SECTION 28 13 13

~~~ PROJECT NOTE ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
ARCHITECT OF RECORD/ENGINEER OF RECORD IS RESPONSIBLE FOR REVIEWING THIS SPECIFICATION SECTION IN DETAIL FOR COORDINATION WITH THE PROJECT SCOPE OF WORK.
ALL "PROJECT NOTE" TEXT IS TO BE REMOVED FOLLOWING REVIEW OF THE CONTENT OF EACH NOTE BY THE ARCHITECT OF RECORD/ENGINEER OF RECORD.
EDIT THE DOCUMENT FOOTER TO INCLUDE THE PROJECT NAME AND NUMBER.
EDIT THE DOCUMENT HEADER TO INDICATE THE ARCHITECT OF RECORD PROJECT ISSUE" DATE. THE "CPS CONTROL" DATE SHOULD NOT BE EDITED.
ANY MODIFICATIONS TO THE TECHNICAL STANDARDS IN THIS SECTION - INCLUDING THE REMOVAL OR ADDITION OF MANUFACTURERS - MUST BE APPROVED BY CPS.
REQUESTS FOR MODIFICATION ARE TO BE SUBMITTED TO THE DESIGN MANAGER DURING THE DESIGN PHASE FOR REVIEW AND APPROVAL.
~~~ END OF PROJECT NOTE ~~~~~~~~~~~~~~~~~~~~~~~~

ACCESS CONTROL SYSTEM - DOOR ENTRY (SMALL INSTALLATION)

~~~ PROJECT NOTE ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
THIS SECTION SHALL BE USED FOR SYSTEMS INVOLVING TWO (2) DOORS OR LESS.

UTILIZE THE TERM "IDF" ONLY FOR PROJECTS FEATURING A SEPERATE IDF ROOM.
~~~ END OF PROJECT NOTE ~~~~~~~~~~~~~~~~~~~~~~~~

PART 1 GENERAL

1.01 SECTION INCLUDES

    A.   Video intercom and access control system. Access Control System - Door Entry (Small Installation).

        1.   This section shall be used for systems involving two (2) doors or less.

    B.   Accessories.

1.02 DEFINITIONS

    A.   Refer to Section 27 05 03 - Communications General Requirements for definitions.

1.03 REFERENCE STANDARDS

    A.   City of Chicago Building Code - Municipal Code of Chicago for the Building Industry; 2017.

    B.   City of Chicago Electrical Code - National Electrical Code with Chicago Amendments; 2017.

    C.   TIA-569-D - Telecommunications Pathways and Spaces; Rev D, 2015.

    D.   UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

1.04 ADMINISTRATIVE REQUIREMENTS

    A.   Preinstallation Meeting: Conduct a preinstallation meeting at least one week prior to the start of the work of this section; require attendance by all affected installers.

        1.   Ensure required submittals have been provided with sufficient time for review prior to scheduling the preinstallation meeting.

        2.   Review the detailed requirements for the work of this section and to review the drawings and specifications for this work. Require attendance by all affected installers including but not limited to:

            a.   Contractor's Superintendent.

            b.   Installer.

            c.   Manufacturer/Fabricator Representative.

            d.   Other affected Subcontractors.

            e.   Architect/Engineer of Record.

            f.   Board's Representative.

3. Record minutes and distribute copies within five (5) days after meeting to participants as well as Architect/Engineer of Record, Board and those affected by decisions made.

B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

A. 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.

B. Shop Drawings: Indicate locations of system components and proposed size, type, and routing of conduits and/or cables. Include elevations and details of proposed equipment arrangements. Include system interconnection schematic diagrams. Include requirements for interface with other systems.

C. Certificate: Certify that proposed system design and components meet or exceed specified requirements.

D. Manufacturer's 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.

E. Operation Data: Include detailed information on system operation, equipment programming and setup, and replacement/spare parts.

