

**COUNTY OF EL DORADO, CALIFORNIA
CHIEF ADMINISTRATIVE OFFICE
FACILITIES DIVISION**

CONTRACT DOCUMENTS

**INCLUDING
NOTICE TO BIDDERS,
PROPOSAL, CONTRACT, AND CONDITIONS OF THE CONTRACT**

FOR

**COUNTY OF EL DORADO
PLACERVILLE JAIL CONTROL PANEL UPGRADE**

BID #14-968-033

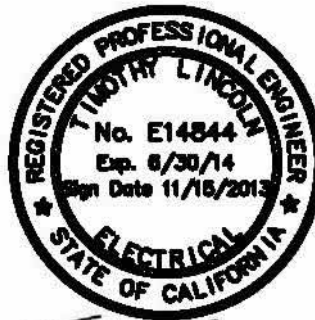
Bid Opening Date: TBD

**COUNTY OF EL DORADO, CALIFORNIA
CHIEF ADMINISTRATIVE OFFICE
FACILITIES DIVISION**

**COUNTY OF EL DORADO
PLACERVILLE JAIL CONTROL PANEL UPGRADE**

BID #14-968-033

The Architectural Improvement Plans and Technical Specifications of these Contract Documents have been prepared under the direction of the following licensed Architect.



Timothy Lincoln

**COUNTY OF EL DORADO, STATE OF CALIFORNIA
CHIEF ADMINISTRATIVE OFFICE
FACILITIES DIVISION**

**COUNTY OF EL DORADO
PLACERVILLE JAIL CONTROL PANEL UPGRADE**

BID #14-968-033

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**COUNTY OF EL DORADO, CALIFORNIA
CHIEF ADMINISTRATIVE OFFICE
FACILITIES DIVISION**

NOTICE TO BIDDERS

NOTICE IS HEREBY GIVEN by the County of El Dorado, State of California, that sealed bids for work in accordance with the Project Plans (Plans) and Contract Documents designated:

**PLACERVILLE JAIL CONTROL PANEL UPGRADE
BID #14-968-033**

will be received by the Chief Administrative Office, Procurement & Contracts Division, at **360 FAIR LANE, PLACERVILLE, CALIFORNIA**, until **TBD**, at which time bids will be publicly opened and read by the Chief Administrative Office, Procurement & Contracts Division.

No Bid may be withdrawn after the time established for receiving bids or before the award and execution of the Contract, unless the award is delayed for a period exceeding sixty (60) calendar days. Bids shall be executed in accordance with the instructions given and on the forms provided in the bound Contract Documents furnished by the County of El Dorado, Chief Administrative Office, Procurement & Contracts Division. The proposal shall **NOT** be detached from the Contract Documents. All bids must be clearly marked on the envelope:

**“COUNTY OF EL DORADO PLACERVILLE JAIL CONTROL PANEL UPGRADE”
BID #14-968-033
TO BE OPENED **TBD** AT 3:00 P.M.**

LOCATION/DESCRIPTION OF THE WORK: The project is located at 300 Forni Road, Placerville California in El Dorado County. The Work to be done as shown on the Plans, generally consists of, but is not limited to:

- A. The furnishing of all labor, materials and equipment for construction of improvements to the Placerville jail security control panel upgrades including but not limited to all security control, including necessary cabinetry all as shown or required per contract documents. Bids are required for the entire work described herein.
- B. The contract time shall be **180 CALENDAR DAYS**.
- C. For bonding purposes the estimated project cost is **approximately \$550,000**.
- D. A Pre-Bid / Site Visit Meeting is scheduled for this project at **TBD**. **ATTENDANCE AT THE PRE-BID MEETING IS MANDATORY AND ONLY THE BIDS OF FIRMS WITH REPRESENTATIVES IN ATTENDANCE WILL BE CONSIDERED FOR EVALUATION AND AWARD. BIDDERS OR THEIR REPRESENTATIVES SHALL MEET IN THE ENTRANCE TO THE JAIL LOCATED AT 300 FORNI ROAD, PLACERVILLE, CA 95667.** In order to limit the disruption to the conduct of business, the meeting date listed will be the only opportunity for bidders to visit the site. The Bidder's representative will be required to sign an attendance sheet and provide the name of the firm being represented. The County will post on the Procurement & Contract's website such Addenda as the County in its discretion considers necessary in response to questions arising and information presented at the Pre-Bid / Site Visit Meeting. Oral statements shall not be relied upon and will not be binding or legally effective. Addenda issued as a result of the Pre-Bid / Site Visit Meeting shall constitute the sole and exclusive record and statement of the results of the Pre-Bid / Site Visit Meeting.

OBTAINING OR INSPECTING CONTRACT DOCUMENTS: The Contract Documents including Plans may be examined:

- Online at <http://edcapps.edcgov.us/contracts/invite.asp>
- At the County of El Dorado, Chief Administrative Office, Procurement & Contract Division located at 360 Fair Lane, Placerville, California, 95667
- Distributed at Pre-Bid Meeting

ONLY CONTRACT DOCUMENTS DISTRIBUTED AT THE MANDATORY PRE-BID MEETING ON **TBD WILL BE ACCEPTABLE FOR BID SUBMITTAL.**

CONTRACTORS LICENSE CLASSIFICATION: Bidders shall be properly license to perform the Work pursuant to the Contractors' State License Law (Business and Professions Code Section 7000 et seq.) and shall possess a **Class C-10 OR C-7 Contractor's** license, and shall maintain a valid license through completion and acceptance of the Work, including the guarantee and acceptance period. Failure of the successful Bidder to obtain proper adequate licensing at the time of contract award shall constitute a failure to execute the Contract and shall result in the forfeiture of the Bidder's security, and may result in legal penalties.

BUSINESS LICENSE: The County Business License Ordinance provides that it is unlawful for any person to furnish supplies or services, or transact any kind of business in the unincorporated territory of El Dorado County without possessing a County business license unless exempt under County Ordinance Code Section 5.08.070. The Bidder to whom an award is made shall comply with all of the requirements of the County Business License Ordinance, where applicable, prior to beginning work under this Contract and at all times during the term of this Contract.

REQUIRED LISTING OF PROPOSED SUBCONTRACTORS: Each Proposal shall have listed therein the name and address of each subcontractor, to whom the Bidder proposes to subcontract portions of the work in an amount in excess of 1/2 of one percent of its total bid in accordance with the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code. The Bidder shall also describe in the Subcontractor Listing the work to be performed by each subcontractor listed. The work to be performed by the subcontractor shall be shown by listing the description of the work, and portion of the work to be performed by the subcontractor in the form of a percentage calculated by dividing the work to be performed by the subcontractor by the lump sum bid price. At the time the bids are submitted all listed subcontractors shall be properly licensed to perform their designated portion of the work. The Bidder's attention is invited to other provisions of the Act related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

NONDISCRIMINATION: Attention is directed to the following Notice that is required by Chapter 5 of Division 4 of Title 2, California Code of Regulations.

**NOTICE OF REQUIREMENT FOR NONDISCRIMINATION PROGRAM
(GOVERNMENT CODE SECTION 12990)**

PREVAILING WAGE REQUIREMENTS: In accordance with the provisions of California Labor Code Sections 1770 et seq., the general prevailing rate of wages in the county in which the Work is to be done has been determined by the Director of the California Department of Industrial Relations. These wage rates appear in the California Department of Transportation publication entitled General Prevailing Wage Rates. Interested parties can obtain the current wage information by submitting their requests to the Department of Industrial Relations, Division of Labor Statistics and Research, P.O. Box 420603, San Francisco CA 94142-0603, Telephone (415) 703-4708 or by referring to the website at <http://www.dir.ca.gov/dlsr/PWD>. The rates at the time of the bid advertisement date of a project will remain in effect for the life of the project in accordance with the California Code of Regulations, as modified and effective January 27, 1997.

Copies of the general prevailing rate of wages in the county in which the Work is to be done are also on file at the Chief Administrative Office, Facilities Division, and are available upon request.

In accordance with the provisions of Labor Code 1810, eight (8) hours of labor shall constitute a legal day's work upon all work done hereunder, and Contractor and any subcontractor employed under this Contract shall conform to and be bound by the provisions of Labor Code Sections 1810 through 1815.

BID SECURITY: A bid security shall be provided with each bid. Bid security shall be in an amount of not less than ten percent (10%) of the total amount bid for the Work and shall be cash, a certified check or cashier's check drawn to the order of the County of El Dorado or a Bidder's Bond executed by a surety satisfactory to the County of El Dorado on the **form provided in the Proposal section of these Contract Documents (do not detach the form)**.

AWARD OF CONTRACT: Bids will be considered for award by the Board of Supervisors or the Purchasing Agent, as applicable. The County of El Dorado reserves the right after opening bids to reject any or all bids, to waive any irregularity in a bid, or to make award to the lowest responsive, responsible Bidder and reject all other bids, as it may best serve the interests of the County.

As a condition of award, the successful Bidder will be required to submit bonds and evidence of insurance prior to execution of the Agreement by the County. Failure to meet this requirement shall constitute abandonment of the Bid by the Bidder and forfeiture of the Bidder's security. Award will then be made to the next lowest responsible Bidder.

PAYMENTS: Attention is directed to Article 6.2 – APPLICATIONS FOR PAYMENT of the Conditions of the Contract.

RETAINAGE FROM PAYMENTS: The Contractor may elect to receive one hundred percent (100%) of payments due under the Contract from time to time, without retention of any portion of the payment by the County, by depositing securities of equivalent value with the County in accordance with the provisions of Section 22300 of the Public Contract Code. Securities eligible for deposit hereunder shall be limited to those listed in Section 16430 of the Government Code, or bank or savings and loan certificates of deposit.

PROJECT ADMINISTRATION: All communications relative to the Contract Documents and Plans shall be directed to Linda Silacci-Smith in the County of El Dorado Chief Administrative Office, Procurement & Contracts Division, 360 Fair Lane, Placerville, CA 95667, telephone: (530) 621-5417. No oral responses to any questions concerning the content of the Plans and Contract Documents will be given. All responses will be in the form of written addenda to the Plans and/or Contract Documents.

BY ORDER OF the Board of Supervisors, County of El Dorado, State of California.

Authorized by the Board of Supervisors on **TBD** at Placerville, California.

Dated: _____

By: _____

Chair, Board of Supervisors

James S. Mitrising
Clerk of the Board of Supervisors

By: _____
Deputy Clerk

Dated: _____

*** END OF DOCUMENT ***

**THESE INSTRUCTIONS SUPPLEMENT THE NOTICE TO BIDDERS, PROPOSAL, DRAFT
AGREEMENT, AND CONDITIONS OF THE CONTRACT**

**PLACERVILLE JAIL CONTROL PANEL UPGRADE
BID #14-968-033**

INSTRUCTIONS TO BIDDERS

1. The County of El Dorado will receive sealed bids from Bidders as stipulated in the Notice to Bidders.
2. The County of El Dorado reserves the right after opening bids to reject any or all bids, to waive any irregularity in a bid, or to make award to the lowest responsive, responsible Bidder and reject all other bids, as it may best serve the interests of the County.
3. Bidders must submit bids only on forms provided in the Contract Documents, and shall be accompanied by all documents and information required to be submitted by these Instructions to Bidders, the Notice to Bidders, and by law. Bids not submitted on the required forms shall be deemed nonresponsive and shall not be considered. The Proposal form is bound together with the Notice to Bidders, Instructions to Bidders, Agreement, and attendant documents. A Proposal shall be deemed "Non-Responsive" if the proposal is submitted without the entire Contract Document package attached.
4. Bidders must submit Non-Collusion Affidavit form with their bids. Bids submitted without the affidavit will be deemed nonresponsive and will not be considered.
5. Bidders must supply all information required by Contract Documents and specifications. Bids must be full and complete. The County reserves the right at its sole discretion to reject any bid as nonresponsive as a result of any error or omission in the bid.
6. Bidders may not modify Proposal Document or qualify their bids.
7. Submission of a bid signifies that the Bidder has done a careful examination of the Contract Documents and has a complete understanding of the nature, extent and location of Work to be performed. Bidder must complete the tasks listed below in subsections "a" and "b" as a condition to bidding ,and submission of bid shall constitute the Bidder's express representation to the County that Bidder has fully completed the following:
 - a. Bidder has attended the mandatory pre-bid meeting and has examined thoroughly and understands the nature and extent of the Contract Documents, Work, Site, locality, actual conditions, as-built conditions, and all local conditions and federal, state and local laws and regulations that in any manner 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;
 - b. Bidder has given the County representative during the bid period prompt written notice of all conflicts, errors, ambiguities or discrepancies that it has discovered in or among the Contract Documents and as built and actual conditions and the written resolution thereof by County is acceptable to Bidder.
8. Substitutions: If the Bidder lists a manufacturer in its Proposal that is a substitute (i.e. "or equal"), such listing shall be considered a substitution request by the Bidder. If the Bidder is the apparent low Bidder, the Bidder shall, within two (2) business days following the bid opening, submit data substantiating the request for the substitution with the "or equal" item. Failure to submit such substantiating data within two

(2) business days following the bid opening may result in the County deeming the apparent low Bidder non-responsive. If no substitute manufacturer is listed in its Proposal, the Bidder shall supply all materials as specified in the Technical Specifications. NO substitution request will be considered after bid opening.

9. The following documents are to be executed and submitted by the apparent low Bidder after bids have been opened and duly inspected, and the County transmits the Notice of Award package to the successful Bidder. Failure to properly and timely submit these documents entitles the County to determine that the Bidder has abandoned the contract, and the bidder's security shall be forfeited to County.

Submit the following documents to Linda Silacci-Smith, Chief Administrative Office, Procurement & Contracts Division, 360 Fair Lane, Placerville, CA 95667 by 5:00 p.m. of the **TENTH** calendar day, following the date of the NOTICE OF AWARD OF CONTRACT letter. Execution of Contracts by the County depends upon approval of Insurance Certificates and Bonds, and associated contract documents.

- i. Contracts: The successful Bidder shall execute and submit the Agreements for the work associated with the Proposal Lump Sum Bid Price Schedule (See Draft Agreement). Submit two (2) originals of Agreement, each bearing an original signature.
- ii. County of El Dorado Performance Bond: To be executed by successful Bidder and surety each with notary acknowledgement.
- iii. County of El Dorado Payment Bond: To be executed by successful Bidder and surety each with notary acknowledgement.
- iv. Insurance certificates required by Contract Conditions and Article 8.
- v. California Form 590 – Withholding Exemption and County Payee Data Record Form

*** END OF DOCUMENT ***

THESE INSTRUCTIONS SUPPLEMENT THE NOTICE TO BIDDERS, PROPOSAL, DRAFT AGREEMENT, AND CONDITIONS OF THE CONTRACT

**PLACERVILLE JAIL CONTROL PANEL UPGRADE
BID #14-968-033**

SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

1. The Contractor shall provide the County a list of on-site employees' names 45 days prior to site mobilization.
2. Contractor's employees **SHALL ATTEND A JAIL ORIENTATION MEETING** prior to site mobilization which includes reading a handbook regarding safety procedures at the jail. Contractor shall allow two (2) man hours per employee for this training.
3. No **CONTRABAND** will be allowed such as knives, personal protection devices (ppds), cigarettes, etc.
4. Contractor's employees will be required to **ENTER/EXIT** at same time and together.
5. Contractor's employees are subject to **SEARCH** at any time.
6. Contractor's employees will be required to sign **WAIVERS** and be aware that this facility has a **NO HOSTAGE POLICY**.
7. Contractor's employees will **NOT** be allowed to wear **ORANGE**.
8. No **CELL PHONES or any other communication devices**, unless approved by the jail project manager in advance, will be allowed into the jail, no exceptions.
9. The **existing** toilet facilities will be made available to Contractor's employees.
10. The County will conduct **CRIMINAL BACKGROUND CHECKS** of all onsite Contractor's employees. Contractor agrees to replace **ANY** employee that the County has objection to without dispute.
11. The County will provide **I.D. BADGES** to Contractor's employees to be displayed at all times by every employee. Lost or misplaced badges **WILL NOT** be replaced; any Contractor's employee without a County-issued I.D. badge will not be allowed on site.
12. Contractor's employees will need to complete a **TOOL CHECK DAILY** both before and after shift.
13. Contractor's employees will be required to remain **on-site** all day once they have entered the facility.
14. Contractor's employees will eat lunch onsite to minimize the daily trips in and out.
15. Bidders are **ENCOURAGED** to work four (4) ten (10) hour days. This is NOT a requirement only a suggestion.

THIS PROJECT WILL REQUIRE PHASING

*** END OF DOCUMENT ***

COMPLETING BID IN PENCIL, ERASURES, OVERWRITES, AND USE OF CORRECTION FLUID OR TAPE ARE NOT ACCEPTABLE. BID PROPOSALS WITH PENCIL, ERASURES, OVERWRITES, OR USE OF CORRECTION FLUID OR TAPE WILL BE REJECTED. ALL CHANGES MUST BE LINED OUT AND CORRECTIONS INSERTED ADJACENT TO THE CHANGE AND INITIALED BY THE BIDDER'S AUTHORIZED REPRESENTATIVE

PROPOSAL

(to be attached to and submitted with this bound Contract Document bid package)

**TO: CHIEF ADMINISTRATIVE OFFICE, PROCUREMENT & CONTRACTS DIVISION
COUNTY OF EL DORADO,
STATE OF CALIFORNIA**

for the construction of

PLACERVILLE JAIL CONTROL PANEL UPGRADE

BID #14-968-033

NAME OF BIDDER: _____

BUSINESS MAILING ADDRESS: _____

CITY, STATE, ZIP: _____

BUSINESS STREET ADDRESS: _____

(Please include even if P.O. Box used)

CITY, STATE, ZIP: _____

TELEPHONE NO: AREA CODE () _____

FAX NO: AREA CODE () _____

The work for which this Proposal is submitted is for the construction in accordance with these Contract Documents (including the payment of not less than the State general prevailing wage rates set forth herein), the Project Plans described below, including any addenda thereto, the Contract annexed hereto, and also in accordance with the Labor Surcharge and Equipment Rental Rates in effect on the date the work is accomplished, and in accordance with the General Prevailing Wage rates. The Project Plans and other Contract Documents for the work to be done are entitled:

PLACERVILLE JAIL CONTROL PANEL UPGRADES

BID #14-968-033

Bids are to be submitted for the entire work. The work includes LUMP SUM BID. Failure to submit a bid for the entire work will result in the bid being deemed non-responsive.

The Bidder shall set forth a lump sum total for the BID, in clearly legible figures in the respective space provided for this purpose.

If the item total for the lump sum is unreadable or otherwise unclear, or is omitted, the bid may be deemed irregular.

Symbols such as commas and dollar signs will be ignored and have no mathematical significance in establishing lump sums. The written lump sum in numbers will be interpreted according to the number of digits and, if applicable, decimal placement. In the event of a discrepancy, the written lump sum in words will govern over the written lump sum in numbers.

The foregoing provisions for the resolution of specific irregularities cannot be so comprehensive as to cover every omission, inconsistency, error or other irregularity which may occur in a bid. Any situation not specifically provided for will be determined in the discretion of the County of El Dorado, and that discretion will be exercised in the manner deemed by the County of El Dorado to best protect the public interest in the prompt and economical completion of the work. The decision of the County of El Dorado respecting the amount of a bid, or the existence or treatment of any irregularity in a bid, shall be final.

If this Proposal is accepted and the undersigned Bidder shall fail to enter into the Contract and furnish the two bonds in the sums required by the State Contract Act, with surety satisfaction to the County of El Dorado in accordance with the Special Provisions within ten (10) days, not including Saturdays, Sundays, and legal holidays, of the date of the letter notice from the County of El Dorado that the Contract has been awarded, the County of El Dorado may, at its option, determine that the Bidder has abandoned the Contract, and thereupon this Proposal and the acceptance thereof shall be null and void and the forfeiture of such security accompanying this Proposal shall operate and the same shall be the property of the County of El Dorado.

Attention! The undersigned Bidder acknowledges that a bid security must be submitted in amount of not less than ten (10) percent of the Lump Sum Bid.

The undersigned, as Bidder, declares under penalty of perjury under the laws of the State of California that the only persons or parties interested in this Proposal, as principals, are those named herein; that this Proposal is made without collusion with any other person, firm, or corporation; that it has carefully examined the location of the proposed work, the annexed proposed form of Contract, and the Plans therein referred to; and that it proposes, and agrees if this Proposal is accepted, that it will contract with the County of El Dorado, in the form of the copy of the Draft Agreement annexed hereto, to provide all necessary machinery, tools, apparatus, and other means of construction, and to do all the work and furnish all the materials specified in the Contract, in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth, and that it will take in full payment therefore the following item prices, to wit:

**PROPOSAL BID PRICE SCHEDULE
PLACERVILLE JAIL CONTROL PANEL UPGRADE
BID #14-968-033**

Note: Bid will be awarded on the basis of the lowest responsive, responsible bidder based upon the total of the LUMP SUM bid and meeting all other requirements.

LUMP SUM BID: (Figure) \$ _____

LUMP SUM BID (Words):

NOTICE: Bidder's failure to execute the questionnaire and statements contained in this Bid as required by applicable laws and regulations, or the determinations by the County of El Dorado based upon those questionnaires and statements, may prohibit award of the subject Contract to the Bidder.

PUBLIC CONTRACT CODE SECTION 10285.1 STATEMENT

In accordance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the Bidder hereby declares under penalty of perjury under the laws of the State of California that the Bidder has _____, has not _____ been convicted within the preceding three years of any offenses referred to in that Section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or Federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "Bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

NOTE: The Bidder must place a check mark after "has" or "has not" in one of the blank spaces provided.

The above Statement is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

PUBLIC CONTRACT CODE SECTION 10162 QUESTIONNAIRE

In accordance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury under the laws of the State of California, the following questionnaire:

Has the Bidder, any officer of the Bidder, or any employee of the Bidder who has a proprietary interest in the Bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes: _____

No: _____

If the answer is yes, explain the circumstances in the following space:

PUBLIC CONTRACT CODE SECTION 10232 STATEMENT

In accordance with Public Contract Code Section 10232, the Bidder hereby states under penalty of perjury under the laws of the State of California, that no more than one final unappealable finding of contempt of court by a Federal Court has been issued against the Bidder within the immediate preceding two year period because of the Bidder's failure to comply with an order of a Federal Court which orders the Bidder to comply with an order of the National Labor Relations Board.

NOTE:

The above Questionnaire and Statement are part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Questionnaire and Statement.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

NONCOLLUSION AFFIDAVIT
(Title 23 United States Code Section 112 and
Public Contract Code Section 7106)

In accordance with Title 23 United States Code, Section 112 and Public Contract Code Section 7106, the Bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other Bidder to put in false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other Bidder, or to secure any advantage against the public body awarding the Contract of anyone interested in the proposed Contract; that all statements contained in the bid are true; and, further, that the Bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

NOTE:

The above Noncollusion Affidavit is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Noncollusion Affidavit.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Accompanying this proposal is _____

(NOTICE: INSERT THE WORDS "CASH (\$____)," "CASHIER'S CHECKS," "CERTIFIED CHECKS," OR "BIDDERS BONDS," AS THE CASE MAY BE)

in amount equal to at least ten percent of the total **amount of the Lump Sum Bid.**

The names of all persons interested in the forgoing Proposal as principals are as follows:

IMPORTANT NOTICE: If the Bidder or other interested person is a corporation, state legal name of corporation and place of incorporation, also names of the president, secretary, treasurer, and executive officer thereof; if a partnership, state name of partnership, also names of all individual partners; if Bidder or other interested person is an individual, state first and last names in full.

Licensed in accordance with an act providing for the registration of Contractors,

License No. _____ Classification(s) _____

A copy of the afore-referenced license must be attached hereto.

ADDENDA: This Proposal is submitted with respect to the changes to the Contract included in addenda number(s)

(Fill in addenda numbers if addenda have been received and insert, in this Proposal, any Proposal Pay Items and Bid Price Schedules that were received as part of the addenda)

By my signature on this Proposal I certify, under penalty of perjury under the laws of the State of California, that the foregoing questionnaire and statements of Public Contract Code Sections 10162, 10232, and 10285.1 are true and correct and that I have complied with the requirements of Section 8103 of the Fair Employment and Housing Commission Regulations (Chapter 5 of Division 4 of Title 2 of the California Code of Regulations). By my signature on this Proposal I further certify, under penalty of perjury under the laws of the State of California and the United States of America that the Noncollusion Affidavit required by Title 23 United States Code, Section 112 and Public Contract Code Section 7106 is true and correct.

The person or persons executing this Proposal on behalf of a corporation or partnership shall be prepared to demonstrate by resolution, article, or otherwise, that such person is or that such persons are appropriately authorized to act in these regards for such corporation or partnership. Such authority shall be demonstrated to the satisfaction of the County of El Dorado.

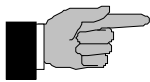
If the signature is by an agent other than an officer of a corporation or a member of a partnership, a power of attorney authorizing said act by the agent on behalf of his principal shall be submitted with the bid forms; otherwise, the bid may be disregarded as irregular and unauthorized.

The Bidder's execution on the signature portion of this Proposal shall constitute an endorsement and execution of those affidavits, declarations and certifications which are part of this Proposal.

Executed this _____ day of _____, 20__

at: _____ County, State of _____

Date: _____



SIGN HERE: _____

Name and Title of Bidder: _____

Name of Firm: _____

END OF PROPOSAL

COUNTY OF EL DORADO

BIDDER'S BOND

this form MUST be used

KNOW ALL PEOPLE BY THESE PRESENTS, THAT WE _____
_____, as **PRINCIPAL**, and

as Surety are held and firmly bound unto the County of El Dorado (Obligee), in the penal sum of **TEN (10) PERCENT OF THE AMOUNT OF THE TOTAL LUMP SUM BID PRICE** of the Principal above named, submitted by said Principal to the Obligee for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made to the Obligee, we the Principal and Surety bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents. In no case shall the liability of the Surety hereunder exceed the sum of

TEN PERCENT (10%) OF THE AMOUNT OF THE TOTAL LUMP SUM BID PRICE

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT:

WHEREAS, the Principal has submitted the above-mentioned Bid to the Obligee, as aforesaid, for certain construction specifically described as follows, for which bids are to be opened at Placerville, El Dorado County, California, for the construction of the:

PLACERVILLE JAIL CONTROL PANEL UPGRADE
BID #14-968-033

NOW, THEREFORE, if the aforesaid Principal is awarded the Contract and, within the time and manner required under the Contract Documents, after the prescribed forms are presented to it for signature, enters into a written contract, in the prescribed form, in accordance with the Bid, and files two bonds with the County of El Dorado, one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by law, then this obligation shall be null and void; otherwise, it shall remain in full force and virtue.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorney's fee to be fixed by the Court.

IN WITNESS WHEREOF, we have set our hands and seals on this _____ day of _____ 20____

(seal) _____
Principal

(seal) _____
Surety

Address: _____

(NOTE: Signature of those executing for the Surety shall be properly acknowledged, and accompanied by a Certificate of Acknowledgment.)

SURETY

ACKNOWLEDGMENT

State of California

County of _____

On _____ before me, _____,
(here insert name and title of the officer)

personally appeared _____

_____ ,

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____

(Seal)

County of El Dorado, State of California

BID #14-968-033

PLACERVILLE JAIL CONTROL PANEL UPGRADE

THIS AGREEMENT ("Agreement") approved by the County of El Dorado Board of Supervisors, this _____ day of _____, in the year of _____, made and concluded, in duplicate, between the COUNTY OF EL DORADO, a political subdivision of the State of California, by the Chief Administrative Office, Facilities Division thereof, the party of the first part hereinafter called "County," and _____ (Contractor) party of the second part hereinafter called "Contractor."

RECITALS

WHEREAS, County has caused the above-captioned project to be let to formal bidding process; and

WHEREAS, Contractor has duly submitted a bid response for the captioned project upon which County has awarded this Contract;

NOW, THEREFORE, the parties hereto have mutually covenanted and agreed, and by these presents do covenant and agree, each with the other, as follows:

Article 1. THE WORK

The improvement contemplated in the performance of this Contract is an improvement over which the County of El Dorado shall exercise general supervision. The County therefore, shall have the right, but not the duty to assume full and direct control over this Contract whenever the County at its sole discretion, shall determine that its responsibility is so required.

The Contractor shall complete the Work as specified or indicated under the County's Contract Documents entitled:

PLACERVILLE JAIL CONTROL PANEL UPGRADE

The project is located at 300 Forni Road, Placerville, California in El Dorado County. The Work to be done as described in the Technical Specifications section and as shown on the Plans, generally consists of, but is not limited to: furnishing of all labor, materials and equipment for construction of improvements to the Placerville jail security control panel upgrades including but not limited to all security control, including necessary cabinetry. The Work will require the following phasing:

- **PHASE ONE (1) SUBMITTALS, PREMOBILIZATION – Term of 120 Calendar Days**
Submittals received by County (within 14 days of issuance of Notice to Proceed), site visit and pretesting (of existing per project specifications).
- **PHASE TWO (2) CONTROL ROOM C3 – Term 08 Calendar Days**
All work within control room including cabinets and testing. Total control room time shall not exceed 60 consecutive hours within the 8 calendar day window. Once work is started in the control room it must be continuous daily until the control room is complete.
- **PHASE THREE (3) CONTROL ROOM C2 – Term 08 Calendar Days**
All work within control room including cabinets and testing. Total control room time shall not exceed 50 consecutive hours within the 8 calendar day window. Once work is started in the control room it must be continuous daily until the control room is complete.

- **PHASE FOUR (4) CENTRAL CONTROL C-1 – Term 08 Calendar Days**
All work within control room including cabinets and testing. Total control room time shall not exceed 60 consecutive hours within the 8 calendar day window. Once work is started in the control room it must be continuous daily until the control room is complete.
- **PHASE FIVE (5) PROJECT CLOSEOUT/PUNCH LIST – Term 36 Calendar Days**
Finalize project closeout.

THE SHUTDOWN TIME OF THE CONTROL ROOMS IS OF PARAMOUNT IMPORTANCE and must strictly comply with the time period specified above.

PROJECT PHASING IS SEQUENTIAL – each preceding phase must be completed before moving on to next phase.

Article 2. CONTRACT DOCUMENTS

The Contract Documents consist of: the Notice to Bidders; the bid forms which include the accepted Proposal, Proposal Bid Price Schedule, Subcontractors Listing, Section 10285.1 Statement, Section 10162 Questionnaire, Section 10232 Statement, and the Noncollusion Affidavit; the Contract which includes this Agreement with all Exhibits thereto, the Performance Bond and Payment Bond; Conditions of the Contract; the drawings listed and identified as the Project Plans; the Technical Specifications; all Addenda incorporated in those documents before their execution, all Contract Change Orders, Architect's Supplemental Instructions, and Construction Change Directives issued in accordance with the Contract Documents which may be delivered or issued after the Effective Date of this Agreement and are not attached hereto; the prevailing Labor Surcharge And Equipment Rental Rates (when required) as determined by the Department of Industrial Relations to be in effect on the date the Work is accomplished; all the obligations of County and of Contractor which are fully set forth and described therein; and all Contract Documents which are hereby specifically referred to and by such reference made a part hereof. All Contract Documents are intended to cooperate so that any work called for in one and not mentioned in the other is to be executed the same as if mentioned in all Contract Documents. Contractor agrees to perform all of its promises, covenants, and conditions set forth in the Contract Documents, and to abide by and perform all terms and conditions set forth therein. In case of conflict between this Agreement and any other contract document, this Agreement shall take precedence.

Article 3. CONTRACT PRICE

As compensation agreed upon for said Work, County shall pay or cause to be paid to Contractor, in full, and for the full contract price and compensation for said completion of the Work, including without limitation, all bonds and insurance, **THE NOT TO EXCEED SUM OF** (insert dollar amount in words) **DOLLARS** (\$(insert dollar amount in numbers)) which sum constitutes the Contract Price for the complete Project (the "Contract Price").

Article 4. COMMENCEMENT AND COMPLETION

The Work to be performed under this Contract shall commence on the date specified in the Notice to Proceed issued by County. The work shall be diligently prosecuted to completion within **180 Calendar days** commencing from the date shown on the Contractor Notice To Proceed.

County and Contractor recognize that time is of the essence of the Agreement and that County will suffer loss if the Work is not completed within the time specified in the above paragraph, plus any extensions thereof allowed in accordance with Article 4.3.5 of the Conditions of the Contract. The parties also recognize that it is and will be impracticable and difficult to ascertain and determine the actual damage County will sustain if the Work is not completed on time. Accordingly, County and Contractor agree that Contractor shall pay County the sum of **ONE THOUSAND FIVE HUNDRED DOLLARS (\$1,500.00)** per day, as liquidated damages and not as a penalty, for each and every calendar day's delay in finishing the Work in excess of the contract time prescribed herein; and Contractor agrees that County may deduct the amount thereof from any monies due or that may become due Contractor under this contract.

TOTAL PROJECT COMPLETION IS 180 CALENDAR DAYS. Liquidated damages per the contractual agreement (\$1,500/day) will be assessed for each phase.

Article 5. PAYMENT

Payment shall be made to Contractor as follows:

Progress payments are to made semi-monthly based on the percentage of completion method reached by the Contractor and invoiced using Exhibit "A", marked "Application and Certificate for Payment" incorporated herein and made by reference a part hereof.

Retention of 5% of the total Contract price will be held until the work is 50% complete, and thereafter at the option of County. Payment by County as herein provided shall not be construed as an absolute acceptance of defects in the work or improper materials.

Article 6. INDEMNITY

To the fullest extent allowed by law, Contractor shall defend, indemnify, and hold the County and its officers, directors, and employees harmless against and from any and all claims, suits, losses, damages, and liability for damages, including attorney's fees and other costs of defense brought for or on account of injuries to or death of any person, including but not limited to, workers and the public, or on account of injuries to or death of County employees, or damage to property, or any economic, consequential or special damages which are claimed or which shall in any way arise out of or be connected with Contractor's services, operations or performance hereunder, regardless of the existence or degree of fault or negligence on the part of the County, the Contractor, subcontractors or employees of any of these, except for the active, or sole negligence of the County, its officers and employees, or where expressly prescribed by statute.

The duty to indemnify and hold harmless the County specifically includes the duties to defend set forth in Section 2778 of the Civil Code. The insurance obligations of the Contractor are separate, independent obligations under the Contract Documents, and the provisions of this defense and indemnity are not intended to modify nor should they be construed as modifying or in any way limiting the insurance obligations set forth in the Contract Documents.

Article 7. GUARANTEES

Contractor shall repair or replace any or all work provided hereunder which is defective due to faulty materials, poor workmanship, or defective equipment at no expense to County, ordinary wear or tear and unusual abuse or neglect excepted, during the term of the Contract and for a period of one (1) year after contract Acceptance. Contractor shall be required to repair or replace any and all adjacent facilities or areas which have been damaged or displaced due to Contractor work performed under this Agreement at no expense to County during the term of this Contract and for a period of one (1) year after Contract Acceptance.

If a warranty or guarantee exceeding one (1) year is provided by the supplier or manufacturer of any equipment or materials used in this Project, or if a warranty or guarantee exceeding one (1) year is required elsewhere in these Contract Documents, then the guarantee for such equipment or materials shall be extended for such term. Contractor expressly agrees to act as co-guarantor of such equipment and materials, and Contractor shall supply County with all warranty and guaranty documents relative to equipment and materials incorporated in the job and guaranteed by its suppliers or manufacturers.

The parties agree that this guarantee and the rights and obligations accruing therefrom shall be in addition to, and not by way of limitation in any manner whatsoever to, the rights, obligations, warranties or remedies otherwise provided for by law.

In the event of Contractor's failure to comply with the above mentioned conditions within ten (10) calendar days after being notified in writing by County, Contractor hereby authorizes County to proceed to have said defects repaired and made good at Contractor's expense, and Contractor will honor and pay all costs and charges therefore upon written demand.

Article 8. NOTICE

Any notice or other correspondence required to be given under this Agreement by either party to the other may be affected by personal delivery in writing or by mail, postage prepaid. Notices personally delivered during normal business hours shall be deemed received on the actual date of delivery; mailed notices shall be deemed received one (1) day after affixed postmark. Notices and correspondence to County shall be in duplicate and shall be delivered to it as follows:

To County:

County of El Dorado
Chief Administrative Office
3000 Fairlane Court, Suite One

Attn.: Russ Fackrell
Facilities Manager

Notices and correspondence to Contractor shall be delivered when personally delivered to, or if mailed, addressed to Contractor at:

Contractor's Business Name

Street Address
City, State Zip

Attn.: Name of Notices Recipient
Title of Notices Recipient

Either party may change its address for notices by giving written notice pursuant to this Article.

Article 9. VENUE

Any litigation arising out of this Contract shall be brought in El Dorado County.

Article 10. PERFORMANCE BOND

As a part of the execution of this Contract, Contractor shall furnish a bond of a surety company authorized to do business in the State of California, conditioned upon the faithful performance of all covenants and stipulations under this Contract. The amount of this bond shall be one hundred percent (100%) of the total Contract Price and shall be executed upon the form provided by County.

Article 11. PAYMENT BOND

As a part of the execution of this Contract, Contractor shall furnish a bond of a surety company authorized to do business in the State of California, conditioned upon the payment in full of all claims for labor and materials in accordance with the provisions of the law of the State of California. The amount of this bond shall be one hundred percent (100%) of the total Contract Price and shall be executed upon the form provided by County.

Article 12. NOTIFICATION OF SURETY COMPANY

The surety company shall familiarize itself with all of the conditions and provisions of this Contract, and shall waive the right of special notification of any change or modifications of this Contract or extension of time, or of decreased or increased work, or of the cancellation of the Contract, or of any other act or acts by County or its authorized agents, under the terms of this Contract; and failure to so notify the aforesaid surety company of changes shall in no way relieve the surety company of its obligation under this Contract.

Article 13. ASSIGNMENT OF ANTITRUST ACTIONS

In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor offers and agrees and will require all of its subcontractors and suppliers to agree to assign to the awarding body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the

Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to Contractor, without further acknowledgment by the parties.

If an awarding body or public purchasing body receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under Government Code Sections 4550-4554, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the public body any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the public body as part of the bid price, less the expenses incurred in obtaining that portion of the recovery. Upon demand in writing by the assignor, the assignee shall, within one year from such demand, reassign the cause of action assigned under Government Code Sections 4550-4554 if the assignor has been or may have been injured by the violation of law for which the cause of action arose and (a) the assignee has not been injured thereby, or (b) the assignee declines to file a court action for the cause of action.

Article 14. TERMINATION BY COUNTY FOR CONVENIENCE

County reserves the right to terminate the Contract at any time upon determination by County's representative that termination of the Contract is in the best interest of County. County shall issue Contractor a written notice specifying that the Contract is to be terminated.

Upon receipt of said written notice, Contractor shall stop all work under the Contract except: (1) work specifically directed to be completed prior to termination, (2) work the Inspector deems necessary to secure the project for termination, (3) removal of equipment and plant from the site of the Work, (4) action that is necessary to protect materials from damage, (5) disposal of materials not yet used in the Work as directed by County, and (6) clean up of the site.

If the Contract is terminated for County's convenience as provided herein, all finished or unfinished work and materials previously paid for shall, at the option of County, become its property. Contractor shall be paid an amount which reflects costs incurred for work provided to the date of notification of termination. In addition, Contractor shall be paid the reasonable cost, as solely judged by County, and without profit, for all work performed to secure the project for termination.

Article 15. TERMINATION BY COUNTY FOR CAUSE

If Contractor is adjudged as bankrupt or insolvent, or makes a general assignment for the benefit of its creditors or if a trustee or receiver is appointed for Contractor or for any of its property, or if Contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or on more than one occasion fails to supply sufficient skilled workmen or suitable material or equipment, or on more than one occasion fails to make prompt payments to subcontractors for labor, materials, or equipment, or disregards the authority of the County's representative, or the Engineer, if one is appointed, or otherwise violates any provision of the Contract Documents, then County may, without prejudice to any other right or remedy and after giving Contractor and its Surety a minimum of ten (10) days from delivery of a written termination notice, terminate the services of Contractor and take equipment and machinery thereon owned by Contractor and finish the Work by whatever method County may deem expedient. In such case, Contractor shall not be entitled to receive any further payment until the Work is finished.

Without prejudice to other rights or remedies County may have, if Contractor fails to begin delivery of materials and equipment, to commence Work within the time specified, to maintain the rate of delivery of material, to execute the Work in the manner and at such locations as specified, or fails to maintain a work program which will ensure County's interest, or, if Contractor is not carrying out the intent of the Contract, an Inspector's written notice may be served upon Contractor and the Surety on its faithful performance bond demanding satisfactory compliance with the Contract. If Contractor or its Surety does not comply with such notice within five (5) days after receiving it, or after starting to comply, fails to continue, County may exclude it from the premises and take possession of all material and equipment, and complete the Work by County's own forces, by letting the unfinished Work to another Contractor, or by a combination of such methods.

Where Contractor's services have been so terminated by County, said termination shall not affect any right of County against Contractor then existing or which may thereafter accrue. Any retention or payment of monies by County due Contractor will not release Contractor from compliance with the Contract Documents.

If the unpaid balance of the Contract price exceeds the direct and indirect costs of completing the Work, including compensation for additional professional services, such excess shall be paid to Contractor. If the sums under the Contract are insufficient for completion, Contractor or Surety shall pay to County within five (5) days after the completion, all costs in excess of the Contract price. In any event, the cost of completing the Work shall be charged against Contractor and its Surety and may be deducted from any money due or becoming due from County.

The provisions of this Article shall be in addition to all other rights and remedies available to County under law.

If after notice of termination, it is determined for any reason that Contractor was not in default, the rights and obligations of the parties shall be the same as if the notice of termination had not been issued. The Contract shall be equitably adjusted to compensate for such termination.

Article 16. SUCCESSORS AND ASSIGNS

This Agreement shall bind and inure to the heirs, devisees, assignees, and successors in interest of Contractor and to the successors in interest of County in the same manner as if such parties had been expressly named herein.

Article 17. REPORTING ACCIDENTS

Contractor shall prepare and submit (within 24 hours of such incidents) reports of accidents at the site and anywhere else the work is in progress in which bodily injury is sustained or property loss in excess of Five Hundred Dollars (\$500.00) occurs.

Article 18. WORKERS' COMPENSATION CERTIFICATION

Contractor shall comply with Labor Code Sections 3700 et seq., requiring it to obtain Workers' Compensation Insurance, and sign a certificate of knowledge thereof.

CERTIFICATE OF KNOWLEDGE - LABOR CODE SECTION 3700

I am aware of the provisions of Section 3700 of the Labor Code, which require every employer to be insured against liability for workers' 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 work of this Contract.

Signed: _____ Date: _____

Article 19. WARRANTY

Contractor warrants to County that materials and equipment furnished for the Work will be of good quality and new, unless otherwise required or permitted under the Contract Documents, that the Work will be free from defects or flaws and is of the highest quality of workmanship and that the Work will conform with the requirements herein. Work not conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective.

Article 20. RETAINAGE

The retainage from payments is set forth in Section 6.4 "WITHHOLDINGS FROM PAYMENTS" of the Conditions of the Contract. Contractor may elect to receive one hundred percent (100%) of payments due as set forth in the Contract Documents, without retention, by depositing securities of equivalent value with County, in accordance with, and as set forth in Section 22300 of the Public Contract Code. Securities eligible for deposit hereunder shall be limited to those listed in Section 16430 of the Government Code, or bank or savings and loan certificates of deposit.

Article 21. PREVAILING WAGE REQUIREMENTS

Contractor shall pay and require payment of prevailing wage rates. In accordance with the provisions of California Labor Code Sections 1770 et seq., the general prevailing rate of wages in the county in which the Work is to be done has been determined by the Director of the California Department of Industrial Relations. These wage rates appear in the California Department of Transportation publication entitled General Prevailing Wage Rates. Interested parties can obtain the current wage information by submitting their requests to the Department of Industrial Relations, Division of Labor Statistics and Research, PO Box 420603, San Francisco CA 94142-0603, Telephone (415) 703-4708 or by referring to the website at <http://www.dir.ca.gov/dlsr/PWD>. The rates at the time of the bid advertisement date of a project will remain in effect for the life of the project in accordance with the California Code of Regulations, as modified and effective January 27, 1997.

Copies of the general prevailing rate of wages in the county in which the Work is to be done are also on file at the Chief Administrative Office, Facilities Division, and are available upon request.

In accordance with the provisions of Labor Code 1810, eight (8) hours of labor shall constitute a legal day's work upon all work done hereunder, and Contractor and any subcontractor employed under this Contract shall conform to and be bound by the provisions of Labor Code Sections 1810 through 1815.

Article 22. BUSINESS LICENSE

The County Business License Ordinance provides that it is unlawful for any person to furnish supplies or services, or transact any kind of business in the unincorporated territory of El Dorado County without possessing a County business license unless exempt under County Ordinance Code Section 5.08.070. Contractor warrants and represents that it shall comply with all of the requirements of the County Business License Ordinance, where applicable, prior to beginning work under this Contract and at all times during the term of this Contract.

Article 23. CONTRACT ADMINISTRATOR

The County Officer or employee with responsibility for administering this Agreement is Russ Fackrell, Facilities Manager, 3000 Fairlane Court, Suite 1, Placerville, CA, Chief Administrative Office, or successor.

Article 24. AUTHORIZED SIGNATURES

The parties hereto represent that the undersigned individuals executing this Agreement on their behalf are fully authorized to do so by law or other appropriate instrument and to bind upon said parties the obligations set forth herein.

Article 25. PARTIAL INVALIDITY

If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions will continue in full force and effect without being impaired or invalidated in any way.

Article 26. ENTIRE AGREEMENT

This document and the documents referred to herein or exhibits hereto are the entire Agreement between the parties and they incorporate or supersede all prior written or oral agreements or understandings.

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IN WITNESS WHEREOF, the said Chief Administration Office, Facilities Division of the County of El Dorado, State of California, has caused this Agreement to be executed by County's Board of Supervisors, on its behalf, and the said Contractor has signed this Agreement the day and year written below.

COUNTY OF EL DORADO

Dated: _____

Chair
Board of Supervisors
County of El Dorado

James S. Mitrisin, Clerk
Of the Board of Supervisors

By: _____

Dated: _____

CONTRACTOR

Dated: _____

Name of Company

By: _____

Authorized Representative

License No.

Federal Employer Identification No.

NOTE: If Contractor is a corporation, the legal name of the corporation shall be set forth above together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation; if Contractor is a co-partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts on behalf of the co-partnership; and if Contractor is an individual, his/her signature shall be placed above. Contractor executing this document on behalf of a corporation or partnership shall be prepared to demonstrate by resolution, article, or otherwise that it is appropriately authorized to act in these regards. For such corporation or partnership, such authority shall be demonstrated to the satisfaction of County. If signature is by an agent, other than officer of a corporation or a member of a partnership, an appropriate Power of Attorney shall be on file with the Department prior to signing this document.

Mailing Address: _____

Business Address: _____

City, Zip: _____

Phone: _____

Fax: _____

*** END OF CONTRACT ***

APPLICATION AND CERTIFICATE FOR PAYMENT - EXHIBIT A

TO OWNER:
 El Dorado County
 360 Fair Lane
 Placerville, CA 95667
 FROM CONTRACTOR:

PROJECT:

APPLICATION #: 1 Distribution to:
 PERIOD TO: _____
 PROJECT NOS: _____
 CONTRACT DATE: _____

County
 Cont Adm
 Contractor

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
 Continuation Sheet is attached.

1. ORIGINAL CONTRACT SUM----- \$
2. Net change by Change Orders----- \$
3. CONTRACT SUM TO DATE (Line 1 +/- 2) \$
4. TOTAL COMPLETED & STORED TO DATE-\$ \$
5. RETAINAGE: (Column G on Continuation Sheet)
 - a. _____ of Completed Work \$
 - (Columns D+E on Continuation Sheet)
 - b. _____ of Stored Material \$
 - (Column F on Continuation Sheet)
 Total Retainage (Line 5a + 5b or
 Total in Column 1 of Continuation Sheet----- \$
6. TOTAL EARNED LESS RETAINAGE----- \$
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 4 less Line 5 Total) \$
- (Line 6 from prior Certificate)----- \$
8. CURRENT PAYMENT DUE----- \$
- (Line 3 less Line 6) \$

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Contract Administrator		
Total approved this Month		
TOTALS		
NET CHANGES by Change Order		

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown therein is now due.

CONTRACTOR:

By: _____ Date: _____
 State of: California
 County of: El Dorado

CERTIFICATE FOR PAYMENT

In accordance with Contract Documents, based on on-site observations and the data comprising application, the Contract Administrator certifies to El Dorado County that to the best of the Contract Administrator's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED ----- \$
 (Attach explanation if amount certified differs from the amount applied for. Initial all figures on this application and on the Continuation Sheet that are changed to conform to the amount certified.)

CONTRACT ADMINISTRATOR

By: _____ Date: _____
 This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner of Contractor under this Contract.

CONTINUATION SHEET

ATTACHMENT TO PAY APPLICATION

PROJECT:

Page 2 of 2 Pages

APPLICATION NUMBER: 1

APPLICATION DATE:

PERIOD TO:

CONTRACTOR'S PROJECT NO:

A Item No.	B Description of Work	C Scheduled Value	D Work Completed		E This Period	F Materials Presently Stored (Not In D or E)	G Total Completed And Stored To Date (D + E + F)		H Balance To Finish (C - G)	I Retainage
			From Previous Application (D + E)				(G/C)			
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SUBTOTALS PAGE 2										

COUNTY OF EL DORADO

PAYMENT BOND

(Section 3247, Civil Code)

Bond No. _____

WHEREAS, the County of El Dorado, a political subdivision of the State of California, hereafter referred to as "Obligee", has awarded to Contractor

_____ hereafter referred to as "Principal", a contract for the work described as follows:

**PLACERVILLE JAIL CONTROL PANEL UPGRADE
 BID #14-968-014**

AND, WHEREAS, said Principal is required to furnish a bond in connection with said contract, guaranteeing the faithful performance thereof:

NOW, THEREFORE, we the undersigned Principal and Surety are held and firmly bound unto the Obligee, in the sum of _____ Dollars, (\$ _____) to be paid to the Obligee, for which payment we bind ourselves, jointly and severally.

THE CONDITION OF THIS OBLIGATION IS SUCH,

That if said Principal or its subcontractors shall fail to pay any of the persons named in Civil Code Section 3181, or amounts due under the Unemployment Insurance Code with respect to work or labor performed by such claimant, or any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the Principal and his subcontractors pursuant to Section 18806 of the Revenue and Taxation Code, with respect to such work and labor, that the Surety herein will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. In case suit is brought upon this bond, the Surety will pay a reasonable attorney's fee to be fixed by the court.

This bond shall inure to the benefit of any of the persons named in Civil Code Section 3181 as to give a right of action to such persons or their assigns in any suit brought upon this bond.

Dated: _____

Correspondence or Claims relating to this bond should be sent to the Surety at the following address:

 PRINCIPAL

 SURETY

 ATTORNEY-IN-FACT

NOTE: Signatures of those executing for the Principal and for the Surety must be properly acknowledged, and a Power of Attorney attached for the Surety.

NOTARY ACKNOWLEDGMENTS ATTACHED

PRINCIPAL

ACKNOWLEDGMENT

State of California

County of _____

On _____ before me, _____,
(here insert name and title of the officer)

personally appeared _____

_____ ,

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____

(Seal)

SURETY

ACKNOWLEDGMENT

State of California

County of _____

On _____ before me, _____,
(here insert name and title of the officer)

personally appeared _____

_____ ,

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____

(Seal)

COUNTY OF EL DORADO

PERFORMANCE BOND

Bond No. _____

KNOW ALL MEN BY THESE PRESENTS, that we _____

the Contractor in the Contract hereto annexed, as Principal, and _____

as Surety, are held firmly bound unto the County of El Dorado, a political subdivision of the State of California, hereinafter called the "Obligee" in the sum of _____ DOLLARS,

(\$ _____) lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, jointly and severally, firmly by these presents.

Signed, sealed and dated: _____

The condition of the above obligation is such that if said Principal as Contractor in the Contract hereto annexed shall faithfully perform each and all of the conditions of said Contract to be performed by him, and shall furnish all tools, equipment, apparatus, facilities, transportation, labor and material, other than material, if any, agreed to be furnished by the Obligee, necessary to perform and complete, and to perform and complete in a good and workmanlike manner, the work of **BID #14-968-033 for the PLACERVILLE JAIL CONTROL PANEL UPGRADE** in strict conformity with the terms and conditions set forth in the Contract hereto annexed, then this obligation shall be null and void; otherwise this bond shall remain in full force and effect and the said Surety will complete the Contract work under its own supervision, by Contract or otherwise, and pay all costs thereof for the balance due under terms of the Contract, and the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorney's fee to be fixed by the court.

This guarantee shall insure the Obligee during the work required by any Contract and for a period of one (1) year from the date of acceptance of the work against faulty or improper materials or workmanship that may be discovered during that time.

No right of action shall accrue under this bond to or for the use of any person other than the Obligee named herein.

Dated: _____, 20_____.

Correspondence or Claims relating to this bond should be sent to the Surety at the following address:

PRINCIPAL

SURETY

ATTORNEY-IN-FACT

NOTE: Signatures of those executing for the Principal and the Surety must be properly acknowledged, and a Power of Attorney attached for the Surety.

NOTARY ACKNOWLEDGMENTS ATTACHED

PRINCIPAL

ACKNOWLEDGMENT

State of California

County of _____

On _____ before me, _____,
(here insert name and title of the officer)

personally appeared _____

_____ ,

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____

(Seal)

SURETY

ACKNOWLEDGMENT

State of California

County of _____

On _____ before me, _____,
(here insert name and title of the officer)

personally appeared _____

_____ ,

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____

(Seal)

Withholding Exemption Certificate

2012

(This form can only be used to certify exemption from nonresident withholding under California Revenue and Taxation Code (R&TC) Section 18662. Do not use this form for exemption from wage withholding.)

590

File this form with your withholding agent. (Please type or print)

Withholding agent's name _____

Payee's name _____

Payee's SSN or ITIN
 SOS file no. CA corp. no. FEIN

Address (number and street, PO Box, or PMB no.) _____

Apt. no./ Ste. no. _____

City _____

State _____ ZIP Code _____

Read the following carefully and check the box that applies to the payee.

I certify that for the reasons checked below, the payee named on this form is exempt from the California income tax withholding requirement on payment(s) made to the entity or individual.

Individuals — Certification of Residency:

I am a resident of California and I reside at the address shown above. If I become a nonresident at any time, I will promptly notify the withholding agent. See instructions for General Information D, Who is a Resident, for the definition of a resident.

Corporations:

The above-named corporation has a permanent place of business in California at the address shown above or is qualified through the California Secretary of State (SOS) to do business in California. The corporation will file a California tax return and withhold on payments of California source income to nonresidents when required. If this corporation ceases to have a permanent place of business in California or ceases to do any of the above, I will promptly notify the withholding agent. See instructions for General Information F, What is a Permanent Place of Business, for the definition of permanent place of business.

Partnerships or limited liability companies (LLC):

The above-named partnership or LLC has a permanent place of business in California at the address shown above or is registered with the California SOS, and is subject to the laws of California. The partnership or LLC will file a California tax return and will withhold on foreign and domestic nonresident partners or members when required. If the partnership or LLC ceases to do any of the above, I will promptly inform the withholding agent. For withholding purposes, a limited liability partnership (LLP) is treated like any other partnership.

Tax-Exempt Entities:

The above-named entity is exempt from tax under California Revenue and Taxation Code (R&TC) Section 23701 _____ (insert letter) or Internal Revenue Code Section 501(c) _____ (insert number). The tax-exempt entity will withhold on payments of California source income to nonresidents when required. If this entity ceases to be exempt from tax, I will promptly notify the withholding agent. Individuals cannot be tax-exempt entities.

Insurance Companies, Individual Retirement Arrangements (IRAs), or Qualified Pension/Profit Sharing Plans:

The above-named entity is an insurance company, IRA, or a federally qualified pension or profit-sharing plan.

California Trusts:

At least one trustee and one noncontingent beneficiary of the above-named trust is a California resident. The trust will file a California fiduciary tax return and will withhold on foreign and domestic nonresident beneficiaries when required. If the trustee becomes a nonresident at any time, I will promptly notify the withholding agent.

Estates — Certification of Residency of Deceased Person:

I am the executor of the above-named person's estate. The decedent was a California resident at the time of death. The estate will file a California fiduciary tax return and will withhold on foreign and domestic nonresident beneficiaries when required.

Nonmilitary Spouse of a Military Servicemember:

I am a nonmilitary spouse of a military servicemember and I meet the Military Spouse Residency Relief Act (MSRRA) requirements. See instructions for General Information E, MSRRA.

CERTIFICATE: Please complete and sign below.

Under penalties of perjury, I hereby certify that the information provided in this document is, to the best of my knowledge, true and correct. If conditions change, I will promptly notify the withholding agent.

Payee's name and title (type or print) _____ Daytime telephone no. _____

Payee's signature ► _____ Date _____

Instructions for Form 590

Withholding Exemption Certificate

References in these instructions are to the California Revenue and Taxation Code (R&TC).

General Information

For purposes of California income tax, references to a spouse, husband, or wife also refer to a Registered Domestic Partner (RDP) unless otherwise specified. For more information on RDPs, get FTB Pub. 737, Tax Information for Registered Domestic Partners.

Private Mail Box (PMB) – Include the PMB in the address field. Write “PMB” first, then the box number. Example: 111 Main Street PMB 123.

Foreign Address – Enter the information in the following order: City, Country, Province/Region, and Postal Code. Follow the country's practice for entering the postal code. **Do not** abbreviate the country's name.

A Purpose

Use Form 590, Withholding Exemption Certificate, to certify an exemption from nonresident withholding. California residents or entities should complete and present Form 590 to the withholding agent. The withholding agent is then relieved of the withholding requirements if the agent relies in good faith on a completed and signed Form 590 unless told by the FTB that the form should not be relied upon.

The following are excluded from withholding and completing this form:

- The United States and any of its agencies or instrumentalities
- A state, a possession of the United States, the District of Columbia, or any of its political subdivisions or instrumentalities
- A foreign government or any of its political subdivisions, agencies, or instrumentalities

Important – This form cannot be used for exemption from wage and real estate withholding.

- If you are an employee, any wage withholding questions should be directed to the FTB General Information number, 800.852.5711. Employers should call **888.745.3886** or go to **edd.ca.gov**.
- Sellers of California real estate use Form 593-C, Real Estate Withholding Certificate, to claim an exemption from real estate withholding.

B Requirement

R&TC Section 18662 requires withholding of income or franchise tax on payments of California source income made to nonresidents of California.

Withholding is required on the following, but is not limited to:

- Payments to nonresidents for services rendered in California.
- Distributions of California source income made to domestic nonresident S corporation

shareholders, partners and members and allocations of California source income made to foreign partners and members.

- Payments to nonresidents for rents if the payments are made in the course of the withholding agent's business.
- Payments to nonresidents for royalties with activities in California.
- Distributions of California source income to nonresident beneficiaries from an estate or trust.
- Prizes and winnings received by nonresidents for contests in California.

However, withholding is optional if the total payments of California source income are \$1,500 or less during the calendar year.

For more information on withholding get FTB Pub. 1017, Resident and Nonresident Withholding Guidelines. To get a withholding publication see General Information H, Publications, Forms, and Additional Information.

Backup Withholding – Beginning on or after January 1, 2010, with certain limited exceptions, payers that are required to withhold and remit backup withholding to the Internal Revenue Service (IRS) are also required to withhold and remit to the Franchise Tax Board (FTB). The California backup withholding rate is 7% of the payment. For California purposes, dividends, interests, and any financial institutions release of loan funds made in the normal course of business are exempt from backup withholding. For additional information on California backup withholding, go to **ftb.ca.gov** and search for **backup withholding**.

If a payee has backup withholding, the payee must contact the FTB to provide a valid Taxpayer Identification Number (TIN) before filing a tax return. The following are acceptable TINs: social security number (SSN); individual taxpayer identification number (ITIN); federal employer identification number (FEIN); California corporation number (CA Corp No.); or Secretary of State (SOS) file number. Failure to provide a valid TIN will result in the denial of the backup withholding credit. For more information go to **ftb.ca.gov** and search for **backup withholding**.

C Who Certifies this Form

Form 590 is certified by the payee. An incomplete certificate is invalid and the withholding agent should not accept it. If the withholding agent receives an incomplete certificate, the withholding agent is required to withhold tax on payments made to the payee until a valid certificate is received. In lieu of a completed certificate on the preprinted form, the withholding agent may accept as a substitute certificate a letter from the payee explaining

why the payee is not subject to withholding. The letter must contain all the information required on the certificate in similar language, including the under penalty of perjury statement and the payee's taxpayer identification number. The withholding agent must retain a copy of the certificate or substitute for at least four years after the last payment to which the certificate applies, and provide it upon request to the Franchise Tax Board.

For example, if an entertainer (or the entertainer's business entity) is paid for a performance, the entertainer's information must be provided. **Do not** submit the entertainer's agent or promoter information.

The grantor of a grantor trust shall be treated as the payee for withholding purposes. Therefore, if the payee is a grantor trust and one or more of the grantors is a nonresident, withholding is required. If all of the grantors on the trust are residents, no withholding is required. Resident grantors can check the box on Form 590 labeled “Individuals — Certification of Residency.”

D Who is a Resident

A California resident is any individual who is in California for other than a temporary or transitory purpose or any individual domiciled in California who is absent for a temporary or transitory purpose.

An individual domiciled in California who is absent from California for an uninterrupted period of at least 546 consecutive days under an employment-related contract is considered outside California for other than a temporary or transitory purpose.

An individual is still considered outside California for other than a temporary or transitory purpose if return visits to California do not total more than 45 days during any taxable year covered by an employment contract.

This provision does not apply if an individual has income from stocks, bonds, notes, or other intangible personal property in excess of \$200,000 in any taxable year in which the employment-related contract is in effect.

A spouse/RDP absent from California for an uninterrupted period of at least 546 days to accompany a spouse/RDP under an employment-related contract is considered outside of California for other than a temporary or transitory purpose.

Generally, an individual who comes to California for a purpose which will extend over a long or indefinite period will be considered a resident. However, an individual who comes to perform a particular contract of short duration will be considered a nonresident.

For assistance in determining resident status,

get FTB Pub. 1031, Guidelines for Determining Resident Status, and FTB Pub. 1032, Tax Information for Military Personnel, or call the FTB at 800.852.5711 or 916.845.6500.

E Military Spouse Residency Relief Act (MSRRA)

Generally, for tax purposes you are considered to maintain your existing residence or domicile. If a military servicemember and nonmilitary spouse have the same state of domicile, the MSRRA provides:

- A spouse shall not be deemed to have lost a residence or domicile in any state solely by reason of being absent to be with the servicemember serving in compliance with military orders.
- A spouse shall not be deemed to have acquired a residence or domicile in any other state solely by reason of being there to be with the servicemember serving in compliance with military orders.

Domicile is defined as the one place:

- Where you maintain a true, fixed, and permanent home
- To which you intend to return whenever you are absent

A military servicemember's nonmilitary spouse is considered a nonresident for tax purposes if the servicemember and spouse have the same domicile outside of California and the spouse is in California solely to be with the servicemember who is serving in compliance with Permanent Change of Station orders.

Note: California may require nonmilitary spouses of military servicemembers to provide proof that they meet the criteria for California personal income tax exemption as set forth in the MSRRA.

Income of a military servicemember's nonmilitary spouse for services performed in California is not California source income subject to state tax if the spouse is in California to be with the servicemember serving in compliance with military orders, and the servicemember and spouse have the same domicile in a state other than California.

For additional information or assistance in determining whether the applicant meets the MSRRA requirements, get FTB Pub. 1032.

F What is a Permanent Place of Business

A corporation has a permanent place of business in California if it is organized and existing under the laws of California or if it is a foreign corporation qualified to transact intrastate business by the SOS. A corporation that has not qualified to transact intrastate business (e.g., a corporation engaged exclusively in interstate commerce) will be considered as having a permanent place of business in California only if it maintains a permanent office in California that is permanently staffed by its employees.

G Withholding Agent

Keep Form 590 for your records. **Do not** send this form to the FTB unless it has been specifically requested.

For more information, contact Withholding Services and Compliance, see General Information H.

The payee must notify the withholding agent if any of the following situations occur:

- The individual payee becomes a nonresident.
- The corporation ceases to have a permanent place of business in California or ceases to be qualified to do business in California.
- The partnership ceases to have a permanent place of business in California.
- The LLC ceases to have a permanent place of business in California.
- The tax-exempt entity loses its tax-exempt status.

The withholding agent must then withhold and report the withholding using Form 592, Resident and Nonresident Withholding Statement, and remit the withholding using Form 592-V, Payment Voucher for Resident and Nonresident Withholding. Form 592-B, Resident and Nonresident Withholding Tax Statement, is retained by the withholding agent

and a copy is given to the payee.

H Publications, Forms, and Additional Information

You can download, view, and print California tax forms and publications at ftb.ca.gov.

To have publications or forms mailed to you or to get additional nonresident withholding information, contact the Withholding Services and Compliance.

WITHHOLDING SERVICES AND
COMPLIANCE MS F182
FRANCHISE TAX BOARD
PO BOX 942867
SACRAMENTO CA 94267-0651

Telephone: 888.792.4900
916.845.4900
Fax: 916.845.9512

OR to get forms by mail write to:

TAX FORMS REQUEST UNIT MS F284
FRANCHISE TAX BOARD
PO BOX 307
RANCHO CORDOVA CA 95741-0307

For all other questions unrelated to withholding or to access the TTY/TDD numbers, see the information below.

Internet and Telephone Assistance

Website: ftb.ca.gov
Telephone: 800.852.5711 from within the
United States
916.845.6500 from outside the
United States
TTY/TDD: 800.822.6268 for persons with
hearing or speech impairments

Asistencia Por Internet y Teléfono

Sitio web: ftb.ca.gov
Teléfono: 800.852.5711 dentro de los
Estados Unidos
916.845.6500 fuera de los Estados
Unidos
TTY/TDD: 800.822.6268 personas con
discapacidades auditivas
y del habla



County of El Dorado

OFFICE OF AUDITOR-CONTROLLER

360 FAIR LANE
PLACERVILLE, CALIFORNIA 95667
Phone: (530) 621-5487 FAX: (530) 295-2535

JOE HARN, CPA
Auditor-Controller

BOB TOSCANO
Assistant Auditor-Controller

PAYEE DATA RECORD

(Required in lieu of IRS W-9 when receiving payment from the County of El Dorado)

Version: June 2011

1	INSTRUCTIONS: Complete all information on this form. Sign, date, and return to the address shown at the bottom of this page. Prompt return of this fully completed form will prevent delays in processing payments. Information provided in this form will be used by the County of El Dorado to prepare Information Returns (1099), for withholding on payments to nonresident payees, and for reporting to the Employment Development Department (EDD). See reverse side for more information and Privacy Statement.		
2	PAYEE'S LEGAL BUSINESS NAME (Type or Print)		
	INDIVIDUALS AND SOLE PROPRIETORS – ENTER NAME AS SHOWN ON SSN (Last, First, M.I.)		PHONE NUMBER:
	MAILING ADDRESS		BUSINESS ADDRESS
	CITY, STATE, ZIP CODE		CITY, STATE, ZIP CODE
3	ENTER FEDERAL EMPLOYER IDENTIFICATION NUMBER (FEIN): <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		NOTE: Individuals and sole proprietors are required to provide their SSN (FEIN may be provided in addition to but not in lieu of the SSN)
PAYEE ENTITY TYPE CHECK ONE BOX ONLY	<input type="checkbox"/> PARTNERSHIP CORPORATION: <input type="checkbox"/> ESTATE OR TRUST <input type="checkbox"/> MEDICAL (e.g., dentistry, psychotherapy, chiropractic, etc.) <input type="checkbox"/> LIMITED LIABILITY COMPANY <input type="checkbox"/> LEGAL (e.g., attorney services) <input type="checkbox"/> EXEMPT (nonprofit) <input type="checkbox"/> ALL OTHER		
	<input type="checkbox"/> INDIVIDUAL OR SOLE PROPRIETOR ENTER SOCIAL SECURITY NUMBER: <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		
	(SSN required by authority of California Revenue and Tax Code Section 18646)		
4	Applicable <u>only</u> if the business address provided in Part 2 is <u>not</u> a physical California address NOTE: If you are a California nonresident providing services to County of El Dorado in California, seven percent (7%) of the payment will be withheld and remitted to the California Franchise Tax Board (FTB) unless you are exempt or have obtained a waiver from FTB. Mark if any of the following apply: <input type="checkbox"/> Exempt from withholding of California income (attach California Form 590) <input type="checkbox"/> Obtained Franchise Tax Board waiver of State withholding (attach a copy) If you are a California nonresident and charge California sales tax, a valid California sales tax permit number is required: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		
5	I hereby certify under penalty of perjury that the information provided on this document is true and correct. Should my residency status change, I will promptly notify the County of El Dorado at the address listed below.		
	AUTHORIZED PAYEE REPRESENTATIVE'S NAME (Type or Print)		TITLE
	SIGNATURE	DATE	TELEPHONE
6	Please return completed form to: Department/Office: <u>County of El Dorado, Procurement & Contracts</u> Mailing Address: <u>360 Fair Lane</u> City/State/Zip: <u>Placerville, CA 95667</u> Telephone: <u>530 621 5830</u> Fax: <u>530 295 2537</u> 13-1508 B 40 of 245		

PAYEE DATA RECORD

(REVERSE)

<p>1</p>	<p>Requirement to Complete Payee Data Record</p> <p>A completed Payee Data Record is required for payments to all non-governmental entities and will be kept on file at the County of El Dorado Auditor-Controller's Office.</p> <p>Payees who do not wish to complete the Payee Data Record may elect to not do business with the County of El Dorado. If the payee does not complete the form and the required payee data is not otherwise provided, payment may be reduced for federal backup withholding and nonresident State income tax withholding. Amounts reported on Information Returns (1099) are in accordance with the Internal Revenue Code and the California Revenue and Taxation Code.</p>
<p>2</p>	<p>Enter the payee's legal business name. Sole proprietorships must also include the owner's full name. An individual must list his/her full name. The mailing address should be the address at which the payee chooses to receive correspondence. Do not enter payment address or lock box information here.</p>
<p>3</p> <p>4</p>	<p>Check the box that corresponds to the payee business type. Check only one box. Corporations must check the box that identifies the type of corporation. The County of El Dorado requires that all parties entering into business transactions that may lead to payment(s) from the County provide their Taxpayer Identification Number (TIN). The TIN is required by the California Revenue and Taxation Code Section 18646 to facilitate tax compliance enforcement activities and the preparation of Form 1099 and other information returns as required by the Internal Revenue Code Section 6109(a).</p> <p>The TIN for individuals and sole proprietorships is the Social Security Number (SSN). Only partnerships, estates, trusts, limited liability corporations and corporations will enter their Federal Employer Identification Number (FEIN).</p> <p>Are you a California resident or nonresident?</p> <p>A corporation will be defined as a "resident" if it has a permanent place of business in California or is qualified through the Secretary of State to do business in California.</p> <p>A partnership is considered a resident partnership if it has a permanent place of business in California. An estate is a resident if the decedent was a California resident at time of death. A trust is a resident if at least one trustee is a California resident.</p> <p>For individuals and sole proprietors, the term "resident" includes every individual who is in California for other than a temporary or transitory purpose and any individual domiciled in California who is absent for a temporary or transitory purpose. Generally, an individual who comes to California for a purpose that will extend over a long or indefinite period will be considered a resident. However, an individual who comes to perform a particular contract of short duration will be considered a nonresident.</p> <p>Payments to all nonresidents may be subject to withholding. Nonresident payees performing services in California or receiving rent, lease, or royalty payments from property (real or personal) located in California will have 7% of their total payments withheld for State income taxes. However, no withholding is required if total payments to the payee are \$1,500 or less for the calendar year. Nonresidents who have been granted a waiver on payments of California source income from the California Franchise Tax Board must submit a copy of the waiver.</p> <p>For information on Nonresident Withholding, contact the Franchise Tax Board at the numbers listed below: Withholding Services and Compliance Section: 1-888-792-4900 E-mail address: wscs.gen@ftb.ca.gov For hearing impaired with TDD, call: 1-800-822-6268 Website: www.ftb.ca.gov</p> <p>California nonresidents charging California sales tax are required to provide their California sales tax number.</p>
<p>5</p>	<p>Provide the name, title, signature, and telephone number of the authorized individual completing this form. Provide the date the form was completed.</p>
<p>6</p>	<p>This section must be completed by the department/office requesting the information.</p>
	<p>Privacy Statement</p> <p>Section 7(b) of the Privacy Act of 1974 (Public Law 93-579) requires that any federal, State, or local governmental agency, which requests an individual to disclose their social security account number, shall inform that individual whether that disclosure is mandatory or voluntary, by which statutory or other authority such number is solicited, and what uses will be made of it.</p> <p>It is mandatory to furnish the information requested. Federal law requires that payment for which the requested information is not provided is subject to federal backup withholding and State law imposes noncompliance penalties of up to \$20,000.</p> <p>You have the right to access records containing your personal information, such as your SSN. To exercise that right, please contact the County of El Dorado Auditor-Controller's Office in writing.</p> <p>All questions should be referred to the County of El Dorado Auditor-Controller's Office.</p>

CERTIFICATE OF INSURANCE FORM FOR CONTRACTORS, ARCHITECTS AND/OR ENGINEERS

CERTIFICATE ISSUER PHONE ()	DATE EXECUTED: THIS CERTIFICATE DOES NOT AMEND, EXTEND, OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. COMPANIES AFFORDING COVERAGE		
INSURED PHONE ()	COMPANY A LETTER COMPANY B LETTER COMPANY C LETTER COMPANY D LETTER COMPANY E LETTER	COMPANY RATING COMPANY RATING COMPANY RATING COMPANY RATING COMPANY RATING	
PROJECT DESCRIPTION PROJECT TITLE: PROJECT NUMBER: LOCATION:			

THIS IS TO CERTIFY that policies of insurance listed below have been issued to the insured named above for the policy period indicated. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusion and conditions of such policies.

