

SECTION 28 23 00 - VIDEO SURVEILLANCE SYSTEM

PART 1 GENERAL

1.01 DESCRIPTION

- A. Furnish and install a complete IP Video Surveillance System as shown on the Drawings and as specified herein. Provide all accessories and equipment as necessary for a complete system.
- B. The Surveillance System shall store video on an on-premises network video recorder (NVR). The system shall utilize IP-based cameras to monitor the internal and external areas of the facility. This section specifies requirements for the provision of all equipment, materials, labor, documentation, and services necessary to furnish and install a complete and operational IP-based on-premises Security Camera Video Management System (VMS) for the project, which supports an unlimited number of users, cameras, servers, and sites.
- C. **The proposed VMS shall have the basic ability for on-premises NVR recording. Where possible, the system should also have the ability to upgrade to blend on-premises recording and storage with a cloud-based system, with the additional ability to transition to a 100% cloud-based system in the future as desired by the Owner.**
- D. QUALITY ASSURANCE, MANUFACTURE
 1. Minimum 3-year experience manufacturing similar products.
 2. Products shall be non-proprietary in such that it may accept a number of different manufacturer cameras in differing forms and functions.
 3. Functional cameras shall include, standard single and multi-sensor cameras, PTZ, fisheye, thermal, explosion proof, etc.
 4. Functional camera shall include differing camera resolutions ranging from 2MP up to 4K cameras.
 5. Functional camera shall include different form factors to include dome, PTZ, bullet, turret, and fisheye.
- E. QUALITY ASSURANCE, CONTRACTOR
 1. Minimum 3-year experience installing security products. Installers shall be trained and authorized by the Manufacturer at the time of this submittal to install, integrate, test, and commission the system.
 2. The actual installation contractor(s) working on this project shall be a **certified installer for the security products** for this project and maintain that status with the warranting manufacturer, including all training requirements, for the duration of the VMS project.
 3. Supply a list of a minimum of five (5) projects over \$100,000 that the firm has completed along with contact names and phone numbers of the Owners' Representatives for those projects. At least three (3) of the completed facilities shall have been occupied and in full operation for at least one (1) year.
 4. It is the intent of this contract for the Contractor to provide sole responsibility for material, labor, and service for the security system. The Integrator shall, at a minimum, staff the project with two certified installers for project foremen and crew leader positions.

- F. All equipment shall be UL listed and labeled and in accordance with applicable NEMA and ANSI Standards.

1.02 SUBMITTALS

- A. For Review:
 - 1. Product data sheets of all components
 - 2. Wiring Diagrams
 - 3. Schematic Block diagrams
 - 4. Network bandwidth calculation
 - 5. Digital video storage calculation
 - 6. Copies of all certifications
- B. To be included in Record and Information Manuals:
 - 1. One (1) copy of each approved submittal
 - 2. Test results
 - 3. Certificate of System Completion

1.03 MANUFACTURERS

- A. As listed within. Basis of design listed is intended to meet the minimum requirements. Other acceptable manufacturers are as noted.

PART 2 PRODUCTS

2.01 IP CAMERA SYSTEM

- A. The system shall be a complete IP-based video surveillance system that shall utilize the Owner's network as the method of transport to a video surveillance server that shall record and retain the video and provide an export capability to transfer files that the Owner wishes to record to their choice of media.
- B. Cameras
 - 1. All Cameras shall utilize Internet Protocol as the transport for the video signaling.
 - 2. All cameras and mounts mounted on both exterior and interior of building should match mounting surface color. This color must be verified with Owner.
 - 3. Housing color for all exterior pole-mounted cameras (including any attached mount and box) shall be painted by the manufacturer to match the lighting pole color.
 - 4. The cameras shall meet or exceed the following performance requirements and criteria.
 - 5. 2MP Varifocal Indoor Dome Camera:
 - a. Image Sensor: 1/2.8" 2MP CMOS
 - b. Lens: 3.2 ~ 10mm (3.1x) motorized varifocal
 - c. Horizontal Angle of View: 109.0°(Wide) ~ 33.2°(Tele)
 - d. Vertical Angle of View: 57.4°(Wide) ~ 18.7°(Tele)
 - e. Compression: H.265/H.264, MJPEG
 - f. Resolution: 1920x1080 2MP
 - g. Day & Night: Auto (ICR)
 - h. Network: 10BASE-T / 100BASE-TX (RJ-45)
 - i. PoE: IEEE802.3af compliant
 - j. Vandal Resistant: No

