



City of Wheeling

REQUEST FOR PROPOSAL

**POLICE AND FIRE DEPARTMENT'S
WIRELESS ACCESS POINTS**

Send to:

City of Wheeling

RFP # 2022-WAP-01

Michael A. Lloyd, Director of Information Technology

1500 Chapline Street, Suite 115

Wheeling, WV 26003

mlloyd@wheelingwv.gov

Submission Due Date for Proposal:

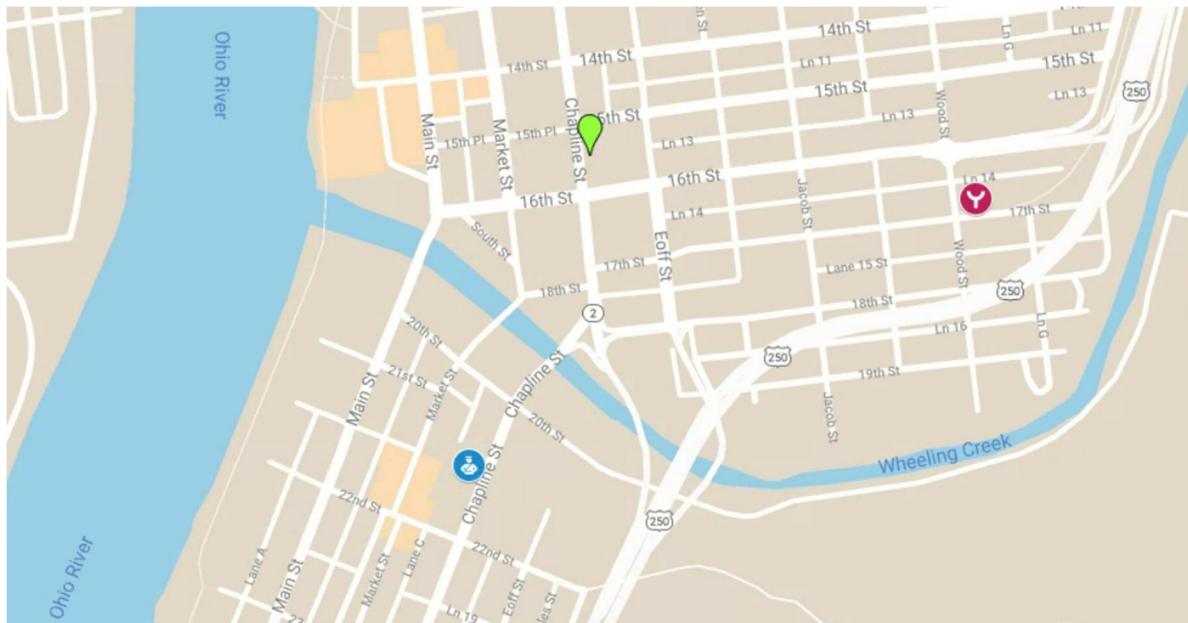
Bids will only be accepted through and no later than 12:00 P.M. on Friday, February 11, 2022

I. About the City of Wheeling

See Appendix A

II. Background

The City of Wheeling, green marker below, West Virginia (“City”) is renovating a structure for the City Police Department (“WPD”), blue marker, located at 2115 Chapline St, Wheeling, WV 26003 and commonly referred to as the “VPC Building”. Similarly, the City is building a new facility for the City Fire Department headquarters (“WFD”), red marker, at Wood and 17th St aka 167 17th St, Wheeling, WV 26003.



III. Project Description

Both structures will require Wireless Access Points (WAP) to be strategically located throughout each structure providing exceptional wireless coverage to users.

The WPD is a four-story building. The WFD is campus-style building.

The WPD construction is tentatively due for completion in August 2022 while the WFD construction is due for completion in December 2022. Therefore, project should coincide with construction and WAP project completion by same dates.

Each location will have dedicated internet access of 100 Mbps with the ability to increase, if necessary. Cat6a data points will be provided.

The solution must be tested to be highly reliable and meet the current and projected bandwidth demands of large, daily uploads used in law enforcement and large, regular streaming and other downloads used in educational settings or research.

The basis of this RFP design is an IEEE 802.11ax, Wi-Fi 6 wireless system. However, a fully optimized 802.11ac, Wi-Fi 5 Wave 2 solution may be considered, although not preferred.

IV. General Requirements

- A. With the exception of any price decreases, all proposals will remain in effect through completion of project.
- B. Refurbished equipment is not acceptable. All equipment must be new and from an authorized reseller of the manufacturer.
- C. Partial or incomplete bids will not be accepted.
- D. When providing equipment quotes, service provider must have at least one (1) certified engineer or equivalent on staff for hardware quoted. Proof must be provided in bid package to be accepted. If bidder is subcontracting or outsourcing this function, then certifications from subcontractor must be provided.
- E. All proposals must include shipping as separate line items.
- F. Three (3) references describing bidder's portfolio experience with comparable projects must be provided in proposal.
- G. Any licensing or subscriptions to support WAP, if required, and hardware warranties shall be a minimum of five (5) years.
 - 1. Warranties shall be a minimum of next business day.
 - 2. Software upgrades shall be included.
 - 3. During the warranty period and any subsequent maintenance agreement period, any defective components shall be repaired or replaced within a timely manner at no cost to the City provided that equipment is covered in any agreement. Manufacturer warranty shall not be less than one (1) year from the installation date of each location. Shipping costs on warranty items shall be the expense of the manufacturer or vendor. Hardware requiring replacement during the warranty period shall be replaced based upon criticality. For example, hardware that is not functioning properly shall be replaced within one (1) business day. Non-critical hardware may be shipped within a reasonable period of time.
- H. Bidder and proposal must account for complete WAP coverage inside each structure. External coverage is also critical for the WPD and must also be complete and accounted for, where necessary.
- I. Proposal must include a predictive RF design to ensure proper coverage and WAP placement.

- J. Proposal must include all hardware (WAP devices, PoE devices, switches, routers, firewalls, etc.), software, subscriptions, licensing, materials, labor, etc. to ensure a fully functional deployment and configuration enabling each department to go-live. This includes consideration for unforeseen, yet reasonable, configurations. Anything excluded from winning proposal will be provided at bidder's expense.
- K. An itemized spreadsheet shall be provided listing, at a minimum, Manufacturer, Manufacturer Part #, Part Description, Quantity, Price Per Unit, Total Cost. Separate by the following six sections: Software, Subscriptions, and Licenses; Hardware; Supplies and Materials; Service and Support; Installation and Labor; and, Additional Items.
- L. Any and all login credentials shall be provided in an encrypted, electronic form to the Director of Information Technology following completion of installation and testing. All default credentials will be changed before completing of installation. Vendor will communicate with the Director to identify what credentials should be used.
- M. The WAP system will be configured to be fully functional by the service provider of the awarded bidder.
- N. A Project Manager shall be listed in the proposal identifying qualifications or a resume and the contact information (address, office phone, mobile phone, hours, etc.). The Project Manager shall be separate from installers or technicians.
- O. Service provider is responsible for setup, staging, configuration, installation, testing, coordination, identifying entire scope of work and sign off, and cleanup.
- P. A solution demonstration, remote or in-person, shall be provided to the Director of Information Technology prior to bid submission. Demonstration shall include devices similar to what will be included in proposal. Demonstration shall be no more than one half hour in length. Failure to provide a demonstration will prevent consideration of proposal.
- Q. Service provider and provide a 90-day and 180-day follow-up meeting for any necessary fine-tuning for the installed solution and perform any necessary configurations as part of the proposal.
- R. Service provider must warrant that the solution they provide will be viable, maintained, and supported for a minimum period of seven (7) years from the date of the first installation.

- S. A separate quote must be prepared for the WPD and WFD.

V. Selection Criteria

#	Factor	Description	Points
1	Solution Provided	A key component is the solution the vendor supplies. The solution must be 100% complete and provide a detailed listing of necessary equipment. Vendor is expected to determine if a network can support the solution prior to implementation. What is the best solution for the City now and for any future growth or changes? What is both secure and easy to manage?	30
2	Vendor experience and vision	Can the vendor provide a complete solution that meets the requirements of this proposal? Is the vendor experienced to install and support their provided solution? Does the vendor have sufficient resources to support the installation and maintenance? Does vendor have properly certified technicians?	15
3	Vendor references	Who has a comparable system as proposed? Who has the vendor sent proposals but wasn't the chosen vendor?	15
4	Vendor support and service	Can the vendor support the proposed system remotely or locally and at all current and future locations?	15
5	Technology	Is proposed system technologically advanced and continuing to be enhanced and maintained or is it a legacy system? What is the expected supported lifespan of the proposed system?	20
6	Scalability	Will the system grow as the City does? Can the system handle future upgrades? At what point does the system need upgraded or replaced?	15
7	Pricing structure	Is the pricing competitive and comprehensive?	25
Total Points			135

VI. Bid Information

A. Timelines

It is the sole responsibility of the bidder to see that the proposal is received before the date and time listed. Postmarks will not be considered as an indication of successful submission.

B. Bid Main Contact

Michael A. Lloyd, Director of Information Technology, 1500 Chapline Street, Suite 115, Wheeling, WV 26003, mlloyd@wheelingwv.gov, 304-234-3719

C. Questions Related to the RFP

All requests for information related to this RFP must be made in writing via email to the Bid Main Contact. Subject line must be RFP2022-WAP-01. All questions and answers will be posted publicly at <http://www.wheelingwv.gov/RFP2022WAP01>. All bidders will be responsible for checking this site for updated questions and answers during the bidding period. No questions will be accepted after February 4, 2022.

D. Hardcopy Required

All proposals must be submitted in hardcopy in ink. No pencil marks or notations will be accepted.

E. Costs

All costs must be included in the bidder's proposal. Any expected shipping costs must be included in the proposal.

F. Taxes

The City is exempt from sales taxes. Applicable municipal Business & Occupational Licensure and taxes shall apply to the vendor.

G. Payments

Payment for any equipment would be paid in full 30-days following award and invoice receipt.

Thirty percent of Services will be paid 30-days after project kickoff. The remaining 70% will be paid upon project completion and final signoff of project and agreed completion by the Director of Information Technology or City Manager.

H. Deadline

WPD = August 1, 2022

WFD = December 1, 2022

I. Performance

By signing below, bidder agrees to perform all work by the established Deadline unless an extension is provided in writing by the Director of Information Technology. If Deadline is not met, a \$1,500.00 penalty will be assessed for each day project is not complete. This includes necessary cleanup, punch list completion, and completion of outstanding issues.

J. Signatures

Each proposal must be signed in the name of the bidder and must contain a written signature of the person authorized by the bidding enterprise to submit proposals on its behalf. A typed spelling of the signature and the position of the signor must be included with the signature.

K. Withdrawals and Errors

The bidder may withdraw any proposal between the submission date and the date and time of bid opening. The request for withdrawal must be made in writing and can be emailed to the Bid Main Contact. A bidder withdrawing a proposal will not be allowed to submit a new proposal. Proposals cannot be withdrawn after the February 16, 2022, 2:00pm opening date and time without the approval of the Director of Information Technology. Once opened, responding bidders will be responsible for any additional costs incurred due to pricing errors in the proposal if their bid is awarded a contract.