CL	Type of Insurance Coverage	Policy Number	Policy Effective Date	Policy Expiration Date	Limits of Liability (in Thousands)
	GENERAL LIABILITY <input type="checkbox"/> Commercial General Liability <input type="checkbox"/> Occurrence <input type="checkbox"/> Claims Made <input type="checkbox"/> Owner's & Contractor's Protective <input type="checkbox"/> General Aggregate * <input type="checkbox"/> Per Project <input type="checkbox"/> Per Location				GENERAL AGGREGATE \$ PRODUCTS-COMP/OPS AGGREGATE \$ PERSONAL & ADVERTISING INJURY \$ EACH OCCURRENCE \$ FIRE DAMAGE (ANY ONE FIRE) \$ MEDICAL EXPENSES (ANY ONE PERSON) \$ DEDUCTIBLE \$
	ARCHITECT'S AND/OR ENGINEER'S PROFESSIONAL LIABILITY <input type="checkbox"/> Claims Made <input type="checkbox"/> Project				GENERAL AGGREGATE \$ EACH CLAIM \$ DEDUCTIBLE \$
	AUTOMOBILE LIABILITY <input type="checkbox"/> Any Auto <input type="checkbox"/> All Owned Autos <input type="checkbox"/> Scheduled Autos <input type="checkbox"/> Hired Autos <input type="checkbox"/> Non-Owned Autos <input type="checkbox"/> Garage Liability				COMBINED SINGLE LIMIT \$ BODILY INJURY (PER PERSON) \$ BODILY INJURY (PER ACCIDENT) \$ PROPERTY DAMAGE \$ DEDUCTIBLE \$
	EXCESS LIABILITY <input type="checkbox"/> Umbrella Form <input type="checkbox"/> Other Than Umbrella Form				EACH OCCURRENCE \$ AGGREGATE \$
	<input type="checkbox"/> WORKER'S COMPENSATION				-----STATUTORY-----
	EMPLOYER'S LIABILITY				(EACH ACCIDENT) \$ (DISEASE - POLICY LIMIT) \$ (DISEASE - EACH EMPLOYEE) \$
	OTHER <input type="checkbox"/> Installation Floater <input type="checkbox"/> Builder's Risk <input type="checkbox"/>				\$ \$ \$

* The General Aggregate limit, under Limits of Insurance, applies separately to each of the projects away from premises owned by or rented by you.

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS/ADDITIONAL INSURED: The County of El Dorado its officers, officials, employees and volunteers are made additional insured, but only insofar as the operations under this contract are concerned. OTHER ADDITIONAL ISSURED:

CERTIFICATE HOLDER	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED OR TERMINATED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL GIVE THIRTY (30) DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, IN ADVANCE OF THE EFFECTIVE DATE OF SUCH CANCELLATION OR TERMINATION.
	AUTHORIZED REPRESENTATIVE SIGNATURE, TITLE, TYPED NAME, SSN AND PHONE NUMBER:

CONTRACTOR'S GUARANTEE
COUNTY OF EL DORADO
PLACERVILLE JAIL CONTROL PANEL UPGRADE
BID #14-968-033

As Contractor for the above referenced project, we hereby agree to repair or replace any or all work provided hereunder which is defective due to faulty materials, poor workmanship, or defective equipment at no expense to the County of El Dorado, ordinary wear and tear and unusual abuse or neglect excepted, during the term of the contract and provide the manufacturer one (1) year warranty period from the date of final acceptance of the work.

We further agree to repair or replace any and all adjacent areas which have been damaged or displaced due to our work performed under this contract at no expense to the County of El Dorado during the term of this contract for a period of one (1) year from the date of final acceptance of the work.

If a warranty or guarantee exceeding one (1) year is provided by the supplier or manufacturer of any equipment or materials used in this Project, or if a warranty or guarantee exceeding one (1) year is required elsewhere in these Contract Documents, then the guarantee for such equipment or materials shall be extended for such term. We expressly agrees to act as co-guarantor of such equipment and materials, and we shall supply County with all warranty and guaranty documents relative to equipment and materials incorporated in the job and guaranteed by its suppliers or manufacturers.

We agree that this guarantee and the rights and obligations accruing there from shall be in addition and not by way of limitation in any manner whatsoever to the rights, obligations, warranties or remedies otherwise provided for by law.

In the event of our failure to comply with the above mentioned conditions with (ten) 10 days after being notified in writing by the County of El Dorado, we hereby authorize the County of El Dorado to proceed to have said defects repaired and made good at our expense and we will honor and pay all costs and charges therefore upon written demand.

EXECUTED on this _____ day of _____, 2013.

CONTRACTOR

By _____

Title _____

By _____

Title _____

*** END OF DOCUMENT ***

COUNTY OF EL DORADO

PLACERVILLE JAIL CONTROL PANEL UPGRADE

BID #14-968-033

CONDITIONS OF THE CONTRACT

Article 1

GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

- 1.1.1 **County:** The County of El Dorado, a political subdivision of the State of California.
- 1.1.2 **Owner:** The County of El Dorado is the Owner and is identified as the Owner in the Contract and these Contract Conditions. The term Owner, and pronouns in place of the same shall mean the County of El Dorado acting by and through its duly authorized representative.
- 1.1.3 **Owner's Representative:** The Chief Administrative Office, Facilities Manager, or designated representative.
- 1.1.4 **Architect:** The person holding a valid California State Architect's license, whose firm has been designated within the Contract Documents as the Architect to provide services on the Project. When the Architect is referred to within the Contract Documents and no Architect has in fact been designated, then the matter shall be referred to the County and shall be interpreted as Owner's Representative.
- 1.1.5 **Project Manager:** Project Manager or such other designated representative of the Owner. The Project Manager has such duties and authority as may be set forth in the Contract Documents.
- 1.1.6 **Contractor:** The person or entity identified as such in the Contract and is referred to throughout the Contract Documents as if singular in number. The term Contractor refers to the Contractor or the Contractor's authorized representative.
- 1.1.7 **Inspector:** The individual designated by the Owner as the Inspector as set forth in Paragraph 2.1.2.
- 1.1.8 **Subcontractor:** Those contractors, of whatever tier, furnishing labor or material, or both, for the Work under the Contract with the Contractor.
- 1.1.9 **Substantial Completion:** The stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.
- 1.1.10 **Final Acceptance:** Conditions upon which the County will accept Work as satisfactorily completed in accordance with the Contract Documents. Requirements include, but are not limited to:
1. All Systems having been tested and accepted as having met requirements of the Contract Documents.
 2. All as-built drawings 2 copies and 3copies of the manufacturer's product data and installation instructions having been submitted by the Contractor, reviewed by the Architect, and accepted by the Owner.

3. All punch list work, as directed by the Owner, having been completed by the Contractor.
 4. Acceptance of the Work by the Purchasing Agent.
- 1.1.11 Final Payment: The Final Payment shall be the only Payment made to Contractor and shall not be considered to be the payment of any or all of the retention.
- 1.1.12 Architect's Supplemental Instructions/Instruction Bulletins: A written order of the Architect and reviewed by the Owner's Representative directing the Contractor to provide supplemental instructions, interpretations, or conduct minor changes in work involving neither extra cost nor extra time and being consistent with the scope and functioning of the project.
- 1.1.13 Construction Change Directive: A written order issued by the Architect and signed by the Owner directing a change in the Work and stating a proposed basis for adjustment, if any, of Contract Time or Sum. The Owner may by Change Directive, without invalidating the Contract and without Contractor's agreement, order changes in the Work. This procedure will be used in the absence of agreement between Owner and Contractor, for subsequent inclusion in a Change Order.
- 1.1.14 Change Order: A Change Directive signed by the Owner and Contractor stating their agreement upon all of the following: 1) a change in the Work, 2) the amount of the adjustment in the Contract Price, if any, and 3) the extent of the adjustment in the Contract Time, if any.
- 1.1.15 Contract Documents: The Contract Documents shall include the documents described in Article 2 of the Contract, including Architect's Supplemental Instructions, Construction Change Directives, and Change Orders.
- 1.1.16 Work: The construction and services required by the Contract Documents, including all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations.
- 1.1.17 Project: The total construction of the Work performed under the Contract Documents.
- 1.1.18 Plans: The graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams, specifically the Plans entitled "County of El Dorado Generator Project".
- 1.1.19 Technical Specifications: That portion of the Contract Documents Division 1 through 26 consisting of the technical written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.
- 1.1.20 Claim: A demand or assertion by the Contractor seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time, or other relief with respect to the terms of the Contract. Claims must be made by written notice and shall include a demand for the Owner's decision. The responsibility to substantiate claims and to resolve the claims of subcontractors of whatever tier shall rest with the Contractor.
- 1.1.21 Work Not Included: Except for such auxiliary work as shown or specified, or is necessary as part of the construction, the following is NOT included in this contract: Any work shown but marked "Not in Contract" (NIC) or otherwise designated to be done under another contract or by Owner.
- 1.1.22 Furnish (material): To supply and deliver to the project ready for installation and in operating condition.
- 1.1.23 Install (service or labor): To place in final position, complete, anchored, connected, and in operable condition with respect to required codes and/or governing agency requirements.
- 1.1.24 Provide: To furnish and install complete. When "Furnish", "Install", or "Provide" is stated, "Provide" is implied.

1.1.25 **Construct:** To “Furnish” materials to “Install” in final position, complete, anchored, and connected with respect to required codes, requirements, Contract Documents, and details.

1.1.26 **Day(s):** All references to “day” or “days” in these Contract Documents shall be defined as calendar-day or calendar-days.

1.2 CONTRACT DOCUMENTS

1.2.1 **One Document:** The Contract Documents are one document and any work shown or mentioned shall be performed or furnished. The Contractor admits and agrees that the Contract Documents exhibit the intent and purpose of the Owner in regard to the Work, and that they are not complete in every detail and are to be considered as showing the purpose and intent only; and he further agrees to furnish all labor or material for any detail that is necessary to carry out the intent and purpose of the Specifications without extra charge.

1.2.2 **Misuse of Words or Punctuation:** The misplacement, addition, or omission of any word, letter, or punctuation mark will not in any way change the intent or meaning of the Contract Documents. Any part of the Work, or any article pertaining thereto which is not specifically set forth in these Contract Documents, but which is necessary for the proper completion of the Work, is to be supplied and set in place at the Contractor's expense, the same as if it had been mentioned in these Contract Documents. The Contractor shall furnish all things necessary to make a good and workmanlike job in accordance with the intent and purpose of the Contract Documents.

1.3 ASSIGNMENT OF CONTRACT

1.3.1 **Mutual Consent:** Neither party to the Contract shall assign the Contract without the written consent of the other party, nor shall the Contractor assign any moneys due or to become due to him hereunder without the written consent of the Owner.

1.3.2 **Assignment Under Anti-Trust Claims:** In accordance with Section 4552 of the California Government Code, and Section 7103 of the Public Contract Code, Contractor and subcontractors shall conform to the following requirements:

1. In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, Contractor or subcontractors offers and agrees to assign to the Owner all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C Section 15) or under the Cartwright Act, [Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code], arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the Owner tenders Final Payment to the Contractor, without further acknowledgment by the parties.
2. If an awarding body or public purchasing body receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under Government Code Sections 4550-4554, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the public body any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the public body as part of the bid price, less the expenses incurred in obtaining that portion of the recovery. Upon demand in writing by the assignor, the assignee shall, within one year from such demand, reassign the cause of action assigned under Government Code Sections 4550-4554 if the assignor has been or may have been injured by the violation of law for which the cause of action arose and (a) the assignee has not been injured thereby, or (b) the assignee declines to file a court action for the cause of action.

1.4 WAIVER OF "COMMON PRACTICE"

1.4.1 The Contractor shall waive "common practice" and "common usage" as construction criteria wherever the Contract Documents details, plans, technical specifications, governing codes, or ordinances require greater quantity or better quality than common practice or common usage would require.

1.5 EXCESSIVE COSTS

1.5.1 Failure to Comply with Contract: If Contractor fails to comply with any Contract requirements, including any required coordination with other contractors, and that failure results in additional costs to Owner, then Contractor shall be liable for such additional costs.

1.5.2 Construction Methods: If Contractor's construction methods and techniques result in additional costs to Owner, after notice, such Contractor shall be responsible for cost attributable to his methods and techniques.

Article 2

OWNER

2.1 OWNER'S REPRESENTATIVE

2.1.1 Owner Representative: The Owner will be represented by the Owner's Representative who shall oversee the performance of the Contract on behalf of the Owner.

2.1.2 Owner May Appoint Inspector: Owner shall be entitled to appoint an agent as Inspector who shall see that the performance of the Work is in strict accordance with the Contract Documents on behalf of the Owner.

2.1.3 Communication: In order that the Owner may act upon expert advice and upon good procedure, all communications from the Contractor shall be in writing and will be through said Owner's Representative or Inspector, as the Owner may direct, and all communications and instructions from the Owner to the Contractor will be so routed. The Owner reserves the right to alter this procedure without the consent of the Contractor. All communications not in compliance herewith, shall be considered non-binding on the Owner.

2.2 RIGHTS OF OWNER

2.2.1 Right to Clean Up: Subject to the strict prohibition against maintaining a nuisance, if a dispute arises between the Contractor, Subcontractors, or separate contractors as to the responsibility under their respective Contracts for maintaining the premises and surrounding area free from waste materials and rubbish the Owner may, but need not, clean up and allocate the cost among those responsible as the Inspector determines to be just.

2.2.2 Right to Accept Imperfect Work: If any part or portion of the Work completed under this Contract is defective and not in accordance with the Plans or Contract Documents, and if the imperfection is judged by Owner to be not of sufficient magnitude or importance so as to make the Work unacceptable, then Owner shall have the right and authority to retain such Work but will make such deductions in Contract Price as may be equitable and reasonable. However, Owner does not by this section; waive any other rights provided for herein.

2.2.3 Right to do Adjacent Work: The Owner reserves the right to perform construction or operations on the site of the Work. In doing this Owner may use its own forces or award separate contracts in connection with other construction or operations on the site but not covered by the Contract Documents. Contractor shall defend, indemnify, and hold Owner harmless for costs incurred by Owner that are payable to a separate contractor because of delays, improperly timed activities, or defective construction by the Contractor, unless such costs are incurred due to the sole or active negligence of Owner.

2.2.4 **Right to Finish Contractor's Work:** If the Contractor defaults or neglects to carry out all or any part of the Work in accordance with the Contract Documents, the Owner has the right, exercisable solely at Owner's discretion, to commence and continue completion of the Work with diligence and promptness. In such an event, if the Owner's cost to complete to Work exceeds the remaining balance of the Contract with the Contractor, Contractor shall reimburse the Owner for such excess costs.

2.2.5 **Right of Partial Use of Project:** The Owner may occupy or use any completed or partially completed portion of the Work at any stage, upon agreement of Owner and Contractor.

1. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents.
2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld.
3. Immediately prior to such partial occupancy or use, the Owner and Contractor shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.
4. Unless otherwise agreed upon in writing, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of work not complying with the requirements of the Contract Documents.
5. No claim for acceleration, delay, or hindrance, may be made by Contractor on his own behalf or that of any of his subcontractors, for any delays, accelerations, or hindrances that may arise out of Owner's partial occupancy of the Project.

2.2.6 **Right to Audit:** Contractor shall maintain and make available to the County, State Auditor, or to any of their duly authorized representatives all books, papers, job cost records, detailed cost estimates, claims, and accounts, including payment, property, payroll, personnel, subcontractor records, and financial records related to or which arise out of the Work or under terms of this Contract. Contractor shall maintain such books, records, data and documents in accordance with generally accepted accounting principles and in accordance with these Contract Conditions and federal and state requirements. These books, papers, records, claims, and accounts shall be made available for examination during normal business hours and shall be readily available and accessible at Contractor's principal place of business in California, for audit during normal business hours at such place of business. Contractor shall provide office space, photocopies and other assistance to enable audit or inspection representatives to conduct such audits or inspections. This right to audit books and records directly related to this Contract shall also extend to any first-tier subcontractors employed under this Contract. Contractor shall incorporate this provision in any subcontract entered into as a result of this Contract and shall require its subcontractors to agree to cooperate with the above-listed agencies by making all appropriate and relevant Project records available to those agencies for audit and copying.

All of Contractor's books, papers, job cost records, detailed cost estimates, claims, and accounts, including payment, property, payroll, personnel, subcontractor records, and financial records related to or which arise out of the work or under terms of this Contract shall be retained for access, inspection and/or audit by the County, the State Auditor, or their duly authorized representatives for at least three (3) after County's final payment to Contractor and/or the final resolution of any claims under this Contract. Contractor shall incorporate this provision in any subcontract entered into as a result of this Contract.

2.3 RESPONSIBILITIES OF OWNER

2.3.1 **Removal, Relocation, or Protection of Underground Infrastructure:** If the Contractor while performing the contract discovers utility facilities not identified by the Owner in the contract plans or specifications, Contractor

shall immediately notify the Owner in writing. Owner shall have the sole discretion to perform the repairs or relocation work itself, or to permit the Contractor to do such repairs or relocation work at a reasonable price. In the event that the Owner authorizes the Contractor to perform the work, the parties shall proceed with a written Change Order as set forth in Article 5 herein. Compensation to the Contractor for said costs shall be in accordance with Section 4215 of the Government Code.

Nothing herein shall be construed to require the Owner to locate the presence of any existing services not expressly included in Government Code Section 4215, nor to limit the Owner's rights or remedies set forth therein.

In accordance with the provisions of Section 4215 of the California Government Code, Contractor shall not be assessed liquidated damages for delay in completion of the project, when such delay was caused by the failure of the Owner or owner of the utility to provide for the removal or relocation of such utility facilities.

Article 3

CONTRACTOR'S RESPONSIBILITIES

3.1 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS

3.1.1 Reporting Errors in Contract Documents: The Contractor shall carefully study and compare the Contract Documents with each other and shall at once report to the Inspector errors, inconsistencies, or omissions discovered. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency, or omission in the Contract Documents without such notice to the Owner, the Contractor shall assume responsibility for such performance and shall bear all costs for correction.

3.1.2 Reporting Errors in Field Conditions: The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies, or omissions discovered shall be reported to the Owner at once.

3.1.3 No Implied Warranty: No warranty is to be implied nor shall any warranty arise by operation of law, or by interpretation of this Contract, that the Plans and Contract Documents are adequate and sufficient to construct the Project.

3.2 SUPERVISION AND CONSTRUCTION PROCEDURES

3.2.1 Supervision of Work: The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work under the Contract, unless Contract Documents give other specific instructions concerning these matters.

3.2.2 Acts of Employees and Agents: The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, subcontractors and their agents and employees, and other persons performing portions of the Work under a contract with the Contractor.

Acts Do Not Waive Contractor's Obligation: The Contractor shall not be relieved of obligations to perform the Work in strict accordance with the Contract Documents either by activities or duties of the Owner's Representative or the Inspector in the administration of the Contract, or by tests, inspections, or approvals required or performed by persons other than the Contractor.

3.3 PROSECUTION OF WORK

- 3.3.1 Time of the Essence: It is expressly understood and agreed that the time of beginning, rate of progress, and time of completion of the Work are of the essence. The time for completion of this contract shall be 75 calendar days commencing from the date shown on the Contractor Notice To Proceed.
- 3.3.2 Owner and Contractor recognize that time is of the essence of the Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified, plus any extensions thereof. They also recognize the delays, expense, and difficulties involved with proving in a legal proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that Contractor shall pay Owner the sum of **One Thousand dollars (\$1,500) per day**, as liquidated damages and not as a penalty, for each and every calendar day's delay in finishing the Work in excess of the contract time prescribed herein.
- 3.3.3 Work During Operational Hours: The Facility will be operational during the Work. The Contractor shall not interfere or hinder government center operations. The Contractor shall keep all equipment and materials within designated work areas and out of hallways and doorways. Emergency exit routes shall be maintained at all times.
- 3.3.4 Construction Schedule: The Contractor shall coordinate the final critical path method (CPM) construction schedule with the Owner. The CPM schedule is required to be submitted within five (5) days of issuance of Notice to Proceed. The CPM schedule will be for Owner's information only. Silence or inaction with regard to Contractor's schedule shall not be construed as acquiescence or acceptance of the schedule as being binding on Owner. Contractor's schedule shall provide for the completion date not to exceed nor shall it provide for the completion date earlier than the time limits for completion set forth in the Contract Documents. Float, whether for the entire Project or for specific tasks therein, shall be deemed to be for the benefit of the Owner. The Contractor shall keep the construction schedule current, and shall submit weekly updates to the Owner's Representative and Inspector, if any. The Contractor shall further prepare and keep current a schedule of submittals which is coordinated with the construction schedule, and which allows the Owner reasonable time to review the submittals.

3.4 SUBMITTALS

- 3.4.1 Use of Listed Manufacturers; Review of "Or Equals": Contractor shall utilize only the manufacturer designated in its Proposal for major equipment items listed therein. In accordance with the provisions of Section 3400 of the California Public Contract Code, but subject to Subsection (b) thereof, if requesting approval of an "or equal" product, Contractor shall within two (2) business days following the bid opening submit data substantiating its request. Failure to submit such substantiating data within two (2) business days following the bid opening shall constitute submission of a non-responsive bid.

3.5 STATE AND FEDERAL LABOR REQUIREMENTS

3.5.1 Hours of Work:

1. Eight (8) hours of labor shall constitute a legal day's work upon all work done hereunder, and it is expressly stipulated that no workman employed at any time by the Contractor, or by any subcontractor under this Contract, upon the Work, shall be required or permitted to work thereon more than eight (8) hours in any one (1) calendar day and/or more than forty (40) hours in any one (1) calendar week except as provided in Section 1815 of the Labor Code of California, and it is further expressly stipulated that for each and every violation of said last named stipulation, said Contractor shall forfeit, as penalty to the said Owner, \$25.00 for each workman employed in the execution of this Contract, or by any subcontractor under this Contract, for each calendar day during which said workman is required or permitted to labor more than eight (8) hours in any one (1) calendar

day or more than forty (40) hours in any one (1) calendar week in violation of the provisions of said Labor Code.

2. In accordance with the provisions of Section 1776 of the Labor Code of the State of California, the Contractor, and each subcontractor, shall also keep an accurate record showing the names and actual hours worked for all workers employed by him in connection with the Work contemplated by the Agreement, which record shall be open at all reasonable hours to the inspection of the Owner or its officers or agents, and to the Chief of the Division of Labor Statistics and Law Enforcement or the Department of Industrial Relations, his deputies or agents.

3.5.2 Apprentice Employment:

1. Pursuant to the provisions of Section 1777.5 of the Labor Code as amended, the Contractor or subcontractor employing tradesmen in any apprenticeable occupation shall apply to the joint apprenticeship committee nearest the site of the public works project and which administers the apprenticeship program in that trade for a Certificate of Approval. The certificate will also fix the ratio of apprentices to journeymen that will be used in the performance of the Contract. All requirements and exceptions to those requirements set forth herein for Apprenticeship Employment are contained in Labor Code Section 1777.5 and are available from the applicable Joint Apprenticeship Committee.
2. The Contractor shall make contributions to funds established for the administration of the apprenticeship programs if he employs registered apprentices or journeymen in any apprenticeable trade on such contracts and if other contractors on the public works site are making such contributions.
3. The Contractor and any subcontractor under him shall comply with the requirements of Sections 1777.5 and 1777.6 in the employment of apprentices. Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, ex officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

3.5.3 Wage Rates:

1. Pursuant to Labor Code Section 1770 et seq., each laborer or mechanic of Contractor or any subcontractor engaged in work on the Project under this Contract shall be paid not less than the hourly wage rate of per diem wages set forth in the prevailing wage rate schedule published by the Director of Industrial Relations regardless of any contractual relationship which may be alleged to exist between Contractor or any subcontractor and such laborers and mechanics.
2. Any laborer or mechanic employed to perform work on the Project under this Contract, which work is not covered by any of the foregoing classifications, shall be paid not less than the prevailing rate of per diem wages specified herein for the classification which most nearly corresponds to the work to be performed by him.
3. The foregoing specified prevailing wage rates are minimum rates only, and the Contractor may pay any wage rate in excess of the applicable rate contained in this Contract.
4. Pursuant to Labor Code Section 1775, the Contractor as a penalty to the Owner shall forfeit \$50.00 for each calendar day, or portion thereof for each worker paid less than prevailing rate established by the Department of Industrial Relations for such work or craft in which such worker is employed. The difference between such prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which the worker was paid less than the prevailing wage rate shall be paid to each worker by the Contractor.
5. An error on the part of an awarding body does not relieve the Contractor from responsibility for payment of the prevailing rate of per diem wages and penalties pursuant to Labor Code Sections 1770 - 1775.

6. All Contractors and subcontractors are subject to the provisions of Sections 1810-1814 of the California Labor Code which provide that the maximum hours a worker is to be employed is limited to eight (8) hours a day and forty (40) hours a week and the Contractor or subcontractor shall forfeit, as a penalty, \$25.00 for each worker employed in the execution of the Contract for each calendar day during which a worker is required or permitted to labor more than eight (8) hours in any calendar day or more than forty (40) hours in any calendar week and is not paid overtime.
7. Section 1815 of the California Labor Code requires that notwithstanding the provisions of Sections 1810-1814, employees of Contractors who work in excess of eight (8) hours per day and forty (40) hours per week shall be compensated for all hours worked in excess of eight (8) hours per day at not less than 1-1/2 times the basic rate of pay.
8. In the case of federally funded projects, where federal and state prevailing wage requirements apply, compliance with both is required. This project is funded in whole or part by federal funds. Contractor's attention is directed to the requirements of, and compliance with the Copeland Act (18 U.S.C. 874 and 29 CFR Part 3), the Davis-Bacon Act (40 U.S.C. 276a to 276a-7 and 29 CFR Part 5), and the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330 and 29 CFR Part 5). (NOT APPLICABLE)
9. If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for similar classifications of labor, Contractor and subcontractors shall pay not less than the higher wage rate. The Department will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes "helper" (or other classifications based on hours of experience) or any other classification not appearing in the Federal wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by Contractor and subcontractors, Contractor and subcontractors shall pay not less than the federal minimum wage rate which most closely approximates the duties of the employees in question. (NOT APPLICABLE)
10. Interested parties can obtain the current wage information by submitting requests to the Department of Industrial Relations, Division of Labor Statistics and Research, PO Box 420603, San Francisco CA 94142-0603, Telephone (415) 703-4708 or by referring to the website at <http://www.dir.ca.gov/dlsr/PWD>. The rates at the time of the bid advertisement date of a project will remain in effect for the life of the project in accordance with the California Code of Regulations, as modified and effective January 27, 1997.
11. Copies of the applicable state prevailing wage rates are on file with the County of El Dorado, Chief Administrative Office, Facilities Division, 3000 Fairlane Court, Placerville, CA 95667, and they are available to any interested party on request.

3.5.4 Certified Payroll: As required under the provisions of Labor Code Section 1776 Contractor and subcontractors shall keep accurate payroll records:

1. The payroll records shall show the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee by him or her in connection with the Project.
2. A certified copy of all payroll records enumerated above shall be available for inspection at all reasonable hours at the principal office of the Contractor as follows:
 - a. Make available or furnish to the employee or his or her authorized representative on request.
 - b. Make available for inspection or furnished upon request to a representative of the Owner, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations.

- c. Make available upon request by the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through either the Owner, the Division of Labor Standards Enforcement, or the Division of Apprenticeship Standards. The requesting party shall, prior to being provided the records, reimburse the costs of preparation by the Contractor, subcontractor, and the entity through which the request was made. The public shall not be given access to the records at the principal office of the Contractor.

3.5.5 **Discrimination In Employment:** No discrimination shall occur in the employment of persons upon the Work because of race, color, sex, national origin, or ancestry or religion of such persons.

3.5.6 **Convict-Made Materials:** Except as may be provided by law, the Contractor agrees that no materials manufactured or produced in a penal or correctional institution shall be incorporated in the construction under this Contract.

3.6 TAXES

3.6.1 **Contractor Pays Taxes:** The Contractor and subcontractors shall pay all local, state, and federal taxes upon labor or materials involved in their branch of the Work, cost of same to be included in the Contract price.

3.7 COMPLIANCE WITH LAW AND LOCAL REQUIREMENTS

3.7.1 **Regulations:** The Contractor and all subcontractors shall conform to and abide by all city, county, and state laws, ordinances, rules, and regulations, as the same pertain to the Work contemplated by said Plans and Contract Documents.

3.7.2 **Permits, Licenses, and Fees:** The County shall procure and pay for all permits and inspection fees that may be required to commence, carry on, and complete the Contract. Contractor shall be responsible for all applicable license fees.

The County has received a building permit for this project. The Contractor shall be responsible for following the provisions of the permit. See Appendix A for a copy of the permit.

3.7.3 **Patent Rights, Copyrights, Trade Names, and Royalties:** The Contractor shall indemnify and save harmless the Owner and all persons acting under him for all liability on account of any patent rights, copyrights, or trade names which may affect the articles or materials or their application under the Contract Documents. The Contractor shall pay all royalties, or other charges that may arise, due to methods, types of construction, processes, materials or use of equipment, and shall hold the Owner harmless from any charges whatsoever which may arise, and shall furnish written assurance, satisfactory to the Owner, that such charges have been paid.

3.8 GUARANTEE

3.8.1 **Final Guarantee:** The Contractor shall guarantee all materials and equipment furnished and work performed for a period of one (1) year. Contractor warrants and guarantees for a period of one year from the date of the Notice of Acceptance that the Work is free from all defects due to faulty materials or workmanship and Contractor shall promptly make such corrections as may be necessary, including repairs of any damage to other parts of the Work resulting from such defects. Owner will give notice of observed defects with reasonable promptness. In the event that Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by such defects within ten (10) calendar days after being notified in writing by Owner, Owner may do so and charge Contractor the cost thereby incurred.

3.8.2 **Extended Guarantees:** If a guaranty exceeding one year is provided by the supplier or manufacturer of any equipment used in this Project, then the guarantee for such materials shall be extended for such term. Contractor expressly agrees to act as co-guarantor of such equipment and materials, and Contractor shall supply Owner with all warranty and guaranty documents relative to equipment and materials incorporated in the job and guaranteed by their suppliers or manufacturers.

3.9 WARRANTY

3.9.1 **Contract Warranty:** The Contractor warrants to the Owner that materials and equipment furnished under the Contract will be of good quality and new, unless otherwise required or permitted by the Contract, that the Work will be free from defects or flaws and is of the highest quality of workmanship and that the Work will conform with the requirements of the Contract. Work not conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective.

3.10 INDEMNIFICATION

3.10.1 **Owner Not Liable for Damages:** The Owner or its authorized representative shall not in any way or manner be answerable or suffer loss, damage, expense, or liability for any loss or damage that may happen to said Work, or part thereof, or in or about the same during its construction and before acceptance and the said Contractor shall assume all liabilities of every kind or nature arising from said Work, either by accident, negligence, theft, vandalism, or any cause whatever; and shall hold the Owner and its authorized representatives harmless from all liability of every kind and nature arising from accident, negligence, or any cause whatever, other than for the active negligence of the Owner, its officers, agents and employees.

3.10.2 **Owner Not Liable for Debts:** Indebtedness incurred for any cause in connection with this Work must be paid by the Contractor, and the Owner is hereby relieved at all times from any indebtedness or claim other than the Contract price.

3.10.3 **Indemnity:** To the fullest extent allowed by law, Contractor shall defend, indemnify, and hold the County and its officers, directors, and employees, harmless against and from any and all claims, suits, losses, damages, and liability for damages, including attorney's fees and other costs of defense brought for or on account of injuries to or death of any person, including but not limited to, workers and the public, or on account of injuries to or death of County employees or damage to property, or any economic, consequential or special damages which are claimed or which shall in any way arise out of or be connected with Contractor's services, operations or performance hereunder, regardless of the existence or degree of fault or negligence on the part of the County, the Contractor, subcontractors or employees of any of these, except for the active, or sole negligence of the County its officers and employees, or where expressly prescribed by statute.

The duty to indemnify and hold harmless the County specifically includes the duties to defend set forth in Section 2778 of the Civil Code. The insurance obligations of Contractor are separate, independent obligations under the Contract Documents, and the provisions of this defense and indemnity are not intended to modify nor should they be construed as modifying or in any way limiting the insurance obligations set forth in the Contract Documents.

3.10.4 **Environmental Indemnification:** To the fullest extent allowed by law, from and after recording of the Notice of Acceptance, Contractor shall indemnify, defend, and save harmless Owner from all losses or damages resulting from injury to or death of any person and damage to property, and any fine, which is occasioned by or arises out of any breach of Environmental and Toxics Warranty, representations, or covenants of Contractor under this Contract. Contractor further agrees to indemnify and hold harmless Owner, its officers, employees, and agents, from and against any and all liability as follows:

1. Including all foreseeable and all unforeseeable consequential damages, directly or indirectly arising out of the use, generation, storage, or disposal of hazardous materials in any location by Contractor, and

2. Including, without limitation, the cost of any required or necessary repair, cleanup, or detoxification and the preparation of any closure or other required plans, whether such action is required or necessary prior to or following filing of the Notice of Acceptance to the full extent that such action is attributable, directly or indirectly, to the presence or use, generation, storage, release, threatened release, or disposal of hazardous materials by any person on the Project prior to filing of the Notice of Acceptance. Contractor's obligations pursuant to the foregoing indemnity shall survive the filing of the Notice of Acceptance of the Project.
3. This agreement as to indemnity and reimbursement as above set forth to be undertaken by the Contractor shall survive the performance of the remainder of said Contract and shall remain in full force and effect notwithstanding such performance.
4. The foregoing duties of indemnity shall not apply to loss, damage, expense, or liability caused solely by the active negligence of the Owner or the Owner's agents, servants or independent contractors.

3.11 WORK REQUIREMENTS

3.11.1 Conduct of Work: The Contractor shall confine the storage of his equipment and materials to limits as designated. He shall at all times exercise due caution and provide all necessary barricades and other safety equipment around the Work to protect the general public from injury to person and property during the entire time of performance of the Work. The Contractor shall not create excessive dust or noise.

3.11.2 Maintenance of Site: Strict prohibition against committing nuisances in or about the Work shall be maintained, and the Contractor shall not in any way obstruct or interfere with movements of traffic on any public right of way without first obtaining the necessary approval of the proper public agency.

3.11.3 Clean Up of Site: The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials. If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.11.4 Cutting and Patching:

1. The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.
2. The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.12 SUBCONTRACTORS

3.12.1 Contractor Responsible for Subcontractor's Acts: Contractor shall be fully responsible to Owner for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

3.12.2 Contractor's Subcontract: Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind subcontractors to Contractor by the terms of the Contract Documents insofar as applicable to the Work of subcontractors and to give Contractor the same power as regards terminating any

subcontract that Owner may exercise over Contractor under any provisions of the Contract Documents. The percentage of retention withheld from any subcontractor by the Contractor shall not exceed the percentage of retention withheld from the Contractor as provided herein.

3.12.3 Ineligible Subcontractor: Contractor is prohibited from performing work with a subcontractor who is ineligible to perform work pursuant to Labor Code Section 1777.1 or 1777.7.

3.13 SUPERINTENDENT

3.13.1 Work Superintendent: The Contractor will employ and maintain on the worksite a qualified supervisor or Superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the sites. The Superintendent shall have full authority to act on behalf of the Contractor, and all communications given to the Superintendent shall be as binding as if given to the Contractor. The Superintendent shall be present on the site at all times as required to perform adequate supervision and coordination of the Work.

3.14 LABOR AND MATERIALS

3.14.1 Skilled Labor: All labor must be especially skilled for each kind of work, and must be thorough and first class in all respects. Any person whom the Inspector or Owner may deem incompetent or disorderly shall be promptly discharged from the Project and not re-employed.

3.14.2 Quality of Materials: All materials used on this Contract shall be new and the best market quality, unless specified or shown otherwise. All Work executed under this Contract shall be done in the best, most thorough, substantial and workmanlike manner and without flaws. All materials and labor shall be subject to the approval of the Inspector as to its quality and fitness, and shall be immediately removed if it does not meet with his approval. The Inspector may refuse to issue the Certificate for Payment until all defective materials or work have been removed and other material of proper quality substituted therefore. All removal and replacement with same shall be done at the Contractor's expense. Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as directed by the manufacturer.

Article 4

ADMINISTRATION OF CONTRACT

4.1 ADMINISTRATION OF CONTRACT

4.1.1 Contract Communications: Unless otherwise provided in the Contract or when direct communications have specifically been authorized, all parties shall communicate through the Owner's Representative or the Inspector if the Owner so directs. Communications by and with the subcontractors and material suppliers shall be through the Contractor. Communications by Contractor to separate contractors, architect, or Project Manager shall be through the Owner's Representative.

4.1.2 Control of Work: The Owner's Representative or the Inspector will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility. The Owner's Representative or the Inspector will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Owner's Representative or the Inspector will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, subcontractors, or their agents or employees, or of any other persons performing portions of the Work.

4.1.3 Recommendation for Payments: Based on his or her observations and evaluations of the Contractor's Applications for Payment, the Owner's Representative will review amounts due the Contractor and will recommend to Owner, payments to Contractor as set forth in the section entitled CERTIFICATION FOR PAYMENTS.

4.1.4 Inspector's Authority: The Inspector will have the authority to stop work whenever necessary to ensure a proper execution of the Work. The Inspector will also have authority to reject Work which does not conform to the Contract Documents. Whenever the Inspector considers it necessary or advisable for implementation of the intent of the Contract Documents, the Inspector will have authority to require additional inspection or testing of the Work in accordance with the following section whether or not such Work is fabricated, installed, or completed. However, neither this authority of the Inspector nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Inspector to the Contractor, subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work. In the event an Inspector is not appointed by the Owner, the Owner's Representative shall have the authority set forth herein.

4.2 INSPECTION AND TESTING

4.2.1 Advance Notice: Contractor shall provide Owner's Representative seventy-two (72) hours notice prior to beginning work at a specific location and for a specific department. Contractor shall notify Owner's Representative and Inspector twenty four (24) hours prior to any day in which Contractor will 1) require an inspection of any portion of the Work, and 2) work in excess of eight (8) hours or any time Contractor intends to work weekends. Any work not performed subject to inspection will not be accepted and will be rejected and/or ordered removed by Owner, or Inspector.

4.2.2 Access to Work: The Owner's Representative, the Architect, the Project Manager, and the Inspector will at all times have access to the Work. In addition, authorized representatives and agents of any participating Federal or State Agency shall be permitted to inspect all Work, materials, payrolls, and records on personnel, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the Work and also for any inspection or testing thereof.

4.2.3 Costs of Tests: The Owner shall bear all costs related to testing for conformance of the Work to the Contract requirements. However, if the Contractor has called for any testing, and that test fails, subsequent tests, and all related costs, shall be borne by the Contractor.

4.2.4 Preparation of Change Directives/Orders: The Owner's Representative or the Inspector, if one is appointed, will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in the section entitled CHANGES IN WORK.

4.3 CLAIMS

4.3.1 Concealed or Unforeseen Conditions: It is understood by both parties that Contractor has made a pre-contract investigation of the site. All concealed, unforeseen, or materially differing conditions are the responsibility of the Contractor in the absence of an actual material, intentional misrepresentation by the Owner as to the conditions on the site. Contractor shall give written notice of any conditions encountered at the site which are unforeseen, concealed, or materially different from those set forth in the Plans or Contract Documents, or ordinarily encountered and generally recognized as inherent in the Work. Such written notice shall be given within five (5) days of his discovery of any such facts.

4.3.2 Notice of Discovery of Hazardous Waste or Unusual Conditions:

1. The Contractor shall promptly, and before the following conditions are disturbed, notify the Owner in writing, in the event the Contractor encounters any of the following:

- a. Material that the Contractor believes may be hazardous waste, as defined in Section 25117 of the Health and Safety Code that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.
 - b. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in the work of the character provided for in the contract.
2. The Owner shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work shall issue a change order under the procedures described herein.
 3. In the event a dispute arises between the Owner and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for in the contract, but shall proceed with all work to be performed under the Contract. The Contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the Contractor and the Owner.

4.3.3 Time Limits on Claims: Claims by Contractor must be made within ten (10) calendar-days after occurrence of the event giving rise to such Claim, except that claims made due to delay or hindrances which Contractor claims was caused by Owner shall be made within five (5) calendar-days after occurrence of the event giving rise to such Claim. Claims must be made by written notice. Failure to make such claim in writing in the time set forth herein shall bar Contractor from recourse for such claim. All claims must be filed on or before the payment date of Final Payment.

4.3.4 Claims for Additional Costs:

1. If Contractor wishes to make a Claim for an increase in the Contract Price, he shall give the Owner written notice thereof within the time set forth in Paragraph 4.3.3. This notice shall be given by the Contractor before proceeding to execute the work, except in an emergency endangering life or property in which case the Contractor shall, as soon as possible, advise Owner of his intent to do the Work.
2. Increases in Contract Price due to Claims shall be calculated based on the Cost Reimbursement method detailed in Paragraph 5.4.1.3.
3. Under no circumstances shall Contractor recover any administrative overhead costs or recover on the basis of any "Home Office" damages formula, "Total Cost" recovery formula, or any other such formula.

4.3.5 Claims for Additional Time:

1. If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate probable effect of delay on progress of the Work.
2. If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated, and that weather conditions had an adverse effect on the scheduled construction.
3. The Owner shall not be liable for any damages on account of any reasonable delay or hindrance of the Owner. However, Contractor shall be entitled to an extension of time for any delay or hindrance caused by the Owner. Any delay or hindrance by Owner which is unreasonable and not within the contemplation of the parties may subject Owner to a claim for damages. Contractor shall make any claims in writing within the time set forth in Paragraph 4.3.3., for any unreasonable delay or hindrance caused by Owner, and specifying the cause thereof as required in paragraph "Submittal of Claims".

4.3.6 **Submittal of Claims:** Any disputes relating to this Contract, or its breach, which is not disposed of by agreement shall be promptly submitted as a claim to the Owner's Representative who shall issue a written response on the dispute. Claims shall be submitted by the Contractor to the Owner's Representative with adequate supporting data and include a demand for the Owner's Representative's decision. Adequate supporting data shall include, but is not limited to, a statement of the reasons for the asserted entitlement, the certified payroll, invoice for material and equipment rental, and an itemized breakdown of any adjustment sought.

4.3.7 **Submission Under Penalty of Perjury:** The Contractor shall certify, at the time of submission of a claim, as follows:

"I certify under penalty of perjury under the laws of the State of California, that the claim is made in good faith, that the supporting data are accurate and complete, and that the amount requested accurately reflects the contract adjustment for which the Owner is liable.

By: _____
“(Contractor's signature)”

4.3.8 **Third Party Claims:** Owner will notify Contractor of receipt of any third party claim relating to the contract within 5 business days of receipt of such claim.

4.4 DISPUTES RESOLUTION

4.4.1 **Continue Work During Dispute:** In the event of any dispute between the Owner and the Contractor, the Contractor will not stop Work but will prosecute the work diligently to completion in the manner directed by the Owner, and the dispute shall be resolved as set forth herein after completion of the Work. However, all disputes must be submitted by Contractor in accordance with the subsequent provisions of this section.

4.4.2 **Requirements for Filing a Claim:** For any claim subject to this Article, the following requirements apply: the claim shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed on or before the date of final payment. Nothing in this subdivision is intended to extend the time limit or supersede notice requirements otherwise provided by this contract for the filing of claims.

1. For claims of less than fifty thousand dollars (\$50,000.00), the Owner shall respond in writing to any written claim within forty five (45) days of receipt of the claim, or may request, in writing, within thirty (30) days of receipt of the claims or relating to defenses or claims the Owner may have against the Contractor, any additional documentation supporting the claim or relating to defenses to the claim the Owner may have against the Contractor.

If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the Owner and the Contractor.

The Owner's written response to the claim, as further documented, shall be submitted to the Contractor within fifteen (15) days after receipt of the further documentation or within a period of time not greater than that taken by the Contractor in producing the additional information, whichever is greater.

2. For claims of over fifty thousand dollars (\$50,000.00) and less than or equal to three hundred seventy-five thousand dollars (\$375,000.00), the Owner shall respond in writing to all written claims within sixty (60) days of receipt of the claim, or may request, in writing, within thirty (30) days of receipt of the claim, any additional documentation supporting the claim or relating to the defenses or claims the Owner may have against the Contractor.

If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the Owner and the Contractor.

The Owner's written response to the claim, as further documented, shall be submitted to the Contractor within thirty (30) days of receipt of the further documentation, or a period of time no greater than that taken by the Contractor in producing the additional information or requested documentation, whichever is greater.

3. If the Contractor disputes the Owner's written response, or the Owner fails to respond within the time prescribed, the Contractor may so notify the Owner, in writing, either within fifteen (15) days of receipt of the Owner's written response or within fifteen (15) days of Owner's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the Owner shall schedule a meet and confer conference within thirty (30) days for settlement of the dispute.
4. If following the meet and confer conference the claim or any portion remains in dispute, the Contractor may file a claim pursuant to Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code, and in accordance with Section 20104.2 of the Public Contract Code.

4.4.3 Owner's Review of Claim: The Owner's Representative shall review the facts pertinent to the claim, secure assistance from legal and other advisors, coordinate with the contract administrators, and promptly provide a written response. The response shall be furnished to the Contractor by certified mail, return receipt requested, or any other method that provides evidence of receipt. The Owner's Representatives' response shall be final and conclusive except as is otherwise provided herein.

4.4.4 Claims Exempt from Review: The procedures and remedies provided in this Section 4.4 do not apply to:

1. Any claims by the Owner.
2. Any claim for or respecting personal injury or death or reimbursement or other compensation arising out of or resulting from liability for personal injury or death.
3. Any claim or dispute relating to stop payment requests or stop notices.
4. Any claim related to the approval, refusal to approve, or substitution of subcontractors, regardless of tier, and suppliers.

4.4.5 Suit in El Dorado County Only: Any litigation arising out of this Contract shall be brought in El Dorado County. The Owner and the Contractor shall follow procedures established for all civil actions filed to resolve claims pursuant to Public Contract Code Section 20104 et seq., including but not limited to Section 20104.4.

4.4.6 Payment of Undisputed Portion of Claim: Payment by Owner of undisputed portion of claim; interest on arbitration award or judgment.

1. Owner shall pay Contractor such portion of a claim which is undisputed except as otherwise provided in the contract.
2. In any suit filed pursuant to Public Contract Code Section 20104.4, the provisions of Section 20104.6 shall apply.
3. The rate of interest payable on unpaid and undisputed claims shall be 6 percent per annum. Interest shall begin to accrue 61 days after the Contractor submits to the Owner information in sufficient detail to enable the Owner to accept the claim statement.
4. The rate of interest payable on any judgment or award in arbitration shall not exceed 6% per annum in accordance with Civil Code Section 3287 et seq.

Article 5

CHANGES IN WORK

5.1 WAIVER

5.1.1 Waivers of Contract Provisions: It is expressly understood and agreed that no waiver granted by the Inspector or the Owner of any term, provision, or covenant of this Contract shall constitute a precedent for breach of the same or any other terms, provisions, or covenants of this Contract.

5.2 CHANGES

5.2.1 Owner May Order Changes in Work: The Contractor agrees that the Owner, without invalidating the Contract, may order changes in Work by altering, adding to, or deducting from the Work, the Contract Amount and Time being adjusted according to the provisions of Section 5.4 and Section 5.5. Contractor agrees to enter into a modification of his original Contract for such changes.

5.2.2 Cost Proposals: Upon request of the Owner for a quotation on the change to the Work, the Contractor shall promptly submit to Owner's Representative, and the Inspector, if one is appointed, in writing a detailed breakdown of the work and of the amount of deduction or addition claimed. In no case shall Cost Proposals be provided later than ten (10) calendar days from the date requested. The Owner's request for quotations on alterations to the Work shall not be considered authorization to proceed with the work prior to issuance of a Change Order, nor shall such request justify any delay in existing work. If Contractor fails to provide Cost Proposals within ten (10) calendar days, Owner may prepare the Cost Proposal based on estimates of labor, materials, and equipment. This proposal, prepared by Owner, shall be binding on the Contractor, will become the basis for Contract Price adjustment, and shall not be subject to dispute or claim.

5.2.3 Contract Change Instrument: Changes in work involving a change in Contract Price or Contract Time shall be done only pursuant to an Architect's Supplemental Instructions, Change Order, or Construction Change Directive as set forth below in this article.

5.2.4 Changes Shall Conform to Contract: Changes in work shall be performed in conformance with applicable provisions of the Contract Documents, and the Contractor shall proceed promptly unless otherwise provided in the Architect's Supplemental Instructions, Change Order, or Change Directive.

5.3 CONTRACT CHANGE INSTRUMENTS

5.3.1 Architect's Supplemental Instructions (ASI): The Owner's Representative or the Architect may order minor changes in work by use of an Architect's Supplemental Instruction. These minor changes will involve neither changes in the Contract Price or Contract Time. If the Contractor disagrees that the change does not involve a change in cost or time, then a Change Order or Change Directive shall be used.

5.3.2 Change Order (CO): The Change Order shall be used in cases where Owner and Contractor agree on the change in work, the amount of or method of computing the Contract Amount, and the amount of adjustment in Contract Time.

5.3.3 Construction Change Directive (CCD): In the event that the Owner and Contractor do not agree on the proposed change in work, and/or the proposed adjustment of Contract Price and Time, or in the event it is essential that the Contractor proceed expeditiously and without delay, then Owner may, by issuance of a Construction Change Directive, order changes in work, and the Contractor shall promptly proceed with the change in work involved.

1. Acceptance of Change Directive: If Contractor agrees with the Change Directive, the Contractor shall by his signature thereon, indicate his acceptance of the terms of the Directive, including adjustments to price and time, and the Change Directive shall then be followed by a Change Order.

2. Non-Acceptance of Change Directive: If the Contractor disagrees with the method of computing an increase in Contract Price, then the amount of adjustment shall be computed by the Cost Reimbursement method detailed in Basis for Adjustment. Disagreements with amounts or credits, under the Cost Reimbursement method, or time, shall be considered a dispute, and processed under the section on Disputes Resolution.

5.4 BASIS OF ADJUSTMENT

5.4.1 Methods of Adjustment: The amount of adjustments to Contract Price, whether a credit or payment, shall be computed by one of the methods detailed below. The method used shall be at the sole determination of the Owner.

1. Unit Prices: Those prices stipulated in the Bid Proposal shall be utilized where they are applicable. In the event the change in original quantity is in excess of twenty five (25) percent of the original bid quantity, and the total dollar value of that bid is greater than \$5,000, the Owner shall review the unit price to determine if a new unit price shall be renegotiated. Unit prices for new items shall be negotiated and mutually agreed upon.
2. Lump Sum: A total lump sum for the Work negotiated and mutually acceptable to the Contractor and Owner. Lump sum quotations for modifications to the Work shall include substantiating documentation with an itemized breakdown of Contractor's and subcontractor's costs, including labor, materials, rentals, approved services, overhead, and profit all calculated as specified in the Cost Reimbursement method which follows.
3. Cost Reimbursement (Extra Work): In this method, the payment for Extra Work shall be made on a time and expense basis that is on an accounting of the Contractor's forces, materials, equipment, and other items of cost as required and used to do the Work. Payment will be made for the documented actual cost of the following:
 - a. Costs of direct labor, excluding supervisory personnel, including social security, old age and unemployment insurance, fringe benefits required by agreement, labor insurance and labor taxes established by law.
 - b. Costs of materials, supplies, and equipment, including cost of transportation and sales tax, whether incorporated if paid for by the Contractor or his subcontractor.
 - c. Rental costs, prevailing in the area, of machinery and equipment for the actual time used, and including transportation costs for items having value in excess of \$100.00.
 - d. Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work.

To the above cost the Contractor shall be allowed a markup of twenty (20) percent on direct labor charges and fifteen (15) percent for all other cost items. When any or all of the Extra Work is done by one of the Contractor's subcontractors, the markups set forth above shall be applied to the subcontractor's actual costs to which a five (5) percent markup shall be allowed the Contractor. These markups shall be considered to be full compensation, covering the cost of general supervision, administration, overhead, profit, and any and all other general expenses, including, but not limited to, uniforms, hand tools, safety equipment, travel and lodging.

5.5 EXTENSION OF TIME FOR COMPLETION

5.5.1 Contractor Delayed or Hindered: Should the Contractor be delayed or hindered in the completion of the Work by the neglect of the Owner, or by fire, by strikes, lockouts, embargoes or earthquakes, and any other causes the Inspector approves as not having been reasonably foreseeable at the time of execution of the Contract Documents, then the time allowance herein fixed for the completion of the Work shall be extended for a period

equivalent to the time lost by reason of any or all of the causes aforesaid. Time extensions must be requested in accordance with Section 4.3.

5.5.2 Agreement on Time Extension: In addition, the Contractor and the Owner reserve the right to mutually agree in writing upon an extension of time for completion for causes other than enumerated above.

5.5.3 Time Extension Not Waiver: The granting of an extension of time by the Owner for performance by the Contractor shall not operate as a waiver or stop the Owner from claiming damages due to any other delays, prior or subsequent, which were not approved by the Owner as provided herein.

Article 6

PAYMENTS AND COMPLETION

6.1 GENERAL

6.1.1 Contract Price: The Contract Price is stated in the Contract is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

6.1.2 Waiver: Neither the acceptance of the Work by the Owner nor the payment of any part or all of the sum due the Contractor hereunder shall constitute a waiver by the Owner of any claim which the Owner may have against the Contractor or Surety under this Contract or otherwise.

6.1.3 Manner of Paying Warrants: Payment becomes due under the terms of this Contract in the manner prescribed by law. The Auditor shall cause a warrant for the Certified amount to be drawn upon the proper fund of the Treasurer of the Owner, which warrant shall be approved and issued to Contractor within that period of time customarily required to process said warrants in the ordinary course of Owner's business..

6.2 APPLICATIONS FOR PAYMENT

6.2.1 Submittal of Applications: The Contractor shall submit to the Owner OR Owner's Representative, an Application for Payment form, which will be provided by the Owner. Such application shall be supported by such data substantiating the Contractor's right to payment as the Owner may require, such as copies of requisitions from subcontractors and material suppliers.

6.2.2 Basis for Payment: The Payment shall be based upon the total Contract price and upon percentage of completion of the Work at the time of the submittal of the application for payment.

6.2.3 Work Free of Liens: The Contractor warrants that upon submittal of an Application for Payment, all work for which Certificates for Payment have been previously issued and payments received from the Owner shall be free and clear of liens, claims, security interests, or encumbrances against Contractor by subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment in relation to the Work.

6.3 CERTIFICATION FOR PAYMENT

6.3.1 Certification Determination: The Owner's Representative will review as soon as practicable for the purpose of determine whether it is a proper payment request and shall within seven (7) days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certification for Payment, with a copy to the Contractor, for such amount as determined to be properly due, or notify the Contractor of the reasons why the payment request is not proper and for withholding certification of payment in whole or in part as provided in Section 6.4.1.

6.3.2 The Owner shall pay or cause to be paid to Contractor, an amount equal to ninety five percent (95%) as noted in Section 6.4.3 of the amount set forth in the approved Certificate for Payment within thirty (30) days of receipt of an Application for Payment approved by the Owner's representative as provided for in Paragraph 6.3.1 above, and shall retain the remaining five percent (5%) as noted in 6.4.3 until the time provided for in Section 6.6.4. The Owner shall withhold amounts pursuant to stop notices received in addition to the retainage. Failure of Owner to make payments provided herein in a timely manner shall not constitute a default by the Owner of the Contract, but may entitle the Contractor to interest as provided by law.

6.4 WITHHOLDING FROM PAYMENTS

6.4.1 Reasons for Withholding: The Owner, upon recommendation of the Inspector, may withhold payments, or on account of subsequently discovered evidence nullify the whole or a part of any progress or retention payments to such extent as may be necessary to protect the Owner from loss on account of:

1. Defective work or material not remedied or replaced.
2. The filing of claims or Stop Notices to withhold, or reasonable evidence indicating probable filing of such claims or notices.
3. Failure of the Contractor to make payments properly to subcontractors, or for materials or labor.
4. Failure to make payments to any person or entity for financial obligations of the Contractor under terms of this Contract.
5. A reasonable doubt that the Contract can be completed for the balance then unpaid.
6. Damage to another contractor.
7. Performance of work in violation of the terms of the Contract Documents.
8. Excessive costs to Owner.
9. Failure of Contractor to comply with requirements for timely submittal of specified documentation, including but not limited to construction schedules, cost proposals, and submittals.

6.4.2 Release of Payment: When the above grounds for withholding are removed, payment shall be made for amounts withheld because of them.

6.4.3 Method of Retainage: The Department will retain 5% of the value of each progress payment from each progress payment. The retained funds shall be retained until thirty five (35) days after recordation of the Notice of Acceptance.

6.5 SUBSTITUTE SECURITIES FOR RETENTION

6.5.1 Substitution of Securities: Bidders are hereby put on notice that the successful bidder may substitute securities for any monies withheld by the County of El Dorado to insure performance of the Contract pursuant to Public Contract Section 22300. This section provides that the Contractor may elect to receive 100 percent of payments due under the Contract Documents from time to time, without retention from any portion of the payment by the County of El Dorado, by depositing eligible securities of equivalent value with the County of El Dorado or qualified escrow agent in accordance with the provisions of Public Contract Code Section 22300. Eligible securities shall be limited to those listed in Section 16430 of the Government Code, or bank or savings and loan

certificates of deposit from a qualified institution. Any such escrow agreement shall follow the form set forth in Public Contract Code Section 22300(f) and provided by the Owner.

6.6 FINAL COMPLETION AND PAYMENT OF RETAINAGE

- 6.6.1 Affidavit of Payment:** After the date of Substantial Completion of the Work, and before final acceptance of the Work, the Contractor shall file with the Owner his affidavit, sworn to before a Notary Public, stating that all workmen and persons employed, all firms supplying materials, and all subcontractors upon the project for either labor or material have been paid in full, except certain items, if any, to be set forth in such affidavit covering disputed claims, including claims for acceleration, disruption, delays, inefficiencies, and hindrance, or items in connection with which Stop Notices have been filed under the provisions of the Statutes of the State of California. The filing of such affidavit by the Contractor shall be one of the prerequisites to the making, by the Owner, of the final retainage payment on the Contract.
- 6.6.2 Final Inspection:** Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of the Application for Payment, the Owner will promptly make such inspection. The Contractor shall complete all punch list items within two days of receipt of the written punch list. When the Owner's Representative finds the work acceptable under the Contract Documents and the Contract fully performed, the Owner's Representative will promptly recommend to Owner that Owner may consider the Project complete, that the Purchasing Agent may accept the project and that the Notice of Acceptance may be issued.
- 6.6.3 Final Certification:** Before issuance of payment, Contractor shall file, with Owner, a certificate in which he certifies that to the best of the Contractor's knowledge, information, and belief, and on the basis of observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents.
- 6.6.4 Payment of Retention:** Thirty-five (35) days after the Notice of Acceptance has been filed, provided the Work is fully completed and the Contract fully performed, the balance due under the Contract shall be paid, less any monies held for stop notices. Payment shall not be construed as an absolute acceptance of the work done up to the time of such payment. The Contractor, if requested by the Owner, shall furnish receipts or other vouchers showing his payments for materials and labor. Owner may withhold from payment an amount not to exceed 150 percent of any amount in dispute.
- 6.6.5 Notice of Acceptance:** The Work shall be accepted in writing in the form of a Notice of Acceptance when the whole of the work has been completed satisfactorily to the Owner. In judging the Work, no allowance for deviations from the original Contract Documents will be made unless already approved in writing at the proper times and in the manner as called for herein.

Article 7

PROTECTION OF PERSONS AND PROPERTY

7.1 PROTECTION OF WORK, PROPERTY, AND PERSONS

- 7.1.1 Responsible for Damage to Owner's Property:** The Contractor shall be entirely responsible for any damage to the property of the Owner due to careless handling of tools and/or materials or other causes attributed to the Contractor's Work in performing this Contract.
- 7.1.2 Responsible for Safety:** The Contractor will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury, or loss to all employees on the Work and other persons who may be affected thereby, all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks,

pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

7.1.3 Safety and Convenience: The Contractor will comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction. The Contractor will erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for safety and protection. The Contractor will notify owners of adjacent utilities when prosecution of the Work may affect them.

7.1.4 Remedy Damages: The Contractor will remedy all damage, injury, or loss to any property caused, directly or indirectly, in whole or part, by the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them or anyone of whose acts any of them would be liable, except damage or loss attributable to the sole or active negligence of the Owner or the Inspector or anyone employed by them and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the Contractor.

Article 8 INSURANCE AND BONDS

8.1 INSURANCE

GENERAL INSURANCE REQUIREMENTS

The Contractor shall provide proof of a policy of insurance satisfactory to the El Dorado County Risk Management Division and documentation evidencing that the Contractor maintains insurance that meets the following requirements:

1. Full Workers' Compensation and Employers' Liability Insurance covering all employees of the Contractor as required by law in the State of California.
2. Commercial General Liability Insurance of not less than Two Million Dollars (\$2,000,000) combined single limit per occurrence for bodily injury and property damage, including but not limited to endorsements for the following coverage: Premises, personal injury, operations, products and completed operations, blanket contractual, and independent contractors liability. This insurance can consist of a minimum \$1 Million primary layer of CGL and the balance as an excess/umbrella layer, but only if the County is provided with written confirmation that the excess/umbrella layer "follows the form" of the CGL policy.
3. Automobile Liability Insurance of not less than One Million Dollars (\$1,000,000) is required in the event motor vehicles are used by the Contractor in performance of the contract.
4. In the event Contractor is a licensed professional and is performing professional services under this contract, Professional Liability Insurance is required with a limit of liability of not less than One Million Dollars (\$1,000,000).
5. Explosion, Collapse and Underground coverage is required when the scope of work includes XCU exposures. For the purpose of this contract, XCU coverage is not required.

PROOF OF INSURANCE REQUIREMENTS

1. Contractor shall furnish proof of coverage satisfactory to the El Dorado County Risk Management Division as evidence that the insurance required herein is being maintained. The insurance will be issued by an insurance company acceptable to the Risk Management Division, or be provided through partial or total self-insurance likewise acceptable to the Risk Management Division.
2. The County of El Dorado, its officers, officials, employees, and volunteers shall be included as additional insureds, but only insofar as the operations under this Contract are concerned. This provision shall apply to all general liability and excess liability policies. Proof that the County is named additional insured shall be made by providing the Risk

Management Division with a certified copy, or other acceptable evidence, of an endorsement to Contractor's insurance policy naming the County additional insured.

3. In the event Contractor cannot provide an occurrence policy, Contractor shall provide insurance covering claims made as a result of performance of this contract for not less than three (3) years following completion of performance of this Contract.
4. Any deductibles or self-insured retentions must be declared to and approved by the County. At the option of the County, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the County, its officers, officials, employees and volunteers; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.
5. Contractor shall require each of its subcontractors to procure and maintain commercial general liability insurance, automobile liability insurance, and workers compensation insurance of the types and in the amounts specified above, or shall insure the activities of its subcontractors in its own policy in like amounts. Contractor shall also require each of its subcontractors to name Contractor and County of El Dorado as additional insureds.

INSURANCE NOTIFICATION REQUIREMENTS

1. Contractor agrees no cancellation or material change in any policy shall become effective except upon thirty (30) days prior written notice to the County of El Dorado, Chief Administrative Office, Facilities Division, Russ Fackrell at 3000 Fairlane Court, Placerville, CA 95667.
2. Contractor agrees that the insurance required herein shall be in effect at all times during the term of this agreement. In the event said insurance coverage expires at any time or times during the term of this Contract, Contractor shall immediately provide a new certificate of insurance as evidence of the required insurance coverage. In the event Contractor fails to keep in effect at all times insurance coverage as herein provided, County may, in addition to any other remedies it may have, terminate this Contract upon the occurrence of such event. New certificates of insurance are subject to the approval of the Risk Management Division.

ADDITIONAL STANDARDS

Certificates shall meet such additional standards as may be determined by the Department either independently or in consultation with the Risk Management Division, as essential for protection of the County.

COMMENCEMENT OF PERFORMANCE

Contractor shall not commence performance of this Contract unless and until compliance with each and every requirement of the insurance provisions is achieved.

MATERIAL BREACH

Failure of Contractor to maintain the insurance required herein, or to comply with any of the requirements of the insurance provisions, shall constitute a material breach of the entire Contract.

REPORTING PROVISIONS

Any failure to comply with the reporting provisions of the policies shall not affect coverage provided to the County, its officers, officials, employees or volunteers.

PRIMARY COVERAGE

The Contractor's insurance coverage shall be primary insurance as respects the County, its officers, officials, employees and volunteers. Any insurance or self-insurance maintained by the County, its officers, officials, employees or volunteers shall be in excess of the Contractor's insurance and shall not contribute with it.

PREMIUM PAYMENTS

The insurance companies shall have no recourse against the County of El Dorado its officers, agents, employees, or any of them for payment of any premiums or assessments under any policy issued by any insurance company.

CONTRACTOR'S OBLIGATIONS

Contractor's indemnity and other obligations shall not be limited by the insurance required herein and shall survive the expiration of this Contract.

8.2 BONDS

8.2.1 General Requirements for Bonds: Before commencing any Work under the Contract, the Contractor shall provide all bonds to the Owner. These bonds shall be in the amounts and for the purposes specified below. They shall be Surety bonds and shall be issued by corporations duly and legally licensed and qualified to transact business in the State of California. They shall be maintained by him and at his expense during the entire life of the Contract or later as provided.

8.2.2 Performance Bond: One bond shall be in the amount of 100 percent of the Awarded Contract and shall guarantee the faithful performance of the Contract and shall insure the Owner during the life of the Contract and the Guarantee period. The Contractor may provide, subject to approval by the Owner, a separate guarantee bond upon completion of and acceptance of the work.

8.2.3 Payment Bond: One bond shall be in the amount of 100 percent of the Awarded Contract and shall guarantee the payment in full of all claims for labor and materials in accordance with the provisions of the laws of the State of California.

8.2.4 Change of Surety: If, at any time a Surety on such bonds becomes irresponsible or loses its right to do business in the State of California, the Owner may require another Surety which the Contractor shall furnish within ten (10) calendar days after receipt of written notice to do so.

8.2.5 Authentication of Bonds: Evidence of authority of an attorney-in-fact acting for the corporate Surety must be provided in the form of a certificate as to his power of attorney and to the effect that it is not terminated and remains in full force and effect on the date of the bonds. The form of the bonds shall be in accordance with those provided in the Draft Agreement.

Article 9

UNCOVERING AND CORRECTION OF WORK

9.1 DEVIATION FROM CONTRACT DOCUMENTS

9.1.1 Improper Work: If the Contractor shall vary from the Contract Documents in the form or quality of the Work, or the amount or value of the materials herein provided for, the Owner shall have the right to order such improper work or materials removed, remade, or replaced. In the event that the Work is ordered changed, any other work disturbed or damaged by such alteration shall be made good at the Contractor's expense.

9.2 CORRECTION OF WORK

9.2.1 Covered or Completed Work: If any work is covered contrary to the written instructions of the Owner's Representative, or the Inspector, if one is appointed, it must, if requested, be uncovered for observation and replaced at the Contractor's expense.

9.2.2 Inspection of Covered Work: If the Owner's Representative or the Inspector, if one is appointed, considers it necessary or advisable that covered Work be inspected or tested by others, the Contractor, upon request, will uncover, expose, or otherwise make available for observation, inspection, or testing as the Inspector may require, that portion of the Work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such Work is defective, the Contractor will bear all the expenses of such uncovering, exposure,

observation, inspection, and testing and of satisfactory reconstruction; if, however, such Work is not found to be defective, the Contractor will be allowed an increase in the Contract price or an extension of the Contract time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and construction, and an appropriate Change Order shall be issued.

9.2.3 **Rejected Work:** The Contractor shall promptly remove from the premises all Work rejected by Owner for failure to comply with the Contract Documents, whether incorporated in the construction or not, and the Contractor shall promptly replace and re-execute the work either during the term of the Contract or during the warranty period, in accordance with the Contract Documents and without expense to the Owner and shall bear the expense of making good all Work of other contractors destroyed or damaged by such removal or replacement.

9.2.4 **Cost of Correction:** All removal and replacement Work shall be done at the Contractor's expense. If the Contractor does not take action to remove such rejected Work within ten (10) days after receipt of written notice, the Owner may remove such Work and store the materials at the expense of the Contractor. Owner also may perform such Work or repairs itself and charge the expense to the Contractor.

Article 10

SUSPENSION OF CONTRACT

10.1 SUSPENSION OF WORK

10.1.1 **Owner May Suspend:** The Owner may suspend the Work or any portion thereof for a period of not more than ninety (90) days or such further time as agreed upon by the Contractor, by written notice to the Contractor and the Inspector which shall fix the date on which work shall be resumed.

10.1.2 **Resumption of Work:** The Contractor shall resume that Work on the dates so fixed. The Contractor shall be allowed an increase in the Contract price or an extension of the Contract time, or both, directly attributed to any suspension.

*** END OF DOCUMENT ***

COUNTY OF EL DORADO

PLACERVILLE JAIL CONTROL PANEL UPGRADE

PLACERVILLE, CALIFORNIA

BID #14-968-033

CONTRACT ADMINISTRATION FORMS

CONTRACT ADMINISTRATION FORMS

SUBMITTAL TRANSMITTAL FORM

REQUEST FOR INTERPRETATION (RFI) FORM

SUBSTITUTION REQUEST FORM

WARRANTY FORM

REQUEST FOR INTERPRETATION

PROJECT NAME: JAIL CONTROL PANEL UPGRADES, Placerville, CA		JOB NO. 14-0451	
		RFI NO.	
TO: AVS ENGINEERS		FROM:	
SUBJECT:			
CATEGORY: <input type="checkbox"/> NEED CLARIFICATION <input type="checkbox"/> REQUEST FOR DEVIATION FROM DOCUMENTS <input type="checkbox"/> UNFORESEEN CONDITION <input type="checkbox"/> CONSTRUCTION CONFLICT <input type="checkbox"/> CONFLICT BETWEEN DOCUMENTS <input type="checkbox"/> OTHER			
SPEC. SECTION	PARAGRAPH NO.	DRAWING NO.	DETAIL NO.
DESCRIPTION:			
CONTRACTOR'S PROPOSED RESOLUTION:			
<input type="checkbox"/> ATTACHMENTS:			
<input type="checkbox"/> COST IMPACT:		<input type="checkbox"/> TIME IMPACT:	
CONTRACTOR SIGNATURE:		DATE:	
RESPONSE:			
<input type="checkbox"/> ATTACHMENTS:			
ARCHITECT SIGNATURE:		DATE:	

SUBSTITUTION REQUEST FORM

PROJECT NAME: PLACERVILLE JAIL CONTROL PANEL UPGRADE	EDC JOB NO. 14-0451	CONTRACTOR'S JOB NO.	SUBMITTAL NO.
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PRODUCT OR SYSTEM:

SECTION NUMBER:

SPECIFIED ITEM:

PROPOSED SUBSTITUTION:

REASON FOR REQUEST:

REDUCTION OF CONTRACT SUM OR TIME WITH THIS SUBSTITUTION:

Attached data includes product description, specifications, illustrations, performance and test data of specified and proposed product or system required for a side-by-side comparison. Applicable portions of data are clearly identified.

Attached data also includes a description of changes to other work which proposed substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments, are correct:

1. The proposed substitution does not affect dimensions shown on drawings.
2. The undersigned will pay for changes to the building design, including engineering design, detailing and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be readily available for the proposed substitution.

The undersigned further states that the function, appearance, and durability of the proposed substitution are equivalent or superior to the specified item.

<p>Submitted by:</p> <p>Signature:</p> <p>Contractor:</p> <p>Telephone:</p> <p>Date:</p> <p>Attachments:</p>	<p>For use by Architect:</p> <p><input type="checkbox"/> Acceptable, see submittal review comments</p> <p><input type="checkbox"/> Rejected, see remarks below.</p> <p>By:</p> <p>Date:</p> <p>Remarks:</p>
--	---

WARRANTY FORM

Project Name _____

Description of Work _____

Specification Section _____

Date of Acceptance by Owner _____

We hereby guarantee that the workmanship and materials that we installed in the above named project have been in accordance with the Drawings and Project Manual and that the work as installed will fulfill the requirements of the guarantee included in the Project Manual. We agree to repair or replace any or all work, together with any other adjacent work that we may displace in so doing, that may prove to be defective in its workmanship or material within a period of _____ (____) years from date of acceptance by the Owner, without any expense whatsoever to Owner, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above-mentioned conditions within 10 days after being notified in writing by the Architect or Owner, we collectively or separately do hereby authorize Owner to proceed to have said defects repaired and made good at our expense and we will honor and pay the costs and charges therefore upon demand. This guarantee is a supplement to the General Conditions of the Contract and not in lieu of any provision thereof.