- k. Basis of Design: Hanwha Techwin QND-6082R
- 6. 2MP Varifocal Outdoor Dome Camera:
 - a. Image Sensor: 1/2.8" 2MP CMOS
 - b. Lens: 3.2 ~ 10mm (3.1x) motorized varifocal
 - c. Horizontal Angle of View: 109.0°(Wide) ~ 33.2°(Tele)
 - d. Vertical Angle of View: 57.4°(Wide) ~ 18.7°(Tele)
 - e. Compression: H.265/H.264, MJPEG
 - f. Resolution: 1920x1080 2MP
 - g. Day & Night: Auto (ICR)
 - h. Network: 10BASE-T / 100BASE-TX (RJ-45)
 - i. PoE: IEEE802.3af compliant
 - j. Vandal Resistant: Yes, IK10
 - k. Environmental: IP66 rated for outdoor use
- l. Basis of Design: Hanwha Techwin QNV-6082R
- 7. 4MP Outdoor Bullet Camera:
 - a. Image Sensor: 1/3" 4MP CMOS
 - b. Lens: 3.2 ~ 10mm (3.1x) motorized varifocal
 - c. Compression: H.265/H.264, MJPEG
 - d. Resolution: MAX 2592x1520 4MP
 - e. Day & Night: Auto (ICR)
 - f. Network: 10BASE-T / 100BASE-TX (RJ-45)
 - g. PoE: IEEE802.3af compliant
 - h. Vandal Resistant: Yes, IK10
 - i. Environmental: IP66 rated for outdoor use
- j. Basis of Design: Hanwha Techwin QN0-7082R
- 8. 2MP Varifocal Outdoor Bullet Camera:
 - a. Image Sensor: 1/2.8" 2MP CMOS
 - b. Lens: 3.2 ~ 10mm (3.1x) motorized varifocal
 - c. Horizontal Angle of View: 109.0°(Wide) ~ 33.2°(Tele)
 - d. Vertical Angle of View: 57.4°(Wide) ~ 18.7°(Tele)
 - e. Compression: H.265/H.264, MJPEG
 - f. Resolution: 1920x1080 2MP
 - g. Day & Night: Auto (ICR)
 - h. Network: 10BASE-T / 100BASE-TX (RJ-45)
 - i. PoE: IEEE802.3af compliant
 - j. Vandal Resistant: Yes, IK10
 - k. Environmental: IP66 rated for outdoor use
- l. Basis of Design: Hanwha Techwin QNO-6082R
- 9. 360-Degree Fisheye Indoor Camera:
 - a. Image Sensor: 1/1.8" 6MP CMOS
 - b. Lens: 1.14mm fixed
 - c. Angular Field of View: H: 187° / V: 187° / D: 187°
 - d. Compression: H.265/H.264, MJPEG
 - e. Resolution: 2560 x 2048 6MP
 - f. Day & Night: Auto (Electrical)
 - g. Network: 10BASE-T / 100BASE-TX (RJ-45)
 - h. PoE: IEEE802.3af compliant
 - i. Vandal Resistant: No
- j. Basis of Design: Hanwha Techwin QNF-8010

10. 180-Degree Multi-Sensor Panoramic Indoor/Outdoor Camera:
 - a. Image Sensor: 2MP x 4
 - b. Lens: 2.8mm fixed
 - c. Angular Field of View: H: 209° / 180° / V: 83.3° (total with 4 sensors)
 - d. Compression: H.265/H.264, MJPEG
 - e. Resolution: 7.3 MP
 - f. Day & Night: Auto (ICR)
 - g. Network: 10BASE-T / 100BASE-TX (RJ-45)
 - h. PoE: IEEE802.3af compliant
 - i. Vandal Resistant: Yes, IK10
 - j. Environmental: IP66 rated for outdoor use
 - k. Basis of Design: Hanwha Techwin PNM-9022V
11. Dual-Sensor Indoor/Outdoor Camera:
 - a. Image Sensor: 1/2.8" 2MP CMOS x 2
 - b. Lens: 6.0mm fixed x 2
 - c. Total Pixels: 4 megapixel
 - d. Resolution: 1920 x 1080 x 2
 - e. Day & Night: Auto (Electrical)
 - f. Network: 10BASE-T / 100BASE-TX (RJ-45)
 - g. PoE: IEEE802.3af compliant
 - h. Vandal Resistant: Yes, IK10
 - i. Environmental: IP66 rated for outdoor use
 - j. Basis of Design: Hanwha Techwin PNM-7000VD with (2) SLA-2M6000D lens
12. The Indoor/Outdoor 360 Multi-sensor type cameras shall meet or exceed the following performance requirements and criteria:
 - a. Image Sensor: 1/1.8" 5MP CMOS x 4
 - b. Lens: 4.13 9.4mm (2.3x) motorized varifocal
 - c. Resolution: 2560x1920, 2560x1440, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x24
 - d. Day Night: Auto (ICR)
 - e. Network: Metal shielded RJ-45(10/100/1000BASE-T)
 - f. PoE: IEEE802.3af compliant
 - g. Outdoor: IP66 rated for outdoor use
 - h. Basis of Design: Hanwha Techwin PNM-9085RQZ
13. Acceptable Equivalent Manufacturers:
 - a. Axis and Panasonic i-PRO
14. Provide enclosures and appropriate mounting bracket for each camera provided based on the location and environment of the installation location. Refer to drawings for camera mounting details and schedule. All exterior wall mount cameras shall be installed with an exterior wall mount kit such that the camera is horizontally mounted (not vertically mounted on the wall). For exterior ceiling mount camera locations, where installed on a gable or sloped ceiling, ensure that camera view will be level to the ground by either (a) rotating the camera lens or (b) providing an appropriate pitched mount bracket to compensate for the slope.
15. See attached camera schedule for type and location.

