AdvantageME CT#

DEPARTMENT OF DEFENSE VETERANS AND EMERGENCY MANAGEMENT

MILITARY BUREAU
Headquarters, Maine National Guard
Camp Keyes, Augusta, Maine 04333-0033

BID DOCUMENTS

For

INSTALL SPRINKLER SYSTEM
AT
FMS #1, PORTLAND, MAINE

PROJECT #23SR10-479D
BID #10-039

10 May 2010

Prepared By:
Directorate of Facilities Engineering
Building #8, Camp Keyes
Augusta, Maine 04333-0033

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SECTION 1

Bidding Instructions and Information

INSTALL SPRINKLER SYSTEM
AT
FMS #1, PORTLAND, MAINE

PROJECT #23SR10-479D

10 May 2010

SECTION 1
SHORT FORM
INSTRUCTION TO BIDDERS

STATE PROJECTS

1. At the time of the opening of proposals, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents, including all addenda. The failure or omission of any bidder to receive or examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect to his proposal. The owner reserves the right to accept or reject any or all proposals as may best serve the interest of the owner.

2. Subject to the owner's right, reserved herein, to accept or reject any or all proposals, the general contractor will be selected on the basis of the sum of the lowest acceptable proposal plus such of the alternates as the owner desires to use.

3. The owner is exempt from the payment of Federal Excise Taxes on articles not to resale and the federal transportation tax on all shipments. The contractor shall quote less these taxes. Upon application, exemption certificates will be furnished when required.

4. Maine State Sales and Use Taxes should not be included in your quotation as the owner is exempt from the payment of such taxes.

5. No proposal may be withdrawn during a period of thirty (30) calendar days immediately following the opening thereof.

6. No contract may be assigned, sublet or transferred without the written consent of the owner.

7. No general contractor shall sublet more than 80% of the contract amount.

8. All foreign corporations intending to do business in the State of Maine must comply with provisions of 13-A M.R.S.A., Chapter 12. Any foreign corporation receiving notice of award of contract shall contact the Secretary of State for the purpose of complying with this statute.

All individual not residents of this State must comply with the provisions of Title 14 M.R.S.A., Section 704.

It may be necessary for the contractor to submit to the owner documentary evidence that the above provisions have been complied with.

9. For contract awards greater than $100,000, the selected General Contractor will be required to furnish a 100% Contract Performance Bond and a 100% Contract Payment Bond to cover the execution of his Contract. Form of Bonds are shown in Section 2-C2 and 2-C3 when applicable.

10. Contractors may be required to furnish a statement of their business experience, record of accomplishments, and financial responsibility at the discretion of the owner.

11. The owner shall retain five percent (5%) of each payment due the contractor as part security for the fulfillment of the contract by the contractor. The owner may, if he deems it expedient to do so, cause the contractor to be paid temporarily or permanently from time to time during the progress of the work the owner may at any time withhold further payments until the full amount of the five percent (5%) is reestablished, all in accordance with the provisions of Title 5, M.R.S.A., Section 1746.

Title 5, M.R.S.A., Section 1746 allows the contractor to deposit with the Treasurer of State certain government bonds in place of retention of payment due contractor in state contracts.

12. The proposal shall be based on the materials, methods, equipment and products as specified.

Any materials, methods, equipment or products not herein specified, but deemed worthy of consideration by any general contractor, may be introduced by a separate letter attached to his proposal. He shall state the cost comparison with the specified materials, methods, equipment or products and the reason for the suggested substitution.

It shall be understood by the general contractor or subcontractor that the attached letter describing the proposed change will not be used in determining the low general or subcontract proposal submitted unless the general or subcontractor shall have submitted their list to the architect/engineer 10 days prior to the date set for the receipt of their respective proposals and shall have received written approval by the architect/engineer.

13. Projects which require compliance with the Davis-Bacon Act are subject to the regulations contained in Title 29, Subtitle A, Part 5 of the Code for Federal Regulations and the federal wage determination attached to and made a part of these instructions to bidders.

14. Listing of job vacancies; Executive Order No. 5, dated December 6, 1971, requires that "... the contractor, or any subcontractor holding a contract directly under that contractor, shall, to the maximum feasible, list all of it's suitable openings with the Maine Department of Labor." This provision shall not apply to employment openings which the contractor proposes to fill from within its own organization.

Two copies of a "Quarterly Report of New Hires" shall be prepared by the 7th of January, April, July and October for the calendar quarter to which data pertains and sent to the local office of Maine Department of Labor, Bureau of Employment Security.

A copy of the reporting form is attached to these instructions to bidders. These may be obtained from the nearest office of the Maine Department of Labor serving the area.

Code of Fair Practices: Executive Order No. 11, dated July 1, 1972, requires that every state contract for public works contain the following provisions: "During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religious creed, sex, national origin, ancestry or age. Such action shall include, but not be limited to the following: Employment, upgrading, demotions, transfers , recruitment or recruitment advertising, layoffs or terminations, rates of pay or other forms of compensation, and selection for training including apprenticeship.

2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor state that all qualified applicants will receive consideration for employment without regard to

race, color, religious creed, sex, national origin, ancestry, or age.

3. The contractor will send to each labor union or representative of the workers with which he has a collective or bargaining agreement, or other contract or understanding, whereby he is furnished with labor for the performance of his contract, a notice, to be provided by the contracting department or agency, advising the said labor union or worker's representative of the contractor's commitment under this section and shall post copies of the notice in conspicuous places available to employees and to applicants for employment."

The contractor will cause the foregoing provisions to be inserted in all contracts for any work covered by this agreement so that such provisions will be binding upon each subcontractor.

15. OSHA - Safety Regulations. This project is subject to compliance with all requirements of the Occupational Safety and Health Administration, Volume 36, No. 105 of the Federal Register, U.S. Department of Labor published Saturday, May 29, 1971, as amended.

16. Any proposal that contains an escalation clause will be invalid.

SUPPLEMENT TO SPECIAL PROVISIONS

EXECUTIVE ORDER #5

APPLICABLE TO "STATE CONTRACTORS AND SUBCONTRACTORS"

All state contracts negotiated on or after December 6, 1971 shall include a clause requiring the contractor, or any subcontractor holding a contract directly under that contractor, to the maximum feasible, to list all of its suitable openings with the Maine Department of Labor.

Such a clause will require the contractor and any subcontractor to list all job openings in his organization in Maine, whether the jobs are generated by the contract or not. Excepted from listing will be jobs which the contractor will fill:

1. Through promotion or transfer of employees already in his organization;

2. Through recall of former employees on layoff status;

3. Through a bona fide employer-union agreement which requires new hires to be made only through union sources.

The contract will not require hiring only from applicants referred by the Maine Department of Labor. The contractor will be free to make his own hiring decisions.

Reporting

To determine the effectiveness of the order in providing jobs for Vietman veterans, state departments and agencies, contractors and their subcontractors will be required to file quarterly reports with the Maine Department of Labor. These reports will indicate only the total number of individuals hired during the reporting period and the number of personnel hired who were Vietnam-era veterans (in service on or after August 5, 1964) who received other than a dishonorable discharge. Such reports will be due not later than the 7th day of the month following the end of each calendar quarter (e.g. April 7, 1972 for the quarter ending March 31, 1972). Report forms (sample attached) will be available from the Maine Department of Labor.

QUARTERLY REPORT OF NEW HIRES

(To be completed by federal contractors and subcontractors subject to Executive Order 11598)

	Number of Hires
1. Total New Hires	
2. Vietnam-Era Veterans Hired	
Quarter Ending:	Date Submitted:

These report forms are being supplied as a convenience to federal contractors and subcontractors to meet their reporting requirements on hires in accordance with federal regulations (41 CFR 50-250) implementing Executive Order 11598.

Instructions for Submittal of Report

Line 1 - Enter the total number of new hires, including Vietnam-era veterans, during the period covered.

Line 2 - Enter the number of Vietnam-era veterans hired during the period covered.

Two copies of this report should be submitted to the local office of the Maine Department of Labor serving the area by the 7th of the month following the calendar quarters to which data pertains. A contractor or subcontractor with more than one establishment in a state may submit the quarterly reports for all such establishments to the Maine Department of Labor, Bureau of Employment Security, 20 Union Street, 54 State House Station, Augusta, ME 04333-0054.

Definitions

(1) New hires are temporary or permanent additions to the employment roll or (a) anyone who has never been employed by the organization, or (b) former employees who were not called back by the employer or are not returning from military leave.

(2) Vietnam-Era Veteran. A veteran separated on or after August 5, 1964 and who has received other than a dishonorable discharge.

Any questions regarding this matter should be referred to the nearest office of the Department of Labor's Bureau of Employment Security.

SUBMITTED BY	
Name of Firm	
Street Address	Signature
City, State, Zip	Title:

MA 5-82.1 (12/71)

SECTION 2

Forms

INSTALL SPRINKLER SYSTEM
AT
FMS #1, PORTLAND, MAINE

PROJECT #23SR10-479D

10 May 2010

SECTION 2-A
NOTICE TO BUILDING CONTRACTORS
(State Projects)
(Advertisement)

Sealed Proposals, in envelopes plainly marked Proposal for:

Install Sprinkler System at FMS #1, Portland, Maine, Project Number 23SR10-479D, Bid Number #10-039.

Brief Job Description: The Work of this Contract involves installation of a fire suppression system and a fire alarm system in approximately 13,000 square feet of existing vehicle maintenance shop, in accordance with plans and specifications prepared by: **Smith Reuter Lull Architects.**

Addressed to: Directorate of Facilities Engineering
Building 8, Camp Keyes
Augusta, Maine 04333-0033
Attn: Mr. David Pelletier
Project # 23SR10-479D
Bid # 10-039

Proposal will be opened and read aloud at Camp Keyes, Building #8, Augusta, Maine at **1:00 pm on 22 June 2010.** Bids received after **1:00 pm** will not be considered and will be returned unopened.

Any Proposal that contains an escalation clause will be invalid.

All proposals greater than $100,000.00 must be accompanied by certified or cashiers check for 5% of the Proposal, or a satisfactory Bid Bond in a similar amount. The Owner reserves the right to waive all formalities, and reject any and all Proposals, or to accept any Proposal. Proposals shall be submitted upon the form provided.

For contract awards greater than $100,000.00 the successful Bidder will be required to furnish 100% contract Performance Bond and a 100% contract Payment Bond to cover the execution of the Work which shall be in conformity with the Form of Bonds contained in Section 2-C of the specifications and for the Contract Amount.

Paper copies of plans and specifications may be obtained from the following for a non-refundable fee of $**75.00.** Only checks shall be accepted, make check payable to the Treasurer, State of Maine:

Directorate of Facilities Engineering
Building #8, Camp Keyes
Augusta, Maine 04333-0033
Attn: Mr. David Pelletier
Phone: (207) 626-7848

Electronic copies of the plans and specifications may be obtained free of charge, by emailing david.pelletier@us.army.mil.

Plans and specifications will also be available for review at the following locations:

McGraw Hill Construction/Dodge Plan Room
Spiller's Reprographics
224 Gorham Road
Scarborough, ME. 04074
Phone: (207) 883-4856
Fax: (207) 883-3015

Associated General Contractors of Maine
188 Whitten Road
P.O. Box 5519
Augusta, ME. 04332-5519
Phone: (207) 622-4741
Fax: (207) 622-1625

Construction Summary of Maine
Cross Insurance Building
74 Gilman Road
P.O. Box 1388
Bangor, ME. 04401
Phone: (207) 990-1156
Fax: (603) 627-4524

Directorate Facilities Engineering
Building #8, Camp Keyes
Station #33
Augusta, ME. 04333-0033
Phone: (207) 626-7848
Fax: (207) 626-4553
david.pelletier@us.army.mil

A Pre-bidding Conference is scheduled for **11:00 am on 14 June 2010** on site at FMS #1, 772 Stevens Ave, Portland, Maine. The Contractors shall meet on the right side parking area. This is mandatory for all General Contractors.

All questions during the bid process will be submitted in writing or facsimile to Attn: James Reuter, Smith Reuter Lull Architects, 179 Lisbon Street, FL2 Suite 2, Lewiston, Maine 04240, Fax 207-824-7237, email: jim@smithreuter.com.

OWNER:
JOHN W. LIBBY
Commissioner

We comply with all 504 Architectural Handicapped Accessibility Standards.

SECTION 2-B

PROPOSAL

BIDDER_____

_____

TO: DEPARTMENT OF DEFENSE, VETERANS AND EMERGENCY MANAGEMENT MILITARY BUREAU
Headquarters, Maine National Guard
Building 8, Camp Keyes, 194 Winthrop Street
Augusta, Maine 04333-0033

A. DESCRIPTION OF BASE BID:

The Work of this Contract involves installation of a fire suppression system and a fire alarm system in approximately 13,000 square feet of existing vehicle maintenance shop. Test and certify the completed system. Provide manufacturer's certification of testing and operation compliance. Arrange for system commissioning by an independent commissioning agent. Arrange for system commissioning by an independent commissioning agent. Provide as-built drawings that reflect any deviations from the construction plans. Provide Operation and Maintenance Manuals. Provide operator training for the owner upon completion of system installation. The Contractor shall provide and install items in accordance with Plans and Specifications.

B. Having carefully examined the forms of Contract, General Conditions, Plans and Specifications dated **10 May 2010**, prepared by **Smith Reuter Lull Architects,** for the Directorate of Facilities Engineering:

Install Sprinkler System at FMS #1, Portland, Maine, PN 23SR10-479D, Bid Number #10-039.

Allowance #1, Include the sum of $5,000.00 for commissioning services as specified in Section 01 00 00 and Section 28 31 13. Lump Sum. Dollars $5,000.00.

Allowances #1 for $5,000.00 shall be incorporated into the Base Bid.

as well as the premises and conditions affecting the work, we the undersigned propose to furnish all labor, equipment and materials necessary for and reasonably incidental to the construction and completion of this Proposal for LUMP SUM AMOUNT OF:

Base Bid $_____($_____).
(written amount of base bid)

Total of Base Bid and Allowance #1…..Lump Sum. Dollars$_____.

C. This Proposal includes the following addenda to the Plans and Specifications:

Addendum No.____, Dated _____.
Addendum No._____, Dated _____

D. The undersigned acknowledges that all prices within this Section 2-B PROPOSAL, must be filled in, to include Base Bid, Added Alternates and Unit Prices; or the Bidder will be considered non-responsive and this bid will be rejected.

E. The undersigned agrees, if awarded the Contract, the Contractor shall complete all work before the Contract Completion Date of **30 October 2010.** The Contact will terminate on **31 November 2010.**

F. The undersigned agrees, if the Proposal is accepted, to sign a Contract and deliver it, along with the affidavits of all insurance's specified, within 3 calendar days after the date of notification of such acceptance, except if the 3rd day falls on a holiday, a Saturday, or a Sunday then the conditions will be fulfilled if the required documents are received before 12:00 o'clock noon the day following the holiday, or the Monday following the Saturday or Sunday.

SIGNED BY: _____

_____

_____

Address

Note: If Bidder is a corporation, write State of incorporation, and if a partnership give full names of all partners.

SECTION 2-C1

SHORT FORM
FORM OF GENERAL CONTRACT BID BOND

Know all men by these presents, that we, the undersigned, (1) _____ _____, (2) _____as Principal, and (3) ___ _____ as Surety, are hereby held and firmly bound unto (4) _____ in the penal sum of _____ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns, signed this (5) _____ day of _____, 20____.

The condition of the above obligation is such that whereas the Principal has submitted to (6) Owner _____ _____ _____ a certain Proposal, attached hereto and hereby made a part hereof, to enter into a Contract in writing, for the construction of (7) _____ _____ _____.

Now therefore:

(a) If said Proposal shall be rejected, or, in the alternate,

(b) If said Proposal shall be accepted and the Principal shall execute and deliver a contract in the form of Contract attached hereto (properly completed in accordance with said Proposal) and shall furnish a bond for his faithful performance of said Contract, and for the payment of all persons performing labor or furnishing material in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Proposal, then this obligation shall be void, otherwise the same shall remain in force and effect: it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received hereby stipulates and agrees that the obligation of said Surety and its bonds shall be in no way impaired or affected by any extension of the time within which the Principal may accept such Proposal: and said Surety does hereby waive notice of any such extension.

In witness whereof, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Signed and seals this (5) _____ day of _____, 20___.

Witness:	Contractor: _____
_____	by _____ (L.S.)
_____	by _____ (L.S.)
_____	by _____ (L.S.)
Witness:	Surety: _____
_____	by _____ (L.S.)
_____	by _____ (L.S.)

Approved as to form _____, 20___.

By _____
(Owner's Attorney)

Legend

(1) Correct name of Contractor.
(2) A Corporation, a Partnership, or an Individual, as the case may be.
(3) Correct name of Surety.
(4) Treasurer of the State of Maine.
(5) Same date as that of Contract.
(6) Owner shall be the State of Maine.
(7) Name of project as designated in the Contract Documents.

If Contractor is Partnership, all Partners should execute Bond. A Power of Attorney document, together with a statement that it still is in full force and effect shall be provided by the person executing this Bond. Bond must be countersigned by a Resident Maine Agent.

SECTION 2-C2

SHORT FORM
FORM OF GENERAL CONTRACT PERFORMANCE BOND
(State Projects)

KNOW ALL MEN BY THESE PRESENTS THAT (1)_____

_____, (2)_____

OF_____AND STATE OF_____AS

PRINCIPAL, AND (3)_____

A CORPORATION DULY ORGANIZED UNDER THE LAWS OF THE STATE OF_____

AND HAVING A USUAL PLACE OF BUSINESS IN_____AS SURETY,

ARE HELD AND FIRMLY BOUND UNTO THE (4)_____

IN THE SUM OF_____DOLLARS ($_____),

TO BE PAID SAID (4)_____

OR HIS SUCCESSORS IN OFFICE, FOR WHICH PAYMENT WELL AND TRULY TO BE MADE, PRINCIPAL AND SURETY BIND THEMSELVES, THEIR HEIRS, EXECUTORS AND ADMINISTRATORS, SUCCESSORS AND ASSIGNS, JOINTLY AND SEVERALLY BY THESE PRESENTS.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT IF THE PRINCIPAL SHALL PROMPTLY AND FAITHFULLY PERFORM THE CONTRACT ENTERED INTO ON THE

(5)_____DAY OF_____A.D. 20_____FOR THE CONSTRUCTION OF

(6)_____

THEN THIS OBLIGATION SHALL BE NULL AND VOID: OTHERWISE, IT SHALL REMAIN IN FULL FORCE AND EFFECT.

THE SURETY HEREBY WAIVES NOTICE OF ANY ALTERATION OR EXTENSION OF TIME MADE BY THE (7) OWNER.

SIGNED AND SEALED THIS (5)_____DAY OF_____20_____.

WITNESSES:CONTRACTOR:_____

_____BY_____(L.S.)

_____BY_____(L.S.)

_____BY_____(L.S.)

WITNESSES:SURETY:_____

_____BY_____L.S.)

_____BY_____(L.S.)

APPROVED AS TO FORM_____, 20_____.

BY_____
(Owner's Attorney)

Legend

(1)Correct name of contractor.
(2)A corporation, a partnership, or an individual, as the case may be.
(3)Correct name of surety.
(4)Treasurer of the State of Maine.
(5)Same date as that of contract.
(6)Name of project s designated in the contract documents.
(7)Owner shall be the State of Maine.

If contractor is partnership, all partners should execute bond. A power of attorney document, together with a statement that it still is in full force and effect shall be provided by the person executing this bond. Bond must be countersigned by a Resident Maine Agent.

SECTION 2-C3
SHORT FORM

Form of General Contract Payment Bond
(State Projects)

Know all men by these presents that *Correct name of contractor*

A corporation, a partnership, or an individual, as the case may be of_____

and state of_____ as principal and *Correct name of surety* a corporation

duly organized under the laws of the state of_____ and having a usual place of business

in_____ as surety are heldand firmly bound unto the *Treasurer of the State of Maine* in

the sum of _____Dollars, ($_____) for the use and benefit of

claimants* as herein below defined, for the payment whereof principal and surety bind themselves,

their heirs, executors and administrators, successors and assigns, jointly and severally by these

presents.

The condition of this obligation is such that if the principal shall promptly satisfy all claims and demands

incurred for all labor and materials, used or required by him in connection with the work contemplated

in the contract entered into on the *Same date as that of contract* day of _____ A.D. 20___ for the

construction of *Name of project as designated in the contract documents*and shall fully reimburse the

obligee for all outlay and expense which said obligee may incur in making good any default of said

principal, then this obligation shall be null and void: otherwise, it shall remain in full force and effect.

* A claimant is defined as one having a direct contract with the principal or with a subcontractor of the principal for labor, material, or both, used or reasonably required for use in the performance of the contract.

Signed and Sealed this *Same date as that of contract* day of_____20____.

Witness: _____ Contractor:_____

_____By_____(L.S.)

_____By_____(L.S.)

_____By_____(L.S.)

Witness: _____ Surety:_____

_____BY_____(L.S.)

_____BY_____(L.S.)

Approved As To Form_____, 20_____.

By_____
(Owner's Attorney)

If contractor is partnership, all partners should execute bond. A power of attorney document, together with a statement that it still is in full force and effect shall be provided by the person executing this bond. Bond must be countersigned by a Resident Maine Agent.

SECTION 2-E

STATE OF MAINE

CONTRACT AGREEMENT-SHORT FORM

(Use when contract value is more than $50,000)

CT # 15A

THIS AGREEMENT made the____, day of _____in the year Two Thousand Ten by and between the State of Maine through the Department of Defense, Veterans and Emergency Management, hereinafter called the *Owner*, duly authorized and empowered by virtue of the laws of the State of Maine and _____, hereinafter called the *Contractor*.

Approp. No. Federal 100% 013-15A-7110-30-78A1-4711-ENGR-M110XX $00,000.00

DFE Project No.: ***23SR10-479D***

BGS Project No.: ***1289***

WITNESSETH,

That the Owner and the Contractor for the considerations hereinafter named agree as follows:

ARTICLE 1. SCOPE OF WORK

The *Contractor* shall furnish all of the materials and perform all the work shown on the plans and described in the specifications entitled: **Install Sprinkler System at FMS #1, Portland, Maine, PN 23SR10-479D.** Prepared by, **Smith Reuter Lull Architects,** acting as Designer and in the documents entitled the architect and/or engineer, and shall do everything required by this agreement, the general conditions and special provisions of the contract, the specifications and the drawings.

ARTICLE 2. TIME OF COMPLETION

The undersigned agrees, if awarded the Contract, the Contractor shall complete all work before the Contract Completion Date of **30 October 2010.** The Contact will terminate on **31 November 2010.**

ARTICLE 3. THE CONTRACT SUM

Allowance #1, Include the sum of $5,000.00 for commissioning services as specified in Section 01 00 00 and Section 28 31 13. The Owner shall recover any of the Allowance not used at the end of the project in the form of a change order.

The *Owner* shall pay the Contractor for the performance of the contract, subject to additions and deductions provided by approved change orders in current funds as follows: For Base Bid: _____. Dollars ($0.00)

The total Contract Sum for Base Bid and Allowance #1 shall be: **Total Contract Amount $_____.**

ARTICLE 4. CONTRACT BONDS

The *Contractor* shall furnish the owner the approved contract bonds (as per Article 27 of the Standard General Conditions) in the amount of 100% of the contract amount.

ARTICLE 5. PROGRESS PAYMENTS

The owner shall make payments on account of the contract as provided therein as follows: Each month 95% of the value, based on contract prices of labor and materials incorporated in the work and of materials suitably stored at the site thereof up to the first day of that month, as certified by the architect and/or engineers.

The owner may cause the contractor to be paid such portion of the amount retained hereunder as he deems advisable. (See Article 24 of the Standard General Conditions (Sec. 3-A))

ARTICLE 6. FINAL PAYMENT

Final payment shall be due 30 days after completion and acceptance of the work, provided the *Contractor* has submitted evidence satisfactory to the owner that all payrolls, material bills and other indebtedness connected with the work has been paid.

ARTICLE 7. THE CONTRACT DOCUMENTS

The general conditions of the contract, instructions to bidders, the proposal, the special provisions, the specifications and the drawings, together with this agreement, form the contract, and they are as fully a part of the contract as if hereto attached or herein repeated. The following is an enumeration of the specifications and the drawings.

SPECIFICATIONS:

SECTION 1 **Bidding Instruction and Information:**

1 Instructions to Bidders

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SP2 FMS #1 Second Floor Plan
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SP4 Building Sections

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E1 FMS #1 First Floor Plan
E2 FMS #1 Second Floor Plan
E3 Sprinkler Feed Main Location Plan

ADDENDA:

Addendum No.__ Dated _____.
Addendum No.__ Dated _____.

The owner and the contractor hereby agree to the full performance of the covenants herein.

IN WITNESS WHEREOF the parties hereto have executed this agreement in six(6) original copies the day and year first above written.

Witness: **Contractor: _____.**

By: _____.
Date

_____.

Name: _____.
Title: Owner

If a corporation, use the corporate seal and write State of Incorporation. If a partnership, all partners should execute this agreement.

Owner: Department of Defense, Veterans And Emergency Management

By: _____.
Date

Mr. Peter J. Rogers
Deputy Commissioner

Project Manager: Bureau of General Services

By: _____.
Date

_____.
Construction Engineer

Approval Authority: Bureau of General Services

By: _____.
Date

Joseph Ostwald
Director, Planning, Design & Construction

SECTION 3

Conditions of Contract

INSTALL SPRINKLER SYSTEM
AT
FMS #1, PORTLAND, MAINE

PROJECT #23SR10-479D

10 May 2010

SECTION 3-A

STATE OF MAINE

STANDARD GENERAL CONDITIONS
FOR
CONTRACT WORK
ON STATE PROJECTS

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ARTICLE 1. **DEFINITIONS**

Whenever the following terms are used in these specifications or the contract, the intent and meaning shall be interpreted as follows:

Architect: The project architect and/or engineer whose name appears on the plans and/or specifications for the project, acting directly or through an authorized representative.

Bid Security: The security designated in the proposal, furnished by bidders as a guaranty of good faith to enter into a contract with the state, should a contract be awarded to that bidder.

Bidder: Any individual, partnership, or corporation submitting a proposal for the performance of the work described under the terms of the contract, acting directly or through a duly authorized representative.

Bureau: The Bureau of General Services

Calendar Days: Consecutive days, as occurring on a calendar, taking into account the day of the week, month, year, and any religious, national, or local holidays.

Change Order: A written agreement between the owner and the contractor, operating as a supplement to the contract, covering correction of: omissions, errors, and discrepancies between the plans and the proposal or estimates; or any alterations in the plans; or additional requirements; work, materials, and incidentals required to complete the construction of the project in an acceptable manner, and setting forth the basis of compensation for that supplemental work, if any. Before any change order modifies or becomes a part of the work, it must be duly signed by the contractor, and the owner, and approved by the Bureau of General Services and the architect.

Contract: A written agreement between the owner and the successful bidder, by which the contractor is bound to perform the work specified, in accordance with plans, specifications, general conditions, and special provisions, that are a part of the contract documents, together with all supplemental agreements by which the owner is bound to compensate the contractor at mutually established and accepted rates or prices.

Contract Bond: The approved forms of security furnished by the contractor and his surety, or sureties, which guarantee the faithful performance of all the terms of the contract and the payment of all bills for labor, materials, and equipment by the contractor.

Contract Documents: The contract documents consist of the contract, general conditions, special provisions, the plans and specifications including all addenda and all other modifications thereof, that were incorporated in the documents prior to their execution.

Contractor: The individual, partnership, or corporation undertaking the execution of the general contract work under the terms of the contract with the owner, acting directly or through a duly authorized representative.

Director of the Bureau of General Services: The state director of the Bureau of General Services or her duly authorized representative.

Owner: The State of Maine, acting through its duly authorized representative.

Plans: All official drawings or reproductions of drawings pertaining to the work provided for in the contract and such working plans as may be furnished or approved by the owner or architect from time to time.

Project: The entire improvement proposed by the owner to be constructed in part or in whole pursuant to these specifications and contract documents. Where the word "Job" appears it shall mean the project.

Proposal or Bid: The written offer of the bidder, on a form prescribed to perform the work specified.

Provide: The word "provide" shall mean "furnish and install," including connections to services if required, unless specified otherwise.

Clerk of the Works: The authorized representative of the Architect.

State: The State of Maine, acting through its duly authorized representative.

Subcontractor: The individual, the firm or corporation undertaking the execution of any part of the work under the terms of the contract by virtue of a written agreement between itself and the contractor.

Superintendent: The representative of the contractor, authorized by the contractor to receive and fulfill instructions from the architect.

Supplemental Agreement: A supplemental agreement is any agreement entered into between the contractor and the owner with the approval of the bureau and the architect subsequent to the execution of the contract.

Surety: The individual, partnership, or corporation which is bound jointly and severally with the contractor and subcontractor to insure his faithful performance of the contract and for his payment of the bills for labor, materials and equipment by the contractor and subcontractors.

ARTICLE 2. **INTENT, CORRELATION AND EXECUTION OF DOCUMENTS**

The intent of the contract document is to prescribe a complete work or improvement. The plans, including all revisions, general conditions for contract work, special provisions, instructions to bidders, proposal, contract, contract bond, and all other sections of the specifications, including all addenda, all dated and on file in the Bureau of General Services, prior to the time set for receiving proposals as prepared by the architect, shall each become a part of the contract documents, and all proposals must be based on a full compliance therewith. Any supplemental agreements entered into subsequent to the contract will become a part of said contract.

The contract documents are complementary, and what is called for by any one shall be binding as if called for by all. The intention of the document is that , UNLESS OTHERWISE SPECIFIED, the contractor shall furnish all labor, materials, equipment, items, articles, tools, transportation, insurance, services, necessary supplies, operations or methods and incidentals that may be reasonably required to construct and complete the project, facility, or improvement in a manner necessary for the proper execution of the work. Any deviations from the plans which may be required by the exigencies of the construction, or because of error, will in all cases, be determined by the architect, and authorized in writing subject to approval by the owner and bureau. Materials or work described in words which, so applied, have a well-known technical or trade meaning shall be held to refer to such recognized standards. Since the plans and specifications cover the dimensions and features of the work and do not set forth the analysis of the design, it is the duty of the contractor fulfilling them to ascertain the true intent in any case where it is doubtful.

Work not covered under any heading, section, branch, class, or trade of the specifications, shall not be supplied unless it is shown on the drawings or is reasonably inferable therefrom as being necessary to produce the intended results.

The contractor shall take no advantage of any apparent error or omission in the plans and specifications, and the architect shall be permitted to make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the plans and specifications. Where errors or omissions appear in the contract documents, the contractor shall promptly notify the architect in writing of such errors or omissions. Inconsistencies in the contract documents are to be reported before proposals are received, whenever found.

The Contractor shall, upon his acceptance of a contract and before commencing work, contact the architect and request a preconstruction conference. The purpose of this conference shall be as follows:

1. To introduce the members of the architectural firm and the representative of the owner and to define their responsibilities in connection with this project.

2. To emphasize any special provisions applicable to the project.

3. To establish the work progress schedule and set up procedures for prompt review of all required shop drawings.

4. To provide the contractor with opportunity to discuss points of doubt and any apparent inconsistencies noted in the plans and specifications before proceeding to purchase material or execute the work.

During the further progress of work, regular meetings will be held at time intervals appropriate in the judgment of the architect to review the work progress schedule, general project progress and any other questions which might affect the execution of the contract.

ARTICLE 3: **DETAIL DRAWINGS AND INSTRUCTIONS**

The architect shall furnish, with reasonable promptness, additional instructions by means of drawings or otherwise, that are necessary for the proper execution of the work. All such drawings and instruction shall be consistent with the contract documents, shall be true developments thereof, and shall be reasonably inferable therefrom.

The work shall be executed in conformity therewith and the contractor shall do no work without proper drawings and instructions.

Immediately after being awarded the contract, the contractor shall prepare an estimated progress schedule and submit same for architect's approval. It shall indicate the dates for starting and completion of the various stages of construction.

ARTICLE 4: **COPIES FURNISHED**

Unless otherwise provided in the contract documents, the contractor will be furnished, free of charge, copies of all drawings and specifications reasonably necessary for the execution of the work.

ARTICLE 5: **SHOP DRAWINGS**

The contractor shall check and verify all field measurements and shall submit with such promptness as to cause no delay in the contractor's own work or in that of any other contractor, adequate copies, checked and approved by the contractors of all shop drawings and schedules required for the work of the various trades. The architect shall check and approve, with reasonable promptness, such scheduled drawings only conformance with the design concept of the project and compliance with the information given in the contract documents. The contractor shall make any corrections required by the architect, and shall file with the architect two corrected copies, and shall furnish such other copies as may be needed. The architect's approval of such drawings or schedules shall not relieve the contractor from responsibility for deviations from drawings or specifications, unless the contractors have, in writing, called the architect's attention to such deviations at the time of submission and secured the architect's written approval; nor shall it relieve the contractors from responsibility for errors in shop drawings or schedules.

ARTICLE 6: **DRAWINGS AND SPECIFICATIONS**

The contractor shall keep, in good order, one copy of all drawings and specifications on the work, which will be made available to the architect and to his representative.

ARTICLE 7: **OWNERSHIP OF DRAWINGS**

All drawings, specifications and copies thereof furnished by the architect are the property of the architect. They are not to be used on other work without written permission from the architect, and, with the exception of the signed contract set, are to be returned to the architect upon request, or at the completion of the work.

ARTICLE 8: **SAMPLES**

The Contractor shall furnish for approval, with reasonable promptness, all samples as directed by the architect. The architect shall check and approve such samples, with reasonable promptness, only for conformance with the design concept of the project and for compliance with the project and for compliance with the information given in the contract documents. The work shall be in accordance with approved samples.

ARTICLE 9: **MATERIALS, APPLIANCE, EMPLOYEES**

Unless otherwise stipulated, the contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and facilities necessary for the execution and completion of the work.

Whenever an article or material is defined by describing a proprietary product, or by using the name of a manufacturer, the term “Or Approved Equal”, if not inserted, shall be implied. The specific article or material mentioned shall be understood to establish minimum standards as to the type, function, standard of design, durability, efficiency and quality desired and shall not be construed to exclude other manufacturers’ products of comparable quality, design, and efficiency.

Materials and models of items which the contractor alleges to be equal to the materials and methods of items named in the specifications, shall be subject to the written approval by the architect/engineer. If the alleged equals are to receive consideration in the bid award, written approval shall be received from the architect/engineer at least ten days prior to the established bid opening dates. The use of alternate items will not be permitted without the approval of the owner and architect. All approved substitutions shall be in writing and approved by the architect. The contractor shall not be relieved of the responsibility to furnish articles or materials equal in quality, design, and efficiency to those specified because of the approval of such alternate items by the architect. The architect’s approval or rejection of a proposed substitution may be based on any of the previous considerations, and his decision may or may not express reasons for rejection and shall be final. Requests for substitutions shall originate and be

submitted by the contractor, not a subcontractor. The materials or equipment shall be sufficiently described to enable the architect to easily identify salient features.

Any material or products not specified in the bidding documents but being worthy of consideration may be introduced by the contractor, or subcontractor. The contractor's submission shall include a cost comparison with the specified material and the reason for the suggested substitution. The basic proposal shall be as specified.

It shall be understood by the general contractor or subcontractor that the attached letter describing the proposed changes will not be used in determining the low general contractor or subcontractor proposal submitted, unless the general contractor or subcontractor has submitted its list to the architect/engineer 10 days prior to the date set for the receipt of their respective proposals and has received written approval by the architect/engineer five days prior to the opening of the bid.

The contractor shall guarantee his work against any defects in workmanship and materials for a period of one year from the date of the written acceptance of the project.

Materials and equipment shall be new, free from defects, perfect and complete, unless otherwise stipulated. Materials or equipment specified or shown on the drawings shall be applied or installed according to the directions with the manufacturer, or the recommendations of an association dealing primarily with the material, unless specifically designated otherwise. The scope of the direction furnished shall include the application of experienced personnel to each trade involved. In no case shall the installation be below the standard recommended by the manufacturer or association.

The contractor shall be responsible to the owner for the suitability of materials and equipment furnished and for full compliance with the specification.

The contractor shall promptly pay all his employees when their pay is due, shall promptly pay when due all bills for materials, supplies and services going into the work, and all bills for insurance, workmen's compensation coverage, federal and state unemployment compensation, and Social Security charges applicable to said project. Before final settlement is made, the contractor shall furnish to the owner affidavits that all said payments have been made.

The contractor shall at all times enforce strict discipline and good order among his employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him.

ARTICLE 10: **ROYALTIES AND PATENTS**

The contractor shall, for all time, secure to the owner the free and undisputed right to the use of any and all patented articles or methods used in the work and shall defend at his own expense any and all suits for infringement or alleged infringement of such patents, and in the event of adverse award under patent suits, the contractor shall pay such awards and hold the

owner harmless in connection with any patent suits that may arise as a result of installations made by the contractor, or to any awards made thereunder.

ARTICLE 11: **SURVEYS, PERMITS, LAWS, TAXES AND REGULATIONS**

The owner shall furnish all surveys unless otherwise specified.

Permits and licenses necessary for the prosecution of the work shall be secured and paid for by the contractor. Easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the owner, unless otherwise specified.

The contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the contractor observes that the drawings and specifications are at variance therewith, the contractor shall promptly notify the architect in writing and any necessary changes shall be adjusted as provided in the contract for changes in the work. If the contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations and without such notice to the architect, the contractor shall bear all costs arising therefrom.

Adherence to the codes promulgated by the BOARD OF CONSTRUCTION SAFETY RULES AND REGULATIONS is required by statute. Copies of the latest rules and regulations may be obtained from the Department of Labor, 54 State House Station, Augusta, Maine 04333-0054.

The State is exempt from the payment of Federal Excise Taxes on articles not for resale and from the Federal Transportation Tax on all shipments. All quotes from the contractor and subcontractors shall be free of these taxes. The State is exempt from the payment of Maine State Sales and Use Taxes. All quotes from the contractor and subcontractors shall be free of these taxes.

ARTICLE 12: **LABOR AND WAGES**

All contractors and subcontractors shall conform to the labor laws of the State of Maine, and all other laws, ordinances, and legal requirements affecting the work in Maine.

If a wage scale prepared by the Department of Labor is included in the contract documents, such wage scale represents the minimum wages that must be paid to each category of labor employed on the project.

