVED INSTRUCTION FOR THIS BID. ITEMS BELOW APPLY TO AND BECOME PART OF TERMS AND CONDITIONS OF BID. ANY EXCEPTIONS THERETO MUST BE IN WRITING.

1. Each bid shall be emailed or placed in a separate envelope completely and properly identified with the name and number of bid. Bids must be in the Purchasing Office **BEFORE** the hour and date specified.

2. **QUOTE F.O.B. DESTINATION.** If otherwise, show exact cost to deliver. Bid unit price on quantity specified – extend and show total. In case of errors in extension, UNIT prices shall govern. Bids subject to unlimited price increase will not be considered.

3. Bids **MUST** give full firm name and address of the bidder. Failure to manually sign bid will disqualify it. Person signing bid should show TITLE or AUTHORITY TO BIND HIS FIRM IN A CONTRACT.

4. Bids **CANNOT** be altered or amended after opening time. Any alterations made before opening time must be initialed by bidder or his authorized agent. No bid can be withdrawn after opening without the approval by the Vice-President of Administration & Finance based on a written acceptable reason.

5. The University is exempt from State Sales Tax and Federal Excise Tax. **DO NOT INCLUDE TAX IN BID.**

6. Any catalog, brand name or manufacturer's reference used in a bid invitation is descriptive-**NOT** restrictive-it is to indicate type and quality desired unless otherwise indicated. Bids on brand of like nature and quality will be considered. If bid is based on other than referenced specifications, proposal must show manufacturer, brand or trade name, lot number, etc., of article offered. If other than brand(s) specified is offered, illustrations and complete description should be made part of the bid. If bidder takes no exception to specifications or reference data, he will be required to furnish brand names, numbers, etc., as specified.

7. Samples, when requested, must be furnished free of expense to the University. If not destroyed in examination, they will be returned to the bidder on request, at his expense. Each sample should be marked with bidder's name, address, and University bid number. **DO NOT ENCLOSE OR ATTACH SAMPLE TO BID.**

8. **Delivery:** Bid must show number of days required to make delivery to place material in receiving agency's designated location under normal conditions. Failure to state delivery time obligates bidder to complete delivery in 14 calendar days. A five-day difference in delivery promise may break a tie. Un realistically short or long delivery promises may cause bid to be disregarded. Consistent failure to meet delivery promises without valid reason may cause removal from bidder list. Delivery shall be made during normal working hours only, 8:00 a.m. to 5:00 p.m., unless prior approval for late delivery has been obtained from the Director of Purchasing.

9. If delay is foreseen, contractor shall give written notice to Director of Purchasing. The University has the right to extend delivery date if reasons appear valid. Contractor must keep University advised at all times of status of order. Default in promised delivery (without accepted reasons) or failure to meet specifications, authorizes the University to purchase supplies elsewhere and charge full increase in cost and handling to defaulting contractor.

10. All items proposed shall be new, in first class condition suitable for shipment and storage (Midwestern State University prefers recycled packaging whenever possible), unless otherwise indicated in bid. Verbal agreements to the University will not be recognized. All materials and services shall be subject to Purchaser's approval. Unsatisfactory materials will be returned at Seller's expense.

11. Written and verbal inquires pertaining to bids must give Bid Number and Commodity.

12. No substitutions or cancellations permitted without written approval of Director of Purchasing.

13. The University reserves the right to accept or reject all or any part of any bid, waive minor technicalities and award to the Bidder that bids to the Best Value to the University. The University reserves the right to award by item or by total bid. Prices should be itemized.

14. Consistent and continued tie bidding could cause rejection of bids by the University and/or investigation for Anti-Trust violations.

15. The contractor agrees to protect the University from claims involving infringement of patents or copyrights.

16. This is a Quotation inquiry only and implies no obligation on the part of the University. All costs quotations must include all the various features needed to

satisfy the requirements. Note: No amounts will be paid for the items in this BID in excess of the amounts quoted.

17. **Award:** A written purchase order or notice of award mailed or otherwise furnished to the successful bidder within the time of acceptance specified in this package results in a binding contract without further action by either party.

18. **Variation in Quantity:** The University assumes no liability for commodities produced, processed or shipped in excess of the amount specified herein.

19. **Invoicing:** Bidder shall submit two (2) copies of an itemized invoice shoeing bid number and purchase order number to:

Midwestern State University
Accounts Payable
3410 Taft Blvd.
Wichita Falls, TX. 76308

20. **Payments:** The University, after receipt of completed order will make payment to the contractor within 30 days from the receipt of goods or invoice which ever is later. All partial shipment must be pre-approved by the Director of Purchasing. In the event of partial shipments the University is not required to make payments until the order is complete. Acceptance of and final payment for the item will be contingent upon satisfactory performance of the product received by the University.

21. **Discrimination:** In order to comply with the provisions of fair employment practices, the contractor agrees as follows; 1.) the contractor will not discriminate against any employee or applicant for employment because of race, sex, religion, handicap, or national origin; 2.) in all solicitations or advertisements for employees, the contactor will state that all qualified applicants will receive consideration without regard to race, color, sex, age, religion, handicap or national origin; 3.) the contractor will furnish such relevant information and reports as request by the University for the purpose of determining compliance with these regulations; and 4.) failure of the contractor to comply with these laws will be deemed a breach of contract and it may be cancelled, terminated or suspended in whole or in part.

22. **Assignment:** Any contract entered into pursuant to this request is not assignable, nor the duties thereunder, by either party without the written consent of the other party in the contract.

23. **Other Remedies:** In addition to the remedies stated herein, the University has the right to pursue other remedies permitted by law or in equity.

24. **E-Verify**: Contractor is responsible to verify all employees are approved by The Homeland Security E-Verify program.

25. **Bonds**: For construction type awards, if bids are over $25,000 a payment bond will be required if awarded the contract. A performance bond will be required if award is over $100,000.

REQUEST FOR PROPOSAL

NEW FIBER INSTALLATION FOR RELOCATION ON IT SERVERS MIDWESTERN STATE UNIVERSITY

It is the intent of these specifications to describe the minimum requirements for **the above titled project** at Midwestern State University in sufficient detail to secure comparable bids.

Each bidder must confirm he fully understands these specifications and the University's needs and satisfies himself that he is cognizant of all factors relating to requirements contained in these specifications.

The bid analysis will include compliance to bid specifications, past performance with vendor, references, delivery time, which will have a weighted average of 30 percent and the overall cost to the university, which will have a weighted average of 70 percent. Midwestern State University reserves the right to consider deviations from these specifications.

Award of this bid will be contingent on availability of Midwestern State University funds.

References shall be included on this bid form. Three current customers with a comparable purchase shall be listed with complete name, address, telephone number and contact person.

Bids must be submitted on this form and the bidder shall return the entire bid/specification package which will constitute a contract equally binding between the bidder and Midwestern State University if bids accepted by the University. Each bid shall be placed in a sealed envelope or emailed, signed by a person having the authority to bind his/her firm in a contract.

This contract shall remain in effect until completion and acceptance by the University. Midwestern State University reserves the right to enforce the performance of this contract in any manner prescribed by law or deemed to be in the best interest of the University in the event of breach or default if this contract. Midwestern State University reserves the right to terminate the contract immediately in the event the successful bidder fails to make delivery in accordance with the specifications.

Questions concerning these specifications should be directed via email no later than March 21, 2018 to:

Stephen Shelley, Director of Purchasing and Contract Management
3410 Taft Blvd. Daniel Bldg. Rm. 202
Wichita Falls, TX. 76308
stephen.shelley@mwsu.edu
(940) 397-4110

Midwestern State University may in it's sole discretion respond in writing to questions concerning this bid request. Only MSU responses made by formal written addendum to this proposal shall be binding and shall be posted on the MSU purchasing web site located at http://mwsu.edu/purchasing/. Oral or other written interpretations or clarifications shall be without legal effect.

All bids meeting the intent of this invitation to bid will be considered for award. Bidders taking exception to the specifications, or offering substitutions, shall state these exceptions by attachment as part of the bid. The absence of such a list shall indicate that the bidder has not taken exception and shall hold the bidder responsible to perform in strict accordance with the specifications of the invitation. Midwestern State University reserves the right to accept any and all or none of the exception(s) / substitution(s) deemed to be in the best interest of the University.

PRE-BID MEETING: A pre-bid meeting will be held at **10:30 a.m. on Wednesday, March 7, 2018 in the Memorial Building located on** Midwestern State University, 3410 Taft Blvd., Wichita Falls, Texas.

Proposals are to be sent via email or hand delivered to:

Stephen Shelley, Director of Purchasing and Contract Management
3410 Taft Blvd. Daniel Bldg. Rm. 202
Wichita Falls, TX. 76308
stephen.shelley@mwsu.edu
(940) 397-4110

SPECIFICATIONS
RFP #735-18-8197

Please see specifications and drawing at the below Link under current bid opportunities listed under the RFP number:
http://mwsu.edu/purchasing/

Please supply a HUB Subcontracting Plan with your bid, which can be found at the below listed link:
http://www.window.state.tx.us/procurement/prog/hub/hub-subcontracting-plan/

Please supply schedule and lead time for project with bid:

Supply an insurance certificate with your Bid.

Supply a W-9 With your Bid if new to Midwestern State University.

2010 Uniform General Conditions apply to this Bid and can be found at the below listed link:
http://mwsu.edu/purchasing/contract-management

Schedule:
Project cannot be completed until the new HS+HS building is on line (HS+HS Substantial Completion is 5/15/19) since all of the fiber will tie into its new server. Fiber installations to the other buildings can begin any time after a PO is issued. The new fiber duplicates existing connections, except it will be terminating in HS+HS's server room instead of Memorial. Consequently, connection of new fiber inside HS+HS shall occur one building at a time; no more than one building shall be without fiber service at any given time.

Contractor to submit a start date and completion date with their bid.

There are no liquidated damages with this project.

Since the HS+HS building is not MSU's legal responsibility until Substantial Completion is achieved, all construction work at the HS+HS site must adhere to Construction Manager,Trinity Hughes/Sundt's, safety requirements without exception, including wearing PPE such as hard hats, safety glasses, and gloves (see attached three documents).

SECTION 270000

COMMUNICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes general design requirements, administration topics, and installation for communications systems.

1.2 SYSTEM DESCRIPTION

A. The objective of this project is to provide a complete communications cabling infrastructure system installation including, but not limited to: fiber backbone, testing and other items/materials, as specified in drawings, these specifications, and contract documents.

B. Related Sections

1. Section 271300 Communications Backbone Cabling

1.3 SCOPE OF WORK

A. This section establishes infrastructure to be used as signal pathways for communications systems, but is not limited to the following:

1. Comply with all Project Contract documents and the following requirements for a complete project installation.
2. Provide a structured cabling system as described hereafter that includes, but is not limited to, supplying, installing and testing of: outside plant cabling and terminations.
3. Furnish all labor, materials, tools, equipment and services for the installation described herein.
4. Follow industry standard installation procedures for communications cable to assure that the mechanical and electrical transmission characteristics of this cable plant and equipment are maintained.

B. Work of this section covers complete installation of permanent links for data communications networks utilizing fiber transmission media that includes, but is not limited to the following:

1. Provide, install, terminate, test, and document all fiber outside plant cables.
2. Provide and install all termination devices such as, but not limited to, fiber distribution panels, bulkheads, connectors, and fiber fan out kits. Document all termination devices with proper labeling.
3. Provide in quantities specified, interconnect components such as, but not limited to, fiber patch cables.
4. Provide and install all appropriate consumable items required to complete the installation.
5. Provide complete documentation and demonstration of work.
6. Provide indexed and organized complete Test Results of all fiber cable and their components.
7. Provide Submittals as outlined below.

8. Provide a Manufacturer's Extended Product Warranty and System Assurance Warranty for this wiring system.
9. Conduct a final document handover meeting with client, consultant, and PM to review, discuss and educate the Owner on the final product, test results, and As-Built Drawings.

C. Changes to the Scope of Work

1. Owner changes to the scope of work shall be in writing.
2. Change orders shall be submitted to the Owner/Project Manager complete with price breakdown and description for approval before any work is done.
3. The Contractor shall respond to these changes with a complete material list, including pricing, labor, and taxes in writing to be presented to the Owner for approval.
4. The Contractor shall not proceed with additional scope of work without signed approval by the Owner. Owner will not pay for additional work performed by the Contractor without written/signed approval of these changes.
5. Contractor will attach a copy of the signed change order with billing information.

1.4 PRODUCTS AND WORK BY OTHERS (NIC)

A. The Owner may separately procure and/or provide certain equipment and components that will be installed during the course of the project. Such items may not be indicated in the documents.

B. Contractor shall cooperate with the Owner and Owner's suppliers when considering:

1. The provision and installation of phone systems, related system equipment/software, and employee station equipment/software.
2. The provision and installation of multi-port routers, switches, and other Layer 2 / Layer 3 networking components in communications rooms.
3. The provision and installation of Uninterruptible Power Source (UPS) devices in communications rooms.
4. Communications grounding busbar and grounding wires connecting to the main building electrode system.
5. Dedicated power panels, ground busbar, circuits, and utility outlets.
6. Communication pathway devices such as, but not limited to, cable tray, in the existing pathways pull boxes and stub-ups, conduit sleeves, and penetrations in the steam tunnels, walls and floors.

1.5 SUBSTITUTION PROCEDURES

A. A substitution may be considered when a product becomes unavailable through no fault of the Contractor. An alternate product must be equal to or exceed specified requirements. The material substituted shall not void, alter or change manufacturers' structured cabling system warranty.

B. Document substitution requests with complete data substantiating compliance of proposed substitution with Contract Documents. Include in each request for substitution:

1. Product identification, manufacturer's name and address.
2. Product Data:

a) Description, performance and test data, reference standards, finishes and colors.
b) Samples: Finishes.

c) Complete and accurate drawings indicating construction revisions required (if any) to accommodate substitutions.
d) Data relating to changes required in construction schedule.
e) Cost comparison between specified and proposed substitution.

C. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

D. The Owner will be the final judge of acceptability, with review by DataCom Design Group.

E. No substitute shall be ordered, installed or utilized without the Consultant's prior written verification of acceptance from the Owner.

1.6 REFERENCES AND RELATED DOCUMENTS

A. Drawings and General provisions of the contract, including Uniform General Conditions, Supplementary General Conditions and specifications, Communications specifications and plans, and the publications listed below apply to the Communications section, are incorporated into this specification by reference, and shall be considered a part of this section.

B. Reference to codes, rules, regulations, standards, manufacturer's instructions, or requirements of regulatory agencies shall mean reference to the latest printed edition of each in effect at the date of contract.

C. The Contractor shall read all sections in their entirety and apply them as appropriate for work in this section.

D. Conflicts

1. Drawings and specifications are to be used in conjunction with one another and to supplement one another.
2. In general, the specifications determine the nature and quality of the materials and tests, and the drawings establish the quantities, details, and give characteristics of performance that should be adhered to during the installation of the communications system components.
3. If there is an apparent conflict between the drawings and specifications, or between specification sections, the items with the greater quantity and/or quality shall be estimated and installed.
4. Clarification with the Owner and/or DataCom Design Group about these items shall be made in writing prior to procurement and installation.

E. Codes and Standards

1. American National Standards Institute/Telecommunications Industry Association (ANSI/TIA)

a) ANSI/TIA-568-C.0 "Generic Telecommunications Cabling for Customer Premises"
b) ANSI/TIA-568-C.1 "Commercial Building Telecommunications Cabling Standard"
c) ANSI/TIA-568-C.3 "Optical Fiber Cabling Components Standard"
d) ANSI/TIA-568-C.4 "Broadband Coaxial Cabling and Components Standard"
e) ANSI/TIA-569-C "Telecommunications Pathways and Spaces"
f) ANSI/TIA-606-B "Administration Standard for Commercial Telecommunications Infrastructure"

g) ANSI/TIA-607-B "Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications"
h) ANSI/TIA-942-A: “Telecommunications Infrastructure Standard for Data Centers”
i) ANSI/TIA-1152: “Requirements for Field Test Instruments and Measurements for Balanced Twisted-Pair Cabling”

2. American National Standards Institute (ANSI)

a) ANSI C80.1 Electrical rigid steel conduit.

3. BICSI

a) BICSI Telecommunications Distribution Methods Manual (TDMM)

4. Institute of Electrical and Electronic Engineers (IEEE)

a) IEEE 142-1991 Recommended Practice for Grounding of Industrial and Commercial Power Systems
b) IEEE 1100-2005 IEEE Recommended Practice for Powering and Grounding Electronic Equipment

5. National Electrical Code (NEC)

a) NEC Article 250 - Grounding and Bonding
b) NEC Chapter 8 - Communications Systems

6. National Electrical Manufacturers Association (NEMA)

a) NEMA RN1 Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
b) NEMA TC2 Electrical Polyvinyl Chloride (PVC) Tubing and Conduit
c) NEMA TC3 Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing.
d) NEMA VE 1 - Metal Cable Tray Systems
e) NEMA VE 2 - Cable Tray Installation Guidelines

7. Underwriters' Laboratories (UL)

a) UL Cable Certification and Follow-Up Program
b) UL 83: Thermoplastic-Insulated Wires and Cables
c) UL 467: Grounding and Bonding Equipment
d) UL 514B: Conduit, Tubing, and Cable Fittings
e) UL 1666: Standard for Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts

8. Local, county, state and federal regulations and codes in effect as of date of installation.
9. Equipment of foreign manufacture must meet U.S. codes and standards.

a) It shall be indicated in the proposal the components that may be of foreign manufacture, if any, and the country of origin.

