



The Reno-Sparks Convention & Visitors Authority is soliciting a  
Bid for  
**Reno-Sparks Convention Center Security Camera Upgrade**  
**RFP 2022-04**  
**PWP-WA-2022-358**

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*Released by Jose Martinez, Project Manager*  
(Friday, May 27, 2022)

The Point of Contact is Jose Martinez, Project Manager at (775) 827-7768, or  
e-mail [jmartinez@renotahoeusa.com](mailto:jmartinez@renotahoeusa.com).

All questions or additional information concerning the Bid document must be submitted to the point of contact. No communication to any other staff or Board Member of the Reno-Sparks Convention & Visitors Authority regarding this Bid is allowed.

**SUBMISSION DATE AND TIME: Tuesday, June 21, 2022, 3:00 PM**

Company Name:\_\_\_\_\_



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## I. INTRODUCTION

The Reno-Sparks Convention and Visitors Authority ("Authority") is currently accepting sealed responses from qualified Bidders (a "Bidder") for the provision of services, as set forth in this **RFP 2022-04 PWP-WA-2022-358**.

The Authority, an independent governmental entity, was established in February 1959 as the Washoe County Fair and Recreation Board. The Authority owns and/or operates the Reno-Sparks Convention Center, Reno Events Center, National Bowling Stadium, and the Reno-Sparks Livestock Events Center. The Authority is operating instrumentality in the Washoe County area for promoting conventions, tourism, and outdoor recreation.

This RFP is for a Security Camera Upgrade at the Reno-Sparks Convention Center.

## II. SCHEDULE

Request for Proposals Available	<b>Friday, May 27, 2022</b>
<b>Mandatory Pre-Bid Meeting</b>	<b>Tuesday, June 7, 2022, 9:00AM (PDT)</b>
Written Questions Due (if any)	<b>Wednesday, June 15, 2022, 5:00PM (PDT)</b>
Written Responses to Questions Issued	<b>Friday, June 17, 2022, 5:00PM (PDT)</b>
Bid Responses Due	<b>Tuesday, June 21, 2022, 3:00PM(PDT)</b>
Bid Opening Time	<b>Tuesday, June 21, 2022, 3:10PM(PDT)</b>

**A Mandatory Pre-Bid meeting will occur on June 7, 2022, 9:00 AM (PDT), at the Reno-Sparks Convention Center, Administrative Offices, 4590 South Virginia Street, Reno, Nevada.**

Any irregularities or lack of clarity in this Bid should be brought to the attention of the Point of Contact prior to or on the date for Written Questions set forth in this Section for correction or clarification.

Any addenda to this Bid issued will forthwith become an integral part of this Bid. Bidder is required to acknowledge receipt of same by signing and returning the addenda in its response.



### **III. SUBMISSION OF RESPONSE**

Bidder will submit its response to this Bid on the letterhead of its company, Bidder establishment, corporation, etc. attached to the original RFP 2022-04 PWP-WA-2022-358 document. Bidder will sign and return the **ENTIRE BID DOCUMENT**, together with any addenda.

Responses will be enclosed in a sealed envelope addressed to:

Reno-Sparks Convention and Visitors Authority  
Finance Department  
P.O. Box 837  
Reno, NV 89504-0837

Or delivered to:

Reno-Sparks Convention and Visitors Authority  
Finance Department  
4065 S. Virginia Street, Suite 100  
Reno, NV 89502

***Response envelope must indicate name and address of Bidder, Bid number, and opening date.***

In order for a response to be considered it will be mandatory that the response be in conformance with the terms and conditions of this Bid.



#### IV. BIDDER'S CHECKLIST

Bidders are instructed to complete and return the following items in order for their proposals to be complete. Failure to return all the items may result in your proposal being declared "non-responsive."

Bidder Information Requirements		Page	Completed
V.A.	Company Information	7	<input type="checkbox"/>
V.B.	Company Background	8	<input type="checkbox"/>
V.C.	Nevada Contractor License Information	9	<input type="checkbox"/>
V.D.	Business License Information	9	<input type="checkbox"/>
VI.	Subcontractors Exceeding 5% of Bid	10	<input type="checkbox"/>
VII.	Subcontractors Exceeding 1% of Bid	11	<input type="checkbox"/>
VIII.	Certification Regarding Debarment	12	<input type="checkbox"/>
IX.	Local Preference Affidavit	13	<input type="checkbox"/>
X.	Acknowledgment and Execution	14	<input type="checkbox"/>
XIII.	Base Bid Form	26	<input type="checkbox"/>
XIV.	5% Bid Bond	34	<input type="checkbox"/>



## **V. PROPOSER INFORMATION**

The following information must be completed, either typed or printed, and returned with the bid in accordance with the General Conditions contained herein.

### **A. Company Information**

Company Name:
Contact Name:
Address:
City, State Zip Code:
Telephone Number:
Facsimile Number:
E-Mail:



**B. Company Background**

Has your company ever failed to complete any contracts awarded to it?  
No\_\_\_Yes\_\_\_(If yes, please provide details.)

Has your company filed any arbitration request or lawsuits on contracts awarded within the last five years? No Yes (If yes, please provide details.)

Does your company now have any legal suits or arbitration claims pending or outstanding against it or any officers relating to the performance of a public contract?  
No Yes (If yes, please provide details.)

Does your company now employ any officers or principals who were with another Bidder when that company failed to complete a contract within the last five years? No Yes (If yes, please provide details.)

Has your company had a contract partially or completely terminated for default (cause) within the past five years? No Yes (If yes, please provide details.)

Has your company been found non-responsible on a government bid within the last five years? No Yes (If yes, please provide details.)





**C. Nevada Contractor License Information:**

Prospective bidders will be required to have a current Contractor's License under the Nevada State Law for the type of work specified herein.

<b>License Number:</b>
License Classification:
Limitation(s) of License:
Date Issued:
Date of Expiration:
Name of Licensee:
City, State, Zip Code:
Telephone Number:

**D. Business License Information:**

<b>City of Reno</b>
License Number:
License Expiration:
Name of Licensee (if different):

**Or**

☐ License will be obtained after award.



## VI. SUBCONTRACTORS EXCEEDING 5% OF BID

Pursuant to NRS 338.141, the Bidder must submit the following names of First-Tier Subcontractors who will provide to Bidder labor or a portion of the work or improvements for which Subcontractor will be paid an amount exceeding five percent (5%) of the bid price. The Bidder shall list the name of a Subcontractor for each portion of the work, the value of which exceeds five percent (5%) of the Bid price. **If Bidder will perform more than 5% of the work, BIDDER SHALL ALSO LIST HIS/HER NAME and description of the work that the prime contractor will perform in the space provided below.** If, additional space is needed, attach a separate page.

Subcontractor Name	
Nevada License	Limit of License
Address	
Telephone	
Description of Work	
Subcontractor Name	
Nevada License	Limit of License
Address	
Telephone	
Description of Work	
Subcontractor Name	
Nevada License	Limit of License
Address	
Telephone	
Description of Work	

Bidder Name: \_\_\_\_\_ Authorized Signature: \_\_\_\_\_



## VII. SUBCONTRACTORS EXCEEDING 1% OF BID AMOUNT

In compliance with NRS 338.141, Bidder submits the following names of First-Tier Subcontractors who will provide to Bidder labor or a portion of the work or improvements for which Subcontractor will be paid an amount exceeding one percent (1%) of the Bid or \$50,000, whichever is greater. The Bidder shall list the name of a Subcontractor for each portion of any of the work the value of which exceeds one percent (1%) of the Bid Price.

**Since all Subcontractors listed on the Bidder's 5% Subcontractor Information Form are over 1% of the Bid amount, those Subcontractors shall automatically be deemed incorporated into this 1% Subcontractor Information form and need not be re-listed below.**

Information provided must be submitted within two (2) hours after the completion of the opening of the bids (Per NRS 338.141). Bidder shall enter "**NONE**" under "**Name of Subcontractor**" if not utilizing subcontractors exceeding this amount. This form must be complete in all respects. If, additional space is needed, attach a separate page. The bidder may elect to submit this information with the bid proposal and, in that case, the bidder will be considered as having submitted this information within the above two hours.

Subcontractor Name	
Nevada License	Limit of License
Address	
Telephone	
Description of Work	
Subcontractor Name	
Nevada License	Limit of License
Address	
Telephone	
Description of Work	

Bidder Name: \_\_\_\_\_ Authorized Signature: \_\_\_\_\_



## VIII. CERTIFICATION REGARDING DEBARMENT

### Certification Regarding Debarment, Suspension, And Other Matters

(This to be signed and returned at the time of bid)

The prospective bidder, \_\_\_\_\_ certifies to the best of its knowledge and belief that it and its principals:

- Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- Have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and
- Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. Any exceptions provided will not necessarily result in denial of award but will be considered in determining bidder responsibility and whether or not the Authority will enter into contract with the party. For any exception noted, indicate on an attached sheet to whom it applies, initiating agency, and dates of action. Providing false information may result in criminal prosecution or administrative sanctions.

Signature:
Print Name:
Title:
Date:



## IX. LOCAL PREFERENCE AFFIDAVIT

This form is required to receive a preference in bidding on projects exceeding \$100,000. This form must be submitted no later than two (2) hours following the opening of bids, only if the bidder wishes for their preferential status (established by their current Certificate of Eligibility) to be considered in the evaluation of bids. A copy of the bidder's Certificate of Eligibility must be submitted at the time the contractor submits their bid.

I, \_\_\_\_\_, on behalf of the Contractor, \_\_\_\_\_, swear and affirm that in order to be in compliance with NRS 338.0117 and be eligible to receive a preference in bidding **2022-04 PWP-WA-2022-358 Reno-Sparks Convention Center Security Camera Upgrade** certify that the following requirement will be adhered to, documented and attained on completion of the contract. Upon submission of this affidavit on behalf of \_\_\_\_\_, I recognize and accept that failure to comply with any requirements is a material breach of the contract and entitles the Authority to damages. In addition, the Contractor may lose their preference designation and/or lose their ability to bid on public works for a period of time, pursuant to NRS 338:

- The Contractor shall ensure at least 50 percent of workers employed on the public work possess a Nevada driver's license or identification card;
- The Contractor shall ensure all vehicles used primarily for the public work will be registered and (where applicable) partially apportioned to Nevada;
- The Contractor shall ensure payroll records related to this project are maintained and available within the State of Nevada.

**These requirements are not applicable to Contractors who do not use the "Bidder's Preference" eligibility certificate in their bid or do not receive an advantage in ranking of bids due to their preference status.**

Signature:
Print Name:
Title:
Date:



## **X. ACKNOWLEDGMENT AND EXECUTION**

\_\_\_\_\_ (Name of Principal) being first duly sworn, deposes and says: That he/she is the Bidder, or authorized agent of the Bidder for whom the aforesaid described work is to be performed by; that he/she has read the Plans, Specifications, and related documents including but not limited to, any addenda issued and understands the terms, conditions, and requirements thereof; that if his/her bid is accepted that he/she agrees to furnish and deliver all materials except those specified to be furnished by the Authority and to do and perform all work for the bidding **2022-04 PWP-WA-2022-358 Reno-Sparks Convention Center Security Camera Upgrade** together with incidental items necessary to complete the work to be constructed and/or services to be provided in accordance with the Specifications, Plans, and Contract Documents annexed hereto.

The undersigned, as Bidder, declares that the only persons or parties interested in this proposal, as principals, are those named herein, the Bidder is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid: that this proposal is made without collusion with any other person, firm or corporation; that he/she has carefully examined the location of the proposed work; the proposed form of Contract, the Contract Provisions, Plans, Specifications and Contract Documents incorporated therein referred to and made part thereof; that he/she proposes and agrees if this proposal is accepted, that he/she will contract with the Authority in the form of the Contract prescribed, 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 and annexed Contract Provisions, Plans and Specifications, in the manner and time prescribed and according to the requirements of the Project Representative as therein set forth, it being understood and agreed that the quantities shown herein are approximate only and are subject to increase or decrease, and that he/she will accept, in full, payment therefore the indicated prices.

Signature:
Print Name:
Title:
Date:



## **XI. PERFORMANCE BOND, PAYMENT BOND AND BID BOND**

All Bonding Companies must have an "A" rating or better with Moody's or A.M. Best Company, and be included on the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bond and as Acceptable Reinsuring Companies" as published in circular 570 (as amended) by the audit staff, Bureau of Accounts, U.S. Treasury Department. (In other words, the company is T-listed.)

### **A. Performance Bond**

The Contractor awarded this bid will be required to furnish the Authority with a surety bond conditioned upon the faithful performance of the contract. This may take the form of a bond executed by a surety company authorized to do business in the State of Nevada and approved by the Authority. The bond shall be in a sum equal to one hundred percent (100%) of the amount of the contract price. Such bond shall be forfeited to the Authority in the event that bidder receiving the contract shall fail or refuse to fulfill the requirements and all terms and conditions of the contract.

### **B. Payment Bond**

The Contractor awarded this bid will be required to furnish the Authority with a payment bond. This may take the form of a bond executed by a surety company authorized to do business in the State of Nevada and approved by the Authority. The bond shall be in a sum equal to one hundred percent (100%) of the amount of the contract price. The bond must be solely for the protection of claimants supplying labor or materials to the contractor to whom the contract was awarded, or to any of his subcontractors, in the prosecution of the work provided for in such contract.

### **C. Bid Bond**

A bid deposit in an amount equal to at least 5% of the bid is required as a bid security by the Authority. The bid security may only be in cash, cashier's check, certified check or bid bond. Checks must be made payable to the Reno-Sparks Convention and Visitors Authority. If the bid security is a bond, it shall be executed by a surety insurer authorized to issue surety bonds in the State of Nevada. The bid security must be executed by the bidder and enclosed with the bid proposal in the sealed bid envelope.

## **XII. GENERAL TERMS & CONDITIONS**

### **A. The bidder agrees that**

Bidder has carefully examined the specifications, and all provisions relating to the item(s) to be furnished or the work to be done; understands the meaning, intent, and requirements; and

Bidder will enter into a written Agreement and furnish the item(s) or complete the work in



the time specified, and in strict conformity with the Reno Sparks Convention and Visitors Authority's specifications for the prices quoted.

No communication to any other staff or Board Member of the Authority regarding this Bid is allowed, except through the designated point of contact, and any such communication initiated by the Bidder may result in a disqualification of the Bidder.

**Note:** Bidder is defined as any individual, partnership, or corporation submitting a bid, proposal, or quotation in response to a request for bid (Bid), request for proposal (RFP), request for information (RFI) or request for qualification (RFQ). A Bidder may also be referred to as a bidder, contractor, proposer, supplier or vendor.

The use of the title "Bidder", "Contractor", "Consultant", "Proposer", or "Vendor" within this solicitation document and any resulting Agreement shall be deemed interchangeable and shall refer to the person or entity with whom the Authority is soliciting and/or contracting for the service or product referenced within the bid document.

## **B. Addenda**

The effect of all addenda to the bid documents shall be considered in the bid and said addenda shall be made part of the bid documents and shall be returned with them. Before submitting a bid, each Bidder shall ascertain whether or not any addenda have been issued, and failure to acknowledge any such addenda may render the bid invalid and result in its rejection.

All potential Bidders are responsible for monitoring the Authority website regarding the availability of new bid documents or addenda (where applicable). The Authority will not be responsible for the results of any potential failures in automatic notification systems to potential Bidders or plan holders with respect to these documents and will not adjust bid schedules or requirements due to any potential failures of those systems.

## **C. Advertisements, Product Endorsements**

Authority employees are prohibited from making endorsements, either implied or direct, of commercial products or services without written approval of the Authority President/CEO.

## **D. Annual Appropriation of Funds**

In the event the Authority fails to obligate requisite funds for the ensuing fiscal year(s) for payment of amounts due against an agreement resulting from this Request for Proposal, necessitating cancellation of the Agreement, the successful Bidder(s) shall agree to hold the Authority free from any charge or penalty.

## **E. Brand Names**

The herein contained technical information shall in no manner be construed as restrictive as to the manufacturer, process or point of origin. References appearing restrictive shall be





deemed inadvertent or employed as a descriptive device to delineate as to the quality, or configuration.

Offers made as an alternate to those specified shall be given consideration in the evaluation process provided said alternatives shall be fully described using brochures, specifications, literature, or any combination thereof, accompanying and deemed an integral portion of the Bidder's response.

The Authority shall solely determine the acceptability of all offerings.

**F. Business License Requirement**

All companies doing business with the Authority are required to obtain and maintain a current business license from the appropriate jurisdiction prior to the commencement of work. Bidder(s) awarded an Agreement resulting from this bid shall be required to obtain a current business license if they do not already possess one.

**G. Compliance**

All material and work performed shall comply with standing Federal, State, and Local Codes and Regulations, including but not limited to Occupational Safety and Health Act, Americans with Disabilities Act, etc.

**H. Confidential Information**

Any information deemed confidential or proprietary should be clearly identified by the Bidder as such. It may then be protected and treated with confidentiality only to the extent permitted by state law. Otherwise the information shall be considered a public record. Information or data submitted with a bid will not be returned.

**I. Conflict of Interest**

No Authority employee or member of the employee's immediate family, may participate directly or indirectly in the procurement process pertaining to this bid if they:

- Have a financial interest or other personal interest that is incompatible with the proper discharge of their official duties in the public interest or would tend to impair their independence, judgment or action in the performance of their official duties.
- Are negotiating for or have an arrangement concerning prospective employment with Bidder. The Bidder warrants to the best of his knowledge that the submission of the bid will not create such conflict of interest.

**J. Default of Agreement**

In case of default by the successful Bidder, the Authority may procure the product(s) or service from other sources and hold the Bidder responsible for any excess cost occasioned thereby.



If necessity requires the use of materials or supplies not conforming to the specifications, they may be accepted, and payment therefore shall be made at a proper adjustment in price.

Default by the Bidder in any manner including failure or refusal to furnish any product(s) or service at the price and/or the time specified may be considered cause to commence with proceedings against any surety held, or assess a penalty equal to five (5) percent of the total proposal price.

**K. Disputes**

All disputes under this proposal shall be submitted to binding arbitration in accordance with the procedures of the Commercial Rules of the American Arbitration Association and judgment of the arbitrator shall be binding as a final judgment and shall be entered by a court of competent jurisdiction. Such arbitration shall be conducted in Washoe County, Nevada. The procedures specified herein shall be the sole and exclusive procedure for resolution of disputes arising out of, or relating to this proposal except those instances otherwise overseen by the governing law of the State of Nevada.

**L. Document Ownership**

All technical documents and records originated or prepared pursuant to this Agreement, including papers, reports, charts, and computer programs, shall be delivered to and become the exclusive property of the Authority and may be copyrighted by the Authority. Bidder assigns all copyrights to Authority by undertaking this agreement.

**M. Document Submittals**

It should be noted that the documents submitted by prospective Bidders are competitive sealed proposals and not competitive sealed bids. When proposals are opened, prices and other information will not be made public until the proposal is awarded. There shall be no disclosure of any Bidder's information to competing Bidders prior to the award of the proposal.

Upon award of the Agreement, the executed Agreement and proposals will become public information. Accordingly, each proposal should be submitted on the vendor's most favorable terms from a price and technical standpoint.

**N. Evaluation and Recommendation, Selection and Agreement**

The Authority reserves the right to waive any informalities or irregularities.

The Authority reserves the right to alter, amend, or modify any provisions of this Bid, or to withdraw this Bid, at any time prior to the award of an Agreement pursuant hereto.

The Authority reserves the right to hold responses for a period of ninety (90) days from the date of opening before awarding or rejecting said responses.

Severability exists with regard to acceptance or rejection of any item, group of items, or



section unless the Bidder has stipulated specific limitations.

Once a final selection has been made as described above, the Authority will work with the Bidder on preparing an Agreement (the "Agreement") for execution, which will set forth the terms and scope of the engagement of the selected Bidder, including, but not be limited to, the terms set forth in this Bid. If the Authority and the selected Bidder have not executed a negotiated agreement within fifteen (15) business days after selection by the Authority, the Authority may terminate negotiations with that selected Bidder and may initiate negotiations with an alternative Bidder.

No Agreement may be assigned to any other person or entity.

Upon notification of selection and full execution of the Agreement, the Bidder selected must be duly licensed to conduct business in the State of Nevada, Washoe County and the City of Reno. Proof of certificates, licenses, and permits must be submitted to the Authority Finance Department before work can begin. Cost of all required certificates, licenses, and permits are the responsibility of the Bidder.

**O. Exceptions**

A Bidder deviating from specifications must specify any and all deviation(s). Failure to note said exceptions shall be interpreted to convey that the Bidder shall propose to perform in the manner described and/or specified in this bid solicitation. If exception(s) are taken or alternatives offered, complete descriptions must be shown separately.

**P. Indemnification**

The Bidder hereby agrees to indemnify and to save and hold harmless the Authority and their agents from any and all claims, actions, costs, expenses, (including attorney's fees), liability, damages or payments incurred by reasons of any bodily injury including death or property damage resulting from the Bidder's operations.

**Q. Insurance**

The Agreement contemplated by this Bid will require that the successful Bidder shall procure and maintain, at its sole expense the following minimum insurance coverage:

**Commercial General Liability.** Commercial General Liability at least as broad as Insurance Services Office policy form CG 00 01 04/13, or equivalent, providing coverage on an occurrence form for Bodily Injury, Property Damage, Liquor Liability, Independent Proposers, Personal Injury, Broad Form Property Damage, Broad Form Contractual Liability and Medical Payments. The limits of liability shall not be less than Two Million Dollars (\$2,000,000) per occurrence, Four Million Dollars (\$4,000,000) general aggregate for both bodily injury and property damage.

The policy shall include the Authority and its agents, beneficiaries, partners, employees, the County of Washoe, and the Authority of Reno as additional insureds with coverage at least as broad as Insurance Services Office (ISO) endorsement form CG 20 26 04/16.



The policy shall provide that coverage is provided on a primary basis, not excess or contributing with or secondary to any other insurance as may be available to the additional insureds.

Proposer waives all rights against the Authority, and its agents, beneficiaries, partners, employees, the County of Washoe, and the Authority of Reno any other Indemnitees listed in this Agreement for recovery of damages to the extent these damages are covered by the commercial general liability or commercial umbrella liability insurance maintained pursuant to this agreement. Proposer's insurer shall endorse CGL policy to waive subrogation against with respect to any loss paid under the policy.

**Automobile Liability.** Automobile Liability at least as broad as Insurance Services Office Business Auto Coverage Form CA 00 01 04/13, or equivalent, providing coverage for Bodily Injury and Property Damage resulting from the ownership, maintenance, or use of any auto, whether owned, rented or hired or non-owned. The limit of liability shall not less than One Million Dollars (\$1,000,000) combined single limit (CSL) for bodily injury and property damage.

**Workers' Compensation and Employer's Liability.** Workers' Compensation at least as broad as National Council on Compensation Insurance (NCCI) policy form WC 00 00 00 C 01/15, or equivalent, providing coverage meeting the requirements of the Workers' Compensation law of the State of Nevada. To the extent such waivers are obtainable from the insurance carriers, the policy shall include an endorsement waiving the insurance company's rights of subrogation against the Authority, its agents, beneficiaries, partners, employees, the County of Washoe, and Authority of Reno. This endorsement shall be at least as broad as National Council on Compensation Insurance (NCCI) Waiver of Our Right to Recover from Others Endorsement form WC 00 03 13 04/84.

**Property.** Property insurance on an All-Risk or Special Form providing coverage for personal property of the Bidder.

**Blanket Employee Dishonesty Coverage.** The Proposer shall maintain crime insurance including coverage for the loss of money, securities, and other property by the Proposer's employees, sub-contractors or other parties with a limit not less than \$1,000,000 per occurrence. Coverage shall be endorsed to include coverage for loss of money, securities and other property in the care, custody or control of Proposer whether in transit or at a permanent or temporary premises.

**Form of Coverage.** All such insurance maintained by the Bidder shall be: issued by insurance companies authorized to do insurance business in the State of Nevada, issued by insurance companies with current A.M. Best financial ratings of at least A X or better satisfactory in form and substance to Authority.

All insurance and bond shall provide that the policy shall not be cancelled, nor shall coverage be reduced thereunder until after thirty (30) days written notice to Authority at Reno-Sparks Convention & Visitors Authority, Post Office Box 837, Reno, Nevada 89504-0837.

The Bidder shall deposit each policy or a certificate thereof with Authority no less than thirty



(30) days prior to the start of the agreement date.

**R. Items Offered**

If the item offered by the Bidder has a trade name, brand and/or catalog number, such shall be stated in the bid. If the Bidder proposes to furnish an item of a manufacturer or vendor other than that mentioned on the face hereof, Bidder must specify maker, brand, quality, catalog number, or other trade designation. Unless such is noted on the bid form, it will be deemed that the item offered is that designated even though the bid may state "or equal".

**S. Late Bids, Modifications, or Withdrawals**

Bids, modifications of bids, or bid withdrawals received after the exact time and date specified for receipt will not be considered.

Within the scope of this proposal, the Authority shall be held harmless in any and all transactions between the Bidder and the other participating governmental entities.

**T. Lawful Performance**

Vendor shall abide by all Federal, State and Local Laws, Ordinances, Regulations, and Statutes as may be related to the performance of duties under this agreement. In addition, all applicable permits and licenses required shall be obtained by the vendor, at vendor's sole expense.

**U. Litigation Warranty**

The Bidder, by bidding, warrants that Bidder is not currently involved in litigation or arbitration concerning the materials or Bidder's performance concerning the same or similar material or service to be supplied pursuant to this Agreement of specification, and that no judgments or awards have been made against Bidder on the basis of Bidder's performance in supplying or installing the same or similar material or service, unless such fact is disclosed to the Authority in the bid. Disclosure may not disqualify the Bidder. The Authority reserves the right to evaluate bids on the basis of the facts surrounding such litigation or arbitration and to require Bidder to furnish the Authority with a surety bond executed by a surety company authorized to do business in the State of Nevada and approved by the Authority in a sum equal to one hundred percent (100%) of the Agreement price conditional on the faithful performance by Bidder of the Agreement in the event the bid is awarded to Bidder, notwithstanding the litigation or arbitration.

**V. Non-Discrimination**

No Bidder providing a service, program or activity to the public on behalf of the Authority shall discriminate against any person because of sex, race, color, creed, national origin or disability, and shall comply with the Americans with Disability Act and Authority's policies pursuant thereto when providing said service, program or activity.

The Authority is an Affirmative Action/Equal Opportunity Employer. Bidders shall be cognizant



of the requirements for compliance with Executive Order 11246, entitled "Equal Employment Opportunity" as amended by Executive Order 11375 and as supplemented in regulations of the U.S. Department of Labor (41 CFR part 60).

The Contractor and any Subcontractors will comply with the requirements set forth in Nevada Revised Statutes Chapter 338 regarding public works, including, but not limited to, the provisions of NRS 338.125 which provides that the Contractor and Subcontractors may not discriminate in any of their employment practices.

**W. Open Meeting Law**

NRS 241 provides that public business will be conducted in open meeting.

**X. Prevailing Wages**

Bidder is responsible for complying with all applicable local, State and Federal wage laws, whether or not specifically cited in this bid document.

Per NRS Sections 338.020 through 338.090, certain projects defined as "public works" require the payment of the prevailing wage as determined by the Labor Commissioner. Projects/contracts for construction of a public work valued at less than \$100,000 are exempt from the prevailing wage requirement (NRS 338.080). Bidder shall be fully aware of the prevailing wage requirements of the State of Nevada as detailed in NRS Chapter 338 and price their bid response accordingly, where applicable. Further information concerning Prevailing Wage rates can be found at: [publicworks@labor.nv.gov](mailto:publicworks@labor.nv.gov)

**Y. Protests**

**Pre-Opening Protests:** Any protest based upon restrictive specifications or alleged improprieties by the Authority, which are apparent prior to proposed opening including, without limitation, these protest procedures, shall be submitted to the Authority at least seven (7) days prior to the submission opening date. Three (3) copies of any pre-opening protests must be delivered to Reno-Sparks Convention & Visitors Authority, 4065 South Virginia Street, Suite 100, Reno, Nevada 89502, Attention: Jose Martinez. All protests must be in writing to be considered and shall specify in detail the grounds for the protest and the facts and law supporting the protest. All pre-opening protests will be resolved by the Authority prior to the submission opening. The Authority Finance Department will issue a written decision specifying the grounds for granting or denying the pre-opening protest. If a protest is granted, the proposed opening date may be postponed and an Addendum issued or, at the sole discretions of the Authority, the Authority may cancel the bid. If the protest is denied, submissions will be received and opened on the scheduled opening date in the same manner as if no protest had been filed.

**Appeal by Unsuccessful Bidder:** Any protest from an unsuccessful proposer must be submitted prior to award by the Board as established in NRS 332.068. Bidder must submit a written appeal in accordance with the requirements set forth herein to the Finance Department within five business days from the date of the letter notifying of intent to award.



The appellant must post a bond with the written appeal with good and solvent surety authorized to do business in the State of Nevada in an amount equal to 25% of the value of the contract in order to have their appeal heard by the Board. Any and all bonds are subject to the approval of the Board's Attorney. In the event the appeal is not upheld by the Board, a claim may be made against the bond in an amount equal to the expenses incurred and other monetary losses suffered by the Authority because of the unsuccessful appeal.

The route of appeal is the Director of Finance then the President/CEO, or designee, and must be followed sequentially. No Bid protests will be heard by the Board unless the proposer has followed the appeal process route.

### **Claims Against Protest Bonds:**

The Authority shall not make a claim upon any bond or other security unless and until the basis of that claim is considered and approved by the Board. The Authority may:

- Claim its regular staff time and costs in processing, considering and/or defending against an award protest.
- Claim any necessary extraordinary staff overtime incurred in processing, considering and/or defending against an award protest.
- Claim the Authority's Attorney time and costs in processing, considering and/or defending against an award protest.
- Claim any resulting fees and costs incurred to any independent contractors, consultants or contracted attorneys utilized in processing, considering and/or defending against an award protest.
- Claim any lost expenditure savings, lost revenue and other consequential financial damages resulting from the protest's automatic stay of the award of an Agreement to a selected solicitation response.
- Claim any lost gifts, lost grants or other lost government or private financial participation resulting from any delay caused by the protest's automatic stay of the award of an Agreement to a selected solicitation response.

### **Protest Bond Risk Inquiry—Procedure:**

As soon as possible after an award protester has posted a protest bond or other security, the soliciting Authority department or agency shall provide a written non-binding estimate of the basis of potential claims unique to the circumstances of the Agreement award(s) stayed by the protest, without disclosing any bid information that must remain confidential until an award decision is final. From this estimate, the protester shall be responsible for calculating the risk(s) of proceeding with a protest to a final decision by the Board. A protester may withdraw a protest in writing at any time prior to a decision of the Board, but any withdrawal more than seven (7) calendar days after the issue date of the Authority's estimate of the basis of potential claims shall, upon Board's approval of the claims, be subject to claims against the bond or other security of the withdrawing protestor prior to its return to the protester.

## **Z. Signature**

All bids shall be signed, and the title and Bidder name indicated. A bid by a corporation shall





be signed by an authorized officer, employee or agent with his or her title.

**AA. Submission of Responses**

The Authority assumes no responsibility for errant delivery of responses, including those relegated to a courier agent who fails to deliver in accordance with the submission time/date and address requirements.

The Authority will not be responsible for the premature opening of responses, which are not properly addressed or identified.

The Authority will not accept a response submitted by telephone, telegraphic notice, facsimile, or e-mail.

Bidder will furnish the required information typed or written in ink.

The person signing the response must initial erasures or other changes in ink.

In the spaces provided, a duly authorized representative of the Bidder will sign this Bid document.

Bidder will proofread its response carefully for errors.

In the event of a difference between written words and figures, the amount stated in written words will govern.

In the event of a difference between unit price and extended price, the unit price will govern.

The Authority is not liable for any costs incurred by Bidder prior to entering into the final Agreement. Costs of developing the qualifications or any other such expenses incurred by the Bidder in responding to this Bid, are entirely the responsibility of the Bidder, and shall not be reimbursed in any manner by the Authority.

Respondent shall be responsible to ensure they have complied in all respects with the provisions of NRS 338.141 regarding listing of general contractors and/or subcontractors who will perform any work on the project. Failure of Respondent to comply with the provisions of NRS 338.141 will result in rejection of Respondent's bid.

Respondent shall bear the responsibility to ascertain the relevancy of the "preference for certain contractors" referenced in NRS 338.147. Respondents claiming preference shall submit with their Bid the "Certificate of Eligibility" issued by the State of Nevada Contractor's Board as proof of Contractor's compliance with the provisions of NRS 338.147. Failure to submit the Certificate of Eligibility with the sealed Bid shall result in the waiver of any bidder preference. In the event Respondent claims a bidder preference pursuant to NRS 338.147, the RSCVA strongly encourages Respondent to deliver to the RSCVA an affidavit satisfying the requirements of NRS 338.0117 with the Bid response. However, pursuant to NRS 338.147(2)(a)(3) the Respondent may deliver the foregoing affidavit up to two (2) hours after the opening of the bids, all as set forth in NRS 338.147(2)(a)(3). Failure to timely submit the





foregoing affidavit shall result in a waiver of any bidder preference.

