

Nathan Hale Elementary School HVAC Verification and Evaluation

Meriden Public School
Meriden, CT

August, 2024

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1 Executive Summary

The City of Meriden Board of Education has requested a detailed assessment of the mechanical systems ventilation performance in accordance with new regulations set forth by the State of Connecticut. In 2023, the state of Connecticut codified ventilation assessment at each school building under jurisdiction of local and regional boards of education. Per substitute Senate Bill 1198, “each local and regional board of education shall ensure that its heating, ventilation and air conditioning (HVAC) system is maintained and operated in accordance with the prevailing maintenance standards, such as ASHRAE Standard 62 at the time of installation or renovation of such system”. These assessments must be completed by January 1, 2025, and every five years thereafter.

This report is an overview of findings from the HVAC systems evaluation performed at Nathan Hale Elementary School. The focus of this report is twofold: First, to identify to what extent the school’s current ventilation system components are operational. Second, to evaluate if the system components are operating in such a manner as to provide adequate ventilation to the spaces within the building in accordance with the most recent indoor ventilation standards.

It has been identified that most of the AHUs at the Nathan Hale Elementary School are operating well below their intended design airflows as indicated by the 1989 design plans. As a result, most of the rooms within Nathan Hale Elementary School fail to meet the minimum outside air requirements prescribed by ASHRAE Standard 62.1, as referenced in the state’s building code. In addition, many of the exhaust fans in the building were found not operable by testing and balancing personnel. These fans should be repaired or replaced and returned to service.

Further investigation into the HVAC system should be conducted to determine if the current mechanical equipment is capable of providing adequate ventilation for the school. Based on this investigation’s findings, an engineered design should be prepared to correct issues concerning the HVAC system. We also recommend that the duct system be cleaned, that outside air dampers and supply air fans be evaluated for proper operation, and that exhaust fans be repaired and placed back into service.

1.1 Building Overview

Nathan Hale Elementary School is located at 277 Atkins Street Extension, Meriden, CT 06450. The school is a two-story, approximately 63,000 square foot building. The HVAC equipment consists of eight (8) air handling units (AHU’s), one (1) makeup air unit (MAU), multiple variable refrigerant flow (VRF) split air conditioning units, and twelve (12) exhaust fans (EF’s). The HVAC system is controlled by a building automation system (BAS). Exhaust fans are on a timer and run via light switch. This building is not equipped with CO₂ demand control ventilation (DCV). See Appendix B for school floor plans.

1.2 HVAC System Overview

- AHU-1 is installed in the plenum space above the U-11 corridor ceiling. The unit is a Trane Model 6A air handling unit and serves to condition and ventilate interior spaces of the Northeast portion of the school.
- AHU-2 is installed in the plenum space above the ceiling in the administrative corridor near conference room U-08. The unit is a Trane Model 6A air handling unit and serves to condition and ventilate perimeter office spaces in the North portion of the building.
- AHU-3 is installed in the attic above the gymnasium. The unit is a Trane Model 21A air handling unit and serves to condition and ventilate the auditorium and gymnasium spaces.

- AHU-4 is installed in the plenum space above the music classroom ceiling. The unit is a Trane Model 3AW air handling unit and serves to condition and ventilate Music U-56.
- AHU-5 is installed in the plenum space above the art classroom ceiling. The unit is a Trane Model 3A air handling unit and serves to condition and ventilate Art U-51
- AHU-6 is installed in the attic above the cafeteria. The unit is a Trane Model 12A air handling unit and serves to condition and ventilate the U-34 Cafeteria and Teacher's Lounge.
- AHU-7 is installed in the plenum space above the library. The unit is a Trane Model 8A air handling unit and serves to condition and ventilate the Library and Media Center.
- AHU-8 is installed in the plenum space above the U-77 corridor ceiling. The unit is a Trane Model 12A air handling unit and serves to condition and ventilate the upper resource area, guidance, and ramp corridor.
- EFs are installed in the attic and on the roof of the building. The fans serve as exhaust ventilation for the common restrooms and classroom toilet rooms.
- VRF ceiling recessed fan coil units are installed in many classrooms and are controlled by individual room thermostats. Remote condensing units are installed on the roof.
- MAU-1 serves the kitchen and provides make-up air for the kitchen exhaust hood operation.

2 Evaluation

2.1 Code Compliance

In 2023, substitute senate bill 1198 codified ventilation assessments at each school building under jurisdiction of local and regional boards of education. These assessments must be completed by January 1, 2025, and every five years thereafter. Per the requirements of sSB 1198, the assessment included the following inspections and evaluations:

- (A) Documenting for maximum filter efficiency (MERV ratings)
- (B) Physical measurements of outside air delivery rate at the minimum damper position
- (C) Verification of the appropriate condition and operation of ventilation components
- (D) Measurement of air distribution through all system inlets and outlets,
- (E) Verification of unit operation and that required maintenance has been performed in accordance with the most recent indoor ventilation standards promulgated by the American Society of Heating, Refrigerating and Air-Conditioning Engineers
- (F) Verification of control sequences of damper operations
- (G) Verification of carbon dioxide sensors does not apply.
- (H) Identification of to what extent each school's current ventilation system components, including any existing central or noncentral mechanical ventilation system, are operating in such a manner as to provide appropriate ventilation to the school building in accordance with most recent indoor ventilation standards promulgated by the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

The required supply of outside air into interior occupied spaces is governed by the 2022 Connecticut State Building Code, which adopts the 2021 International Mechanical Code (IMC), and ASHRAE Standard 62.1, prescribes the flow rate of outdoor air required for occupied areas based on occupancy classification. Depending on the room classification and occupant density, the outdoor airflow rates in cubic feet per minute (CFM) per person are defined. When occupancy density is unknown, these documents define occupant density for each room classification in number of occupants per space floor area. The required airflow rate in CFM for every occupied space is then calculated based on this value. It shall be noted that although the occupancy classification is education, the IMC does not distinguish between an office within an office building, a school, or any other building classification. This applies to all rooms that are not considered traditional educational rooms such as

health care offices, gymnasiums, theaters, and assembly halls. Table 1 below, from the 2021 IMC, indicates population density and required ventilation rates for each room classification.

**Table 1
Room Type & Occupancy Summary**

Room Types	Quantity ¹	Total Area ¹ (SF)	Occupancy Rate ² (People/1000 SF)	Occupancy Ventilation ² (CFM/person)	Area Ventilation ² (CFM/SF)	Exhaust Rate ² (CFM)
Art Classroom	1	1,203.0	20	10	0.18	0.7
Auditorium	1	1,477.8	150	5	0.06	-
Cafeteria	5	4,976.7	100	7.5	0.18	-
Classroom	29	25,798.8	35	10	0.12	-
Computer Lab	1	728.0	25	10	0.12	-
Conference Room	1	228.7	50	5	0.06	-
Corridor	15	10,101.6	-	-	0.06	-
Custodial	8	334.8	-	-	-	-
Greenhouse	0	0.0	-	-	-	-
Gymnasium	1	3,942.5	7	20	0.18	-
Library	1	3,047.6	10	5	0.12	-
Lobby	2	1,818.9	10	5	0.06	-
Locker Room	2	148.3	-	-	-	0.25
Nurse	3	780.8	5	5	0.06	-
Office	13	3,048.1	5	5	0.06	-
Restroom	40	1,269.7	-	-	-	50/70*
Stairs	2	266.7	-	-	-	-
Storage	17	2,155.1	-	-	0.12	-
Utility	1	62.0	-	-	-	-
Vestibule	6	966.7	10	5	0.06	-
Waiting Room	2	246.0	30	5	0.06	-

¹ Based on 1989 as-built drawings

² Based on 2021 International Mechanical Code

Some room types do not have an outside air requirement, as can be seen in Table 1 above. Alternatively, these rooms have exhaust rates that must be met, and are evaluated separately in this report. Refer to the exhaust rate evaluation table in Appendix B for individual room exhaust rate evaluations.

In addition to providing mechanical ventilation to the space, an alternative method approved by the building code allows for air to enter the occupied space naturally through operable windows. The code states that the minimum openable area to the outdoors shall be 4% of the floor area being ventilated. Although this is an acceptable

means of providing outdoor air by code, it is not a realistic option during cold weather or hot weather months, as windows will typically be closed. Operable windows are not considered as sources of ventilation in this analysis.

2.2 Field Study Findings and General Observations

F&O performed a walkdown of the school prior to the TAB testing activities and noted room measurements, observable maintenance concerns and general equipment condition. Below is a summary of these observations.

2.2.1 Air Distribution and Outside Air Dampers

In many areas of the attic, ductwork was found to be in poor condition (See Appendix A TAB Report photos). Insulation was missing from portions of the ductwork which can reduce the efficiency of the system. Insulation also prevents condensation from forming on the inside and outside of the ductwork. Damaged ductwork and duct connections with poor seals were observed throughout the attic space, reducing airflow. In one location near AHU-8, ductwork has become completely disconnected, reducing the amount of air reaching the intended zones.

Some rooms in the school appear to have been converted from their original use based on the 1989 as-built drawings. New HVAC load calculations should be performed in these locations, and air distribution systems updated to ensure proper ventilation and conditioning for its updated use.

2.2.2 Air Handling Units

The air handling units in the building are designed to operate providing a constant volume of supply air to the space. Return air is mixed with outside air for ventilation. The outside air damper on each unit adjusts according to the building automation system and environmental sensors.

Based on the testing and balancing results, all of the AHUs in the building are operating below their design conditions (see Table 2). Total supply and outside airflow measurements are below original design values, which indicates that while the AHUs may be capable of supplying adequate ventilation to the space, current operating conditions are limiting the performance of the equipment. Table 3 below compares the design outside airflow rate to the calculated cfm based on room area, room type, and expected occupancy. It can be seen that, except for AHU-5, all AHUs were designed to provide enough outside air to satisfy current ventilation requirements.

The air handling equipment is showing signs of aging and appeared to be in fair to poor condition. The filters had been recently replaced, but the coils beyond the filters were dirty. This is an indication that filter replacement intervals may need to be increased, or an investigative study should be performed to identify how dust and debris is getting beyond the filter media.

2.2.3 Exhaust Fans

Exhaust fans in the classroom restrooms are turned on when the light switch in the restroom is on. Other exhaust fans throughout the building run on occupancy sensors or run continuously. Many of the exhaust fans installed were found not operational. Refer to the TAB report in Appendix A for a full list of equipment and their condition. As noted in the system description above, most of the non-operable exhaust fans serve the classroom toilet rooms. According to IMC standards, restrooms require a minimum of 50 CFM of exhaust air per stall or urinal if running continuously, and 70 CFM if running intermittently. Other exhaust fans were found to be rubbing. This

indicates that the fans need to be adjusted. If not corrected, the fans will remain less energy efficient and have a higher risk of failure.

2.2.4 Kitchen Exhaust and Make-Up Air Unit

The makeup air unit (MAU) serving the kitchen is designed to operate when the kitchen exhaust hood is in operation. The MAU was not operational while TAB was performing measurements on the building. Further investigation into the MAUs operation should be performed. TAB personnel also discovered that the MAU is not interlocked with the kitchen exhaust fan. The purpose of the MAU is to provide fresh air to replace air being exhausted by the kitchen EF. Without replacement air, the kitchen operates at a negative pressure, and air from other portions of the school is drawn in to replace the hood exhaust air. If the MAU is not functioning properly, some areas of the school may not be receiving the correct amount of conditioned ventilation.

2.3 Outside Airflow and Air Change Rates

2.3.1 Airflow Design vs. Measurements

Table 2 and 3 below display AHU design parameters regarding supply and outside airflows. Design information was obtained from the Nathan Hale Elementary School as-built mechanical schedule. Airflow measurements were performed by Air Balance Service Company and using ASHRAE 62.1 standards outside airflow rates were calculated. Note that the measured airflows are less than the design airflow and that the minimum outdoor air Appendix A contains the full report provided by Air Balance Service Company TAB.

**Table 2
Design vs. Measured Airflow**

AHU	DESIGN AIRFLOW			MEASURED AIRFLOW		
	SUPPLY CFM	OA CFM	% OA	SUPPLY CFM	OA CFM	% OA
AHU-1	3035	507	17%	1522	428	28%
AHU-2	2200	260	12%	1329	80	6%
AHU-3	10485	2750	26%	4915	688	14%
AHU-4	1840	300	16%	1228	40	3%
AHU-5	1600	300	19%	1081	354	33%
AHU-6	6280	2260	36%	3396	714	21%
AHU-7	3800	30	1%	2396	14	1%
AHU-8	5970	475	8%	1550	168	11%

**Table 3
Design vs. Calculated Outside Air**

AHU	DESIGN AIRFLOW			CALCULATED AIRFLOW	
	SA CFM	OA CFM	% OA	OA CFM	% OA
AHU-1	3035	507	17%	428	28%
AHU-2	2200	260	12%	80	6%
AHU-3	10485	2750	26%	688	14%
AHU-4	1840	300	16%	40	3%
AHU-5	1600	300	19%	354	33%
AHU-6	6280	2260	36%	714	21%
AHU-7	3800	30	1%	14	1%
AHU-8	5970	475	8%	168	11%

It can be seen in Table 2 that the measured supply airflow rate and outside air airflow rate are less than the designed airflows. Some of the air handlers were not designed to provide outside air as recommended by the current ASHRAE 62 standards, this can be seen in Table 3. An investigation should be carried out to determine why the air handlers are not currently providing the designed airflow rate.

2.3.2 Individual Room Ventilation

Ventilation rates for each room at the minimum outdoor air damper position are itemized in Appendix C. At this position, most rooms lack appropriate ventilation based on ASHRAE population densities described in Section 2.1. Supply fan speed and minimum damper positions should be set such that continuous ventilation is provided. See Section 3 for recommended adjustments.

3 Discussion and Recommendations

3.1 General Recommendations to Improve Schools Performance

It is recommended that cleaning of the entire school’s duct system be performed by a qualified professional. AHU coils, filters, and ductwork were all observed dirty and in need of cleaning (see photos in Appendix A). This cleaning will help improve the quality of air circulated throughout the school and reduce pressure drop in the system. Reduced airflow due from dirty coils and filters can also increase the electrical consumption of the fan motors and affect motor performance, resulting in increased operating costs and possible motor failure.

To preserve the condition and capability of the HVAC equipment serving the building, it is recommended that a maintenance program following ASHRAE 180-2018: *Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems* be implemented. This standard provides a comprehensive guide, that when followed, can increase the HVAC system’s ability to achieve acceptable thermal comfort, energy efficiency and indoor air quality within the building.

Recommissioning of the entire HVAC system should be performed to ensure all equipment and control components of the system are operating as designed. This service should be performed in 3–5-year intervals to optimize system performance, increase energy savings, and improve system efficiency.

3.1.1 Air Distribution and Outside Air Dampers

During testing of the outside air dampers, it was found that AHU 4, AHU 7, and AHU 8 have dampers that remained in the closed position even when the control system is signaling a 100% open command. The zones being served by these AHUs are not receiving any outside air. Testing should be performed to ensure all dampers are operational and if not, actuators repaired or replaced.

Rebalancing of the supply, return, and outside air for all rooms should be performed after completion of duct cleaning and system repairs. Airflows should be tested and balance dampers adjusted to provide the design airflow rate and ensure the proper amount of outside air is being delivered to each zone.

3.1.2 Exhaust Fans

Exhaust fans that are not operational should be repaired or replaced to provide adequate ventilation according to ASHRAE standards. All exhaust fans should have maintenance performed and balanced to proper airflow rates.

3.1.3 Kitchen Exhaust and Make-Up Air Unit

Further investigation into the operation of the make-up air unit should be carried out. If the MAU is found operational, controls should be designed to operate the MAU based on kitchen exhaust operation. TAB should be performed to ensure MAU and exhaust fan are properly ventilating the space.

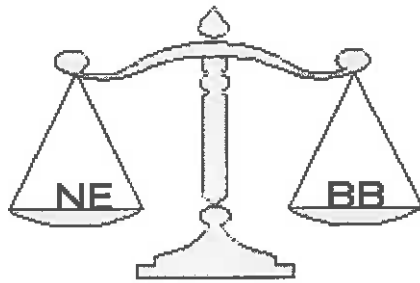
3.1.4 Air Handling Units

Due to the age and condition of the AHUs installed, replacement of these systems should be considered. The AHUs currently installed may not be able to properly treat outside air due to increased ventilation requirements based on ASHRAE 62.1 outside air requirements.

Classrooms that have VRF air conditioning units installed should be provided with outside air by other means. A dedicated outside air system (DOAS) should be designed to provide the required outside air to each classroom.

Appendix A

Testing and Balancing Report



CERTIFIED TEST, ADJUST AND BALANCE REPORT

REPORT DATE: 12-28-23

**PROJECT: NATHAN HALE ELEMENTARY SCHOOL
VENTILATION VERIFICATION**

ADDRESS: MERIDEN, CT

CUSTOMER: FUSS & ONEILL, INC.

**NEBB TAB CONTRACTOR: AIR BALANCING SERVICE CO.
16 PROGRESS CIRCLE UNIT 1A
NEWINGTON, CT 06111**

PHONE NUMBER: (860) 500-5008

FAX NUMBER: (860) 500-5010

WEBSITE: WWW.AIRBAL.COM

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AIR BALANCING REPORT	SHEET NO.
NEBB / TABB CERTIFICATION	
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PROJECT: NATHAN HALE ELEMENTARY VENT VERFICIATION
REPORT DATE: 12-28-23
SUBMITTED BY: AIR BALANCING SERVICE CO. NEBB CERTIFIED #2453
CODE: 23318T

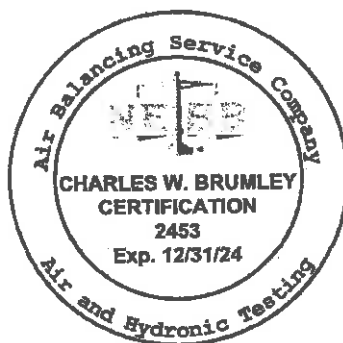
Firm Certification Number: 2453

Firm Name: Air Balancing Service Company

Certification: Testing, Adjusting and Balancing of Environmental Systems

Certified Professional Name: CHARLES W. BRUMLEY

Expiration Date: 12/31/24



Charles W. Brumley

**** AIR INSTRUMENT CALIBRATION REPORT ****

INSTRUMENT SERIAL NUMBER	APPLICATION	CALIBRATION
SHORTRIDGE AIRDATA MULTIMETER ADM-860C SERIAL NO. M20410	MULTIMETER USED IN VELOCITY, STATIC PRESSURES, FLOWHOOD READINGS, DIFFERENTIAL PRESSURES, TEMPERATURE	8/16/2023
TRIPLETT SERIAL NO. 2211629	AIRFLOW VELOCITY	8/16/2023
EXTECH PHOTO TACH SERIAL NO. 201117034	MOTOR AND FAN RPM'S	8/16/2023
EXTECH DIG THERMOMETER RH390 SERIAL NO. A21031496	TEMPERATURE / HUMIDITY	8/16/2023
FLUKE 52/II SERIAL NO. 7092090	TEMPERATURE	8/16/2023
FLUKE AMMETER 323 SERIAL NO. 53965787MV	VOLTAGE AND AMPERAGE	8/16/2023

Pro-Calibration, LLC Calibration Data Sheet

Submitted by: Air Balancing Service Co.
Manufacturer: Shortridge Instruments
Model Number: ADM-860C
Serial Number: M20410
Description: Air Data Multimeter

Asset Number #: ABSC-040
Cal. Technician: CT2
Cal. Date: 8/16/23
Due Date: 8/16/24
Cal. Procedure: Manufacturer Specifications
Cal. Interval: 12 Months

Standards Used:

975	993	1066	1072	1094	1113	1144	1152
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Temperature: 21Deg.C Barometric Pressure: 30.02"HG Humidity: 45%RH

STD#	Tested Function	Range	Standard	Uut. Meas. Val.	Allowable Tolerance Range
1113	Pressure in/wc	0-60"WC	0.0500	0.0500	0.0480 – 0.0520"wc
1144	+/- 2%rdg., +/-0.001"wc		0.5000	0.5000	0.4890 – 0.5110"wc
1152			1.000	1.000	0.9790 – 1.0210"wc
			10.000	10.05	9.799 – 10.201"wc
			25.000	25.05	24.499 – 25.501"wc
			50.000	50.10	48.999 – 51.001"wc
975	Air Velocity	25-5000	50	50	42 - 59 fpm
993	+/- 3%rdg., +/-7fpm	Ft/min.	200	200	187 - 213 fpm
1072			500	500	478 - 522 fpm
1144			900	905	866 - 934 fpm
1152			1500	1505	1448 - 1552 fpm
			3100	3110	3000 - 3200 fpm
			4900	4910	4746 - 5054 fpm
1066	Temperature	-65/+250°F	5.00	5.2	4.5 – 5.5°F
	+/- 0.5°F		32.00	32.2	31.5 – 32.5°F
			77.00	77.2	76.5 – 77.5°F
			100.00	100.2	99.0 – 101.0°F
			240.00	240.2	239.0 – 241.0°F
1094	Absolute Pressure ±2%, rdg, ±0.1"HG	14 – 40in.Hg	30.02	30.0	29.32 – 30.72 in.Hg.

Note;

Pro-Calibration, LLC Calibration Data Sheet

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Submitted by: Air Balancing Service Co.
Manufacturer: Triplett
Model Number: CFM400
Serial Number: 2211629
Description: Rotating Vane Anemometer
Asset Number: ABSC-049

Cal. Technician: CT2
Cal. Date: 8/16/23
Due Date: 8/16/24
Cal. Procedure: Manufacturer Specifications
Cal. Interval: 12 Months

Standards Used:

975	991	992	994	1072	1152			
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Temperature: 21Deg.C. Barometric Pressure: 30.02"HG. Humidity: 45%RH.

#	Tested Function	Allowable Range	Standard	Uut. Meas. Val.	After Adj.	Tolerance
1	Air Velocity	90 - 100	95	93		+/-1.5% of rdg, +59fpm
	40-5900fpm	145 - 155	150	149		+/-1.5% of rdg, +59fpm
		391 - 409	400	401		+/-1.5% of rdg, +59fpm
		788 - 812	800	805		+/-1.5% of rdg, +59fpm
		1184 - 1216	1200	1206		+/-1.5% of rdg, +59fpm
		3065 - 3135	3100	3108		+/-1.5% of rdg, +59fpm
2	Temperature	69.46 - 73.46	71.46	72		+/- 1.1deg.F
	-4 - 140deg.F					

Pro-Calibration, LLC Calibration Data Sheet

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Submitted by: Air Balancing Service Co.
Manufacturer: Extech Instruments
Model Number: 461920
Serial Number: 201117034
Description: Laser / Photo Contact Tach.

Asset Number: ABSC-036
Cal. Technician: CT2
Cal. Date: 8/16/23
Due Date: 8/16/24
Cal. Procedure: Manufacturer Specifications
Cal. Interval: 12 Months

Standards Used:

883

1005

Temperature: 21Deg.C

Barometric Pressure: 30.02"HG.

Humidity: 45%RH.

#	Tested Function	Range	Standard	UUT. Meas. Val.	After Adj.	Tolerance
1	Speed / RPM / Photo	10-99,999	500.00	500.0		± 0.05% + 1dig.
			1000.00	1000		± 0.05% + 1dig.
			1800.00	1800		± 0.05% + 1dig.
			6000.00	6000		± 0.05% + 1dig.
			30,000.00	30,001		± 0.05% + 1dig.
			90,000.00	90,002		± 0.05% + 1dig.

Pro-Calibration, LLC 480 Harwich Rd. Brewster, MA 02631

774-323-3662

www.pro-calibration.com

Veteran owned and operated

Pro-Calibration, LLC Calibration Data Sheet

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Submitted by: Air Balancing Service Co.
Manufacturer: Extech Instruments
Model Number: RH390
Serial Number: A21031496
Description: Digital Psychrometer
Asset Number: ABSC-034

Cal. Technician: CT2
Cal. Date: 8/16/23
Due Date: 8/16/24
Cal. Procedure: Manufacturer Specifications
Cal. Interval: 12 Months

Standards Used:

1003 1057 1080 1081 1135

Temperature: 21Deg.C Barometric Pressure: 30.02"HG. Humidity: 45%RH

#	Tested Function	Range	Standard	Uut. Meas. Val.	After Adj.	Tolerance
1	Temperature	-20 / +70°C	23.61	23.6		± 1.0°C
2	Relative Humidity	0.0 – 100.0 %rh	33.07	34.8		±2%RH
			58.8	60.2		
			75.47	77.1		(20%-90%)
3	Wet Bulb	0 - 80°C	18.2	17.6		Calculated
4	Dew Point	-30 / 100°C	15.1	16.0		Calculated

Pro-Calibration, LLC Calibration Data Sheet

Page 1 of 1

Submitted by: Air Balancing Service Co.
 Manufacturer: Fluke
 Model Number: 52/II
 Serial Number: 7092090
 Description: Digital Thermometer

Asset Number #: ABSC-046
 Cal. Technician: CT2
 Cal. Date: 8/16/23
 Due Date: 8/16/24
 Cal. Procedure: Manufacturer Specifications
 Cal. Interval: 12 Months

Standards Used:

1153

Temperature: 21Deg.C. Barometric Pressure: 30.02HG. Humidity: 45%RH

#	Tested Function	Range	Standard	Uut. Meas. Val.	After Adj.	Tolerance
1.	Temperature T1	-200 /+1370°C	-100.00 °C	-99.8		± 0.1% rdg +0.7°C
			-20.00 °C	-19.7		± 0.1% rdg +0.7°C
			0.00 °C	0.1		± 0.1% rdg +0.7°C
			100.00 °C	100.0		± 0.1% rdg +0.7°C
			1200.00°C	1200		± 0.1% rdg +0.7°C
2	Temperature T2	-200 /+1370°C	-100.00 °C	-99.9		± 0.1% rdg +0.7°C
			-20.00 °C	-19.9		± 0.1% rdg +0.7°C
			0.00 °C	0.0		± 0.1% rdg +0.7°C
			100.00 °C	100.1		± 0.1% rdg +0.7°C
			1200.00°C	1200		± 0.1% rdg +0.7°C

Pro-Calibration, LLC Calibration Data Sheet

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Submitted by: Air Balancing Service Co.
Manufacturer: Fluke
Model Number: 323 True RMS
Serial Number: 53965787MV
Description: True RMS clamp meter
Asset Number: ABSC-037

Cal. Technician: CT2
Cal. Date: 8/16/23
Due Date: 8/16/24
Cal. Procedure: Manufacturer Specifications
Cal. Interval: 12 Months

Standards Used:

1153

Temperature: 21Deg.C Barometric Pressure: 30.02"HG Humidity: 45RH%

#	Tested Function	Range	Standard	Uut. Meas. Val.	After Adj.	Tolerance
1.	DC Voltage	0 - 600.0 V	10.0000V	10.0		1% +/- 5 counts
			100.000V	100.1		1% +/- 5 counts
			500.000V	500.2		1% +/- 5 counts
2.	AC Voltage @ (60Hz)	0 - 600.0 V	10.0000V	10.0		1.5% +/- 5 counts
			100.000V	100.1		1.5% +/- 5 counts
			500.00V	500.3		1.5% +/- 5 counts
3.	AC Current @ (60 Hz)	0 - 400.0 A	10.0000A	10.0		2.0% +/- 5 counts
			100.000A	100.1		2.0% +/- 5 counts
			390.00A	390.2		2.0% +/- 5 counts
4.	Resistance	0 - 400.0 Ω	10.0000Ω	10.0		1% - 5 counts
			100.000Ω	100.1		1% - 5 counts
			375.00Ω	374.8		1% - 5 counts
5	Continuity / Audible	≤30Ω	Check	OK		≤30Ω

ABBREVIATION / MEANING

ABBREVIATION / MEANING

AC	AIR CONDITIONER	MIN	MINIMUM
AC/HR	AIR CHANGES PER HOUR	MUA	MAKE-UP AIR
AHU	AIR HANDLING UNIT	NO.	NUMBER
AK	AREA FACTOR	OA	OUTSIDE AIR
AMP	AMPERAGE	OA%	PERCENT OF OUTSIDE AIR
CEF	CEILING EXHAUST FAN	OD	OUTSIDE DIAMETER
CFM	CUBIC FEET PER MINUTE	OED	OPEN END DUCT
CNTRL	CONTROL	PERF	PERFORATED DIFFUSER
CU FT	CUBIC FEET	POS	POSITION
CV	CONSTANT VOLUME	PRESS	PRESSURE
DD	DIRECT DRIVE	PRIM	PRIMARY
DEL	ACTUAL DELIVERED	RA	RETURN AIR
DES	DESIGN	RA%	PERCENT OF RETURN AIR
DIFF	DIFFERENTIAL	RHC	REHEAT COIL
EF	EXHAUST FAN	RPM	REVOLUTIONS PER MINUTE
ESP	EXTERNAL STATIC PRESSURE (" WG)	RTU	ROOF TOP UNIT
FPM	FEET PER MINUTE	SA	SUPPLY AIR
FT	FEET	SF	SERVICE FACTOR
H	HEIGHT	SL	SLOT
HP	HORSEPOWER	SN	SERIAL NUMBER
HR	HOUR	SP	STATIC PRESSURE (" WG)
HTG	HEATING	SQ FT	SQUARE FEET
L	LENGTH	TEMP	TEMPERATURE
LD	LINEAR DIFFUSER	TF	THERMAFUSER
LFD	LAMINAR FLOW DIFFUSER	TSP	TOTAL STATIC PRESSURE (" WG)
LR	LIGHT RETURN	VAV	VARIABLE AIR VOLUME
LT	LIGHT TROEFFER	VEL	VELOCITY IN FEET PER MINUTE
MA	MIXED AIR	VFD	VARIABLE FREQUENCY DRIVE
MAU	MAKE-UP AIR UNIT	W	WIDTH
MAX	MAXIMUM	WEF	WALL EXHAUST FAN
MD	MOTORIZED DAMPER	WG	WATER GAUGE
MER	MECHANICAL EQUIPMENT ROOM	W/	WITH
MFR	MANUFACTURER		

**PROJECT: NATHAN HALE ELEMENTARY SCHOOL
VENTILATION VERIFICATION**

PROJECT DESCRIPTION: Balance air systems as requested

COMMENT:

The following Exhaust Fans are not running:

- 1) U-35
- 2) U-49
- 3) U-43
- 4) U-32
- 5) U-57
- 6) U-21
- 7) U-83
- 8) U-97
- 9) U-111
- 10) L-04
- 11) L-05
- 12) L-11
- 13) L-16
- 14) L-20
- 15) L-24
- 16) L-30
- 17) L-37

The following Exhaust Fans are rubbing:

- 1) U-102
- 2) U-104
- 3) U-108

The following Exhaust Fan is not installed:

- 1) L-17

**SUBMITTED BY: AIR BALANCING SERVICE CO.
REPORT DATE: 12-28-23
CODE: 23318C**

NEBB CERTIFIED #2453

**PROJECT: NATHAN HALE ELEMENTARY SCHOOL
VENTILATION VERIFICATION**

PROJECT DESCRIPTION: Balance air systems as requested

COMMENT CON'T:

AHU-4:

The outside damper was given a 100% open command, but the damper remained closed.

AHU-5:

There is supposed to be a supply and return in the U-61 Corridor. The supply and return are not installed.

AHU-6:

There is supposed to be a return grill in the U-61 Corridor. The return is not installed.

AHU-7:

The outside air damper is given a 100% open command, but the damper remained closed.

AHU-8:

The belts are loose.

The outside air damper is given a 100% open command, but the damper remained closed.

MAU-1:

This unit does not run when the Kitchen Hood exhaust fan comes on.

**SUBMITTED BY: AIR BALANCING SERVICE CO.
REPORT DATE: 12-28-23
CODE: 23318C**

NEBB CERTIFIED #2453

TAB MEASUREMENTS

** SUPPLY / EXHAUST READINGS **

FLOOR	ROOM #	ROOM NAME	ROOM TYPE	DRAWING ROOM #	DRAWING ROOM NAME	TAB MEASURED (SA CFM)	TAB MEASURED (EA CFM)	CALC. OA CFM @ MIN (OA CFM)	MEASURED UNIT OA% (OA CFM)	BAS DAMPER COMMAND (POS%)	ASSOCIATED VAV & RTU/AHU UNIT
L	N/A	N/A	STAIRS	L-01	STAIR #1	N/A	N/A	N/A	N/A	N/A	N/A
L	139	RESTROOM	RESTROOM	L-02	TOILET	N/A	73	N/A	N/A	N/A	N/A
L	N/A	N/A	CORRIDOR	L-03	OUTDOOR STORAGE	N/A	N/A	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-04	TOILET	N/A	0	N/A	N/A	N/A	N/A
L	138	N/A	CLASSROOM	L-05	CLASSROOM	N/A	0	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-06	TOILET	N/A	169	N/A	N/A	N/A	N/A
L	139	N/A	CLASSROOM	L-07	CLASSROOM	N/A	268	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-08	TOILET	N/A	105	N/A	N/A	N/A	N/A
L	140	N/A	CLASSROOM	L-09	CLASSROOM	N/A	234	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-10	TOILET	N/A	169	N/A	N/A	N/A	N/A
L	141	N/A	CLASSROOM	L-11	CLASSROOM	N/A	0	N/A	N/A	N/A	N/A
L	N/A	N/A	CORRIDOR	L012	CORRIDOR	N/A	N/A	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-13	TOILET	N/A	96	N/A	N/A	N/A	N/A
L	142	N/A	CLASSROOM	L-14	CLASSROOM	N/A	320	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-15	TOILET	N/A	146	N/A	N/A	N/A	N/A
L	143	N/A	CLASSROOM	L-16	CLASSROOM	N/A	0	N/A	N/A	N/A	N/A
L	N/A	N/A	CUSTODIAL	L-17	JANITOR	N/A	0	N/A	N/A	N/A	N/A
L	N/A	N/A	CUSTODIAL	L-18	MECHANICAL	N/A	N/A	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-19	TOILET	N/A	57	N/A	N/A	N/A	N/A
L	144	N/A	CLASSROOM	L-20	CLASSROOM	N/A	0	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-21	TOILET	N/A	1.5	N/A	N/A	N/A	N/A
L	145	N/A	CLASSROOM	L-22	CLASSROOM	N/A	363	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-23	TOILET	N/A	77	N/A	N/A	N/A	N/A
L	146	N/A	CLASSROOM	L-24	CLASSROOM	N/A	0	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-25	TOILET	N/A	166	N/A	N/A	N/A	N/A
L	N/A	N/A	CORRIDOR	L-26	CORRIDOR	N/A	N/A	N/A	N/A	N/A	N/A
L	N/A	N/A	CORRIDOR	L-27	CORRIDOR	N/A	N/A	N/A	N/A	N/A	N/A
L	147	N/A	CLASSROOM	L-28	CLASSROOM	N/A	510	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-29	TOILET	N/A	97	N/A	N/A	N/A	N/A

TAB MEASUREMENTS

** SUPPLY / EXHAUST READINGS **

FLOOR	ROOM #	ROOM NAME	ROOM TYPE	DRAWING ROOM #	DRAWING ROOM NAME	TAB MEASURED (SA CFM)	TAB MEASURED (EA CFM)	CALC. OA CFM @ MIN (OA CFM)	MEASURED UNIT OA% (OA CFM)	BAS DAMPER COMMAND (POS%)	ASSOCIATED VAV & RTU/AHU UNIT
L	148	N/A	CLASSROOM	L-30	CLASSROOM	N/A	0	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-31	TOILET	N/A	100	N/A	N/A	N/A	N/A
L	149	N/A	CLASSROOM	L-32	CLASSROOM	N/A	504	N/A	N/A	N/A	N/A
L	N/A	N/A	RESTROOM	L-33	TOILET	N/A	100	N/A	N/A	N/A	N/A
L	150	N/A	CLASSROOM	L-34	CLASSROOM	N/A	489	N/A	N/A	N/A	N/A
L	-	N/A	RESTROOM	L-35	TOILET	N/A	1019	N/A	N/A	N/A	N/A
L	151	N/A	CUSTODIAL	L-36	JANITOR	N/A	72	N/A	N/A	N/A	N/A
U	204	CLASSROOM	RESTROOM	U-84	TOILET	N/A	0	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-85	CLASSROOM	N/A	67	N/A	N/A	N/A	N/A
U	205	CLASSROOM	RESTROOM	U-86	TOILET	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-87	CLASSROOM	N/A	N/A	N/A	N/A	N/A	N/A
U	206	CLASSROOM	RESTROOM	U-88	TOILET	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-89	CLASSROOM	N/A	N/A	N/A	N/A	N/A	N/A
U	207	CLASSROOM	RESTROOM	U-90	TOILET	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-91	CLASSROOM	N/A	N/A	N/A	N/A	N/A	N/A
U	208	CLASSROOM	RESTROOM	U-92	TOILET	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-93	CLASSROOM	N/A	N/A	N/A	N/A	N/A	N/A
U	209	CLASSROOM	RESTROOM	U-94	TOILET	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-95	CLASSROOM	N/A	N/A	N/A	N/A	N/A	N/A
U	210	CLASSROOM	RESTROOM	U-96	TOILET	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-97	CLASSROOM	N/A	N/A	N/A	N/A	N/A	N/A
U	211	CLASSROOM	RESTROOM	U-98	TOILET	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-99	READING CLINIC	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	CORRIDOR	RESTROOM	U-100	TOILET	N/A	N/A	N/A	N/A	N/A	N/A
U	212	CLASSROOM	CORRIDOR	U-101	CORRIDOR	N/A	N/A	N/A	N/A	N/A	N/A
U	M	RESTROOM	CLASSROOM	U-102	CLASSROOM	N/A	N/A	N/A	N/A	N/A	N/A
U	213	CLASSROOM	RESTROOM	U-103	TOILET	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-104	CLASSROOM	N/A	N/A	N/A	N/A	N/A	N/A
U	214	CLASSROOM	RESTROOM	U-105	TOILET	N/A	N/A	N/A	N/A	N/A	N/A

TAB MEASUREMENTS

** SUPPLY / EXHAUST READINGS **

FLOOR	ROOM #	ROOM NAME	ROOM TYPE	DRAWING ROOM #	DRAWING ROOM NAME	TAB MEASURED (SA CFM)	TAB MEASURED (EA CFM)	CALC. OA CFM @ MIN (OA CFM)	MEASURED UNIT OA% (OA CFM)	BAS DAMPER COMMAND (POS%)	ASSOCIATED VAV & RTU/AHU UNIT
U	N/A	RESTROOM	CLASSROOM	U-106	CLASSROOM	N/A	N/A	N/A	N/A	N/A	N/A
U	215	CLASSROOM	RESTROOM	U-107	TOILET	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-108	CLASSROOM	N/A	N/A	N/A	N/A	N/A	N/A
U	216	STORAGE	RESTROOM	U-109	TOILET	N/A	N/A	N/A	N/A	N/A	N/A
U	217	STORAGE	CUSTODIAL	U-110	JANITOR	N/A	N/A	N/A	N/A	N/A	N/A
U	218	RESTROOM	STORAGE	U-111	STORAGE	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	RESTROOM	U-112	HANDICAP TOILET	N/A	N/A	N/A	N/A	N/A	N/A
L	152	N/A	STORAGE	L-37	STORAGE	N/A	N/A	N/A	N/A	N/A	N/A
L	153	N/A	RESTROOM	L-38	HANDICAP TOILET	N/A	N/A	N/A	N/A	N/A	N/A
L	N/A	N/A	STAIRS	L-39	STAIR #2	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	VESTIBULE	U-1	VESTIBULE	79	N/A	22	28%	100%OPEN	AHU-1
U	N/A	N/A	CORRIDOR	U-2	CORRIDOR	132	N/A	8	6%	100%OPEN	AHU-2
U	100	OFFICE	WAITING ROOM	U-3	WAITING ROOM	135	N/A	8	6%	100%OPEN	AHU-2
U	VAULT	VAULT	OFFICE	U-4	OFFICE	443	N/A	27	6%	100%OPEN	AHU-2
U	101	PRINCIPAL	STORAGE	U-5	VAULT	75	N/A	5	6%	100%OPEN	AHU-2
U	103	VICE PRINCIPAL	OFFICE	U-6	PRINCIPAL	236	N/A	66	28%	100%OPEN	AHU-1
U	102	CONFERENCE ROOM	OFFICE	U-7	PSYCHOLOGY	173	N/A	10	6%	100%OPEN	AHU-2
U	104	PSYCHOLOGY	CONFERENCE RM	U-8	CONFERENCE	160	N/A	45	28%	100%OPEN	AHU-1
U	N/A	N/A	OFFICE	U-9	HV IMPROVEMENT	182	N/A	11	6%	100%OPEN	AHU-2
U	N/A	N/A	CORRIDOR	U-10	CORRIDOR	N/A	N/A	N/A	N/A	100%OPEN	N/A
U	105	NURSE	CORRIDOR	U-11	CORRIDOR	65	N/A	18	28%	100%OPEN	AHU-1
U	105A	NURSE	WAITING ROOM	U-12	WAITING ROOM	69	N/A	19	28%	100%OPEN	AHU-1
U	105R	RESTROOM	OFFICE	U-13	RESTROOM	77	N/A	5	6%	100%OPEN	AHU-2
U	105C	NURSE	RESTROOM	U-14	TOILET	N/A	137	N/A	N/A	100%OPEN	N/A
U	105B	NURSE	NURSE	U-15	EXAM	112	N/A	7	6%	100%OPEN	AHU-2
U	N/A	N/A	NURSE	U-16	FIRST AID	55	N/A	15	28%	100%OPEN	AHU-1
U	N/A	N/A	VESTIBULE	U-17	VESTIBULE	78	N/A	22	28%	100%OPEN	AHU-1
U	127	TECH LAB	CORRIDOR	U-18	CORRIDOR	242	N/A	68	28%	100%OPEN	AHU-1
U	128	MEDIA CENTER	LIBRARY	U-19	LIBRARY	1561	N/A	0	0%	100%OPEN	AHU-7

TAB MEASUREMENTS

** SUPPLY / EXHAUST READINGS **

FLOOR	ROOM #	ROOM NAME	ROOM TYPE	DRAWING ROOM #	DRAWING ROOM NAME	TAB MEASURED (SA CFM)	TAB MEASURED (EA CFM)	MEASURED UNIT OA% (OA CFM)	BAS DAMPER COMMAND (POS%)	ASSOCIATED VAV & RTU/AHU UNIT
U	128A	OFFICE	OFFICE	U-20	WORK	130	N/A	0%	100% OPEN	AHU-7
U	N/A	N/A	STORAGE	U-21	STORAGE	104	0	28%	100% OPEN	AHU-7
U	106	CLASSROOM	STORAGE	U-22	STORAGE	N/A	N/A	N/A	N/A	N/A
U	107	CLASSROOM	CLASSROOM	U-23	ANCIL	88	N/A	28%	100% OPEN	AHU-1
U	N/A	N/A	RESTROOM	U-24	MEN	N/A	152	N/A	N/A	N/A
U	N/A	N/A	STORAGE	U-25	WOMEN	N/A	77	N/A	N/A	N/A
U	N/A	N/A	OFFICE	U-26	TEACHER'S WORK	97	N/A	28%	100% OPEN	AHU-1
U	N/A	N/A	LOBBY	U-27	UPPER LOBBY	513	N/A	11%	100% OPEN	AHU-8
U	N/A	N/A	CORRIDOR	U-28	CORRIDOR	249	N/A	28%	100% OPEN	AHU-1
U	N/A	N/A	CUSTODIAL	U-29	JANITOR	N/A	97	N/A	N/A	N/A
U	N/A	N/A	STORAGE	U-30	STORAGE	N/A	135	N/A	N/A	N/A
U	N/A	N/A	RESTROOM	U-31	MEN	N/A	39	N/A	N/A	N/A
U	N/A	N/A	RESTROOM	U-32	WOMEN	N/A	0	N/A	N/A	N/A
U	N/A	N/A	CAFETERIA	U-33	TEACHER'S LOUNGE	566	N/A	21%	15% OPEN	AHU-6
U	112	CAFETERIA	CAFETERIA	U-34	CAFETERIA	2765	N/A	21%	15% OPEN	AHU-6
U	N/A	N/A	STORAGE	U-35	STORAGE	N/A	0	N/A	N/A	N/A
U	N/A	N/A	RESTROOM	U-36	TOILET	N/A	50	N/A	N/A	N/A
U	N/A	N/A	LOCKER ROOM	U-37	LOCKERS	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	CUSTODIAL	U-38	JANITOR	N/A	141	N/A	N/A	N/A
U	N/A	N/A	CORRIDOR	U-39	CORRIDOR	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	CAFETERIA	U-40	KITCHEN	0	5419	0%	N/A	MAU-1
U	N/A	N/A	TECHNOLOGY	U-19A	TECHNOLOGY	705	N/A	0%	100% OPEN	AHU-1
U	N/A	N/A	CAFETERIA	U-41	DISH	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	OFFICE	U-42	OFFICE	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	STORAGE	U-43	DRY STORAGE	N/A	0	N/A	N/A	N/A
U	N/A	N/A	STORAGE	U-44	OUTDOOR STORAGE	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	RESTROOM	U-45	TOILET	N/A	130	N/A	N/A	N/A
U	N/A	N/A	LOCKER ROOM	U-46	LOCKERS	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	CUSTODIAL	U-47	CUSTODIAN	N/A	N/A	N/A	N/A	N/A

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
 SUBMITTED BY: AIR BALANCING SERVICE CO.
 CODE: 23318-4

NEBB CERTIFIED #2453
 SHEET NO. 4

TAB MEASUREMENTS

** SUPPLY / EXHAUST READINGS **

FLOOR	ROOM #	ROOM NAME	ROOM TYPE	DRAWING ROOM #	DRAWING ROOM NAME	TAB MEASURED (SA CFM)	TAB MEASURED (EA CFM)	CALC. OA CFM @ MIN (OA CFM)	MEASURED UNIT OA% (OA CFM)	BAS DAMPER COMMAND (POS%)	ASSOCIATED VAV & RTU/AHU UNIT
U	N/A	N/A	VESTIBULE	U-48	REC	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	STORAGE	U-49	MAINT. STORAGE	N/A	0	N/A	N/A	N/A	N/A
U	N/A	N/A	VESTIBULE	U-50	VESTIBULE	N/A	N/A	N/A	N/A	N/A	N/A
U	123	ART	ART CLASSROOM	U-51	ART	983	674	N/A	33%	100% OPEN	AHU-5
U	123A	RESTROOM	RESTROOM	U-52	TOILET	N/A	139	N/A	N/A	N/A	N/A
U	123B	STORAGE	STORAGE	U-53	STORAGE	98	N/A	N/A	33%	100% OPEN	AHU-5
U	124B	STORAGE	OFFICE	U-54	INSTUNCTIONAL	59	N/A	N/A	3%	100% OPEN	AHU-4
U	124A	N/A	RESTROOM	U-55	TOILET	N/A	99	N/A	N/A	N/A	N/A
U	124	MUSIC	CLASSROOM	U-56	MUSIC	1100	N/A	N/A	3%	100% OPEN	AHU-4
U	124D	STORAGE	STORAGE	U-57	STORAGE	N/A	0	N/A	N/A	N/A	N/A
U	124C	STORAGE	CLASSROOM	U-58	PRAC	69	N/A	N/A	3%	100% OPEN	AHU-4
U	N/A	N/A	VESTIBULE	U-59	VESTIBULE	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	CORRIDOR	U-60	CORRIDOR	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	CORRIDOR	U-61	CORRIDOR	65	N/A	N/A	21%	15% OPEN	AHU-6
U	125	STAGE	AUDITORIUM	U-62	STAGE	855	N/A	N/A	14%	100% OPEN	AHU-3
U	125B	STORAGE	STORAGE	U-63	STORAGE	N/A	N/A	N/A	N/A	N/A	N/A
U	125A	STORAGE	STORAGE	U-64	STORAGE	84	N/A	N/A	14%	100% OPEN	AHU-3
U	134A	STORAGE	STORAGE	U-65	STORAGE	N/A	N/A	N/A	N/A	N/A	N/A
U	134B	OFFICE	STORAGE	U-66	STORAGE	111	N/A	N/A	14%	100% OPEN	AHU-3
U	134	GYM	AUDITORIUM	U-67	AUDITORIUM/GYM	3865	N/A	N/A	14%	100% OPEN	AHU-3
U	N/A	N/A	VESTIBULE	U-68	VESTIBULE	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	LOBBY	U-69	LOWER LOBBY	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	OFFICE	U-70	L / S / H	160	N/A	N/A	11%	100% OPEN	AHU-8
U	130	N/A	NURSE	U-71	PT / OT	90	N/A	N/A	11%	100% OPEN	AHU-8
U	N/A	ELECTICAL	UTILITY	U-72	ELECTRICAL	N/A	N/A	N/A	N/A	N/A	N/A
U	132A	N/A	OFFICE	U-73	TIME-OUT	N/A	N/A	N/A	N/A	N/A	N/A
U	132	N/A	OFFICE	U-74	GUIDANCE	119	N/A	N/A	11%	100% OPEN	AHU-8
U	133	N/A	CLASSROOM	U-75	LD RESOURCE	168	N/A	N/A	11%	100% OPEN	AHU-8
U	N/A	N/A	CORRIDOR	U-76	EXIT RAMP DN	500	N/A	N/A	11%	100% OPEN	AHU-8

TAB MEASUREMENTS

** SUPPLY / EXHAUST READINGS **

FLOOR	ROOM #	ROOM NAME	ROOM TYPE	DRAWING ROOM #	DRAWING ROOM NAME	TAB MEASURED (SA CFM)	TAB MEASURED (EA CFM)	CALC. OA CFM @ MIN (OA CFM)	MEASURED UNIT OA% (OA CFM)	BAS DAMPER COMMAND (POS%)	ASSOCIATED VAV & RTU/AHU UNIT
U	200	JANITOR	CORRIDOR	U-77	EXIT RAMP UP	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	CUSTODIAL	U-78	JANITOR	N/A	68	N/A	N/A	N/A	N/A
U	201	TEACHERS LOUNGE	CORRIDOR	U-79	CORRIDOR	N/A	N/A	N/A	N/A	N/A	N/A
U	202	N/A	CAFETERIA	U-80	TEACHERS LOUNGE	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	N/A	RESTROOM	U-81	HANDICAP TOILET	N/A	88	N/A	N/A	N/A	N/A
U	203	CLASSROOM	RESTROOM	U-82	TOILET	N/A	126	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-83	CLASSROOM	N/A	0	N/A	N/A	N/A	N/A
U	204	CLASSROOM	RESTROOM	U-84	TOILET	N/A	67	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-85	CLASSROOM	N/A	287	N/A	N/A	N/A	N/A
U	205	CLASSROOM	RESTROOM	U-86	TOILET	N/A	94	N/A	N/A	N/A	N/A
U	NA	RESTROOM	CLASSROOM	U-87	CLASSROOM	N/A	294	N/A	N/A	N/A	N/A
U	206	CLASSROOM	RESTROOM	U-88	TOILET	N/A	97	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-89	CLASSROOM	N/A	99	N/A	N/A	N/A	N/A
U	207	CLASSROOM	RESTROOM	U-90	TOILET	N/A	4	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-91	CLASSROOM	N/A	341	N/A	N/A	N/A	N/A
U	208	CLASSROOM	RESTROOM	U-92	TOILET	N/A	120	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-93	CLASSROOM	N/A	331	N/A	N/A	N/A	N/A
U	209	CLASSROOM	RESTROOM	U-94	TOILET	N/A	113	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-95	CLASSROOM	N/A	345	N/A	N/A	N/A	N/A
U	210	CLASSROOM	RESTROOM	U-96	TOILET	N/A	96	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-97	CLASSROOM	N/A	0	N/A	N/A	N/A	N/A
U	211	CLASSROOM	RESTROOM	U-98	TOILET	N/A	94	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-99	READING CLINIC	N/A	356	N/A	N/A	N/A	N/A
U	N/A	CORRIDOR	RESTROOM	U-100	TOILET	N/A	131	N/A	N/A	N/A	N/A
U	212	CLASSROOM	CORRIDOR	U-101	CORRIDOR	N/A	N/A	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-102	CLASSROOM	N/A	516	N/A	N/A	N/A	N/A
U	213	CLASSROOM	RESTROOM	U-103	TOILET	N/A	82	N/A	N/A	N/A	N/A