L. Evidence of Responsibility

The City reserves the right to request evidence from each respondent showing the bidder's financial stability, technical expertise, and staffing ability to fulfill the contract.

M. [Acceptance or Rejection of Proposals](#)

The City reserves the right to reject any and all proposals, or any or all items of any proposal, or waive any irregularity of any proposal.

N. [Contract](#)

The awarded bidder will be required to enter into a written contract with the City. These bid specifications and the bidder's proposal will be attached to, and become part of, the final contract documents.

O. [Award of Contract](#)

No contract will be awarded without the review by the City of Wheeling Legal Department and final approval of the City of Wheeling Council.

P. [Brands](#)

The City has provided manufacturer preference but is willing to accept proposals featuring other equipment that is functionally equivalent. Functional equivalence must be proven through documentation provided by the bidder, and product sheets or links to online product sheets must be included in the bid response. When bidding an alternative, bidder must ensure that any additional components or licensing costs required to integrate into the existing City network are included in the bid.

Q. [Right to Reject Any Proposal](#)

The City reserves the right to reject any or all quotation submittals and to waive any informalities or regularities. The service provider's submission is recognition of this right. In addition, the City reserves the right to award for some, all, or none of the products and services sought herein.

R. [Prevailing Law](#)

In the event of any conflicts or ambiguities between these specifications and state or federal laws, regulations, or rules, then the latter will prevail.

S. [Federal and State Regulations](#)

The bidder's proposal and any contract entered into are subject to all applicable statutes of the United States and the State of West Virginia and all applicable regulations and orders of the Federal or State governments now in effect or which shall be in effect during the period of the contract.

VII. [Technical Requirements](#)

Bidders must provide a narrative description of your product's ability to comply with each item in this section as appropriate. Each description should refer to the section and item number/letter being addressed.

A. Base Requirements

Requirements may be answered by acknowledging a question (such as “Read – Comply”), a description of compliance, or with a statement explaining non-compliance. Non-compliance statements should include a description of alternatives available to reach the same result. The following is a list of requirements that the wireless LAN system must comply with:

1. **Controllerless Wireless System**
System must comply with the IEEE 802.11ax (compatible), 802.11ac, 802.11n, 802.11g, 802.11b and 802.11a standards for wireless ethernet and the WAPs must obtain their power using the 802.3at Power over Ethernet (PoE) standard.
2. **Wireless Access Points**
 - i. **Multigigabit Ethernet Port**
 - a. 1x1000/2.5G
 - b. 1x1000/2.5/5G
 - ii. 802.11ax support
 - iii. Dual band coverage for both the 2.4Ghz and 5Ghz spectrum
 - iv. Minimum radios per WAP
 - v. Ceiling and Wall Mounting
 - vi. Power over Ethernet 802.3at
 - vii. Support Maximal Ratio Combining (MRC) and Beamforming
 - ii. Separate Ethernet interface for configuration and support
 - iii. Splash page for guest login with customization
 - iv. 4x4 radio antenna
 - v. MU-MIMO support
 - vi. A cloud-based controller is preferred
 - vii. A minimum of six (6) SSIDs shall be supported with the ability to separate Wi-Fi traffic based on user role and traffic type. An SSID shall be assignable to a user group, traffic type, or Virtual LAN (VLAN). Specifying VLANs on the Wi-Fi network shall automatically enable the required trunking, tagging, and proper authentication methods for the wired network.
 - viii. Voice and video traffic shall have the ability to be assignable to a specific SSID that provides high-priority handling. The system will provide the ability to set voice SSID which shall automatically establish the proper SIP Application-Layer Gateways (ALG) and set the highest Quality of Service (QoS) parameter.
3. **Location Services**
 - i. Active RFID
 - ii. Real Time Location services
4. **Management**
 - i. WAP Monitoring and Reporting
 - ii. Bandwidth Monitoring and Reporting
 - iii. SNMPv2, SNMPv3

- iv. SSL Web Interface
- v. Command Line
- vi. SSH
- vii. Console Port
- viii. Interference and RF troubleshooting management

5. Standards

- i. Switches with lifetime warranty preferred or a minimum of five (5) years
- ii. Switches should have multigigabit capabilities to take advantage of 802.11ax speeds.
- iii. HPE Aruba 2500/2600 series switch brand is preferred; however, other models or switch brands may be considered
- iv. Redundant power supplies
- v. PoE+
- vi. Cat6 minimum, Cat6a preferred
- vii. Full wire-runs to switches
- viii. Keystones used for terminations on both ends
 - 32-port blank patch panel in rack
 - Data keystone color = Blue
 - Wireless Access Point keystone color = Red
 - Network device (switch, firewall, router) keystone color = White
- ix. Redundant TrippLite Online, Pure Sine, 120v, hot-swappable battery, L5-30R plug UPS for server room and 5-15P for areas outside the server room
- x. Enclosed rack with door/wall filters and exhaust
- xi. Rackmount power receptacles, equipment, and shelving

VIII. Functional Requirements

A. WAP and Network Management

- i. Can any common tools or software utilities be used for wired and wireless network management? Specify.
- ii. Does the network management application integrate into a system management framework?
- iii. Are client identification reports possible based on operating system or browser type to identify types of client (i.e., PC laptop vs smartphone vs tablet)? If the system does allow for this functionality, explain how it functions. (MAC address or Layer 7 Inspection). Identify all client fields which are captured.
- iv. Network management application should allow for configuration management of all wireless infrastructure components.
- v. Application should allow for preset parameters to be downloaded to all WAPs.
- vi. Application should allow WAPs to be placed in groups to facilitate standard configuration while allowing different configurations based on usage scenarios.
- vii. Explain your procedure for provisioning a new WAP device. It is preferred that WAPs be self-provisioned without any manual intervention from the system administrator.

- viii. Describe the capabilities of your central management platform, e.g., firmware updates, configuration changes, monitoring, and diagnostics for all proposed components.
- ix. Describe the features and function of the web portal.
- x. Does the system provide for context aware functionality (e.g., the ability to limit guest access based on time and date)?
- xi. Describe the systems interference mitigation capability.
- xii. WAPs shall be capable of being managed, configured, and monitored by an independent network management solution.
- xiii. Explain tasks the network management solution can perform:
 - a. Total managed devices solution can support.
 - b. Collect and display client device data.
 - c. Client device filters for inventory reporting by device classification.
 - d. Automatically track network users or devices, both wireless or remote.
 - e. Provide visibility into the wired infrastructure.
 - f. Provide visibility into clients associated to network including location, SNR, and connection speed.
 - g. Log and display radio and RADIUS errors, including noise floor and channel utilization information.
 - h. Offer rapid drill-down from network-wide to device-level monitoring views.
 - i. Collect and display client diagnostic, radio diagnostic, RF health, and RF performance information.
 - j. Map upstream relationships between WAPs, controllers, and switches to identify the root cause of downtime and performance problems.
 - k. Correlate performance and downtime issues and send only a single alert in the event of an upstream device failure.
 - l. Automatically configure WAPs and controllers.
 - m. Define configuration policies through a Web user interface or by importing a known-good configuration from an existing device.
 - n. Use hierarchical policy definition to provide general configuration updates across the entire network without overwriting settings that vary from location to location.
 - o. Ability to defer updates until they have been tested and are ready for deployment.
 - p. Intelligently schedule automated configurations and firmware updates.
 - q. Archive device configurations for auditing and version control.
 - r. Maintain detailed audit logs of changes made by all operators.
 - s. Provide an integrated radio frequency planning tool that generates and incorporates heat maps. Please include sample screen shots and reports.
 - t. Support autonomous, controller-managed, and mesh WAPs.
 - u. Generate reports on wired port utilization for capacity planning.
 - v. Provide an Extensible Markup Language (XML) Application Programming Interface (API) for integration of valuable location data with other applications.

- w. Run on standard PC hardware using a standard Windows or Linux operating system.
- x. Implement device communication through Secure Shell (SSH), Telnet, Simple Network Management Protocol (SNMP) v1/v2c/v3, and other standard protocols.
- y. Simulate failures to enable analysis of what-if scenarios for proactive RF coverage planning.
- z. Determine the right quantity and placement of WAPs, controllers, switches, and other edge devices based on RF coverage goals.
- aa. Establish flexible rules-based determination of the impact of a rogue WAP to the existing environment.
- bb. Provide a central management console for monitoring wired and wireless intrusion detection and prevention activity while simultaneously identifying and neutralizing rogue WAPs.
- cc. Display the approximate location of each rogue device and client on a building floor plan.
- dd. Aggregate, correlate, alert, and log wireless attacks that are detected and reported on the network to provide a comprehensive picture of infrastructure security.
- ee. Classify potential threats based on customized rules that define the characteristics of rogue devices and reduce false positives.

B. System Requirements

- i. Describe the 802.11ax WAPs that are part of your response. The 802.11ax WAPs must support 4x4 MU-MIMO.
- ii. System support for multimedia capabilities such as VoIP, Video. Specifics include H.264/RTMP HD Video Unicast Streams and HTTP Segmented/HLS Streaming for modern devices. Describe your solution's handling of these data streams.
- iii. System support for roaming devices without loss of service when changing to another WAP for all mobile device including but not limited to Android, Chromebooks, Windows Tablets and Laptops, Apple iPads and Laptops.
- iv. System support for local switching – WAPs egress/ingress user traffic at local switch.
- v. Support mesh capability – (WAPs should support mesh without data cabling between nodes. A new AP should have the capability of coming online without a physical LAN connection directly to the AP, yet have the ability to participate on the same network)
- vi. An integrated wireless detection system shall safeguard the network from unauthorized or rogue WAPs, clients, and other devices that could potentially harm network operations. Please detail how your solution implements this feature.
- vii. The wireless detection service logging unauthorized WAPs and clients and generate reports about unauthorized activity.
- viii. The wireless detection service shall use active rogue WAPs prevention and disable auto-join to prevent malicious WAPs from associating with the network, thereby ensuring that only authorized WAPs are permitted to connect.

- ix. Operating System (OS) fingerprinting shall gather information about each client connecting to the network to help identify rogue clients, including clients running an OS with known vulnerability that by policy should not be allowed on the network.

C. Support of High-Density User Groups

- i. Support for 50 users with two devices each to include but not limited to: laptops, tablets, smart phones.
 - a. Please describe the methodology for providing complete coverage for high density areas including training room and command center performing web browsing, streaming media, downloads, and high-volume uploads.

