SECTION 281300 - ACCESS CONTROL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
B. Related Requirements:
C. Section 087100 “Door Hardware”
D. Section 260501 “General Electrical Requirements”
E. Section 260526 “Grounding and Bonding for Electrical Systems”
F. Section 260533 “Raceways and Boxes for Electrical Systems”
G. Section 260553 “Identification for Electrical Systems”
H. Division 27 “Communications”
I. Section 280000 “Security Design Criteria”
J. Section 280500 “Common Work Results for Security Systems”

1.2 SUMMARY

A. Section includes:
   1. Card reader.
   2. Biometric Reader
   3. Door control device.
   4. Fire/access power management system.
   5. Power supply.
   6. Interface to campus security system.
   7. Required cabling from door frame to interface to campus security system.
B. Related Requirements:
   Refer to Door Schedule and Drawings for location of doors requiring card readers.
C. Products Installed but Not Supplied Under This Section
   1. Card Reader
   2. Biometric Reader

1.3 REGULATORY REFERENCES

NORTHWESTERN UNIVERSITY
PROJECT NAME _____ FOR: _____
JOB # _____ ISSUED:

NORTHWESTERN UNIVERSITY

2. Record Documentation shall consist of As-built Drawings and Operation and Maintenance Manuals.
3. Provide a letter of transmittal with Record Documentation ide

b. Explanations of subsystem interrelationships. Explanations shall include operations of each subsystem and operations unique to interfaces between each of subsystems and possible conflicts that may occur with interfaces. Each explanation shall be identified, tagged, bound and indexed into a single binder.

c. Electrical schematics for each piece of equipment specified.

d. Power-up and power-down procedures for each subsystem.

e. Description of all diagnostic procedures.

f. A menu tree for each subsystem. Tree shall provide a graphical flow of commands within menu system.

g. Setup procedures for each component of subsystems.

h. A list of manufacturers' local representatives and subcontractors that have performed Work on Project. List shall include contact names; phone numbers and addresses for each.

i. Installation and service manuals for each piece of equipment.

j. Maintenance schedules for all installed components. Schedules shall include inspections and preventative maintenance schedules, and documentation of all repaired or replaced equipment.

1.8 QUALITY ASSURANCE

A. General:

1. Cable and Equipment Manufacturer(s) shall be company specializing in ACS equipment, cable, accessories and/or equipment with minimum of 5 years documented experience in producing products similar to those specified herein.

B. Contractor Qualifications

1. Work specified herein shall be responsibility of a single electronic security systems integration Contractor.

2. Contractor/ or sub-contractor shall be a Millennium certified installer, and document a minimum of five years' experience in Millennium Access fabrication, assembly and installation of systems of similar complexity as specified herein.

a. Documentation shall include names, locations and points of contact for at least three installations of type and complexity specified herein.

b. Contractor shall indicate type of each referenced system and certify that each system has performed satisfactorily in manner intended for a period of not less than 24 months.

3. Contractor shall have local in-house engineering and project management capabilities consistent with requirements of Work.

4. Contractor shall provide a team managed by a full-time project manager who is to be present on site at all times that Work is actively in progress.

5. Team and project manager shall stay the same throughout course of Project unless approved by Owner.

a. Project manager shall be person responsible for preparation of Operation and Maintenance Manuals, training programs and schedules and test protocols, documentation of system testing, maintenance of Record Documentation and coordination and scheduling of all subcontract labor (as applicable and as approved in advance by Engineer).

b. Engineer reserves right to approve Contractor's project manager.

1.10 WARRANTY

A. Contractor shall guarantee all materials, equipment, etc., one (1) year from date of substantial completion of this work. This guarantee shall include all labor, material and travel time.

B. Contractor/Integrator and/or manufacturer of each subsystem must also offer telephone-based Technical Support Capabilities (Live Operator) available 24- hours/7-days per week (“24/7”), and 24-hour turn-around (from receipt of item) for Repair or Replacement of failed co

4. Tripplite UPS: SU1500RTXL2UA

C. Access Controllers
   1. Millennium Enhanced Site Control Unit (ESCU): 149-101992
   2. Millennium Enhanced Door Control Device (EDCD): 149-101966.
   3. Millennium Elevator Control Unit (EC3): EC3-101200
   4. Millennium Elevator Control Device (ECD3): 149-101790

D. Door Position Switches
   1. Provide normally closed concealed door position switches, surface mount magnetic door position switches, and magnetic overhead door position switches to monitor open / closed status of doors as indicated on drawings.
   2. Contractor shall provide wire, and terminate door position switches. Coordinate concealed door position switch installation, wiring, termination, and locations with door and frame supplier.