Bidder has carefully examined the specifications, and all provisions relating to the item(s) to be furnished or the work to be done; understands the meaning, intent, and requirements.

**BB. Tax Exemption**

The Authority is a tax-exempt public entity and is not generally subject to federal excise, state, or local taxes. The Authority is specifically limited in its payment of sales tax per NRS 372.325. No additional taxes may be added or "passed through" as a result of any agreement.

**CC. Venue**

This agreement shall be governed by and interpreted according to the laws of the State of Nevada, and venue for any proceeding shall be in Washoe County.

**DD. Withdrawal of Bids/Proposals**

Bids/Proposals may be withdrawn by written or facsimile notice received prior to the exact hour and date specified for receipt of bid. A bid/proposal may also be withdrawn in person by a Bidder, or Bidder's authorized representative, prior to the exact hour and date set for receipt of bids. Telephone withdrawals are not permitted.



### **XIII. BASE BID FORM**

Project: 2022-04, PWP-WA-2022-358

Project Title: 2022-04 Reno-Sparks Convention Center Security Camera Upgrade  
Reno, Nevada 89502  
Project No. 2022-04

Owner: Reno-Sparks Convention and Visitors Authority  
4590 S. Virginia Street  
Reno, Nevada 89502

Jose Martinez  
Telephone No. 775.827.7768  
E-mail: [jmartinez@renotahoeusa.com](mailto:jmartinez@renotahoeusa.com)

Consultant: PK Electrical, Inc.  
681 Sierra Rose Drive  
Suite B, Reno, NV 89511

Brian Cuneo  
Telephone No. 775.826.9010  
E-mail: [bcuneo@pkelectric.com](mailto:bcuneo@pkelectric.com)



## BID FORM

To: Reno-Sparks Convention and Visitors Authority

Name of Bidder: \_\_\_\_\_

Date of Bid: \_\_\_\_\_

**1.01** Pursuant to and in compliance with the Invitation to Bid and the Bidding Documents relating to the construction of:

Reno-Sparks Convention Center 2022-04  
PWP-WA-2022-358 Security Camera  
Upgrade  
Reno, Nevada 89502  
Project No. 2022-04

Including Addenda \_\_\_\_\_

1. Includes all work shown on the drawings and described in the specifications with the exception of add alternates #1 and #2.
2. Demo qty (4) existing cameras and associated mounts/cable as shown on the demo drawings.
3. Furnish, install and configure qty (41) new cameras and associated mounts, cabling and software support agreement as shown on the drawings. Aim, focus and adjust all new cameras. Connect cameras to network video recording servers and configure.
4. Furnish, install and configure qty (2) control room video viewing workstations. See 4/T0.02 for workstation requirements.
5. Do not include costs in the base bid to furnish network video servers. Include costs in the base bid to install and configure network video recording servers.
6. Configure test and commission the entire camera system and provide training to the owner on the operation of the system.

The undersigned, having become thoroughly familiar with the terms and conditions of the Bidding Documents and with local conditions affecting the performance and cost of the work at the place where the work is to be completed and after having been given ample opportunity to fully inspect the site in all particulars, hereby proposes and agrees to fully perform the work, including furnishing any and all labor, materials, services, equipment and all applicable taxes necessary to construct and complete said work in accordance with the Contract Documents, for the following sum(s) of money:

A. **Base Bid:** Complete Security Camera Upgrade per specifications.

\_\_\_\_\_  
\_\_\_\_\_ Dollars (\$\_\_\_\_\_)



**BID FORM**

- B. **Add Alternate #1:** Furnish qty (2) 160TB network video recording servers.  
See 5/T0.02 for server requirements.

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

- C. **Add Alternate #2:** Furnish qty (2) 288TB network video recording servers.  
See 6/T0.02 for server requirements.

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)



D. Performance Bond and Payment Bond

1. This bid includes the cost of a Performance Bond and Payment Bond. By signing and submitting this bid, the Bidder certifies that they will furnish these bonds in amounts sufficient to cover the total proposed cost of the work, including Base Bid and all Alternates. The bonds shall be amended and maintained current with all contract Change Orders.
2. The cost of these bonds is \_\_\_\_\_% of the total proposed cost of the work, including Base Bid and all Alternates.

E. Bid Bond

1. Accompanying this bid is a bid bond as specified in Section **XI**. Instructions to Bidders, payable without condition to the Owner, equaling no less than 5% of the total proposed cost of the work, including the Base Bid and all Alternates. It is agreed that the bid security will be the measure of liquidated damages which the Owner will sustain by failure, neglect, or refusal of Bidder to deliver the signed contract, bonds, and required insurance documentation within ten days after notification of contract award is made by the Owner.

F. Change Orders

1. The following fees shall be used for lump sum pricing and actual cost pricing of additions and deletions to the work required by the Contract Documents. The following fees are not applicable for unit price-based change orders; and shall not be applied to hourly rates or pricing to which overhead and profit have been included, or to taxes.
  - a. For any additions to the work authorized by the Owner:  
  
The contract sum shall be revised to include the actual cost of the work required for such additions plus  
percent (\_\_\_\_\_%).
  - b. For deletions from the work authorized by the Owner:  
  
The contract sum shall be reduced by an amount equal to the cost savings realized for work not performed by reason of such deletions plus  
\_\_\_\_\_ percent (\_\_\_\_\_%).

G. Time of Commencement, Completion and Damages

1. Base Bid: Contractor shall commence work \_\_\_\_ days after award.



2. From the day of commencement, the Contractor shall substantially complete the work in \_\_\_\_\_ (calendar) days.
3. Final completion, including delivery of all closeout submittals and warranties, shall be achieved within \_\_\_\_\_ calendar days after achieving substantial completion.
4. Time is expressly declared to be of the essence in completion of the work covered by these Bidding Documents, and the Contractor shall be liable for actual damages for delay in completion of work. Actual damages include, but are not limited to, increased consulting fees, additional construction observation fees, travel expenses, and all other costs incurred as a result of the delay in completion. Where the contract allows additional time for completion of the work, the new time limits will be of the essence of the contract.
5. In submitting this bid, the Bidder assures the Owner that availability of labor, material, equipment, services, and other necessary resources are available to meet the proposed substantial completion date.

**1.02** By signing this bid, the Bidder certifies the following:

- A. All information submitted on this bid form is accurate and true to the best of the Bidder's knowledge, and the Bidder has performed due diligence as necessary to provide responsible information.
- B. This bid has been arrived at independently without consultation, communication or agreement as to any matter relating to this bid with any other Bidder or with any competitor.
- C. This bid is in compliance with all local, state, and applicable codes.
- D. The Bidder and any proposed Subcontractors are duly licensed with all applicable authorities having jurisdiction, as required to legally perform the work described by the Bidding Documents at the project location.
- E. The Bidder will maintain strict confidentiality with respect to information submitted on this bid form, any project-related documents obtained during the bidding process, photographic or video images of the site, project-related emails or other correspondence, or information learned through visual review of the facility or project site.
- F. Bidder will comply with the terms of any confidentially agreements made with the Owner during the bidding of this project, as applicable.
- G. This bid shall remain open and not be withdrawn for a period of 90calendar days from the date prescribed for its opening.



- H. If the Owner provides written notice of award to the undersigned within 90 calendar days, the Bidder shall execute and deliver the signed contract agreement, Performance Bond, Payment Bond, required insurance documentation, and any other submittals as specified in the Bidding Documents, together, all within ten calendar days after the Owner issues the notice of award.
- I. The Bidder is an equal opportunity employer, and does not discriminate, and will take "affirmative action" measures to ensure against discrimination in employment, recruitment, advertisements for employment, compensation, termination, upgrading, promotions, and other conditions of employment against any employee or job applicant on the bases of race, creed, color, national origin, sex, or any other legally protected characteristics. No person will be adversely affected in employment with the employer as a result of bringing complaints of unlawful discrimination.
- J. The Bidder provides a work environment that is free from harassment based upon an individual's sex, race, ethnicity, national origin, age, religion or any other legally protected characteristics. All employees, including supervisors and other management personnel, are expected and required to abide by this policy. No person will be adversely affected in employment with the employer as a result of bringing complaints of unlawful harassment.

**1.03** By signing this bid, the Bidder implies their understanding of the following conditions:

- A. The Owner reserves the right to reject any and all bids, waive irregularities or technicalities in any bid, and accept any bid in whole or in part which it deems to be in its best interest.
- B. If notice of award is issued after 90 calendar days from the bid due date, the Bidder shall have the right to either accept the contract or withdraw their bid, without penalty.

**1.04** The name(s) and title(s) for all persons interested in the foregoing bid as principal(s) are:

**Note:** *If Bidder is a corporation, provide names of president, controller, and secretary; if a partnership, and names of all individual co-partners composing the firm; if Bidder or other interested person is an individual, give first and last names in full.*

Name	Title
_____	_____
_____	_____
_____	_____
_____	_____



**1.05** Notice of award or requests for additional information may be addressed to the undersigned at the address set forth below.

**1.06** The Legal Name, State of Incorporation, Address, Contact Information, and Federal Tax Identification Number for the Bidder are:

***Note:*** *If Bidder is a corporation, provide legal name of corporation, state where incorporated, together with the address and contact information and signature of the officer authorized to sign contracts on behalf of the corporation. If Bidder is a partnership, provide legal name of firm, together with the address and contact information and signature(s) of the partner(s) authorized to sign contracts on behalf of the partnership.*

Legal Name of Bidder:

---

State of Incorporation:

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Business Address:

---

---

---

---

Telephone Number:

---

E-mail Address:

---

Federal Tax ID Number:

---

**1.07** Signature of Authorized Bidder Representative

Signature:

---





Typed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**-End of Section-**



#### **XIV. RENO-SPARKS CONVENTION AND VISITORS AUTHORITY – 5% BID BOND**

KNOW ALL MEN BY THESE PRESENTS: That we the undersigned  
\_\_\_\_\_, as "Principal," and  
\_\_\_\_\_, as "Surety," are  
hereby held and firmly bound unto the Reno-Sparks Convention and Visitors Authority,  
as "Obligee," in the penal sum of  
\_\_\_\_\_dollars (\$\_\_\_\_\_) for the payment of which, well and truly to be  
made, the Principal and Surety bind themselves, their heirs, executors, and  
administrators, successors and assigns, jointly and severally, by this instrument. The  
condition of the obligation of this bid bond is as follows:

WHEREAS, NRS 332.105 authorizes local governments to require bid bonds to  
ensure execution and proper performance of the Contract and the Bonding Company  
has an "A" or better rating with Moody's or A.M. Best and T-Listed with the U.S.  
Treasury Department;

AND, WHEREAS, the Principal has submitted a bid for Bid # **2022-04 PWP-WA-  
2022-358** for the **RENO-SPARKS CONVENTION CENTER SECURITY  
CAMERA UPGRADE.**

NOW, THEREFORE,

- (a) If said Bid shall be rejected; or
- (b) If said Bid shall be accepted and the Principal shall execute and deliver the  
contract in the bid documents ("Contract") to Obligee in accordance with  
the terms of the bid documents, and give such bond or bonds as may be  
specified in the bid or contract documents with good and sufficient surety  
for the faithful performance of such Contract and for the prompt payment  
of labor and material furnished in the prosecution thereof; or
- (c) If the Principal shall pay to the Obligee the full amount of the bid bond as a  
penalty irrespective of the Obligee's actual damages in the event of the  
failure of the Principal to enter into such Contract and give such bond or  
bonds, then, this obligation shall be null and void. Otherwise, it shall  
remain in full force and effect, it being expressly understood and agreed  
that the liability of the Surety (but not of the Principal) for any and all  
claims hereunder shall, in no event, exceed the penal amount of the  
obligation as herein stated. The Surety, for the consideration for which this  
bond was executed, hereby stipulates and agrees that the obligations of  
said Surety and its bond shall be in no way impaired or affected by any  
extension of the time within which the Obligee may accept such bid, and  
hereby waives notice of any such extension.



**IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and the Surety has caused their seal to be hereto affixed and these present to be signed by their proper officers.**

Signed, Sealed and dated: \_\_\_\_\_

\_\_\_\_\_  
Principal  
By: \_\_\_\_\_

\_\_\_\_\_  
Surety  
By: \_\_\_\_\_

# **PROJECT MANUAL**

## **VIDEO SURVEILLANCE CAMERA SYSTEM UPGRADE**

### **RENO-SPARKS CONVENTION CENTER**

**4590 South Virginia Street  
Reno, NV 89502**

**Issued for Bid  
May 16, 2022**

### **DESIGN CONSULTANT**

**PK Electrical Inc.  
681 Sierra Rose Dr, Suite B  
Reno, NV 89511  
(775) 826-9010**

## **PROJECT DIRECTORY**

### **Owner**

Reno-Sparks Convention Center  
4590 South Virginia Street  
Reno, NV 89502

Jose Martinez  
Project Manager  
(775) 827-7768  
[jmartinez@renotahoeusa.com](mailto:jmartinez@renotahoeusa.com)

### **Electrical Engineering**

PK Electrical, Inc.  
681 Sierra Rose Dr., Suite B  
Reno NV, 89511

Joey Ganser, PE  
Principal | Engineering  
(775) 826-9010 x 8820  
[jganser@pkelectrical.com](mailto:jganser@pkelectrical.com)

Brian Cuneo, PE, RCDD  
Technology Manager  
(775) 826-9010 x 8824  
[bcuneo@pkelectrical.com](mailto:bcuneo@pkelectrical.com)



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### Project Identification

Project Name: Reno-Sparks Convention Center  
Video Surveillance System Upgrade

Project Address: 4590 South Virginia Street  
Reno, NV 89502

### DIVISION 27 – COMMUNICATIONS

27 01 00 Common Work Results for Communications  
27 08 00 Commissioning of Communications  
27 15 00 Communications Horizontal Cabling

### DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

28 00 00 Common Work Results for Electronic Safety & Security  
28 05 28 Conduits and Backboxes for Electronic Safety and Security  
28 28 00 Video Surveillance System

## SECTION 27 01 00 – COMMON WORK RESULTS FOR COMMUNICATIONS

### PART 1 – GENERAL

#### 1.01 DESCRIPTION OF WORK

- A. Drawings and general provisions of the Contract, Including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.
- B. Include all labor, materials, tools, transportation, storage costs, excavation, training, equipment, insurance, temporary protection, permits, inspections, taxes and all necessary and related items required to provide a complete and operational communications system as shown on the Drawings and described in the Specifications.

#### 1.02 RELATED SECTIONS

- A. General: Consult all other Sections, determine the extent and character of related work, and properly coordinate work specified herein with that specified elsewhere to produce a complete and operable system.
- B. Related Sections:
  - 1. Section 27 08 00: Commissioning of Communications
  - 2. Section 27 15 00: Communications Horizontal Cabling
  - 3. Section 28 00 00: Common Work Results for Electronic Safety & Security.
  - 4. Section 28 05 28: Conduits and Backboxes for Electronic Safety and Security.
  - 5. Section 28 28 00: Video Surveillance System
- C. Division 1 Specifications, General and Supplementary Conditions apply to this Specification Section.

#### 1.03 QUALITY ASSURANCE

- A. The Contractor installing communications cabling and termination equipment must have a minimum of (5) years experience installing telecommunications systems of similar size and scope.
- B. The Contractor must be licensed by the Nevada State Contractors Board.
- C. Formal, written evidence of the following may be requested at any point during the Bid or installation processes:
  - 1. The Contractor, including any subcontractor, must have BICSI® Registered Installers and Technicians on staff and assign them to the current Project. The project shall be staffed at all times by Installers and Technicians who, in the role of lead crafts persons, shall be able to provide leadership and technical resources for the remaining crafts persons on the project.
  - 2. If requested, the Contractor, including any subcontractor, shall show proven expertise in the implementation of cabling projects. This expertise can be illustrated through the inclusion of details of at least three projects involving the design and installation of Category 6 unshielded twisted-pair cabling systems and optical fiber cabling systems within the past two year period. Names, addresses, and telephone numbers of references for the three projects shall be included.
  - 3. The Contractor must be certified by Belden/CDT, CommScope or approved equal in order to provide a 20 to 25 system warranty for the horizontal Category 6

- cabling. The Contractor shall perform all necessary training from the manufacturer to obtain the manufacturer certification and system warranty.
4. In the event subcontractors are used for any portion of the installation or acceptance testing, the Contractor shall be responsible for any subsequent corrective action required on that portion of the work.

#### 1.04 SUBMITTALS

##### A. Manufacturer Product Data Sheets

1. Submit product data sheets in electronic PDF (portable document format).
2. Provide table of contents for each submittal indicating the items being submitted. Products listed in the table of contents should be in the same order as they appear in the Specifications.
3. Provide product data sheets for all items listed in each specification section. Partial submittals will not be accepted.
4. Where product data sheets include more than one distinct item, clearly mark data sheet with arrow or other identifying means to indicate the items being submitted for approval. Delete or cross-out all non-applicable data.

##### B. Cable Test Reports

1. Submit test reports signed and dated by the technician performing the cable testing.

##### C. Cable Warranty

1. Submit manufacturer cabling warranty at the completion of the project.

#### 1.05 REGULATIONS AND CODE COMPLIANCE

- ##### A.
- The Contractor will comply with all applicable governmental regulations including Federal, State, City, and Local applicable codes and ordinances.

- ##### B.
- References to codes and standards called for in the Specifications refer to the latest edition, amendments, and revisions to the codes and standards in effect on the date of these Specifications.

- ##### C.
- All work and materials shall conform to and be installed, inspected and tested in accordance with the governing rules and regulations of the telecommunications industry, as well as federal, state and local governmental agencies, including, but not limited to the following:

1. ANSI/TIA-568.0-E: Generic Telecommunications Cabling for Customer Premises (Revision E, March 2020).
2. ANSI/TIA-568.1-E: Commercial Building Telecommunications Infrastructure Standard (Revision E, March 2020).
3. ANSI/TIA-568.2-D: Balanced Twisted-Pair Telecommunications Cabling And Components Standards (Revision D, September 2018).
4. ANSI/TIA-569-E: Telecommunications Pathways and Spaces (Revision E, May 2019)
5. ANSI/TIA-606-D: Administration Standard for Telecommunications Infrastructure (Revision D, October 2021).
6. ANSI/TIA-1152-A: Requirements for Field Test Instruments and Measurements for Balanced Twisted-Pair Cabling (Revision A, November 2016).
7. ANSI/NFPA-70, 2017 -- National Electrical Code (NEC).



8. Underwriter's Laboratories, Inc. (UL).
9. Federal Communications Commission (FCC).

#### 1.06 DEFINITIONS

- A. Accessible Ceiling: Space above a ceiling constructed of removable tiles (clipped or unclipped). Acoustical ceiling grid with removal tiles would be considered an accessible ceiling. A gypboard ceiling would not be considered an accessible ceiling.
- B. Approved/Approval: Written permission to use a material or system.
- C. As Called For: Materials, equipment including the execution specified/shown in the Specifications.
- D. Code Requirements: Minimum requirements.
- E. Concealed: Work installed in pipe and duct shafts, chases or recesses, inside walls, above ceilings, in slabs or below grade.
- F. Exposed: Work not identified as concealed.
- G. Final Acceptance: Owner acceptance of the project from the Contractor upon certification by the Owner's Representative.
- H. Furnish: Supply and deliver to installation location.
- I. Furnished by Others: Receive delivery at job site or where called for and install.
- J. Inspection: Visual observations by Owner or Owner's Representative.
- K. Install: Mount and connect equipment and associated materials ready for use.
- L. Listed: Refers to classification by a standards agency.
- M. Or Approved Equal: Approved equal or equivalent as determined by Owner or Owner's Representative.
- N. Owner's Representative: Design professional or Consultant representing the Owner.
- O. Provide: Furnish, install and connect ready for use.
- P. Relocate: Disassemble, disconnect, and transport equipment to new locations: then clean, test, and install ready for use.
- Q. Replace: Remove and provide new item.
- R. Review: A general contractual conformance check of specified products.
- S. Satisfactory: As specified in Specifications.

#### 1.07 INTENT OF DRAWINGS

- A. All drawings are diagrammatic unless otherwise noted as detailed dimensioned drawings. Drawings show approximate locations of equipment and devices. Exact locations are subject to the approval of the Owner or Owner's Representative. The Contractor shall

verify dimensions and shall be responsible for their accuracy

- B. Items mentioned in the Specifications and not shown in the Drawings, or shown in the Drawings and not mentioned in the Specifications, shall be of like effect as if shown and mentioned in both. In the case of differences between the Drawings and the Specifications, the stricter provision as determined by the Owner or Owner's Representative shall govern.
- C. Omissions from the Drawings or Specifications, or the incorrect description of details of Work which are necessary to carry out the intent of the Drawings and Specifications, or work which is customarily performed, shall not relieve the Contractor from performing such omitted or incorrectly described work.
- D. No exclusion from, or limitations in, the language used in the Project Documents shall be interpreted as meaning that ancillary or accessory items necessary to complete any required system or item of equipment are to be omitted.

#### 1.08 REVIEW OF SPECIFICATIONS

- A. The Contractor shall carefully study and compare the Drawings and Specifications. Any error, inconsistency or omission discovered shall be immediately reported to the Owner or Owner's Representative. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission without such notice to the Owner or Owner's Representative, the Contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the cost for any correction.

#### 1.09 EXAMINATION OF THE PREMISES

- A. The Contractor shall visit the Site to become familiar with the local conditions under which the work is to be performed and correlate the observations with the requirements of the Drawings and Specifications. No allowance will be made for claims of concealed conditions which the Contractor learned or should have learned in exercising due diligence in its observations of the site and review of the local conditions.
- B. Before ordering any materials or performing any work, the Contractor shall coordinate the installation with the work of other trades and shall verify all measurements. No extra charge or compensation will be allowed for duplicate work or material required because of an unverified difference between an actual dimension and the measurement indicated in the Drawings. Any discrepancies found shall be submitted in writing to the Owner or Owner's Representative for consideration before proceeding with the work.

#### 1.10 COORDINATION OF TELECOM CABLING PATHWAYS AND TELECOM EQUIPMENT ROOMS

- A. The telecom drawings are diagrammatic in depicting the routing of communications pathways and the layout of communications equipment.
- B. The contractor shall coordinate the installation of all telecom work with existing structure, architecture and existing MEPS (Mechanical, Electrical, Plumbing, Sprinkler) utilities.
- C. Prior to the installation of telecom cabling pathways including conduit, j-hooks, sleeves, etc., the contractor shall coordinate the routing of this pathway to avoid conflicts with and provide necessary clearances from the work of other trades. The contractor shall provide all horizontal offsets, vertical offsets and radius bends as necessary to coordinate the routing of the telecom pathway with the work of other trades and building structure.

#### 1.11 WARRANTY

- A. The horizontal Category 6 cabling system including cabling, patch panels, jacks and faceplates shall carry a minimum fifteen (15) year manufacturer warranty from Belden/CDT, Berk-Tek/Leviton, CommScope, Panduit or approved equal.

## PART 2 – PRODUCTS

### 2.01 EQUIPMENT AND MATERIALS MINIMUM REQUIREMENTS

- A. All materials, unless otherwise specified, shall be new and be the standard products of the manufacturer. Used equipment or damaged material will be rejected.
- B. The listing of a manufacturer as “acceptable” does not indicate acceptance of a standard or cataloged item of equipment. All equipment and systems must conform to the Specifications.

### 2.02 WORKMANSHIP, SUBSTITUTIONS, WARRANTY

- A. Materials and workmanship shall meet or exceed industry standards and be fully guaranteed for a minimum of one (1) year from the date of final acceptance. Cable integrity and associated terminations shall be thoroughly inspected, fully tested and guaranteed free from defects, transpositions, open shorts, tight kinks, damaged jacket insulation, etc.
- B. Refer to the individual Division 27 Specifications for additional and/or extended warranty requirements.
- C. All labor must be thoroughly competent, skilled and trained, and all work shall be executed in strict accordance with the best practice of the trades.
- D. The Contractor shall be responsible for and make good, without expense to the Owner, any and all defects arising during this warranty period that are due to imperfect materials, improper installation or poor workmanship.
- E. After the Contract is awarded, requests to substitute for specified materials shall be submitted by the Contractor to the Owner or Owner’s Representative within thirty (30) days, complete with reasons for the substitution and savings which accrue to the Owner if the substitutions are approved. Substitutions after Contract award will be considered only if the substitutions are equal or superior to the products specified.
- F. No material substitutions will be allowed except by written acceptance from the Consultant. Specified catalog numbers are used for description of equipment and standard of quality only. Equivalent material will be given consideration only if adequate comparison data including samples are provided.
- G. Approval of alternate or substitute equipment or material in no way voids the Specification requirements.
- H. Under no circumstances shall the Owner be required to prove that an item proposed for substitution is not equal to the specified item. It shall be mandatory that the Contractor submit to the Owner or Owner’s Representative all evidence to support the contention that the item proposed for substitution is equal to the specified item. The Owner’s decision as to the equality of substitution shall be final and without further recourse.

### 2.03 FACTORY ASSEMBLED PRODUCTS

- A. Manufacturers of equipment assemblies that include components made by others shall assume complete responsibility for the final assembled unit.
  - 1. All components of an assembled unit need not be products of the same manufacturer.
  - 2. Component parts, which are alike, shall be from a single manufacturer.
  - 3. Components shall be compatible with each other and with the total assembly for the intended service.
  - 4. Components of equipment shall bear the manufacturer's name or trademark model number and serial number on a name plate securely affixed in a conspicuous place, or cast integral with, stamped or otherwise permanently marked upon the components of the equipment.
- B. Major items of equipment that serve the same function must be the same make and model.
- C. Equipment and materials installed shall be compatible in all respects with other items being furnished and with existing items so that a complete and fully operational system will result.
- D. Maximum standardization of components shall be provided to reduce spare part requirements.

### PART 3 – EXECUTION

#### 3.01 ROUGH-IN

- A. Before construction work commences, the Contractor shall visit the site and identify the exact routing of horizontal cable pathways.
- B. All equipment locations and cabling pathway shall be coordinated with other trades and existing conditions to eliminate interference with required clearances for equipment maintenance and inspections.
- C. Provide easy, safe and code mandated clearances at equipment racks and enclosures.

#### 3.02 CUTTING, CORING AND PATCHING

- A. The Contractor shall be responsible for all cutting, patching, coring and associated work to complete the communications cabling pathway system.
- B. Protect existing finishes from water damage during core/cutting work and cleanup all related water and debris. Patch adjacent work disturbed by installation of new work including insulation, walls and wall covering, ceiling and floor covering or other finished surfaces.

#### 3.03 FIRESTOPPING

- A. All penetrations through fire-rated building structures (walls and floors) shall be sealed with an appropriate fire stop system. This requirement applies to through penetrations (complete penetration) and membrane penetrations (through one side of a hollow fire rated structure). Any penetrating item i.e., riser slots and sleeves, cables, conduit, cable tray, and raceways, etc. shall be properly fire stopped.

- B. Firestopping assemblies shall meet or exceed the rating of the wall or floor being penetrated.
- C. Fire stopping References:
  - 1. ASTM E814, Standard Method of Fire Tests of Through-Penetration Fire Stops.
  - 2. ASTM E 119, Fire Tests of Building Construction and Materials (for fire-rated architectural barriers).
  - 3. 2002 NFPA National Electrical Code, Section 800-52, Paragraph 2(b), Spread of Fire and Products of Combustion.

### 3.04 CONCEALMENT

- A. Telecom cabling pathways including conduit, j-hooks and sleeves shall be concealed above ceilings, in walls, below slabs, and elsewhere throughout building. If concealment is impossible or impractical, or in areas without ceilings, the Owner's Representative shall be notified of the proposed routing prior to starting that portion of the work.
- B. All telecom cabling must be routed concealed above accessible ceilings or in conduit. No exposed telecom cabling is permitted with the exception of telecom cabling routed within the telecom rooms and the exposed steel roof structure in the exhibition halls.
- C. All exposed conduit shall be painted to match adjacent surfaces.

### 3.05 CONDUIT SEALING

- A. The Contractor shall seal all conduit penetrations to eliminate the intrusion of moisture.

### 3.06 GENERAL INSTALLATION REQUIREMENTS

- A. Coordinate ordering and installation of all equipment with long lead times or having a major impact on work by other trades so as not to delay the job or impact the schedule.
- B. Where mounting heights are not dimensioned, install systems, materials and equipment to provide the maximum headroom possible.
- C. Set all equipment to accurate line and grade, level all equipment and align all equipment components.
- D. Provide all scaffolding, rigging, hoisting and services necessary for erection and delivery of equipment and apparatus furnished into the premises.
- E. No equipment shall be hidden or covered up prior to inspection by the Owner's Representative. All work that is determined to be unsatisfactory shall be corrected immediately.
- F. All work shall be installed level and plumb, parallel and perpendicular to other building systems and components.
- G. The Contractor shall replace all ceiling tiles damaged by work performed as part of the communications contract.
- H. Storage and security of material and equipment shall be the responsibility of the Contractor.

END OF SECTION 27 01 00

## SECTION 27 08 00 – COMMISSIONING OF COMMUNICATIONS

## PART 1 – GENERAL

## 1.01 DESCRIPTION OF WORK

- A. Drawings and general provisions of the Contract, Including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.
- B. The Contractor shall provide all equipment, materials, labor, and services necessary to complete the testing, labeling and documentation of the telecom cabling system in compliance with requirements stated or reasonably inferred by the Specifications and the Contract Drawings.
- C. This section includes the minimum requirements for the testing, identification and administration for the telecommunications cabling system, including the following:
  - 1. Testing
    - a. Category 6 Cable Test Equipment and Test Procedures.
    - b. Cable test reports.
  - 2. Identification
    - a. Labeling of horizontal CAT 6 data cabling.
    - b. Labeling of Copper CAT 6 Patch Panels.

## 1.02 RELATED SECTIONS

- A. General: Consult all other Sections, determine the extent and character of related work, and properly coordinate work specified herein with that specified elsewhere to produce a complete and operable system.
- B. Related Sections:
  - 1. Section 27 01 00: Common Work Results for Communications.
  - 2. Section 27 15 00: Communications Horizontal Cabling
  - 3. Section 28 00 00: Common Work Results for Electronic Safety & Security.
  - 4. Section 28 05 28: Conduits and Backboxes for Electronic Safety and Security.
  - 5. Section 28 28 00: Video Surveillance System
- C. Division 1 Specifications, General and Supplementary Conditions apply to this Specification Section.

## 1.03 REGULATIONS AND CODE COMPLIANCE

- A. Materials and work specified herein shall comply with the requirements of Specification Section 27 01 00 and in particular the following standards and code requirements:
  - 1. ANSI/TIA-568.2-D: Balanced Twisted-Pair Telecommunications Cabling And Components Standards (Revision D, September 2018).
  - 2. ANSI/TIA-606-D: Administration Standard for Telecommunications Infrastructure (Revision D, October 2021).
  - 3. ANSI/TIA-1152-A: Requirements for Field Test Instruments and Measurements for Balanced Twisted-Pair Cabling (Revision A, November 2016).
  - 4. Underwriter's Laboratories, Inc. (UL).

#### 1.04 SUBMITTALS

- A. Test Equipment: Submit manufacturers' catalog sheets and specifications for the following cable testers
  - 1. Category 6 cable tester.
- B. Calibration Reports: Provide calibration reports for all test equipment to be used on the Project. The calibration must have been performed by a manufacturer certified calibration facility and be dated no more than 60 days prior to the start of testing.
- C. Cable Test Reports: Provide test reports in PDF format for all cables signed by the technician performing the cable testing. Include Manufacturers data sheets for the cabling being tested.
- D. Labels: Submit manufacturer's data sheets on the type of labels to be used for each labeling application.

#### PART 2 – PRODUCTS

##### 2.01 HORIZONTAL CATEGORY 6 UNSHIELDED TWISTED-PAIR CABLE TESTER

- A. Shall perform all tests necessary to certify the horizontal Category 6 UTP cabling in accordance with ANSI/TIA/EIA 568 B.2-1.
- B. Shall be a UL certified Level III test set calibrated by a manufacturer certified calibration facility. The calibration shall be dated no more than 60 days prior to the start of testing.
- C. Acceptable Manufacturers
  - 1. Fluke Networks
  - 2. Ideal Industries
  - 3. Agilent Technologies
  - 4. Or equal.

