

REPAIR CONTRACT

THIS REPAIR CONTRACT (“**Contract**”) is by and between the **CITY AND COUNTY OF DENVER**, a municipal corporation of the State of Colorado (the “**City**”) and **DYNALECTRIC COMPANY**, a Delaware **CORPORATION**, whose address is **345 Sheridan Blvd. Lakewood, Colorado 80226** (the “**Contractor**”).

RECITALS

1. The City has identified a need for a qualified contractor to perform services directed by the City. The work will generally consist of performance of such repair services as assigned by the City.
2. The work shall consist of the replacement of a fire alarm panel and associated services described in ***Exhibit A*** (the “**Scope of Work**”).
3. The Contractor is willing, able and has the present capacity to perform all of the repair services required by this Contract.

AGREEMENT

In consideration of the mutual covenants contained in this Contract, and subject to the terms and conditions stated in this Contract, the Parties agree as follows:

1. WORK TO BE PERFORMED.

A. Work: The Contractor shall furnish all labor, tools, supplies, equipment, materials and everything necessary for and required to do, perform and complete all of the work described in the Scope of Work, ***Exhibit A*** (the “**Work**”). Contractor shall perform Work in a highly skilled manner consistent with the performance standards and technical requirements set forth in ***Exhibit A***. The Contractor shall diligently prosecute the Work to completion using its best efforts, highly skilled work effort and attention. The Contractor shall be solely responsible for all means, methods and techniques of performance, protection of property and safety. The Contractor shall be responsible to the City for the acts and omissions of the Contractor’s employees and any other persons performing any of the work or furnishing materials.

B. Oversight: The Director of General Services is the City's representative responsible for authorizing and approving the work performed under this Contract. The Director hereby designates the Director of Public Office Buildings (the “**Director**”) as the authorized representative for the purpose

of designating a project manager, and administering, coordinating and initially approving the work performed and services provided by the Contractor. The project manager shall report to the Director, and shall be responsible for the day- to-day administration, coordination and approval or acceptance of the Work, except for those approvals or acceptances identified herein as requiring Director action. The Director expressly reserves the right to designate another authorized representative to perform on his/her behalf upon written notice to the Contractor.

C. Cooperation and Coordination: The Contractor shall make every reasonable effort to fully coordinate the Work with any City agency or any person or firm under contract with the City doing work which affects the Contractor's Work. The Contractor agrees to allow the City to review any of the procedures used by it in doing the Work under this Contract and to make available for inspection all notes and other documents used in performing the Work.

D. Non-exclusivity: The Contractor acknowledges and agrees that this Contract does not create an exclusive right to perform all Work for which the City may contract for the type of service described in *Exhibit A*. The City may enter contracts with other contractors to perform the same or similar services and reserves the right to select, at the discretion of the Director, the contractor that is the most cost effective, best suited, and/or most readily able to perform a specific Work Project.

E. Inspection of the Work: Persons who are employees of the City or who are under contract to the City will be assigned to inspect and test the Work. These persons may perform any tests and observe the Work to determine whether or not materials used, manufacturing and construction processes and methods applied, and equipment installed satisfy the requirements of the technical specifications, all other Contract requirements, and the Contractor's warranties and guarantees. The Contractor shall permit these inspectors unlimited access to the Work and provide means of safe access to the Work, which cost shall be included in the Contractor's price for the Work. In addition, the Contractor shall provide whatever access and means of access are needed to off-site facilities used to store or manufacture materials and equipment to be incorporated into the Work and shall respond to any other reasonable request to further the inspector's ability to observe or complete any tests. Such inspections shall not relieve the Contractor of any of its quality control responsibilities or any other obligations under the Contract. All inspections and all tests conducted by the City are for the convenience and benefit of the City. These inspections and tests do not constitute acceptance of the materials or Work tested or inspected, and the City may reject or accept any Work or materials at any time prior to the inspections, whether or not previous inspections or tests were conducted by the inspector or a City representative.

F. Warranties; Correction of Work: The Contractor warrants that all parts, materials, components, equipment, systems and other items incorporated into the Work (“Items”) shall be new, unless otherwise specified, and suitable for the purpose used, and will be of good quality, free from faults and defects, and in keeping with common industry standards and that said Items shall be properly installed or incorporated into the Work in accordance with manufacturer’s specifications and standard practices for said Items, and all of this shall be in conformance with the specifications and requirements of this Contract. The Contractor’s warranty shall be effective for a one-year period following the completion of the Work and shall be extended for one year following any repair, replacement or corrective action required under the warranty. The Contractor, when requested, shall furnish the Director with satisfactory evidence of the kind and quality of Items proposed to be incorporated into the Work. At any time while this Contract is in effect or during the warranty period, the Contractor shall, at no cost to the City, promptly investigate, repair, replace, or otherwise correct any of its workmanship and/or Items in the Work which contain fault(s) or defect(s), whether such failure(s) are observed by the City or the Contractor, and promptly repair, replace, otherwise correct any damage to any personal or real property owned by the City or another person resulting from said fault(s) or defect(s) or from the repair, replacement, or correction of the fault(s) or defect(s).

G. Title: The Contractor warrants that it has full title to all items incorporated into the Work, that its transfer of such title to the City is rightful and free and clear from all security interests, liens, claims, or encumbrances whatsoever, and that the Contractor will defend such title against all persons claiming the whole or part of any Item, at no cost to the City.

H. Time is of the Essence: The Work is time sensitive. The Contractor acknowledges and affirms that it is imperative that the Contractor exercise due diligence and actively and expeditiously undertake all measures necessary: 1) in initiating, making good progress, and completing the Work Project, all within the timeframes specified in this Contract, and 2) in promptly and fully correcting or completing any Work noted in a Notice of Deficiency. Failure or refusal by the Contractor to initiate, make good progress, or complete the Work within the Performance Period may result, at the discretion of the Director, in termination of this Contract, or in assessment of liquidated damages under Section 5 of this Contract.

I. Subcontracting: Except as approved by the Director in advance and in writing, the Contractor shall not subcontract with another contractor to perform the Work. The Contractor is prohibited from hiring any subcontractor currently debarred by the City in accordance with section 20-77 of the

Denver Revised Municipal Code.

2. METHODS OF WORK.

A. Resources, Personnel, and Time Commitment: The Work shall be promptly commenced and actively prosecuted with the optimum complement of workers and equipment in order to complete the Work in an effective and expeditious manner. The Contractor shall furnish all labor, tools, supplies, equipment, materials and everything necessary for and required to perform and complete the Work. The Work shall be undertaken by workers skilled, proficient, and experienced in the trades required by this Contract and shall be performed in an orderly and responsible manner in accordance with recognized standards and the plans and specifications contained in this Contract or provided to the Contractor by the City. If the City reasonably believes that the Work is not proceeding satisfactorily or timely because the Contractor has not utilized an adequate number of qualified and skilled personnel or workers or provided sufficient tools, supplies, equipment, or materials, then the City may require the Contractor, at no additional cost to the City, to utilize additional qualified and skilled personnel or workers or provide additional tools, supplies, equipment, or materials to perform the Work in a manner reasonably acceptable to the City.

B. Permits and Licenses: Any tasks specified under this Contract that require the employment of licensed or registered personnel shall be performed by licensed or registered personnel. The Contractor shall obtain, at its own expense, and maintain all permits or licenses, including any prescribed governmental authorizations or approvals, required for the performance of the Work and shall demonstrate, if requested, what actions the Contractor has taken to comply with the required permits, licenses, authorizations or approvals.

C. Work Site Conditions: Work sites and nearby locations shall be kept clean and neat. Equipment, vehicles, and materials no longer needed at the site shall be promptly removed from the site, and any such items lawfully stored for use on the site shall be so placed and secured as to protect the public health and safety. All scraps, debris, trash, excess soil, and other waste materials shall be regularly removed and properly disposed of. Disposal in solid waste containers provided by the City is prohibited unless written authorization is obtained.

D. Protection of Property: The Contractor shall assume full responsibility and expense for the protection of all public and private property, including but not limited to structures, street improvements, pathways, irrigation systems, landscaping, water lines, sewers, and other utilities, both above and below ground, at or near the site or sites of the Work or at any other location affected by the

prosecution of the Work or the transportation or utilization of workers, equipment, or materials in connection with the Work. The Contractor shall provide, in a timely manner and in advance, written notice to: 1) the City department having charge of any property, right of way, or utility affected by the Work; 2) any utility having charge of any utility affected by the Work; and 3) any private property owner whose property or improvements will be affected by the Work, and shall make all necessary arrangements with such City department, utility, or private property owner for the removal and replacement or the protection of such property. The Contractor shall arrange and obtain any utility locations required by law or necessary to protect utilities or underground facilities on public or private property and shall be liable for any failure to obtain or comply with such utility locations. To the extent that any permit or license is required by a City department or other governmental entity for any work on public property, said permit or license shall be obtained and paid for by the Contractor in advance of performing the Work and shall be complied with in the performance of the Work. If the Contractor or its employees, agents, or subcontractors destroy or damage any property, public or private, the Contractor shall promptly repair or replace such property, to the reasonable satisfaction of the Department, before the City will accept or pay for the Work performed. If the Contractor fails to make such repairs or replacement, the Director may, at the Director's discretion, undertake such repair or replacement and deduct the cost of the same from amounts payable to the Contractor under this Contract.

E. Safety: The Contractor is responsible for the health and safety of every person on or at the Work site and shall take all necessary and appropriate precautions and actions to protect such persons from injury, death or loss. The Contractor shall be responsible for being fully familiar with and complying with all applicable City, state or federal laws, ordinances, rules and regulations, requirements and guidelines, including the Occupational Safety and Health Act and any regulations or directives adopted thereunder ("Safety Laws"). The Contractor shall promptly notify the City in writing of any violations of said Safety Laws, along with copies of any injury reports, and any citations, orders, or warnings issued by governmental agencies in the enforcement of said Safety Laws. The Contractor shall provide and properly locate all necessary protective devices and safety precautions, including warning signs, barricades, or other devices or precautions as required by Safety Laws or the City. For all operations requiring the placement and movement of equipment or materials, the Contractor shall observe and exercise, and shall direct its employees or agents to observe and exercise, all appropriate and prudent caution so as to avoid injury to persons or damage to property and to minimize annoyance to or undue interference with the movement of the public and the performance of City functions. All ladders,

scaffolding, or other devices used to reach objects not otherwise accessible, shall be of sound construction, firm and stable and shall be maintained in good, operable condition. All such equipment shall be moved, placed, shifted, and removed from work areas in such a manner as to provide maximum safety to persons and property and cause the least possible interference with the normal usage of such areas by the public and City personnel.

F. Disposal of Non-Hazardous Waste at DADS: In accordance with the Landfill Agreement made between the City and Waste Management of Colorado, Inc., the Contractor will be required to haul dedicated loads (non-hazardous entire loads of waste) to the Denver-Arapahoe Disposal Site (“DADS”) for disposal. DADS is located at Highway 30 and Hampden Avenue in Arapahoe County, Colorado. The City will pay all fees associated with such disposal but the Contractor shall be responsible for the costs of transporting the loads. Non-hazardous waste is defined as those substances and materials not defined or classified as hazardous by the Colorado Hazardous Waste Commission pursuant to C.R.S. §25-15-207, as amended from time to time, and includes construction debris, soil and asbestos. Proposals shall not use Gun Club Road between I-70 and Mississippi Avenue as a means of access to DADS.

G. Prohibition on Use of CCA-Treated Wood Products: The use of any wood products pressure-treated with chromated copper arsenate (CCA) is prohibited. Examples of CCA-treated wood products include wood used in play structures, decks, picnic tables, landscaping timbers, fencing, patios, walkways and boardwalks.

H. Waiver of Part 8 of Article 20 of Title 13, Colorado Revised Statutes: The Contractor specifically waives all the provisions of Part 8 of Article 20 of Title 13, Colorado Revised Statutes regarding defects in the Work under this Contract.

I. Liens and Other Encumbrances: The Contractor shall not permit any mechanic’s or materialman’s liens or any other liens to be imposed and remain for more than ninety (90) days upon any City- owned property, or any part thereof, by reason of any worker labor performed or materials or equipment furnished by any person or legal entity to or on behalf of the Contractor, either pursuant to C.R.S. § 38-26-107 or by any other authority. The Contractor shall promptly pay when due all bills, debts and obligations incurred in connection with this Contract and shall not permit the same to become delinquent. The Contractor shall not permit any lien, mortgage, judgment, execution or adjudication of bankruptcy which will in any way impair the rights of the City under this Contract. The Contractor will indemnify and save harmless the City for the extent of any and all payments, interests, and penalties resulting from failure to comply with this section. The Contractor’s obligations set out in this section shall

survive the termination of this Contract.

J. Environmental Compliance: The Contractor shall obtain all necessary federal, state, and local environmental permits and comply with all applicable federal, state, and local environmental permit requirements relating to the Work. The Contractor shall comply with all applicable local, state, and federal environmental guidelines, rules, regulations, statutes, laws, and orders (collectively, “Environmental Requirements”), including but not limited to Environmental Requirements regarding the storage, use, transportation, and disposal of Hazardous Materials and regarding releases or threatened releases of Hazardous Materials to the environment. The term “Hazardous Materials” shall mean asbestos and asbestos-containing materials, special wastes, polychlorinated biphenyls (PCBs), any petroleum products, natural gas, radioactive source material, pesticides, any hazardous waste as defined at 42 U.S.C. § 6903(5) of the Solid Waste Disposal Act, any hazardous substance as defined at 42 U.S.C. § 9601(14) of the Comprehensive Environmental Response, Compensation and Liability Act, and chemical substance as defined at 15 U.S.C. § 2602(2) of the Toxic Substances Control Act, and any guidelines issued and rules or regulations promulgated pursuant to such statutes or any other applicable federal or state statute.

K. Attorney’s Fees: Colorado Revised Statute 38-26-107 requires that in the event any person or company files a verified statement of amounts due and unpaid in connection with a claim for labor and materials supplied on this project the City shall withhold from payments to the Contractor sufficient funds to insure the payment of any such claims. Should the City and County of Denver be made a party to any lawsuit to enforce such unpaid claims or any lawsuit arising out of or relating to such withheld funds, the Contractor agrees to pay to the City its costs and reasonable attorney’s fee which cost shall be included as a Cost of the Work. Because the City Attorney Staff does not bill the City for legal services on an hourly basis, the Contractor agrees a reasonable fee shall be computed at the rate of two hundred dollars per hour of City Attorney time.

L. Environmental Sustainability: The Contractor shall demonstrate commitment to and experience in environmental sustainability and public health protection practices applicable to its line of services including, but not limited to, construction waste recycling and energy efficiency. Contractor shall work to reduce landfill waste by recycling and/or salvaging recyclable materials. Where applicable, vendor shall procure and install fixtures and equipment that reduce energy use.

3. TERM. The Agreement will commence on **July 1, 2022** and will expire on **February 28, 2023** (the “Term”). Subject to the Manager’s prior written authorization, the Contractor shall complete

any Assigned Work in progress as of the expiration date and the Term of the Agreement will extend until the work is completed or earlier terminated by the Manager. The parties agree that in the performance of the terms, conditions, and requirements of this Agreement by the Contractor, time is of the essence.

4. COMPENSATION AND PAYMENT.

A. Maximum Contract Amount: The Maximum Contract Amount to be paid by the City to the Contractor for satisfactory completion of all Work authorized by the City and performed by the Contractor under this Contract shall in no event exceed the sum of **NINE HUNDRED TWENTY-FOUR THOUSAND NINE HUNDRED EIGHTY-EIGHT DOLLARS AND ZERO CENTS (\$924,988.00)**, unless this Contract is modified to increase said amount by a duly authorized and written amendment to this Contract executed by the Parties in the same manner as this Contract. The Maximum Contract Amount stated herein is not intended, and shall not be construed, as a promise or guarantee to the Contractor that the final price payable to the Contractor for all of the authorized Work will equal the Maximum Contract Amount.

B. Conditions of Payment: Payment shall be made upon satisfactory completion of the Work or as set out in the SOW. The request for payment submitted by the Contractor must fully document and itemize the Work rendered and all equipment, supplies, materials, labor, and other authorized and actually incurred costs. The request for payment shall affirmatively represent that: i) all of the Work specified in the Work Order has been fully performed and completed and any Deficiency Notice has been satisfied; ii) no claims, liens, or amounts owed to employees, suppliers, or materialmen are outstanding and all requirements and conditions of section 13 below have been fully complied with; iii) all rights, title and interests to the materials or improvements provided or installed as the result of the Work have transferred to the City; and iv) no interest or encumbrance of any kind associated with the Work will be asserted, has been acquired, or will be made by the Contractor or any other person or entity. If the request for payment does not contain these representations, the representations are hereby deemed to contain them. The request for payment must be approved by the Director in writing in order to be eligible for compensation under this Contract. Any payment may be reduced by any liquidated damages assessed by the Director under sub-section 5.D.2 below.

C. Subject to Appropriation; No Multiple Year Obligation: It is understood and agreed that any payment obligation of the City hereunder, whether direct or contingent, shall extend only to funds appropriated by the Denver City Council for the purpose of this Contract, encumbered for the

purpose of the Contract and paid into the Treasury of the City. The Contractor acknowledges that (i) the City does not by this Contract, irrevocably pledge present cash reserves for payments in future fiscal years, and (ii) this Contract is not intended to create a multiple-fiscal year direct or indirect debt or financial obligation of the City.

D. Amendments: The Contractor acknowledges that the City is not obligated to execute an amendment to this Contract, and that any work performed by Contractor beyond that specifically described or allowed under this Contract or without a fully and properly executed amendment to this Contract is performed at Contractor's risk and without authorization under this Contract.

5. TERMINATION & REMEDIES.

A. Termination for Convenience of the City. The Director, upon giving twenty (20) calendar days written notice (unless a longer period is given), may terminate this Contract, in whole or part, when it is in the best interest of the City as determined by the Director. To the extent that the Contractor has initiated or completed Work for which the Contractor has not yet been compensated in accordance with this Contract, appropriate compensation for all such authorized Work shall be paid to the Contractor in accordance with this Contract.

B. Termination, With Cause, by the City. The occurrence of any one or more of the following shall constitute a breach of this Contract ("Breach"), for which the Director may, at the Director's option, either terminate this Contract, with cause, upon written notice to the Contractor:

1) The Contractor fails or refuses, within three (3) calendar days of being notified, to expeditiously and actively undertake or substantially or timely perform its responsibilities and obligations or fails or refuses to make adequate progress in performing its responsibilities and obligations under this Contract, including the due diligence obligations set forth in section 1 of this Contract or the Work methods under section 2 of this Contract, provided that the failure or refusal to undertake, make good progress, or complete the Work is not due to matters beyond the Contractor's control such as weather disaster or persistent bad weather, floods, or other acts of God, civil unrest, acts of the public enemy, national calamity, or strike at a manufacturer or supplier for the Work Project;

2) There is substantial evidence that it has been or will be impossible for the Contractor to perform the Work required due to matters within the Contractor's control such as voluntary bankruptcy, strikes, boycotts, and labor disputes involving Contractor's employees or closure or suspension of operations by regulatory order of a governmental entity or an order of a court due to

violations or infractions by the Contractor or Contractor's employees;

3) The Contractor has persistently or flagrantly failed to perform the Work or failed to timely perform the Work or to comply with the specifications and requirements as set forth in the Statement of Work in ***Exhibit A*** to this Contract;

4) The Contractor has submitted one or more requests for payment under this Contract that are fraudulent or persistently or flagrantly erroneous or misleading;

5) The Contractor has made an assignment or transfer of, or subcontracted, its responsibilities and obligations under this Contract without obtaining the Director's written consent or not in conformance with this Contract;

6) The Contractor fails to obtain, renew, replace, or maintain the insurance coverage required by this Contract or causes or is at fault for damage to property or injury to persons that is not covered or not adequately covered by insurance and the Contractor fails to remedy the situation to the satisfaction of the Director;

7) The Contractor fails to obtain or properly and timely maintain any financial assurances required by this Contract;

8) Any lien is filed against City property because of any act or omission of the Contractor and is not timely discharged, unless the Contractor furnishes to the City such bond or other financial assurance reasonably acceptable to the Director to protect the interests of the City;

9) The Contractor has failed to obtain or maintain any required permit or license or has utilized personnel or workers not licensed or registered as required by law;

10) The Contractor has failed to deliver title or warranties or has failed to honor warranties as required by this Contract;

11) The Contractor fails, within three (3) calendar days of being notified, to comply with, or fails to compel its subcontractors to comply with, the prevailing wage requirements or other City ordinances applicable to the type and nature of Work being performed under this Contract; or

12) The Contractor or any of its officers or employees are convicted, plead nolo contendere, enter into a formal contract in which they admit guilt, enter a plea of guilty, or otherwise admit culpability to criminal offenses of bribery, kickbacks, collusive bidding, bid-rigging, antitrust, fraud, undue

influence, theft, racketeering, extortion or any offense of a similar nature, in connection with the Contractor's business.

C. Compensation. Upon termination of this Contract by the City, with cause, under sub- section 5.B above, the Contractor shall be compensated for the Work that the Director determines to have been satisfactorily completed, except that the City shall be entitled to keep any unpaid amount owing to the Contractor to the extent that said amount or some portion of said amount is needed to compensate the City for: 1) liquidated damages, if specified under sub-section 5.E below; 2) the costs of releasing any liens or satisfying any claims related to the Contractor's Work; and 3) the costs of paying a new contractor for those services necessary to complete or rectify the Contractor's Work or to repair or replace any damaged or lost property caused by the Breach of this Contract. The Contractor shall have no claim of any kind whatsoever against the City for any termination with cause, except for compensation for the Work satisfactorily performed as described herein.

D. Remedies.

1) *Termination:* For any termination with cause of this Contract, the City shall have the right to any or all of the following remedies through the courts or other means of legal recourse available to the City: a) cancellation of the Contract; b) actual damages or costs caused by Breach of the Contractor; and c) recovery of costs incurred by the City itself in paying for the release of liens related to the Contractor's Work or in completing or rectifying the Contractor's Work or in retaining and compensating another contractor to complete or rectify the Contractor's Work, to the extent not covered in sub-section 5.C. above. In any legal action brought by the Contractor, the Contractor shall not be entitled to recover any more than the full amount, not previously paid, of any Work Orders executed with and performed in whole or part by the Contractor. The City and the Contractor understand and agree that the rights of specific performance and to incidental, consequential, or punitive damages have been hereby expressly waived and released by both Parties.

2) *Liquidated Damages:* If the Director determines, for a Breach of this Contract under sub-section 5.B above, not to terminate the Contract but to apply liquidated damages as provided in this paragraph, the Contractor shall be liable to the City for liquidated damages in the amount of five hundred dollars (**\$500.00**) per day, calculated from the day that the Director issues notice to the Contractor of a Breach under sub-section 5.B through a) the day before the Breach is remedied, or b) the day before a new Work Order or Contract is executed with another contractor to perform the Work, as so determined by the Director. The Contractor and City hereby acknowledges and agrees that it would be impractical and

extremely difficult to estimate the damages which the City might incur for said breach, and that, in the interest of assuring that the Work is timely and properly performed, the liquidated damages provided herein is the most fair and reasonable way to compensate the City for any delay or inadequate performance without termination of the Contract or litigation.