SUBCONTRACTOR:

Signed Date

Name Title

Company Name License No.

Address

GENERAL CONTRACTOR:

Counter signed Date

Name Title

Company Name and License No.

COUNTY OF EL DORADO

PLACERVILLE JAIL CONTROL PANEL UPGRADE

BID #14-968-033

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

28 05 00	Common Work Results for Electronic Safety and Security
28 05 13	Conductors and Cables
28 05 14	Raceways and Boxes
28 05 26	System Signal Grounding
28 05 27	Cabinets, Enclosures and Racks
28 09 00	Electronic Components
28 15 00	Intercom System
28 23 00	Video Surveillance System
28 46 13	Integrated Sequences of Operation
28 46 19	PLC Integrated Control System

SECTION 28 05 00

COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications, apply to this Section.

1.02 SUMMARY

- A. Part 1 Includes:
 - 1. Related Documents
 - 2. Summary and Related Sections
 - 3. References
 - 4. Definitions
 - 5. System Description and General Responsibilities
 - 6. Coordination
 - 7. Quality Assurance
 - 8. Submittals
 - 9. Delivery, Storage, and Handling
 - 10. Site Conditions
 - 11. Sequencing and Scheduling
 - 12. Warranty
 - 13. Extra Materials
- B. Part 2 Includes:
 - 1. Product Options and Substitutions
 - 2. Materials and Equipment
 - 3. Equipment Modification
 - 4. Fabrication
 - 5. Source Quality Control
 - 6. Firestopping/Sealant Materials
- C. Part 3 Includes:
 - 1. Examination
 - 2. Installation
 - 3. Field Quality Control

4. Cleaning
5. Training

D. Related Sections:

1. 28 05 13 Conductors and Cables
2. 28 05 14 Raceways and Boxes
3. 28 05 26 System Signal Grounding
4. 28 05 27 Cabinets, Enclosures and Racks
5. 28 09 00 Electronic Components
6. 28 15 00 Intercom System
7. 28 23 00 Video Surveillance (CCTV) System
8. 28 46 13 Integrated Sequences of Operation
9. 28 46 19 PLC Integrated Control System

1.03 REFERENCES

A. Codes compliance - Comply with the established project edition of the following codes as applicable:

- | | |
|---|------|
| 1. California Electrical Code (NFPA 70) | CEC |
| 2. National Fire Alarm Codes (NFPA 72) | NFAC |
| 3. California Building Code | CBC |
| 4. All State or County Codes and Ordinances | |

B. Standards Compliance - Comply with the following standards as applicable:

- | | |
|---|------|
| 1. American National Standards Institute | ANSI |
| 2. American Society for Testing and Materials | ASTM |
| 3. Electronics Industry Association | EIA |
| 4. Electrical Testing Laboratories | ETL |
| 5. Factory Mutual | FM |
| 6. Federal Aviation Agency | FAA |
| 7. Federal Communications Commission | FCC |
| 8. Institute of Elect. and Electronics Engineers | IEEE |
| 9. National Electrical Contractors Association | NECA |
| 10. National Electrical Manufacturers Association | NEMA |
| 11. National Fire Protection Association | NFPA |
| 12. Occupational Safety Health Act | OSHA |
| 13. Underwriter's Laboratories | UL |

1.04 DEFINITIONS

- A. **By Others or By Other Trades:** By persons or parties other than the Division 28 Contractor. In this context the words “by others or by other trades” shall not be interpreted to mean “not in contract (NIC)”.
- B. **Certified:** Equipment has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards and found to be safe for use in a specified manner; production is periodically inspected by a nationally recognized testing laboratory; and it bears a label, tag, or other record of certification.
- C. **Concealed:** Not visible or readily accessible such as, embedded in masonry or other construction installed behind wall furring with double partitions or above hung ceilings, in crawl spaces, in shafts.
- D. **Conveniently Accessible:** Capable of being serviced without climbing or crawling under or over obstacles, and with adequate working clearance both front and back.
- E. **Damage:** Visible or invisible abuse that negatively affects performance or appearance and creates defective materials or workmanship.
- F. **Defective Materials or Workmanship:** Operational failures, performance below minimum requirements, evidence that the system will not be reasonably maintainable, errors in documentation, abnormal operations, unsafe conditions, or similar unsatisfactory performance.
- G. **Contractor:** Company holding the contract or agreement with the Owner or its representative. The Contractor may, when permitted, sub-contract Work described in this Section to which the term contractor may apply.
- H. **Exposed:** Not concealed.
- I. **Failure:** Any deviation from intended system operation and performance, as determined by the Contract Documents and subsequent submittals and the Owner’s Representative.
- J. **Furnish:** Purchase and deliver to the Project site complete with every necessary appurtenance, support, and accessory required for operation.
- K. **Install:** Unload at the delivery point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the Project.
- L. **Labeled:** Equipment embodies a valid label, symbol, or other identifying maker of a nationally recognized testing laboratory such as Underwriters’ Laboratories, Inc., the laboratory makes periodic inspections of the production of such equipment, and the labeling indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner.
- M. **Listed:** Equipment is mentioned in a list which is published by a nationally recognized laboratory which makes periodic inspection of the production of such equipment or states that such equipment meets nationally recognized standards or has been tested and found safe for use in a specified manner.

- N. Nationally Recognized Testing Laboratory: A testing laboratory which is approved, in accordance with OSHA regulations, by the Secretary of Labor.
- O. Provide: Furnish and install, completely ready for use, including all accessories required for operation.

1.05 SYSTEM DESCRIPTION AND GENERAL RESPONSIBILITIES

- A. The work to be performed under this contract includes the furnishing of all labor, materials, and equipment for the Electronics Controls Systems. Work shall include all provisions of new electronics controls systems, including door/gate control and alarm monitoring, intercom, duress alarm, video surveillance (CCTV), programmable logic controllers, and all software development/PLC programming.
- B. Combined Prescriptive and Performance Design Requirements
 - 1. Division 28 includes a combination of prescriptive and performance specifications. Compliance with the performance specifications, as well as coordination and integration of the prescription requirements, will require substantial design work on the part of the Contractor.
 - 2. The performance requirements are intended to establish overall system performance requirements, satisfy the operational requirements, and establish the inter-coordination requirements for the Division 28 systems.
 - 3. The prescriptive requirements establish the minimum quality, characteristics, and types of components, equipment, and materials to be used to achieve the stated system performance requirements. The Contractor is advised, however, that prescriptive specifications have not been provided to satisfy all of the specified performance requirements.
 - 4. The Contractor shall carefully consider all of the requirements for each of the Division 28 systems when preparing its bid. Any questions regarding the intent of these requirements, the scope of the systems or their coordination requirements must be submitted in writing prior to bidding in accordance with the Instructions to Bidders. The Contractor shall have no claim for either extra compensation or extra time on the grounds that it did not understand the scope or the requirements of the Division 28 work, and/or the coordination requirements of the Division 28 work with the work of the other Divisions.
 - 5. **IMPORTANT:** Section 28 46 13-3.02 – Sequence of Operations describes the MINIMUM performance requirements necessary for the scope of the project. Any equipment, wiring, raceways, and programming necessary to meet the operational performance as described under Section 28 46 13-3.02 shall be the responsibility of the Contractor, regardless if such entities are not specifically identified in the Drawings and Specifications herein. Any conflicts in performance requirements to other Specification Sections and Drawings shall be brought to the attention of the Owner during preparing for bid, otherwise the stringest (most costly) requirement will take precedence.
 - 6. Compliance with the project requirements will be progressively monitored and adjusted through the submittal process, Shop Test, Performance Test and Continuous Operational Test.

C. Drawing Interpretation

1. The Drawings are diagrammatic and indicate the general arrangement of systems and equipment unless indicated otherwise by dimensions or detail drawings. The Drawings utilize riser, block, installation and schematic diagrams and symbols to outline the Work to be provided. These drawings do not have any dimensional significance nor do they delineate every item required for the intended Work. No interpretation shall be made from the limitations of symbols and diagrams that any elements necessary for complete Work are excluded.
 2. The Work shall be provided in accordance with the intent expressed on the Drawings and Specifications, and in conformance with the actual building architectural and structural conditions. When in conflict, field conditions take precedence over the Contract Documents.
 3. The meaning of abbreviations shall be the same whether in lower case letters or without periods.
 4. The use of words in the singular shall not be considered as singular where other indications denote that more than one item is referred to.
 5. Details that appear on the Contract Documents which are specific with regard to the dimensioning and positioning of the Work, are intended only for the purpose of establishing general feasibility. They do not replace engineering or field coordination by the contractor for the Work.
- D. Provide all parts and equipment for a complete and operational system for the Work of Division 28 as described herein and shown on the drawings.
- E. Furnish and install all trenching and backfill, duct banks, conduits, raceways, sleeves, boxes, gutters, shelves, enclosures, shelf and enclosure supports, backboards, pull ropes (in unused or spare conduits) required to make all systems fully operational, including components not shown on the Drawings, but necessary for fully operational systems.
- F. Furnish, install, terminate, test, dress, and identify all wire and cable required to make systems fully operational, including all wire and cabling not shown on the Drawings, but necessary for fully operational systems.
- G. Recognize that the Work entails a considerable amount of custom integration between individual systems, as well as the design and implementation of many system and component interfaces. Take full responsibility for the complete design, installation, and performance of the total integrated system, including integration between systems and various interfaces, in order to achieve the specified operational features and system performance requirements.
- H. Recognize that the Work entails a considerable amount of custom-written and custom-tailored software, both high-level language applications and hardware-specific drivers. Take full responsibility for the performance of the total software suite, including the software embedded in manufactured equipment, in order to achieve the specified operational features and system performance requirements.
- I. Fully test the systems, demonstrate their satisfactory operation, and train maintenance and operating personnel, as specified in this Section and the Sections governed by this Section.

1.06 COORDINATION

- A. Coordinate with the Owner and all other trades as required to ensure that the entire Work of this Project will be carried out in an orderly, complete, and coordinated fashion.
- B. Coordinate installation of lighting and ventilation in all equipment rooms and control stations to avoid any possible interference and to enhance system function.
- C. Coordinate with the Work of all applicable Divisions and Drawings for the required electrical and mechanical control interfaces to the work of this section.
- D. If applicable, provide coordination drawings of security device plate mounting templates and internal frame conduits to the hollow metal frame manufacturer/supplier to facilitate frame preparation for electronic devices. Rework all frames for which device mounting has not been coordinated at Contractor's expenses.
- E. If applicable, obtain product data and wiring schematic information from the Division 8 and 11 Contractors/manufacturers for all approved locking and door monitoring hardware. Coordinate with the Contractors to properly wire, terminate and test all electrically controlled and monitored door/gate hardware.

1.07 QUALITY ASSURANCE

- A. Division 28 requires contractors with similar work experience and specific licenses and certifications to perform the work of this section. Specific requirements are identified in the related sections and are summarized in Schedule 28 05 00B. Contractors must be certified or licensed at the time of bid where Manufacture certification or licensure is required. Required licenses and certifications shall be submitted within 3 days of being selected as the apparent low bidder.
- B. The Division 28 contractor shall have had experience in the design and installation of similar systems of similar project sizes and similar integration as this project to be considered qualified.
- C. The Contractor shall be responsible for all costs incurred including costs incurred by the Owner and its representatives for failure to provide the experience and key personnel as specified.
 - 1. Deductive change orders may be issued as a result of the failure to properly engineer the work prior to construction or improperly installed work that results in costs incurred to the Owner. Examples of incurred costs are rejection of submittals for failure to follow specifications or failure to properly engineer the work; re-inspection of rejected work.
- D. The Division 28 contractor shall maintain a local service center with qualified service technicians for the duration of the Warranty.
- E. The Division 28 Contractor shall have a California Contractors License C-10 or C-7 for the respective work.
- F. Key Project Personnel must have work experience with projects of similar size and complexity. Systems experience shall be demonstrated for the Key Project Personnel. Résumés of prospective key personal shall be submitted within 30 days of contract award.

1. Project Manager Qualifications
 - a. Bachelors of Science Degree from ABET accredited college in Construction Management or related engineering field or,
 - b. Five years experience with projects of similar size and complexity.
2. Project Engineer Qualifications
 - a. Licensed Professional Electrical Engineer or,
 - b. Bachelors of Science Degree from ABET accredited college in Electronics Engineering field and two years experience with systems to be provided, or
 - c. Technical Trade School Degree, Associate of Science Degree, or Bachelor's Degree and a minimum of six years of demonstrated experience with the systems to be provided.
3. The approved Project Manager shall represent the Contractor at all times in all project matters and shall be responsible for the administrative work including but not limited to, the following:
 - a. Representation at all project meetings.
 - b. Progress schedule and progress reporting.
 - c. Payment schedule of values and pay requests.
 - d. Representation and management of all employees and sub-contractors.
 - e. Conduction of on-site performance and acceptance testing.
4. The approved Project Engineer shall be qualified and shall be responsible for technical work including but not limited to, the following:
 - a. Preparation and signature of all engineering, shop drawings, and product data submittals.
 - b. System fabrication, field installation work, and testing.
5. Consider all qualification and experience materials submitted as binding. Obtain the Owner's approval in writing prior to any deviations from the minimum requirements in organization, personnel, work plan, quality control plan, procurement plan or other declaration within the qualification submittal. Key project personnel substituted prior to or during the Work must meet the specification requirements and obtain the Owner's approval.

G. Regulatory Requirements and Standards:

1. References to the California Electrical Code (CEC) and National Fire Alarm Code (NFAC) are a minimum installation requirement standard. Drawings and Specifications shall govern in those instances where requirements are greater than those specified in the CEC and NFAC.
2. Obtain and pay for all permits and inspections required by all legal authorities and agencies having jurisdiction for the Work. The certificates of all such permits and inspections shall be delivered to the Owner.

1.08 SUBMITTALS

- A. Submit under provisions of Division 1, Submittals.

- B. Contractor is advised that approval or acceptance of product data or shop drawing submittals does not release the contractor from providing all necessary documentation per submittal requirements, nor does it obviate contractor from additional design and coordination throughout the project.
- C. Work Plan
1. Submit a work plan for all work to be performed in the existing facility within 15 days of the Notice to Proceed.
- D. CPM Schedule
1. Submit a Critical Path Method Schedule within 30 days of the Notice to Proceed.
 2. At a minimum show tasks by area such as by building, by floor or other appropriate designations.
 3. Include tasks that are not part of the work of this section but that may affect this section such as work by other trades or contractors or Owner review time.
 4. Include tasks that are not part of the work of this section but that may affect this section such as work by other trades or contractors or Owner review time.
- E. Submittal Matrix
1. Prepare a matrix of submittals by type vs. section of all submittals to be made by the Division 28 contractor within 30 days of the Notice to Proceed.
 2. Utilize the list of required submittals listed at the end of this section as a starting point. Add columns for expected delivery dates and each specification section. If a listed submittal is not required for a specific section, indicate such with an "N/A" or other means in the column and row cross point.
- F. Schedule of Values
1. Submit a Schedule of Values (SOV) based on the CPM schedule and Submittal Matrix that reflect the value of the systems and installation of work for this Division.
 2. That approved SOV will be used as a basis for progress payments.
- G. Product Data:
1. Product data is required for all materials and equipment. Include complete bill of materials for each section with the product data submittal.
 2. Cross-reference submitted items to the Specifications using their related sections and paragraph numbers.
 3. Submit complete product data for the all system components in a single, bound submittal of one or more volumes. Provide a table of contents and labeled divider tabs for each section. Partial submittals for individual sections will be returned without review.
 4. Include descriptive literature, catalog cuts, illustrations, schematics, technical data sheets, and test data necessary for the Owner's Representative to ascertain that proposed equipment and materials comply with specification requirements. Include manufacturer's name, model, catalog or part numbers. Catalog cuts shall be legible and shall clearly identify equipment being submitted.

5. Include required calculations, I/O points lists, system zone schedules, and other tabular data as necessary to clarify system sizing and configuration. Do not, however, consider such submittals as a substitute for complete shop drawings.
6. Disclosure of Product Deviations: Specifically identify and tabulate any and all deviations from the contract documents including all system functions and features. Reference the corresponding specification sections and paragraph/article numbers. All variances and deviations will be reviewed for acceptance or rejection. It will be the Contractor's sole responsibilities to comply with all other contract requirements not revealed in the disclosure of product deviations.

H. Shop Drawings:

1. Shop drawings are required for all systems and component assemblies.
2. AutoCAD ".dwg" files of the Contract Drawings may be made available upon request. These files may be used as a first step in the preparation of shop drawings. Do not consider the drawing plots from such files as a substitute for the shop drawings that are to be prepared by the contractor.
3. Shop drawings will not be accepted or considered unless they are submitted as a complete package for each specification section. Partial submittals covering less than a whole system or with incomplete interfaces to other systems will be rejected.
4. Standard manufacturer's drawings may not be used as shop drawings unless specifically modified for use on this project.
5. Each drawing requires a unique drawing number and revision level. Revisions shall per be dated and referenced per submittal number. Delta numbers and clouds on the drawings shall be used in all instances where changes have been made to the pervious submittal.
6. At a minimum, include the following shop drawings:
 - a. Floor Plans: Scaled drawings showing equipment and device locations in plan view. Include wire and cable types and quantities, raceway sizing and routing. Routing information shall indicate where rated assemblies are penetrated. Separate into as many plan series as needed to prevent overlapping information. These drawings shall be fully coordinated with other trades prior to submittal. Show relationships to adjacent surrounding structures.
 - b. Equipment and Control Room Plans and Elevations: Scaled, dimensioned drawings showing security equipment layouts in security equipment rooms, electrical/security closets, and control rooms. Include electrical J-boxes and receptacles, power, conduit sizing and routing, metal gutters, wiring ducts, cable trays, and supports. Indicate all other non-security cabinets, enclosures, and equipment within the room.
 - c. Cabinet, Enclosure, and Rack Elevations: Scaled, dimensioned drawings for each system equipment cabinet, enclosure, and rack showing component and equipment mounting, wire and cable routing and separation, connector and terminal block locations and labeling, and all necessary fabrication details.
 - d. System Block Diagrams: Single line block diagrams showing the general relationship between system components and the interconnection between systems. Use these drawings as a reference for the Single line diagrams and point-to-point diagrams by cross-referencing the shop drawing number of those diagrams on these drawings.

- e. Single Line Diagrams: Interconnection diagrams for the riser and trunk wiring between equipment cabinets, enclosures racks and major components. Use the same equipment designations as the floor plans and block diagrams.
 - f. Point-to-Point Diagrams: Drawings which show the wiring of each component or device of each individual system. Include details of power supply, grounding, shielding, shield grounding, surge protection, fusing, connector pin-outs, terminal assignments, and similar wiring and connection details. Use the same component and device designations as the floor plans and other shop drawings.
 - g. Schematic Diagrams: Drawings which show the component wiring of a system to include but not limited to resistors, diodes, transistors, relays, etc. Required for all custom systems and modified commercial products.
 - h. Device Installation Diagrams: Details which show the installation and wiring termination of each field device in each individual system. Include settings for dipswitches, jumpers, addresses, port assignments, etc. of all devices.
 - i. All other shop drawings necessary to install, fabricate, locate, identify, test, service, and repair the systems provided.
7. Shop drawings approved by the Owner's Representative OR by the Consultant Engineer is not a release from Contract requirements as defined by the Drawings, Specifications, and governing codes and regulations.
- I. Samples:
- 1. Field Samples:
 - a. Wires and Cables: Submit a one (1) foot sample length of each wire and cable type to be used with the cable identification clearly shown.
 - b. Submit all required samples along with the product data submittal for review and approval prior to installation.
 - c. If all wire samples cannot be submitted at the same time, submit samples with a complete list of all cables to be used noting samples which have been submitted. Update the list with each subsequent sample submittal.
 - 2. Devices/Equipment:
 - a. Submit sample assemblies of each of the following devices or equipment along with the product data submittal for review and approval by the Owner's Representative:
 - 1) Substituted products if requested by Owner
 - 2) Custom component, board, equipment or assembly
 - 3) Intercom Station
 - 4) Duress Station
 - 3. Disposition: Submitted samples become property of the Owner and will not be returned.
 - 4. Approval of any custom or modified assemblies shall be required. Submit technical information with samples.

J. Test Procedures:

1. Initial Performance Testing: Submit test procedures, forms, and checklists for point-by-point testing. Include a listing for each individual system, each control station and control panel, each equipment room, and each major system component. At a minimum, forms shall include columns for operational/non-operational status, remarks, workmanship, and date corrected. Submit a sample format for approval by the Owner's Representative a minimum of 20 days prior to testing.
2. Performance Testing: Submit test forms which are identical to or similar to the accepted Initial Performance Testing forms. Obtain approval from the Owner's Representative for any changes in test procedure or forms.
3. Continuous Operational/Functional Testing: Submit a detailed test procedure for the continuous functional testing described generally in this Section. Submit for approval by the Owner's Representative a minimum of 15 days prior to testing.

K. Test Results:

1. Initial Performance Testing: Submit completed test results for point-by-point testing to the Owner's Representative five days prior to scheduled Performance Testing.
2. Performance Testing: Submit completed test results prior to or with the request to begin the Continuous Operational Test.
3. Continuous Operational Test: Submit completed test results prior to or with the request for Substantial Completion.

L. Record (As-Built) Documents:

1. Maintain a current record set of as-built drawings on the job and as construction and installation progress, show the actual installed location of all items, material, and equipment.
2. Accurately record actual routing of all conduits including sizes and types.
3. The as-built drawings shall be available to the Owner's Representative for review and will be required for evaluation of progress payments.
4. Submit as-built shop drawings created from the approved shop drawings and updated from the site as-built drawing set and any other drawings required to depict the as-built conditions of the installed work.

M. Operational Manuals:

1. Submit the required quantity of identical manuals, which shall contain the Theory of Operation, start up, shut down and emergency procedures, and the manufacturer's operating instructions.
2. Subdivide the manual by section with tab dividers. Provide a table of contents which identifies each section and the contents therein.
3. Submit an electronic copy.

N. Maintenance Manuals:

1. Submit a complete set of maintenance documents as described in this Section. For documents of sizes greater than 11 x 17 inches, prints and electronic copy shall be furnished.

2. Manuals shall include the following as a minimum requirement:
 - a. Technical system description.
 - b. System schematics.
 - c. Detailed wiring diagrams to identify cabling, termination, and routing.
 - d. Panel assembly drawings to identify location of components, terminal strips, and equipment as required to correlate with system drawings.
 - e. Descriptions and drawings as required to maintain equipment from the board to the component level.
 - f. Description of software and user programmable functions. Procedures for user programmable functions shall be included.
 - g. A complete printout of each unique system program.
3. For systems where the program resides on electronic media or other similar storage medium, furnish a copy of the media, or similar medium, to the Owner's Representative.
4. Where multiple systems are combined into a single integrated system, documentation shall include a description of the integrated system and the details of the interfaces between systems.
5. Provide a list of current telephone numbers and addresses of all material vendors and equipment manufacturers who have supplied components in this Project. Include separate service telephone list and purchasing telephone list cross-referencing with each component.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Protect all materials and equipment from damage during storage at the site and throughout the construction period. Protect equipment and materials during shipment and storage against physical damage, dirt, dust, moisture, cold, rain, and any foreign substances that may damage the equipment.
- B. Prevent damage from rain, dirt, sun and ground water by storing the equipment on elevated supports and covering them on all sides with securely fastened protective rigid or flexible waterproof coverings.
- C. Protect conduit by storing it on elevated supports and capping the ends with suitable closure material to prevent dirt accumulation.
- D. Protect all fabricated and/or installed materials and equipment against dust, dirt, moisture, physical damage, metal debris, and any foreign substances that may damage the equipment.
- E. Protect painted surfaces with removable heavy Kraft paper, sheet vinyl or equal, installed at the factory and removed prior to final inspection.
 1. Replace equipment determined by the Owner's Representative to be damaged. Repaint and finish damaged paint on equipment and materials with the same quality of paint and workmanship used by manufacturer so that repaired areas are not obvious.

1.10 SITE CONDITIONS

A. Site Investigation

1. Prior to submitting a bid, the Contractor shall perform a site survey of all related existing systems and submit any potential problems of the design documents that may increase the installation cost of the project.
2. Survey all locations where work is to be performed and verify existing conditions prior to shop drawing submittals.

B. Coordination with Security Personnel

1. This is an existing detention facility with controlled access and movement 24 hours a day, 7 days a week. Expect delays due to facility events. The owner will assign a contact person for the contractor to coordinate day to day activities and access into areas. Coordinate all system interruptions and scheduled down time with the contact person. The contractor shall include in his bid all premium time to which it may be subjected to working.
2. Contractor shall abide by all facility rules.

C. Security Requirements

1. Special security requirements will be provided by the facility. See Division 1.
2. Special requirements may include limited access to the work area by area or time, background checks of on-site personnel, restrictions of equipment and tools to include tool counts.

1.11 SEQUENCING AND SCHEDULING

A. General Requirements:

1. Do not begin the project without the Owner's acceptance of proposed key project personnel for the Division 28 Work.
2. Prepare, review, and coordinate with the Owner's Representative an approved construction (CPM) work schedule. Schedule work in areas and at times that will not interfere with scheduled activities as defined by the Owner's Representative.
3. Do not procure any equipment without accepted product data submittals. Do not perform any field installation without accepted shop drawings. Do not begin any extensive software development or programming without accepted system, operational narratives, the required Owner's coordination, and user's requirements.
4. Pre-assemble control electronics, control panels, racks, and cabinets off-site as most practical.
5. Install system control equipment, control panels, cabinets, racks, and consoles only after major construction in the area in which they are to be installed has been completed and areas have been cleaned, painted, and sealed.
6. After systems installation and prior to point-by-point performance testing, thoroughly pre-test all devices and device wiring for proper performance. Then, thoroughly pre-test each system function in each state or condition under every operating mode.

B. Coordinate all work in the existing facility with the facility contact person.

1.12 WARRANTY

- A. The Contractor is to provide a warranty of the work provided under this contract (including, but not limited to, software, hardware, and peripheral equipment) as a system, including interfaces to work by others for one year from the date of Acceptance of the Work. Specific Division 28 sections may require longer warranty periods. Divisions of work among various suppliers, vendors, installers, subcontractors, and other parties will not be recognized or accepted.
- B. Extended Warranty: Provide itemized pricing for an Extended Service and Warranty for each year after the initial warranty period up to five (5) years. Describe whether all parts and labor are included in this offering.
- C. Guarantee to repair and replace defective materials or workmanship during the warranty period including labor and materials.
- D. An emergency maintenance (Warranty) request shall be defined as a system or portion of a system failure that affects building safety, security, and operation of critical components. Failure of a single component (i.e., smoke detector, intercom station, camera, or monitor) is not considered an emergency maintenance request.
- E. Respond within four hours to an emergency maintenance request. Provide a twenty-four hour telephone contact number (24 hours per day, 365 days per year). Service response time is defined as the period between the placing of a service request and the arrival of a qualified technician capable servicing the problem on-site.
- F. Maintain a sufficient parts inventory at the project during the warranty period to meet the guaranteed system repair times.
- G. Repair and make operational any defective materials or workmanship resulting from an emergency maintenance request within an 8-hour period from the time of the initial arrival of service personnel at the site. Correct non-emergency defective materials or workmanship within four (4) calendar days of receiving notice of the defect.
- H. Where the equipment manufacturer's warranty covers a longer time period than that required by these Specifications, the manufacturer's warranty shall govern.

1.13 EXTRA MATERIALS

- A. Prior to Acceptance of the Work, deliver to the Owner all spare parts and extra materials required in each Section. All spare parts and extra materials shall be brand new in their original shipping boxes or packages and shall have one year material warranty remaining at the time of delivery. Extra materials shall be available to the Contractor to use as immediate replacements during the warranty period. All extra materials used for the warranty requirements shall be replaced by the Contractor.
- B. Special Tools:
 - 1. Provide three of each type of security screw bits used.
 - 2. Provide minimum of one of any specialty tools used.

PART 2 PRODUCTS

2.01 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Comply with the General and Supplementary Conditions and Division 1 Specifications.
- B. The products named in this section and the sections governed by this section establish minimum qualities that substitutions must meet to be considered acceptable. The specified products have also been used in preparing the drawings and specifications, and therefore establish the basis for equipment sizing, wire and cable design, power consumption, and other design parameters.
- C. Substitution requests, if permitted, will be considered only if submitted in strict accordance with the followings:
 - 1. Cross-reference submitted items to the Specifications using their related Section and paragraph number.
 - 2. Submit complete product data, descriptive literature, catalog cuts, illustrations, schematics, technical data sheets, and test data necessary for the Owner's Representative to ascertain that proposed equipment and materials comply with specification requirements. Include manufacturer's name, model, catalog or part numbers. Catalog cuts shall be legible and shall clearly identify equipment being submitted.
 - 3. Disclosure of Product Deviations: Specifically identify and tabulate any and all deviations from the contract documents including all system functions and features. Reference the corresponding specification sections and paragraph/article numbers. All variances and deviations will be reviewed for acceptance or rejection. It will be the Contractor's sole responsibilities to comply with all other contract requirements not revealed in the disclosure of product deviations.
- D. The Contractor shall take full responsibility for all design, coordination, and cost associated with substitutions including, but not limited to:
 - 1. Its integration into the total system including physical mounting space, electrical interconnection, signal wiring, power, quality, electromagnetic interference, communication protocols, and similar design considerations.
 - 2. Any additional materials, equipment, components, accessories, items required for equivalent system operation and performance.
 - 3. Any necessary changes to branch power circuits, circuit protective devices, and the Work of other trades.
 - 4. Any modifications to wire, cable, and raceway design.

2.02 MATERIALS AND EQUIPMENT

- A. All equipment and materials required for installation under these Specifications shall be new and without blemish or defect.
- B. Materials and equipment furnished shall be of current production by manufacturers regularly engaged in the manufacturing of such items, for which replacement parts are available. Specifications are prepared long in advance of project construction; the contractor is to use the newest model of the specified products available at bid time.

- C. All material and equipment shall be listed, labeled, or certified by Underwriters' Laboratories, Inc., where such standards have been established. Equipment and material which are not covered by UL Standard will be accepted provided equipment and material is listed, labeled, certified or otherwise determined to meet safety requirements of a nationally recognized testing laboratory. Equipment of a class which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe will be considered, if inspected or tested in accordance with national industrial standards such as NEMA or ANSI.
- D. All parts of a system shall be the product of one manufacturer. When more than one unit of the same class of equipment or material is required, such units shall be the products of a single manufacturer. Constituent parts which are similar shall be the product of a single manufacturer.
- E. All components of an assembled unit need not be products of the same manufacturer; however, all components must be acceptable to the Owner's Representative. Components shall be compatible with each other and with the total assembly for the intended service.

2.03 EQUIPMENT MODIFICATIONS:

- A. When standard manufactured equipment is modified from its original condition or factory options have been exercised identify the changes as noted below.
 - 1. Clearly identify the modifications on the shop drawings.
 - 2. Clearly identify each piece of modified equipment with a label, which states, "This unit has been modified..." and identify the modification or reference. Locate the label so that a service technician or factory service personal will be able to determine the equipment in use is non-standard and that modifications are required for service, testing and replacement.
 - 3. Identify and describe the modifications on the Record Documents.
- B. Equipment modification labels are not required for jumper or switch settings.

2.04 FABRICATION

- A. Fabricate enclosures to easily accommodate interconnecting cables entering from above or below through the use of auxiliary gutters, cable trays, and conduits. Protect all metal cabinet edges where conductors cross and conduit ends with protective covering or bushing.
- B. Group wires and cables by types, boards and modules, and maintain National Electrical Code clearances throughout the installation, including Class 1, Class 2, communications, and branch circuit power separations. Maintain sufficient and proper separation between microphone-level audio, line-level audio, high-level audio, and video cables.
- C. Uniformly organize equipment and cable routing throughout all enclosures, racks, and cabinets. Provide wiring ducts, wireways, wire posts, D rings, wire saddles to route and secure factory and field wiring. Provide routing for all wiring from point of entry to point of termination to maintain required separation, access to all components, and general organization to the wiring. Neatly dress, route and secure wiring.
- D. Mechanically fasten cabinet raceways and cable clamps to enclosure rear panels, rack members, console members, or to other system components. The use of adhesive

fasteners (without mechanical fastener) is not permitted. Furnish and install cable support posts where necessary to properly support cables.

- E. No splices are permitted in cabinet raceways. Exception: Splice to cable shield when within two inches of cable termination is permitted.
- F. Furnish and install metal grounding type outlet strips in each equipment cabinet, enclosure, and rack. Leave a minimum of two unused receptacles at each location for future expansion. Neatly shorten and dress power cords from individual equipment to the outlet strips.
- G. Provide protection from accidental contact of all terminals or exposed conductors over 25 volts within enclosures that contain Class 2 wiring. Use non-conductive barriers, heat shrink or other acceptable methods. Tape of any kind is not permitted.
- H. Provide an isolated ground bus within each equipment cabinet, enclosure, and rack for single point termination of audio and data shields and grounds.

2.05 SOURCE QUALITY CONTROL

A. Shop Inspections:

1. The Owner's Representative shall have the right at all times to inspect or otherwise evaluate the Work performed or being performed and shall have access to the premises in which the Work is being performed.
2. The Owner's Representative may verify the inspections or re-inspect any item. The Owner reserves the right to reject materials and workmanship found unacceptable during inspections.

B. Shop Test and Demonstration

1. Shop Test and Demonstration shall be a major milestone that shall commence only after all shop assembly, system integration, and software development and programming is complete. Owner's approval of the integrated shop test shall be obtained before any system components are shipped to the site for installation.
2. Perform a point-by-point system demonstration of the Integrated Security System including CCTV system, Duress Alarm System, Integrated Sequences of Operation, PLC system, control panels, Intercom, and Public Address system to show all systems functioning and communicating as a single integrated system.
3. Each input and output point, operational sequence, control panel, and PLC network will be tested. Provide sample field devices, approved mock up devices and jumpers to simulate actual field operation conditions. In addition, simulated system failure, response time, reset and boot up time, and other tests will be conducted as directed by the Owner.
4. Sample field devices including, but not limited to are, intercom stations, paging speakers, microphones, cameras, CCTV monitors, locks, and door position monitoring devices.
5. Notify the Owner a minimum of 15 working days prior to demonstration so that the Owner may witness the demonstration.
6. Conduct the demonstration in strict accordance with the test procedure accepted by the Owner. Demonstrate full compliance with the required operating modes and

sequences of operation under all operating modes. Record demonstration/ test results on a report which shall include a list of all personnel witnessing the demonstration, test methods used, and a record of each specific test made.

7. If demonstration results are not in compliance with requirements, make necessary hardware and software changes, corrections, repairs, or adjustments at no additional cost to the Owner. If corrections cannot be made during the scheduled Shop Test and another shop test is required, the Contractor shall pay for all transportation, lodging and expenses of the Owner's representatives' (maximum seven people) attending the additional tests. This process shall continue until the systems are acceptable to the Owner.

2.06 FIRESTOPPING/SEALANT MATERIALS

- A. Firestop and seal all penetrations of fire walls with minimum three hour sealant or Fire Stop Putty (FSP). This includes but is not limited to all raceway, conductor, sleeve and cable tray penetrations where penetrating device does not completely seal the hole.
- B. Accepted Products: International Protective Coatings Corp. FlameSafe® FSP 1100, Nelson FSP, Domtar Fire-Halt® or equal from other manufacturers.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Carefully inspect the installed Work by other trades and verify that all such Work is complete to the point where installation of the Work of this division may properly commence.
- B. In the event of discrepancy, immediately notify the Owner's Representative. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.
- C. Install all equipment in accordance with all pertinent codes and regulations, the accepted design, and the referenced standards.

3.02 INSTALLATION

- A. Equipment Identification:
 1. Install a nameplate on each individual equipment rack, enclosure, boxes, cabinet, and significant equipment item.
 2. Use identifiers and abbreviations defined in the Drawings whenever possible. Use plan designation for labeling, unless indicated otherwise.
 3. Nameplates shall be laminated black phonemic resin with a white core and engraved lettering, a minimum of 1/4" high. Use fasteners to install nameplates. Do not fasten with adhesives.
 4. Engrave using upper case letters of uniform height; centered on device, cover plate, or enclosure; with all characters made clearly and distinctly.
 5. All equipment shall have the manufacturer's name, address, model number and rating on a name plate securely affixed in a conspicuous place. All equipment shall bear

labels attesting to Underwriters Laboratories approval where subject to Underwriters Laboratories label service.

6. Identify all field terminals and relays with device identification. Lettering shall be 3/16" high minimum.

B. Equipment Installation:

1. Install all equipment in accordance with the manufacturer's recommendations, and accepted shop drawings.
2. Install all equipment in compliance with CEC requirements, NECA's "Standard of Installation", and recognized industry practices.
3. If requested, submit structural and seismic mounting load calculations demonstrating adequate support and bracing for seismic zone 4.
4. Do not attach electrical materials to roof decking, removable or knockout panels, or temporary walls and partitions unless indicated otherwise. Use hangers and other supports to support the equipment and materials, intended for this purpose.
5. Locate equipment as close as practical to the locations shown on the Drawings.
6. Maintain minimum 3-foot working clearances on each side of equipment or equipment racks where access is required to inspect, service or adjust.
7. Check equipment against available mounting space indicated on the drawings. Coordinate location of equipment with existing devices to minimize interference. Bring all conflicts or clearance problems to the attention of the Owner's Representative during the preparation of shop drawings.
8. Where the Owner's Representative determines that equipment installation is not conveniently accessible for operation and maintenance, remove and reinstall equipment in a conveniently accessible manner at no extra cost.

C. Grounding and Shielding:

1. Comply with Section 28 05 26.

D. Surge Suppression:

1. Comply with Section 28 05 26.

3.03 FIELD QUALITY CONTROL

A. Initial Performance Testing:

1. Initial Performance Testing is to be conducted by the Contractor.
2. Point-by-point testing shall include the sequential operation of each system and control function in each of its operating modes. All tests are to be conducted and recorded per the accepted procedure and test forms.
3. Notify the Owner's Representative five days in advance that this activity will be occurring.

B. Performance Testing:

1. Performance Testing is to be conducted by the Contractor and witnessed by the Owner's Representative.

2. Schedule point-by-point performance testing only after Initial Testing has been satisfactorily completed and all necessary corrections have been made. Provide the Owner's Representative with a minimum of 5 working days notice with a request to schedule Performance Testing. Submit Initial Performance Test records prior to the scheduled Performance Test. Failure to submit test results as specified shall be cause to re-schedule testing.
3. Point-by-point testing shall include the sequential operation of each function in each of its operating modes, in addition to completion of all required performance testing and measurement.
4. Conduct point-by-point testing in the presence of Owner's Representative. Record test results on the accepted test checklist which shall include a list of all personnel witnessing the tests. If test results are not in compliance with requirements, make necessary changes or adjustments at no additional cost, and arrange for another test. This process shall continue until the systems are acceptable to the Owner's Representative.
5. Failure of any part of the system which precludes completion of system testing, which cannot be repaired in four (4) hours, shall be cause for terminating the test. Repeated failures which result in a cumulative time of eight (8) hours to effect repairs, shall cause the system test to be declared unacceptable. Retesting of the entire system shall be rescheduled at the convenience of the Owner.
6. Performance Testing will also include inspections for contract document compliance, codes and standards compliance, and workmanship.

C. Continuous Functional/Operational Testing:

1. After completion and Owner Representative's approval of the Performance Testing, conduct a 14-day operational test in order to demonstrate continuous system performance. The systems will not be accepted until they operate for 15 continuous days without a system failure. Restart the test period from the beginning after every confirmed system failure.
2. The Owner will provide staff to man and operate all control points during continuous operational testing. The Owner's test personnel will simulate staff movement, generate alarms, and otherwise randomly operate as many functions as practical on a nearly continuous, 8-hour-shift basis. Provide jumpers and simulation programs to test alarms and other conditions that cannot be readily performed by test personnel. The test staff will record all suspected problems and provide these reports to the test committee.
3. The Owner's Representative will make the final determination for all disputed problems.
4. System failure is defined as any portion of the system that fails to operate as intended and cannot be corrected within 24 hours of the failure. Individual device failure such as a single camera or a single intercom station will not be a cause for system failure.

3.04 CLEANING

- A. Comply with Division 1 requirements.
- B. Protect equipment during installation against entry of foreign matter on the inside. Vacuum clean all equipment both inside and outside before testing, operating and painting. Clean electrical connections with a suitable solvent prior to assembly.

- C. Remove from the premises and dispose of all packing material and debris on a daily basis.
- D. Upon completion of the Work, remove excess debris, materials, equipment, apparatus, tools and the like and leave the premises clean, neat and orderly.
- E. Thoroughly polish all bright metal or plated Work and remove any pasted labels, dirt or stains from the equipment.

3.05 TRAINING

- A. Provide on-site, project-specific training sessions for system operations, maintenance, and programming with designated total hours as follows:

	Operational	Maintenance	Programming
1. Electronic Components	0	1	0
2. Video Surveillance (CCTV) System	2	2	4
3. PLC Integrated Control System	0	8	8
4. Touchscreen Panels	16	2	2
5. Intercom System	2	4	0

- B. All classroom training is to occur on site at a location provided by the Owner.
- C. All training is to review the existing systems as they apply to the equipment and systems provided under this contract. All personnel being trained are expected to have basic experience for the existing systems.
- D. Operational Training:
 - 1. Train security staff in the operation of the System. Operational training shall include how to monitor and control the systems provided under this contract and how to respond to system events.
- E. Maintenance Training:
 - 1. Train Owner’s personnel in the basic user level maintenance and trouble shooting of the System. Structure training to identify the equipment and systems that can be serviced or reset by the on duty building engineer, how to identify systems that have failed or not working, and emergency shutdown procedures.
 - 2. Provide a combination of classroom sessions supported by audio/visual aids, and field sessions with personnel participating in hands-on preventative, corrective maintenance and reactive maintenance.
- F. Programming Training:
 - 1. Train Owner’s personnel in the site-specific programming and software trouble shooting of the System. Training will also include all user programmable features. Conduct training sessions using instructors who have been actively involved throughout construction and who are certified in writing by the manufacturers of the specific systems.

2. Provide a combination of classroom sessions supported by audio/visual aids, and field sessions with personnel participating in hands-on for programming changes, software uploading/downloading, trouble shooting, etc.
- G. Submit an estimated training schedule 15 days prior to training for approval by the Owner's Representative. Estimate classroom and hands-on hours required for all three types of training (operational, maintenance, and programming). Include a syllabus for each class session.
 - H. All training materials including Operational and Maintenance (O&M) Manuals shall be reviewed and approved prior to conducting the specific training.

SCHEDULE 28 05 00 A

SAMPLE LIST OF DIVISION 28 SUBMITTALS

1. CPM Schedule
2. Submittal Matrix
3. Schedule of Values (SOV)
4. Licenses and Certifications
5. Key Project Personnel
6. Product Data
7. Shop Drawings
 - a. Floor Plans
 - b. Enlarged Control / Equipment Rooms and Elevations
 - c. Rack and Cabinet Elevations
 - d. Block Diagrams
 - e. Single Line Diagrams
 - f. Point- to-Point Diagrams
 - g. Schematic Diagrams
 - h. Installation Diagrams and Details
8. Calculations; UPS, Data
9. Sequence of Operations
10. Samples
11. Test Procedures
12. Test Results
13. Record Documents
 - a. Drawings
 - b. O&M Manuals
 - c. Warranty
14. Extra Materials

SCHEDULE 28 05 00 B

3.06 SUMMARY OF REQUIRED LICENSES AND CERTIFICATIONS

This list is provided for the convenience of the Contractor only.

- A. Section 28 05 00 Integrated Systems Contractors
 - 1. California State Contractor's License C-10 (high voltage) or
 - 2. California State Contractor's License C-7 (low voltage)
 - 3. Key Personnel Degree or equal

END OF SECTION 28 05 00

SECTION 28 05 13
CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications, apply to this Section.

1.02 SUMMARY

A. Section Includes:

- 1. Building wire and cable.
- 2. Wiring connectors and connections.

B. Related Sections:

- 1. 28 05 00 Common Work Results for Electronic Safety and Security
- 2. 28 05 14 Raceways and Boxes
- 3. 28 05 26 System Signal Grounding
- 4. 28 05 27 Cabinets, Enclosures and Racks
- 5. 28 09 00 Electronic Components
- 6. 28 15 00 Intercom System
- 7. 28 23 00 Video Surveillance (CCTV) System
- 8. 28 46 19 PLC Integrated Control System
- 9. 28 46 19 Integrated Sequences of Operation

1.03 SYSTEM DESCRIPTION

- A. Provide wiring and cables as described herein, shown on the drawings or as recommended by the manufacturer. When in conflict, the more stringent or greater requirements will take precedence as determined by the Engineer-of-Record.
- B. Wires, cables, harnesses and connectors specifically described in another section or provided by or manufactured by a manufacturer in that section shall be provided by that section.
- C. Wire size and features are minimum requirements, specific applications or manufacturers may have more stringent requirements which are to be provided at no additional cost to Owner.

1.04 SUBMITTALS

- A. Comply with Section 28 05 00.

1.05 QUALITY ASSURANCE

- A. Comply with Section 28 05 00.
- B. NEC Compliance: Comply with Article 725 (Class 2 Power-limited Circuits).
- C. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum ten years documented experience.

1.06 PROJECT CONDITIONS

- A. Conductor sizes are based on copper.
- B. Aluminum conductors shall not be used.
- C. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions.
- D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

1.07 COORDINATION

- A. Coordinate Work with other trades.
- B. Determine required separation between cable and other work.
- C. Determine cable routing to avoid interference with other work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide materials from listed manufacturers or equal.
- B. Cable manufactures or equal from other manufacturers:
 - 1. Belden
 - 2. Berk-tek
 - 3. Commscope/General Instrument
 - 4. General Cable
 - 5. Mohawk
 - 6. Optical Cable Corporation
 - 7. VersaLAN
 - 8. West Penn

2.02 CONNECTORS

A. Terminal Blocks:

1. Type: DIN-rail-mounted, modular, screw terminals.
2. Provide fused terminals where required or indicated.
3. Accepted Manufacturers: Entrelec, Phoenix Contact, Weidmueller, or equal from other manufacturers.

B. CCTV Video Connectors:

1. Type: 75-ohm, commercial crimp-on, 3-piece BNC connectors.
2. Body: Zinc outer piece and nickel center.
3. Contacts: Nickel/gold plating.
4. Accepted Products: Cambridge CPMC-78 series, AMP or equal from other manufacturers.

C. Data Connectors:

1. Type: Deluxe plastic, 9-pin, D sub-miniature hoods.
2. Accepted Products: Cambridge HX series, AMP or equal from other manufacturers.

2.03 WIRES AND CABLES

A. Cables installed below grade (even in conduit) shall be rated for use in wet locations.

B. Listings and Markings: UL listed and marked for flame resistance as follows:

1. General purpose: CEC Type CM
2. Riser: CEC Type CMR
3. Plenum: CEC Type CMP

C. Communication and Control Cables:

1. Conductors: Stranded bare copper, size as indicated.
2. Insulation level: 300 VRMS.
3. Temperature level: 75° C.
4. Paired cables shall be twisted.
5. Shield: 100% coverage aluminum polyester foil with drain wire.

D. Coaxial Cables:

1. Nominal impedance: 75 ohms.
2. Conductor: Stranded bare copper.
3. Dual shield: 100% coverage aluminum polyester tape with 95% coverage tinned copper braid.
4. Maximum attenuation at 10 MHz: 0.87 dB per 100 feet.
5. Insulation: Foam polyethylene, 300 VRMS.

6. Minimum temperature level: 75° C

E. Data Grade Cables:

1. Type: Twisted individually shielded pairs, quantity and size as indicated.
2. Conductors: Stranded bare copper.
3. Insulation level: 300 VRMS.
4. Minimum temperature level: 75° C.
5. Maximum capacitance between conductors: 25 pf per foot.
6. Shield: 100% coverage aluminum polyester foil with drain wire.

F. Category 6 UTP

1. UL listed NEC type CM as defined in NEC Article 800.
2. Complies with UL 1581 Test.
3. Meets and Exceeds TIA/EIA 568-B.2 Specifications.

G. Category 3 UTP

1. High pair count unshielded 24-AWG solid conductor twisted-pair core with a metallic sheath ARMM riser rated shall meet or exceed the TIA/EIA-568B Commercial Building Standards for CAT3. The cable will be riser or plenum rated as dictated by National, State and Local Electrical and Building Codes.

H. Optical Fiber Cable – Multimode

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or equal from other manufacturers:
 - a. Berk-Tek; a Nexans Company
 - b. Belden CDT Inc.; Electronics Division
 - c. CommScope, Inc.
 - d. Corning Cable Systems
 - e. General Cable Technologies Corporation.
 - f. Mohawk; a division of Belden CDT
 - g. Superior Essex Inc.
 - h. SYSTIMAX Solutions; a CommScope Inc. brand
2. Description: Multimode, 50/125 micrometer, 24 fiber, nonconductive, tight buffer, optical fiber cable.
 - a. Comply with ICEA S-83-596 for mechanical properties.
 - b. Comply with TIA/EIA-568-B.3 for performance specifications.
 - c. Comply with TIA/EIA-492AAAA-B for detailed specifications.
 - d. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444, UL 1651, and NFPA 70 for the following types:
 - 1) General Purpose, Nonconductive: Type OFN or OFNG.

- 2) Plenum Rated, Nonconductive: Type OFNP, complying with NFPA 262.
 - 3) Riser Rated, Nonconductive: Type OFNR or OFNP, complying with UL 1666.
 - 4) General Purpose, Conductive: Type OFC or OFCG.
 - 5) Plenum Rated, Conductive: Type OFCP, complying with NFPA 262.
 - 6) Riser Rated, Conductive: Type OFCR or OFCP, complying with UL 1666.
 - e. Conductive cable shall be aluminum armored type.
 - f. Maximum Attenuation: 3.50 dB/km at 850 nm; 1.5 dB/km at 1300 nm.
 - g. Minimum Modal Bandwidth: 2000 MHz-km at 850 nm; 500 MHz-km at 1300 nm.
3. Jacket:
- a. Jacket Color: Aqua for 50/125-micrometer cable.
 - b. Cable cordage jacket, fiber, unit, and group color shall be according to TIA/EIA-598-B.
 - c. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches (1000 mm).

I. Optical Fiber Cable – Single Mode

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or equal from other manufacturers:
 - a. Berk-Tek; a Nexans Company
 - b. Belden CDT Inc.; Electronics Division
 - c. CommScope, Inc.
 - d. Corning Cable Systems
 - e. General Cable Technologies Corporation
 - f. Mohawk; a division of Belden CDT
 - g. Superior Essex Inc.
 - h. SYSTIMAX Solutions; a CommScope Inc. brand
- 2. Description: Single-mode, 12 fiber, nonconductive, tight buffer, optical fiber cable.
 - a. Comply with ICEA S-83-596 for mechanical properties.
 - b. Comply with TIA/EIA-568-B for performance specifications.
 - c. Comply with IEC 60793-2-50 Type B.1.1.
 - d. Comply with TIA/EIA-492CAA for detailed specifications.
 - e. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444, UL 1651, and NFPA 70 for the following types:
 - 1) General Purpose, Nonconductive: Type OFN or OFNG.
 - 2) Plenum Rated, Nonconductive: Type OFNP, complying with NFPA 262.

- 3) Riser Rated, Nonconductive: Type OFNR or OFNP, complying with UL 1666.
 - 4) General Purpose, Conductive: Type OFC or OFCG.
 - 5) Plenum Rated, Conductive: Type OFCP, complying with NFPA 262.
 - 6) Riser Rated, Conductive: Type OFCR or OFCP, complying with UL 1666.
 - f. Conductive cable shall be aluminum armored type.
 - g. Maximum Attenuation: 0.7 dB/km at 1310 nm; 0370 dB/km at 1550 nm.
3. Jacket:
- a. Jacket Color: Yellow for all Single-mode cable.
 - b. Cable cordage jacket, fiber, unit, and group color shall be according to TIA/EIA-598-B.
 - c. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches (1000 mm).

J. Optical Fiber Cable Hardware

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or equal from other manufacturers:
 - a. ADC
 - b. Belden CDT Inc.; Electronics Division
 - c. CommScope, Inc.
 - d. Corning Cable Systems
 - e. Hubbell Premise Wiring
 - f. Leviton Voice & Data Division
 - g. Panduit Corp.
 - h. Siemon Co. (The)
 - i. SYSTIMAX Solutions; a CommScope Inc. brand
- 2. Cross-Connects and Patch Panels: Modular panels housing multiple-numbered, duplex cable connectors.
 - a. Number of Connectors per Field: One for each fiber of cable or cables assigned to field, plus spares and blank positions adequate to suit specified expansion criteria.
- 3. Patch Cords: Factory-made, duplex-fiber cables in 36-inch (900-mm) lengths.
- 4. Cable Connecting Hardware:
 - a. Comply with Optical Fiber Connector Intermateability Standards (FOCIS) specifications of TIA/EIA-604-2, TIA/EIA-604-3-A, and TIA/EIA-604-12. Comply with TIA/EIA-568-B.3.
 - b. Quick-connect, simplex and duplex, Type LC connectors. Insertion loss not more than 0.75 dB.
 - c. Type SFF connectors may be used in termination racks, panels, and equipment packages.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Comply with Section 28 05 00.
- B. Comply with manufacturer's recommendations, procedures, and standards for the assembly, programming, and operation of the alarm system.
- C. Coordinate closely with the door and frame contractor for proper installation of all door position sensors per manufacturer's recommendations.
- D. Mount individual components to removable rear panels in wall-mounted cabinets using DIN rails, snap track or stand off-mounted PC boards, or properly sized mounting hardware.
- E. Fuses: Provide over-current protection for control relay outputs and associated wiring.
- F. Power Distribution:
 - 1. Hardwire each system power supply circuit to a line voltage transient voltage surge suppresser at its point of supply.
 - 2. Coordinate with the electrical contractor for power capacities and circuit assignments in the electrical panel schedules and drawings for the alarm systems. Notify the Owner if additional power or circuits may be required.

3.02 WIRE TERMINATION, DRESSING, AND IDENTIFICATION:

- A. Terminate or join all wires and cables with specified terminal blocks or connectors submitted and accepted for the specific termination. Acceptable termination and junction methods include:
 - 1. Equipment or device terminal blocks (provided with equipment or device): Direct connection with stripped conductors.
 - 2. Equipment or device screw terminals (provided with equipment or device): Two-crimp, spade lug on stripped conductors.
 - 3. Device lead wires (provided with device): Two-crimp, insulated wire nut over conductors.
 - 4. Equipment or device connector (provided with equipment or device): Provide mating connector.
 - 5. Junctions and/or splices where indicated: Provide terminal blocks for control and communication cables and specified connector types for others.
- B. Use the specific cable stripper for each cable and wire type. Use a 3-step-cut coax cable stripper on coaxial cables, a jacket stripper on jacketed cables, and the proper size stripper for individual conductors. Do not strip with a knife, scissors or other improper tool.
- C. Use the proper crimping tool for each cable / connector combination. For example, crimp coaxial cables using a full-cycle ratchet crimp tool with the specific size hexagonal steel die for the cable type. Crimp D-subminiature connectors using a specific D-sub crimp tool, and so on.
- D. For multi-pin connectors use the appropriate pin insertion and extraction tool.

- E. Dress wires and cables to provide a neat and orderly appearance within all enclosures, equipment racks, cabinets, consoles by routing in snap-cover, plastic wiring duct or other acceptable method. In locations where wiring duct is not feasible, organize by cable clamping, dressing and tie-wrapping.
- F. Relieve strain on all loose wire bundles using tie-wrap supports fastened with machine screws or bolts. Do not use self-adhesive type supports.
- G. Neatly form cable ends and apply shrinkable tubing to shielded cables or where necessary to secure the insulation against fraying or raveling.
- H. Individually identify all conductors with a unique number located within 1-1/2-inch from its termination at both ends. Impress the number on a fixed length of white shrinkable tubing with a heat impression stamping machine, or other acceptable method.
- I. Cross reference the interconnection diagrams of the record drawings with the installed cable identification numbers.
- J. Route from source to termination in a uniform manner through raceways, cabinets, and equipment housings without breaking the insulation or deforming the cables. "Flying splices", meaning splices in wire bundles, raceways, or pull boxes are specifically prohibited. Splice only at junction box locations shown on the Drawings.
- K. Obtain Owner's pre-approval for all exposed cable runs.
- L. Maintain separation between Class 1, Class 2, communications, and branch circuit power wire and cable in accordance with the CEC. Do not route microphone-level audio, line-level audio, or high-level audio in the same conduit or cable group.
- M. Do not exceed the following cable pulling tensions:
 - 1. 24 AWG conductors: 4 lbs. per conductor.
 - 2. 22 AWG conductors: 7 lbs. per conductor.
 - 3. 20 AWG conductors: 12 lbs. per conductor.
 - 4. 18 AWG conductors: 19 lbs. per conductor.
 - 5. 16 AWG conductors: 30 lbs. per conductor.
 - 6. 14 AWG conductors: 48 lbs. per conductor.
- N. Use a scale to measure tensions for typical cable pulls. If tensions are exceeded even momentarily or if cables are damaged, remove the cables. Install new cables either using an acceptable anti-friction agent or adding pull boxes to the run.
- O. Install edge protection materials ("cat track") on the edges of holes, lips of ducts of any other point where wires or cables cross sharp metallic edges.

3.03 FIELD QUALITY CONTROL

- A. Performance Testing:
 - 1. Comply with Section 28 05 00, Performance Testing for:
 - a. Initial Performance Testing.

b. Performance Testing.

3.04 TRAINING

A. Provide training in accordance with Section 28 05 00, Demonstration.

END OF SECTION 28 05 13

SECTION 28 05 14
RACEWAYS AND BOXES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Rigid Galvanized Steel Conduit (RGS)
2. Electrical Metallic Tubing (EMT)
3. Rigid Non-metallic Conduit (PVC)
4. Flexible Metal Electrical Conduit
5. Liquid-tight Flexible Metal Conduit
6. Gutters, Wireways and Troughs
7. Cable Trays
8. Fittings, Couplings, and Connectors
9. Supporting Devices
10. Sealant
11. Outdoor Outlet Boxes
12. Indoor Outlet Boxes and Small Junction and Pull Boxes

B. Related Sections:

1. 28 05 00 Common Work Results for Electronic Safety and Security
2. 28 05 13 Conductors and Cables
3. 28 05 26 System Signal Grounding
4. 28 05 27 Cabinets, Enclosures and Racks
5. 28 09 00 Electronic Components
6. 28 15 00 Intercom System
7. 28 23 00 Video Surveillance (CCTV) System
8. 28 46 19 PLC Integrated Control System
9. 28 46 19 Integrated Sequences of Operation

C. REFERENCES

1. ANSI C80.2 Rigid and Steel Conduit
2. ANSI C80.3 Electrical Metallic Tubing - Zinc Coated
3. ANSI 870 Wireways, Auxiliary Gutters, and Associated Fittings
4. NECA Standard of Installation
5. NEMA FB 1 Fittings, Cast Metal Boxes and Conduit Bodies for Conduit
6. NEMA OS 1 Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports
7. CEC California Electrical Code
8. UL 1 Flexible Metal Conduit
9. UL 5 Surface Metal Raceways and Fittings
10. UL 50 Cabinets and Boxes
11. UL 360 Liquid-Tight Flexible Conduit
12. UL 514A Metallic Outlet Boxes
13. UL 514B Fittings for Conduit and Outlet Boxes

1.03 SYSTEM DESCRIPTION

A. Design Requirements:

1. Raceway Size: Use a minimum conduit inside diameter of 3/4-inch. Size conduit and raceway for a maximum cross-sectional fill area of 40%.
2. Gutter, Wireway and Trough Size: Size for a maximum cross sectional fill area of 20%.
3. Raceway Support: For each support and group of fasteners provide strength equal to the maximum weight of the present load plus all future raceways for which the support provides space, times a safety factor. Except as otherwise indicated, use a safety factor greater than four where necessary to provide a minimum safety allowance of 200 lbs. Provide additional support strength where required to prevent distortion of raceway during wire pulling.
4. Equipment Ground Conductor (Green): Where indicated, shown or required, raceway sizes shall be adequate to include the circuit conductors, an equipment ground conductor and a neutral conductor in accordance with percentage of fill requirements as specified.

1.04 SUBMITTALS

- A. Conform to the requirements of Section 28 05 00.
- B. Product Data: Submit manufacturer's technical data for all items to be used including specifications, installation instructions and general recommendations.
- C. Shop Drawings: Submit scale plan and elevation drawings of raceway systems showing layout and size of raceways, pull boxes and junction boxes within three feet of equipment to be installed by this contract.

- D. Record Drawings: Provide shop drawings showing as-built conditions of all raceways, termination boxes, junction boxes, pull boxes and installed equipment.

1.05 SITE CONDITIONS

- A. Conduit routing shown on the Drawings is approximate, actual routing will depend on site conditions and code requirements.
- B. Coordinate with the Owner for approved locations of conduit and equipment installation in the existing facility.

PART 2 PRODUCTS

2.01 RACEWAY (FOR INDOOR USE ON EXPOSED SURFACES)

- A. Acceptable Product: Wiremold (Steel Surface Raceway System) or equivalent: V500, V700, & 700WH
- B. Wiremold (Steel Surface Raceway System) or equivalent: 3000

2.02 RIGID GALVANIZED STEEL CONDUIT (RGS)

- A. Rigid steel conduit zinc coated shall conform to ANSI C80.2.

2.03 ELECTRICAL METALLIC TUBING (EMT)

- A. EMT, zinc coated shall conform to ANSI C80.3.

2.04 RIGID NON-METALLIC CONDUIT (PVC)

- A. Rigid non-metallic conduit shall be Schedule 40 PVC conduit manufactured in compliance with NEMA TC-2. PVC conduit shall be U.L. listed. Joints shall be solvent cement type.
- B. Provide PVC elbows, bends, fittings and adapters as required for a complete installation. Provide solvent cement as recommended by the conduit manufacturer.

2.05 FLEXIBLE METAL ELECTRICAL CONDUIT (GREENFIELD)

- A. Flexible metal electrical conduit shall conform to UL 1.

2.06 LIQUID-TIGHT FLEXIBLE STEEL CONDUIT

- A. Liquid-tight flexible steel conduit shall conform to UL 360.
- B. Sizes 1.25 inches and smaller: Provide with a continuous copper bonding conductor wound spirally between convolutions.
- C. Sizes 1.5 inches and larger: Provide with an internal grounding conductor and grounding bushings.
- D. Also known as Seal Tight flexible conduit.

2.07 GUTTERS, WIREWAYS AND TROUGHS

- A. Use NEMA Type 12.
- B. Use 14 gauge bodies and covers.
- C. Use above and below wall-mounted enclosures and cabinets for the collection of field device conduits, wires, and cables.
- D. Do not use in inaccessible locations.

2.08 FITTINGS, COUPLINGS AND CONNECTORS

- A. Fittings for conduit and outlet boxes shall conform to UL 514B.
- B. Surface metal electrical raceways and fittings shall conform to UL 5.
- C. Use fittings listed and equally acceptable for specific conduit or raceway system used; e.g.: Use PVC coated fittings with PVC coated conduit.
- D. For threaded rigid steel conduit, do not use threadless or compression type fittings.
- E. For EMT, provide steel or malleable iron "concrete-tight" or "rain-tight" couplings and connectors. Use compression, set screw or stainless steel multiple locking type bodies. Do not use indentation type fittings.
- F. Bushing and connectors shall be insulated type which maintain continuity of conduit grounding system. Insulating material shall be molded or locked into metallic body of the fitting. Bushings made entirely of nonmetallic material will not be allowed.
- G. Set screw connectors and couplings body shall have wall thickness at least equal to wall thickness of conduit used. Couplings or conduit trade size ¾-inch through 2 inch shall have two set screws per fitting and 2.5-inch through 4-inch shall have four set screws per fitting. Set screws shall be case hardened steel with hex head and cup point.
- H. Provide flexible metal conduit fittings made of steel or malleable iron. Insulate with one of the following types:
 - 1. Wedge and screw type having an angular wedge fitting between the convolutions of the conduit.
 - 2. Squeeze or clamp type having a bearing surface contoured to wrap around the conduit and clamped by one or more screws.
 - 3. Steel, multiple point type, for threading into internal wall of the conduit convolutions.
- I. Liquid-tight flexible metal conduit shall incorporate a threaded grounding cone, a steel, nylon or equal plastic compression ring and a gland for tightening. Fitting shall be steel, or malleable iron with insulated throat, with male thread and locknut or male bushing with or without "O" ring seal.
- J. Expansion fittings shall be hot-dipped galvanized malleable iron with a packing ring to prevent entrance of water, a pressure ring, a grounding ring and a separate external copper bonding jumper.

- K. Inferior material such as "pot metal" shall not be used for any type of fitting.
- L. All locknuts shall be the bonding type with sharp edges for digging into the metal wall of an enclosure.

2.09 SUPPORTING DEVICES

- A. General: Provide supporting devices with manufacturers standard materials, designed and constructed in accordance with published product information, for a complete installation.
- B. Raceway Supports: Provide manufacturer's standard supports including clevis hangers, riser clamps, conduit straps, threaded C-clamps with retainers, ceiling trapeze, wall brackets and spring steel clamps.
- C. Corrosion Resistance: Provide all supports, support hardware and fasteners hot-dipped galvanized or cadmium plated.
- D. Fasteners: Provide fasteners as required by the type of wall or ceiling construction and the equipment to be supported by the fastener.
- E. U-Channel Strut Systems: Provide minimum 12 gauge U-channel strut system for mounting and supporting electrical equipment. Fittings shall mate with the U-channel.
- F. Fittings for Strut System: Galvanized steel end caps, conduit clamps, conduit hangers, U-bolts.

2.10 OUTDOOR OUTLET BOXES

- A. Conform to NEMA FB 1, for fittings, cast metal boxes and conduit bodies.
- B. Provide electrical boxes and fittings which are UL-listed and labeled, and conform to UL 50, UL 514A, UL 514B, and UL 514C.
- C. Select covers for boxes of types appropriate for each use and location.
- D. Provide gaskets for covers of boxes in damp locations.
- E. Corrosion resistance: Provide galvanized or other equally acceptable corrosion resistant finish for all boxes, accessories and fittings.

2.11 INDOOR OUTLET BOXES AND SMALL JUNCTION- AND PULL-BOXES

- A. Conform to NEMA OS 1 for sheet-steel outlet boxes, device boxes, covers and box supports. Provide minimum 4-inch square by 1.5-inch deep, one piece, deep-drawn, galvanized steel, outlet boxes for general use. Provide square cornered, straight sided gang boxes wherever required by CEC or more than two wiring devices are indicated in the same location. Provide boxes of increased depth where required by the project conditions.
- B. Furnish with stamped knockouts in the back and sides.
- C. Provide threaded screw holes with corrosion-resistant screws for securing box covers and wiring devices.

- D. Accessories: Provide outlet box accessories as required for each installation, including plaster covers, mounting brackets, wallboard hangers, extension rings, fixture studs, cable clamps and metal straps for supporting outlet boxes, which are compatible with outlet boxes being used and fulfilling requirements of individual wiring situations.

2.12 FIRESTOPPING/SEALANT MATERIALS

- A. Accepted Products: International Protective Coatings Corp. FlameSafe® FSP 1100, Nelson FSP, Domtar Fire-Halt® or equal from other manufacturers.

PART 3 EXECUTION

3.01 INSTALLATION

A. Penetrations:

1. Firestop and seal all penetrations of fire walls and floors with minimum three hour sealant or Fire Stop Putty (FSP). This includes but is not limited to all raceway, conductor, sleeve and cable tray penetrations where penetrating device does not completely seal the hole.
2. Provide a suitable caulk for purposes of speech privacy and air flow restriction where a fire rated seal is not required.

B. Raceways and Fittings:

1. Comply with CEC, for application, size, location and installation of each type of raceway.
2. Where not specifically shown on the drawings or specified, use the following guidelines for the selection of raceway types:
 - a. RGS – Exposed exterior and wet locations. Areas subject to physical damage or vandalism.
 - b. EMT – Concrete encased. Interior dry exposed locations.
 - c. PVC – Below grade or under concrete slab. Use metal risers.
 - d. Flexible Metal – Use to connect to equipment that must be mechanically isolated or shifted to final position in indoor dry locations only. Use where conduit must be fished in building voids. Do not use in corrosive atmosphere.
 - e. Liquid-Tight Flexible Metal – Use when flexible metal is required in wet or outdoor locations.
3. Install no more than the equivalent of three 90-degree bends between boxes.
4. Conduit and EMT runs shall be mechanically and electrically continuous from service entrance to all outlets. Each conduit shall enter and be securely connected to a cabinet, junction box, pull box or outlet by means of a locknut on the outside and a bushing on the inside or by means of a liquid-tight, threaded, self-locking, cold-weld type wedge adapter.
5. Keep conduit at least 6 inches away from parallel runs of steam and hot-water pipes.
6. Level and square raceway runs.

7. Complete installation of electrical raceways before starting installation of cables/wires within raceways.
8. Provide supports for raceways as specified.
9. Prevent foreign matter from entering raceways; use temporary closure protection.
10. Make bends and offsets so the inside diameter is not effectively reduced.
11. Unless otherwise indicated, keep the legs of a bend in the same plane and the straight legs of offsets parallel.
12. Use raceway fittings that are of types compatible with the associated raceway and suitable for the use and location.
13. Run raceways with a minimum number of bends. All bends shall have the longest possible radii.
14. Install exposed raceways parallel and perpendicular to nearby surfaces or exposed structural members, and follow the surface contours.
15. Run exposed, parallel or banked raceways together.
16. Make bends in parallel or banked runs from the same center line so that the bends are parallel. Factory elbows may be used in banked runs where they can be installed parallel.
17. Join and terminate raceways with fittings designed and equally acceptable for the purpose of the raceway system and make up tight.
18. Where the installation is such that joints cannot be made tight, use bonding jumpers to provide electrical continuity of the raceway system.
19. Make the set screws of threadless fittings up tight; do not use pliers. Compression fittings shall be tightened with two wrenches.
20. Where raceways are terminated with locknuts and bushings, align the raceway to enter squarely and install the locknuts so that the dished part is against the box.
21. Where terminating in threaded hubs, screw the raceway or fitting tight into the hub so the end bears against the wire protection shoulder.
22. Where chase nipples are used, align the raceway and coupling square to the box and tighten the chase nipple so no threads are exposed. Running threads are not allowed.
23. Install nylon pull strings in empty raceways. Leave not less than 12 inches of slack at each end of the conduit.
24. Horizontal cross runs of conduit or EMT may be installed in partitions only where explicitly permitted. Exposed horizontal runs, where permitted, shall be installed close to ceiling or ceiling beams.
25. Conduits and EMT connected to wall outlets shall be run in such a manner that they will not cross water, steam or waste pipes or radiator branches.
26. Conduits and EMT shall not be run through beams, except where clearly indicated on drawings or where permitted.
27. Conduits and raceways above suspended ceilings may be supported from the floor construction above or from the main ceiling support members, however, the finished installation shall not interfere with the removability of ceiling panels.
28. At building expansion joints, provide expansion fittings and cross at right angles to joint.

29. Provide conduits stubbed up through or from concrete floor for connection to freestanding equipment with an adjustable top or coupling threaded inside for plugs, set flush with the finished floor. Where no equipment connections are made, install screwdriver-operated threaded flush brass plugs in conduit end.
30. Provide expansion fittings for all rigidly fastened conduits spanning a building expansion joint and if not otherwise provided, for all runs 1.5 inches or larger, exceeding 150 feet in length.

C. CABLE TRAY INSTALLATION

1. Comply with recommendations in NEMA VE 2. Install as a complete system, including all necessary fasteners, hold-down clips, splice-plate support systems, barrier strips, hinged horizontal and vertical splice plates, elbows, reducers, tees, and crosses.
2. Remove burrs and sharp edges from cable trays.
3. Fasten cable tray supports to building structure and install seismic restraints.
 - a. Design each fastener and support to carry load indicated by seismic requirements.
 - b. Construct supports from channel members, threaded rods, and other appurtenances furnished by cable tray manufacturer. Arrange supports in trapeze or wall-bracket form as required by application.
 - c. Support bus assembly to prevent twisting from eccentric loading.
 - d. Manufacture center-hung support, designed for 60 percent versus 40 percent eccentric loading condition, with a safety factor of 3.
 - e. Locate and install supports according to NEMA FG 1.
4. Make connections to equipment with flanged fittings fastened to cable tray and to equipment. Support cable tray independent of fittings. Do not carry weight of cable tray on equipment enclosure.
5. Make cable tray connections using standard fittings.
6. Workspace: Install cable trays with enough space to permit access for installing cables.
7. Install barriers to separate cables of different systems, such as power, communications, and data processing.
8. After installation of cable trays is completed, install warning signs in visible locations on or near cable trays.

