NO.	ISSUANCE	DATE	REVISION
1	90% CONSTRUCTION DOCUMENTS	03-27-2020	
2	100% CONSTRUCTION DOCUMENTS	04-17-2020	

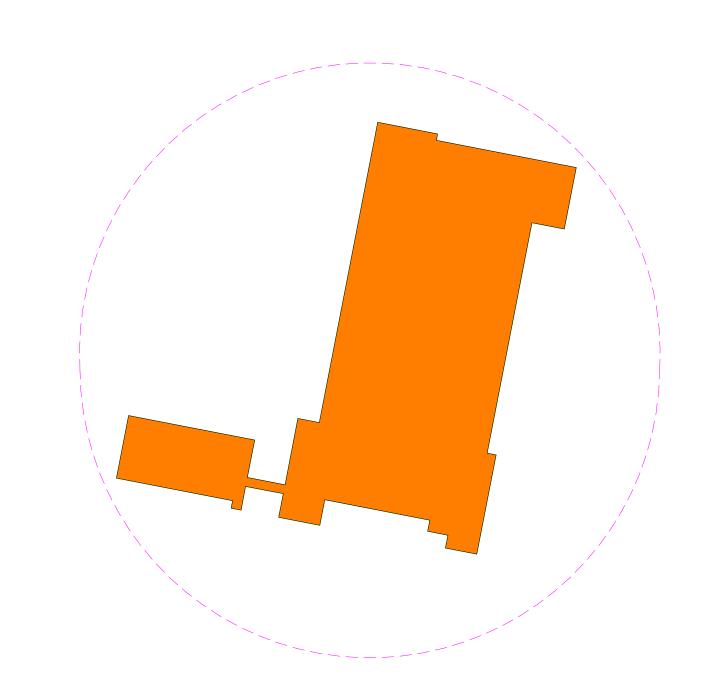
	LIST OF DRAWINGS
GENERAL:	
T-001	COVER SHEET
GENERAL:	
EN-001	ENERGY COMPLIANCE
G-051	SITE PLAN
ABATEMEN	
H-100A	SCOPE OF WORK AND DETAILS
H-100B H-101	ASBESTOS ABATEMENT NOTES THIRD FLOOR BASE ASBESTOS ABATEMENT PLAN
H-101	FIRST FLOOR BASE ASBESTOS ABATEMENT PLAN
H-103	SECOND FLOOR BASE ASBESTOS ABATEMENT PLAN
H-104	THIRD FLOOR ALTERNATE ASBESTOS ABATEMENT PLAN
ARCHITEC [*]	TURAL:
A-100	FIRST FLOOR PLAN
A-101	SECOND FLOOR PLAN & THIRD FLOOR PLAN
A-102	THIRD FLOOR FINISH PLANS
A-103	PARTIAL ROOF PLAN
A-200	PARTIAL FIRST FLOOR REFLECTED CEILING PLANS
A-201 A-202	SECOND FLOOR REFLECTED CEILING PLAN PARTIAL THIRD FLOOR REFLECTED CEILING PLANS
A-202 A-500	PARTIAL THIRD FLOOR REFLECTED CEILING FLANS PARTITION DETAILS
A-625	ROOF DETAILS
A-626	ROOF DETAILS
STRUCTUF	RAL:
S-001	STRUCTURAL NOTES, ABBREVIATIONS, SYMBOLS & DRAWING LIST
S-002	PARTIAL ROOF FRAMING PLAN RTU-9
S-003	SECTIONS & DETAILS FOR RTU-9
S-006	PARTIAL PLANS AND SECTIONS, OPENINGS FOR DUCT WORK SECOND FLOOR (PROJECTOR ROOM), THIRD FLOOR (MECHANICAL ROOM)
S-007	PARTIAL FIRST, SECOND, THIRD FLOOR PLANS-FLOOR OPENINGS FOR DUCT
	WORK EC-9
S-008	SECTIONS AND DETAILS
S-009	NEW FAN LOCATION AUDIORIUM ROOF & SECTION
S-010	SECTIONS AND DETAILS
S-011 S-012	SECTIONS AND DETAILS NEW DUCT LOCATION FOUNDATION PLANS & SECTION
MECHANIC	
M-001	MECHANICAL NOTES, SYMBOLS, AND ANNOTATIONS
M-101	MECHANICAL 1ST FLOOR HVAC DEMOLITION PLAN
M-102	MECHANICAL 2ND & 3RD FLOOR HVAC DEMOLITION PART PLAN
M-200	MECHANICAL UNDERSLAB HVAC CONSTRUCTION PLAN
M-201	MECHANICAL 1ST FLOOR DUCTWORK CONSTRUCTION PLAN
M-202	MECHANICAL 2ND FLOOR DUCTWORK CONSTRUCTION PLAN
M-203	MECHANICAL 3RD FLOOR DUCTWORK CONSTRUCTION PLAN
M-204	MECHANICAL AST ELOOP PIPINO CONSTRUCTION PLAN
M-301 M-302	MECHANICAL 1ST FLOOR PIPING CONSTRUCTION PLAN MECHANICAL 2ND, 3RD, & ROOF PIPING CONSTRUCTION PLAN
M-401	MECHANICAL ENLARGED HVAC CONSTRUCTION PLANS
M-501	MECHANICAL SECTIONS
M-502	MECHANICAL SECTIONS
M-503	MECHANICAL ISOMETRIC VIEWS
M-601	MECHANICAL SCHEDULES
M-701	MECHANICAL FLOW DIAGRAMS
M-801	MECHANICAL DETAILS
M-802	MECHANICAL CONTROLS
M-901 ELECTRICA	MECHANICAL CONTROLS
E-001	ELECTRICAL NOTES, SYMBOLS, AND ANNOTATIONS
E-001 E-101	ELECTRICAL NOTES, STRIBULS, AND ANNOTATIONS ELECTRICAL PARTIAL FIRST FLOOR POWER DEMOLITION PLAN
E-201	ELECTRICAL PARTIAL 1ST FLOOR POWER CONSTRUCTION PLAN
E-203	ELECTRICAL 3RD FLOOR CONSTRUCTION PLAN
E-204	ELECTRICAL PARTIAL ROOF POWER PLAN
E-301	ELECTRICAL PARTIAL FIRST FLOOR REFLECTED CEILING PLAN
E-302	ELECTRICAL SECOND FLOOR REFLECTED CEILING PLAN
E-303	ELECTRICAL THIRD FLOOR REFLECTED CEILING PLAN

FIRE ALARM ROOF CONSTRUCTION PLAN

YONKERS PUBLIC SCHOOLS

One Larkin Center, Yonkers, New York 10701

HVAC UPGRADES SAUNDERS TRADES AND TECHNICAL HIGH SCHOOL



SAUNDERS TRADES & TECHNICAL HIGH SCHOOL

PROJECT LOCATION MAP SCALE: N.T.S.

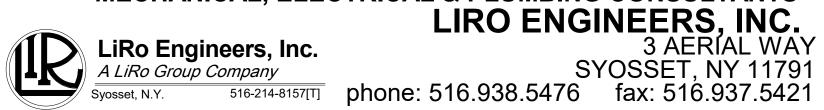
DESIGN TEAM:

ARCHITECT FULLER AND D'ANGELO P.C.

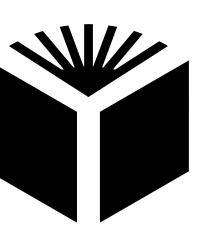
45 KNOLLWOOD ROAD ELMSFORD, NY 10523

phone: 914.592.4444 fax: 914.592.1717

MECHANICAL, ELECTRICAL & PLUMBING CONSULTANTS



ENVIRONMENTAL CONSULTANTS LIRO ENGINEERS, INC. 100 DUFFY AVENUE, SUITE 402 HICKSVILLE, NY 11801 phone: 516.595.2900 fax: 516.937.5421



YONKERS PUBLIC SCHOOLS

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John P. Carr **Executive Director** School Facilities Management

SED # 66-23-00-01-0-206-017

YPS JOB # 10881

Project Information

2015 IECC Energy Code:

Project Title: Saunders Trades and Technical High School HVAC Upgrades

Yonkers, New York Location:

Climate Zone: Project Type: Alteration

Construction Site: 183 Palmer Road Yonkers, NY 10701

Designer/Contractor: Owner/Agent: LiRo Engineers, Inc. Yonkers Public Schools 3 Aerial Way One Larkin Center Syosset, NY 11791 516.938.5476 Yonkers, NY 10701

Mechanical Systems List

Quantity System Type & Description

RTU-9 (Single Zone):

Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 1065 kBtu/h

No minimum efficiency requirement applies Cooling: 1 each - Hydronic Coil, Capacity = 1015 kBtu/h, Air Economizer

No minimum efficiency requirement applies
Fan System: SUPPLY FAN | CAFETERIA -- Compliance (Brake HP method) : Passes

FAN 1 Supply, Single-Zone VAV, 15000 CFM, 20.0 motor nameplate hp, 15.2 design brake hp (18.0 max. BHP), 67.0 fan efficiency

Pressure Drop Credits:

Particulate filtration credit: MERV 13 through 15, 3.2680 credit

EC-10 (EXISTING) (Single Zone):

Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 642 kBtu/h No minimum efficiency requirement applies

Cooling: 1 each - Hydronic Coil, Capacity = 685 kBtu/h, Air Economizer

No minimum efficiency requirement applies

Fan System: EC-10 (EXISTING) + EF-10D (NEW) | AUDITORIUM -- Compliance (Brake HP method) : Passes

EF10D Exhaust, Single-Zone VAV, 5340 CFM, 5.0 motor nameplate hp, 0.6 design brake hp (5.0 max. BHP), 67.0 fan efficiency

EC10 (EXISTING) Supply, Single-Zone VAV, 13000 CFM, 40.0 motor nameplate hp, 11.0 design brake hp (29.5 max. BHP), 67.0 fan efficiency grade

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2015 IECC requirements in COMcheck Version 4.1.3.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title	Signature	

Project Title: Saunders Trades and Technical High School HVAC Upgrades

Data filename: M:\MEP Projects\2019\19-233-0801 Yonkers PS-Saunders HS EngEnv Design\2 Engineering\HVAC\Load Calc\Saunders_COMCheck.cck

Report date: 05/12/20

Page 1 of 11

Date

PROJECT TITLE

SAUNDERS TRADES AND TECHNICAL HIGH SCHOOL HVAC **UPGRADES**

PROJECT ADDRESS

183 PALMER RD YONKERS, NY 10701

OWNER

YONKERS PUBLIC **SCHOOLS**

ARCHITECT

FULLER AND D'ANGELO P.C. 45 KNOLLWOOD ROAD ELMSFORD, NY 10523

MEP ENGINEER AND ENVIRONMENTAL ENGINEER

(T) 914.592.4444



KEY PLAN: NOT TO SCALE

	SHEE	ET SIZE	30X42			
	MARK	DATE	DESCRIPTION			
	REVI	SION				
3						
)	MARK	DATE	DESCRIPTION			
	ISSU	<u>E</u>				
	SED	#:	66-23-00-01-0-206-017			
	YPS JOB:		10881			
	DESI	GN BY: S	НВ			
	DRA	WN BY: S	HB			

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CHK'D BY: EG COPYRIGHT:



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IT IS A VIOLATION OF NYS LAW FOR ANY PERSON TO ALTER

ENERGY COMPLIANCE

EN-001



PROJECT NOTES:

SCOPE OF WORK

- A. This asbestos abatement Project will consist of the removal and disposal of asbestos containing flooring and mastic, replacement of abated tiles with non ACM tiles of similar color, pattern, and size, as well the disconnect and abandoning of asbestos cement ducts associated with the mechanical HVAC system.
- B. The work shall include but not be limited to the abatement work tabulated in the H-100 series drawings.
- C. The Contractor shall be aware of all conditions of the Project and is responsible for verifying quantities and locations of all Work to be performed. Failure to do so shall not relieve the Contractor of its obligation to furnish all labor and materials necessary to perform the Work.
- D. All Work shall be performed in strict accordance with the Project Documents and all governing codes, rules, and regulations. Where conflicts occur between the Project Documents and applicable codes, rules, and regulations, the more stringent shall apply.
- E. Working hours shall be as required and approved by the Owner. Asbestos abatement activities including, but not limited to, work area preparation, gross removal activities, cleaning activities, waste removal, etc. may need to be performed during 'off-hours' (including nights and weekends). In addition, multiple mobilizations may be required to perform the work identified in this project. The Contractor shall coordinate and schedule all Work with the facility and Owner's representative.

SPECIAL JOB CONDITIONS

- 1. The abatement contractor shall confirm the location and quantity of all asbestos removal and, prior to the start of any abatement activities, notify Yonkers Public Schools (YPS) of any inconsistencies with the Bid Documents, as well as any site conditions that were not captured by the Bid Documents that will impact the execution of the work.
- 2. The schedule for all work at the school must be coordinated with and approved in advance of mobilization by YPS.
- 3. Mechanical system components that the Contractor may need to access to perform the work of this contract, including oversized ducts, duct enclsoures, and plenum units, are considered confined spaces for purposes of planning and executing abatement work in this area. The Contractor shall submit a Confined Space Entry plan that must be approved by YPS and acknowledged by the local City of Yonkers fire rescue department.
- 4. The Contractor may perform partial demolition of mechcanical system components that are being taken out of service. Care shall be taken to minimize disturbance in asbestos cement ducts; mechanical system components shall be disconnected from the asbestos ducts and the end sealed using grout, lightweight cement or equivalent. Fill existing Duct below ground to floor level. Disconnection of unit ventilators and sealing of AC ducts shall be performed as abatement modified by site specific variance.
- 5. The abatement contractor shall perform asbestos abatement in a manner consistent with the project specifications as well as all applicable federal, state, and local regulations as modified by Site Specific Varainces.
- The Contractor shall be aware of the presence of lead-based paint on all surfaces except those YPS has designated as non-lead-based paint, and apply the appropriate health and safety measures.
- 7. All work must be coordinated with YPS facility representatives prior to scheduling and mobilization of manpower and resources to the project site.
- 8. The Contractor shall replace all floor tile removed as part of this abatement using non-asbestos resilient vinyl tiles of similar color, pattern and size.
- 9. Abandoned Incinerator Flue is assumed to contain asbestos. Removal shall be performed from the Incinerator Room; flue / flue liner may be secured at roof level and/or intermittently along vertical extension Contractor is responsible for complete removal of the flue / flue liner as ACM.

ASBESTOS ABATEMENT BASE SCOPE OF WORK TABLE:

Work Area	Location	Description of Asbestos Material	Approximate Quantity Of ACM	ICR 56 Procedure	
1	3rd Floor Library (Corner)	9"x9" Beige Floor Tile and Mastic		56-11.7	
2	1st Floor Mechanical Room	Asbestos Cement Ducts	<1.0 SF	SSV	
3	1st Floor Fan Room	Asbestos Cement Ducts	<1.0 SF	SSV	
4	1st Floor Room 201	Asbestos Cement Ducts	<1.0 SF	SSV	
5	1stFloor Room 203	Asbestos Cement Ducts	<1.0 SF	SSV	
6	1st Floor Room 207	Asbestos Cement Ducts	<1.0 SF	SSV	
7	1st Floor Room 209	Asbestos Cement Ducts	<1.0 SF	SSV	
8	1st Floor Faculty Dining	Asbestos Cement Ducts	<1.0 SF	SSV	
9	1st Floor Room 110	Asbestos Cement Ducts	<1.0 SF	SSV	
10	1st Mechanical Room - Incinerator Duct	Asbestos Cement Ducts	<1.0 SF	SSV	
11	1st Floor Old Incincerator Room	Flue / Flue Liner	50.0 LF	56-7.11 (f)	
12	2nd Floor Teacher Room	9"x9" Floor Tile and Mastic	550.0 SF	56-11.7	
13	2nd Floor Storage Room	9"x9" Floor Tile and Mastic	65.0 SF	56-11.7	
Total 815.0 SF / 50.0 LF					

ASBESTOS ABATEMENT ALTERNATE SCOPE OF WORK TABLE:

-	.5105 ABATEMENT ALTERNATE SCOPE OF WORK TABLE.						
	Work		Description of	Approximate Quantity	ICR 56		
	Area	Location	Asbestos Material	Of ACM	Procedure		
	A1	3 rd Floor Library	9"x9" Beige Floor Tile and Mastic	2,450.0 SF	56-11.7		
			5,310.0 SF				

Holding Area

Shower

Not to Scale

LARGE PROJECT WORKER/WASTE DECONTAMINATION UNIT

Equipment

Washroom

H-100A Not To Scale

Abate.

Work

Area

Lockable

Doorway

Clean Room

Lockable

Doorway

PROJECT TITLE

SAUNDERS TRADES AND TECHNICAL HIGH SCHOOL HVAC UPGRADES

PROJECT ADDRESS

183 PALMER RD YONKERS, NY 10701

OWNER

YONKERS PUBLIC SCHOOLS

ARCHITECT

FULLER AND D'ANGELO P.C.

45 KNOLLWOOD ROAD ELMSFORD, NY 10523 (T) 914.592.4444

MEP ENGINEER AND ENVIRONMENTAL ENGINEER



KEY PLAN: NOT TO SCALE

SHEE	ET SIZE 3	80X42			
	DATE	DESCRIPTION			
REVI		000/ CD			
	04.17.20	90% CD			
MARK ISSU		DESCRIPTION			
SED		23-00-01-0-206-017			
YPS	JOB: 108	381			
DESI	GN BY: R.	SALERNO- 10-00697			
DRAWN BY: S. RAMCHARAN					
CHK'D BY: C. ZANONI - 92-16430					
COPYRIGHT:					
LIRO ENGINEERS, INC.					
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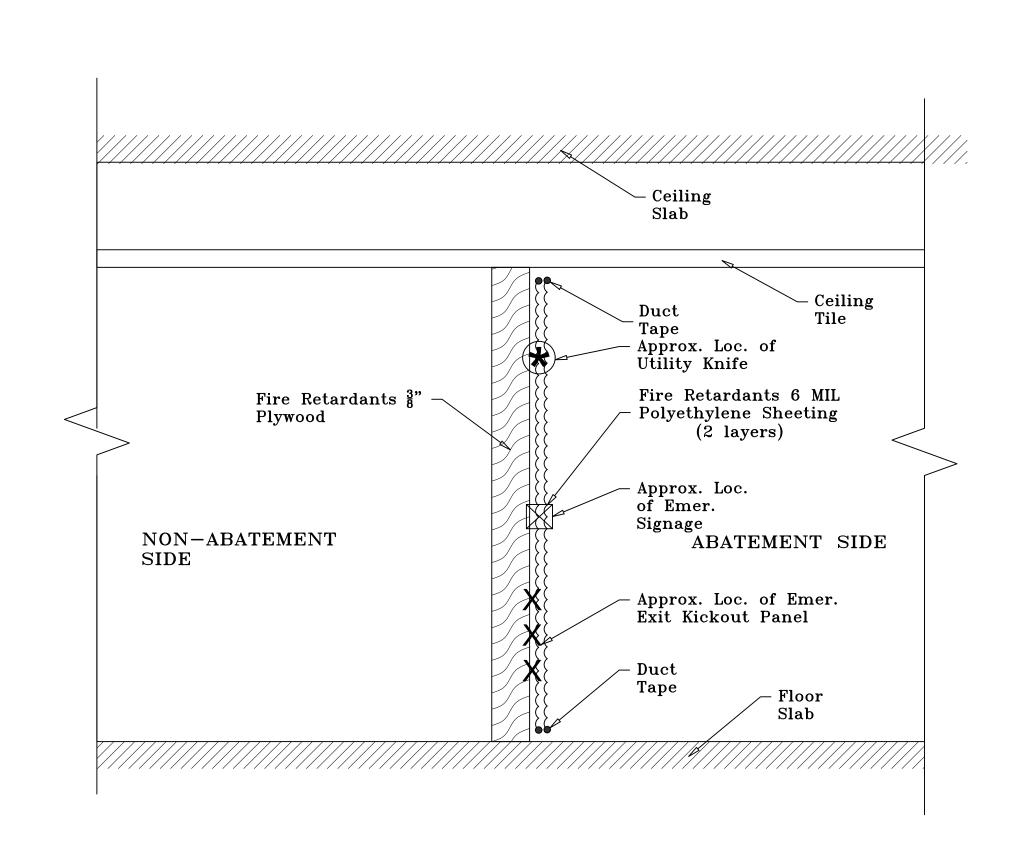


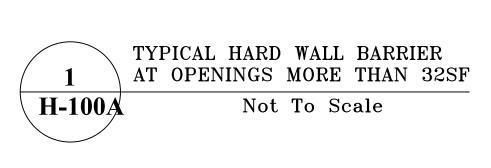
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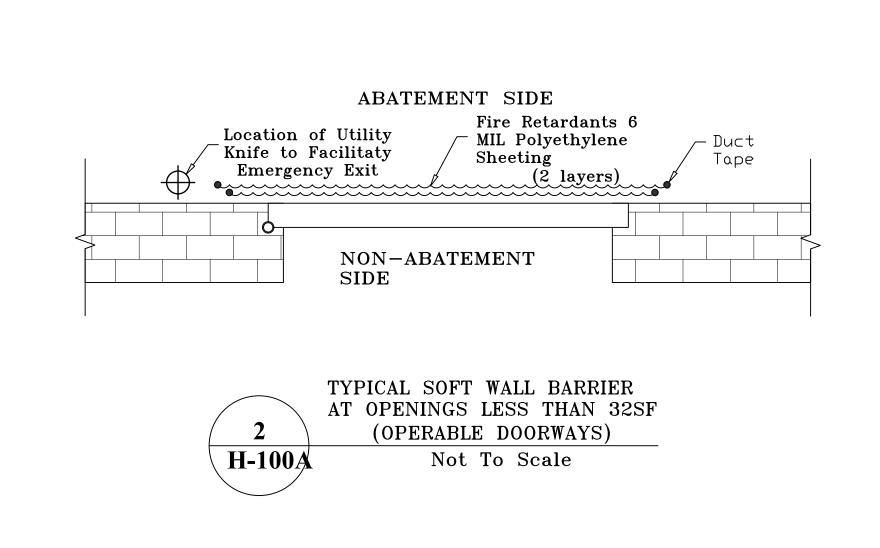
SHEET TITLE

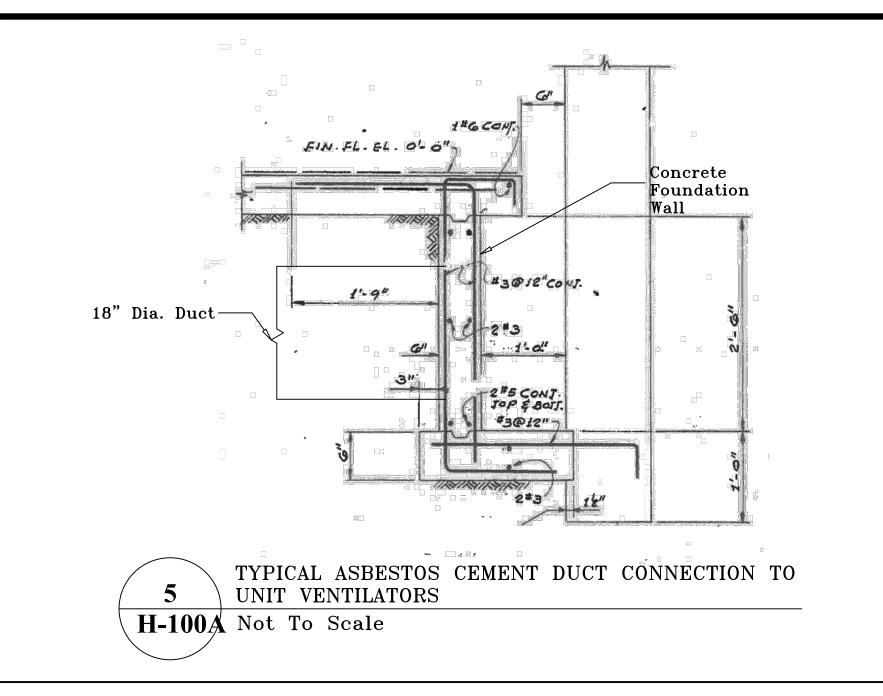
SCOPE OF WORK AND DETAILS

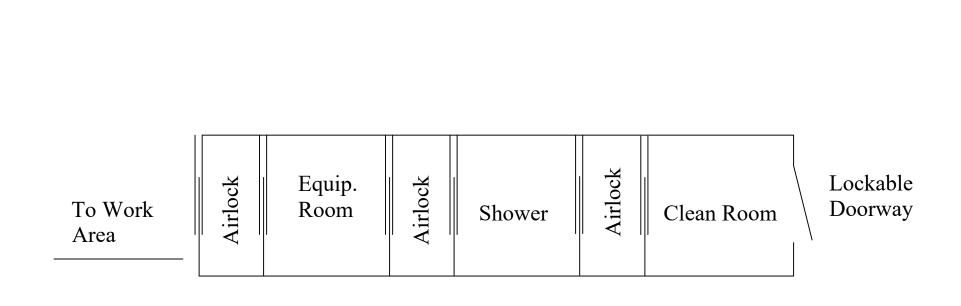
H-100A











property adjacent to the Work.

Perform asbestos related Work in accordance with New York State Industrial Code Rule 56 (herein referred to as Code Rule 56), 40 CFR 61, and 29 CFR 1926. Where more stringent requirements are specified, adhere to the more stringent

he Contractor must maintain current licenses, permits and certifications pursuant to New York State Department of Labor and Department of Environmental Conservation for all Work related to this Project, including the removal, handling,

The Contractor must have and submit proof upon request that any persons employed by the Contractor to engage in or supervise Work on any asbestos Project have a valid NYS asbestos handling certificate pursuant to Code Rule 56.

The Contractor must have and submit proof upon request that any persons employed by the Owner in the performance of the Work. Any Variance applications previously submitted are included as an appendix of this specification.

The Contractor shall be responsible for obtaining all Variances as may be required for the Project or as requested by the Owner. Approval of the Owner is required prior to submission of a Variance application to any regulatory agency. Failure

to obtain Owner approval may result in Owner not permitting variance to be used on the project.

The Contractor shall be responsible for compliance with The New York State Uniform Fire Prevention and Building Code, or its successor during all Work at the site.

Failure to adhere to the Project Documents shall constitute a breach of the Contract and the Owner shall have the right to and may terminate the Contract provided, however, the failure of the Owner to so terminate shall not relieve the Contractor

Pre-Work Submittals: Within 7 days prior to the pre-construction conference, the Contractor shall submit 3 copies of the documents listed below for review and approval prior to the commencement of asbestos abatement activities:

1. Contractor license issued by New York State Department of Labor.

Show the complete sequence of abatement activities and the sequencing of Work within each building or building section.

Show the dates for the beginning and completion of each major element of Work including substantial completion dates for each Work Area, building, or phase. oject Notifications: As required by Federal and State regulatory agencies together with proof of transmittal (i.e. certified mail return receipt).

Building Occupant Notification: As required by regulatory agencies.

Abatement Work Plan: Provide plans that clearly indicate the following: All Work Areas/containments numbered sequentially

Locations and types of all decontamination enclosures. Entrances and exits to the Work Areas/containments'. Type of abatement activity/technique for each Work Area/containmen Number and location of negative air units and exhaust. Also provide calculations for determining number of negative air pressure units. Location of water and electrical connections to building services.

Waste transport routes through the building to the waste storage container Disposal Site/Landfill Permit from applicable regulatory agency.

NYS Department of Environmental Conservation Waste Transporter Permit. Project Close-out Submittals: Within 30 days of the completion of each abatement phase, the Contractor shall submit one copy of the documents listed below to the owner's environmental consultant for review and approval prior to Contractor's final payment. Once the close-out submittal is approved, the Contractor shall provide three sets of the approved close-out documents (double-sided and bound) to owner's representative.

All waste disposal manifests and disposal logs (Original waste manifests shall be sent to the owner's representative

Daily progress log, including the entry/exit log. Disposal Site/Landfill Permit from applicable regulatory agency. Project notifications, amended notifications, Variances.

PRE-CONSTRUCTION CONFERENCE

Prior to start of preparatory Work under this Contract, the Contractor shall attend a pre-construction conference attended by Owner, Facility Personnel, and Environmental Consultant Agenda for this conference shall include but not necessarily be limited to:

Contractor's scope of Work, Work plan, and schedule to include number of workers and shifts

Environmental Consultant's duties, functions, and authority. Contractor's Work procedures including:

a. Methods of job site preparation and removal methods.

Respiratory protection

Cleanup procedures. e. Fire exits and emergency procedures.

Contractor's required pre-work and on-site submittals, documentation, and postings.

Contractor's plan for twenty-four (24) hour Project security both for prevention of theft and for barring entry of unauthorized personnel into Work Areas.

Handling of furniture and other moveable objects

Storage of removed asbestos containing materials. Waste disposal requirements and procedures, including use of the Owner supplied waste manifest ntal Consultant on a pre-construction walk-through documenting existing condition of finishes and furnishings, reviewing overall Work plan, location

In conjunction with the conference the Contractor shall accompany the Owner and Envi of fire exits, fire protection equipment, water supply and temporary electric tie-in.

APPLICABLE STANDARDS AND REGULATIONS

The Contractor shall comply with the following codes and standards, except where more stringent requirements are shown or specified:

Federal Regulations:
1. 29 CFR 1910.1001, "Asbestos" (OSHA) 29 CFR 1910.1200, "Hazard Communication" (OSHA) 29 CFR 1910.134, "Respiratory Protection" (OSHA)

29 CFR 1910.145, "Specification for Accident Prevention Signs and Tags" (OSHA) 29 CFR 1926, "Construction Industry" (OSHA)

6. 29 CFR 1926 1101, "Asbestos, Tremolite, Anthophyllite, and Actinolite" (OSHA)
7. 29 CFR 1926, Subpart AA (1200 through 1213)
8. 29 CFR 1926, 500 "Guardrails, Handratts and Covers" (OSHA)

9. 40 CFR 61, Subpart M, "National Emission Standard for Asbestos" (EPA)

10. 40 CFR 61, Subpart M, "National Emission Standard for Asbestos" (EPA)

11. 40 CFR 763, Appendix A to Subpart E, "Interim TEM Analytical Methods"

12. 49 CFR 171-172, Transportation Standards (DOT)

New York State Regulations:
1. 12 NYCRR, Part 56, "Asbestos", Industrial Code Rule 56 (DOL)

12 NYCRR, Parts 360, 364, Disposal and Transportation (DEC)
10 NYCRR, Part 373, "Asbestos Safety Program Requirements" (DOH)
"New York State Uniform Fire Prevention and Building Code"

Standards and Guidance Documents:

American National Standard Institute (ANSI) Z88.2-80, Practices for Respiratory Protection
ANSI Z9.2_79, Fundamentals Governing the Design and Operation of Local Exhaust Systems
EPA 560/585_024, Guidance for Controlling Asbestos Containing Materials in Buildings (Purple Book)

3PA 530-SW-85-007, Asbestos Waste Management Guidance ASTM Standard E1368 "Standard Practice for Visual Inspection of Asbestos Abatement Projects'

2. At least ten (10) days prior to beginning abatement activities send written notification to:

The Contractor shall provide notification of intent to commence asbestos abatement activities as indicated below. . At least ten (10) Working days prior to beginning abatement activities, send written notification to

Environmental Protection Agency National Emissions Standards for Hazardous Air Pollutants (NESHAPS) Coordinator

New York, NY 10007 New York State Department of Labor

State Office Campus Building 12 - Room 161B

ontractor shall be responsible for maintaining current project filings with regulatory agencies for the duration of the project.

The Contractor shall post and/or provide Building Occupant Notification at least 10 days prior to beginning abatement activities as required by Code Rule 56.

In addition to the requirements of OSHA 1926.1101, the Contractor shall be required to perform personal air monitoring every Work shift in each Work Area during which abatement activities occur in order to determine that appropriate

espiratory protection is being worn and utilized.

The Contractor shall conduct air sampling that is representative of both the 8-hour time weighted average and 30-minute short-term exposures to indicate compliance with the permissible exposure and excursion limits. The Contractor's laboratory analysis of air samples shall be conducted by an NYS DOH ELAP approved laboratory. The consultant shall not collect or analyze the Contractor's air samples. Results of personnel air sample analyses shall be available, verbally, within twenty-four (24) hours of sampling and shall be posted upon receipt. Written laboratory reports shall be delivered and posted at the Work site within five (5) days.

Failure to comply with these requirements may result in all work being stopped until compliance is achiev

The Contractor shall designate a full-time Project Supervisor who shall meet the following qualifications:

The Project Supervisor shall hold New York State certification as an Asbestos Supervisor.

The Project Supervisor shall meet the requirements of a "Competent Person" as defined by OSHA 1926.1101 and shall have a minimum of one year experience as a supervisor.

3. The Project Supervisor must be able to speak, read, and write English fluently, as well as communicate in the primary language of the Workers.

If the Project Supervisor is not on-site at any time whatsoever, all Work shall be stopped. The Project Supervisor shall remain on-site until the Project is complete. The Contractor may not remove the Project Supervisor from the Project without

the written consent of the Owner and the Environmental Consultant; however the Project Supervisor shall be removed from the Project fis o requested by the Owner.

The Project Supervisor shall maintain the bound Daily Project Log and the entry/exit logs as required by New York State Department of Labor and section 2.03 of the specifications and the Waste Disposal Log (Appendix B) required by section

D. The Project Supervisor shall be responsible for the performance of the Work and shall represent the Contractor in all respects at the Project site. The Supervisor shall be the primary point of contact for the Asbestos Project Monitor

DELIVERY AND STORAGE

Deliver all materials to the job site in original packages with containers bearing manufacturer's name and label. Store all materials at the job site in a suitable and designated area.

Store materials subject to deterioration or damage away from wet or damp surfaces and under cover.

Protect materials from unintended contamination and thef

Remove damaged or deteriorated materials from the job site. Materials contaminated with asbestos shall be disposed of as asbestos debris as herein specified. This includes unused Contractor supplies located in the regulated work area

Shut down and lock out all electrical power to the asbestos Work Areas, including lighting circuits. Any electrical power passing through the Work Areas that can't be shut down due to health and safety reasons, shall be protected as per the

Provide temporary 120-240 volt, single phase, three wire, 100 amp electric service with Ground Fault Circuit Interrupters (GFCI) for all electric requirements within the asbestos Work Area.

Where available, obtain from Owner's existing system. Otherwise provide power from other sources (i.e. generator).

Provide temporary wiring and "weatherproof" receptacles in sufficient quantity and location to serve all HEPA equipment and tools.

Provide wiring and receptacles as required by the Environmental Consultant for project monitoring and air sampling equipment (pumps, fans, leaf blowers, etc.).

All power to the Work Area shall be brought in from outside the area through GFCI's at the source.

Provide temporary lighting with "weatherproof" fixtures for all Work Areas including decontamination chambers

1. The entire Work Area shall be kept illuminated at all times.

Provide lighting as required by the Environmental Consultant for the purposes of performing required inspections.

All temporary devices and wiring used in the Work Area shall be capable of decontamination procedures including HEPA vacuuming and wet-wiping.

PRODUCTS domestic water service, if available, from Owner's existing system. Provide hot water heaters with sufficient capacity to meet Project demands.

DAILY PROJECT LOG & WORK AREA ENTRY/EXIT LOG

A. Provide a bound Daily Project Log. The log shall contain on title page the Project name; name, address and phone number of Owner; name, address and phone number of

Under no circumstances shall pencil entries be permitted.

Environmental Consultant; name, address and phone number of Abatement Contractor; emergency numbers including, but not limited to local Fire/Rescue department and all other New York State Department of Labor requirements. B. All entries into the log shall be made in non-washable, permanent ink and such pen shall be strung to or otherwise attached to the log to prevent removal from the log-in area.

C. All persons entering and exiting the Work Area shall sign the entry/exit log and include name, certification number, and time. D. The Project Supervisor shall document all Work performed daily and note all inspections required by Code Rule 56, i.e. testing and inspection of barriers and enclosures.

A. Provide all scaffolding and/or staging as necessary to accomplish the Work of this Contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of all scaffolding and ladders shall comply with all applicable OSHA construction industry standards.

B. Provide scaffolding and ladders as required by the Environmental Consultant for the purposes of performing required inspections

A. Wet all asbestos-containing materials prior to removal with surfactant mixed and applied in accordance with manufacturer's printed instructions.

WASTE DISPOSAL BAGS, DRUMS, AND CONTAINERS

A. Provide 6 mil polyethylene disposal bags printed with asbestos caution labels. Bags shall also be imprinted with U.S. Department of Transportation required markings. B. Provide 30 or 55 gallon capacity fiber, plastic, or metal drums capable of being sealed air and water tight if asbestos waste has the potential to damage or puncture disposal bags.

Affix asbestos caution labels on lids and at one-third points around drum circumference to assure ready identification.

C. Containers and bags must be labeled accordance with 40 CFR Part 61 NESHAPS and Code Rule 56. When the bags/containers are moved to the holding area, lockable trailer, or lockable hardtop dumpster from the waste decontamination system washroom, each bag/container must also be appropriately labeled with the date moved in waterproof

D. Labeled ACM waste containers or bags shall not be used for non-ACM waste or trash. Any material placed in labeled containers or bags, whether turned inside out or not shall be handled and disposed of as ACM waste.

A. All polyethylene (plastic) sheeting used on the Project (including but not limited to sheeting used for critical and isolation barriers, fixed objects, walls, floors, ceilings, waste container) shall be at least 6 mil fire retardant sheeting.

B. Decontamination enclosure systems shall utilize at least 6 mil opaque fire retardant plastic sheeting. At least 2 layers of 6 mil reinforced fire retardant plastic sheeting shall be used for the flooring.

EXECUTION

GENERAL REQUIREMENTS

A. Should visible emissions or water leaks be observed outside the Work Area, immediately stop Work and institute emergency procedures per Code Rule 56. Should there be elevated fiber levels outside the Work Area, immediately stop Work, institute emergency procedures per Code Rule 56, and notify all employers and occupants in adjacent areas. All costs incurred in decontaminating such non-Work Areas and the contents thereof shall be borne by the Contractor, at no additional cost to the Owner

Valid NYS DOL Asbestos Handler certification cards shall be on site prior to admittance of any Contractor's employees to the asbestos Work Area. The following submittals, documentation, and postings shall be maintained on-site by the Contractor during abatement activities at a location approved by the Abatement

Valid Contractor handling license issued by New York State Department of Labor.

NYS DOL Asbestos Handler certification cards for each person employed in the removal, handling, or disturbance of asbestos. Daily OSHA personal air monitoring results.

NYS Department of Health ELAP certification for the laboratory that will be analyzing the OSHA personnel air samples. NYS Department of Environmental Conservation Waste Transporter Permit Project documents (specifications and drawings.

Notifications, Variances, Approved Work Plan. Ensure that the most up-to-date notifications and Variances are on-site. Applicable regulations Material Safety Data Sheets of supplies/chemicals used on the Project.

10. Disposal Site/Landfill Permit from applicable regulatory agency.

11. List of emergency telephone numbers. Magnahelic manometer semi-annual calibration certification. Waste Disposal Log.

14. Daily Project Log. 15. Entry/Exit Logs.

. The following documentation shall be maintained on-site by the Abatement Project Monitor during abatement activities: Valid Contractor handling license issued by New York State Department of Labor.

. Air Sample Log. Air sample results. Project Monitor Daily Log

Asbestos Survey Report

A copy of ASTM Standard E1368 "Standard Practice for Visual Inspection of Asbestos Abatement Projects." Calibration chart for rotometer(s) used on-site.

The Work Area must be vacated by building occupants prior to decontamination enclosure construction and Work Area preparation. All demolition necessary to access asbestos containing materials for removal must be conducted within negative pressure enclosures by licensed asbestos handlers. Demolition debris may be disposed of as construction and demolition debris provided the Abatement Project Monitor determines that it is not contaminated with asbestos

and there has been no disturbance of ACM within the enclosure. If the demolition debris is determined to be contaminated or ACM has been disturbed, it must be disposed of as asbestos waste. WORK AREA PREPARATION A. Asbestos danger signs shall be posted at all approaches to the asbestos Work Area. Post all emergency exits as emergency exits only on the Work Area side, post with

asbestos caution signs on the non-Work Area side. Provide all non-Work Area stairs and corridors accessible to the asbestos Work Area with warning tapes at the base of stairs and beginning of corridors. Warning tapes shall be in addition to caution signs B. Shut down and lock out the building heating, ventilating, and air conditioning systems. Electrical systems and circuits shall also be shut down unless permitted to remain active per Code Rule 56 and appropriately protected and labeled. Existing lighting sources shall not be utilized. Provide temporary electric power and lighting as specified

All non-ACM surfaces and objects within the Work Area shall be pre-cleaned using HEPA vacuuming and/or wet-wiping methods. Dry sweeping and any other methods that raise dust shall be prohibited. ACM shall not be disturbed during pre-cleaning. D. Movable objects within the Work Area shall be HEPA vacuumed and/or wet-wiped and removed from the Work Area.

2. All non-movable equipment in the Work Area shall be completely covered with 2 layers of fire retardant plastic sheeting, at least 6 mil in thickness, and secured in place with duct tape and/or spray adhesive. Active Fire Protection System components in the Work Area shall not be covered with fire retardant plastic sheeting or any other

Provide enclosure of the asbestos Work Area necessary to isolate it from unsealed areas of the building in accordance with the approved asbestos Work plan and as specified

G. Provide critical barriers by sealing off all openings including but not limited to operable windows and skylights, doorways, diffusers, grills, electrical outlets and boxes, doors, floor drains, and any other penetrations to surfaces in the Work Area enclosure, using 2 layers of at least 6 mil fire retardant plastic sheeting. H. Provide isolation barriers by installing temporary framing and sheathing at openings larger than 32 square feet forming the limits of the asbestos Work Area. Sheathing

thickness must be a minimum of 3/8 inch and all sheathing shall be caulked and the Work Area side sealed with two layers of 6 mil fire retardant plastic sheeting. Isolation barriers in stairwells and at work area egress locations shall not be covered with sheathing, only two layers of 6 mil fire retardant plastic sheeting. Isolation barriers shall be installed at all elevator openings in the Work Area. .Elevators running through the regulated abatement work area shall be shut down or isolated as per Code Rule 56. Elevator controls shall be modified so that elevators bypass the Work Area

Provide two independent layers of 6 mil fire retardant plastic sheeting over all floor, wall, and ceiling surfaces. Isolation barriers shall also be covered with two independent layers (for a total of four layers). Sheeting shall be secured with duct tape. All joints in fire retardant plastic sheeting shall overlap 12" minimum. Carpeting left in place shall be covered with 3/8 inch plywood sheathing prior to plasticizing. . Unless otherwise specified for removal, the Contractor shall either protect all fiberglass insulation on piping, ductwork, tanks, etc. in the Work Area using two layers of six mil fire retardant plastic sheeting or remove the insulation as asbestos containing waste. If the Contractor elects to remove the fiberglass insulation as asbestos-contaminated.

he/she shall be responsible for reinsulation if reinsulation of removed insulations is part of the Contract or Project. L. Frame out emergency exits from Work Area. Provide double layer 6 mil fire retardant plastic sheeting and tape seal opening. Post as emergency exits only and tape utility knife to the Work Area side of each exit. Within the Work Area, mark the locations and directions of emergency exits throughout the Work Area using exit signs and/or duct

M. Remove all items attached to or in contact with ACM only after the Work Area enclosure is in place. HEPA vacuum and wet wipe with amended water all items prior to their removal from the Work Area and before the start of asbestos removal operations.

from the Work Area before asbestos removals begin. Contaminated ceiling tiles shall be disposed of as asbestos waste. NEGATIVE AIR PRESSURE FILTRATION SYSTEM A. Provide a portable asbestos filtration system that develops a minimum pressure differential of negative 0.02 in. of water column within all full enclosure areas relative to adjacent unsealed areas and that provides a minimum of 4 air changes per hour in the Work Area during abatement and 6 air changes for non-friable flooring and/or mastic

N. Suspended ceiling tiles shall only be removed after Work Area preparation is complete. If possible, non-contaminated ceiling tiles shall be HEPA vacuumed and removed

B. Such filtration systems must be made operational after critical and isolation barriers are installed but before wall, floor, and ceilings are plasticized and shall be operated 24 hours per day during the entire Project until the final cleanup is completed and satisfactory results of the final air samples are received from the laboratory.

