City of Portland, Maine

Public Buildings Division

Portland High School

Fire Alarm Upgrades – Phase 1

May 11, 2016

Bid #6916

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BID #6916

CITY OF PORTLAND, MAINE
Notice to Contractors

PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES – PHASE 1

Sealed bids will be received at the Purchasing Office, Room 103, City Hall, 389 Congress Street, Portland, Maine 04101, until 3:00 P.M., Tuesday, June 7, 2016, at which time they will be publicly opened, for:

Project Name: Portland High School – Fire Alarm Upgrades – Phase 1
Bid #6916

Location: Portland High School
284 Cumberland Avenue
Portland, Maine

Outline of Work:

The City of Portland intends to upgrade the Fire Alarm system at its Portland High School facility, located at 284 Cumberland Avenue, Portland Me. The City requests bids for the installation, testing, and acceptance of the Fire Alarm system described in the attached specifications and drawings. Prices quoted shall be all-inclusive and represent complete installation as shown on the attached drawings and in the attached specifications. The Contractor shall be responsible for all parts, labor and all other associated apparatus necessary to completely install, test, and turnover for acceptance to the City the Fire Alarm system detailed herein.

MANDATORY PRE-BID CONFERENCE

It is mandatory that all prospective bidders attend a pre-bid meeting that will be held at the site on Tuesday, May 24, 2016 at 10:00 A.M. Only those firms represented at this meeting may bid on the project. In the event of inclement weather, please check the local media outlets, the City of Portland Purchasing website (www.portlandpurchasing.com) and/or call the City's Purchasing Office, 207-874-8654 regarding any postponement. If Portland Schools and/or City operations have been cancelled, any scheduled pre-bid meetings will be cancelled as well. NOTE: Every effort will be made to provide as much forewarning as possible regarding these decisions.

Copies of the above documents will be available at the Purchasing Office, Room 103, City Hall, 389 Congress Street, Portland, ME 04101, upon payment in advance of $25.00 for each set of plans and specifications or $35.00 for each set of plans and specifications to be mailed. Each prospective bidder will be required to obtain from the City each copy of the proposal form and each set of plans; e-mail jrl@portlandmaine.gov, or phone (207) 874-8654, fax (207) 874-8652.

BID #6916

CITY OF PORTLAND, MAINE

PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES – PHASE 1

Notice to Bidders

Sealed bids for the above project, addressed to Purchasing office, City Hall, Room 103, 389 Congress Street, Portland, Maine 04101, and clearly marked on the outside of the envelope with the name of the bidder, project title and bid number, will be received **until 3:00 PM on Tuesday, June 7, 2016**, at which time they will be publicly opened.

All bids shall be submitted on the attached form and are to remain open for sixty (60) days after their opening. Late, faxed or bids submitted electronically will be rejected.

MANDATORY PRE-BID MEETING

There will be a **mandatory pre-bid meeting held on Tuesday, May 24, 2016, at 10:00 A.M.** This meeting will commence at the site Portland High School, 284 Cumberland Avenue, Portland, Maine. Interested bidders shall meet a City Representative at the site. Only those firms represented at this meeting will be allowed to submit a bid on this project.

In the event of inclement weather, please check the local media outlets, the City of Portland Purchasing website (www.portlandpurchasing.com) and/or call the City's Purchasing Office, 207-874-8654 regarding any postponement. If Portland Schools and/or City operations have been cancelled, any scheduled pre-bid meetings will be cancelled as well. NOTE: Every effort will be made to provide as much forewarning as possible regarding these decisions.

All questions shall be directed in writing ONLY to the Purchasing Office at the above address and be received at least five business days prior to the bid opening date (FAX 207-874-8652, or email krc@portlandmaine.gov Responses from the City that substantially alter this bid will be issued in the form of a written addendum to all bid holders registered in the Purchasing Office. Oral explanations or interpretations given before the award of the contract will not be binding.

Bids from vendors not registered with the Purchasing Office may be rejected; receipt of this document directly from the City of Portland indicates registration. Should a vendor receive this Invitation from a source other than the City, please contact 207-874-8654 to ensure that your firm is listed as a vendor for this project.

This bid will be awarded to the qualified/certified bidder that submits the lowest base bid amount.

The successful bidder shall agree to defend, indemnify and save the City harmless from all losses, costs or damages caused by its acts or those of its agents, and, before signing the contract, will produce evidence satisfactory to the City's Corporation Counsel of coverage for General Public and Automobile Liability insurance in amounts not less than $400,000 per person, for bodily injury, death and property damage, protecting the contractor and the City, and naming the City as an additional insured from such claims, and shall also procure Workers' Compensation insurance. The City disclaims any and all responsibility for injury to contractors, their agents or others while examining the job or at any other time.

The successful bidder shall supply the City with a Performance Bond and Labor and Material Payment Bond, each in the amount of the contract price, guaranteeing one hundred percent (100%) performance of the contract, including the guarantee period and free and clear of any and all liens, attachments and encumbrances. All bonds shall comply with the requirements of Maine state law.

Materials and equipment purchased for permanent installation in this project are exempt from the State of Maine Sales and Use tax and from all Federal Excise taxes. Each bidder shall take this exception into account in calculating his bid price for the work.

The contractor shall furnish all labor, materials, fixtures, supplies, equipment and transportation necessary to do the work as specified. The contractor affirms that the equipment, or work, shall be in full compliance with any and all applicable O.S.H.A., D.O.T., ANSI, Federal, State and/or municipal regulations. **Contractors will be responsible for acquiring all necessary permits, licenses and pay all associated fees (including dump disposal fees and disposal taxes, if applicable), unless otherwise specified herein.**

The contractor shall erect and maintain, at all times, any and all safeguards necessary for the protection of life and property of all pedestrian and vehicular traffic. Note that this project will require care by the contractor to limit the disruption with students arriving and departing to school by vehicle or on foot. The contractor is responsible to submit a traffic control plan with this in mind. No additional payment or costs will be made to the contractor for this work.

It is the custom of the City of Portland, Maine to pay its bills 30 days following delivery of items, their acceptance, and receipt of invoices for, all items covered by the Purchase Order(s). In submitting bids under these specifications bidders should take into account all discounts, both trade and time allowed in accordance with this payment policy and quote a

net price. The City is exempt from the State's Sales and Use Tax and from all Federal Excise tax.

Equal Employment Opportunities. Vendor shall comply fully with the Nondiscrimination and Equal Opportunity Provisions of the Workforce Investment Act of 1998, as amended (WIA, 29 CFR part 37); the Nontraditional Employment for Women Act of 1991; title VI of the Civil Rights Act of 1964, as amended; section 504 of the Rehabilitation Act of 1973, as amended; the Age Discrimination Act of 1975, as amended; title IX of the Education Amendments of 1972, as amended; and with all applicable requirements imposed by or pursuant to regulations implementing those laws, including but not limited to 29 CFR part 37, and all other applicable laws, including the Maine Human Rights Act, ordinances and regulations regarding equal opportunity and equal treatment.

The City reserves the right to waive any informalities in bids, to accept any bid or portions thereof (bidders are advised to note this and quote accordingly) and to reject any or all bids should it be deemed for the best interest of the City to do so. The City reserves the right to substantiate the bidder's qualifications, capability to perform, availability, past performance record and to verify that the bidder is current in its obligations to the City, as follows:

Pursuant to City procurement policy and ordinance, the City is unable to contract with businesses or individuals who are delinquent in their financial obligations to the City. These obligations may include but are not limited to real estate and personal property taxes and sewer user fees. Bidders who are delinquent in their financial obligations to the City must do one of the following: bring the obligation current, negotiate a payment plan with the City's Treasury office, or agree to an offset which shall be established by the contract which shall be issued to the successful bidder.

May 12, 2016

Karen C. Marston
Assistant Purchasing Manager

BID #6916

PROPOSAL

Proposal of _____

Name

_____

Address

The name and address shown on the above lines shall be the official name and address of the person, partnership or corporation submitting this bid and shall agree with the "Signature of Bidder" in the case of an individual; the "Name of Firm or Partnership" in the case of a firm or partnership; the "Name of Bidder" in case of a corporation.

TO: Karen C. Marston, Assistant Purchasing Manager
City Hall, Room 103
389 Congress Street
Portland, ME 04101

The undersigned having carefully examined the site of the work; the Plans; Standard Specifications, including all current amendments or revisions there of; the Supplemental Specification, Special Provisions; Contract Agreement and Contract Bonds, where applicable, contained herein for the **Portland High School – Fire Alarm Upgrades – Phase 1** on which proposals will be received until the time specified in this bid document; and in case of award, do(es) hereby propose and offer to enter into a contract to supply all the materials, tools, equipment and labor required to perform and construct the whole of the work in strict accordance with the terms and conditions of this contract at lump sum price stated in the following Price Proposal Page submitted by the undersigned.

This Proposal may be accepted by the City of Portland at any time within ninety (90) calendar days after opening of the bids.

PRICE PROPOSAL

The undersigned having examined the attached document do(es) hereby propose and offer to enter into a contract to supply all the materials, tools, equipment and labor required to perform and construct the whole of the work in strict accordance with the terms and conditions of this contract at the price stated in the following Proposal:

BASE BID
LUMP SUM PRICE: $_____

(Award Basis*)

The undersigned also agrees as follows:

FIRST: To do any extra work which may be ordered, and to accept as full compensation therefore such prices as may be agreed upon in writing by the Engineer and the Contractor; or in case no agreement is made, to accept as full compensation the amount determined upon a "force account" basis as provided in the M.D.O.T. Standard Specifications, Revision of December, 2002.

SECOND: To begin work on the date specified in the Engineer's "Notice to Commence Work" as mutually agreed and to prosecute said work in such a manner as to complete it in the time stated on this proposal.

THIRD: That this offer is to continue open to acceptance until the formal contract is executed by the successful bidder of this work, and the City may at any time without notice accept this proposal whether any other proposal has previously been accepted or not. Provided, however, that the City will accept, in writing, one of the proposals made, or reject all proposals made, within sixty (60) calendar days after the date of opening of the proposals.

The undersigned as Bidder, declares that the only persons or parties interested in this Proposal are those named herein; that the bidder is not financially interested in, or otherwise affiliated in a business way with any other bidder on this contract; and that this Proposal is made without collusion with any other person, firm or corporation.

The undersigned declares that any person(s) employed by the City of Portland, Maine, who has direct or indirect personal or financial interest in this proposal or in any portion of the profits which may be derived therefrom, has been identified and the interest disclosed by separate attachment. (Please include in your disclosure any interest which you know of. An example of a direct interest would be a City employee who would be paid to perform services under this proposal. An example of an indirect interest would be a City employee who is related to any officers, employees, principal or shareholders of your firm or you.) If in doubt as to status or interest, please disclose to the extent known.

Respectfully submitted this _____ day of _____, 20 _____

IF AN INDIVIDUAL, SIGN HERE

Signature of Bidder _____

Address _____

_____

Telephone Number_____ Fax Number _____

Email address:_____

Social Security Number :_____

(Signatures for a Firm, Partnership or Corporation on next page.)

PROPOSAL (continued)

IF A FIRM OR PARTNERSHIP, SIGN HERE

Signature of Bidder _____

Name of Firm or Partnership _____

Business Address _____

_____

Telephone Number_____ Fax Number _____

Email address:_____

Social Security or Tax ID Number :_____

Names and Addresses of Members of Firm or Partnership:

_____

_____

_____

IF A CORPORATION, SIGN HERE

Name of Bidder _____

Authorized Signature _____
(name) (title)

Business Address _____

_____

Telephone Number_____ Fax Number _____

Email address:_____

Tax ID Number :_____

Incorporated under the Laws of the State of _____

Names and Addresses of Officers of the Corporation:

President _____

Secretary _____

Treasurer _____

_____ ss

Before me, personally appeared _____ and acknowledged that the signature to the preceding bid is his/her signature in his/her official capacity.

Date: _____

_____

Notary Public - Signature and Seal

ALL CORPORATIONS MUST SIGN THIS FORM
AND SUBMIT WITH THE BID PROPOSAL

(Insert copy of that part of the records of the corporation wherein authority is given to the officer of that corporation to sign this bid on behalf of the corporation.)

_____

_____

_____

_____

_____
(date)

The above is a true copy of the records of the _____

Corporation, which records are in my legal custody.

_____
Officer having custody of the records

_____ss

Before me appeared, _____,
_____

_____ of the _____ Corporation, and made

oath that the above statement is true.

_____
Notary Public - Signature and Seal

BID #6916

NOTICE

(This Must Be Filled Out)

The full names and residences of all persons interested in this bid as principals are as follows: (In case of Corporation, include and identify President, Treasurer, Manager)

BID #6916

ALL CONTRACTORS SHALL FILL IN THE FOLLOWING INFORMATION BEFORE SUBMITTING BID

	Name and Address of Supplier	Products to be Supplied
1		
2		
3		
4		
5		
6		

	Name and Address of Contractor	Service or Trades to be Supplied	Anticipated $ Amount
1			
2			
3			
4			
5			
6			

This is a Sample Contract or Agreement ONLY; the final terms and conditions in the actual Agreement will be determined by the City's Corporation Counsel Office, and may contain additional provisions.

BID #6916

[SAMPLE]
AGREEMENT BETWEEN THE
CITY OF PORTLAND
AND

_____

(CONTRACTOR)

AGREEMENT entered into this _____ day of _____, 2016 by and between the **CITY OF PORTLAND,** a body politic and corporate, (hereinafter the **"CITY"**), and _____, located at _____ (hereinafter the **"CONTRACTOR"**).

W I T N E S S E T H

WHEREAS, the **CITY** did advertise by **Bid #6916**, entitled **Portland High School –Fire Alarm Upgrades – Phase 1**, and

WHEREAS, the **CONTRACTOR** did, under date of June 7, 2016, submit a Bid for such work; and

WHEREAS, after due consideration of all the Proposals, the **CITY** did award the Bid to the **CONTRACTOR**;

NOW THEREFORE, in consideration of the mutual promises made by each party to the other, the parties covenant and agree as follows:

1. The **CONTRACTOR** shall furnish all labor, materials, fixtures, supplies, equipment and transportation and shall perform all work required for the construction and completion of the **Portland High School – Fire Alarm Upgrades – Phase 1** project in accordance with the specifications contained in the contract documents entitled Portland High School – Fire Alarm Upgrades – Phase 1, Bid #6916, dated May 12, 2016 (hereinafter referred to as "Contract Documents") of which this Agreement is a part. All work shall be performed in strict conformance with the provisions of this Agreement, the Invitation for Bids, the **CONTRACTOR**'s Proposal, and any and all General and Detailed Provisions and Plans.
2. It is agreed that the amount(s) given on the Proposal Page in the **CONTRACTOR**'s Proposal Section of the Contract Documents will be used as the basis for determining the amount due under this Contract Agreement and for establishing the amount of the required Contract Performance Surety Bond and Contract Payment Surety Bond, and that the amount due under this Agreement so determined is _____ _____ ($_____) (hereinafter referred to as the "Contract Price"). The **CITY** will have the right to

increase or decrease the amount and extent of the work by giving reasonable notice in writing to the **CONTRACTOR**.

3. **CONTRACTOR** covenants and agrees that all work performed and materials used shall be free from all defects, and that all work be performed as specified.

4. The **CITY** reserves the right to require Waivers of Lien from subcontractors and/or suppliers prior to each progress payment made to **CONTRACTOR** pursuant to the terms of this Agreement.

5. Prior to the execution of this Agreement, **CONTRACTOR** shall procure and maintain Public Liability Insurance coverage and Automobile Insurance coverage in amounts of not less than Four Hundred Thousand Dollars ($400,000.00) combined single limit and aggregate for bodily injury, death, and property damage, naming the **CITY** as an additional insured thereon, and shall also procure Workers' Compensation Insurance coverage. **CONTRACTOR** shall furnish and thereafter maintain certificates evidencing such coverage, which certificates shall guarantee thirty (30) days' notice of termination of insurance from insurance company or agent.

6. Prior to the execution of this agreement, **CONTRACTOR** shall supply the City with a Performance Bond and Labor and Material Payment Bond, each in the amount of the contract price, guaranteeing one hundred percent (100%) performance of the contract, including the guarantee period and free and clear of any and all liens, attachments and encumbrances. All bonds shall comply with the requirements of Maine state law.

7. To the fullest extent permitted by law, the **CONTRACTOR** shall defend, indemnify and hold harmless the **CITY**, its officers and employees, from and against all claims, damages, losses, and expenses, just or unjust, including but not limited to the costs of defense and attorneys' fees arising out of or resulting from the performance of the Agreement, provided that any such claims, damage, loss or expense (1) is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, including the loss of use therefrom, and (2) is caused in whole or in part by any negligent act or omission of the **CONTRACTOR**, anyone directly or indirectly employed by it, or anyone for whose act it may be liable.

8. Upon receipt of executed contracts and insurance as required, the **CITY** will promptly send an executed **CITY** contract and a "Notice to Commence Work" to the **CONTRACTOR.** The **CONTRACTOR** agrees to perform no work under this Agreement until it receives said Notice and to complete the work in the time specified by the contractor on the Proposal Page; that date/time is:_____. The time set for such completion may be extended only by written consent of the Director of Public Buildings for City of Portland (hereinafter referred to as the **"DIRECTOR"**).

9. The **CONTRACTOR** shall perform the work to the satisfaction of the responsible **CITY** official who will have the right of inspection at all times, and whose approval and acceptance of the work will be a condition precedent to payments by the **CITY** under this Contract. **CITY** inspectors will have the authority to stop work in progress if such work is being done contrary to the plans, specifications, or engineering practice.

10 In the event that any dispute as to the amount, nature or scope of the work required under this Contract, the decision and judgment of the responsible **CITY** official will be final and binding.

11. The **CONTRACTOR** shall guarantee the work for a period of one (1) year for the faithful remedy of any defects due to faulty materials or workmanship and payment for any damage resulting therefrom.
12. **CONTRACTOR** shall keep accurate records of all services performed under this Agreement and shall submit such information to the **CITY** on a monthly basis. Payment for such services shall be made to **CONTRACTOR** not more than thirty (30) days after receipt of said forms and acceptance of the work by the **DIRECTOR.**
13. The **CITY** may terminate this Agreement for cause by written Notice to the **CONTRACTOR.** In the event of such termination, **CONTRACTOR** shall not be entitled to any further payment under this Agreement from the date of receipt of said Notice.
14. The **CITY** will have the right to terminate this Agreement at any time for its convenience on prior written Notice to **CONTRACTOR**. If Agreement is terminated by the **CITY** for convenience, the **CITY** will pay the **CONTRACTOR** for all work performed and all materials purchased pursuant to this Agreement prior to receipt of said Notice.