##### 2.02 LABELS

- A. Labels shall be laser printed and shall meet the legibility, defacement, exposure and adhesion requirements of UL 969.
- B. Acceptable manufacturers
  - 1. Brady
  - 2. Brother
  - 3. HellermannTyton.
  - 4. Panduit
  - 5. Or approved equal

##### 2.03 WORK AREA OUTLET FACEPLATE LABELS

- A. Label each port in each faceplate in accordance with Labeling Scheme identified on the Drawings. Label must be machine printed and inserted in the faceplate label window. Labels shall be provided by the faceplate manufacturer (Belden/CDT, CommScope, or approved equal).



## 2.04 HORIZONTAL CABLE SHEATH LABELS

- A. Label horizontal cable sheaths at work area outlets and at patch panels with laser printed self laminating wrap around vinyl labels. Labels shall be in accordance with the Labeling Scheme identified on the drawings.
- B. Labels shall be white with black type. Label size shall be 1.0" wide by 1.5" high.
- C. At the Telecom Room, cable labels will be affixed to cable a minimum of 1 inch from the termination on the patch panel, and placed in such a way as to be clearly visible.
- D. At the work area outlet, cable labels shall be affixed to the cable 2 inches from the termination on the jack.
  - 1. Acceptable Manufacturers:
    - a. Brady
    - b. Brother
    - c. HellermannTyton.
    - d. Panduit
    - e. Or approved equal

## 2.05 COPPER PATCH PANEL LABELS.

- A. Label each patch panel with a single panel ID label in accordance with the labeling scheme identified on the drawings.
- B. Labels shall be compatible with the patch panels provided for the Project.
- C. Label material shall be permanent polyester. Labels shall be white with black type. Label size shall be 0.5" wide by 0.5" high.
  - 1. Acceptable Manufacturers:
    - a. Brady
    - b. Brother
    - c. HellermannTyton.
    - d. Panduit
    - e. Or approved equal
- D. Label each patch panel port with a laser printed label. Label each port with the room number of the room housing the work area outlet.
- E. Labels shall be compatible with the patch panels provided for the Project.
- F. Label material shall be permanent polyester. Labels shall be white with black type. Label size shall be 0.375" high.
  - 1. Acceptable Manufacturers:
    - a. Brady
    - b. Brother
    - c. HellermannTyton.
    - d. Panduit

- e. Or approved equal

## PART 3 – EXECUTION

### 3.01 CABLE TESTING – GENERAL

- A. Visually inspect all cables, cable reels, and shipping cartons to detect cable damage incurred during shipping and transport. Return visibly damaged items to the manufacturer.
- B. Where post-manufacture test data has been provided by the manufacturer on the reel or shipping carton, submit copies to the Owner's Representative as part of the cable test results.
- C. The Owner's Representative reserves the right to observe any or all portions of the cable testing process.
- D. Test results and corrective procedures are to be documented and submitted to the Owner's Representative within five (5) working days of test completion.

### 3.02 CATEGORY 6 UTP CABLE TESTING

- A. A representative of the end-user shall be invited to witness field testing. The representative shall be notified of the start date of the testing phase 5 business days before testing commences.
- B. Field test measurements shall be made in accordance with Annex I of ANSI/TIA/EIA-568-B.2 unless otherwise noted.
- C. Field test measurements shall be conducted from 1 MHz to 250 MHz.
- D. Field testing shall be conducted using a level III tester. The accuracy of the level III tester shall meet or exceed the requirements of Annex B of ANSI/TIA/EIA-568-B.2-1. The tester shall be within the calibration period recommended by the vendor in order to achieve the vendor-specified measurement accuracy.
- E. Every cabling link shall be tested in accordance with the ANSI/TIA/EIA-568-B.1 Section 11.2: "100-Ohm twisted-pair transmission performance and field test requirements".
- F. The installed twisted-pair horizontal links shall be tested from the patch panel in the telecommunications room to the work area outlet. The cable must pass the "Permanent Link" performance limits specification as defined in ANSI/TIA/EIA-568-B.1.
- G. 100% of the installed cabling links must be tested and must pass the requirements of the standards mentioned above. Any failing link must be diagnosed and corrected. The corrective action shall be followed with a new test to prove that the corrected link meets the performance requirements. The final and passing result of the tests for all links shall be provided in the test results documentation.
- H. Trained technicians who have successfully attended an appropriate training program shall execute the tests. Appropriate training programs include but are not limited to installation certification programs provided by BICSI or the ACP (Association of Cabling Professionals).

- I. A Pass or Fail result for each parameter is determined by comparing the measured values with the specified test limits for that parameter. The test result of a parameter shall be marked with an asterisk (\*) when the result is closer to the test limit than the accuracy of the field tester. The field tester manufacturer must provide documentation as an aid to interpret results marked with asterisks. (Reference TIA-568-B; Annex I: Section I.2.2).
- J. The Contractor shall provide Category 6, 250 MHz channel test results on all pairs of cable. The following minimum field test parameters are required:
  - 1. Wire map (including cable shield if present).
  - 2. Length.
  - 3. Insertion loss.
  - 4. Near-end crosstalk (NEXT) loss.
  - 5. Power sum near-end crosstalk (PSNEXT) loss.
  - 6. Equal-level far-end crosstalk (ELFEXT).
  - 7. Power-sum equal-level far-end crosstalk (PSELFEXT).
  - 8. Return loss.
  - 9. Propagation delay.
  - 10. Delay skew.
- K. Test results shall be provided in electronic format and printed 8.5" x 11" format signed by the technician performing the testing. The electronic format should be a Microsoft Word .doc file. Along with the above test parameters, the following information must be included for each cable tested:
  - 1. Name of Owner and name of project (building name).
  - 2. Date and time of test.
  - 3. Name of technician performing the field testing.
  - 4. Manufacturer, model number, serial number and software revision of field tester.
  - 5. Cable ID (Telecom Room # - Patch Panel # - Port # / Work Area Room # - Telecom Outlet – Jack #).
  - 6. Overall Pass/Fail result.
  - 7. Manufacturer, category and model number of cable.
  - 8. NVP used to determine cable length.

### 3.03 IDENTIFICATION AND LABELING

- A. The Contractor shall confirm the telecom room and work area room numbers with the Owner or Owner's Representative prior to labeling.
- B. Work Area Data Jacks: Each data jack at the work area outlet shall be labeled. The label shall identify the name of the telecom room from which the drop originated, the letter of the patch panel where the drop is terminated and the patch panel port number. For example, Telecom Room "150", Patch Panel "B", Patch Panel Port 48 = "150-B-48".
- C. Work Area Horizontal Data Cable: Horizontal cable should be labeled at both ends within 6" of the point of termination. At the workstation outlet, the label shall identify the name of the telecom room from which the drop originated, the letter of the patch panel where the drop is terminated and the patch panel port number. For example, Telecom Room "150", Patch Panel "B", Patch Panel Port 48 = "150-B-48".
- D. Telecom Room Horizontal Data Cable: At the rear of the patch panel, label horizontal cable identifying the name of the room/location at the opposite end where the cable is terminated. For example, Room 102, Telecom Outlet 2, Jack 3 = "102-2-3".

- E. Patch Panels: Each patch panel in the telecom room shall have an alpha label (A-Z) located on the left hand side of the panel. Patch panel "A" shall be located at the top of the first rack in the telecommunications room. Patch panels beneath patch panel "A" shall be labeled B, C, etc. The lettering scheme will reset in each telecom room. For example, Telecom Room 150, Rack 1, Patch Panel B = "B".
- F. Patch Panel Ports: Each patch panel port shall be labeled with the name of the room/location in which the opposite end of the cable drop is terminated, the outlet number in the room, and the jack number within the telecom outlet plate. For example, Room 102, Telecom Outlet 2, Jack 3 = "102-2-3".

END OF SECTION 27 08 00

## SECTION 27 15 00 – COMMUNICATIONS HORIZONTAL CABLING

## PART 1 – GENERAL

## 1.01 DESCRIPTION OF WORK

- A. The Contractor shall provide all equipment, materials, labor, and services necessary to complete the horizontal cabling system, and to ensure that it is in compliance with requirements stated or reasonably inferred by the Specifications and the Contract Drawings.
- B. The horizontal cabling is that portion of the telecommunication cabling system that extends from the work area telecommunications outlet to the patch panel or termination block in the telecommunications room.
- C. This section includes minimum requirements for the following
  - 1. Horizontal Plenum Rated Category 6 Cabling.
  - 2. 24-Port CAT 6 Patch Panels,
  - 3. Category 6 Cable Termination (at Camera Locations).
  - 4. Velcro Cable Straps.

## 1.02 RELATED SECTIONS

- A. General: Consult all other Sections, determine the extent and character of related work, and properly coordinate work specified herein with that specified elsewhere to produce a complete and operable system.
- B. Related Sections:
  - 1. Section 27 01 00: Common Work Results for Communications.
  - 2. Section 27 08 00: Commissioning of Communications
  - 3. Section 28 00 00: Common Work Results for Electronic Safety & Security.
  - 4. Section 28 05 28: Conduits and Backboxes for Electronic Safety and Security.
  - 5. Section 28 28 00: Video Surveillance System
- C. Division 1 Specifications, General and Supplementary Conditions apply to this Specification Section.

## 1.03 REGULATIONS AND CODE COMPLIANCE

- A. Materials and work specified herein shall comply with the requirements of Specification Section 27 01 00 and in particular the following standards and code requirements:
  - 1. ANSI/TIA-568.0-E: Generic Telecommunications Cabling for Customer Premises (Revision E, March 2020).
  - 2. ANSI/TIA-568.1-E: Commercial Building Telecommunications Infrastructure Standard (Revision E, March 2020).
  - 3. ANSI/TIA-568.2-D: Balanced Twisted-Pair Telecommunications Cabling And Components Standards (Revision D, September 2018).
  - 4. ANSI/TIA-569-E: Telecommunications Pathways and Spaces (Revision E, May 2019)
  - 5. ANSI/TIA-606-D: Administration Standard for Telecommunications Infrastructure (Revision D, October 2021).
  - 6. ANSI/NFPA-70, 2017 -- National Electrical Code (NEC).
  - 7. Underwriter's Laboratories, Inc. (UL).

**1.04 QUALITY ASSURANCE**

- A. All materials shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the Specification shall be subject to the control and approval of the Owner's Representative. Equipment and materials shall be of the quality and the manufacturer indicated. The equipment specified is based upon the acceptable manufacturers listed.
- B. The Contractor shall strictly adhere to all Category 6 installation practices when installing unshielded twisted-pair cabling.

**1.05 SUBMITTALS**

- A. Manufacturer's Data Sheets: Submit manufacturers data sheets for the following items:
  - 1. Horizontal Plenum Rated Category 6 Cabling.
  - 2. 24-Port CAT 6 Patch Panels,
  - 3. Category 6 Cable Termination (at Camera Locations).
  - 4. Velcro Cable Straps.

**1.06 DELIVERY, STORAGE & HANDLING**

- A. Visually inspect all cables, cable reels, and shipping cartons to detect possible cable damage incurred during shipping and transport. Visibly damaged goods are to be returned to the supplier and replaced at no additional cost to the Owner.

**1.07 GUARANTEE**

- A. The Category 6 horizontal data cabling system including work area jacks, horizontal cabling, patch panels and patch cords shall be covered by a minimum fifteen (15) year system warranty from Belden/CDT, CommScope, Berk-Tek/Leviton, Panduit or approved equal (see Specification Section 27 01 00 1.11).
- B. The Telecom Contractor will be responsible for fulfilling the requirements necessary to obtain one of the 15-year specified product warranties. This may require that the Contractor be a "Certified Installer" by the manufacturer. It may also require manufacturer specialized training, field installation oversight, field test verification, etc.

**PART 2 – PRODUCTS****2.01 HORIZONTAL PLENUM CATEGORY 6 CABLE (INDOOR LOCATIONS)**

- A. The horizontal cabling must meet the specific manufacturer system warranty requirements listed in Specification Section 27 15 00 1.7.
- B. Horizontal data cabling shall be 4-pair, Category 6 unshielded twisted pair.
- C. Physical Characteristics
  - 1. Category 6 cable shall meet or exceed the requirements of ANSI/TIA/EIA-568-B.2 and ANSI/TIA/EIA-568-B.2 Addendum 1.
  - 2. Cable shall have a listed plenum rated jacket (CMP).

## 3. The cable jacket must have the following legible markings

- a. Manufacturer's name.
- b. Copper conductor gauge.
- c. Pair count.
- d. UL and CSA listing.
- e. Manufacturer's trademark.
- f. Category rating.
- g. Sequential foot markings, in one foot increments.
- h. Jacket rating (CMP).

## 4. Horizontal data cable shall have a BLACK jacket with white lettering.

## D. Transmission Characteristics

## 1. Cable shall conform to ANSI/TIA/EIA-568-B.2 Addendum 1 as shown below.

Frequency (MHz)	Solid Conductor r Cable Insertion Loss (dB)	NEXT Loss (dB)	PSNEXT Loss (dB)	ELFEXT Loss (dB)	Power Sum ELFEXT (dB)	Return Loss (dB)
1	2.0	74.3	72.3	67.8	64.8	20.0
4	3.8	65.3	63.3	55.8	52.8	23.0
8	5.3	60.8	58.8	49.7	46.7	24.5
10	6.0	59.3	57.3	47.8	44.8	25.0
16	7.6	56.2	54.2	43.7	40.7	25.0
20	8.5	54.8	52.8	41.8	38.8	25.0
25	9.5	53.3	51.3	39.8	36.8	24.3
31.25	10.7	51.9	49.9	37.9	34.9	23.6
62.5	15.4	47.4	45.4	31.9	28.9	21.5
100	19.8	44.3	42.3	27.8	24.8	20.1
200	29.0	39.8	37.8	21.8	18.8	18.0
250	32.8	38.3	36.3	19.8	16.8	17.3

## 2. Propagation delay skew shall not exceed 45 ns per 100 meters for all frequencies from 1 MHz to 250 MHz.

## E. Acceptable Products:

1. Belden/CDT Gigaflex 2400 P/N 2413 010U1000 (jacket color black).
2. CommScope Uniprise CS34P BLK C6 4/23 Plenum Rated P/N UN874047214/10 (jacket color black).
3. Or Approved Equal by Leviton or Panduit.

## 2.02 HORIZONTAL INDOOR/OUTDOOR RATED CATEGORY 6 CABLE (FOR CABLING ROUTED IN UNDERGROUND CONDUIT)

- A. Provide 4-pair CAT 6 indoor/outdoor rated cabling where cabling is routed in underground conduit or wet locations.

- B. Cable shall have a listed riser rated jacket (CMR/CMX). Cable shall be suitable for underground duct installation.
- C. Cable jacket marking: Must be legible and shall contain the following information:
  - 1. Manufacturer's name.
  - 2. Copper conductor gauge.
  - 3. Pair count.
  - 4. Manufacturer's trade mark.
  - 5. Sequential foot markings.
- D. Acceptable Products:
  - 1. Belden P/N 2146A.
  - 2. Mohawk VersaLAN P/N M59200.
  - 3. Hitachi DryBit P/N 30315-8-BK3.
  - 4. Or Approved Equal.

#### 2.03 CATEGORY 6 CABLE TERMINATIONS (AT CAMERA LOCATIONS)

- A. Terminate CAT 6 cabling at cameras in a manner that is compatible with the camera and camera mounting. Termination jacks, plugs and/or connecting patch cords must be concealed and protected at the camera location.
- B. Termination method must be approved by the cabling manufacturer and must allow the CAT 6 cabling to be tested and certified. Examples are as follows:
  - 1. CAT 6 field mount plug.
  - 2. CAT 6 jack with CAT 6 patch cord.
- C. Acceptable Products:
  - 1. Belden REVConnect core and flex plug. Belden P/N RV6FFPUBK18-S1.
  - 2. Belden CAT 6A Field Mount Plug. Belden P/N RVAFPUBK-S1.
  - 3. Or Approved Equal by Leviton or Panduit.

#### 2.04 CATEGORY 6 COPPER PATCH PANELS

- A. Provide 19" rack mounted 48-port or 24-port Category 6 data patch panels as shown on the drawings.
- B. Patch panels shall be constructed of black anodized aluminum or black powder coated steel.
- C. Patch panels shall have fixed outlet jacks with 110 IDC connectors on the rear of the panel.
- D. Patch panels shall be wired in accordance with the T568B standard.
- E. The same manufacturer will be used for both the patch panels and workstation outlets throughout the Project.
- F. Patch panels shall conform to the performance requirements of ANSI/TIA/EIA-568-B.2 Addendum 1 as shown below.



Parameter	Worst Case Channel Performance at 100MHz
Specified Frequency Range	1-250 MHz
Attenuation	0.2 dB
NEXT	54.0 dB
Return Loss	24.0 dB

## G. Acceptable Products:

1. Belden CDT GigaFlex PS6+ Category 6 Patch Panel. Belden/CDT AX101613 (48-port) or AX101611 (24-port).
2. CommScope Uniprise P/N UNP-6-DM-2U-24 (24-port) or UNP-6-DM-2U-24 (48-port).
3. Or Approved Equal by Leviton or Panduit.

## 2.05 CATEGORY 6 PATCH CORDS

- A. Provide Category 6 patch cords for interconnection of patch panel outlets and network switches.
- B. Provide (1) 3'-0" category 6 UTP work area patch cord for every camera drop.
- C. Category 6 patch cords shall meet or exceed the requirements of ANSI/TIA/EIA 568-B.2.
- D. Patch cords shall have a red jacket color, made from stranded conductors and have 8-position RJ-45 style snagless plugs on each end with molded strain relief boots.
- E. Cabling used for the patch cords shall be manufactured by the same manufacturer as the horizontal cabling and shall be of the same product line. Electrical characteristics and performance of the patch cables shall be nearly identical to the horizontal cable with exceptions given due to differences between solid and stranded conductors as indicated in the following table.

Frequency (MHz)	Stranded Conductor Cable Insertion Loss (dB)
1	2.4
4	4.5
8	6.4
10	7.1
16	9.1
20	10.2
25	11.4
31.25	12.8
62.5	18.5
100	23.8
200	34.8
250	39.4

- F. Patch cords shall be rated for use as communications cable and shall have the designation "CM" or "CMR" printed on the jacket.

G. Acceptable Products:

1. Belden/CDT GigaFlex PS6+ Modular Cord P/N C601102003 (3 ft color red).
2. CommScope Uniprise UNCG P/N UC1BBB2-07F003 (3 ft color red).
3. Or Approved Equal by Leviton or Panduit.

2.06 VELCRO CABLE STRAPS

- A. Loosely bundle horizontal cabling with Velcro tie wraps.
- B. Velcro tie wraps shall ¾" in width and cut from a continuous roll.
- C. Install Velcro cable ties at 2'-0" intervals outside of the telecom rooms and 1'-0" intervals inside the telecom rooms.
- D. Do not exceed qty (24) cables per bundle.
- E. Acceptable Products
  1. Panduit TAK-TY HLSP (plenum).
  2. Leviton 43115-075.
  3. Or equal.

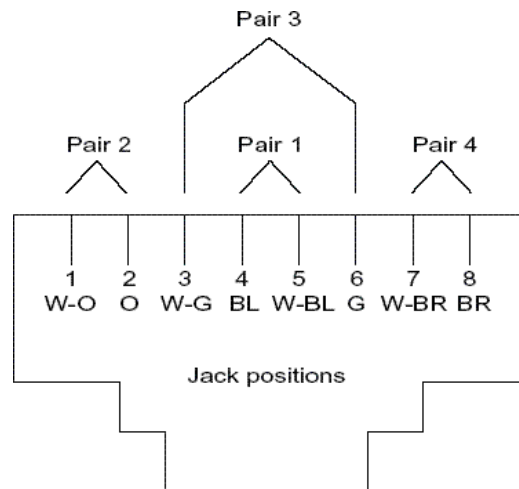
PART 3 – EXECUTION

3.01 HORIZONTAL CABLE ROUTING AND TERMINATION

- A. Ten feet of cable slack shall be stored at the telecom room and three feet of cable slack shall be provided in the ceiling space above the telecom outlet for every installed horizontal cable.
- B. Cables shall be installed in continuous lengths from origin to destination (no splices) except for transition points or consolidation points specifically shown on the drawings.
- C. The cable's minimum bend radius and maximum pulling tension shall not be exceeded. Refer to manufacturers requirements and reference documents.
- D. All telecom cables shall be supported by approved telecom pathways having dedicated support systems directly attached to structure (i.e. conduit, j-hooks, cable tray, etc.). Cables shall not be attached to or supported by ceiling grid, ceiling grid support wires, lighting fixture support wires or the work of other mechanical, electrical, plumbing or sprinkler trades.
- E. All telecom cables shall be stored in accordance with the manufacturer's requirements.
- F. Any cable damaged or exceeding the manufacturer's recommended installation parameters during installation shall be replaced by the Contractor prior to final acceptance at no cost to the Owner.
- G. All telecom cables shall be labeled with self-adhesive labels. At the work area outlet, the cable label shall be applied to the cable behind the faceplate on a section of cable that can be accessed by removing the cover plate. At the Telecom Room, each cable shall be clearly labeled on the cable jacket behind the patch panel at a location that can be

viewed without removing the bundle support ties. Cable labels located within the bundle or where obscured from view shall not be acceptable.

- H. Cables shall be installed in accordance with the recommendations made in the ANSI/TIA/EIA-568-B standard document, manufacturer's recommendations and installation guides, and best industry practices.
- I. Plastic "zip-ties" shall not be permitted within the Structured Cabling System. "Velcro" type (hook and loop) tie wraps shall be used for the purpose of bundling / managing horizontal and backbone cabling (must be plenum rated if installed within a plenum space).
- J. Horizontal UTP pair untwist at the termination shall not exceed 0.5".
- K. Jack pin/pair assignments shall be T568B for all installed horizontal cabling unless otherwise specified within the Project Documents.
  - 1. T568B Jack pin/pair assignments are as follows:



- L. For horizontal cabling, if a J-hook System is used to support cable bundles, all horizontal cables shall be supported at a maximum of 60" intervals. J-hooks must be secured to the permanent building structure. J-Hooks shall not be attached to ceiling tiles, ceiling grid, ceiling support wires or to the work of other mechanical, electrical, plumbing and sprinkler trades.
- M. The horizontal telecom pathway and pathway support system shall not permit significant lateral or vertical motion. Cable quantities shall not exceed J-Hook System manufacturer recommendations or qty (24) cables, whichever is fewer.
- N. Telecom cables may not rest on acoustic ceiling grids or panels, or be attached to any portion of the building except for dedicated telecom pathway including conduit, innerduct, ladder rack, cable tray and/or J-hooks.
- O. The cable length between the work area outlet and the termination in the telecommunications closet shall not exceed 295 feet. Any horizontal cable runs longer than 295 feet should be brought to the immediate attention of the Owner's Representative prior to installation.

- P. When placing cable, the Contractor shall maintain the following minimum clearance from sources of electro-magnetic interference (EMI).
  - 1. 6" clear from power conductors.
  - 2. 12" clear from fluorescent lighting fixtures and ballasts.
  - 3. 36" clear from transformers and motors.

### 3.02 WORK AREA OUTLETS

- A. Work Area outlets and connectors shall be installed in accordance with manufacturer's recommendations and installation guides, and best industry practices.
- B. Cables shall be dressed and terminated in accordance with the recommendations made in the ANSI/TIA/EIA-568-B standard document, manufacturer's recommendations and best industry practices.
- C. Pair untwist at the termination shall not exceed 0.5".
- D. Bend radius of the cable in the termination area shall not be less than 4 times the outside diameter of the cable.

END OF SECTION 27 15 00

SECTION 28 00 00 – COMMON WORK RESULTS FOR ELECTRONIC SAFETY & SECURITY

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. Include all labor, materials, tools, transportation, storage costs, excavation, training, equipment, insurance, temporary protection, permits, inspections, taxes and all necessary and related items required to provide complete and operational video surveillance system as shown on the Drawings and described in the Specifications.

1.02 RELATED SECTIONS

- A. General: Consult all other Sections, determine the extent and character of related work, and properly coordinate work specified herein with that specified elsewhere to produce a complete and operable system.
- B. Related Sections:
  - 1. Section 27 01 00: Common Work Results for Communications
  - 2. Section 27 08 00: Commissioning of Communications
  - 3. Section 27 15 00: Communications Horizontal Cabling
  - 4. Section 28 05 28: Conduits and Backboxes for Electronic Safety and Security.
  - 5. Section 28 28 00: Video Surveillance System
- C. Division 1 Specifications, General and Supplementary Conditions apply to this Specification Section.

1.03 QUALITY ASSURANCE

- A. The Contractor installing the Electronic Safety and Security systems shall have a minimum of (5) years experience installing commercial security systems of similar size and scope.
- B. See individual Division 28 specifications for additional requirements.

1.04 REGULATIONS AND CODE COMPLIANCE

- A. The Contractor will comply with all applicable governmental regulations including Federal, State, City, and Local applicable codes and ordinances.
- B. References to codes and standards called for in the Specifications refer to the latest edition, amendments, and revisions to the codes and standards in effect on the date of these Specifications.
- C. All work and materials shall conform to and be installed, inspected and tested in accordance with the governing rules and regulations as well as federal, state and local governmental agencies, including, but not limited to the following:
  - 1. NFPA-70, 2011 -- National Electrical Code (NEC).
  - 2. Underwriters Laboratories (UL):
    - a. UL 50 - Enclosures for Electrical Equipment.
    - b. UL 294 – Access Control Systems
    - c. UL 365 – Police Station Connected Burglar Alarm Units and Systems

- d. UL 609 – Local Burglar Alarm Units and Systems
- e. UL 611 – Central Station Burglar-Alarm Units
- f. UL 636 – Hold up alarms
- g. UL 1076 – Proprietary Burglar Alarm Units and Systems
- h. UL 1610 – Central Station Burglar-Alarm Units
- i. UL 60950-1 - Information Technology Equipment - Safety.

3. Federal Communications Commission (FCC):

- a. Code of Federal Regulations Title 47 - Part 15 – Radio Frequency Devices.
- b. Code of Federal Regulations Title 47 - Part 68 – Connection of Terminal Equipment to the Telephone Network.

4. Americans with Disabilities Act (ADA).

1.05 DEFINITIONS

- A. Accessible Ceiling: Space above a ceiling constructed of removable tiles (clipped or unclipped). Acoustical ceiling grid with removal tiles would be considered an accessible ceiling. A gypboard ceiling would not be considered an accessible ceiling.
- B. Approved/Approval: Written permission to use a material or system.
- C. As Called For: Materials, equipment including the execution specified/shown in the Specifications.
- D. Code Requirements: Minimum requirements.
- E. Concealed: Work installed in pipe and duct shafts, chases or recesses, inside walls, above ceilings, in slabs or below grade.
- F. Exposed: Work not identified as concealed.
- G. Final Acceptance: Owner acceptance of the project from the Contractor upon certification by the Owner's Representative.
- H. Furnish: Supply and deliver to installation location.
- I. Furnished by Others: Receive delivery at job site or where called for and install.
- J. Inspection: Visual observations by Owner or Owner's Representative.
- K. Install: Mount and connect equipment and associated materials ready for use.
- L. Listed: Refers to classification by a standards agency.
- M. Or Approved Equal: Approved equal or equivalent as determined by Owner or Owner's Representative.
- N. Owner's Representative: Design professional or Consultant representing the Owner.
- O. Provide: Furnish, install and connect ready for use.
- P. Relocate: Disassemble, disconnect, and transport equipment to new locations: then clean, test, and install ready for use.

- Q. Replace: Remove and provide new item.
- R. Review: A general contractual conformance check of specified products.
- S. Satisfactory: As specified in Specifications.

#### 1.06 INTENT OF DRAWINGS

- A. All drawings are diagrammatic unless otherwise noted as detailed dimensioned drawings. Drawings show approximate locations of equipment and devices. Exact locations are subject to the approval of the Owner or Owner's Representative. The Contractor shall verify dimensions and shall be responsible for their accuracy
- B. Items mentioned in the Specifications and not shown in the Drawings, or shown in the Drawings and not mentioned in the Specifications, shall be of like effect as if shown and mentioned in both. In the case of differences between the Drawings and the Specifications, the stricter provision as determined by the Owner or Owner's Representative shall govern.
- C. Omissions from the Drawings or Specifications, or the incorrect description of details of Work which are necessary to carry out the intent of the Drawings and Specifications, or work which is customarily performed, shall not relieve the Contractor from performing such omitted or incorrectly described work.
- D. No exclusion from, or limitations in, the language used in the Project Documents shall be interpreted as meaning that ancillary or accessory items necessary to complete any required system or item of equipment are to be omitted.

#### 1.07 REVIEW OF SPECIFICATIONS

- A. The Contractor shall carefully study and compare the Drawings and Specifications. Any error, inconsistency or omission discovered shall be immediately reported to the Owner or Owner's Representative. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission without such notice to the Owner or Owner's Representative, the Contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the cost for any correction.

#### 1.08 EXAMINATION OF THE PREMISES

- A. The Contractor shall visit the Site to become familiar with the local conditions under which the work is to be performed and correlate the observations with the requirements of the Drawings and Specifications. No allowance will be made for claims of concealed conditions which the Contractor learned or should have learned in exercising due diligence in its observations of the site and review of the local conditions.
- B. Before ordering any materials or performing any work, the Contractor shall coordinate the installation with the work of other trades and shall verify all measurements. No extra charge or compensation will be allowed for duplicate work or material required because of an unverified difference between an actual dimension and the measurement indicated in the Drawings. Any discrepancies found shall be submitted in writing to the Owner or Owner's Representative for consideration before proceeding with the work.

#### 1.09 COORDINATION OF CABLING PATHWAYS AND EQUIPMENT ROOMS

- A. Drawings are diagrammatic in depicting the routing of security cabling pathways and the layout of security equipment.

- B. The contractor shall coordinate the installation of all work with other trades including Mechanical, Electrical, Plumbing, Sprinkler, Structural and Architectural.
- C. The contractor shall participate in coordination meetings with other trades prior to the installation of the work. For a specific space/area, the security contractor shall coordinate the routing and installation of all work with all other trades that have work in that specific space/area.
- D. Prior to the installation of security cabling pathway including conduit, sleeves, etc., the contractor shall coordinate the routing of this pathway to avoid conflicts with and provide necessary clearances from the work of other trades. The contractor shall provide all horizontal offsets, vertical offsets and radius bends as necessary to coordinate the routing of the security pathways with the work of other trades and building structure.
- E. Prior to the installation of equipment and/or cabling in the communication rooms, the contractor shall coordinate the layout of all equipment and cable pathways with the Telecom Contractor.

#### 1.10 WARRANTY AND SERVICES

- A. See individual Division 28 Specifications for warranty requirements.

### PART 2 – PRODUCTS

#### 2.01 EQUIPMENT AND MATERIALS MINIMUM REQUIREMENTS

- A. Electrical equipment and systems shall meet UL Standards and requirements of the National Electric Code. This listing requirement applies to the entire assembly. Any modifications to equipment to suit the intent of the Specifications shall be performed in accordance with these requirements.
- B. Equipment shall meet all applicable FCC Regulations.
- C. All materials, unless otherwise specified, shall be new and be the standard products of the manufacturer. Used equipment or damaged material will be rejected.
- D. The listing of a manufacturer as “acceptable” does not indicate acceptance of a standard or cataloged item of equipment. All equipment and systems must conform to the Specifications.

#### 2.02 WORKMANSHIP, SUBSTITUTIONS, WARRANTY

- A. Materials and workmanship shall meet or exceed industry standards and be fully guaranteed for a minimum of one (1) year from the date of final acceptance. Cable integrity and associated terminations shall be thoroughly inspected, fully tested and guaranteed free from defects, transpositions, open shorts, tight kinks, damaged jacket insulation, etc.
- B. All labor must be thoroughly competent, skilled and trained, and all work shall be executed in strict accordance with the best practice of the trades.
- C. The Contractor shall be responsible for and make good, without expense to the Owner, any and all defects arising during this warranty period that are due to imperfect materials,



improper installation or poor workmanship.

- D. After the Contract is awarded, requests to substitute for specified materials shall be submitted by the Contractor to the Owner or Owner's Representative within thirty (30) days, complete with reasons for the substitution and savings which accrue to the Owner if the substitutions are approved. Substitutions after Contract award will be considered only if the substitutions are equal or superior to the products specified.
- E. No material substitutions will be allowed except by written acceptance from the Consultant. Specified catalog numbers are used for description of equipment and standard of quality only. Equivalent material will be given consideration only if adequate comparison data including samples are provided.
- F. Approval of alternate or substitute equipment or material in no way voids the Specification requirements.
- G. Under no circumstances shall the Owner be required to prove that an item proposed for substitution is not equal to the specified item. It shall be mandatory that the Contractor submit to the Owner or Owner's Representative all evidence to support the contention that the item proposed for substitution is equal to the specified item. The Owner's decision as to the equality of substitution shall be final and without further recourse.