TAB MEASUREMENTS

** SUPPLY / EXHAUST READINGS **

FLOOR	ROOM #	ROOM NAME	ROOM TYPE	DRAWING ROOM #	DRAWING ROOM NAME	TAB MEASURED (SA CFM)	TAB MEASURED (EA CFM)	CALC. OA CFM @ MIN (OA CFM)	MEASURED UNIT OA% (OA CFM)	BAS DAMPER COMMAND (POS%)	ASSOCIATED VAV & RTU/AHU UNIT
U	N/A	RESTROOM	CLASSROOM	U-104	CLASSROOM	N/A	495	N/A	N/A	N/A	N/A
U	214	CLASSROOM	RESTROOM	U-105	TOILET	N/A	138	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-106	CLASSROOM	N/A	413	N/A	N/A	N/A	N/A
U	215	CLASSROOM	RESTROOM	U-107	TOILET	N/A	128	N/A	N/A	N/A	N/A
U	N/A	RESTROOM	CLASSROOM	U-108	CLASSROOM	N/A	539	N/A	N/A	N/A	N/A
U	216	STORAGE	RESTROOM	U-109	TOILET	N/A	127	N/A	N/A	N/A	N/A
U	217	STORAGE	CUSTODIAL	U-110	JANITOR	N/A	54	N/A	N/A	N/A	N/A
U	218	RESTROOM	STORAGE	U-111	STORAGE	N/A	0	N/A	N/A	N/A	N/A
U	N/A	N/A	RESTROOM	U-112	HANDICAP TOILET	N/A	39	N/A	N/A	N/A	N/A

AHU-1

** SUPPLY FAN REPORT **

AREA SERVED: OFFICES / CORRIDOR / VESTIBULES
FAN LOCATION: ATTIC

FAN PERFORMANCE DATA		
	DESIGN	ACTUAL
CFM:	3395	1522
OA CFM:	507	428
TOTAL SP (" WG):	N/A	.75
EXT SP (" WG):	.40	.45
FAN RPM:	909	858
VOLTS/PHASE/CYCLE:	208/3/60	N/A
T1-T2/T2-T3/T1-T3:	N/A	206/211/209
AMPS T1/T2/T3:	5.9	4.0/4.2/4.7

UNIT / MOTOR DATA	
FAN MANUFACTURER:	TRANE
FAN MODEL NO:	CCDB06AN3K
MOTOR MANUFACTURER:	MARATHON
MOTOR HP:	1.5
MOTOR RPM:	1735
MOTOR SF:	1.15
MOTOR FRAME:	145T 70
OVERLOAD MANUFACTURER:	CUTLER-HAMMER EATON
MOTOR SHEAVE BORE X OD:	7/8 X 4 3/4
FAN SHEAVE BORE X OD:	15/16 X 7
BELT NO/SIZE:	1/4L470
FINAL SHEAVE POSITION:	100%OPEN
C-C WITH ADJUSTMENT ("):	15 , +3 , -0

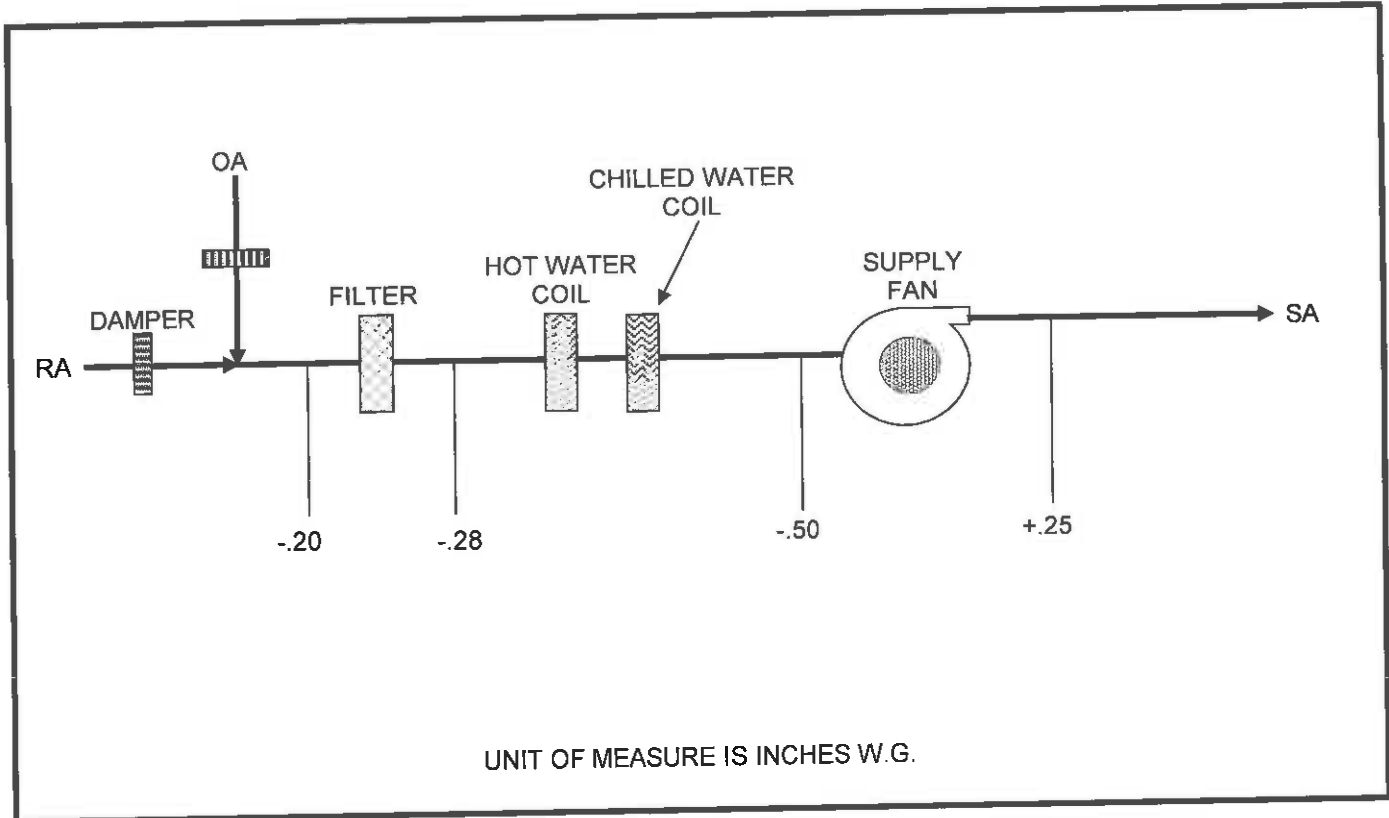
PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-8

NEBB CERTIFIED #2453

SHEET NO. 8

AHU-1

** STATIC PRESSURE PROFILE **



AHU-1

** ROUND DUCT TRAVERSE REPORT **

DESIGNATION: TOTAL AIR DELIVERED BY FAN
 CONDITION: MINIMUM OA
 TEMPERATURE (°F): 58
 DUCT SP (" WG): -.18

 DUCT SIZE (" DIA): 10
 DUCT AREA (SQ FT): 0.545
 INTERNAL DUCT LINING ("): N/A
 TOTAL READINGS 1 FPM: 7758
 TOTAL READINGS 2 FPM: 7933
 TOTAL FPM: 15691
 NUMBER OF POINTS: 20

	DESIGN		ACTUAL
CFM:	507		428
FPM:	930		785

	READINGS 1	READINGS 2
	701	1119
	652	1095
	542	1053
	463	941
	599	668
	990	707
	954	640
	989	561
	1007	530
	861	619
SUBTOTALS FPM:	7758	7933

NOTE: ACTUAL FPM IS AVERAGE OF VELOCITY PROFILE READINGS

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
 SUBMITTED BY: AIR BALANCING SERVICE CO.
 CODE: 23318-10

NEBB CERTIFIED #2453

SHEET NO. 10

AHU-1

** AIR OUTLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	DESIGN CFM	ACTUAL CFM	NOTES
U-17	VESTIBULE		1	9X9	300	78	
U-22	STORAGE / CLASSROOM		2	9X9	125	104	
U-23	ANCIL		3	9X9	180	49	
U-23	ANCIL		4	9X9	180	39	
U-18	CORRIDOR		5	9X9	120	79	
U-18	CORRIDOR		6	9X9	120	89	
U-8	CONFERENCE ROOM		7	6X6	150	79	
U-8	CONFERENCE ROOM		8	6X6	150	81	
U-28	CORRIDOR		9	9X9	120	59	
U-26	TEACHER'S WORK		10	9X9	230	68	
U-26	TEACHER'S WORK		11	9X9	230	29	
U-6	PRINCIPAL		12	9X9	300	236	
U-28	CORRIDOR		13	9X9	120	72	
U-28	CORRIDOR		14	9X9	120	49	
U-1	VESTIBULE		15	9X9	200	79	
U-28	CORRIDOR		16	9X9	120	69	
U-12	WAIT / NURSE		17	9X9	230	69	
U-18	CORRIDOR		18	9X9	120	74	
U-16	NURSE		19	6X6	160	55	
U-11	CORRIDOR		20	9X9	120	65	
TOTAL CFM					3395	1522	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-11

NEBB CERTIFIED #2453

SHEET NO. 11

AHU-1

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	ACTUAL CFM	NOTES
U-18	CORRIDOR		1	12X12	391	
U-17	VESTIBULE		2	8X8	0	
U-12	WAITING / NURSE		3	8X8	68	
	NURSE		4	8X8	52	
U-8	CONFERENCE ROOM		5	10X10	89	
U-23	ANCIL		6	12X12	75	
U-26	TEACHER'S WORK		7	12X12	177	
U-28	CORRIDOR		8	12X12	59	
U-6	PRINCIPAL		9	10X10	105	
U-1	VESTIBULE		10	8X8	59	
TOTAL CFM					1075	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-12

NEBB CERTIFIED #2453

SHEET NO. 12

AHU-2

** SUPPLY FAN REPORT **

AREA SERVED: OFFICES / NURSE

FAN LOCATION: ATTIC

FAN PERFORMANCE DATA		
	DESIGN	ACTUAL
CFM:	2300	1329
OA CFM:	260	80
TOTAL SP (" WG):	N/A	.57
EXT SP (" WG):	.50	.42
FAN RPM:	777	754
VOLTS/PHASE/CYCLE:	208/3/60	N/A
T1-T2/T2-T3/T1-T3:	N/A	211/206/212
AMPS T1/T2/T3:	4.3	3.0/3.4/3.1

UNIT / MOTOR DATA	
FAN MANUFACTURER:	TRANE
FAN MODEL NO:	CCDBC6AN3K
MOTOR MANUFACTURER:	MARATHON
MOTOR HP:	1.0
MOTOR RPM:	1730
MOTOR SF:	1.15
MOTOR FRAME:	145T 70
OVERLOAD MANUFACTURER:	CUTLER-HAMMER EATON
OVERLOAD RATING:	4.44-4.63
MOTOR SHEAVE BORE X OD:	7/8 X 4 3/4
FAN SHEAVE BORE X OD:	15/16 X 9 1/4
BELT NO/SIZE:	1/4L520
FINAL SHEAVE POSITION:	100%OPEN
C-C WITH ADJUSTMENT ("):	15 1/2 , +1 , -2

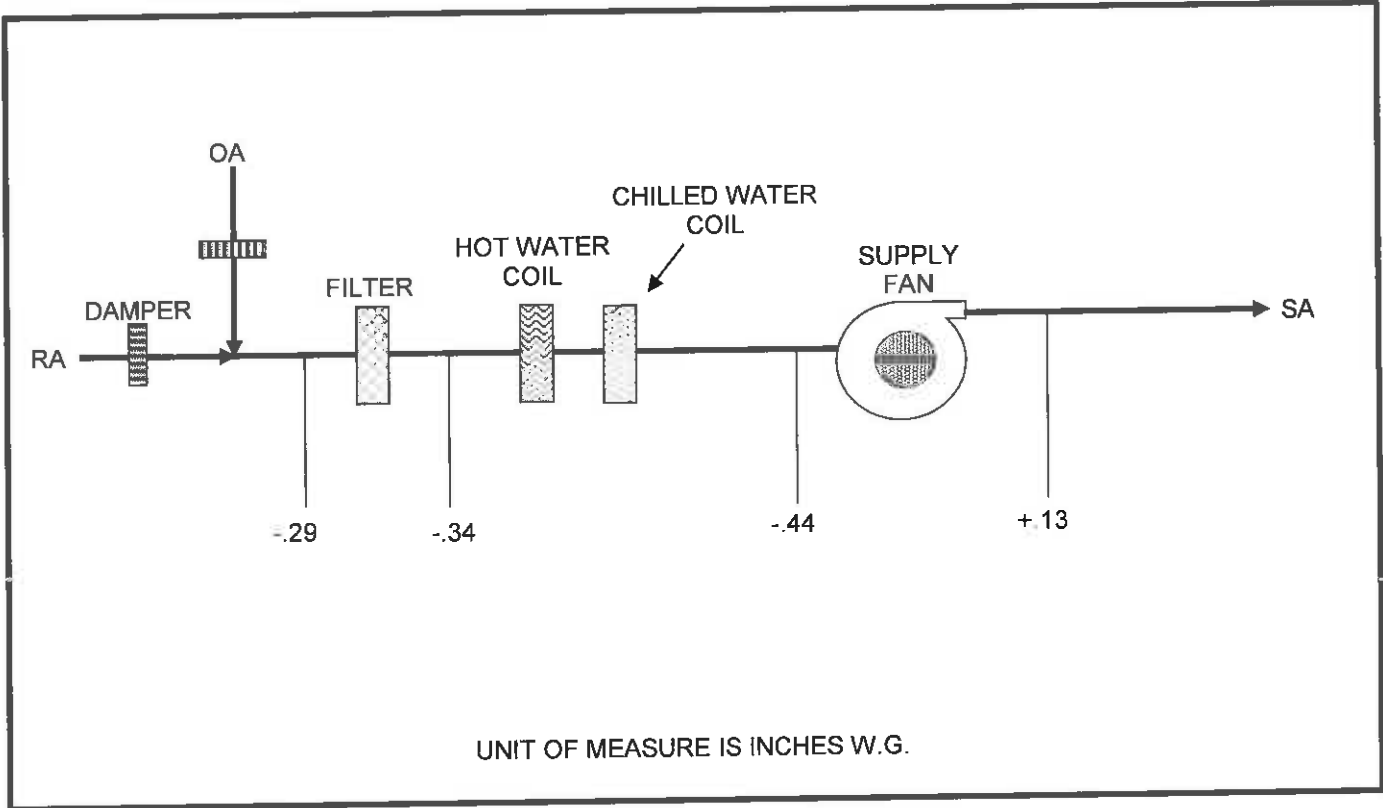
PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-13

NEBB CERTIFIED #2453

SHEET NO. 13

AHU-2

** STATIC PRESSURE PROFILE **



AHU-2

** ROUND DUCT TRAVERSE REPORT **

DESIGNATION: TOTAL AIR DELIVERED BY FAN FROM OA
 CONDITION: MINIMUM OA
 TEMPERATURE (°F): 58
 DUCT SP (" WG): -.31

DUCT SIZE (" DIA): 8
 DUCT AREA (SQ FT): 0.349
 INTERNAL DUCT LINING ("): N/A
 TOTAL READINGS 1 FPM: 2309
 TOTAL READINGS 2 FPM: 2272
 TOTAL FPM: 4581
 NUMBER OF POINTS: 20

	DESIGN		ACTUAL
CFM:	260		80
FPM:	745		229

	READINGS 1	READINGS 2
	202	216
	204	201
	231	207
	228	210
	230	205
	233	249
	234	231
	234	241
	268	241
	245	271
SUBTOTALS FPM:	2309	2272

NOTE: ACTUAL FPM IS AVERAGE OF VELOCITY PROFILE READINGS

PROJECT: NATHAN HALE ELEMENTARY VENT VERFICATION
 SUBMITTED BY: AIR BALANCING SERVICE CO.
 CODE: 23318-15

NEBB CERTIFIED #2453

SHEET NO. 15

AHU-2

** AIR OUTLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	DESIGN CFM	ACTUAL CFM	NOTES
U-5	VAULT		1	9X9	100	75	
U-7	PSYC		2	9X9	225	173	
U-9	H/V IMP		3	9X9	200	95	
U-9	H/V IMP		4	9X9	200	87	
U-13	RESTROOM / NURSE		5	6X6	135	77	
U-15	EXAM / NURSE		6	9X9	190	112	
U-3	WAIT		7	9X9	200	135	
U-4	OFFICE		8	12X12	400	189	
U-4	OFFICE		9	12X12	400	254	
U-4	CORRIDOR		10	9X9	250	132	
TOTAL CFM					2300	1329	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-16

NEBB CERTIFIED #2453

SHEET NO. 16

AHU-2

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	ACTUAL CFM	NOTES
U-3	WAITING / NURSE		1	8X8	91	
U-4	OFFICE		2	12X12	381	
U-7	PSYC		3	8X8	212	
U-9	H / V IMP		4	12X12	370	
U-13	RESTROOM / NURSE		5	8X8	77	
U-15	EXAM / NURSE		6	8X8	95	
TOTAL CFM					1226	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-17

NEBB CERTIFIED #2453

SHEET NO. 17

AHU-3

** SUPPLY FAN REPORT **

AREA SERVED: U-67 AUDITORIUM / GYM / STAGE

FAN LOCATION: ATTIC

FAN PERFORMANCE DATA		
	DESIGN	ACTUAL
CFM:	10485	4915
OA CFM:	2750	688
TOTAL SP (" WG):	N/A	.88
EXT SP (" WG):	.40	.44
FAN RPM:	523	481
VOLTS/PHASE/CYCLE:	208/3/60	N/A
T1-T2/T2-T3/T1-T3:	N/A	211/207/212
AMPS T1/T2/T3:	16.0	8.0/10.2/9.3

UNIT / MOTOR DATA	
FAN MANUFACTURER:	TRANE
FAN MODEL NO:	CC0821AN3K
MOTOR MANUFACTURER:	MAGNETEK CENTURY ELECTRIC
MOTOR HP:	5.0
MOTOR RPM:	1745
MOTOR SF:	1.15
MOTOR FRAME:	5184T
OVERLOAD MANUFACTURER:	CUTLER-HAMMER EATON
OVERLOAD MODEL:	1042
OVERLOAD RATING:	16.8-17.7
MOTOR SHEAVE BORE X OK:	1 1/8 X 5 1/4
FAN SHEAVE BORE X OK:	1 7/16 X 15 3/4
BELT NO/SIZE:	1/BP77
FINAL SHEAVE POSITION:	100%OPEN
C-C WITH ADJUSTMENT ("):	23 1/2 , +1 , -2

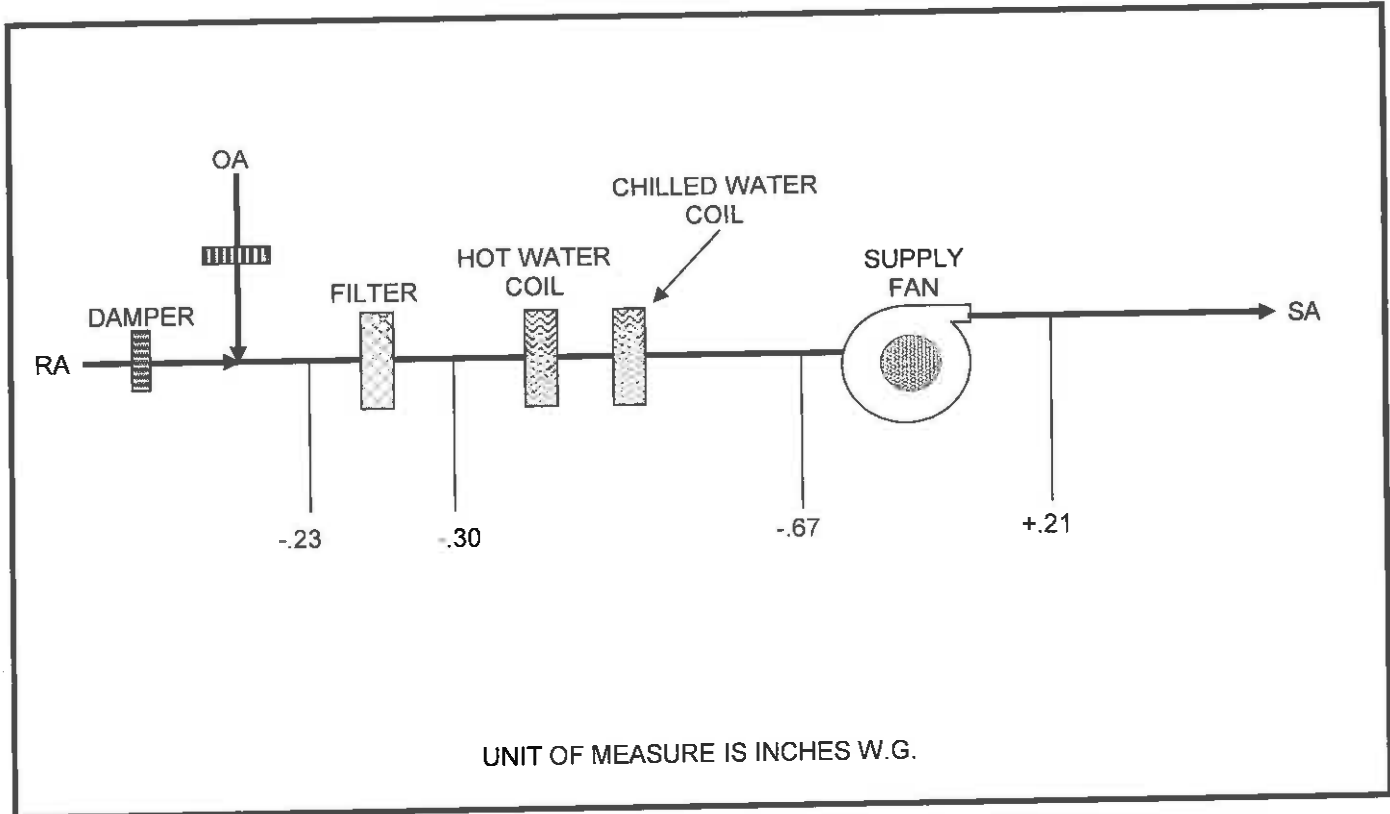
PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-18

NEBB CERTIFIED #2453

SHEET NO. 18

AHU-3

** STATIC PRESSURE PROFILE **



AHU-3

** RECTANGULAR TRAVERSE REPORT **

DESIGNATION: TOTAL AIR DELIVERED BY FAN

CONDITION: MINIMUM OA

TEMPERATURE (°F): 58

DUCT SP (" WG): -.01

DUCT WIDTH ("): 60

DUCT HEIGHT ("): 30

DUCT AREA (SQ FT): 12.500

INTERNAL DUCT LINING ("): N/A

TOTAL FPM: 2748

NUMBER OF POINTS: 50

	DESIGN		ACTUAL
CFM:	2750		688
FPM:	220		55

POSITION	1	2	3	4	5	6	7	8	9	10
1	0	0	0	0	0	0	0	0	0	0
2	0	0	277	0	0	28	0	0	0	0
3	129	0	0	26	27	0	0	35	0	0
4	116	65	0	0	181	167	54	125	71	46
5	139	0	325	86	181	157	75	79	241	63
SUBTOTALS FPM:	385	67	605	116	394	358	136	247	321	119

NOTE: ACTUAL FPM IS AVERAGE OF VELOCITY PROFILE READINGS

AHU-3

** AIR OUTLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	DESIGN CFM	ACTUAL CFM	NOTES
U-67	AUDITORIUM / GYMNASIUM		1	15X15	935	347	
U-67	AUDITORIUM / GYMNASIUM		2	15X15	935	437	
U-67	AUDITORIUM / GYMNASIUM		3	15X15	935	375	
U-67	AUDITORIUM / GYMNASIUM		4	15X15	935	428	
U-67	AUDITORIUM / GYMNASIUM		5	15X15	935	489	
U-67	AUDITORIUM / GYMNASIUM		6	15X15	935	395	
U-67	AUDITORIUM / GYMNASIUM		7	15X15	935	438	
U-67	AUDITORIUM / GYMNASIUM		8	15X15	935	495	
U-67	AUDITORIUM / GYMNASIUM		9	15X15	935	461	
U-66	STORAGE		10	12X4	100	111	
U-64	STORAGE		11	12X4	100	84	
U-62	STAGE		12	15X5	935	475	
U-62	STAGE		13	15X5	935	380	
TOTAL CFM					10485	4915	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-21

NEBB CERTIFIED #2453

SHEET NO. 21

AHU-3

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	ACTUAL CFM	NOTES
U-67	AUDITORIUM / GYMNASIUM		1	30X30	2048	
U-67	AUDITORIUM / GYMNASIUM		2	30X30	1688	
U-62	STAGE		3	22X22	478	
TOTAL CFM					4214	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-22

NEBB CERTIFIED #2453

SHEET NO. 22

AHU-4

** SUPPLY FAN REPORT **

AREA SERVED: U-56 MUSIC
FAN LOCATION: CEILING / ATTIC

FAN PERFORMANCE DATA		
	DESIGN	ACTUAL
CFM:	1940	1228
OA CFM:	300	40
TOTAL SP (" WG):	N/A	.70
EXT SP (" WG):	.30	.30
FAN RPM:	1282	1278
VOLTS/PHASE/CYCLE:	208/3/60	N/A
T1-T2/T2-T3/T1-T3:	N/A	206/210/212
AMPS T1/T2/T3:	4.3	3.9/3.7/3.9

UNIT / MOTOR DATA	
FAN MANUFACTURER:	TRANE
FAN MODEL NO:	CC0803AN3K
MOTOR MANUFACTURER:	MARATHON ELECTRIC
MOTOR HP:	1.0
MOTOR RPM:	1730
MOTOR SF:	1.15
MOTOR FRAME:	143T-70
OVERLOAD MANUFACTURER:	CUTLER-HAMMER EATON
OVERLOAD MODEL:	1031
OVERLOAD RATING:	5.16-5.46
MOTOR SHEAVE BORE X OK:	7/8 X 4
FAN SHEAVE BORE X OK:	15/16 X 5 1/2
BELT NO/SIZE:	1/5L440
FINAL SHEAVE POSITION:	100% CLOSED
C-C WITH ADJUSTMENT ("):	14 1/2 , +1 1/2 , -1 1/2

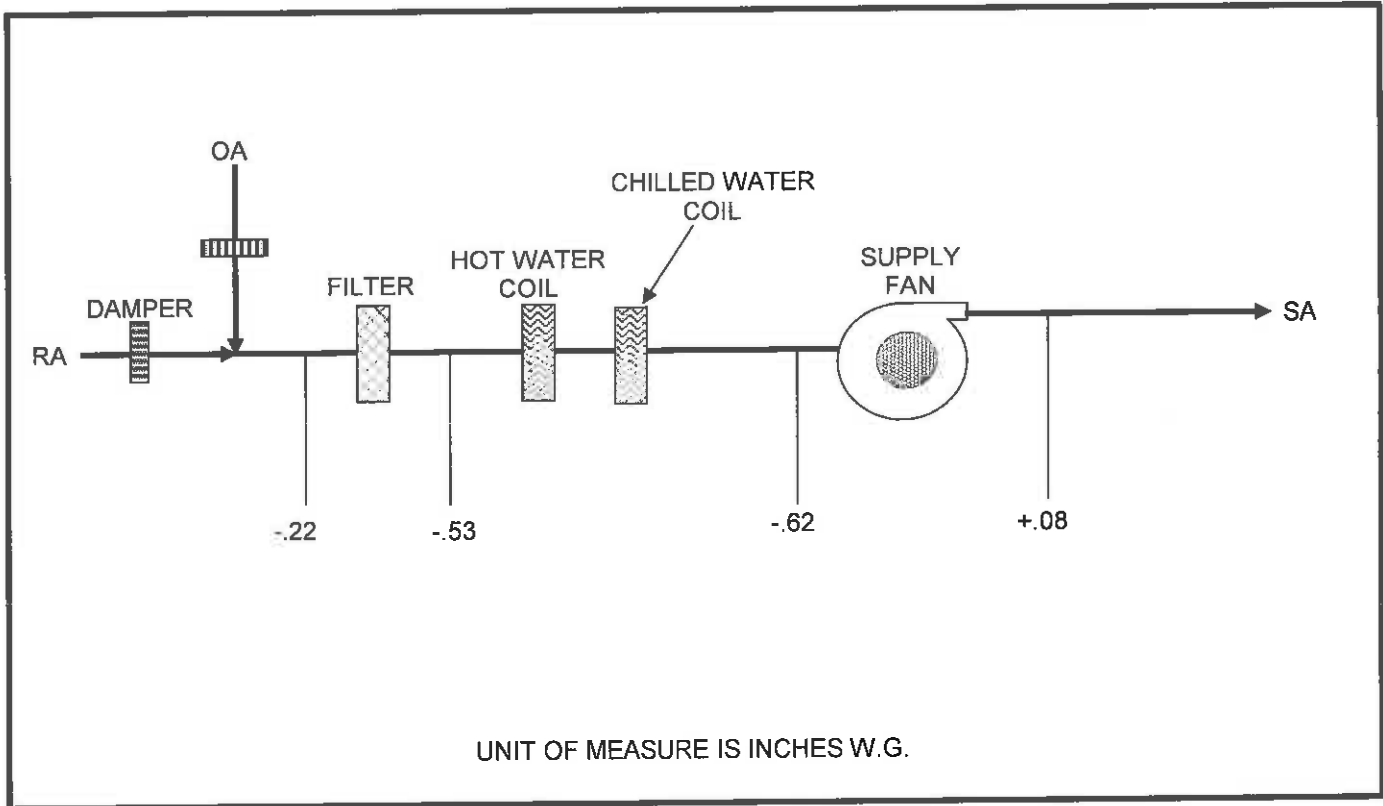
PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-23

NEBB CERTIFIED #2453

SHEET NO. 23

AHU-4

** STATIC PRESSURE PROFILE **



AHU-4

** ROUND DUCT TRAVERSE REPORT **

DESIGNATION: TOTAL AIR DELIVERED
CONDITION: MINIMUM OA
TEMPERATURE (°F): 52
DUCT SP (" WG): -.23

DUCT SIZE (" DIA): 10
DUCT AREA (SQ FT): 0.545
INTERNAL DUCT LINING ("): N/A
TOTAL READINGS 1 FPM: 842
TOTAL READINGS 2 FPM: 618
TOTAL FPM: 1460
NUMBER OF POINTS: 20

	DESIGN		ACTUAL
CFM:	300		40
FPM:	550		73

	READINGS 1	READINGS 2
	50	56
	53	65
	61	74
	95	67
	115	51
	233	86
	59	55
	50	56
	57	53
	69	55
SUBTOTALS FPM:	842	618

NOTE: ACTUAL FPM IS AVERAGE OF VELOCITY PROFILE READINGS

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-25

NEBB CERTIFIED #2453

SHEET NO. 25

AHU-4

** AIR OUTLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	DESIGN CFM	ACTUAL CFM	NOTES
U-54	INSTRUCTION		1	6X6	100	59	
U-56	MUSIC		2	12X12	435	290	
U-56	MUSIC		3	12X12	435	301	
U-56	MUSIC		4	12X12	435	293	
U-56	MUSIC		5	12X12	435	216	
U-58	PRACTICE		6	6X6	100	69	
TOTAL CFM					1940	1228	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-26

NEBB CERTIFIED #2453

SHEET NO. 26

AHU-4

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	ACTUAL CFM	NOTES
U-56	MUSIC		1	22X22	1180	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-27

NEBB CERTIFIED #2453

SHEET NO. 27

AHU-5

** SUPPLY FAN REPORT **

AREA SERVED: U-51 ART
FAN LOCATION: CEILING / ATTIC

FAN PERFORMANCE DATA		
	DESIGN	ACTUAL
CFM:	1600	1081
OA CFM:	300	354
TOTAL SP (" WG):	N/A	.84
EXT SP (" WG):	.30	.31
FAN RPM:	1282	1352
VOLTS/PHASE/CYCLE:	208/3/60	N/A
T1-T2/T2-T3/T1-T3:	N/A	206/211/212
AMPS T1/T2/T3:	4.3	3.8/3.9/3.9

UNIT / MOTOR DATA	
FAN MANUFACTURER:	TRANE
FAN MODEL NO:	CC0803AN3K
MOTOR MANUFACTURER:	MARATHON ELECTRIC
MOTOR HP:	1.0
MOTOR RPM:	1730
MOTOR SF:	1.15
MOTOR FRAME:	143T-70
OVERLOAD MANUFACTURER:	CUTLER-HAMMER EATON
MOTOR SHEAVE BORE X OK:	7/8 X 4
FAN SHEAVE BORE X OK:	15/16 X 4 3/4
BELT NO/SIZE:	1/4L410
FINAL SHEAVE POSITION:	75% OPEN
C-C WITH ADJUSTMENT ("):	14 , +1 1/2 , -1 1/2

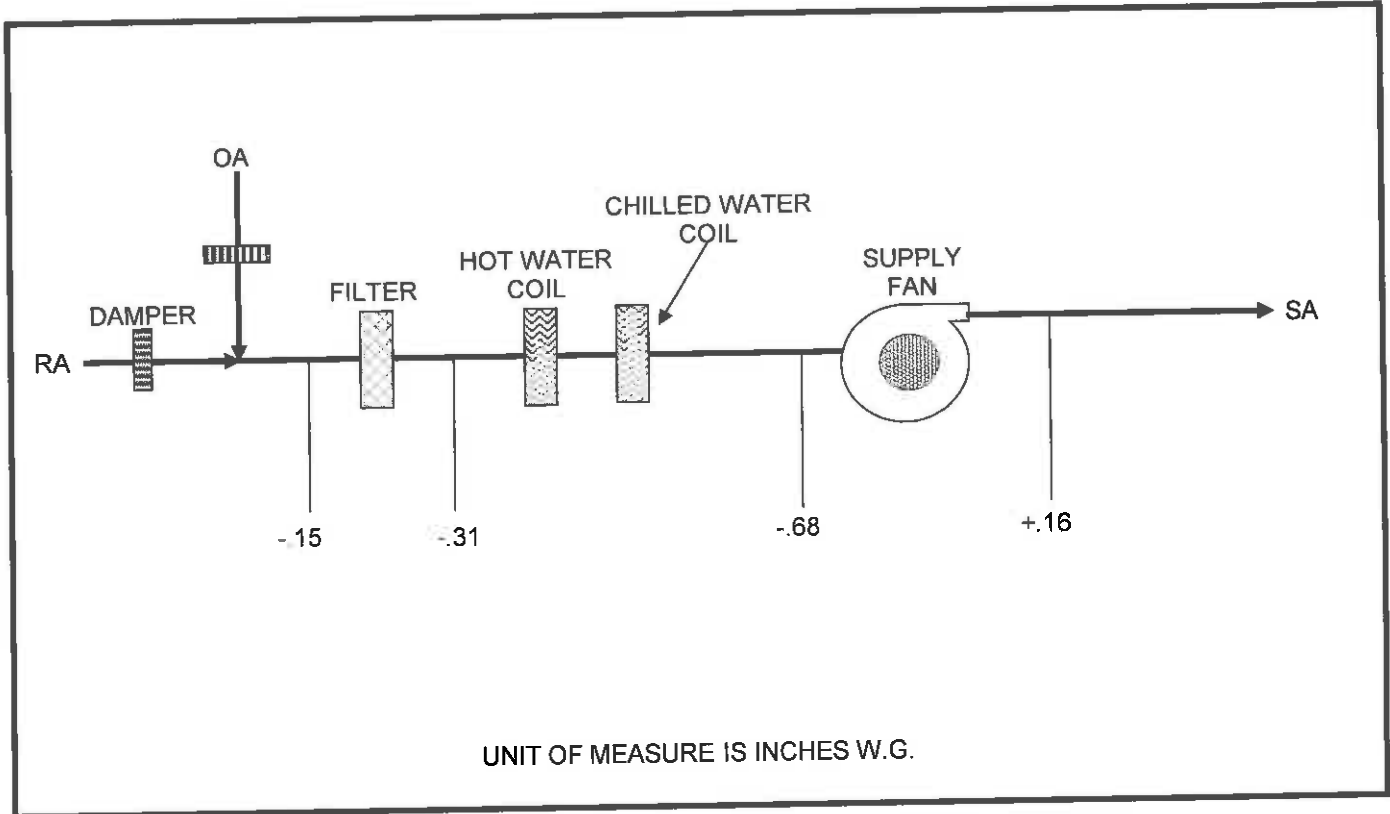
PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-28

NEBB CERTIFIED #2453

SHEET NO. 28

AHU-5

** STATIC PRESSURE PROFILE **



AHU-5

** ROUND DUCT TRAVERSE REPORT **

DESIGNATION: TOTAL AIR DELIVERED
 CONDITION: MINIMUM OA
 TEMPERATURE (°F): 54
 DUCT SP (" WG): -.15

 DUCT SIZE (" DIA): 10
 DUCT AREA (SQ FT): 0.545
 INTERNAL DUCT LINING ("): N/A
 TOTAL READINGS 1 FPM: 6652
 TOTAL READINGS 2 FPM: 6339
 TOTAL FPM: 12991
 NUMBER OF POINTS: 20

	DESIGN		ACTUAL
CFM:	300		354
FPM:	550		650

	READINGS 1	READINGS 2
	883	526
	832	689
	683	633
	724	637
	665	559
	613	779
	585	653
	535	622
	579	578
	553	663
SUBTOTALS FPM:	6652	6339

NOTE: ACTUAL FPM IS AVERAGE OF VELOCITY PROFILE READINGS

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
 SUBMITTED BY: AIR BALANCING SERVICE CO.
 CODE: 23318-30

NEBB CERTIFIED #2453

SHEET NO. 30

AHU-5

** AIR OUTLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	DESIGN CFM	ACTUAL CFM	NOTES
U-51	ART		1	9X9	325	277	
U-51	ART		2	9X9	325	269	
U-51	ART		3	9X9	325	219	
U-51	ART		4	9X9	325	218	
U-53	STORAGE		5	6X6	100	98	
U-61	CORRIDOR		6	N/I	200	N/I	1
TOTAL CFM					1600	1081	

NOTE 1: NOT INSTALLED

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-31

NEBB CERTIFIED #2453

SHEET NO. 31

AHU-5

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	ACTUAL CFM	NOTES
U-51	ART		1	18X18	721	
U-61	CORRIDOR		2	N/I	N/I	1

NOTE 1: NOT INSTALLED

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-32

NEBB CERTIFIED #2453

SHEET NO. 32

AHU-6

** SUPPLY FAN REPORT **

AREA SERVED: U-33 TEACHERS LOUNGE / U-34 CAFÉ
FAN LOCATION: U-34 CAFÉ / ATTIC

FAN PERFORMANCE DATA		
	DESIGN	ACTUAL
CFM:	6280	3396
OA CFM:	2260	714
TOTAL SP (" WG):	N/A	.95
EXT SP (" WG):	.40	.17
FAN RPM:	673	658
VOLTS/PHASE/CYCLE:	208/3/60	N/A
T1-T2/T2-T3/T1-T3:	N/A	210/206/211
AMPS T1/T2/T3:	10.0	7.2/7.2/7.4

UNIT / MOTOR DATA	
FAN MANUFACTURER:	TRANE
FAN MODEL NO:	CCD812AN3K
MOTOR MANUFACTURER:	CENTRURY ELECTRIC
MOTOR HP:	3.0
MOTOR RPM:	1745
MOTOR SF:	1.15
MOTOR FRAME:	5182T
OVERLOAD MANUFACTURER:	SQUARE D
OVERLOAD MODEL:	B17.5
OVERLOAD RATING:	9.67-10.5
MOTOR SHEAVE BORE X OK:	1 1/8 X 4.5
FAN SHEAVE BORE X OK:	1 3/16 X 10 3/4
BELT NO/SIZE:	1/AX62
FINAL SHEAVE POSITION:	100% OPEN
C-C WITH ADJUSTMENT ("):	20 1/2 , +1 1/2 , -1 1/2
MIN OA DAMPER POS:	15%

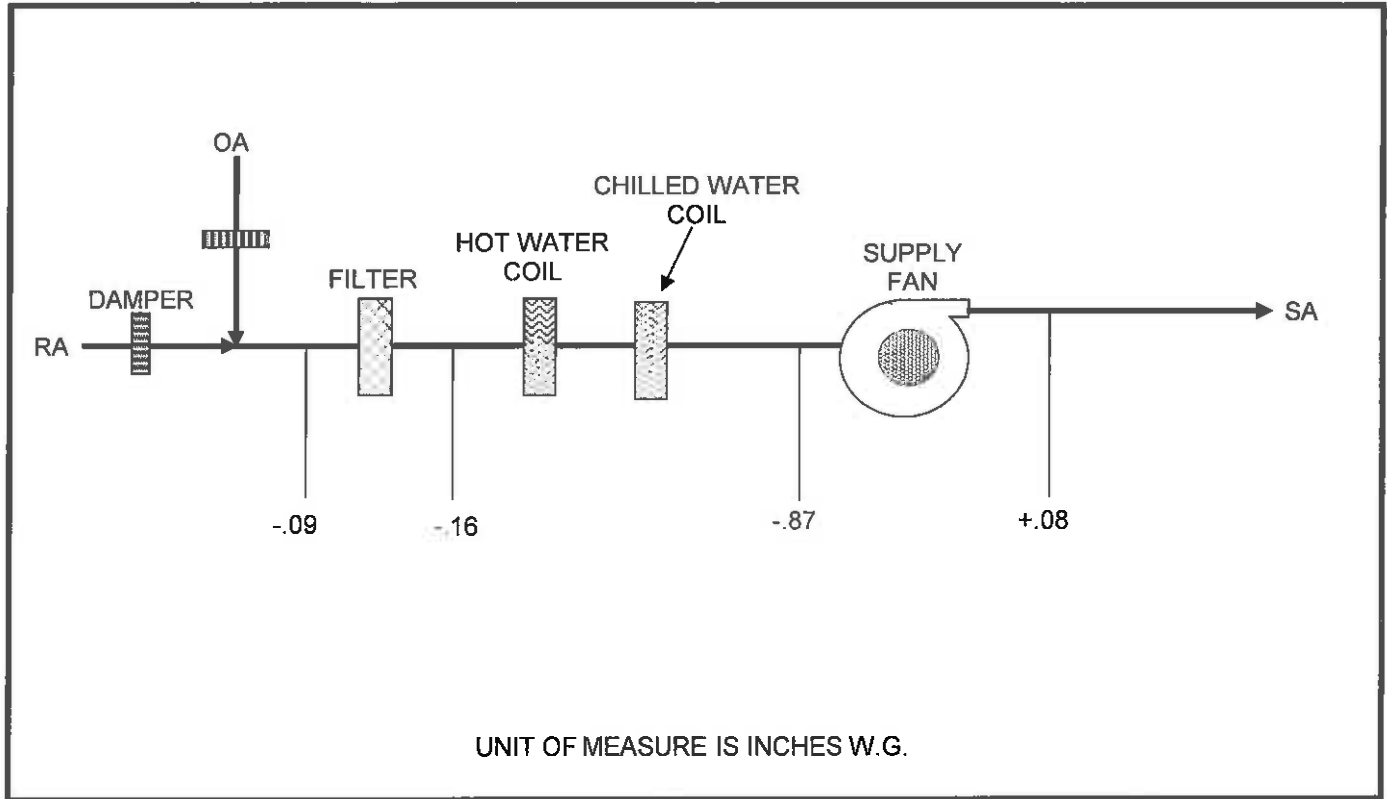
PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-33

NEBB CERTIFIED #2453

SHEET NO. 33

AHU-6

** STATIC PRESSURE PROFILE **



AHU-6

** AIR OUTLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	DESIGN CFM	ACTUAL CFM	NOTES
U-33	TEACHERS LOUNGE		1	9X9	210	136	
U-33	TEACHERS LOUNGE		2	9X9	210	132	
U-33	TEACHERS LOUNGE		3	9X9	210	171	
U-33	TEACHERS LOUNGE		4	9X9	210	127	
U-34	CAFETERIA		5	12X12	420	122	
U-34	CAFETERIA		6	12X12	420	226	
U-34	CAFETERIA		7	12X12	420	243	
U-34	CAFETERIA		8	12X12	420	238	
U-34	CAFETERIA		9	12X12	420	139	
U-34	CAFETERIA		10	12X12	420	180	
U-34	CAFETERIA		11	14X6	420	296	
U-34	CAFETERIA		12	14X6	420	227	
U-34	CAFETERIA		13	14X6	420	461	
U-34	CAFETERIA		14	12X12	420	201	
U-34	CAFETERIA		15	12X12	420	222	
U-34	CAFETERIA		16	12X12	420	210	
U-61	CORRIDOR		17	9X9	200	34	
U-61	CORRIDOR		18	9X9	200	31	
TOTAL CFM					6280	3396	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-35

NEBB CERTIFIED #2453

SHEET NO. 35

AHU-6

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	DESIGN CFM	ACTUAL CFM	NOTES
U-33	TEACHERS LOUNGE		1	16X16	820	541	
U-34	CAFETERIA		2	22X22	960	742	
U-34	CAFETERIA		3	22X22	960	727	
U-34	CAFETERIA		4	22X22	960	672	
U-61	CORRIDOR		5	N/I	400	N/I	
TOTAL CFM					4100	2682	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-36

NEBB CERTIFIED #2453

SHEET NO. 36

AHU-7

** SUPPLY FAN REPORT **

AREA SERVED: U-19 LIBRARY
FAN LOCATION: ATTIC

FAN PERFORMANCE DATA		
	DESIGN	ACTUAL
CFM:	3800	2396
OA CFM:	310	14
TOTAL SP (" WG):	N/A	.88
EXT SP (" WG):	.50	.47
FAN RPM:	726	724
VOLTS/PHASE/CYCLE:	208/3/60	N/A
T1-T2/T2-T3/T1-T3:	N/A	213/208/213
AMPS T1/T2/T3:	5.9	4.2/5.1/4.9

UNIT / MOTOR DATA	
FAN MANUFACTURER:	TRANE
FAN MODEL NO:	CCD808AN3K
MOTOR MANUFACTURER:	MARATHON ELECTRIC
MOTOR HP:	1.5
MOTOR RPM:	1795
MOTOR SF:	1.15
MOTOR FRAME:	145T 70
OVERLOAD MANUFACTURER:	CUTLER-HAMMER EATON
OVERLOAD MODEL:	1032
OVERLOAD RATING:	6.04-6.30
MOTOR SHEAVE BORE X OK:	7/8 X 4 3/4
FAN SHEAVE BORE X OK:	1 3/16 X 9 1/4
BELT NO/SIZE:	1/A54
FINAL SHEAVE POSITION:	100% OPEN
C-C WITH ADJUSTMENT ("):	17 1/2 , +1 , -2

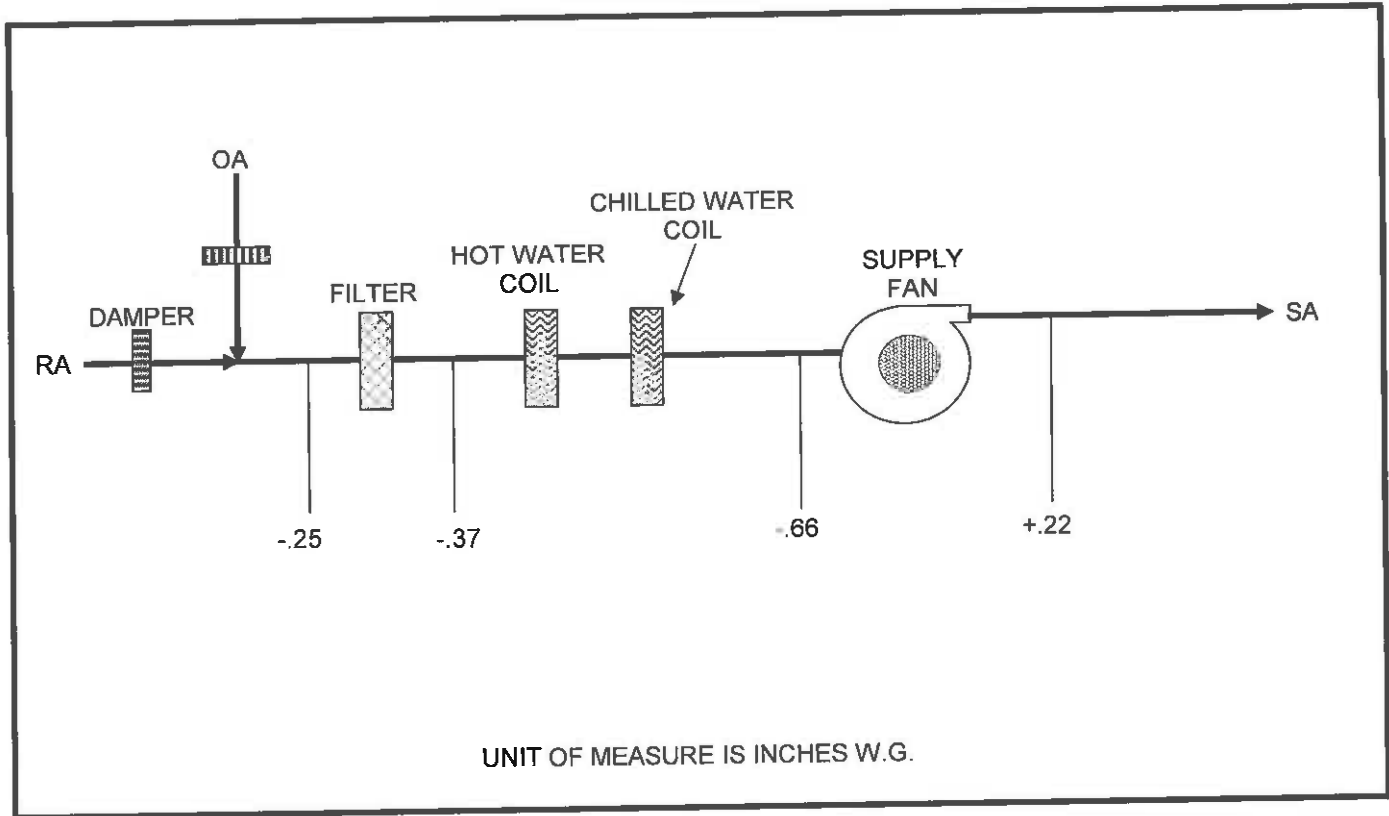
PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-37

NEBB CERTIFIED #2453

SHEET NO. 37

AHU-7

** STATIC PRESSURE PROFILE **



AHU-7

** RECTANGULAR TRAVERSE REPORT **

DESIGNATION: TOTAL AIR DELIVERED BY FAN
CONDITION: MINIMUM OA
TEMPERATURE (°F): 58
DUCT SP (" WG): -.24

DUCT WIDTH ("): 12
DUCT HEIGHT ("): 12
DUCT AREA (SQ FT): 1.000
INTERNAL DUCT LINING ("): N/A
TOTAL FPM: 219
NUMBER OF POINTS: 16

	DESIGN		ACTUAL
CFM:	310		14
FPM:	310		14

POSITION	1	2	3	4
1	0	0	0	0
2	0	27	0	89
3	0	0	0	0
4	103	0	0	0
SUBTOTALS FPM:	103	27	0	89

NOTE: ACTUAL FPM IS AVERAGE OF VELOCITY PROFILE READINGS

AHU-7

** AIR OUTLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	DESIGN CFM	ACTUAL CFM	NOTES
U-20	WORK		1	9X9	195	130	
U-19	LIBRARY		2	15X15	515	309	
U-19	LIBRARY		3	15X15	515	238	
U-19	LIBRARY		4	15X15	515	343	
U-19	LIBRARY		5	15X15	515	357	
U-19	LIBRARY		6	15X15	515	314	
U-19A	TECHNOLOGY		7	15X15	515	338	
U-19A	TECHNOLOGY		8	15X15	515	367	
TOTAL CFM					3800	2396	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-40

NEBB CERTIFIED #2453

SHEET NO. 40

AHU-7

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	ACTUAL CFM	NOTES
U-20	WORK		1	8X8	207	
U-19	LIBRARY		2	18X18	1021	
U-19	LIBRARY		3	22X22	536	
U-19A	TECHNOLOGY		4	18X18	606	
TOTAL CFM					2370	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-41

NEBB CERTIFIED #2453

SHEET NO. 41

AHU-8

** SUPPLY FAN REPORT **

AREA SERVED: UPPER RESOURCE / GUIDANCE / RAMP
FAN LOCATION: CEILING

FAN PERFORMANCE DATA		
	DESIGN	ACTUAL
CFM:	5950	1550
OA CFM:	475	168
TOTAL SP (" WG):	N/A	.27
EXT SP (" WG):	.50	.14
FAN RPM:	600	371
VOLTS/PHASE/CYCLE:	208/3/60	N/A
T1-T2/T2-T3/T1-T3:	N/A	209/206/211
AMPS T1/T2/T3:	7.2	4.3/5.5/5.3

UNIT / MOTOR DATA	
FAN MANUFACTURER:	TRANE
FAN MODEL NO:	CEDB12AN3K
MOTOR MANUFACTURER:	MARATHON ELECTRIC
MOTOR HP:	2.0
MOTOR RPM:	1740
MOTOR SF:	1.15
MOTOR FRAME:	145T-80
OVERLOAD MANUFACTURER:	CUTLER-HAMMER EATON
OVERLOAD MODEL:	1034
OVERLOAD RATING:	7.49-7.76
MOTOR SHEAVE BORE X OK:	7/8 X 4 3/4
FAN SHEAVE BORE X OK:	1 3/16 X 11
BELT NO/SIZE:	1/4L640
FINAL SHEAVE POSITION:	100% OPEN
C-C WITH ADJUSTMENT ("):	20 , +1 1/2 , -1 1/2