D. WAP Requirements

- i. Solution that provides analysis of the wireless LAN for quick and effective troubleshooting, compliance auditing and remediation of guest devices, if necessary.
- ii. Provide intelligent insight into RF and network level information to enable technicians to identify the source of potential risks or disruptive performance.
- iii. Solution ensures WLAN applications, such as voice-over-wireless LAN maintains integrity.
- iv. Describe the features and functions. Include dedicated radios and/or time slicing in channel, across the spectrum etc.
- v. Automatic registration / provisioning i.e., pull configuration from cloud controllers.
- vi. Support survivability mode i.e., in the event they cannot communicate with cloud controller, without disruption.
- vii. For use in areas such as garages or other outdoor areas the enclosures should be ruggedized for installation with a temperature range, -10F to 100F.
- viii. Users must be able to seamlessly move from one location to another without losing connectivity to WAP network. For example, if a user is taking a call using Wi-Fi calling on their mobile phone or communicating using a Microsoft Teams meeting, user must be able to move freely throughout Wi-Fi range without losing the connection or noticing any degradation.
- ix. Support mobile WAPs to supplement installed WLAN infrastructure coverage/density.
- x. Ability to provide simultaneous wireless access for various 802.11x based clients including 802.11 a, b, g, ac, ax. The higher speed 802.11n and when appropriate 802.11ac technology must maintain air-time priority.
- xi. The proposed WAP must support WPA2-personal & WPA2-enterprise with AES encryption.
- xii. The proposed WAPs must provide a dual 2.4Ghz and 5Ghz radio and support indoor mesh networking along with a best path forwarding algorithm to seamlessly route around failures.
- xiii. The proposed WAPs should offer 802.3 Ethernet bridging on mesh nodes and allow that bridge port to support an 802.1q trunk.
- xiv. The WAPs proposed in the solution must be able to power both the 2.4Ghz and 5Ghz radio by standard 802.3at compliant power sources. Discuss how the WAPs

can be powered through standard Category 6 cable and any limitations imposed on your solution by the 802.3at standard.

- xv. The proposed WAPs must include a Stateful Firewall.
- xvi. The WAP must support a customizable captive web portal to either challenge users to authenticate or force users to self-register to a wireless network.
- xvii. The WAPs must provide a mechanism for user authentication to the wireless medium, and/or to production networks including both internal and external RADIUS server authentication.
- xviii. The WAP must support data rate limiting of specific applications, users or networks. Please describe how the solution meets this requirement.
- xix. The WAPs must support Quality of Service (QoS) including WMM and be able to classify traffic by network, by service or by MAC OUI and map the QoS packets to the wired network and respective VLAN. Describe the QoS capabilities at the WAP.
- xx. All WAPs should be capable of being centrally managed and offer plug & play functionality. The operation of the WAP should be independent and distributed and not require the management system or other devices for functionality.

E. Additional Information

- i. Describe any additional features that would benefit the City.

IX. Warranty and Customer Service

A. Support

Describe the support structure, including specific process and procedures. Include the following, both product details and cost method (per hour, per day, included with contract, etc.). Indicate the roles of the manufacturer and reseller in each item.

- i. Support availability, hours, phone or web based, SLA response time, etc.
- ii. Procedure or process for escalating support issues.
- iii. Options available for onsite support, SLA for appearance or resolution, location of nearest support technicians.
- iv. Options for remote assistance.
- v. Number of employees on staff with expertise in WAP? Additional staff who can assist, when needed?
- vi. If outside the City of Wheeling, describe in detail how service provider will support the City from afar or onsite, when necessary.
- vii. Describe the process for dealing with failures related to faulty units and system maintenance. What would be expected of District personnel as far as specialized skill required or training for component replacement, etc.?
- viii. Describe the warranty period. Include any annual or recurring fees for maintenance support including firmware, software revisions, new versions of OS, etc.
 - a. Warranties and subscriptions shall take affect at the date of project final completion, which is the date the final punch list is accepted.

- ix. Specify options and requirements for hardware licensing/maintenance, software upgrades, and technical support in 1 year, 3 year and 5-year increments, including any guaranteed pricing models.
 - a. Describe whether each proposed licensing/maintenance agreement is for a named group of devices or for a pool of devices.
 - b. Maintenance & Support shall begin on the date the equipment is installed, not the date it is delivered. Vendor to verify that manufacturer will comply with this requirement.

X. Additional Capabilities and Features

Describe any features or capabilities not delineated above that would be useful for understanding and evaluation. Note any components that have extra costs associated with them. Examples of such features would include add-on monitoring or security software, remote VPN capabilities, etc. All descriptions should be based on products that are shipping as of the bid due date.

XI. Service Provider Responsibilities and Requirements

The service provider shall name a project manager who shall work with the City's Director of Information Technology to provide and approve a written project schedule. The schedule shall consider WAP installation and location. When installing the WAP with other construction occurring simultaneously, the service provider shall coordinate with the general contractor's project manager.

- A. The service provider shall be responsible for preparing a proposal for each building and reviewing any issues or conditions that may affect the installation or installation schedule.
- B. The service provider's project manager shall conduct a status meeting at least every two weeks during the course of the project and will produce and distribute minutes in a timely manner of each project meeting, including action items and follow up assignments.
- C. All products, hardware and software, should be ready to ship within three months and current as of the bid due date.

XII. Application Submission Procedure

1. **Completed and Signed Application Form (See Attached)**
2. **Project Descriptions** – Provide a brief overview of the project. (Not to exceed two pages)
3. **Supporting Materials** – These materials should convey the work to be performed in detail listing the labor, shipping and makes, models, parts, supplies of the materials included in the project. Also include all related costs.
4. **Work Plan** – Provide a brief outline of the steps involved in the proposed project with time requirements included. **Project Must Be Completed by stated Deadline.**
5. **Bio or Resume** – Provide any information on the vendor's support team who will be involved on the project.

6. **References** – Please provide references of at least three (3) current customers and three (3) business that are no longer a customer.
7. **RFP** – All questions contained within this RFP are answered in detail

XIII. Drawings

- A. See Appendix B.

Application Form

Name: _____ Date: _____

Address: _____

City: _____ State, ZIP: _____

Phone: _____ Email: _____

Website: _____

To assure that your application is complete, please check the following:

- This application is completed and signed
- Project Description is enclosed
- Supporting materials enclosed
- Time Frame/Work Plan is enclosed
- Bios or Resumes
- References
- All questions are answered, in detail, and complete

Certification

I certify that all statements made in this application are true and complete.

Applicant Signature: _____

Date: _____

APPENDIX A

CITY OF WHEELING AND OHIO COUNTY (WEST VIRGINIA) ECONOMIC AND DEMOGRAPHIC DATA



City of Wheeling:

The City of Wheeling is the County Seat of Ohio County, West Virginia. The City is located in the Northern Panhandle of West Virginia and is 128 miles from the City of Charleston (West Virginia State Capitol), 55 miles from Pittsburgh, Pennsylvania, 120 miles from Columbus, Ohio, and 130 miles from Cleveland, Ohio. Interstate 70 and 470 run through the City east-west. U.S. Route 40, WV Route 2 and U.S. Route 250 also run through the City.



Wheeling is the birthplace of West Virginia, served as the first state capitol and, with the arrival of National Road in 1818, was the primary gateway to early western expansion in the United States.

Completed in 1856, the first suspension bridge of its kind in the world was constructed in Wheeling and, until the completion of the Brooklyn Bridge, was the longest in the country. Today, it is the oldest suspension bridge still in use, though limited, and is a National Landmark. The Historic American Engineering Record has called the Wheeling Suspension Bridge "the most important extant antebellum civil engineering structure in North America."

With a rich history spanning more than 250 years, our city blends decades of architectural design with beautiful West Virginia scenery. Did you know that Wheeling has more Victorian-style buildings than any other city in the United States? The Wheeling Metro Area continually ranks among the safest and most affordable places to live in America.

The City of Wheeling is situated along Interstate 70 in the northern panhandle of West Virginia, less than an hour's drive from the Pittsburgh International Airport, making travel easy and convenient.

Recent years have seen a number of positive projects and developments occur. Downtown living has multiplied with the Boury Lofts and Stone Center Lofts projects, with future development of former Wheeling Pitt Building into loft apartments, new investment in the Health Plan's new headquarters, project expansions at Williams Lea, Centre Market, Orrick, Wheeling Hospital, LaBelle Greene, and WesBanco, to name a few, have created hundreds of new jobs and millions of private sector investment. The City has also invested in its own facilities with the construction of a new Water Treatment Plant, completion of the City's Civic Arena/WesBanco Arena renovation and expansion, numerous park and playground improvements, several sewer and water system improvements, bridge re-construction, a major downtown streetscape project and the upcoming new Fire Department Headquarters Building and the Police Department Building renovation project. The Ohio County Board of Education is currently in the midst of over \$70 million in capital investments into every school in the Ohio County School District. All of these efforts, as well as many others, shows the community commitment for continuing to strive to make Wheeling the best City possible.

Known as the Friendly City, Wheeling has a lot to offer in the way of attractions, restaurants, culture, sports and entertainment – there is truly something for everyone.

City Council: Rosemary Ketchum
 Chad Thalman
 Ben Seidler
 Jerry Sklavounakis
 Ty Thorngate
 Dave Palmer

City Mayor: Glenn Elliott

Wheeling MSA: The City of Wheeling is the largest city in the Wheeling-Belmont County (Ohio) Metropolitan Statistical Area that includes Ohio and Marshall Counties, WV, and Belmont County, OH. Greater Wheeling is generally considered part of the Pittsburgh Tri-State area.

Ohio County:

The Ohio County Commission is comprised of three elected commissioners and five independently elected county officials that work together to oversee the fiscal affairs, record keeping, annual budget, levying of real estate taxes, enforcement of state code, and emergency response procedures for the residents of Ohio County.