The system shall include a series of pre_filters and filters to provide High Efficiency Particulate Air (HEPA) filtration of particles down to 0.3 microns at 100% efficiency and below 0.3 microns at 99.9% efficiency. Provide sufficient replacement filters to replace pre_filters every 2 hours, secondary pre_filters every 24 hours, and primary HEPA filters every 600 hours (25 continuous days) of operation. HEPA filter sides shall be marked with installation date during all new HEPA filter installations on project. D. A minimum of one additional filtration unit of at least the same capacity as the primary unit(s) shall be installed and fully functional to be used during primary unit (s) filter changing and in case of primary failure.

E. At no time will the unit exhaust indoors, within 15 feet of a receptor, including but not limited to windows and doors, or adversely affect the air intake of the building. Exhaust ducting shall not exceed 25' in length, except as allowed by Industrial Code Rule 56. Provide construction fencing at ground level exhaust termination locations per F. Upon electric power failure or shut_down of any filtration unit, all abatement activities shall stop immediately and only resume after power is restored and all filtration units

are fully operating. For shut_downs longer than one hour, all openings into the Work Area, including the decontamination enclosures, shall be sealed. G. For all OSHA Class I removal Work Areas, the Contractor shall provide a manometer to verify negative air pressure. Manometers shall be read twice daily and recorded within the Daily Project Log. H. There shall be at least a 4 hour settling period after the Work Area is fully prepared and the negative filtration units have been started to ensure integrity of the barriers. I. Once installed and operational, the Contractor's Supervisor shall conduct daily inspections of the Work Area to insure the airtight integrity of the enclosure and operation of

the negative air system. Findings shall be recorded within the Daily Project Log. Inspections shall also be conducted on days when no abatement activities are in progress per Code Rule 56 (i.e. weekends). REMOVAL OF ASBESTOS CONTAINING MATERIALS A. Asbestos-containing materials shall be removed in accordance with the Contract Documents and the approved Asbestos Work Plan. Only one type of ACM shall be abated at a time within a Work Area. Where there are multiple types of ACM requiring abatement, Code Rule 56 procedures for sequential abatement shall be followed. B. Sufficiently wet asbestos materials with a low pressure, airless fine spray of surfactant to ensure full penetration prior to material removal. Re-wet material that does not

display evidence of saturation. . One Worker shall continuously apply amended water while ACM is being removed. D. Perform cutting, drilling, abrading, or any penetration or disturbance of asbestos containing material in a manner to minimize the dispersal of asbestos fibers into the air. Use equipment and methods specifically designed to limit generation of airborne asbestos particles. All power operated tools used shall be provided with manufacturer HEPA

equipped filtered local exhaust ventilation, as required by regulation. E. Upon removal of ACM from the substrate, the newly exposed surfaces shall be HEPA vacuumed and/or wet cleaned. Surfaces must be thoroughly cleaned using necessary methods and any required solvents to completely remove any adhesive, mastic, etc. All removed material shall be placed into 6 mil plastic disposal bags or other suitable container upon detachment from the substrate. Cleanup of accumulations of loose

debris or waste shall be performed whenever there is enough accumulation to fill a single bag or container and minimally at the end of each work shift. G. Large components shall be wrapped in two layers of 6 mil fire retardant plastic sheeting. Sharp components likely to tear disposal bags shall be placed in fiber drums or boxes and then wrapped with sheeting. H. Power or pressure washers are not permitted for asbestos removal or clean-up procedures unless approved in a Site Specific Variance and allowed by owner. All open ends of pipe and duct insulation not scheduled for removal shall be encapsulated using lag cloth.

K. The use of metal shovels, metal dust pans, etc. are not permitted inside the work area. EQUIPMENT AND WASTE CONTAINER DECONTAMINATION AND REMOVAL PROCEDURES A. External surfaces of contaminated containers and equipment shall be cleaned by wet cleaning and/or HEPA vacuuming in the Work Area before moving such items into the

All construction and demolition debris determined by the Environmental Consultant to be contaminated with asbestos shall be handled and disposed of as asbestos waste.

waste decontamination enclosure system airlock by persons assigned to this duty. The persons in the Work Area shall not enter the airlock. No gross removal operations are permitted when waste transfer is in progress. B. The containers and equipment shall be removed from the airlock by persons stationed in the washroom during waste removal operations. The external surfaces of containers and equipment shall be cleaned a second time by wet cleaning.

. The cleaned containers of asbestos material and equipment are to be dried of any excessive pooled or beaded liquid, placed in uncontaminated 6 mil plastic bags or sheeting,

as the item's physical characteristics demand, and sealed airtight D. The clean recontainerized items shall be moved into the airlock that leads to the holding area. Workers in the washroom shall not enter this airlock. E. Containers and equipment shall be moved from the airlock and into the holding area by persons dressed in clean personal protective equipment, who have entered from the F. The cleaned containers of asbestos material and equipment shall be placed in water tight carts with doors or tops that shall be closed and secured. These carts shall be held in

G. The exit from the decontamination enclosure system shall be secured to prevent unauthorized entry. H. Where the waste removal enclosure is part of the personnel decontamination enclosure, waste removal shall not occur during shift changes or when otherwise occupied. Precautions shall be taken to prevent short circuiting and cycling of air outward through the shower and clean room.

the holding until transfer to the waste container. The carts shall be wet cleaned and/or HEPA vacuumed at least once each day.

A. Tent enclosures may only be used where specifically permitted by Code Rule 56 or a Site Specific Variance issued by the NYS Department of Labor. B. The Contractor shall restrict access to the immediate area where tent removal procedures are taking place using barrier tape and/or construction barriers. Caution signs shall

2. Remote personnel decontamination enclosures shall be constructed. Configuration shall be as required by Project size and a washroom with attached airlock shall be constructed contiguous to the tent enclosure for small and large size tent enclosure work areas. For tent enclosures with gross abatement of friable materials, a contiguous

decontamination system shall be constructed, maintained and utilized, except for minor size tent enclosure work areas where an adjacent decontamination room or area is permitted by Code Rule 56. D. The Work Area shall be precleaned. All objects and equipment that will remain in the restricted area during abatement shall be sealed with two layers of six mil polyethylene and tape. E. The tent shall be a single use barrier constructed with a rigid frame and at least two layers of six mil polyethylene unless one layer of six mil polyethylene is otherwise

permitted by Code Rule 56. Tents with twenty (20) square feet or less of floor space or no gross removal of friable ACM shall be constructed of one (1) layer of six mil

polyethylene and shall include walls, ceilings and a floor (except portions of walls, floors and ceilings that are the removal surface) with double folded seams. All seams shall be sealed airtight using duct tape and/or spray adhesive. F. The tent shall be constructed with at least one airlock for worker/waste egress.

G. A manometer shall be used for all OSHA Class I abatement. H. Negative air shall be maintained at four (4) air changes per hour for non-friable and glovebag abatement tent enclosure work areas. Eight (8) air changes shall be maintained for friable gross removal tent enclosure work areas. In a Minor size abatement tent enclosure work area a HEPA vacuum may be used to maintain the required air changes. OSHA compliance air monitoring is required per section 1.09.

ACM removal shall follow procedures defined in section 3.07.

Waste material shall be placed in properly labeled 6 mil plastic bags or other appropriate containers. The outside of the bags or containers shall be wet wiped and/or HEPA vacuumed in the washroom and shall then be placed in a second bag/container before being transferred to the waste storage container. All transportation of waste bags and containers outside the Work Area shall be in watertight carts. These carts shall be held in the holding area until transfer to the waste container. The carts shall be wet cleaned and/or HEPA vacuumed at least once each day

Following completion of gross abatement and after all accumulations of asbestos waste materials have been containerized, the following decontamination procedures shall be 1. All bagged asbestos waste and unnecessary equipment shall be decontaminated and removed from the Work Area.

2. All surfaces in the Work Area shall be wet cleaned. A wet_purpose shop vacuum may be used to pick up excess liquid, and shall be decontaminated prior to removal

from the Work Area. . The Contractor shall then apply a thin coat of encapsulant to all non-removal surfaces covered with plastic in the Work Area. In no event shall encapsulant be applied to any surface that was the subject of removal prior to obtaining satisfactory air monitoring results. Encapsulants shall be pigmented or tinted to provide an indication for completeness of coverage. The APM shall determine adequacy of coverage.

After the waiting/settling/drying time requirements have elapsed, the Asbestos Project Monitor shall conduct a visual inspection of the Work Area for cleanliness and completion of abatement. The APM shall document the results of the visual inspection in the Project Monitor Log and Contractor's Daily Project Log. After satisfactory APM visual inspection, aggressive final clearance air sampling shall then be conducted by the Environmental Consultant. 5. Upon receipt of satisfactory final clearance air sampling results, the tent shall be collapsed into itself, placed in suitable disposal bags, and transferred through the washroom to the waste decontamination enclosure. Isolation and critical barriers shall then be removed and bagged as asbestos waste followed by satisfactory visual

inspections by the project supervisor and the APM for cleanliness. GLOVEBAG REMOVAL a. Glovebag removals may only be used as specifically permitted by Code Rule 56 or a Site Specific Variance issued by the NYS Department of Labor. Glovebags may only be used on pipe or duct insulation 3. In addition to conformance with applicable regulations and variances, glovebag removals are only permitted to be conducted within tent enclosures complying with these

The Contractor shall restrict access to the immediate area where tent/glovebag removal procedures are taking place using barrier tape and/or construction barriers. Caution Remote personnel decontamination enclosures shall be constructed. Configuration shall be as required by Project size and a washroom with attached airlock shall be constructed contiguous to the tent enclosure

Glovebag removals shall utilize commercially available glovebags of at least six mil thickness. Use shall be in accordance with the manufacturer's instructions and the The sides of the glovebag shall be cut to fit the size pipe being removed. Tools shall be inserted into the attached tool pocket. 2. The glovebag shall be placed around the pipe and the open edges shall be folded and sealed with staples and duct tape. The glovebag shall also be sealed at the pipe to

form a tight seal. 3. Openings shall be made in the glovebag for the wetting tube and HEPA vacuum hose. The opening shall be sealed to form a tight seal. 4. All glovebags shall be smoke tested by the Asbestos Project Monitor under negative pressure using the HEPA vacuum before removal operations commence.

Glovebags that do not pass the smoke test shall be resealed and then retested 5. After first wetting the materials to be removed, removal may commence. ACM shall be continuously wetted. After removal of the ACM, the piping shall be scrubbed or brushed so that no visible ACM remains. Open ends of pipe insulation shall be encapsulated. 6. After the piping is cleaned, the inside of the glovebag shall be washed down and the wetting tube removed. Using the HEPA vacuum, the glovebag shall be collapsed

and then twisted and sealed with tape with the ACM at the bottom of the bag. A disposal bag shall be placed around the glovebag that is then detached from the pipe. The disposal bag is then sealed and transferred through the washroom to the waste storage container. After glovebag removals are complete, tent decontamination procedures shall be followed.

NON-FRIABLE FLOORING AND/OR MASTIC REMOVALS A. The following procedures may only be used for the removal of non-friable flooring and/or mastic materials using manual and chemical methods. These procedures shall not apply to beadblaster use or other abrasive abatement methods. The Contractor shall restrict access to the immediate Work Area where non-friable ACM removal procedures are taking place using barrier tape and/or construction barriers. Caution signs shall be posted

Remote personnel decontamination enclosures may be utilized and shall be constructed at a location in accordance with the approved Work Plan. A washroom with attached airlock shall be constructed contiguous to each Work area enclosure. The Work Area shall be prepared per section 3.05, except that ceilings, walls, and floors need not be fully plasticized However, a four-foot high single layer of 6-mil fire retardant plastic sheeting shall be installed as a splashguard at all walls adjoining mastic removal portions of the work area, to prevent damage to the existing walls.

Negative air shall be maintained at six (6) air changes per hour. F. OSHA compliance air monitoring is required per section 1.09.

G. ACM removal shall follow procedures defined in section 3.07. H. Waste material shall be placed in properly labeled 6 mil plastic bags or other appropriate containers. The outside of the bags or containers shall be wet wiped and/or HEPA vacuumed in the washroom and double-bagged before being passed into the airlock. The bags or containers shall then be transported to the waste storage container. All transportation of waste bags and containers outside the Work Area shall be in watertight carts.

Following completion of gross abatement and after all accumulations of asbestos waste materials have been containerized, the following decontamination procedures shall be . All bagged asbestos waste and unnecessary equipment shall be decontaminated and removed from the Work Area. 2. All plastic sheeting splashguards shall be removed and containerized, followed by all surfaces in the Work Area being wet cleaned. A wet purpose shop vacuum may be used to pick up excess liquid, and shall be decontaminated prior to removal from the Work Area.

The Contractor shall then apply a thin coat of encapsulant to all non-removal surfaces in the Work Area. In no event shall encapsulant be applied to any surface that was the subject of removal prior to obtaining satisfactory air monitoring results. Encapsulants shall be pigmented or tinted to provide an indication for completeness of coverage. The APM shall determine adequacy of coverage. 4. After the waiting/settliong/drying time requirements have elapsed, the Asbestos Project Monitor (APM) shall conduct a visual inspection of the Work Area for cleanliness and completion of abatement. The APM shall document the results of the visual inspection in the Project Monitor Log and Contractor's Daily Project Log.

6. Upon receipt of satisfactory final clearance air sampling results, the isolation and critical barriers shall be removed and bagged as asbestos waste. Following this and satisfactory inspections by the project supervisor and the APM for cleanliness the decontamination enclosures shall be removed. RESTORATION OF UTILITIES, FIRESTOPPING, AND FINISHES A. After final clearance, remove locks and restore electrical and HVAC systems. All temporary power shall be disconnected, power lockouts removed and power restored. All temporary plumbing shall be removed.

After satisfactory APM visual inspection, aggressive final clearance air sampling shall then be conducted by the Environmental Consultar

B. Finishes damaged by asbestos abatement activities including, but not limited to, plaster/paint damage due to duct tape, staples, and spray adhesives, and floor tile lifted due to wet or humid conditions, shall be restored prior to final payment. Finishes unable to be restored shall be replaced under this Contract at the Contractor's expense. 2. All foam and expandable foam products and materials used to seal Work Area openings shall be completely removed upon completion of abatement activities. All penetrations (including, but not limited to, pipes, ducts, etc.) through fire rated construction shall be firestopped using materials and systems tested in accordance with

transport.

ASTM E814 on Projects where reinsulation is part of the required work.

DISPOSAL OF ASBESTOS WASTE TRANSPORTATION AND DISPOSAL SITE A. The Contractor's Hauler and Disposal Site shall be approved by the Owner. All waste generated during the asbestos project shall be disposed of as RACM asbestos

B. The Contractor shall give twenty-four (24) hour notification prior to removing any waste from the site. Waste shall be removed from the site only during normal working hours unless otherwise specified. No waste may be taken from the site unless the Contractor and Environmental Consultant are present and the Environmental Consultant authorizes the release of the waste as described herein. All waste generated as part of the asbestos project shall be removed from the site within ten (10) calendar days after successful completion of all asbestos abatement D. Upon arrival at the Project Site, the Hauler must possess and present to the Environmental Consultant a valid New York State Department of Environmental

Conservation Part 364 Asbestos Hauler's Permit. The Environmental Consultant may verify the authenticity of the hauler's permit with the proper authority. E. The Hauler, with the Contractor and the Environmental Consultant, shall inspect all material in the transport container prior to taking possession and signing the Asbestos Waste Manifests WASTE STORAGE CONTAINERS A. All waste containers shall be fully enclosed and lockable (i.e. enclosed dumpster, trailer, etc.). No open containers will be permitted on-site (i.e. open dumpster with

canvas cover, etc.) unless specifically permitted by applicable regulation or a Site Specific Variance. When asbestos contaminated waste must be kept on the work site overnight or longer, it shall be double bagged and stored in accordance with Federal, State, and local laws. The Environmental Consultant shall verify that the waste storage container and/or truck tags (license plates) match that listed on the New York State Department of Environmental Conservation Part 364 permit. Any container not listed on the permit shall be removed from the site immediately

The container shall be plasticized and sealed with two (2) layers of 6 mil polyethylene. Once on site, it shall be kept locked at all times, except during load out. The waste container shall not be used for storage of equipment or contractor supplies. D. While on-site, the container shall be labeled with EPA Danger signage: DANGER **CONTAINS ASBESTOS FIBERS**

G. Waste generated off-site is not permitted to be brought onto the Project site and loaded into the waste container.

AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD The New York State Department of Environmental Conservation Asbestos Hauler's Permit number shall be stenciled on both sides and back of the container. The container is not permitted to be loaded unless it is properly plasticized, has the appropriate danger signage affixed, and has the permit number appropriately stenciled on the container.

H. All asbestos waste removed from the project site shall be transported directly to the disposal site without any additional waste being added to the container during

PROJECT TITLE

SAUNDERS TRADES AND TECHNICAL HIGH SCHOOL HVAC **UPGRADES**

PROJECT ADDRESS

183 PALMER RD YONKERS, NY 10701

OWNER

YONKERS PUBLIC SCHOOLS

ARCHITECT

FULLER AND D'ANGELO P.C.

> **45 KNOLLWOOD ROAD** ELMSFORD, NY 10523 (T) 914.592.4444

MEP ENGINEER AND ENVIRONMENTAL ENGINEER



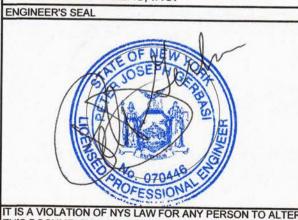
KEY PLAN: NOT TO SCALE

SHE	ET SIZE	30X42

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		RAMCHARAN

CHK'D BY: C. ZANONI - 92-16430

LIRO ENGINEERS, INC.

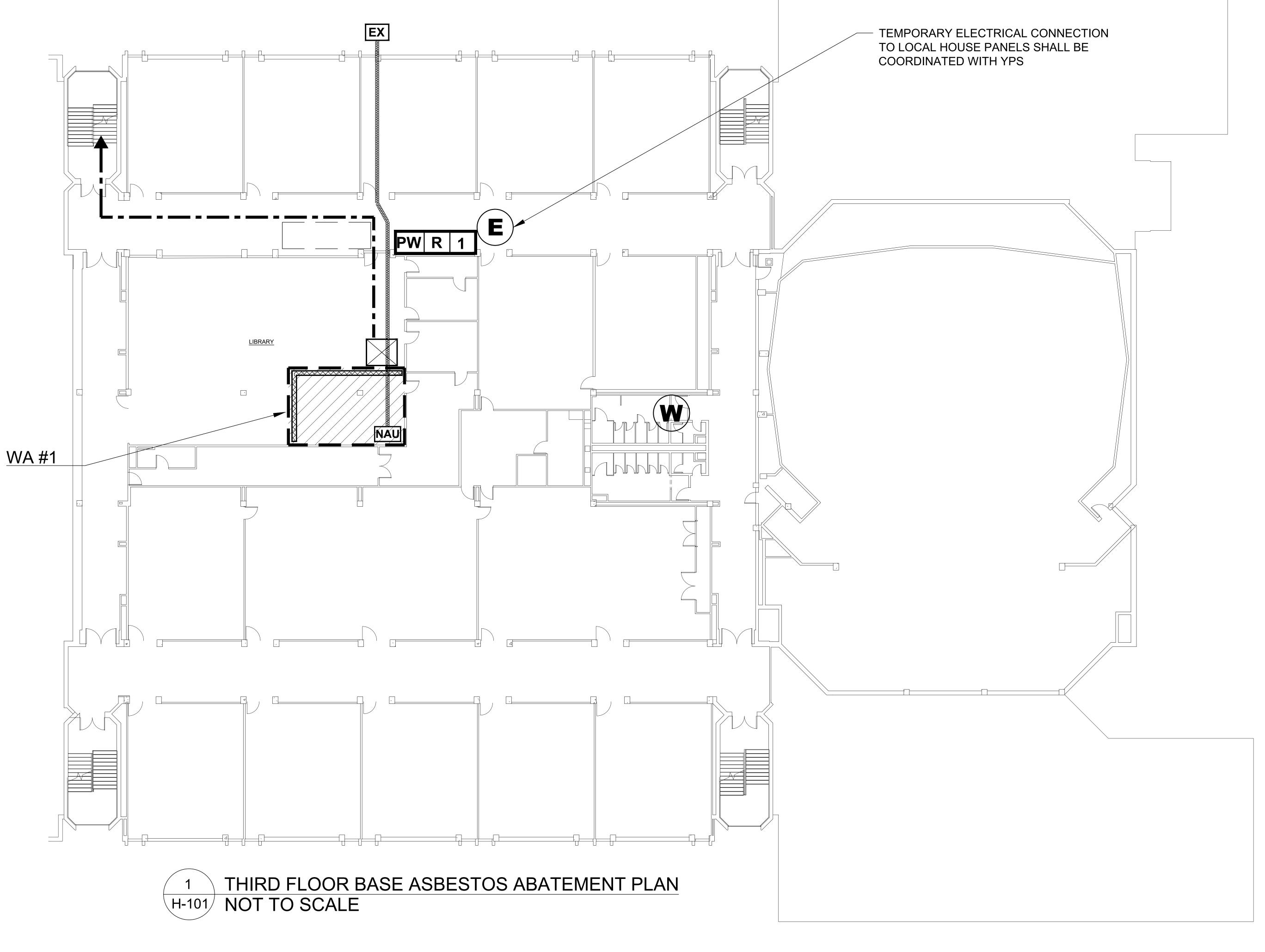


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NOTES

ASBESTOS ABATEMENT

H-100B



LEGEND - TEMPORARY ELECTRIC - WORK AREA LIMITS - FLOOR TILES - 9"X9" BEIGE - WASTE ROUTE - NEGATIVE AIR UNIT REMOTE SMALL PROJECT **DECONTAMINATION UNIT** - AIRLOCK - TEMPORARY WATER - ISOLATION BARRIER

PROJECT TITLE

SAUNDERS TRADES AND TECHNICAL HIGH SCHOOL HVAC UPGRADES

PROJECT ADDRESS

183 PALMER RD YONKERS, NY 10701

OWNER

YONKERS PUBLIC SCHOOLS

ARCHITECT

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MEP ENGINEER AND ENVIRONMENTAL ENGINEER



KEY PLAN: NOT TO SCALE

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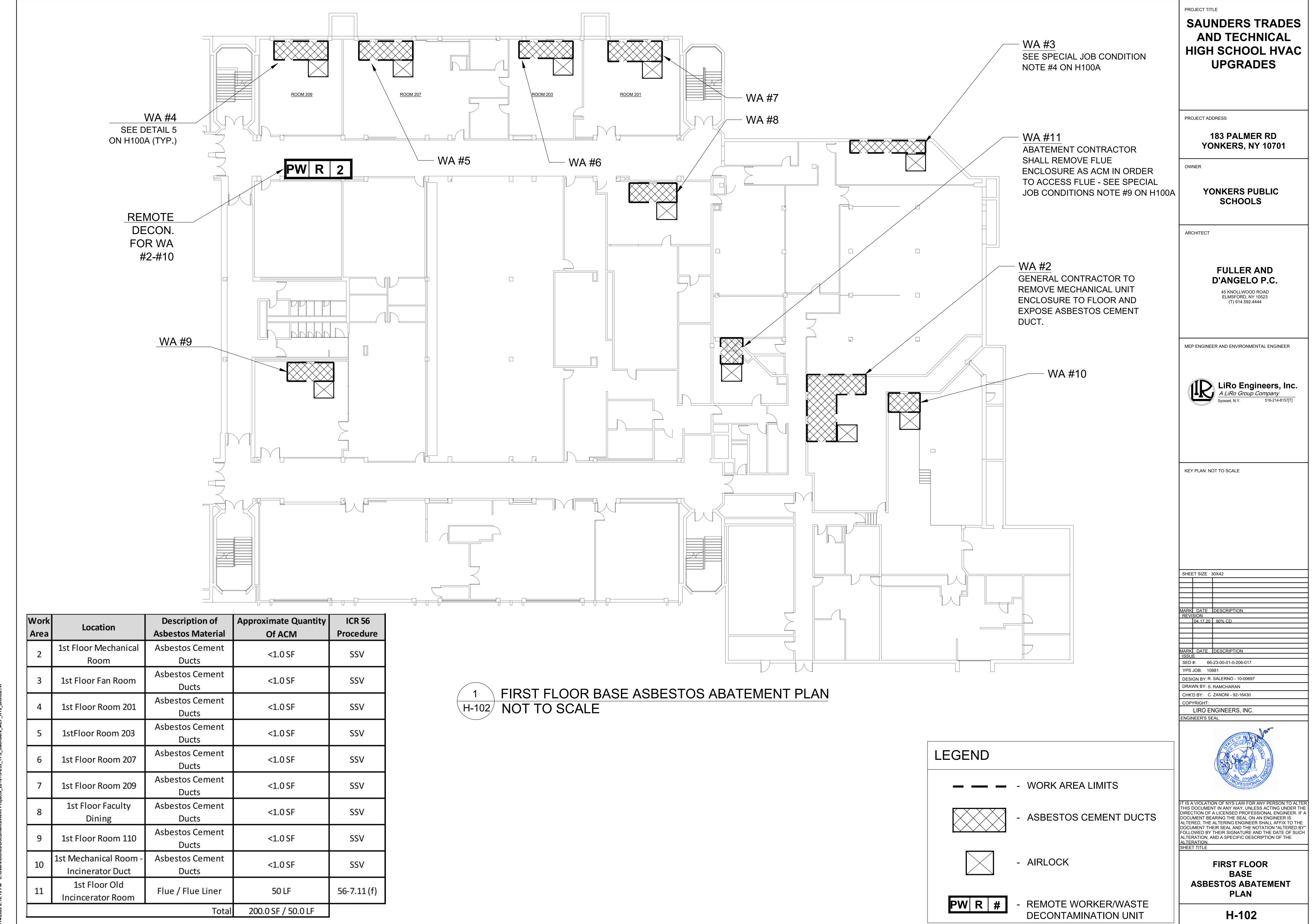


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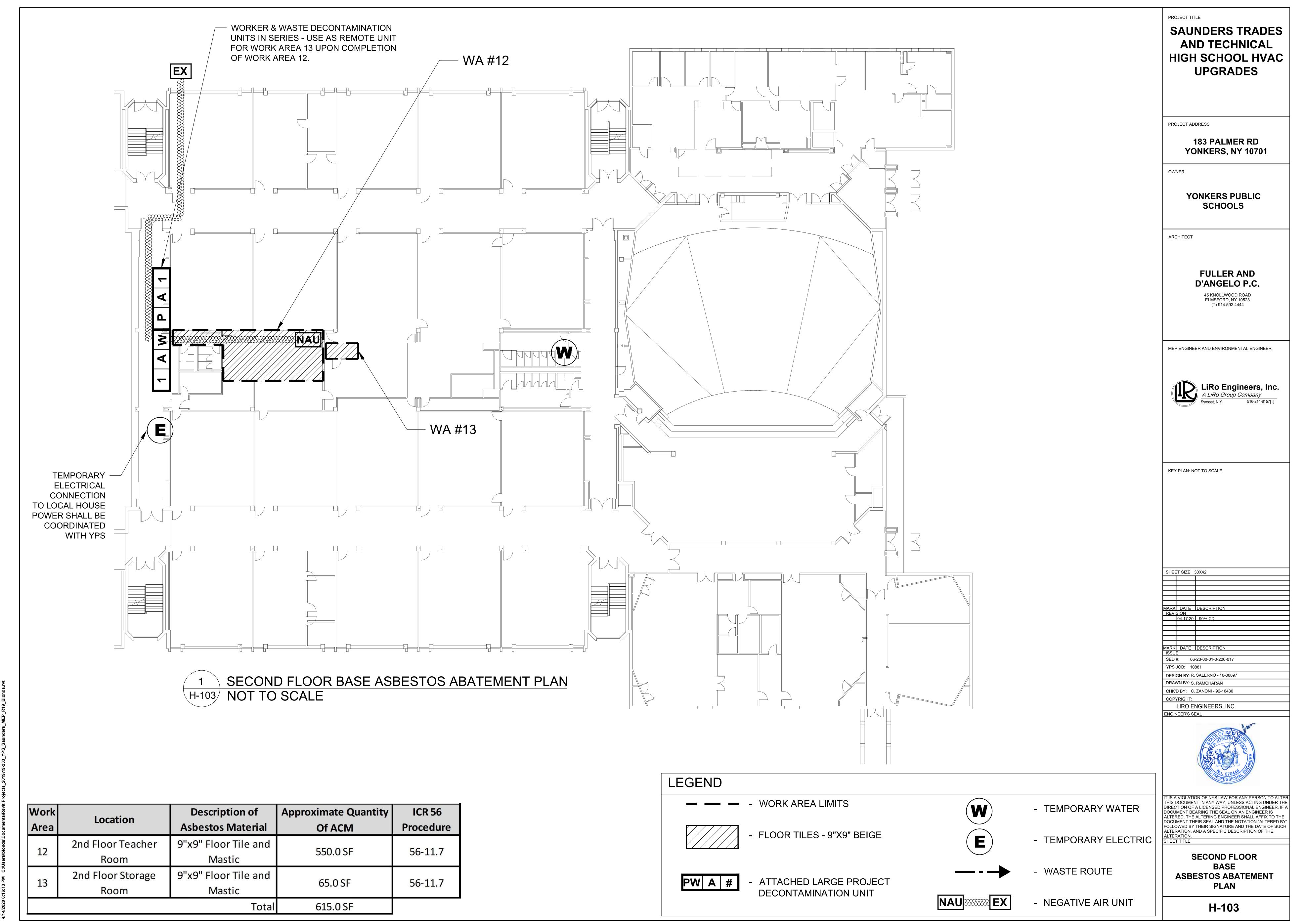
THIRD FLOOR **BASE ASBESTOS ABATEMENT PLAN**

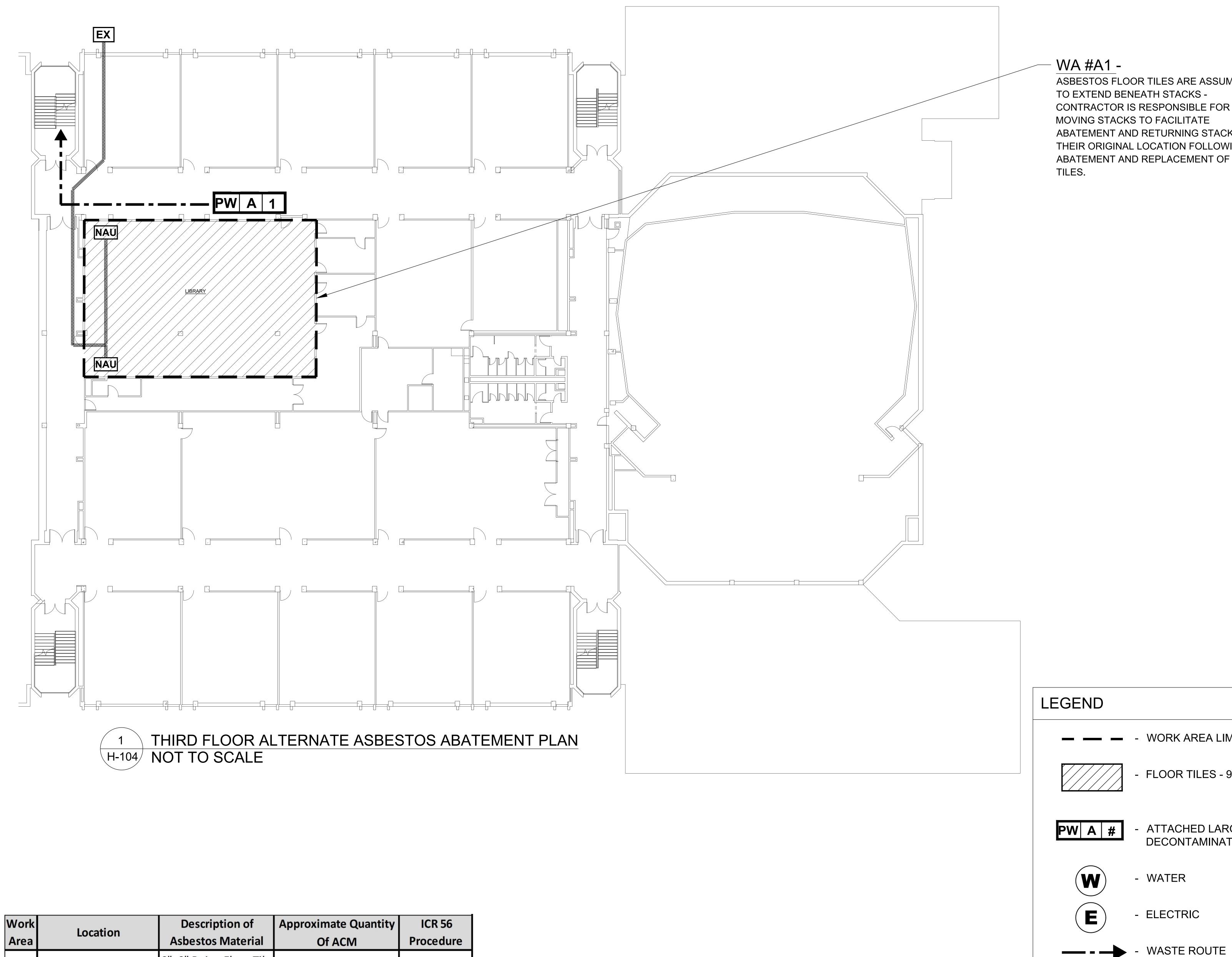
H-101

Work	Location	Description of	Approximate Quantity	ICR 56
Area	Location	Asbestos Material	Of ACM	Procedure
1	3rd Floor Library (Corner)	9"x9" Beige Floor Tile and Mastic	200.0 SF	56-11.7
		Total	200.0 SF	



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ASBESTOS FLOOR TILES ARE ASSUMED TO EXTEND BENEATH STACKS -CONTRACTOR IS RESPONSIBLE FOR MOVING STACKS TO FACILITATE ABATEMENT AND RETURNING STACKS TO THEIR ORIGINAL LOCATION FOLLOWING ABATEMENT AND REPLACEMENT OF

WA #A1 -

- WORK AREA LIMITS

- FLOOR TILES - 9"X9" BEIGE

- ATTACHED LARGE PROJECT

DECONTAMINATION UNIT

- WATER

- ELECTRIC

- NEGATIVE AIR UNIT

PROJECT ADDRESS

PROJECT TITLE

YONKERS, NY 10701

OWNER

YONKERS PUBLIC SCHOOLS

SAUNDERS TRADES

AND TECHNICAL

HIGH SCHOOL HVAC

UPGRADES

183 PALMER RD

ARCHITECT

FULLER AND D'ANGELO P.C.

45 KNOLLWOOD ROAD ELMSFORD, NY 10523 (T) 914.592.4444

MEP ENGINEER AND ENVIRONMENTAL ENGINEER



KEY PLAN: NOT TO SCALE

SHEE	ET SIZE	30X42
MARK	DATE	DESCRIPTION
REVI	SION	
	04.17.20	90% CD
MARK	DATE	DESCRIPTION

SED #: 66-23-00-01-0-206-017

DESIGN BY: R. SALERNO - 10-00697 CHK'D BY: C. ZANONI - 92-16430

LIRO ENGINEERS, INC. ENGINEER'S SEAL

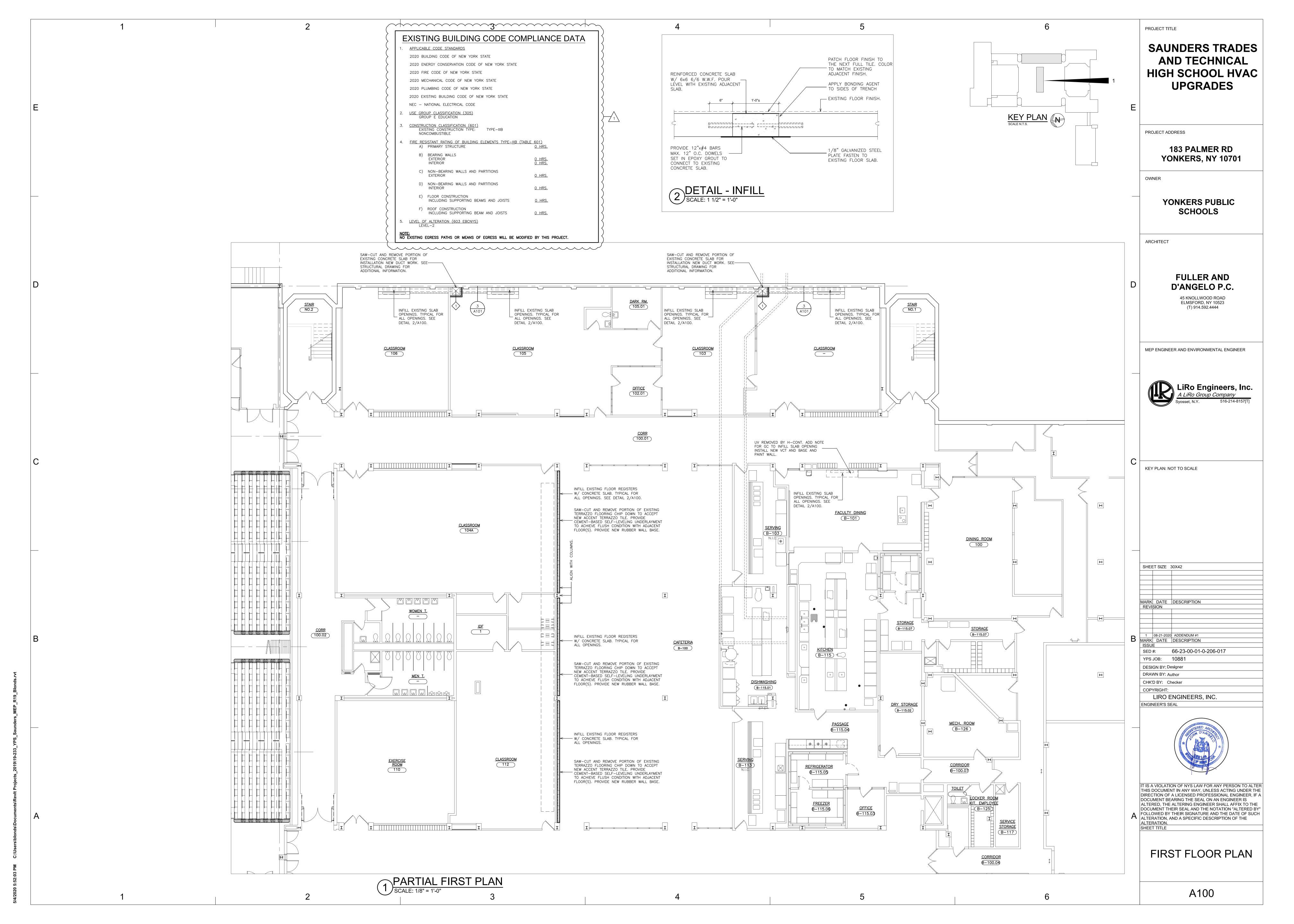


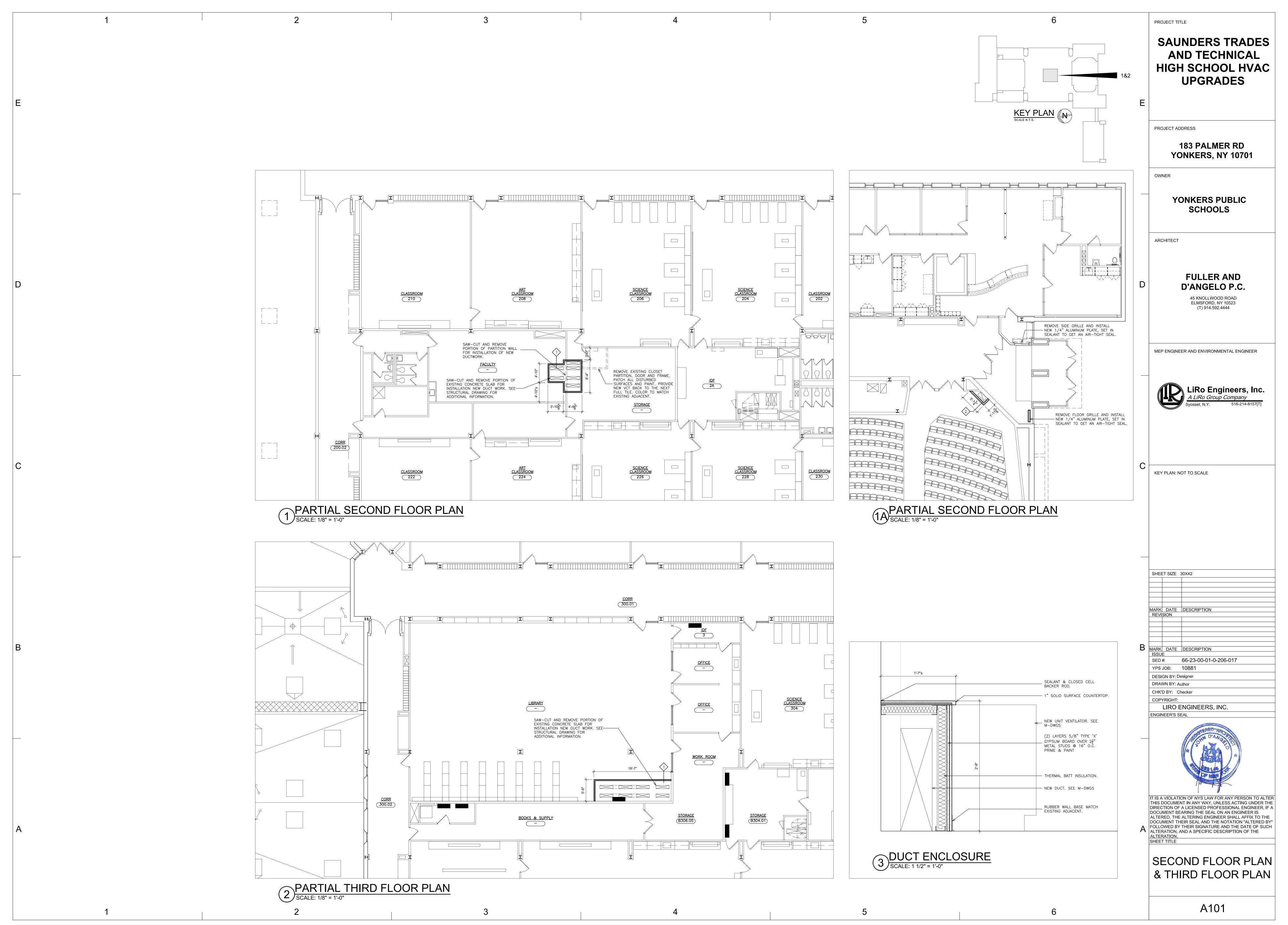
IT IS A VIOLATION OF NYS LAW FOR ANY PERSON TO ALTER THIS DOCUMENT IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. IF A DOCUMENT BEARING THE SEAL ON AN ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE DOCUMENT THEIR SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE

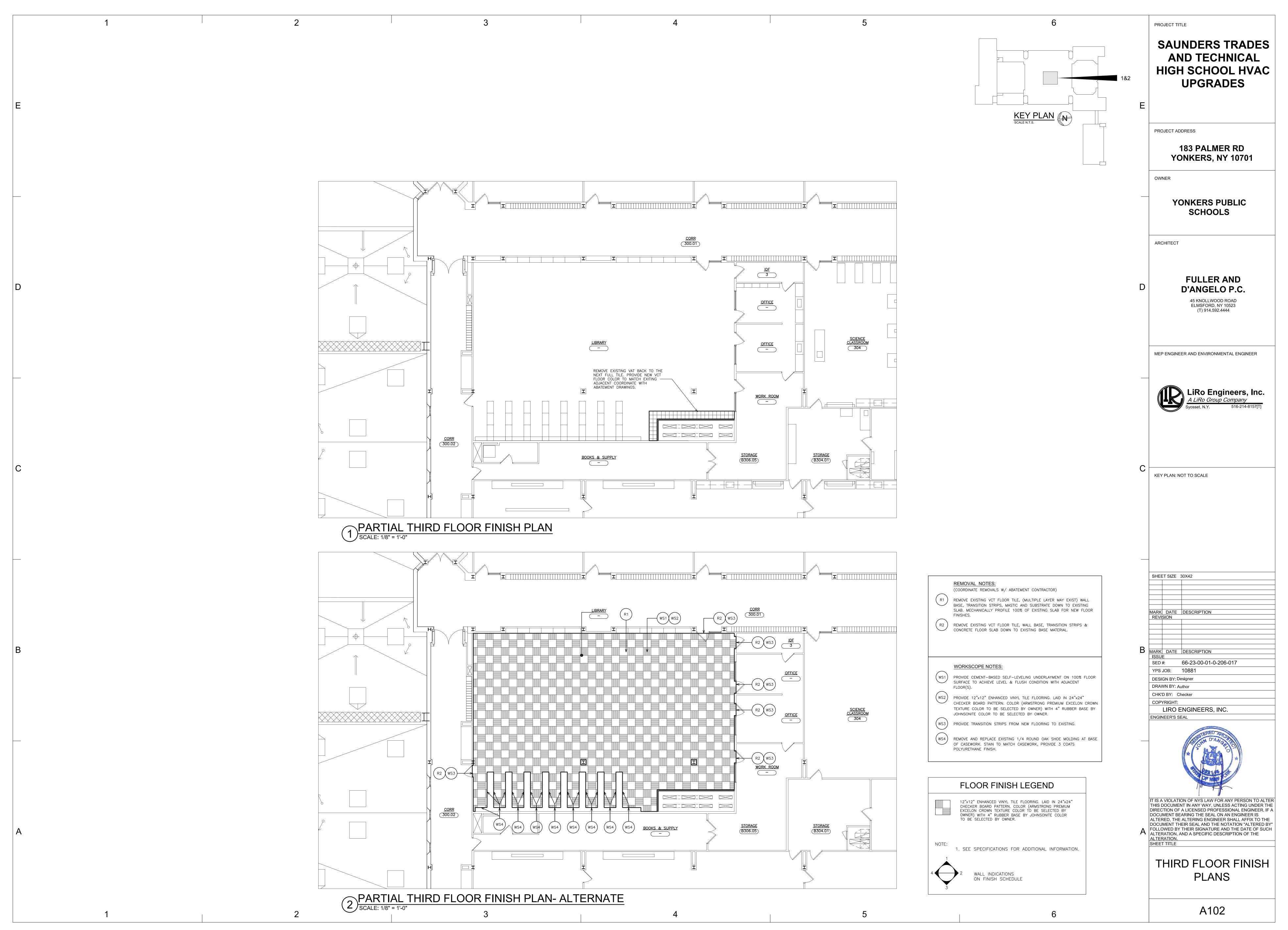
THIRD FLOOR **ALTERNATE ASBESTOS ABATEMENT PLAN**

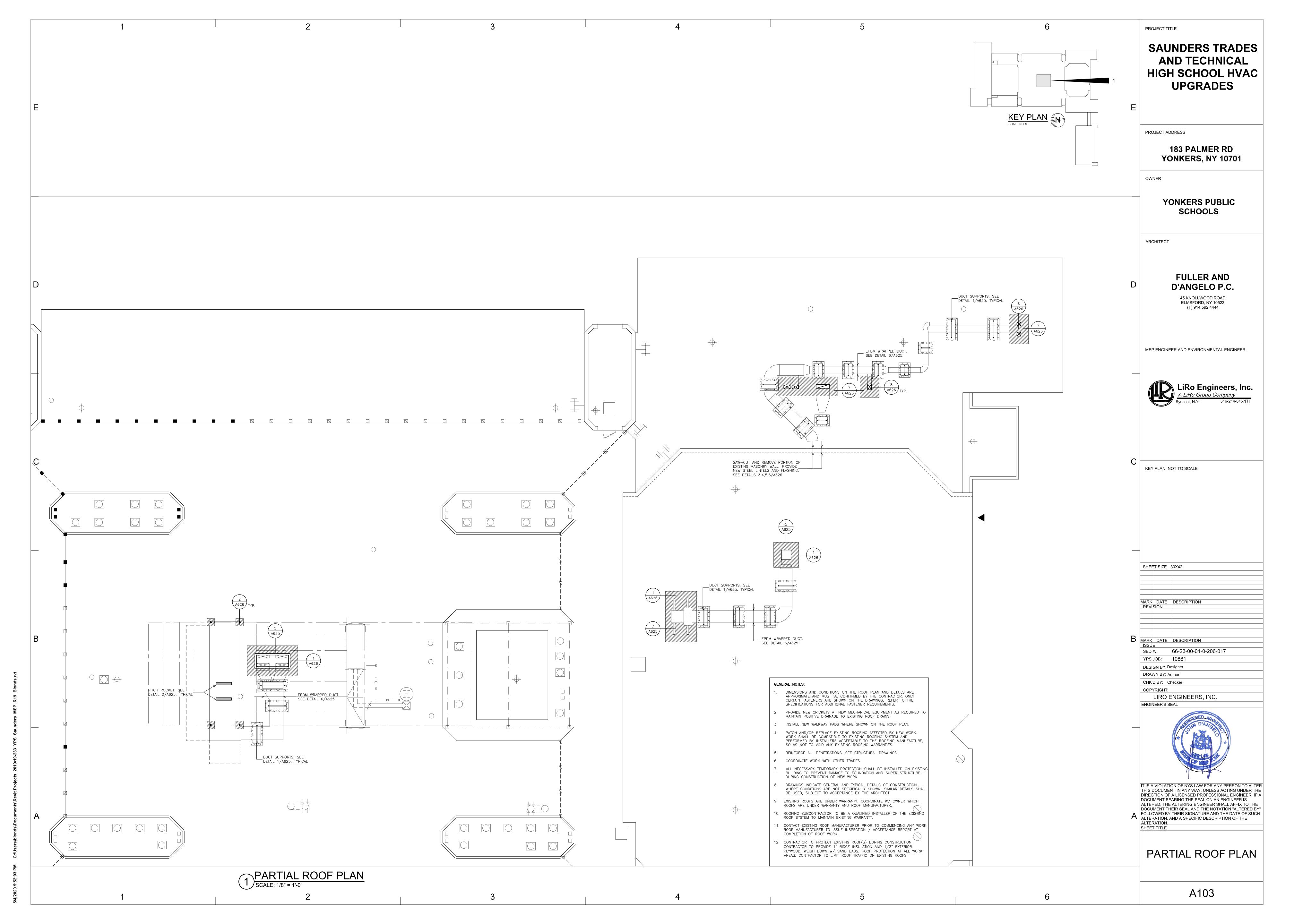
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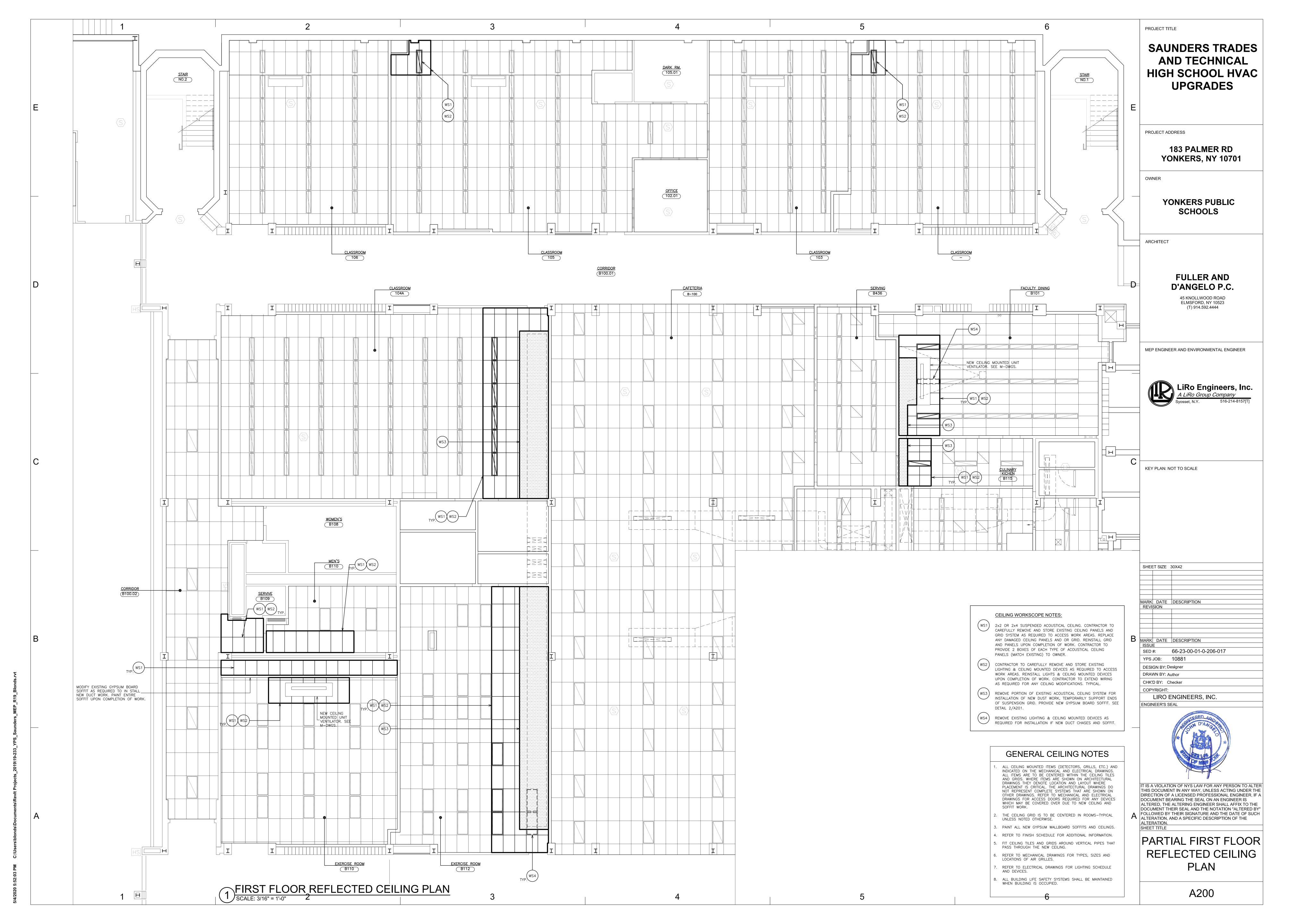
Work Area	Location	Description of Asbestos Material	Approximate Quantity Of ACM	Procedure
A1	3 rd Floor Library	9"x9" Beige Floor Tile and Mastic	2,450.0 SF	56-11.7
		Total	2,450.0 SF	

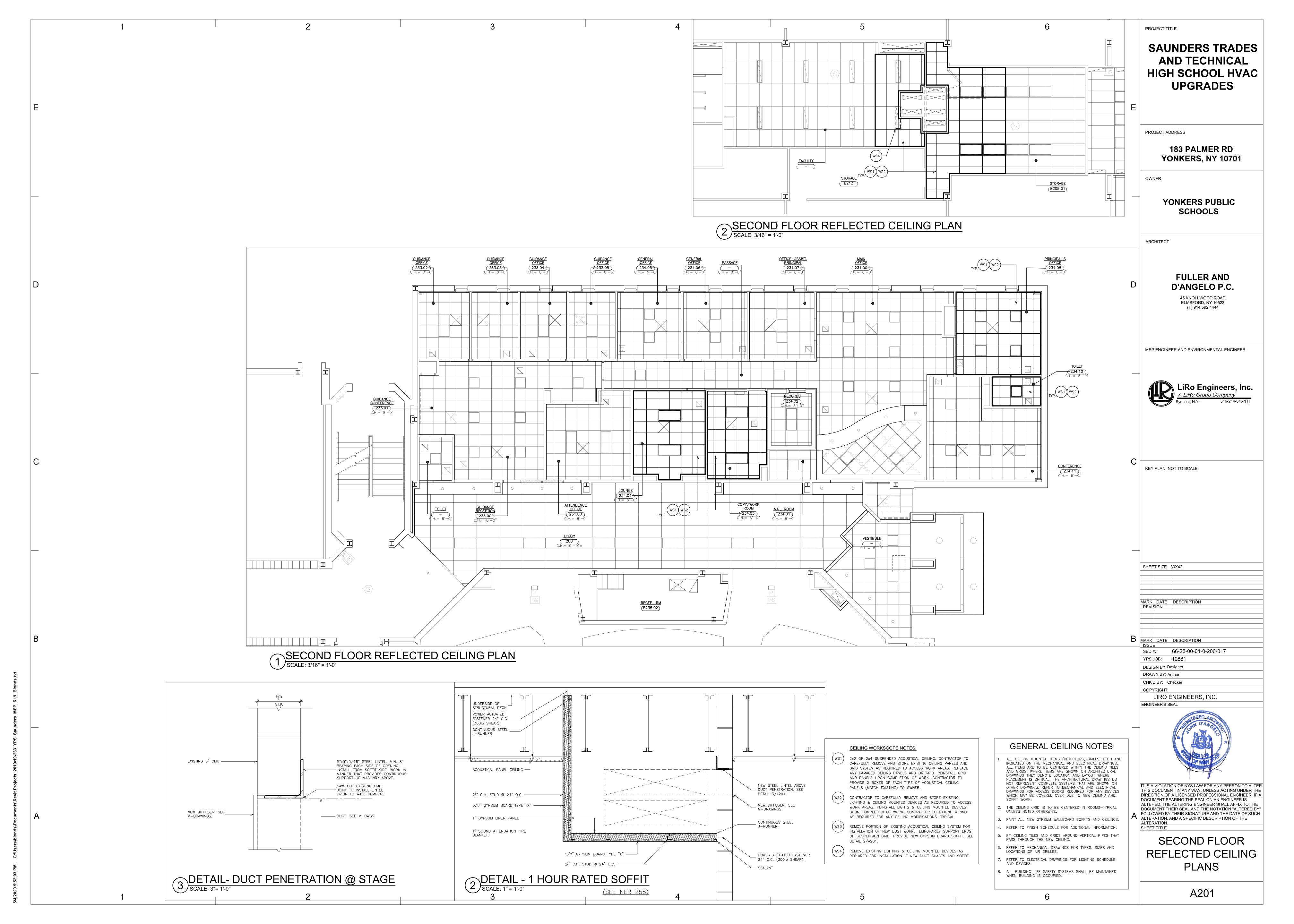


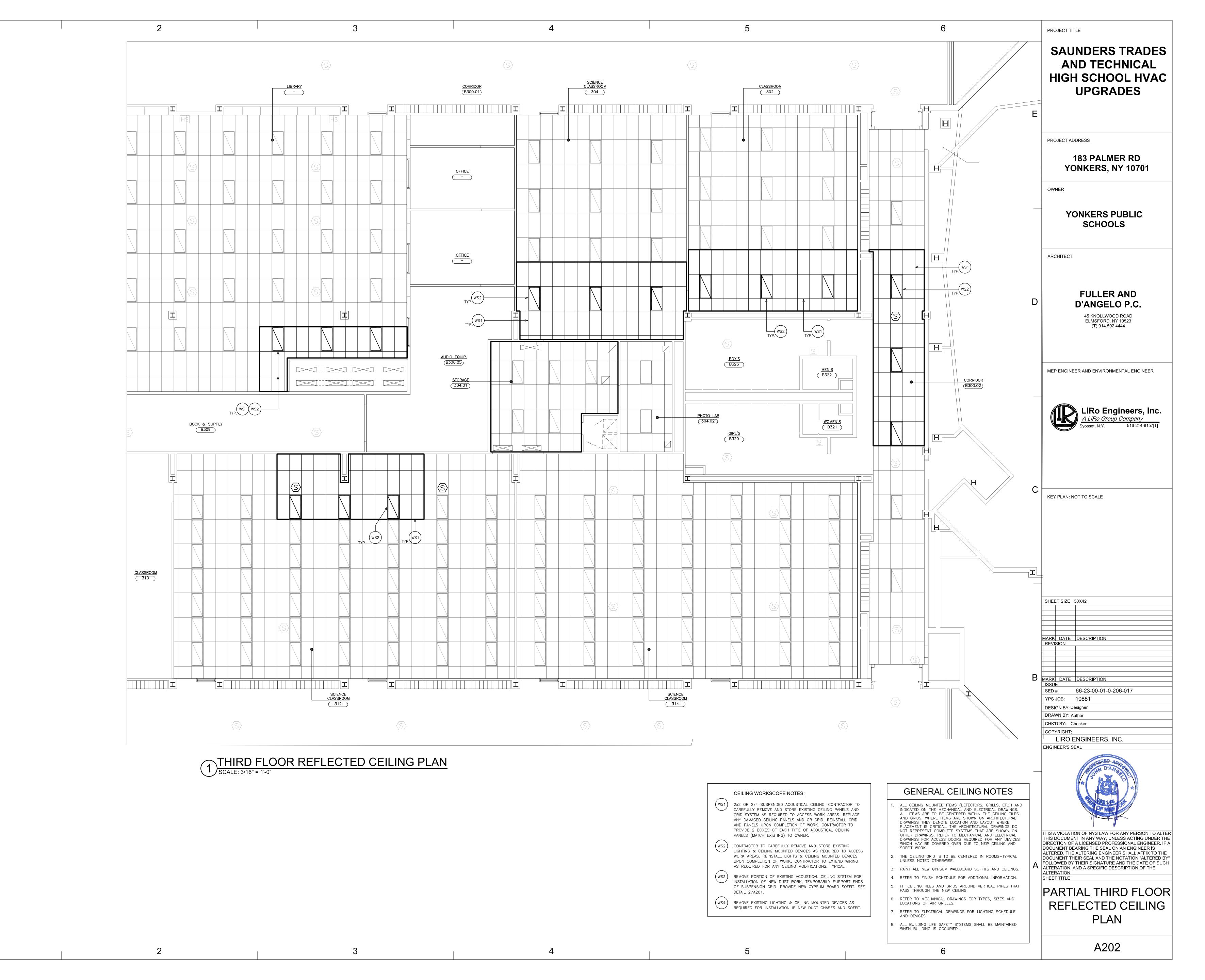




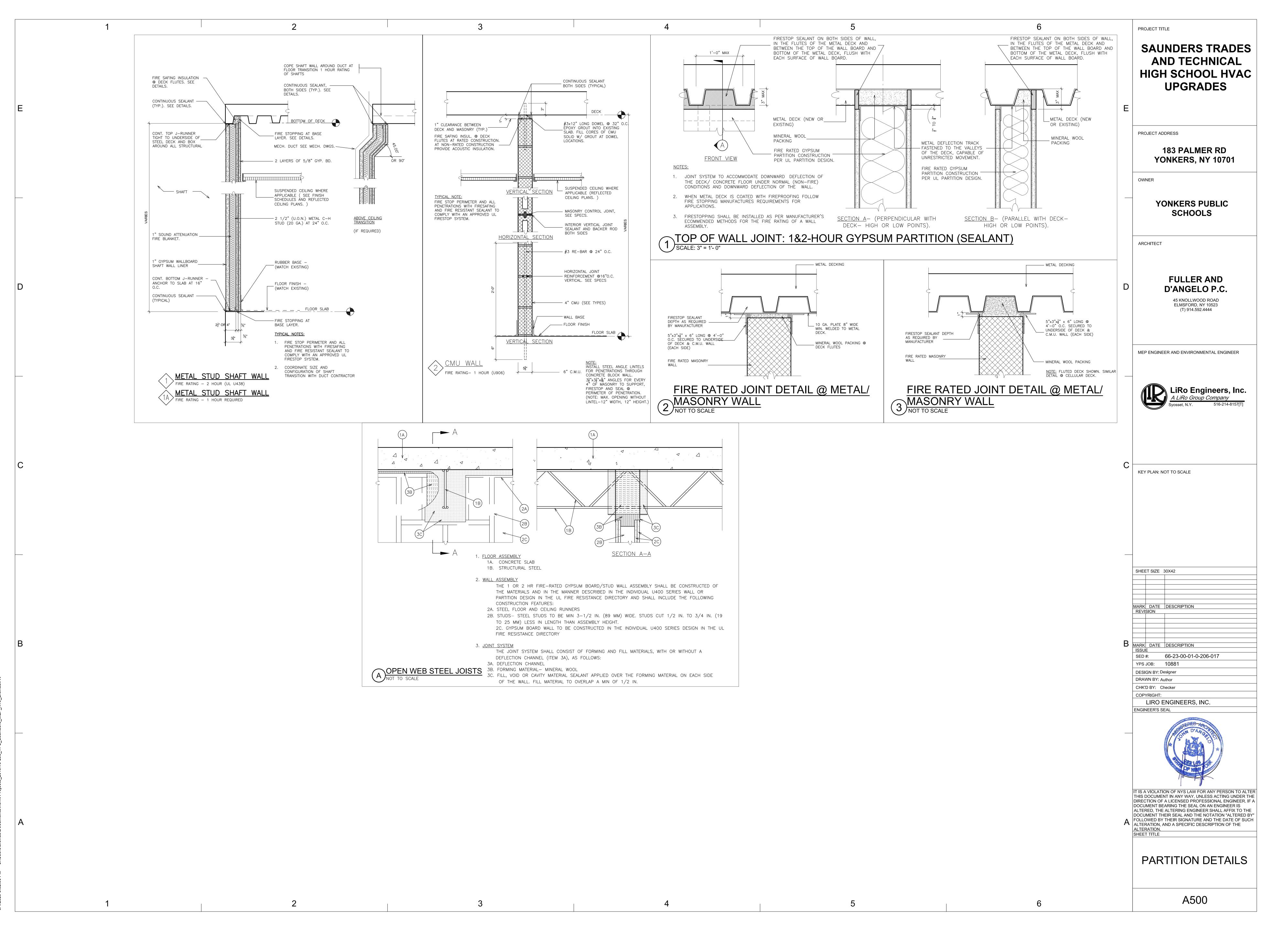




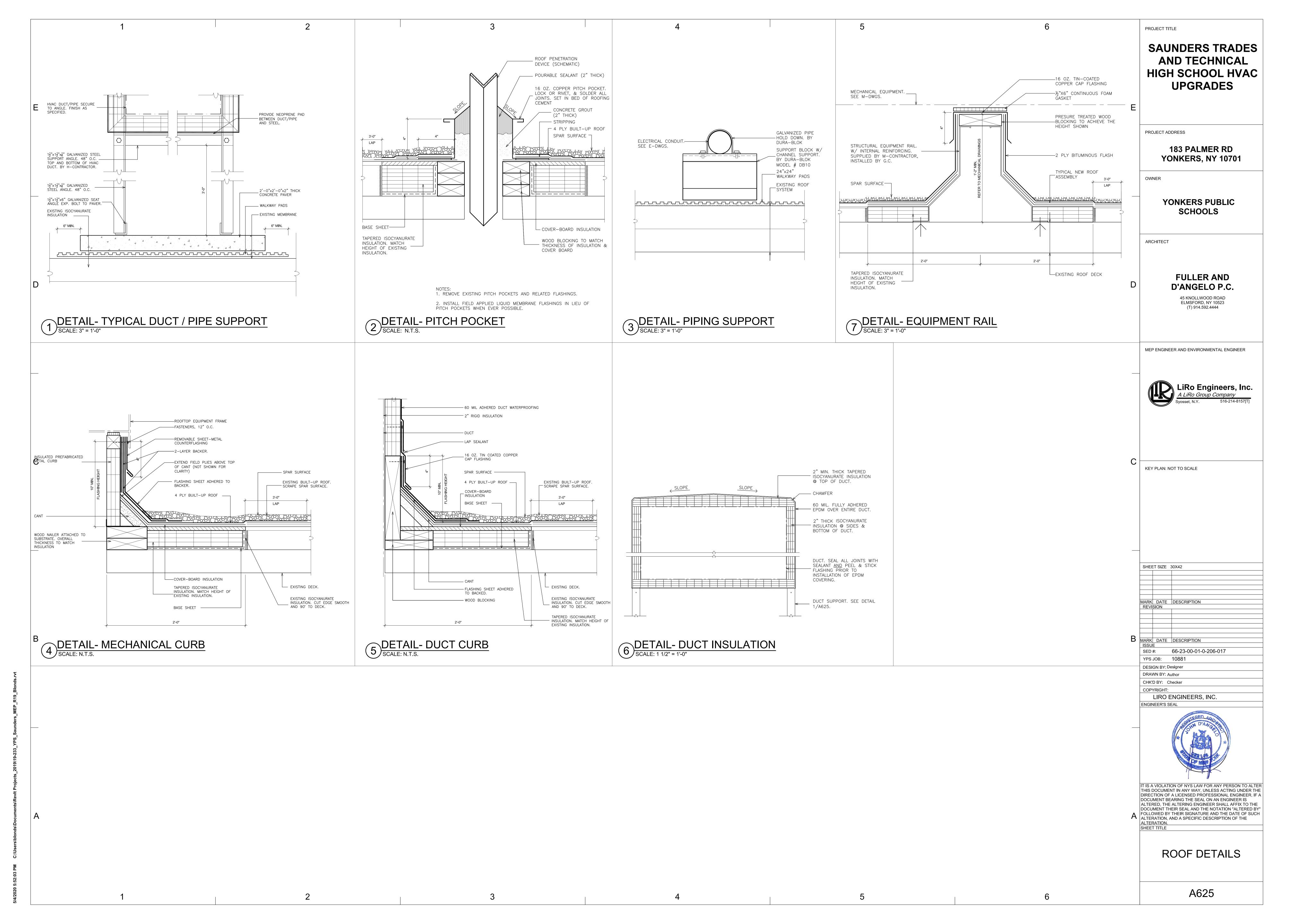


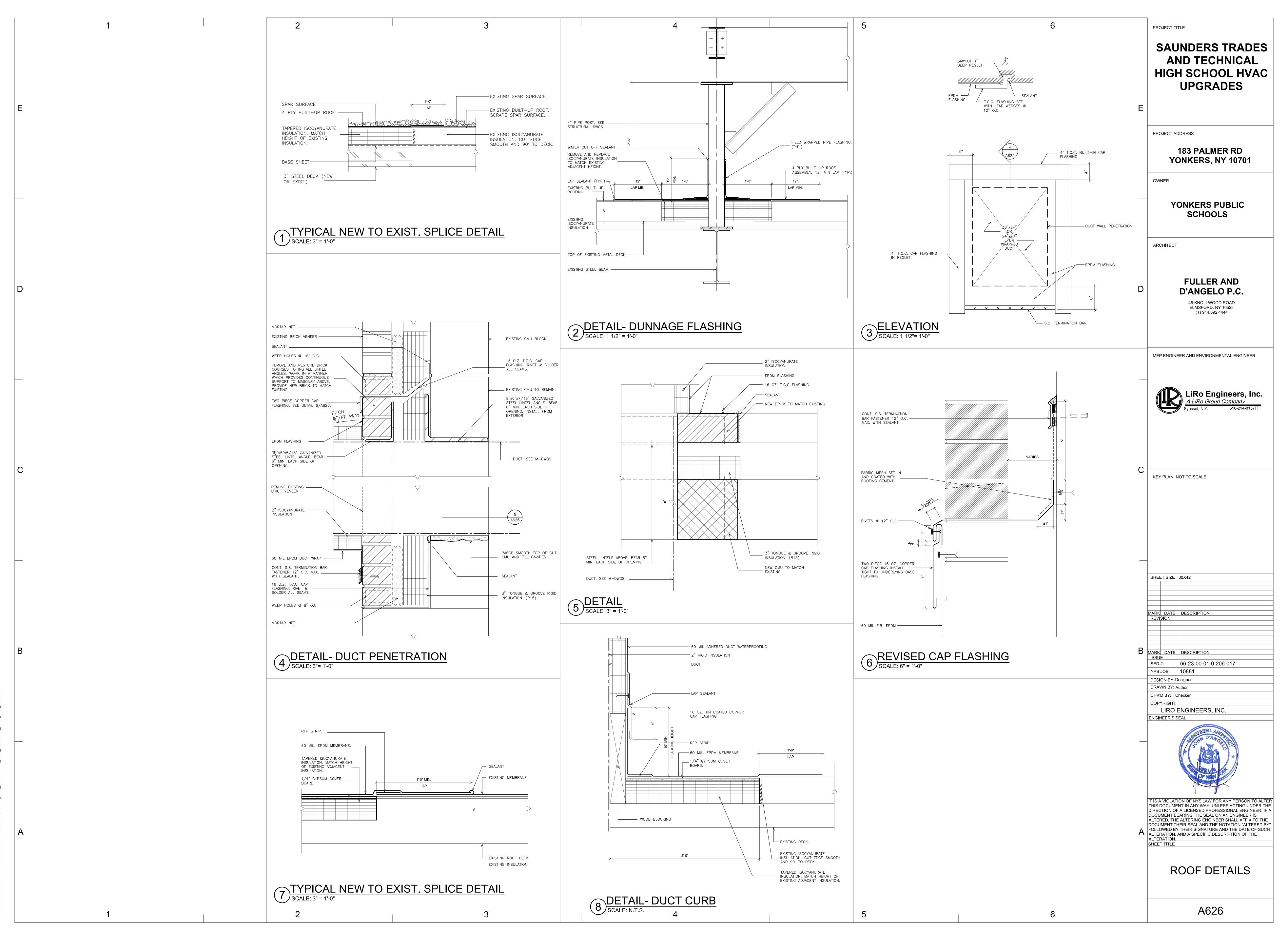


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PROJECT TITLE SAUNDERS TRADES **GENERAL NOTES:** CONCRETE: AND TECHNICAL **ABBREVIATIONS** 1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE WITH NEW 1. ALL CONCRETE WORK SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI-318-14) AND COMMENTARY. YORK STATE SUPPLEMENT. HIGH SCHOOL HVAC H.S. - HIGH STRENGTH MAX. - MAXIMUM 2. CONTRACTOR SHALL COORDINATE STRUCTURAL DRAWINGS WITH MECHANICAL & ELECTRICAL DRAWINGS. 2. ALL CONCRETE SHALL BE 4000 P.S.I. CONTROLLED STONE CONCRETE, AIR ENTRAINED. **UPGRADES** S.C. - SLIP CRITIAL CONNECTION TYP. - TYPICAL 3. CONTRACTOR SHALL CONFORM TO PROJECT SPECIFICATIONS IN ADDITION TO THESE GENERAL NOTES. 3. REINFORCING STEEL, STIRRUPS AND TIES SHALL CONFORM TO ASTM A-615, GRADE 60 4. THE CONTRACTOR SHALL NOT MAKE DEVIATIONS FROM DESIGN DRAWINGS WITHOUT WRITTEN APPROVAL FROM THE 4. ALL CONCRETE SHALL BE AIR-ENTRAIN, AIR ENTRAINING ADMIXTURE SHALL CONFORM TO ASTM-C260. 5. IF THERE IS A DISCREPANCY ON THE CONSTRUCTION DOCUMENTS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY SO 5. MIXING WATER SHALL BE POTABLE. THE MAXIMUM WATER SOLUBLE CHLORIDE ION CONTENT THAT THE DISCREPANCY CAN BE RESOLVED. UNLESS OTHERWISE INDICATED IN WRITING BY THE ENGINEER, THE MORE SHOULD NOT EXCEED 0.10% OF CEMENT. CONSERVATIVE INTERPRETATION OF THE CONSTRUCTION DOCUMENTS SHALL APPLY. STRUCTURAL SYMBOL LEGEND 6. AIR CONTENT (AS DETERMINED IN ACCORDANCE WITH ASTM C173 OR C231): 51/2% ±1% FOR COARSE PROJECT ADDRESS 6. DO NOT SCALE DRAWINGS -- WRITTEN DIMENSIONS CONFIRMED BY FIELD CONDITIONS TAKE PRECEDENCE. IF AGGREGATE SIZE No. 467; 6%±1% FOR COARSE AGGREGATE SIZE No. 57 OR No. 67. S-XXX STRUCTURAL SHEET NUMBER DISCREPANCY ARISES BASED ON FIELD CONDITIONS, CONSULT WITH ARCHITECT/ENGINEER BEFORE PROCEEDING WITH WORK OR ORDERING MATERIALS. 7. SLUMP AS DETERMINED IN ACCORDANCE WITH ASTM C143, MEASURED AT THE POINT OF **183 PALMER RD** PLACEMENT INTO THE STRUCTURE; 4" MAXIMUM FOR SLABS. YONKERS, NY 10701 7. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE SAFETY OF THE PUBLIC AND PROPERTY DURING P - PLATE CONSTRUCTION OPERATIONS AND UNTIL COMPLETION OF ALL WORK. 8. MINIMUM CONCRETE COVERING OF REINFORCING STEEL SHALL BE AS FOLLOWS (UNLESS OTHERWISE NOTED): € -CENTERLINE 8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY PROTECTING ALL WORK DURING CONSTRUCTION AGAINST - 2" FOR SLABS DAMAGE, BREAKAGE, COLLAPSE, DISTORTION AND MISALIGNMENT. - 2" FOR INSIDE FACE OF WALLS Ø -DIAMETER OWNER 9. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY CHANGES TO THIS PROJECT MADE BY GENERAL CONTRACTOR OR 9. CALCIUM CHLORIDE SHALL NOT BE USED IN CONCRETE MIXES. ANY SUBCONTRACTOR OR MATERIAL SUPPLIER UNLESS PROPERLY AUTHORIZED, IN WRITING BY THE ENGINEER. 10. COLD WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI-306. UNLESS THE STRUCTURAL STEEL: YONKERS PUBLIC TEMPERATURE IS AT LEAST 40° F (4.4° C) AND RISING, WATER AND/OR AGGREGATES SHOULD BE HEATED SO THAT THE TEMPERATURE OF THE CONCRETE, WHEN PLACED, IS NOT LESS THAN 55° F **SCHOOLS** 1. ALL STRUCTURAL STEEL WORK SHALL CONFORM TO THE AISC SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS (13° C). PROVISION SHOULD BE MADE FOR MAINTAINING THE CONCRETE MOIST AND AT A MINIMUM INCLUDING THE CODE OF STANDARD PRACTICE AND SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR TEMPERATURE OF NOT LESS THAN 50° F (10° C) FOR A PERIOD OF AT LEAST 7 DAYS. A490 (F3125) BOLTS. 11. HOT WEATHER - WHEN THE AMBIENT TEMPERATURE IS 90° F (32° C) OR ABOVE, SPECIAL 2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING MINIMUM YIELD STRENGTHS AND SPECIFICATIONS, UNLESS PRECAUTIONS SHOULD BE TAKEN DURING BATCHING, MIXING, PLACING AND CURING. AGGREGATE OTHERWISE NOTED. AND CEMENT SHOULD BE KEPT COOL. THE USE OF A SET-RETARDING ADMIXTURE MAY BE ARCHITECT BENEFICIAL, PARTICULARLY WITH SKRINKAGE-COMPENSATING CONCRETE. YIELD ASTM SPEC. A. STRUCTURAL STEEL SHAPES: 50 K.S.I. A-992 12. FORM SURFACES THAT WILL BE IN CONTACT WITH CONCRETE SHOULD BE COATED WITH AN B. STRUCTURAL TUBING 46 K.S.I A-500 GRADE C EFFECTIVE BOND-BREAKING FORM COATING. C. PLATES & CONNECTION MATERIAL: 36 K.S.I. A-36 ANCHOR BOLTS: 36 K.S.I. A-36 OR A-307 E. STAINLESS STEEL 30 K.S.I. 304 **FULLER AND** 3. ALL BOLTED CONNECTIONS SHALL BE ERECTED WITH $\frac{3}{4}$ " DIA. ASTM A-325 OR A-490 (F3125), HIGH STRENGTH, SLIP D'ANGELO P.C. CRITICAL (FRICTION) BOLTS, UNLESS OTHERWISE NOTED. 45 KNOLLWOOD ROAD 4. ALL BOLTS SHALL BE FULLY TENSIONED. ELMSFORD, NY 10523 (T) 914.592.4444 5. ALL WELDING SHALL CONFORM TO AWS D1.1 STRUCTURAL WELDING CODE AND AISC, LATEST REVISION. ELECTRODES SHALL BE E70 SERIES. 6. THE FABRICATOR SHALL BE RESPONSIBLE FOR THE DESIGN AND ADEQUACY OF ALL CONNECTIONS THAT ARE NOT FULLY DETAILED ON THE CONTRACT DRAWINGS. 7. SHEAR CONNECTIONS SHALL BE DESIGNED TO SUPPORT THE REACTION OF THE BEAM FOR THE MAXIMUM SAFE UNIFORM LOAD UNLESS A GREATER REACTION IS SHOWN ON THE DRAWINGS. MEP ENGINEER AND ENVIRONMENTAL ENGINEER 8. ALL STEEL SHALL RECEIVE A SHOP COAT OF APPROVED PAINT EXCEPT SURFACES TO BE WELDED, HIGH STRENGTH BOLTED OR SPRAY FIREPROOFED FOR FIELD COAT. 9. ALL CONTACT SURFACES WITHIN HIGH-STRENGTH BOLT CONNECTIONS AND WELDING AREAS SHALL BE FREE OF OIL, PAINT, LACQUER OR GALVANIZING. LiRo Engineers, Inc.

A LiRo Group Company 10. ENDS OF BEAMS & WEBS SHALL BE REINFORCED WHERE CUTS OR COPES REDUCE STRENGTH BELOW REQUIRED 11. DETAILED FABRICATION SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL. FABRICATION SHALL NOT PROCEED UNTIL SHOP DRAWINGS ARE APPROVED. 12. CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY GUYING AND BRACING REQUIRED TO ERECT AND HOLD THE STEEL FRAME IN ALIGNMENT AND COLUMNS PLUMB. 13. BEARING ENDS TO COLUMNS SHALL BE MILLED TO COMPLETE TRUE BEARING.

	STRUCTURAL DRAWING LIST SHEET NAME				
SHEET NO.					
S-001	STRUCTURAL NOTES, ABBREVIATIONS, SYMBOLS & DRAWING LIST				
S-002	PARTIAL ROOF FRAMING PLAN RTU-9				
S-003	SECTIONS & DETAILS FOR RTU-9				
S-004	NOT USED				
S-005	NOT USED				
S-006	PARTIAL PLANS & SECTIONS, OPENINGS FOR DUCT WORK SECOND FLOOR (PROJECT ROOM), THIRD FLOOR (MECHANICAL ROOM)				
S-007	PARTIAL FIRST, SECOND, THIRD FLOOR PLANS-FLOOR OPENING FOR DUCT WORK EC-9				
S-008	SECTIONS & DETAILS				
S-009	NEW FAN LOCATION AUDITORIUM ROOF & SECTION				
S-010	SECTIONS & DETAILS				
S-011	SECTIONS & DETAILS				
S-012	NEW DUCT LOCATION FOUNDATION PLANS & SECTION				

14. ALL BEAM CONNECTIONS SHALL BE MADE WITH DOUBLE ANGLES UNLESS NOTED

17. APPLY RUST PROOF PAINT TO NEW STEEL MEMBERS AFTER INSTALLATION.

18. ALL EXTERIOR STEELS SHALL BE HOT DIP GALVANIZED, G60.

APPROVAL OF THE ENGINEER.

