

ADDENDUM NO. 2

The bid documents for Specification No. 25-11684-C for the Corp Yard City Fleet EV Charger Project are amended as follows:

1-1. COVER PAGE

BID OPENING DATE: Thursday, January 8, 2026

1-2. ARTICLE 1, DOCUMENT 00 1113 – NOTICE INVITING BIDS

Notice Inviting Bids: City of Berkeley ("City") will receive sealed Bids at City of Berkeley, Purchasing Manager's Office, located at the Martin Luther King Jr. Civic Center, 2180 Milvia Street, Third Floor, Berkeley, CA 94704, Telephone (510) 981-7320, until 2:00 PM, **Thursday, January 8, 2026** for the following public work:

1-3. REVISIONS TO SPECIFICATIONS & DRAWINGS

Refer to "SPECIFICATIONS & DRAWING NARRATIVE".

QUESTIONS AND RESPONSES:**2-1 Q: Please confirm and list all of Owner Furnished devices or equipment.**

A: No equipment or devices will be Owner furnished. With the exception of the Windows Active Directory, as called out on spec section 28 13 00, 1.2.B, this is mainly a CFCI project.

2-2. Q: Please confirm in Sheet TY2.01 that indicated IC, EL, and DS on plans are all existing.

A: Refer to symbol schedule TY0.02. It clearly states that IC is new and that EL and DS cabling and hardware exists.

2-3. Q: Please provide details for R2 Swing Gate Wall Rack as indicated in Sheet TY4.01

A: The R2 rack is specified on 27 11 16, 2.2.B. Refer to manufacturer's recommended mounting installation.

2-4. Q: Please provide mounting details for card readers.

A: The card reader is specified on 27 11 16, 2.3.A. Refer to manufacturer's recommended mounting installation.

2-5. Q: 28 13 00_2.5_a_14_a_1) model ix-10as "per manufacture this item has been discontinued. Manufactures comments via email; "the IX-10AS is discontinued so the LE-SS/A & LE-SSR don't really make sense at this point. "

A: Replace the Aiphone Model IX-10AS with the IPW-10VR. Replace the Model LE-SS/A & LE-SSR with model IX-SS-2G. In addition, provide the analog to IP transmitter IPW-1VT.

2-6. Q: TY7.01 & TY7.02 "keynotes TN" while the PoE switches are reflected in Div. 28 specifications (28 23 00_2.5_3), there is no annotation on if Div. 27 or Div. 28 shall provide. It is clear on TY4.01 that Div. 27 (TN2) shall provide workstation furniture while it is reflected in the Div. 28 specifications (28 13 00_2.6_a_4).

A: This is an electronic security project which is why the furniture was specified on section 28 13 00, 2.6 and that the PoE switch was specified on section 28 23 00, 2.5. It is up to the General Contractor on which sub will provide the switch and furniture.

2-7. Q: What scope is included under Bid Alternate 1? Controls Scope? Camera scope? Or Both?

A: Bid Alternate 1 just includes the Access controls, Intercoms, cabling, and conduit for Visitor Cell 1154, 1155, 1157 as detailed in Sheet TN2.01. Camera scope is part of the base bid.

SPECIFICATIONS & DRAWING NARRATIVE

SPECIFICATIONS

1. Section 28 13 00 - ACCESS CONTROL AND ALARM SYSTEMS
 - a. 2.1.B.2.a (pg 5) – Revised to read as “Avigilon Unity Video 8”.
 - b. 2.1.C.1.b (pg 5)– Revised to read as “Mercury: Controllers; Series 4 (MP1501, MP1502, MP2500, and MP4502)”.
 - c. 2.1.G.1 (pg 9) – Revised to read as “Avigilon Unity Access 7 Enterprise Plus”.
 - d. 2.5.A (pg 10) – Added “IP Addressable 2-Gang Audio Door Station” in its entirety.
 - e. 2.5.B (pg 11) – Added “Rack Mount 2-Wire Network Adaptor” in its entirety.
 - f. 2.5.C (pg 11) – Added “IP To Analog Transmitter” in its entirety.
 - g. 2.5.D (pg 12) – Added “IP Video Answering Station” in its entirety.

2. Section 28 23 00 - VIDEO SURVEILLANCE
 - a. 1.7.B. (pg 3) – Added the definition of NVR.
 - b. 2.1.B.4.a (pg 5) – Revised to read as “Windows 10 IoT or LTSC”.
 - c. 2.1.B.4.b (pg 5) – Revised to read as “Windows Server 2016 and above”.
 - d. 2.1.B.13.e (pg 6) – Revised to read as “H.265”.
 - e. 2.1.B.14.d.2) (pg 6) – Revised in its entirety.
 - f. 2.1.B.18.a (pg 6) – Revised to read as “Avigilon H5/H6 cameras”.
 - g. 2.1.B.23.d.1) (pg 7) – Added “If Data Aging will be employed, use at least 90 days of full resolution of the camera”.
 - h. 2.1.B.24.a (pg 8) – Revised in its entirety.

End of Specifications Narrative

DRAWINGS

1. E0.3 & E1.0
 - a. Receptacles added
2. TD2.01 - ESS - FIRST FLOOR DEMOLITION PLAN
 - a. Deleted the last sentence of the IC symbol.
3. TN2.01 - COMM. - FIRST FLOOR DEVICE PLAN
 - a. Added data outlets in Control Center 1126.
4. TN4.01 - COMM. - (N) SERVER ROOM 1111 ENLARGED PLANS AND ELEVATIONS
 - a. Added the ply backboard and DGP/ACS panels on the west wall.
 - b. Revised and added keynotes.
 - c. Revised the rack elevation.
5. TN6.01 - COMM. FIRST FLOOR DEVICE RCP
 - a. Relocated the data drops in the Visitor Rooms.

5. TN7.01 - COMM. - STRUCTURED CABLING SINGLE LINE DIAGRAM
 - a. Added the two 48 port POE switches.
6. TY1.01 - ESS - FIRST FLOOR DEVICE PLAN OVERALL
 - a. Added the two exterior IC on existing pedestals.
7. TY2.01 - ESS - FIRST FLOOR DEVICE PLAN
 - a. Added new work in the Visitor Rooms. The scope of work shown for the Visitor Rooms 1154, 1155 and 1157 will be under Bid Alternate 1.
 - b. Added ACS devices in Telecom Room 1111 and Sally Port 1125.
 - c. Added/revise the keynotes.
8. TY4.01 - ESS - CONTROL CENTER 1126 ENLARGED PLAN & ELEVATIONS
 - a. Revised the workstation keynote.
9. TY6.01 - ESS - FIRST FLOOR DEVICE RCP
 - a. Relocated the cameras in the Visitor Rooms.
10. TY7.01 - ACCESS CONTROL AND INTERCOM SYSTEMS SINGLE LINE DIAGRAMS
 - a. Revised the Intercom Single Line Diagram as shown.
 - b. Revised the Keynotes.

End of Drawings Narrative

CITY OF BERKELEY

DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECTS



PROJECT MANUAL

Public Safety Building Jail Automation Upgrades

SPECIFICATION NO. 25-11684-C

November, 2025

ADVERTISEMENT DATE: November 3, 2025

PRE-BID CONFERENCE: November 18, 2025

BID OPENING DATE: Thursday, January 8, 2026

DOCUMENT 00 1113**NOTICE INVITING BIDS****ARTICLE 1 - INVITATION TO BID**

- 1.01 Notice Inviting Bids:** City of Berkeley ("City") will receive sealed Bids at City of Berkeley, Purchasing Manager's Office, located at the Martin Luther King Jr. Civic Center, 2180 Milvia Street, Third Floor, Berkeley, CA 94704, Telephone (510) 981-7320, until **2:00 PM, Thursday, January 8, 2026** for the following public work:

**SPECIFICATION NO. 25-11684-C
CITY OF BERKELEY
Public Safety Building Jail Automation Upgrades
2100 Martin Luther King Jr Way**

- 1.02 Project Description: Upgrades to the low-voltage systems in the first-floor detention area, including modifications to cell and entry door controls, replacement of audio and video surveillance equipment, installation of HVAC systems, and conversion of a storage room into a climate-controlled telecommunications room, including ancillary work in accordance with the terms and conditions of the Contract Documents. Work shall be completed within 126 Calendar Days from the date when Contract Time commences to run.**
- 1.03 Procurement of Bidding Documents:**
Bidding Documents contain the full description of the Work. Bidders may obtain Bidding Documents by November 3, 2025 from City of Berkeley's Public Works website under Current Construction Project Bid Opportunities:
<https://berkeleyca.gov/doing-business/working-city/bid-proposal-opportunities>
For information pertaining to the Bidding Documents, please contact the Project Manager, Uriel Gonzalez, 1947 Center Street, 5th Floor, Berkeley, CA 94704, by Email at UGonzalez@berkeleyca.gov or by Telephone at (510) 981-6627 or by FAX **(510) 981-6390**.
- 1.04 Planholders List:**
Bidders are responsible for notifying Uriel Gonzalez, via email at UGonzalez@berkeleyca.gov to be included on the Planholders List. Please include the following in the email subject header: "Planholders list for Specification No. 25-11684-C for Public Safety Building Jail Automation Upgrades". In the body of the email, please state the Name of the Company Representative, Company Name, Address, Telephone Number, Fax Number, and Email Address.
- 1.05 Instructions:** Bidders shall refer to Document 00 2113 (Instructions to Bidders) for required documents and items to be submitted in a sealed envelope for deposit into the Bid Box, located at **City of Berkeley, Purchasing Manager's Office, Martin Luther King Jr. Civic Center, 2180 Milvia Street, Third Floor, Berkeley, CA 94704, Telephone (510) 981-7320** no later than the time and date set forth in Paragraph 1.01 above.
- 1.06 Non-Mandatory Pre-Bid Site Visit:** City **WILL** conduct a Non-Mandatory Pre-Bid Conference and Site Visit at 2100 Martin Luther King Jr Way. The location of work is open to the public during normal business or daylight hours. It is recommended that potential bidders visit the site independently to review site conditions prior to bid. City will conduct a Pre-Bid Conference and Site Visit at 2100 Martin Luther King Jr Way, at 10:00 AM November 18, 2025
- 1.07 Bid Preparation Cost:** Bidders are solely responsible for the cost of preparing their Bids.

- 1.08 Reservation of Rights:** City specifically reserves the right, in its sole discretion, to reject any or all Bids, to re-bid, or to waive inconsequential defects in bidding not involving time, price or quality of the work. City may reject any and all Bids and waive any minor irregularities in the Bids.

ARTICLE 2 - LEGAL REQUIREMENTS

- 2.01 Required Contractor's License(s):** A California "B" contractor's license is required to bid this contract. Joint ventures must secure a joint venture license prior to award of this Contract. Specialty work may require a specialty contractor's license, held by Bidder or a listed subcontractor.
- 2.02 Bid Alternates:** Bid alternates are identified in Document 00 4113 (Bid Form). The determination of lowest bid shall be based upon: Base contract bid price only.
- 2.03 Substitution of Securities:** City will permit the successful bidder to substitute securities for any retention monies withheld to ensure performance of the contract, as set forth in Document 00 6290 Escrow Agreement For Security Deposits In Lieu Of Retention and incorporated herein in full by this reference, in accordance with Section 22300 of the California Public Contract Code.
- 2.04 Prevailing Wage Laws:** The successful Bidder must comply with all prevailing wage laws applicable to the Project, and related requirements contained in the Contract Documents. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the State of California Department of Industrial Relations, are on file at <http://www.dir.ca.gov/oprl/pwd/> and are deemed included in the Bidding Documents. The successful Bidder shall post the applicable prevailing wage rates at the Site.
- 2.05 Community Workforce Agreement:** This contract **WILL** be subject to the Community Workforce Agreement approved by the Berkeley City Council on June 23, 2015 (See Document 00 6580 – City of Berkeley Contracting Policies). The successful bidder and all subcontractors, at any tier, **WILL** be required to sign an Agreement to be Bound as a condition precedent to entering into any contract for this project.
- 2.06 First Source Construction Agreement:** This contract **WILL NOT** be subject to the First Source Construction Agreement (See Document 00 6580 – City of Berkeley Contracting Policies).
- 2.07** This contract **WILL (NOT)** be subject to Supplementary Conditions for Federal Funding. Section 00 7201.

END OF SECTION

DOCUMENT 00 2113**INSTRUCTIONS TO BIDDERS**

Bids are requested by City of Berkeley ("City"), for a general construction contract, or work described in general, as set forth in Document 00 1113 (Notice Inviting Bids), and the following additional terms.

ARTICLE 1 - PROCEDURES FOR SUBMISSION OF BIDS**1.01 Required Pre-Bid Conference and Site Visit**

- A. City **WILL** conduct a Non-Mandatory Pre-Bid Conference and Site Visit at 2100 Martin Luther King Jr Way, at November 18, 2025. The location of work is open to the public during normal business or daylight hours. It is recommended that potential bidders visit the site independently to review site conditions prior to bid.
- B. Questions regarding the site and the Bid Documents may be sent to the City's Representative to clarify such matters as Bidders may request. The Site Visit may be the Bidders' only opportunity to investigate conditions at the Site. Other Pre-Bid Site Visits may be scheduled at City's sole discretion, depending on staff availability.
- C. City will issue Minutes of the Pre-Bid Conference, which shall constitute the sole and exclusive record and statement of the results of the Pre-Bid Conference. The Minutes issued by City are not Contract Documents.

1.02 Required Pre-Bid Investigations

- A. Prior to submission of Bid, Bidder must conduct a careful examination of Bidding Documents and understand the nature, extent, and location of Work to be performed. Refer to Document 00 7200 (General Conditions) on required pre-bid investigations.
- B. Bidders may examine any available existing conditions information (e.g., record documents, specifications, studies, drawings of previous work), as well as applicable environmental assessment information (if any) regarding the Project, which will be posted on the website location indicated in Document 00 1113 (Notice Inviting Bids), paragraph 1.03.

1.03 Bidder Questions and Answers

- A. Bidders must direct all questions about the meaning or intent of Bidding Documents to City's Project Manager in writing as indicated in Document 00 1113 (Notice Inviting Bids), paragraph 1.03. Interpretations or clarifications considered necessary by City in response to such questions will be issued by written Addenda posted to the City's website.
- B. Questions received less than ten (10) calendar days prior to the date for opening Bids may not be answered.
- C. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect, and Bidders shall not rely on oral statements.

1.04 Addenda

- A. Addenda may also be issued to modify the Bidding Documents as deemed advisable by City. Addenda shall be acknowledged by number in Document 00 4113 (Bid Form) and shall be part of the Contract Documents. A complete listing of Addenda may be secured from City on the website as indicated in Document 00 1113 (Notice Inviting Bid), paragraph 1.03.
 - 1. It is the Contractor's responsibility to check the City's website for Addenda prior to submitting their bid.

ARTICLE 2 - RECEIPT OF BIDS**2.01** Date and Time

- A. Sealed Bids will be received by the City until the date and time indicated in Document 00 1113 (Notice Inviting Bids). All Bid envelopes will be time-stamped to reflect their submittal time. City shall reject all Bids received after the specified time and will return such Bids to Bidders unopened. Bidders must submit Bids in accordance with this Document 00 2113.

2.02 Two Envelope Bid Submission:

- A. City will receive Bids in opaque sealed 10 inch x 13 inch envelopes, containing the required items described herein.
- B. Bidders must submit Bids in two envelopes: "Envelope A – Bid Submittals" and "Envelope B – Statement of Qualifications."
- C. Bidders should mark their Bid envelopes using the name, address, identifying information and specification number, indicated in Document 00 1113 (Notice Inviting Bids).

2.03 Required Contents of "Envelope A – Bid Submittals"

- A. Document 00 4113 (Bid Form). Bidders must submit Bids on Document 00 4113 (Bid Form) in accordance with the provisions of Document 00 4113. Bidders must complete all Bid items and supply all information required by Bid documents and specifications.
- B. Document 00 4313 (Bond Accompanying Bid). Bidders must submit Document 00 4313 (Bond Accompanying Bid) accompanied by a cashier's check, certified check (certified without qualification and drawn on a solvent bank of the State of California or a National Bank doing business in the State of California) or completed form of Document 00 4313 of not less than 10% of the base Bid, payable to City and completed in accordance with the provisions of Document 00 4313.
- C. Document 00 4314 (Bidder Registration and Experience Form). Bidders must submit Document 00 4314 (Bidder Registration and Experience Form), completed in accordance with the provisions of Document 00 4314.
- D. Document 00 4330 (Subcontractor List). Bidders must submit Document 00 4330 (Subcontractors List) completed in accordance with the provisions of Document 00 4330. The Subcontractors List must include the names of all subcontractors for those subcontractors who will perform any portion of work, including labor, rendering of service, or specially fabricating and installing a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in excess of one half of one percent (0.5%) of the total Bid amount. Any violation of this requirement may result in a Bid being deemed non-responsive and not being considered.
- E. Document 00 4519 (Non-Collusion Affidavit). Bidders must submit Document 00 4519 (Non-Collusion Affidavit) completed in accordance with the provisions of Document 00 4519.
- F. Document 00 4546 (Bidder Certifications). Bidders must submit Document 00 4546 (Bidder Certification) completed in accordance with the provisions of Document 00 4546.

2.04 Required Contents of "Envelope B – Statement of Qualifications"

- A. Document 00 4513 (Statement of Qualifications for Construction Work). Bidder must submit Document 00 4513 (Statement of Qualifications for Construction Work) in accordance with the provisions of Document 00 4513.

ARTICLE 3 - BID OPENING AND EVALUATION**3.01** Determination of Apparent Low Bidder

- A. City will open each Bidders' Envelope A at the time and place indicated in Document 00 1113 (Notice Inviting Bids), initially evaluate them for responsiveness, and determine an Apparent Low Bidder as specified herein.

- B. Apparent Low Bid will be determined solely on the total amount of all Bid items based on terms contained in Document 00 1113 (Notice Inviting Bids) and Document 00 4113 (Bid Form). All Bidders are required to submit Bids on all Bid items (including any alternates).
- C. For the purposes of award, the apparent low Bidder will be the conforming responsible Bidder offering the lowest total amount for the Total Base Bid shown in the Bid Form. Once the low bidder is determined as herein described, the City reserves the right to award any combination of Additive Bid alternates, or not award any Additive Bid alternates, as it deems to be in the best interest of the City, regardless of whether the total bid of the particular combination selected is higher or lower than any other bidder for that same combination.
- D. For the Apparent Low Bidder only, City will open Envelope B and evaluate the Apparent Low Bidder for responsiveness to the requirements of Document 00 4513 and for Responsibility.
- E. If Apparent Low Bidder is determined to be non-responsive or non-responsible, then City may proceed to the next Apparent Low Bidder's Bid pursuant to any procedures determined in its reasonable discretion, and proceed for all purposes as if this Apparent Low Bidder were the original Apparent Low Bidder.

3.02 Evaluation of Bids

- A. Bids must be full, complete, clearly written and using the required forms. Bidders shall make any change in the Bid by crossing out the original entry, entering and initialing the new entry. Bidder's failure to submit all required documents strictly as required entitles City to reject the Bid as non-responsive. All Bidders must submit Bids containing each of the fully executed documents supplied in this Project Manual.
- B. In evaluating Bids, City will consider Bidders' qualifications, whether or not the Bids comply with the prescribed requirements, unit prices, and other data, as may be requested in Document 00 4113 (Bid Form) or prior to the Notice of Award.
- C. City may conduct reasonable investigations and reference checks of Bidder and other persons and organizations as City deems necessary to assist in the evaluation of any Bid and to establish Bidder's responsibility, qualifications, financial ability and ability to perform the Work in accordance with the Contract Documents to City's satisfaction within the prescribed time. Submission of a Bid constitutes Bidder's consent to the foregoing.
- D. City shall have the right to consider information provided by sources other than Bidder. City shall also have the right to communicate directly with Bidder's surety regarding Bidder's bonds.
- E. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between written words and figures will be resolved in favor of the words.
- F. Bids shall be deemed to include the written responses of the Bidder to any questions or requests for information of City made as part of Bid evaluation process after submission of Bid.

3.03 Reservation of Rights

- A. City reserves the right to reject any or all nonconforming, non-responsive, unbalanced, or conditional Bids, and to reject the Bid of any Bidder as non-responsive as a result of any error or omission in the Bid, or if City believes that it would not be in the best interest of Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by City. For purposes of this paragraph, an "unbalanced Bid" is one having nominal prices for some Bid items and enhanced prices for other Bid items.
- B. City may retain Bid securities and Bid bonds of other than the Apparent Low Bidder for a period of 90 Days after award or full execution of the Contract, whichever first occurs.
- C. City may reject any or all Bids and waive any informalities or minor irregularities in the Bids. City also reserves the right, in its discretion, to reject any or all Bids and to re-Bid the Project.

ARTICLE 4 - MANDATORY BID PROTEST PROCEDURES**4.01 Submission of Written Bid Protest**

- A. Any Bid protest in connection with the construction contract or work described in general in Document 00 1113 (Notice Inviting Bids) must be submitted in writing to the Project Manager as indicated in Document 00 1113, paragraph 1.03 before 3:30 p.m. of the fifth Business Day following opening of the Bidders' envelopes.
- B. The initial protest document must contain a complete statement of the basis for the protest.
- C. The protest must refer to the specific portion of the document that forms the basis for the protest.
- D. The protest must include the name, address, and telephone number of the person representing the protesting party.
- E. Only Bidders who the City otherwise determines are responsive and responsible are eligible to protest a Bid; protests from any other Bidder will not be considered. In order to determine whether a protesting Bidder is responsive and responsible, City may evaluate all information contained in any protesting Bidder's Bid, and conduct the same investigation and evaluation as City is entitled to take regarding an Apparent Low Bidder.
- F. The party filing the protest must concurrently transmit a copy of the initial protest document and any attached documentation to all other parties with a direct financial interest that may be adversely affected by the outcome of the protest. Such parties shall include all other Bidders who appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest.

4.02 Exclusive Remedy

- A. The procedure and time limits set forth in this paragraph are mandatory and are Bidder's sole and exclusive remedy in the event of Bid protest. Bidder's failure to comply with these procedures shall constitute a waiver of any right to further pursue the Bid protest, including filing a Government Code Claim or legal proceedings. A Bidder may not rely on a protest submitted by another Bidder, but must timely pursue its own protest.

ARTICLE 5 - AWARD AND EXECUTION OF CONTRACT**5.01 Notice of Intent to Award and Submittal of Executed Contract Documents**

- A. If Contract is to be awarded, it will be awarded to the lowest responsible responsive Bidder. City will issue Document 00 5100 Notice of Intent to Award. Such Award, if made, will be made within sixty (60) calendar days after the opening of the Bid Proposals.
- B. Successful Bidder must execute and submit to City the "Required Contract Documents and Proof of Insurance" set forth below, by 5:00 p.m. of the 10th calendar Day following the Notice of Intent to Award.

5.02 Required Contract Documents and Proof of Insurance

- A. Document 00 5200 (Agreement), fully executed by successful Bidder. Submit **two** originals and an emailed PDF, each bearing an original signature (in blue ink) and initials on each page.
- B. Document 00 6113.13 (Construction Performance Bond), fully executed by successful Bidder and surety, in the amount set forth in Document 00 6113.13. Submit **two** originals and an emailed PDF.
- C. Document 00 6113.16 (Construction Labor and Material Payment Bond), fully executed by successful Bidder and surety, in the amount set forth in Document 00 6113.16. Submit **two** originals and an emailed PDF.
- D. Document 00 6536 (Guaranty), fully executed by successful Bidder. Submit **two** originals and an emailed PDF.
- E. Insurance certificates and endorsements required by Document 00 7316 (Supplementary Conditions — Insurance and Indemnification): Submit **one** original set and an emailed PDF.
- F. Document 006580 (City Contracting Policies), fully executed by successful bidder. Submit **one** original set and an emailed PDF.

5.03 Failure to Execute and Deliver Documents:

- A. If Bidder to whom Contract is awarded, within the period described in this Document 00 2113, fails or neglects to execute and deliver all required Contract Documents and file all required bonds, insurance certificates, and other documents, City may, in its sole discretion, rescind the award, recover on Bidder's surety bond, or deposit Bidder's cashier's check or certified check for collection, and retain the proceeds thereof as liquidated damages for Bidder's failure to enter into the Contract Documents. Bidder agrees that calculating the damages City may suffer as a result of Bidder's failure to execute and deliver all required Contract Documents would be extremely difficult and impractical and that the amount of Bidder's required Bid security shall be the agreed and presumed amount of City's damages.
- B. Upon such failure to timely deliver all required Contract Documents as set forth herein, City may determine the next Apparent Low Bidder and proceed accordingly. Such Award, if made, will be made within sixty (60) calendar days after the opening of the Bid Proposals.

ARTICLE 6 - GENERAL CONDITIONS AND REQUIREMENTS**6.01 Modification of Commencement of Work:**

- A. City expressly reserves the right to modify the date for the Commencement of Work under the Contract and to independently perform and complete work related to Project. City accepts no responsibility to Contractor for any delays attributed to its need to complete independent work at the Site.
- B. City shall have the right to communicate directly with Apparent Low Bidder's proposed performance bond surety, to confirm the performance bond. City may elect to extend the time to receive faithful performance and labor and material payment bonds.

