

# City of Cambridge

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## PURCHASING DEPARTMENT

795 Massachusetts Ave. • Cambridge, Massachusetts 02139-3219

Amy L. Witts  
*Purchasing Agent*

**TO:** All Bidders

**FROM:** City of Cambridge

**DATE:** April 12, 2016

**RE:** File No. 7201 –Fletcher Maynard Academy Boiler Replacement - Addendum No. 1

**This addendum is comprised of:**

- 1. Modifications to Specifications**
- 2. Additional Drawings**

All other details remain the same.

  
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Amy L. Witts  
Purchasing Agent

Addendum No. 1

ADDENDUM #1

04-11-2016

Fletcher-Maynard Elementary  
Cambridge, Massachusetts

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**Modifications to Specifications**

**HVAC Specifications 23 00 01**

ITEM #1      **ADD:** "2.18 BOILER BREECHING AND CHIMNEY

A

1. General: All breeching and chimneys shall be furnished and installed under this section for all Boilers and Water Heaters by or under the supervision of a licensed plumber in the State of Massachusetts. All flues shall be as described herein with sizes as shown on the drawings and specified.
2. Boilers shall conform to cat IV boiler venting and shall be AL29-4C vent materials as provided by Z-Flex ZVent; Heat Fab Saf-T Vent or Dura Vent Fas NSeal Vent. Combustion air may be PVC, CPVC or PPS Polypropylene.
  - a. Each boiler shall be supplied with a backflow Preventer and a drain section above each back flow preventer.
  - b. The Boiler flue shall be an "Engineered Flue System" designed within the criteria of the boiler manufacturer.
3. Water Heater shall conform to the requirements of The National Fuel Gas Code, ANSI Z223.1 / NFPA-54 where applicable and shall comply with and be listed to UL 1738, the U.S. Standard for Venting Systems for Gas-Burning Appliances, Category II, III and IV and ULC-S636-95. Water Heater flue shall conform to cat IV boiler venting and shall be AL29-4C double wall in exposed locations. Combustion air may be PVC, CPVC or PPS Polypropylene.
4. Shop Drawings: For vents, breechings, chimneys, and stacks. Include plans, elevations, sections, details, and attachments to other work.
5. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, methods of field assembly, components, hangers,

expansion compensation, and seismic restraints, and location and size of each field connection.

6. For all vents, breechings and chimneys include calculations required for seismic restraints, guying and bracing material components and connections to adjacent structures and structural analysis data signed and sealed by the qualified professional engineer. Guying and bracing material components and connections to adjacent structures.

7. Include vent, breeching, chimney, and stack manufacturer draft and sizing calculations for system based on vented equipment being provided and actual fabrication layout, assuring proper venting of all supplied equipment.

8. Include vent, breeching, chimney, and stack manufacturer's expansion calculations for system based on vented equipment being provided and actual fabrication layout, assuring proper expansion compensation of system.

9. Include details of required clearances to construction specific to the project and installation. Indicate required openings and chase sizes required. Indicate maximum ceiling height to maintain clearances required. Note any conflicts to plans for architect/engineer review.

10. Include UL listing with rating criteria, including temperature and pressures.

11. The requirement for double wall may be omitted within the existing chimney space.

C. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of venting system that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, structural failures caused by expansion and contraction. Warranty Period: 10 years from date of Substantial Completion.

D. Manufacturers:

1. Heat-Fab Inc.
2. Metal-Fab, Inc.
3. ProTech Systems Inc.

#### 4. Z-FLEX.

E. Description: Double-wall metal vents tested according to UL 1738 and rated for 480 deg F continuously, with positive or negative flue pressure complying with NFPA 211 and suitable for condensing-gas appliances.

F. Construction: Inner shell and outer jacket separated by at least a 1/2-inch airspace.

G. Inner Shell: ASTM A 959, Type AL 29-4C stainless steel.

H. Outer Jacket: Aluminized steel for interior applications; 316 stainless steel for exterior applications.

I. Accessories: Tees, elbows, increasers, draft-hood connectors, terminations, adjustable roof flashings, storm collars, support assemblies, thimbles, firestop spacers, barometric dampers, expansion compensation, and fasteners; fabricated from similar materials and designs as vent-pipe straight sections; all listed for same assembly.

J. Termination: Stack cap designed to exclude 100 percent of rainfall or sidewall direct vent kit. Refer to drawings for application.

#### K. Installation of listed vents and chimneys:

1. Install in strict accordance with manufacturer's instructions.
2. Locate to comply with minimum clearances from combustibles and minimum termination heights according to product listing or NFPA 211, whichever is most stringent.
3. Maintain required clearances to construction as required by product listing, manufacturer's instructions, and code. Coordinate size of all chases and openings. Confirm ceiling heights. Notify architect/engineer of any conflicts prior to fabrication and installation.
4. Seal between sections of positive-pressure vents according to manufacturer's written installation instructions, using sealants recommended by manufacturer.
5. Support vents at intervals recommended by manufacturer to support weight of vents and all accessories, without exceeding appliance loading.

6. Slope breechings down in direction of appliance, with condensate drain connection at lowest point piped to nearest drain.
7. Utilize 45 degree tees for all vent connectors to breeching and breeching to chimney fittings of listed building heating appliance chimney and engine exhaust chimney vent systems.
8. Provide drain tee section at the chimney base of listed building heating appliance chimney and engine exhaust chimney vent systems. Pipe drain to nearest indirect waste.
9. Provide expansion compensation per manufacturer's instructions.
10. Pipe all open type stack outlet drain sections to indirect waste at appliance location.
11. Provide firestops at all penetrations of rated construction.
12. Provide ventilated thimbles suitable for roof type and slope at all roof penetrations and at all exterior wall applications suitable for wall type.
13. Cleaning:
  - a. After completing system installation, including outlet fittings and devices, inspect exposed finish. 15. Remove burrs, dirt, and construction debris and repair damaged finishes.
  - b. Clean breechings internally, during and after installation, to remove dust and debris. Clean external surfaces to remove welding slag and mill film. Grind welds smooth and apply touchup finish to match factory or shop finish.
  - c. Provide temporary closures at ends of breechings, chimneys, and stacks that are not completed or connected to equipment. AD3 dated 5 October 2014"

- ITEM #2      2.16 Automatic Temperature Control: Par. A. 4: **CHANGE**  
 "under Section 26 00 00" **to read** "under Section 26 00 01."
- ITEM #3      Paragraph 2.16 A. After paragraph 6. Just before the words "The City of Cambridge" **ADD:** "No. 7" to the beginning of that paragraph and **DELETE** the last two sentences.
- ITEM #4      Paragraph 2.16 A. 7. **ADD:** "The ATC system shall be capable of being fully integrated into the Cambridge School System existing BMS System Component manufacturers shall be equal to Advanced Control"

Technologies, Seimens, Schneider, Automated Logic or equal. Software shall be Niagra Tridium to match existing BMS system.

