RFB #24289
REQUEST FOR BIDS AND STATEMENT OF WORK

for

CAPERTON CENTER & VET TECH SECURITY SYSTEM
AT PIERPONT COMMUNITY & TECHNICAL COLLEGE

Prepared for

WEST VIRGINIA
Community & Technical
COLLEGE SYSTEM

West Virginia Community and Technical College System

PREPARED BY:

PICKERING ASSOCIATES
Architects • Engineers • Surveyors
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May 30, 2024
Project No.: 2201011

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SECTION I STATEMENT OF WORK

PART 1: GENERAL

1.01 West Virginia Community and Technical College System seeks to engage a highly qualified security integrator for the installation and maintenance of an Access Control and Alarm Monitoring Systems (ACAMS), Video Surveillance System (VSS) and security communications system at two separate and adjacent buildings in Clarksburg, West Virginia, occupied by Pierpont Community and Technical College:

A. The Caperton Center

B. Vet Tech Facility

1.02 The new systems shall interface and/or be completely compatible with the current system installed at Pierpont Community and Technical College's Advanced Technology Center (ATC) located at 500 Galliher Dr., Fairmont, WV 26554, so that all building security systems can be monitored and controlled from a single location as if they were a single system. The ATC System is as follows:

A. CCTV System: Exacq Vision

B. Camera model: Axis 3267

C. Access System: Lenel S2

1.03 This document describes the system requirements and the parameters of installation and maintenance needed for providing a bid for this Project. The Owner, West Virginia Community and Technical College System, shall be referred to as the "WVCTCS" or "Owner" hereinafter.

1.04 The facility will have a Using Agency that will be involved in project coordination. The Using Agency is Pierpont Community and Technical College ("PCTC"). PCTC and WVCTCS may be jointly referred to in this document as "PCTC/WVCTCS" and shall have the same meanings/definitions as stated above.

1.05 The Owner will be the General Contract holder and the company responding to this Request for Bids ("RFB") shall be the "Offeror." The Offeror shall agree to furnish and install the proposed products and services in accordance with the conditions, requirements and specifications of this RFB and the Offeror's Bid. The Offeror that is awarded the contract shall be the "Contractor."

1.06 The WVCTCS reserves the right to modify the requirements stated herein, or cancel this bid solicitation, without compensation due to any participants for work undertaken in preparation of a response to the RFB.

1.07 Owner's Contact Information:

A. The Contracting Officer ("CO") for this contract is:

Richard Donovan
Senior Director of Facilities
West Virginia Community and Technical College System
1018 Kanawha Boulevard, East, Suite 700
Charleston, WV 25301
681-313-2212

rich.donovan@wvhepc.edu

B. The PCTC/CTCS Technical Representative ("TR") is:

JT Bowers
CIO/Director of IT
Pierpont Community & Technical College
500 Galliher Drive
Fairmont, WV 26554
Phone: 304-368-7257
jbowers15@pierpont.edu

1.08 Specifications and drawings have been prepared by the Owner's Design and Technical Consultant:

Pickering Associates
320 Adams Avenue, Suite 102
Fairmont, WV 26554
Phone: 304-363–1004
Fax: 304–464-4428
ATTN: Pam Wean, AIA
pwean@pickeringusa.com

1.09 Mandatory Pre-bid Meeting:

A Mandatory Prebid meeting is scheduled for:

Time/Date: 10:00 AM, Local Prevailing Time (LPT), June 13, 2024

Place: Pierpont Community and Technical College
Caperton Center, Room 148
501 West Main Street
Clarksburg, WV 26301

Prebid Meeting Attendance is MANDATORY: All Bidders MUST attend the prebid meeting to familiarize themselves with the Project location, site conditions and other relevant information. Should a Bidder fail to attend, the Bid will be disqualified.

Subcontractors and material suppliers are encouraged to attend the prebid meeting.

The complete Invitation to Bid, Addenda and other relevant information concerning RFB # 24289 will be posted at the following URL. It is the Bidder's obligation to check this website for current information: https://wvctcs.org/purchasing-and-finance

PART 2: PROJECT DESCRIPTION

2.01 General:

A. The project objective is to provide a new integrated security system for the PCTC Caperton Center and Vet Tech Facility that shall match, interface and/or be completely compatible with the current system installed at PCTC's Advanced Technology Center (ATC).

B. The project addresses are:

Caperton Center 501 W. Main Street Clarksburg, WV 26301	Vet Tech Facility 211 S. Chestnut Street Clarksburg, WV 26301

2.02 Description of Scope:

A. Furnish and install new Access Control and Alarm Monitoring System (ACAMS), Video Surveillance System (VSS), and security communications system for the buildings listed above.

B. Configure database connectivity for automatic download and update of system user information between the ACAMS and the PCTC IT system using Active Directory Control.

C. For the Vet Tech Facility, raceways and power were installed when the building was recently renovated, and an addition built. Unless otherwise indicated herein or in the specifications and drawings, cabling, provisioning, and installation of all security devices shall be included in the Bid.

D. Network provisioning and configuration will be provided by the Owner. The Contractor shall coordinate all network requirements with the Owner's TR.

E. Electric locking hardware at the Vet Tech Facility has been provided by others in a separate contract under the recently completed renovation and addition project. Unless otherwise indicated herein or in the specifications and drawings, cabling, wiring of locking hardware and connection to the ACAMS shall be included in the Bid.

F. Electric locking hardware shall be connected to existing door hardware at the Caperton Center shall be included Bid. Cabling, wiring of locking hardware and connection to the ACAMS shall be included in the Bid.

PART 3: KEY PERSONNEL REQUIREMENTS

3.01 Prior to receiving a contract/purchase order and becoming the Contractor, the successful Offeror (the low responsible and qualified bidder) shall Identify “Key Personnel” (installers) for this contract that will be dedicated to this contract. However, if it becomes necessary for the Contractor to replace any of the individuals designated as Key Personnel, the Contractor shall request such substitutions and provide qualifications at least equal to those of the person being replaced. Key personnel installing the system shall have the work/installation experience (minimum three years), be fully qualified and certified by the manufacturer as an installer.

3.02 Except as provided in the paragraph below, at least 30 days in advance of the proposed substitution, all proposed substitutions of Key Personnel shall be submitted in writing to the CO, including the information required in paragraph below.

3.03 As a minimum (or as otherwise specified in the solicitation), the Offeror shall provide resumes to the CO which shall include the following:

A. Name of person(s).

B. Functional responsibility.

C. Education/Technical Qualifications: Including, in reverse chronological order, colleges and/or technical schools attended (with dates), degree(s)/certification(s) received, major field(s) of study.

D. Professional certifications or licenses.

E. Required manufacturer’s certifications.

F. Citizenship status.

G. Experience including, area(s) or work in which a person is qualified, company and title of position, approximate starting and ending dates (month/year), concise descriptions of experience for each position held including specific experience related to the requirements of this contract.

H. Certification that the information contained in the resume is correct and accurate (signature of key person and date signed, and signature of the supervisor or higher authority and date signed will be accepted as certification).

PART 4: OFFEROR QUESTIONS, ADDENDA, AND BIDS

4.01 Questions and requests for clarifications concerning the RFB shall be submitted via email to:

Pickering Associates
320 Adams Avenue, Suite 102
Fairmont, WV 26554
Phone: 304-363–1004
Fax: 304–464-4428
pwean@pickeringusa.com

4.02 No response will be made to telephone and verbal questions. Questions and requests for clarification will be received until 5:00 PM, LPT, June 19, 2024. Answers will be made by Addenda issued by the Architect. Addenda will also be posted at the following URL:.
https://wvctcs.org/purchasing-and-finance

4.03 Sealed Bids shall be enclosed and secured in a sealed envelope/package and properly marked and displayed on the outside of envelope/package bearing the name, address of proposer, RFB number and project identification. No other information shall be included or written on the outside of the proposal envelope/package. The WVCTCS shall not be responsible for unidentified bids. Bids will be received until 3:00 PM, LPT, June 27, 2024, and shall be delivered to:

Delivery by UPS, Federal Express & U. S. Postal Service:
Senior Director of Facilities
RFB 24289
West Virginia Community and Technical College System
2001 Union Carbide Drive
South Charleston, WV 25303

Hand delivery:
Senior Director of Facilities
RFB 24289
West Virginia Community and Technical College System
First Floor, 2001 Union Carbide Drive
South Charleston, WV 25303

4.04 Bids received late, after the time and date for receipt of bids, will be returned unopened.

4.05 The WVCTCS reserves the right to reject any Bid that is incomplete or improperly formatted. The WVCTCS may also reject any Bid if the Offeror fails to respond to a request for clarification by the WVCTCS. The WVCTCS reserves the right to waive minor informalities or irregularities, or significant mistakes that can be waived or corrected without prejudice to other Offerors, which are evident after examining the Bid, are considered matters of form rather than substance; that is, the effect on price, quantity, quality, or terms and conditions is negligible. The WVCTCS may waive such informalities or irregularities or allow the Offeror to correct such mistakes and/or omissions, depending on which is in the best interest of the WVCTCS.

4.06 The WVCTCS will be the sole judge as to whether a Bid complies with the Technical Specifications and will afford comparable and equivalent performance. Any such decisions by the WVCTCS shall be final and conclusive.

4.07 In the event of a conflict between any of the RFB documents, resolution will be at the sole discretion of the WVCTCS.

4.10 The WVCTCS reserves the right to change the dates of the above activities and require further information or other considerations.

4.11 Important dates:

Release of RFB	May 31, 2024
Mandatory pre-bid meeting	June 13, 2024, 10:00AM, LPT
Written questions due	June 19, 2024, 5:00 PM, LPT
Questions answered by Addenda and posted	June 24, 2024
Bids will be received until	June 27, 2024, 3:00 PM, LPT
PO Issued & Notice to proceed (estimated)	July 10, 2024

PART 5: BID & CONTRACT REQUIREMENTS

5.01 The Offeror is responsible for all expenses related to the preparation and submission of a response to this bid solicitation. The Owner shall incur no obligation except pursuant to the execution of a contract and the successful Offeror (Contractor).

5.02 The Offeror shall include all (if any) assumptions, conditions, and/or exceptions upon which the contractual and cost/price terms and conditions of the Offeror's bid is based. If not included, it will be assumed that none exists and that the Offeror agrees to comply with all terms and conditions set forth herein for this solicitation, including all requirements, specifications, and provisions.

5.03 Prepare your response with the headings and item numbers indicated below, and in the same order. The indicated supporting documents shall be included in an appendix.

5.04 The Offeror shall submit a single bid in response to this solicitation. Multiple and/or alternate quotes from the same Offeror may not be accepted.

5.05 Technology:

A. Deviations from the specifications, if any: list the equipment that will be provided to meet each paragraph of the products section of the specification. This part of the response shall be organized in the same sequence as the specifications. Supporting data shall include catalog data on the major systems being proposed. If the proposed system deviates from these specifications, that deviation shall be noted and explained.

B. Features: the specifications represent the minimum level of requirements. Components or systems proposed should meet these requirements plus provide additional desirable functions and capabilities, which are unique to the particular product. Describe the additional benefits and features, beyond the minimum requirements specified herein, which the proposed systems will provide.

5.06 Support:

A. Training plan: The Contractor shall provide a maximum of forty (40) hours of training and operation/service support to PCTC after completion and acceptance of installation.

B. Coordination with other trades: the Contractor will be required to provide documentation of raceway and power requirements for the security systems to the Owner's electrical contractor for implementation under a separate contract made directly with the Owner.

C. Availability: With the bid, provide a proposed schedule for completion of the work, with defined milestones in consecutive calendar days after receipt of a purchase order and/or notice to proceed.

D. Labor and equipment warranty shall, at a minimum, be for a period of one year after final acceptance. State any extended warranty offered at no additional cost.

5.07 Experience:

A. Manufacturer: With the bid, indicate and provide evidence of current certification level with each of the manufacturers proposed. Indicate if you are an authorized or certified dealer, and level of certification. Reference only the local office performing the work for certification.

5.08 Bid/Pricing:

A. General: visit the Project before preparing a bid. The specifications define the systems. The bid shall include taxes, permits and fees, shipping, insurance, guarantees, warranties, and service contracts.

B. Offerors are required to guarantee their bid for a period of 45 days from the date for receipt of bids.

C. The bid shall include all labor, materials, equipment, transportation, and incidentals required to install, test, and train personnel in accordance with the specifications.

D. Bidders shall complete the enclosed Bid Form in Appendix A. Bid/Pricing shall include all materials, equipment, devices, labor, licenses, system updates (for one year), taxes, incidentals, and shipping to provide a turnkey system.

E. Offerors shall provide pricing information for a maintenance agreement following the one-year warranty period. Include all materials, labor, and software upgraded. Pricing shall include manufacturer provided software maintenance.

F. Offerors shall provide supporting documentation in the format of a schedule of values spreadsheet identifying system components for each of the base bid and each of the additive alternates (if any) in the format of the table provided in Appendix A. The spreadsheet will have tabs for the base bid and each alternate (if any). List quantities and types of equipment, cables, labor hours, and rate. Include manufacturer’s part numbers only.

PART 6: PROJECT REQUIREMENTS

6.02 Terms and Conditions:

A. Any information provided by the Owner or any contractor prior to the release of this RFB, verbally or in writing, is considered preliminary and is not binding for the Owner or the contractor.

B. The Offeror shall neither make available, nor discuss, the RFB or any parts of the proposal to or with any employees of the Owner from the date of issuance of the RFP until the proposal submission date, unless allowed for purposes of clarification by the Owner's CO in writing.

C. The Offeror shall neither make available, nor discuss, any costs information contained in the sealed copy of the bid to or with any employee of the Owner from the date of issuance of this RFP until the contract award has been announced, unless allowed by the Owner in writing for the purpose of clarification or evaluation.

6.03 Addenda:

A. No interpretation of the meaning of the drawings, specifications, or other bidding documents, or correction of any apparent ambiguity, inconsistency, or error therein will be made verbally to any proposer. Every request for such interpretation or correction shall be in writing, as indicated previously herein. In case the Owner finds it expedient to supplement, modify, or interpret any portion of the bidding documents prior to the bid due date, such procedure will be accomplished by the issuance of written addenda to the RFB which will be issued by the Architect. Addenda will also be posted on the Owner's purchasing web site at the following URL: https://wvctcs.org/purchasing-and-finance

B. All addenda will become part of this RFP and shall be responded to by each Offeror.

C. All addenda shall be acknowledged in writing in the proposal submitted by the Offeror.

D. This RFP, any subsequent addenda, and any written responses to questions takes precedence over any information previously provided.

6.04 Progress Payments: Progress payments may be made monthly for work successfully completed upon certification by the Architect and approval by WVCTCS. Progress payments shall be itemized according to the schedule of values and shall be invoiced in a format approved by the WVCTCS. Ten percent (10%) retainage shall be withheld from each progress payment. Retainage shall be paid upon successful completion of all work and requirements.

6.05 Shipping: shipping, rigging, and other destination charges shall be included in the cost of the proposed system.

6.06 Subcontracting: The Contractor may subcontract parts of the work to be performed but will retain responsibility for all the work associated with the contract for system installation. The Offeror must identify any subcontractors intended for use in the execution of this contract.

6.07 Software License: The Offeror shall disclose the terms and conditions of software licensing

and any limitations on the use of software in the bid.

6.08 Insurance

A. The Contractor shall provide Workman's Compensation Insurance, General Liability Insurance, and Automobile Liability Insurance, and where applicable, Products Liability Insurance, with the Owner being included as a named insured on the liability insurance policies.

B. Certificates of Insurance on all such insurance coverage carried by the Contractor shall be furnished to the Owner prior to commencement of any work.

C. The minimum insurance limits the Contractor shall provide are as follows:

- Workers' Compensation (must be pursuant to West Virginia Code):

a.	E.L. Each Accident	$ 500,000
b.	E.L. Disease-Each Employee	$ 500,000
c.	E.L. Disease-Policy Limit	$ 500,000

- Commercial General Liability (per occurrence):

a.	Each Occurrence	$ 1,000,000
b.	Damage to Rented Premises	$ 1,000,000
c.	MED EXP (anyone person)	$ 5,000
d.	Personal & ADV Injury	$ 1,000,000
e.	General Aggregate	$ 2,000,000
f.	Products-COMP/OPP Aggregate	$ 2,000,000

- Property Damage:

a.	Each occurrence	$ 1,000,000
b.	Aggregate	$ 1,000,000

- Automobile Liability – Owned, Non-owned, and Hired:

a.	Bodily injury, each person	$ 1,000,000
b.	Bodily injury, each accident	$ 1,000,000
c.	Property damage, each occurrence	$ 1,000,000

D. The Owner shall be exempt from, and in no way liable for, any sums of money which may represent a deductible on any insurance policy. The payment of any deductible be the sole responsibility of the Contractor providing insurance.

6.09 AFFIDAVITS (see Exhibits) – TO BE SUBMITTED WITH BID OR AS OTHERWISE PERSCRIBED BY LAW

A. PURCHASING AFFIDAVIT: West Virginia code §5A-3-10A states that no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than $1,000 in the aggregate. The Bidder (vendor) shall execute and submit with its bid, or as otherwise prescribed by West Virginia Code, the Purchasing Affidavit provided in the Bidding Documents.

B. DRUG-FREE WORKPLACE CONFORMANCE AFFIDAVIT: West Virginia Code §21-1D-5 requires each contractor that submits a bid for the work to submit an affidavit that the contractor has a written plan for a drug-free workplace policy prior to being awarded a contract. The contractor (bidder/vendor) shall execute and submit with its bid, or as otherwise prescribed by West Virginia Code, the Drug-Free Workplace Conformance Affidavit provided in the Bidding Documents.

6.10 CERTIFIED DRUG-FREE WORKPLACE REPORT: In accordance with West Virginia Code §21-1D-7b, no less than once per year, or upon completion of the project, every contractor shall provide a certified report to the public authority which let the contract. That report must include each of the items identified in the Required Report Content section of the Certified Drug-Free Workplace Report Coversheet.

6.11 WEST VIRGINIA CONTRACTOR'S LICENSE: West Virginia Code §30-42 requires that all persons desiring to perform contractual work in West Virginia must be duly licensed. The West Virginia Contractor Licensing Board is empowered to issue a contractor's license. Application for a contractor's license may be made by contacting the West Virginia Contractor Licensing Board, Building 3, Room 200, 1900 Kanawha Boulevard, East, Charleston, West Virginia 25305. Telephone: (304) 558-7890. West Virginia Code §30-42 requires any prospective Bidder to include the contractor's license number on or with its Bid. Successful Bidder will be required to furnish a copy of their contractor's license prior to issuance of a Purchase Order/Contract.

6.12 VENDOR REGISTRATION AND DISCLOSURE STATEMENT: The successful Offeror must be a registered vendor with the West Virginia Department of Administration, Purchasing Division, prior to receiving a contract/purchase order. Vendor Registration information is available at the following URL: http://www.state.wv.us/admin/purchase/forms.html

6.13 Shipping: shipping, rigging, and other destination charges shall be included in the cost of the proposed system.

6.14 Royalties, Patents, and Licenses

A. The Contractor shall defend or settle at its own expense, any claim or suit against the Owner alleging that any contractor products furnished under the Agreement infringe any United States patent or copyright. The contractor shall also pay all damages and costs that by final judgment may be assessed against the Owner due to such infringement. The Owner will promptly notify the Contractor in writing of such claim or suit and expect the contractor's obligation to be as sole control of the defense or settlement of such claim or suit. The Owner will cooperate with the Contractor in a reasonable way to facilitate the settlement or defense of such claim or suit. The contractor will not be responsible if the claim or suit arises from the Owner's modifications, or from combinations of products provided by the contractor with products provided by the Owner or others.

B. If any contractor-provided products become, or in the Contractor's opinion, are likely to become the subject of an infringement suit, the Contractor shall:

- Procure for the Owner the right to continue using the applicable product;
- Replace or modify the product to provide a no infringing product that is functionally

equivalent in all material respects; or

- Refund the purchase price or one-time software license fee less a reasonable allowance for use.

6.15 Assignment: Neither the contractor nor the Owner may assign this agreement without the prior written consent of the other party.

6.16 Subcontracting: The Contractor may subcontract the work to be performed but shall retain responsibility for all the work associated with the contract for system installation. The Offeror must identify any subcontractors intended for use in the execution of this contract in its bid.

6.17 Supplemental Terms and Conditions/Modifications: Any supplemental terms, conditions, modification, or waiver of these terms and conditions shall be in writing and signed by the Contractor and the Owner. The State of West Virginia terms and conditions shall prevail whenever there is a conflict.

6.18 Waiver of Rights or Remedy: If the Contractor or the Owner fails to enforce any rights or remedy available under this Agreement, that failure will not be construed as a waiver of any right or remedy with respect to any other breach or failure by the other party.

6.19 Statement of Intent: The Owner certifies the products acquired under this agreement are intended for internal use and not for the purpose of resale.

6.20 Project Closeout Documents: Upon completion of the project and prior to final payment, the Contractor shall provide a complete set of project closeout documents tabbed, indexed and bookmarked in PDF format which shall include but not necessarily be limited to:

A. As built drawings.

B. Approved shop drawings and submittals.

C. Operation and maintenance manuals.

D. Warranties.

E. Software and license agreements.

6.21 Exhibits Applicable to this RFP and to the Contract

A. The following is a list of Exhibits that are attached and are a binding part of this RFP:

Exhibit A, Instructions to Bidders
Exhibit B, Terms and Conditions
Exhibit C, No-Debt Affidavit – MUST BE SUBMITTED WITH BID OR AS REQUIRED BY WV Code
Exhibit D, Drug-Free Workplace Conformance Affidavit – MUST BE SUBMITTED WITH BID OR AS REQUIRED BY WV CODE

PART 7: PROJECT DOCUMENTS

7.01 The Bid shall include a complete turnkey installation of the systems indicated in the following documents:

7.02 Specifications:

A. The specifications define performance criteria, selected specific installation requirements, and some specific performance requirements, which are to be provided under this contract. The level of detail contained within these documents is limited and is intended to be sufficient to obtain competitive Bids from multiple contractors. Detailed design and engineering, including, but not limited to, incidental equipment, ancillary equipment or interface devices, equipment rack layouts, control panel layouts, and equipment mounting details, shall be included in the scope of your work.

Section 01 30 00, Administrative Requirements
Section 08 71 00, Door Hardware (Caperton Center Only)
Section 26 05 26, Grounding and Bonding for Electrical Systems
Section 26 05 29, Hangers and Supports for Electrical Systems
Section 26 05 33.13, Conduit for Electrical Systems
Section 26 05 33.16, Boxes for Electrical Systems
Section 28 00 10, Security General
Section 28 00 90, Security Performance Verification
Section 28 10 00, Access Control
Section 28 20 00, Video Surveillance

7.03 Drawings:

DRAWING INDEX – NEW WORK AT CAPERTON CENTER (MAY 30, 2024): A110: FIRST FLOOR PLAN – CAPERTON CENTER

E000: GENERAL ELECTRICAL NOTES & SPECIFICATIONS
E001: ELECTRICAL SYMBOL LEGEND & ABBREVIATIONS
E130: SECURITY SYSTEM PLAN
E500: SECURITY SYSTEM PLAN

DRAWINGS PROVIDED FOR REFERENCE ONLY (1996 CONSTR. DWGS):
DOOR 101: ENLARGED PLAN 10B
DOOR 102: ENLARGED PLAN 10H & PLAN DETAIL 5F
DOOR 103: PARTIAL FLOOR PLAN & PLAN DETAIL 5D

DRAWING INDEX – NEW WORK AT VET TECH (MAY 30, 2024):
E000: GENERAL ELECTRICAL NOTES AND SPECIFICATIONS
E001: ELECTRICAL SYMBOL LEGEND & ABBREVIATIONS
E130: SECURITY SYSTEMS PLAN
E500: SECURITY SYSTEMS PLAN

DRAWINGS PROVIDED FOR REFERENCE ONLY (2022):
A110: FLOOR PLAN – NOTES PLAN
A600: ROOM, WINDOW & DOOR SCHEDULES

APPENDIX A BID FORMS AND SCHEDULE OF VALUE FORMS

BID FORM

BID TO THE OWNER: West Virginia Community and Technical College System
2001 Union Carbide Drive
South Charleston, WV 25303

PROJECT: RFB 20289
Security System for Vet Tech Facility & Caperton Center
Pierpont Community and Technical College

Bidder's Name: _____

The undersigned, hereinafter called "Bidder," being familiar with and understanding the Bidding Documents, and also having examined the site and being familiar with all local conditions affecting the Project, hereby proposes to furnish all labor, material, equipment, supplies and transportation, and to perform all Work in accordance with the Bidding and Contract Documents within the time set forth below for the sum of:

VET TECH FACILITY BID: $_____

(Amount to be shown in both words and numbers. In the event of a difference between the written amount and the number amount, the written amount shall prevail.)

CAPERTON CENTER BID: $_____

(Amount to be shown in both words and numbers. In the event of a difference between the written amount and the number amount, the written amount shall prevail.)

TOTAL BID FOR BOTH: $_____

(Amount to be shown in both words and numbers. In the event of a difference between the written amount and the number amount, the written amount shall prevail.)

The Bidder, if successful and awarded a Contract, agrees that all Work is to be Substantially Complete within the below listed consecutive calendar days following receipt of Owner's written Notice to Proceed and agrees to achieve Final Completion within 30 consecutive calendar days thereafter.

CALENDAR DAYS FOR VET TECH: _____

(All amounts to be shown in both words and numbers)

CALENDAR DAYS FOR CAPERTON CENTER: _____

(All amounts to be shown in both words and numbers)

CALENDAR DAYS FOR BOTH: _____

(All amounts to be shown in both words and numbers)

RESPECTFULLY SUBMITTED:

SIGNATURE:_____ DATE:_____

Signature In Ink

NAME:_____ *Corporate Seal if Applicable*

Please Type or Print

TITLE: _____

BIDDERS NAME : _____

BIDDER'S ADDRESS: _____

_____

TELEPHONE: _____

EMAIL: _____

CONTRACTOR'S
LICENSE NO:_____

CONTRACTOR'S LICENSE

West Virginia Code §21-11-2 requires that all persons desiring to perform contractual work in West Virginia must be duly licensed. The West Virginia Contractor's Licensing Board is empowered to issue the contractor's license. Application for a contractor's license may be made by contacting the West Virginia Department of Labor, 1900 Kanawha Boulevard, East, Charleston, West Virginia 25305. Telephone: (304) 558-7890. West Virginia Code §21-11 requires any prospective Bidder to include the contractor's license number on their Bid. Successful Bidder will be required to furnish a copy of their contractor's license prior to issuance of a Purchase Order/Contract. Please complete and attach EXHIBIT A to bid.

AFFIDAVITS (on the following pages) – *TO BE SUBMITTED WITH BID OR AS OTHERWISE PRESCRIBED BY LAW*

- PURCHASING AFFIDAVIT: West Virginia Code §5A-3-10A states that no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than $1000 in the aggregate. Please include purchasing affidavit to the bid.

- DRUG-FREE WORKPLACE CONFORMANCE AFFIDAVIT: This affidavit must be submitted with the Bid to comply with West Virginia Code §21-1D-5. Failure to include this affidavit to the bid shall result in disqualification of the Bid.

DISCLOSURE OF INTERESTED PARTIES TO CONTRACTS

Pursuant to West Virginia Code §6D-1-2, a state agency may not enter into a contract, or a series of related contracts, that has/have an actual or estimated value of $1 million or more until the business entity submits to the contracting state agency a Disclosure of Interested Parties to the applicable contract. In addition, the business entity awarded a contract is obligated to submit a supplemental Disclosure of Interested Parties reflecting any new or differing interested parties to the contract within 30 days following the completion or termination of the applicable contract.

The Disclosure Form is available at the following URL: http://www.ethics.wv.gov/Pages/forms.aspx

VENDOR REGISTRATION AND DISCLOSURE STATEMENT

The successful Bidder must be a registered vendor with the West Virginia Department of Administration, Purchasing Division, prior to receiving a contract/purchase order. Vendor registration information is available at the following URL: http://www.state.wv.us/admin/purchase/vrc/wv1.pdf

LIQUIDATED DAMAGES

The Owner will suffer financial loss if the Work is not Substantially Complete within the Contract Time following the date established for commencement of the Work in the notice to proceed and/or purchase order. As liquidated damages, and not as a penalty, the Contractor and the Contractor's surety shall be liable for and shall pay the Owner the sum of $150.00 per day until Substantial Completion is achieved. Allowances may be made for delays due to shortages of materials and/or energy resources, subject to proof by documentation, and for delays due to strikes or other delays beyond the control of the Contractor. All delays and any claim for extension of Contract Time must be properly documented in accordance with the General Conditions of the Contract for Construction, AIA Document A201-1997, and the State of West Virginia Supplementary Conditions to AIA Document A201-1997.

ADDENDA ACKNOWLEDGMENT

The undersigned hereby acknowledges receipt of the following Addenda and has taken the information contained therein into full consideration in the formulation of this Bid.

Addenda No. 1 _____

No. 2 _____

No. 3 _____

No. 4 _____

Failure to acknowledge receipt of each Addendum may be cause for rejection of the Bid.

SIGNATURE: _____ DATE: _____

Signature in Ink

LIST OF PROPOSED SUBCONTRACTORS
(To Be Completed and Submitted with Bid)

List as designated below the proposed subcontractor for each major branch of work for this bid. Also, provide the subcontractor's license number as required by the West Virginia Contractors Licensing Act. If the branch of work is to be completed solely by the Bidder/Contractor, so indicate. If the acceptance of an alternate bid changes a subcontractor, indicate by notation below. The Bidder/Contractor may be requested

to change an unsatisfactory subcontractor. The Bidder/Contractor is responsible for selecting or changing subcontractors. The Owner and Architect/Engineer may indicate their concerns about any entity listed which they have reason to believe past experience indicates that poor performance may be expected. The Bidder/Contractor has full responsibility for satisfactory execution of all work in accordance with the Contract Documents. Any change of proposed subcontractors shall be at no additional cost to the Owner, as the Bidder/Contractor has full responsibility for execution of the work. Bidder/Contractor shall have up to two hours after the bid opening to make adjustments if necessary. Owner will suffer loss should Contractor change from those listed beyond the two-hour time stipulated. Please email adjustments/modifications to Chief Procurement Officer at: rich.donovan@wvhepc.edu.

Branch of Work / Material Category	**Subcontractor/Supplier**	**Contractor License #**
1.		
2.		
3.		
4.		

END OF FORM OF PROPOSAL

Pierpont Caperton Center & Vet Tech Security System

APPENDIX A- Schedule of Values Instructions to Complete

1. **Enter the required information in the following cells:**
   Manufacturer: of the equipment provided Part No: of the equipment provided
   Description – use standard abbreviations. Do not use punctuation such as periods, apostrophes, or quotations. (feet = ft, inches = in) (example: 3/4in copper DHW)
   Unit – relevant unit (CAPS)
   Quantity – whole number, no decimals (do not use truncation to hide decimal portion of value.)
   Labor- whole number, no decimals (do not use truncation to hide decimal portion of value. Round value to nearest dollar.)
   Material - whole number, no decimals (do not use truncation to hide decimal portion of value. Round value to nearest dollar.)
   Total – no entry required; field will auto calculate. Shaded areas are auto calculating.

2. **To add lines to the sheet, select the last empty formatted line (**above the shaded Total line**) on the sheet (click in the left most column, the one EXCEL numbers) and from the Edit menu or the popup menu (right mouse button) select COPY (or use Ctrl-C).**

   From the Insert menu select Copied Cells or from the popup menu select Insert Copied Cells.
3. Do not **insert additional columns.**
4. Do not **add lines below the Total line (shaded** line**).**
5. Do not **use header lines (Bldg. names/numbers, floor numbers, elevation titles). Incorporate all titles in descriptions (example: Bld-1 Acc Ceilings)**
6. Do not **hide columns or rows.**
7. **The Bidder is responsible for the Excel formulas and arithmetic to prepare and submit a complete and accurate bid.**

SCHEDULE OF VALUES

Scope: Base Bid Contract

Project: Caperton Center Security System

Manuf.	Part No.	DESCRIPTION	Unit	QTY.	Labor	Material	SCHEDULED VALUE
					Total		

SCHEDULE OF VALUES

Scope: Base Bid Contract

Project: Vet Tech Security System

Manuf.	Part No.	DESCRIPTION	Unit	QTY.	Labor	Material	SCHEDULED VALUE
				Total			

APPENDIX B
SPECIFICATIONS

APPENDIX B - SPECIFICATIONS

1. SECTION 013000 ADMINISTRATIVE REQUIREMENTS
2. SECTION 087100 DOOR HARDWARE (**CAPERTON CENTER ONLY**)
3. SECTION 260526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
4. SECTION 260529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
5. SECTION 260533.13 CONDUIT FOR ELECTRICAL SYSTEMS
6. SECTION 260533.16 BOXES FOR ELECTRICAL SYSTEMS
7. SECTION 280010 SECURITY – GENERAL
8. SECTION 280090 SECURITY PERFORMANCE VERIFICATION
9. SECTION 281000 ACCESS CONTROL
10. SECTION 282000 VIDEO SURVEILLANCE

SECTION 013000
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General administrative requirements.

B. Submittals for review, information, and project closeout.

C. Number of copies of submittals.

D. Requests for Interpretation (RFI) procedures.

E. Submittal procedures.

1.02 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Make the following types of submittals to Architect:
   1. Requests for Interpretation (RFI).
   2. Requests for substitution.
   3. Shop drawings, product data, and samples.
   4. Applications for payment and change order requests.
   5. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 REQUESTS FOR INTERPRETATION (RFI)

A. Definition: A request seeking one of the following:
   1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
   2. A resolution to an issue which has arisen due to field conditions and affects design intent.

B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
   1. Prepare a separate RFI for each specific item.
      a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
   2. Prepare in a format and with content acceptable to Architect.
   3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.

D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.

E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
   1. Official Project name and number, and any additional required identifiers established in Contract Documents.
   2. Discrete and consecutive RFI number, and descriptive subject/title.
   3. Issue date, and requested reply date.
   4. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
   5. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract

Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.

F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

G. Review Time: Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.

H. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
   1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
   2. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
   3. Notify Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.02 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.

C. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below.

3.03 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. Certificates.
   3. Manufacturer's instructions.
   4. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner.

3.04 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. Submit for Owner's benefit during and after project completion.

3.05 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

3.06 SUBMITTAL PROCEDURES

A. General Requirements:
   1. Use a separate transmittal for each item.
   2. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.

3. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
4. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
    a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
5. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
    a. Send submittals in electronic format via email to Architect.
6. Schedule submittals to expedite the Project, and coordinate submission of related items.
    a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
    b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
7. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
8. Provide space for Contractor and Architect review stamps.
9. When revised for resubmission, identify all changes made since previous submission.
10. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
11. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.

B. Product Data Procedures:
1. Submit only information required by individual specification sections.
2. Collect required information into a single submittal.
3. Do not submit (Material) Safety Data Sheets for materials or products.

C. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
2. Do not reproduce Contract Documents to create shop drawings.
3. Use of reproductions of Contract Documents in digital data form to create shop drawings is only permitted as defined as approved by architect upon request by contractor.
4. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

D. Samples Procedures:
1. Transmit related items together as single package.
2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.

3.07 SUBMITTAL REVIEW

A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.

B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.

C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.

D. Architect's and consultants' actions on items submitted for review:
1. Authorizing purchasing, fabrication, delivery, and installation:
    a. "Approved", or language with same legal meaning.

b. "Approved as Noted, Resubmission not required", or language with same legal meaning.
    1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.
    1) Resubmit corrected item, with review notations acknowledged and incorporated. Resubmit separately, or as part of project record documents.
    2) Non-responsive resubmittals may be rejected.

2. Not Authorizing fabrication, delivery, and installation:
    a. "Revise and Resubmit".
        1) Resubmit revised item, with review notations acknowledged and incorporated.
        2) Non-responsive resubmittals may be rejected.
    b. "Rejected".
        1) Submit item complying with requirements of Contract Documents.

E. Architect's and consultants' actions on items submitted for information:
1. Items for which no action was taken:
    a. "Received" - to notify the Contractor that the submittal has been received for record only.
2. Items for which action was taken:
    a. "Reviewed" - no further action is required from Contractor.

END OF SECTION

SECTION 087100
DOOR HARDWARE

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the following:
   1. Commercial door hardware.
   2. Electrified door hardware.

1.02 SUBMITTALS

A. Product Data: For each product indicated.

B. Shop Drawings: Include details of electrified door hardware and wiring diagrams.

C. Samples: For each exposed finish.

D. Door Hardware Schedule: Organized into door hardware sets indicating type, style, function, size, label, hand, manufacturer, fasteners, location, and finish of each door hardware item. Include description of each electrified door hardware function, including sequence of operation.

E. Product certificates.

1.03 QUALITY ASSURANCE

A. Supplier Qualifications: Person who is or employs a qualified DHI Architectural Hardware Consultant.

B. Source Limitations: Obtain electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that are listed to perform electrical modifications, by a testing and inspecting agency acceptable to authorities having jurisdiction, are acceptable.

C. Pre-Installation Conference: Conduct conference at Project site.

D. Templates: Obtain and distribute templates for doors, frames, and other work specified to be factory prepared for installing door hardware.

E. Standards: Comply with BHMA A156 series standards, Grade 1.

F. Certified Products: Provide door hardware that is listed in BHMA directory of certified products.

1.04 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fails in materials or workmanship within warranty period from date of Substantial Completion.
   1. Warranty Period for one year.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Product: Subject to compliance with requirements, provide the product named for each door hardware item indicated in Door Hardware Sets.

B. Basis-of-Design Product: Product named for each door hardware item indicated in Door Hardware Sets establishes the basis of design. Provide either the named product or a comparable product by one of the manufacturers specified for each type of hardware item.

C. Manufacturers Used in the specification:

Products	Manufacture Specified	Acceptable Equals
Card Readers/Keypads	By Others	No substitutions
Power Supplies	Von Duprin	No substitutions
Power Transfers	SCE (Schlage)	Locknetics, Securitron
QEL/RX kits	Von Duprin	No substitutions

2.02 DOOR HARDWARE

A. Scheduled Door Hardware: Provide door hardware according to Door Hardware Sets at the end of Part 3. Manufacturers' names are abbreviated.

2.03 EXIT DEVICES PARTS

A. Manufacturers:
   1. Scheduled Manufacturer: Von Duprin QEL/RX kits.
   2. Acceptable Manufacturers: No Substitutions.

B. Provide kits with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.

2.04 DOOR CORDS

A. Manufacturers:
   1. Scheduled Manufacturer: Schlage 788/798 Series.
   2. Acceptable Manufacturers: Securitron TSB Series, Locknetics DC Series.

B. Provide door cords with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.

C. Locate electric power transfer per manufacturer’s template and UL requirements, unless interference with operation of door or other hardware.

2.05 POWER SUPPLIES

A. Manufacturers and Products:
   1. Scheduled Manufacturer and Product: Schlage or Von Duprin PS900 series
   2. Acceptable Manufacturers and Products: No Substitutions

B. Requirements:
   1. Provide power supplies, recommended and approved by manufacturer of electrified locking component, for operation of electrified locks, electrified exit devices, magnetic locks, electric strikes, and other components requiring power supply.
   2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
   3. Provide regulated and filtered 24 VDC power supply , and UL class 2 listed.
   4. Options:
   5. Provide power supply, where specified, with internal capability of charging sealed backup batteries 24 VDC, in addition to operating DC load.
   6. Provide sealed batteries for battery back-up at each power supply where specified.
   7. Provide keyed power supply cabinet.
   8. Provide power supply in an enclosure, complete, and requiring 120VAC to fused input.
   9. Provide power supply with emergency release terminals, where specified, that allow release of all devices upon activation of fire alarm system complete with fire alarm input for initiating “no delay” exiting mode.

2.06 FABRICATION

A. Base Metals: Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18 for finishes. Do not furnish manufacturer's standard materials if different from specified standard.

B. Fasteners: Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated. Provide steel machine or wood screws or steel through bolts for fire-rated applications.

C. Spacers or Sex Bolts: For through bolting of hollow metal doors.

D. Fasteners for Wood Doors: Comply with requirements of DHI WDHS.2, "Recommended Fasteners for Wood Doors."

E. Finishes: Comply with BHMA A156.18.

PART 3 EXECUTION

3.01 INSTALLATION

A. Examine doors and frames for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

B. Steel Door and Frame Preparation: Comply with DHI A115 series. Drill and tap doors and frames for surface-applied hardware according to SDI 107.