IN WITNESS WHEREOF, the said **CITY OF PORTLAND** has caused this Agreement to be signed and sealed by Jon P. Jennings, its City Manager, thereunto duly authorized, and _____ has caused this Agreement to be signed and sealed by _____, its _____, thereunto duly authorized, the day and year first above written.

WITNESS

_____

_____

CITY OF PORTLAND

BY: _____
Jon P. Jennings
Its City Manager

CONTRACTOR

By: _____

_____
(Print or type name)

Its _____

Approved as to Form:

_____
Corporation Counsel's Office

Approved as to funds:

_____
Budget Office

Portland High School
Fire Alarm Upgrades – Phase 1
May 12, 2016

Project Dates

1. Contract time for the Work scheduled at the Portland High School may commence June 27, 2016 and must be substantially complete by August 25, 2016. Any change to this schedule must be approved by the City.
2. Contract time for the Work scheduled at City of Portland owned facilities will be subject to Owner's review and approval of Contractor's submitted schedule.
3. Bid due date for the Work will be at 3:00pm, Tuesday, June 7, 2016
4. Technical questions concerning the bid must be submitted in writing no later than 12:00pm Tuesday, May 31, 2016.

Summary of Work

PART 1 - GENERAL

1.1 DESCRIPTION

The City of Portland intends to upgrade the Fire Alarm system at its Portland High School facility, located at 284 Cumberland Avenue, Portland Me. The City requests bids for the installation, testing, and acceptance of the Fire Alarm system described in the attached specifications and drawings. Prices quoted shall be all-inclusive and represent complete installation as shown on the attached drawings and in the attached specifications. The Contractor shall be responsible for all parts, labor and all other associated apparatus necessary to completely install, test, and turnover for acceptance to the City the Fire Alarm system detailed herein.

1.2 SCOPE OF WORK

The scope of work includes the furnishing, installation, connection, and testing of the Fire Alarm System Upgrades. This project is Phase 1 of the Upgrades Master Plan. Scope includes, but is not limited to, installation of a new Fire Alarm Control Panel (FACP) and annunciator panel, removal of interior of existing FACP, installation of zone modules within the tub of the existing FACP for monitoring of existing fire alarm zones, maintenance of existing notification and initiating devices unless noted to be removed, installation of additional fire alarm notification devices, NAC extender panels and addressable initiating devices as shown. Installation of new devices shall include all cabling required. Line voltage power and supporting devices and raceway shall also be included as required.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Limited storage area will be provided by Owner, where available. Supply temporary storage required for storage of equipment and materials for duration of Project. Utilize only areas designated by Owner's Representative for storage.

B. Deliver materials to the job site in the manufacturer's original, unopened containers or wrappings with the manufacturer's name, brand name and installation instructions intact and legible. Deliver in sufficient quantity to permit work to continue without interruption.

C. Comply with the manufacturer's written instructions for proper materials storage.

1. Store materials within temperature ranges complying with manufacturer's recommendations, in dry areas protected from water and direct sunlight. If exposed to temperatures lower or higher than this the installer must restore to this range before using.

D. Any materials which are found to be damaged shall be removed and replaced at the installer's expense.

E. Substitutions:

a. Substitution Requests: Within 2 weeks of notice to proceed, submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

b. Owners Action: If necessary, the Owner will request additional information or documentation for evaluation within one week of receipt of a request for substitution. Owner will notify Contractor of acceptance or rejection of proposed substitution within 10 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

1.4 BUILDING OCCUPANCY AND USE OF PREMISE

A. Owner will occupy premises during periods of construction for the conduct of his normal operations. Cooperate with Owner to minimize conflict and to facilitate Owner's operations. Playgrounds and recreational areas within the school yard may not be utilized during school hours of operation unless Owner's permission is requested and granted.

B. Predetermine and obtain approval, in advance from Owner, for vertical and horizontal transportation of labor and construction materials onto and out of the

building.

C. Before beginning work, the Contractor must secure approval from the Owner for the following.

1. Areas permitted for personnel parking.

2. Access to the site.

3. Areas permitted for storage of materials and debris.

1.5 CONTRACTOR USE OF PREMISES

A. Contractor will limit use of premises to allow for continuous, uninterrupted Owner occupancy and use. Dumpsters, scaffolds, ladders, staging or any other equipment will be only as permitted by the Owner's Representative.

B. Coordinate use of premises under direction of Owner's Representative.

C. Assume full responsibility for protection and safekeeping of products stored on-site under this Contract.

D. Obtain and pay for use of secured additional storage or work areas needed for operations under this Contract.

E. Maintain all exits from the building as fire exits. Should it be necessary, the Contractor will stop work during facility functions and allow use of all egresses from the building.

F. Keep all drive lanes open at all times.

1.6 TEMPORARY UTILITIES, FACILITIES AND CONTROLS

A. Temporary Utilities:

1. Power for construction purposes will be made available at the site.

B. Building Site:

1. The Contractor shall use reasonable care and responsibility to protect the building and site against damages. The Contractor shall be responsible for the correction of any damage incurred as a result of the performance of the contract.

2. The Contractor shall remove all debris from the job site in a timely and legally acceptable manner so as to not detract from the aesthetics or functions of the building.

C. Security:

1. Obey the Owner's requirements for personnel identification, inspection and other security measures.

1.7 JOB SITE PROTECTION

A. The Contractor shall adequately protect building, paved areas, service drives, lawns, shrubs, trees, etc. from damage while performing the required work. Provide canvas, boards and sheet metals (properly secured) as necessary for protection and remove protection materials as work is completed. The Contractor shall repair or be responsible for costs to repair all property damaged during the installation.

B. During the Contractor's performance of the work, the building Owner will continue to occupy the existing building. The Contractor shall take all precautions to prevent the spread of dust and debris, particularly where such material may sift into the building. The Contractor shall provide labor and materials to construct, maintain and remove necessary, temporary enclosures to prevent dust or debris in the construction areas from entering the remainder of the building.

C. Do not overload any portion of the building, by either use of or placement of equipment, storage of debris, or storage of materials.

D. Protect against fire and flame spread. Maintain proper and adequate fire extinguishers.

E. Store moisture susceptible materials above ground and protect with waterproof coverings.

F. Remove all traces of piled bulk material and return the job site to its original condition upon completion of the work.

1.8 WORKING HOURS AND SCHEDULE

A. Construct work in stages to accommodate the Owner's use of premises during construction. Coordinate progress schedule and coordinate with Owner's Representative occupancy during construction. Contractor's daily work areas must be coordinated with and approved by the Owner's Representative, prior to any work commencing in that area. Submit work schedule to Owner's Representative. Working hours while school is not in session will be 6:30am to 6:30pm. Working hours while school is in session will be 3:30pm to 11:30pm.

B. Construct work in stages to provide for continuous public usage. Do not close off public access to facility.

C. Obtain approval from Owner prior to altering Work schedule.

1.9 CONSTRUCTION SCHEDULE

A. The Contractor's Construction Schedule shall clearly identify the on-site crew foreman and the size of the crew to be utilized for each site. The crew size shall remain consistent and work shall be continuous throughout the project, from start-up to completion.

B. The Owner's Representative shall review the Contractor's Construction Schedule prior to the start of any work. After defining the location(s) of the work progress, the Owner's Representative shall arrange to control occupancy in the facilities to the greatest extent possible. It shall be the responsibility of the Contractor to supply the Owner's Representative with written notice, 24 hours in advance, if his work location(s) for a workday is different from the schedule. The Contractor shall update his Construction Schedule weekly and submit a copy to the Owner's Representative for review.

1.10 PRE-JOB DAMAGE SURVEY OF FACILITY

A. Perform a thorough survey of property and all affected areas of the building with Owner's Representative prior to starting the work in each area to document existing damage and operational status of existing equipment. Items identified on this list will not be the responsibility of Contractor unless further damaged by Contractor during execution of Work.

1.11 CORRECTION OF DAMAGE TO PROPERTY

A. Consider any damage to building or property not identified in the pre-job damage survey as having resulted from execution of this Contract and correct at no additional expense to Owner.

1.12 SAFETY

A. The Contractor shall be responsible for all means and methods as they relate to safety and shall comply with all applicable local, state and federal requirements that are safety related. Safety shall be the responsibility of the Contractor. All related personnel shall be instructed daily to be mindful of the full time requirement to maintain a safe environment for the facility's occupants including staff, visitors, students, customers and the occurrence of the general public on or near the site.

1.13 QUALITY ASSURANCE

A. The Contractor installing the system shall be factory trained and certified by the manufacturer they are representing.

B. All work shall be of the highest quality and in strict accordance with the manufacturer's published specifications and to the building Owner's satisfaction.

C. Installer Qualifications: Installation shall be done by personnel certified by NICET as fire-alarm Level II technician.

D. NFPA Certification: Obtain certification according to NFPA 72 by a UL-listed alarm company.

E. There shall be a supervisor, employed by and an employee of the Contractor, on the job site at all times while work is in progress.

1.14 PROJECT CONDITIONS

A. The facilities will be occupied and in use during construction. Take any necessary precaution to create as little disturbance or disruption to the facilities and their occupants as possible during the work.

B. Supply, install and maintain barriers, protection, warning lines, lighting and personnel required to segregate the work area(s) from pedestrian or vehicular traffic, as well as to prevent damage to the facilities, their occupants, and the surrounding landscaped and paved areas. All applicable O.S.H.A. and State of Maine requirements shall be observed by the Contractor. In all instances the more stringent requirements will apply.

C. Schedule and execute work without exposing the facilities interiors to the effects of inclement weather. Protect the facilities and their occupants against such risks, and repair/replace work-related damage to the Owner's satisfaction.

F. Proceed with work only when weather conditions are in compliance with the manufacturer's recommendation limitations, and when conditions will permit the work to proceed in accordance with the manufacturer's requirement and recommendations.

G. Phased or temporary construction will not be permitted. Schedule, execute and coordinate work on a daily basis so that components are installed completely and permanently as specified.

H. All work shall be performed in accordance with applicable Federal, State and local code requirements. In all instances the more stringent requirements will apply.

I. All workmanship and materials shall be of the best construction practice. Specification requirements, which exceed the minimum requirements of the manufacturer, shall be complied with by the Contractor. In all instances the more stringent requirements will apply.

J. Coordinate the work in this Section, including preparatory work, building protection, daily clean up and protection of building occupants.

K. Supply labor, vacuums, tools and appliances necessary to keep the interior and exterior facilities and site areas below and around the area of Work clean, with as little accumulation of dust and debris as possible on a daily basis.

1.15 EMERGENCY RESPONSE

A. The Contractor shall provide the Owner with after-hours (24 hour), emergency cell phone numbers of the Contractor's Superintendent and Foreman.

B. The Contractor must respond to emergency situations or calls within two (2) hours.

1.16 SCHEDULE OF VALUES

A. Provide a line item breakdown of construction labor and materials costs.

1.17 PROGRESS MEETINGS

A. Progress meetings may be scheduled as determined by the Owner and/or Owner’s Representative.

1.18 DIMENSIONS AND QUANTITIES

A. Verify dimensions and quantities in the field prior to bid submission. The scope has been compiled from various sources and may not reflect the actual field conditions, sizes and/or quantities at the time of construction.

B. The Contractor is solely responsible for means and methods of construction. Make necessary investigations (including sampling) and take necessary precautions to properly supply, fabricate, and install work.

C. Unfamiliarity with existing project conditions will not be considered as a basis for additional compensation.

D. In case of inconsistency between this document and product Manufacturers Specifications or within either document, the better quality and/or greater quantity of work shall be provided, as determined by the Owner’s Representative.

1.19 WARRANTY

A. The warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranty: Manufacturer agrees to repair or replace fire-alarm system equipment and components that fail in materials or workmanship within specified warranty period.

1. Warranty Extent: All equipment and components not covered in the Maintenance Service Agreement

2. Warranty Period: Five years from the date of substantial completion

1.20 INSPECTION, ACCEPTANCE AND TITLE

A. Inspection and Acceptance will be at destination and upon successful installation unless otherwise provided. Title to/or risk of loss or damage to all items shall be the responsibility of the successful Contractor until acceptance by the Owner, unless loss or damage results from negligence by the Owner. If the materials or services supplied to the Owner are found to be defective or do not conform to the specifications, the Owner reserves the right to cancel the contract upon written notice to the Contractor and return products at the Contractors expense, based upon the terms of the Contract.

B. The Owner shall at all times have access to the work wherever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and for inspection.

C. The Contractor shall not close up any work until the Owner has inspected the work. Should the Contractor close up the work prior to inspection by the Owner, the Contractor shall uncover the work for inspection by the Owner at no cost to the Owner, and then recover the work according to the specification contained herein.

D. The Contractor shall notify the Owner in writing when the work is ready for inspection. The Owner will inspect the work as expeditiously as possible after receipt of notification from the Contractor.

SECTION 024119 - SELECTIVE DEMOLITION

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 the following:

1. Demolition and removal of selected portions of building.

1.3 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. 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.

1.4 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. Coordinate with Owner's Facilities Director who will establish special procedures for removal and salvage.

1.5 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.

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

C. Standards: Comply with ANSI A10 Construction and Demolition Standards and NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations.

D. Predemolition Conference: Conduct conference at Project site. Review methods and procedures related to selective demolition including, but not limited to, the following:

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
4. Review areas where existing construction is to remain and requires protection.

1.7 PROJECT CONDITIONS

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

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

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

1. 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.

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

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

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.

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. Contractor will arrange with Owner for shut off of indicated services/systems when required.
2. 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.
3. 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.

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.

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.

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 chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
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 portable fire-suppression devices during flame-cutting operations.
5. Maintain adequate ventilation when using cutting torches.
6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. 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 indicated on Drawings.
5. Protect items from damage during transport and storage.

C. 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 reinstalled in their original locations after selective demolition operations are complete.

3.5 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.

3.6 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 024119

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

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. Section Includes:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.

B. Related Requirements:

1. Section 280513 "Conductors and Cables for Electronic Safety and Security" for cabling associated with system panels and devices.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.

B. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-2-THWN-2.

2.2 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Exposed Branch Circuits, Including in Crawlspaces: Type THHN-2-THWN-2, single conductors in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

B. Make splices, terminations, and taps that are compatible with conductor material.

3.5 IDENTIFICATION

A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."

B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

END OF SECTION 260519

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical and fire alarm equipment and systems.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

1.4 QUALITY ASSURANCE

A. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

B. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

C. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
2. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
3. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
4. Toggle Bolts: All-steel springhead type.
5. Hanger Rods: Threaded steel.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

C. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
3. To Existing Concrete: Expansion anchor fasteners.
4. To Steel: Spring-tension clamps.
5. To Light Steel: Sheet metal screws.

C. All devices mounted on suspended ceilings shall be installed in new tiles and shall utilize caddy bars and clips.

1. Tile shall be supplied by the Owner.

D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

END OF SECTION 260529

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Metal conduits, tubing, and fittings.
2. Nonmetal conduits, tubing, and fittings.
3. Boxes, enclosures, and cabinets.

B. Related Requirements:

1. Section 280528 "Pathways for Electronic Safety and Security" for conduits and boxes serving electronic safety and security.

PART 2 - PRODUCTS

2.1 METAL CONDUITS, TUBING, AND FITTINGS

A. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. EMT: Comply with ANSI C80.3 and UL 797.

C. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.

1. Fittings for EMT:

a. Material: Steel or die cast.
b. Type: Setscrew or compression.

2.2 BOXES, ENCLOSURES, AND CABINETS

A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

B. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Indoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: EMT.
2. Boxes and Enclosures: NEMA 250, Type 1.

B. Minimum Raceway Size: 1/2-inch trade size.

C. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. EMT: Use setscrew or compression, steel or cast-metal fittings. Comply with NEMA FB 2.10.
2. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

3.2 INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.

E. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.

F. Install conduits parallel or perpendicular to building lines.

G. Support conduit within 12 inches of enclosures to which attached.

H. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

I. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.

J. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.

K. Cut conduit perpendicular to the length. For conduits 2-inch trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.

L. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

M. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

N. Locate boxes so that cover or plate will not span different building finishes.

O. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.

P. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

END OF SECTION 260533

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Identification of power and control cables.
2. Identification for conductors.
3. Instruction signs.
4. Equipment and device identification labels.

1.3 QUALITY ASSURANCE

A. Comply with ANSI A13.1.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.4 COORDINATION

A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

2.2 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

E. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

F. Painted Identification: Comply with requirements in painting Sections for surface preparation and paint application.

3.2 IDENTIFICATION SCHEDULE

A. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.

2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.

B. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

END OF SECTION 260553

SECTION 280513 - CONDUCTORS AND CABLES FOR ELECTRONIC SAFETY AND SECURITY

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. Section Includes:

1. Low-voltage control cabling.
2. Fire alarm wire and cable.
3. Identification products.

1.3 DEFINITIONS

A. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control and signaling power-limited circuits.

B. Open Cabling: Passing telecommunications cabling through open space (e.g., between the studs of a wall cavity or above accessible ceiling).

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.5 FIELD CONDITIONS

A. Do not install conductors and cables that are wet, moisture damaged, or mold damaged.

1. Indications that wire and cables are wet or moisture damaged include, but are not limited to, discoloration and sagging of factory packing materials.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.

2. Smoke-Developed Index: 450 or less.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 LOW-VOLTAGE CONTROL CABLE

A. Plenum-Rated, Paired Cable: NFPA 70, Type CMP.

1. One pair, twisted, No. 16 AWG, stranded (19x29) tinned copper conductors.
2. PVC insulation.
3. Unshielded.
4. PVC jacket.
5. Flame Resistance: Comply with NFPA 262.

B. Paired Cable: NFPA 70, Type CMG.
1. One pair, twisted, No. 16 AWG, stranded (19x29) tinned copper conductors.
2. PVC insulation.
3. Unshielded.
4. PVC jacket.
5. Flame Resistance: Comply with UL 1581.