1.7 QUALITY ASSURANCE

A. Communications Contractor shall have a complete working knowledge of low voltage communications cabling applications such as, but not limited to data, voice and video network systems.

B. Communications Contractor shall have installed similar-sized systems in at least ten (10) other projects in the last five (5) years prior to this bid and be regularly engaged in the business of installation of the types of systems specified in this document.

C. Communications Contractor and individual installation crew members shall be experienced and qualified to perform the work specified herein at time of bid submission. All onsite supervision personnel that will be assigned to this project shall be listed in the Pre-Installation Submittal.

1. 80% shall have a minimum of three (3) years of experience in the installation of the types of systems, equipment, and cables specified in this document prior to this bid.
2. All installation team members must demonstrate knowledge and compliance with all applicable methods, standards, and codes.
3. All members of the installation team shall be certified by the Structured Cabling System Assurance Warranty provider as having completed the necessary training to complete their part of the installation and capable of an installation that falls under manufacturer's guidelines necessary to obtain the Manufacturer's System Assurance Warranty.
4. Any personnel substitutions shall be noted in writing to the Owner.

D. A BICSI RCDD shall supervise and approve all on-site work as a recognized member of the Contractor's installation team.

E. Refer also to the General Conditions.

1.8 CONTRACTOR REQUIREMENTS

A. In order to accomplish the conditions of this agreement, the Contractor shall perform the specific duties listed herein.

B. Contractor shall provide and pay for all labor, supervision, tools, equipment, test equipment, tests and services to provide and install a complete communications cabling infrastructure system. Pay all required sales, gross receipts, and other taxes.

C. Insurance

1. The Contractor shall procure, submit for review, and maintain for the duration of this agreement, insurance against claims for injuries to persons or damages to property which may arise from, or in connection with, the performance of work hereunder by the Contractor, his agents, representatives, employees or subcontractor. The Contractor shall pay the cost of such insurance.
2. The Owner, its directors, officers, representatives, agents and employees, respectively, shall have no responsibility to the Contractor with respect to any insurance in accordance with the provisions set forth herein.

D. Regulatory Requirements

1. Communications Contractor shall supply all city, county, and state telecommunication cabling permits required by Authority Having Jurisdiction (AHJ).
2. Communications Contractor shall be licensed and/or bonded as required for telecommunications/low voltage cabling systems.

E. Privacy and Confidentiality

1. The Contractor will respect and protect the privacy and confidentiality of Owner, its employees, processes, products, and intellectual property to extent necessary, consistent with the legal responsibilities of the Owner policies.
2. Contractors shall sign a non-disclosure agreement and abide by the requirements to keep confidential all information concerning bid documents and this project.

F. Use of Subcontractors

1. Successful bidder shall inform the Owner's contact and the Consultant in writing about the intention to use Subcontractors and the scope of work for which they are being hired.
2. The Owner or Owner's designated contact must approve the use of Subcontractors in writing prior to the Subcontractor's hiring and start of any work.

G. The Contractor's designated Project Manager will be recognized as the single point of contact. The Project manager shall oversee all work performed to ensure compliance with specifications as outlined in bid documents (which includes all specifications, references, and drawings) to ensure a quality installation and attend project meetings with the telecommunication consultant, the Owner and others.

1.9 PRE-INSTALLATION MEETINGS

A. Communications Contractor shall attend and/or arrange a scheduled pre-installation conference prior to beginning any work of this section. This venue is to ask and clarify questions in writing with consultant and/or project manager/Owner representative.

B. Agenda

1. Safety
2. Work to be performed
3. Scheduling
4. Coordination
5. Other topics as necessary

C. Attendance

1. Communications project manager/supervisor shall attend meetings arranged by the Owner's representatives, and other parties affected by work of this document.
2. All individuals who will serve in an on-site supervisory capacity, including project managers, site supervisors, and lead installers, shall be required to attend the pre-installation conference. Individuals who do not attend the conference will not be permitted to supervise the installation and testing of communications cables on the project.

1.10 CONTRACT ADMINISTRATION

A. DataCom Design Group will perform periodic site visits and provide job field reports upon inspection of Contractor's installation, materials, supporting hardware, coordination with other trades and progress to schedule to the client.

B. Job Field Report outline:

1. General: The general installation progress in relation to scheduled work made by the Contractor up to that date.
2. Deficiencies and/or Items of note.

1.11 POST INSTALLATION MEETINGS

A. At the time of substantial completion, the contractor shall call and arrange for a post installation meeting to present and review all submittal documents to include but not be limited to As-Built Drawings, Test reports, Warranty paperwork, etc.

B. Attendees shall include

1. Communications Contractor
2. Project Manager/Owner Representative
3. DataCom Design Group

C. At this meeting, the Communications Contractor shall present and explain all documentation.

D. Any discrepancies or deviations noted by and agreed to by participants shall be remedied by the Communications Contractor and resubmitted within one (1) week of the meeting.

1.12 DELIVERY, STORAGE, AND HANDLING

A. Coordination with delivery companies, drivers, site address, and contact person(s) will be the responsibility of the Contractor.

B. Communications Contractor requirements:

1. Be responsible for prompt material deliveries to meet contracted completion date.
2. Coordinate deliveries and submittals with the Consultant to ensure a timely installation.
3. No equipment materials shall be delivered to the job site more than three weeks prior to the commencement of its installation.
4. Equipment shall be delivered in original packages with labels intact and identification clearly marked.
5. Equipment shall not be damaged in any way and shall comply with manufacturer's operating specifications.
6. Equipment and components shall be protected from the weather, humidity, temperature variations, dirt, dust, or other contaminants.
7. Equipment damaged prior to system acceptance shall be replaced at no cost to the Owner.
8. Contractor shall be responsible for all handling and control of equipment. Contractor is liable for any material loss due to delivery and storage problems.

C. Owner shall provide the security requirements for the Contractor to follow.

1.13 PROJECT/SITE CONDITIONS

A. For all environmental recommendations, refer to the General Conditions.

B. Contractor shall provide daily a clean work environment that is free from trash/rubbish accumulated during and after cabling installation.

C. Contractor shall keep all liquids (drinks, sodas, etc.) away from finished spaces. If any liquid or other detriment (cuts, soils, stains, etc.) damages any finishes, Contractor shall provide professional services to clean or repair scratched/soiled finishes, at Contractor's expense.

D. Damage by Communications Contractor to the work of others will be remedied at the Contractor's expense in a timely manner.

1.14 WARRANTY

A. The Contractor shall be a certified Manufacturer's Value-Added Reseller (VAR) and/or Authorized Installer and provide an end-to-end product warranty, adhere to the industry standard engineering, installation and testing procedures and utilize the authorized manufacturer components and distribution channels in provisioning this project.

B. Contractor shall coordinate with manufacturer for warranty paperwork and procedures prior to the start of the project.

C. Contractor shall provide a minimum one (1) year warranty on installation and workmanship plus an Extended Product Warranty and System Assurance Warranty for this wiring system and shall commit to make available local support for the product and system during the Warranty period.

1. The Extended Product Warranty shall apply to all passive structured cabling system components and shall cover the replacement or repair of defective products and labor for the replacement or repair of such defective products for a minimum of one (1) year.
2. The System Assurance Warranty provides a complete system and product warranty that will be extended to the end-user, ensuring the structured cabling system will be free of defects in materials and workmanship, will meet or exceed applicable performance requirements defined in the contract documents, and support all current and future network applications for a minimum of twenty (20) years.

D. System Certification: Upon successful completion of the installation and subsequent inspection, the customer shall be provided with a numbered certificate, from the manufacturer, registering the installation.

1.15 PAYMENT

A. Refer to the General Conditions.

1.16 SUBMITTALS

A. Also, refer to Section 271300.

B. The Communications Contractor shall not perform any portion of the work requiring submittal and review of shop drawings, product data, or samples until Owner has approved the respective submittal in writing. Such work shall be in accordance with approved submittals.

C. Pre-Installation Submittal Requirements

1. Communications Contractor shall provide certificates for the appropriate insurance coverage as defined in contract documents.
2. City, county, and/or state telecommunication cabling permits as required by Authority Having Jurisdiction (AHJ).
3. Executed non-disclosure agreement.

4. Appoint a Project Manager and provide the name and contact information.
5. Shop Drawings

    a) Communications Contractor shall submit, for approval, floor plans that identify all device locations, cable routes and quantities, cable types, riser locations, and references to installation details and diagrams.

        1) Communication Contractor shall notify Owner of cable routes exceeding standardized lengths.

    b) Communications Contractor shall submit, for approval, diagrams that show room layouts, rack layouts (including elevations), riser layouts, etc.
    c) The Contractor shall make any corrections as required by the consultant team and submit revised shop drawings to the team for approval.
    d) Approval by the Consultant of such drawings or schedules shall not relieve the Contractor from responsibility for deviations from the drawings or specifications, nor shall it relieve the Contractor from responsibility for errors of any sort in shop drawings or schedules. Requests to deviate shall be submitted in writing to the Consultant.
    e) Release of CAD Files

        1) Contractor may request to utilize the DataCom Design Group AutoCAD floor plan files for assistance in producing shop drawings.
        2) Request shall be made by signing the DataCom Design Group "Agreement for Release of CAD Files" letter.

6. Product Data Cut-sheets

    a) Communications Contractor shall submit catalogue cut-sheets that include manufacturer, trade name, and complete model number for each product specified. Model number shall be handwritten and/or highlighted to indicate exact selection.
    b) Communications Contractor shall identify applicable specification section reference for each product performance for each component specified for approval prior to purchase and installation.

7. Warranty

    a) The Communications Contractor shall submit appropriate documentation from the certifying manufacturer showing the project is registered and qualified for the System Assurance Warranty.
    b) All subsequent work shall be in accordance with approved submittals. The Communications Contractor shall not perform any portion of the work requiring approval of the System Assurance Warranty manufacturer’s warranty registration qualification procedures that would disqualify any part or all of the wiring system from that warranty qualification.

8. Qualifications

    a) Communications Contractor shall submit a list of their previous projects that demonstrate qualification for this project. This list shall include, but not be limited to:

        1) At least ten (10) other projects in the last five (5) years
        2) Name and location of project

3) Project contacts, email addresses, and phone numbers
4) Total square footage
5) Total number of cables/drops
6) Types of media

b) Communications Contractor shall submit an up-to-date and valid statement of qualifications for those assigned to perform the work specified herein at time of bid submission.

1) Communications Contractor Employees
2) Subcontractors

c) Manufacturer certifications for Contractor and installers.

9. Cable Testing Plan

a) The Contractor shall provide a complete and detailed test plan for approval of the cabling system specified herein, including a complete list of test equipment for fiber components and accessories prior to beginning cable testing.
b) The following minimal items shall be submitted for review:

1) A testing plan that clearly describes procedures and methods.
2) Product data for test equipment.
3) Certifications and qualifications of all persons conducting the testing.
4) Calibration certificates indicating that equipment calibration meets National Institute of Standards and Technology (NIST) standards and has been calibrated at least once in the previous year of the testing date.
5) Examples of test reports, including all graphs, tables, and charts necessary for display of testing results.

D. Closeout Submittal Requirements

1. As-Built Drawings

a) Communications Design drawings are to be supplied to the Consultant to prepare the master “As-Built” drawings.
b) Submit one electronic copy and one hard copy with project deliverables within three (3) weeks subsequent to substantial completion.
c) As-Built drawings shall be in AutoCAD format, same version as used by the Consultant. Dimensions and scale of the drawing sheets submitted shall match the size of the drawing sheets used for the contract documents.
d) Utilize normal recognized drafting procedures that match AutoCAD standards, Consultant guidelines, and methodology.
e) The As-Built drawings shall incorporate all changes made to the building identified in, but not limited to, addendum, change notices, site instructions or deviations resulting from site conditions.

1) Contractor shall clearly identify any resubmitted drawing sheets, documents or cut sheets either by using a color to highlight or cloud around resubmitted information.
2) Maintain drawing numbering or page/sheet scheme consistency as per previously issued drawings/documents.

f) Provide dimensioned plan and elevation views of networking components, showing:

1) Rack and/or cabinet locations complete with labeling.
2) One-line diagram of equipment/device interconnections with the cable plant.
3) Standard or typical details of installations unique to Owner's requirements.
4) Graphic symbols and component identification on detail drawing shall conform to the latest conventions:

2. The Communications Contractor shall deliver the Installer's Extended Product Warranty and Manufacturer's signed System Assurance Warranty of installed cabling system to include all components that comprise the complete cabling system.

a) Delivery shall be completed within two (2) weeks of the time of final punch list review.
b) Product Certificates shall be signed by manufacturers of cables, connectors, and terminal equipment certifying that products furnished comply with requirements.

3. Cable Testing Report Requirements

a) Submit certified test reports of Contractor-performed tests. Contractor shall submit the required Test Reports in the format and media specified, upon completion of testing the installed system.
b) The tests shall clearly demonstrate that the media and its components fully comply with the requirements specified herein.
c) Three (3) sets of electronic and hardcopy versions of test reports shall be submitted together and clearly identified with cable designations.
d) Cable inventory data shall be submitted for all fiber, cabling and termination components. Include products furnished:

1) Manufacturer's name
2) Manufacturer's part numbers
3) Cable designations
4) Location and riser assignments
5) Product Data

E. The Contractor's BICSI Registered Communications Distribution Designer (RCDD) supervisor shall review, approve and stamp all documents prior to submitting. The Contractor's RCDD shall warrant in writing that 100% of the installation meets the requirements specified herein upon completion of all work.

PART 2 - PRODUCTS

2.1 SUMMARY

A. Equipment and materials shall be standard products of a manufacturer regularly engaged in the manufacture of telecommunications cabling products and shall be the manufacturer's latest standard design in satisfactory use for at least one year prior to bid opening.

B. All material and equipment, as provided, should be the standard Commercial-Off-The-Shelf (COTS) products of a manufacturer engaged in the manufacturing of such products.

1. Al products shall be typical commercial designs that comply with the requirements specified.
2. All material and equipment shall be readily available through manufacturers and/or distributors.

C. All equipment shall be standard catalogued items of the manufacturer and shall be supplied complete with any optional items required for proper installation.

D. Coordinate the features of materials and equipment so they form an integrated system. Match components and interconnections for optimum future performance and backward compatibility.

E. All materials shall be UL- and/or ETL-approved and labeled in accordance with NEC for all products where labeling service normally applies.

F. Materials and equipment requiring UL 94, 149 or 1863 listing shall be so labeled. Modification of products that nullifies UL labels is not permitted.

G. Backward Compatibility: The provided products shall be backward compatible with lower category ratings such that if higher category components are used with lower category components, the basic link and channel measures shall meet or exceed the lower category's specified parameters.

H. Component Compliance: The provided products shall each meet the minimum transmission specifications listed herein such that no individual component will be less than specifications for permanent link and channel, regardless of the fact that tests for link and channel ultimately meet required specifications.

2.2 ACCEPTABLE MANUFACTURERS

A. Identification (Labeling) System

1. Brady
2. Dymo
3. Hellerman-Tyton
4. Acceptable alternate

PART 3 - EXECUTION

3.1 PREPARATION

A. Field Measurements

1. Verify dimensions in areas of installation by field measurements before fabrication and indicate measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the work.

B. Established Dimensions

1. Where field measurements cannot be made without delaying the work, coordinate with the Owner to establish dimensions.
2. When approved in writing, proceed with fabricating units without field measurements.
3. Coordinate supports, adjacent construction, and fixture locations to ensure actual dimensions correspond to established dimensions.

C. Pre-installation inspection

1. The Contractor shall visually inspect all cables, cable reels, and shipping cartons to detect possible cable damage incurred during shipping and transport.
2. Visibly damaged goods are not acceptable and shall be replaced by the contractor at no additional cost to the Owner.

3.2 INSTALLATION

A. General

1. Contractor shall install work in accordance with specifications, drawings, manufacturer's instructions and approved submittal data.

B. Allowable cable bend radius and pull tension:

a) In general, communications cable cannot tolerate sharp bends or excessive pull tension during installation.
b) Refer to cable manufacturer's bend radius recommendations for the maximum allowable limits.
c) After installation, exposed cable and other surfaces must be cleaned free of lubricant residue. Use only lubricants specifically designed for cable installation.

C. Labeling

1. Cable labels: Self-adhesive vinyl or vinyl-cloth wraparound tape markers, machine printed with alphanumeric cable designations.
2. Flat-surface labels: Self-adhesive vinyl or vinyl-cloth labels, machine printed with alphanumeric cable designations.
3. Provide transparent plastic label holders, and 4-pair marked colored labels.
4. In accordance with ANSI/TIA-606-B "Administration Standard for Commercial Telecommunications Infrastructure":

a) Install colored labels according to the type of field as per color code designations.
b) Use “designation strip color-codes guidelines for voice, data, cross-connect, riser, and backbone fields”.