For projects requiring State prevailing wage rates, at the Preconstruction Conference the Architect shall inform the General Contractor of the statutory requirement to submit to the contracting agency monthly records identifying the names and occupation of all workers employed by them and all independent contractors working under contract with them in connection with the construction project, as required by Maine State Law and Rule. The monthly submission must include hours worked, title of the job, hourly rate or other method of remuneration, and the actual wages or other compensation paid to each.

The submitted records may not reveal information other than described above, such as Social Security number employee identification number, or employee address or phone number. If records are received with information other than described above, they will be returned to the General Contractor for revision and resubmission.

In the employment of laborers, preference shall first be given to residents of the State of Maine who are qualified to perform the work to which the employment relates, and if they cannot be obtained in sufficient numbers, then to citizens of the United States, who may reside in other states.

ARTICLE 13: **CONDITIONS AND CARE OF SITE AND PROTECTION OF THE WORK**

The contractor shall continuously maintain adequate protection of all work from damage and shall protect the property from injury or loss for the duration of this contract, and shall make good any such damage, injury or loss. The contractor shall adequately protect adjacent property as provided by law and the contract documents.

The contractor shall take all necessary precautions for the safety of employees on the work, and shall comply with all applicable provisions of federal, state, and municipal safety laws and buildings codes, and shall prevent accidents or injury to person on, about, or adjacent to the premises where the work is being performed. The contractor shall erect and properly maintain all necessary safeguards for the protection of workmen and the public at all times, as required by the condition and progress of the work, and shall post danger signs warning against all hazards created by the construction process, such as (but not limited to) protruding nails, hoists, well holes, elevator hatchways, scaffolding, window openings, stairways, and falling materials. The contractor shall designate a responsible member of his organization on the work, whose duty shall be the prevention of accidents. The name and position of any person so designated shall be reported to the architect by the contractor.

The contractor shall return to conditions existing prior to the start of work on the project, all aspects of the site that have not been altered, removed, or otherwise changed permanently by the work. The contractor shall protect all existing buildings, structures, or other features from damage by any operation in connection with the project. Utilities encountered shall be protected and maintained in service until removed or abandoned. The contractor shall exercise care when working around such utilities as may be shown on the plot plan or otherwise found. Such utilities are not to be removed, replaced or abandoned.

The contractor shall protect existing trees, and other aspects of the site which will remain a permanent part of the site from damage during grading, excavation, filling, trucking, etc. If necessary, tree trunks shall be boxed, and barricades set up at sufficient distance to prevent damage to major tree branches.

Should the work or material of this or any other contractor employed by the owner become damaged when reasonably protected, the same shall be replaced by the contractor causing the damage at no expense to the owner.

In an emergency potentially affecting health or life or of serious damage to property or of adjoining property, the contractor, without special instruction or authorization from the architect or owner, is hereby permitted to act on his own discretion, to prevent such threatened loss or injury, and the contractor shall so act, without appeal, if so authorized or instructed. Any compensation claimed by the contractor on account of emergency work, shall be determined by agreement.

ARTICLE 14: **INSPECTION OF WORK**

The architect and his representatives, the Bureau of General Services representatives and the owner, shall at all times have access to the work whenever it is in preparation or progress. The contractor shall provide proper facilities for such access and for inspection.

If the specifications, the architect's instructions, laws, ordinances or any public authority require any work to be specially tested or approved, the contractor shall give the architect timely notice of its readiness for observation by the architect or inspection by another authority, and if the inspection is by another authority than the architect, on the date fixed for such inspection, required certificates of inspection shall be secured by the contractor. Observations by the architect shall be promptly made, and where practicable, prior to work is covered or buried. If any work which will ultimately be covered is covered prior to approval or consent of the architect, it must, if requested by the architect, be uncovered for examination at the contractor's expense.

Reexamination of questioned work may be ordered by the architect, and, if so ordered, the work must be uncovered by the contractor. If such work be found in accordance with the contract documents, the owner shall pay the cost of the reexamination and replacement. If such work be found not in accordance with the contract documents, the contractor shall pay such cost, unless it be found that the defect in the work was caused by a contractor employed as provided in Article 32, and in that event the owner shall pay such cost.

The Bureau of General Services, through its representatives shall make periodic inspections of the work during the course of construction and make recommendations to the architect or engineer, when employed. The architect or engineer, shall provide adequate inspection of materials, equipment, methods, and changes in plans on all projects under his supervision.

ARTICLE 15: **SUPERINTENDENCE: SUPERVISION**

The contractor shall have, during the progress of all work, a competent superintendent and any necessary assistants. The superintendent shall not be changed except with the consent of

the owner unless a superintendent proves to be unsatisfactory to the contractor and ceases to be in his employ. The superintendent shall represent the contractor and all directions given to the superintendent in the absence of the contractor shall be as binding as if given directly to the contractor. Important directions shall be confirmed in writing to the contractor. Other directions shall be confirmed on written request in each case. The architect shall not be responsible for the acts or omissions of the superintendent or his assistants.

The contractor shall give efficient supervision to the work using his best skill and attention. He shall carefully study and compare all drawings, specifications and other instructions and shall at once report to the architect any error, inconsistency or omission which he may discover, but he shall not be liable to the owner for any damage resulting from any errors or deficiencies in the contract documents or other instructions by the architect.

ARTICLE 16: **CHANGES IN THE WORK**

The owner reserves the right to increase or decrease any or all of the items of work indicated in the plans, proposal, and contract, or the elimination of any one or more of such items, without invalidating the contract. As the work progresses, the owner may make such alterations in the plans, in the character of the work, or in the specified coordination of two or more concurrent contracts, as may be considered necessary or desirable in order to complete the construction. Such changes shall in no way invalidate the contract. All such work shall be executed under the conditions of the original contract except that any claim for extension of the time caused thereby shall be adjusted at the time of the ordering such change.

In giving instructions, the architect shall have authority to make minor changes in the work, not involving extra cost, and not in consistent with the purposes of the building or project, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a duly signed change order.

Should the contractor encounter during the progress of the work, latent conditions at the site materially differing from those shown on the drawings or in the specifications, or unknown conditions of an unusual nature differing materially from those already encountered in such work, the attention of the architect shall be immediately called for such conditions before they are disturbed. The architect shall promptly investigate the conditions and if they do so materially differ, the contract shall, with the approval of the owner and the bureau be modified by a change order to provide for any increase or decrease in cost resulting from such conditions.

Should such alterations be productive of increased unit cost, or result in decreased unit cost to the contractor, a fair and equitable sum therefor shall be agreed upon in writing before such work is begun, and shall be added to or deducted from the contract amount, as the case may be, by means of a written change order. The change order shall state the nature of the change, the location, the itemized estimate of unit quantities, the basis for payment, and the reason for the change. Such change order to be on approved forms.

When the change order has been properly signed by all parties and encumbered, it shall become a part of the contract.

The value of any such extra work or change shall be determined in one or more of the following ways:

A. By estimate and acceptance in a lump sum.

B. By unit prices named in the contract or subsequently agreed upon.

C. By cost and percentage or by cost and a fixed fee.

If none of the above methods is agreed upon, the contractor, provided he receives an order as above, shall proceed with the work.

Under case (C), the contractor shall keep and present in such form as the architect may direct, a correct account of the cost, together with vouchers. In any case, the architect shall certify to the amount, including reasonable allowance for overhead and profit, due to the contractor. Pending final determination of value, payments on account of changes shall be made on the architect's certificate.

When the subparagraphs (A) and (C) above are used to determine the value of the work, the allowance for overhead and profit combined, included in the total expense to the owner, shall be based upon the following schedule:

Contractor - for any work performed by the contractor's own forces, 20% of the cost;

Subcontractor - for work performed by subcontractor's own forces, 20% of the cost;

Contractor - for work performed by contractor's subcontractor, 10% of the amount due the subcontractor.

Cost shall be limited to the following: Cost of materials, cost of delivery, cost of labor, including Social Security, old age and unemployment insurance (labor cost may include a pro-ratio share of foremen's time, only in case an extension of contract time is granted on account of the change); workmen's compensation insurance; rental value of power tools and equipment.

Overhead shall include the following: bond premium, supervision, wages of time keepers, watchmen and clerks, small tools, incidental, general office expense, and all other expenses not included in "cost".

If the net value of a change results in a credit from the contractor or subcontractor, the credit given shall be the net cost without overhead or profit. The cost as used herein shall include all items of labor, materials and equipment.

ARTICLE 17: **CLAIMS FOR EXTRA COST**

If the contractor claims that any instructions by drawings or otherwise involve extra cost under this contract, the contractor shall give the architect written notice thereof within 10 days after the receipt of such instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property, and the procedure shall then be as provided for changes in work. No such claim shall be valid unless so made.

ARTICLE 18: **DEDUCTIONS FOR UNCORRECTED WORK**

If the architect and owner deem it inexpedient to correct work injured or done not in accordance with the contract, an equitable deduction from the contract amount shall be made therefor.

ARTICLE 19: **DELAYS AND EXTENSION OF TIME**

If the contractor is delayed at any time in the progress of the work by an act or neglect of the owner or the architect, or of any employee of either, or by any separate contractor employed by the owner, or by changes ordered in the work or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or by causes beyond the contractor's control, or by any cause which the architect shall decide to justify the delay, then the time of completion shall be extended for such reasonable time as the architect may decide.

No such extension shall be made for delay occurring more than seven days before claim therefor is made in writing to the architect. In case of a continuing cause of delay, only one claim is necessary.

If no schedule or agreement stating the dates upon which drawings shall be furnished is made, then no claim for delay shall be allowed on account of failure to furnish drawings until two weeks after demand for such drawings and not then unless such claim be reasonable.

This article does not exclude the recovery of damages for delay by either party under other provisions in the contract document.

ARTICLE 20: **CORRECTION OF WORK**

The contractor shall promptly remove from the premises all work condemned by the architect as failing to conform to the contract, whether incorporated or not, and the contractor shall promptly replace and redo the work in accordance with the contract and without expense to the owner and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.

If the contractor does not remove such condemned work within a reasonable time, fixed by written notice, the owner may remove it and may store the material at the expense of the contractor. If the contractor does not pay the expenses of such removal within ten days time, thereafter, the owner may, upon ten days written notice, sell such materials at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs and expenses that should have been borne by the contractor.

The contractor shall remedy any defects due to faulty materials or workmanship and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final payment, or from the date of the owner's substantial usage or occupancy of the project, whichever is earlier, and in accordance with the terms of any special guarantees provided in the contract. The owner shall give notice of observed defects with reasonable promptness. All questions arising under this article will be decided by the architect, notwithstanding final payment.

ARTICLE 21: **OWNERS RIGHT TO DO WORK**

If the contractor should neglect to prosecute the work properly or fail to perform any provisions of this contract, the owner, after three days written notice to the contractor may, without prejudice to any other remedy may make good such deficiencies and may deduct the cost thereof from the payment; then or thereafter due the contractor, provided, however, that the architect shall approve both such action and the amount charged to the contractor.

ARTICLE 22: **OWNERS RIGHT TO TERMINATE CONTRACT**

If the contractor should be adjudged bankrupt, or if the contractor should make a general assignment for the benefit of its creditors, or if a receiver should be appointed on account the contractor's insolvency, or if the contractor should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials or if the contractor should fail to make prompt payment to subcontractors or for material, or labor, or persistently disregard laws, ordinance or the instructions of the architect, or otherwise be guilty of a substantial violation of any provision of the contract, then the owner, upon the certificate of the architect that sufficient cause exists to justify such action, may without prejudice to any other right or remedy and after giving the contractor and the contractor's surety seven days written notice, terminate the employment of the contractor and take possession of the premises and of all materials, tools and appliances thereon and finish the work by whatever method the owner may deem expedient. In such case the contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract amount shall exceed the expense of finishing the work including compensation for additional architectural, managerial and administrative services, such excess shall be paid to the contractor. If such expense shall exceed such unpaid balance, the contractor shall pay the difference to the owner. The expense incurred through the contractor's default, shall be certified by the architect.

ARTICLE 23: **THE CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT**

If the work should be stopped under an order of any court, or other public authority, for a period of thirty days, through no act or fault of the contractor or of anyone employed by the contractor, then the contractor, may, upon seven days written notice to the owner and the architect, terminate this contract and recover from the owner, payment for all work executed and any proven loss sustained upon any plant or materials and reasonable profit and damage.

Should the architect fail to issue any certificate for payment, through no fault of the contractor, within seven days after the contractor's formal request for payment or if the owner should fail to pay to the contractor within 30 days after presentation, any sum certified by the architect, then the contractor may, upon seven days written notice to the owner and the architect, stop the work or terminate this contractor as set out in the preceding paragraph.

ARTICLE 24: **PAYMENTS**

The contractor shall, before the first application for payment, submit to the architect in triplicate a "contract cost breakdown" form acceptable to the architect. If required, this form shall be supported by such evidence as to its correctness as the architect may direct and, unless found to be in error, shall be approved by the architect and used as a basis for payments.

The contractor shall submit to the architect an application for each payment on the latest revision of "Requisition for payment" form, B.P.I. 17-A-61, and, if required, receipts or other vouchers, showing his payments of materials and labor, including payments to subcontractors as required by Article 34.

Application for payment as the work progresses may be made of the owner but no more often than once a month, unless due to unusual circumstance the owner may approve more frequent payment. Said requisition for payments shall be based on the proportionate quantities of the various classes of work completed or incorporated in the work, in accordance with the work progress schedule and the value thereof determined from the contract cost breakdown. Payments, upon authorization of the architect, may be made on account of materials not incorporated in the work but delivered and suitably stored at the site. Such payments shall be conditioned upon submission by the contractor of bills of sale, or such other procedure as will adequately protect the owner's interest including applicable insurance.

In the event any materials are delivered but not yet incorporated in the work, have been included in any said "Requisition for Payment" and payment thereon made and said materials thereafter deteriorate, become damaged or destroyed or for any reason whatsoever become unsuitable or unavailable for use in the work, then the full amount allowed therefore in any previous "Requisition for Payment", shall be deducted from the gross value of any subsequent payment or final payment unless the contractor shall satisfactorily replace said material.

After said "Requisition for Payment" has been prepared by the contractor in the required number of copies, it shall be submitted to the architect for approval. The architect shall verify and approve the "Requisition for Payment", and forward all copies to the owner for processing for payment by the owner.

No certificate issued nor payment made to the contractor, nor partial or entire use of occupancy of the work by the owner, shall be an acceptance of any work or materials not in accordance with this contract. The making and acceptance of the final payment shall constitute a waiver of all claims by the owner, other than those arising from unsettled liens, from faulty work or materials appearing within one year from final payment or from requirement of drawings, or

specifications, and of all claims by the contractor, except those previously made and still unsettled.

Title 5 M.R.S.A. § 1746 as amended provides that in any contract awarded for any public improvement, the State shall withhold 5% of the money due the contractor until the project under the contract has been accepted by or for the State, except that when the contract has been substantially completed the State may, upon request, further reduce the amounts withheld if it deems it desirable and prudent, or except when the contractor elects to deposit with the Treasurer of the State certain Government Bonds as provided in Chapter 437, Public Laws of 1967.

ARTICLE 25. **PAYMENTS WITHHELD**

The architect may withhold or, on account of subsequently discovered evidence, nullify the whole or a part of any certificate to such extent as may be necessary in his reasonable opinion to protect the owner from loss on account of:

A. Defective work not remedied.
B. Claims filed or reasonable evidence indicating probably filing of claims.
C. Failure of the contractor to make payments properly to subcontractors for materials or labor.
D. A reasonable doubt that the contract can be completed for the balance then unpaid.
E. Damage to another contractor.

When the above grounds are removed, payments shall be made for amounts withheld because of them.

ARTICLE 26 **CONTRACTOR'S INSURANCE REQUIREMENTS**

The Contractor shall not commence work under this contract until the Contractor has obtained all insurance required under this article and such insurance has been approved by the Owner, nor shall the Contractor allow any Subcontractor to commence work on a subcontract until all similar insurance required of the Subcontractor has been so obtained and approved.

The Owner does not warrant or represent that the insurance required under this paragraph constitutes an insurance portfolio which adequately addresses all risks faced by the Contractor or its Subcontractors. The Contractor and Subcontractors of every tier shall satisfy themselves as to the existence, extent and adequacy of insurance prior to commencement of work.

The Contractor and any Subcontractor shall procure and maintain for the duration of the Project insurance of the types and limits set forth under this paragraph and such insurance as will protect themselves from claims which may arise out of or result from the Contractor's or Subcontractor's execution of the work, whether such execution be by themselves or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable. The insurance coverage provided by the Contractor and any Subcontractor will be primary coverage.

A. Workers' Compensation Insurance

Worker's compensation insurance for all employees on site in accordance with the statutory workers' compensation law of the State of Maine.

Minimum acceptable limits for Employer's Liability are:

Bodily Injury By Accident	$500,000
Bodily Injury by Disease	$500,000 Each Employee
Bodily Injury by Disease	$500,000 Policy Limit.

B. Liability Insurance

1. General Liability Insurance

General liability insurance shall be on a form providing coverage not less than that of the 1996 occurrence version of the Insurance Services Office (ISO) Commercial General Liability Policy. This insurance shall cover bodily injury and property damage liability for all hazards of the Project including premise and operations, products and completed operations, contractual, and personal injury liabilities. It shall include collapse and underground coverage - as well as explosion coverage if explosion hazards exist. Aggregate limits shall apply on a per location or project basis.

Minimum acceptable limits are:

General aggregate limit:	$2,000,000
Products and completed operations aggregate:	$1,000,000
Each occurrence limit:	$1,000,000
Personal injury aggregate:	$1,000,000

2. Automobile Liability Insurance

Automobile liability insurance against claims for bodily injury, death or property damage resulting from the maintenance, ownership or use of all owned, nonowned and hired automobiles, trucks and trailers.

Minimum acceptable limit is $1,000,000 any one accident or loss.

3. Owners Protective Liability

For Contracts exceeding $50,000 in total Contract amount, Contractor shall secure an Owners Protective Liability policy naming the Owner as the Named Insured.

Minimum acceptable limits are:

General aggregate limit:	$2,000,000
Each occurrence limit:	$1,000,000

4. Pollution Liability

In the event that any disruption, handling, abatement, remediation, encapsulation, removal, transport, or disposal of contaminated or hazardous material is required, the Contractor or its Subcontractor shall secure a pollution liability policy in addition to any other coverages

contained in this section. The insurance shall be provided on an occurrence based policy and shall remain in effect for the duration of the Project.

Minimum acceptable limit is $1,000,000 per occurrence.

C. Property Insurance

1. New Construction

The Contractor shall procure and maintain Builder's Risk insurance naming the Owner, Contractor and any Subcontractor as insureds as their interest may appear. Covered causes of loss form shall be all Risks of Direct Physical Loss, endorsed to include flood, earthquake, transit and sprinkler leakage where sprinkler coverage is applicable. Unless specifically authorized in writing by the Owner, the limit of insurance shall not be less than the initial contract amount and coverage shall apply during the entire contract period and until the work is accepted by the Owner.

2. Renovations and/or Additions within Existing State Owned Buildings

Insurance shall be provided by the Owner. The State shall notify Maine Risk Management Division concerning the Project and shall provide the value of the Project and the name of the Contractor. Said insurance coverage shall cover the interests of the Contractor and Subcontractor, as their interests may appear. Covered causes of loss form shall be Risks of Direct Physical Loss, endorsed to include flood, earthquake, transit and sprinkler leakage. Theft coverage is not included. Exclusions common to commercial property policies are applicable. The $500 per occurrence deductible is the responsibility of the Contractor. Should the Contractor or Subcontractor desire coverage in excess of that maintained by the State, it must be acquired by the Contractor and at Contractor expense. A certificate of insurance will be furnished to the Contractor upon request.

D. Certificates of Insurance

Four original copies of all certificates of insurance in a form and issued by companies acceptable to the Owner shall be provided to the architect prior to commencement of work. The certificates shall name as certificate holder the State of Maine, Bureau of General Services, 77 State House Station, Augusta, Maine 04333-0077 and shall contain a provision that coverage afforded under the insurance policies will not be canceled or materially changed unless at least thirty (30) days prior written notice by registered letter has been given to the Owner.

ARTICLE 27: **CONTRACT BONDS**

The contractor shall furnish to the state upon execution of the contract, a contract performance bond and a contract payment bond; each for the full amount of the contract and issued by a surety company or surety companies authorized to do business in the State of Maine as approved by the owner. The bonds shall be in accordance with and executed on the forms furnished in the specifications. The bonds shall allow for any addition or deductions of the contract.

The contract bonds shall continue in effect for one year after final acceptance of each contract to protect the owner's interest in connection with the one year guarantee of

workmanship and materials and to assure settlement of claims, for the payment of all bills for labor, materials and equipment by the contractor.

ARTICLE 28: **DAMAGES**

1. The contractor shall indemnify and hold harmless the owner and the architect and their agents and employees from and against all claims, damages, losses, and expenses including attorneys' fees arising out of or resulting from the performance of the work, provided that any such claim, damage, loss, or expense (a) is attributable to bodily injury, sickness, disease or death, or injury to or destruction to tangible property (other than the work itself) including the loss of use resulting therefrom, and (b) is caused in whole or in part by a negligent act or omission of the contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

2. In any and all claims against the owner or the architect or any of their agents or employees, by any employee of the contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 1 shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the contractor or any subcontractor under Workmen's Compensation Acts, disability benefit acts or other employee benefit acts.

3. The obligations of the contractor under paragraph 1 shall not exceed to the liability of the architect, the architect's agents or employees arising out of:

(1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications, or

(2) the giving of or the failure to give directions or instructions by the architect, the contractor, agents or employees provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 29: **LIENS**

Neither the final payment nor any part of the retained percentage shall become due until the contractor shall deliver to the owner a complete release of all liens arising out of this contract, or receipts in full in lieu thereof, and, an affidavit that so far as the contractor has knowledge or information the releases and receipts include all the labor and material for which a lien could be filed; but the contractor, may if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the owner, to indemnify him against any lien. If any lien remains unsatisfied after all the payments are made, the contractor shall refund to the owner all moneys that the latter may be compelled to pay in discharging such lien, including all cost and reasonable attorney's fee.

ARTICLE 30: **ASSIGNMENT**

Neither party to the contract shall assign the contractor or sublet it as a whole without the written consent of the other, nor shall the contractor assign any money due or to become due to him hereunder, without the previous written consent of the owner.

ARTICLE 31: **MUTUAL RESPONSIBILITY OF CONTRACTORS**

Should the contractor cause damage to any separate contractor on the work, the contractor agrees, upon due notice, to settle with such contractor by agreement or arbitration, if he will so settle. If such separate contractor sues the owner on account of any damage alleged to have been so sustained, the owner shall notify the contractor, who shall defend such proceedings at the contractors expense and if any judgment against the owner arise therefrom, the contractor shall pay or satisfy it and pay all costs incurred by the owner.

ARTICLE 32: **SEPARATE CONTRACTS**

The owner reserves the right to let other contracts in connection with this work under similar general conditions. The contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs.

If any part of the contractor's work depends on proper execution or results upon the work of any other contractor, the contractor shall inspect and promptly report to the architect any defects in such work that render it unsuitable for such proper execution and results. The contractor's failure so to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of his work, except as to defects which may develop in contractor's work after the execution of the contractor's work.

To insure the proper execution of the contractor's subsequent work the contractor shall measure work already in place and shall at once report to the architect any discrepancy between the executed work and the drawings.

ARTICLE 33: **SUBCONTRACTS**

The Contractor shall not sublet any part of this contract without the written permission of the owner.

The contractor shall submit in writing to the architect for approval a complete list of the names of all particular items of work he proposes to furnish and the names of the subcontractors to whom the contractor proposes to sublet work. The subcontractors named shall be reputable firms of recognized standings with a record of satisfactory work. The contractor shall not employ any subcontractor or use any material until they have been approved, or where there is reason to believe the work will not be accomplished in accordance with the contract documents. The complete list of subcontractors and materials must be submitted for approval to the architect and owner.

The architect shall, on request, furnish to any subcontractor, wherever practicable, evidence of the amounts certified on his account.

The contractor agrees that he is as fully responsible to the owner for the acts and omissions of his subcontractor and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by them, as he is for the acts and omissions of persons directly employed by him.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the owner.

ARTICLE 34: **RELATIONS OF CONTRACTOR AND SUBCONTRACTOR**

The contractor agrees to bind every subcontractor and every subcontractor agrees to be bound by the terms of the contract documents, the drawings and specifications as far as they are applicable to his work, including the following provisions of this article, unless specifically noted to the contrary in a subcontract approved in writing as adequate by the owner or architect.

The Subcontractor agrees:

A. To be bound to the contractor by the terms of the contract documents, drawings, and specifications and to assume toward the contractor all the obligations and responsibilities that the contractor, by those documents, assumes toward the owner.

B. To submit to the contractor applications for payment in such reasonable time as to enable the contractor to apply for payment as specified.

C. To make all claims for extras, for extensions of time and for damages for delays or otherwise, to the contractor in the manner provided in the general conditions for like claims by the contractor upon the owner, except that the time for making claims for extra cost is one week.

The Contractor agrees:

D. To be bound to the subcontractor by all the obligations that the owner assumes to the contractor under the contract documents, drawings and specifications, and by all the provisions thereof affirming remedies and redress to the contractor from the owner.

E. To pay the subcontractor, upon the payment of certificates, the amount allowed to the contractor on account of the subcontractor's work to the extent of the subcontractor's interest therein.

F. To pay the subcontractor, upon the payment of certificates, if issued otherwise as in section E above, so that at all times the subcontractor's total payments shall be as large in proportion to the value of the work done by the subcontractor.

G. To pay the subcontractor to such extent as may be provided by the contract documents or the subcontract, if either of these provide for earlier or larger payments than the above.

H. To pay the subcontractor on demand for subcontract work or materials as far as executed and fixed in place, less the retained percentage, at the time the certificate should issue, even though the Architect fails to issue it for any cause not the fault of the subcontractor.

I. To make no demand for liquidated damages or penalty for delay in any sum in excess of such amounts as may be specifically named in the subcontract.

J. That no claim for services rendered or materials furnished by the contractor to the subcontractor shall be valid unless written notice thereof is given by the contractor to the subcontractor during the first ten days of the calendar month following that in which the claim originated.

K. To give the subcontractor an opportunity to present and to submit evidence in any progress conference or disputes involving subcontract work.

L. To pay the subcontractor a just share of any fire insurance money received by him, the contractor, under article 26 of the general conditions.

ARTICLE 35: **ARCHITECT'S STATUS**

The architect shall be the owner's representative during the construction period, and he shall observe the work in progress on behalf of the owner. He shall have authority to act on behalf of the owner only to the extent expressly provided in the contract documents or otherwise in writing, which shall be shown to the contractor. He shall have authority to stop the work whenever such stoppage may be necessary in his reasonable opinion to insure the proper execution of the contract.

The architect shall be, in the first instance, the interpreter of the conditions of the contract and the judge of its performance. The architect shall side neither with the owner nor with the contractor, but shall use the architect's powers under the contract to enforce its faithful performance by both.

In case of the termination of the employment of the architect, the owner shall appoint a capable and reputable architect whose status under the contract shall be that of the former architect.

ARTICLE 36: **CASH ALLOWANCES**

The contractor shall include the contract sum and all allowances named in the contract documents and shall cause the work so covered to be done by such contractors and for such sums as the architect may direct, the contract amount being adjusted in conformity therewith. The contractor declares that the contract amount includes such sums for expenses and profit on account of cash allowances as he deems proper. No demand for expenses or profit other than those included in the contract shall be allowed. The contractor shall not be required to employ for any such work, persons against whom the contractor has a reasonable objection.

ARTICLE 37: **USES OF PREMISES**

The contractor shall confine his apparatus, the storage of materials and the operations of his workmen to limits indicated by law, ordinances, permits or directions of the architect and shall not unreasonably encumber the premises with his materials.

The contractor shall not load or permit any part of the structure to be loaded with a weight which will endanger its safety. The contractor shall enforce the architect's instructions regarding signs, advertisements, fires, and smoking.

If any part of the building is completed and ready for occupancy, the owner may, by written and mutual consent, without prejudice to any of the owner's rights or the rights of the contractor, Enter in and make use of such completed parts of the building. Such use or occupancy shall in no case be construed as an acceptance of any work or materials.

ARTICLE 38: **CUTTING, PATCHING AND DIGGING**

The contractor shall do all cutting, fitting or patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of other contractors shown upon, or reasonable implied by, the drawings and specifications for the completed structure, and he shall make good after them as the architect may direct.

Any cost caused by defective or ill-timed work shall be borne by the party responsible therefore. The contractor shall not endanger any work by cutting, excavating or otherwise, and shall not cut or alter the work of any other contractor except with the consent of the architect. Cutting, drilling, or patching work of contractors other than the general contractor shall be done only with the permission and instruction of the general contractor and architect. Cutting of structural members must be approved by the architect. All cutting, patching, and digging of other constructors in or about the building shall be done under the supervision of the general contractor who shall be responsible to see that the work is neatly done, and in a manner that will not endanger the structure or harm the component parts, and that patching and back filling shall be done to restore the structure and surfaces to its original condition.

ARTICLE 39: **LAYOUT OF WORK**

The contractor shall be responsible for the correct staking out of the new work on the site, and shall employ a competent engineer/surveyor to locate the building on the site. He shall run the axis lines locating the work, establish correct datum points and check each line and point on the site to insure their correctness. All such lines and points shall be carefully preserved throughout the construction.

The contractor shall lay out all work from dimensions given on plans. The contractor shall take measurements and verify dimensions of existing or old work, if any, that affect his work or to which his work is to be fitted. The contractor alone shall be responsible for the correctness of all measurements and shall verify all grades, lines, levels, elevations and dimensions shown on the drawings and report any errors or inconsistencies to the architect prior to commencing work.

ARTICLE 40: **WORKMANSHIP**

All workmanship, materials, or equipment, either at the site or intended for it shall conform with all respects with the requirements of all the contract documents, and shall be strictly first class, workmanlike installation and the best obtainable from the crafts and trades. Incomplete or careless work will not be allowed. In all cases, the material, equipment, and work shall be equal to or better than the grades specified and the best of their kind that is obtainable for the purpose for which they are intended. The architect's decision on the quality of work shall be final.

All labor shall be performed by mechanics skilled in their respective trades. Prior to submitting a proposal, the contractor shall become familiar with the local labor conditions, skilled and unskilled.

If, in the opinion of the contractor, any work is indicated on the drawings or specified in such manner as would make it impossible to produce work of the highest quality, or should discrepancies appear between drawings, or drawings and specifications, the contractor shall refer the same in writing to the architect for interpretation before proceeding with the work.

If the contractor fails to make such reference, no excuse will be entertained thereafter for failure to carry out the work in the satisfactory manner.

The contractor shall guarantee the contractor's work against any defects in workmanship and materials for a period of one year from the date of the written acceptance of the project.

ARTICLE 41: **CLEANING UP**

The contractor shall at all times keep the premises free from accumulation of waste materials or rubbish caused by his employees or work, and at the completion of the work he shall remove all his rubbish from and about the building and all his tools, scaffolding, and surplus materials and shall leave his work "Broom Clean" or its equivalent, unless more exactly specified.

In case of failure to comply with the contractor, the owner may perform the cleanup and deduct the cost from any moneys due the contractor.

ARTICLE 42: **DISPUTE RESOLUTION**

If, in the performance of this contract, there arises a dispute between the contractor and the owner that cannot be resolved by the parties to the contract, the dispute shall be referred to the Director of the Bureau of General Services who, at his/her discretion, will submit the dispute to non-binding Alternate Dispute Resolution (ADR) or binding arbitration. If the parties in dispute are not satisfied with the results of ADR, the owner or the contractor may resubmit the dispute to the Director of the Bureau of General Services for binding arbitration.

SECTION 3-B

SPECIAL CONDITIONS FOR AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 CONSTRUCTION CONTRACTS

1. GENERAL. Work performed under this contract is incident to the implementation of a Federal program with the State. Accordingly, this State contract shall be governed by, and construed according to below listed Federal law(s) as they may affect the rights, remedies, and obligations of the United States. Federal agencies are permitted to require changes, remedies, changed conditions, access to records retention, suspension of work, and other clauses required by the Office of Procurement Policy.

   a. Administrative, contractual or legal remedies in instances where Contractors violate or breach contract terms, and provide for such sanctions and penalties as may be appropriate.

   b. Termination for cause and for convenience by the grantee (State of Maine) including the manner by which it will be effected and the basis for settlement [All contracts in excess of $10,000].

   c. Notice of awarding agency requirements and regulations pertaining to reporting.

   d. Notice of awarding agency requirements and regulations pertaining to patent rights with respect to any discovery or invention which arises or is developed in the course of or under this contract.

   e. Awarding agency requirements pertaining to copyrights and rights in data.

   f. Access by the grantee, the subgrantee, the Comptroller General of the United States, or any of their duly authorized representatives to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purpose of making audit, examination, excerpts, and transcriptions.

   g. Rention of all required records for three years after grantees or subgrantees make final payments and all other pending matters are closed.

2. EQUAL OPPORTUNITY

   Contractors shall comply with Executive Order 11246 of September, 24, 1965 entitled "Equal Opportunity," as amended by Executive Order 11375 of October 13, 1967 and as supplemented by in Department of Labor Regulations [41 CFR Part 60]. [All contracts in excess of $10,000 by grantees and their contractor or subgrantees].

3. COPEPLAND "Anti-Kickback" ACT

   The State covenants and agrees that it will comply with the Copeland "Anti-Kickback" Act (18 U.S.C. Section 874) as supplemented in Department of Labor regulations (29 CFR Part 3). As applied to this Agreement, the Copeland "Anti-Kickback" Act makes it unlawful to induce, by force, intimidation, threat of procuring dismissal from employment, or otherwise, any person employed in the construction or repair of public buildings or public works, financed in whole or in part by the United States, to give up any part of the compensation to which that person is entitled under a contract of employment.

4. DAVIS-BACON ACT

The Contractor shall comply with the Davis-Bacon Act (40 U.S.C. 276a to a-7) as supplemented by U.S. Department of Labor Regulations (29 CFR Part 5). All rulings and interpretations of the Davis-Bacon Act contained in 29 CFR Part 5 are incorporated by reference in this contract. Davis-Bacon Act applies to "all laborers and mechanics employed by contractors and subcontractors." The Contractor must pay wage rates not less than those determined by the Secretary of Labor in accordance with 40 USC 3141 – 3148 (Wage Rate Requirements).

5. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The State covenants and agrees that it will comply with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. Sections 327-330) as supplemented by Department of Labor regulations (29 CFR Part 5). As applied to this Agreement, the Contract Work Hours and Safety Standards Act specifies that no laborer or mechanic doing any part of the work contemplated by this Agreement shall be required or permitted to work more than 40 hours in any workweek unless paid for all additional hours at not less than 1.5 times the basic rate of pay.

6. ENVIRONMENTAL PROTECTION

a. The Contractor agrees that performance under this Agreement shall comply with the requirements of Section 114 of the Clean Air Act (42 U.S.C. Section 7414) and Section 308 of the Federal Water Pollution Control Act (33 U.S.C. Section 1318), that relate generally to inspection, monitoring, entry reports, and information, and with all regulations and guidelines issued thereunder; the Resources Conservation and Recovery Act (RCRA); the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA); the National Environmental Policy Act (NEPA); and Recovery Act (RCRA); and with applicable provisions of the Clean Air Act (42 U.S.C. 7401, et. Seq.) and Clean Water Act (33 U.S.C. 1251, et. Seq.), as implemented by Executive Order 11738 and Environmental Protection Agency (EPA) rules at Subpart J of 40 CFR part 32; to identify any impact this award may have on the quality of the human environment and provide help as needed to comply with the National Environmental Policy Act (NEPA, at 42 U.S.C. 4321, et. seq.); and any applicable Federal, State or Local environmental regulation.

b. The Contractor shall ensure that no facility used in its performance under this is listed on the Environmental Protection Agency (EPA) list of violating facilities pursuant to 40 CFR Part 15.5 without the concurrence of NGB. The Contractor shall notify the State of the receipt of any communication from EPA indicating that a facility to be or being used in its performance under this Agreement is under consideration for listing on the EPA list of violating facilities.

7. ENERGY POLICY AND CONSERVATION ACT

The Contractor shall comply with mandatory standards and policies relating to energy efficiency which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act [Pub Law 94-163].

8. NONDISCRIMINATION

The Contractor shall ensure no person shall be denied benefits of, or otherwise be subjected to discrimination in connection with the State's performance under this Agreement Accordingly, and to the extent applicable, the Contractor agrees to comply with the following national policies prohibiting discrimination:

a. On the basis of race, color or national origin, in Title V I of the Civil Rights Act of 1964 (42 U.S.C. Section 2000d et seq.) as implemented by DoD regulations at 32 CFR part 195.

b. On the basis of race, color, religion, sex, or national origin, in Executive Order 11246 {3 CFR, 1964-1965 Comp. pg. 339}, as implemented by Department of Labor regulations at 41 CFR part 60.

c. On the basis of sex or blindness, in Title IX of the Education Amendments of 1972 (20 U.S.C. 1681, et seq.), as implemented by DoD regulations at 32 CFR part 196.

d. On the basis of age, in The Age Discrimination Act of 1975 (42 U.S.C. Section 6101 et seq.), as implemented by Department of Health and Human Services regulations at 45 CFR part 90.

e. On the basis of handicap, in Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794), as implemented by Department of Justice regulations at 28 CFR part 41 and DoD regulations at 32 CFR part 56.

9. LOBBYING

a. The Contractor will not expend any funds appropriated by Congress to pay any person for influencing or attempting to influence an officer or employee of any agency, or a Member of Congress in connection with any of the following covered federal actions; the awarding of any Federal contract; the making of any federal grant; the making of any federal loan; the entering into any cooperative agreement; and, the extension , continuation , renewal, amendment, or modification of any Federal contract, grant loan, or cooperative agreement.

b. The Interim Final Rule, New Restrictions on Lobbying, issued by the Office of Management and Budget and the Department of Defense (32 CFR Part 28) to implement the provisions of section 319 of Public Law 101-121 (31 U.S.C., Art 1352) is incorporated by reference.

10. DRUG FREE WORK PLACE

The State covenants and agrees to comply with the requirements regarding drug-free workplace requirements in Subpart B of 32 CFR part 26, which implements sec. 5151-5160 of the Drug-Free Workplace Act of 1988 (Public Law 100-690, Title V, Subtitle D; 41 U.S.C. 701, et seq.).

