VRF HEAT PUMP REPLACEMENT PROJECT

C.H. Booth Library

25 MAIN STREET NEWTOWN, CONNECTICUT DATE: 10th JANUARY, 2024



SUBMITTED TO: Town of Newtown Cyrenius H. Booth Library 25 Main Street Newtown, CT 06470

PREPARED BY:

25 High Ridge Road Pound Ridge NY, 10576 Tel: 914-764-9011

Marchetti Consulting Engineers www.marchetticonsultingengineers.com

	LIST OF DRAWINGS	
SHEET	TITLE	ISSUE
C-001.00	COVER SHEET AND DRAWING LIST	1/10/
	MECHANICAL	
M-001.00	DEMOLITION LOWER LEVEL PLAN	1/10/
M-002.00	DEMOLITION MAIN LEVEL PLAN	1/10/
M-003.00	DEMOLITION UPPER LEVEL PLAN	1/10/
M-004.00	LOWER LEVEL MECHANICAL PLAN	1/10/
M-005.00	MAIN LEVEL MECHANICAL PLAN	1/10/
M-006.00	UPPER LEVEL DEMOLITION & CONSTRUCTION PLAN	1/10/
M-007.00	UPPER LEVEL ATTIC DEMOLITION & CONSTRUCTION PLAN	1/10/
M-008.00	LOWER LEVEL REFRIGERANT LINES PLAN	1/10/
M-009.00	MAIN LEVEL REFRIGERANT LINES PLAN	1/10/
M-010.00	UPPER LEVEL REFRIGERANT LINES PLAN	1/10/
M-011.00	UPPER LEVEL ATTIC REFRIGERANT LINES PLAN & SECTION	1/10/
M-012.00	LOWER LEVEL PENETRATION PLAN	1/10/
M-013.00	MAIN LEVEL PENETRATION PLAN	1/10/
M-014.00	UPPER LEVEL PENETRATION PLAN	1/10/
M-015.00	UPPER LEVEL ATTIC PENETRATION PLAN	1/10/
M-016.00	MECHANICAL DETAILS (1)	1/10/
M-017.00	MECHANICAL DETAILS (2)	1/10/
M-018.00	AIR HANDLER MECHANICAL DETAILS	1/10/
M-019.00	AIR HANDLER MECHANICAL DETAILS & SCHEDULES	1/10/
M-020.00	MECHANICAL SCHEMATICS	1/10/
M-021.00	DAIKIN PIPING TREE DIAGRAM (1)	1/10/
M-022.00	DAIKIN PIPING TREE DIAGRAM (2)	1/10/
M-023.00	MITSUBISHI PIPING TREE DIAGRAM (1)	1/10/
M-024.00	MITSUBISHI PIPING TREE DIAGRAM (2)	1/10/
M-025.00	MITSUBISHI PIPING TREE DIAGRAM (3)	1/10/
M-026.00	MITSUBISHI PIPING TREE DIAGRAM (4)	1/10/
M-027.00	LG PIPING TREE DIAGRAM (1)	1/10/
M-028.00	LG PIPING TREE DIAGRAM (2)	1/10/
M-029.00	LG & MITSUBISHI GUIDE SPECIFICATION - CONTROLS	1/10/
M-030.00	MECHANICAL SPECIFICATIONS (1)	1/10/
M-031.00	MECHANICAL SPECIFICATIONS (2)	1/10/
M-032.00	MECHANICAL SPECIFICATIONS (3)	1/10/
M-033.00	MECHANICAL SPECIFICATIONS (4) MECHANICAL SPECIFICATIONS (5)	1/10/
M-034.00	MECHANICAL SPECIFICATIONS (5) MECHANICAL SPECIFICATIONS (6)	1/10/
M-035.00 M-036.00	MECHANICAL SPECIFICATIONS (0) MECHANICAL SPECIFICATIONS (7)	1/10/
///-030.00	ELECTRICAL	1/10/
E-001.00	LOWER LEVEL ELECTRICAL PLAN	1/10/
E-001.00	MAIN LEVEL ELECTRICAL PLAN	1/10/
E-003.00	UPPER AND ATTIC LEVEL ELECTRICAL PLAN	1/10/
E-003.00	ELECTRICAL RISER DIAGRAM AND SCHEDULES	1/10/
E-005.00	ELECTRICAL SCHEDULES AND DETAILS	1/10/
E-006.00	DAIKIN WIRING DIAGRAM (1)	1/10/
E-007.00	DAIKIN WIRING DIAGRAM (2)	1/10/
E-008.00	DAIKIN WIRING DIAGRAM (3)	1/10/
E-009.00	MITSUBISHI WIRING DIAGRAM	1/10/
E-010.00	ELECTRICAL SPECIFICATIONS	1/10/
	PLUMBING	
P-001.00	LOWER LEVEL PLUMBING PLAN	1/10/
P-002.00	MAIN LEVEL PLUMBING PLAN	1/10/
P-003.00	UPPER LEVEL PLUMBING PLAN	1/10/
P-004.00	PLUMBING DETAILS	1/10/
P-005.00	PLUMBING SPECIFICATIONS	1/10/

NOTE:

ALL BIDDERS TO INCLUDE ANY AND ALL ABATEMENT AND REMEDIATION COSTS ASSOCIATED WITH THE DEMOLITION AND CONSTRUCTION OF THE SYSTEM REPLACEMENT. SYSTEM WARRANTEE PERIOD TO BE INITIATED AFTER ALL SYSTEMS ARE INSTALLED, COMMISSIONED AND TESTED.

Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DESCRIPTION DATE No. 1 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 COVER SHEET AND DRAWING LIST PROJECT NUMBER: #34-2023 DATE: DATE DRAWN BY: EF CHECKED BY: PGM C-001.00 SCALE:

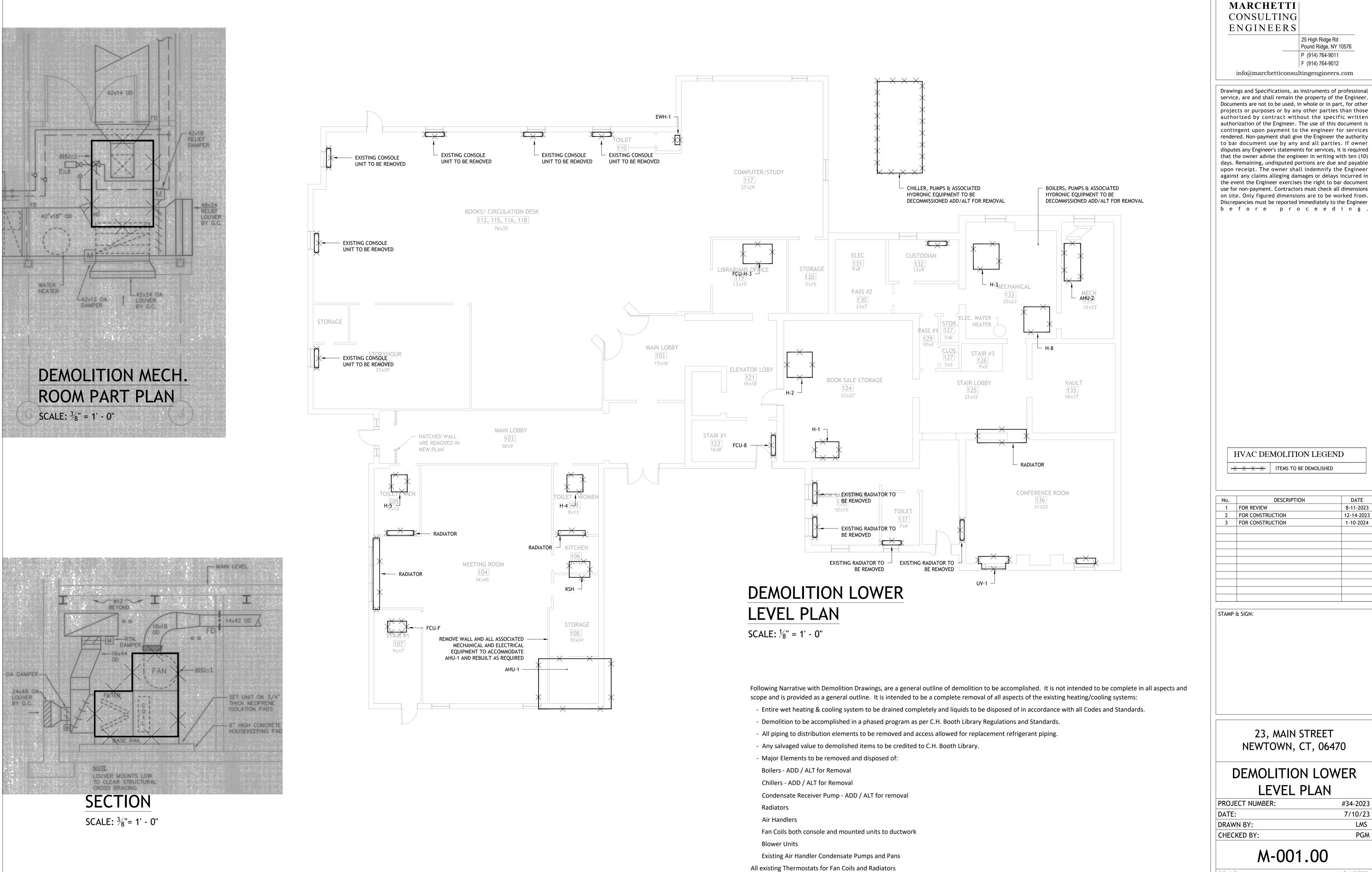
AS NOTED

MARCHETTI

CONSULTING ENGINEERS

> 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012

info@marchetticonsultingengineers.com



SCALE:

AS NOTED

#34-2023

7/10/23

LMS

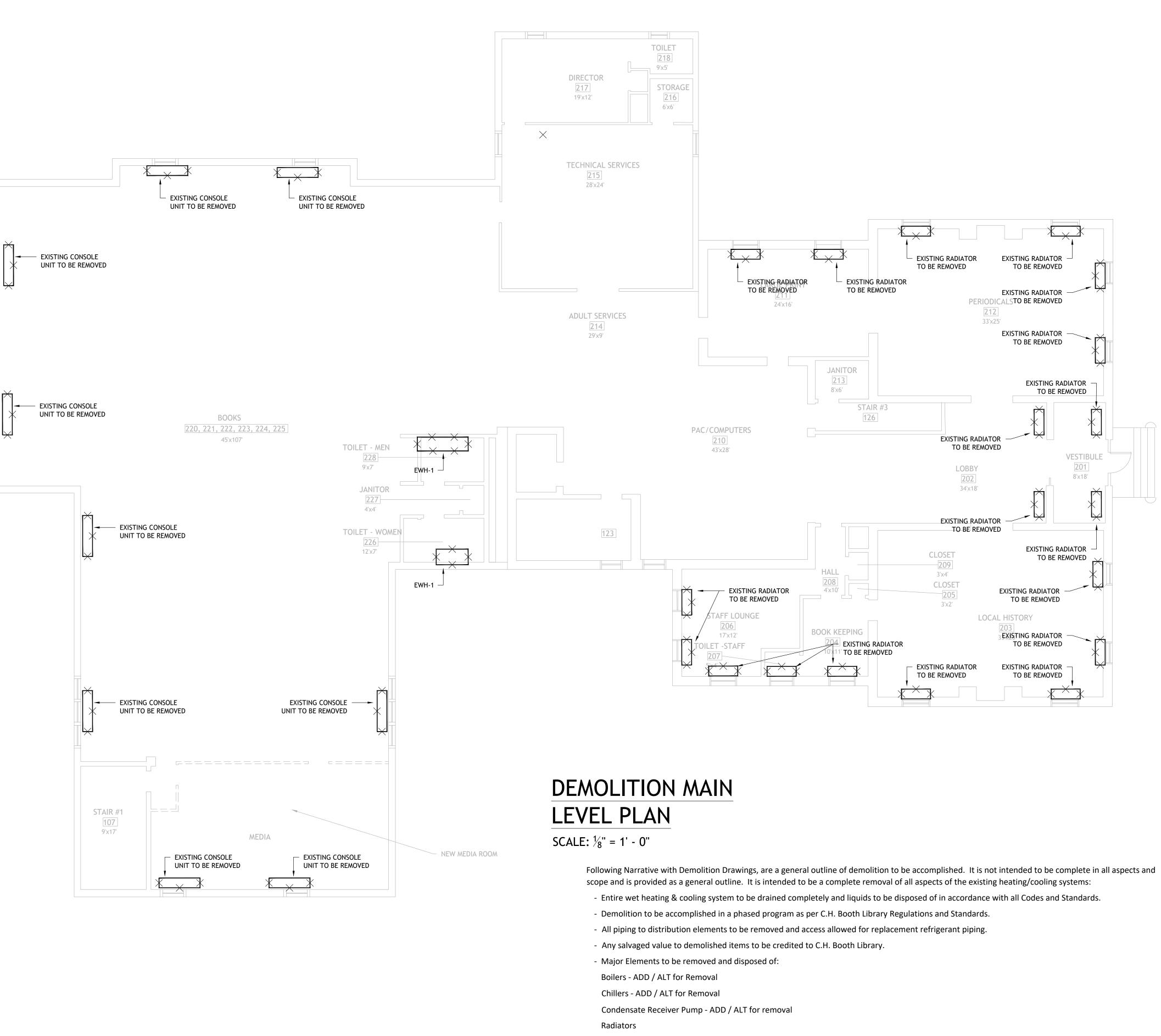
PGM

DATE

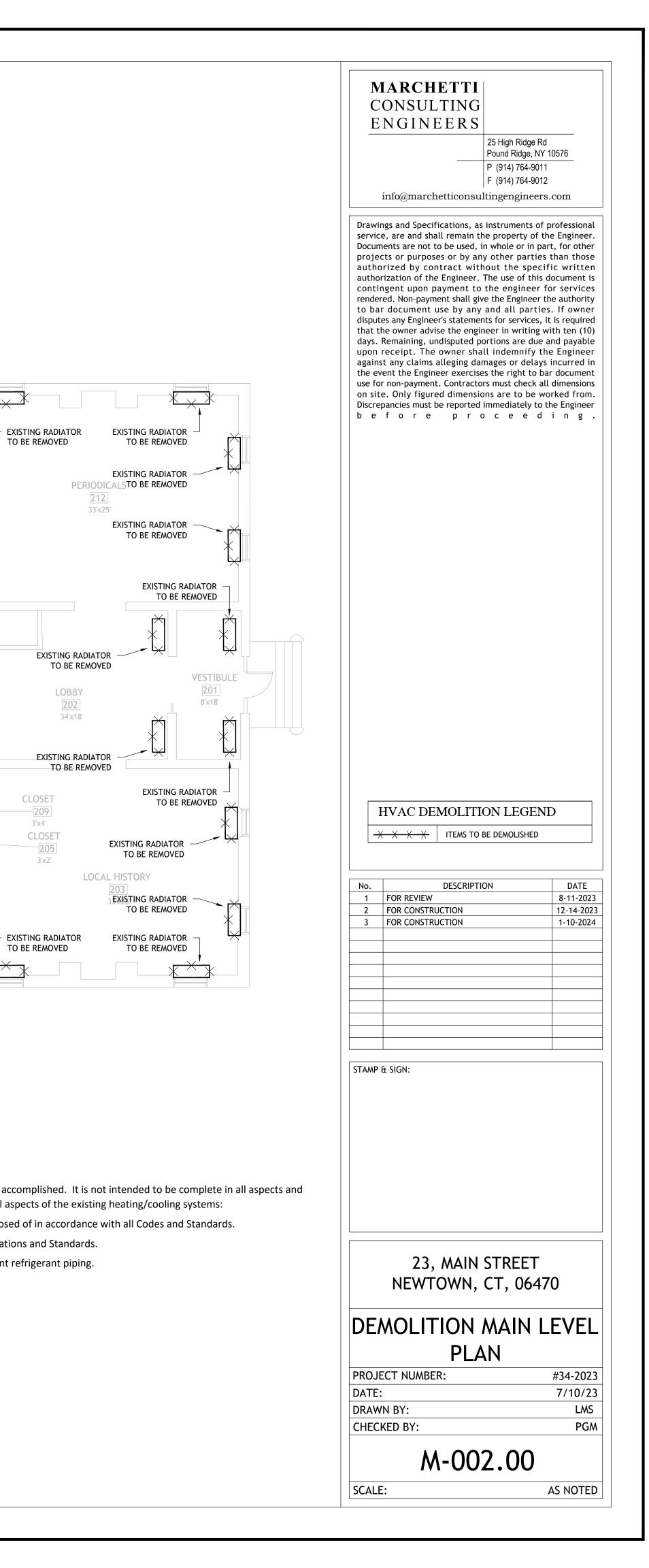
8-11-2023

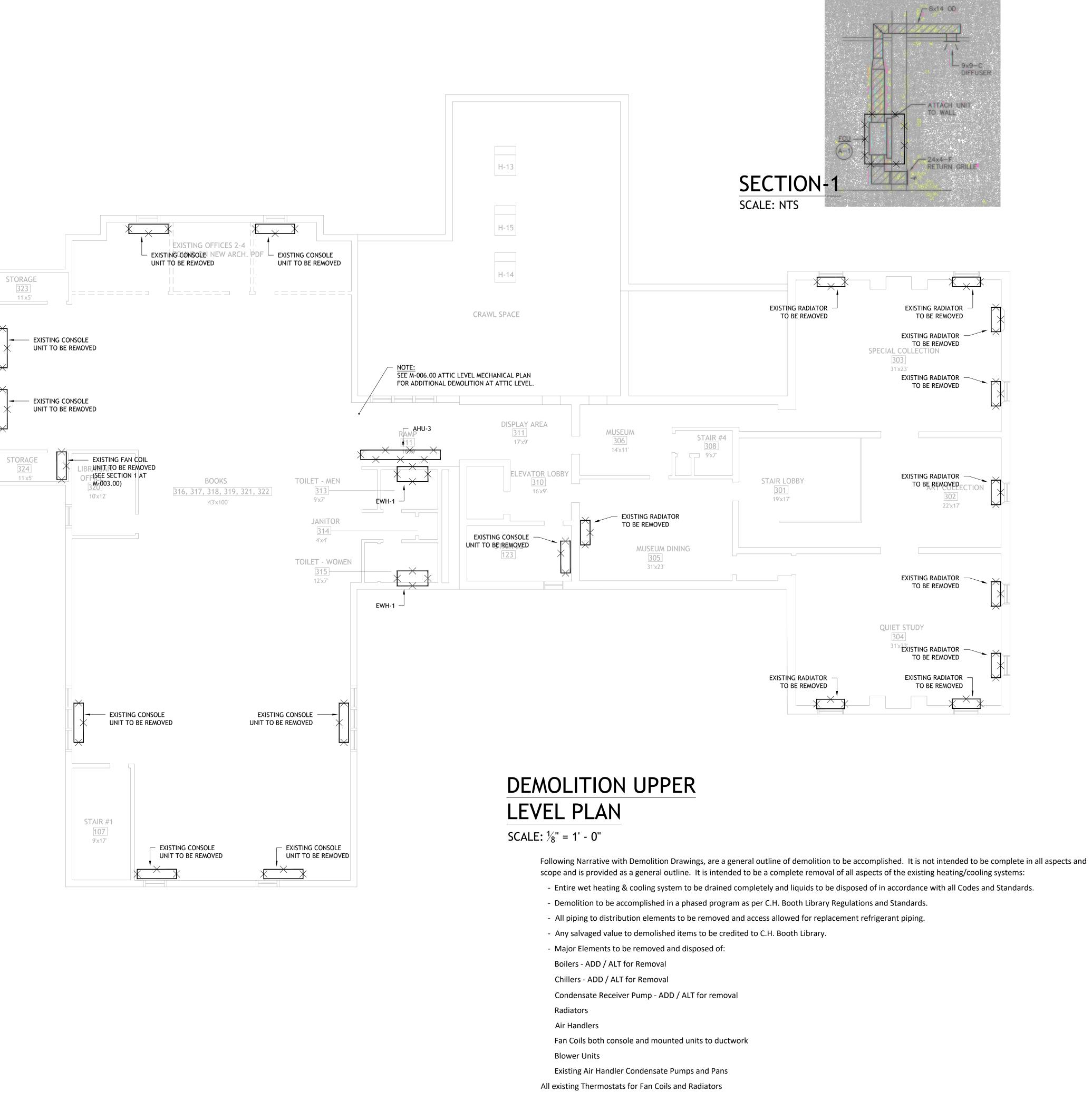
12-14-2023

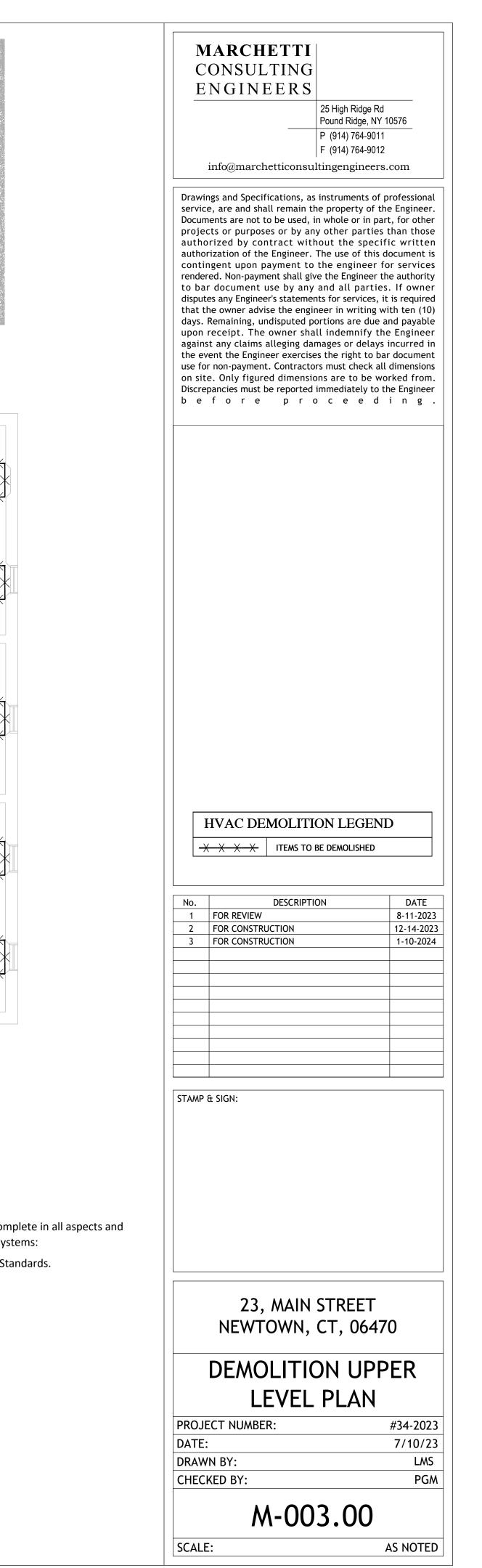
1-10-2024

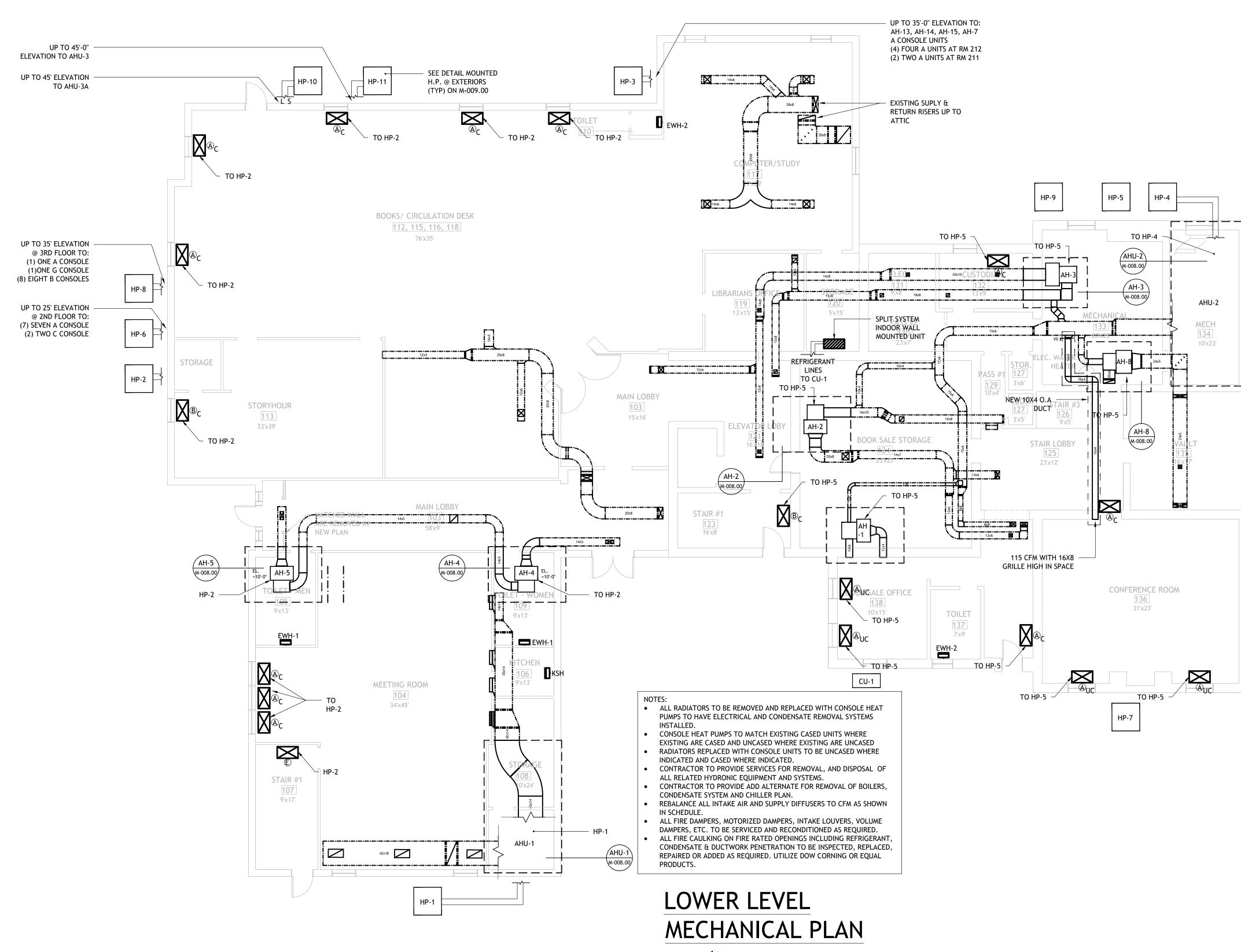


- Air Handlers
- Fan Coils both console and mounted units to ductwork Blower Units
- victing Air Hon
- Existing Air Handler Condensate Pumps and Pans
- All existing Thermostats for Fan Coils and Radiators