E. Concealed Door Position Switch
   1. Minimum Specifications
      a. Gap: 3/8” between magnet and switch
      b. Configuration: Normally closed
      c. Mounting: Concealed within door and frame
   2. Acceptable Manufacturers: GE or approved equivalent.

F. Surface-

1) Detection technology: Passive infrared
2) Detection pattern: Narrow beam 35-degree cone
3) Output contact: Normally open contact is closed when sensing zone is entered or exited
4) Power requirements: 12-24 VDC
5) Mounting: Door header

c. Provide the manufacturer recommended power supply. The power supply shall be UL Class 2, power limited.

5. Ceiling Mounted Request to Exit Motion Sensors (where applicable)

a.

a. Security Door Controls (SD) – 400 Series

b. Securitron Door Controls (SU) – PB Series

K. Fire/Access Power Management System:

1. Life Safety Power J7-250NLXEM4

L. Wire and Cable

1. In all cases, wire conductors and all cables utilized for the connection of the various components as specified herein, including those components provided by others, shall comply with or exceed the recommendations of the component manufacturers.

2. It shall be the Contractor's responsibility to perform all engineering calculations required to ensure that the proper cable sizes are provided, such that the specified equipment will perform as shown in the manufacturer's specifications. All engineering calculations shall be provided with the prefabrication submittals. It shall be the Security Contractors responsibility to obtain and verify the power requirement of NIC electrified hardware before carrying out any engineering calculations.

3. All wire and cable provided by the Contractor shall comply with all applicable codes and ordinances.

4. Wire and cable shall be Belden Corporation, Alpha, West Penn or equivalent.

5. Provide the following #12 THHN stranded unless different criteria is required:

a. Red- 12vdc Positive

b. Black- 12vdc Negative

c. Purple- 24vdc Positive

d. Grey- 24vdc Negative

e. Pink- 24vdc Positive Fire Alarm Switched

f. White/Red stripe- 12vdc Positive for Bio-metric readers

g. White/Black stripe- 12vdc Negative for Bio-metric readers

6. Millennium communication: (Different colored jackets required for multiple sites)

a. 1) Belden 8723

b. 2) WCW 4155105

c. 3) Equivalent to be approved by NU Lock Shop

7. Reader cable

a. Belden 8456 (#22/10 conductor for up to 300`)

b. WCW 425700 (#22/12 conductor for up to 300`)

c. Equivalent to be approved by NU Lock Shop

8. Locking Hardware Cabling

a. WCW 425400 (#22/6 conductor for up to 300`) Standard Locking Hardware

b. WCW 425700 (#22/12 conductor for up to 300`) Delayed Egress Locking Hardware

c. Equivalent to be approved by NU Lock Shop

9. Cable Interconnection System: Molex Inc. No substitutions (Male plug attached to device, Female plug attach to cabling)
   a. 4 pin plug system-#43020-0401/#43025-0400 (as per device)
   b. 6 pin plug system-#43020-0601/#43025-0600 (to be used on readers)
   c. 8 pin plug system-#43020-0801/#43025-0800 (as per device)
   d. Male pins-#43031-0007
   e. Female pins-#43030-0007

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Specific mounting locations, exact wire and cable runs, and conduit routing may not have been specified or delineated on Drawings. Coordinate all aspects of Work with the Architect.

3.2 INSTALLATION

A. General:
   1. Installation shall include the delivery, storage, setting in place, fastening to the building structure, interconnection of the system components, alignment, adjustment and all other work whether or not expressly described herein, which is necessary to produce tested and operational systems, as defined in Part 2 - Products.
   2. Installation shall be in accordance with the manufacturer's specifications unless specifically directed otherwise in this specification.
   3. In the installation of equipment and cables, consideration shall be given not only to operational efficiency, but also to overall aesthetic factors.
   4. Equipment fastenings and supports shall be adequate to support their loads with a safety factory of at least three.
   5. The Contractor prior to the initiation of any related work shall promptly bring conflicts between the manufacturer's instructions and the specification to the attention of the Architect.
   6. Maintain minimum three feet of access in front of all DCD enclosures and power supplies.

B. Pre-installation Coordination
   1. Coordinate with Electrical Contractor that adequate conduit is provided and that equipment back boxes are adequate for system installation.

