

13845 INTRUSION DETECTION SYSTEM

SPECIFIER:

CSI MasterFormat 2004 number: 28 16 00

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: A complete, operable, tested intrusion detection system, listed and labeled by an OSHA approved Nationally Recognized Testing Laboratory (NRTL), including the furnishing and installation of main and distribution terminal cabinets, conduits system, and power feed. All programming shall be by the Contractor with approval from M-DCPS District Communication Management Center (DCOM).
- B. Related Sections:
 - 1. 09900 - Painting.
 - 2. 16112 - Raceways and Conduits.
 - 3. 16131 - Outlet, Pull, and Junction Boxes.

1.2 SYSTEM DESCRIPTION

- A. Significant System Components and Procedures:
 - 1. Contacts for every exterior door including roof accesses.
 - 2. Motion detectors.
 - 3. Intrusion control panels.
 - 4. Power supply.
 - 5. Extended zone modules.
 - 6. Keypads.
 - 7. Raceway and junction box system.
 - 8. Testing.
 - 9. Record drawings.

1.3 SUBMITTALS

- A. Submit properly identified manufacturer's literature and technical data sheets for each item of equipment, depicting equipment capacity before starting work.
- B. Shop Drawings: Include manufacturer's catalog cuts, data sheets, equipment layout riser, equipment dimensions, and wiring diagrams with standard symbols for each component used.
- C. Quality Assurance Submittals: Submit the following with the required shop drawings and manufacturer's literature and data.
 - 1. Load calculations for battery backup and system components.
 - 2. Programming schedule sheet with zone descriptions.

3. Warranty:

- a. Letter from authorized manufacturer's representative addressed to M-DCPS , stating compliance to warranty requirements.
- b. Submit 5 copies of warranty certificate.

D. Closeout Submittals: Record drawings indicating actual locations of cabinets, boxes, conduit runs and warranties.

1.4 QUALITY ASSURANCE

A. Items and Components: UL listed meeting the latest editions of standards 603, 609, 634, 639, 1076, and 1610.

B. Install wiring according to National Electrical Code (NEC) applicable to the project .

C. Shunt switches are not allowed.

D. The system shall provide for the separate zoning of cafeterias, cafeteriums, auditoriums, food service areas, gymnasium/locker rooms, little theaters, the administration area, music rooms, and any other areas according to program requirements. One building or wing may have more than one zone , but one zone shall not include more than one building.

E. System shall be hardwired in its entirety.

F. In terminal cabinets, use screw-on terminal strips for power and signal cable splices.

1.5 WARRANTY

A. Provide full manufacturer's published standard warranty for parts and components.

B. Provide 1 year full maintenance (parts, wiring, and labor) provided by Contractor or manufacturer's authorized representative from date of substantial completion.

C. Provide warranty response information inside alarm system control panel.

D. Warranty shall allow M-DCPS to repair vandalized areas without voiding the total system warranty

PART 2 PRODUCTS

2.1 EQUIPMENT

A. Door Contacts:

1. Side Hinged Doors: Recessed magnetic switch, Model 1078W by GE Sentrol, Model 1078WH (BR) by Interlogica M-DCPS accepted equivalent, with contacts rated at 0.5 amps and 7.5 watts max., complete with necessary mounting accessories for installation in steel doors in a closed circuit alarm systems.