Commissioners: Randy Wharton, President
 Don Nickerson
 Zachary T Abraham

Administrator: Randy Russell

Population					
Year	City of Wheeling	Wheeling MSA	Ohio County	West Virginia	United States
2015	27,502	144,157	42,969	1,842,050	320,635,163
2016	27,287	142,955	42,629	1,831,023	322,941,311
2017	26,863	141,255	42,001	1,817,004	324,985,539
2018	26,650	140,059	41,705	1,804,291	326,687,501
2019	26,430	138,948	41,411	1,792,147	328,239,523

Source: U.S. Census Bureau

Per Capita Personal Income (\$)				
Year	Ohio County	Wheeling MSA	West Virginia	United States
2015	48,902	40,420	37,036	49,019
2016	53,562	41,503	37,070	50,015
2017	61,380	45,940	38,891	52,118
2018	64,115	49,171	41,154	54,606
2019	64,461	49,301	42,242	56,490

Source: U.S. Department of Commerce, Bureau of Economic Analysis

Average Annual Unemployment Rates (%) - Not Seasonally Adjusted				
Year	Ohio County	Wheeling MSA	West Virginia	United States
2016	5.5	6.9	6.1	5.3
2017	4.7	5.7	5.3	4.8
2018	4.5	5.2	5.2	4.4
2019	4.5	5.4	4.9	3.9
2020	8.4	9.5	8.3	3.6

Source: U.S. Department of Labor, Bureau of Labor Statistics

Average Employment		
	2016	2020
Wheeling MSA	61,100	56,900
Ohio County	19,480	18,720
West Virginia	734,500	726,000

Source: WORKFORCE West Virginia

Largest Employers Ohio County
March 2020
1. WVU Medicine
2. Ohio County Board of Education
3. Williams Lea, Inc.
4. Wesbanco Bank, Inc.
5. Cabela's Wholesale, LLC
6. Tunnel Ridge, LLC
7. Wheeling Park Commission
8. Wheeling Island Gaming, Inc
9. City of Wheeling
10. West Liberty State College

Source: WORKFORCE West Virginia

Average Annual Employment for Ohio County by Industry

Average Annual Employment by Industry (2019)	
Industry	Employment
Construction	720
Manufacturing	1,152
Trade, Transportation, and Utilities	5,271
Information	308
Financial Activities	1,566
Professional and Business Services	3,756
Education and Health Services	6,898
Leisure and Hospitality	3,700
Other	1,138
Government	3,351

Source: WORKFORCE West Virginia

Average Weekly Wage (\$)		
	2016	2019
Ohio County	769.86	841.79
West Virginia	799.90	893.05

Source: WORKFORCE West Virginia

Wage per Industry (\$) (2019)		
Industry	Total Wages	Average Weekly Wage
Construction	48,328,021	1,290.81
Manufacturing	60,854,483	1,015.87
Trade, Transportation, and Utilities	194,020,163	707.87
Information	11,013,953	687.68
Financial Activities	90,336,593	1,109.35
Professional and Business Services	192,924,406	987.78
Education and Health Services	335,003,211	933.95
Leisure and Hospitality	73,981,501	384.52
Other	37,091,991	626.81
Government	149,346,131	857.07

Source: WORKFORCE West Virginia

Total Wages (\$)		
Year	Ohio County	West Virginia
2015	1,161,496,340	29,063,859,298
2016	1,161,063,828	28,560,707,319
2017	1,217,266,619	29,626,307,630
2018	1,233,227,414	31,965,019,645
2019	1,240,885,018	32,052,477,697

Source: WORKFORCE West Virginia

Selected Demographic Information

Education: Public and Private Schools:

Ohio County Schools
Wheeling Catholic Central
Linsly School

Higher Education Institutions:

West Virginia Business College
West Virginia Northern Community College
West Liberty University
Wheeling University
Bethany College

Transportation: Ohio Valley Regional Transportation Authority
East Ohio Regional Transportation Authority

Healthcare: Doctor's Urgent Care
East Seals West Virginia
MedExpress
Ohio Valley Medical Center
Peterson Rehabilitation Hospital and Geriatric Center
Wheeling Hospital
Wheeling Clinic

Community: Ohio County Public Library
WesBancoArena.com
CapitolTheatreWheeling.com
WheelingCVB.com
WheelingSymphony.org
Oglebay Institute
Oglebay-Resort.com
Children's Museum of the Ohio Valley
Centre Market
Wheeling Nailers (East Coast Hockey League)

Source: City of Wheeling

APPENDIX B

** Drawings are solely used for reference and may still have minor changes. Vendor selected will need to coordinate with the general contractor for the latest floor plans.*



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DRAWING STATUS
 DESIGN STAGE:
 ○ SCHEMATIC DESIGN
 ○ DESIGN DEVELOPMENT
 ● CONSTRUCTION DRAWINGS
 RELEASED FOR:
 ○ REVIEW
 ● BIDDING
 ● CONSTRUCTION

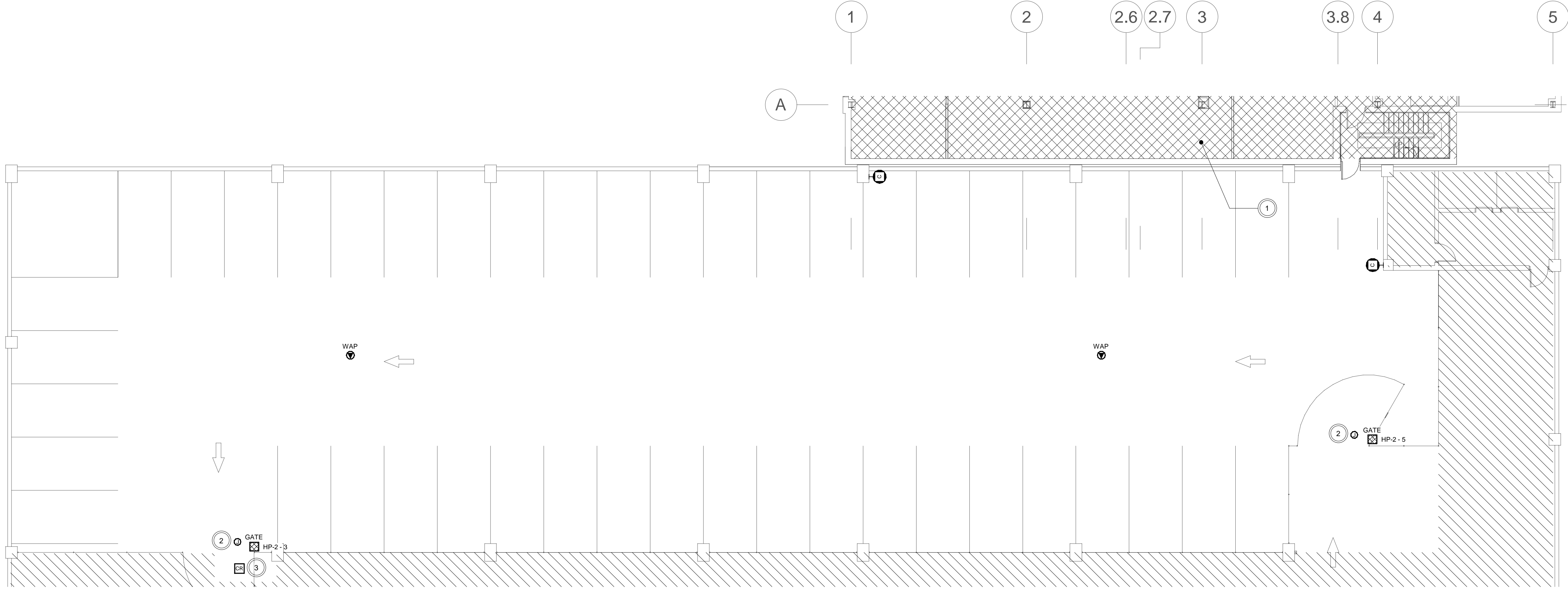
CITY OF WHEELING
W.P.D. - VPC RENOVATION
 2115 CHAPLINE STREET, WHEELING, WV 26003
POWER/SYSTEMS - SECOND AND THIRD FLOOR
PARKING DECK - ELECTRICAL

REVISION	

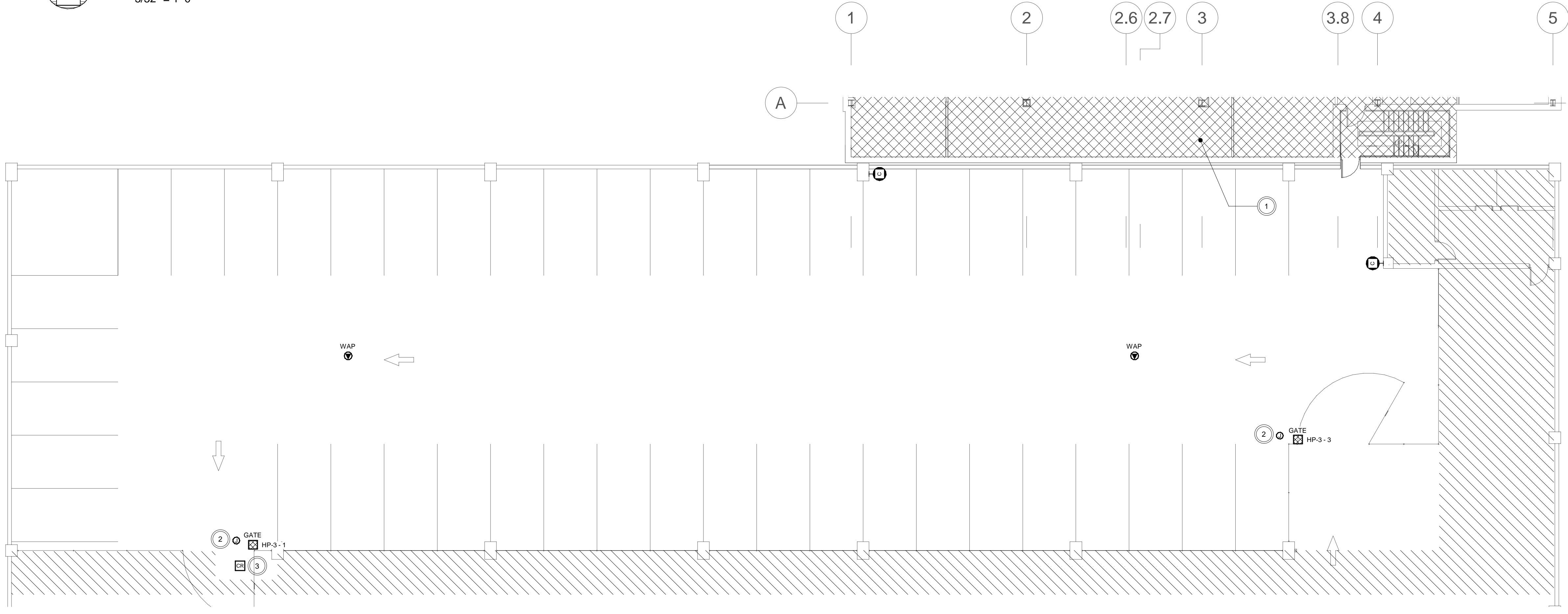
DRAWN BY: CAK	CHECKED BY: JEE
PROJECT NO. 20-108A	
SCALE: AS NOTED	DATE: 05/25/2021

SHEET
E3.5

- | PLAN NOTES |
|---|
| A. COORDINATE INSTALLATION OF ALL PARKING DECK EQUIPMENT WITH EXISTING LIGHTING, PIPING, ETC. FIELD VERIFY. |
| CODED NOTES |
| 1. REFER TO OTHER FLOOR PLANS FOR WORK REQUIRED IN CROSS-HATCHED AREA. |
| 2. JUNCTION BOX FOR GATE CONTROL WIRING. PROVIDE 1" CONDUIT BACK TO ACCESSIBLE CEILING SPACE. |
| 3. CARDREADER FOR GATE ACCESS. EXACT LOCATION SHALL BE DETERMINED IN THE FIELD WITH THE ARCHITECT. |



POWER/SYSTEMS - SECOND FLOOR PLAN PARKING DECK - ELECTRICAL
 3/32" = 1'-0"



POWER/SYSTEMS - THIRD FLOOR PLAN PARKING DECK - ELECTRICAL
 3/32" = 1'-0"