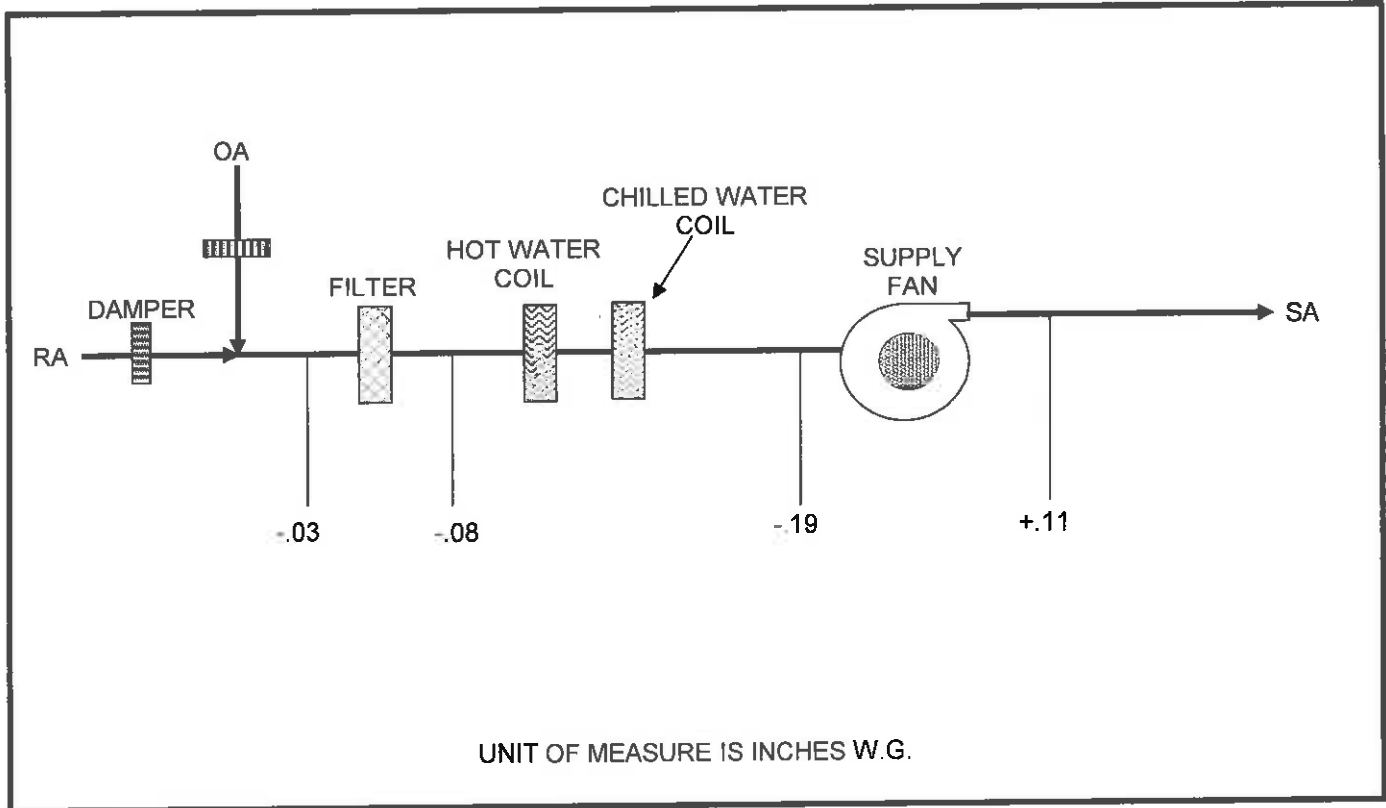
PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-42

NEBB CERTIFIED #2453

SHEET NO. 42

AHU-8

** STATIC PRESSURE PROFILE **



AHU-8

** RECTANGULAR TRAVERSE REPORT **

DESIGNATION: TOTAL AIR DELIVERED BY FAN

CONDITION: MINIMUM OA

TEMPERATURE (°F): 58

DUCT SP (" WG): -.01

DUCT WIDTH ("): 48

DUCT HEIGHT ("): 24

DUCT AREA (SQ FT): 8.000

INTERNAL DUCT LINING ("): N/A

TOTAL FPM: 755

NUMBER OF POINTS: 36

	DESIGN		ACTUAL
CFM:	475		168
FPM:	59		21

POSITION	1	2	3	4	5	6	7	8	9
1	0	0	0	0	0	0	0	0	0
2	0	46	89	71	0	0	0	0	0
3	165	0	0	43	32	0	0	0	0
4	210	0	31	0	68	0	0	0	0
SUBTOTALS FPM:	375	46	120	114	100	0	0	0	0

NOTE: ACTUAL FPM IS AVERAGE OF VELOCITY PROFILE READINGS

AHU-8

** AIR OUTLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	DESIGN CFM	ACTUAL CFM	NOTES
U-75	LD RESOURCE		1	9X9	275	94	
U-75	LD RESOURCE		2	9X9	275	74	
U-74	GUIDANCE		3	9X9	290	119	
U-71	PT/OT		4	9X9	250	38	
U-71	PT/OT		5	9X9	250	52	
U-70	L/S/H		6	9X9	310	75	
U-70	L/S/H		7	9X9	310	85	
U-76	EXIT RAMP		8	15X15	665	253	
U-76	EXIT RAMP		9	15X15	665	80	
U-76	EXIT RAMP		10	15X15	665	167	
U-27	UPPER LOBBY		11	15X15	665	125	
U-27	UPPER LOBBY		12	15X15	665	181	
U-27	UPPER LOBBY		13	15X15	665	207	
TOTAL CFM					5950	1550	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-45

NEBB CERTIFIED #2453

SHEET NO. 45

AHU-8

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	ACTUAL CFM	NOTES
U-75	LD RESOURCE		1	14X14	162	
U-74	GUIDANCE		2	10X10	96	
U-71	PT/OT		3	12X12	158	
U-70	L/S/H		4	14X14	295	
U-76	EXIT RAMP		5	22X22	374	
U-76	EXIT RAMP		6	22X22	289	
TOTAL CFM					1374	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-46

NEBB CERTIFIED #2453

SHEET NO. 46

KITCHEN EXHAUST / MAKE-UP

**** AIR OUTLET/INLET REPORT ****

ROOM NO.	DESIGNATION		NO.	SIZE	AK	ACTUAL VEL	ACTUAL CFM	NOTES
	SUPPLY (MAU)							
U-40	KITCHEN HOOD		1	192X5	6.667	0	0	
	EXHAUT							
U-40	KITCHEN HOOD		1	180X17	21.25	255	5419	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-47

NEBB CERTIFIED #2453

SHEET NO. 47

CEF/EF

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	ACTUAL CFM	NOTES
U-52	ART TOILET		1	12X10	139	
U-55	MUSIC TOILET		2	12X10	99	
U-35	STORAGE (ART)		3	12X10	0	
U-38	JANITOR CLOSET		4	12X10	141	
U-36	LOCKER / TOILET		5	12X10	50	
U-49	MAINTENANCE STORAGE		6	12X10	0	
U-45	CUSTODIAL TOILET		7	12X10	130	
U-43	DRY STORAGE		8	12X10	0	
U-31	MENS TOILET (STAFF)		9	12X10	39	
U-32	WOMENS TOILET (STAFF)		10	12X10	0	
U-29	JANITOR CLOSET		11	12X10	97	
U-30	STORAGE		12	12X10	135	
U-24	MENS		13	12X10	152	
U-25	WOMENS		14	12X10	77	
U-57	STORAGE (MUSIC)		15	12X10	0	
U-14	NURSE TOILET		16	12X10	137	
U-21	STORAGE (LIBRARY)		17	12X10	0	
U-78	JANITOR CLOSET		18	12X10	68	
U-81	H/C TOILET		19	12X10	88	
U-82	TOILET (GIRLS)		20	12X10	126	
U-83	CLASSROOM		21	16X12	0	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-48

NEBB CERTIFIED #2453

SHEET NO. 48

CEF/EF

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	ACTUAL CFM	NOTES
U-86	TOILET (GIRLS)		22	12X10	94	
U-87	CLASSROOM		23	16X12	294	
U-88	TOILET (BOYS)		24	12X10	97	
U-89	CLASSROOM		25	16X12	299	
U-90	TOILET (GIRLS)		26	12X10	114	
U-91	CLASSROOM		27	20X16	341	
U-92	TOILET (BOYS)		28	12X10	120	
U-93	CLASSROOM		29	20X16	331	
U-94	TOILET (GIRLS)		30	12X10	113	
U-95	EMR		31	16X12	345	
U-96	TOILET (BOYS)		32	12X10	96	
U-97	EMR		33	16X12	0	
U-98	TOILET (GIRLS)		34	12X10	94	
U-99	READING CLINIC		35	16X12	356	
U-100	TOILET (BOYS)		36	12X10	131	
U-102	CLASSROOM		37	16X12	516	
U-103	TOILET (GIRLS)		38	12X10	82	
U-104	CLASSROOM		39	16X12	495	
U-105	TOILET (BOYS)		40	12X10	138	
U-106	CLASSROOM		41	16X12	413	
U-107	TOILET (GIRLS)		42	12X10	128	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-49

NEBB CERTIFIED #2453

SHEET NO. 49

CEF/EF

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	ACTUAL CFM	NOTES
U-108	CLASSROOM		43	16X12	539	
U-109	TOILET (BOYS)		44	12X10	127	
U-110	JANITOR CLOSET		45	12X10	54	
U-111	STORAGE		46	12X10	0	
U-112	H/C TOILET		47	12X10	39	
U-84	TOILET (BOYS)		48	12X10	67	
U-85	CLASSROOM		49	16X12	287	
U-51	ART / KILN		50	12X10	674	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-50

NEBB CERTIFIED #2453

SHEET NO. 50

CEF / EF

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	ACTUAL CFM	NOTES
L-02	TOILET (H/C)		51	12X10	73	
L-04	TOILET (GIRLS)		52	12X10	0	
L-05	CLASSROOM		53	16X12	0	
L-06	TOILET (BOYS)		54	12X10	169	
L-07	CLASSROOM		55	16X12	268	
L-08	TOILET (GIRLS)		56	12X10	105	
L-09	CLASSROOM		57	16X12	234	
L-10	TOILET (BOYS)		58	12X10	169	
L-11	CLASSROOM		59	16X12	0	
L-13	TOILET (GIRLS)		60	12X10	96	
L-14	CLASSROOM		61	16X12	320	
L-15	TOILET (BOYS)		62	12X10	146	
L-16	CLASSROOM		63	16X12	0	
L-17	JANITOR CLOSET		64	N/I	N/I	1
L-19	TOILET (GIRLS)		65	12X10	57	
L-20	CLASSROOM		66	16X12	0	
L-21	TOILET (BOYS)		67	12X10	105	
L-22	CLASSROOM		68	16X12	363	
L-23	TOILET (GIRLS)		69	12X10	77	
L-24	CLASSROOM		70	16X12	0	
L-25	TOILET (BOYS)		71	12X10	166	

NOTE 1: NOT INSTALLED

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-51

NEBB CERTIFIED #2453

SHEET NO. 51

CEF / EF

** AIR INLET REPORT **

ROOM NO.	DESIGNATION		NO.	SIZE	ACTUAL CFM	NOTES
L-28	CLASSROOM		72	16X12	510	
L-29	TOILET (GIRLS)		73	12X10	97	
L-30	KINDERGARTEN		74	16X12	0	
L-31	TOILET (BOYS)		75	12X10	100	
L-32	KINDERGARTEN		76	16X12	504	
L-33	TOILET (GIRLS)		77	12X10	100	
L-34	KINDERGARTEN		78	16X12	489	
L-35	TOILET (BOYS)		79	12X10	109	
L-36	JANITOR CLOSET		80	12X10	72	
L-37	STORAGE		81	12X10	0	
L-38	H/C TOILET		82	12X10	67	

PROJECT: NATHAN HALE ELEMENTARY VENT VERIFICATION
SUBMITTED BY: AIR BALANCING SERVICE CO.
CODE: 23318-52

NEBB CERTIFIED #2453

SHEET NO. 52

AHU-2



NATHAN HALE

53

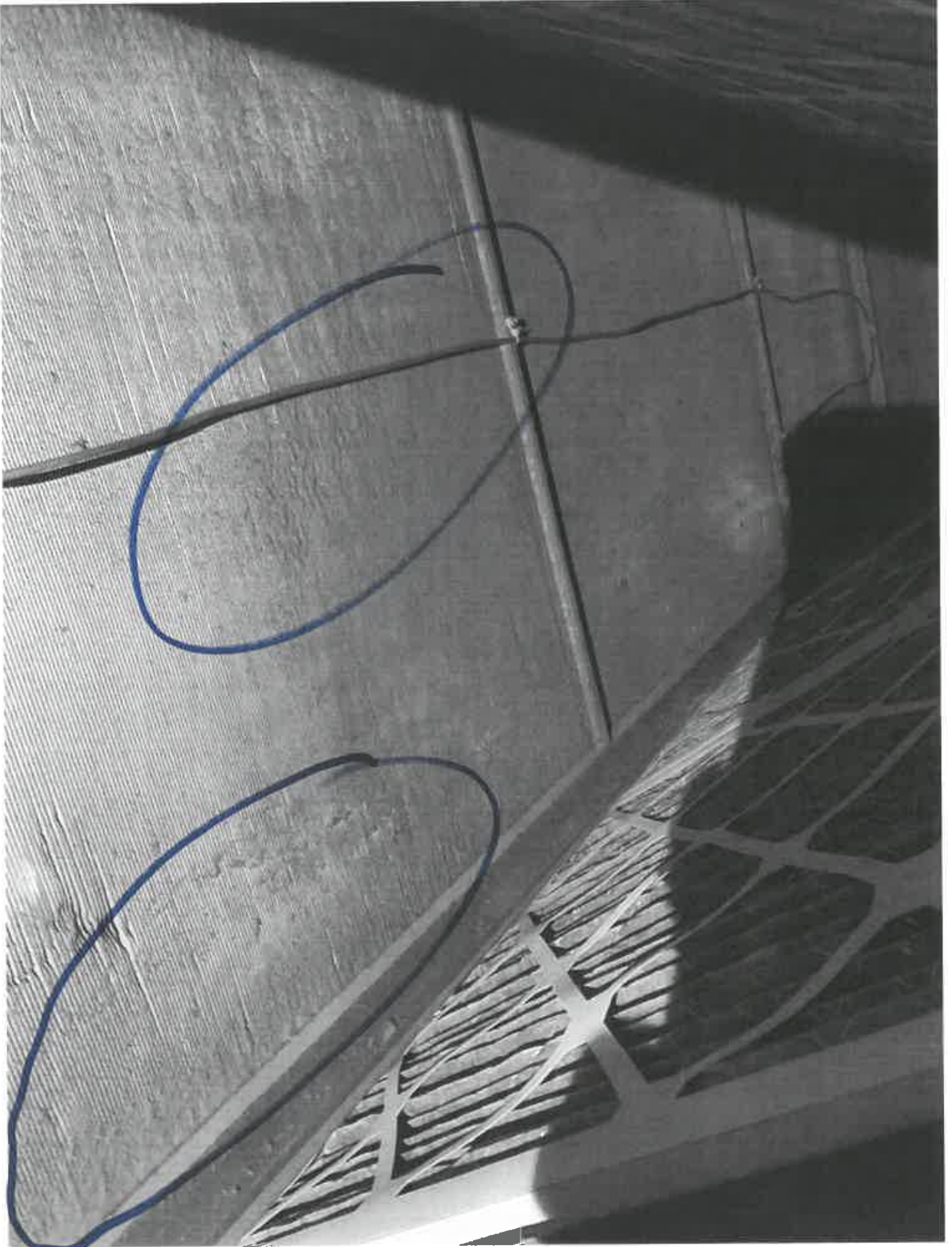
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NATHAN HALE

54

AHU-3



NATHAN HALE

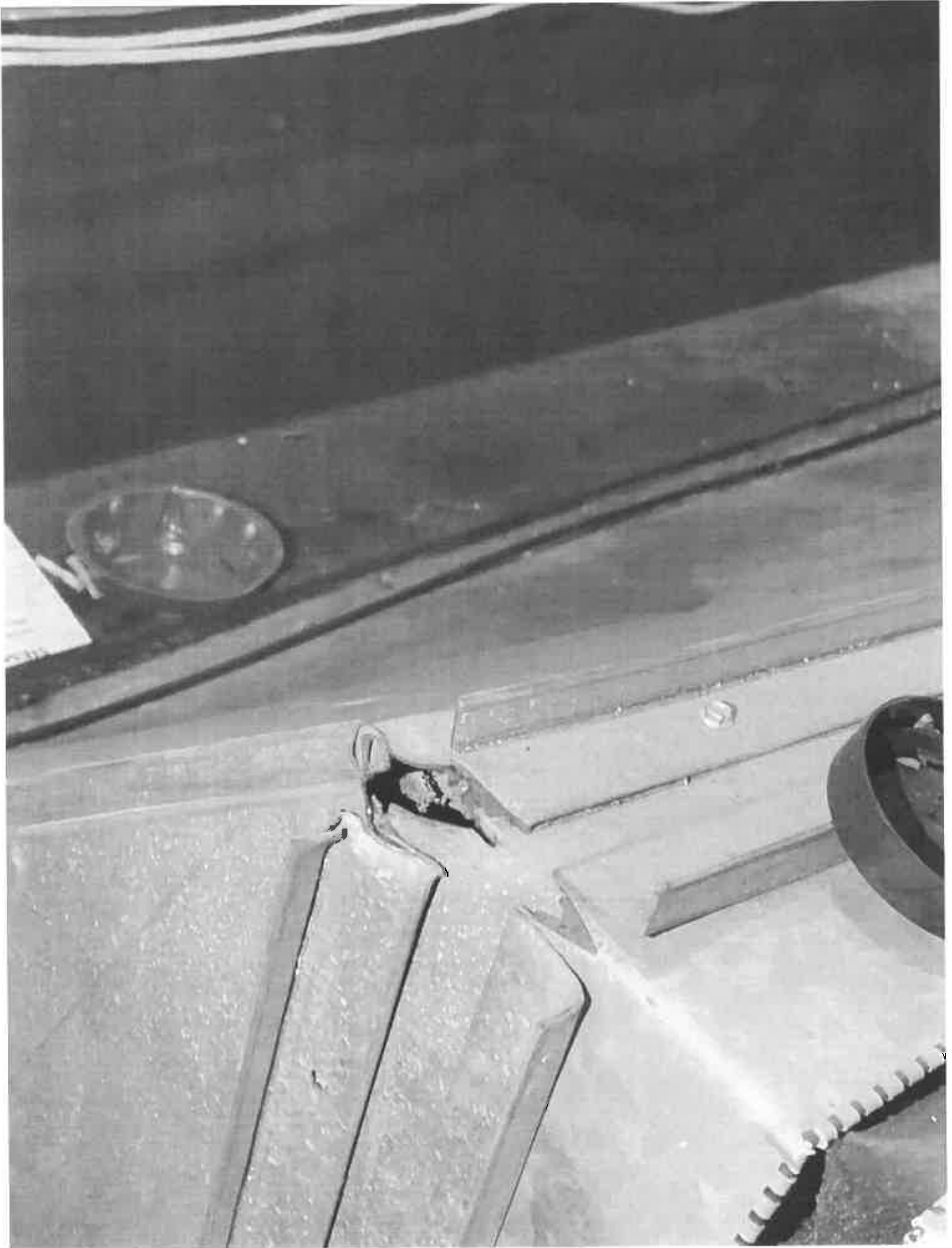
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NATHAN HALE

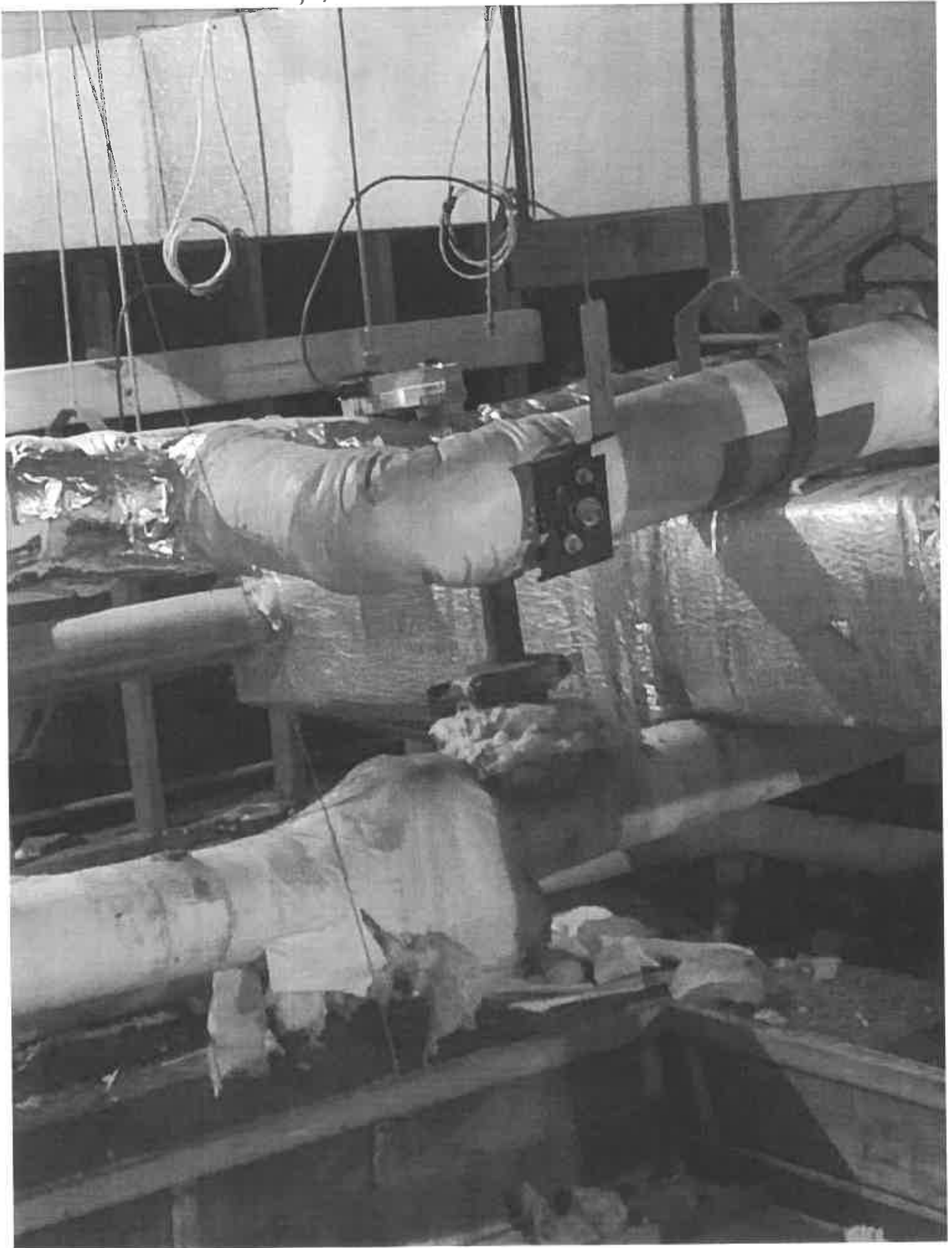
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AHU-3



NATHAN HALE

AHU-3



NATHAN HALE

58

A140-3



NATHAN HALE

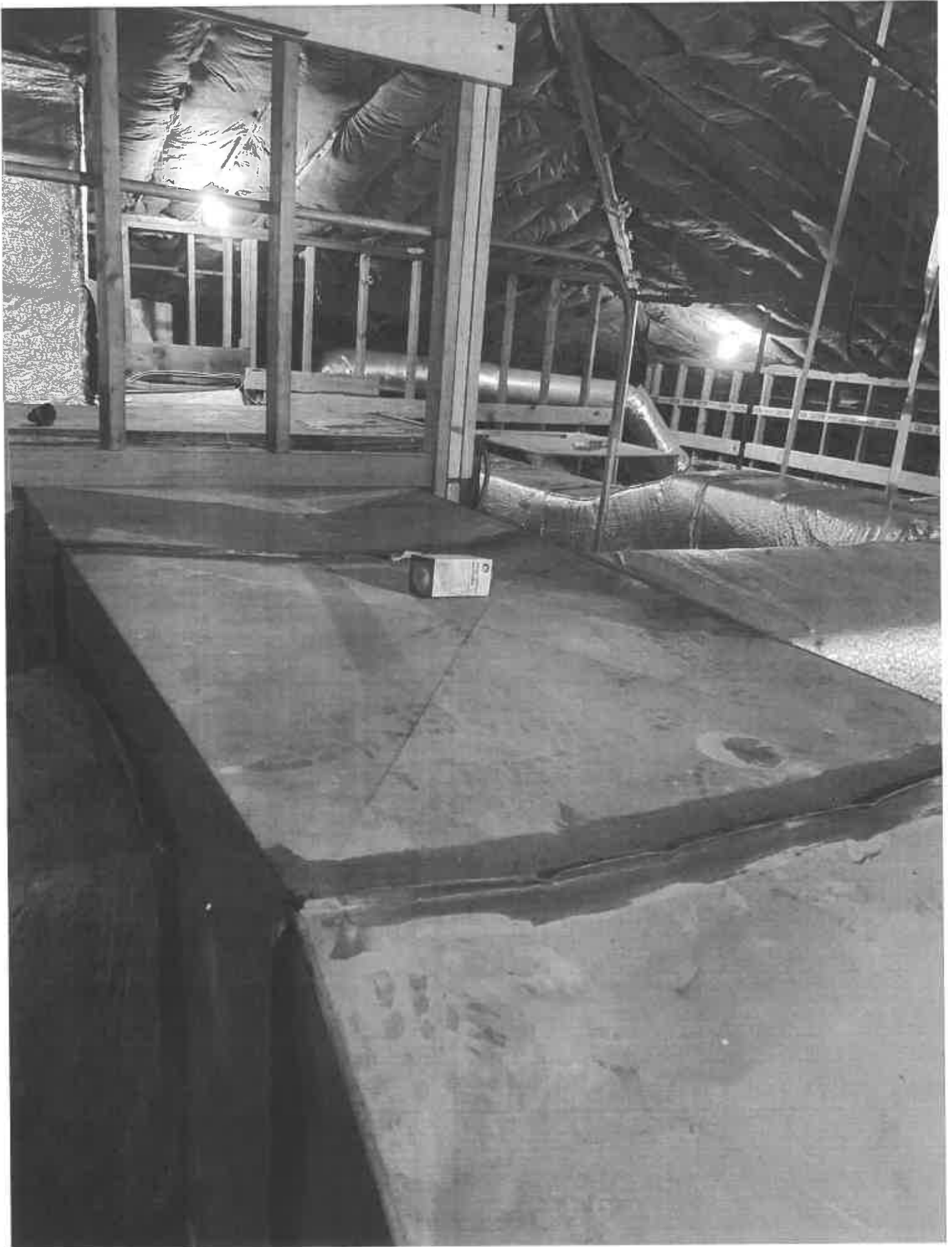
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NATHAN HALE

60

AHU-3



NATHAN HALE

61

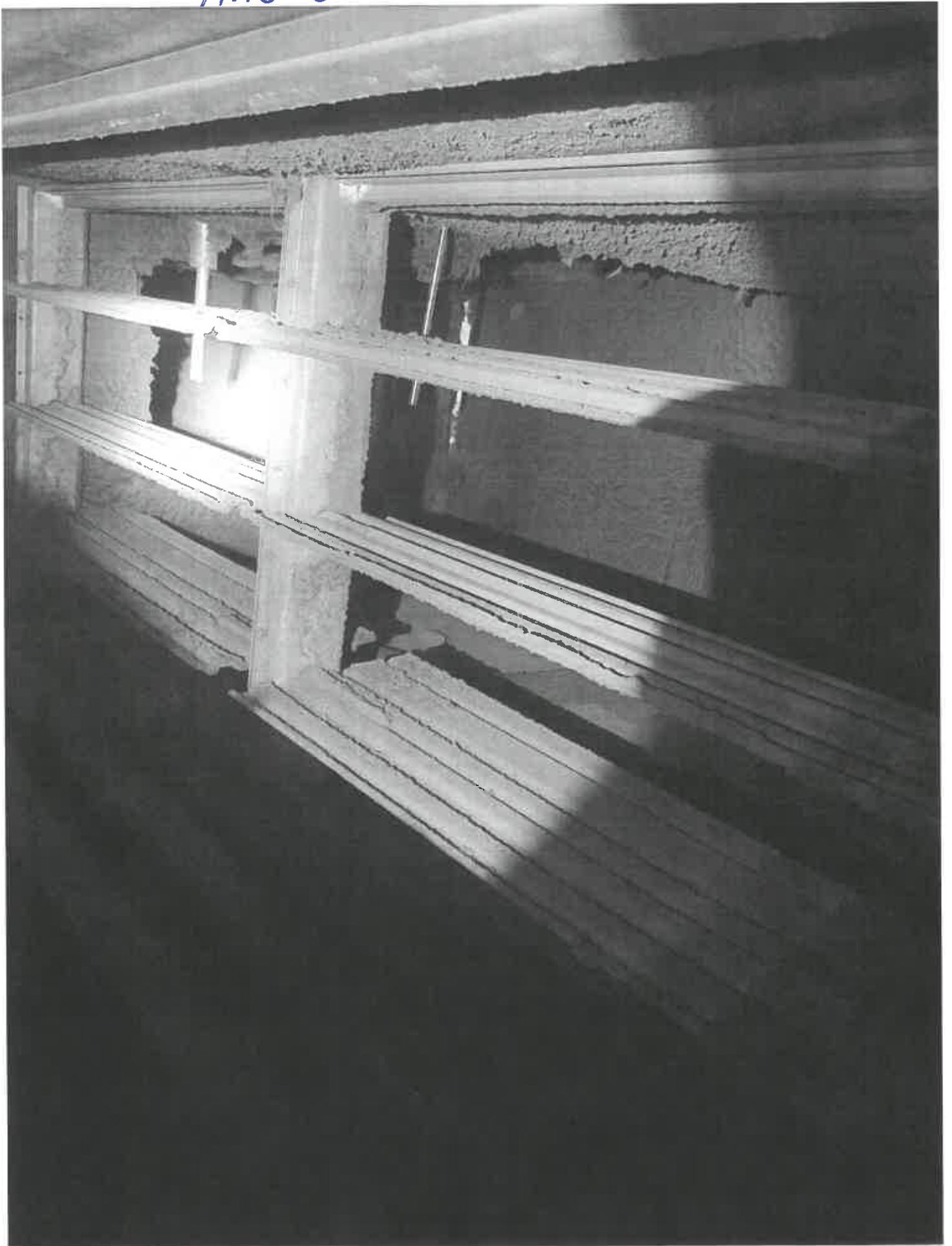
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NATHAN HALE

62

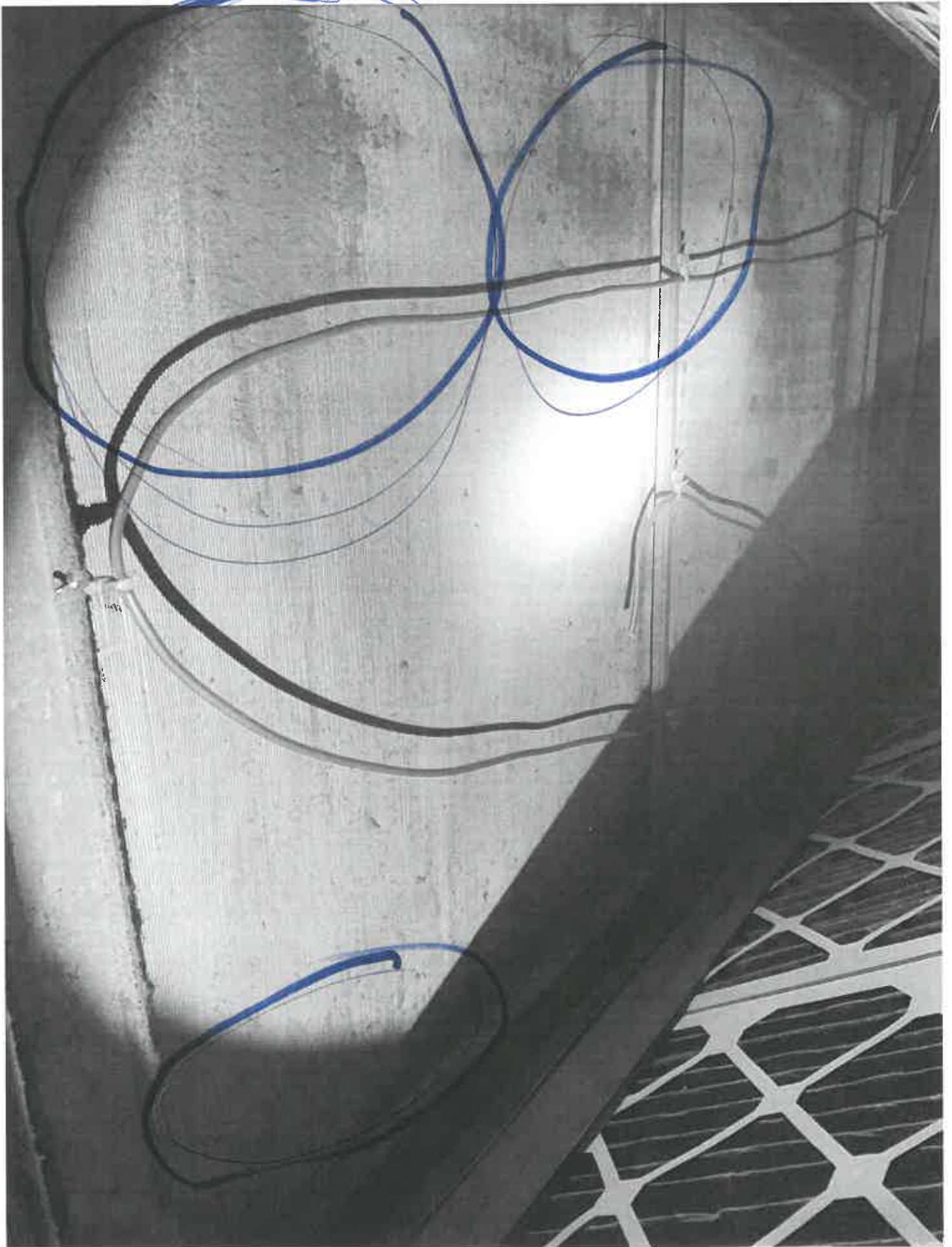
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NATHAN HALE

63

AHU-6



NATHAN HALE

04

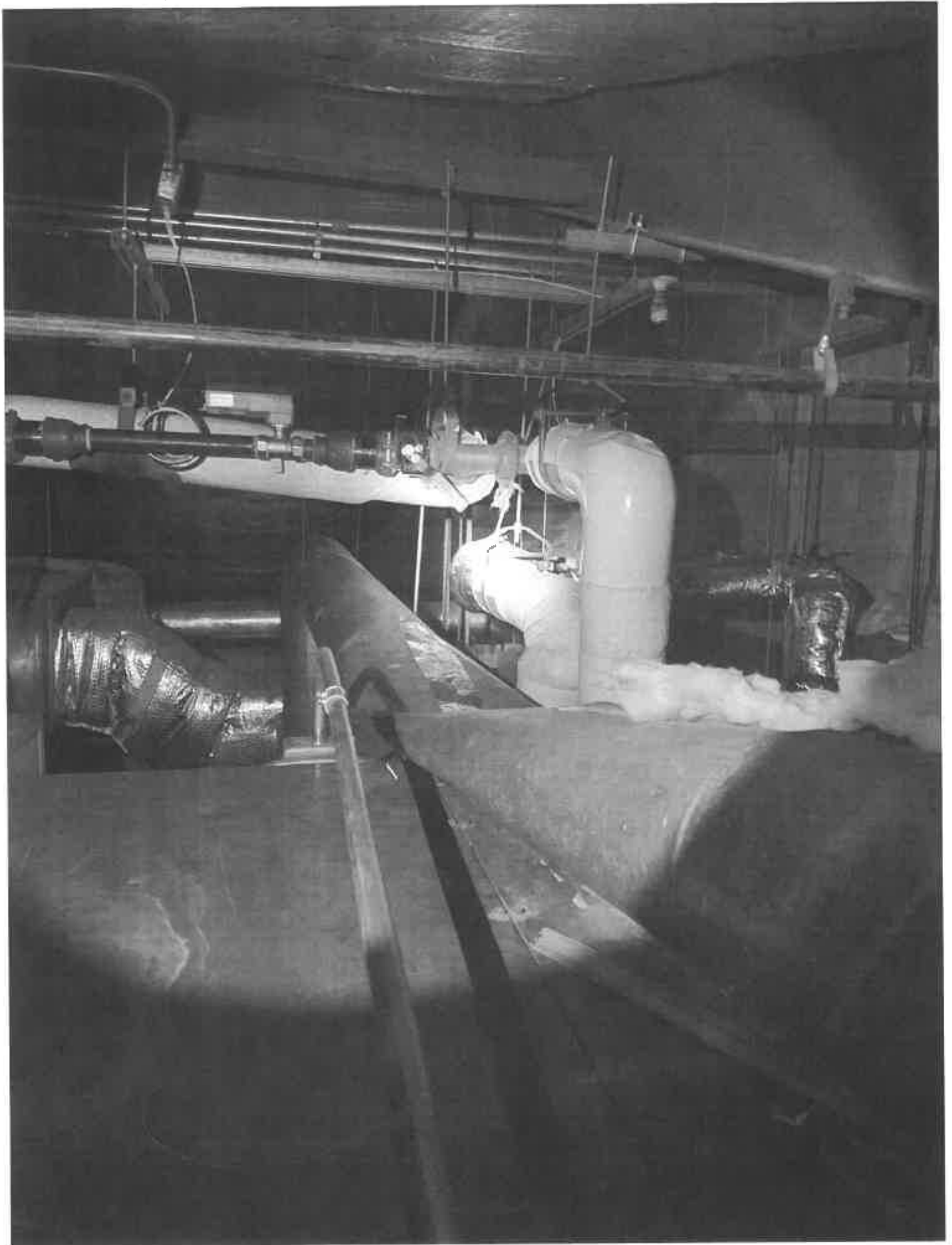
AHU-6



NATHAN HALE

05

AHU-6



NATHAN HALE

66

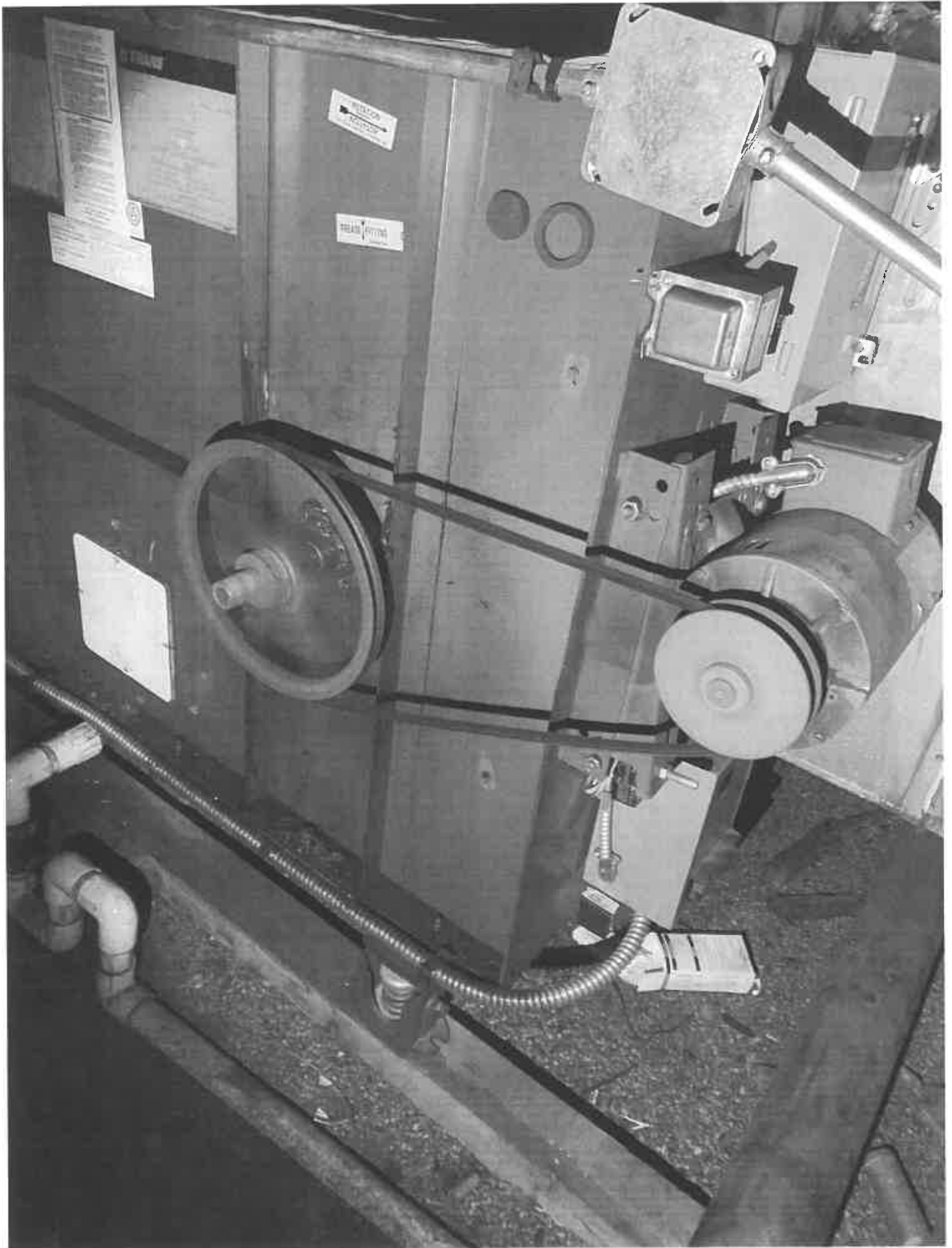
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NATHAN HALE

67

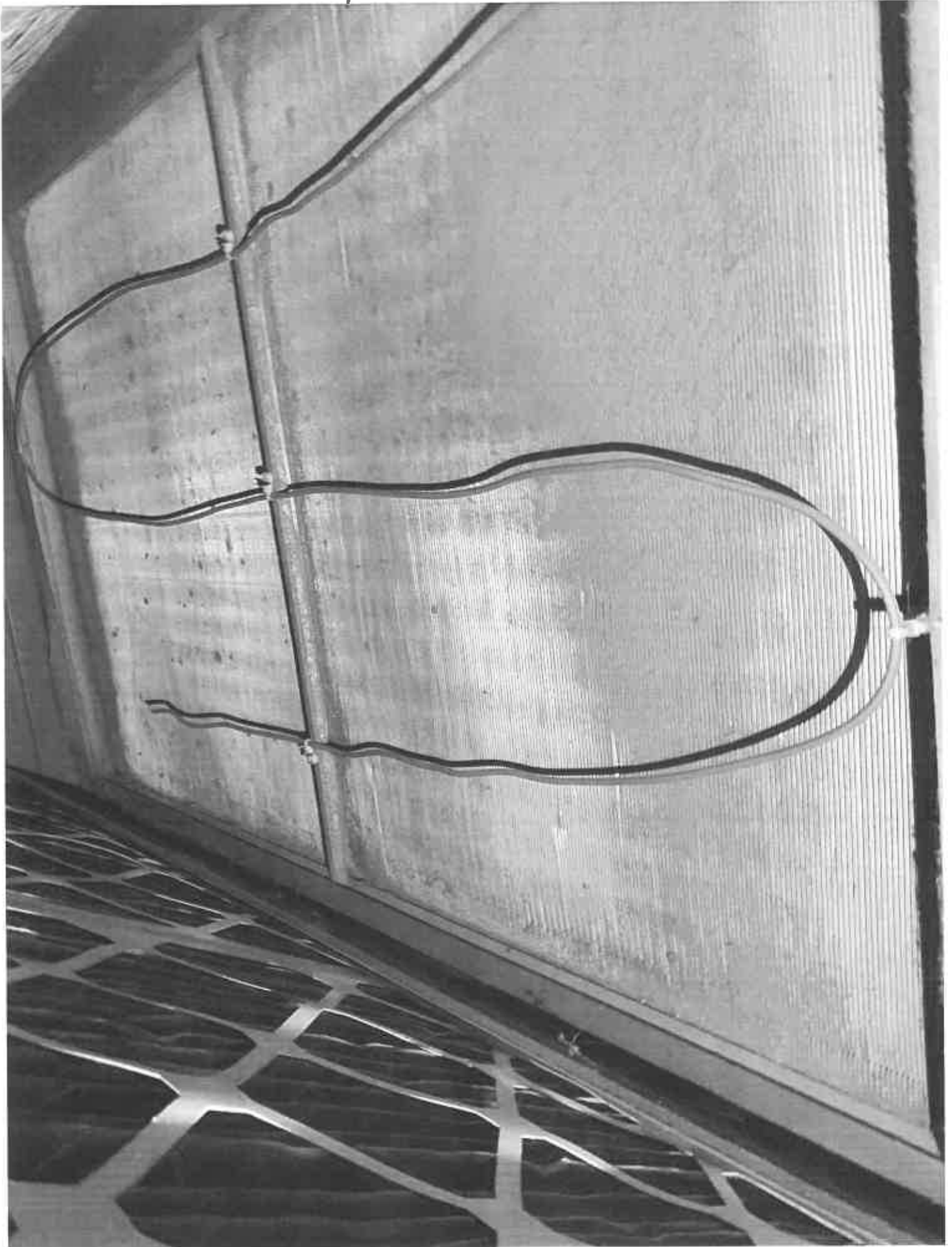
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NATHAN HALE

68

AHU-8



NATHAN HALE

09

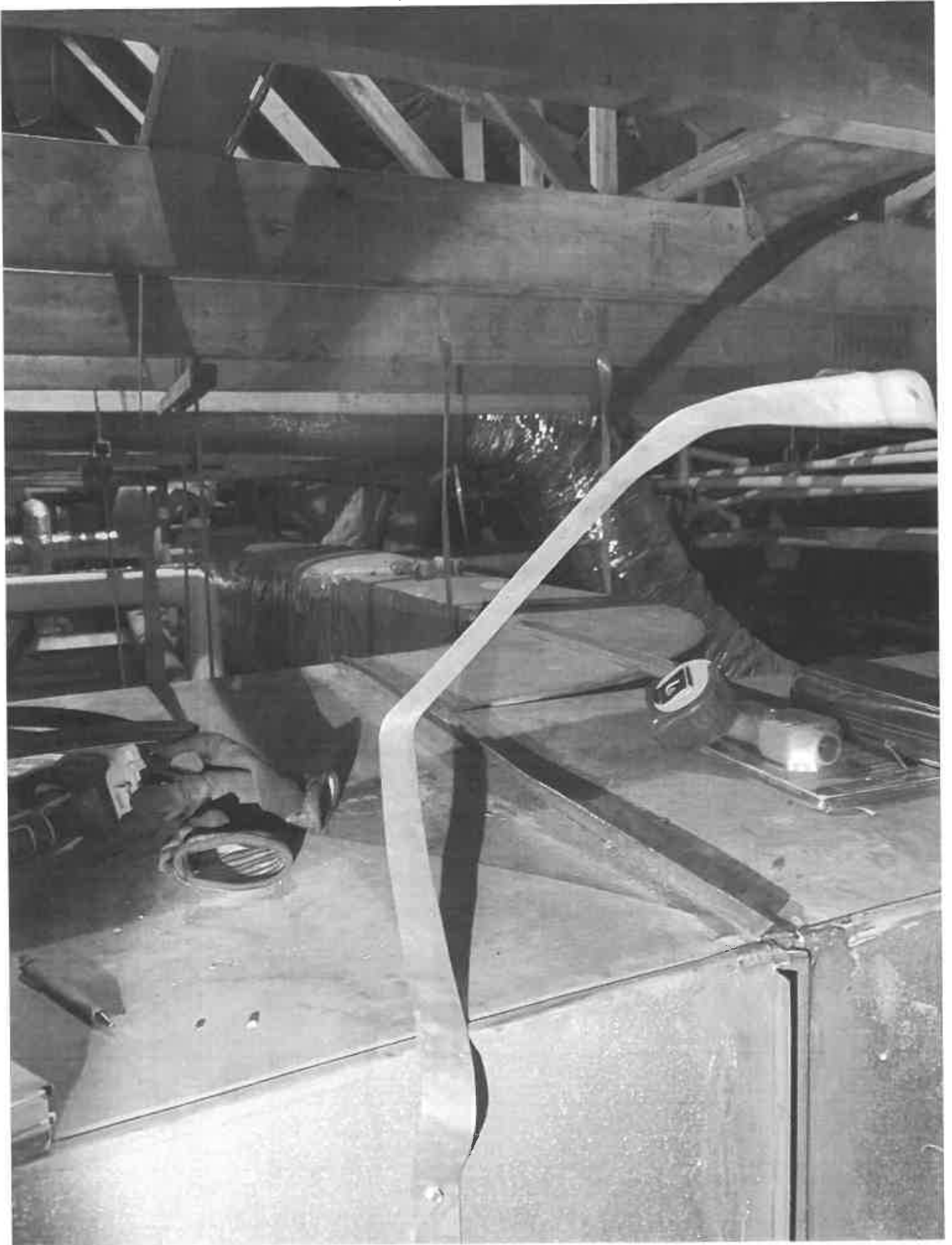
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NATHAN HALE