## 2.03 FACTORY ASSEMBLED PRODUCTS

- A. Manufacturers of equipment assemblies that include components made by others shall assume complete responsibility for the final assembled unit.
  - 1. All components of an assembled unit need not be products of the same manufacturer.
  - 2. Component parts, which are alike, shall be from a single manufacturer.
  - 3. Components shall be compatible with each other and with the total assembly for the intended service.
  - 4. Components of equipment shall bear the manufacturer's name or trademark model number and serial number on a name plate securely affixed in a conspicuous place, or cast integral with, stamped or otherwise permanently marked upon the components of the equipment.
- B. Major items of equipment that serve the same function must be the same make and model.
- C. Equipment and materials installed shall be compatible in all respects with other items being furnished and with existing items so that a complete and fully operational system will result.
- D. Maximum standardization of components shall be provided to reduce spare part requirements.

## PART 3 – EXECUTION

### 3.01 ROUGH-IN

- A. Before construction work commences, the Contractor shall visit the site and identify the exact routing of all cable pathways.

- B. All equipment locations and cabling pathway shall be coordinated with other trades and existing conditions to eliminate interference with required clearances for equipment maintenance and inspections.
- C. Coordinate work with other trades and existing conditions to determine exact location of equipment and routing of cable pathways.
- D. Provide easy, safe and code mandated clearances at equipment racks and enclosures.

### 3.02 CUTTING, CORING AND PATCHING

- A. The Contractor shall be responsible for all cutting, patching, coring and associated work to complete the security cabling pathway system.
- B. Protect existing finishes from water damage during core/cutting work and cleanup all related water and debris. Patch adjacent work disturbed by installation of new work including insulation, walls and wall covering, ceiling and floor covering or other finished surfaces.
- C. Contractor to submit all proposed concrete wall or floor penetrations to the Structural Engineer for approval prior to performing the work. Contractor shall locate and avoid cutting concrete reinforcing steel using current x-ray or pachometer equipment.

### 3.03 FIRESTOPPING

- A. All penetrations through fire-rated building structures (walls and floors) shall be sealed with an appropriate fire stop system. This requirement applies to through penetrations (complete penetration) and membrane penetrations (through one side of a hollow fire rated structure). Any penetrating item i.e., riser slots and sleeves, cables, conduit, cable tray, and raceways, etc. shall be properly fire stopped.
- B. Firestopping assemblies shall meet or exceed the rating of the wall or floor being penetrated.
- C. Fire stopping References:
  - 1. ASTM E814, Standard Method of Fire Tests of Through-Penetration Fire Stops.
  - 2. ASTM E 119, Fire Tests of Building Construction and Materials (for fire-rated architectural barriers).
  - 3. 2002 NFPA National Electrical Code, Section 800-52, Paragraph 2(b), Spread of Fire and Products of Combustion.

### 3.04 CONCEALMENT

- A. Security cabling pathways including conduit and sleeves shall be concealed above ceilings, in walls, below slabs, and elsewhere throughout building. If concealment is impossible or impractical, or in areas without ceilings, the Owner's Representative shall be notified of the proposed routing prior to starting that portion of the work.
- B. All CAT 6 cabling must be routed concealed above accessible ceilings or in conduit. No exposed security cabling is permitted with the exception of CAT 6 security cabling routed within the telecom rooms or within the exposed steel trusses above the exhibition halls.

### 3.05 CONDUIT SEALING

- A. The Contractor shall seal all building penetrations to prevent the intrusion of moisture.

3.06 GENERAL INSTALLATION REQUIREMENTS

- A. Coordinate ordering and installation of all equipment with long lead times or having a major impact on work by other trades so as not to delay the job or impact the schedule.
- B. Where mounting heights are not dimensioned, install systems, materials and equipment to provide the maximum headroom possible.
- C. Set all equipment to accurate line and grade, level all equipment and align all equipment components.
- D. Provide all scaffolding, rigging, hoisting and services necessary for erection and delivery of equipment and apparatus furnished into the premises.
- E. No equipment shall be hidden or covered up prior to inspection by the Owner's Representative. All work that is determined to be unsatisfactory shall be corrected immediately.
- F. All work shall be installed level and plumb, parallel and perpendicular to other building systems and components.
- G. The Contractor shall replace all ceiling tiles damaged by work performed as part of the communications contract.
- H. Storage and security of material and equipment shall be the responsibility of the Contractor.

END OF SECTION 28 00 00

## SECTION 28 05 28 - CONDUITS AND BACK BOXES FOR ELECTRONIC SAFETY AND SECURITY

## PART 1 - GENERAL

## 1.01 DESCRIPTION OF WORK

- A. Provide all labor, materials, equipment, tools, transportation, storage costs, testing, training and all necessary and related items required to provide a complete and operational raceway system for the Video Surveillance System Cabling as shown on the Drawings and described in the Specifications.
- B. Provide a complete end-to-end raceway system for the Video Surveillance System including conduit, fittings, back boxes, cover plates, j-boxes, pullboxes, fittings, j-hooks, supports, braces, pull string and firestopping.
- C. Raceway requirements based on cable routing location/condition:
  - 1. Concealed accessible ceiling space: J-Hooks.
  - 2. Outdoor Exposed: Rigid Conduit (RMC or IMC) painted to match adjacent surfaces.
  - 3. Indoor Exposed Inmate Accessible Location: Rigid Conduit (RMC or IMC) painted to match adjacent surfaces.
  - 4. Indoor Exposed Non-Inmate Accessible Location: EMT Conduit painted to match adjacent surfaces.
  - 5. Control Room Raised Floor: J-Hooks.
  - 6. Underground: Schedule 40 PVC.
  - 7. Outdoor Transition from Underground to Above Grade: Vinyl Coated Rigid Steel.
  - 8. Outdoor Exposed connection from outlet box to camera: Liquid Tight Flex Conduit.

## 1.02 RELATED SECTIONS

- A. General: Consult all other Sections, determine the extent and character of related work, and properly coordinate work specified herein with that specified elsewhere to produce a complete and operable system.
- B. Related Sections:
  - 1. Section 27 01 00: Common Work Results for Communications
  - 2. Section 27 08 00: Commissioning of Communications
  - 3. Section 27 15 00: Communications Horizontal Cabling
  - 4. Section 28 00 00: Common Work Results for Electronic Safety & Security.
  - 5. Section 28 28 00: Video Surveillance System
- C. Division 1 Specifications, General and Supplementary Conditions apply to this Specification Section.

## 1.03 REGULATIONS AND CODE COMPLIANCE

- A. Reference to codes, standards, specifications and recommendations of technical societies, trade organizations and governmental agencies shall mean that latest edition of such publications adopted and published prior to submittal of the bid. Consider such codes or standards a part of this Specification as though fully repeated herein.
- B. Perform all work in accordance with governing codes, rules and regulations including but not limited to the following:

1. National Electrical Manufacturers Association (NEMA):
  - a. TC-3-04 PVC Fittings for Use with Rigid PVC Conduit and Tubing
  - b. FB1-07 Fittings, Cast Metal Boxes and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable
2. National Fire Protection Association (NFPA):
  - a. 70-11 National Electrical Code (NEC)
  - b. 1-05 Flexible Metal Conduit
  - c. 5-04 Surface Metal Raceway and Fittings
  - d. 6-07 Rigid Metal Conduit
  - e. 50-07 Enclosures for Electrical Equipment
  - f. 360-09 Liquid-Tight Flexible Steel Conduit
  - g. 467-07 Grounding and Bonding Equipment
  - h. 514A-04 Metallic Outlet Boxes
  - i. 514B-04 Fittings for Cable and Conduit
  - j. 514C-02 Nonmetallic Outlet Boxes, Flush-Device Boxes & Covers
  - k. 651-05 Schedule 40 and 80 Rigid PVC Conduit
  - l. 651A-07 Type EB and A Rigid PVC Conduit and HDPE Conduit
  - m. 797-07 Electrical Metallic Tubing
  - n. 1242-06 Intermediate Metal Conduit
3. ASTM International:
  - a. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
  - b. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
  - c. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
  - d. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.
4. Underwriters Laboratories Inc.:
  - a. UL 1479 - Fire Tests of Through-Penetration Firestops.
  - b. UL - Fire Resistance Directory.

#### 1.04 SUBMITTALS

- A. See Specification Section 28 00 00 for additional submittal requirements including quantity and format of submittals.
- B. Product Data: Submit manufacturer's product data sheets for the following items:
  1. EMT (Electrical Metallic Tubing) Conduit.
  2. IMC (Intermediate Metal Conduit)
  3. RMC (Rigid Metal Conduit).
  4. Schedule 40 PVC.
  5. Back boxes.
  6. Pull boxes.
  7. Hinged cover enclosures and cabinets.
  8. Fittings.
  9. Firestopping.

- C. Shop Drawings: Submit shop drawings indicating the following:
1. Show size and routing of all conduits 2" and larger including the location of pullboxes.
  2. Show the size and location of conduit penetrations through fire rated and smoke partitions.
  3. Show the size and location of penetrations through structural items including beams, columns and floors. Structural penetrations must be reviewed and approved by the Structural Engineer prior to installing.
  4. Show the location of flexible conduit required at expansion joints and seismic joints.

#### 1.05 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

#### 1.06 QUALITY ASSURANCE

- A. Through Penetration Firestopping of Fire Rated Assemblies: UL 1479 or ASTM E814 with 0.10 inch water gage (24.9 Pa) minimum positive pressure differential to achieve fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.
1. Wall Penetrations: Fire F-Ratings as indicated on Drawings, but not less than 1-hour.
  2. Floor and Roof Penetrations: Fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.
    - a. Floor Penetrations Within Wall Cavities: T-Rating is not required.
- B. Through Penetration Firestopping of Non-Fire Rated Floor and Roof Assemblies: Materials to resist free passage of flame and products of combustion.
1. Noncombustible Penetrating Items: Noncombustible materials for penetrating items connecting maximum of three stories.
  2. Penetrating Items: Materials approved by authorities having jurisdiction for penetrating items connecting maximum of two stories.
- C. Fire Resistant Joints in Fire Rated Floor, Roof, and Wall Assemblies: [ASTM E1966 or] UL 2079 to achieve fire resistant rating as indicated on Drawings for assembly in which joint is installed.
- D. Fire Resistant Joints Between Floor Slabs and Exterior Walls: ASTM E119 with 0.10 inch water gage (24.9 Pa) minimum positive pressure differential to achieve fire resistant rating as indicated on Drawings for floor assembly.
- E. Surface Burning Characteristics: 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

## PART 2 – PRODUCTS

### 2.01 GENERAL

- A. Conduit Size: In accordance with the NEC, but not less than 3/4 inch unless otherwise shown.

## 2.02 CABLE HANGERS (J-HOOKS) AND SUPPORTS

- A. Provide cable hangers (J-hooks) spaced at 5'-0" centers to support horizontal cable routed concealed in accessible ceiling spaces.
- B. All J-hooks must be routed concealed above accessible ceilings. No exposed j-hooks are permitted. In areas without ceilings, cabling must be routed in conduit.
- C. Hangers shall be prefabricated, zinc coated, carbon steel hangers designed specifically for 4-pair UTP communications cabling installations.
- D. Hangers shall have an open top and rolled edges. Hangers shall have a minimum 2" and maximum 4" diameter loop.
- E. Hangers shall be supported directly from the building structure. The Contractor shall provide anchors, beam clamps, threaded rod, rod fasteners, flange clips and brackets as needed to support the cable hangers from the building structure. Do not attach hangers to ceiling support wires or other support systems installed by other building trades.
- F. J-hooks shall not support more cables than recommended by the manufacturer.
- G. Acceptable Products
  - 1. Erico Caddy CableCat Clips.
  - 2. B-Line Cable Hook System.
  - 3. Panduit J-Pro Cable Support System.
  - 4. Or approved equal.

## 2.03 CONDUIT

- A. Rigid galvanized steel: Shall Conform to UL 6, ANSI C80.1.
- B. Rigid intermediate steel conduit (IMC): Shall Conform to UL 1242, ANSI C80.6.
- C. Electrical metallic tubing (EMT): Shall Conform to UL 797, ANSI C80.3. Maximum size not to exceed 105 mm (4 inches) and shall be permitted only with cable rated 600 volts or less.
- D. Flexible galvanized steel conduit: Shall Conform to UL 1.
- E. Liquid-tight flexible metal conduit: Shall Conform to UL 360.
- F. Direct burial plastic conduit: Shall conform to UL 651 and UL 651A, heavy wall PVC or high density polyethylene (PE).

## 2.04 CONDUIT FITTINGS

- A. Rigid steel and IMC conduit fittings:
  - 1. Fittings shall meet the requirements of UL 514B and ANSI/ NEMA FB1.
  - 2. Standard threaded couplings, locknuts, bushings, and elbows: Only steel or malleable iron materials are acceptable. Integral retractable type IMC couplings are also acceptable.

3. Locknuts: Bonding type with sharp edges for digging into the metal wall of an enclosure.
  4. Bushings: Metallic insulating type, consisting of an insulating insert molded or locked into the metallic body of the fitting. Bushings made entirely of metal or nonmetallic material are not permitted.
  5. Erickson (union-type) and set screw type couplings: Approved for use in concrete are permitted for use to complete a conduit run where conduit is installed in concrete. Use set screws of case hardened steel with hex head and cup point to firmly seat in conduit wall for positive ground. Tightening of set screws with pliers is prohibited.
  6. Sealing fittings: Threaded cast iron type. Use continuous drain type sealing fittings to prevent passage of water vapor. In concealed work, install fittings in flush steel boxes with blank cover plates having the same finishes as that of other electrical plates in the room.
- B. Rigid aluminum conduit fittings:
1. Standard threaded couplings, locknuts, bushings, and elbows: Malleable iron, steel; Zinc or cadmium plate iron or steel fittings. Locknuts and bushings: As specified for rigid steel and IMC conduit.
  2. Set screw fittings: Not permitted for use.
- C. Electrical metallic tubing fittings:
1. Fittings shall meet the requirements of UL 514B and ANSI/ NEMA FB1.
  2. Only steel or malleable iron materials are acceptable.
  3. Couplings and connectors: Concrete tight and rain tight, with connectors having insulated throats. Use gland and ring compression type couplings and connectors for conduit sizes 2 inches and smaller. Use set screw type couplings with four set screws each for conduit sizes over 2 inches. Use set screws of case-hardened steel with hex head and cup point to firmly seat in wall of conduit for positive grounding.
  4. Indent type connectors or couplings are prohibited.
  5. Die-cast or pressure-cast zinc-alloy fittings or fittings made of "pot metal" are prohibited.
- D. Flexible steel conduit fittings:
1. Conform to UL 514B. Only steel or malleable iron materials are acceptable.
  2. Clamp type, with insulated throat.
- E. Liquid-tight flexible metal conduit fittings:
1. Fittings shall meet the requirements of UL 514B and ANSI/ NEMA FB1.
  2. Only steel or malleable iron materials are acceptable.
  3. Fittings must incorporate a threaded grounding cone, a steel or plastic compression ring, and a gland for tightening. Connectors shall have insulated throats.
- F. Direct burial plastic conduit fittings:
1. Fittings shall meet the requirements of UL 514C and NEMA TC3.
  2. As recommended by the conduit manufacturer.
- G. Expansion and deflection couplings:



1. Conform to UL 467 and UL 514B.
2. Accommodate, 0.75 inch deflection, expansion, or contraction in any direction, and allow 30 degree angular deflections.
3. Include internal flexible metal braid sized to guarantee conduit ground continuity and fault currents in accordance with UL 467, and the NEC code tables for ground conductors.
4. Jacket: Flexible, corrosion-resistant, watertight, moisture and heat resistant molded rubber material with stainless steel jacket clamps.

## 2.05 CONDUIT SUPPORTS

- A. Parts and hardware: Zinc-coat or provide equivalent corrosion protection.
- B. Individual Conduit Hangers: Designed for the purpose, having a pre-assembled closure bolt and nut, and provisions for receiving a hanger rod.
- C. Multiple conduit (trapeze) hangers: Not less than 1-1/2 by 1-1/2 inch, 12 gage steel, cold formed, lipped channels; with not less than 3/8 inch diameter steel hanger rods.
- D. Solid Masonry and Concrete Anchors: Self-drilling expansion shields, or machine bolt expansion.

## 2.06 OUTLET, JUNCTION, AND PULL BOXES

- A. UL-50 and UL-514A.
- B. Cast metal where required by the NEC or shown, and equipped with rustproof boxes.
- C. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
- D. Metal Floor Boxes: Cast or sheet metal, semi-adjustable, rectangular.
- E. Sheet metal boxes: Galvanized steel, except where otherwise shown.
- F. Flush mounted wall or ceiling boxes shall be installed with raised covers so that front face of raised cover is flush with the wall. Surface mounted wall or ceiling boxes shall be installed with surface style flat or raised covers.

## 2.07 CABINETS

- A. NEMA 250, Type 1 or 4, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
- B. Hinged door in front cover with flush latch and concealed hinge.
- C. Key latch to match panelboards.
- D. Metal barriers to separate wiring of different systems and voltage.
- E. Accessory feet where required for freestanding equipment.

## 2.08 WIREWAYS

- A. Equip with hinged covers, except where removable covers are shown.

## 2.09 WARNING TAPE

- A. Standard, 4-Mil polyethylene 3 inches wide tape non-detectable type, red with black letters, and imprinted with "CAUTION BURIED ELECTRONIC SAFETY AND SECURITY CABLE BELOW".

## 2.10 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

- A. Description: Comply with SCTE 77.
  - 1. Color of Frame and Cover: Gray.
  - 2. Configuration: Units shall be designed for flush burial and have closed bottom, unless otherwise indicated.
  - 3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
  - 4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
  - 5. Cover Legend: Molded lettering, as indicated for each service.
  - 6. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.
  - 7. Handholes 2 inches wide by 24 inches long and larger shall have inserts for cable racks and pulling-in irons installed before concrete is poured.
- B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel or fiberglass or a combination of the two.

## 2.11 SLEEVES FOR RACEWAYS

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.

## 2.12 FIRESTOPPING

- A. Manufacturers:
  - 1. Dow Corning Corp.
  - 2. 3M fire Protection Products.
  - 3. Specified Technology, Inc.
  - 4. Or Approved Equal.
- B. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
  - 1. Silicone Firestopping Elastomeric Firestopping: Single component silicone elastomeric compound and compatible silicone sealant.
  - 2. Foam Firestopping Compounds: Single component foam compound.
  - 3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
  - 4. Fiber Stuffing and Sealant Firestopping: Composite of mineral fiber stuffing insulation with silicone elastomer for smoke stopping.

5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
7. Firestop Pillows: Formed mineral fiber pillows.

C. Color: Dark gray.

## 2.13 FIRESTOPPING ACCESSORIES

- A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.
- B. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.
- C. General:
  1. Furnish UL listed products.
  2. Select products with rating not less than rating of wall or floor being penetrated.
- D. Non-Rated Surfaces:
  1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where conduit is exposed.
  2. For exterior wall openings below grade, furnish modular mechanical type seal consisting of interlocking synthetic rubber links shaped to continuously fill annular space between conduit and cored opening or water-stop type wall sleeve.

## PART 3 – EXECUTION

### 3.01 PENETRATIONS

- A. Cutting or Holes:
  1. Locate holes in advance where they are proposed in the structural sections such as ribs or beams. Obtain the approval of the Owner prior to drilling, cutting or coring through structural sections.
  2. Cut holes through concrete and masonry in new and existing structures with a diamond core drill or concrete saw. Pneumatic hammer, impact electric, hand or manual hammer type drills are not allowed, except where permitted by the Owner required by limited working space.
- B. Fire Stop: Where conduits, wireways, and other electronic safety and security raceways pass through fire partitions, fire walls, smoke partitions, or floors, install a fire stop that provides an effective barrier against the spread of fire, smoke and gases with rock wool fiber or silicone foam sealant only. Completely fill and seal clearances between raceways and openings with the fire stop material.
- C. Waterproofing: At floor, exterior wall, and roof conduit penetrations, completely seal clearances around the conduit and make watertight.

### 3.02 INSTALLATION, GENERAL

## A. Install conduit as follows:

1. In complete runs before pulling in cables or wires.
2. Flattened, dented, or deformed conduit is not permitted. Remove and replace the damaged conduits with new undamaged material.
3. Assure conduit installation does not encroach into the ceiling height head room, walkways, or doorways.
4. Cut square with a hacksaw, ream, remove burrs, and draw up tight.
5. Mechanically continuous.
6. Independently support conduit at 8 foot on center. Do not use other supports i.e., (suspended ceilings, suspended ceiling supporting members, lighting fixtures, conduits, mechanical piping, or mechanical ducts).
7. Support within 12 inches of changes of direction, and within 12 inches of each enclosure to which connected.
8. Close ends of empty conduit with plugs or caps at the rough-in stage to prevent entry of debris, until wires are pulled in.
9. Secure conduits to cabinets, junction boxes, pull boxes and outlet boxes with bonding type locknuts. For rigid and IMC conduit installations, provide a locknut on the inside of the enclosure, made up wrench tight. Do not make conduit connections to junction box covers.
10. Do not use aluminum conduits in wet locations.
11. Unless otherwise indicated on the drawings or specified herein, all conduits shall be installed concealed within finished walls, floors and ceilings.

## B. Conduit Bends:

- 1.
2. Make bends with standard conduit bending machines.
3. Conduit hickey may be used for slight offsets, and for straightening stubbed out conduits.
4. Bending of conduits with a pipe tee or vise is prohibited.

## C. Layout and Homeruns:

1. Install conduit with wiring, including homeruns, as shown.

## 3.03 CONCEALED WORK INSTALLATION

## A. In Concrete:

1. Conduit: Rigid steel, IMC or EMT. Do not install EMT in concrete slabs that are in contact with soil, gravel or vapor barriers.
2. Align and run conduit in direct lines.
3. Make couplings and connections watertight. Use thread compounds that are UL approved conductive type to insure low resistance ground continuity through the conduits. Tightening set screws with pliers is prohibited.

## B. Furred or Suspended Ceilings and in Walls:

1. Conduit for conductors 600 volts and below:
  - a. Rigid steel, IMC, rigid aluminum, or EMT. Different type conduits mixed indiscriminately in the same system is prohibited.
2. Align and run conduit parallel or perpendicular to the building lines.
3. Tightening set screws with pliers is prohibited.

- C. Concealed accessible ceiling spaces and chases (non-inmate accessible):
  - 1. Provide j-hooks spaced at 5'-0" O.C.
  - 2. J-hooks to be supported directly from existing structure. Do not support j-hooks from the supports/work of other trades.

### 3.04 EXPOSED WORK INSTALLATION

- A. Unless otherwise indicated on the drawings, exposed conduit is only permitted on the exterior of the building and in mechanical and electrical rooms.
- B. Conduit for Conductors 600 volts and below:
  - 1. Rigid steel, IMC, or EMT. Different type of conduits mixed indiscriminately in the system is prohibited.
- C. Align and run conduit parallel or perpendicular to the building lines.
- D. Install horizontal runs close to the ceiling or beams and secure with conduit straps.
- E. Support horizontal or vertical runs at not over eight foot intervals.
- F. Surface metal raceways: Use only where shown.
- G. Painting:
  - 1. Paint exposed conduit to match adjacent surfaces.

### 3.05 EXPANSION JOINTS

- A. Conduits 3 inches and larger, that are secured to the building structure on opposite sides of a building expansion joint, require expansion and deflection couplings. Install the couplings in accordance with the manufacturer's recommendations.
- B. Provide conduits smaller than 3 inches with junction boxes on both sides of the expansion joint. Connect conduits to junction boxes with sufficient slack of flexible conduit to produce 5 inch vertical drop midway between the ends. Flexible conduit shall have a copper green ground bonding jumper installed. In lieu of this flexible conduit, expansion and deflection couplings as specified above for 15 inches and larger conduits are acceptable.
- C. Install expansion and deflection couplings where shown.
- D. Seismic Areas: In seismic areas, provide conduits rigidly secured to the building structure on opposite sides of a building expansion joint with junction boxes on both sides of the joint. Connect conduits to junction boxes with 15 inches of slack flexible conduit. Flexible conduit shall have a copper green ground bonding jumper installed.

### 3.06 CONDUIT SUPPORTS, INSTALLATION

- A. Safe working load shall not exceed 1/4 of proof test load of fastening devices.
- B. Use pipe straps or individual conduit hangers for supporting individual conduits.
- C. Maximum distance between supports is 8 foot on center.

- D. Support multiple conduit runs with trapeze hangers. Use trapeze hangers that are designed to support a load equal to or greater than the sum of the weights of the conduits, wires, hanger itself, and 200 pounds. Attach each conduit with U-bolts or other approved fasteners.
- E. Support conduit independently of junction boxes, pull boxes, fixtures, suspended ceiling T-bars, angle supports, and similar items.
- F. Fasteners and Supports in Solid Masonry and Concrete:
  - 1. New Construction: Use steel or malleable iron concrete inserts set in place prior to placing the concrete.
  - 2.
  - 3. Existing Construction:
    - a. Steel expansion anchors not less than 1/4 inch bolt size and not less than 1-1/8 inch embedment.
    - b. Power set fasteners not less than 1/4 inch diameter with depth of penetration not less than 3 inches.
    - c. Use vibration and shock resistant anchors and fasteners for attaching to concrete ceilings.
- G. Hollow Masonry: Toggle bolts are permitted.
- H. Bolts supported only by plaster or gypsum wallboard are not acceptable.
- I. Metal Structures: Use machine screw fasteners or other devices specifically designed and approved for the application.
- J. Attachment by wood plugs, rawl plug, plastic, lead or soft metal anchors, or wood blocking and bolts supported only by plaster is prohibited.
- K. Chain, wire, or perforated strap shall not be used to support or fasten conduit.
- L. Spring steel type supports or fasteners are prohibited for all uses except: Horizontal and vertical supports/fasteners within walls.
- M. Vertical Supports: Vertical conduit runs shall have riser clamps and supports in accordance with the NEC and as shown. Provide supports for cable and wire with fittings that include internal wedges and retaining collars.

### 3.07 BOX INSTALLATION

- A. Boxes for Concealed Conduits:
  - 1. Flush mounted.
  - 2. Provide raised covers for boxes to suit the wall or ceiling, construction and finish.
- B. In addition to boxes shown, install additional boxes where needed to prevent damage to cables and wires during pulling in operations.
- C. Remove only knockouts as required and plug unused openings. Use threaded plugs for cast metal boxes and snap-in metal covers for sheet metal boxes.

- D. Outlet boxes in the same wall mounted back-to-back are prohibited. A minimum 24 inch, center-to-center lateral spacing shall be maintained between boxes).
- E. Minimum size of outlet boxes for ground fault interrupter (GFI) receptacles is 4 inches square by 2-1/8 inches deep, with device covers for the wall material and thickness involved.
- F. Stencil or install phenolic nameplates on covers of the boxes identified on riser diagrams; for example "SIG-FA JB No. 1".
- G. On all Branch Circuit junction box covers, identify the circuits with black marker.

### 3.08 ELECTRONIC SAFETY AND SECURITY CONDUIT

- A. Contractor shall design and install a complete end-to-end raceway system for the Video Surveillance System.
- B. Minimum conduit size of 3/4 inch, but not less than the size shown on the drawings.
- C. All conduit ends shall be equipped with insulated bushings.
- D. All four inch conduits within buildings shall include pull boxes after every two 90 degree bends. Size boxes per the NEC.
- E. Vertical conduits/sleeves through closets floors shall terminate not less than 3 inches below the floor and not less than 3 inches below the ceiling of the floor below.
- F. Terminate conduit runs to/from a backboard in a closet or interstitial space at the top or bottom of the backboard. Conduits shall enter communication closets next to the wall and be flush with the backboard.
- G. Where drilling is necessary for vertical conduits, locate holes so as not to affect structural sections such as ribs or beams.
- H. All empty conduits located in communications closets or on backboards shall be sealed with a standard non-hardening duct seal compound to prevent the entrance of moisture and gases and to meet fire resistance requirements.
- I. Conduit runs shall contain no more than four quarter turns (90 degree bends) between pull boxes/backboards. Minimum radius of communication conduit bends shall be as follows (special long radius):

Sizes of Conduit Trade Size	Radius of Conduit Bends mm, Inches
$\frac{3}{4}$	(6)
1	(9)
1-1/4	(14)
1-1/2	(17)
2	(21)
2-1/2	(25)
3	(31)
3-1/2	(36)
4	(45)

- J. Furnish and install 3/4 inch thick fire retardant plywood specified in on the wall of communication closets where shown on drawings . Mount the plywood with the bottom edge 6 inches above the finished floor.
- K. Furnish and pull wire in all empty conduits. (Sleeves through floor are exceptions).

### 3.09 INSTALLATION – FIRESTOPPING

- A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.
- B. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.
- C. Apply firestopping material in sufficient thickness to achieve required fire and smoke rating, to uniform density and texture.
- D. Place foamed material in layers to ensure homogenous density, filling cavities and spaces. Place sealant to completely seal junctions with adjacent dissimilar materials.
- E. Fire Rated Surface:
1. Seal opening at floor, wall, partition, ceiling, and roof as follows:
    - a. Install sleeve through opening and extending beyond minimum of 1 inch (25 mm) on both sides of building element.
    - b. Size sleeve allowing minimum of 1 inch (25 mm) void between sleeve and building element.
    - c. Pack void with backing material.
    - d. Seal ends of sleeve with UL listed fire resistive silicone compound to meet fire rating of structure penetrated.
  2. Where cable tray, conduit, wireway, and cable penetrates fire rated surface, install firestopping product in accordance with manufacturer's instructions.
- F. Non-Rated Surfaces:
1. Seal opening through non-fire rated wall, partition, floor, ceiling and roof opening as follows:
    - a. Install sleeve through opening and extending beyond minimum of 1 inch (25 mm) on both sides of building element.



- b. Size sleeve allowing minimum of 1 inch (25 mm) void between sleeve and building element.
  - c. Install type of firestopping material recommended by manufacturer.
- 2. Install floor plates or ceiling plates where conduit, penetrates non-fire rated surfaces in occupied spaces. Occupied spaces include rooms with finished ceilings and where penetration occurs below finished ceiling.
- 3. Exterior wall openings below grade: Assemble rubber links of mechanical seal to size of conduit and tighten in place, in accordance with manufacturer's instructions.
- 4. Interior partitions: Seal pipe penetrations at computer rooms and data rooms. Apply sealant to both sides of penetration to completely fill annular space between sleeve and conduit.

END OF SECTION 28 05 28

SECTION 28 20 00 – VIDEO SURVEILLANCE SYSTEM

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide all labor, materials, equipment, tools, transportation, storage costs, testing, training and all necessary and related items required to provide a complete and operational video surveillance system as shown on the Drawings and described in the Specifications.
- B. The Reno-Sparks Convention Center has an existing Avigilon video surveillance system. All cameras, network video recorders (NVRs) and video viewing workstations must be manufactured by Avigilon and compatible with the existing system.
- C. The existing camera system consists of qty (59) cameras connected to a single Avigilon recording server. Project includes the removal of qty (41) cameras and installation of qty (4) new cameras. The qty (41) new cameras will be connected to qty (2) new Avigilon recording servers. Existing cameras that are not replaced will migrate to the (2) new recording servers.
- D. Install latest manufacturer firmware on all new cameras.
- E. Install latest operating system security updates and service packs on new video recording servers. Install latest manufacturer software on new video recording servers. Install camera licenses on new video recording servers.
- F. Install latest operating system security updates and service packs on new video viewing workstations. Install latest manufacturer client viewing software on new video viewing workstations. Connect workstations to existing video wall monitors (2 existing monitors per workstation).
- G. Install and configure (2) new video recording servers. Coordinate server mounting location and connection to existing UPS's with RSCVA IT staff. For each server, install qty (2) 10g SFP+ cords and connect to 10g SFP+ ports on existing network switches as directed by RSCVA IT staff.
- H. Install cable pathways from new camera locations to the telecom (IDF) cabinet serving the camera (see drawings for telecom cabinet (IDF) locations). Cut, core and/or sleeve walls as necessary for cable routing. Install conduit and/or j-hook pathways for routing of cabling. Firestop all cable penetrations through fire rated, smoke and/or acoustical walls.
- I. Install plenum rated CAT 6 cable from camera locations to telecom cabinet/rack (IDF) locations as shown on the drawings. Terminate cat 6 cable at the telecom cabinet/rack (IDF) locations on existing cat 6 patch panels (install new 24-port cat 6 panels where shown on the drawings). Terminate cat 6 cable at camera locations on cat 6 field mount plugs. Test and certify cat 6 cabling after installation/termination.
- J. Remove existing cameras and associated camera mounts (where cameras are shown to be demolished on the drawings). Demo existing camera cabling from camera to termination location. Turn over removed cameras to the owner. Patch and repair surfaces at removed camera locations ready for paint (painting by owner). Where cameras are removed from existing ceiling tiles, install new ceiling tile (ceiling tiles provided by owner).
- K. Install new cameras and associated mounts. Connect cameras to new CAT 6 cabling.