A seamless integration of any new BMS sequences and controls is required. The new ATC system and all its devises and equipment must be capable and integrate into the existing main BMS for the City of Cambridge. No proprietary controls, including field controllers, will be acceptable. Any new DDC controls shall be based on the Tridium Niagra system.

- ITEM #5      2.16 Automatic Temperature Control: Par. C. 2: **CHANGE** "College" to **read** "The City of Cambridge School Department".
- ITEM #6      2.16 Automatic Temperature Control; D. Wiring **ADD**;  
"8. All wiring shall be run in conduit, EMT, minimum size shall be ¼"  
9. Flexible conduit shall be used at all field devices, i.e. Pressure switches, sensors, temperature devices, etc. Minimum length 18". Maximum length 36" Liquid tight shall be used.  
10. Type THHN solid no. 18 AWG for control wiring in dry locations up to 194 degrees F. Type THWN in wet locations up to 167 degrees F.  
11. All devices and equipment shall be mounted in NEMA 1 enclosures.  
12. In addition to all the above requirements, all communication cables shall include a minimum of two (2) spare conductors."
- ITEM #7      Paragraph 2.16.F.2.c.10.c: **DELETE** in its entirety and **SUBSTITUTE**:  
"c. Each new Boiler alarm contact is to be tied into the building "AUTOMATION" system."
- ITEM #8      Paragraph 2.16.F.3:  
1. Par. b. **ADD**; "Not used".  
2. Par. c. First sentence **DELETE** the words "within the Boiler Room".  
3. Par. c. **DELETE** in its entirety and **SUBSTITUTE**; "Differential Pressure setting shall be coordinated in field by Balancing Contractor and BAS Contractor to assure flow at top of all risers. Differential Pressure sensor shall be located as shown on the drawings."
- ITEM #9      Paragraph 2.16.F.4:  
1. Par. 4. **DELETE** in its entirety and **SUBSTITUTE**:  
"4. Domestic Hot Water  
a. This Contractor shall provide monitoring of alarms and control of set points for the Domestic Hot Water specified in section 22001. Provide Water detection BAC alarm from water sensor at drain pan for domestic Hot Water Heater. Hot Water Heater, drain pan and water sensor is provided by the Plumbing Contractor. Any needed relays or interface to provide alarms shall be by the ATC Contractor."

- ITEM #10 Paragraph 2.16.F:  
1, Par. F. **ADD:**  
"5. Unit Heater  
a. Provide digital wall mounted thermostat with temperature display and adjustable range to activate UH-1. Thermostat shall be equal to Johnson Controls NS-BTB7003-0, network sensor temperature adjustment, screw terminals, address switch, LED display of set point and actual temperature."
- ITEM #11 Paragraph: 2.16 B. **ADD:**  
"10. The ATC Contractor shall run a CAT 6E communication cable from ATC control panel back to the IDF.Closet, located on the Second Floor. The ATC contractor shall make all connecting ties required to communicate with the existing Cambridge school department network systemAll communication through the existing Cambridge Network shall be compatible, seamless and trouble free"
- ITEM #12 Paragraph 2.2 K. d. **DELETE** the words "Galvanized, Dryer Vent"
- ITEM #13 Paragraph 2.2 K. e. **DELETE** the words "or polypropylene vent as provided by Centrotherm Innoflue SW: Dura Vent Polypro."

**Plumbing Specifications 22 00 01**

- ITEM #14 Par. 2.9 A. 2. **ADD:**  
"e. Manufacturer shall supply user friendly interface card for ATC monitoring and for setting schedules on a variable time basis. LED display with BMS system. Provide any communication board or relays for remote adjustment of set points, sending of alarms, and remote reading of points monitored by internal Hot Water Heater operating controls and safeties."
- ITEM #15 Par. 2.9 B. 3. D. **DELETE**; "Galvanized, Dryer Vent"
- ITEM #16 Par. 2.9 B. 3. E. **DELETE**: "or polypropylene vent as provided by Centrotherm Innoflue SW: Dura Vent Polypro."
- ITEM #17 Par. 1.16 A: **DELETE**: in its entirety and **ADD**: "A. this contractor shall disconnect and remove all obsolete equipment and all piping, hangers, insulation, valves, fittings, and all miscellaneous items affected."
- ITEM #18 Par. 2.9 B. 1. a. **CHANGE** the following to read:"  
1. Lochinvar model no. SNR201-100A  
2. PVI model no. 20L 100A-GCL

## 3. BOCH "optitherm OT 200N-A"

**Modifications to Drawings**

- ITEM #17 Drawing P101, Boiler Room Plumbing Plans, **ADD** on New Boiler Room Plumbing Plan the pressure reducing valve station to the plumbing floor plan **as per** Sketch SKP-1 attached as part of this addendum.
- ITEM #18 Drawing H102, HVAC Schedule and Details, **CHANGE** "UNIT HEATER SCHEDULE" **as per** Sketch SKM-1 attached as part of this addendum.
- ITEM #19 Drawing H102, HVAC Schedule and Details, **CHANGE** "PIPING DETAIL AT END SUCTION PUMP" **as per** Sketch SKM-1, attached as part of this addendum.
- ITEM #20 Drawing H102 HVAC Schedule and Details, **CHANGE** "BOILER FLUE VENTING SCHEMATIC" **as per** Sketch SKM-2, attached as part of this addendum.
- ITEM #21 Drawing H102 HVAC Schedule and Details, **CHANGE** "BOILER ROOM RISER DIAGRAM" **as per** sketch SKM-3, attached as part of this addendum.
- ITEM #22 Drawing H101 Boiler Room HVAC Plans, **CHANGE** the demolition of the existing fresh air supply to the boiler Room **as per** SKM-4, attached as part of this addendum.
- ITEM #23 Drawing H101 Boiler Room HVAC Plans **ADD** "General Drawing Notes" **as per** sketch SKM-5, attached as part of this addendum.
- ITEM #24 Drawing E101, Boiler Room Electrical Plans, **ADD** on Existing Boiler Room Plan, existing disconnect switch and unit heater to be removed, **as per** Sketch SKE-1 attached as part of this addendum.
- ITEM #25 Drawing E101, Boiler Room Electrical Plans, **CHANGE** on New Boiler Room Plan, motor being identified as existing recir pump to existing condensate sump pump, **as per** Sketch SKE-2 attached as part of this addendum.
- ITEM #26 Drawing E101, Boiler Room Electrical Plans, **MODIFY** on New Boiler Room Plan, note for CO detectors, **as per** Sketch SKE-2 attached as part of this addendum.