70

АНО-е



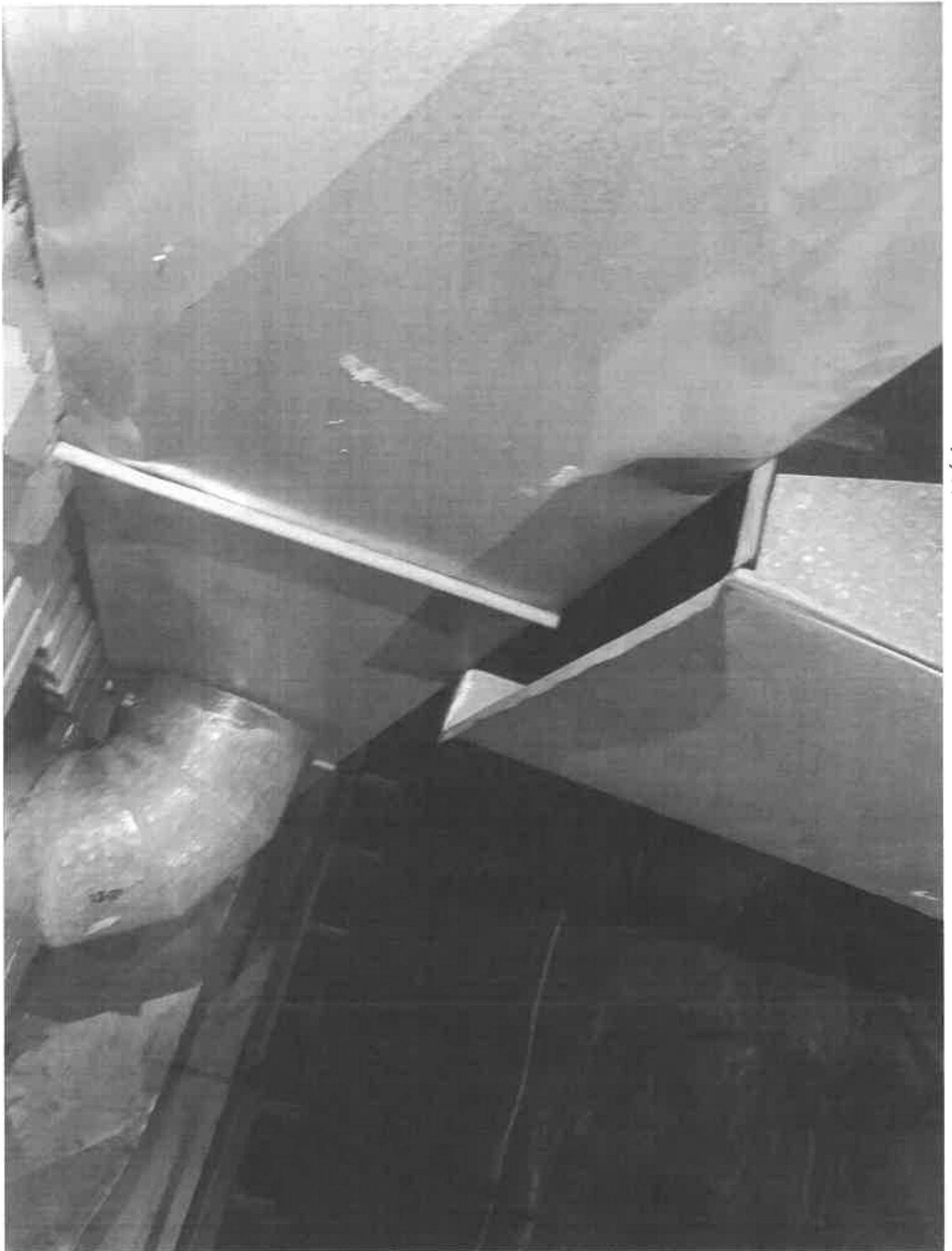
NATHAN HALE

AHU-8



NATHAN HALE

72



NATHAN HALE

AHU-8

Appendix B

Ventilation Data Calculations

NATHAN HALE ELEMENTARY SCHOOL - OUTSIDE AIR VERIFICATION CALCULATION

ROOM IDENTIFICATION												OA EQUIPMENT		VENTILATION CALCULATIONS			
Drawing Room #	Drawing Room Name	Room Type	Area	Volume	AHU	Design Airflow	Occupancy Density	People OA Rate Rp	Area OA CFM Rate Ra	Vbz	OA REQUIREMENT MET						
			(ft ²)	(ft ³)		(cfm)						(pp/1000ft ²)	(cfm/person)	(cfm/ft ²)	(cfm)	Pass/Fail	
L-03	OUTDOOR STORAGE	Corridor	54.5	-	-	0	-	0	3	3	FAILS						
L-05	CLASSROOM	Classroom	912.8	7304	-	0	32	320	110	430	FAILS						
L-07	CLASSROOM	Classroom	889.5	7118	-	0	31	320	107	427	FAILS						
L-09	CLASSROOM	Classroom	894.3	7156	-	0	31	320	107	427	FAILS						
L-11	CLASSROOM	Classroom	881	7050	-	0	31	310	106	416	FAILS						
L-12	CORRIDOR	Corridor	1177	9418	-	0	-	0	71	71	FAILS						
L-14	CLASSROOM	Classroom	890.3	7124	-	0	31	320	107	427	FAILS						
L-16	CLASSROOM	Classroom	888	7106	-	0	31	320	107	427	FAILS						
L-20	CLASSROOM	Classroom	887	7098	-	0	31	320	106	426	FAILS						
L-22	CLASSROOM	Classroom	873.6	6991	-	0	31	310	105	415	FAILS						
L-24	CLASSROOM	Classroom	850.9	6809	-	0	30	300	102	402	FAILS						
L-26	CORRIDOR	Corridor	1120.8	7851	-	0	-	0	67	67	FAILS						
L-27	CORRIDOR	Corridor	896	6277	-	0	-	0	54	54	FAILS						
L-28	CLASSROOM	Classroom	930.6	7447	-	0	33	330	112	442	FAILS						
L-30	CLASSROOM	Classroom	1137.1	9099	-	0	40	400	136	536	FAILS						
L-32	CLASSROOM	Classroom	1141.7	9136	-	0	40	400	137	537	FAILS						
L-34	CLASSROOM	Classroom	1162.4	9301	-	0	41	410	139	549	FAILS						
U-1	VEST	Vestibule	219.8	1762	AHU-1	200	2	15	13	28	FAILS						
U-2	CORRIDOR	Corridor	391.3	3134	AHU-2	250	-	0	23	23	FAILS						
U-4	OFFICE	Office	554.6	4994	AHU-2	800	3	15	33	48	FAILS						
U-3	Wait	Waiting Room	140.5	1268	AHU-2	200	4	25	8	33	FAILS						
U-6	PRIN	Office	193.2	1550	AHU-1	300	1	5	12	17	PASSES						
U-7	PSYC	Office	107.3	862	AHU-2	225	1	5	6	11	FAILS						
U-8	CONF	Conference Room	228.73	1834	AHU-1	300	11	60	14	74	FAILS						
U-9	H/V IMP	Office	241.4	1935	AHU-2	400	1	10	14	24	FAILS						
U-10	CORRIDOR	Corridor	216	1732	-	0	-	0	13	13	FAILS						
U-11	CORRIDOR	Corridor	300	2404	AHU-1	120	-	0	18	18	PASSES						
U-12	WAIT	Waiting Room	105.5	848	AHU-1	230	3	20	6	26	FAILS						
U-13	REST	Office	119.5	960	AHU-2	135	1	5	7	12	FAILS						
U-15	EXAM	Nurse	146.6	1177	AHU-2	190	1	5	9	14	FAILS						
U-16	FIRST AID	Nurse	326.2	2614	AHU-1	160	2	10	20	30	FAILS						
U-17	VEST	Vestibule	215.8	1730	AHU-1	300	2	15	13	28	FAILS						
U-18	CORRIDOR	Corridor	805.3	6446	AHU-1	360	-	0	48	48	PASSES						
U-19A	-	Computer Lab	728	7280	AHU-7	1030	18	190	87	277	FAILS						
U-19	LIBRARY	Library	3047.6	30476	AHU-7	2575	30	155	366	521	FAILS						
U-20	WORK	Office	155.3	1553	AHU-7	195	1	5	9	14	FAILS						
U-23	ANCIL	Office	426	3412	AHU-1	360	2	15	26	41	FAILS						
U-26	TEACHER'S WORK	Office	459	3676	AHU-1	460	2	15	28	43	FAILS						
U-27	UPPER LOBBY	Lobby	1382.6	11065	AHU-8	1995	14	70	83	153	FAILS						
U-28	CORRIDOR	Corridor	559.5	4480	AHU-1	480	-	0	34	34	PASSES						
U-33	TEACHERS LOUNGE	Cafeteria	587.7	4706	AHU-6	840	59	443	106	548	FAILS						
U-34	CAFETERIA	Cafeteria	3106	24852	AHU-6	5040	311	2333	559	2892	FAILS						
U-37	LKRS	Locker Room	97.3	782	-	0	1	5	6	11	FAILS						
U-39	CORRIDOR	Corridor	188.1	1509	-	0	-	0	11	11	FAILS						
U-40	KITCHEN	Cafeteria	1016.5	8136	MAU-1	0	102	765	183	948	PASSES						

NATHAN HALE ELEMENTARY SCHOOL - OUTSIDE AIR VERIFICATION CALCULATION

ROOM IDENTIFICATION												OA EQUIPMENT		VENTILATION CALCULATIONS			
Drawing Room #	Drawing Room Name	Room Type	Area	Volume	AHU	Design Airflow	Occupancy Density (pp/1000ft ²)	People OA Rate Rp (cfm/person)	Area OA CFM Rate Ra (cfm/ft ²)	Vbz (cfm)	OA REQUIREMENT MET						
			(ft ²)	(ft ³)		(cfm)					Pass/Fail						
U-41	DISH	Cafeteria	112.5	904	-	0	11	90	20	110	FAILS						
U-42	OFFICE	Office	61.4	495	-	0	0	5	4	9	FAILS						
U-46	LKRS	Locker Room	51	412	-	0	1	5	3	8	FAILS						
U-48	REC	Vestibule	200	1604	-	0	2	10	12	22	FAILS						
U-50	VEST	Vestibule	150	1204	-	0	2	10	9	19	FAILS						
U-51	ART	Art Classroom	1203	9628	AHU-5	1300	24	250	217	467	PASSES						
U-54	INSTRUC	Office	104	836	AHU-4	100	1	5	6	11	PASSES						
U-56	MUSIC	Classroom	1187.5	9504	AHU-4	1740	42	420	143	563	PASSES						
U-58	PRAC	Classroom	76.6	617	AHU-4	100	3	30	9	39	PASSES						
U-59	VEST	Vestibule	105.7	850	-	0	1	10	6	16	FAILS						
U-60	CORRIDOR	Corridor	244.3	1958	-	0	-	0	15	15	FAILS						
U-61	CORRIDOR	Corridor	900.7	7210	AHU-6	400	-	0	54	54	PASSES						
U-62	STAGE	Auditorium	1477.8	20696	AHU-3	1870	222	100	89	189	PASSES						
U-67	AUDITORIUM/GYM	Gymnasium	3942.5	63087	AHU-3	8415	28	560	710	1270	PASSES						
U-68	VEST	Vestibule	75.4	607	-	0	1	5	5	10	FAILS						
U-69	LOWER LOBBY	Lobby	436.3	3494	-	0	4	25	26	51	FAILS						
U-70	L/S/H	Office	328	2629	AHU-8	620	2	10	20	30	PASSES						
U-71	PT/OT	Nurse	308	2469	AHU-8	500	2	10	18	28	PASSES						
U-73	TIME-OUT	Office	37.2	302	-	0	0	5	2	7	FAILS						
U-74	GUIDANCE	Office	261.2	2094	AHU-8	290	1	10	16	26	PASSES						
U-75	LD RESOURCE	Classroom	521.5	4177	AHU-8	550	18	190	63	253	PASSES						
U-76	EXIT RAMP DN	Corridor	364.5	2920	AHU-8	1995	-	0	22	22	PASSES						
U-79	CORRIDOR	Corridor	2020.5	16168	-	0	-	0	121	121	FAILS						
U-80	TEACHERS LOUNGE	Cafeteria	154	1236	-	0	15	120	28	148	FAILS						
U-83	CLASSROOM	Classroom	908.7	7274	-	0	32	320	109	429	FAILS						
U-85	CLASSROOM	Classroom	909.2	7278	-	0	32	320	109	429	FAILS						
U-87	CLASSROOM	Classroom	895.5	7168	-	0	31	320	107	427	FAILS						
U-89	CLASSROOM	Classroom	902.4	7223	-	0	32	320	108	428	FAILS						
U-91	CLASSROOM	Classroom	896.5	7176	-	0	31	320	108	428	FAILS						
U-93	CLASSROOM	Classroom	890	7124	-	0	31	320	107	427	FAILS						
U-95	CLASSROOM	Classroom	890	7124	-	0	31	320	107	427	FAILS						
U-97	CLASSROOM	Classroom	902	7220	-	0	32	320	108	428	FAILS						
U-99	READING CLINIC	Classroom	891.4	7135	-	0	31	320	107	427	FAILS						
U-101	CORRIDOR	Corridor	863.1	6909	-	0	-	0	52	52	FAILS						
U-102	CLASSROOM	Classroom	932	7460	-	0	33	330	112	442	FAILS						
U-104	CLASSROOM	Classroom	889.4	7119	-	0	31	320	107	427	FAILS						
U-106	CLASSROOM	Classroom	885.7	7090	-	0	31	310	106	416	FAILS						
U-108	CLASSROOM	Classroom	881.2	7054	-	0	31	310	106	416	FAILS						

NATHAN HALE ELEMENTARY SCHOOL - RESTROOM EXHAUST FAN VERIFICATION CALCULATION

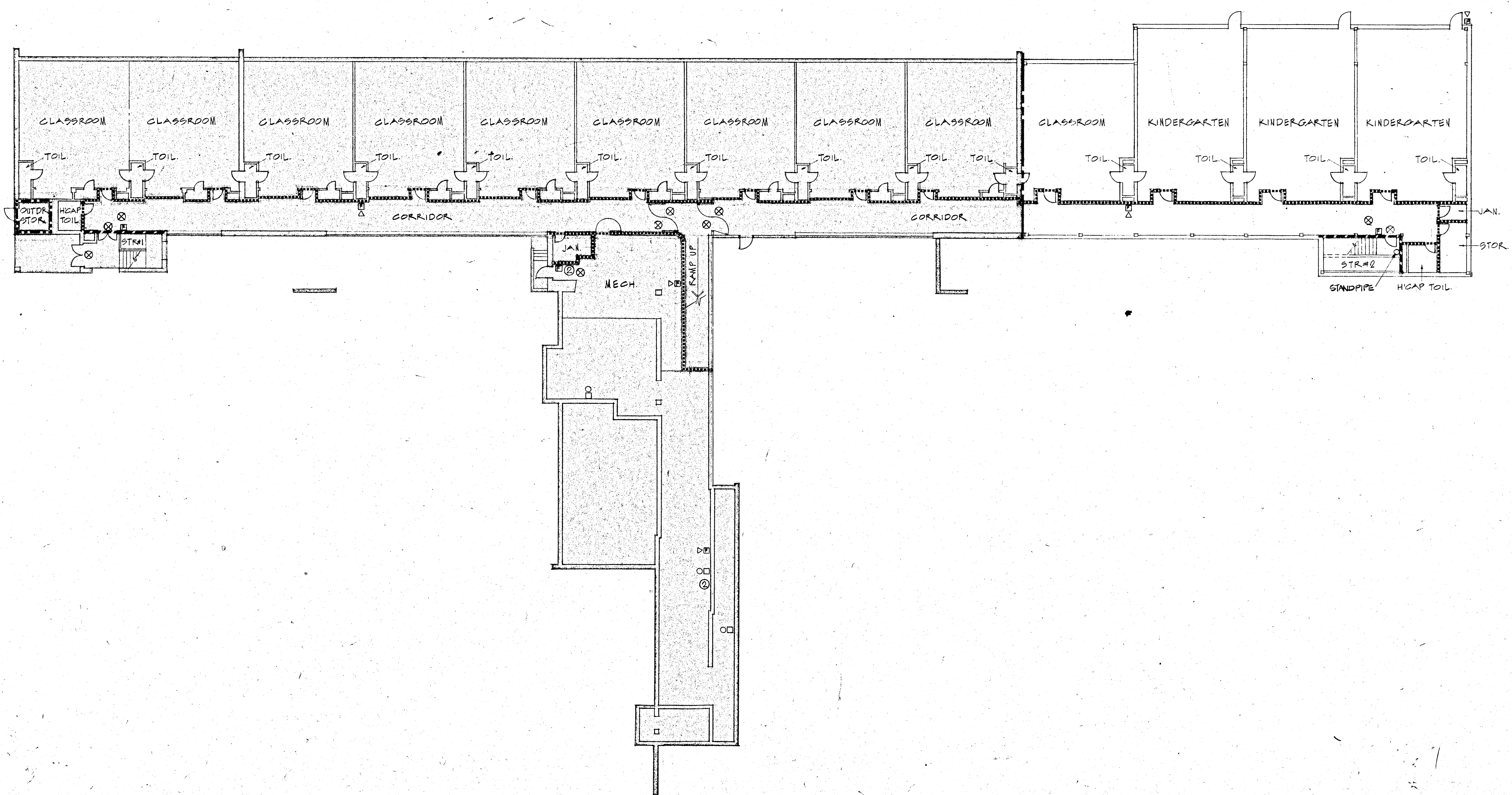
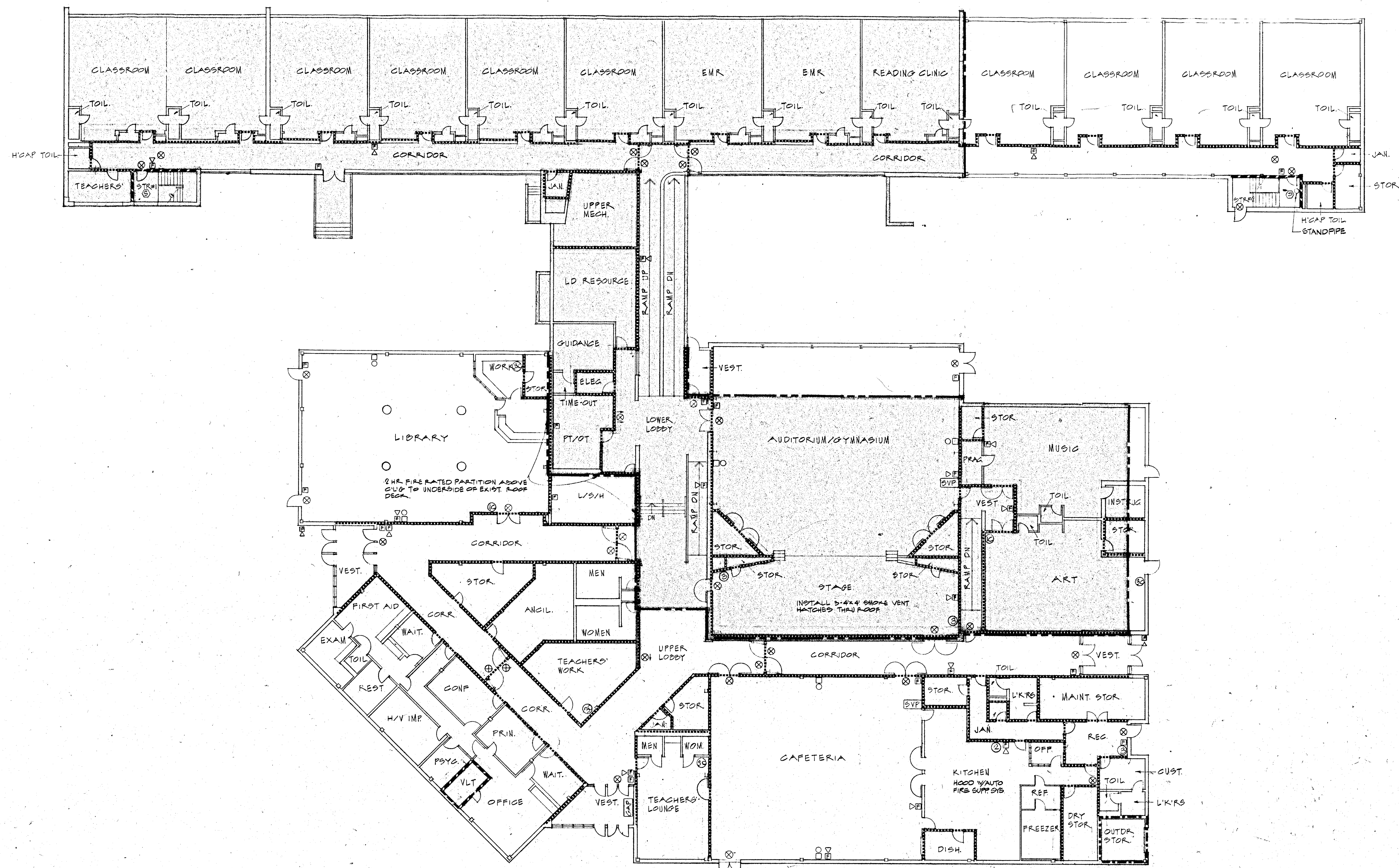
ROOM CHARACTERISTICS									TAB DATA	EXHAUST CALCULATIONS	
Drawing Room #	Drawing Room Name	Room Type	Area	Volume	PLUMBING FIXTURES	Measured Exhaust	ASHRAE 62.1 REQUIRED EXHAUST	OA REQUIREMENT MET			
			(ft ²)	(ft ³)	QTY.	(cfm)	(cfm)	PASS/FAIL			
L-02	TOILET	Restroom	50	402	1	73	70	PASSES			
L-04	TOILET	Restroom	28.7	231.6	1	0	70	FAILS			
L-06	TOILET	Restroom	29.6	238.8	1	169	70	PASSES			
L-08	TOILET	Restroom	25.2	203.6	1	105	70	PASSES			
L-10	TOILET	Restroom	24.4	197.2	1	169	70	PASSES			
L-13	TOILET	Restroom	23	186	1	96	70	PASSES			
L-15	TOILET	Restroom	25.36	204.88	1	146	70	PASSES			
L-19	TOILET	Restroom	23.8	192.4	1	57	70	FAILS			
L-21	TOILET	Restroom	24.2	195.6	1	2	70	FAILS			
L-23	TOILET	Restroom	23	186	1	77	70	PASSES			
L-25	TOILET	Restroom	19.5	158	1	166	70	PASSES			
L-29	TOILET	Restroom	24.2	195.6	1	97	70	PASSES			
L-31	TOILET	Restroom	28.7	231.6	1	100	70	PASSES			
L-33	TOILET	Restroom	24.6	198.8	1	100	70	PASSES			
L-35	TOILET	Restroom	23.4	189.2	1	1019	70	PASSES			
L-38	HCAP TOILET	Restroom	51.4	413.2	1	0	70	FAILS			
U-14	TOILET	Restroom	30	244	1	137	70	PASSES			
U-24	MEN	Restroom	151.7	1217.6	2	152	140	PASSES			
U-25	WOMEN	Restroom	163.6	1312.8	2	77	140	FAILS			
U-31	MEN	Restroom	39.2	317.6	1	39	70	FAILS			
U-32	WOMEN	Restroom	39.3	318.4	1	0	70	FAILS			
U-36	TOILET	Restroom	26.3	214.4	1	50	70	FAILS			
U-45	TOILET	Restroom	26.6	216.8	1	130	70	PASSES			
U-52	TOILET	Restroom	25	204	1	139	70	PASSES			
U-55	TOILET	Restroom	26.5	216	1	0	70	FAILS			
U-81	HCAP TOILET	Restroom	68	548	1	88	70	PASSES			

NATHAN HALE ELEMENTARY SCHOOL - RESTROOM EXHAUST FAN VERIFICATION CALCULATION

ROOM CHARACTERISTICS									TAB DATA	EXHAUST CALCULATIONS	
Drawing Room #	Drawing Room Name	Room Type	Area	Volume	PLUMBING FIXTURES	Measured Exhaust	ASHRAE 62.1 REQUIRED EXHAUST	OA REQUIREMENT MET			
			(ft ²)	(ft ³)	QTY.	(cfm)	(cfm)	PASS/FAIL			
U-82	HCAP TOILET	Restroom	28	228	1	126	70	PASSES			
U-84	HCAP TOILET	Restroom	27	220	1	67	70	FAILS			
U-86	HCAP TOILET	Restroom	26	212	1	94	70	PASSES			
U-88	HCAP TOILET	Restroom	24	196	1	0	70	FAILS			
U-90	HCAP TOILET	Restroom	24	196	1	4	70	FAILS			
U-92	HCAP TOILET	Restroom	24	196	1	120	70	PASSES			
U-94	HCAP TOILET	Restroom	24	196	1	113	70	PASSES			
U-96	HCAP TOILET	Restroom	24	196	1	96	70	PASSES			
U-98	HCAP TOILET	Restroom	24	196	1	94	70	PASSES			
U-100	VEST	Restroom	20	164	1	131	70	PASSES			
U-103	VEST	Restroom	23	188	1	82	70	PASSES			
U-105	VEST	Restroom	24	196	1	138	70	PASSES			
U-107	VEST	Restroom	23	188	1	128	70	PASSES			
U-109	VEST	Restroom	23	188	1	127	70	PASSES			
U-112	VEST	Restroom	50	404	1	39	70	FAILS			

Appendix C

Floor Plans



BUILDING CODE NOTES

USER GROUP: E EDUCATION

CONSTRUCTION TYPE: 2C NON-COMBUSTIBLE, UNPROTECTED BUILDING 100% SPRINKLERED

HEIGHT: 3 ST. 50'; AREA: 28,800 S.F. INCLUDING BONUS

FIRE RESISTANCE PARTING OF STRUCTURAL ELEMENTS

STAIRS AND SHAFTS	2 HR
EXIT ACCESS CORRIDORS	1 HR
COLUMNS, GIRDERS & FRAMING	0 HR
FLOOR CONSTRUCTION INCLUDING BEAMS	0 HR
ROOF CONSTRUCTION INCLUDING BEAMS	0 HR

EGRESS CALCULATIONS

LENGTH OF EXIT ACCESS TRAVEL	200 FT
CAPACITY PER UNIT BREADTH	
STAIRWAYS	113 PERSONS
DOORS, CORRIDORS	150 PERSONS
OCCUPANT LOAD SECOND FLOOR = 325 PERSONS	3 UNITS
PROVIDED: 2 STAIRS @ 2 UNITS + 1 PR DOORS & 1 RAMP	

LEGEND

- 3 HOUR RATING
- - - - 2 HOUR RATING; 1/2 HR. 'B' RATED DOORS.
- 1 HOUR RATING BELOW FIRE RATED CEILINGS, SMOKE BARRIER TIGHT TO STRUCTURE ABOVE, 1/2 HR. OR 1 HR. 'B' RATED DOORS, EXCEPT 20 MIN. AT CLASSROOMS.
- - - - 2 HOUR FIRE RATED PARTITION ABOVE CEILING TO UNDERSIDE OF EXISTING ROOF DECK, SEPARATING NEW FROM EXISTING.
- [] EXTENT OF EXISTING CONSTRUCTION
- [X] EXIT SIGN
- [X] EXIT SIGN W/DIRECTION OF TRAVEL INDICATION
- [] EMERGENCY LIGHT
- [] FIRE HORN AND LIGHT
- [] FIRE PULL STATION
- [] TYPE
- [] FIRE EXTINGUISHER

FIRE EXTINGUISHER TYPES:

1. PRESSURIZED WATER, ULC 2-A
2. DRY CHEMICAL, NON-CONDUCTIVE, ULC 40 B:C
3. DRY CHEMICAL ULC 2-A: 40 B:C

NOTE: REMOVE ALL MECH. DOOR HOLD OPEN DEVICES. INSTALL WALL BUMPERS.

DRAWING NO. **A-3**

EXITING & FIRE SAFETY DIAGRAMS

NATHAN HALE ELEMENTARY SCHOOL ADDITIONS, ALTERATIONS & CODE COMPLIANCE

MERIDEN, CONNECTICUT

CARLIN POZZI-CHIN ARCHITECTS, P.C.

THREE LINCOLN STREET
NEW HAVEN, CONNECTICUT

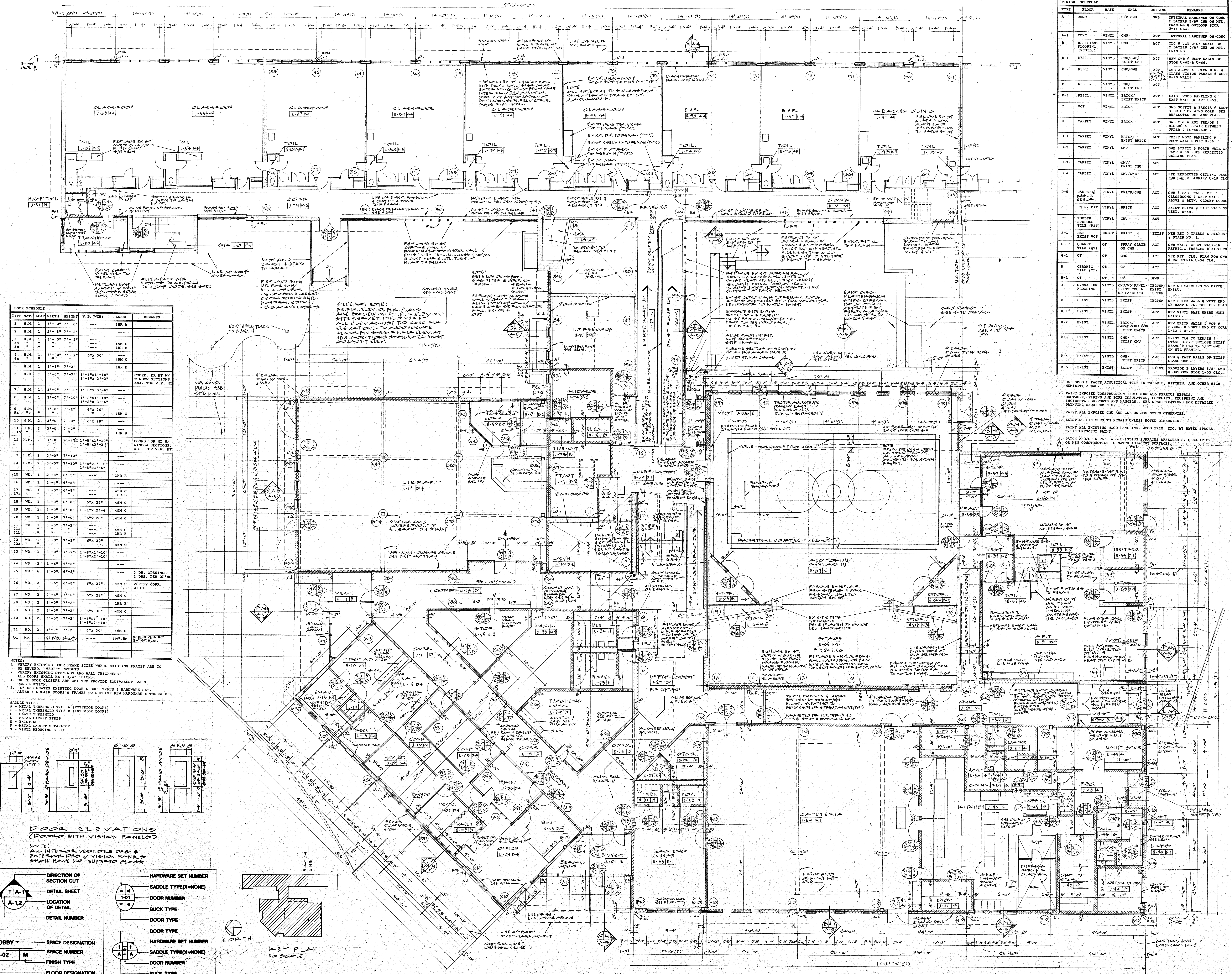
SHEET 18A-1

scale 1/8" = 1'-0"

date 1/25/24

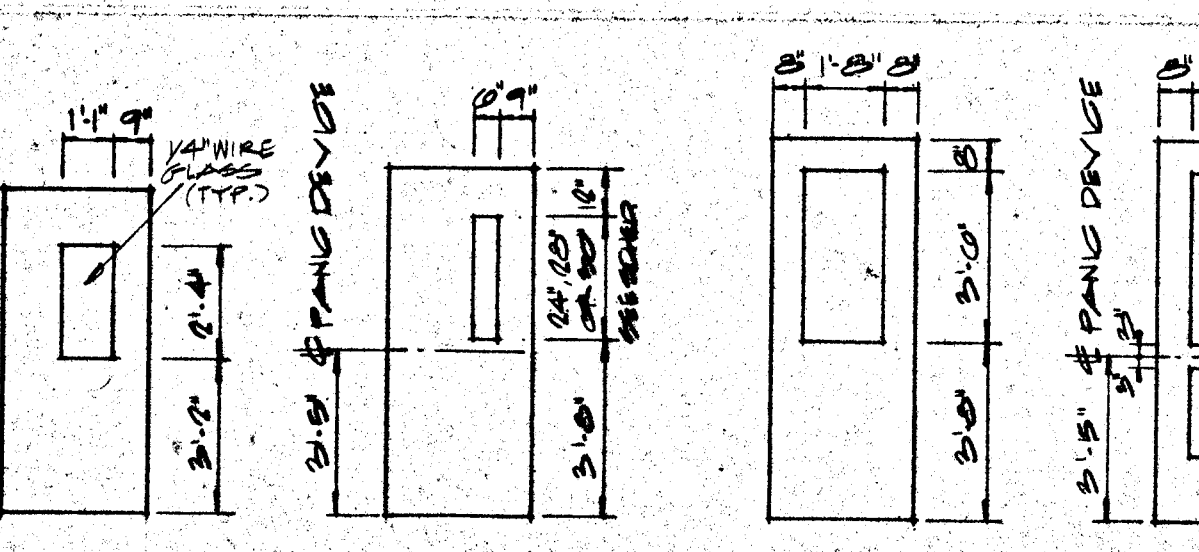
drawn HSK checked PL approved RP

no. date description



TYPE	MAT.	LEAF	WIDTH	HEIGHT	V.P. (X)R	LABEL	REMARKS
1	H.M.	1	3'-0"	7'-0"	---	3HR A	
2	H.M.	1	2'-8"	7'-2"	---	3HR B	
3	H.M.	1	3'-0"	7'-2"	---	45M C	
4	H.M.	1	3'-0"	7'-2"	6"x 30"	45M B	
5	H.M.	1	3'-0"	7'-2"	---	3HR B	
6	H.M.	1	3'-0"	7'-2"	---	---	COORD. DR. BY W/ WINDOW SECTIONS. ADD. TOP V.P. BY
7	H.M.	1	3'-0"	7'-10"	1'-8"x 3'-0"	---	
8	H.M.	1	3'-0"	7'-10"	1'-8"x 3'-0"	---	
9	H.M.	1	3'-0"	7'-2"	6"x 30"	45M C	
10	H.M.	2	3'-0"	7'-0"	6"x 28"	---	
11	H.M.	2	3'-0"	7'-2"	---	3HR B	
12	H.M.	2	3'-0"	7'-10"	1'-8"x 3'-0"	---	COORD. DR. BY W/ WINDOW SECTIONS. ADD. TOP V.P. BY
13	H.M.	2	3'-0"	7'-10"	1'-8"x 3'-0"	---	
14	H.M.	2	3'-0"	7'-10"	1'-8"x 3'-0"	---	
15	WD.	1	2'-8"	6'-5"	---	3HR B	
16	WD.	1	2'-4"	6'-8"	---	---	
17	WD.	1	3'-0"	6'-8"	---	45M C	
18	WD.	1	3'-0"	6'-8"	6"x 24"	45M C	
19	WD.	1	3'-0"	6'-8"	3'-11"x 2'-4"	45M C	
20	WD.	1	3'-0"	7'-0"	6"x 28"	45M C	
21	WD.	1	3'-0"	7'-2"	---	3HR B	
22	WD.	1	3'-0"	7'-2"	6"x 30"	45M C	
23	WD.	1	3'-0"	7'-2"	3'-8"x 3'-0"	---	
24	WD.	2	2'-6"	6'-8"	---	---	
25	WD.	6	2'-0"	6'-8"	---	---	3 DR. OPENINGS 2 DR. PER COR. WID.
26	WD.	2	3'-4"	6'-8"	6"x 24"	55M C	VERIFY CORR. WIDTH
27	WD.	2	2'-6"	7'-0"	6"x 28"	45M C	
28	WD.	2	3'-0"	7'-2"	---	3HR B	
29	WD.	2	3'-0"	7'-2"	6"x 30"	45M C	
30	WD.	2	3'-0"	7'-2"	3'-8"x 3'-0"	---	
31	WD.	2	4'-0"	7'-2"	6"x 30"	45M C	
32	H.M.	1	2'-0"	5'-0"	---	1HR D	VERIFY EXIST. U.S.

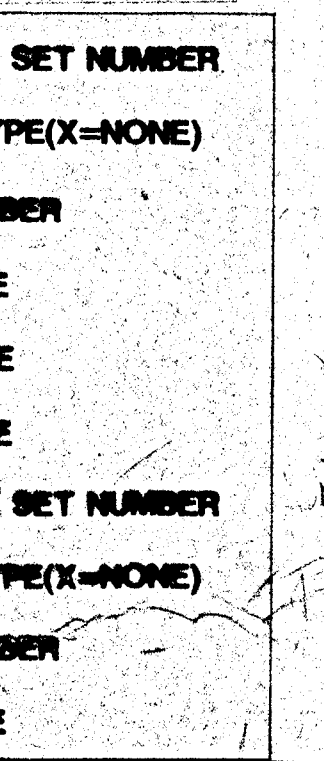
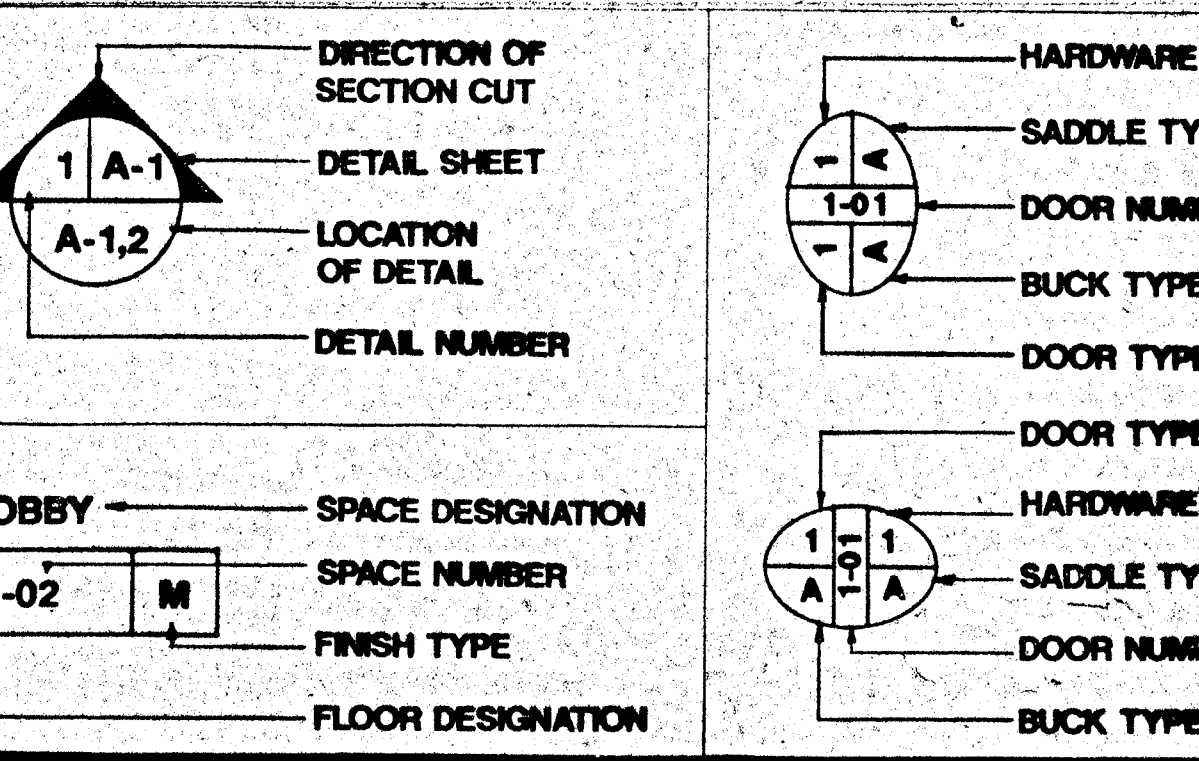
- NOTES:
- VERIFY EXISTING DOOR FRAME SIZES WHERE EXISTING FRAMES ARE TO BE REUSED - VERIFY COORDS.
 - VERIFY EXISTING OPENINGS AND WALL THICKNESS.
 - ALL DOORS SHALL BE 1 3/4" THICK.
 - WHERE DOOR CLOSERS ARE OMITTED PROVIDE EQUIVALENT LABEL CONSTRUCTION.
 - * DESIGNATES EXISTING DOOR & BUCK TYPES & HARDWARE SET. ALTER & REPAIR DOORS & FRAMES TO RECEIVE NEW HARDWARE & THRESHOLD.
- SADDLE TYPES
- A - METAL THRESHOLD TYPE A (EXTERIOR DOORS)
 - B - METAL THRESHOLD TYPE B (INTERIOR DOORS)
 - C - SLATE THRESHOLD
 - D - METAL CARPET STRIP
 - E - WOOD TRIM
 - F - METAL CARPET SEPARATOR
 - G - VINYL REDUCING STRIP



DOOR ELEVATIONS
(DOORS WITH VISION PANELS)

NOTES:

- ALL INTERIOR VESTIBULE DOORS & EXTERIOR DOORS WITH VISION PANELS SHALL HAVE 1/4" TEMPERED GLASS.



FINISH	FLOOR	BASE	WALL	CEILING	REMARKS
A	CONC	CONC	CONC	CONC	INTERRIAL HARDENER ON CONC 2 LAYERS 5/8" GHS ON MET. FRAMING & OUTDOOR STOR U-44 CLG.
A-1	CONC	VINYL	CONC	ACT	INTERRIAL HARDENER ON CONC
B	RESILIENT	VINYL	CONC	ACT	CLG & VCT U-05 SHALL BE 2 LAYERS 5/8" GHS ON MET. FRAMING
B-1	RESIL.	VINYL	CONC/BRK	ACT	NEW GHS & WEST WALLS OF STOR U-04. SEE REFLECTED CEILING PLAN.
B-2	RESIL.	VINYL	CONC/BRK	ACT	GHS ABOVE & BELOW N.H. & GLASS VISION PANELS & WORK U-05 WALLS.
B-3	RESIL.	VINYL	CONC/BRK	ACT	EXIST. GHS
B-4	RESIL.	VINYL	BRICK	ACT	EXIST. WOOD PANELING & EAST WALL OF ACT U-04.
C	VCT	VINYL	BRICK	ACT	GHS SOFFIT & FACIA & EAST SIDE OF CR VING CORR. SEE REFLECTED CEILING PLAN.
D	CARPET	VINYL	BRICK	ACT	GHS CLG & STY TREADS & RISERS AT STAIR BETWEEN UPPER & LOWER LOBBY.
D-1	CARPET	VINYL	BRICK/BRK	ACT	EXIST. WOOD PANELING & WEST WALL MUSIC U-56
D-2	CARPET	VINYL	CONC	ACT	GHS SOFFIT & NORTH WALL OF STOR U-04. SEE REFLECTED CEILING PLAN.
D-3	CARPET	VINYL	CONC/BRK	ACT	EXIST. GHS
D-4	CARPET	VINYL	CONC/BRK	ACT	SEE REFLECTED CEILING PLAN FOR GHS & LIBRARY U-19 CLG
D-5	CARPET	VINYL	BRICK/BRK	ACT	GHS & EAST WALLS OF CLASSROOMS & WEST WALLS ABOVE & BETW. CLOSET DOORS
E	ENTRY MAT	VINYL	BRICK	ACT	EXIST. BRICK & EAST WALL OF VEST. U-51.
F	RUBBER STUDDED TILE (RST)	VINYL	CONC	ACT	ACT
F-1	RST	EXIST	EXIST	EXIST	NEW RST & TREADS & RISERS & STY NO. 1.
G	GLASS TILE (GT)	GT	CONC	ACT	GHS WALLS ABOVE WALK-IN REFRIG. & FREEZER & KITCHEN
H	GT	GT	CONC	ACT	SEE REF. CLG. PLAN FOR GHS & CAFETERIA U-14 CLG.
H-1	CT	CT	CONC	ACT	ACT
J	GLASS TILE (GT)	VINYL	CONC/BRK	ACT	NEW WD PARELING TO MATCH EXIST.
K	EXIST	VINYL	EXIST	EXIST	NEW BRICK WALL & WEST END OF STOR U-04. SEE REFLECTED CEILING PLAN.
K-1	EXIST	VINYL	EXIST	EXIST	NEW VINYL BASE WHERE NONE EXISTS.
K-2	EXIST	VINYL	BRICK/CONC	ACT	NEW BRICK WALLS & VCT & FLOOR & NORTH END OF CORR L-12 & U-79
K-3	EXIST	VINYL	CONC/BRK	ACT	EXIST. CLG TO REMAIN & STAGE U-15. ENCLOSED EXIST. BEAMS & CLG 5/8" GHS ON MET. FRAMING.
K-4	EXIST	VINYL	CONC/BRK	ACT	GHS & EAST WALLS OF EXIST. CLASSROOMS.
K-5	EXIST	EXIST	EXIST	EXIST	PROVIDE 2 LAYERS 5/8" GHS & OUTDOOR STOR L-10 CLG.

- USE SMOKE FACED ACOUSTICAL TILE IN TOILETS, KITCHEN, AND OTHER HIGH HUMIDITY AREAS.
- PAINT EXPOSED CONSTRUCTION INCLUDING ALL FERROUS METALS, STRUCTURE, BEAMING AND PIPE INSULATION, CONDUITS, EQUIPMENT AND INCIDENTAL SUPPORTS AND HANGERS. SEE SPECIFICATIONS FOR DETAILED PAINTING REQUIREMENTS.
- PAINT ALL EXPOSED GHS AND GHS UNLESS NOTED OTHERWISE.
- EXISTING FINISHES TO REMAIN UNLESS NOTED OTHERWISE.
- PAINT ALL EXISTING WOOD PANELING, WOOD TRIM, ETC. AT RATED SPACES W/ INTERDEPENDENT PAINT.
- PATCH AND/OR REPAIR ALL EXISTING SURFACES AFFECTED BY DEMOLITION OR NEW CONSTRUCTION TO MATCH ADJACENT SURFACES.

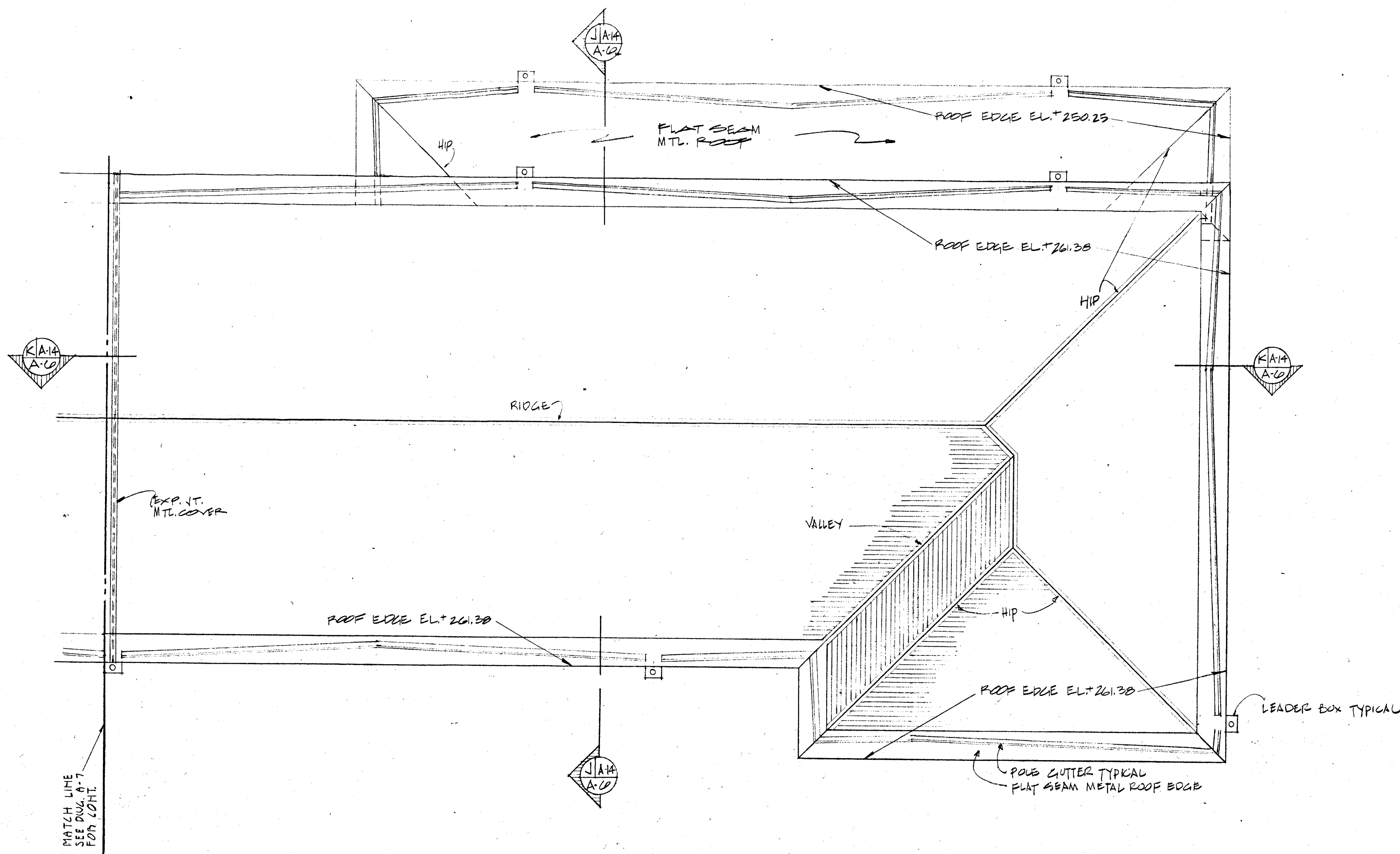
CARLIN POZZI CHIN ARCHITECTS, P.C.
THREE LINCOLN STREET
NEW HAVEN, CONNECTICUT

NATHAN HALE ELEMENTARY SCHOOL
ADDITIONS, ALTERATIONS & CODE COMPLIANCE

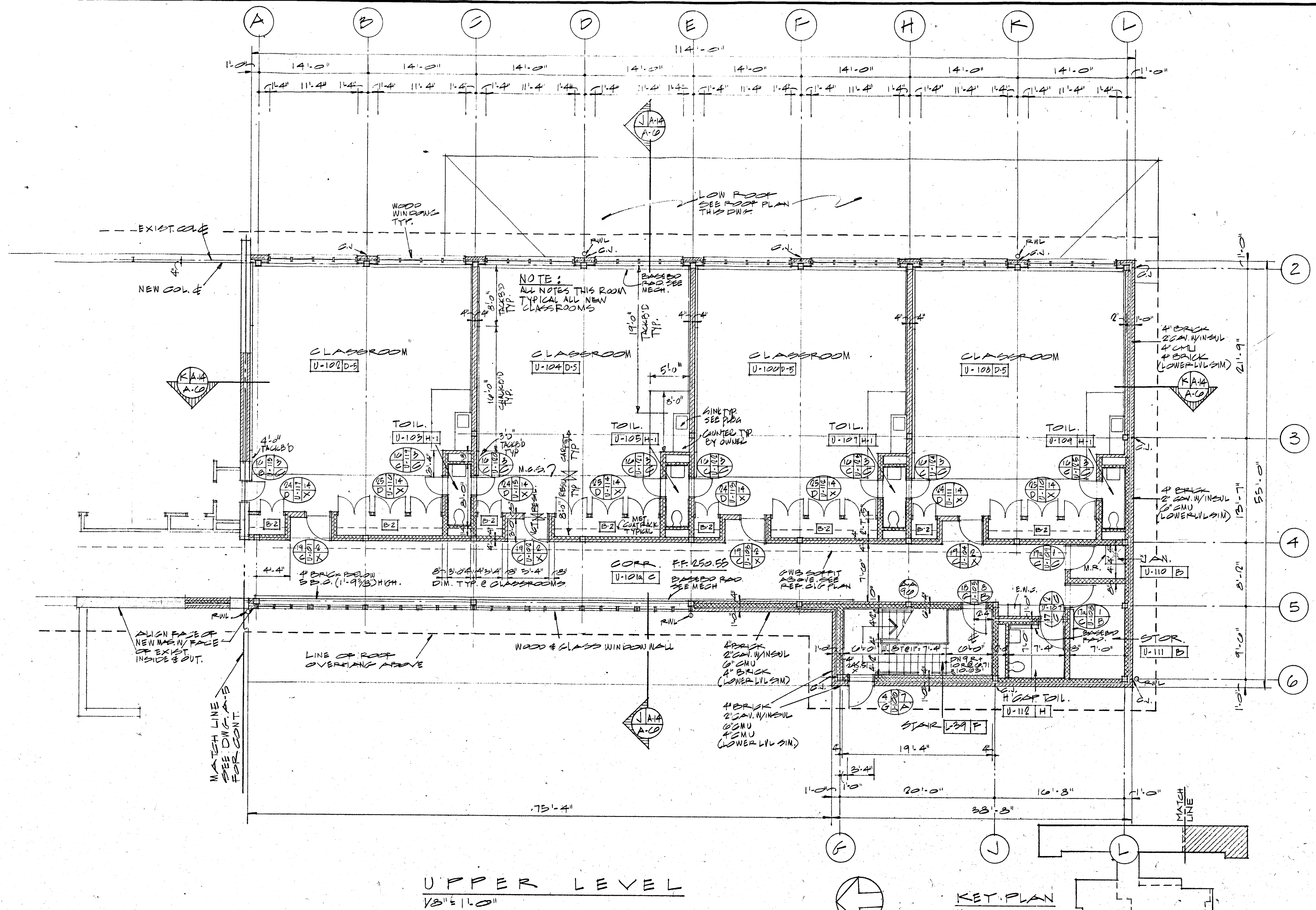
UPPER LEVEL FLOOR PLAN

A-5

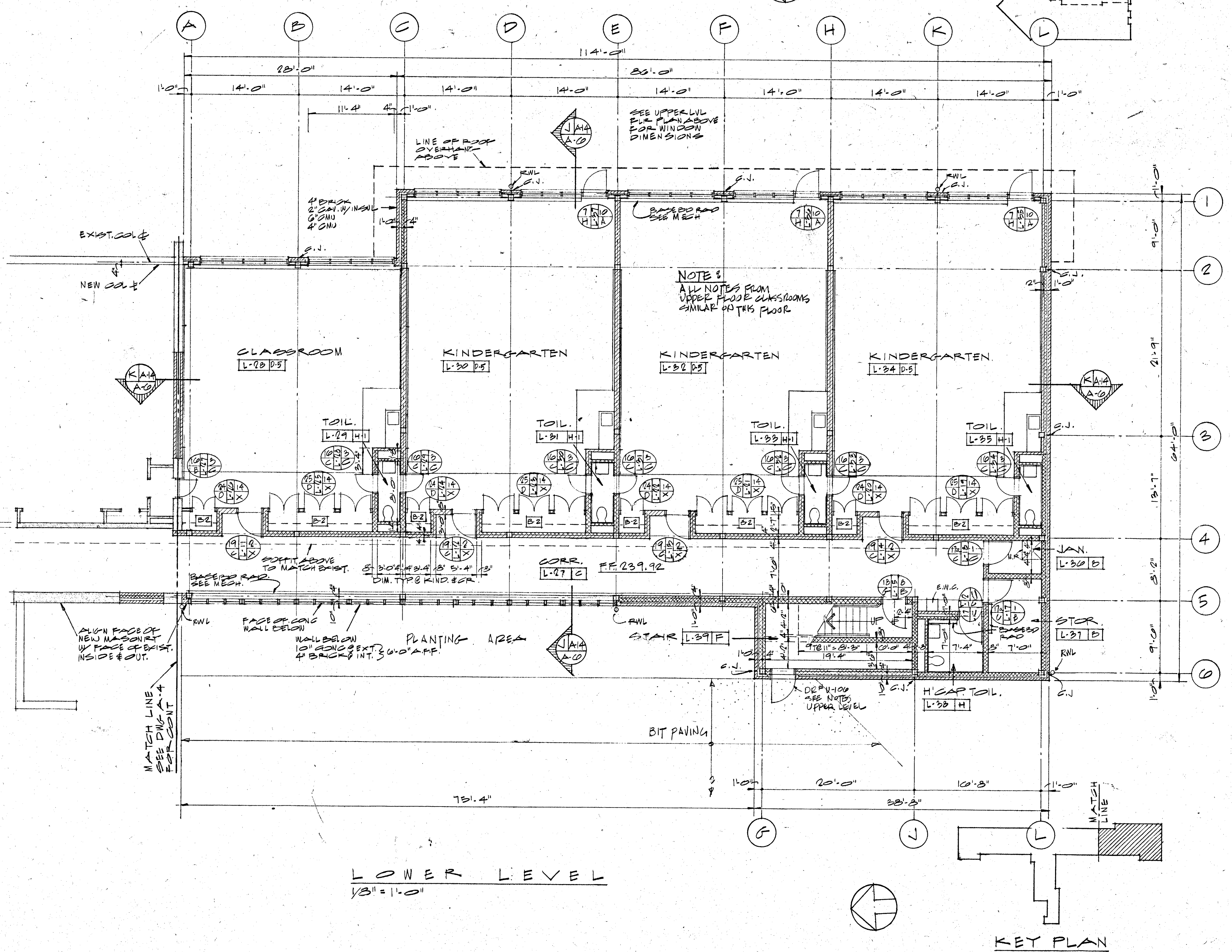
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ROOF PLAN
1/8" = 1'-0"