C. Wood Door Preparation: Comply with DHI A115-W series.

D. Mounting Heights: Comply with the following requirements, unless otherwise indicated:
   1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
   2. Custom Steel Doors and Frames: DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."
   3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

E. Adjust and reinforce attachment substrates as necessary for proper installation and operation. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
   1. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with accessibility requirements.
   1. Door Closers: Adjust sweep period so that from an open position of 70 degrees, the door will take at least three seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

3.02 FIELD QUALITY CONTROL

A. Inspections: Owner will engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

DOOR HARDWARE SETS:

HARDWARE GROUP NO. 01

FOR USE ON DOOR (S):

101	**102**				

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	**EA**	**DOOR CORD**	**788**	**626**	**SCE**
1	**EA**	**LATCH RETRACTION KIT**	**958003/040065 QEL BASEPLATE CONVERSION KIT**		**VON**
1	**EA**	**SWITCH**	**SWITCH KIT-RX**		**VON**
1	**EA**	**CONTROLLER**	**CARD READER BY OTHERS**	**B**	**SCE**
1	**EA**	**POWER SUPPLY**	**PS902 900-4RL 120/240 VAC**		**VON**

1			HDWE SUPPLIER/GC TO VERIFY COMPATIBILITY WITH EXISTING DOOR FOR NEW HDWE		
1			BALANCE OF HARDWARE EXISTING		

OPERATION: DOOR CLOSED AND SECURE. VALID CREDENTIAL ALLOWS ENTRY. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO. 02

FOR USE ON DOOR (S):

103					

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	DOOR CORD	788	626	SCE
1	EA	LATCH RETRACTION KIT	958003/040065 QEL BASEPLATE CONVERSION KIT		VON
1	EA	SWITCH	SWITCH KIT-RX		VON
1	EA	CONTROLLER	CARD READER BY OTHERS	B	SCE
1	EA	POWER SUPPLY	PS902 900-4RL 120/240 VAC		VON
			HDWE SUPPLIER/GC TO VERIFY COMPATIBILITY WITH EXISTING DOOR FOR NEW HDWE		
			BALANCE OF HARDWARE EXISTING		

OPERATION: DOOR CLOSED AND SECURE. VALID CREDENTIAL ALLOWS ENTRY. FREE EGRESS AT ALL TIMES.

END OF SECTION

SECTION 260526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Grounding and bonding requirements.

B. Conductors for grounding and bonding.

C. Connectors for grounding and bonding.

D. Ground bars.

E. Ground rod electrodes.

F. Ground access wells.

1.02 REFERENCE STANDARDS

A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2012.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

C. NEMA GR 1 - Ground Rod Electrodes and Ground Rod Electrode Couplings; 2017.

D. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2017.

E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

F. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify exact locations of underground metal water service pipe entrances to building.
   2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
   3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install ground rod electrodes until final backfill and compaction is complete.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.05 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

A. Do not use products for applications other than as permitted by NFPA 70 and product listing.

B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

D. Grounding System Resistance:
   1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
   2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
   3. Between Grounding Electrode System and Major Electrical Equipment Frames, System Neutral, and Derived Neutral Points: Not greater than 0.5 ohms, when tested using "point-to-point" methods.

E. Grounding Electrode System:
   1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
      a. Provide continuous grounding electrode conductors without splice or joint.
      b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
   2. Metal Underground Water Pipe(s):
      a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet (3.0 m) at an accessible location not more than 5 feet (1.5 m) from the point of entrance to the building.
      b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.
      c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.
   3. Metal In-Ground Support Structure:
      a. Provide connection to metal in-ground support structure that is in direct contact with earth in accordance with NFPA 70.
   4. Concrete-Encased Electrode:
      a. Provide connection to concrete-encased electrode consisting of not less than 20 feet (6.0 m) of either steel reinforcing bars or bare copper conductor not smaller than 4 AWG embedded within concrete foundation or footing that is in direct contact with earth in accordance with NFPA 70.
   5. Ground Rod Electrode(s):
      a. Provide single electrode unless otherwise indicated or required.
      b. Space electrodes not less than 10 feet (3.0 m) from each other and any other ground electrode.
   6. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.

F. Bonding and Equipment Grounding:
   1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
   2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
   3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.

4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
    a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
    b. Metal gas piping.

2.02 GROUNDING AND BONDING COMPONENTS

A. General Requirements:
1. Provide products listed, classified, and labeled as suitable for the purpose intended.
2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 260526:
1. Use insulated copper conductors unless otherwise indicated.
    a. Exceptions:
        1) Use bare copper conductors where installed underground in direct contact with earth.
        2) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:
1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
4. Manufacturers - Mechanical and Compression Connectors:
    a. Advanced Lightning Technology (ALT): www.altfab.com/#sle.
    b. Burndy LLC: www.burndy.com/#sle.
    c. Harger Lightning & Grounding: www.harger.com/#sle.
5. Manufacturers - Exothermic Welded Connections:
    a. Burndy LLC: www.burndy.com/#sle.
    b. Cadweld, a brand of Erico International Corporation: www.erico.com/#sle.
    c. thermOweld, subsidiary of Continental Industries; division of Burndy LLC: www.thermoweld.com/#sle.

D. Ground Bars:
1. Description: Solid copper rectangular ground bars with mounting brackets and insulators.
2. Size: Minimum 6" x 0.75" x 0.25" ..
3. Holes for Connections: Drilled and tapped 0.25-20 and 10-24 to terminate incoming conductors. .

E. Ground Rod Electrodes:
1. Comply with NEMA GR 1.
2. Material: Copper-bonded (copper-clad) steel.
3. Size: 3/4 inch (19 mm) diameter by 10 feet (3.0 m) length, unless otherwise indicated.
4. Manufacturers:
    a. Advanced Lightning Technology (ALT): www.altfab.com/#sle.
    b. Erico International Corporation: www.erico.com/#sle.
    c. Galvan Industries, Inc: www.galvanelectrical.com/#sle.
    d. Harger Lightning & Grounding: www.harger.com/#sle.

F. Ground Access Wells:

1. Description: Open bottom round or rectangular well with access cover for testing and inspection; suitable for the expected load at the installed location.
2. Size: As required to provide adequate access for testing and inspection, but not less than minimum size requirements specified.
    a. Round Wells: Not less than 8 inches (200 mm) in diameter.
    b. Rectangular Wells: Not less than 12 by 12 inches (300 by 300 mm).
3. Depth: As required to extend below frost line to prevent frost upheaval, but not less than 10 inches (250 mm).
4. Cover: Factory-identified by permanent means with word "GROUND".
5. Manufacturers:
    a. Advanced Lightning Technology (ALT): www.altfab.com/#sle.
    b. Erico International Corporation: www.erico.com/#sle.
    c. Harger Lightning & Grounding: www.harger.com/#sle.
    d. thermOweld, subsidiary of Continental Industries; division of Burndy LLC: www.thermoweld.com/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that work likely to damage grounding and bonding system components has been completed.

B. Verify that field measurements are as indicated.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or provide ground plates.
    1. Outdoor Installations: Unless otherwise indicated, install with top of rod 6 inches (150 mm) below finished grade.
    2. Indoor Installations: Unless otherwise indicated, install with 4 inches (100 mm) of top of rod exposed.

D. Make grounding and bonding connections using specified connectors.
    1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
    2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
    3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
    4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
    5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

3.03 FIELD QUALITY CONTROL

A. Inspect and test in accordance with NETA ATS except Section 4.

B. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.

C. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

END OF SECTION

SECTION 260529
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.02 RELATED REQUIREMENTS

A. Section 260533.13 - Conduit for Electrical Systems: Additional support and attachment requirements for conduits.

B. Section 260533.16 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.

1.03 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019.

D. MFMA-4 - Metal Framing Standards Publication; 2004.

E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

H. UL 5B - Strut-Type Channel Raceways and Fittings; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
   2. Coordinate the work with other trades to provide additional framing and materials required for installation.
   3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
   4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
   5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured.

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel (strut) framing systems, non-penetrating rooftop supports, and post-installed concrete and masonry anchors.

1.06 QUALITY ASSURANCE

A. Comply with NFPA 70.

B. Comply with applicable building code.

C. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
   1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
   2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
   3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of 2.0. Include consideration for vibration, equipment operation, and shock loads where applicable.
   4. Do not use products for applications other than as permitted by NFPA 70 and product listing.
   5. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
   6. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
      a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
      b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
   1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
   2. Conduit Clamps: Bolted type unless otherwise indicated.
   3. Manufacturers:
      a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com/#sle.
      b. Erico International Corporation: www.erico.com/#sle.
      c. HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.
      d. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
      e. Thomas & Betts Corporation: www.tnb.com/#sle.

C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
   1. Manufacturers:
      a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com/#sle.
      b. Erico International Corporation: www.erico.com/#sle.
      c. HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.
      d. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.

D. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
   1. Comply with MFMA-4.
   2. Channel (Strut) Used as Raceway (only where specifically indicated): Listed and labeled as complying with UL 5B.
   3. Channel Material:
      a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
      b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.

4. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch (2.66 mm).
5. Minimum Channel Dimensions: 1-5/8 inch (41 mm) width by 13/16 inch (21 mm) height.
6. Manufacturers:
    a. Cooper B-Line, a division of Eaton Corporation: www.cooperindustries.com/#sle.
    b. Thomas & Betts Corporation: www.tnb.com/#sle.
    c. Unistrut, a brand of Atkore International Inc: www.unistrut.com/#sle.
    d. Substitutions: See Section 016000 - Product Requirements.
    e. Source Limitations: Furnish channels (struts) and associated fittings, accessories, and hardware produced by a single manufacturer.

E. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
1. Minimum Size, Unless Otherwise Indicated or Required:
    a. Equipment Supports: 1/2 inch (13 mm) diameter.
    b. Busway Supports: 1/2 inch (13 mm) diameter.
    c. Single Conduit up to 1 inch (27 mm) trade size: 1/4 inch (6 mm) diameter.
    d. Single Conduit larger than 1 inch (27 mm) trade size: 3/8 inch (10 mm) diameter.
    e. Trapeze Support for Multiple Conduits: 3/8 inch (10 mm) diameter.
    f. Outlet Boxes: 1/4 inch (6 mm) diameter.
    g. Luminaires: 1/4 inch (6 mm) diameter.

F. Non-Penetrating Rooftop Supports for Low-Slope Roofs: Steel pedestals with thermoplastic or rubber bases that rest on top of roofing membrane, not requiring any attachment to the roof structure and not penetrating the roofing assembly, with support fixtures as specified.
1. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
2. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports.
3. Mounting Height: Provide minimum clearance of 6 inches (150 mm) under supported component to top of roofing.
4. Manufacturers:
    a. Cooper B-Line, a division of Eaton Corporation: www.cooperindustries.com/#sle.
    b. Erico International Corporation: www.erico.com/#sle.
    c. PHP Systems/Design: www.phpsd.com/#sle.
    d. Unistrut, a brand of Atkore International Inc: www.unistrut.com/#sle.

G. Anchors and Fasteners:
1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
4. Hollow Masonry: Use toggle bolts.
5. Hollow Stud Walls: Use toggle bolts.
6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
7. Sheet Metal: Use sheet metal screws.
8. Wood: Use wood screws.
9. Plastic and lead anchors are not permitted.
10. Powder-actuated fasteners are not permitted.
11. Hammer-driven anchors and fasteners are not permitted.
12. Preset Concrete Inserts: Continuous metal channel (strut) and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
    a. Comply with MFMA-4.
    b. Channel Material: Use galvanized steel.
    c. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch (2.66 mm) minimum base metal thickness.
    d. Manufacturer: Same as manufacturer of metal channel (strut) framing system.
13. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) for compliance with applicable building code.

14. Manufacturers - Mechanical Anchors:
    a. Hilti, Inc: www.us.hilti.com/#sle.
    b. ITW Red Head, a division of Illinois Tool Works, Inc: www.itwredhead.com/#sle.
    c. Powers Fasteners, Inc: www.powers.com/#sle.
    d. Simpson Strong-Tie Company Inc: www.strongtie.com/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive support and attachment components.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.

D. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

E. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

F. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

G. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

H. Equipment Support and Attachment:
    1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
    2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
    3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
    4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

I. Conduit Support and Attachment: Also comply with Section 260533.13.

J. Box Support and Attachment: Also comply with Section 260533.16.

K. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.

L. Secure fasteners according to manufacturer's recommended torque settings.

M. Remove temporary supports.

N. Identify independent electrical component support wires above accessible ceilings (only where specifically indicated or permitted) with color distinguishable from ceiling support wires in accordance with NFPA 70.

3.03 FIELD QUALITY CONTROL

A. Inspect support and attachment components for damage and defects.

B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

C. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

SECTION 260533.13
CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Galvanized steel rigid metal conduit (RMC).
B. Aluminum rigid metal conduit (RMC).
C. Intermediate metal conduit (IMC).
D. Flexible metal conduit (FMC).
E. Liquidtight flexible metal conduit (LFMC).
F. Electrical metallic tubing (EMT).
G. Rigid polyvinyl chloride (PVC) conduit.
H. Conduit fittings.
I. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 260526 - Grounding and Bonding for Electrical Systems.
B. Section 260529 - Hangers and Supports for Electrical Systems.
C. Section 260533.16 - Boxes for Electrical Systems.
D. Section 260533.23 - Surface Raceways for Electrical Systems.

1.03 REFERENCE STANDARDS

A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2020.
B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S); 2020.
C. ANSI C80.5 - American National Standard for Electrical Rigid Metal Conduit -- Aluminum (ERMC-A); 2020.
D. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit; 2018.
E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
F. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2013.
G. NECA 102 - Standard for Installing Aluminum Rigid Metal Conduit; 2004.
H. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); 2017.
I. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
J. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2020.
K. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2021.
L. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
M. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.
N. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
O. UL 6A - Electrical Rigid Metal Conduit-Aluminum, Red Brass, and Stainless Steel; Current Edition, Including All Revisions.
P. UL 360 - Liquid-Tight Flexible Metal Conduit; Current Edition, Including All Revisions.
Q. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
R. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.

S. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.

T. UL 1203 - Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations; Current Edition, Including All Revisions.

U. UL 1242 - Electrical Intermediate Metal Conduit-Steel; Current Edition, Including All Revisions.

V. UL 1660 - Liquid-Tight Flexible Nonmetallic Conduit; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate minimum sizes of conduits with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate the arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
   3. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
   4. Coordinate the work with other trades to provide roof penetrations that preserve the integrity of the roofing system and do not void the roof warranty.
   5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not begin installation of conductors and cables until installation of conduit is complete between outlet, junction and splicing points.

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.

B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.

C. Underground:
   1. Under Slab on Grade: Use galvanized steel rigid metal conduit or rigid PVC conduit.
   2. Exterior, Direct-Buried: Use galvanized steel rigid metal conduit or rigid PVC conduit.
   3. Exterior, Embedded Within Concrete: Use galvanized steel rigid metal conduit or rigid PVC conduit.
   4. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit where emerging from underground.
   5. Where steel conduit is installed in direct contact with earth where soil has a resistivity of less than 2000 ohm-centimeters or is characterized as severely corrosive based on soils report or local experience, use corrosion protection tape to provide supplementary

corrosion protection or use PVC-coated galvanized steel rigid metal conduit.

D. Embedded Within Concrete:
   1. Within Slab on Grade (within structural slabs only where approved by Structural Engineer): Use galvanized steel rigid metal conduit or rigid PVC conduit.
   2. Within Slab Above Ground (within structural slabs only where approved by Structural Engineer): Use galvanized steel rigid metal conduit or rigid PVC conduit.

E. Concealed Within Masonry Walls: Use galvanized steel rigid metal conduit or electrical metallic tubing (EMT).

F. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).

G. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).

H. Exposed, Exterior: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or aluminum rigid metal conduit.

I. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).

J. Hazardous (Classified) Locations: Use galvanized steel rigid metal conduit or aluminum rigid metal conduit.

K. Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit.
   1. Maximum Length: 6 feet (1.8 m).

L. Connections to Vibrating Equipment:
   1. Dry Locations: Use flexible metal conduit.
   2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit.
   3. Maximum Length: 6 feet (1.8 m) unless otherwise indicated.
   4. Vibrating equipment includes, but is not limited to:
      a. Transformers.
      b. Motors.

M. Fished in Existing Walls, Where Necessary: Use flexible metal conduit.

2.02 CONDUIT REQUIREMENTS

A. Existing Work: Where existing conduits are indicated to be reused, they may be reused only where they comply with specified requirements, are free from corrosion, and integrity is verified by pulling a mandrel through them.

B. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.

C. Provide products listed, classified, and labeled as suitable for the purpose intended.

D. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

B. Fittings:
   1. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Hazardous (Classified) Locations: Use fittings listed and labeled as complying with UL 1203 for the classification of the installed location.
   3. Material: Use steel or malleable iron.
   4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.04 ALUMINUM RIGID METAL CONDUIT (RMC)

A. Description: NFPA 70, Type RMC aluminum rigid metal conduit complying with ANSI C80.5 and listed and labeled as complying with UL 6A.

B. Fittings:
   1. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Hazardous (Classified) Locations: Use fittings listed and labeled as complying with UL 1203 for the classification of the installed location.
   3. Material: Use aluminum.
   4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.05 INTERMEDIATE METAL CONDUIT (IMC)

A. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.

B. Fittings:
   1. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Hazardous (Classified) Locations: Use fittings listed and labeled as complying with UL 1203 for the classification of the installed location.
   3. Material: Use steel or malleable iron.
      a. Do not use die cast zinc fittings.
   4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.06 FLEXIBLE METAL CONDUIT (FMC)

A. Description: NFPA 70, Type FMC standard wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems to be used.

B. Fittings:
   1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Material: Use steel or malleable iron.
      a. Do not use die cast zinc fittings.

2.07 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.

B. Fittings:
   1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Material: Use steel or malleable iron.
      a. Do not use die cast zinc fittings.

2.08 ELECTRICAL METALLIC TUBING (EMT)

A. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.

B. Fittings:
   1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Material: Use steel or malleable iron.
   3. Connectors and Couplings: Use compression (gland) or set-screw type.
      a. Do not use indenter type connectors and couplings.
   4. Damp or Wet Locations (where permitted): Use fittings listed for use in wet locations.

2.09 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

A. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.

B. Fittings:
   1. Manufacturer: Same as manufacturer of conduit to be connected.
   2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

2.10 LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT (LFNC)

A. Description: NFPA 70, Type LFNC liquidtight flexible nonmetallic conduit listed and labeled as complying with UL 1660.

B. Fittings:
   1. Manufacturer: Same as manufacturer of conduit to be connected.
   2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B; suitable for the type of conduit to be connected.

2.11 ACCESSORIES

A. Corrosion Protection Tape: PVC-based, minimum thickness of 20 mil (0.51 mm).

B. Conduit Joint Compound: Corrosion-resistant, electrically conductive; suitable for use with the conduit to be installed.

C. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.

D. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force (890 N).

E. Sealing Compound for Sealing Fittings: Listed for use with the particular fittings to be installed.

F. Modular Seals for Conduit Penetrations: Rated for minimum of 40 psig; Suitable for the conduits to be installed.

G. Sealing Systems for Roof Penetrations: Premanufactured components and accessories as required to preserve integrity of roofing system and maintain roof warranty; suitable for conduits and roofing system to be installed; designed to accommodate existing penetrations where applicable.

H. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

I. Duct Bank Spacers: Nonmetallic; designed for maintaining conduit/duct spacing for concrete encasement in open trench installation; suitable for the conduit/duct arrangement to be installed.

J. Bore Spacers: Nonmetallic; designed for maintaining conduit/duct spacing for installation within casing; furnished with roller wheels to facilitate installation, openings to facilitate grout flow, and holes for stabilization cable; suitable for the casing and conduit/duct arrangement to be installed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive conduits.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.

D. Install aluminum rigid metal conduit (RMC) in accordance with NECA 102.

E. Install intermediate metal conduit (IMC) in accordance with NECA 101.

F. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.

G. Install liquidtight flexible nonmetallic conduit (LFNC) in accordance with NECA 111.

H. Conduit Routing:
   1. Unless dimensioned, conduit routing indicated is diagrammatic.
   2. When conduit destination is indicated without specific routing, determine exact routing required.
   3. Conceal all conduits unless specifically indicated to be exposed.
   4. Conduits in the following areas may be exposed, unless otherwise indicated:
      a. Electrical rooms.
      b. Mechanical equipment rooms.
      c. Within joists in areas with no ceiling.
   5. Unless otherwise approved, do not route conduits exposed:
      a. Across floors.
      b. Across top of parapet walls.
      c. Across building exterior surfaces.
   6. Conduits installed underground or embedded in concrete may be routed in the shortest possible manner unless otherwise indicated. Route all other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
   7. Arrange conduit to maintain adequate headroom, clearances, and access.
   8. Arrange conduit to provide no more than the equivalent of four 90 degree bends between pull points.
   9. Arrange conduit to provide no more than 150 feet (46 m) between pull points.
   10. Route conduits above water and drain piping where possible.
   11. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
   12. Maintain minimum clearance of 6 inches (150 mm) between conduits and piping for other systems.
   13. Maintain minimum clearance of 12 inches (300 mm) between conduits and hot surfaces. This includes, but is not limited to:
      a. Heaters.
      b. Hot water piping.
   14. Group parallel conduits in the same area together on a common rack.

I. Conduit Support:
   1. Secure and support conduits in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
   2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
   3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
   4. Use conduit strap to support single surface-mounted conduit.
      a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
   5. Use metal channel (strut) with accessory conduit clamps to support multiple parallel surface-mounted conduits.
   6. Use conduit clamp to support single conduit from beam clamp or threaded rod.
   7. Use trapeze hangers assembled from threaded rods and metal channel (strut) with accessory conduit clamps to support multiple parallel suspended conduits.

8. Use non-penetrating rooftop supports to support conduits routed across rooftops (only where approved).
9. Use of wire for support of conduits is not permitted.

J. Connections and Terminations:
1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
3. Use suitable adapters where required to transition from one type of conduit to another.
4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
6. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
7. Secure joints and connections to provide maximum mechanical strength and electrical continuity.

K. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
2. Make penetrations perpendicular to surfaces unless otherwise indicated.
3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
4. Conceal bends for conduit risers emerging above ground.
5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.

L. Embedment Within Structural Concrete Slabs (only where approved by Structural Engineer):
1. Secure conduits to prevent floating or movement during pouring of concrete.

M. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
3. Where conduits are subject to earth movement by settlement or frost.

N. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
1. Where conduits pass from outdoors into conditioned interior spaces.
2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

3.03 FIELD QUALITY CONTROL

A. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

B. Where coating of PVC-coated galvanized steel rigid metal conduit (RMC) contains cuts or abrasions, repair in accordance with manufacturer's instructions.

C. Correct deficiencies and replace damaged or defective conduits.

3.04 CLEANING

A. Clean interior of conduits to remove moisture and foreign matter.

3.05 PROTECTION

A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

SECTION 260533.16
BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Outlet and device boxes up to 100 cubic inches (1,650 cu cm), including those used as junction and pull boxes.

B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches (1,650 cu cm).

C. Boxes and enclosures for integrated power, data, and audio/video.

D. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 260526 - Grounding and Bonding for Electrical Systems.

B. Section 260529 - Hangers and Supports for Electrical Systems.

C. Section 260533.13 - Conduit for Electrical Systems:
   1. Conduit bodies and other fittings.
   2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.

C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.

D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013 (Reaffirmed 2020).

E. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports; 2013 (Reaffirmed 2020).

F. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.

G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

H. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.

I. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.

J. UL 508A - Industrial Control Panels; Current Edition, Including All Revisions.

K. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

L. UL 514C - Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.

4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
6. Coordinate the work with other trades to preserve insulation integrity.
7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
8. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for cabinets and enclosures, boxes for hazardous (classified) locations, floor boxes, and underground boxes/enclosures.

C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 BOXES

A. General Requirements:
1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
3. Provide products listed, classified, and labeled as suitable for the purpose intended.
4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
5. Provide grounding terminals within boxes where equipment grounding conductors terminate.

B. Outlet and Device Boxes Up to 100 cubic inches (1,650 cu cm), Including Those Used as Junction and Pull Boxes:
1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
3. Use cast iron boxes where exposed galvanized steel rigid metal conduit is used.
4. Use nonmetallic boxes where exposed rigid PVC conduit is used.
5. Use suitable concrete type boxes where flush-mounted in concrete.
6. Use suitable masonry type boxes where flush-mounted in masonry walls.
7. Use raised covers suitable for the type of wall construction and device configuration where required.
8. Use shallow boxes where required by the type of wall construction.
9. Do not use "through-wall" boxes designed for access from both sides of wall.
10. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.

11. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
12. Nonmetallic Boxes: Comply with NEMA OS 2, and list and label as complying with UL 514C.
13. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
14. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.

C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
2. NEMA 250 Environment Type, Unless Otherwise Indicated:
a. Indoor Clean, Dry Locations: Type 1, painted steel.
b. Outdoor Locations: Type 3R, painted steel.
3. Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.

2.02 ACCESSORIES

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for boxes and facade materials to be installed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive boxes.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Box Supports:
1. Secure and support boxes in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.

E. Install boxes plumb and level.

F. Flush-Mounted Boxes:
1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch (6 mm) or does not project beyond finished surface.
2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch (3 mm) at the edge of the box.

G. Install boxes as required to preserve insulation integrity.

H. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

I. Install firestopping to preserve fire resistance rating of partitions and other elements.

J. Close unused box openings.

K. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.

L. Provide grounding and bonding in accordance with Section 260526.

3.03 CLEANING

A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.04 PROTECTION

A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION

SECTION 280010
SECURITY GENERAL

PART 1: GENERAL

1.01 DESCRIPTION:

A. These Security Systems General provisions apply to the following:
   1. Section 28 10 00, Security Systems.
   2. Section 28 20 00, Video Surveillance Systems.

B. Security systems Performance Verification is specified in Section 28 00 90, Security Performance Verification.

C. The interfacing power of and grounding provisions with work provided under these Sections is covered under these Sections.

D. Related Requirement.

1.02 DEFINITIONS:

A. Words that are in common use are throughout the Drawings and Specifications, except:
   1. Words which have well-known technical or trade meanings are used in accordance with such recognized meanings.
   2. Whenever the following listed words and phrases are used, they shall be mutually understood to have the following respective meanings:

B. The words “as indicated” means: as shown on the Drawings, and in accordance with the Specifications.

C. The words “as required” means: as required to provide a complete and satisfactory Work in full conformance with the Drawings and Specifications.

D. The word “New” means: new Work to be provided by Contractor.

E. The word “Provide” means: furnish, install, connect, test and make ready for use.

F. The words “Relocate existing” means: remove existing items from present location. Reinstall, re-connect, and test existing item and make ready for use at new location as shown on the Drawings.

G. The words “Remove existing” means: remove existing item and return item to the Owner.

H. The word “Replace” means: remove existing item and return item to the Owner. Provide new item as indicated.

I. The word “Work” means: The Work is the completed construction required by the Drawings and Specifications, and includes all labor necessary to produce such construction, and all materials and equipment incorporated or to be incorporated in such construction.

J. The word “Furnish” means: supply item as specified. Item to be installed by others.

K. Infrastructure: As used herein shall mean conduit, raceway with all required boxes, fittings, connectors and accessories; completely installed.

1.03 QUALITY ASSURANCE:

A. Provision of manufactured components, installation, wiring and testing shall be the responsibility of a single Contractor.

B. Qualifications of Contractor:
   1. Contractor shall be an installation and service contractor regularly engaged in the sale, installation, maintenance, and service of access control systems.
   2. Contractor shall have ten years experience with the installation, start up and programming of systems of a similar size and complexity to the one proposed.
   3. Contractor shall be a factory authorized dealer of the system proposed for at least two years.

C. Supervision of Work:

1. Contractor shall employ a competent Foreman to be in responsible charge of the Work. Foreman shall be on the project site daily during the execution of the Work.
2. Contractor's Foreman shall a regular employee, principal, or officer of Contractor, who is thoroughly experienced in projects of a similar size and type. Contractor shall not use contract employees or Subcontractors as Foremen.

D. Qualifications of Technicians:
1. All security systems Work shall be performed by electronic technicians thoroughly trained in the installation and service of specialty low-voltage electronic systems.
2. Journeyman Wireman electrical workers may be used to install conduit, raceways, wiring, and the like, provided that final termination, hook-up, programming, and testing is performed by a qualified electronic technician, and that all such Work is supervised by the Contractor's Foreman.
3. All incidental Work, such as cutting and patching, lock hardware installation, painting, carpentry, and the like, shall be accomplished by skilled craftspersons regularly engaged in such type of work. All such Work shall comply with the highest standards applicable to that respective industry or craft.
4. All 120 VAC power wiring and connections are to be performed by a qualified Journeyman Wireman, licensed to perform such Work in the State of West Virginia.

E. Subcontractors:
1. Definition: A subcontractor is a person or entity who has a direct contract will the Contractor to perform any of the Work at the site.
2. Use of any Subcontractor is subject to the approval of the Owner. The Contractor shall identify all Subcontractors on the Bid Form. The Contractor shall make no substitution for any Subcontractor previously selected without approval from the Owner.
3. Contractor's Foreman shall be on the project site daily during all periods when Subcontractors are performing any of the Work. Contractor's Foreman shall be in responsible charge of all Work, including any Work being performed by Subcontractors.
4. By an appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Drawings and Specifications, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these documents, assumes toward the Owner.

F. Regulatory Requirements:
1. All Work is to conform to all building, fire, and electrical codes and ordinances applicable in the State of West Virginia. In case of conflict between the Drawings/ Specifications and codes, the codes shall govern. Notify the Owner's Project Manager of any such conflicts.
2. Contractor shall secure and pay for all license, permits, plan reviews, engineering certifications, and inspections required by regulatory agencies. Contractor shall prepare, at Contractor's expense, any documents, including drawings that may be required by regulatory agencies.
3. Specifications, standards and codes: all work shall be in accordance with the following:
4. The 2017 edition of the National Electrical Code (((NFPA 70))).
5. Telecommunications Industries Association (TIA)
6. Electronic Industries Association (EIA)
7. Underwriters Laboratories (UL)
8. Occupational Safety and Health Administration (OSHA)
9. Local city and county ordinances governing electrical work.
10. In the event of conflicts, the more stringent provisions shall apply.

G. Permits:
1. The Contractor shall apply for and obtain any and all permits required by federal, state, county, city, or other authority having jurisdiction over the work.

H. Supply only new equipment, parts, and material currently manufactured at the time of submittal, and operate only for testing as part of installation procedure.

I. Conduit sizes specified herein or indicated on the Drawings refer to the standard trade sizes, are for identification purposes only, and are not actual dimensions.

J. Codes, standards, and regulations referred to are minimum standards. Where the requirements of these specifications or drawings exceed those of the codes, standards and regulations, the drawings or specifications govern.

K. The drawings and specifications are complementary to each other and what is called for by one shall be as binding as of called for by both. If a discrepancy exists between the Drawing and Specifications, the higher cost shall be included, and the engineer shall be notified of the discrepancy.

1.04 DRAWINGS:

A. Drawings are generally diagrammatic and show the arrangement and location of pathways, outlets, support structures and equipment. The Contractor shall carefully investigate the structural and finish conditions affecting his work and arrange his work accordingly. Should conditions on the job make it necessary to make adjustments to pathways or materials, the Contractor shall so advise the Engineer and secure approval before proceeding with such work.

B. Where exact locations are required by equipment for stubbing-up and terminating conduit concealed in floor slabs, the Contractor shall request drawings, equipment location drawings, foundation drawings, and any other data required by him to locate the concealed conduit before the floor slab is poured.

C. Materials, equipment, or labor not indicated but which can be reasonably inferred to be necessary for a complete installation shall be provided. Drawings and Specifications do not undertake to indicate every item of material, equipment or labor required to produce a complete and properly operating installation.

D. The right is reserved to make reasonable changes in locations of equipment indicated on Drawings prior to rough-in without increase in contract cost.

E. The Contractor shall not reduce the size or number of conduit runs indicated on the Drawings without the written approval of the Engineer.

F. Any work installed contrary to Contract Drawings shall be subject to change as directed by the Engineer, and no extra compensation will be allowed for making these changes.

G. The location of equipment, support structures, outlets, and similar devices shown on the Drawings are approximate only. Do not scale exact equipment locations off the Drawings. Obtain layout dimensions for equipment from the Architectural plans unless specifically indicated on Electronic Security plans.

H. Schematic diagrams shown on the Drawings indicate the required functions only. The technology of a particular manufacturer may be used to accomplish the functions indicated without exact adherence to the schematic Drawings shown. Additional labor and materials required for such deviations shall be furnished at the Contractor’s expense.

I. Verify the ceiling type, ceiling suspension systems, and clearance above hung ceilings prior to ordering cabling and associated hardware. Notify the Engineer of any discrepancies.

J. Portions of these Drawings and Specifications are abbreviated and may include incomplete sentences. Omissions of words or phrases such as “the Contractor shall,” “shall be,” “as indicated on the Drawings,” “In accordance with,” “a,” “the” and “all are intended” shall be supplied by inference.

1.05 ENVIRONMENTAL REQUIREMENTS:

A. Systems or equipment installed in environmentally controlled areas shall meet performance requirements specified herein in the following conditions:
   1. Temperature: 40 °F to 95 °F.
   2. Humidity: 20% to 80% RH.
   3. Air purity: systems shall be capable of continuous operation in an environment where the level of dust, lint, paper fiber, and other airborne particles is equal to that found in a standard office.

B. Systems or equipment installed in indoor environmentally uncontrolled areas shall meet performance requirements specified herein in the following conditions:
   1. Temperature: 0 °F to 120 °F.
   2. Humidity: 5% to 95% RH.

C. Systems in equipment installed in outdoor areas shall meet performance requirements specified herein in the following conditions:
   1. Wind-driven dust, dirt, sand, and snow for 6 hours.
   2. Rain at a maximum rate of 4” per hour.
   3. Ice loads up to 2” measured radially to exposed surfaces.
   4. Wind: 85 mph, maximum.
   5. Sleet with wind: 55 mph, maximum.
   6. Snow cover: 2’ maximum, measured vertically.
   7. Humidity: 0% to 100% RH.
   8. Temperature: -30 °F to 150 °F.

1.06 SPACE CONDITIONS:

A. Verify dimensions of equipment, equipment arrangements, space availability (including any millwork or cabinetry provided by others) and provide systems that work within the constraints of the space available. Notify the Engineer of any situation where space constraints are a problem, prior to the ordering or purchase of equipment. The Contractor shall bear the expense of providing alternate equipment, which will work within the available space, if space availability problems are discovered after equipment is ordered.

B. Drawings are diagrammatic in nature and, unless explicitly dimensioned, indicate approximate locations of equipment and components. Changes in the location, and offsets, of same which are not shown on the Drawings but are necessary in order to accommodate building conditions and coordination with the work of other trades, shall be made prior to initial installation, without additional cost to the Owner.

C. Provide access to equipment and components requiring operation, service or maintenance within the life of the system.

1.07 WARRANTY:

A. Equipment shall be free of faulty workmanship and defects for a period of 1 year from date of substantial completion.

B. Replace defective materials and repair faulty workmanship within 2 days of notification at no cost to the Owner during warranty period.

C. In addition to warranty, provide maintenance service for the warranty period, including at least 2 semi-annual visits to site for checking and adjustment of equipment. During this period, answer service calls within 24 hours. During this period, maintenance calls shall be completed within 3 days of notification and at no cost to the Owner.

D. Software/firmware maintenance: new releases or updates of hardware, software, applicable user manuals, technical and alert bulletins released by the access control manufacturer shall be applied to the system at no cost to the Owner during the warranty period.

PART 2: PRODUCTS

2.01 INTERIOR FLOOR-MOUNTED EQUIPMENT CABINETS:

A. Minimum 16-gauge steel construction.

B. Enclosed with ventilated side panels, square front and vertical corners.

C. Minimum 18” deep.

D. Configured for standard 19” rack panels.

E. Coordinate height as indicated on the Drawings with the equipment used.

F. Finish color shall be black.

G. Manufacturer: Amco, Atlas/Soundolier, Hammond, Home, Lowell, Middle Atlantic Products, Stantron, or Winsted.

2.02 NETWORK EQUIPMENT:

A. Patch Panels:
1. Patch panels shall be rated to meet Category 6 channel warranty requirements.
2. Integrated labels for front and rear.
3. Maximum ports: 48.
4. Rear cable manager.
5. Panels shall be modular type and shall allow standard jacks to be utilized.
6. Manufacturer: Panduit or approved equal.

B. Data Patch Cords:
1. Factory-assembled plug ended jumpers for patch panel blocks.
2. Modular data patch cords shall meet Category 6 channel performance requirements specified herein, and shall be #24 AWG tinned-copper, stranded conductors insulated with solid polyolefin, tightly twisted into individual pairs and jacketed with flame-retardant PVC.
3. Manufacturer: Panduit or approved equal.

2.03 AC POWER:

A. General:
1. Except as otherwise specified herein or indicated on the Drawings, grounding conductors shall be insulated. Insulation shall be rated 600 V. Conductors shall be continuous from connector to connector with no splices. Grounding connectors shall be solid bronze, compression type, designed for use intended.
2. Power wiring for the extension of power circuits provided by others shall be #12 AWG THWN/THHN or XHHN, 600V, rated at 194°F.
3. AC power equipment shall have LED or lamp status devices to provide indication that the systems are on.

2.04 UNINTERRUPTIBLE POWER SUPPLY (UPS):

A. Desktop UPS:
1. Line interactive topology. Capacity as required for the equipment powered.
2. System shall be a self-contained unit designed for the support of computers.
3. Batteries: lead-calcium, lead acid, or nickel-cadmium type sized to sustain the UPS at full rated load for 10 minutes, and half rated load for 30 minutes.
4. Integral lightning and surge protection complying with IEEE C62.41.1-2002 (R2008), IEEE C62.41.2-2002, and UL 1449-2007.
5. The UPS shall provide the following characteristics:
   a. Nominal input voltage: 120 VAC.
   b. Integral automatic current and overvoltage protection.
   c. Electrical noise isolation: 5dB to 45 dB common mode, 28 dB to 80 dB normal mode.
   d. Recharge time: less than 10 hours.
   e. Transfer time: 0ms.
   f. Efficiency: 95%
6. Manufacturer: APC, Eaton, or Tripp-Lite.

B. Rack-Mounted UPS:
1. Line interactive topology. 2200 VA (1920 W) capacity.
2. System shall be a self-contained rack mountable inti designed for the support of computers.
3. Audible noise shall not exceed 52 dBA at 3'.
4. Batteries: lead-calcium, lead-acid, or nickel-cadmium type sized to sustain the UPS at full rated load for 30 minutes, and half rated load for 60 minutes.
5. Integral lightning and surge protection complying with IEEE C62.41.1-2002 (R2008), IEEE C62.41.2-2002, and UL 1449-2007.

6. The UPS Shall provide the following characteristics:
    a. Nominal input voltage: 120 208 220 240 V AC.
    b. Integral automatic current and overvoltage protection.
    c. Electrical noise isolation: 5 dB to 45 dB common mode, 28 dB to 80 dB normal mode.
    d. Recharge time: less than 10 hours.
    e. Transfer time: 0ms.
    f. Efficiency: 95%.
7. Manufacturer: APC, Eaton, or Tripp-Lite.

2.05 SLEEVES:

A. Wall sleeves shall be galvanized rigid metal conduit or electrical metallic tubing.

B. For floor slabs above grade, plastic core form block-outs shall be used.

2.06 PENETRATION SEALS:

A. A. Firestops:
1. Firestops shall consist of an asbestos-free fill material, forming/backing/damming materials, and accessories needed to complete a UL classified through-penetration firestopping system. Fill material shall not slump or sag and shall be the required thickness in the fully cured state.
2. Firestops shall be designed to seal through-penetrations against flame, heat, smoke, and water in compliance with ASTM E84-2013a, ASTM E119-2012a, ASTM E814-2013, and UL 723-2008.
3. Firestops shall be specifically designed and rated for the individual application, including movement, materials, moisture, penetrating item material, and fire and smoke ratings of the penetrated construction.
4. Manufacturer: 3M, GE, Flammadur, Hilti, Nelson, Rectorseal, or Thomas & Betts.