2.02 CAMERA VIDEO MANAGEMENT SYSTEM (VMS)

1. The VMS shall manage video and event data received from cameras connected to multiple recording servers, as well as from physical security, content analytic, environmental detection, transaction and other enterprise systems.
 2. The VMS shall allow the integration of a host of add-on components via integration tools including data link integration events, API commands, contact closure and more.
 3. The VMS shall run on off-the-shelf PC hardware and support all leading manufacturers' cameras and devices (as well as all industry standard compression formats (MPEG4, MJPEG, H.263, H.264 and H.265, MJPEG)
 4. The VMS system resources shall be optimized through per-camera configuration for compression level/format, image resolution, bandwidth, frame rate, conditional recording, retention time, archiving frequency, archiving location and more.
 5. The VMS shall operate so all recording servers and client users are managed by the base, which coordinates all event and alert handling, manages users' rights to specific cameras and functions system wide (Active Directory supported), and distributes all shared assets
 6. The VMS shall function so that storage, based on either size or retention period, is allocated per camera or camera group, with prioritization of important cameras. Video can be stored on local or network drives, using a database structure that eliminates the distinction between 'live recording' and 'archived' video.
 7. The VMS shall have a system-wide repository for shared assets management, including maps for easy navigation to cameras, icons and events tagging/classification tables.
 8. The VMS shall provide free client software capable of operating on Windows, Linux, or Mac and have the following additional features:
 - a. Event Management
 - b. Event Prioritization
 - c. Composite Events (linking events or alerts)
 - d. Push video alerting
 - e. Management of Users, User Groups and Authorizations
 9. The VMS shall be capable of providing the following Actions on an event:
 - a. Send email notification to one or more recipients
 - b. Move PTZ camera to preset
 - c. Send HTTP GET/POST request
 - d. Send TCP/UDP package
 - e. Send event camera(s) to remote Video wall
 10. The VMS shall support the recording, viewing, archiving, and configuring of at least the camera manufacturer that is chosen.
 11. The VMS shall support access for mobile devices (Smartphone, touch pads etc.) with proper authentication.
 12. Acceptable Manufacturer and Product shall be:
 - a. Hanwha Wisenet Wave
 - b. Tyco exacqVision,
- B. Network Video Recorder Hardware (NVR)
1. The NVR shall be a rack-mounted unit capable of being installed in an EIA standard 19" rack without the use of custom mounting hardware with the exception of commercial, off-the-shelf, rack-mount hardware from the NVR server manufacturer. Each NVR shall have Scalable Architecture with unlimited number of cameras, connected to multiple recording servers (up to 64 cameras per server) at multiple sites; support for MJPEG, MPEG4, H.263 and H.264 compression formats, at image resolutions up to 5MP (and higher) and frame rates of 30 fps or more; support for analog cameras via a wide range of IP video encoders.

2. Each NVR shall be configured via an administration utility for setup and configuration of cameras and I/O devices, camera event settings, archive settings, scheduling, and soft buttons for manually triggered events.
 3. Each NVR shall automatically discover and detect cameras and other devices based on user preferences and have the following other features
 - a. Batch Device Configuration
 - b. Export/import of configuration data
 - c. Set automatic system restore points
 - d. Recording and Archiving
 - e. Maintenance-Free, Transparent Archiving
 - f. Multi/dual-stream support
 - g. Support for DNS and NAT (Network Address Translation.)
 - h. PTZ Preset Settings
 - i. PTZ Patrols
 - j. Two way audio
 - k. Networking: Support for Multi-Network operation
 - l. Detailed logging
 - m. Advanced Motion Detection with three resolution levels of motion detection.
 4. Each NVR shall have no limit on the number of concurrent client users, and no incremental cost for additional Clients.
 5. Each NVR shall support up to eight connected displays.
 6. The NVR shall be configured with RAID-5 storage consisting of a 4U chassis and eight hot swappable hard drives. The RAID-5 storage shall be internal to the server and shall provide notification of a drive failure to the administrator.
 7. In addition to the previously declared requirements of the NVR, it must meet all specifications set by the manufacturer.
 8. The contractor should price and retention per camera at 7 days. Explanation of retention process and capability should accompany this bid.
 9. Provide all bridges, gateways or other devices needed to complete the system installation.
 10. The NVR must have 2 network interface cards. Both cards shall be RJ45 connections with the capability of a 1 Gbps each.
 11. Acceptable Manufacturer shall be Wisenet Wave WRR-P-E200L2, Tyco exacqVision, or Engineer approved product.
- C. Provide all components and cost for an on-premises IP-based storage solution per camera. Include an additional cost quote for a Hybrid cloud-NVR system, with an explanation of how a Hybrid system would work.**
- D. Media Converter/POE (For pole cameras)**
1. A fiber optic Ethernet media converter, externally powered, capable of communicating Ethernet over fiber via a Gig E SFP port and supplying Ethernet data and power (PoE+) over Cat 5e/6 cable
 2. Receive an optical signal via an SFP port device power and supply Ethernet signal and power via RJ-45 connector.
 3. Minimum 50 Watts of power for each port.
 4. Provide 2 ports of POE power and 10/100/1000Base-T
 5. Basis for design: Perle S-1110HP-XT
 6. Equivalent Manufactures: Altronix, Comnet, and Vigitron

2.03 APPLICATION

- A. Provide IP cameras with lenses appropriate for the areas to be covered.