D. BOXES AND FITTINGS:

1. Coordination: Coordinate installation of electrical boxes and fittings with wire/cable and raceway installation work, and with general construction work.
2. Weatherproof: Provide weatherproof outlets for all interior and exterior locations exposed to weather or moisture.
3. Knockout Caps: Provide knockout closures to cap unused knockout holes where blanks have been removed.
4. Anchoring: Support and fasten boxes securely per CEC.
5. Sizes: Provide boxes of sizes adequate to meet CEC volume requirements, but in no case smaller than sizes indicated.

6. Do not use sectional (gangable) boxes.
7. Do not use device plates as covers for boxes in exposed locations.
8. Do not use round boxes where conduit must enter box through side of box, which would result in difficult and insecure connections when fastened with locknut or bushing on rounded surface.
9. Threaded Hubs: Use threaded hub type boxes with gasketed weatherproof covers in all exterior locations; where installed on unfinished walls, columns or plasters; where exposed to moisture laden atmosphere; or where indicated.
10. Extension Rings: Where extension rings are required on existing outlet boxes, drill new mounting holes in the rings to align with the mounting holes on the existing boxes.

E. PULL AND JUNCTION BOXES:

1. Conform to CEC.
2. Locate junction and pull boxes in accessible locations.
3. Do not locate boxes in finished areas UON.
4. Supports: Provide in each box sufficient clamps, grids, or devices to which cables are secured in neat and orderly fashion permitting ready identification and so that no cable will have an unsupported length of more than 30 inches.

F. RACEWAY SUPPORTS:

1. Compliance: Install hangers, sleeves, seals, U-channel supports and fasteners as indicated and in accordance with manufacturer's written instructions. Comply with requirements of CEC and American National Standards Institute (ANSI)/National Electrical Manufacturers Association (NEMA) for installation of supporting devices.
2. Provide individual and multiple (trapeze) raceway hangers, and riser clamps as necessary to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assembly, and for securing hanger rods and conduits.
3. Arrange for grouping of parallel runs of horizontal raceways to be supported together on trapeze type hangers where possible.
4. Support individual horizontal conduits and EMT 1.5 inches in size and smaller by either one-hole pipe straps or separate pipe hangers. Use separate pipe hangers for larger sizes. Spring steel fasteners may be used in lieu of pipe straps or hangers for sizes 1.5-inch and smaller in dry locations. For hanger rods with spring steel fasteners, use 0.3-inch diameter or larger threaded steel. Use steel fasteners that are specifically designed for supporting single conduits or EMT. Unless otherwise indicated, do not use wire as a means of support. Use spring steel conduit supports only for lighting system branch circuit raceway in suspended ceilings in dry locations.
5. Except as otherwise indicated, space supports for metallic and non-metallic raceways in accordance with the requirements of this Section and the requirements of the CEC.
6. Provide support for exposed or concealed raceway as close as practical to and not exceeding 12 inches from an unsupported box or access fitting. In horizontal runs a support at a box or access fitting may be omitted when the box or access fitting is independently supported and the raceway termination is not made with a chase nipple or threadless box connector.

7. In vertical runs provide such support that the load produced by the weight of the raceway and the enclosed conductors is carried entirely by the conduit supports, with no weight load on raceway termination's or conductor terminals.

G. MISCELLANEOUS SUPPORTS:

1. Provide supports for all miscellaneous electrical components as required to produce the same safety allowances as specified for raceway supports above. Provide metal channel racks for mounting cabinets, panelboards, disconnects, control enclosures, pull boxes, junction boxes etc.
2. In open overhead spaces, cast boxes threaded to raceways need not be separately supported except where used for fixture support; support sheet metal boxes directly from the building structure or by bar hangers. Where bar hangers are used, attach the bar to raceways on opposite sides of the box and support the raceway with an equally acceptable type fastener not more than 24 inches from the box. When penetrating reinforced-concrete members, avoid cutting any reinforcing steel.
3. Wood backing shall not be used for mounting any equipment except as required for temporary power or telephone terminal strips or unless noted otherwise on drawings. Only steel frame work or strut type channels shall be used for equipment mounting.
4. In hollow masonry, tile, plaster or gypsum board, use toggle type bolts to secure equipment, conduit runs and outlet boxes in place.

H. FASTENERS:

1. Unless otherwise indicated securely fasten all electrical items and their supporting hardware including, but not limited to, conduits, raceways, cables, busways, cabinets, panelboards, wall-mounted transformers, boxes, disconnect switches and control components to the building structure.
2. Fasten by means of wood screws or screw-type nails on wood; by toggle bolts on hollow masonry units; by concrete inserts or expansion bolts on concrete or brick; by machine screws; welded threaded studs, or spring-tension clamps on steel work. Do not weld conduits or pipe straps to steel structures. In partitions of light steel construction use sheet metal screws.
3. Do not use powder charged devices or Ramsets to attach fasteners (unless otherwise approved by the Owner).
4. Holes cut to a depth of more than 1.5 inches in reinforced concrete beams or to a depth of more than 3/4 inches in concrete joints shall not be allowed. Notify the District if such penetration is needed.
5. Loads applied to any fastener shall not exceed one-fifth of the proof test load. Use vibration and shock-resistant fasteners.

3.02 ADJUSTING AND CLEANING

- A. Upon completion of installation of raceways, inspect interiors of raceways at all outlet, junction and pull boxes, remove burrs and obstructions.
- B. Run a swab or mandrel to remove dirt and blockages. Raceways which are deformed and prevent the passage of a mandrel shall be replaced.
- C. Remove dirt and construction debris from all outlet, junction and pull boxes.

END OF SECTION 28 05 14

SECTION 28 05 26
SYSTEM SIGNAL GROUNDING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications, apply to this Section.

1.02 SUMMARY

- A. Provide a separate signal and communications grounding system. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.
- B. Provide an isolated ground bus within each equipment cabinet, enclosure, and rack for single point termination of audio and data shields and grounds. Do not loop or series each ground bus.
- C. Related Sections:
 - 1. 28 05 00 Common Work Results for Electronic Safety and Security
 - 2. 28 05 13 Conductors and Cables
 - 3. 28 05 14 Raceways and Boxes
 - 4. 28 05 27 Cabinets, Enclosures and Racks
 - 5. 28 09 00 Electronic Components
 - 6. 28 15 00 Intercom System
 - 7. 28 23 00 Video Surveillance (CCTV) System
 - 8. 28 46 19 PLC Integrated Control System
 - 9. 28 46 19 Integrated Sequences of Operation

1.03 SUBMITTALS

- A. Comply with Section 28 05 00.

1.04 QUALITY ASSURANCE

- A. Comply with Section 28 05 00.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or equal from other manufacturers:

1. Grounding Conductors, Cables, Connectors, and Rods manufacturers or equal:
 - a. Apache Grounding/Erico Inc.
 - b. Boggs, Inc.
 - c. Chance/Hubbell
 - d. Copperweld Corp.
 - e. Dossert Corp.
 - f. Erico Inc.; Electrical Products Group
 - g. Framatome Connectors/Burndy Electrical
 - h. Galvan Industries, Inc.
 - i. Harger Lightning Protection, Inc.
 - j. Hastings Fiber Glass Products, Inc.
 - k. Heary Brothers Lightning Protection Co.
 - l. Ideal Industries, Inc.
 - m. ILSCO
 - n. Kearney/Cooper Power Systems
 - o. Korns: C. C. Korns Co.; Division of Robroy Industries
 - p. Lightning Master Corp.
 - q. Lyncole XIT Grounding
 - r. O-Z/Gedney Co.; a business of the EGS Electrical Group
 - s. Raco, Inc.; Division of Hubbell
 - t. Robbins Lightning, Inc.
 - u. Salisbury: W. H. Salisbury & Co.
 - v. Superior Grounding Systems, Inc.
 - w. Thomas & Betts, Electrical

2.02 GROUNDING CONDUCTORS

- A. For insulated conductors, comply with Division 16 Section "Conductors and Cables."
- B. Material: copper.
- C. Equipment Grounding Conductors: Insulated with green-colored insulation.
- D. Grounding Electrode Conductors: Stranded cable.
- E. Bare Copper Conductors: Comply with the following:
 1. Solid Conductors: ASTM B 3.
 2. Assembly of Stranded Conductors: ASTM B 8.
 3. Tinned Conductors: ASTM B 33.

F. Copper Bonding Conductors: As follows:

1. Bonding Cable: 16 kcmil, 14 strands of No. 17 AWG copper conductor, 1/4 inch in diameter.
2. Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.
3. Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
4. Tinned Bonding Jumper: Tinned-copper tape, braided copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

G. Grounding Bus: Bare, annealed copper bars of rectangular cross section, with insulators.

2.03 CONNECTOR PRODUCTS

- A. Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.
- B. Bolted Connectors: Bolted-pressure-type connectors, or compression type.

PART 3 EXECUTION

3.01 APPLICATION

- A. Install a 1/0 AWG, THWN, stranded copper bonding jumper from each equipment cabinet ground bus to the single-point ground bus in the security equipment room and elsewhere as indicated. Do not loop or series each ground bus.
- B. Use the signal grounding system as the system signal reference voltage by connecting the isolated secondary common of each low-voltage power supply and equipment item to the system at only one point. Also use the system as the shield ground by connecting the source side of all shields to the system at only one point. Ground all other equipment per manufacturer's recommendation.
- C. Other than its single connection to site ground, isolate this signal grounding system from all other metallic objects. Maintain complete isolation from the safety grounding system which shall be used to ground all equipment cabinets, enclosures, racks, conduits, equipment chassis, and other metallic objects from hazardous line voltages. If 60 Hz hum is found in the system add circuits or transformers within equipment to provide positive isolation between signal and safety/chassis ground, thereby eliminating all ground loops.
- D. Grounding Bus
 1. Use insulated spacer; space 1 inch from wall and support from wall 6 inches above finished floor, unless otherwise indicated.
 2. At doors, route the bus up to the top of the door frame, across the top of the doorway, and down to the specified height above the floor.

3.02 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers and supports is not transmitted to rigidly mounted equipment. Use exothermic-welded connectors for outdoor locations, unless a disconnect-type connection is required; then, use a bolted clamp. Bond straps directly to the basic structure taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.

3.03 CONNECTIONS

- A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
 - 1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
 - 2. Make connections with clean, bare metal at points of contact.
 - 3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
 - 4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.
 - 5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- B. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.
- C. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.
- D. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

3.04 FIELD QUALITY CONTROL

- A. Comply with Section 28 05 00.

END OF SECTION 28 05 26

SECTION 28 05 27

CABINETS, ENCLOSURES AND RACKS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Free-standing Equipment Cabinets, Enclosures or Racks.
2. Wall-mounted Equipment Cabinets or Enclosures.
3. Wall-mounted Equipment Racks.

B. Related Sections:

1. 28 05 00 Common Work Results for Electronic Safety and Security
2. 28 05 13 Conductors and Cables
3. 28 05 14 Raceways and Boxes
4. 28 05 26 System Signal Grounding
5. 28 09 00 Electronic Components
6. 28 15 00 Intercom System
7. 28 23 00 Video Surveillance (CCTV) System
8. 28 46 19 PLC Integrated Control System
9. 28 46 19 Integrated Sequences of Operation

1.03 REFERENCES

- A. ANSI/EIA RS-310-C Rack mounting standards
- B. NEMA 250 Enclosures for Electrical Equipment 1000 V Max
- C. NFPA 70 National Electrical Code - application, and installation of electrical cabinets and enclosures
- D. UL 50 Cabinets and Boxes

1.04 SUBMITTALS

- A. Conform to the requirements of section 28 05 00, General Requirements.

- B. Product Data: Submit manufacturer's technical data for all items to be used including specifications, installation instructions and general recommendations.

1.05 SITE CONDITIONS

- A. Cabinets shown on the Drawings are in approximate locations, actual location within the same room may depend on site conditions and Facility approval.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Types: Provide NEMA type 12 cabinets and enclosures.
- B. Materials: Provide cabinets and enclosures as follows:
 - 1. Provide electrical cabinets and enclosures which are UL listed and labeled, and constructed in conformance with UL 50 "Cabinets and Boxes."
 - 2. In normally dry interior locations, provide sheet steel with corrosion resistant fasteners.
 - 3. Outdoors and in damp interior locations, provide galvanized sheet steel with stainless steel fasteners.
 - 4. At constantly wet locations or corrosive atmospheres, provide stainless sheet steel with stainless steel fasteners
- C. Rail Mounts: Full enclosure length rack angles shall be installed and have ANSI/EIA RS-310-C mounting standards with 10-32 tapped mounting holes in each enclosure.
- D. Shelf: Provide a shelf or other suitable mounting plate for all non-rack mountable equipment.
- E. Painting: In addition to galvanizing or priming coat, all inside and outside surfaces of trim and doors shall be given a factory finish coat of paint.
- F. Grounding:
 - 1. Comply with Section 28 05 26.
 - 2. Provide cabinets and enclosures with provision for cabinet grounding without penetrating exterior wall of the enclosure.

2.02 SLIDE OUT RACKS

- A. Provide slide out 19" racks to provide rear access to wiring and components. Custom build unistrut support to accommodate slide out rack. Provide the following or equal from other manufacturers.
 - 1. Middle Atlantic ProductsSRS Series
- B. Provide key-locking latches for doors.

2.03 FREE-STANDING EQUIPMENT CABINETS, ENCLOSURES OR RACKS

- A. Provide free standing enclosures/racks. Racks in Security Electronics Room need not be fully enclosed or lockable. Provide the following or equal from other manufacturers:
 - 1. HoffmanProline Series
- B. Modular free standing equipment racks, overall size shall be 78x23x23 inches.
- C. Provide modular enclosure components including, but not limited to, the following:
 - 1. Solid lockable front and rear solid doors, all keyed alike.
 - 2. Solid sides on all enclosure sides not directly joined to another enclosure.
 - 3. Rack joining kits.
 - 4. Cover and fan.
 - 5. Filtered air inlet.
 - 6. Keyboard slide tray for each keyboard.
 - 7. Base for each enclosure with wire management provisions.

2.04 WALL-MOUNTED EQUIPMENT CABINETS OR ENCLOSURES

- A. Provide wall-mounted cabinets/enclosures from the following or equal from other manufacturers:
 - 1. HoffmanConcept Wall-Mount Series
- B. Provide removable doors.
- C. Provide removable internal mounting panel for component installation.
- D. Provide handle operated, key-locking latches for doors.
- E. Provide multiple doors where required. Individual door width shall be no greater than 24 inches.

2.05 WALL-MOUNTED EQUIPMENT RACKS

- A. Provide wall-mounted, double-hinged racks Racks in Security Electronics Room need not be fully enclosed or lockable. Provide the following or equal from other manufacturers:
 - 1. HoffmanIndustrial E-DH Series
- B. Provide key-locking latches for doors.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Mounting: Mount cabinets at a uniform height, nominally 6 feet to the top of the enclosure above finished floor, except as otherwise noted or physically not practical. Mount cabinets with fronts straight and plumb.

- B. Bracing: Brace or anchor all free-standing/wall-mounted cabinets using Uni-strut or other approved method to building structure.
- C. Flush Cabinets: Set flush cabinets in finished spaces flush with adjacent walls. Mount cabinets with fronts straight and plumb.
- D. Painting: Touch up all welds, scrapes and other mars in the enclosure finish with a rust inhibiting paint.
- E. Front Access: Locate with minimum of 36 inches clear space in front of each cabinet or rack.
- F. Other Access: Provide minimum 36 inches clear space to each side of enclosure which requires access for inspection or service.

END OF SECTION 28 05 27

SECTION 28 09 00
ELECTRONIC COMPONENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications, apply to this Section.

1.02 SUMMARY

A. Section Includes

- 1. Door/Gate Monitoring and Control
- 2. Power Supplies (24 VDC, UPS)
- 3. Terminal Blocks, Fuses, and Snubbers
- 4. Relays
- 5. Security Screws
- 6. Tone Generators
- 7. Call Made Light
- 8. Intercom/Pedestal
- 9. Connectors
- 10. Loop Detectors
- 11. Intercom/Camera/Card Reader Pedestal
- 12. Site Vehicle Gate Intercom

B. Related Sections:

- 1. 28 05 00 Common Work Results for Electronic Safety and Security
- 2. 28 05 13 Conductors and Cables
- 3. 28 05 14 Raceways and Boxes
- 4. 28 05 26 System Signal Grounding
- 5. 28 05 27 Cabinets, Enclosures and Racks
- 6. 28 15 00 Intercom System
- 7. 28 23 00 Video Surveillance (CCTV) System
- 8. 28 46 19 PLC Integrated Control System
- 9. 28 46 19 Integrated Sequences of Operation

1.03 SYSTEM DESCRIPTION

A. Power Supplies

- a. Provide power supplies as required for each system.
- b. Low voltage systems shall operate on 24 VDC or 24 VAC or as determined by each section. Size all power supplies to maintain Class 2 ratings and operation of each system at 150% of the maximum loaded condition.
- c. Unless otherwise indicated, 24 volt door hardware including locks, strikes, and latches shall be supplied by external power supplies with over-voltage and short circuit protection.
- d. Acceptable products: Power One, Lamda, or equal from other manufacturers.

B. Uninterruptible Power Supplies (UPS)

1. Provide UPS back up for all Security Electronics, and computer CPU's where shown on the drawings.
2. Size the security equipment UPS with sufficient capacity to support and maintain all added security equipment and devices for a minimum of 15 minutes after the loss of power. Provide (1) UPS per group of racks in each Electronics Rooms.
3. Submit UPS power calculations indicating power consumption by each major equipment component.

C. Terminal blocks, Fuses and Snubbers

1. Provide DIN mounted terminal blocks for field and miscellaneous wiring.
2. Provide fused terminal blocks for power distribution circuit protection.
3. Provide circuit snubbers at all electric strike door locks for EMF protection.

D. Relays

1. Provide relays for use as interposing relays, timer relays, audio relay, one shots, or other applications as shown on plans.
2. Provide EMF circuit protection diode across all relay coils.

E. Security Screws:

1. Submit various types of security screws for approval.
2. Screws shall be suitable for outdoor locations.

F. Tone Generators

1. Provide 24 VDC solid state piezoelectric alarms.
2. Provide one tone generator for each tone or a multi-tone unit. Provide a tone generator for each tone required at each control panel Refer to the Software Development Section for tone types.

G. Provide all necessary interconnecting wiring and terminations including, but not limited to, junction boxes, terminal strips, lead wires, internal contacts, connectors, etc., from new or existing terminations to the new terminations in the control electronics cabinets.

1.04 SUBMITTALS

- A. Comply with Section 28 05 00, General Requirements.
- B. Calculations
 - 1. DC power supply sizing.
 - 2. AC power supply sizing.
 - 3. UPS system load and battery sizing.
- C. UPS installation drawings: Show UPS size and physical mounting. Design and show power source, and branch circuit and load wiring to/from UPS units.

1.05 QUALITY ASSURANCE

- A. Comply with Section 28 05 00, General Requirements.

1.06 EXTRA MATERIALS

- A. Deliver the following spare parts:
 - 1. DC power supply 1 each size used.
 - 2. AC power supply 1 each size used.
 - 3. Relays 5 each type used.
 - 4. Tone Generators 5 each type used.

PART 2 PRODUCTS

2.01 ACCEPTABLE PRODUCTS

- A. Provide equipment and components including but not limited to the following or equal from other manufactures. All products shall have the features described herein. The materials listed below establish the minimum quality and standards that are to be met:
 - 1. Power Supplies Altronix, Pelco, Rauland, IDEC. Lambda
 - 2. Uninterruptible Power Supplies APC, Best, TOPAZ, Exide
 - 3. Electrical Relays IDEC RU Series
 - 4. Audio Relays IDEC RY22S Series
 - 5. Fuses Phoenix, Entrelec
 - 6. Snubbers Square D, Rifa
 - 7. Terminal Blocks Phoenix, Entrelec
 - 8. Tone Generators Floyd Bell (Columbus, OH)
 - 9. Call Made Industrial Traffic Solutions
 - 10. Pedestal Talk-A-Phone ETP-PM, Custom

2.02 POWER SUPPLIES

A. DC and AC Power Supplies

1. Power supply outputs to integrated circuit devices shall be regulated to within +/- one percent of the rated voltage output.
2. Size as required for each location with a capacity of 150 percent of the intended maximum load.
3. Class 2 power supplies shall be power limited to 100 watts with over-voltage and short circuit protection.
4. Where required provide power supply with battery backup. The power supply shall include battery-charging circuit, power loss switching circuit, low battery, trouble and power loss output contact. Size battery to accommodate calculated load for the specified time period.

2.03 UNINTERRUPTIBLE POWER SUPPLIES (UPS)

- A. Provide solid state inverter/charger and static bypass switch with less than 1/4 cycle, static transfer time, and frequency stability of 60 Hz + 1 Hz, voltage regulation of +8%, total harmonic distortion less than 5% and minimum output capacity and voltage as indicated in the drawings.
- B. Provide sealed lead/acid type batteries.

2.04 ELECTRICAL RELAYS

- A. Rate relays appropriate for the application or as shown on plans.
- B. Provide relay sockets for ease of replacement.
- C. Provide mounting hardware (i.e. bracket, DIN rail, etc.) UON.

2.05 AUDIO RELAYS

- A. The audio switching relays shall connect intercom stations to intercom amplifiers.
- B. Relay switch contacts shall be DTD bifurcated gold plated contacts, rated for 2 amperes inductive and operate on 24 volts DC.
- C. The relays shall be rated for at least 1 million operations.
- D. The relays shall be removable socket mounted on DIN rail. All field terminations shall be landed on screw terminals rated to accommodate the required field wires.
- E. Provide mounting hardware (i.e. bracket for rack mount, DIN rail, etc.) UON.

2.06 TONE GENERATORS

- A. Solid State Piezoelectric.
- B. Screw or quick connect terminals.

2.07 SOURCE QUALITY CONTROL

- A. Comply with Section 28 05 00, General Requirements.
- B. Provide components as required for Shop Testing and Demonstration.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Comply with Section 28 05 00, General Requirements.
- B. Comply with manufacturer's recommendations, procedures, and standards for each product.
- C. All Class-1 wiring, and their conduits shall only be routed to the designated Class-1 gutter or duct. All Class-2 wiring, unless otherwise noted, and their conduits shall only be routed to the designated Class-2 gutter or duct.
- D. Provide sufficient quantity of power supplies of CEC Article 725, Class 2 capacity, to power the associated equipment. Furnish power supplies with over voltage and short circuit protection.
- E. Mount individual components to removable rear panels in wall-mounted cabinets using DIN rails, snap track or stand off-mounted PC boards, or properly sized mounting hardware.
- F. Fuses: Provide over-current protection for control relay outputs and associated wiring.

3.02 WIRE AND CABLE INSTALLATION:

- A. Comply with Section 28 05 13.

3.03 WIRE TERMINATION, DRESSING, AND IDENTIFICATION:

- A. Comply with Section 28 05 13 and Section 28 05 00.

3.04 FIELD QUALITY CONTROL

- A. Comply with Section 28 05 00.

3.05 TRAINING

- A. Comply with Section 28 05 00.

END OF SECTION 28 09 00

SECTION 28 15 00

INTERCOM SYSTEM

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Intercom Stations
2. Paging Speakers
3. Master Intercom Stations
4. Intercom Server
5. Power Supplies

B. Related Sections:

1. 28 05 00 Common Work Results for Electronic Safety and Security
2. 28 05 13 Conductors and Cables
3. 28 05 14 Raceways and Boxes
4. 28 05 26 System Signal Grounding
5. 28 05 27 Cabinets, Enclosures and Racks
6. 28 09 00 Electronic Components
7. 28 46 13 PLC Integrated Sequences of Operation
8. 28 46 19 PLC Integrated Control System

1.03 INTEGRATED SEQUENCES OF OPERATION SYSTEM DESCRIPTION

A. Scope of Work Summary:

1. All existing intercom stations and wiring will remain. Contractor will be responsible for changing all headend equipment, including terminations, replacing terminal blocks, interfaces to other systems, and power supplies.
2. A digital intercom system with adjustable talk and listen modes will be provided. The Operator Interface Console in Central Control and Housing Unit Control Room will be installed with operator components (a Master Intercom Station with gooseneck microphone built in). All audio server components and power supplies will be located locally in the Equipment Rooms. Relevant input/output logic functions will be programmed into and controlled by the programmable logic controller (Refer to 28 46 13).

3. The intercom stations must have DSP for auto adjustment of ambient noise. The audio path connection must automatically and actively perform noise cancellation during a call.
4. The master station shall be capable of both hands-free duplex mode and simplex mode (using push-to-talk).
5. See Section 28 46 13 for Integrated Sequences of Operation. Both the drawings and specifications must be used concurrently for a complete understanding of the project.

1.04 SUBMITTALS

- A. Comply with Section 28 05 00.

1.05 QUALITY ASSURANCE

- A. Comply with Section 28 05 00.

1.06 COORDINATION

- A. Coordinate with the Owner for all programmable system functions and features using matrix forms to gather user's inputs. Make all necessary program changes at no additional cost prior to final acceptance.

1.07 EXTRA MATERIALS

- A. Deliver the following spare parts to the Owner at a location to be designated (quantities to be determined):
 1. (1) Subscriber Card
 2. (1) Paging Amplifier

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Provide equipment and components including, but not limited to, the following or equal from other manufacturers. The Contractor will be responsible for the design and operability of all system components of the final approved system. If any of the below components are no longer in production by the manufacturer, replace with an equivalent or better component. If any of the components cannot be found or are in question, provide and submit for approval a component of equal or better quality.
 1. Master Intercom Station..... Commend 872A
 2. Intercom Compact ServerCommend GE300US
 3. Compact Server Subscriber Card Commend L3-GED-4P
 4. Compact Server Network CardCommend L3-ICX
 5. Master Intercom ServerCommend GE800US
 6. Server Subscriber Card Commend L8-GED-4P
 7. Server Network CardCommend L8-ICX

- 8. Interface CardsCommend G8-IF/G3-IF
- 9. Licensing and Software.....Commend
- 10. Power Supplies..... Commend, Power-one HD24-4.8-A
- 11. Solderless Terminals. Amp, 3M, Concord
- 12. Barrier Terminal Strips..... Phoenix Contact, Entelec
- 13. Wiring Materials..... Panduit, T&B, Voltrex

2.02 SOURCE QUALITY CONTROL

- A. Comply with Section 28 05 00, General Requirements Shop Test and Demonstration.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Comply with Section 28 05 00, General Requirements.
- B. Comply with manufacturer's recommendations, procedures and standards for the installation and operation of the equipment.
- C. All microphone and line level audio signals shall be shielded, balanced lines. Matching transformers and pads shall be provided as required to ensure balancing and proper levels. Normal line operating levels shall be 0 dBm.
- D. Microphone, line and speaker levels shall be run in separate raceways and shall be separated from one another and from power cabling in racks and on terminal boards.

3.02 ADJUSTMENTS

- A. After installation of the Intercommunication and Public Address Systems, and prior to performance testing, functionally test all system devices and other audio components, and all interfaces to other systems, including control panels. In addition, perform the following adjustments and measurements.
- B. Make all intercom speaker tap and amplifier gain adjustments prior performance testing as follows:
 - 1. Intercom Speaker Tap Adjustments: Select intercom taps for 75 dBA at 4 feet on-axis with power input equal to tap setting (for example, at 1/2-watt input).
 - 2. System Amplifier Gain Adjustments: Adjust intercom amplifier gain controls in both the monitor and talk direction to provide unity gain (to produce the same level in the control room as the person talking at the intercom station, and vice versa) with speaker volume controls at mid-range. Adjust amplifiers for either unity gain, or for feedback stability, if unity gain cannot be achieved.
- C. Once all volume levels have been accepted by the County, permanently mark or identify all adjustment settings on the amplifiers and accessories.

3.03 FIELD QUALITY CONTROL

- A. Performance Measurements: Use a one-third-octave spectrum analyzer and pink-noise generator, or other test equipment pre-approved by the County, to measure system performance. Make the following audio performance measurements for the longest and the shortest intercom runs, and for a minimum of three different intercom stations with the longest and shortest runs:
- B. Signal-to-Noise Ratio: Minimum of 40 dB below standard signal levels from 32 Hz to 16 kHz on an "A" weighing scale.
- C. Signal-to-Crosstalk Ratio: Minimum of 40 dB below standard signal levels when measured on any other intercom or audio line.
- D. Signal-to-Transient Ratio: 30 dB or better, measured as the signal-to-noise during any transient caused by the operations of (a) any piece of equipment associated with that program path, or (b) any other electrical, lighting, ventilation equipment and etc.
- E. Intercom Level Uniformity: Less than +/- 2 dB difference in dbA between any two intercom stations.
- F. Testing: Comply with Section 28 05 00, General Requirements.

3.04 TRAINING

- A. Provide training in accordance with Section 28 05 00.

END OF SECTION 28 15 00

SECTION 28 23 00

VIDEO SURVEILLANCE (CCTV) SYSTEM

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Cameras, Lenses and Enclosures
2. Programming Server
3. Programmable Keyboard Controller
4. Network Video Recording System
5. Camera Power Supply

B. Related Sections:

1. 28 05 00 Common Work Results for Electronic Safety and Security
2. 28 05 13 Conductors and Cables
3. 28 05 14 Raceways and Boxes
4. 28 05 26 System Signal Grounding
5. 28 05 27 Cabinets, Enclosures and Racks
6. 28 09 00 Electronic Components
7. 28 46 13 Integrated Sequences of Operation
8. 28 46 19 PLC Integrated Control System

1.03 REFERENCES

- A. ANSI/EIA-170, Electrical Performance Standards - Monochrome Television Studio Facilities A ("RS-170"): Standards for picture quality.
- B. ANSI/EIA-330, Electrical Performance Standards for Closed Circuit Television Camera 525/60 Interlaced 2:1 ("RS-330"): Standards for Picture quality.

1.04 SYSTEM DESCRIPTION

A. Scope of Work Summary:

1. The facility has an existing color CCTV system connected to an NVR and utilizing an ONSSI system to monitor, display, and record critical areas of the building as indicated on the drawings. New monitors will be provided at Central Control to display all

cameras via split screen and automatic sequencing. Specific camera call up and alarm event monitoring of cameras will be performed through a new Operator Interface Console (OIC).

2. Contractor shall be responsible for providing additional video cards, drivers, PCs, servers, and interface equipment to add additional monitoring and switching to each Operator Interface Console in Central Control.
3. See Section 28 46 13 for Integrated Sequences of Operation. Both the drawings and specifications must be used concurrently for a complete understanding of the project.

B. Sequence of Operation:

1. Alarm/Event Control: Perform camera call up by integrating with other security electronic systems described in the Specifications.

C. Monitoring and Display System

1. Existing cameras will be displayed on the new monitors for viewing movement doors without line of sight from the control point and will be automatically displayed when the related door is selected.
2. Provide new viewing workstations with software to monitor all existing cameras as described and shown on the Drawings. New workstations shall be located in Central Control in a lockable cabinet.

1.05 SUBMITTALS

- A. Comply with Section 28 05 00.
- B. Performance Measurements: Record and submit all performance measurements in a complete test report.

1.06 COORDINATION

- A. Coordinate with the Owner all sequencing, split screen display, and event/alarm/intercom call ups for the new monitors prior to installation.

1.07 EXTRA MATERIALS

- A. Deliver the following spare parts to the Owner at a location to be designated (quantities to be determined):
 1. (1) CCTV Monitor

1.08 QUALITY ASSURANCE

- A. Comply with Section 28 05 00.
- B. CEC Compliance: Comply with applicable requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements, provide video surveillance system equipment and components including, but not limited to, the following:
- B. Acceptable Products or equal from other manufacturers:
 - 1. Viewing Workstation/ServerDell Poweredge R310
 - 2. 20" LCD Monitor Bosch, Pelco
 - 3. Monitor MountsWorkrite Sequoia
 - 4. PoE Network SwitchHP Procurve

2.02 SOURCE QUALITY CONTROL

- A. Comply with Section 28 05 00.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Comply with Section 28 05 00.
- B. Comply with manufacturer's recommendations, procedures and standards for the assembly and operation of the CCTV cameras.
- C. Use screw type terminals and crimped lugs for camera power cable terminations.
- D. Use BNC connectors, sufficiently sized for each cable type, for all coaxial cable terminations.

3.02 FIELD QUALITY CONTROL

- A. After installation of the video surveillance system, and prior to performance testing, functionally test all cameras, video equipment, and other hardware interconnections, and all interfaces to other systems. In addition, conduct the following adjustments and measurements:
- B. Performance Testing
 - 1. Comply with Section 28 05 00, Performance Testing for:
 - a. Initial Performance Testing
 - b. Performance Testing
 - 1) Demonstrate proper alignment, adjustment, and switching, sequencing, auto-positioning and system performance for all camera locations with all required sequences of operation under all operating modes. Demonstrate proper interface with all other security electronic systems.
 - c. Continuous Operational/Functional Testing

3.03 TRAINING

- A. Provide training in accordance with Section 28 05 00.
- B. Provide qualified technicians certified by the product manufacturers to perform the training. Submit evidence of qualifications for Owner's approval prior to training.

END OF SECTION 28 23 00

SECTION 28 46 13

INTEGRATED SEQUENCES OF OPERATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this Section.

1.02 SUMMARY

A. Section Includes

1. Software Development
2. Control Electronic System Software
3. Sequences of Operation

B. Related Sections:

1. 28 05 00 Common Work Results for Electronic Safety and Security
2. 28 05 13 Conductors and Cables
3. 28 05 14 Raceways and Boxes
4. 28 05 26 System Signal Grounding
5. 28 05 27 Cabinets, Enclosures and Racks
6. 28 09 00 Electronic Components
7. 28 15 00 Intercom System
8. 28 23 00 Video Surveillance (CCTV) System
9. 28 46 19 PLC Integrated Control System

1.03 DEFINITIONS

- A. Control System Software: A software application program that performs logic and control functions based on programmable criteria.
- B. Programming Workstation: Graphic icon display that allows the operator to monitor system activity and alarm conditions on a real-time basis, and presents the operator with a selection of functions. Typically this portion of the screen/graphics is displayed in all operating modes allowing alarms to be monitored while using other system features.
- C. Icon: Pictorial graphic display of a symbol or devices such as doors, locks, buttons.
- D. Operator Interface (OI): Used to generally define computer monitor, mouse, audio, button, or any other devices used for Human-Machine Interfacing.

1.04 SYSTEM DESCRIPTION

- A. Provide software development and programming for workstations, control panels, and each system as defined in each respective Section and described in this Section. Sample sequences of operations have been established to provide a base understanding of the project requirements.

1.05 SUBMITTALS

- A. Comply with Section 28 05 00.
- B. Theory of Operation: Develop and submit functional narratives supported by full-size, color state diagrams for the various combinations of icons and buttons in each operational state. Submit 14 calendar days prior to Review Meeting.
- C. Review Meeting: Attend submittal review meeting to receive Owner comments on the theory of operation and preliminary development submittal.
- D. Full Development: Incorporate all Owner review comments and resubmit the theory of operation submittal along with full-size, graphic layouts panel. Submit 14 calendar days prior to Owner Workshop and Demonstration.
- E. Control Electronics Software: Develop and submit control electronics software (logic) for each typical function. Submit 14 calendar days prior to Owner Workshop and Demonstration.
- F. Owner Workshop and Demonstration: Attend submittal review meeting along with a complete Control Panel training/ demonstration including. After demonstrating the control panel and functions and recording all Owner comments, incorporate as many Owner review comments as possible before re-demonstrating the following day.
- G. Record Documents
 1. Compile a list giving each PLC program name, its installed version number, the number of copies installed, the serial number of each copy, the publisher's name and address, and the publisher's customer support telephone number.
 2. Prepare and submit complete documentation of the final installed runtime versions of the operator interface software, including a diagram of its component modules, subroutines, ladder logic, databases, libraries, drivers, and other parts. Narrative descriptions shall accompany the diagram, giving basic descriptions of each component and describing the interaction between components. Provide complete, annotated program listings of all custom scripts, macros, and subroutines.
 3. Provide the Owner with all original installation DVDs or CD-ROMs and all software manuals for every software program installed on the system. Provide one complete copy of the full development environment for the operator interface software installed on the programming laptop (refer to Section 28 23 00).

1.06 QUALITY ASSURANCE

- A. Comply with Section 28 05 00.
- B. Have the Project Manager support all specified submittal reviews and demonstrations, and all software-related project meetings. Have the Software Engineer support-related project meetings on an as needed basis, or at the Project Inspector's request.

1.07 SEQUENCING AND SCHEDULING

- A. Comply with requirements of Section 28 05 00.
- B. Submit submittals described in this section in the order they are listed.

1.08 WARRANTY

- A. Comply with Section 28 05 00.
- B. Warrant all software development and programming to be free of defects for a period of one-year from the date of final acceptance. For warranty purposes, consider a defect to be any programming error or errant software behavior not explicitly agreed upon by the Owner, either intermittent or continuous, and all unincorporated Owner comments.
- C. Respond to reported defects with on-site personnel within the response times specified in Section 28 05 00.

PART 2 - PRODUCTS

2.01 SOURCE QUALITY CONTROL

- A. Factory Test:
 - 1. Comply with the requirements of Section 28 05 00.
 - 2. Functional Testing:
 - a. Thoroughly test every function under all operating sequences and operating modes. Activate system outputs in response operations and test reactions to test inputs.

PART 3 - EXECUTION

3.01 CUSTOMIZABILITY OF THE TOUCHSCREEN CONTROL SYSTEM

- A. The sequence of operations presented in this Specification shall be open to customization by the County. Shapes of icons, size, arrangement, color, and even functionality shall be changeable as required by the County at no additional cost. Contractor shall submit a proposed design, including sample colored screen layouts, of how he/she intends on installing the Touchscreen controls interface. The included sequence of operations herein shall serve only as a basis of design, and does not exclude further development and customization required by the County.

- B. ALL EXISTING FUNCTIONS MUST BE PRESERVED unless excepted by the County. A diagram and list of all existing functions is listed in the Appendix to follow. Note that not all functions are sampled in the following in the sequence of operation description. The Contractor is responsible for developing and translating all hard panel functions into touchscreen functions. The samples provided below are for reference and a guide as to the overall look and feel desired by the County.

3.02 TOUCH SCREEN OPERATIONAL THEORY

- A. The touchscreen Operator Interface Controller (OIC) provides the integration to control and monitor devices such as:

- 1. Doors
- 2. Gates
- 3. Intercoms
- 4. Cameras
- 5. Alarms

- B. Operator Interface Controller (OIC)

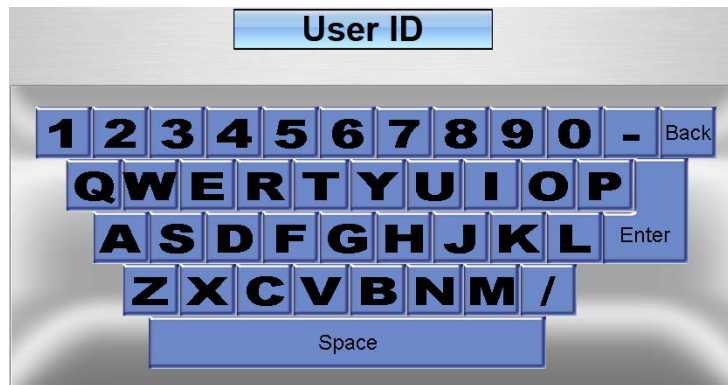
- 1. The OIC station is a control station that allows the operator to control certain areas of the facility by use of computer similar to what may be found at a home. Icons, or buttons, are located on the floor plan for each type of device that can be controlled. These icons change color, indicating the status of each devices present condition or state of control. By selecting one of these icons with the pointer, one can change the state of the controlled device from On-Off or from Unlocked-Locked, depending on the device. Some operations, such as unlocking a door require a two-step procedure.

- C. Control Station Techniques

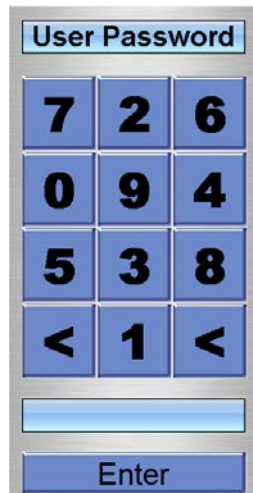
- 1. The OIC station is controlled by the pointer on the screen which can be navigated with a mouse and/or using a finger on a touch screen. There will always be pointer on the screen. When the pointer is over a button icon, the outline of the icon appears. This is to show which button icon will be used or selected. Clicking the left mouse button or lifting a finger from the touch screen while on an active icon location will cause the icon to activate. In essence the Control Station is like a personal computer and operates in the same fashion.
 - a. The pointer is the arrow on the screen.
 - b. One can navigate the arrow with the mouse and/or with a finger via touch screen.
 - c. The icon will have an outline around it when the pointer is correctly over it.
 - d. Clicking the left mouse button or lifting a finger off the touch screen selects and activates the icon.

- D. Administrative Functions

- 1. OPERATOR LOG ON / LOG OFF FUNCTIONS OVERVIEW
 - a. ENTER YOUR USER ID WITH THE KEYBOARD BELOW:



b. THEN ENTER YOUR USER PASSWORD WITH THE FOLLOWING KEYPAD:



c. TO LOG OFF PRESS:



The system will also automatically log off if the system is idle (no input from the operator) for more than 10 minutes. This preset time of 10 minutes is adjustable from the administrator privileges.

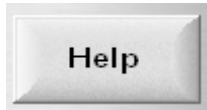
2. SUMMARY

- a. To begin the operations of the OIC system, the operator must enter a unique User Identification and Password via the "User ID" and "User Password" screens to access the system and become a user of the control station. Each function and activity of the Control station is tracked and recorded to allow for monitoring and review of all activities on the system as well as to provide a comprehensive log for Owner related functions.
- b. To **LOGON** the initial keypad screen will be displayed and the operator will be required to enter their personal user identification number (6 characters) and then enter. The operator will then input their user password (4 numbers) by selecting the numbers from the displayed scramble pad. Successful completion of this task will take the operator to the site map of the facility.

- c. To **LOGOFF** of the system the operator selects the Log Off function button which is located on the right hand side of all screens. By selection of this function button, a pop up menu will appear that gives the operator the option to “Change Operator,” Log Out”, or to “Cancel” the logoff process.
- d. **LOGOUT**, by selection of this command, the station will log out of the system. The operator will have the opportunity to LogOut, Change Operators or Cancel the process.

E. Station Controls

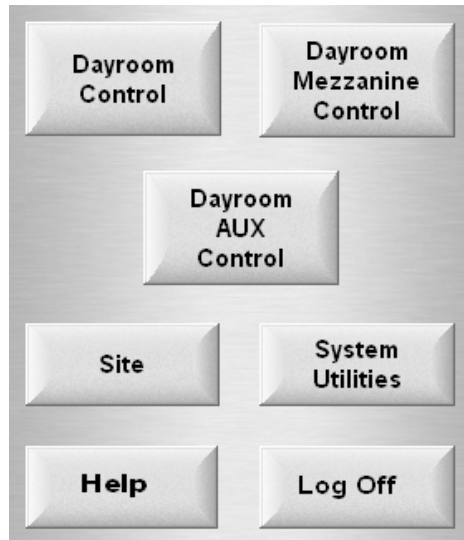
1. HELP SCREEN



- 2. Select the **HELP** function icon to navigate to the help menu takes you to the overview of all functions within your OIC system.

3. SCREEN NAVIGATION:

- a. At the extreme right hand side of each Touch Screen map, various screen navigation Icons are present. Upon activation of an Icon, the Map will immediately change from the current display to the one selected. There are no navigation Icons present within the boundaries of any individual Touch Screen map.
- b. Sample navigation bar (provide labels/navigation project specific):



4. SILENCE



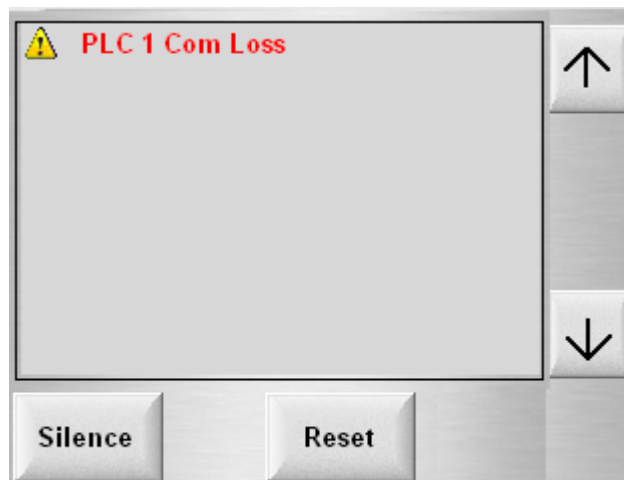
- a. Select the alarming icon that is to be silenced and then select the **Silence** icon. This will keep the alarm condition within the queue but reset the audible alarm associated with it. Selecting an alarm in the queue will automatically call up the screen that contains the alarm displaying the exact location.

5. RESET



- a. Select the previously silenced alarm location from the queue and then select the **Reset** icon; alarms can only be reset individually. The operator must be on the active area map that is annunciating the alarm before the alarm can be reset. An alarm can only be **Reset** after the associated alarm has been silenced and the alarm condition is cleared.

6. ALARM QUEUE



- a. The alarm queue is located at the upper right of the screen, it lists any alarms that are in the system at the present time (Breach, Panic, etc.) and are associated with the station in control. The queue is set up to display the first 6 alarms in order for

which they arrived and also a window to address the total quantity alarms in the system. When an alarm is selected the operator must silence it prior to resetting it or removing it from the queue. When an alarm has been silenced it will change from red to pink and will be moved to the rear of the queue to show the operator a change of condition. The operator may also scroll through the alarms by use of the UP or DOWN arrows to individually select the alarm.

F. Door Status, Definitions and Control

1. DOOR CONDITIONS AND ICONS

a. SECURE



The swing door icons represent the doors current condition as secure.

b. DOOR UNLOCKED BUT CLOSED



When the DOOR icon is pressed to unlock, the graphic will outline in red to indicate the door is unlocked but not yet opened. No alarm will show up on the queue.

c. DOOR UNLOCKED AND OPENED



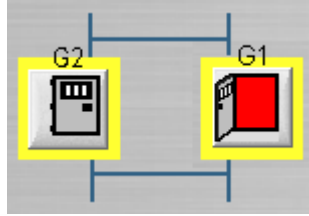
When the DOOR icon is pressed to unlock, and the door is opened, the graphic will outline in red and show an open door. No alarm will show up on the queue.

d. DOOR FORCED OPEN



When the DOOR has been breached or forced open, the graphic will indicate red and show an open door. A door breach alarm will show up on the queue.

e. INTERLOCK CONDITIONS



G1 shown as interlocked with G2. G1 cannot be unlocked until G2 has been secured. The door icon with a yellow Halo represents an interlocked door and cannot be unlocked until secure conditions exist within the respective group and or the interlock override is performed (Interlock Override should only be used in emergency situations only).

f. DOOR SHUNTED



When the DOOR has been placed into SHUNT mode, the door will no longer send a breach alarm when being opening by a key or DPS unsecure state. SHUNT is done by pressing the door, followed by the shunt button on function bar. Same procedure to turn off the SHUNT. A green halo will appear behind the icon while in the SHUNT mode.

g. DOOR HOLD OPEN



When the DOOR has been placed into HOLD mode, the door lock power will remain on and unlocked until turned off by operator. HOLD is done by pressing the door to HOLD OPEN followed by the HOLD button on the function bar. Same procedure to turn off the HOLD. An orange halo will appear behind the icon while in the HOLD OPEN mode.

h. DOOR ISOLATE

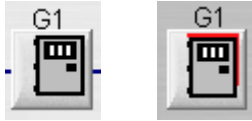


When the DOOR has been placed into ISOLATE mode, the door has no become locked out. ISOLATE disables the ability to unlock a door until turned back off. ISOLATE is done by pressing the door to ISOLATE followed by the ISOLATE button

on function bar. Same procedure to turn off the ISOLATE. A red "X" will appear on the icon while it is in the ISOLATE mode.

G. DOOR CONTROL FUNCTIONS

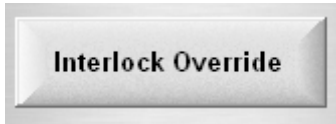
1. UNLOCK/OPEN Function: Swing Doors



LOCKED UNLOCKED

UNLOCK is a two-step function. Simply touch the door icon and then the UNLOCK button and it will unlock for the preset time. During an UNLOCK function, swinging doors will automatically relock after a programmed amount of time (approximately three seconds) has elapsed.

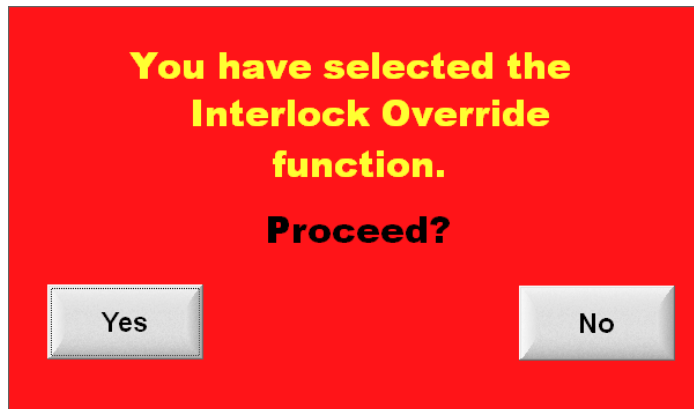
2. INTERLOCK OVERRIDE



THEN PRESS DOOR TO OVERRIDE



THE FOLLOWING DIALOG APPEARS:



INTERLOCK OVERRIDE is used only in emergency situations. Doors are interlocked to provide protection against two or more doors being open at the same time. This is typically found in a sally port or a vestibule area, but it is also found within other functional areas. However, in emergency situations, INTERLOCK OVERRIDE can be utilized. Select the Interlock Override icon. Select the interlocked door you wish to override. A security activity dialog window will be displayed on the active area map to

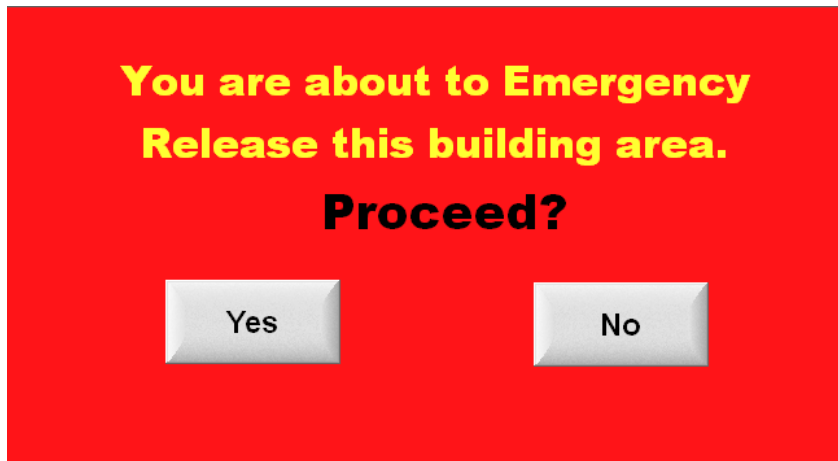
verify that you want to press YES or NO to cancel the request. Any interlocked door that is displayed on the active area map can now be unlocked.

3. EMERGENCY RELEASE

Press the EMERGENCY RELEASE button to release the doors in that area.



Then the following Popup appears asking if you would like to PROCEED with a YES or NO. Once YES is pressed, the doors with in the EMERGENCY RELEASE GROUP will open. If NO is pressed, the Popup will close.



Doors being released will show a red halo behind the icon as well as the EMR button will blink red.



To turn off the EMERGENCY RELEASE, simply press the EMR button and this Popup will appear asking if you would like to Disable the emergency release, YES or NO.

**You are about to Disable Emergency
Release this building area.**

Proceed?

Yes

No

H. Intercom Status, Definitions and Control

1. AUDIO CONDITIONS AND ICONS

a. IDLE INTERCOM



Intercom icon that is idle and not currently in-use.

b. IDLE PAGING



Paging icon that is idle and not currently in-use.

c. NORMAL CALL-IN



Intercom icon changes (flashes) between the two conditions representing a pending call-in to the control station.

d. SELECTED-ACTIVE TALK PATH



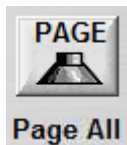
Intercom/paging icon changes to a solid yellow color to represent that it is in-use by the control station

e. SELECTED-ACTIVE PAGING ZONE



Paging icon changes to a solid yellow color to represent that it is in-use by control station.

f. IDLE ALL PAGE



g. SELECTED-ACTIVE ALL PAGE



When pressing ALL-PAGE, all page speakers within the areas will be open to hear audio until turned off.

2. INTERCOM CONTROL FUNCTIONS

a. SELECTING INTERCOMS OR PAGING ZONES



ACTIVE

ACTIVE

Select the intercom pushbutton icon on the active area map; it will turn YELLOW upon the user/operators selection to represent an active speech path between the control station and the remote field device. The intercom audio path is opened - meaning that the user/operator can now speak and/or listening to that station.

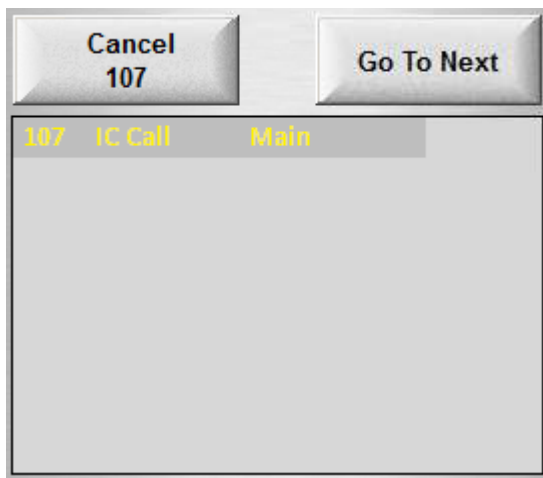
To speak, press the push-to-talk pushbutton on the desk or communication console. Hold down during the station user's conversation and release to listen to the field station.

For intercoms two-way voice communication is established by selecting the intercom station pushbutton icon on the active area map near the location where the user/operator wants to communicate. When communication is established, the intercom push button icon will turn a solid YELLOW. A YELLOW CAMERA icon (if

cameras are associated with this intercom station) indicates that the camera is automatically following the intercom, the video will be displayed on the adjacent video surveillance system monitor. At this time the operator will have an open audio path for this intercom station. You can communicate to only one location at a time. As you communicate to another location, the previous audio connection will automatically cancel. To talk to the location, press and hold the push-to-talk button on the desktop and begin the conversation.

If a Field Intercom Button (the button on the intercom station itself) is pressed, then the intercom push button icon on the active area map will FLASH YELLOW and an audible tone will annunciate. At this time the operator may select the icon to answer the call as described above. The intercoms that are currently calling-in are placed within the intercom queue and may be selected individually or may be selected using next to answer them in the order.

3. INTERCOM QUEUE



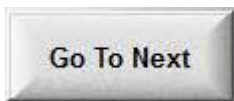
The Intercom Queue located at the bottom left of the screen contains area icons representing the functional areas of the facility. All area maps are accessible via a single icon selection of the desired area pushbutton icon on the facility map. The Intercom Queue contains options which allow the operator Connect or Reset.

4. CONNECT ICON



Select the **Connect** icon to activate the first station on the Pending List.

5. GO TO NEXT ICON



Select the **Next** icon to deactivate the selected call and select the next intercom.

6. MUTE

Select the **Mute** icon to mute an intercom call request. The intercom call request will still remain on the queue.

I. CCTV Status, Definitions and Control

1. CCTV CONDITIONS AND ICONS

a. CAMERA LOCATION AND SELECTION ICON



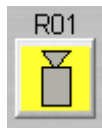
Fixed Camera Icon

b. CAMERA MANUALLY SELECTED BY OPERATOR



Camera has been manually selected for display on a call-up monitor for viewing

c. CAMERA FOLLOWING INTERCOM



Camera icon represents a camera-follow function or command that has been assigned to an intercom station upon selection of the intercom from the control station. The camera is called up on a monitor for viewing.

2. CCTV CONTROL FUNCTIONS

a. MANUALLY SELECTING CAMERAS



Select any CAMERA pushbutton icon to view the image the video surveillance system monitor. The CAMERA icon pushbutton is BLUE while the camera is active. Select another camera to change the active video image.

3. INTERCOM CALL-UP CAMERAS



AND THE ASSOCIATED CAMERA ICON WILL CHANGE TO



When an audio path is established with a selected intercom station, the camera that covers the designated area around the intercom station will be displayed on the video surveillance system monitor. A GREEN CAMERA within the camera pushbutton icon indicates that the camera is automatically following the intercom. This will only turn YELLOW if a camera is associated with an intercom call-up group.

J. ALARM STATUS ICONS

1. Field Panic Stations



Activation of this device shown above will cause an alarm input into the PLC which will generate an alarm on the control station at the corresponding location. This alarm indication maybe silenced and reset as explained earlier. These alarms cannot be reset until the field device has been reset to a normal state.

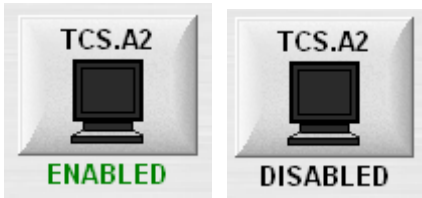
2. OIC PANIC ALARM



The OIC can press this PANIC button within their control screen if necessary to lockdown all controls within the OIC and alert Central Control of a panic condition. Upon activation, Central Control will have full control of areas controlled by the Housing Unit (with exception to individual cell controls). If Central Control activates its Panic Station, any Housing Unit will not be able to takeover controls. Central Control will be in lockdown with a reset possible via a hidden switch in the PLC cabinet at the Security Electronics Room.

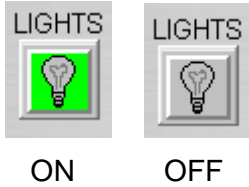
K. ENABLE/DISABLE OF STATION

- L. Central Control will have the ability to force the stations in each Housing Unit offline while taking over full controls of those stations (with exception to individual cell controls). This is done by going to the stations local machine screen and pressing the station icon. ENABLED in green shows station still logged on and DISABLED in black shows station logged off and disabled from control. Central Control must RE-ENABLE THE station the same way to give back control.



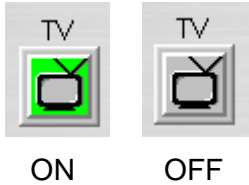
M. Utilities

1. LIGHT CONTROL



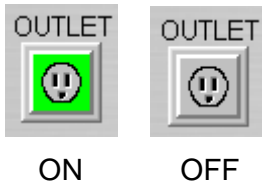
Selection of this icon allows for the On/Off (shown in respective conditions above) function of the lights within a predetermined location (i.e. dayroom, cell, office).

2. TV CONTROL



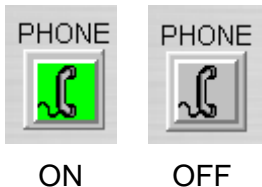
Selection of this icon allows for the On/Off (shown in respective conditions above) function of the TV's within a predetermined location (i.e. dayroom).

3. POWER CONTROL



Selection of this icon allows for the On/Off (shown in respective conditions above) function any kind of power device within a predetermined location (i.e. dayroom, cell, office).

4. PHONE CONTROL



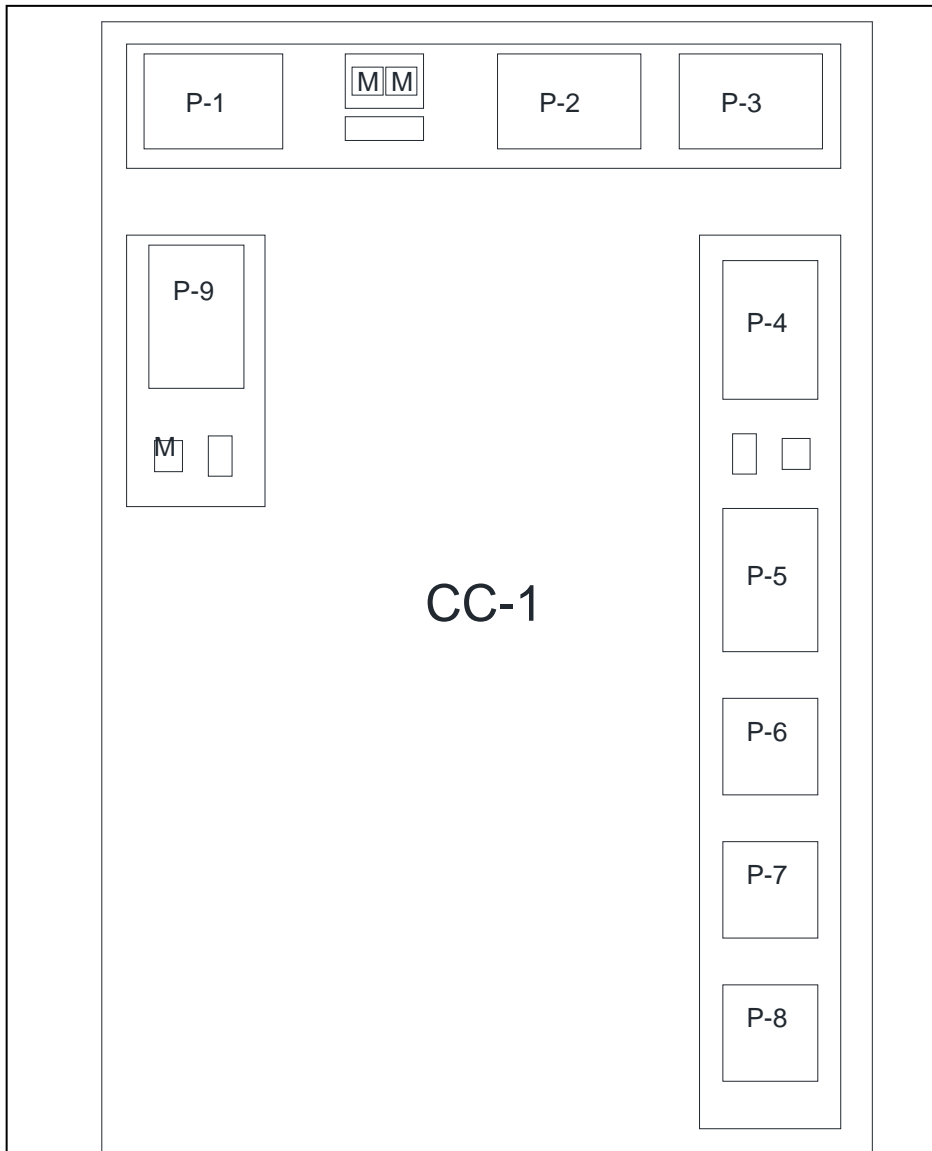
Selection of this icon allows for the On/Off (shown in respective conditions above) function of the phone within a predetermined location (i.e. dayroom, cell, office).

N. Cell Customization

Each Housing Unit Cell, will be an icon itself that will allow the operator to input custom information regarding the resident inmate. Provide Fields for classification, including color options, as well as fields for general notes.

Appendix – 28 46 13 A.