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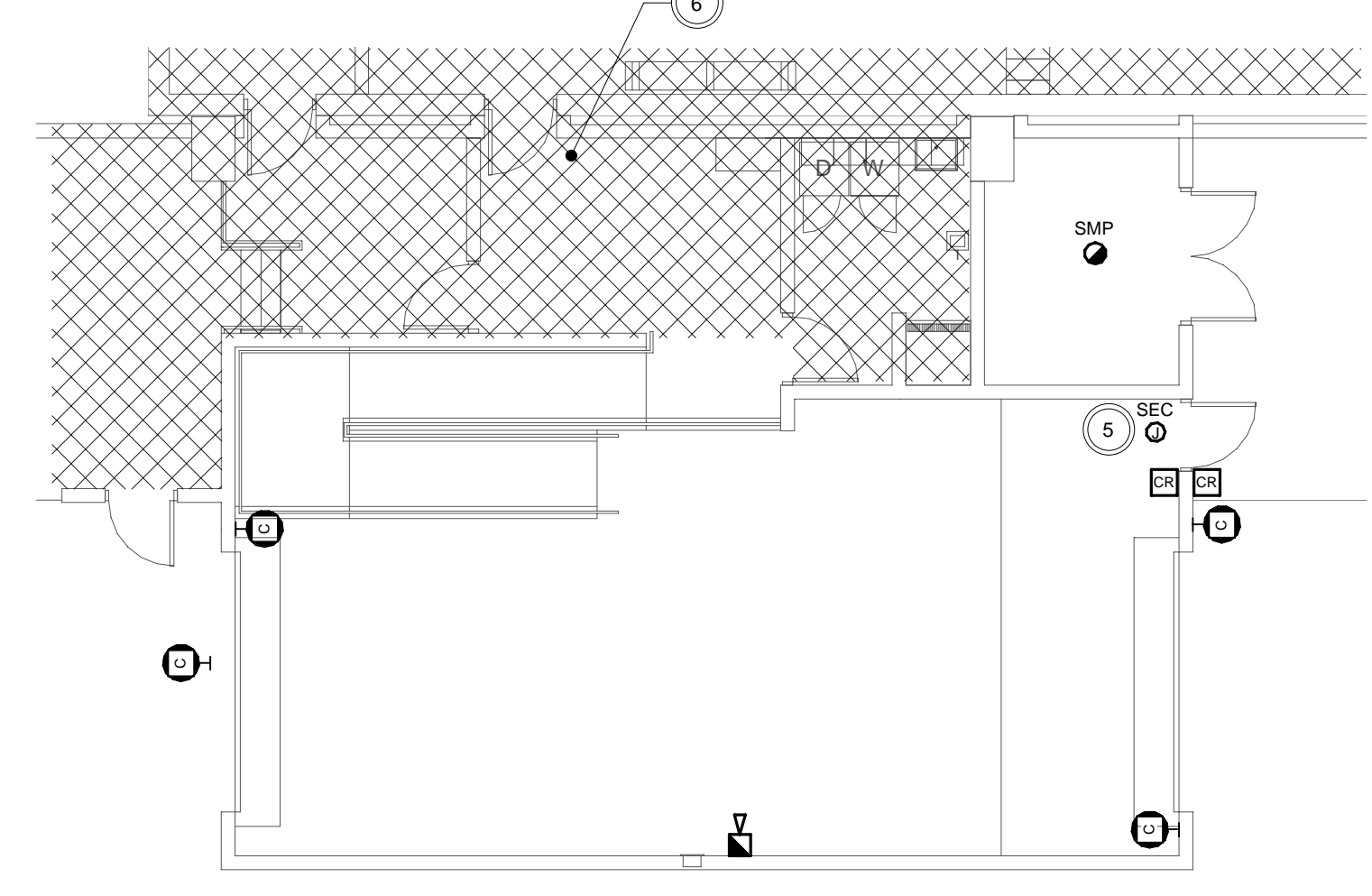
CODED NOTES

1. DATA OUTLET INSIDE ELEVATOR CONTROL PANEL. EXTEND 1" CONDUIT FROM CONTROL PANEL TO ACCESSIBLE CEILING SPACE.
2. DATA OUTLET INSIDE FIRE ALARM CONTROL PANEL. EXTEND 1" CONDUIT FROM CONTROL PANEL TO ACCESSIBLE CEILING SPACE.
3. FIRE ALARM DEVICE SHALL BE LOCATED IN SAME LOCATION AS DEMOLISHED DEVICE.
4. MOUNTED AT LOWER LEVEL BY EXIT DOOR (NOT SHOWN).
5. CIRCUIT SHALL MATCH THE BASE BID PLAN.
6. REFER TO BASE BID PLAN FOR WORK IN CROSS-HATCH AREA.
7. DATA OUTLET INSIDE MAIN LIGHTING CONTROLLER. EXTEND 1" CONDUIT FROM CONTROL PANEL TO ACCESSIBLE CEILING SPACE.
8. JUNCTION BOX FOR GATE CONTROL WIRING. PROVIDE 1" CONDUIT BACK TO ACCESSIBLE CEILING SPACE.
9. CARD READER LOCATED ON PEDESTAL. PROVIDE 1" CONDUIT BACK TO ACCESSIBLE CEILING SPACE. COORDINATE CONDUIT ROUTE WITH ARCHITECT.
10. 12" WIDE X 4" DEEP CABLE TRAY.
11. 18" WIDE X 4" DEEP CABLE TRAY.
12. ACTUATORS FOR AUTOMATIC DOOR. COORDINATE FINAL LOCATION WITH ARCHITECT.

PLAN NOTES

A. REFER TO SECURED DOOR DETAIL AND DOOR HARDWARE SCHEDULE FOR ACCESS CONTROL ROUGH-IN INFORMATION.

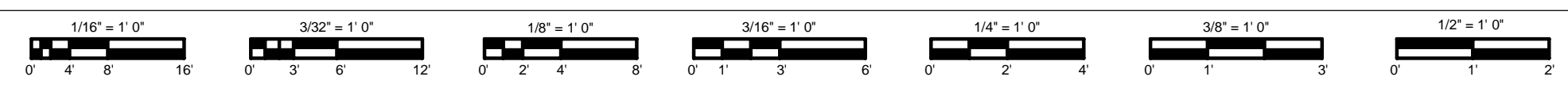
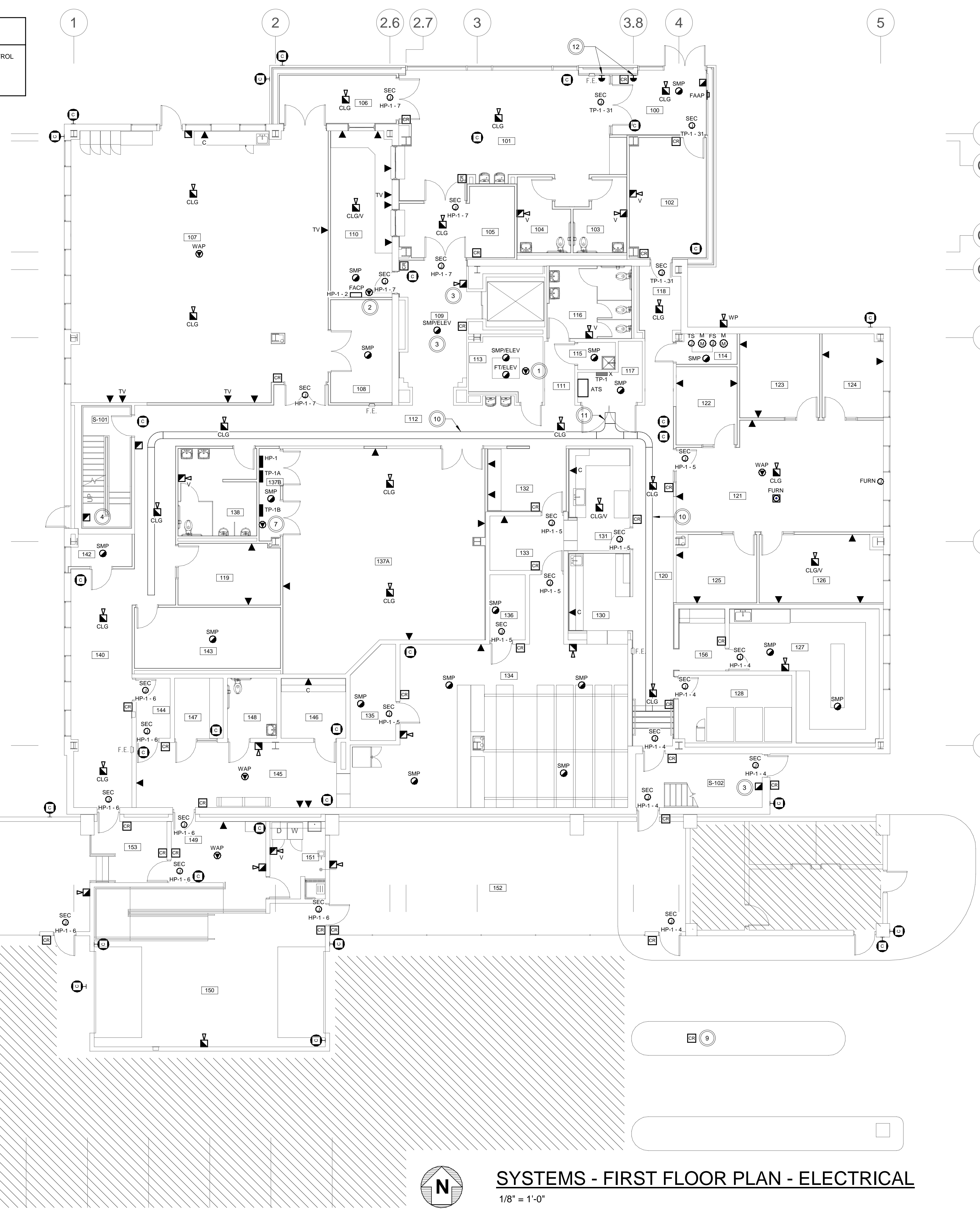
B. COORDINATE FINAL CABLE TRAY LOCATIONS TO AVOID DUCTWORK, PIPING, ETC. AND MAINTAIN ACCESS TO CABLE TRAY.