2.04 INSTALLATION

- A. Install Video Surveillance System as shown on the Drawings in accordance with manufacturer's written instructions.
- B. Provide 120 volt power to all equipment from nearest emergency circuit.
- C. Provide grounding of all equipment in accordance with ANSI/EIA/TIA-607.
- D. Coordinate Camera height with owner before securing.
- E. Install all components in cabinets and racks.
- F. Coordinate complete system installation with Owner's representative.
- G. Install Ethernet Switches and validate connectivity throughout. Configure all VLANs, IP Routing, and IP Subnets.
- H. Provide all required Integration Services to setup and program the Network (IP addresses, VLAN's, Routing, Wireless Surveys, etc.).
- I. Contractor shall supply the "latest" software updates as part of the system configuration for two (2) years after system acceptance.

2.05 TESTING

- A. Provide a complete functional test of all components in accordance with manufacturer's recommendations.
- B. Operate system for a minimum of seven (7) consecutive days with no problems before claiming contract completion.
- C. Refer to Section 26 08 40, "Electrical Tests, Adjustments, Inspection."

2.06 EQUIPMENT DEMONSTRATION

- A. After all system tests have been completed, schedule an instruction period with the Owner. Instruction to be provided by manufacturer's authorized field technician. Include up to four (4) sessions of four (4) hours each on different days.
- B. Instruction shall include:
 - 1. Location of all components of the system and explanation of their function
 - 2. Demonstration of equipment
 - 3. Maintenance and repair procedures
 - 4. Programming procedures
 - 5. Review of documents in Record and Information Manuals

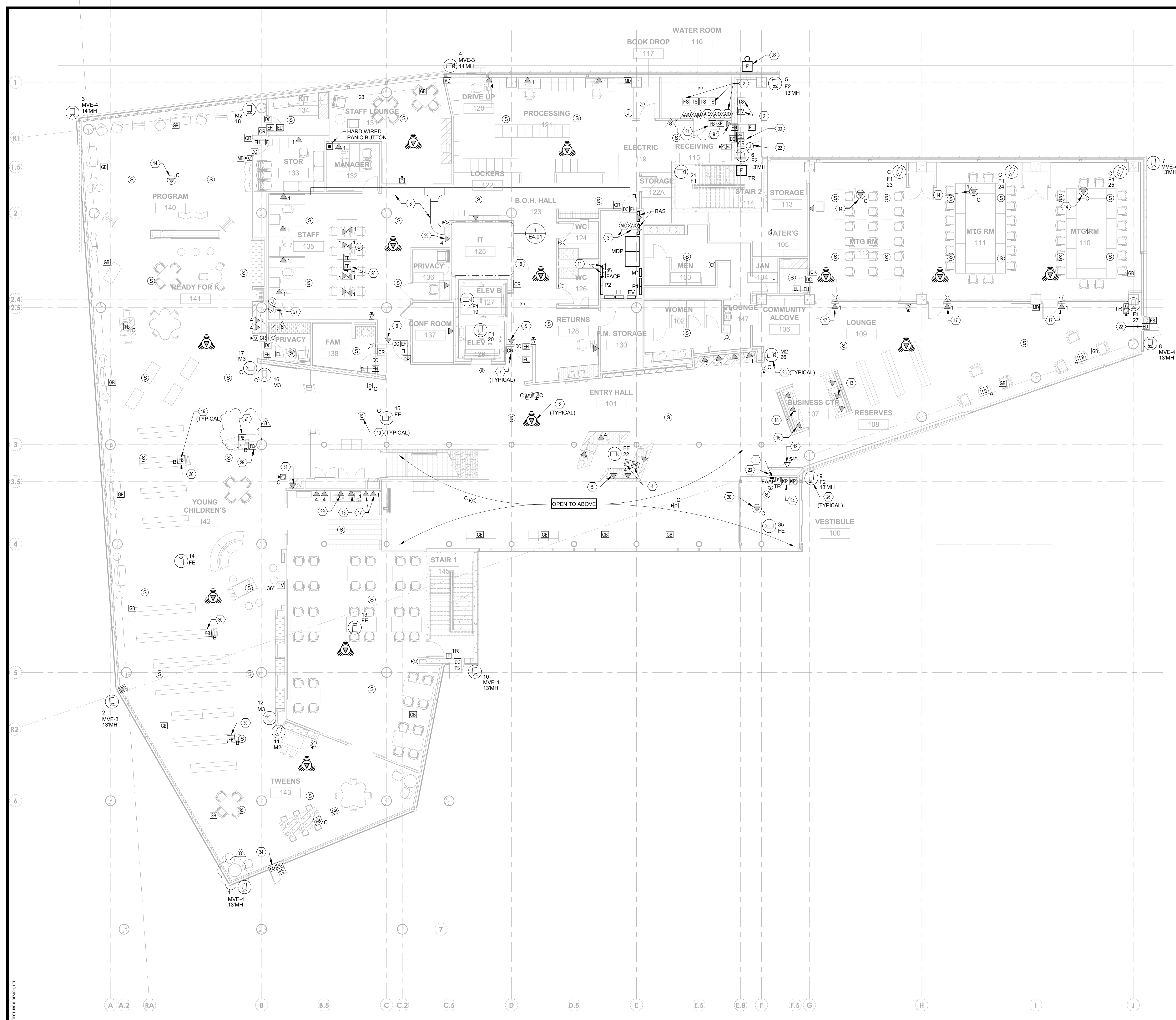
- C. Contractor shall have all participants sign the Certificate of System Completion in Section 28 00 99, "Requirements for Contract Completion."