6. WHEN RIGHTS AND REMEDIES NOT WAIVED. In no event will any payment or other action by the City constitute or be construed to be a waiver by the City of any breach of covenant or default that may then exist on the part of the Contractor. No payment, other action, or inaction by the City when any breach or default exists will impair or prejudice any right or remedy available to it with respect to any breach or default. No assent, expressed or implied, to any breach of any term of the Agreement constitutes a waiver of any other breach.

7. INDEPENDENT CONTRACTOR. The Contractor is an independent contractor retained to perform services for limited periods of time. Neither the Contractor nor any of its employees are employees or officers of the City under Chapter 18 of the Denver Revised Municipal Code, or for any purpose whatsoever. The Contractor is responsible for the operational management, errors and omissions of the Contractor's employees, agents, and subcontractors. Without limiting the foregoing, the Contractor understands and acknowledges that the Contractor and the Contractor's employees, agents and subcontractors: a) are not entitled to workers' compensation benefits through the City; b) are not entitled to unemployment insurance benefits unless unemployment compensation coverage is provided by the Contractor or some other entity besides the City; and c) are obligated to pay federal and state taxes on any monies earned pursuant to this Contract. Furthermore, it is understood and agreed that nothing in this Contract is intended, or shall be construed, to constitute a joint venture between the Parties.

8. INSURANCE:

A. General Conditions: Contractor agrees to secure, at or before the time of execution of this Agreement, the following insurance covering all operations, goods or services provided pursuant to this Agreement. Contractor shall keep the required insurance coverage in force at all times during the term of the Agreement, including any extension thereof, and during any warranty period. The required insurance shall be underwritten by an insurer licensed or authorized to do business in Colorado and rated by A.M. Best Company as "A-VIII" or better. Each policy shall require notification to the City in the event any of the required policies be canceled or non-renewed before the expiration date thereof. Such written notice shall be sent to the parties identified in the Notices section of this Agreement. Such notice

shall reference the City contract number listed on the signature page of this Agreement. Said notice shall be sent thirty (30) days prior to such cancellation or non-renewal unless due to non-payment of premiums for which notice shall be sent ten (10) days prior. If such written notice is unavailable from the insurer, Contractor shall provide written notice of cancellation, non-renewal and any reduction in coverage to the parties identified in the Notices section by certified mail, return receipt requested within three (3) business days of such notice by its insurer(s) and referencing the City's contract number. Contractor shall be responsible for the payment of any deductible or self-insured retention.

The insurance coverages specified in this Agreement are the minimum requirements, and these requirements do not lessen or limit the liability of the Contractor. The Contractor shall maintain, at its own expense, any additional kinds or amounts of insurance that it may deem necessary to cover its obligations and liabilities under this Agreement.

B. Proof of Insurance: Contractor may not commence services or work relating to this Agreement prior to placement of coverages required under this Agreement. Contractor certifies that the certificate of insurance attached as Exhibit E, preferably an ACORD form, complies with all insurance requirements of this Agreement. The City requests that the City's contract number be referenced on the certificate of insurance. The City's acceptance of a certificate of insurance or other proof of insurance that does not comply with all insurance requirements set forth in this Agreement shall not act as a waiver of Contractor's breach of this Agreement or of any of the City's rights or remedies under this Agreement. The City's Risk Management Office may require additional proof of insurance, including but not limited to policies and endorsements.

C. Additional Insureds: For Commercial General Liability, Auto Liability and Excess Liability/Umbrella (if required), Contractor and sub-contractor's insurer(s) shall include the City and County of Denver, its elected and appointed officials, employees and volunteers as additional insured.

D. Waiver of Subrogation: For all coverages required under this Agreement, with the exception of Professional Liability - if required, Contractor's insurer shall waive subrogation rights against the City.

E. Subcontractors and Subconsultants: Contractor shall confirm and document that all subcontractors and subconsultants (including independent contractors, suppliers or other entities providing goods or services required by this Agreement) procure and maintain coverage as approved by the Contractor and appropriate to their respective primary business risks considering the nature and scope of services provided.

F. Workers' Compensation and Employer's Liability Insurance: Contractor shall maintain the coverage as required by statute for each work location and shall maintain Employer's Liability insurance with limits of \$100,000 per occurrence for each bodily injury claim, \$100,000 per occurrence for each bodily injury caused by disease claim, and \$500,000 aggregate for all bodily injuries caused by disease claims.

G. Commercial General Liability: Contractor shall maintain a Commercial General Liability insurance policy with minimum limits of \$1,000,000 for each bodily injury and property damage occurrence, \$2,000,000 products and completed operations aggregate (if applicable), and \$2,000,000 policy aggregate.

H. Automobile Liability: Contractor shall maintain Automobile Liability with minimum limits of \$1,000,000 combined single limit applicable to all owned, hired and non-owned vehicles used in performing services under this Agreement.

I. Builder's Risk: Contractor shall maintain limits equal to the completed value of the project. Coverage shall be written on an all risk, replacement cost basis including coverage for soft costs, flood and earth movement, if in a flood or quake zone, and, if applicable, equipment breakdown including testing. The City and County of Denver, Contractor, and subcontractors shall be Additional Named Insureds under the policy. Policy shall remain in force until acceptance of the project by the City.

J. Professional Liability (Errors & Omissions): Contractor shall maintain minimum limits of \$1,000,000 per claim and \$1,000,000 policy aggregate limit. The policy shall be kept in force, or a Tail policy placed, for three (3) years for all contracts except construction contracts for which the policy or Tail shall be kept in place for eight (8) years.

9. DEFENSE AND INDEMNIFICATION.

A. Contractor agrees to defend, indemnify, reimburse and hold harmless City, its appointed and elected officials, agents and employees for, from and against all liabilities, claims, judgments, suits or demands for damages to persons or property arising out of, resulting from, or relating to the work performed under this Agreement ("Claims"), unless such Claims have been specifically determined by the trier of fact to be the sole negligence or willful misconduct of the City. This indemnity shall be interpreted in the broadest possible manner to indemnify City for any acts or omissions of Contractor or its subcontractors either passive or active, irrespective of fault, including City's concurrent negligence whether active or passive, except for the sole negligence or willful misconduct of City.

B. Contractor's duty to defend and indemnify City shall arise at the time written notice

of the Claim is first provided to City regardless of whether Claimant has filed suit on the Claim. Contractor's duty to defend and indemnify City shall arise even if City is the only party sued by claimant and/or claimant alleges that City's negligence or willful misconduct was the sole cause of claimant's damages.

C. Contractor shall defend any and all Claims which may be brought or threatened against City and shall pay on behalf of City any expenses incurred by reason of such Claims including, but not limited to, court costs and attorney fees incurred in defending and investigating such Claims or seeking to enforce this indemnity obligation. Such payments on behalf of City will be in addition to any other legal remedies available to City and will not be the City's exclusive remedy.

D. Insurance coverage requirements specified in this Agreement in no way lessen or limit the liability of the Contractor under the terms of this indemnification obligation. The Contractor is responsible to obtain, at its own expense, any additional insurance that it deems necessary for the City's protection.

E. This defense and indemnification obligation shall survive the expiration or termination of this Agreement.

10. FINANCIAL ASSURANCES. Without limiting or waiving any other responsibilities or obligations of the Contractor under this Contract, the Contractor shall provide a payment and performance bond(s), an irrevocable letter of credit, or other performance guarantees in the amount of **NINE HUNDRED NINETEEN THOUSAND FOUR HUNDRED SEVENTY-ONE DOLLARS AND ZERO CENTS (\$919,471.00)** (the "Surety"). Bonds must be substantially in the form specified in *Exhibit D*, which is attached hereto and incorporated herein by reference. The form of letters of credit or other performance guarantees must be acceptable to the City Attorney. The Surety must not expire before termination of this Contract. The Contractor shall deliver to the Director, prior to the execution of the Contract, a fully executed Surety which shall provide effective and sufficient financial assurance for the full and faithful performance of the Contractor's duties and obligations under this Contract and the payment of bills for labor and materials for the Work, along with appropriate powers of attorney. The Surety must be issued from a surety corporation or bank authorized to do business in the State of Colorado and which is acceptable to the City. Such Surety shall be payable to the City upon demand for the Contractor's failure to perform as required under this Contract and/or failure to pay all amounts owed to laborers, mechanics, subcontractors, and materialmen for work performed or materials, supplies, rental items, tools, and equipment provided for the Work under this Contract. The Surety shall also assure the repair or

replacement of any Work found to be defective or otherwise not in compliance with this Contract. The Surety shall remain in effect or be promptly renewed or replaced by another Surety acceptable to the City during the Term of the Contract, or any extension thereof, and during a ninety (90) day period after the expiration or termination of this Contract and any warranty period or other period prescribed by law. Satisfactory proof of renewal or acceptable replacement must be provided to the Director at least sixty (60) days prior to the date of expiration or termination of the Surety. The Contractor's obligations set out in this section shall survive the termination of this Contract and failure to obtain or maintain said Surety shall be grounds for immediate termination.

11. COLORADO GOVERNMENTAL IMMUNITY ACT. The Parties hereto understand and agree that the City is relying upon, and has not waived, the monetary limitations and all other rights, immunities and protection provided by the Colorado Governmental Act, § 24-10-101 *et seq.*, C.R.S.

12. TAXES, CHARGES AND PENALTIES. The City is not liable for the payment of taxes, late charges or penalties of any nature, except for any additional amounts that the City may be required to pay under the City's prompt payment ordinance D.R.M.C. § 20-107, *et seq.* The Contractor shall promptly pay when due, all taxes, bills, debts and obligations it incurs performing the services under the Agreement and shall not allow any lien, mortgage, judgment or execution to be filed against City property.

13. COMPLIANCE WITH ALL LAWS. Contractor shall perform or cause to be performed all services in full compliance with all applicable laws, rules, regulations and codes of the United States, the State of Colorado; and with the Charter, ordinances, rules, regulations and Executive Orders of the City and County of Denver.

14. EXAMINATION OF RECORDS AND AUDITS. Any authorized agent of the City, including the City Auditor or his or her representative, has the right to access, and the right to examine, copy and retain copies, at City's election in paper or electronic form, any pertinent books, documents, papers and records related to Contractor's performance pursuant to this Agreement, provision of any goods or services to the City, and any other transactions related to this Agreement. Contractor shall cooperate with City representatives and City representatives shall be granted access to the foregoing documents and information during reasonable business hours and until the latter of three (3) years after the final payment under the Agreement or expiration of the applicable statute of limitations. When conducting an audit of this Agreement, the City Auditor shall be subject to government auditing standards issued by the United States Government Accountability Office by the Comptroller General of the United States, including with respect to disclosure of information acquired during the course of an audit. No examination of records

and audits pursuant to this paragraph shall require Contractor to make disclosures in violation of state or federal privacy laws. Contractor shall at all times comply with D.R.M.C. 20-276.

15. ASSIGNMENT; SUBCONTRACTING. The Contractor shall not voluntarily or involuntarily assign any of its rights or obligations, or subcontract performance obligations, under this Agreement without obtaining the Director's prior written consent. Any assignment or subcontracting without such consent will be ineffective and void, and will be cause for termination of this Agreement by the City. The Director has sole and absolute discretion whether to consent to any assignment or subcontracting, or to terminate the Agreement because of unauthorized assignment or subcontracting. In the event of any subcontracting or unauthorized assignment: (i) the Contractor shall remain responsible to the City; and (ii) no contractual relationship shall be created between the City and any sub-consultant, subcontractor or assign.

16. NO THIRD-PARTY BENEFICIARY. Enforcement of the terms of the Agreement and all rights of action relating to enforcement are strictly reserved to the parties. Nothing contained in the Agreement gives or allows any claim or right of action to any third person or entity. Any person or entity other than the City or the Contractor receiving services or benefits pursuant to the Agreement is an incidental beneficiary only.

17. NO AUTHORITY TO BIND CITY TO CONTRACTS. The Contractor lacks any authority to bind the City on any contractual matters. Final approval of all contractual matters that purport to obligate the City must be executed by the City in accordance with the City's Charter and the Denver Revised Municipal Code.

18. AGREEMENT AS COMPLETE INTEGRATION-AMENDMENTS. The Agreement is the complete integration of all understandings between the parties as to the subject matter of the Agreement. No prior, contemporaneous or subsequent addition, deletion, or other modification has any force or effect, unless embodied in the Agreement in writing. No oral representation by any officer or employee of the City at variance with the terms of the Agreement or any written amendment to the Agreement will have any force or effect or bind the City.

19. SEVERABILITY. Except for the provisions of the Agreement requiring appropriation of funds and limiting the total amount payable by the City, if a court of competent jurisdiction finds any provision of the Agreement or any portion of it to be invalid, illegal, or unenforceable, the validity of the remaining portions or provisions will not be affected, if the intent of the parties can be fulfilled.

20. CONFLICT OF INTEREST.

A. No employee of the City shall have any personal or beneficial interest in the services or property described in the Agreement. The Contractor shall not hire, or contract for services with, any employee or officer of the City that would be in violation of the City's Code of Ethics, D.R.M.C. §2-51, et seq. or the Charter §§ 1.2.8, 1.2.9, and 1.2.12.

B. The Contractor shall not engage in any transaction, activity or conduct that would result in a conflict of interest under the Agreement. The Contractor represents that it has disclosed any and all current or potential conflicts of interest. A conflict of interest shall include transactions, activities or conduct that would affect the judgment, actions or work of the Contractor by placing the Contractor's own interests, or the interests of any party with whom the Contractor has a contractual arrangement, in conflict with those of the City. The City, in its sole discretion, will determine the existence of a conflict of interest and may terminate the Agreement if it determines a conflict exists, after it has given the Contractor written notice describing the conflict.

21. NOTICES. All notices required by the terms of the Agreement must be hand delivered, sent by overnight courier service, mailed by certified mail, return receipt requested, or mailed via United States mail, postage prepaid, if to Contractor at the address first above written, and if to the City at:

By Contractor to: Executive Director of General Services
201 West Colfax Avenue, Dept. 304
Denver, Colorado 80202

And by the City to: Dynalectric Company
345 Sheridan Boulevard
Lakewood, Colorado 80226

Notices hand delivered or sent by overnight courier are effective upon delivery. Notices sent by certified mail are effective upon receipt. Notices sent by mail are effective upon deposit with the U.S. Postal Service. The parties may designate substitute addresses where or persons to whom notices are to be mailed or delivered. However, these substitutions will not become effective until actual receipt of written notification.

22. DISPUTES. All disputes between the City and Contractor arising out of or regarding the Agreement will be resolved by administrative hearing pursuant to the procedure established by D.R.M.C. § 56- 106(b)-(f). For the purposes of that administrative procedure, the City official rendering a final determination shall be the Executive Director as defined in this Agreement.

23. GOVERNING LAW; VENUE. The Agreement will be construed and enforced in

accordance with applicable federal law, the laws of the State of Colorado, and the Charter, Revised Municipal Code, ordinances, regulations and Executive Orders of the City and County of Denver, which are expressly incorporated into the Agreement. Unless otherwise specified, any reference to statutes, laws, regulations, charter or code provisions, ordinances, executive orders, or related memoranda, includes amendments or supplements to same. Venue for any legal action relating to the Agreement will be in the District Court of the State of Colorado, Second Judicial District (Denver District Court).

24. NO DISCRIMINATION IN EMPLOYMENT. In connection with the performance of work under the Agreement, the Contractor may not refuse to hire, discharge, promote, demote, or discriminate in matters of compensation against any person otherwise qualified, solely because of race, color, religion, national origin, ethnicity, citizenship, immigration status, gender, age, sexual orientation, gender identity, gender expression, marital status, source of income, military status, protective hairstyle, or disability. The Contractor shall insert the foregoing provision in all subcontracts.

25. USE, POSSESSION OR SALE OF ALCOHOL OR DRUGS. The Contractor shall cooperate and comply with the provisions of Executive Order 94 concerning the use, possession or sale of alcohol or drugs. Violation of this provision or refusal to cooperate with implementation of the policy can result in the City barring the Contractor from City facilities or participating in City operations.

26. PREVAILING WAGE REQUIREMENTS.

A. Contractor shall comply with, and agrees to be bound by, all requirements, conditions and City determinations regarding the Payment of Prevailing Wages Ordinance, Sections 20-76 through 20-79, D.R.M.C. including, but not limited to, the requirement that every covered worker working on a City owned or leased building or on City-owned land shall be paid no less than the prevailing wages and fringe benefits in effect on the date the bid or request for proposal was advertised. In the event a request for bids, or a request for proposal, was not advertised, Contractor shall pay every covered worker no less than the prevailing wages and fringe benefits in effect on the date funds for the contract were encumbered.

B. Date bid or proposal issuance was advertised **01/26/2022**.

If contract opportunity was not advertised, date of written encumbrance **N/A**.

C. Prevailing wage and fringe rates will adjust on the yearly anniversary of the actual date of bid or proposal issuance, if applicable, or the date of the written encumbrance if no bid/proposal issuance date is applicable. Unless expressly provided for in this Agreement, Contractor will receive no additional compensation for increases in prevailing wages or fringe benefits

D. Contractor shall provide the Auditor with a list of all subcontractors providing any

services under the contract.

E. Contractor shall provide the Auditor with electronically-certified payroll records for all covered workers employed under the contract.

F. Contractor shall prominently post at the work site the current prevailing wage and fringe benefit rates. The posting must inform workers that any complaints regarding the payment of prevailing wages or fringe benefits may be submitted to the Denver Auditor by calling 720-913-5000 or emailing auditor@denvergov.org. If Contractor fails to pay workers as required by the Prevailing Wage Ordinance, Contractor will not be paid until documentation of payment satisfactory to the Auditor has been provided. The City may, by written notice, suspend or terminate work if Contractor fails to pay required wages and fringe benefits.

27. **LEGAL AUTHORITY.** Contractor represents and warrants that it possesses the legal authority, pursuant to any proper, appropriate and official motion, resolution or action passed or taken, to enter into the Agreement. Each person signing and executing the Agreement on behalf of Contractor represents and warrants that he has been fully authorized by Contractor to execute the Agreement on behalf of Contractor and to validly and legally bind Contractor to all the terms, performances and provisions of the Agreement. The City shall have the right, in its sole discretion, to either temporarily suspend or permanently terminate the Agreement if there is a dispute as to the legal authority of either Contractor or the person signing the Agreement to enter into the Agreement.

28. **NO EMPLOYMENT OF A WORKER WITHOUT AUTHORIZATION TO PERFORM WORK UNDER THE AGREEMENT.**

A. This Agreement is subject to Division 5 of Article IV of Chapter 20 of the Denver Revised Municipal Code, and any amendments (the "Certification Ordinance").

B. The Contractor certifies that:

1) At the time of its execution of this Agreement, it does not knowingly employ or contract with a worker without authorization who will perform work under this Agreement, nor will it knowingly employ or contract with a worker without authorization to perform work under this Agreement in the future.

2) It will participate in the E-Verify Program, as defined in § 8-17.5-101(3.7), C.R.S., and confirm the employment eligibility of all employees who are newly hired for employment to perform work under this Agreement.

3) It will not enter into a contract with a subconsultant or subcontractor that

fails to certify to the Contractor that it shall not knowingly employ or contract with a worker without authorization to perform work under this Agreement.

4) It is prohibited from using the E-Verify Program procedures to undertake pre-employment screening of job applicants while performing its obligations under this Agreement, and it is required to comply with any and all federal requirements related to use of the E-Verify Program including, by way of example, all program requirements related to employee notification and preservation of employee rights.

5) If it obtains actual knowledge that a subconsultant or subcontractor performing work under this Agreement knowingly employs or contracts with a worker without authorization, it will notify such subconsultant or subcontractor and the City within three (3) days. The Contractor shall also terminate such subconsultant or subcontractor if within three (3) days after such notice the subconsultant or subcontractor does not stop employing or contracting with the worker without authorization, unless during the three-day period the subconsultant or subcontractor provides information to establish that the subconsultant or subcontractor has not knowingly employed or contracted with a worker without authorization.

6) It will comply with a reasonable request made in the course of an investigation by the Colorado Department of Labor and Employment under authority of § 8-17.5-102(5), C.R.S., or the City Auditor, under authority of D.R.M.C. 20-90.3.

C. The Contractor is liable for any violations as provided in the Certification Ordinance. If the Contractor violates any provision of this section or the Certification Ordinance, the City may terminate this Agreement for a breach of the Agreement. If this Agreement is so terminated, the Contractor shall be liable for actual and consequential damages to the City. Any termination of a contract due to a violation of this section or the Certification Ordinance may also, at the discretion of the City, constitute grounds for disqualifying the Contractor from submitting bids or proposals for future contracts with the City.

29. NO CONSTRUCTION AGAINST DRAFTING PARTY. The parties and their respective counsel have had the opportunity to review the Agreement, and the Agreement will not be construed against any party merely because any provisions of the Agreement were prepared by a particular party.

30. CONTRACT DOCUMENTS; ORDER OF PRECEDENCE. This Contract consists of sections 1 through 35 which precede the signature page(s) ("Contract Text"), and the following exhibits

and attachments which are incorporated herein and made a part hereof by reference:

Exhibit A	Statement of Work and General Conditions
Exhibit B	Contractor's Pricing Proposal
Exhibit C	Prevailing Wage Rate Schedules
Exhibit D	Surety
Exhibit E	Insurance Certificate

In the event of an irreconcilable conflict (i) between a provision of the Contract Text and any of the listed exhibits or attachments or (ii) among provisions of any exhibits or attachments, such that it is impossible to give reasonable effect to all, the order of precedence to determine which document shall control to resolve such conflict, is as follows, in descending order:

Contract Text Exhibit A Exhibit B Exhibit C Exhibit D

31. SURVIVAL OF CERTAIN PROVISIONS. The terms of the Agreement and any exhibits and attachments that by reasonable implication contemplate continued performance, rights, or compliance beyond expiration or termination of the Agreement survive the Agreement and will continue to be enforceable. Without limiting the generality of this provision, the Contractor's obligations to provide insurance and to indemnify the City will survive for a period equal to any and all relevant statutes of limitation, plus the time necessary to fully resolve any claims, matters, or actions begun within that period.

32. TIME IS OF THE ESSENCE. The Parties agree that in the performance of the terms, conditions, and requirements of this Contract, time is of the essence.

33. SECTION HEADINGS. The captions and headings set forth herein are for convenience of reference only and shall not be construed so as to define or limit the terms and provisions hereof.

34. CITY EXECUTION OF CONTRACT. This Contract will not be effective or binding on the City until it has been fully executed by all required signatories of the City and County of Denver, and if required by Charter, approved by the City Council.

35. CITY EXECUTION OF AGREEMENT. The Agreement will not be effective or binding on the City until it has been fully executed by all required signatories of the City and County of Denver, and if required by Charter, approved by the City Council.