11. USE OF UNITED STATES FLAG CARRIERS

a. The State covenants and agrees that travel supported by U.S. Government funds under this Agreement shall use U.S.-flag air carriers (air carriers holding certificates under 49 U.S.C. 41102) for international air transportation of people and property to the extent that such service is available, in accordance with the International Air Transportation Fair

Competitive Practices Act of 1974 (49 U.S.C. 40118) and the inter-operative guidelines issued by the Comptroller General of the United States in the March 31, 1981, amendment to Comptroller General Decision B138942.

b. The State agrees that it will comply with the Cargo Preference Act of 1954 (46 U.S.C. 1241), as implemented by Department of Transportation regulation at 46 CFR 381.7, and 46 CFR 381.7(b).

12. DEBARMENT AND SUSPENSION

The State covenants and agrees to comply with the requirements regarding debarment and suspension in Subpart C of the OMB guidance in 2 CFR part 180, as implemented by the DoD in 2 CFR part 1125. The Grantee agrees to communicate the requirement to comply with Subpart C to persons at the next lower tier with whom the Grantee enters into transactions that are "covered transactions" under Subpart B of 2 CFR part 180 and the DoD implementation in 2 CFR part 1125.

13. WHISTLEBLOWER PROTECTION

Each recipient or sub-recipient awarded funds made available under this Recovery Act contract shall promptly refer to the Department of Defense, Office of Inspector General any credible evidence that a principal, employee, agent, contractor, sub-recipient, subcontractor, or other person has submitted a false claim under the False Claims Act or has committed a criminal or civil violation of laws pertaining to fraud, conflict of interest, bribery, gratuity, or similar misconduct involving those funds. ((RA) Section1553) The Department of Defense, Office of Inspector General can be reached at 800-424-9098 or by e-mail: hotline@dodig.mil

14. BUY AMERICAN ACT - Required Use of American Iron, Steel, and Manufactured Goods—Section 1605 of the American Recovery and Reinvestment Act of 2009—Construction Materials (Interim Award Term)

(When awarding Recovery Act funds for construction, alteration, maintenance, or repair that does not involve construction materials covered under international agreements, the agency shall use the following award terms)

(a) *Definitions*. As used in this award term and condition—

"Building or work" means construction, maintenance, alteration, or repair. The terms include, without limitation, buildings, structures, and improvements of all types, such as bridges, dams, plants, highways, parkways, streets, subways, tunnels, sewers, mains, power lines, pumping stations, heavy generators, railways, airports, terminals, docks, piers, wharves, ways, lighthouses, buoys, jetties, breakwaters, levees, canals, dredging, shoring, rehabilitation and reactivation of plants, scaffolding, drilling, blasting, excavating, clearing, and landscaping. The manufacture or furnishing of materials, articles, supplies, or equipment (whether or not a Federal or State agency acquires title to such materials, articles, supplies, or equipment during the course of the manufacture or furnishing, or owns the materials from which they are manufactured or furnished) is not "building" or "work" within the meaning of this definition unless conducted in connection with and at the site of such building or work as is described in the foregoing sentence, or under the United States Housing Act of 1937 and the Housing Act of 1949 in the construction or development of the project.

“Construction material” means an article, material, or supply brought to the construction site by the recipient, subrecipient or a subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, that are discrete systems incorporated into a public building or work and that are produced as complete systems, are evaluated as a single and distinct construction material regardless of when or how the individual parts or components of those systems are delivered to the construction site. Materials purchased directly by the Government are supplies, not construction material.

“Domestic construction material” means—

(1) An unmanufactured construction material mined or produced in the United States;

or

(2) A construction material manufactured in the United States.

“Foreign construction material” means a construction material other than a domestic construction material.

“Manufactured good or product” means a good or product used as construction material in a project that is the result of processing materials by way of machinery and/or labor that produce a substantially different article. Where the basic character, function, or kind of material processed remains the same, it is not manufactured.

"Manufactured construction material" means any construction material that is not “unmanufactured construction material."

“Public building or public work” means building or work, the construction, alteration, maintenance, or repair of which, as defined in this award term, is carried on directly by authority of, or with funds of, a Federal agency to serve the interest of the general public regardless of whether title thereof is in a Federal agency.

“Steel” means an alloy that includes at least 50 percent iron, between 0.02 and 2 percent carbon, and may include other elements.

"Unmanufactured construction material" means raw material brought to the construction site for incorporation into the building or work that has not been—

(1) Processed into a specific form and shape; or
(2) Combined with other raw material to create a material that has different properties than the properties of the individual raw materials.

“United States” means the 50 States, the District of Columbia, and outlying areas including:

(1) Commonwealths-

(i) Puerto Rico
(ii) The Northern Mariana Islands;

(2) Territories.
(i) American Samoa
(ii) Guam
(iii) U.S. Virgin Islands; and

(3) Minor outlying islands.
(i) Baker Island.
(ii) Howland Island.
(iii) Jarvis Island.
(iv) Johnston Atoll.
(v) Kingman Reef.
(vi) Midway Islands.
(vii) Navassa Island.
(viii) Palmyra Atoll.
(ix) Wake Atoll.

(b) *Domestic preference*.

(1) This award term and condition implements Section 1605 of the American Recovery and Reinvestment Act of 2009 (Recovery Act)(Pub. L. 111-5), by requiring that all iron, steel, and other manufactured goods used as construction material in the project are produced in the United States.

(2) The recipient shall use only domestic construction material in performing this project, except as provided in paragraph (b)(3) and (b)(4) of this term and condition.

(3) This requirement does not apply to the construction material or components listed by the Government as follows:

_____

[*Award official to list applicable excepted materials or indicate "none"*]

(4) The award official may add other foreign construction material to the list in paragraph (b)(3) of this term and condition if the Federal government determines that—

(i) The cost of domestic construction material would be unreasonable. The cost of domestic iron, steel, or other manufactured goods used as construction material in the project is unreasonable when the cumulative cost of such material will increase the cost of the overall project by more than 25 percent;

(ii) The construction material is not mined, produced, or manufactured in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(iii) The application of the restriction of section 1605 of the Recovery Act to a particular construction material would be inconsistent with the public interest.

(c) *Request for determination of inapplicability of Section 1605 of the Recovery Act.*

(1) (i) Any recipient request to use foreign construction material in accordance with paragraph (b)(4) of this clause shall include adequate information for Government evaluation of the request, including—

(A) A description of the foreign and domestic construction materials;
(B) Unit of measure;
(C) Quantity;
(D) Price;

(E) Time of delivery or availability;
(F) Location of the construction project;
(G) Name and address of the proposed supplier; and
(H) A detailed justification of the reason for use of foreign construction materials cited in accordance with paragraph (b)(4) of this clause.

(ii) A request based on unreasonable cost shall include a reasonable survey of the market and a completed price comparison table in the format in paragraph (d) of this clause.

(iii) The price of construction material shall include all delivery costs to the construction site and any applicable duty.

(iv) Any recipient request for a determination submitted after award shall explain why the recipient could not reasonably foresee the need for such determination and could not have requested the determination before award. If the recipient does not submit a satisfactory explanation, the award official need not make a determination.

(2) If the Federal government determines after award that an exception to section 1605 of the Recovery Act applies, the award official will amend the award to allow use of the foreign construction material. When the basis of the exception is non-availability or public interest, the amended award shall reflect adjustment of the award amount or redistribution of budgeted funds, as appropriate, to cover costs associated with acquiring or using the foreign construction material. When the basis for the exception is the unreasonable price of a domestic construction material, the award official shall adjust the award amount or redistribute budgeted funds, as appropriate, by at least the differential established in 2 CFR 176.110(a).

(3) Unless the Government determines that an exception to section 1605 of the Recovery Act applies, use of foreign construction material is noncompliant with section 1605 of the American Recovery and Reinvestment Act.

(d) *Data*. To permit evaluation of requests under paragraph (c) of this clause based on unreasonable cost, the Recipient shall include the following information and any applicable supporting data based on the survey of suppliers:

Foreign and Domestic Construction Materials Price Comparison			
Construction Material Description	Unit of Measure	Quantity	Price (Dollars)*
Item 1:			
Foreign construction material			
Domestic construction material			
Item 2:			
Foreign construction material			
Domestic construction material			

[*List name, address, telephone number, email address, and contact for suppliers surveyed. Attach copy of response; if oral, attach summary.*]
[*Include other applicable supporting information.*]
[* *Include all delivery costs to the construction site.*]

15. BUY AMERICAN ACT - Required Use of American Iron, Steel, and Manufactured Goods (Construction Materials under International Agreements)—Section 1605 of the American Recovery and Reinvestment Act of 2009 (Interim Award Term)

When awarding Recovery Act funds for construction, alteration, maintenance, or repair that involves construction materials covered under international agreements, the agency shall use the following award terms:

(a) *Definitions*. As used in this award term and condition—

"Building or work" means construction, maintenance, alteration, or repair. The terms include, without limitation, buildings, structures, and improvements of all types, such as bridges, dams, plants, highways, parkways, streets, subways, tunnels, sewers, mains, power lines, pumping stations, heavy generators, railways, airports, terminals, docks, piers, wharves, ways, lighthouses, buoys, jetties, breakwaters, levees, canals, dredging, shoring, rehabilitation and reactivation of plants, scaffolding, drilling, blasting, excavating, clearing, and landscaping. The manufacture or furnishing of materials, articles, supplies, or equipment (whether or not a Federal or State agency acquires title to such materials, articles, supplies, or equipment during the course of the manufacture or furnishing, or owns the materials from which they are manufactured or furnished) is not "building" or "work" within the meaning of this definition unless conducted in connection with and at the site of such building or work as is described in the foregoing sentence, or under the United States Housing Act of 1937 and the Housing Act of 1949 in the construction or development of the project.

"Construction material" means an article, material, or supply brought to the construction site by the recipient, subrecipient or a subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, that are discrete systems incorporated into a public building or work and that are produced as complete systems, are evaluated as a single and distinct construction material regardless of when or how the individual parts or components of those systems are delivered to the construction site. Materials purchased directly by the Government are supplies, not construction material.

"Designated country" --

(1) The World Trade Organization Government Procurement Agreement (Aruba, Austria, Belgium, Bulgaria, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea (Republic of), Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and United Kingdom;

(2) A Free Trade Agreement (FTA) country (Australia, Bahrain, Canada, Chile, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Israel, Mexico, Morocco, Nicaragua, Oman, Peru, or Singapore); or

(3) A least developed country (Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Djibouti, East Timor, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Laos, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Nepal, Niger, Rwanda, Samoa, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Tanzania, Togo, Tuvalu, Uganda, Vanuatu, Yemen, or Zambia)

"Designated country construction material" means a construction material that --

(1) Is wholly the growth, product, or manufacture of a designated country; or

(2) In the case of a construction material that consists in whole or in part of materials from another country, has been substantially transformed in a designated country into a new and different construction material distinct from the materials from which it was transformed.

"Foreign construction material" means a construction material other than a domestic construction material.

"Manufactured construction material" means any construction material that is not unmanufactured construction material."

"Public building or public work" means building or work, the construction, alteration, maintenance, or repair of which, as defined in this Subpart, is carried on directly by authority of, or with funds of, a Federal agency to serve the interest of the general public regardless of whether title thereof is in a Federal agency.

"Steel" means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements.

"Unmanufactured construction material" means raw material brought to the construction site for incorporation into the building or work that has not been--

(1) Processed into a specific form and shape; or

(2) Combined with other raw material to create a material that has different properties than the properties of the individual raw materials.

"United States" means the 50 States, the District of Columbia, and outlying areas.

(b) *Construction materials*.

(1) This award term and condition implements

(i) Section 1605(a) of the American Recovery and Reinvestment Act of 2009 (Pub. L. 111-5) (Recovery Act), by requiring that all iron, steel, and other manufactured goods used as construction material in the project are produced in the United States; and

(ii) Section 1605(d), which requires application of the Buy American requirement in a manner consistent with U.S. obligations under international agreements. The restrictions of section 1605 of the Recovery Act do not apply to designated country construction materials. The Buy American requirement in section 1605 shall not be applied where the iron, steel or manufactured goods used as construction material in the project are from a Party to an international

agreement that obligates the recipient to treat the goods and services of that Party the same as domestic goods and services, or where the iron, steel or manufactured goods used as construction material in the project are from a least developed country. This obligation shall only apply to projects with an estimated value of $7,443,000 or more.

(2) The recipient shall use only domestic or designated country construction material in performing the work funded in whole or part with this award, except as provided in paragraphs (b)(3) and (b)(4) of this term and condition.

(3) The requirement in paragraph (b)(2) of this term and condition does not apply to the construction materials or components listed by the Government as follows:

_____

[*Award official to list applicable excepted materials or indicate "none"*]

(4) The award official may add other construction material to the list in paragraph (b)(3) of this award term and condition if the Federal government determines that—

(i) The cost of domestic construction material would be unreasonable. The cost of domestic iron, steel, or other manufactured goods used as construction material in the project is unreasonable when the cumulative cost of such material will increase the overall cost of the project by more than 25 percent;

(ii) The construction material is not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality; or

(iii) The application of the restriction of section 1605 of the Recovery Act to a particular construction material would be inconsistent with the public interest.

(c) *Request for determination of inapplicability of section 1605 of the Recovery Act or the Buy American Act.*

(1) (i) Any recipient request to use foreign construction material in accordance with paragraph(b)(4) of this term and condition shall include adequate information for Government evaluation of the request, including—

(A) A description of the foreign and domestic construction materials;
(B) Unit of measure;
(C) Quantity;
(D) Price;
(E) Time of delivery or availability;
(F) Location of the construction project;
(G) Name and address of the proposed supplier; and
(H) A detailed justification of the reason for use of foreign construction materials cited in accordance with paragraph(b)(4) of this clause.

(ii) A request based on unreasonable cost shall include a reasonable survey of the market and a completed price comparison table in the format in paragraph(d) of this clause.

(iii) The price of construction material shall include all delivery costs to the construction site and any applicable duty.

(iv) Any recipient request for a determination submitted after award shall explain why the recipient could not reasonably foresee the need for such determination and could not have requested the determination before award. If the recipient does not submit a satisfactory explanation, the award official need not make a determination.

(2) If the Federal government determines after award that an exception to section 1605 of the Recovery Act applies and the award official will amend the award to allow use of the foreign construction material. When the basis of the exception is nonavailability or public interest, the amended award shall reflect adjustment of the award amount or redistribution of budgeted funds, as appropriate, to cover costs associated with acquiring or using the foreign construction material. When the basis for the exception is the unreasonable price of a domestic construction material, the award official shall adjust the award amount or redistribute budgeted funds, as appropriate, by at least the differential established in paragraph (b)(4)(i) of this term and condition

(3) Unless the Government determines that an exception to the section 1605 of the Recovery Act applies, use of foreign construction material other than designated country construction material is noncompliant with the applicable Act.

(d) *Data*. To permit evaluation of requests under paragraph (c) of this clause based on unreasonable cost, the applicant shall include the following information and any applicable supporting data based on the survey of suppliers:

Foreign and Domestic Construction Materials Price Comparison			
Construction Material Description	Unit of Measure	Quantity	Price (Dollars)*
Item 1:			
Foreign construction material			
Domestic construction material			
Item 2:			
Foreign construction material			
Domestic construction material			

[*List name, address, telephone number ,email address, and contact for suppliers surveyed. Attach copy of response; if oral, attach summary.*]
[*Include other applicable supporting information.*]
[* *Include all delivery costs to the construction site).*]

16. UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES.

The Contractor/Vendor covenants and agrees that he/she will comply with the provisions of the uniform relocation assistance and real property acquisition policies act of 1970 (42 U.S.C. 4601 et seq.) and regulations issued thereunder (49 CFR Part 24).

Davis Bacon Wage Rates

GENERAL DECISION: ME20080001 02/26/2010 ME1

Date: February 26, 2010
General Decision Number: ME20080001 02/26/2010

Superseded General Decision Number: ME20070001

State: Maine

Construction Type: Building

Counties: Androscoggin, Cumberland and Penobscot Counties in Maine.

Building Construction Projects (does not include single family homes and apartments up to and including 4 stories).

Modification Number	Publication Date
0	02/08/2008
1	04/04/2008
2	10/03/2008
3	12/19/2008
4	01/30/2009
5	03/06/2009
6	04/17/2009
7	04/24/2009
8	06/12/2009
9	06/26/2009
10	10/23/2009
11	12/18/2009
12	01/29/2010
13	02/26/2010

BOIL0029-003 10/01/2009

	Rates	Fringes
BOILERMAKER	$ 32.14	8.96+26.6%

CARP1996-001 04/01/2009

	Rates	Fringes
Carpenters: (Including acoustical ceiling installation, drywall hanging and batt insulation installation)		
Carpenters	$ 20.20	14.13
Carpenters:		
Millwrights	$ 25.20	14.13

ELEC0567-001 12/01/2009

ANDROSCOGGIN COUNTY: Townships of Auburn, Durham, Lewiston, Lisbon, Mechanic Falls, Minot, Poland
CUMBERLAND COUNTY: Entire County (All Townships)
PENOBSCOT COUNTY: Entire County, excluding 2R.8, Chester, Prentis, Seboeis, Webster, and Winn Townshps and area south thereof.

	Rates	Fringes
Electricians:.....	$ 27.83	13.38
Teledata Technicians.....	$ 21.82	12.30

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* ELEC1253-001 12/01/2009

ANDROSCOGGIN COUNTY (Townships of Greene, Leeds, Livermore, Livermore Falls, Turner, Wales, Webster)

PENOBSCOT COUNTY (Townships of Alton, Argyle, Bangor, Bradford, Bradley, Brewer, Burlington, Carmel, Carroll, Charleston, Chester, Clifton, Corinna, Corinth, Dixmont, Eddington, Edinburg, Enfield, Etna, Exeter, Garland, Glenburn, Grand Falls, Greenbush, Greenfield, Hampden, Hermon, Holden, Howland, Hudson, Kenduskeag, LeGrange, Lakeville, Lee, Levant, Lincoln, Lowell, Mattamiscontis, Maxfield, Milford, Newburg, Newport, Old Town, Orono, Orrington, Passadumkeag, Plymouth, Prentiss, Seboeis, Springfield,Stetson, Summit, Veazie, Webster, Winn, 2R.8, 3R.1, 5R

	Rates	Fringes
Electricians:.....	$ 26.80	12.35

TELEDATA TECHNICIANS:
Work on radio, fiber-optics, holovision, video, recording

voice, sound, nurse calls, emergency call, microwave and

visual production and reproduction apparatus,

telecommunication systems; burglar alarm, surveilance systems, CCTV, CATV, card access Systems

RS 232 Ethernet; any local area network system associated

with computer installation; does not include fire alarm installation

only programming and
maintenance of such.....$ 21.86 11.16

IRON0007-018 09/16/2009

	Rates	Fringes
Ironworkers:		
Structural and Reinforcing..	$ 21.15	17.47

SUME2000-001 10/24/2000

	Rates	Fringes
BRICKLAYER.....	$ 15.12	2.66
Caulker/Waterproofer.....	$ 13.49	3.40
Cement Mason/Finisher.....	$ 11.71	1.26
DRYWALL FINISHER/TAPER.....	$ 13.09	
Elevator Constructor.....	$ 20.07	6.26
Laborers: (Including General Laborers and Brick Mason Tenders).....	$ 10.55	4.40
PIPEFITTER.....	$ 17.89	7.40
PLUMBER.....	$ 13.92	1.19
Power equipment operators:		
Backhoes.....	$ 14.22	5.39
Cranes.....	$ 14.78	4.47
Excavators.....	$ 14.53	2.45
Loaders.....	$ 13.95	2.71
Rollers.....	$ 13.50	4.31
ROOFER, Including Built Up, Composition and Single Ply Roofs.....	$ 11.47	1.91
SHEETMETAL WORKER.....	$ 12.47	3.61
SPRINKLER FITTER.....	$ 10.53	1.27
Truck drivers:		
Dump.....	$ 10.33	1.27
Tri Axle.....	$ 10.11	2.02

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

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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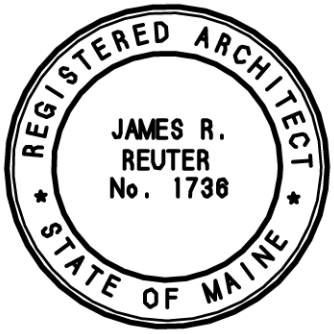
END OF GENERAL DECISION

SECTION 4

Construction Specifications



INSTALL SPRINKLER SYSTEM
AT
FMS #1, PORTLAND, MAINE

PROJECT #23SR10-479D

10 May 2010

SECTION 01 00 00
ADMINISTRATIVE PROVISIONS

PART 1 GENERAL

1.01 CONTRACT REQUIREMENTS

A. Scope of Work

1. The Work of this Contract involves installation of a fire suppression system and a fire alarm system in approximately 13,000 square feet of existing vehicle maintenance shop. Test and certify the completed system. Provide manufacturer's certification of testing and operation compliance. Arrange for system commissioning by an independent commissioning agent. Arrange for system commissioning by an independent commissioning agent. Provide as-built drawings that reflect any deviations from the construction plans. Provide Operation and Maintenance Manuals. Provide operator training for the owner upon completion of system installation. The Contractor shall provide and install items in accordance with Plans and Specifications.

B. Contract Method

1. Basis of award of this Contract will be in accordance with Section 1 Instructions to Bidder, Paragraph 2.

2. Contract type: State of Maine – Section 2-E, Contract for Minor Public Improvements.

3. The project will be constructed under a single lump sum contract.

C. Work Sequence

1. Work of the Contract and related provisions are as described in the Contract Documents.

D. Contractor Use of Premises

1. Work of this Contract includes coordinating the work with the daily operations of the Owner.

2. Limited use of premises for Work and construction operations only, to allow for Owner occupancy, work by other Contractors, and public access.

3. Federal Compressed and Holliday Schedule. The Contractor may not work on Federal Holidays, Compressed Days or State Shut Down Day which are 24, 28, 31 May, 8, 22 June, 3, 6, 20 July, 3, 7, 17, 31 August, 4, 7, 14, 28 September, 9, 12, 26 October, 9, 11, 23, 26 November 2009.

4. Limit access to Owner's site, hours of operations are 7:00 A.M. - 4:00 P.M. If Contractor would like to work on a federal or state holiday he/she must request

permission from Owner three working days in advance. The Owner reserves the right to accept or reject Contractor's request.

5. The Contractor must work with each organization to gain access to certain area through-out the building. When the Contractor needs to gain access to certain areas, he must notify each organization seven working days in advance.

6. Coordinate use of premises under direction of Owner.

7. The Contractor shall be responsible for his/her security in Construction Area until substantial completion. The contractor shall coordinate security of Building with Owner.

E. Owner Occupancy

1. Owner will occupy surrounding areas during entire period of construction, to conduct Owner's normal operations. The Contractor shall cooperate with Owner to minimize conflict to the Owner's operations.

F. Owner-furnished Products: Not Used

G. Schedule of Allowances:

1. All Allowances provided under this Contract are to only be used at the discretion of the Owner. Allowances are not part of the total amount due to the Contractor; the Contractor shall only be entitled to the amount of the Base Bid. Prior to Final Payment the Owner shall issue a Change Order to deduct the remainder of the unused allowances from the Contract amount.

2. The Owner reserves the right to accept or reject any proposals from the Contractor. The Owner reserves the right to require the Contractor to provide (three) separate independent estimate for work to be done under the allowances.

3. Allowance #1, Include the sum of $5,000.00 for commissioning services. The Owner will appoint and employ services of an independent firm to perform commissioning services. The independent firm will perform commissioning services as specified in Section 28 31 13.

H. Additive Alternate: Not Used

I. Unit Prices: Not Used

J. Applications for Payment:

1. Submit Six (6) copies of each application under procedures of Section 3-A Article 24, on "Requisition for Payment", Form B.G.S. 17-A-61, revised 29 Feb. 08.

K. Coordination:

1. Work of this Contract includes coordination of the entire Work of the Project.

2. The Contractor shall obtain and pay for all necessary construction/building permits. The Contractor shall send (two) copies of all permits to the Owner.

3. Coordinate work with all utilities. Interruption of services shall be coordinated with an appropriate official at the facility to minimize the disruption of operations within the facility.

4. Notify an appropriate official at the facility at least three days in advance of the need to move furnishings, equipment, materials, etc. from areas to be affected by the construction.

5. Control on-site activities to minimize the disruption of the occupants.

6. Coordinate the work of equipment and material suppliers and subcontractors.

7. Make arrangements for the timely delivery of materials and supplies to the job site and for their temporary storage on site.

8. Maintain the project site in a neat condition.

9. Assist the Owner as required in the review of construction.

10. Maintain up to date progress records and as-built drawings.

L. Conflicts

1. Contractor shall notify Owner in writing of any real or apparent conflicts in the Contract Documents and, except in cases of emergency, await Owner's determination before proceeding.

2. The **Project Manger** shall resolve conflicts that arise during construction.

3. If two or more solutions are indicated in the Contract Documents, the Contractor shall assume the cost of the more expensive solution unless otherwise directed by the Owner.

M. Field Engineering

1. The Contractor shall be responsible for all field engineering as required.

2. The Contractor shall be responsible for all special inspections required to obtain a Building Permit from the **City of Portland**.

N. Reference Standards

1. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

2. The date of the standard is that in effect as of the Bid date, or date of Owner-Contractor Agreement when there are no bids, except when a specific date is given.

3. Obtain copies of standards when required by Contract Documents. Maintain copy at job site during progress of the specific work.

1.02 SCHEDULING AND PHASING OF WORK

A. Substantial Completion: Work of this Contract must be substantially completed **15 October 2010.** So that the Owner can have full use of the building. Final completion of all work of this Contract shall be completed by **30 October 2010.**

1. Except as otherwise specified, Substantial Completion is hereby defined to mean a stage of completion sufficient for the Owner to have full beneficial use and occupancy of the structure involved, less only minor corrections and repairs that can be performed without undue annoyance to building occupants which shall be documented on the "punch list" as specified hereinafter. Beneficial use and occupancy means removal of all debris, interior and exterior scaffolding, surplus equipment and material and cleaning as required under the Contract completed.

2. Normal building operations will continue throughout the length of the Project. The successful Contractor shall develop a schedule of work that is respectful of the Owner's needs but with a mutual understanding that temporary relocation of personnel within the building will be required.

3. Within ten (10) working days following issuance of a Letter to Proceed, and notwithstanding any delay in execution of a formal Contract Agreement, the Contractor shall prepare a proposed Phasing and Progress Schedule. The final Schedule shall be as mutually agreed to by the Owner and Contractor, and within the following guidelines:

4. The Owner's business operations must continue throughout the entire construction period.

5. Work within the building interior must comply with the Owner's requirements for continued use and occupancy.

6. Applicable egress codes must be complied with during the construction period. In particular, building entrances and exit ways must be kept open at all times.

1.03 REGULATORY REQUIREMENTS

A. Conform to Local, State and Federal codes.

1.04 PROJECT MEETINGS

A. Requirements:

1. Contractor shall, upon acceptance of a Contract and before commencing Work,

contact the Owner and request a pre-construction conference as required in Section 3-A, Article 2.

B. Pre-construction Conference

1. The OWNER will administer pre-construction conference for execution of Owner-Contractor Agreement and exchange of preliminary submittals.

C. Progress Meetings

1. The Contractor shall schedule and administer Project meetings throughout progress of the Work, called meetings, and pre-installation conferences.

2. The Contractor shall make physical arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within two days to Owner, participants, and those affected by decisions made at meetings.

3. Attendance: Job superintendent, major Subcontractors and suppliers, Owner and those appropriate to agenda topics for each meeting.

4. Suggested Agenda: Review of Work progress, status of progress schedule and adjustments thereto, delivery schedules, submittals, maintenance of quality standards, pending changes and substitutions, and other items affecting progress of Work.

1.05 SUBMITTALS

A. Procedures

1. In all submittals always refer to project number **23SR10-479D**.

2. Deliver six (6) copies of submittals to Designer for approval at address listed in SECTION 2-A.

3. Transmit each item under OWNER-accepted form. Identify Project, Contractor, Subcontractor, major supplier; identify pertinent drawing sheet and detail number, and Specification Section number, as appropriate. Identify deviations from Contract Documents. Provide space for Contractor and OWNER review stamps.

4. Submit initial Progress Schedules and Contract Schedule Of Values in duplicate within 10 days after date of Owner - Contractor Agreement. After review by DESIGNER revise and resubmit as required. Submit revised schedules with each Application for Payment, reflecting changes since previous submittal.

5. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.

6. After DESIGNER review of submittal, revise and resubmit as required identifying changes made since previous submittal.

7. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

B. Quality Assurance; Substitutions, in accordance with Section 01 00 00, para. 1.08.

C. Construction Progress Schedule

1. Within ten (10) working days following issuance of a Notice to Proceed, the Contractor shall submit six (6) copies of the Construction Progress Schedule.

2. Show submittal dates required for Shop Drawings, Product Data, and Samples, and product delivery dates, including those furnished by Owner and those under Allowances as applicable.

D. Schedule Of Values

1. Submit typed schedule on "Requisition for Payment", B.G.S. Form 17-A-61, revised 29 Feb. 08.

2 Format: Table of Contents of this Project Manual.

3. Include in each line item a directly proportional amount of Contractor's overhead and profit.

4. Revise schedule to list change orders, for each application for payment.

E. Shop Drawings

1. Shop drawings will be submitted to Owner, in accordance with para. 1.05 of this Section.

F. Product Data

1. Mark each copy to identify applicable products, models, options, and other data; supplement manufacturers' standard data to provide information unique to the Work.

2. Submit the number of copies, which Contractor requires, plus three copies, which will be retained by OWNER.

G. Manufacturers Instructions

1. Submit two copies each, of Manufacturer's Instructions.

H. Samples Not Used

I. Field Samples Not Used

1.06 QUALITY CONTROL

A. Quality Control, General

1. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Workmanship

1. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.

2. Perform work by persons qualified to produce workmanship of specified quality.

3. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

C. Manufacturers' Instructions

1. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Owner before proceeding.

D. Manufacturers' Certificates

1. When required by individual Specifications Section, submit manufacturer's certificate, in duplicate, those products that meet or exceed specified requirements.

1.07 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

A. Electricity

1. The Contractor shall be allowed to hook to existing electrical panel in building, for temporary power. The Contractor will not disrupt power at building. The Owner will only pay for cost of electricity.

2. The Contractor shall provide all temporary electrical panels.

3. The Contractor shall be responsible to fix any damages, caused by modifications for temporary services.

B. Lighting

1. The Contractor shall provide source of lighting.

C. Heat, Ventilation

1. The Contractor shall provide source of heating. The Contract shall not use electrical heating units, if the Owner is supplying electrical power to the Contractor.

D. Water

1. The Contractor shall be allowed to hook to existing water in building, for temporary water supply. The Contractor will pay for cost of water usage for dust control and compaction [large amounts of water].

E. Sanitary Facilities

1. The Contractor shall provide their Sanitary Facilities.

F. Barriers

1. Provide as required to prevent public entry to construction areas, to provide for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations.

G. The Contractor will provide:

1. Office Trailer: Weather tight, with lighting, electrical receptacles, heating, cooling and drawing display table.

2. Storage Sheds for Tools, Materials, and Equipment: Weather tight, with adequate space for organized storage and access, and lighting for inspection of stored materials.

3. His/her own on-site telephone, if so required for the conduct of his/her business.

4. Protected storage, if necessary.

5. Temporary barricades to separate the Contract Site areas from the Owner's area or public area.

H. Protection And Restoration

1. The Contractor shall be responsible for all damages to furnishings, equipment, supplies, existing construction, including finished surfaces, caused by Work of Contract.

2. The Contractor shall be fully responsible for maintaining weather-tight integrity of the roofing system and wall systems, including permanent and temporary flashings, during the entire construction period.

3. The Contractor's responsibilities shall include the cost to repair damage to the existing building's structure, finishes and contents associated with the Contractor's failure to maintain the watertight integrity of the roofing system and wall system, whether permanent or temporary, at no additional cost to the Owner.

4. The Contractor shall protect paved areas and lawns around the Building from damage associated with the construction. Costs to repair major damage to paved areas and lawns will be deducted from Contractor's final payment to cover Owner's expenses to repair damage. The Owner will determine if damages to lawns are minor or major.

I. Security

1. Provide security program and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, and theft. Coordinate with Owner's security program.

J. Water Control Not Used

K. Cleaning during Construction

1. Throughout the construction period the Contractor shall be responsible for maintaining building and site areas affected by the Work in a standard of cleanliness.

a. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing protection of materials.

b. Completely remove all scrap, debris, waste material and other items not required for construction from the site at least once a week.

c. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

2. Conduct daily inspection, more often if necessary, to verify that requirements for cleanliness are being satisfied.

3. Provide required personnel, equipment and materials needed to maintain the specified standard of cleanliness.

4. Use only those cleaning materials and equipment that are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

L. Removal

1. Materials to be removed, including all components and accessories, become property of the Contractor and shall be promptly removed from the Contract Site and legally disposed of at Contractor's expense.

2. Remove all debris, rubbish, surplus materials and equipment immediately from the Project Site and legally dispose of at Contractor's expense.

3. Remove temporary materials, equipment, services, and construction prior to Substantial Completion inspection.

4. Clean and repair damage caused by installation or use of temporary facilities. Restore existing facilities used during construction to specified, or to original, condition.

5. Do not assume that local landfill facilities will accept construction debris, even if paid for.

1.08 MATERIAL AND EQUIPMENT

A. Products

1. Products include material, equipment, and systems.

2. Comply with Specifications and referenced standards as minimum requirements.

3. Components required to be supplied in quantity within a Specification section shall be the same, and shall be interchangeable.

4. Do not use materials and equipment removed from existing structure, except as specifically required, or allowed, by Contract Documents.

5. ACBM (ASBESTOS CONTAINING BUILDING MAT'LS) NOT ALLOWED, materials containing asbestos in any manner or quantity are not allowed on this Project. If such materials are installed they shall be removed and replaced at no additional cost to the Owner.

B. Transportation and Handling

1. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.

2. Provide equipment and personnel to handle products by methods to prevent soiling or damage.

3. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

C. Storage and Protection

1. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.

2. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.

3. Products Specified by Reference Standards or by Description Only: Any product meeting those standards.

4. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not specifically named.

D. Products List

1. Within 15 days after date of Owner-Contractor Agreement, submit complete list of

major products proposed for use, with name of manufacturer, trade name, and model number of each product.

E. Substitutions

1. Substitutions shall be submitted a minimum of 72 hours prior to bid date, any substitutions not submitted 72 hours prior to bid date shall not be permitted.

2. Do not assume that "or Equal" or terms of similar meaning indicate automatic approval of substitute products.

3. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

4. Request constitutes a representation that the Contractor:

a. Has investigated proposed product and determined that it meets or exceeds, in all respects, specified product.

b. Will provide the same warranty for substitution as for specified product.

c. Waives claims for additional costs, which may subsequently become apparent.

5. The OWNER will determine acceptability of proposed substitution, and will notify the Contractor of acceptance or rejection in writing within a reasonable time.

1.09 CONTRACT CLOSEOUT

A. Closeout Procedures

1. When Contractor considers Work has reached final completion, submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for OWNER's inspection.

2. In addition to submittals required by the conditions of the Contract, provide release of all liens, claims and submit final requisition.

B. Final Cleaning

1. Execute prior to final inspection.

2. Clean site; sweep hard surfaced areas, rake clean other surfaces.

3. Remove waste and surplus materials, rubbish, and construction facilities from the Project and from the site. Owner will be responsible for cleaning after acceptance.

C. Project Record Documents

1. Store documents separate from those used for construction.

2. Keep documents current; do not permanently conceal any work until Owner has inspected and required information has been recorded.

3. At Contract closeout, submit documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION

3.01 FINAL CLEANING

A. Execute final cleaning before final project assessment.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.

D. Replace filters of operating equipment.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and construction facilities from site.

3.02 STARTING OF SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Architect/Engineer seven days before start-up of each item.

C. Verify tests, meter readings, and specified electrical characteristics agree with those required by equipment or system manufacturer.

D. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation before start-up, and to supervise placing equipment or system in operation.

E. Submit a written report in accordance with Section 01 00 00 that equipment or system has been properly installed and is functioning correctly.

3.03 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks before date of Substantial Completion.

B. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at equipment location.

C. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

E. Required instruction time for each item of equipment and system is specified in individual sections.

3.04 TESTING, ADJUSTING AND BALANCING NOT USED

3.05 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

3.06 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:

1. Drawings.

2. Specifications.

3. Addenda.

4. Change Orders and other modifications to the Contract.

5. Reviewed Shop Drawings, Product Data, and Samples.

6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer's name and product model and number.

2. Product substitutions or alternates used.

3. Changes made by Addenda and modifications.

F. Record Drawings: Legibly mark each item to record actual construction including:

1. Measured depths of foundations in relation to finish main floor datum.

2. Measured horizontal and vertical locations of underground utilities and an appurtenances, referenced to permanent surface improvements.

3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.

4. Field changes of dimension and detail.

5. Details not on original Contract drawings.

G. Submit documents to Owner with claim for final Application for Payment.

3.07 OPERATION AND MAINTENANCE DATA

A. Submit data bound in 8-1/2 x 11-inch (A4) text pages, three D side ring binders with durable plastic covers.

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.

C. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

E. Contents: Prepare Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:

1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.

2. Part 2: Operation and Maintenance Instructions arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:

   a. Significant design criteria.
   b. List of equipment.
   c. Parts list for each component.
   d. Operating instructions.
   e. Maintenance instructions for equipment and systems.
   f. Provide a written and bounded monthly/yearly maintenance manual to demonstrate step by step maintenance instruction on equipment.
   g. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

3. Part 3: Project Documents and Certificates, including the following:

   a. Shop drawings and product data.
   b. Air and water balance reports.
   c. Certificates.
   d. Originals of warranties and bonds.

3.08 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.

B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.

C. Submit one copy of completed volumes 15 days before final inspection. Draft copy be reviewed and returned after final inspection, with Architect/Engineer comments. Revise content of document sets as required before final submission.

D. Submit two sets of revised final volumes in final form within 10 days after receipt from Owner.

E. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting

conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.

F. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

G. Include color coded wiring diagrams as installed.

H. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and special operating instructions.

I. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

J. Include servicing and lubrication schedule, and list of lubricants required.

K. Include manufacturer's printed operation and maintenance instructions.

L. Include sequence of operation by controls manufacturer.

M. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

N. Include control diagrams by controls manufacturer as installed.

O. Include Contractor's coordination drawings, with color coded piping diagrams as installed.

P. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

Q. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

R. Include test reports as specified in Section 28 31 13.

S. Additional Requirements: As specified in individual product specification sections.

T. Include listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

3.09 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Furnish spare parts, maintenance, and extra products in quantities specified in individual specification sections.

B. Deliver to Project site and place in location as directed by Owner; obtain receipt before final payment.

3.10 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Include Table of Contents and assemble in three D side ring binder with durable plastic cover.

F. Submit before final Application for Payment.

G. Time of Submittals:

1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.

2. Make other submittals within ten days after Date of Substantial Completion, before final Application for Payment.

3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

END OF SECTION

SECTION 01 35 43
ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.01 DEFINITIONS OF CONTAMINANTS:

A. Sediment: Soil and other debris that has been eroded and transported by runoff water.

B. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations, and from community activities.

C. Rubbish: A variety of combustible and noncombustible wastes such as paper, boxes, glass, crockery, metal, lumber, cans and bones.

D. Debris: Includes combustible and noncombustible wastes such as ashes, waste materials that result from construction or maintenance and repair work, leaves, and tree trimmings.

E. Chemical Wastes: Includes salts, acids, alkalies, herbicides, pesticides, and organic chemicals.

F. Sanitary Wastes: See Section 01 00 00, para. 1.07.E.1.

G. Sewage: Wastes characterized as domestic sanitary sewage.

H. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

I. Oily Waste: Includes petroleum products and bituminous materials.

1.02 ENVIRONMENTAL PROTECTION REQUIREMENTS:

A. General:

1. Provide and maintain during the life of the contract, environmental protection as defined herein. Provide environmental protective measures as required to control pollution that develops during normal construction practice. Provide also environmental protection measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with all federal, state, and local regulations pertaining to water, air, and noise pollution.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION

3.01 PROTECTION OF NATURAL RESOURCES:

A. General:

1. The natural resources within the project boundaries and outside the limits of permanent work performed under this contract shall be preserved in their existing condition or restored to an

equivalent or improved condition upon completion of the work. Confine construction activities to areas defined by the work schedule, drawings, and specifications.

B. Land Resources:

1. Except in areas indicated to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without special approval of the Owner. Do not fasten or attach ropes, cables, or guys to any existing nearby trees for anchorages unless specifically authorized. Where such special emergency use is authorized, the Contractor shall be responsible for any resultant damage.

C. Protection:

1. Protect existing trees which are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operators. Remove displaced rocks from uncleared areas. Protect monuments, markers and works of art.

D. Repair and Restoration:

1. Repair or restore to their original condition all trees or other landscape features scarred or damaged by the equipment operations. Obtain approval of the repair or restoration from the Owner prior to its initiation.

E. Temporary Construction:

1. Obliterate all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, and all other vestiges of construction. Temporary roads, parking areas, and similar temporary use areas shall be graded in conformance with surrounding areas, tilled, and seeded. Include topsoil or nutriment during the seeding operation as necessary to establish a suitable stand of grass.

F. Water Resources:

1. Perform all work in such a manner that any adverse environmental impact on water resources is reduced to a level acceptable to the Owner.

G. Oil Substances:

1. Take special measures to prevent oily or hazardous substances from entering the ground, drainage areas or local bodies of water. Surround all temporary fuel oil, petroleum, or liquid chemical storage tanks with a temporary berm of sufficient size and strength to contain the contents of the tanks in the event of content leakage or spillage.

H. Fish and Wildlife Resources:

1. During the performance of the work take such steps as required to prevent interference or disturbance to fish and wildlife. Do not alter water flows or otherwise significantly disturb native habitat adjacent to the project area which are critical to fish and wildlife except as may be indicated or specified.

I. Historical and Archaeological Resources:

1. Carefully preserve and report immediately to the Owner all items having any apparent historical or archaeological interest which are discovered in the course of any construction activities.

3.02 EROSION AND SEDIMENT CONTROL MEASURES:

A. Burn-off:

1. Burn-off of ground cover is not permitted.

B. Protection of Erodible Soils:

1. All earthwork brought to final grade shall be immediately finished as indicated or specified. Protect immediately side slopes and backslopes upon completion of rough grading. Plan and conduct all earthwork in such a manner as to minimize the duration of exposure of unprotected soils.

C. Temporary Protection to Erodible Soils:

1. Utilize the following methods to prevent erosion and control sedimentation.

D. Mechanical Retardation and Control of Runoff:

1. Mechanically retard and control the rate of runoff from the construction site. This includes construction of diversion ditches, benches, and berms, to retard and divert runoff to protected drainage courses.

E. Vegetation and Mulch:

1. Provide temporary protection on all side and back slopes as soon as rough grading is completed or sufficient soil is exposed to require protection to prevent erosion. Such protection shall be by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydroseeding, anchoring mulch in place, covering with anchored netting, sodding, or such contamination of these and other methods necessary for effective erosion control.

3.03 CONTROL AND DISPOSAL OF SOLID, CHEMICAL AND SANITARY WASTES:

A. General:

1. Pick up solid wastes and place in containers which are emptied on a regular schedule. The preparation, cooking, and disposing of food are strictly prohibited on the project site. Conduct handling and disposal of wastes to prevent contamination of the site and other areas. On completion, leave areas clean and natural looking. Obliterate signs of temporary construction and activities incidental to construction of permanent work in place.

B. Disposal of Rubbish, Garbage, and Debris:

1. Dispose of rubbish, garbage and debris in accordance with the requirements specified herein.

C. Sewage, Odor, and Pest Control:

1. Dispose of sewage through connection to the installation sanitary sewage system. Where such a system is not available, use chemical toilets or comparable effective units and periodically empty wastes into the installation sanitary sewerage system. Include provisions for pest control and elimination of odors.

D. Chemical Wastes:

1. Store chemical waste in corrosion resistant containers labeled to identify type of waste and date filled. Remove containers from the project site, and dispose of chemical waste in accordance with federal, state, and local regulations. For oil and hazardous material spills which may be large enough to violate federal, state, or local regulations, notify the MeARNG Environmental Specialist immediately - Telephone (207) 626-4395.

E. Petroleum Products:

1. Conduct fueling and lubricating of equipment and motor vehicles in a manner that affords the maximum protection against spills and evaporation. Dispose of lubricants to be discarded and excess oil in accordance with approved procedures meeting federal, state and local regulations.

3.04 DUST CONTROL:

A. General:

1. Keep dust down at all times, including nonworking hours, weekends, and holidays. Sprinkle or treat with dust suppressors, the soil at the site, haul roads, and other areas disturbed by operations. Petroleum products will not be used as suppressors. No dry power brooming is permitted. Instead use vacuuming, wet mopping, wet sweeping, or wet power brooming. Air blowing is permitted only for cleaning of non-particulate debris, such as steel reinforcing bars. No unnecessary shaking of bags is permitted where bagged cement, concrete mortar and plaster is used.

3.05 NOISE:

A. General:

1. When available, make the maximum use "low-noise-emission products" as certified by EPA. No blasting or use of explosives is permitted without written permission of the Contracting Officer and then only during designated times.

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Related Sections include the following:

1. Divisions 02 through 33 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

A. Submittals shall comply with the requirements of the Construction Contract Clauses, Division 01 Section "Submittal Procedures" and the individual sections specifying the work.

B. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.

2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.

3. Products: List products to be used and firms or entities that will perform the Work.

4. Dates: Indicate when cutting and patching will be performed.

5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.

6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

7. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:

a. Foundation construction.
b. Bearing walls.
c. Structural steel.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include the following:

1. Primary operational systems and equipment.
2. Air or smoke barriers.
3. Fire-suppression systems.
4. Control systems.
5. Communication systems.
6. Electrical wiring systems.
7. Operating systems of special construction.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Miscellaneous elements include the following:

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Equipment supports.
4. Piping, ductwork, vessels, and equipment.
5. Noise- and vibration-control elements and systems.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.

2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

5. Proceed with patching after construction operations requiring cutting are complete.

6. Excavating and Backfill: Comply with requirements in applicable Division 02 Sections where required by cutting and patching options.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

   a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
   b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

   a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION

SECTION 02 41 20

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.

B. Related Sections include the following:

1. Division 01 Section "Summary" for use of premises, and phasing, and Owner-occupancy requirements.
2. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1.4 SUBMITTALS

A. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Locations of proposed dust- and noise-control temporary partitions and means of egress.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
6. Means of protection for items to remain and items in path of waste removal from building.

B. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

1.6 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

1. Comply with requirements specified in Division 01 Section "Summary."

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. Hazardous materials will be removed by Owner before start of the Work.
2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

   1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

   1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
   2. Arrange to shut off indicated utilities with utility companies.
   3. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

    a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and

3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
5. Maintain adequate ventilation when using cutting torches.
6. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
8. Dispose of demolished items and materials promptly.

B. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area on-site.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.

B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.

1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

F. Roofing: Remove no more existing roofing than can be covered in one day by new roofing and so that building interior remains watertight and weathertight. Refer to Division 07 Section "EPDM Membrane Roofing" for new roofing requirements.

1. Remove existing roof membrane, flashings, copings, and roof accessories.
2. Remove existing roofing system down to substrate.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02 41 20

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 GENERAL

1.01 SCOPE

A. The work covered by this section shall include but is not restricted to the following:

1. Nailers, blocking, rough bucks, furring, etc.
2. Cutting and patching for all trades.
3. Rough hardware.
4. Wood preservative.
5. Wood framing.

B. Any carpentry work or materials which are necessary or required for the thorough completion of the Work, unless specified as work by others, shall be done by this Contractor.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

A. Lumber Standards and Grade-Marking: Each piece of framing lumber and each board shall comply with the American Lumber Standards, SPR 16, and with specific grading requirements of the association recognized as covering the species used and under whose grading rules it is produced. Each piece of framing lumber and each board shall be identified by the grade-mark of a recognized association or independent inspection agency. Such association or independent inspection agency shall be certified by the Board of Review, American Lumber Standards Committee, Washington, D.C., to grade the species. Lumber shall comply with U.S. Product Standard PS-20, and plywood shall comply with U.S. Product Standards PS-1 and PS-2. Wood preservative treatments shall comply with the following standards of the American Wood Preservers Association: U1-03 and T1-03.

1.04 PROTECTION

A. All materials when delivered to the site shall be so piled and stored to insure proper drainage, ventilation and protection from the elements. No kiln-dried materials shall be placed in any building until the building is sufficiently dry.

PART 2 PRODUCTS

2.01 MATERIALS

A. Lumber species and grades:

1. Framing lumber shall be of those species and grades meeting the stress grade requirements indicated. All rough lumber shall be dressed four sides, dried to a

moisture content not exceeding 19%, well seasoned, straight, sound, and free from excessive splits, checks, shakes and wane.

3. Unless otherwise indicated, lumber for studs, joists and rafters shall be Spruce-Pine-Fir #1/#2 graded according to NLGA rules with base design properties for lumber 2 to 4 inches thick as published in Table 4A of the 2001 Supplement to the National Design Specification for Wood Construction and Table 4D of the same publication for visually graded timbers 5 inches by 5 inches and larger.

B. Pressure treated Southern Pine (PT):

1. AWPA Use Category UC2: Sill plates, studs and other wood-based materials used for interior construction that are not in contact with the ground but may be exposed to dampness. Refer to AWPA Standards C2, C15, C31.

C. Rough hardware shall include all nails, bolts, anchors, joist hangers, screws and other fastenings required to complete the work. All fastenings used on exterior of the building shall be galvanized. Wood connectors shall be accepted by the Building Officials and Code Administrators International Inc. (BOCA). Provide galvanized framing connectors and joist and beam hangers of size and type recommended by the manufacturer for each use including recommended nails. Provide connectors and hangers as manufactured by Simpson Strong Tie Co. Inc. or approved equivalent. Insure that fasteners and connectors are compatible with those chemicals used for pressure treatment and are appropriately galvanized.

D. Typical furring/strapping shall be 1 x 3 spruce unless otherwise noted on drawings.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

B. Verify that rough carpentry may be performed in accordance with the original design and all pertinent codes and regulations.

C. In event of discrepancy, notify the Architect. Do not proceed with installation until all such discrepancies have been fully resolved.

3.02 WORKMANSHIP

A. Materials shall be erected in plumb level, and workmanlike manner, cut, fitted, coped, scribed as required.

B. Framing, blocking, etc., shall be secured in a safe, solid and permanent manner using appropriate types of fastenings.

C. Wood sills, grounds, and other lumber in contact with exterior concrete, including all blocking for roofing work and all wood nailers as called for on the drawings, shall be pressure-treated.

D. Provide solid wood blocking for mounting of mechanical and electrical items, and all other surface-mounted items.

3.03 CLEANING UP

A. Keep the premises in a neat, safe and orderly condition at all times during execution of this portion of the work, free from accumulation of sawdust, cut ends and debris.

B. At the end of each working day, or more often if necessary, thoroughly sweep all surfaces where refuse from this portion of the work has settled.

END OF SECTION 06 10 00

SECTION 07 84 00

FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes (unless specified elsewhere) through-penetration firestop systems for penetrations through, and at the top of, the following fire-resistance-rated assemblies, including both empty openings and openings containing penetrating items:

1. Floors.
2. Walls and partitions.
3. Smoke barriers.
4. Construction enclosing compartmentalized areas.

B. Related Sections include the following:

1. Division 21 Section “Fire Suppression Sprinklers” for sleeve and piping penetrations.
2. Division 26 Sections specifying cable and conduit penetrations.

1.2 DEFINITIONS

A. Firestops: Specially tested materials used to reestablish the integrity of a fire rated wall, floor, or other partition after the structure has been breached for the through-penetration of building.

B. Through Penetration: Pipes, conduits, ducts, cable trays, cable, wire or other element passin completely through an opening in a fire rated barrier/assembly.

C. Membrane Penetration: Penetration of a fire rated barrier that breaches on side, but does no pass completely through to the other side.

D. System: The combination of specific materials and/or devices, including the penetrating item(s) required to complete the firestop, as tested by an independent third party test facility.

E. Barrier/Assembly: A wall, floor, or other partition with a fire – smoke rating of 1, 2, or 3 hours.

F. F-Rating: The time a firestop (penetrating item/building material/firestop material) can withstand direct flame without a burn through as tested to ASTM E814 / UL 1479.

G. T-Rating: The amount of time a through-penetration firestop limits the temperature rise on the cold side (outside the test furnace) as tested to ASTM E814 / UL 1479.

H. L-Rating: The L-Rating criteria determines the amount of air leakage, in cubic feet per minute, per square foot of opening (CFM/sq. ft). through the firestop system at ambient and/or 400 degrees F. air temperature at an air pressure differential of 0.30in. W.C. L-Ratings are used to

determine the suitability of a firestop to stop smoke and toxic gases in accordance with NFPA Life Safety Code, 101.

1.3 PERFORMANCE REQUIREMENTS

A. General: For the following constructions, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly penetrated.

1. Fire-resistance-rated load-bearing walls, including partitions, with fire-protection-rated openings.
2. Fire-resistance-rated non-load-bearing walls, including partitions, with fire-protection-rated openings.
3. Fire-resistance-rated floor assemblies.

B. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, as determined per ASTM E 814, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.

C. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, as determined per ASTM E 814, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:

1. Penetrations located outside wall cavities.
2. Penetrations located outside fire-resistive shaft enclosures.
3. Penetrations located in construction containing fire-protection-rated openings.
4. Penetrating items larger than 4-inch- (100-mm-) diameter nominal pipe or 16 sq. in. (100 sq. cm) in overall cross-sectional area.

D. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that after curing do not deteriorate when exposed to these conditions both during and after construction.

1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
2. For floor penetrations with annular spaces exceeding 4 inches (100 mm) in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved either by installing floor plates or by other means.
3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
4. For firestop systems exposed to view, provide acrylic based product for compatibility with finish painting.

E. For through-penetration firestop systems exposed to view, provide products with flame-spread ratings of less than 25 and smoke-developed ratings of less than 450, as determined per ASTM E 84.

1.4 SUBMITTALS

A. Product Data: For each type of through-penetration firestop system product indicated. Literature shall indicate product characteristics, typical uses, performance and limitation criteria, and test data.

B. Shop Drawings: For each through-penetration firestop system, show each kind of construction condition penetrated, relationships to adjoining construction, and kind of penetrating item. Include UL Tested System designation that evidences compliance with requirements for each condition indicated.

1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.
2. Engineering Judgments: Where Project conditions require modification of qualified testing and inspecting agency's illustration to suit a particular through-penetration firestop condition, submit illustration, with modifications marked, approved by through-penetration firestop system manufacturer's fire-protection engineer.

C. Product Test Reports: From a qualified testing agency indicating through-penetration firestop system complies with requirements, based on comprehensive testing of current products.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed through-penetration firestop systems similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in "Performance Requirements" Article:

1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL or another agency performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction.
2. Through-penetration firestop systems are identical to those tested per ASTM E 814. Provide rated systems complying with the following requirements:.

a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by the following:

1) UL in "Fire Resistance Directory."

C. Special Inspections: Allow for 1 of each type of firestopping system to be removed and inspected for conformance with approved submittals. All firestopping shall be inspected prior to the installation of ceilings.

D. Above Ceiling review: Prior to the installation of ceilings, a review of construction completion shall be done for firestopping and other items that will not be visible when the ceilings have been installed.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multicomponent materials.

B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by through-penetration firestop system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilate through-penetration firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

1.8 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.

C. Notify Architect at least seven days in advance of through-penetration firestop system installations; confirm dates and times on days preceding each series of installations.

D. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until Architect and building inspector, if required by authorities having jurisdiction, have examined each installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Firestop Systems Inc.
2. Grace Construction Products
3. Hilti Construction Chemicals, Inc.
4. International Protective Coatings Corp.
5. Isolatek International.
6. 3M Fire Protection Products.

7. Nelson Firestop Products.
8. RectorSeal Corporation (The).
9. Specified Technologies Inc.

2.2 FIRESTOP SYSTEMS, GENERAL

A. Compatibility: Provide through-penetration firestop systems that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.

B. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by the qualified testing and inspecting agency for firestop systems indicated. Accessories include, but are not limited to, the following items:

1. Permanent forming/damming/backing materials, including the following:

   a. Slag-/rock-wool-fiber insulation.
   b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
   c. Fire-rated form board.
   d. Fillers for sealants.

2. Temporary forming materials.
3. Substrate primers.
4. Collars.
5. Steel sleeves.

2.3 FILL MATERIALS

A. General: Provide through-penetration firestop systems containing the types of fill materials as required by UL approved Through-Penetration Firestop System. Fill materials are those referred to in directories of the referenced testing and inspecting agencies as fill, void, or cavity materials.

B. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer metallic sleeve lined with an intumescent strip, a radial extended flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.

C. Firestopping Track Systems: Head-of-wall drywall track system consisting of a slip track designed to allow an inflatable bag to be filled with cementicious fireproofing material to seal the track to deck condition a top of wall.

D. Latex Sealants: Single-component latex formulations that after cure do not re-emulsify during exposure to moisture.

E. Elastomeric Spray: Single component, water-based elastomeric compound.

F. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

G. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized steel sheet.

H. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.

I. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.

J. Mortars: Prepackaged, dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

K. Pillows/Bags: Reusable, heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents and fire-retardant additives.

L. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

M. Silicone Sealants: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:

1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping, gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.

N. Unfaced, Slag-Wool-/Rock-Wool-Fiber Board Insulation: ASTM C 612, maximum flame-spread and smoke-developed indices of 15 and 0, respectively; passing ASTM E 136 for combustion characteristics; and of the following density, type, thermal resistivity, and fiber color:

1. Nominal density of 4 lb/cu. ft. (64 kg/cu. m), Types IA and IB, thermal resistivity of 4 deg F x h x sq. ft./Btu x in. at 75 deg F (27.7 K x m/W at 24 deg C).
2. Color: Natural.
3. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Fibrex Insulations Inc.
   b. Owens Corning.
   c. Thermafiber

2.4 MIXING

A. For those products requiring mixing before application, comply with through-penetration firestop system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean out openings immediately before installing through-penetration firestop systems to comply with written recommendations of firestop system manufacturer and the following requirements:

1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of through-penetration firestop systems.
2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration firestop systems. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop system's seal with substrates.

3.3 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

A. General: Install through-penetration firestop systems to comply with "Performance Requirements" Article and firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Provide through-penetration firestop systems for conditions specified whether or not firestopping is indicated.

1. Through-Penetrations: Install through-penetration firestop systems in all open pentrations and in the annular space in all penetrations in fire-rated barriers.
2. Membrane-Penetrations: Install through-penetration firestop systems in rated walls. Where required by code, provide products that meet the requirements of third party time/temperature testing.
3. Construction Joints/Gaps: Provide through-penetration firestop systems for the following locations:

    a. Between the edges of floor slabs and exterior walls.
    b. Between the tops of walls and the underside of floors or roofs.
    c. In the control joints in masonry walls and floors.

4. Smoke Stopping: Provide smoke stops for through-penetrations, membrane penetrations, and construction gaps with a material approved and tested for such applications.

C. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.

D. Install fill materials for firestop systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

E. Install board insulation in exterior wall construction where indicated on Drawings.

3.4 FIELD QUALITY CONTROL

A. Prior to installation of ceilings, inspect penetrations requiring firestopping to verify complete installation of firestopping materials. Proceed with enclosing through-penetration firestop systems with other construction only after inspection reports are issued.

B. Where deficiencies are found, repair or replace through-penetration firestop systems so they comply with requirements.

C. Reinstall firestopping materials that have been removed for inspection.

3.5 IDENTIFICATION

A. Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of

each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include the following information on labels:

1. The words: "Warning--Through-Penetration Firestop System--Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Through-penetration firestop system designation of applicable testing and inspecting agency.
4. Date of installation.
5. Through-penetration firestop system manufacturer's name.
6. Installer's name.

3.6 CLEANING AND PROTECTION

A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce through-penetration firestop systems complying with specified requirements.

END OF SECTION 07 84 00

SECTION 09 91 00

PAINTING

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 surface preparation and field painting of the following:

1. Exposed exterior items and surfaces.
2. Exposed interior items and surfaces.
3. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.

1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

1. Finished metal surfaces include the following:

a. Anodized aluminum.
b. Stainless steel.
c. Chromium plate.
d. Copper.
e. Bronze and brass.

2. Operating parts include moving parts of operating equipment and the following:

a. Valve and damper operators.
b. Linkages.
c. Sensing devices.

3. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1.3 DEFINITIONS

A. General: Standard coating terms defined in ASTM D 16 apply to this Section.

1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.
3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
4. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
5. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

1.4 SUBMITTALS

A. Product Data: For each paint system specified. Include block fillers and primers.

1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

B. Samples for Selection: Manufacturer's color chips showing the full range of colors available for each type of finish-coat material indicated.

1. After color selection, the Architect will furnish color list of color selections for surfaces to be coated.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

B. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

C. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample of each type of coating and substrate required on the Project. Comply with procedures specified in PDCA P5. Duplicate finish of approved prepared samples.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.7 PROJECT CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F (10 and 32 deg C).

B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F (7.2 and 35 deg C).

C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.8 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied in the quantities described below. Package paint materials in unopened, factory-sealed containers for storage and identify with labels describing contents. Deliver extra materials to the Owner.

1. Quantity: Furnish the Owner with an additional 5 percent, but not less than 1 gal. (3.785 L) of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in the paint schedules.

1. California Paint Co. (Cal).
2. Benjamin Moore & Co. (Moore).
3. ICI Dulux Paints (ICI)
4. PPG Industries, Inc. (PPG).
5. Sherwin-Williams Co. (S-W).

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality professional paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: Provide color selections made by the Architect. Allow for up to 15 different color selections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.

1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.2 PREPARATION FOR SURFACES

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and reprime.
2. Cementitious Materials: Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

   a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
   b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.
   c. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.

3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

   a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
   b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
   c. When transparent finish is required, backprime with spar varnish.

d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on backside.
e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.

a. Blast steel surfaces clean as recommended by paint system manufacturer and according to requirements of SSPC-SP 10.
b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.
d. Piece Marks: Remove piece marks or numbers and characters that identify components for erection prior to field painting. Applying a primer to cover the marks will also be acceptable.

5. Galvanized Surfaces: Clean galvanized surfaces with a palm sander and 60 grit sandpaper so surface is free of surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

E. Tinting: Tint primer of colors such as reds, yellows, and oranges with a gray basecoat system designed to help provide color coverage.

1. Do not tint prime or base coat for multi-colored finishes.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in the schedules.
2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
3. Provide finish coats that are compatible with primers used.

4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
9. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
10. Sand lightly between each succeeding enamel or varnish coat.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. Field-applied primer will be required on metal surfaces that have been shop primed.
3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces. When using colors such as red, yellow or orange, an extra coat of finish may be necessary. Notify Architect when additional coats do not fix the problem.
4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

1. A total of three coats paint is required.

E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and in occupied spaces.

F. Mechanical items to be painted include, but are not limited to, the following:

1. Piping, including sprinkler piping, pipe hangers, and supports.
2. Ductwork.
3. Insulation.
4. Motors and mechanical equipment.
5. Accessory items.

G. Electrical items to be painted include, but are not limited to, the following:

1. Conduit and fittings.
2. Switchgear.
3. Panelboards.

H. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

I. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.

J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

K. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.

1. Provide satin finish for final coats.

L. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.5 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.6 EXTERIOR PAINT SCHEDULE

A. Smooth Siding and Trim: Provide the following finish systems over smooth siding and trim surfaces:

1. Low-Luster Acrylic Finish: 2 finish coats over a primer.

a. Primer: Exterior, alkyd or latex, wood primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer.

1) Cal: Trouble-Shooter 100% Acrylic Latex Primer 45100.
2) ICI: 2000-1200, Dulux-Pro Exterior Acrylic Primer.
3) Moore: Super Spec Latex Exterior Primer #169.
4) PPG: Speedhide Exterior Latex Primer, 6-609.
5) S-W: A-100 Exterior Latex Wood Primer B42W41 Series.

b. First and Second Coats: Low-sheen (eggshell or satin), exterior, latex paint applied at spreading rate recommended by the manufacturer.

1) Cal: 100% Acrylic Latex House & Trim Paint, Eggshell Finish 40100.
2) ICI: 2402-XXXX, Dulux-Pro Exterior 100% Acrylic Satin Finish.
3) Moore: Super Spec Low Lustre Latex House Paint #185.
4) PPG: Speedhide Exterior Satin Latex, 6-2000 Series.
5) S-W: SuperPaint Exterior Latex Satin, A89 Series.

B. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is required on shop-primed items.

1. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a rust-inhibitive primer.

a. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer.

1) Cal: Larcoloid Latex Metal Primer 51108.
2) ICI: 4020-XXXX, Devflex DTM Flat Interior/Exterior Waterborne Primer & Finish.
3) Moore: DTM Acrylic Semi-Gloss M29.
4) PPG: 6-208 Speedhide Interior/Exterior Rust Inhibitive Steel Primer.
5) S-W: DTM Acrylic Primer/Finish B66W1 Series.

b. First and Second Coats: Semigloss, exterior, acrylic-latex enamel applied at spreading rate recommended by the manufacturer.

1) Cal: 100 % Acrylic Latex Satin Gloss 2010 402XX.
2) ICI: 4206-XXXX, Devflex Interior/Exterior Acrylic Semi-Gloss Enamel.
3) Moore: DTM Acrylic Semi-Gloss M29.
4) PPG: Speedhide Exterior Semi-Gloss Latex, 6-900 Series.
5) S-W: DTM Acrylic Coating Gloss (Waterborne) B66W200 Series.

3.7 INTERIOR PAINT SCHEDULE

A. Concrete Masonry Units: Provide the following finish systems over interior concrete masonry block units:

1. Low-Luster, Acrylic-Enamel Finish: 2 finish coats over a block filler.

a. Block Filler: High-performance, latex-based, block filler applied at spreading rate recommended by the manufacturer.

1) Cal: Wilbur & Williams Mason-Cote Block Filler 3751.
2) ICI: 3100-1200, Ultra-Hide Gripper Interior/Exterior Block Surfacer.
3) Moore: Super Craft Latex Block Filler #285.
4) PPG: 6-7 Speedhide Interior/Exterior Masonry Latex Block Filler.
5) S-W: PrepRite Block Filler B25W25 Series.

b. First and Second Coats: Low-luster (eggshell or satin), acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils (0.071 mm).

1) Cal: Premium 100% Acrylic Latex Eggshell 531XX.
2) ICI: 1412-XXXX, Ultra-Hide Latex Eggshell or
1414-XXXX, Ultra-Hide Satin Latex Enamel.
3) Moore: Super Spec Latex Eggshell Enamel #274.
4) PPG: Speedhide Interior Eggshell Latex Enamel, 6-411 Series.
5) SW: ProMar 200 Interior Latex Eggshell B20W200 Series.

B. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:

1. Flat Acrylic Ceiling Finish: 2 finish coats over a primer.

a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer.

1) Cal: ProPrime Undercoater Primer-Sealer 54500.
2) ICI: 1000-1200, Dulux Ultra Interior Latex Wall Primer.
3) Moore: Super Spec Latex Enamel Undercoater & Primer Sealer #253.
4) PPG: Speedhide Interior Latex Primer Sealer, 6-2.
5) S-W: PrepRite 200 Latex Primer B28W200 Series.

b. First and Second Coats: Flat, acrylic-latex-based, interior paint applied at spreading rate recommended by the manufacturer.

1) Cal: Premium Acrylic Latex Flat 533XX.
2) ICI: 1210-XXXX, Ultra-Hide Latex Flat Interior Wall Paint.
3) Moore: Super Spec Latex Flat #275.
4) PPG: Speedhide Interior Flat Latex, 6-70 Series.
5) S-W: ProMar 200 Latex Flat Wall Paint B30W200 Series.

2. Low-Luster, Acrylic-Enamel Wall Finish: 2 finish coats over a primer.

a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer.

1) Cal: ProPrime Undercoater Primer-Sealer 54500.
2) ICI: 1000-1200, Dulux Ultra Interior Latex Wall Primer.
3) Moore: Super Spec Latex Enamel Undercoater & Primer Sealer #253.
4) PPG: Speedhide Interior Latex Primer Sealer, 6-2.
5) S-W: PrepRite 200 Latex Primer B28W200 Series.

b. First and Second Coats: Low-luster (eggshell or satin), acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer.

1) Cal: Premium 100% Acrylic Latex Eggshell 531XX.
2) ICI: 1412-XXXX, Ultra-Hide Latex Eggshell or
1414-XXXX, Ultra-Hide Satin Latex Enamel.
3) Moore: Super Spec Latex Eggshell Enamel #274.
4) PPG: Speedhide Interior Eggshell Latex Enamel, 6-411 Series.
5) S-W: ProMar 200 Interior Latex Eggshell B20W200 Series.

C. Natural-Finish Woodwork: Provide the following natural finishes over new, interior woodwork:

1. Waterborne, Satin-Varnish Finish: 2 finish coats of a waterborne, clear-satin varnish over a sanding sealer. Wipe wood filler before applying stain.

a. Sealer Coat: Clear sanding sealer applied at spreading rate recommended by the manufacturer.

1) ICI: 1802-0000, Woodpride Interior Waterborne Polyurethane Satin
2) Moore: Moore's Interior Wood Finishes Quick-Dry Sanding Sealer No. 413.

b. First and Second Finish Coats: Waterborne, varnish finish applied at spreading rate recommended by the manufacturer.

1) ICI: 1802-0000, Woodpride Interior Waterborne Polyurethane Satin
2) Moore: Benwood Interior Wood Finishes Polyurethane Finishes Low Lustre No. 435.

D. Ferrous Metal: Provide the following finish systems over ferrous metal:

1. Semigloss, Acrylic-Enamel Finish: One finish coat over an enamel undercoater and a primer.

   a. Primer: Quick-drying, rust-inhibitive, alkyd-based or epoxy-metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer.

      1) Cal: Larcoloid Rust Inhibiting Metal Primer 21150.
      2) ICI: 4020-1000, Devflex DTM Flat Interior/Exterior Waterborne Primer & Finish.
      3) Moore: IronClad Latex Low Lustre Metal & Wood Enamel #363.
      4) PPG: 6-208 Speedhide Interior/Exterior Rust Inhibitive Steel Primer.
      5) S-W: DTM Acrylic Primer/Finish B66W1 Series.

   b. Undercoat: Alkyd, interior enamel undercoat or semigloss, acrylic-latex, interior enamel, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer.

      1) Cal: Premium 100% Acrylic Semi-Gloss 563XX.
      2) ICI: 1416-XXXX, Ultra-Hide Latex Semi-Gloss Interior Wall and Trim Enamel.
      3) Moore: Super Spec Latex Semi-Gloss Enamel #276.
      4) PPG: Speedhide Interior Semi-Gloss Latex Enamel, 6-510 Series.
      5) S-W: ProMar 200 Interior Latex Semi-Gloss B31W200 Series.

   c. Finish Coat: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer.

      1) ICI: 1416-XXXX, Ultra-Hide Latex Semi-Gloss Interior Wall and Trim Enamel.
      2) Cal: Premium 100% Acrylic Semi-Gloss 563XX.
      3) Moore: Super Spec Latex Semi-Gloss Enamel #276.
      4) PPG: Speedhide Interior Semi-Gloss Latex Enamel, 6-510 Series.
      5) S-W: ProMar 200 Interior Latex Semi-Gloss B31W200 Series.

END OF SECTION 09 91 00

SECTION 21 13 13

FIRE SUPPRESSION SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following wet-pipe fire-suppression piping inside the building, which require special design and installation as follows:

1. The furnished sprinkler system shall meet State of Maine NFPA-13, NFPA -14 and NFPA -24 standards.
2. All material must be UL AND FM approved and in accordance with NFPA-13, NFPA -14 and NFPA -24 standards.
3. Backflow prevention shall be per the local water district.
4. Zoning shall be per the drawings: A and B with sectionalizing valves located at riser entrance in the sprinkler room.
5. Provide new separate, testable, wet sprinkler zones for existing system and FMS#1 system
6. Provide low point drains piped to exterior locations as required
7. Provide protection of gymnasium flooring while extending sprinkler feed main
8. Provide permits from the City of Portland and State of Maine
9. Provide 10psi safety margin for hydraulic calculations in lieu of 10%
10. CVPC will not be permitted.
11. Ceiling tiles and/or grid which is damaged during installation will be replaced and paid for by the contractor.
12. All areas subject to freezing shall be protected by antifreeze loops or a dry system, at the contractor’s discretion, unless specifically noted on the plans.
13. State of Maine sprinkler permit does not excuse the contractor from meeting all the requirements of this specification.
14. Contractor will be required to schedule workloads and meet completion dates as per owner and architect.
15. Alarm and alarm wiring to devices (installed under this contract) shall be by others. Coordination and cooperation with fire alarm contractor is required.
16. All holes through masonry or concrete shall be cored.
17. Firestopping is required in all full height walls.
18. All exposed piping shall meet Architect’s and Owner’s aesthetic expectations. Chrome escutcheons are required at exposed wall/piping penetrations. Exposed piping locations shall be reviewed and approved by the Architect before installation.
19. Sprinkler head guards shall be installed per NFPA-13.

20. Some project areas include exposed unit heaters at ceiling level. Follow all NFPA 13 requirements for the relative distance of sprinklers from heat sources and provide higher temperature rated sprinklers where required.
21. Existing Sprinkler System: The Building is partial protected by an existing wet sprinkler system in all areas except for the FMS 1 project area. Approval of the Portland Fire Department and Building Owner is required prior to shut down of the existing system. The existing sprinkler system may be taken out of service during construction periods in which the sprinkler system is being modified only when the Contractor is on site. The existing sprinkler system shall be returned to service during periods when the Contractor is not on site.

1.3 SYSTEM DESCRIPTION

A. Wet-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing water and that is connected to water supply. Water discharges immediately from sprinklers when they are opened. Sprinklers open when heat melts fusible link or destroys frangible device.

1.4 PERFORMANCE REQUIREMENTS

A. Standard Piping System Component Working Pressure: Listed for at least 175 psig (1200 kPa).

B. Fire-suppression sprinkler system design shall be approved by authority(ies) having jurisdiction (AHJ).

1. Margin of Safety for Available Water Flow and Pressure: 10 percent, including losses through water-service piping, valves, and backflow preventers.

2. Sprinkler Occupancy Hazard Classifications:
   a. Vehicle repair shops: Ordinary Hazard, Group 2.
   b. Building Service Areas: Ordinary Hazard, Group 1.
   c. Electrical Equipment Rooms: Ordinary Hazard, Group 1.
   d. General Storage Areas: Ordinary Hazard, Group 1.
   e. Mechanical and Electrical Equipment Rooms: Ordinary Hazard, Group 1.
   f. Office areas: Light Hazard.

3. Minimum Density for Automatic-Sprinkler Piping Design:

   a. Light-Hazard Occupancy: 0.10 gpm over 1500-sq. ft. (6.3 mL/s over 139-sq. m) area.
   b. Ordinary-Hazard, Group 1 Occupancy: 0.15 gpm over 1500-sq. ft. (9.5 mL/s over 139-sq. m) area.
   c. Ordinary-Hazard, Group 2 Occupancy: 0.20 gpm over 1500-sq. ft. (12.6 mL/s over 139-sq. m) area.

4. Maximum Protection Area per Sprinkler: Per NFPA 13 and/or UL listing for specific sprinkler(s) used.

5. Total Combined Hose-Stream Demand Requirement: Due to the mixed use occupancies; hose stream demand shall be 250 gpm.

6. Water Supply Information- Hydraulic calculations are to be based on the following fire-hydrant flow test data for bidding purposes unless more recent data is available:

   a. Date: 10-15-2007

   b. Time: Unknown

   c. Performed by: Portland Water District

   d. Location of Residual Fire Hydrant: Stevens Avenue

   e. Location of Flow Fire Hydrant: Stevens Avenue

   f. Static Pressure at Residual Fire Hydrant: 60 psi(0 ft elevation difference from FMS #1 FF)

   g. Measured Flow at Flow Fire Hydrant 1838 gpm

   h. Residual Pressure at Residual Fire Hydrant: 56 psi

7. The contractor shall conduct or commission a new hydrant flow test of the city water supply to the project site. This data shall be used for final design hydraulic calculations. Water supply data must be less than one year old from the start of the sprinkler system design period.