2. Side Hinged Door (For remodeling Projects Only): Surface magnetic switch, Model T-N by Interlogic, with contacts rated at 0.5 amps and 7.5 watts max., complete with necessary mounting accessories for installation in steel doors in a closed circuit alarm systems.
 3. Hinged Roof Access Doors: Surface mounted, magnetic switch, Amesco Model ODS 59A, Fair VIP 1000-98L24 or M-DCPS accepted equivalent. Provide 2 mounting spacers and matching cover plate, for closed circuit alarm systems.
 4. Roll-Up Overhead Doors: Floor mounted extra heavy duty magnetic switch in an aluminum housing, Model ODS 59A by Amesco or Model 1000-98L24 by Flair Electronics, or M-DCPS accepted equivalent, with armored cable, complete with necessary mounting accessories for installation in closed circuit alarm systems.
- B. Cable: Belden No.8740 (2 conductor), No.8443 (3 conductor), No.9794 (4 conductor), as directed by security system manufacturer.
1. Conductors for Monitoring Devices: Minimum 22 gage AWG stranded, unshielded cable with vinyl plastic insulation, color-coded.
 2. NRTL labeled and listed, NEC type CM or CL3, .
 3. Comply with UL 1581 flame test.
 4. Power Conductor for Motion Detectors, EZMs, and Keypads: CL-2 or CL-3, jacketed, minimum 18 gage stranded wire.
 5. Power Conductor for Battery: Minimum 18 gage stranded wire.
 6. Underground cable shall be for wet locations according to NEC.
- C. Motion Detectors: Dual technology (PIR/microwave) motion detector sensors.
1. Ceiling mounted: Risco Group RK 150T, Bosh DS9360 or M-DCPS accepted equivalent.
 2. Wall mounted: Risco Group RK815, Bosh ISC-BDL2-WP12G, Napco M7100STE or Optex MX40PI.
- D. Recessed Ceiling Mount:
1. Model RK-150T by Risco Group
 2. Model D59360 by Bosch Security
- E. Wall Mount:
1. Model RK-815 by Risco Group.
 2. Model ISC-BDL2-WP12G by Bosh Security.
 3. Model M7100STE by Napes.
 4. Model MX 40 PI by Opax.
- F. Intrusion Control Panels:
1. Manufacturers:
 - a. NAPCO Model Gemini -X255.
 - b. Bosch Security Series 2000.
 - c. Or other M-DCPS accepted equivalent.
 2. Provide mandatory NRTL Mercantile listing with tamperproof provisions.

3. Indicate location on riser diagram.
 4. Install panels with centerline at 5'-0" above finish floor.
 5. Panel cabinet shall be #14 gauge steel construction with hinged, lockable door.
- G. Panel Batteries:
1. Provide two 7 amp batteries in parallel in the panel.
- H. Remote Power Supplies:
1. Supervised for low battery failure and power supply failure.
 2. Show locations on riser diagram.
 3. These indications shall report through a dedicated zone of the intrusion detection system to M-DCPS DCOM as a priority trouble.
- I. Zone Expansion Modules/Expansion Zone Modules (EZM):
1. Remotely located in a distributed fashion to minimize raceway and wiring.
 2. Powered from the intrusion control panel.
 3. Power supply load shall not exceed 85 percent of the maximum load.
 4. Mount EZM's in a hinged door junction box with a fire retardant painted plywood backboard inside the box, 10" x 10" x 4" minimum size.
 5. Install EZM cabinets with centerline at 5'-0" above finish floor.
 6. Install power supplies between 6'-0" to 8'-0" above finish floor.
 7. List EZM's location numbers inside and outside the junction boxes and on riser diagram.
 8. Do not use the keypad as a zone expander.
- J. Miscellaneous: Refer to Section 16112 for products also required for installation under this section.

PART 3 EXECUTION

3.1 INSPECTION

- A. Do not proceed with the work of this section until conditions detrimental to the proper and timely completion of the Work have been corrected in an acceptable manner.

3.2 INSTALLATION

- A. Install wiring, conduit, boxes, and the like required for a complete system according to manufacturer's instructions and approved submittals.
- B. System equipment and wiring installation shall be by the properly licensed company, either the original equipment manufacturer or the factory distributor for the brand of equipment used. Furnish wiring diagrams and wire runs for the raceway system installed by the licensed electrical contractor, under Division 16.
- C. Provide door contacts and related devices at exterior doors, roof scuttles, and interior doors to high security spaces including, but not limited to, spaces containing student records, audiovisual equipment, instructional TV equipment, computer equipment,

chemical storage, facility operation and management equipment, and other similar valuable goods. Rooms with interior corridor access and motion detectors do not require door contacts.