2. Coordinate with Electrical Contractor that adequate power has been provided and properly located for Security System equipment.
3. Coordinate with Door and Door Hardware supplier that doors and door frames are properly prepared for electric locking hardware and door position switches, and locations of all devices prior to installation
4. At a minimum, coordinate following with Owner:
    a. Locations of all LAN-connected devices and bandwidth requirements.
    b. LAN cable requirements at each device.
    c. VLAN/other network partitionin

c. Automatic release of fail-safe locking devices during a building fire alarm condition.

F. Equipment

1. Install Owner provided card and biometric readers.
2. Power Supplies must not exceed 80% draw.
3. Millennium board count must always match reader count, except for ADA or delayed egress operation.
4. Provide and install Door Control Device (DCD) equipment as indicated on Drawings and specified herein. Additional specific installation requirements are as follows:

9. System cabling shall not loop back to the Site Controller Unit.

K. EDIT TO COORDINATE WITH PROJECT REQUIREMENTS. **[120 VAC power dedicated to security and on the generator backup will be provided by Division 26 Contractor for ACS System as indicated on the Drawings.] [Backup Millenium equipment on batteries and/or UPS].**

L. Connect to AC power and provide UL listed power supplies and transformers to distribute low voltage power to system components as required.

M. Labeling
 1. Label all controls as necessary to agree with their function.
 2. Mark all Wire and Cable in common at both ends using a permanent method such as self- laminating cable marking tape.
  a. Tags shall be attached to wire and cable nylon cable ties in an accessible location so that they can easily be read.
  b. Tags shall be installed when wire and cables are installed.
  c. Labeling shall agree with Record Documentation.
  d. Place wire identification numbers at each end of conductor involved by using sleeve type, heat shrinkable markers. Markers shall be installed so as to be readable from left to right or top to bottom.
  e. Mark all connectors with common designations for mating connectors. Connector designations shall be indicated on record drawings.

N. Coil all spare conductors in device back box, panel raceway, or top of panel where raceway is not provided. Conductors shall be neatly bundled and tagged.

O. Fire Alarm Interface
 1. Connect (hard wire) fail-safe electric and time delay locking mechanics to building fire alarm system for fail-safe release upon any fire alarm.
 2. Interface with a single low voltage / low current normally closed dry contact from fire alarm system provided by fire alarm Contractor (verify exact locations). Contact shall open on any fire alarm condition. 34.6
 3. Provide all addition9 275.21(2.)]TJ ET Q0091012 0 612 792 reW*h9.96 Tf1 0 0 1 220.61 275.21 Tm0 g0 G

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units. May be waived by Northwestern Lock Shop.

3.5 SYSTEM ACCEPTANCE

A. Final acceptance testing of Work will be conducted.

B. Prior to any final acceptance testing, Contractor shall submit two sets of preliminary (draft) Record Drawings to Engineer. Preliminary Record Drawings are to be used by Engineer to conduct system final test.

C. Submit a paragraph-by-paragraph completion matrix indicating completion or delinquency for each item included in Specification and all subsequent addenda and bulletins as part of Work. Indicate completion of requirement by word “Completed” following each paragraph number. Indicate delinquency for requirement by words “To Be Completed” following applicable paragraph number. Should work on any item be under way, but not yet fully complete, indicate extent (or lack thereof) of completion to date, and proposed date of completion.

D. Deliver a report describing results of functional tests, burn-in tests, diagnostics, calibrations, corrections, and repairs including written certification to Engineer that installed complete Security System has been calibrated, tested, and is fully functional as specified herein.

E. Upon written notification from Contractor that Security System is completely installed, integrated and operational, and testing is completed, Engineer will conduct a final acceptance test of entire system.

F. During the course of final acceptance test by Engineer, Contractor shall be responsible for demonstrating that without exception, completed and integrated system complies with contract requirements.
    1. All physical and functional requirements of project shall be demonstrated and shown.
        a. Demonstration will begin by comparing “as built” conditions of Security System to requirements outlined in Specification, item by item.
    2. Functionality of various interfaces between systems will be tested.
    3. Installation of all field devices will be inspected by Engineer. This field inspection will weigh heavily on general neatness and quality of installations, complete functionality of each individual device, and mounting, back box and conduit requirements compliance.
    4. All equipment shall be on and fully operational during any and all testing procedures.
        a. Provide all personnel, equipment, and supplies necessary to perform all site testing.
        b. Supply at least two two-way radios for use during test

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