B. Expansion Seals:
1. Waterproof, modular, mechanical expansion type consisting of synthetic rubber grommets or interlocking links shaped to continuously fill the annular space between the penetrating item and the opening. Sizing of links and sleeve shall be determined by the manufacturer.
2. Manufacturer: Calpico, Pipe Linx, Metraflex MetraSeal, or Thunderline Link Seal.

C. Seals Assemblies:
1. Seal assemblies shall consist of a frame, compression mechanism, and insert modules. Assemblies shall be waterproof and shall be designed to allow easy addition or deletion of penetrating items.
2. Seal assemblies for multicable penetrations of fire- and smoke-rated construction shall comply with the requirements of firestops as specified herein.
3. Manufacturer: Nelson Multi-Plug.

2.07 CABLES, CONNECTORS AND MISCELLANEOUS EQUIPMENT:

A. A General:
1. Cable construction, insulation, and jacket shall comply with NFPA 70-2017, requirements for the application for which it is used. Provide type Cm or CMG for general use; type CMP for plenum use; and CMR for riser use.
2. Cables and conductors installed in enclosures or raceways underground or in slabs on grade shall be UL listed for use in wet locations.
3. Flame resistance: non-plenum rated cable shall comply with UL 1581-2001. Plenum-rated cable shall comply with NFPA 262-2011.

B. Alarm Cabling:
1. Two unshielded twisted pair, #22 AWG or larger cable (sized for voltage drop) for cabling between addressable alarm or sensor devices.
2. Unshielded 4-conductor, #20 AWG or larger cable (sized for voltage drop) for cabling to motion detection devices.

3. Unshielded 2-conductor, #20 AWG or larger (sized for voltage drop) for cabling to door contacts.
4. Manufacturer: Alpha, Belden, CommScope, or West Penn.

C. RS-233 Cable:
1. Two twisted pairs, #22 AWG, stranded (7x30) tinned copper conductors, each pair individually shielded with aluminum foil-polyester tape to provide 100 percent shield coverage.
2. Pairs shall be cabled on common axis with #24 AWG, stranded (7x32) tinned copper drain wire.

D. RS-485 Cable:
1. Two unshielded twisted pairs, #22 AWG, stranded (7x30) tinned copper conductors.

E. Control Cables:

F. Multiconductor, color-coded type, #22 AWG or larger conductors (sized for voltage drop), stranded tinned-copper for energy limited control circuits. Multiconductor, color-coded typed, #14 AWG or larger conductors (sized for voltage drop), stranded tinned-copper for other control circuits.

G. Network Cables:
1. UL listed and CSA certified.
2. Category 6 cables meeting TIA/EIA 568-B1-B3, with addenda, requirements for category 6 cable.
3. Additional Cable Performance Requirements:
a. Minimum power sum ACR: 9 dB at 155 MHz.
b. Maximum attenuation: 21 dB at 100 MHz per 100 m.
c. Minimum power sum near end crosstalk: 36 dB at 100 MHz.
d. Minimum power sum near end crosstalk: 36.3 dB at 250 MHz.
e. Minimum power sum equal level far end crosstalk: 16.8 dB at 250 MHz.
f. Maximum delay skew: 25 ns.

PART 3: EXECUTION

3.01 EQUIPMENT ENCLOSURES:

A. Where controls or equipment are specified herein or indicated on the Drawings for future installlation, space shall be provided in the control console and the equipment racks, and on the control panels.

B. Provide ventilation according to equipment manufacturer’s recommendations.

C. Provide unused equipment enclosure panel space with blank or ventilation panels.

3.02 NETWORKED EQUIPMENT:

A. Configure the network addresses, security settings, and other parameters per the Owner’s requirements and as recommended by the manufacturer to support the security systems and video surveillance systems as indicated on the Drawings.

3.03 SLEEVES:

A. Provide where conduits pass through elevated floor slabs if conduits are not a part of the slab pour and for future cable or conduit risers.
1. Install in raised foundations at least 2” high.

B. Provide where cables pass through walls and elevated floor slabs.

C. Wall sleeves shall extend 4” from each side of the walls.

D. Openings through slabs for busway risers shall be finished with a 4” wide x 2” high curb around the opening.

E. Sleeves shall be secured in place. Provide insulating bushings on both sides of sleeves for cables.

F. Provide ground bushings on both sides of sleeves containing separate ground conductors.

3.04 PENETRATION SEALS

A. General:
   1. Install in accordance with the manufacturer's published instructions to achieve ratings and classifications specified herein. A copy of these instructions shall be maintained and available on site.

B. Firestops:
   1. Close and firestop abandoned penetrations and penetrations through fire- and smoke-rated construction. Materials used to seal these penetrations shall continue the construction's fire and smoke resistance ratings uninterrupted and shall maintain an effective barrier against the spread of flame, smoke, water, and hot gases.
   2. Install after installation of raceways.

C. Expansion Seals:
   1. Install to seal single conduit or cable penetrations of walls below grade.

D. Seal Assemblies:
   1. Install to seal the penetration of walls below grade by multiple cables in the same opening.

3.05 CABLES, CONNECTORS AND MISCELLANEOUS EQUIPMENT:

A. Network Cable:
   1. Security network cables shall be installed in a star topology from each security network patch panel to the security equipment being served on the same floor. The length of this cable shall not exceed 295'. Coordinate the cable routing as necessary to ensure distance requirements are not exceeded.
   2. Observe the bending radius and pulling strength requirements of the cables during handling and installation. Each run of cable between the patch panel and the network outlet serving the security equipment shall be continuous without joints or splices.
   3. Conceal security network cables within ceilings and walls, Complete work above ceiling prior to ceiling tile installation.
   4. Cables shall be routed at least 2' from any fluorescent ballast and at least 40" from any electric motors or other high-level source of EMI.
   5. Cabling routed above accessible ceiling where indicated on the Drawings.
      a. In conduit where indicated on the Drawings, underground or finished floor, and/or exposed.
      b. On J-hooks, above the drop ceiling.
   6. Cables, when not installed in conduit or cable tray, shall be bundled in groups of 25 and cable tied. Cable ties shall not be tight to the point of deforming the cable jackets.
   7. Provide temporary protection of cables before termination. Cables shall not be left lying on the floor. Bundle and use cable ties to provide protection.
   8. Provide clutch or shear pin protection for cables during cable pulling to ensure cable pulling tension is not exceeded.
   9. Jacks shall be wired per the pair assignments indicated in the TIA/EIA 568-B1-B3, with addenda, designation T568B wiring plan.
   10. Network cables shall be installed and terminated in accordance with the manufacturer's recommended procedures.

B. Network cross-connects:
   1. Copper data cross-connects shall consist of 19" rack mounted patch panels. If more than 48 cables are to be terminated in a single rack, a patch cord organizer shall be placed between 48-port cross-connect units.
   2. If only one cross-connect panel is required a patch cord organizer shall be placed under the panel. Horizontal cables shall be terminated directly onto this modular panel.
   3. Provide 2 patch cords for each camera data jack. 50% shall be nominal 7':, 50% shall be nominal 3' in length.

3.06 OPERATION AND MAINTENANCE DOCUMENTATION PACKAGE:

A. These operation and maintenance manual requirements supplement operation and maintenance manual documentation requirements of other Sections of these specifications.

B. Operation and maintenance documentation, in hardback 3-ring loose-leaf binders except full size drawings and CDs, shall cover the specialty systems. Documentation shall include operations and maintenance documentation directory, emergency information, operating manual, maintenance manual, test report, and construction documents.

C. The operating and maintenance documentation package shall be submitted as one comprehensive package to the Owner 3 weeks before systems acceptance testing, and shall be updated, revised and completed during, and at completion of, Performance Verification.

D. Documentation shall be type written and shall contain, at a minimum, the following information.
   1. Introduction:
      a. Project name, contractors' and subcontractors' names, addresses, and telephone and facsimile numbers.
      b. Index.
   2. Operations and Maintenance Documentation Directory:
      a. Explanation of the identification system used, including lists of systems, equipment and component identifiers and names.
   3. Emergency Information:
      a. Information for technical and nontechnical personnel about actions recommended during emergency situations to protect property and to minimize disruption to the building occupants. Emergencies shall, at a minimum, include:
         1) Power failure.
         2) Heating failure.
         3) Cooling failure.
   4. 4Operating Manual:
      a. General information for each system as applicable.
         1) System features.
         2) System description.
         3) Simplified one-line diagrams.
         4) Settings for controls.
      b. Technical information for each system as applicable.
         1) System specifications.
         2) Operating routines and procedures.
         3) User programming instructions.
         4) Special procedures.
         5) Basic troubleshooting.
   5. Maintenance Manual:
      a. Descriptions (specifications) of the equipment and components.
      b. Description of function, as applicable: the function of the equipment, functional parameters, and performance verification procedures.
      c. Recommended maintenance procedures and their recommended frequency for this Project.
      d. Name, address and contact of at least one qualified service company.
      e. Recommended list of spare parts, part numbers, and the places(s) from which they can be obtained.
      f. Original purchase order number; date of purchase; name, address, and the telephone number of the vendor; and warranty information.
      g. Manufacturers recommended procedures.
      h. Any other information needed for the preparation of documents supporting the management of operation and maintenance programs.
      i. Copies of software configuration files and/or programming files, as applicable, on CDs.

6. Test Reports and Certifications:
    a. Access control and alarm monitoring system test reports.
    b. Video surveillance system test reports.
    c. Network cable test reports.
7. Construction Documents:
    a. Record drawings.
    b. Approved submittals.
    c. Warranty certificates.
    d. Inspection certificates.
    e. Performance Verification report.
    f. Tools for tamper-resistant enclosures and tools for manual resetting devices.

E. Submit a receipt signed by the Owner acknowledging receipt of the operation and maintenance documentation package.

F. Provide metal cabinets mounted on the wall of the IDF room to house the operation and maintenance documentation package. Cabinets shall be approximately 12” wide x 18” high x 6” deep constructed of 18-gauge sheet metal with hinged door with latch.

3.07 RECORD DRAWINGS:

A. Definition: Project Record Drawings are drawings that completely record and document all aspects and features of the Work. (Also known as “as-built” drawings.)

B. The purpose of Project Record Drawings is to provide factual information regarding all aspects of the Work, to enable future service, modifications, and additions to the Work.

C. Contractor shall accurately maintain Project Record Drawings throughout the course of this project. Project Record Drawings shall include documentation of all Work, including the documentation of existing equipment, wiring conduits, and raceways that are to be reused in the Work.

D. Contractor shall maintain the working set of Project Record Drawings at the project site throughout the course of the Work. The working set shall be updated on a daily basis as the Work progresses.

E. Project Record Drawings shall accurately show the physical placement of the following:
1. Equipment and devices, including mode numbers.
2. Conduit and raceways.
3. Junction and pull box locations and routing.
4. End-of-line resistor locations.
5. Interfaces to external equipment.
6. Connections to power and telephone circuits.

F. Project Record Drawings shall show the physical placement of each device and conduit or aerial center line, to be accurate to within one foot (1’) of the nearest landmark. Where the site plan furnished by Owner conflicts with actual conditions, Contractor shall amend site plan as required. Indicate exact description of conduit runs (above ground, two-foot trench, along outside wall of building, etc.)

G. The Record Drawings shall show wire and cable runs, zone numbers, tamper circuit configuration, panel/circuit breaker numbers from which equipment is powered, and splice points.

H. The Record Drawings shall be available for inspection by the Owner’s Project Manager on a daily basis.

I. Upon completion of Work. And prior to Final Acceptance, Contractor shall prepare and submit to the Owner’s representative a final record set of Record Drawings. This set shall consist of all data transferred from the working set, supplemented by Riser Diagrams and other information. The final record set of Project Record Drawings shall be drafted by a skilled draftsperson, under the supervision of Contractor. Submit the following:
1. Two (2) sets of bound prints.

2. Two (2) copies of electronic drawings files prepared in AutoCAD DWG format and PDF plot of those on CDs.
3. Two (2) back-up copies of site-specific programs, electronics configuration files and other software to make the system operational.

J. Reproduction of design drawings shall not be used in the preparation of record drawings.

3.08 MAINTENANCE:

A. Equipment operated prior to the date of substantial completion shall be maintained in accordance with manufacturer's recommendations.

3.09 INSTRUCTION OF OPERATING PERSONNEL:

A. Conduct formal instruction sessions for operating personnel. Conduct two (2) similar sessions. The first session shall be conducted at the time of start-up and check-out and the second session shall be approximately two months later. Sessions shall be conducted at the site.

B. Prepare and submit a syllabus describing an overview of the program, describing how the program will be conducted, when and where meetings are to be held, names and company affiliations of lecturers, description of contents and outline for each lecture, and recommended reference material and outside reading. Obtain direction from the Owner on which operating personnel shall be instructed in each system.

C. Sessions shall include:
1. General familiarization and operating procedures for each specialty systems installation.
2. Routine maintenance procedures for equipment.
3. User level programming of programmable systems.
4. Factory-trained technicians shall give operating and maintenance instructions on the following specialty systems and equipment:

System/Equipment		Minimim Session Duration, Hours
Video Surveillance Systems		16
Security Systems		16

5. Provide DVD format video of training sessions and a complete record copy of training materials, handouts, and other printed materials used in each training session.
6. Obtain receipt acknowledging completion of each time of instruction.

END OF SECTION

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SECTION 280090
SECURITY PERFORMANCE VERIFICATION

PART 1: GENERAL

1.01 DESCRIPTION:

A. Performance verification is an ongoing process and shall be performed throughout construction. Performance verification verifies that systems are operating in a manner consistent with the Construction Documents.

B. This Section covers specialty systems performance verification, as required to demonstrate that the equipment and systems of Section 28 10 00, Access Control and Section 28 20 00, Video Surveillance Systems, are ready for safe and satisfactory operation, as defined by the Construction Documents. Performance verification shall include, but shall not be limited to, identification specialty system devices, cabling and equipment, cleaning, check-out, testing and adjusting of systems, preparation of equipment and systems documentation and of maintenance and operation manuals, Owner training, and preparation of record drawings.

C. Performance verification shall conclude with the completion of required testing, training, and system documentation as specified herein and required to demonstrate the proper operation of the specialty equipment and systems.

D. Security systems covered by this Section are Section 28 10 00, Access Control, and Section 28 20 00, Video Surveillance Systems.

1.02 QUALITY ASSURANCE:

A. Provide a Security Systems Performance Verification Supervisor for the security systems. The Security Systems Performance Verification Supervisor shall have ten years experience in security systems contracting. The Security Systems Performance Verification Supervisor shall become familiar with the Owner's project requirements and the requirements of the performance verification process as defined in this Section. The Security Systems Performance Verification Supervisor shall coordinate and execute the required performance verification activities.

B. The Security Systems Performance Verification Supervisor shall review submittal data for conformance with the requirements of the Project, shall monitor compliance with the requirements specified herein for storage and protection of equipment during construction, shall oversee testing, and shall document that the scheduled and specified performance requirements of each system have been accomplished.

1.03 PERFORMANCE VERIFICATION RESPONSIBILITIES:

A. The Security Systems Performance Verification Supervisor shall be responsible for scheduling, supervising, coordinating, and executing the testing and performance verification activities as specified herein.

B. Security systems performance verification shall take place in three phases Performance verification requirements for each phase are as follows:

1. Construction Phase:
    a. During the construction phase of the Project, transmit a status update report upon request to the Engineer (via e-mail), using the form included herein. (The Engineer will e-mail an electronic version of the attached form to the Contractor upon request.) The status update report shall include digital photographs of areas where significant progress has been made. Digital photographs shall be minimum 1200 x 1600 pixels in resolution. Both the detail in the report and the detail in the photographs shall be sufficient for the Engineer to assess the progress made to date and respond appropriately to pay requests. Periods of inactivity will require only a retransmission of the most recent form (via e-mail), updated to reflect the new date, and that "no significant progress has been made since the last status report was submitted". Status reports will not be requested more than once every 2 weeks.
    b. Provide documentation of installed systems and equipment and develop functional testing procedures, prior to normal operation and maintenance manual submittals.

This documentation shall include detailed manufacturer installation, operating, troubleshooting and maintenance procedures; full factory testing reports, if any; and full warranty information, including responsibilities of the Owner to keep the warranty in force. In addition, the installation, check-out materials that are actually shipped inside the equipment, and the actual field check-out sheet forms to be used by the factory or field technicians shall be submitted to the Engineer.

c. Develop and submit to the Engineer for review and comment, prior to system functional testing a complete functional testing plan using manufacturer's testing procedures and functional testing checklists for equipment to be commissioned.
d. Assist in clarifying the proposed operation and control of equipment in areas where the specifications, drawings or equipment documentation is not sufficient for writing detailed testing procedures.
e. Review the proposed functional test procedures to ensure feasibility, safety, and equipment protection. Obtain approval from the Engineer for proposed functional test procedures.
f. Prepare a preliminary schedule for performance verification activities, including equipment testing and adjusting from start to completion, and update the schedule during the construction period, as appropriate. Notify the Engineer immediately when performance verification activities not yet performed, or not yet scheduled, will delay construction.
g. Provide functional testing for equipment and execute the security systems related portions of the functional checklists of all the equipment during the testing process.
h. Perform and document functional test results, providing a copy to the Engineer.
i. Correct noncompliance items before beginning acceptance testing. Discrepancies and problems shall be remedied before acceptance testing.

2. Acceptance Phase:
   a. Place equipment and systems into operation and continue their operation during each working day of the acceptance testing and performance verification activities, as required.
   b. Provide skilled technicians to execute acceptance testing of each system. Technicians shall be available and present during the agreed upon schedule acceptance tests and for sufficient duration to complete the necessary tests, adjustments and problem-solving.
   c. Perform acceptance testing for specified systems and equipment as directed by the Owner and interpret the test data as necessary.
   d. Correct deficiencies (differences between specified and observed performance) as identified and interpreted by the Engineer and retest the equipment, as required to demonstrate proper operation and performance.
   e. Prepare operation and maintenance manuals as specified, including clarifying and updating the original sequences of operation to as-built conditions.
   f. Maintain marked-up record drawings and produce final record drawings of project drawings and contractor-generated coordination drawings.
   g. Provide specified training of the Owner's operating personnel.
   h. Coordinate with equipment manufacturers to determine specific requirements to maintain the validity of the warranty.
3. Warranty Period:
   a. Correct deficiencies and make necessary adjustments to operations and maintenance manuals, and as-built drawings system or equipment modifications made during the warranty period.

PART 2: PRODUCTS

2.01 TEST EQUIPMENT:

A. Standard testing equipment required to perform the required testing shall be provided by the Contractor for the equipment or system being tested.

B. Test equipment shall be of the quality and accuracy required to test and/or measure system performance with the tolerances specified and shall have been calibrated within the last 12

months, or as specified herein. Equipment shall be calibrated according to the manufacturer's recommended intervals and when dropped or damaged. Calibration tags shall be at least twice that of the instrumentation being tested.

PART 3: EXECUTION

3.01 SUBMITTALS:

A. Submit additional documentation as required to support the performance verification process. This additional submittal documentation shall include, at a minimum, the proposed functional testing plan, and functional testing checklists.

3.02 FUNCTIONAL TESTING:

A. General:
   1. Functional testing shall be performed as required to ensure that the equipment and systems are properly installed and ready for operation, so that acceptance testing may proceed without delays. Follow the approved functional testing procedures. Sampling strategies shall not be used for functional testing. The functional testing for equipment and subsystems of a given system shall be successfully completed and documented prior to acceptance testing of the system.
   2. Functional testing plan: develop the detailed functional testing plans for equipment and systems that are to be commissioned, as specified herein. Review the proposed procedures and functional testing documentation to ensure that there is written documentation that each of the manufacturer recommended procedures has been completed.
   3. The functional testing plan shall include the manufacturer's standard written check-out procedures copied from the installation manuals and manufacturer's normally used field check-out sheets. The plan shall include checklists and procedures with specific boxes or lines for recording and documenting the tests recommended by the equipment manufacturer, and as specified herein. Each checklist shall include a summary statement with a signature block at the end of the plan.

B. Security Systems Tests:
   1. Access Control and Alarm Monitoring Systems:
      a. Program an access card for each of the following clearances:
         1) Master access level to open all doors in the system.
         2) Program a second access card to open all doors in the system, but then classify the card as lost or stolen to test stolen card used event.
         3) Program an active access card with limited access to only main entry doors to test access denied events.
      b. Attempt to access each door using the valid card first, and the card classified as lost or stolen card second and the limited.
      c. Confirm that a valid card read performs the actions specified herein and indicated on the Drawings.
      d. Print a report showing the activity of the valid card during the test period, as well as the alarm activity for the test period. Confirm that the report shows a valid access for each door in the system for the valid card, and that the card classified as lost or stolen generated an appropriate alarm or exception report for each door in the system. Present this report to the Engineer.
      e. For each access-controlled door, the following alarm conditions shall be tested:
         1) Door forced open. A card reader-controlled door is opened without the use of a valid credential or an exit only monitored door is opened when armed.
         2) Door held open alarm. Door held open longer than the predetermined allowed time after a valid entry or exit.
      f. For each of the above alarm conditions, test that the appropriate ACAMS system event and message is displayed on the operator workstation.
      g. Test each door alarm condition reporting to the Central Station when the IDS system is armed.
      h. Test each duress button to report to the Central Station 24/7.

i. Print a report showing the alarm activity for the test period. Confirm that the report shows an alarm or exception appropriate for the zone and breach for each intrusion detection or duress alarm zone or device in the system. Present this report to the Engineer.

2. Video Surveillance Systems:
   a. Display each camera in the system on the operator workstation monitor in color. Where day/night type cameras are implemented, display each camera in the daytime in color, and at nighttime in black and white. Record a minimum of 5 minutes of video from each camera in the system at a minimum of 7 frames per second, between the hours of 9:00 am and 5:00 pm. Record a minimum of 5 minutes of video from each camera in the system at a minimum of 7 frames per second, between the hours of 11:00 pm and 3:00 am.
   b. Demonstrate each feature of the video surveillance system. Confirm that each feature functions as specified herein. Demonstrate alarm monitor and moved to its preset pan-tilt-zoom position at the initiation of each intrusion detection or duress alarm event, valid and invalid access card read, initiation of an intercom call, and other events as indicated on the Drawings.
   c. Demonstrate that the video recording system is operational and recording the appropriate video camera at the initiation of each intrusion detection or duress alarm event, valid and invalid access card read, initiation of an intercom call, and other events as indicated on the Drawings.
3. Cable Testing:
   a. General:
      1) Applies to Category 6 cables.
      2) Testing shall be accomplished using an Agilent Technologies, Fluke Networks, or Ideal Industries test instrument supporting an extended frequency range to 250 MHz.
      3) Test 100% of the cabling links.
      4) The tester shall support the following requirements:
         (a) Level III accuracy as defined in TIA/EIA 568-C-2012.
         (b) Digital with fault location capabilities.
         (c) Measure ELFEXT and Power Sum ELFEXT.
         (d) Distinguish external noise from NEXT.
      5) Input the test results into the test instrument manufacturer's reporting software, Tabulate and analyze results to ensure cabling systems meets requirements specified herein.
      6) Document failed pairs or strands. Replace cable, then retest. Repeat procedure until passes requirements.
      7) Upon completion provide a hard copy report in a 3-ring binder and on CD-ROM for review and approval.
      8) A representative of the Owner shall be invited to witness the field testing. The representative shall be notified of the start date of the testing phase at least 5 business days before testing commences.
   b. Other Copper Cabling Testing:
      1) Each pair of other copper cabling shall be tested.
   c. Twisted pair cable testing shall include:
      1) Cable length.
      2) Continuity.
      3) Proper connectivity.
      4) Open Pairs.
      5) Short circuits.
      6) Reversed pairs.
      7) EMI noise induction.
      8) Attenuation.
      9) Near end cross talk.

d. Category 6 Testing:
   1) Each category 6 outlet/cable shall be tested and certified in accordance with TIA/EIA 568-C-2009. Each pair shall be tested. A test cable shall be used at the test unit end. Testing shall occur in both directions.
   2) Each category 6 cabling link shall be tested in accordance with the field test specifications defined in TIA/EIA 568-C-2012.
   3) Category 6 cable wire map shall report pass if the wiring of each wire-pair is determined to be correct as defined in TIA/EIA 568-C-2012.
   4) Category 6 cable length test result shall report measured length of each pair of a basic link and channel based on the propagation delay measurement and the average value for nominal velocity of propagation. The physical length of the link shall be calculated using the pair with the shortest electrical delay. This length figure shall be reported and shall be used for making the pass/fail criteria are based on the maximum length allowed for the basic link configuration plus 10% to allow for the variation and uncertainty of the nominal velocity of propagation.
   5) Category 6 cable near end crosstalk loss shall be tested for each wire pair combination from each end of the link (a total of 12 pair combinations). This parameter shall be measured from 1 MHz through 250 MHz with a maximum step size of 0.50 MHz. For a pass condition, the worst-case NEXT margin and the worst value of NEXT shall be recorded for each case, the frequency at which h it occurs, and the test limit value at this frequency.
   6) Category 6 cable power sun near end crosstalk loss shall be evaluated and reported for each wire pair from both ends of the link under test (a total of 8 results). Evaluate this parameter from 1MHz through 250 MHz with a maximum step size of 0.50 MHz. For a pass condition, the worst case PSNEXT margin and the worst PSNEXT value shall be recorded, the frequency at which it occurs, and the test limit value at this frequency.
   7) Category 6 cable equal level far end crosstalk pair-to-pair loss shall be measured for each wire pair combination from both ends of the link under test. ELFNEXT shall be measured from 1 MHz through 250 MHz with a maximum step size of 0.50 MHz. for a pass condition, the worst case ELFNEXT margin and the worst ELFNEXT value shall e recorded, the frequency at which it occurs, and the time limit value at this frequency.
   8) Category 6 cable power sum equal level far end crosstalk loss shall be calculated by combining the effects of the FEXT disturbance from 3 wire pairs on the fourth one. The test shall yield 8 wire pair combinations. Each wire pair shall be evaluated from 1 MHz through 250 MHz with a maximum step size of 0.50 MHZ. for a pass condition, the worst case PSELFEXT margin and the worst PSELFEXT value shall be recorded, the frequency at which it occurs, and the test limit value at this frequency.
   9) Category 6 cable return loss shall be measured from both ends of the link under test from 1 MHz through 250 MHz with a maximum step size of 0.50 MHZ. for a pass condition. The wort case RL margin and the worst RL value shall be recorded, the frequency at which it occurs, and the test limit value at this frequency.
   10) Category 6 cable attenuation-to-crosstalk ratio shall be calculated to determine the bandwidth for a two-wire pair network in terms of signal-to-noise ratio. This calculation yields 12 combinations (6 from each end of the link). For a pass condition, the worst case ACR margin and the worst ACR value shall be recorded, the frequency at which it occurs, and the test limit value at this frequency.

3.03 ACCEPTANCE TESTING:

A. Before obtaining permission from the Owner to schedule the acceptance test, provide written verification that each system has been calibrated, tested and is ready to begin the 14-day burn-in period and acceptance testing.

B. Conduct final acceptance test after a period of not less than 14 consecutive normal working days of trouble-free operation.

C. During this burn-in period, each system shall operate continuously for 24 hours per day. During the acceptance test, demonstrate the correct operation of features and capabilities specified herein.

D. The Owner reserves the right to witness the acceptance tests. Notify the Owner at least 10 days prior to the date scheduled for the tests.

3.04 RETESTING OF EQUIPMENT AND/OR SYSTEMS:

A. Provide labor and materials required for retesting of any functional test found to be deficient.

B. Prior to retesting, submit required data indicating that the deficient items have been completed and/or corrected to the Engineer for approval and rescheduling of the functional test. If during the retesting it becomes apparent that the deficient items have not been completed and/or corrected as indicated in the data provided by the Contractor, the retesting shall be stopped. Costs for the performance verification team to further supervise the retesting of a functional test shall be the responsibility of the Contractor.

3.05 TESTING DOCUMENTATION, NONCONFORMANCE, AND APPROVALS:

A. Provide the Engineer with a list of outstanding items of the functional testing procedures that were not completed successfully within 2 days of test completion. The Engineer will then review the Contractor's functional testing reports and submit either a noncompliance report or an approval form to the Contractor. The Contractor shall work with the Engineer to retest deficiencies or uncompleted items. Correct items that are deficient or incomplete in the checklists and tests in a timely manner and notify the Engineer as soon as outstanding items have been corrected. Resubmit an updated report and a statement of correction on the original noncompliance report. When requirements are completed, the Engineer will recommend approval of the functional testing of each system and schedule the acceptance testing of the equipment or system.

B. As acceptance testing progresses and deficiencies are identified, work with the Engineer to resolve the issues.

3.06 OPERATION AND MAINTENANCE DOCUMENT PACKAGE:

A. The Security Systems Performance Verification Supervisor shall compile and prepare documentation for equipment and systems covered in these Security Specifications and deliver this documentation for inclusion in the operation and maintenance manuals prior to the training of the Owner's personnel. The Engineer shall receive a copy of the operation and maintenance manuals for review.

3.07 INSTRUCTION OF OPERATING PERSONNEL:

A. The Security Systems Performance Verification Supervisor shall schedule, coordinate, assemble and deliver the documentation of the training required by these Security Specifications.

END OF SECTION

SECTION 281000
ACCESS CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Access control system requirements.

B. Access control units and software.

C. Access control point peripherals, including readers and keypads.

D. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 087100 - Door Hardware: Electrically operated door hardware, for interface with access control system.

B. Section 260526 - Grounding and Bonding for Electrical Systems.

C. Section 260533.13 - Conduit for Electrical Systems.

1.03 DEFINITIONS

A. Access Control Cloud Services: Subscription-based hosted application utilizing Software as a Service (SaaS) delivery model in lieu of on-premises servers/software.

1.04 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

C. UL 294 - Access Control System Units; Current Edition, Including All Revisions.

D. UL 1076 - Proprietary Burglar Alarm Units and Systems; Current Edition, Including All Revisions.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other installers to provide suitable door hardware as required for both access control functionality and code compliance.
   2. Coordinate the placement of readers with millwork, furniture, equipment, etc. installed under other sections or by others.
   3. Coordinate the work with other installers to provide power for equipment at required locations.
   4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Access Control Cloud Services:
   1. Subscription fees to be paid by Owner.

1.06 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each system component. Include ratings, configurations, standard wiring diagrams, dimensions, finishes, service condition requirements, and installed features.

C. Evidence of qualifications for manufacturer.

D. Evidence of qualifications for installer.

E. Evidence of qualifications for maintenance contractor (if different entity from installer).

F. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.

G. Manufacturer’s detailed field testing procedures.

H. Field quality control test reports.

1.07 QUALITY ASSURANCE

A. Comply with the following:
   1. NFPA 70.
   2. The requirements of the local authorities having jurisdiction.
   3. Applicable TIA/EIA standards.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

D. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience with access control systems of similar size, type, and complexity and providing contract maintenance service as a regular part of their business; authorized manufacturer's representative. Installation company shall have a minimal of two permanently employed persons with current certification in their field office responsible for installaiton and ongoing maintenance of the project.
   1. Contract maintenance office located within 100 miles (160 km) of project site.

E. Maintenance Contractor Qualifications: Same entity as installer.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

B. Store products in manufacturer's unopened packaging, keep dry and protect from damage until ready for installation.

1.09 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.10 WARRANTY

A. Provide minimum one year manufacturer warranty covering repair or replacement due to defective materials or workmanship.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Access Control Units - Basis of Design: Identical as the existing manufactures equipment or Owner approved equal..

B. Access Control Software - Basis of Design: Identical as the existing manufactures equipment or Owner approved equal..

C. Readers and Keypads - Basis of Design: Identical as the existing manufactures equipment or Owner approved equal..

2.02 ACCESS CONTROL SYSTEM REQUIREMENTS

A. Provide modifications and extensions to existing access control system consisting of required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, system programming, etc. as necessary for a complete operating system that provides the functional intent indicated.

B. Access Control Points:
   1. See article "ACCESS CONTROL POINT PERIPHERALS" below for device descriptions.
   2. Doors::
      a. Location: as indicated on the drawings..
      b. Function: Operational and emergency.
      c. Access: Controlled entry, free exit.

d. Peripherals on Secure Side:
1) Reader/Keypad: Contactless smart card reader identical as the existing manufactures equipment or Owner approved equal..
e. Locking Device: Electric strike.
1) Configuration: Fail-secure.

C. Interface with Other Systems:
1. Provide products compatible with other systems requiring interface with access control system.

D. Provide products listed, classified, and labeled as suitable for the purpose intended.
1. Access Control Units and Readers: Listed and labeled as complying with UL 294.

2.03 ACCESS CONTROL UNITS AND SOFTWARE

A. Provided access device compatible with current access control system equipment installed at the facility.

B. Provide access control units and software compatible with readers to be connected.

C. Unless otherwise indicated, provide software and licenses required for fully operational system.

D. Access Control Unit:
1. Basis of Design: Identical as the existing manufactures equipment or Owner approved equal..

2.04 ACCESS CONTROL POINT PERIPHERALS

A. Provide devices compatible with control units and software.

B. Provide devices suitable for operation under the service conditions at the installed location.

C. Readers and Keypads:
1. General Requirements:
a. Provide readers compatible with credentials to be used.
b. Color: To be selected by Architect from manufacturer's available standard colors.
c. Contactless Smart Card Readers:
1) Utilize 13.56 MHz RF communication with compatible credentials.
2) Utilize 64 bit authentication keys.
3) Support ISO compliant credentials.
d. Proximity Readers:
1) Utilize 125 kHz RF communication with compatible credentials.

D. Door Locking Devices (Electric Strikes and Magnetic Locks): Comply with Section 087100.

E. Provide Electric Latch Retraction devices for exit doors as indicated on drawings. Provide all hardware and accesories for retraction device installaion and operation.

2.05 ACCESSORIES

A. Provide components as indicated or as required for connection of access control system to devices and other systems indicated.

B. Unless otherwise indicated, credentials to be provided by Contractor.
1. Provide credentials compatible with readers and control units/software to be used.

C. Provide cables as indicated or as required for connections between system components.

D. Provide accessory racks/cabinets as indicated or as required for equipment mounting.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that ratings and configurations of system components are consistent with the indicated requirements.

C. Verify that mounting surfaces are ready to receive system components.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to system.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install access control system in accordance with NECA 1 (general workmanship).

B. Install products in accordance with manufacturer's instructions.

C. Wiring Method: Unless otherwise indicated, use cables (not in conduit).
   1. Use suitable listed cables in wet locations, including underground raceways.
   2. Use suitable listed cables for vertical riser applications.
   3. Use listed plenum rated cables in spaces used for environmental air.
   4. Install wiring in conduit for the following:
      a. Where required for rough-in.
      b. Where required by authorities having jurisdiction.
      c. Where exposed to damage.
      d. Where installed outside the building.
      e. For exposed connections from outlet boxes to devices.
   5. Conduit: Comply with Section 260533.13.
   6. Conceal cables unless specifically indicated to be exposed.
   7. Use power transfer hinges complying with Section 087100 for concealed connections to door hardware.
   8. Route exposed cables parallel or perpendicular to building structural members and surfaces.
   9. Do not exceed manufacturer's recommended maximum cable length between components.

D. Provide grounding and bonding in accordance with Section 260526.

3.03 FIELD QUALITY CONTROL

A. Provide services of a manufacturer's authorized representative to observe installation and assist in inspection and testing. Include manufacturer's detailed testing procedures and field reports with submittals.

B. Prepare and start system in accordance with manufacturer's instructions.

C. Program system parameters according to requirements of Owner.

D. Test for proper interface with other systems.

E. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.

F. Submit detailed reports indicating inspection and testing results and corrective actions taken.

3.04 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.05 CLOSEOUT ACTIVITIES

A. Demonstration: Demonstrate proper operation of system to Owner, and correct deficiencies or make adjustments as directed.

B. Training: Train Owner's personnel on operation, adjustment, and maintenance of system.
   1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
   2. Provide minimum of four hours of training.
   3. Instructor: Manufacturer's authorized representative.
   4. Location: At project site.

3.06 PROTECTION

A. Protect installed system components from subsequent construction operations.

END OF SECTION

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SECTION 282000
VIDEO SURVEILLANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Video surveillance system requirements.

B. Cameras.

C. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 260526 - Grounding and Bonding for Electrical Systems.

B. Section 260529 - Hangers and Supports for Electrical Systems.

C. Section 260533.13 - Conduit for Electrical Systems.

D. Section 281000 - Access Control: For interface with video surveillance system.

1.03 REFERENCE STANDARDS

A. 47 CFR 15 - Radio Frequency Devices; current edition.

B. AASHTO LTS - Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals; 2013, with Editorial Revision (2022).

C. IEEE C2 - National Electrical Safety Code; 2017.

D. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

E. NECA 303 - Standard for Installing and Maintaining Closed-Circuit Television (CCTV) Systems; 2019.

F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the placement of cameras with structural members, ductwork, piping, equipment, luminaires, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
   2. Coordinate the work with other installers to provide power for cameras and equipment at required locations.
   3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each system component. Include ratings, configurations, standard wiring diagrams, dimensions, finishes, service condition requirements, and installed features.

C. Evidence of qualifications for installer.

D. Evidence of qualifications for maintenance contractor (if different entity from installer).

E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.

F. Manufacturer’s detailed field testing procedures.

G. Field quality control test reports.

H. Maintenance contracts.

1.06 QUALITY ASSURANCE

A. Comply with the following:
   1. NFPA 70.
   2. Applicable TIA/EIA standards.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

D. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience with video surveillance systems of similar size, type, and complexity and providing contract maintenance service as a regular part of their business; authorized manufacturer's representative.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions and NECA 303.

B. Store products in manufacturer's unopened packaging, keep dry and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

A. Provide minimum one year manufacturer warranty covering repair or replacement due to defective materials or workmanship.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Cameras - Basis of Design: Axis.

2.02 VIDEO SURVEILLANCE SYSTEM

A. Integrate new cameras with modifications and extensions to existing video surveillance system consisting of all required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, system programming, etc. as necessary for a complete operating system that provides the functional intent indicated.

B. System Description: IP system with connection to network (IP) cameras.

C. Cameras Required:
   1. Camera Identical as the existing camera manufacturer's equipment or Owner approved equal. :
      a. Location: Install cameras in the positions indicated on the drawings..
      b. Camera Type: Furnish cameras as indicated on the drawing camera list. .
      c. Lens Type: Furnished with camera.
      d. Mounting: Surface, ceiling, indoor and outdoor as applicable for the location as indicated on the drawings..
      e. HMDI Output: 1080p.
      f. Accessories:
         1) Provide weatherproof enclousurse as reqreuied for location.
         2) Provide a minimal single-gang box for camera mounting.
         3) Provide a minimal 3/4 inch conduit to route camera cable from mounting box to insided buildiing.
         4) Weatherproof and seal all exterior wall penatrations.

D. Video Recording and Viewing Equipment Required:

1. See article "VIDEO RECORDING AND VIEWING EQUIPMENT" below for product descriptions.

E. Provide products listed, classified, and labeled as suitable for the purpose intended.

F. Electromagnetic Interference/Radio Frequency Interference (EMI/RFI) Limits: Comply with FCC requirements of 47 CFR 15, for Class B, consumer application.

2.03 ACCESSORIES

A. Camera Enclosures: Where not factory-installed, provide camera enclosures suitable for operation under service conditions at installed location.

B. Camera Mounting Supports: Where not factory installed, provide mounting supports necessary for installation.

C. Camera Poles:
1. Provide poles suitable for cameras, supports, and accessories to be installed.
2. Structural Design Criteria:
   a. Comply with AASHTO LTS.
   b. Wind Load: Include effective projected area (EPA) of cameras, supports, and accessories to be installed.
   c. Dead Load: Include weight of proposed cameras, supports, and accessories.
3. Pole Configuration: As indicated on drawings.
4. Provide ground lug, accessible from handhole.

D. Provide components as indicated or as required for connection of video surveillance system to devices and other systems indicated.

E. Provide components as indicated or as required for system power and network connections.

F. Provide cables as indicated or as required for connections between system components.

G. Provide accessory racks/cabinets as indicated or as required for equipment mounting.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that ratings and configurations of system components are consistent with the indicated requirements.

C. Verify that mounting surfaces are ready to receive system components.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to system where applicable.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install video surveillance system in accordance with NECA 1 (general workmanship) and NECA 303.