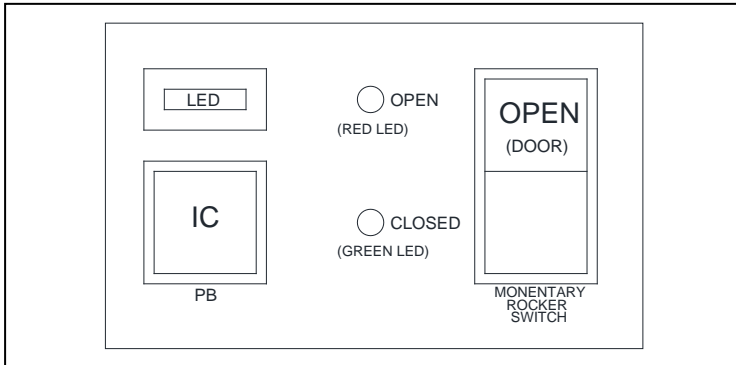
Existing Central Control Room Layout and Panel Designations:



Panel P1

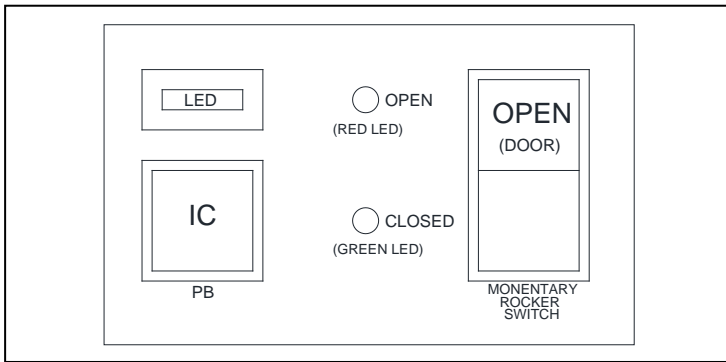
Door and Intercom Controls

Levels 1 and 2 Housing



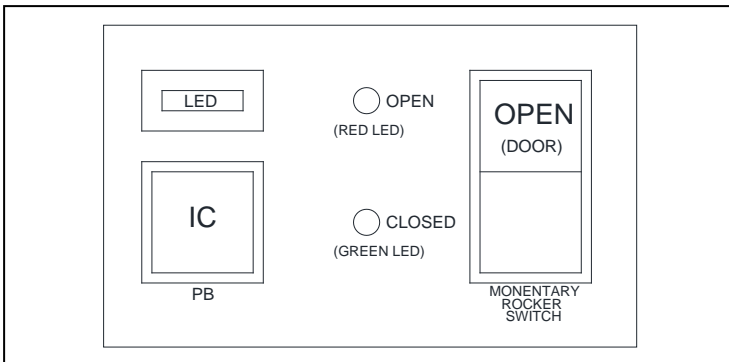
LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Booking



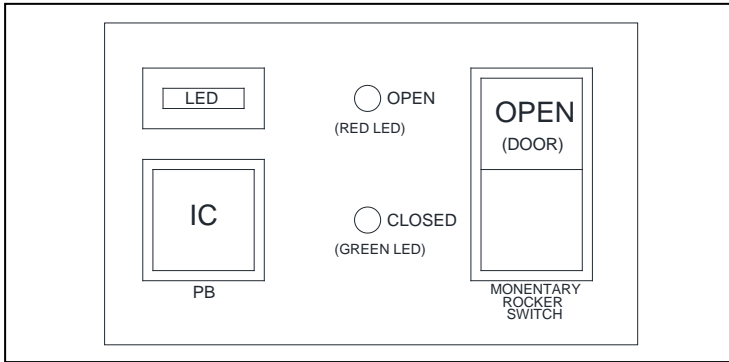
LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Laundry



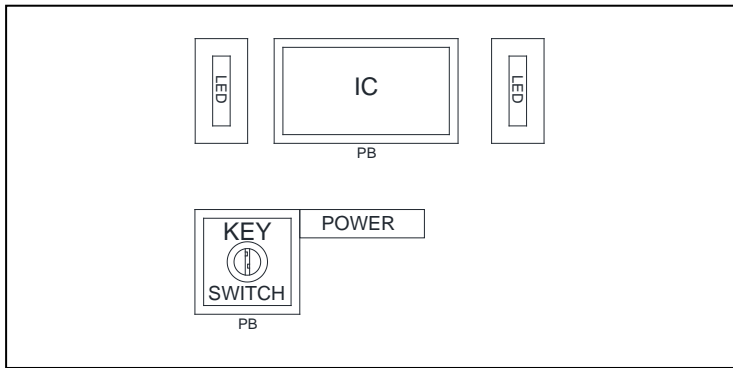
LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Levels 3 and 4 Housing



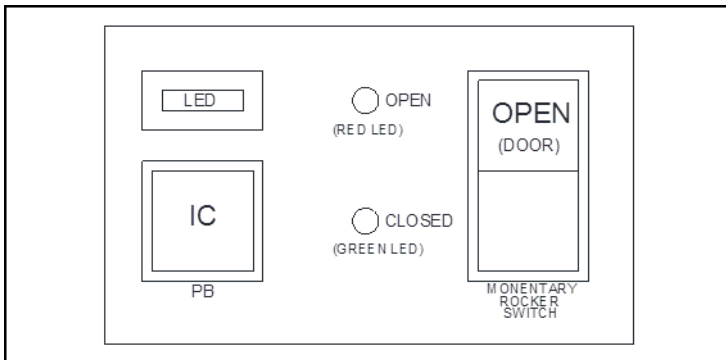
LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Stair 2



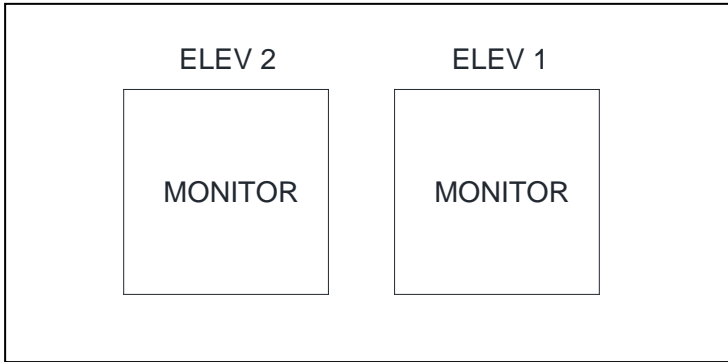
LED
PB
LED
Key Switch
Power LED

Elev 2 Vest



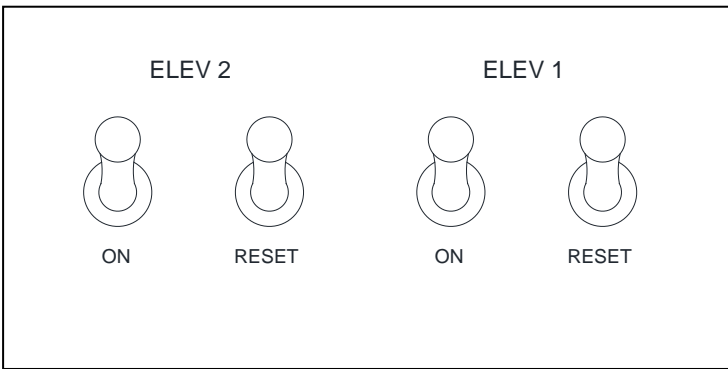
LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Elevator Monitors



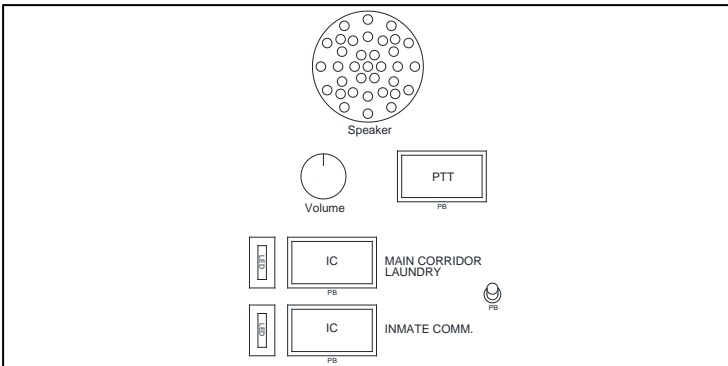
Left Monitor
Right Monitor

Elevator Monitor Controls



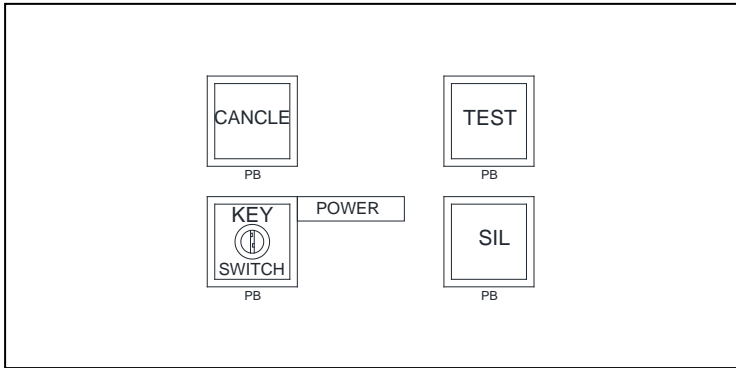
Elev 2 'ON' Toggle Switch
Elev 2 'RESET' Toggle Switch
Elev 1 'ON' Toggle Switch
Elev 1 'RESET' Toggle Switch

Master Intercom Station



Panel Speaker
Volume Control
Push to Talk
Main Corridor IC Call-in LED
Main Corridor Intercom Select Push Button
Inmate IC Call-in LED
Inmate Intercom Select Push Button
Push Button

Panel Controls

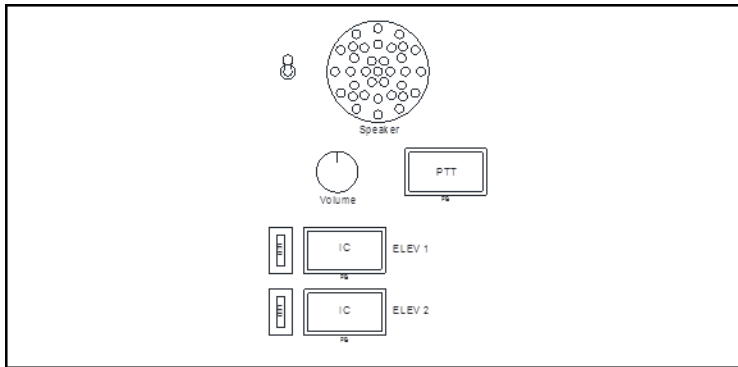


Power Key Switch
Power LED
Silence Push Button
Test Push Button
Cancel Push Button

Panel P2

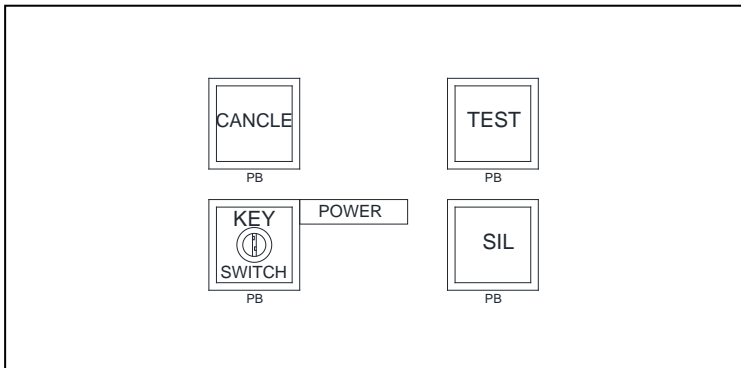
Door and Intercom Controls

Master Intercom Station



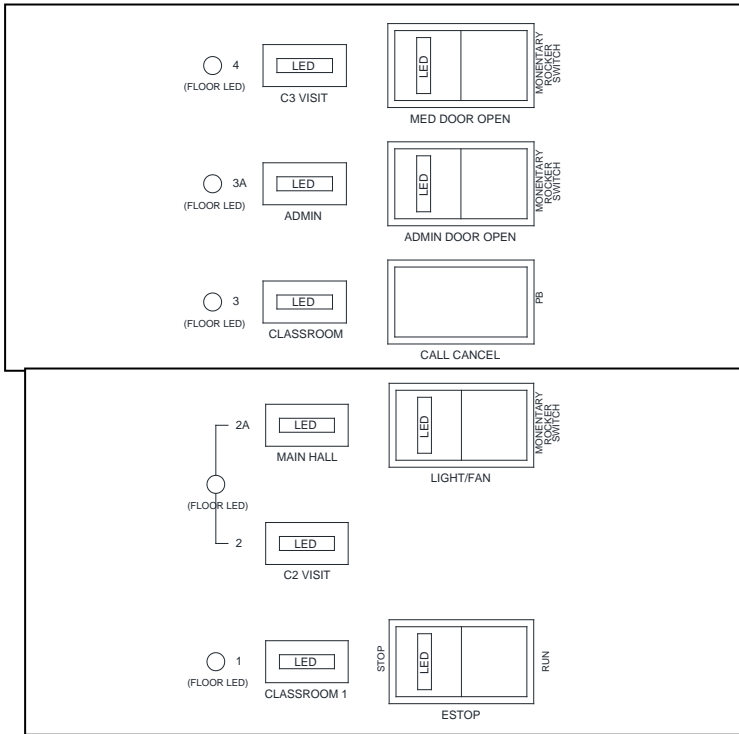
Panel Speaker
Volume Control
Push to Talk
Elevator 1 IC Call-in LED
Elevator 1 Intercom Select Push Button
Elevator 2 IC Call-in LED
Elevator 1 Intercom Select Push Button

Panel Controls

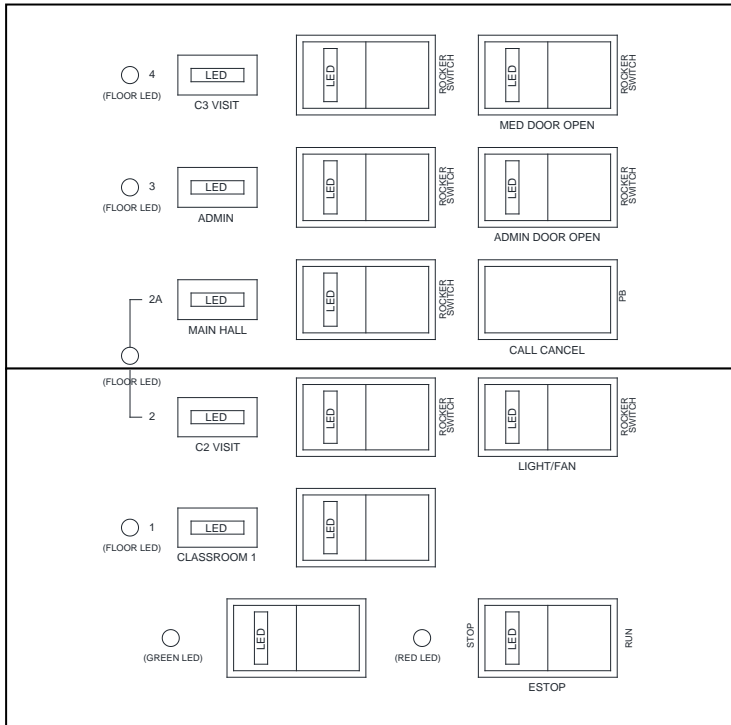


Power Key Switch
Power LED
Silence Push Button
Test Push Button
Cancel Push Button

Elevtor 2 Controls



- Elevator Level LED - Level 4
- Elevator Level LED - Level 3A
- Elevator Level LED - Level 3
- Elevator Level LED - Level 2A / 2
- Elevator Level LED - Level 1
- Elevator IC Call LED - Level 4
- Elevator IC Call LED - Level 3A
- Elevator IC Call LED - Level 3A
- Elevator IC Call LED - Level 2A
- Elevator IC Call LED - Level 2
- Elevator IC Call LED - Level 1
- Door Open/Close Switch LED Level 4
- Door Open/Close Switch LED Level 3a
- Door Open/Close Switch Level 5
- Door Open/Close Switch Level 3a
- Call Cancel PB LED
- Call Cancel PB
- Emergency Stop Switch LED
- Emergency Stop Switch

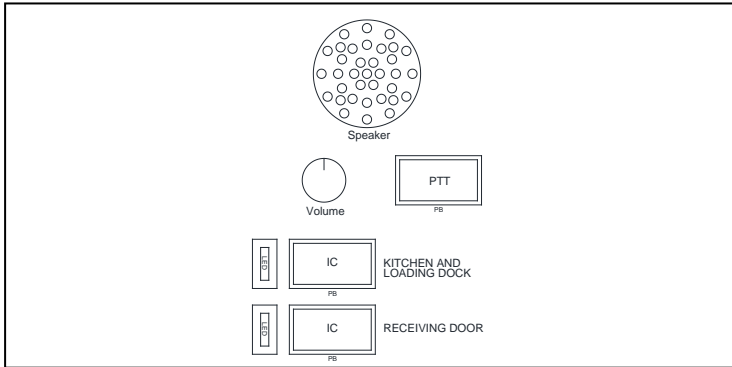


- Elevator Level LED - Level 4
- Elevator Level LED - Level 3
- Elevator Level LED - Level 2A / 2
- Elevator Level LED - Level 1
- Elevator IC Call LED - Level 4
- Elevator IC Call LED - Level 3
- Elevator IC Call LED - Level 2A
- Elevator IC Call LED - Level 2
- Elevator IC Call LED - Level 1
- Floor Select Toggle Switch 4 LED
- Floor Select Toggle Switch 3 LED
- Floor Select Toggle Switch 2A LED
- Floor Select Toggle Switch 2 LED
- Floor Select Toggle Switch 1 LED
- Floor Select Toggle Switch 4
- Floor Select Toggle Switch 3
- Floor Select Toggle Switch 2A
- Floor Select Toggle Switch 2
- Floor Select Toggle Switch 1
- Door Open/Close Switch LED Level 4
- Door Open/Close Switch LED Level 3
- Call Cancel PB LED
- Call Cancel PB
- Green LED
- Toggle Switch LED
- Toggle Switch
- Red LED
- Emergency Stop Switch LED
- Emergency Stop Switch

Panel P3

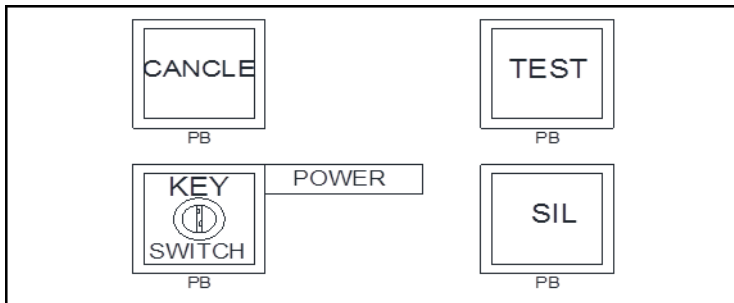
Door and Intercom Controls

Master Intercom Station

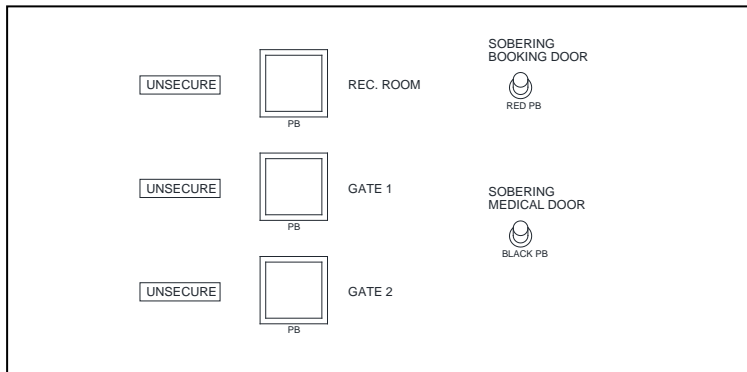


Panel Speaker
Volume Control
Push to Talk
Kitchen IC Call-in LED
Kitchen Intercom Select Push Button
Loading Dock IC Call-in LED
Loading Dock Select Push Button

Panel Controls

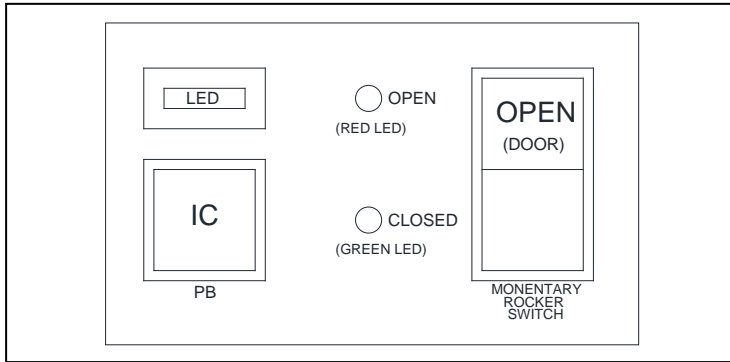


Power Key Switch
Power LED
Silence Push Button
Test Push Button
Cancel Push Button



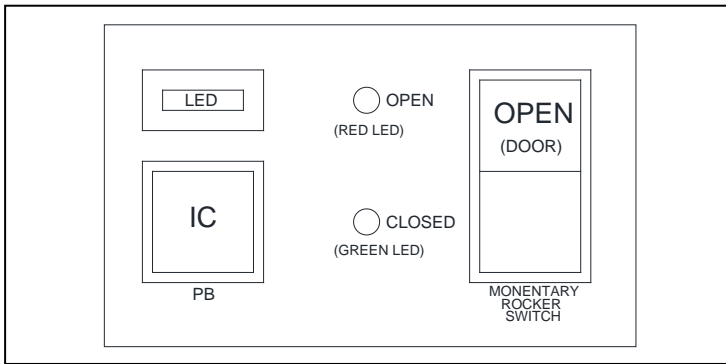
Receiving LED
Receiving Push Button
Gate 1 LED
Gate 1 Push Button
Gate 2 LED
Gate 2 Push Button
Red Push Button Sobering Booking Door
Black Push Button Sobering Med Door

Sobering



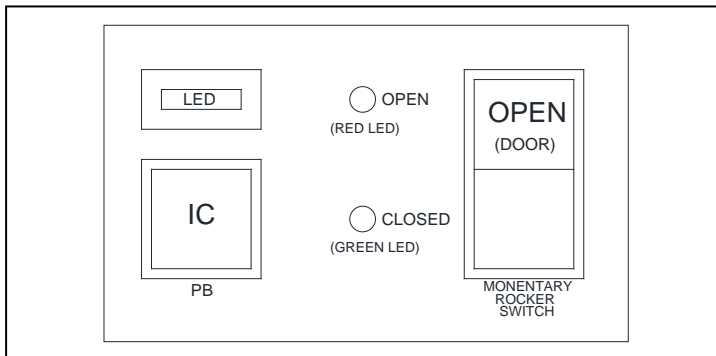
LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Medical Holding



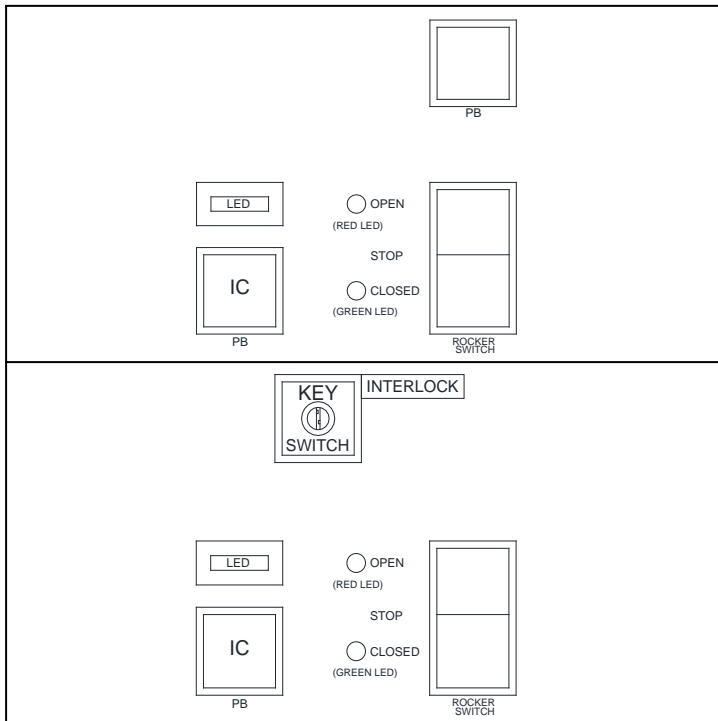
LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Medical Exam



LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

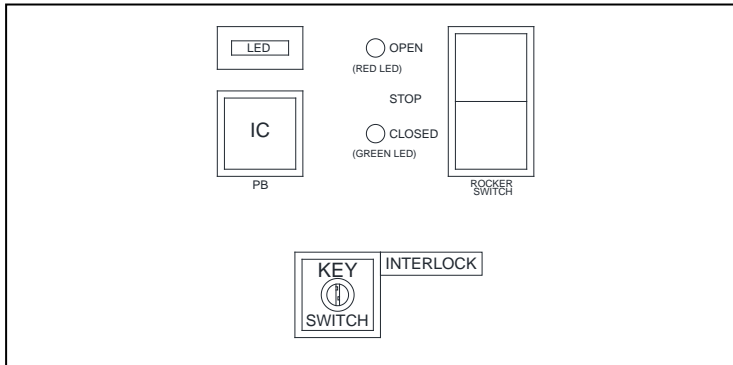
Kitched Corridor



Magnetic Lock Push Button
LED
IC (PB)
Open (Red LED)
Close (Green LED)
Open (Door Rocker Switch)
Close (Door Rocker Switch)
Interlock Override Key Switch
Interlock Override LED
LED
IC (PB)
Open (Red LED)
Close (Green LED)
Open (Door Rocker Switch)
Close (Door Rocker Switch)

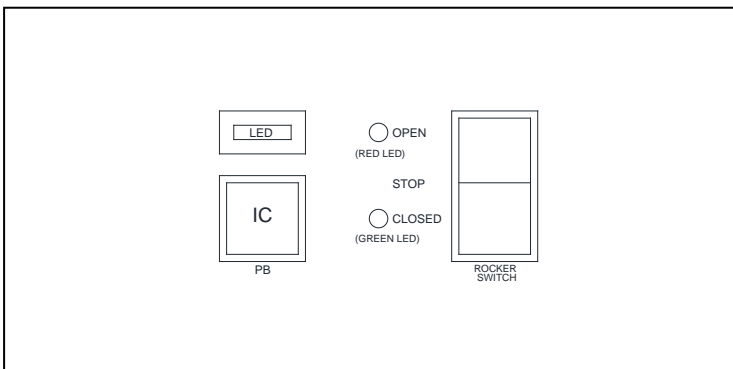
Panel P4

Door and Intercom Controls



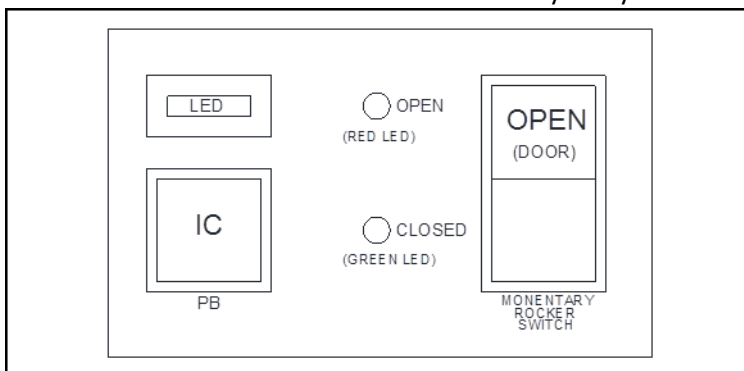
IC LED
IC (PB)
Open (Red LED)
Close (Green LED)
Open (Door Rocker Switch)
Close (Door Rocker Switch)
Interlock Override Key Switch
Interlock Override LED

Release Door 2



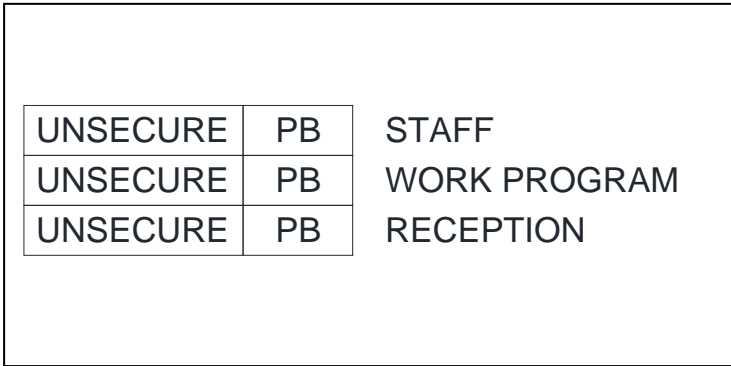
IC LED
IC (PB)
Open (Red LED)
Close (Green LED)
Open (Door Rocker Switch)
Close (Door Rocker Switch)

Lobby Entry

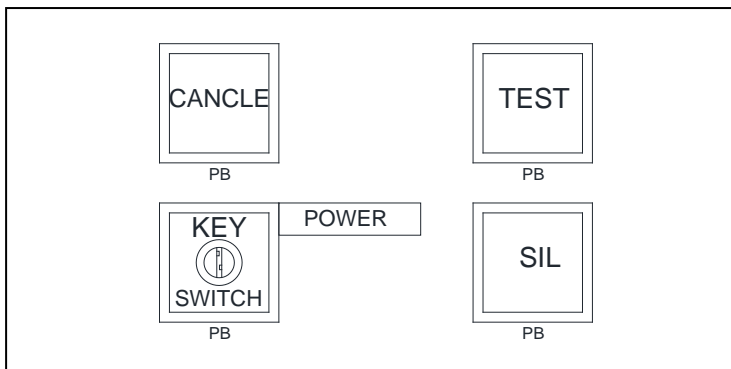


LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Momentary Rocker Switch)

Administration

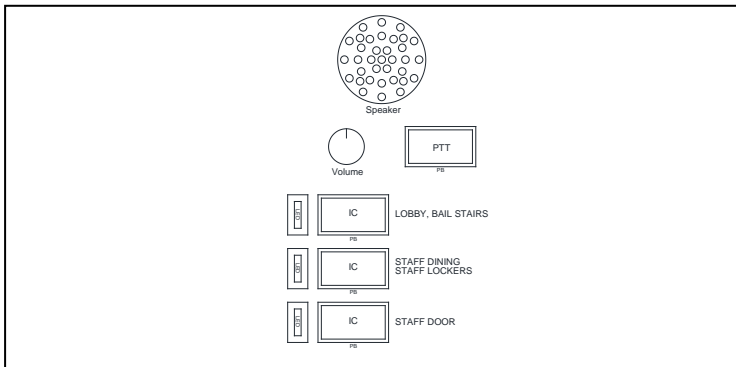


Staff Unsecure LED
Staff Unsecure Reset Button
Work Program Unsecure LED
Work Program Reset Button
Reception Unsecure LED
Reception Unsecure Reset Button



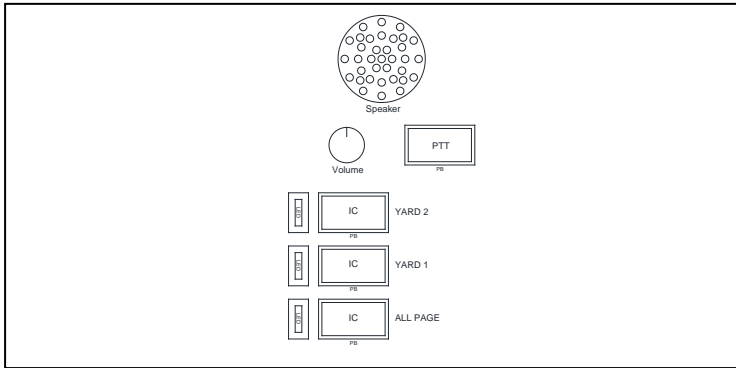
Power Key Switch
Power LED
Silence Push Button
Test Push Button
Cancel Push Button

Master Intercom Station

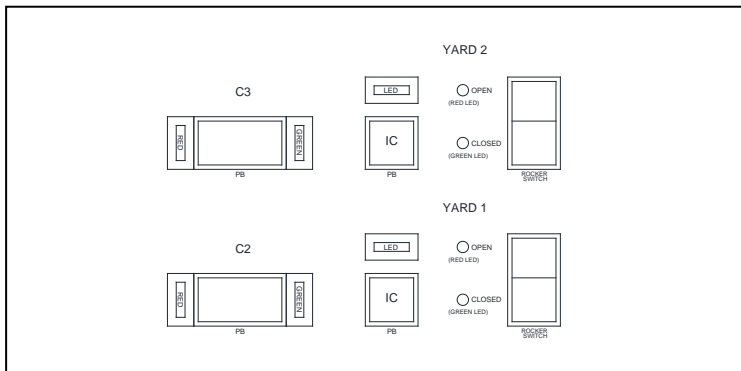


Panel Speaker
Volume Control
Push to Talk
Lobby Bail Stairs IC Call-in LED
Lobby Bail Stairs Intercom Select Push Button
Staff Dining/Lockers IC Call-in LED
Staff Dining/Lockers Select Push Button
Staff Door IC Call-in LED
Staff Door Select Push Button

Master Intercom Station

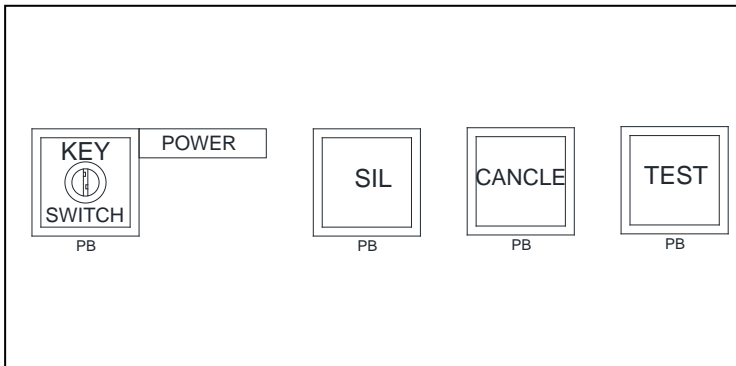


Panel Speaker
Volume Control
Push to Talk
Yard 2 IC Call-in LED
Yard 2 Intercom Select Push Button
Yard 1 IC Call-in LED
Yard 1 Select Push Button
All Page IC Call-in LED
All Page Select Push Button



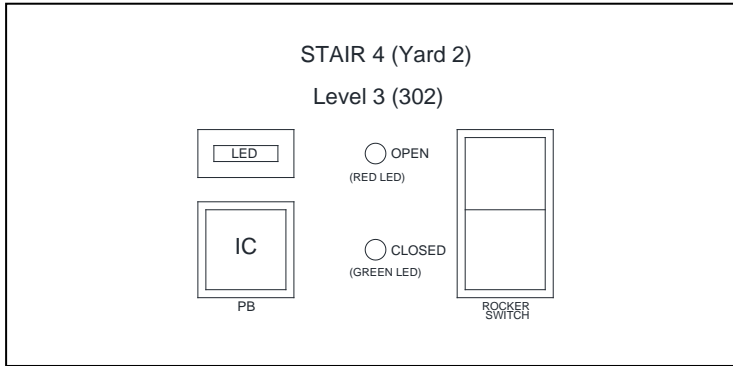
C3 Push Button
C3 Red LED
C3 Green LED
C2 Push Button
C2 Red LED
C2 Green LD
Yard 2 Station Select Button
Yard 2 Station Select LED
Yard 2 Door Toggle Switch
Yard 2 Door Red LED
Yard 2 Door Green LED
Yard 2 Door Toggle Switch
Yard 1 Station Select Button
Yard 1 Station Select LED
Yard 1 Door Toggle Switch
Yard 1 Door Red LED
Yard 1 Door Green LED

Panel 5 Power Controls

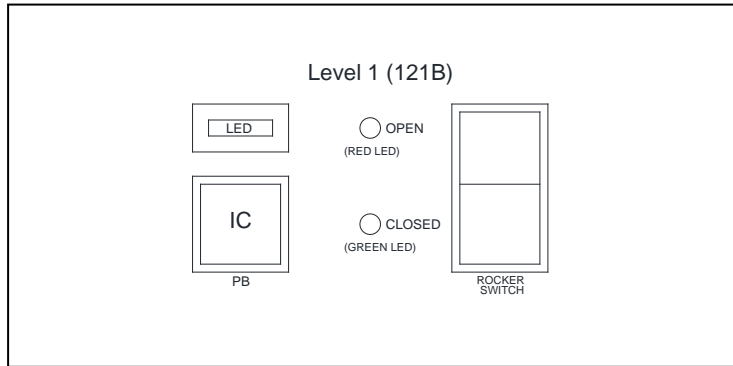


Power Key Switch
Power LED
Silence Push Button
Test Push Button
Cancle Push Button

Fire Exits Stair 4 - Yard 1

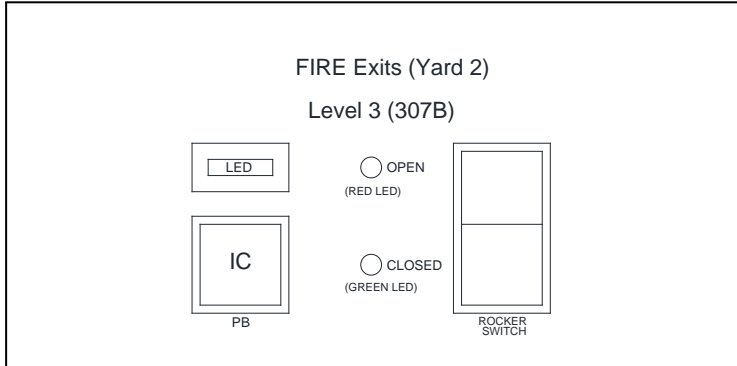


- Station Select LED
- Station Select Button
- Door Toggle Switch
- Door Red LED
- Door Green LED



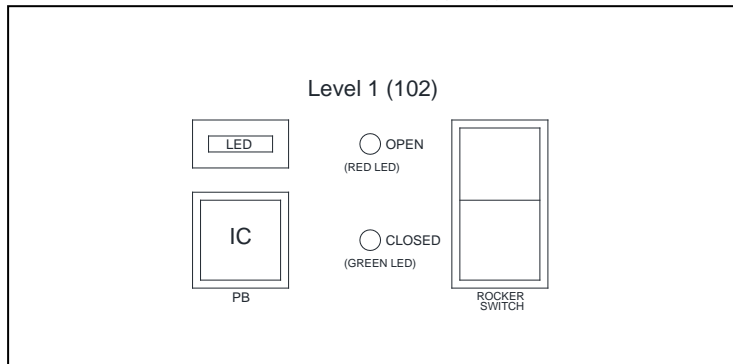
- Station Select LED
- Station Select Button
- Door Toggle Switch
- Door Red LED
- Door Green LED

Level 3 (307B)



- Station Select LED
- Station Select Button
- Door Toggle Switch
- Door Red LED
- Door Green LED

Level1 (120)



- Station Select LED
- Station Select Button
- Door Toggle Switch
- Door Red LED
- Door Green LED

Panel P6

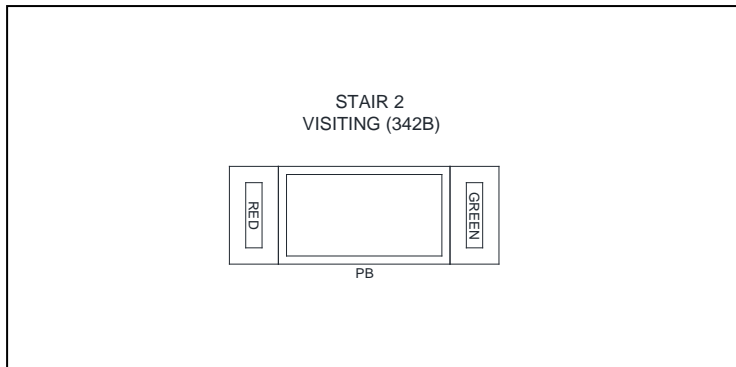
Door and Intercom Controls

Exit Doors

UNSECURE	PB	YARD 2 (307A)
UNSECURE	PB	YARD 1 (121A)
UNSECURE	PB	ADMIN STAIR (328)
UNSECURE	PB	MAIN CORRIDOR (285)
UNSECURE	PB	PERIMETER (122)
UNSECURE	PB	VISITOR (342)

Yard 2 Unsecure LED
Yard 2 Unsecure Reset Button
Yard 1 Unsecure LED
Yard 1 Unsecure Reset Button
Admin Stair Unsecure LED
Admin Stair Unsecure Reset Button
Main Corridor Unsecure LED
Main Corridor Unsecure Reset Button
Perimeter Unsecure LED
Perimeter Unsecure Reset Button
Visitor Unsecure LED
Visitor Unsecure Reset Button

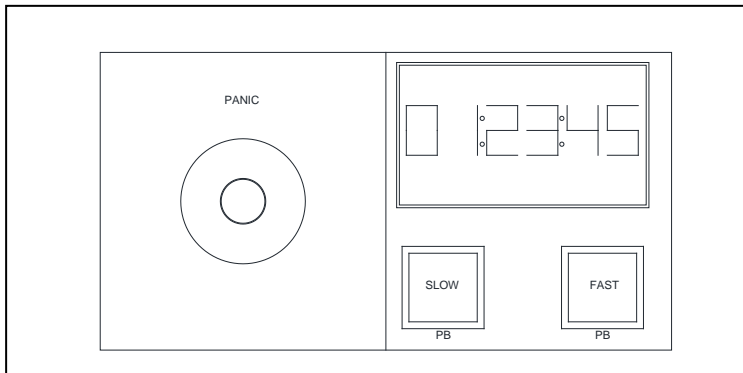
Stair 2 - Visiting



Stair 2 Push Button
Stair 2 Push Button - Red LED
Stair 2 Push Button - Red Green

Panel P7

Panic and Clock



Alarm Panel

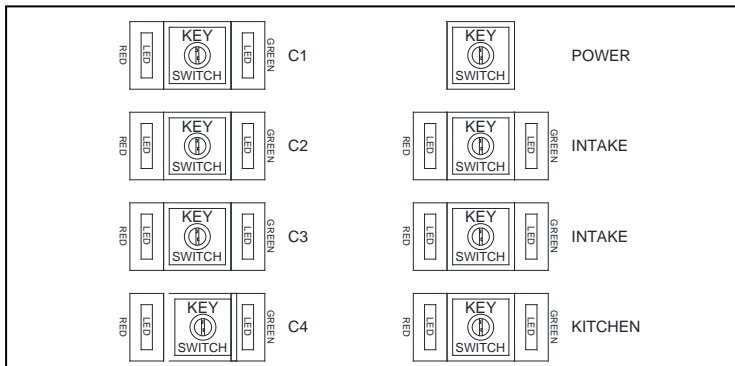
Panic Button

Clock

Slow Push Button

Fast Push Button

Panel Alarm Reset



C1 Keyswitch Switch

C1 Keyswitch Switch - Red LED

C1 Keyswitch Switch - Green LED

C2 Keyswitch Switch

C2 Keyswitch Switch - Red LED

C2 Keyswitch Switch - Green LED

C3 Keyswitch Switch

C3 Keyswitch Switch - Red LED

C3 Keyswitch Switch - Green LED

C4 Keyswitch Switch

C4 Keyswitch Switch - Red LED

C4 Keyswitch Switch - Green LED

Power Keyswitch Switch

Power Keyswitch Switch - Red LED

Power Keyswitch Switch - Green LED

Intake 1 Keyswitch Switch

Intake 1 Keyswitch Switch - Red LED

Intake 1 Keyswitch Switch - Green LED

Intake 2 Keyswitch Switch

Intake 2 Keyswitch Switch - Red LED

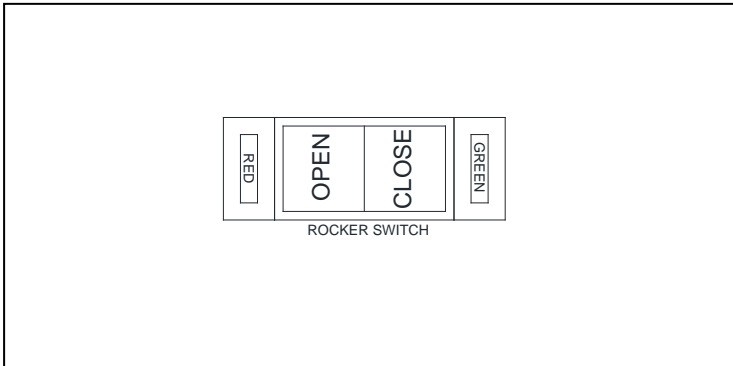
Intake 2 Keyswitch Switch - Green LED

Kitchen Keyswitch Switch

Kitchen Keyswitch Switch - Red LED

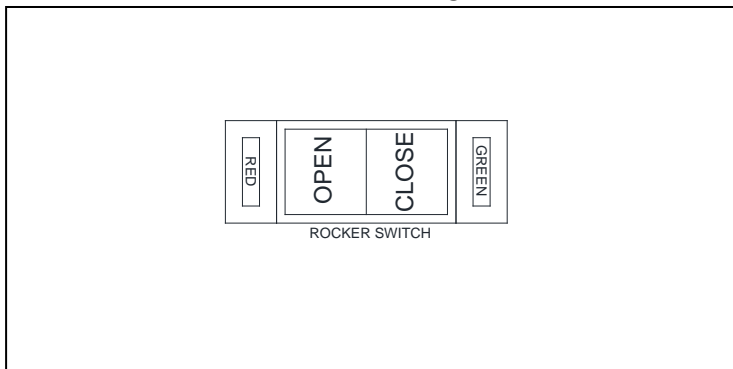
Kitchen Keyswitch Switch - Green LED

Sobering Cell 2



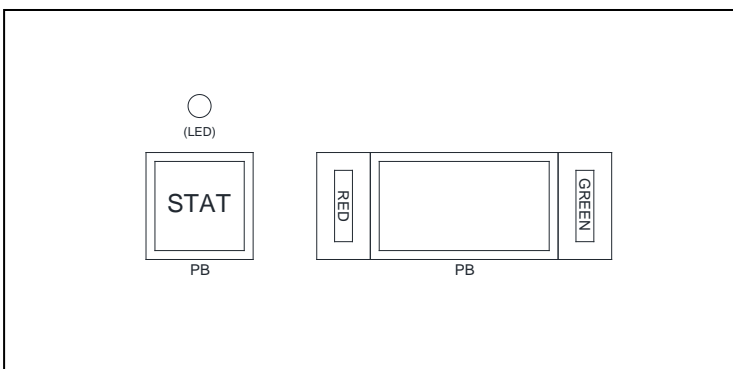
Sobering 2 Rocker Switch - Open
Sobering 2 Rocker Switch - Open
Sobering 2 Rocker Switch - Open LED (red)
Sobering 2 Rocker Switch - closed LED (Green)

Sobering Cell 1



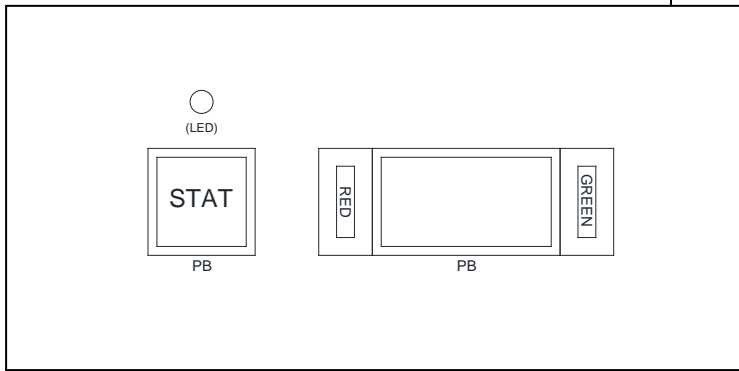
Sobering 1 Rocker Switch - Open
Sobering 1 Rocker Switch - Open
Sobering 1 Rocker Switch - Open LED (red)
Sobering 1 Rocker Switch - closed LED (Green)

Sobering Corridor Door 1



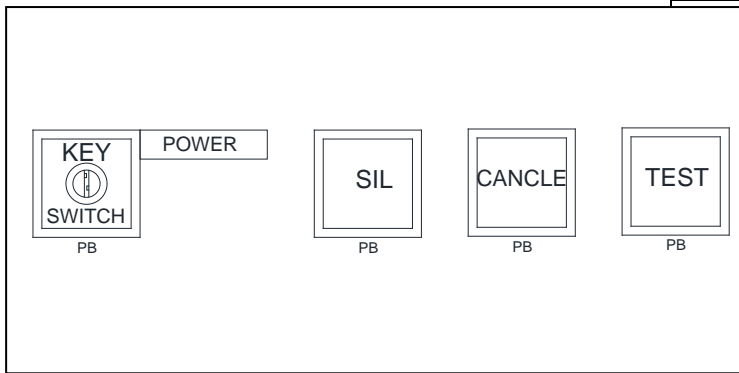
Station Select Push Button
Station Select LED
Sobering Push Button
Sobering Push Button - Red LED
Sobering Push Button - Red Green
Intercom

Medical / Sobering Corridor Door 1



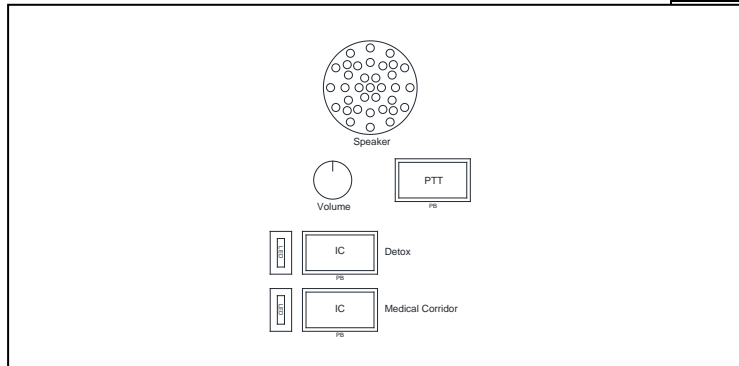
on Select Push Button
on Select LED
cal / Sobering Push Button
cal / Sobering Push Button - Red LED
cal / Sobering Push Button - Red Green
com

Medical / Sobering Corridor Door 1



er Key Switch
er LED
ce Push Button
Push Button
e Push Button

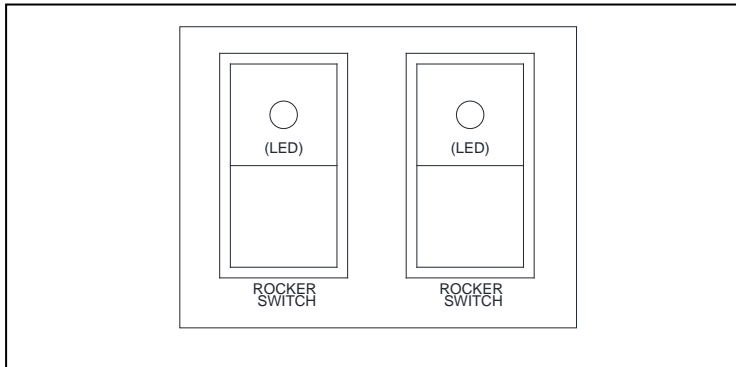
Master Intercom Station



l Speaker
me Control
to Talk
x IC Call-in LED
x Intercom Select Push Button
ical Corridor IC Call-in LED
ical Corridor Select Push Button

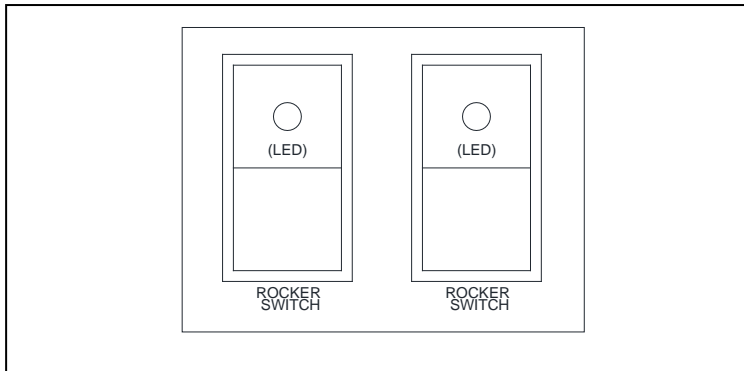
Panel P8

Lighting and Power



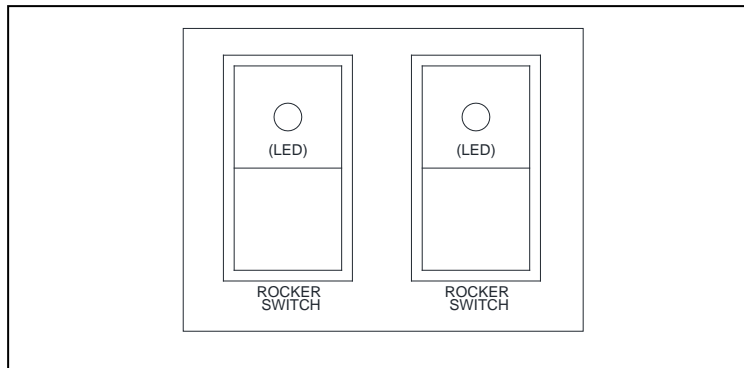
Left Rocker Switch - ON
Left Rocker Switch - OFF
Left Rocker Switch -LED
Left Rocker Switch - ON
Left Rocker Switch - OFF
Left Rocker Switch -LED

Intake



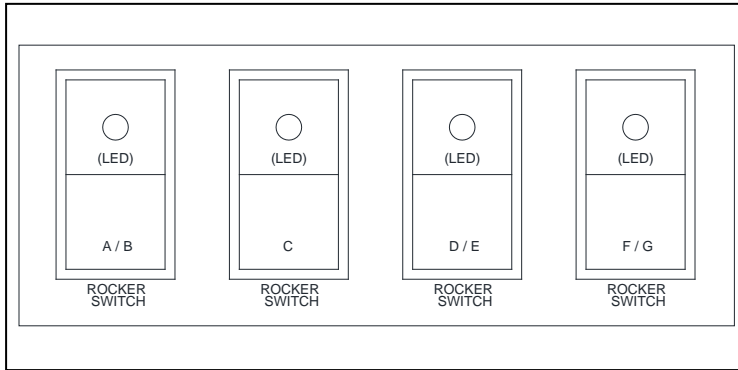
Left Rocker Switch - ON
Left Rocker Switch - OFF
Left Rocker Switch -LED
Left Rocker Switch - ON
Left Rocker Switch - OFF
Left Rocker Switch -LED

Dress

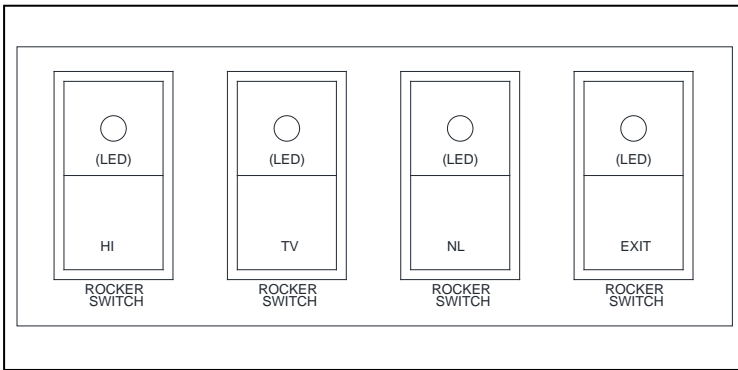


Left Rocker Switch (Male) - ON
Left Rocker Switch (Male) - OFF
Left Rocker Switch (Male) -LED
Left Rocker Switch (Female) - ON
Left Rocker Switch (Female) - OFF
Left Rocker Switch (Female) -LED

Holding - Top Row

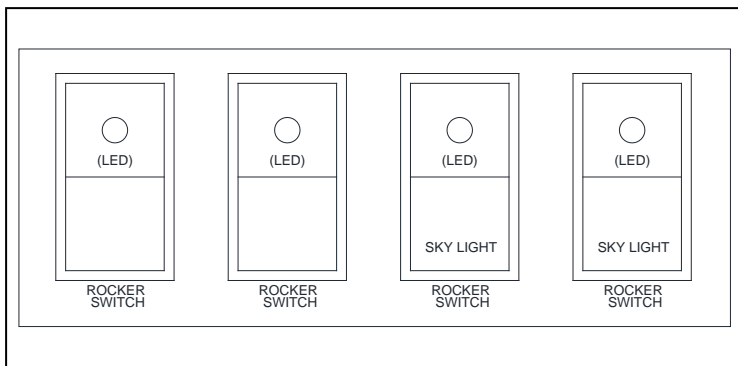


A/B Rocker Switch - ON
A/B Rocker Switch - OFF
A/B Rocker Switch - LED
C Rocker Switch - ON
C Rocker Switch - OFF
C Rocker Switch - LED
D/E Rocker Switch - ON
D/E Rocker Switch - OFF
D/E Rocker Switch - LED
F/G Rocker Switch - ON
F/G Rocker Switch - OFF
F/G Rocker Switch - LED



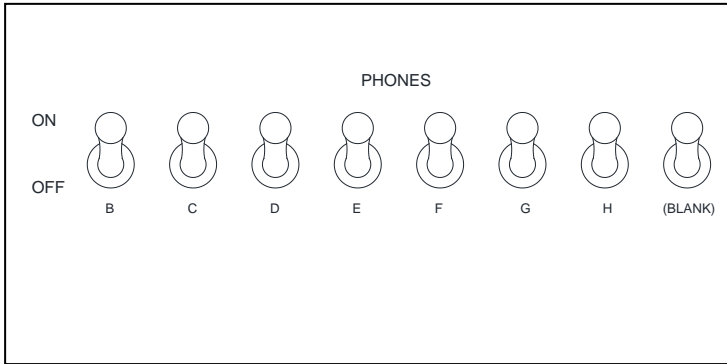
A/B Rocker Switch - ON
A/B Rocker Switch - OFF
A/B Rocker Switch - LED
C Rocker Switch - ON
C Rocker Switch - OFF
C Rocker Switch - LED
D/E Rocker Switch - ON
D/E Rocker Switch - OFF
D/E Rocker Switch - LED
F/G Rocker Switch - ON
F/G Rocker Switch - OFF
F/G Rocker Switch - LED

Main Corridor



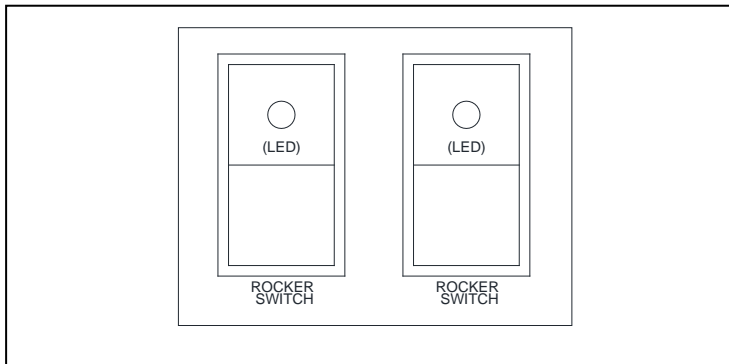
Left Rocker Switch - ON
Left Rocker Switch - OFF
Left Rocker Switch - LED
Left/Middle Rocker Switch - ON
Left/Middle Rocker Switch - OFF
C Rocker Switch - LED
Sky Light Left Rocker Switch - ON
Sky Light Left Rocker Switch - OFF
Sky Light Left Rocker Switch - LED
Sky Light Right Rocker Switch - ON
Sky Light Right Rocker Switch - OFF
Sky Light Right Rocker Switch - LED

Phones



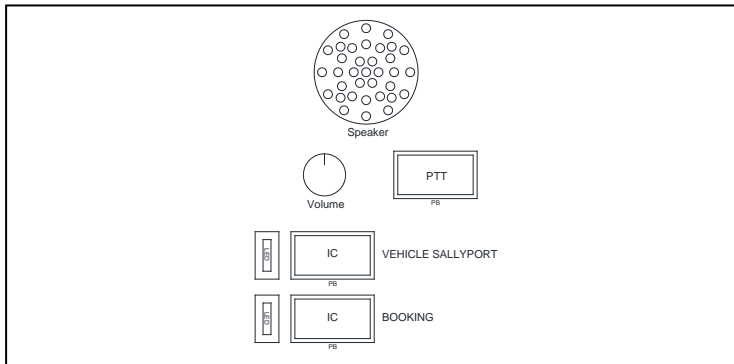
B Rocker Switch
C Rocker Switch
D Rocker Switch
E Rocker Switch
F Rocker Switch
G Rocker Switch
H Rocker Switch
(Blank) Rocker Switch

Detox



Left Rocker Switch - ON
Left Rocker Switch - OFF
Left Rocker Switch -LED
Left Rocker Switch - ON
Left Rocker Switch - OFF
Left Rocker Switch -LED

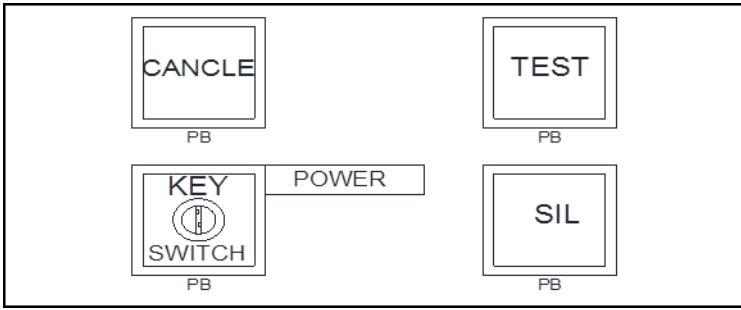
Panel P9



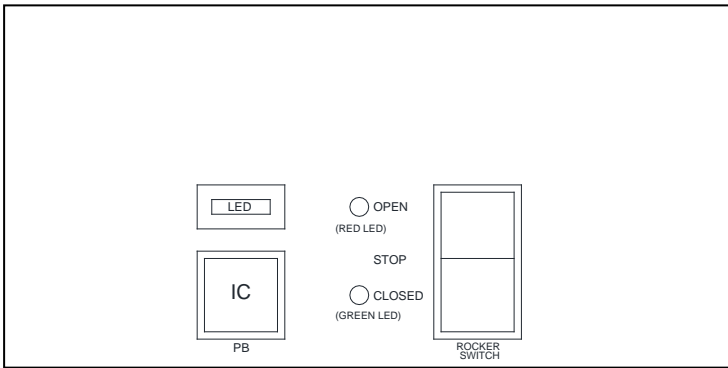
Door and Intercom Controls

- Panel Speaker
- Volume Control
- Push to Talk
- Vehicle Sallyport IC Call-in LED
- Vehicle Sallyport Intercom Select Push Button
- Booking IC Call-in LED
- Booking Select Push Button

Panel Controls

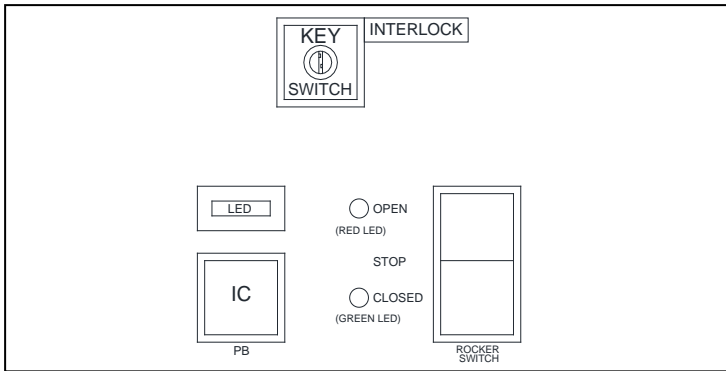


Power Key Switch
Power LED
Silence Push Button
Test Push Button
Cancel Push Button

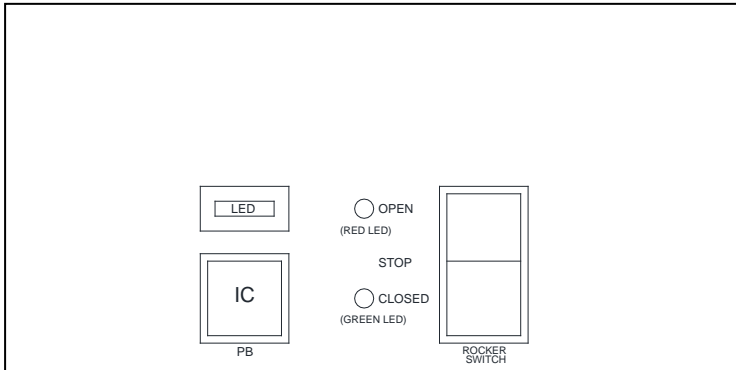


LED
IC (PB)
Open (Red LED)
Close (Green LED)
Open (Door Rocker Switch)
Close (Door Rocker Switch)
Interlock Override Key Switch
Interlock Override LED
LED
IC (PB)
Open (Red LED)
Close (Green LED)
Open (Door Rocker Switch)
Close (Door Rocker Switch)

Vehicle Sallyport Gate 2

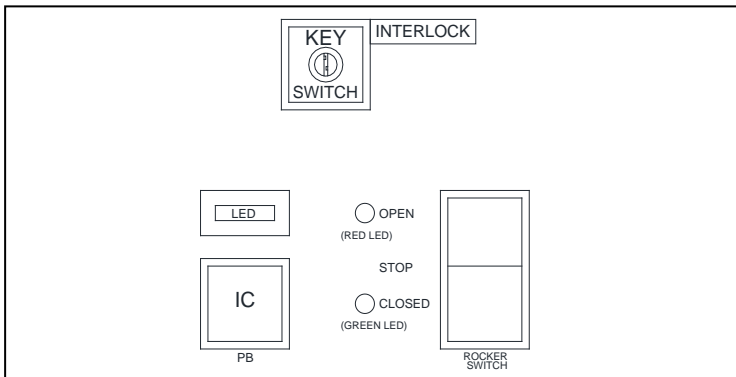


Intake Door 1



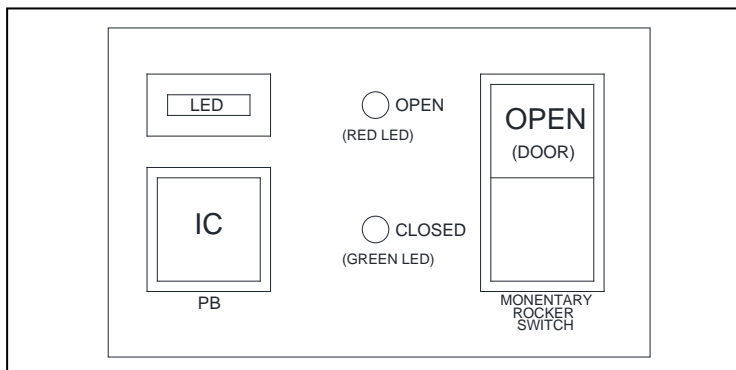
LED
IC (PB)
Open (Red LED)
Close (Green LED)
Open (Door Rocker Switch)
Close (Door Rocker Switch)
Interlock Override Key Switch
Interlock Override LED
LED
IC (PB)
Open (Red LED)
Close (Green LED)
Open (Door Rocker Switch)
Close (Door Rocker Switch)

Intake Door 2

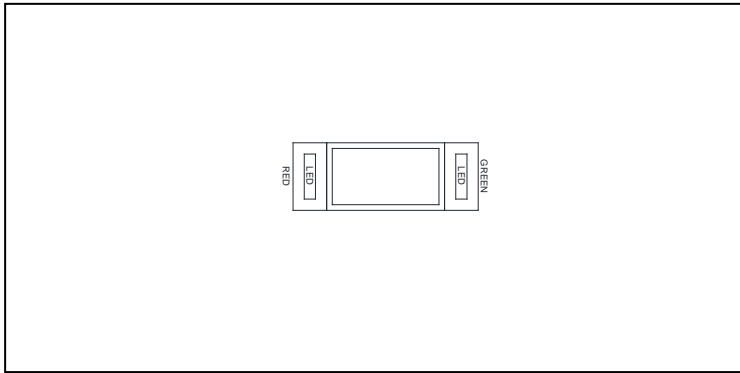


LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Medical



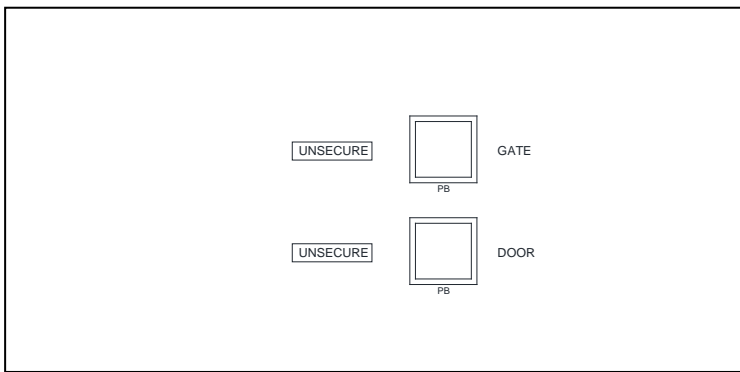
Holding



Red LED

Push Button

Green LED



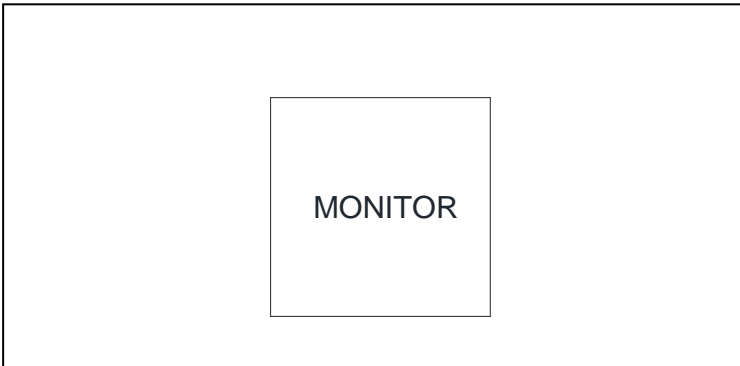
Gate Unsecure LED

Gate Push Button

Door Unsecure LED

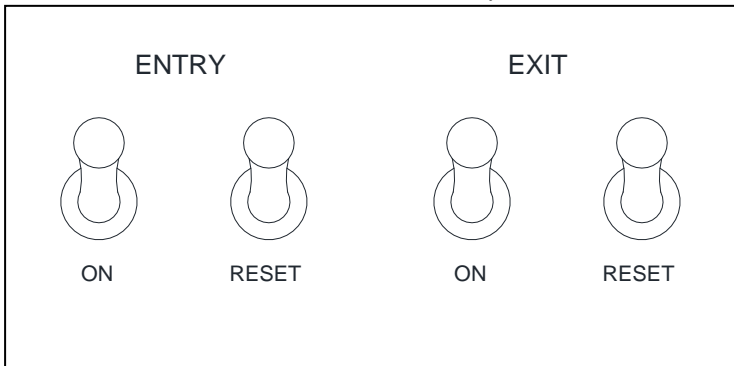
Door Push Button

Sally Port Monitor



Monitor

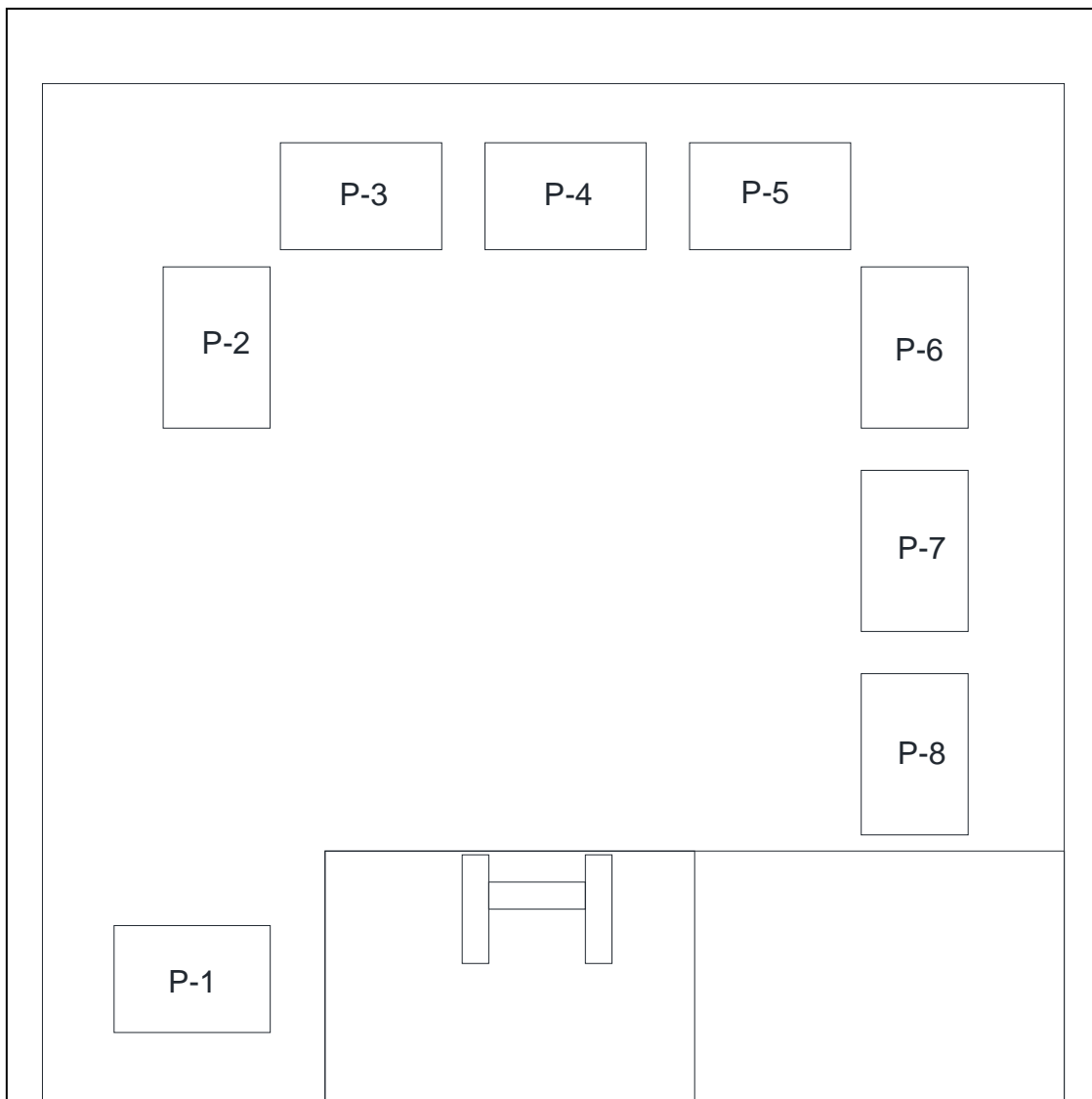
Sally Port Monitor



Entry 'ON' Toggle Switch
Entry 'RESET' Toggle Switch
Exit 'ON' Toggle Switch
Exit 'RESET' Toggle Switch

EXISTING HOUSING UNIT CONTROL – CC2

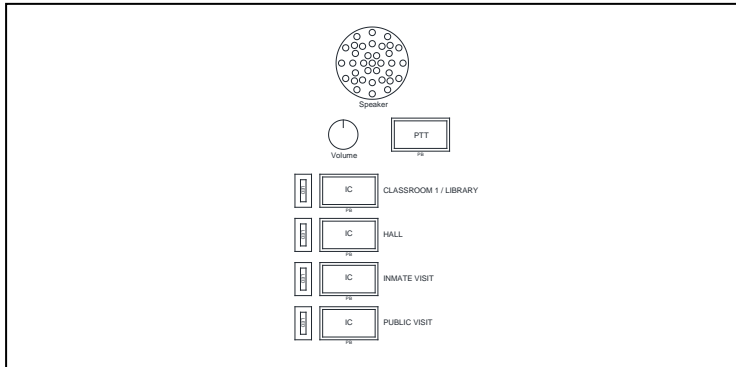
(SAME QUANTITY OF FUNCTIONS AND PANELS AT HOUSING UNIT CONTROL – CC3)



Panel P1

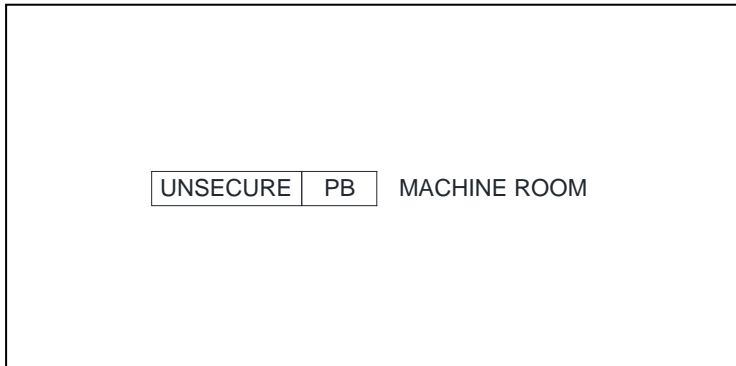
Door and Intercom Controls

Master Intercom Station



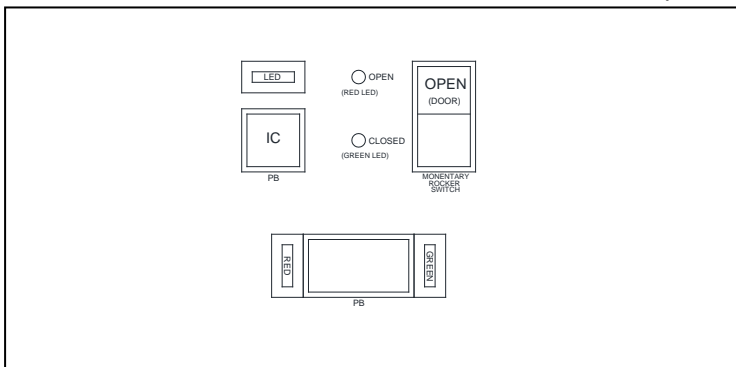
Panel Speaker
Volume Control
Push to Talk
Class Room 1 IC Call-in LED
Class Room 1 Select Push Button
Hall IC Call-in LED
Hall Select Push Button
Inmate Visit IC Call-in LED
Inmate Visit Select Push Button
Public Visit IC Call-in LED
Public Visit Select Push Button

Elevator 2



Yard 2 Unsecure LED
Yard 2 Unsecure Reset Button

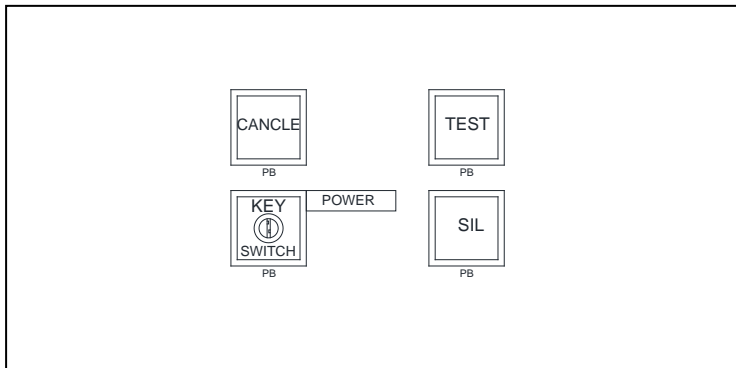
Visitstion Booth - Attorney



LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

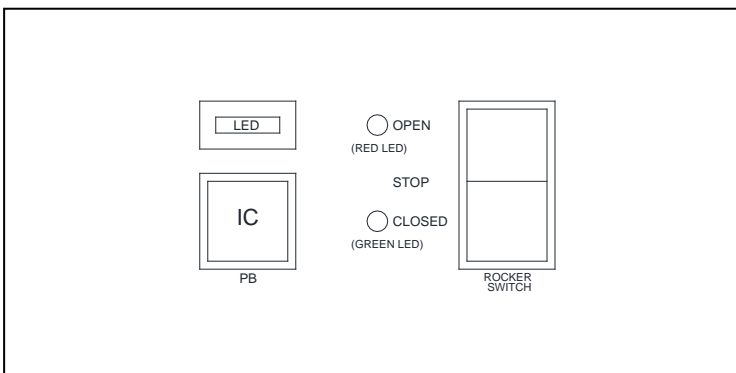
Red LED
Push Button
Green LED

Panel Controls



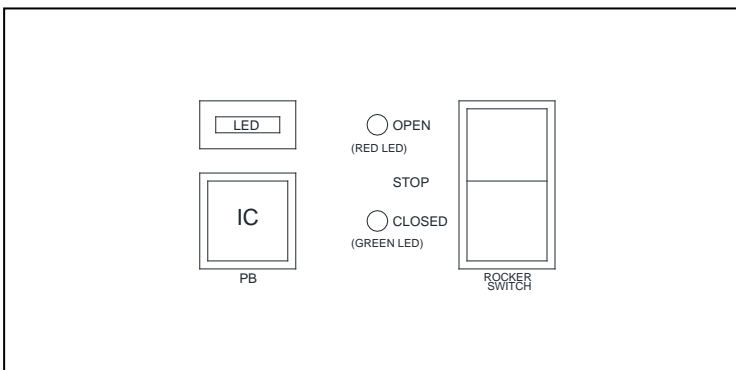
Power Key Switch
Power LED
Silence Push Button
Test Push Button
Cancel Push Button

Yard 2 Stair



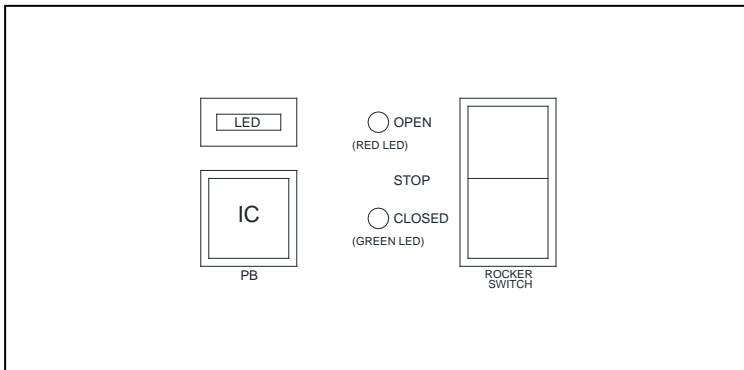
LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Momentary Rocker Switch)

Class Room 1



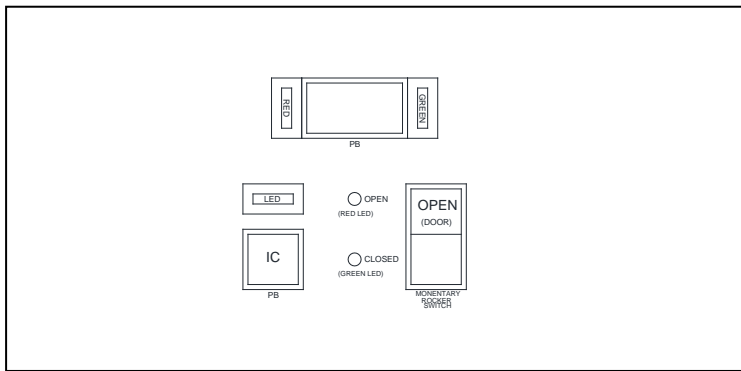
LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Momentary Rocker Switch)

Elevator 2



LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Momentary Rocker Switch)