6.02 Conformed Project Manual:

- A. Following Award of Contract, City may prepare a conformed Project Manual reflecting Addenda issued during bidding, which will, failing objection, constitute the approved Project Manual.

6.03 Payment Bond:

- A. If the Project described in Document 00 1113 (Notice Inviting Bids) involves an expenditure in excess of twenty-five thousand dollars (\$25,000), the successful Bidder must file a payment bond with and approved by City prior to entering upon the performance of the Work, in accordance with Civil Code § 3247.

6.04 Wage Rates:

- A. The successful Bidder must comply with all prevailing wage laws applicable to the Project, and related requirements contained in the Contract Documents. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the State of California Department of Industrial Relations, are on file at <http://www.dir.ca.gov/oprl/pwd/> and are deemed included in the Bidding Documents. The successful Bidder shall post the applicable prevailing wage rates at the Site.

6.05 Withdrawal of Bids:

- A. Bidders may withdraw their Bids at any time prior to the Bid opening time fixed in this Document 00 2113, only by written request for the withdrawal of Bid filed with City's Purchasing Department, at 2180 Milvia Street, 3rd Floor, Berkeley, CA 94704. Bidder or its duly authorized representative shall execute request to withdraw Bid.

6.06 Ineligible Contractors and Subcontractors:

- A. No contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

- B. City shall not accept a Bid from a Bidder who is ineligible to bid or work on, or be awarded, a public works project pursuant to California Labor Code section 1777.1 or 1777.7. Bidders and the Contractor who is awarded the project contract shall not utilize, or allow work by, any subcontractor who is ineligible to bid or work on, or be awarded, a public works project pursuant to California Labor Code Section 1777.1 or 1777.7. (See California Public Contract Code Section 6109.) The California Division of Labor Standards Enforcement publishes a list of debarred contractors and subcontractors on the Internet at www.dir.ca.gov/DLSE/debar.html.

6.07 Substitutions:

- A. Bidders must base their Bids on products and systems specified in Contract Documents or listed by name in Addenda. City will consider substitution requests only for "or equal items." Bidders wanting to use "or equal" item(s) may submit Document 00 6325 (Substitution Request Form) no later than 35 calendar days after Notice of Award. As a limitation on Bidder's privilege to request substitution of "or equal" items, City has found that certain items are designated as City standards and certain items are designated to match existing items in use on a particular public improvement either completed or in the course of completion or are available from one source. As to such items, City will not permit substitution. Such items are described in the Bidding Documents.

6.08 Definitions:

- A. All abbreviations and definitions of terms used in this Document 00 2113 are set forth in Document 00 7200 (General Conditions) and Section 01 4200 (References and Definitions).

END OF SECTION

DOCUMENT 00 3132**GEOTECHNICAL DATA AND EXISTING CONDITIONS****ARTICLE 1 - REPORTS AND INFORMATION ON EXISTING CONDITIONS****1.01 Inspection of Reports:**

- A. City, its consultants, and prior contractors may have collected documents providing a general description of the Site and conditions of the Work. These documents may consist of geotechnical reports for and around the Site, contracts, contract specifications, tenant improvement contracts, as-built drawings, utility drawings, and information regarding Underground Facilities (collectively, "Existing Conditions Data".)
- B. Bidders may inspect Geotechnical and Existing Conditions Data. These documents are listed in Section 01 1100 (Summary) and are available for review at the address identified therein. Copies may be obtained for the cost of reproduction and handling upon Bidder's payment for the costs.
- C. Existing Conditions Data is for information only and does not describe labor, materials or equipment furnished by Contractor, but rather, information regarding conditions of the work. Such Existing Conditions Data is not a Contract Document.

ARTICLE 2 - USE OF EXISTING CONDITIONS DATA**2.01 Above-Ground Existing Conditions:**

- A. City makes no warranty or representation of existing aboveground conditions, as-built conditions, or other aboveground actual conditions verifiable by reasonable independent investigation. These conditions are verifiable by Bidder by the performance of its own independent investigation that Bidder must perform prior to bidding and Bidder must not rely on the information supplied by City regarding existing conditions.
- B. Bidder represents and agrees that in submitting its Bid, it is not relying on any information regarding above-ground existing conditions supplied by City.

2.02 Underground Facilities:

- A. Information supplied regarding existing Underground Facilities at or contiguous to the Site is based on information furnished to City by others (e.g., the builders of such Underground Facilities or others).
- B. City assumes responsibility for only the general accuracy, completeness or thoroughness of information regarding Underground Facilities that are owned by City. This express assumption of responsibility applies only if Bidder has conducted the independent investigation required of it under Document 00 7200 (General Conditions) and discrepancies were not apparent. Bidder is solely responsible for any interpretation or conclusion drawn from this information.
- C. City is not responsible for information regarding Underground Facilities owned by others.

2.03 Hazardous Materials Surveys:

- A. Bidders may rely on this data and information for general accuracy regarding the locations of potentially hazardous materials subject of the Work. City does not warrant and makes no representation regarding the completeness or thoroughness of any data or information regarding existing conditions or hazardous materials, including, but not limited to, quantities, characteristics, volumes, or associated structural features. Bidder represents and agrees that in submitting a Bid it is not relying on any such data, information or deductions.
- B. Data and information regarding the locations of hazardous materials are not part of Contract Documents.

2.04 Geotechnical Data:

- A. Bidder may rely upon the general accuracy of the "technical data" contained in the geotechnical reports and drawings identified above, but only insofar as it relates to subsurface conditions,

provided Bidder has conducted the independent investigation required of it and discrepancies were not apparent.

- B. The term "technical data" shall include actual reported depths, reported quantities, reported soil types, reported soil conditions, and reported material, equipment, or structures that were encountered during subsurface exploration. The term "technical data" does not include, and Bidder may not rely upon, any other data, interpretations, opinions or information shown or indicated in such drawings or reports that otherwise relate to subsurface conditions or described structures. The term "technical data" shall not include the location of Underground Facilities.
- C. Bidder may not rely on the completeness of reports and drawings for the purposes of bidding or construction. Bidder is solely responsible for any interpretation or conclusion drawn from any "technical data" or any other data, interpretations, opinions, or information contained in supplied geotechnical data.
- D. Except as expressly set forth in this Document 00 3132, City does not warrant, and makes no representation regarding, the accuracy or thoroughness of any geotechnical data.
- E. Bidder represents and agrees that in submitting its Bid, it is not relying on any geotechnical data supplied by City, except as specifically set forth herein.

ARTICLE 3 - INVESTIGATIONS

3.01 Required Investigations:

- A. Before submitting a Bid, each Bidder shall be responsible to obtain such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site or otherwise, which may affect cost, progress, performance or furnishing of Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of Contract Documents.
- B. Bidders shall advise City in writing during the Bid period of any questions, suppositions, inferences or deductions Bidders may have for City's review and response.
- C. City has provided time in the period prior to bidding for Bidder to perform these investigations.

3.02 Access to Site for Investigations:

- A. During the Pre-Bid Site Visit(s), City will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies, as each Bidder deems necessary for submission of a Bid. The Bidder may request alternate dates and times to access the site. Such request must be made in writing at least ten (10) calendar days prior to bid. Bidders must fill all holes and clean up and restore the Site to its former conditions upon completion of such explorations, investigations, tests, and studies. Such investigations may be performed only under the provisions of Document 00 2113 (Instructions to Bidders) and Document 00 7200 (General Conditions) including, but not limited to, proof of insurance and obligation to indemnify against claims arising from such investigation work. Each Bidder shall supply all equipment required to perform any investigations as each Bidder deems necessary. City has the right to limit the number of pieces of machinery operating at one time due to safety concerns.

END OF SECTION

**DOCUMENT 00 4113
BID FORM**

TO CITY OF BERKELEY

THIS BID IS SUBMITTED BY:

(Firm/Company Name)

Re:Public Safety Building Jail Automation Upgrades at 2100 Martin Luther King Jr Way, Specification No. 25-11684-C

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with City of Berkeley in the form included in the Contract Documents, Document 00 5200 (Agreement), to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Sum and within the Contract Time indicated in this Bid and in accordance with all other terms and conditions of the Contract Documents.
2. Bidder accepts all of the terms and conditions of the Contract Documents, Document 00 1113 (Notice Inviting Bids), and Document 00 2113 (Instructions to Bidders), including, without limitation, those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for 60 calendar days after the day of Bid opening, unless there is a bid protest, then 90 calendar days after the day of bid opening. Bidder will sign and submit Document 00 5200 (Agreement) and other documents required by Document 002113, paragraph 5.02 (Required Contract Documents and Proof of Insurance) within 20 calendar days after receipt of City’s Notice of Intent to Award.
3. In submitting this Bid, Bidder represents that Bidder has examined all of the Contract Documents, performed all necessary Pre-Bid investigations as set forth in Document 00 5200 (Agreement) Article 6 (Contractor’s Representation), received the Pre-Bid conference minutes (if any), and received the following Addenda:

Addendum Number	ADDENDUM DATE	Signature of Bidder

4. Based on the foregoing, Bidder proposes and agrees to fully perform the Work within the time stated and in strict accordance with the Contract Documents for the following sums of money listed in the following Schedule of Bid Prices:

SCHEDULE OF BID PRICES

All Bid items, including lump sums and unit prices, must be filled in completely. Bid items are described in Section 01 1100 (Summary of Work). Quote in figures only, unless words are specifically requested.

ITEM	DESCRIPTION	PRICE (\$)
1	All work of the Contract Documents other than work separately provided for under other bid items, i.e. excluding Bid Alternates item 1.	
	Total Bid Price: (Bid Item 1 through 1)	

Total Bid Price: (Bid Item 1 through 1)

(Words)

Bid Alternates

ITEM	DESCRIPTION	PRICE (\$)
1	Bid Alternate 1: Access controls, Intercoms, cabling, and conduit for Visitor Cell 1154, 1155, 1157	

5. Subcontractors for work included in all Bid items are listed on Document 00 4330 (Subcontractors List) submitted herewith.
6. The undersigned Bidder understands that City reserves the right to reject this Bid, but that this Bid shall remain open and shall not be withdrawn for a period of sixty (60) calendar days from the date prescribed for its opening.
7. If written notice of the acceptance of this Bid, hereinafter referred to as Notice of Intent to Award, is mailed or delivered to the undersigned Bidder within the time described in Paragraph 2 of this Document 00 4113 or at any other time thereafter before it is withdrawn, the undersigned Bidder will execute and deliver the documents required by Document 00 2113 (Instructions to Bidders) within the times specified therein.
8. Notice of Award or request for additional information may be addressed to the undersigned Bidder at the address set forth below.
9. The undersigned Bidder herewith encloses cash, a cashier's check, or certified check of or on a responsible bank in the United States, or a corporate surety bond furnished by a surety authorized to do a surety business in the State of California, in form specified in Document 00 2113 (Instructions to Bidders), in the amount of ten percent (10%) of the Total Bid Price and made payable to City of Berkeley.
10. The undersigned Bidder agrees to commence Work under the Contract Documents on the date established in Document 00 7200 (General Conditions) and to complete all Work within the time specified in Document 00 5200 (Agreement).
11. The undersigned Bidder agrees that, in accordance with Document 00 7200 (General Conditions), liquidated damages for failure to complete all Work in the Contract within the time specified in Document 00 5200 (Agreement) shall be as set forth in Document 00 5200.

(Name/Title)

(Name/Title)

Telephone Number(s):

(Area Code) (Number)

(Area Code) (Number)

Fax Number(s):

(Area Code) (Number)

(Area Code) (Number)

Date of Bid:

END OF SECTION

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DOCUMENT 00 4313
BOND ACCOMPANYING BID

KNOW ALL BY THESE PRESENTS:

That the undersigned

(Name of Contractor)

as Principal and the undersigned as Surety are held and firmly bound unto City of Berkeley,
as obligee, in the penal sum of _____

(Dollar Amount in Words)

Dollars (\$ _____) lawful money of the United States of America being at least ten
percent (10%) of the aggregate amount of said Principal

_____’s base Bid, for the payment of which,
well and truly to be made, we bind ourselves, our successors, executors, administrators, and assigns,
jointly and severally, firmly by these presents.

WHEREAS, the said Principal is submitting a Bid for

Specification No. 25-11684-C
Public Safety Building Jail Automation Upgrades
at 2100 Martin Luther King Jr Way.

THE CONDITION OF THIS OBLIGATION IS SUCH that if the Bid submitted by the said Principal
be accepted and the Contract be awarded to said Principal and said Principal shall within the required
periods enter into the Contract so awarded and provide the required Construction Performance Bond,
Construction Labor and Material Payment Bond, insurance certificates, Guarantee, and all other
endorsements, forms, and documents required under Document 00 2113 (Instructions to Bidders), then
this obligation shall be void, otherwise to remain in full force and effect.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument this _____
day of _____, 20____.
(Month)

(Corporate Seal)

By _____
Principal

By _____
Surety

(Corporate Seal)

By _____
Attorney in Fact

END OF SECTION

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DOCUMENT 00 4314
BIDDER REGISTRATION FORM
INSTRUCTIONS

In order to register to undertake work for City of Berkeley, Bidder **must**:

- 1) Fill out this registration form completely; do not leave blanks.
- 2) Provide certificates of insurance or a letter evidencing coverage complying with Document 00 4513 (Statement of Qualifications).

INDEPENDENT CONTRACTOR REGISTRATION

Contractor's License # _____

Date: _____ Fed I.D. # _____

Full Corporate Name of Company: _____

Street Address: _____

Mailing Address: _____

Phone: _____ Fax: _____

Name of Principal Contact: _____

Type of Business: _____ Sole Proprietor _____ Partnership
 _____ Non-Profit 501(c)(3) _____ Corporation
 _____ other (please explain: _____)

INSURANCE

Workers' Compensation:

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

General Liability:

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

Policy Limits: \$ _____

A.M. Best Rating: _____

Automobile Liability:

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

Policy Limits: \$ _____

A.M. Best Rating: _____

All-risk Course of Construction (if applicable, as required by Document 00 7316 [Supplementary Conditions – Insurance]):

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

Policy Limits: \$ _____

A.M. Best Rating: _____

Professional Liability (if applicable, as required by Document 00 7316 [Supplementary Conditions – Insurance]):

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

Policy Limits: \$ _____

A.M. Best Rating: _____

Pollution Legal Liability Insurance (if applicable, as required by Document 00 7316 [Supplementary Conditions – Insurance]):

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

Policy Limits: \$ _____

A.M. Best Rating: _____

BIDDER CERTIFIES, UNDER PENALTY OF PERJURY, THAT THE FOREGOING INFORMATION IS CURRENT AND ACCURATE AND AUTHORIZES OWNER, AND ITS AGENTS AND REPRESENTATIVES TO OBTAIN A CREDIT REPORT AND/OR VERIFY ANY OF THE ABOVE INFORMATION.

SIGNATURE

DATE

SAFETY EXPERIENCE

The following statements as to the Bidder's safety experience are submitted with the Bid, as part thereof, and the Bidder guarantees the truthfulness and accuracy of all information.

1. List Bidder's interstate Experience Modification Rate for the last three years.

[20_] _____ [20_] _____ [20_] _____

2. Use Bidder's last year's Cal/OSHA 300 log to fill in the following number of injuries and illnesses:

a. Number of lost workday cases _____

b. Number of medical treatment cases _____

c. Number of fatalities _____

3. Employee hours worked last year _____

4. State the name of Bidder's safety engineer/manager:

Attach a resume or outline of this individual's safety and health qualifications and experience.

I CERTIFY, UNDER PENALTY OF PERJURY, THAT THE FOREGOING INFORMATION IS CURRENT AND ACCURATE AND I AUTHORIZE OWNER, AND ITS AGENTS AND REPRESENTATIVES TO OBTAIN A CREDIT REPORT AND/OR VERIFY ANY OF THE ABOVE INFORMATION.

BIDDER:

By: _____
Signature

Its: _____
Title

Date _____

END OF SECTION

**DOCUMENT 00 4330
SUBCONTRACTORS LIST**

Bidder submits the following information as to the subcontractors Bidder intends to employ if awarded the Contract.

Full Name of Subcontractor (Sub.) and Address of Mill or Shop	Sub.'s License No.	Description of Work: Reference to Bid Items	Sub.'s Bid Amount	Sub.'s Depart. Of Industrial Relations No.

(Bidder to attach additional sheets if necessary)

END OF SECTION

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DOCUMENT 00 4513
STATEMENT OF QUALIFICATIONS FOR CONSTRUCTION PROJECTS

ARTICLE 1 – GENERAL INFORMATION**1.01 Minimum Bidder Qualifications.**

- A. Bidders must be duly licensed in accordance with the California Business & Professions Code and have a history of work performance sufficient to meet the requirements of a responsible bidder in the California Public Contract Code Section 1104.
- B. Bidders must have three (3) years experience as a continuously operating entity engaged in the performance of similar work.
- C. Bidders must demonstrate successful experience with type of work of this Project, to include, within the past year, completed two (2) projects of a similar nature and complexity with a contract dollar amount of (i.) at least 75% of the amount of Bidder's Bid or (ii.) 125% of such amount in the aggregate.

1.02 Measurement.

- A. Bidder's compliance with the minimum qualification requirements will be measured by Bidder's experience as an operating entity and also by the experience of the supervisory personnel who will have responsible charge of the various major components of the Work.
- B. If Bidder subcontracts portions of the Work, City, in its determination of whether the minimum qualification requirements have been met, may consider the qualifications of the Subcontractor's supervisory personnel.
- C. The qualifications of the Key Personnel are to be submitted with the Statement of Qualifications ("SOQ"), by providing the information described in this Document 00 4513.

ARTICLE 2 – Required Contents of SOQ Submission**2.01 Transmittal Letter**

- A. The Transmittal Letter shall name the proposed prime contractor, its legal structure (i.e., corporation, partnership, limited partnership, joint venture). If a joint venture or partnership is proposed, Bidder shall identify partner and/or member of the joint venture and their roles and responsibilities.

2.02 Submittals:

- A. Completed Questionnaire. Bidder shall include a completed Statement of Qualification Questionnaire in the form attached to this Document 00 4513 as Attachment "A".
- B. License: Evidence of a valid contractor's license and required licenses of all licensees of persons who are Key Personnel necessary to perform the Work.
- C. Litigation History. Description of litigation history for the past three years, including names of involved parties, nature of dispute, and disposition.

2.03 Additional Submittals:

After bid opening, Contractor maybe required to supply the City with the following submittals upon request.

- A. Resumes of Proposed Key Personnel. Bidder shall provide a resume for each named Key Personnel of Bidder, to include as necessary: Years of experience; Education - degrees, schools and years obtained; Professional Registrations; Fluency in English (Yes/No); At least two client references, including contact names, addresses and telephone numbers, and description of projects of a similar nature worked on in the past five years.
- B. Audited or Reviewed Financial Statements. Include audited or reviewed financial statements for the three most recently completed fiscal years for Bidder and each member of any proposed

consorting or joint venture. Also include audited or reviewed financial statements for the three most recently completed fiscal years for any parent companies) of Bidder and each member of any proposed consortium or joint venture.

- C. Surety Letter re: Capability to Provide Required Performance and Payment Bonds. Bidder shall include a letter from a surety duly licensed to do business in the State of California, having a financial rating from A.M. Best Company of A-, VIII or better, that the surety has agreed to provide Bidder with the required performance and payment bonds in accordance with the requirements set forth in Documents 00 6113.13 (Construction Performance Bond) and 00 6113.16 (Construction Labor and material Payment bond), each in the penal sum of the Contractor's bid when submitted. Owner shall have the right to verify with the surety that the surety, based upon the Bid prices, will issue the required bonds under the conditions stated.
- D. Insurer Letter re: Capability to Provide the Required Insurance. Bidder shall provide a letter from an insurance underwriter, having a financial rating reasonably acceptable to City, confirming that the insurer will provide Bidder the required coverages and amounts specified in the Contract Documents.
- E. Description of Human and Physical Resources. Bidder shall identify, describe, and quantify for itself, the following technical information for the construction work: Description and location of manufacturing facilities, naming products and quantifying production capacity and current demand; Description of field organization(s), naming skills and equipment; Description of safety program quality control procedures, and safety experience.

2.04 Format.

- A. The SOQ shall be clear and concise to enable management-oriented personnel to make a thorough evaluation and arrive at a sound determination as to whether the SOQ meet City's requirement. To this end, the SOQ should be so specific, detailed and complete as to demonstrate clearly and fully that the Bidder has a thorough understanding of and has demonstrated knowledge of the requirements to perform the Work (or applicable portion thereof).
- B. Any explanation requested by a Bidder regarding the meaning or interpretation of this Document 00 4513 must be requested in writing and with sufficient time allowed for a reply to reach Bidder before the submission of its SOQ. Oral explanations or instructions will not be binding. Any information provided to any prospective Bidder concerning this Document 00 4513 will be furnished to all prospective Bidders as an Addendum to the Bidding Documents.

STATEMENT OF QUALIFICATION QUESTIONNAIRE FOLLOWS ON NEXT PAGE

ATTACHMENT “A” – STATEMENT OF QUALIFICATION QUESTIONNAIRE

Bidders shall complete the entire Statement of Qualification Questionnaire and submit it in accordance with Document 00 2113 (Instructions to Bidders) and Document 00 4513 (Statement of Qualifications). Failure to complete the questionnaire or inclusion of any false statement(s) shall be ground for immediate disqualification.

CONTACT INFORMATION

Company Name: _____

Owner of Company: _____

Contact Person: _____

Address: _____

Phone: _____ Fax: _____

PART A: GENERAL INFORMATION

- 1. Does Bidder possess a valid and current California Contractor’s license for the work proposed? Yes ___ No ___
- 2. Does Bidder have a minimum of **\$2,000,000** liability insurance coverage? Yes ___ No ___
- 3. Has Bidder’s License been revoked at any time in the last five years? Yes ___ No ___
- 4. Has Bidder been “default terminated” by an Owner (other than for convenience), or has a Surety completed a contract for Bidder within the last five years? Yes ___ No ___
- 5. Has Bidder been convicted more than twice for failure to pay prevailing wages in the last three years? Yes ___ No ___
- 6. Will Bidder provide copies of its reviewed or audited financial statements and accompanying notes for the last three years, if requested? Yes ___ No ___

**Bidder may be disqualified if any answer to questions 1, 2, or 6 is No.
 Bidder may be disqualified if any answer to questions 3, 4, or 5 is Yes.**

PART B: SAFETY, PREVAILING WAGE, DISPUTES AND BONDS

(SAFETY)

- 1. Has Cal/OHSA, Federal OSHA, the EPA or any Air Quality Management Owner cited Bidder in the past five years?
 Yes ___ No ___ If yes, attach description of each citation.
- 2. How often does Bidder require documented safety meetings be held for:

Field Supervisor	Weekly _____	Bi-Weekly _____	Monthly _____	Less Than Monthly _____
Employees	Weekly _____	Bi-Weekly _____	Monthly _____	Less Than Monthly _____
New Hires	Weekly _____	Bi-Weekly _____	Monthly _____	Less Than Monthly _____
Subcontractors	Weekly _____	Bi-Weekly _____	Monthly _____	Less Than Monthly _____
- 3. How often does Bidder conduct documented safety inspections?
 Quarterly _____ Semi-annually _____ Annually _____ Other _____

- 4. Does Bidder have home office safety representatives who visit/audit the job site?
 Quarterly _____ Semi-annually _____ Annually _____ Other _____
- 5. What is Bidder's Interstate Experience Modification Rate? _____. (A rating in excess of **[1]** may constitute grounds for disqualification as non-responsible).

(PREVAILING WAGE PROVISIONS)

- 6. Has Bidder been fined, penalized or otherwise found to have violated any prevailing wage or labor code provision? If yes, attach description of each occurrence.
 Yes _____ No _____

(LICENSE PROVISIONS)

- 7. Has Bidder changed names or license numbers in the past 5 years? If so, please state reason for change.
 Yes _____ No _____ Reason: _____

(DISPUTES)

- 8. Has Bidder had any claims, litigation, or disputes ending in mediation or arbitration, or termination for cause associated with any project in the past 5 years? If yes, attach description of each instance including details of total claim amount, settlement amount, and Owner's name and phone number.
 Yes _____ No _____

(BONDING)

- 9. Bonding Capacity – Provide documentation from Bidder's surety identifying the following:
 Name of bonding company/surety: _____
 Name of Surety Agent: _____
 Surety Agent address: _____
 Surety Agent phone number: _____
 Is surety a California-admitted surety? Yes _____ No _____
 Is surety listed in the current edition of the California Department of the Treasury's Listing of approved sureties? Yes _____ No _____
 List surety's A.M. Best Rating: _____
 What is Bidder's total bonding capacity? _____
 What percent does Bidder pay for bonds? _____

PART C: EXPERIENCE OF PRIME CONTRACTOR

The nature of this Project requires prior similar experience for the firm and the Key Personnel assigned. Summarize similar project experience below and provide the detailed project information requested:

Prime Contractor. List three projects of similar size and scope to the Work of the Contract, completed in the past two (2) years, and indicate who were the superintendent, project manager and scheduler.