2.07 WARRANTY OF WORK

- A. Contractor shall warrant all materials, equipment, and workmanship for a period of one (1) year from date of completion.

END OF SECTION

CAMERA SCHEDULE					
NUMBER	* TYPE	MOUNTING	ENVIRONMENT	DESCRIPTION	SHEET
P1	OUTDOOR 4MP BULLET CAMERA	POLE-MOUNTED	EXTERIOR	PARKING ENTRANCE	E0.01
P2	OUTDOOR 360 (4) SENSOR	POLE-MOUNTED	EXTERIOR	SOUTHWEST AND HANDICAP PARKING	E0.01
P3	OUTDOOR 180 (3) SENSOR	POLE-MOUNTED	EXTERIOR	SOUTH CENTER PARKING	E0.01
P4	OUTDOOR 360 (4) SENSOR	POLE-MOUNTED	EXTERIOR	EAST PARKING	E0.01
P5	OUTDOOR 180 (3) SENSOR	POLE-MOUNTED	EXTERIOR	MIDDLE PARKING FACING SOUTH	E0.01
P6	OUTDOOR 180 (3) SENSOR	POLE-MOUNTED	EXTERIOR	MIDDLE PARKING FACING NORTH	E0.01
P7	OUTDOOR 4MP BULLET CAMERA	POLE-MOUNTED	EXTERIOR	PARKING EXIT	E0.01
P8	OUTDOOR 180 (3) SENSOR	POLE-MOUNTED	EXTERIOR	NORTHWEST PARKING	E0.01
P9	OUTDOOR 4MP BULLET CAMERA	POLE-MOUNTED	EXTERIOR	BOOK DROP	E0.01
1	OUTDOOR 360 (4) SENSOR	WALL-MOUNTED OUTDOOR	EXTERIOR	SOUTH CORNER OF BUILDING	T1.01
2	OUTDOOR 180 (3) SENSOR	WALL-MOUNTED OUTDOOR	EXTERIOR	WEST SIDE OF BUILDING	T1.01
3	OUTDOOR 360 (4) SENSOR	WALL-MOUNTED OUTDOOR	EXTERIOR	NORTHWEST CORNER OF BUILDING	T1.01
4	OUTDOOR 180 (3) SENSOR	WALL-MOUNTED OUTDOOR	EXTERIOR	NORTH CENTER OF BUILDING	T1.01
5	OUTDOOR 4MP BULLET CAMERA	WALL-MOUNTED OUTDOOR	EXTERIOR	RECEIVING AREA COVERAGE	T1.01
6	OUTDOOR 2MP BULLET CAMERA	WALL-MOUNTED OUTDOOR	EXTERIOR	RECEIVING DOOR COVERAGE	T1.01
7	OUTDOOR 360 (4) SENSOR	WALL-MOUNTED OUTDOOR	EXTERIOR	NORTHEAST CORNER	T1.01
8	OUTDOOR 360 (4) SENSOR	WALL-MOUNTED OUTDOOR	EXTERIOR	EAST SIDE OUTSIDE LOUNGE	T1.01
9	OUTDOOR 4MP BULLET CAMERA	WALL-MOUNTED OUTDOOR	EXTERIOR	VESTIBULE VIEW	T1.01
10	OUTDOOR 360 (4) SENSOR	WALL-MOUNTED OUTDOOR	EXTERIOR	SOUTHEAST CORNER OUTSIDE STAIR 1	T1.01
11	INDOOR 180 (2) SENSOR	CEILING-MOUNTED	INTERIOR	TWEENS FACING SOUTH	T1.01
12	INDOOR 180 (2) SENSOR	CEILING-MOUNTED	INTERIOR	TWEENS FACING NORTH	T1.01
13	INDOOR FISHEYE CAMERA	CEILING-MOUNTED	INTERIOR	WORK AREA	T1.01
14	INDOOR FISHEYE CAMERA	CEILING-MOUNTED	INTERIOR	YOUNG CHILDRENS	T1.01
15	INDOOR FISHEYE CAMERA	CEILING-MOUNTED	INTERIOR	ENTRY HALL WEST	T1.01
16	INDOOR 180 (2) SENSOR	CEILING-MOUNTED	INTERIOR	READY FOR K FACING SOUTH	T1.01
17	INDOOR 180 (2) SENSOR	CEILING-MOUNTED	INTERIOR	READY FOR K FACING WEST	T1.01
18	INDOOR 180 (2) SENSOR	CEILING-MOUNTED	INTERIOR	PROGRAM SPACE FACING SOUTHWEST	T1.01
19	INDOOR 2MP DOME	CEILING-MOUNTED	INTERIOR	IN ELEVATOR B	T1.01
20	INDOOR 2MP DOME	CEILING-MOUNTED	INTERIOR	IN ELEVATOR A	T1.01
21	INDOOR 2MP BULLET	WALL-MOUNTED AT 7' 8" AFG	INTERIOR	STAIR 2	T1.01
22	INDOOR FISHEYE CAMERA	CEILING-MOUNTED	INTERIOR	ENTRY HALL CENTER	T1.01
23	INDOOR 2MP DOME	CEILING-MOUNTED	INTERIOR	MEETING ROOM 112	T1.01
24	INDOOR 2MP DOME	CEILING-MOUNTED	INTERIOR	MEETING ROOM 111	T1.01
25	INDOOR 2MP DOME	CEILING-MOUNTED	INTERIOR	MEETING ROOM 110	T1.01
26	INDOOR 180 (2) SENSOR	CEILING-MOUNTED	INTERIOR	COMMUNITY ALCOVE	T1.01
27	INDOOR FISHEYE CAMERA	CEILING-MOUNTED	INTERIOR	READING/STUDY	T1.02
28	INDOOR 180 (2) SENSOR	CEILING-MOUNTED	INTERIOR	COLLECTIONS N WALL	T1.02
29	INDOOR 2MP BULLET	WALL-MOUNTED AT 7' 8" AFG	INTERIOR	2ND FLOOR STAIR 1	T1.02
30	INDOOR FISHEYE CAMERA	CEILING-MOUNTED	INTERIOR	COLLECTIONS CENTER	T1.02
31	INDOOR FISHEYE CAMERA	CEILING-MOUNTED	INTERIOR	COLLECTIONS NORTH	T1.02
32	INDOOR 180 (2) SENSOR	CEILING-MOUNTED	INTERIOR	TEEN NORTHWEST CORNER	T1.02
33	INDOOR 180 (2) SENSOR	CEILING-MOUNTED	INTERIOR	PUBLIC PCS NORTHEAST	T1.02
34	INDOOR 180 (2) SENSOR	CEILING-MOUNTED	INTERIOR	PUBLIC PCS SOUTHEAST	T1.02
35	INDOOR FISHEYE CAMERA	CEILING-MOUNTED	INTERIOR	INSIDE VESTIBULE	T1.01