15. OXYGEN CUTTING OF STRUCTURAL STEEL IS NOT ALLOWED IN THE FIELD EXCEPT WITH THE WRITTEN CONSENT AND

16. BLAST CLEAN OF RUST AND PAINT OF EXISTING STEEL BEFORE INSTALLATION OF NEW STEEL MEMBERS.

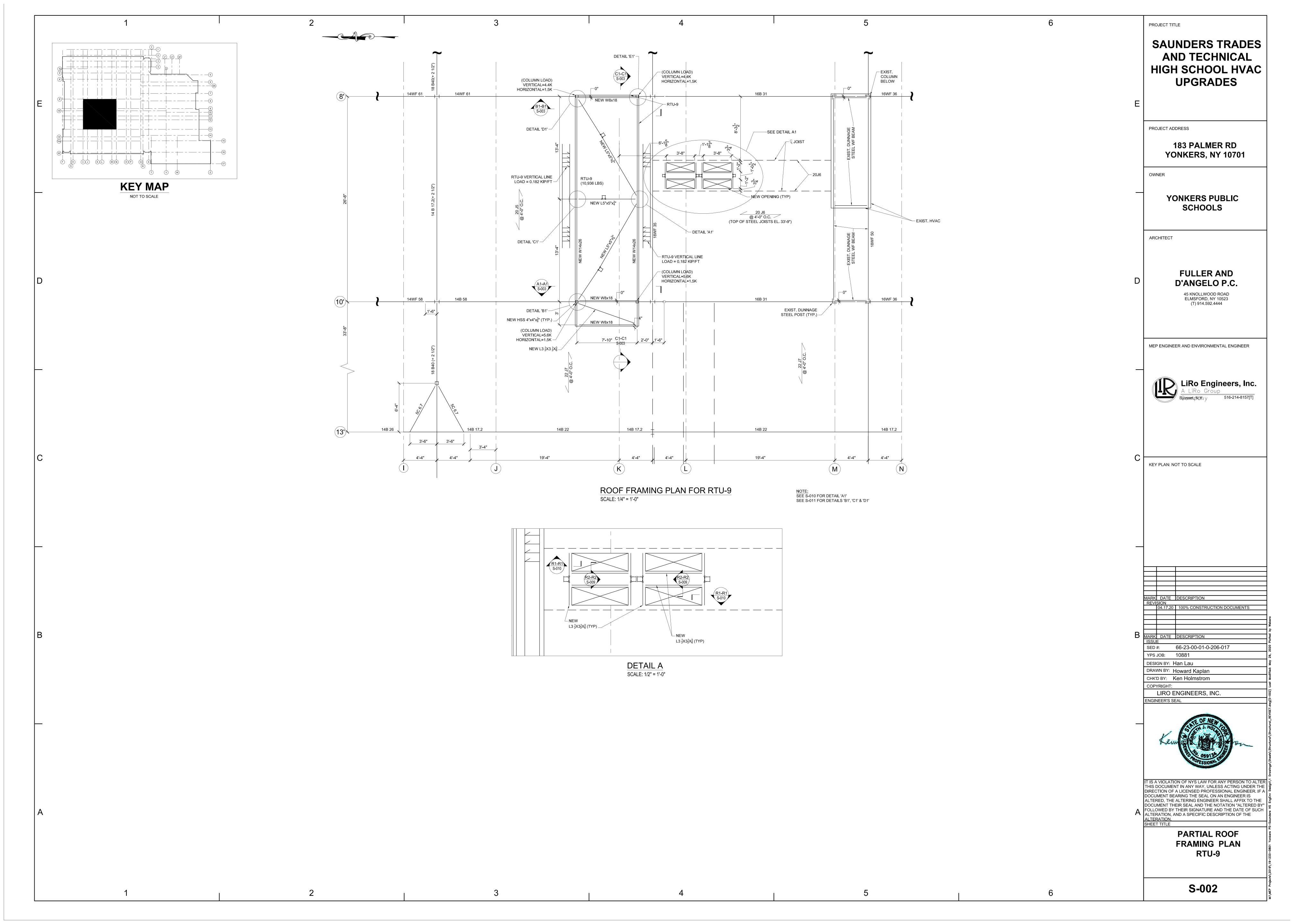
KEY PLAN: NOT TO SCALE 04.17.20 100% CONSTRUCTION DOCUMENTS B MARK DATE DESCRIPTION SED #: 66-23-00-01-0-206-017 YPS JOB: 10881 DESIGN BY: Han Lau DRAWN BY: Howard Kaplan CHK'D BY: Ken Holmstrom COPYRIGHT: LIRO ENGINEERS, INC. ENGINEER'S SEAL THIS DOCUMENT IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. IF A DOCUMENT BEARING THE SEAL ON AN ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE A DOCUMENT THEIR SEAL AND THE NOTATION "ALTERED BY"
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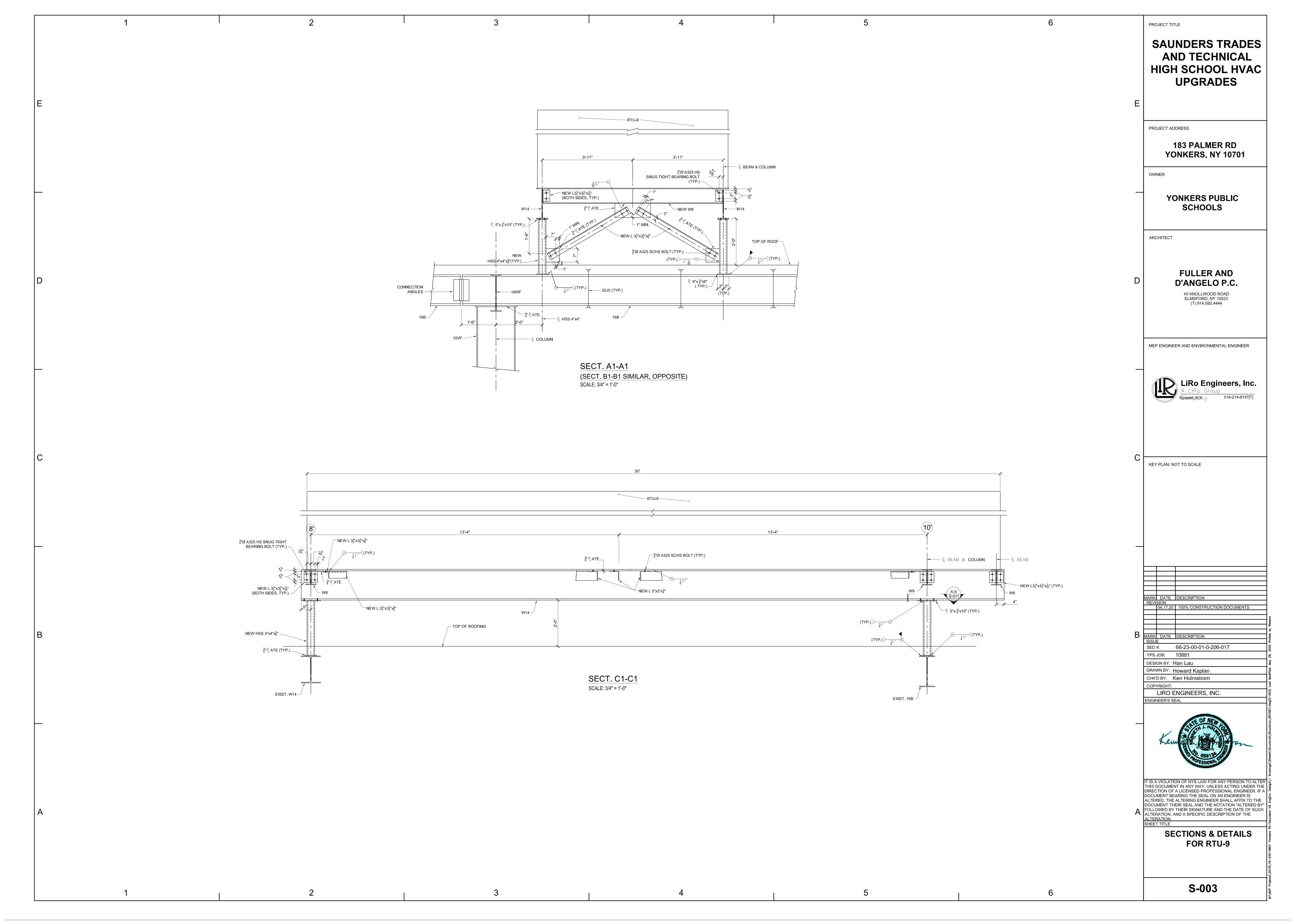
STRUCTURAL NOTES,

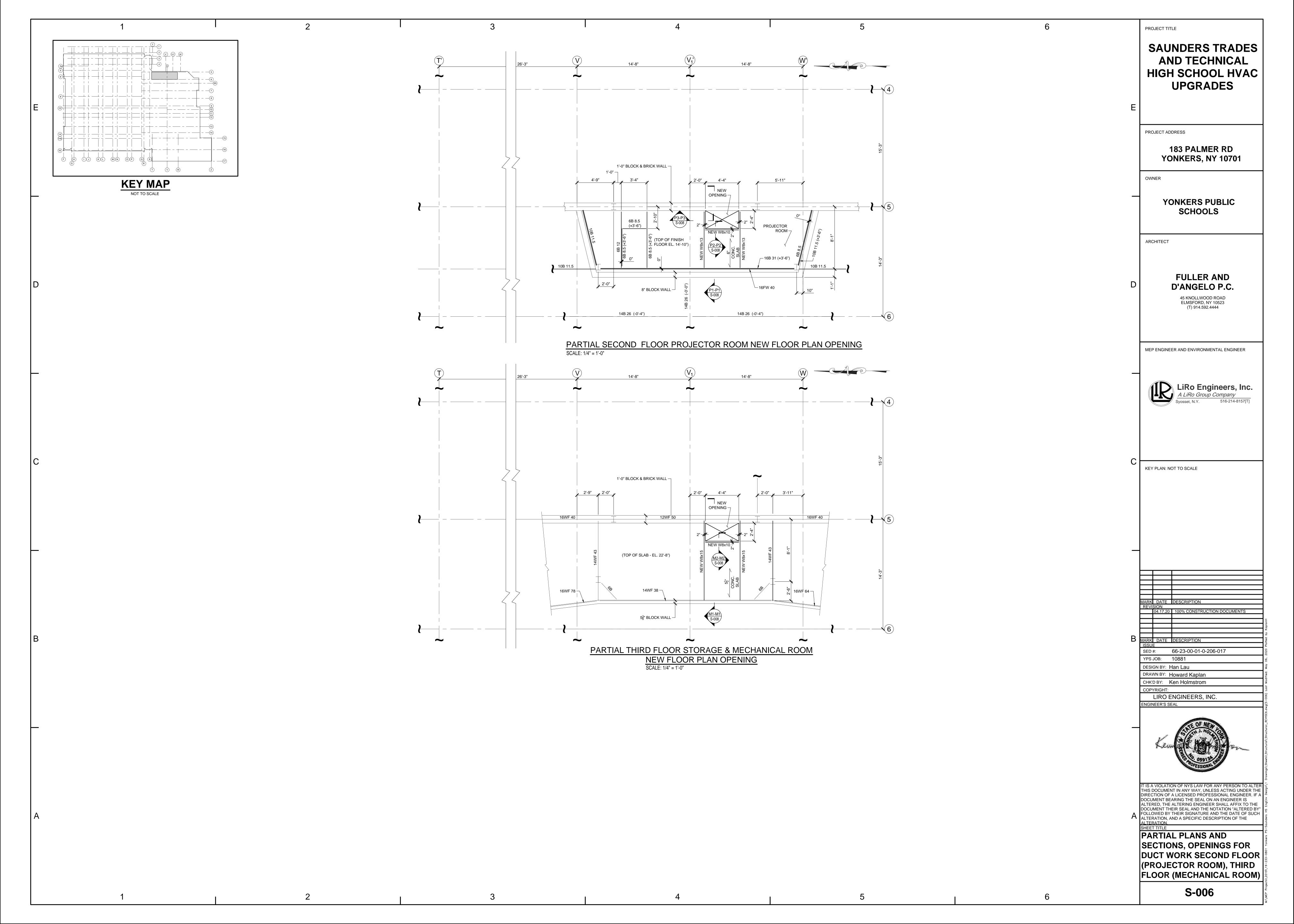
ABBREVIATIONS, SYMBOLS

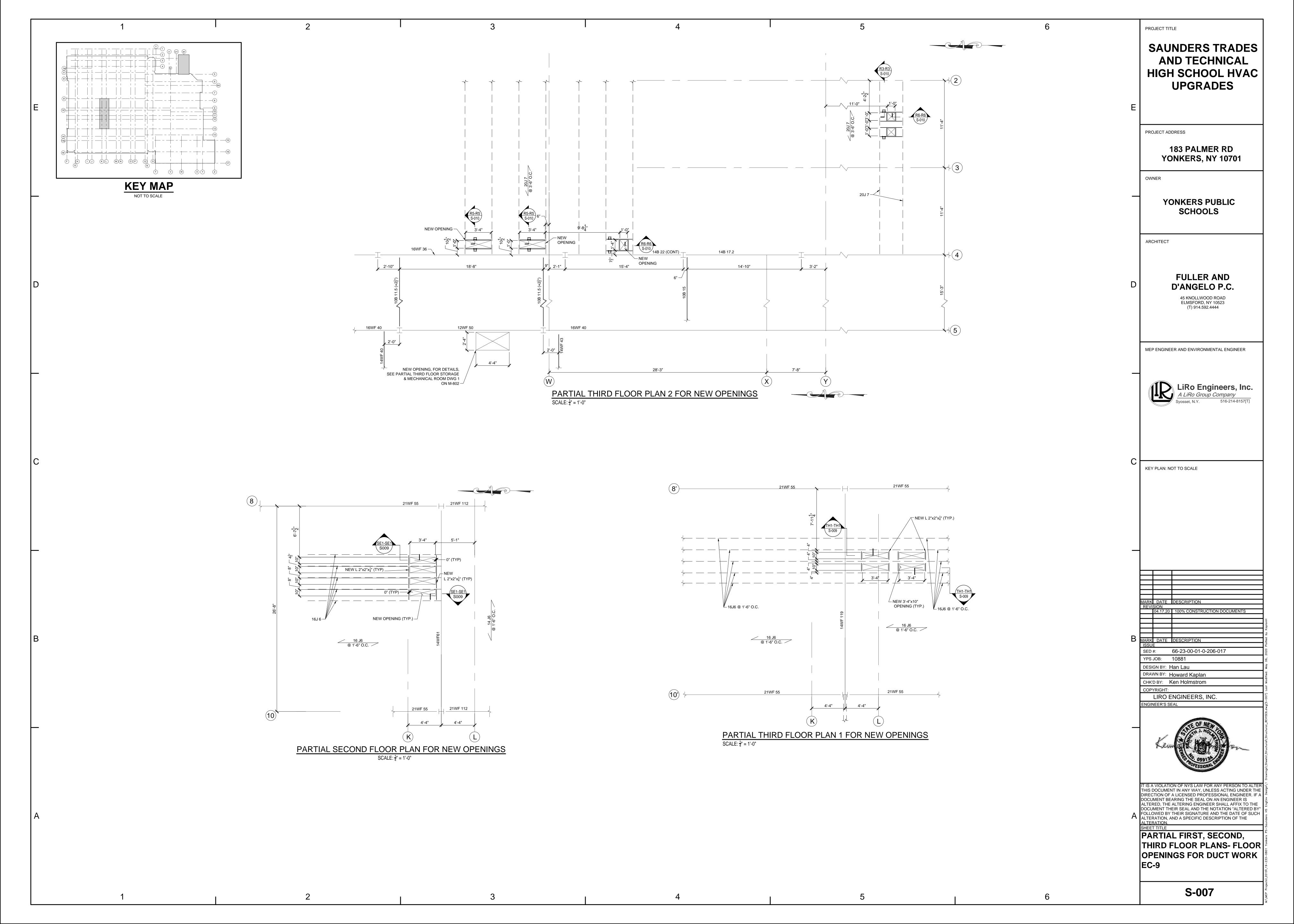
& DRAWING LIST

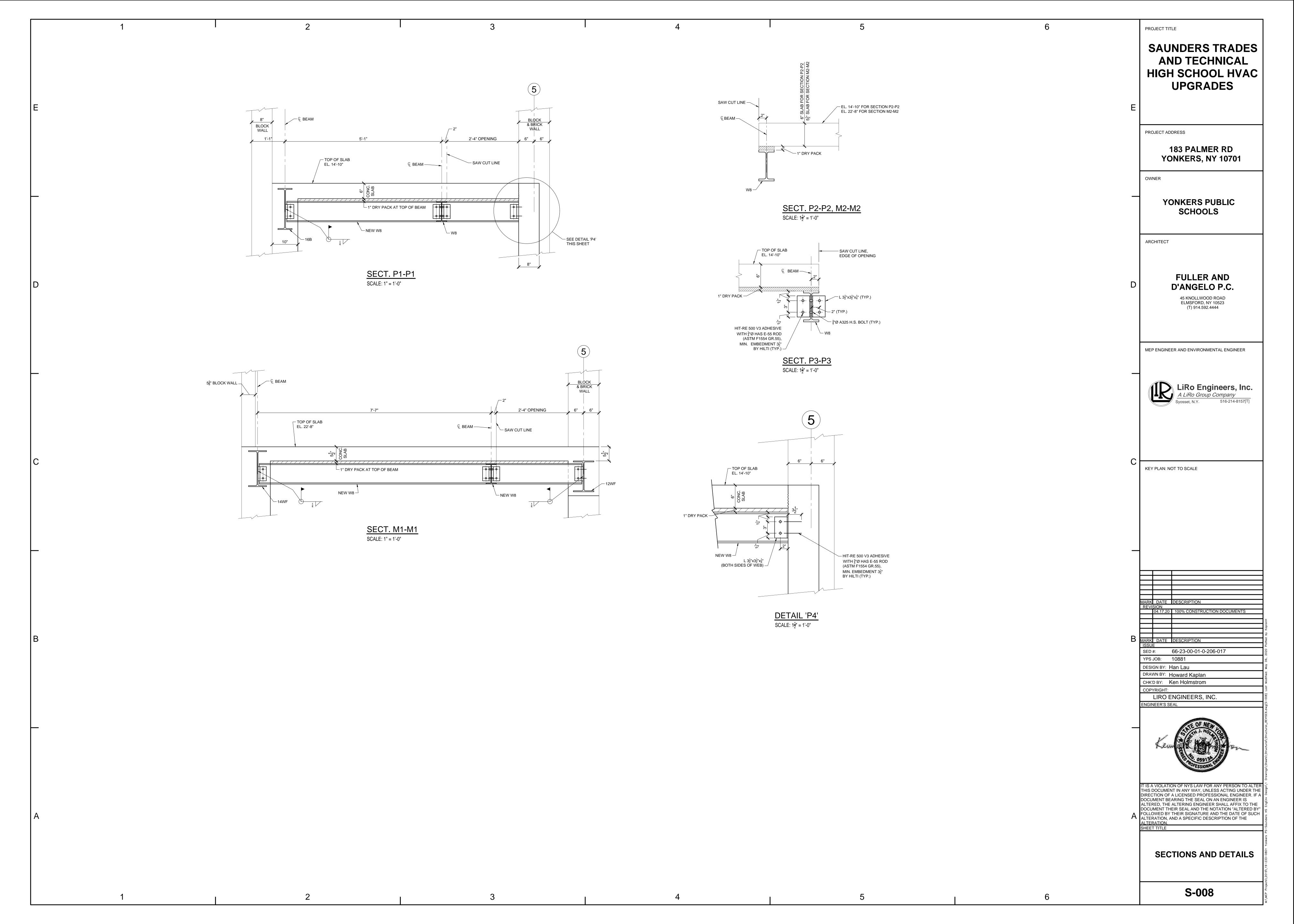
S-001

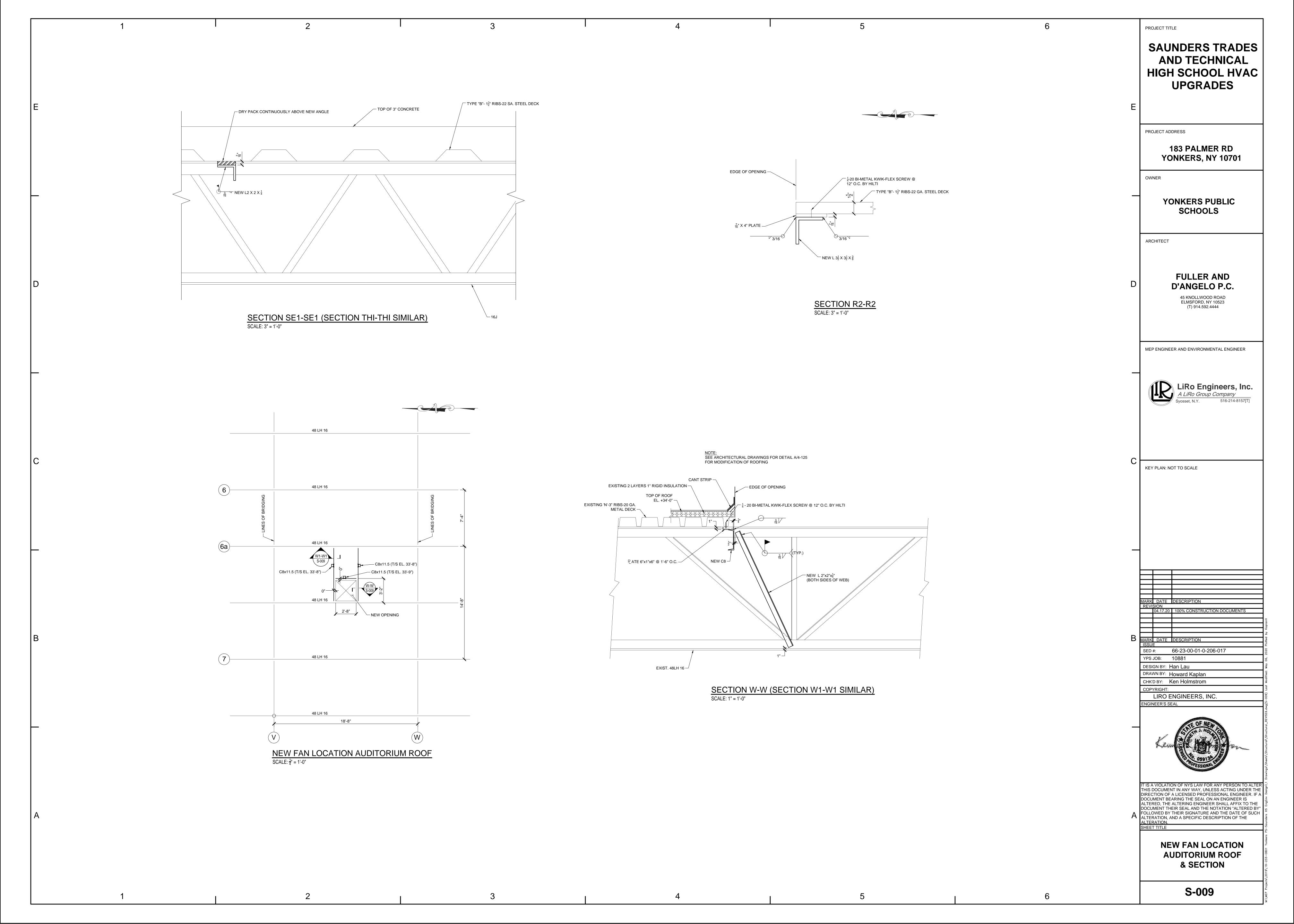


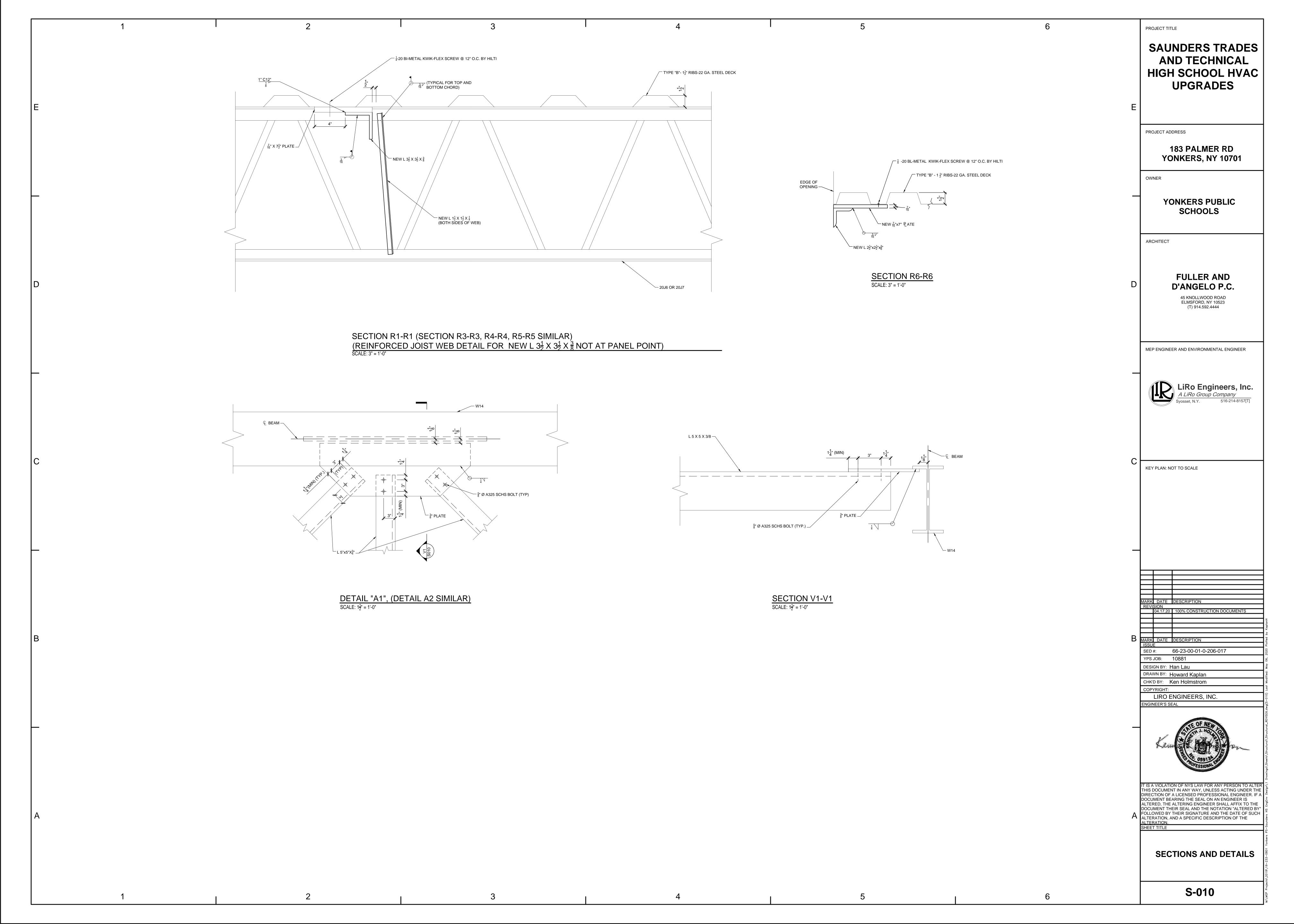


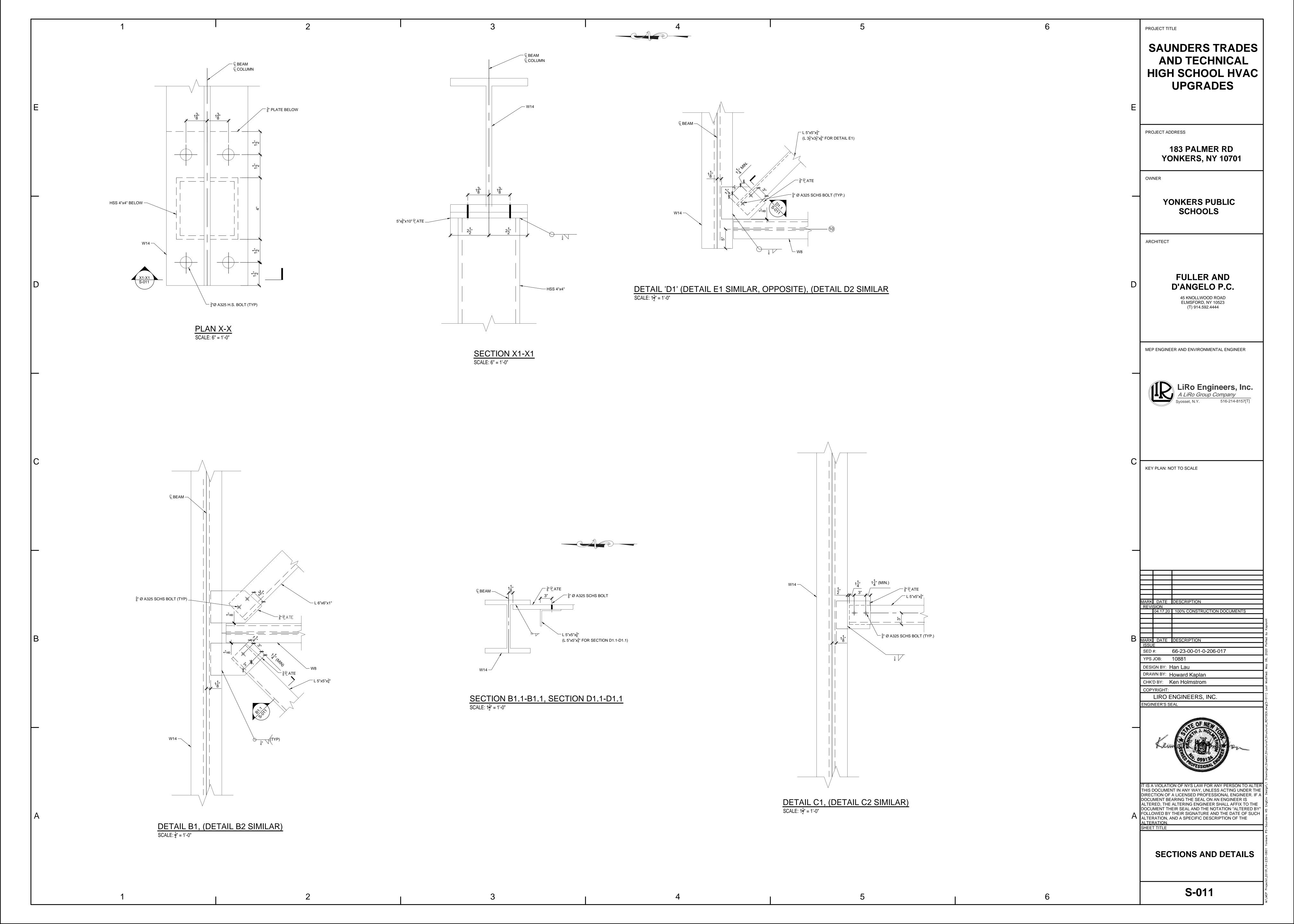


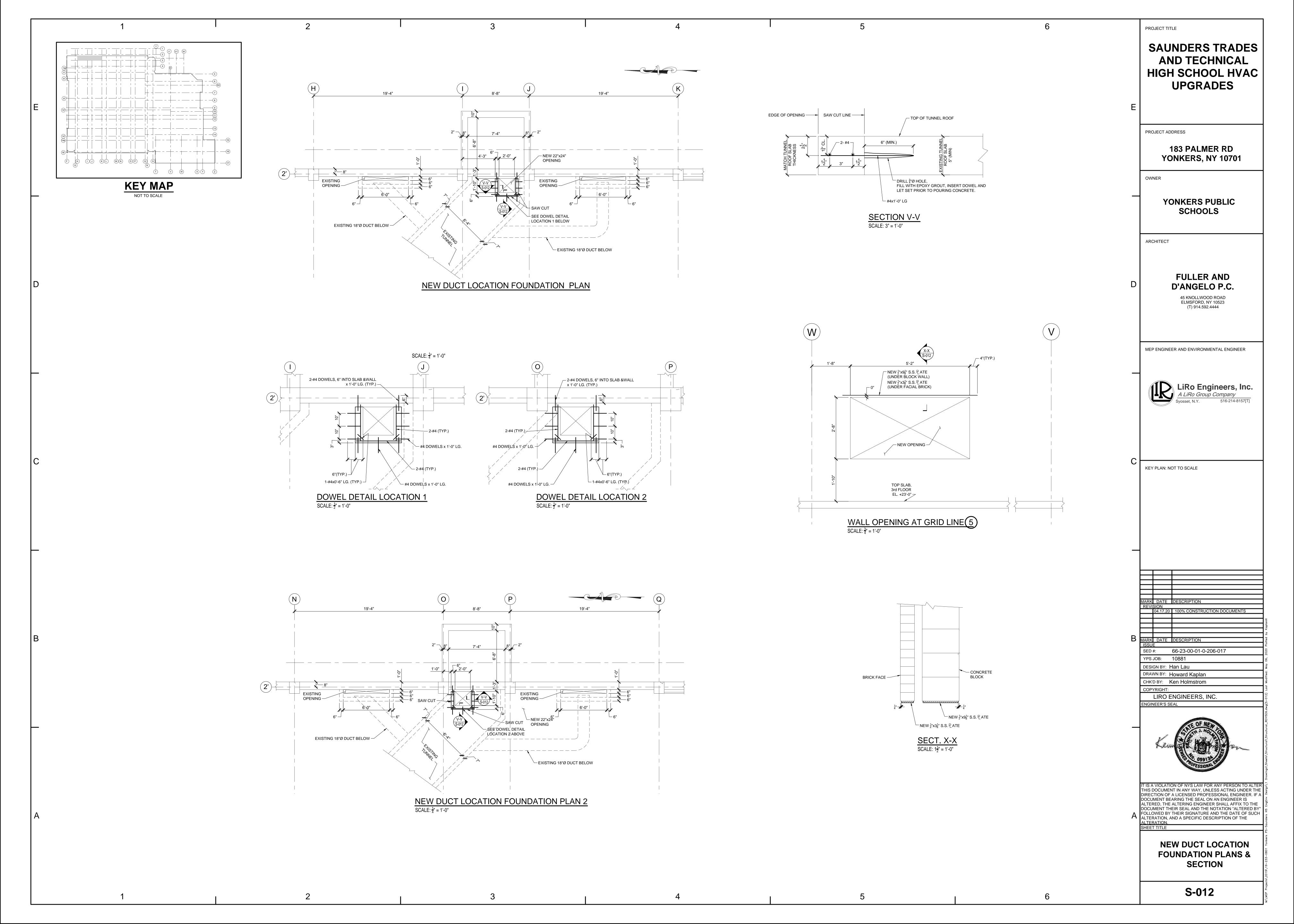












- IN STRICT ACCORDANCE WITH SEISMIC REQUIREMENTS. THE EXACT MOUNTING HEIGHTS AND LOCATIONS OF ALL HVAC EQUIPMENT SHALL BE FIELD VERIFIED AND COORDINATED WITH ALL OTHER MECHANICAL, ELECTRICAL, PLUMBING, FIRE SPRINKLER, ARCHITECTURAL AND STRUCTURAL SYSTEMS. DURING SHOP DRAWINGS SUBMISSIONS, SHOW ALL MOUNTING HEIGHTS OF DUCTWORK, UNITS, ETC.
- THE FINISH AND COLOR OF THE AIR DEVICES, AND ALL OTHER EXPOSED HVAC EQUIPMENT SHALL BE COORDINATED WITH THE ARCHITECT.
- VERIFY ALL EQUIPMENT VOLTAGES WITH THE ELECTRICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT.
- ELECTRICAL CONTRACTOR WILL PROVIDE DISCONNECT SWITCHES FOR ALL HVAC EQUIPMENT INCLUDING WEATHERPROOF UNITS AS REQUIRED, UNLESS UNITS ARE SPECIFIED WITH FACTORY MOUNTED & INSTALLED DISCONNECT SWITCHES. REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR EXACT DETAILS.
- PROVIDE PHASE LOSS PROTECTION FOR ALL POLY-PHASE MOTOR DEVICES.
- THE FINAL LOCATION OF AIR DEVICES MUST BE COORDINATED WITH THE REFLECTED CEILING PLAN AND ALL OTHER MECHANICAL, ELECTRICAL, SPRINKLER, ARCHITECTURAL, AND STRUCTURAL SYSTEMS.
- DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET STEEL IN STRICT COMPLIANCE WITH THE LATEST EDITION OF THE ASHRAE, NFPA, AND SMACNA GUIDE RECOMMENDATIONS. ALL DUCTS TO HAVE PITTSBURGH TYPE LOCK FOR LONGITUDINAL SEAMS AND DRIVE SLIP / "S" SLIP FOR TRANSVERSE JOINTS. "DUCT-MATE" JOINT SYSTEM IS ACCEPTABLE IN LIEU OF PRIOR SEAM SYSTEMS. SIZES AS SHOWN INDICATE INSIDE CLEAR DIMENSIONS OF THE AIR PASSAGE. DUCTWORK SHALL BE FULLY INSULATED AS PER APPLICABLE CODES AND WRITTEN SPECIFICATIONS.
- DUCT SIZES MUST BE VERIFIED FOR CLEARANCES AT THE JOB SITE PRIOR TO FABRICATION. DIMENSIONS MAY BE CHANGED TO ACCOMMODATE CONSTRUCTION AS LONG AS EFFECTIVE CROSS-SECTIONAL AREA IS MAINTAINED, DUCT TRANSITIONS SHALL BE CONSTRUCTED WITH A SLOPE OF 1" TO 4". ALL DEVIATIONS FROM ORIGINAL CONTRACT DRAWINGS SHALL BE REVIEWED BY ENGINEER DURING THE SHOP DRAWING PROCESS.
- PROVIDE ELBOWS OR TEES WITH TURNING VANES FOR ALL CHANGES OF DUCT DIRECTION. PROVIDE SPLITTER DAMPERS WITH LOCKING QUADRANTS IN ALL TEES.
- PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO PROPERLY BALANCE EACH INDIVIDUAL AIR DISTRIBUTION SYSTEM. IF THE LOCATION OF THE BALANCING DAMPER IS NOT DEFINED ON THE DRAWINGS, THE FOLLOWING MINIMUMS STANDARDS SHALL GOVERN. ALL SUPPLY, RETURN, AND EXHAUST MAIN BRANCHES FROM TRUNKS, EACH SPLIT AND ALL SUB- BRANCHES FROM MAIN SHALL INCORPORATE BALANCING DAMPERS.
- PROVIDE FLEXIBLE CONNECTORS AT ALL DUCT CONNECTIONS TO VIBRATING EQUIPMENT. THESE CONNECTORS SHALL BE INSTALLED IN CLOSE PROXIMITY TO SUCH EQUIPMENT.
- PROVIDE FIRE DAMPERS WITH RATED ACCESS DOORS AT ALL DUCT PENETRATIONS THROUGH FIRE RATED WALLS, SMOKE AND FIRE STOPPING, SHAFT, FLOORS, RATED CEILINGS AND PARTITIONS AS REQUIRED TO MAINTAIN ARCHITECTURAL FIRE RATINGS. REFER TO THE ARCHITECTURAL PLANS AND SPECIFICATIONS FOR LOCATIONS AND FIRE RATING REQUIREMENTS. MC MUST FULLY REVIEW ALL ARCHITECTURAL AND ENGINEERING DRAWINGS AND VISIT THE SITE PRIOR TO SUBMITTING THE BID. NO EXTRAS WILL BE
- ALL ACCESS DOORS REQUIRED IN GENERAL CONSTRUCTION ARE TO BE PROVIDED AND INSTALLED BY THE GENERAL CONTRACTOR. IT IS THE RESPONSIBILITY OF THE HVAC CONTRACTOR TO IDENTIFY SIZE. TYPE. LOCATION AND ADDITIONAL FRAMING OF SUCH DOORS FOR PROPER ACCESS TO ALL CONCEALED HVAC EQUIPMENT, VALVES AND OTHER RELATED EQUIPMENT. THE HVAC CONTRACTOR SHALL IDENTIFY THESE REQUIREMENTS ON A COORDINATED SHOP DRAWING PRIOR TO SYSTEM FABRICATION AND INSTALLATION.
- ALL WALL AND ROOF OPENINGS 12" X 12" OR LARGER ARE TO BE EQUIPPED WITH BURGLAR BARS USING 5/8" DIAMETER RODS RUNNING 12" ON CENTER IN BOTH DIRECTIONS AND WELDED AT ALL INTERSECTING POINTS. SECURE THE PERIMETER FRAME ASSEMBLY TO THE WALL OR ROOF FRAMED OPENING.
- ALL CEILING MOUNTED EQUIPMENT MUST BE SUPPORTED DIRECTLY FROM BUILDING STRUCTURE WITH COMBINATION SPRING AND NEOPRENE-IN-SHEAR HANGERS AND ROD. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED TO ADEQUATELY SUPPORT THE LOAD.
- M.C. MUST CONTRACT AN INDEPENDENT NEBB CERTIFIED AIR BALANCING & TESTING COMPANY TO PERFORM THE AIR BALANCING WORK AND ASSOCIATED SYSTEM AIR BALANCING REPORT. ALL WORK SHALL BE PERFORMED IN STRICT COMPLIANCE WITH ALL APPLICABLE CODES, REGULATIONS, PLANS AND WRITTEN SPECIFICATIONS. SUBMIT THE FINAL AIR BALANCE REPORT TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT, AS DETERMINED BY THE G.C. AND OWNER/CLIENT. THE AIR BALANCE REPORT MUST INCLUDE ALL SUPPLY, RETURN, & EXHAUST AIR TERMINALS, FRESH AIR (OUTSIDE AIR) INTAKE AND VENTILATION EXHAUST CFM RATES FOR ALL UNITS. ALSO INCLUDE ACTUAL SUPPLY & RETURN AIR VELOCITY & STATIC PRESSURE READINGS ALONG WITH ALL MOTOR AMPERAGES
- IF APPLICABLE, ALL ROOFTOP HVAC EQUIPMENT SHALL BE MOUNTED ON STEEL DUNNAGE, LEVEL AND SUFFICIENTLY AWAY FROM EDGE OF ROOF (MIN. 6'-0"). ALL EXPOSED DUCTWORK PENETRATIONS MUST BE PROPERLY FLASHED TO ALLOW FOR A WEATHER TIGHT SEAL. IN ADDITION, ADEQUATE CLEARANCES SHALL | (19. BE PROVIDED FOR CLEANING AND MAINTENANCE REQUIREMENTS. THE FINAL LOCATION OF ALL ROOFTOP UNITS MUST ALSO COMPLY WITH ALL OSHA SAFETY REQUIREMENTS. M.C. MUST SUBMIT THE FOLLOWING ITEMS TO THE ENGINEER FOR REVIEW AND APPROVAL:(A) DUCTWORK ROOF PENETRATION FLASHING MATERIAL/METHODS, AND (B) EXACT STRUCTURAL FASTENING MATERIALS, METHODS, LOCATIONS TO PROPERLY SECURE THE ROOF-TOP EQUIPMENT TO THE STEEL DUNNAGE.
- FIRE ALARM CONTRACTOR IS TO PROVIDE DUCT SMOKE DETECTORS WITH AUXILIARY CONTACTS. UPON ACTIVATION THE SMOKE DETECTORS SHALL SHUT DOWN THE AIR DISTRIBUTION SYSTEMS AND ACTIVATE A VISIBLE AND AUDIBLE SUPERVISOR SIGNAL AT A CONSTANTLY ATTENDED LOCATION IN ACCORDANCE WITH NFPA 90A & 90B. THE M.C. IS RESPONSIBLE TO COORDINATE THE INSTALLATION OF THE SMOKE DETECTORS WITH THE FIRE ALARM CONTRACTOR.THE E.C. IS RESPONSIBLE FOR WIRING. THE FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR COMMISSIONING.
- ALL INSTRUMENTATION AND CONTROLS BY CONTROLS CONTRACTOR.
- RIGGING OF NEW EQUIPMENT TO BE SCHEDULED/COORDINATED WITH OWNER REP. RIGGING MUST BE PERFORMED DURING "OFF HOURS" TO ELIMINATE PARKING PROBLEMS. M.C. MUST COORDINATE RIGGING WITH ANY REQUIREMENT MANDATED BY THE LOCAL BUILDING DEPARTMENT AND/OR ANY OTHER AGENCIES INCLUDING SUCH PERMITS, FEES, ETC.
- COORDINATE EXACT LOCATIONS AND VERTICAL ELEVATIONS OF ALL TRANSFER GRILLS AND OPENINGS WITH THE ARCHITECT.
- ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS/SPECIFICATIONS.

MECHANICAL DEMOLITION NOTES

- ALL EXISTING EQUIPMENT REQUIRED TO BE REUSED SHALL BE CLEANED, RECONDITIONED, CALIBRATED AND ADJUSTED. EXISTING EQUIPMENT SHALL BE ABATED AS DIRECTED IN THE ENVIRONMENTAL DRAWINGS. IN ALL INSTANCES WHERE CONTRACTOR FINDS THAT EXISTING EQUIPMENT IS DEFECTIVE TO THE POINT WHERE IT CANNOT BE PROPERLY RESTORED AND WILL NOT OPERATE PROPERLY. HE SHALL REPORT THE SPECIFIC INSTRUMENTS OR EQUIPMENT TO THE ARCHITECT/ENGINEER
- FIELD VERIFY DEMOLITION REQUIREMENTS AND EXISTING CONDITIONS. DEMOLITION NOTES ARE INDICATED IN NOTE FORM.
- CONTRACTOR SHALL ESTABLISH A PATH OF TRAVEL AND TIME SCHEDULE FOR THE REMOVAL OF ALL DEBRIS AND WASTE. AND HAVE THIS APPROVED BY OWNER. CONTRACTOR IS TO ENSURE THAT ALL CORRIDORS AND PUBLIC AREAS BE KEPT FREE OF OBSTRUCTIONS, DEBRIS, AND ARE TO BE BROOM SWEPT CLEAN AT ALL TIMES.
- CONTRACTOR SHALL VISIT THE SITE AND BECOME INFORMED AS TO THE CONDITION OF THE PREMISES AND THE EXTENT AND CHARACTER OF WORK REQUIRED. NO ADDITIONAL COMPENSATION WILL BE APPROVED DUE TO FIELD CONDITIONS. WHERE EXISTING VENTILATION AND AIR CONDITIONING SYSTEMS WILL BE INTERRUPTED TO SPACES AS THE RESULT OF DEMOLITION, IF THE SPACES WILL BE OCCUPIED DURING CONSTRUCTION, CONTRACTOR IS RESPONSIBLE TO PROVIDE TEMPORARY MEANS OF VENTILATION, HEATING AND COOLING. COORDINATE PHASING AND REQUIREMENTS WITH FACILITY OWNER.

CONTROL GENERAL NOTES

- THE NEW EQUIPMENT DDC CONTROLLERS SHALL WORK SEAMLESSLY WITH THE EXISTING LEGACY ANDOVER SYSTEM TO MEET SEQUENCES OF OPERATION. ALL NEW COMPONENTS SHALL BE 100 PERCENT COMPATIBLE WITH THE EXISTING SYSTEM. EXISTING CONTROLS SERVICE BY EMF CONTROLS. CONTACT CHIP GREENWOOD AT GREENWOODW@EMFCONTROLS.COM OR 914-747-1007.
- ENSURE ALL EXISTING EQUIPMENT SEQUENCES AND CONTROLS ARE MAINTAINED UNLESS OTHERWISE INDICATED ON THESE DRAWINGS.
- REVIEW BMS WITH EXISTING SYSTEM MANUFACTURER AND PERFORM ANY REQUIRED SOFTWARE UPGRADES PRIOR TO THE VFD INSTALLATION.
- PERFORM ALL NECESSARY INSPECTIONS AND PERFORMANCE TESTS AFTER INSTALLATION OF VFD TO ENSURE SYSTEM IS OPERATING PROPERLY.
- CONTRACTOR TO COORDINATE SCHEDULE WITH FACILITY PRIOR TO SHUTDOWN OF ANY EQUIPMENT.