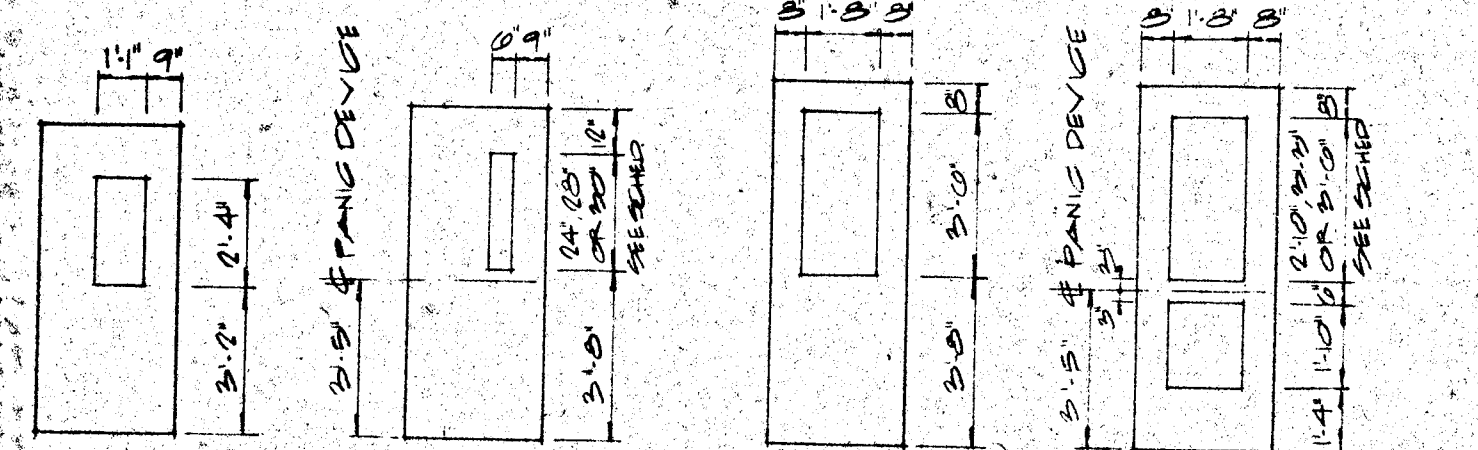
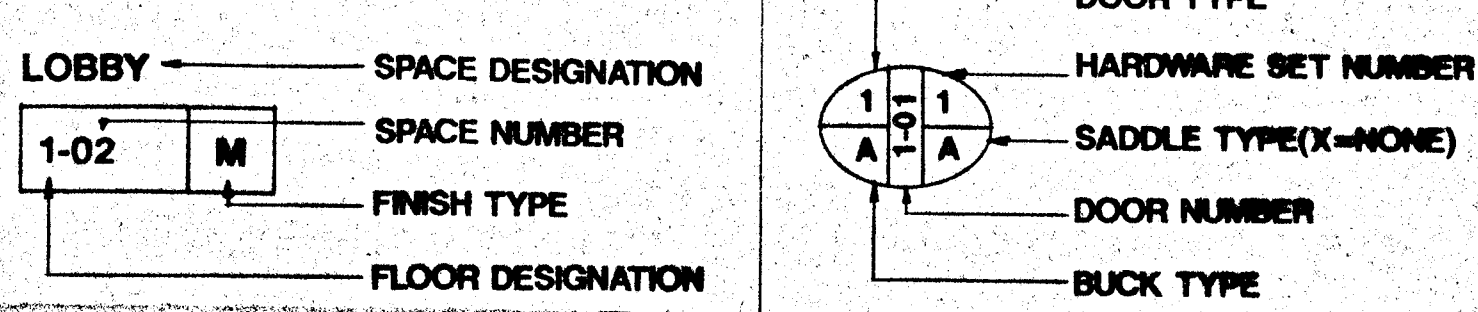
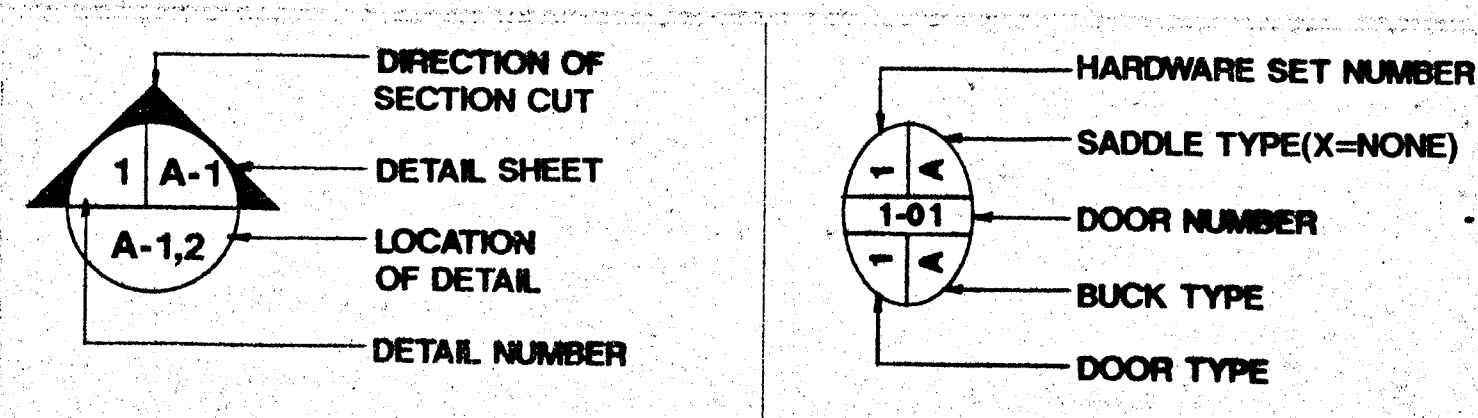
UPPER LEVEL
1/8" = 1'-0"



LOWER LEVEL
1/8" = 1'-0"

LEGEND

	EXIST WALLS TO REMAIN		ROUGH WOOD, BLOCKING
	EXIST WALLS TO BE REMOVED		FINISHED WOOD
	GYPSUM WALL BOARD		FIBERGLASS BATT INSUL.
	CUT NEW OPENING IN EXISTING MASONRY WALL		RIGID FOAM BOARD INSUL.
	EARTH		2" FOIL FACED FIRE PROTECTIVE INSUL.
	COMPACTED FILL OR GRAVEL		CAULKING (LARGE SCALE)
	CONCRETE (SECTION)		CERAMIC OR QUARRY TILE
	CONCRETE (ELEVATION)		ACOUSTICAL TILE (SECTION)
	CONCRETE MASONRY		+0.00 NEW SPOT ELEVATION
	REINFC. CONCRETE MASONRY		+0.00 EXISTING SPOT ELEVATIONS
	BRICK (SECTION)		NEW CONTOURS
	BRICK (ELEVATION)		EXISTING CONTOURS
	METAL (LARGE SCALE)		ⓐ COLUMN NUMBER
	METAL (SMALL SCALE)		FINISHED FLR. SLABS TOP OF STEEL, WORKING PTS.



DOOR ELEVATIONS
(DOORS WITH VISION PANELS)

NOTE: ALL INTERIOR VISION PANELS AND EXTERIOR DRYSW. VISION PANELS SHALL HAVE 1/4" TEMPERED GLASS

DOOR SCHEDULE

TYPE	MAT.	LEAF	WIDTH	HEIGHT	V.P. (W/O)	LABEL	REMARKS
1	H.M.	1	3'-0"	7'-0"	---	SHR A	---
2	H.M.	1	3'-0"	7'-0"	---	45M C	---
3	H.M.	1	3'-0"	7'-0"	---	45M B	---
4	H.M.	1	3'-0"	7'-0"	6'x 30"	45M C	---
5	H.M.	1	3'-0"	7'-0"	---	1HR B	---
6	H.M.	1	3'-0"	7'-0"	1'-8"x3'-10"	---	COORD. DR HT W/ WINDOW SECTIONS. ADV. TOP V.P. HT
7	H.M.	1	3'-0"	7'-0"	1'-8"x3'-6"	---	---
8	H.M.	1	3'-0"	7'-0"	1'-8"x3'-10"	---	---
9	H.M.	1	3'-0"	7'-0"	6'x 30"	45M C	---
10	H.M.	2	3'-0"	7'-0"	6'x 28"	---	---
11	H.M.	2	3'-0"	7'-0"	---	1HR B	---
12	H.M.	2	3'-0"	7'-0"	1'-8"x3'-10"	---	COORD. DR HT W/ WINDOW SECTIONS. ADV. TOP V.P. HT
13	H.M.	2	3'-0"	7'-0"	---	---	---
14	H.M.	2	3'-0"	7'-0"	1'-8"x3'-6"	---	---
15	WD.	1	2'-8"	6'-8"	---	1HR B	---
16	WD.	1	2'-4"	6'-8"	---	1HR B	---
17	WD.	1	3'-0"	6'-8"	---	45M C	---
18	WD.	1	3'-0"	6'-8"	6'x 24"	45M C	---
19	WD.	1	3'-0"	6'-8"	1'-1"x 2'-4"	45M C	---
20	WD.	1	3'-0"	7'-0"	6'x 28"	45M C	---
21	WD.	1	3'-0"	7'-0"	---	45M C	---
22	WD.	1	3'-0"	7'-0"	6'x 30"	45M C	---
23	WD.	1	3'-0"	7'-0"	1'-8"x3'-10"	---	---
24	WD.	2	1'-8"	6'-8"	---	---	---
25	WD.	6	2'-0"	6'-8"	---	---	3 DR. OPENINGS 2 DRG. PER OP'NG
26	WD.	2	3'-6"	6'-8"	6'x 24"	45M C	VERIFY CORR. WIDTH
27	WD.	2	2'-6"	7'-0"	6'x 24"	45M C	---
28	WD.	2	3'-0"	7'-0"	---	1HR B	---
29	WD.	2	3'-0"	7'-0"	6'x 30"	45M C	---
30	WD.	2	3'-0"	7'-0"	1'-8"x3'-10"	---	---
31	WD.	2	4'-0"	7'-0"	6'x 30"	45M C	---
32	HM	1	6'-8"	6'-8"	---	1HR B	VERIFY VERT. BY EXIST. H.M.

NOTES:

- VERIFY EXISTING DOOR FRAME SIZES WHERE EXISTING FRAMES ARE TO BE REUSED. VERIFY CUTOUPS.
- VERIFY EXISTING OPENINGS AND WALL THICKNESS.
- ALL DOORS SHALL BE 1 3/4" THICK.
- WHERE DOOR CLOSERS ARE OMITTED PROVIDE EQUIVALENT LABEL CONSTRUCTION.
- ** DENOTES EXISTING DOOR & BUCK TYPES & HARDWARE SET. ALTER & REPAIR DOORS & FRAMES TO RECEIVE NEW HARDWARE & THRESHOLD.

SADDLE TYPES

- METAL THRESHOLD TYPE A (EXTERIOR DOORS)
- METAL THRESHOLD TYPE B (INTERIOR DOORS)
- SLATE THRESHOLD
- METAL CARPET STRIP
- EXISTING
- METAL CARPET SEPARATOR
- VINYL REINFORC. STRIP

FINISH SCHEDULE

TYPE	FLOOR	BASE	WALL	CEILING	REMARKS
A	CONC.	---	EXP. CHU	GWB	INTEGRAL HARDENER ON CONC. 2 LAYERS 5/8" ONB ON MTL. FRAMING & OUTDOOR STOR U-44 CIG.
A-1	CONC.	VINYL	CHU	ACT	INTEGRAL HARDENER ON CONC.
B	RESILIENT FLOORING (RESIL.)	VINYL	CHU	ACT	CLG & VCT U-05 SHALL BE 2 LAYERS 5/8" ONB ON MTL. FRAMING
B-1	RESIL.	VINYL	CHU/GWB	ACT	NEW ONB & WEST WALLS OF STOR U-65 & U-66.
B-2	RESIL.	VINYL	CHU/GWB	ACT	GWB ABOVE & BELOW H.M. & GLASS VISION PANELS & WOOD U-20 WALLS.
B-3	RESIL.	VINYL	CHU/EXIST CHU	ACT	---
B-4	RESIL.	VINYL	BRICK/EXIST BRICK	ACT	EXIST WOOD PANELING & EAST WALL OF RTY U-51.
C	VCT	VINYL	BRICK	ACT	GWB SOFFIT & FASCIA & EAST SIDE OF OR HING. COR. SEE REFLECTED CEILING PLAN.
D	CARPET	VINYL	BRICK	ACT	ONE CLG & SET THREADS & RISERS AT STAIR BETWEEN UPPER & LOWER LOBBY.
D-1	CARPET	VINYL	BRICK/EXIST BRICK	ACT	EXIST WOOD PANELING & WEST WALL MUSIC U-56
D-2	CARPET	VINYL	CHU	ACT	GWB SOFFIT & NORTH WALL OF STOR U-65. SEE REFLECTED CEILING PLAN.
D-3	CARPET	VINYL	CHU/EXIST CHU	ACT	---
D-4	CARPET	VINYL	CHU/GWB	ACT	SEE REFLECTED CEILING PLAN FOR ONB & LIBRARY U-31 CIG.
D-5	CARPET	VINYL	BRICK/GWB	ACT	GWB & EAST WALLS OF CLASSROOMS & WEST WALLS ABOVE & BETWEEN CLOSET DOORS
E	ENTRY MAT	VINYL	BRICK	ACT	EXIST BRICK & EAST WALL OF VEST. U-50.
F	RUBBER STUDDED TILE (RST)	VINYL	CHU	ACT	---
F-1	RST	EXIST VCT	EXIST	EXIST	NEW RST @ THREADS & RISERS @ STAIR NO. 1.
G	QUARRY TILE (QT)	QT	---	ACT	GWB WALLS ABOVE WALK-IN REFRIG. & FREEZER & KITCHEN
G-1	QT	QT	---	ACT	SEE REF. CIG. PLAN FOR ONB @ CAFETERIA U-34 CIG.
H	CERAMIC TILE (CT)	CT	---	ACT	---
H-1	CT	CT	---	GWB	---
J	GYMNASIUM FLOORING	VINYL	CHU/NO PANEL/EXIST CHU & NO PANELING	TECUM/EXIST TECUM	NEW WD PANELING TO MATCH EXIST.
K	EXIST	VINYL	EXIST	---	NEW BRICK WALL & WEST END OF RAMP U-76. SEE FLR PLAN
K-1	EXIST	VINYL	EXIST	---	NEW VINYL BASE WHERE NONE EXISTS.
K-2	EXIST	VINYL	BRICK/EXIST BRICK	---	EXIST CLG TO REMAIN @ STAGE U-62. ENCLOSE EXIST STAGE & CIG BY 5/8" ONB ON MTL FRAMING.
K-3	EXIST	VINYL	CHU/EXIST CHU	---	EXIST CLG TO REMAIN @ STAGE U-62. ENCLOSE EXIST STAGE & CIG BY 5/8" ONB ON MTL FRAMING.
K-4	EXIST	VINYL	GWB/EXIST BRICK	---	GWB & EAST WALLS OF EXIST CLASSROOMS.
K-5	EXIST	EXIST	EXIST	---	PROVIDE 2 LAYERS 5/8" ONB @ OUTDOOR STOR U-03 CIG.

GENERAL NOTE:

FIN. FLR. ELEVATIONS ON FLR. PLANS ARE BASED ON FIN. FLR. ELEV. ON SITE SURVEY. FIN. FLR. ELEV. ON EXIST. FLR. PLAN IS TO BE USED FOR FIN. FLR. ELEV. TO ACCOMMODATE FLR. FINISHES. NEW FIN. FLR. ELEV. SHALL MATCH EXIST. ADJACENT FIN. FLR. ELEVATIONS.

- USE SMOOTH FACED ACOUSTICAL TILE IN TOILETS, KITCHEN, AND OTHER HIGH HUMIDITY AREAS.
- PAINT EXPOSED CONSTRUCTION INCLUDING ALL FERROUS METALS, DUCTWORK, PIPING AND PIPE INSULATION, CONDENS. EQUIPMENT AND INCIDENTAL SUPPORTS AND HANGERS. SEE SPECIFICATIONS FOR DETAILED PAINTING REQUIREMENTS.
- PAINT ALL EXPOSED CHU AND GNB UNLESS NOTED OTHERWISE.
- EXISTING FINISHES TO REMAIN UNLESS NOTED OTHERWISE.
- PAINT ALL EXISTING WOOD PANELING, WOOD TRIM, ETC. AT RATED SPACES W/ SHOWSCENT PAINT.
- PATCH AND/OR REPAIR ALL EXISTING SURFACES AFFECTED BY DEMOLITION OR NEW CONSTRUCTION TO MATCH ADJACENT SURFACES.

CARLIN POZZI-OHIN ARCHITECTS, P.C.
THREE LINCOLN STREET
NEW HAVEN, CONNECTICUT

scale: 1/8" = 1'-0"
date: 1/25/87

drawn: P.P.P.
checked: DC
approved: P.P.P.

PROJECT NO. 870191A01

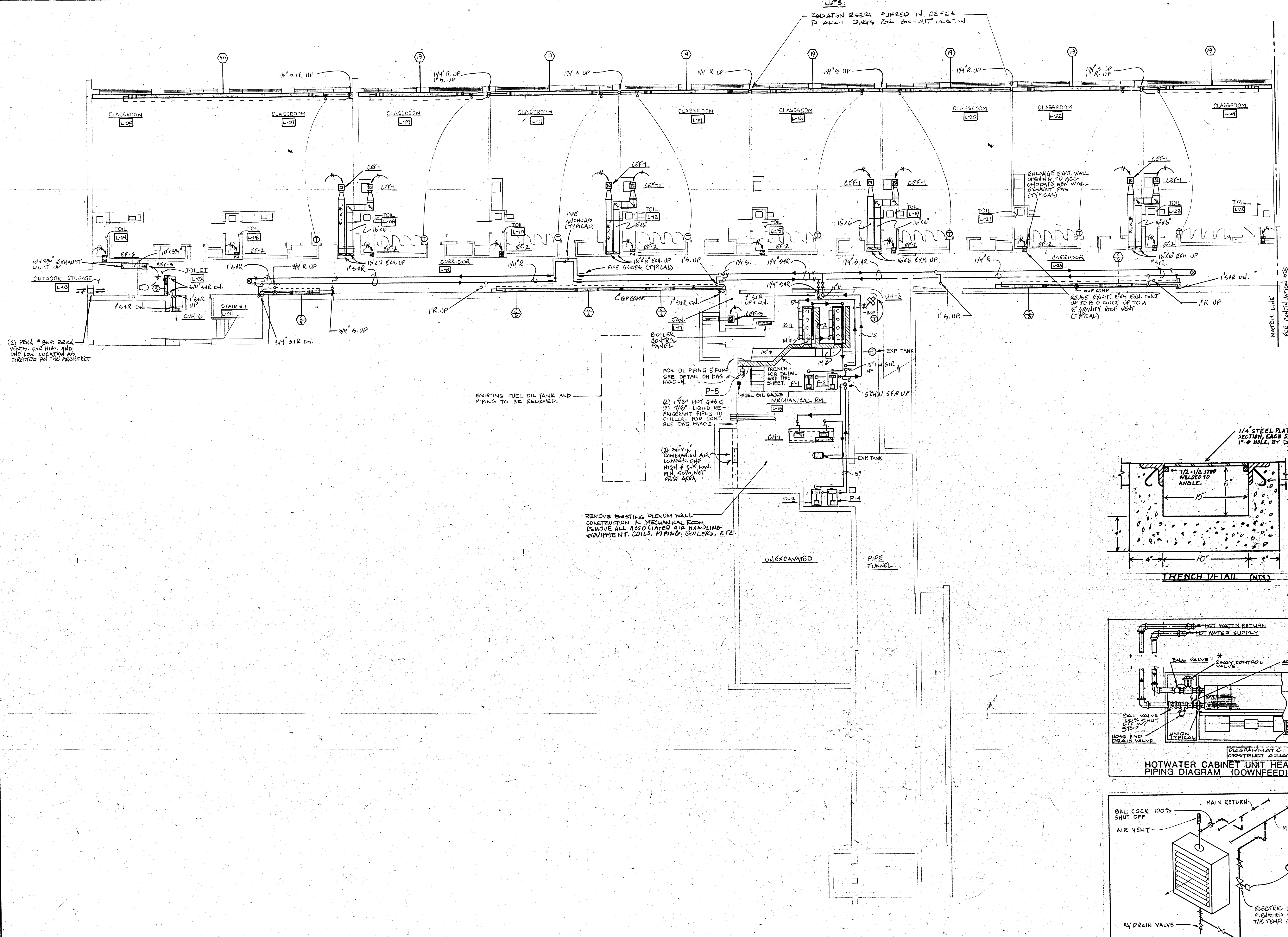
NATHAN HALE ELEMENTARY SCHOOL
ADDITIONS, ALTERATIONS & CODE COMPLIANCE

CLASSROOM WING ADDITION
UPPER & LOWER LEVEL
ROOF & FLOOR PLANS

CONNECTICUT

drawing no. **A-6**

DATE: 1/25/87



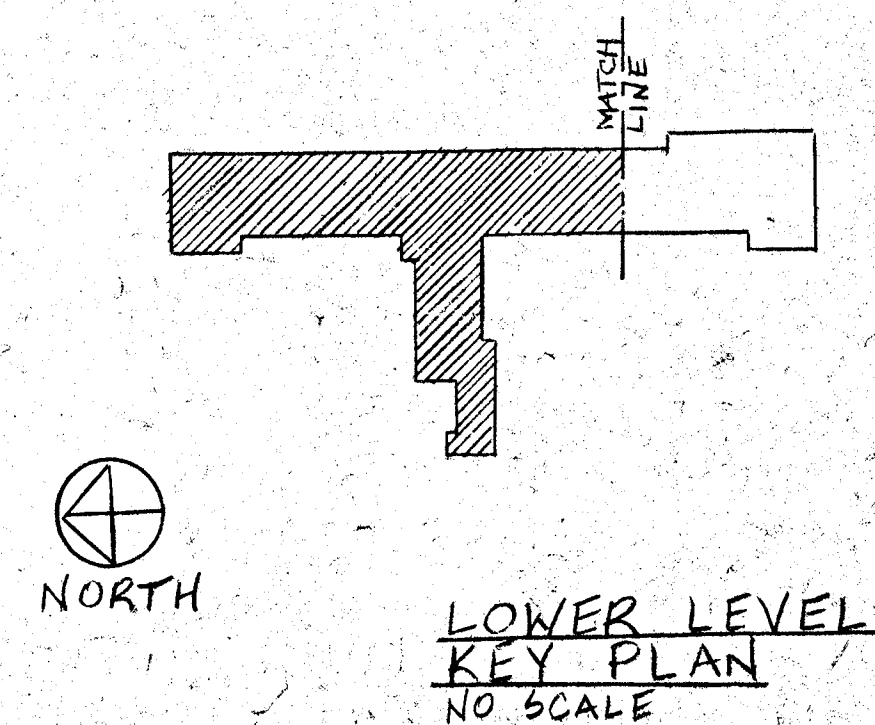
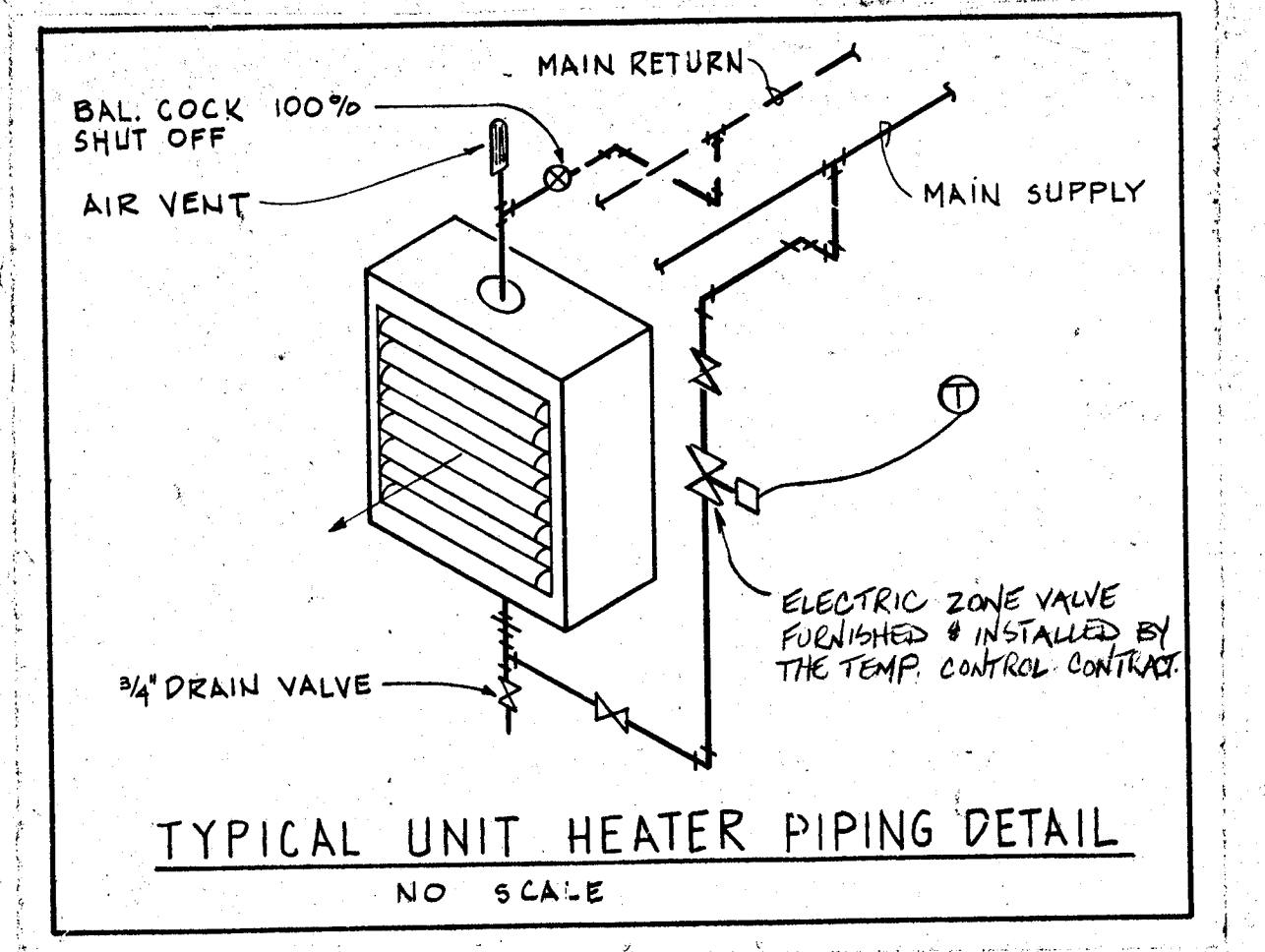
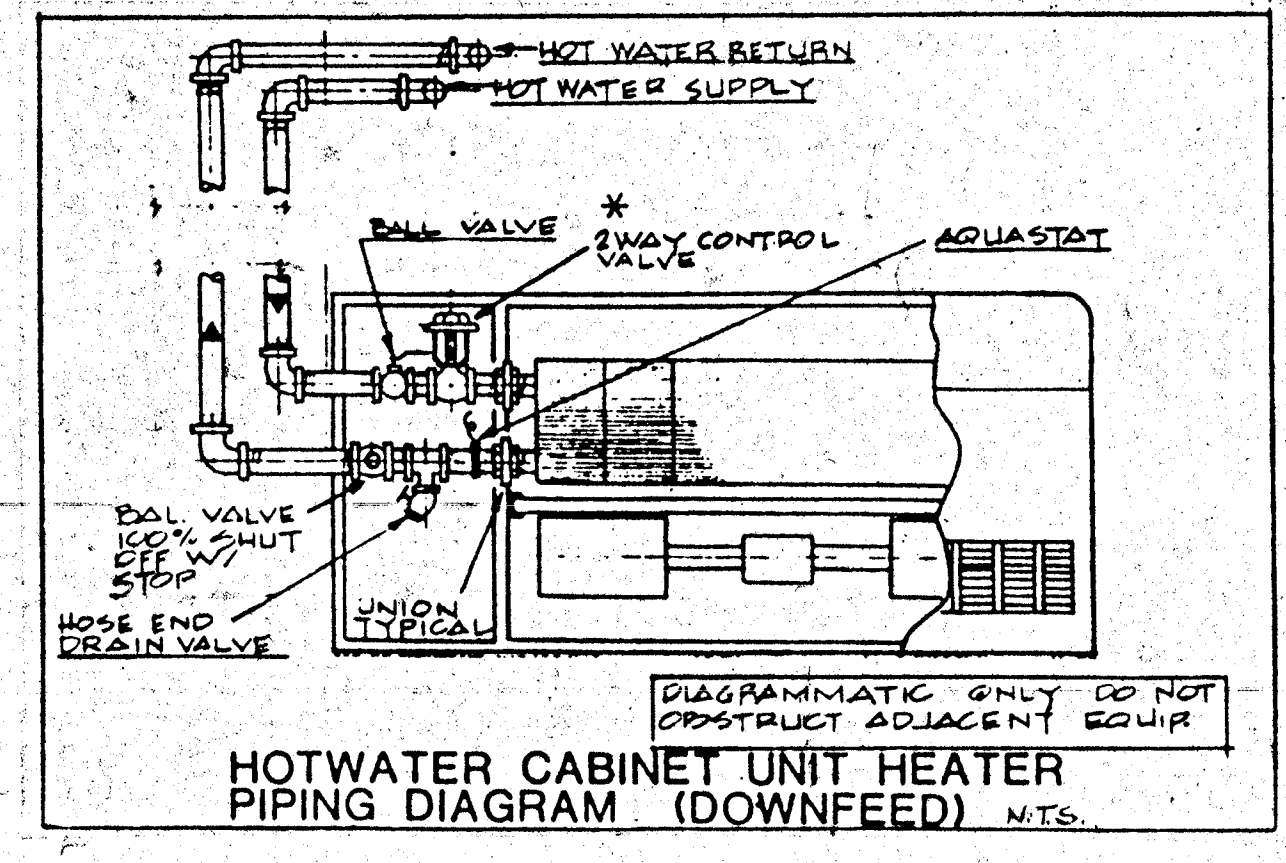
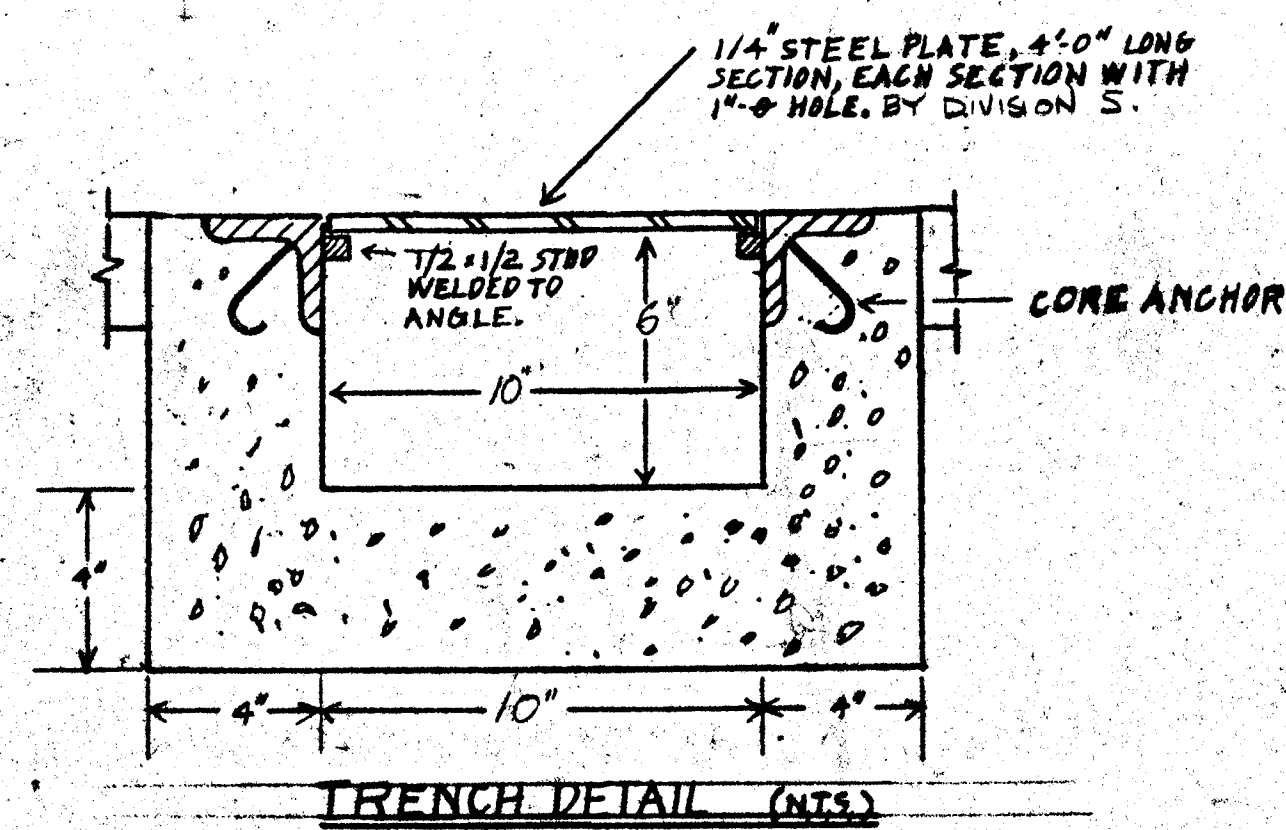
LOWER LEVEL
SCALE: 1/8" = 1'-0"

FOR THE EXACT LOCATION OF EQUIPMENT
LOCATED IN THE CEILING, REFER TO THE
ARCHITECTURAL REFLECTED CEILING PLANS

NOTE:
REMOVE EXISTING FUEL OIL TANK(S) IN MANNER
APPROVED BY MERIDEN FIRE MARSHAL.

All demolition and removal of existing heating equipment, piping, etc.
to be by General Contractor under direction of the appropriate trade
contractor. Removal to include all existing systems, except as speci-
fically noted on Drawings for reuse. Generally, the entire heating
system is to be removed.

The entire chilled water system, including chiller, chilled water
pumps, condensing unit, chilled water coils, chilled water piping,
chilled water pipe insulation, and associated control components shall
be SUPPLEMENTAL BID NO. 1.



DRAWING NO. HVAC - 1	PROJECT NATHAN HALE ELEMENTARY SCHOOL ADDITIONS, ALTERATIONS & CODE COMPLIANCE	ARCHITECT CARLIN-POZZI-CHIN ARCHITECTS, P.C. THREE LINCOLN STREET NEW HAVEN, CONNECTICUT	DATE 1-25-91	DATE DESCRIPTION 1-25-91
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AIR HANDLING UNIT SCHEDULE

SYMBOL	MANUFACTURER & MODEL	BLOWER				TOTAL COOLING (BTUH)	COIL TYPE	COOLING				HEATING				AREA SERVED	T.S.P.	REMARKS													
		SUPPLY CFM	ESP	RA	FAN MOTOR			ENT (°F)	LAT (°F)	COIL	APD	ENT (°F)	LAT (°F)	COIL	APD				ENT (°F)	LAT (°F)	COIL	APD									
AHU-1	TRANE 42E 6A	3035	.40	507	208-3-60 1.5	90,000	WL	80°	67°	58.0	57.6	110DF	4	.50	15.2	45°	55°	4.0'	105,300	58°	90°	105SF	1	.14"	10.5	180°	160°	8'	INTERIOR OFFICES	1.22'	HEATING COIL TRANE TYPE WC
AHU-2	TRANE 42E 6A	2200	.50	280	208-3-60 1.5	57,700	WL	79°	66°	53.8	57.7	110DF	4	.26	11.5	45°	55°	1.7'	66,800	62°	90°	80SF	1	.05"	6.7	180°	160°	3'	PERMETER OFFICES	0.91'	
AHU-3	TRANE 42E 21A	10,485	.40	2750	208-3-60 5.0	355,500	WL	81°	68°	57.6	56.3	110DF	4	.43	22.2	45°	55°	16.7'	432,100	52°	90°	104SF	1	.12"	43.2	180°	160°	9.4'	AUDITORIUM 151M	1.16'	ECONOMIZER
AHU-4	TRANE 42E 3AW	1840	.30	300	208-3-60 1.75	128,200	WL	80°	67°	58.4	57.8	110DF	4	.27	10.8	45°	55°	1.4'	61,900	59°	90°	80SF	1	.07"	6.2	180°	160°	3'	MUSIC RM.	0.87'	
AHU-5	TRANE 42E 3A	1600	.30	300	208-3-60 1.75	140,300	WL	80°	67°	51.2	57.9	110DF	8	.67	10.2	45°	55°	1.2'	57,300	57°	90°	87SF	1	.16"	5.7	180°	160°	2'	ART RM.	1.31'	
AHU-6	TRANE 42E 12A	6280	.40	2260	208-3-60 3.0	282,800	WL	82°	69°	55.1	54.3	110DF	6	.80	20.5	45°	55°	7.2'	305,200	45°	90°	105SF	1	.14"	30.5	180°	160°	6'	CAFETERIA LOUNGE	1.52'	ECONOMIZER
AHU-7	TRANE 42E 6A	3800	.50	310	208-3-60 1.5	96,800	WL	79°	66°	53.9	57.9	110DF	4	.40	19.4	45°	55°	1.4'	106,700	64°	90°	105SF	1	.13"	10.7	180°	160°	2'	LIBRARY	1.19'	
AHU-8	TRANE 42E 12A	5970	.50	475	208-3-60 2.0	133,300	WL	79°	66°	60.3	58.6	107DF	4	1.41	28.0	45°	55°	1.5'	167,600	54°	90°	104SF	1	.12"	16.7	180°	160°	5'	LOBBY OFFICES	1.19'	ECONOMIZER

CONDENSER UNIT SCHEDULE

SYMBOL	MANUFACTURER & MODEL	CAPACITY (TONS)	CONDENSER FAN					COMPRESSOR			LIQUID AND GAS LINE	ELECTRICAL	REFRIGERANT	REMARKS
			EDBT	EWBT	QTY.	MCA	FLA	QTY.	RA	LRA				
CU-1	TRANE CAUC-C60	72.9	95°	—	0	34	41 EA	—	—	—	2 3/8" LIQUID 3 1/2" GAS	208V-60-3	R-22	3400 LBS.

BOILER SCHEDULE

SYMBOL	MANUFACTURER & MODEL	AGA INPUT (BTUH)	OUTPUT (BTUH)	NET I-B-R RATING (BTUH)	NUMBER OF MODULES	AGA INPUT (CFM)	FIRING RATE (GPM)	WEIGHT	REMARKS
B1A-B2	HYDROTHERM MDP-1540	1,540,000	1,168,000	1,015,000	4	1540	11.0	2880	

PUMP SCHEDULE

SYMBOL	MANUFACTURER & MODEL	GPM	HEAD	RPM	HP	IMP Ø	ELECTRICAL	REMARKS
P1 & P2	TACO EB 500B	250	40'	1750	5	7.5"	208V-60-3	HOT WATER PUMPS
P-3 & P-4	TACO BB 400B	180	55'	1750	5	7.5"	208V-60-3	CHILLED WATER PUMPS
P-5	PREFERRED UTILITIES	1000	25 (GPM) (CO)PS	1725	1/4	N.A.	115V-60-1	OIL PUMP

CHILLER SCHEDULE

SYMBOL	MANUFACTURER & MODEL	ENT (°F)	LWT (°F)	TONS COOLING @ 95°/65°	NUMBER OF COMPRESSORS	RA	ELECTRICAL	KW	GPM	WEIGHT	WPD	MCA	REMARKS
CH-1	TRANE CAAC-C60R	55°	45°	74.8	2	17 EA	208V-60-3	81.4	180	4352 LBS	13'	36.5	

FIN TUBE RADIATION SCHEDULE

SYMBOL	MANUFACTURER & MODEL	BTUH/FT	GPM	ENT (°F)	LWT (°F)	HEATING ELEMENT			ENCLOSURE		REMARKS	
						FIN/FT	TUBE	ROWS	FIN SIZE	DEPTH		HEIGHT
(X)	VULCAN LINOVECTOR DS	1160	1	180°	160°	60	1"	1	3/4" x 3/4"	4 1/4"	24"	
(Y)	VULCAN FLOORLINE FR	720	1	180°	160°	48	3/4"	1	2 3/4" x 3"	3 1/2"	10"	
(Z)	VULCAN LINOVECTOR DS	1540	1	180°	160°	60	1"	2	3/4" x 3/4"	5 1/2"	24"	