36. ELECTRONIC SIGNATURES AND ELECTRONIC RECORDS. Contractor consents to the use of electronic signatures by the City. The Agreement, and any other documents requiring a signature under the Agreement, may be signed electronically by the City in the manner specified by the City. The Parties agree not to deny the legal effect or enforceability of the Agreement solely because it is in electronic form or because an electronic record was used in its formation. The Parties agree not to object to the admissibility of the Agreement in the form of an electronic record, or a paper copy of an electronic

document, or a paper copy of a document bearing an electronic signature, on the ground that it is an electronic record or electronic signature or that it is not in its original form or is not an original.

37. INUREMENT. The rights and obligations of the parties to the Agreement inure to the benefit of and shall be binding upon the parties and their respective successors and assigns, provided assignments are consented to in accordance with the terms of the Agreement.

ATTACHED EXHIBITS

Exhibit A	Statement of Work and General Conditions
Exhibit B	Contractor's Pricing Proposal
Exhibit C	Prevailing Wage Rate Schedules
Exhibit D	Surety
Exhibit E	Insurance Certificate

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Contract Control Number: GENRL-202263055-00
Contractor Name: DYNALECTRIC COMPANY

IN WITNESS WHEREOF, the parties have set their hands and affixed their seals at
Denver, Colorado as of:

SEAL **CITY AND COUNTY OF DENVER:**

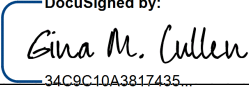
ATTEST: By: _____

APPROVED AS TO FORM: **REGISTERED AND COUNTERSIGNED:**
Attorney for the City and County of Denver
By: _____ By: _____

By: _____

Contract Control Number:
Contractor Name:

GENRL-202263055-00
DYNALECTRIC COMPANY

By:  _____
34C9C10A3817435...

Name: Gina M. Cullen
(please print)

Title: President & CEO, Colorado
(please print)

ATTEST: [if required]

By: _____

Name: _____
(please print)

Title: _____
(please print)

EXHIBIT A
SCOPE OF WORK
POLICE ADMINISTRATION BUILDING FIRE ALARM SYSTEM REPLACEMENT

A.1 OVERVIEW

The project will include the installation of a new fire alarm panel in Police Admin Building with full smoke detection (in non-sprinklered areas) and voice evacuation occupant notification throughout Levels 1 through 5 and Level 7 (approximately 123,000 SF) and occupant notification throughout the garage/basement levels (approx. 180,000 SF) as well as all supporting materials and demolition. The existing fire alarm panel for both the Police Administration Building (PAB) and the Pre-Arrestment Detention Facility (PADF) is located in PADF at 1351 Cherokee Street 80204 and near the end of its useful life. This project will focus on developing a stand-alone system for PAB under the ordinance of the appropriate Denver Building & Fire Code. The existing fire alarm panel in PADF will remain and provide continued monitoring for the facility.

A.2 SCOPE OF WORK

SECTION 210500 - FIRE SPRINKLER SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. This Section and the Drawings outline the general, but not specific, scope of the project's Fire Sprinkler System. The successful Contractor will be the Engineer of Record for the design of the system. The Design and Engineering of the Fire Sprinkler System shall be by the Fire Sprinkler Contractor. It is the Contractor's responsibility that the system meets all the requirements of NFPA and the Authority Having Jurisdiction.
- B. This Section specifies Automatic Sprinkler Systems for buildings and structures. Materials and equipment specified in this Section include:
 - 1. Pipe, Fittings, Valves and Specialties
 - 2. Sprinklers and Accessories
- C. Products furnished but not installed by the Contractor include sprinkler head cabinet with spare sprinkler heads. Furnish to the Owner's maintenance personnel for installation in an approved location.
- D. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 7 Section "Joint Sealers" for materials and methods for sealing pipe penetrations

- through basement walls and fire/smoke barriers.
- 2. Division 23 Section "Mechanical Identification" for labeling and identification of fire protection piping system and components.
- 3. Division 23 sections inclusive.

1.3 DEFINITIONS

- A. Pipe sizes used in this Specification are Nominal Pipe Size (NPS).
- B. Other definitions for Fire Protection Systems are listed in applicable NFPA Codes or Standards.
- C. Working Plans as used in this Section means those documents (including drawings and calculations) prepared pursuant to the requirements contained in NFPA 13 for obtaining approval of the Authority Having Jurisdiction.

1.4 SYSTEM DESCRIPTION

- A. The building is provided with an existing partial sprinkler system. The existing fire sprinkler protection on Level 6 is not in service. Provide a complete and working Fire Sprinkler System for Level 6 of the building. Recertify system.
- B. Fire Sprinkler System is a "Wet-Pipe" system employing automatic sprinklers attached to a piping system containing water and connected to a water supply so that water discharges immediately from sprinklers opened by fire.

1.5 SUBMITTALS

- A. The contractor is to prepare a submittal schedule that coincides with the overall construction schedule. This submittal schedule should include a list of individual products to be submitted under each specification section. This submittal schedule shall also include dates for anticipated review, shipment, and on-site delivery times of the submitted product.
- B. Submittal shall be submitted to the Consultant for review and approval prior to submittal to the AHJ for approval.
- C. Submittals shall be prepared by authorized equipment dealers, vendors, suppliers, or representative of the products submitted. Include contact and business information of the equipment dealers, vendors, suppliers and representatives. Products and equipment submitted shall also be representative of the products and equipment to be procured and installed. General product data and shop drawings downloaded from unaffiliated websites will not be reviewed or accepted.
 - 1. After review, submittals shall be returned together with review comments and specific actions (if required) to be taken by the Contractor. Typical comments and actions will be:
 - a. Reviewed – resubmittal not required.
 - b. Rejected – resubmittal required.
 - c. Revise and Resubmit – resubmittal required.
 - d. Make Corrections as Noted – resubmittal not required unless corrections cannot be met.
- D. The Engineer shall be given a submittal review time of ten (10) working days upon receipt of submittal. Previous submittal rejection or revision shall not compress this review time. It shall be the contractor's responsibility to ensure these review and/or re-review times are incorporated into the submittal schedule with enough lead time as not to affect overall construction schedule.
- E. Product data for each type sprinkler head, valve, piping and piping specialty, fire protection specialty, and any equipment installed in accordance with the Contract Documents.
- F. Shop drawings and hydraulic calculations prepared in accordance with NFPA 13. Do not proceed with the installation of the work until the Architect/Engineer review of shop drawings is received.
- G. Contractor shall stamp shop drawings indicating compliance with applicable codes and contract drawings. Contractor shall stamp drawing "Approved for Construction".
- H. Product data, shop drawings, and hydraulic calculations shall be submitted to the Consultant as one-single package. Individual submittals received of any item will be returned without review until all items are received.

- I. Submit all submittal items required for each Specification Section. Submittals shall be prepared and submitted in accordance with the submittal schedule. The contractor is to determine and coordinate submittal review times, lead times and delivery times of submitted products as it coincides with the overall construction schedule. Submittals submitted in bulk or under a single division will not be review and will be sent back as "revise and resubmit".
- J. If more than one (1) re-submittals (either for shop drawings or for as-built drawings) are made by the Contractor, the Owner reserves the right to charge the Contractor for subsequent reviews by their consultants. Such extra fees shall be deducted from payments by the Owner to the Contractor.
- K. Maintenance data for each type sprinkler head, valve, piping specialty, fire protection specialty specified, for inclusion in operating and maintenance manual specified in Division 1.
- L. Welder's Qualification Certificate.
- M. Test Reports and Certificates, including "Contractor's Material and Test Certificate for Aboveground Piping" and "Contractor's Materials and Test Certificate for Underground Piping" as described in NFPA 13.
- N. Hydraulic calculations and drawings created by the Contractor and submitted to the Engineer shall have the signed stamp of a professional engineer registered in the State of Colorado and familiar with this type of installation and with previous similar experience or the signature with certification number of a Level 4 Senior Engineering Technician of the National Institute for Certification of Engineering Technology (practicing in the Fire Protection field) certifying that the Fire Sprinkler System has been hydraulically calculated in compliance with NFPA and governing codes.
- O. Fire sprinkler piping design drawings shall show, and be coordinated with, all ductwork, air devices, lighting, electrical panels and structural elements of the Building.
- P. Electronic submittals shall be packaged as a bookmarked multi-page single PDF.

1.6 REQUESTS FOR INFORMATION

- A. All "Requests for Information" submitted by the Contractor shall include a proposed solution and an estimated cost/schedule impact. Any RFI's that do not contain this required information will be sent back to the Contractor unanswered.
- B. Schedule the work to provide the Engineer a minimum review time of five (5) business days upon receipt of RFIs to provide a response.

1.7 HYDRAULIC DESIGN

- A. The Fire Sprinkler System shall be hydraulically calculated by the Contractor in compliance with NFPA 13.
- B. The water supply curve shall be developed by deducting 10% up to 10 PSI from the static and residual pressures measured during the flow test. The final fire sprinkler system demand shall be below the water supply curve.
- C. Velocities in pipes shall be shown on hydraulic calculations. Velocities in overhead piping shall not exceed 32 feet per second.

- D. Allow 10 feet of loss for electric water flow switches or as recommended by the manufacturer and note on hydraulic calculations.
- E. The Fire Sprinkler Contractor shall provide as many sets of hydraulic calculations as necessary, performed and submitted to prove that the most remote and demanding areas are calculated.
- F. Design information shall be permanently affixed to the main riser as described in NFPA 13.
- G. Water Flow Data: Refer to accompanying Bid Documents for water supply information. Water supply information is for bidding purposes only.
- H. Before hydraulically calculating fire sprinkler system, the Fire Sprinkle Contractor shall verify exact water flow data with Local Water and/or Fire Department. A copy of the water flow test data from the Local Water and/or Fire Department shall accompany the hydraulic calculations.
- I. Where a water flow test is used for the purposes of design, the test shall be conducted no more than 12 months prior to working plan submittal unless otherwise approved by the AHJ.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Installation and alterations of fire protection piping, equipment, specialties, and accessories, and repair and servicing of equipment shall be performed only by qualified installer. The term "qualified" means experienced in such work (experienced shall mean having a minimum of five (5) previous projects similar in size and scope to this project), familiar with all precautions required, and has complied with all the requirements of the Authority Having Jurisdiction. The Contractor shall be licensed for the design and installation for the specific type of system in the jurisdiction where the work is to be performed and the State of Colorado. Upon request, submit evidence of such qualifications to the Engineer. Refer to Division 1 Section "Definitions and Standards" for definitions for "Installers".
- B. Qualifications for Welding Processes and Operators: Comply with the requirements of AWS D10.9, "Specifications of Qualifications of Welding Procedures and Welders for Piping and Tubing, Level AR-3".

1.9 SEQUENCING AND SCHEDULING

- A. Schedule rough-in installations with installations of other building components.
- B. Minimum time frame for notice of inspections, tests and meetings is five (5) days and list the persons to be notified.

1.10 EXTRA STOCK

- A. Sprinkler Heads: For each style and temperature range (and length for dry heads) required, furnish additional sprinkler heads per NFPA 13.
 - 1. Obtain receipt from Owner that extra stock has been received.
- B. Wrenches: Furnish two (2) spanner wrenches for each type and size of valve connection and fire hose coupling.

PART 2 - PRODUCTS

2.1 MATERIALS AND PRODUCTS

- A. General: Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, temperature ratings, and capacities as indicated. Where not indicated, provide proper selection as determined by Installer to comply with installation requirements. Provide sizes and types matching piping and equipment connections; provide fittings of materials which match pipe materials used in fire protection systems.
- B. All equipment used on this project shall be new and UL Listed, unless noted or specified otherwise.

2.2 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide fire protection system products from one of the following:
 - 1. Gate Valves:
 - a. Nibco
 - b. Kennedy Valve, Division of ITT Grinnell Valve Co., Inc.
 - c. Mueller
 - d. Stockham
 - e. Grinnell
 - f. Milwaukee
 - g. Or equal
 - 2. Swing Check Valves:
 - a. Mueller
 - b. Kennedy Valve, Division of ITT Grinnell Valve Co., Inc.
 - c. Viking
 - d. Victaulic
 - e. Globe
 - f. Tyco Fire Products
 - g. Reliable Automatic Sprinkler Company
 - h. Or equal
 - 3. Butterfly and Ball Valves:
 - a. Grinnell
 - b. Mueller
 - c. Victaulic
 - d. Milwaukee
 - e. Or equal
 - 4. Grooved Mechanical Couplings:
 - a. Gruvlok
 - b. Victaulic Company of America
 - c. Or equal

5. Sprinkler Heads:

- a. Reliable Automatic Sprinkler Co., Inc.
- b. Viking Corp.
- c. Globe
- d. Tyco Fire Products
- e. Victaulic Company of America
- f. Or equal

6. Inspector's Test and Drain Module:

- a. Victaulic
- b. A.G.F.
- c. Or equal

7. Flexible Stainless Steel Hose Branch Line:

- a. UL Listed and FM approved for Fire Protection Use, Braided Hose only.

2.3 BASIC IDENTIFICATION

A. General: Provide identification complying with Division 23 Basic Mechanical Materials and Methods section "Mechanical Identification", in accordance with the following listing:

1. Fire Sprinkler Piping: Pipe markers.
2. Fire Sprinkler Valves: Valve tags.
3. Fire Sprinkler Signs: Provide the following signs:
 - a. At each sprinkler valve, sign indicating what portion of system valve controls.
 - b. At each outside alarm device, sign indicating what authority to call if device is activated.
 - c. At door to each sprinkler control valves, sign reading "**FIRE CONTROL**".
 - d. At each drain or test, sign indicating its purpose.

B. Attach to the riser a metal sign indicating the name, address and telephone number of the Fire Sprinkler Contractor. Also indicate the date of installation.

2.4 BASIC PIPING SPECIALTIES

A. General: Provide piping specialties complying with Division 23 Basic Mechanical Materials and Methods section "Piping Specialties", in accordance with the following listing:

1. Pipe Escutcheons
2. Dielectric Unions
3. Drip Pans
4. Pipe Sleeves
5. Sleeve Seals
6. Fire Barrier Penetration Seals

2.5 BASIC SUPPORTS AND ANCHORS

- A. General: Provide supports and anchors for fire protection system in compliance with NFPA 13.
 - 1. Adjustable steel clevis hangers, adjustable steel band hangers, or adjustable band hangers, for horizontal-piping hangers and supports.
 - 2. Two-bolt riser clamps for vertical piping supports.
 - 3. Steel turnbuckles and malleable iron sockets for hanger-rod attachments.
 - 4. Concrete inserts, top-beam C-clamps, side beam or channel clamps or center beam clamps for building attachments.
 - 5. Concrete inserts and other type hangers penetrating into or through structural members shall be submitted (by the Fire Protection Contractor) to, and have the approval of, the Structural Engineer contracted for this project.
 - 6. Powder driven studs shall not be allowed.
 - 7. Hangers (which are acceptable for Project) and hanger spacing shall be in accordance with NFPA-13.

2.6 PIPE AND TUBING MATERIALS (INSIDE BUILDING)

- A. General: Refer to Part 3 Article "Pipe Applications" for identification of systems where the below specified pipe and fitting materials are used.
- B. Steel Pipe: ASTM A 53, A795 or A135, Schedule 40 or Schedule 10, U.S. manufacture, Black steel pipe, plain ends.
- C. U.S. manufactured pipe is required.
- D. Schedule 5 pipe shall not be allowed.
- E. The Corrosion Resistance Ratio of the pipe shall be 1.00 or greater. Documentation shall be presented with product submittal.
- F. Schedule 10 pipe shall only be allowed for pipe sizes 2-1/2 inch and larger.

2.7 FITTINGS (INSIDE BUILDING)

- A. Cast Iron Threaded Fittings: ANSI B16.4, Class 125 standard pattern, for threaded joints. Threads shall conform to ANSI B1.20.1.
- B. Malleable Iron Threaded Fittings: ANSI B16.3, Class 300, standard pattern, for threaded joints. Threads shall conform to ANSI B1.20.1. Install steel pipe with threaded joints and fittings for 2-inch and smaller and where shown on drawings.
- C. Steel Fittings: ASTM A234, seamless or welded, for welded joints.
- D. Grooved Mechanical Fittings: ASTM A 536, Grade 65-45-12 ductile iron; ASTM A 47 Grade 32510 malleable iron; or ASTM A53, Type F or Types E or S.
- E. Grooved Mechanical Couplings: Consist of ductile or malleable iron housing, a synthetic rubber gasket of a central cavity pressure-responsive design; with nuts, bolts, locking pin, locking toggle, or lugs to secure roll-grooved pipe and fittings. Grooved mechanical couplings including gaskets used on dry-pipe systems shall be listed for dry-pipe service.

- F. Grooved Mechanical Fittings and Couplings for the entire fire protection system shall be of the same manufacturer as submitted in shop drawing equipment review.
- G. Cast Iron Threaded Flanges: ANSI B16.1, Class 250; raised ground face, bolt spot faced.
- H. Cast Bronze Flanges: ANSI B16.24, Class 300; raised ground face, bolt holes spot faced.
- I. Plain end, hooker type, or push-on fittings or couplings shall not be allowed.
- J. Bushings and reducing couplings shall not be allowed.
- K. UL listed and Factory Mutual approved segmentally welded fittings are acceptable.
- L. Mechanical Tee's shall not be allowed.

2.8 JOINING MATERIALS

- A. Welding Materials: Comply with Section II, Part C, ASME Boiler and Pressure Vessel Code for welding materials appropriate for the wall thickness and chemical analysis of the pipe being welded.
- B. Gasket Materials: Thickness, materials and type suitable for fluid or gas to be handled, and design temperatures and pressures.

2.9 GENERAL DUTY VALVES

- A. Gate Valves - 2-Inch and Smaller: Body and bonnet of cast bronze, 175 pound cold water working pressure – non-shock, threaded ends, solid wedge, outside screw and yoke, rising stem, screw-in bonnet, and malleable iron handwheel. Valves shall be capable of being repacked under pressure, with valve wide open.
- B. Gate Valves - 2-1/2 Inch and Larger: Iron body; bronze mounted, 175 pound cold water working pressure – non-shock. Valves shall have solid taper wedge; outside screw and yoke, rising stem; flanged bonnet, with body and bonnet conforming to ASTM A 126 Class B; replaceable bronze wedge facing rings; flanged ends; and a packing assembly consisting of a cast iron gland flange, brass gland, packing, bonnet, and bronze bonnet bushing. Valves shall be capable of being repacked under pressure, with valve wide open.
- C. Butterfly Valves: 2-1/2 Inch to 8-inch shall be listed to 175 PSI with optional internal tamper switch. Body shall be ductile iron with a corrosion resistant coating. Seat shall be field replaceable without the use of special tools. The valve shall be provided with stem bushings to isolate the stem from the stem journal. The valve body shall be machined with a retaining lip for positive retention of the seat to provide drip tight shutoff at full rated differential pressure with the downstream piping removed.
- D. Ball Valves: 1-1/2 Inch and smaller shall be threaded, forged brass construction, with teflon seats and blow out proof stem.
- E. Ball Valves: 2-Inch to 3-inch shall be listed to 300 PSI with optional internal tamper switch. Body shall be ductile iron with corrosion resistant coating. Ball shall be 316 stainless steel.

- F. Swing Check Valves: MSS SP-71; Class 175, cast iron body and bolted cap conforming to ASTM A 126, Class B; horizontal swing, with a bronze disc or cast-iron disc with bronze disc ring, and flanged ends. Valve shall be capable of being refitted while the valve remains in the line.

2.10 BASIC METERS AND GAUGES

- A. Provide meters and gauges as specified below.
 - 1. UL Listed and FM Approved for fire protection service.
 - 2. For water gauges 0-300 PSI range.
 - 3. For air gauges, 0-80 PSI range graduated in 1 PSI increments with a 80 PSI -250 PSI retard range

2.11 ALARM DEVICE AND FIRE PROTECTION SPECIALTIES

- A. General: Types and sizes shall mate and match piping and equipment connections. Provide fire protection specialties, UL listed, in accordance with the following listing. Provide sizes and types which mate and match piping and equipment connections.
- B. Water Flow Indicators: Vane type waterflow detector, rated to 250 PSIG; designed for horizontal or vertical installation; have two (2) SPDT circuit switches to provide isolated alarm and auxiliary contacts, 7 ampere 125 volts AC and 0.25 ampere 24 volts DC; complete with factory-set field-adjustable retard element to prevent false signals, tamper-proof cover which sends a signal when cover is removed, and with activation time retarding capability set at 30 seconds. The setting shall be verified through the Inspectors Test prior to Final Inspection.
- C. Supervisory Switches: Provide products recommended by manufacturer for use in service indicated. SPST, normally closed contacts, designed to signal valve in other than full open position.

2.12 AUTOMATIC SPRINKLERS

- A. Sprinkler Heads: Provide sprinkler heads with a temperature rating per NFPA 13. Sprinkler head K factor should be selected to optimize the hydraulics of the fire sprinkler system. A minimum K factor of 5.6 is to be used.
- B. Sprinkler Head Finishes: Provide heads with the following finishes:
 - 1. Upright, Pendent and Sidewall Styles: Chrome plated, factory brass, in finish spaces, exposed to view; rough bronze finish for heads in unfinished spaces and not exposed to view. Heads shall be stainless steel where installed exposed to acids, chemicals, or other corrosive fumes.
 - 2. Recessed Style: Bright chrome, with bright chrome escutcheon plate in areas with a finished ceiling. GEM Models FR948 and F948 recessed sprinklers are not acceptable.
 - 3. See drawings for additional sprinkler type requirements.
- C. Sprinkler Head Cabinet and Wrench: Finished steel cabinet, suitable for wall mounting, with hinged cover and space for spare sprinkler heads plus sprinkler head wrench. Provide amounts of each style per NFPA 13. Locate head cabinet on shop drawing submittal.
- D. Plastic fire sprinkler escutcheons are not acceptable.

2.13 INSPECTOR'S TEST AND DRAIN ASSEMBLY

- A. Provide an alarm test module of a manufacturer listed in Paragraph 2.2.
- B. Comply with NFPA 13, for draining and testing of wet sprinkler system.
- C. Test and drain piping shall be routed to existing main sprinkler drain. Location shall meet Owner's approval.

PART 3 - EXECUTION

3.1 PIPE APPLICATIONS

- A. Install Schedule 40 steel pipe with threaded joints and fittings for piping 2-inch and smaller.
- B. Install Schedule 10 steel pipe with roll-grooved ends and grooved mechanical coupling or with threaded joints and fittings for piping 2-1/2-inch and larger.
- C. Acceptable alternates to Schedule 40 pipe shall be installed per manufacturer's recommendations.

3.2 PIPING INSTALLATIONS

- A. Provide a minimum 5'-0" cover for all underground pipe installations. Install in accordance with AWWA C600.
- B. Locations and Arrangements: Drawings (plans, schematics, and diagrams) indicate the general location and arrangement of piping systems. So far as practical, install piping as indicated. Drawings are diagrammatic in character and do not necessarily indicate every required offset, valve, fitting, etc.
 - 1. Deviations from approved "Working Plans" for sprinkler piping require written approval of the Authority Having Jurisdiction. Written approval shall be on file with the Engineer prior to deviating from the approved "Working Plans".
- C. Install sprinkler piping to provide for system drainage in accordance with NFPA 13.
- D. Use approved fittings to make all changes in direction, branch takeoffs from mains, and reductions in pipe sizes. Welded outlet branch pipe fittings are acceptable.
- E. Install unions in pipe 2-inch and smaller, adjacent to each valve. Unions are not required on flanged devices or in piping installations using grooved mechanical couplings.
- F. Install flanges or flange adapters on valves, apparatus, and equipment having 2-1/2 inch and larger connections.
- G. For welded pipe, all cutouts (coupons) shall be removed prior to installation.