	NOTES	IDENTIFIER	DESCRIPTION
		AHU A.P.D.	AIR HANDLING UNIT AIR PRESSURE DROP
	CONTRACTOR SHALL BE RESPONSIBLE FOR DEMOLITION OF MECHANICAL EQUIPMENT AND MATERIAL RELATING TO THEIR RESPECTIVE TRADE.	BACNET	BUILDING AUTOMATION AND CONTROL NETWORK
	THE CONTRACTOR SHALL REMOVE, RELOCATE, REPLACE, ADJUST, ADAPT AND MODIFY EXISTING EQUIPMENT AND/OR SYSTEMS AS REQUIRED WHEN SUCH WORK IS UNCOVERED AND FOUND TO MORE WITH COMPLETION OF WORK IN THIS	BAS BG BHP	BUILDING AUTOMATION SYSTEM BOTTOM GRILLE BRAKE HORSEPOWER
	CONTRACT OR OTHER CONTRACT WORK. THE CONTRACTOR SHALL ABANDON IN PLACE ALL EQUIPMENT AND/OR SYSTEMS AS	BMS B.O.D.	BUILDING MANAGEMENT SYSTEM BOTTOM OF DUCT
	DEFINED IN THE SCOPE OF THIS CONTRACT. EXECUTE THE DEMOLITION IN CAREFUL AND ORDERLY MANNER WITH THE LEAST	BOT BR	BOTTOM BOTTOM REGISTER
	POSSIBLE DISTURBANCE TO THE PUBLIC, EGRESS OR THE FUNCTIONING OF THE EXISTING BUILDING. TAKE NECESSARY PRECAUTIONS TO PREVENT DUST AND DIRT FROM RISING BY	BTU/HR CFM CHWR	BRITISH THERMAL UNITS/HR CUBIC FEET PER MINUTE CHILLED WATER RETURN
	WETTING DEMOLISHED DEBRIS. EXCESSIVE USE OF WATER WILL NOT BE PERMITTED.	CHWS CM	CHILLED WATER SUPPLY CHILLER
	PRIOR TO DEMOLITION, CONTRACTOR SHALL REVIEW WITH OWNER ALL MATERIALS TO BE REMOVED, SHOULD THE OWNER WANT TO KEEP ANY MATERIALS THE CONTRACTOR SHALL REMOVE AND DELIVER THE PARTS TO THE OWNER ON THE SITE WHERE SO	COND	CONDENSATE DRAIN CONTROL PANEL
	DIRECTED. OTHERWISE ALL DEMOLISHED OR REMOVED MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND BE DISPOSED OF IN A LEGAL MANNER.	CWR CWS	CONDENSER WATER RETURN CONDENSER WATER SUPPLY
	DEMOLITION SHALL INCLUDE REMOVAL OF ALL PARTS AND PIECES IN THEIR ENTIRETY BACK TO POINTS INDICATED OR IF NOT INDICATED BACK TO THEIR POINT OF SOURCE.	DB DES	DAMPER END SWITCH
	WHERE CONDITIONS PROHIBIT TOTAL REMOVAL OF THE WORK, THE REMAINING PORTION SHALL BE CUT FLUSH WITH THE SURROUNDING SURFACE AND BE CAPPED,	DIA DN	DIAMETER DOWN DIEFERENTIAL PRESSURE TRANSMITTER
	PLUGGED OR SEALED AND THE SURROUNDING SURFACE SHALL BE REFINISHED IN AN APPROVED MANNER.	DPT DTWR DTWS	DIFFERENTIAL PRESSURE TRANSMITTER DUAL TEMPERATURE WATER RETURN DUAL TEMPERATURE WATER SUPPLY
	DO NOT REMOVE EXISTING STRUCTURAL WORK. DO NOT REMOVE OPERATIONAL ELEMENTS AND SAFETY-RELATED COMPONENTS IN A MANNER RESULTING IN A REDUCTION OF CAPACITIES TO PERFORM IN THE MANNER INTENDED OR RESULTING IN	EA EAT	EXHAUST AIR ENTERING AIR TEMPERATURE
	DECREASED OPERATIONAL LIFE, INCREASED MAINTENANCE, OR DECREASED SAFETY.	EC EDB	ENVIRONMENTAL CONTROL UNIT ENTERING DRY BULB
	REMOVALS, DISCONNECTIONS, AND RELOCATIONS SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADE INVOLVED AND SHALL BE EMPLOYED BY A CONTRACTOR LICENSED IN THE TRADE INVOLVED. ALL WORK SHALL BE DONE IN ACCORDANCE WITH	EER EF	ENERGY EFFICIENCY RATIO EXHAUST FAN
	ACCEPTED TRADE PRACTICES. PROVIDE ADEQUATE TEMPORARY SUPPORT FOR WORK TO REMAIN, TO PREVENT	EG EUH	EXHAUST GRILLE ELECTRIC HEATER
	FAILURE. DO NOT ENDANGER OTHER WORK.	ETR ESP	EXISTING TO REMAIN EXTERNAL STATIC PRESSURE
	PROTECTION: PROVIDE ADEQUATE PROTECTION WHERE REQUIRED FOR THE PRESENT BUILDING AND ITS CONTENTS. TEMPORARY DUSTPROOF BARRIERS AND BARRICADES SHALL BE ERECTED WHERE REQUIRED FOR PROTECTION OF PERSONNEL, PROTECTION	EUH	ELECTRIC UNIT HEATER ENTERING WET BULB
	FROM DUST AND DIRT, FOR SECURITY, FIRE AND WEATHER PROTECTIVE REASONS.	EWT FAI	ENTERING WATER TEMPERATURE FRESH AIR INTAKE
	CONTRACTOR SHALL TAKE EVERY PRECAUTION AGAINST FIRE BY EMPLOYING FIRE DEPARTMENT TYPE HOSES AND PORTABLE FIRE EXTINGUISHERS AS REQUIRED BY OSHA AND/OR THE OWNER'S INSURANCE UNDERWRITER.	FCU FLA	FAN COIL UNIT FULL-LOAD-AMPERAGE
	BEFORE STARTING DEMOLITION OPERATIONS, PROVIDE THE NECESSARY PROTECTIVE	FPM	FEET PER MINUTE
	DEVICES, WHERE REQUIRED, AND IN STRICT ACCORDANCE WITH OSHA RULES AND REGULATIONS.	FT FZ	FLOW TRANSMITTER FREEZE
	ALL EXISTING EQUIPMENT REQUIRED TO BE REUSED SHALL BE CLEANED, RECONDITIONED, CALIBRATED AND ADJUSTED. EXISTING EQUIPMENT SHALL BE ABATED AS DIRECTED IN THE ENVIRONMENTAL DRAWINGS. IN ALL INSTANCES WHERE	G GC	GAS GENERAL CONTRACTOR
	CONTRACTOR FINDS THAT EXISTING EQUIPMENT IS DEFECTIVE TO THE POINT WHERE IT CANNOT BE PROPERLY RESTORED AND WILL NOT OPERATE PROPERLY, HE SHALL	GPM HD	GALLONS PER MINUTE HEAD
	REPORT THE SPECIFIC INSTRUMENTS OR EQUIPMENT TO THE ARCHITECT/ENGINEER FOR DIRECTIONS.	HHWR HHWS	HEATING HOT WATER RETURN HEATING HOT WATER SUPPLY
	FIELD VERIFY DEMOLITION REQUIREMENTS AND EXISTING CONDITIONS. DEMOLITION NOTES ARE INDICATED IN NOTE FORM.	HP HV	HORSEPOWER HEATING/VENTILATION
	CONTRACTOR SHALL ESTABLISH A PATH OF TRAVEL AND TIME SCHEDULE FOR THE REMOVAL OF ALL DEBRIS AND WASTE, AND HAVE THIS APPROVED BY OWNER.	IAW LAT	IN ACCORDANCE WITH LEAVING AIR TEMPERATURE
	CONTRACTOR IS TO ENSURE THAT ALL CORRIDORS AND PUBLIC AREAS BE KEPT FREE OF OBSTRUCTIONS, DEBRIS, AND ARE TO BE BROOM SWEPT CLEAN AT ALL TIMES.	MAU MAX	MAKE UP AIR UNIT MAXIMUM
	CONTRACTOR SHALL VISIT THE SITE AND BECOME INFORMED AS TO THE CONDITION OF THE PREMISES AND THE EXTENT AND CHARACTER OF WORK REQUIRED. NO ADDITIONAL COMPENSATION WILL BE APPROVED DUE TO FIELD CONDITIONS.	MBH MIN OA	THOUSAND BTU PER HOUR MINIMUM OUTSIDE AIR
\rightarrow	WHERE EXISTING VENTILATION AND AIR CONDITIONING SYSTEMS WILL BE INTERRUPTED	OAI	OUTSIDE AIR INTAKE
	TO SPACES AS THE RESULT OF DEMOLITION, IF THE SPACES WILL BE OCCUPIED DURING CONSTRUCTION, CONTRACTOR IS RESPONSIBLE TO PROVIDE TEMPORARY MEANS OF VENTILATION, HEATING AND COOLING. COORDINATE PHASING AND REQUIREMENTS	OPNG OP WT	OPERATING WEIGHT
~	WITH FACILITY OWNER.	P PD	PUMP PRESSURE DROP
	CONTROL GENERAL NOTES	PT QTY	PRESSURE TRANSMITTER QUANTITY
	THE NEW EQUIPMENT DDC CONTROLLERS SHALL WORK SEAMLESSLY WITH THE	RA RD	RETURN AIR RETURN DIFFUSER
	EXISTING LEGACY ANDOVER SYSTEM TO MEET SEQUENCES OF OPERATION. ALL NEW COMPONENTS SHALL BE 100 PERCENT COMPATIBLE WITH THE EXISTING SYSTEM. EXISTING CONTROLS SERVICE BY EMF CONTROLS. CONTACT CHIP	RG RH	RETURN GRILLE RELATIVE HUMIDITY
	GREENWOOD AT GREENWOODW@EMFCONTROLS.COM OR 914-747-1007.	RPM RTU	ROTATIONS PER MINUTE ROOFTOP UNIT
	ENSURE ALL EXISTING EQUIPMENT SEQUENCES AND CONTROLS ARE MAINTAINED UNLESS OTHERWISE INDICATED ON THESE DRAWINGS.	SA SCV	SUPPLY AIR SELF CONTAINED CONTROL VALVE
	REVIEW BMS WITH EXISTING SYSTEM MANUFACTURER AND PERFORM ANY REQUIRED SOFTWARE UPGRADES PRIOR TO THE VFD INSTALLATION.	SD SG	SUPPLY DIFFUSER SUPPLY GRILLE
	PERFORM ALL NECESSARY INSPECTIONS AND PERFORMANCE TESTS AFTER INSTALLATION OF VFD TO ENSURE SYSTEM IS OPERATING PROPERLY.	SPS SR	STATIC PRESSURE SENSOR SAFETY RELAY
•	CONTRACTOR TO COORDINATE SCHEDULE WITH FACILITY PRIOR TO SHUTDOWN OF ANY EQUIPMENT.	TCV TG	TEMPERATURE CONTROL VALVE TRANSFER GRILLE
		TSP TO	TOTAL STATIC PRESSURE TRANSFER OPENING
		T.O.D.	TOP OF DUCT
		TT TYP.	TEMPERATURE TRANSMITTER TYPICAL
		UH	UNIT HEATER UNIT VENTILATOR
		VAV VFD	VARIABLE AIR VOLUME VARIABLE FREQUENCY DRIVE
		VIC VIF	VIBRATION ISOLATION CONNECTION VERIFY IN FIELD
		WB W.C.	WET BULB WATER COLUMN
		٧٧.٠٠.	