5. Pathway Labels and Labeling System

a) Labeling system shall consist of a hand-held portable printer
b) All labels shall be permanent, i.e. will not fade, peel, or deteriorate due to environment or time.

D. Within the normal environment, the installed systems shall not generate nor be susceptible to any harmful electromagnetic emission, radiation, or induction that degrades, or obstructs any equipment.

E. Expansion Capability: Unless otherwise indicated, provide spare conductor pairs in cables, positions in patch panels, cross connects, and terminal strips, and space in cable pathways and backboard layouts to accommodate 20% future increase in structure cable system capacity.

F. In the event of a breach of the representations and warranties contained herein, the Contractor, at their own expense, shall take all measures necessary to make the cabling system work and comply with the applicable manufacturer written technical recommendations and standards.

G. System Tests

1. Upon completion of the installation of the communications infrastructure systems, including all pathways and grounding, the Contractor shall test the system.

   a) Cables and termination modules shall be affixed, mounted or installed to the designed/specified permanent location prior to testing.
   b) Any removal and reinstallation of any component in a circuit, including faceplates, shall require retesting of that circuit and any other disturbed or affected circuits.
   c) Approved instruments, apparatus, services, and qualified personnel shall be utilized.
   d) The Contractor must verify that the requirements of the specifications are fully met through testing with an approved tester (rated for testing parameters listed elsewhere), and documentation as specified below.
   e) This includes confirmation of requirements by demonstration, testing and inspection. Demonstration shall be provided at final walk-through in soft copy and printed test data.

2. Failed Tests

   a) If tests fail, Contractor shall correct as required to produce a legitimate passing test.
   b) Manipulation of tester parameters on a failing test in order to achieve a passing test is unacceptable.
   c) If the Contractor is found to have manipulated or falsified any failing test result to show a “PASS” for any reason (without written notice and prior approval of the Owner), the Contractor shall be required to employ a Third-Party Testing Agent selected by the Owner to retest the complete cable plant and shall be required to pay all costs associated with this retesting.

3. Owner reserves the right to be present during any or all testing.

3.3 CLEANING

A. The Contractor will clean all surfaces prior to final acceptance by Owner.

3.4 COMPLETION INSPECTION AND PUNCH LIST

A. When the Contractor determines that the Scope of Work has been completed in accordance with the plans and specifications, Contractor shall schedule a Completion Inspection with the Owner.

B. A Punch List will be generated during the Completion Inspection containing deficiencies in need of corrective action.

C. Complete all punch list deficiencies within 10 working days. The work is not complete until all punch list deficiencies have been addressed.

3.5 ACCEPTANCE

A. Once all work has been completed, test documentation has been submitted, and Owner is satisfied that all work is in accordance with contract documents, the Owner shall notify Contractor in writing of formal acceptance of the system.

B. Contractor must warrant in writing that 100% of the installation meets the requirements specified herein (Standards Compliance & Test Requirements).

C. Acceptance shall be subject to completion of all work, successful post-installation testing which yields 100% PASS rating, and receipt of full documentation soft and hard copies as described herein.

END OF SECTION

SECTION 271300

COMMUNICATIONS BACKBONE CABLING

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes the backbone cabling portion of a structured cabling system including:

1. Fiber backbone cabling
2. Splicing
3. Termination and patch cables

B. Provide all backbone cabling, terminating hardware, adapters, and cross-connecting hardware necessary to interconnect all system equipment including equipment located in Communications rooms.

C. Related Sections

1. Section 270000 Communications

1.2 REFERENCES

A. Specific reference in specifications to codes, rules, regulations, standards, manufacturer's instructions, or requirements of regulatory agencies shall mean the latest printed edition of each in effect at the date of contract unless the document is shown dated.

B. Conflicts

1. Refer to section 270000.

C. Codes and Standards

1. Refer to section 270000.

1.3 SUBMITTALS

A. Refer to section 270000.

B. Cable Pulling Plan

1. The contractor shall submit a cable pulling plan prior to installation.
2. Submittal requirements:

a) Indicate the installed backbone conduit layout in schematic format, including junction boxes and distances between junction boxes.
b) Indicate contents of each conduit.
c) Indicate the cable pulling calculations, conduit fill ratios and actual cable runs and tensions.

d) Include detail and schedule showing the construction sequence of communications rooms.
e) Installation of cabling shall not commence prior to approval of the pulling plan and calculations by the engineer.

C. Cable Testing Plan

1. Refer to Section 270000.

D. Cable Testing Reports

1. Refer to Section 270000.

1.4 QUALITY ASSURANCE

A. Refer to section 270000.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Refer to section 270000.

B. Storage temperature range: -40°F to 149°F (-40°C to 65°C)

C. Fiber cables shall be shipped on reels in lengths as specified with a minimum overage of 10%:

1. The cable shall be wound on the reel so that unwinding can be done without kinking the cable.
2. Two meters of cable at both ends of the cable shall be accessible for testing.

a) All fiber shall be tested on the reel for continuity and distance compliance before installation.

3. Each reel shall have a permanent label attached showing length, cable identification number, cable size, cable type, attenuation, bandwidth, and date of manufacture.

a) Labels shall be water resistant and the writing on the labels shall be indelible.

1.6 PROJECT/SITE CONDITIONS

A. Refer to section 270000.

1.7 WARRANTY

A. Refer to section 270000.

1.8 MAINTENANCE AND SUPPORT

A. Refer to section 270000.

PART 2 - PRODUCTS

2.1 ACCEPTABLE FIBER CABLE MANUFACTURERS

A. Armored Outside Plant Rated Fiber, OS2 Single Mode 6 strand.

1. Corning ALTOS Gel Free 006EUC-T4100D20
2. Owner approved alternate.

B. Armored Outside Plant Rated Fiber, OS2 Single Mode 24 strand.

1. Corning ALTOS Gel Free 024EUC-T4100D20
2. Owner approved alternate.

C. Armored Outside Plant Rated Fiber, OS2 Single Mode 36 strand.

1. Corning ALTOS Gel Free 036EUC-T4100D20
2. Owner approved alternate.

D. Armored Outside Plant Rated Fiber, OS2 Single Mode 48 strand.

1. Corning ALTOS Gel Free 048EUC-T4100D20
2. Owner approved alternate.

E. Armored Outside Plant Rated Fiber, OS2 Single Mode 96 strand.

1. Corning ALTOS Gel Free 096EUC-T4100D20.
2. Owner approved alternate.

2.2 ACCEPTABLE MANUFACTURERS

A. Fiber adapter panels (12-Port) for Single Mode Fiber Bulkhead Colors Blue SM UPC, Green SM APC.

1. OCC – 12F SM FAP 6112SMDSC
2. Owner approved alternate

B. Fiber adapter panel blanks.

1. OCC – FAP Blank 600
2. Owner approved alternate

C. Fiber Termination Shelf (Rack-Mounted) 2 Rack Unit for up to 24 strands.

1. OCC – RTC2U-6APB
2. Owner approved alternate.

D. Fiber Termination Shelf (Rack-Mounted) 4 Rack unit for 24-48 strands.

1. OCC - RTC4U-12APB
2. Owner approved alternate

2.3 ACCEPTABLE COMPONENT MANUFACTURERS

A. Fiber Connectors, Single Mode (SC)

1. Corning CCH-CS12-59-P00RE
2. Owner approved alternate

B. Fiber Duplex Patch Cables (Type SM)

1. Corning Brand
2. Owner approved alternate

C. Labeling

1. Refer to section 270000.

2.4 FIBER BACKBONE CABLING

A. Fiber General Requirements

1. Fiber shall be certified to meet all parts of TIA-455 and comply with TIA-492, ANSI/ICEA S-83-596 and ANSI/ICEA S-83-640 and the NEC.
2. Fibers shall have D-LUX coating or approved equivalent to ensure color retention, minimize micro bending losses and improve handling. The coating shall be mechanically strippable.
3. Cable installed in plenums or air-handling spaces shall meet UL 910 and shall be marked OFNP (optical fiber non-conductive plenum) in accordance with the NEC.

    a) Plenum Fiber rated cable consisting of multiple fibers shall have a Plenum PVC outer jacket.

        1) Each group of fibers shall have a color-coded Low Smoke PVC buffer.
        2) The buffered fibers are organized in subunits of fibers, reinforced with aramid yarn for extra strength and surrounded with a color-coded low smoke tube.

4. Armored Fiber

    a) Stranded loose tube dielectric fiber cable shall be utilized for underground conduit applications.
    b) Underground cable, including cable installed in conduits, and tunnels will contain an additional moisture barrier in the form of a flooding compound.
    c) All OSP fiber strength members shall be dielectric without any metallic elements.

5. Fiber conductors shall follow standard color code schemes. Fiber numbers and binders shall correspond to the following color codes:

    a) Fiber/Binder No. 1 – blue
    b) Fiber/Binder No. 2 – orange
    c) Fiber/Binder No. 3 – green
    d) Fiber/Binder No. 4 – brown
    e) Fiber/Binder No. 5 – slate
    f) Fiber/Binder No. 6 – white
    g) Fiber/Binder No. 7 – red
    h) Fiber/Binder No. 8 – black

i) Fiber/Binder No. 9 – yellow
j) Fiber/Binder No. 10 – violet
k) Fiber/Binder No. 11 – rose
l) Fiber/Binder No. 12 – aqua

6. Cable Minimum Bending Radius:

a) During Installation: 20X cable diameter
b) After Installation: 10X cable diameter

7. Operating temperature range: -76°F to 185°F (-60°C to 85°C).

B. Single Mode Fiber Requirements

1. Fibers shall have dual wavelength capability, transmitting at 1310 and 1550 nm ranges.
2. 8.3 µm core
3. 125 µm ± 1 µm cladding diameter
4. Cladding non-circularity: = 1%
5. Core/cladding concentricity error: = .5 µm
6. Colored fiber diameter: 254 µm ± 7 µm
7. Maximum Attenuation: 1.0 dB/km at 1310 and 1550 nm (inside premises) and 0.5 dB/km at 1310 and 1550 nm (OSP)
8. Minimum Bandwidth: 20 GHz
9. The mechanical and environmental specifications for OSP fiber cable shall be in accordance with ANSI/ICEA S-87-640. OSP fiber cables shall be of a water-block construction and meet the requirements for compound flow and water penetration as established by ANSI/ICEA S-87-640. Outdoor cable shall have minimum pull strength of 2670 N (600 lbf).

2.5 FIBER PATCH CABLES

A. Verify exact quantities and lengths with Owner prior to purchase

B. Provide the appropriately-rated (matched to the installed cable plant) Modular Patch Cords for the appropriate location and equipment.

C. Single Mode patch cables shall be a stepped-index 8.3 µm core with a 125 µm cladding.

D. Duplex SC connectors shall meet the following specifications:

1. Made and warranted by the manufacturer of the cabling system installed in this project and shall meet or exceed patch cord specifications as outlined in TIA standards.
2. Patch cords shall be in original packaging when presented to the Owner.

E. Aramid yarn and a jacket of flame-retardant PVC shall cover the fiber cladding.

F. Single Mode patch cable additional requirements:

1. Return Loss: -50 dB maximum
2. Mated Connector Loss: $\mu = 0.35$ dB, $\sigma = 0.2$ dB
3. Connection Repeatability: 0.20 dB maximum changes per 200 re-connects.

G. The Single Mode connector (visible portion) and adapter/outlet shall be identified by the color blue.

2.6 LABELING

A. Refer to Section 270000.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Refer to Section 270000.

B. Verify the following before proceeding:

1. Conduits, and cable trays are properly installed.
2. Grounding system is properly installed and tested.

3.2 PREPARATION

A. Refer to section 270000.

B. OSP Cable

1. The Contractor shall verify pulling material (pull rope, mule tape, etc.) average breaking strength based on cable type and size, pulling distance and pathway, and other pertinent factors.

3.3 FIBER INSTALLATION

A. Fiber Cable Installation

1. All Fiber cable is to be ran from end to end without splices except for the final terminations at both ends.
2. Only technicians certified by the product manufacturer shall perform terminations.

a) Terminations shall be made in a controlled environment.
b) Cables may be assembled off-site, although testing must be completed with the cable in its final installed condition.
c) Test optical fiber on the reel for distance and continuity verification before installation.

3. At each location where fiber cable is exposed to human intrusion, it shall be marked with warning tags.

a) Warning tags shall be yellow or orange in color, and shall contain the warning "CAUTION FIBER OPTIC CABLE".
b) The text shall be permanent, black, block characters, and at least 0’-.1875” high.

c) A warning tag shall be permanently affixed to each exposed cable or bundle of cables, at intervals of not less than 5’-0”.
d) Any section of exposed cable that is less than 5’-0” in length shall have at least one warning tag affixed to it.

B. Fiber Distribution Center

1. Contractor shall provide sufficient spare adapter plates to fill the appropriate-sized FDC.

3.4 FIBER TERMINATION AND SPLICING

A. Interconnect Units and Distribution Shelves

1. Modular in design and used in fiber interconnection, cross-connection, and splicing applications
2. 1’-7” (19”) rack-mountable
3. Accept 12-strand, 24-strand, 48-strand terminations
4. Owner approved industry standard connector

B. Fiber Fusion Splice

1. Fusion splices shall be mounted in protective trays within the closure.
2. Fusion splices shall not exceed a maximum optical attenuation of 0.3 dB when measured in accordance with ANSI/TIA-455-34, Method a (factory testing) or ANSI/TIA-455-59 (field testing).

a) Fiber splices shall have a minimum return loss of 26 dB for Single Mode

1) Minimum Single Mode return loss for broadband analog video (CATV) applications is 55 dB.

3.5 INSTALLATION REQUIREMENTS

A. All installation shall be done in conformance with ANSI/TIA-568-B standards, BICSI methods, and industry standard installation guidelines.

1. The Contractor shall ensure that the maximum pulling tensions of the specified distribution cables are not exceeded and cable bends maintain the proper radius during the placement of the facilities.
2. Failure to follow the appropriate guidelines shall require the Contractor to provide in a timely fashion the additional material and labor necessary to properly rectify the situation.
3. This shall also apply to any and all damages sustained to the cables by the Contractor during the implementation.

B. The Contractor shall provide service loops for cables terminating in the communications rooms.

1. A 20’-0” service loop shall be provided and secured in a neat and standards-compliant manner above the equipment racks or cable trays unless specified otherwise.
2. This allows for future changes or expansion without installing new cables.

C. Documentation

1. All cable inventory data documentation shall be submitted in format coordinated with and approved by owner so that data can be incorporated into existing databases.
2. Documentation shall include cable identification number, source and destination, type of cable, length of cable and number of pairs or fibers.
3. Complete cross connect documentation is required. It shall include detailed documentation of each pair of all strands of fiber.

3.6 FIELD QUALITY CONTROL

A. Refer to section 270000.

3.7 FIBER POST-INSTALLATION TESTING

A. Provide all labor, materials, tools, field-test instruments and equipment required for the complete and proper test measurements of the installed fiber cabling.

B. Contractor shall have successfully attended a fiber testing training program, which includes testing with an OLTS and an OTDR and have obtained a certificate as proof thereof.

C. In addition to Tier 2 testing of ANSI/TIA-568-C.0 Annex E, an image of each fiber optic connector end face shall be taken, recorded and provided as part of the records.

D. All outlets, cables, patch panels and associated components shall be fully assembled and labeled prior to field-testing.

1. Any testing performed on incomplete systems shall be redone on completion of the work.

E. Dust caps shall be placed on fiber end faces or adapters for each optical fiber link after all testing is complete on the fiber link.

F. Pre-test Submittals

1. Manufacturers catalog sheets and specifications for the fiber cable field-test instruments including

a) OLTS (Optical Loss Test Set)
b) OTDR (Optical Time Domain Reflectometer)

2. A schedule (list) of all fiber cables to be tested
3. Fiber testing training program certificate
4. Sample test reports

G. Fiber testing standards

1. The Contractor shall meet or exceed the following standards and guidelines:

a) ANSI/TIA-568-C.0 Optical Fiber Transmission/Test Requirements, and Annex E: Optical Fiber Field Test Guidelines (Tier 2)

1) Tier 2 testing is a higher level of testing that provides qualitative measures of the installed condition and performance of the cabling system

2) In addition to Tier 2 testing of ANSI/TIA-568-C.0 Annex E, an image of each fiber optic connector end face shall be taken, recorded and provided as part of the records.

b) ANSI/TIA-568-B.3 Optical Fiber Cabling Components Standard
c) TIA/TSB-140 Additional Guidelines for Field-Testing Length, Loss and Polarity of Optical Fiber Cabling Systems

2. Single Mode requirements.

a) ANSI-526-7, Method A.1: Optical Power Loss Measurements of Installed Single Mode Fiber Cable Plant-OFSTP-7
b)

3. The cable installers shall have a copy of these references in their possession and be familiar with the contents

H. In order to conform to the overall project event schedule, the contractor shall survey and coordinate the optical fiber testing with other applicable trades.

I. In addition to the test regiment detailed in this document, the contractor shall notify the Owner of any additional tests that are deemed necessary to guarantee a fully functional system.

1. The contractor shall carry out and record any additional measurement results at no additional charge.

J. The contractor shall provide all test measurement results two (2) weeks prior to substantial completion in spreadsheet format and native file format from the test instrument.