1. Hinged Door Contacts: A maximum of 4 associated door contacts may be grouped in a zone. Provide independent wiring to each switch from a junction box located next to the expansion zone module (E.M.) before converting to a zone.
 - a. Side Hinged Doors:
 - 1) Install recessed switch components in spaces in both door and head jamb prepared by the door and frame manufacturer.
 - 2) Set magnet into top of door with accepted silicone sealant.
 - b. Hinged Roof Access: Mount on inside face of access housing according to switch manufacturer's recommendations.
2. Motion Detectors:
 - a. Provide motion detectors in each area with windows, fixed glass, or glass block to the exterior and any room with vision panels, regardless of the location or function.
 - b. Provide motion detectors at exterior accessed storage rooms.
 - c. Provide individual zones for each motion detector.
 - d. Motion detectors shall have their own power supply and not be fed from the security panel.
 - e. Locate ceiling mounted motion detectors at least 5 feet away from A/C supply registers and at least 10 feet from windows.
3. Wiring:
 - a. Install wiring in metallic conduit from door head switch through door lintel construction to adjacent junction box.
 - b. Connection between top of sheet metal sleeve in head jamb section and conduit in door lintel construction to adjacent junction box need not be solid but sheet metal sleeve and conduit shall be in alignment with each other.
 - c. Provide EOL resistor and indicate location on drawings
 - d. A maximum of 4 associated door switches may be grouped in a zone. Provide independent wiring to each switch from a junction box located next to the expansion zone module (E.M.) before converting to a zone.
 - e. Splices in main cabinets and sub panels shall be on terminal strips.
4. Bonding and Grounding: Provide as required by the latest edition of the NEC.
5. Conductor Identification: Identify each pair of conductors, each contact in each panel, and at loose wire terminations.
6. Cable Slack:
 - a. Terminate cables with enough slack, each duly tagged for future connections by the Board, on terminal strips in junction box in electrical room as shown on Drawings, extending 1 inch empty conduit from this box underground to pull box as shown Drawings (site plan).

7. Permanently label all conduits as to plan room number destination, at all terminal cabinets.
 8. Mount all junction boxes located above ceiling with the opening facing down, and with a reasonable immediate access pathway provided.
 9. All conduit runs shall be as direct as possible in order to save on wiring cost and reduce poor performance due to cable voltage drops.
- D. At security cabinets, provide 3/4" plywood backboard with fire retardant paint.
- E. Provide patch cord from intrusion detection circuit board to telephone outlet provided by M-DCPS in the intrusion detection panel.
- F. Connect fire alarm system to the 2 separate telephone outlets provided by M-DCPS in the fire alarm panel.

3.3 FIELD QUALITY CONTROL

- A. Before testing the intrusion detection system transmission from the project site to the central control station, coordinate with M-DCPS and A/E to ensure M-DCPS DCOM will be available to verify a successful and trouble free transmission signal.
- B. Site Test:
1. Check and test installation for shorts, grounds, circuit continuity, and minimum 12 volts readings at all motion detectors.
 2. Cables: Test free from opens, grounds, or crosses (shorts) between conductors.
 3. Walk-test doors and motion detectors for proper function and operation. Ensure proper zoning of devices.
 4. Test all functions on intrusion control panels for proper functions and operations.
 5. Verify signals are properly received at the M-DCPS DCOM.
 6. Check for proper standby battery backup in intrusion panels and remote power supplies.
 7. Verify remote power supplies are UL 603 listed for burglary systems.
 8. Inspect and test cabinet tampers on intrusion cabinets.
 9. Verify raceway cover is properly painted blue.

3.4 DEMONSTRATION AND TRAINING

- A. Provide a minimum of 2 hours of training to designated M-DCPS personnel, including school staff and maintenance personnel. Training shall be provided by a competent, factory authorized personnel, and shall include instructions on the operation, and troubleshooting of the installed systems. Training shall be scheduled by the Contractor through the M-DCPS Project Manager.

END OF SECTION