2.3 FIRE ALARM WIRE AND CABLE

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Comtran Corporation.
2. Draka Cableteq USA.
3. Genesis Cable Products; Honeywell International, Inc.
4. Rockbestos-Suprenant Cable Corp.
5. West Penn Wire.

B. General Wire and Cable Requirements:

1. NRTL listed and labeled as complying with NFPA 70, Article 760.
2. Plenum rated for use in open-cable wiring.

C. Signaling Line Circuits: Twisted, shielded pair, not less than No. 18 AWG, size as recommended by system manufacturer.

D. Non-Power-Limited Circuits: Solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation.

1. Low-Voltage Circuits: No. 16 AWG, minimum.
2. Line-Voltage Circuits: No. 12 AWG, minimum.
3. Multiconductor Armored Cable: NFPA 70, Type MC, copper conductors, Type TFN/THHN conductor insulation, copper drain wire, copper armor with red identifier stripe, NTRL listed for fire alarm and cable tray installation, plenum rated, and complying with requirements in UL 2196 for a 2-hour rating.

2.4 IDENTIFICATION PRODUCTS

A. Comply with UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

B. Comply with requirements in Section 260553 "Identification for Electrical Systems."

PART 3 - EXECUTION

3.1 INSTALLATION OF HANGERS AND SUPPORTS

A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for installation of supports for cables.

3.2 WIRING METHOD

A. Install exposed wiring in metal pathways and wireways.

1. Minimum conduit size shall be 1/2 inch.
2. Comply with requirements in Section 280528 "Pathways for Electronic Safety and Security."

B. Install cable, concealed in accessible ceilings, walls, and floors when possible. Open-cable wiring methods may be used.

1. When a device is indicated to be installed on an existing concrete or masonry wall, or at a non-accessible ceiling cabling shall be surface mounted within raceway, painted to match existing surface.
2. Exposed conduit shall be kept to a minimum.

C. Wiring within Enclosures:

1. Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii.
2. Install lacing bars and distribution spools.
3. Separate power-limited and non-power-limited conductors as recommended in writing by manufacturer.
4. Install conductors parallel with or at right angles to sides and back of enclosure.
5. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with intrusion system to terminal blocks.
6. Mark each terminal according to system's wiring diagrams.
7. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Comply with NECA 1.

B. Conductors: Size according to system manufacturer's written instructions unless otherwise indicated.

C. General Requirements for Cabling:

1. Terminate all conductors; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, and cross-connect and patch panels.
2. Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inches and not more than 6 inches from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
3. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
4. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.

D. Open-Cable Installation:

1. Suspend copper cable not in a wireway or pathway a minimum of 8 inches above ceilings by cable supports not more than 60 inches apart.
2. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.

3.4 FIRE ALARM WIRING INSTALLATION

A. Comply with NECA 1 and NFPA 72.

B. Wiring Method: Install wiring according to Section 280528 "Pathways for Electronic Safety and Security."

1. Install plenum cable in environmental air spaces, and above all accessible ceilings.
2. Where exposed, fire alarm circuits and equipment control wiring associated with the fire alarm system shall be installed in a dedicated raceway system. This system shall not be used for any other wire or cable.

C. Wiring Method:

1. Cables and raceways used for fire alarm circuits, and equipment control wiring associated with the fire alarm system, may not contain any other wire or cable.
2. Signaling Line Circuits: Power-limited fire alarm cables may be installed in the same cable or raceway as signaling line circuits.

D. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

E. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.

F. Color-Coding: Color-code fire alarm conductors red. Paint fire alarm system junction boxes and covers red.

G. Wiring to Remote Alarm Transmitting Device: 1-inch conduit between the fire alarm control panel and the transmitter. Install number of conductors and electrical supervision for connecting wiring as needed to suit monitoring function.

3.5 CONNECTIONS

A. Comply with requirements in Section 283111 "Digital, Addressable Fire-Alarm System for connecting, terminating, and identifying wires and cables.

3.6 IDENTIFICATION

A. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

END OF SECTION 280513

SECTION 280528 - PATHWAYS FOR ELECTRONIC SAFETY AND SECURITY

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. Section Includes:

1. Surface pathways.
2. Boxes, enclosures, and cabinets.

B. Related Requirements:

1. Section 260533 "Raceways and Boxes for Electrical Systems" for conduits, wireways, surface raceways, boxes, and faceplate adapters serving electrical systems.

1.3 ACTION SUBMITTALS

A. Product Data: For surface pathways.

PART 2 - PRODUCTS

2.1 SURFACE PATHWAYS

A. General Requirements for Surface Pathways:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Surface Metal Pathways: Galvanized steel with snap-on covers complying with UL 5. Prime coated, ready for field painting.

2.2 BOXES, ENCLOSURES, AND CABINETS

A. Sheet-Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.

B. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

C. Gangable boxes are allowed.

D. Cabinets:

1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.

PART 3 - EXECUTION

3.1 PATHWAY APPLICATION

A. Indoors: Apply pathway products as specified below unless otherwise indicated:

1. Exposed: Surface metal pathway.
2. Concealed in Recessed Ceilings and Interior Walls and Partitions: Open-cable wiring methods may be used. Comply with requirements of Section 280513 “Conductors and Cables for Electronic Safety and Security.”
3. Boxes and Enclosures: NEMA 250, Type 1.

B. Minimum Pathway Size: 1/2-inch trade size.

C. Pathway Fittings: Compatible with pathways and suitable for use and location.

D. Install surface pathways only where devices are to be installed at existing concrete or masonry surfaces and existing inaccessible ceilings.

3.2 INSTALLATION

A. Comply with NECA 1 and NECA 101for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NFPA 70 limitations for types of pathways allowed in specific occupancies and number of floors.

B. Keep pathways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal pathway runs above water and steam piping.

C. Complete pathway installation before starting conductor installation.

D. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.

E. Arrange stub-ups so curved portions of bends are not visible above finished slab.

F. Install pathways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.

G. Install pull wires in empty pathways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground pathways designated as spare above grade alongside pathways in use.

H. Surface Pathways:

1. Install surface pathway for surface electrical outlet boxes devices are to be installed at existing concrete or masonry surfaces, and at existing inaccessible ceilings.
2. Minimize extent of surface pathways as much as possible.
3. Secure surface pathway with screws or other anchor-type devices at intervals not exceeding 48 inches and with no less than two supports per straight pathway section. Support surface pathway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.

I. Install pathway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed pathways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install pathway sealing fittings according to NFPA 70.

J. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

K. Fasten junction and pull boxes to or support from building structure.

L. Identify all exposed boxes, raceway and blank cover plates on As-Built drawings.

3.3 FIRESTOPPING

A. Install firestopping at penetrations of fire-rated floor and wall assemblies.

3.4 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.

END OF SECTION 280528

SECTION 283111 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

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. Section Includes:

1. Fire-alarm control unit.
2. Manual fire-alarm boxes.
3. System smoke detectors.
4. Heat detectors.
5. Notification appliances.
6. Device guards.
7. Remote annunciator.
8. Addressable interface device.

B. Related Requirements:

1. Section 280513 "Conductors and Cables for Electronic Safety and Security" for cables and conductors for fire-alarm systems.

1.3 DEFINITIONS

A. FACP: Fire Alarm Control Panel.

B. NICET: National Institute for Certification in Engineering Technologies.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product, including furnished options and accessories.

1. Include construction details, material descriptions, dimensions, profiles, and finishes.
2. Include rated capacities, operating characteristics, and electrical characteristics.

B. Shop Drawings: For fire-alarm system.

1. Comply with recommendations and requirements in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
2. Include plans, elevations, sections, details, and attachments to other work.
3. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and locations. Indicate conductor sizes,

indicate termination locations and requirements, and distinguish between factory and field wiring.
4. Detail assembly and support requirements.
5. Include voltage drop calculations for notification-appliance circuits.
6. Include battery-size calculations.
7. Include input/output matrix.
8. Include statement from manufacturer that all equipment and components have been tested as a system and meet all requirements in this Specification and in NFPA 72.
9. Include performance parameters and installation details for each detector.

C. General Submittal Requirements:

1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Architect.
2. Shop Drawings shall be prepared by persons with the following qualifications:

a. Trained and certified by manufacturer in fire-alarm system design.
b. NICET-certified, fire-alarm technician; Level III minimum.
c. Licensed or certified by authorities having jurisdiction.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Field quality-control reports.

1.6 Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following and deliver copies to authorities having jurisdiction:

a. Comply with the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
b. Provide "Fire Alarm and Emergency Communications System Record of Completion Documents" according to the "Completion Documents" Article in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
c. Complete wiring diagrams showing connections between all devices and equipment. Each conductor shall be numbered at every junction point with indication of origination and termination points.
d. Riser diagram.
e. Device addresses.
f. Provide "Inspection and Testing Form" according to the "Inspection, Testing and Maintenance" chapter in NFPA 72, and include the following:

1) Equipment tested.

2) Frequency of testing of installed components.
3) Frequency of inspection of installed components.
4) Requirements and recommendations related to results of maintenance.
5) Manufacturer's user training manuals.

g. Manufacturer's required maintenance related to system warranty requirements.
h. Abbreviated operating instructions for mounting at fire-alarm control unit and each annunciator unit.

B. Software and Firmware Operational Documentation:

1. Software operating and upgrade manuals.
2. Program Software Backup: On USB flash drive or compact disk, complete with data files.
3. Device address list.
4. Printout of software application.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Lamps for Remote Indicating Lamp Units: Quantity equal to 10 percent of amount installed, but no fewer than one unit.
2. Lamps for Strobe Units: Quantity equal to 10 percent of amount installed, but no fewer than one unit.
3. Smoke Detectors: One unit.
4. Detector Bases: One unit of each type.
5. Keys and Tools: One extra set for access to locked or tamperproofed components.
6. Audible and Visual Notification Appliances: One of each type installed.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

B. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm Level II technician.

C. NFPA Certification: Obtain certification according to NFPA 72 by a UL-listed fire alarm control panel.

1.10 PROJECT CONDITIONS

A. Perform a full test of the existing system prior to starting work. Document any equipment or components not functioning, and provide schedule to Owner including options and cost for repair or replacement.

B. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:

1. Notify Owner no fewer than seven days in advance of proposed interruption of fire-alarm service.
2. Any interruption shall be limited to be less than 12 hours in duration, and during daylight hours. If interruption will be other than described, contractor shall notify Owner of expected duration and timing, and Owner shall make arrangements to provide temporary guard service. Extended or night time interruption shall be limited to one occurrence, and shall not
3. Do not proceed with interruption of fire-alarm service without Owner's written permission.

C. Use of Devices during Construction: Protect devices during construction. All existing devices not in the immediate vicinity of active construction shall be in service to protect the facility during construction. Remove & relocate protective devices as necessary to achieve this.

1.11 SEQUENCING AND SCHEDULING

A. New fire alarm control panel shall be installed and be active prior to demolition of any existing active fire alarm equipment.

B. Design intent is to remove interior of existing fire alarm control panel. Zone modules shall be connected to each existing active fire alarm zone, and installed within the empty tub of the existing control panel. Zone modules shall communicate with the new fire alarm control panel for annunciation of alarm, supervisory, or trouble occurrences at each of the existing zones. Labeling of zones in the new fire alarm panel shall match the area protected.

C. Existing Fire-Alarm Equipment: Maintain existing equipment fully operational. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service, and label existing fire-alarm equipment to be removed "NOT IN SERVICE" until removed from the building.

1.12 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace fire-alarm system equipment and components that fail in materials or workmanship within specified warranty period.

1. Warranty Extent: All equipment and components not covered in the Maintenance Service Agreement.
2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Fire alarm system installation shall comply with the City of Portland Fire Department Rules and Regulations.

B. Noncoded, UL-certified addressable system, with multiplexed signal transmission and horn/strobe evacuation.

C. All components provided shall be listed for use with the selected system.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

A. Fire-alarm signal initiation shall be by one or more of the following devices and systems:

1. Manual stations.
2. Heat detectors.
3. Smoke detectors.
4. Duct smoke detectors.
5. Automatic sprinkler system water flow.
6. Fire standpipe system.
7. Dry system pressure flow switch.

B. Fire-alarm signal shall initiate the following actions:

1. Continuously operate alarm notification appliances.
2. Identify alarm and specific initiating device at fire-alarm control unit and remote annunciator.
3. Transmit an alarm signal to the remote alarm receiving station.
4. Release fire and smoke doors held open by magnetic door holders.
5. Record events in the system memory.

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

1. Duct smoke detectors.
2. Valve supervisory switch.
3. High- or low-air-pressure switch of a dry-pipe sprinkler system.
4. Elevator shunt-trip supervision.
5. User disabling of zones or individual devices.
6. Loss of communication with any panel on the network.

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

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

E. System Supervisory Signal Actions:

1. Identify specific device initiating the event at fire-alarm control unit and remote annunciator.
2. After a time delay of 200 seconds, transmit a trouble or supervisory signal to the remote alarm receiving station.

2.3 FIRE-ALARM CONTROL UNIT

A. Fire alarm control panel Basis-of-Design is Potter Electric Signal Company, model PFC-6200, or equivalent.

1. Basis-of-Design panel is available for purchase via open distribution. Distributors include, but are not limited to:

a. ADIGlobal
b. Tri-Ed Distribution
c. Alarmax Distributors

2. Training and certification for the Basis-of-Design panel is available online at: **http://www.pottersignal.com/training/**

A. General Requirements for Fire-Alarm Control Unit:

1. The FACP shall include one (1) Signaling Line Circuit (SLC) that will power, supervise, monitor, and control a maximum of 127 analog addressable points which may be made up of any combination of sensors and modules. The SLC shall have the capability to be wired in an NFPA Style 4, 6, or 7 (Class B) configuration.
2. The FACP shall be capable of expanding to 318 analog addressable points, which may be made of any combination of sensors and modules, by use of up to 2 SLCE-127 Signal Line Communication expansion board. The SLCE-127 shall have the capability to be wired in a NFPA Style 4, 6, or 7 (Class B) configuration.
3. The FACP shall have 3 form C relays dedicated to Alarm, Trouble, and Supervisory conditions. These relays shall have a contact rating of 3 Amps at 24VDC.
4. The FACP shall have a power supply capable of providing a minimum of 3.5 amps of 24 VDC power to devices requiring auxiliary power and/or notification appliances.
5. The FACP shall have two (2) programmable Notification Appliance Circuits rated at no less than 3 amps per circuit and capable of being wired in a Class B configuration. These circuits shall be programmable for the following output types:

a. Notification Appliance Circuit – Continuous, ANSI Temporal, and Synchronized Output.
b. Auxiliary Power – Constant and Resettable.

6. The FACP NAC circuits shall include the capability to automatically synchronize notification appliances from multiple manufacturers simultaneously on the same FACP without the need for a synchronization module. Systems that do not allow for multiple brands of strobes to be synchronized together on the same panel are not acceptable. The following manufacturers synchronization protocol shall be supported as a minimum:

a. Potter/Amseco
b. Gentex
c. Wheelock
d. System Sensor

7. The FACP shall include a 4-wire serial P-LINK bus for communication with system annunciators, power supplies, expansion modules, and other accessories. The P-LINK bus shall support a wiring distance of no less than 6500 feet from the panel to the furthest device and be capable of being wired in Class B.

8. The FACP shall have two (2) programmable I/O Circuits rated at 1 amp per circuit and capable of being wired in a Class B configuration. These circuits shall be programmable for the following output types.

    a. Notification Appliance Circuit – Continuous Output
    b. Notification Appliance Circuit – ANSI Temporal Output
    c. Notification Appliance Circuit – Synchronized Output.
    d. Auxiliary Power – Constant
    e. Auxiliary Power – Resettable.
    f. Contact Input Pull Station
    g. Contact Input Waterflow
    h. Contact Input Supervisory
    i. Contact Input Tamper
    j. Contact Input Fire Drill
    k. Contact Input Trouble Monitor
    l. Contact Input Aux.
    m. Trigger IO Reverse Polarity
    n. Trigger IO Reverse Polarity No Trouble
    o. Contact Input Reset
    p. Contact Input Silence

9. The FACP shall include an operator interface keypad and annunciation panel that includes a backlit LCD display and color coded system status LED's.
10. The FACP shall be housed in a UL listed key locked cabinet with sufficient space to house 8AH or 18AH batteries.
11. The FACP shall include programming terminals for the purpose of addressing system SLC devices without the need for a special programmer.
12. The FACP shall be capable of being programmed with an IP address so that it can reside on a standard TCP/IP network. The IP address shall be able to be assigned dynamically through DDNS or programmed statically.
13. The FACP shall include a built-in TCP/IP Ethernet port for programming and communications purposes.

    a. The TCP/IP Ethernet port shall be capable of communicating to an approved UL listed central station via the internet or other compliant TCP/IP network connection, without the need for additional modules or software.

        1) The central station communication shall be transmitted in a format capable of transmitting event information by point or by software zone.
        2) The installation contractor shall verify the building network components compliance with any applicable codes and standards including NFPA and UL.

    b. The TCP/IP Ethernet port shall be capable of connecting a computer to the FACP for programming purposes using a standard Ethernet patch cable. Systems that require special cables, modules or adapters for programming are not acceptable.
    c. The FACP shall be capable of emailing the systems software program, event history, detector status, and any off-normal events that occur, to up to 20 preauthorized email recipients. Authorized email recipients shall have the ability to opt in and out of email transmissions by sending the FACP a standard email message.

14. The FACP shall include the ability to add a Digital Alarm Communicating Transmitter (DACT). The DACT shall be capable of being used in lieu of or in addition to the IP central station communication capability.

15. The FACP operating software shall include the following features:

    a. The ability to program any input to activate any output or group of outputs on the system.
    b. Drift compensation to ensure smoke detector accuracy between maintenance inspections.
    c. Maintenance alert function to warn of excessive dust or dirt accumulation in a smoke detector.
    d. Built-in detector sensitivity test meeting the requirements of NFPA 72.
    e. 1000 event history buffer that stores all off-normal conditions and actions along with a time/date stamp of when they occurred.
    f. Alarm verification feature with a programmable counter.
    g. Auxiliary point types to allow for the configuration of non-fire related devices on the SLC loop.
    h. One person walk-test capability with all devices tested during walk-test mode recorded in the event history buffer.
    i. Duplicate device address detection to determine if more than 1 device per SLC loop shares the same address. An authorized user shall also be able to turn on the LED for any device address to assist in troubleshooting duplicate address troubles.