ITEM #27 Drawing E101, Boiler Room Electrical Plans, **ADD** on New Boiler Room Plan, junction box with circuit for temperature control panel, **as per** Sketch SKE-3 attached as part of this addendum.

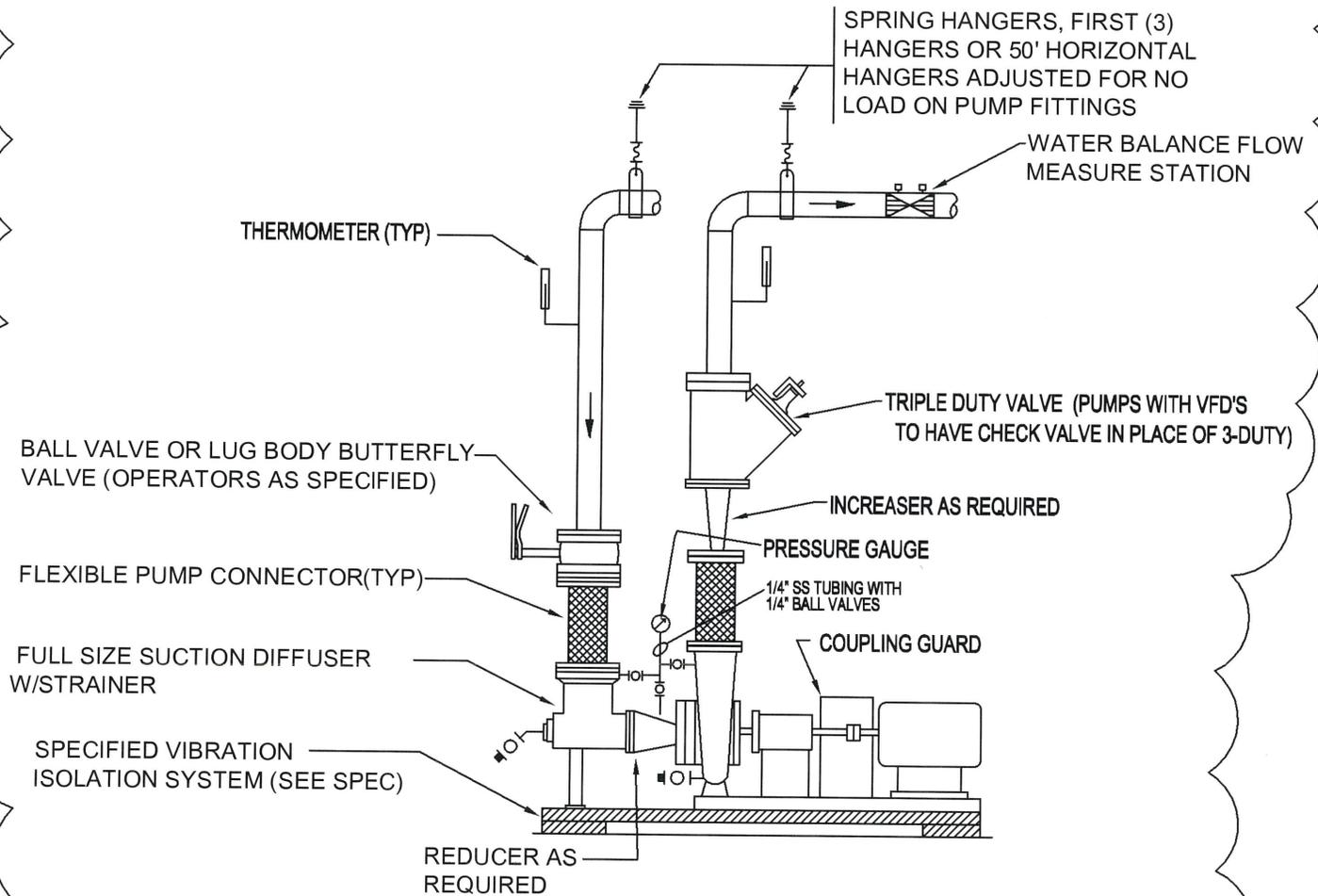
ITEM # 28 Drawing A100, Building Elevation 1 **CHANGE** chimney cap per attached SKA-001

**END OF ADDENDUM #1**

UH  
1

# UNIT HEATER SCHEDULE

TAG	MFR	MODEL NO.	BTUH CAPACITY	WATER SIDE		GMP	CFM	REMARKS
				SUP.	RET.			
UH-1	TRANE	20-S2	16,400	140°	120°	3.5	950	



NOTE:  
1. PROVIDE ABRASIVE SEPARATORS FOR MECHANICAL SEALS.

## PIPING DETAIL AT END SUCTION PUMP

NO SCALE

**LINDGREN & SHARPLES, P.C.**  
CONSULTING ENGINEERS  
PHONE: (413) 732-4336 FAX: (413) 731-0786  
435 COTTAGE STREET SPRINGFIELD, MA 01104