NOTE: this listing will be used to assess compliance with the stated minimum qualifications in Section 1.01.

Project Name	Construction Cost (\$)	Year Completed	Name of Project Superintendent	Name of Project Manager	Name of Project Scheduler

List Key Personnel that will be assigned to the Work of the current Project and their experience/training with the projects listed above:

Project Manager: _____

Project Superintendent: _____

Project Scheduler: _____

Recent Projects.

Provide information about three (3) of its most currently completed projects. Names and references must be current and verifiable. This listing will be used to assess compliance with the stated minimum qualifications in Section 1.01. If a separate sheet is used, it must contain all of the following information:

1. Project Name: _____
Location: _____
Owner: _____
Owner Contact (name and phone): _____
Architect/Engineer: _____
Architect/Engineer Contact (name and phone number): _____
Const. Mgr. or Project Mgr. (name and phone number): _____
Description of Project, Scope of Work Performed: _____

Total Construction Cost: _____
Total Change Order Amount: _____
Did Change Orders exceed 10% of original contract sum? _____ If yes, please explain on separate sheet.
Original Scheduled Date of Completion: _____
Time Extensions Granted (number of calendar days): _____
Actual Date of Completion: _____
Number of Stop Notices filed by Subcontractors or Suppliers: _____
2. Project Name: _____
Location: _____
Owner: _____
Owner Contact (name and phone): _____
Architect/Engineer: _____
Architect/Engineer Contact (name and phone number): _____
Const. Mgr. or Project Mgr. (name and phone number): _____
Description of Project, Scope of Work Performed: _____

Total Construction Cost: _____

Total Change Order Amount: _____

Did Change Orders exceed 10% of original contract sum? _____ If yes, please explain on separate sheet.

Original Scheduled Date of Completion: _____

Time Extensions Granted (number of calendar days): _____

Actual Date of Completion: _____

Number of Stop Notices filed by Subcontractors or Suppliers: _____

3. Project Name: _____

Location: _____

Owner: _____

Owner Contact (name and phone): _____

Architect/Engineer: _____

Architect/Engineer Contact (name and phone number): _____

Const. Mgr. or Project Mgr. (name and phone number): _____

Description of Project, Scope of Work Performed: _____

Total Construction Cost: _____

Total Change Order Amount: _____

Did Change Orders exceed 10% of original contract sum? _____ If yes, please explain on separate sheet.

Original Scheduled Date of Completion: _____

Time Extensions Granted (number of calendar days): _____

Actual Date of Completion: _____

Number of Stop Notices filed by Subcontractors or Suppliers: _____

PART D: FINANCIAL INFORMATION

- 1. Has Bidder ever reorganized under the protection of bankruptcy laws?
Yes _____ No _____ If yes, please state when _____
- 2. If Bidder has had the general liability carrier identified in Document 00 4314 (Bidder Registration and Safety Experience Form) for less than 5 years, please provide additional information below for balance of the last 5 years:

Agency Name: _____

Contact Name: _____

Phone Number _____

Carrier: _____ A.M. Best Rating: _____

Carrier: _____ A.M. Best Rating: _____

Carrier: _____ A.M. Best Rating: _____

- 3. Has Bidder ever had insurance terminated by a carrier? Yes _____ No _____
If yes, explain on a separate signed sheet marked with correlating cross-reference to this paragraph of the questionnaire.

Bidder hereby declares under penalty of perjury that all the information provided in this questionnaire is true and correct.

SIGNATURE

TITLE

END OF SECTION

NOTE: If Bidder is a partnership or a joint venture, this affidavit must be signed and sworn to by every member of the partnership or venture.

NOTE: If Bidder [including any partner or venturer of a partnership or joint venture] is a corporation, this affidavit must be signed by the Chairman, President, or Vice President and by the Secretary, Assistant Secretary, Chief Financial Officer, or Assistant Treasurer.

NOTE: If Bidder's affidavit on this form is made outside the State of California, the official position of the person taking such affidavit shall be certified according to law.

END OF SECTION

DOCUMENT 00 4546

BIDDER CERTIFICATIONS

TO BE EXECUTED BY ALL BIDDERS AND SUBMITTED WITH BID

The undersigned Bidder certifies to City as set forth in sections 1 through 5 below.

1. STATEMENT OF CONVICTIONS

By my signature hereunder, I hereby swear, under penalty of perjury, that no more than one final, unappealable finding of contempt of court by a Federal Court has been issued against Bidder within the past two years because of failure to comply with an order of a Federal Court or to comply with an order of the National Labor Relations Board.

2. CERTIFICATION OF WORKER'S COMPENSATION INSURANCE

By my signature hereunder, as the Contractor, I certify that I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of the work of this Contract.

3. CERTIFICATION OF PREVAILING WAGE RATES AND RECORDS

By my signature hereunder, as the Contractor, I certify that I am aware of the provisions of Section 1773 of the California Labor Code, which requires the payment of prevailing wage on public projects. Also, that the Contractor and any subcontractors under the Contractor shall comply with California Labor Code §1776, regarding wage records, and with California Labor Code §1777.5, regarding the employment and training of apprentices. It is the Contractor's responsibility to ensure compliance by any and all subcontractors performing work under this Contract.

4. CERTIFICATION OF COMPLIANCE WITH PUBLIC WORKS CHAPTER OF LABOR CODE

By my signature hereunder, as the Contractor, I certify that I am aware of Sections 1777.1 and 1777.7 of the California Labor Code and Contractor and Subcontractors and am eligible to bid and work on public works projects.

5. CERTIFICATION OF ADEQUACY OF CONTRACT AMOUNT

By my signature hereunder, as the Contractor, pursuant to Labor Code Section 2810(a), I certify that, if awarded the Contract based on the undersigned's Bid, the Contract will include funds sufficient to allow the Contractor to comply with all applicable local, state, and federal laws or regulations governing the labor or services to be provided. I understand that Owner will be relying on this certification if it awards the Contract to the undersigned.

BIDDER:

(Name of Bidder)

Date: _____, [20] By: _____
(Signature)

Name: _____
(Print Name)

Its: _____
(Title)

END OF SECTION

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LOAD CALCULATIONS			
EXISTING SERVICE CAPACITY	1600A	480V 3PH	
EXISTING LOADS			
EXISTING EQUIPMENT		329,724.0 VA	
25% OF EXISTING LOADS		82,431.0 VA	
NEW LOAD			
(1) HEAT PUMP 2.496KW @208V (1Φ)		2,496.0 VA	
(1) QUAD RECEPT. - RACK 1.3KW @120V (1Φ)		1,300.0 VA	
(1) SPECIALTY RECEPT. - RACK 3.744KW @208V (1Φ)		3,744.0 VA	
(1) RECEPTACLE 0.3KW @120V (1Φ)		300.0 VA	
(2) ACCESS CONTROL SYSTEM POWER 1.2KW @120V (1Φ)		2,400.0 VA	
TOTAL LOADS			
		=	422,395.0 VA
	AMPS AT 480/277V 3PH	=	508.1 AMPS
	+10% SPARE CAPACITY	=	50.8 AMPS
TOTAL		=	558.9 AMPS
THE EXISTING 1600A 480/277V SERVICE IS ADEQUATE			

PANELBOARD SCHEDULE - LUPS																																																																																																																																																																																						
DESIGNATION	FEEDER NO.	POLES & AMPS	LOAD, VA			C K	P H	C K	LOAD, VA			POLES & AMPS	FEEDER NO.	DESIGNATION																																																																																																																																																																								
			LTG.	RECEPT.	OTHER				LTG.	RECEPT.	OTHER																																																																																																																																																																											
(E) COMPUTER RACK	1	3/30			1500	1	A	2			1500	3/30	1	(E) COMPUTER RACK																																																																																																																																																																								
(E) COMPUTER RACK	1	3/30			1500	3	B	4			1500	3/30	1	(E) COMPUTER RACK																																																																																																																																																																								
(E) COMPUTER RACK	1	3/30			1500	5	C	6			1500	3/30	1	(E) COMPUTER RACK																																																																																																																																																																								
(E) COMPUTER RACK	1	3/30			1500	7	A	8			1500	3/30	1	(E) COMPUTER RACK																																																																																																																																																																								
(E) COMPUTER RACK	1	3/30			1500	9	B	10			1500	3/30	1	(E) COMPUTER RACK																																																																																																																																																																								
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(E) COMPUTER RACK	1	3/30			1500	21	B	22			1500	3/30	1	(E) COMPUTER RACK																																																																																																																																																																								
(E) COMPUTER RACK	1	3/30			1500	23	C	24			1500	3/30	1	(E) COMPUTER RACK																																																																																																																																																																								
(N) QUAD RECEPT. - RACK	2	1/20		1300		25	A	26						SPACE																																																																																																																																																																								
(N) SPECIALTY RECEPT. - RACK	3	2/30		1872		27	B	28						SPACE																																																																																																																																																																								
SPACE				1872		29	C	30						SPACE																																																																																																																																																																								
SPACE						31	A	32				1/20		(E) RECEPT. COMP. RM																																																																																																																																																																								
SPACE						33	B	34				1/20		(E) RECEPT. COMP. RM																																																																																																																																																																								
SPACE						35	C	36				1/20		(E) RECEPT. MEC. MAINT.																																																																																																																																																																								
(E) COMM. RACK	1	1/20			1500	37	A	38				1/20		SPARE																																																																																																																																																																								
(E) COMM. RACK	1	1/20			1500	39	B	40			400	1/20		(E) CTRL. DAMPERS																																																																																																																																																																								
(E) COMM. RACK	1	1/20			1500	41	C	42			400	1/20		(E) MECH TOP																																																																																																																																																																								
SECTION SUB-TOTALS			0	5044	22500				0	0	14300			SECTION SUB-TOTALS																																																																																																																																																																								
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			LTG.	RECEPT.	OTHER				LTG.	RECEPT.	OTHER																																																																																																																																																																											
(E) ELEV. #1 CTRL. & CAB LGT.	1	1/20		500		1	A	2			900	1/20	1	(E) RECEPTACLES ROOF																																																																																																																																																																								
(E) ELEV. #2 CTRL. & CAB LGT.	1	1/20		580		3	B	4			700	1/20	1	(E) EF4																																																																																																																																																																								
(E) EXT. ROOF LIGHTS	1	1/20		100		5	C	6			900	1/20	1	(E) RECEPTACLES ROOF																																																																																																																																																																								
(E) EF#8	1	1/20			580	7	A	8			100	1/20	1	(E) EF#11																																																																																																																																																																								
SPARE						9	B	10			500	1/20	1	(E) EF#8																																																																																																																																																																								
(E) CP-1	1	1/20			800	11	C	12			200	1/20	1	(E) RECEPT.																																																																																																																																																																								
SPARE						13	A	14				1/20		SPARE																																																																																																																																																																								
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SPACE						23	C	24						SPACE																																																																																																																																																																								
(N) HEAT PUMP	2	2/15		1248		25	A	26						SPACE																																																																																																																																																																								
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SECTION SUB-TOTALS			1160	0	3856				0	2000	1300			SECTION SUB-TOTALS																																																																																																																																																																								
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			LTG.	RECEPT.	OTHER				LTG.	RECEPT.	OTHER																																																																																																																																																																											
(E) RECEPTACLES	1	1/20		1280		1	A	2			2000	2/30	1	(E) HT/1-1																																																																																																																																																																								
(E) RECEPTACLES	1	1/20		1440		3	B	4			2000	2/30	1	(E) HT/1-1																																																																																																																																																																								
(E) WH/1-1, WH/1-2	1	1/20			500	5	C	6			2000	2/30	1	(E) HT/1-1																																																																																																																																																																								
(E) B.C.U.-1 (TRANE)	1	1/20			1000	7	A	8			2000	2/30	1	(E) HT/1-1																																																																																																																																																																								
(E) RECEPTACLES RM 1126	1	1/20		360		9	B	10			200	1/20	1	(E) RECEPTACLES RM 1126																																																																																																																																																																								
(E) RECEPTACLES RM 1126	1	1/20		360		11	C	12			540	1/20	1	(E) RECEPTACLES RM 1126																																																																																																																																																																								
(E) REFRIG. RM 1149	1	1/20			700	13	A	14			500	1/20	1	(E) FIRE FLY RM. 1106																																																																																																																																																																								
(E) FREEZER RM 1149	1	1/20			700	15	B	16			1000	1/20	1	(E) RECEPTACLES RM 1126																																																																																																																																																																								
(E) SLIDING DOOR	1	1/20			1000	17	C	18			500	1/20	1	SPARE																																																																																																																																																																								
(E) SLIDING DOOR	1	1/20			1000	19	A	20			1200	2/20	1	(E) ROLL-UP DOOR																																																																																																																																																																								
(E) ROLL-UP DOOR	1	2/20			1200	21	B	22			1200	2/20	1	(E) ROLL-UP DOOR																																																																																																																																																																								
(N) RECEPTACLE - TV	2	1/20		300		25	A	26			500	1/20		SPARE																																																																																																																																																																								
(N) ACCESS CONTROL SYSTEM	2	1/20			1200	27	B	28			500	1/20		(N) WORK STATION RECEPT																																																																																																																																																																								
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<table border="1"> <thead> <tr> <th>CATEGORY</th> <th colspan="2">CONN. LOAD</th> <th colspan="2">DESIGN LOAD</th> <th colspan="2">MOUNTING:</th> <th colspan="2">SURFACE</th> <th colspan="4">REMARKS:</th> </tr> <tr> <th></th> <th>KVA</th> <th>AMPS</th> <th>DIV.</th> <th>KVA</th> <th>AMPS</th> <th>VOLTS:</th> <th></th> <th></th> <th colspan="4"></th> </tr> </thead> <tbody> <tr> <td>LIGHTING:</td> <td>0.0</td> <td>0.0</td> <td>1.25</td> <td>0.0</td> <td>0.0</td> <td>120/208</td> <td></td> <td></td> <td colspan="4"></td> </tr> <tr> <td>RECEPTACLE:</td> <td>6.5</td> <td>18.0</td> <td>1.00</td> <td>6.5</td> <td>18.0</td> <td>PHASEWIRE:</td> <td>3/4</td> <td></td> <td colspan="4"></td> </tr> <tr> <td>MOTORS:</td> <td>21.6</td> <td>60.0</td> <td>1.00</td> <td>21.6</td> <td>60.0</td> <td>MAINS SIZE:</td> <td>225 AMPS</td> <td></td> <td colspan="4"></td> </tr> <tr> <td>SPECIAL LOADS:</td> <td>0.0</td> <td>0.0</td> <td>1.00</td> <td>0.0</td> <td>0.0</td> <td>MAINS TYPE:</td> <td>MLO</td> <td></td> <td colspan="4"></td> </tr> <tr> <td>ELECTRIC HEATING:</td> <td>0.0</td> <td>0.0</td> <td>1.00</td> <td>0.0</td> <td>0.0</td> <td>BUSS TYPE:</td> <td>COPPER</td> <td></td> <td colspan="4"></td> </tr> <tr> <td>WATER HEATING:</td> <td>0.0</td> <td>0.0</td> <td>1.00</td> <td>0.0</td> <td>0.0</td> <td>BRKR TYPE:</td> <td>BOLT-IN</td> <td></td> <td colspan="4"></td> </tr> <tr> <td>EVSE/EVCS:</td> <td>0.0</td> <td>0.0</td> <td>1.25</td> <td>0.0</td> <td>0.0</td> <td>A.I.C. (RMS):</td> <td>10,000</td> <td></td> <td colspan="4"></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>A Phase</td> <td>10.5 Connected Kva</td> <td></td> <td colspan="4"></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>B Phase</td> <td>9.8 Connected Kva</td> <td></td> <td colspan="4"></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>C Phase</td> <td>7.8 Connected Kva</td> <td></td> <td colspan="4"></td> </tr> <tr> <td>TOTAL:</td> <td>28.1</td> <td>78.0</td> <td></td> <td>28.1</td> <td>78.0</td> <td></td> <td></td> <td></td> <td colspan="4"></td> </tr> </tbody> </table>														CATEGORY	CONN. LOAD		DESIGN LOAD		MOUNTING:		SURFACE		REMARKS:					KVA	AMPS	DIV.	KVA	AMPS	VOLTS:							LIGHTING:	0.0	0.0	1.25	0.0	0.0	120/208							RECEPTACLE:	6.5	18.0	1.00	6.5	18.0	PHASEWIRE:	3/4						MOTORS:	21.6	60.0	1.00	21.6	60.0	MAINS SIZE:	225 AMPS						SPECIAL LOADS:	0.0	0.0	1.00	0.0	0.0	MAINS TYPE:	MLO						ELECTRIC HEATING:	0.0	0.0	1.00	0.0	0.0	BUSS TYPE:	COPPER						WATER HEATING:	0.0	0.0	1.00	0.0	0.0	BRKR TYPE:	BOLT-IN						EVSE/EVCS:	0.0	0.0	1.25	0.0	0.0	A.I.C. (RMS):	10,000												A Phase	10.5 Connected Kva												B Phase	9.8 Connected Kva												C Phase	7.8 Connected Kva						TOTAL:	28.1	78.0		28.1	78.0							
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Date Signed: 12/6/25



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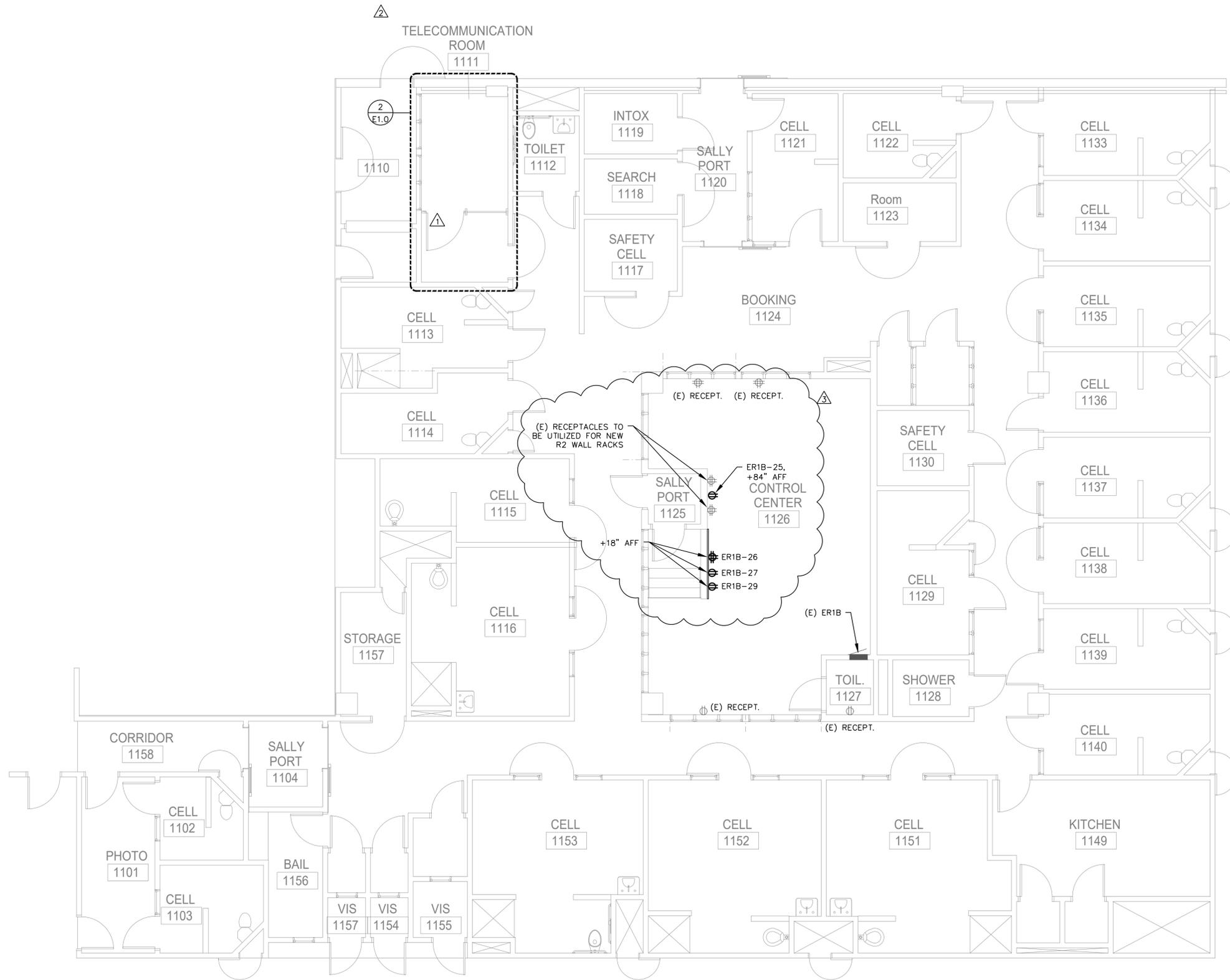
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N&T JOB NUMBER	230612.00
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DATE	DESCRIPTION
1 03/31/2025	Revision #1
2 06/05/2025	Revision #2
3 12/16/2025	Addendum 2

DRAWN BY **RK** CHECKED BY **NH**
SHEET TITLE

ELECTRICAL PANEL SCHEDULES

SHEET NUMBER
E0.3

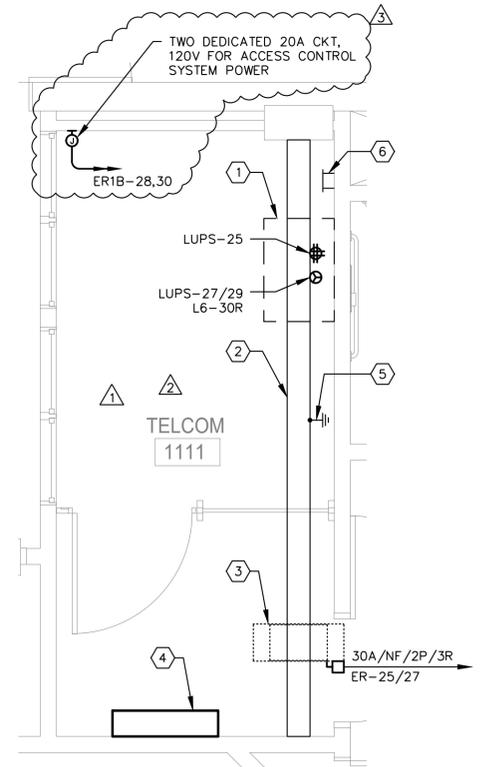
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1 ELECTRICAL POWER PLAN
FIRST FLOOR
SCALE: 3/16"=1'-0"
0 4' 8' 12'

GENERAL SHEET NOTES

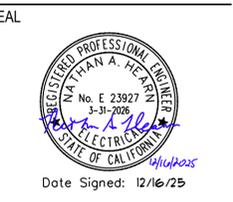
- A. NEW RECEPTACLES IN STORAGE ROOM 1111 TO BE MOUNTED ON THE CABLE TRAY. REFER TO TN4.01.
- SHEET KEYNOTES**
- 1 SERVER RACK. REFER TO TN4.01.
 - 2 18" WIDE CABLE RUNWAY SUPPORTED FROM CEILING. MOUNT BOTTOM AT 7'6" A.F.F.
 - 3 HEAT PUMP AND DISCONNECT ON ROOF. SEE SHEET M2.1
 - 4 FAN COIL. SEE SHEET M2.1
 - 5 GROUND EACH RACK, CABINET AND CABLE TRAY PER CEC ARTICLE 250 AND SPECIFICATION SECTION 27 05 29.
 - 6 PROVIDE MAIN GROUNDING BUS BAR WITH (6) #6 COMPRESSION LUGS, MINIMUM. MOUNT ON THE BACKBOARD BELOW THE CABLE TRAY.