F. Maintenance Data: Include detailed information on recommended maintenance procedures and intervals.

G. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in School's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.07 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 with labels clearly identifying product name and manufacturer, keep dry and protect from damage until ready for installation.

1.08 WARRANTY

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

PART 2 PRODUCTS

2.01 SYSTEM DESIGN

A. Basic System Characteristics:
1. The Video Intercom / Access Control System shall provide an integrated solution for Access Control and Security/Intrusion Detection.
2. This Video Intercom / Access Control System shall provide a true multi-tasking, multi-station platform.

B. System Components / Features:
1. The Contractor shall provide the Video Intercom / Access Control System as specified herein:
   a. Aiphone JF Series Hands-free Color Video Intercom System.
      1) Enhanced Video Intercom System Features:
         (a) Hands-Free mode.
         (b) Open voice (VOX) or Press-to-Talk (PTT) modes of communication.
         (c) Selective remote control (e.g. door release).
         (d) Pre-record entrance messages.

       (e)   Entrance monitoring.
       (f)   Leave a voice memo to replay at inside stations.
       (g)   Room-to-Room communication.
       (h)   Automatic Recording. All monitors turn on when camera station calls in.
       (i)   Manual Recording.
       (j)   Camera station can be monitored from inside.
       (k)   Expandable to three inside and two door stations.

2.02 MANUFACTURERS

A.   Aiphone Corporation, 6670 185th Avenue NE, Redmond, Washington 98052. Toll Free (800) 692-0200. Phone (425) 455-0510. Fax (425) 455-0071. Website www.aiphone.com. E-mail info@aiphone.com.

B.   All products shall be UL Listed.

2.03 VIDEO INTERCOM AND ACCESS CONTROL SYSTEM

A.   Enhanced Hands-Free Color Video Intercom System: Aiphone "JF Series".
    1.   Power Source:
       a.   18 V DC.
       b.   Mo2. Calling: PS-1820UL.
    2.   Calling:
       a.   Chime, image, and audio.
       b.   Approximately 45 seconds.
    3.   Communication:
       a.   Automatic (hands-free): To activate, momentarily press TALK button.
       b.   Manual (press-to-talk/release-to-listen): To activate, press TALK button for 1 second or until talk LED turns on.
    4.   Camera: CCD.
    5.   Video Monitor:
       a.   3.5-inch direct-view TFT color LCD.
       b.   Scanning Lines: 525.
       c.   Minimum Illumination: 5 Lux at 1 foot.
    6.   Night Viewing: Up to 1 foot from camera, with white LED projected, background beyond 1 foot cannot be seen.
    7.   Door Release:
       a.   Contact Rating: N/O 24 V AC/DC, 500 mA.
       b.   Door Release Relay: Model RY-18L for Form C high-current contact (single door).
       c.   RY-3DL Form C high-current contact (2-door).
    8.   Wiring:
       a.   Door to Master Station: 2 conductor.
       b.   Enhanced Master Monitor Station to Sub Monitor Station: 4 conductor.
       c.   Mid capacitance, solid, non-shielded.
    9.   Distance:

~~~ PROJECT NOTE ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
IF DISTANCES ARE EXCEEDED, SPECIFIER SHALL USE SECTION 28 13 15 - ACCESS CONTROL SYSTEM (LARGE INSTALLATION).
~~~ END OF PROJECT NOTE ~~~~~~~~~~~~~~~~~~~~~~~~

       a.   Door to Enhanced Master Station JBW-BA: Long Distance Door Station Adapter.
          1)   16 AWG: 820 feet (utilize if distances are from over 330 feet to under 820 feet).
       b.   Door to Enhanced Master Station:
          1)   22 AWG: 165 feet.
          2)   18 AWG: 330 feet.
       c.   Enhanced Master Station to Farthest Sub Monitor Station:
          1)   22 AWG: 165 feet.

        2)   18 AWG: 330 feet.

