28 00 00 - ELECTRONIC SAFETY AND SECURITY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Conditions for contracts of construction, referred to in the contract documents as the General Conditions, together with the following articles of the specifications, which amend, modify and supplement various articles and provisions of the General Conditions, are made part of the Contract and shall apply to all work under the Contract.

B. All articles or parts of articles of the General Conditions not so amended, modified or supplemented by these specifications shall remain in full force and effect. Should any discrepancy become apparent between the General Conditions and the specifications notify Architect, in writing and the Architect shall interpret and decide such matters in accordance with the provisions of the General Conditions.

C. Comply with all applicable governmental regulations and with all Federal, State, County, City, and other applicable codes and ordinances.

D. These specifications are not intended as a material list of items required by the Contract.

E. Coordinate with others who will be working in the space at the same time as this work.

F. It is the intent of these specifications to provide a complete and workable security system ready for the Owner's use. Any item not specifically shown on the drawings or called for in the specifications, but normally required to conform to the intent, are to be considered as part of the Contract.

G. Any given item of equipment or material shall be the product of one manufacturer throughout the facility. Multiple manufacturers of any one item shall not be permitted, unless specifically noted otherwise.

H. These specifications are equipment and performance specifications. Actual installation shall be as indicated on the Drawings. Any discrepancies found between the Specification and the Drawing shall be immediately brought to the attention of the Architect and Construction Manager.

1.2 SUMMARY

A. Work under this specification shall include devices as reflected on drawings.

B. All information in this specification shall be used in conjunction with Manufacturers' Specifications for a complete security system.

C. The Security Subcontractor shall provide all security equipment reflected on drawings and listed in this specification. The Security Subcontractor will be responsible for all final connections of each device at each junction box, security control panel and as described in this specification.

E. Provide all other devices and appurtenance as required for complete installation of those devices supplied by Fidelity to include, but not limited to all screws, fasteners, cover plates, connectors and hangers as required

F. Coordinate with General Contractor and FREC- Security Infrastructure Group for the execution of all work to ensure its proper and timely completion. This work shall include but may not be limited to the following;

1. Furnish (2) two sets of "as-built" drawings to the Owner, Construction Manager, and the Engineer at completion of installation. Furnish electronic CAD drawing files, which shall be fully compatible with AutoCAD Release 2004. No drawing file shall be write-protected. (these are minimum requirements, see general conditions)
2. Provide system documentation including copies of all relevant drawings and equipment manuals.
3. Provide Operating and Maintenance manuals.
4. Provide warranty services for the specified period from the date of acceptance.
5. Remove and dispose of all refuse related to the security system installation from site.
6. Provide labeling and complete documentation of all cables, wiring boxes, equipment cabinets, pull boxes and termination strips installed under this contract.

1.3 QUALITY ASSURANCE

A. Materials shall conform to NEMA and NEC Standards.

B. Materials shall bear UL labels and be UL approved for the application for which they are used.

C. All workmanship shall conform to the standards set forth by FREC-Security Infrastructure Group.

1.4 DELIVERY, STORAGE AND HANDLING

A. Security Subcontractor shall be responsible for equipment from time of receiving.

B. Handle devices carefully to avoid damage to material components, enclosures, and finish.

C. Store devices in clean dry space.

D. Protect devices from dirt, fumes, water and physical damage.

1.5 CONTRACTOR QUALIFICATIONS

A. Security Subcontractor shall have a minimum of 10 years experience in the installation of security systems of the type and size to be provided on this project.

B. The Security Subcontractor's project manager shall have a minimum of 7 years project management experience on like size project. The Security subcontractor's foreman shall have a minimum of 5 years experience on like size projects.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Wire specified is that as shown on drawings.

B. Only devices specified on drawings shall be used.

2.2 MATERIALS

A. Wiring General

1. Type as indicated on the Security Cable Legend.
2. Only those cables and wires or their equivalent types required for the devices listed for this particular installation shall be used.
3. All cables in wet or damp locations including underground raceways shall be listed for use in these locations.
4. Joints, splices, and terminations shall be made inside a box or enclosure and shall be made with Plain B wire connectors, or rosin-core soldered, where applicable. **All home run cables are to be, without splices, unless otherwise noted.**
5. Wires and cables shall be clearly, logically and permanently marked.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Security Subcontractor shall examine areas and conditions under which security equipment is to be installed. Examine the drawings of other trades to determine the existing design conditions that may affect the work. The Security subcontractor shall be held responsible for any assumptions in regard thereto.