B. Install products in accordance with manufacturer's instructions.

C. Provide required support and attachment in accordance with Section 260529.

D. Wiring Method: Unless otherwise indicated, use cables (not in conduit).
1. Use suitable listed cables in wet locations, including underground raceways.
2. Use suitable listed cables for vertical riser applications.
3. Use listed plenum rated cables in spaces used for environmental air.
4. Install wiring in conduit for the following:
   a. Where required for rough-in.
   b. Where required by authorities having jurisdiction.
   c. Where exposed to damage.
   d. Where installed outside the building.
   e. For exposed connections from outlet boxes to cameras.

5. Conduit: Comply with Section 260533.13.
6. Conceal all cables unless specifically indicated to be exposed.
7. Route exposed cables parallel or perpendicular to building structural members and surfaces.

E. Pole-Mounted Cameras:
1. Maintain the following minimum clearances:
a. Comply with IEEE C2.
b. Comply with utility company requirements.

F. Provide grounding and bonding in accordance with Section 260526.

3.03 FIELD QUALITY CONTROL

A. Prepare and start system in accordance with manufacturer's instructions.

B. Adjust cameras to provide desired field of view and produce suitable images under all service lighting conditions.

C. Program system parameters according to requirements of Owner.

D. Test for proper interface with other systems.

E. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.

3.04 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.05 CLOSEOUT ACTIVITIES

A. See Section 017800 - Closeout Submittals, for closeout submittals.

B. See Section 017900 - Demonstration and Training, for additional requirements.

C. Demonstration: Demonstrate proper operation of system to Owner, and correct deficiencies or make adjustments as directed.

3.06 PROTECTION

A. Protect installed system components from subsequent construction operations.

3.07 MAINTENANCE

A. Provide to Owner, a proposal as an alternate to the base bid, a separate maintenance contract for the service and maintenance of video surveillance system for two years from date of Substantial Completion; Include a complete description of preventive maintenance, systematic examination, adjustment, cleaning, inspection, and testing, with a detailed schedule.

END OF SECTION

APPENDIX C.1
PIERPONT CAPERTON CENTER
GENERAL NOTES

APPENDIX C.1 – PIERPONT CAPERTON CENTER

DRAWING INDEX – NEW WORK AT CAPERTON CENTER:

A110: FIRST FLOOR PLAN – CAPERTON CENTER

E000: GENERAL ELECTRICAL NOTES & SPECIFICATIONS

E001: ELECTRICAL SYMBOL LEGEND & ABBREVIATIONS

E130: SECURITY SYSTEM PLAN

E500: SECURITY SYSTEM PLAN

DRAWINGS PROVIDED FOR REFERENCE ONLY (1996 CONSTR. DWGS):

DOOR 101: ENLARGED PLAN 10B

DOOR 102: ENLARGED PLAN 10H & PLAN DETAIL 5F

DOOR 103: PARTIAL FLOOR PLAN & PLAN DETAIL 5D

GENERAL NOTES:

1. PLANS AND DETAILS INCLUDED IN THIS APPENDIX THAT WERE TAKEN FROM THE ORIGINAL CONSTRUCTION DOCUMENTS OF THE CAPERTON CENTER (DRAWINGS DATED DEC. 1996) ARE PROVIDED FOR REFERENCE ONLY. VERIFY EXISTING CONDITIONS IN FIELD AND REPORT ANY DISCREPANCIES TO ARCHITECT PRIOR TO COMMENCING WORK.
2. DO NOT SCALE DRAWINGS.
3. DOORS TO RECEIVE SECURITY DEVICES AND NEW DOOR HARDWARE INCLUDE DOOR NUMBERS 101, 102 & 103.
4. NEW SECURITY ACCESS CONTROL, VIDEO SURVEILLANCE AND COMMUNICATION SYSTEM SHALL MATCH, INTERFACE, AND/OR BE COMPATIBLE WITH THE SYSTEM INSTALLED AT THE PIERPONT COMMUNITY & TECHNICAL COLLEGE ADVANCED TECHNOLOGY CENTER (ATC), 500 GALLIHER DR., FAIRMONT, WV. SEE SPECIFICATIONS FOR INFORMATION.
5. WHEREVER POSSIBLE, CONCEAL POWER SUPPLIES, CONDUIT AND OTHER APPLICABLE DEVICES ABOVE DROPPED CEILINGS AND INSIDE WALLS.

PIERPONT COMMUNITY & TECHNICAL COLLEGE
501 W MAIN ST. CLARKSBURG, WV
PIERPONT CAPERTON SECURITY SYSTEM
FLOOR PLAN
Drawing Description
Rev. | Description | By | Date
0 | ISSUED FOR BID | PJW | 05/30/2024
PICKERING ASSOCIATES
Architects • Engineers • Surveyors
320 Adams St. Suite #102 Phone: (304) 363-1004
Fairmont, West Virginia 26554 Fax: (304) 464-4428
STATE OF WEST VIRGINIA
PAMELA J. VIEAN
No. 9301
REGISTERED ARCHITECT
Project: 2201011
Designed By: JGH
Drawn By: JGH
Checked By: PJW
Scale: As indicated
Plot Date: 02/14/2023
Revision: 0
Drawing Number: A110
GENERAL NOTES
1. PROVIDE NEW CAMERAS, SECURITY DEVICES AND HARDWARE ON EXTERIOR DOORS AS SPECIFIED.
2. VERIFY EXISTING CONDITIONS IN FIELD AND REPORT ANY DISCREPANCIES TO ARCHITECT.
3. PATCH & REPAIR ANY SURFACES THAT ARE DAMAGED DURING INSTALLATION TO ORIGINAL CONDITION TO MATCH EXISTING.
CAPERTON CENTER DOOR SCHEDULE
MARK | DOOR HARDWARE | COMMENTS
101 | 01
102 | 01
103 | 02
101
102
103
FIRST FLOOR PLAN – CAPERTON CENTER
SCALE: 1/8"=1'0"

DIVISION 26 GENERAL REQUIREMENTS

SECTION 260500 COMMON WORK RESULTS FOR ELECTRICAL

THE ELECTRICAL CONTRACTOR SHALL RESPONSIBLE FOR THE DEMOLITION OF SELECTED ELECTRICAL EQUIPMENT AS INDICATED ON THE DRAWINGS AND ALL NECESSARY DEMOLITION ACTIVITIES REQUIRED FOR THIS PROJECT. REMOVE ALL INDICATED DEVICES FEEDER CONDUCTORS AND CONDUITS FROM EQUIPMENT TO SOURCE DISTRIBUTION PANELS. WHERE CONDUCTORS ARE ROUTED WITH OTHER EQUIPMENT NOT SELECTED FOR DEMOLITION, REMOVE CONDUITS TO NEAREST SHARED JUNCTION BOX. REMOVE ALL UNUSED CONDUIT SUPPORT EQUIPMENT. REMOVE ALL ASSOCIATED CONTROL CABLES. PREPARE AREAS FOR NEW ELECTRICAL EQUIPMENT INSTALLATION. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL EQUIPMENT DEMOLITION WITH OWNER AND OTHER CRAFTS.

THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NEW MATERIALS AND EQUIPMENT AS INDICATED IN THE SCHEDULES ON THE PROJECT DRAWINGS AND ALL ITEMS REQUIRED TO MAKE THE ELECTRICAL SYSTEMS FINISHED AND WORKING SYSTEMS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATIONS ASSOCIATED WITH EQUIPMENT PROVIDE BY OTHERS, AS DIRECTED BY THE OWNER, AND AS INDICATED ON THE PROJECT DRAWINGS.

WORK UNDER THIS CONTRACT CONSISTS OF THE FURNISHING, INSTALLATION, TESTING, AND GUARANTEE OF THE COMPLETE ELECTRICAL SYSTEM AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN. ALL ELECTRICAL WORK SHOWN AND REQUIRED SHALL BE BY THE ELECTRICAL CONTRACTOR, UNLESS OTHERWISE STATED. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL MINOR ITEMS OBVIOUSLY AND REASONABLY NECESSARY FOR THE COMPLETION OF THE WORK AND MAKE FINAL CONNECTIONS. THE FOLLOWING IS A GENERAL SUMMARY OF WORK INCLUDED, AND IS NOT INTENDED TO BE ALL INCLUSIVE:

A. THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY ELECTRICAL DISTRIBUTION, TEMPORARY LIGHTING, AND TEMPORARY GENERAL PURPOSE RECEPTACLES FOR THE AREAS OF CONSTRUCTION AND FOR THE PARTICIPATING CONTRACTORS. ALL TEMPORARY INSTALLATIONS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 590 – TEMPORARY INSTALLATIONS, AND MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION.
B. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW CONDUIT, WIRING, AND ELECTRICAL CONNECTIONS FOR THE NEW DEVICES AND EQUIPMENT AS INDICATED.
C. THE ELECTRICAL CONTRACTOR SHALL PROVIDE RECORD COPY DOCUMENTATION OF ALL THE NEW ELECTRICAL INSTALLATIONS. THE RECORD COPY DOCUMENTATION SHALL INCLUDE ALL ADJUSTMENTS TO THE EXISTING INSTALLATIONS AFFECTED BY THE NEW CONSTRUCTION.

ALL WORK UNDER THIS CONTRACT SHALL BE GOVERNED BY, AND SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE FOLLOWING CODES OR STANDARDS:

1. THE OWNER
2. STATE FIRE COMMISSION AND OR FIRE MARSHALL.
3. NATIONAL ELECTRICAL CODE (NEC).
4. NATIONAL FIRE CODE AS PUBLISHED BY THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).
5. NATIONAL ELECTRICAL SAFETY CODE (NESC).
6. INTERNATIONAL BUILDING CODE (IBC).
7. OTHER STATE, COUNTY, OR APPLICABLE JURISDICTIONAL LAWS, ORDINANCES, OR REGULATIONS.
8. COMPLY WITH ACCEPTED STANDARDS OF WORKMANSHIP AS RECOGNIZED BY THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA) INSTALLATION STANDARDS MANUAL.

THE FINAL INSTALLATION SHALL CONFORM TO THE CURRENT REVISION OF THE NFPA REGULATIONS, AND IEEE STANDARDS, AND ALL MATERIALS UTILIZED SHALL COMPLY WITH APPLICABLE STANDARDS OF NEMA AND ANSI.

ALL ELECTRICAL WORK SHALL BE INSPECTED AND APPROVED BY ALL LOCAL JURISDICTIONAL AUTHORITIES. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR DETERMINATION AND COORDINATION OF PROPER INSPECTIONS AND NOTIFICATION OF ALL JURISDICTIONAL AUTHORITIES UNDER THIS ITEM.

ALL MATERIALS USED FOR THE PROJECT SHALL BE LISTED AND CLASSIFIED BY UNDERWRITERS LABORATORIES, INC. AS SUITABLE FOR PURPOSE SPECIFIED AND INSTALLATION.

THE INSTALLATIONS SHALL BE PERFORMED IN COMPLIANCE WITH OSHA AND SAFE CONSTRUCTION PRACTICES, AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THIS PROVISION.

ALL HANDLING AND DISPOSAL OF REMOVED EQUIPMENT OR REFUSE SHALL COMPLY WITH ALL STATE AND FEDERAL EPA REGULATIONS. DOCUMENTATION OF PROPER DISPOSAL SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION, IN WRITING, PRIOR TO BEING HANDLED OR DISTURBED BY THE ELECTRICAL CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL PROVIDE NEW COMPONENTS WHICH HAVE FAULT WITHSTAND CAPABILITY SUITABLE FOR THE INSTALLATION AND WHICH WILL PROVIDE APPROPRIATE PROTECTION FOR ANY NEW EQUIPMENT. IDENTIFY ANY EQUIPMENT COORDINATION PROBLEMS WITH THE ENGINEER.

THE DRAWINGS FOR THE ELECTRICAL WORK ARE COMPLETELY DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF WORK, AND TO INDICATE THE GENERAL ARRANGEMENTS AND LOCATIONS OF EQUIPMENT, OUTLETS, LIGHT FIXTURES, SWITCHES COMMUNICATION DEVICES, ETC. SCALING OF THE DRAWINGS IS NOT SUFFICIENT OR ACCURATE FOR DETERMINING EQUIPMENT LOCATIONS. MAKE ALL NECESSARY FIELD MEASUREMENTS TO ASSURE CORRECT FIT PRIOR TO ORDERING ELECTRICAL EQUIPMENT AND ASSOCIATED MATERIAL.

SECTION 260503 EQUIPMENT WIRING CONNECTIONS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW EQUIPMENT ELECTRICAL CONNECTIONS, THE ELECTRICAL CONTRACTOR SHALL COORDINATE AND MAKE ELECTRICAL CONNECTIONS IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S INSTRUCTIONS. REVIEW SHOP DRAWINGS, PRODUCT DATA, MANUFACTURER'S WIRING DIAGRAMS, MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND EQUIPMENT LOCATION PRIOR TO ROUGH–IN AND ELECTRICAL INSTALLATIONS.

THE ELECTRICAL CONTRACTOR SHALL MAKE CONDUIT CONNECTIONS TO EQUIPMENT USING FLEXIBLE CONDUIT. USE LIQUID–TIGHT FLEXIBLE CONDUIT WITH WATERTIGHT CONNECTORS IN DAMP OR WET LOCATIONS. CONNECT HEAT PRODUCING EQUIPMENT USING WIRE AND CABLE WITH INSULATION SUITABLE FOR TEMPERATURES ENCOUNTERED. PROVIDE RECEPTACLE OUTLET AND ATTACHMENT PLUG TO ACCOMMODATE EQUIPMENT CONNECTIONS, AS INDICATED.

SECTION 260519 LOW–VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW ELECTRICAL WIRE AND CABLE, AND WIRING CONNECTORS AND CONNECTIONS. ELECTRICAL WIRING SHALL BE SINGLE CONDUCTOR STRANDED COPPER WIRE WITH THHN/THWN INSULATION RATED AT 600V.

THE ELECTRICAL CONTRACTOR SHALL ROUTE WIRE AND CABLE AS REQUIRED TO MEET PROJECT CONDITIONS. INSTALL CABLE IN ACCORDANCE WITH THE NECA "STANDARD OF INSTALLATION." USE CONDUCTOR NOT SMALLER THAN 12 AWG FOR POWER AND LIGHTING CIRCUITS. USE CONDUCTOR NOT SMALLER THAN 14 AWG FOR CONTROL CIRCUITS.

SECTION 260526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL EQUIPMENT GROUNDING CONDUCTORS AND ELECTRICAL SYSTEM BONDING, AS INDICATED. ALL ELECTRICAL SYSTEM GROUNDING CONDUCTORS AND BONDING SHALL BE INSTALLED IN ACCORDANCE WITH IEEE 142 AND IEEE 1000.

THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE A SEPARATE, INSULATED CONDUCTOR WITHIN EACH FEEDER. THE GROUNDING CONDUCTOR SHALL BE TERMINATED AT EACH END ON A SUITABLE LUG, BUS, OR BUSHING. THE ELECTRICAL CONTRACTOR SHALL BOND TOGETHER EACH METALLIC RACEWAY, PIPE, DUCT, AND OTHER METAL OBJECTS ASSOCIATED WITH ELECTRICAL EQUIPMENT FRAMES, AND ELECTRICAL EQUIPMENT.

SECTION 260529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL CONDUIT AND EQUIPMENT SUPPORTS, ANCHORS AND FASTENERS, AND FIRESTOPPING RELATING TO ELECTRICAL WORK AS FOLLOWS:

A. LOCATE AND INSTALL ANCHORS, FASTENERS, AND SUPPORTS IN ACCORDANCE WITH NECA "STANDARD OF INSTALLATION".
    1. DO NOT FASTEN SUPPORTS TO PIPES, DUCTS, MECHANICAL EQUIPMENT, OR CONDUIT.
    2. DO NOT USE SPRING STEEL CLIPS AND CLAMPS.
    3. OBTAIN PERMISSION FROM THE ENGINEER BEFORE DRILLING OR CUTTING STRUCTURAL MEMBERS.
B. FABRICATE SUPPORTS FROM STRUCTURAL STEEL OR FORMED STEEL MEMBERS. RIGIDLY WELD MEMBERS OR USE HEXAGON–HEAD BOLTS TO PRESENT NEAT APPEARANCE WITH ADEQUATE STRENGTH AND RIGIDITY. USE SPRING LOCK WASHERS UNDER ALL NUTS.
C. INSTALL SURFACE–MOUNTED CABINETS AND PANELBOARDS WITH MINIMUM OF FOUR ANCHORS.
D. IN WET AND DAMP LOCATIONS USE STEEL CHANNEL SUPPORTS TO STAND CABINETS AND PANELBOARDS (1) INCH OFF WALL.
E. USE SHEET METAL CHANNEL TO BRIDGE STUDS ABOVE AND BELOW CABINETS AND PANELBOARDS RECESSED IN HOLLOW PARTITIONS.
F. INSTALL MATERIAL AT FIRE RATED CONSTRUCTION PERIMETERS AND OPENINGS CONTAINING PENETRATING SLEEVES, PIPING, DUCTWORK, CONDUIT AND OTHER ITEMS, REQUIRING FIRESTOPPING. APPLY FIRESTOPPING MATERIAL IN SUFFICIENT THICKNESS TO ACHIEVE REQUIRED FIRE AND SMOKE RATING.

SECTION 260533 RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW CONDUIT, WIREWAYS, OUTLET BOXES, AND PULL AND JUNCTION BOXES TO MEET THE ELECTRICAL SYSTEM REQUIREMENTS. INSTALL CONDUIT AND BOXES IN ACCORDANCE WITH NECA "STANDARD OF INSTALLATION." THE TYPE OF CONDUIT AND BOXES TO BE USED IN VARIOUS LOCATIONS IS AS FOLLOWS;

A. CONCEALED WITHIN INTERIOR WALLS OR ABOVE ACCESSIBLE CEILINGS: EMT, MC AND AC.
B. EXPOSED CONDUIT WHEN SUBJECT TO POSSIBLE PHYSICAL DAMAGE: RMC.
C. EXPOSED CONDUIT WHERE NOT SUBJECT TO POSSIBLE PHYSICAL DAMAGE: EMT.
D. BETWEEN OUTLET BOXES AND/OR PULL BOXES LOCATED ABOVE HUNG OR FURRED CEILINGS: EMT, MC AND AC.
E. WET AND DAMP LOCATIONS: RMC, LFMC AND SCHEDULE 40 PVC.
F. UNDERGROUND LOCTIONS: RMC AND SCHEDULE 40 PVC.
G. CONDUIT MINIMUM SIZE: 3/4 INCH.
H. SHEET METAL OUTLET BOXES: NEMA OS 1, GALVANIZED STEEL.
I. PULL AND JUNCTION BOXES: NEMA OS 1, GALVANIZED STEEL.

MC AND AC CABLES INSTALLED SHALL COMPLY WITH ALL NEC REQUIREMENTS AND SHALL BE LISTED AND RATED FOR THE SPACES AND AREAS WHERE INSTALLED SUCH AS, BUT NOT LIMITED TO, PATIENT CARE SPACES OR HAZARDOUS LOCATIONS.

THE ELECTRICAL CONTRACTOR SHALL VERIFY OUTLET, LIGHT FIXTURE, SWITCH, EQUIPMENT LOCATIONS, CONDUIT ROUTES, AND CONDUIT TERMINATIONS PRIOR TO ROUGH–IN. ARRANGE CONDUIT AND BOX SUPPORTS TO PREVENT MISALIGNMENT DURING WIRING INSTALLATION. THE ELECTRICAL CONTRACTOR SHALL ROUTE CONDUIT THROUGH ROOF OPENINGS FOR PIPING AND DUCTWORK OR THROUGH SUITABLE ROOF JACK WITH PITCH POCKET. GROUND AND BOND ALL CONDUITS AND BOXES.

THE ELECTRICAL CONTRACTOR SHALL COORDINATE MOUNTING HEIGHTS AND LOCATION OF OUTLETS AND SWITCHES MOUNTED ABOVE COUNTERS, BENCHES, AND BACKSPLASHES WITH THE ARCHITECTURAL ELEVATIONS. LOCATE JUNCTION BOXES TO ALLOW LUMINAIRES TO BE POSITIONED AS SHOWN ON THE ELECTRICAL PLAN AND ARCHITECTURAL REFLECTED CEILING PLAN.

THE ELECTRICAL CONTRACTOR SHALL INSTALL CONDUIT AND BOXES TO PRESERVE THE FIRE RESISTANCE RATING OF PARTITIONS AND OTHER ELEMENTS.

SECTION 260553 IDENTIFICATION FOR ELECTRICAL SYSTEMS

THE NEW ELECTRICAL DISTRIBUTION EQUIPMENT SHALL HAVE SIGNAGE INDICATING NAME, SOURCE OF POWER, AND MAIN DISCONNECTING MEANS. SIGNAGE SHALL BE ENGRAVED BLACK LETTERING ON WHITE, THREE–LAYER LAMINATED PLASTIC MATERIAL, PERMANENTLY AFFIXED TO THE EQUIPMENT. SECURE NAMEPLATE TO THE EQUIPMENT'S FRONT DOOR SURFACE OF SWITCHBOARDS AND PANELBOARDS. IN ALL AREAS, LABEL EACH CONDUCTOR AT PANELBOARD GUTTERS, PULL BOXES, OUTLET AND JUNCTION BOXES, AND AT EACH LOAD CONNECTION. THE ELECTRICAL CONTRACTOR SHALL UPDATE EXISTING PANEL SCHEDULES PER NEW ARRANGEMENTS AND WIRING.

SECTION 262413 SWITCHBOARDS

THE ELECTRICAL CONTRACTOR SHALL PROVIDED AND INSTALL THE NEW DISTRIBUTION SWITCHBOARDS, AS INDICATED. INSTALL NEW SWITCHBOARDS IN ACCORDANCE WITH NEMA PB 1.1 AND THE NECA "STANDARD OF INSTALLATION."

THE ELECTRICAL CONTRACTOR SHALL FEED ALL SWITCHBOARDS SUPPLY FEEDS WITH CONDUIT AND INDIVIDUAL CONDUCTORS. EM CABLES SHALL BE FOR BRANCH CIRCUITS FOR UTILIZATION EQUIPMENT ONLY.

THE ELECTRICAL CONTRACTOR SHALL GROUND AND BOND EACH SWITCHBOARD. PROVIDE ENGRAVED PLASTIC NAMEPLATE AND TYPE CIRCUIT DIRECTORY FOR EACH NEW SWITCHBOARD.

SECTION 262416 PANELBOARDS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW DISTRIBUTION PANELBOARDS, AS INDICATED. INSTALL EACH NEW PANELBOARD IN ACCORDANCE WITH NEMA PB 1.1 AND THE NECA "STANDARD OF INSTALLATION". ACCEPTABLE PANELBOARD MANUFACTURERS ARE GENERAL ELECTRIC, SQUARE D, OR ENGINEER APPROVED EQUAL.

THE DISTRIBUTION PANELBOARD SHALL BE NEMA PB 1, CIRCUIT BREAKER TYPE WITH COPPER BUS AND COPPER GROUND BUS. THE PANELBOARD SHALL HAVE A MINIMUM INTEGRATED SHORT CIRCUIT RATING OF 22,000 AMPERES RMS SYMMETRICAL FOR 208Y/120 VOLT PANELBOARD, AND 35,000 AMPERES RMS SYMMETRICAL FOR 480Y/277 VOLT PANELBOARD. THE CIRCUIT BREAKERS SHALL BE MOLDED CASE CIRCUIT BREAKERS, NEMA AB 1, WITH INTEGRAL THERMAL AND INSTANTANEOUS MAGNETIC TRIP IN EACH POLE. PROVIDE UL LISTED, TYPE HACR CIRCUIT BREAKERS FOR AIR CONDITIONING EQUIPMENT BRANCH CIRCUITS.

THE ELECTRICAL CONTRACTOR SHALL FEED ALL PANELBOARDS SUPPLY FEEDS WITH CONDUIT AND INDIVIDUAL CONDUCTORS. EM CABLES SHALL BE FOR BRANCH CIRCUITS FOR UTILIZATION EQUIPMENT ONLY.

THE ELECTRICAL CONTRACTOR SHALL GROUND AND BOND EACH PANELBOARD. PROVIDE ENGRAVED PLASTIC NAMEPLATE AND TYPED CIRCUIT DIRECTORY FOR EACH NEW AND ADJUSTED PANELBOARD.

SECTION 262726 WIRING DEVICES

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW WALL SWITCHES, RECEPTACLES, AND DEVICE PLATES, AS INDICATED. INSTALL ALL WIRING DEVICES PLUMB AND LEVEL, AND IN ACCORDANCE WITH THE NECA "STANDARD OF INSTALLATION". INSTALL SWITCHES WITH "OFF" POSITION DOWN. INSTALL WALL DIMMERS TO ACHIEVE FULL RATING SPECIFIED AND INDICATED AFTER DERATING FOR GANGING AS INSTRUCTED BY THE MANUFACTURER. INSTALL GENERAL DUTY RECEPTACLES WITH THE GROUNDING POLE ON TOP.

THE ELECTRICAL CONTRACTOR SHALL NOT SHARE NEUTRAL CONDUCTORS FOR THE ELECTRICAL CIRCUITS. CONNECT EACH WIRING DEVICE GROUNDING TERMINAL TO THE OUTLET BOX WITH A BONDING JUMPER. THE ELECTRICAL CONTRACTOR SHALL OPERATE EACH WALL SWITCH WITH THE CIRCUIT ENERGIZED AND VERIFY PROPER OPERATION. VERIFY THAT EACH RECEPTACLE DEVICE IS ENERGIZED AND TEST EACH RECEPTACLE DEVICE FOR PROPER OPERATION. TEST EACH GFCI RECEPTACLE DEVICE FOR PROPER OPERATION.

THE ELECTRICAL CONTRACTOR SHALL INSTALL DECORATIVE PLATES ON SWITCH, RECEPTACLE, AND BLANK OUTLETS IN FINISHED AREAS. USE JUMBO SIZE PLATES FOR OUTLETS INSTALLED IN MASONRY WALLS. INSTALL GALVANIZED STEEL PLATES ON OUTLET AND JUNCTION BOXES IN UNFINISHED AREAS, ABOVE ACCESSIBLE CEILINGS, AND ON SURFACE MOUNTED OUTLETS. INSTALL PROTECTIVE RINGS ON ACTIVE FLUSH COVER SERVICE FITTINGS.

THE ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATIONS OF OUTLET BOXES WITH THE ARCHITECTURAL ELEVATIONS TO OBTAIN EXACT MOUNTING HEIGHTS SPECIFIED AND INDICATED ON THE DRAWINGS. INSTALL WALL SWITCHES 48 INCHES ABOVE FINISHED FLOOR. INSTALL CONVENIENCE RECEPTACLES 18 INCHES ABOVE FINISHED FLOOR. INSTALL CONVENIENCE RECEPTACLES 6 INCHES ABOVE BACKSPLASH OF COUNTER. INSTALL DIMMER SWITCHES 48 INCHES ABOVE FINISHED FLOOR. INSTALL TELEPHONE JACKS 18 INCHES ABOVE FINISHED FLOOR. INSTALL TELEPHONE JACKS FOR FORWARD–REACH WALL TELEPHONE TO POSITION TOP OF TELEPHONE AT 54 INCHES ABOVE FINISHED FLOOR.

SECTION 262813 FUSES

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW FUSES, AS INDICATED. INSTALL FUSES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSTALL FUSE WITH LABEL ORIENTED SUCH THAT MANUFACTURER, TYPE, AND SIZE ARE EASILY READ. ACCEPTABLE MANUFACTURERS ARE BUSSMAN, GOULD SHAWMUT, LITTLEFUSE OR EQUAL.

SECTION 262818 ENCLOSED CIRCUIT BREAKERS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW ENCLOSED MOLDED–CASE CIRCUIT BREAKERS AS INDICATED. INSTALL ENCLOSED CIRCUIT BREAKERS IN ACCORDANCE WITH THE NECA "STANDARD OF INSTALLATION". LABEL THE ENCLOSED CIRCUIT BREAKER TO INDICATE THE EQUIPMENT SERVED AND ORIENT TOP OF ENCLOSURE 6'–0"AFF. LABEL ENCLOSED CIRCUIT BREAKERS TO INDICATE EQUIPMENT SERVED. ACCEPTABLE MANUFACTURERS ARE GENERAL ELECTRIC AND SQUARE D.

THE ENCLOSED CIRCUIT BREAKERS SHALL BE SHALL BE LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, AND MARKED FOR INTENDED USE. THE ENCLOSED CIRCUIT BREAKERS SHALL COMPLY WITH NEMA AB 1, WITH INTERRUPTING CAPACITY TO MEET AVAILABLE FAULT CURRENTS, AND NEMA KS 1. THE CIRCUIT BREAKERS SHALL BE MOLDED–CASE TYPE WITH INVERSE TIME–CURRENT ELEMENT FOR LOW–LEVEL OVERLOADS, INSTANTANEOUS MAGNETIC TRIP ELEMENT FOR SHORT CIRCUITS, AND ADJUSTABLE MAGNETIC TRIP SETTING.

SECTION 262819 ENCLOSED SWITCHES

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW FUSIBLE AND NON–FUSIBLE SAFETY DISCONNECT SWITCHES, AS INDICATED. INSTALL ENCLOSED SWITCHES IN ACCORDANCE WITH THE NECA "STANDARD OF INSTALLATION." LABEL DISCONNECTS TO INDICATE EQUIPMENT SERVED. ACCEPTABLE MANUFACTURERS ARE GENERAL ELECTRIC AND SQUARE D, OR ENGINEER APPROVED EQUAL.

THE NEW SAFETY DISCONNECT SWITCHES SHALL BE HEAVY–DUTY TYPE, ENCLOSED, LOAD INTERRUPTER KNIFE SWITCH. THE OPERATING HANDLE SHALL BE LOCKABLE IN THE "OFF" POSITION, TYPE NEMA 1 FOR INTERIOR DRY LOCATIONS AND TYPE NEMA 3R FOR EXTERIOR LOCATIONS.

SECTION 265100 INTERIOR LIGHTING

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW INTERIOR LUMINAIRES AND ACCESSORIES, EXIT SIGNS, BALLASTS, AND LAMPS, AS INDICATED. THE NEW LIGHT FIXTURES SHALL BE LISTED AND LABELED BY UNDERWRITERS LABORATORIES, INC. AS SUITABLE FOR THE PURPOSE SPECIFIED AND INSTALLATION LOCATION. INSTALL ACCESSORIES FURNISHED WITH EACH LUMINAIRE.

THE ELECTRICAL CONTRACTOR SHALL INSTALL SUSPENDED LUMINAIRES USING PENDANTS SUPPORTED FROM SWIVEL HANGERS. PROVIDE PENDANT LENGTH REQUIRED TO SUSPEND LUMINAIRE AT INDICATED HEIGHT. INSTALL SURFACE MOUNTED LUMINAIRES AND EXIT SIGNS PLUMB AND ADJUST TO ALIGN WITH BUILDING LINES AND WITH EACH OTHER. FOR EXPOSED GRID CEILINGS, SUPPORT SURFACE MOUNTED LUMINAIRES ON GRID CEILING DIRECTLY FROM BUILDING STRUCTURE. SECURE ALL NEW LUMINAIRE INSTALLATIONS TO PREVENT MOVEMENT.

THE ELECTRICAL CONTRACTOR SHALL CLEAN ELECTRICAL PARTS TO REMOVE CONDUCTIVE AND DELETERIOUS MATERIALS. REMOVE DIRT AND DEBRIS FROM ENCLOSURES. CLEAN PHOTOMETRIC CONTROL SURFACES AS RECOMMENDED BY MANUFACTURER. CLEAN FINISHES AND TOUCH UP DAMAGE. OPERATE EACH LUMINAIRE AFTER INSTALLATION AND CONNECTION. INSPECT FOR PROPER CONNECTION AND OPERATION. AIM AND ADJUST LUMINAIRES AS DIRECTED. POSITION EXIT SIGN DIRECTIONAL ARROWS AS INDICATED. RELAMP LUMINAIRES THAT HAVE FAILED LAMPS AT SUBSTANTIAL COMPLETION.

SECTION 265600 EXTERIOR LIGHTING

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW EXTERIOR LIGHT FIXTURES, LIGHT FIXTURE LAMPS, ACCESSORIES, LIGHT FIXTURE POSTS, AND LIGHT FIXTURE POLES, AS INDICATED. THE NEW LIGHT FIXTURES SHALL BE LISTED AND LABELED BY UNDERWRITERS LABORATORIES, INC. AS SUITABLE FOR THE PURPOSE SPECIFIED AND INSTALLATION LOCATION. INSTALL ACCESSORIES FURNISHED WITH EACH LIGHT FIXTURE.

THE ELECTRICAL CONTRACTOR SHALL INSTALL POST/POLE MOUNTED LIGHT FIXTURES INCLUDING LAMPS, ALL SOCKETS, REFLECTORS, LENSES, HOUSINGS, AND OTHER COMPONENTS REQUIRED TO POSITION, ENERGIZE, AND PROTECT THE LAMP AND DISTRIBUTE THE LIGHT. PROVIDE AND INSTALL ALL REQUIRED CONDUIT, BOXES, WIRING, CONNECTORS, HARDWARE, POLES, FOUNDATIONS, SUPPORTS, TRIM, ACCESSORIES, ETC. AS NECESSARY FOR A COMPLETE OPERATING SYSTEM. PROVIDE PRODUCTS SUITABLE TO WITHSTAND NORMAL HANDLING, INSTALLATION, AND SERVICE WITHOUT ANY DAMAGE, DISTORTION, CORROSION, FADING, DISCOLORING, ETC.

THE ELECTRICAL CONTRACTOR SHALL INSTALL PRODUCTS ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS. INSTALL LUMINAIRES SECURELY, IN A NEAT AND WORKMANLIKE MANNER. INSTALL LUMINAIRES PLUMB AND SQUARE AND ALIGNED WITH BUILDING LINES AND WITH ADJACENT LUMINAIRES. BOND PRODUCTS AND METAL ACCESSORIES TO BRANCH CIRCUIT EQUIPMENT GROUNDING CONDUCTOR AND POLE BASE GROUND BAR.

DIVISION 27/28 GENERAL REQUIREMENTS

SECTION 270500 COMMON WORK RESULTS FOR COMMUNICATIONS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL CABLING FOR VOICE AND DATA COMMUNICATIONS AS INDICATED. INSTALL NEW CABLING FOR VOICE AND DATA COMMUNICATIONS IN ACCORDANCE WITH TIA/EIA 568. INSTALL COMMUNICATION PATHWAYS IN ACCORDANCE WITH TIA/EIA 569.

THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF CONDUIT, OUTLET BOXES, COMMUNICATION WIRING, WIRING SUPPORT, COMMUNICATION OUTLETS, WALL PLATES, AND ASSOCIATED TERMINATIONS AND TESTING. COORDINATE ALL NEW INSTALLATIONS AND RELOCATED INSTALLATIONS WITH THE OWNER.

SECTION 283111 FIRE ALARM

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW FIRE ALARM AND DETECTION EQUIPMENT, CABLING, TERMINATIONS, AND THE REQUIREMENTS FOR EXTENDING, ADJUSTING, AND RELOCATING THE EXISTING AREA FIRE ALARM AND DETECTION SYSTEM AND EQUIPMENT. ALL WORK SHALL INCLUDE WIRING, CONNECTIONS, AND TECHNICAL SERVICES AS NEEDED TO INTERFACE THE REMAINING AND RELOCATED FIRE ALARM SYSTEM AND EQUIPMENT WITH THE NEW INSTALLATIONS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL WIRING, TERMINATION REQUIREMENTS, AND PROGRAMMING WITH THE MANUFACTURER. ALL NEW AND ADJUSTED INSTALLATIONS SHALL BE TESTED IN ACCORDANCE WITH THE NFPA AND WEST VIRGINIA STATE FIRE COMMISSION.

ELECTRICAL ABBREVIATIONS

A	AMP, AMPERE, AMPERAGE
A/V	AUDIO/VISUAL
AC	ARMORED CABLE OR ALTERNATING CURRENT
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
ANNC	FIRE ALARM ANNUNCIATOR PANEL
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
C.	COUNTER HEIGHT****
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
COMM	COMMUNICATIONS
COMP	COMPRESSOR
CTRL	CONTROL
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
D	DIMMING
DWG	DRAWING
E	EMERGENCY
EA	EACH
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EGC	EQUIPMENT GROUNDING CONDUCTOR
ELEC	ELECTRIC OR ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
EXIST, EX.	EXISTING
EXT	EXTERIOR
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FC	FOOT CANDLE(S)
FL	FLOOR
FT	FOOT OR FEET
GEN	GENERATOR
GFCI, GFI	GROUND FAULT CIRCUIT INTERUPPTER
GND	GROUND
HD	HAND DRYER
HOA	HAND–OFF–AUTOMATIC
HP	HORSEPOWER
KCMIL	THOUSAND CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT–AMPERE
KW	KILOWATT
LC	LIGHTING CONTACTOR
LT/LTS	LIGHT/LIGHTS
MAX	MAXIMUM
MC	METAL CLAD
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MFGR	MANUFACTURER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NF	NON–FUSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
OHD	OVERHEAD DOOR
PC	PHOTOCELL
PH	PHASE
REC	RECEPTACLE
REV	REVISION
RM	ROOM
RMC	RIGID METAL CONDUIT
RTU	ROOF TOP UNIT
TEL	TELEPHONE
TV	TELEVISION
TYP	TYPICAL
UC	UNDER COUNTER
UGE	UNDERGROUND ELECTRIC
UL	UNDERWRITER'S LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTABLE POWER SUPPLY
V	VOLT
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF
XMFR	TRANSFORMER

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Rev.	Description	By	Date
0	ISSUED FOR BID	CSH	05/30/24

Drawing Description

PIERPONT COMMUNITY & TECHNICAL COLLEGE
501 W MAIN ST. CLARKSBURG, WV
PIERPONT CAPERTON SECURITY SYSTEM
GENERAL ELECTRICAL NOTES AND SPECIFICATIONS

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No. 14330

Project:	2201011
Designed By:	CSH
Drawn By:	BEM
Checked By:	CSH
Scale:	NTS
Plot Date:	05/30/24
Revision:	0
Drawing Number:	E000

ELECTRICAL SYMBOL LEGEND

- ALL ITEMS SHOWN AS DASHED ON DEMOLITION PLANS SHALL BE REMOVED UNLESS NOTED OTHERWISE.
- FLUORESCENT, INCANDESCENT, OR LED TYPE LIGHTING FIXTURES COMPLETE WITH LAMPS. REFER TO LIGHT FIXTURE SCHEDULE FOR DETAILS.
- EXTERIOR POLE–MOUNTED LED FIXTURES
- COORDINATE NUMBER OF FACES AND THE DIRECTIONAL ARROWS, AS REQUIRED. CONNECTION TO THE EXIT LIGHT FIXTURE SHALL BE MADE AHEAD OF THE LOCAL LIGHT SWITCHING CIRCUIT.
- SINGLE AND DOUBLE LED REMOTE HEAD EMERGENCY EGRESS FIXTURES
- $ — SINGLE POLE, 20A 120/277V SINGLE THROW SWITCH. MOUNT 46" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE.
- $3 — 20A 120/277V THREE–WAY, SINGLE THROW SWITCH. MOUNT 46" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE.
- $4 — 20A 120/277V FOUR–WAY, SINGLE THROW SWITCH. MOUNT 46" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE.
- $K — 20A 120/277V LOCK TYPE, HUBBELL SINGLE THROW SWITCH. MOUNT 46" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE.
- $OS — 20A 120/277V SINGLE BUTTON ON/OFF OCCUPANCY SENSOR, MOUNT 46" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE.
- OS — CEILING MOUNT OCCUPANCY SENSOR, COORDINATE POWER PACK REQUIREMENTS AND QUANTITIES WITH THE MANUFACTURER.
- PC — PHOTOCELL LIGHTING CONTROLLER. NOTE DETAIL DRAWINGS FOR MOUNTING DETAIL.
- DUPLEX GROUNDING TYPE RECEPTACLE, 20A 120V. MOUNT 18" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT. COORDINATE COLOR WITH OWNER.
- GFCI — GROUND–FAULT CIRCUIT INTERRUPTER TYPE DUPLEX RECEPTACLE, 20A 120V. MOUNT 18" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- TV — DUPLEX GROUNDING TYPE RECEPTACLE, 20A 120V. MOUNT 84" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- TWO (2) DUPLEX GROUNDING TYPE SPECIFICATION GRADE RECEPTACLE, 20A 120V. MOUNT IN COMMON BOX WITH COMMON PLATE 18" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- DUPLEX GROUNDING TYPE RECEPTACLE, 20A, 125V. MOUNT IN FLOOR BOX WITH COMMON PLATE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- TWO (2) DUPLEX GROUNDING TYPE RECEPTACLES, 20A, 125V. MOUNT IN FLOOR BOX WITH COMMON PLATE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- USB — COMBINATION 3.1A/5VDC USB CHARGERS WITH 20A, 125V DUPLEX GROUNDING TYPE RECEPTACLES. MOUNT IN COMMON BOX WITH COMMON PLATE AT 18" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- USB — TWO (2) COMBINATION 3.1A/5VDC USB CHARGERS WITH 20A, 125V DUPLEX GROUNDING TYPE RECEPTACLES. MOUNT IN COMMON BOX WITH COMMON PLATE AT 18" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- C — SUBSCRIPT "C" INDICATES DEVICE TO BE MOUNTED 6" ABOVE COUNTERTOP TO CENTERLINE.
- R — SUBSCRIPT "R" INDICATES RED DEVICE CONNECTED TO EMERGENCY POWER.
- WP — SUBSCRIPT "WP" INDICATES DEVICE INSTALLATION AND ENCLOSURE SHALL BE WEATHER–PROOF
- SPECIAL RECEPTACLE OR FEED. REFER TO DRAWINGS FOR DESCRIPTION.
- 480Y/277V, 3ø 4W PANELBOARD. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- 208Y/120V, 3ø 4W PANELBOARD. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- 240V, 3ø 3W PANELBOARD. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- 240/120V, 1ø 3W PANELBOARD. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- POINT OF ELECTRICAL CONNECTION TO EQUIPMENT. CONFIRM EQUIPMENT CONNECTION REQUIREMENTS AND ARRANGEMENT PRIOR TO ROUGH–IN. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- A–2 — ELECTRICAL CIRCUIT HOMERUN TO PANEL 'A' CIRCUIT #2 (EXAMPLE). ALL CIRCUIT WIRING SHALL BE (2) –#12 THHN/THWN CONDUCTORS AND (1)–#12 THHN/THWN GROUND CONDUCTOR IN 3/4" EMT, UNLESS NOTED OTHERWISE.
- NON–FUSED HEAVY–DUTY TYPE SAFETY DISCONNECT SWITCH. SIZE, POLES, AND NEMA TYPE AS INDICATED ON ELECTRICAL DRAWINGS.
- FUSED HEAVY–DUTY TYPE SAFETY DISCONNECT SWITCH. SIZE, POLES, FUSE SIZE, AND NEMA TYPE AS INDICATED ON ELECTRICAL DRAWINGS.
- COMBINATION MOTOR STARTER AND HEAVY–DUTY TYPE SAFETY DISCONNECT SWITCH. SIZE, POLES, FUSE SIZE, AND NEMA TYPE AS INDICATED ON ELECTRICAL DRAWINGS.
- STANDARD JUNCTION BOX WITH COVER. LOCATE AND CONNECT AS DIRECTED.
- HUBBEL QUAZITE 11"X18" PG STYLE POLYMER CONCRETE ENCLOSURE.