*~~~ **PROJECT NOTE** ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~*
IF DISTANCES ARE EXCEEDED, SPECIFIER SHALL USE SECTION 28 13 15 - ACCESS CONTROL
SYSTEM (LARGE INSTALLATION).
*~~~ **END OF PROJECT NOTE** ~~~~~~~~~~~~~~~~~~~~~~~~~*

    10.   Picture Memory:
        a.   Record up to fifty (50) image sequences (1 frame per second, 8 frames per image).
        b.   Save up to ten (10) sequences (80 frames).
    11.   Voice Memo: Record maximum three (3) voice memos (maximum approximately 15 seconds per memo).
    12.   Message for Entrance: Record maximum two (2) messages (maximum approximately 10 seconds per message).

  B.   Door Stations:
    1.   Fixed Video Door Station: Model JF-DV-HID (Surface).
        a.   Proximity Card Reader: Embedded "HID ProxPoint Plus".
        b.   Faceplate: Die-cast zinc.
        c.   Surface mount.
        d.   Microphone.
        e.   Speaker.
        f.   Camera: Color CCD with white illuminator LEDs.
        g.   Call button.
        h.   Vandal resistant.
        i.   Weather resistant.
        j.   Operating Temperature: 14 degrees F to 140 degrees F (minus 10 degrees C to 60 degrees C).
    2.   Fixed Video Door Station: Model JF-DVF-HID (Flush).
        a.   Proximity Card Reader: Embedded "HID ProxPoint Plus".
        b.   Faceplate: Stainless steel.
        c.   Flush mount.
        d.   Microphone.
        e.   Speaker.
        f.   Camera: Color CCD with white illuminator LEDs.
        g.   Call button.
        h.   Vandal resistant.
        i.   Weather resistant.
        j.   Operating Temperature: 14 degrees F to 140 degrees F (minus 10 degrees C to 60 degrees C).
    3.   If conditions require side conduit entry to mounting enclosure, provide SBX-DVF surface mount backbox and provide door station model JF-DVF. Contact CPS ITS Help Desk at (773) 553-3925 for special mounting approval.

  C.   Enhanced Master and Sub Master Stations:
    1.   Master Station: Model JF-2MED.
        a.   Supports:
           1)   Two (2) color video door stations.
           2)   Three (3) additional inside color monitor stations.
        b.   Power: 18 V DC.
        c.   Current Consumption: 520 mA maximum.
        d.   Calling: Chime and image, approximately 45 seconds.
        e.   Communication:
           1)   Hands-Free Mode: Approximately 60 seconds.
           2)   PTT Mode: Press-to-talk, release to listen, approximately 60 seconds.
        f.   Door Release Contact: 24 V AC/DC, 500 mA (N/O dry closure contact L, L).

g.   Picture memory.
h.   Microphone.
i.   Speaker.
j.   Video Monitor:
   1)   3.5-inch direct-view TFT color LCD.
   2)   Scanning Lines: 525.
k.   CALL button with red door call-in LED.
l.   PLAY button with red play LED.
m.   REC button with red record LED.
n.   MENU/MEMO button with red memo LED.
o.   POWER switch.
p.   MONITOR button.
q.   Red transmit LED.
r.   TALK button.
s.   Screen brightness control.
t.   Receive volume control.
u.   Chime tone, alert sound volume.
v.   Call-in Setting Switch:
   1)   Setting 1: Call-in from door station 1 only.
   2)   Setting 2: Call-in from door station 2 only.
   3)   Setting 1 and 2: Call-in from both door stations 1 and 2.
w.   Operating Temperature: 32 degrees F to 104 degrees F (0 degrees C to 40 degrees C).