B. Notify Architect and Construction Manager in writing of conditions detrimental to proper and timely completion of work.

C. Do not proceed with work until satisfactory conditions are present.

D. Inform Architect in writing of any application requirements that are not specified or that are detrimental to proper installation of equipment for clarification and specifications.

E. Existing Contract Documents for all other trades shall be made available for review through the General Contractor.

F. Verify all dimensions and distances in the field and document all cable lengths and materials provided. Furnish and install all miscellaneous hardware, i.e., nuts, bolts, tie wraps, etc., whether specified or not, necessary to the proper operation of the specified systems.

3.2 INSTALLATION

A. Location of Equipment

1. The specifications describe only approximate locations of the work. Verify all locations in the field.
2. Locate equipment and accessories to provide easy access for proper service and maintenance.
3. Coordinate device rough in with hard ceilings and architectural walls with arrelct.
4. Any conflict with other trades shall be submitted for approval to architect.

B. Wiring

1. Refer to typical security details on drawings for location of devices and wiring information.
2. All cable shall enter the Security Control Panel location, through the 3" nipples on top of the horizontal trough. A minimum of 6' of spare cable shall be left neatly bundled in the horizontal trough. The cable shall be fed down to the bottom of the vertical trough, no coiled slack shall be left in the vertical trough. Each individual cable shall be stripped back of its outer insulation and plastic wrapping. Each individual pair of wires contained in a cable shall be stripped of their shielding and plastic wrapping. Each individual cable shall be stripped back to the level which is 18" below top horizontal trough. All of the drain wires for the cable pairs shall be twisted together and insulated with appropriately sized shrink-wrap, ensuring none of the grounds are exposed. Black tape shall be used to provide a 4" band over the transition area of the stripped back cable; this will also prevent the shrink-wrap from slipping. All unused conductors will be stripped back of their outer insulation and secured uncoiled in the vertical trough. All unused conductors of a single cable will be secured to each other and labeled with the associated security device number spaced 2' apart.
3. For ceiling distribution environments, "J-hook" hangers must be used to support the cable runs. All J-hook hangers will be installed per manufacturers' instructions separated by a maximum of 60-inches (5-feet) center-to-center. Large bundles of cables may require cable tray to support.

C. Devices

1. Provide resistor matrices across the monitoring loop at each intrusion, or alarm device.
2. Provide any combination video gear/equipment needed and as shown on drawings for each video camera location and head end.
3. Terminate cabinet tampers in all cabinets shown on Security Control Panel drawings.
4. Adjust any closed circuit video camera as needed. (focus, iris, etc.)
5. Provide labels on all security devices as per "Identification" section of this specification.
6. Conduct a thorough pre-test and final acceptance test using provided test report/documentation forms.

D. Conduit and Raceway System

1. Provide Shop drawings for conduit design, routing, sizing and junction boxes for Electrical Trade Contractor.
2. Review and coordinate conduit and wire way (conduit) installation with the Electrical Trade Contractor to ensure proper function and operation of the security systems. Contractors shall reference all electrical drawings and specifications for site standards regarding the installation of all electrical conduits and cabling.
3. All security wiring installed in an inaccessible area shall be installed in conduit.
4. All security wiring installed in exposed areas shall be installed in conduit or cable tray.
5. All security wiring installed beyond the Owner's secure space shall be in conduit.
6. All conduit shall be parallel with, or at right angles to, walls and ceilings. It shall be adequately supported by means of approved hangers.
7. Conduit fill shall not exceed 40% of conduit cross-sectional area.
8. Nominal trade sizes for conduit shall be 1"-inch minimum and 4-inch maximum for home run conduits. ¾"-inch minimum size conduit for branch raceways.
9. All junction boxes and pull boxes utilized in the raceway system shall be installed as per NEC.