ELECTRICAL SYSTEM CONTROLS SYMBOL LEGEND

- S — CEILING SPEAKER, FLUSH MOUNTED DEVICE. REFER TO DRAWINGS AND/ OR SPECIFICATIONS FOR DETAILS.
- C — SECURITY CAMERA, CEILING MOUNTED DEVICE. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR CAMERA LOCATIONS AND/OR DETAILS.
- SECURITY CAMERA, WALL MOUNTED DEVICE. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR CAMERA LOCATIONS AND/OR DETAILS.
- WAP — WIRELESS COMMUNICATIONS ACCESS POINT.
- T — THERMOSTAT CONTROL JUNCTION BOX. E.C. IS RESPONSIBLE FOR INSTALLATION OF ROUGH–IN BOX AND CONDUIT FOR EQUIPMENT INSTALLATION. VERIFY EXACT LOCATION AND INSTALLATION REQUIREMENTS WITH THE MECHANICAL DRAWINGS AND THE MECHANICAL CONTRACTOR.
- SPEAKER, SURFACE–MOUNTED DEVICE. REFER TO DRAWINGS AND/ OR SPECIFICATIONS FOR DETAILS.
- SINGLE–FACED CEILING/WALL MOUNTED CLOCK. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT PRIOR TO ROUGH–IN.
- PR — ACCESS CONTROL PROXIMITY CARD READER. REFER TO DRAWINGS FOR DETAILS AND SPECIFICATIONS.
- RB — ACCESS CONTROL DOOR RELEASE BUTTON. REFER TO DRAWINGS FOR DETAILS AND SPECIFICATIONS.
- TV — JUNCTION BOX FOR TELEVISION CABLE OUTLET. MOUNT AT 84" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. PROVIDE 4–11/16" SQUARE BOX WITH SINGLE–GANG PLASTER RING AND PROVIDE 3/4"C WITH PULL STRING FROM BOX TO 1' ABOVE FINISHED CEILING. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT.
- V — RJ45 TELEPHONE SYSTEM OUTLET. MOUNT AT 54" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. PROVIDE 4–11/16" SQUARE BOX WITH SINGLE–GANG PLASTER RING AND PROVIDE 3/4"C WITH PULL STRING FROM BOX TO 1' ABOVE FINISHED CEILING. INSTALL ONE (1) CAT 5e CABLE FROM OUTLET BOX TO COMMUNICATION ROOM AND TERMINATE AS DIRECTED BY THE OWNER. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT.
- T — RJ11 TELEPHONE SYSTEM OUTLET. MOUNT AT 54" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. PROVIDE 4–11/16" SQUARE BOX WITH SINGLE–GANG PLASTER RING AND PROVIDE 3/4"C WITH PULL STRING FROM BOX TO 1' ABOVE FINISHED CEILING. INSTALL ONE (1) CAT 5e CABLE FROM OUTLET BOX TO COMMUNICATION ROOM AND TERMINATE AS DIRECTED BY THE OWNER. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT.
- 3 — COMMUNICATION SYSTEM OUTLET. MOUNT AT 18" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. PROVIDE 4–11/16" SQUARE BOX WITH SINGLE–GANG PLASTER RING AND PROVIDE 3/4"C WITH PULL STRING FROM BOX TO 1' ABOVE FINISHED CEILING. PROVIDE RJ45 & VOIP JACKS & COVER PLATE WITH FINAL TERMINATIONS AT JACK. INSTALL CAT6 CABLES (UNLESS DESIGNATED OTHERWISE) FROM OUTLET BOX TO COMMUNICATION ROOM AND TERMINATE TO PUNCH–DOWN BLOCK (OR AS DIRECTED BY THE OWNER), LABEL, AND TEST. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT. TYPICAL TWO COMMUNICATION WIRING (2) DROPS PER OUTLET LOCATION UNLESS OTHERWISE INDICATED BY SUBSCRIPT. (EXAMPLE: "3" INDICATES NUMBER THREE (3) NUMBER OF DROPS TO OUTLET LOCATION.)
- PUSH BUTTON. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- ES — EMERGENCY STOP PUSH BUTTON. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- INTERCOM PAGING SYSTEM. REFER TO DRAWINGS FOR DETAILS AND SPECIFICATIONS.
- K — EMERGENCY LOCKDOWN KEYED SWITCH. REFER TO DRAWINGS FOR DETAILS AND SPECIFICATIONS.
- SECURITY MOTION DETECTOR.

FIRE ALARM AND DETECTION SYMBOL LEGEND

- AUDIBLE AND VISUAL SIGNAL. MOUNT AT 82" A.F.F. TO CENTERLINE UNLESS OTHERWISE NOTED.
- VISUAL SIGNAL ONLY. MOUNT AT 82" A.F.F. TO CENTERLINE UNLESS OTHERWISE NOTED.
- M — MANUALLY OPERATED PULL STATION MOUNT AT 46" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE.
- CO — CARBON MONOXIDE DETECTOR MOUNTED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
- S — AUTOMATIC SMOKE DETECTOR, PHOTOELECTRIC TYPE, CEILING MOUNTED.
- S/CO — COMBINATION AUTOMATIC SMOKE AND CARBON MONOXIDE DETECTOR TYPE CEILING MOUNTED
- D — AUTOMATIC DUCT SMOKE DETECTOR, PHOTOELECTRIC TYPE, CEILING MOUNTED. CONNECT TO EXISTING SECURITY SYSTEM
- H — HEAT DETECTOR COMBINATION FIXED TEMP. AND RATE OF RISE, CEILING MOUNTED.
- D — FIRE ALARM SYSTEMS MAGNETIC DOOR HOLDER. MOUNT AT 84" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT.
- ANNC — REMOTE ANNUNCIATOR PANEL. MOUNT AT 54" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT.
- FACP — FIRE ALARM CONTROL PANEL. MOUNT AT 54" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT.
- FS — SPRINKLER SYSTEM FLOW SWITCH. FURNISHED AND INSTALLED BY THE FIRE PROTECTION CONTRACTOR, CONNECTED TO THE FIRE ALARM AND DETECTION SYSTEM BY THE ELECTRICAL CONTRACTOR. VERIFY LOCATION AND EXACT QUANTITY WITH THE EQUIPMENT PROVIDER PRIOR TO ROUGH–IN AND ZONE ADDRESSABLE MONITOR MODULE ALLOCATION.
- TS — SPRINKLER SYSTEM TAMPER SWITCH. FURNISHED AND INSTALLED BY THE FIRE PROTECTION CONTRACTOR, CONNECTED TO THE FIRE ALARM AND DETECTION SYSTEM BY THE ELECTRICAL CONTRACTOR. VERIFY LOCATION AND EXACT QUANTITY WITH THE EQUIPMENT PROVIDER PRIOR TO ROUGH–IN AND ZONE ADDRESSABLE MONITOR MODULE ALLOCATION.
- PUSH BUTTON. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- ES — EMERGENCY STOP PUSH BUTTON. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.

ELECTRICAL DEMOLITION NOTES

1. THE GENERAL DEMOLITION NOTES LISTED HERE APPLY TO THE ELECTRICAL DEMOLITION DRAWINGS IN ADDITION TO ANY CODED NOTES INDICATED ON THE DEMOLITION DRAWINGS.
2. AN ATTEMPT HAS BEEN MADE TO SHOW ALL ELECTRICAL ITEMS TO REMAIN OR BE REMOVED. THE ELECTRICAL CONTRACTOR (EC) SHALL FIELD VERIFY EXISTING CONDITIONS AND REMOVE OR RELOCATE ANY ITEM WHICH INTERFERES WITH NEW CONSTRUCTION. THE SCHEDULED DEMOLITION IS BASED ON FIELD OBSERVATIONS AND EXISTING RECORD DOCUMENTS. THE ELECTRICAL CONTRACTOR SHALL REPORT DISCREPANCIES TO THE OWNER OR ENGINEER BEFORE DISTURBING EXISTING INSTALLATIONS.
3. THE ELECTRICAL CONTRACTOR (EC) SHALL DISCONNECT AND REMOVE EXISTING ELECTRICAL DISTRIBUTION EQUIPMENT, ELECTRICAL DEVICES, CONDUIT AND WIRING, AND ALL EQUIPMENT ACCESSORIES IN THE AREA AS INDICATED ON THE DEMOLITION DRAWING. THE ELECTRICAL CONTRACTOR SHALL REMOVE UNUSED CONDUIT AND WIRING TO THE SOURCE OF ELECTRICAL DISTRIBUTION.
4. THE ELECTRICAL CONTRACTOR (EC) SHALL PROTECT ALL EXISTING EQUIPMENT AND EXISTING INSTALLATIONS THAT ARE SCHEDULED TO REMAIN IN SERVICE FROM DAMAGE. REFEED ANY ITEM WHOSE WIRING IS INTERRUPTED DUE TO WORK IN ADJACENT AREAS.
5. THE ELECTRICAL CONTRACTOR (EC) SHALL REMOVE ALL HANGERS AND SUPPORTS SERVING CONDUIT AND WIRE BEING DEMOLISHED. PROVIDE AND/OR ADJUST EXISTING HANGERS TO SUPPORT ANY REMAINING CONDUIT AND WIRE, OR EQUIPMENT ADJACENT TO DEMOLISHED AREAS AND EQUIPMENT.
6. THE ELECTRICAL CONTRACTOR (EC) SHALL REMOVE ALL EXISTING WIRING AND CONDUITS BEING ABANDONED. ABANDONED CONDUITS SHALL BE CUT FLUSH AT CEILINGS AND FLOORS AND BE PROPERLY CLOSED.
7. MAKE ALL ELECTRICAL DEMOLITION SAFE FOR ALL PARTICIPATING CONTRACTORS. PROTECT ALL WIRING AND ELECTRICAL CONNECTIONS THAT REMAIN IN SERVICE FROM DAMAGE.

ELECTRICAL CONSTRUCTION NOTES

1. THE DRAWINGS INDICATE GENERAL ELECTRICAL INSTALLATIONS AND ASSOCIATED EQUIPMENT QUANTITIES. ALL NEW INSTALLATIONS SHALL BE COORDINATED WITH THE OWNER.
2. THE OWNER SHALL BE NOTIFIED IMMEDIATELY OF ANY PRESENCE OF ASBESTOS MATERIAL DISCOVERED DURING CONSTRUCTION. ANY ASBESTOS MATERIAL SHALL BE REMOVED BY OTHERS.
3. ALL BUILDING UTILITIES AND BUILDING STRUCTURES SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. THE ELECTRICAL CONTRACTOR (EC) SHALL BE RESPONSIBLE FOR RESTORING ALL EXISTING FEATURES AND REPAIRING ANY UTILITIES DAMAGED BY CONSTRUCTION TO A CONDITION SATISFACTORY TO THE OWNER.
4. ALL NEW ELECTRICAL INSTALLATIONS SHALL BE DOCUMENTED AND ELECTRICAL PANEL SCHEDULES UPDATED.
5. THE ELECTRICAL DESIGN DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO SHOW EXACT LOCATION OF EQUIPMENT AND DEVICES UNLESS DIMENSIONS ARE GIVEN OR OTHERWISE IMPLIED FOR CLEARANCES. ALL ELECTRICAL EQUIPMENT ARE TO BE INSTALLED ALONG WITH THE GENERAL PLANS. ALL LABOR AND MATERIALS AND OTHER RELATED WORK NECESSARY TO PROVIDE MINOR OFFSETS IN ELECTRICAL WORK AS REQUIRED TO AVOID CONFLICT WITH OTHER WORK OR CLEARANCES SHALL BE INCLUDED IN THE ELECTRICAL BID.
6. THE ELECTRICAL CONTRACTOR (EC) SHALL PROVIDE FIRESEALING OF ALL OPENINGS THROUGH FIRE RATED WALLS AND ASSEMBLIES CREATED BY NEW ELECTRICAL INSTALLATIONS OR THE SCHEDULED REMOVAL OF EXISTING INSTALLATIONS.

SECURITY SYSTEM AND CONTROLS LEGEND

- KEYPAD
- REX — REQUEST–TO–EXIT MOTION SENSOR
- ES — ELECTRIC STRIKE
- DC — DOOR CONTACT
- OHDC — OVERHEAD DOOR CONTACT
- CR — CARD READER
- ACP — ACCESS CONTROL PANEL
- SSCP — SECURITY SYSTEM CONTROL PANEL
- HE — VIDEO SERVER
- NODE — NODE
- ELR — EXIT LATCH RETRACTION
- PR — AIPHONE INTERCOM & CARD READER

MATERIALS

- FIBER–REINFORCED CONCRETE
- CONCRETE
- CONCRETE MASONRY
- BRICK OR HOT MIX ASPHALT
- WELL–GRADED STONE/GRAVEL
- UNIFORM–GRADED STONE/GRAVEL
- WOOD BLOCKING
- RIGID INSULATION
- BATT INSULATION
- STEEL
- SOIL
- BEDROCK
- SAND
- CARPET (SURFACE)
- HARDWOOD FLOOR (SURFACE)
- WOOD SHEATHING (SURFACE)
- CERAMIC TILE (SURFACE)
- VCT (SURFACE)
- CLAY TILE FLOORING (SURFACE)
- SAND/GYPSUM/HOT MIX ASPHALT (SURFACE)

ANNOTATIONS

- # — CODED NOTE
- # — DEMOLITION NOTE
- # — REVISION TAG
- N / W DWG E / S — ELEVATION VIEW REFERENCE TAG
- INTERIOR ELEVATION REFERENCE TAG
- SECTION VIEW REFERENCE TAG
- DETAIL REFERENCE TAG
- CALLOUT AREA FOR VIEW (OPTIONAL)
- OFFICE 000 — ROOM TAG
- FIRST FLOOR EL. 100'–0" — LEVEL REFERENCE TAG
- # — COLUMN GRID TAG
- 100'–0" — BEARING ELEVATION OR TOP SURFACE ELEVATION
- X# — MARK TAG
- 12 / # — SLOPE
- TRUE NORTH / PROJECT NORTH — NORTH ARROWS

MATCHLINE MXXX — CALLOUT SHEET ON WHICH THE DRAWING CONTINUES

DRAWING TITLE
SCALE: 1/8"=1'–0"

DRAWING REFERENCE
A / E110 E305 — DRAWING TITLE
SCALE: 1/4"=1'–0"
DRAWING LOCATION
DRAWING REFERENCE TAG LOCATION

DETAIL REFERENCE
1 / A301 A501 — DRAWING TITLE
SCALE: 1/4"=1'–0"
DETAIL LOCATION
DETAIL REFERENCE TAG LOCATION

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Rev.	Description	By	Date
0	ISSUED FOR BID	CSH	05/30/24

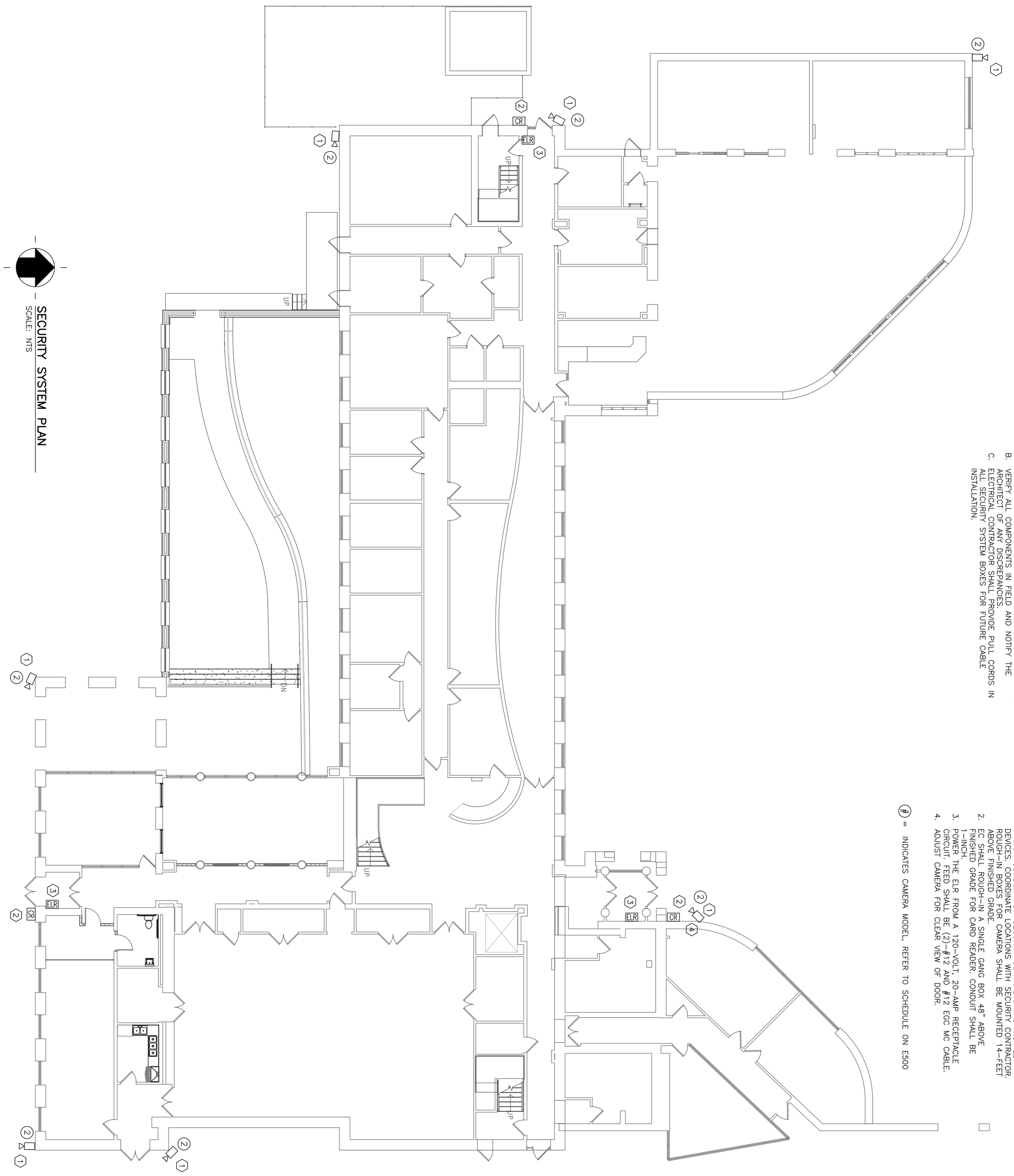
Drawing Description

PIERPONT COMMUNITY & TECHNICAL COLLEGE
501 W MAIN ST. CLARKSBURG, WV
PIERPONT CAPERTON SECURITY SYSTEM
ELECTRICAL SYMBOL LEGEND AND ABBREVIATIONS

CARL S. HENSON
REGISTERED
No. 14330
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER

Project:	2201011
Designed By:	CSH
Drawn By:	BEM
Checked By:	CSH
Scale:	NTS
Plot Date:	05/30/24
Revision:	0

Drawing Number:
E001



SECURITY SYSTEM PLAN

SCALE: NTS

GENERAL NOTES:

A. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL ROUGH-IN BOXES AND CONDUITS TO SECURITY DEVICES ON DRAWING.
B. VERIFY ALL COMPONENTS IN FIELD AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
C. ELECTRICAL CONTRACTOR SHALL PROVIDE PULL CORDS IN ALL SECURITY SYSTEM BOXES FOR FUTURE CABLE INSTALLATION.

(#) CODED NOTES:

1. ELECTRICAL CONTRACTOR SHALL ROUGH-IN BOXES AND A 1-INCH CONDUIT FOR SECURITY CONTRACTOR TO INSTALL DEVICES. COORDINATE LOCATIONS WITH SECURITY CONTRACTOR. ROUGH-IN BOXES FOR CAMERA SHALL BE MOUNTED 14-FEET ABOVE FINISHED GRADE.
2. EC SHALL ROUGH-IN A SINGLE GANG BOX 48" ABOVE FINISHED GRADE FOR CARD READER. CONDUIT SHALL BE 1-INCH.
3. POWER THE ELR FROM A 120-VOLT, 20-AMP RECEPTACLE CIRCUIT. FEED SHALL BE (2)-#12 AND #12 EGC MC CABLE.
4. ADJUST CAMERA FOR CLEAR VIEW OF DOOR.

(#) = INDICATES CAMERA MODEL, REFER TO SCHEDULE ON E500

Drawing Description				
PIERPONT COMMUNITY & TECHNICAL COLLEGE 501 W MAIN ST. CLARKSBURG, WV PIERPONT CAPERTON SECURITY SYSTEM SECURITY SYSTEM PLAN	0	ISSUED FOR BID	CSH	05/30/24
	Rev.	Description	By	Date

CARL S. HENSON REGISTERED No. 14330 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Project:	2201011
Designed By:	CSH
Drawn By:	BEM
Checked By:	CSH
Scale:	NTS
Plot Date:	05/30/24
Revision:	0
Drawing Number:	E130

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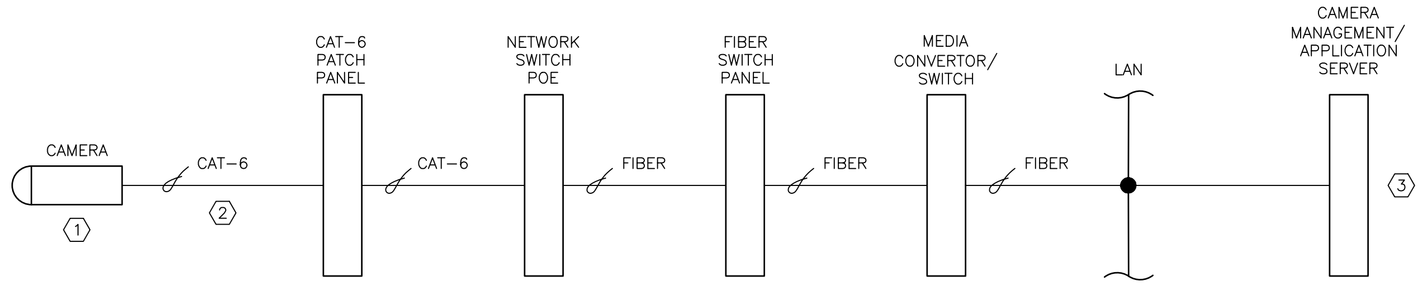


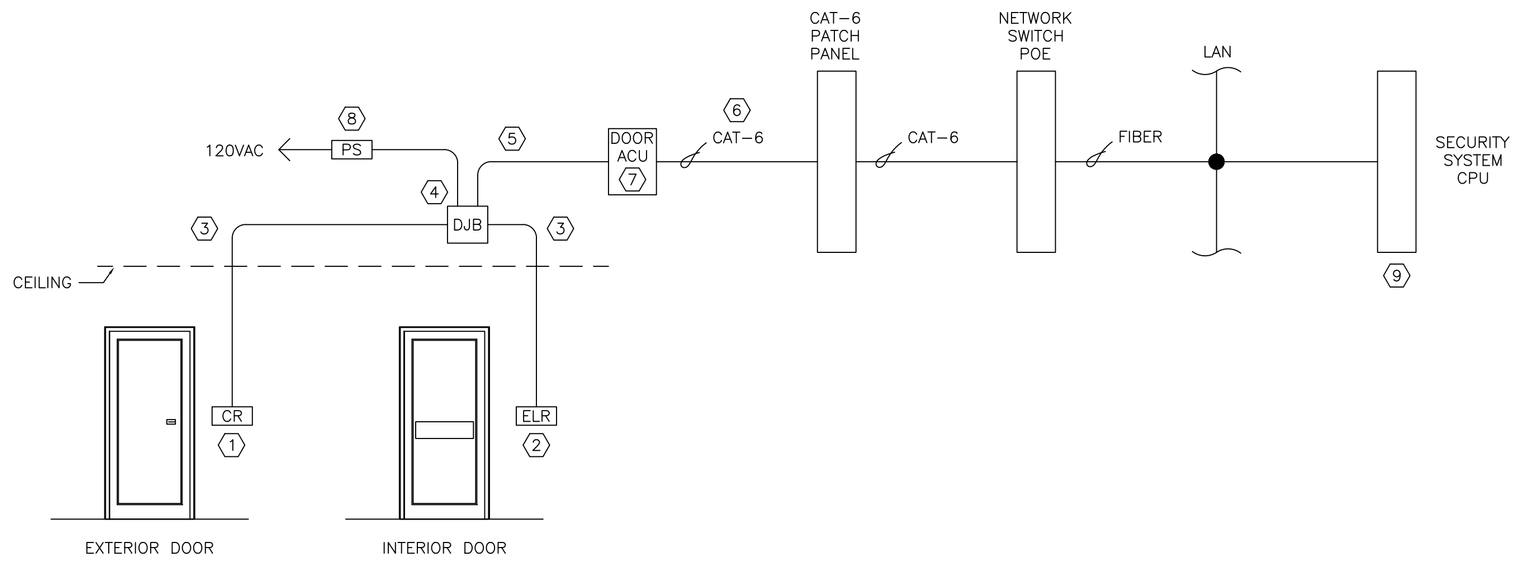
CODED NOTES:

1. PURCHASE AND INSTALL CAMERA PER MANUFACTURERS INSTRUCTION. INSTALL MOUNTING HARDWARE AND WEATHER–PROOF DEVICE AS REQUIRED BY LOCATION.
2. PURCHASE AND INSTALL CAT–6 PLENUM RATED CABLE FROM CAMERA TO LOCAL AREA NETWORK (LAN) PATCH PANEL. ROUTE CABLE IN CONDUIT WHERE EXPOSED TO PHYSICAL DAMAGE, CONCEALED WALL, OR UNDER FLOOR.
3. PURCHASE AND INSTALL CAMERA MANAGEMENT AND APPLICATION SERVER EXACQVISION MODEL #IP04–06T–R2A. SUBSTITUTIONS NOT PERMITTED. INSTALLER SHALL BE RESPONSIBLE FOR INTERFACING SERVER ON LOCAL AREA NETWORK (LAN). PROVIDE ALL CAMERA LICENSES REQUIRED.

1 / E500 **STANDARD CAMERA DIAGRAM**
SCALE: N.T.S.

ADMINISTRATION BUILDING SECURITY CAMERA EQUIPMENT LIST BASIS OF DESIGN SCHEDULE

DESIGNATION	EQUIPMENT DESCRIPTION	MANUFACTURER	PRODUCT LINE	MODEL #	COMMENTS
1	12 MP 360 DEGREE IR PANORAMIC	AXIS	AXIS M43 SERIES	M4318–PLVE	SECURITY CONTRACTOR SHALL PROVIDE AND INSTALL ALL HARDWARE AND CABLES NECESSARY FOR A COMPLETE SYSTEM.
2	5 MP DOME, OUTDOOR, IR CAMERA	AXIS	AXIS P32 SERIES	P3267–LVE	SECURITY CONTRACTOR SHALL PROVIDE AND INSTALL ALL HARDWARE AND CABLES NECESSARY FOR A COMPLETE SYSTEM.
NOTES:					
1	SUBSTITUTIONS ARE PERMITTED WITH APPROVAL FROM THE ENGINEER. MUST BE COMPATIBLE WITH S2 EQUIPMENT.				
2					



CODED NOTES:

1. INSTALL SINGLE GANG BOX FOR CARD READER.
2. INSTALL EXIT LATCH REFRACTION AND ALL ASSOCIATED HARDWARE.
3. INSTALL A 3/4 INCH CONDUIT FOR CABLE ROUTING.
4. INSTALL A 12 IN X 12 IN X 4 IN (MINIMAL) DOOR JUNCTION BOX.
5. INSTALL A 1 INCH CONDUIT FOR CABLE ROUTING.
6. ROUTE A CAT–6 PLENUM RATED CABLE FROM DOOR ACTUATOR CONTROLLER TO LOCAL AREA NETWORK (LAN). INSTALLER SHALL BE RESPONSIBLE FOR PROGRAMMING CONTROLLER AND LAN INTERFACING.
7. INSTALL A DOOR CONTROLLER ACTUATION (ACU) TO OPERATE ELECTRIC LATCH RELEASE.
8. INSTALL A POWER SUPPLY FOR DOOR OPERATORS. SUPPLY VOLTAGE SHALL BE FROM A 120–VOLT A.C. 20–AMP (MAX) CIRCUIT. PROVIDE A LOTO DEVICE.
9. INSTALLER SHALL PURCHASE AND INSTALL ALL HARDWARE NECESSARY TO INTERCONNECT THE NEW DOOR ACCESS CONTROL EQUIPMENT. INSTALLER SHALL BE RESPONSIBLE FOR WORKING WITH THE EXISTING SECURITY SYSTEM AND PROGRAMMING ACCESS CONTROL DEVICES INTO EXISTING SECURITY SYSTEM NETWORK.

2 / E500 **STANDARD SECURE ENTRANCE/EXIT DIAGRAM**
SCALE: N.T.S.

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Rev.	Description	By	Date
0	ISSUED FOR BID	CSH	02/30/24

Drawing Description

PIERPONT COMMUNITY & TECHNICAL COLLEGE
501 W MAIN ST. CLARKSBURG, WV
PIERPONT CAPERTON SECURITY SYSTEM
SECURITY SYSTEM PLAN

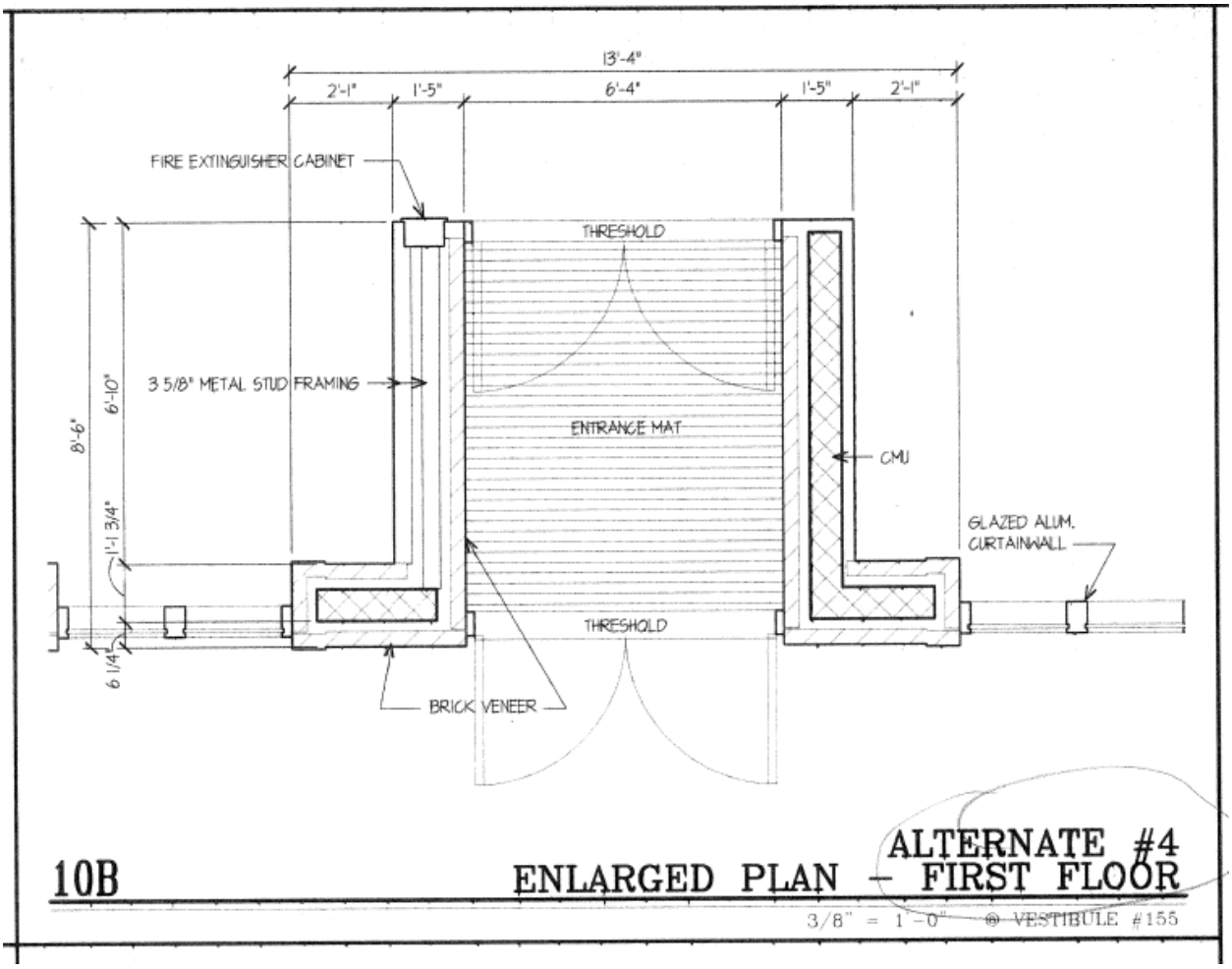
CARL S. HENSON REGISTERED No. 14330 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Project:	2201011
Designed By:	CSH
Drawn By:	RCM
Checked By:	CSH
Scale:	NTS
Plot Date:	05/30/24
Revision:	0

Drawing Number:
E500

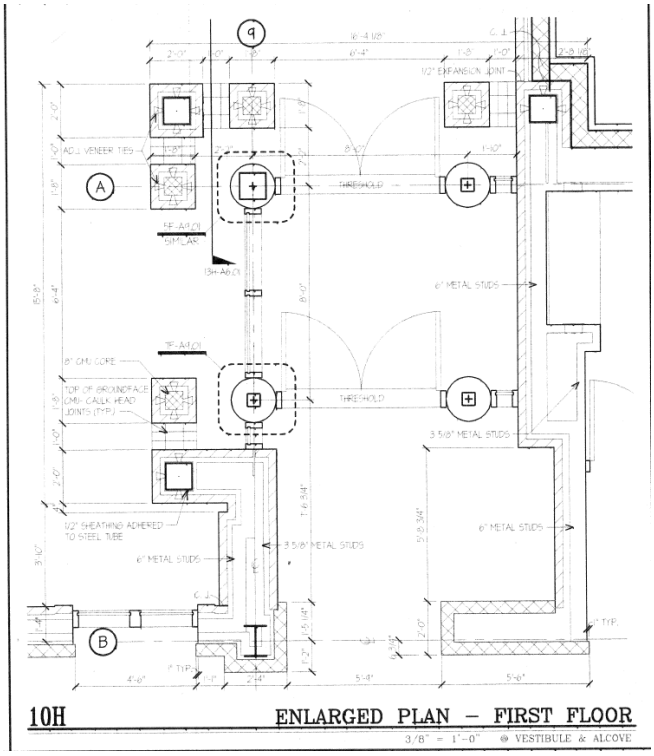
DRAWING PROVIDED FOR REFERENCE ONLY

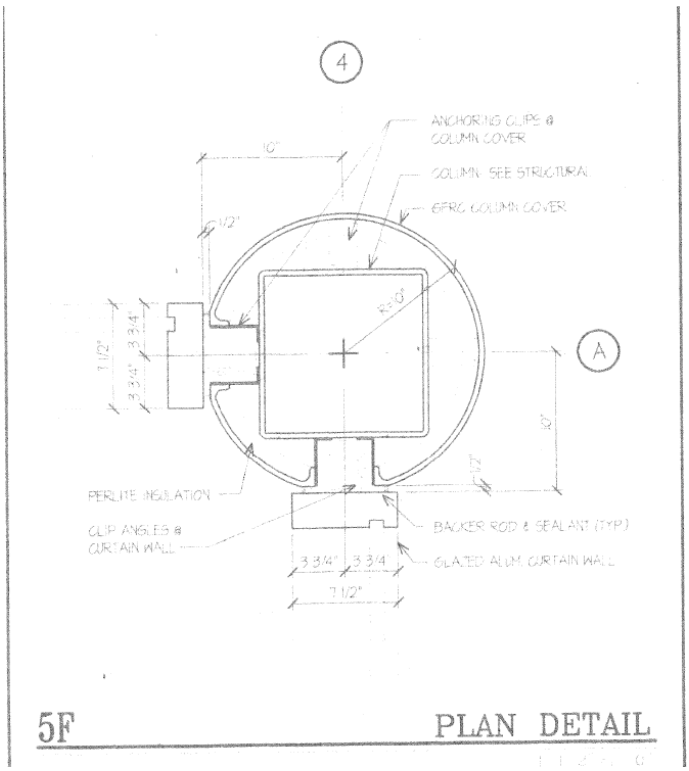
DOOR 101:



DRAWING PROVIDED FOR REFERENCE ONLY

DOOR 102:





DRAWING PROVIDED FOR REFERENCE ONLY

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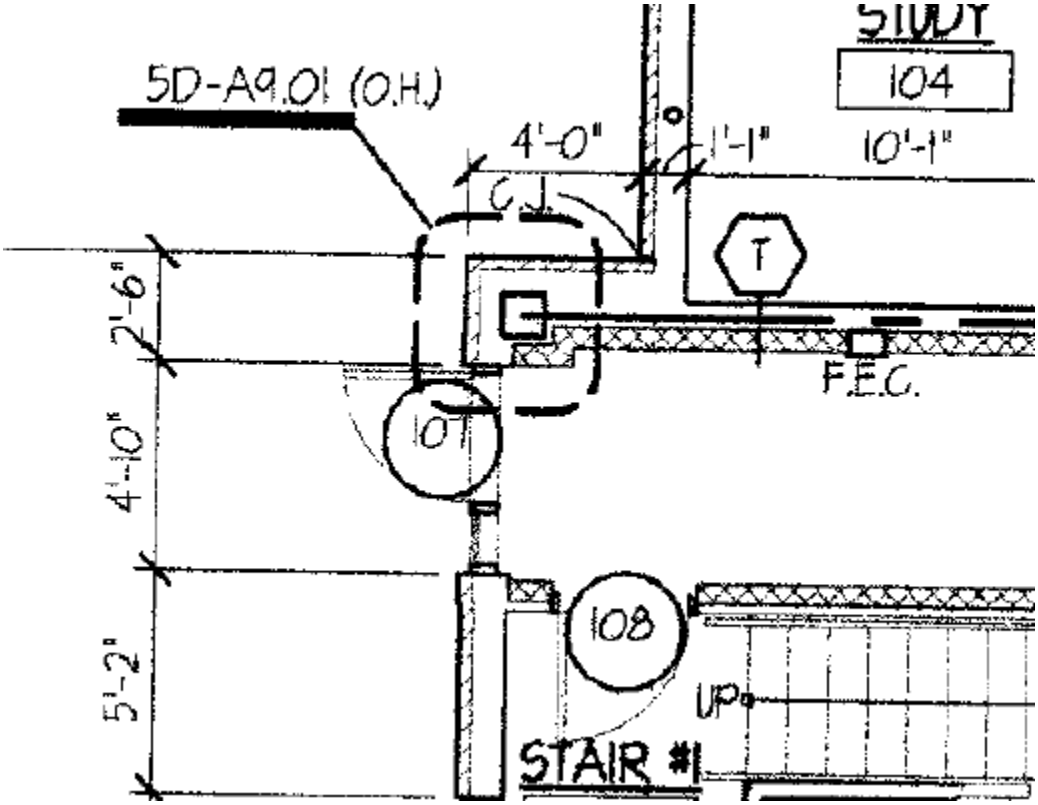

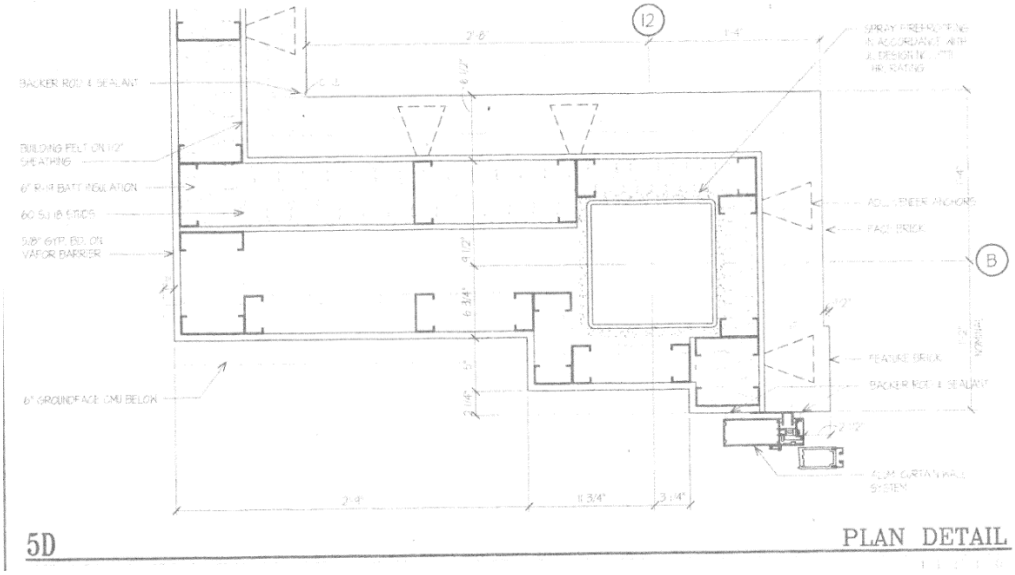

APPENDIX C.2
VET TECH FACILITY
GENERAL NOTES

APPENDIX C.2 – PIERPONT VET TECH FACILITY

DRAWING INDEX – NEW WORK AT VET TECH:

E000: GENERAL ELECTRICAL NOTES AND SPECIFICATIONS

E001: ELECTRICAL SYMBOL LEGEND & ABBREVIATIONS

E130: SECURITY SYSTEMS PLAN

E500: SECURITY SYSTEMS PLAN

DRAWINGS PROVIDED FOR REFERENCE ONLY (2022):

A110: FLOOR PLAN – NOTES PLAN

A600: ROOM, WINDOW & DOOR SCHEDULES

SPECIFICATIONS PROVIDEDED FOR REFERENCE ONLY (2022):

PARTIAL SECTION 08 71 00 – DOOR HARDWARE – PAGES 9-12:

(HARDWARE SETS FOR DOORS 001A, 013A, & 018A)

GENERAL NOTES:

1. DRAWINGS AND SPECIFICATIONS INCLUDED IN THIS APPENDIX THAT WERE INCLUDED AS BID DOCUMENTS FOR THE CONSTRUCTION OF THE VET TECH FACILITY (DRAWINGS DATED FEB., 2022) ARE PROVIDED FOR REFERENCE ONLY.
2. DO NOT SCALE DRAWINGS.
3. ALL EXTERIOR DOORS, FRAMES, HARDWARE AND CONDUIT ROUGH-INS FOR SECURITY DEVICES AT THE PIERPONT VET TECH FACILITY ARE TO BE PROVIDED UNDER SEPARATE CONTRACT WITH FAIRCHANCE CONSTRUCTION.
4. PROVIDE NEW CAMERAS WHERE SHOWN ON ELECTRICAL DRAWINGS, AND SECURITY DEVICES AT EXTERIOR DOOR NUMBERS 001A, 013A & 018A.
5. NEW SECURITY ACCESS CONTROL, VIDEO SURVEILLANCE AND COMMUNICATION SYSTEM SHALL MATCH, INTERFACE, AND/OR BE COMPATIBLE WITH THE SYSTEM INSTALLED AT THE PIERPONT COMMUNITY & TECHNICAL COLLEGE ADVANCED TECHNOLOGY CENTER (ATC), 500 GALLIHER DR., FAIRMONT, WV. SEE SPECIFICATIONS FOR INFORMATION.
6. CONCEAL POWER SUPPLIES, CONDUIT AND OTHER APPLICABLE DEVICES ABOVE DROPPED CEILINGS AND INSIDE WALLS.
7. ITEMS SHOWN ON THE DOOR HARDWARE SCHEDULE INCLUDED IN THIS APPENDIX ARE NOT GUARANTEED TO BE THE ACTUAL COMPONENTS THAT WILL BE INSTALLED. COORDINATE ACTUAL COMPONENTS WITH THE GENERAL CONTRACTOR.
8. COORDINATE SCHEDULE OF INSTALLATION OF SECURITY DEVICES WITH GENERAL CONTRACTOR.

DIVISION 26 GENERAL REQUIREMENTS

SECTION 260500 COMMON WORK RESULTS FOR ELECTRICAL

THE ELECTRICAL CONTRACTOR SHALL RESPONSIBLE FOR THE DEMOLITION OF SELECTED ELECTRICAL EQUIPMENT AS INDICATED ON THE DRAWINGS AND ALL NECESSARY DEMOLITION ACTIVITIES REQUIRED FOR THIS PROJECT. REMOVE ALL INDICATED DEVICES FEEDER CONDUCTORS AND CONDUITS FROM EQUIPMENT TO SOURCE DISTRIBUTION PANELS. WHERE CONDUCTORS ARE ROUTED WITH OTHER EQUIPMENT NOT SELECTED FOR DEMOLITION, REMOVE CONDUITS TO NEAREST SHARED JUNCTION BOX. REMOVE ALL UNUSED CONDUIT SUPPORT EQUIPMENT. REMOVE ALL ASSOCIATED CONTROL CABLES. PREPARE AREAS FOR NEW ELECTRICAL EQUIPMENT INSTALLATION. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL EQUIPMENT DEMOLITION WITH OWNER AND OTHER CRAFTS.

THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NEW MATERIALS AND EQUIPMENT AS INDICATED IN THE SCHEDULES ON THE PROJECT DRAWINGS AND ALL ITEMS REQUIRED TO MAKE THE ELECTRICAL SYSTEMS FINISHED AND WORKING SYSTEMS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATIONS ASSOCIATED WITH EQUIPMENT PROVIDE BY OTHERS, AS DIRECTED BY THE OWNER, AND AS INDICATED ON THE PROJECT DRAWINGS.

WORK UNDER THIS CONTRACT CONSISTS OF THE FURNISHING, INSTALLATION, TESTING, AND GUARANTEE OF THE COMPLETE ELECTRICAL SYSTEM AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN. ALL ELECTRICAL WORK SHOWN AND REQUIRED SHALL BE BY THE ELECTRICAL CONTRACTOR, UNLESS OTHERWISE STATED. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL MINOR ITEMS OBVIOUSLY AND REASONABLY NECESSARY FOR THE COMPLETION OF THE WORK AND MAKE FINAL CONNECTIONS. THE FOLLOWING IS A GENERAL SUMMARY OF WORK INCLUDED, AND IS NOT INTENDED TO BE ALL INCLUSIVE:

A. THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY ELECTRICAL DISTRIBUTION, TEMPORARY LIGHTING, AND TEMPORARY GENERAL PURPOSE RECEPTACLES FOR THE AREAS OF CONSTRUCTION AND FOR THE PARTICIPATING CONTRACTORS. ALL TEMPORARY INSTALLATIONS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 590 – TEMPORARY INSTALLATIONS, AND MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION.
B. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW CONDUIT, WIRING, AND ELECTRICAL CONNECTIONS FOR THE NEW DEVICES AND EQUIPMENT AS INDICATED.
C. THE ELECTRICAL CONTRACTOR SHALL PROVIDE RECORD COPY DOCUMENTATION OF ALL THE NEW ELECTRICAL INSTALLATIONS. THE RECORD COPY DOCUMENTATION SHALL INCLUDE ALL ADJUSTMENTS TO THE EXISTING INSTALLATIONS AFFECTED BY THE NEW CONSTRUCTION.

ALL WORK UNDER THIS CONTRACT SHALL BE GOVERNED BY, AND SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF THE FOLLOWING CODES OR STANDARDS:

1. THE OWNER
2. STATE FIRE COMMISSION AND OR FIRE MARSHALL.
3. NATIONAL ELECTRICAL CODE (NEC).
4. NATIONAL FIRE CODE AS PUBLISHED BY THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).
5. NATIONAL ELECTRICAL SAFETY CODE (NESC).
6. INTERNATIONAL BUILDING CODE (IBC).
7. OTHER STATE, COUNTY, OR APPLICABLE JURISDICTIONAL LAWS, ORDINANCES, OR REGULATIONS.
8. COMPLY WITH ACCEPTED STANDARDS OF WORKMANSHIP AS RECOGNIZED BY THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA) INSTALLATION STANDARDS MANUAL.

THE FINAL INSTALLATION SHALL CONFORM TO THE CURRENT REVISION OF THE NFPA REGULATIONS, AND IEEE STANDARDS, AND ALL MATERIALS UTILIZED SHALL COMPLY WITH APPLICABLE STANDARDS OF NEMA AND ANSI.

ALL ELECTRICAL WORK SHALL BE INSPECTED AND APPROVED BY ALL LOCAL JURISDICTIONAL AUTHORITIES. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR DETERMINATION AND COORDINATION OF PROPER INSPECTIONS AND NOTIFICATION OF ALL JURISDICTIONAL AUTHORITIES UNDER THIS ITEM.

ALL MATERIALS USED FOR THE PROJECT SHALL BE LISTED AND CLASSIFIED BY UNDERWRITERS LABORATORIES, INC. AS SUITABLE FOR PURPOSE SPECIFIED AND INSTALLATION.

THE INSTALLATIONS SHALL BE PERFORMED IN COMPLIANCE WITH OSHA AND SAFE CONSTRUCTION PRACTICES, AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THIS PROVISION.

ALL HANDLING AND DISPOSAL OF REMOVED EQUIPMENT OR REFUSE SHALL COMPLY WITH ALL STATE AND FEDERAL EPA REGULATIONS. DOCUMENTATION OF PROPER DISPOSAL SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION, IN WRITING, PRIOR TO BEING HANDLED OR DISTURBED BY THE ELECTRICAL CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL PROVIDE NEW COMPONENTS WHICH HAVE FAULT WITHSTAND CAPABILITY SUITABLE FOR THE INSTALLATION AND WHICH WILL PROVIDE APPROPRIATE PROTECTION FOR ANY NEW EQUIPMENT. IDENTIFY ANY EQUIPMENT COORDINATION PROBLEMS WITH THE ENGINEER.

THE DRAWINGS FOR THE ELECTRICAL WORK ARE COMPLETELY DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF WORK, AND TO INDICATE THE GENERAL ARRANGEMENTS AND LOCATIONS OF EQUIPMENT, OUTLETS, LIGHT FIXTURES, SWITCHES COMMUNICATION DEVICES, ETC. SCALING OF THE DRAWINGS IS NOT SUFFICIENT OR ACCURATE FOR DETERMINING EQUIPMENT LOCATIONS. MAKE ALL NECESSARY FIELD MEASUREMENTS TO ASSURE CORRECT FIT PRIOR TO ORDERING ELECTRICAL EQUIPMENT AND ASSOCIATED MATERIAL.

SECTION 260503 EQUIPMENT WIRING CONNECTIONS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW EQUIPMENT ELECTRICAL CONNECTIONS, THE ELECTRICAL CONTRACTOR SHALL COORDINATE AND MAKE ELECTRICAL CONNECTIONS IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S INSTRUCTIONS. REVIEW SHOP DRAWINGS, PRODUCT DATA, MANUFACTURER'S WIRING DIAGRAMS, MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND EQUIPMENT LOCATION PRIOR TO ROUGH–IN AND ELECTRICAL INSTALLATIONS.

THE ELECTRICAL CONTRACTOR SHALL MAKE CONDUIT CONNECTIONS TO EQUIPMENT USING FLEXIBLE CONDUIT. USE LIQUID–TIGHT FLEXIBLE CONDUIT WITH WATERTIGHT CONNECTORS IN DAMP OR WET LOCATIONS. CONNECT HEAT PRODUCING EQUIPMENT USING WIRE AND CABLE WITH INSULATION SUITABLE FOR TEMPERATURES ENCOUNTERED. PROVIDE RECEPTACLE OUTLET AND ATTACHMENT PLUG TO ACCOMMODATE EQUIPMENT CONNECTIONS, AS INDICATED.

SECTION 260519 LOW–VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW ELECTRICAL WIRE AND CABLE, AND WIRING CONNECTORS AND CONNECTIONS. ELECTRICAL WIRING SHALL BE SINGLE CONDUCTOR STRANDED COPPER WIRE WITH THHN/THWN INSULATION RATED AT 600V.

THE ELECTRICAL CONTRACTOR SHALL ROUTE WIRE AND CABLE AS REQUIRED TO MEET PROJECT CONDITIONS. INSTALL CABLE IN ACCORDANCE WITH THE NECA "STANDARD OF INSTALLATION." USE CONDUCTOR NOT SMALLER THAN 12 AWG FOR POWER AND LIGHTING CIRCUITS. USE CONDUCTOR NOT SMALLER THAN 14 AWG FOR CONTROL CIRCUITS.

SECTION 260526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL EQUIPMENT GROUNDING CONDUCTORS AND ELECTRICAL SYSTEM BONDING, AS INDICATED. ALL ELECTRICAL SYSTEM GROUNDING CONDUCTORS AND BONDING SHALL BE INSTALLED IN ACCORDANCE WITH IEEE 142 AND IEEE 1000.

THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE A SEPARATE, INSULATED CONDUCTOR WITHIN EACH FEEDER. THE GROUNDING CONDUCTOR SHALL BE TERMINATED AT EACH END ON A SUITABLE LUG, BUS, OR BUSHING. THE ELECTRICAL CONTRACTOR SHALL BOND TOGETHER EACH METALLIC RACEWAY, PIPE, DUCT, AND OTHER METAL OBJECTS ASSOCIATED WITH ELECTRICAL EQUIPMENT FRAMES, AND ELECTRICAL EQUIPMENT.

SECTION 260529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL CONDUIT AND EQUIPMENT SUPPORTS, ANCHORS AND FASTENERS, AND FIRESTOPPING RELATING TO ELECTRICAL WORK AS FOLLOWS:

A. LOCATE AND INSTALL ANCHORS, FASTENERS, AND SUPPORTS IN ACCORDANCE WITH NECA "STANDARD OF INSTALLATION".
   1. DO NOT FASTEN SUPPORTS TO PIPES, DUCTS, MECHANICAL EQUIPMENT, OR CONDUIT.
   2. DO NOT USE SPRING STEEL CLIPS AND CLAMPS.
   3. OBTAIN PERMISSION FROM THE ENGINEER BEFORE DRILLING OR CUTTING STRUCTURAL MEMBERS.
B. FABRICATE SUPPORTS FROM STRUCTURAL STEEL OR FORMED STEEL MEMBERS. RIGIDLY WELD MEMBERS OR USE HEXAGON–HEAD BOLTS TO PRESENT NEAT APPEARANCE WITH ADEQUATE STRENGTH AND RIGIDITY. USE SPRING LOCK WASHERS UNDER ALL NUTS.
C. INSTALL SURFACE–MOUNTED CABINETS AND PANELBOARDS WITH MINIMUM OF FOUR ANCHORS.
D. IN WET AND DAMP LOCATIONS USE STEEL CHANNEL SUPPORTS TO STAND CABINETS AND PANELBOARDS (1) INCH OFF WALL.
E. USE SHEET METAL CHANNEL TO BRIDGE STUDS ABOVE AND BELOW CABINETS AND PANELBOARDS RECESSED IN HOLLOW PARTITIONS.
F. INSTALL MATERIAL AT FIRE RATED CONSTRUCTION PERIMETERS AND OPENINGS CONTAINING PENETRATING SLEEVES, PIPING, DUCTWORK, CONDUIT AND OTHER ITEMS, REQUIRING FIRESTOPPING. APPLY FIRESTOPPING MATERIAL IN SUFFICIENT THICKNESS TO ACHIEVE REQUIRED FIRE AND SMOKE RATING.

SECTION 260533 RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW CONDUIT, WIREWAYS, OUTLET BOXES, AND PULL AND JUNCTION BOXES TO MEET THE ELECTRICAL SYSTEM REQUIREMENTS. INSTALL CONDUIT AND BOXES IN ACCORDANCE WITH NECA "STANDARD OF INSTALLATION." THE TYPE OF CONDUIT AND BOXES TO BE USED IN VARIOUS LOCATIONS IS AS FOLLOWS;

A. CONCEALED WITHIN INTERIOR WALLS OR ABOVE ACCESSIBLE CEILINGS: EMT, MC AND AC.
B. EXPOSED CONDUIT WHEN SUBJECT TO POSSIBLE PHYSICAL DAMAGE: RMC.
C. EXPOSED CONDUIT WHERE NOT SUBJECT TO POSSIBLE PHYSICAL DAMAGE: EMT.
D. BETWEEN OUTLET BOXES AND/OR PULL BOXES LOCATED ABOVE HUNG OR FURRED CEILINGS: EMT, MC AND AC.
E. WET AND DAMP LOCATIONS: RMC, LFMC AND SCHEDULE 40 PVC.
F. UNDERGROUND LOCTIONS: RMC AND SCHEDULE 40 PVC.
G. CONDUIT MINIMUM SIZE: 3/4 INCH.
H. SHEET METAL OUTLET BOXES: NEMA OS 1, GALVANIZED STEEL.
I. PULL AND JUNCTION BOXES: NEMA OS 1, GALVANIZED STEEL.

MC AND AC CABLES INSTALLED SHALL COMPLY WITH ALL NEC REQUIREMENTS AND SHALL BE LISTED AND RATED FOR THE SPACES AND AREAS WHERE INSTALLED SUCH AS, BUT NOT LIMITED TO, PATIENT CARE SPACES OR HAZARDOUS LOCATIONS.

THE ELECTRICAL CONTRACTOR SHALL VERIFY OUTLET, LIGHT FIXTURE, SWITCH, EQUIPMENT LOCATIONS, CONDUIT ROUTES, AND CONDUIT TERMINATIONS PRIOR TO ROUGH–IN. ARRANGE CONDUIT AND BOX SUPPORTS TO PREVENT MISALIGNMENT DURING WIRING INSTALLATION. THE ELECTRICAL CONTRACTOR SHALL ROUTE CONDUIT THROUGH ROOF OPENINGS FOR PIPING AND DUCTWORK OR THROUGH SUITABLE ROOF JACK WITH PITCH POCKET. GROUND AND BOND ALL CONDUITS AND BOXES.

THE ELECTRICAL CONTRACTOR SHALL COORDINATE MOUNTING HEIGHTS AND LOCATION OF OUTLETS AND SWITCHES MOUNTED ABOVE COUNTERS, BENCHES, AND BACKSPLASHES WITH THE ARCHITECTURAL ELEVATIONS. LOCATE JUNCTION BOXES TO ALLOW LUMINAIRES TO BE POSITIONED AS SHOWN ON THE ELECTRICAL PLAN AND ARCHITECTURAL REFLECTED CEILING PLAN.

THE ELECTRICAL CONTRACTOR SHALL INSTALL CONDUIT AND BOXES TO PRESERVE THE FIRE RESISTANCE RATING OF PARTITIONS AND OTHER ELEMENTS.

SECTION 260553 IDENTIFICATION FOR ELECTRICAL SYSTEMS

THE NEW ELECTRICAL DISTRIBUTION EQUIPMENT SHALL HAVE SIGNAGE INDICATING NAME, SOURCE OF POWER, AND MAIN DISCONNECTING MEANS. SIGNAGE SHALL BE ENGRAVED BLACK LETTERING ON WHITE, THREE–LAYER LAMINATED PLASTIC MATERIAL, PERMANENTLY AFFIXED TO THE EQUIPMENT. SECURE NAMEPLATE TO THE EQUIPMENT'S FRONT DOOR SURFACE OF SWITCHBOARDS AND PANELBOARDS. IN ALL AREAS, LABEL EACH CONDUCTOR AT PANELBOARD GUTTERS, PULL BOXES, OUTLET AND JUNCTION BOXES, AND AT EACH LOAD CONNECTION. THE ELECTRICAL CONTRACTOR SHALL UPDATE EXISTING PANEL SCHEDULES PER NEW ARRANGEMENTS AND WIRING.

SECTION 262413 SWITCHBOARDS

THE ELECTRICAL CONTRACTOR SHALL PROVIDED AND INSTALL THE NEW DISTRIBUTION SWITCHBOARDS, AS INDICATED. INSTALL NEW SWITCHBOARDS IN ACCORDANCE WITH NEMA PB 1.1 AND THE NECA "STANDARD OF INSTALLATION."

THE ELECTRICAL CONTRACTOR SHALL FEED ALL SWITCHBOARDS SUPPLY FEEDS WITH CONDUIT AND INDIVIDUAL CONDUCTORS. EM CABLES SHALL BE FOR BRANCH CIRCUITS FOR UTILIZATION EQUIPMENT ONLY.

THE ELECTRICAL CONTRACTOR SHALL GROUND AND BOND EACH SWITCHBOARD. PROVIDE ENGRAVED PLASTIC NAMEPLATE AND TYPE CIRCUIT DIRECTORY FOR EACH NEW SWITCHBOARD.

SECTION 262416 PANELBOARDS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW DISTRIBUTION PANELBOARDS, AS INDICATED. INSTALL EACH NEW PANELBOARD IN ACCORDANCE WITH NEMA PB 1.1 AND THE NECA "STANDARD OF INSTALLATION". ACCEPTABLE PANELBOARD MANUFACTURERS ARE GENERAL ELECTRIC, SQUARE D, OR ENGINEER APPROVED EQUAL.

THE DISTRIBUTION PANELBOARD SHALL BE NEMA PB 1, CIRCUIT BREAKER TYPE WITH COPPER BUS AND COPPER GROUND BUS. THE PANELBOARD SHALL HAVE A MINIMUM INTEGRATED SHORT CIRCUIT RATING OF 22,000 AMPERES RMS SYMMETRICAL FOR 208Y/120 VOLT PANELBOARD, AND 35,000 AMPERES RMS SYMMETRICAL FOR 480Y/277 VOLT PANELBOARD. THE CIRCUIT BREAKERS SHALL BE MOLDED CASE CIRCUIT BREAKERS, NEMA AB 1, WITH INTEGRAL THERMAL AND INSTANTANEOUS MAGNETIC TRIP IN EACH POLE. PROVIDE UL LISTED, TYPE HACR CIRCUIT BREAKERS FOR AIR CONDITIONING EQUIPMENT BRANCH CIRCUITS.

THE ELECTRICAL CONTRACTOR SHALL FEED ALL PANELBOARDS SUPPLY FEEDS WITH CONDUIT AND INDIVIDUAL CONDUCTORS. EM CABLES SHALL BE FOR BRANCH CIRCUITS FOR UTILIZATION EQUIPMENT ONLY.

THE ELECTRICAL CONTRACTOR SHALL GROUND AND BOND EACH PANELBOARD. PROVIDE ENGRAVED PLASTIC NAMEPLATE AND TYPED CIRCUIT DIRECTORY FOR EACH NEW AND ADJUSTED PANELBOARD.

SECTION 262726 WIRING DEVICES

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW WALL SWITCHES, RECEPTACLES, AND DEVICE PLATES, AS INDICATED. INSTALL ALL WIRING DEVICES PLUMB AND LEVEL, AND IN ACCORDANCE WITH THE NECA "STANDARD OF INSTALLATION". INSTALL SWITCHES WITH "OFF" POSITION DOWN. INSTALL WALL DIMMERS TO ACHIEVE FULL RATING SPECIFIED AND INDICATED AFTER DERATING FOR GANGING AS INSTRUCTED BY THE MANUFACTURER. INSTALL GENERAL DUTY RECEPTACLES WITH THE GROUNDING POLE ON TOP.

THE ELECTRICAL CONTRACTOR SHALL NOT SHARE NEUTRAL CONDUCTORS FOR THE ELECTRICAL CIRCUITS. CONNECT EACH WIRING DEVICE GROUNDING TERMINAL TO THE OUTLET BOX WITH A BONDING JUMPER. THE ELECTRICAL CONTRACTOR SHALL OPERATE EACH WALL SWITCH WITH THE CIRCUIT ENERGIZED AND VERIFY PROPER OPERATION. VERIFY THAT EACH RECEPTACLE DEVICE IS ENERGIZED AND TEST EACH RECEPTACLE DEVICE FOR PROPER OPERATION. TEST EACH GFCI RECEPTACLE DEVICE FOR PROPER OPERATION.

THE ELECTRICAL CONTRACTOR SHALL INSTALL DECORATIVE PLATES ON SWITCH, RECEPTACLE, AND BLANK OUTLETS IN FINISHED AREAS. USE JUMBO SIZE PLATES FOR OUTLETS INSTALLED IN MASONRY WALLS. INSTALL GALVANIZED STEEL PLATES ON OUTLET AND JUNCTION BOXES IN UNFINISHED AREAS, ABOVE ACCESSIBLE CEILINGS, AND ON SURFACE MOUNTED OUTLETS. INSTALL PROTECTIVE RINGS ON ACTIVE FLUSH COVER SERVICE FITTINGS.

THE ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATIONS OF OUTLET BOXES WITH THE ARCHITECTURAL ELEVATIONS TO OBTAIN EXACT MOUNTING HEIGHTS SPECIFIED AND INDICATED ON THE DRAWINGS. INSTALL WALL SWITCHES 48 INCHES ABOVE FINISHED FLOOR. INSTALL CONVENIENCE RECEPTACLES 18 INCHES ABOVE FINISHED FLOOR. INSTALL CONVENIENCE RECEPTACLES 6 INCHES ABOVE BACKSPLASH OF COUNTER. INSTALL DIMMER SWITCHES 48 INCHES ABOVE FINISHED FLOOR. INSTALL TELEPHONE JACKS 18 INCHES ABOVE FINISHED FLOOR. INSTALL TELEPHONE JACKS FOR FORWARD–REACH WALL TELEPHONE TO POSITION TOP OF TELEPHONE AT 54 INCHES ABOVE FINISHED FLOOR.

SECTION 262813 FUSES

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW FUSES, AS INDICATED. INSTALL FUSES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSTALL FUSE WITH LABEL ORIENTED SUCH THAT MANUFACTURER, TYPE, AND SIZE ARE EASILY READ. ACCEPTABLE MANUFACTURERS ARE BUSSMAN, GOULD SHAWMUT, LITTLEFUSE OR EQUAL.

SECTION 262818 ENCLOSED CIRCUIT BREAKERS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW ENCLOSED MOLDED–CASE CIRCUIT BREAKERS AS INDICATED. INSTALL ENCLOSED CIRCUIT BREAKERS IN ACCORDANCE WITH THE NECA "STANDARD OF INSTALLATION". LABEL THE ENCLOSED CIRCUIT BREAKER TO INDICATE THE EQUIPMENT SERVED AND ORIENT TOP OF ENCLOSURE 6'–0" AFF. LABEL ENCLOSED CIRCUIT BREAKERS TO INDICATE EQUIPMENT SERVED. ACCEPTABLE MANUFACTURERS ARE GENERAL ELECTRIC AND SQUARE D.

THE ENCLOSED CIRCUIT BREAKERS SHALL BE SHALL BE LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, AND MARKED FOR INTENDED USE. THE ENCLOSED CIRCUIT BREAKERS SHALL COMPLY WITH NEMA AB 1, WITH INTERRUPTING CAPACITY TO MEET AVAILABLE FAULT CURRENTS, AND NEMA KS 1. THE CIRCUIT BREAKERS SHALL BE MOLDED–CASE TYPE WITH INVERSE TIME–CURRENT ELEMENT FOR LOW–LEVEL OVERLOADS, INSTANTANEOUS MAGNETIC TRIP ELEMENT FOR SHORT CIRCUITS, AND ADJUSTABLE MAGNETIC TRIP SETTING.

SECTION 262819 ENCLOSED SWITCHES

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW FUSIBLE AND NON–FUSIBLE SAFETY DISCONNECT SWITCHES, AS INDICATED. INSTALL ENCLOSED SWITCHES IN ACCORDANCE WITH THE NECA "STANDARD OF INSTALLATION." LABEL DISCONNECTS TO INDICATE EQUIPMENT SERVED. ACCEPTABLE MANUFACTURERS ARE GENERAL ELECTRIC AND SQUARE D, OR ENGINEER APPROVED EQUAL.

THE NEW SAFETY DISCONNECT SWITCHES SHALL BE HEAVY–DUTY TYPE, ENCLOSED, LOAD INTERRUPTER KNIFE SWITCH. THE OPERATING HANDLE SHALL BE LOCKABLE IN THE "OFF" POSITION, TYPE NEMA 1 FOR INTERIOR DRY LOCATIONS AND TYPE NEMA 3R FOR EXTERIOR LOCATIONS.

SECTION 265100 INTERIOR LIGHTING

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW INTERIOR LUMINAIRES AND ACCESSORIES, EXIT SIGNS, BALLASTS, AND LAMPS, AS INDICATED. THE NEW LIGHT FIXTURES SHALL BE LISTED AND LABELED BY UNDERWRITERS LABORATORIES, INC. AS SUITABLE FOR THE PURPOSE SPECIFIED AND INSTALLATION LOCATION. INSTALL ACCESSORIES FURNISHED WITH EACH LUMINAIRE.

THE ELECTRICAL CONTRACTOR SHALL INSTALL SUSPENDED LUMINAIRES USING PENDANTS SUPPORTED FROM SWIVEL HANGERS. PROVIDE PENDANT LENGTH REQUIRED TO SUSPEND LUMINAIRE AT INDICATED HEIGHT. INSTALL SURFACE MOUNTED LUMINAIRES AND EXIT SIGNS PLUMB AND ADJUST TO ALIGN WITH BUILDING LINES AND WITH EACH OTHER. FOR EXPOSED GRID CEILINGS, SUPPORT SURFACE MOUNTED LUMINAIRES ON GRID CEILING DIRECTLY FROM BUILDING STRUCTURE. SECURE ALL NEW LUMINAIRE INSTALLATIONS TO PREVENT MOVEMENT.

THE ELECTRICAL CONTRACTOR SHALL CLEAN ELECTRICAL PARTS TO REMOVE CONDUCTIVE AND DELETERIOUS MATERIALS. REMOVE DIRT AND DEBRIS FROM ENCLOSURES. CLEAN PHOTOMETRIC CONTROL SURFACES AS RECOMMENDED BY MANUFACTURER. CLEAN FINISHES AND TOUCH UP DAMAGE. OPERATE EACH LUMINAIRE AFTER INSTALLATION AND CONNECTION. INSPECT FOR PROPER CONNECTION AND OPERATION. AIM AND ADJUST LUMINAIRES AS DIRECTED. POSITION EXIT SIGN DIRECTIONAL ARROWS AS INDICATED. RELAMP LUMINAIRES THAT HAVE FAILED LAMPS AT SUBSTANTIAL COMPLETION.

SECTION 265600 EXTERIOR LIGHTING

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW EXTERIOR LIGHT FIXTURES, LIGHT FIXTURE LAMPS, ACCESSORIES, LIGHT FIXTURE POSTS, AND LIGHT FIXTURE POLES, AS INDICATED. THE NEW LIGHT FIXTURES SHALL BE LISTED AND LABELED BY UNDERWRITERS LABORATORIES, INC. AS SUITABLE FOR THE PURPOSE SPECIFIED AND INSTALLATION LOCATION. INSTALL ACCESSORIES FURNISHED WITH EACH LIGHT FIXTURE.

THE ELECTRICAL CONTRACTOR SHALL INSTALL POST/POLE MOUNTED LIGHT FIXTURES INCLUDING LAMPS, ALL SOCKETS, REFLECTORS, LENSES, HOUSINGS, AND OTHER COMPONENTS REQUIRED TO POSITION, ENERGIZE, AND PROTECT THE LAMP AND DISTRIBUTE THE LIGHT. PROVIDE AND INSTALL ALL REQUIRED CONDUIT, BOXES, WIRING, CONNECTORS, HARDWARE, POLES, FOUNDATIONS, SUPPORTS, TRIM, ACCESSORIES, ETC. AS NECESSARY FOR A COMPLETE OPERATING SYSTEM. PROVIDE PRODUCTS SUITABLE TO WITHSTAND NORMAL HANDLING, INSTALLATION, AND SERVICE WITHOUT ANY DAMAGE, DISTORTION, CORROSION, FADING, DISCOLORING, ETC.

THE ELECTRICAL CONTRACTOR SHALL INSTALL PRODUCTS ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS. INSTALL LUMINAIRES SECURELY, IN A NEAT AND WORKMANLIKE MANNER. INSTALL LUMINAIRES PLUMB AND SQUARE AND ALIGNED WITH BUILDING LINES AND WITH ADJACENT LUMINAIRES. BOND PRODUCTS AND METAL ACCESSORIES TO BRANCH CIRCUIT EQUIPMENT GROUNDING CONDUCTOR AND POLE BASE GROUND BAR.

DIVISION 27/28 GENERAL REQUIREMENTS

SECTION 270500 COMMON WORK RESULTS FOR COMMUNICATIONS

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL CABLING FOR VOICE AND DATA COMMUNICATIONS AS INDICATED. INSTALL NEW CABLING FOR VOICE AND DATA COMMUNICATIONS IN ACCORDANCE WITH TIA/EIA 568. INSTALL COMMUNICATION PATHWAYS IN ACCORDANCE WITH TIA/EIA 569.

THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF CONDUIT, OUTLET BOXES, COMMUNICATION WIRING, WIRING SUPPORT, COMMUNICATION OUTLETS, WALL PLATES, AND ASSOCIATED TERMINATIONS AND TESTING. COORDINATE ALL NEW INSTALLATIONS AND RELOCATED INSTALLATIONS WITH THE OWNER.

SECTION 283111 FIRE ALARM

THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL NEW FIRE ALARM AND DETECTION EQUIPMENT, CABLING, TERMINATIONS, AND THE REQUIREMENTS FOR EXTENDING, ADJUSTING, AND RELOCATING THE EXISTING AREA FIRE ALARM AND DETECTION SYSTEM AND EQUIPMENT. ALL WORK SHALL INCLUDE WIRING, CONNECTIONS, AND TECHNICAL SERVICES AS NEEDED TO INTERFACE THE REMAINING AND RELOCATED FIRE ALARM SYSTEM AND EQUIPMENT WITH THE NEW INSTALLATIONS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL WIRING, TERMINATION REQUIREMENTS, AND PROGRAMMING WITH THE MANUFACTURER. ALL NEW AND ADJUSTED INSTALLATIONS SHALL BE TESTED IN ACCORDANCE WITH THE NFPA AND WEST VIRGINIA STATE FIRE COMMISSION.