- H. Hangers and Supports: Comply with the requirements of NFPA 13. Hanger and support spacing and locations for piping joined with grooved mechanical couplings shall be in accordance with the grooved mechanical coupling manufacturer's written instructions for rigid systems. Provide protection from damage where subject to earthquake in accordance with NFPA 13.
- I. Install mechanical sleeve seal at pipe penetrations in basement and foundation walls. Refer to Division 23 Section "Basic Piping Materials and Methods".
- J. All piping penetrating walls to structure shall be sleeved and sealed per Division 23.
- K. Install test connections sized and located in accordance with NFPA 13 complete with shutoff valve. Test connections may also serve as drain pipes.
- L. Install pressure gauge on the riser assembly or sprinkler main near each test connection. Provide gauge with a connection not less than 1/4-inch and having a soft metal seated globe valve, arranged for draining pipe between gauge and valve. Install gauges to permit removal, and where they will not be subject to freezing.
- M. The Fire Sprinkler Contractor shall be responsible for the coordination of his installation with all other contractors and existing building elements.
- N. Protect adjacent area where pipe cutting and threading takes place (e.g. floors, ceilings, walls, etc.).
- O. There shall be no fire sprinkler piping in Electrical Rooms, other than piping serving sprinklers directly in that room, or installed over any electrical panels.
- P. Provide spring-loaded check valve at top of drain risers.
- Q. Install hangers straight and true and piping parallel to building lines.

3.3 PIPE JOINT CONSTRUCTION

- A. Welded Joints: AWS D10.9, Level AR-3.
- B. Threaded Joints: Conform to ANSI B1.20.1, tapered pipe threads for field cut threads. Join pipe, fittings, and valves as follows:
 - 1. Note the internal length of threads in fittings or valve ends, and proximity of internal seat or wall, to determine how far pipe should be threaded into joint.
 - 2. Align threads at point of assembly.
 - 3. Apply appropriate tape or thread compound to the external pipe threads.
 - 4. Assemble joint to appropriate thread depth. When using a wrench on valves, place the wrench on the valve end into which the pipe is being threaded.
 - 5. Damaged Threads: Do not use pipe with threads which are corroded or damaged. If a weld opens during cutting or threading operations, that portion of pipe shall not be used.
- C. Flanged Joints: Align flange surfaces parallel. Assemble joints by sequencing bolt tightening to make initial contact of flanges and gaskets as flat and parallel as possible. Use suitable lubricants on bolt threads. Tighten bolts gradually and uniformly to appropriate torque specified by the bolt manufacturer.

- D. Mechanical Grooved Joints: Roll grooves on pipe ends dimensionally compatible with the couplings.
- E. End Treatment: After cutting pipe lengths, remove burrs and fins from pipe ends.

3.4 VALVE INSTALLATIONS

- A. General: Install fire protection specialty valves, fittings and specialties in accordance with the manufacturer's written instructions, NFPA 13 and the Authority Having Jurisdiction.
- B. Gate Valves: Install electronically supervised-open indicating valves so located to control all sources of water supply except fire department connections. Where there is more than one (1) control valve, provide permanently marked identification signs indicating the portion of the system controlled by each valve.

3.5 SPRINKLER HEAD INSTALLATIONS

- A. Any sprinklers with any paint on them, as a result of the painting of the sprinkler piping, shall be replaced. The sprinkler system shall then be hydrostatically tested again at the Contractor's expense.
- B. Sprinkler heads shall be positioned so as to comply with NFPA 13 for any obstructions.
- C. Run piping concealed above heated furred ceilings and in joists to minimize obstructions. Expose only heads.
- D. Protect sprinkler heads against mechanical injury with standard guards.
- E. Provide heads in "pocketed" areas caused by exposed duct, piping or beams.
- F. Sprinkler heads shall be located in the center of all 2-foot x 2-foot ceiling tiles, quarter points, and along the centerline lengthwise of 2-foot x 4-foot ceiling tiles.
- G. Use proper tools to prevent damage during installations.
- H. Install sprinkler piping in a manner such that mechanical equipment, ceiling tiles or lights can be accessed and easily removed.
- I. Minimum fire sprinkler head temperature rating for sprinklers in electrical rooms shall be 212 degree F. Keep sprinklers as far from transformers and/or panels as spacing allows.

3.6 INSTALLATION OF BASIC IDENTIFICATION

- A. General: Install mechanical identification in accordance with Division 23 Basic Mechanical Materials and Methods section "Mechanical Identification".
- B. Install fire sprinkler signs on piping in accordance with NFPA 13 requirements.

3.7 INSTALLATION OF METERS AND GAUGES

- A. Install meters and gauges in accordance with Division 23 Basic Mechanical Materials and Methods section "Meters and Gauges".

3.8 FLEXIBLE STAINLESS STEEL HOSE BRANCH LINE

- A. Install per requirements associated with the listing of U.L. and Factory Mutual for installation in suspended or sheet rock ceilings. Provide factory brackets to maintain listing of installation for applicable sprinkler head type connection.

3.9 FIELD QUALITY CONTROL

- A. Flush, test and inspect Sprinkler Piping Systems in accordance with NFPA 13.
- B. The Fire Sprinkler Contractor shall conduct and bear the costs of all necessary tests of the Fire Sprinkler Work, furnish all labor, power and equipment. All piping shall be tested with water as required, the tests witnessed by the Authority Having Jurisdiction.
- C. The Fire Sprinkler Piping shall be tested under a hydrostatic pressure of not less than 200 PSIG, for a duration of not less than two (2) hours.
- D. Replace piping system components which do not pass the test procedures specified, and retest repaired portion of the system at Fire Sprinkler Contractor's expense.
- E. All piping tests (pneumatic and hydrostatic) shall be conducted prior to the application of any painting materials. This will prevent hidden leaks and/or repainting of repaired/altered piping.

3.10 SYSTEM CERTIFICATION

- A. The Contractor shall provide the Owner with written certification prior to final inspection, that all new equipment:
 - 1. Has been visually inspected and functionally tested as required by the specifications.
 - 2. Is installed entirely in accordance with the manufacturer's recommendations within the limitations of the system's UL listings and NFPA criteria.
 - 3. Is in proper working order.

3.11 FINAL INSPECTION AND TESTING

- A. The Contractor shall make arrangements with the Owner for final inspection and witnessing of the final acceptance tests. The Fire Sprinkler Contractor, the Alarm System Contractor and the Owner will conduct the final inspection and witness the final acceptance test.
- B. All tests and inspections required by the referenced Codes and Standards, and the Owner shall be performed by the Contractor.

- C. The inspecting committee as referenced above will visit the job site to inspect the work and witness the final acceptance tests when they have been advised by the Contractor that the work is completed and ready for test. If the Work is not complete or the test is unsatisfactory, the Contractor shall be responsible for the Consultant's extra time and expenses for re-inspection and witnessing the re-testing of the work. Such extra fees shall be deducted from payments by the Owner to the Contractor.
- D. After the system has been inspected and tested, a certificate, "Contractor's Material and Test Certificate Sprinkler System - Water Spray System", shall be provided by the Contractor and shall be signed by him or his representative, the Owner's representative and by a representative of the Fire Department if appropriate. Sufficient copies shall be prepared to ensure the Engineer, Owner, all Inspecting Authorities and the Contractor have a copy for their files. The Contractor shall prepare one (1) test report for each inspection performed whether successful or not.
- E. The signing of the Certificate by the Owner's representative shall in no way prejudice any claim against the Contractor for faulty material, poor workmanship, or failure to comply with Inspecting Authority's requirements or Local Ordinances.
- F. Contractor shall provide at least five (5) working days notice for all tests.
- G. All sprinkler supervisory initiating devices shall be functionally tested to verify proper operation.
- H. All supervisory functions of each initiating device shall be functionally tested.
- I. Receipt of all alarm and trouble signals, initiated during the course of the testing, shall be verified at the Fire Alarm Control Panel.

3.12 OPERATION AND MAINTENANCE MANUAL

- A. The Contractor shall provide the Owner with a loose-leaf manual containing:
 - 1. A detailed description of the systems.
 - 2. A detailed description of routine maintenance required or recommended or which would be provided under a maintenance contract including a maintenance schedule and detailed maintenance instructions for each type of device installed.
 - 3. Manufacturer's Data Sheets and Installation Manuals/Instructions for all equipment installed.
 - 4. A list of recommended spare parts.
 - 5. Service Directory.
 - 6. Full size reproducibles of the Record Drawings (stamped and signed per Section 1.6).
 - 7. Hydraulic Calculations (stamped and signed per Section 1.6).
- B. Within fifteen (15) days of the completion of the work, three (3) copies of the manual shall be submitted for approval.

3.13 RECORD DRAWINGS

- A. The Contractor shall provide and maintain on the site an up-to-date record set of approved shop drawing prints which shall be marked to show each and every change made to the sprinkler system from the original approved Shop Drawings. This shall not be construed as authorization to deviate from or make changes to the shop drawings approved by the Owner without written instruction from the Owner in each case. This set of drawings shall be used only as a record set.
- B. Upon completion of the Work, the record set of prints shall be used to prepare complete, accurate final record drawings reflecting any and all changes and deviations made to the sprinkler system.
- C. The Owner, at his option and at the Contractor's expense, may require revised hydraulic calculations depending on the extent and nature of field changes.
- D. The Record Drawings and Hydraulic Calculations shall have the signed stamp of a Professional Engineer registered in the State of Colorado or the signature with certification number of a Level 4 Senior Engineering Technician of the National Institute for Certification of Engineering Technology certifying the Record Drawings and the Hydraulic Calculations accurately represent the completed Fire Protection System.

3.14 GUARANTEE PERIOD

- A. Guarantee: The Contractor shall guarantee all materials and workmanship for a period of one (1) year beginning with the date of final acceptance by the Owner. The Contractor shall be responsible during the design, installation, testing and guarantee periods for any damage caused by him (or his subcontractors) or by defects in his (or his subcontractor's) work, materials, or equipment.
- B. Emergency Service: During the installation and warranty period, the Contractor shall provide emergency repair service for the sprinkler system within four (4) hours of a request by the Owner for such service. This service shall be provided on a twenty-four (24) hour per day, seven (7) days per week basis.

3.15 TRAINING

- A. The Contractor shall conduct two (2) training sessions of four (4) hours each to familiarize the building personnel with the features, operation and maintenance of the sprinkler systems. Training sessions shall be scheduled by the Owner at a time mutually agreeable to the Contractor and the Owner.

3.16 WATER DAMAGE

- A. The Fire Sprinkler Contractor shall be responsible for any damage to the work of others, to building and property/materials of others caused by leaks in automatic sprinkler equipment, unplugged or disconnected pipes or fittings, and shall pay for necessary replacement or repair of work or items so damaged during the installation and testing periods of the automatic sprinkler work.

3.17 WORK BY OTHERS

- A. Electrical Contractor shall wire all water flow switches and tamper switches on valves to central alarm panel, and shall also wire alarm bells or light/horn.

END OF SECTION 210500

SECTION 230000 - BASIC MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including the General Conditions of the Contract for Construction, AIA A201 1987 Edition, specification sections apply to the Division 23 specifications and drawings.
- B. Related Sections: Refer to all sections in Division 23. Refer to Division 26 specification section and Division 26 drawings.

1.2 SUMMARY

- A. This Section specifies the basic requirements for mechanical installations and includes requirements common to more than one (1) section of Division 23. It expands and supplements the requirements specified in sections of Division 23.
- B. The Contractor shall coordinate and co-operate with Owner at all times for all new to existing connections, system shutdowns and restart-up, flushing and filling both new and existing systems.
- C. The Contractor shall be responsible for the maintenance operation and servicing of all new mechanical systems which are to be used by the Owner during the time of any occupancy and use of any areas within the construction limitations before final completion or acceptance of the systems. A written record of maintenance, operation and servicing shall be turned over to the Owner prior to final acceptance.
- D. Refer to AIA Document A 201-1987, Paragraph 9.6.6, 9.9 and 11.3.11.

1.3 PROJECT CONDITIONS

- A. The Contractor may attend a pre-bid walk-thru and shall make themselves familiar with the existing conditions. No additional costs to the Owner shall be accepted for additional work for these existing conditions.
- B. Field verify all existing conditions prior to submitting bids.
- C. Report any existing damaged equipment or systems to the Owner prior to any work.
- D. Protect all mechanical and electrical work against theft, injury or damage from all causes until it has been tested and accepted.
- E. Be responsible for all damage to the property of the Owner or to the work of other contractors during the construction and guarantee period. Repair or replace any part of the Work which may show defect during one (1) year from the final acceptance of all work. Provided such defect is, in the opinion of the Architect, due to imperfect material or workmanship and not due to the Owner's carelessness or improper use.

1.4 ACCESSIBILITY

- A. Install equipment and materials to provide required access for servicing and maintenance. Coordinate the final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow ample space for removal of all parts that require replacement or servicing.
- B. Furnish hinged steel access doors with concealed latch, whether shown on drawings or not, in all walls and ceilings for access to all concealed valves, shock absorbers, air vents, motors, fans, balancing cocks, and other operating devices requiring adjustment or servicing. Refer to Division 1 for access door specification and Division 23 for duct access door requirements.
- C. The minimum size of any access door shall not be less than the size of the equipment to be removed or 24-inch x 24-inch if used for service only.
- D. Furnish doors to trades performing work in which they are to be built, in ample time for building-in as the work progresses. Whenever possible, group valves, cocks, etc., to permit use of minimum number of access doors within a given room or space.
- E. Factory manufactured doors shall be of a type compatible with the finish in which they are to be installed. In lieu of these doors, shop fabricated access doors with DuroDyne hinges may be used.
- F. Access doors in fire-rated walls and ceilings shall have equivalent UL label and fire rating.

1.5 ROUGH-IN

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.
- B. Refer to equipment shop drawings and manufacturer's requirements for actual provided equipment for rough-in requirements.

1.6 REQUIREMENTS OF REGULATORY AGENCIES

- A. Refer to AIA Document A201 (1987) Edition, "REGULATIONS AND LAWS" and "GOVERNING LAW."
- B. Execute and inspect all work in accordance with all Underwriters, local and state codes, rules and regulations applicable to the trade affected as a minimum, but if the plans and/or specifications call for requirements that exceed these rules and regulations, the greater requirement shall be followed. Follow recommendations of NFPA, SMACNA, EPA, OSHA and ASHRAE.
- C. Comply with standards in effect at the date of these Contract Documents, except where a standard or specific date or edition is indicated.
- D. The handling, removal and disposal of regulated refrigerants shall be in accordance with U.S. EPA, state and local regulations.
- E. After entering into contract, Contractor will be held to complete all work necessary to meet these requirements without additional expense to the Owner.

1.7 REQUIREMENTS OF LOCAL UTILITY COMPANIES

- A. Comply with rules and regulations of local utility companies. Include in bid the cost of all valves, valve boxes, meter boxes, meters and such accessory equipment which will be required for the project.

1.8 PERMITS AND FEES

- A. Refer to AIA Document A201 (1987) Edition, "TAXES," "PERMITS, FEES AND NOTICES" and "USE OF SITE".
- B. Contractor shall arrange for and pay for all inspections, licenses and certificates required in connection with the Work.

1.9 MECHANICAL INSTALLATIONS

- A. Drawings are diagrammatic in character and do not necessarily indicate every required offset, valve, fitting, etc.
- B. Drawings and specifications are complementary. Whatever is called for in either is binding as though called for in both.
- C. Drawings shall not be scaled for rough-in measurements or used as shop drawings. Where drawings are required for these purposes or have to be made from field measurement, take the necessary measurements and prepare the drawings.
- D. Before any Work is installed, determine that equipment will properly fit the space; that required piping grades can be maintained and that ductwork can be run as contemplated without interferences between systems, with structural elements or with the work of other trades.
- E. Coordinate the installation of mechanical materials and equipment above and below ceilings with suspension system, light fixtures, and other building components.
 - 1. Coordinate ceiling cavity space carefully with all trades. In the event of conflict, install mechanical and electric systems within the cavity space allocation in the following order of priority.
 - a. Plumbing waste, vent piping and roof drain mains and leaders
 - b. Supply, return and exhaust ductwork
 - c. Fire sprinkler mains and leaders
 - d. Electrical conduit
 - e. Domestic hot and cold water, medical gas piping
 - f. Pneumatic control piping
 - g. Fire sprinkler branch piping and sprinkler runouts
- F. Verify all dimensions by field measurements.
- G. Arrange for chases, slots, and openings in other building components to allow for mechanical installations.
- H. Coordinate the installation of required supporting devices and sleeves to be set in poured in place concrete and other structural components, as they are constructed.

- I. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the work. Give particular attention to large equipment requiring positioning prior to closing-in the building.
- J. Coordinate the cutting and patching of building components to accommodate the installation of mechanical equipment and materials.
- K. Where mounting heights are not detailed or dimensioned, install mechanical services and overhead equipment to provide the maximum headroom possible.
- L. Install mechanical equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.
- M. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

1.10 CUTTING AND PATCHING

- A. This Article specifies the cutting and patching of mechanical equipment, components, and materials to include removal and legal disposal of selected materials, components, and equipment.
- B. Refer to AIA Document A201 (1987) Edition, "CUTTING AND PATCHING".
- C. Do not endanger or damage installed work through procedures and processes of cutting and patching.
- D. Arrange for repairs required to restore other work, because of damage caused as a result of mechanical installations.
- E. No additional compensation will be authorized for cutting and patching work that is necessitated by ill-timed, defective, or non-conforming installations.
- F. Perform cutting, fitting, and patching of mechanical equipment and materials required to:
 - 1. Uncover work to provide for installation of ill-timed work;
 - 2. Remove and replace defective work;
 - 3. Remove and replace work not conforming to requirements of the Contract Documents;
 - 4. Remove samples of installed work as specified for testing;
 - 5. Install equipment and materials in existing structures;
 - 6. Upon written instructions from the Engineer, uncover and restore work to provide for Engineer observation of concealed work.
- G. Cut, remove and legally dispose of selected mechanical equipment, components, and materials as indicated, including, but not limited to removal of mechanical piping, heating units, and other mechanical items made obsolete by the new work.
- H. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.
- I. Provide and maintain an approved type of temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

- J. Locate, identify, and protect mechanical and electrical services passing through remodeling or demolition area and serving other areas required to be maintained operational. **When services must be interrupted, provide temporary services for the affected areas and notify the Owner prior to changeover.**

1.11 TEMPORARY FACILITIES

- A. Use of Permanent Building Equipment for Temporary Heating or Cooling:
 - 1. Permanent building equipment shall not be used without written permission from the Owner. If this equipment is used for temporary heating or cooling, it shall be adequately maintained per manufacturer's instructions and protected with filters, strainers, controls, reliefs, etc. The guarantee period shall not start until the equipment is turned over to the Owner for his use.
- B. Refer to AIA Document A 201-1987, Paragraph 9.6.6, 9.9 and 11.3.11.

1.12 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Materials and equipment of equivalent quality may be substituted for those scheduled or identified by name on the drawings if so reviewed by the Engineer and Owner prior to bidding. This may be done by submitting to the Engineer, at least seven (7) working days prior to the bid date, a letter in triplicate requesting prior review. This submittal shall include all data necessary for complete evaluation of the substitution and publication in written Addenda.

1.13 MECHANICAL SUBMITTALS

- A. Refer to the Conditions of the Contract (General and Supplementary), Division 1 and AIA Document A201, "SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES".
- B. The contractor is to prepare a submittal schedule that coincides with the overall construction schedule. This submittal schedule should include a list of individual products to be submitted under each specification section. This submittal schedule shall also include dates for anticipated review, shipment and on-site delivery times of the submitted product.
- C. The Engineer shall be given a submittal review time of ten (10) working days upon receipt of submittal. Previous submittal rejection or revision shall not compress this review time. It shall be the contractor's responsibility to ensure these review and/or re-review times are incorporated into the submittal schedule with enough lead time as not to affect overall construction schedule.
- D. The manufacturer's material or equipment listed in the schedule or identified by name on the drawings are the types to be provided for the establishment of size, capacity, grade and quality. If alternates are used in lieu of the scheduled names, the cost of any changes in construction required by their use shall be borne by Contractor.
- E. Submittals shall be prepared by authorized equipment dealers, vendors, suppliers, or representative of the products submitted. Include contact and business information of the equipment dealers, vendors, suppliers and representatives. Products and equipment submitted shall also be representative of the products and equipment to be procured and installed. General product data and shop drawings downloaded from unaffiliated websites will not be reviewed or accepted.

- F. All equipment shall conform to the State and/or Local Energy Conservation Standards.
- G. Submittal of shop drawings, product data, and samples will be accepted only when submitted by and stamped by the Contractor. Data submitted from subcontractors and material suppliers directly to the Engineer will not be processed unless prior written approval is obtained by the Contractor.
- H. Submit all submittal items required for each Specification Section. Submittals shall be prepared and submitted in accordance with the submittal schedule. The contractor is to determine and coordinate submittal review times, lead times and delivery times of submitted products as it coincides with the overall construction schedule. Submittals submitted in bulk or under a single division will not be reviewed and will be sent back as "revise and resubmit".
- I. If more than one (1) re-submittals (either for shop drawings or for as-built drawings) are made by the Contractor, the Owner reserves the right to charge the Contractor for subsequent reviews by their consultants. Such extra fees shall be deducted from payments by the Owner to the Contractor.
- J. Before starting Work, prepare and submit to the Engineer all shop drawings and descriptive equipment data required for the project. Unless each item is identified with specification section and sufficient data to identify its compliance with the specifications and drawings, the item will be returned without action or "Revise and Resubmit". Continue to submit shop drawings after each Engineer's action, until a "Reviewed" action is received. The Contractor shall submit the total number of sets as called for in Division 23 to the Engineer for final distribution. Submittals shall include the following specified materials and, in addition, any materials not listed below but which are specified in the individual sections of Division 23 which follow.
 - 1. Pipe Markers
 - 2. Process piping
 - 3. Valves, including pressure relief and pressure regulating
 - 4. Pumps
 - 5. Tanks, including expansion and fuel storage
 - 6. Thermometers and pressure gauges
 - 7. Boilers, burners, trim and feed equipment
 - 8. Piping specialties, including hot water and steam
 - 9. Supports, anchors and seals
 - 10. Expansion compensators
 - 11. Flexible pipe connectors
 - 12. Water flow meters
 - 13. Insulation, including plastic pipe fitting insulation covers and manufacturer's installation instructions
 - 14. Heat exchangers
 - 15. Terminal heat transfer units
 - 16. Air conditioning equipment and specialties
 - 17. Fans, ductwork, dampers, louvers, grilles, registers and diffusers
 - 18. Automatic control systems
- K. Wiring diagrams, control panelboards, motor test data, motors, starters and controls for electrically operated equipment furnished by mechanical trades.
- L. Identify each item with specification section and sufficient data to certify its compliance with the specifications.
- M. Electronic submittals shall be packaged as a bookmarked multi-page single PDF file and shall not be over 5MB. Electronic Submittals over 5MB will not be accepted and will be returned un-reviewed.