E. Grounding

1. The vertical raceway located at control panels (CP) shall have a "ground bus" capable of receiving all grounding drains for the cables that terminate from that vertical raceway. Extend a single grounding electrode from the "ground bus" to cold water, building steel, or dedicated grounding system that is non-fire system related.
2. Each control panel shall have a bonding jumper from the "ground bus" located in the vertical raceway and a ground lug inside each panel location.
3. Grounding and shielding shall conform to the following procedures. AC grounding applies only to power circuits intended for powering Security equipment.
4. It is the primary intent if the following procedures to provide a safe system for personnel to operate.
5. The power cord from active equipment shall not have its third prong-grounding conductor (if present) defeated.
6. To reduce noise voltages in the system it is intended that only one ground connection path exist between two pieces of equipment.
7. Where mounting hardware is indicated as a means of grounding, ensure both a solid electrical and mechanical connection is made.
8. Permanently and effectively, bond to building earth ground per applicable codes. Insulated connections between conduit and wall boxes, junction boxes, or wire ways are not permitted.
9. Passive Equipment Chassis: Connect an appropriately sized (green) insulated ground cable to the copper ground terminal block (provided under the electrical contract), to the ground bus bar within each equipment rack. This ground bus bar shall be bonded to bright metal of each equipment rack with the appropriate anti-oxidant employed at the copper to rack interface. Each adjacent equipment rack shall have its grounding conductor home-run to the copper ground terminal block.

F. Mounting Boxes/Enclosures

1. Mounting boxes and enclosures shall be rigidly and securely mounted to the building structure. Wiring contained in them shall be accessible. Install blanking devices or threaded plugs in all unused holes.
2. Clean all interiors thoroughly before installing plates, panels or covers.
3. Back Box Requirements.
   a. **PB Duress Button (under cntr)**
      1) NA
      2) Under cabinet (verify with architect)
   b. **M Motion detector**
      1) Single gang
      2) Ceiling Mount or 9'6" Wall Mount
   c. **GB Glass Break**
      1) Single gang
      2) Ceiling Mount or 9'6" Wall Mount
   d. **TS Temp sensor**
      1) Horz. single gang with single gang stainless steel wall plate.
      2) 5' to center (verify with architect)
   e. **Fire alarm point**
      1) 4-11/16" j-box
      2) Mount demarcation as per Control panel elevation detail. Raceway, wire, terminations and coordination from demarcation point to contacts to be monitored, shall be provided by appropriate trade and manufacturer representative.

G. Electrical Power 120V AC

1. Any 110V AC electrical work will be provided by Electrical subcontractor.
2. Review and coordinate electrical power system installation with the Electrical Trade Contractor to ensure proper function and operation of the Security systems.
3. Reference all electrical drawings and specifications for site standards regarding the installation of all electrical power.
4. Verify that all power circuits designed for Security equipment, both fixed-in-place and portable, are properly wired, phased and grounded. Report any discrepancies found to the Construction Manager and the Owner/Engineer so that appropriate corrective action can be taken.
5. Ensure distribution of electrical power within all equipment racks, enclosures and consoles. For each branch circuit provide a minimum of two (2) spare receptacles in each plug mold strip. Provide a minimum of one (1) unswitched receptacle power strip (rack mounted) per each equipment rack cabinet group.

H. Finishes

1. All enclosures, housings and supporting structures supplied by the Security Subcontractor not having a standard factory protective finish shall be painted. Paint specifications will be supplied by the Owner/Engineer or indicated herein.
2. Any equipment or materials supplied, which are exposed to public view, shall be approved by the Architect. Provide, as may be required by the Architect, custom color and/or finish for all such items. This does NOT exclude equipment or materials that are supplied with standard colors or finishes as specified herein.

3.3 IDENTIFICATION

A. All cabling shall be labeled as per below.

LABEL CONFIGURATIONS
WIRE LABELS

CCTV WIRE LABELS

Wire class
1.01.20
DVR & position on DVR

CCTV Wire label Classification
- xxx.xxx.20 Camera video coax
- xxx.xxx.21 Camera power
- xxx.xxx.22 PTZ camera data
- xxx.xxx.24 UTP cable

VIDEO MONITOR WIRE LABELS

Wire class
VM.01.20
Device No.

Video Monitor Wire label Classification
- xxx.xxx.20 Monitor video coax
- xxx.xxx.21 Monitor power
- xxx.xxx.22 PTZ Controller data
- xxx.xxx.24 Monitor UTP cable

INTRUSION/OTHER POINTS WIRE LABELS

ZONE No. — Wire class
Z-001.30

Intrusion/Other points Wire label Classification
- Z-xxx.30 Device power
- Z-xxx.31 Device input signal
- Z-xxx.32 Device output signal

LOW VOLTAGE POWER/COMMUNICATION CABLE LABELS

Device No.
001.40
Power wire class

Power Wire label Classification
- xxxx.45 Bosch control panel power 16.5vac
- xxxx.46 Security Device power supply 12vdc
- xxxx.47 Expansion Module power and communication
- xxxx.48 Keypad power and comunication