B. Operator Control and Interface

1. Acknowledge (ACK) Button

    a. Depressing the FACP ACK button in response to new alarms and/or troubles shall silence the local piezo sounder and change the alarm and trouble LED's from flashing mode to steady ON mode. The alarm or trouble event information on the LCD display shall also display an icon indicating that the event has been acknowledged.

2. Alarm Silence (SILENCE) Button

    a. Depressing the FACP SILENCE button shall cause all silenceable alarm notification appliances and relays to return to their normal non-alarm condition. The selection of which notification appliance circuits and relays that are silenceable by this button, shall be fully field programmable within the confines of all applicable codes and standards. The FACP software shall include silence inhibit and auto silence/unsilence timers.

3. Alarm Activate (DRILL) Button

    a. Depressing the FACP DRILL button shall activate all notification appliance circuits. The drill function shall latch until the ESC button is depressed.

4. System (RESET) Button

    a. Depressing the FACP RESET button shall cause all electronically latched input devices and software zones, as well as all associated output devices and circuits to return to their normal condition.

5. Display

    a. The user interface display shall be a backlit 2 line 32 character LCD.

C. Notification-Appliance Circuit:

1. Audible appliances shall sound in a three-pulse temporal pattern, as defined in NFPA 72.
2. Visual alarm appliances shall flash in synchronization where multiple appliances are in the same field of view, as defined in NFPA 72.

D. Elevator Recall:

1. Elevator recall shall be initiated only by one of the following alarm-initiating devices:

    a. Elevator lobby detectors except the lobby detector on the designated floor.
    b. Smoke detector in elevator machine room.
    c. Heat detectors in elevator hoistway.

2. Elevator controller shall be programmed to move the cars to the alternate recall floor if lobby detectors located on the designated recall floors are activated.
3. Water-flow alarm connected to sprinkler in an elevator shaft and elevator machine room shall shut down elevators associated with the location without time delay.

    a. Water-flow switch associated with the sprinkler in the elevator pit may have a delay to allow elevators to move to the designated floor.

E. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke-barrier walls shall be connected to fire-alarm system.

F. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.

G. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory signals and digital alarm radio transmitters shall be powered by 24-V dc source.

1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.

H. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.

    a. Batteries used for backup power to the main FACP or remote power supply panels shall be of the sealed lead acid, maintenance free type.
    b. Batteries shall be sized according to the power requirements of the FACP and be capable of operating the system in standby mode for a minimum of 24 hours followed by 5 minutes in alarm condition.
    c. Battery calculations shall be supplied showing the calculated standby battery size after factoring in a minimum 15% efficiency/derating factor.

I. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

2.4 MANUAL FIRE-ALARM BOXES

A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation. Provide manufacturer's surface back box for mounting.

1. Single-action mechanism, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
2. Station Reset: Key-operated switch.
3. Indoor Protective Shield: Factory-fabricated, clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm. Lifting the cover actuates an integral battery-powered audible horn intended to discourage false-alarm operation.

    a. Provide (1) at each manual fire alarm box located in a normally occupied space.

2.5 SYSTEM SMOKE DETECTORS

A. General Requirements for System Smoke Detectors:

1. Comply with UL 268; operating at 24-V dc, nominal.
2. Detectors shall be four-wire type.
3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
6. Integral Visual-Indicating Light: LED type, indicating detector has operated and power-on status.
7. Remote Control: Unless otherwise indicated, detectors shall be digital-addressable type, individually monitored at fire-alarm control unit for calibration and alarm condition.

B. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:

    a. Primary status.
    b. Device type.
    c. Present average value.
    d. Sensor range (normal, dirty, etc.).

2.6 HEAT DETECTORS

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

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

B. Heat Detector, Fixed-Temperature Type: Actuated by temperature that exceeds a fixed temperature of 190 deg F.

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

2.7 NOTIFICATION APPLIANCES

A. General Requirements for Notification Appliances: Individually addressed, connected to a signaling-line circuit, equipped for mounting as indicated, and with screw terminals for system connections.

B. General Requirements for Notification Appliances: Connected to notification-appliance signal circuits, zoned as indicated, equipped for mounting as indicated, and with screw terminals for system connections.

1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated, and with screw terminals for system connections.

C. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn, using the coded signal prescribed in UL 464 test protocol.

D. Visible Notification Appliances: Xenon strobe lights complying with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch-high letters on the lens.

1. Rated Light Output:

a. 15/30/75/110 cd, selectable in the field.

2. Mounting: Wall or ceiling mounted as indicated.
3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
4. Flashing shall be in a temporal pattern, synchronized with other units within the same field of view.
5. Strobe Leads: Factory connected to screw terminals.
6. Mounting Faceplate: Factory finished, white, unless noted otherwise.

2.8 REMOTE ANNUNCIATOR

A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing.

1. Mounting: Contractor shall verify size of existing annunciator panel. If space allows, recess mount new within existing backbox. Otherwise, surface mount. Ensure surface panel is not more than 4 inches deep.
2. NEMA 250, Type 1.

B. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.

2.9 ADDRESSABLE INTERFACE DEVICE

A. General:

1. Include address-setting means on the module.
2. Store an internal identifying code for control panel use to identify the module type.

B. Monitor Module: Microelectronic module providing a system address for alarm-initiating devices for wired applications with normally open contacts.

C. Integral Relay: Capable of providing a direct signal to elevator controller to initiate elevator recall or to circuit-breaker shunt trip for power shutdown.

1. Allow the control panel to switch the relay contacts on command.
2. Have a minimum of two normally open and two normally closed contacts available for field wiring.

D. Control Module:

1. Operate notification devices.
2. Operate solenoids for use in sprinkler service.

E. Zone Module:

1. Module used to supervise status of a zone of conventional initiating devices.
2. Module shall have LEDs to indicate status of zone.

2.10 RADIO ALARM TRANSMITTER

A. Transmitter is existing to be maintained. Contractor shall coordinate with the City of Portland Fire Department for required communication between the existing radio alarm transmitter and the fire alarm control panel.

2.11 DEVICE GUARDS

A. Description: Welded wire mesh of size and shape for the manual station, smoke detector, gong, or other device requiring protection.

1. Factory fabricated and furnished by device manufacturer.
2. Finish: Paint of color to match the protected device.
3. Provide (1) at each new or existing device located at all levels of the Gymnasium, Wrestling Room, Locker Rooms, and Loading Dock Area, shown or not shown.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions for compliance with requirements for ventilation, temperature, humidity, and other conditions affecting performance of the Work.

1. Verify that manufacturer's written instructions for environmental conditions have been permanently established in spaces where equipment and wiring are installed, before installation begins.

B. Examine roughing-in for electrical connections to verify actual locations of connections before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EQUIPMENT INSTALLATION

A. Comply with NFPA 72, NFPA 101, and requirements of authorities having jurisdiction for installation and testing of fire-alarm equipment. Install all electrical wiring to comply with requirements in NFPA 70 including, but not limited to, Article 760, "Fire Alarm Systems."

1. Devices placed in service before all other trades have completed cleanup shall be replaced.
2. Devices installed but not yet placed in service shall be protected from construction dust, debris, dirt, moisture, and damage according to manufacturer's written storage instructions.

B. Connecting to Existing Equipment: Verify that existing fire-alarm system is operational before making changes or connections.

1. Connect existing zones to new control panel.
2. Connect new equipment to existing alarm transmission equipment at the supervising station.

C. Install wall-mounted equipment, with tops of cabinets not more than 72 inchesabove the finished floor.

D. Manual Fire-Alarm Boxes:

1. Install manual fire-alarm box in the normal path of egress within 60 inches of the exit doorway.
2. Mount manual fire-alarm box on a background of a contrasting color.
3. The operable part of manual fire-alarm box shall be between 42 inches and 48 inches above floor level. All new devices shall be mounted at the same height unless otherwise indicated.

E. Install a cover on each smoke detector that is not in service during construction. Cover shall remain in place except during system testing. Remove cover prior to system turnover. Covers installed for protection of in-service smoke detectors shall be removed when active construction is not in the immediate vicinity of the device.

F. Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location.

G. Remote Status and Alarm Indicators: Install in a visible location near each smoke detector, sprinkler water-flow switch, and valve-tamper switch that is not readily visible from normal viewing position.

H. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille. Install all new devices at the same height unless otherwise indicated.

I. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling. Install all new devices at the same height unless otherwise indicated.

3.3 PATHWAYS

A. Pathways above recessed ceilings may be routed exposed.

B. Pathways in areas of hard surfaces shall be installed in surface raceway.

3.4 CONNECTIONS

A. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 36 inches from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.

1. Alarm-initiating connection to elevator recall system and components.
2. Supervisory connections at valve supervisory switches.
3. Supervisory connections at low-air-pressure switch of each dry-pipe sprinkler system.
4. Supervisory connections at elevator shunt-trip breaker.

3.5 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

B. Install framed instructions in a location visible from fire-alarm control unit.

3.6 GROUNDING

A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

B. Ground shielded cables at the control panel location only. Insulate shield at device location.

3.7 FIELD QUALITY CONTROL

A. Field tests shall be witnessed by authorities having jurisdiction.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

C. Perform tests and inspections.

D. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Visual Inspection: Conduct visual inspection prior to testing.

    a. Inspection shall be based on completed record Drawings and system documentation that is required by the "Completion Documents, Preparation" table in the "Documentation" section of the "Fundamentals" chapter in NFPA 72.
    b. Comply with the "Visual Inspection Frequencies" table in the "Inspection" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.

2. System Testing: Comply with the "Test Methods" table in the "Testing" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
4. Test visible appliances for the public operating mode according to manufacturer's written instructions.
5. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" section of the "Fundamentals" chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.

F. Fire-alarm system will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

H. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.

I. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.8 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 24 months' full maintenance by skilled employees of manufacturer's designated service organization. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

1. Include visual inspections according to the "Visual Inspection Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
2. Perform tests in the "Test Methods" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
3. Perform tests per the "Testing Frequencies" table in the "Testing" paragraph of the "Inspection, Testing and Maintenance" chapter in NFPA 72.

3.9 SOFTWARE SERVICE AGREEMENT

A. Comply with UL 864.

B. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.

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

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

3.10 DEMONSTRATION

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

END OF SECTION 283111

PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1
PORTLAND, MAINE

INDEX

ISSUED FOR BID
05.04.16

SIGNATURE	DATE
OWNER :	
ARCHITECT :	
CONTRACTOR :	

REV.	DESCRIPTION	DATE
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No. 10272
LICENSED PROFESSIONAL ENGINEER
05.04.16

SHEET No.
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COMM. No.
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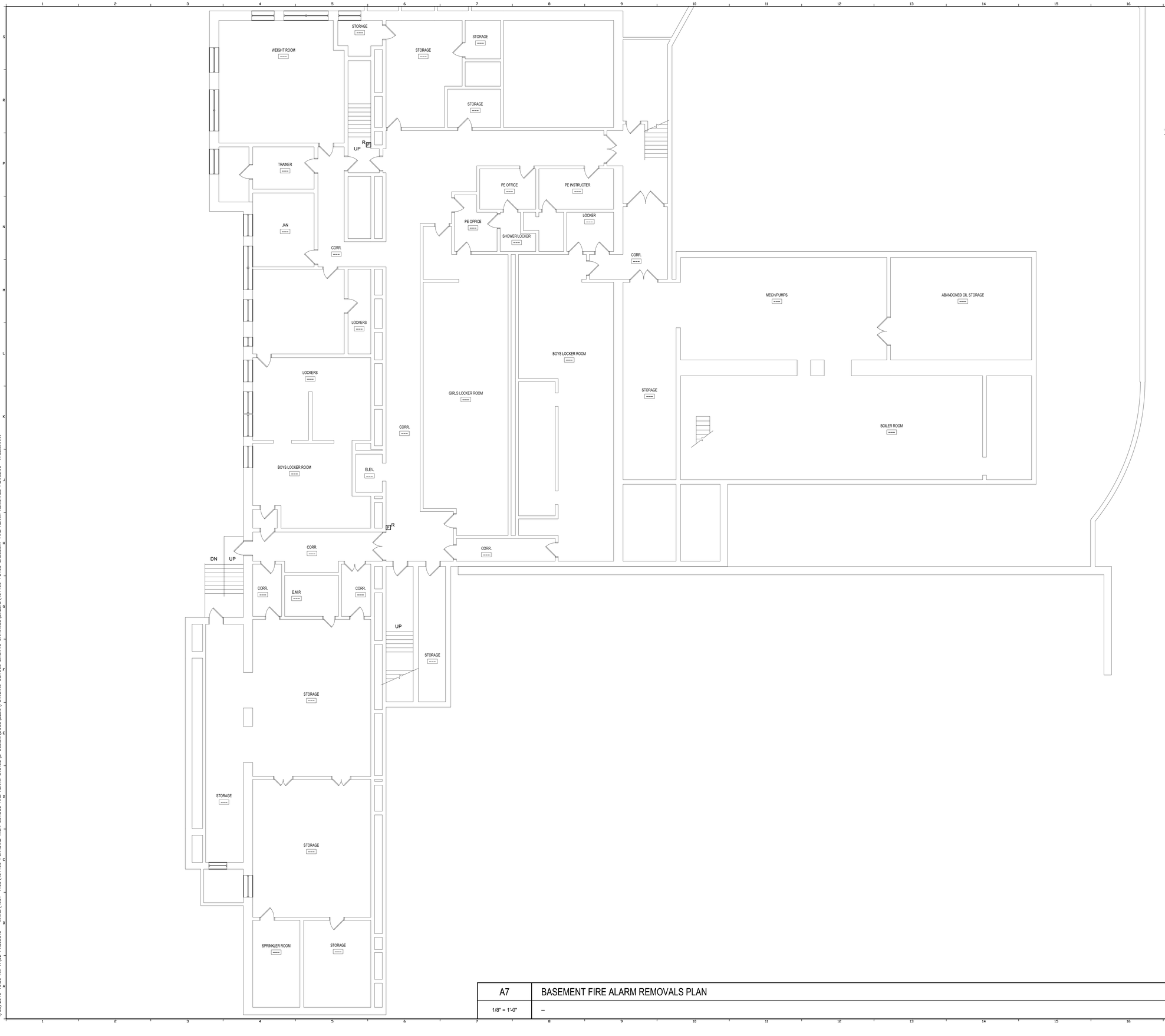
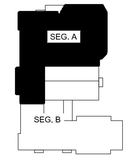


GENERAL DEMOLITION NOTES:

THESE NOTES SHALL APPLY TO ALL DEMO PLANS FOR THIS BUILDING.

1. MAINTAIN, OR RESTORE IF INTERRUPTED BY REMOVALS OR IN PATH OF NEW CONSTRUCTION, ALL CONDUITS AND CONDUCTORS PASSING THROUGH AND SERVING UNDISTURBED AREAS (SHOWN OR NOT SHOWN).
2. ALL EXISTING CONDUITS STUBBED THROUGH CEILING OR FLOOR SERVING ITEMS TO BE REMOVED (SHOWN OR NOT SHOWN) AND NOT REQUIRED TO BE REUSED SHALL BE CUT OFF FLUSH WITH THE SURFACE AND SEALED.
3. IN ANY AREA REQUIRING THE PERFORMANCE OF ANY TRADES WORK, THIS CONTRACTOR SHALL CAREFULLY REMOVE AND STORE ANY ELECTRICAL ITEMS IN THE PATH OF WORK, REINSTALLING AND RECONNECTING SAME AS REQUIRED IN ACCORDANCE WITH THE PLANS AND/OR AS DIRECTED AFTER COMPLETION OF OTHER TRADES WORK IN THAT AREA.
4. INVENTORY ITEMS THAT ARE REMOVED, AND PROVIDE A LIST TO THE OWNER FOR THEIR SELECTION OF ITEMS TO BE RETAINED. ALL ITEMS REJECTED BY THE OWNER SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.
5. WHERE EXISTING DEVICE IS NOTED TO BE REMOVED, RECESSED JUNCTION BOX MAY BE ABANDONED IN PLACE. PROVIDE BLANK PLATE AT BOX.