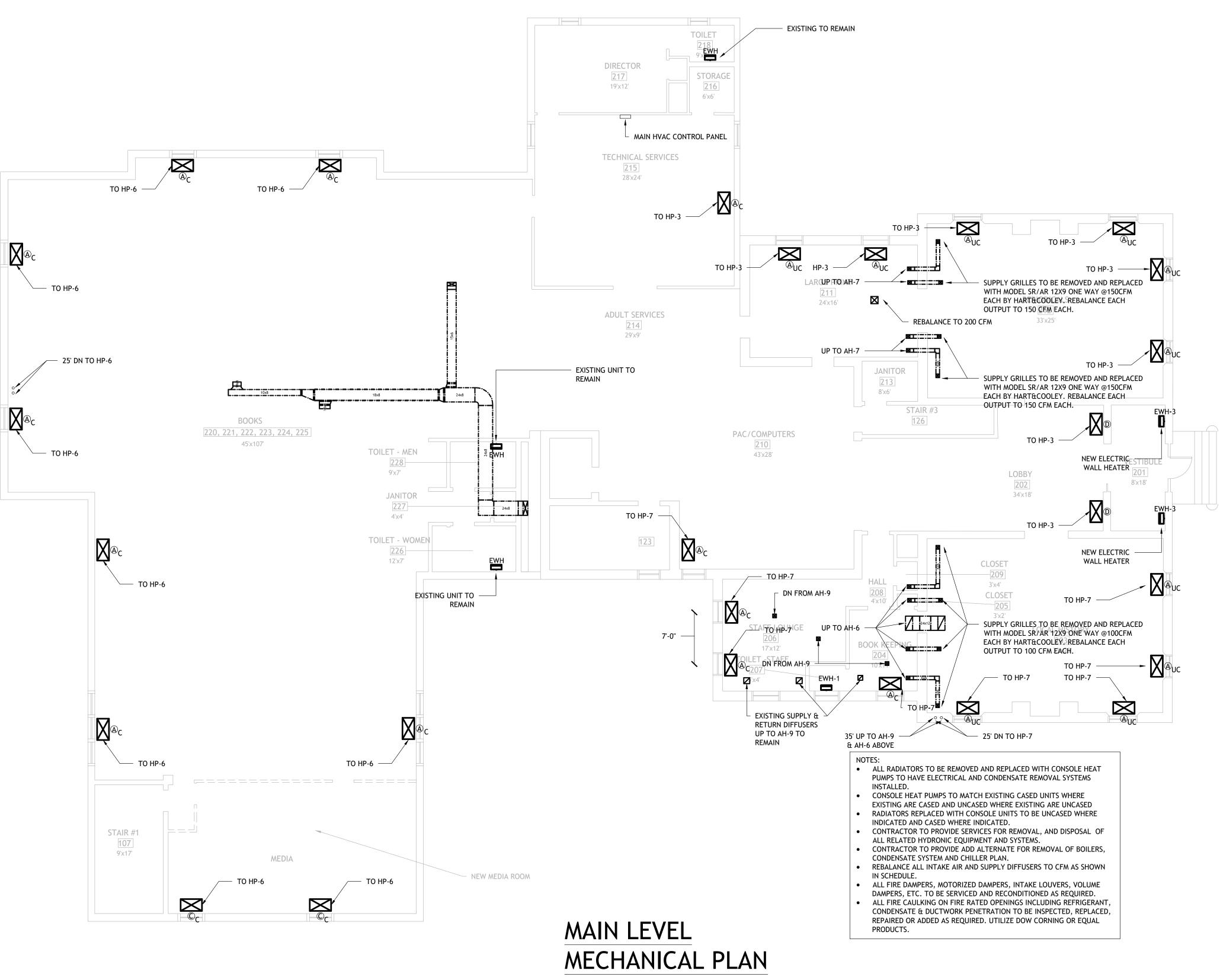




SCALE: ¹/₈" = 1' - 0"

HVAC LEGEND 10x8 SUPPLY DUCT WITH SIZE 10x8 RETURN DUCT WITH SIZE FLEX DUCT WITH SIZE CEILING DIFFUSER RETURN GRILLE EF EXHAUST GRILLE **1" LINEAR DIFFUSER SLOT** -----FLOOR DIFFUSER Ⅻ-/--SIDE WALL DIFFUSER T.S 🗶 🚽 🛏 TOE SPACE SUPPLY /∥ → SIDE WALL RETURN GRILLE EF 🖊 🔫 🕂 — SIDE WALL EXHAUST GRILLE UP/DN SUPPLY RISER OR DROP UP/DN RETURN RISER OR DROP VD L VOLUME DAMPER FD L FIRE DAMPER ZD 🔔 ZONE DAMPER MOTOR DAMPER (T) THERMOSTAT (S) SENSOR - 🚔 - UH ELECTRICAL UNIT HEATER HEAT PUMP UNIT AH-1 AIR HANDLER UNIT CONSOLE UNIT (CASED OR UNCASED) CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED ╘╴╼╸╸ EWH-# NEW ELECTRIC WALL HEATER LIQUID AND SUCTION REFRIGERANT LINES

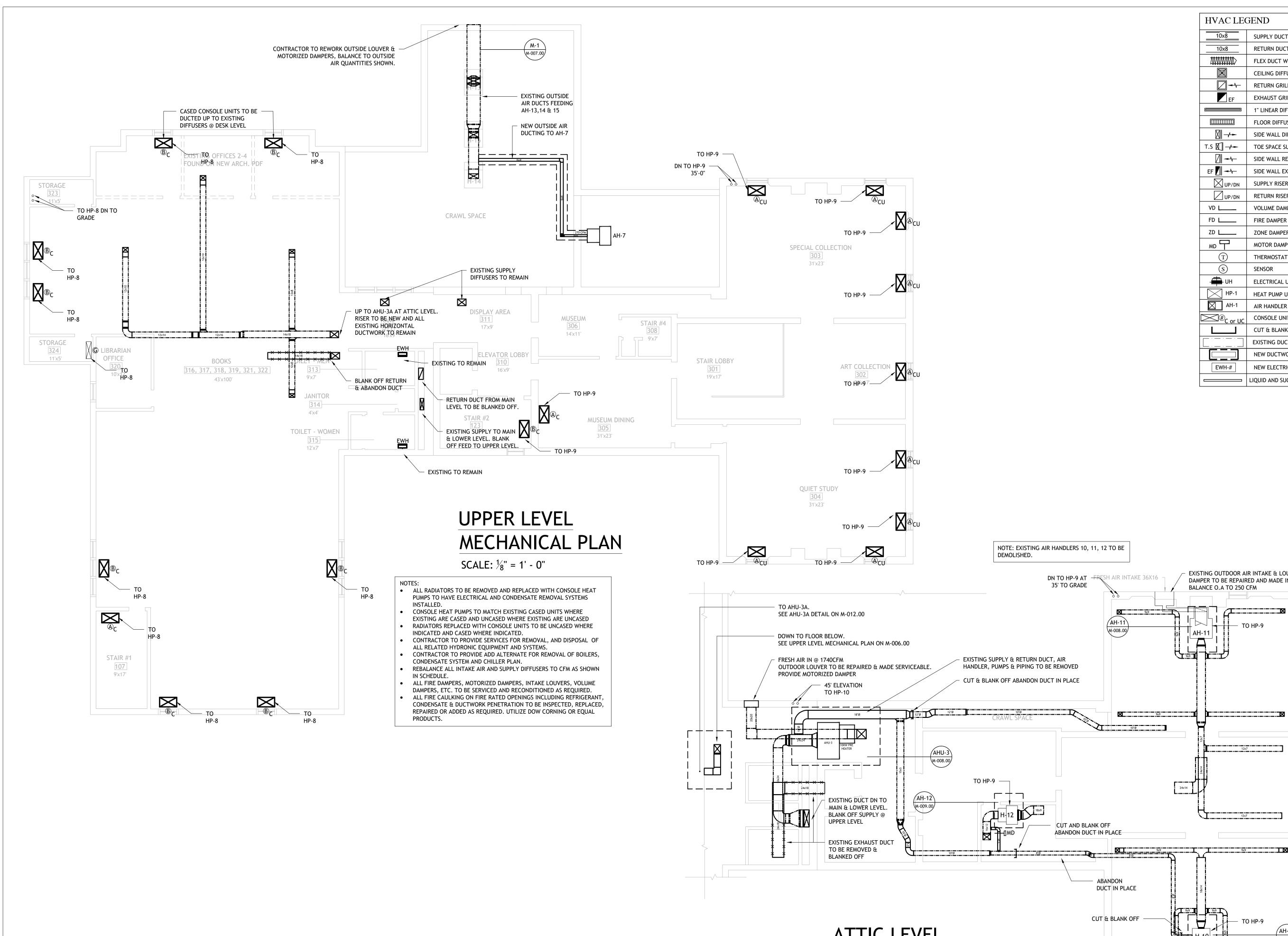
MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DESCRIPTION DATE No. 8-11-2023 1 FOR REVIEW 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 LOWER LEVEL MECHANICAL PLAN **PROJECT NUMBER:** #34-2023 7/10/23 DATE: DRAWN BY: LMS CHECKED BY: PGM M-004.00 SCALE: AS NOTED



SCALE: ¹/₈" = 1' - 0"

HVAC LEGEND <u>1</u>0x8 SUPPLY DUCT WITH SIZE RETURN DUCT WITH SIZE 10x8 FLEX DUCT WITH SIZE CEILING DIFFUSER RETURN GRILLE EF EXHAUST GRILLE 1" LINEAR DIFFUSER SLOT -----FLOOR DIFFUSER ፟፟፟፟∭_≁∽ SIDE WALL DIFFUSER T.S 🗶 🚽 🗕 TOE SPACE SUPPLY /∥ → SIDE WALL RETURN GRILLE EF SIDE WALL EXHAUST GRILLE UP/DN SUPPLY RISER OR DROP UP/DN RETURN RISER OR DROP VD L VOLUME DAMPER FD L FIRE DAMPER ZD _____ ZONE DAMPER мD MOTOR DAMPER (T) THERMOSTAT (S) SENSOR - 🚔 - UH ELECTRICAL UNIT HEATER HP-1 HEAT PUMP UNIT AH-1 AIR HANDLER UNIT CONSOLE UNIT (CASED OR UNCASED) CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED ╘╴╼╴╴ EWH-# NEW ELECTRIC WALL HEATER LIQUID AND SUCTION REFRIGERANT LINES

MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DESCRIPTION DATE No. 8-11-2023 1 FOR REVIEW 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 MAIN LEVEL MECHANICAL PLAN PROJECT NUMBER: #34-2023 7/10/23 DATE: DRAWN BY: LMS CHECKED BY: PGM M-005.00 SCALE:

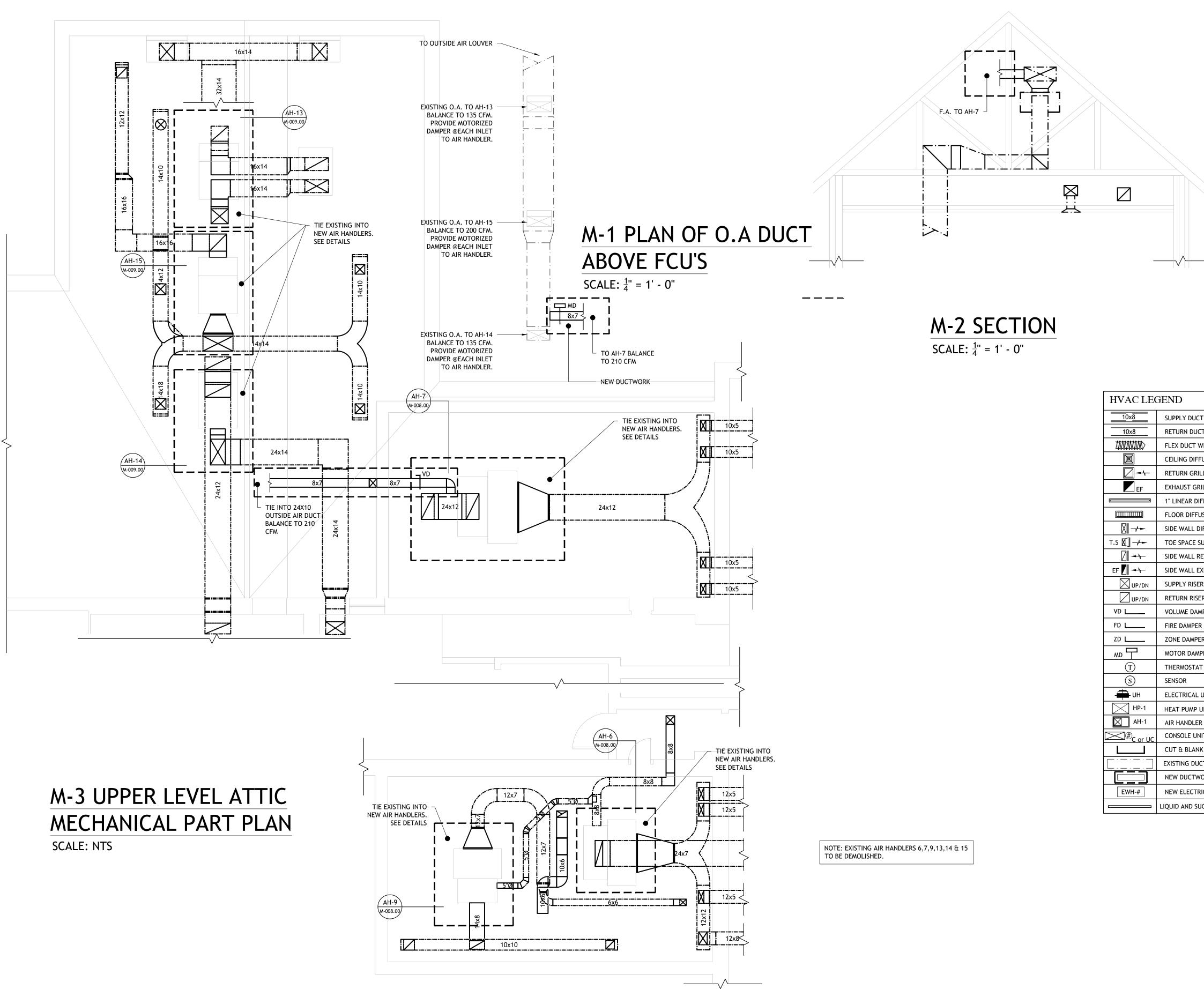


ATTIC LEVEL MECHANICAL PLAN

SCALE: ¹/₈" = 1' - 0"

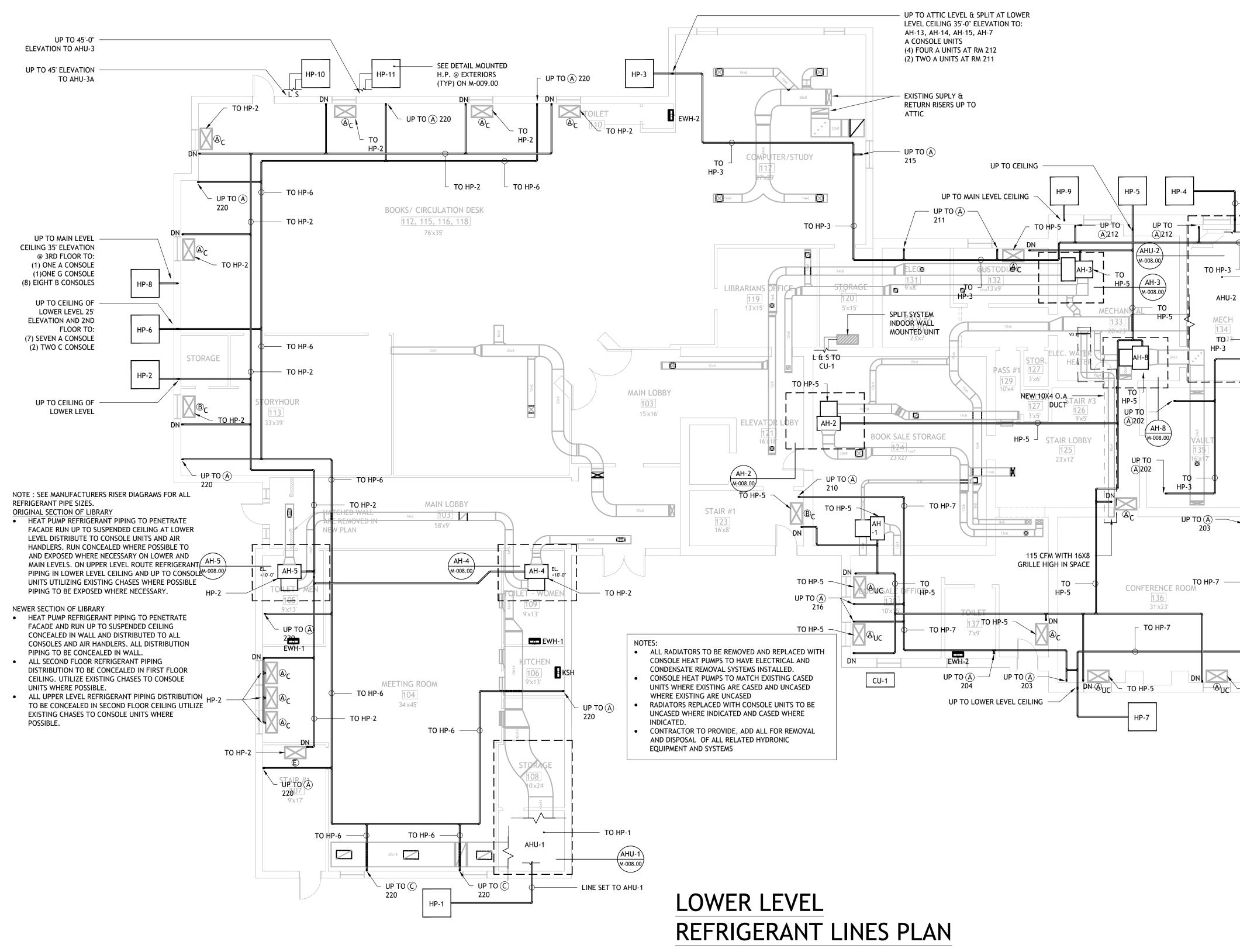
EXISTING OUTDOOR AIR INTAKE & LOUVER & MOTORIZED DAMPER TO BE REPAIRED AND MADE IN SERVICEABLE CONDITION. BALANCE O.A TO 250 CFM

HVAC LEGEND MARCHETTI <u>1</u>0x8 CONSULTING SUPPLY DUCT WITH SIZE ENGINEERS 10x8 RETURN DUCT WITH SIZE FLEX DUCT WITH SIZE 25 High Ridge Rd Pound Ridge, NY 10576 CEILING DIFFUSER P (914) 764-9011 RETURN GRILLE F (914) 764-9012 EF EXHAUST GRILLE info@marchetticonsultingengineers.com -----1" LINEAR DIFFUSER SLOT Drawings and Specifications, as instruments of professional FLOOR DIFFUSER service, are and shall remain the property of the Engineer. Ⅻ-/--SIDE WALL DIFFUSER Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those T.S 🗶 🚽 🛏 TOE SPACE SUPPLY authorized by contract without the specific written authorization of the Engineer. The use of this document is // ≁~ SIDE WALL RETURN GRILLE contingent upon payment to the engineer for services EF 🖊 🔫 🔶 SIDE WALL EXHAUST GRILLE rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner UP/DN SUPPLY RISER OR DROP disputes any Engineer's statements for services, it is required UP/DN that the owner advise the engineer in writing with ten (10) RETURN RISER OR DROP days. Remaining, undisputed portions are due and payable VD L VOLUME DAMPER upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in FD L FIRE DAMPER the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions ZD 🔔 ZONE DAMPER on site. Only figured dimensions are to be worked from. мD MOTOR DAMPER Discrepancies must be reported immediately to the Engineer before proceeding (T) THERMOSTAT (S) SENSOR - 🚔 - UH ELECTRICAL UNIT HEATER HEAT PUMP UNIT AH-1 AIR HANDLER UNIT CONSOLE UNIT (CASED OR UNCASED) CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED ╘╴╼╸╸ EWH-# NEW ELECTRIC WALL HEATER LIQUID AND SUCTION REFRIGERANT LINES EXISTING OUTDOOR AIR INTAKE & LOUVER & MOTORIZED DAMPER TO BE REPAIRED AND MADE IN SERVICEABLE CONDITION. DESCRIPTION DATE No. BALANCE O.A TO 250 CFM 1 FOR REVIEW 8-11-2023 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 9x9.... (AH-11) TO HP-9 W-008.00 AH-11 A ᡗᠴᡜ᠆ᡅ᠋ᠴᢧ STAMP & SIGN: 9x9 10[°]Ø 12x7 24x14 ·-----12x7 23, MAIN STREET **NEWTOWN, CT, 06470** ABANDON UPPER LEVEL DEMOLITION & DUCT IN PLACE CONSTRUCTION PLAN CUT & BLANK OFF TO HP-9 PROJECT NUMBER: #34-2023 AH-10 DATE: 7/10/23 M-008.00 DRAWN BY: LMS PGM CHECKED BY: M-006.00 BALANCE O.A TO 250 CFM - FRESH AIR INTAKE SCALE: AS NOTED



HVAC LEO	GEND
<u>1</u> 0x8	SUPPLY DUCT WITH SIZE
10x8	RETURN DUCT WITH SIZE
	FLEX DUCT WITH SIZE
	CEILING DIFFUSER
	RETURN GRILLE
EF	EXHAUST GRILLE
	1" LINEAR DIFFUSER SLOT
	FLOOR DIFFUSER
	SIDE WALL DIFFUSER
T.S 🕅 —/	TOE SPACE SUPPLY
/ -≁-	SIDE WALL RETURN GRILLE
EF ∑ →	SIDE WALL EXHAUST GRILLE
	SUPPLY RISER OR DROP
UP/DN	RETURN RISER OR DROP
	VOLUME DAMPER
FD L	FIRE DAMPER
ZD L	ZONE DAMPER
MDT	MOTOR DAMPER
T	THERMOSTAT
S	SENSOR
- 🛱 ИН	ELECTRICAL UNIT HEATER
HP-1	HEAT PUMP UNIT
AH-1	AIR HANDLER UNIT
C or UC	CONSOLE UNIT (CASED OR UNCASED)
	CUT & BLANK OFF DUCT
	EXISTING DUCTWORK TO REMAIN
	NEW DUCTWORK TO BE INSTALLED
EWH-#	NEW ELECTRIC WALL HEATER
	LIQUID AND SUCTION REFRIGERANT LINES

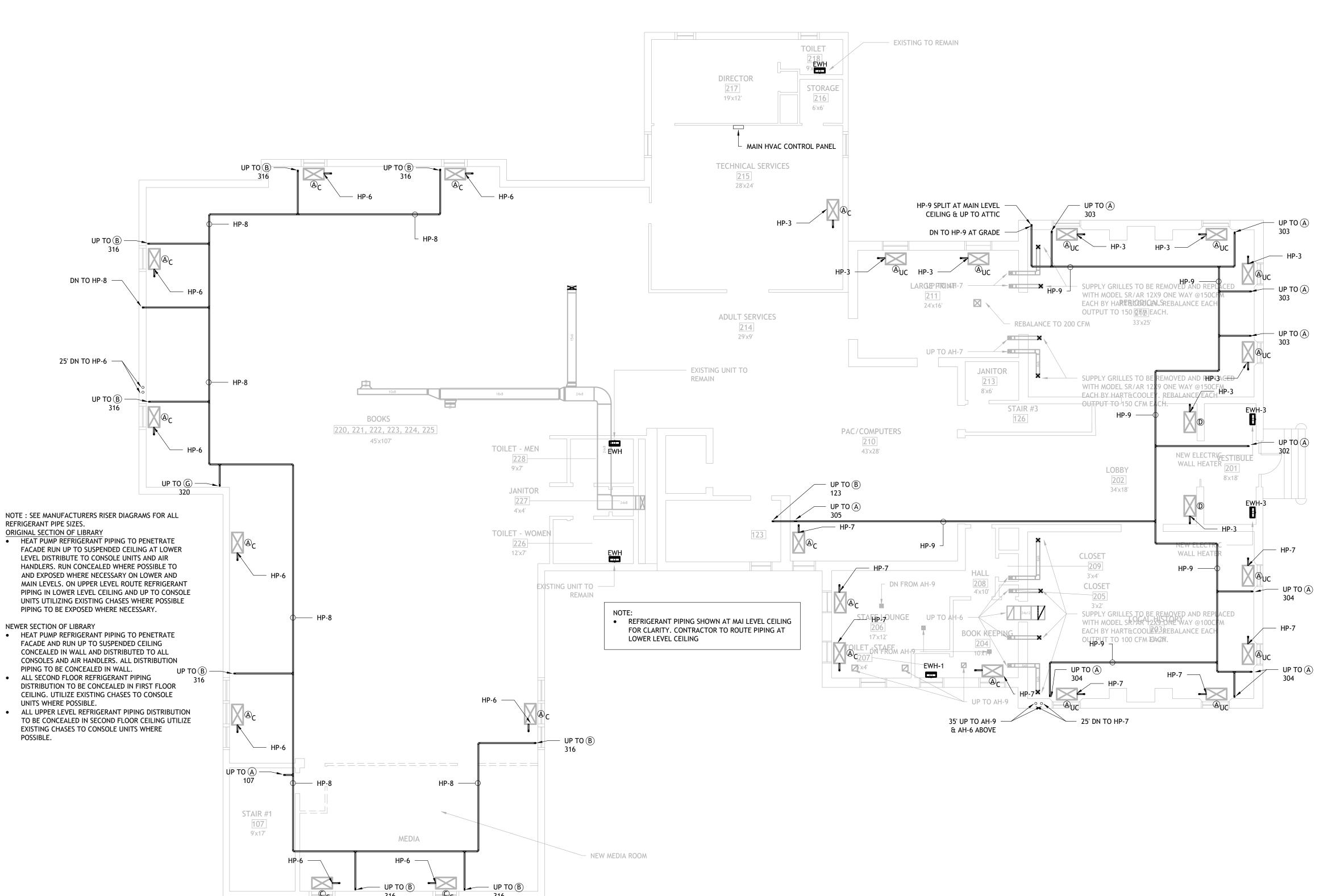
MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DESCRIPTION DATE No. 1 FOR REVIEW 8-11-2023 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 UPPER LEVEL ATTIC DEMOLITION & CONSTRUCTION PLAN PROJECT NUMBER: #34-2023 7/10/23 DATE: DRAWN BY: LMS CHECKED BY: PGM M-007.00 SCALE: AS NOTED