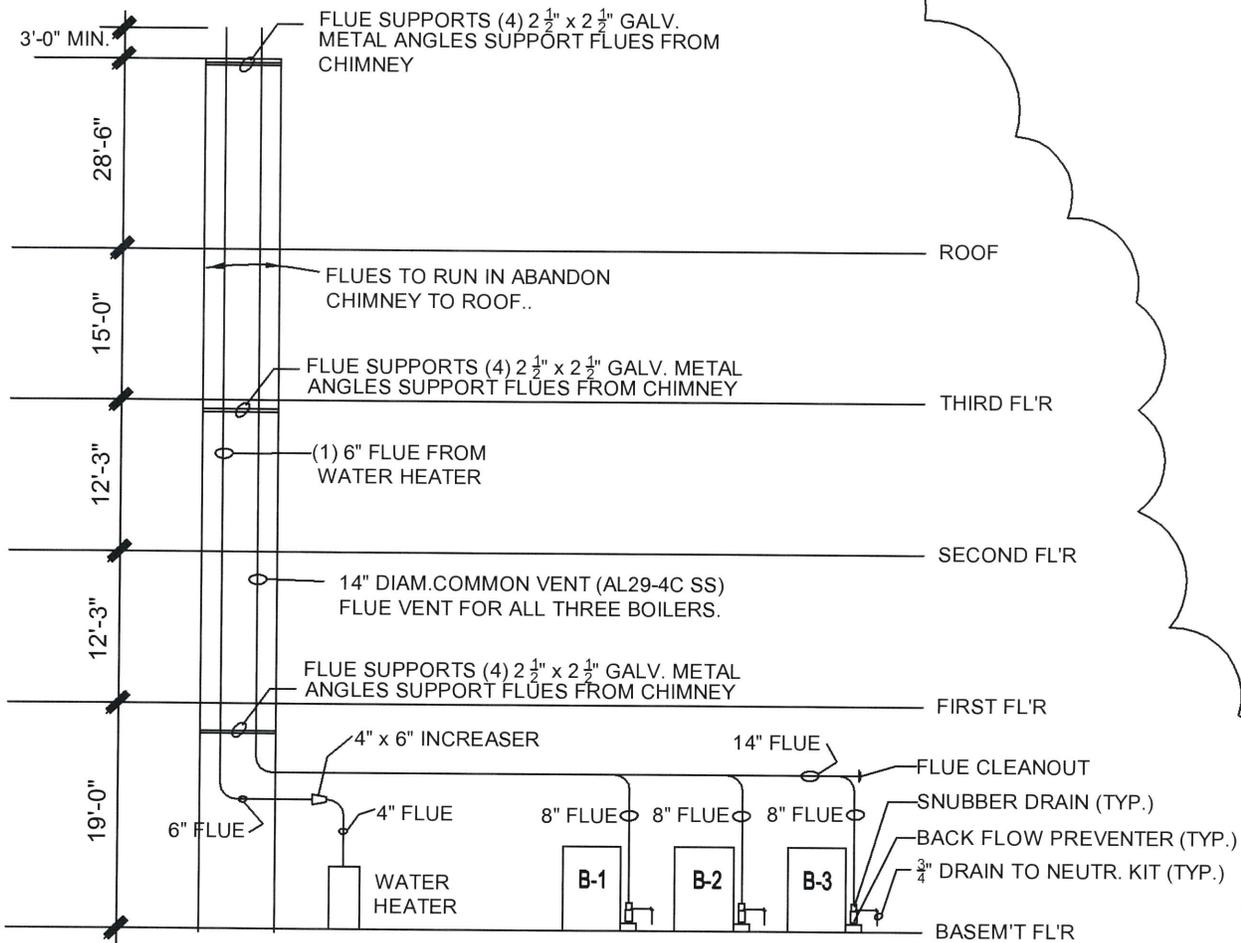
### MECHANICAL DETAILS & SCHEDULES

FLETCHER-MAYNARD ELEMENTARY  
225 WINDSOR STREET  
CAMBRIDGE, MA 02139

DATE: 04/11/16  
SCALE: N.T.S.  
DRAWN: RDN  
CHECKED: CPS  
DWG FILE: H102

SKETCH NUMBER:

**SKM-1**



# BOILER FLUE VENTING SCHEMATIC

NO SCALE

**LINDGREN & SHARPLES, P.C.**

CONSULTING ENGINEERS

PHONE: (413) 732-4336  
436 COTTAGE STREET

FAX: (413) 731-0786  
SPRINGFIELD, MA 01104

**MECHANICAL DETAILS &  
SCHEDULES**

FLETCHER-MAYNARD ELEMENTARY  
225 WINDSOR STREET  
CAMBRIDGE, MA 02139

DATE: 04/11/16

SCALE: N.T.S.

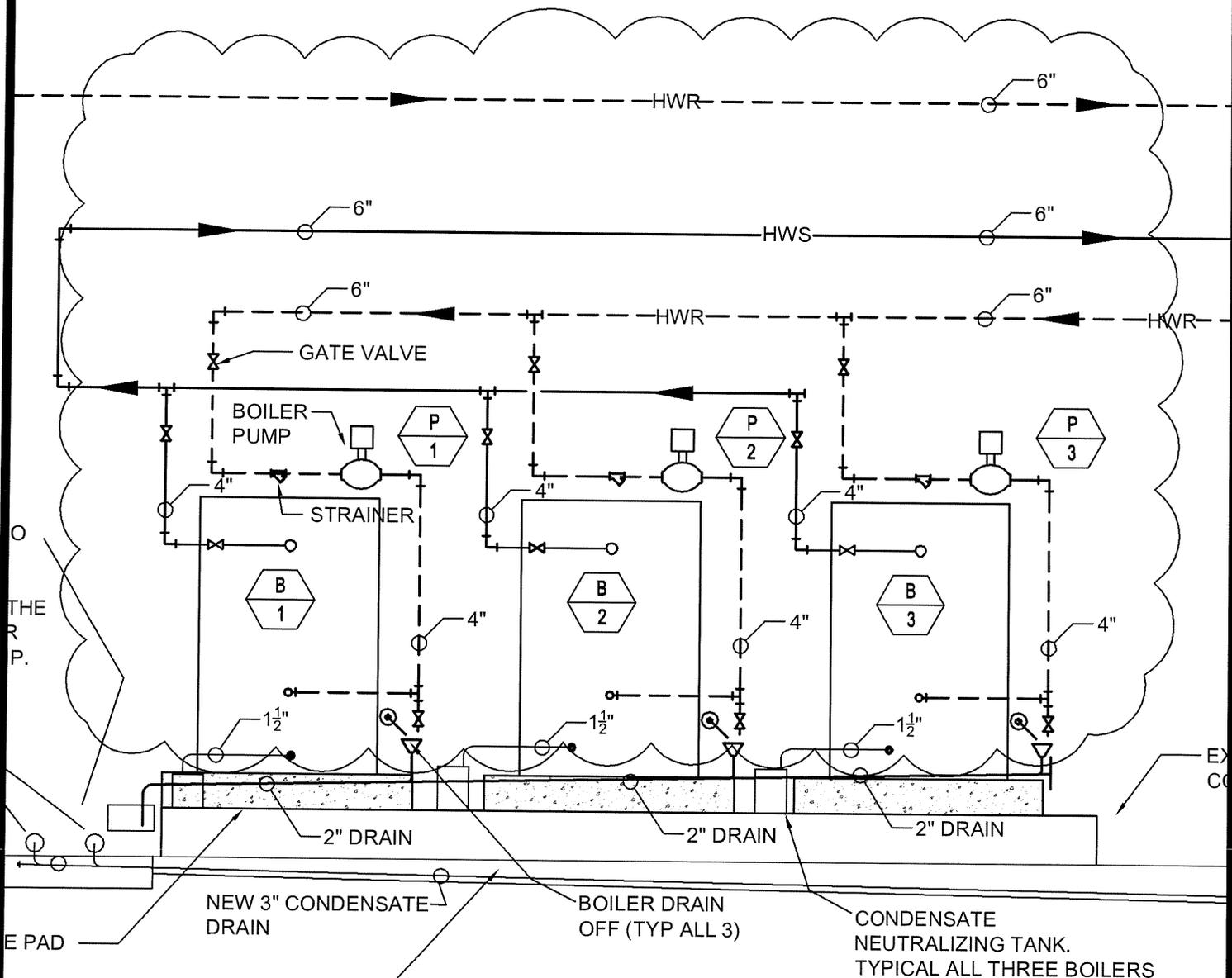
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DWG FILE: H102