	HVAC SY	_	_
<u>IDENTIFIER</u>	DESCRIPTION	IDENTIFIER	DESCRIPTION
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	AIR VENT		
2 2	PRESSURE GAUGE WITH PETCOCK		FLAT, PLEATED FILTER
	THERMOMETER		
\	PIPE RUNOUT UP THROUGH		
	FINISHED FLOOR ABOVE PIPE DROP		CARTRIDGE FILTER
\\\\	ON DIRECTION OF FLOW		
\$	PIPE RISER PIPE TEE DOWN		
<u> </u>	PIPE TEE UP		HUMIDFIER
	TWO WAY AND THREE WAY CONTROL VALVE		HOIMIDFIER
~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	BALL/ISOLATION VALVE		
		PH	
	GLOBE VALVE		COIL - PREHEAT
2 101 2	EXPANSION/RELIEF VALVE	<u></u>	
	BALANCING VALVE	C	
Ž	CHECK VALVE DRAIN VALVE		COIL - COOLING
~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	FLEXIBLE CONNECTION	<u>/_d</u>	
	UNION	H /	
5 / 5	STRAINER WITH BLOW OFF VALVE		COIL - HEATING
5 ×	TRIPLE DUTY VALVE	<u></u>	
≥ ⊗ ?	THERMOSTATIC STEAM TRAP		F. F
=======================================	CAPPED PIPE		ELECTRIC HEATER
≥	FLOAT & THERMOSTATIC STEAM TRAP		
	PIPE ANCHOR	$(\widehat{\mathbf{XX}})$	
≥ = ->	PIPE SLEEVE	YY	AVERAGING DEVICE XX-DEVICE TYPE
2	NEW DUCTWORK OR PIPING	\{	YY - SIGNAL TYPE
8/////8	EXISTING DUCTWORK OR PIPING TO BE REMOVED	<u> </u>	
	EXISTING DUCTWORK OR		PUMP
	PIPING TO REMAIN		
₹ / 	HEAT TRACE PIPE		VARIABLE FREQUENCY DRIVE
2 04/40	DOUBLE-LINE AND SINGLE-LINE RECTANGULAR DUCT, FIRST		
24X12	NUMBER INDICATES SIDE IN VIEW	ρ - 	SPLIT-CASE PUMP
< <u>24X12</u> <	IN INCHES, SECOND NUMBER INDICATES SIDE IN DEPTH IN		5.13E : 01ml
	INCHES	—————————————————————————————————————	END ONOTION TO THE
	DOUBLE-LINE AND SINGLE-LINE	ſ'n	END-SUCTION PUMP
, 120	ROUND DUCT, NUMBER		INLINE PUMP
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	INDICATES DIAMETER IN INCHES)	HACHAC I CIVIE
~~~~~~	FLEXIBLE DUCTWORK	XXX	EQUIPMENT TAG
-	DECLINATE CASES	XX	EQUIPMENT NUMBER
	REGULAR SUPPLY AIR DUCT (UP AND DOWN)	XXX X-XXX	DETAIL TAG/CALL OUT TAG MECHANICAL SHEET NUMBER
		V-7///	WILD IANIOAL SHEET NUMBER
	REGULAR RETURN AIR DUCT (UP AND DOWN)	(XX)	TAG - BMS DEVICE XX-DEVICE TYPE
<u>k</u>	. ,	<u> </u>	YY-SIGNAL TYPE
	REGULAR EXHAUST AIR DUCT (UP AND DOWN)	YYY	ELECTRIC PNEUMATIC RELAY
	(SI / NIAD DOMANA)	(EP XX	XX - TAG NUMBER YYY - SYSTEM
	REGULAR OUTSIDE AIR DUCT		FIELD CONNECT NEW TO
	(UP AND DOWN)	$\Theta \Phi$	EXISTING
	ROUND SUPPLY AIR DUCT	0	FIELD DISCONNECT
$\bigvee$ $\stackrel{\times}{\bigvee}$	(UP AND DOWN)	PS	DIFFERENTIAL PRESSURE
$\bigcirc$	ROUND RETURN AIR DUCT		SENSOR SUPPLY AIR FLOW
	(UP AND DOWN)	<i>1</i> -	SUPPLY AIR FLOW
	DOUBLE EVENTS TO THE		EXHAUST AIR  GAS SENSOR (INDICATE TYPE
	ROUND EXHAUST AIR DUCT (UP AND DOWN)	Gtype —	GAS SENSOR (INDICATE TYPE UNDERCUT DOOR
	. ,		THERMOSTAT
	ROUND OUTSIDE AIR DUCT	DSD	DUCT SMOKE DETECTOR
	(UP AND DOWN)	TS	TEMPERATURE SENSOR
·	INCLUATED ELEVIDLE DUCT		4 WAY CEILING DIFFUSER
· · · · · · · · · · · · · · · · · · ·	INSULATED FLEXIBLE DUCT	<b></b>	
¹VD	VOLUME DAMPER	<b>+</b>	3 WAY CEILING DIFFUSER
——— BD	BACKDRAFT DAMPER	<b></b>	2 WAY CEILING DIFFUSER
——— FD/AD	FIRE DAMPER AND ACCESS DOOR	<u></u>	2 WAY CEILING DIFFUSER
SD/AD	SMOKE DAMPER AND ACCESS DOOR	<b>▶</b>	
<u>~~</u> Σ	MOTOR OPERATED DAMPER		EXHAUST FAN
			EXHAUST GRILLE
M		<u>M</u>	METER
	CONTROL DAMPER	R	REGULATOR
1			RETURN GRILLE/REGISTER
		$\underline{\hspace{1cm}}$	SUPPLY DIFFUSER - ROUND
	FAN - CENTRIFUGAL	Ø	RETURN DIFFUSER - ROUND
		$(\varnothing)$	EXHAUST DIFFUSER - ROUND
	AIRFLOW MEASURING STATION		SIDEWALL GRILLE
		<u></u>	FI FAT ALII
		TC	ELECTRONIC TIMECLOCK
	-		REFER TO SUPPLEMENTAL

PROJECT TITLE

#### SAUNDERS TRADES AND TECHNICAL HIGH SCHOOL HVAC **UPGRADES**

PROJECT ADDRESS

**183 PALMER RD** YONKERS, NY 10701

OWNER

YONKERS PUBLIC **SCHOOLS** 

**ARCHITECT** 

**FULLER AND** D'ANGELO P.C. 45 KNOLLWOOD ROAD

ELMSFORD, NY 10523

(T) 914.592.4444

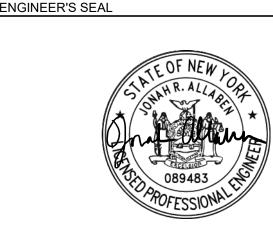
MEP ENGINEER AND ENVIRONMENTAL ENGINEER



KEY PLAN: NOT TO SCALE

SHEET SIZE 30X42

K DATE DESCRIPTION 08.18.20 ADENDUM 1 04.17.20 100% CONSTRUCTION DOCUMENTS 03.27.20 90% CONSTRUCTION DOCUMENTS
ARK DATE DESCRIPTION SED #: 66-23-00-01-0-206-017 YPS JOB: 10881 DESIGN BY: SHB DRAWN BY: SHB CHK'D BY: SFA COPYRIGHT: LIRO ENGINEERS, INC.



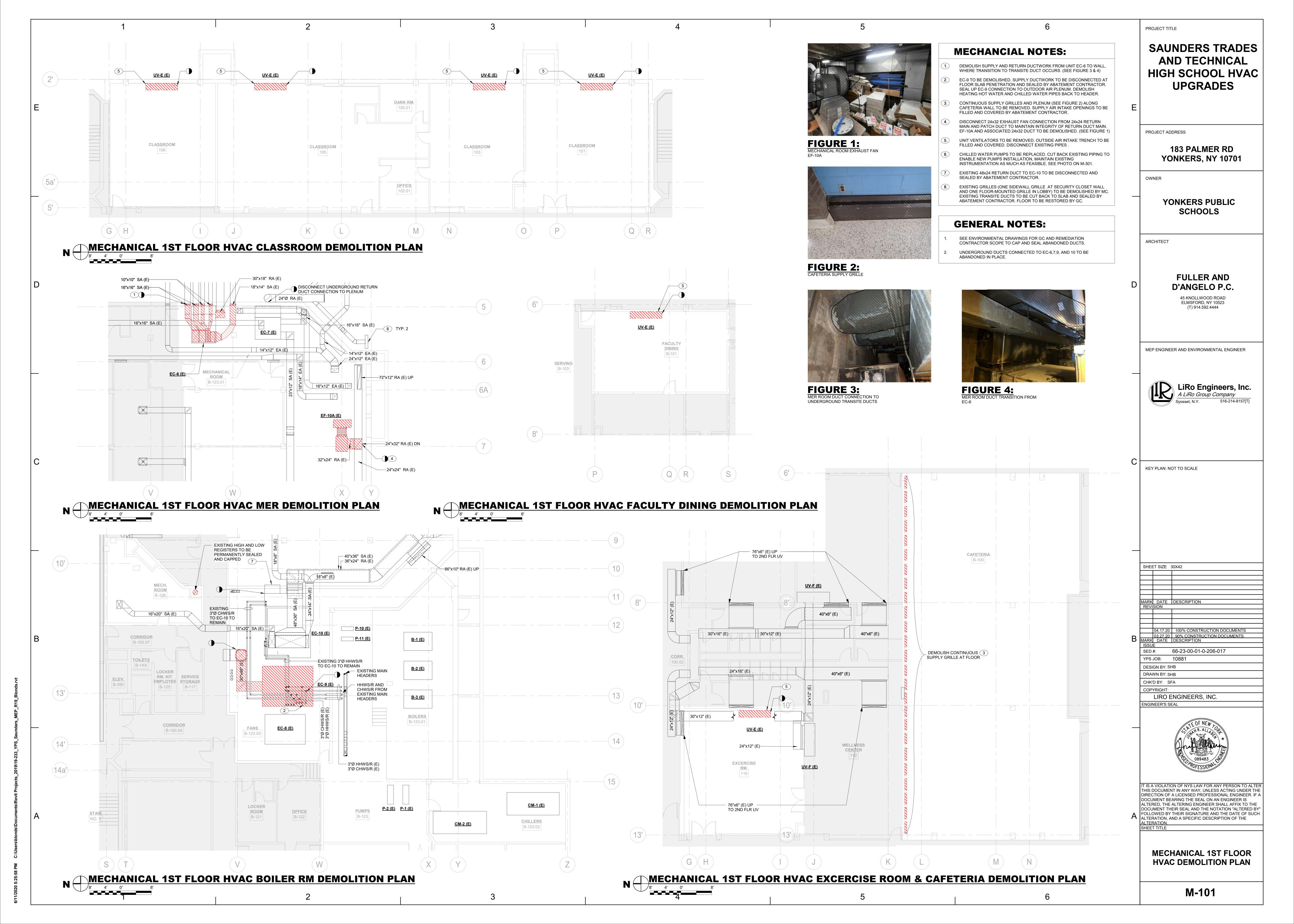
T IS A VIOLATION OF NYS LAW FOR ANY PERSON TO ALTER

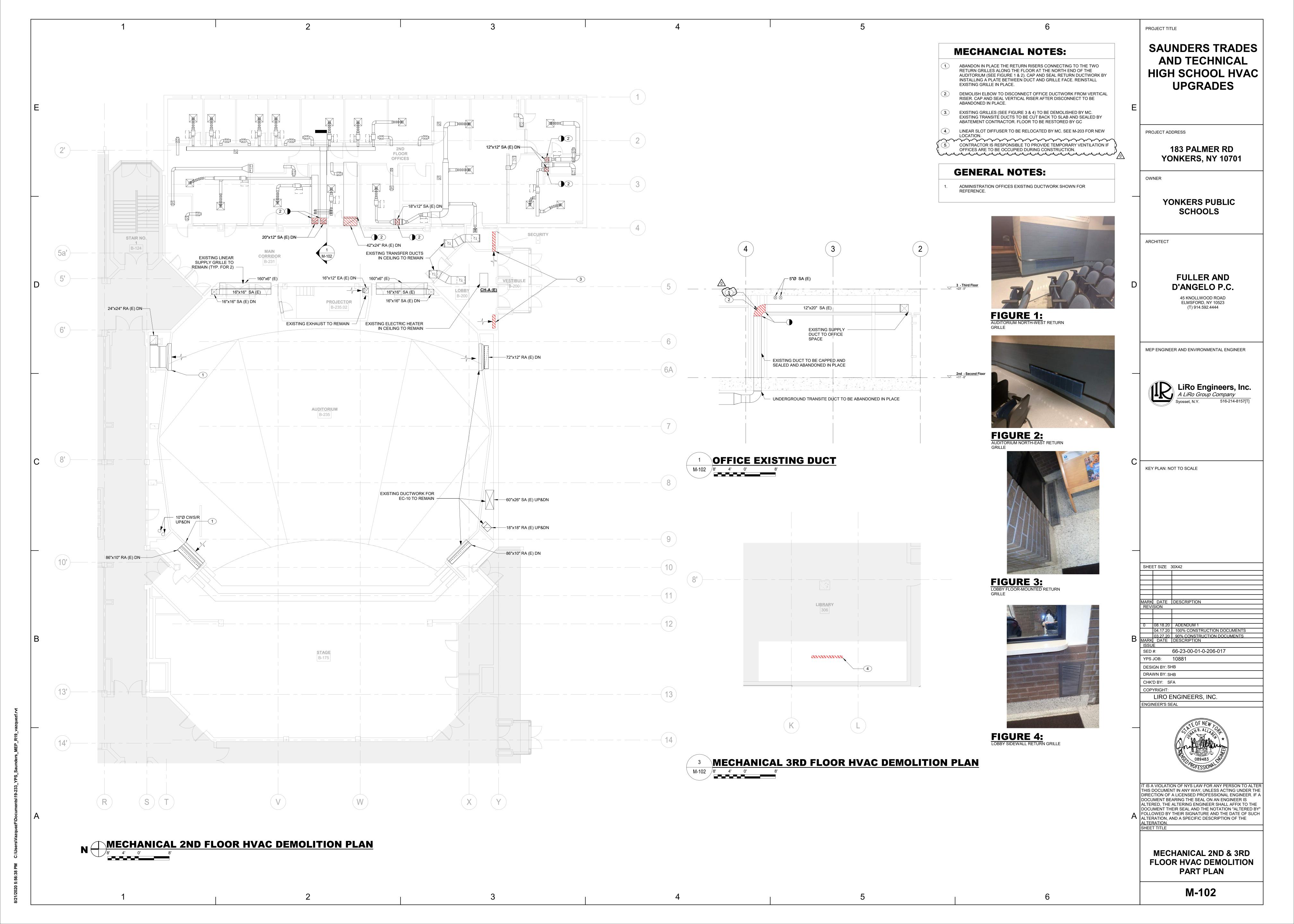
THIS DOCUMENT IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. IF A DOCUMENT BEARING THE SEAL ON AN ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE DOCUMENT THEIR SEAL AND THE NOTATION "ALTERED BY FOLLOWED BY THEIR SIGNATURE AND THE DATE OF SUCH A LATERATION, AND A SPECIFIC DESCRIPTION OF THE SHEET TITLE

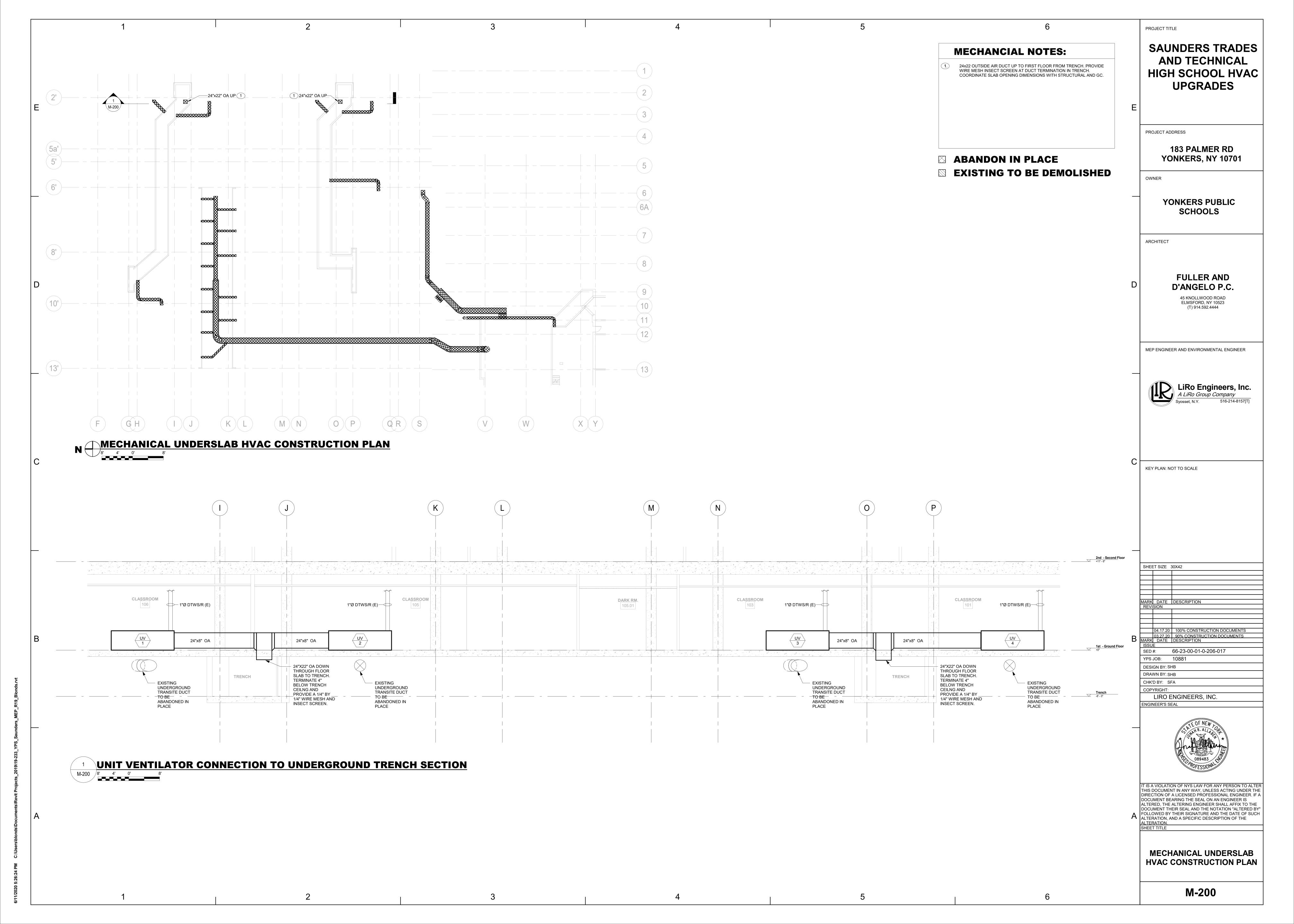
> **MECHANICAL NOTES,** SYMBOLS, AND

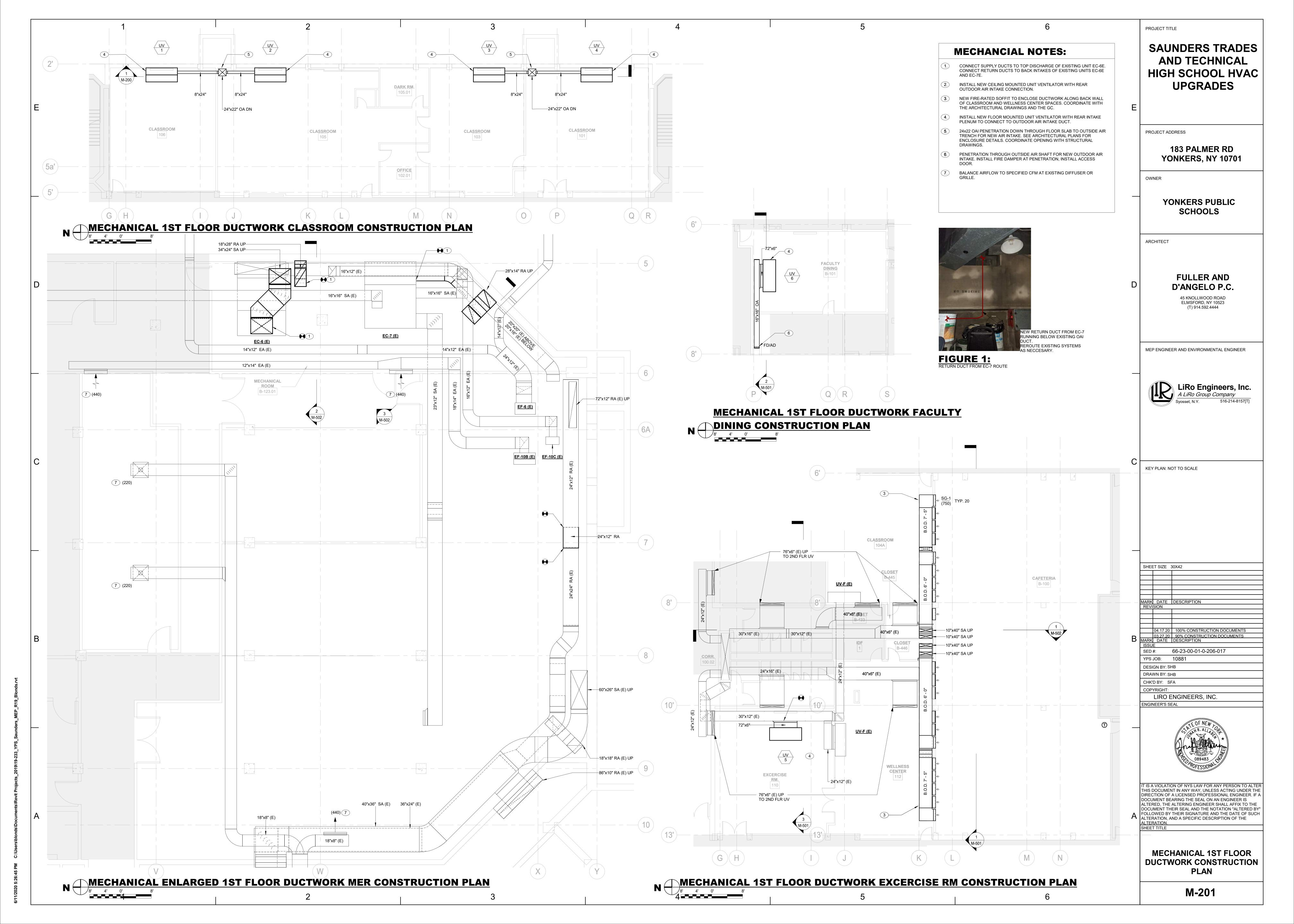
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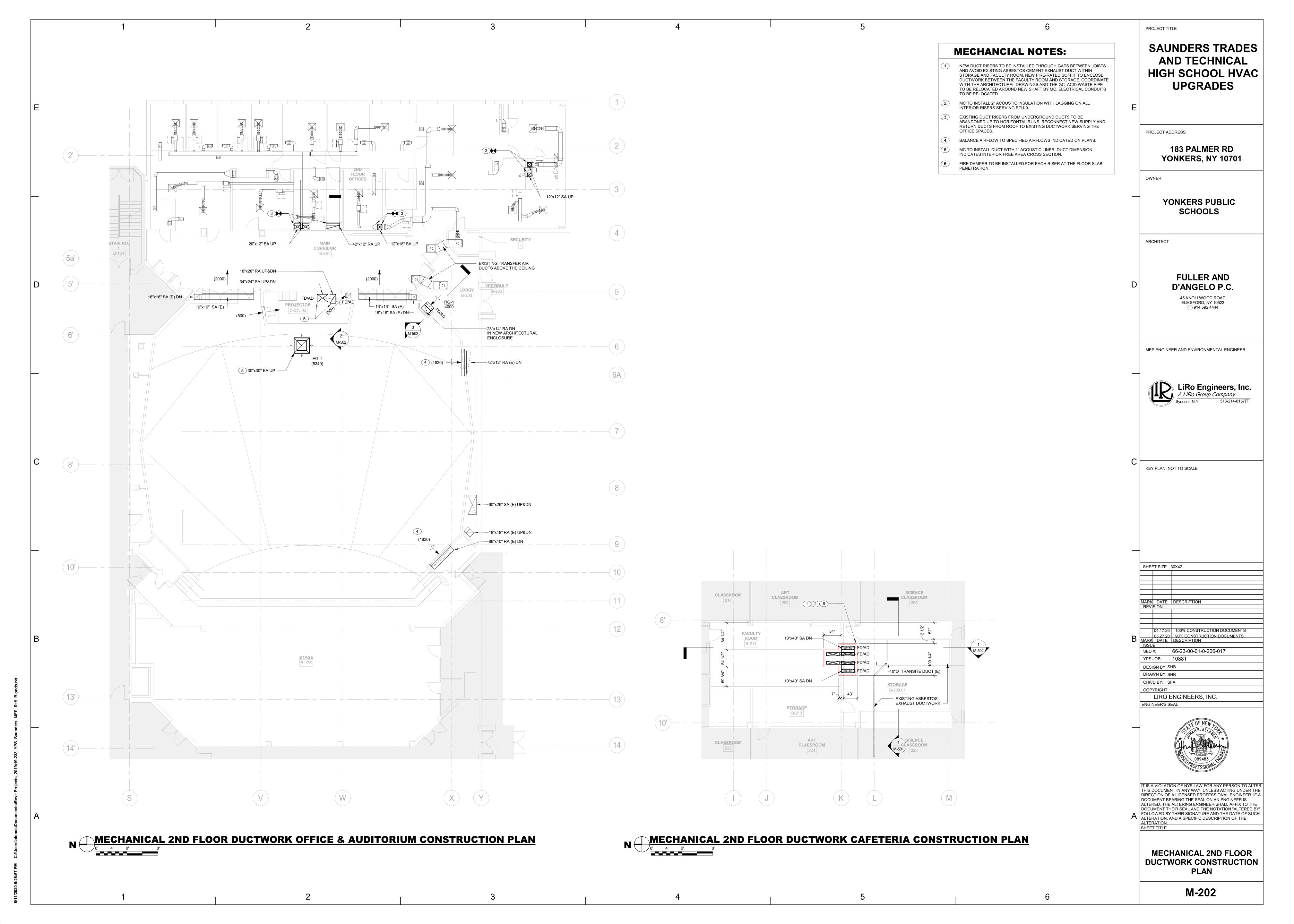
**ANNOTATIONS** 

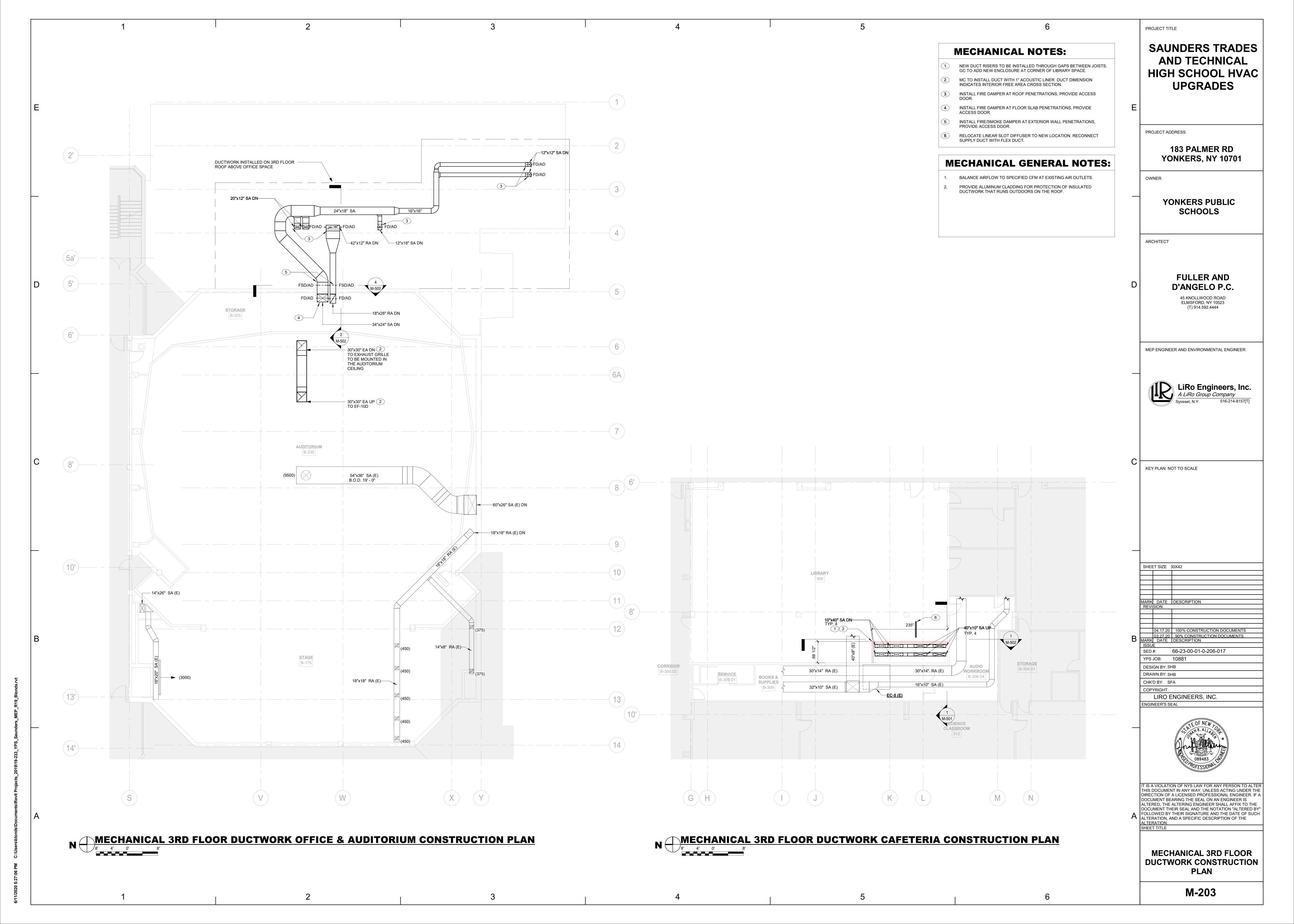


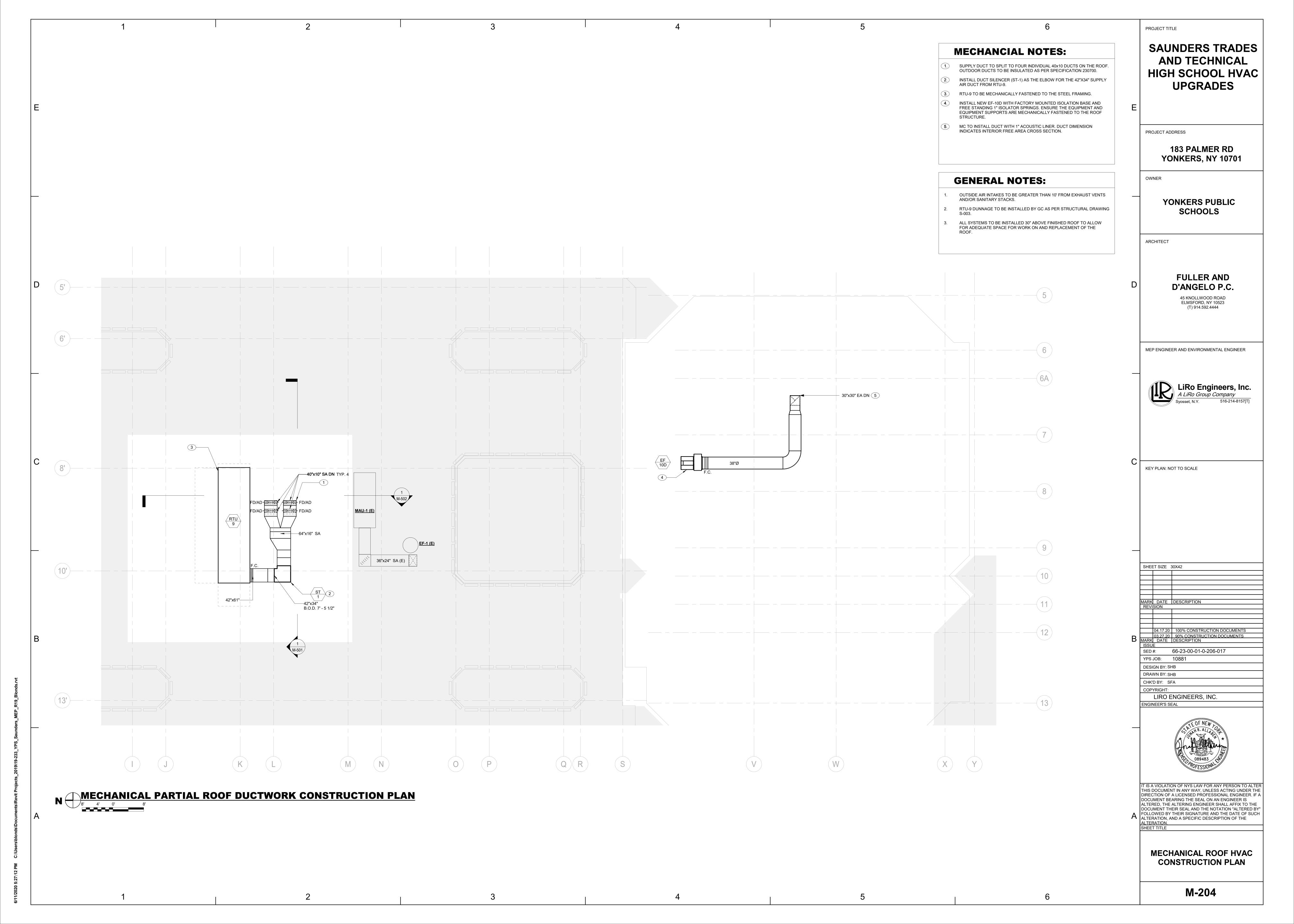


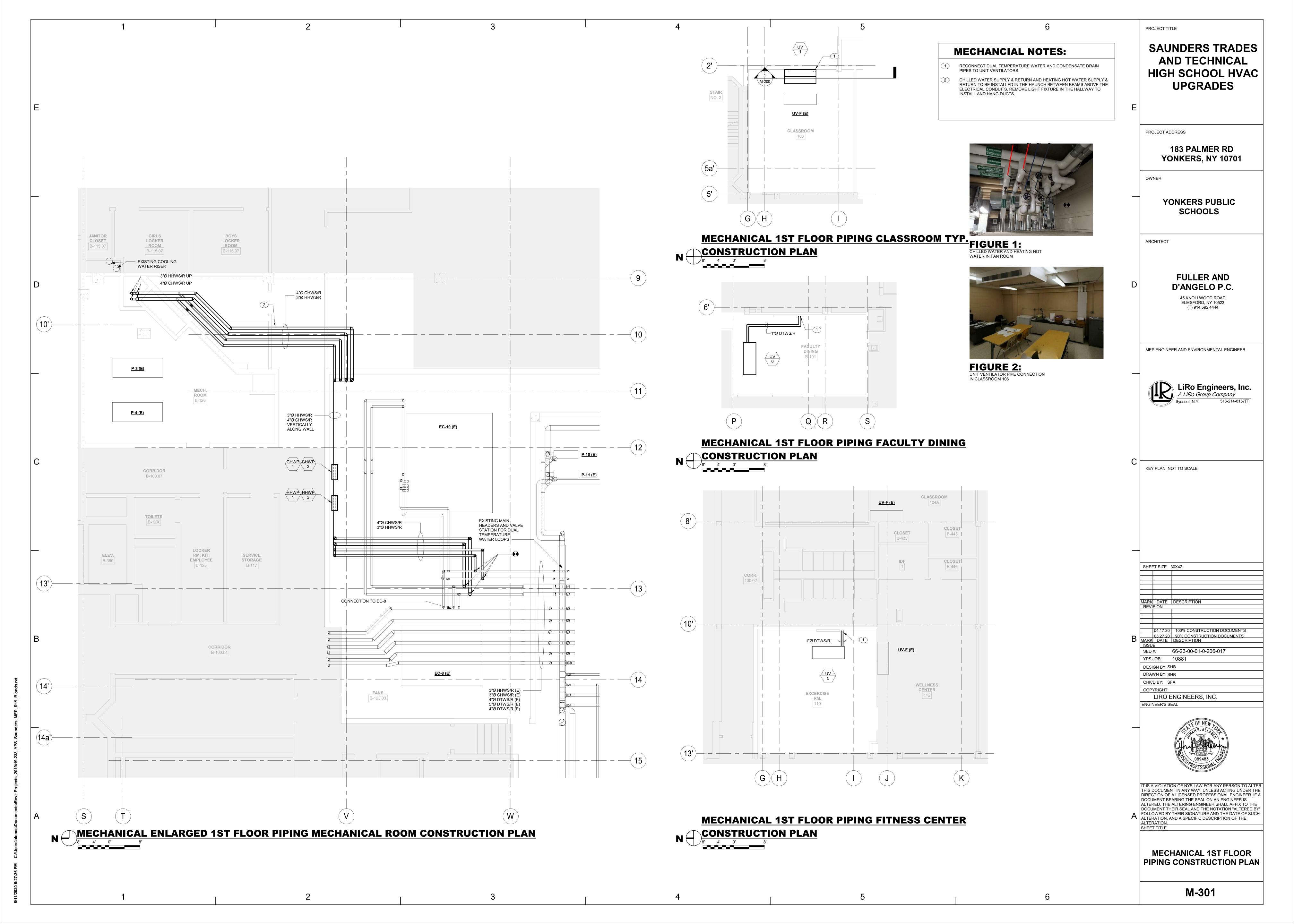


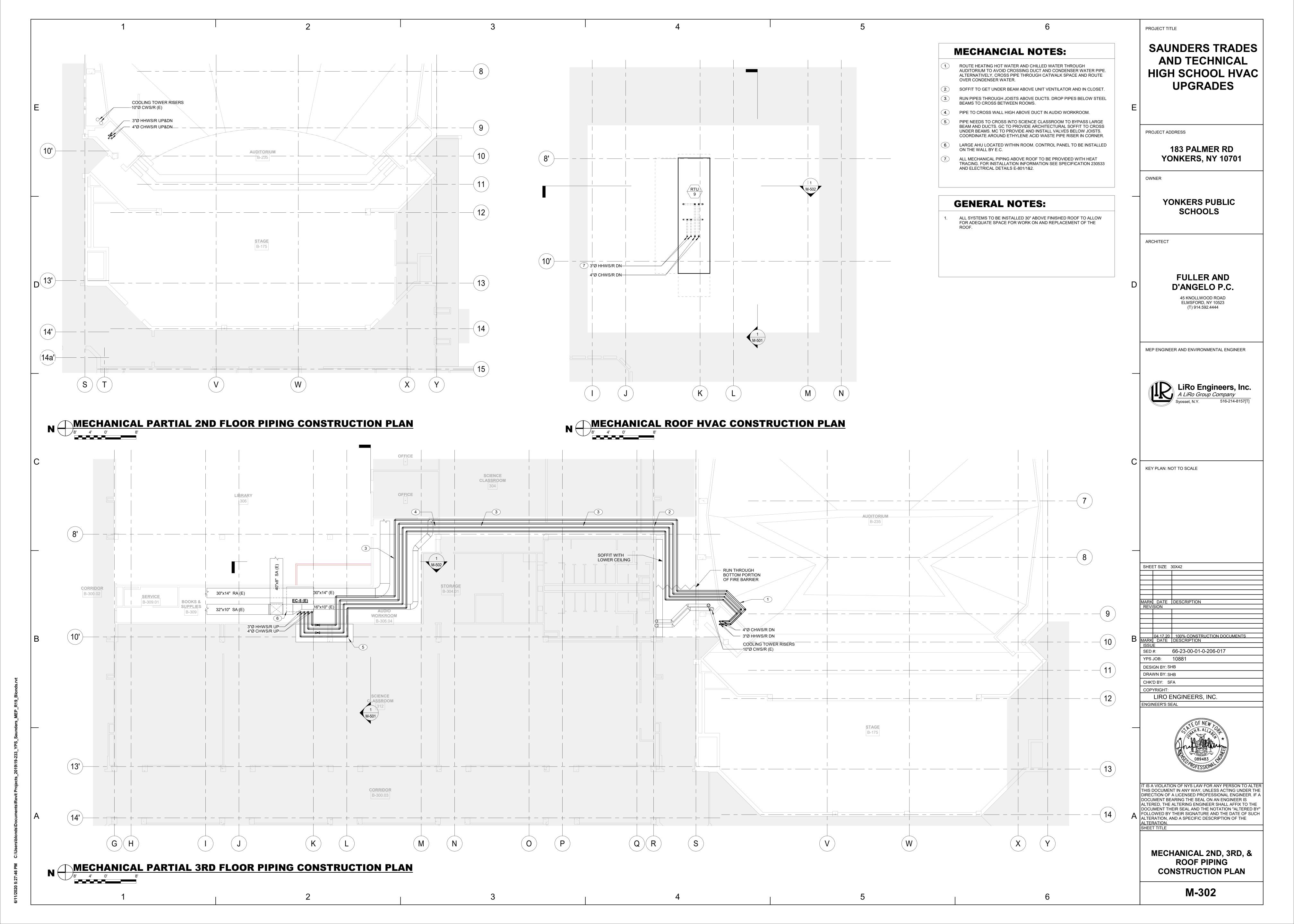


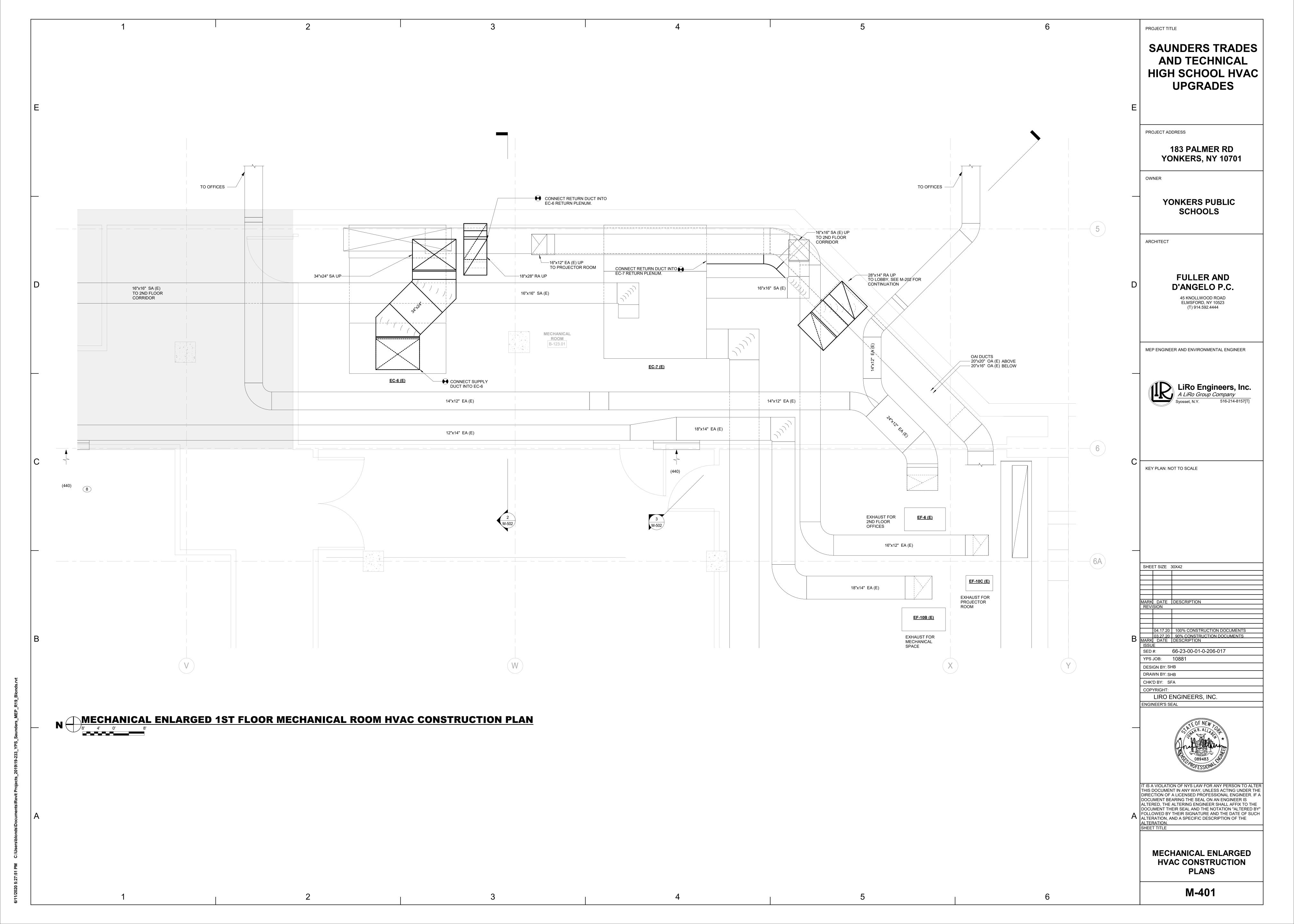


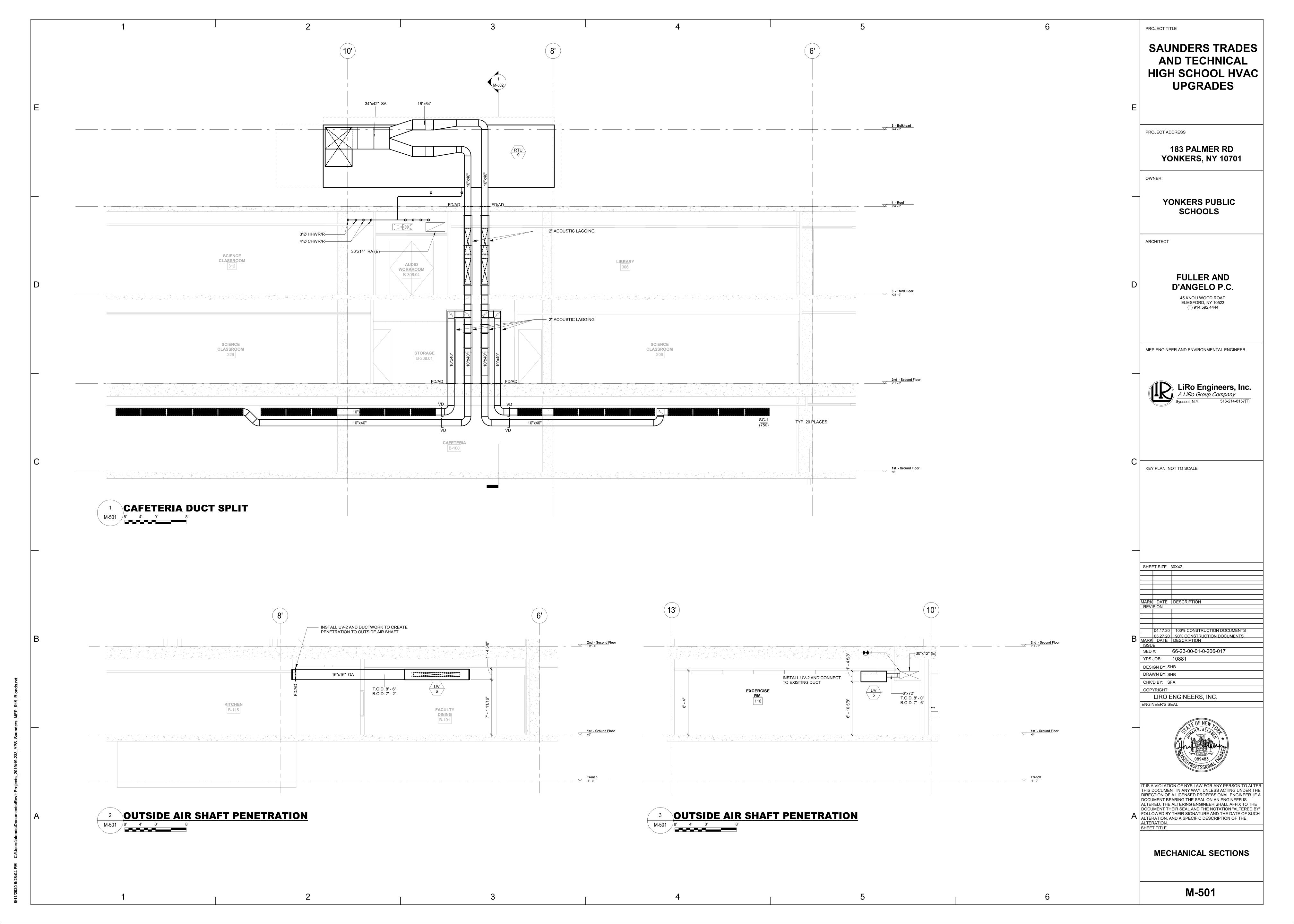


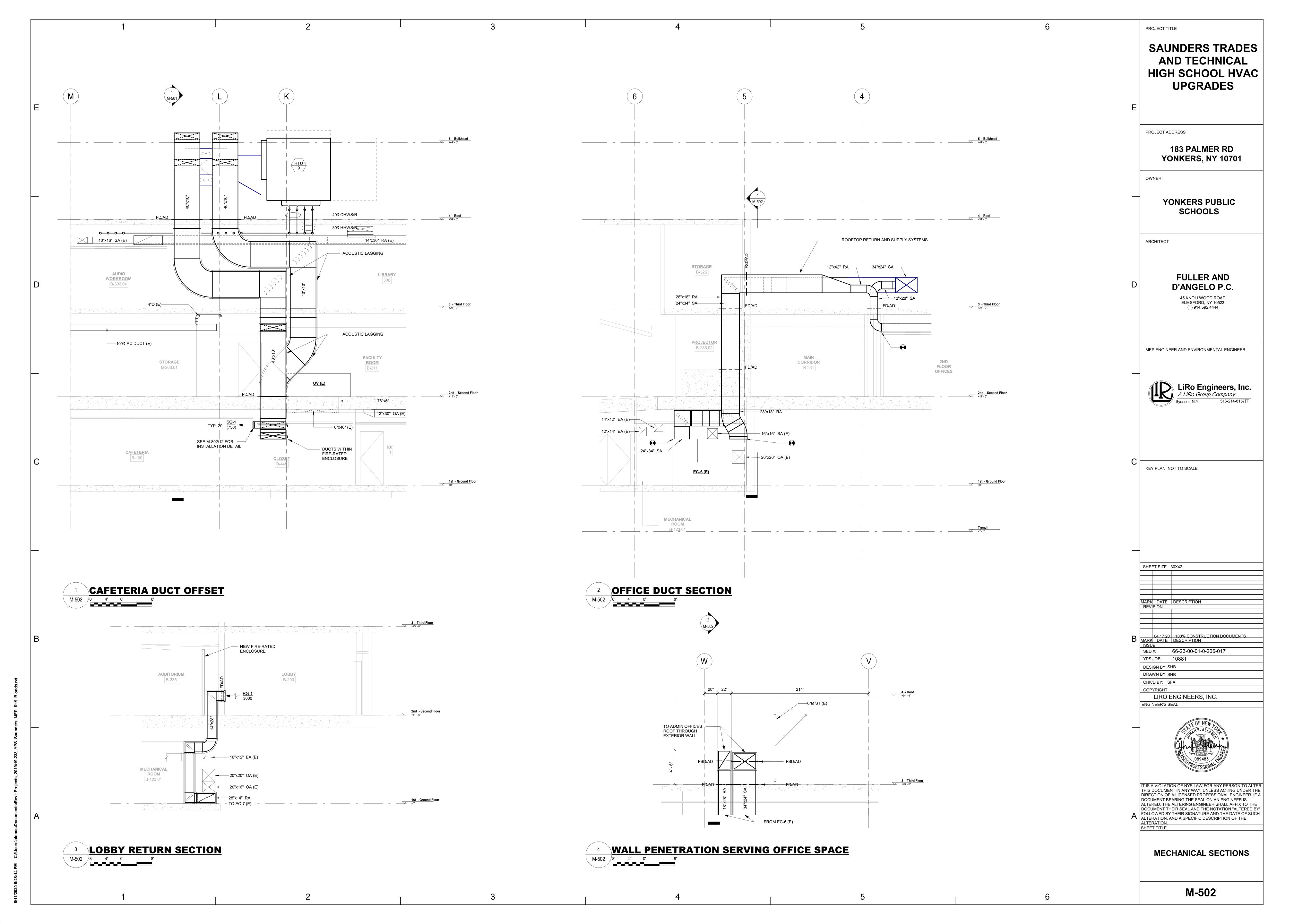


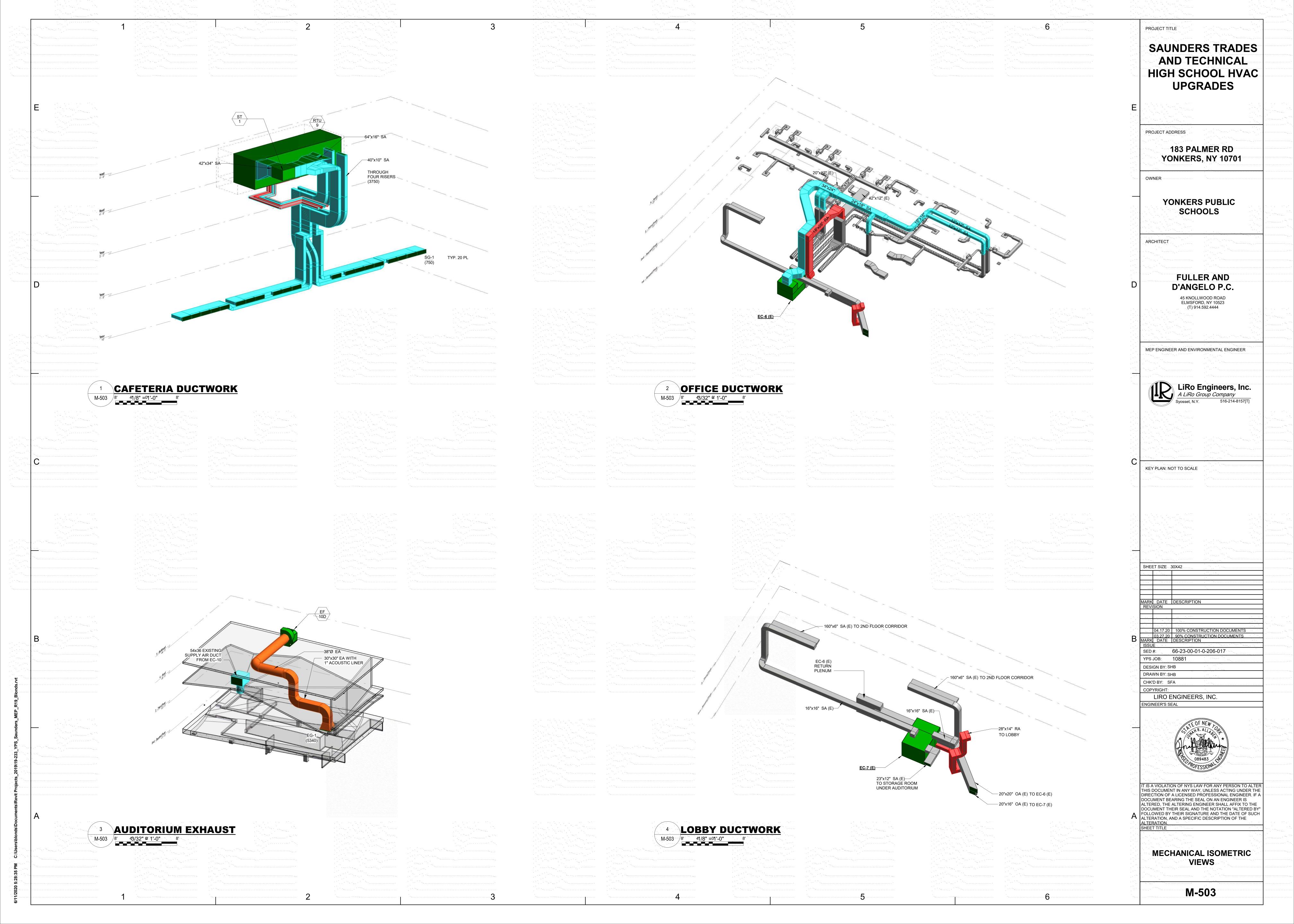












3. PROVIDE WATER COIL CONNECTIONS FROM THE BOTTOM OF THE UNIT. HEATING COIL TO BE INSTALLED BEFORE THE COOLING COIL. COIL CONTROL VALVES TO BE PROVIDED BY UNIT MANUFACTURER AND BE SHIPPED LOOSE TO BE INSTALLED BY MC

4. PROVIDE UNIT WITH FACE AND BYPASS DAMPERS WITH ACTUATORS AROUND THE COOLING COIL. CONTROLS FOR THE BYPASS DAMPERS TO BE COMPLETED BY CONTROLS CONTROL PANEL. UNIT MANUFACTURER VIA FIELD-INSTALLED SUPPLEMENTARY CONTROL PANEL

AIR HANDLING UNIT SCHEDULE HOT WATER HEATING COIL **ELECTRICAL** OPER. WEIGHT NOTES QTY COILS POWER V-PH-HZ NOTES: 1. PROVIDE UNIT WITH FACTORY MOUNTED FAN VFD, DISCONNECT SWITCH AND BUILT-IN PREPROGRAMMED CONTROLLER.

**UNIT VENTILATOR SCHEDULE** MANUFACTURER MODEL **TYPE** SERVICE CLASSROOM 100 MAGICAIRE MAGICAIRE VERTICAL VERTICAL CLASSROOM 10 CLASSROOM 103 MAGICAIRE MAUVF-5 VERTICAL CLASSROOM 10 MAGICAIRE MAUHF5 HORIZONTAL EXERCISE ROOM MAGICAIRE MAUHF5 HORIZONTAL **FACULTY DINING** 

3. PROVIDE UNIT WITH BUILT-IN DIGITAL CONTROLLER.

4. PROVIDE LITTLE GIANT CONDENSATE PUMP FOR SUSPENDED HORIZONTAL UNITS.

6. INSTALL PUMP PER MANUFACTURER'S SPECIFICATION.

2. PROVIDE UNIT CONFIGURED FOR 100% OUTDOOR AIR OPERATION WITH SIDE SUPPLY DISCHARGE.

	PUMP SCHEDULE													
						HEAD	M	OTOR D	ATA	UNIT DIM.	OPER.			
TAG	MANUFACTURER	MODEL	LOCATION	SERVICE	PUMP TYPE	TYPE		(FT.WG)	RPM	HP	V-PH-HZ	(LxWxH)	WEIGHT (LB)	NOTES
CHWP-1	BELL & GOSSETT	BG-E80-2.5x2.5x9.5C-SS182JM-1-IN	BOILER ROOM	CHILLED WATER	INLINE	H20	129	40	1750	3	208-3-60	21.5"x11.75"x28.13"	265	1,2,3,4,5,6,7
CHWP-2	BELL & GOSSETT	BG-E80-2.5x2.5x9.5C-SS182JM-1-IN	BOILER ROOM	CHILLED WATER	INLINE	H20	129	40	1750	3	208-3-60	21.5"x11.75"x28.13"	265	1,2,3,4,5,6,7
HHWP-1	BELL & GOSSETT	BG-E90-150AAB-075-1725-1	BOILER ROOM	HEATING HOT WATER	INLINE	H20	40	24	1750	0.75	208-3-60	11.5"x3"x17.25"	63	1,2,3,4,5,6,7
HHWP-2	BELL & GOSSETT	BG-E90-150AAB-075-1725-1	BOILER ROOM	HEATING HOT WATER	INLINE	H20	40	24	1750	0.75	208-3-60	11.5"x3"x17.25"	63	1,2,3,4,5,6,7
NOTES:					1	•	1							
1. ALL CONTRO	DL WIRING, RELAYS,	MISCELLANEOUS DEVICES SHALL E	BE BY DIVISION 2	23.										
2. PROVIDE VIE	BRATION ISOLATORS	SIZED FOR MINIMUM 90% DAMPEN	IING EFFICIENC	Υ.										
3. PROVIDE PR	REMIUM EFFICIENCY	INVERTER DUTY MOTORS AND VFD	S.											
4. M.C. TO PRO	4. M.C. TO PROVIDE PUMP INSULATION COVERS.													
5. PROVIDE ME	ECHANICAL SEALS FO	OR INLINE PUMPS.												-

TAG	MANUFACTURER / MODEL	SERVICE	MAX FLOW CFM	NECK SIZE (IN)	FACE SIZE (IN)	APD (IN.WG)	MAX NC	NOTES	
SG-1	TITUS / 300RS-HD	SUPPLY	750	36X10	38X12	0.020	10.0	1,2,3,4,5	
RG-1	TITUS / 350RL	RETURN	4000	48X30	50X32	0.035	12.5	1,2,3,4,5	
EG-1	TITUS / 350RL	EXHAUST	5340	48X48	50X50	0.020	10.0	1,2,3,4,5	

2. BLADES SHALL BE FIRMLY HELD IN PLACE BY MULLIONS FROM BEHIND THE GRILLE AND FIXED TO THE GRILLE BY WELDING IN PLACE. BLADE DEFLECTION ANGLE SHALL BE 35°.

3. OPPOSED-BLADE VOLUME DAMPER SHALL BE CONSTRUCTED OF HEAVY GUAGE STEEL. DAMPER MUST BE OPERABLE FROM THE FACE OF THE GRILLE. 4. THE GRILLE FINISH SHALL BE #26 WHITE.

5. THE MANUFACTURER SHALL PROVIDE PUBLISHED PERFORMANCE DATA FOR THE GRILLE. THE GRILLE SHALL BE TESTED IN ACCORDANCE WITH ANSI/ASHRAE STANDARD 70-1991.

2. PROVIDE STAINLESS STEEL WALL AND CEILING SWIVEL TYPE MOUNTING BRACKET.

				SOUND ATTEN	UATO	R SC	HED	ULE											
TAG	MANUEACTURER	MODEL	SEDVICE	LOCATION		DIMENSIO	N	AIRFLOW	VELOCIT	P.D. MAX			DYNA	MIC INS	ERTIO	N LOSS			OPER. WEIGHT
IAG	MANUFACTURER	MODEL	SERVICE	LOCATION	WIDTH (IN)	HEIGHT (IN)	LENGTH (IN)	(CFM)	Y (FPM)	(IN WG)	63 HZ	125 HZ	250 HZ	500 HZ	1000 HZ	2000 HZ	4000 HZ	8000 HZ	(LB)
ST-1	VIBRO-ACOUSTICS	RED-UHV-25353	RTU-9 SUPPLY AIR	ROOFTOP DUCTWORK	42	34	60	15000	1513	0.18	6	8	8	16	18	24	18	14	235
NOTES:																			

1. LENGTH SHOWN FOR ELBOW SILENCERS IS CENTERLINE LENGTH. 2. NON-BASIS OF DESIGN SILENCER MANUFACTURER SHALL PROVIDE, FOR APPROVAL, PROFESSIONAL ENGINEER STAMPED ACOUSTICAL CALCULATIONS FOR ALL SYSTEMS WITH SILENCERS TO DEMONSTRATE THAT THE RESULTANT DUCTBORNE FAN...

ENOUGH BIGGOT BEGINNER TO BE MONTH THE TENENT BOOTS IN THE TENENT
3. NON-BASIS OF DESIGN SILENCER MANUFACTURER SHALL PROVIDE, FOR APPROVAL, PROFESSIONAL ENGINEER STAMPED PRESSURE DROP CALCULATIONS FOR ALL SYSTEMS WITH SILENCERS TO DEMONSTRATE THAT THE RESULTANT INSTALLED
4. FOR NON-BASIS OF DESIGN PRODUCT SUPPLIED, CONTRACTOR IS FINANCIALLY RESPONSIBLE TO ENSURE NOISE CONTROL SOLUTION IS DELIVERED TO ACHIEVE SPECIFIED RC LEVEL IN SPACES AS PER SED DESIGN GUIDELINES FOR HVAC SYSTEM

TAG	MANUFACTURER	MODEL	SERVICE	TYPE	KW	V-PH-HZ
EUH-1	MODINE	HER75	RTU-9	SUSPENDED	7.5	208-3-60

	FAN SCHEDULE													
TAG	MANUFACTURER /	LOCATION	SERVICE	TYPE	DRIVE	FLOW	TSP		ELEC	CTRICAL		UNIT DIM.	OPER. WEIGHT	NOTES
IAG	MODEL	LOCATION	SERVICE	ITPE	DRIVE	(CFM)	IN.WG	HP	ВНР	RPM	V-PH-HZ	(LxWxH)	(LB)	NOIES
EF-10D	GREENHECK / USF-30	ROOF	AUDITORIUM	UTILITY SET FAN	DIRECT	5340	0.50	5.00	0.61	870	208-3-60	50.47x51.13x76.77	814	1,2,3
NOTES:														
1. PROVIDE	. PROVIDE MOTORIZED BACK DRAFT DAMPER.													
2. PROVIDE	2. PROVIDE FACTORY MOUNTED ISOLATION BASE WITH RESTRAINED SPRING ISOLATORS SIZED FOR MINIMUM 90% DAMPENING EFFICIENCY.													
3. MC TO IN	STALL VFD LOCATED NEAR E	EF-10A.												

	VARIABLE FREQUENCY DRIVE SCHEDULE								
ID	MANUFACTURER	MODEL	TECHNICAL DATA	COMMENTS					
EC-10 VFD	ABB	ACH580-BCR-114A-2+B056+F267+G390+K491	208 VAC 3-PHASE; 40 HP; 6-PULSE. SOFT START BYPASS	NEMA 12 ENCLOSURE					
CHWP-1 VFD	B&G	A2	208 VAC 3-PHASE; 3 HP	NEMA 12 ENCLOSURE					
CHWP-2 VFD	B&G	A2	208 VAC 3-PHASE; 3 HP	NEMA 12 ENCLOSURE					
HHWP-1 VFD	B&G	A2	208 VAC 3-PHASE; 1.5 HP	NEMA 12 ENCLOSURE					
HHWP-2 VFD	B&G	A2	208 VAC 3-PHASE; 1.5 HP	NEMA 12 ENCLOSURE					
EF-10D VFD	ABB	ACH550-BCR-06A6-2+B055	208 VAC 3-PHASE; 1.5 HP; 6-PULSE.	NEMA 12 ENCLOSURE					
NOTE:	·								

1. VFD TO BE PROVIDED BY MC AND INSTALLED BY EC

	ZONE	Az	OCCUP. DENSITY	Code Occupancy	Rp	Ra	Ez	Voz	Design OAI
TAG	NAME	SF	PER/1000 SQFT	Category	CFM/PER	CFM/SF	1	CFM	CFM
UV-1	CLASSROOM 106	876	35	CLASSROOM	10	0.12	1.0	412	425
UV-2	CLASSROOM 105	1446.47	35	CLASSROOM	10	0.12	1.0	680	700
UV-3	CLASSROOM 103	776.87	25	COMPUTER LAB	10	0.12	1.0	287	300
UV-4	CLASSROOM 101	1037.9	35	CLASSROOM	10	0.12	1.0	488	500
UV-5	EXERCISE ROOM	987.14	10	WEIGHT ROOM	20	0.06	0.8	321	325
UV-6	FACULTY DINING	734.93	100	CAFETERIA	7.5	0.18	0.8	854	875
RTU-9	STUDENT DINING	4205	100	CAFETERIA	7.5	0.18	1.0	3911	15000

munimum manumum manum ma

**AND TECHNICAL** HIGH SCHOOL HVAC **UPGRADES** 

SAUNDERS TRADES

PROJECT ADDRESS

PROJECT TITLE

**183 PALMER RD** YONKERS, NY 10701

OWNER

YONKERS PUBLIC **SCHOOLS** 

ARCHITECT

**FULLER AND** D'ANGELO P.C. 45 KNOLLWOOD ROAD ELMSFORD, NY 10523

(T) 914.592.4444

MEP ENGINEER AND ENVIRONMENTAL ENGINEER



KEY PLAN: NOT TO SCALE

	SHEE	ET SIZE	30X42
	MARK	DATE	DESCRIPTION
	REVI	SION	
	0	08.18.20	ADENDUM 1
		04.17.20	100% CONSTRUCTION DOCUMENTS
D		03.27.20	90% CONSTRUCTION DOCUMENTS
В	MARK		DESCRIPTION
	ISSU	<u>E</u>	
	SED	#:	66-23-00-01-0-206-017
	YPS	JOB:	10881
	DESI	GN BY: SI	łB
	DRA	WN BY: SH	<del>I</del> B
	CHK'	D BY: SF	FA
	COP	YRIGHT:	
		LIRO E	NGINEERS, INC.

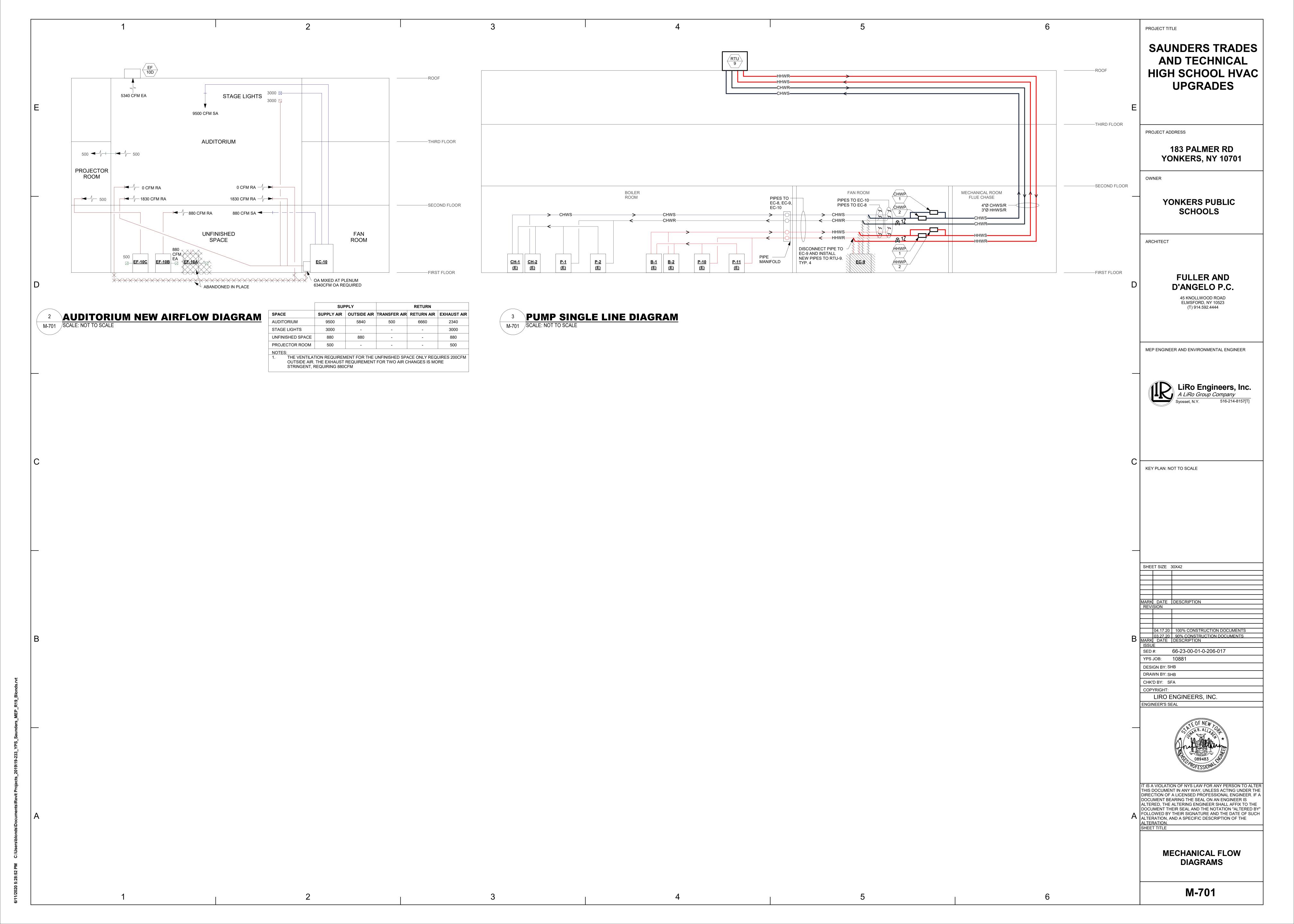
**ENGINEER'S SEAL** 

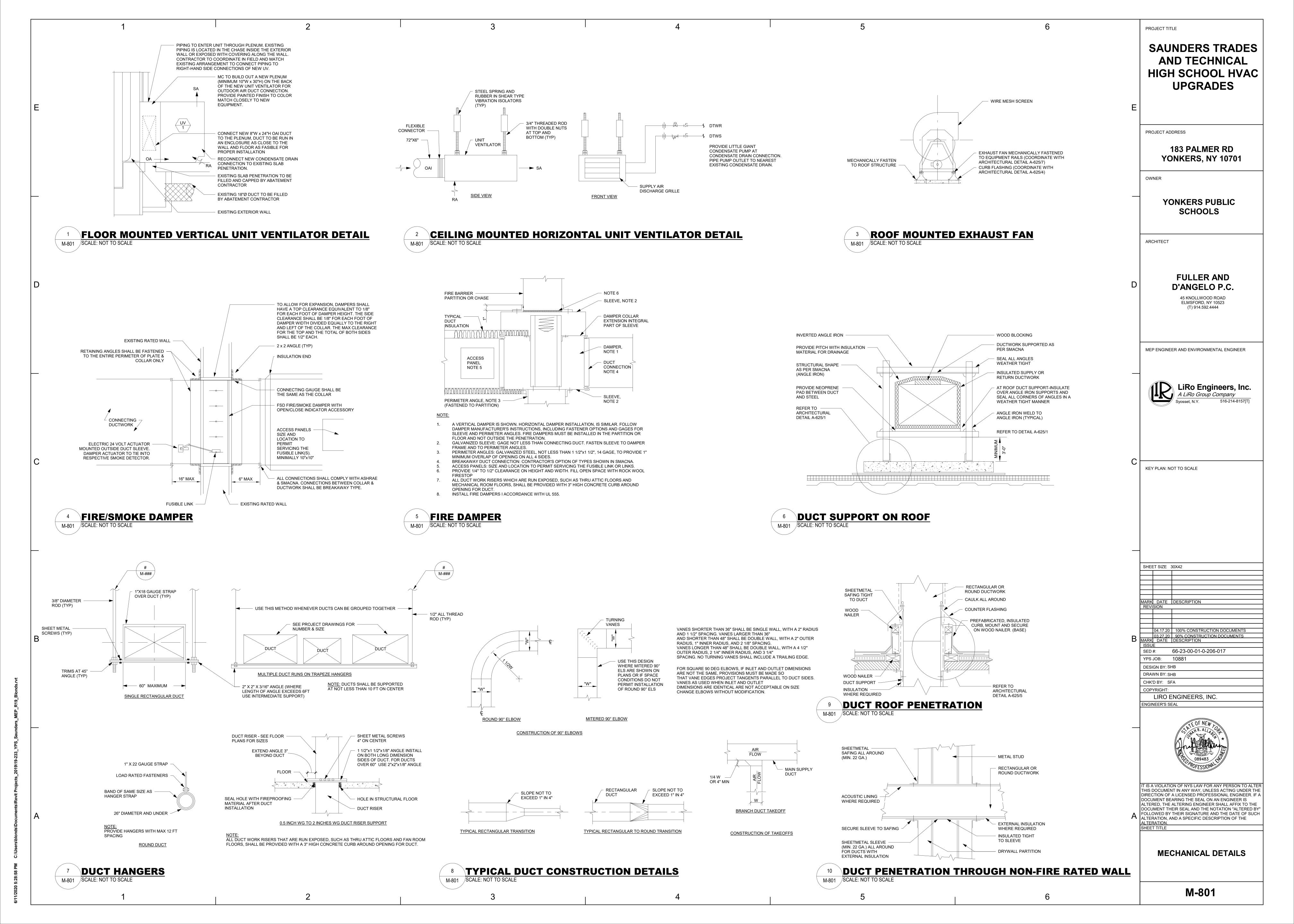


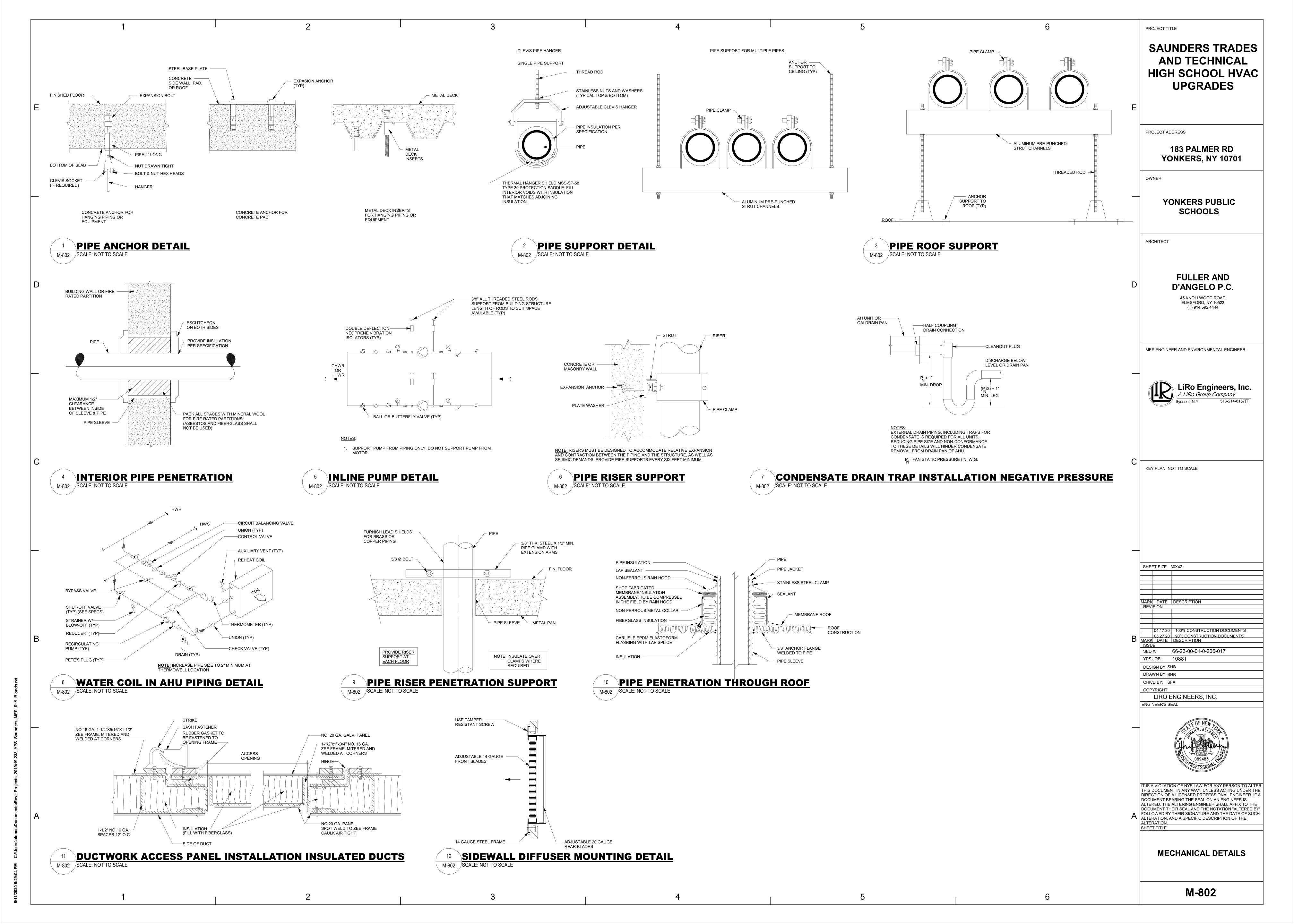
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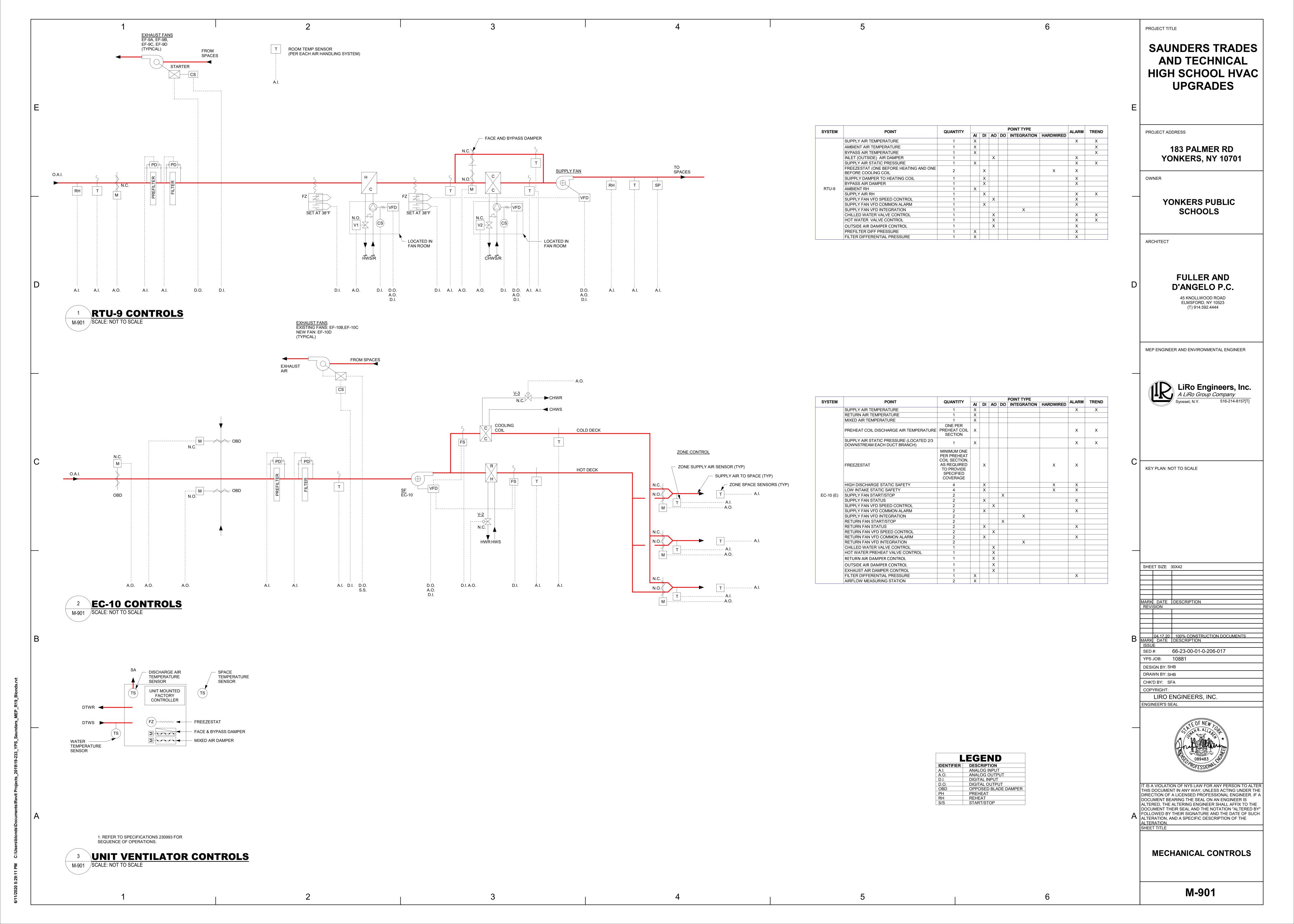
MECHANICAL SCHEDULES

M-601









## SCOPE OF WORK ELECTRICAL WORK CONSISTS OF:

- DEMOLITION OF ELECTRICAL EQUIPMENT, INCLUDING COMBINATION STARTERS AND ASSOCIATED CONDUIT AND WIRING.
  INSTALLING VFDs FURNISHED BY OTHERS FOR THE EXISITNG AND NEW EQUIPMENT.
  MODIFICATIONS TO EXISTING PANELBOARDS, INCLUDING FURNISHING NEW AND UTILIZING EXISTING SPARE BRANCH CIRUIT BREAKERS.
  FURNISHING AND INSTALLING NEW PANELBOARD
- FURNISHING AND INSTALLING NEW PANELBOARD.
  FURNISHING AND INSTALLING HEAT TRACE AND FREEZE PROTECTION
  SYSTEM.