KEY PLAN

LEGEND:

E	EXISTING TO REMAIN
ER	EXISTING RELOCATED
NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
R	EXISTING TO BE REMOVED
RR	REMOVE & RELOCATE EXISTING
FH	FIRE ALARM HORN / LIGHT
F	MULTI-CANDLA STROBE
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	GAS SHUT-OFF
EX RT	RADIO TRANSMITTER BOX
MM	MONITOR MODULE
RT	TEST STATION
RM	RELAY MODULE
	ANSUL GAS TANK
AMP	FIRE ALARM AMPLIFIER

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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

BASEMENT FIRE ALARM REMOVALS PLAN

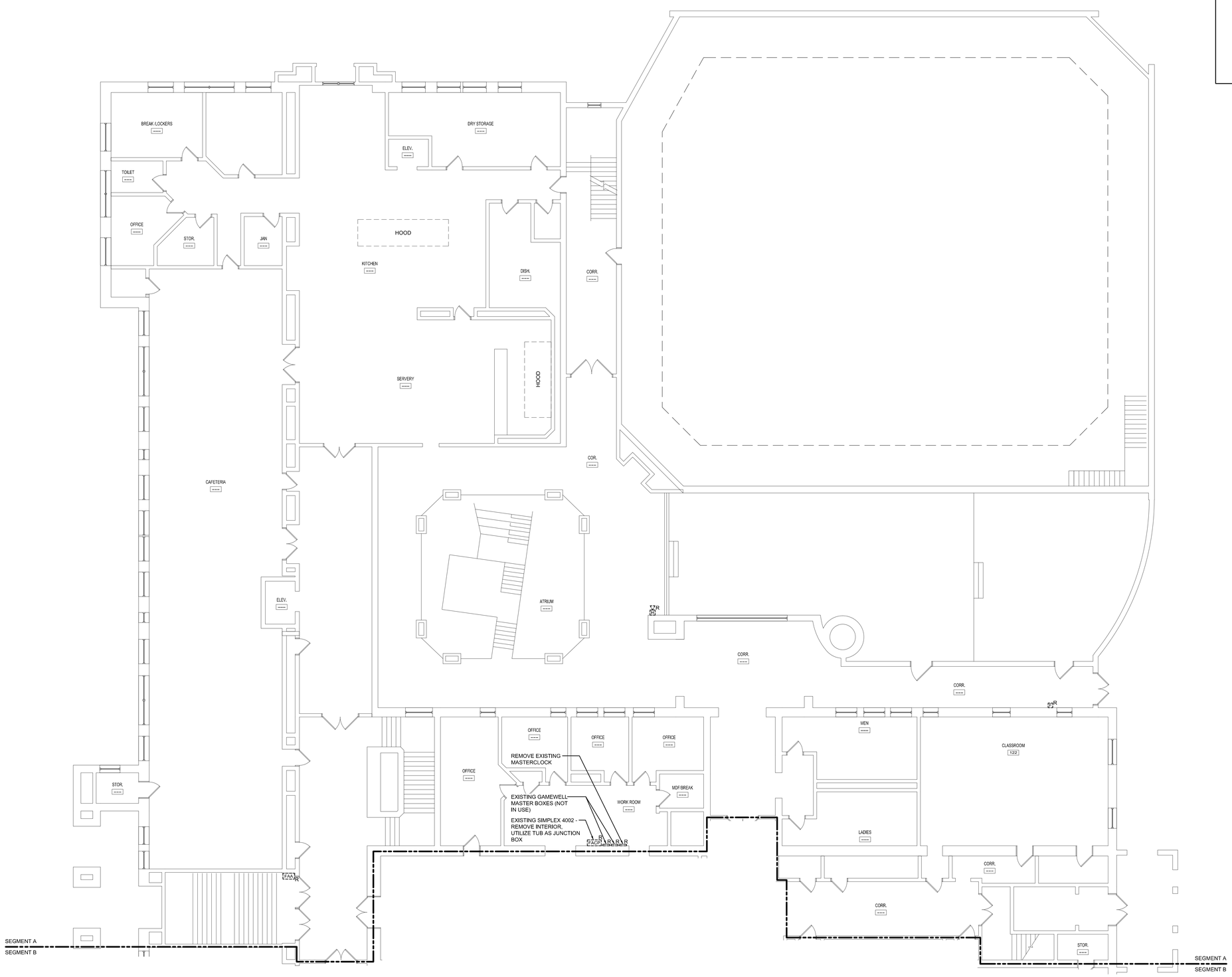
SHEET TITLE:

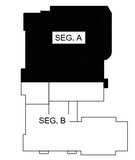
WBRC CAD FILE:	404100 – FD100
PROJECT No.	404100
SCALE:	AS NOTED
PROJECT MANAGER:	SJL
DRAWN BY:	KRM
CHECKED BY:	SJL

GRAPHIC SCALE: 0" 1"

SHEET No. FD100

A7	BASEMENT FIRE ALARM REMOVALS PLAN
1/8" = 1'-0"	--





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NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
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FHS	MULTI-CANDELA HORN/STROBE
FDCHS	CEILING MOUNTED MULTI-CANDELA HORN/STROBE
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RT	TEST STATION
RM	RELAY MODULE
A	ANSUL GAS TANK
AMP	FIRE ALARM AMPLIFIER

REV.	DESCRIPTION	DATE
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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

FIRST FLOOR - SEG. A FIRE ALARM REMOVALS PLAN

SHEET TITLE:

WBRC CAD FILE:	404100 – FD102A
PROJECT No.	404100
SCALE:	AS NOTED
PROJECT MANAGER:	SJL
DRAWN BY:	KRM
CHECKED BY:	SJL

GRAPHIC SCALE: 0" 1"

SHEET No. FD102A

A1	FIRST FLOOR - SEG. A FIRE ALARM REMOVALS PLAN
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SEG. A

SEG. B

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REV.	DESCRIPTION	DATE
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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

FIRST FLOOR - SEG. B FIRE ALARM REMOVALS PLAN

SHEET TITLE:

WBRC CAD FILE: 404100 – FD102B

PROJECT No. 404100

GRAPHIC SCALE: 0" 1"

SCALE: AS NOTED

PROJECT MANAGER: SJL

SHEET No. FD102B

DRAWN BY: KRM

CHECKED BY: SJL

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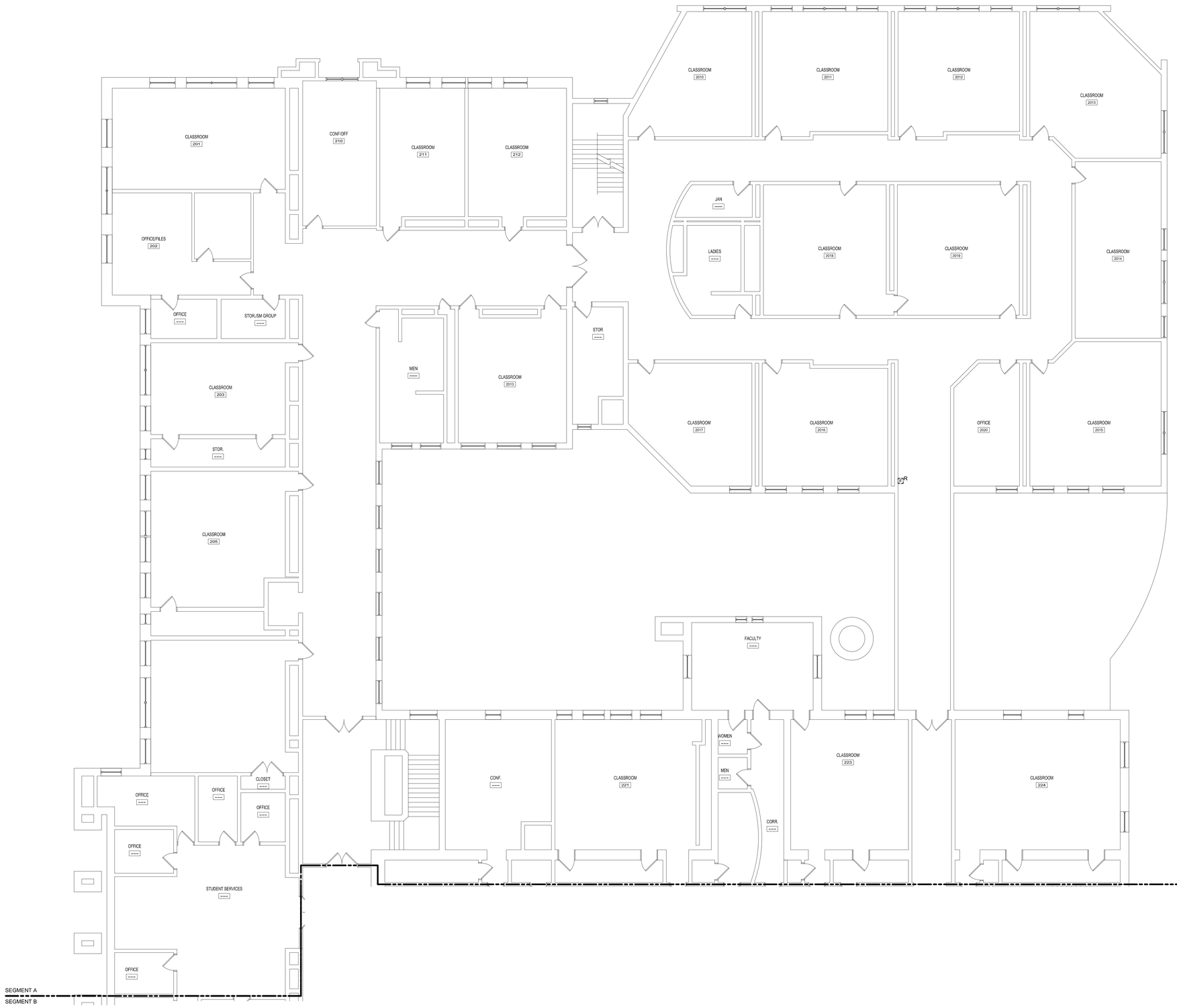

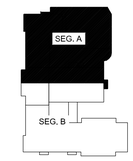

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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

SECOND FLOOR - SEG. A FIRE ALARM REMOVALS PLAN

SHEET TITLE:

WBRC CAD FILE:	404100 – FD103A
PROJECT No.	404100
SCALE:	AS NOTED
PROJECT MANAGER:	SJL
DRAWN BY:	KRM
CHECKED BY:	SJL
GRAPHIC SCALE:	0" 1"
SHEET No.	FD103A

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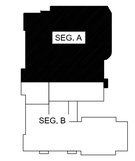

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A	ANSUL GAS TANK
AMP	FIRE ALARM AMPLIFIER

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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

THIRD FLOOR - SEG. A FIRE ALARM REMOVALS PLAN

SHEET TITLE:

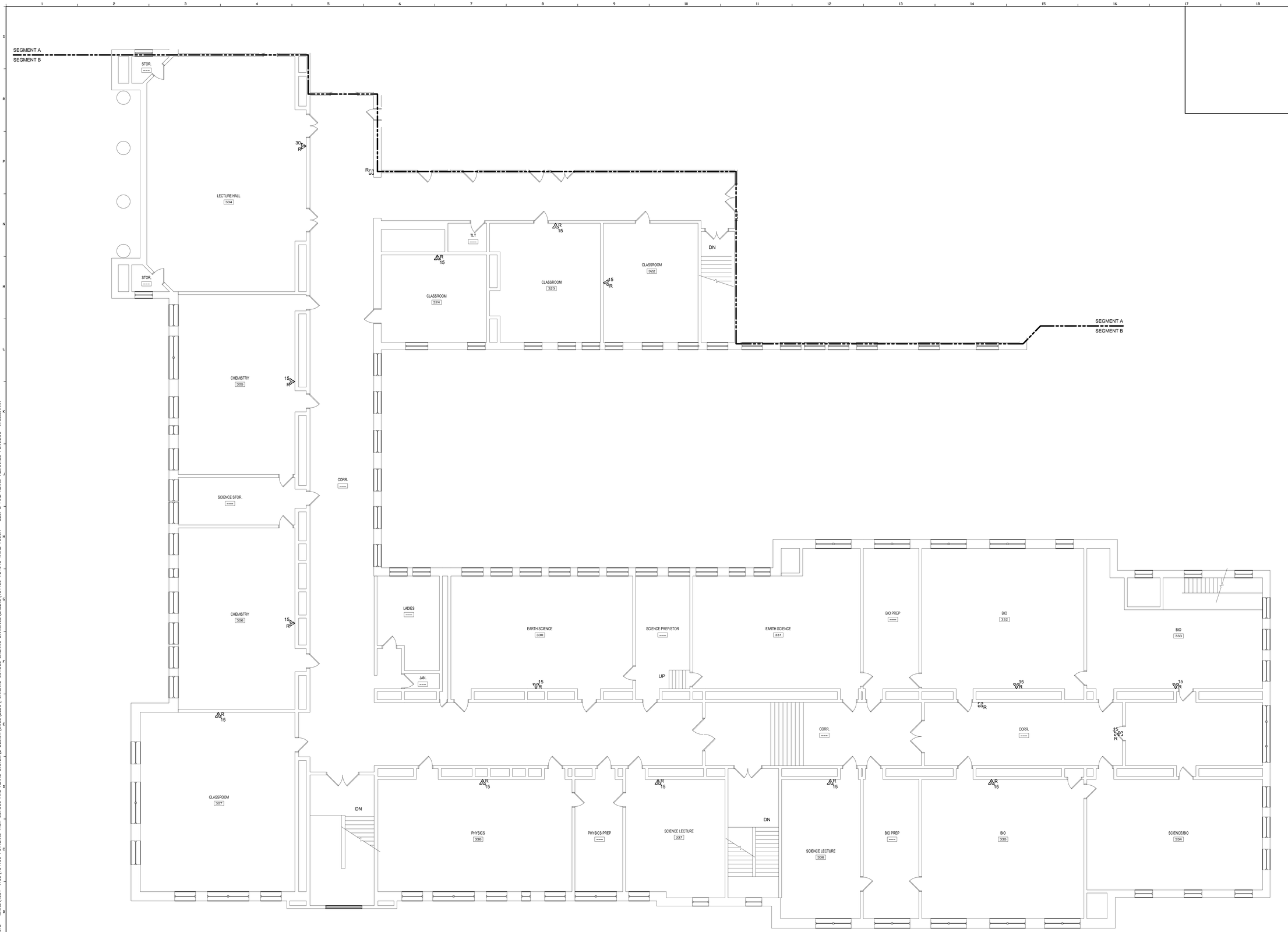
WBRC CAD FILE:	404100 – FD104A
PROJECT No.	404100
SCALE:	AS NOTED
PROJECT MANAGER:	SJL
DRAWN BY:	KRM
CHECKED BY:	SJL

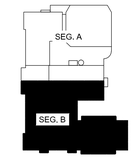
GRAPHIC SCALE: 0" 1"

SHEET No. FD104A

A1	THIRD FLOOR - SEG. A FIRE ALARM REMOVALS PLAN
1/8" = 1'-0"	--

4/29/2016 1:13 AM T:\02 PROJECTS – MAINE\4001 – 4100\404100 PORTLAND HIGH SCHOOL FIRE ALARM SYSTEM\2 DESIGN\DWGS\BLDG\PORTLAND SCHOOL EXISTING DRAWINGS\SHEETS\FD104A THIRD FLOOR – SEG. A FIRE ALARM REMOVALS PLAN.DWG KYLE.MAHAR





KEY PLAN

LEGEND:

E	EXISTING TO REMAIN
ER	EXISTING RELOCATED
NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
R	EXISTING TO BE REMOVED
RR	REMOVE & RELOCATE EXISTING
	FIRE ALARM HORN / LIGHT
	MULTI-CANDLA STROBE
	MULTI-CANDELA HORN/STROBE
CHS	CEILING MOUNTED MULTI-CANDELA HORN/STROBE
HT	FIRE ALARM SYSTEM CEILING MOUNTED HEAT DETECTOR - "EL" FOR ELEVATOR SHUNT TRIP
SD	FIRE ALARM SYSTEM CEILING MOUNTED SMOKE DETECTOR - "EL" FOR ELEVATOR RECALL
F	WALL MOUNTED FIRE ALARM SYSTEM MANUAL PULL STATION
K	KNOX BOX
J	JUNCTION BOX
	DOOR HOLD-OPEN DEVICE CONNECTION
PS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM PRESSURE SWITCH
FS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM FLOW SWITCH
TS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM TAMPER SWITCH
SD	FIRE ALARM SYSTEM DUCT MOUNTED SMOKE DETECTOR
FACP	FIRE ALARM SYSTEM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR
	GAS SHUT-OFF
EX RT	RADIO TRANSMITTER BOX
MM	MONITOR MODULE
RT	TEST STATION
RM	RELAY MODULE
A	ANSUL GAS TANK
AMP	FIRE ALARM AMPLIFIER

REV.	DESCRIPTION	DATE
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0	ISSUED FOR BID	05.04.16

ISSUED FOR BID

05.04.16

CURRENT ISSUE STATUS:

STATE OF MAINE — STEPHANIE J. LAPLANT — No.10272 — LICENSED PROFESSIONAL ENGINEER

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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

THIRD FLOOR - SEG. B FIRE ALARM REMOVALS PLAN

SHEET TITLE:

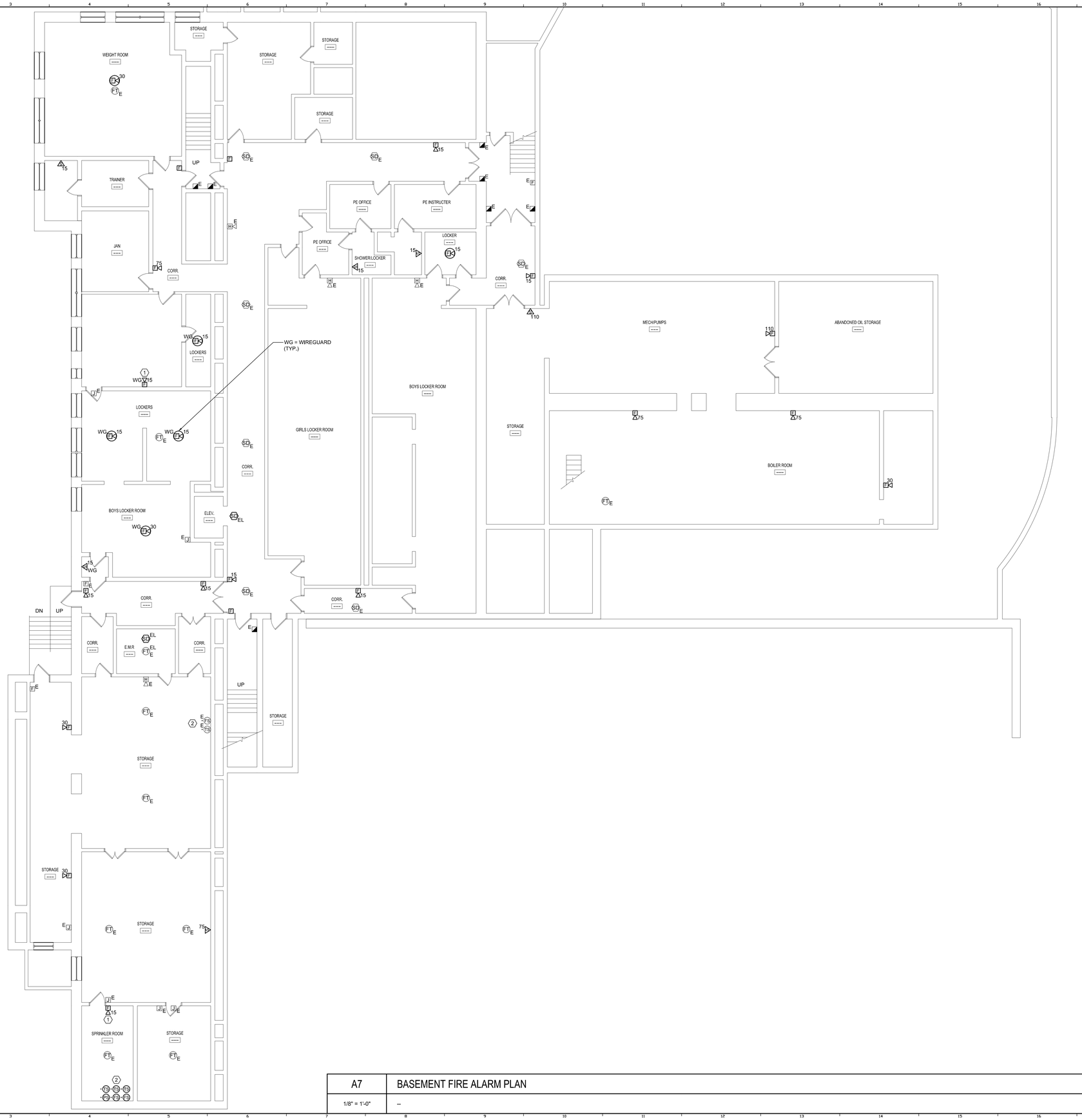
WBRC CAD FILE:	404100 – FD104B
PROJECT No.	404100
SCALE:	AS NOTED
PROJECT MANAGER:	SJL
DRAWN BY:	KRM
CHECKED BY:	SJL

GRAPHIC SCALE: 0" 1"

SHEET No. FD104B

A1	THIRD FLOOR - SEG. B FIRE ALARM REMOVALS PLAN
1/8" = 1'-0"	--

5/4/2016 1:06 PM T:\02_PROJECTS – MAINE\4001–4100\404100_PORTLAND_HIGH_SCHOOL_FIRE_ALARM_SYSTEM\2_DESIGN\DWGS\BLDG\PORTLAND_SCHOOL_EXISTING_DRAWINGS\SHEETS\404100–FD104B THIRD FLOOR – SEG. B FIRE ALARM REMOVALS PLAN.DWG KYLE MAHAR



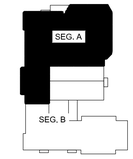
GENERAL NOTES:

1. TO THE EXTENT POSSIBLE, INSTALL FIRE ALARM CABLES IN SPECIFIED UNENCLOSED WIRING METHOD ABOVE ACCESSIBLE CEILING.

TECHNICAL NOTES:

(1) UTILIZE EXISTING JUNCTION BOX AT THIS LOCATION FOR NEW F/A DEVICE.