SKETCH NUMBER:

**SKM-2**



# BOILER ROOM RISER DIAGRAM

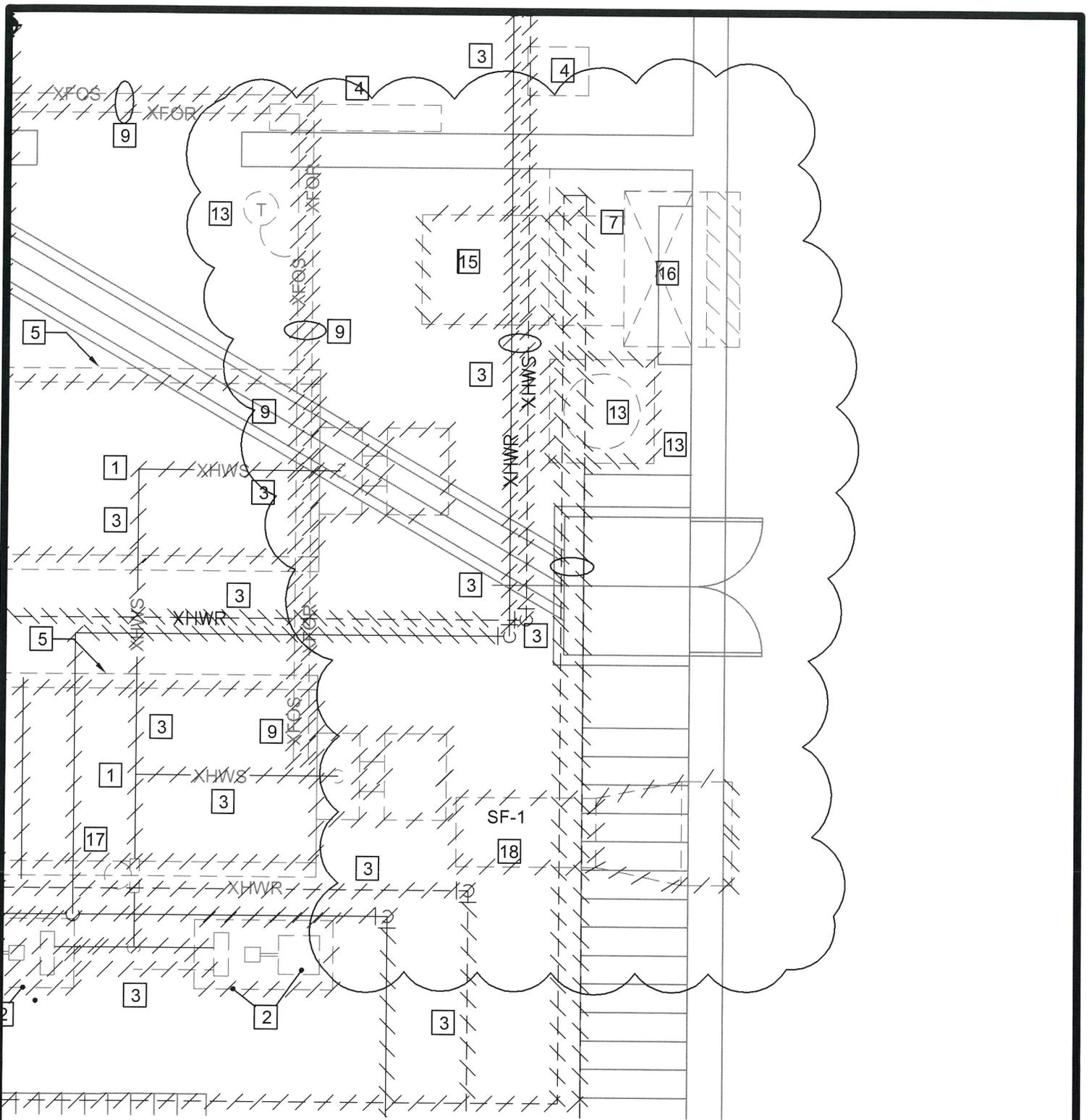
NO SCALE

**LINDGREN & SHARPLES, P.C.**  
 CONSULTING ENGINEERS  
 PHONE: (413) 732-4336 FAX: (413) 731-0786  
 435 COTTAGE STREET SPRINGFIELD, MA 01104

**MECHANICAL DETAILS & SCHEDULES**  
 FLETCHER-MAYNARD ELEMENTARY  
 225 WINDSOR STREET  
 CAMBRIDGE, MA 02139

DATE: 04/11/16  
 SCALE: N.T.S.  
 DRAWN: RDN  
 CHECKED: CPS  
 DWG FILE: H102

SKETCH NUMBER:  
**SKM-3**



# EXISTING BOILER ROOM HVAC PLAN

SCALE: 1/4" = 1' - 0"

**LINDGREN & SHARPLES, P.C.**  
 CONSULTING ENGINEERS  
 PHONE: (413) 732-4336 FAX: (413) 731-0786  
 435 COTTAGE STREET SPRINGFIELD, MA 01104

**MECHANICAL DETAILS & SCHEDULES**  
 FLETCHER-MAYNARD ELEMENTARY  
 225 WINDSOR STREET  
 CAMBRIDGE, MA 02139

DATE: 04/11/16  
 SCALE: 1/4"=-1'0"  
 DRAWN: RDN  
 CHECKED: CPS  
 DWG FILE: H101

SKETCH NUMBER:  
**SKM-4**

GENERAL DRAWING NOTES

- A. FILL ALL SLEEVES SOLID WITH NON-SHRINK MORTAR WHERE PIPING HAS BEEN REMOVED THROUGH EXTERIOR WALL
- B. PROVIDE CIRCUIT SETTERS IN BOILER ROOM ON RETURN LINES (1 1/4", (2) 1 1/2", (2) 4" LEAVING THE BOILER ROOM, FOR BALANCING CONTRACTOR'S USE TO VERIFY FLOW IN EACH SET OF OF DISTRIBUTION RETURN LINES (1 1/4", (2) 1 1/2", (2) 4" LEAVING THE BOILER ROOM.