  INSTALLATION OF POWER TO THE NEW AND EXISTNG LOADS.
- INSTALLATION OF ELECTRICAL AND ELECTRONIC EQUIPMENT FURNISHED BY OTHERS.
  REMOVAL AND REINSTALLATION OF THE CEILING MOUNTED DEVICES TO FACILITATE INSTALLATION OF THE PROPOSED DUCTS AND PIPING BY

RELOCATION OF THE EXIISTNG DEVICES, INCLUDING WIRING DEVICES,

FIRE ALARM DEVICES AND CONTROLS DEVICES AFFECTED BY INSTALLATION OF NEW EQUIPMENT.

0. EXTENSION OF THE EXISITNG POWER CIRCUITS FEEDING UNIT VENTILATORS DUE TO INSTALLATIONS OF NEW UNITS IN DIFFERENT

NOTE: THIS SCOPE OF WORK DESCRIPTION IS PROVIDED TO GIVE AN OVERALL "MACRO" DESCRIPTION OF THIS PROJECT. E.C. IS RESPONSIBLE TO REVIEW ALL ENGINEERING AND ARCHITECTURAL DRAWINGS AND VISIT THE SITE IF NEEDED, PRIOR TO SUBMISSION OF BID.

### **GENERAL NOTES**

- 1. ALL ELECTRICAL WORK SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE 2014 EDITION OF THE NATIONAL ELECTRICAL CODE (N.E.C.), NFPA 101, 2015, 2015 N.Y.S. BUILDING CODES AND ALL LOCAL AND MUNICIPAL CODES HAVING JURISDICTION.
- 2. ELECTRICAL CONTRACTOR (E.C.) TO VISIT SITE, ACQUAINT HIMSELF WITH EXISTING CONDITIONS AND INCLUDE ALL NECESSARY COSTS TO COMPLETE THE INSTALLATION.
  3. E.C. TO FURNISH AND PAY FOR ALL PERMITS AS REQUIRED AND OBTAIN FINAL

LOCAL AND MUNICIPAL CODES HAVING JURISDICTION.

CERTIFICATE OF INSPECTION.

BRANCH CIRCUIT HOMERUNS THAT EXCEED 100 L.F. SHALL BE AWG #10, UNLESS OTHERWISE NOTED.
 MINIMUM WIRE SIZE SHALL BE AWG #12 THHN CU. REFER TO PANEL SCHEDULES FOR IDENTIFICATION OF ANY WIRE SIZES GREATER THAN #12.
 RECEPTACLE COLOR SCHEME TO BE COORDINATED WITH C.M., ARCHITECT &

ALL WIRING SHALL BE CONCEALED IN CONDUIT AS ALLOWED BY N.E.C. AND ALL

- RECEPTACLE COLOR SCHEME TO BE COORDINATED WITH C.M., ARCHITECT & OWNER.
   CATALOG NUMBERS ARE MEANT TO INDICATE TYPE DESIRED AND MAY BE SUBSTITUTED WITH AN APPROVED EQUAL DEVICE. "APPROVED EQUAL" MUST BE SUBMITTED TO THE ENGINEER FOR WRITTEN APPROVAL PRIOR TO
- INSTALLATION IN THE FIELD.

  WORK MUST BE COORDINATED WITH ALL OTHER TRADES TO ELIMINATE CONFLICTS & INTERFERENCES.
- E.C. SHALL BALANCE LOADS ON PARALLEL FEEDER AND ALL PANELS.
   E.C. IS RESPONSIBLE FOR PROVIDING CLEAR PANEL AND EQUIPMENT LABELS AND CLEARLY IDENTIFYING ALL AS-BUILT CIRCUITS. COMPLETED, LAMINATED AS-BUILT CIRCUIT ID CARDS TO BE INSTALLED INSIDE EVERY PANELBOARD. COPIES OF ALL AS-BUILT CIRCUIT ID CARDS TO BE SUBMITTED TO THE OWNER. ALL PANEL SCHEDULES MUST CLEARLY STATE EXACT DEVICES SERVED AND ASSOCIATED LOCATION (FLOOR AND ROOM).
- E.C. MUST PROVIDE CIRCUIT LABELING ON (ALL SWITCH & RECEPTACLE COVER PLATES AND ALL NITE-LIGHTS) FOR EASY IDENTIFICATION (THIS IS A HOSPITAL STANDARD). THIS LABELING MUST COORDINATE WITH THE DETAILED CIRCUIT IDENTIFICATIONS ON THE PANEL SCHEDULES. REFER TO DETAILS IN THIS DRAWING SET. ALL LABELING OF EQUIPMENT SHALL BE STRICTLY ENFORCED.
   E.C. MUST PROVIDE PROPER "FIRE STOPPING" AT ALL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES. SUBMIT EXACT MATERIALS AND METHODS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION. NO
- EXCEPTIONS TAKEN.

  14. CONTROL WIRING FOR HVAC UNITS (OTHER THAN LOW VOLTAGE POWER SUPPLY WIRING) SHALL BE DONE BY HVAC CONTRACTOR.
- 50FFET WIKING) SHALL BE DONE BY TWAC CONTRACTOR.

  5. ALL UNDERGROUND CONDUIT SHALL BE RIGID PVC COATED, HOT DIPPED GALVANIZED STEEL WITH WARNING TAPE ABOVE IT.

  6. CONDUIT AND WIRE ON POWER AND LIGHTING PLANS IS TYPICALLY NOT SHOWN
- EXCEPT FOR HOMERUNS. CONTRACTOR SHALL PROVIDE ALL NECESSARY CONDUIT, BOXES, PULL BOXES, WIRING, SWITCHES AND ACCESSORIES TO INTERCONNECT THE ELECTRICAL ITEM FOR CIRCUITING AND HOMERUNS INDICATED SYMBOLICALLY ON THE DRAWINGS. SEE LEGEND-HOMERUNS DESIGNATION FOR SYMBOLOGY APPLICABLE TO ALL SYMBOLS SHOWN.

  17. U.O.N. ON PLANS AND SECTIONS: ALL HEAVY LINES ARE NEW EQUIPMENT
- CONDUIT, WIRING, ETC. ALL LIGHT LINES ARE EQUIPMENT, CONDUIT, WIRING, ETC. BY OTHERS.

  ALL EXPOSED WIRING (ABOVE THE CEILING) MUST BE PLENUM RATED IF NOT
- CONCEALED IN AN APPROVED RACEWAY SYSTEM.

  19. E.C. MUST INCLUDE IN HIS PRICE ALL MATERIAL AND LABOR FOR TEMPORARY POWER AND LIGHTING FOR ALL TRADES DURING DEMOLITION (IF APPLICABLE) &
- POWER DISTRIBUTION NOTE: CONDUITS TO BE AS FOLLOWS. WHERE RUN WITHIN THE BUILDING IN DRY LOCATIONS NOT SUBJECT TO PHYSICAL DAMAGE PROVIDE E.M.T WHERE RUN IN BUILDING WHERE SUBJECT TO PHYSICAL DAMAGE, WET OR DAMP LOCATIONS, THRU ROOFS OR CONCRETE PROVIDE THICK WALLED RIGID STEEL CONDUIT. WHERE RUN UNDERGROUND PROVIDE SCHEDULE 40 P.V.C. EXCEPT THAT ALL ELBOWS ON P.V.C. CONDUIT SYSTEM SHALL BE THICK WALLED RIGID STEEL AND SHALL BE GROUNDED IN ACCORDANCE WITH N.E.C. 300-5(D) WHERE REQUIRED.

## **TYPICAL DEVICE MOUNTING HEIGHT**

RECEPTACLES (OFFICE AREA)	18" AFF
RECEPTACLES (U.O.N.)	36" AFF
LIGHT SWITCHES	48" AFF
DISCONNECT SWITCHES	NEC 404.8(A)
TELEPHONE OUTLETS	18" AFF
TELEPHONE OUTLET (WALL MTD)	48" AFF
COMPUTER OUTLETS	18" AFF
CLOCK OUTLETS	7'-6" AFF
FIRE ALARM PULL STATION	48" AFF
FIRE ALARM AUDIO/VISUAL ALARM	80" AFF
EXIT LIGHTS (WALL MTD)	1' ABOVE DOOR
EMERGENCY LIGHTS (WALL MTD)	7'-6" AFF
TV OUTLETS	18" AFF
AUDIO/VIDEO OUTLETS	18" AFF
MICROPHONE OUTLETS	18" AFF
PA ANNUNCIATOR PANEL	48" AFF
WELDING OUTLETS	36" AFF
NOTE: DIMENSIONS ARE TO DEVICE CENTERLIN UNLESS NOTED OTHERWISE	NE

THIS SYMBOL LEGEND IS SHOWN FOR GENERAL REFERENCE ONLY. THE PRESENCE OF A SYMBOL ON THIS LEGEND DOES NOT IMPLY ITS USE ON THIS PROJECT. REFER TO DRAWINGS FOR SPECIFIC SYMBOLS USED.

BRANCH CIRCUIT HOMERUN. SHORT LINES INDICATE PHASE CONDUCTORS. LONG LINES INDICATE NEUTRAL CONDUCTOR. ONE SEPARATE GREEN GROUNDING CONDUCTOR SHALL BE PROVIDED FOR EACH HOMERUN; NOT SHOWN.

JUNCTION BOX
FIELD CONNECT

PANELBOARD, SURFACE MOUNTED

PANELBOARD, RECESSED

PEM RECEPTACLE, DUPLEX
EM = EMERGENCY

RECEPTACLE, DUPLEX
EM = EMERGENCY
GFI = GROUND FAULT INTERRUPTER
WP = WEATHERPROF, NEMA 3R
RECEPTACLE, QUADRUPLEX

RECEPTACLE, SINGLE
 RECEPTACLE, SPECIAL PURPOSE
 A = 120V, 20A, 1 PHASE, 2-POLE, 3W, NEMA 5-20R.
 B = 208V, 20A, 1 PHASE, 2-POLE, 3W, NEMA 6-20R.
 C = 120V, 30A, 1 PHASE, 2-POLE, 3W, NEMA 5-30R.
 D = 208V, 30A, 1 PHASE, 2-POLE, 3W, NEMA 6-30R.
 E = 208V, 60A, 1 PHASE, 3-POLE, 4W, NEMA 14-60R.

F = 208V, 30A, 3 PHASE, 3-POLE, 4W, NEMA 15-30R.

G = 208V, 50A, 3 PHASE, 3-POLE, 4W, NEMA 15-30R.
H = 208V, 60A, 3 PHASE, 3-POLE, 4W, NEMA 15-60R.

ENCLOSED CIRCUIT BREAKER
DISCONNECT SWITCH, FUSED
STARTER, COMBINATION WITH
DISCONNECT SWITCH
DISCONNECT SWITCH
STARTER, COMBINATION WITH
DISCONNECT SWITCH

DISCONNECT SWITCH └ FUSE/BREAKER SIZE BLANK STARTER OR MOTOR CONTROLLER DENOTES UNFUSED ∀ VARIABLE FREQUENCY DRIVE DISCONNECT/CB TAG \$ SWITCH L = LOCK BLANK = SINGLE POLE M = MOTOR2 = DOUBLE POLE OS = OCCUPANCY SENSOR 3 = THREE-WAY P = WITH PILOT LIGHT 4 = FOUR-WAY

T = TIMER OPERATED

X = EXPLOSION PROOF

WP = WEATHER PROOF, NEMA 3R

GENERATOR

(800AF/800AT) DRAW OUT CIRCUIT BREAKER
(3P, U.O.N.)
AF = AMP FRAME
AT = AMP TRIP

CIRCUIT BREAKER (3P, U.O.N.)

SWITCH AND FUSE (3P, U.O.N.)

D = DIMMER

K = KEY OPERATED

800AS 800AF AS = AMP SWITCH

F = FUSED

AUTOMATIC TRANSFER SWITCH (ATS)

N = NORMAL (NON-GENERATOR) POWER

E = EMERGENCY (GENERATOR) POWER

L = LOAD (OUTPUT)

ATS-1 = DEVICE LABEL

LIGHT FIXTURES, VARIOUS. SEE LIGHTING

LIGHT FIXTURES, VARIOUS. SEE LIGHTING
FIXTURE SCHEDULE.
DARK BLACK HATCH INDICATES EMERGENCY
BATTERY OR EMERGENCY (LIFE SAFETY)
GENERATOR POWER.

EXIT SIGN, CEILING MOUNTED; EXIT SIGN, WALL
MOUNTED, ARROWS INDICATE CHEVRON

MOUNTED. ARROWS INDICATE CHEVRON DIRECTION.

EMERGENCY WALL PACK

∇ ▼ ■ DATA; VOICE/DATA; VOICE OUTLET

# MOTOR, # = HORSEPOWER

REFER TO SUPPLEMENTAL FIGURE INDICATED BY NUMBER (I.E. F2 REFERS TO FIGURE 2)

EQUIPMENT TAG

XXX EQUIPMENT NUMBER

XXX DETAIL TAG/CALL OUT TAG

X-XXX ← ELECTRICAL SHEET NUMBER

- INDICATES EMERGENCY PANEL BLANK- NORMAL LOADS E= EMERGENCY LOADS (NEC ARTICLE 700) X= LEGALLY REQUIRED AND OPTIONAL LOADS (NEC ARTICLE 701 & 702) LS= LIFE SAFETY LOADS (NEC 517.32) CR= CRITICAL LOADS (NEC 517.33 EQ= EQUIPMENT LOADS (NEC 517.34) DISTINGUISHES THIS PANEL FROM OTHER SIMILAR PANELS FOR A GIVEN FLOOR. INDICATES FLOOR B= BASEMENT, 1= FIRST FLOOR, ETC. 1st PANEL OF THIS TYPE = "A", 2nd PANEL OF THIS TYPE = "B", ETC. INDICATES VOLTAGE L = 208VH = 480V

TABLE INDICATING VARIOUS PANEL DESIGNATIONS FOR DIFFERENT BUILDING CONFIGURATIONS								
	208V ONLY	208V 8						
		208V	480V					
SINGLE STORY BUILDING NORMAL PANELS	A, B, C, ETC.		HA, HB, HC, ETC.					
MULTIPLE STORY BUILDING NORMAL PANELS	1A, 1B, 2A, 2B, ETC.		H1A, H1B, H2A, H2B, ETC.					
SINGLE STORY BUILDING EMERGENCY PANELS	A/E, B/E, C/E, A/X, B/X, ETC.		HA/E, HB/E, HC/E, HA/X, ETC.					
MULTIPLE STORY BUILDING EMERGENCY PANELS	1A/E, 1B/E, 1A/E, 2A/X	L2A/E, L2A/X,	H1A/E, H1B/E, H2A/E, H2A/X, ETC.					

## STANDARD SWITCHBOARD DESIGNATIONS

208V ONLY

"MAIN SWITCHBOARD"

480V & 208V IN SAME BUILDING.

480V = MSB/HA
208V = MSB/LA

I-LINE PANELS ARE SIMILAR EXCEPT USE MDP/A.

MDP = MAIN DISTRIBUTION PANEL OR USE MP/A WHERE

MP = MECHANICAL PANEL

HP HORSEPOWER

JC JANITOR'S CLOSET

KVA KILOVOLT AMPERE

HUM HUMIDIFIER

KV KILOVOLT

KW KILOWATT

	ABBRE	VIA	<b>TIONS</b>
Α	AMP-AMPERE	KWH	KILOWATT HOUR
AD	ACCESS DOOR	LP	LIGHTING PANEL
AFF	ABOVE FINISHED FLOOR	LTG	LIGHTING
ALT	ALTERNATE	MANUF	MANUFACTURER
AWG	AMERICAN WIRE GAUGE	MC	MAIN CIRCUIT BREAKER
BKR	BREAKER	MLO	MAIN LUGS ONLY
С	CONDUIT/CONDUCTOR	MOCP	MAXIMUM OVERCURRENT
СВ	CIRCUIT BREAKER		PROTECTION
CKT	CIRCUIT	N	NEUTRAL
CU	COPPER	NEC	NATIONAL ELECTRICAL CODE
DWG	DRAWING	NEMA	NATIONAL ELECTRICAL
EC	ELECTRIC CONTRACTOR		MANUFACTURERS ASSOCIATION
ELEC	ELECTRICAL	NIC	NOT IN CONTRACT
ETR	EXISTING TO REMAIN	PNL	PANEL
FACP	FIRE ALARM CONTROL PANEL	RTU	ROOF TOP UNIT
FD	FIRE DAMPER	TYP	TYPICAL
G	GROUND	U.O.N.	UNLESS OTHERWISE
GFI	GROUND FAULT INTERRUPT		NOTED
HD	HAND DRYER	V	VOLT OR VOLTAGE
	HODOEDOWED	\	\ (IE\) \ D O \ (

VB VIEW BOX

XFMR TRANSFORMER

Y WYE (STAR)

WT WEIGHT

WP WEATHERPROOF (NEMA 3R)

## CALINI

PROJECT TITLE

# SAUNDERS TRADES AND TECHNICAL HIGH SCHOOL HVAC UPGRADES

PROJECT ADDRESS

183 PALMER RD YONKERS, NY 10701

OWNER

YONKERS PUBLIC SCHOOLS

ARCHITECT

FULLER AND D'ANGELO P.C.

45 KNOLLWOOD ROAD

ELMSFORD, NY 10523

(T) 914.592.4444

MEP ENGINEER AND ENVIRONMENTAL ENGINEER



KEY PLAN: NOT TO SCALE

B SHEET SIZE 30X42

MARK DATE DESCRIPTION

REVISION

04.17.20 100% CONSTRUCTION DOCUMENTS

03.27.20 90% CONSTRUCTION DOCUMENTS

MARK DATE DESCRIPTION

ISSUE

SED #: 66-23-00-01-0-206-017

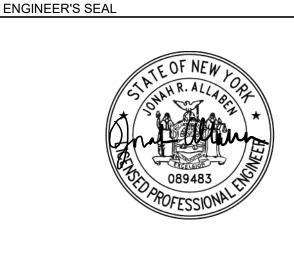
YPS JOB: 10881

DESIGN BY: DS

DRAWN BY: EA

CHK'D BY: FU

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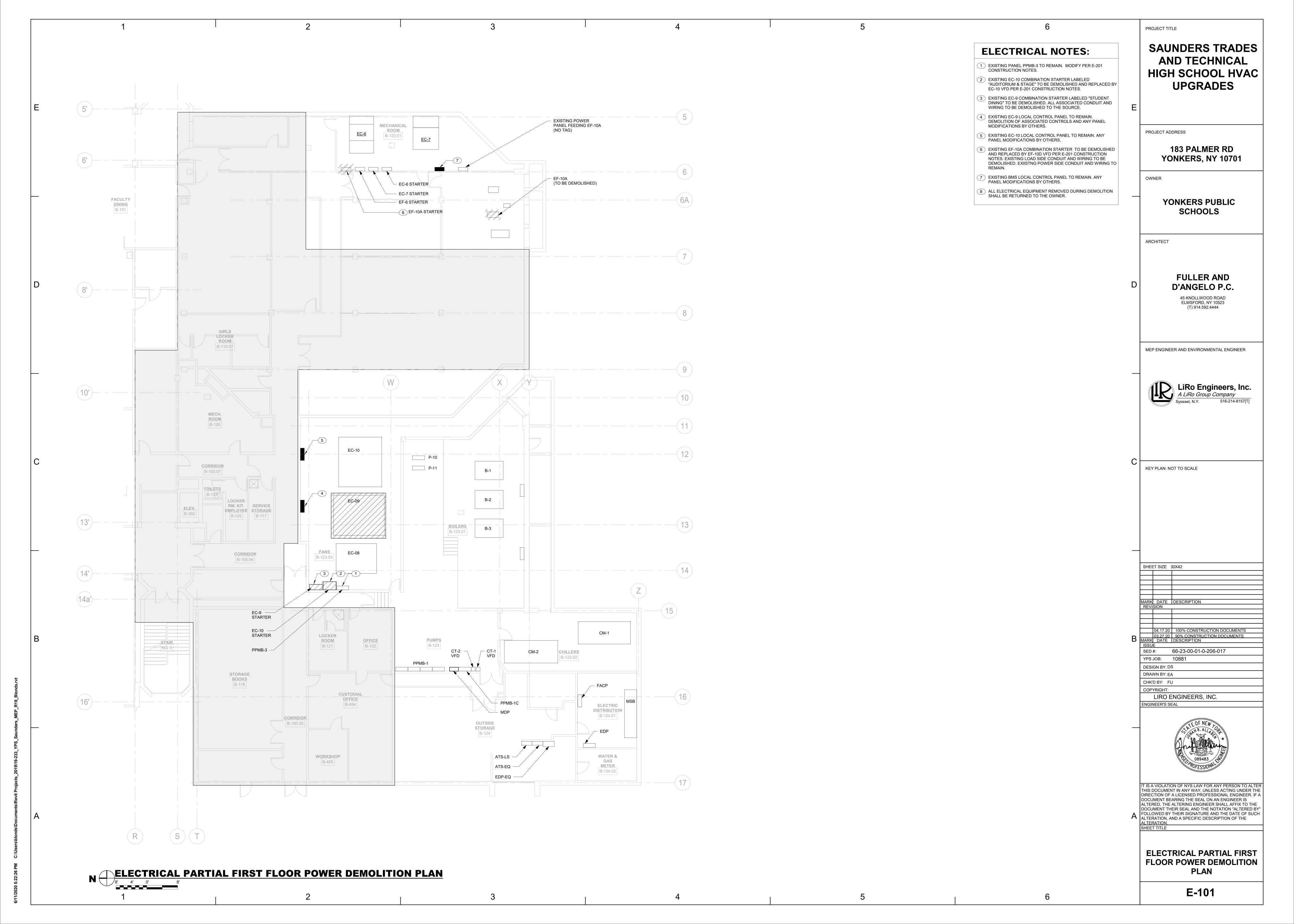
LIRO ENGINEERS, INC.

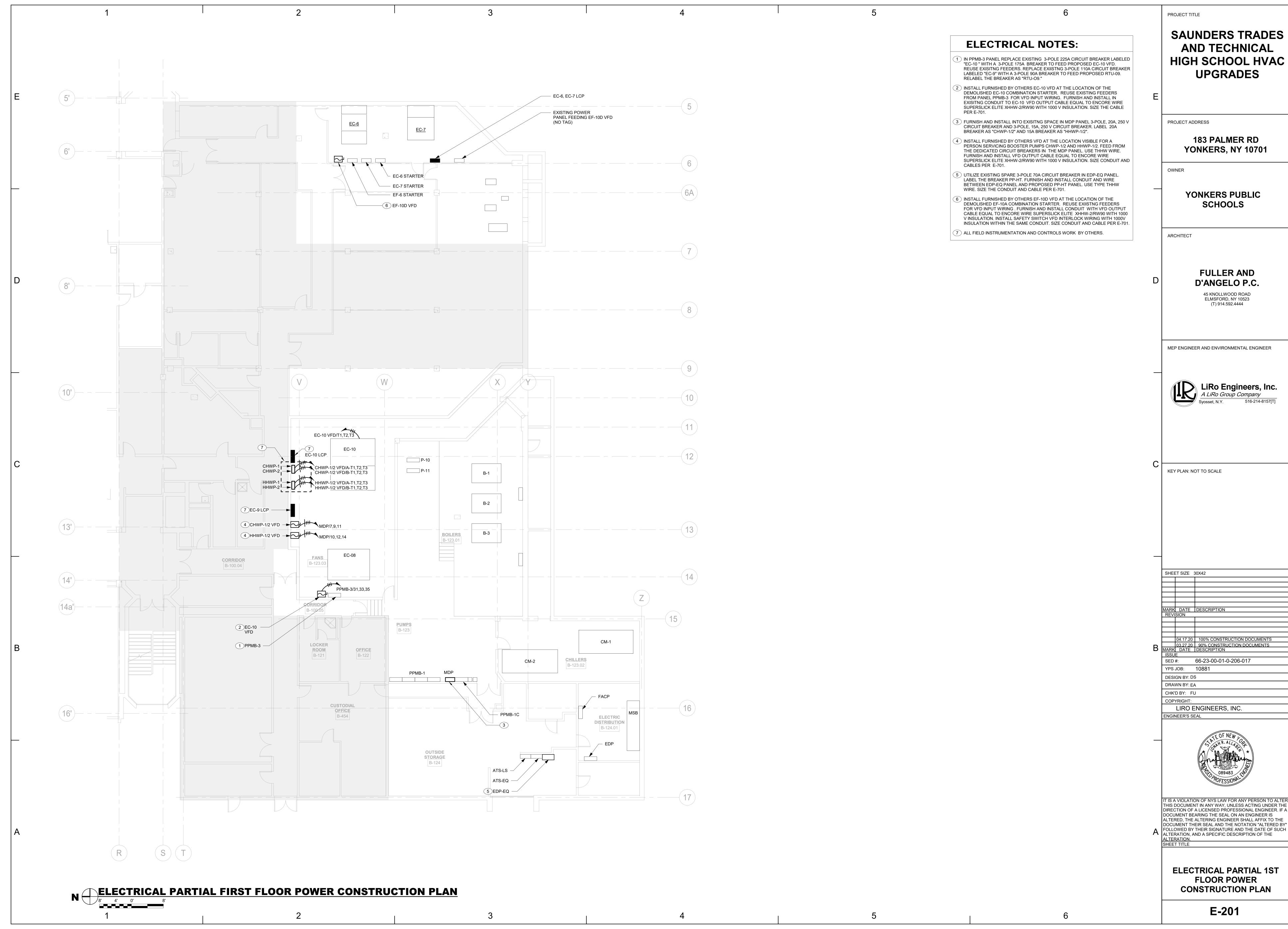
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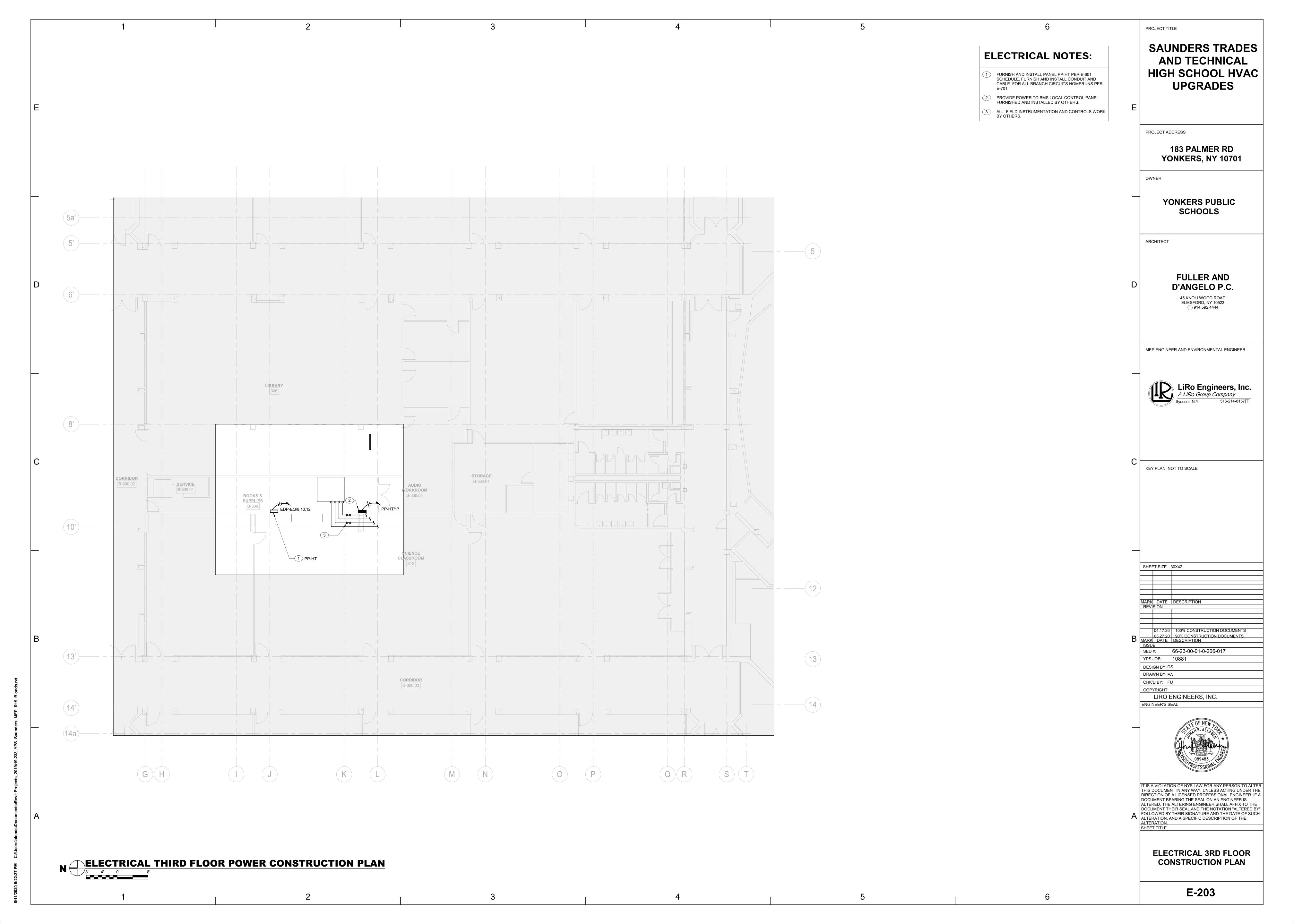
SHEET TITLE

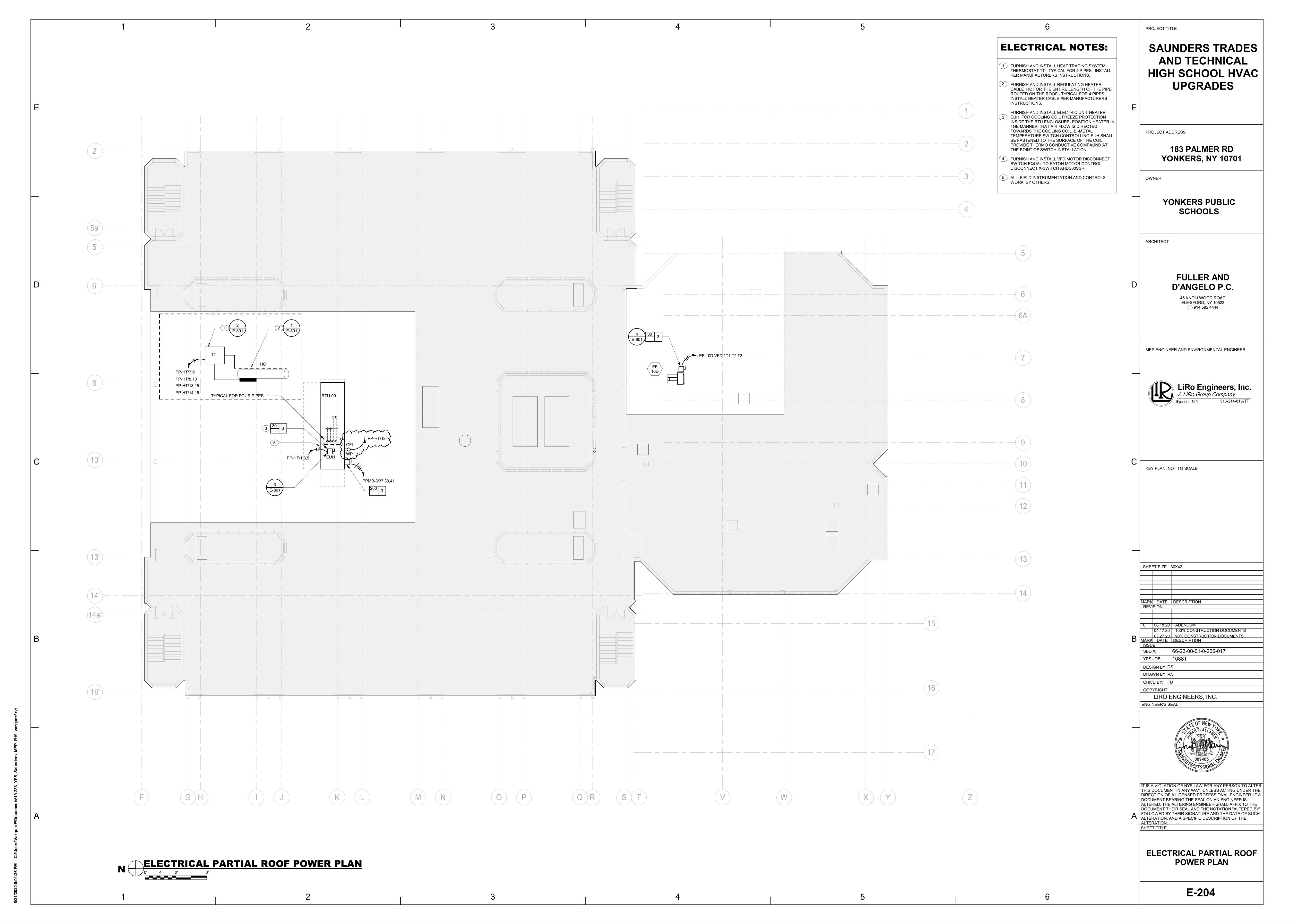
ELECTRICAL NOTES, SYMBOLS, AND ANNOTATIONS

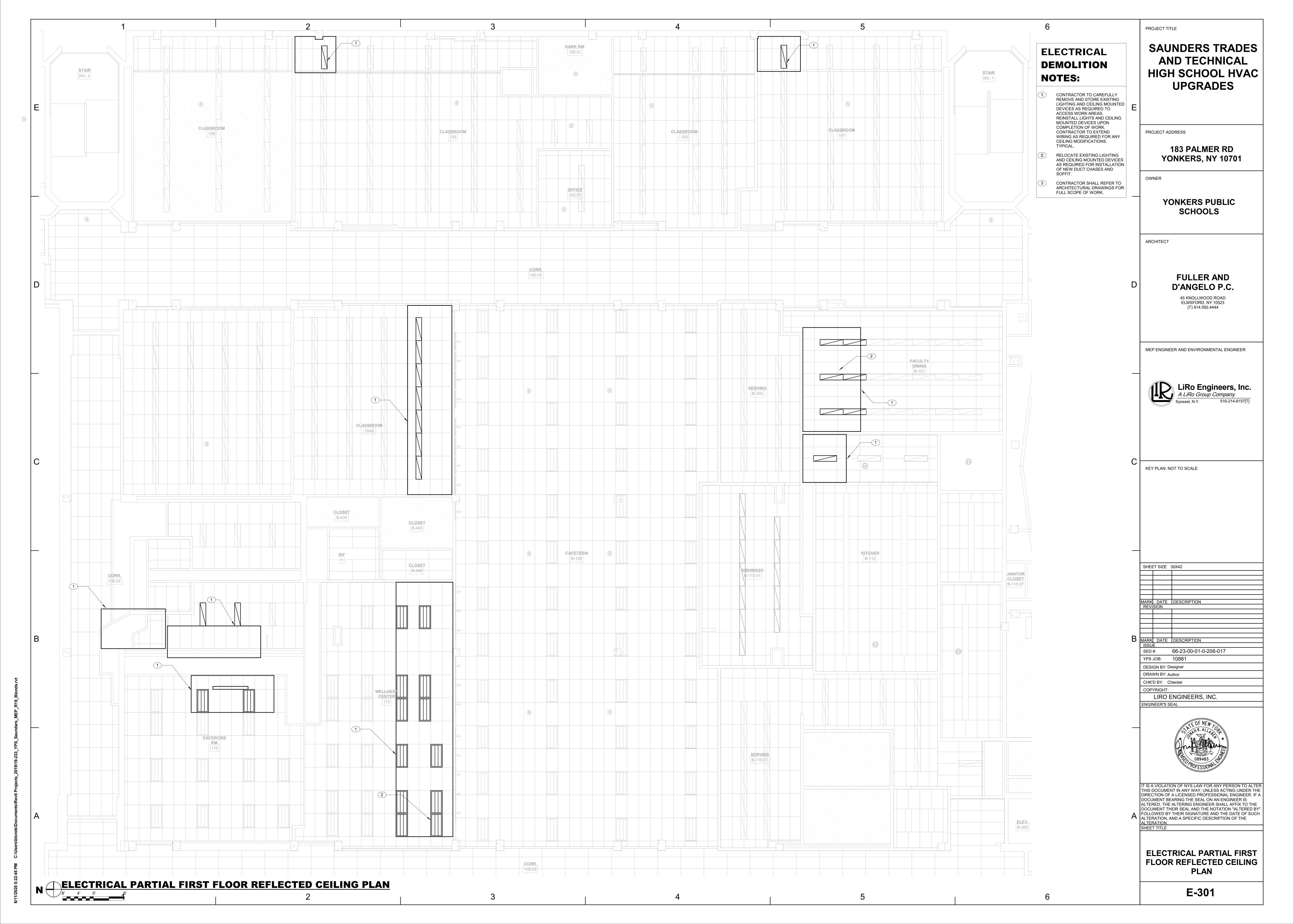
E-001











**ELECTRICAL DEMOLITION NOTES:** 

CONTRACTOR TO CAREFULLY REMOVE AND STORE EXISTING LIGHTING AND CEILING MOUNTED DEVICES AS REQUIRED TO ACCESS WORK AREAS. REINSTALL LIGHTS AND CEILING MOUNTED DEVICES UPON COMPLETION OF WORK. CONTRACTOR TO EXTEND WIRING AS REQUIRED FOR ANY CEILING MODIFICATIONS. TYPICAL.

RELOCATE EXISTING LIGHTING AND CEILING MOUNTED DEVICES AS REQUIRED FOR INSTALLATION OF NEW DUCT CHASES AND SOFFIT.

CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR FULL

**SAUNDERS TRADES** AND TECHNICAL HIGH SCHOOL HVAC **UPGRADES** 

PROJECT ADDRESS

PROJECT TITLE

**183 PALMER RD** YONKERS, NY 10701

OWNER

YONKERS PUBLIC **SCHOOLS** 

ARCHITECT

**FULLER AND** D'ANGELO P.C. 45 KNOLLWOOD ROAD ELMSFORD, NY 10523

(T) 914.592.4444

MEP ENGINEER AND ENVIRONMENTAL ENGINEER



KEY PLAN: NOT TO SCALE

SHEET SIZE 30X42 SED #: 66-23-00-01-0-206-017

YPS JOB: 10881 DESIGN BY: Designer DRAWN BY: Author CHK'D BY: Checker COPYRIGHT:

LIRO ENGINEERS, INC. ENGINEER'S SEAL



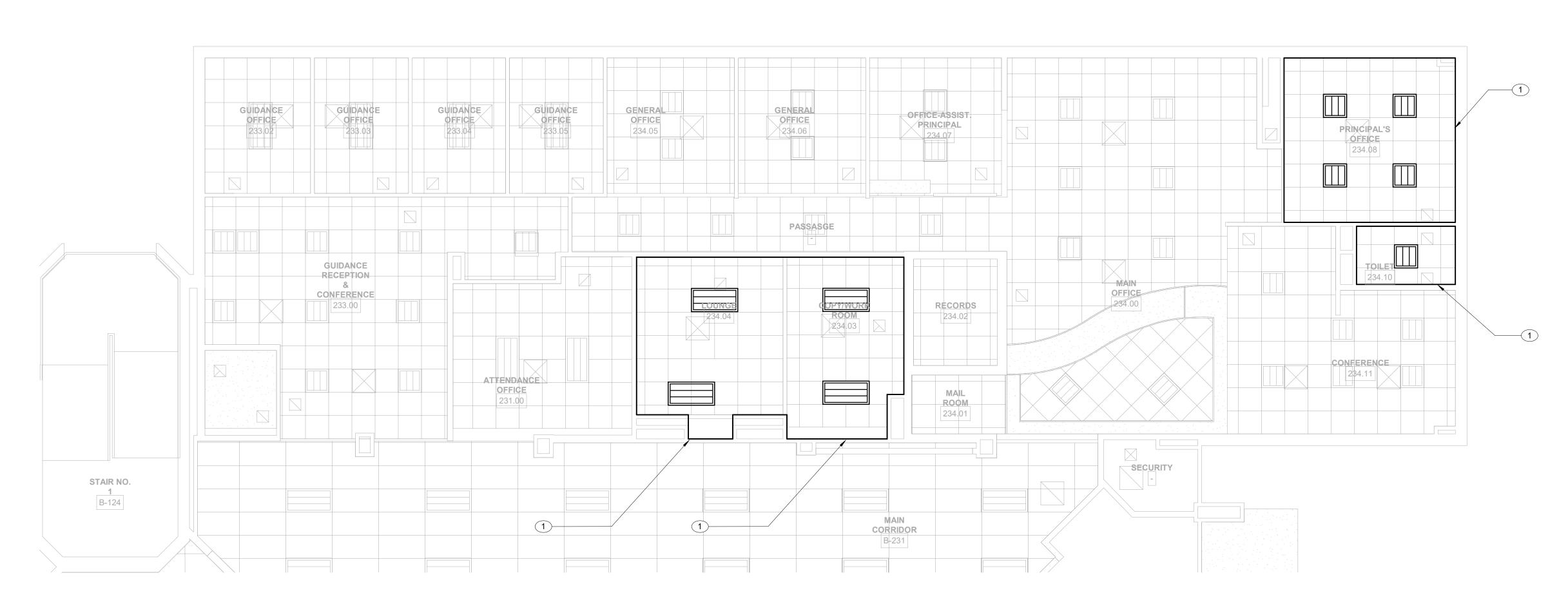
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ELECTRICAL SECOND FLOOR REFLECTED CEILING PLAN

E-302

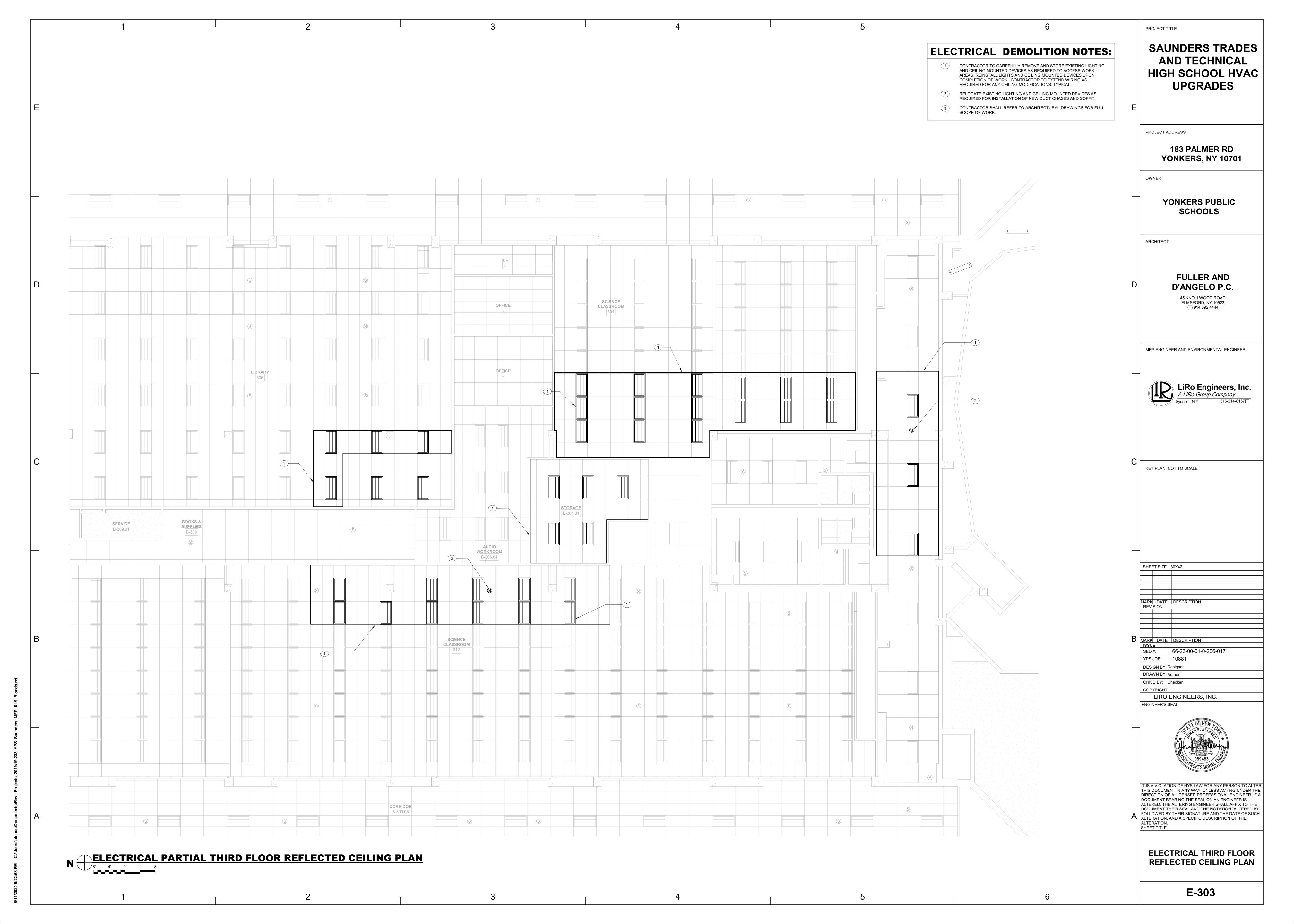
FACULTY ROOM B-211 STORAGE B-208.01 STORAGE B-213

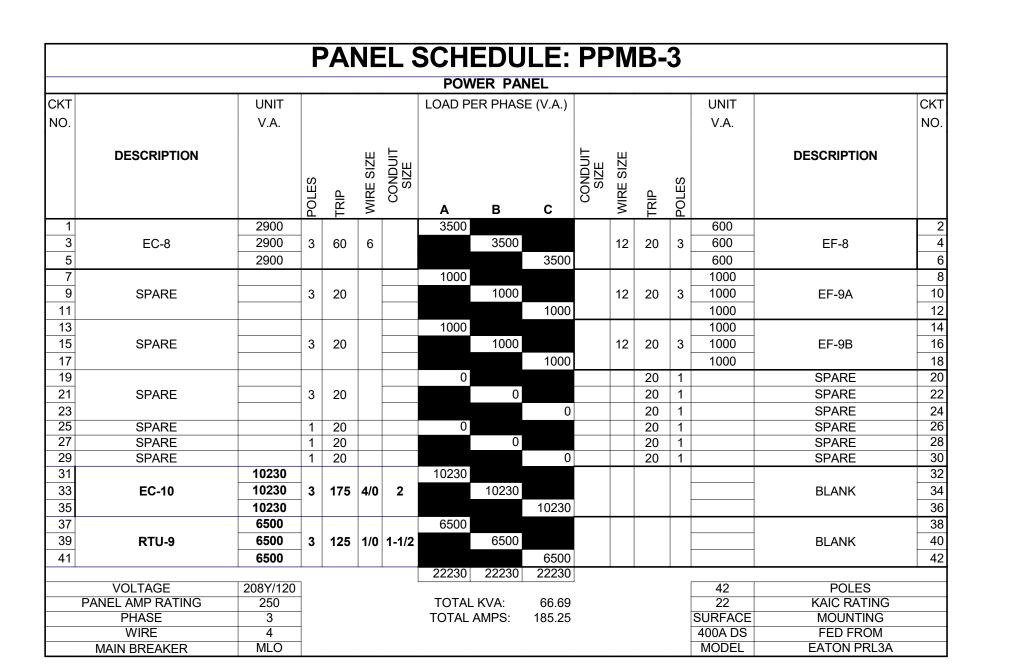
ELECTRICAL PARTIAL SECOND FLOOR REFLECTED CEILING PLAN



N ELECTRICAL PARTIAL SECOND FLOOR REFLECTED CEILING PLAN

IT IS A VIOLATION OF NYS LAW FOR ANY PERSON TO ALTER





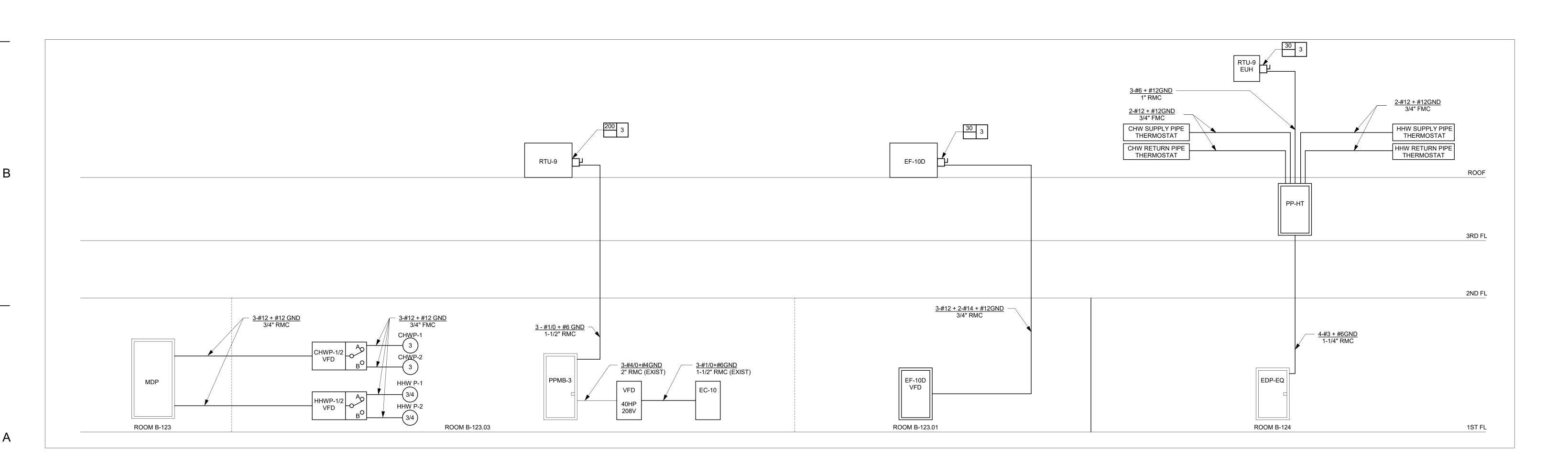
				PA	NE		SCH				)P-	EQ	!			
			_			EM	ERGENO			<u>IEL</u>						
CKT		UNIT					LOAD PI	ER PHAS	E (V.A.)					UNIT		CK
NO.		V.A.												V.A.		NO
	DESCRIPTION		POLES	TRIP	WIRE SIZE	CONDUIT	A	В	С	CONDUIT	WIRE SIZE	TRIP	POLES		DESCRIPTION	
1		3000					3000									
3	AP-GEN	3000	3	30	10			3000				30	3		SPARE	
5		3000							3000							
7							4300							4300		
9	SPARE		3	40				4300		1-1/4	3	70	3	4300	PP-HT	1
11									4300	1				4300		1
13		14235					50435							36200		1
15	ELEVATOR	14235	3	150	2/0			50435			600	400	3	36200	EM-DP	1
17		14235					•		50435	1			'	36200		1
19							0									2
21	BLANK							0							BLANK	2
23			1						0							2