C. Seismic Performance: Fire-suppression piping shall be capable of withstanding the effects of earthquake motions determined according to NFPA 13 and ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."

1.5 SUBMITTALS

A. Submittals to be in accordance with Division 1, Submittal Procedures unless otherwise indicated by this section.

B. Product Data for the fire sprinkler components (but not limited to):

1. Piping materials, including all sprinkler specialty fittings.
2. Pipe hangers and supports.
3. Valves, including listed fire-protection valves, unlisted general-duty valves, and specialty valves and trim.
4. Sprinklers, escutcheons, and guards. Include sprinkler flow characteristics, mounting, finish, and other pertinent data.
5. Fire department connections, including type; number, size, and arrangement of inlets; caps and chains; size and direction of outlet; escutcheon and marking; and finish.
6. Alarm devices, including electrical data.

C. Approved Sprinkler Piping Drawings: Working plans, prepared according to NFPA 13, shall be approved by authorities having jurisdiction, including hydraulic calculations.

D. For wet-pipe sprinkler systems, submit four (4) sets of drawings that include all information as required by NFPA 13 to Architect and Owner for review and approval. The drawings shall be prepared on uniform sized sheets not less than 24 in by 36 in. Partial submittals will not be

1. Layout indicating details, plan view, elevations and sections of the system piping. Indicate the location of sprinklers and piping in relation to the ceiling layout, showing pipe lengths and sizes.

2. Detailed riser diagram including isometric diagrams showing schematic of systems supply, supply connection, devices, valves, pipe and fittings.

E. Field Test Reports and Certificates: Submit test results for compliance with performance requirements and as described in NFPA 13. Include "Contractor's Material and Test Certificate for Aboveground Piping." Provide a copy in operation and maintenance manuals.

F. Welding certificates.

G. Field quality-control test reports.

H. Operation and Maintenance Data: Operation, and maintenance manuals for all installed equipment.

I. As Built Drawings:

1. General: Prepare and submit four (4) sets of detailed "As-Built" Drawings to the Project Manager and Fire Protection Engineer. The drawings shall show the system as installed, including all deviations from both the project drawings and the approved shop drawings. The drawings shall also include all information as required by NFPA 13. The drawings shall be prepared on uniform sized sheets not less than 24 in by 36 in. Submit these drawings within two weeks after the final acceptance test of the system.

2. Provide two (2) sets of CAD based electronic as-built drawings to the Architect and Owner; each set shall include DWG and PDF file formats, including all associated externally referenced electronic files (Xref's). Provide both DWG and PDF file formats via email or on two (2) separate recordable CD's.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer's responsibilities include designing, fabricating, and installing fire-suppression systems and providing engineering services needed to assume engineering responsibility as required by the AHJ.

B. Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX.

C. NFPA Standards: Fire-suppression-system equipment, specialties, accessories, installation, and testing shall comply with the following:

1. NFPA 13, "Installation of Sprinkler Systems."

2. NFPA 14, “Installation of standpipe systems.”
3. NFPA 24, "Installation of Private Fire Service Mains and Their Appurtenances."

1.7 COORDINATION

A. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Sprinkler Cabinets: Finished, wall-mounting, steel cabinet with hinged cover, with space for minimum of six spare sprinklers plus sprinkler wrench. Include number of sprinklers required by NFPA 13 and sprinkler wrench. Include separate cabinet with sprinklers and wrench for each type of sprinkler on Project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Where titles below introduce product lists, the manufacturers offering products that may be incorporated into the Work must guarantee their products are UL listed and FM approved for use in fire protection systems.

2.2 DUCTILE-IRON PIPE AND FITTINGS

A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint bell end and plain end.

1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern.
2. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron gland, rubber gasket, and steel bolts and nuts.

B. Grooved-End, Ductile-Iron Pipe: AWWA C151, with factory- or field-formed, radius-cut-grooved ends according to AWWA C606.

1. Grooved-Joint Piping Systems:

a. Grooved-End Fittings: ASTM A 536, ductile-iron casting with OD matching ductile-iron-pipe OD and cement lining.
b. Grooved-End-Pipe Couplings: AWWA C606, gasketed fitting matching ductile-iron-pipe OD. Include ductile-iron housing with keys matching ductile-iron-pipe and fitting grooves, prelubricated rubber gasket with center leg, and steel bolts and nuts.

c. Grooved-End-Pipe Transition Coupling: UL 213 and AWWA C606, gasketed fitting with end matching ductile-iron-pipe OD and end matching steel-pipe OD. Include ductile-iron housing with key matching ductile-iron-pipe groove and key matching steel-pipe groove, prelubricated rubber gasket listed for use with housing, and steel bolts and nuts.

d. Grooved-End Transition Flange: UL 213, gasketed fitting with key for ductile-iron-pipe dimensions. Include flange-type, ductile-iron housing with rubber gasket listed for use with housing and steel bolts and nuts.

C. All ductile iron pipe and fittings must meet Portland Water District requirements.

2.3 STEEL PIPE AND FITTINGS

A. Threaded-End, Standard-Weight Steel Pipe: ASTM A 53/A 53M, ASTM A 135, or ASTM A 795, hot-dip galvanized where indicated and with factory- or field-formed threaded ends.

1. Cast-Iron Threaded Flanges: ASME B16.1.
2. Malleable-Iron Threaded Fittings: ASME B16.3.
3. Gray-Iron Threaded Fittings: ASME B16.4.
4. Steel Threaded Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106, Schedule 40, seamless steel pipe. Include ends matching joining method.
5. Steel Threaded Couplings: ASTM A 865 .

B. Plain-End, Standard-Weight Steel Pipe: ASTM A 53/A 53M, ASTM A 135, or ASTM A 795.

1. Steel Welding Fittings: ASTM A 234/A 234M, and ASME B16.9 or ASME B16.11.
2. Steel Flanges and Flanged Fittings: ASME B16.5.

C. Grooved-End, Standard-Weight Steel Pipe: ASTM A 53/A 53M, ASTM A 135, or ASTM A 795, with factory- or field-formed roll-grooved ends.

1. Grooved-Joint Piping Systems:

a. Grooved-End Fittings: UL-listed, ASTM A 536, ductile-iron casting with OD matching steel-pipe OD.

b. Grooved-End-Pipe Couplings: UL 213 and AWWA C606, rigid pattern, unless otherwise indicated; gasketed fitting matching steel-pipe OD. Include ductile-iron housing with keys matching steel-pipe and fitting grooves rubber gasket listed for use with housing, and steel bolts and nuts.

D. Plain-End, Schedule 10 Steel Pipe: ASTM A 135 or ASTM A 795, Schedule 10 in NPS 5 (DN 125) and smaller; and NFPA 13-specified wall thickness in NPS 6 to NPS 10 (DN 150 to DN 250).

1. Steel Welding Fittings: ASTM A 234/A 234M, and ASME B16.9 or ASME B16.11.
2. Steel Flanges and Flanged Fittings: ASME B16.5.

E. Grooved-End, Schedule 10 Steel Pipe: ASTM A 135 or ASTM A 795, Schedule 10 in NPS 5 (DN 125) and smaller; and NFPA 13-specified wall thickness in NPS 6 to NPS 10 (DN 150 to DN 250); with factory- or field-formed, roll-grooved ends.

1. Grooved-Joint Piping Systems:

   a. Grooved-End Fittings: UL-listed, ASTM A 536, ductile-iron casting with OD matching steel-pipe OD.
   b. Grooved-End-Pipe Couplings: UL 213 and AWWA C606, rigid pattern, unless otherwise indicated; gasketed fitting matching steel-pipe OD. Include ductile-iron housing with keys matching steel-pipe and fitting grooves rubber gasket listed for use with housing, and steel bolts and nuts.

2.4 SPRINKLER SPECIALTY FITTINGS

A. Sprinkler specialty fittings shall be UL listed and FM approved, with 175-psig (1200-kPa) minimum working-pressure rating, and made of materials compatible with piping. Sprinkler specialty fittings shall have 250-psig (1725-kPa) minimum working-pressure rating if fittings are components of high-pressure piping system.

B. Outlet Specialty Fittings:

   1. Mechanical-T and -Cross Fittings: UL 213, ductile-iron housing with gaskets, bolts and nuts, and threaded, locking-lug, or grooved outlets.
   2. Snap-On and Strapless Outlet Fittings: UL 213, ductile-iron housing or casting with gasket and threaded outlet.

C. Sprinkler Drain and Alarm Test Fittings: Cast- or ductile-iron body; with threaded or locking-lug inlet and outlet, test valve, and orifice and sight glass.

D. Sprinkler Branch-Line Test Fittings: Brass body with threaded inlet, capped drain outlet, and threaded outlet for sprinkler.

E. Sprinkler Inspector's Test Fitting: Cast- or ductile-iron housing with threaded inlet and drain outlet and sight glass.

F. Drop-Nipple Fittings: UL 1474, adjustable with threaded inlet and outlet, and seals.

2.5 LISTED FIRE-PROTECTION VALVES

A. Valves shall be UL listed or FMG approved, with 175-psig (1200 kPa) minimum pressure rating. Valves shall have 250-psig (1725-kPa) minimum pressure rating if valves are components of high-pressure piping system.

B. Ball Valves: Comply with UL 1091, except with ball instead of disc.

   1. NPS 1-1/2 (DN 40) and Smaller: Bronze body with threaded ends.
   2. NPS 2 and NPS 2-1/2 (DN 50 and DN 65): Bronze body with threaded ends or ductile-iron body with grooved ends.
   3. NPS 3 (DN 80): Ductile-iron body with grooved ends.

C. Butterfly Valves: UL 1091.

   1. NPS 2 (DN 50) and Smaller: Bronze body with threaded ends.

2. NPS 2-1/2 (DN 65) and Larger: Bronze, cast-iron, or ductile-iron body; wafer type or with flanged or grooved ends.

D. Check Valves NPS 2 (DN 50) and Larger: UL 312, swing type, cast-iron body with flanged or grooved ends.

E. Gate Valves: UL 262, OS&Y type.

1. NPS 2 (DN 50) and Smaller: Bronze body with threaded ends.
2. NPS 2-1/2 (DN 65) and Larger: Cast-iron body with flanged ends.

F. Indicating Valves: UL 1091, with integral indicating device and ends matching connecting piping.

1. Indicator: Electrical, 115-V ac, prewired, single-circuit, supervisory switch or Visual.
2. NPS 2 (DN 50) and Smaller: Ball or butterfly valve with bronze body and threaded ends.
3. NPS 2-1/2 (DN 65) and Larger: Butterfly valve with cast- or ductile-iron body; wafer type or with flanged or grooved ends.

2.6 SPECIALTY VALVES

A. Sprinkler System Control Valves: UL listed and FM approved, cast- or ductile-iron body with flanged or grooved ends, and 175-psig (1200-kPa) minimum pressure rating. Control valves shall have 250-psig (1725-kPa) minimum pressure rating if valves are components of high-pressure piping system.

1. Alarm Check Valves: UL 193, designed for horizontal or vertical installation, with bronze grooved seat with O-ring seals, single-hinge pin, and latch design. Include trim sets for bypass, drain, electrical sprinkler alarm switch, and pressure gages.

B. Automatic Drain Valves: UL 1726, NPS 3/4 (DN 20), ball-check device with threaded ends.

2.7 SPRINKLERS

A. Sprinklers shall be UL listed and FM approved, with 175-psig (1200-kPa) minimum pressure rating. Sprinklers shall have 250-psig (1725-kPa) minimum pressure rating if sprinklers are components of high-pressure piping system.

B. Automatic Sprinklers: With heat-responsive element complying with the following:

1. UL 199, for nonresidential applications.
2. UL 1767, for early-suppression, fast-response applications.

C. Sprinkler Types and Categories: Nominal 1/2-inch (12.7-mm) orifice for "Ordinary" temperature classification rating, unless otherwise indicated or required by application.

1. Open Sprinklers: UL 199, without heat-responsive element.

a. Orifice: 1/2 inch (12.7 mm), with discharge coefficient K between 5.3 and 5.8.
b. Orifice: 17/32 inch (13.5 mm), with discharge coefficient K between 7.4 and 8.2.

D. Sprinkler types, features, and options as follows:

1. White semi-recessed style for suspended ceilings; bronze upright style for exposed areas.
2. Sidewall sprinklers.
3. Upright sprinklers.

E. Sprinkler Finishes: Chrome plated, bronze, and/or painted.

F. Special Coatings: Wax, lead, and corrosion-resistant paint.

G. Sprinkler Escutcheons: Materials, types, and finishes for the following sprinkler mounting applications. Escutcheons for flush and recessed-type sprinklers are specified with sprinklers.

1. Ceiling Mounting: White finish steel, 2 piece, with 1-inch (25-mm) vertical adjustment.
2. Sidewall Mounting: White finish, one piece, flat.

H. Sprinkler Guards: Where required, install wire-cage type, including fastening device for attaching to sprinkler.

2.8 FIRE DEPARTMENT CONNECTIONS

A. Wall-Type, Fire Department Connection: UL 405, 175-psig (1200-kPa) minimum pressure rating; with corrosion-resistant-metal body with brass inlets, brass wall escutcheon plate, brass lugged caps with gaskets and brass chains, and brass lugged swivel connections. Include inlets with threads according to NFPA 1963 and matching local fire department sizes and threads, outlet with pipe threads, extension pipe nipples, check devices or clappers for inlets, and escutcheon plate with marking similar to "AUTO SPKR & STANDPIPE."
1. Type: Style as per local fire department requirements

2.9 ALARM DEVICES

A. Alarm-device types shall match piping and equipment connections.

B. Water-Motor-Operated Alarm: UL 753, mechanical-operation type with pelton-wheel operator with shaft length, bearings, and sleeve to suit wall construction and 10-inch- (250-mm-) diameter, cast-aluminum alarm gong with red-enamel factory finish. Include NPS 3/4 (DN 20) inlet and NPS 1 (DN 25) drain connections.

C. Electrically Operated Alarm: UL 464, with 6-inch- (150-mm-) minimum diameter, vibrating-type, metal alarm bell with red-enamel factory finish and suitable for outdoor use.

D. Water-Flow Indicator: UL 346, electrical-supervision, paddle-operated-type, water-flow detector with 250-psig (1725-kPa) pressure rating and designed for horizontal or vertical installation. Include two single-pole, double-throw circuit switches for isolated alarm and auxiliary contacts, 7 A, 125-V ac and 0.25 A, 24-V dc; complete with factory-set, field-adjustable retard element to prevent false signals and tamperproof cover that sends signal if removed.

E. Valve Supervisory Switch: UL 753, electrical, single-pole, double-throw switch with normally closed contacts. Include design that signals controlled valve is in other than fully open position.

F. Indicator-Post Supervisory Switch: UL 753, electrical, single-pole, double-throw switch with normally closed contacts. Include design that signals controlled indicator-post valve is in other than fully open position.

2.10 PRESSURE GAGES

A. Description: UL 393, 3-1/2- to 4-1/2-inch- (90- to 115-mm-) diameter, dial pressure gage with range of 0 to 300 psig (0 to 2070 kPa).

PART 3 - EXECUTION

3.1 EARTHWORK

A. Coordinate with general contractor.

3.2 PIPING APPLICATIONS, GENERAL

A. Shop weld pipe joints where welded piping is indicated.

B. Do not use welded joints for galvanized-steel pipe.

C. Flanges, flanged fittings, unions, nipples, and transition and special fittings with finish and pressure ratings same as or higher than system's pressure rating may be used in aboveground applications, unless otherwise indicated.

D. Piping between Fire Department Connections and Check Valves: Galvanized, standard-weight steel pipe with grooved ends; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.

3.3 SPRINKLER SYSTEM PIPING APPLICATIONS

A. Standard-Pressure, Wet-Pipe Sprinkler System, 175-psig (1200-kPa) Maximum Working Pressure:

1. Sprinkler-Piping Fitting Option: Specialty sprinkler fittings, NPS 3 (DN 80) and smaller, including mechanical-T and -cross fittings, may be used downstream from sprinkler zone valves.
2. NPS 1-1/2 (DN 40) and Smaller: Threaded-end, black, standard-weight steel pipe; cast- or malleable-iron threaded fittings; and threaded joints.
3. NPS 1-1/2 (DN 40) and Smaller: Plain-end, Schedule 10 steel pipe; steel welding fittings; and welded joints.
4. NPS 2 (DN 50): Threaded-end, black, standard-weight steel pipe; cast- or malleable-iron threaded fittings; and threaded joints.
5. NPS 2 (DN 50): Plain-end, black, standard-weight steel pipe; steel welding fittings; and welded joints.
6. NPS 2 (DN 50): Grooved-end, black, standard-weight steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.

7. NPS 2 (DN 50): Plain-end, Schedule 10 steel pipe; steel welding fittings; and welded joints.
8. NPS 2 (DN 50): Grooved-end, Schedule 10 steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.
9. NPS 2-1/2 to NPS 3-1/2 (DN 65 to DN 90): Threaded-end, black, standard-weight steel pipe; cast- or malleable-iron threaded fittings; and threaded joints.
10. NPS 2-1/2 to NPS 3-1/2 (DN 65 to DN 90): Plain-end, black, standard-weight steel pipe; steel welding fittings; and welded joints.
11. NPS 2-1/2 to NPS 3-1/2 (DN 65 to DN 90): Grooved-end, black, standard-weight steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.
12. NPS 2-1/2 to NPS 3-1/2 (DN 65 to DN 90): Plain-end, Schedule 10 steel pipe; steel welding fittings; and welded joints.
13. NPS 2-1/2 to NPS 3-1/2 (DN 65 to DN 90): Grooved-end, Schedule 10 steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.
14. NPS 4 to NPS 6 (DN 100 to DN 150): Threaded-end, black, standard-weight steel pipe; cast- or malleable-iron threaded fittings; and threaded joints.
15. NPS 4 to NPS 6 (DN 100 to DN 150): Plain-end, black, standard-weight steel pipe; steel welding fittings; and welded joints.
16. NPS 4 to NPS 6 (DN 100 to DN 150): Grooved-end, black, standard-weight steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.
17. NPS 4 to NPS 6 (DN 100 to DN 150): Plain-end, Schedule 10 steel pipe; steel welding fittings; and welded joints.
18. NPS 4 to NPS 6 (DN 100 to DN 150): Grooved-end, Schedule 10 steel pipe; grooved-end fittings; grooved-end-pipe couplings; and grooved joints.

3.4 VALVE APPLICATIONS

A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Listed Fire-Protection Valves: UL listed and FMG approved for applications where required by NFPA 13.

   a. Shutoff Duty: Use ball, butterfly, or gate valves.

2. Unlisted General-Duty Valves: For applications where UL-listed and FM-approved valves are not required by NFPA 13.

a. Shutoff Duty: Use ball, butterfly, or gate valves.

3.5 JOINT CONSTRUCTION

A. Refer to NFPA-13 for basic piping joint construction.

B. Threaded Joints: Comply with NFPA 13 for pipe thickness and threads. Do not thread pipe smaller than NPS 8 (DN 200) with wall thickness less than Schedule 40.

C. Grooved Joints: Assemble joints with listed coupling and gasket, lubricant, and bolts.

1. Ductile-Iron Pipe: Radius-cut-groove ends of piping. Use grooved-end fittings and grooved-end-pipe couplings.

2. Steel Pipe: Square-cut or roll-groove piping as indicated. Use grooved-end fittings and rigid, grooved-end-pipe couplings, unless otherwise indicated.

3.6 SERVICE-ENTRANCE PIPING

A. Connect fire-suppression piping to water-service piping of size and in location indicated for service entrance to building. Refer to Site Plan and Division 2 Section "Water Distribution" for exterior piping.

B. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories as required at connection to water-service piping.

C. Install shutoff valve, check valve, pressure gage, and drain at connection to water service.

3.7 WATER-SUPPLY CONNECTION

A. Connect fire-suppression piping to building's existing fire water entrance piping.

B. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories indicated at connection to water distribution piping.

C. Install shutoff valve, check valve, pressure gage, and drain at connection to water supply.

3.8 PIPING INSTALLATION

A. Refer to Division 15 Section "Basic Mechanical Materials and Methods" for basic piping installation.

B. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.

1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.

C. Use approved fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

D. Install unions adjacent to each valve in pipes NPS 2 (DN 50) and smaller. Unions are not required on flanged devices or in piping installations using grooved joints.

E. Install "Inspector's Test Connection" in sprinkler system piping, complete with shutoff valve, sized and located according to NFPA 13.

F. Install sprinkler piping with drains for complete system drainage.

G. Install sprinkler zone control valves, test assemblies, and drain risers as required.

H. Install drain valves on standpipes.

I. Install ball drip valves to drain piping between fire department connections and check valves. Drain to floor drain or outside building.

J. Install alarm devices in piping systems.

K. Hangers and Supports: Comply with NFPA 13 for hanger materials.

L. Earthquake Protection: Install piping according to NFPA 13 to protect from earthquake damage.

M. Install pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gages with connection not less than NPS 1/4 (DN 8) and with soft metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they will not be subject to freezing.

N. Fill wet-pipe sprinkler system piping with water.

3.9 VALVE INSTALLATION

A. Install listed fire-protection valves, unlisted general-duty valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.

B. Install listed fire-protection shutoff valves supervised-open, located to control sources of water supply except from fire department connections. Install permanent identification signs indicating portion of system controlled by each valve.

C. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water supply sources.

D. Specialty Valves:

1. Alarm Check Valves: Install in vertical position for proper direction of flow, including bypass check valve and retarding chamber drain-line connection.

3.10 SPRINKLER APPLICATIONS

A. Where specific sprinkler types are not indicated, use the following sprinkler types:

1. Rooms without Ceilings: Upright sprinklers.
2. Rooms with Suspended Ceilings: Pendent, recessed sprinklers
3. Wall Mounting: Sidewall sprinklers.
4. Sprinkler Finishes:

a. Upright, Pendent, and Sidewall Sprinklers: White in finished spaces exposed to view; rough bronze in unfinished spaces not exposed to view; protective coated where exposed to acids, chemicals, or other corrosive fumes.
b. Recessed Sprinklers: white, with white escutcheon.

3.11 SPRINKLER INSTALLATION

A. Install fire sprinklers in a symmetrical pattern no closer than 6” to any ceiling grid.

B. Do not install pendent or sidewall, wet-type sprinklers in areas subject to freezing. Use dry-type sprinklers with water supply from heated space.

3.12 FIRE DEPARTMENT CONNECTION INSTALLATION

A. Install wall-type, fire department connections in vertical wall in accordance with local fire department requirements.

B. Install ball drip valve at each check valve for fire department connection.

3.13 CONNECTIONS

A. Drawings show general fire protection areas, with special design provisions.

B. Install piping adjacent to equipment to allow service and maintenance.

C. Connect water-supply piping to fire-suppression piping. Include backflow preventer between potable-water piping and fire-suppression piping. Provide backflow preventer approved by local water district.

D. Install ball drip valves at each check valve for fire department connection. Drain to floor drain or outside building.

E. Connect piping to specialty valves, hose valves, specialties, fire department connections, and accessories.

F. Electrical Connections: By Others

3.14 LABELING AND IDENTIFICATION

A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.

3.15 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
3. Energize circuits to electrical equipment and devices.
4. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.

5. Coordinate with fire alarm tests. Operate as required.

B. Report test results promptly and in writing to Architect and authorities having jurisdiction.

3.16 CLEANING AND PROTECTION

A. Clean dirt and debris from sprinklers.

B. Remove and replace sprinklers with paint other than factory finish.

C. Protect sprinklers from damage until Substantial Completion.

3.17 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire protection system. Refer to Division 1 Section "Closeout Procedures."

END OF SECTION

SECTION 26 00 10

BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Summary of Electrical Work: The electrical work includes, but is not limited to, the following:
   1. Fire Alarm System.
   2. Coordination with sprinkler subcontractor as required to provide a complete and operating system.

B. Site Inspection: Visit the site, before submitting bid, to become familiar with the procedural manner, materials, labor, quantities, and expenses involved in completing the work. No allowances for extra work will be granted to accomplish these ends if the need for which could have been foreseen or anticipated by such a visit.

C. Related Sections:
   1. Drawings, Division 00, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUBMITTALS

A. Submit under procedures given in Section 01 33 00.

B. Submit shop drawings and product data grouped in sets to include complete submittals of related systems, products, and accessories in a single submittal. Clearly mark each submittal with appropriate specification section and paragraph reference.

C. Mark dimensions and values in units to match those specified.

D. Electrical submittals shall be reviewed by, and carry the approval stamp of, the electrical subcontractor and be initialed and dated by the reviewer.

E. Submit certificate of final inspection and approval from authority having jurisdiction, and record electrical drawings.

F. Upon request, provide samples for inspection. Samples will be returned after inspection is completed.

G. Manual: Upon completion of this portion of the Work, and as a condition of its acceptance, deliver to the Engineer for the Owner two copies of a manual describing the system:
   1. Provide manuals in durable plastic ring binders, nominal 8½ x 11" size.
   2. Identification on, or readable through, the front cover stating general nature of the manual.
   3. A copy of all reviewed submittals and shop drawings.
   4. Complete instructions regarding operation and maintenance of all equipment involved.
   5. Complete name and address of nearest vendor of replaceable parts.

6. Copy of all guarantees and warranties issued.
7. Where contents of manuals include manufacturer's catalog pages, clearly indicate the precise items included in this installation.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Electrical: Conform to ANSI/NFPA 70, National Electrical Code.
   2. Obtain permits and request inspections from local building inspector.

B. Electrical materials, devices, and equipment shall be new. Where standards have been established by the following, they shall conform to those standards as to quality, fabrication, application, and installation and be not less than further required under this specification.

   1. Underwriters Laboratories, Inc. (UL).
   2. National Electrical Manufacturers Association (NEMA).
   3. American National Standards Association (ANSI).
   4. National Fire Protection Association (NFPA).
   5. Occupational Safety and Health Administration (OSHA).
   6. National Electrical Contractors Association (NECA).
   7. Standards of local Building Codes, Electrical, and Fire Departments, City of Augusta.

1.4 WORK SEQUENCE & COORDINATION

A. Install work under this section so as to conform to the progress of the work of other sections. Complete the electrical work as soon as conditions of the building will permit.

B. Coordinate in advance with other trades the shape, size and position of all necessary openings, sleeves, supports and related and coordinate electrical installation with mechanical equipment, piping and ductwork to avoid conflicts and to provide electric service and wiring as required for a complete and operating system.

C. Refer to Division 21 for electrical work required for fire suppression. Prior to roughing in, verify that the electrical characteristics of the sprinkler equipment being provided are compatible with the electric power circuits specified; if in doubt consult Engineer.

1.5 WIRING STANDARD

A. Follow wiring coding as indicated on the drawings. Use only the approved wiring methods for circuit applications as indicated in Table 1 (unmarked items are <u>not</u> permitted):

B. Where specifically detailed on drawings, follow wiring method indicated.

C. In the event an application location is encountered that is not listed in the wiring standards, consult Engineer for instructions.

TABLE 1

		Building Wire & Cables in Raceway							Cable	
	Application Location	RSC	EMT	PVC	Cable Tray	Surf. Rc'wy	LiqTgt	Flex	MC	NM
1	Underground, 5' away from foundation Concrete encased	SFBC		BC SFBC						
2	In/Under concrete slab to 5' away from foundation	SFBC		SFBC						
3	In slab above grade	BC		BC						
4	Exposed outdoor	SFBC								
5	Wet interior	SFBC	SFBC							
6	Concealed dry interior Wall stud spaces Ceiling void	 FBC FBC	 FBC FBC							
7	Accessible dry interior Ceiling void Lighting fixture whip Casework	 SFBC	 FBC							
8	Exposed dry interior Finished space Unfinished space	 SFBC	 BC			 BC				
9	Motor/Equipment connection						B	B	B	

Key: S=Secondary Service, F=Feeders, B=Branch Circuits, C=Control Circuits

1.6 SUBSTITUTIONS

A. Any proposal for a substitution shall be made in writing, including full details for consideration by Engineer. Substitutions will be permitted only by written acceptance of the Engineer.

B. Acceptance of a proposed substitution by the Engineer shall not relieve the Contractor from his responsibility to provide a satisfactory installation of the Work in accordance with the intent of the plans and specifications and shall not affect his guarantee covering all parts of the work.

C. Any material or equipment submitted for acceptance which is arranged differently or of a different physical size from that shown or specified shall be accompanied by shop drawings indicating the different arrangements of size and the method of making the various connections to the equipment. The final results shall be compatible with the system as designed.

D. Electrical materials and equipment have generally been specified by referencing one or more manufacturer's standard product. Materials of similar quality by listed "Acceptable Manufacturers" will generally not be considered a substitute and will be reviewed for conformance with these specifications. Materials not of similar quality, or by manufacturers not listed as acceptable, will be considered a substitute.

E. In the event a proposed substitution for material or equipment has been rejected, Engineer will only review subsequent submittals for that material or equipment that are not substitutes.

1.7 PROJECT/SITE CONDITIONS

A. Install work in locations shown on drawings, unless prevented by project conditions.

B. Prepare drawings showing proposed rearrangement of work to meet project conditions, including changes to Work specified in other sections. Obtain permission of Engineer before proceeding.

1.8 ASBESTOS ABATEMENT

A. If during the course of work, the existence of asbestos or asbestos containing materials is encountered or suspected in the structure or building, promptly notify the Owner and Engineer. The Owner will consult with his Asbestos Consultant regarding removal and encapsulation of the asbestos material. Do not perform any work prior to receipt of special instructions from the Owner.

1.9 WORKMANSHIP

A. Workmanship shall be by licensed electricians well skilled in the trade. A Master Electrician licensed in the State of Maine shall be on site and supervise all work.

B. Install all work according to the best practices of the trade and in accordance with NECA -1-2000, “Standard Practices for Good Workmanship in Electrical Construction.”

C. In the event of a conflict with required codes or an obvious misapplication of equipment, material, wiring practice, or other installation, before proceeding, promptly notify the Engineer. In no event shall any work be installed that is contrary to applicable codes.

1.10 DEVIATIONS AND DISCREPANCIES

A. The drawings are intended to indicate only diagrammatically the extent, general character, and approximate locations of the electrical work. Work indicated, but having minor details obviously omitted, shall be furnished complete to perform the functions intended without additional cost to the Owner. Follow the architectural, structural, and mechanical drawings so that work under this section is properly installed and coordinated with other sections.

B. The drawings and specifications are complementary each to the other and what is called for in one shall be as binding as if called for by both. In the event of conflicting information on the electrical drawings, or between or within drawings and specifications, or between trades, that which is better, best, most stringent, or most expensive will govern, except as may otherwise be permitted by Engineer.

C. Bidders shall study plans and specifications and in the event there are any apparent errors, omissions, conflicts, or ambiguities, shall contact Engineer for clarification prior to submitting their bid.

1.11 CHANGE ORDERS

A. No change shall be made from the work, equipment, or materials under this section except as directed in writing by Engineer.

B. All requests for change in contract price and scope shall be accompanied by a breakdown list of materials with unit and extended prices and labor hours with unit and extended price, plus markups that have been applied.

1.12 RECORD DRAWINGS

A. Keep in good condition at the job, apart from all other prints used in actual construction, one complete set of diazo blueline or white print electrical drawings. Record on these drawings, completely and accurately, any and all differences between the work as actually installed and the design as shown on the drawings. Record all changes within one week of the time that the changes are authorized. Record drawings shall be maintained in site construction office and be available for inspection by Engineer. At the completion of the work, deliver Record Drawings in accordance with requirement for submittals.

1.13 TESTING AND TRAINING

A. Conduct operating test for approval in presence of Engineer. The electrical work shall be demonstrated to operate as specified. Furnish instruments, materials, and personnel required for tests. Notify Engineer at least 10 days in advance of proposed test date.

B. Provide demonstration and training. Notify Owner at least 10 days in advance of proposed training date.

END OF SECTION

SECTION 26 05 00

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Existing work
2. Grounding and bonding
3. Supports
4. Identification
5. Conduit and fittings
6. Surface raceway
7. Electrical boxes
8. Electrical tape
9. Terminations
10. Firestopping

B. Related Sections:
1. Drawings, Division 00, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
2. Section 26 00 10, Basic Electrical Requirements.

1.2 REFERENCES

A. Conform to requirements of National Electrical Code (NEC) ANSI-C1/NFPA 70-2008.

B. Conform to requirements of National Electrical Safety Code (NESC) ANSI 2007.

C. Furnish products listed by Underwriters Laboratories, Inc., or other testing firm acceptable to authority having jurisdiction.

1.3 SUBMITTALS

A. Product Data: Provide catalog data for the following:

1. Grounding and bonding devices
2. Supports
3. Anchors
4. Conduit and fittings
5. Surface raceway
6. Electrical boxes
7. Mounting brackets/ceiling channels
8. Firestop Materials

B. Submit product data and shop drawings in booklet form with a separate sheet for each product. Indicate clearly on each sheet product manufacturer, catalog number, product description and other pertinent data.

C. Test reports.
   1. Grounding system continuity and resistance test.
   2. Conductor continuity and insulation resistance test.

1.4 PROJECT CONDITIONS

A. Existing project conditions indicated on drawings are based on casual field observation and existing record documents.

B. Verify field measurements and circuiting arrangements are as shown on drawings.

C. Verify removal of existing electric work.

D. Report discrepancies to Engineer before disturbing existing installation.

1.5 COORDINATION

A. Obtain and review shop drawings, product data, and manufacturer's instructions for equipment furnished under other sections to determine connection locations and requirements.

B. Sequence rough-in of electrical connections to coordinate with installation and start up of equipment furnished under other sections.

PART 2 - PRODUCTS

2.1 GROUNDING MATERIALS

A. Ground Rod: Copper clad steel, 3/4" diameter x 10' length. Die-stamp each near the top with the name or trademark of the manufacturer and the length of the rod in feet. The rods shall have a hard, clean, smooth, continuous, surface throughout the length of the rod.

   1. Galvanized steel rods are permitted where required by Utility Company.

B. Mechanical Connectors: Bronze.

C. Thermit Welds: Cadweld.

2.2 BASIC MATERIALS

A. Steel Channel: Galvanized or painted steel.

B. Anchors:

   1. Masonry Anchors: Rawl-Stud, Lok-Bolt, Saber-Tooth, or equal by Arro, Diamond, or Redhead.

2. Hollow-Wall Anchors: Toggle bolt by Rawl or equal by Arro, Diamond, or Redhead.
3. Anchors shall have sufficient holding power for intended use.
4. Plastic anchors and powder actuated anchors are not permitted.

C. Miscellaneous Hardware: Treat for corrosion resistance.

D. Nameplates: Engraved three layer laminated plastic (lamicoid), white letters on black background. Embossed plastic adhesive tape labels, with 3/16" white letters on black background.

E. Wire and Cable Markers: Cloth markers, split sleeve or tubing type.

2.3 METAL CONDUIT

A. Acceptable Manufacturers:

1. Allied Tube and Conduit
2. Wheatland Tube Company
3. Jones and Laughlin
4. Republic Steel
5. Triangle PWC

B. Conduit:

1. Metal Conduit and Tubing: Hot dipped galvanized or sheradized steel.
2. Flexible Conduit: Galvanized steel.
3. Liquidtight Flexible Metallic Conduit: Flexible conduit with PVC jacket.

2.4 FITTINGS

A. Manufacturers:

1. Appleton
2. Bridgeport
3. O-Z/Gedney
4. Raco
5. Steel City
6. Thomas and Betts
7. Carlon
8. American Pipe & Plastics, Inc.

B. Conduit Fittings:

1. Metal Fittings and Conduit Bodies: NEMA FB 1.
2. Plastic Fittings and Conduit Bodies: NEMA TC 3.
3. Fittings and Conduit Bodies for RSC: Galvanized steel or malleable iron, couplings and fittings threaded.
4. Fittings for EMT: Watertight, concrete tight, compression style with galvanized or zinc-plated steel body and cadmium plated steel or malleable iron nut like O-Z/Gedney

#7075S connector and #6075S coupling for 3/4" trade size. Set screw held connectors and fittings of any type are not permitted.

5. Conduit Bodies for EMT: Cast aluminum, galvanized iron or malleable iron bodies.
6. Insulated Bushings: Appleton "BBU".
7. Grounding Bushings: O-Z/Gedney "BLG".
8. Conduit Sealing Bushings: OZ Gedney Type CSB, or approved equal.
9. Fittings for Liquidtight Flexible Metallic Conduit: Galvanized steel or malleable iron, couplings and fittings threaded.
10. Conduit Clamps: Galvanized malleable iron equivalent to O-Z/Gedney 14-G and 15-G Series with clamp back spacer for RSC, and single hole #15-75G malleable or #15-75S galvanized steel clips for EMT.

2.5 SURFACE METAL RACEWAY

A. Manufacturers:

1. Walker/Wiremold

B. Description: One piece surface metal, Wiremold 500 & 700, and suitable for use as surface raceway.

1. Size: As shown on drawing.
2. Finish: Ivory enamel.

2.6 ELECTRICAL BOXES

A. Manufacturers:

1. Appleton
2. Crouse Hinds
3. Hoffman
4. Killark
5. Lee Products
6. Raco
7. Square D
8. Steel City

B. Boxes:

1. Sheet Metal: NEMA OS 1; galvanized steel, 4" x 4" x 2" with raised plaster ring and non-gangable 3" H x 3 1/2" D x 2" W per section masonry boxes. Gangable or sectionalizing boxes are not permitted.
2. Cast Metal: Aluminum or cast alloy, deep type "FD", gasket cover, threaded hubs, "Bell" boxes not permitted.

C. Mounting Brackets and Adjustable Ceiling Channels: Galvanized steel of substantial construction to support boxes by bridging between hollow wall studs or ceiling channels, like Caddy #SGB24 screw gun bracket, Caddy #H4 mounting bracket, and B-Line #BA-12 box hanger, or approved equal.

D. Pull Boxes: Code gauge galvanized steel, no prepunched knockouts.

E. Hinged Cover Enclosures: NEMA 250, Type 1, steel enclosure with manufacturer's standard enamel finish and continuous hinge cover, held closed by flush latch operable by screwdriver.

2.7 WIRE AND CABLE

A. Manufacturers:

1. Anaconda
2. Rome Cable
3. General Cable
4. Okonite
5. Phelps Dodge Cable
6. Southwire
7. Triangle PWC

B. Remote Control and Signal Cable:

1. Control Cable for Class 1 Remote Control and Signal Circuits: Copper conductor, 600 volt insulation, rated 60E C, individual conductors twisted together, shielded, and covered with PVC jacket.
2. Control Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 60E C, individual conductors twisted together, shielded, and covered with PVC jacket; UL listed.
3. Plenum Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 60E C, individual conductors twisted together, shielded, and covered with nonmetallic jacket; UL listed for use in air handling ducts, hollow spaces used as ducts, and plenums.