- L. Coordinate connection of cameras to existing network switches with RSCVA IT. Verify switch port numbers and related camera VLANs. Install and mount 60 watt POE++ injectors (where shown on drawings) in existing network cabinets and connect to power. Provide and install CAT 6 patch cords to cross connect cameras to network switches.
- M. Aim, focus and adjust new cameras. Connect new cameras to new recording servers. Configure camera recording streams, compression and frame rates on servers. Configure control room viewing workstations to view new cameras as they are installed.
- N. Configure video analytics on cameras as required by the specifications.
- O. Test and commission the entire video surveillance system. Provide four (4) hours of training to the owner on the operation and maintenance of the system.
- P. Turn over extra stock (spare) cameras to the owner.

## 1.02 RELATED SECTIONS

- A. General: Consult all other Sections, determine the extent and character of related work, and properly coordinate work specified herein with that specified elsewhere to produce a complete and operable system.
- B. Related Sections:
  - 1. Section 27 01 00: Common Work Results for Communications.
  - 2. Section 27 08 00: Commissioning of Communications
  - 3. Section 27 15 00: Communications Horizontal Cabling
  - 4. Section 28 00 00: Common Work Results for Electronic Safety & Security.
  - 5. Section 28 05 28: Conduits and Backboxes for Electronic Safety and Security.
- C. Division 1 Specifications, General and Supplementary Conditions apply to this Specification Section.

## 1.03 QUALITY ASSURANCE

- A. The Contractor installing the IP video surveillance cameras and video recording software must have a minimum of (5) years experience installing video surveillance systems of similar size and scope.
- B. Contractor must be an Avigilon Certified Partner.
- C. The Contractor installing the IP video surveillance system must be a firm normally engaged in the design, installation and maintenance of integrated security systems including access control, intrusion detection and video surveillance.
- D. The contractor installing the Category 6 cabling to the cameras must comply with the qualification requirements and installation requirements listed in the Division 27 Specifications.
- E. The Contractor must be licensed by the Nevada State Contractors Board.
- F. Formal, written evidence of the following may be requested at any point during the Bid or installation processes:
  - 1. If requested, the Contractor, including any subcontractor, shall show proven expertise in the implementation of video surveillance projects. This expertise can

be illustrated through the inclusion of details of at least three (3) projects involving the design and installation of video surveillance systems within the past three-year period of similar size and scope. Names, addresses, and telephone numbers of references for the three projects shall be included.

2. In the event subcontractors are used for any portion of the installation or acceptance testing, the Contractor shall be responsible for any subsequent corrective action required on that portion of the work.

#### 1.04 SUBMITTALS

##### A. Manufacturer Product Data Sheets

1. Submit product data sheets in electronic PDF (portable document format).
2. Provide a table of contents for each submittal indicating the items being submitted. Products listed in the table of contents should be in the same order as they appear in the Specifications.
3. Provide product data sheets for all items listed in each specification section. Partial submittals will not be accepted.
4. Where product data sheets include more than one distinct item, clearly mark data sheet with arrow or other identifying means to clearly indicate the items being submitted for approval. Delete or cross-out non-applicable data.
5. Provide manufacturer data sheets for the following equipment and software:
  - a. 3-Sensor 24 MegaPixel IP Dome Cameras and Mounts
  - b. 4-Sensor 32 MegaPixel IP Dome Cameras and Mounts.
  - c. 1-Sensor 12 MegaPixel Fisheye IP Dome Cameras.
  - d. 1-Sensor 61 MegaPixel Bullet Camera with Custom Lens and Environmental Housing.
  - e. 60 Watt POE++ injectors.
  - f. Control room video viewing workstations.
  - g. Video management system software, licenses and software support.
  - h. Network video recording servers and 10G SFP network cables [ADD ALTERNATE].

#### 1.05 REGULATIONS AND CODE COMPLIANCE

- A. The Contractor will comply with all applicable governmental regulations including Federal, State, City, and local applicable codes and ordinances.
- B. References to codes and standards called for in the Specifications refer to the latest edition, amendments, and revisions to the codes and standards in effect on the date of these Specifications.
- C. All work and materials shall conform to and be installed, inspected and tested in accordance with federal, state and local governmental agencies, including, but not limited to the following:
  1. ANSI/NFPA-70, 2017 -- National Electrical Code (NEC).
  2. Underwriter's Laboratories, Inc. (UL).
  3. Federal Communications Commission (FCC).
  4. Americans with Disabilities Act (ADA).

#### 1.06 INTENT OF DRAWINGS

- A. All drawings are diagrammatic unless otherwise noted as detailed dimensioned drawings. Drawings show approximate locations of equipment and devices. Exact locations are

subject to the approval of the Owner or Owner's Representative. The Contractor shall verify dimensions and shall be responsible for their accuracy

- B. Items mentioned in the Specifications and not shown in the Drawings, or shown in the Drawings and not mentioned in the Specifications, shall be of like effect as if shown and mentioned in both. In the case of differences between the Drawings and the Specifications, the stricter provision as determined by the Owner or Owner's Representative shall govern.
- C. Omissions from the Drawings or Specifications, or the incorrect description of details of Work which are necessary to carry out the intent of the Drawings and Specifications, or work which is customarily performed, shall not relieve the Contractor from performing such omitted or incorrectly described work.
- D. No exclusion from, or limitations in, the language used in the Project Documents shall be interpreted as meaning that ancillary or accessory items necessary to complete any required system or item of equipment are to be omitted.

#### 1.07 REVIEW OF SPECIFICATIONS

- A. Prior to submitting a bid for the Project, the Contractor shall carefully study and compare the Drawings and Specifications and shall at once report to the Owner or Owner's Representative any error, inconsistency or omission discovered. During construction, if the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Specifications without such notice to the Owner or Owner's Representative, the Contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the cost for any correction.
- B. The Contractor shall not deviate from the specified scope of work as indicated in the Project Documents. Deviations include (but are not limited to):
  - 1. Alteration of video surveillance camera locations from those specified in Plans.
  - 2. Installation of horizontal cables to a different Telecom Room than indicated on the Plans.

#### 1.08 EXAMINATION OF THE PREMISES

- A. The Contractor shall visit the Site(s) to become familiar with the local conditions under which the work is to be performed and correlate his observations with the requirements of the Drawings and Specifications. No allowance will be made for claims of concealed conditions which the Contractor learned or should have learned in exercising due diligence in its observations of the site and review of the local conditions.
- B. Before ordering any materials or performing any work, the Contractor shall verify all measurements and be responsible for correctness of same. No extra charge or compensation will be allowed for duplicate work or material required because of an unverified difference between an actual dimension and the measurement indicated in the Drawings. Any discrepancies found shall be submitted in writing to the Owner or Owner's Representative for consideration before proceeding with the work.

#### 1.09 DELIVERY, STORAGE AND HANDLING

- A. All items to be installed as a component of the IP video surveillance system for the Project shall be stored according to manufacturer's recommendations. In addition, all items must be stored in a location protected from vandalism and weather. Items shall not be stored outside. If air temperature at the storage location shall be below 40 degrees F,

the equipment shall be moved to a heated 50 degrees F (minimum) location. If necessary, equipment shall be stored off site at The Contractor's expense.

#### 1.10 WARRANTY

- A. See Division 1 Specifications and General Conditions regarding Guarantee and Warranty requirements which apply to this Specification Section.
- B. The Contractor shall provide the following warranty for the Video Surveillance System described in this specification section:
  - 1. Warranty Start Date: The warranty period will begin after substantial completion of the project.
  - 2. Complete System Warranty: The complete Video Surveillance System including all devices, equipment, cabling, software and programming shall be guaranteed to be free from defects in workmanship and materials for a minimum period of one (1) year from date of substantial completion. Promptly remedy such defects and any subsequent damage caused by the defects or repair thereof at no expense to the Owner.
  - 3. Labor Warranty: Contractor to provide all labor as necessary to complete warranty repairs for a period of one (1) year from the date of substantial completion. During this labor warranty period, all services including equipment, labor, travel, expenses, etc., shall be provided during normal working hours at no cost to the Owner. The Contractor shall provide the Owner with a phone number for service. The Contractor shall respond within one (1) business day of receipt of a service call. The Contractor shall provide an on-site response time of two (2) business day for repair of critical system items during normal business hours.
  - 4. Warranty Exclusions: The guarantee shall exclude acts of God, vandalism, physical abuse or operator misuse.
  - 5. Extended Warranties: Contractor to provide the following equipment with extended warranties:
    - a. Network video recorders: 5-year next business day onsite warranty [ADD ALTERNATE].
    - b. Control room video viewing workstations: 5-year next business day onsite warranty.
    - c. Video Management System Software Maintenance Agreement: 5-Years.
    - d. Cameras: 3-Year Warranty.

#### 1.11 FINAL ACCEPTANCE

- A. General
  - 1. All cameras mounted in accordance with the drawings.
  - 2. All CAT 6 cables installed, terminated, labeled and tested. Certified test reports submitted to the Owner.
  - 3. All cameras connected to the network and assigned IP addresses (Owner to provide IP address scheme). Contractor to provide list of camera locations, hardware MAC addresses and IP addresses to the Owner.
  - 4. All cameras communicating and recording to the video "Recording" server.
  - 5. All cameras properly aimed and focused for both day and night operation.

6. All cameras configured for proper aspect ratio, resolution, frame rate and video recording size.
7. Video "Recording" software installed, updated and configured on the video recording server at each project location.
8. Device licenses for each camera installed on the server.
9. Client viewing and configuration software installed, updated and configured on (2) control room video viewing workstations.
10. Configure permissions on the recording servers to allow specific users to view live and recorded video.
11. Entire video surveillance system tested and commissioned in the presence of the Owner's Representative.
12. All Punchlist items identified during the testing and commissioning corrected to the satisfaction of the Owner's Representative.
13. Extra stock items turned over to the Owner.
14. Operation and Maintenance manuals turned over to the Owner.
15. Owner training completed.

## PART 2 – PRODUCTS

### 2.01 FIXED 3-SENSOR AND 4-SENSOR VANDAL RESISTANT DOME CAMERAS

#### A. Provide cameras meeting the following requirements:

1. Camera will consist of 3 or 4 individual 8MP fixed cameras installed in a single vandal resistant dome.
2. Each of the 3 or 4 cameras within the dome shall be capable of being repositioned within the dome by moving it around the perimeter of a circular support track.
3. Each of the 3 or 4 cameras within the dome shall be capable of being independently aimed up and down, side to side.
4. Each of the 4 cameras within the dome shall be capable of being remotely focused over the IP network via a web browser.
5. Each of the 3 or 4 cameras will have a minimum 8MP Resolution.
6. Wide Dynamic Range.
7. Dual encoder (H.264 and MJPEG).
8. The entire camera assembly will one RJ-45 Ethernet Connector, 10/100 Base-T.
9. The entire camera assembly will require 1 software camera license within the VMS software.
10. POE+ 30 Watts - IEEE 802.3at Compliant (no IR).
11. POE++ 60 Watts (with IR).
12. Vandal Resistant and IK10 Rated.
13. IP 66 Ingress and Weather Rated.
14. Video frame rate (up to) 20FPS.
15. 3-Year Warranty.

#### B. Provide camera mount kits to support cameras:

1. Provide corner mount kit, gooseneck support arm and shroud to mount cameras on exterior corners of buildings as shown on the drawings.
2. Provide pendant mount kit to mount cameras below exposed roof steel in exhibition halls.
3. Provide surface mount kit to mount cameras on gypboard or t-bar ceilings as shown on the drawings.
4. Provide additional mounting plates, adapters and accessories as necessary for a vandal resistant and weatherproof installation at all camera locations.

## C. Acceptable Products:

1. 4-sensor 4x8MP 270/360 degree dome camera:
  - a. Avigilon P/N 32C-H4A-4MH-360.
  - b. No substitutions.
2. 3-sensor 3x8MP 180 degree dome camera:
  - a. Avigilon P/N 24C-H4A-3MH-180.
  - b. No substitutions.
3. Provide the following mounts and accessories with each camera as indicated on the camera schedule:
  - a. Clear lens cover: Avigilon P/N H4AMH-DO-COVR1.
  - b. Camera shroud cover: Avigilon P/N H4AMH-AD-PEND1.
  - c. Outdoor corner mount bracket: Avigilon P/N H4-MT-CRNR1.
  - d. Outdoor pendant gooseneck mount: Avigilon P/N IRPTZ-MNT-WALL1.
  - e. Indoor pendant mount shroud cover with 1.5" NPT: Avigilon P/N IRPTZ-MNT-NPTA1.
  - f. Camera Surface Mount Adapter: Avigilon P/N H4AMH-AD-DOME1.
  - g. IR Illuminator: Avigilon P/N H4AMH-AD-IRIL1.
  - h. 60W POE++ Injector (for cameras with IR Illuminator): Avigilon P/N POE-INJ2-60W-NA.
  - i. No substitutions.

## 2.02 FIXED 1-SENSOR 12MP FISHEYE 360 DEGREE DOME CAMERA

## A. Provide cameras meeting the following requirements:

1. Camera will consist of single 12MP fixed camera installed in a vandal resistant dome.
2. Wide Dynamic Range.
3. Dual encoder (H.264 and MJPEG).
4. The entire camera assembly will one RJ-45 Ethernet Connector, 10/100 Base-T.
5. The entire camera assembly will require 1 software camera license within the VMS software.
6. POE+ 30 Watts - IEEE 802.3at Compliant (with IR).
7. Vandal Resistant and IK10 Rated.
8. IP 66 Ingress and Weather Rated.
9. Video frame rate (up to) 20FPS.
10. 3-Year Warranty.

## B. Provide pendant mount kit as shown on the drawings. Provide additional mounting plates, adapters and accessories as necessary for a vandal resistant and weatherproof installation.

## C. Acceptable Products:

1. 1-sensor 12MP 360 degree fisheye camera:
  - a. Avigilon P/N 12.0W-H5A-FE-D01-IR.
  - b. No substitutions.



2. Provide the following accessories with each camera as indicated on the camera schedule:
  - a. Pendant mount kit: Avigilon P/N H5A-FE-MT-NPTA1.
  - b. No substitutions.

### 2.03 FIXED 1-SENSOR 61MP BULLET CAMERA WITH ENVIRONMENTAL HOUSING

- A. Provide cameras meeting the following requirements:
  1. Camera will consist of single 61MP fixed camera.
  2. Wide Dynamic Range.
  3. Dual encoder (H.264 and MJPEG).
  4. The entire camera assembly will one RJ-45 Ethernet Connector, 10/100 Base-T.
  5. The entire camera assembly will require 1 software camera license within the VMS software.
  6. POE+ 30 Watts - IEEE 802.3at Compliant.
  7. IP 66 Ingress and Weather Rated Housing.
  8. Video frame rate (up to) 10FPS.
  9. 3-Year Warranty.
- B. Provide environmental housing and mount kit as shown on the drawings. Provide additional mounting plates, adapters and accessories as necessary for a vandal resistant and weatherproof installation.
- C. Acceptable Products:
  1. 1-sensor 81MP bullet camera:
    - a. Avigilon P/N 61C-H5PRO-B.
    - b. No substitutions.
  2. Provide the following accessories with each camera as indicated on the camera schedule:
    - a. Canon Camera Lens: Avigilon P/N LEF163528CA2.
    - b. Environmental bullet camera housing: Avigilon P/N ES-HD-CWS-LG.
    - c. 60W POE++ Injector (for camera housing): Avigilon P/N POE-INJ2-60W-NA.
    - d. Corner Mount Adapter: Avigilon P/N ES-HD-MNT-CORNER.
    - e. No substitutions.

### 2.04 CONTROL ROOM VIDEO VIEWING WORKSTATIONS

- A. Provide, install and configure qty (2) video viewing workstations in the control room.
- B. 5-Year Onsite Next Business Day Warranty.
- C. Workstations shall have adequate resources to display 16 cameras per monitor (32 cameras total) without video lag or jitter.
- D. Acceptable Products:
  1. Avigilon (Dell OEM) P/N RM6-WKS-4MN-NA.
  2. Provide 2-year extended warranty with each workstation. Avigilon (Dell OEM) P/N NVR-WKS-WARR-EXTEND-2YR.

## 3. No Substitutions.

## 2.05 NETWORK VIDEO RECORDING SERVERS [ADD ALTERNATE #1]

- A. Contractor shall furnish qty (2) 160TB video recording servers each with qty (2) direct attach 10GbE network cables.
- B. Video recording servers shall store a minimum of 30 days of recorded video.
- C. VMS Recording server(s) shall meet the following minimum requirements:
  - 1. 2RU Rack mounted. Provide rack mounting rails as necessary for mounting in 4-post server rack.
  - 2. Dual (redundant) 1,100W hot-swappable power supplies.
  - 3. Windows 2019 Server.
  - 4. Avigilon Control Center ACC-7.
  - 5. Dual Xeon Processor.
  - 6. 48GB RAM.
  - 7. Qty (2) M.2 SSD Drives in RAID 1 Config for Operating System.
  - 8. 160TB of storage configured in RAID 6 config (192TB Raw Storage Capacity).
  - 9. Dual 10GbE Direct Attached SFP+ network ports.
  - 10. 5-Year Onsite Next Business Day Warranty. In the event of a hard drive failure, a new hard drive is sent out and the owner keeps the failed hard drive.
- D. Acceptable Products:
  - 1. QTY (2) Avigilon P/N AINVR-PRM-160TB-NA each with qty (2) 10GbE SFP+ direct attached network cables P/N AINVR-SFPPLUS-SR.
  - 2. No Substitutions.

## 2.06 NETWORK VIDEO RECORDING SERVERS [ADD ALTERNATE #2]

- A. Contractor shall furnish qty (2) 288TB video recording servers each with qty (2) direct attach 10GbE network cables.
- B. Video recording servers shall store a minimum of 60 days of recorded video.
- C. VMS Recording server(s) shall meet the following minimum requirements:
  - 1. 2RU Rack mounted. Provide rack mounting rails as necessary for mounting in 4-post server rack.
  - 2. Dual (redundant) 1,100W hot-swappable power supplies.
  - 3. Windows 2019 Server.
  - 4. Avigilon Control Center ACC-7.
  - 5. Dual Xeon Processor.
  - 6. 64GB RAM.
  - 7. Qty (2) M.2 SSD Drives in RAID 1 Config for Operating System.
  - 8. 288TB of storage configured in RAID 60 config (360TB Raw Storage Capacity).
  - 9. Dual 10GbE Direct Attached SFP+ network ports.
  - 10. 5-Year Onsite Next Business Day Warranty. In the event of a hard drive failure, a new hard drive is sent out and the owner keeps the failed hard drive.
- D. Acceptable Products:
  - 1. QTY (2) Avigilon P/N NVR5-PRM-288TB-S19-NA each with qty (2) 10GbE SFP+ direct attached network cables P/N NVR5-SFPPLUS-SR-B.

2. No Substitutions.

2.07 VIDEO MANAGEMENT SYSTEM SOFTWARE, LICENSING AND SOFTWARE SUPPORT

- A. Provide latest version of Avigilon VMS Enterprise software on (2) new servers.
- B. Provide latest version of Avigilon VMS Enterprise client software on (2) new video viewing workstations.
- C. No new camera licenses are required. Qty (41) existing camera licenses will be migrated to the new cameras.
- D. Provide 5-year software maintenance agreement for qty (41) new cameras and qty (18) cameras to remain (59 cameras total). During the 5-year period, the software manufacturer will provide software updates and product support free of charge.
- E. Acceptable Products:
  - 1. Server Software: Avigilon Enterprise Control Center Server Software Version 7.xx (latest version). Install on qty (2) new NVR's.
  - 2. Client Software: Avigilon Control Center Client Software Version 7.xx (latest version). Install on qty (2) new control room video viewing workstations.
  - 3. 5-Year Software Maintenance Agreement: Avigilon Smart Assurance Plan P/N ACC-ENT-SMART-5YR. Provide 5-year product maintenance agreement for qty (59) cameras.
  - 4. No substitutions.

PART 3 – EXECUTION

3.01 ROUGH-IN

- A. Before construction work commences, the Contractor shall visit the site and identify the exact location and mounting of all cameras.
- B. Camera mounting locations shall be coordinated with other ceiling/wall mounted items including HVAC grills, lights, switches, exit signs, fire sprinklers, smoke detectors, etc. Cameras, mounts, raceway and cabling shall be installed so as not to interfere with required clearances for maintenance and inspection of existing equipment.
- C. Notify the Owner's Representative of any obstructions that may block the camera views shown on the Drawings.
- D. The contractor shall minimize the amount of exposed conduit and boxes exposed to view. All exterior conduit shall be rigid RMC with water tight boxes and fittings.
- E. All exposed screws and fasteners used for camera mounting hardware, conduit supports, j-boxes and pull boxes shall be vandal resistant (Torx Pin-Head Style).
- F. All exposed conduit shall be painted to match adjacent surfaces.

3.02 CUTTING AND PATCHING

- A. The Contractor shall be responsible for all cutting, patching, coring and associated work to complete the camera installation. Patch adjacent work disturbed or damaged by

installation of new work including insulation, walls and wall covering, ceiling and floor covering or other finished surfaces.

- B. The contractor shall be responsible for repairing any ceiling tile, ceiling grid, ceiling supports or adjacent surfaces damaged during the installation of the cameras.
- C. All penetrations through the building envelope shall be sealed and made water tight.
- D. All penetrations through fire rated walls, floors and ceilings shall be fire stopped with a UL listed fire stop system meeting or exceeding the rating of the assembly being penetrated.
- E. No roof penetrations are permitted.

### 3.03 GENERAL INSTALLATION REQUIREMENTS

- A. Coordinate ordering and installation of all equipment with long lead times or having a major impact on work by other trades so as not to delay the job or impact the schedule.
- B. Set all cameras and associated supports to accurate line and grade, level all equipment and align all equipment components.
- C. Provide all lifts, scaffolding, rigging, hoisting and services necessary for installation of equipment.
- D. Storage and security of material and equipment prior to installation shall be the responsibility of the Contractor.

### 3.04 CAMERA MOUNTING AND NETWORK CONNECTION

- A. Install cameras, mounts and accessories as shown on the drawings and in accordance with the Manufacturer's instructions.
- B. Verify camera mounting locations and make minor adjustments to the camera locations to avoid clearance conflicts.
- C. Secure cameras to structure with mount kit called out in the camera schedule.
- D. Furnish, install and terminate Category 6 cabling from the IP camera to the telecom equipment cabinet identified on the Drawings.
- E. Terminate CAT 6 cable at the camera on CAT 6 Field Mount Plug and connect directly to the camera.
- F. The contractor shall assign static IP addresses to the camera with the IP address scheme specified by the Owner.
- G. Verify that the camera has the most current firmware version. If not, download and install the latest firmware version from the manufacturer's website.
- H. Logon to the camera and set the date and time. Set the time to Pacific Standard Time and configure the camera to automatically adjust to daylight savings time. Configure the camera to connect to a Network Time Protocol (NTP) server once every 24 hours and synchronize the time. Verify IP address of NTP server with the Owner.
- I. Add the camera to the database on the VMS "Recording Server" and load the appropriate drivers for the camera.

- J. Configure camera ID, description and date/time stamping. The camera ID should follow the following naming convention: "Camera # - Area – Location". For example, Camera 3 at main entry would be named: "3 – Main Entrance". Confirm camera naming scheme with Owner.
- K. Change the default logon password on the IP camera web interface as directed by the Owner.

### 3.05 FIXED CAMERA SETUP, FOCUSING AND ADJUSTMENT

- A. Configure the resolution on the cameras to the maximum setting as applicable for each camera.
- B. Aim the camera with the horizontal field of view shown on the drawings. Cameras set to a wider field of view than shown on the drawings or in a "fish-eye" configuration will be required to be re-adjusted by the contractor.
- C. Adjust the vertical field of view so that the ceiling is not visible. For outdoor cameras, adjust the vertical field of view so that the sky is not visible. Secure the camera lens per the manufacturer's instructions.
- D. Use the camera's web interface to focus the camera based on the field of view set above. Adjust the focus as necessary to provide a clear field of view.
- E. Adjust the image quality settings on the camera to provide the clearest picture quality for all lighting conditions. The cameras have several settings that affect the image quality. The contractor shall consult with the camera manufacturer and shall adjust these settings to provide optimum image quality depending on the particular "scene" viewed by the camera.
- F. Configure the cameras to automatically switch to daytime color and nighttime black & white mode as applicable for the lighting conditions.
- G. Verify all camera views with the Owner.

### 3.06 TESTING AND COMMISSIONING

- A. After completion of the project, the contractor shall test and commission the IP Video Surveillance System including all cameras and video management software in the presence of the Owner's Representative. The contractor shall notify the Owner's Representative a minimum of (1) week prior to testing.
- B. At a minimum, the following tests shall be performed.
  - 1. Verify physical mounting of all cameras.
  - 2. Verify network connectivity to all cameras.
  - 3. Verify aim and focus of all cameras.
  - 4. Verify that cameras have been properly focused for both daytime and nighttime use.
  - 5. Verify frame rate and image recording settings on all cameras.
  - 6. Verify privacy masking of camera views where applicable.
  - 7. Verify proper motion sensitivity adjustment of cameras.
  - 8. Verify archiving settings.
  - 9. Verify that camera licenses have been installed on the recording server(s).
  - 10. Verify proper installation and configuration of the digital video recording software.

11. Verify proper installation and configuration of the client software including permissions.
- C. After completion of the commissioning, the Owner's Representative shall prepare a Punchlist of all items to be corrected. After the contractor has completed the Punchlist items to the satisfaction of the Owner's Representative, the Project will be considered "substantially complete" at which time the warranty period will begin.

### 3.07 TRAINING

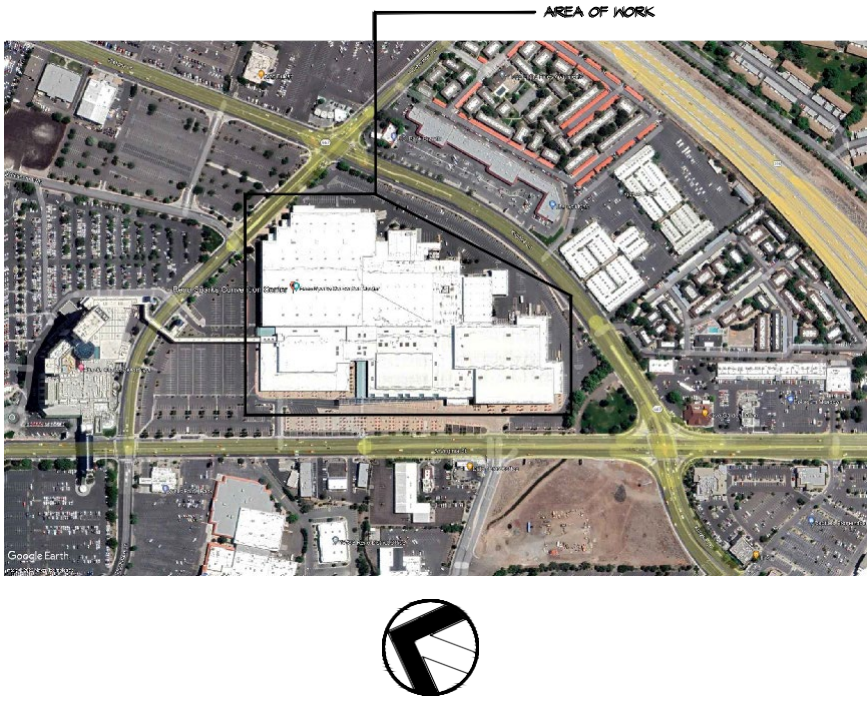

- A. After completion of the camera installation, software installation, testing and commissioning, the contractor shall provide a minimum of four (4) hours training to the Owner. Training shall cover usage and operation of the cameras, video recording server software and client software.