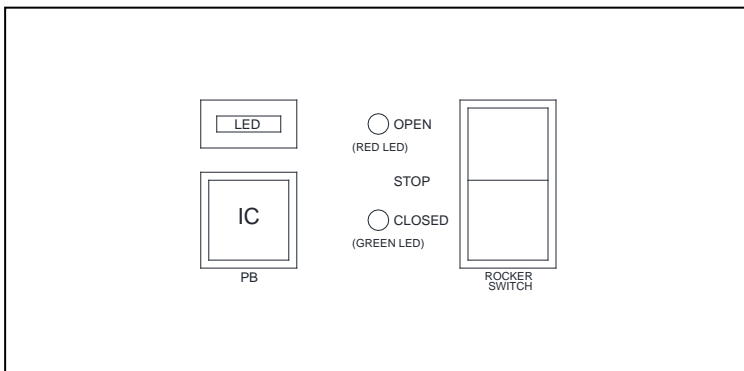
C2 and Hall



Red LED
Push Button
Green LED

LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Momentary Rocker Switch)

Classification

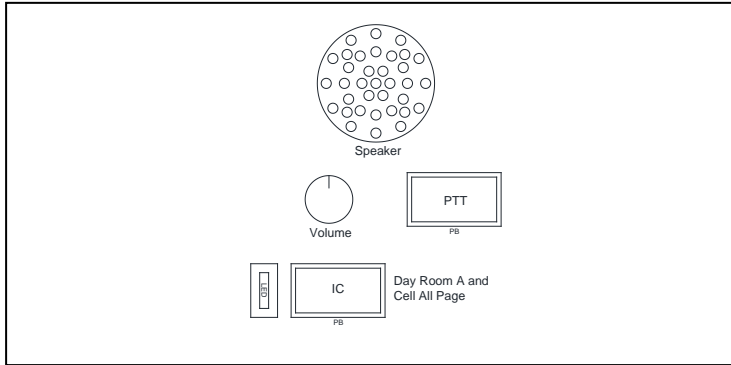


LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Momentary Rocker Switch)

Panel P2

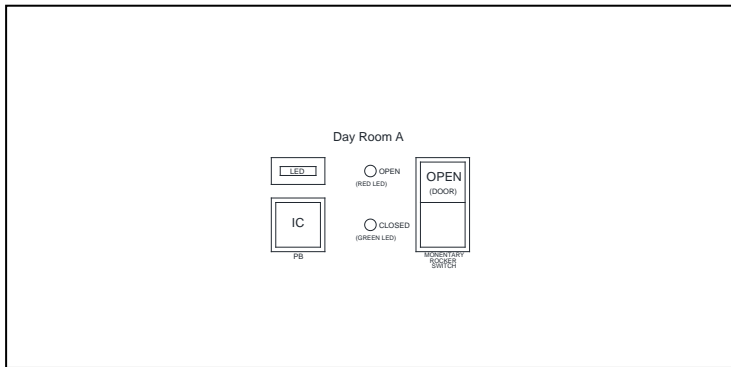
Door and Intercom Controls

Master Intercom Station

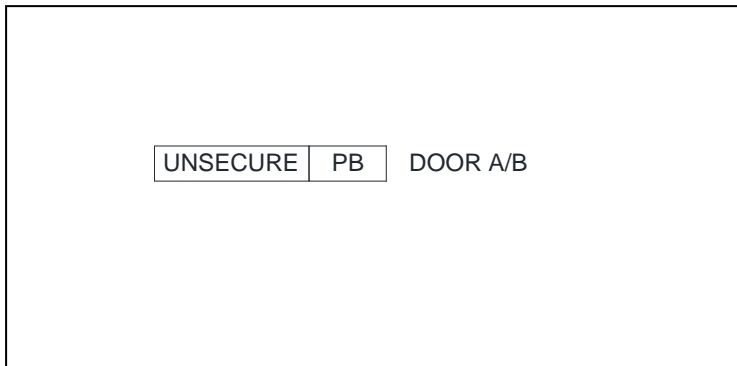


Panel Speaker
Volume Control
Push to Talk
Dayroom A / Cell All Page LED
Dayroom A / Cell All Page Select PB

Day Room A

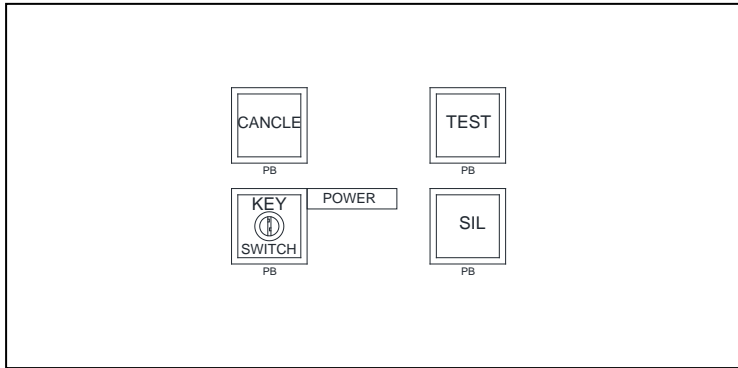


LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)



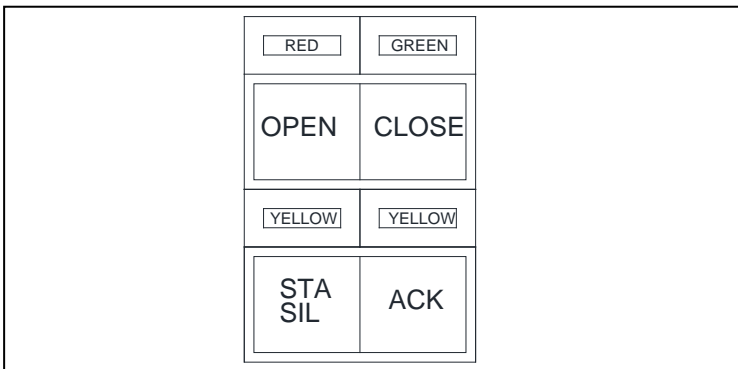
Door A/B Unsecure LED
Door A/B Unsecure Reset Button

Panel Controls



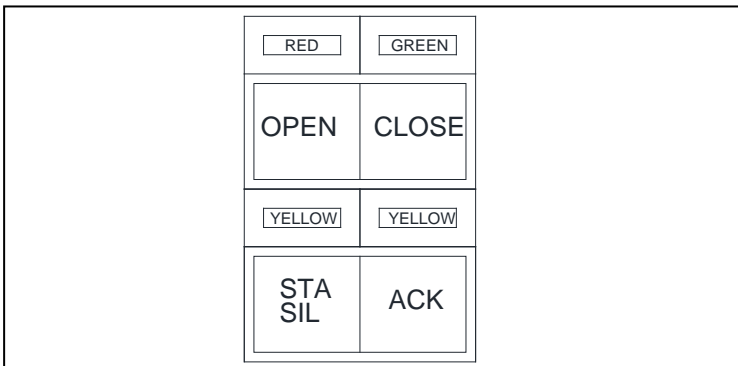
Power Key Switch
Power LED
Silence Push Button
Test Push Button
Cancel Push Button

Cell 1



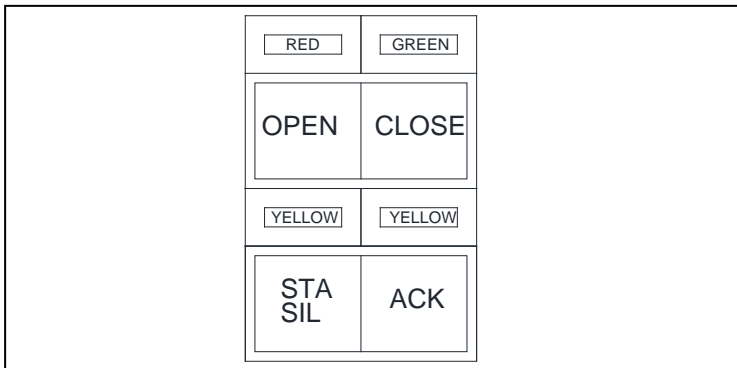
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 2



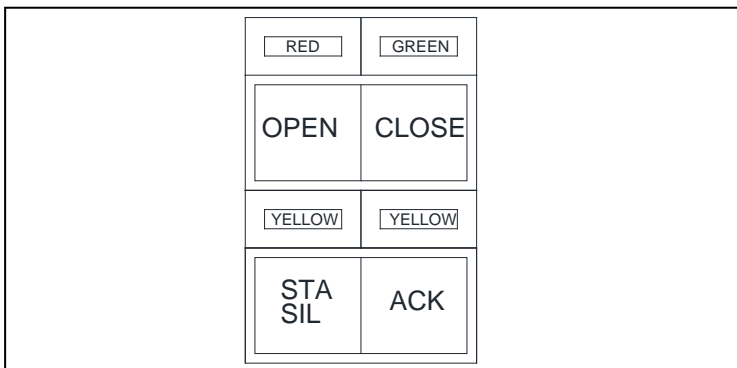
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 3



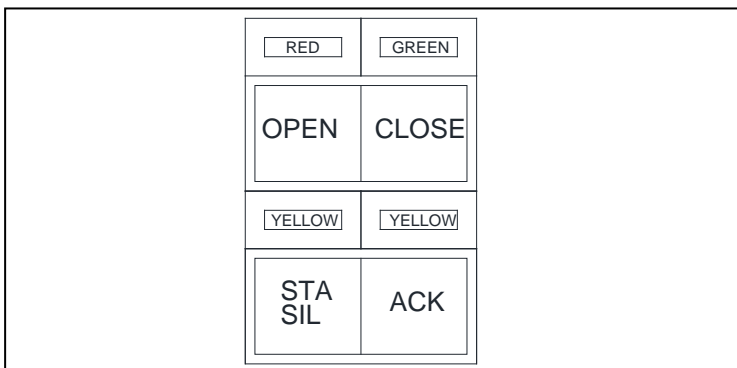
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 4



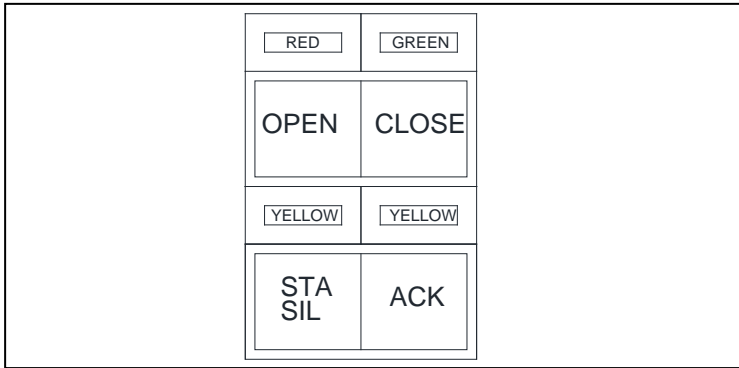
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 5



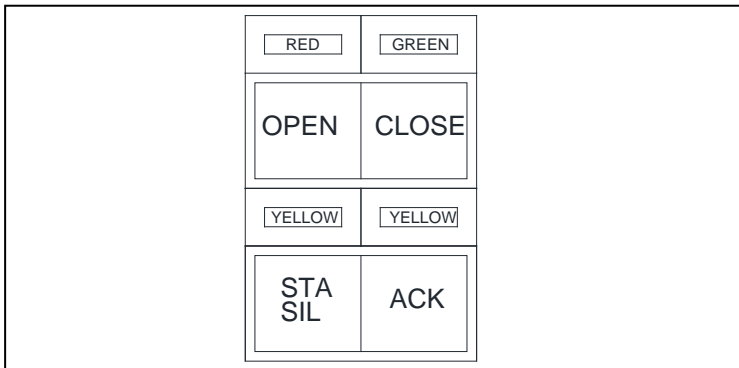
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 6



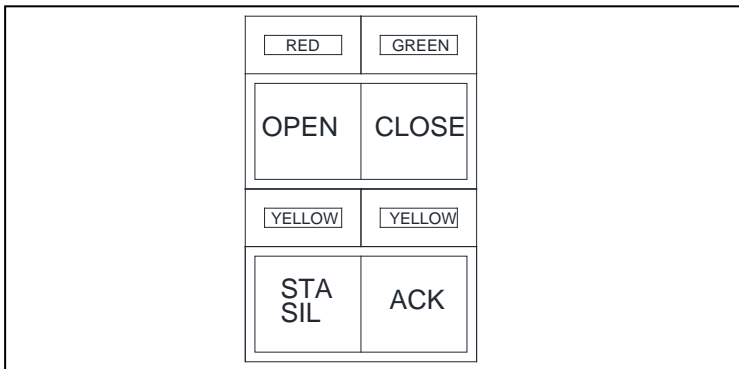
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 7



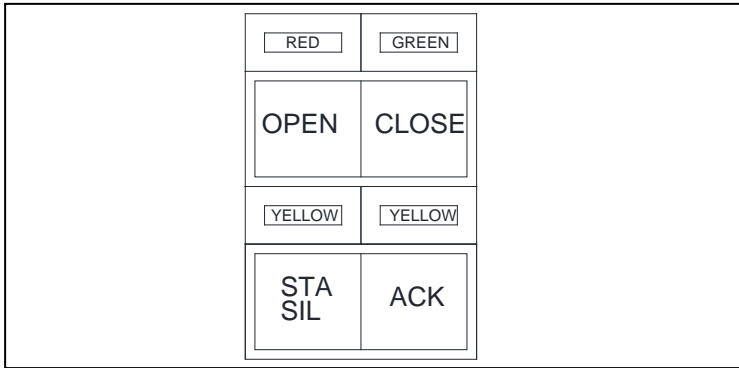
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 8



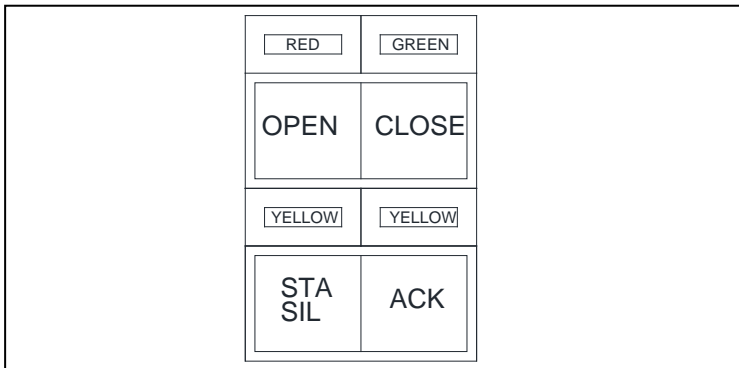
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 9



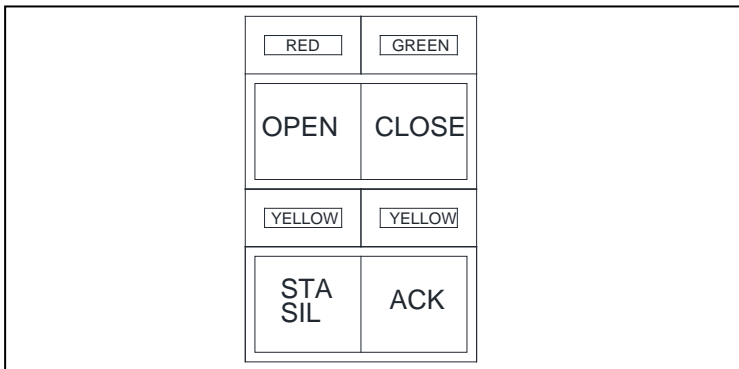
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 10



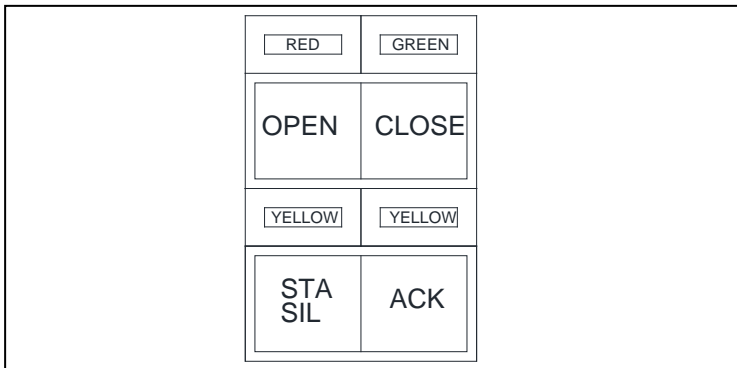
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 11



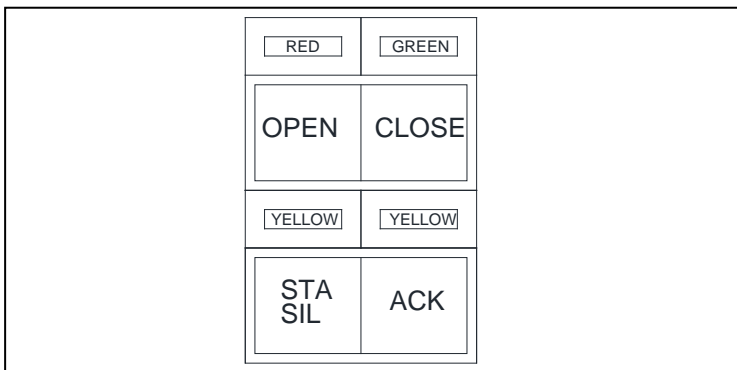
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 12



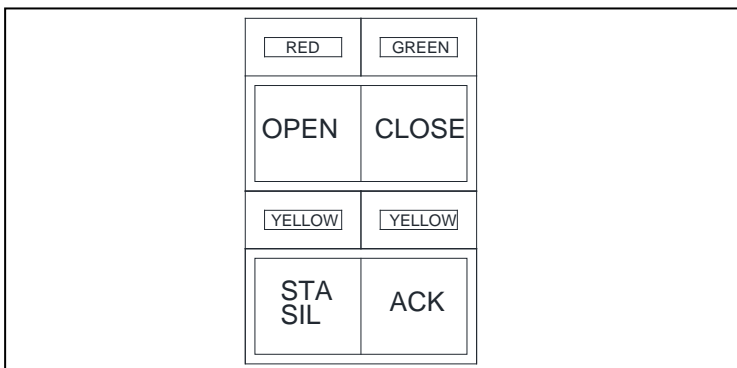
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 13



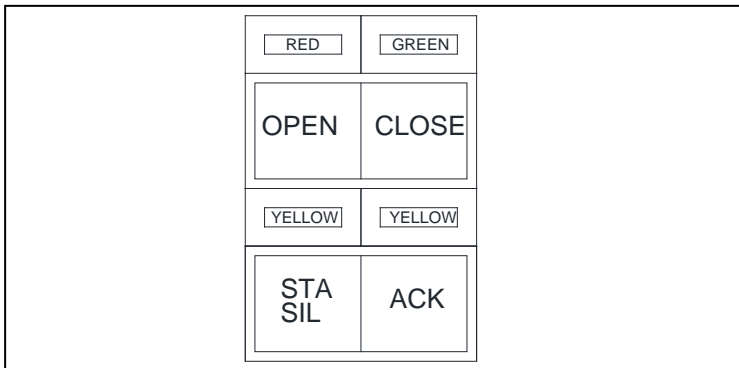
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 14



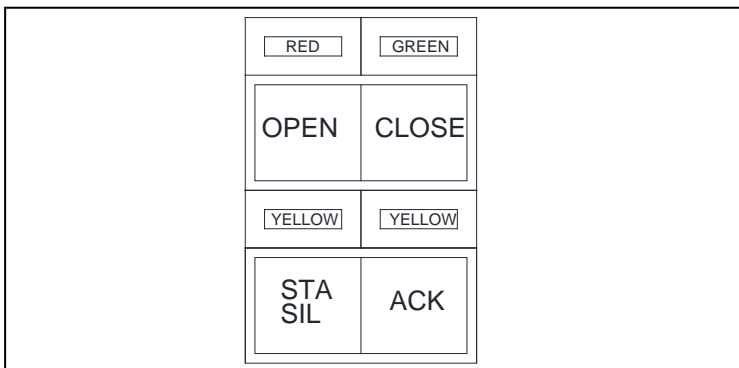
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 15



Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 16

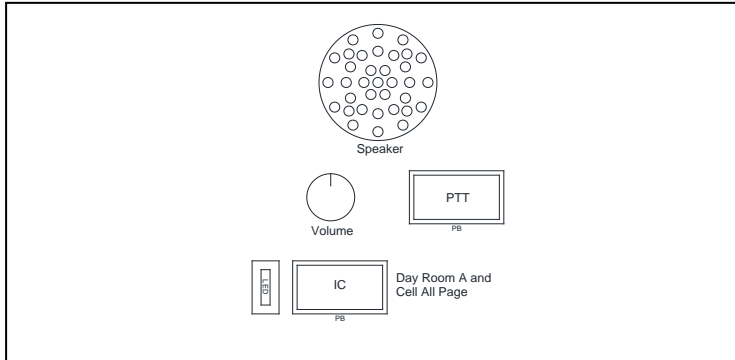


Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Panel P3

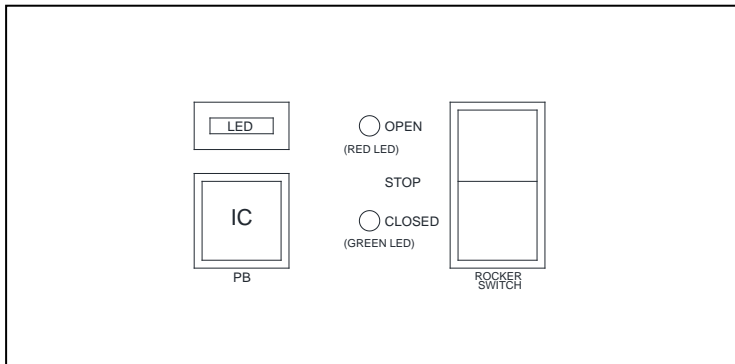
Door and Intercom Controls

Master Intercom Station



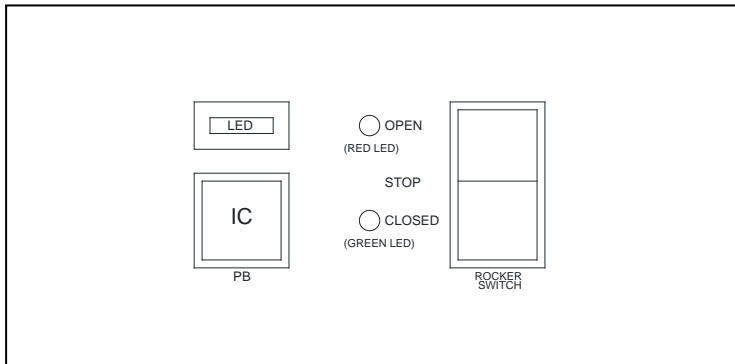
Panel Speaker
Volume Control
Push to Talk
Dayroom A / Cell All Page LED
Dayroom A / Cell All Page Select PB

Indoor Yard

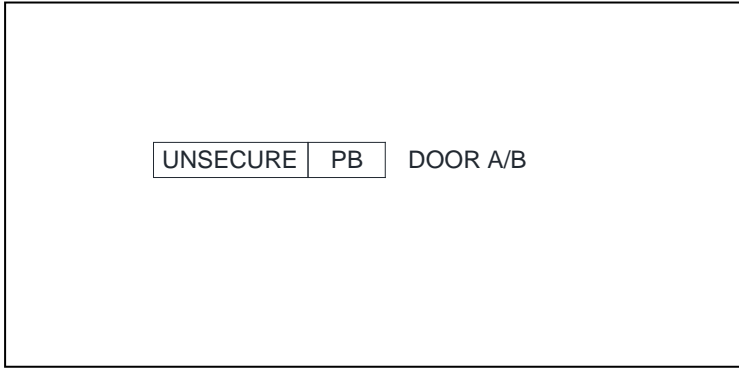


LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Day Room B

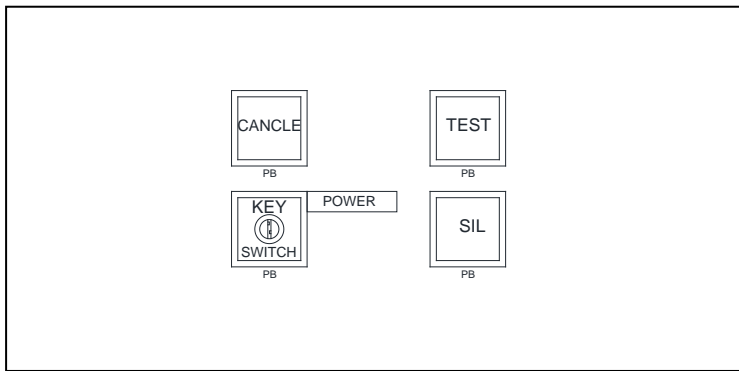


LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)



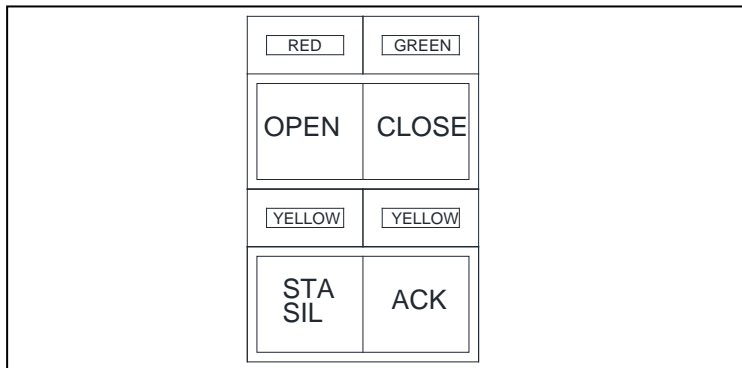
- Door A/B Unsecure LED
- Door A/B Unsecure Reset Button

Panel Controls



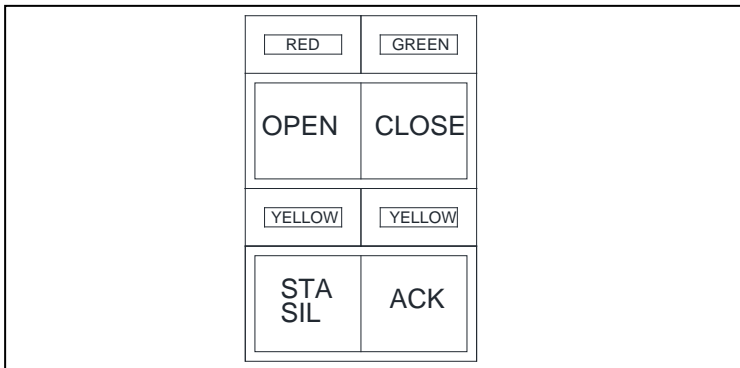
- Power Key Switch
- Power LED
- Silence Push Button
- Test Push Button
- Cancel Push Button

Cell 1



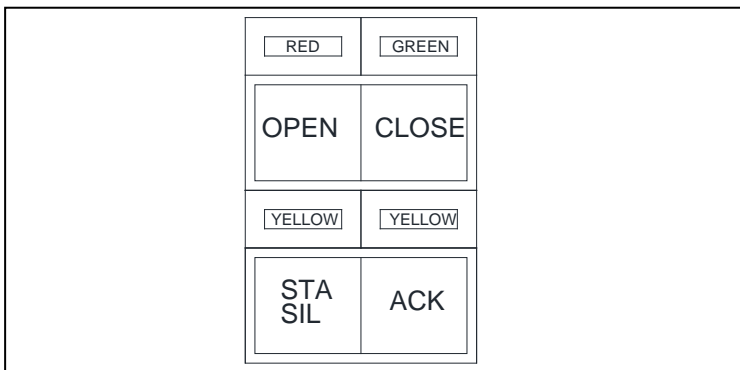
- Open LED Red
- Open Selector Switch
- Close LED Green
- Close Selector Switch
- Station Silence Led
- Station Silence Selector Switch
- Station Call In LED Yellow
- Station Acknowledge Selector Switch

Cell 2



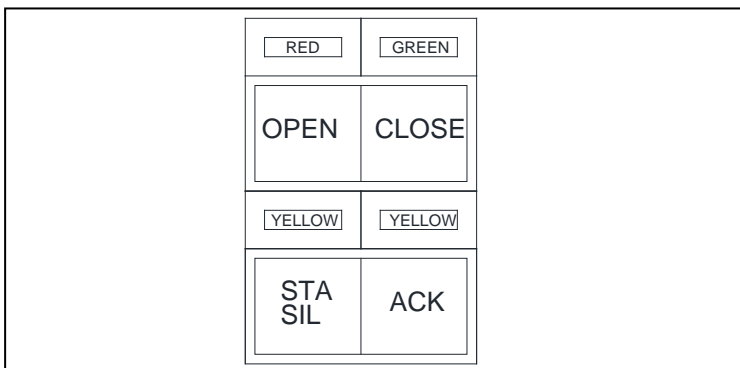
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 3



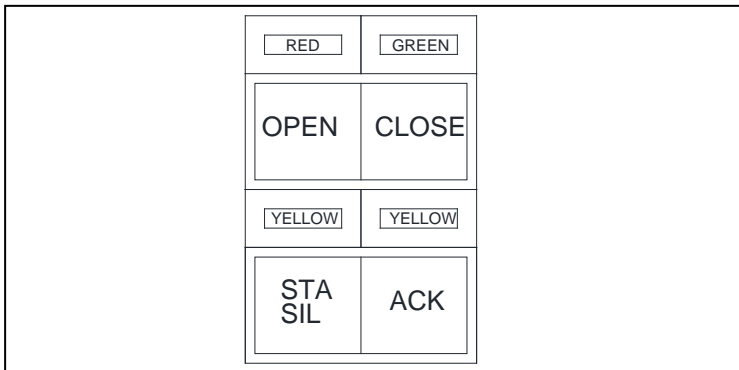
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 4



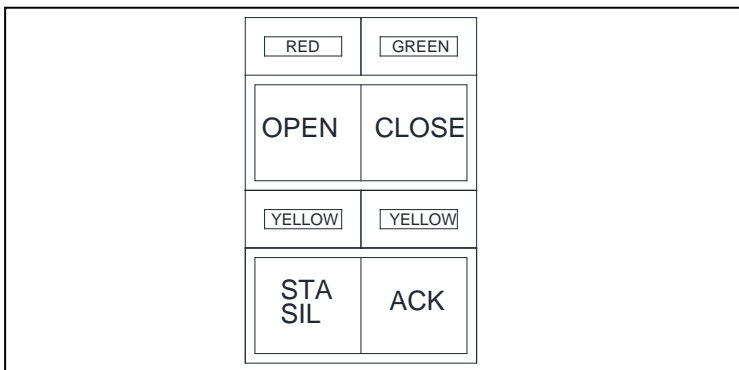
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 5



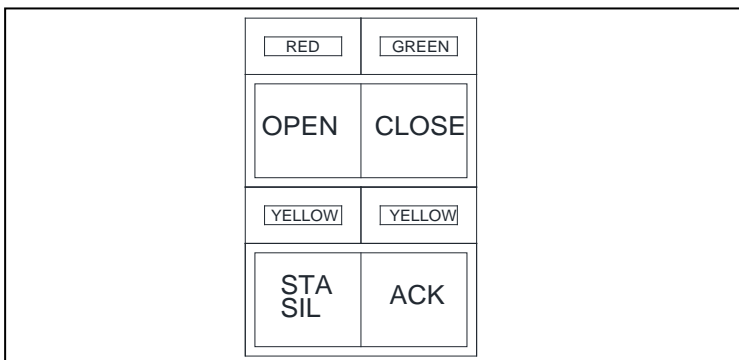
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 6



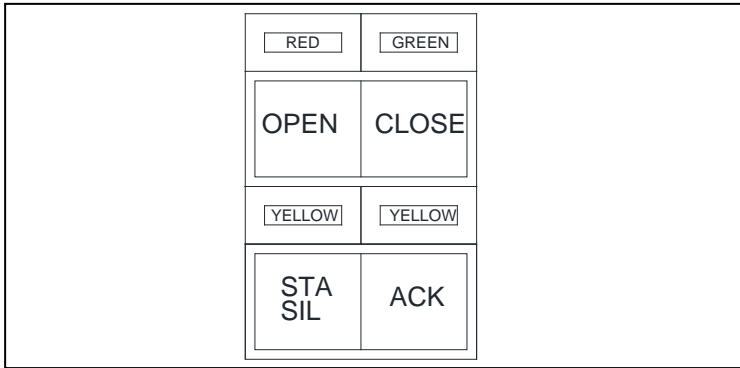
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 7



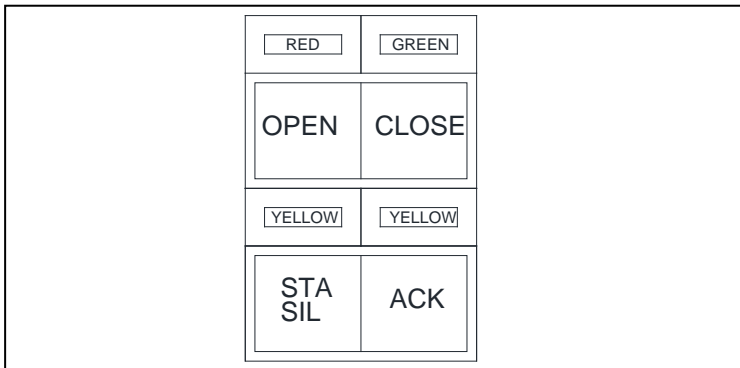
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 8



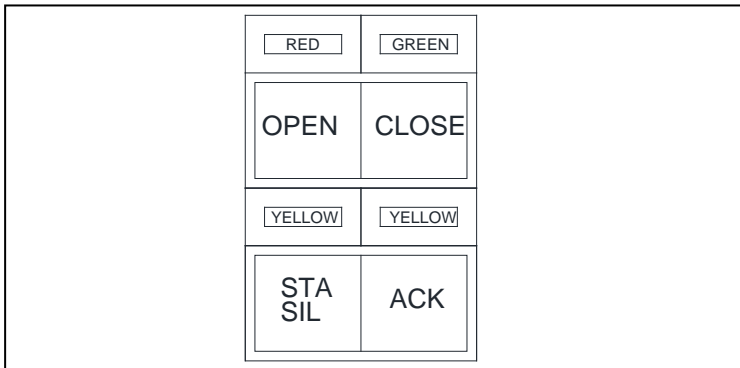
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 9



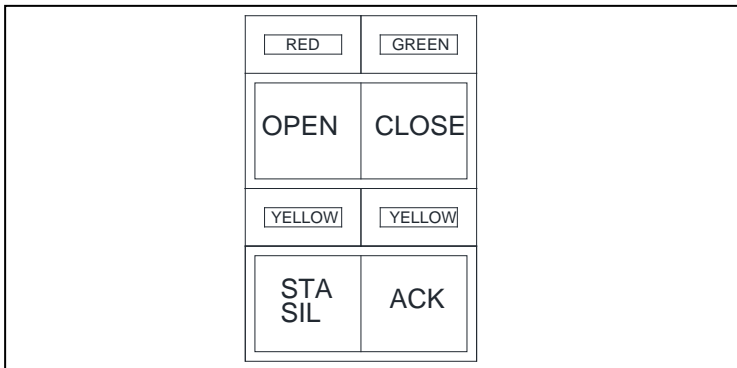
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 10



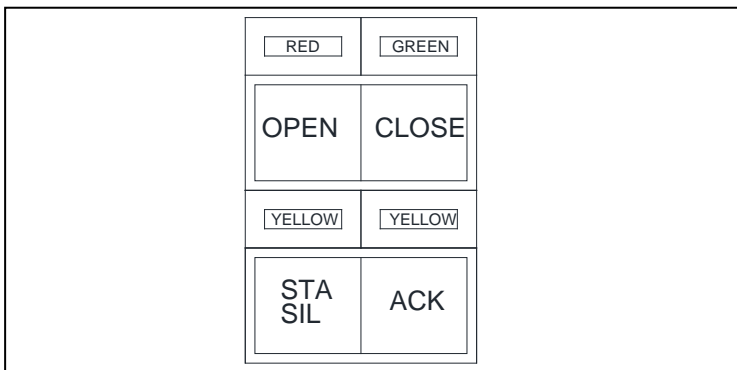
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 11



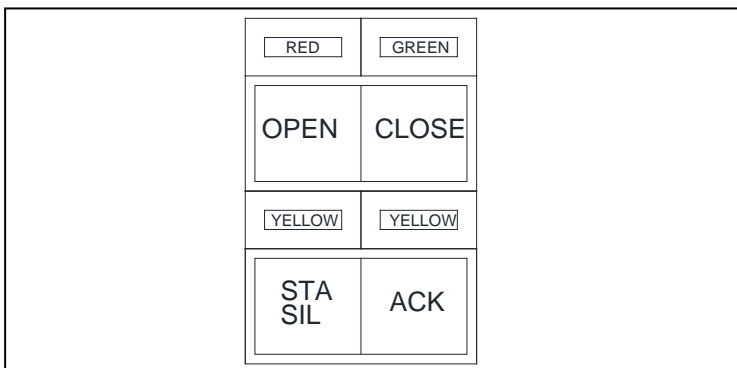
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 12



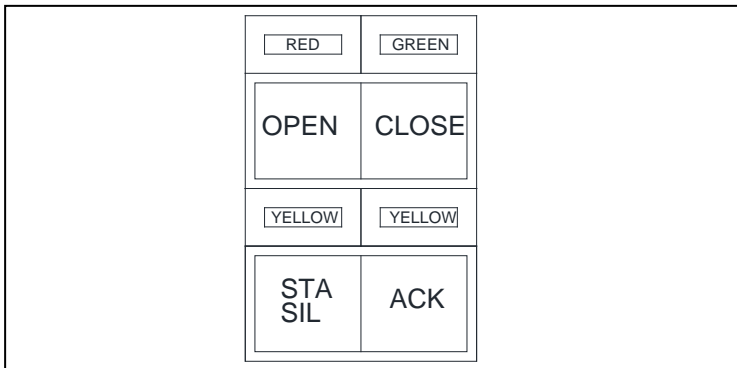
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 13



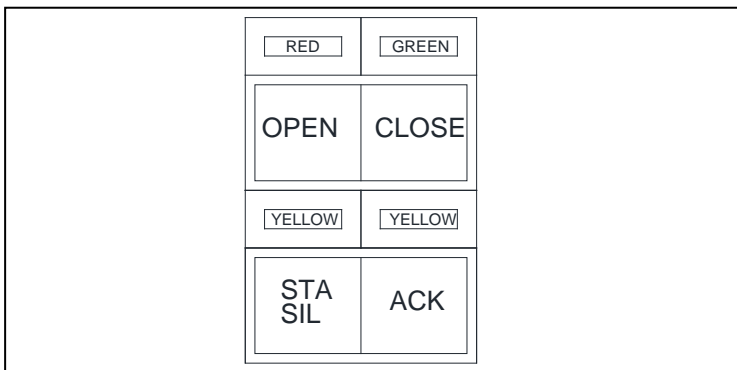
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 14



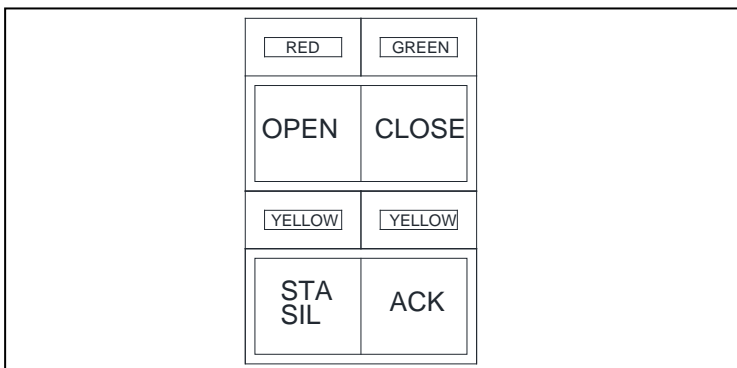
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 15



Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 16

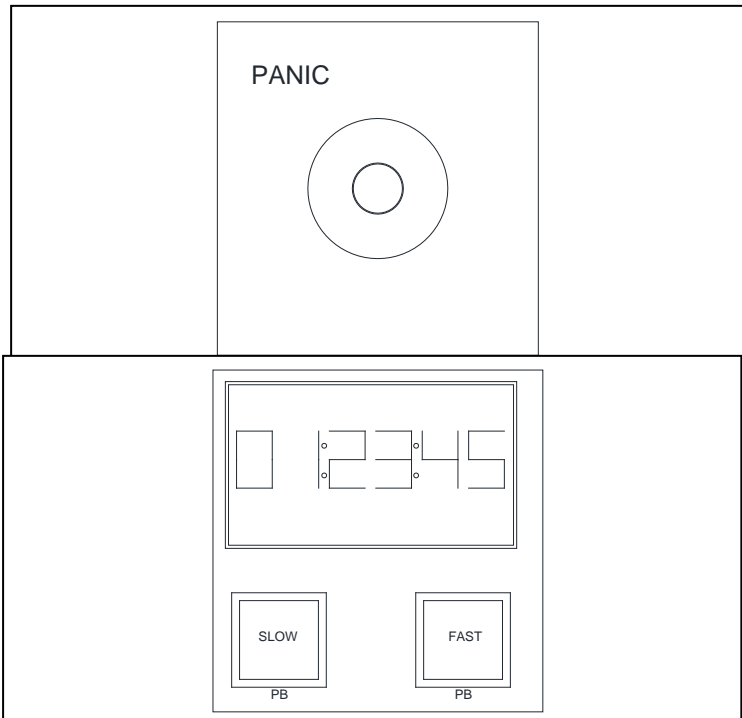


Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Panel P4

Panic Alarm and Clock

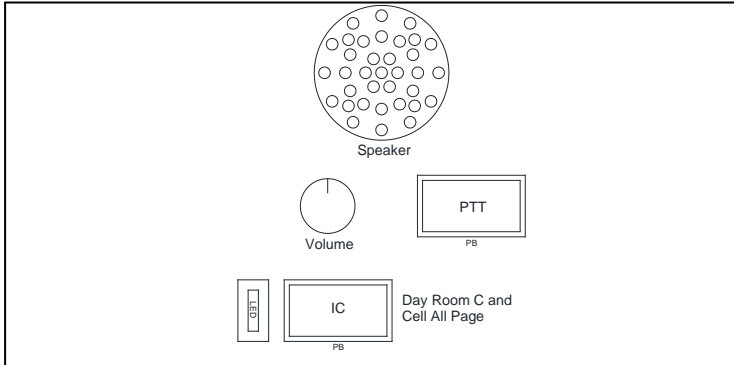
Panic Alarm and Clock



Panic Button
Clock
Slow Push Button
Fast Push Button

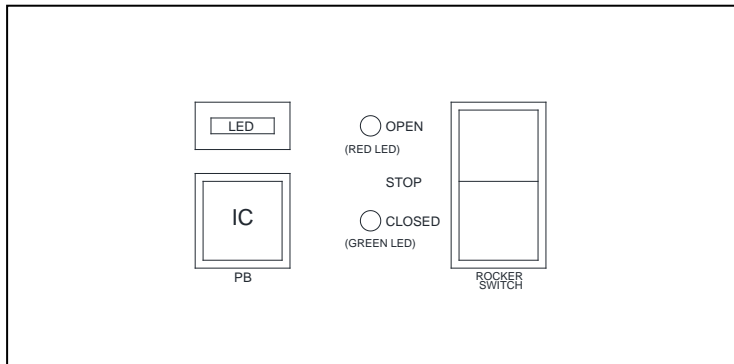
Panel P5

Door and Intercom Controls



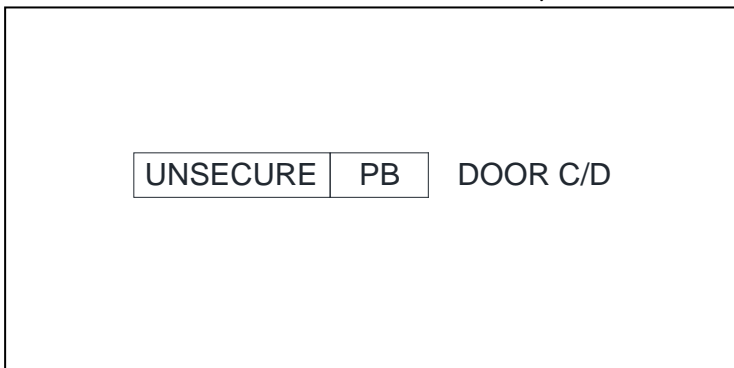
Panel Speaker
Volume Control
Push to Talk
Dayroom C / Cell All Page LED
Dayroom C / Cell All Page Select PB

Day Room C



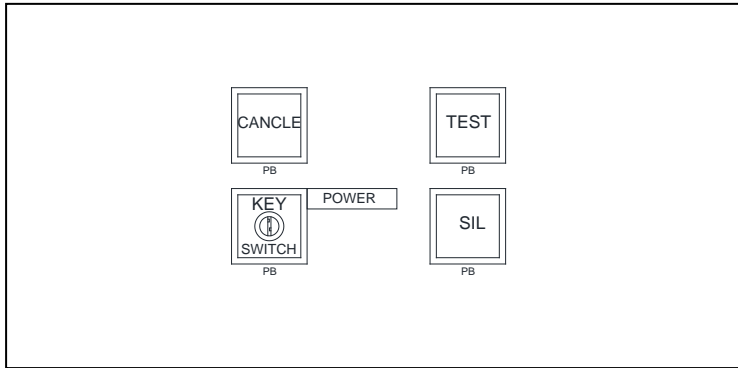
LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Door C/D Alarm



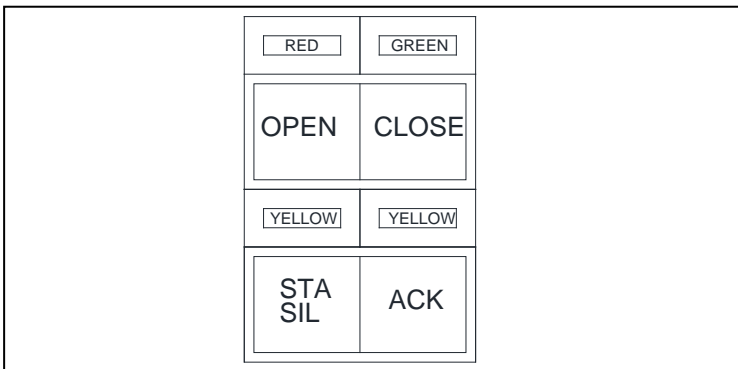
Door C/D Unsecure LED
Door C/D Unsecure Reset Button

Panel Controls



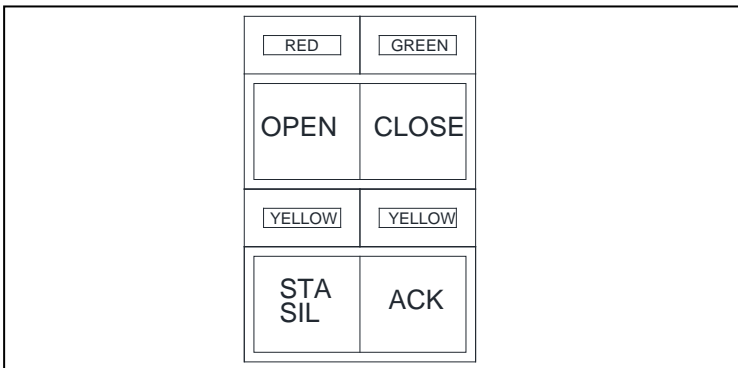
Power Key Switch
Power LED
Silence Push Button
Test Push Button
Cancel Push Button

Cell 1



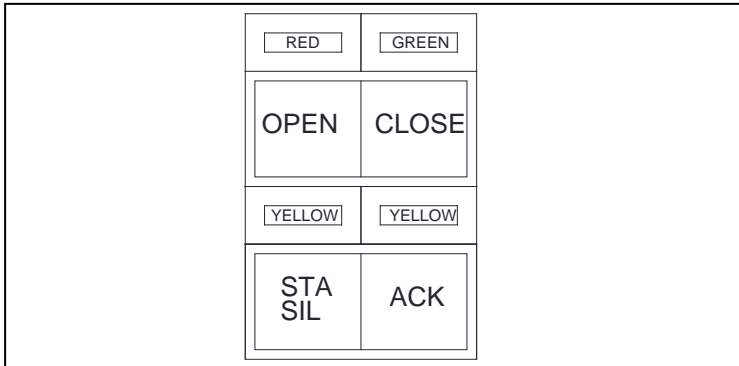
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 2



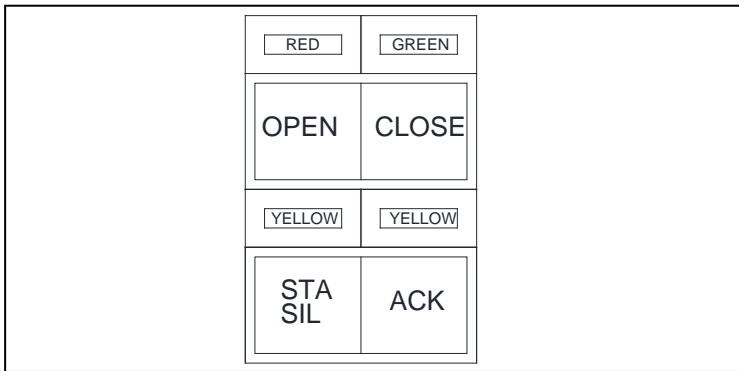
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 3



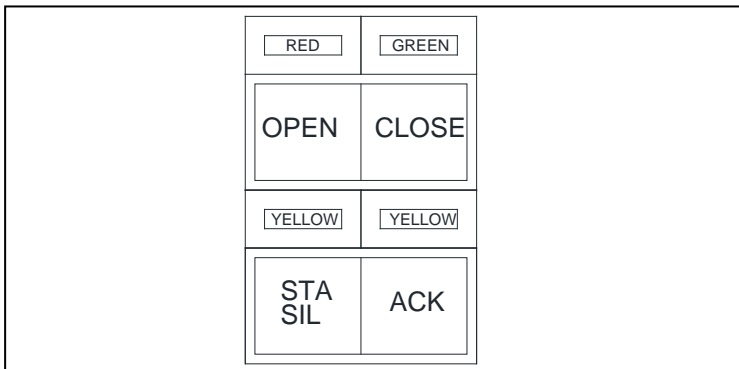
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 4



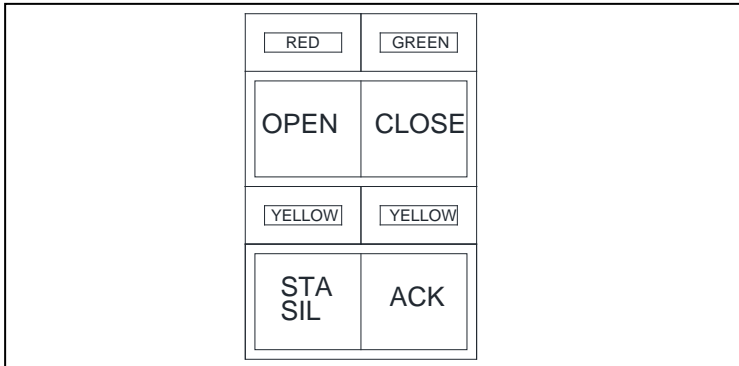
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 5



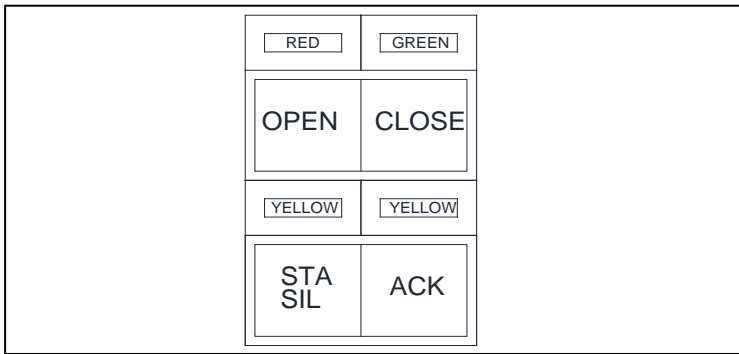
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 6



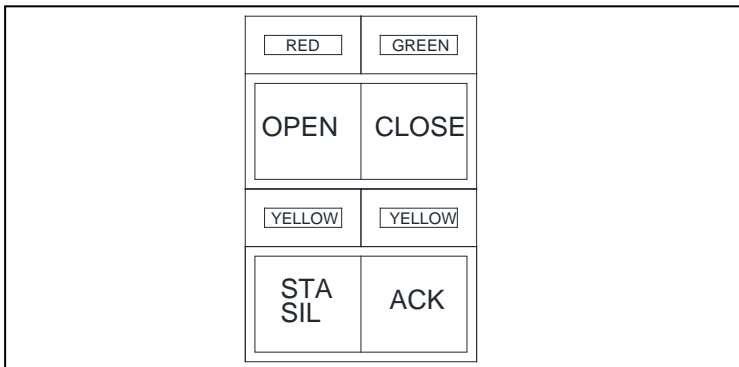
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 7



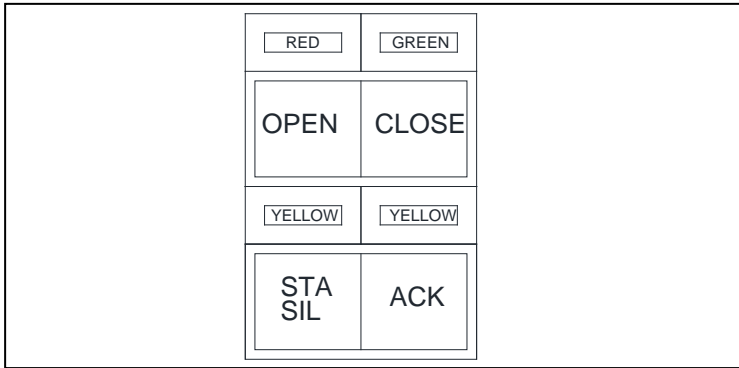
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 8



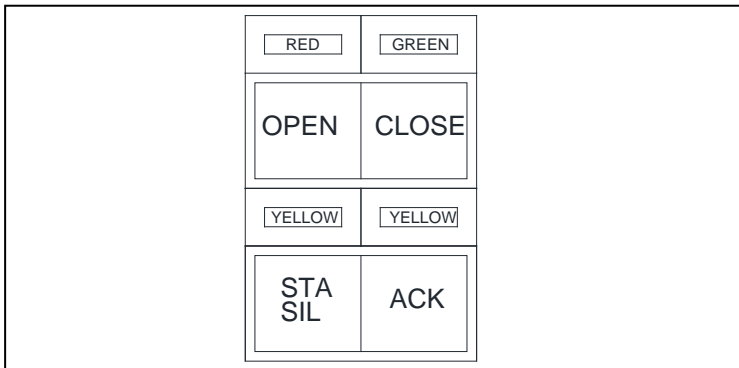
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 9



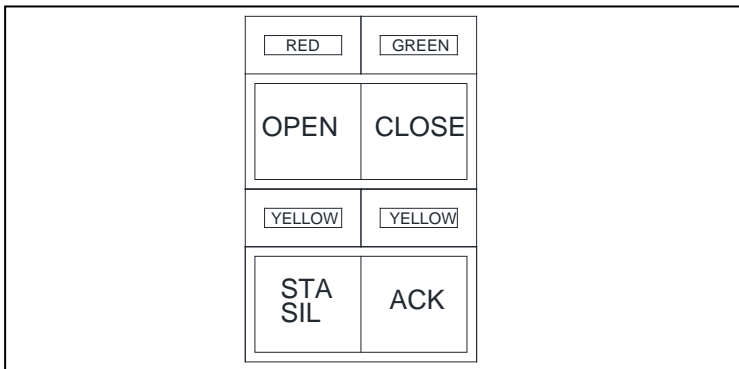
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 10



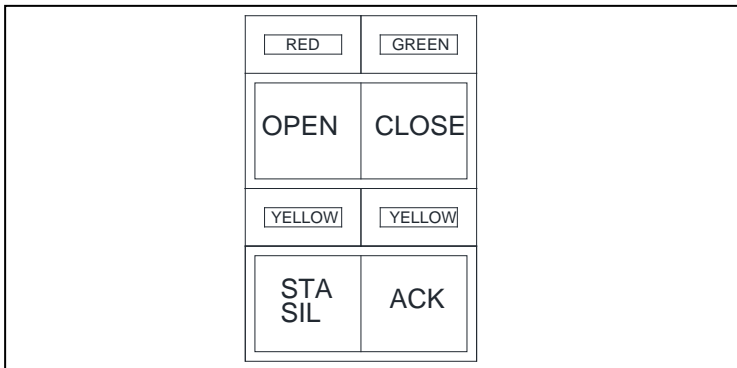
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 11



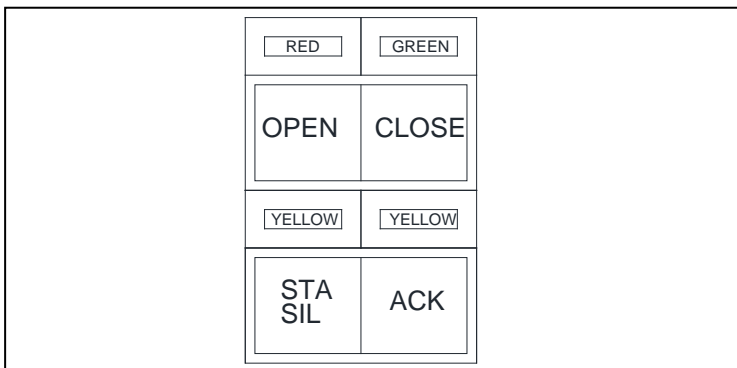
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 12



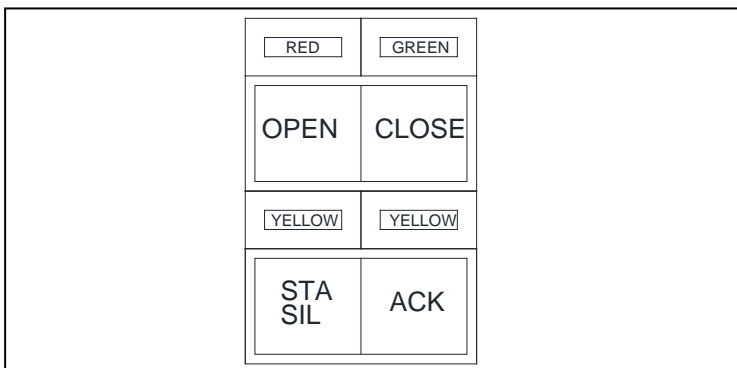
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 13



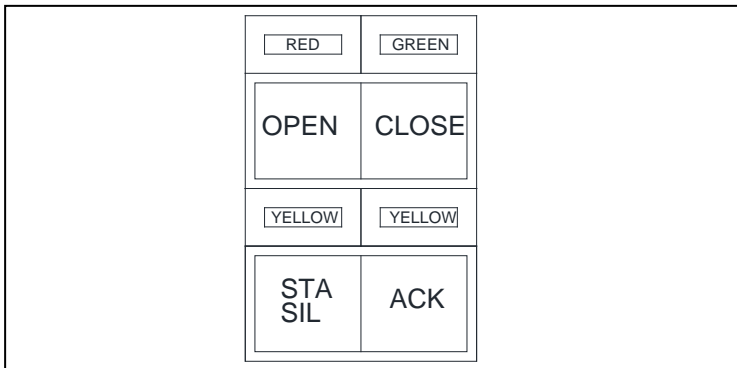
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 14



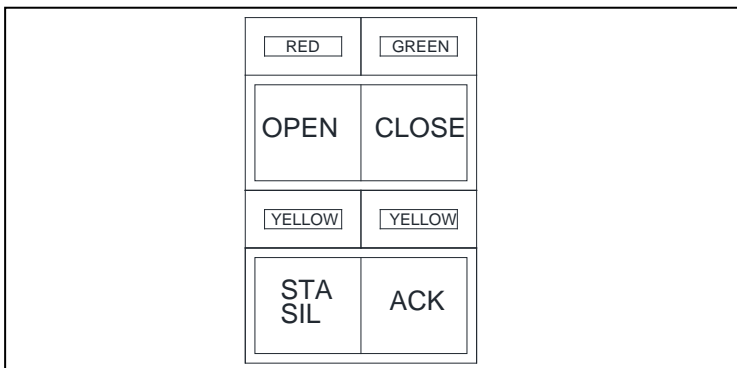
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 15



Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 16

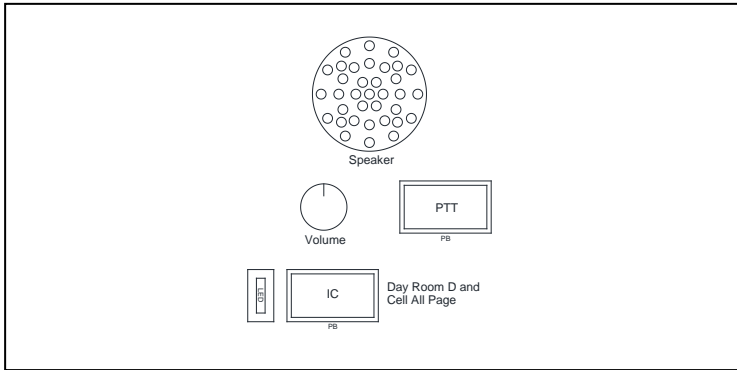


Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Panel P6

Door and Intercom Controls

Master Intercom Station



Panel Speaker

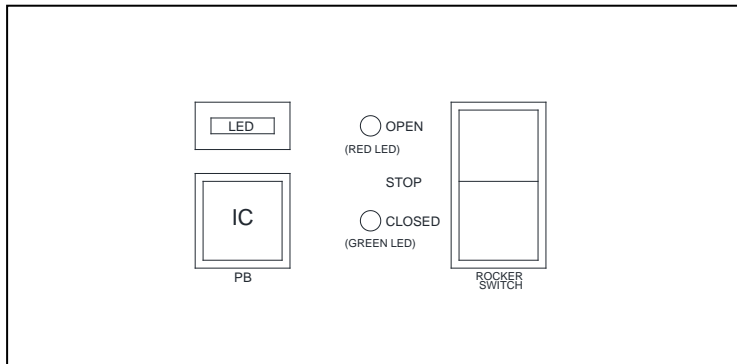
Volume Control

Push to Talk

Dayroom D / Cell All Page LED

Dayroom D / Cell All Page Select PB

Day Room D



LED

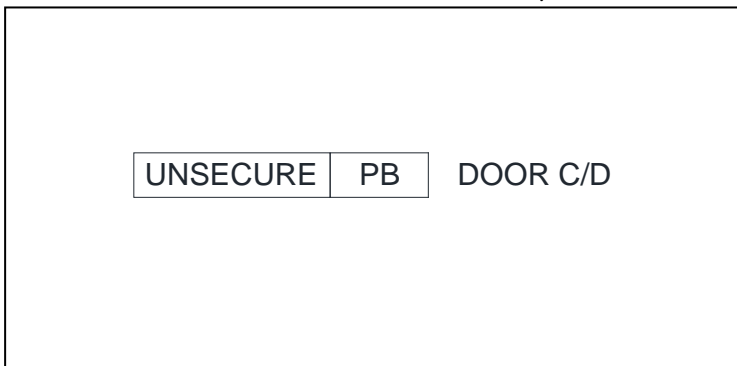
IC (PB)

Open (Red LED)

Close (Green LED)

OPEN(Door Momentary Rocker Switch)

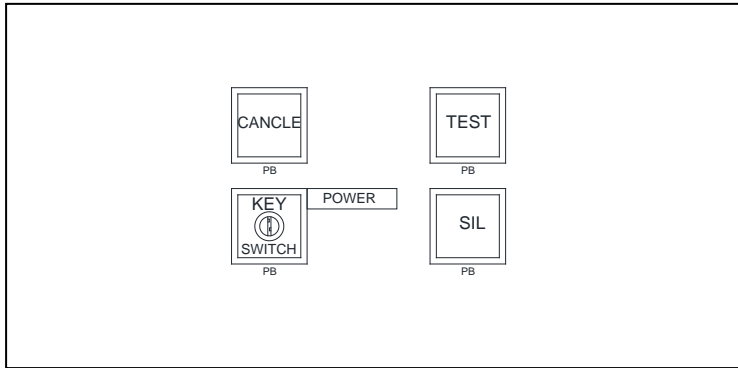
Door C/D Alarm



Door C/D Unsecure LED

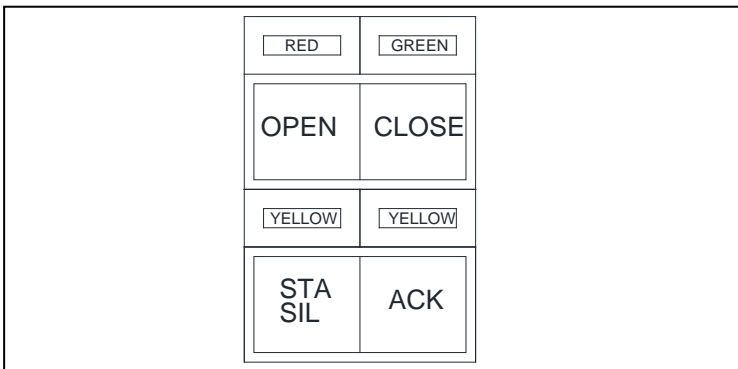
Door C/D Unsecure Reset Button

Panel Controls



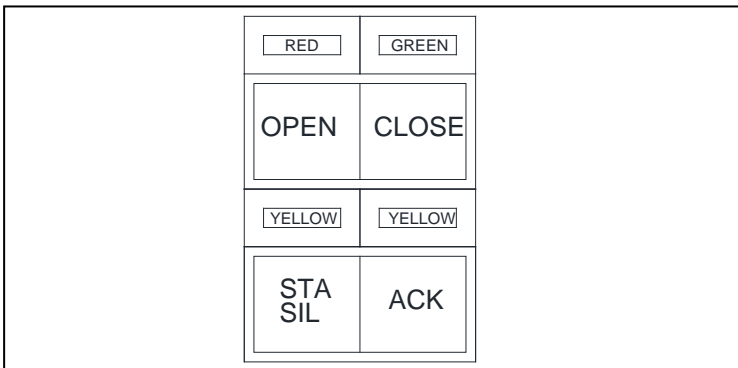
Power Key Switch
Power LED
Silence Push Button
Test Push Button
Cancel Push Button

Cell 1



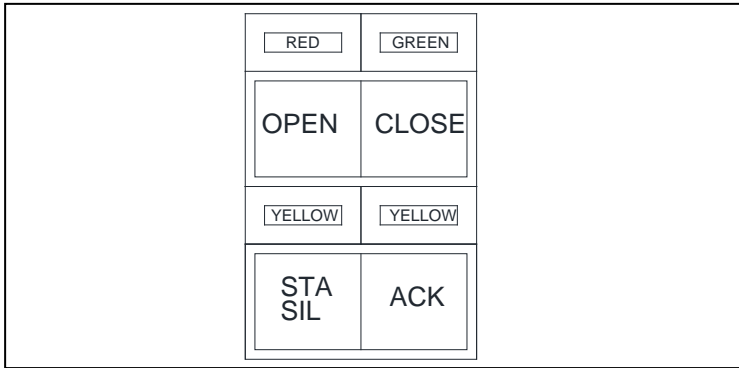
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 2



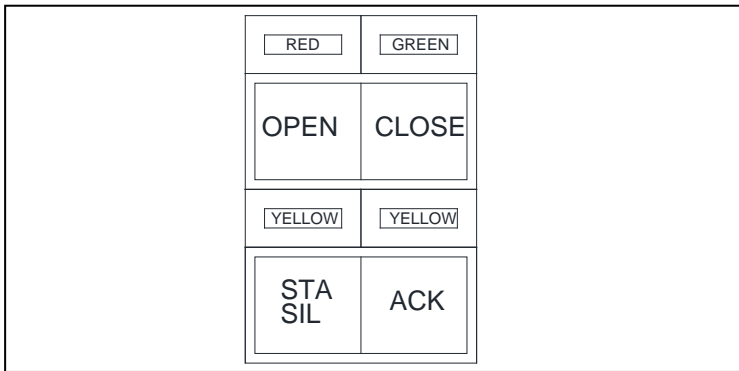
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 3



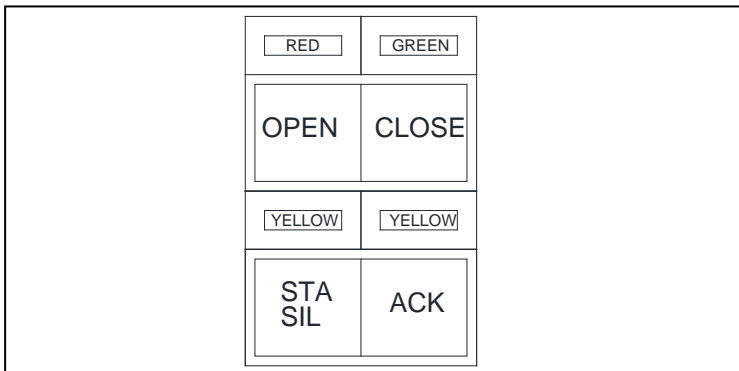
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 4



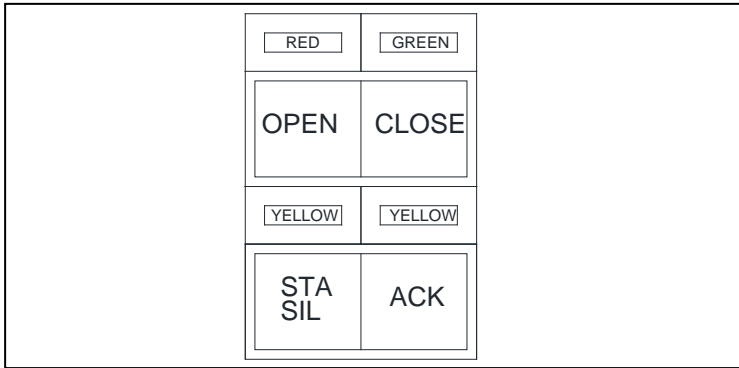
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 5



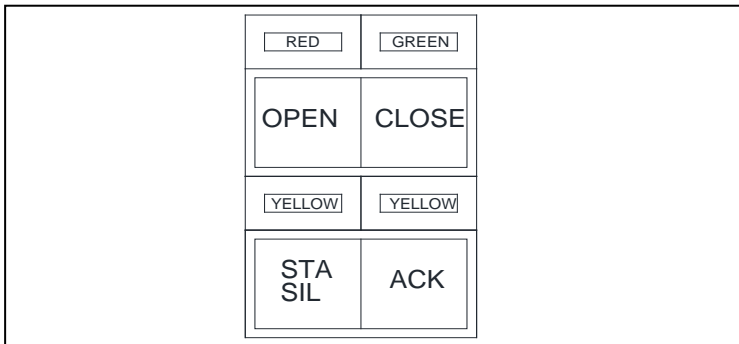
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 6



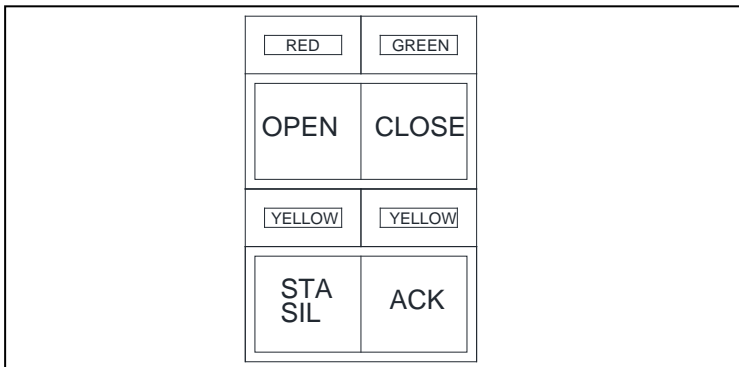
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 7



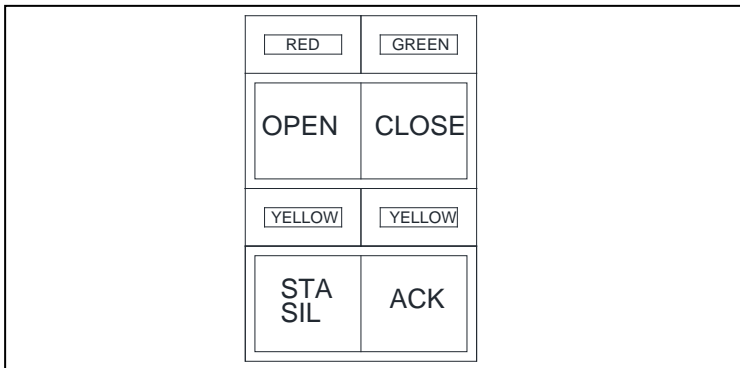
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 8



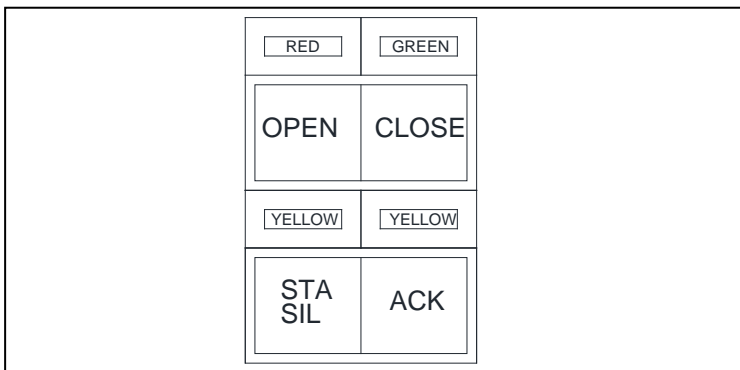
Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 9