SCALE: ¹/₈" = 1' - 0"

HVAC LEGEND MARCHETTI 10x8 CONSULTING SUPPLY DUCT WITH SIZE ENGINEERS 10x8 RETURN DUCT WITH SIZE FLEX DUCT WITH SIZE 25 High Ridge Rd Pound Ridge, NY 10576 CEILING DIFFUSER P (914) 764-9011 RETURN GRILLE F (914) 764-9012 EF EXHAUST GRILLE info@marchetticonsultingengineers.com **1" LINEAR DIFFUSER SLOT** -----Drawings and Specifications, as instruments of professional FLOOR DIFFUSER service, are and shall remain the property of the Engineer. Ⅻ-/--SIDE WALL DIFFUSER Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those T.S 🗶 🚽 🛏 TOE SPACE SUPPLY authorized by contract without the specific written authorization of the Engineer. The use of this document is /∥ -----SIDE WALL RETURN GRILLE contingent upon payment to the engineer for services EF 🖊 🔫 🕂 — SIDE WALL EXHAUST GRILLE rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner UP/DN SUPPLY RISER OR DROP disputes any Engineer's statements for services, it is required UP/DN that the owner advise the engineer in writing with ten (10) RETURN RISER OR DROP days. Remaining, undisputed portions are due and payable VD L VOLUME DAMPER upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in FD L FIRE DAMPER the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions ZD 🔔 ZONE DAMPER MD T on site. Only figured dimensions are to be worked from. MOTOR DAMPER Discrepancies must be reported immediately to the Engineer before proceeding. (T)THERMOSTAT (S) SENSOR - 🚔 - UH ELECTRICAL UNIT HEATER 📈 НР-1 HEAT PUMP UNIT AH-1 AIR HANDLER UNIT CONSOLE UNIT (CASED OR UNCASED) CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED EWH-# NEW ELECTRIC WALL HEATER LIQUID AND SUCTION REFRIGERANT LINES DESCRIPTION DATE No. 8-11-2023 1 FOR REVIEW 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 LOWER LEVEL REFRIGERANT LINES PLAN PROJECT NUMBER: #34-2023 DATE: 7/10/23 DRAWN BY: LMS CHECKED BY: PGM M-008.00 SCALE: AS NOTED

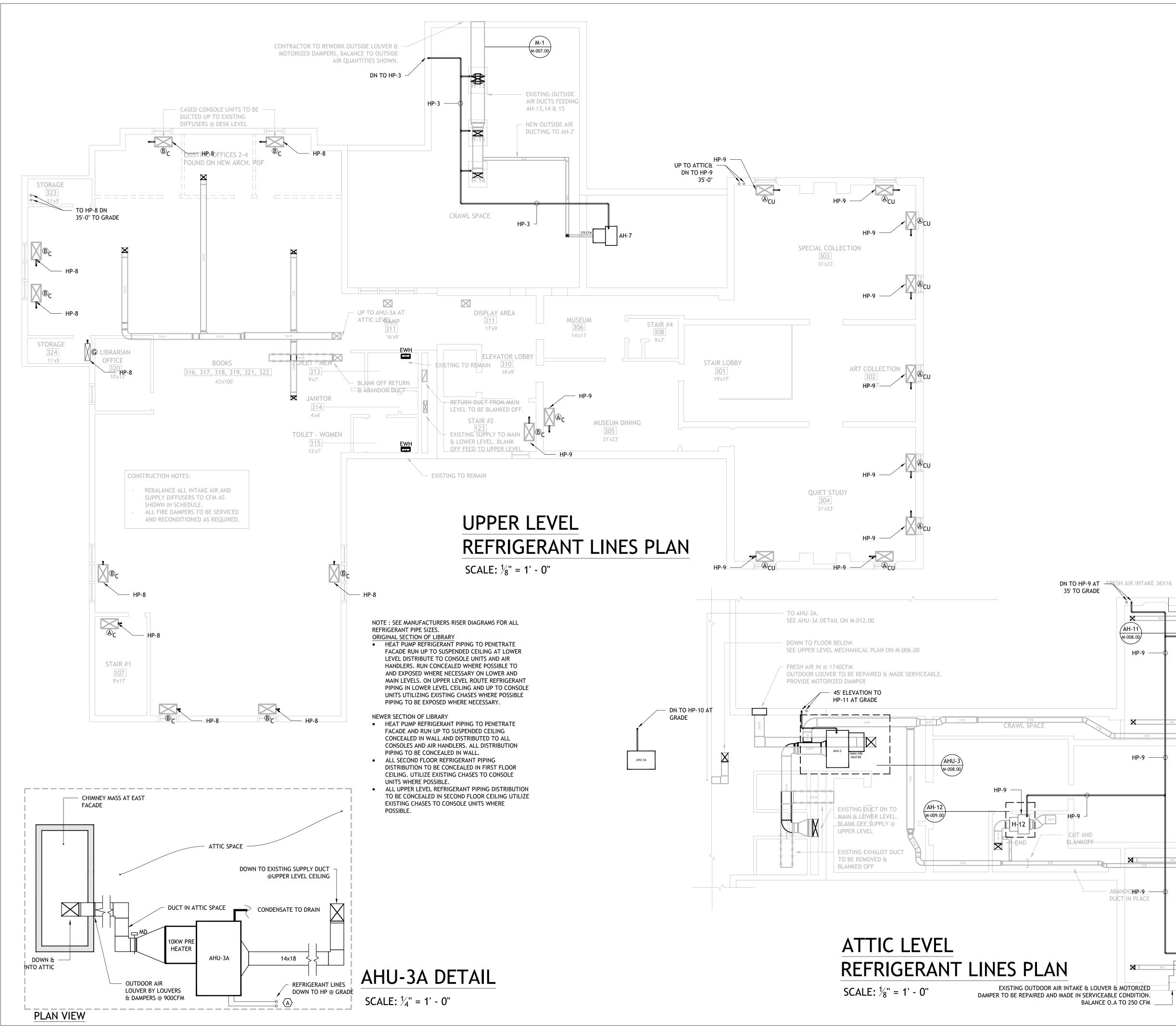
LINE SET TO AHU-2 UP TO (A)212 TO HP-4 - UP TO (A)202 ____ - UP TO (A) 203



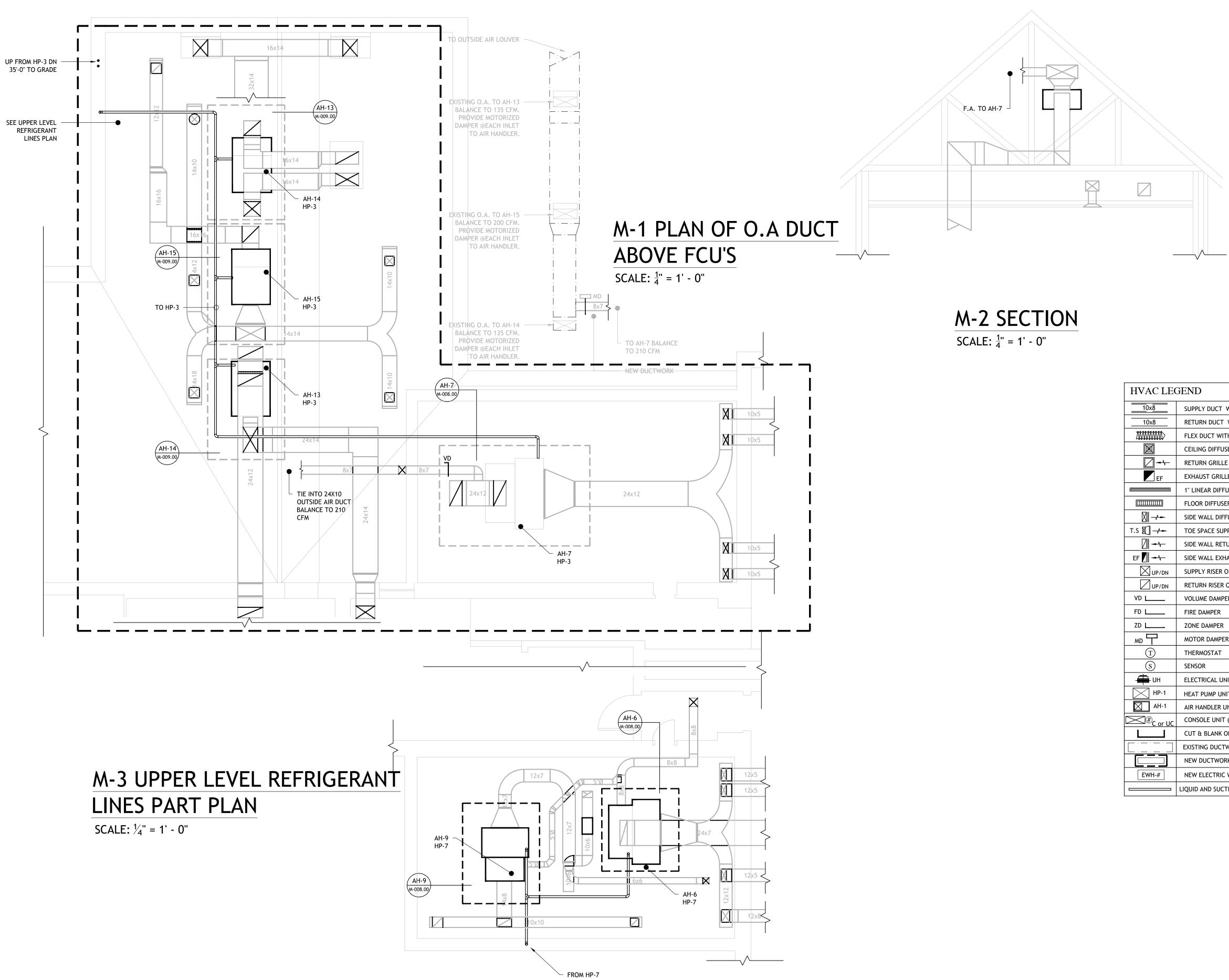
MAIN LEVEL REFRIGERANT LINES PLAN

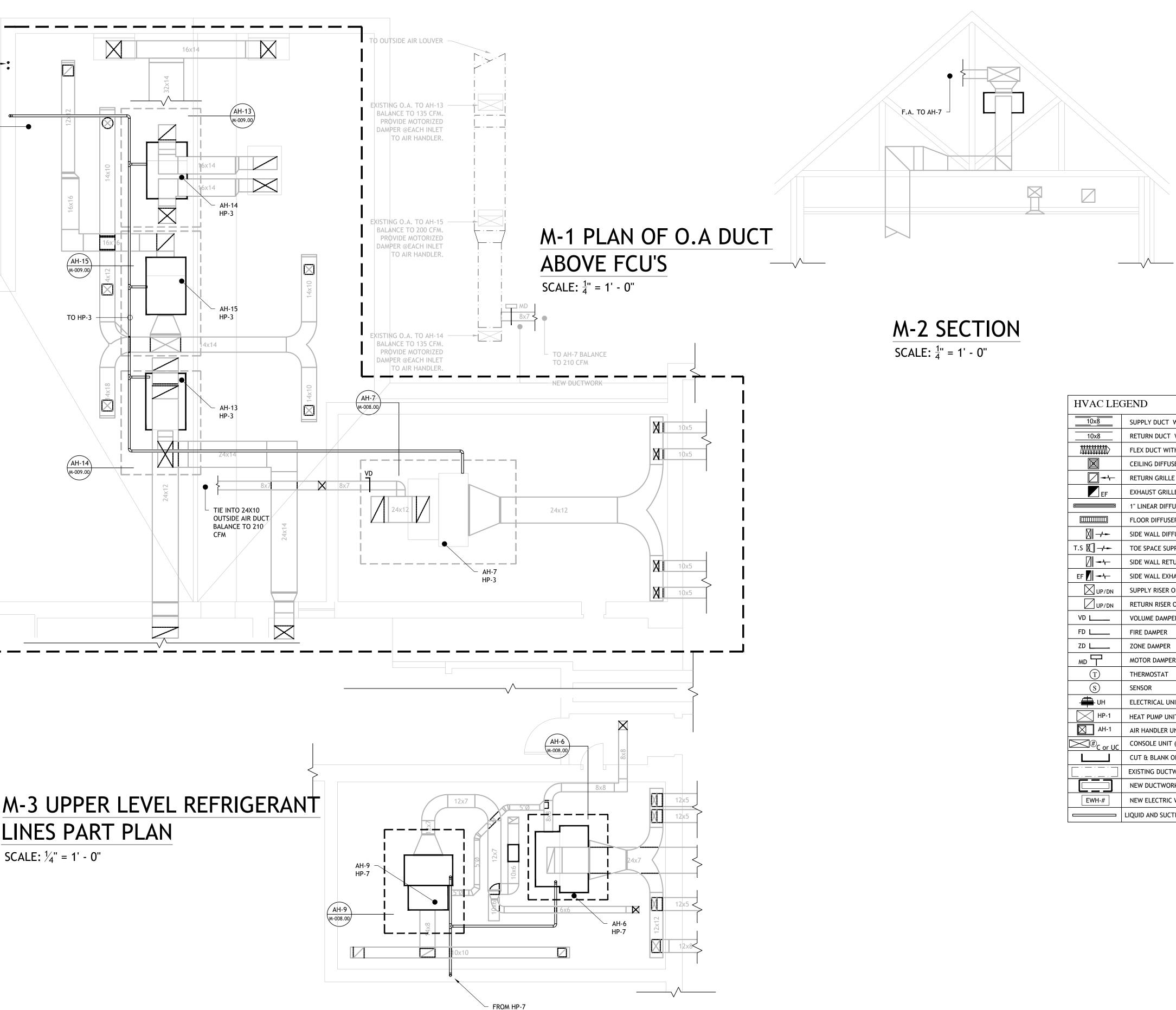
SCALE: ¹/₈" = 1' - 0"

HVAC LEGEND MARCHETTI <u>1</u>0x8 CONSULTING SUPPLY DUCT WITH SIZE ENGINEERS 10x8 RETURN DUCT WITH SIZE FLEX DUCT WITH SIZE 25 High Ridge Rd Pound Ridge, NY 10576 CEILING DIFFUSER P (914) 764-9011 RETURN GRILLE F (914) 764-9012 EF EF EXHAUST GRILLE info@marchetticonsultingengineers.com 1" LINEAR DIFFUSER SLOT -----Drawings and Specifications, as instruments of professional FLOOR DIFFUSER service, are and shall remain the property of the Engineer. ⊠ -⁄--SIDE WALL DIFFUSER Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those T.S 🗶 🚽 🗕 TOE SPACE SUPPLY authorized by contract without the specific written authorization of the Engineer. The use of this document is /∥ → SIDE WALL RETURN GRILLE contingent upon payment to the engineer for services EF SIDE WALL EXHAUST GRILLE rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner UP/DN SUPPLY RISER OR DROP disputes any Engineer's statements for services, it is required UP/DN that the owner advise the engineer in writing with ten (10) RETURN RISER OR DROP days. Remaining, undisputed portions are due and payable VD L VOLUME DAMPER upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in FD _____ FIRE DAMPER the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions ZD 🔔 ZONE DAMPER on site. Only figured dimensions are to be worked from. мD MOTOR DAMPER Discrepancies must be reported immediately to the Engineer before proceeding. (T) THERMOSTAT (S) SENSOR - 🚔 - UH ELECTRICAL UNIT HEATER HP-1 HEAT PUMP UNIT AH-1 AIR HANDLER UNIT CONSOLE UNIT (CASED OR UNCASED) CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED EWH-# NEW ELECTRIC WALL HEATER LIQUID AND SUCTION REFRIGERANT LINES DESCRIPTION DATE No. 1 FOR REVIEW 8-11-2023 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 MAIN LEVEL REFRIGERANT LINES PLAN PROJECT NUMBER: #34-2023 7/10/23 DATE: DRAWN BY: LMS PGM CHECKED BY: M-009.00 SCALE: AS NOTED



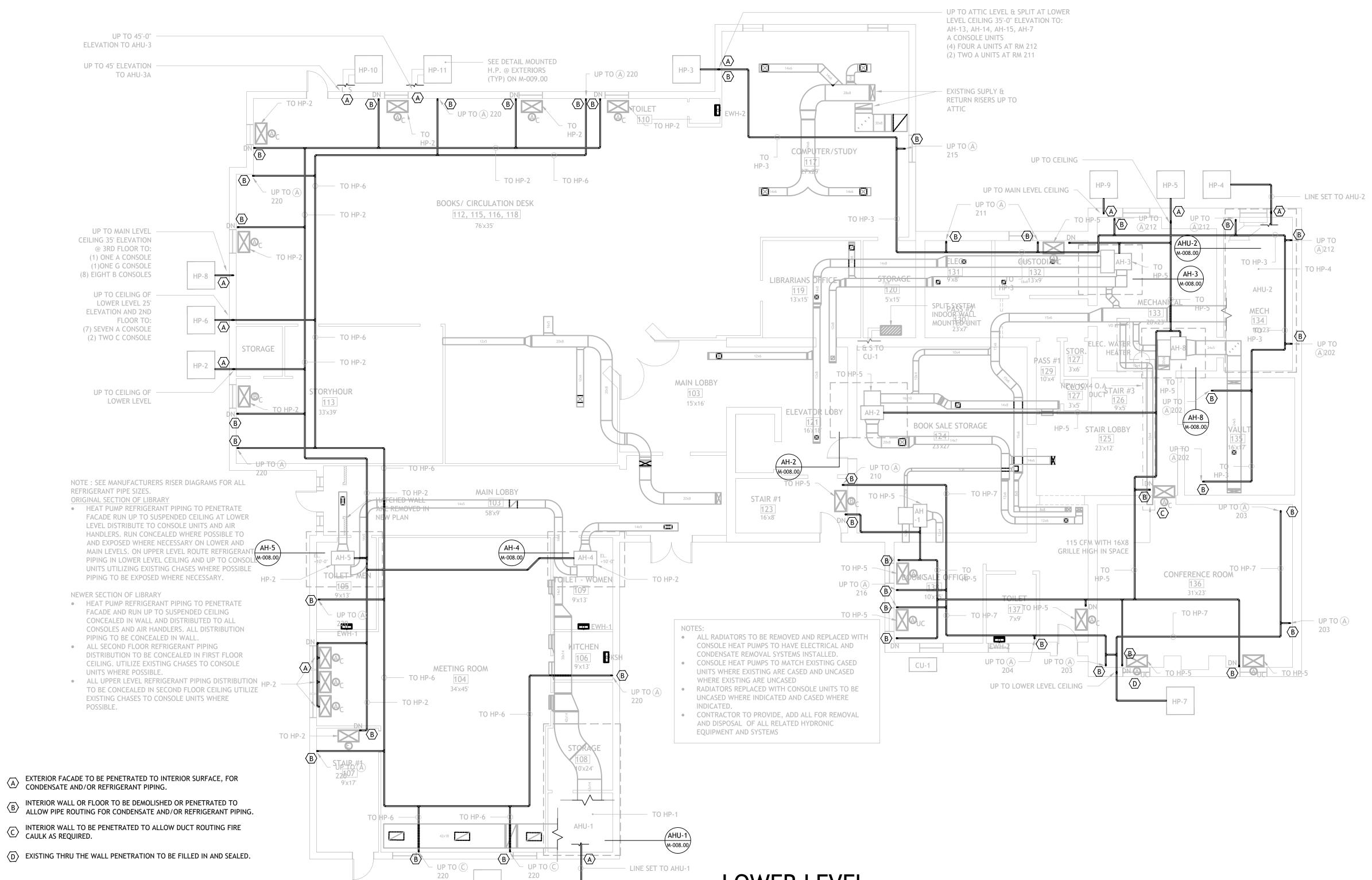
HVAC LEGEND MARCHETTI 10x8 CONSULTING SUPPLY DUCT WITH SIZE ENGINEERS RETURN DUCT WITH SIZE 10x8 FLEX DUCT WITH SIZE 25 High Ridge Rd Pound Ridge, NY 10576 CEILING DIFFUSER P (914) 764-9011 RETURN GRILLE F (914) 764-9012 EF EXHAUST GRILLE info@marchetticonsultingengineers.com **1" LINEAR DIFFUSER SLOT** -----Drawings and Specifications, as instruments of professional FLOOR DIFFUSER service, are and shall remain the property of the Engineer. Ⅻ-/--SIDE WALL DIFFUSER Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those T.S 🗶 🚽 🛏 TOE SPACE SUPPLY authorized by contract without the specific written authorization of the Engineer. The use of this document is /∥ → SIDE WALL RETURN GRILLE contingent upon payment to the engineer for services EF 🖊 🔫 🔶 SIDE WALL EXHAUST GRILLE rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner UP/DN SUPPLY RISER OR DROP disputes any Engineer's statements for services, it is required UP/DN that the owner advise the engineer in writing with ten (10) RETURN RISER OR DROP days. Remaining, undisputed portions are due and payable VD L VOLUME DAMPER upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in FD L FIRE DAMPER the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions ZD 🔔 ZONE DAMPER on site. Only figured dimensions are to be worked from. мD MOTOR DAMPER Discrepancies must be reported immediately to the Engineer before proceeding. (T)THERMOSTAT (S) SENSOR - 🚔 - UH ELECTRICAL UNIT HEATER ₩Р-1 HEAT PUMP UNIT AH-1 AIR HANDLER UNIT CONSOLE UNIT (CASED OR UNCASED) CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED ╘╴╼╸╴ EWH-# NEW ELECTRIC WALL HEATER LIQUID AND SUCTION REFRIGERANT LINES EXISTING OUTDOOR AIR INTAKE & LOUVER & MOTORIZED DAMPER TO BE REPAIRED AND MADE IN SERVICEABLE CONDITION. DESCRIPTION DATE No. BALANCE O.A TO 250 CFM 8-11-2023 1 FOR REVIEW 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 AH-11 W-008.00 HP-9 UT AND ANKOFF STAMP & SIGN: HP-9 23, MAIN STREET NEWTOWN, CT, 06470 ABANDOHP-9 UPPER REFRIGERANT LINES DUCT IN PLACE PLAN PROJECT NUMBER: #34-2023 AH-10 DATE: 7/10/23 M-008.00 DRAWN BY: LMS PGM CHECKED BY: M-010.00 BALANCE O.A TO 250 CFM - FRESH AIR INTAKE SCALE: AS NOTED





HVAC LEGEND 10x8 SUPPLY DUCT WITH SIZE 10x8 RETURN DUCT WITH SIZE 10x8 FLEX DUCT WITH SIZE 10x8 CEILING DIFFUSER 10x7 RETURN GRILLE 11 LINEAR DIFFUSER 12 -+ 13 FLOOR DIFFUSER 14 -+ 15 -+ 16 -+ 17 LINEAR DIFFUSER 18 -+ 19 -+ 10 FLOOR DIFFUSER 11 LINEAR DIFFUSER 11 SIDE WALL DIFFUSER 15 M 10 -+ 10 SUPPLY RISER OR DROP 11 VOLUME DAMPER 11 VOLUME DAMPER 11 VOLUME DAMPER 12 ZONE DAMPER 13 SENSOR 14 HP-1 14		
10x8 RETURN DUCT WITH SIZE 10x8 RETURN DUCT WITH SIZE Image: Celling Diffuser Celling Diffuser Image: Celling Diffuser 1" LINEAR DIFFUser SLOT Image: Celling Diffuser FLOOR DIFFUser Image: Celling Diffuser SIDE WALL RETURN GRILLE Image: Celling Diffuser SIDE WALL RETURN GRILE <	HVAC LEO	GEND
Image: Second system FLEX DUCT WITH SIZE Image: Second system CEILING DIFFUSER Image: Second system Image: Second system Image: Second ucc<	<u>10x8</u>	SUPPLY DUCT WITH SIZE
Ceilling Diffuser Ceilling Diffuser From Control Contecont Contecont Control Control Control Control Contec	10x8	RETURN DUCT WITH SIZE
Image: series of the serie		FLEX DUCT WITH SIZE
EF EXHAUST GRILLE I'' LINEAR DIFFUSER SLOT IIIIIII FLOOR DIFFUSER IIIIIIII FLOOR DIFFUSER IIIIIIII FLOOR DIFFUSER IIIIIIIII FLOOR DIFFUSER IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		CEILING DIFFUSER
Image: Second state of the second		RETURN GRILLE
FLOOR DIFFUSER Image: Side Wall Diffuser T.S Image: Side Wall Return Grille Image: Side Wall Return Return Grille Image: Side Wall Return R	EF	EXHAUST GRILLE
Image: State of the state		1" LINEAR DIFFUSER SLOT
LinTOE SPACE SUPPLYImage: Constraint of the system of th		FLOOR DIFFUSER
Image: Side wall return grille EF Image: Side wall exhaust grille Image: Wall exhaust grille Supply riser or drop Image: Wall exhaust grille Volume damper Image: Wall exhaust grille Volume damper VD Volume damper FD Fire damper Image: Side wall exhaust grille Volume damper Image: Side wall exhaust grille Fire damper Image: Side wall exhaust gril		SIDE WALL DIFFUSER
EF Image: Construction of the construct	T.S 🕅 —/	TOE SPACE SUPPLY
Image: Supply Riser or Drop Image: UP/DN RETURN RISER OR DROP VD VOLUME DAMPER FD FIRE DAMPER ZD ZONE DAMPER MD MOTOR DAMPER Image: Transformer of the state of the		SIDE WALL RETURN GRILLE
Image: Service of the service of th	EF 📶 🔫 🌾	SIDE WALL EXHAUST GRILLE
VD VOLUME DAMPER FD FIRE DAMPER ZD ZONE DAMPER MD MOTOR DAMPER IT THERMOSTAT S SENSOR Image: UH ELECTRICAL UNIT HEATER Image: UH ELECTRICAL UNIT Image: UH ELECTRICAL UNIT HEATER Image: UH ELECTRICAL UNIT Image: UH ELECTRICAL UNIT Image: UH ELECTRICAL UNIT HEATER Image: UH ELECTRICAL UNIT <	UP/DN	SUPPLY RISER OR DROP
FD FIRE DAMPER ZD ZONE DAMPER MD MOTOR DAMPER ① THERMOSTAT ③ SENSOR ↓ UH ELECTRICAL UNIT HEATER ↓ HP-1 HP-1 HEAT PUMP UNIT ▲H-1 AIR HANDLER UNIT ↓ CONSOLE UNIT (CASED OR UNCASED) ↓ CUT & BLANK OFF DUCT ↓ EXISTING DUCTWORK TO REMAIN ↓ NEW DUCTWORK TO BE INSTALLED	UP/DN	RETURN RISER OR DROP
ZD ZONE DAMPER MD MOTOR DAMPER ① THERMOSTAT ③ SENSOR ● UH ELECTRICAL UNIT HEATER ○ HP-1 HEAT PUMP UNIT △ AH-1 AIR HANDLER UNIT ○ ⑦ C or UC CONSOLE UNIT (CASED OR UNCASED) ○ ⑦ C or UC CUT & BLANK OFF DUCT ○ EXISTING DUCTWORK TO REMAIN ○ NEW DUCTWORK TO BE INSTALLED	VD L	VOLUME DAMPER
MD MOTOR DAMPER ① THERMOSTAT ③ SENSOR ● UH ELECTRICAL UNIT HEATER ○ HP-1 HP-1 HEAT PUMP UNIT ○ AH-1 AIR HANDLER UNIT ○ ⑦ C or UC CONSOLE UNIT (CASED OR UNCASED) ○ ⑦ C or UC CUT & BLANK OFF DUCT ○ EXISTING DUCTWORK TO REMAIN ○ NEW DUCTWORK TO BE INSTALLED	FD	FIRE DAMPER
Image: The im	ZD L	ZONE DAMPER
S SENSOR UH ELECTRICAL UNIT HEATER HP-1 HEAT PUMP UNIT AH-1 AIR HANDLER UNIT C or UC CONSOLE UNIT (CASED OR UNCASED) C UT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED	мD	MOTOR DAMPER
Image: UH ELECTRICAL UNIT HEATER Image: WH HP-1 HP-1 HEAT PUMP UNIT Image: WH AH-1 AH-1 AIR HANDLER UNIT Image: WH CONSOLE UNIT (CASED OR UNCASED) Image: WH CUT & BLANK OFF DUCT Image: WH EXISTING DUCTWORK TO REMAIN Image: WH NEW DUCTWORK TO BE INSTALLED	T	THERMOSTAT
HP-1 HEAT PUMP UNIT AH-1 AIR HANDLER UNIT CONSOLE UNIT (CASED OR UNCASED) CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED	S	SENSOR
AH-1 AIR HANDLER UNIT Cor UC CONSOLE UNIT (CASED OR UNCASED) CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED	- 🛱 ИН	ELECTRICAL UNIT HEATER
CONSOLE UNIT (CASED OR UNCASED) CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED	HP-1	HEAT PUMP UNIT
CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED	AH-1	AIR HANDLER UNIT
CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED	C or UC	CONSOLE UNIT (CASED OR UNCASED)
NEW DUCTWORK TO BE INSTALLED		CUT & BLANK OFF DUCT
		EXISTING DUCTWORK TO REMAIN
EWH-# NEW ELECTRIC WALL HEATER		NEW DUCTWORK TO BE INSTALLED
	EWH-#	NEW ELECTRIC WALL HEATER
LIQUID AND SUCTION REFRIGERANT LINES		LIQUID AND SUCTION REFRIGERANT LINES

MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DATE DESCRIPTION No. 8-11-2023 1 FOR REVIEW 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 UPPER LEVEL ATTIC REFRIGERANT LINES PLAN & SECTION #34-2023 PROJECT NUMBER: DATE: 7/10/23 DRAWN BY: LMS CHECKED BY: PGM M-011.00 SCALE: AS NOTED

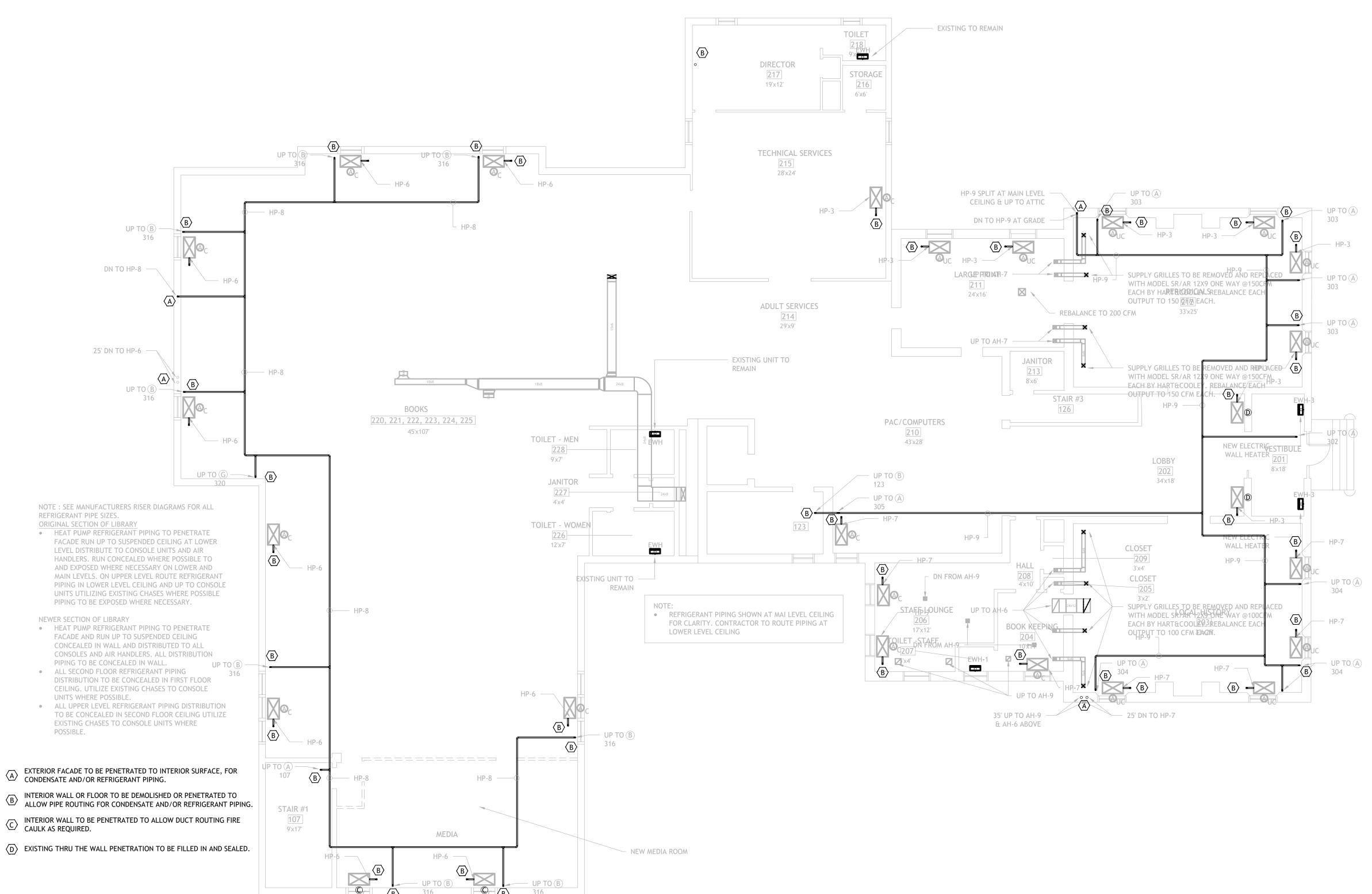


LOWER LEVEL PENETRATION PLAN

SCALE: ¹/₈" = 1' - 0"

HVAC LEGEND 10x8 SUPPLY DUCT WITH SIZE 10x8 RETURN DUCT WITH SIZE 10x8 FLEX DUCT WITH SIZE IDX8 FLEX DUCT WITH SIZE IDX8 CEILING DIFFUSER IDX8 CEILING DIFFUSER IDX8 RETURN GRILLE IDX8 EF EF EXHAUST GRILLE IDX8 I'' LINEAR DIFFUSER SLOT IDX8 FLOOR DIFFUSER	
10x8 SUPPLY DUCT WITH SIZE 10x8 RETURN DUCT WITH SIZE 10x8 FLEX DUCT WITH SIZE Image: Ceiling Diffuser Ceiling Diffuser	
10x8 RETURN DUCT WITH SIZE 10x8 FLEX DUCT WITH SIZE Image: Celling Diffuser Image: Ce	
Image: Second system FLEX DUCT WITH SIZE Image: Second system CEILING DIFFUSER Image: Second system RETURN GRILLE Image: Second system 1" LINEAR DIFFUSER SLOT	
CEILING DIFFUSER Image: C	
Image: Constraint of the second se	
EF EXHAUST GRILLE	
Image: Construction of the second	
FLOOR DIFFUSER	
SIDE WALL DIFFUSER	
T.S 🗶	
SIDE WALL RETURN GRILLE	
EF	
UP/DN SUPPLY RISER OR DROP	
UP/DN RETURN RISER OR DROP	
VD L VOLUME DAMPER	
FD FIRE DAMPER	
ZD ZONE DAMPER	
MD MOTOR DAMPER	
T THERMOSTAT	
S SENSOR	
- UH ELECTRICAL UNIT HEATER	
HP-1 HEAT PUMP UNIT	
AH-1 AIR HANDLER UNIT	
C or UC CONSOLE UNIT (CASED OR UNCASE	D)
CUT & BLANK OFF DUCT	
NEW DUCTWORK TO BE INSTALLED)
EWH-# NEW ELECTRIC WALL HEATER	
LIQUID AND SUCTION REFRIGERANT	

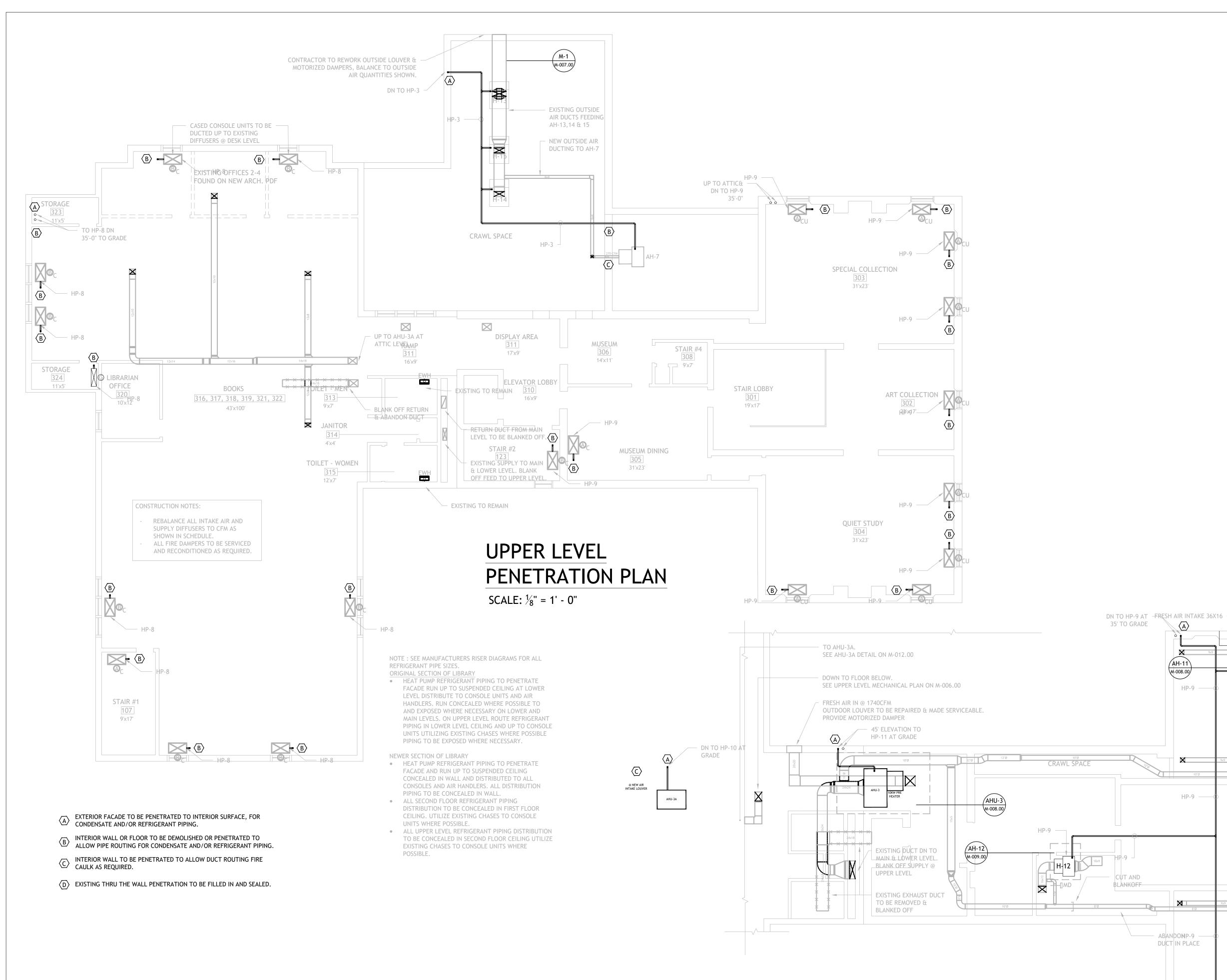
MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DESCRIPTION DATE No. 1 FOR REVIEW 8-11-2023 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 LOWER LEVEL PENETRATION PLAN #34-2023 PROJECT NUMBER: 7/10/23 DATE: DRAWN BY: LMS CHECKED BY: PGM M-012.00 SCALE: AS NOTED



MAIN LEVEL PENETRATION PLAN

SCALE: ¹/₈" = 1' - 0"

HVAC LEGEND MARCHETTI <u>1</u>0x8 CONSULTING SUPPLY DUCT WITH SIZE ENGINEERS 10x8 RETURN DUCT WITH SIZE FLEX DUCT WITH SIZE 25 High Ridge Rd Pound Ridge, NY 10576 CEILING DIFFUSER P (914) 764-9011 RETURN GRILLE F (914) 764-9012 EF EF EXHAUST GRILLE info@marchetticonsultingengineers.com 1" LINEAR DIFFUSER SLOT -----Drawings and Specifications, as instruments of professional FLOOR DIFFUSER service, are and shall remain the property of the Engineer. Ⅻ-/--SIDE WALL DIFFUSER Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those T.S 🗶 🚽 🛏 TOE SPACE SUPPLY authorized by contract without the specific written authorization of the Engineer. The use of this document is /∥ → SIDE WALL RETURN GRILLE contingent upon payment to the engineer for services EF SIDE WALL EXHAUST GRILLE rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner UP/DN SUPPLY RISER OR DROP disputes any Engineer's statements for services, it is required UP/DN that the owner advise the engineer in writing with ten (10) RETURN RISER OR DROP days. Remaining, undisputed portions are due and payable VD L VOLUME DAMPER upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in FD L FIRE DAMPER the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions ZD 🔔 ZONE DAMPER on site. Only figured dimensions are to be worked from. мD MOTOR DAMPER Discrepancies must be reported immediately to the Engineer before proceeding. (T) THERMOSTAT (S) SENSOR - 🚔 - UH ELECTRICAL UNIT HEATER HP-1 HEAT PUMP UNIT AH-1 AIR HANDLER UNIT CONSOLE UNIT (CASED OR UNCASED) CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED EWH-# NEW ELECTRIC WALL HEATER LIQUID AND SUCTION REFRIGERANT LINES DESCRIPTION DATE No. 1 FOR REVIEW 8-11-2023 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 MAIN LEVEL PENETRATION PLAN PROJECT NUMBER: #34-2023 7/10/23 DATE: DRAWN BY: LMS PGM CHECKED BY: M-013.00 SCALE: AS NOTED



ATTIC LEVEL PENETRATION PLAN

SCALE: ¹/₈" = 1' - 0"

EXISTING OUTDOOR AIR INTAKE & LOUVER & MOTORIZED DAMPER TO BE REPAIRED AND MADE IN SERVICEABLE CONDITION. BALANCE O.A TO 250 CFM

 $\langle A \rangle$

(AH-11)

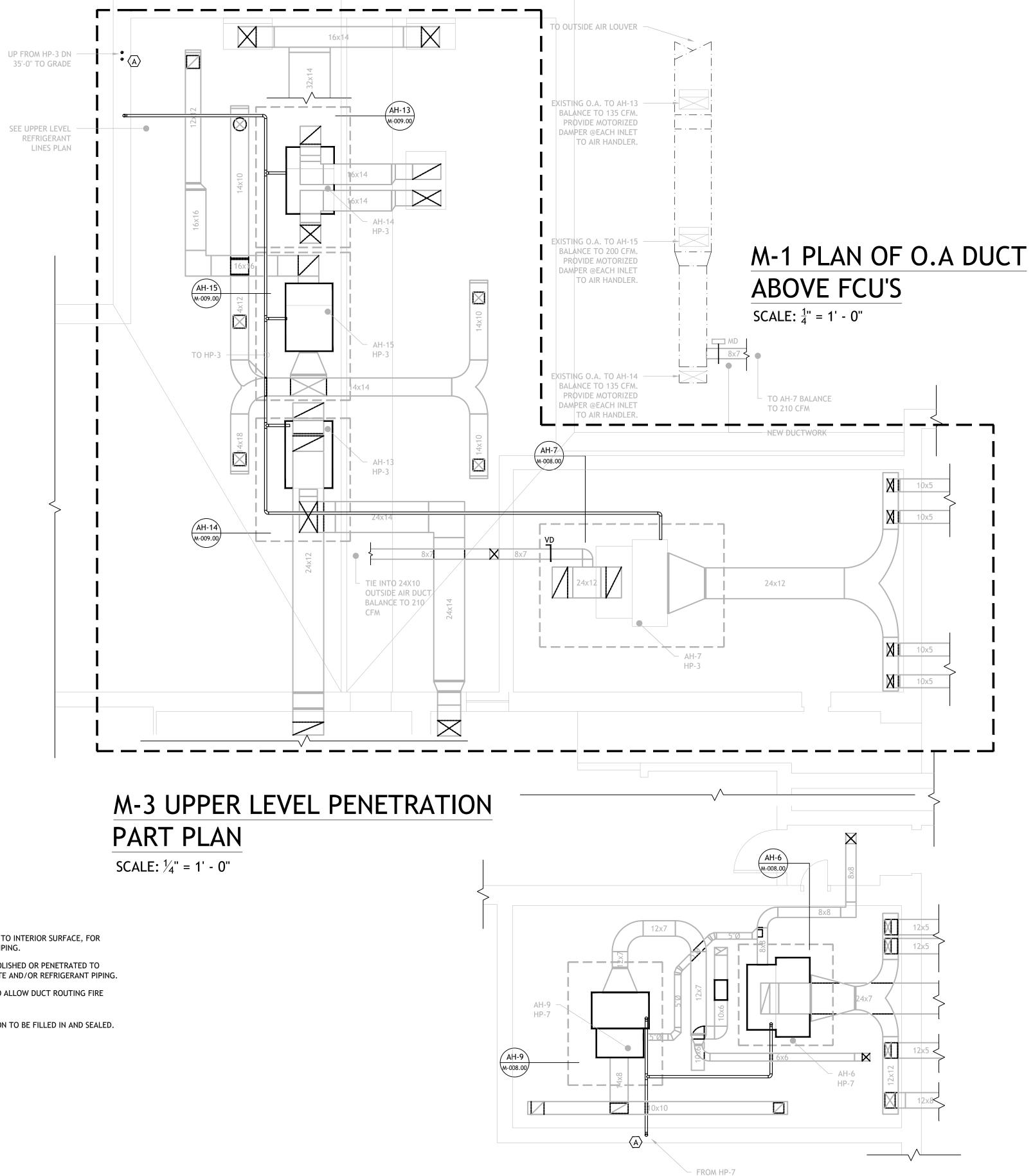
(00.800-W

HP-9

X

HP-9 —

HVAC LEGEND MARCHETTI <u>1</u>0x8 SUPPLY DUCT WITH SIZE CONSULTING ENGINEERS 10x8 RETURN DUCT WITH SIZE FLEX DUCT WITH SIZE 25 High Ridge Rd Pound Ridge, NY 10576 CEILING DIFFUSER P (914) 764-9011 RETURN GRILLE F (914) 764-9012 EF EXHAUST GRILLE info@marchetticonsultingengineers.com **1" LINEAR DIFFUSER SLOT** -----Drawings and Specifications, as instruments of professional FLOOR DIFFUSER service, are and shall remain the property of the Engineer. Ⅻ-/--SIDE WALL DIFFUSER Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those t.s 🔊 🕂 🗕 TOE SPACE SUPPLY authorized by contract without the specific written authorization of the Engineer. The use of this document is /∥ -----SIDE WALL RETURN GRILLE contingent upon payment to the engineer for services EF 🖊 🔫 🔶 SIDE WALL EXHAUST GRILLE rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner UP/DN SUPPLY RISER OR DROP disputes any Engineer's statements for services, it is required UP/DN that the owner advise the engineer in writing with ten (10) RETURN RISER OR DROP days. Remaining, undisputed portions are due and payable VD L VOLUME DAMPER upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in FD L FIRE DAMPER the event the Engineer exercises the right to bar document ZD 🔔 use for non-payment. Contractors must check all dimensions ZONE DAMPER on site. Only figured dimensions are to be worked from. мD MOTOR DAMPER Discrepancies must be reported immediately to the Engineer before proceeding (T)THERMOSTAT (S) SENSOR - 🚔 - UH ELECTRICAL UNIT HEATER HP-1 HEAT PUMP UNIT AH-1 AIR HANDLER UNIT CONSOLE UNIT (CASED OR UNCASED) CUT & BLANK OFF DUCT EXISTING DUCTWORK TO REMAIN NEW DUCTWORK TO BE INSTALLED ╘╴╼╸╸ EWH-# NEW ELECTRIC WALL HEATER LIQUID AND SUCTION REFRIGERANT LINES EXISTING OUTDOOR AIR INTAKE & LOUVER & MOTORIZED DESCRIPTION DATE No. DAMPER TO BE REPAIRED AND MADE IN SERVICEABLE CONDITION. BALANCE O.A TO 250 CFM 1 FOR REVIEW 8-11-2023 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 UT AND STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 UPPER LEVEL PENETRATION PLAN PROJECT NUMBER: #34-2023 AH-10 7/10/23 DATE: M-008.00 DRAWN BY: LMS PGM CHECKED BY: M-014.00 FRESH AIR INTAKE SCALE: AS NOTED

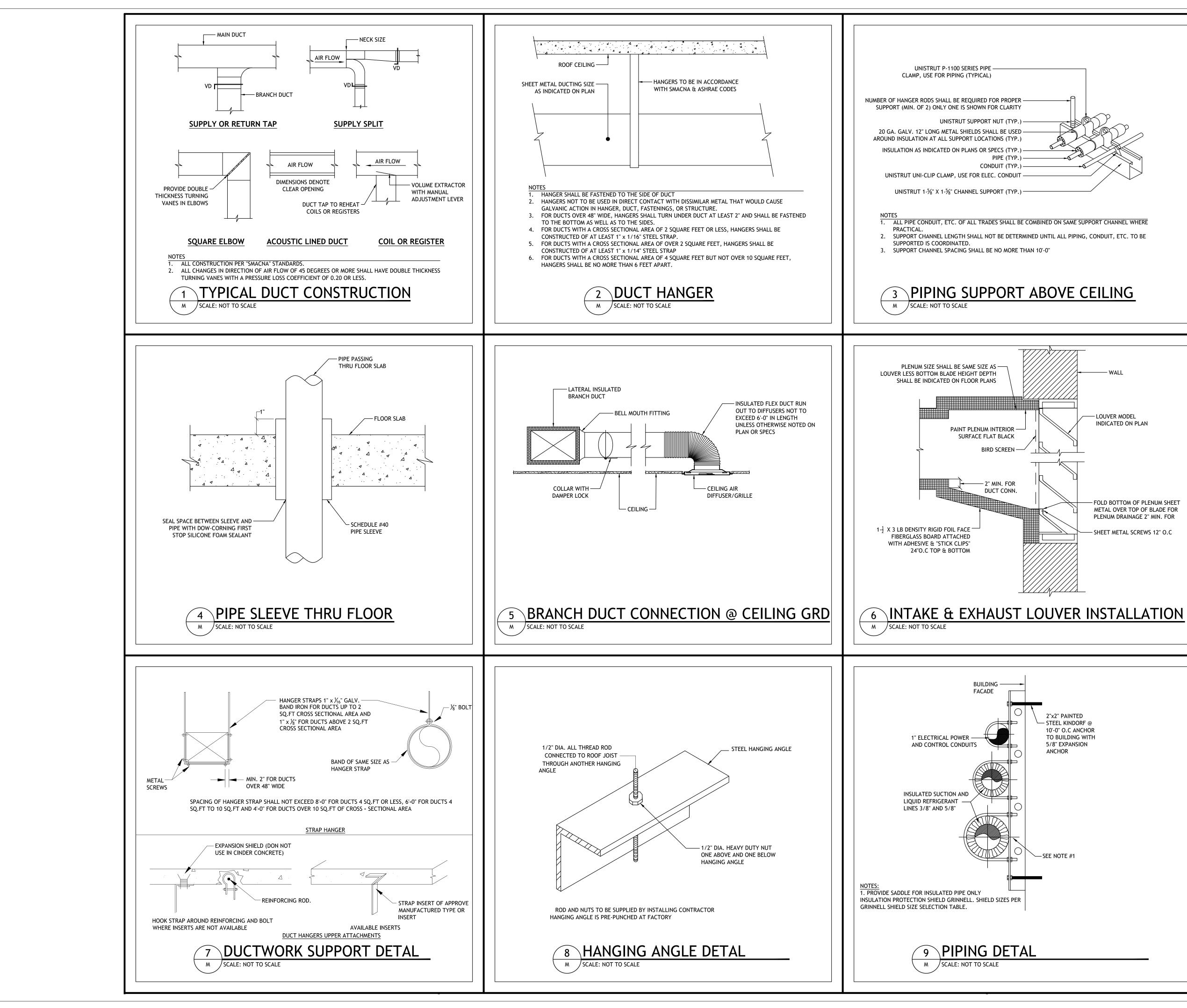


(A) EXTERIOR FACADE TO BE PENETRATED TO INTERIOR SURFACE, FOR CONDENSATE AND/OR REFRIGERANT PIPING.