2 ENLARGED ELECTRICAL POWER PLAN
SCALE: 3/8"=1'-0"
0 2' 4' 6'

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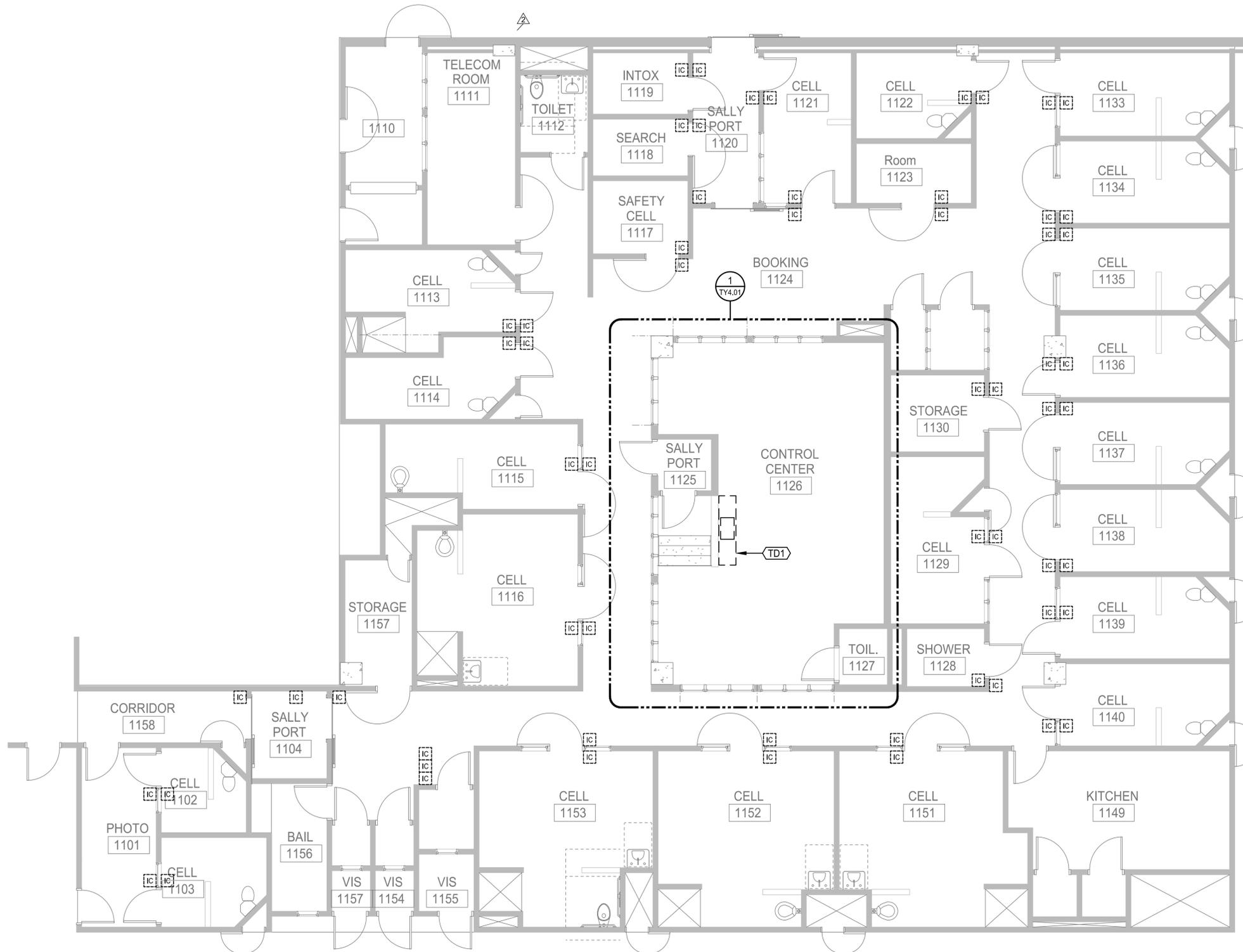
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1	03/31/2025 Revision #1
2	06/05/2025 Revision #2
3	12/16/2025 Addendum 2

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SHEET TITLE

**ELECTRICAL
POWER PLAN -
FIRST FLOOR**

SHEET NUMBER

E1.0



LEGEND

IC REMOVE EXISTING AUDIO INTERCOM AND REPLACE WITH NEW. SEE SHEET TY2.01. DO NOT REMOVE EXISTING CABLING SINCE IT WILL BE RE-USED.

TD1 REMOVE EXISTING PLC CONSOLE, MONITORS AND CASEWORK. DO NOT REMOVE EXISTING PLC CABLING SINCE IT WILL BE RE-USED.

KEYNOTES

TN COMMUNICATIONS SYSTEMS: WORK OF DIVISION 27.

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DATE _____

RAY ENRIQUEZ
REG. NO. 19021
EXPIRES 12/31/2025

APPROVALS

PROJECT TITLE

**City of Berkeley
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2100 Martin Luther King Jr. Way,
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N&T JOB NUMBER 21827.00

REVISIONS	DATE	DESCRIPTION
△	06/08/2025	PLAN CHECK 2
△	12/10/2025	ADDENDUM 2

DRAWN BY **IK, TT** CHECKED BY **RE**
SHEET TITLE

**ELECTRONIC SECURITY SYSTEMS - FIRST FLOOR
DEMOLITION PLAN**

SHEET NUMBER
TD2.01

1 ELECTRONIC SECURITY SYSTEMS - FIRST FLOOR DEMOLITION PLAN
3/16"=1'-0" NORTH

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Ray Enriquez
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REG. NO. 19091
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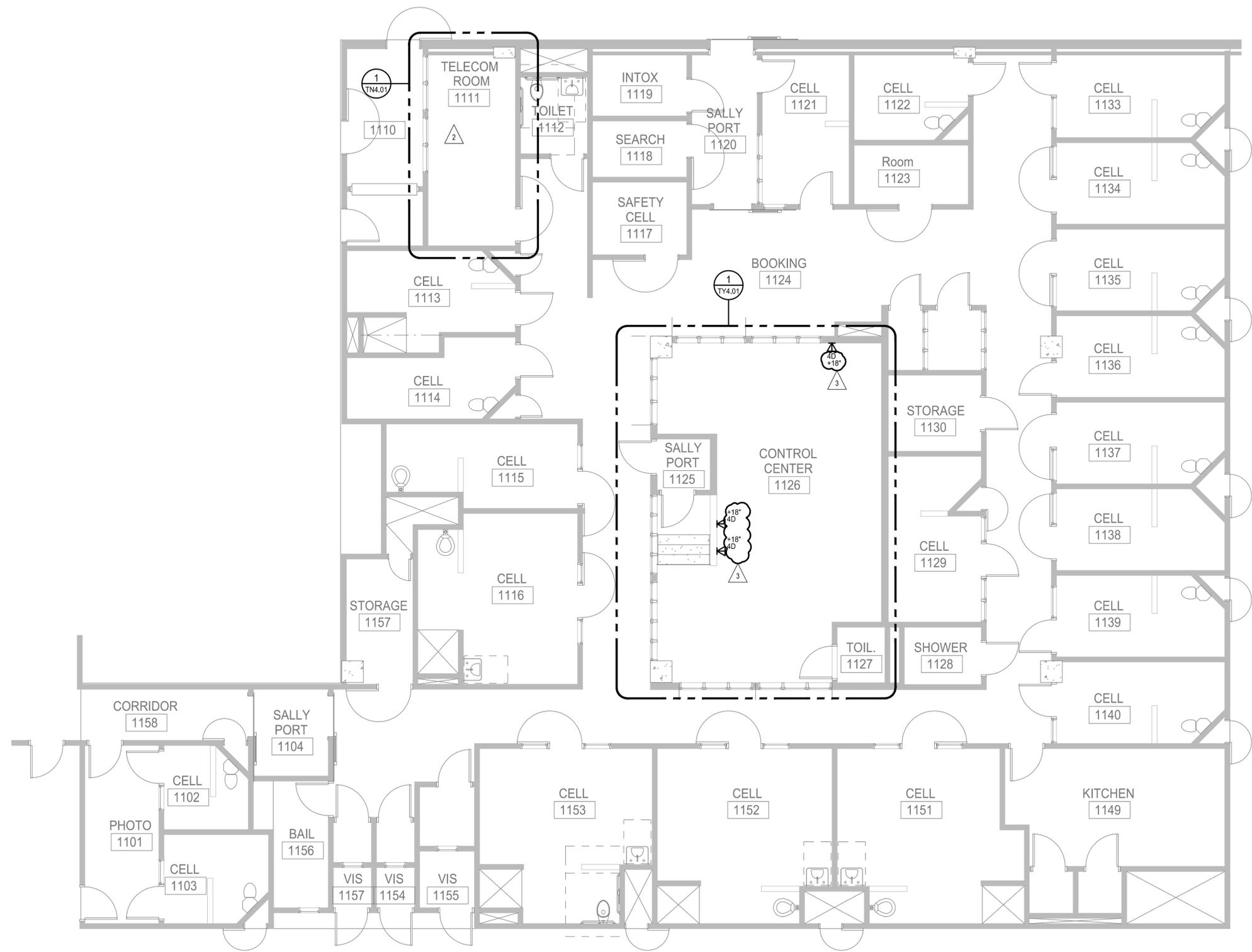
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ISSUE DATE	09/16/2025
N&T JOB NUMBER	21827.00
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△ 12/10/2025	ADDENDUM 2

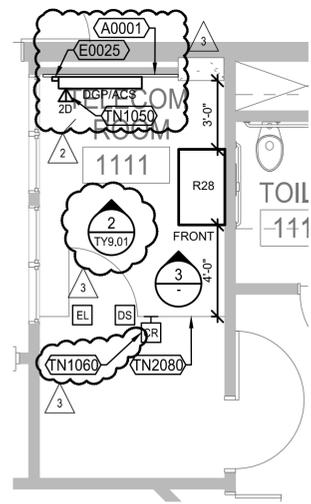
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SHEET TITLE
**COMMUNICATIONS -
FIRST FLOOR DEVICE
PLAN**

SHEET NUMBER
TN2.01

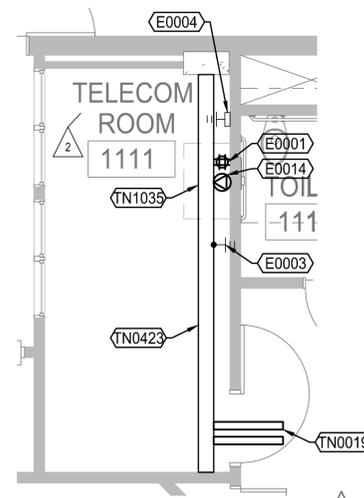


1 COMMUNICATIONS - FIRST FLOOR DEVICE PLAN 3/16"=1'-0" NORTH



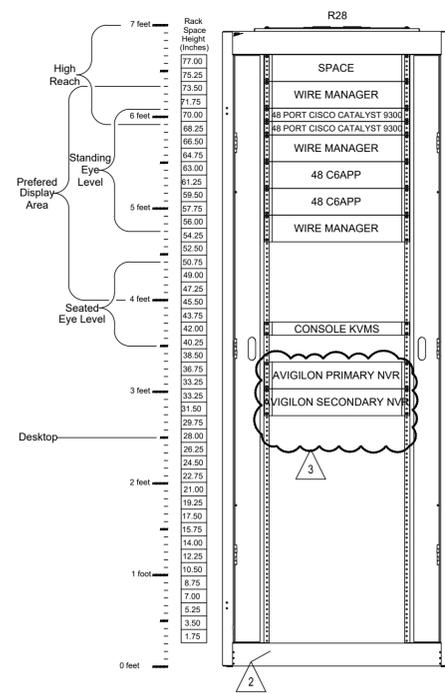
1 COMMUNICATIONS - TELECOM ROOM 1111 ENLARGED PLAN

1/4"=1'-0" NORTH



2 COMMUNICATIONS - TELECOM ROOM 1111 ENLARGED RCP

1/4"=1'-0" NORTH



3 RACK ELEVATIONS

1"=1'-0"

KEYNOTES

- △3 (A0001) PROVIDE 3/4" THICK, FIRE-RESISTANT TREATED PLYWOOD BACKBOARD FROM 6" A.F.F. TO 8'-6" A.F.F. PAINT, COLOR WHITE.
- △3 (E0001) PROVIDE A QUAD 5-20R RECEPTACLE ON A DEDICATED CIRCUIT, PER R28 SERVER RACK, MOUNTED ON THE CABLETRAY.
- △3 (E0003) GROUND EACH RACK, CABINET AND CABLE TRAY PER CEC ARTICLE 250 AND SPECIFICATION SECTION 27 05 29.
- △3 (E0004) PROVIDE MAIN GROUNDING BUS BAR WITH (6) #6 COMPRESSION LUGS, MINIMUM, MOUNT ON THE BACKBOARD BELOW THE CABLE TRAY.
- △3 (E0014) PROVIDE ONE L6-30R, PER R28 SERVER RACK, MOUNTED TO SIDE OF CABLE TRAY.
- △3 (E0025) PROVIDE TWO DEDICATED 20A CKT, 120V HARDWIRED FOR ACCESS CONTROL SYSTEMS POWER.
- △3 (TN0019) (2) 4" C.
- △3 (TN0423) PROVIDE 12" WIDE CABLE RUNWAY (CR-12) SUPPORTED FROM CEILING/STRUCTURE. MOUNT BOTTOM @ 7'-6" A.F.F.
- △3 (TN1035) PROVIDE WATERFALL DROPOUTS FOR EACH RACK, TYP.
- △3 (TN1050) PROVIDE DATA FOR ELECTRONIC SECURITY ACS PANELS. PROVIDE 2-PORT SURFACE MOUNT BOX AND INSTALL INSIDE THE ACS GUTTER. COORDINATE EXACT LOCATION AND TERMINATION WITH DIV 28 CONTRACTOR.
- △3 (TN1060) PROVIDE CARD READER (CR), DOOR SWITCH (DS) AND ELECTRIC LOCK (EL) ON THE CHAIN LINK FENCE. WORK OF DIV 28. SEE SPEC SECTION 28 13 00.
- △3 (TN2080) CHAIN LINK FENCE.

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REGISTERED COMMUNITY DESIGNER
RAY ENRIQUEZ
REG. NO. 19091
EXPIRES 12/31/2025

APPROVALS

PROJECT TITLE

**City of Berkeley
PSB - Detention
Area Automation
Upgrades**

2100 Martin Luther King Jr. Way,
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06/08/2025	PLAN CHECK 2
12/10/2025	ADDENDUM 2

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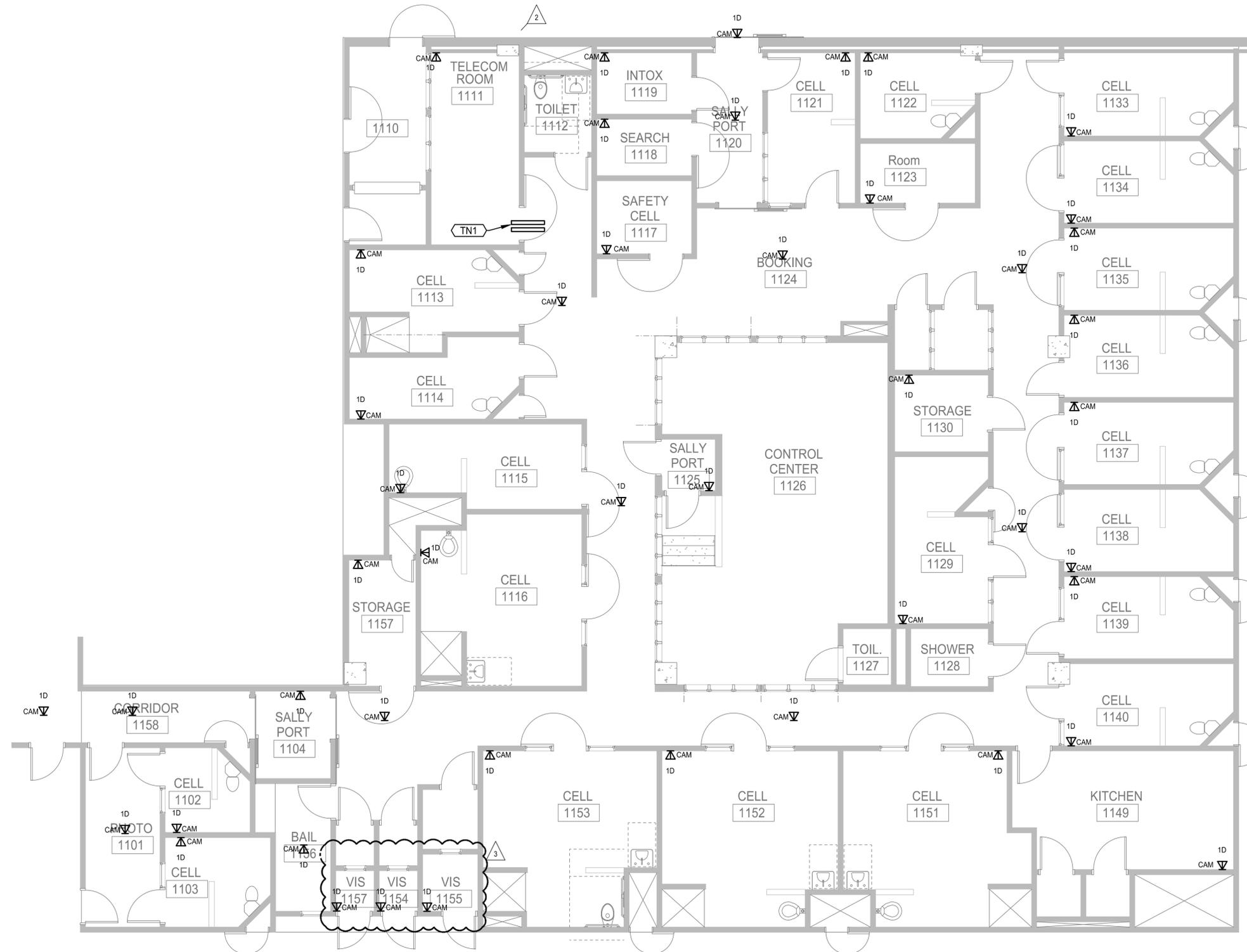
SHEET TITLE

**COMMUNICATIONS -
TELECOM ROOM 1111
ENLARGED PLANS &
ELEVATIONS**

SHEET NUMBER

TN4.01

KEYNOTES	
TN	COMMUNICATIONS SYSTEMS: WORK OF DIVISION 27.
	(2) 4" C.



1 COMMUNICATIONS - FIRST FLOOR DEVICE RCP 3/16"=1'-0" NORTH

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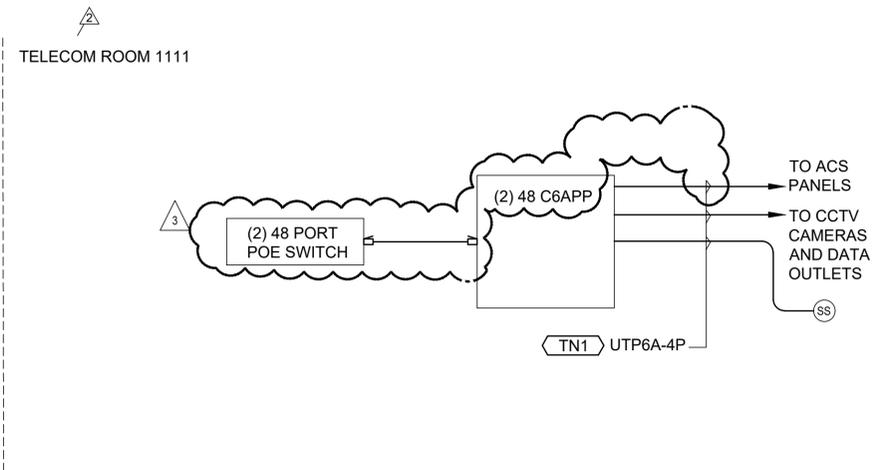
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	06/08/2025	PLAN CHECK 2
	12/10/2025	ADDENDUM 2

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 SHEET TITLE
**COMMUNICATIONS -
 FIRST FLOOR DEVICE
 RCP**

SHEET NUMBER
TN6.01



1 STRUCTURED CABLING SINGLE LINE DIAGRAM

NTS

KEYNOTES

TN1 TO CCTV CAMERAS, VIDEO INTERCOM (VI) AND ACS PANELS. PROVIDE PLENUM RATED CAT 6A CABLES (UTP6A-4P). REFER TO PLANS FOR QUANTITY.

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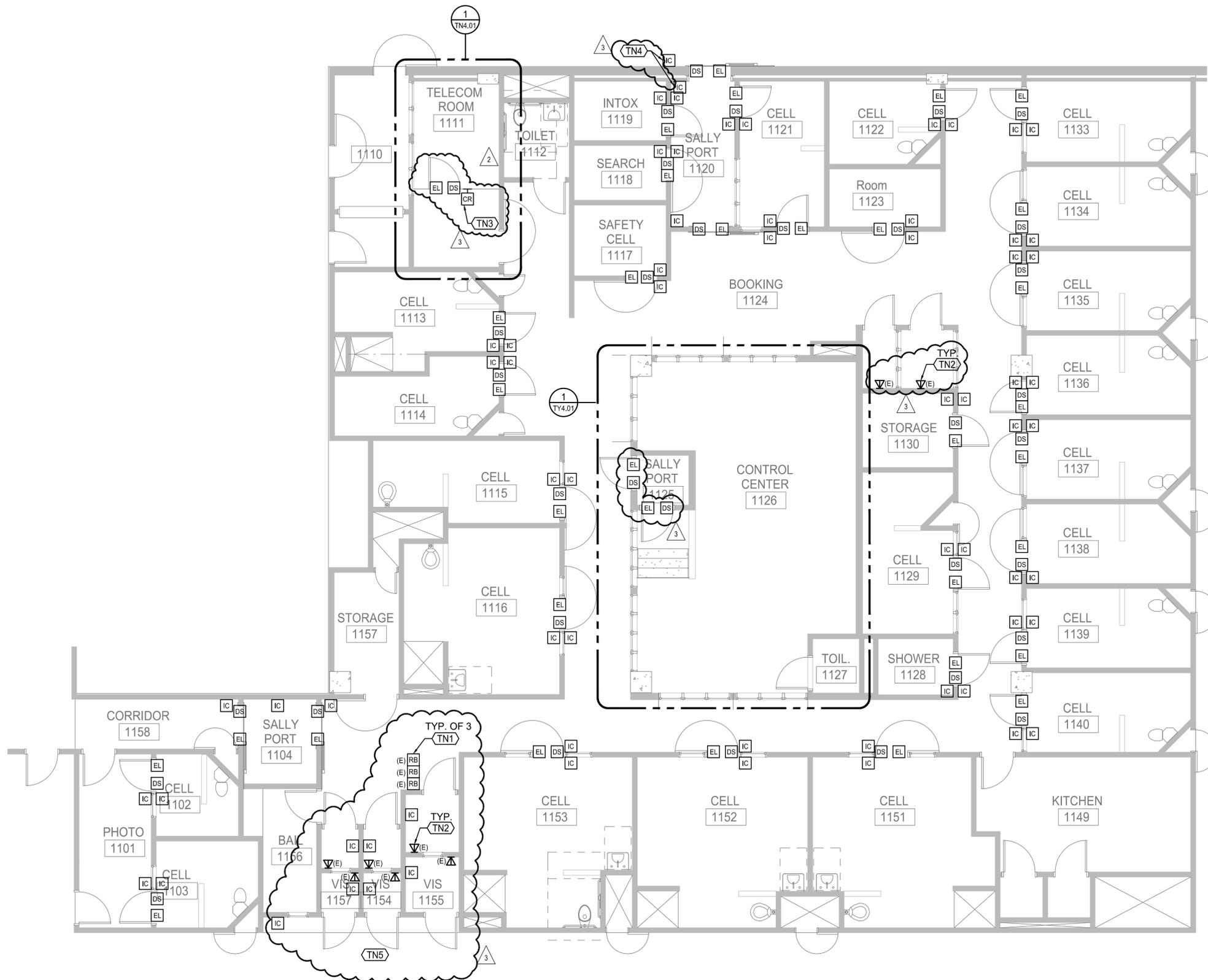
DRAWN BY **IK, TT** CHECKED BY **RE**

SHEET TITLE

COMM. - STRUCTURED
CABLING SINGLE LINE
DIAGRAM

SHEET NUMBER

TN7.01



- KEYNOTES**
- TN COMMUNICATIONS SYSTEMS: WORK OF DIVISION 27 & 28.
 - (TN1) (E) DOOR RELEASE BUTTONS TO REMAIN IN PLACE, TYP OF 3. THESE BUTTONS UNLOCKS VISITOR DOORS 1154, 1155 & 1157.
 - (TN2) (E) WALL TELEPHONE HANDSET TO REMAIN IN PLACE.
 - (TN3) PROVIDE NEW CARD READER (CR), DOOR SWITCH (DS) AND ELECTRIC LOCK (EL) ON THE CHAIN LINK FENCE. SEE SHEET TN4.01.
 - (TN4) PROVIDE EQUAL TO AIPHONE IX-NVP 3-GANG AUDIO INTERCOM STATION.
 - (TN5) THE SCOPE OF WORK SHOWN FOR THE VISITOR ROOMS 1154, 1155 AND 1157 WILL BE UNDER BID ALTERNATE 1.