1. Software shall also be provided to view the native results.

K. All tests performed on optical fiber cabling that use a laser or LED in a test set shall be carried out with safety precautions in accordance with ANSI Z136.2.

1. A visible fault locator (VFL) normally uses a Class 2 or 3 light source and should not be directly viewed.
2. Safe usage of the tool requires indirect viewing of the light source by pointing the end of the fiber at an adjacent surface (or introducing another surface in front of a fixed mounted connector) until the presence of light is determined.

L. Link attenuation measurement and allowance calculation

1. The measured link attenuation shall be less than the link attenuation allowance. The link attenuation allowance is calculated as:

a) Link Attenuation Allowance (dB) = Cable Attenuation Allowance (dB) + Connector Insertion Loss Allowance (dB) + Splice Insertion Loss Allowance (dB)

1) Connector Insertion Loss Allowance (dB) = Number of Connector Pairs X 0.4dB
2) Splice Insertion Loss Allowance (dB) = Number of Splices X 0.15dB
3) Cable Attenuation Allowance (dB) = Maximum Cable Attenuation Coefficient (dB/km) X Length (km)

M. Fiber Testing Requirements

1. All installed fiber links shall be field-tested and pass the following tests:

    a) OLTS (Optical Loss Test Set) length and dual wavelength attenuation
    b) OTDR (Optical Time Domain Reflectometer) traces and event tables

2. OLTS (Optical Loss Test Set)

    a) The length and attenuation of each installed fiber link shall be measured and documented.
    b) System loss measurements requirements:

        1) 1310 and 1550 nanometers for Single Mode

    c) Reflective events (connections) shall not exceed 0.75 dB.
    d) Non-reflective events (splices) shall not exceed 0.3 dB.
    e) A horizontal link in a network with a consolidation point may be tested using a fixed upper limit for attenuation of 2.75 dB.
    f) Optical sources shall be turned on for a minimum of 5 minutes prior to referencing.
    g) Fiber links shall be measured and reported for attenuation in each direction and attenuation bi-directionally (averaged in both directions)
    h) Polarity shall be verified for duplex connector systems
    i) Mandrels

        1) Where mandrels are used, secure the mandrel to the light source by some means such as a cable tie or tape.
        2) Care should be taken to ensure that the fiber jacket is not deformed or damaged when using a cable tie or tape.
        3) The light source shall be referenced to the meter a minimum of twice daily (i.e., in the morning and noon).

3. OTDR (Optical Time Domain Reflectometer)

    a) An OTDR trace shall be taken of each fiber link in one direction to ensure uniformity of cable attenuation and connector insertion loss
    b) Testing shall consist of a bi-directional end to end OTDR trace performed per TIA 455-61
    c) Individual connector, splice and fiber insertion loss shall be evaluated using the OTDR trace.
    d) Fibers shall be inspected at 400X for Single Mode

4. Maximum Attenuation

    a) Single Mode OSP (outside) 0.5 dB/km at 1310 nm and 1550 nm

5. Test Cords (Jumpers)

    a) Testing of the cabling shall be performed using high-quality test cords of the same fiber type and core size as the cabling under test.

        1) OLTS test cords shall be between 3’-3” (1m) and 16’-4” (5m).
        2) OTDR testing shall be approximately 328’-0” (100m) for the launch cable and at least 82’-0” (25m) for the receive cable.

b) The test jumper, the adapters, and fiber under test shall be cleaned immediately prior to each fiber being tested.

1) After cleaning, cleaning solutions shall be given sufficient time to evaporate (approximately 30 seconds) prior to the mating of fiber test jumper to the fiber under test.

6. Test Failure

a) Any fiber link that fails these requirements shall be diagnosed and corrected.
b) Any corrective action that must take place shall be documented and followed with a new test to prove that the corrected link meets performance requirements

7. Acceptable Testers

a) Fluke DTX Cable Analyzer
b) Owner Approved equivalent

N. The Owner or the Owner's representative shall be invited to witness, review or both witness and review field-testing.

1. The Owner or the Owner's representative shall be notified of the testing start date, five (5) business days before testing commences.
2. The Owner or the Owner's representative will select a random sample of 5% of the installed links and test that sample.

a) The measured results obtained from the random sample shall be compared to the data provided by the contractor.
b) If more than 2% of the sample results differ in terms of the pass/fail determination, the contractor under supervision of the Owner or Owner's representative shall repeat 100% of the testing at no cost to the Owner.

O. Test Results

1. The detailed test results documentation data is to be provided in an electronic database for each tested fiber strand and shall contain the following information:

a) Identification of the customer site as specified by the end-user
b) Name of the test limit selected to execute the stored test results
c) Name of the personnel performing the test
d) Date and time the test results were saved
e) The manufacturer, model and serial number of the test instrument.
f) The version of the test software and the version of the test limit database held within the test instrument.
g) Fiber identification number
h) Length for each optical fiber
i) Index of refraction used for length calculation when using a length capable OLTS.
j) Test results to include OLTS attenuation link and channel measurements at the appropriate wavelength(s) and the margin (difference between the measured attenuation and the test limit value).
k) Test results to include OTDR link and channel traces and event tables at the appropriate wavelength(s).
l) Length for each optical fiber as calculated by the OTDR
m) Overall Pass/Fail evaluation of the link-under-test for OLTS and OTDR measurements

n) Circuit IDs reported by the test instrument should match the specified label ID

3.8 CLEANING

A. Refer to section 270000.

3.9 ACCEPTANCE

A. Refer to Section 270000.

END OF SECTION

SPECIAL CONDITIONS

These Special Conditions are in addition to the requirements of the Uniform General Conditions and the Supplementary General Conditions of the Contract and are a part of the Contract Documents.

1. LAYING OUT BUILDING: The General Contractor shall employ an experienced and competent Professional Civil Engineer or a Registered Professional Land Surveyor (RPLS) and cause him to establish at least three (3) separate permanent benchmarks, such benchmarks shall be established using two (2) of the permanent University benchmarks as identified by the University to which easy access may be had during the progress of the Work, and from time to time to determine and verify the lines and grades. As the Work progresses, establish easily accessible benchmarks at each level referenced to finish floor line.

    a. The layout work shall be supervised by the Civil Engineer or RPLS and approved by the Architect/Engineer. At completion of the layout work, the Civil Engineer or RPLS shall submit a signed report to the Architect/Engineer stating that he is satisfied with the work and its accuracy.

    b. The General Contractor shall erect and maintain substantial protection of all established layout controls for structures, set their location to provide proper working clearance and verify that they are level and at the proper grade.

    c. As the Work progresses, the General Contractor shall lay out partitions on rough floors in exact locations as a guide to all contractors and trades.

    d. Before ordering any materials or doing any work, each Contractor shall verify and be responsible for the correctness of all measurements. No extra charge or compensation will be allowed as a result of difference between actual dimensions and the measurements indicated on the drawings. Any differences, which may be found, shall be submitted to the Architect/Engineer for consideration before proceeding with the Work.

2. LEVEL OR TRANSIT: The General Contractor shall maintain an accurate level or transit at the site at all times. This instrument shall be used to verify lines, grades, etc., and shall be available at all times for use by the Architect/Engineer and the Owner. A surveyor's level or grade control lasers shall be used to lay out all work and shall be used by operators skilled in its use.

3. CUTTING, PATCHING AND INSTALLATION OF SLEEVES: The General Contractor shall coordinate and oversee all cutting and patching activities in the execution of the work and shall leave all chases, holes or openings straight, true and of proper size as may be necessary for the proper installation of his own or other contractor's or subcontractor's work, consulting with the superintendent and contractors or subcontractors concerned regarding proper location and size.

    a. No excessive cutting will be permitted nor shall any piers or other structural members be cut without the written approval of the Architect/Engineer. After such work has been installed, the Contractor shall carefully fit around, close up, repair, patch, and point up as directed to the entire satisfaction of the Architect/Engineer and Owner.

    b. All this work shall be done carefully with proper tools by personnel of the particular trade to which such work belongs, and shall be done without extra charge to the Owner. Each Contractor or Subcontractor will be required to build into his own work, as directed, any and all items furnished by others. Cutting and repairing of new work, in place, made necessary by negligence of another Contractor or Subcontractor or anyone employed by him, shall be paid for by the party, which is at fault.

    c. The work of each section of the Specifications, unless otherwise specified, includes all cutting,

patching and digging for work in that trade section required for proper accommodations of work of other trades. Execute such work with competent personnel skilled in trade required for restoration. The Contractor and/or each Subcontractor shall arrange and pay for cutting and patching required for installation of its own work, as applicable.

d. The Contractor shall ensure sleeves are provided for all service lines, including piping and conduit, covered in the Contract documents, which may pass through walls, roof or floors. Sleeves through floors shall extend 2" above finish Floor and cast into floor or sealed with heavy-duty sealant or fire stop material.

4. SANITARY FACILITIES: The General Contractor shall provide an adequate number of temporary sanitary facilities for the use of all persons employed on the job, and shall clean same at least weekly, or more often as deemed necessary by the Owner. He shall post notices, take such precautions as may be necessary, and remove refuse deposited in or about the buildings necessary to maintain the premises in a sanitary condition. Sanitary facilities shall be located away from public view to greatest extent possible. Neither the General Contractor nor any of the construction work forces shall be allowed to use campus sanitary facilities.

5. PROTECTION: Each Contractor shall protect, properly and effectively, all materials and equipment furnished by him during and after their installation. Building materials, Contractor's equipment, etc., may be stored on the premises, but the placing of same shall be within the construction fence. When any room in the building is used as a shop, storeroom, etc., the Contractor will be held responsible for any repairs, patching or cleaning arising from such use. The Contractor shall protect and be responsible for any damage to the work or material, from the date of the agreement until the final payment is made, and shall make good without cost to the Owner, any damage or loss that may occur during this period. The Contractor shall handle all material as directed, so that it may be inspected by the A/E's and the Owner's representative(s). All cement, lime, insulation, and other material affected by weather shall be covered and protected to keep them free from damage while they are being transported to or stored on the site.

a. During the execution of the Work, open ends of all piping, conduit, and mechanical ducts as well as all openings in equipment shall be closed before leaving the Work at any time, to prevent the entrance of foreign matter.

b. All heating, ventilating, plumbing, and electrical equipment shall be protected during the execution of the Work.

c. All plumbing fixtures shall be protected and shall be boarded over so that they cannot be used by personnel or others. All drains shall be covered until placed in service to prevent the entrance of foreign matter.

6. SIGNS: No signs or advertisements will be allowed to be displayed without the approval of the Owner.

7. SITE SECURITY WATCHMAN AND JANITOR: The Contractor, at its own expense, and option may employ unarmed security personnel when deemed necessary to protect its Work, but must notify the Owner of any such security firms or employees. Campus police will not provide security for the Contractor's areas. The Contractor shall provide a person or persons for janitor work, who shall keep all offices clean, attend to the temporary toilet rooms and keep them clean and supplied, attend to drinking water and supplies. This person shall also help to keep the construction areas broomed, free from accumulated debris, and relatively clean.

8. ACCESS TO SITE AND PROTECTIONS: The Construction Documents shows the area of the building site which may be used by the Contractors. A fence shall be erected by the General Contractor around this gross area. The Contractor and Subcontractors shall confine their activities to this area and in no way obstruct any other part of the campus or utilize any campus facilities for any purpose.

a. As soon as Work is begun at the site, the General Contractor shall build a substantial wire mesh fence at least six feet high as shown on the Construction Documents and completely surrounding the site. Posts shall be placed not more than eight (8) feet apart and set securely. Wire mesh shall be tightly stretched over the supports.

b. Enclosure fences shall be provided with fire gates and gates for trucking in locations shown on Construction Documents, hung with heavy strap hinges, and provided with hasps for locking. Fences and gates shall be properly maintained throughout the duration of the job and removed on completion or when directed by the Architect/Engineer. Where directed by MSU representatives, contractor shall include campus padlocks for access required for service work within fence and/or fire protection of existing buildings.

c. The trees and shrubs, within the work area assigned to the Contractor and endangered plants near access ways to the above, shall be protected by the Contractor with drip-line fencing and tree trunk wooden shields per University policy and as detailed on drawings, all maintained in sound condition. Contractor shall not remove, cut or trim any trees or shrubs in the Contract area before notifying the Owners and Architect/Engineer's representative and receiving approval.

d. The Contractor shall be responsible for the protection of existing building surfaces, both interior and exterior, utilities, exterior structures, pavements, sidewalks, vegetation, irrigation systems, and component parts and equipment. Any damage to existing areas will be repaired at the responsibility of the Contractor with the approval of the Owner. Repairs not satisfactorily completed will be done by the Owner and deducted from the Contractor's contract amount.

e. The Contractor is responsible for expenses incurred as the result of the loss of a security access card or key. As the result of the loss of a master key, an entire building will have to be re-keyed, with the expense charged to the Contractor.

9. PROJECT CLEANLINESS: It shall be the responsibility of the Contractor to see that the debris, trash, and dust residue resulting from building operations are removed from the building and the property in a timely manner. All installed equipment and ductwork shall be protected from accumulations of construction dust. When project work occurs in existing buildings, existing spaces, finishes and ductwork shall be properly sealed and protected from construction dust and damage. The Contractor shall provide personnel for janitorial work in order to keep all offices, office toilet rooms, and portable toilets cleaned; attend to drinking water and supplies. Solid debris, such as brick bats, mortar and plaster droppings, may not be dumped on the grounds about the building. All scrap from lumber, crating, excelsior, paper and similar types of trash are to be removed from the building site. Trash, construction debris, and mud shall not be allowed to accumulate anywhere on the project for periods of longer than one week, whether in the building, on the grounds, in the adjacent areas, or on the campus streets serving as delivery and haul-off routes for the work of this project. In other words, there must be thorough cleanup of the building and its surroundings no less often than once a week, and more often as may be directed by the Owner.

10. WATER FOR BUILDING WORK: The General Contractor shall provide temporary lines for all water required in the building Work and will arrange with the Owner's Utility Department for water service. The Contractor shall include all connections and means of conveying same to place where required, including the necessary metering devices capable of measuring water used by construction activity. In lieu of temporary connections, the Contractor may make permanent connections and this may serve for the construction period. In the event the Owner does not have water available at the site from the Owner's existing distribution system, the Contractor shall negotiate with the City for water and pay all fees and rates required by the City Water Department or shall provide an on site water well of sufficient production for construction.

11. ELECTRICAL ENERGY: The Contractor shall arrange with the local Utility Company for temporary

construction power with metering, whenever available. When using temporary power provided by the local utility company, the contractor is responsible for all costs, including electrical energy costs. If power is available only through the Owner's on-campus system, the Contractor shall arrange for and provide metering equipment capable of measuring power used by construction activities, if relevant to the project. The Contractor may energize the permanent power system in the building only when approved by the Owner. All costs of electrical energy provided through the University's power grid shall be paid by the University unless it is determined that the Contractor is not using the energy in a prudent and reasonable fashion in which case the Contractor shall be required to pay at the prevailing rate of the local Utility Company. When utilizing local Utility Company power, invoices must be submitted prior to payment reimbursement.

12. TEMPORARY HEAT & LIGHTING: If temporary heat is required for protection of the Work, the General Contractor shall provide Owner approved heating apparatus. Provide heat in such a manner that no Work will be damaged and ensure adequate ventilation exists. The Contractor shall provide adequate lighting about the site for security, inspections of excavations, night shift work should such occur, and shall also provide adequate temporary interior lighting throughout the building enclosure to facilitate quality workmanship and appropriate inspection visibility.

13. TEMPORARY SERVICES: If relevant to the project, and after equipment has been connected to the Central Utilities System, the Contractor may request that the utilities department open valves to put systems in service for heating or cooling. The Contractor is NOT to open or close any valves to utility systems. Proper system operation having been demonstrated to the University Utility Department, the Contractor may use the systems for heating and/or cooling once the thermal controls are operational.

During operation of the mechanical equipment, prior to Substantial Completion, the Contractor shall keep the mechanical equipment in good operating condition, properly flushed with chemical treatment systems properly started, properly maintained, including regular replacement, and/or cleaning of filters, both temporary and permanent. The guaranty period shall start on the date of official acceptance. Filters shall be changed at least every 2 weeks and more frequently if extremely dusty conditions exist.

14. REMOVAL OF TEMPORARY FACILITY: When a temporary facility is no longer needed for the proper conduct of the Work, the Contractor shall completely remove it from the Project and shall repair or replace any material, equipment or finished surface damaged in doing so.

15. WARRANTIES AND GUARANTEES: Pursuant to Article Xlll of the Uniform General Conditions, additional warranty requirements and guarantees are described more fully in various sections of the technical specifications.

16. PROJECT SIGN: If applicable, the Contractor shall construct and erect one project sign on the project site in a location designated by the Owner. The sign shall make clear reference to the Midwestern State University System as well as Midwestern State University-. Submit a one-quarter scale shop drawing of the sign complete with all lettering to the Architect/Owner for approval before construction. The sign shall remain the property of the Contractor, and upon project completion, the Contractor shall remove the sign and remove from University property in a legal manner.