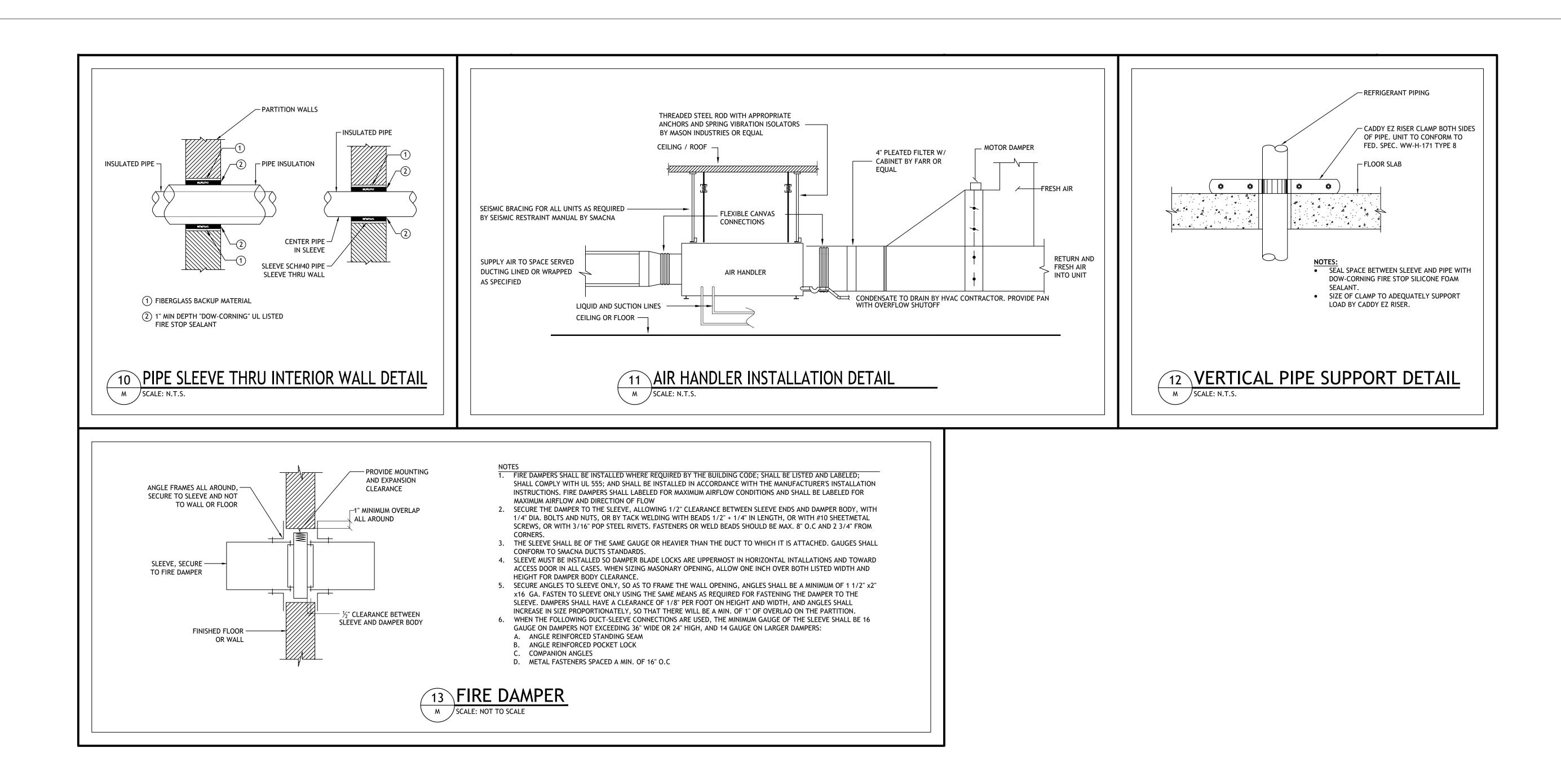
- B INTERIOR WALL OR FLOOR TO BE DEMOLISHED OR PENETRATED TO ALLOW PIPE ROUTING FOR CONDENSATE AND/OR REFRIGERANT PIPING.
- C INTERIOR WALL TO BE PENETRATED TO ALLOW DUCT ROUTING FIRE CAULK AS REQUIRED.
- $\langle \overline{D} \rangle$ EXISTING THRU THE WALL PENETRATION TO BE FILLED IN AND SEALED.

	MARCHETTI CONSULTING ENGINEERS	
	25 High R Pound Ric	dge, NY 10576
	P (914) 7 F (914) 7 info@marchetticonsultingeng	64-9012
	Drawings and Specifications, as instrume service, are and shall remain the proper Documents are not to be used, in whole o projects or purposes or by any other p authorized by contract without the authorization of the Engineer. The use o contingent upon payment to the engi rendered. Non-payment shall give the Eng to bar document use by any and all disputes any Engineer's statements for ser- that the owner advise the engineer in wr days. Remaining, undisputed portions ar upon receipt. The owner shall indem against any claims alleging damages or the event the Engineer exercises the righ use for non-payment. Contractors must ch on site. Only figured dimensions are to Discrepancies must be reported immediat b e f o r e p r o c e	ents of professional ty of the Engineer. or in part, for other parties than those specific written of this document is neer for services tineer the authority parties. If owner vices, it is required riting with ten (10) re due and payable nify the Engineer delays incurred in nt to bar document neck all dimensions o be worked from. ely to the Engineer
E	No. DESCRIPTION	DATE
	1 FOR REVIEW 2 FOR CONSTRUCTION 3 FOR CONSTRUCTION	8-11-2023 12-14-2023 1-10-2024
UNCASED)	STAMP & SIGN:	
EMAIN STALLED ER ERANT LINES		
	23, MAIN STRE NEWTOWN, CT, C	
		_
	PENETRATION PROJECT NUMBER:	PLAN #34-2023
	DATE: DRAWN BY:	7/10/23
	CHECKED BY:	LMS PGM
	M-015.0	0
	SCALE:	AS NOTED

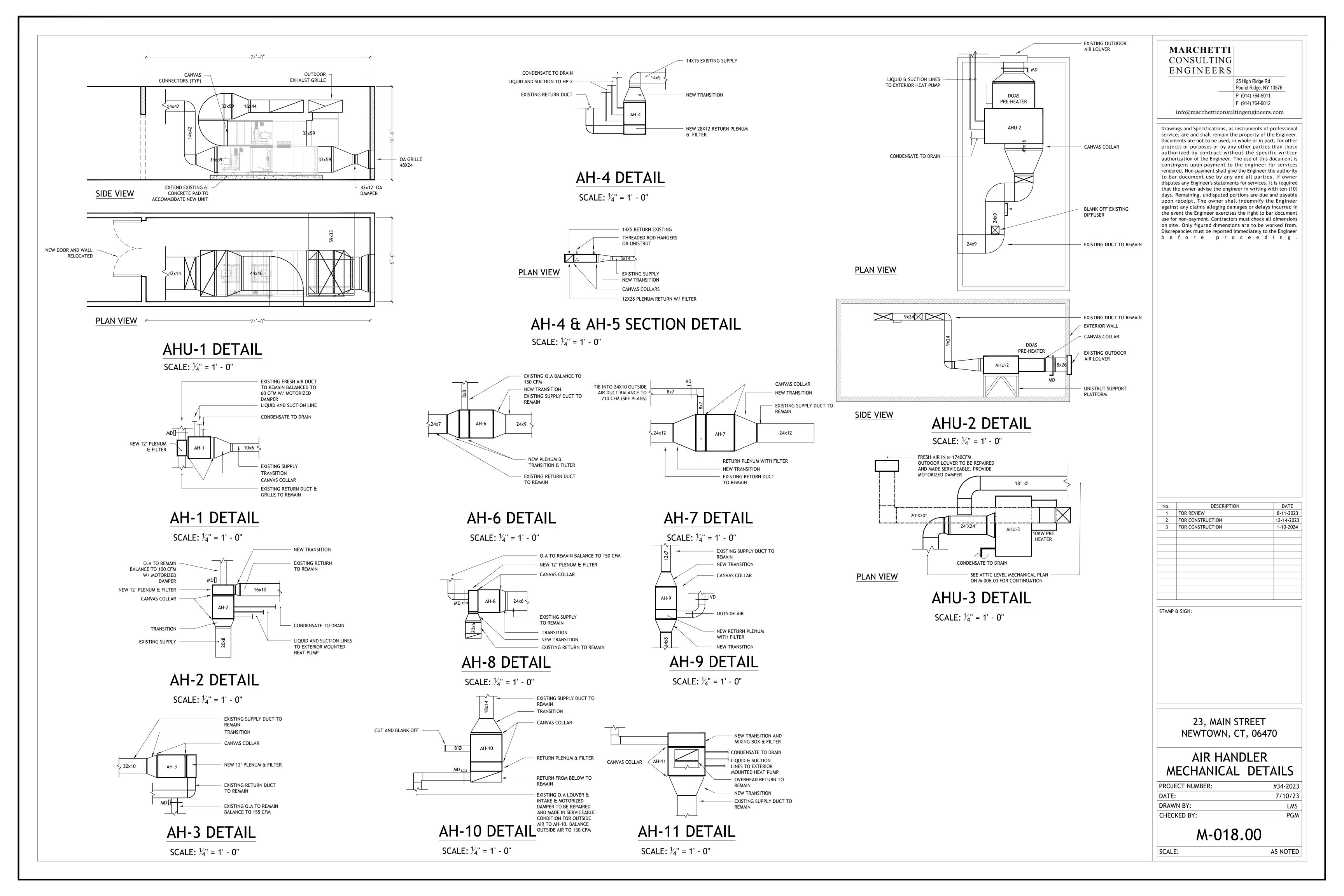
HVAC LEO	GEND
<u>10x8</u>	SUPPLY DUCT WITH SIZE
10x8	RETURN DUCT WITH SIZE
	FLEX DUCT WITH SIZE
	CEILING DIFFUSER
	RETURN GRILLE
EF	EXHAUST GRILLE
	1" LINEAR DIFFUSER SLOT
	FLOOR DIFFUSER
	SIDE WALL DIFFUSER
T.S 🕅 —/	TOE SPACE SUPPLY
	SIDE WALL RETURN GRILLE
EF →	SIDE WALL EXHAUST GRILLE
UP/DN	SUPPLY RISER OR DROP
UP/DN	RETURN RISER OR DROP
VD L	VOLUME DAMPER
FD L	FIRE DAMPER
ZD 🔔	ZONE DAMPER
мDТ	MOTOR DAMPER
T	THERMOSTAT
S	SENSOR
- 🛱 ИН	ELECTRICAL UNIT HEATER
HP-1	HEAT PUMP UNIT
AH-1	AIR HANDLER UNIT
⊂⊂ or UC	CONSOLE UNIT (CASED OR UNCASED)
	CUT & BLANK OFF DUCT
	EXISTING DUCTWORK TO REMAIN
	NEW DUCTWORK TO BE INSTALLED
EWH-#	NEW ELECTRIC WALL HEATER
	LIQUID AND SUCTION REFRIGERANT LINES

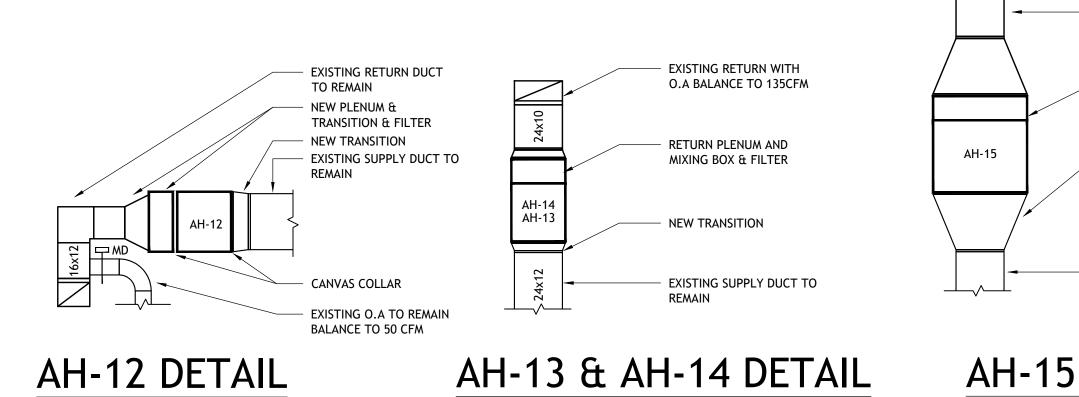


MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. - WALL - LOUVER MODEL INDICATED ON PLAN - FOLD BOTTOM OF PLENUM SHEET METAL OVER TOP OF BLADE FOR PLENUM DRAINAGE 2" MIN. FOR - SHEET METAL SCREWS 12" O.C DESCRIPTION DATE No. 8-11-2023 1 FOR REVIEW 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET **NEWTOWN, CT, 06470** MECHANICAL DETAILS (1) PROJECT NUMBER: #34-2023 DATE: 7/10/23 DRAWN BY: LMS PGM CHECKED BY: M-016.00 SCALE: AS NOTED



MARCHETTI	
CONSULTING ENGINEERS	Ridge Rd
P (914) F (914)	Ridge, NY 10576 764-9011 764-9012 gineers.com
info@marchetticonsultingen Drawings and Specifications, as instrum service, are and shall remain the prope Documents are not to be used, in whole projects or purposes or by any other authorized by contract without th authorization of the Engineer. The use contingent upon payment to the en rendered. Non-payment shall give the En to bar document use by any and al disputes any Engineer's statements for se that the owner advise the engineer in a days. Remaining, undisputed portions a upon receipt. The owner shall inder against any claims alleging damages of the event the Engineer exercises the ri use for non-payment. Contractors must on site. Only figured dimensions are Discrepancies must be reported immedia	nents of professional erty of the Engineer. or in part, for other parties than those e specific written of this document is gineer for services ngineer the authority l parties. If owner ervices, it is required writing with ten (10) are due and payable mnify the Engineer or delays incurred in ght to bar document check all dimensions to be worked from.
No.DESCRIPTION1FOR REVIEW2FOR CONSTRUCTION3FOR CONSTRUCTION	DATE 8-11-2023 12-14-2023 1-10-2024
STAMP & SIGN:	EET
23, MAIN STRI NEWTOWN, CT, MECHANICAL DE	TAILS (2)
NEWTOWN, CT,	TAILS (2) #34-2023 7/10/23 LMS
NEWTOWN, CT, MECHANICAL DE PROJECT NUMBER: DATE:	#34-2023 7/10/23 LMS PGM





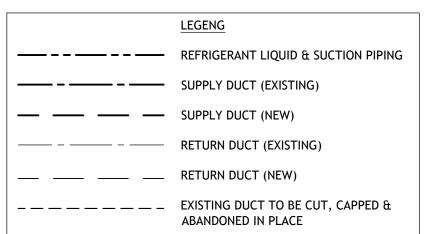
SCALE: ¹/₄" = 1' - 0"

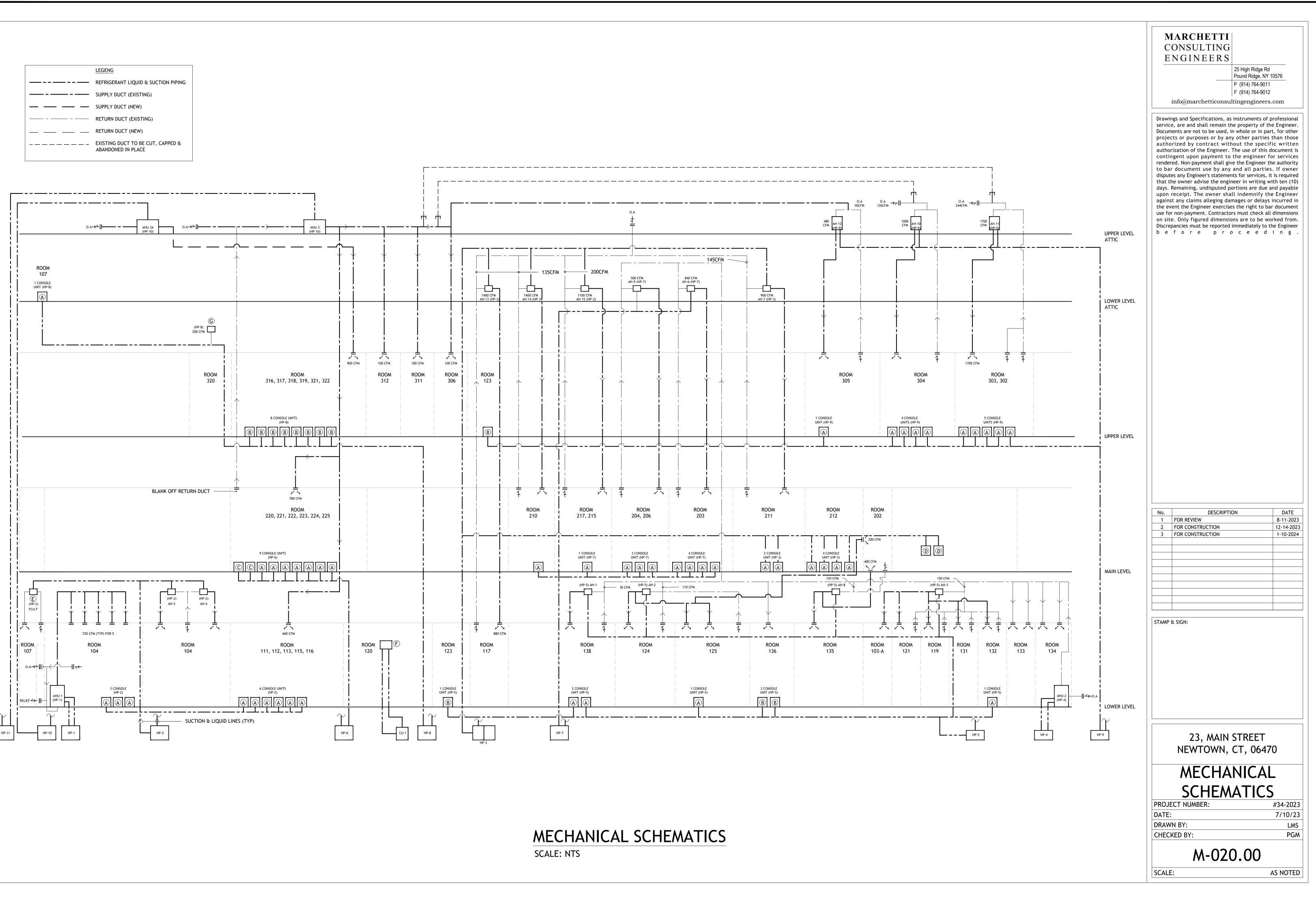
AH-13 & AH-14 SCALE: ¹/₄" = 1' - 0"

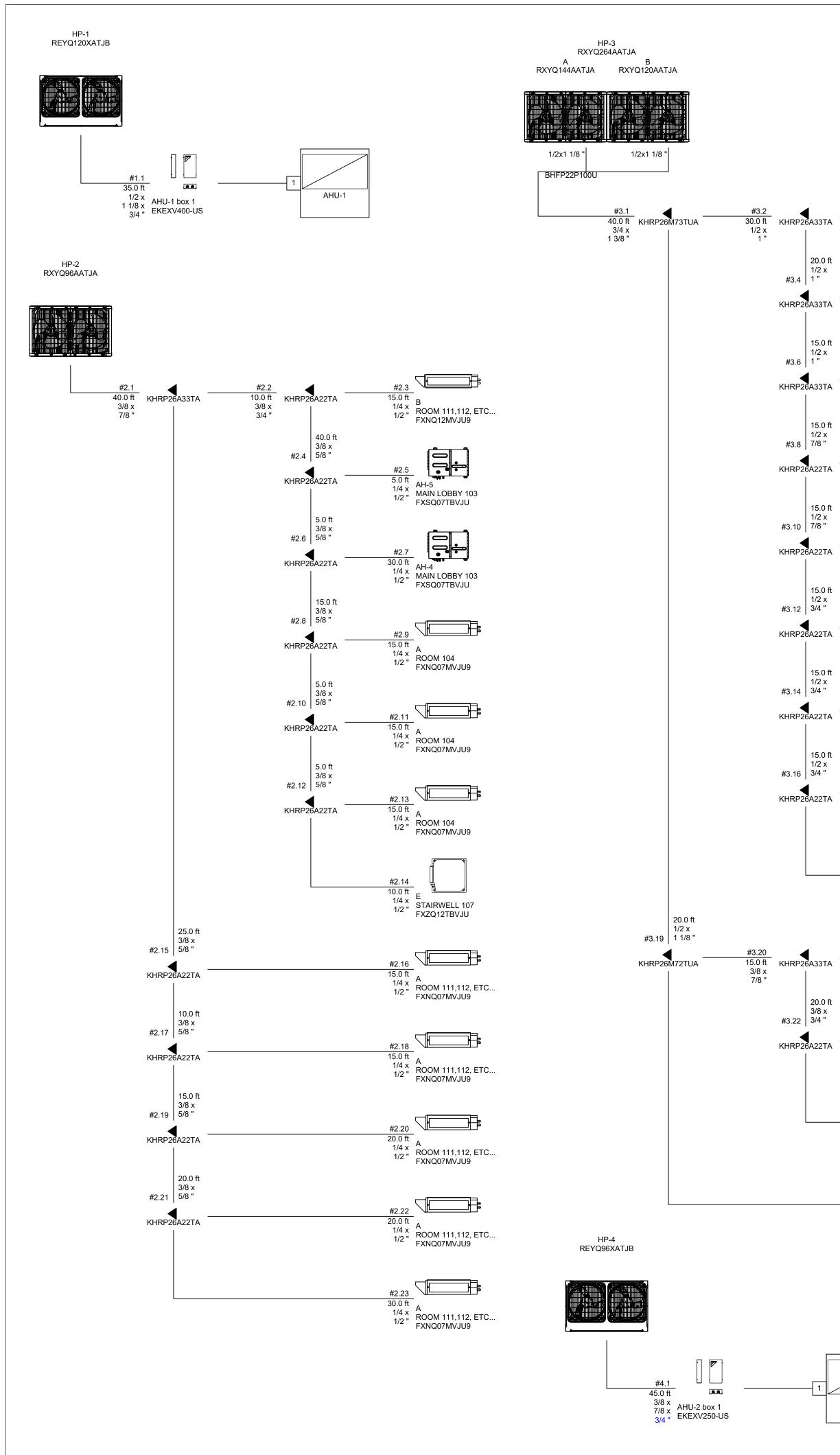
				E	LECTRIC	HEATER S	CHEDI	ULE					
UNIT	MFG	MODEL	HTG	KW	V	A DIA.					сомм		
EWH-		CWH3408F	13.6	4.0		11.1 1		_	RM	105 & 1	09 WI	TH CWH 35M P	KIT
EWH-2		FFR1500T2	5.1	1.5		12.6 1					RM		
EWH-		FFR2004T2	6.8	2.0	208	8.3 1				ROO		07 & 218	
KSH-′	1 MARLEY	QTS1500T	5.12	1.5	120	12.5 1		רדור י	בסגרי	-ς <u>γ</u> / τ\			-10 & AH-11. 1
AHT-	1 MARLEY	TUH1020	34.1	9.6	208	27.6 3		E) IN	ATTI	C W/ AH	-13, 1) IN ATTIC W/
	1		1	AH	U-1 SCHE	DULE					T	1	
UNIT	MODEL	MFG	CFM	w.c	HTG. MB			HP	v	PHASE	HZ	COMMENTS	
AHU-1	AV5040-R-FRM0 AVS040-L-FVM EKEXY400-US		3600	1"	42.	0 114	4.3	5	208	3	60		-
			1	1	ΔΗΙ	J-2 SCHEDU	IIF			1		1	L
			CEN		нтс и		1		M	DUACE			
UNIT	MODEL	MFG	CFM	W.C	MB		MBH	A	V	PHASE	DD 01		
	ARND153DCR4		1000	2"	51.	0 12	20	7	208	1		/IDE PREHEAT DKW V=208, A	ER ZWPREHTRO =48, PHASE 1
AHU-2	AVS040-L-FVM	MITSUBIS R HI	1000	1"	61.	4 1 [′]	2	3	208	1	PROV	/IDE WITH PRE	EHEAT 24.2 MBH
			6-		нтс	I-3 SCHEDL				D1115-			
UNIT	MODEL	MFG	CFM	W.C	MB			A	۷	PHASE	HZ		MENTS VER & MIDDLE
AHU-3	ARND153DCR4	LG	1740	2"	59.	9 143	.11	7	208	1	60	LEVEL MATC	H WITH HP-11, PRE.HTR 10KW
						-3A SCHED							
UNIT	MODEL	MFG	CFM	W.C	HTG. MB			А	v	PHASE	HZ	СОМ	MENTS
AHU-3A	ARND093DCR4	LG	900	1"	51.	0 12	20	7	208	1	60	W/ HP-10	FLOOR MATCH PROVIDE ZW TR 10KW
					I-4 SCHE	DULF							
UNIT	MODEL	MFG			FG. CAP.	COOL.	v	PH	4SF		сомм	FNTS	
JIII					MBH	CAP. MBH			JL				
	ARNU073M-1	LG	2	279	8.5	7.5	208	·	1				-
AH-4	PEFY-P06MAUE	-3 MITSUBI	SHI 2	265	6.7	6.0	208		1				
	FXSQ07TBVJL	DAIKI	1 2	281	8.8	7.2	208		1				
				AH	I-5 SCHE	DULE							
UNIT	MODEL	MFG	С	FM H	IG. CAP.	COOL.	v	PH	ASE		сомм	ENTS	
					MBH	CAP. MBH							-
	ARNU073M-1	LG		279	8.5	7.5	208		1				
AH-5	PEFY-P06MAUE			265	6.7	6.0	208		1				-
	FXSQ07TBVJL	DAIKI	4 2	281	8.8	7.2	208		1				
					I-1 SCHE	1			I				
UNIT	MODEL	MFG	c	FM H	FG. CAP. MBH	COOL. CAP. MBH	v	PH	ASE		сомм	ENTS	
	ARNU073M-1	LG	2	279	8.5	7.5	208		1				1
AH-1	PEFY-P06MAUE	-3 MITSUBI	SHI 2	265	6.7	6.0	208		1				1
	FXSQ07TBVJL			281	8.8	7.2	208	ļ ,	1				1
					AH-2 SCI								_
					FG. CAP.	COOL.	. v	Α	рн	ASE	(COMMENTS	
	MODEI	MFC			MBH	CAP. MBH							
UNIT	MODEL	MFG			47 /	12.0	208	.75		1			
	ARNU123M1	LG		815	13.6					,			
UNIT AH-2	ARNU123M1 PEFY P12NMAU-	LG E3 MITSUBI	SHI 3	318	13.5	12.0	208			1			
	ARNU123M1	LG E3 MITSUBI	SHI 3				208 208			1			
	ARNU123M1 PEFY P12NMAU-	LG E3 MITSUBI	SHI 3	18 150	13.5	12.0 12.0							
	ARNU123M1 PEFY P12NMAU-	LG E3 MITSUBI	5HI 3	18	13.5 13.9	12.0 12.0	208					COMMENTS	
AH-2	ARNU123M1 PEFY P12NMAU- FXMQ12PBVJU MODEL	LG E3 MITSUBI DAIKIN	5HI 3	18 150	13.5 13.9 AH-3 SCI IG. CAP. MBH	12.0 12.0 HEDULE COOL. CAP. MBH	208	.65 A	PH.	1	(COMMENTS	
AH-2 UNIT	ARNU123M1 PEFY P12NMAU- FXMQ12PBVJL	LG E3 MITSUBI DAIKIN MFG	5HI 3 4 4 CC	18 150 FM	13.5 13.9 AH-3 SCI	12.0 12.0 HEDULE COOL.	208 V	.65 A .9	PH	ASE	(COMMENTS	