ACCESS CONTROL WIRE LABELS

Device — Wire class
KP.001.00
Key- Pad Number

Access Control Wire label Classification
- xxxx.xxxx.00 Keypad Data/Power cable from panels to doors
- xxxx.xxxx.01 Door contact cable from panel to doors
- xxxx.xxxx.02 Request to exit power cable from panel to doors
- xxxx.xxxx.03 Request to exit signal cable from panel to doors
- xxxx.xxxx.04 Spare
- xxxx.xxxx.05 Spare
- xxxx.xxxx.06 Lock power cable from panel to doors
- xxxx.xxxx.07 Auxiliary power cable from panel to doors
- xxxx.xxxx.08 Spare
- xxxx.xxxx.09 Spare
- xxxx.xxxx.10 Spare
- xxxx.xxxx.11 Communication cable for door interface boards

A. All cables and terminal strips shall be labeled with machine generated black uppercase lettering on a permanent sleeve type labels. Labels shall be placed on both ends of the cable and no more than 6" from the point at which the cable is broken out into individual copper pairs and 1" from the connector or terminal block. All labels shall be readily visible.

B. Hand lettered label stock shall not be accepted for final installation. Hand lettered stock is only acceptable for use with temporary labeling required during construction phases.

C. If at any time during the project, the cable label becomes illegible or removed, the Contractor shall immediately replace it with a duplicate pre-printed cable label.

D. All cable IDs shall be both physically and visually accessible upon completion of the project.

E. All enclosures at head end cluster shall have a clear plastic sleeve with an adhesive back installed inside enclosure on back side of door with an updated program sheet and or panel schedule for equipment and points installed in enclosure. Install sleeve horizontally.

F. All devices and enclosures shall be labeled as per below.

LABEL CONFIGURATIONS
SECURITY DEVICE TAGS

CCTV DEVICE TAGS

1.01
DVR & position on DVR

Camera tag number shall be placed on camera housing, viewable from the ground. (1/4" strike, ARIAL - black lettering on clear tape). Remove all manufacturer labels and identification.

INTRUSION/OTHER POINTS DEVICE TAGS

Zone No.
Z-001

Intrusion/Other device tag number shall be placed on device, viewable from the ground. (1/4" strike, ARIAL - black lettering on clear tape). Remove all manufacturer labels and identification.

ENCLOSURE TAGS

OCTOPOPIT ALARM POINT SPLICE ENCLOSURE

ALARM POINT SPLICE

BOSCH CONTROL PANEL ENCLOSURE

CONTROL PANEL

SECURITY DEVICE POWER SUPPLY

DEVICE POWER

ACCESS CONTROL POWER SUPPLY

ACCESS CONTROL POWER

3.4 ACCEPTANCE

A. Provide labor to conduct a thorough pre-test and final acceptance test using report/documentation forms and script provided.

B. During acceptance testing, provide services of a fully qualified security systems technician who is knowledgeable of the project.

C. Using the commissioning test data, the Owner/Engineer and/or his representative shall select, at random, functions to be demonstrated. The Contractor in accordance with the acceptance test procedure shall demonstrate these functions. At 100-percent of the systems, functions shall be demonstrated. All of the functions demonstrated must perform, as specified and documented on commissioning data sheets or the system must be re-tested.

D. Furnish instruments required for testing.

E. After the acceptance tests are complete and the system is demonstrated to be functioning as specified, a thirty-day endurance test period requiring only routine maintenance and adjustment, the system shall be accepted. If during the endurance test period the system fails to perform as specified and cannot be corrected within eight hours, the Owner/Engineer may request that the endurance tests be repeated after problems have been corrected.

F. If acceptance is delayed because of defects in or failure of equipment or because the installation fails to meet the requirements of this specification, Security Subcontractor shall pay the Engineer, at the Engineer's standard rate in effect at that time, for any additional time and expenses during any extension of the acceptance testing periods.

G. Coordinate testing period so that free access, work lighting and electrical power are available on site.

H. Ensure that technical areas are in clean and orderly condition, ready for acceptance testing.

END OF SECTION

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General Notes:

Project Title:

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Fidelity Investor Center
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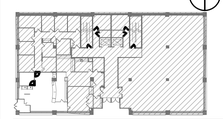
Portland, ME 04112
Branch ID No. 120

Number	Description	Date
	ISSUED FOR PERMIT & CONSTR	03 OCT 14

Key Plan: Project North



CAD File:
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Drawing Sheet Title :
ELECTRONIC SECURITY SPECIFICATIONS

Drawing Sheet Number:
ES-700

Owner's Drawing Sheet No.:

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