

**SECTION 28 16 00
INTRUSION DETECTION**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Main cabinet
- B. Terminal cabinets
- C. Conduit and boxes
- D. Power wiring

1.2 SYSTEM DESCRIPTION

- A. Security system shall include the furnishing and installation of main and distribution terminal cabinets, conduit system and power feeds.
- B. Knox Box for School Police Department and Fire Department

1.3 SUBMITTALS

- A. Submit under the provisions of Section 01 33 00.
- B. Shop Drawings: Indicate layout, raceway diagrams, and equipment dimensions.
- C. Product Data: Provide data sheets for each item of equipment, depicting equipment capacity.

1.4 RECORD DRAWINGS

- A. Submit under the provisions of Section 01 77 00.
- B. Accurately indicate actual locations of cabinets, boxes, and conduit runs.

PART 2 PRODUCTS

2.1 MAIN CABINET

- A. Steel construction #14 gauge 36" x 36" x 6" cabinet with hinged lockable cover on ½" thick plywood backboard painted light gray.
 - 1. Also, allow a 4' x 4' empty space above or to either side of the main cabinet at a centerline of 7' for additional security equipment.
- B. Main cabinet shall be surfaces mounted.
- C. Locate the Main Security Cabinet in the Video Control room; however, Section 2.3A has priority.
- D. The location of the main, Ahead-end@, security terminal cabinet shall not exceed 95' from the antenna weather head.

2.2 BUILDING & FLOOR DISTRIBUTION CABINETS

- A. Steel construction #14 gauge 12" x 18" x 6" cabinet with hinged lockable cover on ½" thick plywood backboard painted light gray.
- B. All distribution cabinets shall be surfaces mounted.

2.3 CONDUIT AND BOXES

- A. Criteria for security antenna stub out location:
 - 1. This location will be based on the Radio Frequency assigned to the site and the direct line of site from the antenna to the repeater location and will be selected at time of review.
 - 2. The security system radio has a direct line of sight antenna to the repeater located at Latitude (26, 35, 20 N) and Longitude (080, 12, 43 W) US441 and Lantana Road.
- B. Provide & install a 3" raceway to outside at the antenna mounting structure designated location and terminated with a weather head.
 - 1. The penetrating portion of conduit shall be a contiguous 10' piece of rigid, with 6' firmly supported at two joist points below the roof penetration and 4' above the roof.

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2. The raceway shall continue and terminate against the wall below the ceiling 90" AFF over the main Ahead-end@ Terminal Cabinet capped with an EMT set screw connector and fiber bushing.
- C. Provide and install an antenna mounting structure locate next to the antenna stub-out (see B).
 1. Design the antenna mounting structure to support an antenna array of six 6-element Yagi 9dBd gain antennas model #460-6.
 2. Structure shall meet ASCE-78 requirements.
 3. Top of structure shall be at least 49' (15 Meters) above grade.
- D. Provide & install a building distribution cabinet for each building.
 1. Provide & install a separate 2" raceway from the main Ahead-end@ cabinet for each building distribution cabinet.
 2. For buildings with more than one level, provide a floor distribution cabinet for each additional floor level.
 3. Feed each of these cabinets with a separate 2" conduit from the main building distribution cabinet.
 4. If any floor level area is greater than 20,000 sq ft, provide additional floor distribution cabinets; with no one cabinet feeding more than 20,000 sq ft.
 5. Raceway shall not exceed 400' without a pull box.
- E. Provide & install ¾" conduits from the distribution cabinets and distribute to feed all junction and mounting boxes in the distribution area.
 1. Each ¾" conduit shall feed no more than 16 wall sensor mounting box locations.
 2. Each of these conduit runs shall leave and return to the cabinet, (looped).
- F. Provide & install a separate ¾" conduit from the main security terminal cabinet to the fire alarm main terminal cabinet.
- G. Provide & install a separate ¾" conduit from the nearest security distribution cabinet to all walk-in refrigeration units, and terminate this conduit to the unit's temperature-sensor relay enclosure.
- H. Provide & install a separate ¾" conduit from the nearest security distribution cabinet to the emergency electric generator control panel.
- I. Provide & install a recessed mounted 4-11/16" x 4-11/16" x 2-1/8" boxes with flush single gang ring and single gang cover; mounted with the opening vertical, located 12" to the side of the intercom speaker or clock; in rooms where clocks or speakers are designated.
 1. Refer to the prototype classroom layout.
 2. If a projection screen will block the security device in this location, move the security junction box to clear the blockage to either side of the projection screen.
- J. Provide & install recessed mounted 4-11/16" x 4-11/16" x 2-1/8" sensor mounting boxes with single gang ring and single gang cover; mounted with the opening vertical, 90" above the floor and 15' from any exterior doors or exterior glass (susceptible to entry) at the following locations:
 1. All interior corridors
 2. In rooms that do not have a clock or speaker but have exterior doors or glass.
 3. Electrical rooms, mechanical rooms, storage rooms, etc. That may allow access through them to the interior of the building.
- K. Provide & install recessed mounted 4-11/16" x 4-11/16" x 2-1/8" sensor mounting boxes with single gang ring and single gang cover; mounted with the opening vertical, 90" above the floor and 15' from the entry/exit doors in the following areas:
 1. Cafeteria manager's office
 2. Media CCTV studio