(2) MAINTAIN EXISTING SPRINKLER FLOW, TAMPER AND/OR PRESSURE SWITCHES WITHIN THIS SPACE. INSTALL MONITOR MODULES AS REQUIRED TO CONNECT TO FIRE ALARM SYSTEM ADDRESSABLE LOOP.



KEY PLAN

LEGEND:

E	EXISTING TO REMAIN
ER	EXISTING RELOCATED
NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
R	EXISTING TO BE REMOVED
RR	REMOVE & RELOCATE EXISTING
	FIRE ALARM HORN / LIGHT
	MULTI-CANDLA STROBE
	MULTI-CANDELA HORN/STROBE
	CEILING MOUNTED MULTI-CANDELA HORN/STROBE
FT	FIRE ALARM SYSTEM CEILING MOUNTED HEAT DETECTOR - "EL" FOR ELEVATOR SHUNT TRIP
SD	FIRE ALARM SYSTEM CEILING MOUNTED SMOKE DETECTOR - "EL" FOR ELEVATOR RECALL
F	WALL MOUNTED FIRE ALARM SYSTEM MANUAL PULL STATION
K	KNOX BOX
J	JUNCTION BOX
	DOOR HOLD-OPEN DEVICE CONNECTION
PS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM PRESSURE SWITCH
FS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM FLOW SWITCH
TS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM TAMPER SWITCH
SD D	FIRE ALARM SYSTEM DUCT MOUNTED SMOKE DETECTOR
FACP	FIRE ALARM SYSTEM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR
	GAS SHUT-OFF
EX RT	RADIO TRANSMITTER BOX
MM	MONITOR MODULE
RT	TEST STATION
RM	RELAY MODULE
	ANSUL GAS TANK
AMP	FIRE ALARM AMPLIFIER

REV.	DESCRIPTION	DATE
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0	ISSUED FOR BID	05.04.16

ISSUED FOR BID

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CURRENT ISSUE STATUS:

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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

BASEMENT FIRE ALARM PLAN

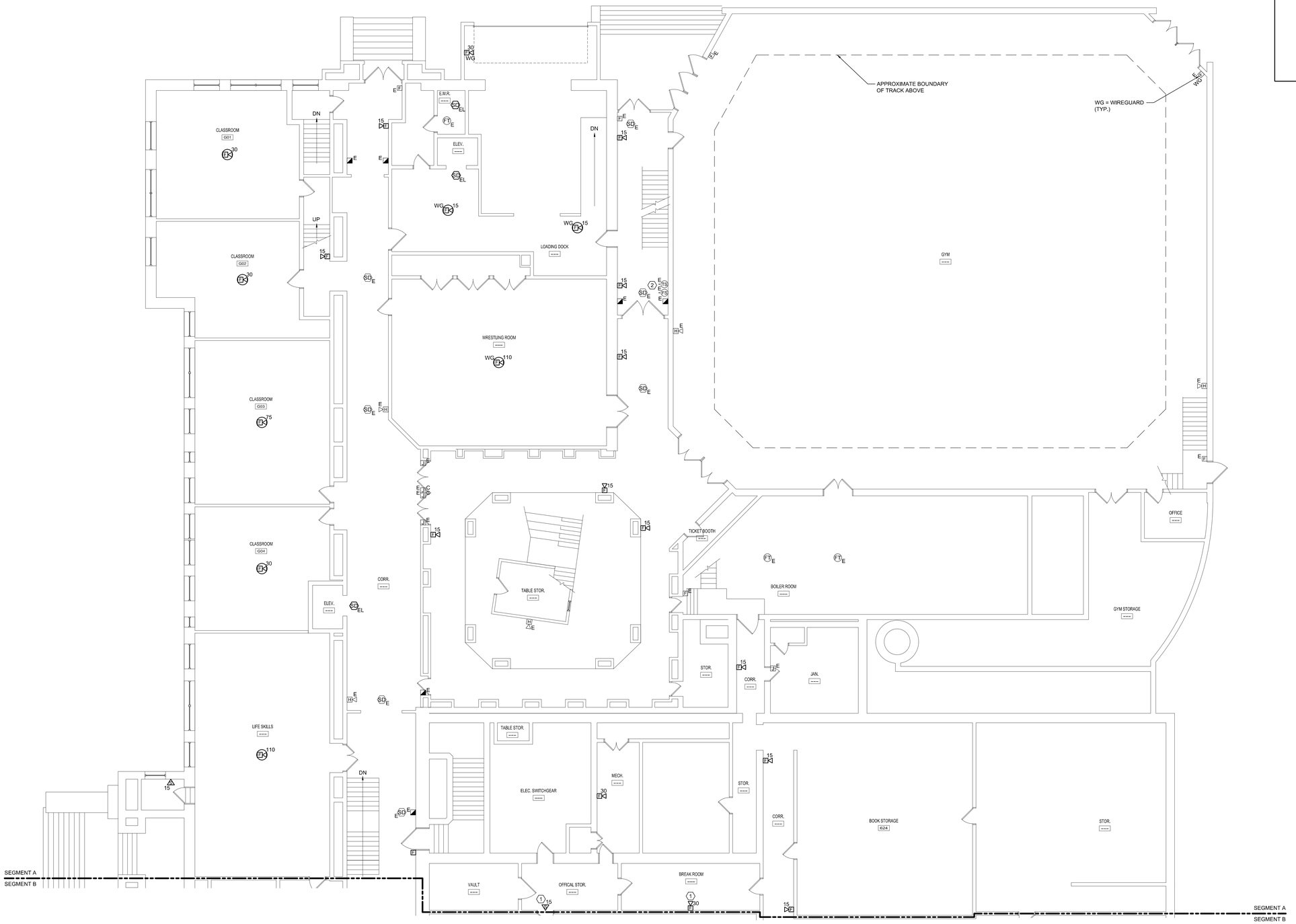
SHEET TITLE:

WBRC CAD FILE:	404100 – FA100
PROJECT No.	404100
SCALE:	AS NOTED
PROJECT MANAGER:	SJL
DRAWN BY:	KRM
CHECKED BY:	SJL

GRAPHIC SCALE: 0" 1"

SHEET No. FA100

A7	BASEMENT FIRE ALARM PLAN	
1/8" = 1'-0"	–	



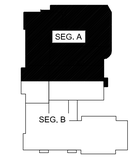
GENERAL NOTES:

1. TO THE EXTENT POSSIBLE, INSTALL FIRE ALARM CABLES IN SPECIFIED UNENCLOSED WIRING METHOD ABOVE ACCESSIBLE CEILING.

TECHNICAL NOTES:

(1) UTILIZE EXISTING JUNCTION BOX AT THIS LOCATION FOR NEW F/A DEVICE.

(2) MAINTAIN EXISTING SPRINKLER FLOW, TAMPER AND/OR PRESSURE SWITCHES WITHIN THIS SPACE. INSTALL MONITOR MODULES AS REQUIRED TO CONNECT TO FIRE ALARM SYSTEM ADDRESSABLE LOOP.



KEY PLAN

LEGEND:

E	EXISTING TO REMAIN
ER	EXISTING RELOCATED
NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
R	EXISTING TO BE REMOVED
RR	REMOVE & RELOCATE EXISTING
	FIRE ALARM HORN / LIGHT
	MULTI-CANDLA STROBE
	MULTI-CANDELA HORN/STROBE
	CEILING MOUNTED MULTI-CANDELA HORN/STROBE
FT	FIRE ALARM SYSTEM CEILING MOUNTED HEAT DETECTOR - "EL" FOR ELEVATOR SHUNT TRIP
SD	FIRE ALARM SYSTEM CEILING MOUNTED SMOKE DETECTOR - "EL" FOR ELEVATOR RECALL
F	WALL MOUNTED FIRE ALARM SYSTEM MANUAL PULL STATION
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FACP	FIRE ALARM SYSTEM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR
	GAS SHUT-OFF
EX RT	RADIO TRANSMITTER BOX
MM	MONITOR MODULE
RT	TEST STATION
RM	RELAY MODULE
	ANSUL GAS TANK
AMP	FIRE ALARM AMPLIFIER

REV.	DESCRIPTION	DATE
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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

GROUND FLOOR - SEG. A FIRE ALARM PLAN

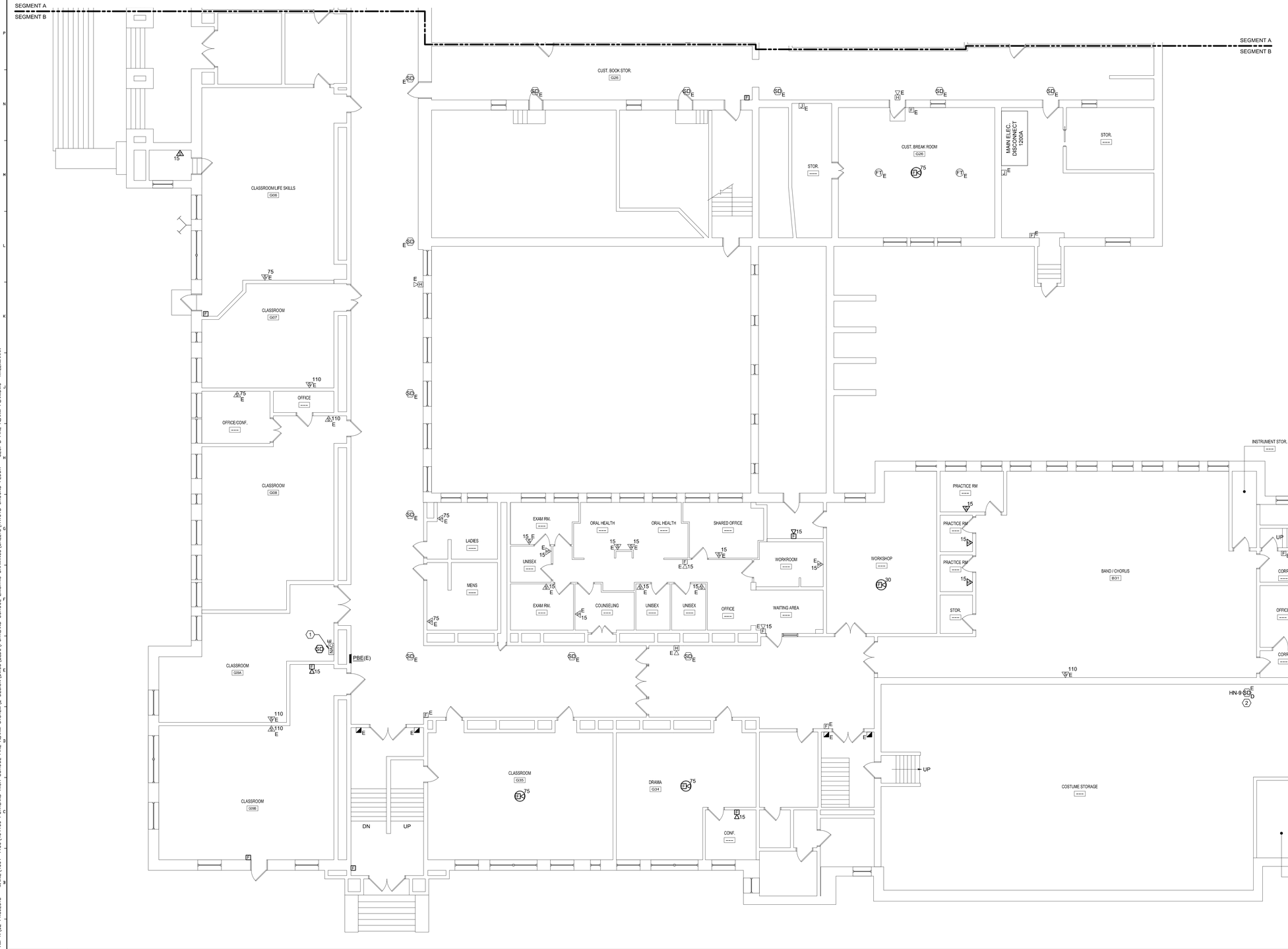
SHEET TITLE:

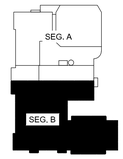
WBRC CAD FILE:	404100 – FA101A
PROJECT No.	404100
SCALE:	AS NOTED
PROJECT MANAGER:	SJL
DRAWN BY:	KRM
CHECKED BY:	SJL

GRAPHIC SCALE: 0" 1"

SHEET No. FA101A

A1	GROUND FLOOR - SEG. A FIRE ALARM PLAN
1/8" = 1'-0"	--





GENERAL NOTES:

1. TO THE EXTENT POSSIBLE, INSTALL FIRE ALARM CABLES IN SPECIFIED UNENCLOSED WIRING METHOD ABOVE ACCESSIBLE CEILING.

TECHNICAL NOTES:

(1) UTILIZE EXISTING NAC POWER EXTENDER FOR NEW NOTIFICATION DEVICES AS NECESSARY.

(2) DUCT SMOKE DETECTORS ARE NOTED DIAGRAMMATICALLY IN THIS SPACE. REPLACE EXISTING DUCT SMOKE DETECTOR WITH A NEW DEVICE. CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATION OF EACH EXISTING DETECTOR. IF 120V POWER IS REQUIRED, CONNECT TO NEARBY RECEPTACLE CIRCUIT.

KEY PLAN

LEGEND:

E	EXISTING TO REMAIN
ER	EXISTING RELOCATED
NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
R	EXISTING TO BE REMOVED
RR	REMOVE & RELOCATE EXISTING
FH	FIRE ALARM HORN / LIGHT
F	MULTI-CANDLA STROBE
FH	MULTI-CANDELA HORN/STROBE
FH	CEILING MOUNTED MULTI-CANDELA HORN/STROBE
FT	FIRE ALARM SYSTEM CEILING MOUNTED HEAT DETECTOR - "EL" FOR ELEVATOR SHUNT TRIP
SD	FIRE ALARM SYSTEM CEILING MOUNTED SMOKE DETECTOR - "EL" FOR ELEVATOR RECALL
F	WALL MOUNTED FIRE ALARM SYSTEM MANUAL PULL STATION
K	KNOX BOX
J	JUNCTION BOX
	DOOR HOLD-OPEN DEVICE CONNECTION
PS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM PRESSURE SWITCH
FS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM FLOW SWITCH
TS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM TAMPER SWITCH
SD	FIRE ALARM SYSTEM DUCT MOUNTED SMOKE DETECTOR
FACP	FIRE ALARM SYSTEM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR
	GAS SHUT-OFF
EX RT	RADIO TRANSMITTER BOX
MM	MONITOR MODULE
RT	TEST STATION
RM	RELAY MODULE
	ANSUL GAS TANK
AMP	FIRE ALARM AMPLIFIER

REV.	DESCRIPTION	DATE
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0	ISSUED FOR BID	05.04.16