2.8 TAPE AND TERMINATIONS

A. Manufacturers, Tape:

1. 3M Co., Scotch #33 and #88

B. Manufacturers, Terminations:

1. Dossert
2. Ideal
3. 3M Co.
4. Thomas and Betts

C. Wire Connection Devices/Terminations: Compression set or twist-on type with integral molded insulation and internal metallic compression ring or spiral screw-on connecting device. Twist-on type shall be like Ideal "Wing Nut" series. Push-on type wire terminals are not acceptable.

D. Wire Terminals, Butt Splices: Crimp set with integral insulated sleeve, electro tin plated, fully annealed copper.

2.9 FIRESTOPPING MATERIALS

A. Use only through-penetration firestop products that have been tested for specific fire resistance rated conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire rating required for the application:
   1. Latex Sealants: Single component latex formulations that when cured do not re-emulsify during exposure to moisture.
   2. Firestop Devices: Factory assembles steel collars lined with intumescent material sized to fit a specific outside diameter of penetrating item.
   3. Firestop Putty: Intumescent, non-hardening, water resistant putties containing no solvents, inorganic fibers or silicone compounds.
   4. Wrap Strips: Single component intumescent elastomeric strips faced on both sides with a plastic film.
   5. Firestop Pillows: Re-useable, non-curing, mineral fiber core encapsulated with an intumescent coating contained in a flame retardant poly bag.
   6. Silicone Sealants: Moisture curing, single component, silicone elastomeric sealant for horizontal surfaces (pourable or non-sag) or vertical surface (non-sag).
   7. Silicone Foam: Multi-component, silicone based, liquid elastomers that when mixed expand and cure in place to produce a flexible, non-shrinking foam.

B. Firestop systems shall be UL classified and rated for the type of construction where it is applied.

PART 3 - EXECUTION

3.1 EXISTING ELECTRICAL WORK

A. Verify that abandoned wiring and equipment serve only abandoned facilities.

B. Disconnect existing electrical systems in walls, floors, and ceilings indicated for removal.

C. Coordinate utility service outages and reconnections with Utility Company and Owner.

D. In any area requiring the work of other trades, carefully remove, store and protect any electrical items in the path of the work and re-install and re-connect after the completion of the other trade's work.

E. In areas where painting is required, remove all electrical items including, but not limited to, lighting fixtures, devices and cover plates, then reinstall after painting has been completed. In the event any electrical items that were not removed become painted, clean the items, or replace if cleaning cannot be suitably cleaned.

F. Provide temporary wiring and connections to maintain existing systems in service during construction until replacement circuits and systems are ready for service, including circuits and systems that serve other areas.
   1. Existing fire alarm system.

G. Remove, relocate, and repair existing installations to accommodate new construction.
   1. Remove abandoned wiring to source of supply.
   2. Remove exposed abandoned conduit and boxes, including abandoned conduit above accessible ceiling finishes.

3. Disconnect and remove underfloor wiring, cut raceways flush with floor and patch and restore floor surfaces.

H. Repair adjacent construction and finishes damaged during removal of existing electrical work.

I. Maintain access to existing, active electrical installations.

J. Clean and repair existing materials and equipment within limits of work which remain or are to be reused.
   1. Do not reuse conduit, wire, and other materials except as specifically noted on the drawings.

K. Extend existing installations using materials and methods compatible with existing electrical installations, and as specified.

3.2 EXAMINATION AND PREPARATION

A. Verify that the interior of the building has been physically protected from weather.

B. Verify that supporting surfaces are ready to receive work.

C. Electrical boxes are shown on drawings, locations are approximate unless dimensioned.

D. Make electrical connections to utilization equipment in accordance with equipment manufacturer's instructions.

   1. Verify that wiring and outlet rough-in work is complete and that utilization equipment is ready for electrical connection, wiring, and energization.
   2. Make wiring connections in control panel or in wiring compartment of prewired equipment. Provide interconnecting wiring where indicated.

3.3 GROUNDING

A. Install grounding electrodes and conductors at locations indicated. Install additional rod electrodes as required to meet Regulatory Requirements.

B. Provide ground bonding as indicated and to meet Regulatory Requirements. Include a separate green [or bare for NM cable] ground wire in each branch and feeder circuit and bond to grounding system.

C. Maintain isolation between neutral and ground conductors in accordance with NEC.

D. Install grounding system so all conductive materials operate at ground potential and there is a low impedance path to ground in the event of a fault.

E. Test grounding system for resistance to earth using fall-to-potential method in accordance with IEEE Std. 81. Maximum ground to earth resistance shall not exceed 25 ohms.

F. Test grounding system continuity resistance (megger); resistance shall not exceed 0.1 ohms.

G. Submit test reports for ground/earth resistance and continuity resistance.

3.4 SUPPORT SYSTEMS

A. Install support systems sized and fastened to accommodate weight of equipment and conduit, including wiring, which they carry.

1. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors, beam clamps, and spring steel clips as appropriate for the application.
2. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.
3. Do not fasten supports to piping, ceiling support wires, ductwork, mechanical equipment, or conduit.
4. Do not use powder actuated anchors.
5. Do not drill structural wood or steel members.
6. Fabricate supports from structural steel or steel channel.
7. Install surface mounted cabinets and panelboards with minimum of four anchors.
8. Provide steel channel supports to stand cabinets 1" off wall in wet locations.
9. Bridge studs top and bottom with channels to support flush mounted cabinets and panelboards in stud walls.

3.5 CONDUIT

A. Size raceways for conductor type installed or for type THW conductors, whichever is larger.

1. Minimum Size Conduit: 3/4".

B. Install all conduit concealed in walls or above finished ceilings except where specifically indicated to be surface mounted. Arrange conduit to maintain headroom and to present neat appearance. Install conduit in accordance with the following:

1. Route exposed raceway parallel and perpendicular to walls and adjacent piping.
2. Maintain minimum 6" clearance to piping and 12" clearance from parallel runs of flues, steam pipes, and heating appliances. Install horizontal raceway runs above water and steam piping.
3. Complete raceway installation before installing conductors.
4. Maintain required fire, acoustic, and vapor barrier rating when penetrating walls, floors, and ceilings. Where indicated on drawings, sleeve penetrations through concrete walls, floors, and ceilings.
5. Route conduit through roof openings for piping and ductwork where possible; otherwise, route through roof with pitch pocket.
6. Group in parallel runs where practical and install on steel channel support system. Maintain spacing between raceways or derate circuit ampacities to NFPA 70 requirements.
7. Use conduit hangers and clamps; do not fasten with wire or perforated pipe straps.
8. Use conduit bodies to make sharp changes in direction.
9. Terminate conduit stubs and box connections with insulated bushings.
10. Steel conduit joints shall be threaded; clamp on or set screw fittings are not permitted.
11. Use suitable caps to protect installed raceway against entrance of dirt and moisture.

12. Provide No. 12 AWG insulated conductor or suitable pull string in empty raceways, except sleeves and nipples.
13. Install expansion joints where raceway crosses building expansion joints, and where necessary to compensate for thermal expansion.
14. Use liquidtight conduit for flexible connections in damp or wet locations.
15. Install conduit so condensation will drain and not be trapped.
16. Prevent lodgement of dirt, trash, and mortar; swab all raceways prior to installation of wire and cable.

C. Surface Raceways:

1. Always install as inconspicuously as possible following corners wherever possible, mount plumb and level.
2. Securely anchor to mounting surfaces using methods specified in Section 26 05 00.
3. Use fittings and accessories designed for use with raceway system, and install in accordance with manufacturer's instructions.
4. Use suitable insulated bushings and inserts at connections to outlets and corner fittings in metal raceway.

3.6 BOXES

A. General:

1. Install electrical boxes where shown on the drawings, and as required for splices, taps, wire pulling, equipment connections, and regulatory requirements.
2. Locate and install electrical boxes to maintain headroom and to present neat mechanical appearance.
3. Align wall mounted outlet boxes for switches, thermostats, and similar devices.
4. Coordinate mounting heights and locations of outlets above counters, benches, and back splashes.
5. Install lighting outlets to locate luminaires as shown on reflected ceiling plan.
6. Use expansion anchors, shields, or toggle bolts to fasten boxes in place. Do not use explosive powder driven anchors, except where specifically permitted by Engineer. Do not use nails or wire for permanent support.
7. Secure boxes to interior wall and partition studs, accurately positioned to allow for surface finish thickness; select raised cover depth to assure proper fit.
8. Do not install boxes back-to-back in walls; provide 6" separation, minimum; except provide 24" separation, minimum in acoustic rated walls.
9. Use hinged cover enclosure for interior pull and junction boxes larger than 12 inches in any dimension. Install in an accessible location that will allow easy access.
10. Field punch openings in pull boxes using punch/dies of appropriate size. Provide knockout closures for unused openings.

B. Surface mounted applications:

1. Use cast "FD" outlet boxes for all surface mounted applications to 10 feet above finished floor, and for exterior and wet locations.
2. Where pull boxes must be installed in finished areas, consult Engineer to select location, style, and finish. The location shall always be as inconspicuous as possible.

C. Concealed above ceilings:

1. Install 4" x 4" x 2" or larger steel boxes for general wiring.
2. Octagon boxes, 3 ½" or 4" by 1 ½" or larger depth, are permitted for flush mounted lighting fixture outlets, use adjustable steel channel fasteners for support.
3. Locate and install electrical boxes to allow access. Provide access panels where required for practical access, and as required by the NEC.

D. Concealed in GWB or plaster walls:

1. Install 4" x 4" x 2" steel box; select raised plaster ring and set box so that outer edge is not less than 1/8" below finished wall surface.
2. Use stamped steel mounting bracket for flush outlet/device boxes in hollow stud wall.
3. Align wall mounted outlet boxes for switches, thermostats, and similar devices.
4. Coordinate mounting heights and locations of outlets above counters, benches, and back splashes.

3.7 INSTALLATION OF WIRES AND CABLES

A. Verify that interior of building has been physically protected from weather, that mechanical work which is likely to injure conductors has been completed and completely and thoroughly swab raceway system before installing conductors.

B. Use wire not smaller than 12 AWG for power and lighting circuits, and not smaller than 14 AWG for control wiring.

1. Use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 75 feet; and for 20 ampere, 277 volt branch circuit home runs longer than 200 feet.

C. Neatly train and secure wiring inside boxes, equipment, and panelboards.

D. Use UL listed wire pulling lubricant for pulling 4 AWG and larger wires.

E. Install wiring according to the Wiring Standard, Section 26 00 00, or in another Division 26 Section, or as directed in applicable section. Protect and support exposed cables (where allowed) above accessible ceilings to keep them from resting on ceiling tiles. Use channel, or running boards as necessary to provide support. Do not support wiring on ceiling support wires, unless ceiling installer has provided certification that ceiling support system is rated to carry the additional load of the cables. Install cables to run parallel and perpendicular to building lines; do not run diagonally, leave ample slack cable at turns.

F. Make splices, taps, and terminations to carry full ampacity of conductors without perceptible temperature rise.

G. Terminate spare conductors with electrical tape.

H. Color code all service, feeder, branch, control, and signalling circuit conductors. Color shall be green for grounding conductors and white for neutrals, except where neutrals of more than one system are installed in same raceway or box, the other neutral shall be white with a colored (not green) stripe. Color code ungrounded conductors operating at 120 volts to ground black, red, and blue for Phases A, B, and C and at 277 volts, brown, orange, and yellow respectively.

I. Terminate all wire joints #10 AWG or smaller with crimp set or twist-on wire terminating device. Use crimp set or bolted "Burndy" or suitable alternate bolted or crimp set device for conductors larger than #10 AWG.

J. Cover all joints made with non-insulated connecting devices with electrical tape; use Type #88 at any time or #33 whenever the temperature of the joint or the room is above 60EF. Triple wrap joints, each wrap having a 50% overlay.

3.8 DEVICES

A. Install wall plates flush and level.

1. Install decorative plates on switch, receptacle, and blank outlets in finished areas, using oversized plates for outlets installed in masonry walls.
2. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3.9 FIRESTOPPING

A. Install through penetration firestop systems in accordance with firestop system manufacturer’s written installation instructions for products and applications indicated.

B. Engage an experienced installer who is trained, certified, licensed, or otherwise qualified by the firestop system manufacturer to install the firestop products.

C. Coordinate construction of openings and penetrating items to ensure that firestop systems are installed according to specified requirements.

D. Provide firestop systems that are compatible with one another, with the substrates forming openings, with the items penetrating the firestop system, and under the conditions of service for the application being considered.

E. Provide components for each firestop system that are needed to install fill materials. Use only components specified by the firestop system manufacturer and approved by the qualified testing agency for the designated system.

F. Keep areas of work accessible until inspection by the AHJ has been completed.

G. Inspecting Agency: Owner may engage a qualified independent inspecting agency to inspect the completed firestop system. The independent agency shall comply with ASTM E 2174 requirements including inspecting personnel qualifications, method of conducting inspections, and preparation of test reports.

H. Where deficiencies are found, repair or replace the firestop systems so that they comply with requirements. Proceed with enclosing firestop systems with other construction only after inspection reports are issued and the firestop installations comply with requirements.

I. Protect the firestop system during and after installation to insure that the systems do not deteriorate and are not damaged during the remaining period of construction. In the event

damage or deterioration occurs, remove affected firestop system and replace with new materials in compliance with this specification.

3.10 IDENTIFICATION

A. Identify electrical distribution and control equipment, and loads served, to meet regulatory requirements and as scheduled.

1. Degrease and clean surfaces to receive nameplates and tape labels.
2. Secure nameplates to equipment fronts using screws, rivets, or adhesive, with edges parallel to equipment lines. Secure nameplate to inside face of recessed panelboard doors in finished locations.
3. Use embossed tape nameplates with 3/16" lettering to identify individual switches and circuit breakers, wall switches, receptacle circuits, and loads served.
4. Use lamicoid nameplates with minimum 1/4" lettering to identify distribution and control equipment.
5. Nameplate information shall suitably identify the device or circuit. Any nameplate that is not suitably descriptive in the opinion of the Engineer shall be replaced as directed.

B. Install wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connections.

1. Use branch circuit or feeder number to identify power and lighting circuits.
2. Use control wire number as indicated on schematic and interconnection diagrams and equipment manufacturer's shop drawings to identify control wiring.

3.11 FIELD QUALITY CONTROL

A. Perform field inspection and testing of wiring as follows:

1. Inspect wire and cables for physical damage and proper connection.
2. Torque test conductor connections and terminations to manufacturer's recommended values.
3. Perform continuity and insulation resistance (megger) test on all power and equipment feeder and branch circuit conductors. Submit test report tabulating the test performed and the results.
4. Verify proper phasing connections; check rotation of all motors.

B. Perform field inspection and testing of devices as follows:
1. Test for proper polarity and ground continuity.
2. Replace defective units and retest.
3. Submit test report.

END OF SECTION

SECTION 28 31 00

FIRE ALARM SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. New building fire alarm system, including materials, labor, and services of a manufacturer trained installer, and related work.
2. Coordination with Elevator Contractor.
3. Final adjustment and test of system.
4. Letter certifying that system has been properly installed and operates in accordance with applicable codes and these specifications.

B. Related Documents:
1. Drawings, Division 00, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
2. Section 26 00 10, Basic Electrical Requirements.
3. Section 26 05 00, Basic Electrical Materials and Methods.

1.2 REFERENCES

1. NFPA 70, National Electrical Code, 2008.
2. NFPA 72, Fire Alarm Code, 2007.
3. NFPA 101, Life Safety Code, 2006.

1.3 SUBMITTALS

A. Deliver submittals as directed in Section 26 00 10 for:

1. Fire alarm control panel
2. Notification device power extenders
3. Manual stations
4. Smoke detectors
5. Duct smoke detectors
6. Heat detectors
7. Monitor modules
8. Control modules
9. Audible/visual devices
10. Telephone dialer
11. Wire and cable

B. Provide shop drawings and product data to indicate system components, size of components, location, floor plan drawings, and full one line schematic of wiring system showing every fire device and building and operation details. Indicate every fire alarm device, wire type, wire size,

number of conductors, device location and room name for approval by the local Fire Department, Engineer, and Owner's representative.

C. Subject to authorization of Owner, Engineer may provide building floor plans and device locations in AutoCAD “Dwg” format for use by contractor in preparing shop drawings. If such drawing files are offered, it will be with the understanding that contractor is responsible for any necessary format changes, and that contractor will remove any information not pertinent to contractor’s work, and as may be requested by the Engineer. Contractor’s drawings shall be issued with Contractor’s title block and logo; use of A/E’s title block is prohibited. No extra cost shall accrue to Owner in the event such files are not offered or for format and/or editing work that may be required.

D. Submit manufacturer's descriptive literature, operating instructions, and maintenance and repair data.

E. Have manufacturer submit, on completion of system verification, a point by point check list indicating the date and time of each item inspected and issue a certificate, confirming that the inspection has been completed and the system is installed and functioning in accordance with the specifications.

F. Submit final test report and letter signed by an authorized representative of the manufacturer and installing company.

1.4 QUALITY ASSURANCE

A. Approvals:
   1. The system shall have proper listing and approval by Underwriters Laboratories, Inc. (UL), and meet UL Standard 864.
   2. The system shall be listed and approved by UL for extinguishing release applications.

B. Regulatory Requirements:
   1. Installation subject to approval, inspection, and test by manufacturer certified installer.
   2. Provide equipment listed by UL and FM, tested by a nationally recognized fire test laboratory, and compatible with the integrated fire alarm system.
   3. Equipment, wiring, and installation shall meet the requirements of NFPA 70, 72, 101, and Americans with Disabilities Act (ADA).

1.5 WARRANTY

A. All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one year period shall be included as part of the work.

1.6 POST CONTRACT MAINTENANCE:

A. Complete maintenance and repair service for the fire alarm system shall be available from a factory trained authorized representative of the manufacturer of the major equipment for a period of five (5) years after expiration of the guaranty.

B. As part of the submittal, include a quote for a maintenance contract to provide all maintenance, test, and repair described below. Include also a quote of unscheduled maintenance/repair, including hourly rates for technicians trained on this equipment, and response travel costs. Submittals that do not identify all post contract maintenance costs will not be accepted. Rates and costs shall be valid for the period of five (5) years after expiration of the guaranty.

C. Maintenance and testing shall be on a semiannual basis or as required by the AHJ. A preventive maintenance schedule shall be provided by the contractor that shall describe the protocol for preventive maintenance. The schedule shall include:

D. Systematic examination, adjustment and cleaning of all detectors, manual fire alarm stations, control panels, power supplies, relays, waterflow switches and all accessories of the fire alarm system.

E. Each circuit in the fire alarm system shall be tested semiannually.
   1. Each smoke detector shall be tested in accordance with the requirements of NFPA 72 Chapter 5.

PART 2 - PRODUCTS

2.1 GENERAL

A. Acceptable Manufacturers

   1. Fire Control Instruments
   2. Honeywell
   3. Notifier
   4. Simplex
   5. Siemens

B. System: Analog/addressable, annunciated, 24 volt DC, Notifier AFP-200, or approved equal, containing a microprocessor based Central Processing Unit (CPU). The CPU shall communicate with and control system equipment such as intelligent detectors, addressable modules, printer, annunciators, and other system controlled devices.

C. Fire alarm system components shall be by a single acceptable manufacturer, except as specifically approved by Engineer for unusual accessories.

D. Provide fully supervised wiring and manual fire alarm stations, smoke detectors, audio/visual alarms, station detectors, annunciated circuits, and sprinkler devices.

E. Design system to operate upon alarm initiation input from manual stations, automatic detectors and sprinkler circuits as follows:
   1. Actuate control panel to cause all evacuation alarm horns to sound in a three pulse temporal pattern per ANSI S3.41, Audible Emergency Evacuation Signal, and evacuation alarm lights to flash throughout the building.
   2. Indicate the zone in alarm on the front of the fire alarm control panel.
   3. Shut down heating and ventilating equipment fans.
   4. Summon the local fire department.
   5. Close doors that are held open electrically.

6. Activate audible/visual communications for areas of rescue assistance.
7. Monitor and control computer room pre-action sprinkler system.

F. Operating power failure or disarrangement of the supervised circuits shall cause an audible signal to sound, and lamp to indicate, until all circuits are restored to normal, except equip the audible signal with a silencing switch. The audible signal shall re-activate in the event of a subsequent trouble event on another circuit.

G. In the event commercial power is lost, the system shall automatically transfer to standby battery power. Transfer shall not cause disarrangement except trouble lamp shall indicate loss of prime power.

H. Basic Performance:
1. Encode alarm, trouble and supervisory signals from all intelligent reporting devices on an NFPA Style 4 (Class B) Signaling Line Circuit (SLC).
2. Wire Initiation Device Circuits (IDC) to Class A (NFPA Style D) standard.
3. Wire Notification Appliance Circuits (NAC) to Class A (NFPA Style Z).
4. Digitized electronic signals shall employ check digits or multiple polling.
5. A single ground or open on the system SLC shall not cause system malfunction, loss of operating power or the ability to report an alarm.
6. Alarm signals arriving at the main FACP shall not be lost following a power failure until the alarm signal is processed and recorded.

I. Manufacturer, or manufacturer's authorized representative shall have a minimum of five years experience and maintain a full-time service office within 150 miles of the building site. Service office shall be staffed with trained technicians and stocked with sufficient spare parts so as to provide repairs within 24 hours of time reported outage.

2.2 CONTROL PANEL

A. Steel construction, painted manufacturer's standard finish, hinged front cover, key locked, semi-flush mounted with transparent pane(s) to view system status indicators.

B. Equip panel with:

1. Door mounted, 80 character, backlit LCD display, annunciator.
2. Separate trouble light for each supervised circuit.
3. Trouble buzzer light and trouble silence switch.
4. Separate pilot lamp to supervise standby power.
5. System reset switch.
6. Alarm horn silence switch.

C. Provide supervision of system as follows: A break or a ground on any supervised circuit causes trouble signal and trouble lamp illumination. Trouble signal silence switch silences buzzer but lamp remains illuminated. On restoration of the system, the trouble signal to remain energized until trouble signal silence switch is restored to normal. On loss of normal AC power, the trouble alarm operates and illuminates emergency power supervisory pilot lamp. Operation of the trouble alarm silence switch silences trouble signal but power supervisory lamp remains illuminated. On restoration of normal power, trouble alarm remains energized until the silence switch is restored to normal.

D. Provide analog maintenance alert to warn when smoke detector dust accumulation is excessive, and three level (low, medium, high) manual individual detector sensitivity adjustment.

E. Design control panel with integral digital communicator capable of reporting up to 56 zones or 198 points to a Central Station.

F. System Capacity and General Operation:
   1. Include capability to monitor up to 198 intelligent/addressable devices.
   2. Provide Form-C alarm and trouble relays rated at a minimum of 2.0 amps @ 30 VDC. It shall also include four Class B (NFPA Style Y) programmable Notification Appliance Circuits.
   3. The system shall support up to 99 programmable EIA-485 driven relays for an overall system capacity of 301 circuits.
   4. Include a full featured operator interface control and annunciation panel that shall include a backlit Liquid Crystal Display, individual, color coded system status LEDs, and an alphanumeric keypad for the field programming and control of the fire alarm system.
   5. All programming or editing of the existing program in the system shall be achieved without special equipment and without interrupting the alarm monitoring functions of the Fire Alarm Control Panel.

G. Provide the following features in the FACP:
   1. Drift Compensation to extend detector accuracy over life.
   2. Sensitivity Test, meeting requirements of NFPA 72, Chapter 5.
   3. Maintenance Alert to warn of excessive smoke detector dirt or dust accumulation.
   4. System Status Reports to display or printer.
   5. Alarm Verification, with verification counters.
   6. PAS presignal, meeting NFPA 72 3-8.3 requirements.
   7. Rapid manual station reporting (under 2 seconds).
   8. Non-Alarm points for general (non-fire) control.
   9. Periodic Detector Test, conducted automatically by software.
   10. Pre-alarm for advanced fire warning.
   11. Cross Zoning with the capability of: counting two detectors in alarm, two software zones in alarm, or one smoke detector and one thermal detector.
   12. March time and temporal coding options.
   13. Walk Test, with check for two detectors set to same address.
   14. UL 1076 Security Monitor Points.
   15. Control-By-Time for non-fire operations, with holiday schedules.
   16. Day/Night automatic adjustment of detector sensitivity.

H. Central Microprocessor:
   1. The Microprocessor shall communicate with, monitor, and control all external interfaces with the control panel. It shall include EPROM for system program storage, non-volatile memory for building-specific program storage, and a "watch dog" timer circuit to detect and report microprocessor failure.
   2. The microprocessor shall contain and execute all control-by-event programs for specific action to be taken if an alarm condition is detected by the system. Control-by-event equations shall be held in non-volatile programmable memory and shall not be lost even if system primary and secondary power failure occurs.
   3. The microprocessor shall also provide a real-time clock for time annotation of system displays, printer, and history file. The time-of-day and date shall not be lost if system primary and secondary power supplies fail. The real time clock may also be used to

control non-fire functions at programmed time-of-day, day-of-week, and day-of-year events.

I. Field Wiring Terminal Blocks: Panel I/O wiring terminal blocks shall be a removable, plug-in type and be designed for 18 to 12 AWG wire. Terminal blocks which are permanently fixed are not acceptable.

J. Operator's Controls:
   1. Acknowledge Switch:
      a. Activation of the control panel acknowledge switch in response to new alarms and/or troubles shall silence the local panel sounder, change the alarm and trouble LEDs from flashing mode to steady-on mode. If multiple alarm or trouble conditions exist, depression of this switch shall advance the 80-character LCD display to the next alarm or trouble condition.
      b. The Acknowledge switch shall also silence all remote annunciator sounders.
   2. Signal Silence Switch: Activation of the Signal silence switch shall cause all programmed alarm notification appliances and relays to return to the normal condition after an alarm condition. The selection of notification circuits and relays that are silenceable by this switch shall be fully field programmable as permitted by applicable standards. The FACP software shall include silence inhibit and auto-silence timers.
   3. System Reset Switch: The system reset switch shall cause all electronically-latched initiating devices, appliances or software zones, as well as all associated output devices and circuits, to return to their normal condition.
   4. Holding the system RESET switch shall perform a lamp test function.
   5. Drill (Evacuate) Switch: The drill switch shall activate all notification appliance circuits. The drill function shall latch until the panel is silenced or reset.

K. Field Programming:
   1. The system shall be programmable, configurable and expandable in the field without the need for special tools or electronic equipment and not require field replacement of electronic integrated circuits.
   2. All programming can be done using the standard FACP keypad.
   3. All field defined programs shall be stored in non-volatile memory.
   4. The programming function shall be enabled with a password that may be defined specifically for the system when it is installed. Two levels of password protection shall be provided in addition to a key-lock cabinet. The lower level password is used for status level changes such as zone disable or manual on/off commands, and the higher-level is used for actual change of program information.
   5. Program edit shall not interfere with normal operation and fire protection. If a fire condition is detected during programming operation, the system shall exit programming and perform fire protection functions as programmed.
   6. Provide a special program check function to detect common operator errors.
   7. Include an Auto-Program (self-learn) function to quickly install initial functions and make the system operational.
   8. Provide an off-line programming with batch upload/download function.
   9. Specific System Operations:
      a. Smoke Detector Sensitivity Adjust: Provide a means to adjust the sensitivity of any or all analog intelligent smoke detectors in the system from the control panel. Sensitivity range shall be within the allowed UL window.
      b. Alarm Verification: Each intelligent addressable smoke detector in the system shall be independently selected and enabled to be alarm verified. The alarm

verification delay shall be programmable from 5 to 30 seconds. The FACP shall keep a count of the number of times that each detector has entered the verification cycle. These counters may be displayed and reset by the proper operator commands.

c. Point Disable: Any device in the system may be enabled or disabled through the system keypad.

d. Point Read: The system shall be able to display or print the following point status diagnostic functions:

1) Device status.
2) Device types.
3) Custom device labels.
4) View analog detector values.
5) Device zone assignments.
6) All program Parameters.

10. System Status Reports: Upon command by operator, generate a printed status report listing system status.
11. System History Recording and Reporting: Provide a history buffer capable of storing up to 650 system alarms/troubles/operator actions, including time and date stamp of the activation. The contents of the History Buffer may be manually reviewed, one event at a time, or printed in its entirety.
12. Although the foreground history buffer may be cleared for user convenience, a background, non-erasable buffer shall be maintained which provides the last 650 system events.
13. The History Buffer shall use non-volatile memory. Systems that use volatile memory for history storage are not acceptable.
14. Automatic Detector Maintenance Alert: The FACP shall automatically interrogate each intelligent smoke detector and analyze the detector responses over a period of time.

a. If any intelligent smoke detector in the system responds with a reading that is below or above normal limits, then the system will enter the Trouble Mode, and the detector will be annunciated on the system display, and printed on the optional printer. This feature shall in no way inhibit the receipt of alarm conditions in the system, nor shall it require any special hardware, special tools or computer expertise to perform.

15. Pre-alarm Function: The system shall provide two levels of pre-alarm warning to give advance notice of a possible fire situation. Both pre-alarm levels shall be fully field adjustable. The first level shall give an audible indication at the panel. The second level shall give an audible indication and may also activate control relays. The system shall also have the ability to activate local detector sounder bases at the pre-alarm level, to assist in avoiding nuisance alarms.
16. Software Zones: The FACP shall provide 99 software zones. All addressable devices may be field programmed to be grouped into software zones for control activation and annunciation purposes.

L. Display :

1. Provide all the controls and indicators used by the system operator to program all system operational parameters.
2. Include status information and custom alphanumeric labels for all intelligent detectors, addressable modules, and software zones.
3. Provide an 80-character back-lit alphanumeric Liquid Crystal Display (LCD). It shall also provide 5 Light-Emitting-Diodes (LEDs), that will indicate the status of the following

system parameters: AC POWER, SYSTEM ALARM, SYSTEM TROUBLE, SIGNAL SILENCED, SUPERVISORY, and PRE-ALARM.

4. Provide a 21-key touch key-pad with control capability to command all system functions, entry of alphabetic or numeric information, and field programming. Two different password levels shall be provided to prevent unauthorized system control or programming.
5. Include the following operator functions: SIGNAL SILENCE, RESET, DRILL, and ACKNOWLEDGE.

M. Signaling Line Circuit (SLC) Interface:

1. The SLC interface shall provide power to and communicate with up to 99 intelligent detectors (Ionization, Photoelectric, or Thermal) and 99 intelligent modules (monitor or control) for a system capacity of 198 devices. This shall be accomplished over a single SLC loop and shall be capable of supporting NFPA 72 Style 4, Style 6, or Style 7 wiring.
2. The loop interface shall receive analog information from all intelligent detectors on the loop to determine whether normal, alarm, or trouble conditions exist for each detector. The software shall automatically maintain the detector's desired sensitivity level by adjusting for the effects of environmental factors, including the accumulation of dust in each detector. The analog information shall also be used for automatic detector testing and for the automatic determination of detector maintenance requirements.
3. The detector software shall meet NFPA 72, chapter 7 requirements and be certified by UL as a calibrated sensitivity test instrument.
4. The detector software shall allow manual or automatic sensitivity adjustment.

N. Serial Interfaces:

1. Provide an EIA-232 interface between the Fire Alarm Control Panel and UL Listed Electronic Data Processing (EDP) peripherals.
    a. Supports the use of printers, CRT monitors, and PC compatible computers.
    b. Include special protocol methods that allow off-site monitoring of the FACP over standard dial-up phone lines. This ancillary capability shall allow remote readout of all status information, including analog values, and shall not interfere with or degrade FACP operations when used. It shall allow remote FACP Acknowledge, Reset, or Signal Silence in this mode. It shall also allow adjustment of detector sensitivity and readout of the history file.
2. Provide an EIA-485 interface for the serial connection of remote annunciators and LCD displays that may be used for network connection to a Proprietary Receiving Unit.
3. Protect all interfaces and associated equipment so that they will not be affected by voltage surges or line transients, consistent with UL standard 864.

O. Universal Digital Alarm Communicator Transmitter (UDACT):

1. The UDACT is an interface for communicating digital information between a fire alarm control panel and a UL-Listed central station.
2. It shall be compact in size, and mount in a standard module position of the fire alarm control cabinet.
3. Include connections for dual telephone lines (with voltage detect), per UL/NFPA/FCC requirements, with the ability of split reporting of panel events to up to three different telephone numbers.
4. Completely field programmable from a built-in keypad and 4 character red, seven segment display.
5. Capable of transmitting events in at least 15 different formats. This ensures compatibility with existing and future transmission formats.

6. Communication shall include vital system status such as:
    a. Independent Zone (Alarm, trouble, non-alarm, supervisory)
    b. Independent Addressable Device Status
    c. AC (Mains) Power Loss
    d. Low Battery and Earth Fault
    e. System Off Normal
    f. 12 and 24 Hour Test Signal
    g. Abnormal Test Signal (per UL requirements)
    h. EIA-485 Communications Failure
    i. Phone Line Failure
7. The UDACT shall support independent zone/point reporting when used in the Contact ID format. In this format the UDACT shall support transmission of up to 2,040 points. This enables the central station to have exact details concerning the origin of the fire or response emergency.
8. An optional module shall be available which provides 8 Form-C relays rated at 5.0 amperes. The relays shall track programmable software zones.

2.3 Power Supply:

A. Provide power supply unit as part of control panel or as separate unit to automatically maintain standby battery bank fully charged under normal conditions and sized to recharge standby batteries in 12 hours maximum, following emergency operation. Power supply shall operate the system when batteries are disconnected.
    1. The Power Supply shall operate on 120 VAC, 60 Hz, and provide all necessary power for the FACP.
    2. It shall produce 5.0 amps of usable Notification appliance power, using a switching 24 VDC regulator. An 3.0 amp Notification expansion power supply shall be available for UL 1971 and ADA devices, for a total system capacity of 8 amps.
    3. Battery charger shall be dual-rate charging type for fast battery recharge and be power-limited per 1995 UL864 standards.
    4. Provide a very low frequency sweep earth detect circuit, capable of detecting earth faults.
    5. Provide optional meters to indicate battery voltage and charging current.

B. Provide sealed nickel cadmium or lead acid batteries of sufficient capacity to operate system under supervised load conditions without recharging for 24 consecutive hours and then have sufficient power left to operate sounding devices for fifteen minutes. Batteries shall be warranted for 5 years full plus 5 years pro rata, total of 10 years. Mount batteries in the bottom of the FACP or in a steel locked enclosure located 6 inches minimum or 6 feet maximum above floor in a dry, clean location where ambient temperatures will be 40 degrees F maximum. Protect enclosure so that spillage of electrolyte will not damage FACP interior.

2.4 ADDRESSABLE DEVICES - GENERAL

A. Detectors shall be intelligent and addressable, and connect with two wires to the Fire Alarm Control Panel Signaling Line Circuits.

B. Provide decade (numbered 0 to 9) rotary decimal switches for address-setting.

C. Addressable Devices shall use simple to install and maintain type address switches. Devices which use a binary address setting method, such as a dip switch, are not an allowable substitute.

D. Provide dual alarm and power LEDs on addressable smoke and thermal detectors.
   1. Both LEDs flash under normal conditions to indicate that the detector is operational and in regular communication with the control panel.
   2. Both LEDs shall continuously illuminate indicating that an alarm condition has been detected.
   3. The flashing mode operation of the detector LEDs shall be optional through the system field program.
   4. Provide an output connection in the base to connect an external remote alarm LED.

E. Provide detector sensitivity adjustment through field programming of the system. Sensitivity shall be automatically adjusted by the panel on a time-of-day basis.

F. Provide automatic detector compensation for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72, Chapter 7.

G. The detectors shall be ceiling-mount and shall include a separate twist-lock base with tamper proof feature. An optional base shall be available with a built-in (local) sounder rated at 85 DBA minimum.

H. Provide the means to test detectors and report to the FACP by activating a built-in magnetic switch, or be initiated remotely on command from the FACP.

I. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (ION, PHOTO, THERMAL).

2.5 ADDRESSABLE FIRE ALARM BOXES

A. Manual: Non-coded, single action, flush mounted in new construction, surface mounted on matching back box (do not mount on standard electrical box) in existing construction. Station shall remain in actuated position until reset by key access.

B. Back Boxes: For recessed applications, provide 4" x 4" x 2.5" deep, or larger, flush back box. For surface mounted applications, provide matching back box so that face of manual station does not overhang the box.

C. Addressable pull boxes shall, on command from the control panel, send data to the panel representing the state of the manual switch and the addressable communication module status. Provide a key operated test-reset lock to restor device to normal use.

D. Manual stations shall be solidly constructed of Lexan with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters, 1.75 inches or larger.

2.6 INTELLIGENT HEAT DETECTORS

A. Thermal detectors shall be intelligent addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius) and have a rate-of-rise element rated at 15 degrees F (9.4 degrees C) per minute. It shall connect via two wires to the fire alarm control panel signaling line circuit.

B. Detectors: Fixed temperature, combined fixed temperature rate of rise as indicated, 135E F for normal locations, 190E F for boiler room applications, complete with plug-in detector base for surface mounting on outlet box.

C. Rate of Rise: 14E F per minute.
   1. For elevator shunt trip applications, provide temperature rating 10° lower than adjacent sprinkler head rating.

D. Resetting: Provide fixed temperature detectors of automatic reset type.

2.7 INTELLIGENT PHOTOELECTRIC SMOKE DETECTORS

A. The detectors shall use the photoelectric light-scattering principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.

B. Capable of detecting products of combustion without requirements for presence of heat or smoke, unaffected by changes in environmental temperature, humidity, and pressure; semi flush mounted, with indicator lamp, provision for remote mounting, designed for operation on 24 volts DC. Provide complete with plug-in detector base for surface mounting on outlet box.

C. Furnish duct mounting units complete with duct mounting enclosure and sampling tubes.

D. Equip detectors with 30 mesh insect screen and closed back to prevent entry of dust and air turbulence and shield electronics to prevent false alarms caused by EMI and RFI.

E. Design detector to be easily disassembled to facilitate cleaning.

2.8 ADDRESSABLE DRY CONTACT MONITOR MODULE

A. Provide addressable monitor modules to connect one supervised IDC zone of conventional alarm initiating devices (any N.O. dry contact device) to one of the fire alarm control panel SLCs.