FAN SCHEDULE

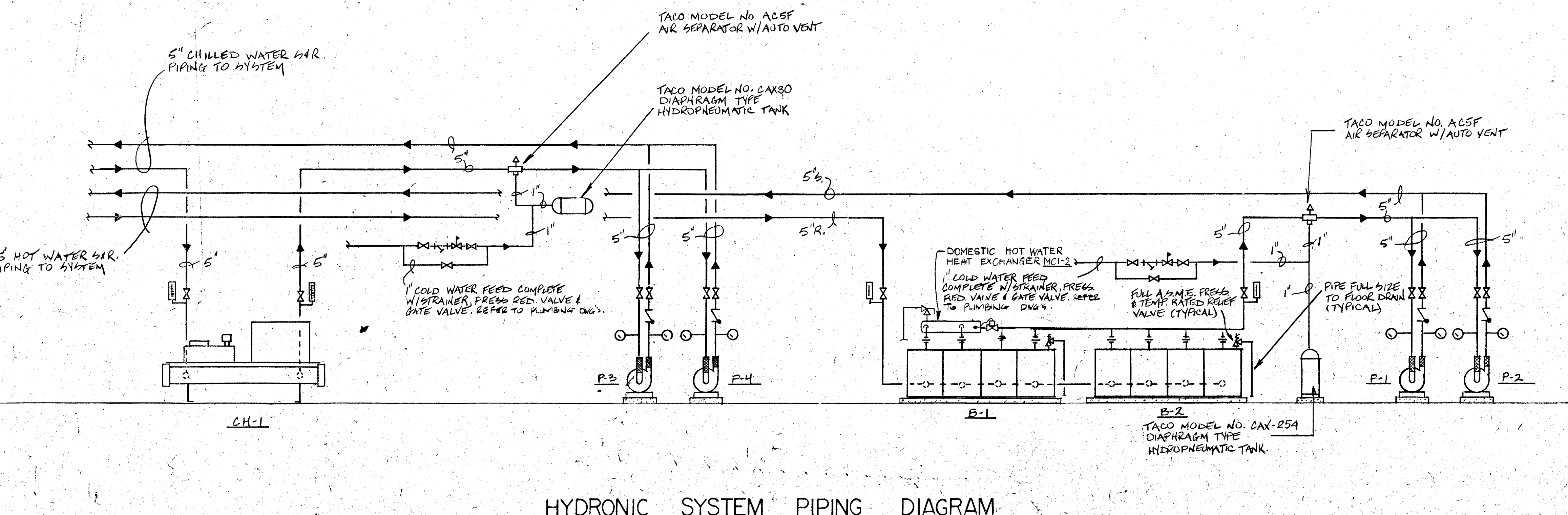
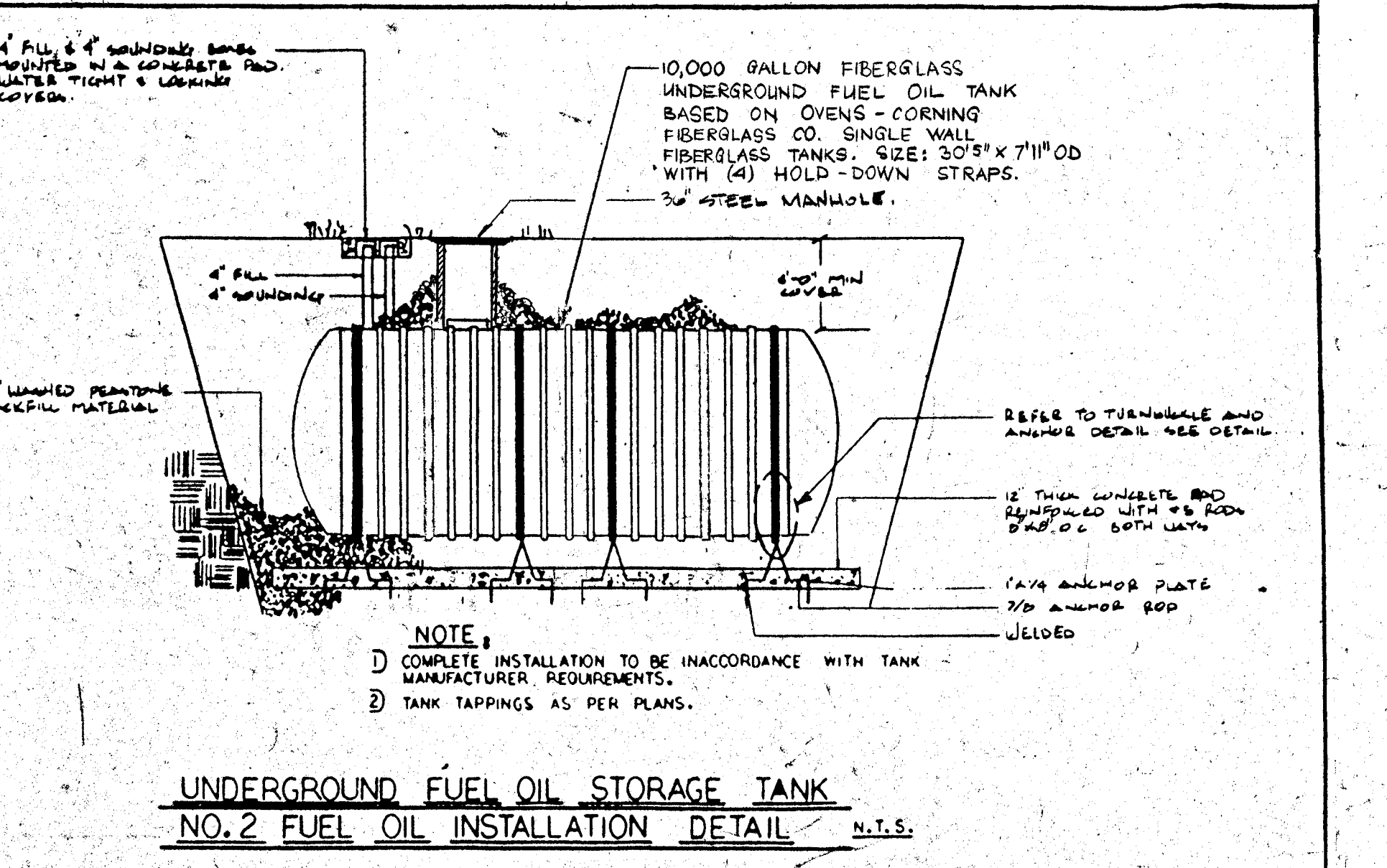
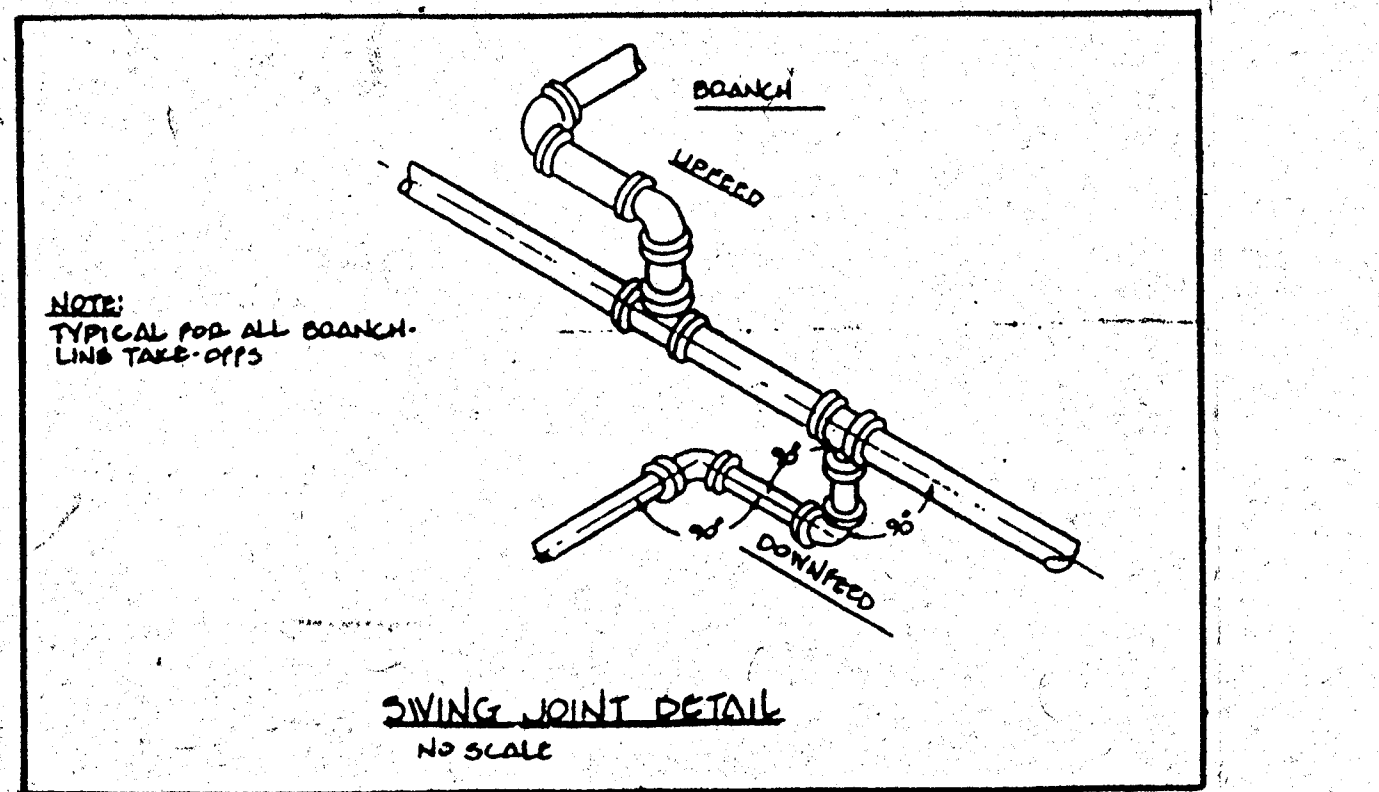
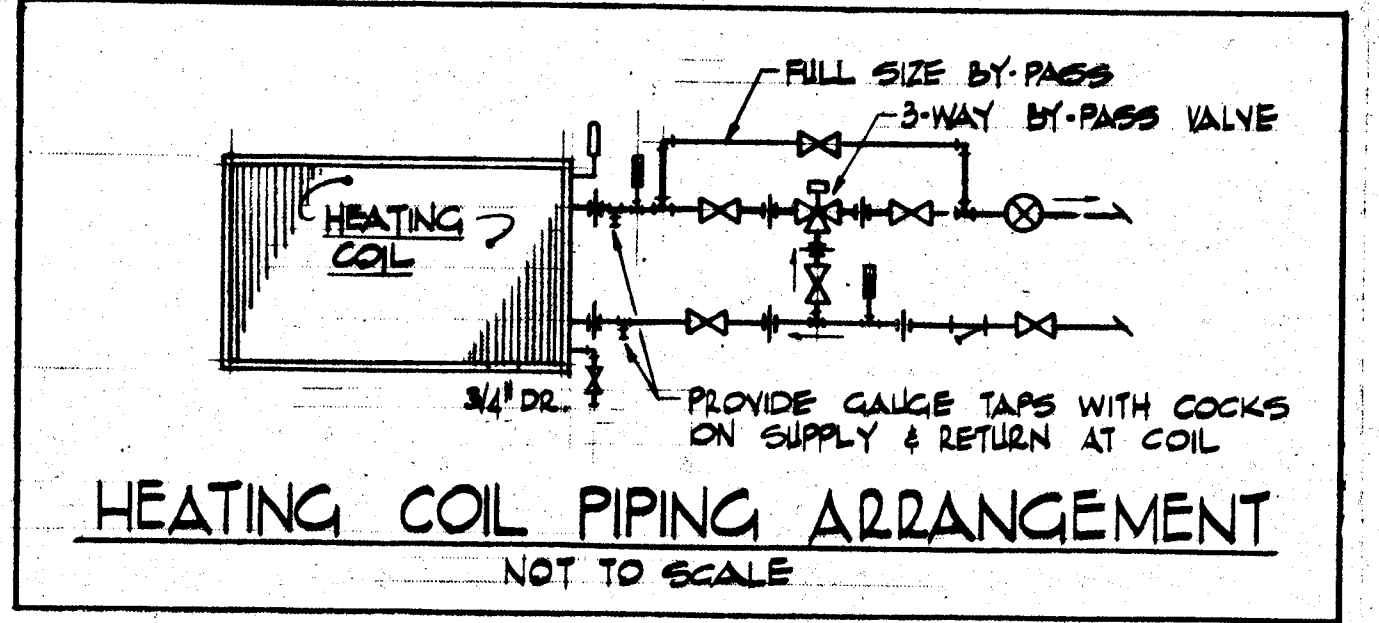
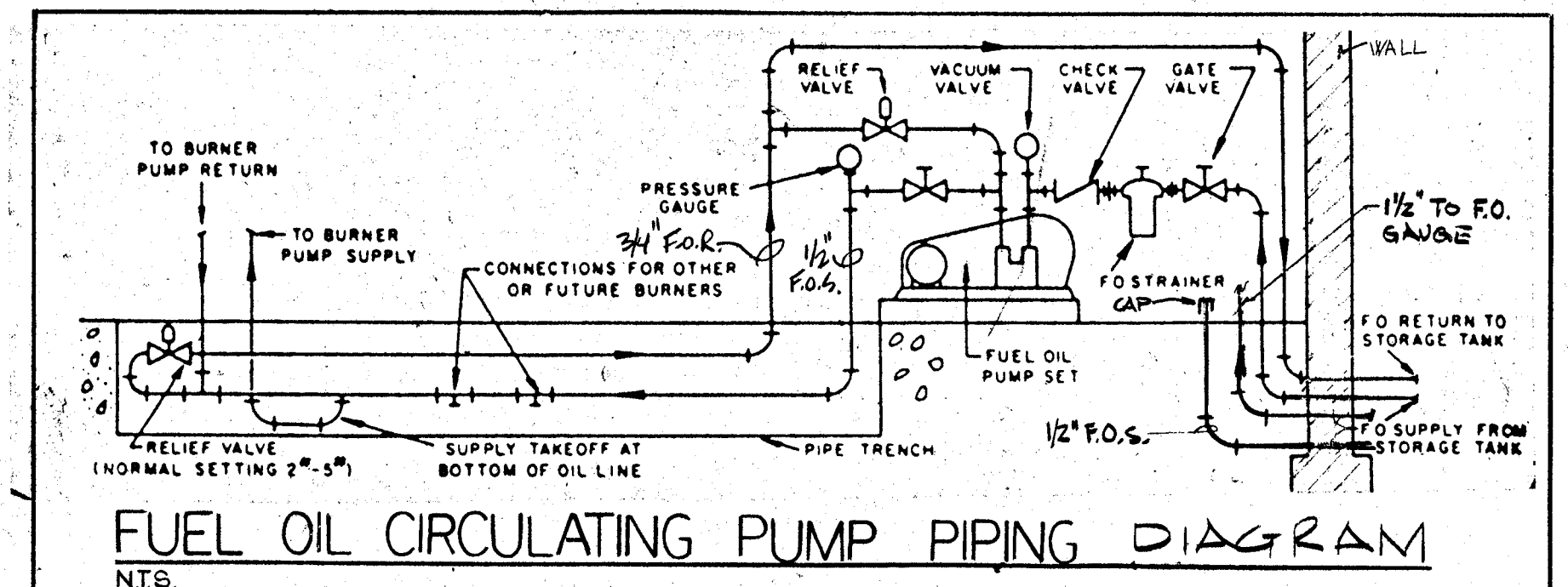
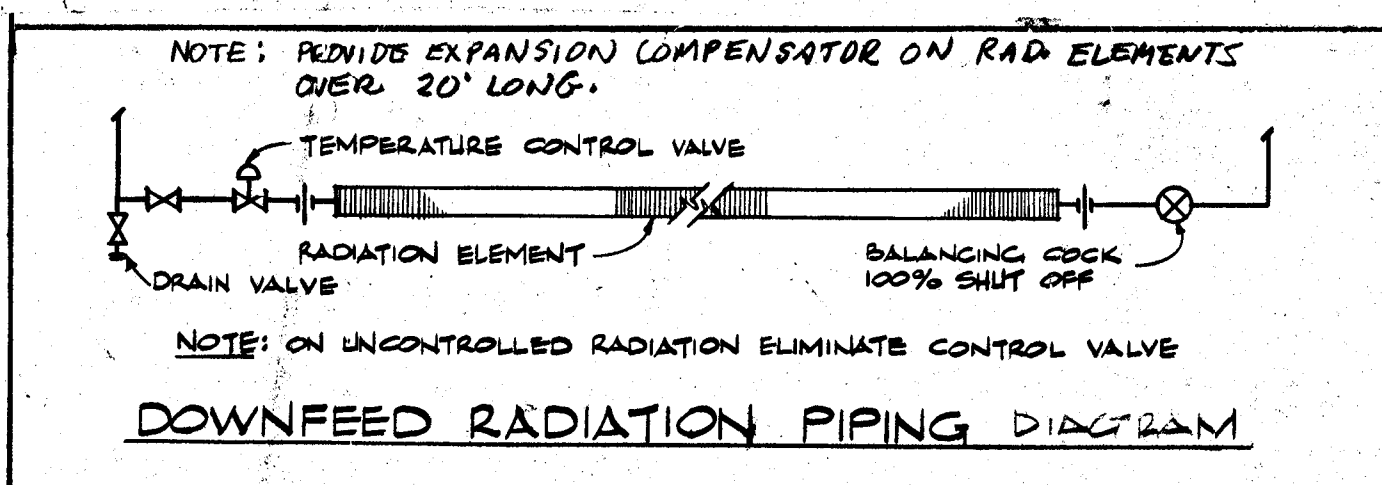
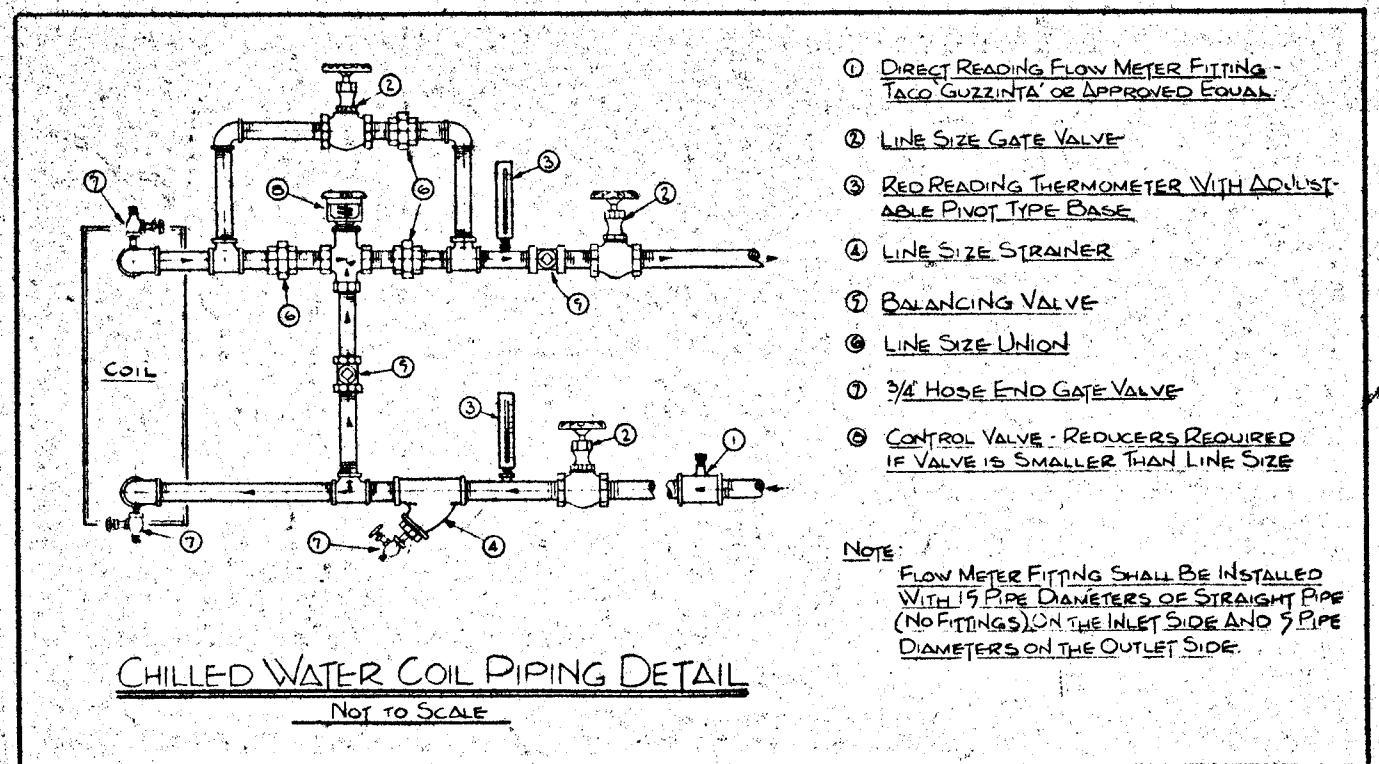
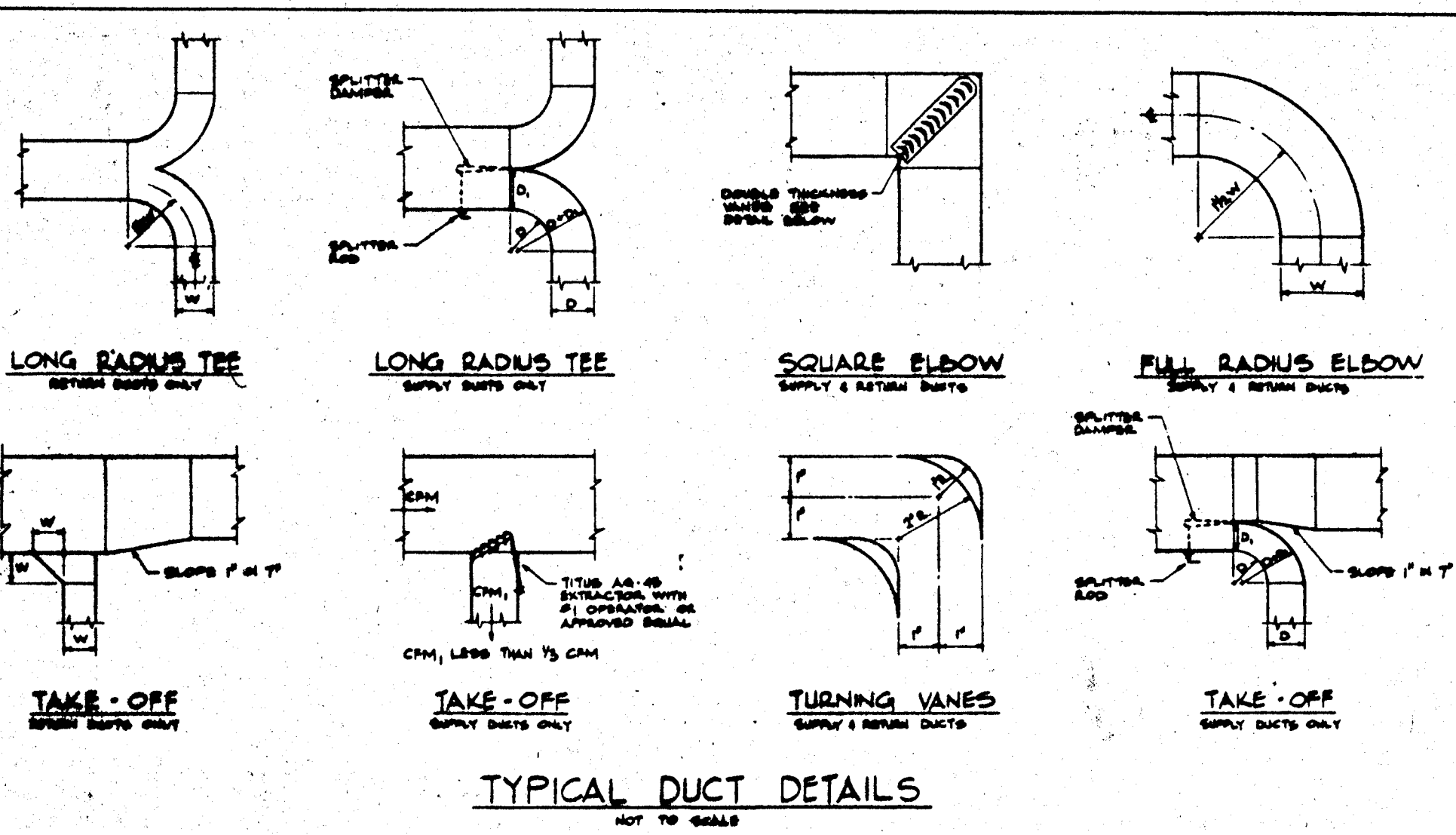
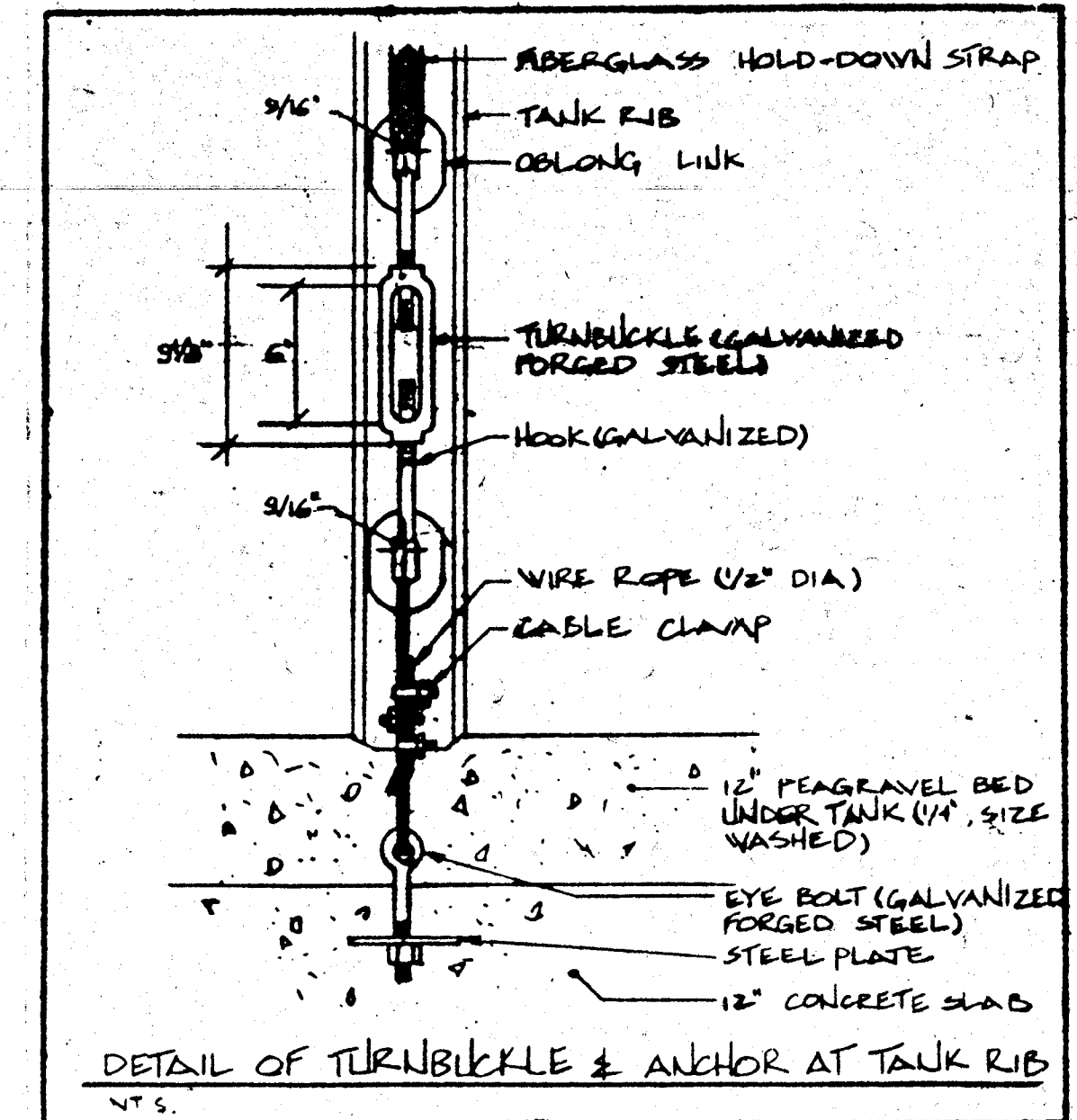
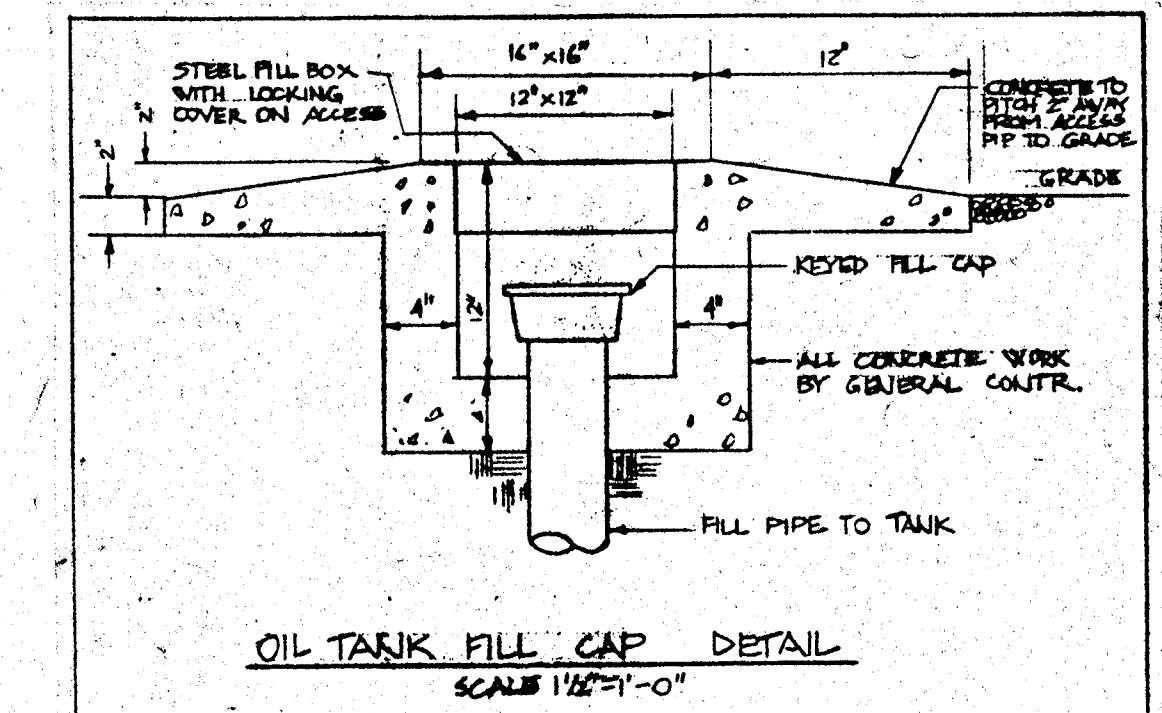
SYMBOL	MANUFACTURER & MODEL	CFM	ESP	RPM	ONES	WATTS	ELECTRICAL	CONTROLLED BY	REMARKS
CE-1	PENN ZEPHYR Z 101	460	.250	1050	4.9	239	115/110	WALL MOUNTED	BACKDRAFT DAMPERS SHALL BE OPERATED BY AIR TO PROVIDE POSITIVE CLOSURE WHEN FAN IS NOT OPERATING UNDER ALL WEATHER CONDITIONS TO WHICH THE ACCOMPANYING FAN IS SUBJECT.
EF-2	PENN ZEPHYR ZT	85	.250	1110	2.8	48	115/110	LIGHT SWITCH	WALL MOUNTED
CE-3	PENN ZEPHYR ZT	85	.250	1110	2.8	48	115/110	WALL MOUNTED	WALL MOUNTED
CE-4	PENN ZEPHYR ZT	100	.275	1240	3.4	105	115/110	WALL MOUNTED	WALL MOUNTED
EF-5	PENN DYNAPAN LC-BQ	510	.125	1725	4.4	176 HP	115/110	REV. ACT. TSTAT	ATTIC VENTILATION FAN
EF-7B	PENN DYNAPAN LC-BT	1085	.125	1725	6.4	18 HP	115/110	REV. ACT. TSTAT	ATTIC VENTILATION FAN
EF-6	PENN DYNAPAN LC-EN	240	.125	1000	2.2	112 HP	115/110	REV. ACT. TSTAT	ATTIC VENTILATION FAN
EF-12	PENN ZEPHYR Z-14	1450	0.125	880	5.7	173 HP	115/110	HOOD SWITCH	

CABINET UNIT HEATER / UNIT HEATER SCHEDULE

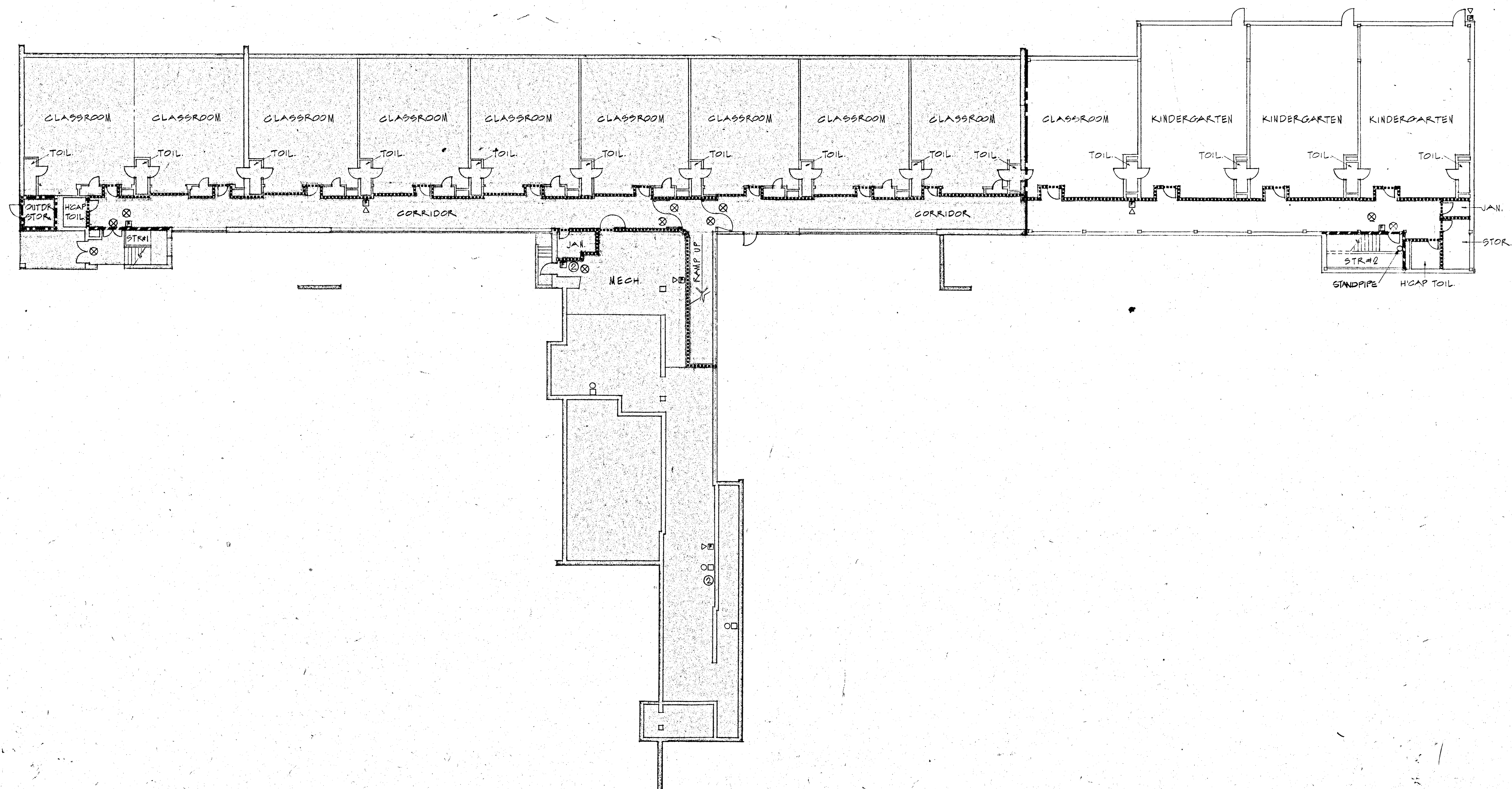
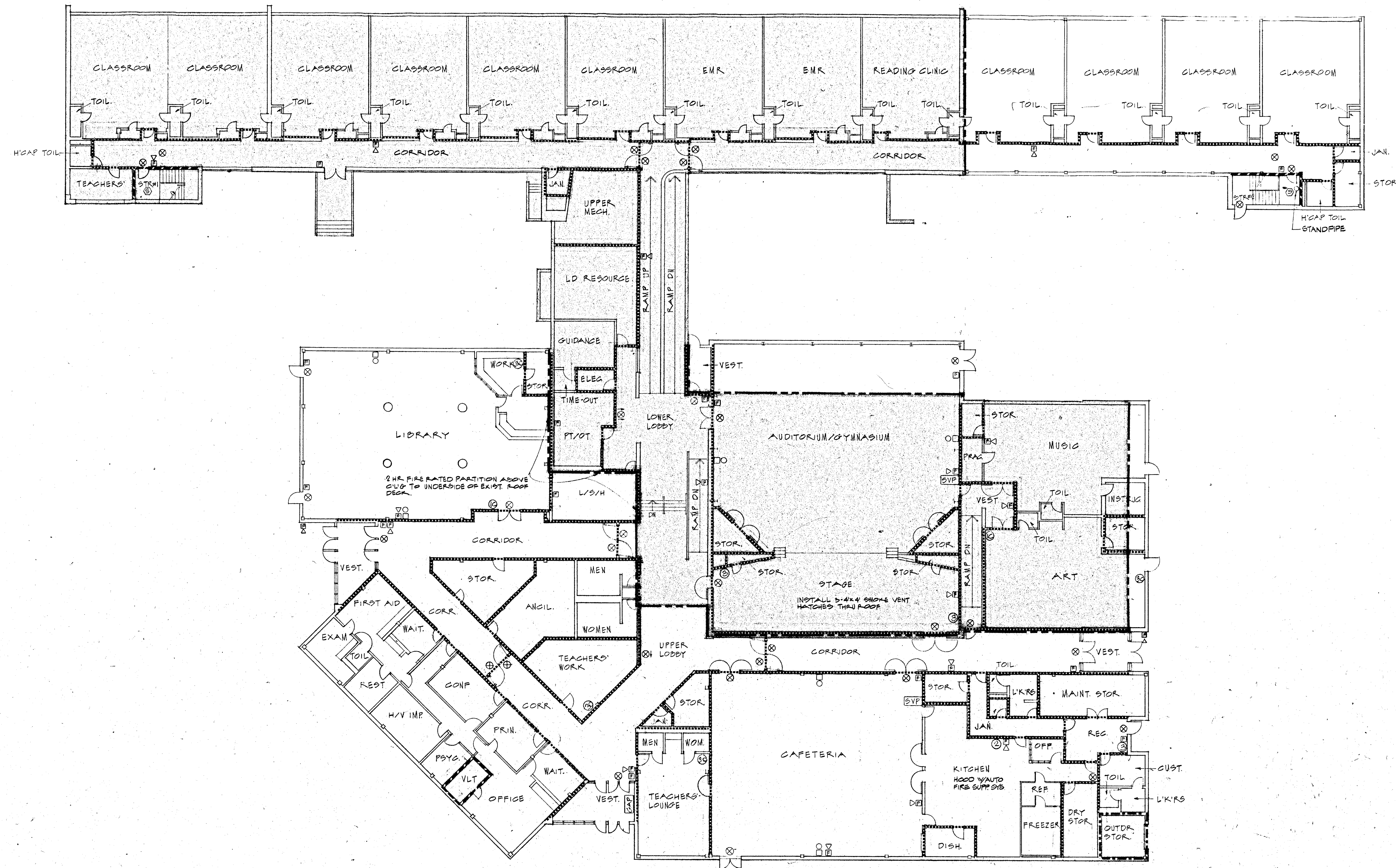
SYMBOL	MANUFACTURER & MODEL	CFM	RPM	HP	ELECTR.	BTUH-CAPACITY	GPM	ENT	LWT	EAT	LAT	WPD FT.	REMARKS
CUH-1	VULCAN COB-UNIT 2	250	1000	1/30	115-1-60	10,652	1.28	180°	160°	60°	99°	0.1'	
CUH-2	COB-UNIT 2	250	1000	1/30	115-1-60	10,652	1.28	180°	160°	60°	99°	0.1'	
CUH-3	COB-UNIT 3	330	1050	1/30	115-1-60	18,984	2.23	180°	160°	60°	113°	0.3'	
CUH-4	COB-UNIT 3	330	1050	1/30	115-1-60	18,984	2.23	180°	160°	60°	113°	0.3'	
UH-1	HY-18A	500	1550	1/30	115-1-60	15,769	2.00	180°	160°	60°	89°	2.2'	
UH-2	HY-18A	500	1550	1/30	115-1-60	15,769	2.00	180°	160°	60°	89°	2.2'	
CUH-5	BURNHAM DOORAC BD-50C	145	1000	—	115-1-60	10,000	2.00	180°	160°	60°	124°	0.1'	1.8 AMPS
CUH-6	BURNHAM DOORAC BD-50C	145	1000	—	115-1-60	10,000	2.00	180°	160°	60°	124°	0.1'	1.8 AMPS
CUH-7	VULCAN CR-50-UNIT 6	620	1050	1/20	115-1-60	38,054	4.43	180°	160°	60°	117°	0.9'	ARRANGEMENT 5B
UH-3	VULCAN HY-84	1400	1050	1/20	115-1-60	52,277	6.50	180°	160°	60°	94°	0.24'	

HVAC SYMBOL LIST

SYMBOL	DESCRIPTION
—○—	GATE VALVE
—○—	BALANCING COCK - 100% SHUT-OFF
C.S.D.	CEILING SUPPLY DIFFUSER
C.R.R.	CEILING RETURN REGISTER
S.S.R.	SIDEWALL SUPPLY REGISTER
S.R.R.	SIDEWALL RETURN REGISTER
O.A.	OUTDOOR AIR
H.W.	HOT WATER
CH.W.	CHILLED WATER
S.	SUPPLY
R.	RETURN
—○—	HOT WATER SUPPLY PIPING
—○—	HOT WATER RETURN PIPING
CH.W.S.	CHILLED WATER SUPPLY PIPING
CH.W.R.	CHILLED WATER RETURN PIPING
—○—	THERMOSTAT - 5'0" AFF
—○—	STRAINER
—○—	CHECK VALVE
—○—	UNION
—○—	THERMOMETER
—○—	VOLUME DAMPER
—○—	ACOUSTICALLY LINED DUCTWORK
—○—	RADIATION CONTROL VALVE (REMOTE TSTAT)
—○—	LENGTH OF TYPE 'X' RADIATION
—○—	RETURN OR EXHAUST AIR
—○—	PRESSURE REGULATING VALVE
—○—	RADIATION CONTROL VALVE (INTEGRAL TSTAT)
—○—	MOTORIZED DAMPER
F.O.S.	FUEL OIL SUPPLY PIPING
F.O.R.	FUEL OIL RETURN PIPING
F.O.V.	FUEL OIL VENT PIPING
F.O.G.	FUEL OIL GAUGE PIPING
—○—	REVERSE ACTING TSTAT SET AT 78°F - 7'0" AFF



CARLIN-POZZI-CHIN ARCHITECTS, P.C.
 consulting engineers
 800 cottage grove road
 bloomfield, ct 06002
NATHAN HALE ELEMENTARY SCHOOL
 ADDITIONS, ALTERATIONS & CCCE COMPLIANCE
 MERIDEN, CONNECTICUT
HVAC SCHEDULES AND DETAILS
 DRAWING NO. **HVAC-1-4**



BUILDING CODE NOTES

USER GROUP: E EDUCATION

CONSTRUCTION TYPE: 2C NON-COMBUSTIBLE, UNPROTECTED BUILDING 100% SPRINKLERED

HEIGHT: 3 ST. 50'; AREA: 28,400 S.F. INCLUDING BONUS

FIRE RESISTANCE PARTING OF STRUCTURAL ELEMENTS

STAIRS AND SHAFTS	2 HR
EXIT ACCESS CORRIDORS	1 HR
COLUMNS, GIRDERS & FRAMING	0 HR
FLOOR CONSTRUCTION INCLUDING BEAMS	0 HR
ROOF CONSTRUCTION INCLUDING BEAMS	0 HR

EGRESS CALCULATIONS

LENGTH OF EXIT ACCESS TRAVEL	200 FT
CAPACITY PER UNIT BROAD WIDTH	
STAIRWAYS	113 PERSONS
DOORS, CORRIDORS	150 PERSONS
OCCUPANT LOAD SECOND FLOOR = 325 PERSONS	3 UNITS
PROVIDED: 2 STAIRS @ 2 UNITS + 1 PR DOORS & 1 RAMP	

- LEGEND**
- 3 HOUR RATING
 - - - - 2 HOUR RATING; 1/2 HR. 'B' RATED DOORS.
 - 1 HOUR RATING BELOW FIRE RATED CEILINGS, SMOKE BARRIER TIGHT TO STRUCTURE ABOVE, 1/2 HR. 'C' OR 1 HR. 'B' RATED DOORS, EXCEPT 20 MIN. AT CLASSROOMS.
 - - - - 2 HOUR FIRE RATED PARTITION ABOVE CEILING TO UNDERSIDE OF EXISTING ROOF DECK, SEPARATING NEW FROM EXISTING.
 - [] EXTENT OF EXISTING CONSTRUCTION
 - [X] EXIT SIGN
 - [X] EXIT SIGN W/DIRECTION OF TRAVEL INDICATION
 - [] EMERGENCY LIGHT
 - [] FIRE HORN AND LIGHT
 - [] FIRE PULL STATION
 - [] TYPE
 - [] FIRE EXTINGUISHER
- FIRE EXTINGUISHER TYPES:**
1. PRESSURIZED WATER, ULC 2-A
 2. DRY CHEMICAL, NON-CONDUCTIVE, ULC 40 B:C
 3. DRY CHEMICAL ULC 2-A: 40 B:C

NOTE: REMOVE ALL MECH. DOOR HOLD OPEN DEVICES. INSTALL WALL BUMPERS.

DRAWING NO. **A-3**

EXITING & FIRE SAFETY DIAGRAMS

**NATHAN HALE ELEMENTARY SCHOOL
ADDITIONS, ALTERATIONS & CODE COMPLIANCE**

MERIDEN, CONNECTICUT

**CARLIN POZZI-CHIN
ARCHITECTS, P.C.**

THREE LINCOLN STREET
NEW HAVEN, CONNECTICUT

SHEET 12 OF 14

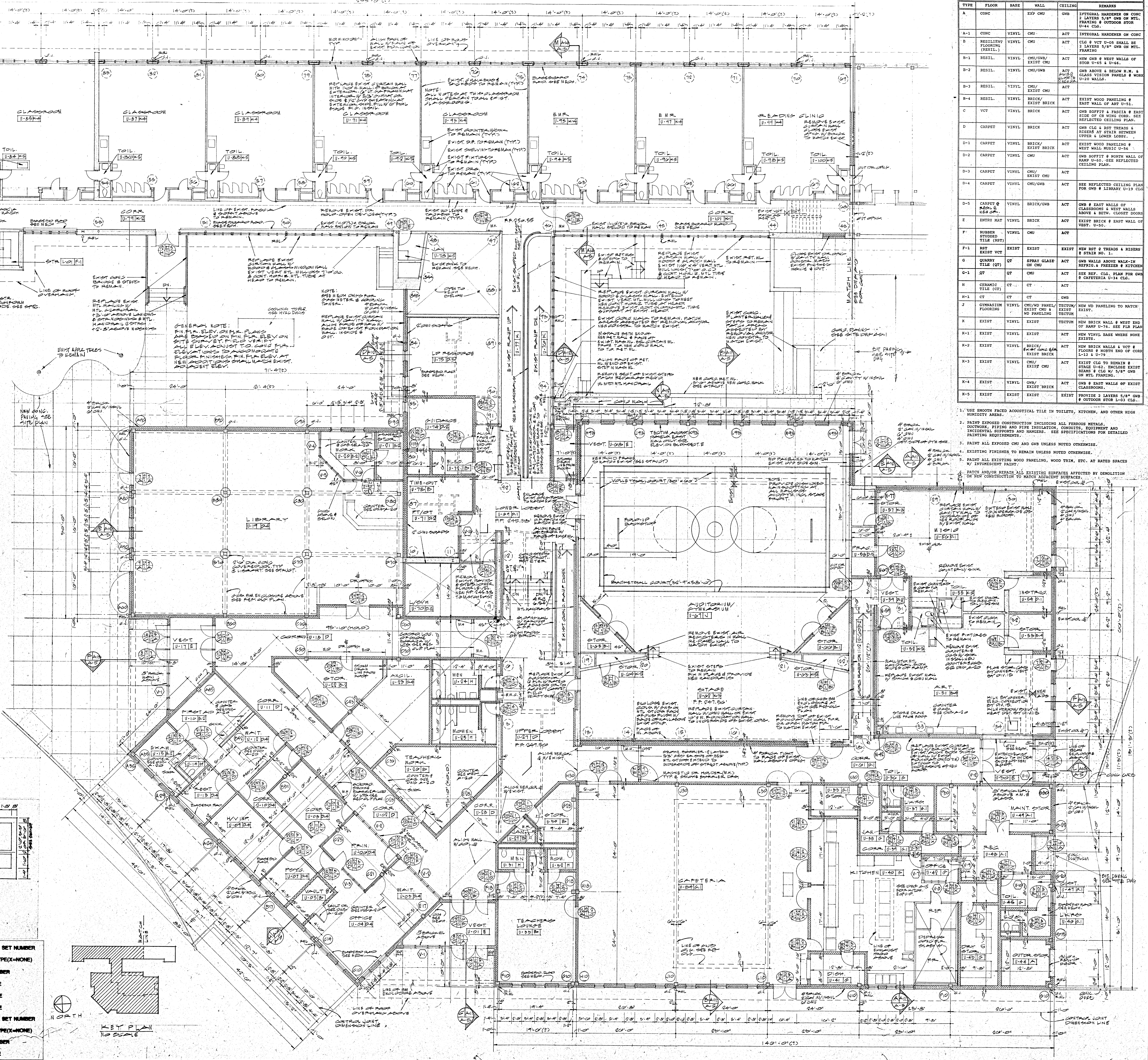
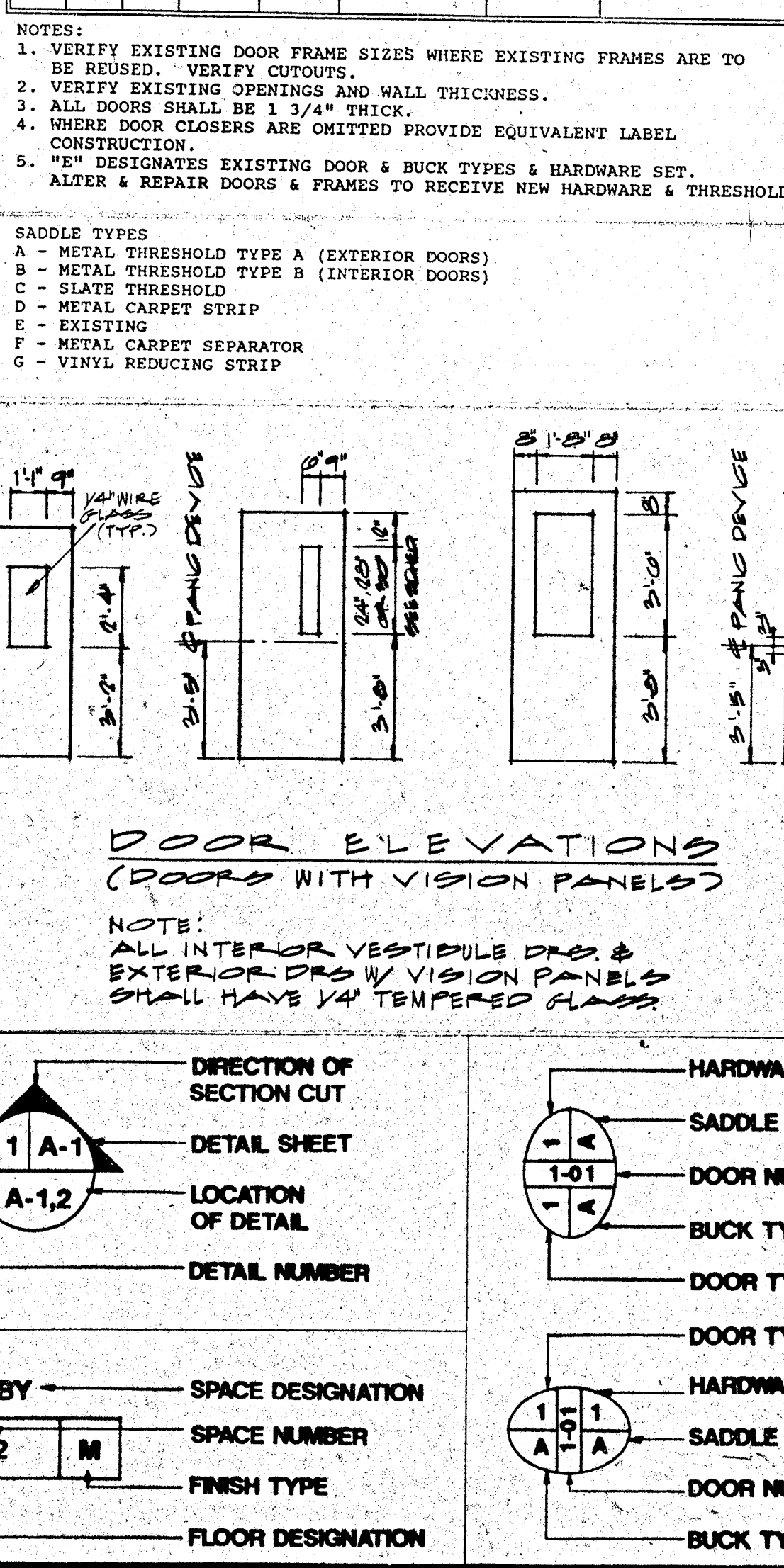
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DATE: 1/25/24

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CHECKED: PC
APPROVED: HRP

NO. DATE DESCRIPTION

TYPE	MAT.	LEAF	WIDTH	HEIGHT	V.P. (WxH)	LABEL	REMARKS
1	H.M.	1	3'-0"	7'-0"	---	3HR A	
2	H.M.	1	2'-8"	7'-2"	---	3HR B	
3	H.M.	1	3'-0"	7'-2"	---	45M C	
3b	"	"	"	"	"	3HR B	
4	H.M.	1	3'-0"	7'-2"	6"x 30"	45M C	
4a	"	"	"	"	"	3HR B	
5	H.M.	1	3'-0"	7'-2"	---	3HR B	
6	H.M.	1	3'-0"	7'-2"	---	---	COORD. DR. WT. W/ WINDOW SECTIONS. ADD. TOP V.P. W/ HT.
7	H.M.	1	3'-0"	7'-10"	1'-8"x 3'-2"	---	
8	H.M.	1	3'-0"	7'-10"	1'-8"x 3'-10"	---	
9	H.M.	1	3'-8"	7'-2"	6"x 30"	45M C	
10	H.M.	2	3'-0"	7'-0"	6"x 28"	---	
11	H.M.	2	3'-0"	7'-2"	---	3HR B	
12	H.M.	2	3'-0"	7'-10"	---	---	COORD. DR. WT. W/ WINDOW SECTIONS. ADD. TOP V.P. W/ HT.
13	H.M.	2	3'-0"	7'-10"	---	---	
14	H.M.	2	3'-0"	7'-10"	---	---	
15	WD.	1	2'-8"	6'-5"	---	3HR B	
16	WD.	1	2'-4"	6'-8"	---	---	
17	WD.	1	3'-0"	6'-8"	---	45M C	
18	WD.	1	3'-0"	6'-8"	6"x 24"	45M C	
19	WD.	1	3'-0"	6'-8"	3'-17" x 2'-4"	45M C	
20	WD.	1	3'-0"	7'-0"	6"x 28"	45M C	
21	WD.	1	3'-0"	7'-2"	---	3HR B	
22	WD.	1	3'-0"	7'-2"	---	45M C	
23	WD.	1	3'-0"	7'-2"	6"x 30"	45M C	
24	WD.	2	2'-6"	6'-8"	---	---	
25	WD.	6	2'-0"	6'-8"	---	---	3 DR. OPENINGS 2 DR. PER DR. NO.
26	WD.	2	3'-4"	6'-8"	6"x 24"	55M C	VERIFY CORR. WIDTH
27	WD.	2	2'-6"	7'-0"	6"x 28"	45M C	
28	WD.	2	3'-0"	7'-2"	---	3HR B	
29	WD.	2	3'-0"	7'-2"	6"x 30"	45M C	
30	WD.	2	3'-0"	7'-2"	3'-10" x 1'-10"	---	
31	WD.	2	3'-0"	7'-2"	3'-10" x 1'-10"	---	
32	WD.	2	4'-0"	7'-2"	6"x 30"	45M C	
33	WD.	1	2'-0"	5'-10"	---	1HR D	PED. VERIFY EXIST. U.S.



FINISH SCHEDULE	TYPE	FLOOR	BASE	WALL	CEILING	REMARKS
A	CONC		EXP. CONG	CONC	ACT	INTERRIAL HARDENER ON CONC 2 LAYERS 5/8" GMB ON MET. FRAMING & OUTDOOR STOR U-44 CLG.
A-1	CONC	VINYL	CHU	CONC	ACT	INTERRIAL HARDENER ON CONC
B	RESILIENT FLOORING	VINYL	CHU	ACT	ACT	CLG & VCF U-05 SHALL BE 2 LAYERS 5/8" GMB ON MET. FRAMING
B-1	RESIL.	VINYL	CHU/CHW	ACT	ACT	NEW GMB & WEST WALLS OF STOR U-04. SEE REFLECTED CEILING PLAN.
B-2	RESIL.	VINYL	CHU/CHW	ACT	ACT	GMB ABOVE & BELOW N.H. & GLASS VISION PANELS & WORK U-25 WALLS.
B-3	RESIL.	VINYL	CHU/EXIST CHU	ACT	ACT	
B-4	RESIL.	VINYL	BRICK/EXIST BRICK	ACT	ACT	EXIST WOOD PANELING & EAST WALL OF ACT U-41.
C	VCF	VINYL	BRICK	ACT	ACT	GMB SOFFIT & FACIA & EAST SIDE OF CR VING CORR. SEE REFLECTED CEILING PLAN.
D	CARPET	VINYL	BRICK	ACT	ACT	GMB CLG & STY TREADS & RISERS AT STAIR BETWEEN UPPER & LOWER LOBBY.
D-1	CARPET	VINYL	BRICK/EXIST BRICK	ACT	ACT	EXIST WOOD PANELING & WEST WALL MUSIC U-56.
D-2	CARPET	VINYL	CHU	ACT	ACT	GMB SOFFIT & NORTH WALL OF STOR U-04. SEE REFLECTED CEILING PLAN.
D-3	CARPET	VINYL	CHU/EXIST CHU	ACT	ACT	
D-4	CARPET	VINYL	CHU/CHW	ACT	ACT	SEE REFLECTED CEILING PLAN FOR GMB & LIBRARY U-19 CLG.
D-5	CARPET & RUBBER STUDDED TILE (RST)	VINYL	BRICK/CHU	ACT	ACT	GMB & EAST WALLS OF CLASSROOMS & WEST WALLS ABOVE & BETW. CLOSET DOORS.
E	ENTRY MAT	VINYL	BRICK	ACT	ACT	EXIST BRICK & EAST WALL OF VEST. U-51.
F	RUBBER STUDDED TILE (RST)	VINYL	CHU	ACT	ACT	
F-1	RST	EXIST	EXIST	EXIST	EXIST	NEW RST & TREADS & RISERS & STY NO. 1.
G	GRABBY TILE (GT)	GT	CHU	ACT	ACT	GMB WALLS ABOVE WALK-IN REFRIG. & FREEZER & KITCHEN
G-1	GT	GT	CHU	ACT	ACT	SEE REF. CLG. PLAN FOR GMB & CATERERIA U-14 CLG.
H	CERAMIC TILE (CT)	CT	CT	ACT	ACT	
H-1	CT	CT	CT	ACT	ACT	
J	GLASS BLOCK FLOORING	VINYL	CHU/WD PANEL/WD PANELING	TECTUM	ACT	NEW WD PANELING TO MATCH EXIST.
K	EXIST	VINYL	EXIST	TECTUM	ACT	NEW BRICK WALL & WEST END OF STOR U-04. SEE REFLECTED CEILING PLAN.
K-1	EXIST	VINYL	EXIST	ACT	ACT	NEW VINYL BASE WHERE NONE EXISTS.
K-2	EXIST	VINYL	BRICK/EXIST BRICK	ACT	ACT	NEW BRICK WALLS & VCF & FLOORS & NORTH END OF CORR L-12 & U-79.
K-3	EXIST	VINYL	CHU/EXIST CHU	ACT	ACT	EXIST CLG TO REMAIN & STAGE U-50. ENCLOSED EXIST BEAMS & CLG W/ 5/8" GMB ON MET. FRAMING.
K-4	EXIST	VINYL	CHU/EXIST BRICK	ACT	ACT	GMB & EAST WALLS OF EXIST CLASSROOMS.
K-5	EXIST	EXIST	EXIST	EXIST	EXIST	PROVIDE 2 LAYERS 5/8" GMB & OUTDOOR STOR L-10 CLG.

- USE SMOKE FACED ACOUSTICAL TILE IN TOILETS, KITCHEN, AND OTHER HIGH HUMIDITY AREAS.
- PAINT EXPOSED CONSTRUCTION INCLUDING ALL FERROUS METALS, STRUCTURE, BEAM AND PIPE INSULATION, CONDUITS, EQUIPMENT AND INCIDENTAL SUPPORTS AND HANDLES. SEE SPECIFICATIONS FOR DETAILED PAINTING REQUIREMENTS.
- PAINT ALL EXPOSED CHU AND GMB UNLESS NOTED OTHERWISE.
- EXISTING FINISHES TO REMAIN UNLESS NOTED OTHERWISE.
- PAINT ALL EXISTING WOOD PANELING, WOOD TRIM, ETC. AT RATED SPACES W/ INTERDEPENDENT PAINT.
- PATCH AND/OR REPAIR ALL EXISTING SURFACES AFFECTED BY DEMOLITION OR NEW CONSTRUCTION TO MATCH ADJACENT SURFACES.