- GENERAL NOTES:**
- FIELD VERIFY EXACT LOCATIONS OF ALL DEVICES AND EQUIPMENT. REFER TO DRAWINGS AND SPECIFICATIONS OF OTHER CONSTRUCTION WORK TRADES FOR ADDITIONAL ELECTRICAL WORK INCLUDED IN DIVISIONS 27 AND 28.
 - COORDINATE ALL ROUGH-IN REQUIREMENTS OF DEVICES IN CASEWORK, FURNITURE AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL DRAWINGS AND SPECIFICATIONS PRIOR TO ROUGH-IN.
 - COORDINATE ALL FINAL DEVICE COLOR AND FINISHES SELECTIONS WITH ARCHITECT AND OWNER.
 - ALL DATA CABLES SHALL BE ROUTED IN CABLE TRAY, J-HOOKS OR CONDUIT. CABLES SHALL BE ROUTED INCONSPICUOUSLY PARALLEL TO BUILDING STRUCTURES AND DUCTWORK, ETC.
 - ALL WIRE IN CONDUITS (INCLUDING FLEX CONDUIT) SHALL BE CONCEALED WHERE POSSIBLE. IF SURFACE CONDUIT IS USED IT MUST FIRST BE APPROVED BY A/E AND PAINTED TO MATCH WALL/CEILING FINISHES.
 - COORDINATE LOCKDOWN FUNCTIONS WITH ARCHITECTURAL DOOR HARDWARE SPECIFICATIONS FOR INTEGRATION IN THE ACCESS CONTROL SYSTEM.
 - ALL DATA CABLING SHALL BE HOMERUN TO IT ROOM ON THIS FLOOR. PROVIDE PATCH PANELS TO SERVE QUANTITIES OF OUTLETS SHOWN ON PLANS PLUS 20% SPARE.
 - COORDINATE ALL A/V DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH CML A/V VENDOR (NEW ERA).
 - PROVIDE SEALS AROUND ALL CONDUITS AND ALL ELECTRICAL PENETRATIONS.
 - COORDINATE FINAL FLOOR BOX LOCATION WITH ARCHITECTURAL FURNITURE PLANS.