**LINDGREN & SHARPLES, P.C.**

CONSULTING ENGINEERS

PHONE: (413) 732-4336      FAX: (413) 731-0786  
435 COTTAGE STREET      SPRINGFIELD, MA 01104

**MECHANICAL DETAILS &  
SCHEDULES**

FLETCHER-MAYNARD ELEMENTARY  
225 WINDSOR STREET  
CAMBRIDGE, MA 02139

DATE : 04/11/16

SCALE : N.T.S.

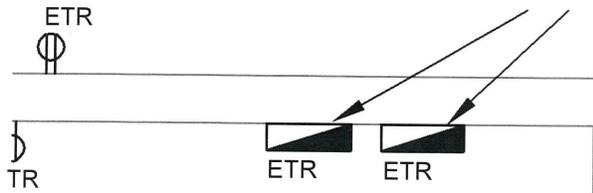
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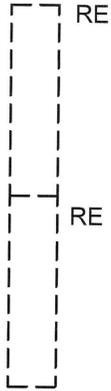
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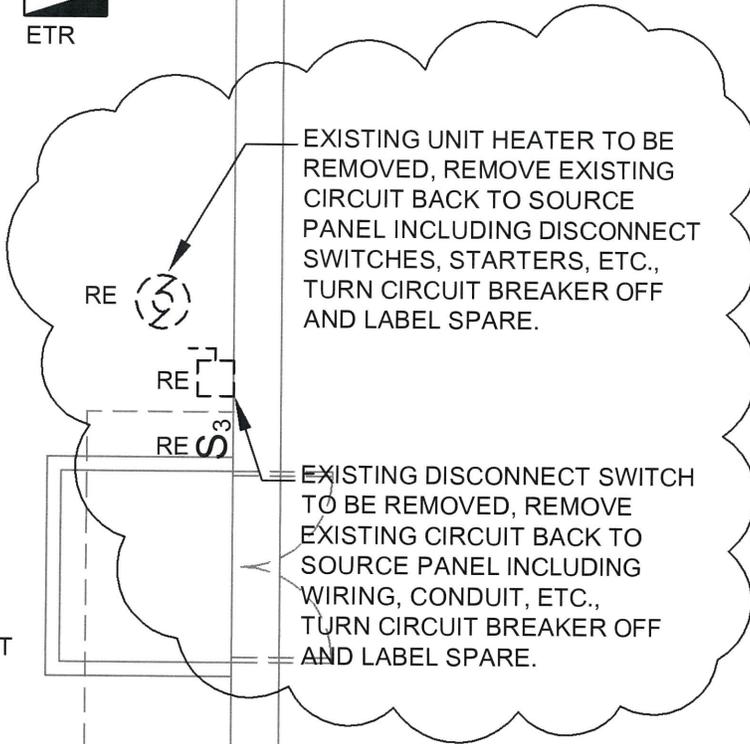
**SKM-5**



(TYPICAL OF 2)



EXISTING BOILERS TO BE REMOVED, REMOVE EXISTING CIRCUIT BACK TO SOURCE PANEL INCLUDING DISCONNECT SWITCHES, STARTERS, ETC., TURN CIRCUIT BREAKER OFF AND LABEL SPARE.



EXISTING UNIT HEATER TO BE REMOVED, REMOVE EXISTING CIRCUIT BACK TO SOURCE PANEL INCLUDING DISCONNECT SWITCHES, STARTERS, ETC., TURN CIRCUIT BREAKER OFF AND LABEL SPARE.

EXISTING DISCONNECT SWITCH TO BE REMOVED, REMOVE EXISTING CIRCUIT BACK TO SOURCE PANEL INCLUDING WIRING, CONDUIT, ETC., TURN CIRCUIT BREAKER OFF AND LABEL SPARE.



# EXISTING BOILER ROOM ELECTRICAL PLAN

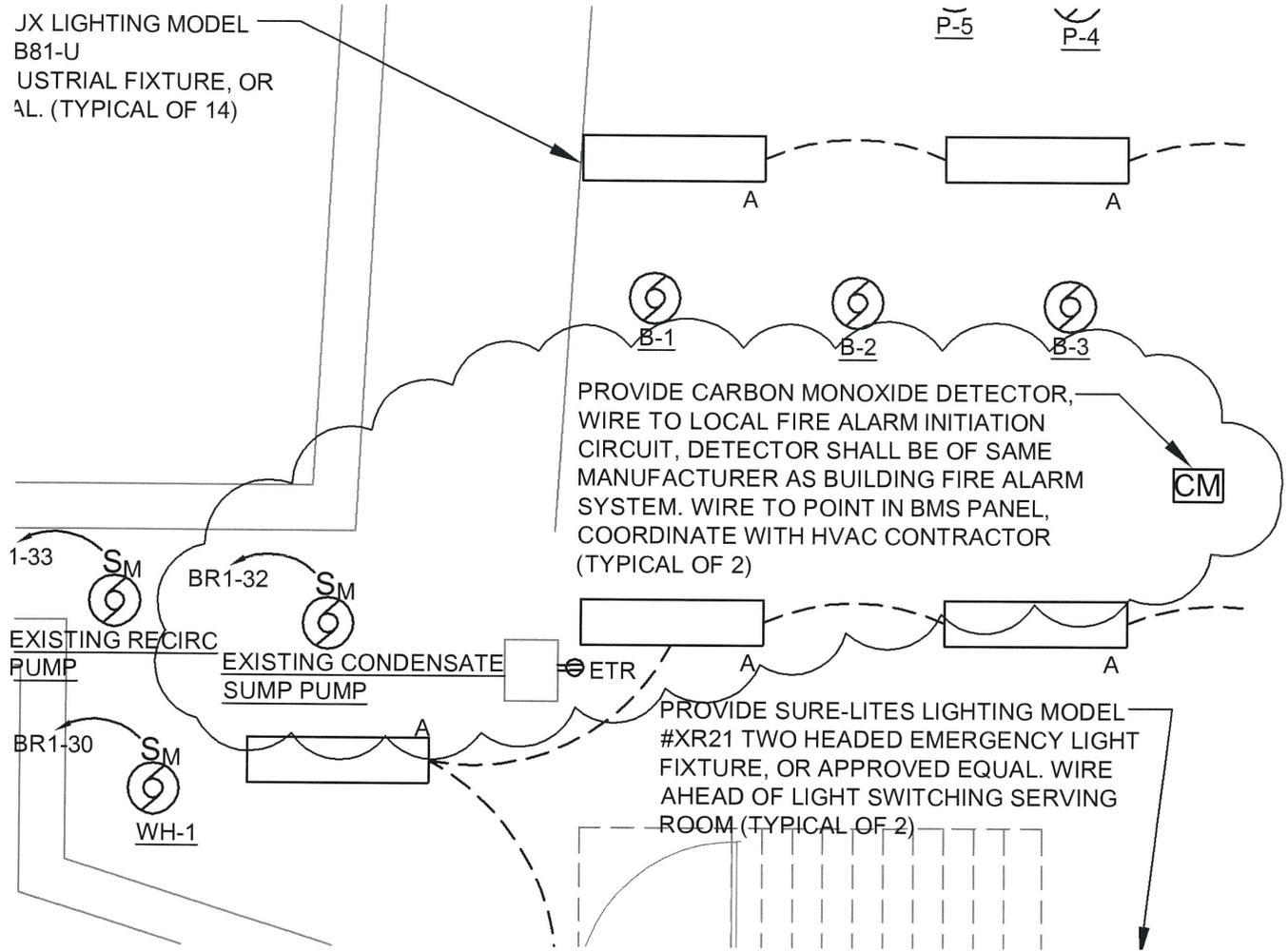
SCALE: 1/4" = 1' - 0"