2.   Sub Master Station: Model JF-2HD.
a.   Power: 18 V DC.
b.   Current Consumption: 230 mA maximum.
c.   Calling: Chime and image, approximately 45 seconds.
d.   Communication:
   1)   Hands-Free Mode: Approximately 60 seconds.
   2)   PTT Mode: Press-to-talk, release to listen, approximately 60 seconds.
e.   Microphone.
f.   Speaker.
g.   Video Monitor:
   1)   3.5-inch direct-view TFT color LCD.
   2)   Scanning Lines: 525.
h.   CALL button with red door call-in LED.
i.   PLAY button with red play LED.
j.   REC button with red record LED.
k.   MENU button with red memo LED.
l.   POWER switch.
m.   MONITOR button.
n.   Red transmit LED.
o.   TALK button.
p.   Screen brightness control.
q.   Receive volume control.
r.   Chime tone, alert sound volume.
s.   Call-in Setting Switch:
   1)   Setting 1: Call-in from door station 1 only.
   2)   Setting 2: Call-in from door station 2 only.
   3)   Setting 1 and 2: Call-in from both door stations 1 and 2.
t.   Operating Temperature: 32 degrees F to 104 degrees F (0 degrees C to 40 degrees C).

2.04 ACCESSORIES

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

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

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

D. Video intercom and access control system (Aiphone JF Series) accessories:
   1. 1-Gang Mounting Plate: Model MKW-P.
      a. For fixed video door station Model JF-DV.
   2. Security Lock Box: Model SBX-LSE.
      a. One lock box per door station.
      b. Lock not included.
   3. Surface Mount Box: Model SBX-DVF.
      a. For fixed video door station Model JF-DVF.
   4. Long-Distance Door Station Adaptor: Model JBW-BA.
   5. Selective Door Release Adaptor: Model RY-3DL.
      a. For two (2) doors.
   6. Form C Door Release Relay: Model RY-18L.
      a. For one (1) door.
   7. Monitor Desk Stand - Model MCW-S/A
   8. CCTV Camera Interface Module: Model JBW-M.
      a. To use this accessory, approval from the CPS Office of Safety & Security at (773) 553-3335 must be obtained.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify that mounting surfaces are ready to receive system components. Verify that conditions are satisfactory for installation prior to starting work.

B. Notify Architect/Engineer of Record of conditions that would adversely affect installation or subsequent use.

C. Proceed only after unsatisfactory conditions have been corrected. Commencement of work in this section will be an indication of the acceptance of substrate conditions and the Contractor will be held responsible for the satisfactory execution and results of the finished work.

3.02 WIRING METHODS AND INSTALLATION OF PATHWAYS

A. Wiring Method: Install cables in dedicated raceways for Security and Communication Door Entry System cabling. Conceal raceway except in unfinished spaces.
   1. Comply with requirements for raceways and boxes and their installation specified in Sections 26 05 33.13 - Conduit for Electrical Systems, 26 05 33.16 - Boxes for Electrical Systems, and 26 05 33.23 - Surface Raceways for Electrical Systems.
   2. Comply with TIA-569-D for pull-box sizing and length of conduit and number of bends between pull points.
   3. Utilize wide radius bends and elbows.
   4. Provide all wiring in conduit, minimum ¾ inch.

B. Conduit shall not be exterior mounted on outside of building to door station. Exception: Approval from CPS Information Technology Services (ITS) Help Desk at (773) 553-3925.

C. Wiring within Enclosures: Bundle, lace, and train cables to terminal points without exceeding manufacturer's limitations on bending radii. Provide service loop per requirements of this Section. Provide and use lacing bars and distribution spools.

D. Wiring within MDF **[and IDFs]**: Bundle, lace, and train cables to terminal points without exceeding   manufacturer's limitations on bending radii. Provide service loop per requirements of this Section. Utilize overhead ladder rack runway for cable routing within room(s).

      1. Coordinate with Division 27 contractor on installation of floor-mounted rack for security system equipment. Coordinate location adjacent to structured cabling floor-mounted racks.

      2. CEU shall be located in the MDF **[IDF]** room, top of security rack, 2U.

          a. Comply with requirements for ladder rack runway, cabinets, and racks specified in Section 27 11 16 - Communications Cabinets, Racks, and Enclosures. Drawings indicate general arrangement of pathways and fittings.