CARLIN POZZI CHIN ARCHITECTS, P.C.
 THREE LINCOLN STREET
 NEW HAVEN, CONNECTICUT

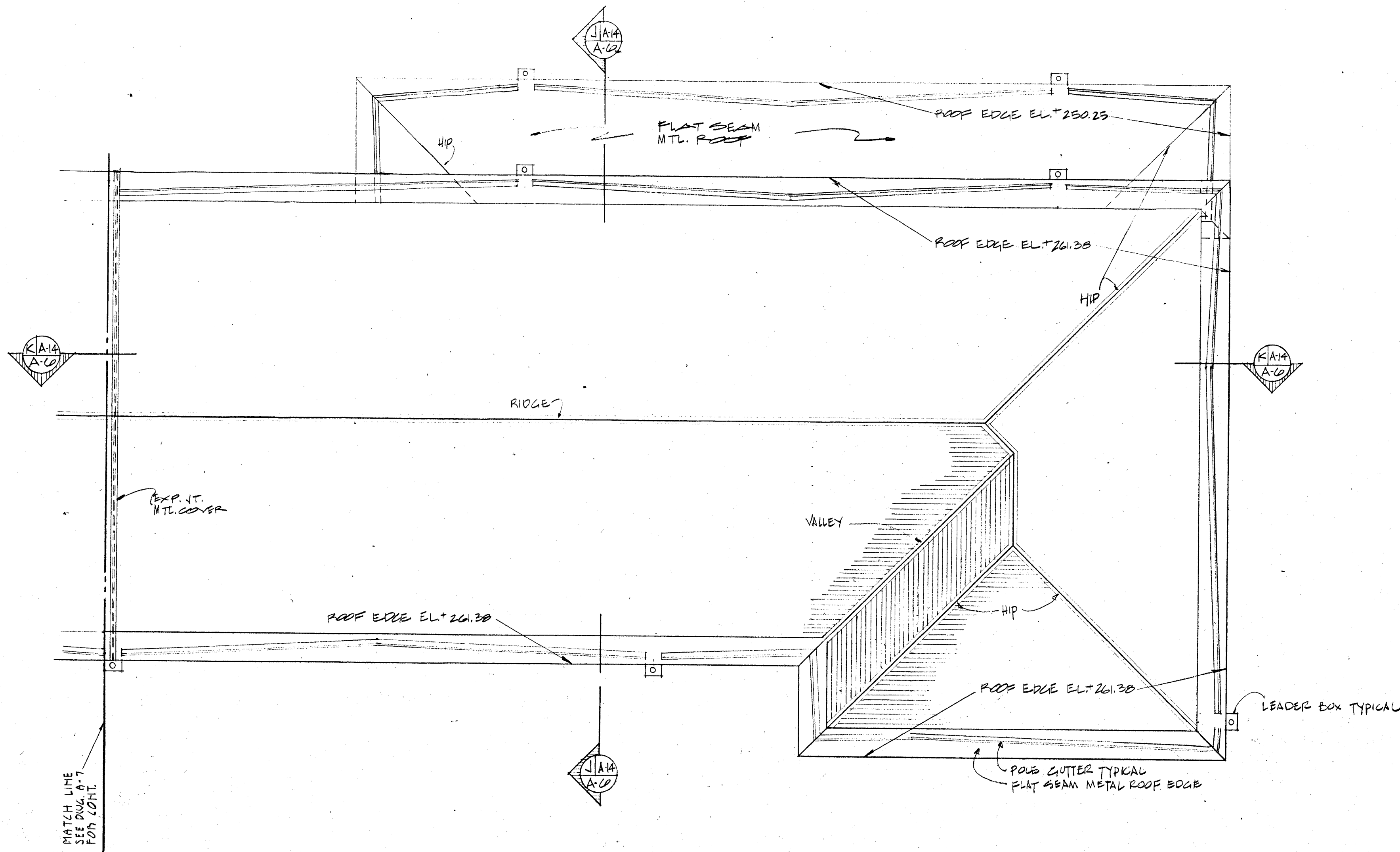
NATHAN HALE ELEMENTARY SCHOOL
 ADDITIONS, ALTERATIONS & CODE COMPLIANCE
 MERIDEN, CONNECTICUT

UPPER LEVEL FLOOR PLAN
A-5

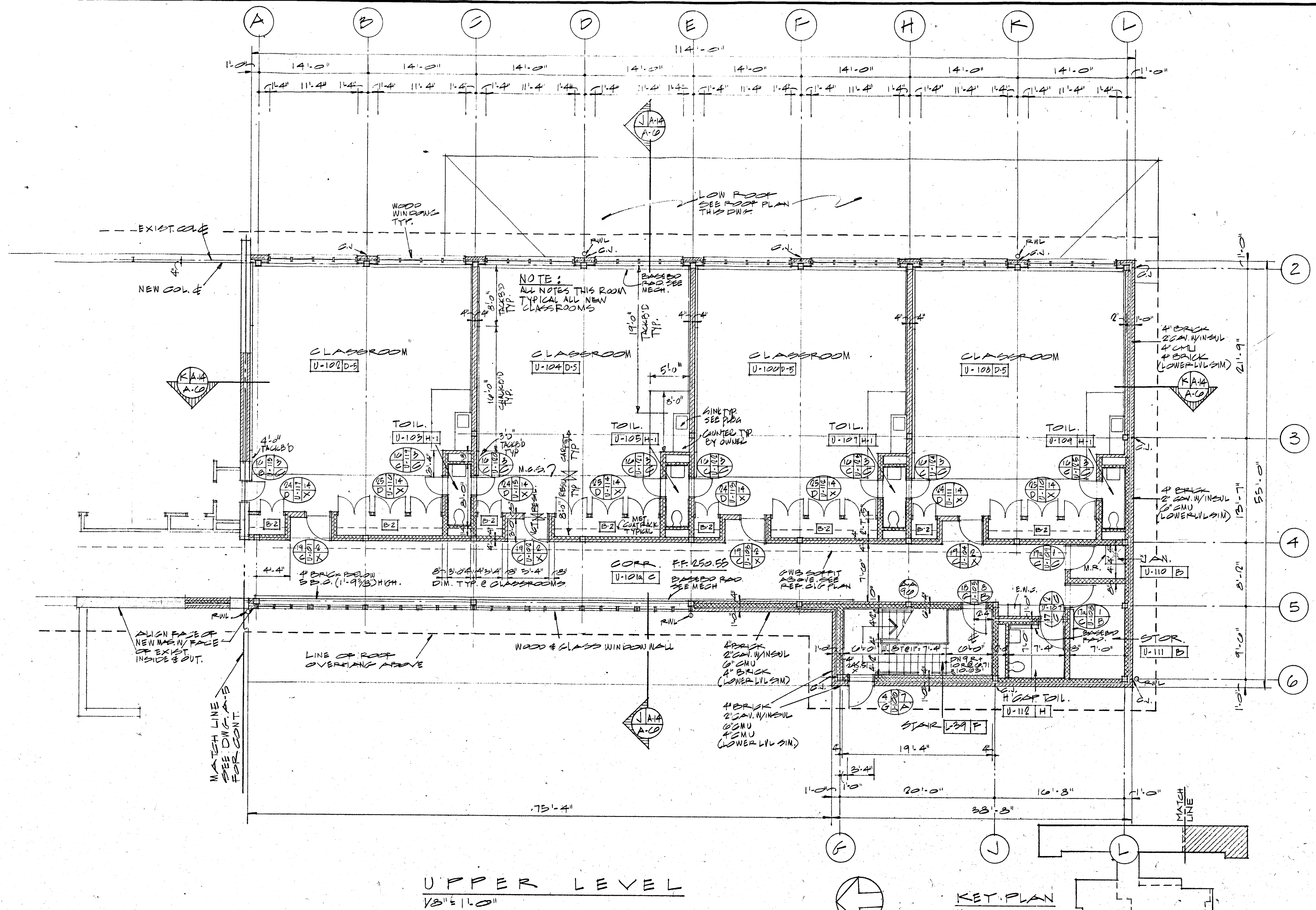
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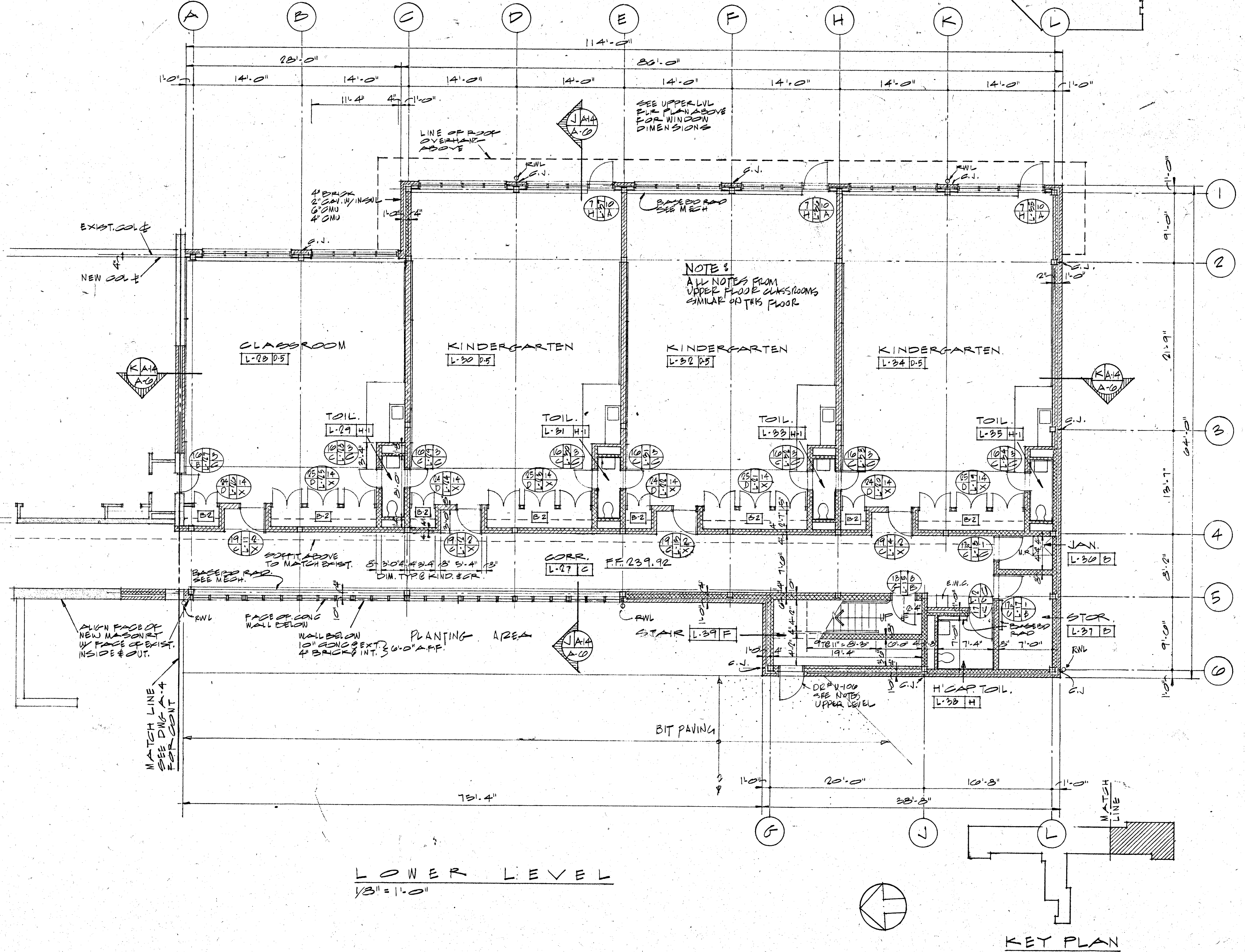
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ROOF PLAN
1/8" = 1'-0"



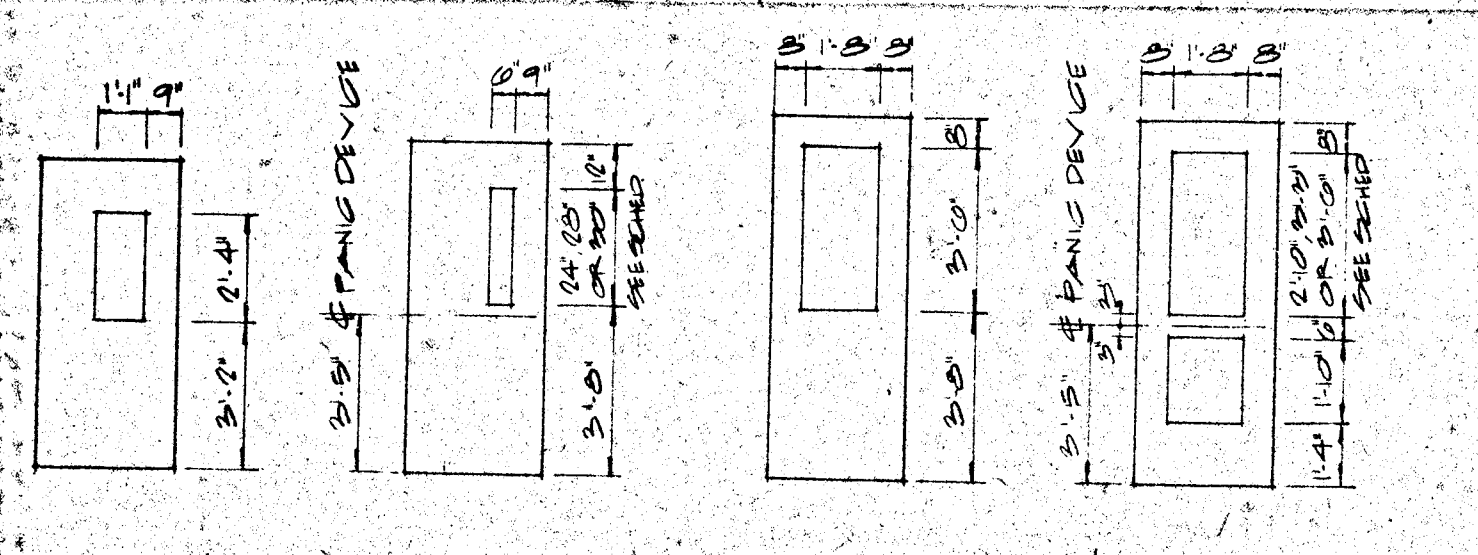
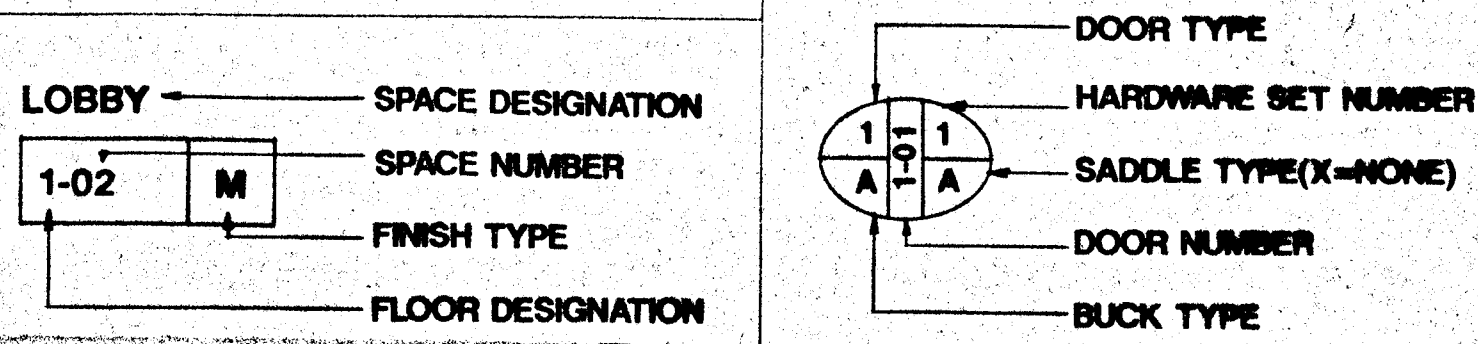
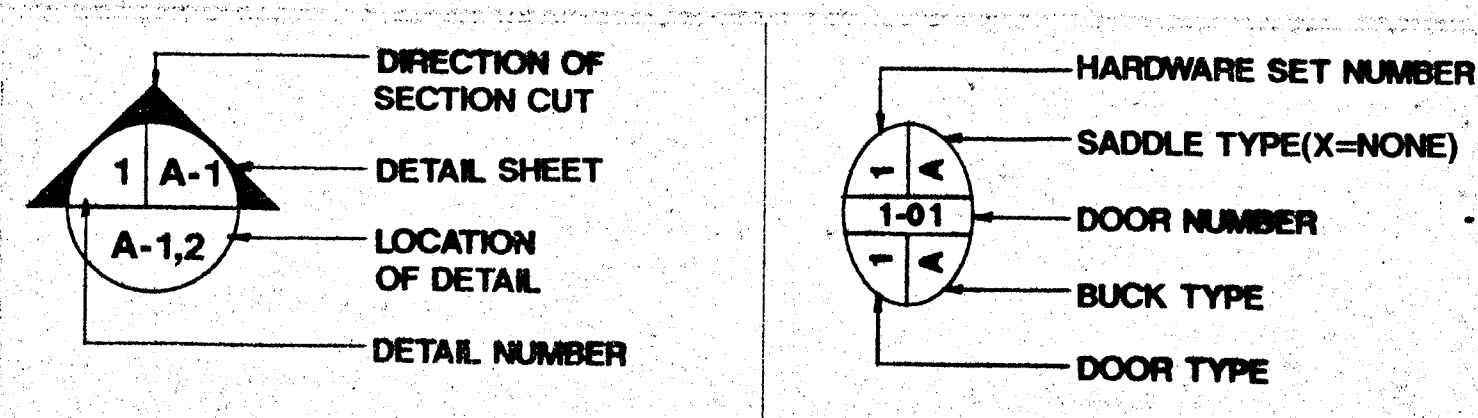
UPPER LEVEL
1/8" = 1'-0"



LOWER LEVEL
1/8" = 1'-0"

LEGEND

	EXIST WALLS TO REMAIN		ROUGH WOOD, BLOCKING
	EXIST WALLS TO BE REMOVED		FINISHED WOOD
	GYPSUM WALL BOARD		FIBERGLASS BATT INSUL.
	CUT NEW OPENING IN EXISTING MASONRY WALL		RIGID FOAM BOARD INSUL.
	EARTH		2" FOIL FACED FIRE PROTECTIVE INSUL.
	COMPACTED FILL OR GRAVEL		CAULKING (LARGE SCALE)
	CONCRETE (SECTION)		CERAMIC OR QUARRY TILE
	CONCRETE (ELEVATION)		ACOUSTICAL TILE (SECTION)
	CONCRETE MASONRY		+0.00 NEW SPOT ELEVATION
	REINF. CONCRETE MASONRY		+0.00 EXISTING SPOT ELEVATIONS
	BRICK (SECTION)		NEW CONTOURS
	BRICK (ELEVATION)		EXISTING CONTOURS
	METAL (LARGE SCALE)		② COLUMN NUMBER
	METAL (SMALL SCALE)		FINISHED FLR. SLABS TOP OF STEEL, WORKING PTS.



DOOR SCHEDULE

TYPE	MAT.	LEAF	WIDTH	HEIGHT	V.P. (W/O)	LABEL	REMARKS
1	H.M.	1	3'-0"	7'-0"	---	SHR A	---
2	H.M.	1	3'-0"	7'-0"	---	45M C	---
3	H.M.	1	3'-0"	7'-0"	---	45M B	---
4	H.M.	1	3'-0"	7'-0"	6'x 30"	45M C	---
5	H.M.	1	3'-0"	7'-0"	---	1HR B	---
6	H.M.	1	3'-0"	7'-0"	1'-8"x3'-10"	---	COORD. DR HT W/ WINDOW SECTIONS. ADV. TOP V.P. HT
7	H.M.	1	3'-0"	7'-0"	1'-8"x3'-6"	---	---
8	H.M.	1	3'-0"	7'-0"	1'-8"x3'-10"	---	---
9	H.M.	1	3'-0"	7'-0"	6'x 30"	45M C	---
10	H.M.	2	3'-0"	7'-0"	6'x 28"	---	---
11	H.M.	2	3'-0"	7'-0"	---	1HR B	---
12	H.M.	2	3'-0"	7'-0"	1'-8"x3'-10"	---	COORD. DR HT W/ WINDOW SECTIONS. ADV. TOP V.P. HT
13	H.M.	2	3'-0"	7'-0"	---	---	---
14	H.M.	2	3'-0"	7'-0"	1'-8"x3'-6"	---	---
15	WD.	1	2'-8"	6'-8"	---	1HR B	---
16	WD.	1	2'-4"	6'-8"	---	1HR B	---
17	WD.	1	3'-0"	6'-8"	---	45M C	---
18	WD.	1	3'-0"	6'-8"	6'x 24"	45M C	---
19	WD.	1	3'-0"	6'-8"	1'-1"x 2'-4"	45M C	---
20	WD.	1	3'-0"	7'-0"	6'x 28"	45M C	---
21	WD.	1	3'-0"	7'-0"	---	45M C	---
22	WD.	1	3'-0"	7'-0"	6'x 30"	45M C	---
23	WD.	1	3'-0"	7'-0"	1'-8"x3'-10"	---	---
24	WD.	2	1'-8"	6'-8"	---	---	---
25	WD.	6	2'-0"	6'-8"	---	---	3 DR. OPENINGS 2 DRG. PER OP'NG
26	WD.	2	3'-6"	6'-8"	6'x 24"	45M C	VERIFY CORR. WIDTH
27	WD.	2	2'-6"	7'-0"	6'x 24"	45M C	---
28	WD.	2	3'-0"	7'-0"	---	1HR B	---
29	WD.	2	3'-0"	7'-0"	6'x 30"	45M C	---
30	WD.	2	3'-0"	7'-0"	1'-8"x3'-10"	---	---
31	WD.	2	4'-0"	7'-0"	6'x 30"	45M C	---
32	FM	1	6'-8"	6'-8"	---	---	SEE SPEC. FOR FINISHES

NOTES:

- VERIFY EXISTING DOOR FRAME SIZES WHERE EXISTING FRAMES ARE TO BE REUSED. VERIFY CUTOUPS.
- VERIFY EXISTING OPENINGS AND WALL THICKNESS.
- ALL DOORS SHALL BE 1 3/4" THICK.
- WHERE DOOR CLOSERS ARE OMITTED PROVIDE EQUIVALENT LABEL CONSTRUCTION.
- ** DENOTES EXISTING DOOR & BUCK TYPES & HARDWARE SET. ALTER & REPAIR DOORS & FRAMES TO RECEIVE NEW HARDWARE & THRESHOLD.

SADDLE TYPES

- METAL THRESHOLD TYPE A (EXTERIOR DOORS)
- METAL THRESHOLD TYPE B (INTERIOR DOORS)
- SLATE THRESHOLD
- METAL CARPET STRIP
- EXISTING
- METAL CARPET SEPARATOR
- VINYL REINFORCING STRIP

FINISH SCHEDULE

TYPE	FLOOR	BASE	WALL	CEILING	REMARKS
A	CONC.	---	EXP. CHU	GWB	INTEGRAL HARDENER ON CONC 2 LAYERS 5/8" ONB ON MTL. FRAMING & OUTDOOR STOR U-44 CIG.
A-1	CONC.	VINYL	CHU	ACT	INTEGRAL HARDENER ON CONC
B	RESILIENT FLOORING (RESIL.)	VINYL	CHU	ACT	CIG & VCT U-05 SHALL BE 2 LAYERS 5/8" ONB ON MTL. FRAMING
B-1	RESIL.	VINYL	CHU/GWB	ACT	NEW ONB & WEST WALLS OF STOR U-65 & U-66.
B-2	RESIL.	VINYL	CHU/GWB	ACT	GWB ABOVE & BELOW H.M. & GLASS VISION PANELS & WOOD U-20 WALLS.
B-3	RESIL.	VINYL	CHU/EXIST CHU	ACT	---
B-4	RESIL.	VINYL	BRICK/EXIST BRICK	ACT	EXIST WOOD PANELING & EAST WALL OF ART U-51.
C	VCT	VINYL	BRICK	ACT	GWB SOFFIT & FASCIA & EAST SIDE OF OR HING COR. SEE REFLECTED CEILING PLAN.
D	CARPET	VINYL	BRICK	ACT	ONE CIG & SET THREADS & RISERS AT STAIR BETWEEN UPPER & LOWER LOBBY.
D-1	CARPET	VINYL	BRICK/EXIST BRICK	ACT	EXIST WOOD PANELING & WEST WALL MUSIC U-56
D-2	CARPET	VINYL	CHU	ACT	GWB SOFFIT & NORTH WALL OF STOR U-65. SEE REFLECTED CEILING PLAN.
D-3	CARPET	VINYL	CHU/EXIST CHU	ACT	---
D-4	CARPET	VINYL	CHU/GWB	ACT	SEE REFLECTED CEILING PLAN FOR ONB & LIBRARY U-31 CIG.
D-5	CARPET	VINYL	BRICK/GWB	ACT	GWB & EAST WALLS OF CLASSROOMS & WEST WALLS ABOVE & BETWEEN CLOSET DOORS
E	ENTRY MAT	VINYL	BRICK	ACT	EXIST BRICK & EAST WALL OF VEST. U-50.
F	RUBBER STUCCO TILE (RST)	VINYL	CHU	ACT	---
F-1	RST	EXIST VCT	EXIST	EXIST	NEW RST & TREADS & RISERS @ STAIR NO. 1.
G	QUARRY TILE (QT)	QT	SPRAY GLAZE ON CHU	ACT	GWB WALLS ABOVE WALK-IN REFRIG. & FREEZER & KITCHEN
G-1	QT	QT	CHU	ACT	SEE REF. CIG. PLAN FOR ONB @ CAFETERIA U-34 CIG.
H	CERAMIC TILE (CT)	CT	CHU	ACT	---
H-1	CT	CT	CT	GWB	NEW WOOD PANELING TO MATCH EXIST.
J	GYMNASIUM FLOORING	VINYL	CHU/NO PANEL/EXIST CHU & NO PANELING	TECUM/EXIST TECUM	NEW WOOD PANELING TO MATCH EXIST.
K	EXIST	VINYL	EXIST	TECUM	NEW BRICK WALL & WEST END OF RAMP U-76. SEE FLR PLAN
K-1	EXIST	VINYL	EXIST	ACT	NEW VINYL BASE WHERE NONE EXISTS.
K-2	EXIST	VINYL	BRICK/EXIST BRICK	ACT	NEW BRICK WALLS & VCT @ FLOORS & NORTH END OF CORR L-12 & U-79
K-3	EXIST	VINYL	CHU/EXIST CHU	ACT	EXIST CIG TO REMAIN @ STAGE U-62. ENCLOSE EXIST STAGE & CIG BY 5/8" ONB ON MTL FRAMING.
K-4	EXIST	VINYL	GWB/EXIST BRICK	ACT	GWB & EAST WALLS OF EXIST CLASSROOM.
K-5	EXIST	EXIST	EXIST	EXIST	PROVIDE 2 LAYERS 5/8" ONB @ OUTDOOR STOR U-03 CIG.

- USE SMOOTH FACED ACOUSTICAL TILE IN TOILETS, KITCHEN, AND OTHER HIGH HUMIDITY AREAS.
- PAINT EXPOSED CONSTRUCTION INCLUDING ALL FERROUS METALS, DUCTWORK, PIPING AND PIPE INSULATION, CONDENS. EQUIPMENT AND INCIDENTAL SUPPORTS AND HANGERS. SEE SPECIFICATIONS FOR DETAILED PAINTING REQUIREMENTS.
- PAINT ALL EXPOSED CHU AND ONB UNLESS NOTED OTHERWISE.
- EXISTING FINISHES TO REMAIN UNLESS NOTED OTHERWISE.
- PAINT ALL EXISTING WOOD PANELING, WOOD TRIM, ETC. AT RATED SPACES W/ SHOWSCENT PAINT.
- PATCH AND/OR REPAIR ALL EXISTING SURFACES AFFECTED BY DEMOLITION OR NEW CONSTRUCTION TO MATCH ADJACENT SURFACES.

CARLIN POZZI-OHIN ARCHITECTS, P.C.
THREE LINCOLN STREET
NEW HAVEN, CONNECTICUT

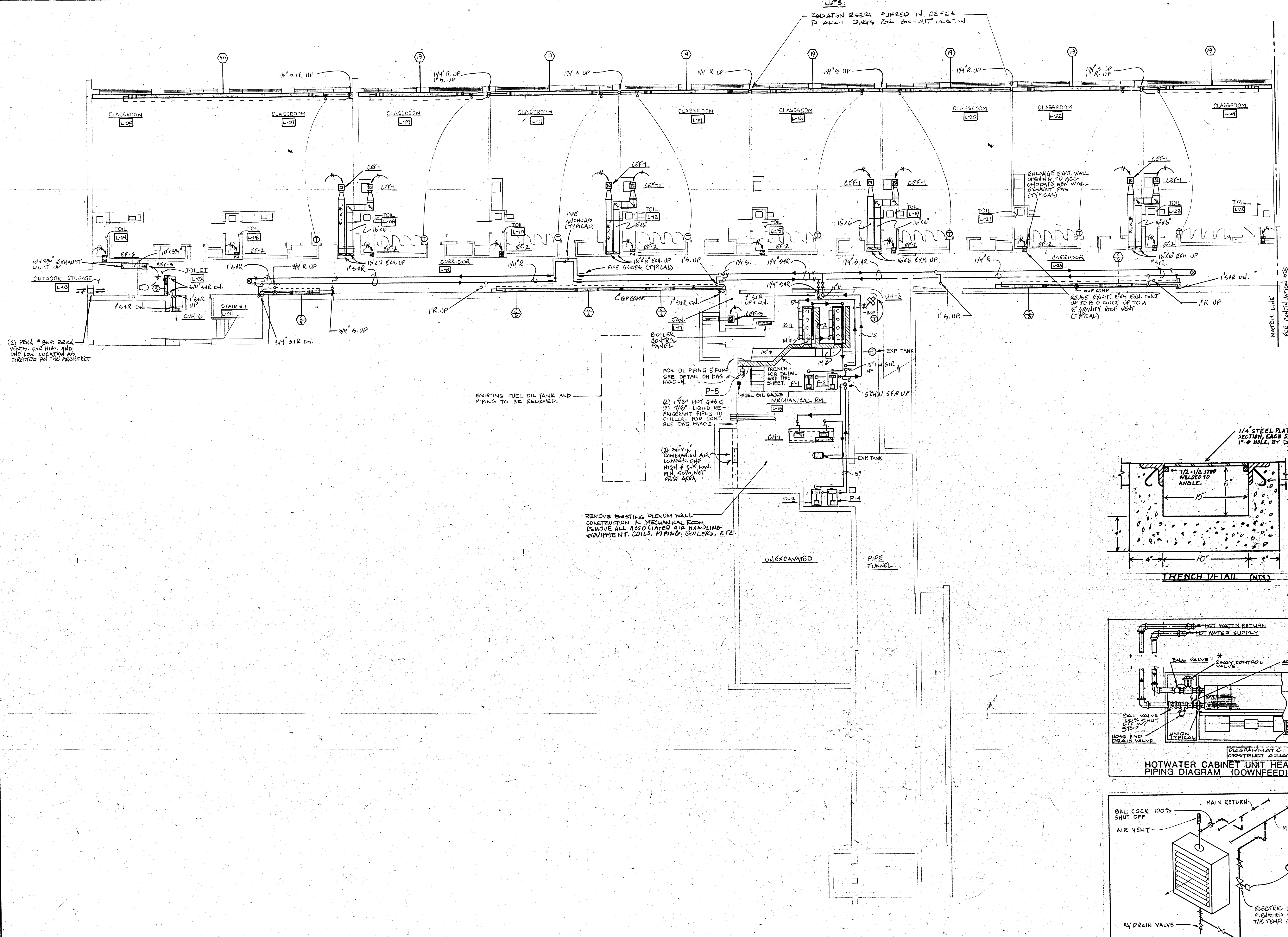
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checked DC
approved P.P.P.
no. date description

NATHAN HALE ELEMENTARY SCHOOL
ADDITIONS, ALTERATIONS & CODE COMPLIANCE

CLASSROOM WING ADDITION
UPPER & LOWER LEVEL
ROOF & FLOOR PLANS

CONNECTICUT

drawing no. **A-6**
1/27/87 4:15:35 4/8/87 5:11:35 3/11/88



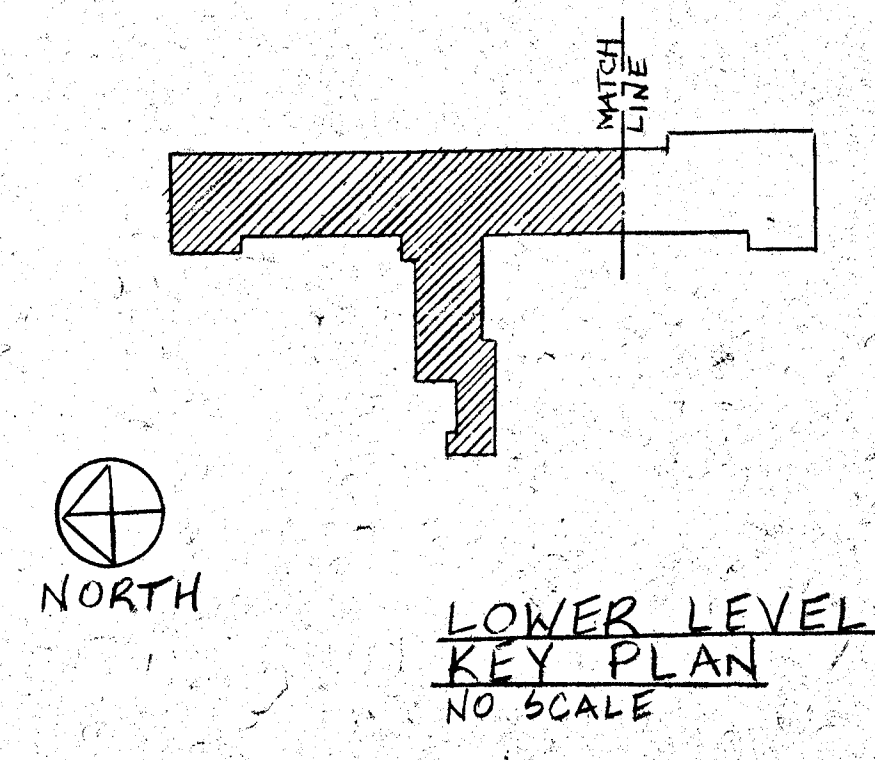
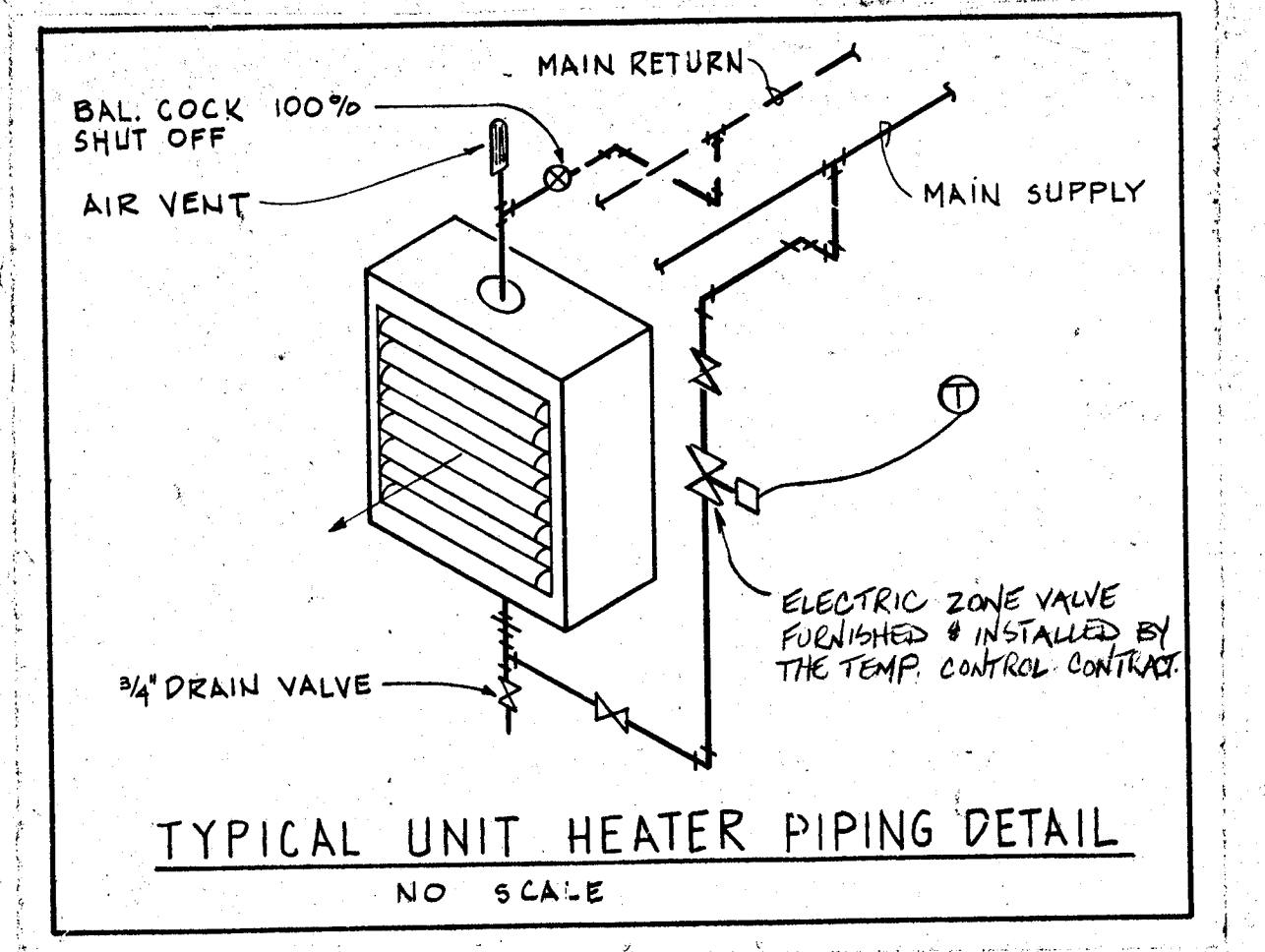
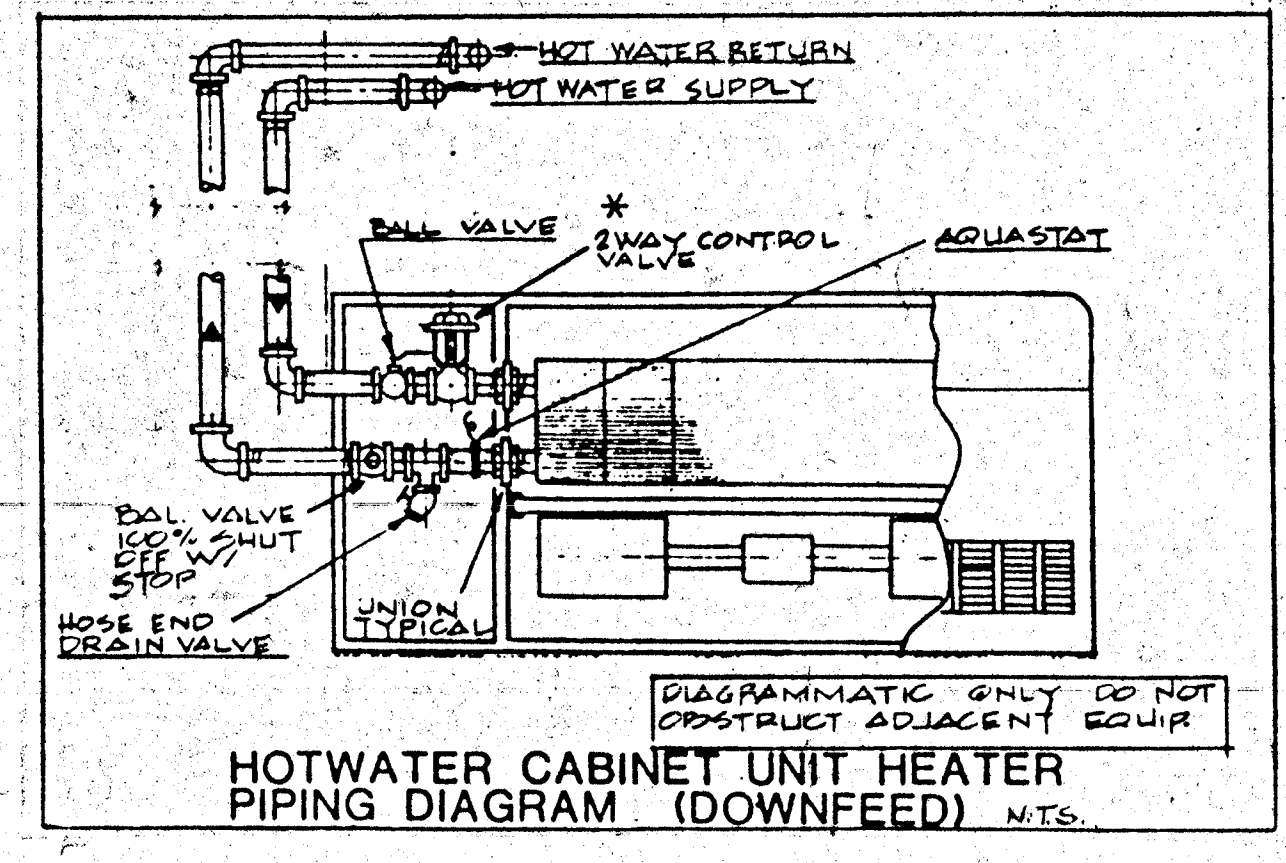
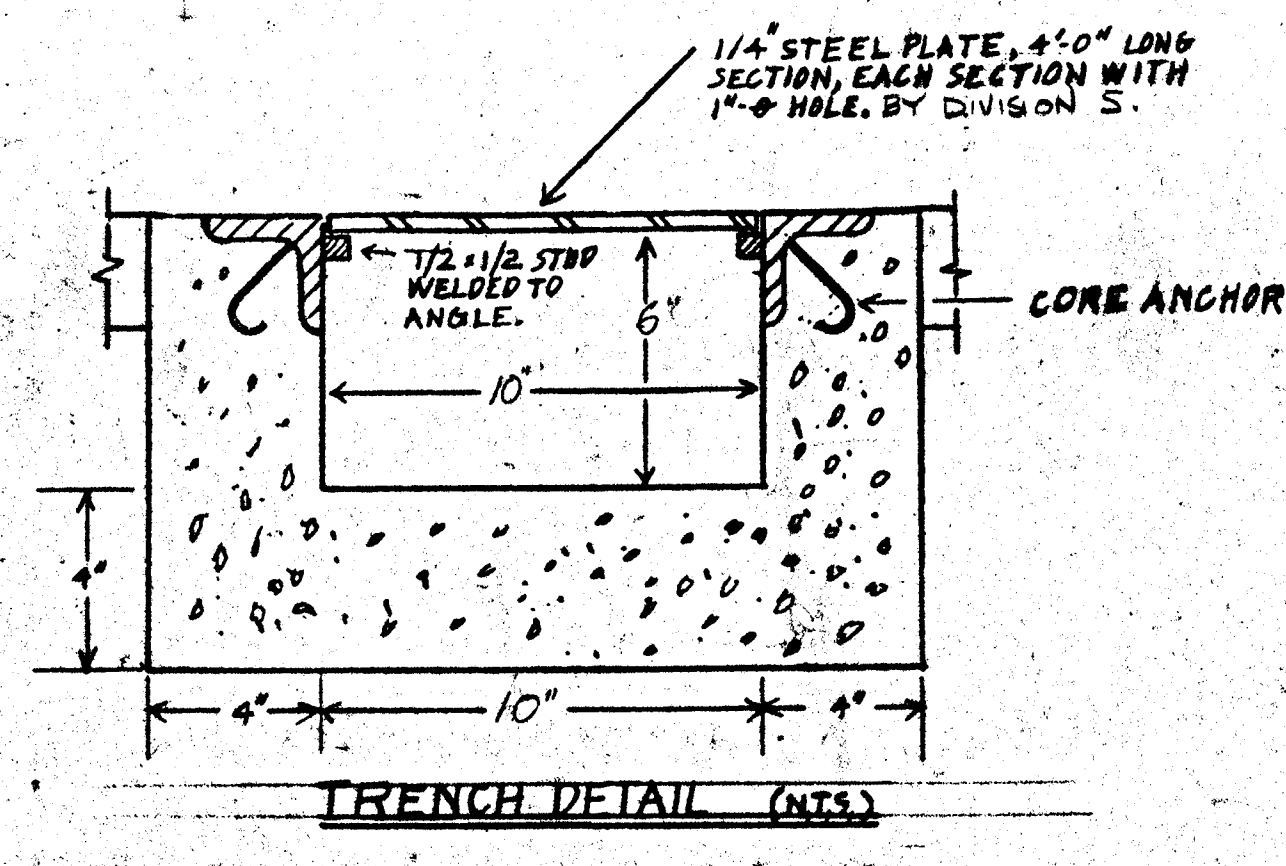
LOWER LEVEL
SCALE: 1/8" = 1'-0"

FOR THE EXACT LOCATION OF EQUIPMENT
LOCATED IN THE CEILING, REFER TO THE
ARCHITECTURAL REFLECTED CEILING PLANS

NOTE:
REMOVE EXISTING FUEL OIL TANK(S) IN MANNER
APPROVED BY MERIDEN FIRE MARSHAL.

All demolition and removal of existing heating equipment, piping, etc.
to be by General Contractor under direction of the appropriate trade
contractor. Removal to include all existing systems, except as speci-
fically noted on Drawings for reuse. Generally, the entire heating
system is to be removed.

The entire chilled water system, including chiller, chilled water
pumps, condensing unit, chilled water coils, chilled water piping,
chilled water pipe insulation, and associated control components shall
be SUPPLEMENTAL BID NO. 1.



drawing no.	1001	date	1-25-91
checked	D.C.A.	approved	A.Y.
date description	D.C.A.		

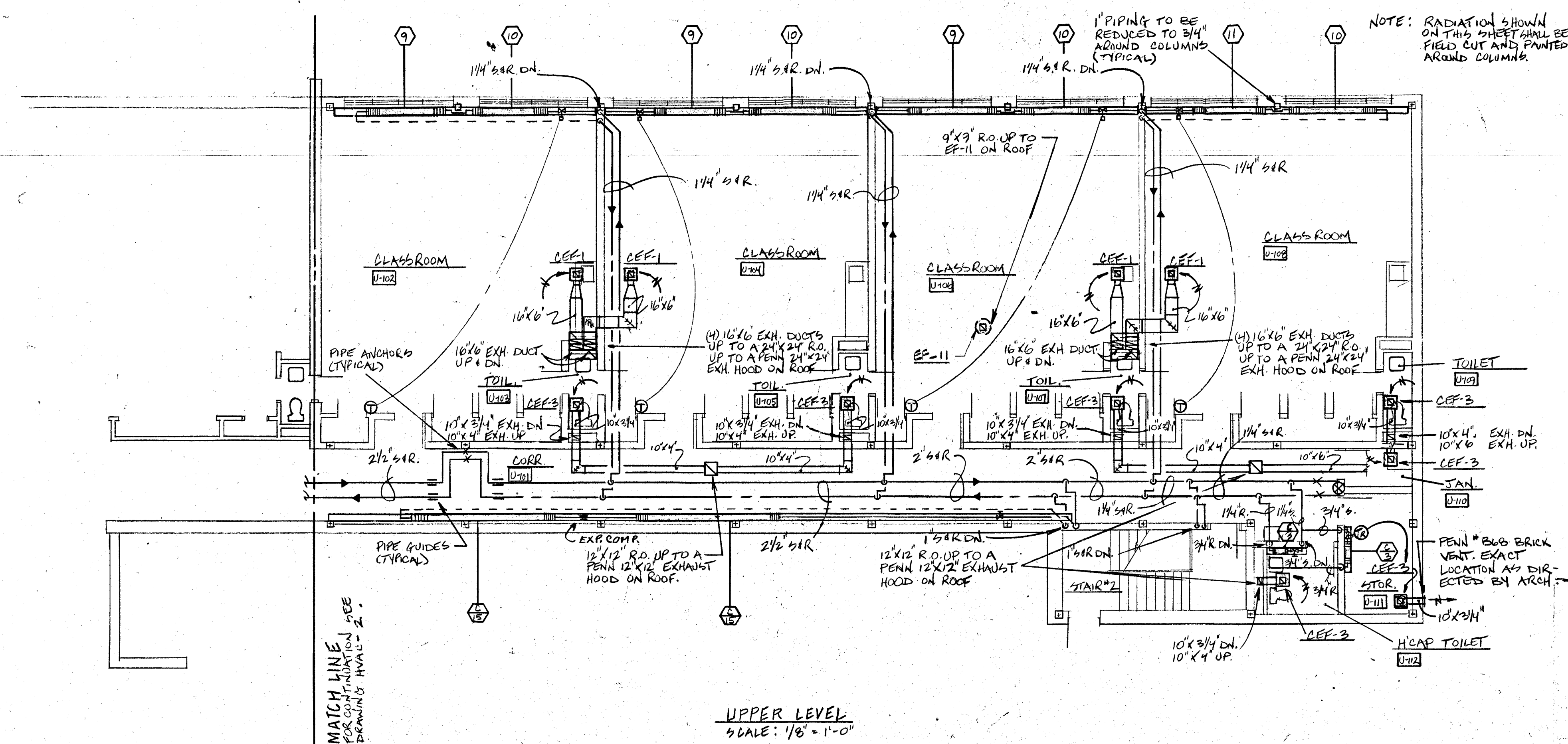
CARLIN-POZZI-CHIN ARCHITECTS, P.C.
THREE LINCOLN STREET
NEW HAVEN, CONNECTICUT

D. C. ALLEN, INC.
consulting engineers
800 cottage grove road
Bloomfield, ct 06002

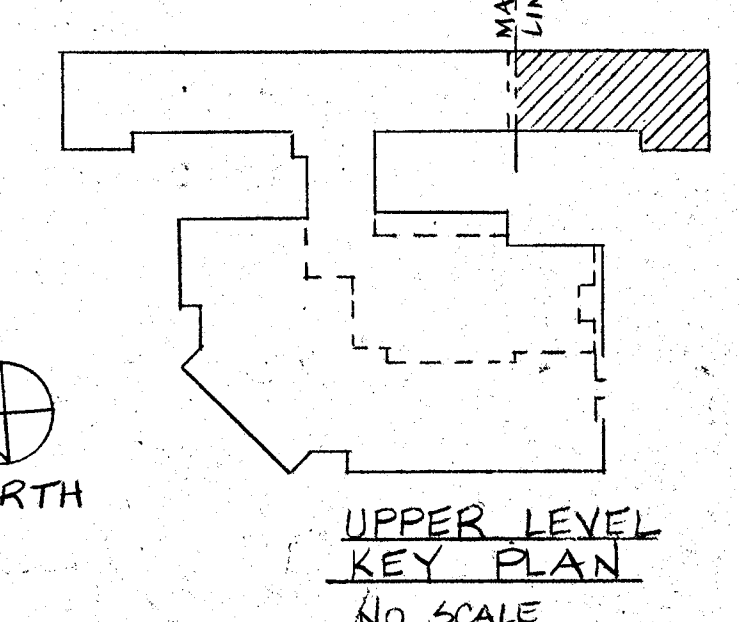
NATHAN HALE ELEMENTARY SCHOOL
ADDITIONS, ALTERATIONS & CODE COMPLIANCE
MERIDEN, CONNECTICUT

LOWER LEVEL PLAN

REVISED NO. 1
HVAC
- 1 -



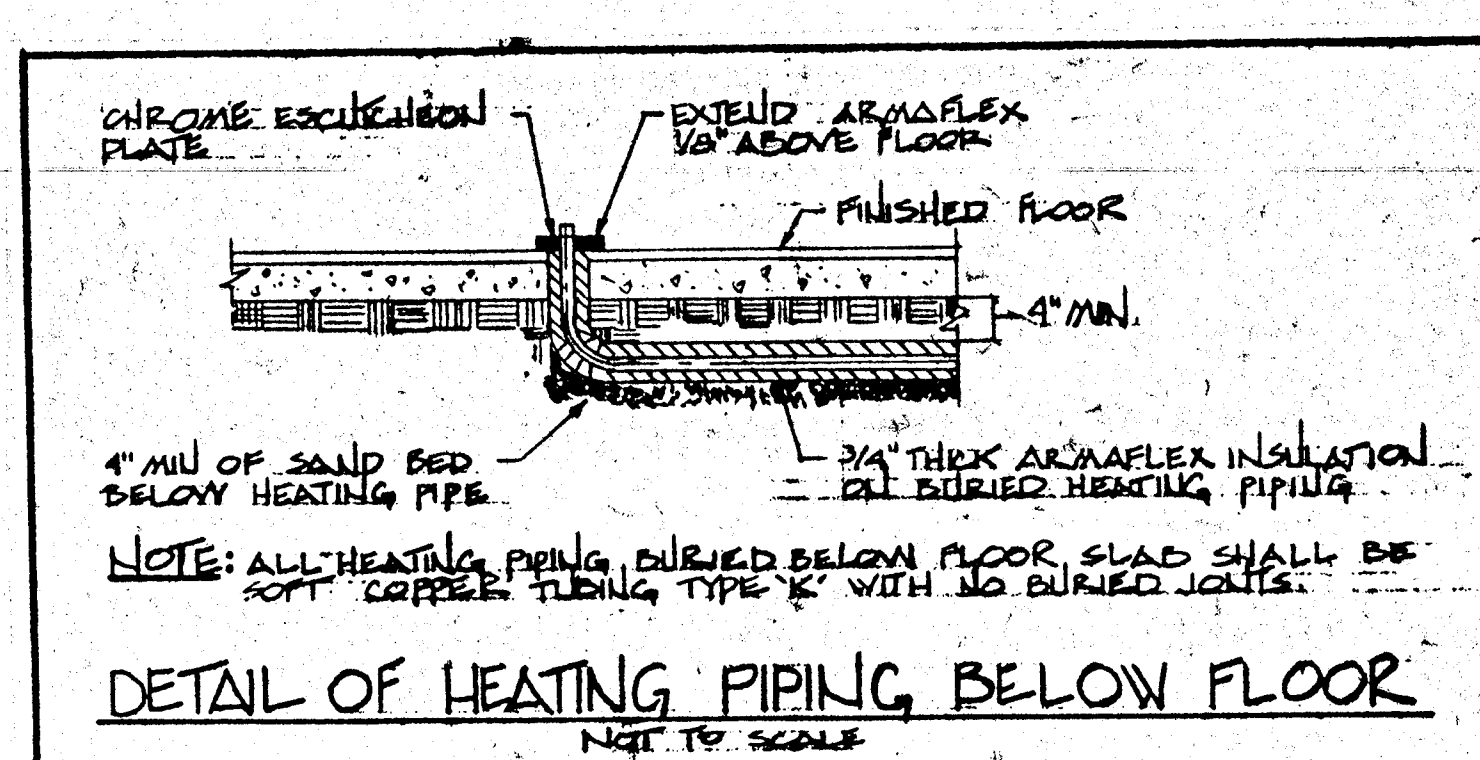
UPPER LEVEL
SCALE: 1/8" = 1'-0"



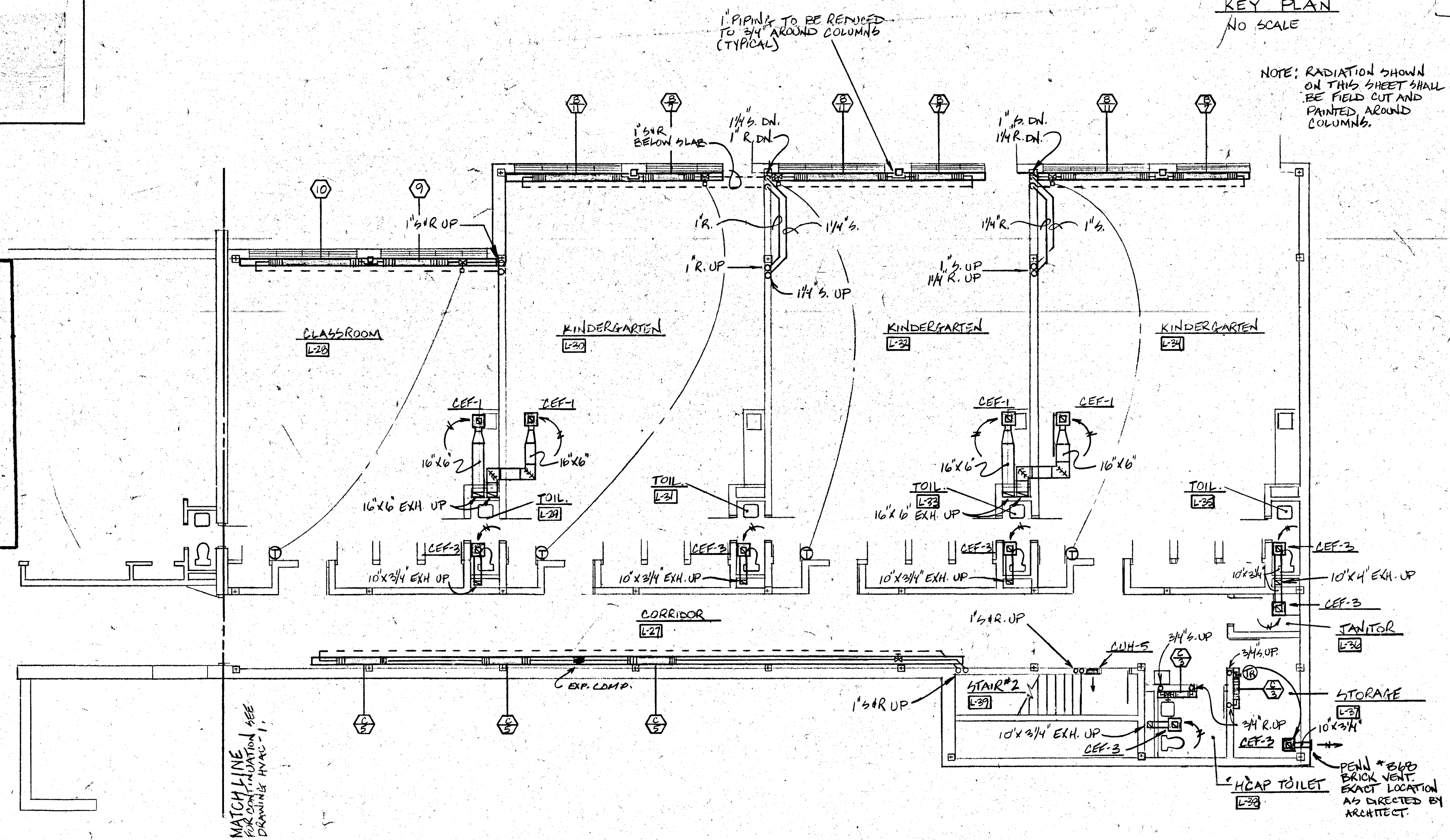
UPPER LEVEL KEY PLAN
NO SCALE

The entire chilled water system, including chiller, chilled water pumps, condensing unit, chilled water coils, chilled water piping, chilled water pipe insulation, and associated control components shall be SUPPLEMENTAL BID NO. 1.