B. The monitor module shall mount in a 4-inch square, 2-1/8 inch deep electrical box.

C. The IDC zone shall be suitable for Style D or Style B operation. Include an LED status light as specified above for addressable devices.

2.9 TWO WIRE DETECTOR MONITOR MODULE

A. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional 2-wire smoke detectors or other alarm initiating devices (any N.O. dry contact device).

B. The two-wire monitor module shall mount in a 4-inch square, 2-1/8 inch deep electrical box or with an optional surface backbox.

C. The IDC zone may be wired for Class A or B (Style D or Style B) operation. Include an LED status light as specified above for addressable devices.

2.10 ADDRESSABLE CONTROL MODULE

A. Provide addressable control modules to supervise and control conventional NACs of compatible, 24 VDC powered, polarized audio/visual notification appliances or for other auxiliary functions, such as fan shutdown, which require a dry contact relay.

B. The control module shall mount in a standard 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box, or to a surface mounted backbox.

C. The control module NAC may be wired for Style Z or Style Y (Class A/B) with up to 1 amp of inductive A/V signal, or 2 amps of resistive A/V signal operation, or as a dry contact (Form-C) relay. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary relay or NACs may be energized at the same time on the same pair of wires.

D. Audio/visual power shall be provided by a separate supervised power circuit from the main fire alarm control panel or from a supervised, UL listed remote power supply.

E. The control module shall be suitable for pilot duty applications and rated for a minimum of 0.6 amps at 30 VDC.

2.11 ADDRESSABLE RELAY MODULE

A. Provide addressable relay modules for HVAC control and other building functions as needed. The relay shall be form C and rated for a minimum of 2.0 Amps resistive or 1.0 Amps inductive. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary relay or NACs may be energized at the same time on the same pair of wires.

2.12 AUDIBLE/VISUAL ALARM DEVICES

A. Provide combination vibrating horn/flashing strobe alarm devices mounted on a common housing, except where indicated, provide strobe unit without horn. Provide matching back box for all surface mounted units; do not mount on standard electrical box. In flush mounted applications, provide matching back box, or standard electrical box as needed.

B. Design horns for parallel type operation semi-flush mounted, with audio output of not less than 95 db at 10 feet on axis except 87 db rating may be used where the higher rated output is excessive.

C. Strobes shall be Xenon flash tube type meeting UL 1971 and NFPA 72 and having a minimum flash intensity of 15 candela polar distribution, or higher where indicated on drawings, with a maximum pulse duration of 0.2 second and maximum duty cycle of 40 percent. Strobes shall meet the ADA required 75 candela on axis distribution. The flash repetition rate shall be a minimum of 1 and maximum of 2 per second. Provide synchronizing control so that strobes in a common area flash simultaneously. Provide higher flash intensity units as indicated and/or as necessary to meet the requirements of NFPA 72 in large spaces.

D. Back Boxes: For recessed applications, provide 4" x 4" x 2.5" deep, or larger as needed, flush back box. For surface mounted applications, provide matching back box so that face of a/v unit does not overhang the box.

2.13 REMOTE ANNUNCIATOR

A. Provide remote annunciator:

1. Indicate trouble and alarm for each zone on system.
2. Provide alarm and trouble silencers, system reset, and manual evacuation switches.

2.14 SPRINKLER DEVICES

A. Monitor tamper switches for each OS&Y valve in sprinkler system.

B. Monitor flow and pressure switches and control pre-action sprinkler valve.

2.15 SINGLE STATION SMOKE DETECTOR

A. Provide with power on indicator and three position test switch.

2.16 MAGNETIC DOOR HOLDERS

A. Wall/Door mounted, 24 volts DC, 25 lb. minimum holding force, low power consumption, Simplex #2088 series, provide matching backbox for surface mounted applications.

2.17 WIRE AND CABLE

A. Provide number and size of wires as recommended by the manufacturer of the alarm system, but not less than #18 AWG for initiating device circuits and #14 AWG for notification appliance circuits.

B. Wire in conduit:
1. Type THHN building wire, minimum #14 AWG, stranded copper conductor, per Section 16050.
2. Twisted or twisted shielded pair, as required by fire alarm system manufacturer, minimum #18 AWG, stranded copper conductor for digital circuits, and #16 AWG for alarm notification circuits, include overall PVC jacket.

C. Power Limited Fire Alarm System Cable

1. Fire rated cable, UL rated, Type FPL, minimum #16 AWG stranded copper conductor.
2. Cable marked type FPLP shall be used in ducts, plenums, and other space used for environmental air.
3. Cable marked type FPLR shall be used in riser and all other applications.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install as recommended by the equipment manufacturer and in accordance with NFPA 70, NFPA 72 and local and State codes.

B. The stations, detectors, audiovisual units, control panel, and batteries are approximately located on the drawings. Minor rearrangements to adjust for appearance and structural conditions are to be expected. Detectors have been arranged on floor plan to meet or exceed code required minimum spacing. Provide additional detectors where location adjustments prevent meeting these requirements. Provide additional audiovisual units as required to meet minimum evacuation alarm audible sound level requirements.

C. Install fire alarm wires and cable in conduit per Section 26 00 10, except where indicated, fire rated cable is permitted above accessible ceilings in accordance with Section 26 00 10.

D. Paint all fire alarm junction boxes red and stencil "FIRE ALARM" on each box cover, including existing boxes.

E. Fire alarm conductor terminations in control panel and splice cabinets shall be made on terminal strips with a separate point for each conductor. All such strips to be number identified as shown in wiring diagram attached to inside of door of control panel. Connect wiring neatly to terminal strips; bundle wires, neatly arrange in straight runs with square corners and secure with nylon cable straps or lace with jute cord. Set up termination of cabling so that sections of the system may be isolated or shorted out for servicing.

F. Mount end-of-line resistor for each circuit in control panel.

G. Provide signal connection to elevator controller.

H. Mount fire alarm boxes centered at 48 inches above finished floor. Fire alarm boxes shall not protrude more than 0'-4" from the mounting surface, and shall not protrude beyond the sides of the backbox..

I. Protect smoke detectors from contamination due to construction dust or the like. In the event of false alarms due to dirty detectors, remove all detectors and clean or replace them and reinstall at no extra cost to Owner.

J. Mount audiovisual devices 6'-8" AFF to underside of visual device, but not less than 1'-0" below ceilings. Any wall mounted device mounted less than 6'-8" AFF shall not protrude more than 0'-4" from the mounting surface.

3.2 FIELD QUALITY CONTROL

A. The Contractor shall subcontract with an independent commissioning agent to supervise testing of all system devices on a per-device basis upon completion of the project work. The independent commissioning agent shall be a licensed Professional Engineer in the State of Maine. The independent commissioning agent shall prepare a written report of findings which shall be submitted to the Owner, listing the status of all devices, along with any corrective ac-

tion that may be required. Upon completion of corrective actions as directed by the commissioning report, the commissioning agent shall conduct a final test to confirm that system defects have been addressed. A final report shall be issued to the Owner following the completed final inspection. The Contractor shall include all costs associated with the commissioning agent's services.

1. System wiring shall be tested to demonstrate correct system response and correct subsequent system operation in the event of:
    a. Open, shorted and grounded signal line circuits.
    b. Open, shorted and grounded notification, releasing circuits.
    c. Primary power or battery disconnected.
2. System notification appliances shall be demonstrated as follows:
    a. All alarm notification appliances actuate as programmed.
    b. Audibility and visibility at required levels.
3. System indications shall be demonstrated as follows:
    a. Correct message display for each alarm input at the control display.
    b. Correct annunciator light for each alarm input at each annunciator and graphic
    c. display as shown on the drawings.
    d. Correct history logging for all system activity.
4. System off-site reporting functions shall be demonstrated as follows:
    a. Correct device transmitted for each alarm input.
    b. Trouble signals received for disconnect.
5. Secondary power capabilities shall be demonstrated as follows:
    a. System primary power shall be disconnected for a period of time as specified herein. At the end of that period, an alarm condition shall be created and the system shall perform as specified for a period as specified.
    b. System primary power shall be restored for forty-eight hours and system-charging current shall be normal trickle charge for a fully charged battery bank.
    c. System battery voltages and charging currents shall be checked at the fire alarm control panel.

B. Provide the service of a competent and NICET certified factory-trained technician authorized by the manufacturer of the fire alarm equipment to technically supervise and participate during all of the adjustments and tests for the system. All testing shall be in accordance with NFPA 72, Chapter 7.

C. Technician shall make a thorough inspection of the complete installed fire alarm systems including operation of all components such as manual stations, thermal detectors, smoke detectors, sprinkler flow valves, and controls, and open each circuit at its most remote point to ensure the following:

1. Complete and functional system.
2. Underwriters Laboratories requirements.
3. Installed in accordance with manufacturer's instructions.
4. Regulations covering supervision of components are adhered to.
5. Make changes necessary to conform to Items 1, 2, 3, and 4 with technical assistance from the manufacturer.

D. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation and perform the following:
1. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.

2. Verify activation of all flow switches.
3. Open initiating device circuits and verify that the trouble signal actuates.
4. Open and short signaling line circuits and verify that the trouble signal actuates.
5. Open and short Notification Appliance Circuits and verify that trouble signal actuates.
6. Ground all circuits and verify response of trouble signals.
7. Check presence and audibility of tone at all alarm notification devices.
8. Check installation, supervision, and operation of all intelligent smoke detectors using the Walk Test.

E. Introduce each of the alarm conditions that the system is required to detect. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.

F. At the final inspection, technician shall demonstrate that the systems functions properly in every respect.

3.3 INSTRUCTION:

A. Provide a typewritten "Sequence of Operation" and instruction as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.

B. The Contractor and/or the Systems Manufacturer's representatives shall provide

C. Have fire alarm technician prepare a test report certifying that the system has been successfully tested in accordance with these specifications and regulatory requirements.

D. Submit manufacturer's warranty for equipment and wiring to be free from mechanical and electrical defects for a period of one year from the date of acceptance. At the conclusion of the warranty period, manufacturer's technician shall re-inspect and service the system and furnish a letter to the Owner certifying that 100% of the system is operating properly.

END OF SECTION

SECTION 5

Plans

INSTALL SPRINKLER SYSTEM
AT
FMS #1, PORTLAND, MAINE

PROJECT #23SR10-479D

10 May 2010

SPRINKLER & FIRE ALARM PROJECT

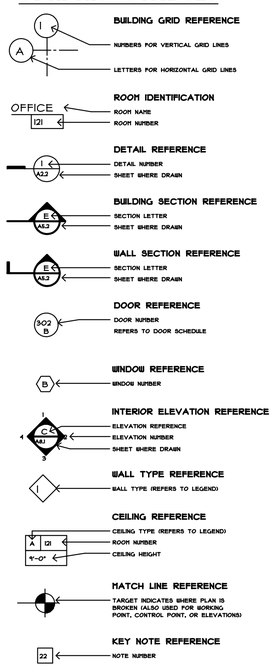
MAINE ARMY NATIONAL GUARD

FIELD MAINTENANCE SHOP #1

PORTLAND, MAINE

PROJECT NO. 23SR10-479D
BID NO. 10-039

GRAPHIC SYMBOLS



GENERAL NOTES:

1. All dimensions and existing conditions shall be checked and verified by the contractor at the site. Hold indicated dimensions. Do not scale drawings. Resolve any discrepancies with the architect before beginning work.
2. All electrical outlets, computer and telephone outlets/jacks, switches, pull stations, thermostats, exit lights and all other wall mounted accessories shall be aligned vertically or horizontally when in close proximity. Coordination of this alignment shall be the responsibility of the contractor.
3. Locations shall be approved by the professional. Install firesafing at all penetrations (pipes, ducts, structural steel, etc...) from between floors and from between fire rated spaces.
4. All dimenstions are to face of stud, or face of CMU unless noted otherwise.
5. Separate all dissimilar metals.
6. All structural steel, framing, metal deck, ductwork and piping which is exposed to view or behind a grill shall be painted

COORDINATION NOTE:

1. Owner's HVAC contractor will be installing equipment and piping in the building under a separate contract.
2. Scheduling of this activity may conflict with scheduling of the sprinler system installation.
3. The sprinkler contractor should plan for delays during sprinkler system installation due to this other work.

LIST OF DRAWINGS

T1 Title Sheet

Sprinkler

SP1 FMS #1 First Floor Plan
SP2 FMS #1 Second Floor Plan
SP3 Sprinkler Feed Main Location Plans
SP4 Building Sections

Electrical

E0 Electrical Symbols List & Riser Diagrams
E1 FMS #1 First Floor Plan
E2 FMS #1 Second Floor Plan
E3 Sprinkler Feed Main Location Plan

SMITH REUTER LULL ARCHITECTS

179 Lisbon Street
Lewiston, Maine 04240
(207) 786-5623
(207) 824-7237

ELECTRICAL AND FIRE ALARM

Hewett & Whitney Engineers
161 Main Street, Suite 2A
PO Box 318
Winthrop, Maine 04364
(207) 377-6969
Fax (207) 377-7584

KEY TO ABBREVIATIONS

AB	anchor bolt
ABV	above
AC	acoustical
A/C	air conditioning
ACC	access
ACT	acoustical tile
ACP	acoustical ceiling panel
ADD	addendum
ADH	adhesive
ADJ	adjacent
ADJT	adjustable
AFF	above finish floor
AGG	aggregate
AIB	air infiltration barrier
AL	aluminum
ALT	alternate
ANC	anchor(age)
ANOD	anodized
AP	access panel
APX	approximate
ARCH	architect(ural)
ASPH	asphalt
AT	asphalt tile
AUTO	automatic
BBD	bulletin board
BD	board
BEL	below
BET	between
BIT	bituminous
BJT	bed joint
BLK	block
BLKG	blocking
BLDG	building
BM	bench mark
BOT	bottom
BPL	bearing plate
BRG	bearing
BRK	brick
BRZ	bronze
BS	both sides
BSMT	basement
BVL	beveled
BW	both ways
CAB	cabinet
CB	catch basin
CEM	cement(itious)
CER	ceramic
CFL	counterflashing
CFT	cubic foot
CG	corner gaurd
CHAM	chamfer
CHBD	chalk board
CHT	ceiling height
CI	cast iron
CIPC	cast-in-place concrete
CIR	circle
CIRC	circumference
CJT	control joint
CK	caulk(ing)
CLG	ceiling
CLL	contract limit line
CLR	clear(ance)
CMU	concrete masonry unit
CO	clean out
COL	column
COMB	combination
CONC	concrete
COMP	compress(ed) (ible)
COMPO	composition (composite)
CONST	construction
CONT	continue(ous)
CONTR	contract(or)
CORR	corrugated
CPR	copper
CPT	carpet(ed)
CRS	course(s)
CS	countersink
CSMT	casement
CST	cast stone
CT	ceramic tile
CTR	counter
CUH	cabinet unit heater
CX	connection
CYD	cubic yard
D	drain
DEM	demolish (tion)
DEP	depressed
DF	drinking fountain
DH	double hung
DHW	domestic hot water
DIAG	diagonal
DIAM	diameter
DIM	dimension
DIV	division
DMT	demountable
DP	dampproofing
DPR	damper
DR	door
DS	downspout
DT	drain tile
DTL	detail
DW	dumb waiter
DWG	drawing
DWR	drawer
E	East
EAF	each face
EB	expansion bolt
EF	exhaust fan
EFS	exterior finish system
EL	elevation
ELEC	electric(al)
ELEM	element
ELEV	elevator
EMR	emergency
ENC	enclose(ure)
EP	electrical panelboard
EQ	equal
EQP	equipment
EST	estimate
EW	each way
EWC	electrical water cooler
EXG	existing
EXH	exhaust
EXP	exposed
EXT	exterior
FA	fire alarm
FAS	fastener
FB	face brick
FBD	fiberboard
FBO	furnished by others
FBRK	fire brick
FCO	floor cleanout
FD	floor drain
FE	fire extinguisher
FEC	fire extinguisher cabinet
FF	factory finish
FFE	finished floor elevation
FFL	finished floor line
FGL	fiberglass
FIN	finish(ed)
FJT	flush joint
FLG	flashing
FLR	floor(ing)
FLUR	flourescent
FLX	flexible
FN	fence
FND	foundation
FOB	face of brick
FOC	face of concrete
FOF	face of finish
FOM	face of masonry
FOS	face of studs
FP	fire proof
FPL	floor plate
FR	frame(d), (ing)
FS	full size
FT	fin tube
FTG	footing
FUR	furred(ing)
FUT	future
GA	gage, gauge
GB	grab bar
GC	general contractor
GCMU	glazed concrete masonry units
GD	grade, grading
GF	ground face
GI	galvanized iron
GKT	gasket(ed)
GL	glass, glazing
GLB	glass block
GLF	glass fiber
GP	galvanized pipe
GPDW	gypsum dry wall
GPT	gypsum tile
GRN	granite
GSS	galvanized steel sheet
GT	grout
GV	galvanized
GVL	gravel
GYP	gypsum
H	hardener
HB	hose bib
HBD	hardboard
HC	hollow core
HD	high density
HDR	header
HDW	hardware
HK	hook(s)
HM	hollow metal
HOR	horizontal
HSC	high strength corner
HT	height
HTG	heating
HVAC	heating-ventilating air-conditioning
HW	hot water
HWD	hardwood
HWH	hot water heater
HWR	hot water return
HWS	hot water supply
HX	hexagonal
ID	inside diameter
INCL	include(d), (ing)
INS	insulate(d), (ion)
INT	interior
INTM	intermediate
INV	invert
IPS	iron pipe size
J	joist
JC	janitor's closet
JF	joint filler
JT	joint
KIT	kitchen
KO	knock out
KPL	kickplate
L	length
LAB	laboratory
LAM	laminate
LAV	lavatory
LB	lag bolt
LBL	label
LCS	liquid chalk system
LH	left hand
LL	live load
LP	lightproof
LPT	low point
LSD	liquid soap dispenser
LT	light
LTL	lintel
LVR	louver
LW	lightweight
MAS	masonry
MAX	maximum
MB	machine bolt
MBR	member
MC	medicine cabinet
MDO	medium density overlay
MECH	mechanic(al)
MED	medium
MET	metal
MFD	metal floor decking
MFR	manufacturer
MH	manhole
MIN	minimum
MIR	mirror
MISC	miscellanious
MLD	molding, moulding
MMB	membrane
MNT	mount(ed), (ing)
MO	masonry opening
MOD	modular
MOV	movable
MR	moisture resistant
MRD	metal roof decking
MT	metal threshhold
MTFR	metal furring
MTL	material(s)
MULL	mullion
MWK	millwork
N	North
NAT	natural
NIC	not in contract
NL	nailable
NOM	nominal
NTS	not to scale
O/	over
OA	overall
OBS	obscure
OC	on center(s)
OD	outside diameter
OH	overhead
OJ	open-web joist
OPG	opening
OPH	opposite hand
OPP	opposite
PAR	parallel
PB	panic bar
PBD	particle board
PCC	precast concrete
PCF	pounds per cubic foot
PED	pedestal
PERF	perforate(d)
PERI	perimeter
PFB	prefabricate(d)
PFL	pounds per lineal foot prefinished
PFN	plate glass
PG	parking
PK	plate
PL	property line
PLAM	plastic laminate
PLAS	plaster
PNL	panel
PNT	paint(ed)
PORC	porcelain
PRF	preformed
PSC	prestressed concrete
PSF	pounds per square foot
PSI	pounds per square inch
PT	pressure treated
PTD	paper towel dispenser
PTN	partition
PTR	paper towel receptor
PV	pave(d), (ing)
PVC	polyvinyl chloride
PVMT	pavement
PWD	plywood
PWG	polished wire glass
QT	quarry tile
R	riser
RA	return air
RAD	radius
RB	rubber base
RBT	rabbet
RBT	rubber tile
RCP	reinforced concrete pipe
RD	roof drain
RE	reinforce(d), (ing)
REF	reference
REFG	refridgerator
REG	register
REM	remove (al)
RES	resilient
RET	return
REV	revision(s), (ed)
RFG	roofing
RFH	roof hatch
RFL	reflect(ed), (ive), (or)
RH	right hand
RL	rail(ing)
RM	room
RO	rough opening
ROW	right of way
RT	resilient tile
RVS	reverse (side)
RWC	rainwater conductor
RWL	rainwater leader
S	South
SAT	suspended acoustical tile
SC	solid core
SCH	schedule
SCN	screen
SD	storm drain
SEC	section
SFGL	safety glass
SG	sheet glass
SH	shelf, shelving
SHT	sheet
SHTH	sheathing
SIM	similar
SKL	skylight
SL	sleeve
SLR	sealer
SNT	sealant
SP	soundproof
SPC	spacer
SPK	speaker
SPL	special
SPEC	specification(s)
SQ	square
SSK	service sink
SST	stainless steel
ST	steel
STA	station
STD	standard
STFRT	storefront
STN	stain
STO	storage
STR	structural
SYM	symmetry(ical)
SYN	synthetic
SYS	system
T	tread
TB	towel bar
TEL	telephone
TEMP	tempered
T&G	tongue and groove
THK	thick(ness)
THR	threshold
TI	tapered insulation
TKBD	tackboard
TOM	top of masonry
TOP	top of plate
TOW	top of wall
TPD	toilet paper dispenser
TPTN	toilet partition
TSL	top of slab
TST	top of steel
T'STAT	thermostat
TV	television
TW	teacher's wardrobe
TYP	typical
TZ	terrazzo
UC	undercut
UL	underloyment
UNF	unfinished
UR	urinal
UV	unit ventilator
VAR	varnish
VB	vinyl base
VBA	vapor barrier
VCB	vinyl cove base
VCT	vinyl composition tile
VERT	vertical
VF	vinyl fabric
VG	vertical grain
VIN	vinyl
VJ	v-joint(ed)
VNR	veneer
VSB	vinyl straight base
VT	vinyl tile
VTR	vent through roof
W	West
WB	wood base
WC	water closet
WCO	wall clean out
WD	wood
WG	wired glass
WH	wall hung
WHA	water hammer arrestor
WHB	wheel bumper
WI	wrought iron
WIN	window
WM	wire mesh
WO	without
WP	waterproofing
WPT	working point
WR	water repellent
WS	waterstop
WSCT	wainscot
WTW	wall to wall
WWF	welded wire fabric

REGISTERED ARCHITECT
JAMES R. REUTER
No. 1738
STATE OF MAINE

SPRINKLER AND FIRE ALARM PROJECT
FMS #1
MAINE ARMY NATIONAL GUARD
PORTLAND, MAINE

SMITH REUTER LULL ARCHITECTS
LEWISTON BETHEL

179 Lisbon St.
Lewiston, ME 04240
207.786.5623 voice/fax

822 Grover Hill Rd.
Bethel, ME 04217
207.824.7237 voice/fax

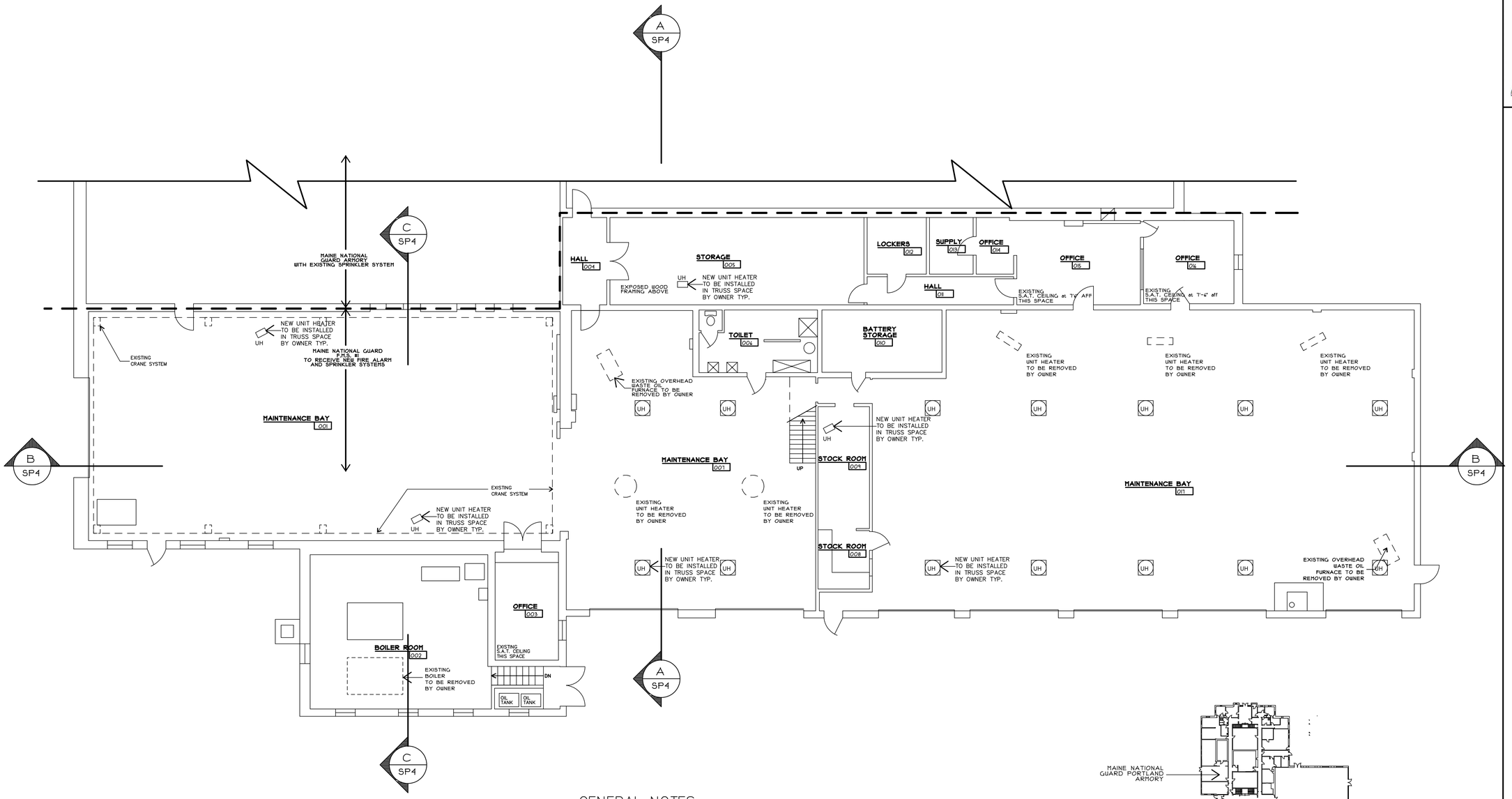
info@smithreuter.com

TITLE SHEET

PROJECT NO. 23SR10-479D
BID NO. 10-039

09 APR 2010

T1



FMS #1
PARTIAL FIRST FLOOR PLAN

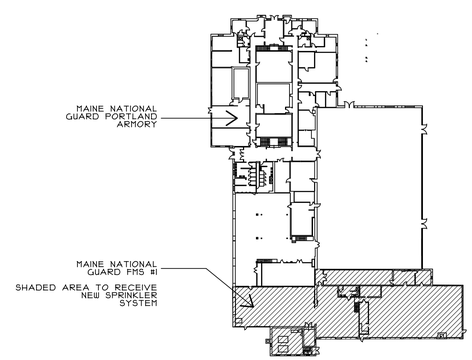
1/8" = 1'-0'

GRAPHIC SCALE

0' 5' 10' 15' 20' 25'

GENERAL NOTES:

1. ALL AREAS IN THE FMS #1 PORTION OF THE BUILDING ARE TO BE SPRINKLERED IN ACCORDANCE WITH NFPA-13
2. IT IS THE INTENT TO CONCEAL ALL PIPING IN AREAS WITH ACOUSTICAL TILE OR GPDW CEILINGS UNLESS APPROVED BY THE OWNER AND ARCHITECT.
3. SPRINKLER CONTRACTOR SHALL MEET ALL REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND NFPA-13.
4. PROVIDE COVERAGE BELOW OVERHEAD DOORS AND OBSTRUCTIONS IN ACCORDANCE WITH NFPA-13.
5. THERE ARE CONCEALED INSTITIAL SPACES THAT WILL REQUIRE COVERAGE.
6. INSTALL SPRINKLER SYSTEM AROUND EXISTING CRANE SYSTEM
7. NEW EXPOSED CONDUIT AND SPRINKLER PIPING, INCLUDING PIPE HANGERS AND SUPPORTS, TO BE PAINTED THE COLOR OF THE EXISTING WALL OR CEILING UPON WHICH THE CONDUIT OR PIPING IS PLACED.



KEY PLAN

REGISTERED ARCHITECT
JAMES R. REUTER
No. 1736
STATE OF MAINE

SPRINKLER AND FIRE ALARM PROJECT
FMS #1
MAINE ARMY NATIONAL GUARD
PORTLAND, MAINE

SMITH REUTER LULL ARCHITECTS
LEWISTON BETHEL

179 Lisbon St.
Lewiston, ME 04240
207.786.5623 voice/fax

822 Grover Hill Rd.
Bethel, ME 04217
207.824.7237 voice/fax

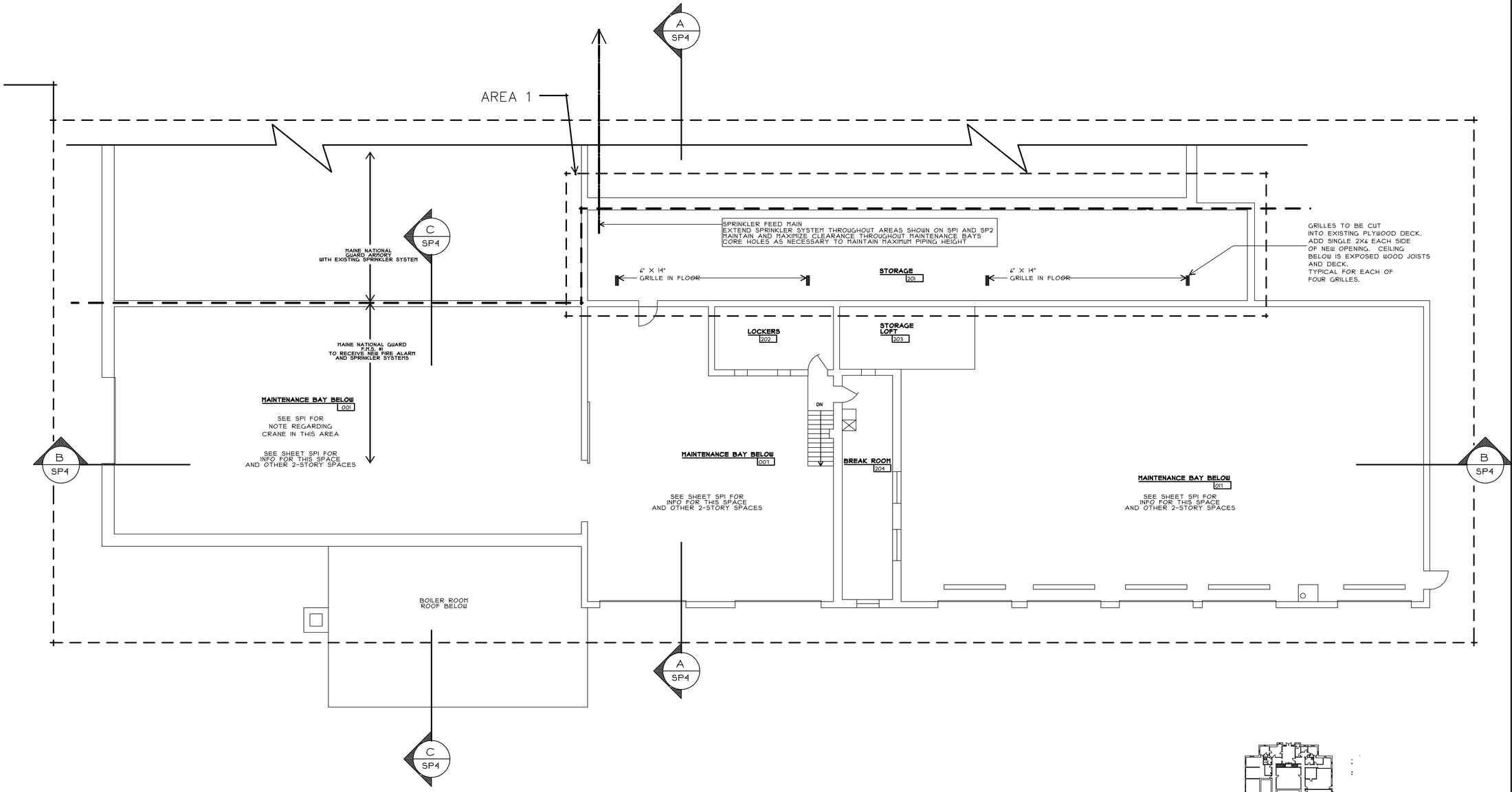
info@smithreuter.com

FMS #1
FIRST FLOOR PLAN

PROJECT NO.
23SR10-479D
BID NO.
10-039

09 APR 2010

SP1



FMS #1
PARTIAL SECOND FLOOR PLAN

1/8" = 1'-0'

GRAPHIC SCALE

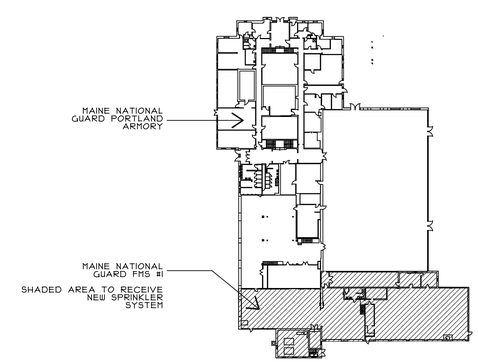
0' 5' 10' 15' 20' 25'

AREA 1:

PROVIDE (4) 6" X 14" FLOOR LOUVERS TO PROVIDE WARM AIR FROM BELOW

GENERAL NOTES:

1. ALL AREAS IN THE FMS #1 PORTION OF THE BUILDING ARE TO BE SPRINKLERED IN ACCORDANCE WITH NFPA-13
2. IT IS THE INTENT TO CONCEAL ALL PIPING IN AREAS WITH ACOUSTICAL TILE OR GPDW CEILINGS UNLESS APPROVED BY THE OWNER AND ARCHITECT.
3. SPRINKLER CONTRACTOR SHALL MEET ALL REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND NFPA-13.
4. PROVIDE COVERAGE BELOW OVERHEAD DOORS AND OBSTRUCTIONS IN ACCORDANCE WITH NFPA-13.
5. THERE ARE CONCEALED INSTITIAL SPACES THAT WILL REQUIRE COVERAGE.
6. INSTALL SPRINKLER SYSTEM AROUND EXISTING CRANE SYSTEM
7. NEW EXPOSED CONDUIT AND SPRINKLER PIPING, INCLUDING PIPE HANGERS AND SUPPORTS, TO BE PAINTED THE COLOR OF THE EXISTING WALL OR CEILING UPON WHICH THE CONDUIT OR PIPING IS PLACED.