1.14 REQUESTS FOR INFORMATION

- A. All "Requests for Information" submitted by the Contractor shall include a proposed solution and an estimated cost/schedule impact. Any RFI's that do not contain this required information will be sent back to the Contractor unanswered.
- B. Schedule the work to provide the Engineer a minimum review time of five (5) business days upon receipt of RFIs to provide a response.

1.15 MECHANICAL COORDINATION DRAWINGS

- A. Review in detail all floor plans, reflected ceiling plans, elevations, sections, and details to conclusively coordinate with all trades and integrate all installations. Indicate locations where space is limited, and where sequencing and coordination of installations are of importance to the efficient flow of the work.

1.16 PRODUCT LISTING

- A. Prepare listing of major mechanical equipment and materials for the project, within two (2) weeks of signing the Contract Documents and transmit to the Mechanical Engineer.
- B. Unless otherwise specified, all materials and equipment shall be of domestic (USA) manufacture and shall be of the best quality used for the purpose in commercial practice.
- C. Provide all information requested.
- D. Submit this listing as a part of the submittal requirement specified in Division 1, "PRODUCTS AND SUBSTITUTION".
- E. When two (2) or more items of same material or equipment are required (pumps, valves, air conditioning units, etc.) they shall be of the same manufacturer. Product manufacturer uniformity does not apply to raw materials, bulk materials, pipe, tube, fittings (except flanged and grooved types), sheet metal, wire, steel bar stock, welding rods, solder, fasteners, motors for dissimilar equipment units, and similar items used in work, except as otherwise indicated.
- F. Provide products which are compatible within systems and other connected items.

1.17 NAMEPLATE DATA

- A. Provide permanent operational data nameplate on each item of mechanical equipment, indicating manufacturer, product name, model number, serial number, efficiency rating (i.e. EER, etc.) capacity, operating and power characteristics, labels of tested compliances, and similar essential data. Locate nameplates in an accessible location.

1.18 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to project properly identified with names, model numbers, types, grades, compliance labels, and similar information needed for distinct identifications; adequately packaged and protected to prevent damage during shipment, storage, and handling.

- B. Store equipment and materials at the site, unless off-site storage is authorized in writing. Protect stored equipment and materials from damage, dirt, dust and moisture.
- C. Coordinate deliveries of mechanical materials and equipment to minimize construction site congestion. Limit each shipment of materials and equipment to the items and quantities needed for the smooth and efficient flow of installations.
- D. Provide factory-applied plastic end-caps on each length of pipe and tube, except for concrete, corrugated metal, hub-and-spigot, clay pipe. Maintain end-caps through shipping, storage and handling to prevent pipe-end damage and prevent entrance of dirt, debris, and moisture.
- E. Protect stored pipes and tubes. Elevate above grade and enclose with durable, waterproof wrapping. When stored inside, do not exceed structural capacity of the floor.
- F. Protect flanges, fittings, and specialties from moisture and dirt by inside storage and enclosure, or by packaging with durable, waterproof wrapping.

1.19 RECORD DOCUMENTS

- A. Keep a complete set of record document prints or electronic mark-ups in custody during entire period of construction at the construction site.
- B. Mark drawing prints to indicate revisions to piping and ductwork, size and location both exterior and interior; including locations of coils, dampers and other control devices, filters, boxes, and similar units requiring periodic maintenance or repair; actual equipment locations, dimensioned from column lines; actual inverts and locations of underground piping; concealed equipment, dimensioned to column lines; mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located (i.e., traps, strainers, expansion compensators, tanks, etc.); RFI's; change orders; concealed control system devices. Changes to be noted on the drawings shall include final location of any piping or ductwork relocated more than 1'-0" from where shown on the drawings.
- C. Mark Equipment Schedules on the drawings with changes to Manufacturer, Model Number, and data based on reviewed shop drawings.
- D. At the completion of the project, mark all valve tag numbers on the drawings and turn these drawings over to the General Contractor for his submission to the Engineer. This Contract will not be considered completed until these record drawings have been received and reviewed by the Engineer.

1.20 LUBRICATION OF EQUIPMENT

- A. Contractor shall properly lubricate all mechanical pieces of equipment which he provided before turning the building over to the Owner. He shall attach a linen tag or heavy duty shipping tag on the piece of equipment showing the date of lubrication and the type and brand of lubricant used.
- B. Furnish the Engineer with a typewritten list in quadruplicate, of each item lubricated and type of lubricant used, no later than two (2) weeks before completion of the project, or at time of acceptance by the Owner of a portion of the building and the mechanical systems involved.

1.21 DEMOLITION

- A. During the demolition phase of this Contract, it is the responsibility of this Contractor to carefully remove existing equipment, piping, fixtures and related items either as shown on the demolition drawings as being removed, or as required for the work. These items shall be removed from the premises.
- B. The location of existing equipment, pipes, and other components shown on the drawings has been taken from existing drawings and is, therefore, only as accurate as that information. All existing conditions shall be verified from field measurements with necessary adjustment being made to the drawing information.
- C. If asbestos material, in any form, is discovered by this Contractor in the process of his work, he shall report such occurrence to the Owner immediately. The Owner will determine the action to be taken for the asbestos removal, which is not a part of the work to be done under this Division.

1.22 WARRANTIES

- A. Refer to AIA Document A201 (1987) Edition, "WARRANTY", "PERFORMANCE BOND AND PAYMENT BOND" for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements. In any case, the entire mechanical system shall be warranted no less than one (1) year from the time of acceptance by the Owner.
- B. Compile and assemble the warranties specified in Division 23, into a separated set of vinyl covered, three-ring binders, tabulated and indexed for easy reference.
- C. Provide complete warranty information for each item to include product or equipment to include date or beginning of warranty or bond; duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

1.23 CLEANING

- A. Refer to AIA Document A201 (1987) Edition, "CLEANING UP".

END OF SECTION 230000

SECTION 230100 - M&E COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Carefully coordinate the interface between Division 23 (Mechanical) and Division 26 (Electrical) before submitting any equipment for review or commencing installation.
- B. Responsibility: Unless otherwise indicated, all motor and controls for Division 23 equipment shall be furnished, set in place and wired in accordance with the following schedule:

COORDINATION SCHEDULE				
ITEM	Furnished Under	Set in Place Under	Power Wiring Under	Control Wiring Under
Valve Motors Damper Motors, Solenoid Valves, etc. (Note 2)	23	23	--	23
EP Valves or Switches, P.E. Switches, etc. (Note 2)	23	23	26	23
Fire Alarm System	26	26	26	26
Smoke Detectors Including Relays for Fan Control (Note 3)	26	23	26	23
Fire/Smoke Dampers	23	23	26	26
Notes: (1) If furnished as part of factory wired equipment, furnish and set in place under Division 23, wiring and connections under Division 26. (2) If float switches, line thermostats, P.E. switches, time switches, or other controls carry the FULL LOAD CURRENT to any motor, they shall be furnished and set in place under Division 23, but they shall be connected under Division 26. If they do not carry the FULL LOAD CURRENT to any motor, they shall be furnished, set in place and wired under Division 23. (3) Wiring from alarm contacts to alarm system by Division 26; all control function wiring by Division 23. Division 23 to coordinate locations with Division 26.				

- C. Control Wiring:
- Consists of wiring in pilot circuits of contactors, starters, sensors, controllers, and relays, and wiring for valve and damper operators.
- D. Connections:
- Make connections to all controls directly attached to ducts, piping and mechanical equipment with flexible connections.

E. Starters:

1. Provide magnetic starters for all three phase motors and equipment complete with:
 - a. Control transformers.
 - b. 120V holding coils.
 - c. Integral hand-off auto switch.
 - d. Auxiliary contacts required for system operation plus one (1) spare.

F. Remote Switches and Pushbutton Stations:

1. Provide all remote switches and/or pushbutton stations required for manually operated equipment (if no automatic controls have been provided) complete with pilot lights of an approved type lighted by current from load side of starter.

G. Special Requirement:

1. Motor, starters and other electrical equipment installed in moist areas or areas of special conditions, such as explosion proof, shall be designed and approved for installation in such areas with appropriate enclosure.

H. Identification:

1. Provide identification of purpose for each switch and/or pushbutton station furnished. Identification may be either engraved plastic sign or permanent mounting to wall below switch, or stamping on switch cover proper. All such identification signs and/or switch covers in finished areas shall match other hardware in the immediate area.

I. Control Voltage:

1. Maximum allowable control voltage is 120V. Fully protect control circuit conductors in accordance with National Electrical Code.
2. Fully coordinate the requirements of each division with regard to supplying a complete DDC Control System. J-Boxes and control transformer connections shall be provided under Division 26. The transformers shall be furnished and set in place under Div. 23.

PART 2 - PRODUCTS

2.1 MOTOR HORSEPOWER

- A. In general, all motors 3/4 HP and above shall be three phase, all motors less than 3/4 HP shall be single phase.
- B. Voltage and phase of motors as scheduled on the electrical drawings shall take precedence in the case of a conflict between the mechanical and electrical drawings or general conditions 2.1 A., above.

- C. Work under Division 23 includes coordinating the electrical requirements of all mechanical equipment with the requirements of the work under Division 26, before ordering the equipment.
 - 1. If motor horsepowers are changed under the work of Division 23, without a change in duty of the motor's driven device, coordination of additional electrical work (if any) and additional payment for the work (if any) shall be provided under the section of Division 23 initiating the change. Increases or decreases in motor horsepower from that specified shall not be made without written approval from the Architect.

PART 3 - EXECUTION - Not used.

END OF SECTION 230100

SECTION 233300 - DUCTWORK ACCESSORIES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Types of Ductwork Accessories required for project include the following:

1. Combination Fire/Smoke Dampers

1.2 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of ductwork accessories, of types and sizes required, whose products have been in satisfactory use in similar service for not less than five (5) years.
- B. Industry Standards: Comply with ASHRAE recommendations pertaining to construction of ductwork accessories, except as otherwise indicated.
- C. UL Compliance: Construct, test, and label fire dampers in accordance with UL Standard 555 "Fire Dampers and Ceiling Dampers" and UL Standard 555S "Motor-Driven Fire/Smoke Dampers".
- D. NFPA Compliance: Comply with applicable provisions of NFPA 90A "Air Conditioning and Ventilating Systems", pertaining to installation of ductwork accessories.
- E. SMACNA Compliance: Comply with "Fire Damper and Heat Stop Guide" for the installation of fire, smoke, and fire/smoke dampers.
- F. All fire dampers, smoke dampers, fire/smoke dampers and radiation dampers shall meet the latest local building code requirements.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data for each type of ductwork accessory, including dimensions, capacities, and materials of construction, and installation instructions.
- B. Shop Drawings: Submit manufacturer's assembly-type shop drawings for each type of ductwork accessory showing interfacing requirements with ductwork, method of fastening or support, and methods of assembly of components. Include details of construction equipment and accessories being provided.
- C. Submittals for all damper types specified in this section shall include a schedule for each damper indicating net free area, actual face velocity and pressure drop (at sea level) based on net free area and the maximum air quantity which will be passing through the damper. Submittals without this information will be rejected.
- D. Record Drawings: At project closeout, submit record drawings of installed systems products, in accordance with requirements of Division 1.

- E. Maintenance Data: Submit manufacturer's maintenance data including parts lists for each type of duct accessory. Include this data, product data, and shop drawings in maintenance manual; in accordance with requirements of Division 1.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
 - 1. Smoke, Static/Dynamic Fire, and Combination Fire/Smoke Dampers:
 - a. Air Balance, Inc.
 - b. Ruskin
 - c. Greenheck
 - d. Pottorff
 - e. NCA Industries, Inc.

2.2 COMBINATION FIRE/SMOKE DAMPERS

- A. General: Fire/Smoke dampers with airfoil blades meeting the requirements of UL Standard 555 6th Edition and 555S 4th Edition.
- B. Rating: UL 555 fire resistance rating of 1-1/2 hours.
- C. Operating Temperature: UL 555S elevated temperature rating of 250 degree F.
- D. Leakage: UL 555S Class II Leakage Rating.
- E. Differential Pressure: Minimum UL 555S differential pressure rating of 4-inch w.g.
- F. Velocity: Minimum UL 555S velocity rating of 2000 fpm.
- G. Frame: Structural galvanized steel hat channel. Top and bottom frame members on dampers less than 7-inch high shall be low profile design to maximize the free area of these smaller dampers. Four-piece construction with 1-1/2 inch minimum integral overlapping gusset reinforcements in each corner to assure square corners and provide maximum resistance to racking.
- H. Blades: 16 Gauge galvanized steel with full-length structural reinforcement and a double skin airfoil shape. . Each blade shall be symmetrical relative to its axle pivot point, presenting identical performance characteristics with air flowing in either direction through the damper. Provide symmetrical blades of varying size as required to completely fill the damper opening.
- I. Blade Stops: Blade stops at top and bottom of damper frame shall occupy no more than 1/2-inch of the damper opening area to allow for maximum free area and to minimize pressure loss across the damper.
- J. Linkage: Concealed in jamb.
- K. Seals: Extruded silicone rubber permanently bonded to the appropriate blade edges.

- L. Jamb: Flexible stainless steel compression type.
- M. Axles: Minimum 1/2-inch diameter plated steel.
- N. Bearings: Stainless steel sleeve type rotating in polished extruded holes in the damper frame.
- O. Actuator: Normally closed, 120V, 60 Hz electric motor mounted outside the air stream] that meets IBC 15-second operation requirement and is tested for minimum of one (1) year of holding with no evidence of spring return failure.
 - 1. Actuators shall return to fully open (normal) position when reset.
 - 2. Provide actuators as manufactured by Belimo, or equal.
- P. Sleeve: Factory supplied as a single assembly with an integral factory sleeve.
- Q. Retaining Angles: Factory supplied and sized to provide installation overlap in accordance with the manufacturer's UL listing.
- R. Duct Transition Connection: The Contractor is responsible for selecting and installing the appropriate duct transition.
- S. All factory wiring to be done in accordance with N.E.C. (NFPA 70). Refer to Detail on Drawings; Sequence of Operation on Mechanical Drawing and/or Electrical portion of the Contract Documents for full coordination of equipment and controls. Coordinate actuator mounting arrangement with Drawings (i.e. right or left mounting).
- T. Heat-Activated Temperature Release Device: Control close and lock damper during test, smoke detection, power failure, or fire conditions through actuator closure spring. At no time shall actuator disengage from damper blades. Allow damper to be automatically reset remotely or manually reset locally after test, smoke detection, or power failure. 165 Degree F release temperature.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas and conditions under which ductwork accessories will be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to the Engineer.

3.2 INSTALLATION OF DUCTWORK ACCESSORIES

- A. Install ductwork accessories in accordance with manufacturer's installation instructions, with applicable portions of details of construction as shown in SMACNA standards, and in accordance with recognized industry practices to ensure that products serve intended function.
- B. Coordinate with other work, including ductwork, as necessary to interface installation of ductwork accessories properly with other work.

- C. Provide duct access doors whether shown or not for inspection and cleaning before and after all filters, coils, fans, automatic dampers, at fire dampers (minimum 16-inch x 24-inch in ducts larger than 18-inch), fire/smoke dampers, upstream of duct smoke detectors and elsewhere as indicated. Review locations prior to fabrication. Provide multiple access doors for large ductwork to provide adequate reach to equipment.
- D. Install fire dampers and smoke dampers in accordance with manufacturer's instructions.
- E. Provide fire dampers and smoke dampers at locations shown, where ducts and outlets pass through fire rated components, and where required by Authorities Having Jurisdiction.
- F. Where fire and smoke dampers are installed in fire and smoke rated construction, provide firestopping between fire and fire smoke damper sleeve and substrate.

3.3 FIELD QUALITY CONTROL

- A. Operate installed ductwork accessories to demonstrate compliance with requirements. Test for air leakage while system is operating. Repair or replace faulty accessories, as required to obtain proper operation and leakproof performance.
- B. Test every fire and fire/smoke damper for proper operation, provide letter to the Architect/Engineer certifying this work is complete and all dampers are functioning properly.

3.4 ADJUSTING AND CLEANING

- A. Adjusting: Adjust ductwork accessories for proper settings, install fusible links in fire dampers and adjust for proper action.
- B. Label access doors in accordance with Division 23 Section "Mechanical Identification".
- C. Final positioning of manual dampers is specified in Division 23 Section "Testing, Adjusting, and Balancing".
- D. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

3.5 EXTRA STOCK

- A. Furnish extra fusible links to Owner, one (1) link for every ten (10) installed of each temperature range; obtain receipt.

END OF SECTION 233300

SECTION 284621.11 - ADDRESSABLE FIRE ALARM SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section includes fire alarm systems for buildings and structures. This section and the drawings outline the general, but not specific, scope of the project's fire alarm system. The successful contractor will be the Engineer of Record for the design of the system. The design and engineering of the fire alarm system shall be by the fire alarm contractor. It is the contractor's responsibility that the system meets all the requirements of NFPA and the Authority Having Jurisdiction (AHJ).
- B. Related Requirements:
 - 1. Division 01

1.3 ACRONYMS

- A. EMT: Electrical Metallic Tubing.
- B. FACP: Fire Alarm Control Panel.
- C. FM: FM Global
- D. LED: Light Emitting Diode.
- E. HLI: High Level Interface.
- F. IMC: Intermediate Metal Conduit
- G. NICET: National Institute for Certification in Engineering Technologies.
- H. NRTL: Nationally Recognized Testing Laboratory.

1.4 DEFINITIONS

- A. Definitions in NFPA 72 apply to fire alarm terms used in this Section.

1.5 SYSTEM DESCRIPTION

- A. Noncoded, UL Listed, addressable system; multiplexed signal transmission dedicated to fire alarm service only with voice/strobe evacuation.
 - 1. New fire alarm control panel shall be capable of monitoring the status of the existing Siemens MXL fire alarm control panel located in the Pre-Arrestment Detention Facility (PADF) building.
- B. Automatic sensitivity control of certain smoke detectors.
- C. All components provided shall be listed for use with the selected system.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.6 PERFORMANCE REQUIREMENTS

- A. System shall comply with applicable codes, NFPA 72 and local amendments.
- B. Premises protection includes a primarily Group B Occupancy with two levels of S-2 parking as well as incidental assembly spaces and mechanical and storage spaces throughout. The building is Type I-B construction and is approximately 315,530 square feet in area including the basement parking levels and the mechanical penthouse. The building is not classified as a high rise and is partially sprinklered.

1.7 SYSTEMS OPERATIONAL DESCRIPTION

- A. Fire alarm signal initiation shall be by one or more of the following devices and systems:
 - 1. Manual stations.
 - 2. Heat detectors.
 - 3. Smoke detectors.
 - 4. Automatic sprinkler system water flow.
 - 5. Preaction system.
 - 6. Dry system pressure flow switch.
 - 7. Fire pump running.
- B. Fire alarm signal shall initiate the following actions:
 - 1. Continuously operate alarm notification appliances, including voice evacuation messages.
 - 2. Identify alarm and specific initiating device at fire alarm control panel.
 - 3. Transmit an alarm signal to the remote alarm receiving station.
 - 4. De-energize electromagnetic door holders.
 - 5. Unlock electric door locks in designated egress paths.
 - 6. Release fire and smoke doors held open by magnetic door holders.
 - 7. Activate voice/alarm communication system.
 - 8. Recall elevators to primary or alternate recall floors.
 - 9. Activate elevator power shunt trip.
 - 10. Activate emergency lighting control.
 - 11. Activate emergency shutoffs for gas and fuel supplies.
 - 12. Record events in the system memory.

C. Supervisory signal initiation shall be by one or more of the following devices and actions:

1. Valve supervisory switch.
2. Duct smoke detector.
3. Activation of smoke detectors at the top of stairway shafts.
4. High- or low-air-pressure switch of a dry-pipe or preaction sprinkler system.
5. Elevator shunt trip supervision.
6. Fire-pump loss of power.
7. Fire-pump power phase reversal.
8. User disabling of zones or individual devices.
9. Loss of communication with any panel on the network.

D. System trouble signal initiation shall be by one or more of the following devices and actions:

1. Open circuits, shorts, and grounds in designated circuits.
2. Opening, tampering with, or removing alarm initiating and supervisory signal-initiating devices.
3. Loss of communication with any addressable sensor, input module, relay, control module, or Ethernet module.
4. Loss of primary power at the FACP.
5. Ground or a single break in internal circuits of the FACP.
6. Abnormal ac voltage at the FACP.
7. Break in standby battery circuitry.
8. Failure of battery charging.
9. Abnormal position of any switch at the FACP or annunciator.
10. Voice signal amplifier failure.

E. System Trouble and Supervisory Signal Actions:

1. Activate audible and visible signals at the FACP.
2. Identify specific device initiating the event at fire alarm control panel.
3. Record the event on system printer.
4. After a time delay of 200 seconds, transmit a trouble or supervisory signal to the remote alarm receiving station.
5. Transmit system status to building management system.
6. Display system status on graphic annunciator.

1.8 ACTION SUBMITTALS

A. General Submittal Requirements:

1. Submittals shall be prepared by authorized equipment dealers, vendors, suppliers, or representative of the products submitted. Include contact and business information of the equipment dealers, vendors, suppliers and representatives. Products and equipment submitted shall also be representative of the products and equipment to be procured and installed. General product data and shop drawings downloaded from unaffiliated websites will not be reviewed or accepted.
2. The Engineer shall be given a submittal review time of ten (10) working days upon receipt of submittal. Previous submittal rejection or revision shall not compress this review time. It shall be the contractor's responsibility to ensure these review and/or re-review times are incorporated into the submittal schedule with enough lead time as not to affect overall construction schedule.

- a. After review, submittals shall be returned together with review comments and specific actions (if required) to be taken by the Contractor. Typical comments and actions will be:
 - 1) Reviewed – resubmittal not required.
 - 2) Rejected – resubmittal required.
 - 3) Revise and Resubmit – resubmittal required.
 - 4) Make Corrections as Noted – resubmittal not required unless corrections cannot be met.
 3. Product data and shop drawing submittals shall be submitted in conjunction with one another. Submittals that are received individually will be returned without review until both are received.
 4. Submittals shall be approved by the Consultant prior to submitting them to the AHJ for permit.
 5. If more than one (1) re-submittals (either for shop drawings or for as-built drawings) are made by the Contractor, the Owner reserves the right to charge the Contractor for subsequent reviews by their consultants. Such extra fees shall be deducted from payments by the Owner to the Contractor.
 6. Shop Drawings shall be prepared by persons with the following qualifications:
 - a. Trained and certified by manufacturer in fire alarm system design.
 - b. NICET certified, fire alarm technician; Level IV minimum or a Professional Engineer registered in the State of Colorado and familiar with this type of installation.
 - c. Approved to design fire alarm systems in the City and County of Denver.
 7. Shop drawings shall be signed and stamped by a Professional engineer registered in the State of Colorado at the time of submittal to the Consultant.
- B. Product Data: For each type of product, including furnished options and accessories.
1. Include construction details, material descriptions, dimensions, profiles, and finishes.
 2. Include rated capacities, operating characteristics, and electrical characteristics.
- C. Shop Drawings: For fire alarm system.
1. Comply with recommendations and requirements in Chapter 7, "Documentation" and Chapter 10, "Fundamentals" in NFPA 72.
 2. System Operation Description: Include a detailed description for the project, including method of operation and supervision of each type of circuit and sequence of operations for manually and automatically initiated system inputs and outputs. Manufacturer's standard descriptions for generic systems are not acceptable.
 3. Device Address List: Coordinate with final system programming.
 4. System Riser Diagram: Include a detailed riser diagram with device addresses, conduit sizes, cable and wire types and sizes. Include type and number of system components on each circuit.
 5. Include plans, elevations, sections, details, and attachments to other work.
 6. Floor Plans: Include floor plans that indicate the use of all rooms; locations of alarm initiating devices, locations of alarm notification appliances and locations of fire alarm control panel, annunciators, transponders and notification power supplies.
 7. Include a graphic map adjacent to each fire alarm control panel and remote annunciator. Graphic maps shall be correctly oriented for their installed location. Graphic maps shall be approved by the Owner and AHJ prior to installation.

8. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and locations. Indicate conductor sizes, indicate termination locations and requirements, and distinguish between factory and field wiring. Show wiring color code.
9. Visible Notification Appliances: Include candela ratings for visible alarm notification appliances.
10. Audible Notification Appliances: Include sound level ratings for audible alarm notification appliances.
11. Detail assembly and support requirements.
12. Include voltage drop calculations for notification appliance circuits.
13. Include battery-size calculations.
14. Include input/output matrix.
15. Include statement from manufacturer that all equipment and components have been tested as a system and meet all requirements in this Specification and in NFPA 72.
16. Include performance parameters and installation details for each detector.
17. Verify that each duct smoke detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
18. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale; coordinate location of duct smoke detectors and access to them.
 - a. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators.
 - b. Show field wiring required for HVAC unit shutdown on alarm.
 - c. Locate detectors according to manufacturer's written recommendations.
 - d. Show air-sampling detector mounting location and pipe routing.
19. Include voice/alarm signaling-service equipment rack or console layout, grounding schematic, amplifier power calculation, and single-line connection diagram.
20. Include floor plans to indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits and point-to-point wiring diagrams.

1.9 REQUESTS FOR INFORMATION

- A. All "Requests for Information" submitted by the Contractor shall include a proposed solution and an estimated cost/schedule impact. Any RFI's that do not contain this required information will be sent back to the Contractor unanswered.
- B. Schedule the work to provide the Engineer a minimum review time of five (5) business days upon receipt of RFIs to provide a response.

1.10 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Field quality-control reports.

1.11 Sample Warranty: For special warranty.

1.12 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For fire alarm systems and components to include in emergency, operation, and maintenance manuals.
 - 1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
 - a. Comply with the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
 - b. As-Built drawings shall be provided in PDF and AutoCAD format.
 - c. Provide "Fire Alarm and Emergency Communications System Record of Completion Documents" according to the "Completion Documentation" section in Chapter 7, "Fundamentals", in NFPA 72.
 - d. Complete wiring diagrams showing connections between all devices and equipment. Each conductor shall be numbered at every junction point with indication of origination and termination points.
 - e. Riser diagram.
 - f. Device addresses.
 - g. Record copy of site-specific software.
 - h. Provide "Inspection and Testing Form" according to the "Inspection, Testing and Maintenance" chapter in NFPA 72, and include the following:
 - 1) Equipment tested.
 - 2) Frequency of testing of installed components.
 - 3) Frequency of inspection of installed components.
 - 4) Requirements and recommendations related to results of maintenance.
 - 5) Manufacturer's user training manuals.
 - i. Manufacturer's required maintenance related to system warranty requirements.
 - j. Abbreviated operating instructions for mounting at fire alarm control panel and each annunciator unit.
 - k. Installation instructions for each device installed.
- B. Software and Firmware Operational Documentation:
 - 1. Software operating and upgrade manuals.
 - 2. Program Software Backup: On magnetic media or compact disk, complete with data files.
 - 3. Device address list.
 - 4. Printout of software application and graphic screens.

1.13 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Lamps for Remote Indicating Lamp Units: Quantity equal to 10 percent of amount installed, but no fewer than one unit.
 - 2. Lamps for Strobe Units: Quantity equal to 10 percent of amount installed, but no fewer than one unit.
 - 3. Smoke Detectors, Heat Detectors: Quantity equal to 10 percent of amount of each type installed, but no fewer than one unit of each type.
 - 4. Detector Bases: Quantity equal to two percent of amount of each type installed, but no fewer than one unit of each type.

5. Manual Pull Stations: Quantity equal to 10 percent of amount installed, but no fewer than one unit.
6. Relay Modules, Monitor Modules, Control Modules, Isolation Modules: Quantity equal to 10 percent of amount of each type installed, but no fewer than one unit of each type.
7. Keys and Tools: One extra set for access to locked or tamperproofed components.
8. Audible and Visual Notification Appliances: One of each type installed.
9. Fuses: Two of each type installed in the system. Provide in a box or cabinet with compartments marked with fuse types and sizes.

1.14 QUALITY ASSURANCE

- A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.
- B. Installer Qualifications: Installation shall be by personnel certified by NICET as fire alarm Level II or higher technician.
- C. NFPA Certification: Obtain certification according to NFPA 72 by an NRTL.

1.15 PROJECT CONDITIONS

- A. The existing PAB building is served by the Siemens MXL fire alarm control panel installed in PADF. The existing system shall remain installed within the PADF building and shall be removed from the PAB building and the shared parking levels unless otherwise noted on the plans. The new PAB fire alarm system will monitor the existing fire alarm control panel in PADF.
- B. Perform a full test of the existing system prior to starting work. Document, in writing, any equipment or components not functioning as designed.
- C. Interruption of Existing Fire alarm Service: Do not interrupt fire alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:
 1. Notify Owner no fewer than seven days in advance of proposed interruption of fire alarm service.
 2. Do not proceed with interruption of fire alarm service without Owner's written permission.
- D. Use of Devices during Construction: Protect devices during construction unless devices are placed in service to protect the facility during construction.

1.16 SEQUENCING AND SCHEDULING

- A. Equipment Removal: After acceptance of new fire alarm system, remove existing disconnected fire alarm equipment and wiring. Under no circumstances shall any existing portion of the system be abandoned in place.

1.17 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace fire alarm system equipment and components that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Extent: All equipment and components not covered in the Maintenance Service Agreement.
 - 2. Warranty Period: One year from date of Substantial Completion.
 - 3. As-built: Drawings shall be maintained by the awarded contractor for the duration of the warranty period to ensure complete system accuracy.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Fire Alarm Control Panel:
 - a. Bosch Security Systems, Inc.
 - b. Edwards United Technologies
 - c. Fike Corporation
 - d. Fire-Lite Alarms, Inc.; a Honeywell Company.
 - e. Gamewell - FCI by Honeywell.
 - f. Johnson Controls
 - g. Mircom Technologies, Ltd.
 - h. Notifier
 - i. Potter Electric Signal Company, LLC.
 - j. Siemens Industry, Inc.; Fire Safety Division.
 - k. SilentKnight; a Honeywell Company.
 - l. Engineer approved equivalent. Approval shall be obtained prior to project bid
 - 2. Fire Alarm Wire and Cable:
 - a. Comtran Corporation.
 - b. Helix/HiTemp Cables, Inc.; a Draka USA Company.
 - c. West Penn Wire/CDT; a division of Cable Design Technologies.
 - d. Engineer approved equivalent. Approval shall be obtained prior to project bid.
 - 3. Equipment
 - a. Proprietary equipment by FACP Manufacturer; or
 - b. Fenwal Controls
 - c. Keltron Corporation.
 - d. Protectowire Company, Inc.
 - 4. Audible and Visual Signals:
 - a. Proprietary equipment by FACP Manufacturer; or
 - b. Commercial Products Group.
 - c. Federal Signal Corporation.
 - d. Gentex Corporation.

- e. System Sensor.
- f. Wheelock; a Brand of Eaton
- g. Engineer approved equivalent. Approval shall be obtained prior to project bid.

2.2 FIRE ALARM CONTROL PANEL

A. General Requirements for Fire Alarm Control Panel:

1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864 and listed and labeled by an NRTL.
 - a. System software and programs shall be held in nonvolatile flash, electrically erasable, programmable, read-only memory, retaining the information through failure of primary and secondary power supplies.
 - b. Include a real-time clock for time annotation of events on the event recorder.
 - c. Provide communication between the FACP and remote circuit interface panels, annunciators, and displays.
 - d. The FACP shall be listed for connection to a central station signaling system service.
 - e. Provide nonvolatile memory for system database, logic, and operating system and event history. The system shall require no manual input to initialize in the event of a complete power down condition. The FACP shall provide a minimum 500-event history log.
2. The FACP shall indicate which communication zones have been silenced and shall provide selective silencing of alarm notification appliances by building communication zone.
3. Addressable control circuits for operation of notification appliances and mechanical equipment: The FACP shall be listed for releasing service.

B. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire alarm control panel and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type, two line(s) of 80 characters, minimum.
2. Keypad: Arranged to permit entry and execution of programming, display, and control commands.

C. Initiating Device, Notification Appliance, and Signaling Line Circuits:

1. Pathway Class Designations: NFPA 72, Class B.
2. Pathway Survivability: Level 0.
3. Install no more than 100 addressable devices on each signaling-line circuit.

D. Serial Interfaces:

1. One dedicated RS 485 port for central station operation using point ID DACT.
 - a. The dial-in port shall allow remote access to the FACP for programming changes and system diagnostic routines. Access by a remote terminal shall be by encrypted password algorithm.

2. One RS 485 port for remote annunciators, Ethernet module, or multi-interface module (printer port).
 3. One USB port for PC configuration.
 4. One RS 232 port for voice evacuation interface.
- E. Actuation of alarm notification appliances, emergency voice communications, annunciation, elevator recall, and actuation of suppression systems shall occur within 10 seconds after the activation of an initiating device.
- F. Electrical monitoring for the integrity or wiring external to the FACP for mechanical equipment shutdown and magnetic door holding circuits is not required, provided a break in the circuit will cause the doors to close and mechanical equipment to shut down.
- G. Notification Appliance Circuit:
 1. Audible appliances shall sound in a three pulse temporal pattern, as defined in NFPA 72.
 2. Visual alarm appliances shall flash in synchronization where more than two appliances are in the same field of view, as defined in NFPA 72.
- H. Elevator Shutdown: Heat detector operation in the elevator machine room or hoistway shuts down elevator power by operating a shunt trip in a circuit breaker feeding the elevator. Heat detector activation operates building notification appliances and annunciator.
 1. Heat detectors shall be located within two feet of each sprinkler in the space and shall have a lower temperature and faster RTI as compared to the sprinkler.
 2. Verify elevator requirements based on elevator provided and AHJ requirements.
- I. Elevator Recall: Smoke detectors at the following locations shall initiate automatic elevator recall.
 1. Elevator recall shall be initiated only by one of the following alarm initiating devices:
 - a. Elevator lobby detectors.
 - b. Smoke detector in elevator machine room.
 - c. Smoke detectors in elevator hoistway.
 2. Elevator controller shall be programmed to move the cars to the alternate recall floor if elevator lobby detectors located on the designated recall floors are activated.
 3. Waterflow alarm connected to sprinkler in an elevator shaft and elevator machine room shall shut down elevators associated with the location without time delay.
 - a. Waterflow switch associated with the sprinkler in the elevator pit may have a delay to allow elevators to move to the designated floor.
- J. Remote Smoke detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory and print out the final adjusted values on system printer.
- K. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.

- L. Voice/Alarm Signaling Service: Central emergency communication system with redundant microphones, preamplifiers, amplifiers, and tone generators provided as a special module that is part of fire alarm control panel.
 - 1. Indicate number of alarm channels for automatic, or for manual transmission of announcements by use of the central-control microphone. Amplifiers shall comply with UL 1711.
 - a. Allow the application of, and evacuation signal to, indicated number of zones and, at the same time, allow voice paging to the other zones selectively or in any combination.
 - b. Programmable tone and message sequence selection.
 - c. Standard digitally recorded messages for "Evacuation" and "All Clear."
 - d. Generate tones to be sequenced with audio messages of type recommended by NFPA 72 and that are compatible with tone patterns of notification-appliance circuits of fire alarm control panel.
 - 2. Status Annunciator: Indicate the status of various voice/alarm speaker zones.
 - 3. Preamplifiers, amplifiers, and tone generators shall automatically transfer to backup units, on primary equipment failure.
- M. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory signals and digital alarm radio transmitters shall be powered by 24-V dc source.
 - 1. Alarm current draw of entire fire alarm system shall not exceed 80 percent of the power-supply module rating.
 - 2. Power supply shall have a dedicated fused safety switch for this connection at the fire service entrance equipment. Paint the switch box red and identify it with "FIRE ALARM SYSTEM POWER".
- N. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch. System shall have sufficient power to operate the system on standby for a period of 24 hours, followed by 15 minutes of alarm.
 - 1. Batteries: Sealed lead calcium.
 - 2. Battery and Charger Capacity: Comply with NFPA 72.
- O. Surge Protection: Install surge protection on normal ac power for the FACP and its accessories. Comply with Division 26 Section "Transient-Voltage Suppression for Low-Voltage Electrical Power Circuits" for auxiliary suppressors.
- P. Alarm Silencing, Trouble and Supervisory Alarm Reset: Manual reset at the FACP after initiating devices are restored to normal.
 - 1. Silencing switch operation halts alarm operation of notification appliances and activates an "alarm silence" light. Display of identity of the alarm zone or device is retained.
 - 2. Audible and visual notification appliances shall both stop upon activation of the silencing switch.
 - 3. Subsequent alarm signals from other devices or zones reactivate notification appliances until the silencing switch is operated again.

- Q. Walk Test: A test mode to allow one person to test alarm and supervisory features of initiating devices. Enabling of this mode shall require entry of a password. The FACP and annunciators shall display a test indication while the test is underway. If testing ceases while in walk test mode, after a preset delay, the system shall automatically return to normal.
- R. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

2.3 PREACTION SYSTEM

- A. Initiate Presignal Alarm: This function shall cause an audible and visual alarm and indication at the FACP. Activation of an initiation device connected as part of a preaction system shall be annunciated at the FACP only, without activation of the general evacuation alarm.

2.4 MANUAL FIRE ALARM BOXES

- A. General Requirements for Manual Fire alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.
 - 1. Double-action mechanism requiring two actions to initiate and alarm, pull lever type; with integral addressable module arranged to communicate manual station status (normal, alarm, or trouble) to fire alarm control panel
 - 2. Station Reset: Key- or wrench-operated switch.
 - 3. Weatherproof Protective Shield: Factory-fabricated, clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm.

2.5 SYSTEM SMOKE DETECTORS

- A. General Requirements for System Smoke Detectors:
 - 1. Comply with UL 268; operating at 24 Vdc, nominal.
 - 2. Detectors shall be two wire type.
 - 3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire alarm control panel.
 - 4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
 - 5. Latching: Detectors latch in the off-normal state and require manual reset of the system to restore them to normal.
 - 6. Integral Visual-Indicating Light: LED type, indicating detector has operated and power-on status.
 - 7. Remote Control: Unless otherwise indicated, detectors shall be digital-addressable type, individually monitored at fire alarm control panel or calibration, sensitivity, and alarm condition and individually adjustable for sensitivity by fire alarm control panel.

B. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire alarm control panel and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire alarm control panel, having the designated access level, shall be able to manually access the following for each detector:
 - a. Primary status.
 - b. Device type.
 - c. Present average value.
 - d. Present sensitivity selected.
 - e. Sensor range (normal, dirty, etc.).

C. Duct Smoke Detectors: Photoelectric type complying with UL 268A.

1. Detector address shall be accessible from fire alarm control panel and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire alarm control panel, having the designated access level, shall be able to manually access the following for each detector:
 - a. Primary status.
 - b. Device type.
 - c. Present average value.
 - d. Present sensitivity selected.
 - e. Sensor range (normal, dirty, etc.).
3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector for smoke detection in HVAC system ducts.
4. Each sensor shall have multiple levels of detection sensitivity.
5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
6. Relay Fan Shutdown: Fully programmable relay rated to interrupt fan motor-control circuit.
7. Self-Restoring: Detectors shall not require resetting or readjustment after actuation to restore them to normal operation.
8. Integral Visual-Indicating Light: LED type. Indicating detector has operated and power on status. Provide remote status and alarm indicator and test station; coordinate location with Owner and Architect prior to installation.

2.6 HEAT DETECTORS

A. General Requirements for Heat Detectors: Comply with UL 521.

1. Temperature sensors shall test for and communicate the sensitivity range of the device.

B. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F or a rate of rise that exceeds 15 deg F per minute unless otherwise indicated.

1. Mounting: Twist-lock base interchangeable with smoke detector bases.
2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire alarm control panel.

- C. Heat Detector, Fixed-Temperature Type: Actuated by temperature that exceeds a fixed temperature of 190 deg F.
 - 1. Mounting: Twist-lock base interchangeable with smoke detector bases.
 - 2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire alarm control panel.

2.7 NOTIFICATION APPLIANCES

- A. General Requirements for Notification Appliances: Connected to notification-appliance signal circuits, zoned as indicated, equipped for mounting as indicated, and with screw terminals for system connections.
 - 1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated, and with screw terminals for system connections.
- B. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn, using the coded signal prescribed in UL 464 test protocol.
- C. Visible Notification Appliances: Xenon strobe lights complying with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "ALERT" is engraved in minimum 1-inch-high letters on the lens.
 - 1. Rated Light Output: As indicated on design drawings.
 - a. 15/30/75/110 cd, selectable in the field.
 - b. 135/150/177/185 cd, selectable in the field.
 - 2. Mounting: Wall mounted unless otherwise indicated.
 - 3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
 - 4. Flashing shall be in a temporal pattern, synchronized with other units.
 - 5. Strobe Leads: Factory connected to screw terminals.
 - 6. Mounting Faceplate: Factory finished, white.
- D. Voice/Tone Notification Appliances:
 - 1. Comply with UL 1480.
 - 2. Speakers for Voice Notification: Locate speakers for voice notification to provide the intelligibility requirements of the "Notification Appliances" and "Emergency Communications Systems" chapters in NFPA 72.
 - 3. High-Range Units: Rated 2 to 15 W.
 - 4. Low-Range Units: Rated 1 to 2 W.
 - 5. Mounting: Flush or surface mounted and bidirectional.
 - 6. Matching Transformers: Tap range matched to acoustical environment of speaker location.

2.8 MAGNETIC DOOR HOLDERS

- A. Description: Units are equipped for wall or floor mounting as indicated and are complete with matching doorplate.
 - 1. Electromagnets: Require no more than 3 W to develop 25-lbf holding force.
 - 2. Wall-Mounted Units: Flush mounted unless otherwise indicated.
 - 3. Rating: 24-V ac or dc
 - 4. Rating: 120-V ac
- B. Material and Finish: Match door hardware.

2.9 GRAPHIC ANNUNCIATOR

- A. Graphic Annunciator Panel: Mounted in an aluminum frame with nonglare, minimum 3/16-inch thick, clear acrylic cover over graphic representation of the facility. Detector locations shall be represented by red LED lamps. Normal system operation shall be indicated by a lighted, green LED. Trouble and supervisory alarms shall be represented by an amber LED.
 - 1. Comply with UL 864.
 - 2. Operating voltage shall be 24-V dc provided by a local 24-V power supply provided with the annunciator.
 - 3. Include built-in voltage regulation, reverse polarity protection, RS 232/422 serial communications, and a lamp test switch.
 - 4. Surface mounted in a NEMA 250, Type 1 cabinet, with key lock and no exposed screws or hinges.
 - 5. Graphic representation of the facility shall be a CAD drawing and each detector shall be represented by an LED in its actual location. CAD drawing shall be at 1/8-inch per foot scale or larger.
 - 6. The LED representing a detector shall flash two times per second while detector is an alarm.

2.10 ADDRESSABLE INTERFACE DEVICE

- A. General:
 - 1. Include address-setting means on the module.
 - 2. Store an internal identifying code for control panel use to identify the module type.
 - 3. Listed for controlling HVAC fan motor controllers.
- B. Monitor Module: Microelectronic module providing a system address for alarm initiating devices for wired applications with normally open contacts.
- C. Integral Relay: Capable of providing a direct signal to elevator controller to initiate elevator recall, to circuit-breaker shunt trip for power shutdown.
 - 1. Allow the control panel to switch the relay contacts on command.
 - 2. Have a minimum of two normally open and two normally closed contacts available for field wiring.
- D. Control Module:
 - 1. Operate notification devices.

2. Operate solenoids for use in sprinkler service.

2.11 RADIO ALARM TRANSMITTER

- A. Transmitter shall comply with NFPA 1221 and 47 CFR 90.
- B. Description: Manufacturer's standard commercial product; factory assembled, wired, and tested; ready for installation and operation.
 1. Packaging: A single, modular, NEMA 250, Type 1 metal enclosure with a tamper-resistant flush tumbler lock.
 2. Signal Transmission Mode and Frequency: VHF or UHF 2-W power output, coordinated with operating characteristics of the established remote central receiving station designated by Owner.
 3. Normal Power Input: 120-V ac.
 4. Secondary Power: Integral-sealed, rechargeable, 12-V battery and charger. Comply with NFPA 72 requirements for battery capacity; submit calculations.
 5. Antenna: Omnidirectional, coaxial half-wave, dipole type with driving point impedance matched to transmitter and antenna cable output impedance. Mount to building structure where indicated. Wind-load strength of antenna and mounting hardware and supports shall withstand 100 mph with a gust factor of 1.3 without failure.
 6. Antenna Cable: Coaxial cable with impedance matched to the transmitter output impedance.
 7. Antenna-Cable Connectors: Weatherproof.
 8. Alarm Interface Devices: Circuit boards, modules, and other auxiliary devices, integral to the transmitter, matching fire alarm and other system outputs to message-generating inputs of the transmitter that produce required message transmissions.
- C. Functional Performance: Unit shall receive alarm, supervisory, or trouble signal from fire alarm control panel or from its own internal sensors or controls and shall automatically transmit signal along with a unique code that identifies the transmitting station to the remote central receiving station. Transmitted messages shall correspond to standard designations for fire-reporting system to which the signal is being transmitted and shall include separately designated messages in response to the following events or conditions:
 1. Transmitter Low-Battery Condition: Sent when battery voltage is below 85 percent of rated value.
 2. System Test Message: Initiated manually by a test switch within the transmitter cabinet, or automatically at an optionally preselected time, once every 24 hours, with transmission time controlled by a programmed timing device integral to transmitter controls.
 3. Transmitter Trouble Message: Actuated by failure, in excess of one-minute duration, of the transmitter normal power source, derangement of the wiring of the transmitter, or any alarm input interface circuit or device connected to it.
 4. Local Fire Alarm System Trouble Message: Initiated by events or conditions that cause a trouble signal to be indicated on the building system.
 5. Local Fire Alarm System Alarm Message: Actuated when the building system goes into an alarm state. Identifies device that initiated the alarm.
 6. Local Fire Alarm System, Supervisory-Alarm Message: Actuated when the building alarm system indicates a supervisory alarm.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions for compliance with requirements for ventilation, temperature, humidity, and other conditions affecting performance of the Work.
 - 1. Verify that manufacturer's written instructions for environmental conditions have been permanently established in spaces where equipment and wiring are installed before installation begins.
- B. Examine rough in for electrical connections to verify actual locations of connections before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EQUIPMENT INSTALLATION

- A. Comply with currently adopted version of NFPA 72, and requirements of the authorities having jurisdiction for installation and testing of fire alarm equipment. Install all electrical wiring to comply with requirements in NFPA 70 including, but not limited to, Article 760, "Fire Alarm Systems."
 - 1. Devices placed in service before all other trades have completed cleanup shall be replaced.
 - 2. Devices installed but not yet placed in service shall be protected from construction dust, debris, dirt, moisture, and damage according to manufacturer's written storage instructions.
- B. Connecting to Existing Equipment: Verify that existing fire alarm system is operational before making changes or connections.
 - 1. Remove PAB and Parking garage fire alarm system components from existing FACP located in PADF. Provide monitoring of existing FACP in PADF by the new PAB FACP.
- C. Install wall-mounted equipment, with tops of cabinets not more than 78 inches above the finished floor.
- D. Manual Fire alarm Boxes:
 - 1. Install manual fire alarm box in the normal path of egress within 60 inches of the exit doorway.
 - 2. Mount manual fire alarm box on a background of a contrasting color.
 - 3. The operable part of manual fire alarm box shall be between 42 inches and 48 inches above floor level. All devices shall be mounted at the same height unless otherwise indicated.
- E. Smoke or Heat Detector Spacing:
 - 1. Comply with the "Smoke Sensing Fire Detectors" section in the "Initiating Devices" chapter in NFPA 72, for smoke detector spacing.
 - 2. Comply with the "Heat Sensing Fire Detectors" section in the "Initiating Devices" chapter in NFPA 72, for heat-detector spacing.
 - 3. Smooth ceiling spacing shall not exceed the rating of the detector.