ERISTION REFRIGERA EXISTING SUPPLY DUCT TO REMAIN C	CONSOLE UNIT REPLACING RADIATOR D & SUCTION INT LINES TO R HEAT PUMP CONSOLE HEAT PUMP CONSOLE HEAT PUMP CONSOLE HEAT PUMP CONSOLE HEAT PUMP CONSOLE HEAT PUMP CONSOLE HEAT PUMP	PUMP @ CONSOLE HEAT PUMP.	MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10)
4 DETAIL AH-15 DETAIL D	EXTERIORS	DETAIL @ LOWER LEVEL	days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the owner the Engineer oversizes the right to be decument
SCALE: ¹ / ₄ " = 1' - 0"	SCALE: NTS SCALE: $\frac{1}{4}$ " = 1' - 0"	SCALE: NTS HEAT PUMP 2 (HP-2) SCHEDULE	the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from.
AH-6 SCHEDULE	AH-15 SCHEDULE	UNIT MODEL MFG HTG. CAP. MBH COOL. CAP. MBH V MCA MOCP PHASE COMMENTS HP-2 ARUM096BTE5 LG 108 96 208 28.5 40 3 HP-2 PURYHP96TNU MITSUBISHI 108 96 208 43 70 3 SERVES AH4, AH-5 HEAT PUMP 3 (HP-3) SCHEDULE	Discrepancies must be reported immediately to the Engineer b e f o r e p r o c e e d i n g .
UNIT MODEL MFG CFM HTG. CAP. COOL. V A PHASE COMMENTS	UNIT MODEL MFG CFM HTG. CAP. COOL. MBH CAP. MBH V A PHASE COMMENTS	UNIT MODEL MFG HTG. CAP. COOL. MBH CAP. MBH V MCA MOCP PHASE COMMENTS	
ARNU153M2A4 LG 413 17.1 15.4 208 .9 1	ARNU363B8A4 LG 1317 40.6 36.2 208 3.9 1	ARUM144BTE5 LG 162 144 208 51.1 70 3 SERVES AH-7,13,14 & 15.	
AH-6 PEFY-P15NMAU-E3 MITSUBISHI 424 17.0 15 208 .67 1 FXMQ15PBVJU DAIKIN 420 17.0 15 208 .7 1	AH-15 PEFY-P36NMHU-E2 MITSUBISHI 1340 40.0 36.0 208 3.1 1 FXMQ36TBVJU DAIKIN 1300 40.0 36.0 208 3.5 1	HP-3 PUHYHP144-TSNU-A MITSUBISHI 162 144 208 38X2 60X2 3 SERVES AIT 7, 13, 14 G 13. RXYQ264AATJA DAIKIN 177 233 208 - - 3 (2 HP-72)	
AH-7 SCHEDULE	UNIT A SCHEDULE	HEAT PUMP 4 (HP-4) SCHEDULE	
UNIT MODEL MFG CFM HTG. CAP. MBH COOL. CAP. MBH V A PHASE COMMENTS	UNIT MODEL MFG CFM HTG. CAP. COOL. MBH CAP. MBH V A PHASE COMMENTS	UNIT MODEL MFG HTG. CAP. MBH COOL. CAP. MBH V MCA MOCP PHASE COMMENTS	
ARNU363B8A4 LG 1317 40.6 36.2 208 3.9 1	ARNU073CEU LG 265 8.5 7.5 208 .3 1	ARUM096BTE5 LG 108 96 208 28.5 40 3	
AH-7 PEFY-P36NMHU-E2 MITSUBISHI 1340 40.0 36.0 208 3.1 1 FXMQ36TBVJU DAIKIN 1300 40.0 36.0 208 3.5 1	A PFFYP06NRMU-E MITSUBISHI 229 6.7 6.0 208 .27 1 FXNQ07MVJU9 DAIKIN 245 8.8 6.2 208 .3 1	HP-4 PEFY-P96TNU-A MITSUBISHI 64.8 78.3 208 - 3 AHU-2 REYQ96XATJB DAIKIN 76 95 208 38 45 3	
AH-8 SCHEDULE	UNIT B SCHEDULE	HEAT PUMP 5 (HP-5) SCHEDULE	
UNIT MODEL MFG CFM HTG. CAP. COOL. V A PHASE COMMENTS	UNIT MODEL MFG CFM HTG. CAP. COOL. MBH CAP. MBH V A PHASE COMMENTS	UNIT MODEL MFG HTG. CAP. COOL. MBH COOL. CAP. MBH V MCA MOCP PHASE COMMENTS	
ARNU123M1 LG 315 13.6 12.0 208 .75 1	ARNU-123CEU LG 371 13.6 12.3 208 .6 1	ARUM096BTE5 LG 103 96 208 28.5 40 3	
AH-8 PEFY P12NMAU-E3 MITSUBISHI 318 13.5 12.0 208 .66 1	B PFFYP-12NRMU-3 MITSUBISHI 317 13.5 12.0 208 .5 1	HP-5 PUHY-HP96TNUA MITSUBISHI 108 96 208 43 70 3 AH-1, 2, 3, 8 & CONSOLES	
FXMQ12PBVJU DAIKIN 450 13.9 12.0 208 .65 1	FXNQ12MVJU9 DAIKIN 280 14.0 10.1 208 .5 1	- DAIKIN 74 94 208 34 35 3	
AH-9 SCHEDULE	UNIT C SCHEDULE	HEAT PUMP 6 (HP-6) SCHEDULE	
MIG CIM MBH CAP. MBH V A PHASE COMMENTS	MIG CIM MBH CAP. MBH CAP. MBH CAP. MBH	MODEL MFG MBH CAP. MBH V MCA MOCP PHASE COMMENTS	No. DESCRIPTION DATE
ARNU123M2A4 LG 425 13.6 12.3 208 0.6 1 AH-9 PEFY-P12NMAU-E3 MITSUBISHI 371 13.5 12.0 208 0.66 1	ARNU153CE4 LG 406 17.1 15.4 208 .4 1 C PFFYP-15NRMU-3 MITSUBISHI 388 17.0 15.0 208 .32 1	ARUM072BTE5 LG 81 72 208 22.6 35 3 HP-6 PUHY-HP72TNU-A MITSUBISHI 80 72 208 38 60 3 SERVES CONSOLES 220, ETC	1 FOR REVIEW 8-11-2023 2 FOR CONSTRUCTION 12-14-2023
FXSQ12TBVJ4 DAIKIN 335 14.0 12.01 208 0.6 1	FXNQ15MVJU9 DAIKIN 280 17.0 14.0 208 .30 1	RXYQ72AATJA DAIKIN 52 67 208 27 30 3	3 FOR CONSTRUCTION 1-10-2024
AH-10 SCHEDULE	UNIT D SCHEDULE	HEAT PUMP 7 (HP-7) SCHEDULE	
UNIT MODEL MFG CFM HTG. CAP. COOL. MBH CAP. MBH V A PHASE COMMENTS	UNIT MODEL MFG CFM HTG. CAP. COOL. MBH CAP. MBH V A PHASE COMMENTS	UNIT MODEL MFG HTG. CAP. MBH COOL. CAP. MBH V MCA MOCP PHASE COMMENTS	
ARNU283M3A4 LG 1060 31.5 28.0 208 3.8 1	ARNU183-CFU LG 565 21.5 19.1 208 .5 1	ARUM072BTE5 LG 81 72 208 22.6 35 3	
AH-10 PEFY-P30NMHU-E2 MITSUBISHI 883 34.0 30.0 208 2.2 1 FXSQ30TBVJU DAIKIN 1000 32.0 30.0 208 3.1 1	D PFFYP-18NRMU-E MITSUBISHI 459 20.0 18.0 208 .42 1 FXNQ18 DAIKIN 460 20.0 18.5 208 .5 1	HP-7 PUHY-HP72TNU-A MITSUBISHI 80 72 208 38 60 3 SERVES AH-6 & AH-9 RXYQ72AATJA DAIKIN 52 67 208 27 30 3	
AH-11 SCHEDULE		HEAT PUMP 8 (HP-8) SCHEDULE	STAMP & SIGN:
UNIT MODEL MFG CFM HTG. CAP. COOL. MBH COOL. V A PHASE COMMENTS	UNIT MODEL MFG CFM HTG. CAP. COOL. MBH CAP. MBH V A PHASE COMMENTS	UNIT MODEL MFG HTG. CAP. COOL. MBH COOL. CAP. MBH V MCA MOCP PHASE COMMENTS	
ARNU363B8A4 LG 1317 40.6 36.2 208 3.3 1	ARNU123TU LG 325 13.6 12.3 208 .25 1	ARUM121BTE5 LG 135 119.7 208 30.9 40 3	
AH-11 PEFY-P36NMHU-E2 MITSUBISHI 1342 40.0 36.0 208 3.1 1 FXSQ36TBVJU DAIKIN 1130 41.4 36.0 208 2.5 1	E PLFYP-12NFMU MITSUBISHI 280 13.5 12.0 208 .23 1 CEILING MOUNTED UNIT FFQ12W2VJU9 DAIKIN 300 13.0 12.0 208 .30 1	HP-8 PUHYHP120TNUA MITSUBISHI 135 120 208 47 70 3 SERVES ROOM 316, ETC	
		RXYQ192AATJA DAIKIN 125 140 208 59 60 3	
UNIT MODEL MFG CFM HTG. CAP. MBH COOL. CAP. MBH V A PHASE COMMENTS	UNIT MODEL MFG CFM HTG. CAP. COOL. V A PHASE COMMENTS	HEAT PUMP 9 (HP-9) SCHEDULE UNIT MODEL MFG HTG. CAP. MBH COOL. CAP. MBH V MCA MOCP PHASE COMMENTS	
ONTI MODEL MFG CFM MBH CAP. MBH V A PHASE COMMENTS ARNU093M2A4 LG 468 10.9 9.6 208 2.2 1	LS12011FV3 LG 280 - 12.0 208 7.4 1	UNIT MODEL MFG MBH CAP. MBH V MCA MOCP PHASE COMMENTS ARUM168BTE5 LG 189 168 208 53.6 70 3	
AH-12 PEFY-P08NMAU-E3 MITSUBISHI 300 9.0 8.0 208 0.56 1	F PUZA12NKA MITSUBISHI 240 - 12.0 208 11 1 COOLING ONLY UNIT & DEDICATED CONDENSING UNIT FOR ROOM 120	HP-9 PUHY-HP92TSNU-A MITSUBISHI 215 192 208 2X43 2X70 3 SERVES AH-10, 11, 12 & ROOM 302, 303, 304, 305. 2 2 2 2 2 2 2 2 2 2 3 2 4 2 4 2 4 2 4	
FXSQ08TBVJU DAIKIN 320 9.0 8.0 208 1.0 1	RX12NMVJU DAIKIN 250 - 12.0 208 12.2 1	RXYQ192AATJA DAIKIN 126 152 208 59.8 60 3 2-11-90	23, MAIN STREET NEWTOWN, CT, 06470
AH-13 SCHEDULE		HEAT PUMP 10 (HP-10) SCHEDULE	
UNIT MODEL MFG CFM HTG. CAP. MBH COOL. CAP. MBH V A PHASE COMMENTS	UNIT MODEL MFG CFM HTG. CAP. COOL. MBH CAP. MBH V A PHASE COMMENTS	UNIT MODEL MFG HTG. CAP. MBH COOL. CAP. MBH V MCA MOCP PHASE COMMENTS	AIR HANDLER MECHANICAL
ARNU243M2A4 LG 640 27.3 24.2 208 2.2 1 AH-13 PEFY-24NMHU-E2 MITSUBISHI 671 27.0 24.0 208 1.6 1	ARNU063NJA4 LG 200 6.0 6.0 208 .3 1 G PVFYP6NAMU-E1 MITSUBISHI 200 6.0 6.0 208 .3 1	ARUM096BTE5 LG 108 96 208 28.5 40 3 HP-10 PUHYHP96TNU-A MITSUBISHI 108 96 208 43 70 3 SERVES AHU-3A	DETAILS & SCHEDULES
FXMQ24TBVJU DAIKIN 742 27.9 24.0 208 1.8 1	FXT06TAVJUD DAIKIN 200 6.0 6.0 208 .3 1	- DAIKIN	PROJECT NUMBER: #34-2023
AH-14 SCHEDULE	HEAT PUMP 1 (HP-1) SCHEDULE	HEAT PUMP 11 (HP-11) SCHEDULE	DATE: 7/10/23 DRAWN BY: LMS
UNIT MODEL MFG CFM HTG. CAP. COOL. MBH CAP. MBH V A PHASE COMMENTS	UNIT MODEL MFG HTG. CAP. COOL. MBH CAP. MBH V MCA MOCP PHASE COMMENTS	UNIT MODEL MFG HTG. CAP. COOL. MBH CAP. MBH V MCA MOCP PHASE COMMENTS	CHECKED BY: PGM
ARNU243M2A4 LG 640 27.3 24.2 208 2.2 1	ARUM121BTE5 LG 135 119.7 208 30.9 40 3	ARUM168BTE5 LG 189.0 168.0 208 53.6 70 3	M-019.00
AH-14 PEFY-24NMHU-E2 MITSUBISHI 671 27.0 24.0 208 1.6 1 FXMQ24TBVJU DAIKIN 742 27.9 24.0 208 1.8 1	HP-1 PUHY-HP120TNUA MITSUBISHI 119.8 120.0 208 47 70 3 SERVES AHU-1 REYQ120XATJB DAIKIN 81 120 208 43 50 3	HP-11 PUHY-HP92TSNU-A MITSUBISHI 215 192 208 2X43 2X70 3 SERVES AHU-3 - DAIKIN -	SCALE: AS NOTED

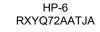
NEW TRANSITION	CONSOLE UNIT REPLACING RADIATOR CONSOLE UNIT REMOVAL SYSTEM VIA PUMP AS REQUIRED	6" CONCRETE SLAB W/ 6X6-10-10 WWW
EXISTING SUPPLY DUCT TO REMAIN	LIQUID & SUCTION	6" OF 1" COMPACTED GRAVEL
REMAIN	CONSOLE HEAT PUMP	MOUNTED HEAT PUMP @
DETAIL	DETAIL	EXTERIORS
1' - 0"	SCΔΙ Ε· ΝΤς	SCALE: $\frac{1}{4}$ = 1' - 0"



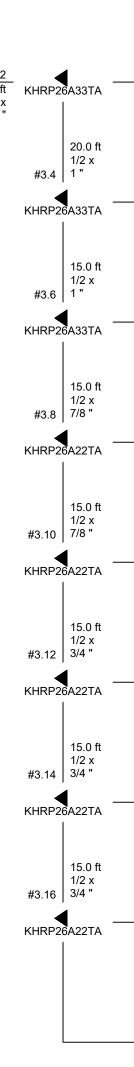


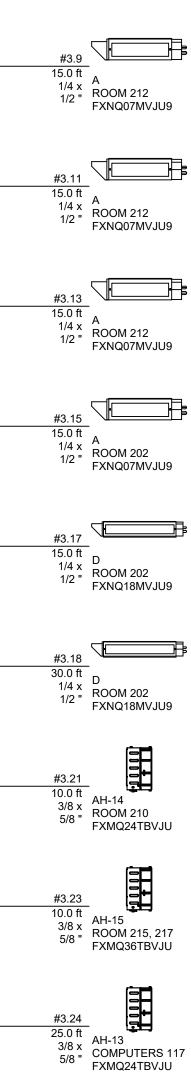


HP-5 RXYQ96AATJA



7/8 "





1/4 x A 1/2 " ROOM 215 FXNQ07MVJU9

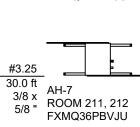
1/4 x A 1/2 " ROOM 211 FXNQ07MVJU9

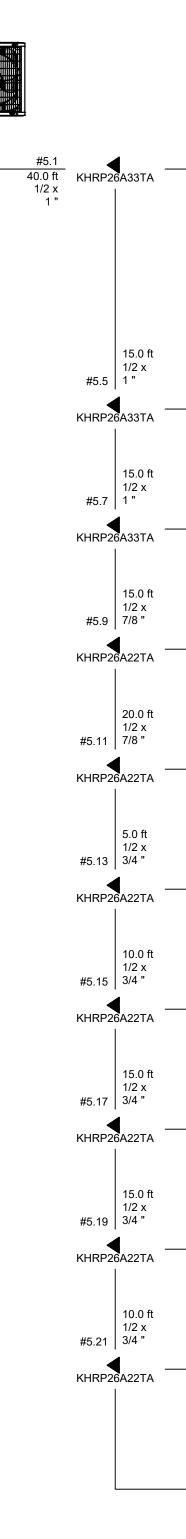
1/4 x A 1/2 " ROOM 211 FXNQ07MVJU9

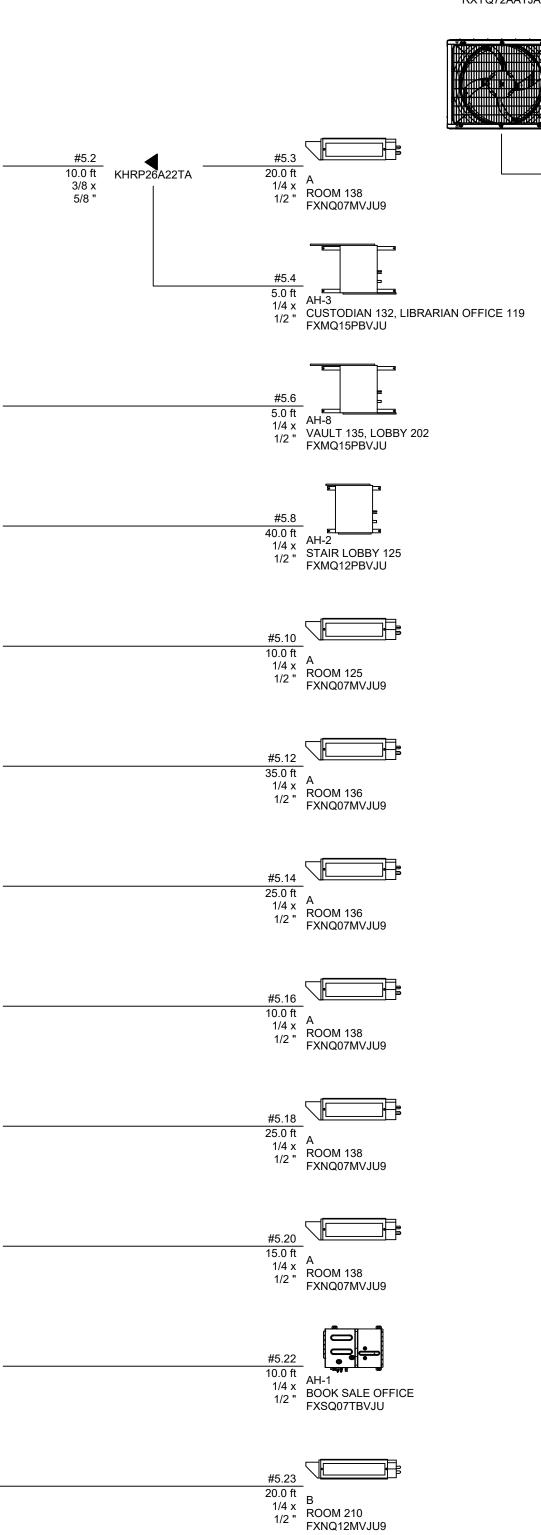
#3.5

15.0 ft

15.0 ft



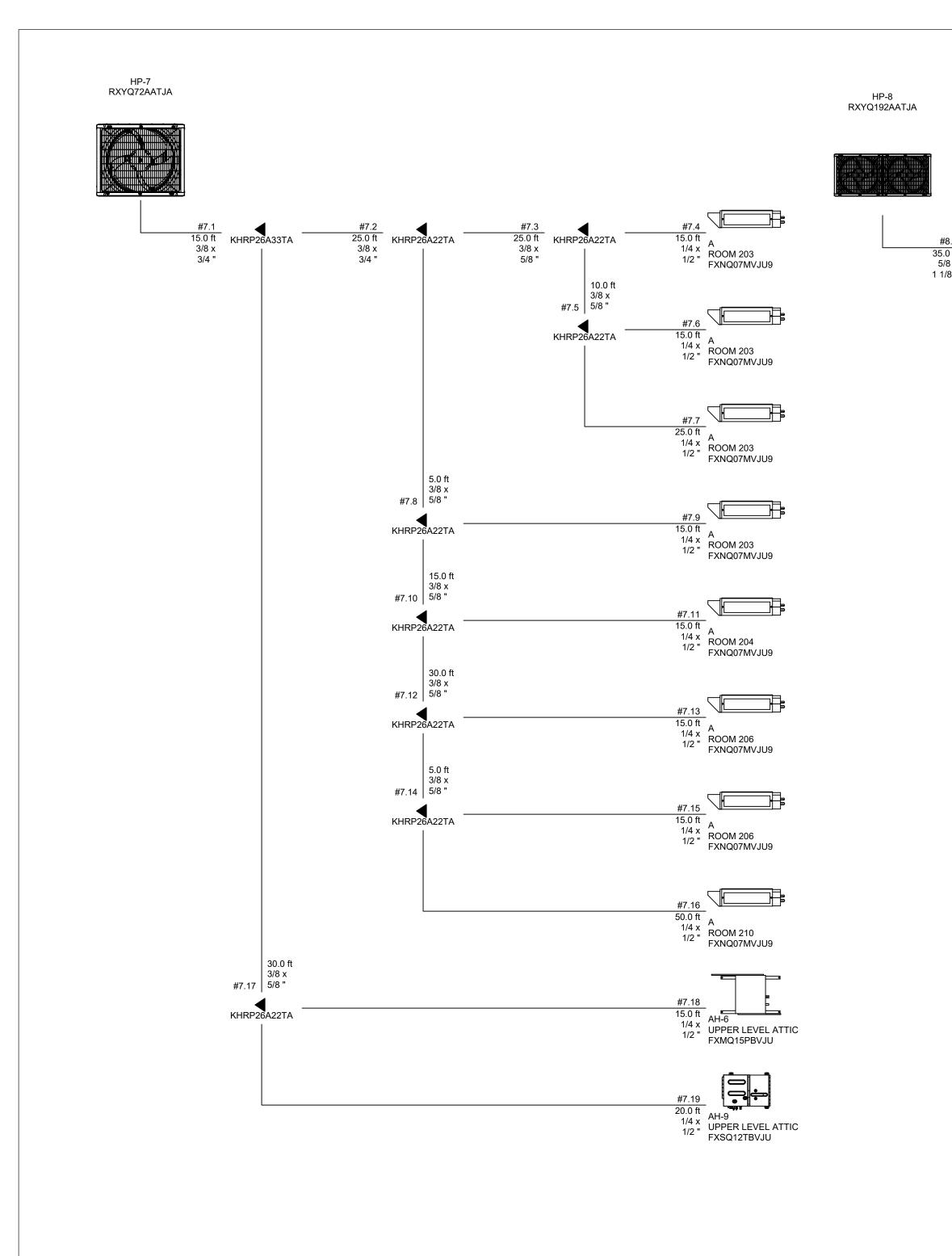


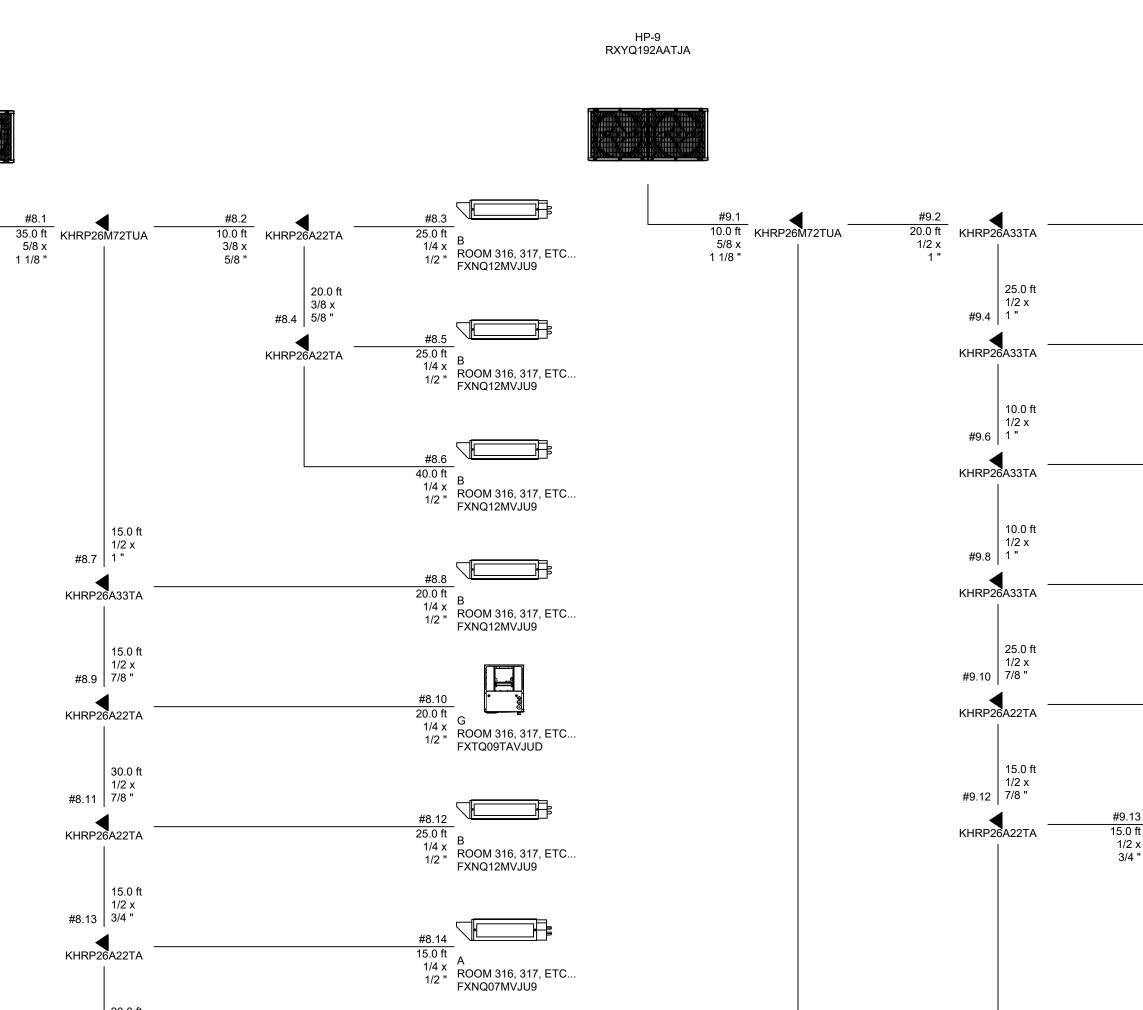


AHU-2

#6.3 #6.1 40.0 ft 1/2 x #6.2 15.0 ft KHRP26A22TA 1/2 x 7/8 " 20.0 ft A 1/4 x A 1/2 " ROOM 220 FXNQ07MVJU9 40.0 ft 1/2 x #6.4 7/8 " #6.5 KHRP26A22TA 20.0 ft 1/4 x 1/2 " ROOM 220 1/2 " FXNQ07MVJU9 20.0 ft #6.6 3/4 " #6.7 KHRP26A22TA 20.0 ft 1/4 x 1/2 " ROOM 220 FXNQ07MVJU9 15.0 ft #6.8 3/4 " KHRP26A22TA 20.0 ft 1/4 x C 1/2 " ROOM 220 1/2 " FYNO18MV/ II FXNQ18MVJU9 | 15.0 ft | 1/2 x #6.10 | 3/4 " #6 11 KHRP26A22TA 20.0 ft 1/4 x 1/2 " ROOM 220 FXNQ18MVJU9 #6.12 30.0 ft A 1/4 x 1/2 " ROOM 138 FXNQ07MVJU9 20.0 ft 3/8 x #6.13 5/8 " #6.14 KHRP26A22TA 20.0 ft 1/4 x 1/2 " ROOM 220 FXNQ07MVJU9 20.0 ft 3/8 x #6.15 5/8 " #6.16 20.0 ft 1/4 x 1/2 " ROOM 220 FXNQ07MVJU9 KHRP26A22TA No. #6.17 45.0 ft 1/4 x 1/2 " ROOM 220 FXNQ07MVJU9

MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DATE DESCRIPTION 8-11-2023 1 FOR REVIEW 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 DAIKIN PIPING TREE DIAGRAM (1) PROJECT NUMBER: #34-2023 7/10/23 DATE: DRAWN BY: LMS CHECKED BY: PGM M-021.00 SCALE: AS NOTED





#8.16

20.0 H 1/4 x 1/2 " ROOM 316, 317, ETC... FXNQ12MVJU9

#8.15 35.0 ft 1/4 x 1/2 " ROOM 316, 317, ETC... FXNQ12MVJU9

25.0 ft 1/4 x 1/2 " FXNQ12MVJU9

25.0 ft

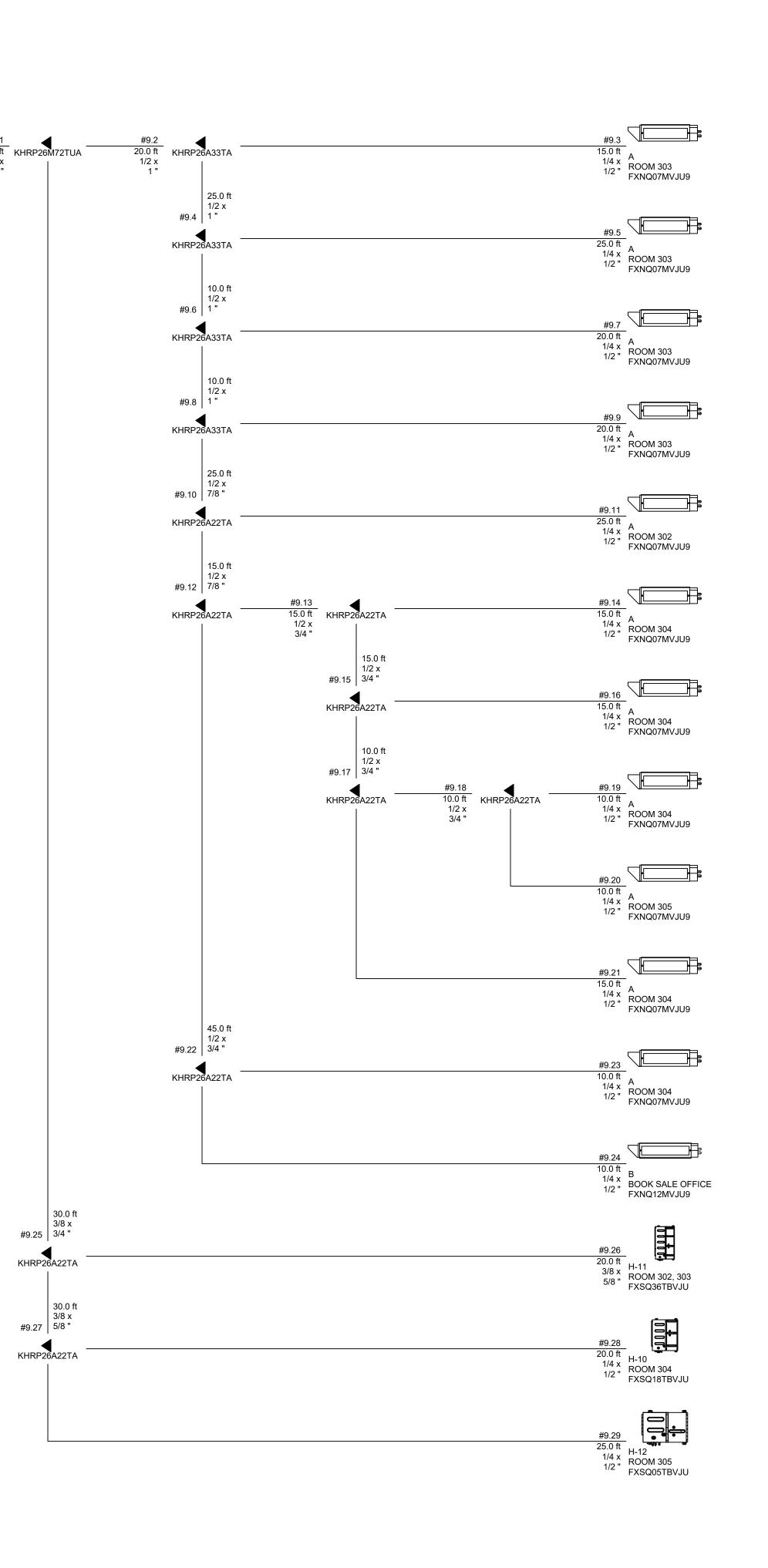
#8.19

20.0 ft 1/2 x #8.15 3/4 "

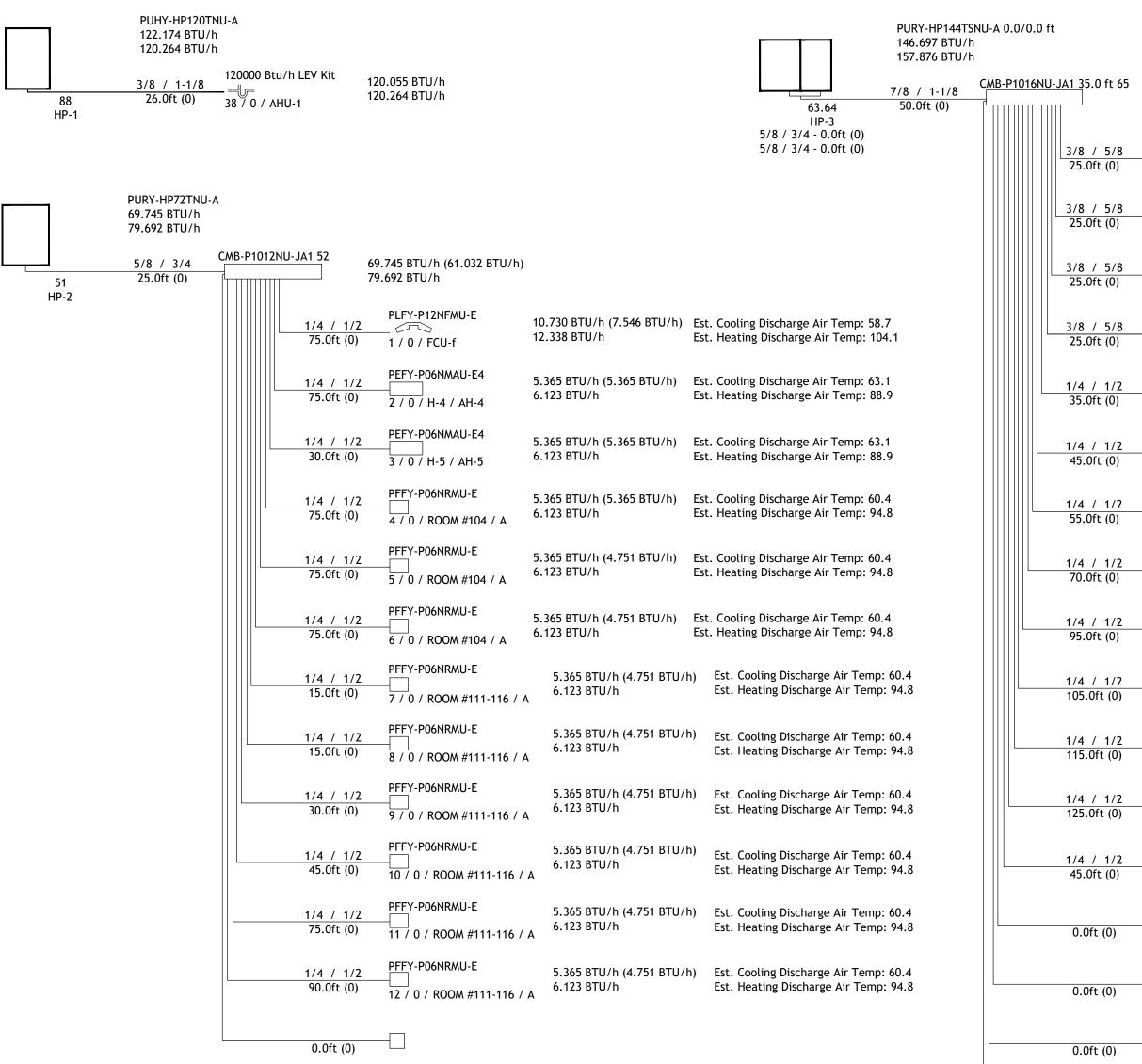
KHRP26A22TA

15.0 ft 1/2 x #8.17 3/4 "

KHRP26A22TA



MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DATE No. DESCRIPTION 1 FOR REVIEW 8-11-2023 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 DAIKIN PIPING TREE DIAGRAM (2) #34-2023 PROJECT NUMBER: 7/10/23 DATE: DRAWN BY: LMS CHECKED BY: PGM M-022.00 SCALE: AS NOTED



PURY-HP144TSNU-A 0.0/0.0 ft 146.697 BTU/h

157.876 BTU/h

PUHY-HP96TNU-A 97.514 BTU/h 108.832 BTU/h PEFY-P96NMHU-E-OA 3/8 / 7/8 35.0ft (0) 76 26 / 0 / ROOM #134 / AHU-2 HP-4

64.751 BTU/h

	146.697 BTU/h (128.34 157.876 BTU/h
3/8 / 5/8 25.0ft (0)	PEFY-P24NMHU-E2 35.0 ft
3/8 / 5/8 25.0ft (0)	PEFY-P24NMHU-E2 35.0 ft 14 / 0 / H-14 / AH-14
3/8 / 5/8 25.0ft (0)	PEFY-P36NMHU-E2 35.0 ft 15 / 0 / H-15 / AH-15
3/8 / 5/8 25.0ft (0)	PEFY-P36NMHU-E2 35.0 ft 16 / 0 / H-7 / AH-7
1/4 / 1/2 35.0ft (0)	PFFY-P06NRMU-E 25.0 ft
1/4 / 1/2 45.0ft (0)	PFFY-P06NRMU-E 25.0 ft 18 / 0 / ROOM #211 / A
1/4 / 1/2 55.0ft (0)	PFFY-P06NRMU-E 25.0 ft 19 / 0 / ROOM #212 / A
1/4 / 1/2 70.0ft (0)	PFFY-P06NRMU-E 25.0 ft 20 / 0 / ROOM #212 / A
1/4 / 1/2 95.0ft (0)	PFFY-P06NRMU-E 25.0 ft 21 / 0 / ROOM #212 / A
1/4 / 1/2 105.0ft (0)	PFFY-P06NRMU-E 25.0 ft 22 / 0 / ROOM #212 / A
1/4 / 1/2 115.0ft (0)	PFFY-P18NRMU-E 25.0 ft 23 / 0 / ROOM #202 / D
1/4 / 1/2 125.0ft (0)	PFFY-P18NRMU-E 25.0 ft 24 / 0 / ROOM #202 / D
 1/4 / 1/2 45.0ft (0)	PFFY-P06NRMU-E 25.0 ft 25 / 0 / ROOM #215 / A
0.0ft (0)	-
 0.0ft (0)	-
0.0ft (0)	-

0.0ft (0)

146.697 BTU/h (128.342 BTU/h)

19.297 BTU/h (14.04/ BTU/h) Est. Cooling Discharge Air Temp: 60.2 19.297 BTU/h Est. Heating Discharge Air Temp: 96.7
17.781 BTU/h (14.047 BTU/h) Est. Cooling Discharge Air Temp: 60.2 19.297 BTU/h Est. Heating Discharge Air Temp: 96.7
26.672 BTU/h (24.236 BTU/h) Est. Cooling Discharge Air Temp: 60.2 23.588 BTU/h Est. Heating Discharge Air Temp: 89.7
26.672 BTU/h (24.236 BTU/h) Est. Cooling Discharge Air Temp: 62.923.588 BTU/hEst. Heating Discharge Air Temp: 89.7
4.445 BTU/h (4.412 BTU/h)Est. Cooling Discharge Air Temp: 61.84.788 BTU/hEst. Heating Discharge Air Temp: 89.4
4.445 BTU/h (4.412 BTU/h)Est. Cooling Discharge Air Temp: 61.84.788 BTU/hEst. Heating Discharge Air Temp: 89.4
4.445 BTU/h (4.412 BTU/h)Est. Cooling Discharge Air Temp: 61.84.788 BTU/hEst. Heating Discharge Air Temp: 89.4
4.445 BTU/h (4.412 BTU/h)Est. Cooling Discharge Air Temp: 61.84.788 BTU/hEst. Heating Discharge Air Temp: 89.4
4.445 BTU/h (4.412 BTU/h)Est. Cooling Discharge Air Temp: 61.84.788 BTU/hEst. Heating Discharge Air Temp: 89.4
4.445 BTU/h (4.412 BTU/h)Est. Cooling Discharge Air Temp: 61.84.788 BTU/hEst. Heating Discharge Air Temp: 89.4
13.336 BTU/h (10.444 BTU/h)Est. Cooling Discharge Air Temp: 58.514.294 BTU/hEst. Heating Discharge Air Temp: 93.9
13.336 BTU/h (10.444 BTU/h)Est. Cooling Discharge Air Temp: 58.514.294 BTU/hEst. Heating Discharge Air Temp: 93.9
4.445 BTU/h (4.412 BTU/h)Est. Cooling Discharge Air Temp: 61.84.788 BTU/hEst. Heating Discharge Air Temp: 89.4

17.781 BTU/h (14.047 BTU/h) Est. Cooling Discharge Air Temp: 60.2

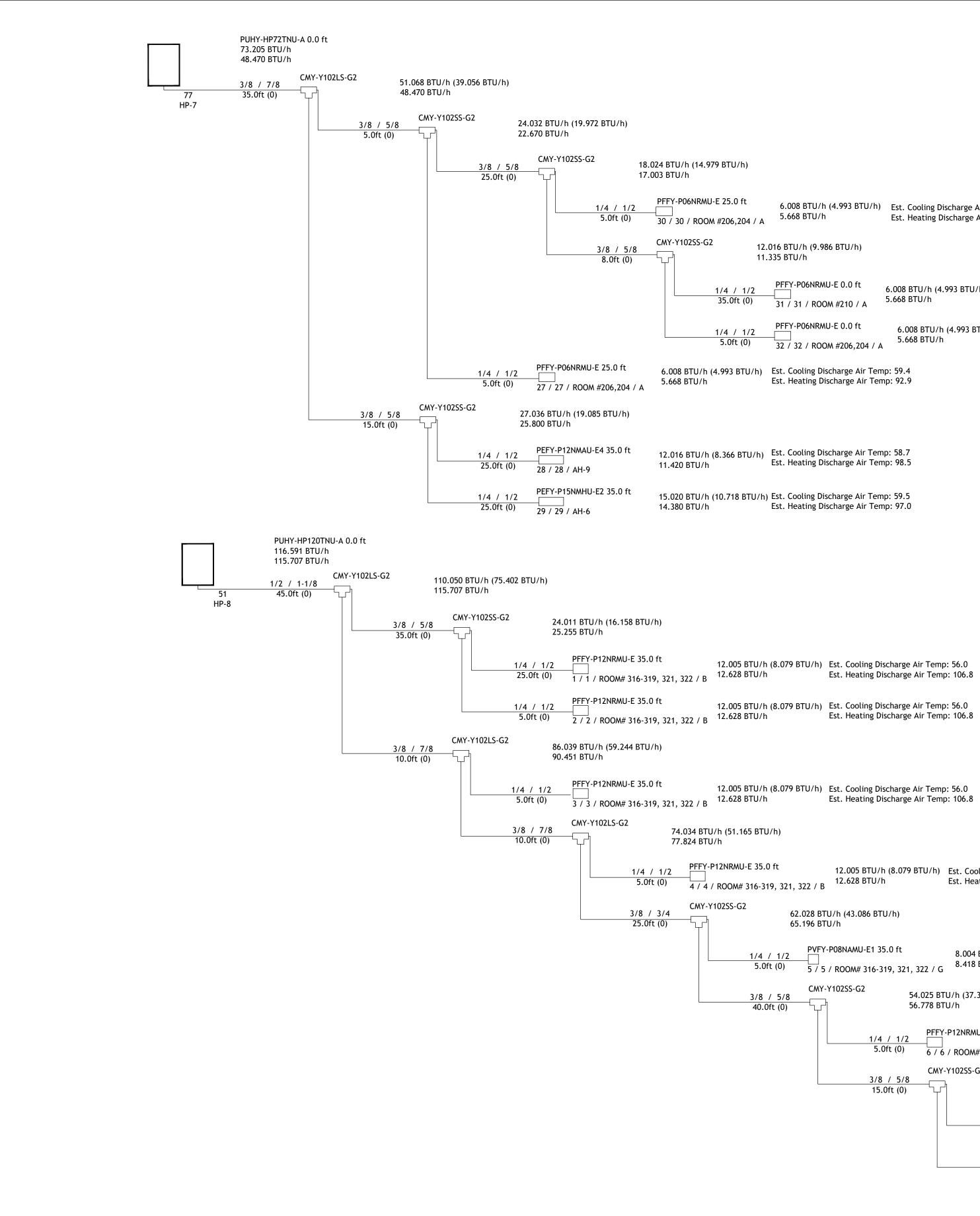
MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. 78.416 BTU/h (14.047 BTU/h) Est. Cooling Discharge Air Temp: 52.3 Est. Heating Discharge Air Temp: 82.4 DESCRIPTION DATE No. 1 FOR REVIEW 8-11-2023 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 MITSUBISHI PIPING TREE DIAGRAM (1) PROJECT NUMBER: #34-2023 7/10/23 DATE: LMS DRAWN BY: PGM CHECKED BY: M-023.00 SCALE: AS NOTED



MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DESCRIPTION DATE No. 1 FOR REVIEW 8-11-2023 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 MITSUBISHI PIPING TREE DIAGRAM (2) PROJECT NUMBER: #34-2023 DATE: 7/10/23 DRAWN BY: LMS CHECKED BY: PGM M-024.00 SCALE: AS NOTED

 3/8 / 1/2
 PFFY-P06NRMU-E 0.0 ft
 5.115 BTU/h (4.658 BTU/h)
 Est. Cooling Discharge Air Temp: 60.8

 5.0ft (0)
 36 / 0 / ROOM #136 / A
 5.626 BTU/h
 Est. Heating Discharge Air Temp: 92.8



E 25.0 ft	6.008 BTU/h (4.993 BTU/h)	Est. Cooling Discharge Air Ter	•
#206,204 / A	5.668 BTU/h	Est. Heating Discharge Air Te	
	016 BTU/h (9.986 BTU/h) 335 BTU/h		
1/4 / 1/2	PFFY-P06NRMU-E 0.0 ft	6.008 BTU/h (4.993 BTU/h)	Est. Cooling Discharge Air Temp: 59.4
35.0ft (0)		5.668 BTU/h	Est. Heating Discharge Air Temp: 92.9
<u>1/4 / 1/2</u>	PFFY-P06NRMU-E 0.0 ft	6.008 BTU/h (4.993 BTU/h)	Est. Cooling Discharge Air Temp: 59.4
5.0ft (0)		5.668 BTU/h	Est. Heating Discharge Air Temp: 92.9
4.993 BTU/h)	Est. Cooling Discharge Air Tem Est. Heating Discharge Air Tem	•	

12.016 BTU/h (8.366 BTU/h) Est. Cooling Discharge Air Temp: 58.7 Est. Heating Discharge Air Temp: 98.5

15.020 BTU/h (10.718 BTU/h) Est. Cooling Discharge Air Temp: 59.5 Est. Heating Discharge Air Temp: 97.0

12.005 BTU/h (8.079 BTU/h) Est. Cooling Discharge Air Temp: 56.0 12.628 BTU/h Est. Heating Discharge Air Temp: 106.8

12.005 BTU/h (8.079 BTU/h) Est. Cooling Discharge Air Temp: 56.0 Est. Heating Discharge Air Temp: 106.8

 1/4
 1/2
 PFFY-P12NRMU-E 35.0 ft
 12.005 BTU/h (8.079 BTU/h)
 Est. Cooling Discharge Air Temp: 56.0

 5.0ft (0)
 4 / 4 / ROOM# 316-319, 321, 322 / B
 12.005 BTU/h (8.079 BTU/h)
 Est. Heating Discharge Air Temp: 106.8
 62.028 BTU/h (43.086 BTU/h) 65.196 BTU/h
 PVFY-P08NAMU-E1 35.0 ft
 8.004 BTU/h (5.779 BTU/h)
 Est. Cooling Discharge Air Temp: 66.4

 5.0ft (0)
 5 / 5 / ROOM# 316-319, 321, 322 / G
 8.418 BTU/h
 Est. Heating Discharge Air Temp: 89.5
 CMY-Y102SS-G2 3/8 / 5/8 40.0ft (0) 56.778 BTU/h 54.025 BTU/h (37.307 BTU/h)
 PFFY-P12NRMU-E 35.0 ft
 12.005 BTU/h (8.079 BTU/h)
 Est. Cooling Discharge Air Temp: 56.0

 5.0ft (0)
 6 / 6 / ROOM# 316-319, 321, 322 / G
 16.628 BTU/h
 Est. Heating Discharge Air Temp: 106.8
 CMY-Y102SS-G2
 3/8 / 5/8
 42.019 BTU/h (29.1)

 15.0ft (0)
 44.150 BTU/h
 42.019 BTU/h (29.228 BTU/h)
 PFFY-P06NRMU-E 35.0 ft
 6.003 BTU/h (4.991 BTU/h)
 Est. Cooling Discharge Air Temp: 59.4

 5.0ft (0)
 7 / 7 / ROOM# 107 / A
 6.267 BTU/h
 Est. Heating Discharge Air Temp: 95.4
 CMY-Y102SS-G2 36.016 BTU/h (24.237 BTU/h) 37.883 BTU/h <u>3/8 / 5/8</u> 30.0ft (0)

 Bigs
 PFFY-P12NRMU-E 35.0 ft
 12.005 BTU/h (8.079 BTU/h)
 Est. Cooling Discharge Air Temp: 56.0

 5.0ft (0)
 8 / 8 / ROOM# 316-319, 321, 322 / B
 12.628 BTU/h
 Est. Heating Discharge Air Temp: 106.8

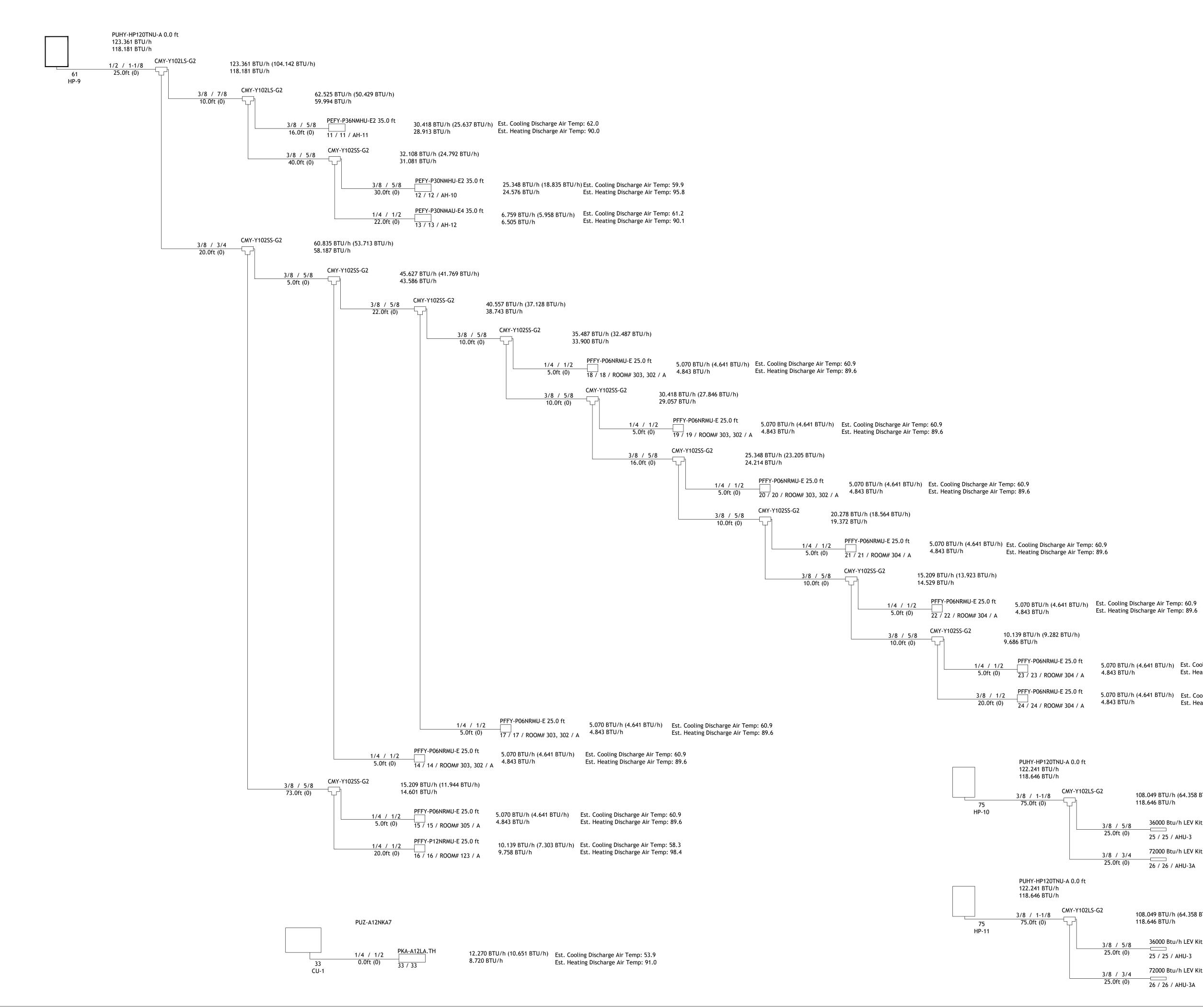
 CMY-Y102SS-G2 24.011 BTU/h (16.158 BTU/h) 1/2 / 5/8 20.0ft (0) 25.255 BTU/h
 3/8 / 1/2
 PFFY-P12NRMU-E 35.0 ft
 12.005 BTU/h (8.079 BTU/h)
 Est. Cooling Discharge Air Temp: 56.0