END OF SECTION 28 20 00

# RENO-SPARKS CONVENTION CENTER VIDEO SURVEILLANCE CAMERA UPGRADE

4590 S. VIRGINIA ST.  
RENO, NV 89502

Issued for Bid  
May 16, 2022

DESIGN CRITERIA	OWNER	DRAWING SCHEDULE																																													
<div>APPLICABLE CODES AND REGULATIONS</div> <div>2018 INTERNATIONAL BUILDING CODE 2018 INTERNATIONAL FIRE CODE 2017 NATIONAL ELECTRIC CODE 2018 INTERNATIONAL ENERGY CONSERVATION CODE CURRENT NORTHERN NEVADA AMENDMENTS</div>	<div>RENO-SPARKS CONVENTION &amp; VISITORS AUTHORITY</div> <div>Jose Martinez RSCVA Project Manager</div>	<div>DRAWING SCHEDULE</div> <table><thead><tr><th>SHEET</th><th>DESCRIPTION</th><th>ISSUED FOR BID MAY 16, 2022</th></tr></thead><tbody><tr><td>G0.01</td><td>COVER SHEET AND DRAWING SCHEDULE</td><td>■</td></tr><tr><td>T0.01</td><td>VIDEO SURVEILLANCE GENERAL NOTES, LEGEND AND WORK PHASING REQUIREMENTS</td><td>■</td></tr><tr><td>T0.02</td><td>CAMERA SYSTEM ONLINE AND EQUIPMENT SCHEDULES</td><td>■</td></tr><tr><td>T0.03</td><td>CAMERA MOUNTING DETAILS</td><td>■</td></tr><tr><td>T1.00</td><td>OVERALL FLOOR PLAN</td><td>■</td></tr><tr><td>T1.01</td><td>NE CONVENTION CENTER - CAMERA DEMO PLAN</td><td>■</td></tr><tr><td>T1.02</td><td>SE CONVENTION CENTER - CAMERA DEMO PLAN</td><td>■</td></tr><tr><td>T1.03</td><td>SW CONVENTION CENTER - CAMERA DEMO PLAN</td><td>■</td></tr><tr><td>T1.04</td><td>NW CONVENTION CENTER - CAMERA DEMO PLAN</td><td>■</td></tr><tr><td>T2.01</td><td>NE CONVENTION CENTER - NEW CAMERA PLAN</td><td>■</td></tr><tr><td>T2.02</td><td>SE CONVENTION CENTER - NEW CAMERA PLAN</td><td>■</td></tr><tr><td>T2.03</td><td>SW CONVENTION CENTER - NEW CAMERA PLAN</td><td>■</td></tr><tr><td>T2.04</td><td>NW CONVENTION CENTER - NEW CAMERA PLAN</td><td>■</td></tr><tr><td colspan="2">TOTAL SHEETS IN ISSUE:</td><td>13</td></tr></tbody></table>	SHEET	DESCRIPTION	ISSUED FOR BID MAY 16, 2022	G0.01	COVER SHEET AND DRAWING SCHEDULE	■	T0.01	VIDEO SURVEILLANCE GENERAL NOTES, LEGEND AND WORK PHASING REQUIREMENTS	■	T0.02	CAMERA SYSTEM ONLINE AND EQUIPMENT SCHEDULES	■	T0.03	CAMERA MOUNTING DETAILS	■	T1.00	OVERALL FLOOR PLAN	■	T1.01	NE CONVENTION CENTER - CAMERA DEMO PLAN	■	T1.02	SE CONVENTION CENTER - CAMERA DEMO PLAN	■	T1.03	SW CONVENTION CENTER - CAMERA DEMO PLAN	■	T1.04	NW CONVENTION CENTER - CAMERA DEMO PLAN	■	T2.01	NE CONVENTION CENTER - NEW CAMERA PLAN	■	T2.02	SE CONVENTION CENTER - NEW CAMERA PLAN	■	T2.03	SW CONVENTION CENTER - NEW CAMERA PLAN	■	T2.04	NW CONVENTION CENTER - NEW CAMERA PLAN	■	TOTAL SHEETS IN ISSUE:		13
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<div>SITE MAP</div> <div></div>	<div>ELECTRICAL / SECURITY CONSULTANT</div> <div><div><b>PK Electrical, Inc.</b> <i>Engineering - Design - Consulting</i> <small>681 Sierra Rose Drive, Suite B   Reno, NV 89511   775.826.9010 4601 DTC Boulevard, Suite 740   Denver, CO 80237   720.481.3290 pk-electrical.com</small></div></div>																																														



VIDEO SURVEILLANCE SYSTEM GENERAL NOTES	
ITEM	DESCRIPTION
1.	<b>DESCRIPTION OF WORK:</b> INSTALL A COMPLETE AND OPERATIONAL VIDEO SURVEILLANCE SYSTEM INCLUDING CAMERAS, CAMERA MOUNTS, RACEWAY, CABLING, CONTROL ROOM COMPUTERS, VIDEO RECORDING SERVERS, SOFTWARE, LICENSING, SYSTEM CONFIGURATION TESTING AND COMMISSIONING.
2.	<b>STANDARDS AND CODES:</b> ALL VIDEO SURVEILLANCE WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC) AND THE DIVISION 21 AND DIVISION 28 SPECIFICATIONS.
3.	<b>CONTRACTOR LICENSING, CERTIFICATION AND EXPERIENCE:</b> CONTRACTOR INSTALLING THE ACCESS CONTROL SYSTEM SHALL BE A FIRM NORMALLY ENGAGED IN THE INSTALLATION, MAINTENANCE AND SUPPORT OF SECURITY AND VIDEO SURVEILLANCE SYSTEMS.  CONTRACTOR MUST HAVE A MINIMUM OF 5-YEARS EXPERIENCE INSTALLING VIDEO SURVEILLANCE SYSTEMS OF SIMILAR SIZE AND SCOPE.  CONTRACTOR INSTALLING THE SECURITY SYSTEMS SHALL BE AN AVIGILON CERTIFIED PARTNER AND SHALL BE AN AUTHORIZED AVIGILON DEALER.  CONTRACTOR SHALL MAINTAIN A 24/7 CALL CENTER AND SHALL RESPOND WITHIN FOUR (4) BUSINESS HOURS OF RECEIPT OF A SERVICE CALL. CONTRACTOR SHALL PROVIDE ON-SITE RESPONSE TIME OF ONE (1) BUSINESS DAY FOR REPAIR OF CRITICAL SYSTEM ITEMS DURING NORMAL BUSINESS HOURS. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, MATERIALS, TOOLS AND TRAINED PERSONNEL TO PERFORM ALL REPAIRS. SEE SPECIFICATIONS FOR ADDITIONAL CONTRACTOR QUALIFICATION REQUIREMENTS.
4.	<b>GENERAL REQUIREMENTS:</b> INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, TRANSPORTATION, STORAGE COSTS, TRAINING, INSURANCE, TEMPORARY PROTECTION, PERMITS, INSPECTIONS, TAXES AND ALL NECESSARY AND RELATED ITEMS REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL VIDEO SURVEILLANCE SYSTEM AS SHOWN ON THE DRAWINGS AND DESCRIBED IN THE SPECIFICATIONS.  INFORMATION SHOWN ON THE DRAWINGS IS DIAGRAMMATIC. FIELD VERIFY ALL DIMENSIONS, LOCATIONS, AND LAYOUT. DO NOT SCALE THE PLANS FOR RACEWAY, OUTLET OR EQUIPMENT LOCATIONS.  5. <b>EXAMINATION OF SITE:</b> BEFORE SUBMITTING A PROPOSAL, THE CONTRACTOR SHALL EXAMINE THE SITE AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND LIMITATIONS. NO ENTERAS WILL BE ALLOWED BECAUSE OF THE CONTRACTOR'S MISUNDERSTANDING OF THE AMOUNT OF WORK INVOLVED OR LACK OF KNOWLEDGE OF ANY SITE CONDITIONS WHICH MAY AFFECT THE WORK. ANY APPARENT VARIANCE OF THE DRAWINGS OR SPECIFICATIONS FROM THE EXISTING CONDITIONS AT THE SITE SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER BEFORE SUBMITTING A PROPOSAL.  6. <b>SUBMITTALS:</b> SUBMIT MANUFACTURER DATA SHEETS FOR ALL EQUIPMENT, CABLING AND SOFTWARE. SUBMIT SHOP DRAWINGS FOR APPROVAL INCLUDING POINT-TO-POINT WIRING AND PANEL BLOCK DIAGRAMS SHOWING ALL DEVICES AND REQUIRED CABLING.  7. <b>RACEWAY:</b> INSTALL, SUPPORT AND SEISMIC BRACE ALL RACEWAY. THIS INCLUDES BUT IS NOT LIMITED TO ALL CONDUIT, OUTLET BOXES, PULL BOXES, J-HOOKS, SLEEVES, ETC. OUTDOOR CONDUIT SHALL BE RIGID STEEL (RMC OR IMC) OR LIQUID TIGHT FLEX. PAINT CONDUIT TO MATCH ADJACENT WALL/CEILING SURFACES.  INSTALL PULL STRING IN ALL CONDUIT.  INSTALL RACEWAY PERPENDICULAR TO BUILDING GRID LINES UNLESS OTHERWISE NOTED.  RACEWAY SHALL BE INSTALLED SO THAT THE FOLLOWING MINIMUM CLEAR DISTANCES ARE MAINTAINED FROM SOURCES OF ELECTRO-MAGNETIC INTERFERENCE (EMI), 6" CLEAR FROM POWER CABLES, 12" CLEAR FROM FLUORESCENT LIGHTING AND 36" CLEAR FROM TRANSFORMERS AND MOTORS.  8. <b>CUTTING AND PATCHING:</b> PROVIDE ALL CUTTING, PATCHING, CORING AND ASSOCIATED WORK TO COMPLETE THE VIDEO SURVEILLANCE CAMERA MOUNTING AND CABLING PATHWAY SYSTEM.  PROTECT EXISTING FINISHES FROM WATER DAMAGE DURING CORE/CUTTING WORK AND CLEANUP ALL RELATED WATER AND DEBRIS. PATCH ADJACENT WORK DISTURBED BY INSTALLATION OF NEW WORK INCLUDING INSULATION, WALLS AND WALL COVERING, CEILING AND FLOOR COVERING OR OTHER FINISHED SURFACES.  PATCH WALL AND CEILING SURFACES READY-FOR-PAINT WHERE EXISTING CAMERAS ARE REMOVED. PAINTING BY OWNER. WHERE EXISTING CAMERAS ARE REMOVED FROM CEILING TILES, REPLACE EXISTING CEILING WITH NEW CEILING TILE (CEILING TILES PROVIDED BY THE OWNER).  9. <b>FIRESTOPPING:</b> SEAL ALL PENETRATIONS THROUGH RATED WALLS AND FLOORS WITH UL LISTED FIRE STOPPING ASSEMBLIES. FIRE STOPPING ASSEMBLIES SHALL MEET OR EXCEED THE RATINGS OF THE WALL OR FLOOR BEING PENETRATED.  10. <b>CABLING AND TERMINATIONS:</b> ALL CAT 6 CABLING FROM THE CAMERAS TO THE TELECOM ROOM SHALL BE ROUTED CONCEALED ABOVE ACCESSIBLE CEILING SPACES, WITHIN VERTICAL WALL CHASES OR ROUTED IN CONDUIT. NO EXPOSED CABLING IS PERMITTED WITH THE EXCEPTION OF CABLING ROUTED IN THE EXPOSED STEEL ROOF FRAMING/TRUSSES IN THE HIGH CEILING EXHIBIT HALLS.  ALL CABLING SHALL BE PLENUM RATED (CMP) JACKET COLOR BLACK.  CABLING ROUTED IN UNDERGROUND OR UNDER SLAB CONDUIT SHALL WATER RESISTANT INDOOR/OUTDOOR RATED (GMR/GMX).  CAT 6 CABLING FOR SURVEILLANCE CAMERAS TO BE INSTALLED, TERMINATED AND TESTED IN ACCORDANCE WITH THE DIV 21 SPECS.  NO SPLICES ARE PERMITTED IN ANY CABLING UNLESS EXPLICITLY SHOWN ON THE DRAWINGS. INSTALL CABLE WITH NO VISIBLE DEFECTS INCLUDING KINKS, TWISTS, CUTS, BURNS, ETC. CONTRACTOR SHALL REMOVE AND REPLACE DEFECTIVE CABLES.  THE MAXIMUM CABLE LENGTH BETWEEN THE CAMERA AND THE TERMINATION PATCH PANEL IN THE TELECOM ROOM IS 245 FEET, PROVIDE ETHERNET EXTENDERS MATCHING THE POE RATINGS OF THE CAMERAS WHERE CABLE LENGTHS EXCEED 245 FEET.  11. <b>CABLE LABELING, TESTING AND CERTIFICATION:</b> LABEL ALL CABLES AT EACH END AND AT PULL BOX LOCATIONS. LABELS SHOULD INDICATE THE TERMINATION LOCATION AT THE OPPOSITE END.  LABEL ALL RACK MOUNTED EQUIPMENT INDICATING ITS FUNCTION.  LABEL ALL EQUIPMENT WITH ETHERNET CONNECTIONS WITH THE IP ADDRESS AND MAC ADDRESS OF THE DEVICE.  TEST AND CERTIFY ALL CABLING. CAT 6 CABLING FOR THE VIDEO SURVEILLANCE CAMERAS SHALL BE TESTED AND CERTIFIED IN ACCORDANCE WITH THE DIVISION 21 SPECIFICATIONS.  12. <b>SUPERVISION OF WORK:</b> ALL WORK SHALL BE SUPERVISED ON A DAILY BASIS BY A SUPERVISOR HAVING A MINIMUM OF FIVE (5) YEARS EXPERIENCE IN THE INSTALLATION OF COMMERCIAL SECURITY SYSTEMS.  13. <b>CCTV CAMERAS:</b> AT THE START OF THE PROJECT, PROVIDE A SPREADSHEET TO RSCVA IT STAFF INDICATING THE CAMERA NUMBER AND HARDWARE MAC ADDRESS SO THAT IP ADDRESSES CAN BE PROVIDED FOR ALL CAMERAS. PROVIDE THE MAC ADDRESS OF SERVER AND WORKSTATION NIC CARD(S) SO THAT IP ADDRESSES CAN BE ASSIGNED. IDENTIFY EXISTING SWITCH PORT NUMBERS WHERE CAMERAS, SERVERS AND WORKSTATIONS WILL BE ATTACHED SO THAT VLANs CAN BE ASSIGNED TO THE CAMERA SYSTEM.  FURNISH AND INSTALL CCTV CAMERAS AS SHOWN ON THE DRAWINGS AND DESCRIBED IN THE DIVISION 28 SPECIFICATIONS. MOUNT, SECURE, AIM, FOCUS, ADJUST, CONNECT TO THE NETWORK, ASSIGN IP ADDRESSES, TEST, COMMISSION AND DEMONSTRATE ALL CAMERAS. VERIFY MOUNTING, ACCESSIBILITY AND CLEARANCE REQUIREMENTS AT EACH CCTV CAMERA LOCATION. MAKE MINOR ADJUSTMENTS TO CAMERA LOCATIONS TO ACCOMMODATE EXISTING CEILING CONDITIONS AND OVERHEAD CLEARANCES ISSUES INCLUDING LIGHTS, HVAC DUCTS, HVAC REGISTERS, SPRINKLER PIPING, SPRINKLER HEADS, SPEAKERS, EXIT SIGNS, ETC.  DOWNLOAD THE LATEST CAMERA FIRMWARE VERSION FROM THE MANUFACTURER'S WEBSITE AND INSTALL ON ALL CAMERAS.  14. <b>VIDEO RECORDING SERVERS:</b> PROVIDE, INSTALL, AND CONFIGURE VIDEO RECORDING SERVER HARDWARE, WINDOWS SERVER OPERATING SYSTEM SOFTWARE AND AVIGILON VIDEO MANAGEMENT SYSTEM (VMS) SOFTWARE. INSTALL LATEST FIRMWARE UPDATES AND SERVICE PACKS ON ALL SERVERS. INSTALL CAMERA LICENSES ON ALL SERVERS. COORDINATE WINDOWS DOMAIN REQUIREMENTS, SECURITY REQUIREMENTS AND ACCOUNT NAMES/PASSWORD COMPLEXITY WITH RSCVA IT STAFF.  15. <b>CONTROL ROOM WORKSTATIONS:</b> PROVIDE, INSTALL, AND CONFIGURE CONTROL ROOM WORKSTATIONS. INSTALL AVIGILON CLIENT VIEWING AND MANAGEMENT SOFTWARE ON ALL CONTROL ROOM WORKSTATIONS. COORDINATE WINDOWS DOMAIN REQUIREMENTS, SECURITY REQUIREMENTS AND ACCOUNT NAMES/PASSWORD COMPLEXITY WITH RSCVA IT STAFF.  16. <b>VIDEO SURVEILLANCE SYSTEM TESTING AND COMMISSIONING:</b> TEST, COMMISSION AND DEMONSTRATE THE VIDEO SURVEILLANCE CAMERAS AND RELATED VIDEO MANAGEMENT SOFTWARE AT THE COMPLETION OF THE PROJECT. TESTING AND COMMISSIONING INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING: VERIFY CAMERA LICENSES ARE INSTALLED ON THE RECORDING SERVERS. VERIFY CAMERAS ARE MOUNTED PROPERLY AND SECURED. VERIFY CAMERAS HAVE BEEN ASSIGNED A PROPER IP ADDRESS AND ARE COMMUNICATING WITH THE RECORDING SERVERS. VERIFY CAMERAS ARE CONFIGURED TO RECORD TO THE VIDEO RECORDING SERVER. VERIFY FRAME RATES AND COMPRESSION ARE CONFIGURED PER THE SPECIFICATIONS. VERIFY CAMERAS ARE AIMED AND FOCUSED. VERIFY CAMERAS ARE CONFIGURED FOR BOTH DAY AND NIGHT USE. VERIFY CURRENT FIRMWARE IS INSTALLED ON CAMERAS. VERIFY CAMERAS ARE NAMED PROPERLY ON THE SERVERS. VERIFY ALL SOFTWARE AND CAMERAS ARE SECURED WITH USER ACCOUNTS AND PASSWORDS AS REQUIRED BY DOUGLAS COUNTY IT. VERIFY AVIGILON CLIENT SOFTWARE HAS BEEN INSTALLED AND CONFIGURED ON CONTROL ROOM WORKSTATIONS.  PROVIDE FOUR (4) HOURS OF TRAINING TO THE OWNER COVERING THE USE AND OPERATION OF THE CAMERAS, VIDEO MANAGEMENT SERVER SOFTWARE AND CLIENT VIEWING SOFTWARE.  PROVIDE SYSTEM DOCUMENTATION AND O&M MANUALS IN ELECTRONIC PDF FORMAT.  17. <b>GUARANTEE:</b> THE COMPLETE VIDEO SURVEILLANCE SYSTEM INCLUDING CAMERAS, CABLING, SERVERS, NETWORK SWITCHES AND PROGRAMMING SHALL BE GUARANTEED TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A MINIMUM PERIOD OF ONE (1) YEAR FROM DATE OF SUBSTANTIAL COMPLETION. PROMPTLY REMEDY SUCH DEFECTS AND ANY SUBSEQUENT DAMAGE CAUSED BY THE DEFECTS OR REPAIR THEREOF AT NO EXPENSE TO THE OWNER. SEE INDIVIDUAL SPECIFICATION SECTIONS FOR ADDITIONAL AND/OR EXTENDED WARRANTY REQUIREMENTS.  18. <b>SUBSTANTIAL COMPLETION:</b> THE FOLLOWING ARE PREREQUISITES FOR SUBSTANTIAL COMPLETION OF THE VIDEO SURVEILLANCE SYSTEM: ALL WORK COMPLETED IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS. SYSTEM PROGRAMMING COMPLETED. TESTING AND COMMISSIONING COMPLETED. PUNCH LIST ITEMS COMPLETED AND SIGNED OFF. SYSTEM DEMONSTRATION AND OWNER TRAINING COMPLETED. AS-BUILT DRAWINGS SUBMITTED. MANUFACTURER'S OPERATION AND MAINTENANCE MANUALS SUBMITTED. MANUFACTURER'S WARRANTY AND CONTRACTOR'S GUARANTEE SUBMITTED. EXTRA STOCK ITEMS TURNED OVER TO THE OWNER.

PROJECT PHASING REQUIREMENTS	
ITEM	DESCRIPTION
1.	THE EXISTING CAMERA SYSTEM CONSISTS OF QTY (54) CAMERAS CONNECTED TO A SINGLE AVIGILON RECORDING SERVER AND QTY (2) CONTROL ROOM VIDEO VIEWING WORKSTATIONS. PROJECT INCLUDES THE REMOVAL OF QTY (41) EXISTING CAMERAS AND INSTALLATION OF QTY (41) NEW CAMERAS. THE QTY (41) NEW CAMERAS WILL BE CONNECTED TO QTY (2) NEW AVIGILON RECORDING SERVERS. QTY (2) NEW VIDEO VIEWING WORKSTATIONS WILL BE INSTALLED IN THE CONTROL ROOM TO REPLACE THE (2) EXISTING VIEWING WORKSTATIONS. EXISTING QTY (18) CAMERAS THAT ARE NOT BEING REPLACED WILL BE MOVED FROM THE OLD AVIGILON RECORDING SERVER TO THE (2) NEW RECORDING SERVERS. THE OLD AVIGILON SERVER WILL BE DECOMMISSIONED.
2.	PROVIDE ALL MATERIAL AND EQUIPMENT SUBMITTALS FOR REVIEW AND APPROVAL. PROCURE ALL APPROVED MATERIALS AND EQUIPMENT.
3.	OBTAIN IP ADDRESS SCHEME FOR VIDEO SURVEILLANCE CAMERAS, RECORDING SERVERS AND CLIENT VIEWING WORKSTATIONS FROM RSCVA IT STAFF. ASSIGN IP ADDRESSES TO ALL CAMERAS, SERVERS AND WORKSTATIONS.
4.	INSTALL LATEST MANUFACTURER FIRMWARE ON ALL NEW CAMERAS.
5.	INSTALL LATEST MANUFACTURER SOFTWARE ON NEW RECORDING SERVERS AND NEW CONTROL ROOM VIEWING WORKSTATIONS. INSTALL LATEST OPERATING SYSTEM SECURITY UPDATES AND SERVICE PACKS ON SERVERS AND CONTROL ROOM VIEWING WORKSTATIONS. INSTALL CAMERA LICENSES ON NEW SERVERS.
6.	INSTALL (2) NEW VIDEO VIEWING WORKSTATIONS IN THE CONTROL TO REPLACE (2) EXISTING VIEWING WORKSTATIONS. CONNECT NEW WORKSTATIONS TO EXISTING VIDEO WALL MONITORS (QTY 2 MONITORS PER WORKSTATION). CONFIGURE (2) NEW VIDEO VIEWING WORKSTATIONS TO CONNECT TO EXISTING AVIGILON SERVER AND CAMERAS.
7.	INSTALL (2) NEW AVIGILON RECORDING SERVERS IN 2ND FLOOR MAIN COMMUNICATIONS ROOM. INSTALL SERVERS IN EXISTING 4-POST RACK. COORDINATE EXACT RACK MOUNTING LOCATION WITH RSCVA IT. CONFIGURE (54) EXISTING CAMERAS TO RECORD TO NEW SERVERS. DECOMMISSION OLD AVIGILON SERVER.
8.	CONTRACTOR SHALL PROVIDE ALL PERSONNEL LIFTS AS REQUIRED TO COMPLETE THE WORK. LIFTS USED IN THE CONVENTION HALLS MAY BE ELECTRIC OR LP POWERED. LIFTS USED IN CARPETED CONCOURSE AREAS AND BALLROOM MUST BE ELECTRIC POWERED. CONTRACTOR SHALL SCHEDULE AND COORDINATE ALL WORK WITH RSCVA AS REQUIRED TO ACCOMMODATE ON-GOING CONVENTION CENTER EVENTS.
9.	INSTALL CABLE PATHWAYS FROM NEW CAMERA LOCATIONS TO THE TELECOM (IDF) CABINET SERVING THE CAMERA (SEE DRAWINGS FOR TELECOM CABINET (IDF) LOCATIONS). CUT, CORE AND/OR SLEEVE WALLS AS NECESSARY FOR CABLE ROUTING. INSTALL CONDUIT AND/OR J-HOOK PATHWAYS FOR ROUTING OF CABLING. FIRESTOP ALL CABLE PENETRATIONS THROUGH FIRE RATED, SMOKE AND/OR ACOUSTICAL WALLS.
10.	INSTALL PLENUM RATED CAT 6 CABLE FROM CAMERA LOCATIONS TO TELECOM CABINET/RACK (IDF) LOCATIONS AS SHOWN ON THE DRAWINGS. TERMINATE CAT 6 CABLE AT THE TELECOM CABINET/RACK (IDF) LOCATIONS ON EXISTING CAT 6 PATCH PANELS (INSTALL NEW 24-PORT CAT 6 PANELS WHERE SHOWN ON THE DRAWINGS). TERMINATE CAT 6 CABLE AT CAMERA LOCATIONS ON CAT 6 FIELD MOUNT PLUGS. TEST AND CERTIFY CAT 6 CABLING AFTER INSTALLATION/TERMINATION.
11.	REMOVE EXISTING CAMERAS AND ASSOCIATED CAMERA MOUNTS (WHERE APPLICABLE). DEMO EXISTING CAMERA CABLING FROM CAMERA TO TERMINATION LOCATION. TURN OVER REMOVED CAMERAS TO THE OWNER. PATCH AND REPAIR SURFACES AT REMOVED CAMERA LOCATIONS READY FOR PAINT (PAINTING BY OWNER). WHERE CAMERAS ARE REMOVED FROM EXISTING CEILING TILES, INSTALL NEW CEILING TILE (CEILING TILES PROVIDED BY OWNER).
12.	INSTALL NEW CAMERAS AND ASSOCIATED MOUNTS. CONNECT CAMERAS TO NEW CAT 6 CABLING.
13.	COORDINATE CONNECTION OF CAMERAS TO EXISTING NETWORK SWITCHES WITH RSCVA IT. VERIFY SWITCH PORT NUMBERS AND RELATED CAMERA VLANs. INSTALL AND MOUNT 60 WATT FRED+ INJECTORS (WHERE SHOWN ON DRAWINGS) IN EXISTING NETWORK CABINETS AND CONNECT TO POWER. PROVIDE AND INSTALL CAT 6 PATCH CORDS TO CROSS CONNECT CAMERAS TO NETWORK SWITCHES.
14.	AIM, FOCUS AND ADJUST NEW CAMERAS. CONNECT NEW CAMERAS TO NEW RECORDING SERVERS. CONFIGURE CAMERA RECORDING STREAMS, COMPRESSION AND FRAME RATES ON SERVERS. CONFIGURE CONTROL ROOM VIEWING WORKSTATIONS TO VIEW NEW CAMERAS AS THEY ARE INSTALLED.
15.	CONFIGURE VIDEO ANALYTICS ON CAMERAS AS REQUIRED BY THE SPECIFICATIONS.
16.	TEST AND COMMISSION THE ENTIRE VIDEO SURVEILLANCE SYSTEM. PROVIDE FOUR (4) HOURS OF TRAINING TO THE OWNER ON THE OPERATION AND MAINTENANCE OF THE SYSTEM.
17.	TURN OVER EXTRA STOCK CAMERAS TO THE OWNER.
18.	PROVIDE OVERALL (1) YEAR WARRANTY FOR THE COMPLETE SYSTEM AND INSTALLATION.
19.	PROVIDE FIFTEEN (15) YEAR WARRANTY FOR THE CAT 6 CABLING SYSTEM.
20.	PROVIDE (5) YEAR ONSITE WARRANTY FOR NEW NVRS AND CONTROL ROOM VIDEO VIEWING WORKSTATIONS.
21.	PROVIDE (3) YEAR WARRANTY FOR ALL NEW CAMERAS.
22.	PROVIDE (5) YEAR SOFTWARE AND SUPPORT AGREEMENT (SMART SOFTWARE ASSURANCE) FROM AVIGILON FOR EACH NEW CAMERA AND EACH CAMERA TO REMAIN (I.E. QTY (54) 5-YEAR CAMERA SUPPORT AGREEMENTS TOTAL).

#### BASE BID AND BID ALTERNATES

BASE BID:	
1.	INCLUDES ALL WORK SHOWN ON THE DRAWINGS AND DESCRIBED IN THE SPECIFICATIONS WITH THE EXCEPTION OF ADD ALTERNATES #1 AND #2.
2.	DEMO QTY (41) EXISTING CAMERAS AND ASSOCIATED MOUNTS/CABLE AS SHOWN ON THE DEMO DRAWINGS.
3.	FURNISH, INSTALL, AND CONFIGURE QTY (41) NEW CAMERAS AND ASSOCIATED MOUNTS, CABLING AND SOFTWARE SUPPORT AGREEMENTS AS SHOWN ON THE DRAWINGS. AIM, FOCUS AND ADJUST ALL NEW CAMERAS. CONNECT CAMERAS TO NETWORK, VIDEO RECORDING SERVERS AND CONFIGURE.
4.	FURNISH, INSTALL, AND CONFIGURE QTY (2) CONTROL ROOM VIDEO VIEWING WORKSTATIONS. SEE 4/70.02 FOR WORKSTATION REQUIREMENTS.
5.	DO NOT INCLUDE COSTS IN THE BASE BID TO FURNISH NETWORK VIDEO RECORDING SERVERS. INCLUDE COSTS IN THE BASE BID TO INSTALL AND CONFIGURE NETWORK VIDEO RECORDING SERVERS.
4.	CONFIGURE, TEST AND COMMISSION THE ENTIRE CAMERA SYSTEM AND PROVIDE TRAINING TO THE OWNER ON THE OPERATION OF THE SYSTEM.
ADD ALTERNATE #1:	
1.	FURNISH QTY (2) 160TB NETWORK VIDEO RECORDING SERVERS. SEE 5/70.02 FOR SERVER REQUIREMENTS.
ADD ALTERNATE #2:	
1.	FURNISH QTY (2) 288TB NETWORK VIDEO RECORDING SERVERS. SEE 6/70.02 FOR SERVER REQUIREMENTS.

ABBREVIATIONS	
AFF	ABOVE FINISH FLOOR
AV	AUDIO / VISUAL
AWG	AMERICAN WIRE GAUGE
DEMARC	DEMARICATION POINT
DIA	DIAMETER
FBO	FURNISHED BY OTHERS
(E)	EXISTING
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
EQ	EQUAL
FBO	FURNISHED BY OTHERS
FPD	FLAT PANEL DISPLAY
GND	GROUND
HC	HORIZONTAL CROSS-CONNECT
IC	INTERMEDIATE CROSS-CONNECT
ID	INSIDE DIAMETER
IDC	INSULATION DISPLACEMENT CONNECTOR
IDF	INTERMEDIATE DISTRIBUTION FRAME
LAN	LOCAL AREA NETWORK
MC	MAIN CROSS-CONNECT
MDF	MAIN DISTRIBUTION FRAME
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFE	OWNER FURNISHED EQUIPMENT
OSP	OUTSIDE PLANT
PVC	POLYVINYLCHLORIDE
RSCVA	RENO-SPARKS CONVENTION & VISITORS AUTHORITY (OWNER)
TR	TELECOMMUNICATIONS ROOM
TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
TMSB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
TYP	TYPICAL
UN	UNLESS OTHERWISE NOTED
UTP	UNSHIELDED TWISTED PAIR
VMS	VIDEO MANAGEMENT SYSTEM

#### RACEWAY LEGEND

SYMBOL	DESCRIPTION
----	CONDUIT. SIZE AS INDICATED ON DRAWINGS
----	CONDUIT UNDERGROUND OR IN SLAB
----	CONDUIT STUB OUT WITH BUSHINGS.
----	HORIZONTAL OR VERTICAL SLEEVE WITH BUSHINGS.
----	CONDUIT UP OR DOWN.
— J — J —	J-HOOKS (WHERE SPECIFIC ROUTING REQUIRED)
	CABLE TRAY OR LADDER RACK. SIZE INDICATED ON DWGS
----	WIRE BASKET TRAY. SIZE INDICATED ON DRWGS.
----	VERTICAL LADDER RACK.
○	CONDUIT OR SLEEVE STUB UP.

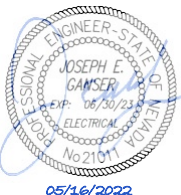
#### VIDEO SURVEILLANCE LEGEND

SYMBOL	DESCRIPTION
	4-SENSOR 32MP 360 DEGREE DOME CAMERA.
	4-SENSOR 32MP 270 DEGREE DOME CAMERA.
	3-SENSOR 24MP 180 DEGREE DOME CAMERA.
	PAN-TILT-ZOOM (PTZ) DOME CAMERA.
	1-SENSOR 12MP 360 DEGREE FISHEYE DOME CAMERA.
	FIXED 6MP BULLET CAMERA WITH ENVIRONMENTAL HOUSING.
	NETWORK VIDEO RECORDER (RACK MOUNTED).
	24-PORT CAT 6 PATCH PANEL (RACK MOUNTED).
	VIDEO VIEWING WORKSTATION WITH QTY (2) CONNECTED FLAT PANEL DISPLAYS.