ELECTRICAL ABBREVIATIONS

A	AMP, AMPERE, AMPERAGE
A/V	AUDIO/VISUAL
AC	ARMORED CABLE OR ALTERNATING CURRENT
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
ANNC	FIRE ALARM ANNUNCIATOR PANEL
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
C.	COUNTER HEIGHT****
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
COMM	COMMUNICATIONS
COMP	COMPRESSOR
CTRL	CONTROL
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
D	DIMMING
DWG	DRAWING
E	EMERGENCY
EA	EACH
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EGC	EQUIPMENT GROUNDING CONDUCTOR
ELEC	ELECTRIC OR ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
EXIST, EX.	EXISTING
EXT	EXTERIOR
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FC	FOOT CANDLE(S)
FL	FLOOR
FT	FOOT OR FEET
GEN	GENERATOR
GFCI, GFI	GROUND FAULT CIRCUIT INTERUPPTER
GND	GROUND
HD	HAND DRYER
HOA	HAND–OFF–AUTOMATIC
HP	HORSEPOWER
KCMIL	THOUSAND CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT–AMPERE
KW	KILOWATT
LC	LIGHTING CONTACTOR
LT/LTS	LIGHT/LIGHTS
MAX	MAXIMUM
MC	METAL CLAD
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MFGR	MANUFACTURER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NF	NON–FUSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
OHD	OVERHEAD DOOR
PC	PHOTOCELL
PH	PHASE
REC	RECEPTACLE
REV	REVISION
RM	ROOM
RMC	RIGID METAL CONDUIT
RTU	ROOF TOP UNIT
TEL	TELEPHONE
TV	TELEVISION
TYP	TYPICAL
UC	UNDER COUNTER
UGE	UNDERGROUND ELECTRIC
UL	UNDERWRITER'S LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTABLE POWER SUPPLY
V	VOLT
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF
XMFR	TRANSFORMER

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Rev.	Description	By	Date
0	ISSUED FOR BID	CSH	05/30/24

Drawing Description
PIERPONT COMMUNITY & TECHNICAL COLLEGE
501 W MAIN ST. CLARKSBURG, WV
PIERPONT VET TECH SECURITY SYSTEM
GENERAL ELECTRICAL NOTES AND SPECIFICATIONS

CARL S. HENSON
No. 14330

Project:	2201011
Designed By:	CSH
Drawn By:	BEM
Checked By:	CSH
Scale:	NTS
Plot Date:	05/30/24
Revision:	0
Drawing Number:	E000

ELECTRICAL SYMBOL LEGEND

- ALL ITEMS SHOWN AS DASHED ON DEMOLITION PLANS SHALL BE REMOVED UNLESS NOTED OTHERWISE.
- FLUORESCENT, INCANDESCENT, OR LED TYPE LIGHTING FIXTURES COMPLETE WITH LAMPS. REFER TO LIGHT FIXTURE SCHEDULE FOR DETAILS.
- EXTERIOR POLE–MOUNTED LED FIXTURES
- COORDINATE NUMBER OF FACES AND THE DIRECTIONAL ARROWS, AS REQUIRED. CONNECTION TO THE EXIT LIGHT FIXTURE SHALL BE MADE AHEAD OF THE LOCAL LIGHT SWITCHING CIRCUIT.
- SINGLE AND DOUBLE LED REMOTE HEAD EMERGENCY EGRESS FIXTURES
- $ — SINGLE POLE, 20A 120/277V SINGLE THROW SWITCH. MOUNT 46" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE.
- $3 — 20A 120/277V THREE–WAY, SINGLE THROW SWITCH. MOUNT 46" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE.
- $4 — 20A 120/277V FOUR–WAY, SINGLE THROW SWITCH. MOUNT 46" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE.
- $K — 20A 120/277V LOCK TYPE, HUBBELL SINGLE THROW SWITCH. MOUNT 46" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE.
- $OS — 20A 120/277V SINGLE BUTTON ON/OFF OCCUPANCY SENSOR, MOUNT 46" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE.
- OS — CEILING MOUNT OCCUPANCY SENSOR, COORDINATE POWER PACK REQUIREMENTS AND QUANTITIES WITH THE MANUFACTURER.
- PC — PHOTOCELL LIGHTING CONTROLLER. NOTE DETAIL DRAWINGS FOR MOUNTING DETAIL.
- DUPLEX GROUNDING TYPE RECEPTACLE, 20A 120V. MOUNT 18" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT. COORDINATE COLOR WITH OWNER.
- GFCI — GROUND–FAULT CIRCUIT INTERRUPTER TYPE DUPLEX RECEPTACLE, 20A 120V. MOUNT 18" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- TV — DUPLEX GROUNDING TYPE RECEPTACLE, 20A 120V. MOUNT 84" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- TWO (2) DUPLEX GROUNDING TYPE SPECIFICATION GRADE RECEPTACLE, 20A 120V. MOUNT IN COMMON BOX WITH COMMON PLATE 18" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- DUPLEX GROUNDING TYPE RECEPTACLE, 20A, 125V. MOUNT IN FLOOR BOX WITH COMMON PLATE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- TWO (2) DUPLEX GROUNDING TYPE RECEPTACLES, 20A, 125V. MOUNT IN FLOOR BOX WITH COMMON PLATE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- USB — COMBINATION 3.1A/5VDC USB CHARGERS WITH 20A, 125V DUPLEX GROUNDING TYPE RECEPTACLES. MOUNT IN COMMON BOX WITH COMMON PLATE AT 18" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- USB — TWO (2) COMBINATION 3.1A/5VDC USB CHARGERS WITH 20A, 125V DUPLEX GROUNDING TYPE RECEPTACLES. MOUNT IN COMMON BOX WITH COMMON PLATE AT 18" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- C — SUBSCRIPT "C" INDICATES DEVICE TO BE MOUNTED 6" ABOVE COUNTERTOP TO CENTERLINE.
- R — SUBSCRIPT "R" INDICATES RED DEVICE CONNECTED TO EMERGENCY POWER.
- WP — SUBSCRIPT "WP" INDICATES DEVICE INSTALLATION AND ENCLOSURE SHALL BE WEATHER–PROOF
- SPECIAL RECEPTACLE OR FEED. REFER TO DRAWINGS FOR DESCRIPTION.
- 480Y/277V, 3ø 4W PANELBOARD. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- 208Y/120V, 3ø 4W PANELBOARD. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- 240V, 3ø 3W PANELBOARD. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- 240/120V, 1ø 3W PANELBOARD. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- POINT OF ELECTRICAL CONNECTION TO EQUIPMENT. CONFIRM EQUIPMENT CONNECTION REQUIREMENTS AND ARRANGEMENT PRIOR TO ROUGH–IN. VERIFY EXACT LOCATION WITH ARCHITECTURAL DRAWINGS AND ARCHITECT.
- A–2 — ELECTRICAL CIRCUIT HOMERUN TO PANEL 'A' CIRCUIT #2 (EXAMPLE). ALL CIRCUIT WIRING SHALL BE (2) –#12 THHN/THWN CONDUCTORS AND (1)–#12 THHN/THWN GROUND CONDUCTOR IN 3/4" EMT, UNLESS NOTED OTHERWISE.
- NON–FUSED HEAVY–DUTY TYPE SAFETY DISCONNECT SWITCH. SIZE, POLES, AND NEMA TYPE AS INDICATED ON ELECTRICAL DRAWINGS.
- FUSED HEAVY–DUTY TYPE SAFETY DISCONNECT SWITCH. SIZE, POLES, FUSE SIZE, AND NEMA TYPE AS INDICATED ON ELECTRICAL DRAWINGS.
- COMBINATION MOTOR STARTER AND HEAVY–DUTY TYPE SAFETY DISCONNECT SWITCH. SIZE, POLES, FUSE SIZE, AND NEMA TYPE AS INDICATED ON ELECTRICAL DRAWINGS.
- STANDARD JUNCTION BOX WITH COVER. LOCATE AND CONNECT AS DIRECTED.
- HUBBEL QUAZITE 11"X18" PG STYLE POLYMER CONCRETE ENCLOSURE.

ELECTRICAL SYSTEM CONTROLS SYMBOL LEGEND

- S — CEILING SPEAKER, FLUSH MOUNTED DEVICE. REFER TO DRAWINGS AND/ OR SPECIFICATIONS FOR DETAILS.
- C — SECURITY CAMERA, CEILING MOUNTED DEVICE. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR CAMERA LOCATIONS AND/OR DETAILS.
- SECURITY CAMERA, WALL MOUNTED DEVICE. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR CAMERA LOCATIONS AND/OR DETAILS.
- WAP — WIRELESS COMMUNICATIONS ACCESS POINT.
- T — THERMOSTAT CONTROL JUNCTION BOX. E.C. IS RESPONSIBLE FOR INSTALLATION OF ROUGH–IN BOX AND CONDUIT FOR EQUIPMENT INSTALLATION. VERIFY EXACT LOCATION AND INSTALLATION REQUIREMENTS WITH THE MECHANICAL DRAWINGS AND THE MECHANICAL CONTRACTOR.
- SPEAKER, SURFACE–MOUNTED DEVICE. REFER TO DRAWINGS AND/ OR SPECIFICATIONS FOR DETAILS.
- SINGLE–FACED CEILING/WALL MOUNTED CLOCK. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT PRIOR TO ROUGH–IN.
- PR — ACCESS CONTROL PROXIMITY CARD READER. REFER TO DRAWINGS FOR DETAILS AND SPECIFICATIONS.
- RB — ACCESS CONTROL DOOR RELEASE BUTTON. REFER TO DRAWINGS FOR DETAILS AND SPECIFICATIONS.
- TV — JUNCTION BOX FOR TELEVISION CABLE OUTLET. MOUNT AT 84" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. PROVIDE 4–11/16" SQUARE BOX WITH SINGLE–GANG PLASTER RING AND PROVIDE 3/4"C WITH PULL STRING FROM BOX TO 1' ABOVE FINISHED CEILING. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT.
- V — RJ45 TELEPHONE SYSTEM OUTLET. MOUNT AT 54" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. PROVIDE 4–11/16" SQUARE BOX WITH SINGLE–GANG PLASTER RING AND PROVIDE 3/4"C WITH PULL STRING FROM BOX TO 1' ABOVE FINISHED CEILING. INSTALL ONE (1) CAT 5e CABLE FROM OUTLET BOX TO COMMUNICATION ROOM AND TERMINATE AS DIRECTED BY THE OWNER. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT.
- T — RJ11 TELEPHONE SYSTEM OUTLET. MOUNT AT 54" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. PROVIDE 4–11/16" SQUARE BOX WITH SINGLE–GANG PLASTER RING AND PROVIDE 3/4"C WITH PULL STRING FROM BOX TO 1' ABOVE FINISHED CEILING. INSTALL ONE (1) CAT 5e CABLE FROM OUTLET BOX TO COMMUNICATION ROOM AND TERMINATE AS DIRECTED BY THE OWNER. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT.
- 3 — COMMUNICATION SYSTEM OUTLET. MOUNT AT 18" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. PROVIDE 4–11/16" SQUARE BOX WITH SINGLE–GANG PLASTER RING AND PROVIDE 3/4"C WITH PULL STRING FROM BOX TO 1' ABOVE FINISHED CEILING. PROVIDE RJ45 & VOIP JACKS & COVER PLATE WITH FINAL TERMINATIONS AT JACK. INSTALL CAT6 CABLES (UNLESS DESIGNATED OTHERWISE) FROM OUTLET BOX TO COMMUNICATION ROOM AND TERMINATE TO PUNCH–DOWN BLOCK (OR AS DIRECTED BY THE OWNER), LABEL, AND TEST. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT. TYPICAL TWO COMMUNICATION WIRING (2) DROPS PER OUTLET LOCATION UNLESS OTHERWISE INDICATED BY SUBSCRIPT. (EXAMPLE: "3" INDICATES NUMBER THREE (3) NUMBER OF DROPS TO OUTLET LOCATION.)
- PUSH BUTTON. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- ES — EMERGENCY STOP PUSH BUTTON. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- INTERCOM PAGING SYSTEM. REFER TO DRAWINGS FOR DETAILS AND SPECIFICATIONS.
- K — EMERGENCY LOCKDOWN KEYED SWITCH. REFER TO DRAWINGS FOR DETAILS AND SPECIFICATIONS.
- SECURITY MOTION DETECTOR.

FIRE ALARM AND DETECTION SYMBOL LEGEND

- AUDIBLE AND VISUAL SIGNAL. MOUNT AT 82" A.F.F. TO CENTERLINE UNLESS OTHERWISE NOTED.
- VISUAL SIGNAL ONLY. MOUNT AT 82" A.F.F. TO CENTERLINE UNLESS OTHERWISE NOTED.
- M — MANUALLY OPERATED PULL STATION MOUNT AT 46" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE.
- CO — CARBON MONOXIDE DETECTOR MOUNTED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
- S — AUTOMATIC SMOKE DETECTOR, PHOTOELECTRIC TYPE, CEILING MOUNTED.
- S/CO — COMBINATION AUTOMATIC SMOKE AND CARBON MONOXIDE DETECTOR TYPE CEILING MOUNTED
- D — AUTOMATIC DUCT SMOKE DETECTOR, PHOTOELECTRIC TYPE, CEILING MOUNTED. CONNECT TO EXISTING SECURITY SYSTEM
- H — HEAT DETECTOR COMBINATION FIXED TEMP. AND RATE OF RISE, CEILING MOUNTED.
- D — FIRE ALARM SYSTEMS MAGNETIC DOOR HOLDER. MOUNT AT 84" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT.
- ANNC — REMOTE ANNUNCIATOR PANEL. MOUNT AT 54" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT.
- FACP — FIRE ALARM CONTROL PANEL. MOUNT AT 54" A.F.F. TO CENTERLINE UNLESS NOTED OTHERWISE. VERIFY EXACT LOCATION WITH THE ARCHITECTURAL DRAWINGS AND ARCHITECT.
- FS — SPRINKLER SYSTEM FLOW SWITCH. FURNISHED AND INSTALLED BY THE FIRE PROTECTION CONTRACTOR, CONNECTED TO THE FIRE ALARM AND DETECTION SYSTEM BY THE ELECTRICAL CONTRACTOR. VERIFY LOCATION AND EXACT QUANTITY WITH THE EQUIPMENT PROVIDER PRIOR TO ROUGH–IN AND ZONE ADDRESSABLE MONITOR MODULE ALLOCATION.
- TS — SPRINKLER SYSTEM TAMPER SWITCH. FURNISHED AND INSTALLED BY THE FIRE PROTECTION CONTRACTOR, CONNECTED TO THE FIRE ALARM AND DETECTION SYSTEM BY THE ELECTRICAL CONTRACTOR. VERIFY LOCATION AND EXACT QUANTITY WITH THE EQUIPMENT PROVIDER PRIOR TO ROUGH–IN AND ZONE ADDRESSABLE MONITOR MODULE ALLOCATION.
- PUSH BUTTON. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.
- ES — EMERGENCY STOP PUSH BUTTON. REFER TO DRAWINGS AND/OR SPECIFICATIONS FOR DETAILS.

ELECTRICAL DEMOLITION NOTES

1. THE GENERAL DEMOLITION NOTES LISTED HERE APPLY TO THE ELECTRICAL DEMOLITION DRAWINGS IN ADDITION TO ANY CODED NOTES INDICATED ON THE DEMOLITION DRAWINGS.
2. AN ATTEMPT HAS BEEN MADE TO SHOW ALL ELECTRICAL ITEMS TO REMAIN OR BE REMOVED. THE ELECTRICAL CONTRACTOR (EC) SHALL FIELD VERIFY EXISTING CONDITIONS AND REMOVE OR RELOCATE ANY ITEM WHICH INTERFERES WITH NEW CONSTRUCTION. THE SCHEDULED DEMOLITION IS BASED ON FIELD OBSERVATIONS AND EXISTING RECORD DOCUMENTS. THE ELECTRICAL CONTRACTOR SHALL REPORT DISCREPANCIES TO THE OWNER OR ENGINEER BEFORE DISTURBING EXISTING INSTALLATIONS.
3. THE ELECTRICAL CONTRACTOR (EC) SHALL DISCONNECT AND REMOVE EXISTING ELECTRICAL DISTRIBUTION EQUIPMENT, ELECTRICAL DEVICES, CONDUIT AND WIRING, AND ALL EQUIPMENT ACCESSORIES IN THE AREA AS INDICATED ON THE DEMOLITION DRAWING. THE ELECTRICAL CONTRACTOR SHALL REMOVE UNUSED CONDUIT AND WIRING TO THE SOURCE OF ELECTRICAL DISTRIBUTION.
4. THE ELECTRICAL CONTRACTOR (EC) SHALL PROTECT ALL EXISTING EQUIPMENT AND EXISTING INSTALLATIONS THAT ARE SCHEDULED TO REMAIN IN SERVICE FROM DAMAGE. REFEED ANY ITEM WHOSE WIRING IS INTERRUPTED DUE TO WORK IN ADJACENT AREAS.
5. THE ELECTRICAL CONTRACTOR (EC) SHALL REMOVE ALL HANGERS AND SUPPORTS SERVING CONDUIT AND WIRE BEING DEMOLISHED. PROVIDE AND/OR ADJUST EXISTING HANGERS TO SUPPORT ANY REMAINING CONDUIT AND WIRE, OR EQUIPMENT ADJACENT TO DEMOLISHED AREAS AND EQUIPMENT.
6. THE ELECTRICAL CONTRACTOR (EC) SHALL REMOVE ALL EXISTING WIRING AND CONDUITS BEING ABANDONED. ABANDONED CONDUITS SHALL BE CUT FLUSH AT CEILINGS AND FLOORS AND BE PROPERLY CLOSED.
7. MAKE ALL ELECTRICAL DEMOLITION SAFE FOR ALL PARTICIPATING CONTRACTORS. PROTECT ALL WIRING AND ELECTRICAL CONNECTIONS THAT REMAIN IN SERVICE FROM DAMAGE.

ELECTRICAL CONSTRUCTION NOTES

1. THE DRAWINGS INDICATE GENERAL ELECTRICAL INSTALLATIONS AND ASSOCIATED EQUIPMENT QUANTITIES. ALL NEW INSTALLATIONS SHALL BE COORDINATED WITH THE OWNER.
2. THE OWNER SHALL BE NOTIFIED IMMEDIATELY OF ANY PRESENCE OF ASBESTOS MATERIAL DISCOVERED DURING CONSTRUCTION. ANY ASBESTOS MATERIAL SHALL BE REMOVED BY OTHERS.
3. ALL BUILDING UTILITIES AND BUILDING STRUCTURES SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. THE ELECTRICAL CONTRACTOR (EC) SHALL BE RESPONSIBLE FOR RESTORING ALL EXISTING FEATURES AND REPAIRING ANY UTILITIES DAMAGED BY CONSTRUCTION TO A CONDITION SATISFACTORY TO THE OWNER.
4. ALL NEW ELECTRICAL INSTALLATIONS SHALL BE DOCUMENTED AND ELECTRICAL PANEL SCHEDULES UPDATED.
5. THE ELECTRICAL DESIGN DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO SHOW EXACT LOCATION OF EQUIPMENT AND DEVICES UNLESS DIMENSIONS ARE GIVEN OR OTHERWISE IMPLIED FOR CLEARANCES. ALL ELECTRICAL EQUIPMENT ARE TO BE INSTALLED ALONG WITH THE GENERAL PLANS. ALL LABOR AND MATERIALS AND OTHER RELATED WORK NECESSARY TO PROVIDE MINOR OFFSETS IN ELECTRICAL WORK AS REQUIRED TO AVOID CONFLICT WITH OTHER WORK OR CLEARANCES SHALL BE INCLUDED IN THE ELECTRICAL BID.
6. THE ELECTRICAL CONTRACTOR (EC) SHALL PROVIDE FIRESEALING OF ALL OPENINGS THROUGH FIRE RATED WALLS AND ASSEMBLIES CREATED BY NEW ELECTRICAL INSTALLATIONS OR THE SCHEDULED REMOVAL OF EXISTING INSTALLATIONS.

AREA CLASSIFICATION LEGEND

- UNCLASSIFIED AREA, NEMA 4X EXCEPT IN MCC ROOMS AND CONTROL ROOMS WHERE IT IS NEMA 1
- CLASS I, DIV. 1, GROUP B, C & D
- CLASS I, DIV. 2, GROUP A, B, C & D
- CLASS I, DIV. 2, GROUP B, C & D, FROM SOURCE UP TO 18" ABOVE FLOOR OR GRADE
- CLASS II, DIV. 1, GROUP E, F & G
- CLASS II, DIV. 2, GROUP E, F, & G
- CLASS I, DIV. 2, GROUP B, C & D AND CLASS II, DIV. 2, GROUP E, F & G
- CLASS I, DIV. 2, GROUP B, C & D, INSIDE OF THE DIKE WALL AND UP TO THE TOP OF DIKE WALL, SINCE THE DIKE HEIGHT IS LESS THAN THE DISTANCE FROM THE DIKE TO THE TANK. NFPA-30 TABLE 5-9.53 AND NFPA-497 FIGURE 3-8.19

NOTES:

1. HAZARD AREA CLASSIFICATION AND EXACT LOCATION OF BOUNDARIES TO BE VERIFIED/DETERMINED BY OWNER. ALL ELECTRICAL WORK IN HAZARDOUS (CLASSIFIED) LOCATIONS SHALL MEET ALL REQUIREMENTS OF THE LATEST EDITION OF THE N.E.C. ARTICLE 500.
2. ANY SUMP PUMP OR TRENCH BELOW THE FLOOR LEVEL SHALL BE CONSIDERED TO BE CLASS I, DIV 1, GROUP D, HAZARDOUS LOCATION.
3. THE AREA CLASSIFICATIONS SHOWN FOR INDOOR CLASS I AREAS ARE BASED ON THE PREMISE THAT THE INSTALLATION MEETS ADEQUATE VENTILATION AND APPLICABLE REQUIREMENTS OF NFPA–30 AND NFPA–497.
4. NEC TEMPERATURE CLASSIFICATION CODE IS T1, MAX SURFACE TEMPERATURE OF 450 DEGREES CELSIUS (842 DEGREES FAHRENHEIT).

SECURITY SYSTEM AND CONTROLS LEGEND

KEYPAD		ACP	ACCESS CONTROL PANEL
REX	REQUEST–TO–EXIT MOTION SENSOR	SSCP	SECURITY SYSTEM CONTROL PANEL
ES	ELECTRIC STRIKE	HE	VIDEO SERVER
DC	DOOR CONTACT	NODE	NODE
OHDC	OVERHEAD DOOR CONTACT	ELR	EXIT LATCH RETRACTION
CR	CARD READER	PR	AIPHONE INTERCOM & CARD READER

MATERIALS

- FIBER–REINFORCED CONCRETE
- CONCRETE
- CONCRETE MASONRY
- BRICK OR HOT MIX ASPHALT
- WELL–GRADED STONE/GRAVEL
- UNIFORM–GRADED STONE/GRAVEL
- WOOD BLOCKING
- RIGID INSULATION
- BATT INSULATION
- STEEL
- SOIL
- BEDROCK
- SAND
- CARPET (SURFACE)
- HARDWOOD FLOOR (SURFACE)
- WOOD SHEATHING (SURFACE)
- CERAMIC TILE (SURFACE)
- VCT (SURFACE)
- CLAY TILE FLOORING (SURFACE)
- SAND/GYPSUM/HOT MIX ASPHALT (SURFACE)

ANNOTATIONS

- # — CODED NOTE
- # — DEMOLITION NOTE
- # — REVISION TAG
- N / W DWG E / S — A / DWG — ELEVATION VIEW REFERENCE TAG
- INTERIOR ELEVATION REFERENCE TAG
- SECTION VIEW REFERENCE TAG
- 1 / DWG — DETAIL REFERENCE TAG
- CALLOUT AREA FOR VIEW (OPTIONAL)
- OFFICE / 000 — ROOM TAG
- FIRST FLOOR / EL. 100'–0" — LEVEL REFERENCE TAG
- # — COLUMN GRID TAG
- 100'–0" — BEARING ELEVATION OR TOP SURFACE ELEVATION
- X# — MARK TAG
- 12 / # — SLOPE
- TRUE NORTH / PROJECT NORTH — N — NORTH ARROWS
- MATCHLINE MXXX — CALLOUT SHEET ON WHICH THE DRAWING CONTINUES
- DRAWING TITLE / SCALE: 1/8"=1'–0"
- DRAWING REFERENCE — A — E110 E305 — DRAWING TITLE / SCALE: 1/4"=1'–0" — DRAWING LOCATION — DRAWING REFERENCE TAG LOCATION
- DETAIL REFERENCE — 1 — A301 A501 — DRAWING TITLE / SCALE: 1/4"=1'–0" — DETAIL LOCATION — DETAIL REFERENCE TAG LOCATION

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Rev.	Description	By	Date
0	ISSUED FOR BID	CSH	05/30/24

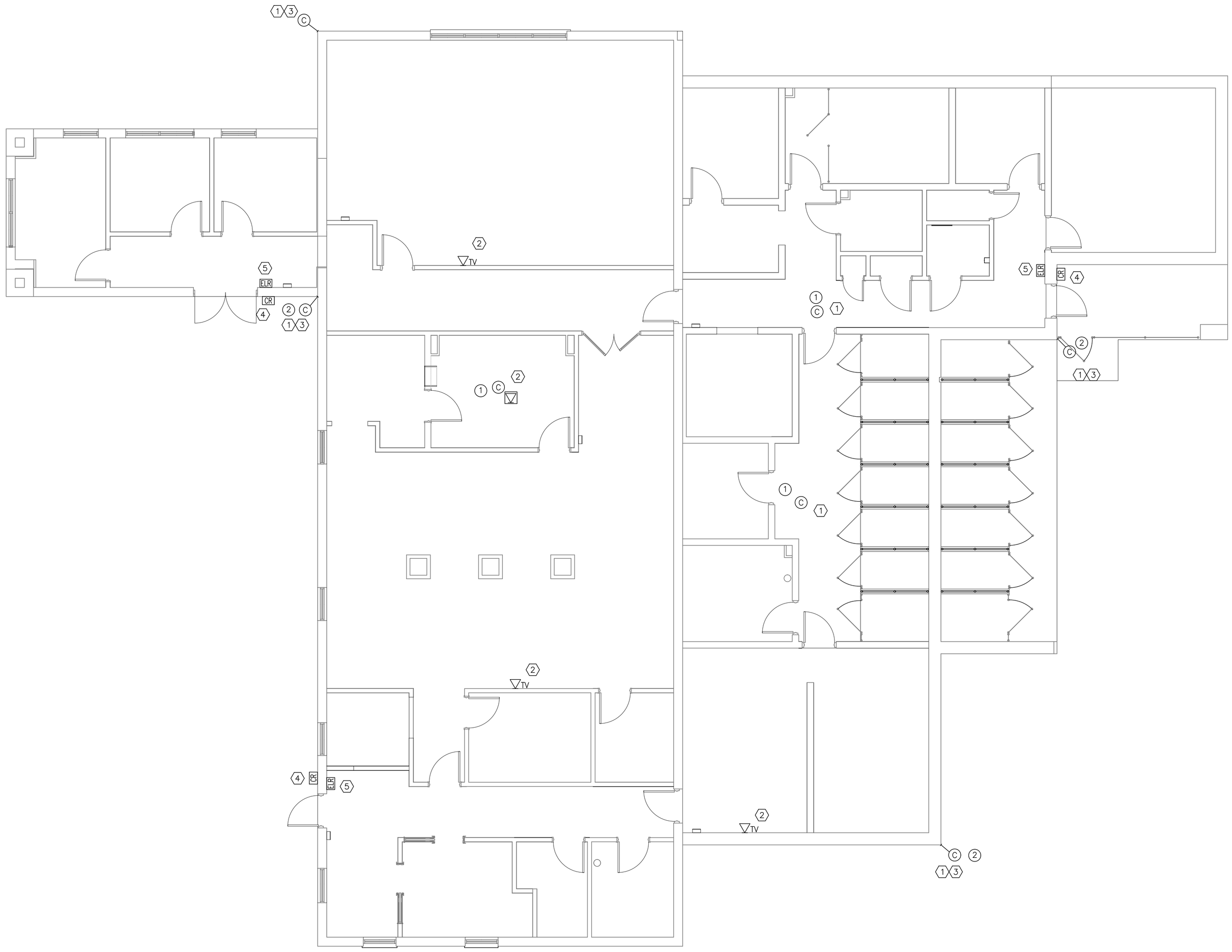
Drawing Description

PIERPONT COMMUNITY & TECHNICAL COLLEGE
501 W MAIN ST. CLARKSBURG, WV
PIERPONT VET TECH SECURITY SYSTEM
ELECTRICAL SYMBOL LEGEND AND ABBREVIATIONS

CARL S. HENSON REGISTERED No. 14330 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Project:	2201011
Designed By:	CSH
Drawn By:	BEM
Checked By:	CSH
Scale:	NTS
Plot Date:	05/30/24
Revision:	0

Drawing Number: E001



SECURITY SYSTEM PLAN
SCALE: 3/16" = 1'-0"

CODED NOTES:

1. ELECTRICAL CONTRACTOR SHALL ROUGH-IN BOXES AND A 1-INCH CONDUIT FOR SECURITY CONTRACTOR TO INSTALL DEVICES. COORDINATE LOCATIONS WITH SECURITY CONTRACTOR.
2. PROVIDE DATA CONNECTION TO CAMERA IN SURGERY. CAMERA SHALL BE CONNECTED TO TV IN TREATMENT ROOM, CLASSROOM, AND GROOMING AREA.
3. ROUGH-IN BOXES FOR CAMERA SHALL BE MOUNTED 1-FOOT BELOW COPING.
4. EC SHALL ROUGH-IN A SINGLE GANG BOX 48" ABOVE FINISHED GRADE FOR CARD READER. CONDUIT SHALL BE 1-INCH.
5. POWER THE ELR FROM A 120-VOLT, 20-AMP RECEPTACLE CIRCUIT. FEED SHALL BE (2)-#12 AND #12 EGC MC CABLE.

(#) = INDICATES CAMERA MODEL, REFER TO SCHEDULE ON E500

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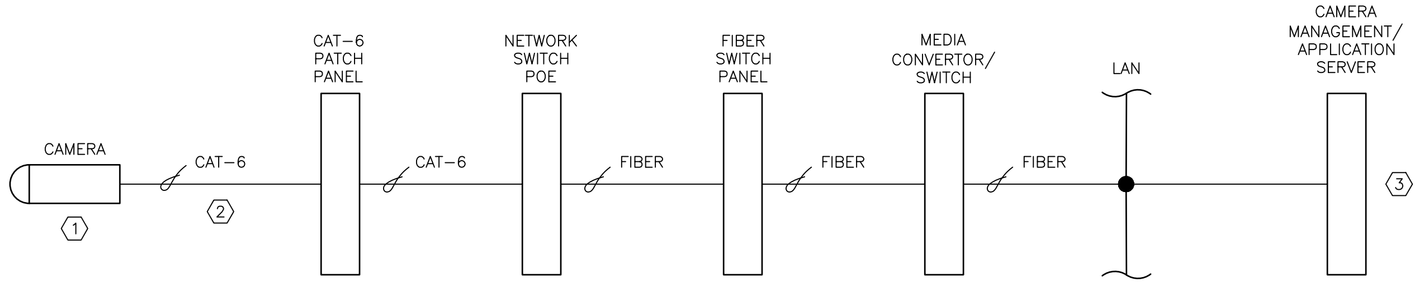
PIERPONT COMMUNITY & TECHNICAL COLLEGE
501 W MAIN ST. CLARKSBURG, WV
PIERPONT VET TECH SECURITY SYSTEM
SECURITY SYSTEM PLAN

CARL S. HENSON REGISTERED No. 14330 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Project:	2201011
Designed By:	CSH
Drawn By:	BEM
Checked By:	CSH
Scale:	3/16" = 1'-0"
Plot Date:	05/30/24
Revision:	0

Drawing Number:
E130



CODED NOTES:

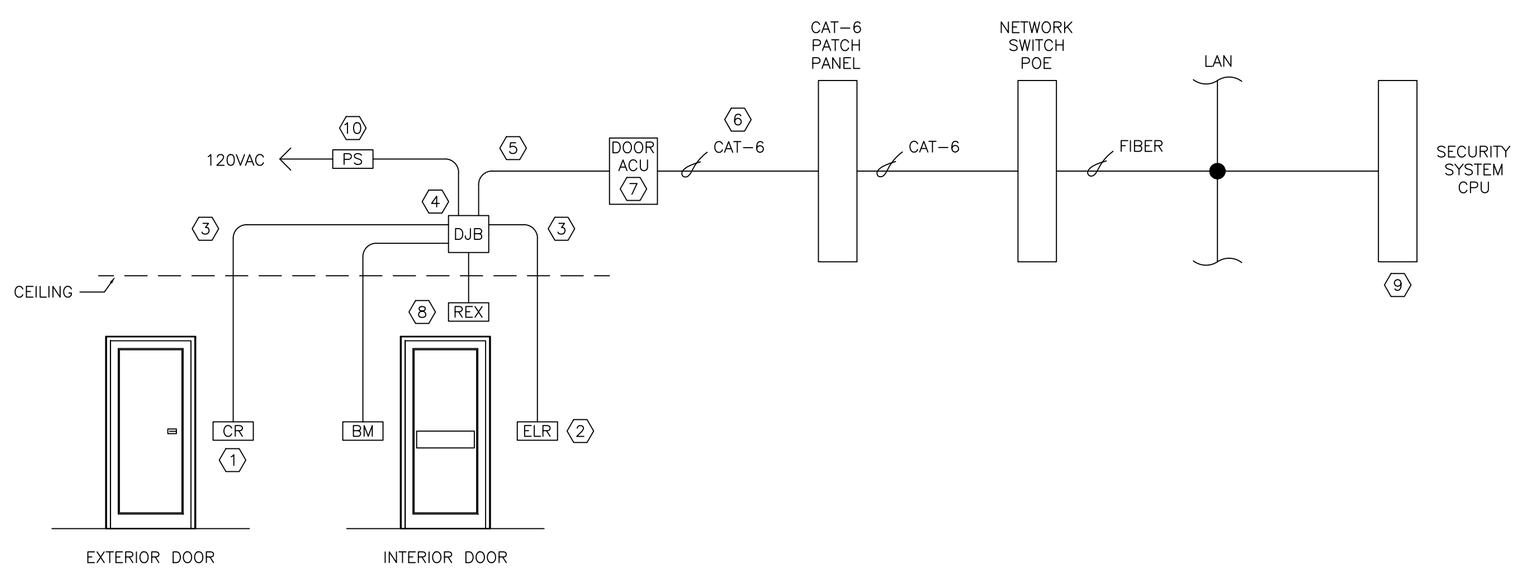
1. PURCHASE AND INSTALL CAMERA PER MANUFACTURERS INSTRUCTION. INSTALL MOUNTING HARDWARE AND WEATHER–PROOF DEVICE AS REQUIRED BY LOCATION.
2. PURCHASE AND INSTALL CAT–6 PLENUM RATED CABLE FROM CAMERA TO LOCAL AREA NETWORK (LAN) PATCH PANEL. ROUTE CABLE IN CONDUIT WHERE EXPOSED TO PHYSICAL DAMAGE, CONCEALED WALL, OR UNDER FLOOR.
3. PURCHASE AND INSTALL CAMERA MANAGEMENT AND APPLICATION SERVER EXACOVISION MODEL #IP04–06T–R2A. SUBSTITUTIONS NOT PERMITTED. INSTALLER SHALL BE RESPONSIBLE FOR INTERFACING SERVER ON LOCAL AREA NETWORK (LAN). PROVIDE ALL CAMERA LICENSES REQUIRED.

1/E500 **STANDARD CAMERA DIAGRAM**
SCALE: N.T.S.

ADMINISTRATION BUILDING SECURITY CAMERA EQUIPMENT LIST BASIS OF DESIGN SCHEDULE

DESIGNATION	EQUIPMENT DESCRIPTION	MANUFACTURER	PRODUCT LINE	MODEL #	COMMENTS
1	12 MP 360 DEGREE IR PANORAMIC	AXIS	AXIS M30 SERIES	M418–PLVE	EC SHALL PURCHASE MOUNTING HARDWARE APPLICABLE FOR AREA OF INSTALLATION.
2	5 MP DOME	AXIS	AXIS P32 SERIES	P3267–LVE	EC SHALL PURCHASE MOUNTING HARDWARE APPLICABLE FOR AREA OF INSTALLATION.
NOTES:					
1	SUBSTITUTIONS ARE PERMITTED WITH APPROVAL FROM THE ENGINEER.				
2					

(#) = CAMERA DESIGNATION



CODED NOTES:

1. INSTALL SINGLE GANG BOX FOR CARD READER.
2. INSTALL EXIT LATCH REFRACTION AND ALL ASSOCIATED HARDWARE.
3. INSTALL A 3/4 INCH CONDUIT FOR CABLE ROUTING.
4. INSTALL A 12 IN X 12 IN X 4 IN (MINIMAL) DOOR JUNCTION BOX.
5. INSTALL A 1 INCH CONDUIT FOR CABLE ROUTING.
6. ROUTE A CAT–6 PLENUM RATED CABLE FROM DOOR ACTUATOR CONTROLLER TO LOCAL AREA NETWORK (LAN). INSTALLER SHALL BE RESPONSIBLE FOR PROGRAMMING CONTROLLER AND LAN INTERFACING.
7. INSTALL A DOOR CONTROLLER ACTUATION (ACU) TO OPERATE ELECTRIC LATCH RELEASE.
8. INSTALL A SINGLE GANG BOX AND 3/4 INCH CONDUIT ROUTED TO DOOR ACTUATOR. MOUNT REQUEST TO EXIT DETECTOR OVER DOOR.
9. INSTALLER SHALL PURCHASE AND INSTALL ALL HARDWARE NECESSARY TO INTERCONNECT THE NEW DOOR ACCESS CONTROL EQUIPMENT. INSTALLER SHALL BE RESPONSIBLE FOR WORKING WITH THE EXISTING SECURITY SYSTEM AND PROGRAMMING ACCESS CONTROL DEVICES INTO EXISTING SECURITY SYSTEM NETWORK.
10. INSTALL A POWER SUPPLY FROM A 120–VOLT AC 20–AMP CIRCUIT. PROVIDE LOTO DEVICE.

2/E500 **STANDARD SECURE ENTRANCE/EXIT DIAGRAM**
SCALE: N.T.S.

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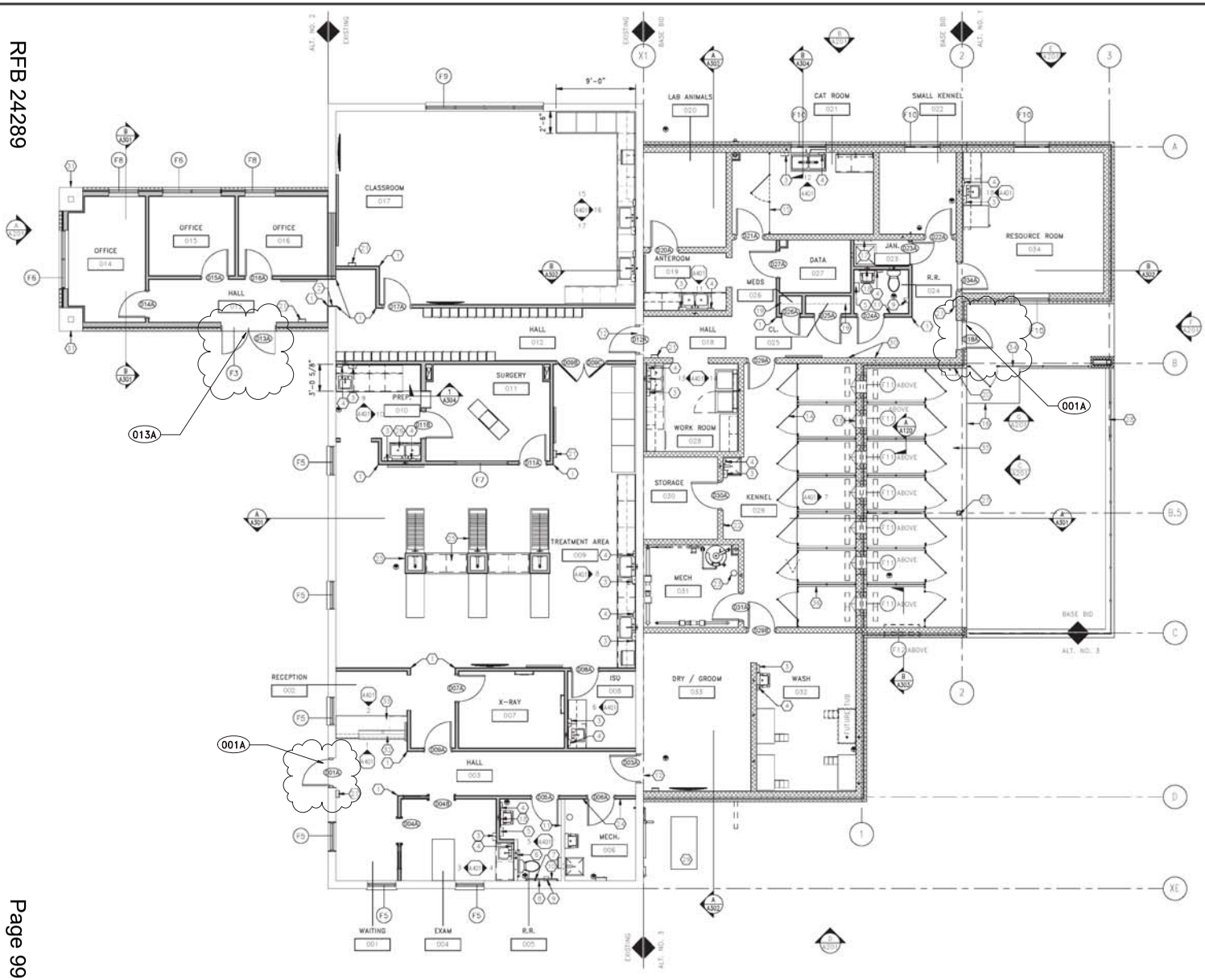
Drawing Description

PIERPONT COMMUNITY & TECHNICAL COLLEGE
501 W MAIN ST. CLARKSBURG, WV
PIERPONT VET TECH SECURITY SYSTEM
SECURITY SYSTEM PLAN

CARL S. HENSON REGISTERED No. 14330 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

Project:	2201011
Designed By:	CSH
Drawn By:	RCM
Checked By:	CSH
Scale:	N.T.S.
Plot Date:	05/30/24
Revision:	0

Drawing Number:
E500



FLOOR PLAN – NOTES PLAN
SCALE: 3/16" = 1'-0"

DRAWING PROVIDED FOR REFERENCE ONLY.

GENERAL NOTES

A. COLUMN LINES REFER TO FACE OF CMU WALL, UNLESS NOTED OTHERWISE – TYP.
B. SEE SHEET A110.B FOR BASE BID PLAN WITHOUT ALTERNATES.
C. SEE SHEETS A140 & A141 FOR EQUIPMENT DETAILS.
D. ALL BASE CABINETS SHALL BE 24" DEEP UNLESS NOTE OTHERWISE.
E. ALL EXTERIOR CORNERS OF INTERIOR CMU WALLS SHALL BE BULLNOSE.
F. SEE DWG. A101 FOR TYP. MOUNTING HEIGHTS OF TOILETS ACCESSORIES.
G. SLOPE ALL SLABS TO FLOOR DRAINS – TYP.
H. PATCH & FINISH ALL EXISTING GYP. BOARD WALLS WHERE DAMAGED @ DEMOLISHED WALLS.