17. PROJECT PLANNING AND SCHEDULING: The Contractor shall participate with the Owner and A/E in a project-planning workshop promptly upon execution of the contract unless specified differently in the Contract document. Based on the project plan developed at that workshop, and within twenty-one (21) calendar days from Notice to Proceed, the Contractor shall submit its proposed Work Progress Schedule for the entire duration of the project to the Owner and A/E for review. The Schedule shall be coordinated with the Contract Price Breakdown, or Schedule of Values, and shall include all significant procurement, including long lead-time delivery items and approval activities, all work placement activities, including start and completion dates, identification of time periods for overhead inspections, pre-final and final inspections, system start-up and

commissioning, and punch-list corrections, as a minimum. The initial schedule submission shall coincide with the initial submittal of the Contract Price Breakdown and the two documents will be reviewed together. The Contractor shall revise the schedule as necessary to obtain acceptance by the Owner and A/E to establish a Baseline Schedule for the project. Once the Baseline Schedule is accepted, the Contractor shall update the schedule monthly, as a minimum, to record actual progress of activity start and completion and remaining durations and shall provide updated reports monthly to the Owner and A/E in association with each request for progress payment. The format and content of monthly update reporting shall be as determined at the project-planning workshop unless specified otherwise in the contract documents. The Contractor shall include a separate line item in its Contract Price Breakdown for planning and scheduling, to include development of the accepted Baseline Schedule and all updates and reporting.

18. CLARIFICATION OF INSURANCE REQUIREMENTS: Refer to the Uniform General Conditions and Supplementary General Conditions, paragraph 5.2. When the project involves work in an existing structure, the scope of this Builder's Risk Insurance is to cover any portion of an existing building which is in the Contractor's care, custody or control (which may be necessary to do Work in another portion of the building), over and above the normal limitations imposed by paragraph 5.2. Paragraph 5.2 is not intended to increase the dollar amount of the Insurance, which is stipulated in paragraph 5.2 to be 100% of the value of the Work, but only to increase the scope of what is to be covered.

19. PREVAILING WAGE RATE DETERMINATION: Pursuant to the Uniform General Conditions/Supplementary General Conditions, the following schedule indicates the prevailing wage rate determination determined by the Owner.

See Attachment "B" Prevailing Rate Schedule.

20. ONGOING CAMPUS/OWNER OPERATIONS: This project is surrounded by continuously functioning campus facilities, including student housing, academic and research efforts. The Contractor shall make every effort to avoid disruptions to ongoing campus activities and to maintain a safe environment for students, faculty, and staff in the areas adjacent to the project. Campus utilities must not be interrupted except when scheduled and approved in advance through Owner-designated established channels. The Contractor of his personnel shall NOT open or close any valves of the central campus utilities. Valve operation is to be done by University utilities personnel only. The Contractor shall not activate or de-activate any campus utility system, or component of any such system, without express written direction from the Owner.

    The facilities will only be available during the scheduled construction time-period as specified by the Owner, typically from 8:00 am until 6:00 pm Monday through Friday. Work during other times, including weekends, shall only be allowed with prior request and written authorization from the Owner. In addition, the Contractor shall accommodate and coordinate its construction work force and activities to allow the Owner's forces and Owner's separate subcontractors (i.e. telephone, data, IT, computer, and furniture installation) to enter the jobsite to perform their work.

21. CONTRACTOR PARKING: Parking is either within the Contractor's fenced area, or off campus at the Contractor's expense. There will be no parking outside of fenced area adjacent to the site or on public streets on campus for any of the contractor's work force unless specifically approved by the Owner.

    A limited number of remote parking spaces may be provided near the campus. Such parking will be available at no cost to the Contractor or the workers but will require permits, issued by the campus police department, for all vehicles and transportation furnished by the Contractor. Such remote parking is provided for the convenience of the Contractor with the understanding that the Contractor is responsible for all workers and all workers' vehicles while they are on the campus.

22. RESPONSIBILITY FOR WORK FORCE: A superintendent shall be on site at all times while work is

in progress. The Contractor is responsible for the actions of its entire work force, including Subcontractor's and supplier's employees, whenever they are on the campus. The Contractor shall submit their plan for identifying and controlling all workers, and for management of personnel records, including payroll records. Identification badges for workers, busing of workers from remote parking lot(s), frequent written and verbal reminders to work force of appropriate behavior and avoidance of campus facilities, and publishing of established access and egress routes for vehicular and pedestrian traffic are required, as a minimum, in order to maintain control of the work force.

a. Unacceptable behavior on the part of the workers anywhere on campus, including parking lots, the project site, and the accessing route(s) through the site through the campus, or failure to obtain parking permits, or traffic violations while on campus may lead to cancellation of the Contractor's on-campus parking privileges. Further, identifiable offending worker(s) will be removed from the project.

b. Harassment of any person, whether student, faculty, staff, or visitor to the campus, is forbidden. Harassment includes any action such as jeering, whistling, calling-out, staring, snickering, making rude or questionable comments, or similar behavior. If identifiable, any offending worker(s) will be removed from the project.

23. SITE ACCESS AND CONTROL: All campus roads, drives and fire lanes as well as all sidewalks and pedestrian routes, other than those specifically indicated to be in the contractor's area of control, must be kept open at all times. The Contractor shall make advance preparations for, and obtain security clearance for, all significant material deliveries and truck traffic, cranes, concrete trucks, etc., through the campus to the project site. Contractor shall provide all traffic controls, warning signs, barricades, and flagmen during all construction traffic operations that affect roadways and pedestrian walkways with plans for same that are acceptable to the Owner.

24 NOISE CONTROL: Equipment locations and timing or sequence of work operations shall be coordinated so as not to inordinately conflict with the Owner's continuing use of the existing or adjacent buildings, and/or minimally interfere with scheduled meetings or events or on-going operations.

25. SMOKING: Smoking is not allowed inside any campus building or anywhere on campus except in designated areas. Smoking will not be allowed in any enclosed area of the building(s) of this project. Enclosed, as used here, refers to erection of exterior walls and overhead structure for any portion of the project; it does not mean to indicate a state of building "dry-in". Use or possession of illegal drugs or alcohol on the project site or anywhere on campus is forbidden.

26. SITE AND AREA MAINTENANCE: The Contractor shall erect erosion control at the perimeter of the site and otherwise control migration of construction debris and dirt to campus and public areas adjacent the project site. The Contractor shall keep all roadways in the vicinity of the project clear of mud, dirt, debris, and construction materials. The Contractor will be required to clean campus streets utilized as truck routes for the project if mud or debris is allowed to remain in the roadways. If such roadways, parking lots or site improvements are damaged by the work of this project, the Contractor will be required to repair them in kind to a quality acceptable to the Owner.

27. GENERAL PERMITS: The Owner is exempt from paying for permits and fees to local government entities related to work on the Owner's property. There will be no building permit required, no platting fees and no local government inspection fees for permanent work on the Owner's property. The Owner is not exempt from permit and fee requirements for work in public rights of way or outside the boundaries of the Owner's property. The Contractor shall secure, pay and maintain all required permits.

28. SEDIMENTATION AND EROSION CONTROLS/NPDES GENERAL PERMIT: The National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Sites (General Permit) issued by the United States Environmental Protection Agency

(EPA) requires compliance for construction activities resulting in the disturbance of five (5) acres or more or if a construction site is part of a common plan of development of five (5) acres or more. The Owner's property is comprised of an overall total of approximately 473acres of which this project covers a part; therefore, compliance with the NPDES General Permit is required.

a. Indemnification. GENERAL CONTRACTOR HEREBY INDEMNIFIES AND HOLDS HARMLESS OWNER FROM ANY AND ALL LIABILITY, LOSS, DAMAGE, COST, AND EXPENSE ARISING OUT OF A VIOLATION OF THE APPLICABLE EPA NPDES REGULATIONS, THIS SPECIAL CONDITIONS SECTION, OR THE TERMS AND CONDITIONS OF THE GENERAL PERMIT TO THE EXTENT ATTRIBUTABLE TO AN ACT OR OMISSION OF GENERAL CONTRACTOR, ITS SUBCONTRACTORS AT ANY TIER, OR CONSULTANTS.

29. ENVIRONMENTAL PROTECTION PROCEDURES: Any existing trees and shrubs within the Project Site assigned to the contractor and any endangered plants near access ways to the Project Site, shall be protected by the Contractor as detailed in the Drawings, or maintained in sound condition until permission is given for their removal. Contractor shall not remove, cut or trim any trees or shrubs in the Project Site before notifying the Owner's representative and receiving his prior approval. Any vegetation damaged during construction shall be replaced in kind. The Contractor shall be responsible for repair of all damage to areas of the Project site used for construction storage purposes. Repair shall consist of replacing trees, vegetation, grasses in kind with watering and maintenance as required for establishment unless otherwise noted on the Drawings.

    The Contractor is solely responsible for cleaning up and properly disposing of all spilled pollutants brought to the site as part of the Contractor's work, including oil, paint, fuels, antifreeze, solvents, etc. in accordance with applicable laws and regulations. Contractor must keep accurate records (such as receipts, copies of analytical results, etc.), indicating proper cleanup and disposal of spilled materials in accordance with applicable laws and regulations. Furthermore, Contractor is responsible for ensuring that all discharges from the site are in compliance with all applicable laws and regulations. Contractor is responsible for pollutant contaminated run-off and proper disposal of all waste materials generated as a result of work activities.

    Chemical cleaning of new utility additions shall be done by circulating a good non-phosphate cleaner through as much of the new system as possible. Prior to dumping the cleaning agent, notify the City of Industrial Water Treatment Department to sample the effluent. If the City of approves dumping to drain, then dump to the sanitary sewer. Refill the system with water, circulate and again have the City of Industrial Waste Water Treatment Department to sample prior to dumping. If at any stage the City of refuses to accept the effluent, the Contractor must make special arrangements for the legal disposal of the effluent and give the owner a copy of the shipping and disposal manifests.

30. CONTRACTOR OCCUPANCY AND LIMITS OF CONSTRUCTION: The Contractor and all his personnel, his assigns, materialmen, suppliers and subcontractors shall confine and limit their work and use of the Project Site to those areas within the defined Project Site limits of construction. All areas beyond these limits are patrolled by the City of Police Department and The MSU Midwestern State University- Campus Police Department personnel. All public and University rules, laws and requirement shall be obeyed. No tools, construction vehicles, or construction material shall be permitted beyond the Project Site limits of construction. The Contractor shall confine his personnel within the Project Site limits of construction. Loitering of construction personnel beyond the fenced limits of construction or around the Project Site construction entry gates shall be discouraged.

31. RECORD DOCUMENTS: The Contractor shall provide the Owner, at between one month and three months prior to Substantial Completion, with a complete set of the as-built Telecommunication Drawings and Telecommunication Port Log for the Owner's use in coordinating selection and procurement of telephone/data equipment.

As a requirement for acceptance of Substantial Completion, the Contractor shall reproduce two (2) copies of the current As-Built Drawings and Specifications maintained at the job site and provide these copies to the Owner. These documents shall be labeled "Interim Record Drawings and Specifications", and are required to assist the Owner in the operation of the facility until Final Completion is accomplished and the final As-Built Drawings and Specifications are provided to the Project Architect/Engineer to prepare the final "Record Drawings" and "Record Specifications". Three (3) weeks before substantial completion acceptance of the project, the contractor shall have submitted a draft copy of the Owner's operating and maintenance manuals. Two (2) copies of the final owners operating and maintenance manuals shall be delivered within 30 days of substantial completion and include copies of ALL approved shop drawings and submittal; list of ALL subcontractors and vendors including names, addresses, phone numbers; warranty and guarantee documents, etc.

32. CHANGE ORDER PRICING: Article Xll, Sec, 11.3.4 of General add the following:

The total cost of all labor and materials, including supervision up to the level of Project Superintendent, itemized to show man-hours by trade and classification, unburdened hourly rates, and total labor cost. Man-hour totals, labor rates, and materials shall be based on reasonable and prevailing area labor rates and materials costs.

33. FIELD MANAGEMENT AND TEMPORARY STRUCTURES:

a. The Contractor shall coordinate and direct the work of this project from the site or Owner-designated area at adjacent site for the duration of the Work. One or more of the following options applies to this Project **only if designated by a checked box**:

The Owner will designate and provide an adequately sized enclosed area for field office operations to the General Contractor adjacent the Project site. This location is to be properly maintained and released back to the owner in its original condition.

☑ The Contractor shall provide and maintain its own temporary field office(s) that is weather-tight, well-lighted, air conditioned and safely heated, and to include provisions for telephone, data, and facsimile services, conference area(s), including tables and chairs, toilet facilities, and maintenance of all project files including submittals, project correspondence, and payment and payroll records, etc. The University will assist in providing hook-ups for telephone, data, and facsimile services when project is within campus grid. A lockable, 12' x 12' minimum private office shall be provided for the use of the Owner and A/E, equipped with an operational telephone, a fax machine and computer connections.

The Contractor shall provide and maintain a conference area, which shall include at least one primary area suitable for up to fifteen (15) persons to participate in progress and coordination meetings. The walls of this conference area are to serve as display surfaces for maintaining current prints of project schedules and work placement plans. This space can be incorporated with the Contractor's office trailers, and will be for shared and joint use by both throughout the project duration.

The Contractor shall provide and maintain at the site for the duration of the Project, for the use of the Owner and its consultants, including the Architect/Engineer, a separate field office structure which is adequately weather-tight, well-lighted, air conditioned and safely heated, adequately supported and anchored, with toilet facilities, and two long distance phone/fax lines. Local calls made from these lines shall be paid by the General Contractor. Long distance calls shall be paid for by the person or party placing the calls. The telephone numbers shall be reported to the Owner and the Architect/Engineer as soon as the telephones are installed.

Such field office shall be a minimum of twelve (12) feet wide by about thirty- (30) feet long and shall be partitioned to provide for two separate work areas including two entry doors with keyed locks, and shall include toilet facilities. Each of the three "office" areas within this structure shall be provided with layout tables, plan storage, file cabinets, desk and chairs, one telephone and outlet and one fax and one data outlet, as well as adequate convenience outlets to accommodate business machines.

Telephone service to this field office shall include one phone line capable of local and long distance service with voice mail and one fax and one data line, for a total of three separate lines, each with individual phone numbers and each line to be connected to multiple outlets for convenient arrangement. All costs for providing this telephone service, including a phone unit in each separate area, shall be paid by the Contractor.

b. The General Contractor shall arrange for each Subcontractor to have field office accommodations as necessary to perform their work adequately.

c. The General Contractor shall provide adequate and safe entries to all field offices, including steps with railings and landings or stoops as required, and shall provide hard surface walkways to connect the field office structures to one another and to site entry or exit.

d. Upon authorization to mobilize, the General Contractor shall submit a plan layout showing location of field offices, size and arrangement of spaces and outlets, fencing, site control points, and utility tie-in locations for Owner review and acceptance.

e. All costs for temporary field offices shall be included in the Contractor's Contract Price Breakdown. Reimbursement of such costs shall be included in the regular Progress Payment on a monthly basis, pro-rated over the anticipated duration of the project.

34. TEMPORARY EQUIPMENT:

a. The General Contractor shall provide all scaffolding necessary for the performance of the Work. All scaffolding shall be so constructed, anchored, and braced as to comply in all respects with OSHA guidelines to afford safety and protection to both craftsmen and their Work, inspectors, and to the Work of other contractors.

b. The General Contractor and its Subcontractors shall provide on the premises at locations approved by the Owner, suitable substantial watertight storage sheds for the storage of tools and all materials which would be damaged by the weather; shall maintain same in good condition and shall remove same when directed. All storage sheds shall be of sufficient size to hold the materials required and shall have floors raised at least 6" above the ground on heavy joists.

c. Except as otherwise specified, the Contractor shall furnish at its own cost and risk, all significant tools, apparatus, hoists or cranes, derricks, etc.

d. Temporary equipment shall be installed in such a manner that finish work will not be damaged by smoke, falling mortar, concrete or other causes. Location and arrangement of temporary equipment shall be subject to the approval of the Construction Inspector.

e. All temporary shoring required for the installation of Work shall be included in this Contract and the General Contractor must assume all responsibility for this Work and make good any damage caused by improper supports or failure of shoring in any respect.

35. SAFETY:

a. The Contractor shall provide barricades, warning signs and lights. Comply with recognized standards and code requirements for the erection of substantial barricades where needed to

prevent accidents and any unsafe condition from developing during the construction period.

b. The Contractor shall review fire prevention and protection needs with the Owner's personnel in procedures and post warnings and information. Maintain unobstructed access to fire extinguishers, temporary fire protection facilities, stairways and other access routes. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of ignition.

c. The Contractor shall be responsible for initiating, maintaining, and supervising safety precautions and programs associated with the work. It shall be the duty and responsibility of the Contractor to comply with all pertinent sections of the Occupational Safety and Health Act and all amendments thereof. The Contractor shall do all things necessary and provide all equipment and labor necessary to protect students, staff, faculty, and the general public from dangers associated with the work. Walkways, parking areas, and other areas surrounding the job site will be in use and given priority. The University shall not be held responsible for failure of the Contractor to perform the job in a safe manner.