4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Annex A or Annex B in NFPA 72.
 5. HVAC: Locate detectors not closer than 36 inches from air-supply diffuser or return-air opening.
 6. Lighting Fixtures: Locate detectors not closer than 12 inches from any part of a lighting fixture and not directly above pendant mounted or indirect lighting.
- F. Install a cover on each smoke detector that is not placed in service during construction. Cover shall remain in place except during system testing. Remove cover prior to system turnover. Shipping covers are not listed for protection against contamination during construction.
- G. Duct Smoke Detectors: Comply with NFPA 72. Install sampling tubes so they extend the full width of duct. Tubes more than 36 inches long shall be supported at both ends.
1. Do not install smoke detector in duct smoke detector housing during construction. Install detector only during system testing and prior to system turnover.
- H. Elevator Shafts: Coordinate heat detector temperature rating and location with sprinkler rating and location.
- I. Remote Status and Alarm Indicators: Install in a visible location near each smoke detector, sprinkler waterflow switch, and valve-tamper switch that is not readily visible from normal viewing position.
- J. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install audible notification appliances on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Install all devices at the same height unless otherwise indicated.
- K. Visible Alarm-Indicating Devices: Install visible notification appliance adjacent to each audible notification appliance such that the entire lens is between 80 inches and 96 inches and at least 6 inches below the ceiling. Install all devices at the same height unless otherwise indicated.
- L. Device Location-Indicating Lights: Locate in public space near the device they monitor.

3.3 WIRING INSTALLATION

- A. Wire and cable for fire alarm systems shall be UL listed and labeled as complying with NFPA 70, Article 760.
- B. Wire size shall be as recommended by the fire alarm system manufacturer.
- C. Pathways shall be installed in EMT. Exposed EMT shall be painted red enamel.
- D. Fire alarm circuits and equipment control wiring associated with the fire alarm system shall be installed in a dedicated raceway system. This system shall not be used for any other wire or cable.
- E. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by the manufacturer. Install conductors parallel with or at right angles to sides and back of enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure type terminal blocks or plug connectors.

- F. Color Coding: Color code fire alarm conductors differently from the normal building power wiring. Use one color for alarm circuit wire and a different color code for supervisory circuits. Color code audible alarm indicating circuits differently from alarm initiating circuits. Use different colors for visible alarm indicating devices. Coordinate with Owner for standard color coding
- G. Paint fire alarm system junction boxes and covers red.

3.4 CONNECTIONS

- A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, connect hardware and devices to fire alarm system.
 - 1. Verify that hardware and devices are listed for use with installed fire alarm system before making connections.
- B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 36 inches from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.
 - 1. Smoke dampers in air ducts of designated HVAC duct systems.
 - 2. Magnetically held-open doors.
 - 3. Alarm initiating connection to elevator recall system and components.
 - 4. Alarm initiating connection to activate emergency lighting control.
 - 5. Alarm initiating connection to activate emergency shutoffs for gas and fuel supplies.
 - 6. Supervisory connections at valve supervisory switches.
 - 7. Supervisory connections at low-air-pressure switch of each dry-pipe sprinkler system.
 - 8. Supervisory connections at elevator shunt-trip breaker.
 - 9. Supervisory connections at fire-pump power failure including a dead-phase or phase-reversal condition.
 - 10. Supervisory connections at fire-pump engine control panel.

3.5 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals.
- B. Install framed instructions in a location visible from fire alarm control panel.

3.6 GROUNDING

- A. Ground fire alarm control panel and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire alarm control panel.
- B. Ground shielded cables at the control panel location only. Insulate shield at device location.

3.7 FIELD QUALITY CONTROL

- A. Field tests shall be witnessed by Consultant.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

- C. Perform tests and inspections.
- D. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
 - 1. Visual Inspection: Conduct visual inspection prior to testing.
 - a. Inspection shall be based on completed record Drawings and system documentation that is required by NFPA 72.
 - b. Comply with the "Visual Inspection Frequencies" table in the "Inspection" section of Chapter 14, "Inspection, Testing and Maintenance", in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.
 - 2. System Testing: Comply with the "Test Methods" table in the "Testing" section of Chapter 14, "Inspection, Testing and Maintenance", in NFPA 72.
 - 3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
 - 4. Test visible appliances for the public operating mode according to manufacturer's written instructions.
 - 5. Detectors that are outside of their marked sensitivity range shall be replaced.
 - 6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" and the "Inspection and Testing Form" located in NFPA 72.
- E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
- F. Fire alarm system will be considered defective if it does not pass tests and inspections.
- G. Prepare test and inspection reports.

3.8 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
 - 1. Include visual inspections according to the "Visual Inspection Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
 - 2. Perform tests in the "Test Methods" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
 - 3. Perform tests per the "Testing Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

3.9 SOFTWARE SERVICE AGREEMENT

- A. Comply with UL 864.
- B. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.

- C. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.

- 1. Upgrade Notice: At least 30 days to allow Owner to schedule access to system and to upgrade computer equipment if necessary.

3.10 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire alarm system.

END OF SECTION 284621.1

A.3 COOPERATIVE PURCHASING:

The City and County of Denver encourages and participates in cooperative purchasing endeavors undertaken by or on behalf of other governmental jurisdictions, pursuant to Denver Revised Municipal Code Sec. 20-64.5. To the extent other governmental jurisdictions are legally able to participate in cooperative purchasing endeavors, the City and County of Denver supports such cooperative activities. Further, it is a specific requirement of this proposal or Request for Proposal that pricing offered herein to the City and County of Denver may be offered by the vendor to any other governmental jurisdiction purchasing the same products.

The vendor(s) must deal directly with any governmental agency concerning the placement of purchase orders, freight charges for destinations outside of the Denver Metro area, contractual disputes, invoicing, and payment. The City and County of Denver shall not be liable for any costs, damages incurred by any other entity.

A.4 BACKGROUND CHECKS AND DISQUALIFICATION:

Because of the nature of the proposed contract for the City, Contractor, at its expense, must conduct, or have previously conducted a background check for each of its employees, as well as for the employees of its subcontractors, who will provide services to the City. Background checks are to be conducted through an independent background check vendor and must include the following:

- Social Security Number Trace;
- Federal Criminal Records (includes wants, warrants, arrests, convictions, and incarcerations);
- Colorado Criminal Records (includes wants, warrants, arrests, convictions, and incarcerations);
- Criminal Records from other States if the employee disclosed, or the background check identifies, that the employee lived in another state in the last seven years (includes wants, warrants, arrests, convictions, and incarcerations); and
- National Sexual Offender Registry Search.

The background check shall include all convictions for the last seven years and may include additional convictions beyond seven years when permitted and/or required by law.

Because of the sensitive nature of the work proposed under this RFP, the City shall automatically disqualify from employment under this contract persons with felony convictions. Alternatively, the Director of Purchasing may require that a fidelity bond, or such other assurance in such amount as deemed appropriate, be provided to the City as a condition precedent to grant permission where an employee's prior conviction would otherwise preclude their participation under the contract.

All Contractor employees are required to self-disclose to the Contractor any criminal charges and convictions and nolo contendere pleas (not contest pleas) that occur while providing services to the City within three business days of the conviction, charge, or plea. Contractor is required to inform the City of any criminal charges or convictions or nolo contendere pleas (no contest pleas) that arise while an employee is on assignment with the City. Contractor must inform the City within one business day of the Contractor having knowledge of the charge, conviction, or plea. The City will determine, in its sole discretion, whether the employee will remain on a City assignment.

Contracts for work at the following locations require NCIC background checks:

- Police Academy
- Denver Animal Shelter
- Traffic Operations
- DPD Police Precincts

Other City locations may also require a NCIC background check. These background checks will be administered by the City and will be at no cost to the Contractor. Contractor employees will be required to provide their social security numbers to the City. Contractors will be provided entrance cards for each facility. Contractors are not allowed to share cards to provide services. The background check(s) must be conducted successfully prior to initial access and/or involvement by employees. Employees who separate from the Contractor's employment must undergo another background check prior to renewed access and/or involvement in providing services to the City. The City also has the ability to audit the Contractor's background check process, to ensure compliance with City standards, at any time. Additionally,

Failure by the Contractor to comply with the terms of this Section may result in the termination of its contract with the City.

A.5 INVOICING REQUIREMENTS:

Vendor must be capable of providing invoices that include the following details:

- Invoice number
- Invoice date
- Service date(s) or service period
- Purchase Order (PO) number (will be provided to vendor when assigned)
- Service location (Building name and address)
- Facility Code (list will be provided to the vendor)
- Itemized charges, including unit of measurement
- Total charge

Vendor shall also provide monthly statement billing (as required).

A.6 VENDOR'S PERFORMANCE:

The Executive Director of General Services or his/her authorized representative will decide all questions which may arise to the quality and acceptability of any work performed under the contract. If, in the opinion of the Executive Director of General Services or his/her authorized representative, performance becomes unsatisfactory, the City shall notify the Vendor. Repeated incidences of unsatisfactory performance will result in cancellation of the agreement for default.

EXHIBIT B: PROPOSAL PRICING SHEET**PROPOSAL ITEMS: See EXHIBIT A- Scope of Work**

Note to Supplier: The price submitted in the "Project Cost" shall include all outlined.

Base Bid

Item No.	Description	Quantity	Unit Cost
1	Fire Sprinkler Systems	Lump Sum	\$50,284.00
2	Mechanical and Electrical Coordination	Lump Sum	\$2,875.00
3	Ductwork/ Combination Fire/Smoke Dampers	Lump Sum	\$14,375.00
4	Addressable Fire Alarm Systems	Lump Sum	\$815,367.00
5	Bidirectional Antenna (BDA) Survey	Lump Sum	\$1,725.00
6	Two-way communication phones in elevator lobbies	Lump Sum	\$34,845.00

TOTAL PROJECT COST	\$ 919,471.00
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Line item pricing to include but not limited to all materials, equipment, shipping, handling costs, on-site labor, etc. Excludes all asbestos testing, monitoring, and abatement activities and costs.

The cost for Performance and Payment Bond will not be taken under consideration for the evaluation of the proposal

Cost for Performance and Payment Bond for above PROJECT COST	Percentage charged by Surety company: <u>0.60</u> %	\$ 5,517.00
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DELIVERY: Prices quoted shall be F.O.B. 1331 Cherokee Street, Denver, CO 80204, unloaded and installed.

Estimated Completion Time after Receipt of Order 3 0 5 Calendar Days

Vendor to unload, if applicable. Separate shipping and handling charges on invoices are not acceptable. Proposed pricing must incorporate all shipping and handling costs.

EXHIBIT C: Prevailing Wage Rate Schedules



TO: All Users of the City and County of Denver Prevailing Wage Schedules
FROM: Ryland Feno, Classification and Compensation Analyst Staff
DATE: January 10, 2022
SUBJECT: Latest Change to Prevailing Wage Schedules

The effective date for this publication will be **Friday, January 07, 2022** and applies to the City and County of Denver for **BUILDING CONSTRUCTION PROJECTS** (does not include residential construction consisting of single family homes and apartments up to and including 4 stories) in accordance with the Denver Revised Municipal Code, Section 20-76(c).

General Wage Decision No. CO20220020
Superseded General Decision No. CO20210020
Modification No. 0
Publication Date: 01/07/2022
(6 pages)

Unless otherwise specified in this document, apprentices shall be permitted only if they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor (DOL). The employer and the individual apprentice must be registered in a program which has received prior approval by the DOL. Any employer who employs an apprentice and is found to be in violation of this provision shall be required to pay said apprentice the full journeyman scale.

Attachments as listed above.

***Career Service Board approved to adjust all Davis Bacon classifications under \$15.87 to comply with the city's minimum wage. The effective date is January 1, 2022. See page 6 for reference.**

Office of Human Resources
201 W. Colfax Ave. Dept. 412 | Denver, CO 80202
p: 720.913.5751 | f: 720.913.5720
www.denvergov.org/humanresources

"General Decision Number: CO20220020 01/07/2022

Superseded General Decision Number: CO20210020

State: Colorado

Construction Type: Building

County: Denver County in Colorado.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022, Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least \$15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022, Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least \$11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/07/2022

ASBE0028-002 07/01/2019

Rates

Fringes

ASBESTOS WORKER/HEAT & FROST
INSULATOR - MECHANICAL (Duct,
Pipe & Mechanical System
Insulation).....\$ 32.98 14.73

CARP0055-002 11/01/2019

	Rates	Fringes
CARPENTER (Drywall Hanging Only).....	\$ 29.95	10.99

CARP1607-001 06/01/2020

	Rates	Fringes
MILLWRIGHT.....	\$ 35.50	14.68

ELEC0068-012 06/01/2020

	Rates	Fringes
ELECTRICIAN (Includes Low Voltage Wiring).....	\$ 38.00	16.97

ELEV0025-001 01/01/2021

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 48.09	35.825

FOOTNOTE:

- a. Vacation: 6%/under 5 years based on regular hourly rate for all hours worked. 8%/over 5 years based on regular hourly rate for all hours worked.
b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

ENGI0009-017 05/01/2021

	Rates	Fringes
POWER EQUIPMENT OPERATOR (Crane)		
141 tons and over.....	\$ 35.17	12.35
50 tons and under.....	\$ 31.70	12.35
51 to 90 tons.....	\$ 31.97	12.35
91 to 140 tons.....	\$ 33.05	12.35

* IRON0024-009 12/01/2021

	Rates	Fringes
IRONWORKER, ORNAMENTAL.....	\$ 31.00	14.25

* IRON0024-010 11/01/2021

	Rates	Fringes
IRONWORKER, STRUCTURAL.....	\$ 31.00	14.25

PAIN0079-006 08/01/2017

	Rates	Fringes
PAINTER (Brush, Roller and Spray; Excludes Drywall Finishing/Taping).....	\$ 20.50	8.41

PAIN0079-007 08/01/2017

	Rates	Fringes
DRYWALL FINISHER/TAPER.....	\$ 21.20	8.41

PAIN0419-001 07/01/2016

	Rates	Fringes
SOFT FLOOR LAYER (Vinyl and Carpet).....	\$ 20.00	10.83

* PAIN0930-002 07/01/2021

	Rates	Fringes
GLAZIER.....	\$ 31.92	11.74

PLUM0003-009 06/01/2021

	Rates	Fringes
PLUMBER (Excludes HVAC Duct, Pipe and Unit Installation).....	\$ 39.53	18.52

PLUM0208-008 01/01/2021

	Rates	Fringes
PIPEFITTER (Includes HVAC Pipe and Unit Installation; Excludes HVAC Duct Installation).....	\$ 37.55	17.88

SFCO0669-002 04/01/2021

	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers).....	\$ 39.59	25.30

SHEE0009-004 07/01/2021

	Rates	Fringes
SHEET METAL WORKER (Includes HVAC Duct Installation; Excludes HVAC Pipe and Unit Installation).....	\$ 36.45	20.15

SUCO2013-006 07/31/2015		
	Rates	Fringes
BRICKLAYER.....	\$ 21.96	0.00
CARPENTER (Acoustical Ceiling Installation Only).....	\$ 22.40	4.85
CARPENTER (Metal Stud Installation Only).....	\$ 17.68	0.00
CARPENTER, Excludes Acoustical Ceiling Installation, Drywall Hanging, and Metal Stud Installation.....	\$ 21.09	6.31
CEMENT MASON/CONCRETE FINISHER...	\$ 20.09	7.03
LABORER: Common or General.....	\$ 14.49	5.22
LABORER: Mason Tender - Brick...	\$ 15.99	0.00
LABORER: Mason Tender - Cement/Concrete.....	\$ 16.00	0.00
LABORER: Pipelayer.....	\$ 16.96	3.68
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 20.78	5.78
OPERATOR: Bobcat/Skid Steer/Skid Loader.....	\$ 19.10	3.89
OPERATOR: Grader/Blade.....	\$ 21.50	0.00
ROOFER.....	\$ 16.56	0.00
TRUCK DRIVER: Dump Truck.....	\$ 17.34	0.00
WATERPROOFER.....	\$ 12.71	0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.		
=====		

**Office of Human Resources
Supplemental Rates
(Specific to the Denver projects)
Revision Date: 01-01-2022**

Classification		Base	Fringe
Boilermaker		\$30.97	\$21.45
Iron Worker, Reinforcing		\$18.49	\$3.87
Laborer: Concrete Saw		\$15.87	-
Paper Hanger		\$20.15	\$6.91
Plasterer		\$24.60	\$12.11
Plaster Tender		\$15.87	-
Power Equipment Operator	Concrete Mixer - Less than 1 yd	\$23.67	\$10.67
	Concrete Mixer - 1 yd and over	\$23.82	\$10.68
	Drillers	\$23.97	\$10.70
	Loader - up to and incl 6 cu yd	\$23.67	\$10.67
	Loaders - over 6 cu yd	\$23.82	\$10.68
	Mechanic	\$18.48	-
	Motor Grader	\$23.97	\$10.70
	Oilers	\$22.97	\$10.70
	Roller	\$23.67	\$10.67
Truck Driver	Flatbed	\$19.14	\$10.07
	Semi	\$19.48	\$10.11
Waterproofer		\$15.87	\$0.00

Go to www.denvergov.org/Auditor to view the Prevailing Wage Clarification Document for a list of complete classifications used.

EXHIBIT D

Bond No. 107597626 & K41541453

Proposal No. 29327B

E.6 PERFORMANCE AND PAYMENT BOND

(Note: Do not provide a Performance and Payment Bond until requested by a City representative.)

**CITY AND COUNTY OF DENVER
DEPARTMENT OF GENERAL SERVICES****PERFORMANCE AND PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned Dynalectric Company,
a corporation organized and existing under and by virtue of the laws of the State of DE, *
hereafter referred to as the "Contractor", and Travelers Casualty and Surety Company of America & Federal Insurance Company,
a corporation organized and existing under and by virtue of the laws of the State of CT & IN,
and authorized to transact business in the State of Colorado, as Surety, are held and firmly bound unto the CITY
AND COUNTY OF DENVER, a municipal corporation of the State of Colorado, hereinafter referred to as the
"City", in the penal sum of nine hundred nineteen thousand four hundred seventy-one and 00/100 Dollars
(\$919,471.00), lawful money of the United States of America, for the payment of which sum, well and truly to
be made, we bind ourselves and our heirs, executors, administrators, successors and assigns, jointly and severally,
firmly by these presents;

* One Tower Square, Hartford, CT 06183 (TR) &
3 Mountainview Road, Suite 103, Warren, NJ 07059 (FE)

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH THAT:

WHEREAS, the above bounden Contractor has entered into a written contract with the aforesaid City for
furnishing all labor and tools, supplies, equipment, superintendence, materials and everything necessary for and
required to do, perform and complete the construction of **CONTRACT NO. 202263055, [Police
Administration Building - Fire Alarm System Improvements]**, Denver, Colorado, and has bound itself
to complete the project within the time or times specified or pay liquidated damages, all as designated, defined
and described in the said Contract and Conditions thereof, and in accordance with the Plans
and Technical Specifications therefore, a copy of said Contract being made a part hereof;

NOW, THEREFORE, if the said Contractor shall and will, in all particulars well and truly and faithfully
observe, perform and abide by each and every Covenant, Condition and part of said Contract, and the Conditions,
Technical Specifications, Plans, and other Contract Documents thereto attached, or by reference made a part
thereof and any alterations in and additions thereto, according to the true intent and meaning in such case, then
this obligation shall be and become null and void; otherwise, it shall remain in full force and effect;

PROVIDED FURTHER, that if the said Contractor shall satisfy all claims and demands incurred by the
Contractor in the performance of said Contract, and shall fully indemnify and save harmless the City from
all damages, claims, demands, expense and charge of every kind (including claims of patent infringement)
arising from any act, omission, or neglect of said Contractor, its agents, or employees with relation to said
work; and shall fully reimburse and repay to the City all costs, damages, and expenses which it may incur in
making good any default based upon the failure of the Contractor to fulfill its obligation to furnish
maintenance, repairs or replacements for the full guarantee period provided in the Contract Documents, then
this obligation shall be null and void; otherwise it shall remain in full force and effect;

PROVIDED FURTHER, that if said Contractor shall at all times promptly make payments of all amounts
lawfully due to all persons supplying or furnishing it or its subcontractors with labor and materials, rental
machinery, tools or equipment used or performed in the prosecution of work provided for in the above
Contract and that if the Contractor will indemnify and save harmless the City for the extent of any and all
payments in connection with the carrying out of such Contract, then this obligation shall be null and void;
otherwise it shall remain in full force and effect;

PROVIDED FURTHER, that if the said Contractor fails to duly pay for any labor, materials, team
hire, sustenance, provisions, provender, gasoline, lubricating oils, fuel oils, grease, coal, or any other
supplies or materials used or consumed by said Contractor or its subcontractors in performance of the work
contracted to be done, or fails to pay any person who supplies rental machinery, tools or equipment, all amounts
due as the result

Proposal No. 29327B

of the use of such machinery, tools or equipment in the prosecution of the work, the Surety will pay the same in any amount not exceeding the amount of this obligation, together with interest as provided by law;

PROVIDED FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to contracts with others in connection with this project, or the work to be performed thereunder, or the Technical Specifications and Plans accompanying the same, shall in any way affect its obligation on this bond and it does hereby waive notice of any change, extension of time, alteration or addition to the terms of the Contract, or contracts, or to the work, or to the Technical Specifications and Plans.