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22070



RENO-SPARKS CONVENTION CENTER  
VIDEO SURVEILLANCE CAMERA UPGRADE  
4590 SOUTH VIRGINIA STREET  
RENO, NV 89502

#### REVISIONS

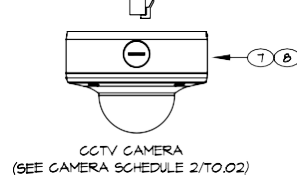
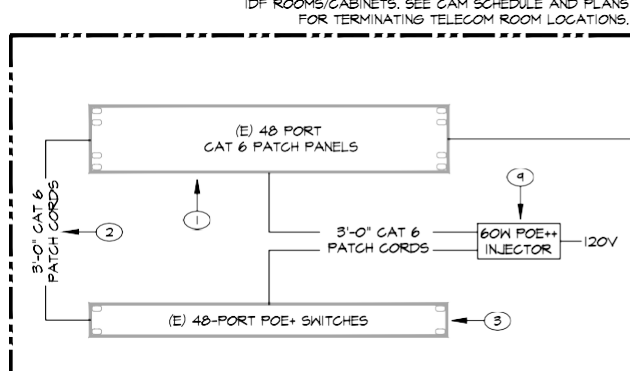
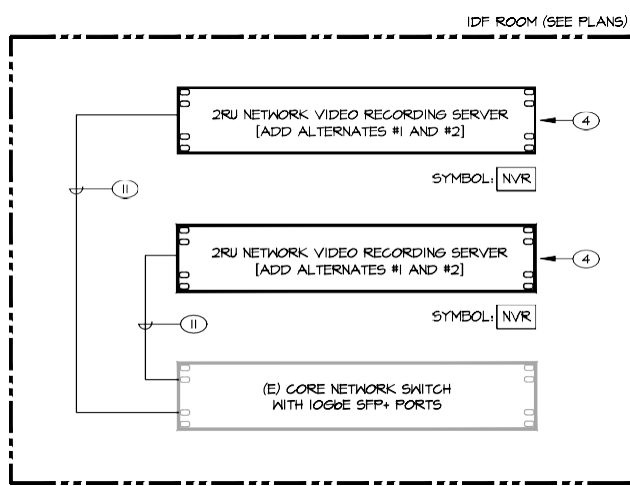
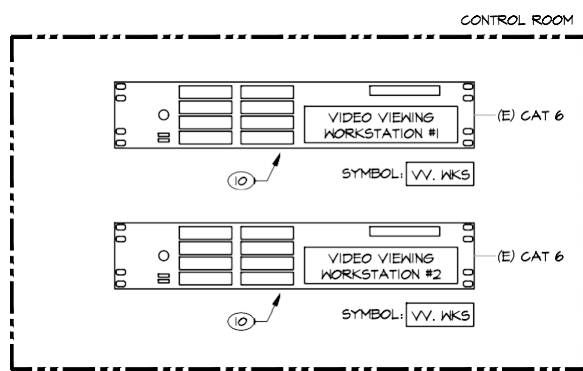
#### SHEET TITLE

GENERAL NOTES,  
LEGEND AND  
ABBREVIATIONS

DRAWN	BC
CHECKED	JG
DATE	5/14/22
JOB NUMBER	22070
PROJECT NAME	BC

T0.01

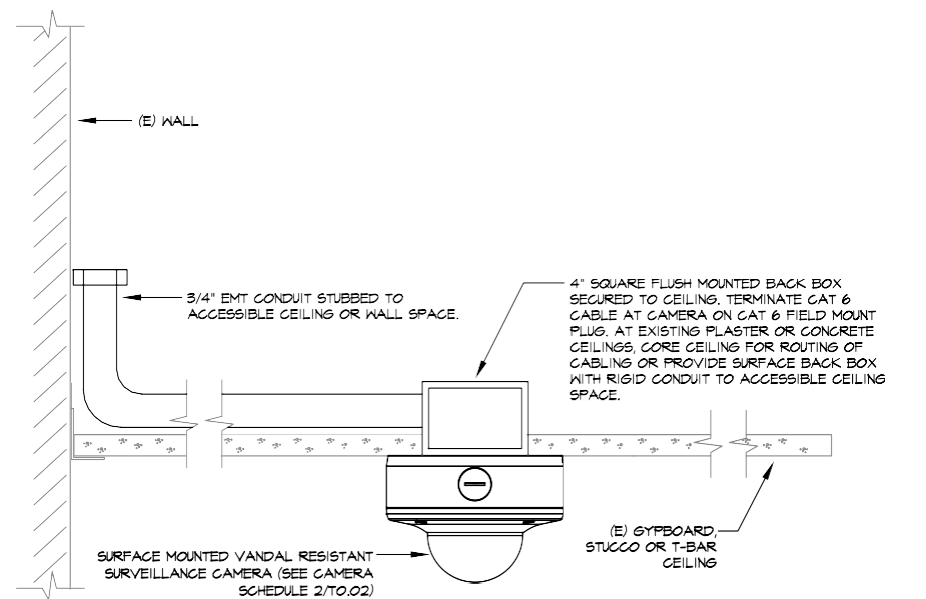




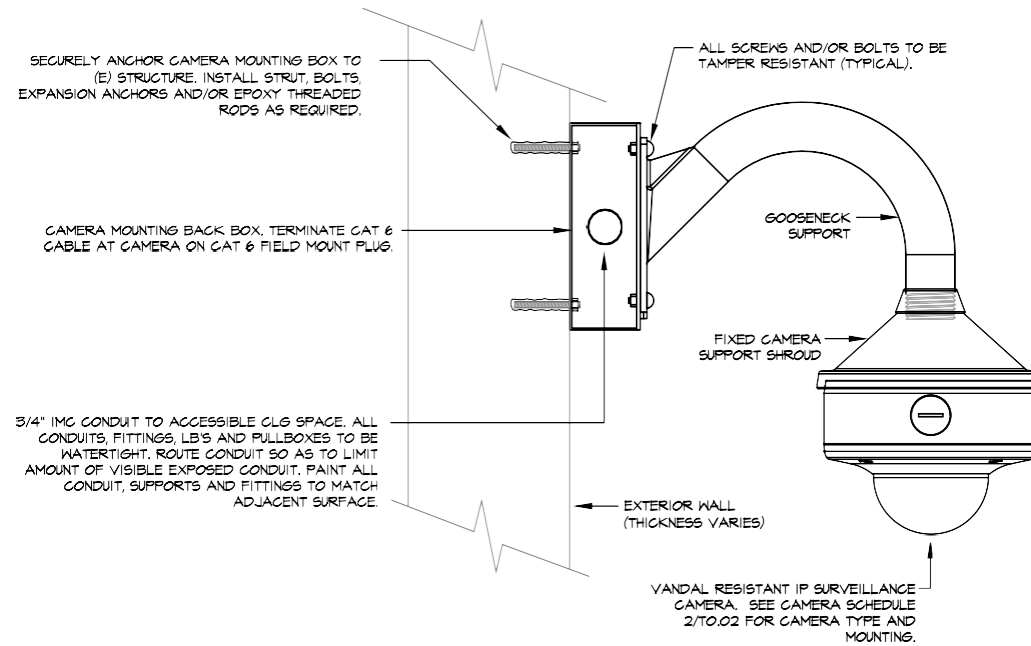
## 1 VIDEO SURVEILLANCE SYSTEM ONELINE DIAGRAM

SCALE: NONE

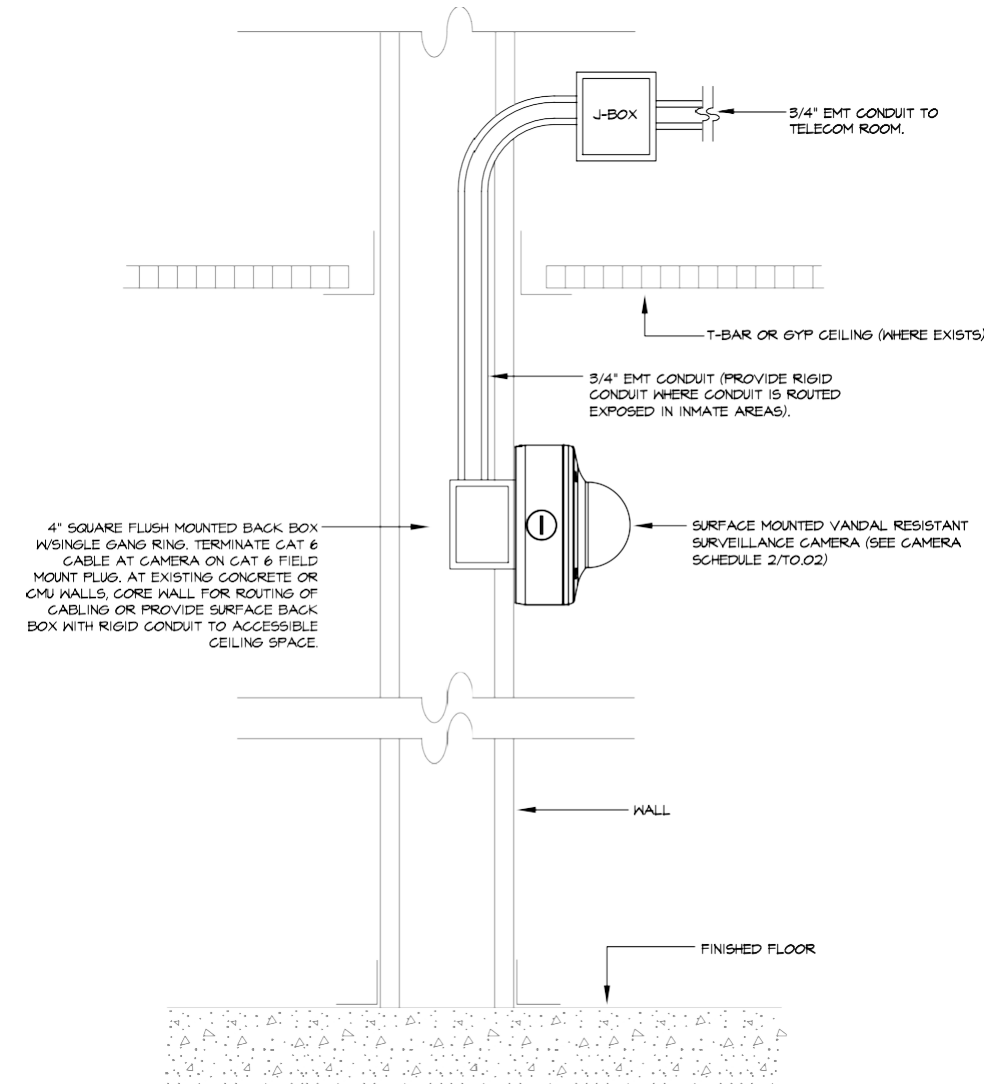
VIDEO SURVEILLANCE CAMERA SCHEDULE (BASE BID)																						
CAMERA											MOUNT				ACCESSORIES		LICENSES		MISC			
CAM NO.	LOCATION	CAMERA TYPE	VIEW (IN DEGREES)	INDOOR / OUTDOOR	MP	LENSES	IR	POE	DOME COVER	MFG	CAMERA PART #	DOME COVER PART #	MOUNTING LOCATION	MOUNT TYPE	MOUNTING SURFACE	MOUNTING HEIGHT	MOUNT PART #S	MOUNTING DETAIL	IR RING PART #	POE++ INJECTOR PART #		
1	C01-R	NE CORNER - HALL #1	270°	OUTDOOR	4x 8MP	4X 4MM	-	30W POE++	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	CORNER	CORNER	METAL PANEL	+/- 35'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	4.5/70.03	-	-	REUSE EXISTING	
2	C03-R	EAST LOADING DOCKS	270°	OUTDOOR	4x 8MP	4X 4MM	YES	60W POE++	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	CORNER	CORNER	METAL PANEL	+/- 14'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	4.5/70.03	HAAMH-AD-IR1L1	POE-INJ2-60W-NA	REUSE EXISTING	
3	C04-R	NE CORNER - ADMIN / SECURITY	270°	OUTDOOR	4x 8MP	4X 4MM	YES	60W POE++	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	CORNER	CORNER	CONCRETE	+/- 14'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1 + H4-MT-CRNR1	4.5/70.03	HAAMH-AD-IR1L1	POE-INJ2-60W-NA	REUSE EXISTING	
4	C05-R	EAST LOADING DOCKS	3-SENSOR FIXED DOME	180°	OUTDOOR	3x 8MP	3 X 5.2MM	YES	60W POE++	CLEAR	AVIGILON	24C-H4A-3MH-180	HAAMH-DO-COV1	WALL	SURFACE	CONCRETE	+/- 14'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	2/70.03	HAAMH-AD-IR1L1	POE-INJ2-60W-NA	REUSE EXISTING
5	C07-R	EAST LOADING DOCKS/SE ENTRY	4-SENSOR FIXED DOME	270°	OUTDOOR	4x 8MP	4X 4MM	YES	60W POE++	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	CORNER	CORNER	CONCRETE	+/- 14'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1 + H4-MT-CRNR1	4.5/70.03	HAAMH-AD-IR1L1	POE-INJ2-60W-NA	REUSE EXISTING
6	C08-R	EAST LOADING DOCKS	4-SENSOR FIXED DOME	270°	OUTDOOR	4x 8MP	4X 4MM	YES	60W POE++	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	CORNER	CORNER	CMU	+/- 16'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	4.5/70.03	HAAMH-AD-IR1L1	POE-INJ2-60W-NA	REUSE EXISTING
7	C10-R	EAST LOADING DOCKS	4-SENSOR FIXED DOME	270°	OUTDOOR	4x 8MP	4X 4MM	YES	60W POE++	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	CORNER	CORNER	CONCRETE	+/- 35'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	4.5/70.03	HAAMH-AD-IR1L1	POE-INJ2-60W-NA	REUSE EXISTING
8	C11-R	SOUTH LOADING DOCK	1-SENSOR FISHEYE	360°	OUTDOOR	1X 12MP	1X 1.6MM	YES	30W POE+	CLEAR	AVIGILON	12.0W-HSA-FE-D01-IR	-	STUCCO	PENDANT	STUCCO	+/- 16'-0"	HSA-FE-MT-NPTA1	6.10.03	-	-	REUSE EXISTING
9	C13-R	SW CORNER / PARKING LOT F	270°	OUTDOOR	4x 8MP	4X 4MM	YES	60W POE++	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	CORNER	CORNER	CONCRETE	+/- 25'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	4.5/70.03	HAAMH-AD-IR1L1	POE-INJ2-60W-NA	REUSE EXISTING	
10	C15-R	WEST PLAZA / S VIRGINIA ENTRY	4-SENSOR FIXED DOME	270°	OUTDOOR	4x 8MP	4X 4MM	YES	60W POE++	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	CORNER	CORNER	CONCRETE	+/- 12'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	4.5/70.03	HAAMH-AD-IR1L1	POE-INJ2-60W-NA	REUSE EXISTING
11	C16-R	WEST MAIN ENTRANCE	4-SENSOR FIXED DOME	270°	OUTDOOR	4x 8MP	4X 4MM	YES	60W POE++	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	CORNER	CORNER	METAL PANEL	+/- 15'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	4.5/70.03	HAAMH-AD-IR1L1	POE-INJ2-60W-NA	REUSE EXISTING
12	C18-R	NORTH PARKING LOT A	3-SENSOR FIXED DOME	180°	OUTDOOR	3x 8MP	3 X 5.2MM	YES	60W POE++	CLEAR	AVIGILON	24C-H4A-3MH-180	HAAMH-DO-COV1	WALL	SURFACE	METAL PANEL	+/- 15'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	2/70.03	HAAMH-AD-IR1L1	POE-INJ2-60W-NA	REUSE EXISTING
13	C20-R	HALL #1 1A	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	STEEL PLATE TRUSS	PENDANT	STEEL	+/- 32'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-NPTA1	6/70.03	-	-	REUSE EXISTING
14	C21-R	HALL #1 1B	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	STEEL PLATE TRUSS	PENDANT	STEEL	+/- 32'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-NPTA1	6/70.03	-	-	REUSE EXISTING
15	C22-R	HALL #1 1D	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	STEEL PLATE TRUSS	PENDANT	STEEL	+/- 32'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-NPTA1	6/70.03	-	-	REUSE EXISTING
16	C23-R	HALL #2	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	STEEL PLATE TRUSS	PENDANT	STEEL	+/- 32'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-NPTA1	6/70.03	-	-	REUSE EXISTING
17	C24-R	HALL #2	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	STEEL PLATE TRUSS	PENDANT	STEEL	+/- 32'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-NPTA1	6/70.03	-	-	REUSE EXISTING
18	C25-R	HALL #2	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	STEEL I-BEAM	PENDANT	STEEL	+/- 32'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-NPTA1	6/70.03	-	-	REUSE EXISTING
19	C26A-R	HALL #3 NORTH	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	STEEL I-BEAM	PENDANT	STEEL	+/- 32'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-NPTA1	6/70.03	-	-	REUSE EXISTING
20	C26-R	HALL #3 SOUTH	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	STEEL I-BEAM	PENDANT	STEEL	+/- 32'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-NPTA1	6/70.03	-	-	REUSE EXISTING
21	C27A-R	HALL #4 NORTH	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	STEEL I-BEAM	PENDANT	STEEL	+/- 32'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-NPTA1	6/70.03	-	-	REUSE EXISTING
22	C27-R	HALL #4 SOUTH	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	STEEL I-BEAM	PENDANT	STEEL	+/- 32'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-NPTA1	6/70.03	-	-	REUSE EXISTING
23	C28-R	HALL #5 NORTH	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	STEEL I-BEAM	PENDANT	STEEL	+/- 32'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-NPTA1	6/70.03	-	-	REUSE EXISTING
24	C29-R	HALL #5 NORTH	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	STEEL I-BEAM	PENDANT	STEEL	+/- 32'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-NPTA1	6/70.03	-	-	REUSE EXISTING
25	C32-R	AMR-2 ENTRY	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 9'-6"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
26	C33-R	AMR-1 ENTRY	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 9'-6"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
27	C34-R	REG LOBBY	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 21'-6"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
28	C35-R	CONCOURSE B / REG LOBBY	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 21'-6"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
29	C36-R	NORTH BALLROOM LOBBY	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	GYPBOD CLG	SURFACE	GYPBOD	+/- 21'-6"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
30	C37-R	SOUTH BALLROOM LOBBY	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	GYPBOD CLG	SURFACE	GYPBOD	+/- 21'-6"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
31	C38-R	ALL 44 WEST ENTRANCE / CONCOURSE	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 21'-6"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
32	C39-R	WEST BALLROOM	3-SENSOR FIXED DOME	180°	INDOOR	3x 8MP	3 X 5.2MM	-	30W POE+	CLEAR	AVIGILON	24C-H4A-3MH-180	HAAMH-DO-COV1	WALL	SURFACE	GYPBOD	+/- 20'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	3/70.03	-	-	REUSE EXISTING
33	C40-R	EAST BALLROOM	3-SENSOR FIXED DOME	180°	INDOOR	3x 8MP	3 X 5.2MM	-	30W POE+	CLEAR	AVIGILON	24C-H4A-3MH-180	HAAMH-DO-COV1	WALL	SURFACE	GYPBOD	+/- 20'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	3/70.03	-	-	REUSE EXISTING
34	C41-R	CONCOURSE F	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 10'-0"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
35	C52-R	TOP OF ESCALATOR TO ATLANTIS	3-SENSOR FIXED DOME	180°	INDOOR	3x 8MP	3 X 5.2MM	-	30W POE+	CLEAR	AVIGILON	24C-H4A-3MH-180	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 14'-0"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
36	C56-R	BOTTOM OF ESCALATOR TO ATLANTIS	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	GYPBOD CLG	SURFACE	GYPBOD	+/- 14'-0"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
37	C58-R	NW CORNER / PARKING LOTS A/B	4-SENSOR FIXED DOME	270°	OUTDOOR	4x 8MP	4X 4MM	YES	60W POE++	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	CORNER	CORNER	METAL PANEL	+/- 20'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	4.5/70.03	HAAMH-AD-IR1L1	POE-INJ2-60W-NA	REUSE EXISTING
38	C60-N	NE PARKING LOT C	1-SENSOR FIXED BULLET WITH CUSTOM LENS	OUTDOOR	1X 6MP	CANON LENS	-	(2) x 30W POE	-	AVIGILON	61C-HSPRO-B	-	CORNER	CORNER	METAL PANEL	+/- 38'-0"	ES-HD-CWS-IG + ES-HD-MNT-CORNER	4.5/70.03	-	-	POE-INJ2-60W-NA	REUSE EXISTING
39	C61-N	CONCOURSE B / CONCOURSE D	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 21'-6"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
40	C62-N	CONCOURSE A	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 21'-6"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
41	C63-N	NORTH PARKING LOT B	3-SENSOR FIXED DOME	180°	OUTDOOR	3x 8MP	3 X 5.2MM	YES	60W POE++	CLEAR	AVIGILON	24C-H4A-3MH-180	HAAMH-DO-COV1	WALL	SURFACE	METAL PANEL	+/- 35'-0"	HAAMH-AD-PEND1 + IRPTZ-MNT-WALL1	2/70.03	HAAMH-AD-IR1L1	POE-INJ2-60W-NA	REUSE EXISTING
42	C64-R	CONCOURSE E	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 10'-0"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
43	C65-R	CONCOURSE C	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 14'-0"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
44	C66-R	CONCOURSE D	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 14'-0"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
45	C67-R	CONCOURSE E	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 14'-0"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
46	C68-R	CONCOURSE F	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 14'-0"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
47	C69-R	CONCOURSE G	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 14'-0"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
48	C70-R	CONCOURSE H	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 14'-0"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING
49	C71-R	CONCOURSE I	4-SENSOR FIXED DOME	360°	INDOOR	4x 8MP	4X 4MM	-	30W POE+	CLEAR	AVIGILON	32C-H4A-4MH-360	HAAMH-DO-COV1	T-BAR CLG TILE	SURFACE	T-BAR TILE	+/- 14'-0"	HAAMH-AD-DOME1	1/70.03	-	-	REUSE EXISTING



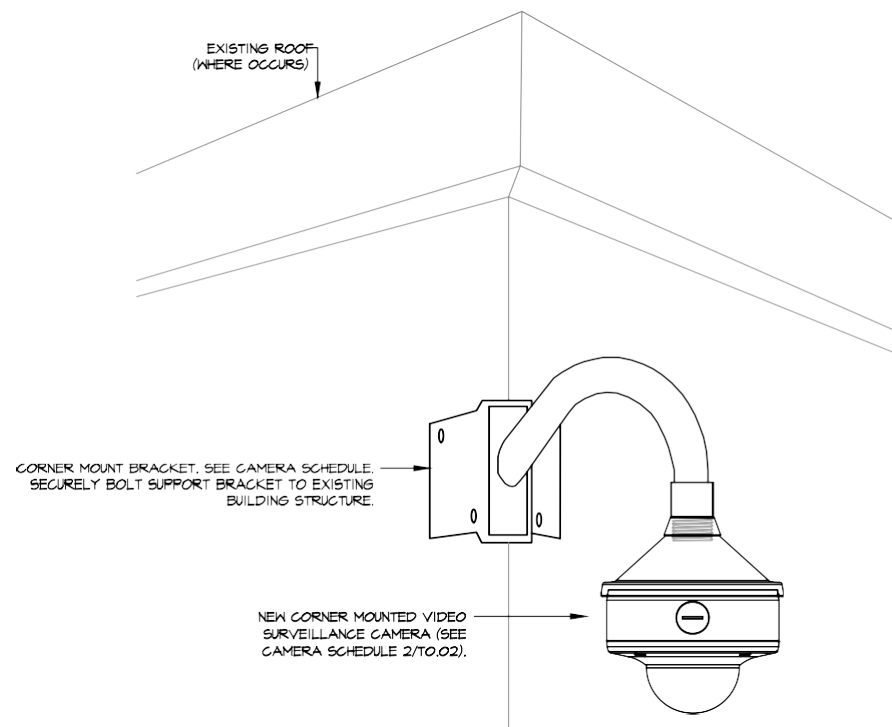
1 SURFACE CEILING MOUNTED CAMERA  
T0.03 SCALE: NONE



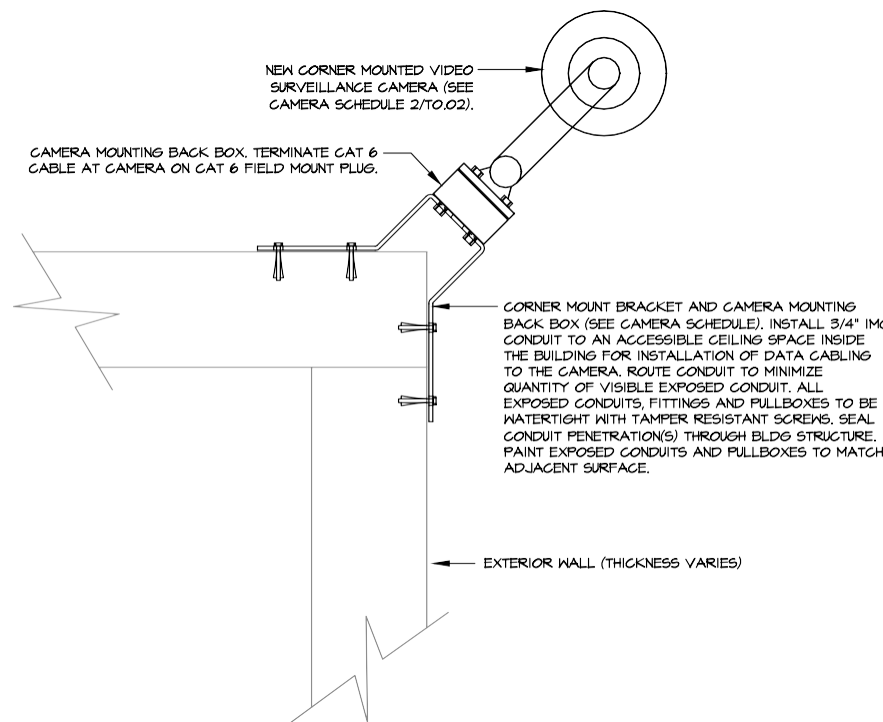
2 EXTERIOR WALL MTD CAMERA  
T0.03 SCALE: NONE



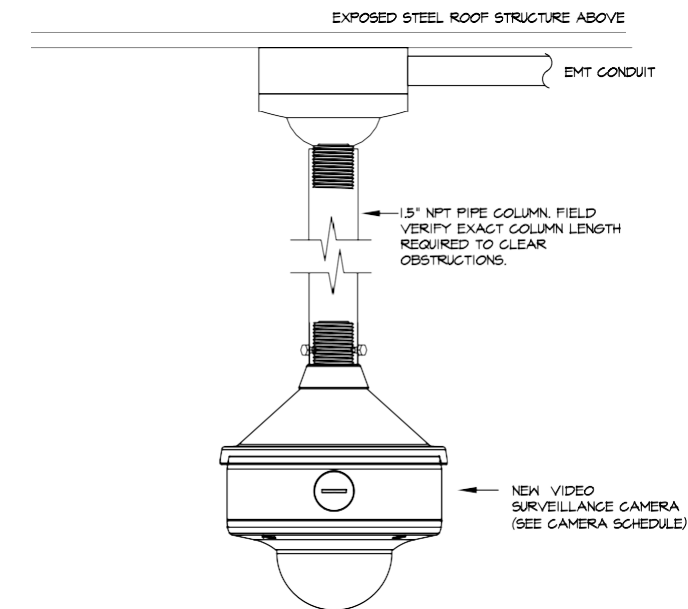
3 INDOOR WALL MOUNTED DOME CAMERA  
T0.03 SCALE: NONE



4 CORNER MTD CAMERA (ELEV)  
T0.03 SCALE: NONE



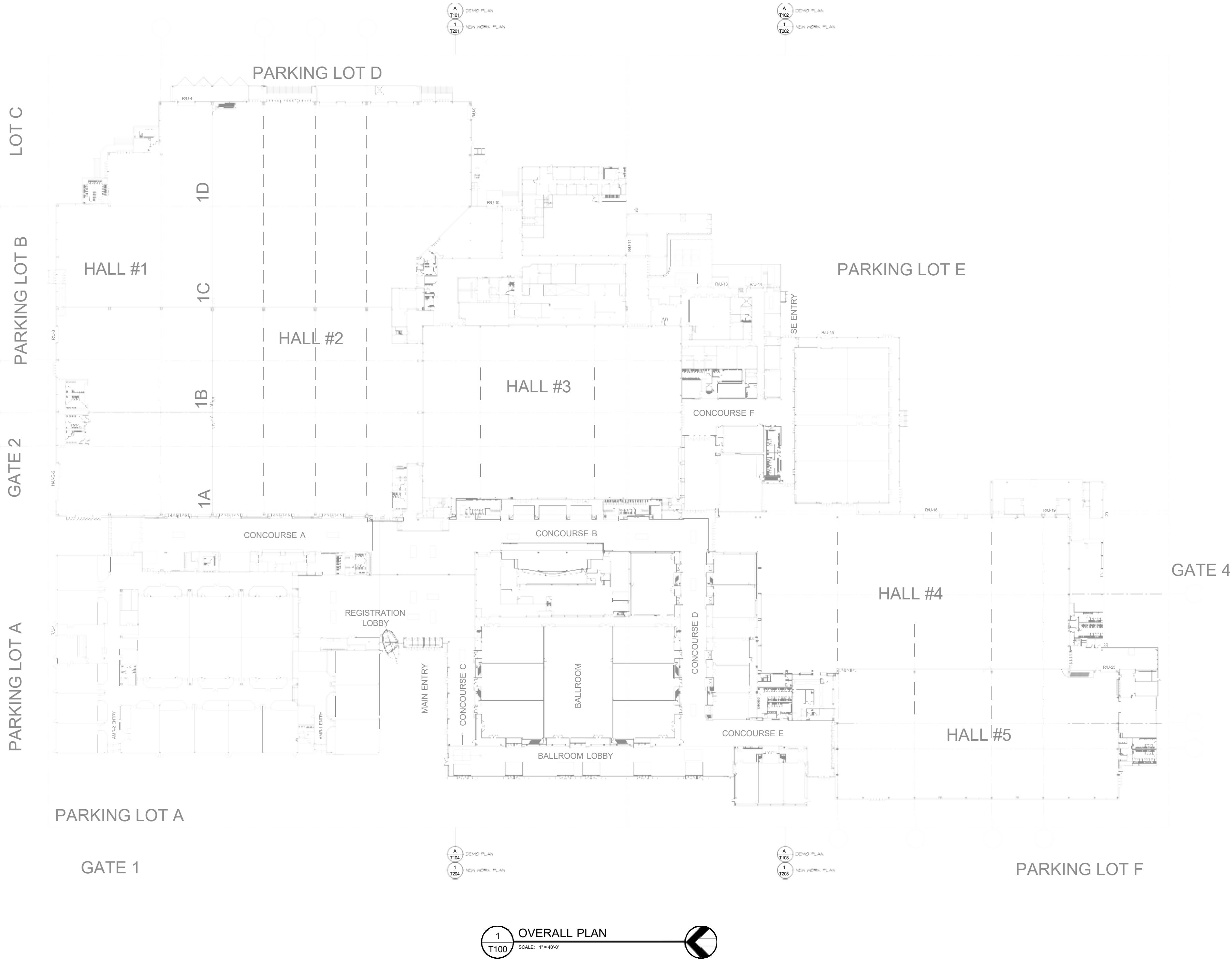
5 CORNER MTD CAMERA (PLAN)  
T0.03 SCALE: NONE



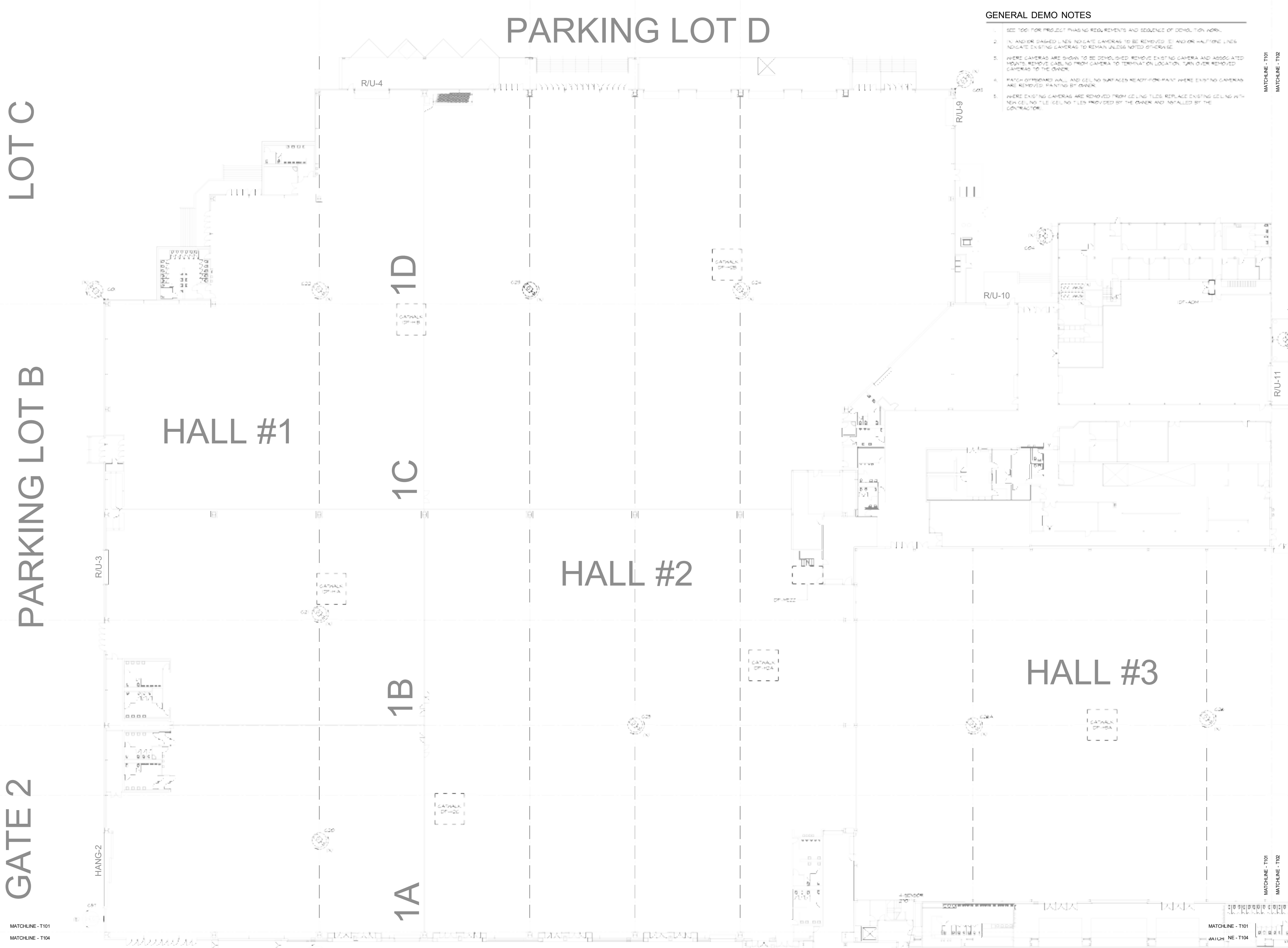
6 PENDANT MTD CAMERA  
T0.03 SCALE: NONE

REVISIONS	
SHEET TITLE	
CAMERA MOUNTING DETAILS	





REVISIONS	
SHEET TITLE	
OVERALL PLAN	
DRAWN: BC	CHECKED: JG
DATE: 5/14/22	JOB NUMBER: 22070
PROJECT MGR: BC	



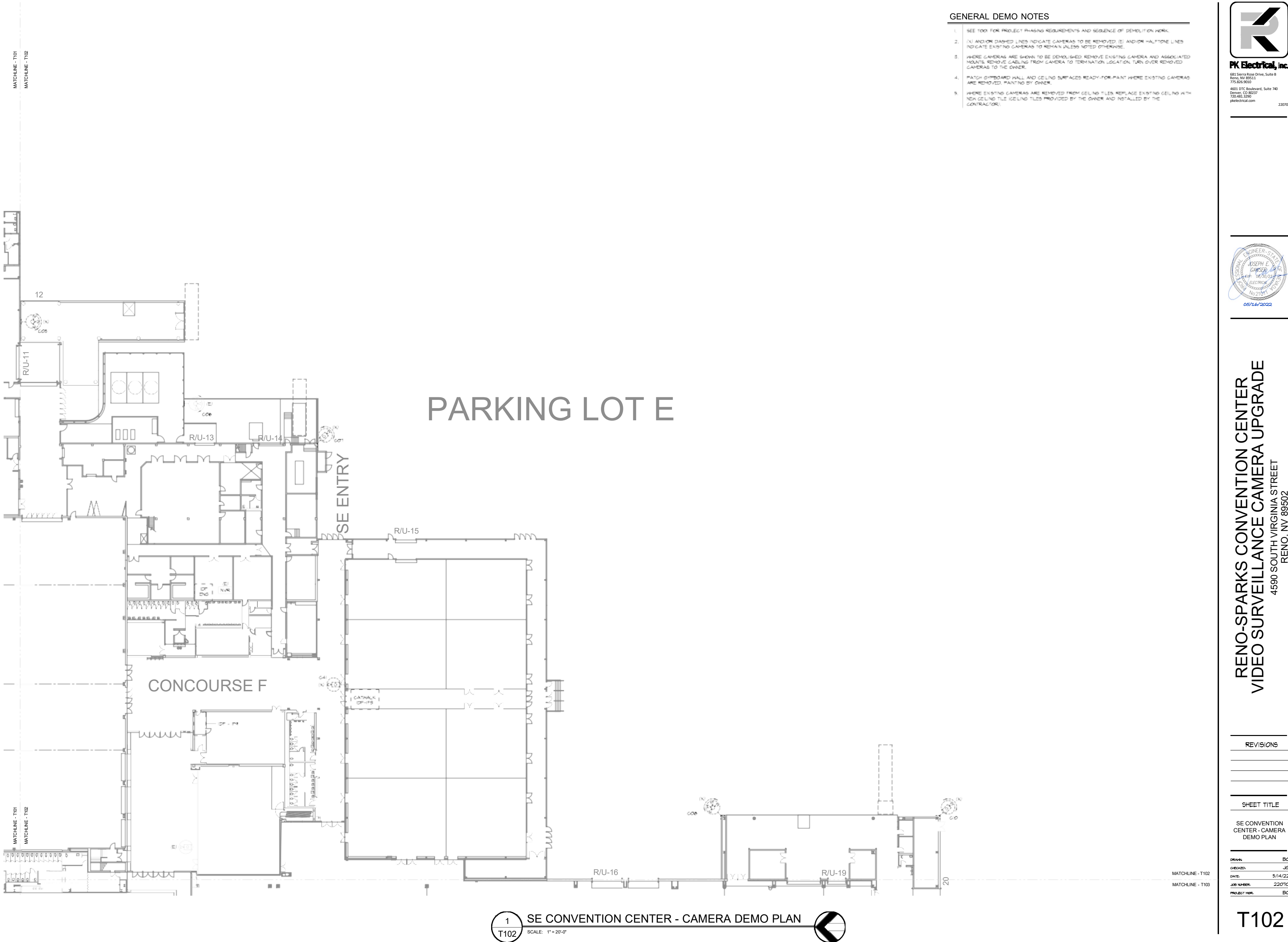
- GENERAL DEMO NOTES
- SEE T101 FOR PROJECT PHASES, REQUIREMENTS AND SEQUENCE OF DEMOLITION WORK.
  - IN AND/OR DASHED LINES INDICATE CAMERAS TO BE REMOVED. IN AND/OR HALFTONE LINES INDICATE EXISTING CAMERAS TO REMAIN UNLESS NOTED OTHERWISE.
  - WHERE CAMERAS ARE SHOWN TO BE DEMOLISHED, REMOVE EXISTING CAMERA AND ASSOCIATED MOUNTS, REMOVE CABLE FROM CAMERA TO TERMINATION LOCATION, TURN OVER REMOVED CAMERAS TO THE OWNER.
  - MATCH OFFBOARD WALL AND CEILING SURFACES READY-FOR-PAIN WHERE EXISTING CAMERAS ARE REMOVED; PAINTING BY OWNER.
  - WHERE EXISTING CAMERAS ARE REMOVED FROM CEILING TILES, REPLACE EXISTING CEILING WITH NEW CEILING TILE (CEILING TILES PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR).