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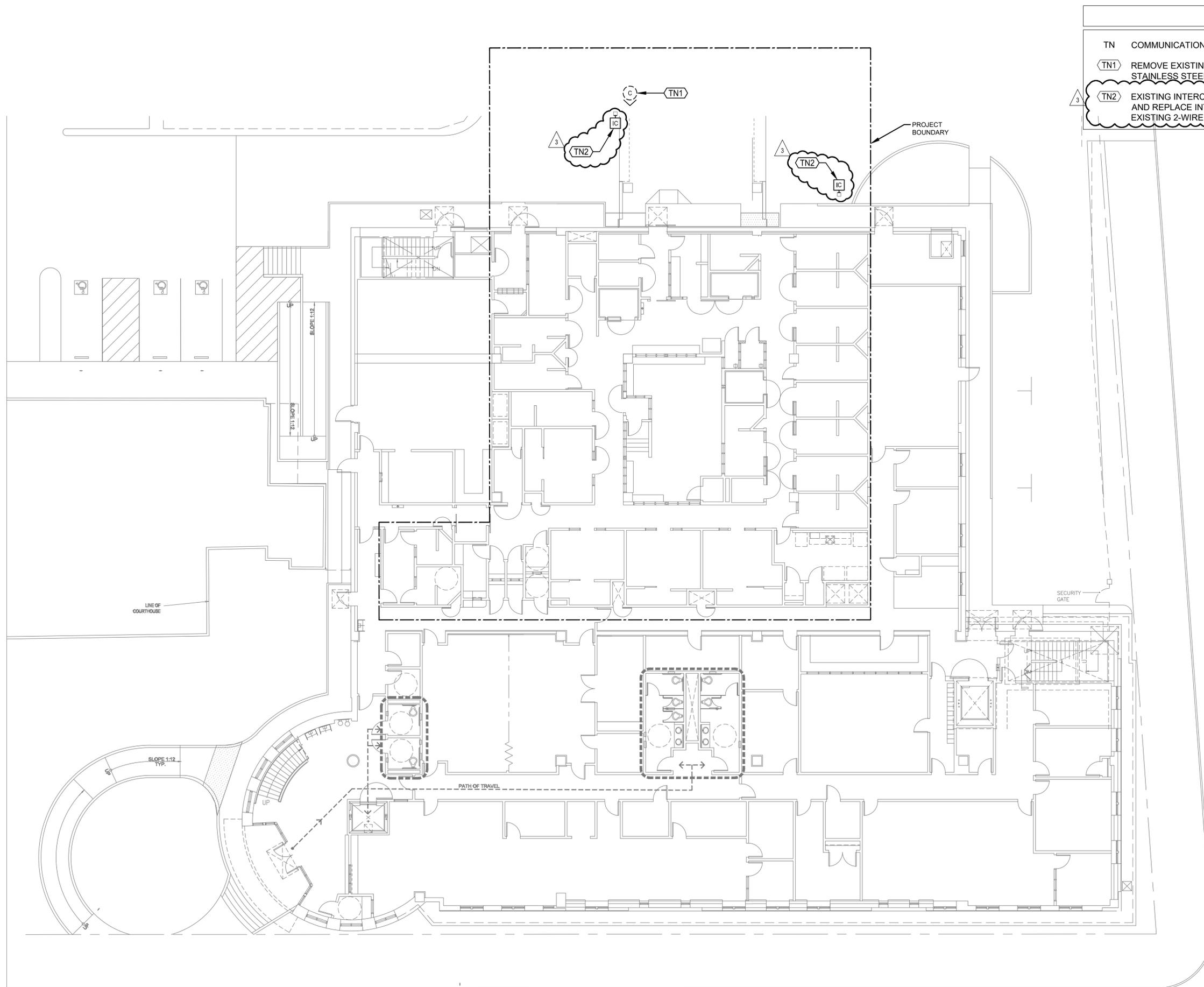
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△	06/06/2025	PLAN CHECK 2
△	12/10/2025	ADDENDUM 2

DRAWN BY **IK, TT** CHECKED BY **RE**
SHEET TITLE

**ELECTRONIC SECURITY SYSTEMS - FIRST FLOOR
DEVICE PLAN**

SHEET NUMBER
TY2.01

1 ELECTRONIC SECURITY SYSTEMS - FIRST FLOOR DEVICE PLAN 3/16"=1'-0" NORTH



TN COMMUNICATIONS SYSTEMS: WORK OF DIVISION 27.

TN1 REMOVE EXISTING CAMERA. PROVIDE BLANK STAINLESS STEEL FACEPLATE.

TN2 EXISTING INTERCOM (IC) ON A PEDESTAL. REMOVE AND REPLACE INTERCOM WITH NEW IC. RE-USED EXISTING 2-WIRE CABLE.

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3	12/10/2025	ADDENDUM 2

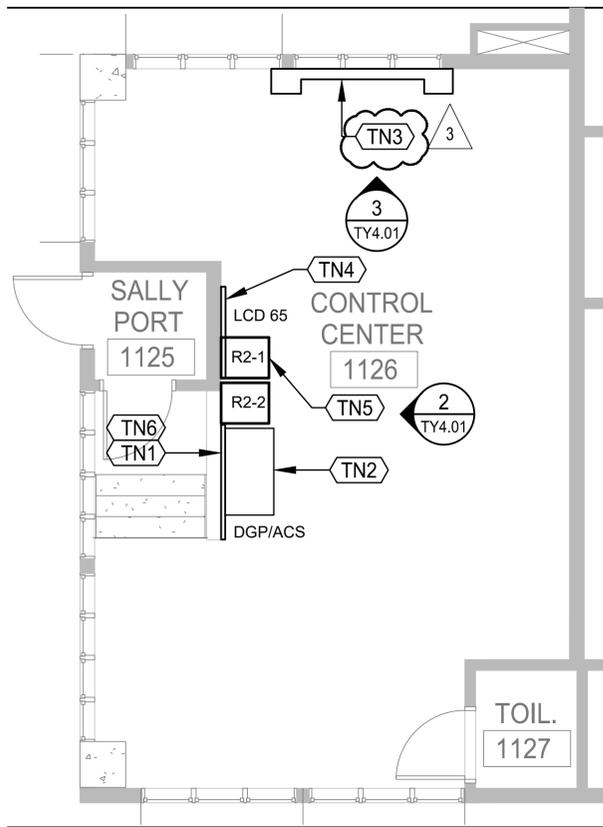
DRAWN BY **IK, TT** CHECKED BY **RE**

SHEET TITLE

ELECTRONIC SECURITY SYSTEMS - FIRST FLOOR DEVICE PLAN OVERALL

SHEET NUMBER

1 ELECTRONIC SECURITY SYSTEMS - FIRST FLOOR DEVICE PLAN OVERALL 3/32"=1'-0" NORTH



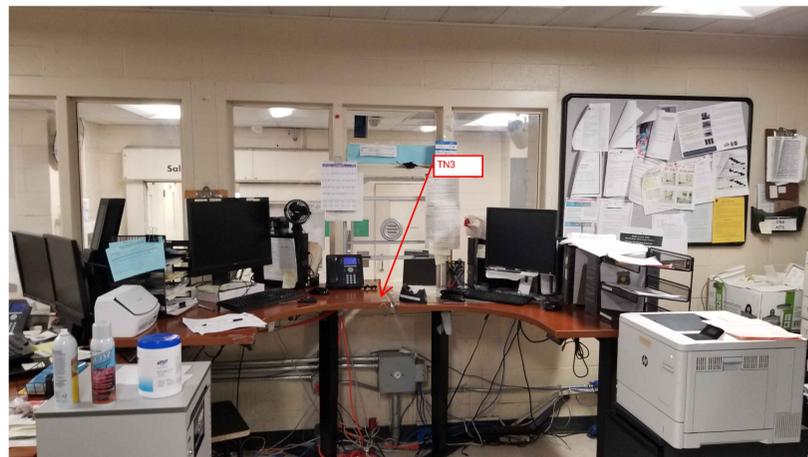
1 ESS - CONTROL CENTER 1126
ENLARGED PLAN

1/4"=1'-0" NORTH



2 EXISTING PLC CONSOLE

NTS



3 LOCATION OF SECOND WORKSTATION

NTS

DEMOLITION KEYNOTES

- (TD1) REMOVE EXISTING PLC CONSOLE, MONITORS AND CASEWORK. DO NOT REMOVE EXISTING PLC CABLING SINCE IT WILL BE RE-USED.
- (TD2) REMOVE EXISTING TV MONITOR.

KEYNOTES

- 3 TN COMMUNICATIONS SYSTEMS: WORK OF DIVISIONS 27 & 28.
- (TN1) INTERCEPT AND RE-USE ALL OF THE EXISTING PLC CABLING USED FOR THE AUDIO INTERCOMS AND DETENTION CELL DOOR HARDWARE. TERMINATE EXISTING CABLING ON NEW DGP/ACS PANELS/POWER SUPPLIES.
- (TN2) PROVIDE WORKSTATION FURNITURE EQUAL TO WINSTED VUE-L 59" OPEN BASE WITH CPU PEDESTAL. MOUNT THE FIRST WORKSTATION WITH TWO (2) 32" TOUCHSCREEN MONITORS.
- (TN3) MOUNT THE SECOND WORKSTATION WITH TWO (2) 32" TOUCHSCREEN MONITORS ON THE EXISTING FURNITURE.
- (TN4) PROVIDE NEW 65" LCD TV. MOUNT TOP OF TV APPROX 3" BELOW THE CEILING. CONNECT THE TV TO THE ADJACENT WORKSTATION VIA HDMI CABLE.
- (TN5) PROVIDE (2) R2 SWING GATE WALL RACK MOUNTED BELOW THE WINDOWS. INSTALL THE AIPHONE IX-10AS NETWORK ADAPTORS AND POE SWITCHES IN THE WALL RACKS. INSTALL THE RACKS TO SWING-OUT IN OPPOSITE DIRECTIONS.
- (TN6) PROVIDE 3/4" THICK, FIRE-RESISTANT TREATED PLYWOOD BACKBOARD FROM FLOOR TO BELOW THE WINDOW. TRIM TO FIT.

NOLL & TAM ARCHITECTS

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Berkeley, CA 94710
tel 510.542.2200
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SEAL

Smith, Fause & McDonald Inc.
Communications Engineering Group
351 8th Street
San Francisco, California 94103
(415) 255-9140 www.sfm.com

DATE _____
RAY ENRIQUEZ
REG. NO. 10001
EXPIRES 12/31/2025

APPROVALS

PROJECT TITLE

**City of Berkeley
PSB - Detention
Area Automation
Upgrades**

2100 Martin Luther King Jr. Way,
Berkeley, CA 94704

PERMIT SET

ISSUE DATE 09/16/2025

N&T JOB NUMBER 21827.00

REVISIONS	DATE	DESCRIPTION
△	12/10/2025	ADDENDUM 2

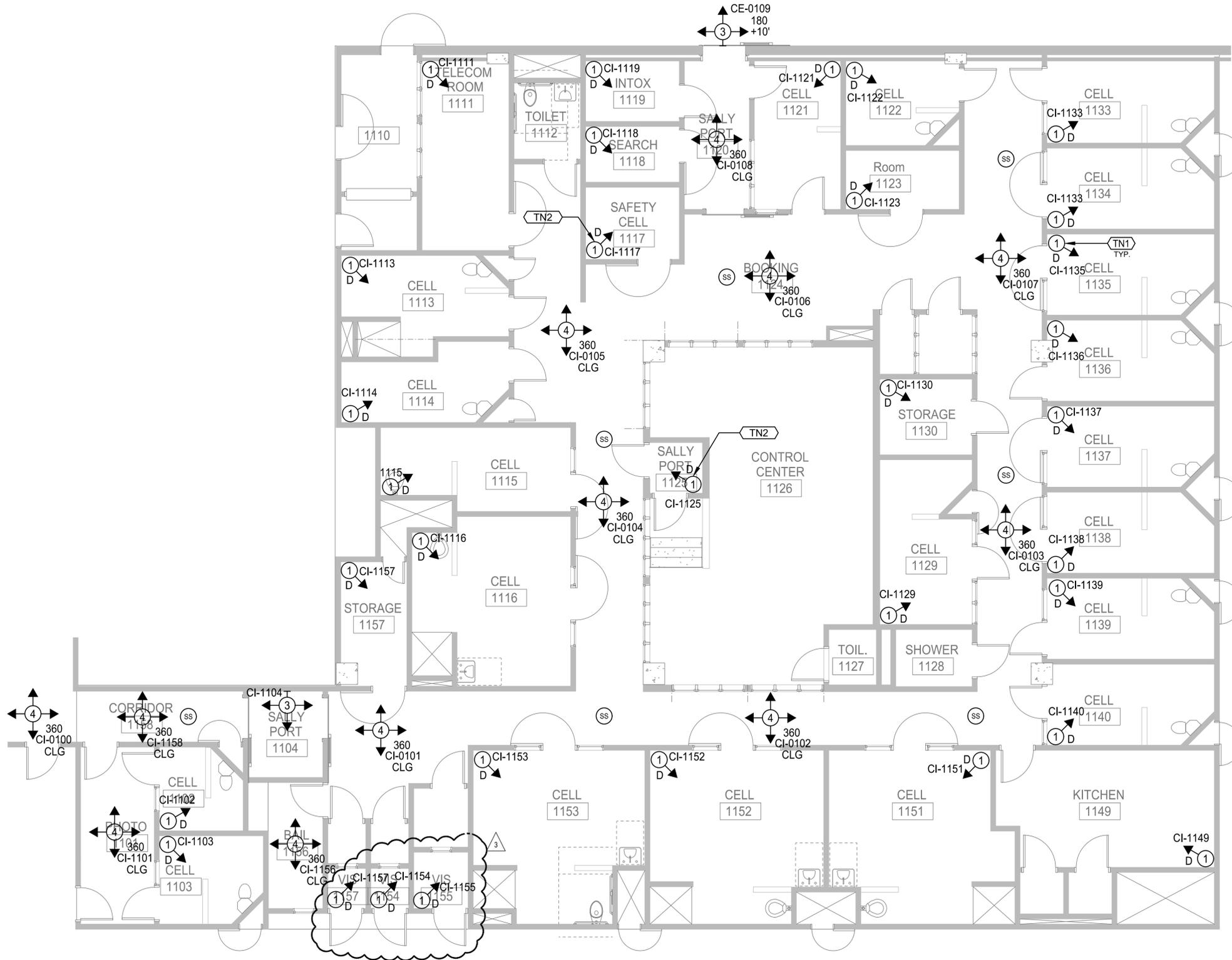
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SHEET TITLE

ESS - CONTROL
CENTER 1126
ENLARGED PLAN &
ELEVATIONS

SHEET NUMBER

TY4.01



- KEYNOTES**
- TN ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISIONS 28.
 - (TN1) PROVIDE 20' OF SLACK CABLE IN THE CEILING FOR ON-SITE RELOCATION OF THE CAMERAS. RELOCATION MUST BE APPROVED BY CITY REPRESENTATIVE.
 - (TN2) PROVIDE A GUI BUTTON AT THE CONTROL CENTER DESKTOP THAT WILL TURN OFF THE CAMERAS AND RECORDING IN ROOM 1117 (SAFETY CELL) AND 1125 (SALLY PORT).
 - (TN3) THE SCOPE OF WORK SHOWN FOR THE VISITOR ROOMS 1154, 1155 AND 1157 WILL BE UNDER BID ALTERNATE 1.

NOLL & TAM ARCHITECTS

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DATE _____
RAY ENRIQUEZ
REG. NO. 10021
EXPIRES 12/31/2025

APPROVALS

PROJECT TITLE

**City of Berkeley
PSB - Detention
Area Automation
Upgrades**

2100 Martin Luther King Jr. Way,
Berkeley, CA 94704

PERMIT SET

ISSUE DATE 09/16/2025
N&T JOB NUMBER 21827.00

REVISIONS	DATE	DESCRIPTION

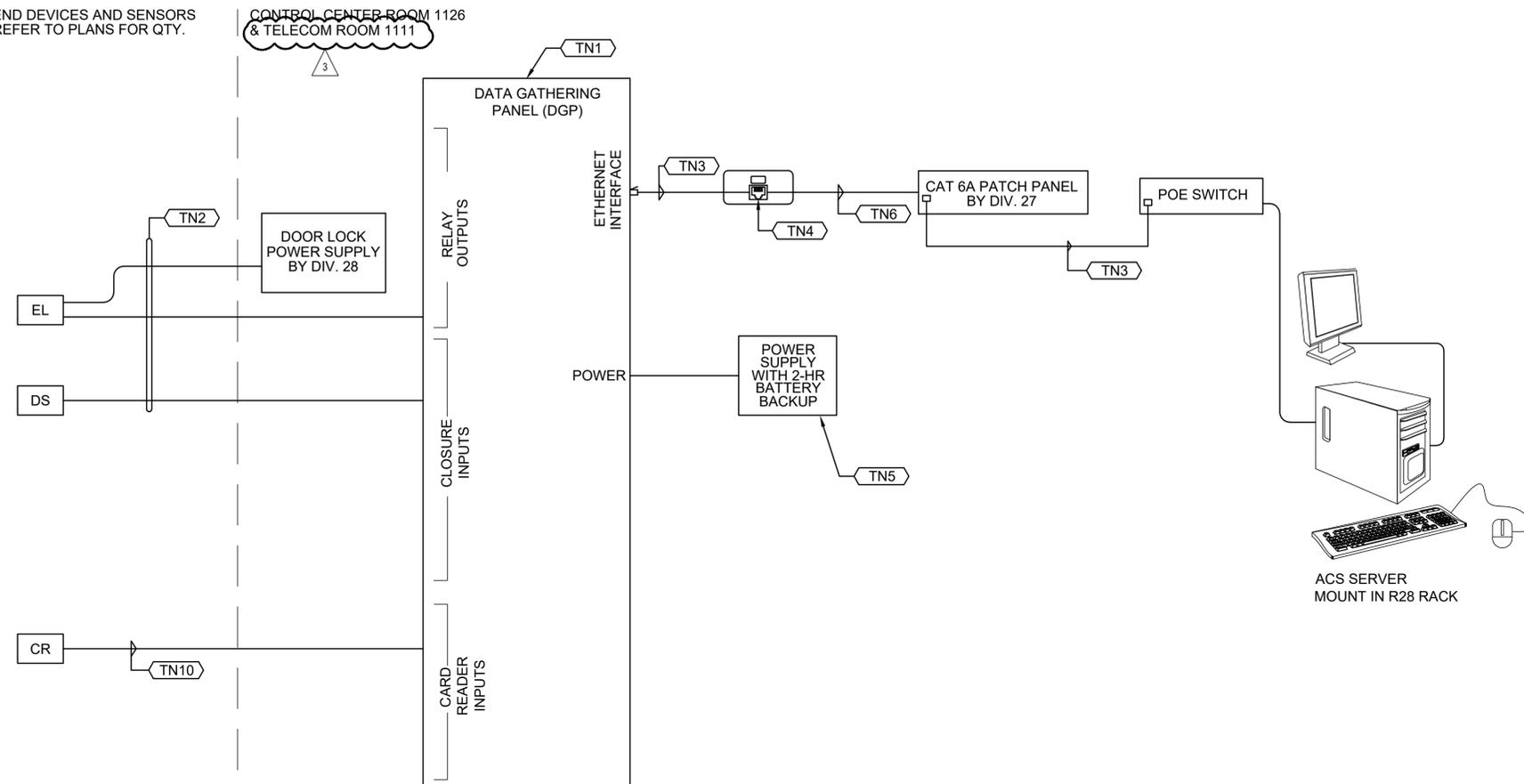
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SHEET TITLE

**ELECTRONIC SECURITY SYSTEMS - FIRST FLOOR
DEVICE RCP**

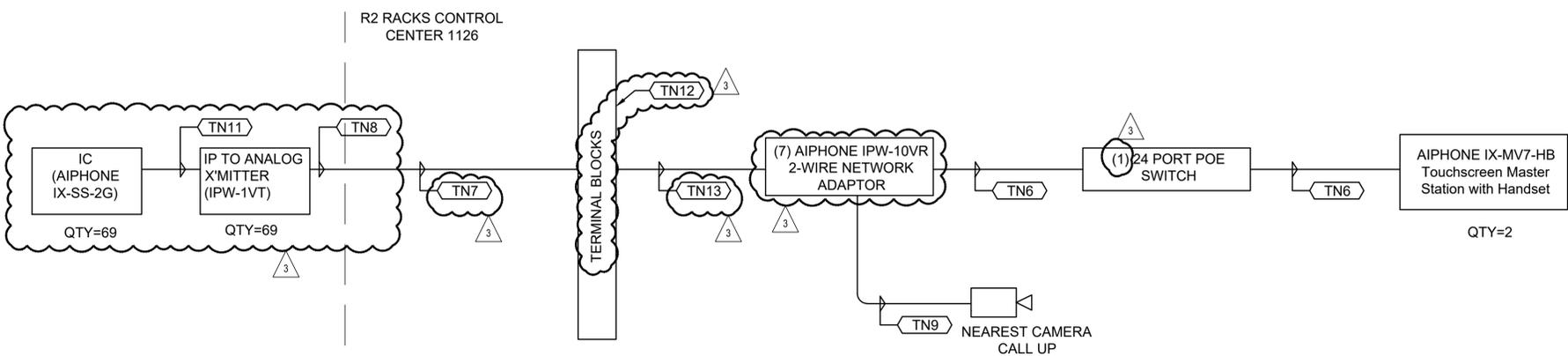
SHEET NUMBER
TY6.01

1 ELECTRONIC SECURITY SYSTEMS - FIRST FLOOR DEVICE RCP 3/16"=1'-0" NORTH

END DEVICES AND SENSORS REFER TO PLANS FOR QTY.



1 ACCESS CONTROL SINGLE LINE DIAGRAM NTS 1



2 INTERCOM SINGLE LINE DIAGRAM NTS

SHEET NOTES

1 FUNCTIONAL BLOCK DIAGRAMS ARE DIAGRAMMATIC. CONTRACTOR TO SUBMIT SHOP DRAWINGS INDICATING EXACT QTY AND LOCATION OF ACCESS CONTROLLERS AND RELATED HARDWARE REQUIRED TO MEET THE FUNCTIONAL REQUIREMENTS OF THE PROJECT.

KEYNOTES

- TN TELECOMMUNICATIONS & ELECTRONIC SECURITY SYSTEMS: COMPLY WITH DIVISIONS 27 & 28.
- TN1 PROVIDE AS MANY AS REQUIRED TO SUPPORT ALL END DEVICES AND SENSORS. REFER TO PLANS FOR QUANTITY.
- TN2 INTERCEPT EXISTING PLC CABLING IN THE EXISTING CONSOLE IN CONTROL CENTER ROOM 1126 AND RE-USE FOR ACCESS CONTROL SYSTEM.
- TN3 CAT6A PATCH CORDS. PROVIDE QTY. AS REQUIRED.
- TN4 MULTIMEDIA PLATE (BISCUIT BOX) BY FOR TERMINATION OF STATION CABLING. CONCEAL INSIDE ACS GUTTER.
- TN5 PROVIDE POWER SUPPLY WITH 2-HR BATTERY BACKUP, AS SPECIFIED.
- TN6 CAT6A CABLES (UTP6A-4P).
- TN7 INTERCEPT EXISTING INTERCOM CABLING IN THE EXISTING CONSOLE IN CONTROL CENTER ROOM 1126 AND RE-USE FOR INTERCOM SYSTEM.
- TN8 RE-USE EXISTING 2-WIRE INTERCOM CABLE.
- TN9 (2) #18 AWG.
- TN10 PER MANUFACTURER'S RECOMMENDED CABLING.
- TN11 CAT 6A CABLE (UTP6A-4P). MAX DISTANCE 1S 15' BETWEEN THE IC AND 2-WIRE AUDIO ADAPTOR.
- TN11 PROVIDE TERMINAL BLOCKS.
- TN11 PROVIDE (2) #18 AWG PER IC PORT.

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EXPIRES 12/31/2025

APPROVALS

PROJECT TITLE

**City of Berkeley
PSB - Detention
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Upgrades**

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REVISIONS	
Δ DATE DESCRIPTION	
Δ 12/10/2025	ADDENDUM 2

DRAWN BY **IK, TT** CHECKED BY **RE**

SHEET TITLE
ACCESS CONTROL AND INTERCOM SYSTEMS SINGLE LINE DIAGRAMS

SHEET NUMBER

TY7.01

SECTION 28 13 00

ACCESS CONTROL AND ALARM SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Conditions and Division 1 Specification Sections, apply to this Section.

1.2 RELATED WORK IN OTHER SECTIONS:

- 1. Section 27 15 00 – Communications Horizontal Cabling
 - a. Provides the structured cabling to the access control panels
 - 2. Section 28 05 00 – Common Work Results for Electronic Safety and Security
 - 3. Section 28 05 13 – Conductors and Cables for Electronic Safety and Security
 - 4. Section 28 05 28 – Pathways for Electronic Safety and Security
 - 5. Section 28 23 00 – Video Surveillance
- B. By the City
 - 1. Microsoft Windows ActiveDirectory directory services for use in assigning access groups and users by the Contractor. Refer to the minimum functional directory services capabilities provided by the access control system provided under the work of this Section.