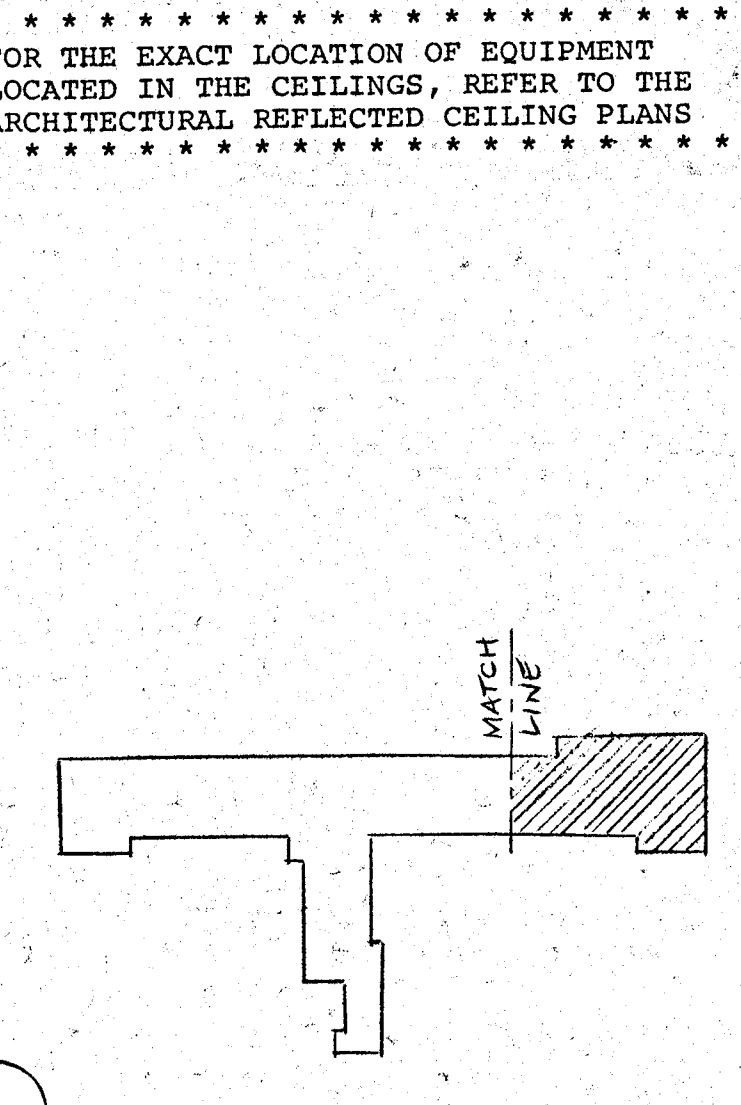
All demolition and removal of existing heating equipment, piping, etc. to be by General Contractor under direction of the appropriate trade contractor. Removal to include all existing systems, except as specifically noted on drawings for reuse. Generally, the entire heating system is to be removed.



DETAIL OF HEATING PIPING BELOW FLOOR
NOT TO SCALE



LOWER LEVEL
SCALE: 1/8" = 1'-0"



LOWER LEVEL KEY PLAN
NO SCALE

FOR THE EXACT LOCATION OF EQUIPMENT LOCATED IN THE CEILINGS, REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS.

drawing no. HVAC-3	UPPER / LOWER LEVEL PLAN	D. C. ALLEN, INC. consulting engineers 800 cottage grove road Bloomfield, ct 06002	CARLIN POZZI-CHIN ARCHITECTS, P.C. THREE LINCOLN STREET NEW HAVEN, CONNECTICUT	scale 1/8" = 1'-0"	date 1-28-81	drawing checked by D.C.A.	approved by A.T.	drawing no. HVAC-3	date 1-28-81	description HVAC
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AIR HANDLING UNIT SCHEDULE

SYMBOL	MANUFACTURER & MODEL	BLOWER				TOTAL COOLING (BTUH)	COIL TYPE	COOLING				HEATING				AREA SERVED	T.S.P.	REMARKS														
		SUPPLY CFM	ESP	RA	FAN MOTOR			EAT (°F)	LAT (°F)	COIL	APD	EAT (°F)	LAT (°F)	COIL	APD																	
AHU-1	TRANE 42E-0A	3035	.40	507	208-3-60 1.5	90,000	WL	80°	67°	58.0	57.6	110DF	4	.50	15.2	45°	55°	4.0'	10.5	300	58°	90°	105SF	1	.14"	10.5	180°	180°	8'	INTERIOR OFFICES	1.22'	HEATING COIL TRANE TYPE WC
AHU-2	TRANE 42E-0A	2200	.50	280	208-3-60 1.5	57,700	WL	79°	66°	53.8	57.7	110DF	4	.26	11.5	45°	55°	1.7'	66,800	62°	90°	80PF	1	.05"	6.7	180°	180°	3'	PERMETER OFFICES	0.91'		
AHU-3	TRANE 42E-0A	10,485	.40	2750	208-3-60 1.5	355,500	WL	81°	68°	57.6	56.3	110DF	4	.43	22.2	45°	55°	16.7'	432,100	52°	90°	104SF	1	.12"	43.2	180°	180°	9.4'	AUDITORIUM 1ST FM	1.16'	ECONOMIZER	
AHU-4	TRANE 42E-0A	1840	.30	300	208-3-60 1.5	128,200	WL	80°	67°	58.4	57.8	110DF	4	.27	10.8	45°	55°	1.4'	21,900	59°	90°	83SF	1	.07"	6.2	180°	180°	3'	MUSIC RM.	0.87'		
AHU-5	TRANE 42E-0A	1600	.30	300	208-3-60 1.5	140,300	WL	80°	67°	51.2	57.9	110DF	6	.67	10.2	45°	55°	1.2'	57,300	57°	90°	87SF	1	.16"	5.7	180°	180°	2'	ART RM.	1.31'		
AHU-6	TRANE 42E-0A	6280	.40	2260	208-3-60 1.5	282,800	WL	82°	69°	55.1	54.3	110DF	6	.80	56.6	45°	55°	7.2'	305,200	45°	90°	105SF	1	.14"	30.5	180°	180°	6'	CAFETERIA LOUNGE	1.52'	ECONOMIZER	
AHU-7	TRANE 42E-0A	3800	.50	310	208-3-60 1.5	96,800	WL	79°	66°	53.9	57.9	110DF	4	.40	19.4	45°	55°	1.4'	106,700	64°	90°	105SF	1	.13"	10.7	180°	180°	2'	LIBRARY	1.19'		
AHU-8	TRANE 42E-0A	5970	.50	475	208-3-60 2.0	133,300	WL	79°	66°	60.3	58.6	107DF	4	1.41	28.0	45°	55°	1.5'	167,600	54°	90°	104SF	1	.12"	16.7	180°	180°	5'	LOBBY OFFICES	1.19'	ECONOMIZER	

CONDENSER UNIT SCHEDULE

SYMBOL	MANUFACTURER & MODEL	CAPACITY (TONS)	CONDENSER FAN					COMPRESSOR			LIQUID AND GAS LINES	ELECTRICAL	REFRIGERANT	REMARKS
			EDBT	EWBT	QTY.	MCA	FLA	QTY.	RA	LRA				
CU-1	TRANE CAUC-C60	72.9	95°	—	0	34	41 EA	—	—	—	2 1/2" 30000	208V-60-3	R-22	3400 LBS.

BOILER SCHEDULE

SYMBOL	MANUFACTURER & MODEL	AGA INPUT (BTUH)	OUTPUT (BTUH)	NET I-B-R RATING (BTUH)	NUMBER OF MODULES	GAS INPUT (CFM)	FIRING RATE (GPM)	WEIGHT	REMARKS
B1A-B2	HYDROTHERM MDP-1540	1,540,000	1,168,000	1,015,000	4	1540	11.0	2880	

PUMP SCHEDULE

SYMBOL	MANUFACTURER & MODEL	GPM	HEAD	RPM	HP	IMP Ø	ELECTRICAL	REMARKS
P1 & P2	TACO EB 500B	250	40'	1750	5	7.5"	208V-60-3	HOT WATER PUMPS
P-3 & P-4	TACO BB 400B	180	55'	1750	5	7.5"	208V-60-3	CHILLED WATER PUMPS
P-5	PREFERRED UTILITIES	1000	25 (GPM)	1725	1/4	N.A.	115V-60-1	OIL PUMP

CHILLER SCHEDULE

SYMBOL	MANUFACTURER & MODEL	EWT (°F)	LWT (°F)	TONS COOLING @ 95°/65°	NUMBER OF COMPRESSORS	RA	ELECTRICAL	KW	GPM	WEIGHT	WPD	MCA	REMARKS
CH-1	TRANE CAAC-C60R	65°	45°	74.8	2	17 EA	208V-60-3	81.4	180	4352 LBS	13'	36.5	

FIN TUBE RADIATION SCHEDULE

SYMBOL	MANUFACTURER & MODEL	BTUH/FT	GPM	EWT (°F)	LWT (°F)	HEATING ELEMENT		ENCLOSURE		REMARKS		
						FIN/FT	TUBE	ROWS	FIN SIZE		DEPTH	HEIGHT
(X)	VULCAN LINDVECTOR DS	1160	1	180°	160°	60	1"	1	3/4" x 3/4"	4 1/4"	24"	
(Y)	VULCAN FLOORLINE FR	720	1	180°	160°	48	3/4"	1	2 3/4" x 3"	3 1/2"	10"	
(Z)	VULCAN LINDVECTOR DS	1540	1	180°	160°	60	1"	2	3/4" x 3/4"	5 1/2"	24"	

FAN SCHEDULE

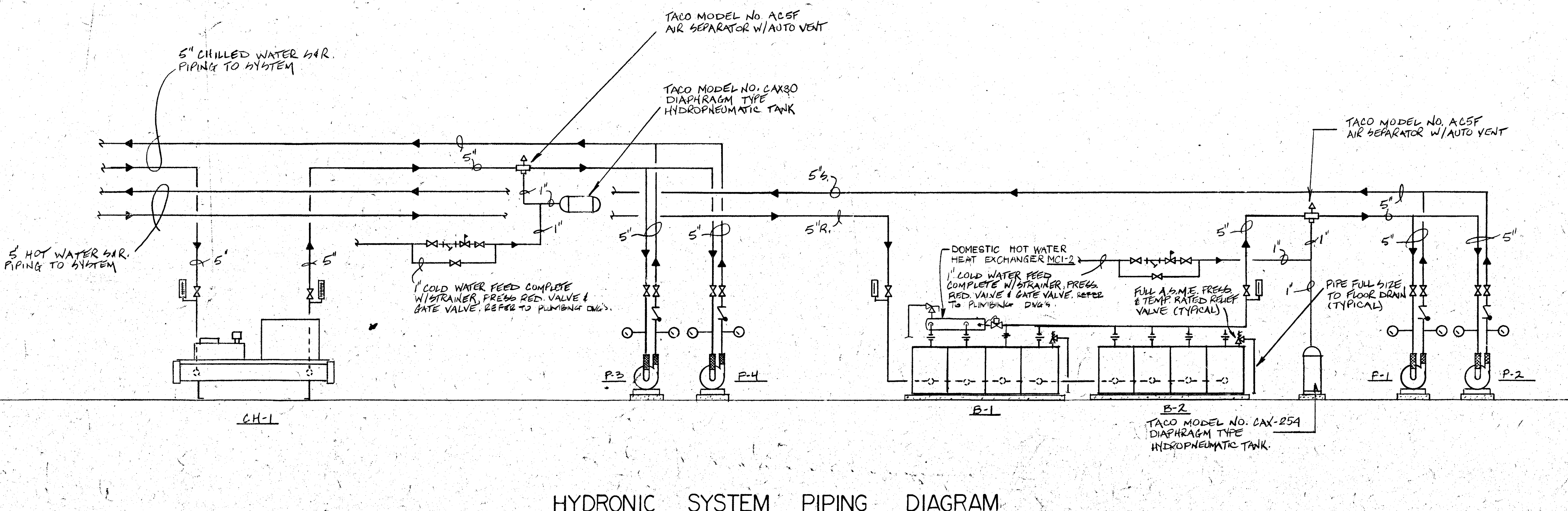
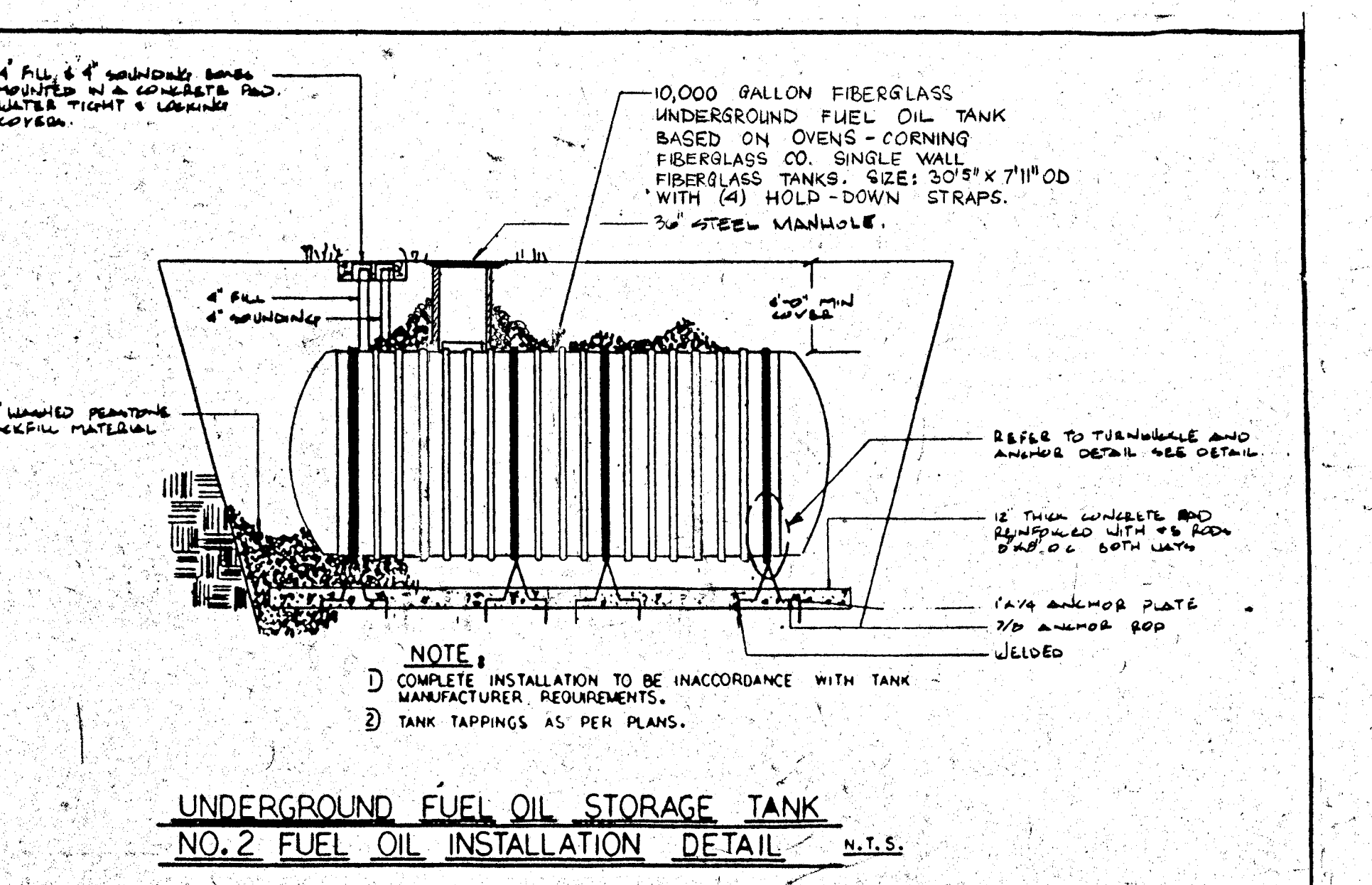
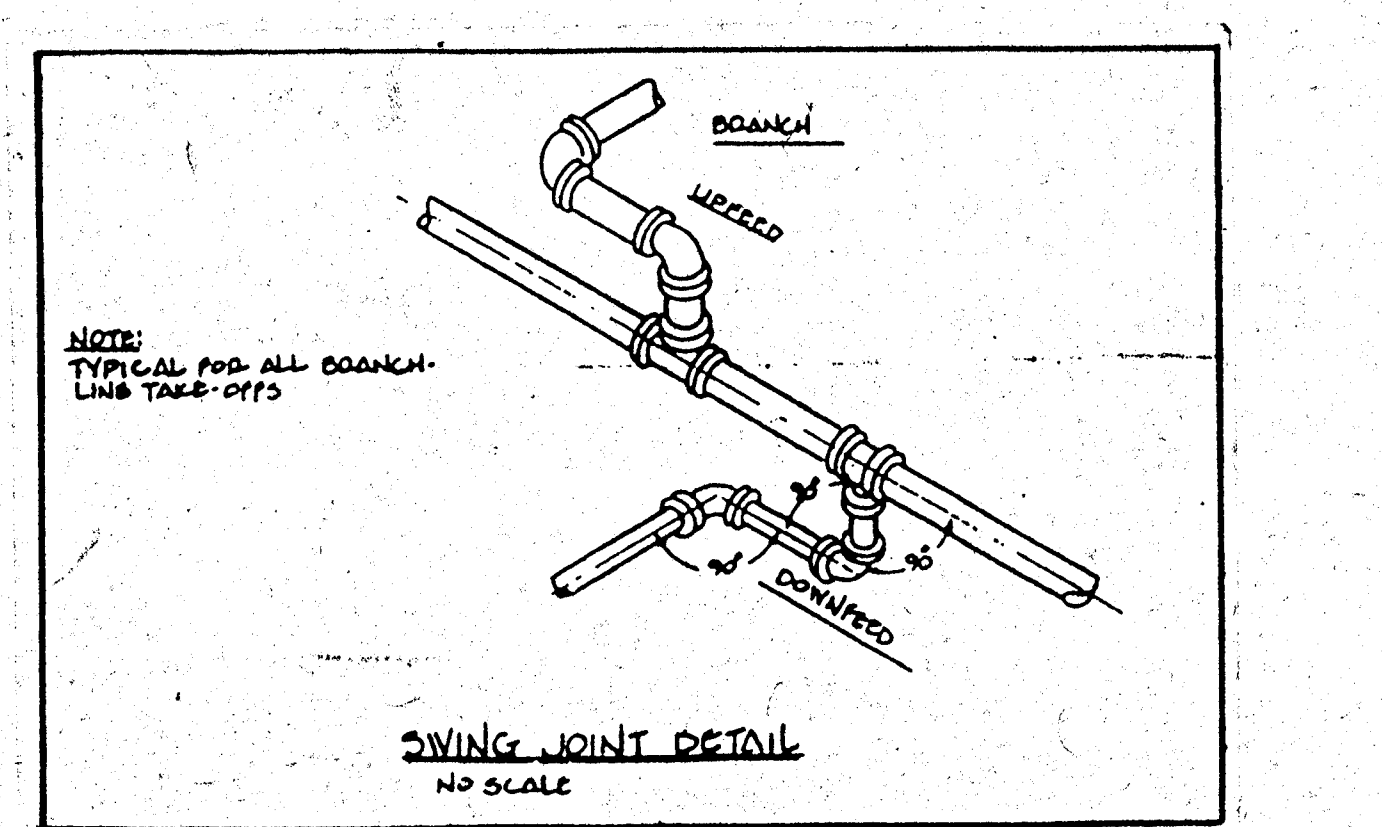
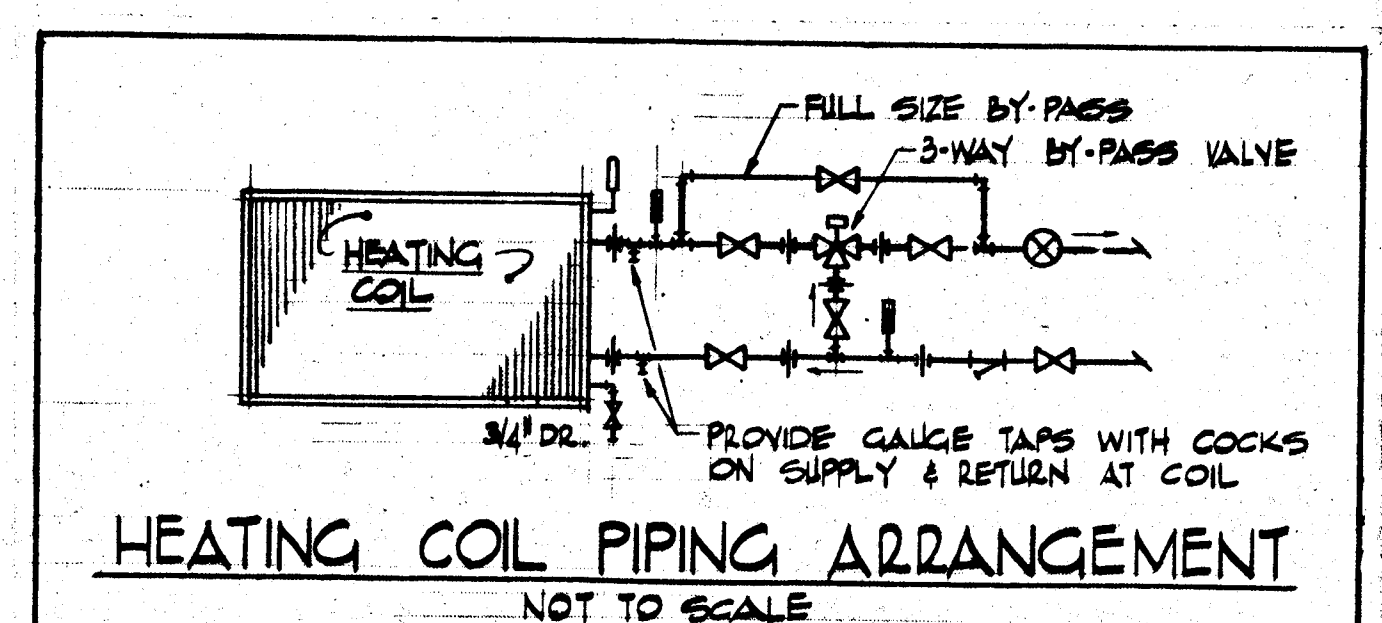
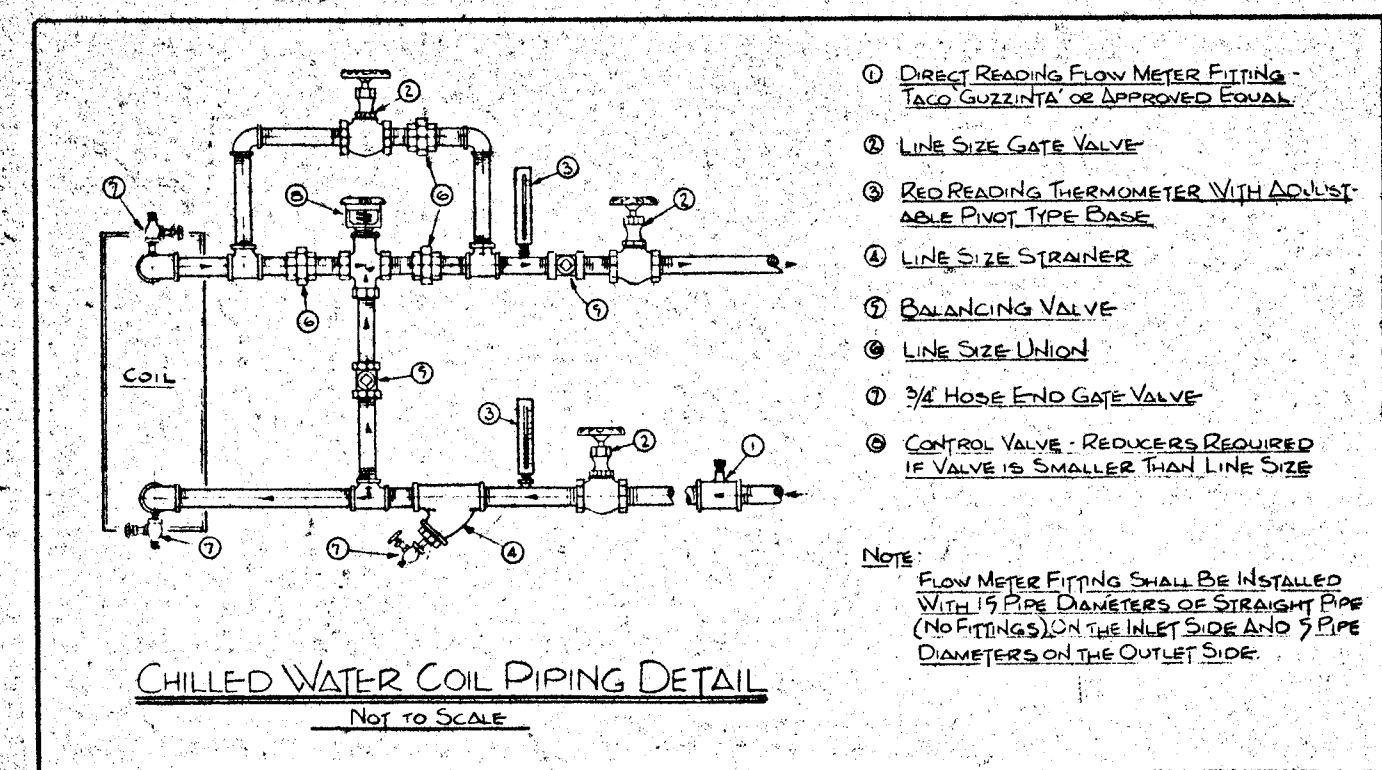
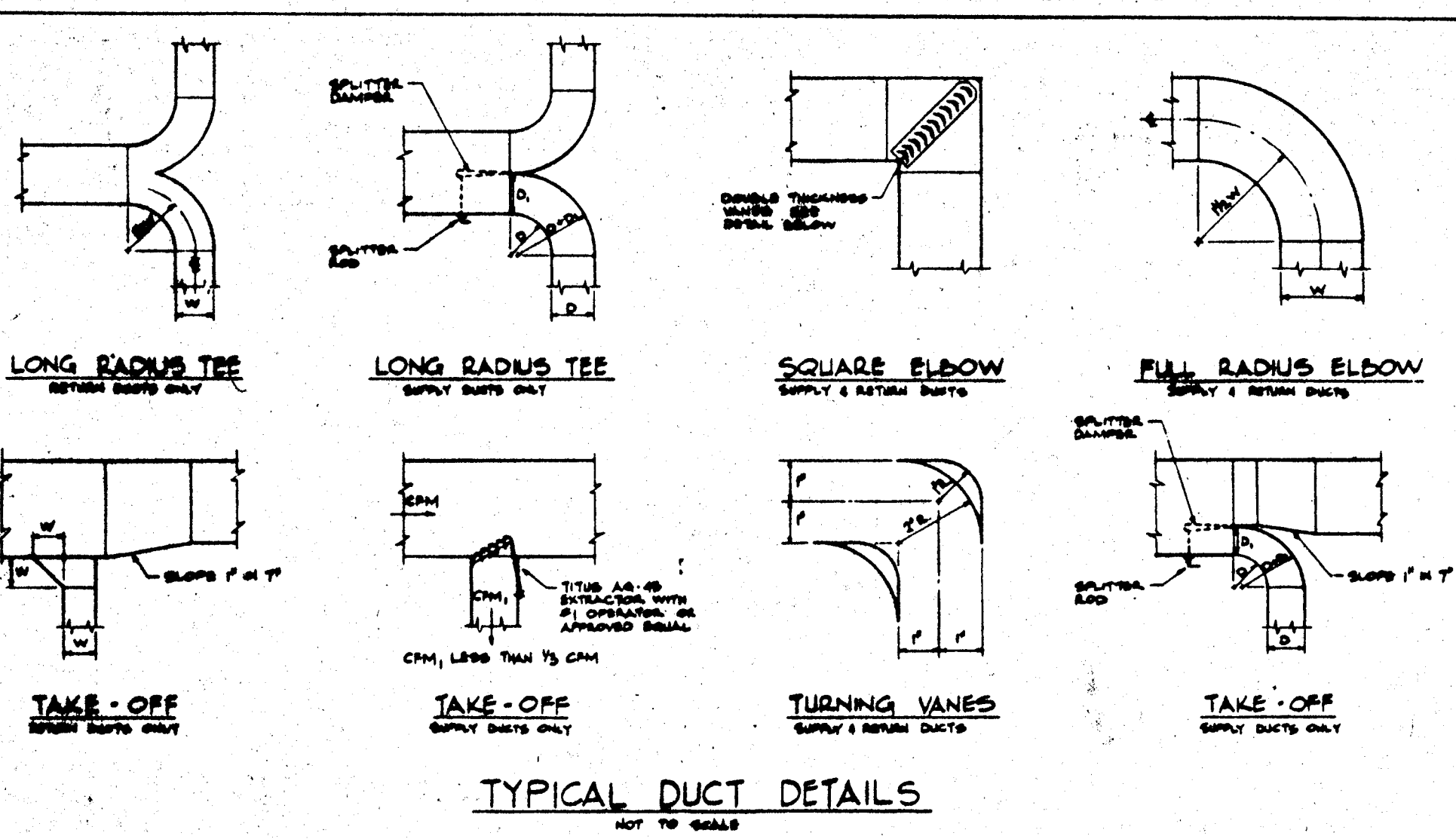
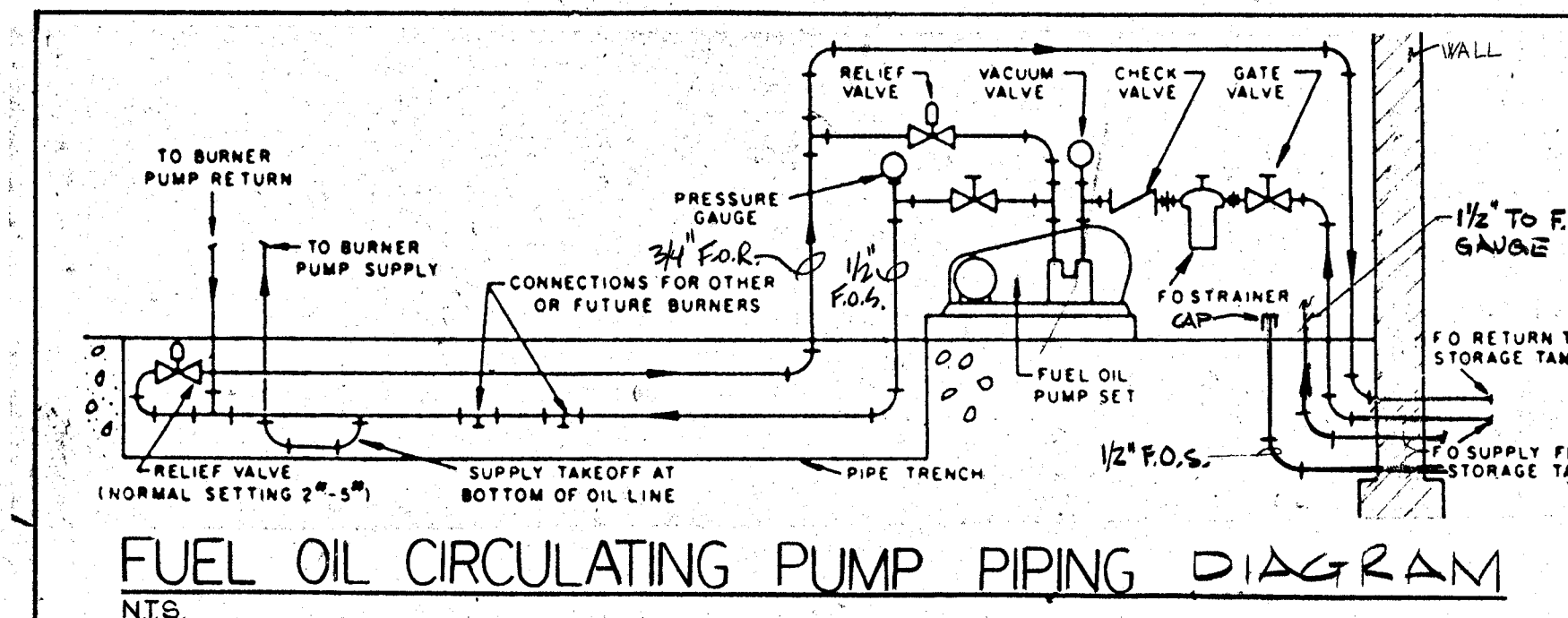
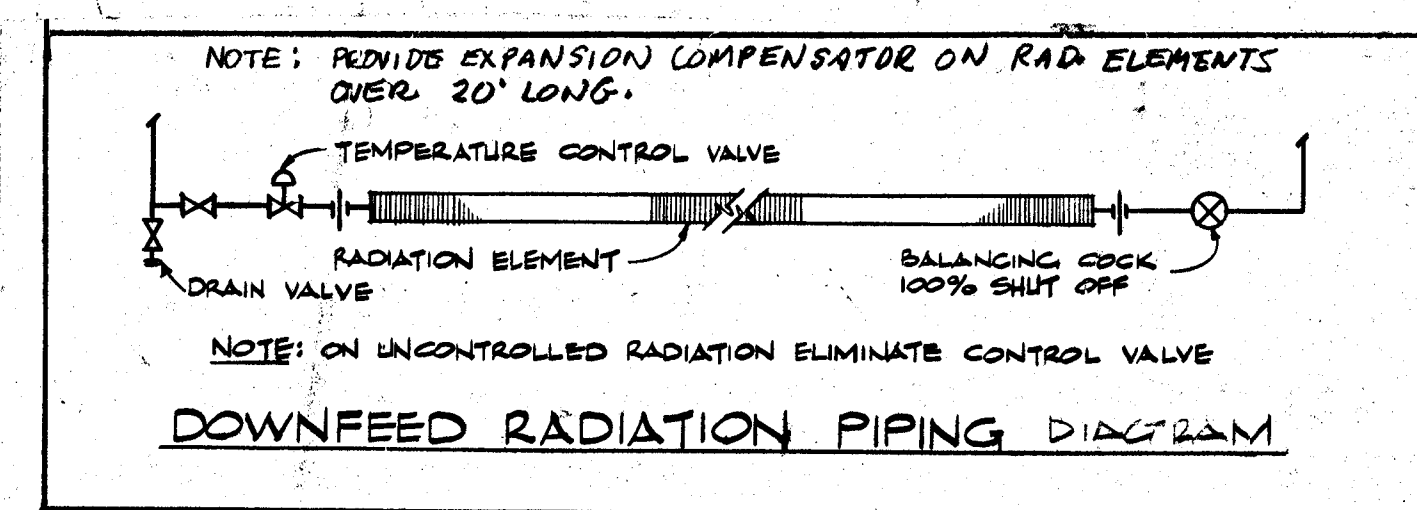
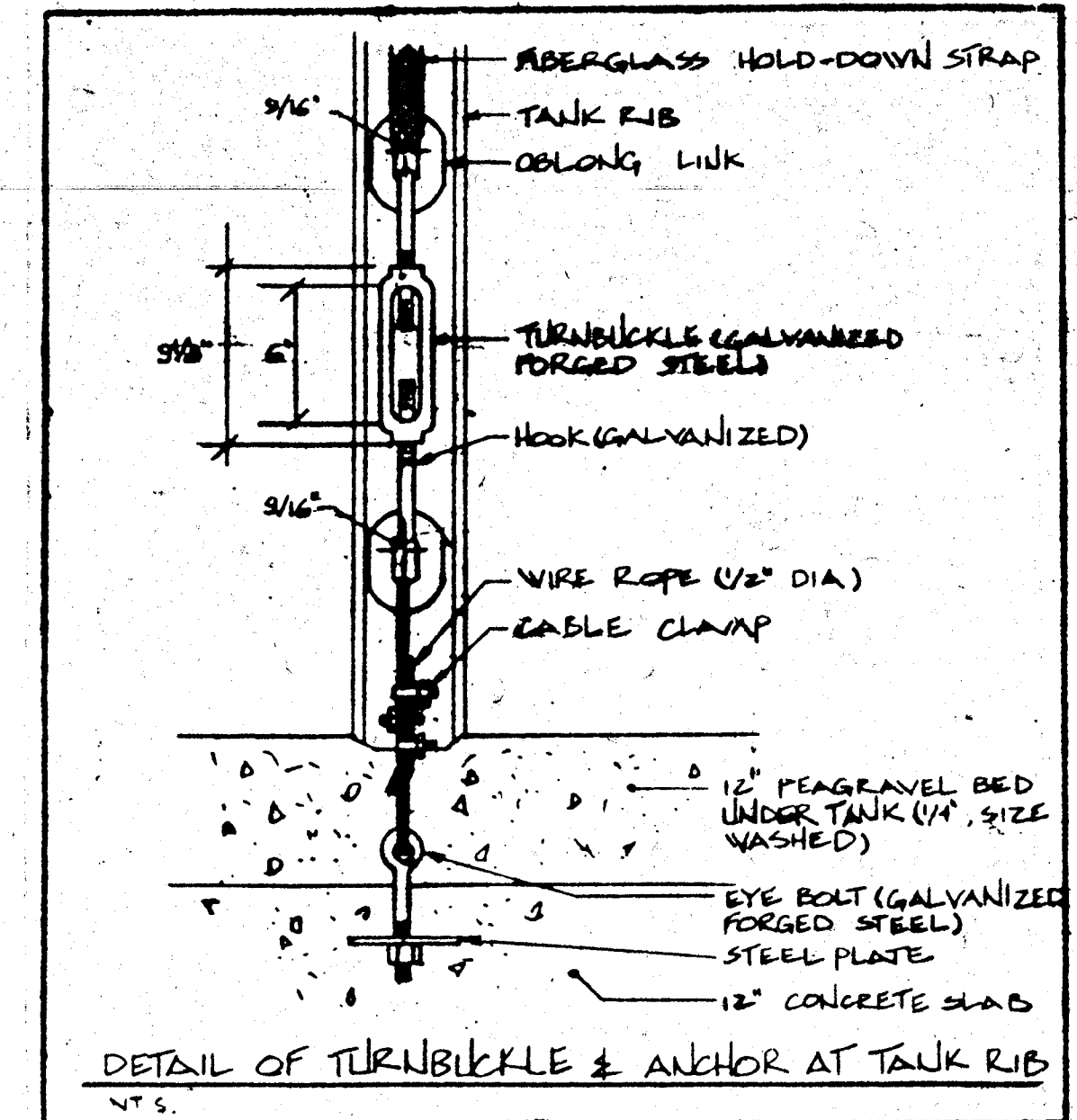
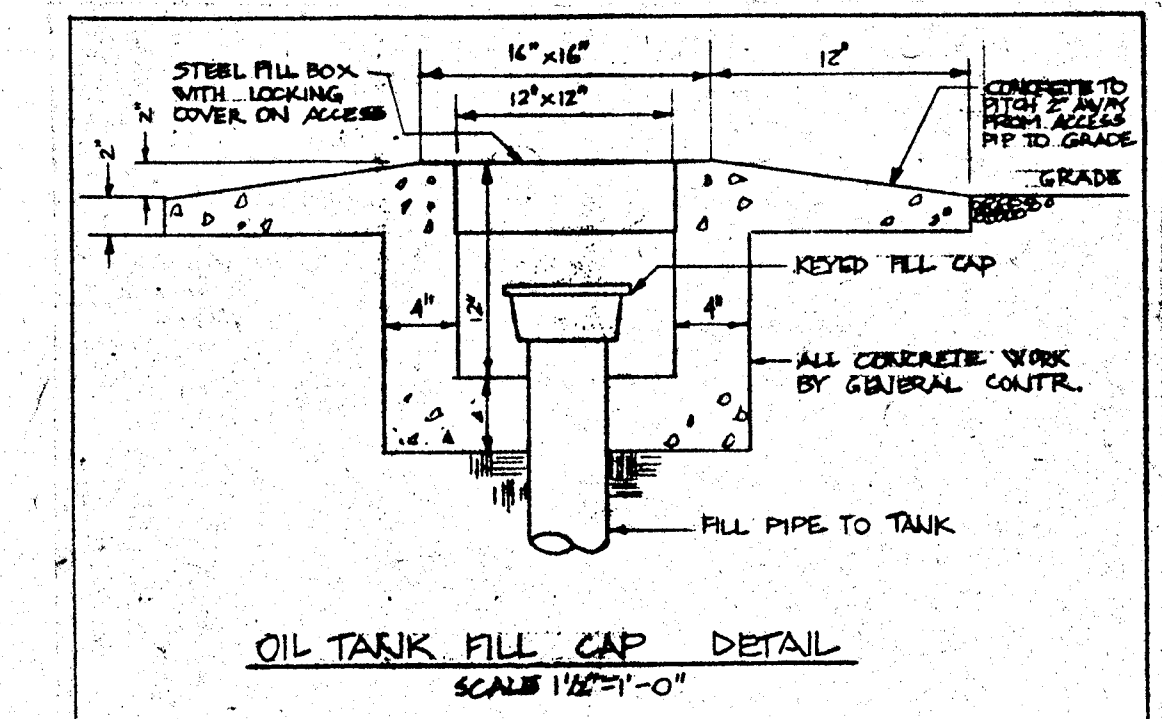
SYMBOL	MANUFACTURER & MODEL	CFM	ESP	RPM	ONES	WATTS	ELECTRICAL	CONTROLLED BY	REMARKS
CF-1	PENN ZEPHYR Z 101	460	.250	1050	4.9	239	115/110	WALL MOUNTED	BACKDRAFT DAMPERS SHALL BE OPERATED BY AIR TO PROVIDE POSITIVE CLOSURE WHEN FAN IS NOT OPERATING UNDER ALL WEATHER CONDITIONS TO WHICH THE ACCOMPANYING FAN IS SUBJECTED.
CF-2	PENN ZEPHYR ZT	85	.250	1110	2.8	48	115/110	LIGHT SWITCH	WALL MOUNTED
CF-3	PENN ZEPHYR ZT	85	.250	1110	2.8	48	115/110	WALL MOUNTED	WALL MOUNTED
CF-4	PENN ZEPHYR ZT	100	.275	1240	3.4	105	115/110	WALL MOUNTED	WALL MOUNTED
EF-5	PENN DYNAPAN LC-BQ	510	.125	1725	4.4	176 HP	115/110	REV. ACT. TSTAT	ATTIC VENTILATION FAN
EF-7B	PENN DYNAPAN LC-BQ	1085	.125	1725	6.4	188 HP	115/110	REV. ACT. TSTAT	ATTIC VENTILATION FAN
EF-6	PENN DYNAPAN LC-BQ	240	.125	1000	2.2	112 HP	115/110	REV. ACT. TSTAT	ATTIC VENTILATION FAN
EF-12	PENN ZEPHYR Z-14	1450	0.125	880	5.7	173 HP	115/110	HOOD SWITCH	

CABINET UNIT HEATER / UNIT HEATER SCHEDULE

SYMBOL	MANUFACTURER & MODEL	CFM	RPM	HP	ELECTR.	BTUH-CAPACITY	GPM	EWT	LWT	EAT	LAT	WPD FT.	REMARKS
CUH-1	VULCAN COB-UNIT 2	250	1000	1/30	115-1-60	10,652	1.28	180°	160°	60°	99°	0.1'	
CUH-2	COB-UNIT 2	250	1000	1/30	115-1-60	10,652	1.28	180°	160°	60°	99°	0.1'	
CUH-3	COB-UNIT 3	330	1080	1/30	115-1-60	18,984	2.23	180°	160°	60°	115°	0.3'	
CUH-4	COB-UNIT 3	330	1080	1/30	115-1-60	18,984	2.23	180°	160°	60°	115°	0.3'	
UH-1	HY-18A	500	1550	1/30	115-1-60	15,769	2.00	180°	160°	60°	89°	2.2'	
UH-2	HY-18A	500	1550	1/30	115-1-60	15,769	2.00	180°	160°	60°	89°	2.2'	
CUH-5	BURNHAM DOORAC BD-50C	145	1000	—	115-1-60	10,000	2.00	180°	160°	60°	124°	0.1'	1.8 AMPS
CUH-6	BURNHAM DOORAC BD-50C	145	1000	—	115-1-60	10,000	2.00	180°	160°	60°	124°	0.1'	1.8 AMPS
CUH-7	VULCAN CR-50-UNIT 6	620	1050	1/20	115-1-60	38,054	4.43	180°	160°	60°	117°	0.9'	ARRANGEMENT 5B
UH-3	VULCAN HY-84	1400	1050	1/20	115-1-60	52,277	6.30	180°	160°	60°	94°	0.24'	

HVAC SYMBOL LIST

SYMBOL	DESCRIPTION
(Symbol)	GATE VALVE
(Symbol)	BALANCING COCK - 100% SHUT-OFF
(Symbol)	C.E.D.
(Symbol)	CEILING SUPPLY DIFFUSER
(Symbol)	C.E.R.
(Symbol)	CEILING RETURN REGISTER
(Symbol)	S.S.R.
(Symbol)	SIDEWALL SUPPLY REGISTER
(Symbol)	S.R.R.
(Symbol)	SIDEWALL RETURN REGISTER
(Symbol)	O.A.
(Symbol)	OUTDOOR AIR
(Symbol)	H.W.
(Symbol)	HOT WATER
(Symbol)	C.H.W.
(Symbol)	CHILLED WATER
(Symbol)	S.
(Symbol)	SUPPLY
(Symbol)	R.
(Symbol)	RETURN
(Symbol)	HOT WATER SUPPLY PIPING
(Symbol)	HOT WATER RETURN PIPING
(Symbol)	CH.W.S.
(Symbol)	CHILLED WATER SUPPLY PIPING
(Symbol)	CH.W.R.
(Symbol)	CHILLED WATER RETURN PIPING
(Symbol)	THERMOSTAT - 5'-0" AFF
(Symbol)	STRAINER
(Symbol)	CHECK VALVE
(Symbol)	UNION
(Symbol)	THERMOMETER
(Symbol)	VOLUME DAMPER
(Symbol)	ACOUSTICALLY LINED DUCTWORK
(Symbol)	RADIATION CONTROL VALVE (REMOTE TSTAT)
(Symbol)	LENGTH OF TYPE 'X' RADIATION
(Symbol)	RETURN OR EXHAUST AIR
(Symbol)	PRESSURE REGULATING VALVE
(Symbol)	RADIATION CONTROL VALVE (INTEGRAL TSTAT)
(Symbol)	MOTORIZED DAMPER
(Symbol)	F.O.S.
(Symbol)	FUEL OIL SUPPLY PIPING
(Symbol)	F.O.R.
(Symbol)	FUEL OIL RETURN PIPING
(Symbol)	F.O.V.
(Symbol)	FUEL OIL VENT PIPING
(Symbol)	F.O.G.
(Symbol)	FUEL OIL GAUGE PIPING
(Symbol)	REVERSE ACTING TSTAT SET AT 78°F - 7'-0" AFF



CARLIN-POZZI-CHIN ARCHITECTS, P.C.
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 NATHAN HALE ELEMENTARY SCHOOL
 ADDITIONS, ALTERATIONS & CCCE COMPLIANCE
 SCHEDULES AND DETAILS
 HVAC - 4
 DRAWING NO.