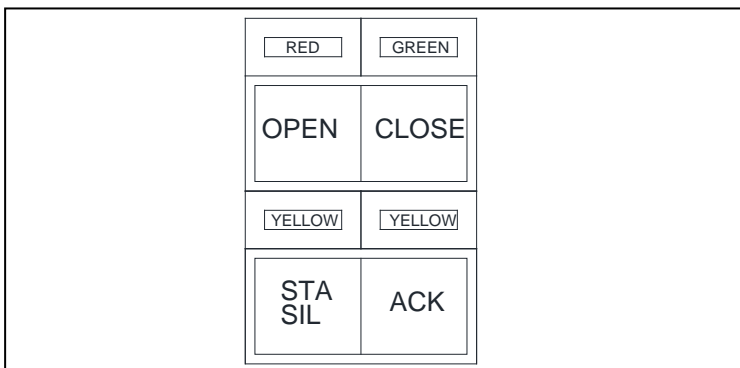
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 10



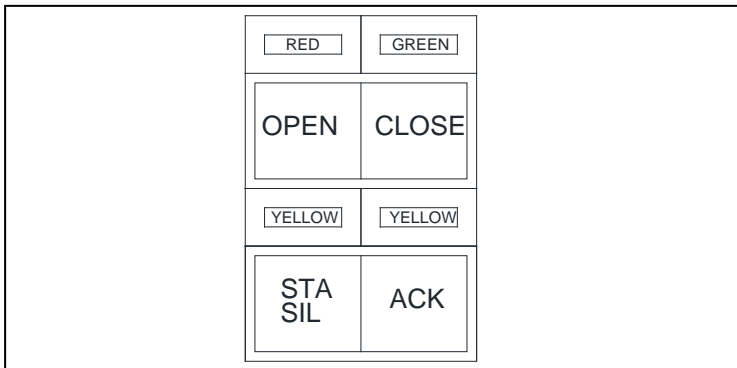
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 11



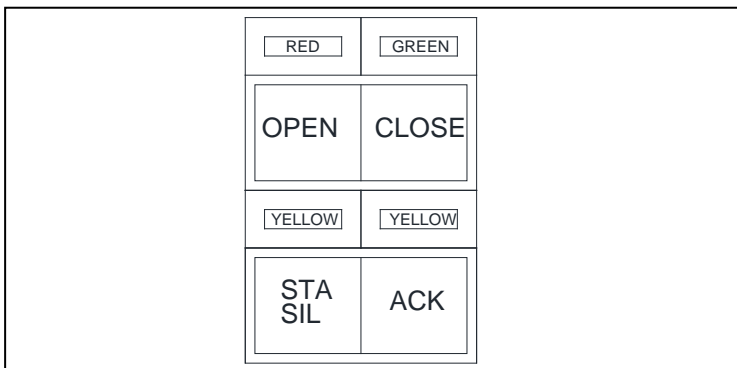
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 12



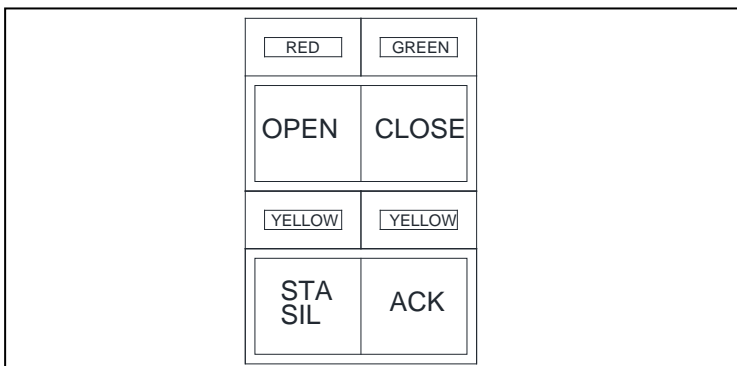
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 13



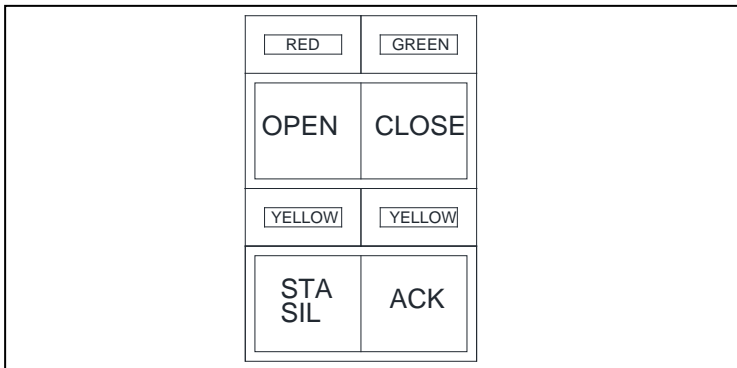
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 14



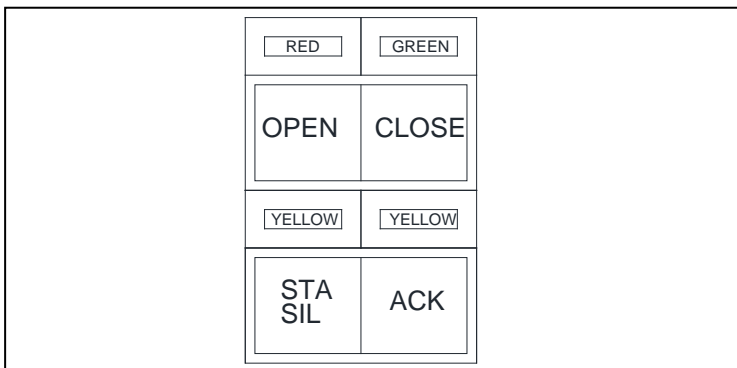
- | |
|-------------------------------------|
| Open LED Red |
| Open Selector Switch |
| Close LED Green |
| Close Selector Switch |
| Station Silence Led |
| Station Silence Selector Switch |
| Station Call In LED Yellow |
| Station Acknowledge Selector Switch |

Cell 15



Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Cell 16

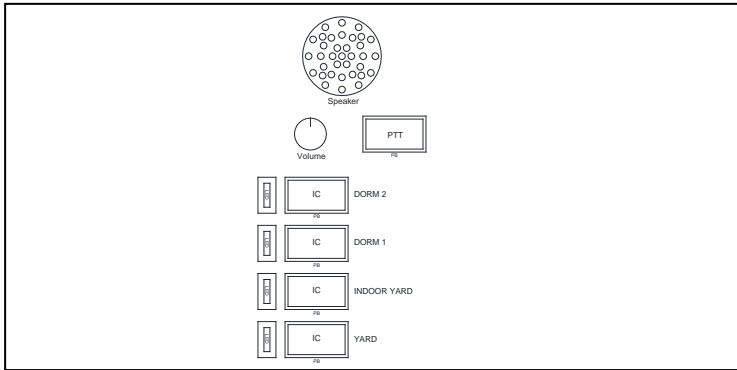


Open LED Red
Open Selector Switch
Close LED Green
Close Selector Switch
Station Silence Led
Station Silence Selector Switch
Station Call In LED Yellow
Station Acknowledge Selector Switch

Panel P7

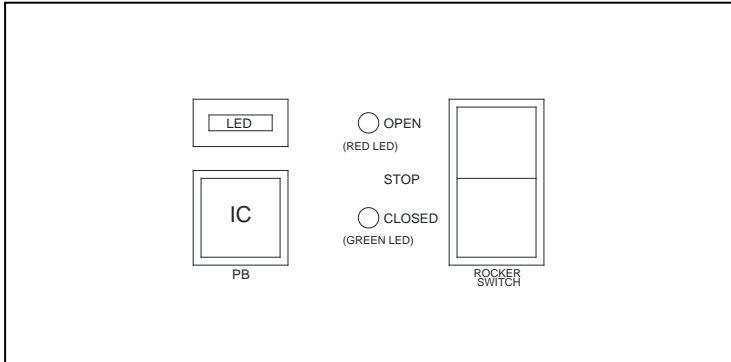
Door and Intercom Controls

Master Intercom Station



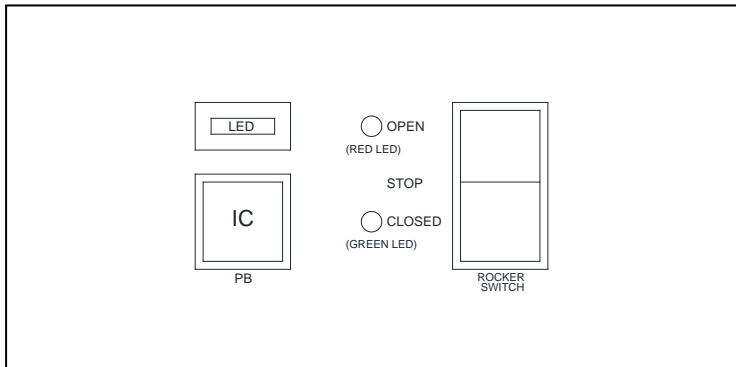
Panel Speaker
Volume Control
Push to Talk
Dorm 2 LED
Dorm 2 Select PB
Dorm 1 LED
Dorm 1 Select PB
Indoor Yard LED
Indoor Yard Select PB
Outdoor Yard LED
Outdoor Yard Select PB

Yard 1



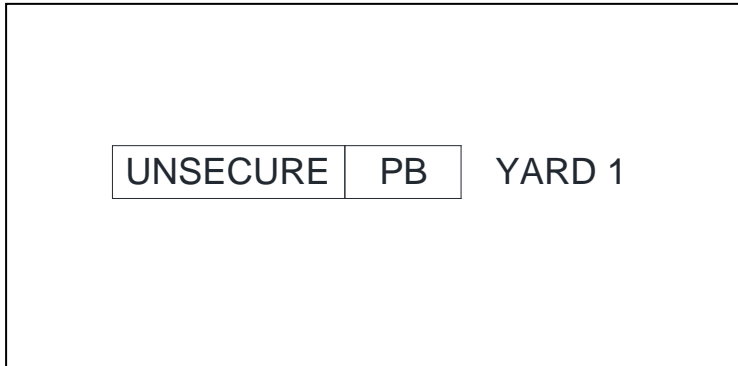
LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Yard 1 Stairs



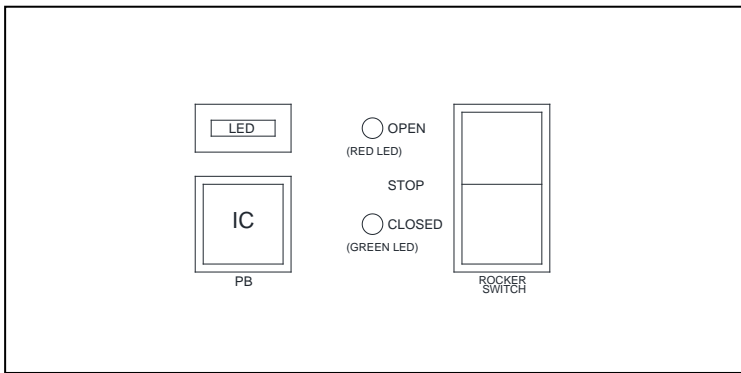
LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Fire Exit

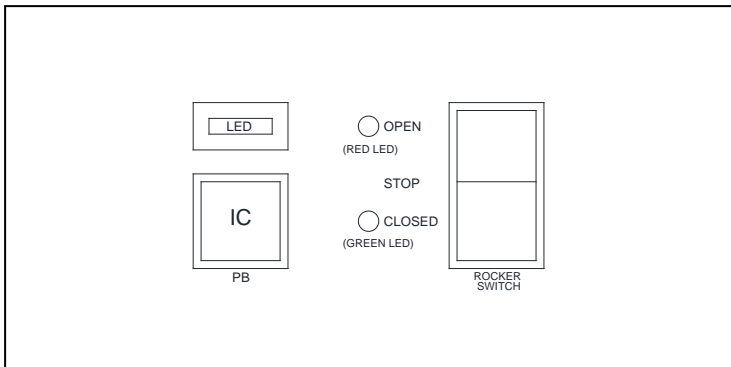


Door A/B Unsecure LED
Door A/B Unsecure Reset Button

Dorm 2

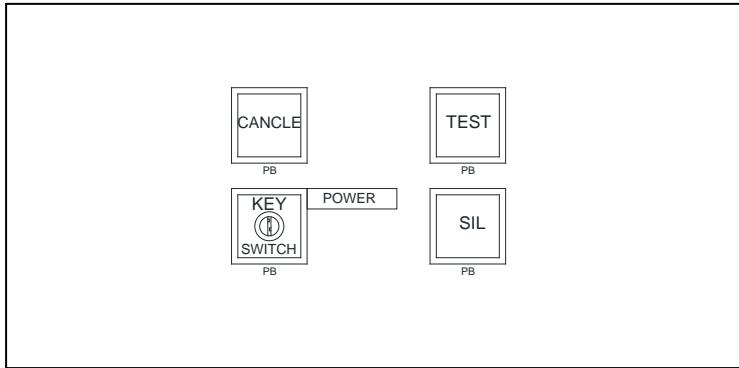


LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)



LED
IC (PB)
Open (Red LED)
Close (Green LED)
OPEN(Door Monentary Rocker Switch)

Panel Controls

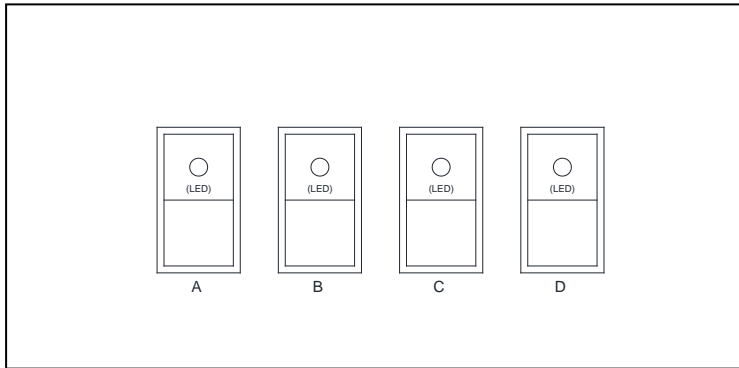


Power Key Switch
Power LED
Silence Push Button
Test Push Button
Cancel Push Button

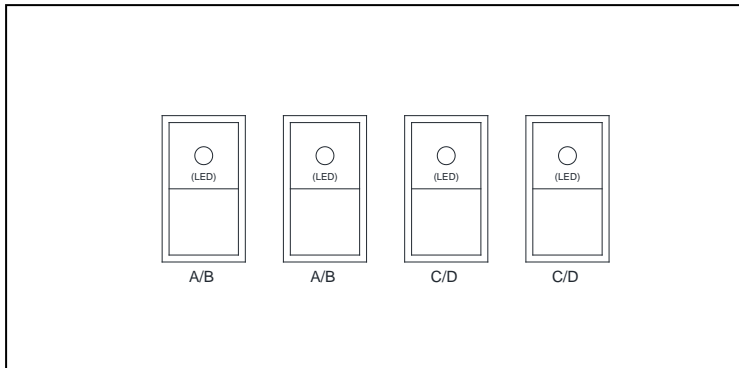
Panel P8

Door and Intercom Controls

TV Power

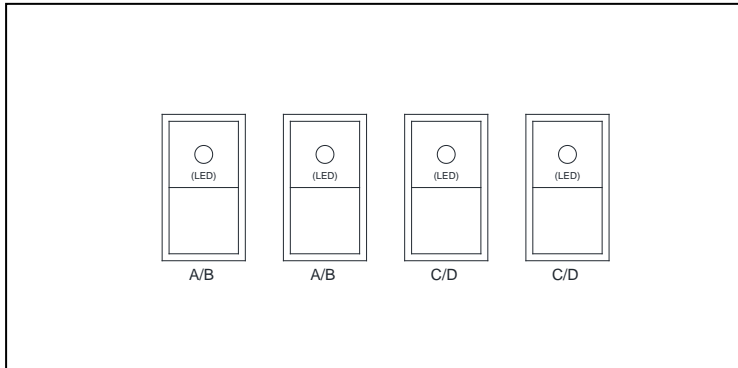


- Switch E
- Switch A LED
- Switch B
- Switch B LED
- Switch C
- Switch C LED
- Switch D
- Switch D LED



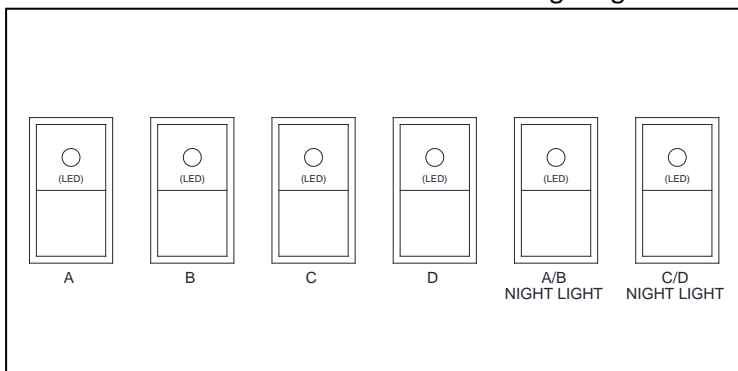
- Switch A/B
- Switch A/B LED
- Switch A/B
- Switch A/B LED
- Switch C D
- Switch C/D LED
- Switch C D
- Switch C/D LED

Corridor Lighting



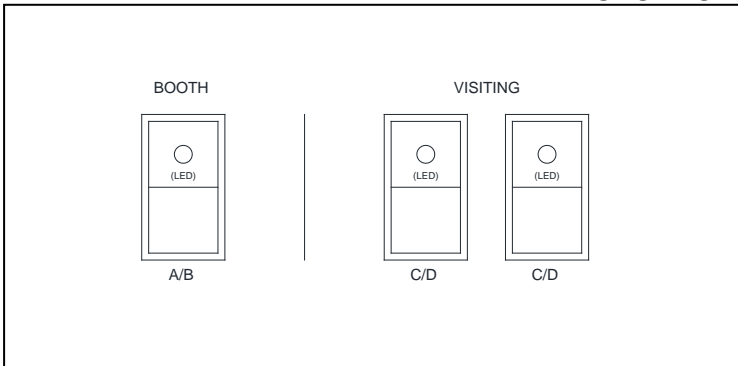
Switch A/B
Switch A/B LED
Switch A/B
Switch A/B LED
Switch C D
Switch C/D LED
Switch C D
Switch C/D LED

Cell Lighting



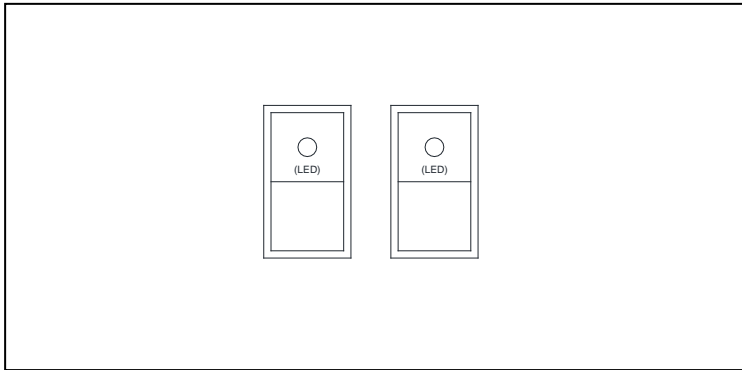
Switch A
Switch A LED
Switch B
Switch B LED
Switch C
Switch C LED
Switch D
Switch D LED
Switch A/B Night Light
Switch A/B Night Light LED
Switch C D Night Light
Switch C/D Night Light LED

Booth and Visiting Lighting



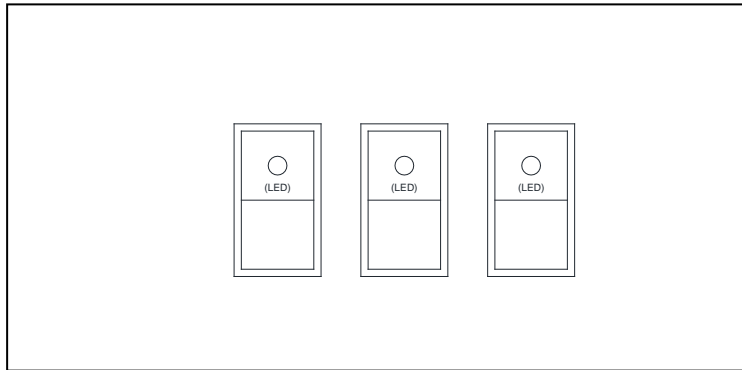
Switch A/B
Switch A/B LED
Switch C D
Switch C/D LED
Switch C D
Switch C/D LED

Class Room 1



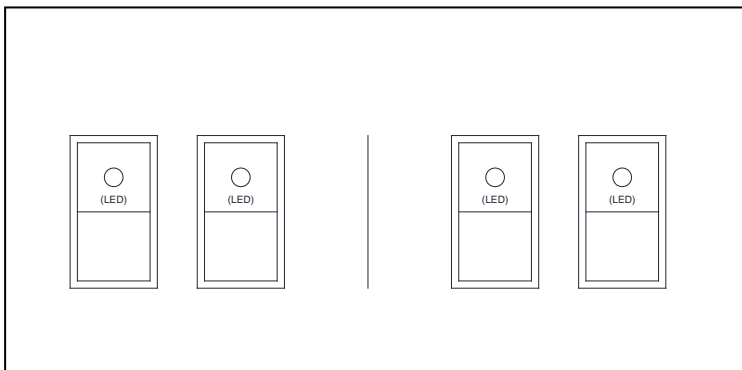
Switch 1
Switch 1 LED
Switch 2
Switch 2 LED

Yard-Int-Yard



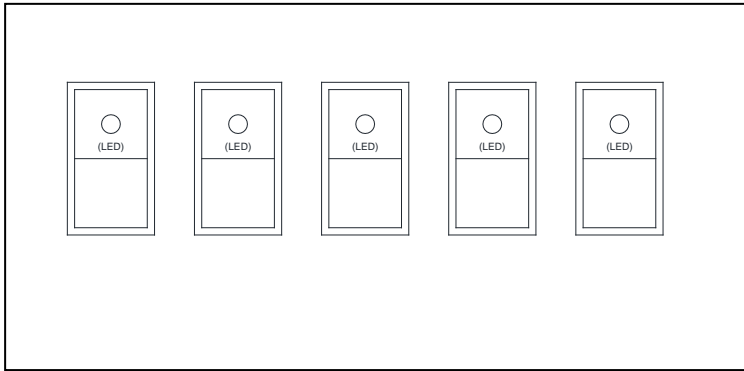
Switch 1 Yard
Switch 1 Yard LED
Switch 2 Int
Switch 2 Int LED
Switch 3 Yard
Switch 3 Yerd LED

Hall



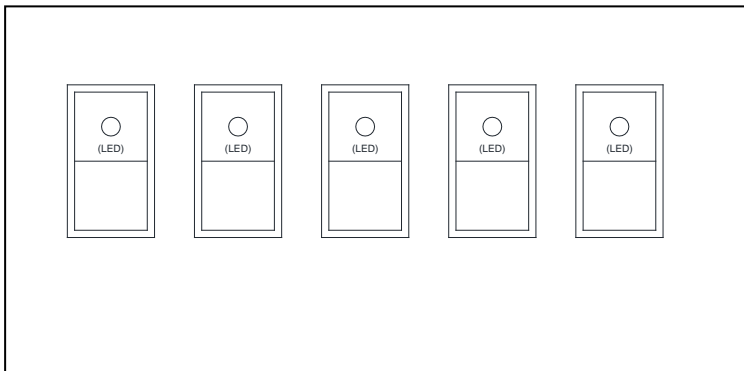
Switch Hall 1
Switch Hall 1 LED
Switch Hall 2
Switch Hall 2 LED
Switch Hall 3
Switch Hall 3 LED
Switch Hall 4
Switch Hall 4 LED

Dorm 2



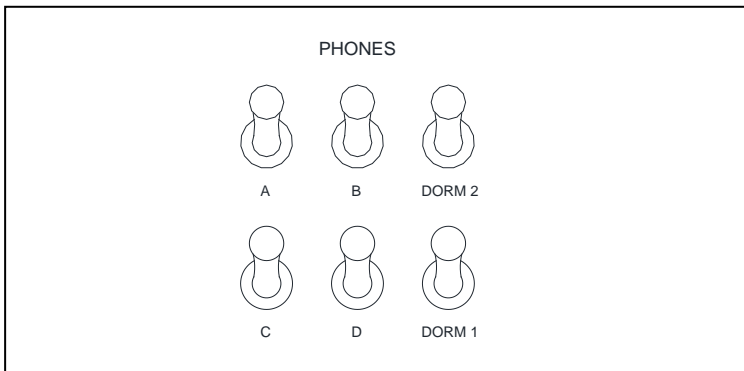
Switch 1
Switch 1 LED
Switch 2
Switch 2 LED
Switch 3
Switch 3 LED
Switch 4
Switch 4 LED
Switch 5
Switch 5 LED

Dorm 1



Switch 1
Switch 1 LED
Switch 2
Switch 2 LED
Switch 3
Switch 3 LED
Switch 4
Switch 4 LED
Switch 5
Switch 5 LED

Phones



Phone Switch A
Phone Switch C
Phone Switch Dorm 2
Phone Switch C
Phone Switch D
Phone Switch Dorm 1

END OF SECTION 28 46 13

SECTION 28 46 19

PLC INTEGRATED CONTROL SYSTEM

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Programmable Logic Controllers (PLC)
2. Programming Laptop Computer
3. Power Supplies

B. Related Sections:

1. 28 05 13 Conductors and Cables
2. 28 05 14 Raceways and Boxes
3. 28 05 26 System Signal Grounding
4. 28 05 27 Cabinets, Enclosures and Racks
5. 28 09 00 Electronic Components
6. 28 15 00 Intercom System
7. 28 23 00 Video Surveillance (CCTV) System
8. 28 46 13 Integrated Sequences of Operation

1.03 DESCRIPTION OF WORK

- A. The control electronics shall provide control and monitoring functions for systems and interfaces as described on the Drawings and in these Specifications.
- B. The controllers shall provide all necessary logic functions, timing functions, memory, software, input/output points and communication capabilities for the operating features required to meet all of the requirements of the Specifications and Drawings.
- C. The controller shall be general purpose in nature and not custom designed and built for this isolated application. The controller shall be generally non-location specific in its construction. The controller shall be made location specific and operationally customized by installing EPROM with applicable software, and making the I/O interface boards system specific and installing the proper I/O modules.

- D. Logic functions shall include, but not be limited to, AND, OR and INVERT functions with sufficient levels to provide operating features required to perform all of the functions required by the Specifications and Drawings.
- E. Timing functions shall include, but not be limited to, on-delay, off-delay, stepping and pulsing. Sufficient variations of programmable timing shall be available to provide all the operating features as required by the Specifications and Drawings.
- F. Provide a daisy chain configuration network of PLCs to communicate all signals, between indicated PLC's in areas as shown on drawings.
- G. All new and existing PLC's shall be programmed to correct current issues such as incorrect call-up and sequence of camera displays. See section 28 46 13 for sequences of operations.

1.04 SUBMITTALS

- A. Submit under provisions of Section 28 05 00.

1.05 QUALITY ASSURANCE

- A. Comply with Section 28 05 00.

1.06 EXTRA MATERIALS

- A. Deliver the following spare parts at a location to be designated:
 - 1. (1) PLC CPUs
 - 2. (1) input module per Unit – minimum 64 point module installed in Chassis.
 - 3. (1) output module per Unit – minimum 64 point module installed in Chassis.
 - 4. (2) network modules (when applicable)
 - 5. (1) PLC power supplies per Unit

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. The control electronics shall be the product of a manufacturer engaged in the production of controllers for industrial applications for a minimum of ten (10) years. Only manufacturers with national distribution will be considered.

2.02 CONTROL ELECTRONICS EQUIPMENT

- 1. PLC CPU and ControllerOmron CS1 Series, or equal
- 2. PLC Input ModuleOmron CS1 Series, or equal
- 3. PLC Output ModuleOmron CS1 Series, or equal
- 4. PLC Network ModuleOmron Controller Link, or equal
- 5. Touchscreen PC23" Touchscreen and PC

6. HMI SolutionOmron-Indusoft, or equal

2.03 PLC GENERAL DESCRIPTION

A. General Description:

1. Environmental ratings for all components of the PLC system, except programming equipment, shall meet or exceed the following requirements:
 - a. Ambient Temperature rating of 0 to 60 C (32 to 140 F) operational and -20 to 70 C (-4 to 158 F) storage.
 - b. Humidity rating of 10% to 90% Relative Humidity (non-condensing).
 - c. All system modules shall be designed so as to provide for free airflow convection cooling. No internal fans or other means of cooling except heat sinks shall be required.
2. The PLC shall meet the following standards: UL Listed, CSA Certified, and CE.
3. The PLC and I/O modules shall be of modular and rack mounted construction.
4. The system power supplies shall be protected against short circuits.
5. Programmable controller manufacturer must guarantee the availability of replacement/spare parts for a minimum of ten (10) years.
6. All I/O modules and housings must be of a standard type and fully interchangeable with previous PLC series.
7. All controllers and I/O structures of a single manufacturer shall be capable of being mounted on the same size fixing centers to allow for larger capacity controllers to be installed in the future should the facility require an expansion beyond the limits specified in the original contract documents.
8. Controllers must be capable of driving local I/O racks, where local is defined as up to one hundred (100) feet from the control unit, without the need for further intelligent interface modules.
9. When required, the system must be capable of controlling remote I/O up to a distance of 500 meters (1,640 feet) from the controller, using high-speed links with a minimum data rate of one hundred and eighty seven (187) Kbaud. Communications over this link shall be accomplished using twisted-pair wires with an overall shield.

2.04 PLC CENTRAL PROCESSING UNIT

- A. The central processing unit (CPU) shall be microprocessor based, encased in a shielded enclosure to provide RFI protection, and shall provide the logic control functions and data transfer based upon the program stored in memory and the status of the inputs and outputs. The controller must be able to support up to 5,120 local I/O.
- B. The minimum standard control functions of the CPU shall include:
 1. Relay Ladder Logic.
 2. Latching relays.
 3. Timer clock pulses (.02s, 0.1s, 0.2s, 1s & 1m) and timers (.01 & 0.1 sec. Increments).
 4. Counters (up/down).

5. Data comparison (=, <, >), data range comparison, and data table comparison.
 6. Data transfers (single register, blocks of registers, data distribution and collection using pointer).
 7. Synchronous shift registers forward and reverse (multiple channel length bit shifts).
 8. One-shot output and input controls.
 9. Master control relays (interlocks).
 10. Bit reads and moves.
 11. I/O forcing and setting
 12. BCD to Binary or Hexadecimal conversion.
 13. Binary or Hexadecimal to BCD conversion.
 14. I/O Refresh on command, immediate I/O inputs, and scheduled interrupt on command.
 15. On-line program editing.
- C. The following minimum modes of operation of the CPU must be selectable via a key operated switch or programming software commands:
1. PROGRAM – Processor is not scanning program in memory and all outputs are held OFF.
 2. MONITOR – Processor is executing program and changes in user memory and data memory are allowed.
 3. RUN – Processor is executing program in memory and outputs are controlling to the program. No editing of program or data registers is allowed.
- D. The above settings shall require either a key, a programming console with a key, or programming software loaded on a computer to change the operating mode of the CPU.
- E. The processor shall incorporate extensive self-diagnostic, which will not half the processor. In addition, separate visual indicators will annunciate at the following conditions:
1. POWER – Logic power is applied to the CPU and I/O rack from the power supply.
 2. RUN – Processor is executing the program in memory outputs are being controlled according to the program.
 3. OUTPUT INHIBIT – Processor is executing program in memory according to input status, but, outputs are being held in the OFF-state.
 4. ALARM – A non-fatal error (such as a low memory battery condition) has occurred in the PLC hardware or program software. The PLC is still running and the outputs are being controlled according to the program.
 5. ERROR – A fatal error (such as a memory parity error) has occurred, the CPU is not scanning the program, and the outputs are held in the OFF-state.
 6. COMM – Indicating the CPU is communicating with the device connected to the peripheral port or RS-232C port.
- F. In addition to visual self-diagnostic indicators (LED's) the processor shall have a specifically designated block of a least 100 words of internal diagnostic words and bits. These shall

provide more detailed system status and fault diagnostic information accessible by programming equipment or intelligent peripherals.

- G. The processor must contain an error log area. This area must be able to log what error occurred and when the error happened, giving exact time and date. This area must be able to store a minimum of 1000 records.
- H. At a minimum, the internal diagnostic registers shall the following information:
 - 1. Type of digital (input or output) or intelligent (analog, ASCII, etc.) I/O unit inserted in a particular slot (I/O table listing). This data should be accessible via programming console or programming software.
 - 2. If an I/O module is improperly mounted (wrong slot) or not in a slot (I/O verify or I/O bus error).
 - 3. Error codes for intelligent I/O module errors.
 - 4. PLC operation mode.
 - 5. Present and maximum scan time.
 - 6. Local Area Network operation status and error status.
 - 7. Local Area Network data Send and Receive verification and error status.
 - 8. Serial Host Computer interface operation and error status.
 - 9. Remote I/O rack operation and error status.
 - 10. Memory Error Area.
 - 11. Startup time. The start time should be updated every time the power is turned ON.
 - 12. Power Interruption Time.
- I. A single RS232 or RS422 compatible or Fiber Optic.
- J. Differential communication port shall be used for software based ladder logic programming and communications to other compatible devices. The PLC system must support up to three of these ports simultaneously.
- K. The data rate of the serial communications port shall be switch selectable. The following shall be the minimum available data rates: 300, 1200, 2400, 4800, 9600 and 19,200 baud.

2.05 INPUT/OUTPUT MODULES

- A. Each input or output module shall be a self-contained unit housed within an enclosure so that no part of its circuit board is exposed to contact by handling.
- B. Input and output units shall be UL listed, CSA certified and CE.
- C. Pressure type screw terminals will accept one No. 12 or two No. 14 stranded or solid wires.
- D. Convenience marker strips shall be provided adjacent to the I/O field wiring terminals for user labeling of all I/O points.
- E. It shall be possible to replace any I/O module without or disturbing user field wiring.

- F. Input and output modules shall be available in 8,16, 32, 64, and 96 points per unit. The 32, 64, and 96-point units shall not be multiplexed I/O and shall have a thumbscrew secured, high density connector capable of accepting individual soldered or crimped connector pins or ribbon cable via IDC type connector configuration.
- G. All high-density DC input or output units shall be solid state in nature. The output units shall be transistor type for long life and high DC reliability. Reed relays are not acceptable.

2.06 NETWORK OPTIONS

- A. Networking options must include Ethernet, Ethernet IP, Profibus DP, DeviceNet and Omron's SYSMAC bus remote I/O and ControllerLink network. Ethernet communications must support TCP, UDP, and FTP protocols. The PLC should have the ability to generate e-mail messages to be sent via WAN or LAN, to report errors, provide scheduled maintenance and status reports. In addition, FTP (file transfer protocol) can be used to transfer data files between a host computer and or FLASH memory card and the PLC's memory.

2.07 TOUCHSCREEN PC

- A. Each Touchscreen PC shall function as the primary means of overall system control and monitoring. The computer equipment shall be arranged to present an efficient and organized appearance.
- B. The computer equipment shall be arranged to present an efficient and organized appearance. The following components shall be located with the workstation:
 1. PC based computer (with mouse and keyboard).
 2. Touchscreen Panel.
 3. Speakers.
 4. Master Intercom Station (refer to 28 15 00).
- C. Provide computer equipment that meets the following minimum specification requirements
 1. Intel Pentium 4 microprocessor operating at 3.4 GHz. 2 MB L3 Cache, or equal.
 2. 4 GB, 533 MHz, DDR2 SDRAM memory.
 3. Two (2) 40 GB SATA with RAID.
 4. One (1) 48X24X48 IDE CD-RW drive with 8 MB memory, 700 MB media capacity and fifty (50) CD's.
 5. Local bus 32-bit IDE controller capable of supporting two (2) hard disk drives.
 6. ISA expansion bus with three spare expansion slots.
 7. 48X CD-RW and 16X DVD+RW/+R and fifty (50) CD's.
 8. Single SVGA video output card 1820 X 1200 pixels at 76Hz, 256 color) with 128 MB DDR SDRAM Memory.
 9. Harman/Kardon HK-206 speakers, 3 watts each, 3 in. full range driver, 90 Hz-20Hz frequency response, or equal.
 10. Tower type chassis including high capacity power supply with surge suppressor.

11. 101 key keyboard.
 12. Microsoft mouse.
- D. Audio tone generator to activate on reception of an alarm. Audio tone shall be capable of being enabled or disabled on operator command.
 - E. A touchscreen panel (monitor) shall be the primary means of operator access to the system. They shall provide the operator interface for control of the entire system. The touchscreen panel may be an "off-the-shelf" consumer grade panel, but must be secured using custom mounting for adjustable (horizontal, vertical, tilt, with lockable position) movement and minimize shake/torque while in normal operation.
 - F. A keyboard and mouse are the secondary means of operator access to the system. To communicate with the direct digital control system, the operator shall input via the keyboard or mouse a command along with a proper alphanumeric identification of the system. Keyboard shall have standard ASCII coded logic outputs, providing full International English language displays and printouts. Auxiliary function keys shall be provided for various functions. These keys shall allow common operations to be performed by punching a single key instead of having to type out the command on the keyboard.
 - G. A digital display clock shall display on the monitor at all times. Provision for manually resetting it shall be provided. It shall be a 24 hour real-time clock and seven-day calendar to provide data for logging.
 - H. A network control key or software passwords shall allow automatic functions of the system to continue, but prevent unauthorized tampering with any computer pushbuttons or controls while the computer is unattended. This shall not disable the scanning or alarming functions.

2.08 HUMAN MACHINE INTERFACE (HMI) SOLUTION:

- A. Software Architecture General Design Features:
 1. The HMI package shall:
 2. Be 32-bit software capable of running on operating systems currently supported by Microsoft, including Windows XP, Windows Vista, Windows Server, Windows 2000 (Advanced) Server, Windows 2003 Server, Windows 2008 Server R2.
 3. Support and take advantage of multiple processors on the same machine (symmetric multiprocessor design). For example, adding another chip to the computer should distribute the load of the HMI software across both chips, thereby increasing performance, etc.
 4. Support and take advantage of multiple threads within the CPU. This multi-threading, among other benefits, aids in multi-tasking for CPU optimization, dependencies, and the like.
 5. Have a scalable architecture such that the user can start with a small application and later grow the application database to any size by upgrading the license.
 6. Embrace and integrate Microsoft Standards including:
 - a. Microsoft Access
 - b. Microsoft SQL Server
 - c. Microsoft Data Engine (MSDE)

- d. Open Database Connectivity (ODBC)
 - e. ADO, OLE-DB for Database Interface
 - f. Object Linking and Embedding (OLE)
 - g. ActiveX Technologies
 - h. OLE for Process Control (OPC)
7. Have the ability to write scripts within the package using a non-proprietary language (e.g.: VBScript).
 8. Must support modifications in the driver worksheet to allocate addresses in the PLC (to maintain flexibility on the PLC supplier).

B. Networking:

1. The HMI package shall:
 - a. Implement Client / Server Distributed Networking.
 - b. Support industry standard network protocols such as Ethernet (TCP/IP and UDP/IP) and EthernetIP as well as all Omron legacy networks (Controller Link, SYSNET, etc.), without any OPC interface.
 - c. Operate on a network with multiple protocol stacks.
 - d. Plug and Play with standard routers, switches, network Intranets and the Internet.
2. Support, where applicable, a Web based Browser Plug-in so that Alarming, Graphics, Trends can be viewed from any Internet Explorer station in addition to alarming through any Microsoft based operating system. Also, it will permit interaction (e.g., changing set point, switching screens, etc.) from these dedicated Internet Explorer stations.
3. Be configurable as an independent distributed database regardless of the number of nodes in the system.
4. Support at least 256 workstations (nodes) simultaneously.
5. Expansion of the system shall be possible with the addition of non-proprietary PC based off the shelf hardware.
6. Connect to a large number of I/O Device Interfaces via OPC Servers across the network.
7. Allow different versions of the development environment to reside simultaneously on the same computer, under different directories.
8. Have the ability to exchange data with external SQL Relational Databases, via 3rd party ADO providers, without the addition of any add-on packages.
9. Have the ability to save alarm history and event history to any SQL Relational Database, via 3rd party ADO providers, without the addition of any add-on packages.

C. Graphic Display Software Module:

1. The graphical display module shall have the ability to:
 - a. Allow configuration of highly detailed screens with animation.
 - b. Use an object-oriented design.

- c. Permit using the mouse for object creation, editing, and placing on the screen.
- d. Show object properties for customization with either menu choices, right-clicking, pop-up menus, or double-click shortcuts.
- e. Offer floating, dockable tool bars with drawing and animation tools for building the display.
- f. Provide a grid that can be displayed on screen to assist in aligning objects precisely.
- g. Permit re-sizing of the grid in both the X and Y direction (independently) in one-pixel increments.
- h. Allow "Snap to Grid" functionality to be turned on/off during configuration.
- i. Not require compilation of the displays before use; a simple "save" is all that is needed for use.
- j. Offer Password Protection of displays created.
- k. Provide language switching "on the fly"; with the ability for user-created displays to change languages, as well as the menus and tools employed by the graphics package itself.
- l. Display the graphic interface in 2 monitors connected to the same computer (CPU). The graphic interface available on each monitor must provide independent screen navigation.
- m. Run more than one instance of the graphic interface on the same computer (Thin Client solution) without any additional configuration on the Server station.
- n. Create tags as structures/classes of at least one member.
- o. Create array tags and configure another tag as its index when configuring objects on the screen.

D. Alarms and Events:

- 1. The alarm system shall provide complete alarm and event management with a user-definable message structure.
- 2. The alarm system shall provide 16 message sub-classes and 16 message types.
- 3. The alarm system shall provide the ability to condense system alarming by the provision of group messages/alarms.
- 4. The alarm system shall be programmed to alarm any change of state that the system detects, including:
 - a. The failure of communications channels used by the system.
 - b. The failure of system's hardware which results in an automatic fail-over of the system's functions from the active to standby server.
- 5. The alarm system shall be capable of annunciating alarms, including, but not limited to:
 - a. Activation of an audible alarm or light.
 - b. Alarm display updated with the current alarm.
 - c. Alarm banner updated on configured process displays.

6. The alarm system shall display alarm messages in a manner to facilitate easy interpretation of current alarms, including, but not limited to:
 - a. Different text color and background color for those points that are in alarm, those that have been acknowledged, and those that are no longer in alarm.
 - b. Flashing of the current alarm message(s) in the alarm list.
7. The alarm system shall provide capability to acknowledge alarm message when data point enters and/or exits alarm state. The system shall permit alarm acknowledgement, including, but not limited to:
 - a. On an individual point.
 - b. On a filtered group of points.
 - c. On all alarms.
8. The alarm system shall provide filtering to control the alarms display. The filtering shall include, but not be limited to:
 - a. Date.
 - b. Time.
 - c. Alarm Class.
 - d. Alarm Type.
 - e. Alarm Priority.
 - f. Status (in alarm, out of alarm, or acknowledged).
 - g. Any defined alarm message field.
9. Alarm colors vary by equipment served. Alarms colors shall visually annunciate to meet site requirements.

E. Security:

1. The software shall provide a security component for restricting access to different areas of the system.
2. It shall be possible to configure different sets of individual users (range at least 1 to 1000 users) as well as categorizing those users (e.g., engineers, operators, supervisors, etc.) into groups (range at least 1 to 100 groups).
3. It shall be possible to assign a person to more than one group (e.g., Engineer and a Supervisor).
4. For each individual user, and for each group, it shall be possible to define:
 - a. Name.
 - b. Password, including such parameters as minimum length required, time allowed before it must be changed, and uniqueness over time).
 - c. Data Points which can and cannot be written to.
 - d. Which screens they have access to.
5. It shall be possible to configure an Auto-Logout period, whereby the user is automatically logged out of the system after a specified amount of time has elapsed.

6. Restrictions on software module interaction shall be configured on a per-user and per-group basis. Items to lock out include:
 - a. Exiting the applications.
 - b. Printing.
 - c. Entering Configuration Mode.
 - d. Switching Languages.
 - e. Starting/Stopping of Alarm and/or Data Logging.
 - f. Acknowledgement of Alarms.
 - g. Alarm Filtering.
 - h. Changing Zoom Factors in Graphics and Trends.
 - i. Modifying and Executing Trend Reports.
 - j. Adding, Editing and/or Deleting Trend Pens.
 - k. Running a Script.
 - l. Accessing the Windows Desktop.
7. If a user fails to successfully log in after a configurable number of times, it shall be possible to lock that account out until either an administrator clears it, or after a preset amount of time has elapsed.
8. A utility shall be provided to show which users are logged into the system (both on the local machine, and on networked machines).

F. Internet Connectivity:

1. A stand-alone Web Server software module shall be provided so the HMI software can be accessed over the Internet.
2. The Web Server module shall run under Windows NT, embedded NT, and Windows 2000.
3. A user shall only require Internet Explorer to be installed on their machine (Thin Client) to access the system, with any "Plug-ins" automatically installed for them by the Server when they first access a graphic, trend, or alarm screen.
4. A mechanism shall be provided to deliver the software and data updates through firewalls.
5. The Web Server module shall manage the number of concurrent users of the Internet connection. Software licensing agreements shall be provided to allow for six (6) concurrent users.
6. It shall be possible to have "floating" web licenses, whereby if one user logs off, that license is freed up so that another user can log in.
7. The same security system employed by the HMI software shall also manage users connecting via the web.
8. The graphics files shall be represented over the web in the same manner as shown on a "standard" HMI workstation (i.e., close-approximations via HTML are NOT acceptable: the graphics should look and interact the same as a regular station).

9. Anywhere a file path name can be used within the graphics software, a URL shall also be able to be specified.
10. Alarms on a web station shall look and interact the same as a standard workstation.
11. Trend View windows on a web station shall look and interact the same as a standard workstation.
12. A “standard” workstation user shall also be able to connect to a networked system of other “standard” workstations via the Internet.

G. OPC Data:

1. If OPC databases are used, must be able to import OPC tags
2. The OPC Browser shall list all registered OPC Data Servers when making a connection to I/O data, and OPC Alarm and Event Servers when configuring alarms, and OPC Historical Data Access servers when configuring trending applications.
3. It shall be possible to browse OPC Servers installed on the local machine as well as those installed on any node visible on the network.
4. Ability to keep OPC tags on scan to optimize communications to commonly used data items.
5. On-line OPC Data Configuration changes (e.g., adding a new tag on-line) shall be supported by the HMI package.
6. OPC Data Ranges shall be read in and used to configure limits on graphic dynamics, trend limits, data entry field ranges, and so on.
7. OPC Quality Flags shall be used in graphic dynamics (degrees of communication quality shall be indicated by change in color used for objects), data logging, and alarm presentation.
8. A component for bridging/mapping OPC Data from one server to another shall be provided (e.g., map an PLC data point to a Modbus register).

H. Historical Data:

1. The system shall provide a complete historical subsystem providing the user the capability to capture and analyze historical data.
2. There shall be no limit (other than storage capacity) on the number of archives that can be created. The system shall also allow selection of any point in the system to be added/configured for archiving.
3. The historical subsystem shall use standard Windows tree/list view presentation techniques to facilitate the display and editing of archive timers, archive types, graphical data displays and tabular data displays.
4. The historical subsystem shall promote the visualization of historical data in both tabular and graphical form. This includes the capability to view historical data via a web-enabled interface as specified herein.

I. Reports:

1. The system shall provide an integral reporting subsystem used to report both current and archived data.

2. The reporting subsystem shall provide the capability define reports for both visualization and printed format.
3. The reporting subsystem shall provide the capability to define both the dynamic and static properties reports, including, but not limited to:
 - a. Inclusion of archived data, alarm data or event data.
 - b. Customization of the format, layout, and graphical images, included on a report.
4. Configuration of automatic report generation, including frequency, destination of the report, and a prioritized list of alternate system resources should problems be encountered during automatic production.
5. The system shall be supplied with pre-configured reports, including, but not limited to:
 - a. Graphic display documentation.
 - b. Historical archiving.
 - c. Alarm archiving.
 - d. Control logic/scripting configuration.
 - e. User and group security configuration.
6. The reporting subsystem shall not impose limits on the number of reports that can be configured.

J. Database:

1. The system shall utilize a real-time relational database for storage of all process related data.
2. The database shall be based on an accepted industry standard database technology.
3. Tag names should be able to support up to 255 characters.
4. The database subsystem shall provide the capability of "browsing" an application database, independent of the application.
5. The database system shall support both internal (computational) and external tags (real world). Use of internal tags shall be unlimited.
6. The database system shall provide the ability for each tag (dependant on type) to have high and low limits, start and substitute values.
7. The database system shall provide for event driven execution for data processing. Systems that require external data sources (PLCs) be polled for complete database update shall not be accepted.

K. Client/Server:

1. The software shall employ native client-server architecture. The architecture shall promote the use of multiple server and multiple client (i.e., workstation) configurations.
2. Any server computer shall be able to be dedicated to specific process functionality (i.e., Alarm Service, Historical Data Collection, etc.).
3. All clients shall have the capability to locally store and utilize process displays, as well as local control actions. Should a requested display and/or control action not exist locally at the client level; the client will access the data for the server. This operation will be transparent to the user.

4. All clients shall have complete visibility to all servers, and all servers shall have visibility at the peer level.
 5. The software shall promote portability of applications between computers without any redevelopment or modification.
 6. It shall be possible for the user to monitor and control the process from client or server. This includes, but is not limited to:
 - a. View the same or different displays simultaneously.
 - b. Make process adjustments and acknowledge alarms.
 - c. View alarms, events, trends, and reports.
 7. The development and runtime environments shall be decoupled allowing the user to configure run-time only clients without any development capabilities. Modification of a client from run-time only, to runtime/development, shall be achieved as a simple license upgrade. Reinstallation or new installation of software will be permitted to achieve this functionality.
 8. The system shall support implementation of thin-client technology.
 9. The HMI system shall support thin-client platforms from PDAs to Industrialized PCs.
- L. Redundancy:
1. To maximize data availability and integrity, the system shall provide the ability for configuration of system redundancy.
 2. Configuration of system redundancy shall in no way limit or restrict the use of the client/server configuration and/or architecture.
 3. Clients shall automatically “failover” to the backup or redundant server. This operation shall not require any application reprogramming or reconfiguration.
 4. System redundancy shall be configurable on a “server by server” basis up to a profile of six (6) redundant servers.
 5. Once a failed server becomes available, the active server shall checkpoint data missing data to the previously failed server. This operation shall occur in the background, and shall not effect the operation of the on-line server.

2.09 BACNET ROUTERS

- A. Provide all BACnet routers as necessary to meet the requirements of these specifications.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Comply with Section 28 05 00.
- B. Comply with manufacturer's recommendations, procedures and standards for the assembly and operation of the Control Electronics.
- C. Common functions such as sallyport interlocks shall be wired to a single system. This type of function shall not be networked.

3.02 TRAINING

A. Comply with Section 28 05 00, TRAINING.

3.03 FIELD QUALITY CONTROL

A. Testing: Comply with Section 28 05 00.

END OF SECTION 28 46 19

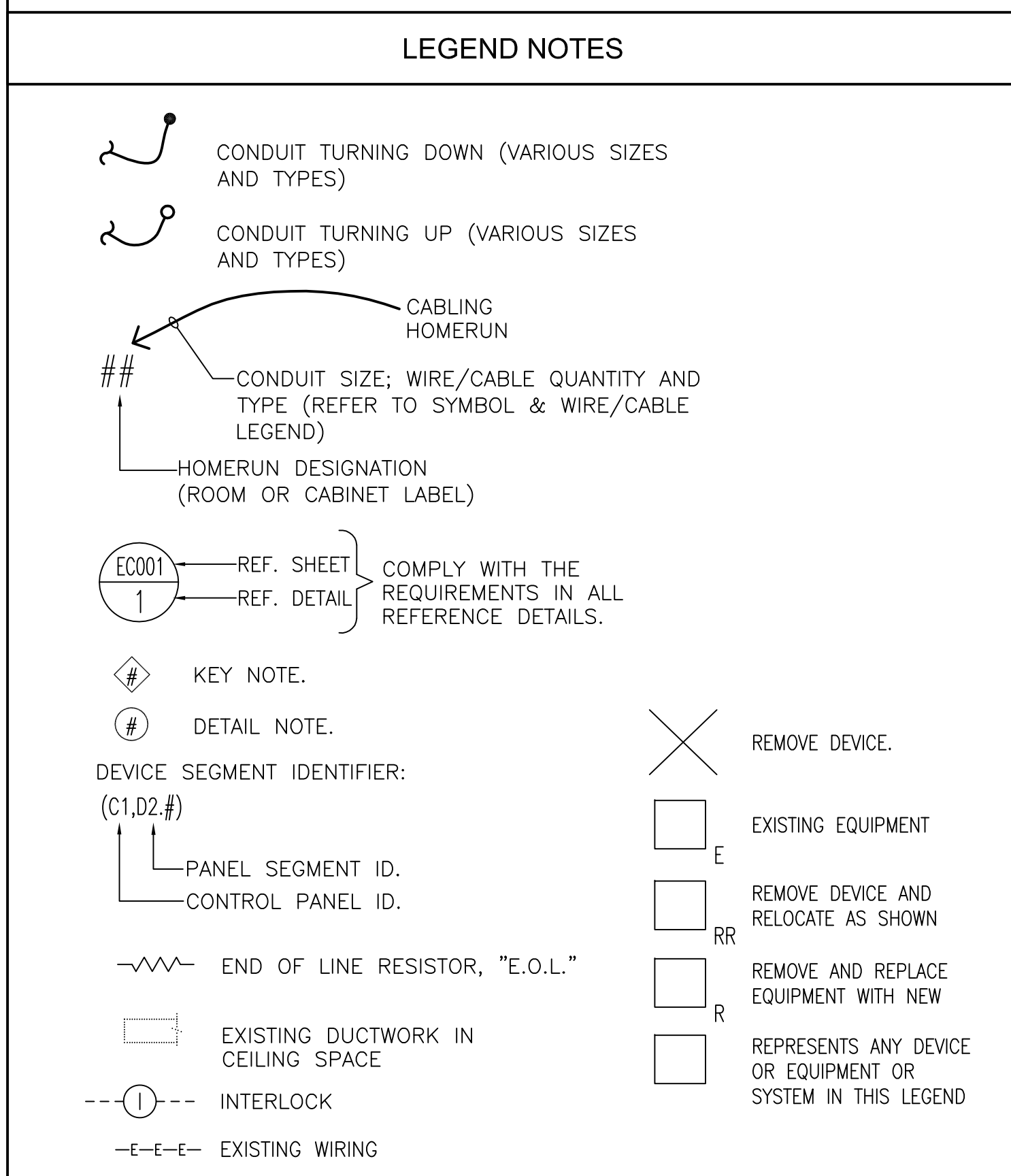
END OF TECHNICAL SPECIFICATIONS

GENERAL NOTES

- THESE DRAWINGS PROVIDE SUPPLEMENTAL INFORMATION TO THE SPECIFICATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A COMPLETE SET OF CONTRACT DOCUMENTS, ADDENDA, DRAWINGS AND SPECIFICATIONS.
- THESE DRAWINGS SHALL NOT BE USED FOR FIELD INSTALLATION. THE APPROVED SHOP DRAWINGS ARE TO BE USED FOR FIELD INSTALLATION. REFER TO THE SPECIFICATIONS FOR SHOP DRAWING REQUIREMENTS.
- THE CONTRACTOR SHALL COORDINATE ITS WORK WITH OTHER TRADES AT THE SITE. ANY COSTS TO INSTALL WORK THAT IS DIFFERENT FROM THE WORK AS SHOWN ON THE DRAWINGS SHALL BE INCURRED BY THE CONTRACTOR. ANY DISCREPANCIES, AMBIGUITIES OR CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER DURING BID TIME FOR CLARIFICATION. ANY SUCH CONFLICTS NOT CLARIFIED PRIOR TO BID SHALL BE SUBJECT TO THE INTERPRETATION OF THE OWNER AT NO ADDITIONAL COST TO THE COUNTY.
- ANY AND ALL DAMAGE TO THE EXISTING PROPERTY AND/OR SURROUNDING AREA SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE/AT NO ADDITIONAL COST TO THE COUNTY.
- THE CONTRACTOR SHALL PROVIDE AND KEEP A UP-TO-DATE AND COMPLETE RECORD SET OF SHOP DRAWINGS. THESE PRINTS SHALL BE CORRECTED DAILY AND SHOW EVERY CHANGE FROM THE APPROVED SHOP DRAWINGS. THIS SET OF DRAWINGS SHALL BE KEPT ON THE JOB SITE AND SHALL BE USED ONLY AS A RECORD SET. THIS SHALL NOT BE CONSTRUED AS AUTHORIZATION FOR THE CONTRACTOR TO MAKE CHANGES IN THE CONTRACT DOCUMENTS WITHOUT WRITTEN COUNTY AUTHORIZATION.
- THE EXACT LOCATION OF ALL DEVICES AND EQUIPMENT SHALL BE COORDINATED WITH THE ELECTRICAL AND MECHANICAL DRAWING DETAILS, OR SECTIONS PRIOR TO INSTALLATION. MOUNTING HEIGHTS OF ALL DEVICES AND EQUIPMENT ARE FROM FINISHED FLOOR TO THE CENTER OF DEVICES AND EQUIPMENT UNLESS OTHERWISE NOTED. BOXES INSTALLED IN LOCATIONS THAT ARE NOT APPROVED BY THE OWNER SHALL BE RELOCATED AS DIRECTED BY THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
- FULLY COORDINATE THE LAYOUT OF ALL CABINETS AND RACKS WITH OTHER EQUIPMENT AND FURNITURE WITHIN THE SAME ROOM PRIOR TO SUBMITTING SHOP DRAWINGS FOR APPROVAL.
- ALL WORK SHALL BE INSPECTED AND APPROVED BEFORE COVER-UP.
- ALL RECESSED FIXTURES, SPEAKERS, RECEPTACLES, SWITCHES, ETC., MOUNTED IN THE FIRE RATED CEILINGS OR WALLS SHALL BE ENCLOSED WITH AN APPROVED ENCLOSURE CARRYING THE SAME FIRE RATING AS THE CEILING OR WALL.
- CONTRACTOR SHALL TEST AND IDENTIFY ALL EXISTING CONDITIONS OF SYSTEMS RELEVANT AND/OR AFFECTED BY THIS PROJECT. SUBMIT A LIST OF IDENTIFIED PROBLEMS AND SEQUENCES OF OPERATIONS TO THE COUNTY IN PREPARATION OF PRODUCT DATA AND SHOP DRAWING SUBMITTALS. FAILURE TO DOCUMENT PROBLEMS WILL RESULT IN THE INSTALLATION COMPANY BEING HELD RESPONSIBLE FOR REPAIRS OR CORRECTIONS. THIS INCLUDES BUT IS NOT LIMITED TO PROGRAMMING OF SYSTEMS.

SHEET INDEX

EC001	GENERAL NOTES, LEGEND, ABBREVIATIONS, AND SHEET INDEX
EC101	DEVICE PLAN LEVEL 1
EC102	DEVICE PLAN LEVEL 2
EC103	DEVICE PLAN LEVEL 3
EC104	DEVICE PLAN LEVEL 4
EC201	ENLARGED ROOM LAYOUTS
EC301	CONTROL ELECTRONICS BLOCK DIAGRAM



PROJECT NOTES

- THIS IS AN EXISTING DETENTION FACILITY WITH CONTROLLED ACCESS AND MOVEMENT 24 HOURS A DAY, 7 DAYS A WEEK. EXPECT DELAYS DUE TO FACILITY EVENTS. THE OWNER WILL ASSIGN A CONTACT PERSON FOR THE CONTRACTOR TO COORDINATE DAY TO DAY ACTIVITIES AND ACCESS INTO AREAS. COORDINATE ALL SYSTEM INTERRUPTIONS AND SCHEDULED DOWN TIME WITH THE CONTACT PERSON. THE CONTRACTOR WILL INCLUDE IN HIS BID ALL PREMIUM TIME TO WHICH HE MAY BE SUBJECT TO WORKING IN PROCEDURE AND AT TIMES WHERE IT WOULD CAUSE THE LEAST INTERFERENCE WITH OPERATIONS OF THE OWNER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAW CUTTING, TRENCHING, BACK FILLING, COMPACTION, AND PATCHING OF CONCRETE AND ASPHALT AS REQUIRED TO PERFORM HIS WORK. ATTENTION IS CALLED TO THE FACT THAT THERE IS UNDERGROUND UTILITY LINES. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN TRENCHING FOR HIS WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER AND APPROVED REPAIR OF ANY AND ALL DAMAGES CAUSED BY ITS WORK.
- SECURITY REQUIREMENTS, EXPOSED CONDUIT:
 - WHERE NOT SPECIFICALLY SHOWN ON THE DRAWINGS OR SPECIFIED USE THE FOLLOWING GUIDELINES FOR THE SELECTION OF EXPOSED RACEWAY TYPES:
 - IMC or RGS - LOCATIONS UNDER FIFTEEN FEET IN HEIGHT FROM FINISHED FLOOR WHERE EXPOSED TO INMATE OR PUBLIC ACCESS.
 - EMT - LOCATIONS NOT ACCESSIBLE TO INMATES, PUBLIC ACCESS, OR OVER 15 FEET IN HEIGHT FROM FINISHED FLOOR.
 - PVC - NOT PERMITTED
 - SECURE RACEWAY WITH TWO HOLE CONDUIT STRAPS IN INMATE AND PUBLIC ACCESSIBLE AREAS, ONE HOLE STRAPS NOT PERMITTED EXCEPT WHEN CONDUIT IS TIGHT TO CORNER.
 - SUPPORT EXPOSED CONDUIT IN INMATE ACCESSIBLE AREAS WITH CONDUIT STRAPS EVERY FIVE FEET AND WITHIN TWELVE INCHES OF ANY JOINT.
- CONTRACTOR TO MAINTAIN SEPARATION BETWEEN CLASS 1 AND CLASS 2 WIRING AS REQUIRED BY NEC.
- CONTRACTOR MAY COMBINE AND HOMERUN TO IT ROOM OR J-BOX UP TO 3 DEVICES UNLESS OTHERWISE NOTED.
- MOST FIELD DEVICES SHOWN ON DRAWINGS ARE EXISTING. CONTRACTOR SHALL TEST ALL EXISTING DEVICES AND MAKE FULLY FUNCTIONAL AFTER UPGRADE/ INSTALLATION OF RELEVANT SYSTEMS. REFER TO GENERAL NOTE 10 PRIOR TO INSTALLATION.
- CONTRACTOR SHALL INCLUDE IN HIS BID ALLOWANCE FOR UP TO 5% DISCREPANCY IN THE LOCATIONS, QUANTITY, AND TYPE OF EXISTING FIELD DEVICES SHOWN ON THE DRAWINGS AND SPECIFICATIONS (REFER TO SCREENSHOTS) - MINOR DISCREPANCIES IN LOCATIONS AND TYPES OF DEVICES SHALL NOT BE CONSIDERED AS PART OF THE 5% ALLOWANCE.
- BACKGROUNDS SHOWN ON THE DRAWINGS MAY NOT BE 100% ACCURATE. CONTRACTOR SHALL TAKE NOTE ANY DISCREPANCIES AND REVISE THE BACKGROUNDS ON HIS SHOP DRAWING SUBMITTAL.
- CONTRACTOR SHALL USE EXISTING CONTROL PANEL LAYOUTS, AND DEVICE PLANS AS THE BASIS FOR DETERMINING QUANTITY, LOCATION, AND TYPES OF EXISTING FIELD DEVICES.

ABBREVIATIONS

(E)	- EXISTING	MASTER STATION
ACP	- ACCESS CONTROL PANEL	I/O - INPUT OR OUTPUT
ACC	- ACCESS CONTROL CABINET	M - MONITOR
AFF	- ABOVE FINISH FLOOR	MD - MAIN DISTRIBUTION FRAME
AFG	- ABOVE FINISH GRADE	MH - MANHOLE
AIP	- AUDIO INTERFACE PANEL	MFR - MANUFACTURER
AMP	- AMPLIFIER	NIC - NOT IN CONTRACT
AR	- AUDIO RACK	OVOI - COUNTY FURNISHED, COUNTY INSTALLED
ATM	- AUDIO THRESHOLD MONITORING	PBO - PROVIDED BY OTHER
B/W	- BLACK AND WHITE	PED - PEDESTAL
CCTV	- CLOSED CIRCUIT TELEVISION (VIDEO SURVEILLANCE SYSTEM)	PKC - PROGRAMMABLE KEYBOARD CONTROLLER
CM	- CONTROL MODULE	PRO - POWER OVER ETHERNET
CP	- CONTROL PANEL	PP - FIBER PATCH PANEL WITH TRANSCEIVERS
CPU	- CENTRAL PROCESSING UNIT	PS - POWER SUPPLY
DPS	- DOOR POSITION SENSOR	PTR - PRINTER
ELEC	- ELECTRICAL PANEL	R - REMOVE AND REPLACE UNLESS OTHERWISE NOTED
F.A.	- FIRE ALARM	UPS - UNINTERRUPTIBLE POWER SUPPLY
FPP	- FIBER PATCH PANEL WITH TRANSCEIVERS	VR - VIDEO RACK
HH	- HANDHOLE	WP - WATER PROOF
IA	- INTERCOM AUDIO AMPLIFIER	WPS - WINDOW POSITION SENSOR
ICM	- INTERCOM CALL	

PATHWAY ELECTRICAL NOTES

- DRAWINGS ARE DIAGRAMMATIC ONLY, ROUTING OF RACEWAYS SHALL BE AT THE OPTION OF THE CONTRACTOR UNLESS OTHERWISE NOTED AND SHALL BE COORDINATED WITH OTHER SECTIONS. DO NOT USE CONTRACT DRAWINGS FOR LOCATIONS OF ANY ELECTRICAL, ARCHITECTURAL, STRUCTURAL, CIVIL, OR MECHANICAL ITEMS.
- ALL CONDUITS SHALL BE, 3/4" NOMINAL OR LARGER AS REQUIRED BY THE SYSTEMS.
- ALL INTERRUPTION OF ELECTRICAL POWER SHALL BE KEPT TO A MINIMUM. HOWEVER, WHEN AN INTERRUPTION IS NECESSARY, THE SHUTDOWN MUST BE COORDINATED WITH THE OWNER PRIOR TO THE OUTAGE. ANY OVERTIME PAY SHALL BE INCLUDED IN THE CONTRACTOR'S BID. WORK IN EXISTING SWITCHBOARDS OR PANEL BOARDS SHALL BE COORDINATED WITH THE COUNTY PRIOR TO REMOVING ACCESS PANELS OR DOORS.
- COMPLY WITH CEC, FOR APPLICATION, SIZE, LOCATION, AND INSTALLATION OF EACH TYPE OF RACEWAY. A GROUNDING CONDUCTOR SHALL BE PROVIDED IN ALL CONDUIT RUNS.
- PENETRATIONS OF ANY KIND IN FIRE AND SMOKE PARTITIONS, WALLS, AND CEILING ASSEMBLIES, SHALL BE FIRE STOPPED AND SEALED WITH AN APPROVED MATERIAL AND AS REQUIRED BY CODE.
- ROOF PENETRATIONS OF ANY KIND MUST BE APPROVED BY THE COUNTY AND PERFORMED BY A LICENSED ROOFER.
- EXACT METHOD AND LOCATION OF CONDUIT PENETRATION AND OPENINGS IN CONCRETE WALLS OR FLOORS OR STRUCTURAL STEEL MEMBERS SHALL BE AS DIRECTED BY THE STRUCTURAL ENGINEER. PERFORM CORING, SAW CUTTING, PATCHING, AND REFINISHING OF EXISTING WALLS AND SURFACES WHEREVER IT IS NECESSARY TO PENETRATE. OPENINGS SHALL BE SEALED IN AN APPROVED METHOD TO MEET THE FIRE RATING OF THE PARTICULAR WALL, FLOOR OR CEILING. EXACT METHOD AND LOCATIONS OF CONDUIT PENETRATIONS AND OPENINGS IN CONCRETE WALLS OR FLOORS SHALL BE UL APPROVED.
- ROUTE EXPOSED CONDUIT AND CONDUIT IN CEILING SPACE PARALLEL AND PERPENDICULAR TO WALLS AND ADJACENT PIPING. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT A NEAT APPEARANCE.
- SECURELY FASTEN ALL DEVICES AND BOXES.
- ALL JUNCTION BOXES MUST BE ACCESSIBLE BY MAINTENANCE STAFF, BUT NOT BY THE PUBLIC/INMATES.
- MAXIMUM NUMBER OF CONDUCTORS IN PULL AND JUNCTION BOXES SHALL CONFORM TO THE CALIFORNIA ELECTRICAL CODE, ARTICLE 370-6. COMPLY WITH CEC FOR 40% MAXIMUM CONDUIT FILL. UPSIZE CONDUITS ACCORDINGLY AT NO ADDITIONAL COST TO THE OWNER.
- JUNCTION AND PULLBOXES: FOR INTERIOR DRY LOCATIONS, BOXES SHALL BE GALVANIZED ONE-PIECE, DRAWN STEEL, KNOCKOUT TYPE WITH REMOVABLE MACHINE SCREW SECURED COVERS. BOXES SHALL BE SIZED FOR THE NUMBER AND SIZES OF CONDUCTORS AND CONDUIT ENTERING THE BOX AND EQUIPPED WITH PLASTER EXTENSION RINGS WHERE REQUIRED. BOXES SHALL BE LABELED TO INDICATE PANEL AND CIRCUIT NUMBER, OR TYPE OF SIGNAL OR COMMUNICATIONS SYSTEM.
- ALL CONDUIT IS TO BE CONCEALED UNLESS OTHERWISE PERMITTED. PAINT ALL EXPOSED CONDUITS TO MATCH EXISTING SURFACES. REPAIR, PATCH, CLEAN AND PAINT EXISTING SURFACES THAT ARE DAMAGED, DISTURBED OR LEFT IN AN UNFINISHED OR MISMATCHING CONDITION AS A RESULT OF THE WORK OF THIS CONTRACT, TO MATCH THE ADJACENT AREA.
- THE SEISMIC BRACING AND ANCHORAGE OF ELECTRICAL CONDUITS, BUS DUCT, WIREWAY, AND CABLE TRAY SHALL BE IN ACCORDANCE WITH THE CALIFORNIA BUILDING CODE, CHAPTER 16 AND "GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND, PLUMBING PIPING SYSTEMS." PUBLISHED BY SMACNA AND PPIC.
- RIGID GALVANIZED STEEL CONDUIT FITTINGS SHALL BE THREADED AND THOROUGHLY GALVANIZED. RIGID CONDUIT SHALL BE FULL WEIGHT GALVANIZED STEEL. ELECTRICAL METALLIC TUBING (EMT) CONDUIT FITTINGS SHALL BE STEEL, RAIN TIGHT THREADLESS COMPRESSION TYPE. DIE CAST, SET SCREW, OR INDENTER TYPES ARE NOT ACCEPTABLE. FLEXIBLE STEEL CONDUIT FITTINGS SHALL BE MALLEABLE IRON CLAMP, SQUEEZE TYPE OR STEEL TWIST-IN TYPE WITH INSULATED THROAT. SET SCREW TYPE IS NOT ACCEPTABLE.