36. HAZARDOUS MATERIALS: For information only, an asbestos report has or has not been filed on the portion of the existing building involved in the project and a positive or negative result was reported. See abatement requirements, if relevant, elsewhere in the Construction Documents. In the event the Contractor encounters material, which he reasonably believed to be asbestos, which has not been abated, the Contractor shall immediately stop work in the area affected and report the condition to the Owner. If in fact the material is asbestos and has not been abated, the Contractor shall not resume the non-asbestos-related work in the affected area until the asbestos has been abated. The abatement action may be done in any of three ways, as the Owner may decide. The Owner may perform the abatement by its own forces, or the Owner may contract with a third party to perform the abatement, or the Contractor may perform the abatement by an appropriate means acceptable to the Owner such as performing the work through its own employees if they are appropriately certified or hiring an abatement subcontractor. If the Contractor is to perform the abatement, the Owner and the Contractor will negotiate a change order in accordance with the contract terms relative to extra work. In such a case, the Owner specifically agrees that the cost of any special comprehensive general liability insurance that may be required relative to the abatement work will be considered a direct cost of the extra work, on which like the other direct costs the Contractor will be allowed to add a percentage of 5% or 15%.

---End of Special Conditions---

COMMUNICATION NOTES

1.) THE TELECOMMUNICATIONS CONTRACTOR SHALL REVIEW ALL CONSTRUCTION DOCUMENTS, WHICH MAKE UP THE CONTRACT DOCUMENTS AND SHALL COORDINATE ALL WORK ON THE COMMUNICATIONS PLANS WITH THE OWNER.

A.) STRUCTURED CABLING REQUIREMENTS FOR THE PROJECT ARE THE RESPONSIBILITY OF THE COMMUNICATIONS CABLING CONTRACTOR UNLESS OTHERWISE NOTED. COORDINATE WITH ALL TRADES THAT APPLY.

2.) TELECOMMUNICATIONS CONTRACTOR, CABLING CONTRACTOR, OR COMMUNICATIONS CONTRACTOR SHALL HERE AFTER BE REFERRED TO AS CONTRACTOR UNLESS OTHERWISE NOTED.

3.) CONTRACTOR SHALL PROVIDE ALL MATERIALS, COMPONENTS, TOOLS, AND LABOR NECESSARY TO COMPLETE THIS INFRASTRUCTURE INSTALLATION.

COMMUNICATIONS CABLING:

1.) PROVIDE ALL NECESSARY MEANS TO PROTECT ALL EXISTING AND NEW FIBER CABLING AND PORTS FROM MECHANICAL DAMAGE AND DUST DURING CONSTRUCTION.

2.) THE EXISTING FIBER TO REMAIN IN PLACE AND WILL NOT BE REMOVED BY THE CONTRACTOR.

3.) THE CONTRACTOR WILL USE THE EXISTING CABLE TRAY AND CONDUIT PATHWAYS FOR THE INSTALLATION OF THE NEW FIBER.

FIRESTOPPING:

1.) MAINTAIN THE EXISTING SEAL ON ALL PENETRATIONS THROUGH FIRE-RATED BARRIERS (CONDUITS, SLEEVES, SLOTS, CHASES).

CONSTRUCTION NOTES

1.) IN ADDITION TO BASE BID OUTLINED BELOW, CONTRACTOR TO SUBMIT ALTERNATE BID AT THE TIME OF SUBMISSION TO REMOVE EXISTING FIBER AFTER THE BASE PROJECT COMPLETION.

2.) THE PROJECT WILL BE CONDUCTED IN THE FOLLOWING ORDER:

A.) THE FIRST GROUP WILL BE MEMORIAL HALL AND BRIDWELL HALL.

B.) THE SECOND GROUP WILL BE PIERCE HALL, MARTIN HALL, MCCULLOUGH HALL, CENTRAL PLANT AND CLARK STUDENT CENTER.

C.) THE THIRD GROUP WILL BE REDWINE FITNESS CENTER, HARDIN ADMINISTRATION, BOLIN SCIENCE HALL AND MOFFETT LIBRARY.

D.) THE FOURTH GROUP WILL BE DILLARD COBA, MCCOY ENGINEERING HALL, DANIEL BUILDING, KILLINGSWORTH FAIN SORORITY AND FERGUSON HALL.

E.) THE FIFTH GROUP WILL BE POLICE HOUSE AND VINSON COUNSELING CENTER.

DRAWING LIST

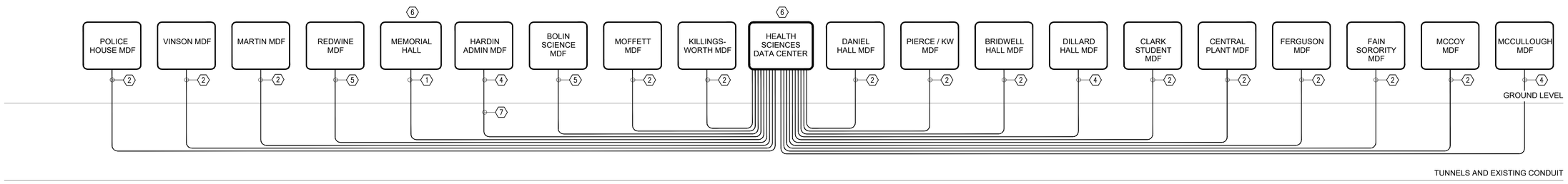
GENERAL NOTE:

1.) THE FIBER CABLE IS TO BE RAN END TO END WITHOUT SPLICE.

2.) FIRST FOUR (4) STRANDS OF EACH FIBER RUN TO BE TERMINATED WITH APC TYPE CONNECTORS, THE REMAINING STRANDS OF EACH RUN TO BE TERMINATED WITH UPC TYPE CONNECTORS.

KEYED NOTES:

1. 6-STRAND OS2 ARMORED SM FIBER PROVIDE 20 FOOT SERVICE LOOP AT BOTH ENDS.
2. 24-STRAND OS2 ARMORED SM FIBER PROVIDE 20 FOOT SERVICE LOOP AT BOTH ENDS.
3. 36-STRAND OS2 ARMORED SM FIBER PROVIDE 20 FOOT SERVICE LOOP AT BOTH ENDS.
4. 48-STRAND OS2 ARMORED SM FIBER PROVIDE 20 FOOT SERVICE LOOP AT BOTH ENDS.
5. 96-STRAND OS2 ARMORED SM FIBER PROVIDE 20 FOOT SERVICE LOOP AT BOTH ENDS.
6. FIBER FROM HEALTH SCIENCES TO MEMORIAL HALL WILL BE COMPLETED FIRST, THE REST OF THE INSTALLATION WILL FOLLOW THE SCHEDULE SHOWN IN THE CONSTRUCTION NOTES SECTION NOTE #2.
7. 50 PAIR OSP COPPER PROVIDE 20 FOOT SERVICE LOOP AT BOTH ENDS.



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Suite 350
Austin, Texas 78757
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MIDWESTERN STATE UNIVERSITY

MIDWESTERN UNIVERSITY OUTSIDE PLANT FIBER REFRESH

3410 TAFT BLVD,
WICHITA FALLS, TEXAS,
76308

BICSI REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
Kevin Hamlin
Reg. No. 202054R
EXPIRES 12-31-20
RCDD

REVISIONS:

NUMBER	DATE	DESCRIPTION

PROJECT NUMBER:

DRAWN BY: GL
CHECKED BY: FT

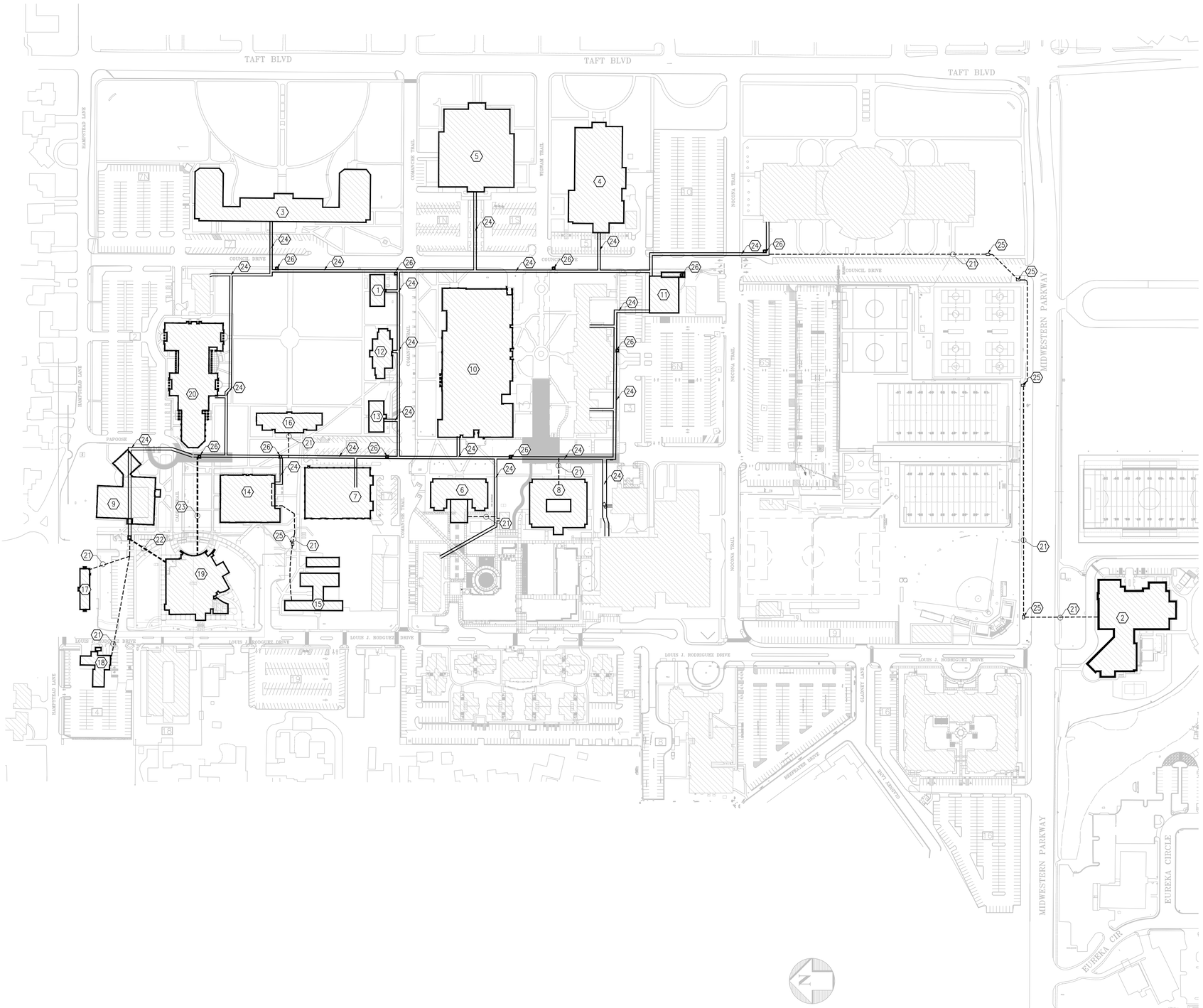
DATE: JANUARY 05, 2018

SHEET TITLE:

LEGEND AND NOTES - COMMUNICATIONS

SHEET NUMBER:

T-001



GENERAL NOTES:

1). FIELD VERIFY ALL DISTANCES, CONDITIONS AND REQUIREMENTS FOR PROPOSED AND EXISTING PATHWAYS SHOWN.

2.) OUTSIDE PLANT CONDUIT, TUNNEL ROUTING AND TELECOMMUNICATION HANDHOLE LOCATIONS SHOWN FOR REFERENCE ONLY. VERIFY EXACT PLACEMENT WITH FIELD CONDITIONS.

4.) RETAIN AND REPLACE ALL PLUGS/SEALS FOR POPULATED AND SPARE OSP CONDUIT AFTER CABLE PLACEMENT.

5.) FIELD VERIFY ALL OSP FIBER LENGTHS, PENETRATIONS, SPLICE TRANSITIONS, TERMINATIONS AND REQUIREMENTS PRIOR TO BID SUBMISSION.

KEYED NOTES:

1. MEMORIAL HALL
2. REDWINE WELLNESS CENTER
3. HARDIN ADMINISTRATION
4. BOLIN SCIENCE HALL
5. MOFFETT LIBRARY
6. KILLINGSWORTH HALL
7. DANIEL BUILDING
8. PIERCE / KW MECH BUILDING
9. BRIDWELL HALL
10. CLARK STUDENT CENTER
11. CENTRAL PLANT
12. FERGUSON HALL
13. FAIN SORORITY
14. MCCOY ENGINEERING HALL
15. MCCULLOUGH HALL
16. MARTIN HALL
17. VINSON COUNSELING CENTER
18. POLICE HOUSE
19. HEALTH SCIENCES BUILDING
20. DILLARD COBA HALL
21. EXISTING ONE (1) 4"ø CONDUIT.
22. EXISTING SIX (6) 4"ø CONDUITS EACH TO TUNNEL ENTRANCE AT BRIDWELL.
23. EXISTING SIX (6) 4"ø CONDUITS TO QUAD TUNNEL.
24. UTILIZE EXISTING CABLE TRAY IN THE STEAM TUNNELS.
25. EXISTING HAND HOLE.
26. EXISTING TUNNEL ENTRANCE.

1 SITE PLAN - COMMUNICATIONS
1" = 120'-0"

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MIDWESTERN STATE UNIVERSITY

MIDWESTERN STATE UNIVERSITY OUTSIDE PLANT FIBER REFRESH

3410 TAFT BLVD,
WICHITA FALLS, TEXAS,
76308

REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
Bicsi
Kevin Hamlin
REG. NO. 202054R
EXPIRES 12-31-20
RCDD

REVISIONS:

NUMBER	DATE	DESCRIPTION

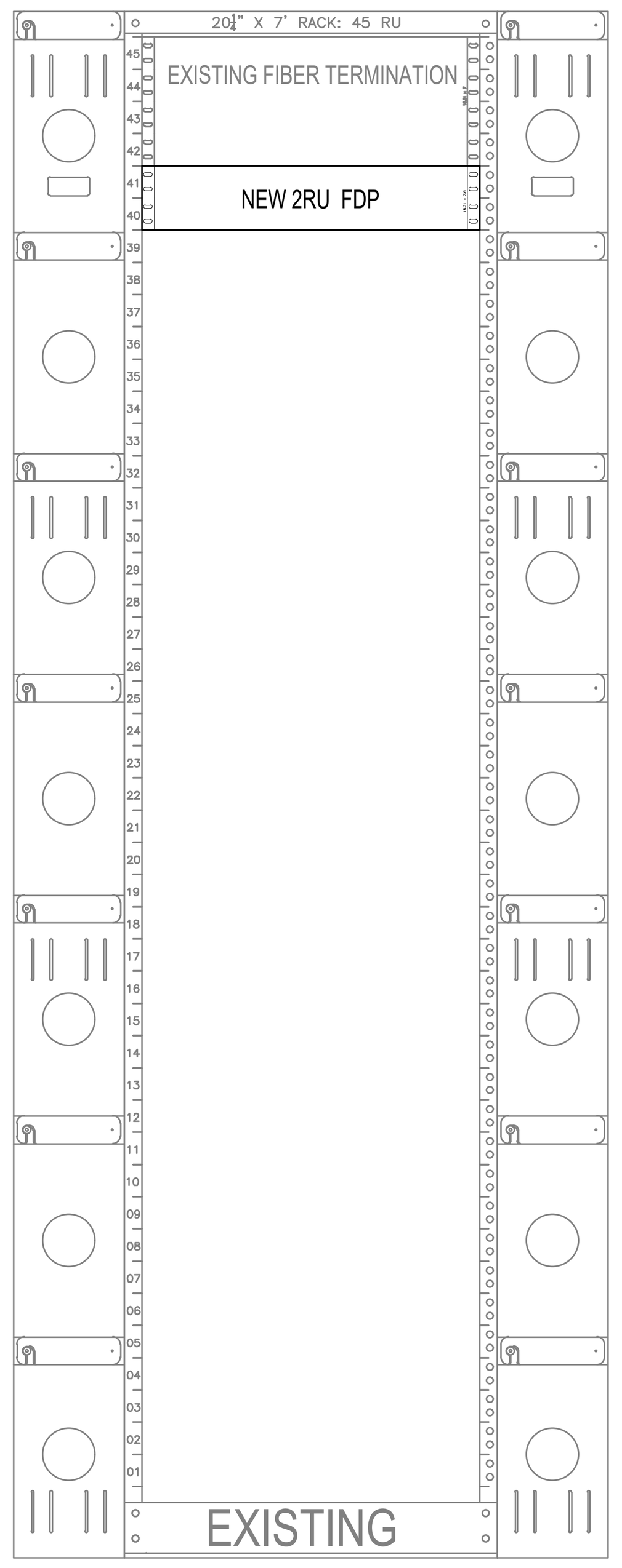
PROJECT NUMBER:

DRAWN BY: GL
CHECKED BY: FT

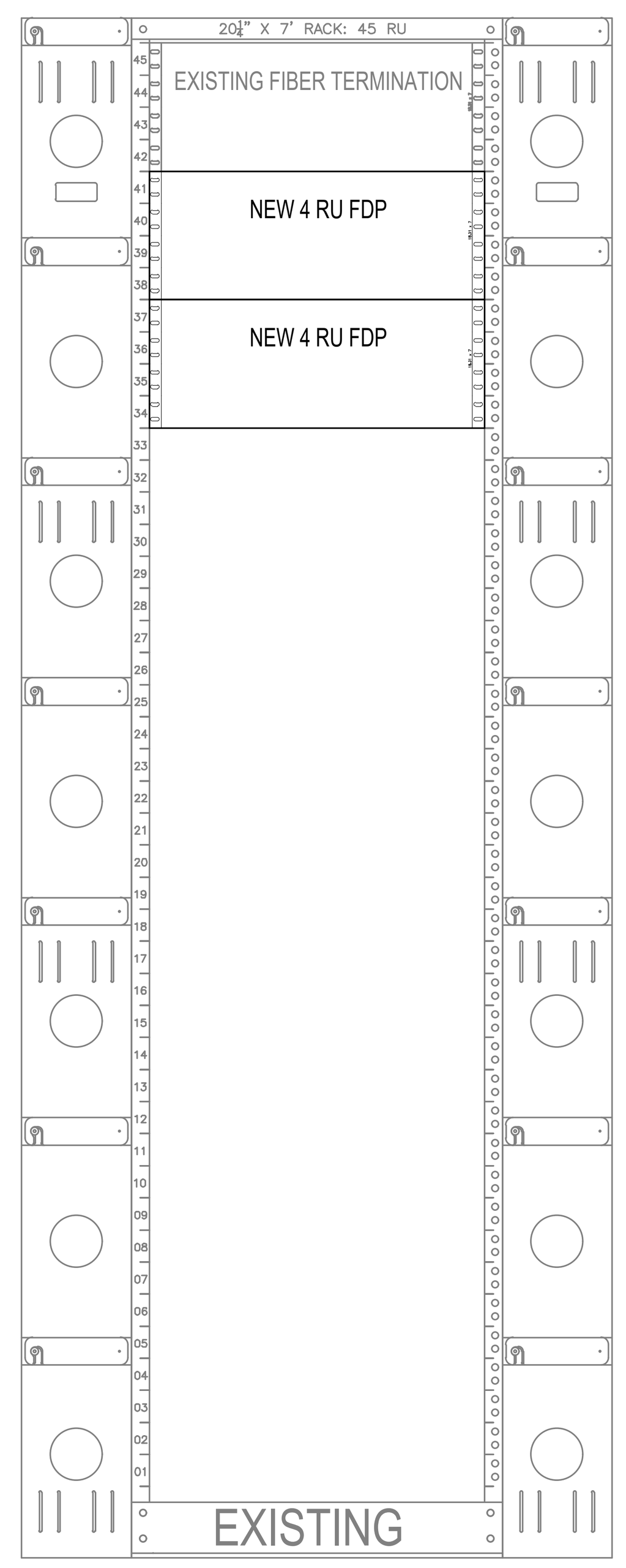
DATE: JANUARY 05, 2018

SHEET TITLE:
SITE PLAN - COMMUNICATIONS

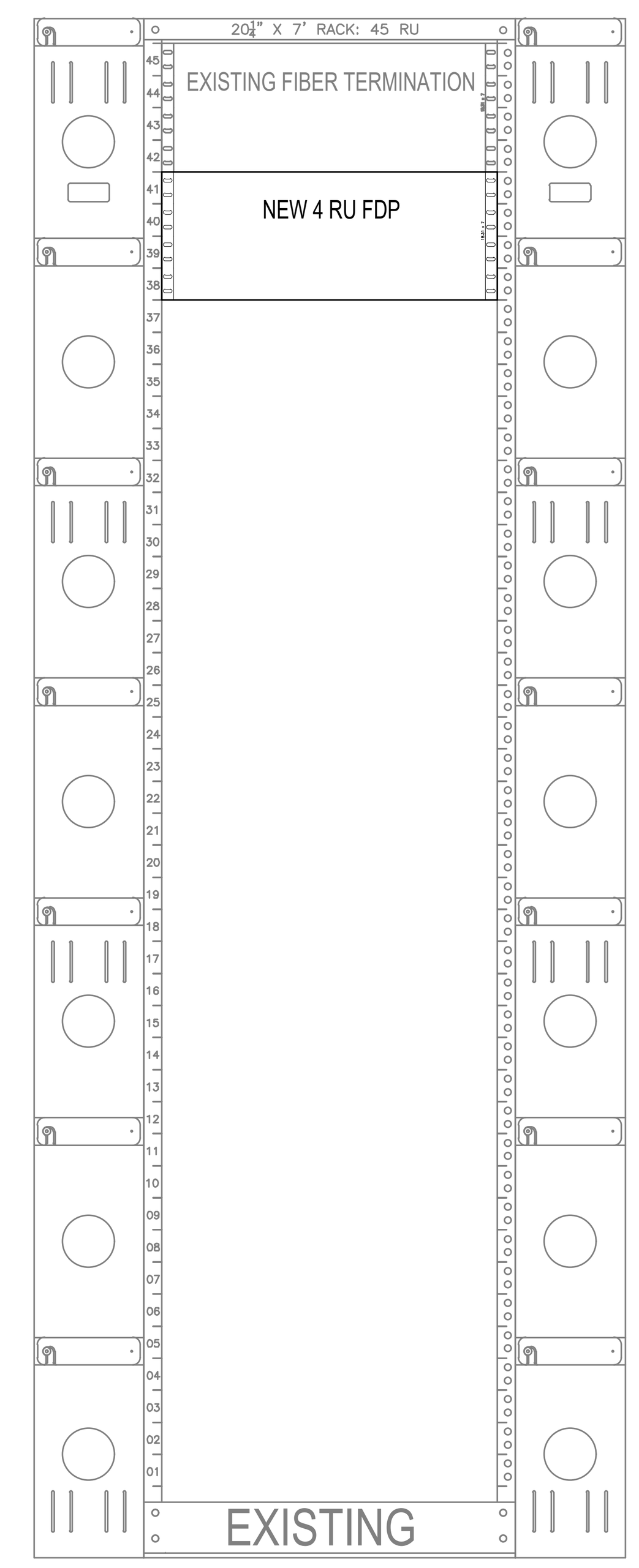
SHEET NUMBER:
T-002



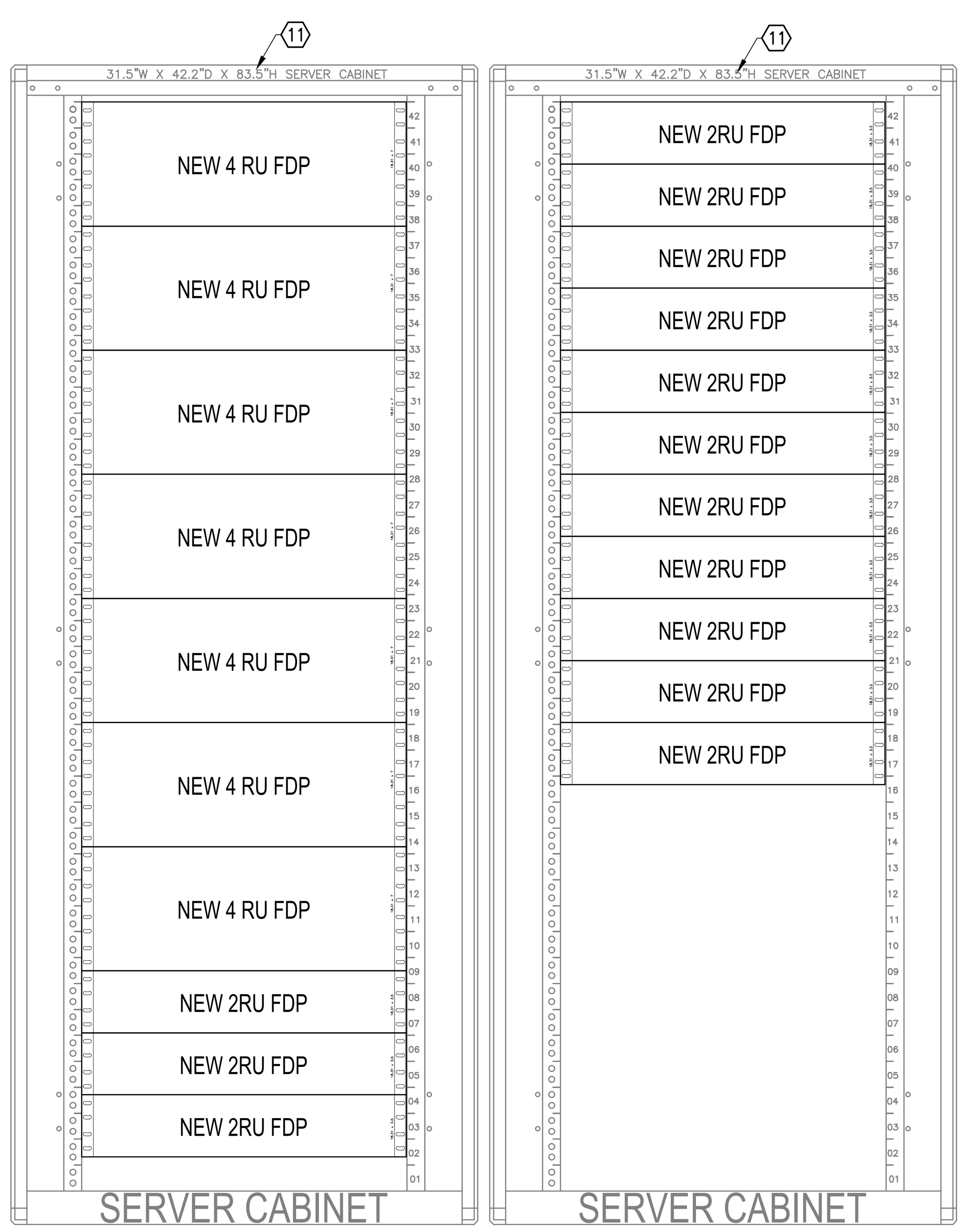
1 TYPICAL RACK ELEVATION
NTS



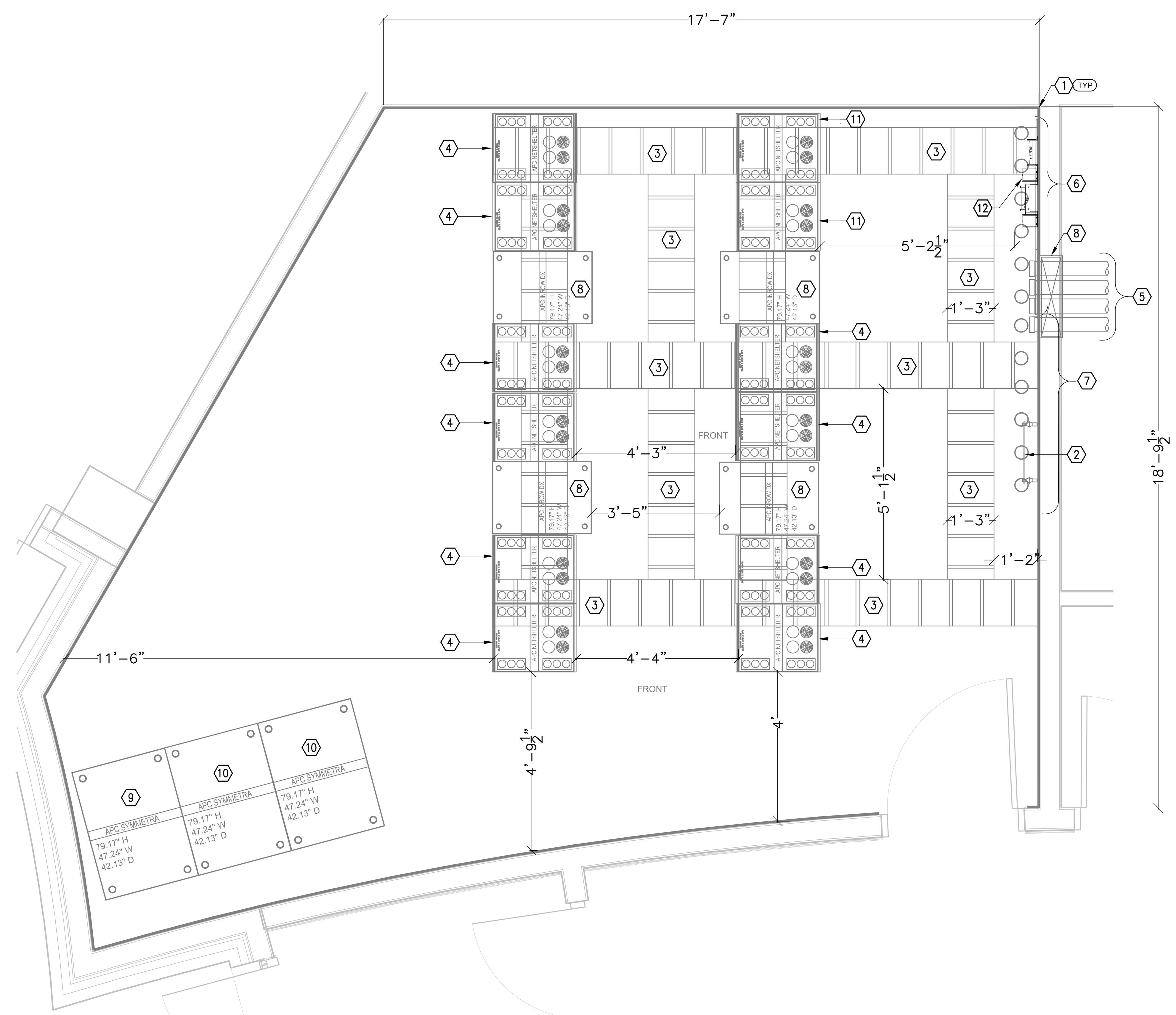
2 BOLIN AND REDWINE RACK ELEVATION
NTS



3 HARDIN,BRIDWELL, MCCULLOUGH AND MCCOY RACK ELEVATION
NTS



4 DATA CENTER OSP CABINET LAYOUT
NTS



5 EXISTING LEVEL 1 DATA CENTER ROOM LAYOUT
1/2" = 1'-0"

GENERAL NOTES:

1.) DATA CENTER LAYOUT IS FOR INFORMATION ONLY, WORK TO BE DONE BY OTHERS.

2.) SEE 271300 FOR PRODUCT INFORMATION, COORDINATE RACK LOCATION WITH THE OWNER.

3.) SEE 270000 FOR COMMUNICATIONS GENERAL INFORMATION.

4.) EXISTING EQUIPMENT TO REMAIN IN THE RACK.

KEYED NOTES:

1. EXISTING ¾" WALL MOUNTED PLYWOOD.
2. EXISTING TELECOMMUNICATIONS MAIN GROUNDING BUSBAR.
3. EXISTING HORIZONTAL CABLE RUNWAY/LADDER RACK.
4. EXISTING SERVER CABINET. (TYP)
5. EXISTING FOUR (4) 4" COMMUNICATIONS CONDUIT TO MDF 112.
6. EXISTING (6) 4"ø CONDUITS TO TUNNEL ENTRANCE AT BRIDWELL.
7. EXISTING (6) 4"ø CONDUITS TO QUAD TUNNEL.
8. EXISTING IN-ROW HVAC COOLING UNIT. REFER TO HVAC AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
9. EXISTING UPS CABINET. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
10. EXISTING UPS BATTERY CABINET. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
11. EXISTING OSP SERVER CABINET.
12. COPPER OSP BUILDING ENTRANCE TERMINAL.