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3. Media CCTV storage room
 4. P.E. storage room
 5. P.E. office
 6. Main Telephone Equipment Room
 7. Clinic
 - L. Provide & install an additional 4-11/16" x 4-11/16" x 2-1/8" box above suspended ceiling directly above each wall sensor-mounting box.
 1. Locate the box no higher than 36" above the ceiling, in the same room as the wall mounted boxes.
 - M. Provided and install two recessed mount Knox-Box with UL listed tamper switches, ¼" plate steel housing, ⅝" thick door with interior gasket seal.
 1. Both boxes and locks shall have 2" steel dust cover with tamper seal mounting capability.
 2. Finish color shall be Aluminum for Police and Black for Fire.
 3. Mount boxes at 4 feet AFF.
 - a. Use Knox-Box as, Manufactured by The Knox Company, Model 3221 for Fire Department and 3225 for Police Department with the recessed mounting kit (3240).
 - i) All recessed mounting kit shell housings, including the cover plate and screw heads, is flush with the finish wall.
 - ii) Install the housing plumb to insure vertical alignment of the vault.
 - b. Provided and install a ¾" conduit from the back of the Knox Box to a 4-11/16" x 4-11/16" x 2-1/8" box with cover, located above the nearest removable ceiling tile.
 - i) Continue the conduit run to the nearest security terminal cabinet.
 - c. The District's Senior Project Manager shall coordinate with the Department of School Police and the Contractor in transmitting the Knox authorization forms completed by the Department of School Police to assure it is keyed to the SDPBC AMaster@.
 - d. Obtain the Knox authorization form for the Fire Department Knox box from the Fire Department having jurisdiction.
 - N. Provide & install a separate ¾" conduit from the back of the Fire Departments (Knox Box) enclosures to a 4-11/16" x 4-11/16" x 2-1/8" box with cover, located above the nearest removable ceiling tile.
 1. Continue the conduit run to the nearest security distribution cabinet.
 - O. Provide & install a separate ¾" conduit from the main security cabinet to the main telephone room terminal-board.
 - P. Provide & install a ¾" conduit between all security distribution cabinets and all card-access distribution cabinets, at all terminal cabinet locations.
 - Q. Provide & install six additional recessed mounted 4-11/16" x 4-11/16" x 2-1/8" sensor mounting boxes with flush single gang ring and single gang cover; with the opening mounting vertical with ¾" conduit run to nearest security junction box, (Estimate 100' of conduit for each run.)
 1. District shall direct the wall mount locations in field during construction prior to final above ceiling inspection.
 - R. Do not provide ½" conduits, minimum conduit size shall be ¾".
- 2.4 POWER FEED
- A. Provide & install a dedicated 120-volt normal power duplex outlet located adjacent to the upper portion of the main security system's cabinet.
 - B. Provide & install a dedicated 120-volt duplex outlet fed from the optional branch of the generator power source, adjacent to the normal power receptacle.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install system in accordance with NECA "Standard of Installation" and Section 26 05 33.
- B. Obtain a detail book from the S.D.P.B.C. School Police Department Security Section for system specifics.
- C. Permanently label all conduits as to plan room number destination, at all terminal cabinets.
- D. Paint all Security system junction box covers black.
- E. Install ½" (black round indicators) of paper construction on ceiling tile grid work at all locations where security system boxes are located above the drop ceiling.
- F. Permanently label all the security-system terminal cabinets, "security system".
- G. Install 200 lb strength pull string throughout the raceway system.
- H. Mount all junction boxes located above ceiling with the opening facing down, and with a reasonable immediate access pathway provided.
 - 1. Note: Requiring the removal of a light fixture or other similar ceiling equipment is not a reasonable access pathway).
- I. The Security system raceway shall be a separate raceway system and shall not interconnect with or be used by any other system without the authorization of the Department of School Police Security System Section or per DMS sections 28 33 00, 27 53 10, and 28 13 00.
- J. All conduit runs shall be as direct as possible in order to save on wiring cost and to reduce poor performance due to cable voltage loss.

3.2 DEMONSTRATION AND TRAINING

- A. Training of the Owner's operation and maintenance personnel is required in cooperation with the Owner's Representative.
 - 1. Provide competent, factory authorized personnel to provide instruction to operation and maintenance personnel concerning the location, operation, and troubleshooting of the installed systems.
 - 2. Schedule the instruction in coordination with the Owner's Representative after submission and approval of formal training plans.
 - 3. Refer to Section 01 91 00, Commissioning, for further contractor training requirements.
- B. Provide demonstration and training for all types of intrusion detection systems installed in this project.

END OF SECTION