- CODED NOTES:**
- FIRE ALARM ANNUCIATOR PANEL. MOUNT AT 54" A.F.F.
 - FIRE ALARM ADDRESSABLE MODULES FOR SPRINKLER SYSTEM TAMPER AND FLOW SWITCHES. REFER TO FIRE PROTECTION PLANS FOR EXACT REQUIREMENTS AND LOCATION.
 - FIRE ALARM ADDRESSABLE MODULES FOR BAS MONITORING OF ALARM, TROUBLE AND SUPERVISORY STATUS.
 - DURESS AND LOCKDOWN BUTTONS. DURESS SIGNALS SHALL BE TRANSMITTED TO 911 AND CML'S MAIN SECURITY CONTROL CENTER. FIELD COORDINATE EXACT LOCATION WITH CML SECURITY VENDOR PRIOR TO ROUGH-IN.
 - PROVIDE DATA FOR PUBLIC ADDRESS STATION (VOIP) AT CUSTOMER SERVICE DESK.
 - APPROXIMATE LOCATION OF CEILING MOUNTED WIRELESS ACCESS POINT (WAP) OUTLET (CAT6A). EXACT LOCATION TO BE DETERMINED BY WIRELESS SURVEY BY CML IT DEPARTMENT. PROVIDE 15 FEET OF CABLE LOOP AT OUTLET AND HOMERUN TO DEDICATED PATCH PANEL.
 - CARD READER BY CML SECURITY VENDOR. FIELD VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
 - 18" WIDE, 4" DEEP CABLE TRAY SYSTEM WITH BOTTOM COVER. FIELD COORDINATE ROUTING WITH OTHER TRADES PRIOR TO INSTALLATION.
 - PROVIDE DATA FOR VIDEO MONITOR TO VIEW INTERIOR AND EXTERIOR SPACES. MOUNT DEVICE ABOVE DOOR NEXT TO RECEPTACLE.
 - PROVIDE STEM MOUNTED DEVICE (WHERE APPLICABLE). ALL SPEAKERS SHALL BE SUSPENDED AT EQUAL HEIGHT. COORDINATE EXACT LOCATION WITH CML A/V VENDOR.
 - PROVIDE TELEPHONE DATA FOR IP/GSM COMMUNICATOR PANEL FOR FIRE ALARM SYSTEM. COORDINATE WITH CML PROPERTY MANAGEMENT FOR MONITORING STATION SUBSCRIPTION INFORMATION.
 - PROVIDE DATA FOR COURTESY PHONE.
 - PROVIDE DATA FOR PRINTER.
 - PROVIDE CEILING MOUNTED DATA OUTLET FOR PROJECTOR. COORDINATE LOCATION WITH CML A/V VENDOR.
 - PROVIDE DATA FOR VEN UNIT.
 - REFER TO SHEET E0.00 FOR FLOORBOX REQUIREMENTS.
 - PROVIDE DATA FOR ROOM SCHEDULER.
 - PROVIDE DATA FOR COPIER/PRINTER.
 - REFER TO E4.01 FOR CARD READER LOCATION.
 - PROVIDE CEILING MOUNTED DATA TO FOR "PEOPLE COUNTER".
 - PANIC BUTTON BY CML SECURITY VENDOR. FIELD VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
 - PROVIDE EGRESS WITH SOUNDER.
 - PROVIDE 1" CONDUIT TO SERVE BOOK SECURITY SYSTEM. ROUTE ABOVE CEILING TO NEAREST WALL. CABLING BY CML SECURITY VENDOR.
 - PROVIDE 1" CONDUIT TO SECURITY KEY PAD. MAKE FINAL CONNECTIONS WITH DOOR HARDWARE VENDOR.
 - PROVIDE INTERIOR CAMERA. ROUTE DATA CABLING BACK TO IT ROOM. FIELD COORDINATE EXACT MOUNTING HEIGHT AND LOCATION WITH CML PRIOR TO ROUGH-IN.
 - PROVIDE EXTERIOR CAMERA. ROUTE DATA CABLING IN 1" CONDUIT SLEEVE STUBBED 6" INTO BUILDING. CABLING BACK TO IT ROOM. FIELD COORDINATE EXACT MOUNTING HEIGHT AND LOCATION WITH CML PRIOR TO ROUGH-IN.
 - PROVIDE JUNCTION BOX IN WALL FOR POWER AND DATA CONNECTIONS TO SYSTEM FURNITURE.
 - PROVIDE JUNCTION BOX IN FLOOR FOR POWER AND DATA CONNECTIONS TO SYSTEM FURNITURE.
 - PROVIDE DATA FOR STAFF-KIOSK.
 - PROVIDE DATA FOR CATALOG PC.
 - PROVIDE DATA FOR SELF-CHECKOUT.
 - SPRINKLER BELL (BY OTHERS).
 - PROVIDE STI SS2421EM-EN KIT NEXT TO KEY PAD.

REVISION SCHEDULE		
#	DATE	REVISION DESCRIPTION
4	10.07.22	Bulletin 04
5	10.25.22	Bulletin 05
8	01.24.23	Bulletin 07

PROJECT NAME :
CML REYNOLDSBURG
 1402 BRICE ROAD
 REYNOLDSBURG, OHIO 43068

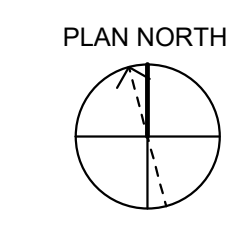
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ISSUE DATE : 06/10/22

A/E/C ADVANCED ENGINEERING CONSULTANTS
 Mechanical | Electrical | Plumbing | Fire Protection
 1405 Dublin Road, Suite: (614) 486-4778
 Columbus, Ohio 43215 Fax: (614) 486-4082