E. Comply with requirements for ladder rack runway, cabinets, and racks specified in Section 27 11 16 - Communications Cabinets, Racks, and Enclosures. Drawings indicate general arrangement of pathways and fittings.

F. Power Supply shall be within 33 feet of the master station.

G. Master station power supply wiring shall be in metal raceway.

3.03 INSTALLATION

A. Install all equipment and components in accordance with manufacturer's written instructions, in compliance with City of Chicago Building Code, City of Chicago Electrical Code, and with recognized industry practices, to ensure that all items comply with specifications and service intended purposes.

B. Record serial numbers of all items furnished that are serialized. Serial numbers to be included in warranty manual.

C. All items must be complete as specified prior to final acceptance. It will be the responsibility of the Contractor to ensure all cabling meets all specifications and standards defined herein.

D. Pulling Cable: Do not exceed manufacturer's recommended pulling tensions. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between indicated termination, tap, or junction points. Remove and discard cable where damaged during installation and replace it with new cable.

E. Terminations: Terminate UTP cables in MDF room at patch panels.

F. Labeling

      1. Identify system components, wiring, cabling, and terminals according to Section 26 05 53 - Identification for Electrical Systems.

      2. System: Use a unique 3-syllable alphanumeric designation for each cable, and label the cable and the jacks, connectors, and terminals to which it connects with the same designations. Use logical and systematic designations related to the architectural arrangements of the facility.

          a. First syllable is to identify and locate the wiring closet or equipment room where the cable originates.

          b. Second syllable is to identify and locate the cross-connect or patch panel field in which the cable terminates.

          c. Third syllable is to designate the type of medial (copper or fiber) and the position occupied by the cable pairs or fibers in the field.

      3. Outlets: Label cables within entry outlet boxes.

      4. Distribution Racks and Frames: Label each unit and field within that unit.

      5. Within Connectors Fields, in MDF Room: Label each connector and each discrete unit of cable-terminating and connecting hardware.

      6. Cables, Generally: Label each cable within 4 inches of each termination and tap, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.

G. Cable Schedule: Post at a prominent location in each wiring closet and equipment room. List incoming and outgoing cables and their designations, origins, and destinations. Provide a diskette copy of final comprehensive schedules for the project in the software and format selected by the Owner.

H. Install integrated security and communication system in accordance with manufacturer's instructions at locations indicated on the Drawings.

     I.   Mount equipment plumb, level, square, and secure.

    J.   Unless otherwise indicated, use CAT-5e Cable.

        1.   CAT-5e Cables:

            a.   Run cables from and homerun to one central location where CEU will be installed.

            b.   Maximum Cable Runs: Keep each cable run to a maximum of 980 feet from communication device to CEU.

            c.   Maintain twists of cable pairs to point of termination or no more than 0.5-inch untwisted.

            d.   Do not remove more than 1 inch of jacket when terminating cables.

            e.   Cable Bends:

                1)   Make gradual bends of cable, where necessary.

                2)   Do not make bends of cable sharper than 1-inch radius.

                3)   Do not allow cable to be sharply bent or kinked at any time.

            f.   Cross-connect cables, where necessary, using CAT-5e rated punch blocks and components.

            g.   Do not splice or bridge cables.

            h.   Cable Pulling:

                1)   Pull cable with low to moderate force.

                2)   Do not use oil or other lubricants not specifically designed for cable pulling.

            i.   Keep cables as far away from potential sources of EMI as possible.

            j.   Label Cable Termination Points: Use unique number for each cable segment.

            k.   Testing Cables: Test installed cable segments with cable tester.

            l.   Jacks: Install jacks to prevent dust and other contaminants from settling on contacts. Jacks are to be yellow in color.

            m.   Cable Slack:

                1)   Leave extra slack on cables, neatly coiled-up in ceiling or nearest concealed place.