1.3 SCOPE

- A. Work of Division 28 includes provision of a Unified Security Platform (USP), including fully integrated access control and video surveillance systems as described in Section 28 23 00 and this Section. Work of section 28 13 00 includes (but is not necessarily limited to) provision of the access control subsystem portion of the USP, including but not limited to:
 - 1. Two workstations with access to a touch screen monitor that manages the doors/intercoms. (One at the CORPUS desk and one near the existing PLC console)
 - 2. Restriction of doors that only one door can be opened at a time.
 - 3. Provide an IP based strobe siren for alert that a door is opened.
 - 4. At each workstation, when an Officer initiate/activate a two-way intercom, the nearest camera should be pulled up on the workstation monitors.
 - 5. At each workstation, create a two-step process in opening a door. First, select the door, which opens a camera view. Second, a confirmation to actually open the door.
 - 6. Create a log of doors opening and closing that can be audited.
 - 7. When an intercom is activated outside of Control Center, there should be an audible and visual indicators at the workstations. Include the ability to mute individual alerts, but retain the visual.
 - 8. Emergency ability to override and open all doors. This would require at least a 2 step process or greater to activate.
 - 9. Access Control System.
 - a. Work of this Project provides a new enterprise grade access control system with headend server and storage located at Server Room 1111. The Access Control

(ACS) shall include all intelligent field advanced processing controller, communication devices, card readers, access cards, I/O boards, power supplies, enclosures, mounting hardware, and all other equipment as specified herein. All material shall be the manufacturer's standard catalog products.

b. Monitoring

1) The ACS shall allow system administrators to separate the creation and viewing of objects into partitions. ACS operators shall be associated with partitions and this shall determine which objects operators have the ability to create and or view.

a) The ACS partitions shall include but not be limited to the following objects:

- (1) Personnel
- (2) Clearances
- (3) Doors
- (4) Controllers with all associated hardware (readers, inputs, outputs, etc).
- (5) Video servers with all associated objects (cameras, tours, views, etc).
- (6) Application layouts
- (7) Events
- (8) Dynamic views
- (9) Maps
- (10) Reports, forms, results
- (11) Holidays
- (12) Badge layouts
- (13) Queries
- (14) Images

b) Graphical User Interface (GUI)

(1) The ACAS shall employ a standard Windows graphical user interface (GUI). A mouse and keyboard shall be the primary operator interface with the system. Operator screens shall utilize all standard Windows-style functions such as drop-down menus, context menus, radio buttons, and lists, as appropriate. The interface shall utilize a 'tree structure' similar to Windows Explorer.

c) Administration Operator Interface

- (1) The ACAS shall employ an Administration Operator Interface to control the following:
- (2) Hardware (readers, inputs, outputs, door controls, other systems, future fully integrated video surveillance systems,).
- (3) Configuration of personnel records, operators and operator privileges.
- (4) Graphical Maps.
- (5) Application Layouts.
- (6) Dynamic Views.
- (7) Queries.
- (8) Import/Export of objects, including images.
- (9) System Variables.
- (10) Reports (either periodic or one-time).
- (11) System functions (event command and control, actions, schedules).
- (12) Display of a list of objects in a grid that can have their values modified and respond to real-time status changes.

- (13) Scheduling of backups.
 - (14) Monitoring of system settings and performance.
 - (15) Designing of and printing of badges.
 - (16) The GUI shall be configurable by the system administrator to control the views and access of each Monitoring Station operator.
- d) At the workstations, ACS system provides for real time monitoring of system status including graphical maps of the areas under the control of the system indicating alarm conditions correlated with camera call up of the cameras installed under the work of Section 28 23 00 for the cameras with views of the area of alarm as described elsewhere in this Section.
 - e) System views can be broken into up to 16 tiled focus areas within a single workstation's display to permit simultaneous display of multiple content (example: graphical map, event log, display of user record associated with event, and multiple camera views around event).

1.4 SUBMITTALS

- A. Refer to the requirements of Section 28 05 00 – Common Work Results for Electronic Safety and Security.

1.5 TRAINING

- A. Train the City's Representatives in operation of the installed video management system. Provide a least three separate training tracks focused on the training needs of specific stakeholder groups within the City's operation and technical staff including at least Operator Staff, Administrators and City's Technical/Information Technology Support Staff.
 - 1. For the Operator Staff provide at least eight hour classroom type training sessions, covering the basic theory and operation of the Access Control and Intrusion Detection system and provide up to 20 hours support for the initial systems operator during first use. Schedule the three different sessions at different times of the day/days of the week to accommodate the different schedules of the City's staff.
 - 2. For the Administrator Staff provide at least eight hours classroom type training in the theory and both basic and advanced operation and functions of the Access Control and Intrusion Detection system. Provide hands-on Training for the Command Center Administrator Staff, provide up to 8 hours hands-on support for in basic and advanced systems operations.
 - 3. For the City's Technical/Information Technology Support Staff and third party integrators staff provide eight hours classroom and hands-on training in Access Control system functionality, IP communications protocols used, device handshaking, record importing and overall data flow through the system. Review directory tree integration mechanisms and requirements for tree maintenance. Review methods for bare metal recovery of operations. Review Access Control manufacturer's approved methods for software upgrades and hardware replacement, including failed disks in the storage array.
 - 4. For each Training session, Document the training provided using a camera and video recorder and provide a copy of the recorded training to the City for future reference and use in training new staff.

1.6 QUALITY ASSURANCE

- A. General:
1. Conform to Section 28 05 00 - Common Work Results For Electronic Safety and Security.
 2. The manufacturers of all hardware and software components employed in the system shall be established vendors to the access control/security monitoring industry for no less than five (5) years.
 3. Security Contractor must be a certified Avigilon Dealer in order to certify the installation of the ACS and VMS in the PSB Detention Area.
 4. The security system integrator shall supply information attesting to the fact that their firm is an authorized product dealer for the system proposed at the Project site.
 5. The security system integrator shall supply information attesting to the fact that their installation and service technicians are competent factory trained personnel capable of maintaining the systems of this scale and of providing reasonable service time.
 6. The security system integrator shall provide a minimum of three (3) references whose systems are of similar complexity and have been installed and maintained by the security system integrator in the last five (5) years.
 7. There shall be a local representative and factory authorized local service organization that shall carry a complete stock of parts and provide maintenance for these systems. Local shall be defined as an area in a 100 mile radius of installed location
- B. Standards Agencies.
1. The ACS shall be tested and listed by Underwriters Laboratories (UL) for UL 294 for Access Control System Units.
 2. Additionally, conform to the applicable portions of the following standards defined in 28 05 00 – Common Work Results for Electronic Safety and Security.

1.7 DEFINITIONS

- A. ACS – Access Control System. The integrated system installed by the work of this Contract comprising the access control system, intrusion detection system and panic/duress alarms, including both central processing hardware and the remote field devices.
- B. CSA – Client Software Application
- C. DGP. Data Gathering Panel. Intelligent access control and alarm systems panel connected to the ACS network and to card readers, access control and intrusion detection field devices as specified elsewhere in this Section.
- D. DGM – Dynamic Graphical Maps
- E. SDK – Software Development Kit
- F. SMA – Software Maintenance Agreement
- G. SSM – Server Software Module
- H. UI – User Interface
- I. USP – Unified Security Platform

- J. USW – Unified Web Client
- K. VMS – Video Management System

1.8 COORDINATION

- A. Coordinate the work of this contract with the related work of at least the following parties:
 - 1. City’s Physical Security Staff
 - 2. City’s IT staff and the IT Integrators working for the City

PART 2 - PRODUCTS

2.1 ACCESS CONTROL PANELS & RELATED

- A. Access Control and Data Gathering Panels
 - 1. Drawing References:
 - a. ACS, DGP (Data Gathering Panel)
 - 2. A fully integrated physical security system consisting of the following components:
 - a. Access Control Software.
 - b. Access Control Server Appliance.
 - c. Access Control Panel Hardware.
 - d. Reader Hardware.
 - e. Power Supplies.
 - f. Video Management System.
 - g. Video Management System Interfaces.
 - h. Storage Appliances for Electronic Safety and Security.
 - i. Video Surveillance Positioning Equipment.
 - j. Video Surveillance Sensors.
- B. Access control software collaborations
 - 1. Database Collaborations and Integrations: Provide access control software capable of integration with the following industry standard third-party databases.
 - a. Bidirectional:
 - 1) REST API Integration.
 - b. Pull Only:
 - 1) Lightweight Directory Access Protocol (LDAP/Active Directory).
 - 2) Structured Query Language (SQL) Server.
 - 3) Oracle Relational Database Management System (RDBMS).
 - 4) Comma Separated Value (CSV).
 - c. Push Only:
 - 1) Extensible Markup Language (XML) for Event Push.
 - 2. Video Integrations: Coordinate integration and unification requirements with 28 05 45.
 - a. Avigilon **Unity Video 8**.
- C. Access Control Hardware integrations
 - 1. Panel Hardware:
 - a. Mercury: Controllers; Series 3 (LP1501, LP1502, LP2500, and LP4502).
 - b. Mercury: Controllers; **Series 4 (MP1501, MP1502, MP2500, and MP4502)**
 - c. Mercury: Controllers; Legacy (SCP, SCP-C, and SCP-E.)
 - d. Mercury: Sub Panels; MR50, MR52, MR16IN, MR16OUT, MR51E, and MR62E).


Addendum 2


Addendum 2

- e. Mercury: Conversion Boards; M5 Bridge.
 - f. Mercury: Conversion Boards; MS Bridge.
 - 2. Supported Reader Hardware:
 - a. HID: Prox.
 - b. HID: R Series.
 - c. HID: Signo.
 - d. Allegion: Schlage Series.
 - e. Farpointe: Pyramid.
 - f. Farpointe: Delta.
 - g. Farpointe: Conekt.
 - 3. Credential Technologies:
 - a. Credentials capable of Open Card format (PROX, MiFare, DESFire CSN).
 - b. HID Global: All Physical (SEOS, iClass, Prox, Mifare, DESFire) and Mobile (Origo).
 - c. Schlage: All Physical (Mifare, Prox, DESFire).
 - d. Farpointe Data: All Physical (Mifare/Prox) and Mobile.
 - e. Salto Credentials: All Physical (MiFare/DESfire or SEOS, iClass) and Mobile (JustIN) via SALTO SHIP integration to Pro Access Space.
 - 4. Intrusion Detection Control Panels:
 - a. Bosch B series: (B3512, B4512, B5512, B6512, B8512G, B9512G).
 - b. Bosch D Series: (D9412GV4, D9412GV4 V2).
 - c. DMP (Digital Monitoring Products): XR150 & XR550.
 - 5. Power Supplies: Provide one of the following power supplies that are manufacturer-prepared to support access control panels:
 - a. Life Safety Power
 - 1) Unified Power: Mercury Security;
- D. Access control software Interface
- 1. Web-Based Access Support: Provide access control software with browser-based access to system applications including support for industry standard desktop and mobile web browsers.
 - 2. Tabbed User Interface: System supports the following functionality in a tabbed view:
 - a. Monitor events, alarms, and hardware status in real time.
 - b. Verify identifies in real time.
 - c. Search historical events and alarms.
 - 3. Events and Alarms: Provide system that allows administrators the ability to create, configure, and prioritize events and alarms and communicate information about the generation of the event or alarm to the operator with guidance for responding to the event or alarm. Events will support two levels: system level events affect all objects in the system; field level events affect only the object they are configured on.
 - 4. Access Groups: Provide system that allows administrators the ability to create groups of card readers and schedules such that card readers can allow or restrict access to areas based on schedules.
 - a. Identity Records: Provide a system with integrated identity management, allowing imports of data from supported databases. Each identity supports access control based on groups and roles as well as individual overrides. Include functionality to customize identity and token forms in base software. Provide identity records capable of management and synchronization between multiple sites.
 - 5. Roles: Support a role-based permission method allowing one or more roles to be assigned to identities to determine physical and logical access.
 - 6. Badging: Provide a tool to support the creation of custom badge layouts including the following content:
 - a. Static Information: Badge size, background color, text strings, and graphics common to every badge.

- b. Dynamic Information: Text fields and images from the identities database unique to each badge.
- 7. Enrollment: Provide integrated identity management and enrollment functionality as part of the core system functionality.
 - a. [Specifier Notes] – Retain the following paragraph only if specifying compatible HID Origo Credential Management.
- 8. Includes integration with HID Origo Credential Management or deployment of Origo mobile credentials directly from the access control web interface.
- 9. Macros: Provide system capable of linking one or more events to macros such that a single event may execute up to 30 macros. System must support minimum of 255 macros per intelligent field controller.
- 10. Device Template Configuration: Provide access control system that supports templates to automatically populate standard parameter fields in groups for new or existing doors, wires, readers, and input/output devices.
- 11. Encryption: Provide access control system that supports the following encryption methods:
 - a. TLS 1.2: Require TLS encryption between the access control system, Mercury controllers, and external systems.
 - b. Custom Certificates: Require self-signed or certificate authority certificate to harden access control system. Certificates will authenticate Mercury panels to the access control system.
 - c. FIPS 140-2: Require access control server to utilize FIPS 140-2 compliant ciphers only.
 - d. FIPS 201-2: Require large-encoded card formats for FIPS 201-2 certified pivClass solution.
- 12. Custom Device Mappings: Administrators may assign a unique group of alarm attributes to specific device-alarm combinations to override global settings of generic attributes.
- 13. Dashboard: Allow creation of a dashboard for real-time status and actions of hardware components on a single screen that can also filter by name, status, appliance, or group.
 - a. Hardware Status:
 - 1) Panels: Communication, power, tamper, and battery.
 - 2) Sub-Panels: Communication, power, and tamper.
 - 3) Inputs: Inactive, active, trouble, and masked.
 - 4) Outputs: Off, on, and trouble.
 - 5) Doors: Communication, tamper, battery, unlocked, help, masked, and forced.
 - 6) Appliances: RAM, program, database, CPU load, and port status.
 - b. Monitor:
 - 1) Panels: Device status, security status, name, model, firmware, IP address, MAC address, access port, callback port, cards in use, and last communication.
 - 2) Sub-Panels: Device status, name, panel, type, port, address, and firmware.
 - 3) Inputs: Device status, input name, subpanel, EOL resistance, and address.
 - 4) Outputs: Device status, output name, subpanel, schedule, and address.
 - 5) Power Supplies: Power supply name, installed status, status, and logs.
 - 6) Access Control Doors: Status, name, panel, door state, door mode, and override status.
 - c. Manipulate Access Control Doors:
 - 1) Door actions: Grant, restore, unlock, locks no access, disable.
 - 2) Door mode: Card only, card and PIN, card or PIN, PIN only, facility code only, exit leaves open, toggle + exit leaves open.
 - 3) Door Forced: Mask forced, unmasked forced.
 - 4) Door Held: Masked held, unmasked held.
 - 5) Installed: Install, uninstall.

14. Map Interface: Provide interface for creating customizable layouts including floorplans, reader locations, and buttons that can trigger actions.
 - a. Actions: Card readers indicate alarm via icon and allow for card only, card and pin, card or pin, pin only, facility code only, disable, unlock, lock, grant, restore, mask held, unmask held, and trace actions.
 - b. Occupancy/Mustering: Maps will provide real-time occupancy of a defined area.
 - c. Programmable Buttons: Maps will provide mapping of buttons and text to perform actions.
 15. Verification Interface: Provide web-browser-enabled connection to access control software allowing a user to review information about card holders entering or existing up to four (4) doors in real time. Information to include badge photo, transaction time, and date via any device with a compatible browser.
 16. Virtual Verification Station: Provide web-browser-enabled connection to the access control software to allow a user to visually confirm the identity and authorization of a person attempting entry to a controller area via a mobile device such as a tablet or smartphone.
 17. Access Control Software Reporting: Generate, filter, edit, and customize system reports including the automated generation and distribution of customized reports in PDF and CSV formats.
- E. Access Control Software Video Integrations.
1. Video Management System Unification: Provide the following features in video management system when used in conjunction with access control software.
 - a. Link cameras and doors on a single screen.
 - b. Search video by card swipe identity last or first name using identity search.
 - c. Grant door access.
 - d. Monitor live door swipes with video for identity verification.
 - e. Display video and alarm information in video management client.
 2. Access Control System: Provide following features in access control software when used in conjunction with video management system.
 - a. Link cameras and doors to specific events.
 - b. Notifications for events includes live video and recording of even from before and after in web browser interface.
- F. Access Control Software Administration
1. Backup: Provide access control software capable of backing up via USB drive, local appliance, windows network share, or secure copy protocol.
 2. Database Replication: Replicate database from 1 to 100 appliances for distributed identity control.
 3. Password Update: Provide ability for administrator to require operator update password at next login.
 4. Failover and Redundancy: Provide access control software that supports switching to backup system automatically in the event of a fatal failure without loss of monitoring or hardware control.
 - a. Provide failover technology supporting LDAP data replication.
 - b. Provide failover technology supporting either a 1:1 or N:1 architecture.
 5. Updates: Provide access control software capable of automatically updating the following:
 - a. Operating System: Version, service packs, and security vulnerabilities.
 - b. Field Devices: Firmware versions.
 - c. Upgrade Functionality: Provide access control software capable of automatically upgrading software licensing.



- G. Manufacturer:
1. Avigilon **Unity Access 7 Enterprise Plus**

2.2 BACKBOARD MOUNTED EQUIPMENT

1. Drawing Reference(s): PS, Door Lock Power Supply
2. Function:
 - a. Power supply with backup battery
 - b. Class 1 (115VAC Input)
 - c. Individually fused, Power Limited, Class 2 outputs - sized to meet worst case load and runtime while maintaining system operations.
 - d. High density supply supports at least 8 doors per enclosure. Low density power supplies not acceptable.
 - e. Unless otherwise indicated support operation of ACS system for specified operational period following loss of power.
 - f. Battery is lead acid type of common commercial manufacture.
 - g. UL Listings: UL 294, UL603, UL 1069, UL1481 for application
 - h. Provide timer modules as required to supplement DGP control
 - i. Supervised fire alarm disconnect
 - j. Power supply and battery fully enclosed in steel NEMA enclosure with cam lock cover and conduit knockouts.
 - k. Thermal and short circuit protection with auto reset.
3. Manufacturers:
 - a. Life Safety Power (Design Basis)
 - b. Altronix
 - c. Or equal.

2.3 CARD READERS

- A. Card Readers
1. Drawing References:
 - a. CR: Card Reader, Wall Mount
 - b. CN: Card Reader, Mullion Mount
 - c. CKP: Card Reader, Wall Mount with Integral Keypad
 2. Dual Technology Card Readers:
 - a. Each reader supports both HID iCLASS 13.56 MHz Contactless Smart Card and Prox Dual Technologies.
 3. Provide range of color options for selection by the City's Representative.
 4. Minimum Features/Functions:
 - a. Typical Maximum Read Range
 - 1) HID Prox ISO Card: 2.5 – 3.5" (6.5 - 9.0 cm)
 - 2) HID Prox Keyfob/Tag: 1.0 – 2.25" (2.5 - 5.5 cm)
 - 3) Microprox® Tag: 1.0 – 1.25" (2.5-3.2 cm)
 - 4) iCLASS SE Card: 4.0 - 4.5" (10.2 - 11.4 cm)
 - 5) iCLASS SE Key/Tag: 1.0 - 2.0" (2.5 - 5.0 cm)
 - b. Dimensions
 - 1) CN: 1.9" x 6.0" x 0.9"
 - 2) CR: 3.3" x 4.8" x 0.95"
 - 3) CKP: 3.3" x 4.8" x 1.1"
 - c. Operating Temperature
 - 1) -40° to 150° F
 - d. Operating Humidity

- 1) 5% to 95% relative humidity non-condensing
- e. Transmit Frequencies
 - 1) 125 kHz and 13.56 MHz
- f. Cable Distance
 - 1) Wiegand Interface 500ft (150 m) 22 AWg
- g. Card Compatibility
 - 1) 125 kHz Proximity
 - a) HID proximity cards, key fobs, and tags
 - b) AWID Credentials
 - c) EM4102 Credentials
 - 2) 13.56 MHz contactless smart cards
 - a) Seos, iCLASS SE/SR, MIFARE DESFire EV1/EV2 and MIFARE Classic
 - b) standard iCLASS Access Control Application (order with Standard interpreter)
 - c) FeliCa CSN, CEPAS
- h. CKP: Integral keypad permits transmission of supplemental instructions to ACS DGP in combination with use of an authenticated access control card.
- 5. Manufacturers:
 - a. HID
 - 1) CR: HID Signo 40 Reader.
 - 2) CN: HID Signo 15 Reader.
 - 3) CKP: HID Signo 40 Reader with Keypad.

2.4 POE STROBE SIREN

- A. Strobe Siren
 - 1. Drawing References: SS
 - 2. Features:
 - a. Connect to VMS to signal and alarm using strobe lighting and siren alarms.
 - b. Includes various sound clips and white/RGBA light patterns.
 - c. Powered with PoE,
 - 3. Manufacturer:
 - a. Axis D4100-E
 - b. Or equal.



2.5 IP NETWORK COMPATIBLE INTERCOM SYSTEM

- A. **IP Addressable 2-Gang Audio Door Station**
 - 1. **Drawing References: IC**
 - 2. **Door Station**
 - a. **Type: IP Addressable 2-Gang Audio Door Station for the IX Series. Flush mount**
 - b. **Material: Stainless steel**
 - c. **Dimensions: 4-3/4"H x 4-3/4" W**
 - 3. **Performance and Operation**
 - a. **Connectivity: Connects to a network using Cat-5e/6 cable**
 - b. **Power Source: POE (IEEE 802.3af class 0)**
 - 1) **Power Draw: 3.36 Watts**
 - c. **Networking:**
 - 1) **Protocols: IPv4, IPv6, TCP, UDP, SIP, HTTP, HTTPS, RTSP, RTP, RTCP, IGMP, MLD, SMTP, FTP, DHCP, NTP, DNS**

- 2) SIP: SIP 2.0 compliant
- 3) Port Security: IEEE 802.1X
- 4) Audio Codec: G.711 (m-law, A-law), G.722
- d. Indicators (Audible and Visual):
 - 1) Audible and visual indications for calling, communication, and door release
 - 2) Illuminated call button indicator
 - 3) Status Indicator: Orange/blue
 - 4) Communication Indicator: Orange
 - 5) Call Indicator: Green
- 4. Inputs and Outputs
 - a. LAN Port: 1 POE LAN port
 - b. Output: 1 contact output
 - c. Input: 1 trigger input
- 5. Environmental Ratings
 - a. Ingress Protection (Weather Resistance): IP65
 - b. Impact Protection (Vandal Resistance): IK08
- 6. Manufacturers:
 - a. Aiphone IX-SS-2G



Addendum 2

B. Rack Mount 2-Wire Network Adaptor

- 1. Drawing References: 2-Wire Network Adaptor
- 2. Network Adaptor
 - a. Type: Analog-to-IP converter, Rack Mount Receiver
 - b. Function: Uses unshielded twisted pair (UTP) or other 2-conductor copper wire to connect IP intercom stations. Supplies PoE to stations
 - c. Dimensions: 1-3/4"H x 19"W x 11"D
 - d. Mounting: Supplied rack mount
- 3. Performance And Operation
 - a. Power Input: 100-240V AC
 - b. Power Draw: 260W max
 - c. LAN Ports: 2 (RJ45)
 - d. UTP Ports: 10 (RJ45 to UTP connector)
 - e. Required Components: An IPW-1VT transmitter module is needed for each connected station
 - f. Supported Wire: 22~18AWG shielded or unshielded wire
 - g. Maximum Cat-5e/6 to 2-wire Converter Distance: 15 feet
 - h. PoE Passthrough: The PoE passthrough feature on select IX Series stations is not supported with this module
- 4. Calling Capacity
 - a. With Video Station:
 - 1) 0-500': 5 master stations
 - 2) 501-1000': 3 master stations
 - b. With Audio Station:
 - 1) 0-1000': 7 master stations
- 5. Manufacturers:
 - a. Aiphone IPW-10VR



Addendum 2

C. IP To Analog Transmitter

- 1. Drawing References: IP TO ANALOG X'MITTER
- 2. Transmitter Module
 - a. Type: Analog-to-IP module, Ethernet over UTP Transmitter

- b. **Function:** Uses UTP or other 2-conductor copper wire to connect IP intercom stations to an IPW-10VR receiver module. Supplies PoE to stations
- c. **Dimensions:** 1-7/16"H x 3"W x 1-1/8"D
- d. **Requirement:** One is needed per intercom station to be connected to an IPW-10VR receiver module
- 3. **Performance and Operation**
 - a. **Power Input:** Provided by the IPW-10VR
 - b. **Power Draw:** < 2 Watts
 - c. **LAN Ports:** 1 (RJ45)
 - d. **UTP Ports:** 1
 - e. **Supported Wire:** 22~18AWG shielded or unshielded wire
 - f. **Maximum Cat-5e/6 to 2-wire Converter Distance:** 15'
 - g. **Features:** LED status indicators
 - h. **PoE Passthrough:** The PoE passthrough feature on select IX Series stations is not supported with this adaptor
- 4. **Manufacturers:**
 - a. **Aiphone Model:** IPW-1VT