IN WITNESS WHEREOF, said Contractor and said Surety have executed these presents as of this
15th day of April, 2022.

Attest:

Secretary



Dynalectric Company
 345 Sheridan Boulevard, CO 80226

Contractor

By:

[Signature]
 President, ~~CEO~~, COLORADO
 Travelers Casualty and Surety Company of America &
 Federal Insurance Company

Surety

By:

[Signature]
 Attorney-in-Fact, Rita Losquadro

(Accompany this bond with Attorney-in-Fact's authority from the Surety to execute bond, certified to include the date of the bond).

APPROVED AS TO FORM:

Attorney for the City and County
 of Denver

By:

[Signature]
 Assistant City Attorney

APPROVED FOR THE CITY AND COUNTY
 OF DENVER

By:

MAYOR

By:

[Signature]
 ANDREW AMADOR, EXECUTIVE
 DIRECTOR OF GENERAL SERVICES



Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **Rita Losquadro** of **UNIONDALE**, **New York**, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **21st** day of **April**, **2021**.



State of Connecticut

City of Hartford ss.

By: _____

Robert L. Raney
 Robert L. Raney, Senior Vice President

On this the **21st** day of **April**, **2021**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June**, **2026**



Anna P. Nowik
 Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this **15th** day of **April**, **2022**



Kevin E. Hughes
 Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.



CERTIFICATE OF LIABILITY INSURANCE

 DATE (MM/DD/YYYY)
04/18/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must have **ADDITIONAL INSURED** provisions or be endorsed. If **SUBROGATION IS WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER ***MARSH USA INC 1166 AVENUE OF THE AMERICAS NEW YORK, NY 10036 Phone: 866-966-4664 Emcor.Certrequest@marsh.com / Fax: 203-229-6787 CN102796740-DYN-LAK-21-22 29327B	CONTACT NAME: PHONE (A/C, No. Ext): FAX (A/C, No): E-MAIL: ADDRESS: <table style="width: 100%;"> <tr> <th style="text-align: center;">INSURER(S) AFFORDING COVERAGE</th> <th style="text-align: center;">NAIC #</th> </tr> <tr> <td>INSURER A : Continental Casualty Company</td> <td>20443</td> </tr> <tr> <td>INSURER B : American Casualty Company of Reading, PA</td> <td>20427</td> </tr> <tr> <td>INSURER C : Transportation Insurance Co</td> <td>20494</td> </tr> <tr> <td>INSURER D : N/A</td> <td>N/A</td> </tr> <tr> <td>INSURER E :</td> <td></td> </tr> <tr> <td>INSURER F :</td> <td></td> </tr> </table>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A : Continental Casualty Company	20443	INSURER B : American Casualty Company of Reading, PA	20427	INSURER C : Transportation Insurance Co	20494	INSURER D : N/A	N/A	INSURER E :		INSURER F :	
INSURER(S) AFFORDING COVERAGE	NAIC #														
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INSURER D : N/A	N/A														
INSURER E :															
INSURER F :															
INSURED DYNALECTRIC COMPANY 345 SHERIDAN BLVD LAKEWOOD, CO 80226															

COVERAGES

CERTIFICATE NUMBER:

NYC-011308119-01

REVISION NUMBER: 1

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PRO-JECT ☐ LOC ☐ OTHER:			GL 7015289851	10/01/2021	10/01/2022	EACH OCCURRENCE \$ 2,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 25,000 PERSONAL & ADV INJURY \$ 2,000,000 GENERAL AGGREGATE \$ 6,000,000 PRODUCTS - COMP/OP AGG \$ 14,000,000 \$
A	AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ☒ HIRED AUTOS ONLY ☒ NON-OWNED AUTOS ONLY			BUA 7015289882	10/01/2021	10/01/2022	COMBINED SINGLE LIMIT (Ea accident) \$ 2,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ Auto Physical Damage \$ Included
	UMBRELLA LIAB ☐ OCCUR EXCESS LIAB ☐ CLAIMS-MADE DED RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y / N ☒ N	N / A	WC 7015294418 (AOS) WC 7015294385 (CA) WC 7015302405 (AZ, OR, WI)	10/01/2021 10/01/2021 10/01/2021	10/01/2022 10/01/2022 10/01/2022	☒ PER STATUTE ☐ OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

RE: 29327B - POLICE ADMIN BUILDING FIRE ALARM SYSTEM REPLACEMENT PROJECT - INSTALLATION OF A COMPLETE NEW FIRE ALARM SYSTEM INCLUDING EQUIPMENT AND DEVICES THROUGHOUT THE POLICE ADMIN BUILDING - 1351 CHEROKEE STREET DENVER, CO 80204
 ADDITIONAL INSURED UNDER ALL POLICIES (EXCEPT WORKERS COMPENSATION & EMPLOYERS LIABILITY) WHERE REQUIRED BY CONTRACT: CITY AND COUNTY OF DENVER, IT'S ELECTED AND APPOINTED OFFICIALS, EMPLOYEES, AND VOLUNTEERS.
 WAIVER OF SUBROGATION AS REQUIRED BY CONTRACT AND WHERE NOT PROHIBITED BY LAW.

CERTIFICATE HOLDER

CANCELLATION

CITY AND COUNTY OF DENVER GENERAL SERVICES PURCHASING 1351 CHEROKEE STREET DENVER, CO 80204	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE of Marsh USA Inc.
--	--

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AGENCY CUSTOMER ID: CN102796740

LOC #: Norwalk



ADDITIONAL REMARKS SCHEDULE

AGENCY ***MARSH USA INC		NAMED INSURED DYNALECTRIC COMPANY 345 SHERIDAN BLVD LAKEWOOD, CO 80226
POLICY NUMBER		
CARRIER	NAIC CODE	EFFECTIVE DATE:

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,
FORM NUMBER: 25 FORM TITLE: Certificate of Liability Insurance

AUTO PHYSICAL DAMAGE COMP / COLL DEDUCTIBLE \$500

FOR WORKER'S COMPENSATION, AUTO LIABILITY, GENERAL LIABILITY AND UMBRELLA LIABILITY:
IN THE EVENT OF CANCELLATION OR MATERIAL CHANGE THAT REDUCES OR RESTRICTS THE INSURANCE AFFORDED BY THIS COVERAGE PART (OTHER THAN THE REDUCTION OF AGGREGATE LIMITS THROUGH PAYMENT OF CLAIMS AS APPLICABLE), INSURER AGREES TO MAIL PRIOR WRITTEN NOTICE OF CANCELLATION OR MATERIAL CHANGE TO: CERTIFICATE HOLDER
SCHEDULE
1. NUMBER OF DAYS ADVANCE NOTICE: FOR ANY STATUTORILY PERMITTED REASON OTHER THAN NON-PAYMENT OF PREMIUM, THE NUMBER OF DAYS REQUIRED FOR NOTICE OF CANCELLATION AS PROVIDED IN PARAGRAPH 2 OF EITHER THE CANCELLATION COMMON POLICY CONDITIONS OR AS AMENDED BY THE APPLICABLE STATE CANCELLATION ENDORSEMENT IS INCREASED TO THE LESSER OF 60 DAYS OR THE NUMBER OF DAYS REQUIRED IN A WRITTEN CONTRACT.
FOR NON-PAYMENT OF PREMIUM, THE GREATER OF (1) THE NUMBER OF DAYS REQUIRED BY STATE LAW OR (2) THE NUMBER OF DAYS REQUIRED BY WRITTEN CONTRACT.
2. NAME:
NOTICE WILL BE MAILED TO: CERTIFICATE HOLDER

POLICY NUMBER: GL 7015289851
NAMED INSURED: EMCOR Group, Inc.
POLICY TERM: 10-01-2021 to 10-01-2022

COMMERCIAL GENERAL LIABILITY
CG 24 04 05 09

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Person Or Organization:

ANY PERSON OR ORGANIZATION WITH WHOM YOU AGREE UNDER A CONTRACT TO WAIVE YOUR RIGHT TO RECOVER AGAINST THEM. YOU MUST AGREE TO THIS WAIVER PRIOR TO THE DATE OF LOSS.

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The following is added to Paragraph **8. Transfer Of Rights Of Recovery Against Others To Us** of **Section IV – Conditions:**

We waive any right of recovery we may have against the person or organization shown in the Schedule above because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazard." This waiver applies only to the person or organization shown in the Schedule above.

POLICY NUMBER: BUA 7015289882

COMMERCIAL AUTO
CA 04 44 03 10**THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.****WAIVER OF TRANSFER OF RIGHTS OF RECOVERY
AGAINST OTHERS TO US (WAIVER OF SUBROGATION)**

This endorsement modifies insurance provided under the following:

**BUSINESS AUTO COVERAGE FORM
BUSINESS AUTO PHYSICAL DAMAGE COVERAGE FORM
GARAGE COVERAGE FORM
MOTOR CARRIER COVERAGE FORM
TRUCKERS COVERAGE FORM**

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Named Insured: EMCOR Group, Inc.**Endorsement Effective Date:** 10/01/2021**SCHEDULE****Name(s) Of Person(s) Or Organization(s):**

ANY PERSON OR ORGANIZATION ON WHOSE BEHALF YOU ARE REQUIRED TO OBTAIN THIS WAIVER OF OUR RIGHT TO RECOVER FROM UNDER A CONTRACT OR AGREEMENT.

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The Transfer Of Rights Of Recovery Against Others To Us Condition does not apply to the person(s) or organization(s) shown in the Schedule, but only to the extent that subrogation is waived prior to the "accident" or the "loss" under a contract with that person or organization.



Workers Compensation And Employers Liability Insurance Policy Endorsement

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Any person or organization for which the employer has agreed by written contract, executed prior to loss, may execute a waiver of subrogation. However, for purposes of work performed by the employer in Missouri, this waiver of subrogation does not apply to any construction group of classifications as designated by the waiver of right to recover from others (subrogation) rule in our manual.

Schedule

Any Person or Organization on whose behalf you are required to obtain this waiver of our right to recover from under a written contract or agreement.

The premium charge for the endorsement is reflected in the Schedule of Operations.

All other terms and conditions of the policy remain unchanged.

This endorsement, which forms a part of and is for attachment to the policy issued by the designated Insurers, takes effect on the Policy Effective Date of said policy at the hour stated in said policy, unless another effective date (the Endorsement Effective Date) is shown below, and expires concurrently with said policy unless another expiration date is shown below.

Form No: WC 00 03 13 (04-1984)

Endorsement Effective Date:

Endorsement No: ; Page: 1 of 1

Underwriting Company: American Casualty Company of Reading, Pennsylvania

Endorsement Expiration Date:

Policy No: WC 7015294418

Policy Effective Date: 10/01/2021

Policy Page:



CERTIFICATE OF PROPERTY INSURANCE

DATE (MM/DD/YYYY)
05/17/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

PRODUCER Aon Risk Services Southwest, Inc. Houston TX Office 5555 San Felipe Suite 1500 Houston TX 77056 USA	CONTACT NAME: <table style="width: 100%;"> <tr> <td style="width: 50%;">PHONE (A/C. No. Ext): (866) 283-7122</td> <td style="width: 50%;">FAX (A/C. No.): (800) 363-0105</td> </tr> </table> E-MAIL ADDRESS: PRODUCER CUSTOMER ID #: 570000088002	PHONE (A/C. No. Ext): (866) 283-7122	FAX (A/C. No.): (800) 363-0105												
PHONE (A/C. No. Ext): (866) 283-7122	FAX (A/C. No.): (800) 363-0105														
INSURED Dynalectric Colorado 345 Sheridan Blvd. Lakewood CO 80226 USA	<table style="width: 100%;"> <tr> <th style="text-align: center;">INSURER(S) AFFORDING COVERAGE</th> <th style="text-align: center;">NAIC #</th> </tr> <tr> <td>INSURER A: GuideOne National Insurance Company</td> <td>14167</td> </tr> <tr> <td>INSURER B:</td> <td></td> </tr> <tr> <td>INSURER C:</td> <td></td> </tr> <tr> <td>INSURER D:</td> <td></td> </tr> <tr> <td>INSURER E:</td> <td></td> </tr> <tr> <td>INSURER F:</td> <td></td> </tr> </table>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A: GuideOne National Insurance Company	14167	INSURER B:		INSURER C:		INSURER D:		INSURER E:		INSURER F:	
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INSURER A: GuideOne National Insurance Company	14167														
INSURER B:															
INSURER C:															
INSURER D:															
INSURER E:															
INSURER F:															

COVERAGES **CERTIFICATE NUMBER:** 570093128665 **REVISION NUMBER:**

LOCATION OF PREMISES/ DESCRIPTION OF PROPERTY (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

RE: Job No. 29327B, Job Name: Police Admin Building Fire Alarm System Replacement Project, Installation of a complete new fire alarm system including equipment and devices throughout the Police Admin Building.

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE		POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	COVERED PROPERTY	LIMITS
A	☒	PROPERTY	099002194	10/01/2021	10/01/2022	BUILDING	
		CAUSES OF LOSS				PERSONAL PROPERTY	
		BASIC				BUSINESS INCOME	
		BROAD				EXTRA EXPENSE	
		SPECIAL				RENTAL VALUE	
		EARTHQUAKE				BLANKET BUILDING	
		WIND				BLANKET PERS PROP	
		FLOOD				BLANKET BLDG & PP	
	☒	ALL RISK-Subject to Exclusions				X Loss Limit	\$12,500,000
A	☒	INLAND MARINE	099002194	10/01/2021	10/01/2022	X Job Site	\$10,000,000
		CAUSES OF LOSS				X In Transit	\$2,500,000
		NAMED PERILS				X CE-Installation Floater	\$2,500,000
	☒	All Risk				X Temp Storage	\$3,000,000
		CRIME					
		TYPE OF POLICY					
		BOILER & MACHINERY / EQUIPMENT BREAKDOWN					

SPECIAL CONDITIONS / OTHER COVERAGES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

City and County of Denver, it's elected and appointed officials, employees and volunteers are included as Additional Insured in accordance with the policy provisions of the Contractors Equipment policy. City and County of Denver, it's elected and appointed officials, employees and volunteers are included as Loss Payee in accordance with the policy provisions of the

CERTIFICATE HOLDER

CANCELLATION

City and County of Denver
 General Services Purchasing
 1351 Cherokee Street
 Denver CO 80204 USA

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Aon Risk Services Southwest, Inc.

Holder Identifier: Dyanlectric CO

570093128665

CERTIFICATE NUMBER:





ADDITIONAL REMARKS SCHEDULE

AGENCY Aon Risk Services Southwest, Inc.		NAMED INSURED Dynalectric Colorado	
POLICY NUMBER See Certificate Number: 570093128665		EFFECTIVE DATE:	
CARRIER See Certificate Number: 570093128665	NAIC CODE		

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: ACORD 24 FORM TITLE: Certificate of Property Insurance

LOCATION OF PREMISES / DESCRIPTION OF PROPERTY

SPECIAL CONDITIONS / OTHER COVERAGES

Contractors Equipment policy. A Waiver of Subrogation is granted in favor of Certificate Holder in accordance with the policy provisions of the Contractors Equipment policy.



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
05/17/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Willis Towers Watson Northeast, Inc. c/o 26 Century Blvd P.O. Box 305191 Nashville, TN 372305191 USA	CONTACT NAME: Willis Towers Watson Certificate Center PHONE (A/C, No, Ext): 1-877-945-7378 FAX (A/C, No): 1-888-467-2378 E-MAIL ADDRESS: certificates@willis.com														
INSURED Dynalectric Company 345 Sheridan Blvd Lakewood, CO 80226	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">INSURER(S) AFFORDING COVERAGE</th> <th style="text-align: center;">NAIC #</th> </tr> <tr> <td>INSURER A: Steadfast Insurance Company</td> <td>26387</td> </tr> <tr> <td>INSURER B:</td> <td></td> </tr> <tr> <td>INSURER C:</td> <td></td> </tr> <tr> <td>INSURER D:</td> <td></td> </tr> <tr> <td>INSURER E:</td> <td></td> </tr> <tr> <td>INSURER F:</td> <td></td> </tr> </table>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A: Steadfast Insurance Company	26387	INSURER B:		INSURER C:		INSURER D:		INSURER E:		INSURER F:	
INSURER(S) AFFORDING COVERAGE	NAIC #														
INSURER A: Steadfast Insurance Company	26387														
INSURER B:															
INSURER C:															
INSURER D:															
INSURER E:															
INSURER F:															

COVERAGES

CERTIFICATE NUMBER: W24771824
REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☐ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☐ PRO-JECT ☐ LOC ☐ OTHER:						EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$ \$
	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	UMBRELLA LIAB ☐ OCCUR EXCESS LIAB ☐ CLAIMS-MADE DED ☐ RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ Y ☒ N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						PER STATUTE ☐ OTH-ER ☐ E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
A	Pollution Liability	Y	Y	E0C 09817132 05	10/31/2021	10/31/2022	Per Occurrence: \$1,000,000 Aggregate: \$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

SEE ATTACHED

CERTIFICATE HOLDER

City and County of Denver General Services Purchasing
 1351 Cherokee Street
 Denver, CO 80204

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Jula M Powers

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ACORD 25 (2016/03)

The ACORD name and logo are registered marks of ACORD

SR ID: 22595960

BATCH: 2528429

AGENCY CUSTOMER ID: _____

LOC #: _____

**ADDITIONAL REMARKS SCHEDULE**Page 2 of 2

AGENCY Willis Towers Watson Northeast, Inc.		NAMED INSURED Dynalectric Company 345 Sheridan Blvd Lakewood, CO 80226	
POLICY NUMBER See Page 1		EFFECTIVE DATE: See Page 1	
CARRIER See Page 1	NAIC CODE See Page 1		

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 FORM TITLE: Certificate of Liability Insurance

Job / Project No.: 29327B

Job Name: Police Admin Building Fire Alarm System Replacement Project

Description: Installation of a complete new fire alarm system including equipment and devices throughout the Police Admin Building

City and County of Denver, it's elected and appointed officials, employees, and volunteers Dynalectric and all subcontractors are included as an Additional Insured as respects to Pollution Liability.

Waiver of Subrogation applies in favor of Additional Insured with respects to Pollution Liability.

INSURER AFFORDING COVERAGE: Steadfast Insurance Company

NAIC#: 26387

POLICY NUMBER: EOC 09817132 05

EFF DATE: 10/31/2021

EXP DATE: 10/31/2022

TYPE OF INSURANCE:

Professional Liability

LIMIT DESCRIPTION:

Per Claim:

Aggregate

LIMIT AMOUNT:

\$1,000,000

\$1,000,000

Endorsement # 16



CPL Additional Insured and Primary Coverage Endorsement

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l Prem.	Return Prem.
EOC 9817132 05	10/31/2021	10/31/2022	10/31/2021		-----	-----

Named Insured and Mailing Address:

EMCOR Group, Inc.
301 Merritt Seven
Norwalk, Connecticut 06851

Producer:

Willis Towers Watson Northeast, Inc.
75 Arlington Street, Floor 10
Boston MA 02116

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided by the following:

Contractor's Protective Professional Indemnity and Liability Insurance Policy

Solely with respect to coverage provided under Section A.2 Contractors Pollution Liability, It is hereby agreed that Section **V. DEFINITIONS**, Paragraph J. **Insured** is amended to include clients or other entities as additional **Insureds** where required by contract but only for **Loss** arising out of **Covered Operations** performed by the **Named Insured** for such additional **Insured**.

This does not apply to **Bodily Injury, Property Damage** or **Cleanup Costs** arising out of the sole negligence or willful misconduct of the additional **Insured**.

As respects, the coverage afforded the additional **Insured** and where required by contract, this insurance is 1) primary; or 2) primary and non-contributory, and our obligations are not affected by any other insurance carried by such additional **Insured** whether primary, excess, contingent, or on any other basis.

ALL OTHER TERMS, CONDITIONS AND EXCLUSIONS SHALL REMAIN UNCHANGED.

O. INSPECTION

The Company shall be permitted but not obligated to inspect, sample, and monitor on a continuing basis the **Insured's** property or operations, at any time. Neither the Company's right to make inspections, sample, and monitor, nor the actual undertaking thereof nor any report thereon, shall constitute an undertaking, on behalf of the **Insured** or others, to determine or warrant that property or operations are safe, healthful or conform to acceptable engineering practice or are in compliance with any law, rule, or regulation.

P. SOLE AGENT

The **Named Insured** first listed in Item 1 of the Declarations shall act on behalf of all other **Insureds**, if any, for the payment or return of premium, receipt and acceptance of any endorsement issued to form a part of this Policy and giving and receiving notice of cancellation or nonrenewal.

Q. ASSIGNMENT

This Policy shall not be assigned without the prior written consent of the Company. Assignment of interest under this Policy shall not bind the Company until its consent is endorsed onto this Policy.

R. SUBROGATION

If there is a payment made by the Company, the Company shall be subrogated to all the Insured's rights of recovery against any person or organization. The **Insured** shall cooperate with the Company and do whatever is necessary to secure these rights. The **Insured** shall do nothing after a claim to waive or prejudice such rights. The Company agrees to waive this right of subrogation against the client of the Insured or other entities to the extent that the **Insured** had, prior to **Claim**, a written agreement to waive such rights.

All recoveries obtained through subrogation will be applied towards the **Named Insured's** Self-Insured Retention first with the remaining balance payable to the Company.

S. CHANGES

Notice to any agent or knowledge possessed by any agent or by any other person shall not effect a waiver or a change in any part of this Policy or stop the Company from asserting any right under the terms of this Policy; nor shall the terms of this Policy be waived or changed, except by endorsement issued to form a part of this Policy.

T. CANCELLATION

This Policy can be canceled by the **Named Insured** by returning this Policy to the Company or its authorized representatives. The **Named Insured** can also cancel the Policy by written notice to the Company stating at what future date cancellation is to be effective. If the **Named Insured** cancels, earned premium shall be computed using the customary short rate table, or pro-rata of the Minimum Annual Policy Premium, whichever is greater.

This Policy can be canceled by the Company by written notice to the **Named Insured**, at the address last known to the Company. The Company shall provide written notice at least ninety (90) days before cancellation is to be effective.

There are exceptions to the length of the notice that shall be provided to the **Named Insured**. The **Named Insured** shall only be entitled to ten (10) days' notice if the Company cancels because:

1. The **Insured** has failed to pay a premium when due; or
2. The **Insured** has failed to pay the applicable Self-Insured Retention amounts due.

If the Company cancels, earned premium shall be computed pro-rata, except that if the Company cancels for the reason specified in 1. or 2. above, earned premium shall be computed in the same manner provided above when the **Named Insured** cancels.

Proof of mailing of any notice of cancellation shall be sufficient proof of notice. The effective date of cancellation terminates the **Policy Period**. Return of unearned premium is not a condition of cancellation. Unearned premium shall be returned by the Company as soon as practicable.