<p><b>LINDGREN &amp; SHARPLES, P.C.</b> CONSULTING ENGINEERS PHONE: (413) 732-4336 FAX: (413) 731-0786 435 COTTAGE STREET SPRINGFIELD, MA 01104</p>	<p><b>ELECTRICAL BOILER ROOM PLAN</b> FLETCHER-MAYNARD ELEMENTARY 225 WINDSOR STREET CAMBRIDGE, MA 02139</p>	<p>DATE: 04/11/16 SCALE: 1/4"=1'0" DRAWN: RDN CHECKED: RDN DWG FILE: E101</p>	<p>SKETCH NUMBER: <b>SKE-1</b></p>
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JX LIGHTING MODEL  
B81-U  
INDUSTRIAL FIXTURE, OR  
EQU. (TYPICAL OF 14)

P-5

P-4



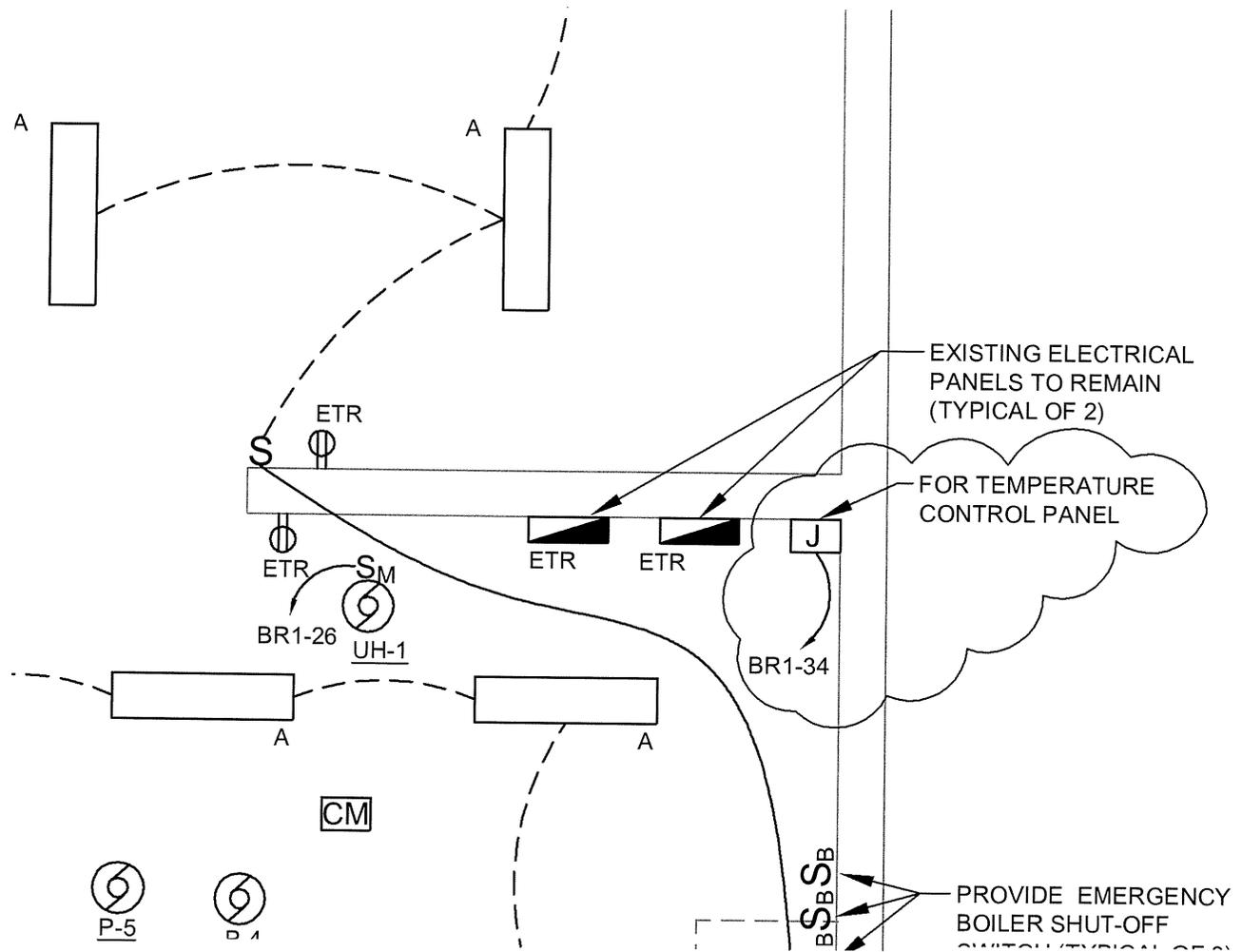
PROVIDE CARBON MONOXIDE DETECTOR, WIRE TO LOCAL FIRE ALARM INITIATION CIRCUIT, DETECTOR SHALL BE OF SAME MANUFACTURER AS BUILDING FIRE ALARM SYSTEM. WIRE TO POINT IN BMS PANEL, COORDINATE WITH HVAC CONTRACTOR (TYPICAL OF 2)

PROVIDE SURE-LITES LIGHTING MODEL #XR21 TWO HEADED EMERGENCY LIGHT FIXTURE, OR APPROVED EQUAL. WIRE AHEAD OF LIGHT SWITCHING SERVING ROOM (TYPICAL OF 2)

# NEW BOILER ROOM ELECTRICAL PLAN

SCALE: 1/4" = 1' - 0"