WIRE/CABLE LEGEND

TYPE	DESCRIPTION	MFR./PART No.	
A	#14 AWG THWN	SUBMIT/AS REQ'D	GLASS-1 CONDUCTOR
B	(3) PAIR #22 TWISTED, SHIELDED	BELDEN/AS REQ'D	DATA COMMUNICATIONS
C	RG-59/U COAXIAL CABLE	BELDEN/9259	VIDEO SIGNAL
D	(1) PAIR #16 TWISTED	BELDEN/AS REQ'D	DEVICE POWER/CONTROLS
E	(1) PAIR #18 TWISTED/ SHIELDED	BELDEN/AS REQ'D	INTERCOM/LINE AUDIO
F	(1) PAIR #18 TWISTED	BELDEN/AS REQ'D	PAGING/LINE AUDIO
G	(1) PAIR #20 TWISTED	BELDEN/AS REQ'D	COMMUNICATION SIGNAL
K	4-PAIR CAT 6	BELDEN/AS REQ'D	NETWORK COMMUNICATIONS
L	24-STR MULTI-MODE OPTIC FIBER	BELDEN/AS REQ'D	VIDEO/AUDIO/DATA
M	12-STR MULTI-MODE OPTIC FIBER	BELDEN/AS REQ'D	VIDEO/AUDIO/DATA
N	2-STR MULTI-MODE OPTIC FIBER	BELDEN/AS REQ'D	VIDEO/AUDIO/DATA
R	#12 AWG THWN	BELDEN/AS REQ'D	DEVICE POWER
S	RG-6 COPPER BRAIDED	SUBMIT/AS REQ'D	VIDEO SIGNAL

LEGEND

DOOR/GATE CONTROL AND MONITORING SYSTEM				
SYMBOL	DESCRIPTION	WIRE TYPE	MOUNTING HEIGHT	KEY NOTE
⊙	EXISTING REQUEST TO EXIT PUSH BUTTON	-	-	-
⊕	EXISTING ELECTRIC LOCK HARDWARE W/ POSITION LIMIT SWITCH, PROVIDED BY OTHER DIVISIONS	-	-	-
◆	EXISTING DOOR POSITION SWITCH (DPS)	-	-	-
INTERCOMMUNICATION SYSTEM				
SYMBOL	DESCRIPTION	WIRE TYPE	MOUNTING HEIGHT	KEY NOTE
⊠	EXISTING INTERCOM CALL STATION	-	-	-
⊠	EXISTING SPEAKER, WALL MOUNTED	-	-	-
⊠	EXISTING SPEAKER, CEILING MOUNTED	-	-	-
DURESS ALARM SYSTEM				
SYMBOL	DESCRIPTION	WIRE TYPE	MOUNTING HEIGHT	KEY NOTE
⊠	EXISTING DURESS ALARM STATION	-	-	-
VIDEO SURVEILLANCE (CCTV) SYSTEM				
SYMBOL	DESCRIPTION	WIRE TYPE	MOUNTING HEIGHT	KEY NOTE
⊠	EXISTING FIXED COLOR CAMERA IN DOME HOUSING: 'C#' DENOTES CAMERA NUMBER	-	-	-
⊠	EXISTING PAN/TILT/ZOOM (PTZ) COLOR CAMERA: 'C#' DENOTES CAMERA NUMBER	-	-	-
M	VIDEO MONITOR WITH MOUNT	1C	WALL MTD.	
VR	VIDEO EQUIPMENT RACK	N/A	-	
RACEWAYS AND BOXES				
SYMBOL	DESCRIPTION	WIRE TYPE	MOUNTING HEIGHT	KEY NOTE
J	JUNCTION BOX	N/A	AS REQ'D	
PLC SYSTEM				
SYMBOL	DESCRIPTION	WIRE TYPE	MOUNTING HEIGHT	KEY NOTE
PLC	PROGRAMMABLE LOGIC CONTROLLER	-	AS REQ'D	
CP	EXISTING CUSTOM CONTROL PANEL	-	-	
TP	TOUCHSCREEN PANEL	-	AS REQ'D	

EXISTING PAGING ZONE SCHEDULE

ZONE NO:	AREAS INCLUDED IN ZONE
ZONE A	LOADING DOCK - 223 CORRIDOR - 2332 OFFICE - 225 OFFICE - 225 KITCHEN - 231 VESTIBULE - 227
ZONE B	VESTIBULE - 237 CORRIDOR - 238 CORRIDOR - 238B ROOM - 254 ROOM - 255 CORRIDOR - 253
ZONE C	CORRIDOR - 285 VESTIBULE - 286 INMATE SERVICES - 215 COMMISSARY - 214 CORRIDOR - 273 LAUNDRY - 270 MALE PROPERTY - 271 FEMALE PROPERTY - 272 BOOKING - 260 BOOKING - 279 SALLYPORT - 257 DETOX - 256 REPORTS - 258 STAIR #11
ZONE D	VEHICLE SALLYPORT
ZONE E	TRAINING - 357 BRIEFING - 356 DINING - 355 CORRIDOR - 328 CORRIDOR - 344 CORRIDOR - 341 LOCKER - 333 LOCKER - 335

CONTRACTOR SHALL VERIFY EXISTING PAGING ZONES THROUGHOUT THE FACILITY AND ENSURE THAT ALL ZONES ARE MAINTAINED AND FUNCTIONAL AFTER CONVERTING THE EXISTING CONTROL PANELS TO TOUCHSCREEN PANELS.

AVS ENGINEERS, INC
Security and Low Voltage Division

556 N. Diamond Bar Blvd, Suite 112 Tel: 909.860.1400
Diamond Bar, CA 91765 Fax: 909.860.1442

Project Location
EL DORADO COUNTY
COUNTY JAIL
PLACERVILLE, CA

Project Name
SECURITY UPGRADES

AVS Project No.: S13-01010

ISSUE DESCRIPTION DATE
100%CD 11/15/2013

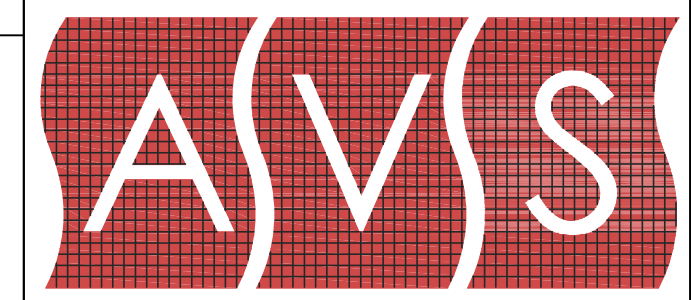
Key Plan

Drawing Title
NOTES, SHEET INDEX, SCHEDULE AND ABBREVIATIONS

Scale: AS SHOWN
Drawn By: S. HON
Reviewed By: B. JUNG
Date: 11/15/2013
Drawing Number
EC001

GENERAL NOTES

- CONTRACTOR SHALL INCLUDE IN HIS BID ALLOWANCE FOR UP TO 5% DISCREPANCY IN THE LOCATIONS, QUANTITY, AND TYPE OF EXISTING FIELD DEVICES SHOWN ON THE DRAWINGS AND SPECIFICATIONS (REFER TO SCREENSHOTS) – MINOR DISCREPANCIES IN LOCATIONS AND TYPES OF DEVICES SHALL NOT BE CONSIDERED AS PART OF THE 5% ALLOWANCE.



Security and Low Voltage Division

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Project Location
EL DORADO COUNTY
COUNTY JAIL
PLACERVILLE, CA

Project Name
SECURITY UPGRADES

AVS Project No.: S13-01010



Tim Lind

ISSUE DESCRIPTION	DATE
100%CD	11/15/2013

Key Plan

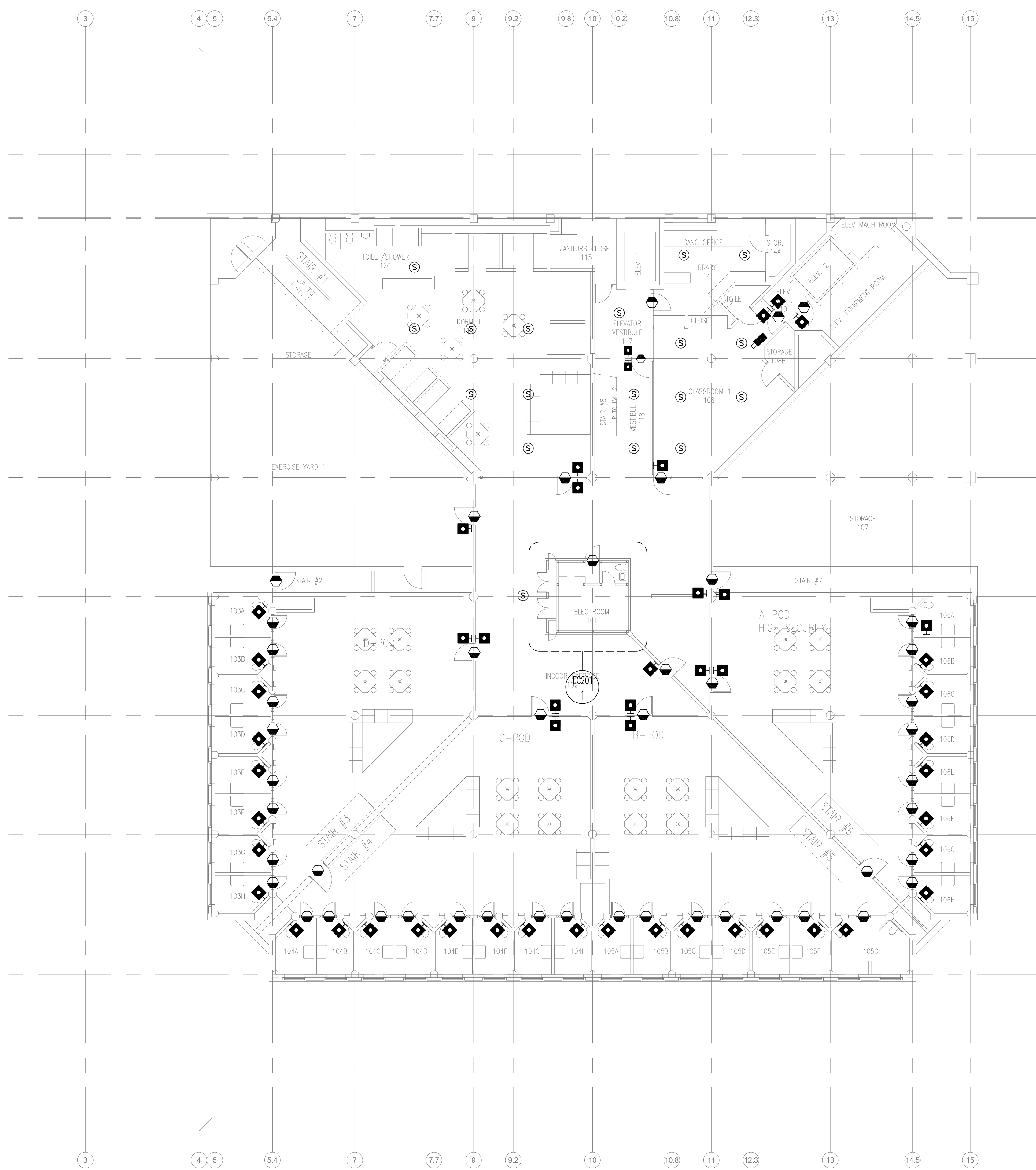
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DEVICE PLAN LEVEL 1

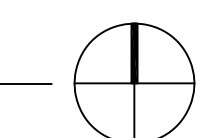
Scale:	AS SHOWN
Drawn By:	S. HON
Reviewed By:	B. JUNG
Date:	11/15/2013

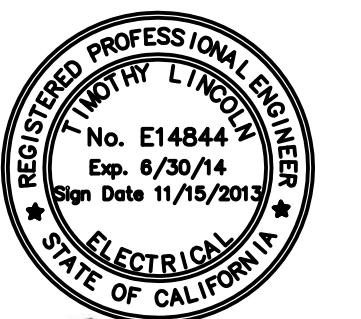
Drawing Number

EC101



1 DEVICE PLAN LEVEL 1
3/32" = 1'-0"





Tim Lincoln

ISSUE DESCRIPTION	DATE
100%CD	11/15/2013

GENERAL NOTES

- CONTRACTOR SHALL INCLUDE IN HIS BID ALLOWANCE FOR UP TO 5% DISCREPANCY IN THE LOCATIONS, QUANTITY, AND TYPE OF EXISTING FIELD DEVICES SHOWN ON THE DRAWINGS AND SPECIFICATIONS (REFER TO SCREENSHOTS) - MINOR DISCREPANCIES IN LOCATIONS AND TYPES OF DEVICES SHALL NOT BE CONSIDERED AS PART OF THE 5% ALLOWANCE.

Key Plan

Drawing Title

DEVICE PLAN LEVEL 2

Scale: AS SHOWN

Drawn By: S. HON

Reviewed By: B. JUNG

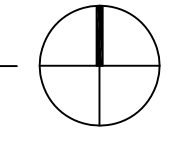
Date: 11/15/2013

Drawing Number

EC102



1 DEVICE PLAN LEVEL 2
 3/32" = 1'-0"



Project Location
 EL DORADO COUNTY
 COUNTY JAIL
 PLACERVILLE, CA

Project Name
 SECURITY UPGRADES

AVS Project No.: S13-01010



Tim Lind

GENERAL NOTES

- CONTRACTOR SHALL INCLUDE IN HIS BID ALLOWANCE FOR UP TO 5% DISCREPANCY IN THE LOCATIONS, QUANTITY, AND TYPE OF EXISTING FIELD DEVICES SHOWN ON THE DRAWINGS AND SPECIFICATIONS (REFER TO SCREENSHOTS) - MINOR DISCREPANCIES IN LOCATIONS AND TYPES OF DEVICES SHALL NOT BE CONSIDERED AS PART OF THE 5% ALLOWANCE.

ISSUE DESCRIPTION	DATE
100%CD	11/15/2013

Key Plan

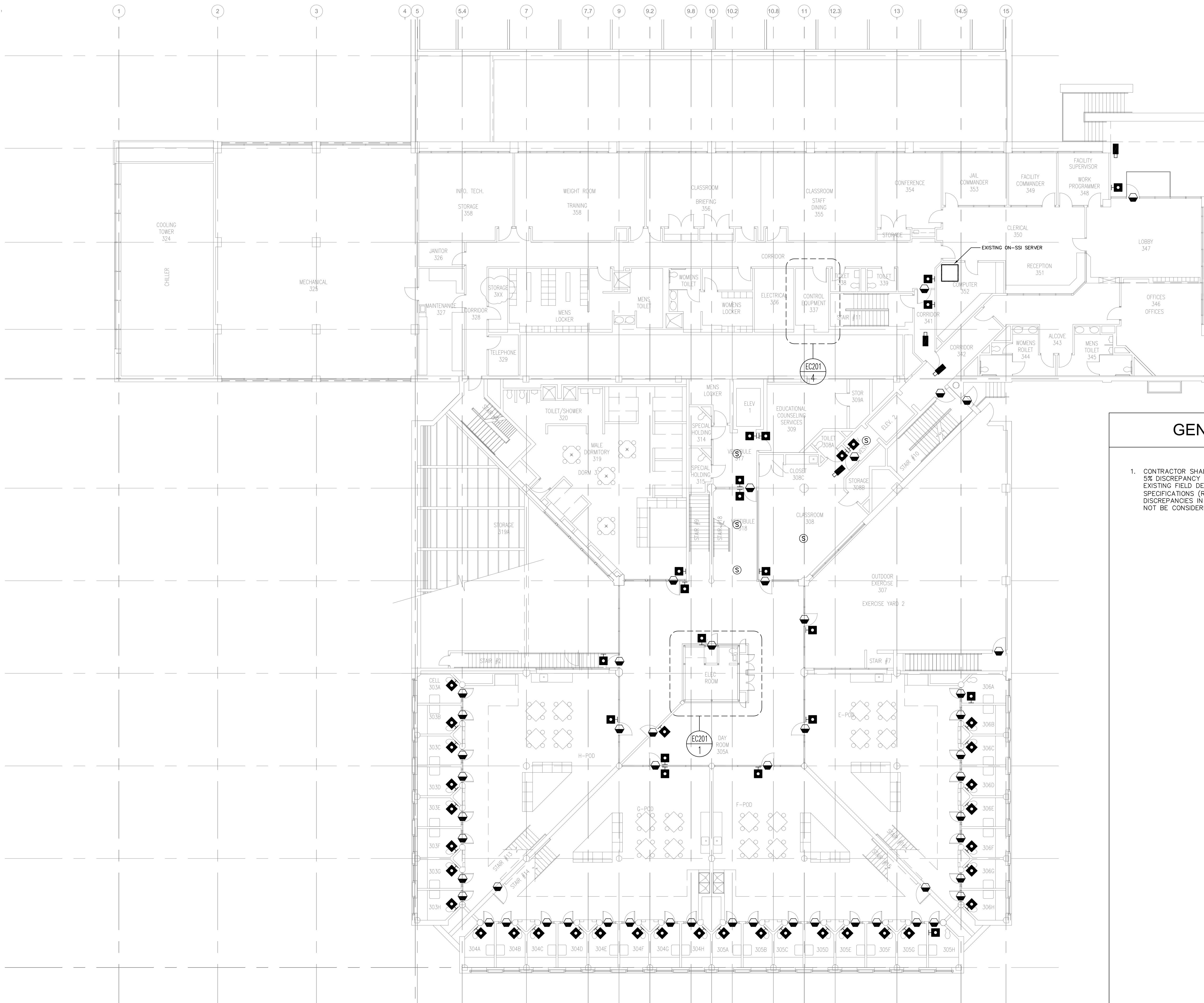
Drawing Title

DEVICE PLAN LEVEL 3

Scale:	AS SHOWN
Drawn By:	S. HON
Reviewed By:	B. JUNG
Date:	11/15/2013

Drawing Number

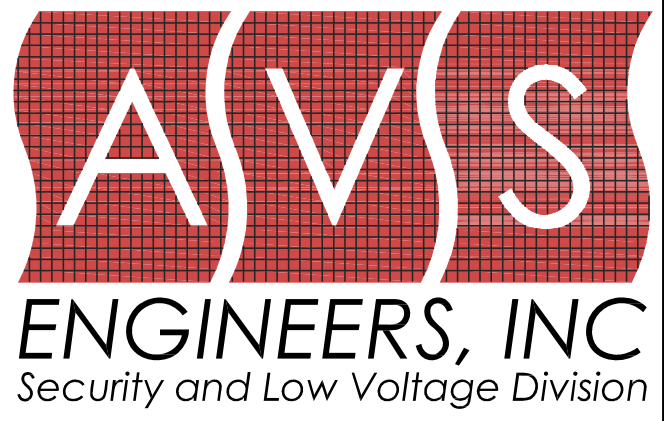
EC103



1 DEVICE PLAN LEVEL 3
 3/32" = 1'-0"

GENERAL NOTES

- CONTRACTOR SHALL INCLUDE IN HIS BID ALLOWANCE FOR UP TO 5% DISCREPANCY IN THE LOCATIONS, QUANTITY, AND TYPE OF EXISTING FIELD DEVICES SHOWN ON THE DRAWINGS AND SPECIFICATIONS (REFER TO SCREENSHOTS) - MINOR DISCREPANCIES IN LOCATIONS AND TYPES OF DEVICES SHALL NOT BE CONSIDERED AS PART OF THE 5% ALLOWANCE.

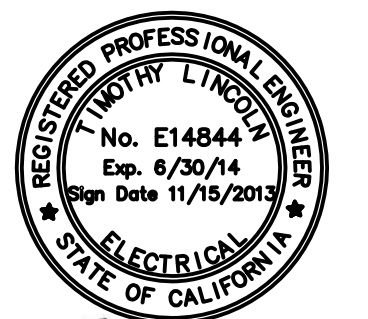


556 N. Diamond Bar Blvd, Suite 112 Tel: 909.860.1400
Diamond Bar, CA 91765 Fax: 909.860.1442

Project Location
EL DORADO COUNTY
COUNTY JAIL
PLACERVILLE, CA

Project Name
SECURITY UPGRADES

AVS Project No.: S13-01010



Tim Lind

ISSUE DESCRIPTION	DATE
100%CD	11/15/2013

Key Plan

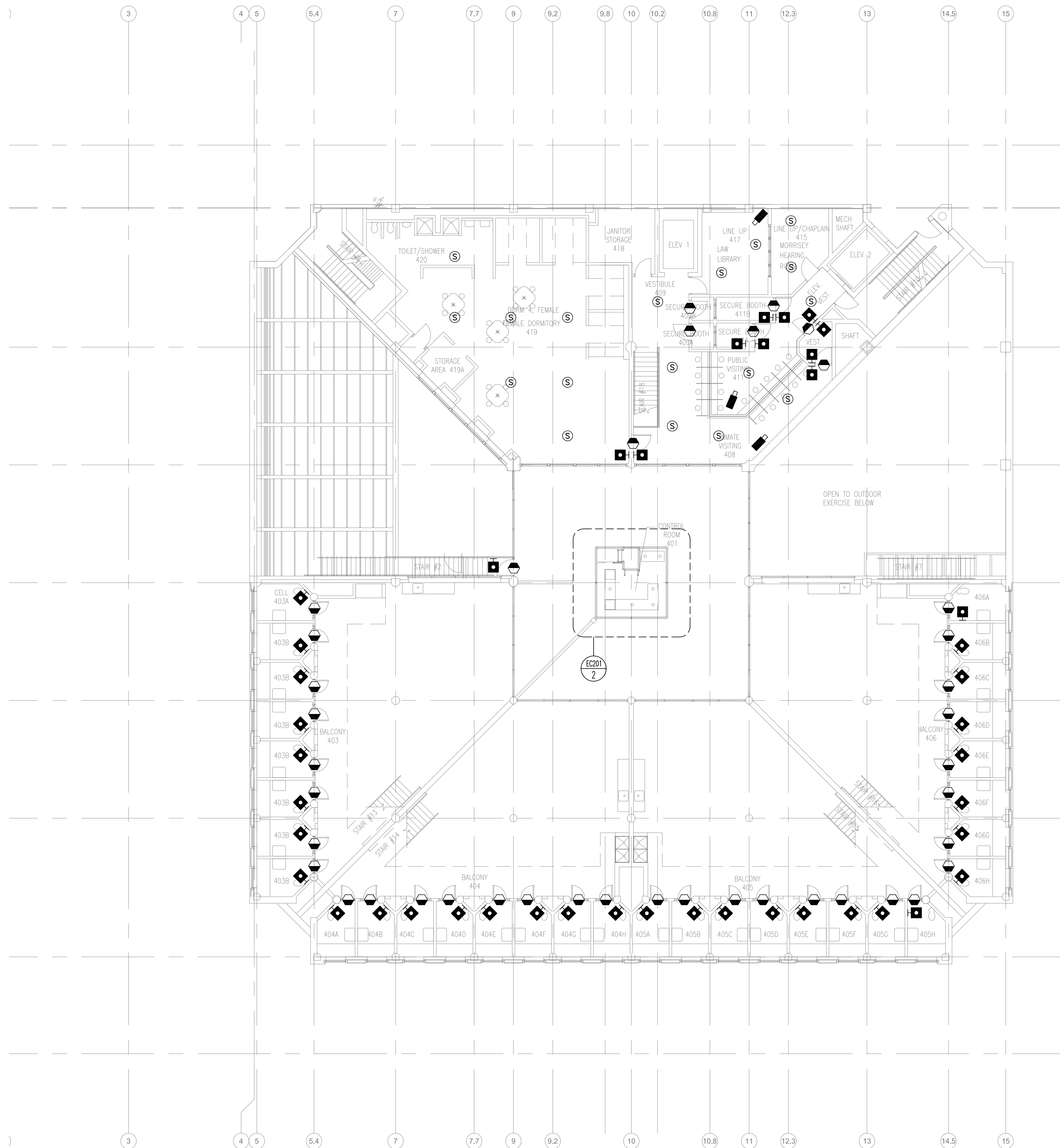
Drawing Title

DEVICE PLAN LEVEL 4

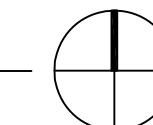
Scale:	AS SHOWN
Drawn By:	S. HON
Reviewed By:	B. JUNG
Date:	11/15/2013

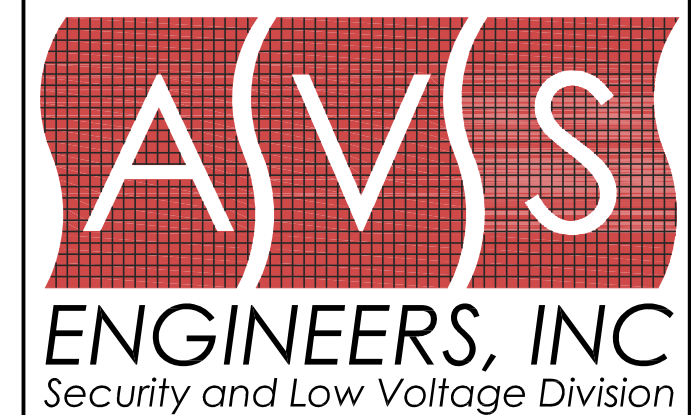
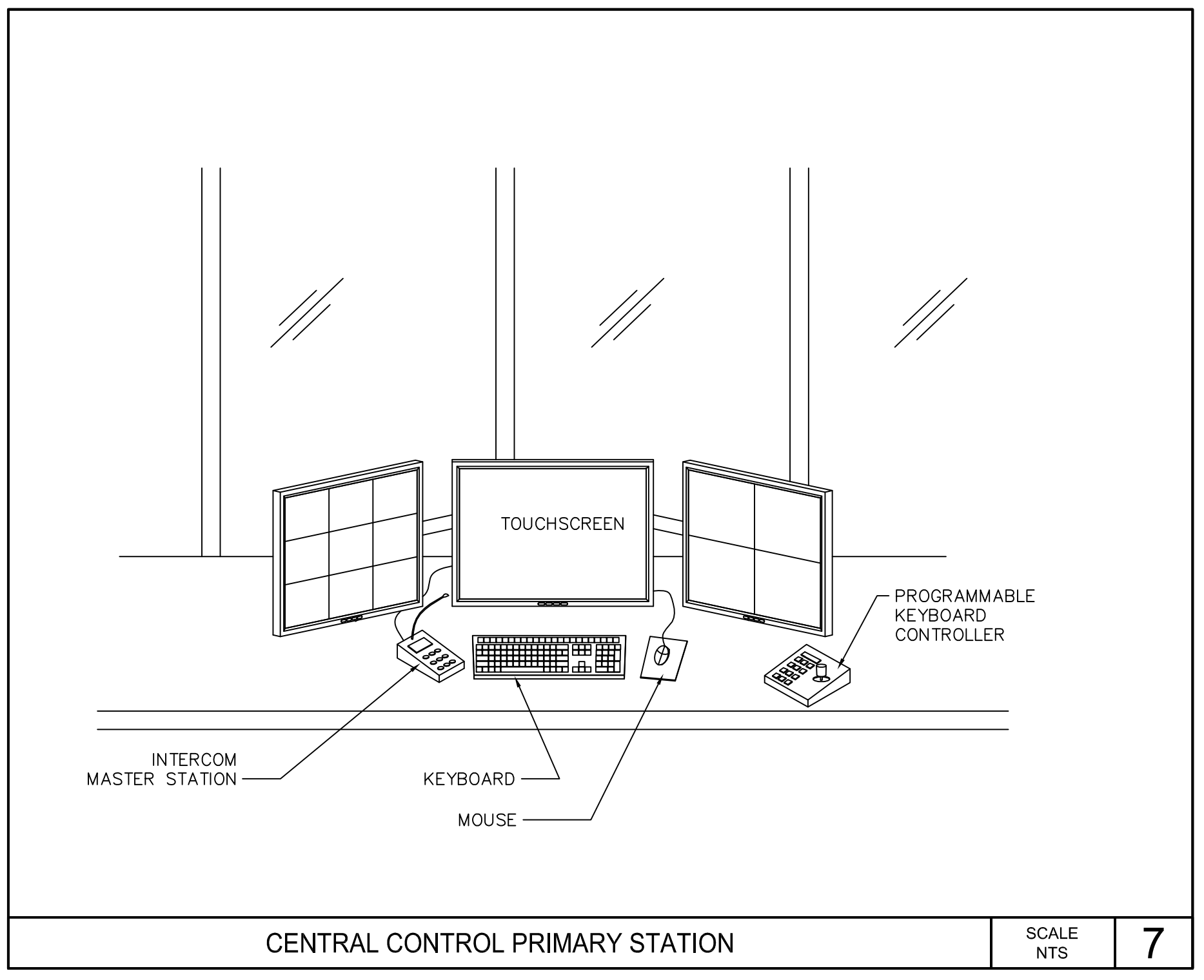
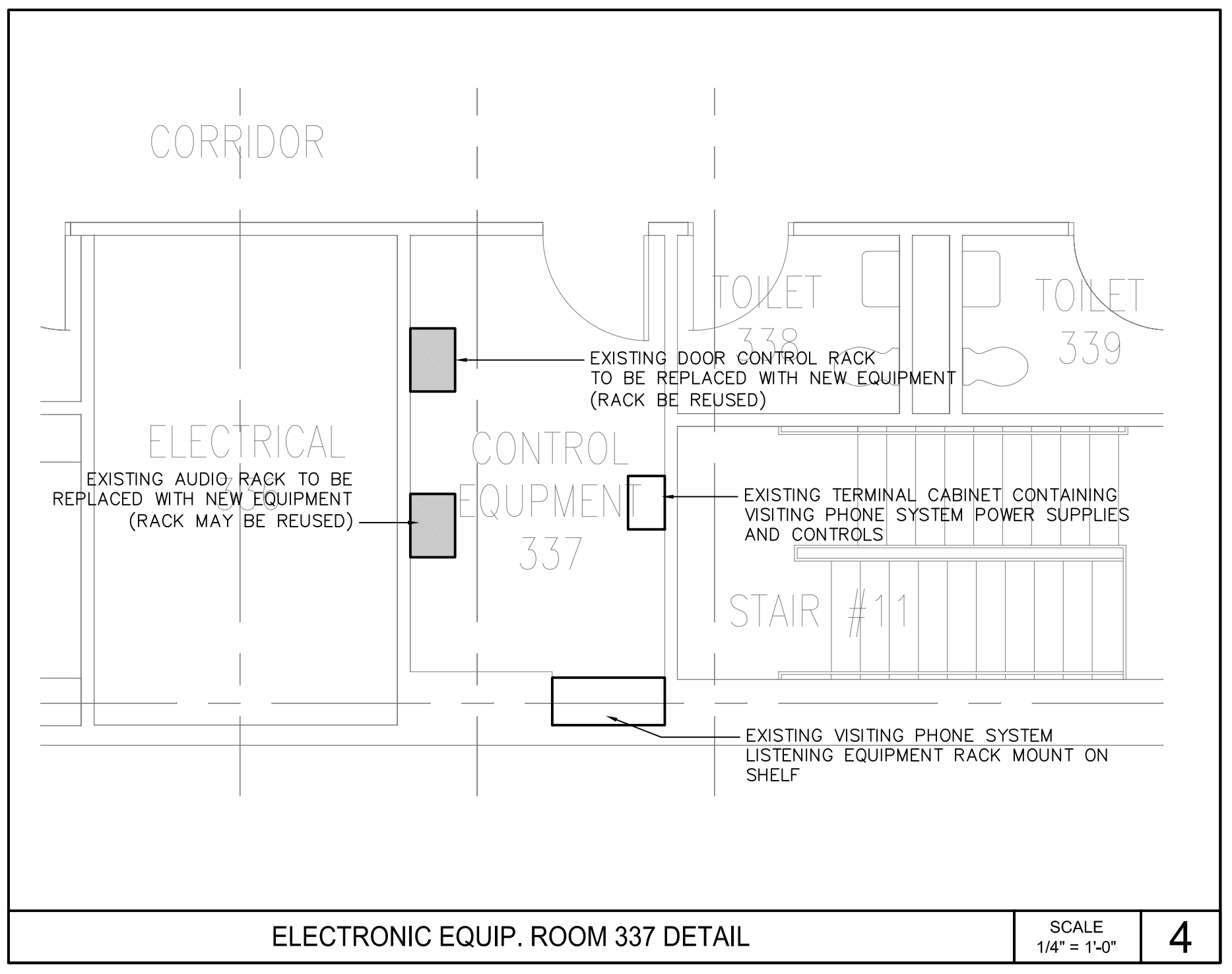
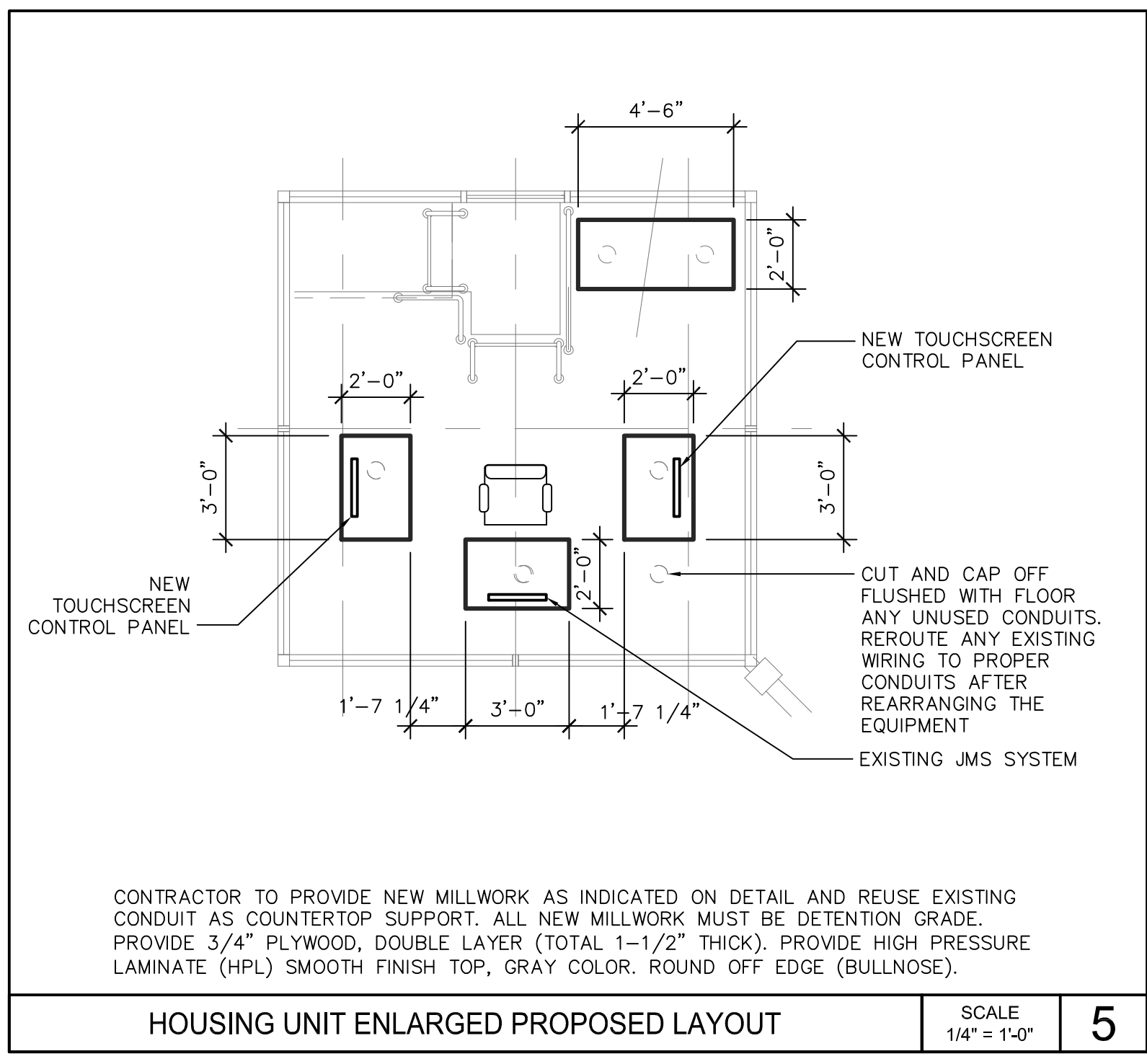
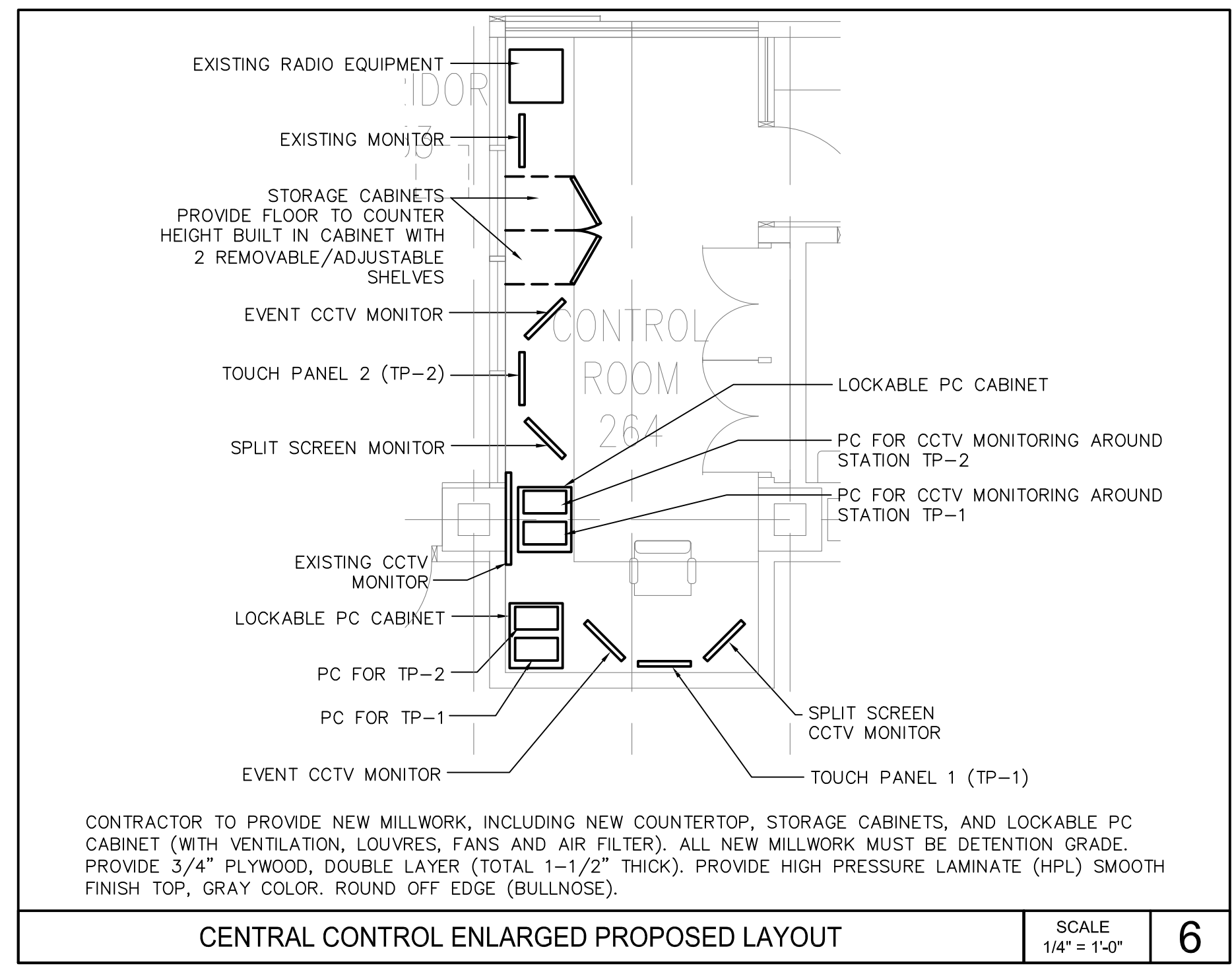
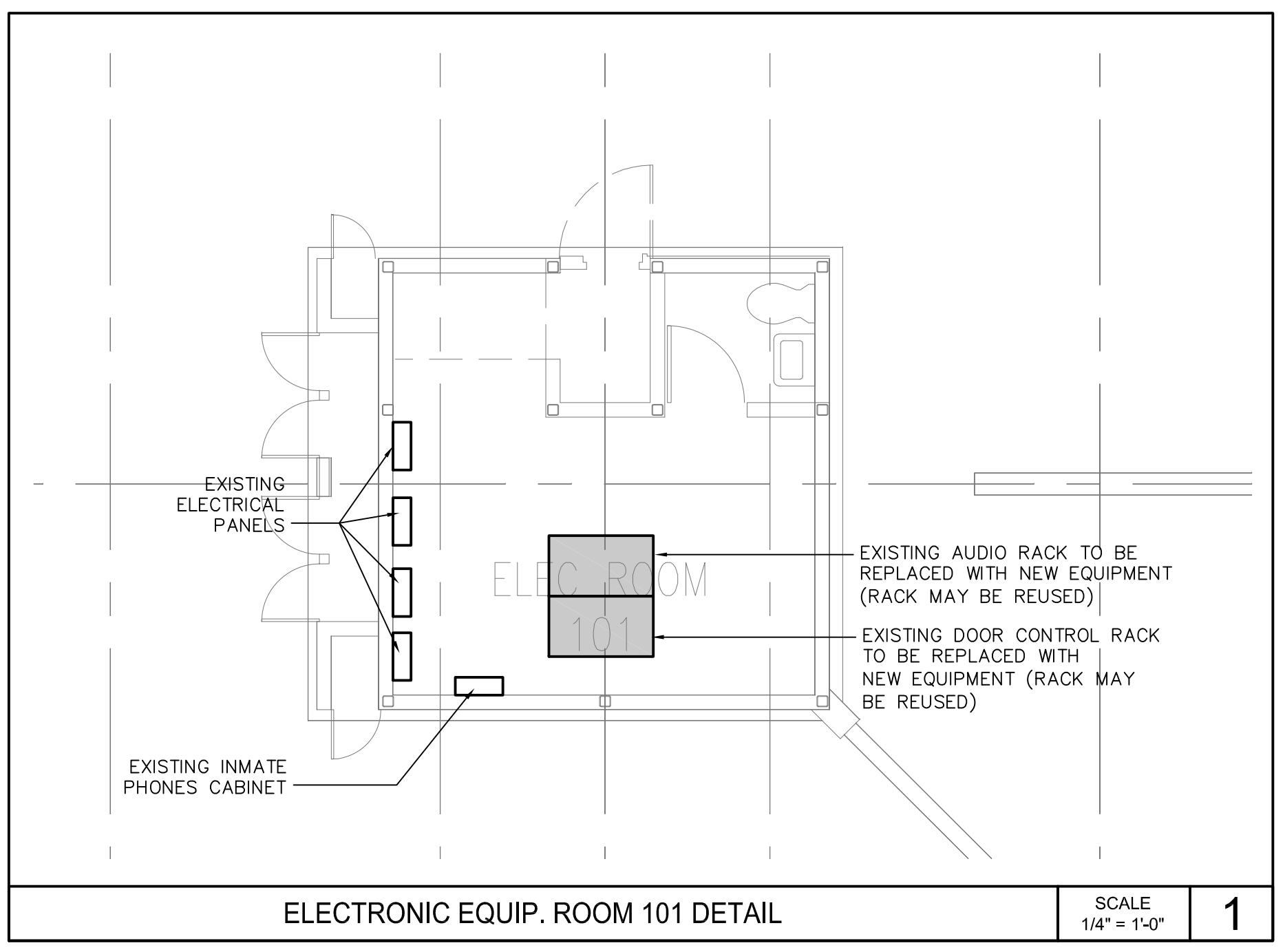
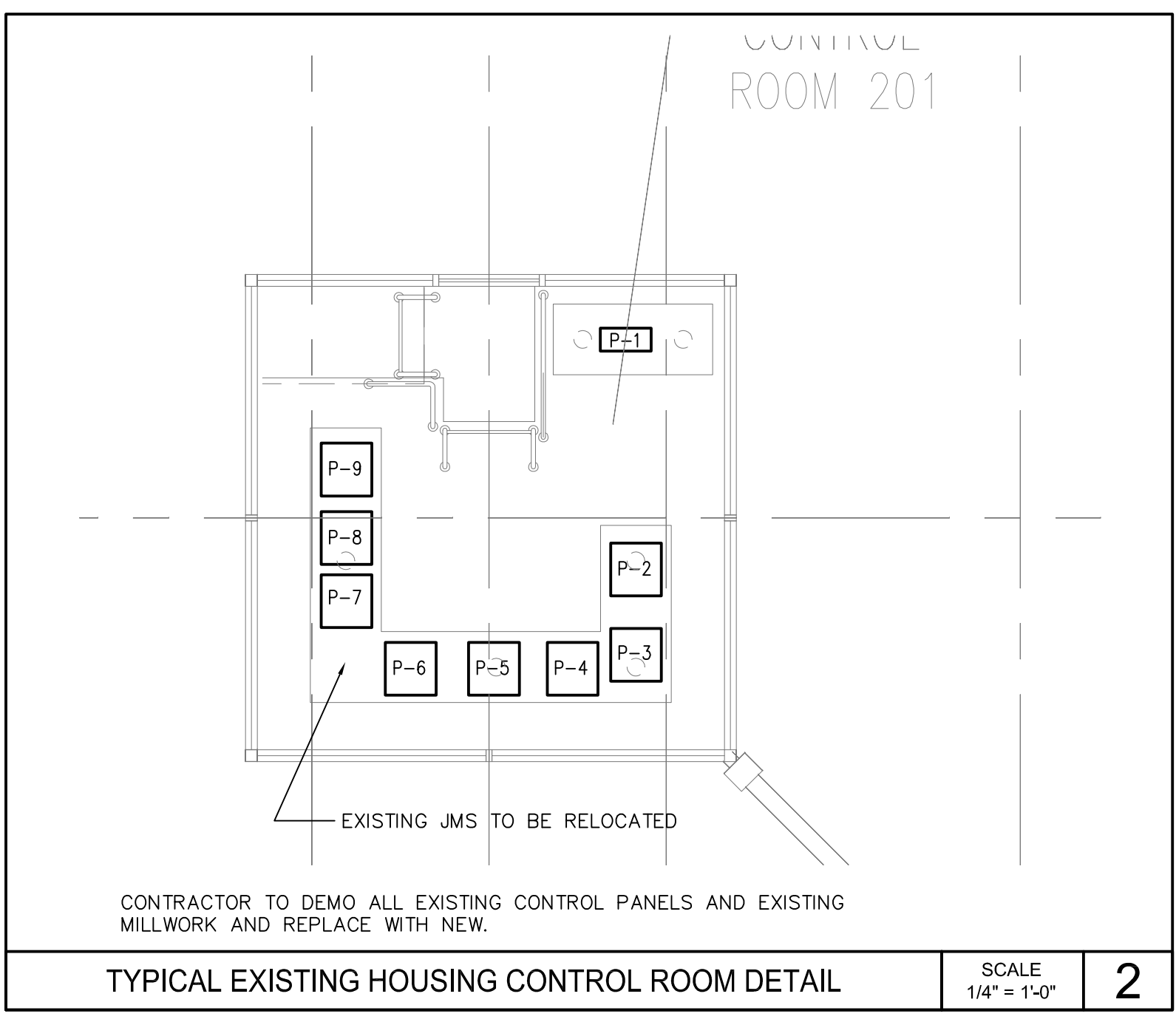
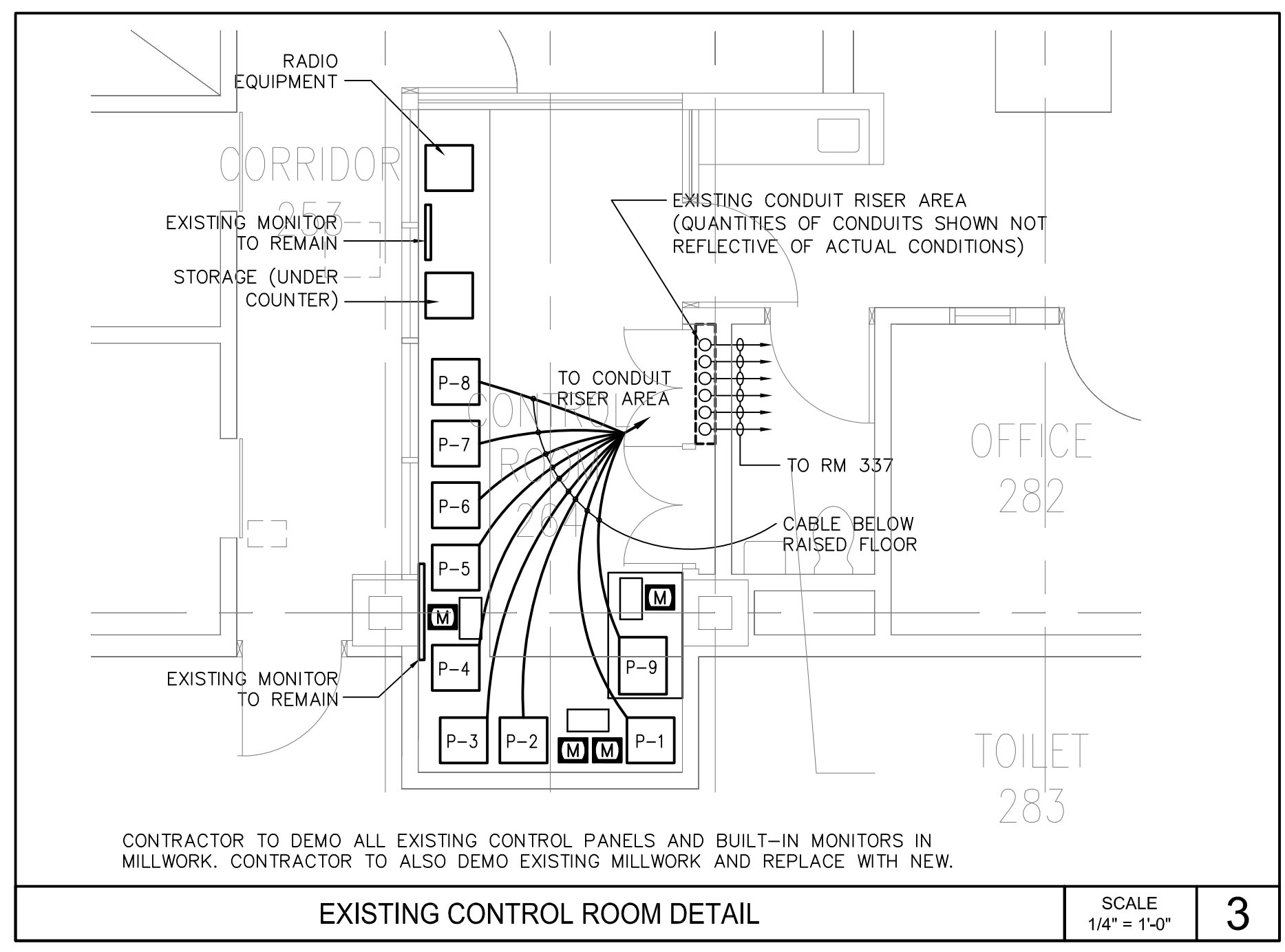
Drawing Number

EC104



1 DEVICE PLAN LEVEL 4
3/32" = 1'-0"



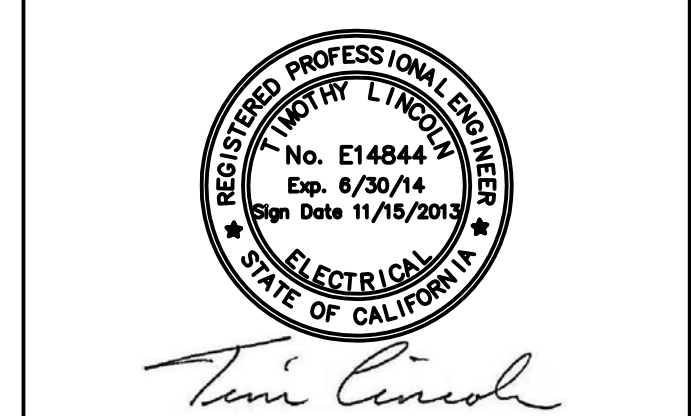


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Diamond Bar, CA 91765 Fax: 909.860.1442

Project Location
EL DORADO COUNTY
COUNTY JAIL
PLACERVILLE, CA

Project Name
SECURITY UPGRADES

AVS Project No.: S13-01010



ISSUE DESCRIPTION	DATE
100%CD	11/15/2013

Key Plan

Drawing Title
ENLARGED ROOM LAYOUTS

Scale:	AS SHOWN
Drawn By:	S. HON
Reviewed By:	B. JUNG
Date:	11/15/2013

Drawing Number

EC201



Tim Trinchese

ISSUE DESCRIPTION	DATE
100%CD	11/15/2013

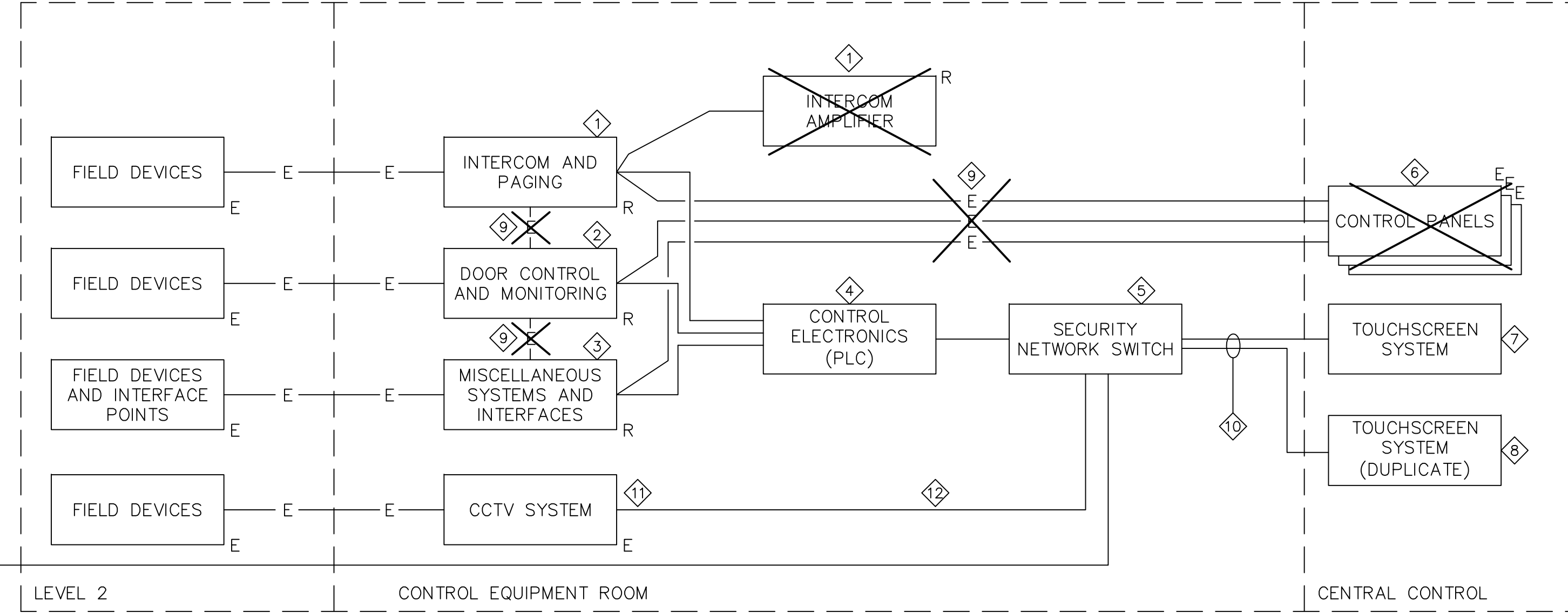
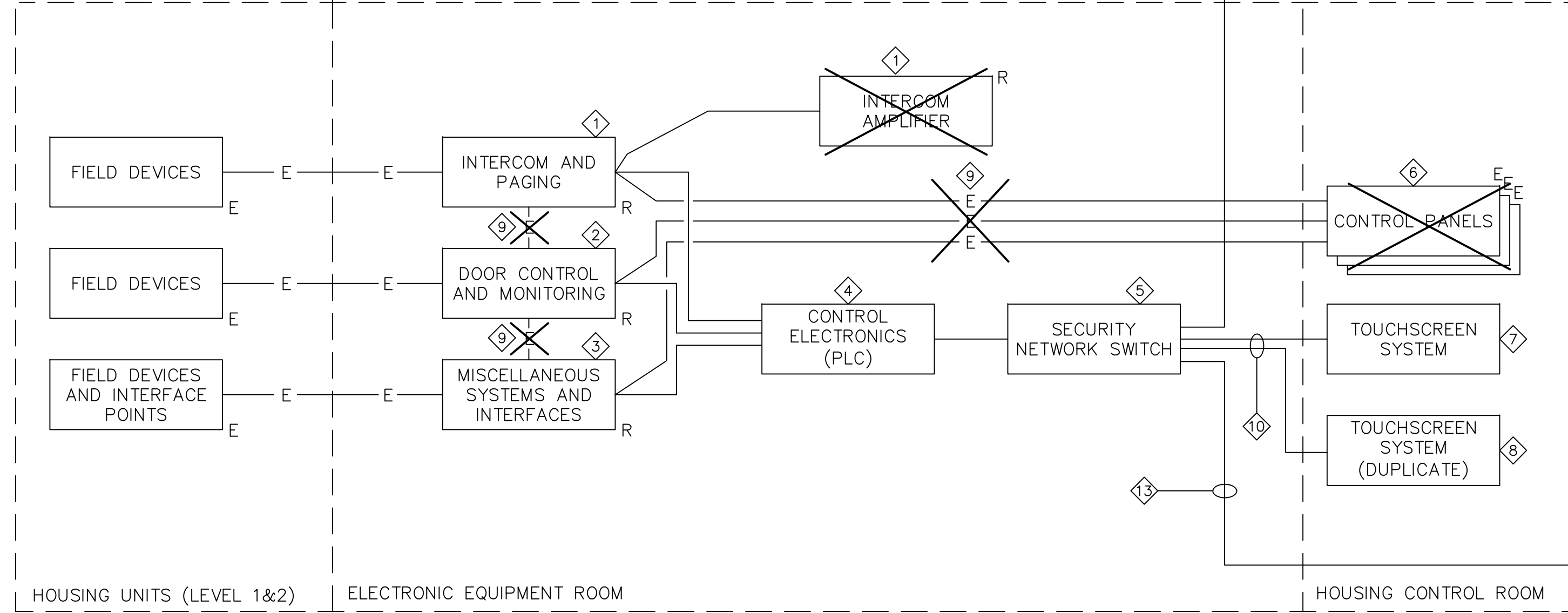
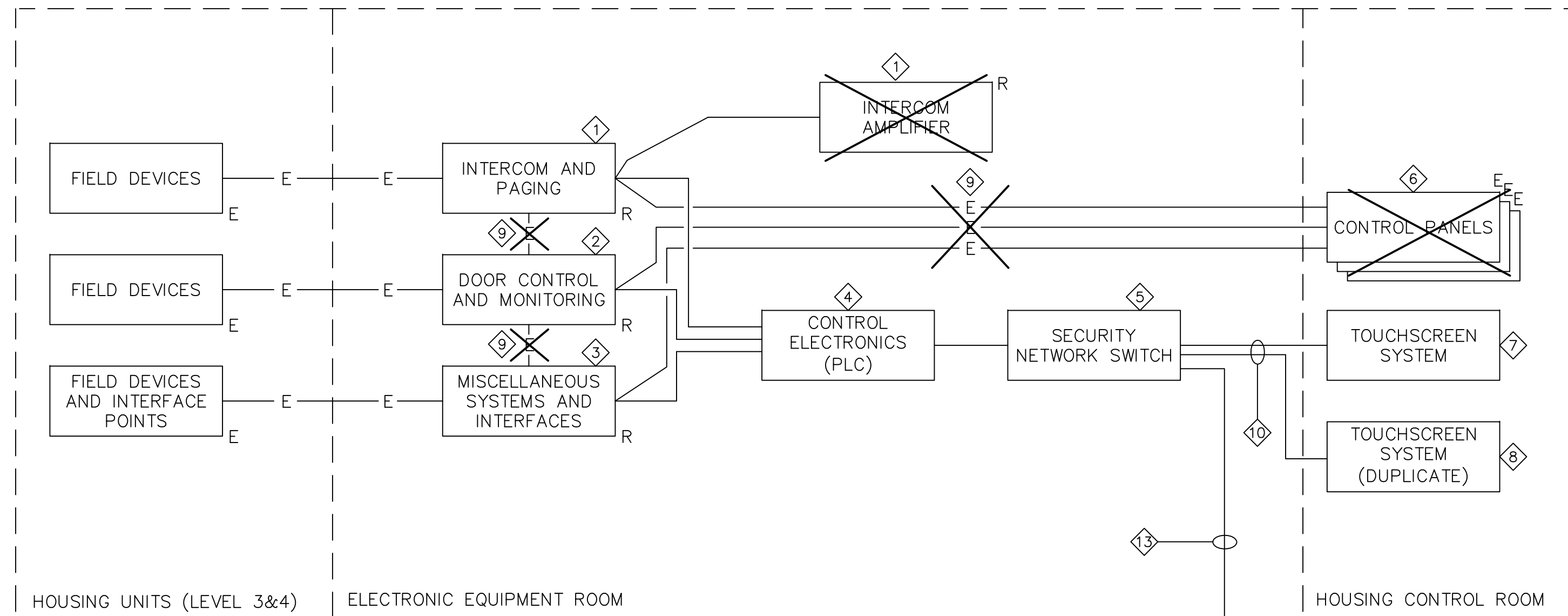
Key Plan

GENERAL NOTES:

- CONTRACTOR SHALL INCLUDE IN HIS BID ALLOWANCE FOR UP TO 5% DISCREPANCY IN THE LOCATIONS, QUANTITY, AND TYPE OF EXISTING FIELD DEVICES SHOWN ON THE DRAWINGS AND SPECIFICATIONS (REFER TO SCREENSHOTS) - MINOR DISCREPANCIES IN LOCATIONS AND TYPES OF DEVICES SHALL NOT BE CONSIDERED AS PART OF THE 5% ALLOWANCE.
- PROVIDE NEW RACK MOUNTED UPS IN EACH EQUIPMENT ROOM WITH MINIMUM 15 MINUTES OF BATTERY BACKUP AND SPARE LOAD CAPACITY OF 100%. ALL SECURITY ELECTRONICS EQUIPMENT MUST BE POWERED VIA UPS. CONNECT UPS TO EMERGENCY POWER.

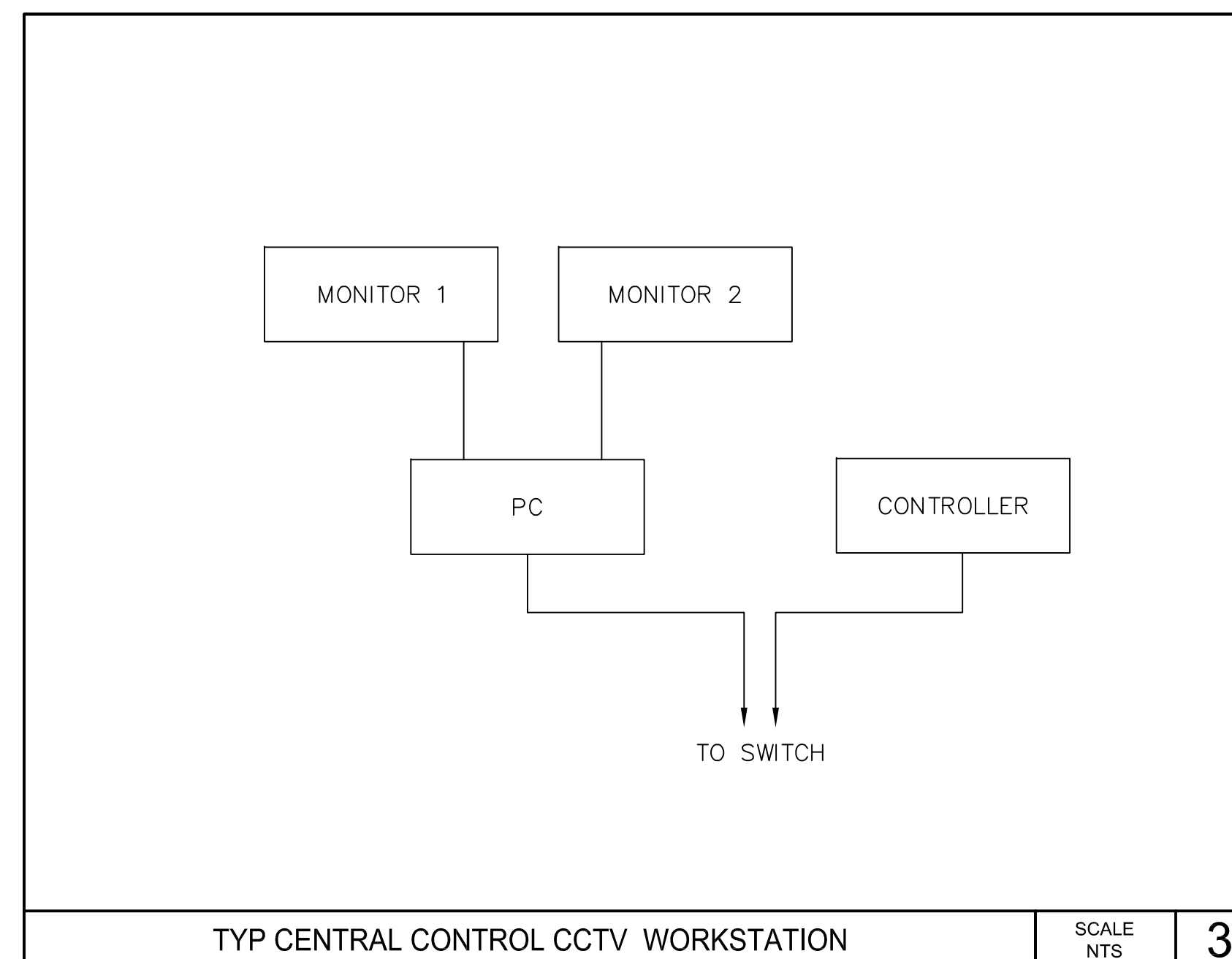
KEY NOTES BY SYMBOL "Ⓝ":

- EXISTING INTERCOM, PAGING, AND RELATED AUDIO EQUIPMENT TO BE REMOVED AND REPLACED WITH NEW. TIE THE NEW SYSTEM EQUIPMENT TO NEW CONTROL ELECTRONICS PLC SYSTEM.
- EXISTING DURESS ALARM, DOOR CONTROL AND MONITORING SWITCHING ELECTRONICS AND RELAYS TO BE REMOVED AND REPLACED WITH NEW. TIE THE NEW SYSTEM EQUIPMENT TO NEW CONTROL ELECTRONICS PLC SYSTEM.
- EXISTING MISCELLANEOUS SYSTEMS AND INTERFACES (LIKE DURESS ALARM AND TELEPHONE CONTROL) TO BE REPLACED WITH NEW (JUST THE CONTROLS). TIE THE NEW SYSTEM INTERFACES TO NEW CONTROL ELECTRONICS PLC SYSTEM.
- PROVIDE NEW CONTROL ELECTRONICS PLC SYSTEM. PROVIDE ALL NECESSARY INTERFACES AND RELAYS TO MONITOR/CONTROL EXISTING DEVICES.
- PROVIDE NEW NETWORK SWITCH TO TIE IN THE NEW CONTROL ELECTRONICS PLC WITH THE EXISTING AND REPLACED ELECTRONICS SYSTEMS.
- EXISTING CONTROL PANELS SHALL BE DEMOLISHED AND REPLACED WITH A NEW TOUCHSCREEN SYSTEM.
- PROVIDE NEW TOUCHSCREEN SYSTEM (INCLUDING NEW TOUCHSCREEN PANEL) TO REPLACE THE EXISTING CONTROL PANELS. ALL FUNCTIONS SHALL BE PRESERVED. SUBMIT GRAPHICAL MAPS FOR APPROVAL BY THE COUNTY PRIOR TO PROGRAMMING.
- PROVIDE A DUPLICATE REDUNDANT TOUCHSCREEN SYSTEM.
- EXISTING WIRING TO BE REMOVED.
- PROVIDE CONDUIT AND WIRING NECESSARY TO INTERCONNECT DEVICE/EQUIPMENT WITH DEVICE/EQUIPMENT AS SHOWN.
- TIE EXISTING CCTV SYSTEM (ONSSI + NVR LOCATED IN COMPUTER 352) INTO NETWORK SWITCH. INTERFACE WITH PLC SYSTEM AND HMI SOFTWARE TO AUTOMATICALLY CALL UP CAMERAS UPON EVENT ALARMS AND INTERCOM CALLS. ALSO ALLOW CAMERA SELECTION FROM THE HMI TOUCH SCREEN. THERE ARE AN ADDITIONAL 27 CAMERAS CONNECTED TO THE COUNTY LAN, WHICH TIE INTO THE EXISTING ON-SSI SERVER (NOT SHOWN ON PLANS) 24 OF THE CAMERAS WILL BE LOCATED IN THE HOUSING PODS, 3 OF THEM IN THE KITCHEN AREA. THE EXISTING ON-SSI SERVER SOFTWARE IS NETDVM5 VERSION 6.5G WITH NETGUARD EVS CLIENT VERSION 4.6G, RUNNING MICROSOFT SQL SERVER 2008. CONTRACTOR TO PROVIDE NEW WORKSTATION WITH IDENTICAL OR GREATER (ENSURE THAT IT IS BACKWARDS COMPATIBLE), INCLUDING ADDITIONAL SOFTWARE AS REQUIRED TO DISPLAY AND MONITOR ALL EXISTING CAMERAS (BOTH THOSE SHOWN ON THE PLANS, AND THE ADDITIONAL 27 CAMERAS). THE NEW WORKSTATION TO BE HOUSED IN CENTRAL CONTROL UNDERDESK AND INTERFACE WITH THE PLC SYSTEM FOR AUTOMATIC CALL UP OF CAMERAS UPON AN INTERCOM CALL, DURESS ALARM, DOOR BREACH, OR ANY OTHER EVENT ALARM.
- PROVIDE NEW NETWORK CONNECTION (WIRE AND CONDUIT) TO NETWORK SWITCH FOR COMMUNICATION NETWORK TO PLC SYSTEM.
- PROVIDE 6-STRAND MULTIMODE FIBER IN 1" CONDUIT. INCLUDE PATCH PANELS, TRANSCEIVERS, AND ALL TERMINATIONS FOR FIBER NETWORK.



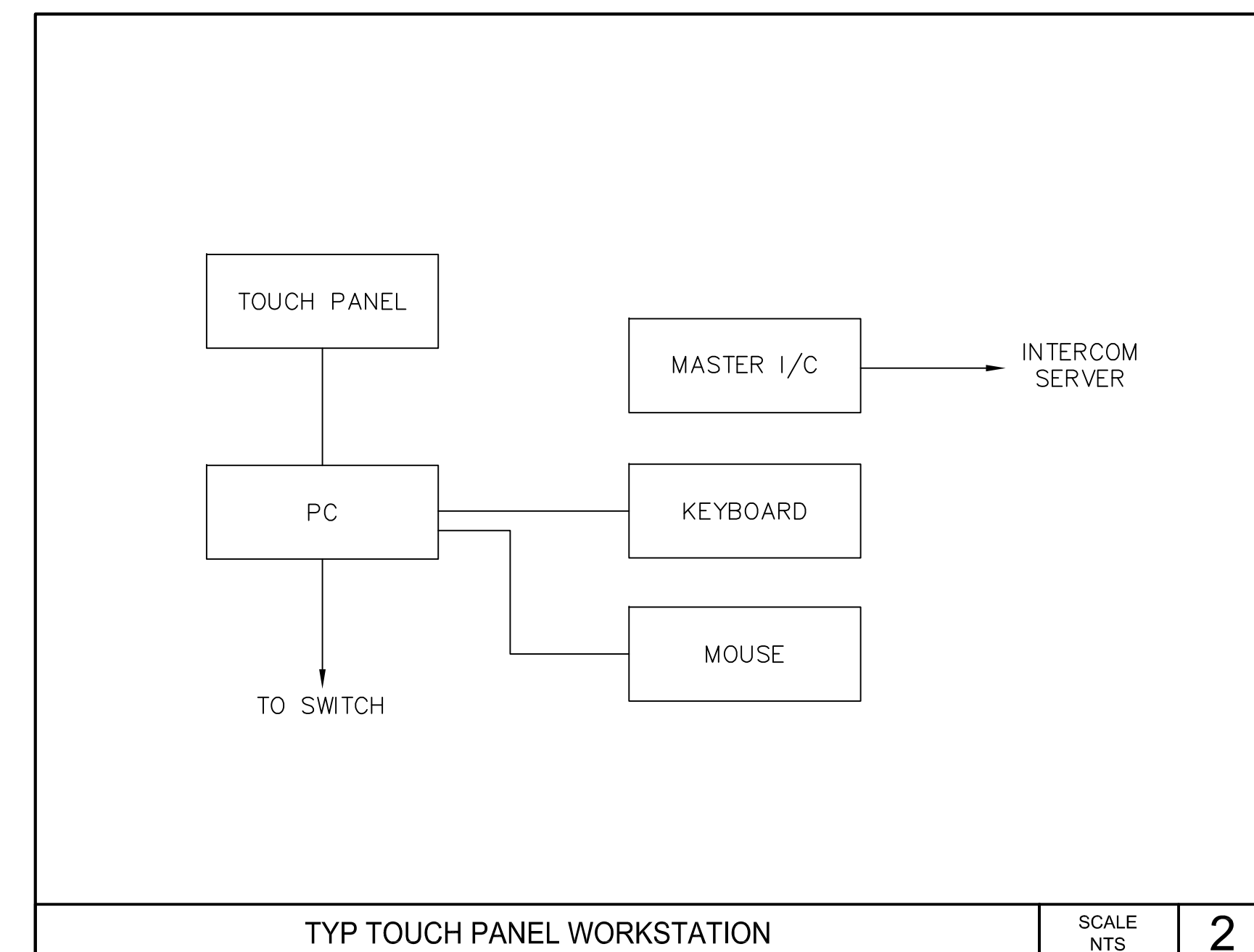
CONTROL ELECTRONICS BLOCK DIAGRAM

SCALE NTS 1



TYP CENTRAL CONTROL CCTV WORKSTATION

SCALE NTS 3



TYP TOUCH PANEL WORKSTATION

SCALE NTS 2

Drawing Title

CONTROL ELECTRONICS
BLOCK DIAGRAM

Scale:	AS SHOWN
Drawn By:	S. HON
Reviewed By:	B. JUNG
Date:	11/15/2013

Drawing Number

EC301