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MIDWESTERN STATE UNIVERSITY

MIDWESTERN UNIVERSITY OUTSIDE PLANT FIBER REFRESH

3410 TAFT BLVD, WICHITA FALLS, TEXAS, 76308

REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER — Bicsi — Kevin Hamlin — Reg. No. 202054R — RCDD

REVISIONS:

NUMBER	DATE	DESCRIPTION

PROJECT NUMBER:

DRAWN BY: GL
CHECKED BY: FT

DATE: JANUARY 05, 2018

SHEET TITLE:

TELECOM RACK LAYOUT - COMMUNICATIONS

SHEET NUMBER:

T-003

DATACOM DESIGN GROUP
Technology Solutions :: Building for the Future ®

Subcontractors will estimate, plan, and manage the execution of their work in a manner that protects the health and safety of all project stakeholders in accordance with these:

- Federal & State OSHA, COE EM 385.1.1, and MSHA regulations including all manufacturer requirements
- The requirements of the SMS Safety System Manual - Safety Management & Illness Prevention (SM-SAFETY-001) including any additional requirements of the project Agreement.
- The Project Safety Management Plan,

Specific Instructions to bidder, which includes specific requirements addressing:

  - Any subcontractor where such subcontractor has 25 or more employees on-site, or has an Experience Modification Rate (EMR) > 1.2, or required by Sundt risk mitigation plan for the project, are required to have a full-time dedicated safety representative on-site. This person shall have no other duties assigned.
  - Subcontractor foreman need OSHA 10-hour training, Superintendents an OSHA 30 hour course.
  - All Subcontractor employees will participate in a site safety orientation.
  - All persons on project site will wear required proper Personal Protective Equipment (PPE) for their work exposures in compliance with manufacturer, and Sundt requirements.
  - Detailed project safety planning will be progressively elaborated in coordination with the development of work packages.
  - A safety management plan will be developed for each subdivision of the work which will be managed by subcontractor competent person.
  - The safety management plan will be specific to that definable feature of the work (DFOW) and become a component of the work package for that scope; minimum contents to include:
    - Job Hazard Analysis (JHA) for scope of work.
    - Task Hazard Analysis (THA) - A THA will be completed for each required task.
- ***Cranes***
  - All cranes must be operated by certified operators.
  - All cranes must have a third-party safety inspection, completed at the site and documented prior to project work.
  - Project-specific certification is not required for a mobile crane that has had a documented annual certification within the past 30 days.
  - All crane lifts exceeding 75% of the crane's capacity must have a documented Critical Lift Plan.
  - All crane lifts 90% or more of the crane's capacity must have a third-party engineering review.
- ***Excavations***
  - All excavations are required to have an excavation permit prior to the dig.
  - Excavation checklists must be performed each day for each active excavation.
- ***Fall protection***
  - All projects must establish a site-specific Fall Protection and Rescue program.
  - All projects must provide adequate protection (deemed by OSHA or Sundt) to those working elevated work above 6’.
  - The program must be approved by an authorized competent person.
- ***Hot work***
  - A hot work permit process shall be developed for each project.
- **Control of hazardous energy (lock-out/tag-out)**
  - All work involving stored energy shall have project-specific lock-out/tag-out procedures.
- ***Scaffolding***
  - All scaffolding shall be tagged for communicating status of accessibility.
  - Prior to use, a daily inspection must be completed and documented by a competent person of the entity responsible for erection and maintenance of the scaffolding.

SUNDT CONSTRUCTION, INC.

CODE OF SAFE PRACTICES

- No one under the influence or with possession of drugs or intoxicating liquor is allowed on the job.
- No unruly behavior of any kind is allowed.
- No weapons allowed on the jobsite.
- No children / animals allowed on the jobsite.
- No Music Devices. Mobile Electronic Devices / Radios used for jobsite communication purposes only.
- No Mobile Electronic Devices or Radios 'In Motion'.
- No one ill or fatigued is required or permitted to work.
- Follow no smoking rules.
- Anyone improperly using portable restrooms or writing graffiti will be removed from the job.
- Report any unsafe and / or unsanitary conditions to the Superintendent. If possible, correct the condition first, and then report. Do not work in the area until the hazard has been corrected.
- Report all defective equipment to the Superintendent.
- Report all accidents, incidents, and property damage, including near misses, to the Superintendent.
- No loose / frayed clothing, sweatpants, shorts; badly worn shoes shall not be worn. Shirts must have sleeves.
- Nonconductive Hard hats shall be worn at all times.
- 100% Eye protection and 100% gloves worn on jobsites, as well as abide by all OSHA and/or manufacturer requirements regarding all PPE.
- All grinding operations require Spoggles or goggles in addition to a face shield.
- High-visibility clothing shall be worn by all persons on a job site or in an operating plant area.
- Follow OSHA regulation for cement containing products.
- Seat belts worn when provided in equipment.
- Elevated Tools and Materials should be tethered or protective system in place to prevent dropped objects.
- Do not throw materials, tools, or other objects from buildings or structures.
- Do not descend into an unshored or improperly sloped / benched trench five feet or more in depth.
- Crane Operators must possess nationally recognized certification
- A third party certification is required of all mobile and tower cranes exceeding five tons rated capacity. Refer to Sundt Safety Systems Manual Section for specific info.
- Fall Protection Protective System and Rescue plan required for work above 6'
- Maintain guardrails, safety barricades, and "Danger" or "Caution" Tape.
- Install, secure, label and maintain covers on all floor, deck, manhole, and roof openings.
- Full-Body Harness and proper lanyard used in boom lifts, midrail chains secured in scissors lifts.
- Only use nonconductive ladders per manufacturer instructions.
- Inspect scaffolding before use.
- Do not tamper with electrical wiring, equipment, or machinery.
- Maintain GFCI / assured grounding program
- Remove damaged cords from work areas.
- Proper lockout / tagout procedures shall be established and followed when required.
- Confined space work areas should be identified, the air tested, and employee training conducted.
- Comply with all regulations regarding hazardous materials.
- Clean up all liquid spills immediately.
- Keep the work areas clean at all times.
- Follow jobsite speed limits.
- Know where emergency exits are located.
- Know where fire extinguishers are located.
- Know the location of first aid kits.

Task Hazard Analysis (THA's) shall be completed daily as required by the Project Superintendent.

I certify that I understand and agree by this Code of Safe Practices. I acknowledge that my safety, my employee's safety, and subcontractor employee's safety is my responsibility.

Signed: _____/_____/ _____ _____

Employee (Print and Sign) **Company Name** (Print) *(last 4 SS#)*

Date_____Sundt Project Name_____Sundt Project Number_____

The Project Superintendent has the authority to enforce this Policy and take action as deemed necessary.

Revised 5//2017

BID SHEET
RFP #735-18-8197
NEW FIBER INSTALLATION FOR RELOCATION ON IT SERVERS

Base Price:_____

Company:_____

Address:_____

Printed Name:_____

Signature:_____

Email:_____

Telephone:_____

VENDOR REFERENCES

Please list three (3) references of current customers who can verify the quality of service your company provides. The University prefers customers of similar size and scope of work to this proposal. ***THIS FORM MUST BE RETURNED WITH YOUR PROPOSAL.***

REFERENCE ONE

Government/CompanyName:_____

Address:_____

ContactPersonandTitle:_____

Phone:_____ Fax:_____

Contract Period:_____ ScopeofWork:_____

REFERENCE TWO

Government/CompanyName:_____

Address:_____

ContactPersonandTitle:_____

Phone:_____ Fax:_____

Contract Period:_____ ScopeofWork:_____

REFERENCE THREE

Government/CompanyName:_____

Address:_____

ContactPersonandTitle:_____

Phone:_____ Fax:_____

Contract Period:_____ ScopeofWork:_____

AFFIDAVIT

The undersigned certifies that the bid prices contained in this proposal have been carefully checked and are submitted as correct and final and if bid is accepted (within 90 days unless otherwise noted by vendor), agrees to furnish any and/or all items upon which prices are offered, at the price(s) and upon the conditions contained in the Specifications.

STATE OF TEXAS
COUNTY OF WICHITA

BEFORE ME, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared

_____

_

who, after having first been duly sworn, upon oath did depose and say;

That the foregoing proposal submitted by _____

_____

_ hereinafter called "Bidder" is the duly authorized agent of said company and that the person signing said proposal has been duly authorized to execute the same. Bidder affirms that they are duly authorized to execute this contract, that this company, corporation, firm, partnership or individual has not prepared this bid in collusion with any other Bidder, and that the contents of this bid as to prices, terms or conditions of said bid have not been communicated by the undersigned nor by any employee or agent to any other person engaged in this type of business prior to the official opening of this bid.

Name and Address of Bidder:

_____

_____

_____

Telephone number_____

Email_____

_____
Signature
Name:_____

Title:_____

SWORN TO AND SUBSCRIBED BEFORE ME THIS _____day of _____,
20 _____.

_____
Notary Public in and for the
State of Texas.

AGREEMENT BETWEEN
MIDWESTERN STATE UNIVERSITY
AND

CONTRACT NO.

This Agreement made the day of in the year 20 , by and between , hereinafter called the Contractor, and the Board of Regents of Midwestern State University, hereinafter called the Owner,

WITNESSETH, that the Contractor and the Owner for the consideration hereinafter named agree as follows:

ARTICLE 1. SCOPE OF WORK: The Contractor shall furnish all of the materials and perform all of the work shown on the drawings and described in the specifications for the project entitled . These drawings and specifications prepared for Midwestern State University by , acting as and in these Contract Documents entitled the Project Architect. The Contractor shall do everything required by this Agreement, the General and Supplemental Conditions of the Contract, the Special Conditions, the Addenda, the Specifications, the Drawings, the Historically Underutilized Business (HUB) Subcontracting Plan, and the Proposal attached as **Exhibit 1** (including any unit prices stated therein).

The Specifications and Drawings are enumerated as follows:

SPECIFICATIONS: See attached as **Exhibit 2**.

DRAWINGS: See attached as **Exhibit 2**.

ADDENDA: See attached as **Exhibit 2**.

ALTERNATES: The following Alternate Proposals, fully described in the Specifications, are included as a part of this Contract: .

ARTICLE 2. TIME OF COMPLETION: The Owner shall provide a Notice to Proceed in which a date for commencement of the work shall be stated; such commencement date shall be 10 or more days after the date of the notice. The Contractor shall achieve substantial completion of the work within ( ) calendar days after such commencement date, as such completion date may be extended by approved Change Orders. The time set forth for completion of the work is an essential element of the Contract.

ARTICLE 3. THE CONTRACT SUM: The Owner shall pay the Contractor for performance of the Contract, subject to additions and deductions provided therein, the sum of ($), and make payment on account as hereinafter provided.

ARTICLE 4. HUB SUBCONTRACTING PLAN: The Owner has adopted Exhibit H, Policy on Utilization of Historically Underutilized Business ("Policy"), which is incorporated herein by reference. Contractor, as a provision of the Agreement must comply with the requirements of the Policy and adhere to the HUB Subcontracting Plan submitted with Contractor's Proposal and attached as **Exhibit 3**. No changes to the HUB Subcontracting Plan can be made by the Contractor without the prior written approval of the Owner in accordance with the Policy.

ARTICLE 5. LIQUIDATED DAMAGES: For each consecutive calendar day after the substantial completion period set forth in Article 2 above that any work, including the correction of deficiencies found during the final testing and inspection, is not completed, the amount of ($) will be deducted from the money due or becomes due the Contractor, not as a penalty but as liquidated damages representing the parties' estimate at the time of contract execution of the damages which the Owner will sustain for late completion.

ARTICLE 6. CERTIFICATION OF NO ASBESTOS CONTAINING MATERIALS OR WORK:

The Contractor shall provide a certification statement, included with each materials submittal, stating that no asbestos containing materials or work is included within the scope of the proposed submittal.

The Contractor shall insure that Texas Department of Health licensed individuals, consultants or companies are used for any required asbestos work including asbestos inspection, asbestos abatement plans/specifications, asbestos abatement, asbestos project management and third-party asbestos monitoring.

The Contractor shall provide at Substantial Completion, a notarized affidavit to the Owner and the Architect stating that no asbestos containing materials or work was provided, installed, furnished or added to the Project.

The Contractor shall take whatever measures he deems necessary to insure that all employees, suppliers, fabricators, materialmen, subcontractors, or their assigns, comply with this requirement.

All materials used on this Project shall be certified as non Asbestos Containing Building Materials (ACBM). The Contractor shall insure compliance with the following acts from all of his subcontractors and assigns:

Asbestos Hazard Emergency Response Act (AHERA—40 CFR 763-99 (7));

National Emission Standards for Hazardous Air Pollutants (NESHAP—EPA 40 CFR 61, National Emission Standard for Asbestos;

Texas Asbestos Health Protection Rules (TAHRP—Tex. Admin. Code Title 25, Part 1, Ch. 295C, Asbestos Health Protection

Every subcontractor shall provide a notarized statement that no ACBM has been used, provided, or left on this Project.

The Contractor shall provide, in hard copy and electronic form, all necessary material safety data sheets (MSDS) of all products used in the construction of the Project to the Texas Department of Health licensed inspector or Project Architect or Engineer who will compile the information from the MSDS and, finding no asbestos in any of the product, make a certification statement.

At Final Completion the Contractor shall provide a notarized certification statement per TAC Title 25 Part 1, Ch. 295.34, par. c.1 that no ACBM was used during construction of the Project.

ARTICLE 7. ACCEPTANCE OF BID OR AWARD OF CONTRACT: By signing this Agreement, the undersigned certifies as follows:

Assignment. This Agreement is a personal service contract for the services of Construction, and Contractor's interest in this Agreement, duties hereunder and/or fees due hereunder may not be assigned or delegated to a third party.

Records of expenses pertaining to Additional Services and services performed on the basis of a Worker Wage Rate or Monthly Salary Rate shall be kept on the basis of generally accepted accounting principles and in accordance with cost accounting standards promulgated by the Federal Office of Management and Budget Cost Accounting Standards Board and shall be available for audit by the Owner or the Owner's authorized representative on reasonable notice.

Family Code Child Support Certification. Pursuant to Section 231.006, Texas Family Code, Service Provider certifies that it is not ineligible to receive the award of or payments under this Agreement and acknowledges that this Agreement may be terminated and payment may be withheld if this certification is inaccurate.

Eligibility Certification. Pursuant to Section 2155.004, Texas Government Code, Service Provider certifies that the individual or business entity named in this Agreement is not ineligible to receive the award of or payments under this Agreement and acknowledges that this Agreement may be terminated and payment withheld if this certification is inaccurate.

Franchise Tax Certification. A corporate or limited liability company Contractor certifies that it is not currently delinquent in the payment of any Franchise Taxes due under Chapter 171 of the Texas Tax Code, or that the corporation or limited liability company is exempt from the payment of such taxes, or that the corporation or limited liability company is an out-of-state corporation or limited liability company that is not subject to the Texas Franchise Tax, whichever is applicable.

Payment of Debt or Delinquency to the State. Pursuant to Sections 2107.008 and 2252.903, Texas Government Code, Contractor agrees that any payments owing to Contractor under this Agreement may be applied directly toward any debt or delinquency that Contractor owes the State of Texas or any agency of the State of Texas regardless of when it arises, until such debt or delinquency is paid in full.

Entire Agreement; Modifications. This Agreement supersedes all prior agreements, written or oral, between Contractor and Owner and shall constitute the entire Agreement and understanding between the parties with respect to the Project. This Agreement and each of its provisions shall be binding upon the parties and may not be waived, modified, amended or altered except by a writing signed by Contractor and Owner.

Captions. The captions of paragraphs in this Agreement are for convenience only and shall not be considered or referred to in resolving questions of interpretation or construction.

Governing Law and Venue. This Agreement and all of the rights and obligations of the parties and all of the terms and conditions shall be construed, interpreted and applied in accordance with and governed by and enforced under the laws of the State of Texas without reference to its conflicts of law provisions. The county where the Project is located shall be the sole place of venue for any legal action arising from or related to this Agreement or the Project in which the Owner is a party.

Waivers. No delay or omission by either party in exercising any right or power arising from non compliance or failure of performance by the other party with any of the provisions of this Agreement shall impair or constitute a waiver of any such right or power. A waiver by either party of any covenant or condition of this Agreement shall not be construed as a waiver of any subsequent breach of that or of any other covenant or condition of the Agreement.

Binding Effect. This Agreement shall be binding upon and inure to the benefit of the parties and their respective permitted assigns and successors.

Appointment. Owner hereby expressly reserves the right from time to time to designate by notice to Contractor a representative(s) to act partially or wholly for Owner in connection with the performance of Owner's obligations. Contractor shall act only upon instructions from the designated representative(s) unless otherwise specifically notified to the contrary.

Records. Records of Contractor’s costs, reimbursable expenses pertaining to the Project and payments shall be available to Owner or its authorized representative during business hours and shall be retained for four (4) years after final Payment or abandonment of the Project, unless Owner otherwise instructs Contractor in writing.

Notices. All notices, consents, approvals, demands, requests or other communications relied on by the parties shall be in writing. Written notice shall be deemed to have been given when delivered in person to the designated representative of the Contractor or Owner for whom it is intended; or sent by U. S. Mail to the last known business address of the designated representative; or transmitted by fax machine to the last know business fax number of the designated representative.

Mail notices are deemed effective upon receipt or on the third business day after the date of mailing, whichever is sooner. Fax notices are deemed effective the next business day after faxing.

Severability. Should any term or provision of this Agreement be held invalid or unenforceable in any respect, the remaining terms and provisions shall not be affected and this Agreement shall be construed as if the invalid or unenforceable term or provision had never been included.

Illegal Dumping. The Contractor shall ensure that it and all of its Subcontractors and assigns prevent illegal dumping of litter in accordance with Title 5, Texas Health and Safety Code, Chapter 365.

Ethics Matters/No Financial Interest**.** Contractor and its employees, agents, representatives and subcontractors have read and understand University's Conflicts of Interest Policy, University's Standards of Conduct Guide and applicable state ethics laws and rules. Neither Contractor nor its employees, agents, representatives or subcontractors will assist or cause University employees to violate University's Conflicts of Interest Policy, provisions described by University's Standards of Conduct Guide, or applicable state ethics laws or rules. Contractor represents and warrants that no member of the Board has a direct or indirect financial interest in the transaction that is the subject of this Agreement.

By signature hereon, Contractor certifies that no member of the Board of Regents of Midwestern State University, or Executive Officers, including component institutions, has a financial interest, directly or indirectly, in the transaction that is the subject of this contract.

BY SIGNING BELOW, the Parties have executed and bound themselves to this Agreement as of the day and year first above written.

MIDWESTERN STATE UNIVERSITY

By: _____	By: _____
Signature	Signature
_____	_____
Print name	Print name
Date: _____	Date: _____