KEY PLAN

REGISTERED ARCHITECT
JAMES R. REUTER
No. 1736
STATE OF MAINE

SPRINKLER AND FIRE ALARM PROJECT
FMS #1
MAINE ARMY NATIONAL GUARD
PORTLAND, MAINE

SMITH REUTER LULL ARCHITECTS
LEWISTON BETHEL
179 Lisbon St.
Lewiston, ME 04240
207.786.5623 voice/fax

822 Grover Hill Rd.
Bethel, ME 04217
207.824.7237 voice/fax

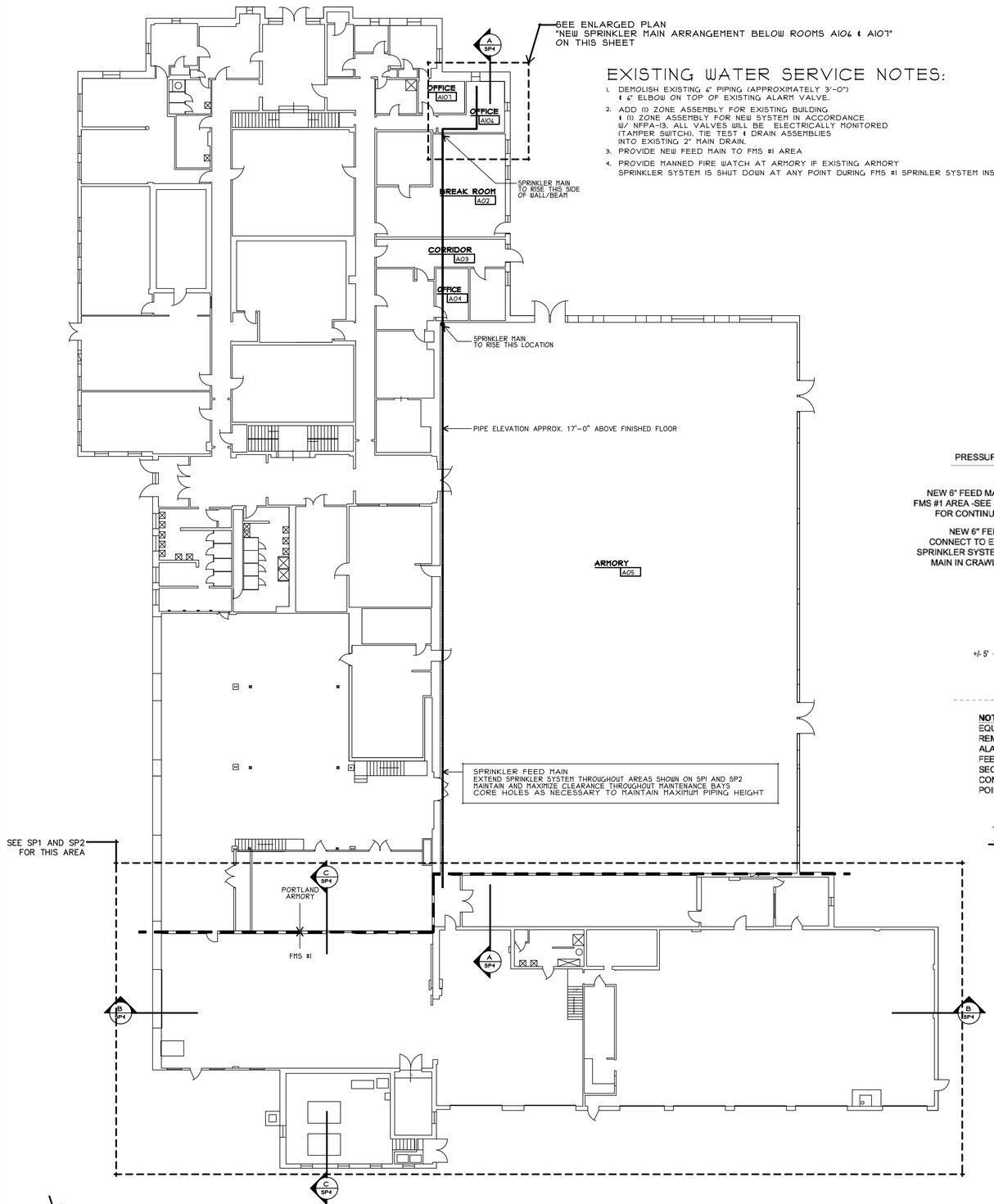
info@smithreuter.com

FMS #1
SECOND FLOOR PLAN

PROJECT NO. 235R10-479D
BID NO. 10-039

09 APR 2010

SP2



SPRINKLER MAIN LOCATION FIRST FLOOR PLAN

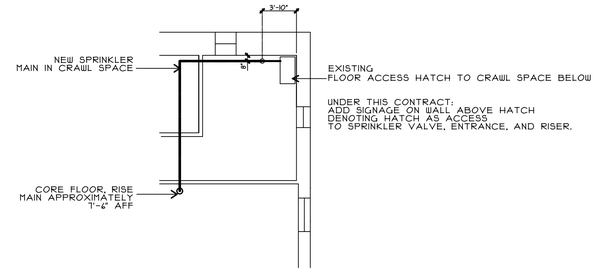
1/16" = 1'-0'

GRAPHIC SCALE

0' 5' 10' 15' 20' 25'

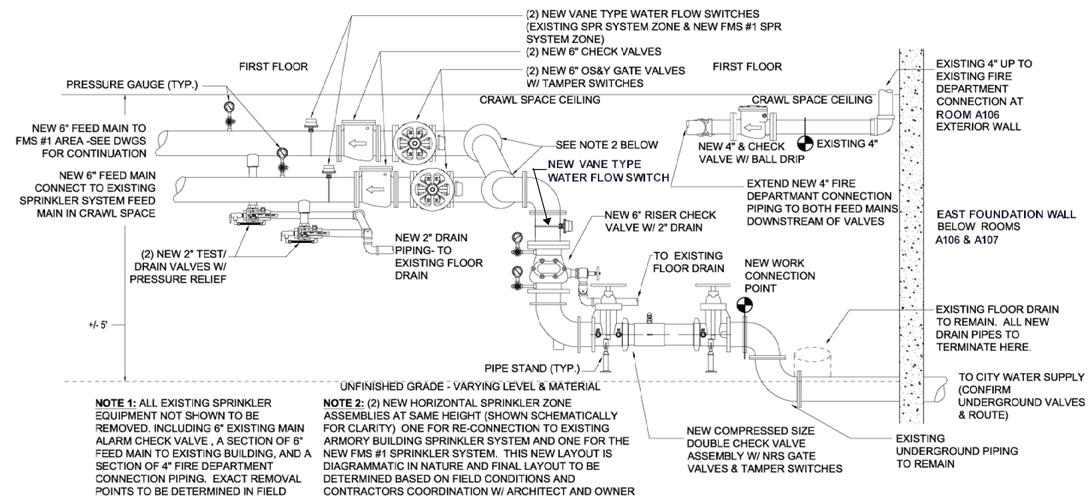
EXISTING WATER SERVICE NOTES:

1. DEMOLISH EXISTING 6" PIPING (APPROXIMATELY 3'-0") & 6" ELBOW ON TOP OF EXISTING ALARM VALVE.
2. ADD (1) ZONE ASSEMBLY FOR EXISTING BUILDING & (1) ZONE ASSEMBLY FOR NEW SYSTEM IN ACCORDANCE W/ NFPA-13. ALL VALVES WILL BE ELECTRICALLY MONITORED (TAMPER SWITCH). TIE TEST & DRAIN ASSEMBLIES INTO EXISTING 2" MAIN DRAIN.
3. PROVIDE NEW FEED MAIN TO FMS #1 AREA
4. PROVIDE MANNED FIRE WATCH AT ARMORY IF EXISTING ARMORY SPRINKLER SYSTEM IS SHUT DOWN AT ANY POINT DURING FMS #1 SPRINLER SYSTEM INSTALLATION.



SPRINKLER MAIN LOCATION ENLARGED FLOOR PLAN

1/8" = 1'-0'

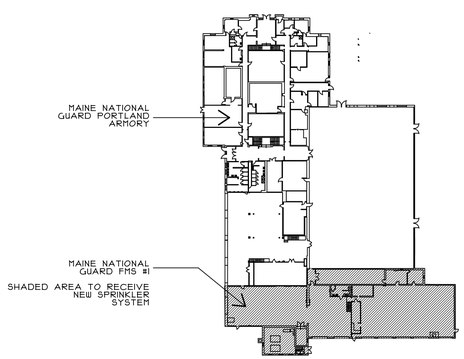


NOTE 1: ALL EXISTING SPRINKLER EQUIPMENT NOT SHOWN TO BE REMOVED. INCLUDING 6" EXISTING MAIN ALARM CHECK VALVE , A SECTION OF 6" FEED MAIN TO EXISTING BUILDING, AND A SECTION OF 4" FIRE DEPARTMENT CONNECTION PIPING. EXACT REMOVAL POINTS TO BE DETERMINED IN FIELD

NOTE 2: (2) NEW HORIZONTAL SPRINKLER ZONE ASSEMBLIES AT SAME HEIGHT (SHOWN SCHEMATICALLY FOR CLARITY) ONE FOR RE-CONNECTION TO EXISTING ARMORY BUILDING SPRINKLER SYSTEM AND ONE FOR THE NEW FMS #1 SPRINKLER SYSTEM. THIS NEW LAYOUT IS DIAGRAMMATIC IN NATURE AND FINAL LAYOUT TO BE DETERMINED BASED ON FIELD CONDITIONS AND CONTRACTORS COORDINATION W/ ARCHITECT AND OWNER

SCHEMATIC DRAWING NEW SPRINKLER MAIN ARRANGEMENT BELOW ROOMS A106 & A107

NOT TO SCALE



KEY PLAN

REGISTERED ARCHITECT JAMES R. REUTER No. 1738 STATE OF MAINE

SPRINKLER AND FIRE ALARM PROJECT

FMS #1

MAINE ARMY NATIONAL GUARD

PORTLAND, MAINE

SMITH REUTER LULL ARCHITECTS
LEWISTON BETHEL

179 Lisbon St.
Lewiston, ME 04240
207.786.5623 voice/fax

822 Grover Hill Rd.
Bethel, ME 04217
207.824.7237 voice/fax

info@smithreuter.com

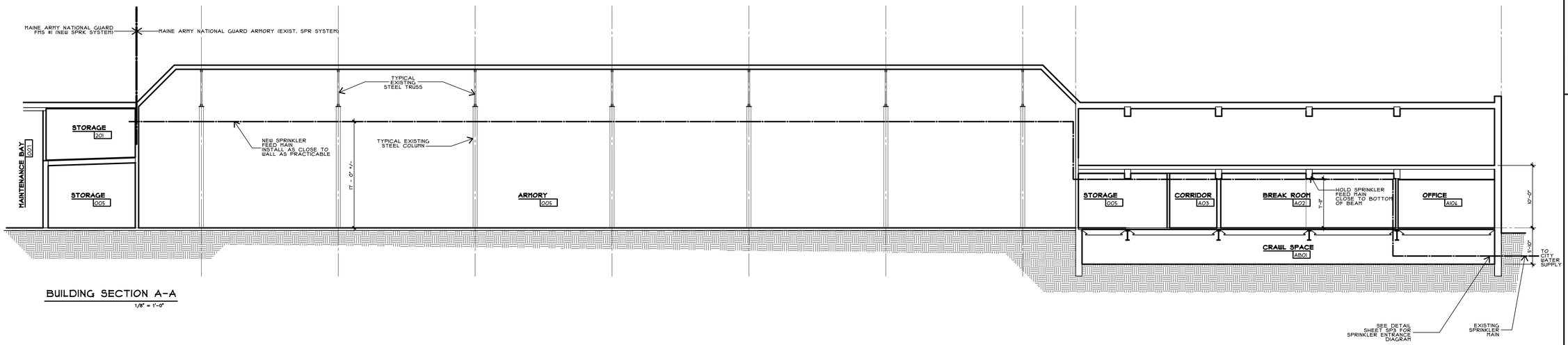
SPRINKLER FEED MAIN LOCATION PLAN

PROJECT NO. 23SR10-479D

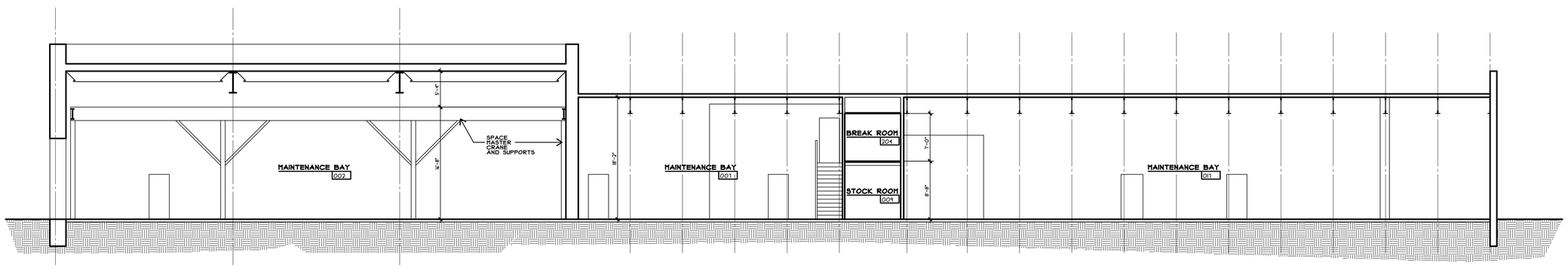
BID NO. 10-039

09 APR 2010

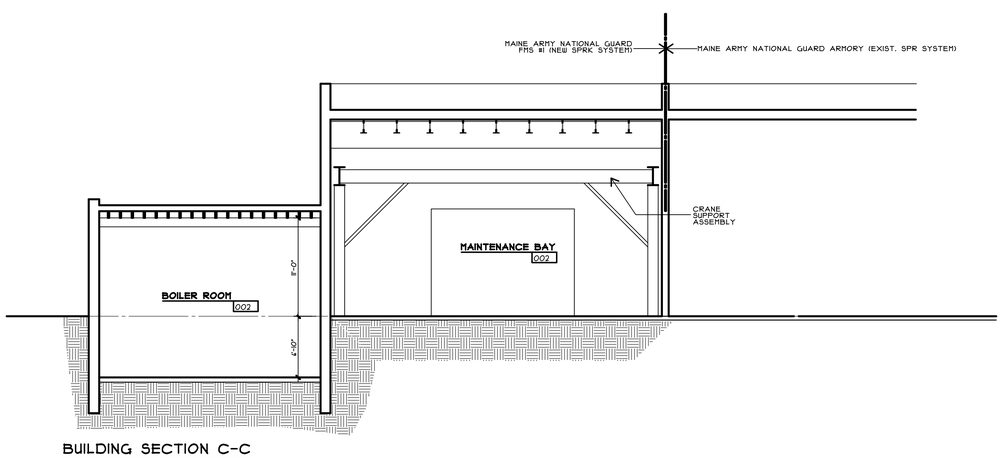
SP3



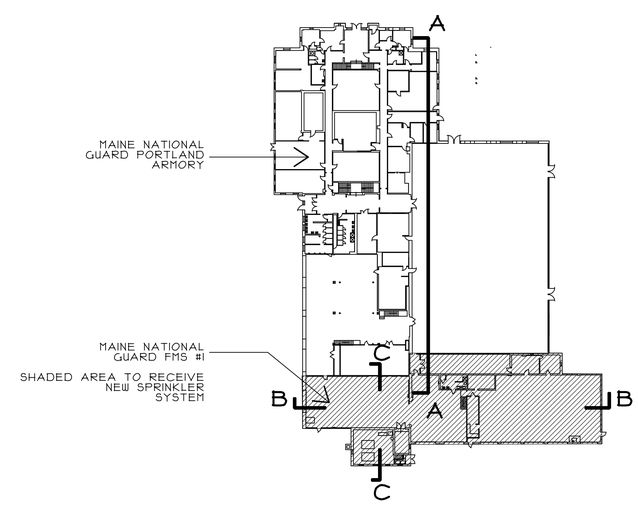
BUILDING SECTION A-A
1/8" = 1'-0"



BUILDING SECTION B-B
1/8" = 1'-0"



BUILDING SECTION C-C
1/8" = 1'-0"



KEY PLAN

REGISTERED ARCHITECT
JAMES R. REUTER
No. 1736
STATE OF MAINE

SPRINKLER AND FIRE ALARM PROJECT

FMS #1
MAINE ARMY NATIONAL GUARD
PORTLAND, MAINE

SMITH REUTER LULL ARCHITECTS
LEWISTON BETHEL
179 Lisbon St.
Lewiston, ME 04240
207.786.5623 voice/fax

822 Grover Hill Rd.
Bethel, ME 04217
207.824.7237 voice/fax

info@smithreuter.com

BUILDING SECTIONS

PROJECT NO. 23SR10-479D
BID NO. 10-039

09 APR 2010

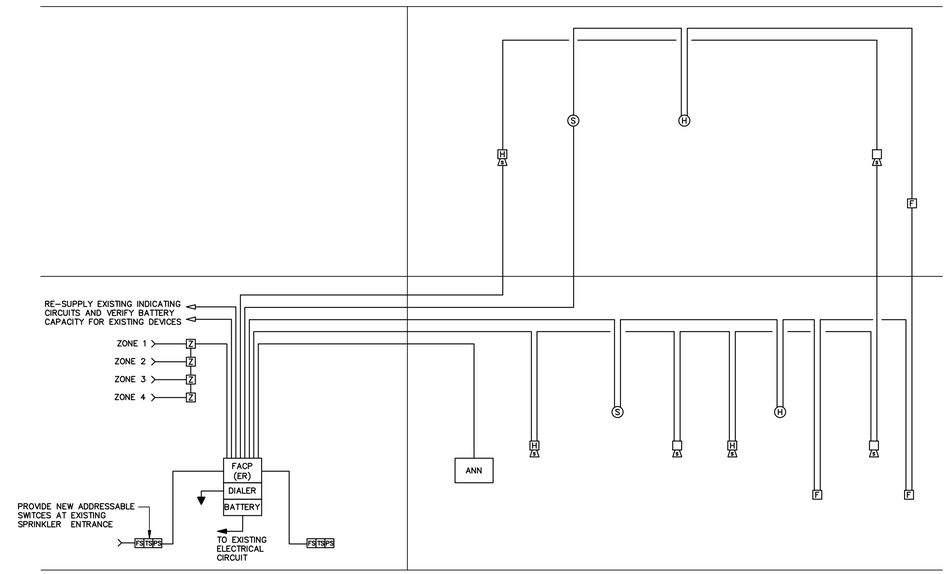
SP4

ELECTRICAL SYMBOLS & INSTRUCTIONS

(X)	KEYED NOTE, SEE NOTE OF SAME LETTER ON SHEET.
[ ]	INDICATES EXISTING DEVICE OR ITEM.
———	BRANCH CIRCUIT WIRING CONCEALED IN CEILING OR WALL.
— — — —	BRANCH CIRCUIT WIRING CONCEALED IN FLOOR.
- - - - - - - -	EXPOSED WIRING.
———▷	DIRECTIVE ARROW.
⏚	GROUND.
J □ P	JUNCTION BOX, SPLICE BOX AND PULL BOX.
2 W P ▼▼▼▼	TELEPHONE OUTLET 1'–6" AFF, QUANTITY AS NOTED, WITH "W" 4'–0" AFF, WITH "P" FOR PAY TELEPHONE 4'–0" AFF, WITH "U" 0'–6" ABOVE COUNTER.
FACP	FIRE ALARM CONTROL PANEL.
ANN	FIRE ALARM REMOTE ANNUNCIATOR.
FS TS PS	FIRE ALARM FLOW SWITCH, TAMPER SWITCH, PRESSURE SWITCH.
V H	FIRE ALARM AUDIO/VISUAL ALARM, 6'–8" AFF.
V	FIRE ALARM VISUAL ALARM, 6'–8" AFF.
F	FIRE ALARM MANUAL PULL STATION 4'–0" AFF.
S	FIRE ALARM SMOKE DETECTOR, CEILING MOUNTED UNLESS NOTED OTHERWISE.
DS	FIRE ALARM DUCT SMOKE DETECTOR.
DH	FIRE ALARM DOOR CLOSER OR RELEASE MECHANISM
H	FIRE ALARM HEAT DETECTOR, CEILING MOUNTED UNLESS NOTED OTHERWISE.
LS	FIRE ALARM SYSTEM LOCAL SMOKE DETECTOR, w/ SOUNDER IN BASE, CEILING MOUNTED UNLESS NOTED OTHERWISE.
Z	FIRE ALARM ZONE ADDRESSABLE MODULE.
SD	FIRE ALARM SPRINKLER MAIN.
—— TAS ——	FIRE ALARM WIRING SHALL BE IN EMT CONDUIT: T = INITIATING AND CONTROL COMMUNICATIONS CIRCUIT A = AUDIO ALARM SIGNALING DEVICE CIRCUIT S = VISUAL ALARM SIGNALING DEVICE CABLE D = MAGNETIC DOOR HOLDER CIRCUIT

ABBREVIATIONS

A	AMPERES	ELEV	ELEVATION, ELEVATOR	NID	NETWORK INTERFACE DEMARCATION
AFF	ABOVE FINISHED FLOOR	EMERG	EMERGENCY	NO	NUMBER
AFG	ABOVE FINISHED GRADE	EMT	ELECTRICAL METALLIC TUBING	OC	ON CENTER
ATS	AUTOMATIC TRANSFER SWITCH	EQUIP	EQUIPMENT	PNL	PANEL, PANEL BOARD
BATT	BATTERY	EXIST'G	EXISTING	PVC	POLYVINYL CHLORIDE
BKR	BREAKER	EXT	EXTERIOR	PWR	POWER
BLDG	BUILDING	FA	FIRE ALARM	R	REMOVE
C,c	CONDUIT, CONDUCTOR	FACP	FIRE ALARM CONTROL PANEL	RECEP	RECEPTACLE
CB	CIRCUIT BREAKER	FIN	FINISH, FINISHED	RL	RELOCATE
CKT	CIRCUIT	FLR	FLOOR	RSC	RIGID STEEL CONDUIT
CLG	CEILING	GND	GROUND	SW	SWITCH
C.M.P.	CENTRAL MAINE POWER CO.	HP	HORSEPOWER, HEAT PUMP	TEL	TELEPHONE
CT	CURRENT TRANSFORMER	J–BOX	JUNCTION BOX	TRANS	TRANSFORMER
DISTRIB	DISTRIBUTION	KVA	KILO VOLT AMPS	TYP	TYPICAL
DN	DOWN	KW	KILOWATT(S)	UF	UNDER FLOOR
DWG	DRAWING	LGT	LIGHT	UG	UNDERGROUND
E	EXISTING	LTG	LIGHTING	V	VOLTS
EC	ELECTRICAL CONTRACTOR	MAX	MAXIMUM	W	WATTS
ER	EXISTING REPLACE	MIN	MINIMUM	WM	WIREMOLD
ELECT	ELECTRIC, ELECTRICAL	N	NEW	WP	WEATHERPROOF
		NIC	NOT IN CONTRACT	W/W, WW	WIREWAY



FMS #1 FIRE ALARM RISER DIAGRAM

NO SCALE

FIRE ALARM RISER NOTES

1. DIAGRAM DENOTES GENERAL ARRANGEMENT OF DEVICES AND TYPICAL SCHEMATIC WIRING. SEE FLOOR PLAN DRAWINGS FOR ACTUAL QUANTITIES AND LOCATIONS OF DEVICES.
2. PROVIDE ALL NECESSARY SYSTEM CARDS, POWER EXTENDER MODULES, POWER SUPPLIES, ENCLOSURES, AND INTERFACE MODULES NECESSARY FOR A COMPLETE AND FUNCTIONING SYSTEM.
3. PROVIDE SMOKE DETECTOR PROTECTION AT ALL FIRE ALARM EQUIPMENT LOCATIONS (NOT SHOWN ON PLANS).
4. PROVIDE WIRING AND CONDUIT SIZING AS REQUIRED FOR SUBMITTED FIRE ALARM SYSTEM.
5. PROVIDE SCREW SET LOCK ON DEVICES FOR ALL CIRCUIT BREAKERS SUPPLYING FIRE ALARM EQUIPMENT.
6. PROVIDE TAMPER SWITCH AT EACH SPRINKLER VALVE LOCATION. COORDINATE WITH SPRINKLER CONTRACTOR.
7. CONTRACTOR SHALL VERIFY EXISTING WIRING IS PRESENT AND OPERATIONAL.
8. CONTACTOR SHALL COUNT EXISTING NOTIFICATION DEVICES TO CALCULATE BATTERY SIZING.

Hewett & Whitney
ENGINEERS & DESIGNERS
ELECTRICAL & MECHANICAL SYSTEMS
161 MAIN STREET WINTHROP, MAINE
Tel 207•377•6969 Fax 207•377•7584

PLOT DATE: May 12, 2010

SPRINKLER AND FIRE ALARM PROJECT
MAINE ARMY NATIONAL GUARD
PORTLAND, MAINE

SMITH REUTER LULL ARCHITECTS
LEWISTON BETHEL
179 Lisbon St.
Lewiston, ME 04240
207.786.5623 207.786.5625 fax

822 Grover Hill Rd.
Bethel, ME 04217
207.824.7237 207.824.8429 fax

info@smithreuter.com

ELECTRICAL SYMBOLS LIST AND RISER DIAGRAMS

STATE OF MAINE
COLIN C. HEWETT
8374
LICENSED PROFESSIONAL ENGINEER
04–09–10

PROJECT NO. 23SR10-479D

BID NO. 10-039

04/09/10

E0

GENERAL NOTES

1. THIS PLAN HAS BEEN COMPILED FROM FIELD OBSERVATIONS AND OWNER SUPPLIED DRAWINGS. FIELD VERIFY ALL CONDITIONS AND OBSERVE NECESSARY SAFETY PRECAUTIONS BEFORE DOING ANY WORK.
2. DEVICES WITH CONTINUOUS LINETYPE ——— INDICATE NEW UNLESS OTHERWISE INDICATED.
3. IN EVENT ANY UNSAFE WIRING IS ENCOUNTERED, IMMEDIATELY NOTIFY ENGINEER FOR CORRECTIVE ACTION.

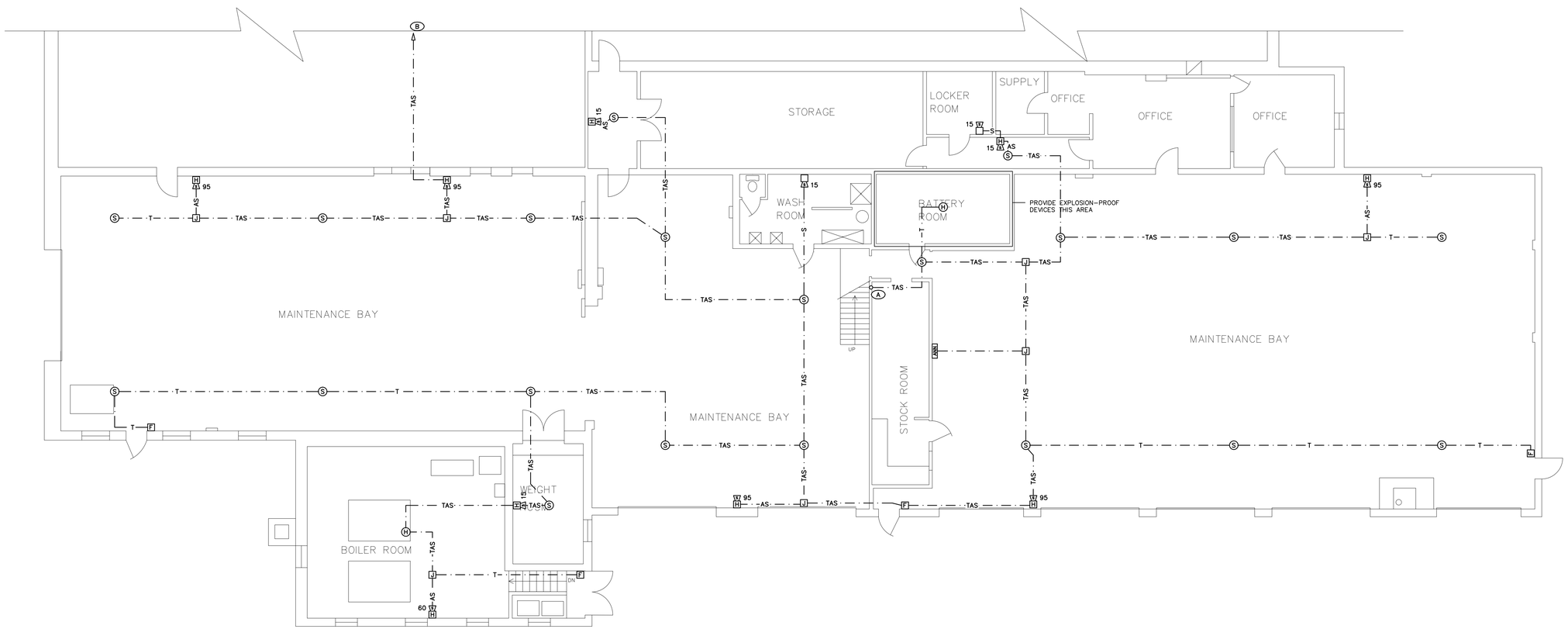
FIRE ALARM NOTES

1. FIRE ALARM STROBE LIGHTS IN OPEN AREAS SHALL FLASH IN SYNCHRONIZATION.
2. RE-CONNECT ANY EXISTING DOOR HOLDERS TO RELEASE UPON ALARM ACTIVATION.

KEYED NOTES

(A) WIRE UP TO NEXT FIRE ALARM DEVICE. SEE DRAWING E2 FOR CONTINUATION.

(B) WIRE TO NEW FACP, SEE DRAWING E3 FOR CONTINUATION.



FMS #1 PARTIAL FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0" MEARNG #23SR09-438

4' 2' 0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MAINE
COLIN C. HEWETT
8374
LICENSED PROFESSIONAL ENGINEER
04-09-10

Hewett & Whitney
ENGINEERS & DESIGNERS
ELECTRICAL & MECHANICAL SYSTEMS
161 MAIN STREET WINTHROP, MAINE
Tel 207•377•6969 Fax 207•377•7584

PLOT DATE: May 12, 2010

SPRINKLER AND FIRE ALARM PROJECT

MAINE ARMY NATIONAL GUARD

PORTLAND, MAINE

SMITH REUTER LULL ARCHITECTS
LEWISTON BETHEL
179 Lisbon St.
Lewiston, ME 04240
207.786.5623 207.786.5625 fax

822 Grover Hill Rd.
Bethel, ME 04217
207.824.7237 207.824.8429 fax

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FMS #1
FIRST FLOOR PLAN

PROJECT NO. 23SR10-479D

BID NO. 10-039

04/09/10

E1

GENERAL NOTES

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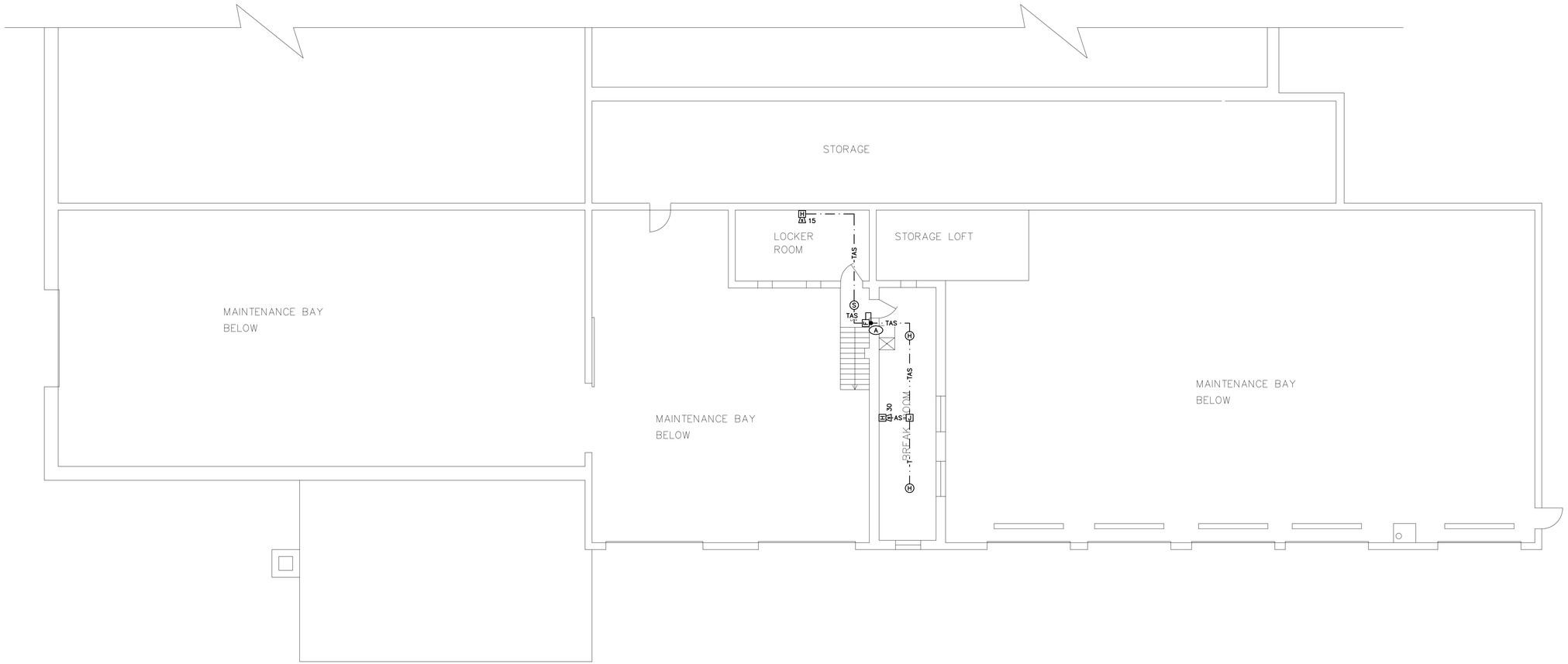
2. DEVICES WITH CONTINUOUS LINETYPE ——— INDICATE NEW UNLESS OTHERWISE INDICATED.
3. IN EVENT ANY UNSAFE WIRING IS ENCOUNTERED, IMMEDIATELY NOTIFY ENGINEER FOR CORRECTIVE ACTION.

FIRE ALARM NOTES

1. FIRE ALARM STROBE LIGHTS IN OPEN AREAS SHALL FLASH IN SYNCHRONIZATION.
2. RE-CONNECT ANY EXISTING DOOR HOLDERS TO RELEASE UPON ALARM ACTIVATION.

KEYED NOTES

(A) WIRE DOWN TO NEXT FIRE ALARM DEVICE. SEE DRAWING E1 FOR CONTINUATION.



FMS #1 PARTIAL SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0" MEARNG #23SR09-438

4' 2' 0 4' 8' 16'
SCALE: 1/8" = 1'-0"

STATE OF MAINE
COLIN C. HEWETT
8374
LICENSED PROFESSIONAL ENGINEER
04-09-10

Hewett & Whitney
ENGINEERS & DESIGNERS
ELECTRICAL & MECHANICAL SYSTEMS
161 MAIN STREET WINTHROP, MAINE
Tel 207•377•6969 Fax 207•377•7584

PLOT DATE: May 12, 2010

SPRINKLER AND FIRE ALARM PROJECT

MAINE ARMY NATIONAL GUARD

PORTLAND, MAINE

SMITH REUTER LULL ARCHITECTS
LEWISTON BETHEL
179 Lisbon St.
Lewiston, ME 04240
207.786.5623 207.786.5625 fax

822 Grover Hill Rd.
Bethel, ME 04217
207.824.7237 207.824.8429 fax

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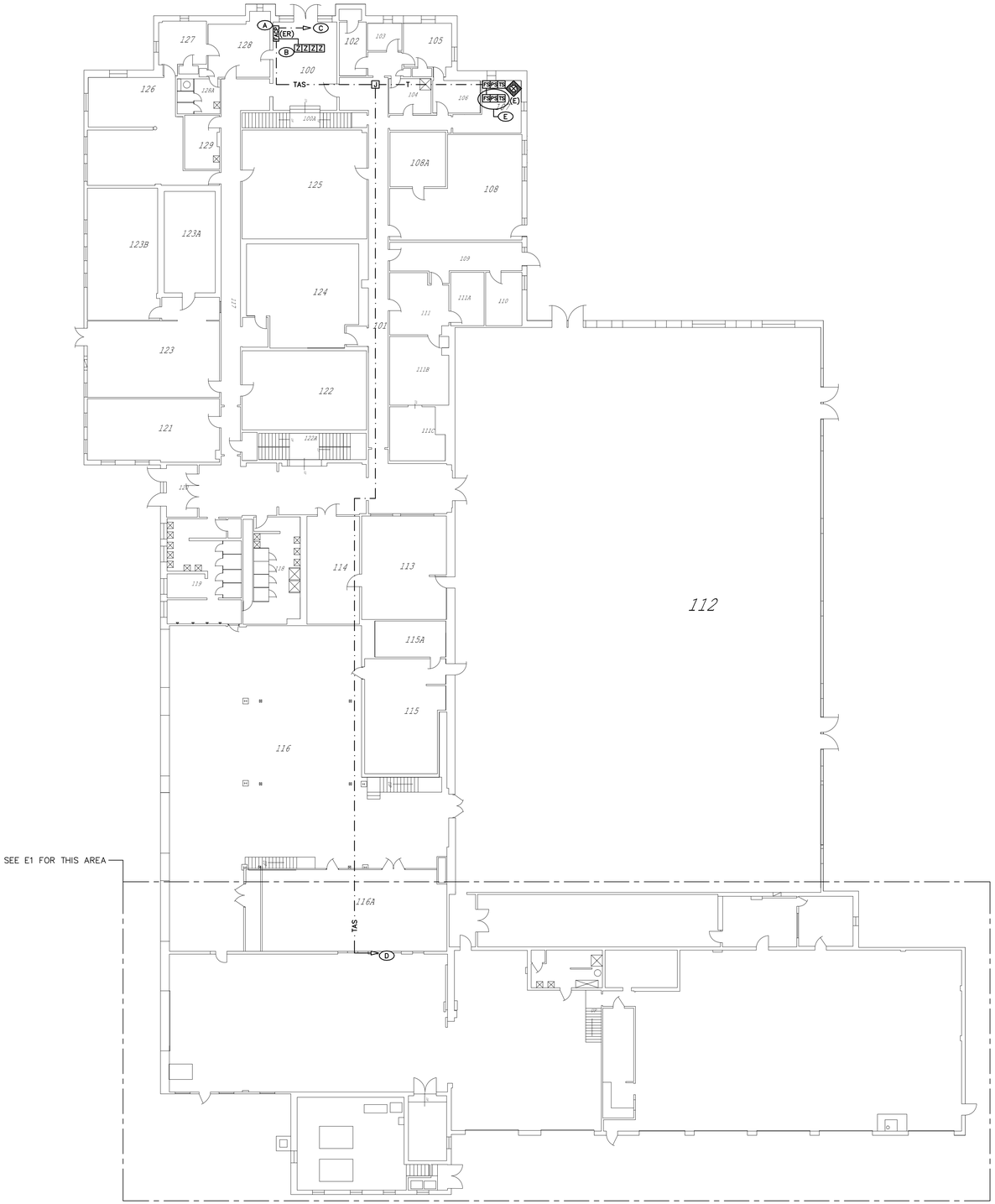
FMS #1
SECOND FLOOR PLAN

PROJECT NO. 23SR10-479D

BID NO. 10-039

04/09/10

E2



SPRINKLER MAIN LOCATION FIRST FLOOR PLAN

SCALE: 1/16" = 1'-0" MEARNG #23SF09-438

NORTH

GENERAL NOTES

1. THIS PLAN HAS BEEN COMPILED FROM FIELD OBSERVATIONS AND OWNER SUPPLIED DRAWINGS. FIELD VERIFY ALL CONDITIONS AND OBSERVE NECESSARY SAFETY PRECAUTIONS BEFORE DOING ANY WORK.
2. DEVICES WITH CONTINUOUS LINETYPE ——— INDICATE NEW UNLESS OTHERWISE INDICATED.
3. IN EVENT ANY UNSAFE WIRING IS ENCOUNTERED, IMMEDIATELY NOTIFY ENGINEER FOR CORRECTIVE ACTION.

KEYED NOTES

(A) REMOVE EXISTING FACP AND REPLACE WITH NEW FACP. EXISTING PANEL IS GENERAL ELECTRIC ESL 1500 SERIES, 5 ZONE MODEL.

(B) FIELD LOCATE ZONE ADDRESSABLE MODULES TO BEST ADVANTAGE TO INTERCEPT EXISTING FIRE ALARM ZONES.

(C) RESUPPLY EXISTING INDICATING CIRCUITS, VERIFY BATTERY CAPACITY FOR EXISTING DEVICES.

(D) WIRE TO NEXT FIRE ALARM DEVICE. SEE DRAWING E1 FOR CONTINUATION.

(E) PROVIDE NEW ADDRESSABLE SWITCHES ON EXISTING SPRINKLER ENTRANCE IN CRAWL SPACE BELOW.

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SPRINKLER AND FIRE ALARM PROJECT

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PORTLAND, MAINE

SMITH REUTER LULL
ARCHITECTS
LEWISTON BETHEL
179 Lisbon St.
Lewiston, ME 04240
207.786.5623 207.786.5625 fax

822 Grover Hill Rd.
Bethel, ME 04217
207.824.7237 207.824.8429 fax

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SPRINKLER FEED MAIN LOCATION PLAN

STATE OF MAINE
COLIN C. HEWETT
8374
LICENSED PROFESSIONAL ENGINEER
04-09-10

PROJECT NO. 23SR10-479D

BID NO. 10-039

04/09/10

E3