1 FIRST FLOOR PLAN - SYSTEMS
 1/8" = 1'-0"



LEVEL 1 SYSTEMS PLAN

T1.01

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- GENERAL NOTES:**
- FIELD VERIFY EXACT LOCATIONS OF ALL DEVICES AND EQUIPMENT. REFER TO DRAWINGS AND SPECIFICATIONS OF OTHER CONSTRUCTION WORK TRADES FOR ADDITIONAL ELECTRICAL WORK INCLUDED IN DIVISIONS 27 AND 28.
 - COORDINATE ALL ROUGH-IN REQUIREMENTS OF DEVICES IN CASEWORK, FURNITURE AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL DRAWINGS AND SPECIFICATIONS PRIOR TO ROUGH-IN.
 - COORDINATE ALL FINAL DEVICE COLOR AND FINISHES SELECTIONS WITH ARCHITECT AND OWNER.
 - ALL DATA CABLES SHALL BE ROUTED IN CABLE TRAY, J-HOOKS OR CONDUIT. CABLES SHALL BE ROUTED INCONSPICUOUSLY, PARALLEL TO BUILDING STRUCTURES AND DUCTWORK, ETC.
 - ALL WIRE IN CONDUITS (INCLUDING FLEX CONDUIT) SHALL BE CONCEALED WHERE POSSIBLE. IF SURFACE CONDUIT IS USED IT MUST FIRST BE APPROVED BY A/E AND PAINTED TO MATCH WALL/CEILING FINISHES.
 - COORDINATE LOCKDOWN FUNCTIONS WITH ARCHITECTURAL DOOR HARDWARE SPECIFICATIONS FOR INTEGRATION IN THE ACCESS CONTROL SYSTEM.
 - ALL DATA CABLING SHALL BE HOMERUN TO IT ROOM ON THIS FLOOR. PROVIDE PATCH PANELS TO SERVE QUANTITIES OF OUTLETS SHOWN ON PLANS PLUS 20% SPARE.
 - COORDINATE ALL AV DEVICE LOCATIONS AND MOUNTING HEIGHTS WITH CML AV VENDOR (NEW ERA).
 - PROVIDE SEALS AROUND ALL CONDUITS AND ALL ELECTRICAL PENETRATIONS.
 - COORDINATE FINAL FLOOR BOX LOCATION WITH ARCHITECTURAL FURNITURE PLANS.
 - REFER TO E2.02 FOR FLOOR BOX INSTALLATION.

- CODED NOTES:**
- REFER TO E4.02 FOR CARD READER LOCATION.
 - APPROXIMATE LOCATION OF WIRELESS ACCESS POINT (WAP) OUTLET (CAT6A). EXACT LOCATION TO BE DETERMINED BY WIRELESS SURVEY BY CML IT DEPARTMENT. PROVIDE 15 FEET OF CABLE LOOP AT OUTLET AND HOMERUN TO DEDICATED PATCH PANEL.
 - CARD READER BY CML SECURITY VENDOR. FIELD VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
 - REFER TO SHEET E0.00 FOR FLOORBOX REQUIREMENTS.
 - PROVIDE DATA AND AV CONNECTIONS FOR DISPLAY MONITOR. COORDINATE MOUNTING HEIGHT WITH CML PRIOR TO ROUGH-IN. ROUGH-IN 4" X 4" X 2-5/8" DEEP JUNCTION BOX AND 1-1/2" CONDUIT STUB UP TO 3" ABOVE ACCESSIBLE CEILING FOR CABLING.
 - PROVIDE DATA FOR ROOM SCHEDULER.
 - PROVIDE DATA FOR STAFF KIOSK.
 - PROVIDE STEM MOUNTED DEVICE (WHERE APPLICABLE). ALL SPEAKERS SHALL BE SUSPENDED AT EQUAL HEIGHT. COORDINATE EXACT LOCATION WITH CML AV VENDOR.
 - PANIC BUTTON BY CML SECURITY VENDOR. FIELD VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
 - PROVIDE PHONE FOR ELEVATOR CONTROLLER. FIELD VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
 - FIRE ALARM ADDRESSABLE MODULES FOR BAS MONITORING OF ALARM, TROUBLE AND SUPERVISORY STATUS.
 - PROVIDE INTERIOR CAMERA. ROUTE DATA CABLING ABOVE ACCESSIBLE CEILING BACK TO IT ROOM ON THIS FLOOR. FIELD COORDINATE EXACT MOUNTING HEIGHT AND LOCATION WITH CML PRIOR TO ROUGH-IN.
 - 18" WIDE, 4" DEEP CABLE TRAY SYSTEM WITH BOTTOM COVER. FIELD COORDINATE ROUTING WITH OTHER TRADES PRIOR TO INSTALLATION.
 - PROVIDE DATA FOR PRINTER.
 - PROVIDE DATA FOR COPIER/PRINTER.
 - PROVIDE DATA FOR CATALOG PC.
 - PROVIDE DATA FOR VEN UNIT.

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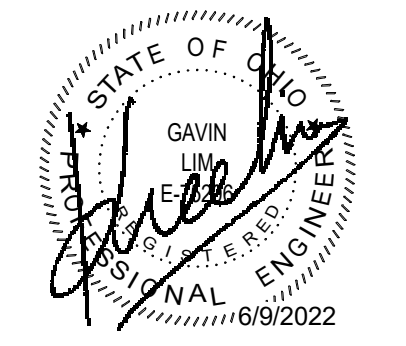
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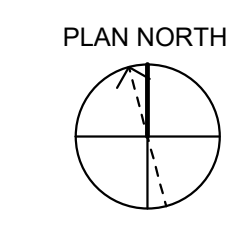
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LEVEL 2 SYSTEMS PLAN

T1.02

1 SECOND FLOOR PLAN - SYSTEMS
 1/8" = 1'-0"



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