<p><b>LINDGREN &amp; SHARPLES, P.C.</b> CONSULTING ENGINEERS PHONE: (413) 732-4336 FAX: (413) 731-0786 435 COTTAGE STREET SPRINGFIELD, MA 01104</p>	<p><b>ELECTRICAL BOILER ROOM PLAN</b> FLETCHER-MAYNARD ELEMENTARY 225 WINDSOR STREET CAMBRIDGE, MA 02139</p>	<p>DATE: 04/11/16 SCALE: 1/4"=1'0" DRAWN: RDN CHECKED: RDN DWG FILE: E101</p>	<p>SKETCH NUMBER: <b>SKE-2</b></p>
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# NEW BOILER ROOM ELECTRICAL PLAN

SCALE: 1/4" = 1' - 0"

**LINDGREN & SHARPLES, P.C.**  
CONSULTING ENGINEERS

PHONE: (413) 732-4336 FAX: (413) 731-0786  
435 COTTAGE STREET SPRINGFIELD, MA 01104

**ELECTRICAL BOILER ROOM  
PLAN**

FLETCHER-MAYNARD ELEMENTARY  
225 WINDSOR STREET  
CAMBRIDGE, MA 02139

DATE: 04/11/16

SCALE: 1/4"=1'0"

DRAWN: RDN

CHECKED: RDN

DWG FILE: E101

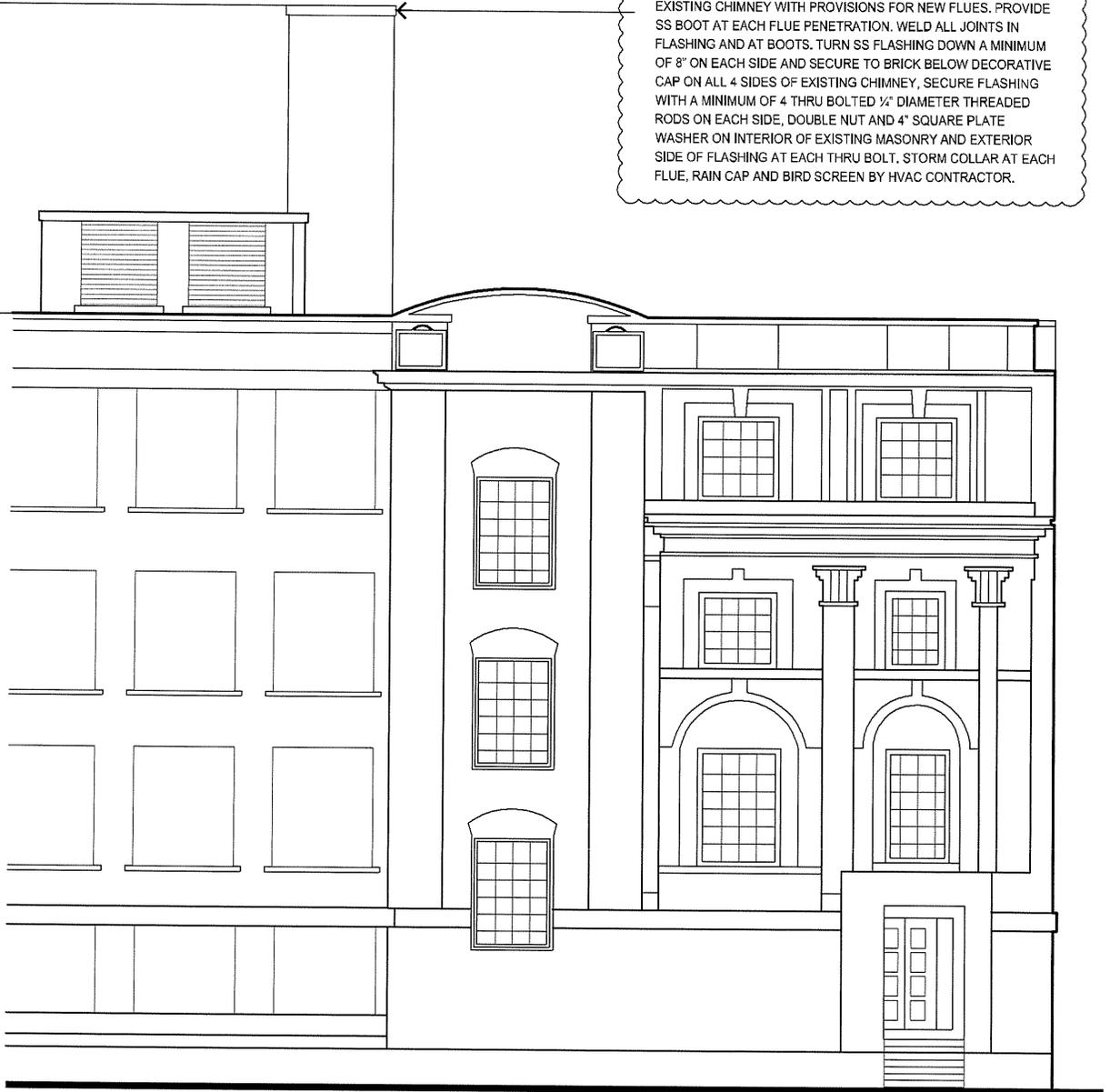
SKETCH NUMBER:

**SKE-3**

99'-6"  
TOP OF CHIMNEY

71'-0"  
TOP OF ROOF

FLASHING AT TOP OF MASONRY CHIMNEY: PROVIDE 18 GAUGE STAINLESS FLASHING TO CLOSE OFF UNUSED PORTIONS OF EXISTING CHIMNEY WITH PROVISIONS FOR NEW FLUES. PROVIDE SS BOOT AT EACH FLUE PENETRATION. WELD ALL JOINTS IN FLASHING AND AT BOOTS. TURN SS FLASHING DOWN A MINIMUM OF 8" ON EACH SIDE AND SECURE TO BRICK BELOW DECORATIVE CAP ON ALL 4 SIDES OF EXISTING CHIMNEY, SECURE FLASHING WITH A MINIMUM OF 4 THRU BOLTED 1/2" DIAMETER THREADED RODS ON EACH SIDE, DOUBLE NUT AND 4" SQUARE PLATE WASHER ON INTERIOR OF EXISTING MASONRY AND EXTERIOR SIDE OF FLASHING AT EACH THRU BOLT. STORM COLLAR AT EACH FLUE, RAIN CAP AND BIRD SCREEN BY HVAC CONTRACTOR.



DWG 1/A100

1 BUILDING ELEVATION (REVISED)

1/16"=1'-0"

TAI SOO KIM PARTNERS

TAI 146 Wyllys Street  
SOO Hartford, Connecticut  
KIM Tel: (860) 547-1970  
Fax: (860) 249-0695

JOB NAME/NUMBER

FMA

SCALE:

1/16" = 1'-0"

DATE:

4/11/2016

ISSUED:

TITLE

FMA BUILDING  
ELEVATION

DRAWING NO.

SKA-001