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

ROOM LEGEND

100	VESTIBULE
101	HARD LOBBY
102	SAFE ROOM/CONFER.
103	RESTROOM
104	RESTROOM
105	SOFT LOBBY
106	VESTIBULE
107	TRAINING/COMMUNITY ROOM
108	STORAGE
109	ELEVATOR LOBBY
110	RECEPTION
111	CORRIDOR
112	CORRIDOR
113	UTILITY
114	UTILITY
115	JANITOR
116	WOMENS RESTROOM
117	UTILITY
118	CORRIDOR
119	TRAINING OFFICE
120	CORRIDOR
121	CIVILIAN OPEN OFFICE
122	VIC. ADV. OFFICE
123	VIC. ADV. INTERVIEW
124	VIC. ADV. OFFICE
125	HOMELESS LIASON OFFICE
126	HWY SAFETY COORD. OFFICE
127	ARMORY
128	KENNEL
130	BAG & TAG
131	EVIDENCE PROCESSING
132	REPORT WRITING
133	PROPERTY CLERK
134	PROPERTY ROOM
135	WEAPONS CAGE
136	DRUG STORAGE
137A	TRAINING SIMULATION
137B	ELECTRICAL CLOSET
138	MENS RESTROOM
140	CORRIDOR
142	IDF
143	CITIZEN PATROL STORAGE
144	SECURE VEST.
145	PROCESSING
146	INTERVIEW/DUI TESTING
147	TEMP. HOLDING
148	UNISEX RESTROOM
149	SALLY PORT
150	SALLY PORT
151	DECON
152	SECURE AREA
153	STAIR
156	GLN CLEANING
S-101	EXISTING STAIR
S-102	EXISTING STAIR



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

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PLAN NOTES

A. REFER TO SECURED DOOR DETAIL AND DOOR HARDWARE SCHEDULE FOR ACCESS CONTROL ROUGH-IN INFORMATION.

B. COORDINATE FINAL CABLE TRAY LOCATIONS TO AVOID DUCTWORK, PIPING, ETC. AND MAINTAIN ACCESS TO CABLE TRAY.

CODED NOTES

1. FIRE ALARM DEVICE SHALL BE LOCATED IN SAME LOCATION AS DEMOLISHED DEVICE. CONNECT TO NEW FIRE ALARM WIRING.

2. WIREMOLD TO BE INSTALLED ABOVE COUNTER AT 8" TO CENTERLINE.

3. SERVER ROOM. LINE ALL WALLS WITH FIRE TREATED, 3/4" PLYWOOD COVERED IN LIGHT GRAY PAINT FROM 24" AFF TO 120" AFF. PROVIDE TELECOMMUNICATIONS GROUND BAR PER DETAIL. PROVIDE CONDUIT STUBS AS REQUIRED FOR CABLE ACCESS INTO ROOM - COORDINATE LOCATIONS WITH TELECOM CONTRACTOR.

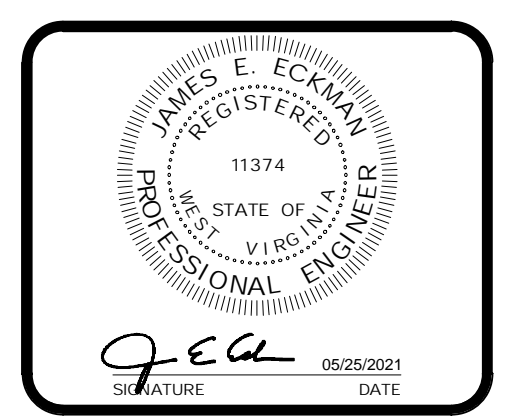
4. 12" WIDE X 4" DEEP CABLE TRAY.

5. 18" WIDE X 4" DEEP CABLE TRAY.

6. REFER TO DRAWING E3.5 FOR WORK IN THE PARKING GARAGE.



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DRAWING STATUS

DESIGN STAGE:

- SCHEMATIC DESIGN
- DESIGN DEVELOPMENT
- CONSTRUCTION DRAWINGS

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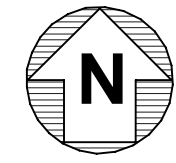
- REVIEW
- BIDDING
- CONSTRUCTION

CITY OF WHEELING
W.P.D. - VPC RENOVATION
 2115 CHAPLINE STREET, WHEELING, WV 26003
SYSTEMS - SECOND FLOOR PLAN - ELECTRICAL

ROOM LEGEND

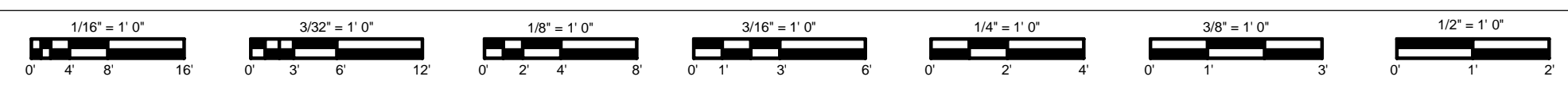
200	BREAKROOM
201	ELEVATOR LOBBY
202	CORRIDOR
203	CORRIDOR
204	UTILITY
205	RESTROOM
206	UTILITY
207	UTILITY
208	CORRIDOR
209	RESTROOM
210	CONFERENCE
211	CORRIDOR
212	ROLL CALL BRIEFING
213	SEC. FILE STORAGE
214	MAIL/COPY ROOM
216	PATROL BULLPEN
217	SUP. OFFICE
218	PATROL STORAGE
219	MEETING ROOM
220	STAFF SGT. OFFICE
221	STORAGE
222	CMDR. OFFICE
223	CMDR. OFFICE
224	CMDR. OFFICE
225	PATROL STORAGE
226	DUTY LOCKERS
227	SERVER R.T.
228	SWAT STORAGE
229	STORAGE/UTILITY
231	INVEST. BULLPEN
232	CONFERENCE
233	ICAC OFFICE
234	CMDR. OFFICE
235	DEP. CHIEF OFFICE
236	INTERVIEW
237	BACKGROUND CHECK
238	INTERVIEW
S-201	EXISTING STAIR
S-202	EXISTING STAIR

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



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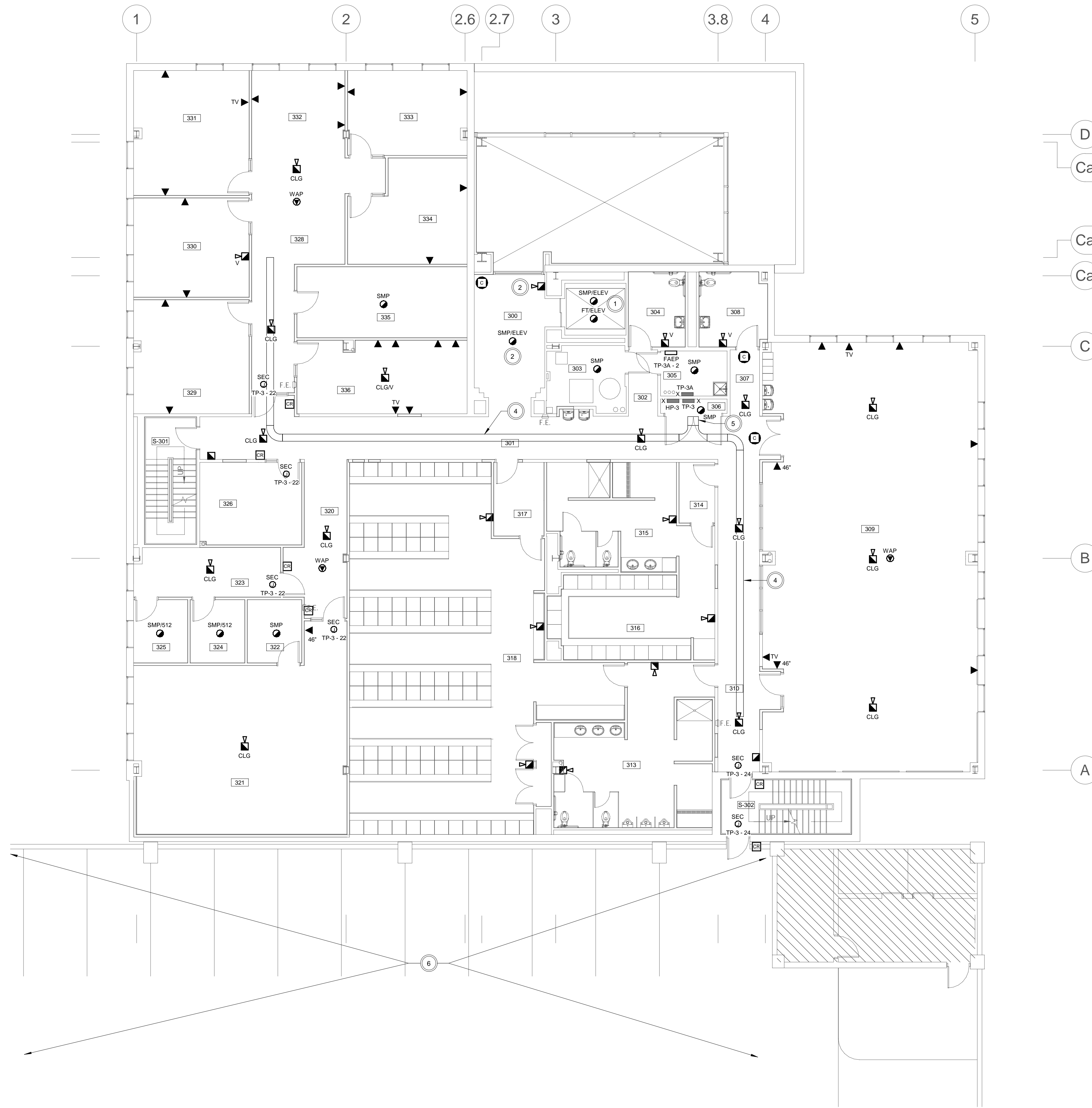
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 PROJECT NO. 20-108A
 SCALE: AS NOTED
 DATE: 05/25/2021

SHEET
E4.2

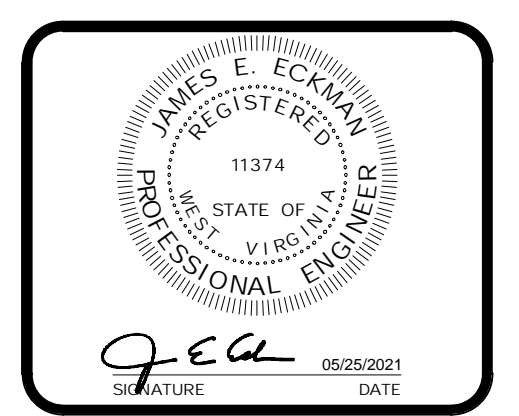


SYSTEMS - THIRD FLOOR PLAN - ELECTRICAL
 1/8" = 1'-0"

- PLAN NOTES**
- REFER TO SECURED DOOR DETAIL AND DOOR HARDWARE SCHEDULE FOR ACCESS CONTROL ROUGH-IN INFORMATION.
 - COORDINATE FINAL CABLE TRAY LOCATIONS TO AVOID DUCTWORK, PIPING, ETC. AND MAINTAIN ACCESS TO CABLE TRAY.
- CODED NOTES**
- DEVICES MOUNTED AT TOP OF ELEVATOR SHAFT. HEAT DETECTOR SHALL BE LOCATED WITHIN 24" OF SPRINKLER HEAD.
 - FIRE ALARM DEVICE SHALL BE LOCATED IN SAME LOCATION AS DEMOLISHED DEVICE. CONNECT TO NEW FIRE ALARM WIRING.
 - EXTEND 1" CONDUIT FROM DEVICE TO NEAREST ACCESSIBLE CEILING SPACE.
 - 12" WIDE X 4" DEEP CABLE TRAY.
 - 18" WIDE X 4" DEEP CABLE TRAY.
 - REFER TO DRAWING E3.5 FOR WORK IN THE PARKING GARAGE.