25							0	'								2
27	BLANK		1					0							BLANK	2
29			1						0							3
		'					57735	57735	57735					-		
	VOLTAGE	208Y/120								•				30	POLES	
P	ANEL AMP RATING	600					TOTAL		173.205					22	KAIC RATING	
	PHASE	3	1				TOTAL	AMPS:	481.125					SURFACE	MOUNTING	
	WIRE	4												400A DS	FED FROM	
	MAIN BREAKER	600												MODEL	EATON PRL3A	

			P	Al	NE	EL	SCH	ED	ULE	: F	P	<b>-</b>	IT	-		
						PO	OWER & L	.IGHTI	NG PANI	EL						
СКТ		UNIT					LOAD PE	R PHA	SE (V.A.)					UNIT		CK
NO.		V.A.												V.A.		NC
	DESCRIPTION		POLES	TRIP	WIRE SIZE	CONDUIT	A	В	С	CONDUIT	WIRE SIZE	TRIP	POLES		DESCRIPTION	
1		2500	_	T .			2500					<u> </u>				
3	GFCI RTU-9 EUH	2500	3	30	10	3/4		2500				30	3		SPARE	
5		2500							2500						_	
7	GFCI CW SUPPLY PIPE	600			†	1	1200						_	600	GFCI HW SUPPLY PIPE	
9	HEAT TRACE	600	2	20	12	3/4		1200		3/4	12	20	2	600	HEAT TRACE	1
11	SPARE		1	20					0			20	1		SPARE	1
13	GFCI CW RETURN PIPE	600			1.0		1200						_	600	GFCI HW RETURN PIPE	1
15	HEAT TRACE	600	2	20	12	3/4		1200		3/4	12	20	2	600	HEAT TRACE	
17	RTU BMS CONTROLLER	540	1	20	12	3/4			<b>{ 540</b>	3/4	ŶŹ	ŽÕ	7	<u> </u>	RTU-REC	$\gamma_1^1$
19	BLANK						0			$\sim$	$\sim$	$\overline{}$	~	$\sim$	BLANK	~~
21	BLANK							0							BLANK	2
23	BLANK								0						BLANK	2
	VOLTAGE	000)//400	1				4900	4900	3040					0.4	DOI 50	
	VOLTAGE	208Y/120					TOTAL	10.74	40.04					24 10	POLES	
	PANEL AMP RATING PHASE	100					TOTAL TOTAL A		12.84 35.666					H-FRAME	KAIC RATING MOUNTING	
	WIRE	4					TOTAL	AIVIPS.	33.000					EDP-EQ	FED FROM	
	MAIN BREAKER	70	-											MODEL	EATON 3BR1224BC100	

				PA	N	EL	_ SCI			=:	M	DP	)			
								er pan							<u> </u>	_
NO.		UNIT V.A.					LOAD PE	R PHASE	Ē (V.A.)					UNIT V.A.		Cł N
	DESCRIPTION		POLES	TRIP	WIRE SIZE	CONDUIT	A	В	С	CONDUIT	WIRE SIZE	TRIP	POLES		DESCRIPTION	
1	BLANK		1-				0						_		BLANK	
3	BLANK							0							BLANK	
5	BLANK								0						BLANK	
7		750					750								BLANK	
9	CHWP-1/2	750	3	20	12	3/4		940						190		L
11		750							940	3/4	12	15	3	190	HHWP-1/2	
13							190							190		
15	COOLING TOWER		3	60				0								
17									0			30	3		SPARE	
19							0									
21	CHILLED WATER PUMP-1		3	90				0								T
23			1						0			20	2		SPARE	
25							0									t
27	COOLING TOWER CT-1		3	60				0				50	3		SPARE	H
29									0							H
31							0					20	1		BLOCK CONTROL PANEL	†
33	CHILLER ROOM		3	15				0				20	1		RED CHILLER VALVES	$^{+}$
35	EXHAUST FAN								0			20	1		BLUE FREON DETECTOR	t
37							0					20	1		BLACK CHEMICAL OUTLET	+
39	CHILLED WATER PUMP-2		3	90				0				20	1		ROOF GFCI OUTLET	†
41									0			20	1		BLANK	†
							940	940	940			_				
	VOLTAGE	208Y/120	7				l .			_				42	POLES	
	PANEL AMP RATING	225					TOTAL		2.82					22	KAIC RATING	
	PHASE	3	1				TOTAL A	MPS: 7	'.8333					SURFACE	MOUNTING	
	WIRE	4	1											MSB	FED FROM	
	MAIN BREAKER	200A												MODEL	GE AF43S	

		ELECTF	RICAL EQUIPMENT SCHEDU	JLE	
ID	MANUFACTURER	DESCRIPTION	MODEL	TECHICAL DATA	COMMENTS
PP-HT	EATON	3-PHASE MCB LOADCENTER-COPPER BUS	3BR1224BC100R	100A MAIN; 24 CIR.208Y/120V	NEMA 3R ENCLOSURE
TT	NELSON	HEAT TRACING SYSTEM THERMOSTAT	TH4X325-2	22A RESISTANCE 208/240 VAC; RANGE: 25 TO 325°F	NEMA 4X ENCLOSURE
НС	NELSON	REGULATING HEATER CABLE	CLT23-JT	230V; 3 W/FT; 150°F MAX.	
EC-10 VFD(*)	ABB	VARIABLE FREQUENCY DRIVE	ACH580-BCR-114A-2+B056+F267+G390+K491	208 VAC 3-PHASE; 40 HP; 6-PULSE. SOFT START BYPASS	NEMA 12 ENCLOSURE
CHWP 1-2 VFD(*)	B&G	VARIABLE FREQUENCY DRIVE	A2	208 VAC 3-PHASE; 1.5 HP; 5% IMPEAD	NEMA 12 ENCLOSURE
HHWP 1-2 VFD(*)	B&G	VARIABLE FREQUENCY DRIVE	A2	208 VAC 3-PHASE; 3 HP; 5% IMPEAD	NEMA 12 ENCLOSURE
EF-10D VFD(*)	ABB	VARIABLE FREQUENCY DRIVE	ACH550-BDR-06A6-2+B055+E211+F267	208 VAC 3-PHASE; 1.5 HP; PASSIVE FILTER ; FVNR BYPASS	NEMA 12 ENCLOSURE
EUH(*)	MODINE	ELECTRIC UNIT HEATER	HER75	208 VAC 3-PHASE; 7.5 KW; 25.6 KBTUH; 530 CFM, 472 FPM; ΔT=45°F	REMOTE THERMOSTAT
TS(*)	SELCO	BI-METAL TEMPERATURE SWITCH	OA-60-BVIO90S20	RANGE:-40°F - 350°F; 125 VAC, 15A, OPEN ON RISE SP=40°F;	THERMOSTAT SWITCH FOR EU

## ELECTRICAL PANEL AND EQUIPMENT SCHEDULES SCALE: 1/8" = 1'-0"





PROJECT TITLE

SAUNDERS TRADES
AND TECHNICAL
HIGH SCHOOL HVAC
UPGRADES

PROJECT ADDRESS

183 PALMER RD YONKERS, NY 10701

OWNER

YONKERS PUBLIC SCHOOLS

ARCHITECT

FULLER AND D'ANGELO P.C. 45 KNOLLWOOD ROAD ELMSFORD, NY 10523 (T) 914.592.4444

MEP ENGINEER AND ENVIRONMENTAL ENGINEER



KEY PLAN: NOT TO SCALE

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03.27.20 90% CONSTRUCTION DOCUMENTS
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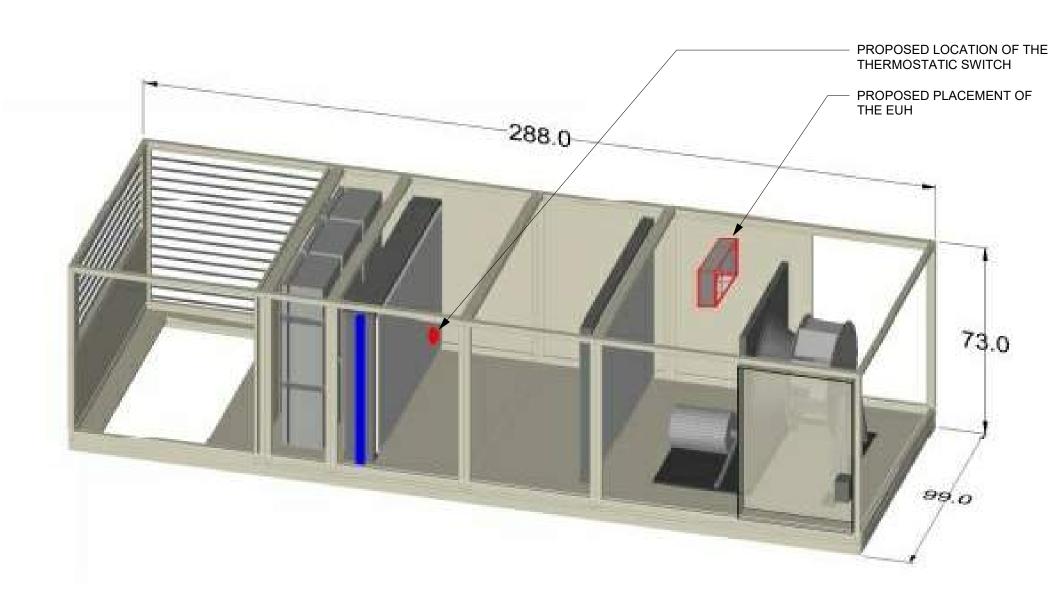
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SHEET TITLE

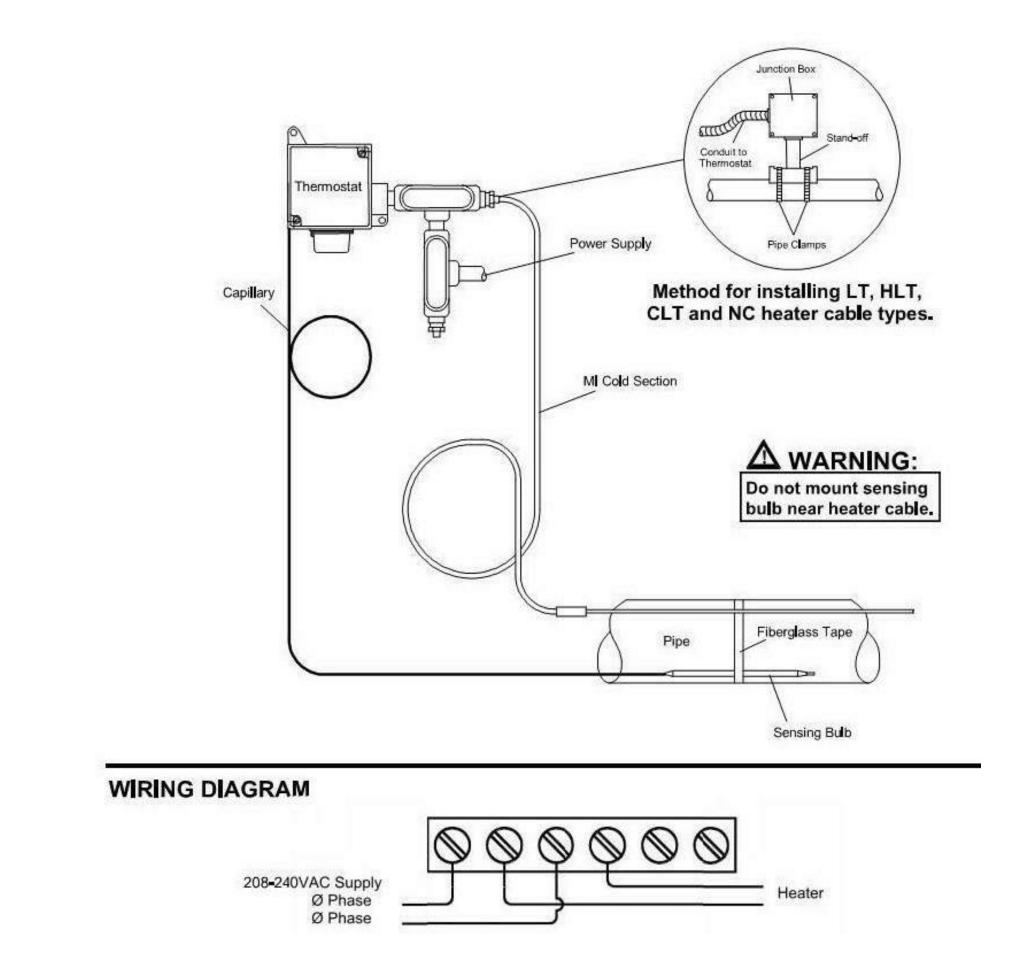
ELECTRICAL SCHEDULES
AND DIAGRAMS

E-601

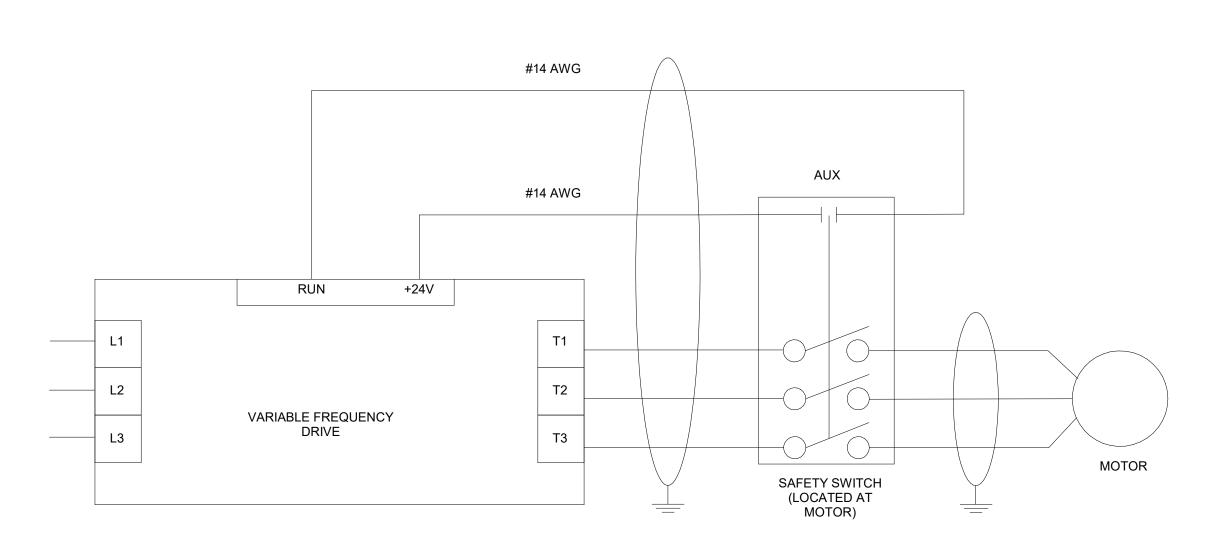
# 1 HEAT TRACING PLT-BS SPLICE CONNECTION KIT DETAIL E-801 SCALE: NOT TO SCALE



3 ELECTRIC UNIT HEATER FOR RTU-09 DETAIL



# 2 HEAT TRACING TH4X325-2 THERMOSTAT DETAIL E-801 SCALE: NOT TO SCALE



4 MOTOR SAFETY SWITCH FOR VARIABLE FREQUENCY DRIVES
E-801 SCALE: NOT TO SCALE

PROJECT TITLE

SAUNDERS TRADES
AND TECHNICAL
HIGH SCHOOL HVAC
UPGRADES

PROJECT ADDRESS

183 PALMER RD YONKERS, NY 10701

OWNER

YONKERS PUBLIC SCHOOLS

ARCHITECT

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45 KNOLLWOOD ROAD ELMSFORD, NY 10523 (T) 914.592.4444

MEP ENGINEER AND ENVIRONMENTAL ENGINEER



KEY PLAN: NOT TO SCALE

B

SHEET SIZE 30X42

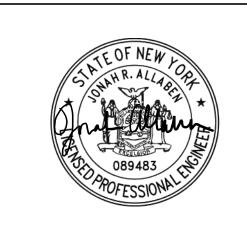
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ELECTRICAL AND CONTROL DETAILS

E-801

1. INSTALLATION SHALL BE IN ACCORDANCE WITH 2007 NEW YORK FIRECODE. 2. DEVICE LAYOUT DRAWINGS INDICATE APPROXIMATE LOCATION OF DEVICES. ACTUAL LOCATION SHALL BE INSTALLED CENTER OF CEILING TILE AND CENTER OF RESPECTIVE ROOM TAKING INTO CONSIDERATION FIELD CONDITIONS (LIGHTS, DUCTWORK, ETC.)

3. SUPPORT WIRE FOR CEILING MAY NOT BE USED TO SUPPORT ANY ELECTRICAL CONDUIT OR WIRE.

4. FOR EMT AND FLEXIBLE ALUMINUM METALLIC CONDUIT, ONLY THROATED INSULATOR CONNECTOR SHALL BE USED.

5. ALL FLEXIBLE CONDUIT USED WITHIN 12" OF A SPRINKLER RISER SHALL BE INSTALLED IN LIQUID TIGHT FLEXIBLE CONDUIT WITH STEEL COMPRESSION

6. THE FACP AND FCPS PANELS SHALL BE WIRED TO A 120 VAC 3 WIRE DEDICATED 20 AMP CIRCUIT BREAKER. THIS BREAKER SHALL BE AN EMERGENCY POWER CIRCUIT IF AVAILABLE. IF NOT AVAILABLE THE CIRCUIT SHALL NOT BE AUTOMATICALLY SHUT OFF BY THE CONTROL PANEL SYSTEM OPERATION. WIRING FOR THIS TO BE 12 AWG, WIRING BY OTHERS.

7. FIRE CONTROL PANELS, POWER SUPPLIES AND MODULE ENCLOSURES SHALL BE MOUNTED DIRECTLY TO STUDS USING THE APPROPRIATE SIZED METAL SCREWS IN A MINIMUM OF TWO PLACES. AT LEAST TWO OTHER FASTENERS FOR A TOTAL OF FOUR SHALL BE USED SUCH AS CRYWALL ANCHORS OR TOGGLE BOLTS. SHOULD ADDITIONAL MOUNTING HOLES BE DRILLED, ALL FOUR CORNERS ARE TO BE ANCHORED AT A MINIMUM.

8. ALL J-BOX COVERS USED IN FIRE ALARM AND FIRE SUPPRESSION SYSTEM AND CONTROLS SHALL BE RED.

9. WHEN CUTTING A DEVICE INTO A WALL AFTER DRYWALL IS INSTALLED, FLEXIBLE METAL CONDUIT WITH AN INSULATED SHALL BE USED. 10. NO MORE THAN TWO WIRES SHALL BE TERMINATED ON ANY SCREW TYPE TERMINATION LUG.

11. T-TAPPING OF SUPERVISED CIRCUITS WHICH EMPLOY AN END OF LINE RESISTOR IS SPECIFICALLY EXCLUDED.

12. ALL PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE MADE USING A CONDUIT SLEEVE AND SHALL BE FIRE CAULKED USING UL APPROVED FIRE BARRIER CAULK LISTED FOR THE APPLICATION.

## FIRE ALARM NOTES

1. FIRE ALARM VENDOR MUST PRODUCE A SEPARATE FIXED PRICE TO PERFORM THE SCOPE OF WORK CONTAINED ON THESE DRAWINGS IN CONNECTION WITH THE FIRE ALARM SYSTEM. THESE DRAWINGS ARE PROVIDED FOR BID PURPOSES ONLY AND TO ILLUSTRATE THE SCOPE OF WORK INTENT OF THIS PROJECT. PRIOR TO SUBMISSION OF THE FIRE ALARM SYSTEM BID, THE FIRE ALARM VENDOR IS RESPONSIBLE TO REVIEW ALL DRAWINGS (I.E., MECHANICAL/HVAC, ELECTRICAL, PLUMBING, FIRE SPRINKLER, AND ARCHITECTURAL). UPON SUBMISSION OF THE FIRE ALARM BID, THE FIRE ALARM VENDOR CERTIFIES THAT ALL DRAWINGS HAVE BEEN REVIEWED, THE SITE HAS BEEN VISITED/INSPECTED (IF APPLICABLE), AND THAT ALL LOCAL FIRE MARSHALL REQUIRED ITEMS ARE FULLY UNDERSTOOD AND INCLUDED IN THE BID PRICE (NO CHANGE ORDERS ALLOWED).

2. FIRE ALARM VENDOR MUST ADHERE TO ALL LOCAL CODES AND AUTHORITIES HAVING JURISDICTION (I.E., BUILDING DEPT, FIRE MARSHALL, ETC.). THE ENTIRE SYSTEM MUST BE DESIGNED IN ACCORDANCE WITH THESE AUTHORITIES HAVING JURISDICTION.

3. FIRE ALARM VENDOR MUST SUBMIT TO THE ENGINEER & OWNER FINAL (AS APPROVED BY THE LOCAL BLDG. DEPT. & FIRE MARSHALL) SIGNED AND SEALED (BY ANY LICENSED PE) DESIGN /BUILD DRAWINGS INCLUDING: FIRE ALARM RISER DIAGRAM, LAYOUT, EQUIPMENT LIST & SPECIFICATIONS PRIOR TO START OF INSTALLATION. THE COST OF THE ENGINEERING FEE, PROGRAMMING CHARGE, NEW EQUIPMENT, CONNECTION & TESTING, TROUBLE SHOOTING OF SYSTEM, ATTENDANCE AT THE FIRE ALARM INSPECTION, ETC. ARE TO BE PART OF THE TOTAL PRICE. INSTALLATION OF THE NEW FIRE ALARM SYSTEM CAN BEGIN UPON

4. LOCATION OF ALL FIRE ALARM DEVICES (HORNS, STROBES, ETC.) INDICATED ON THESE DOCUMENTS ARE TO BE USED ADDITION TO THE LOCAL FIRE MARSHAL'S ORDINANCE. ADDITIONAL DEVICES REQUIRED ABOVE AND BEYOND THESE AS A GUIDE ONLY. DESIGN OF THE ENTIRE SYSTEM MUST BE IN ACCORDANCE WITH THE NEW YORK CITY BUILDING & FIRE CODES, DOCUMENTS OR DEVICES ADDED AT THE REQUEST OF THE FIRE MARSHAL OR BUILDING DEPARTMENT WILL BE REIMBURSED UNDER CONTRACT UNIT PRICING.

WRITTEN APPROVAL FROM THE ENGINEER.

5. ALL CABLES AND WIRING MUST BE PLENUM RETURN RATED CABLES.

	CE OF A SYMBOL ON THIS LEGEND DOES NOT IMPLY ITS USE ON DJECT. REFER TO DRAWINGS FOR SPECIFIC SYMBOLS USED.
FACP	FIRE ALARM CONTROL PANEL
ANN	FIRE ALARM REMOTE ANNUNCIATOR PANEL
F	MANUAL FIRE ALARM PULL STATION
$\bigoplus$	HEAT DETECTOR
S	SMOKE DETECTOR
SA	SMOKE DETECTOR ABOVE CEILING
H	FIRE ALARM WALL MOUNTED HORN STROBE
	CEILING MOUNTED HORN STROBE
ST	FIRE ALARM STROBE
©R 	DUCT SMOKE DETECTOR - RETURN
S S	DUCT SMOKE DETECTOR - SUPPLY
R	COMBINATION RATE OF RISE AND 135 DEGREES HEAT DETECTOR CONNECTED TO FA SYSTEM
$\Diamond$	FLOW SWITCH CONNECTED TO FIRE ALARM SYSTEM
GV	GATE VALVE TAMPER SWITCH
FD	FIRE SMOKE DAMPER
FSD	FIRE SMOKE DAMPER
FSR	FAN SHUT DOWN RELAY
R	RELAY
RTS	REMOTE TEST SWITCH
M	MONITOR MODULE
ISO	ISOLATION MODULE
IAM	INDIVIDUAL ADDRESSABLE MODULE

FIRE ALARM SYMBOLS

THIS SYMBOL LEGEND IS SHOWN FOR GENERAL REFERENCE ONLY. THE

#### **ABBREVIATIONS**

END OF THE LINE RESISTOR

(I.E. F2 REFERS TO FIGURE 2)

DETAIL TAG/ CALL OUT TAG FIRE ALARM SHEET NUMBER

ALARM BELL

EQUIPMENT TAG

EQUIPMENT NUMBER

XXX

X-XXX

E.C. ELECTRICAL CONTRACTOR F.A.C FIRE ALARM CONTRACTOR E.R. EXISTING DEVICE RELOCATED F.S.C FIRE SPRINKLER CONTRACTOR ETR EXISTING TO REMAIN M.C. MECHANICAL CONTRACTOR

REFER TO SUPPLEMENTAL FIGURE INDICATED BY NUMBER

SEQUENCE OF OPERATIONS MATRIX NOTES:
CENTRAL STATION ALARM SERVICE TO RECEIVE SEPARATE &
DISTINCT SIGNALS AS FOLLOWS:
A) FIRE ALARM (SEE MATRIX) B) TROUBLE SIGNALS (SEE MATRIX) C) SUPERVISORY SIGNALS FOR SPRINKLER TAMPER SW.' D) SUPERVISORY SIGNALS FOR RESIDENTIAL UNITS SD/CO E) SUPERVISORY SIGNALS FOR GENERATOR RUN/FAIL F) SIGNALS TO BE TRANSMITTED AS CONTACT ID G) TROUBLE SIGNALS FOR TAMPERING OR REMOVAL OF RESIDENTIAL SMOKES OR SMOKE/CO DETECTORS
H) HVAC RESET SHALL BE INDEPENDENT OF FACP RESET FUNCTION I) DEPENDS ON HOW ELEVATOR SHAFT IS BUILT & IF PROTECTED BY SPRINKLER SYSTEM ACTIVATION OF AREA HEAT DETECTOR ACTIVATION OF AREA SMOKE DETECTOR XXX ACTIVATION OF MANUAL PULL STATION ACTIVATION OF BEAM DETECTOR  $X \mid X \mid X$ ACTIVATION OF COMMON AREA SMOKE/CO DET  $X \mid X \mid X$ ACTIVATION OF CO DET ACTIVATION OF ABOVE HUNG CEILING SMOKE DET ACTIVATION OF ELEV. LOBBY SMOKE DET. ACTIVATION OF ELEV. HOISTWAY HEAT DET. X X X X ACTIVATION OF ELEV. HOISTWAY SMOKE DET. X X X X ACTIVATION OF ELEV. MACH. RM HEAT DET. ACTIVATION OF ELEV. MACH. RM SMOKE DET ACTIVATION OF DUCT SMOKE DETECTOR ACTIVATION OF SPRINKLER WATERFLOW/PRESSURE SW. ACTIVATION OF SPRINKLER TAMPER SW. ACTIVATION OF SPRINKLER HI/LO PRESSURE SW. ACTIVATION OF FIRE PUMP RUN/FAIL ACTIVATION OF FIRE PUMP PHASE REVERSAL ACTIVATION OF FIRE PUMP PHASE LOSS ACTIVATION OF GROUND FAULT ON FACP ACTIVATION OF NOTIFICATION APPLIANCE CIR. SHORT ACTIVATION OF OPEN CIRCUIT ON FACP ACTIVATION OF LOW BATTERY ON FACP ACTIVATION OF AC POWER LOSS TO FACP ACTIVATION OF GENERATOR RUN/FAIL ACTIVATION OF GENERATOR TROUBLE

PROJECT TITLE

SAUNDERS TRADES AND TECHNICAL HIGH SCHOOL HVAC **UPGRADES** 

PROJECT ADDRESS

**183 PALMER RD** YONKERS, NY 10701

OWNER

YONKERS PUBLIC SCHOOLS

**ARCHITECT** 

**FULLER AND** D'ANGELO P.C. 45 KNOLLWOOD ROAD

ELMSFORD, NY 10523

(T) 914.592.4444

MEP ENGINEER AND ENVIRONMENTAL ENGINEER



KEY PLAN: NOT TO SCALE

	SHEE	ET SIZE	30X42
	MARK		DESCRIPTION
	REVI	SION	
В		04.17.20	
D	MARK		DESCRIPTION
	ISSU	<u>E</u>	
	SED	#:	66-23-00-01-0-206-017
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FIRE ALARM NOTES, **SYMBOLS & LEGEND** 

ACTIVATION OF GENERATOR SELECTOR SWITCH NOT IN AUTO

ACTIVATION OF AUTOMATIC EXTINGUISHING SYSTEM (A.E.S.)

**FA-001** 