                2)   Leave a minimum of 1 foot of cable slack at door station side and a minimum of 10 feet of cable slack at CEU side.

            n.   Do not install cables taught.

            o.   Grommets: Protect cables with grommets where passing through metal studs or other items that could damage cables.

            p.   Do not mix TIA/EIA 568A and 568B wiring on same installation. Use TIA/EIA 568B wiring throughout installation.

            q.   Staples:

                1)   Do not use staples that crimp cables tightly.

                2)   Do not use T-18 and T-25 cable staples.

            r.   Use firestop cables that penetrate firewalls.

            s.   Install pull wire in raceway to door station for future card reader.

        2.   Use suitable listed cables in wet locations, including underground raceways.

        3.   Use suitable listed cables for vertical riser applications.

        4.   Use listed plenum rated cables in spaces used for environmental air.

        5.   Use power transfer hinges complying with Section 08 71 00 for concealed connections to door hardware.

    K.   Provide grounding and bonding in accordance with Section 26 05 26.

3.04 FIELD QUALITY CONTROL

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

    B.   Program system parameters according to requirements of Board.

    C.   Inspect for physical damage and test cable for continuity and shorts. Test cable segments for faulty connectors, splices, terminations, and the integrity of the cable and its component parts.

    D.   Test for proper interface with other systems in accordance with manufacturer's instructions.

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

3.05 ADJUSTING

A. Make adjustments or corrections for operation of the system in accordance with manufacturer's instructions. Obtain final approval from Department of Safety & Security.

B. Follow the manufacturer's instructions to program the system in accordance with the Department of Safety & Security requirements and provide a copy of programming on CD-ROM disk in format required for downloading.

C. Re-adjust or replace system devices until all cameras are properly aimed and focused to meet Department of Safety & Security satisfaction. Personnel shall be available for adjustments for a period of thirty (30) consecutive days.

3.06 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish. Repair damaged finish(es), including chips, scratches, and abrasions.

B. All equipment, hardware and finishes shall be cleaned prior to final acceptance. Unless otherwise indicated, clean shall mean free of dust, dirt, mud, debris, oil, grease, residues, and contamination.

C. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Preliminary Acceptance. Protect conduit and wireway openings against the entrance of foreign matter by means of plugs or caps. Cover fixtures, materials, equipment and devices furnished or installed under this Section or otherwise protect against damage, both before and after installation. Hardware, materials, equipment, or devices damaged prior to final acceptance of the work shall be restored to their original condition or replaced.

D. During the course of installation work, provide for on-going proper disposal of all debris, including but not limited to: equipment packaging and shipping materials, shipping pallets, empty cable reels/boxes, cable cuttings, etc. The Contractor shall, at all times, keep the site free from accumulations of waste material or rubbish caused by its employees or work. Remove all crates, cartons, and other waste materials or trash from the working areas at the end of each working day. Flammable waste material must be removed from the working areas at the time of generation. All rubbish and debris, combustible or not, shall be discarded in covered metal containers daily and removed from the premises at least weekly and legally disposed of.

3.07 CLOSEOUT ACTIVITIES

A. Demonstrate proper operation of equipment to Owner's designated representative(s) and correct deficiencies or make adjustments as directed.

B. Demonstration: Demonstrate operation of system to Owner's appointed personnel at final system inspection by qualified representative of manufacturer.
    1. Provide four (4) 1-hour sessions.

C. Training: Train Owner's appointed personnel on operation and maintenance of system.
    1. Provide instruction and training of the Board authorized personnel as required for operation of system.
    2. Provide hands-on demonstration of operation of system components and complete system, including user-level program changes and functions.
    3. Instructor: Manufacturer's training personnel.
    4. Location: At project site.
    5. Aiphone Technical Support
        a. Available from 6:00 AM to 4:30 PM, Monday thru Friday, Pacific Time at (800) 692-0200.
    6. Video tape first training session and provide tape to designated representative.

3.08 PROTECTION

    A.   Protect installed system components from subsequent construction operations.

END OF SECTION 28 13 13