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DESIGN STAGE:

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- DESIGN DEVELOPMENT
- CONSTRUCTION DRAWINGS

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- BIDDING
- CONSTRUCTION

CITY OF WHEELING
W.P.D. - VPC RENOVATION
 2115 CHAPLINE STREET, WHEELING, WV 26003
SYSTEMS - THIRD FLOOR PLAN - ELECTRICAL

ROOM LEGEND

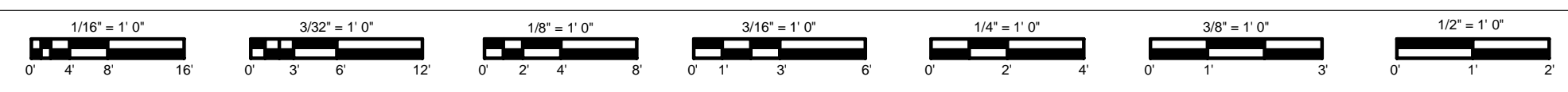
300	ELEVATOR LOBBY
301	CORRIDOR
302	CORRIDOR
303	UTILITY
304	RESTROOM
305	UTILITY
306	UTILITY
307	CORRIDOR
308	RESTROOM
309	FITNESS
310	CORRIDOR
313	MEN'S RESTROOM/SHOWERS
314	VESTIBULE
315	WOMEN'S RESTROOM/SHOWERS
316	WOMEN'S LOCKERS
317	VESTIBULE
318	MEN'S LOCKERS
320	CORRIDOR
321	DEFENSIVE TACTICS
322	STORAGE
323	VESTIBULE
324	BUNK
325	BUNK
326	BACKUP DISPATCH
328	WAITING AREA
329	PROF. STANDARD OVERSEER OFFICE
330	CONFERENCE
331	CHIEF OF POLICE
332	CHIEF ADMIN ASSISTANT
333	DEP. CHIEF OFFICE
334	SP. OP CMDR OFFICE
335	SECURE FILE STORAGE
336	PUBLIC INFO/CRIME ANALYST OFFICE
S-301	EXISTING STAIR
S-302	EXISTING STAIR

REVISION

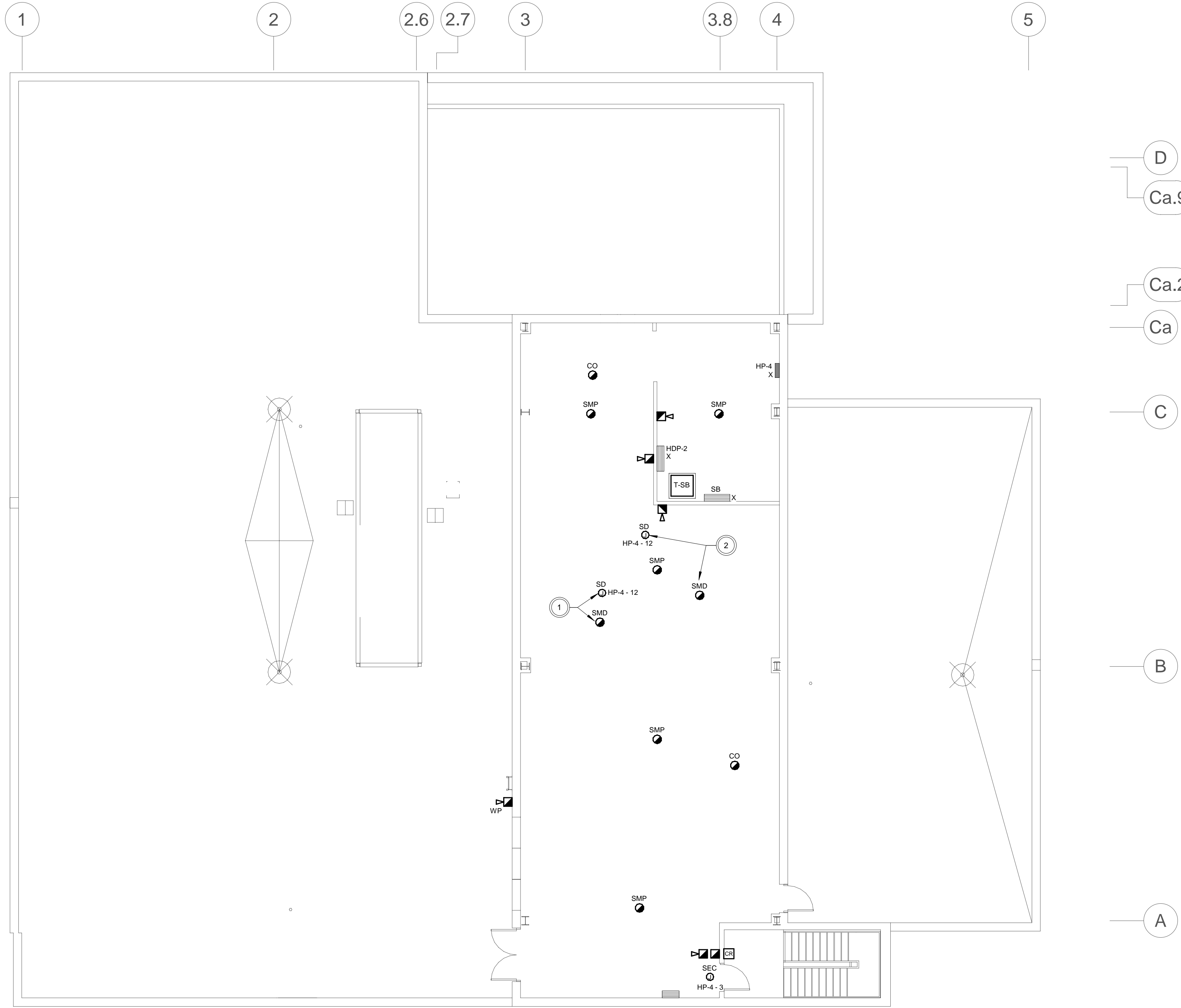
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PROJECT NO. 20-108A	
SCALE: AS NOTED	DATE: 05/25/2021

SHEET
E4.3

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PLAN NOTES

A. REFER TO SECURED DOOR DETAIL AND DOOR HARDWARE SCHEDULE FOR ACCESS CONTROL ROUGH-IN INFORMATION.

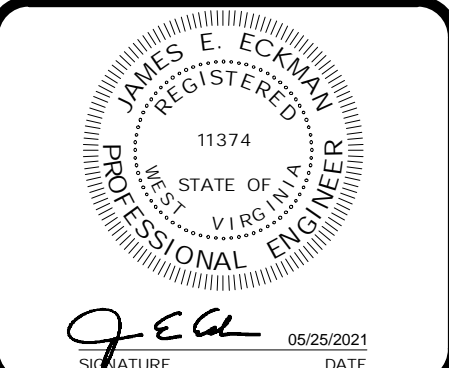
CODED NOTES

1. SMOKE DAMPER AND DUCT DETECTOR LOCATED ON AHU-1 MAIN SUPPLY DUCT. COORDINATE LOCATION WITH MC. REFER TO DETAIL.

2. SMOKE DAMPER AND DUCT DETECTOR LOCATED ON RF-1 MAIN RETURN DUCT. COORDINATE LOCATION WITH MC. REFER TO DETAIL.



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- DESIGN DEVELOPMENT
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CITY OF WHEELING
W.P.D. - VPC RENOVATION
 2115 CHAPLINE STREET, WHEELING, WV 26003
SYSTEMS - ROOF PLAN - ELECTRICAL

REVISION	

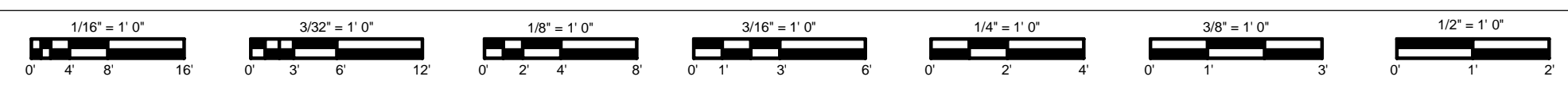
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PROJECT NO. 20-108A

SCALE: AS NOTED
 DATE: 05/25/2021

SHEET **E4.4**

SYSTEMS - ROOF PLAN - ELECTRICAL
 1/8" = 1'-0"



REVISION	

DRAWN BY: Author	CHECKED BY: Checker
PROJECT NO: 20-108B	
SCALE: AS NOTED	DATE: 09/23/21

ROOM LEGEND	
100	VESTIBULE
101	LOBBY
102	TREATMENT ROOM
103	RECEPTION
104	CORRIDOR
105	UNISEX R.R.
106	UNISEX R.R.
107	CORRIDOR
108	TRAINING ROOM
109	TRAINING SIMULATION
110	STORAGE
111	KITCHENETTE
112	WAITING AREA/ADMIN. ASSIST.
113	FILE ROOM
114	CONFERENCE ROOM
115	CHIEF OFFICE
116	BUNK ROOM
117	SHOWER ROOM
118	INVESTIGATOR OFFICE
119	EVIDENCE
120	INVESTIGATOR OFFICE
121	WORK ROOM
122	INSPECTOR OFFICE
123	CORRIDOR
124	UNISEX R.R.
125	UNISEX R.R.
126	EMS OFFICE
127	TRAINING OFFICE
128	CORRIDOR
129A	FITNESS ROOM
129B	FITNESS STORAGE
130	KITCHEN/DINING ROOM
131	UNISEX R.R.
132	JANITOR CLOSET
133	STOR.
134	BUNK ROOM
135	SHOWER ROOM
136	BUNK ROOM
137	SHOWER ROOM
138	BUNK ROOM
139	SHOWER ROOM
140	BUNK ROOM
141	SHOWER ROOM
142	BUNK ROOM

ROOM LEGEND	
143	SHOWER ROOM
144	BUNK ROOM
145	SHOWER ROOM
146	LAUNDRY ROOM
147	IT SERVER ROOM
148	INSPECTOR OFFICE
149	STAFF LOCKERS
150	SHOWER ROOM
151A	HONOR GUARD STOR.
151B	ELECT. CLOSET
152	CAPTAIN OFFICE
153	BUNK ROOM
154	SHOWER ROOM
155	CAPTAIN OFFICE
156	BUNK ROOM
157	SHOWER ROOM
158	CAPTAIN OFFICE
159	BUNK ROOM
160	SHOWER ROOM
161	REPORT WRITING
162	VESTIBULE
163	CORRIDOR
164	CORRIDOR
165	CORRIDOR
166	CORRIDOR
167A	CORRIDOR
167B	MECH. CLOSET
167C	ELECT. CLOSET
168	VESTIBULE
169	CORRIDOR
170A	MECHANICAL ROOM
170B	ELECTRICAL ROOM
171	UNISEX R.R.
172	EMS STORAGE
173A	CLEAN/DECON
173B	SHOW. ROOM
174	TGS LAUNDRY
175	QUARTERMASTER
176	LOW VEHICLE BAY
177	HIGH APPARATUS BAY
178	TGS
179	FIRE EQUIP. STOR.
180	WORKSHOP/TOOL STOR.
181	TRAINING TOWER

PLAN NOTES

A. ALL DEVICES MOUNTED TO PRE-CAST CONCRETE PANELS SHALL BE SURFACE MOUNTED. COORDINATE ALL LOCATIONS WITH ARCHITECTURAL DRAWINGS.