CODED NOTES

1 4'-0" HIGH ST. STL. CORNER GUARD.
2 COVER OPENING W/5/8" GYP. BD. OVER 7/8" MET. FURRING.
3 PAPER TOWEL DISPENSER–PROVIDED AND INSTALLED BY OWNER.
4 SOAP DISPENSER–PROVIDED AND INSTALLED BY OWNER.
5 ELEC. HAND DRYER.
6 36" GRAB BAR.
7 18" GRAB BAR (VERT.).
8 REMOVE EXIST. GYP. BD. AS REQ'D. TO PROVIDE BLOCKING IN EXIST. WALLS FOR WALL-MTD. ACCESSORIES.
9 TOILET TISSUE DISPENSER.
10 42" GRAB BAR.
11 COAT HOOK.
12 CAREFULLY COORDINATE LOCATION OF DOOR OPENING WITH WALLS OF ADDITION. TOOTH-IN, REPAIR AND FINISH JAMBS TO MATCH EXIST. ADJ. WALLS.
13 4" HIGH CONC. CURB & GUILLOTINE DOOR– TYP. @ 7 KENNELS.
14 3'-0" WIDE X 6'-0" HIGH GATES, TYP. @ INTERIOR & EXTERIOR KENNELS. – PROVIDED BY OWNER & INSTALLED BY CONTRACTOR.
15 FULL HEIGHT METAL MESH ENCLOSURE W/ 3'-0" WIDE GATE.
16 EDGE OF CONCRETE PAD.
17 MOP/BROOM HOLDER W/SHELF.
18 24" X 40" MIRROR.
19 PLAS. LAM./PLYWOOD SHELVES ON ADJUSTABLE BRACKETS/STANDARDS; 16" DEEP X WIDTH OF CLOSET; FIVE HIGH.
20 WALL–MTD. PLASTIC HOSE HANGER.
21 SURFACE–MTD. FIRE EXTINGUISHER CABINET.
22 WALL–MTD. METAL HOSE REEL.
23 FIRE EXTINGUISHER.
24 LOCATION OF 1–HR. RATED WALL UNDER ALT. NO. 3.
25 SEE DWGS. A140 & A141 FOR EQUIPMENT– TYP.
26 PLUMBING EQUIPMENT – SEE PLUMBING DRAWINGS.
27 PTD. STL. COL. – SEE STRUCT. DWGS.
28 42" HIGH PTD. STL. GUARDRAIL ON RETAINING WALL – SEE CIVIL DWGS.
29 GENERATOR & PAD – SEE ELEC. & CIVIL DWGS.
30 8" x 8" ACCESS PANEL, 24" ABOVE FIN. FL. – COORD. W/ PLUMB. VALVE.
31 EXIST. MASONRY COLUMNS TO REMAIN.
32 10" WIDE PLASTIC LAMINATE TRANSACTION COUNTER.
33 PLASTIC LAMINATE DESK & DRAWERS.
34 6'–0" HIGH DECORATIVE ALUM. FENCE & GATE – SEE SPECS.
35 APPLY CONCRETE SEALER TO EXTERIOR KENNEL SLAB WITHIN FENCED IN AREA. SEE SPEC. SECTION 09 96 00.
36 4'–0" HIGH 6" PTD. CMU W/2'–0" HIGH MESH PARTITION ABOVE. – PROVIDED BY OWNER & INSTALLED BY CONTRACTOR.

SHEET NUMBER	SHEET NAME
A101	ADA REQUIREMENTS
A102	WALL TYPES
A110	NOTES PLAN
A110.B	NOTES PLAN - BASE BID
A111	REFLECTED CEILING PLAN
A112	ROOF PLAN
A120	DIMENSION PLAN
A140	EQUIPMENT PLAN & SCHEDULE
A141	EQUIPMENT PLAN & SCHEDULE

PICKERING ASSOCIATES
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11283 Emerson Avenue
Parkersburg, West Virginia 26104
Phone: (304) 464-5305
Fax: (304) 464-4328

Rev.	Description	Date	By
	ISSUED FOR BID	02/01/2022	PJW

Drawing Description
PIERPONT COMMUNITY & TECHNICAL COLLEGE
501 W MAIN ST. CLARKSBURG, WV
PIERPONT VET TECH RELOCATION
NOTES PLAN

STATE OF WEST VIRGINIA
PAMELA JO WEAN
NO. 3331
REGISTERED ARCHITECT

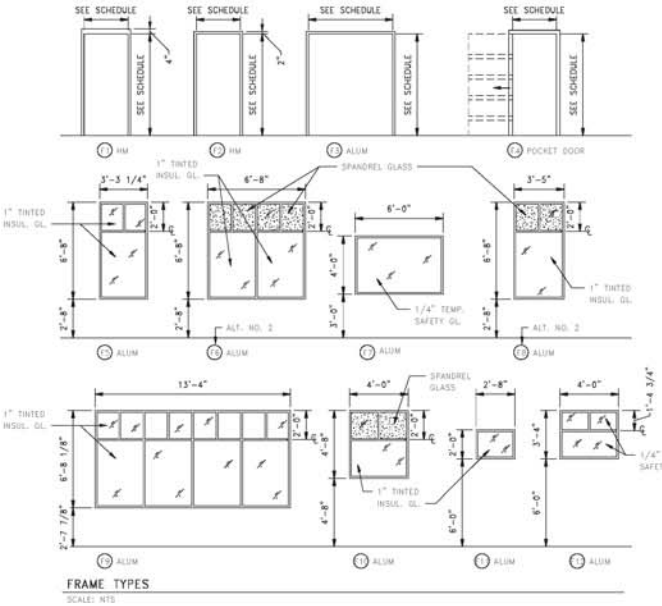
Project:	2201011
Designed By:	JGH
Drawn By:	JGH
Checked By:	PJW
Scale:	As indicated
Plot Date:	02/01/2022
Revision:	0
Drawing Number:	A110

ROOM FINISH SCHEDULE

ROOM #	NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	COMMENTS
001	WAITING	LVT	VINYL	PAINT	LAY-IN	
002	RECEPTION	LVT	VINYL	PAINT	LAY-IN	
003	HALL	LVT	VINYL	PAINT	LAY-IN	
004	EXAM	LVT	VINYL	PAINT	LAY-IN	
005	R.R.	LVT	VINYL	PAINT	LAY-IN	
006	MECH.	SEALED CONC.	VINYL	PAINT	LAY-IN	
007	X-RAY	LVT	VINYL	PAINT	LAY-IN	
008	ISO	SHEET VINYL	VINYL	PAINT	GYP.BD.	
009	TREATMENT AREA	SHEET VINYL	VINYL	PAINT	LAY-IN	
010	PREP.	SHEET VINYL	VINYL	PAINT	GYP.BD.	
011	SURGERY	SHEET VINYL	VINYL	PAINT	GYP.BD.	
012	HALL	LVT	VINYL	PAINT	LAY-IN	
013	HALL	LVT	VINYL	PAINT	LAY-IN	ALT. NO. 2
014	OFFICE	CARPET TILE	VINYL	PAINT	LAY-IN	ALT. NO. 2
015	OFFICE	CARPET TILE	VINYL	PAINT	LAY-IN	ALT. NO. 2
016	OFFICE	CARPET TILE	VINYL	PAINT	LAY-IN	ALT. NO. 2
017	CLASSROOM	LVT	VINYL	PAINT	LAY-IN	
018	HALL	SHEET VINYL	VINYL	PAINT	LAY-IN	
019	ANTEROOM	SHEET VINYL	VINYL	PAINT	GYP. BD.	
020	LAB ANIMALS	SHEET VINYL	VINYL	PAINT	GYP. BD.	
021	CAT ROOM	SHEET VINYL	VINYL	PAINT	GYP. BD.	
022	SMALL KENNEL	SHEET VINYL	VINYL	PAINT	GYP. BD.	
023	JAN.	SEALED CONC.	VINYL	PAINT	LAY-IN	
024	R.R.	LVT	VINYL	PAINT	LAY-IN	
025	CL.	LVT	VINYL	PAINT	LAY-IN	
026	MEDS	LVT	VINYL	PAINT	LAY-IN	
027	DATA	LVT	VINYL	PAINT	LAY-IN	
028	WORK ROOM	LVT	VINYL	PAINT	LAY-IN	
029	KENNEL	RESINOUS	RESINOUS	EPOXY PAINT	GYP. BD.	APPLY CONCRETE SEALER TO EXTERIOR SLAB @ KENNELS
030	STORAGE	VCT	NONE	PAINT	LAY-IN	
031	MECH	SEALED CONC.	NONE	PAINT	PTD. STRUCTURE	
032	WASH	SEALED CONC.	VINYL	PAINT	LAY-IN	ALT. NO. 3
033	DRY / GROOM	SEALED CONC.	VINYL	PAINT	LAY-IN	ALT. NO. 3
034	RESOURCE ROOM	LVT	VINYL	PAINT	LAY-IN	ALT. NO. 1

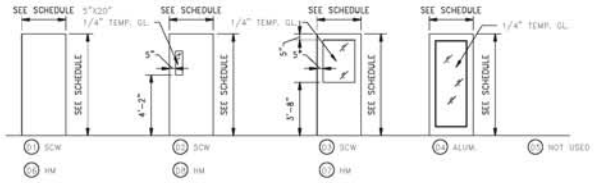
DOOR SCHEDULE

MARK	SIGNAGE DISPLAY	DOOR TYPE	WIDTH	HEIGHT	DOOR HARDWARE	DOOR MATERIAL	FRAME TYPE	FRAME MATERIAL	FIRE RATING	COMMENTS
001A	EXIT	D7	3'-0"	6'-8"	16	HM	F2	HM		VERIFY MASONRY OPNG. IN FIELD
003A	TBD	D2	3'-0"	7'-0"	11 ALT	SCW	F1	HM	90 MIN.	ALT. NO.3 ONLY
004A	EXAM ROOM	D1	3'-0"	7'-0"	14	SCW	F4	ALUM		POCKET DOOR : OPEN SIZE TO BE 3'-0"
004B	EXAM ROOM	D1	3'-0"	7'-0"	15	SCW	F4	ALUM		POCKET DOOR : OPEN SIZE TO BE 3'-0"
005A	RESTROOM	D1	3'-0"	7'-0"	13	SCW	F2	HM		
006A	MECH.	D1	3'-0"	7'-0"	1 ALT	SCW	F2	HM	60 MIN.	ALT. NO. 3 ONLY
006A	MECH.	D1	3'-0"	7'-0"	1	SCW	F2	HM	60 MIN.	BASE BID ONLY
007A	X-RAY	D2	3'-0"	7'-0"	12	SCW	F2	HM		LEAD LINED - NO CLOSER, LOCKABLE
008A	ISOLATION	D3	3'-0"	7'-0"	3	HM	F2	HM		
009A	TREATMENT	D3	3'-0"	7'-0"	20	SCW	F2	HM		
009B	TREATMENT	D3	3'-0"	7'-0"	23	SCW	F2	HM		
009C	TREATMENT	D1	2'-6"	7'-0"	22	SCW	F2	HM		INACTIVE LEAF
011A	SURGERY	D3	3'-0"	7'-0"	3	SCW	F2	HM		
011B	~	D3	3'-0"	7'-0"	4	SCW	F2	HM		
012A	TBD	D2	3'-0"	7'-0"	19	SCW	F1	HM	90 MIN.	ELECTRIC HOLD-OPEN
012B	SEE NOTE**	D4	3'-0"	7'-0"	17	ALUM	F3	ALUM		BASE BID ONLY; **(2 SIGNS) STAFF ENTRANCE (EXTERIOR) & EXIT (INTERIOR)
013A	SEE NOTE**	D4	6'-0"	7'-0"	18 ALT	ALUM	F3	ALUM		ALT. NO.2 ONLY; **(2 SIGNS) STAFF ENTRANCE (EXTERIOR) & EXIT (INTERIOR)
014A	OFFICE	D2	3'-0"	7'-0"	10 ALT	SCW	F2	HM		ALT. NO.2 ONLY
015A	OFFICE	D2	3'-0"	7'-0"	10 ALT	SCW	F2	HM		ALT. NO.2 ONLY
016A	OFFICE	D2	3'-0"	7'-0"	10 ALT	SCW	F2	HM		ALT. NO.2 ONLY
017A	CLASSROOM	D2	3'-0"	7'-0"	5	SCW	F2	HM		
018A	EXIT	D8	3'-0"	7'-0"	16	HM	F1	HM		
020A	LAB ANIMALS **	D8	3'-0"	7'-0"	2	HM	F1	HM		** ALSO PROVIDE SIGN "ANTEROOM" IN HALL
021A	CAT ROOM	D3	3'-0"	7'-0"	8	HM	F1	HM		
022A	SMALL KENNEL	D3	3'-0"	7'-0"	9	HM	F1	HM		
023A	JANITOR	D1	2'-6"	7'-0"	6	SCW	F2	HM		
024A	RESTROOM	D1	3'-0"	7'-0"	7	SCW	F2	HM		
025A	CLOSET	D1	3'-0"	7'-0"	6	SCW	F2	HM		
026A	CLOSET	D1	2'-0"	7'-0"	6	SCW	F2	HM		
027A	DATA	D1	3'-0"	7'-0"	1	SCW	F2	HM		
029A	KENNEL	D3	3'-0"	7'-0"	9	HM	F1	HM		
029B	KENNEL	D2	3'-0"	7'-0"	21 ALT	HM	F1	HM		ALT. NO.3 ONLY
030A	STORAGE	D1	3'-0"	7'-0"	1	SCW	F1	HM	60 MIN.	
031A	MECH.	D1	3'-0"	7'-0"	1	SCW	F1	HM	60 MIN.	
034A	RESOURCE ROOM	D3	3'-0"	7'-0"	2 ALT	SCW	F1	HM		ALT. NO.1 ONLY



FRAME TYPES

SCALE: NTS



DOOR TYPES

SCALE: NTS

GENERAL NOTES

A. PROVIDE WINDOW SHADES ON ALL GLAZED EXTERIOR STOREFRONT FRAMES EXCEPT AT TYPES F11 & F12. SEE SPEC. SECTION 12 24 00.

B. PROVIDE ROUGH-IN FOR ACCESS CONTROL DEVICES TO BE PROVIDED & INSTALLED ON ALL EXTERIOR DOORS UNDER SEPARATE CONTRACT.

DRAWING PROVIDED FOR REFERENCE ONLY.

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Rev	Description	By	Date
0	ISSUED FOR BID	PJW	02/01/2022

Drawing Description

PIERPONT COMMUNITY & TECHNICAL COLLEGE
501 W MAIN ST. CLARKSBURG, WV
PIERPONT VET TECH RELOCATION
ROOM, WINDOW & DOOR SCHEDULES

STATE OF WEST VIRGINIA
PAMELA JO WEAN
NO. 3331
REGISTERED ARCHITECT

Project:	2201011
Designed By:	JGH
Drawn By:	JGH
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Scale:	As indicated
Plot Date:	02/01/2022
Revision:	0
Drawing Number:	A600

1	EA	MOP PLATE	8400 4 X 1 LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	□ER

HARDWARE GROUP NO. 13

FOR USE ON DOOR (S):

005A

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 (NRP AS REQUIRED)	652	IVE
1	EA	PRIVACY LOCK	L9040 17A L583-363 L283-722	626	SCH
1	EA	SURFACE CLOSER	4050A REG OR PA AS REQ	689	LCN
1	EA	KICK PLATE	8400 10 X 2 LDW B-CS	630	IVE
1	EA	MOP PLATE	8400 4 X 1 LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	□ER

HARDWARE GROUP NO. 14

FOR USE ON DOOR (S):

004A

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	SET	HEAVY DUTY POCKET DOOR KIT	9850-96	AL	HAG
1	EA	DOOR EDGE PULL	230	626	IVE
2	EA	FLUSH PULL	955	626	IVE

HARDWARE GROUP NO. 15

FOR USE ON DOOR (S):

004B

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	SET	HEAVY DUTY POCKET DOOR KIT	9850-96	AL	HAG
1	EA	DOOR EDGE PULL	230	626	IVE
2	EA	FLUSH PULL	955	626	IVE
1	EA	VIEWER	U698 W/ COVER	626	IVE

HARDWARE GROUP NO. 16

FOR USE ON DOOR (S):

001A 018A

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	LX-RX-QEL-99-NL-OP-110MD 24 VDC	626	VON
1	EA	INTERFACE	B7 AS REQUIRED		VON

		BOX			
1	EA	RIM CYLINDER	AS REQUIRED MATCH EXISTING KEY SYSTEM	626	C-R
1	EA	90 DEG OFFSET PULL	8190E□HD 12 O	630-316	IVE
1	EA	SURFACE CLOSER	4050A SCUSH SRI	689	LCN
1	EA	KICK PLATE	8400 10 X 2 LDW B-CS	630	IVE
1	EA	RAIN DRIP	142AA	AA	□ER
1	EA	GASKETING	429AA-S	AA	□ER
1	EA	DOOR SWEEP	8198AA	AA	□ER
1	EA	THRESHOLD	65A-223	A	□ER
1	EA	CONTROLLER	CARD READER BY OTHERS	B	SCE
1	EA	DOOR CONTACT	679-05WD/HM AS REQUIRED	BLK	SCE
1	EA	POWER SUPPLY	PS902 900-2RS COORDINATE POWER SUPPLY REQUIREMENT WITH SECURITY PROVIDER	LGR	VON
1			PROVIDE FACTORY POINT TO POINT WIRING DIAGRAMS		
1			PROVIDE RISER DIAGRAMS		

OPERATION: DOOR NORMALLY CLOSED AND LOCKED. PRESENTING VALID CREDENTIAL TO READER MOMENTARILY RETRACTS PANIC DEVICE LATCH. PANIC DEVICE LATCHES ALSO CAPABLE OF BEING ELECTRONICALLY DOGGED DOWN (I.E. PUSH/PULL MODE) AS DESIGNATED BY ACCESS CONTROL SYSTEM SCHEDULE. EXIT DEVICES LATCH AND LOCK WITH ACTIVATION OF SECURITY SYSTEM. FREE EGRESS AT ALL TIMES. DURING FIRE EVENT OR POWER OUTAGE DOOR IS SECURE.

HARDWARE GROUP NO. 17

FOR USE ON DOOR (S):

012B					

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	LX-RX-QEL-99-NL-OP-110MD 24 VDC	626	VON
1	EA	INTERFACE BOX	B7 AS REQUIRED		VON
1	EA	RIM CYLINDER	AS REQUIRED MATCH EXISTING KEY SYSTEM	626	C-R
1	EA	90 DEG OFFSET PULL	8190E□HD 12 O	630-316	IVE
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4050A EDA SRI	689	LCN
1	EA	MOUNTING PLATES	BRACKETS AS REQUIRED	689	LCN
1	EA	WEATHERSTRIP	INTEGRAL WEATHERSTRIP BY DOOR/FRAME MFGR.		B/O
1	EA	DOOR SWEEP	8198AA	AA	□ER

1	EA	THRESHOLD	65A-223	A	□ER
1	EA	CONTROLLER	CARD READER BY OTHERS	B	SCE
1	EA	DOOR CONTACT	7764	628	SCE
1	EA	POWER SUPPLY	PS902 900-2RS COORDINATE POWER SUPPLY REQUIREMENT WITH SECURITY PROVIDER	LGR	VON
1			PROVIDE FACTORY POINT TO POINT WIRING DIAGRAMS		
1			PROVIDE RISER DIAGRAMS		

OPERATION: DOOR NORMALLY CLOSED AND LOCKED. PRESENTING VALID CREDENTIAL TO READER MOMENTARILY RETRACTS PANIC DEVICE LATCH. PANIC DEVICE LATCHES ALSO CAPABLE OF BEING ELECTRONICALLY DOGGED DOWN (I.E. PUSH/PULL MODE) AS DESIGNATED BY ACCESS CONTROL SYSTEM SCHEDULE. EXIT DEVICES LATCH AND LOCK WITH ACTIVATION OF SECURITY SYSTEM. FREE EGRESS AT ALL TIMES. DURING FIRE EVENT OR POWER OUTAGE DOOR IS SECURE.

HARDWARE GROUP NO. 18-ALT

FOR USE ON DOOR (S):

013A

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY EPT	628	IVE
2	EA	POWER TRANSFER	EPT10	689	VON
1	EA	REMOVABLE MULLION	KR4954 STAB	689	VON
1	EA	ELEC PANIC HARDWARE	LD-LX-RX-99-EO	626	VON
1	EA	ELEC PANIC HARDWARE	LD-LX-RX-99-L-E996-17-FSE 24 VDC	626	VON
1	EA	INTERFACE BOX	B7 AS REQUIRED		VON
1	EA	RIM CYLINDER	AS REQUIRED MATCH EXISTING KEY SYSTEM	626	C-R
1	EA	MORTISE CYLINDER	AS REQUIRED MATCH EXISTING KEY SYSTEM	626	C-R
2	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	4050A EDA SRI	689	LCN
2	EA	MOUNTING PLATES	BRACKETS AS REQUIRED	689	LCN
1	EA	WEATHERSTRIP	INTEGRAL WEATHERSTRIP BY DOOR/FRAME MFGR.		B/O
2	EA	DOOR SWEEP	8198AA	AA	□ER
1	EA	THRESHOLD	65A-223	A	□ER
1	EA	CONTROLLER	CARD READER BY OTHERS	B	SCE
2	EA	DOOR CONTACT	7764	628	SCE
1	EA	POWER SUPPLY	PS902 900-2RS COORDINATE POWER SUPPLY REQUIREMENT WITH SECURITY PROVIDER	LGR	VON
1			PROVIDE FACTORY POINT TO POINT WIRING		

			DIAGRAMS		
1			PROVIDE RISER DIAGRAMS		

OPERATION: DOORS CLOSED AND SECURED. VALID CREDENTIAL ALLOWS ENTRY. FREE EGRESS AT ALL TIMES. DURING FIRE EVENT OR POWER OUTAGE DOORS ARE SECURE.

HARDWARE GROUP NO. 19

FOR USE ON DOOR (S):

012A					

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 (NRP AS REQUIRED)	652	IVE
1	EA	FIRE EXIT HARDWARE	99-L-F-17	626	VON
1	EA	RIM CYLINDER	AS REQUIRED MATCH EXISTING KEY SYSTEM	626	C-R
1	EA	SURFACE CLOSER	4050A EDA	689	LCN
1	EA	KICK PLATE	8400 10 X 2 LDW B-CS	630	IVE
1	EA	MOP PLATE	8400 4 X 1 LDW B-CS	630	IVE
1	EA	FIRE/LIFE WALL MAG	SEM7800 SERIES AS REQ D	689	LCN
1	EA	GASKETING	488SBK PSA	BK	□ER

OPERATION: DOORS NORMALLY HELD OPEN. IN-CASE OF FIRE EVENT DOORS CLOSE AND LATCH. MUST BE TIED INTO FIRE ALARM.

HARDWARE GROUP NO. 20

FOR USE ON DOOR (S):

009A					

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 (NRP AS REQUIRED)	652	IVE
1	EA	PUSH/PULL LATCH	HL6 9070 2 3/4 B A	626	SCH
1	EA	MORTISE CYLINDER	AS REQUIRED MATCH EXISTING KEY SYSTEM	626	C-R
1	EA	SURFACE CLOSER	4050A REG OR PA AS REQ	689	LCN
1	EA	MOP PLATE	8400 4 X 1 LDW B-CS	630	IVE
1	EA	ARMOR PLATE	8402 34 X 2 LDW B-CS	630	IVE
1	EA	WALL STOP/HOLDER	WS45	626	IVE
1	EA	GASKETING	488SBK PSA	BK	□ER

HARDWARE GROUP NO. 21-ALT

FOR USE ON DOOR (S):

029B					

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 (NRP AS REQUIRED)	652	IVE
1	EA	PUSH/PULL LATCH	HL6 9070 2 3/4 B A	626	SCH

APPENDIX D
SCHEDULE OF VALUES
FOR REFERENCE ONLY

APPENDIX D:

THE SCHEDULE OF VALUES INCLUDED IN APPENDIX D LISTS ITEMS PROVIDED IN THE PIERPONT COMMUNITY & TECHNICAL COLLEGE ADVANCED TECHNOLOGY CENTER (ATC) IN FAIRMONT, WV. THE LIST IS PROVIDED FOR REFERENCE ONLY AND IS NOT GUARANTEED TO BE ACCURATE. ACTUAL CONDITIONS SHALL BE CONFIRMED BY THE SECUIRTY SYSTEM CONTRACTOR.

PROVIDED FOR REFERENCE ONLY

SCHEDULE OF VALUES

Scope: Base Contract

Project: CTCS of WV-Pierpont CTC - North Central Advanced Technology Center

Contractor:

Manuf.	Part No.	DESCRIPTION	UM	QTY.	Labor	Material	SCHEDULED VALUE
S2	S2-EXT-16-WM	Netbox Extreme Controller	PC	1	$ -	$ -	$ -
S2	S2-IDC-16	Identity Management	PC	1	$ -	$ -	$ -
S2	S2-RMK	Rack Mount Kit	PC	1	$ -	$ -	$ -
Ultratech	IM-1270	S2 Battery	PC	1	$ -	$ -	$ -
S2	S2-NN-E2R-WM	S2 Network Node 2 Reader Wall Mount	PC	3	$ -	$ -	$ -
S2	S2-NN-E4R-WM	S2 Network Node 4 Reader Wall Mount	PC	1	$ -	$ -	$ -
S2	S2-RLI-AL	Remote Lock integration	PC	14	$ -	$ -	$ -
Ultratech	IM-1270	S2 Battery	PC	4	$ -	$ -	$ -
Secruritron	BPS-24-2	24V Power Supply - 2 amp output - 4 ports	PC	4	$ -	$ -	$ -
Ultratech	IM-1270	S2 Battery	PC	8	$ -	$ -	$ -
HID	6145CGN0000	Mullion Multiclass Reader	PC	1	$ -	$ -	$ -
HID	6125CGN0000	Single Gang Multiclass Reader	PC	7	$ -	$ -	$ -
HID	2001PGGMN	ICLASS 16/2K Cards	PC	200	$ -	$ -	$ -
GE	1078-CN	Recessed Door Contacts	PC	28	$ -	$ -	$ -
GE	2505A	Gargae Door Contact	PC	3	$ -	$ -	$ -
GE	1138T-N	Surface Mount Door Contact	PC	1	$ -	$ -	$ -
GE	3050	Panic Button	PC	4	$ -	$ -	$ -
W Box	1GANGDRSR	Local Door Alarm	PC	5	$ -	$ -	$ -
Fargo	CR-80	Fargo Ultra Card Blank White PVC	PC	1	$ -	$ -	$ -
Fargo	DTC4250e	ID Card Printer/ Encoder	PC	1	$ -	$ -	$ -
Fargo	FX-86177	Cleaning Kit	PC	1	$ -	$ -	$ -
Fargo	FX-45210	Full Color Ribbon	PC	1	$ -	$ -	$ -
Logitech	C920	HD Pro WebCam	PC	1	$ -	$ -	$ -
Logitech	8" Mini Tripod	Polaroid 8" Heavy Duty Mini Tripod	PC	1	$ -	$ -	$ -
Endital	Rack Mt PC	Rack Mount PC	PC	1	$ -	$ -	$ -
Endital	Badging PC	Badging PC	PC	1	$ -	$ -	$ -
S2	S2-INP	Supervised Input Blade	PC	4	$ -	$ -	$ -
Leviton	62460-10	CAT6 - 10" Patch Cord - Orange	PC	5	$ -	$ -	$ -
West Penn	AC2518228	Access Control Composite Cable	FT	6000	$ -	$ -	$ -
West Penn	25221B	22-2C STR 1000' Reel Plenum	FT	2000	$ -	$ -	$ -
S2	S2-VMS-B-EX	ExacqVision VMS Software Intergration	PC	1	$ -	$ -	$ -
S2	S2-VMS-C-EX	ExacqVision VMS Intergration	PC	19	$ -	$ -	$ -
Exacq	IP04-10T-R4A	IP-4UNVR - 10TB (Comes with 4 licenses)	PC	1	$ -	$ -	$ -
Exacq	5000-40110	Redundant Power Supply	PC	1	$ -	$ -	$ -
Exacq	5000-40341	Raid5 Option	PC	1	$ -	$ -	$ -
Exacq	5000-20060	26" Rackmount	PC	1	$ -	$ -	$ -

Exacq	EVIP01	Exacq IP Licnese	PC	15	$ -	$ -	$ -
Tripplite	SMART2200RM2U	2200VA/1600W RACKMOUNT UPS	PC	1	$ -	$ -	$ -
Axis	M3005-V	Ultra-Compact, Indoor Fixed Mini Dome Camera, Vandal-resistant	PC	7	$ -	$ -	$ -
Axis	**M3024-LVE**	**Outdoor-ready, day/night HDTV fixed dome with IR illumination - 1.3mp**	PC	1	$ -	$ -	$ -
Axis	**P3215-VE**	**Day/night fixed dome with an IK10 vandal-resistant outdoor casing. Vari-**	PC	5	$ -	$ -	$ -
Axis	**P3214-VE**	**Outdoor P32 Network Cameras, HDTV 720p/1080p video quality**	PC	6	$ -	$ -	$ -
Axis	**M3004-V**	**Ultra-Compact Indoor Fixed Mini Dome Camera, Vandal-resistant**	PC	7	$ -	$ -	$ -
Axis	**M3025-VE**	**Compact, Day/Night Fixed Minidome, Vandal-resistant, Outdoor-ready.**	PC	1	$ -	$ -	$ -
Axis	**T91E61**	**Wall Mount**	PC	7	$ -	$ -	$ -
Axis	**T94F02D**	**Outdoor Pendant Kit**	PC	2	$ -	$ -	$ -
Axis	**T94T01D**	**Outdoor Pendant Kit**	PC	5	$ -	$ -	$ -
ATEN	**CL1000M**	**17" Rackmount LCD Console Support USB and PS2**	PC	1	$ -	$ -	$ -
Endital	**AMS/VMS Wortsta**	**VMS Workstation**	PC	1	$ -	$ -	$ -
ViewZ	VZ24LED-E	24" LED Widescreen HD Monitor	PC	2	$ -	$ -	$ -
Tripplite	SMART500RT1U	500KVA LINEINTERACTIVE UPS	PC	1	$ -	$ -	$ -
Middle Atlantic	DTRK1018	Security Equipment Cabinet Vented Door	PC	1	$ -	$ -	$ -
Middle Atlantic	DTVFD-10	Security Equipment Cabinet Vented Door	PC	1	$ -	$ -	$ -
Berk Tek	**10032092**	**CAT6 Plenum Cable**	FT	7000	$ -	$ -	$ -
Leviton	**62460-03**	**3" Patch Cords CAT6 - Green**	PC	23	$ -	$ -	$ -
Leviton	**62460-07**	**7" Patch Cords CAT6 - Green**	PC	23	$ -	$ -	$ -
Leviton	**41089-1WP**	**One port biscuit jack**	PC	23	$ -	$ -	$ -
Leviton	**61110-RL6**	**Quickport RJ45 CAT6 Jacks**	PC	23	$ -	$ -	$ -
Leviton	**69586-U48**	**CAT6 48 Port Patch Panel**	PC	4	$ -	$ -	$ -
Stentofon Turbine	**1008111030**	**TCIS-3, Turbine Compact IP Standard-3 and Back Box**	PC	4	$ -	$ -	$ -
		Total			$ -	$ -	$ -

EXHIBITS

EXHIBIT A – Instructions to Bidders

EXHIBIT B – Terms and Conditions

EXHIBIT C – Purchasing Affidavit (No-Debt Affidavit)

EXHIBIT D – Drug Free Workplace Conformance Affidavit

INSTRUCTIONS TO BIDDERS

(Purchases greater than $25,000)

West Virginia Community and Technical College System ("WVCTCS")

1. BIDDER'S REPRESENTATIONS: The bidder, by making a bid, represents that: (a) the bidder has read and understands the bidding documents, terms and conditions, and the bid is made in accordance therewith; and (b) the bid is based upon the materials, equipment, systems, printing and/or services specified.

2. QUALITY STANDARDS: Brand names, when identified, include the standard of quality, performance or use desired. Unless otherwise noted, bids by bidders on equivalents may be considered, provided the bidder furnishes descriptive literature and other proof required by the Institution. Samples, when required, must be furnished free of charge, including freight. In the event the Institution elects to contract for a brand purported to be an equivalent by the bidder, the acceptance of the item will be conditioned on the Institution's inspection and testing after receipt. If, in the sole judgment of WVCTCS, the item is determined not to be equivalent, the item will be returned at the Seller's expense and the contract terminated.

3. SUBMISSION OF BIDS: The bid, the bid security, if any, and other documents required to be submitted with the bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the bids and shall be identified as a "Sealed Bid," and shall include the bid number, the bid opening time, and the bid opening date. Bids shall be delivered and deposited at the designated location prior to the time and date for receipt of bids. Bids received after the time and date for the bid opening will be returned unopened. The bidder shall assume full responsibility for timely delivery at the location designated for receipt of bids. Oral, telephonic, facsimile or telegraphic bids are invalid and will not receive consideration.

4. MODIFICATION OR WITHDRAWAL OF BIDS: Prior to the time and date designated for receipt of bids, a bid submitted may be modified or withdrawn by notice to the party receiving bids at the place designated for receipt of bids. Such notice shall be in writing over the signature of the bidder and shall be received prior to the designated time and date for receipt of bids. A modification shall be worded so as not to reveal the amount of the original bid. A withdrawal may be made by facsimile or electronic transmission. A modification may also be made by facsimile or electronic transmission if the final bid result is not revealed prior to the bid opening.

5. OPENING OF BIDS: Bids shall be publicly opened and read aloud at the designated location for receipt of bids shortly after the time and date bids are due.

6. REJECTION OF BIDS: WVCTCS shall have the right to reject any and all bids, in whole or part; to reject a bid not accompanied by a required bid security or other data required by the bidding documents; or reject a bid which is in any way incomplete or irregular.

7. ACCEPTANCE OF BID (AWARD): It is the intent of WVCTCS to award a contract/purchase order to the lowest responsible and responsive bidder provided the bid does not exceed the funds available. WVCTCS shall have the right to waive informalities or irregularities in a bid received and to accept the bid, which in WVCTCS' judgment, is in WVCTCS' own best interests. All bids are governed by West Virginia Code and the Procedural Rules of WVCTCS.

8. VENDOR REGISTRATION: Prior to award for purchases exceeding $15,000, the apparent successful bidder must be properly registered with the W. Va. Department of Administration, Purchasing Division, and have paid the required vendor registration fee.

9. FISCAL YEAR FUNDING: All services performed or goods delivered under State Purchase Orders/Contracts are to be continued for the term of the Purchase Order/Contract, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30. If that occurs, the state may notify the vendor that an alternative source of funding has been obtained and thereby avoid the automatic termination. Non-appropriation or non-funding shall not be considered an event of default.

10. GOVERNING LAW: This contract/purchase order shall be governed by the laws of the State of West Virginia.

11. PAYMENTS AND INTEREST ON LATE PAYMENTS: Payment may only be made after the delivery and acceptance of goods or services. Interest may be paid for late payment in accordance with the West Virginia Code.

12. RESIDENT VENDOR PREFERENCE: A resident vendor preference will be granted upon written request in accordance with the West Virginia Code.

13. TAX EXEMPTION: The State of West Virginia, including WVCTCS, is exempt from federal and state taxes and will not pay or reimburse such taxes.

TERMS AND CONDITIONS

1. ACCEPTANCE: Vendor shall be bound by this Order and its terms and conditions upon receipt of this Order. This Order expressly limits acceptance to the terms and conditions stated herein. Additional or different terms proposed by the Vendor are objected to and are hereby rejected, unless otherwise provided for in writing by the Institution and approved by the WV Attorney General.

2. APPLICABLE LAW: The laws of the State of West Virginia and the Procedural Rules of the WV Community and Technical College System ("WVCTCS") shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.

3. ASSIGNMENT: Neither this Order nor any monies due, or to become due hereunder, may be assigned by the Vendor without the Institution's consent.

4. INSTITUTION: For the purposes of these Terms and Conditions, "Institution" means a state institution of higher education, the WV Higher Education Policy Commission, and the WV Council for Community and Technical College Education, each as define in W. Va. Code.

5. CANCELLATION: The Institution may cancel any Purchase Order/Contract upon 30 days written notice to the Vendor.

6. COMPLIANCE: Vendor shall comply with all federal, state and local laws, regulations and ordinances including, but not limited to, the prevailing wage rates of the W. Va. Division of Labor, if applicable.

7. DELIVERY: For exceptions to the delivery date as specified in the Order, the Vendor shall give prior notification and obtain the approval of the Institution. Time is of the essence of this Order and it is subject to termination by the Institution, and to liquidated damages if they are identified in the bidding documents for failure to deliver on time.

8. DISPUTES: Disputes by the Vendor arising out of the Contract/Purchase Order that cannot be settled by the parties shall be submitted to the West Virginia Claims Commission. Language binding the Institution to any arbitration or decision of any arbitration board, commission, panel, or other entity is void and of no effect.

9. HOLD HARMLESS: The Institution will not agree to hold the Vendor or any other party harmless because such agreement is not consistent with state law.

10. MODIFICATIONS: This writing is the parties' final expression of intent. No modification of this Order shall be binding unless agreed to in writing by the Institution.

11. NON-FUNDING: All services performed, or goods delivered under this Purchase Order/Contract are to be continued for the term of the Purchase Order/Contract, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30.

12. ORDER NUMBERS: Contract Order numbers or Purchase Order numbers shall be clearly shown on all acknowledgments, shipping labels, packing slips, invoices, and correspondence.

13. PAYMENTS AND INTEREST ON LATE PAYMENTS: Payments may only be made after the delivery of goods or services. Interest may be paid on late payments in accordance with the West Virginia Code.

14. RENEWAL: The Contract may be renewed only upon mutual written agreement of the parties.

15. REJECTION: All goods or materials purchased herein are subject to approval of the Institution. Any rejection of goods or materials resulting in nonconformity to the terms, conditions, or specifications of this Order, whether held by the Institution or returned to the Vendor, will be at the Vendor's risk and expense.

16. VENDOR: For the purposes of these Terms and Conditions, the "Vendor" means the vendor whose quotation, bid, proposal or expression of interest has been accepted and has received a lawfully issued Purchase Order from the Institution.

17. SHIPPING, PACKING, BILLING & PRICING: Unless otherwise stated, all goods are to be shipped prepaid, FOB destination. No charges will be allowed for special handling, packing, wrapping, bags, containers, etc., unless otherwise specified. All goods or services shall be shipped on or before the date specified in this Order. Prices are those that are stated in this Order. No price increase will be accepted without written authority from the Institution.

18. TAXES: The State of West Virginia (the Institution) is exempt from Federal and State taxes and will not pay or reimburse such taxes.

19. TERMINATION: In the event of a breach by the Vendor of any of the provisions of this Contract/Purchase Order, the Institution reserves the right to cancel and terminate this contract forthwith upon giving written notice to the Vendor. The Vendor shall be liable for damages suffered by the Institution resulting from the Vendor's breach of contract.

20. WARRANTY: The Vendor expressly warrants that the goods and/or services covered by this Order will: (a) conform to the specifications, drawings, samples or other description furnished or specified by the Institution; (b) be merchantable and fit for the purpose intended; (c) be free and clear of all liens, claims and encumbrances of any kind; and/or (d) be free from defect in material and workmanship.

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (*W. Va. Code* §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: _____

Authorized Signature: _____ Date: _____

State of _____

County of _____, to-wit:

Taken, subscribed, and sworn to before me this ___ day of _____, 20___.

My Commission expires _____, 20___.

AFFIX SEAL HERE **NOTARY PUBLIC** _____

Purchasing Affidavit *(Revised 01/19/2018)*

EXHIBIT D

State of West Virginia
DRUG FREE WORKPLACE CONFORMANCE AFFIDAVIT
***West Virginia Code* §21-1D-5**

I, _____, after being first duly sworn, depose and state as follows:

1. I am an employee of _____; and,
(Company Name)

2. I do hereby attest that _____
(Company Name)

maintains a written plan for a drug-free workplace policy and that such plan and policy are in compliance with ***West Virginia Code*** §21-1D.

The above statements are sworn to under the penalty of perjury.

Printed Name: _____

Signature: _____

Title: _____

Company Name:_____

Date: _____

STATE OF WEST VIRGINIA,

COUNTY OF _____, TO-WIT:

Taken, subscribed and sworn to before me this _____day of _____, _____.

By Commission expires _____

(Seal)

_____
(Notary Public)

Rev. July 7, 2017