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05.04.16
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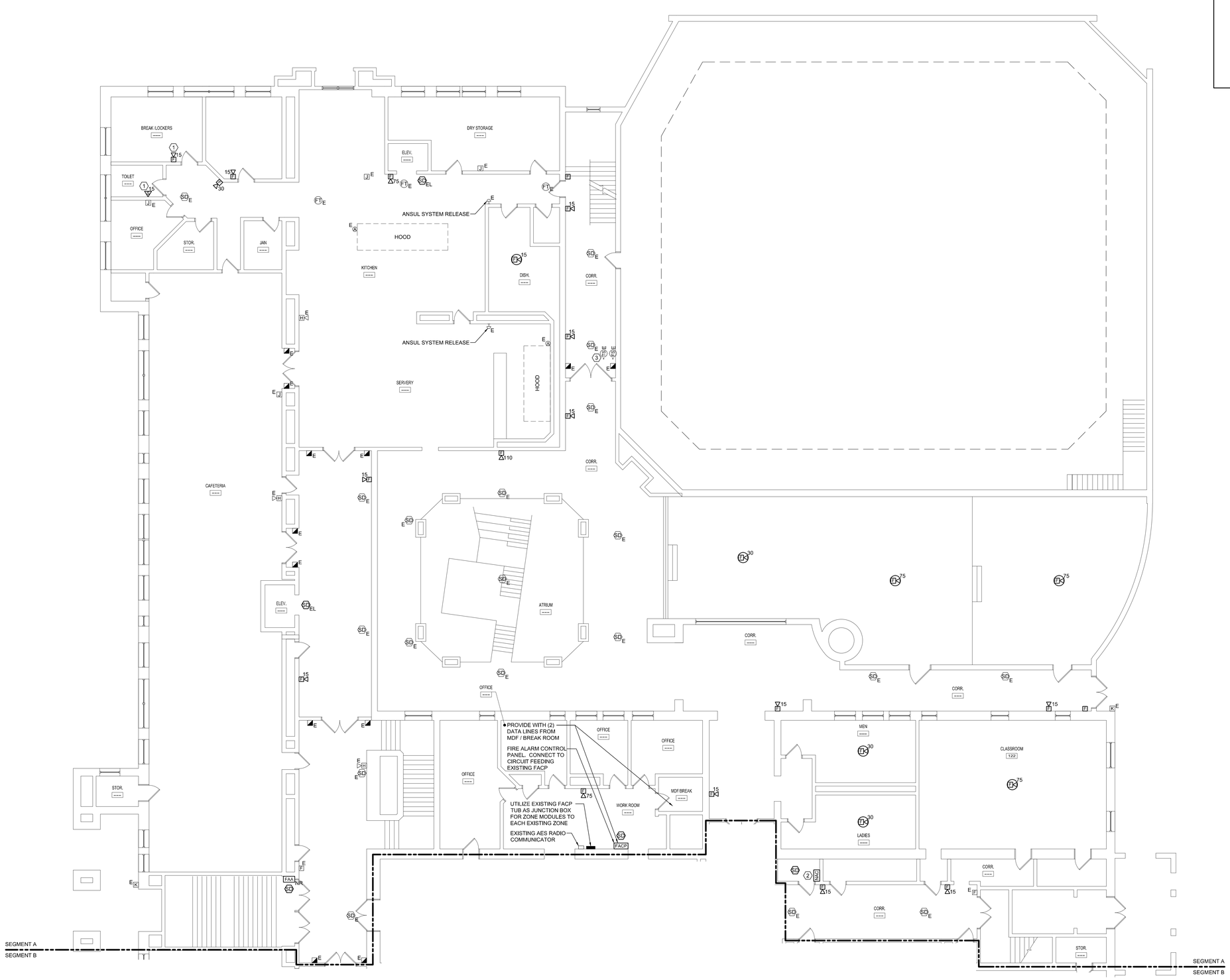
PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1
PROJECT: PORTLAND, ME

GROUND FLOOR - SEG. B FIRE ALARM PLAN
SHEET TITLE:

WBRC CAD FILE: 404100 – FA101B
PROJECT No. 404100
SCALE: AS NOTED
PROJECT MANAGER: SJL
DRAWN BY: KRM
CHECKED BY: SJL
GRAPHIC SCALE: 0" 1"
SHEET No. FA101B

A1	GROUND FLOOR - SEG. B FIRE ALARM PLAN
1/8" = 1'-0"	--



GENERAL NOTES:

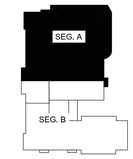
1. TO THE EXTENT POSSIBLE, INSTALL FIRE ALARM CABLES IN SPECIFIED UNENCLOSED WIRING METHOD ABOVE ACCESSIBLE CEILING.

TECHNICAL NOTES:

(1) UTILIZE EXISTING JUNCTION BOX AT THIS LOCATION FOR NEW F/A DEVICE.

(2) CONNECT POWER FOR NAC EXTENDER TO 1P20A CIRCUIT BREAKER IN EXISTING POLE SPACE IN EXISTING PANEL IN CORR. REFER TO SHEET FA102B FOR LOCATION.

(3) MAINTAIN EXISTING SPRINKLER FLOW, TAMPER AND/OR PRESSURE SWITCHES WITHIN THIS SPACE. INSTALL MONITOR MODULES AS REQUIRED TO CONNECT TO FIRE ALARM SYSTEM ADDRESSABLE LOOP.



KEY PLAN

LEGEND:

E	EXISTING TO REMAIN
ER	EXISTING RELOCATED
NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
R	EXISTING TO BE REMOVED
RR	REMOVE & RELOCATE EXISTING
	FIRE ALARM HORN / LIGHT
	MULTI-CANDLA STROBE
	MULTI-CANDELA HORN/STROBE
	CEILING MOUNTED MULTI-CANDELA HORN/STROBE
	FIRE ALARM SYSTEM CEILING MOUNTED HEAT DETECTOR - "EL" FOR ELEVATOR SHUNT TRIP
	FIRE ALARM SYSTEM CEILING MOUNTED SMOKE DETECTOR - "EL" FOR ELEVATOR RECALL
	WALL MOUNTED FIRE ALARM SYSTEM MANUAL PULL STATION
K	KNOX BOX
J	JUNCTION BOX
	DOOR HOLD-OPEN DEVICE CONNECTION
PS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM PRESSURE SWITCH
FS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM FLOW SWITCH
TS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM TAMPER SWITCH
SD	FIRE ALARM SYSTEM DUCT MOUNTED SMOKE DETECTOR
FACP	FIRE ALARM SYSTEM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR
GS	GAS SHUT-OFF
RT	RADIO TRANSMITTER BOX
MM	MONITOR MODULE
RT	TEST STATION
RM	RELAY MODULE
	ANSUL GAS TANK
AMP	FIRE ALARM AMPLIFIER

REV.	DESCRIPTION	DATE
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0	ISSUED FOR BID	05.04.16

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05.04.16

CURRENT ISSUE STATUS:

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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

FIRST FLOOR - SEG. A FIRE ALARM PLAN

SHEET TITLE:

WBRC CAD FILE:	404100 – FA102A
PROJECT No.	404100
SCALE:	AS NOTED
PROJECT MANAGER:	SJL
DRAWN BY:	KRM
CHECKED BY:	SJL

GRAPHIC SCALE: 0" 1"

SHEET No. FA102A

A1	FIRST FLOOR - SEG. A FIRE ALARM PLAN
1/8" = 1'-0"	--

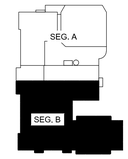
5/3/2016 8:51 AM T:\02 PROJECTS – MAINE\4001–4100\404100 PORTLAND HIGH SCHOOL FIRE ALARM SYSTEM\2 DESIGN\DWGS\BLDG\PORTLAND SCHOOL_EXISTING DRAWINGS\SHEETS\FA102A FIRST FLOOR – SEG. A FIRE ALARM PLAN.DWG KYLE.MAHAR

GENERAL NOTES:

1. TO THE EXTENT POSSIBLE, INSTALL FIRE ALARM CABLES IN SPECIFIED UNENCLOSED WIRING METHOD ABOVE ACCESSIBLE CEILING.

TECHNICAL NOTES:

(1) MAINTAIN EXISTING SPRINKLER FLOW, TAMPER AND/OR PRESSURE SWITCHES WITHIN THIS SPACE. INSTALL MONITOR MODULES AS REQUIRED TO CONNECT TO FIRE ALARM SYSTEM ADDRESSABLE LOOP.



KEY PLAN

LEGEND:

E	EXISTING TO REMAIN
ER	EXISTING RELOCATED
NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
R	EXISTING TO BE REMOVED
RR	REMOVE & RELOCATE EXISTING
	FIRE ALARM HORN / LIGHT
	MULTI-CANDLA STROBE
	MULTI-CANDELA HORN/STROBE
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	WALL MOUNTED FIRE ALARM SYSTEM MANUAL PULL STATION
K	KNOX BOX
J	JUNCTION BOX
	DOOR HOLD-OPEN DEVICE CONNECTION
PS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM PRESSURE SWITCH
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	GAS SHUT-OFF
RT	RADIO TRANSMITTER BOX
MM	MONITOR MODULE
RT	TEST STATION
RM	RELAY MODULE
	ANSUL GAS TANK
AMP	FIRE ALARM AMPLIFIER

REV.	DESCRIPTION	DATE
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ISSUED FOR BID
05.04.16

CURRENT ISSUE STATUS:

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05.04.16

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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

FIRST FLOOR - SEG. B FIRE ALARM PLAN

SHEET TITLE:

WBRC CAD FILE: 404100 – FA102B

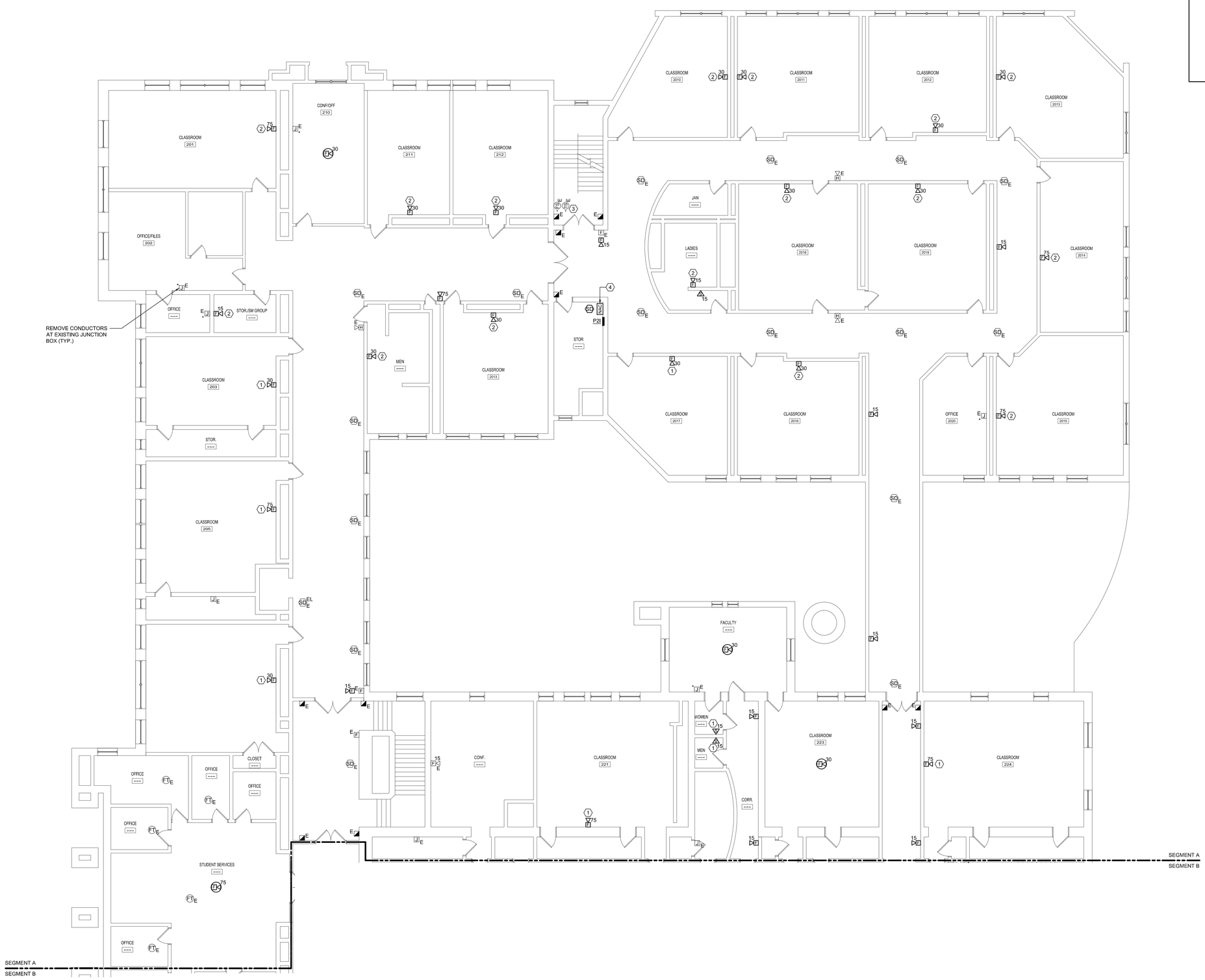
PROJECT No. 404100
SCALE: AS NOTED
PROJECT MANAGER: SJL
DRAWN BY: KRM
CHECKED BY: SJL

GRAPHIC SCALE: 0" 1"

SHEET No. FA102B

A1 | FIRST FLOOR - SEG. B FIRE ALARM PLAN
1/8" = 1'-0" | --

5/3/2016 8:55 AM T:\02 PROJECTS – MAINE\404001-404100 PORTLAND HIGH SCHOOL FIRE ALARM SYSTEM\2 DESIGN\DWGS\BLDG\PORTLAND SCHOOL_EXISTING DRAWINGS\SHEETS\FA102B FIRST FLOOR – SEG. B FIRE ALARM PLAN.DWG KYLE.MAHAR



GENERAL NOTES:

1. TO THE EXTENT POSSIBLE, INSTALL FIRE ALARM CABLES IN SPECIFIED UNENCLOSED WIRING METHOD ABOVE ACCESSIBLE CEILING.

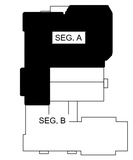
TECHNICAL NOTES:

(1) UTILIZE EXISTING JUNCTION BOX AT THIS LOCATION FOR NEW F/A DEVICE.

(2) REMOVE EXISTING CONDUCTOR FROM EXISTING JUNCTION BOX. JUNCTION BOX AND PATHWAY SHALL BE REUSED FOR NEW DEVICE AND CONDUCTORS.

(3) MAINTAIN EXISTING SPRINKLER FLOW, TAMPER AND/OR PRESSURE SWITCHES WITHIN THIS SPACE. INSTALL MONITOR MODULES AS REQUIRED TO CONNECT TO FIRE ALARM SYSTEM ADDRESSABLE LOOP.

(4) CONNECT POWER FOR NAC EXTENDER TO EXISTING PANEL P2I. PANEL IS WESTINGHOUSE TYPE PRL1.



KEY PLAN

LEGEND:

E	EXISTING TO REMAIN
ER	EXISTING RELOCATED
NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
R	EXISTING TO BE REMOVED
RR	REMOVE & RELOCATE EXISTING
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F	MULTI-CANDELA STROBE
FH	MULTI-CANDELA HORN/STROBE
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FS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM FLOW SWITCH
TS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM TAMPER SWITCH
SD D	FIRE ALARM SYSTEM DUCT MOUNTED SMOKE DETECTOR
FACP	FIRE ALARM SYSTEM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR
GV	GAS SHUT-OFF
RT	RADIO TRANSMITTER BOX
MM	MONITOR MODULE
RT	TEST STATION
RM	RELAY MODULE
A	ANSUL GAS TANK
AMP	FIRE ALARM AMPLIFIER

REV.	DESCRIPTION	DATE
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0	ISSUED FOR BID	05.04.16

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05.04.16

CURRENT ISSUE STATUS:

STEPHANIE J. LAPLANT No.10272 LICENSED PROFESSIONAL ENGINEER STATE OF MAINE

WBRC ARCHITECTS• ENGINEERS
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BANGOR, MAINE 207-947-4511
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SARASOTA, FLORIDA 941-556-0757

PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

SECOND FLOOR - SEG. A FIRE ALARM PLAN

SHEET TITLE:

WBRC CAD FILE: 404100 – FA103A

PROJECT No. 404100

GRAPHIC SCALE: 0" 1"

SCALE: AS NOTED

PROJECT MANAGER: SJL

SHEET No. FA103A

DRAWN BY: KRM

CHECKED BY: SJL

A1	SECOND FLOOR - SEG. A FIRE ALARM PLAN
1/8" = 1'-0"	--

5/3/2016 9:03 AM T:\02 PROJECTS – MAINE\4001-4100\404100 PORTLAND HIGH SCHOOL FIRE ALARM SYSTEM\2 DESIGN\DWGS\BLDG\PORTLAND SCHOOL EXISTING DRAWINGS\SHEETS\FA103A SECOND FLOOR – SEG. A FIRE ALARM PLAN.DWG KYLE.MAHAR

GENERAL NOTES:

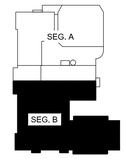
1. TO THE EXTENT POSSIBLE, INSTALL FIRE ALARM CABLES IN SPECIFIED UNENCLOSED WIRING METHOD ABOVE ACCESSIBLE CEILING.

TECHNICAL NOTES:

(1) UTILIZE EXISTING JUNCTION BOX AT THIS LOCATION FOR NEW F/A DEVICE.

(2) MAINTAIN EXISTING SPRINKLER FLOW, TAMPER AND/OR PRESSURE SWITCHES WITHIN THIS SPACE. INSTALL MONITOR MODULES AS REQUIRED TO CONNECT TO FIRE ALARM SYSTEM ADDRESSABLE LOOP.

(3) CONNECT POWER FOR NAC EXTENDER TO EXISTING POLE SPACE IN EXISTING PANEL P2F. PANEL IS WESTINGHOUSE TYPE PRL1.