CODED NOTES

1. SERVER ROOM. LINE ALL WALLS WITH FIRE-TREATED, 3/4" PLYWOOD COVERED IN LIGHT GREY PAINT FROM 24" AFF TO 120" AFF. PROVIDE TELECOMMUNICATIONS GROUND BAR PER DETAIL. PROVIDE CONDUIT STUBS AS REQUIRED FOR CABLE ACCESS INTO ROOM. COORDINATE LOCATIONS WITH TELECOM CONTRACTOR.

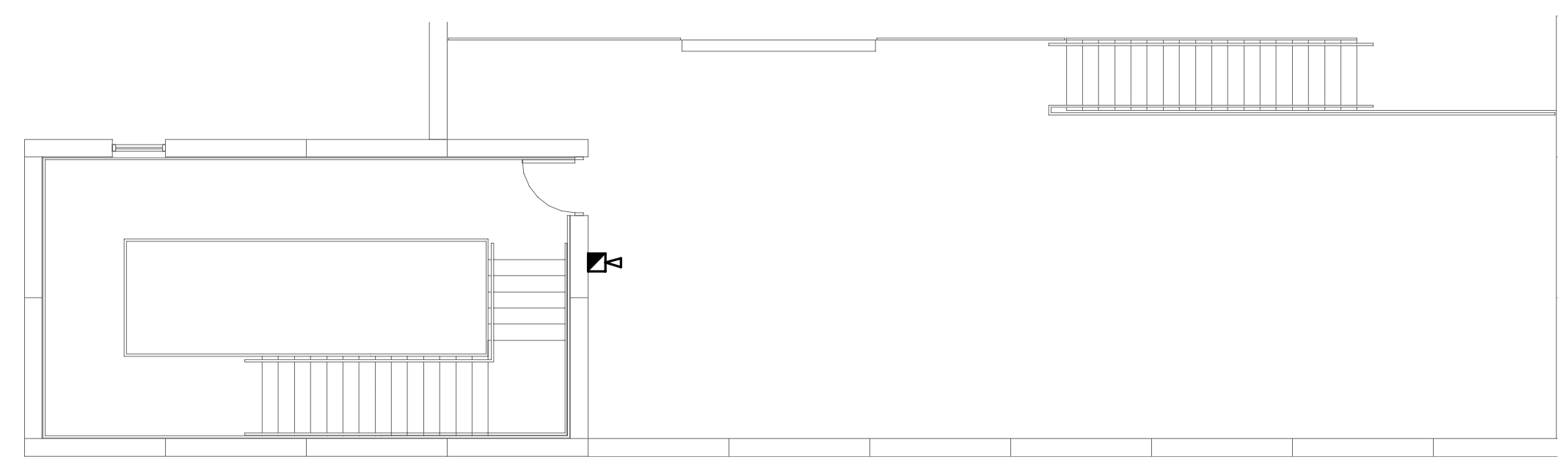
2. DUCT DETECTOR ON RTU-1 RETURN DUCT. COORDINATE LOCATION WITH MC. REMOTE TEST SWITCH TO BE LOCATED ON CEILING.

3. DUCT DETECTOR ON RTU-2 RETURN DUCT. COORDINATE LOCATION WITH MC. REMOTE TEST SWITCH TO BE LOCATED ON CEILING.

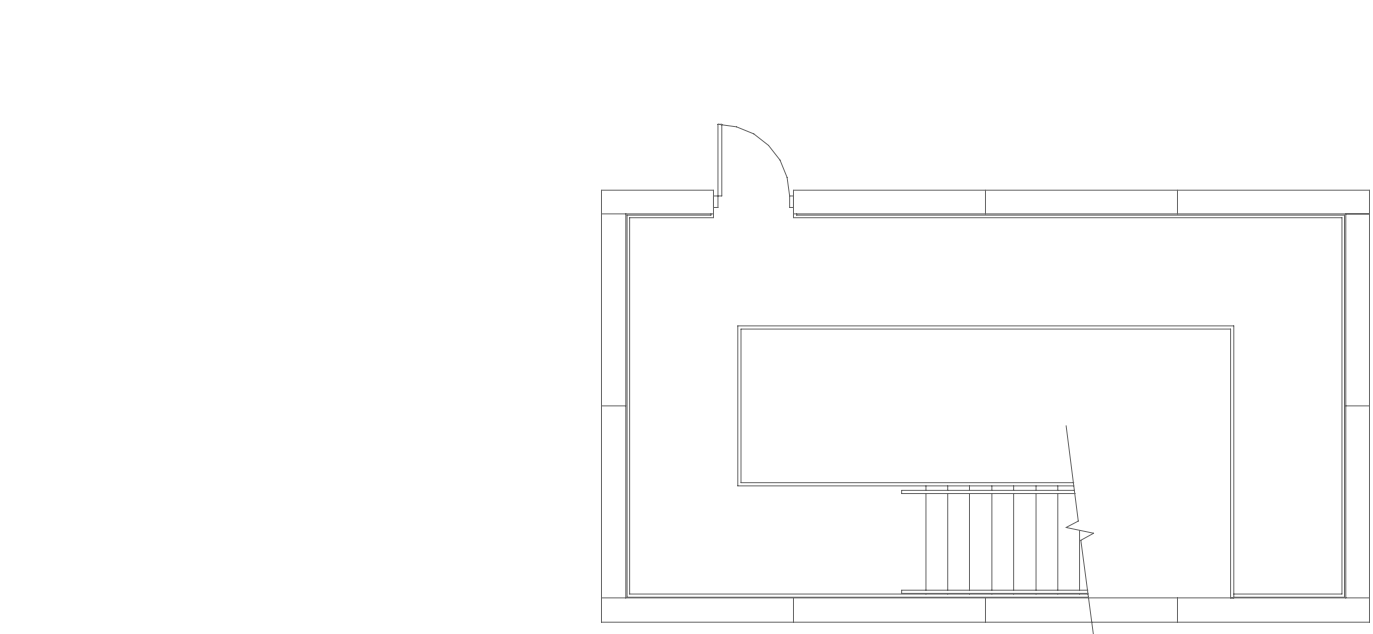
4. TELECOM OUTLET MOUNTED INSIDE FACP. PROVIDE 1" TO ACCESSIBLE CEILING SPACE.

5. TELECOM OUTLET MOUNTED INSIDE LIGHTING CONTROLLER. PROVIDE 1" TO ACCESSIBLE CEILING SPACE.

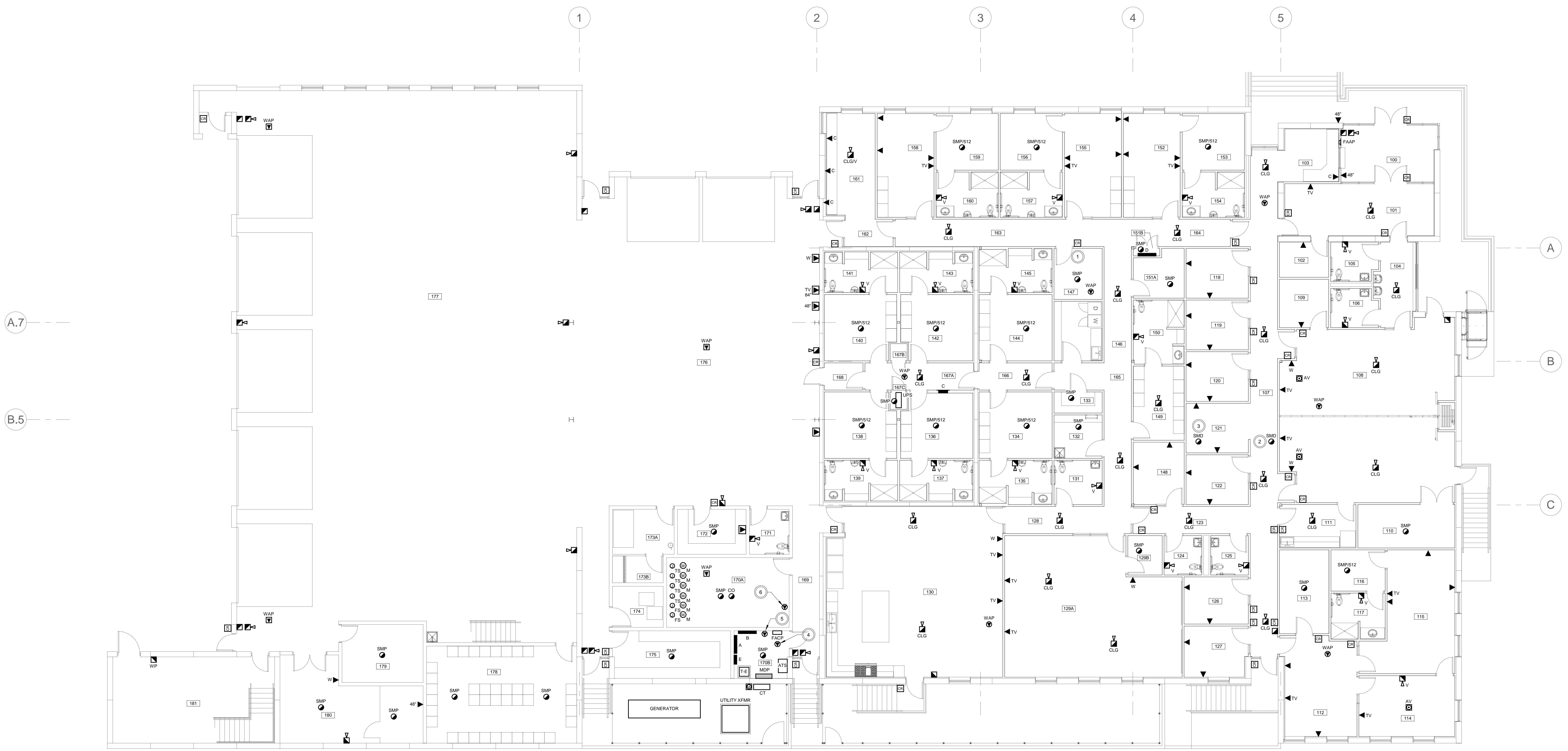
6. TELECOM OUTLET MOUNTED INSIDE TEMPERATURE CONTROL PANEL. PROVIDE 1" TO ACCESSIBLE CEILING.



SYSTEMS - MEZZANINE FLOOR PLAN - ELECTRICAL
 1/8" = 1'-0"



SYSTEMS - TOWER FLOOR PLAN - ELECTRICAL
 1/8" = 1'-0"



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