Addendum 2

D. IP Video Answering Station

- 1. **Drawing References:** Touchscreen Master Station with Handset
- 2. **Video Answering Station**
 - a. **Type:** IP Video Answering Station with Handset
 - b. **Display:** 7" LCD touchscreen
 - c. **Mounting:** Desk stand (multi-angled: 30 deg, 45 deg, 60 deg) or wall mount
 - d. **Dimensions:** 8-1/16"H x 11"W x 2-3/16"D
- 3. **Performance And Operation**
 - a. **Connectivity:** Connects to a network using Cat-5e/6 cable
 - b. **Power Source:** POE (IEEE 802.3af class 0)
 - 1) **Power Draw:** 4.32 W.
 - c. **Communication Modes:** Hands-free (full-duplex), push-to-talk (simplex), or handset (full-duplex)
 - d. **Video:**
 - 1) **Camera:** Fixed video camera with privacy shutter
 - 2) **Sensor:** 1/3" CMOS 480p
 - 3) **Min Illumination:** 5 lux
 - 4) **Video Codec:** H.264/AVC, motion JPEG
 - 5) **Features:** Picture-in-picture function can view selected intercom's camera and an associated ONVIF Profile S camera
 - e. **Audio:**
 - 1) **Audio Codec:** G.711 (m-law, A-law), G.722
 - 2) **Speaker Output:** 8 ohm, 0.5W
 - 3) **Audio Input:** 600 ohm
 - f. **Networking:**
 - 1) **SIP:** SIP compliant
 - 2) **ONVIF:** ONVIF Profile S compliant
 - 3) **Protocols:** IPv4, IPv6, TCP, UDP, SIP, HTTP, HTTPS, RTSP, RTP, RTCP, IGMP, MLD, SMTP, SFTP, DHCP, NTP, DNS
 - 4) **Port Security:** IEEE 802.1X
- 4. **Capacity and Storage**
 - a. **Address Book:** 500 station address book
 - b. **Monitoring:** Monitor one station or scan monitor up to 500 station.
 - c. **Paging:** Can page all units or select groups
 - d. **Bell Schedule:** Can handle up to 50 events per day

- e. **Memory: Memory can be expanded with microSD™ card**
- f. **Recording: Audio and video of active conversations can be stored on a microSD™ card**
- 5. **Inputs and Outputs**
 - a. **Outputs: Two contact outputs**
 - b. **Inputs: Four trigger inputs**
 - c. **Jack: 3.5mm Stereo Mini Jack**
- 6. **Manufacturers:**
 - a. **Aiphone IX-MV7-HB. Provide one each at the two (2) workstations.**

2.6 WORKSTATION FURNITURE

- A. Components
 - 1. Frame: Steel
 - 2. Base: Open stationary
 - 3. Work Surface
 - a. Type: Single
 - b. Construction: 1-1/4 inch Solid Surface with bullnose edge.
 - c. Faces: Laminate
 - d. Edge type: Comfort Edge, 1-1/8 inch molded urethane shaped edge
 - e. Laminate face color: Black
 - f. Solid surface color. Black
 - 4. Manufacturers:
 - a. Winsted Vue-L 59" Stationary Open Base
 - b. Or equal

PART 3 - EXECUTION

3.1 GENERAL

- A. The Contractor shall install all system components, including City furnished equipment, and appurtenances in accordance with the manufacturer's instructions, IEEE C2 and as shown and necessary to provide a fully functional system. The contractor shall furnish necessary interconnections, services, and adjustments required for a complete and operable system as specified and shown. Control signal, communications, and data transmission line grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation.
- B. Provide mounting hardware as necessary to securely fasten ACS hardware to the supporting structure or racks.
- C. Device Wiring and Communication Circuit Surge Protection
 - 1. All inputs shall be protected against surges induced on device wiring. Outputs shall be protected against surges induced on control and device wiring installed outdoors and as shown. All communications equipment shall be protected against surges induced on any communications circuit. All cables and conductors, except fiber optics, which serve as communications circuits from security console to field equipment, and between field equipment, shall have surge protection circuits installed at each end.
- D. Installation

1. The contractor shall install the system in accordance with the standards for safety, NFPA 70, UL 681, UL 1037 and UL 1076, and the appropriate installation manual for each equipment type. Components within the system shall be configured with appropriate service points to pinpoint system trouble in less than 20 minutes.
2. Flexible cords or cord connections shall not be used to supply power to any components of the system, except where specifically noted. All other electrical work shall be as specified in Division 26 and as shown.
3. All circuit boards are to be mounted on "Stand-Offs". Circuit boards may not be affixed with double sided tape.
4. No components of the security system are to be mounted on the interior door of the DGP enclosure. Where additional space is required, Contractor to place a supplemental NEMA enclosure adjacent to the DGP sized as required to accommodate the additional components.
5. Perimeter Wireway: Refer to the requirements of Section 28 05 28 - Pathway for Electronic safety and Security regarding the requirement to wrap the backboard at electronic security system installation locations with steel wireway/gutter and terminal cabinets as necessary to fully enclose wiring and components associated with electronic security systems installation.
6. Enclosure Penetrations
7. Enclosure penetrations shall be from the bottom unless the system design requires penetrations from other directions. Penetrations of interior enclosures involving transitions of conduit from interior to exterior, and penetrations on exterior enclosures shall be sealed with rubber silicone sealant to preclude the entry of water. The conduit riser shall terminate in a hot-dipped galvanized metal cable terminator. The terminator shall be filled with an approved sealant as recommended by the cable manufacturer, and in a manner that does not damage the cable. Locate penetrations to enclosures to ensure they will not interfere with components inside enclosure such as batteries, circuit boards, locking mechanisms etc.
8. Cold Galvanizing
9. Field welds and/or brazing on factory galvanized boxes, enclosures, conduits, etc., shall be coated with a cold galvanized paint containing at least 95 percent zinc by weight.

E. Intercom Preparation and Installation

1. Verify the following compliance before starting installation.
2. The unit turns inoperative during power failure.
3. Keep the intercom wires at least 1 foot (30 cm) away from strong electrical wiring (AC 100-240 V) including, in particular, wiring for inverter electrical appliances. Noise and malfunction could result.
4. If a strong light shines on the main unit screen, the picture may turn white or only silhouettes will be visible.
5. Other manufacturer's devices (such as sensor, detectors, door releases) used with this system, comply with the manufacturer's installation requirements.
6. The LCD panel is manufactured with very high precision techniques, inevitably will have a very small portion of its picture elements always lit or not lit at all. This is not considered a unit malfunction. Please be aware of this in advance.
7. Install integrated security and communication system in accordance with manufacturer's instructions at locations indicated on the Drawings.
8. Mount equipment plumb, level, square, and secure. For video entrance stations and video door stations, comply with manufacturer's design requirements to provide optimum picture quality of station monitoring.

3.2 PROGRAMMING

A. Initial Systems Programming

1. Contractor to meet with City's Representative to confirm functional requirements for surveillance systems defined in Part 1 of this Section, including but not limited to the following:
 - a. Access Classification Tiers. Establish Tiers and Classes of Doors and the levels of protection to required at each including:
 - 1) Monitoring to be provided at each Alarm point.
 - 2) Always on (24 hour response).
 - 3) On when the system is Master Armed.
 - 4) Only on when the system is Perimeter Armed.
 - 5) Displays / Does Not Display at the Access Control Panel when the point is activated.
 - 6) Provides / Does Not Provide entry warning tone.
 - 7) Sounds / Does Not Sound audible alarm indication.
 - 8) Point is bypassable / not bypassable.
 - 9) Alarm Verification with programmable verification time.
 - 10) Summary Relay activation by Point.
 - 11) Provides / Does Not Provide "watch point" capability.
 - 12) Threat Level
 - a) Programming should incorporate altered conditions of operations at each opening for each Event Condition based on Threat Level established and selected by Command Center operators.
 - b. Calendar. System Operations as a function of day-of-the-week and hour-of-the-day and differential access permitted based on these changes, particularly for No Scheduled Event Condition.
 - 1) Access limitations and device functions that are dependent on the time or access or the event.
 - c. Alarm System response to events
 - 1) Normal access (validated).
 - 2) System fault
 - 3) Unauthorized access
 - 4) Unauthorized access detected by multiple monitoring points.
 - d. Pass codes according to the authorities and functions defined by the City's Representative.
 - e. In addition to standard door operation arming and alarming as described in Part 1 of this Specification Section, initial system programming to include the following features and functions:
 - f. Document the Initial Programming Requirements and Submit in accordance with Section 28 05 00 - Common Work Results For Electronic Safety and Security.
2. At minimum, include allowance of post-opening programming time in the following quantities.
 - a. In addition to providing the programming necessary to meet the functional requirements defined in Part 1 of this Section, Contractor to provide systems customization programming time as defined below in the following quantities:
 - 1) 100 hours.
 - b. Programming time is time spent by a trained systems programming developing the specific sequence of alarm events and response for this Project.
 - c. Programming time does not include installation of or correcting deficient installation of system components, coordination with the contractors, training the programmer in the programming of the system software or meeting with the the City's Representative(s) to establish the functional requirements of the security system.

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- d. Programming time not used in initial systems configuration shall be available to the City for supplemental post-opening programming. Contractor to provide such post opening programming in a minimum of 4 hour blocks.
- e. Contractor to provide City's Representative with daily timesheets of programming time spent in support of this Project on request.
- f. Implement System Programming as defined above.

3.3 WIRING PRACTICE

- A. Comply with requirements of Sections 27 11 16 - Communications Cabinets, Racks, Frames and Enclosures and Section 28 05 13 – Conductors and Cables for Electronic Safety and Security
- B. At electric strikes and electric locks and all other monitored lines requiring same, provide end-of-line resistors, diodes or MOV's where device does not already include such components. Document where such devices have been added.

3.4 SYSTEM STARTUP

- A. Satisfaction of the requirements below does not relieve the Contractor of responsibility for incorrect installations, defective equipment items, or collateral damage as a result of Contractor work/equipment. The Contractor shall not apply power to the system until after:
 - 1. System equipment items have been set up in accordance with manufacturer's instructions.
 - 2. A visual inspection of the system has been conducted to ensure that defective equipment items have not been installed and that there are no loose connections.
 - 3. System wiring has been tested and verified as correctly connected.
 - 4. System grounding and transient protection systems have been verified as properly installed.
 - 5. Power supplies to be connected to the system have been verified as the correct voltage, phasing, and frequency.

3.5 SYSTEMS PERFORMANCE DEMONSTRATION AND ADJUSTING PROCEDURES

- A. Demonstrate functionality of each installed device. Refer to the requirements of Section 28 05 00 - Common Work Results for Electronic Safety and Security.

3.6 LABELING

- A. Conform with the requirements of Section 27 05 53 – Identification for Communications Systems.

3.7 WARRANTY

- A. Warranty
 - 1. The ACS shall be warranted by the contractor for one (1) year from the date of Substantial Completion.

- B. Maintenance and Service
 - 1. The contractor shall provide all services required and equipment necessary to maintain the entire ACS in an operational state as specified for a period of one (1) year after formal written acceptance of the system, and shall provide all necessary material required for performing scheduled adjustments or other nonscheduled work.
- C. Description of Work
 - 1. The adjustment and repair of ACS includes computer equipment, contractor provided programming, software updates, signal transmission equipment, access control equipment, facility interfaces, and support equipment. Provide the manufacturers required adjustments, re-programming of deficient contractor programmed functions and other work as necessary.
- D. Personnel
 - 1. Service personnel shall be qualified to accomplish all work promptly and satisfactorily. Provide proof that Service personnel have successfully completed the enterprise level of both hardware and software training offered by the system manufacturer. The City's Representative shall be advised in writing of the name of the designated service representative and of any change in personnel.
- E. Inspections
 - 1. The contractor shall perform two inspections at six (6) month intervals or more often if required by the manufacturers. This work shall be performed during regular working hours, Monday through Friday, excluding Federal holidays. These inspections shall include:
 - 2. Visual checks and operational tests of the central processor, local processors, monitors, keyboards, system printers, peripheral equipment, ACS equipment, power supplies, and electrical and mechanical controls.
 - 3. Clean system equipment, including interior and exterior surfaces.
 - 4. Perform diagnostics on all equipment.
 - 5. Check and calibrate each ACS device.
 - 6. Run system software and correct diagnosed problems.
 - 7. Resolve previous outstanding problems.
- F. Warranty Service
 - 1. The City's Representative shall initiate service calls when the ACS is not functioning properly. Qualified personnel shall be available to provide service to the complete ACS.
 - 2. The City's Representative shall be furnished with the telephone number where the contractor's service supervisor can be reached at all times.
 - 3. Service personnel shall be at the site within four (4) hours after receiving a request for service.
 - 4. The ACS shall be restored to proper operating condition after one (1) calendar day.
 - 5. Materials installed during warranty service to match or exceed specification of products originally installed for the specified function.

END OF SECTION

SECTION 28 23 00

VIDEO SURVEILLANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Conditions and Division 1 Specification Sections, apply to this Section.

1.2 RELATED WORK IN OTHER SECTIONS:

- A. Section 27 11 19 - Communications Termination Blocks and Patch Panels
 - 1. Provides the patch panels, if not existing to support the cameras installed under the work of this project.
- B. Section 27 15 00 - Communications Horizontal Cabling
 - 1. Horizontal structured cabling to support the cameras installed under the work of this project.
- C. Section 28 05 00 - Common Work Results for Electronic Safety and Security
 - 1. Submittals required of the work of this section.
 - 2. Miscellaneous parts and execution standards for the work of this Section.
- D. Section 28 05 28
 - 1. Provides raceway and backboxes for the work of this Section.

1.3 SCOPE

- A. Work of Division 28 includes provision of a Unified Security Platform (USP), including video surveillance systems as described in this Section. Work of Section 28 23 00 includes provision of the visual surveillance portion of the USP, including but not limited to:
 - 1. Video Surveillance System.
 - a. 180 and 360 degree view high definition Multiview indoor and outdoor, self-illuminated TCP/IP cameras.
 - b. 90 degree detention grade cameras.
 - 2. Network Video Recorder (NVR) based Video Management System (VMS) with:
 - a. Camera licensing for the quantity of cameras shown on the plans plus 10% spare licensing capacity.
 - 3. POE enabled Ethernet Switches.

1.4 SUBMITTALS

- A. Refer to the requirements of Section 28 05 00 – Common Work Results for Electronic Safety and Security.

1.5 SYSTEM PERFORMANCE REQUIREMENTS

- A. Video Surveillance Systems:

1. Technical Performance:
 - a. TCP/IP: System demonstrates full conformance with alarming, video analytics functionality, including motion detection using ONVIF Software (Open Network Video Interface Forum) Protocol.
 - b. IP Cameras: Meet Manufacturers performance specification.
2. Functional Performance:
 - a. Monitor and Display
 - 1) Remote monitoring and reviewing of recorded images by persons using:
 - a) City's Local and Wide Area Network.
 - b) Local Area Network using City furnished network switching, and cabling provided under the work of this Project.
 - 2) Provide images suitable for making identification of persons under lighting conditions resulting from the work of this Project and the prevailing environmental conditions at the Project site.
 - b. Record
 - 1) Record video streams using network video recorder provided under the work of this Project
 - c. Retrieve
 - 1) Retrieve any video stream recorded within the minimum required storage window using search and locate tools and event indices as described elsewhere herein.
3. Uninterrupted Power System: For systems deriving camera power from power supplies installed under the work of this Project, sustain system operation for 2 hours following loss of power.

1.6 COORDINATE

1. Coordinate intended camera locations with the work of the Other Trades and the work of Section 28 05 28 – Pathways for Electronic Safety and Security to ensure field conditions do not result in obscuring the intended camera view(s).
2. Refer to Division 27 specifications to ensure that station cabling required for the work of this section.

1.7 DEFINITIONS

- A. Refer additionally to Section 28 05 00 - Common Work Results for Electronic Safety and Security.
- B. Abbreviations used in this Section
 1. ACS – Access Control System
 2. AES: Advanced Encryption Standard
 3. AGC: Automatic gain control
 4. ALPR – Automated License Plate Recognition
 5. API: Application Programming Interface
 6. Aspect ratio: A ratio of width to height in images
 7. Bit Rate: The number of bits/time unit sent over a network
 8. Bonjour: Enables automatic discovery of computers, devices, and services on IP networks.
 9. CSA – Client Software Application
 10. DGM – Dynamic Graphical Maps
 11. DHCP: Dynamic Host Configuration Protocol
 12. DNS: Domain Name System
 13. DVS – Digital Video Server

14. EIS: Electronic Image Stabilization
15. FPS: Frames per Second
16. FTP: File Transfer Protocol
17. H.264 (Video Compression Format)
18. IEEE 802.1x: Authentication framework for network devices
19. IP: Internet Protocol
20. IR light: Infrared light
21. ISO: International Standards Organization
22. JPEG: Joint Photographic Experts Group (image format)
23. LAN: Local Area Network
24. LED: Light Emitting Diode
25. LPR: License Plate Recognition
26. Lux: A standard unit of illumination measurement
27. MBR: Maximum Bit Rate
28. MPEG: Moving Picture Experts Group
29. Multicast: Communication between a single sender and multiple receivers on a network
30. NTP: Network Time Protocol
31. NTSC: National Television System Committee – a color encoding system based on 60Hz
32. **NVR - Network Video Recorder**
33. ONVIF: Global standard for the interface of IP-based physical security products
34. PACS: Physical Access Control System
35. PAL: Phase Alternating Line – a color encoding system based on 50Hz
36. PTZ: Pan/Tilt/Zoom
37. PoE: Power over Ethernet (IEEE 802.3af/at) standard for providing power over network cable
38. PPF: Pixels per foot
39. Progressive scan: An image scanning technology which scans the entire picture
40. QoS: Quality of Service
41. RAID: Redundant Array of Independent Disks
42. SDK – Software Development Kit
43. SIP: Session Initiation Protocol
44. SMA – Software Maintenance Agreement
45. SMPTE: Society of Motion Picture and Television Engineers
46. SMTP: Simple Mail Transfer Protocol
47. SNMP: Simple Network Management Protocol
48. SSL: Secure Sockets Layer
49. SSM – Server Software Module
50. SaaS: Software as a Service
51. TCP: Transmission Control Protocol
52. TLS: Transport Layer Security
53. UI: User Interface
54. UPS: Uninterruptible Power Supply
55. UPnP: Universal Plug and Play
56. USP: Unified Security Platform
57. USW: Unified Web Client
58. Unicast: Communication between a single sender and single receiver on a network
59. VBR: Variable Bit Rate
60. VMS: Video Management System
61. WDR: Wide dynamic range



Addendum 2

1.8 LABELING AND DOCUMENTATION

- A. Label the finished installation. Label each cable at each end uniquely using a Brady or similar cable labeling system.
- B. Document the camera locations on a floor plan using CAD. Assign each camera a unique ID identical with those applied at the NVR and use this identification on the floor plans. Indicate the head end rack location and the major wiring runs. Provide a single-line diagram of the installed system. Submit PDF copies of the as built drawing documentation. In addition submit electronic copies of the CAD files for the City's use. Submit electronic files on a media type determined by the City.
- C. Prepare and provide a hard copy and an electronic copy of an O&M manual for for the completed installation. Hard copy to be provided in a three ring binder. The electronic copy to be submitted on a PDF on a media type determined by the City's Representative.

1.9 TRAINING

- A. Train the City's Representatives in operation of the installed video management system. Provide a least two separate four (4) hour training tracks focused on the training needs of specific stakeholder groups within the City's operation and technical staff and City's Technical/Information Technology Support Staff.
 - 1. Provide eight hours classroom and hands-on training in VMS system functionality, IP communications protocols used, device handshaking and overall signal flow and read/write operations used in recording and retrieval. Review directory tree integration mechanisms and requirements for tree maintenance. Review methods for bare metal recovery of operations. Review VMS manufacturer's approved methods for software upgrades and hardware replacement, including failed disks in the storage array.
 - 2. For each Training session, Document the training provided using a camera and video recorder and provide a copy of the recorded training to the City for future reference and use in training new staff.

1.10 QUALITY ASSURANCE

- A. Test Equipment - provide for the purposes of quality assurance as described in Section 28 05 00 - Common Work Results for Electronic Safety and Security.
 - 1. Network Packet Analyzer: (Fluke, Wireshark)
 - 2. Waveform/Vector Monitor.
 - 3. Portable High Resolution Color Picture Monitor (Marshall Electronics, ToteVision or equal).

PART 2 - PRODUCTS

2.1 VIDEO SURVEILLANCE HEADEND EQUIPMENT

- A. General:
 - a. All equipment and materials used shall be standard components that are regularly manufactured and used in the manufacturer's CCTV system.
 - b. All systems and components shall have been thoroughly tested and proven in production use for at least 60 days prior to the installation of this system.
 - c. All CCTV Headend systems and components shall be provided with the availability of a toll free, 24-hour technical assistance program from the manufacturer, which provides immediate technical assistance to the end user at no charge

B. Network Video Management Software (NVMS)

1. Drawing Reference: VMS, NVR
2. The design and performance requirements for the NVMS software are as follows:
3. The NVMS shall be available as a pre-loaded application in the following Avigilon hardware:
 - a. ACC ES HD Recorder
 - b. Avigilon HD Video Appliance
 - c. Avigilon HD Network Video Recorder
 - d. Avigilon HD Network Video Recorder Workstation
4. The NVMS shall be available as a standalone software application with the following system requirements:
 - a. **Windows 10 IoT or LTSB**
 - b. **Windows Server 2016 and above**
5. The NVMS software application can be installed on any open platform hardware, and does not require hardware multiplexer or time-division technology for video or audio.
6. The NVMS shall support increasing recording storage capacity without additional licenses.
7. The NVMS shall decompress H.264 video through the client graphics card / graphical processing unit.
8. The NVMS shall be an enterprise level software solution that shall be scalable from one client, server and camera up to:
 - a. 100 servers per Site.
 - b. 300 cameras per server
 - c. Up to 10 000 cameras per Site
 - d. Indefinite number of concurrent client to Site connections, limited only by the bandwidth capability of the network and server.
9. The NVMS server and client software applications can be installed and run on the same computer or on separate computers.
10. The NVMS shall include but not limited to the following applications:
 - a. Server Software Applications
 - 1) Control Center Server
 - 2) Control Center Admin Tool
 - 3) Control Center Gateway
 - b. Client Software Applications
 - 1) Control Center Client
 - 2) Control Center Web Client
 - 3) Control Center Player
 - 4) Control Center Camera Installation Tool
 - 5) Control Center Mobile
 - 6) Gateway Web Client (HTML5)
11. The NVMS shall secure video and audio data by securely transmitting all command and control data via TCP/IP using cryptographic keys based on SSL to prevent eavesdropping or tampering.
12. The NVMS shall support storage and processing of video and audio.
 - a. Audio and video must be recorded natively from the camera with no transcoding.
 - b. Audio and video must be synchronized regardless of frame-rate, resolution or bitrate.
13. The NVMS shall support industry standard video compression formats, including but not limited to:
 - a. JPEG2000
 - b. MJPEG
 - c. MPEG-4
 - d. H.264



Addendum 2



Addendum 2

- e. **H.265**
- 14. The NVMS shall perform dynamic video stream management.
 - a. Dynamic video stream management shall reduce the system bandwidth and storage usage by only transmitting video to the client as required.
 - b. The client shall communicate the maximum monitor resolution to the server and the server shall act as a video proxy and stream the required video resolution.
 - c. The NVMS shall tile multi-megapixel videos streams and only transmit the requested portion of the video stream to the client.
 - d. Recorded video storage is extended by dynamically reducing the quality of the recorded video over time so that video is still viable but uses less storage.
 - 1) JPEG and JPEG2000 video image rate is reduced to one half or one quarter of the original image rate.
 - 2) **H.264 & H.265** video records a high quality stream and a low quality stream. The high quality stream is discarded after a set amount of time.
 - e. Shall be available for local users, remote users and mobile devices.
- 15. The NVMS shall find devices and systems on the network by the following methods:
 - a. Automatic — servers, video and audio sources that are connected to the same network as the client are automatically discovered.
 - b. Search — servers, video and audio sources running on a different network segment than the client can be discovered by searching for the device's IP address or hostname.
 - c. Parent to child — logging into a parent site automatically discovers the configured children sites.
- 16. The NVMS shall allow manually discovered server instances, video and audio sources to be visible to all users of a single client workstation.
 - a. Network settings for all server instances will be identical for all users of a single client workstation.
- 17. The NVMS shall support recording and management of video and audio sources through the use of industry standard drivers. These drivers shall include:
 - a. ONVIF Profile S
 - b. Publically Published API
- 18. The NVMS shall support monitoring video and audio sources from:
 - a. Avigilon **H5/H6 cameras**
 - b. Avigilon self-learning analytics cameras
 - c. Avigilon IP H.264/JPEG2000 cameras and encoders
 - d. Rialto video analytics appliances
 - e. ACTi cameras/encoders
 - f. Arecont cameras
 - g. Axis cameras/encoders
 - h. Bosch cameras/encoders
 - i. IQInvision cameras
 - j. Mobotix cameras
 - k. ONVIF 1.00, 1.01, and 1.02 cameras
 - l. Panasonic cameras/encoders
 - m. Pelco cameras
 - n. Samsung cameras/encoders
 - o. Samsung Techwin cameras
 - p. Sanyo cameras
 - q. Scallop cameras
 - r. Sightlogix cameras
 - s. Sony cameras
 - t. VideolQ cameras/encoders
- 19. The NVMS shall support de-warping of live and recorded video.