KEY PLAN

LEGEND:

E	EXISTING TO REMAIN
ER	EXISTING RELOCATED
NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
R	EXISTING TO BE REMOVED
RR	REMOVE & RELOCATE EXISTING
	FIRE ALARM HORN / LIGHT
	MULTI-CANDLA STROBE
	MULTI-CANDELA HORN/STROBE
	CEILING MOUNTED MULTI-CANDELA HORN/STROBE
FT	FIRE ALARM SYSTEM CEILING MOUNTED HEAT DETECTOR - "EL" FOR ELEVATOR SHUNT TRIP
SD	FIRE ALARM SYSTEM CEILING MOUNTED SMOKE DETECTOR - "EL" FOR ELEVATOR RECALL
	WALL MOUNTED FIRE ALARM SYSTEM MANUAL PULL STATION
K	KNOX BOX
J	JUNCTION BOX
	DOOR HOLD-OPEN DEVICE CONNECTION
PS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM PRESSURE SWITCH
FS	FIRE ALARM SYSTEM/SPRINKLER SYSTEM FLOW SWITCH
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FACP	FIRE ALARM SYSTEM CONTROL PANEL
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	GAS SHUT-OFF
EX RT	RADIO TRANSMITTER BOX
MM	MONITOR MODULE
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AMP	FIRE ALARM AMPLIFIER

REV.	DESCRIPTION	DATE
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CURRENT ISSUE STATUS:

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STEPHANIE J. LAPLANTE
No.10272
LICENSED PROFESSIONAL ENGINEER

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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

SECOND FLOOR - SEG. B FIRE ALARM PLAN

SHEET TITLE:

WBRC CAD FILE: 404100 – FA103B

PROJECT No. 404100

SCALE: AS NOTED

PROJECT MANAGER: SJL

DRAWN BY: KRM

CHECKED BY: SJL

GRAPHIC SCALE: 0" 1"

SHEET No. FA103B

A1	SECOND FLOOR - SEG. B FIRE ALARM PLAN
1/8" = 1'-0"	--

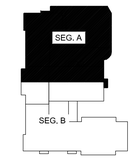
5/3/2016 9:04 AM T:\02 PROJECTS – MAINE\404100-410\404100 PORTLAND HIGH SCHOOL FIRE ALARM SYSTEM\2 DESIGN\DWGS\BLD\PORTLAND SCHOOL EXISTING DRAWINGS\SHEETS\FA103B SECOND FLOOR – SEG. B FIRE ALARM PLAN.DWG KYLE.MAHAR

GENERAL NOTES:

1. TO THE EXTENT POSSIBLE, INSTALL FIRE ALARM CABLES IN SPECIFIED UNENCLOSED WIRING METHOD ABOVE ACCESSIBLE CEILING.

TECHNICAL NOTES:

(1) MAINTAIN EXISTING SPRINKLER FLOW, TAMPER AND/OR PRESSURE SWITCHES WITHIN THIS SPACE. INSTALL MONITOR MODULES AS REQUIRED TO CONNECT TO FIRE ALARM SYSTEM ADDRESSABLE LOOP.



KEY PLAN

LEGEND:

E	EXISTING TO REMAIN
ER	EXISTING RELOCATED
NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
R	EXISTING TO BE REMOVED
RR	REMOVE & RELOCATE EXISTING
FX	FIRE ALARM HORN / LIGHT
FV	MULTI-CANDLA STROBE
FF	MULTI-CANDELA HORN/STROBE
FX	CEILING MOUNTED MULTI-CANDELA HORN/STROBE
FT	FIRE ALARM SYSTEM CEILING MOUNTED HEAT DETECTOR - "EL" FOR ELEVATOR SHUNT TRIP
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CURRENT ISSUE STATUS:

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No. 10272
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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

THIRD FLOOR - SEG. A FIRE ALARM PLAN

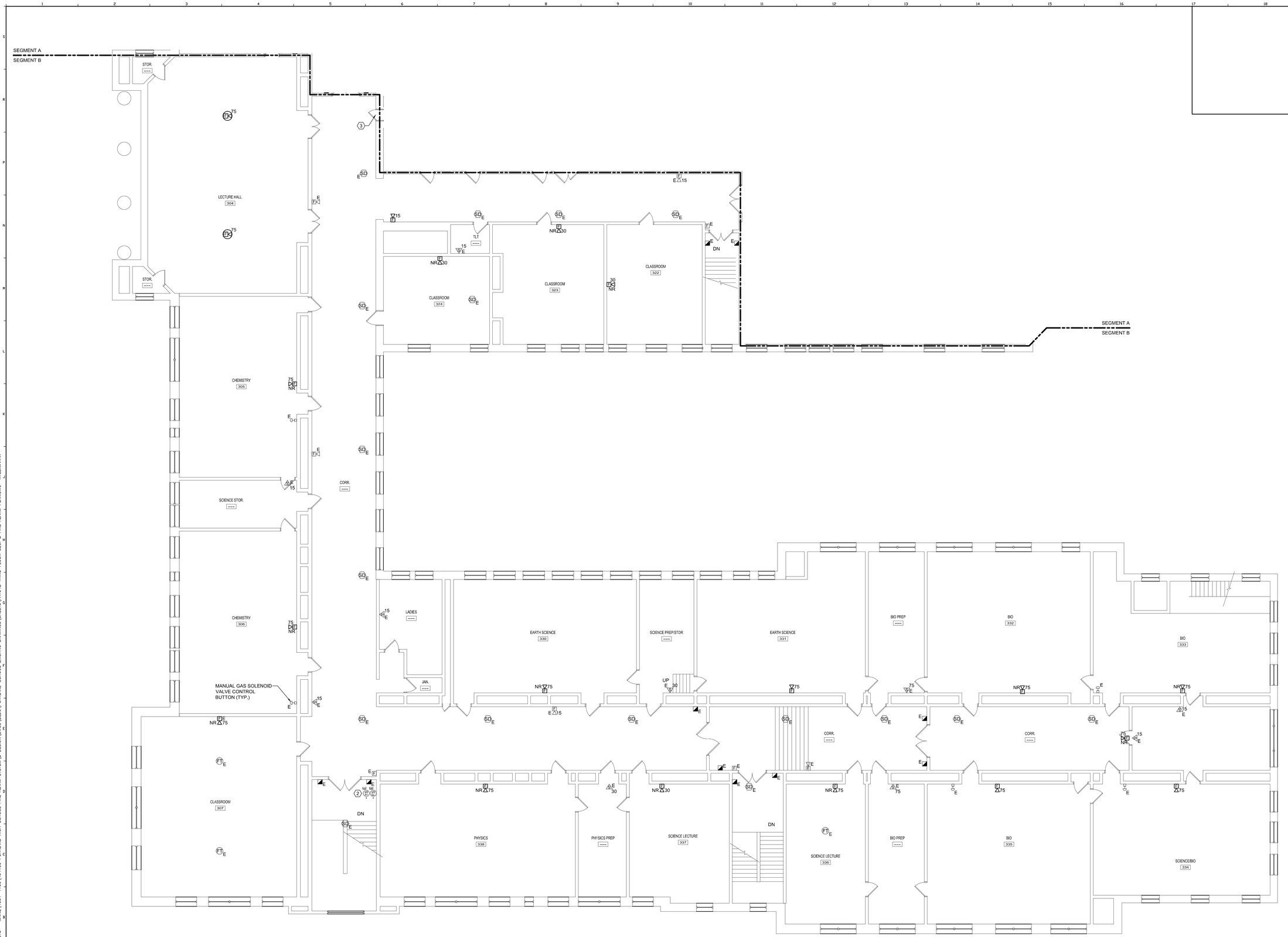
SHEET TITLE:

WBRC CAD FILE:	404100 – FA104A
PROJECT No.	404100
SCALE:	AS NOTED
PROJECT MANAGER:	SJL
DRAWN BY:	KRM
CHECKED BY:	LJW

GRAPHIC SCALE: 0" 1"

SHEET No. FA104A

A1	THIRD FLOOR - SEG. A FIRE ALARM PLAN
1/8" = 1'-0"	--



GENERAL NOTES:

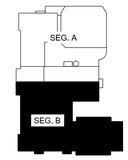
1. TO THE EXTENT POSSIBLE, INSTALL FIRE ALARM CABLES IN SPECIFIED UNENCLOSED WIRING METHOD ABOVE ACCESSIBLE CEILING.

TECHNICAL NOTES:

(1) UTILIZE EXISTING JUNCTION BOX AT THIS LOCATION FOR NEW F/A DEVICE.

(2) MAINTAIN EXISTING SPRINKLER FLOW, TAMPER AND/OR PRESSURE SWITCHES WITHIN THIS SPACE. INSTALL MONITOR MODULES AS REQUIRED TO CONNECT TO FIRE ALARM SYSTEM ADDRESSABLE LOOP.

(3) ATTIC ACCESS. UTILIZE EXISTING NAC POWER EXTENDER IN ATTIC FOR NOTIFICATION DEVICES AS REQUIRED.



KEY PLAN

LEGEND:

E	EXISTING TO REMAIN
ER	EXISTING RELOCATED
NR	NEW TO REPLACE EXISTING IN EXISTING LOCATION
R	EXISTING TO BE REMOVED
RR	REMOVE & RELOCATE EXISTING
	FIRE ALARM HORN / LIGHT
	MULTI-CANDLA STROBE
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	CEILING MOUNTED MULTI-CANDELA HORN/STROBE
FT	FIRE ALARM SYSTEM CEILING MOUNTED HEAT DETECTOR - "EL" FOR ELEVATOR SHUNT TRIP
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	GAS SHUT-OFF
EX RT	RADIO TRANSMITTER BOX
MM	MONITOR MODULE
RT	TEST STATION
RM	RELAY MODULE
	ANSUL GAS TANK
AMP	FIRE ALARM AMPLIFIER

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CURRENT ISSUE STATUS:

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PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1

PROJECT: PORTLAND, ME

THIRD FLOOR SEG. B FIRE ALARM PLAN

SHEET TITLE:

WBRC CAD FILE: 404100 – FA104B

PROJECT No. 404100

SCALE: AS NOTED

PROJECT MANAGER: SJL

DRAWN BY: KRM

CHECKED BY: SJL

GRAPHIC SCALE: 0" 1"

SHEET No. FA104B

A1	THIRD FLOOR SEG. B FIRE ALARM PLAN
1/8" = 1'-0"	--

N1	--
NTS	--

N5	--
NTS	--

N15	--
NTS	--

J1	--
NTS	--

J5	--
NTS	--

J8	FIRE ALARM SEQUENCE OF OPERATIONS
NTS	--

E1	--
NTS	--

E5	--
NTS	--

E8	--
NTS	--

E12	MOUNTING HEIGHT DETAIL
NTS	--

E15	ELEVATOR SHUNT TRIP WIRING DIAGRAM
NTS	--

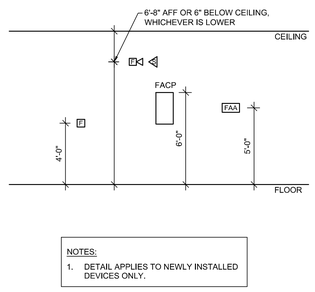
A1	--
NTS	--

A5	--
NTS	--

A8	FIRE ALARM RISER DIAGRAM
NTS	--

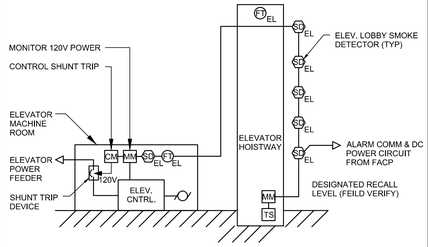
FIRE ALARM SEQUENCE OF OPERATIONS

SYSTEM INPUTS	SYSTEM OUTPUTS: ACTUATE COMMON ALARM SIGNAL	IDENTIFY ALARM AT FIRE ALARM CONTROL PANEL	IDENTIFY ALARM AT FIRE ALARM ANNUNCIATOR	IDENTIFY INITIATION DEVICE/ZONE IN ALARM AT FIRE ALARM CONTROL PANEL	IDENTIFY INITIATION DEVICE/ZONE IN ALARM AT FIRE ALARM ANNUNCIATOR	TRANSMIT FIRE ALARM TO REMOTE ALARM RECEIVING STATION	RELEASE DOORS HELD OPEN BY MAGNETIC DOOR HOLDERS	RECORD EVENTS IN FIRE ALARM CONTROL PANEL MEMORY	TRANSMIT SUPERVISORY SIGNAL TO REMOTE ALARM RECEIVING STATION	RECALL ASSOCIATED ELEVATOR TO DESIGNATED RECALL FLOOR (PRIMARY OR ALTERNATE)	SHUNT TRIP ASSOCIATED ELEVATOR (DISCONNECT ALL AC POWER)	SHUT DOWN ASSOCIATED EQUIPMENT
MANUAL FIRE ALARM PULL STATIONS	X	X	X	X	X	X	X	X				
HEAT DETECTORS - ELEVATOR MACHINE ROOMS	X	X	X	X	X	X		X			X	
HEAT DETECTORS (OTHER)	X	X	X	X	X	X	X	X				
SPOT SMOKE DETECTORS - ELEVATOR MACHINE ROOMS	X	X	X	X	X	X		X		X		
SPOT SMOKE DETECTORS @ MAGNETIC DOOR HOLDER(S)	X	X	X	X	X	X	X	X				
SPRINKLER WATERFLOW	X	X	X	X	X	X	X	X				
SPRINKLER CONTROL VALVE				X	X			X	X			
ELEVATOR SHUNT TRIP				X	X			X	X		X	
DISABLED DEVICE				X	X			X	X			
LOST COMMUNICATION WITH AUXILIARY PANEL				X	X			X	X			
DUCT SMOKE DETECTORS				X	X			X	X			X
OPEN CIRCUIT				X	X			X	X			
SHORT CIRCUIT				X	X			X	X			
GROUND FAULT				X	X			X	X			
LOST COMMUNICATION WITH PERIPHERAL DEVICE				X	X			X	X			
FIRE ALARM AC POWER FAILURE				X	X			X	X			
ABNORMAL AC VOLTAGE AT FIRE ALARM CONTROL PANEL				X	X			X	X			
FIRE ALARM SYSTEM LOW BATTERY				X	X			X	X			
ABNORMAL SWITCH POSITION AT FIRE ALARM CONTROL PANEL				X	X			X	X			
ABNORMAL SWITCH POSITION AT FIRE ALARM ANNUNCIATOR				X	X			X	X			



NOTES:

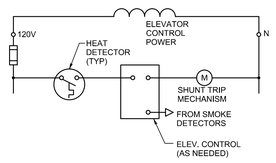
1. DETAIL APPLIES TO NEWLY INSTALLED DEVICES ONLY.



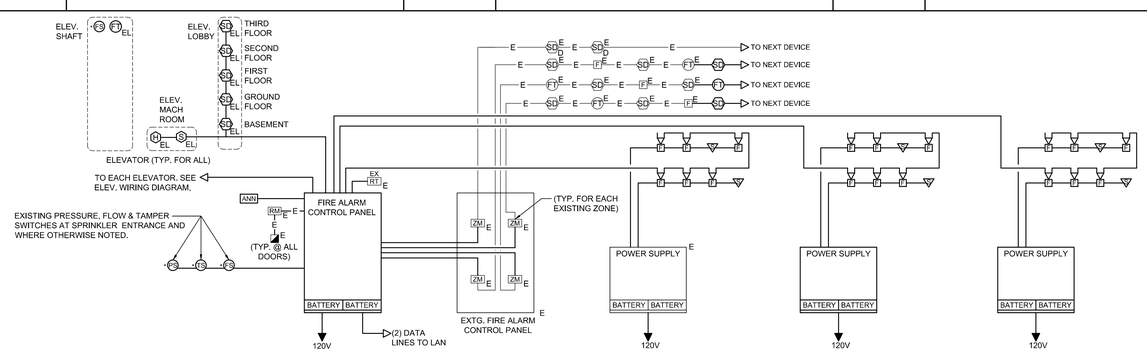
WIRING DIAGRAM

NOTES:

1. MAINTAIN EXISTING SHUNT TRIP DEVICE.
2. REFER TO NFPA 72-2013 SECTION 21.3 FOR SMOKE DETECTOR ELEVATOR CONTROL CIRCUIT REQUIREMENTS. ACTIVATION OF SMOKE DETECTORS TO CAUSE ELEVATOR CONTROL TO RECALL CAR TO DESIGNATED FLOOR AND OPEN DOORS.
3. FIRE ALARM SYSTEM SHALL BE ADDRESSABLE TYPE. PROVIDE ANY NECESSARY INTERFACE RALAYS BETWEEN 120V AND FIRE ALARM COMPONENTS. LOBBY AND MACHINE DETECTORS MAY BE 4-WIRE TYPE HARDWIRED TO ELEV. CNTL OR USE ADDRESSABLE CONTROL MODULES TO PROVIDE CONTROL OUTPUTS TO ELEAVTORE MACHINE.
4. HEAT DETECTOR ALARM TEMPERATURE TO BE MINIMUM 10°F LOWER THAN SPRINKLER HEAD, PER NFPA 72-2013. MOUNT HEAT DETECTOR WITHIN 2'-0" OF SPRINKLER HEAD.
5. REFER TO NFPA 72-2013 SECTION 21.4 FOR ELEVATOR SHUTDOWN SEQUENCE. ACTIVATION OF ANY HEAT DETECTOR TO ACTIVATE SHUNT TRIP TO POWER DOWN ELEVATOR EQUIPMENT AND ELEVATOR BATTERY POWER. MONITOR 120V AND INITIATE FIRE ALARM TROUBLE IN EVENT OF LOSS OF SHUNT TRIP POWER.



ELEMENTARY DIAGRAM



GENERAL PROJECT NOTES:

1. ALL DEVICES SHALL BE NEW UNLESS OTHERWISE NOTED.
2. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER, RECTILINEAR TO BUILDING STRUCTURE, AND IN ACCORDANCE WITH ALL APPLICABLE CODES, INCLUDING, BUT NOT LIMITED TO NFPA 70, 72, 90A, AND DIRECTION OF AUTHORITY HAVING JURISDICTION.
3. EXISTING AND NEW FIRE ALARM DEVICES ARE SHOWN IN THEIR APPROXIMATE LOCATION. CONTRACTOR SHALL REVIEW THE BUILDING, AND FIELD VERIFY, TO DETERMINE EXACT MOUNTING LOCATIONS FOR FIRE ALARM DEVICES AND EQUIPMENT. CARE SHALL BE TAKEN TO AVOID EXISTING ELECTRICAL, MECHANICAL, SPRINKLER AND OTHER CEILING AND WALL MOUNTED DEVICES AND EQUIPMENT.
4. ALL PENETRATION THROUGH FLOORS, RATED WALLS AND PARTITIONS SHALL BE SEALED WITH A U.L. LISTED AND APPROVED FIRE SEALANT MATERIAL TO MAINTAIN THE RATING OF THE SEPARATION.

REV.	DESCRIPTION	DATE
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0	ISSUED FOR BID	05.04.16

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PROJECT: PORTLAND HIGH SCHOOL
FIRE ALARM UPGRADES - PHASE 1
PORTLAND, ME

SHEET TITLE: ELECTRICAL DETAILS

WBRC CAD FILE: 404100 – FA501
PROJECT No. 404100
SCALE: AS NOTED
PROJECT MANAGER: SJL
DRAWN BY: KRM
CHECKED BY: SJL
GRAPHIC SCALE: 0" 1"
SHEET No. FA501