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Denver, CO 80237  
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pk-electrical.com  
22070



**RENO-SPARKS CONVENTION CENTER  
VIDEO SURVEILLANCE CAMERA UPGRADE**  
4590 SOUTH VIRGINIA STREET  
RENO, NV 89502

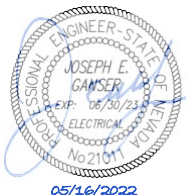
REVISIONS	
SHEET TITLE	
NE CONVENTION CENTER - CAMERA DEMO PLAN	
DRAWN	BC
CHECKED	JG
DATE	5/14/22
JOB NUMBER	22070
PROJECT NAME	BC



GENERAL DEMO NOTES

1. SEE TOOL FOR PROJECT PHASING REQUIREMENTS AND SEQUENCE OF DEMOLITION WORK.
2. (X) AND/OR DASHED LINES INDICATE CAMERAS TO BE REMOVED. (E) AND/OR HALFTONE LINES INDICATE EXISTING CAMERAS TO REMAIN UNLESS NOTED OTHERWISE.
3. WHERE CAMERAS ARE SHOWN TO BE DEMOLISHED, REMOVE EXISTING CAMERA AND ASSOCIATED MOUNTS, REMOVE CABLEING FROM CAMERA TO TERMINATION LOCATION, TURN OVER REMOVED CAMERAS TO THE OWNER.
4. PATCH GYPSBOARD WALL AND CEILING SURFACES READY-FOR-PAINT WHERE EXISTING CAMERAS ARE REMOVED, PAINTING BY OWNER.
5. WHERE EXISTING CAMERAS ARE REMOVED FROM CEILING TILES, REPLACE EXISTING CEILING WITH NEW CEILING TILE INCLUDING TILES PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR(S).

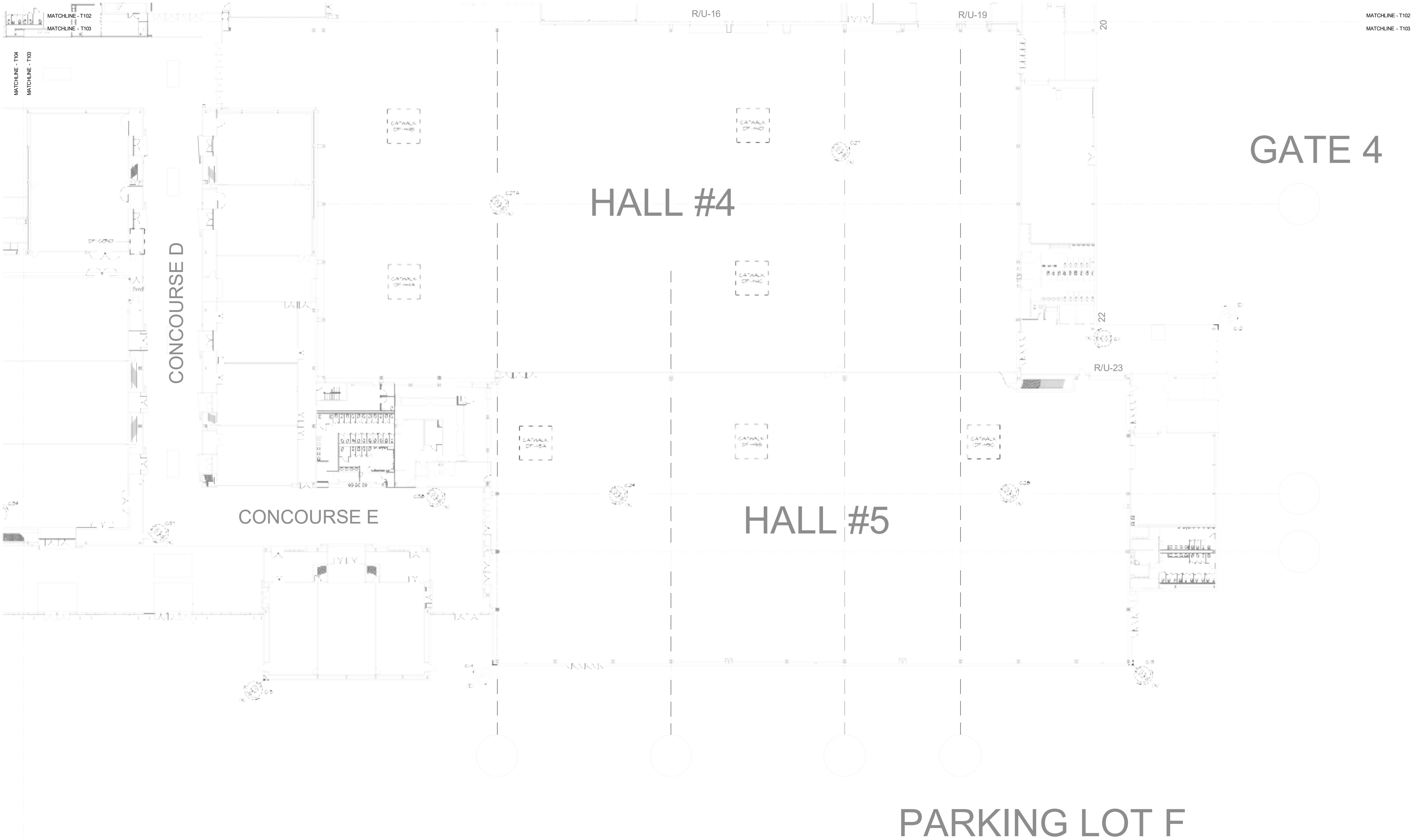
**PK Electrical, Inc.**  
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RENO-SPARKS CONVENTION CENTER  
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REVISIONS	
SHEET TITLE	
SE CONVENTION CENTER - CAMERA DEMO PLAN	
DRAWN	BC
CHECKED	JG
DATE	5/14/22
JOB NUMBER	22070
PROJECT MGR	BC

T102



- GENERAL DEMO NOTES
- 1. SEE T01 FOR PROJECT PHASING REQUIREMENTS AND SEQUENCE OF DEMOLITION WORK.
  - 2. (X) AND/OR DASHED LINES INDICATE CAMERAS TO BE REMOVED. (L) AND/OR HALFTONE LINES INDICATE EXISTING CAMERAS TO REMAIN UNLESS NOTED OTHERWISE.
  - 3. WHERE CAMERAS ARE SHOWN TO BE DEMOLISHED, REMOVE EXISTING CAMERA AND ASSOCIATED WIRING. REMOVE CABLES FROM CAMERA TO TERMINATION LOCATION. TURN OVER REMOVED CAMERAS TO THE OWNER.
  - 4. PATCH OFFBOARD WALL AND CEILING SURFACES READY-FOR-PAINT WHERE EXISTING CAMERAS ARE REMOVED. PAINTING BY OWNER.
  - 5. WHERE EXISTING CAMERAS ARE REMOVED FROM CEILING TILES, REPLACE EXISTING CEILING WITH NEW CEILING TILE (CEILING TILES PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR).

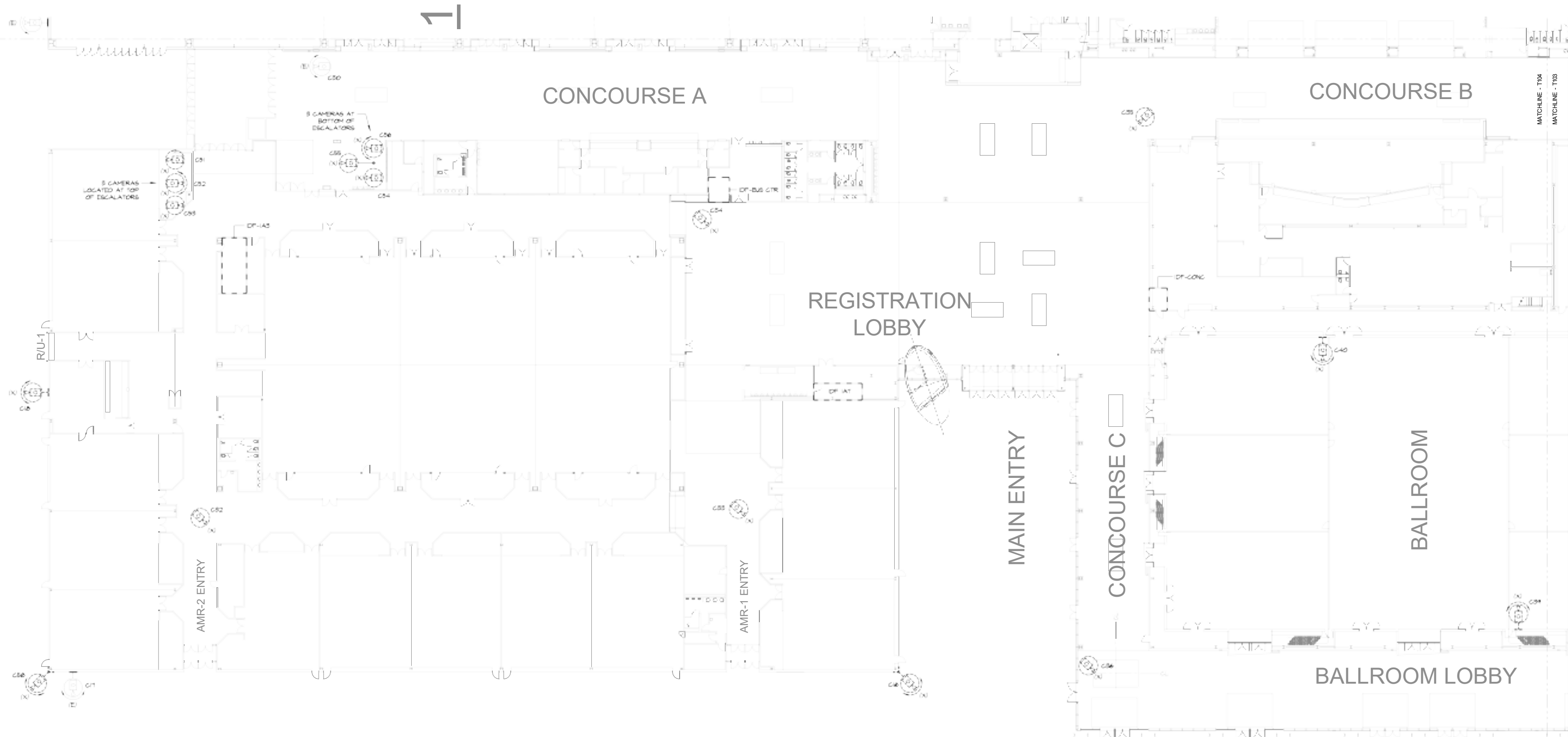


MATCHLINE - T101  
MATCHLINE - T104

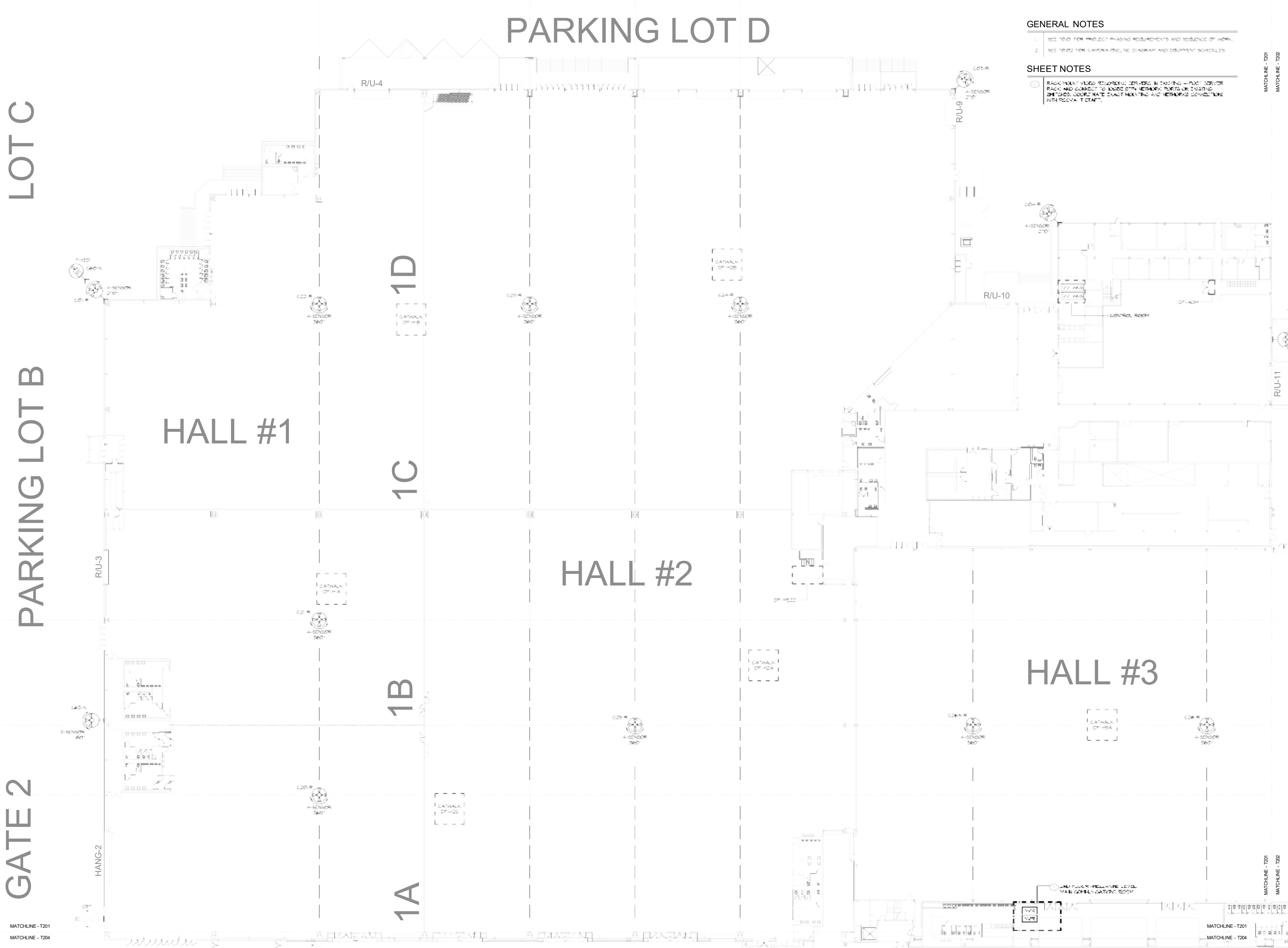
PARKING LOT A

PARKING LOT A

GATE 1



- GENERAL DEMO NOTES
1. SEE TOOL FOR PROJECT PHASING REQUIREMENTS AND SEQUENCE OF DEMOLITION WORK.
  2. (X) AND/OR DASHED LINES INDICATE CAMERAS TO BE REMOVED. (E) AND/OR HALFTONE LINES INDICATE EXISTING CAMERAS TO REMAIN UNLESS NOTED OTHERWISE.
  3. WHERE CAMERAS ARE SHOWN TO BE DEMOLISHED, REMOVE EXISTING CAMERA AND ASSOCIATED MOUNTS, REMOVE CABLING FROM CAMERA TO TERMINATION LOCATION, TURN OVER REMOVED CAMERAS TO THE OWNER.
  4. PATCH GYPSBOARD WALL AND CEILING SURFACES READY-FOR-PANT WHERE EXISTING CAMERAS ARE REMOVED. PAINTING BY OWNER.
  5. WHERE EXISTING CAMERAS ARE REMOVED FROM CEILING TILES, REPLACE EXISTING CEILING WITH NEW CEILING TILE (CEILING TILES PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR).



- GENERAL NOTES
- SEE T201 FOR PROJECT PHASING REQUIREMENTS AND SEQUENCE OF WORK.
  - SEE T202 FOR CAMERA ONLINE DIAGRAM AND EQUIPMENT SCHEDULES.
- SHEET NOTES
1. RACK MOUNT VIDEO RECORDING DEVICES IN EXISTING 4-PHASE SERVER RACKS AND CONNECT TO ADDED STRIP NETWORK PORTS ON EXISTING SWITCHES. COORDINATE EXACT MOUNTING AND NETWORK CONNECTIONS WITH RECORDING STAFF.



**PK Electrical, Inc.**  
681 Sierra Rose Drive, Suite B  
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4601 DTC Boulevard, Suite 740  
Denver, CO 80237  
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22070



**RENO-SPARKS CONVENTION CENTER  
VIDEO SURVEILLANCE CAMERA UPGRADE**  
4590 SOUTH VIRGINIA STREET  
RENO, NV 89502

REVISIONS	
SHEET TITLE	
NE CONVENTION CENTER - NEW CAMERA PLAN	
DRAWN	BC
CHECKED	JG
DATE	5/14/22
JOB NUMBER	22070
PROJECT NAME	BC



RENO-SPARKS CONVENTION CENTER  
VIDEO SURVEILLANCE CAMERA UPGRADE

4590 SOUTH VIRGINIA STREET  
RENO, NV 89502

## REVISIONS

HEET TITLE

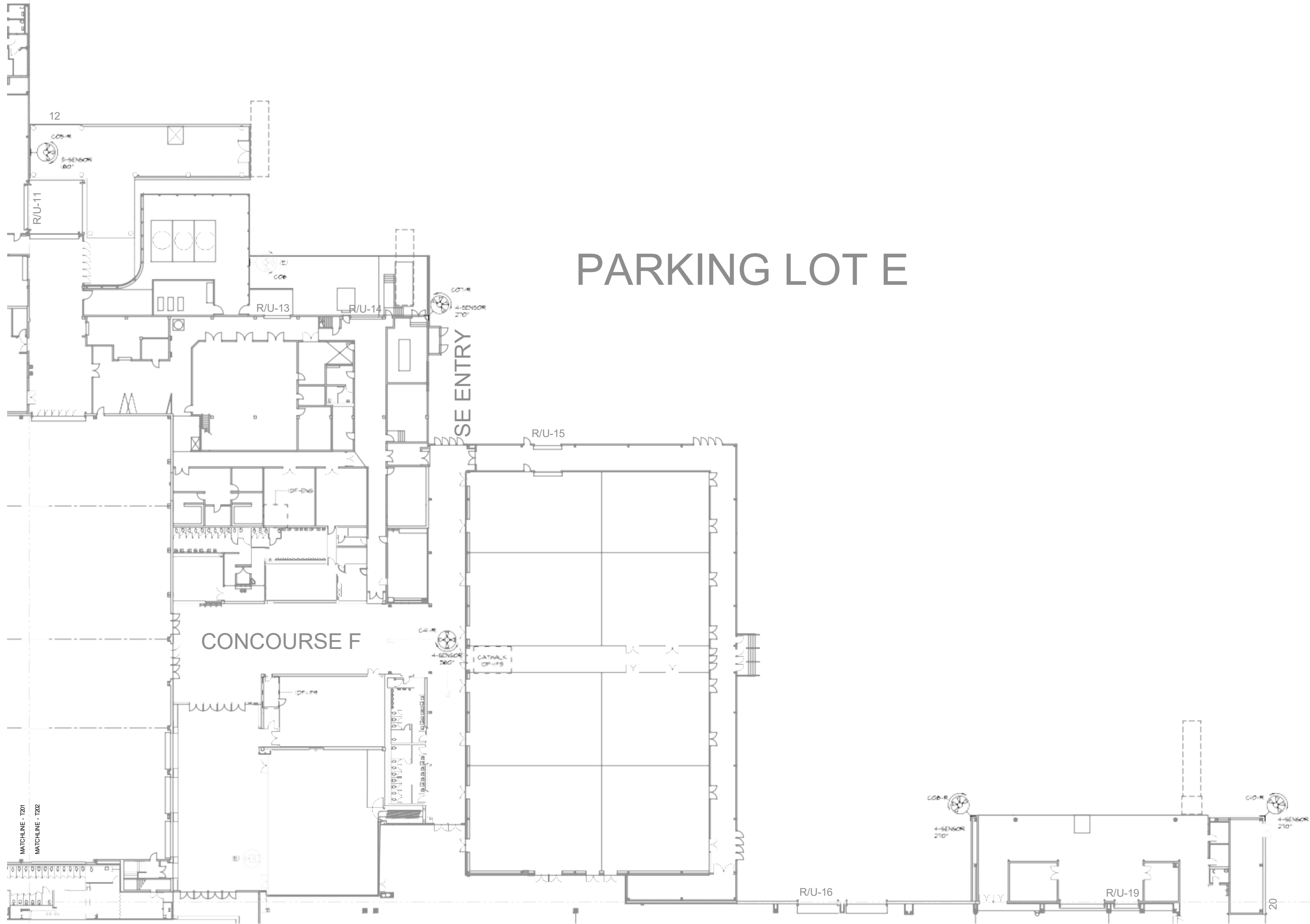
## SE CONVENTION CENTER - NEW CAMERA PLAN

TRAIN:	BC
CHECKED:	JG
DATE:	5/14/22
ID NUMBER:	22070
SUBJECT MOR:	BC

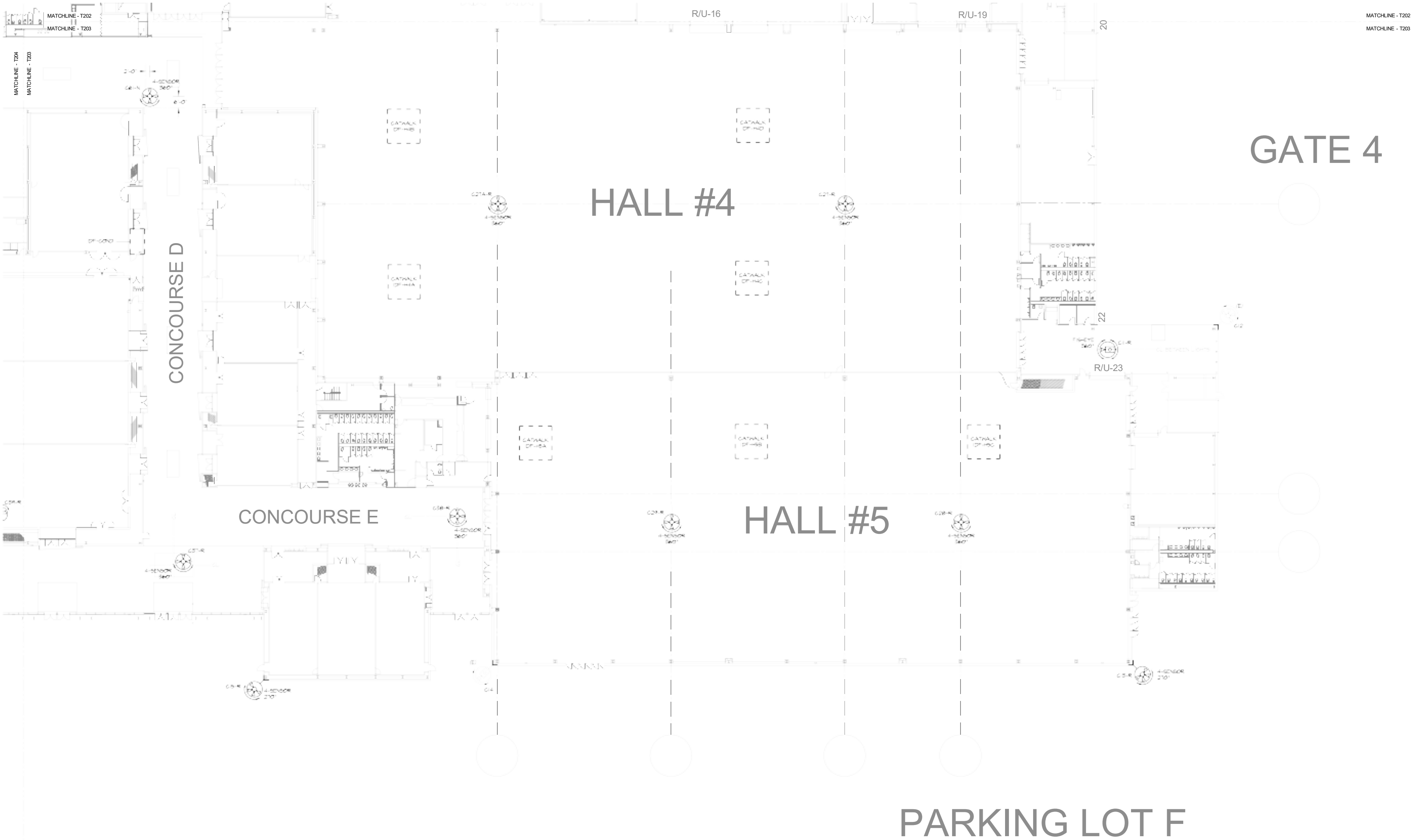
T202

## GENERAL NOTES

1. SEE TO.01 FOR PROJECT PHASING REQUIREMENTS AND SEQUENCE OF WORK.
2. SEE TO.02 FOR CAMERA ONLINE DIAGRAM AND EQUIPMENT SCHEDULES.



1 SE CONVENTION CENTER - NEW CAMERA PLAN  
T202 SCALE: 1" = 20'-0"



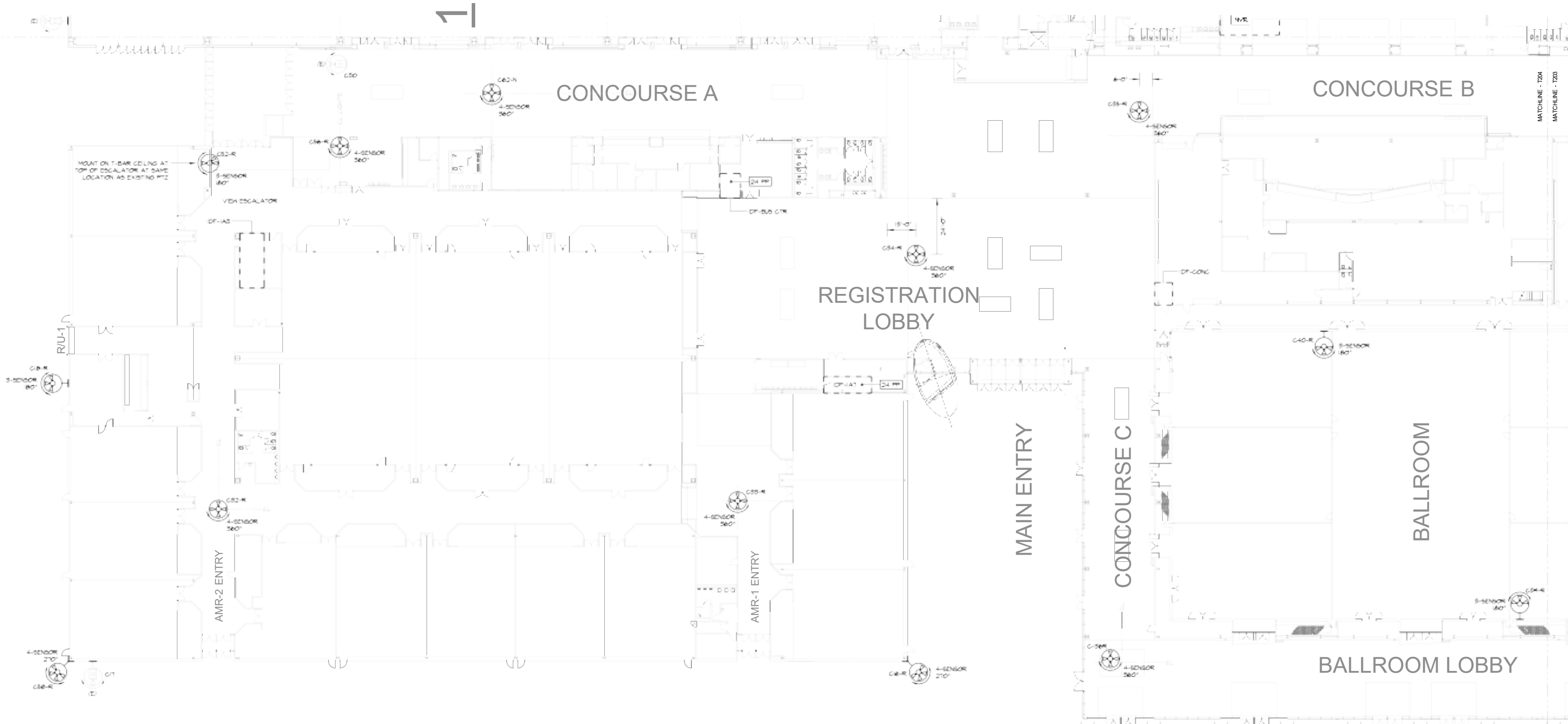
- GENERAL NOTES
- SEE T001 FOR PROJECT PHASING REQUIREMENTS AND SEQUENCE OF WORK.
  - SEE T002 FOR CAMERA ONLINE DIAGRAM AND EQUIPMENT SCHEDULES.

MATCHLINE - T201  
MATCHLINE - T204

PARKING LOT A

PARKING LOT A

GATE 1



#### GENERAL NOTES

1. SEE TO-01 FOR PROJECT PHASING REQUIREMENTS AND SEQUENCE OF WORK.
2. SEE TO-02 FOR CAMERA ONLINE DIAGRAM AND EQUIPMENT SCHEDULES.

#### REVISIONS

#### SHEET TITLE

NW CONVENTION  
CENTER - NEW  
CAMERA PLAN

DRAWN: BC  
CHECKED: JG  
DATE: 5/14/22  
JOB NUMBER: 22070  
PROJECT NAME: BC

**T204**