Addendum 2



Addendum 2

- a. From supported cameras fitted with an Immervision Panomorph lens.
- b. From cameras with a fixed fisheye lens, including but not limited to:
 - 1) Oncam Grandeye Evolution line of cameras.
20. The NVMS shall provide the ability to configure and manage alarms and events.
 - a. Individual alarms from a third party system (access control, etc.) can be pre-selected and configured to be monitored.
 - b. Can define alarm and event triggers.
 - c. Can configure resulting video operations.
 - d. Detect if the video or audio signal is lost and alert the system administrator.
 - e. Support receiving Simple Network Management Protocol (SNMP) messages from servers and alert users.
 - f. Alarm and event notifications can be customized and forwarded to:
 - 1) Users logged into the client application
 - 2) Users logged into the mobile application
 - 3) Configured email addresses
 - 4) External entities and third party software, such as central monitoring stations and call centers
 - g. Can escalate alarms from one user or group to another if the alarm is unacknowledged for a preset duration.
 - h. Email notifications can be configured to:
 - 1) Notify users and system administrators when an event or system health error occurs.
 - 2) Schedule when email notifications are sent.
 - 3) Include camera images in email notifications.
 - i. Support receiving digital input triggers and triggering digital outputs from:
 - 1) An input/output board
 - 2) Supported IP camera or encoder
 - 3) Integrated system
21. The NVMS shall provide the ability to send central monitoring stations heartbeat messages, or regular notification to confirm the system connection and that there are no events of note.
22. The NVMS shall maintain an event log and allow users to use the log events as triggers for specific event actions.
23. Video Management Data Storage Server
 - a. EIA 19" Rack Mount chassis, including all necessary mounting rails and hardware to mount in DIN (square hole) 4 post racks as provided under the work of Section 27 11 16 – Communications Cabinets, Racks, Frames and Enclosures.
 - b. Each server not less than 2RU high.
 - c. Quantity of servers: As required and recommended by the VMS manufacturer for the quantity equal to 1.1 times the number of cameras provided under the work of this Project.
 - d. Features/Functions/Performance - iSCSI Raid Arrays
 - 1) Total Capacity: As required to capture full-motion video of specified cameras stored without overwriting for at least 365 days continuous operation. **If Data Aging will be employed, use at least 90 days of full resolution of the camera.**
Assuming:
 - a) 1.1 times the camera count initially provided with the Project. Contractor to calculate the required storage based on the requirements herein below then multiply the result times 1.1 to identify the minimum storage requirement.
 - b) Recording resolution to match resolution of supplied cameras.
 - c) 10 frame per second motion recording minimum





- 2) Minimum RAID Architecture:
 - a) As required by the VMS Manufacturer, but in no case less than RAID 5.
 - 3) Minimum Construction and Performance
 - a) As required by the VMS Manufacturer.
 - e. Rack mountable, EIA 19", including all necessary mounting rails and hardware to mount in square hole) 4 post racks with DIN (square) openings
 - 24. Manufacturer, NVMS/NVR:
 - a. **Latest version of Avigilon Unity 8**
 - 1) **Two (2) Network Video Recorders (Primary & Secondary) to meet the storage requirements, e.g. NVR6-PRM-PLUS-FORM-H-440TB-S22**
 - 2) Two (2) Workstations with two (2) 32" touch screen monitors **RM7-WKS-2MN**
- C. Rack Mount Monitor, Keyboard and 19" Display Console
- 1. Drawing Reference: CONSOLE KVMS
 - 2. Minimum Features, Functions, Performance, Construction
 - a. Combines an 8-port KVM switch, 19" LCD screen, full keyboard and touchpad in a 1U rack-mountable drawer assembly.
 - b. Mounts into 19"-wide rack, 26"-38" deep.
 - c. Control up to 8 servers from a single, easily accessible console.
 - d. Includes eight cables that support computers with either PS/2 or USB connections
 - e. Flip-up/fold-down screen keeps the console from blocking access to rack equipment when not in use:
 - f. 19" monitor supports video resolutions up to 1280 x 1024
 - g. DDC emulation allows optimal output to the LCD
 - h. Multi-Level Password Security
 - i. Enhances security by limiting access to an administrator and up to 4 local users
 - j. Two-level log-out allows for manual log-out or automatic log-out after a user-defined period of time has passed.
 - 3. Manufacturers:
 - a. Tripp Lite NetDirector 8-Port Console KVM Switch B020-U08-19-IP
 - b. APC
 - c. Or equal.

2.2 CAMERAS AND RELATED

- A. IP Surveillance Indoor Dome Camera, Fixed, Corner Camera:
 - 1. Drawing References:
 - a. Interior Cameras, Circle with 1 in center and one arrowhead, subscript D
 - 2. Minimum Features, Functions, Performance, Construction
 - a. Housing: Provide stainless steel enclosure with environmental rating sufficient to withstand high pressure washing.
 - b. Performance:
 - 1) Image Sensor: 1/2.8 inch progressive scan CMOS.
 - 2) Maximum Resolution:
 - a) Aspect Ratio: 16:9: 2560 x 1440.
 - b) Aspect Ratio: 4:3: 2592 x 1944.
 - c. Imaging Rate:
 - 1) WDR Off: (50 Hz/60 Hz): 25 fps/30 fps.
 - 2) WDR On: (50 Hz/60 Hz): 20 fps/20 fps.
 - d. Dynamic Range:
 - 1) WDR Off: 83 dB.

- 2) WDR On: 126 dB.
- e. Minimum Illumination:
 - 1) Color: 0.027 lux.
 - 2) Monochrome: 0.014 lux.
 - 3) IR: 0.0 lux.
- f. Field of View:
 - 1) Horizontal angle: 16:9: 133 degrees.
 - 2) Horizontal angle: 4:3: 135 degrees.
 - 3) Vertical angle: 16:9: 74 degrees.
 - 4) Vertical angle: 4:3: 95 degrees.
- 3. Manufacturer:
 - a. Avigilon 5.0C-H5A-CR2-IR-SS
- B. IP Surveillance Interior/Exterior Dome Camera, Three Camera Sensors minimum, Fixed, 180° Combined Horizontal Angle:
 - 1. Drawing References:
 - a. Interior Cameras, Circle with 3 in center and three arrowheads, subscript CI
 - b. Exterior Cameras, Circle with 3 in center and three arrowheads, subscript CE
 - 2. Minimum Features, Functions, Performance, Construction
 - 1) Image Sensor 1/2.5" progressive scan CMOS
 - 2) Aspect Ratio 16:9
 - 3) Active Pixels 3840 x 2160
 - 4) 3x Image Sensor Max Resolution (per image sensor) 11520 x 2160
 - 5) Minimum Illumination
 - a) 0.02 lux (F1.8)in color mode
 - b) 0.04lux(F1.8)in monochrome mode
 - c) 0 lux with optional IR illuminator
 - 6) Image Rate-High Frame rate Mode:
 - a) 3x Image Sensor (60Hz, 50Hz) 15/14fps
 - 7) Dynamic Range 100dB,true WDR,dual exposure
 - b. Image Compression Method
 - 1) H.264 HDSM Smart Codec
 - 2) H.265 HDSM Smart Codec
 - 3) Motion JPEG
 - c. Streaming
 - 1) Multi-streamH.264
 - 2) Multi-streamH.265
 - 3) Motion JPEG
 - d. Motion Detection Selectable sensitivity and threshold
 - e. Electronic Shutter Control
 - 1) Automatic
 - 2) Manual (1/8 to 1/8000sec)
 - f. Iris Control Fixed
 - g. Day/Night Control
 - 1) Automatic
 - 2) Manual
 - h. Lens (Per Image Sensor)
 - 1) 4mmF1.8-101°
 - 2) 5.2mmF1.8-70°

- 3) Remote Focus
- i. Image Control
 - 1) Image Compression Method H.264 (MPEG-4 Part 10/AVC), Motion JPEG
 - 2) Streaming Multi-stream H.264 and Motion JPEG
 - 3) Motion Detection Selectable sensitivity and threshold
 - 4) Electronic Shutter Control Automatic, Manual (1/6 to 1/8000 sec)
 - 5) Iris Control Automatic, Manual
 - 6) Day/Night Control Automatic, Manual
 - 7) Flicker Control 50 Hz, 60 Hz
 - 8) White Balance Automatic, Manual
 - 9) Backlight Compensation Adjustable
 - 10) Privacy Zones Up to 64 zones
 - 11) Audio Compression Method G.711 PCM 8 kHz
 - 12) Audio Input/Output Line level input and output
 - 13) External I/O Terminals Alarm In, Alarm Out
- j. Network
 - 1) Network 100BASE-TX
 - 2) Cabling Type CAT5
 - 3) Connector RJ-45
 - 4) API ONVIF compliance version 1.02, 2.00, Profile S (www.onvif.org)
 - 5) Security Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication
 - 6) Protocol IPv4, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP,UDP, IGMP, ICMP, DHCP, Zeroconf, ARP,
 - 7) Streaming Protocols RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP
- k. Mounting hardware: Contractor to select to suit application, with manufacturer accessory mounting plates, pipe mounts, pendant adapters, parapet mounts, corner mounts and backboxes as necessary to mount to rough-in conditions.
- 3. Manufacturers:
 - a. Avigilon
 - 1) 3 Imager:
 - a) 24C-H5A-3MH [3 x 4K (8MP)]
 - b) Clear cover
 - c) Select In-ceiling mount, surface mount or pendant mount to suit mounting conditions.
- C. IP Surveillance Interior/Exterior Dome Camera, Four Camera Sensors, Fixed, 360° Combined Horizontal Angle:
 - 1. Drawing References:
 - a. Interior Cameras, Circle with 4 in center and four arrowheads, subscript CI
 - b. Exterior Cameras, Circle with 4 in center and four arrowheads, subscript CE
 - 2. Minimum Features, Functions, Performance, Construction
 - 1) Image Sensor 1/2.5" progressive scan CMOS
 - 2) Aspect Ratio 16:9
 - 3) Active Pixels 3840 x 2160
 - 4) 4x Image Sensor Max Resolution (per image sensor) 15360 x 2160
 - 5) Minimum Illumination

- a) 0.02 lux (F1.8)in color mode
- b) 0.04lux(F1.8)in monochrome mode
- c) 0 lux with optional IR illuminator
- 6) Image Rate-High Frame rate Mode:
 - a) 4x Image Sensor (60Hz, 50Hz) 10/10fps
- 7) Dynamic Range 100dB,true WDR,dual exposure
- b. Image Compression Method
 - 1) H.264 HDSM Smart Codec
 - 2) H.265 HDSM Smart Codec
 - 3) Motion JPEG
- c. Streaming
 - 1) Multi-streamH.264
 - 2) Multi-streamH.265
 - 3) Motion JPEG
- d. Motion Detection Selectable sensitivity and threshold
- e. Electronic Shutter Control
 - 1) Automatic
 - 2) Manual (1/8 to 1/8000sec)
- f. Iris Control Fixed
- g. Day/Night Control
 - 1) Automatic
 - 2) Manual
- h. Lens (Per Image Sensor)
 - 1) 4mmF1.8-101°
 - 2) 5.2mmF1.8-70°
 - 3) RemoteFocus
- i. Image Control
 - 1) Image Compression Method H.264 (MPEG-4 Part 10/AVC), Motion JPEG
 - 2) Streaming Multi-stream H.264 and Motion JPEG
 - 3) Motion Detection Selectable sensitivity and threshold
 - 4) Electronic Shutter Control Automatic, Manual (1/6 to 1/8000 sec)
 - 5) Iris Control Automatic, Manual
 - 6) Day/Night Control Automatic, Manual
 - 7) Flicker Control 50 Hz, 60 Hz
 - 8) White Balance Automatic, Manual
 - 9) Backlight Compensation Adjustable
 - 10) Privacy Zones Up to 64 zones
 - 11) Audio Compression Method G.711 PCM 8 kHz
 - 12) Audio Input/Output Line level input and output
 - 13) External I/O Terminals Alarm In, Alarm Out
- j. Network
 - 1) Network 100BASE-TX
 - 2) Cabling Type CAT5
 - 3) Connector RJ-45
 - 4) API ONVIF compliance version 1.02, 2.00, Profile S (www.onvif.org)
 - 5) Security Password protection, HTTPS encryption, digest authentication, WS authentication, user access log, 802.1x port based authentication

- 6) Protocol IPv4, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP,UDP, IGMP, ICMP, DHCP, Zeroconf, ARP,
- 7) Streaming Protocols RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTPS/TCP, HTTP
- k. Mounting hardware: Contractor to select to suit application, with manufacturer accessory mounting plates, pipe mounts, pendant adapters, parapet mounts, corner mounts and backboxes as necessary to mount to rough-in conditions.
- 3. Manufacturers:
 - a. Avigilon
 - 1) 4 Imager:
 - a) 32C-H5A-4MH [4 x 4K (8MP)]
 - b) Clear cover
 - c) Select In-ceiling mount, surface mount or pendant mount to suit mounting conditions.

2.3 POWER SUPPLIES

- A. Computer Grade Uninterruptible Power System, UL Listed
 - 1. Drawing Reference: 5 KVA UPS + (2) BATTERY PACKS
 - 2. Features/Functions/Performance:
 - a. Provide continuous, no-break power with sine wave output.
 - b. Size to carry connected load.
 - c. Provide Transient Over-Voltage (TOV) Surge Suppression; comply with ANSI/IEEE C62.41-1980, Category A and Category B.
 - d. Provide complete isolation from Line.
 - e. Provide output voltage regulation to ANSI C84.1 for computing equipment.
 - f. SNMP manageable and status reporting to City's Management console. Provide Ethernet network interface on UPS.
 - g. Provide output KVA, switch-mode power supply rated, not less than 150% of connected load indicated.
 - h. Rack Mounted - at full height racks, provide rack mounted equipment.
 - 3. Acceptable:
 - a. APC Smart-UPS SRT 5000VA RM 208V, model number: SRT5KRMXLTUS with two (2) APC Smart-UPS SRT 192V, 3RU Battery Pack, model number: SRT192RMBP

2.4 VIDEO TERMINAL EQUIPMENT

- A. LCD TV, 65 in. Diagonal
 - 1. Drawing Reference: None
 - a. Commercial grade 24/7 duty cycle
 - b. Network (RJ45) Port
 - c. RS232/IP/Serial means of control
 - d. 330 Nit
 - e. 1300:1 Contrast Ratio
 - f. 3840x2160 Max. Resolution
 - g. HDMI In x 3
 - h. Support for SmartThings Apps
 - 2. Features/Functions:
 - 3. Manufacturer:
 - a. Samsung TU690T UHD Smart TV.

- b. Or equal
- B. Flat-Panel Display Wall Mount
 - 1. Drawing Reference: None
 - 2. Functions:
 - a. Can support the required LCD and Plasma Panels supplied by the work of this Project.
 - b. Holds rear of panel away from wall ~2 in. to permit A/V interface mounting behind display.
 - c. Permits display to be tilted in the vertical plane for optimum viewing as directed by the City's Representative.
 - d. Allows the complete mount and display assembly to not protrude more than 4 in. out from wall surface.
 - e. Designed to mount to 16 in., 20 in., 24 in. center stud systems
 - f. Panel can be securely fastened to mount using to prevent theft by adding a City furnished padlock.
 - g. Where mounting fasteners are exposed during normal operations, secure mount with tamper-resistant fasteners.
 - h. Designed to accommodate panels from at least Pioneer, Panasonic, Sharp, Samsung, & LG Electronics
 - i. Heavy duty construction with steel components
 - j. UL or ETL listed
 - k. California OSHPD OPA (seismic restraint pre-approval). Installation to be accordance with OPA.
 - 3. Manufacturers:
 - a. Chief PDRUB Large Flat Panel Swing Arm Wall Mount, 37" Extension
 - b. Or approved equal.

2.5 POE NETWORK SWITCH

- 1. Port Count:
 - a. 24 or 48
- 2. Construction:
 - a. 1 Rack Unit
 - b. Provide accessories as required to rack mount.
- 3. Manufacturers:
 - a. Cisco Catalyst 9300 Series
 - b. Hewlett Packard
 - c. Or equal

PART 3 - EXECUTION

3.1 PROGRAMMING AND INSTALLATION

- A. Initial Systems Programming
 - 1. Meet with City's Representative to establish functional requirements for surveillance systems, including but not limited to the following:
 - a. Camera Views
 - 1) Define in conjunction with the City's representatives the minimum field of view to be provided at each fixed cameras. Contractor to review the target for each camera at the Initial Systems Programming Meeting with the City's Representative and adjust the target view areas, and where required, the

mounting location to provide the view currently required by the City's Representative. Where the mounting location requires adjustment, Contractor to coordinate related changes required with City's Representative.

2. Document and submit in accordance with the requirements of Section 28 05 00.
3. Provide initial systems programming in accordance with the preceding.

B. Installation

1. General

- a. Conform to the manufacturer's recommendations and instructions regarding:
 - 1) camera mounting and adjustment.
 - 2) power and video cable sizing for length of indicated run.

2. Camera Installation

- a. Locate the cameras in accordance with the plans and as required to provide the target images noted on the plans, except where modified through the pre-construction meeting described above.
- b. Do not place cameras where they will be subject to ready access or tampering from persons in public access areas of the sites.
 - 1) Bring to the City's Representative attention through an RFI any proposed location that does not require a ladder or similar means of access from the public space.
 - 2) Obtain City's Representative's resolution of the RFI prior to proceeding with the installation.
- c. Secure cameras to structure so that they cannot be readily removed, including with use tools or by force.
 - 1) Cameras are to be mounted to flush mounted backboxes at fed through rear of camera body, except where surface mounting is explicitly called for.
 - 2) Where surface mounting is indicated, use knock-outs on side of camera housing to connect to conduit. Install backbox containing required structured cabling biscuit box at remote location hidden from view and secure cover with tamperproof fasteners.
 - 3) Select fastening means appropriate to the mounting surface and its underlying framing system and fasten securely to the structure and not to lightweight surface materials. Removal of cameras following successful fastening shall require use of tamper fastener tooling or application of destructive force. City's Representative reserves the right to request remounting of any camera not found to meet this standard at no additional cost.
- d. Where mounting to pipe mount indicated/or required by field conditions, select materials to maintain stability of camera image under environmental conditions associated with installation location, including wind load and potential for impact.
- e. At exterior cameras, seal openings as directed by the manufacturer's instructions.
- f. Apply manufacturer's recommended anti-graffiti coating to camera housings and domes.
- g. Provide cameras with lensing as required to cover area of coverage indicated on the plans.
- h. Adjust auto-iris systems at night to gain maximum depth of field under low light conditions.
- i. Using a precision display portable video monitor and/or laptop, adjust each camera's angle and field of view as directed by the City's Representative.

3.2 SYSTEM STARTUP

- A. The Contractor shall not apply power to the CCTV system until the following items have been completed:
 - 1. CCTV system equipment items and NVR interface have been set up in accordance with manufacturer's instructions.
 - 2. A visual inspection of the CCTV system has been conducted to ensure that defective equipment items have not been installed and that there are no loose connections.
 - 3. System wiring has been tested and verified as correctly connected as indicated.
 - 4. All system grounding and transient protection systems have been verified as properly installed and connected as indicated.
 - 5. Power supplies to be connected to the CCTV system have been verified as the correct voltage, phasing, and frequency as indicated.
- B. Satisfaction of the above requirements shall not relieve the Contractor of responsibility for incorrect installation, defective equipment items, or collateral damage as a result of Contractor work/equipment.

3.3 SYSTEMS PERFORMANCE TESTING AND ADJUSTING PROCEDURES

- A. The Contractor shall provide all personnel, equipment, instrumentation, and supplies necessary to perform all site testing. The City's Representative will witness all performance verification and endurance testing. Written permission shall be obtained from the City's Representative before proceeding with the next phase of testing. Original copies of all data produced during performance verification and endurance testing shall be turned over to the City's Representative at the conclusion of each phase of testing prior to City's Representative approval of the test.
- B. Contractor's Field Testing.
 - 1. The Contractor shall calibrate and test all equipment, verify system operation, place the integrated system in service, and test the integrated system. Ground rods installed by the Contractor shall be tested as specified in IEEE Std 142. The Contractor shall deliver a report describing results of functional tests, diagnostics, and calibrations including written certification to the City's Representative that the installed complete system has been calibrated, tested, and is ready to begin performance verification testing. The report shall also include a copy of the approved performance verification test procedure. In addition, the Contractor shall make a master video tape recording to DVD showing typical day and night views of each camera in the system and shall deliver the DVD with the report. Note any objects in the field of view that might produce highlights that could cause camera blinding. Note any objects in the field of view or anomalies in the terrain which may cause blind spots. Note if a camera cannot be aimed to cover the zone and exclude the rising or setting sun from the picture. Note night assessment capabilities and whether lights or vehicle headlights cause blooming or picture degradation. If any of the above conditions or other conditions exist that cause picture degradation or interfere with the camera field of view, the Contractor shall inform the City's Representative. The DVD shall be recorded using the video recorder installed as part of the CCTV system. If a recorder is not part of the CCTV system, the DVD prepared using the Video Management System installed under the work of this Section. The Contractor shall provide the City's Representative with the original tape as part of the documentation of the system and shall submit a letter certifying that the CCTV system is ready for performance verification testing. The field testing shall as a minimum include:
 - a. Verification that the video transmission system and any signal or control cabling have been installed, tested, and approved as specified.

- b. When the system includes remote control/monitoring stations or remote switch panels, verification that the remote devices are functional, communicate with the security center, and perform all functions as specified.
 - c. Verification that all cameras are aimed and focused properly. The Contractor shall conduct a walk test of the area covered by each camera to verify the field of view.
 - d. Verification that cameras facing the direction of rising or setting sun are aimed sufficiently below the horizon so that the camera does not view the sun directly.
 - e. When dome camera mounts are used in the system, verify that all preset positions are correct and that the dome also operates correctly in a manual control mode.
2. The Contractor shall deliver a report describing results of functional tests, diagnostics, and calibrations including written certification to the City's Representative that the installed complete system has been calibrated, tested, and is ready to begin performance verification testing. The report shall also include a copy of the approved performance verification test procedure.

C. Performance Verification Test

1. The Contractor shall demonstrate that the completed CCTV system complies with the contract requirements. Using approved test procedures, all physical and functional requirements of the project shall be demonstrated and shown. The performance verification test, as specified, shall not be started until receipt by the Contractor of written permission from the City's Representative, based on the Contractor's written report. This shall include certification of successful completion of Contractor Field Testing as specified in paragraph "Contractor's Field Testing," and upon successful completion of training as specified. If the CCTV system is being installed in conjunction with an ESS, the CCTV performance verification test shall be run simultaneously with the ESS performance verification test. The City's Representative may terminate testing at any time when the system fails to perform as specified. Upon successful completion of the performance verification test, the Contractor shall deliver test reports and other documentation as specified to the City's Representative prior to commencing the endurance test.
2. Testing
 - a. Picture Monitors:
 - 1) Using indicated video test source, verify linearity and adjust as required.
 - b. Camera Operation: Demonstrate that each camera:
 - 1) Produces images in conformance with specifications and as defined in the initial systems programming requirements.
 - 2) Includes date/time/camera number identification.
 - c. Uninterrupted Power Systems: Disconnect normal power service. Demonstrate that the system remains in full operation for the specified time.

3.4 LABELING

- A. Conform with the requirements of Section 27 05 53 – Identification for Communications Systems and for field devices, use the device label assigned per the requirements of Section 28 05 00 - Common Work Results for Electronic Safety and Security.

3.5 VIDEO INTERCOM SYSTEM

- A. Installation
1. Install hands-free color video intercom system in accordance with manufacturer's instructions at locations indicated on the Drawings.
 2. Mount equipment plumb, level, square, and secure.

- B. Adjusting
 - 1. Adjust hands-free color video intercom system for proper operation in accordance with manufacturer's instructions.
- C. Demonstration And Training
 - 1. Demonstration:
 - a. Demonstrate that hands-free color video intercom system functions properly.
 - b. Perform demonstration at final system inspection by qualified representative of manufacturer.
 - 2. Instruction and Training:
 - a. Provide instruction and training of City 's personnel as required for operation of hands-free color video intercom system.
 - b. Provide hands-on demonstration of operation of system components and complete system, including user-level program changes and functions.
 - c. Provide instruction and training by qualified representative of manufacturer.

3.6 WARRANTY

- A. The product shall perform in all material respects in accordance with the accompanying user manual, and the media on which the Software Product resides will be free from defects in materials and workmanship under normal use.

3.7 OPTIONAL PREVENTATIVE MAINTENANCE SERVICE CONTRACT

- A. The Contractor shall provide optional pricing for a planned preventative maintenance service contract covering 3 (three) years from end of system warranty (years two through four).
- B. The Contractor's proposal shall clearly define all Security Contractor and manufacturer costs expected over the life of the Preventative Maintenance Service Contract
- C. The City reserves the first to exercise the option for the Preventative Maintenance Service Contract at any time up to the end of the initial systems warranty (end of year one operations).

END OF SECTION