 5.0ft (0)
 9 / 9 / ROOM# 316-319, 321, 322 / B
 12.028 BTU/h
 Est. Heating Discharge Air Temp: 106.8

MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DESCRIPTION DATE No. 8-11-2023 1 FOR REVIEW 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 MITSUBISHI PIPING TREE DIAGRAM (3) PROJECT NUMBER: #34-2023 DATE: 7/10/23 DRAWN BY: LMS PGM CHECKED BY: M-025.00 SCALE: AS NOTED

 3/8
 1/2
 PFFY-P12NRMU-E 35.0 ft
 12.005 BTU/h (8.079 BTU/h)
 Est. Cooling Discharge Air Temp: 56.0

 40.0ft (0)
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10
 10



25.348 BTU/h (18.835 BTU/h) Est. Cooling Discharge Air Temp: 59.9
24.576 BTU/h	Est. Heating Discharge Air Temp: 95.8
	Est Cooling Discharge Air Temp: 61.2

MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DESCRIPTION DATE No. 1 FOR REVIEW 8-11-2023 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 MITSUBISHI PIPING TREE DIAGRAM (4) PROJECT NUMBER: #34-2023 7/10/23 DATE: DRAWN BY: LMS PGM CHECKED BY: M-026.00
 3/8 / 3/4
 72000 Btu/h LEV Kit 45.0 ft
 72.033 BTU/h

 25.0ft (0)
 26 / 26 / AHU-3A
 79.097 BTU/h
 AS NOTED SCALE:

 PFFY-P06NRMU-E 25.0 ft
 5.070 BTU/h (4.641 BTU/h)
 Est. Cooling Discharge Air Temp: 60.9

 5.0ft (0)
 23 / 23 / ROOM# 304 / A
 4.843 BTU/h
 Est. Heating Discharge Air Temp: 89.6

 3/8
 / 1/2
 PFFY-P06NRMU-E 25.0 ft
 5.070 BTU/h (4.641 BTU/h)
 Est. Cooling Discharge Air Temp: 60.9

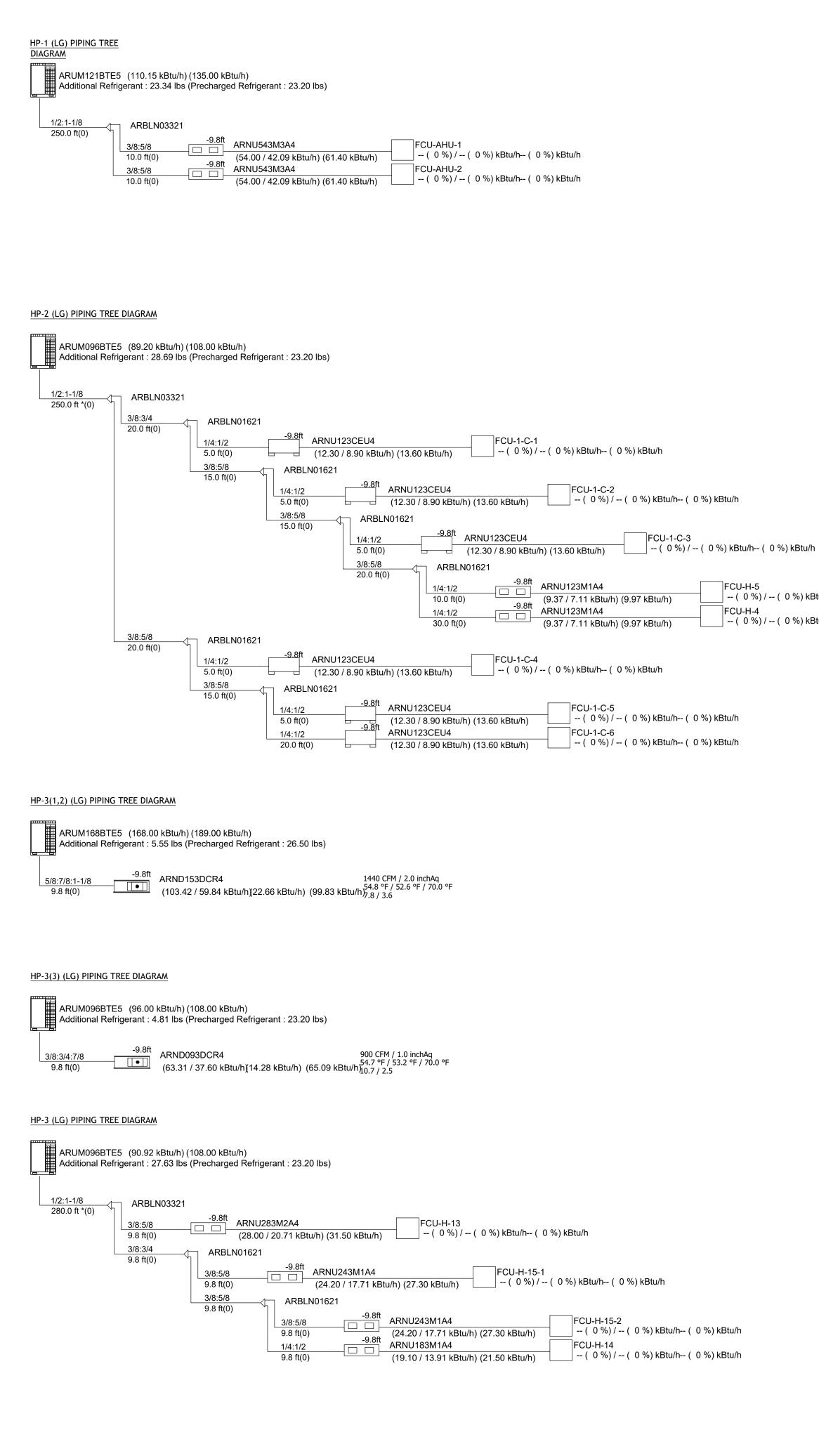
 20.0ft (0)
 24 / 24 / ROOM# 304 / A
 4.843 BTU/h
 Est. Heating Discharge Air Temp: 89.6

108.049 BTU/h (64.358 BTU/h) 118.646 BTU/h <u>3/8 / 5/8</u> <u>25 Oft (0)</u> <u>36000 Btu/h LEV Kit 45.0 ft</u> 25.0ft (0) 25 / 25 / AHU-3
 3/8
 3/4
 72000 Btu/h LEV Kit 45.0 ft
 72.033 BTU/h

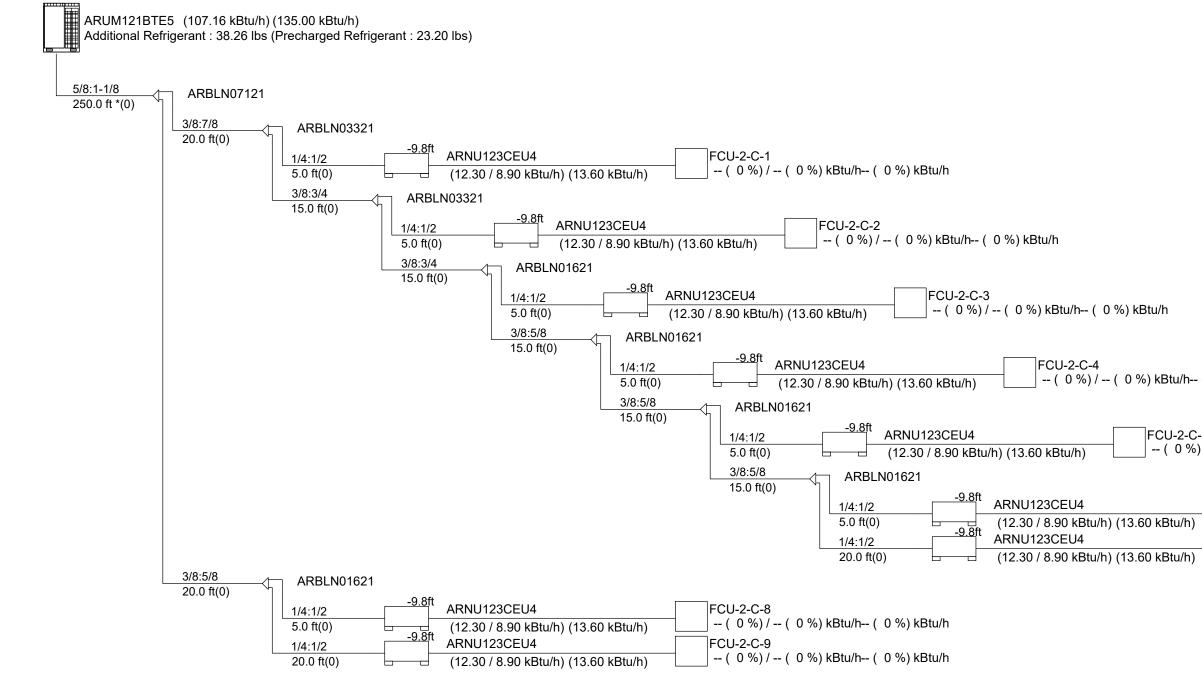
 25.0ft (0)
 26 / 26 / AHU-3A
 79.097 BTU/h

108.049 BTU/h (64.358 BTU/h) 118.646 BTU/h

3/8 / 5/8 36000 Btu/h LEV Kit 45.0 ft 25.0ft (0) 25 / 25 / AHU-3

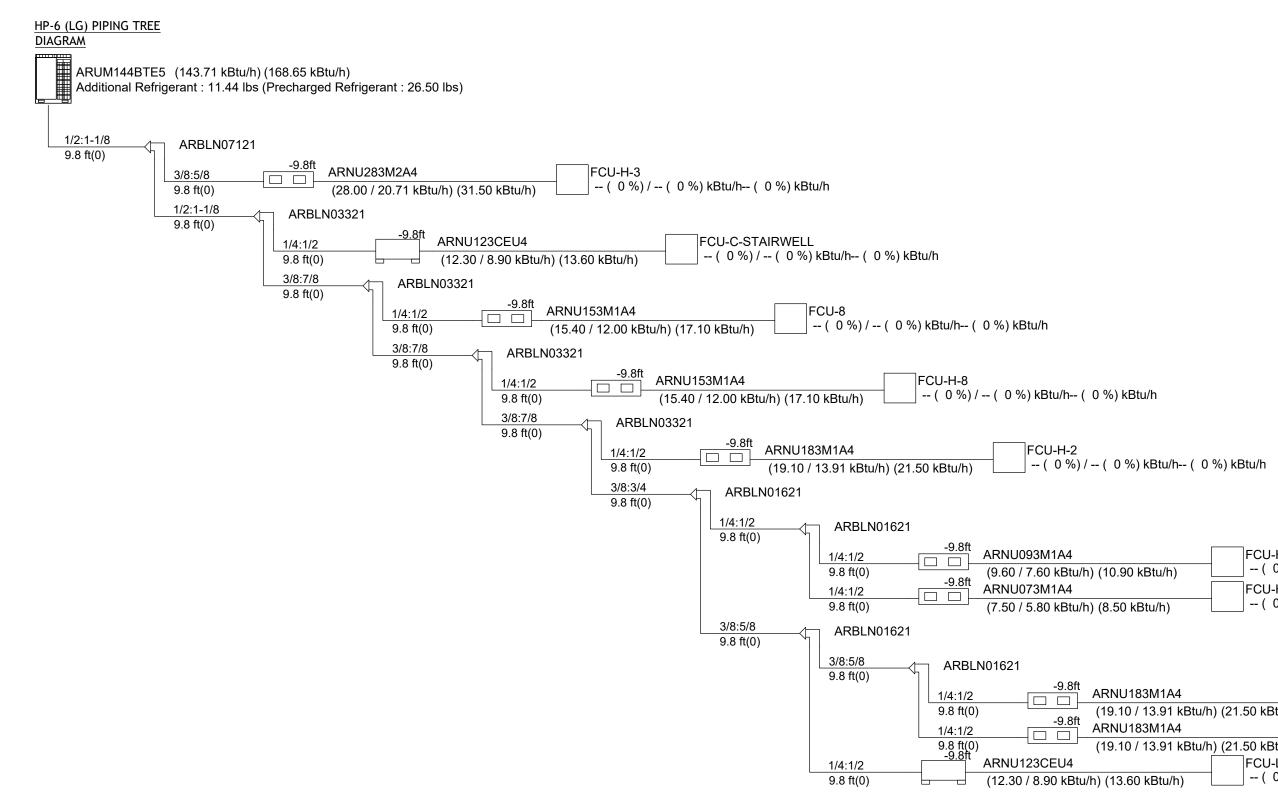


HP-5 (LG) PIPING TREE DIAGRAM



-- (0 %) / -- (0 %) kBtu/h-- (0 %) kBtu/h

-- (0 %) / -- (0 %) kBtu/h-- (0 %) kBtu/h



--- (0 %) / -- (0 %) kBtu/h-- (0 %) kBtu/h

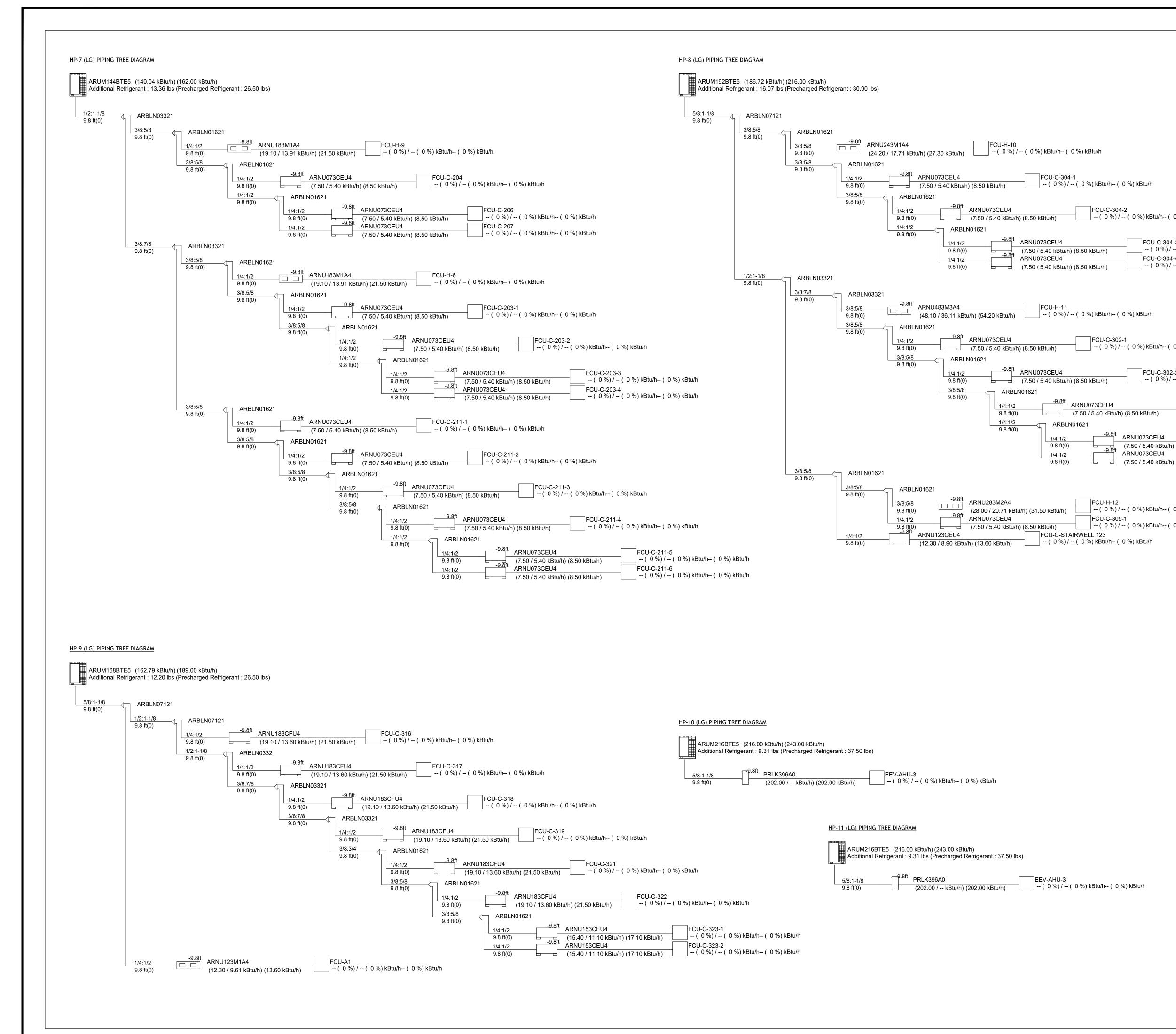
FCU-2-C-5 -- (0 %) / -- (0 %) kBtu/h-- (0 %) kBtu/h

FCU-2-C-6 -- (0 %) / -- (0 %) kBtu/h-- (0 %) kBtu/h FCU-2-C-7 -- (0 %) / -- (0 %) kBtu/h-- (0 %) kBtu/h

FCU-H-1-1 -- (0 %) / -- (0 %) kBtu/h-- (0 %) kBtu/h FCU-H-1-2 -- (0 %) / -- (0 %) kBtu/h-- (0 %) kBtu/h

ARNU183M1A4	FCU-H-136-1
(19.10 / 13.91 kBtu/h) (21.50 kBtu/h)	(0 %) /(0 %) kBtu/h(0 %) kBtu/h
ARNU183M1A4	FCU-H-136-2
(19.10 / 13.91 kBtu/h) (21.50 kBtu/h)	(0 %) / (0 %) kBtu/h (0 %) kBtu/h
n) (13.60 kBtu/h) FCU-Lobby (0 %) /	(0 %) kBtu/h(0 %) kBtu/h

MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DESCRIPTION DATE No. 8-11-2023 1 FOR REVIEW 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 LG PIPING TREE DIAGRAM (1) PROJECT NUMBER: #34-2023 DATE: 7/10/23 DRAWN BY: LMS PGM CHECKED BY: M-027.00 SCALE: AS NOTED



	C	IARCHETTI ONSULTING		
		NGINEERS	25 High Ridge Rd Pound Ridge, NY P (914) 764-9011 F (914) 764-9012 Itingengineers	10576
0 %) kBtu/h 3 (0 %) kBtu/h (0 %) kBtu/h (0 %) kBtu/h (0 %) kBtu/h	servic Docum proje autho conti rende to ba disput that t days. upon again the ev use fo on sit Discret	ngs and Specifications, as the, are and shall remain the nents are not to be used, in cts or purposes or by an prized by contract with rization of the Engineer. ngent upon payment to red. Non-payment shall give r document use by any tes any Engineer's statement the owner advise the engin Remaining, undisputed pur receipt. The owner sha st any claims alleging dar yent the Engineer exercises for non-payment. Contracto te. Only figured dimension pancies must be reported for repro	ne property of the n whole or in parties y other parties nout the specific The use of this of the engineer for e the Engineer the and all parties not for services, in neer in writing we ortions are due at all indemnify the mages or delays es the right to bat rs must check all ons are to be we	he Engineer. rt, for other than those fic written document is or services he authority s. If owner t is required with ten (10) and payable e Engineer incurred in ar document d dimensions orked from. he Engineer
0 %) kBtu/h				
P-2 (0 %) kBtu/h (0 %) kBtu/h FCU-C-302-3 (0 %) / (0 %) kBtu/h (0 %) kBtu/h				
FCU-C-302-4 (0 %) / (0 %) kBtu/h (0 %) kBtu/h FCU-C-302-5 (0 %) / (0 %) kBtu/h (0 %) kBtu/h				
0 %) kBtu/h 0 %) kBtu/h				
	No.	DESCRIPTI	0N	DATE
	1 2 3	FOR REVIEW FOR CONSTRUCTION FOR CONSTRUCTION		8-11-2023 12-14-2023 1-10-2024
		& SIGN:		
		23, MAIN NEWTOWN,		' 0
		LG PIPIN DIAGRA ECT NUMBER:		
		/N BY: KED BY:		7/10/23 LMS PGM
	SCALI	M-028		AS NOTED

LG's Multi V™ Controls

1.01 SYSTEM DESCRIPTION

LG's Multi V[™] Controls Network is the integrated controls platform for LG's Multi V[™] Variable Refrigerant Flow (VRF) systems. The customizable Multi V[™] Controls Network allows the level of control to match the needs of the building and its occupants. Multi V M Controls Network offers several controller options for the occupant(s) of the space, central controller options for facilities management personnel, application controllers for third-party equipment control, and BACnet® and LonWork[™] interfaces for integration with Building Management Systems (BMS).

1.02 QUALITY ASSURANCE

A. The units shall be manufactured in a facility registered to ISO 9001 and ISO 14001, which are environmental protection standards set by the International Organization for Standardization (ISO). B. All wiring shall be in accordance with the National Electrical Code (NEC).

1.03 STORAGE AND HANDLING

A. All LG VRF controllers shall be stored and protected from weather, extreme temperature, etc., as suggested by the manufacturer. All LG VRF controllers shall be moved, lifted, etc., as suggested by the manufacturer.

Article 2 - Limited Warranty

2.01 LG Air Conditioner Controls and Accessories shall be warranted for one (1) year from the date of original installation. For Warranty Specifications go to LGhvac.com.

2.02 The VRF system shall be installed by an individual or company that has completed current LG Multi V Installation, Commissioning and Service training and holds a current government issued license that authorizes the individual or company to service and install HVAC equipment in the state where the System is located, if such a license is required.

2.03 Startup and Service shall be performed by a party that has completed the current LG training requirements and who has performed such startup and service pursuant to LG's current published instructions.

Article 3 - Remote Controllers

3.1 REMOTE TEMPERATURE BUTTON SENSOR: ZRTBS01

3.1.1 Overview:

The ZRTBS01 Remote Temperature Button Sensor for LG systems shall be capable of measuring space temperature remotely for LG indoor units. 3.1.2 General:

3.1.2.1 The Remote Temperature Button Sensor shall be compatible with LG Multi V[™] VRF indoor units excluding wall mount IDUs.

3.1.2.2 The Remote Temperature Button Sensor shall communicate to the LG Multi V™ VRF indoor unit via attached fifty-foot communications cable.

3.1.2.3 The Remote Temperature Button Sensor shall be approximately 0.88 inch in diameter. 3.1.2.4 The Remote Temperature Button Sensor shall be paintable 3.1.3 Basic Functions:

Function	Description	Monitor	Control
Space Temperature	Measured space temperature.	X	

Available functions/features may differ based on connected system.

Article 4 - Central Controllers 4.01 LG AC SMART 5: PACS5A000

A. Overview:

The LG AC Smart 5 shall be capable of monitoring and control of up to 128 devices (including indoor units, ERV, DI/DOs, DOKITS, AWHPs, AHUs) or 64 devices (including indoor units, ERV, DI/DOs, DOKITS, AWHPs and AHUs) and 9 I/O Modules through its touchscreen interface and Embedded web browser. The LG AC Smart 5 shall provide multiple energy management schemes and control of third-party equipment when paired with associated I/O Module. Additionally, the LG AC Smart 5 shall be capable of providing daily, weekly, yearly, and holiday programmable scheduling of Occupied/Unoccupied settings, On/Off, Mode of Operation, set point and fan speed based on the available functions of the connected system.

Β. General:

The LG AC Smart 5 shall communicate to the LG Multi V™ VRF indoor unit via the VRF RS-485 daisy-chain communication protocol. The LG AC Smart 5 shall communicate to a third-party Building Automation System via

BACnet®/IP and Modbus TCP.

The LG AC Smart 5 shall have a 10.2" backlit touchscreen LCD display screen. The LG AC Smart 5 shall have web access with user control.

5. The LG AC Smart 5 shall be able to generate an operation and error history log with reporting capabilities.

The LG AC Smart 5 shall be able to generate an operational trending report. The LG AC Smart 5 shall be able to control up to 128 indoor units in a group or as a single zone.

8. The LG AC Smart 5 shall have two built-in digital inputs, and two built-in digital outputs for device interlock.

9. The LG AC Smart 5 shall have two set point auto changeover.

10. The LG AC Smart 5 shall have occupied/unoccupied set point control. 11. The LG AC Smart 5 shall have remote controller lock (All, Setpoint, Mode, and Fan Speed).

12. The LG AC Smart 5 shall have error e-mail notification. 13. The LG AC Smart 5 shall have visual floor plan navigation.

BACnet® is a trademark of ASHRAE.

C. Basic Functions:

Function On/Off	Description On/Off operation for group	Monitor X	Control X
Mode of Operation	Mode of Operation for group (Heat/Cool/Fan/Auto/Dry)	Х	Х
Set Point	Space temperature setpoint for group. Setting temperature range 64°F-84°F depending on operation mode and connected equipment.	х	Х
Space Temperature	Display measured space temperature	Х	
Fan Speed	Select fan speeds Hi-Mid1-Mid2-Low-Auto	Х	Х
Airflow Direction	Select air direction settings Auto/Swing/Fixed	Х	Х
Group Control	Control and Monitor a group or multiple groups	Х	Х
Operational and Event Log History	Record system operation and fault code history	Х	
Language Selection Available functions/fe	Choice of multiple languages eatures may differ based on connected system.		Х

D. Advanced Functions:

Function Schedule Daily, Weekly, programmable Minimum of fi Occupied/Unoc temperature, Timed Override Timed override Occupied/Unoccupied Ability to have Setting Energy Use Display Display actual operation consumption. Operation Run Time Limit Limit the run ti Two setpoint auto

Automatically operation heating and c Send E-Mail Email Notification

detected Peak/Demand Control Control and

Temperature setpoint range limit Ability to limit ranges

Remote controller Lock setting

HTML 5 suppor Web Server

Available functions/features may differ

E. Electrical: 1. The LG AC Smart 5 shall be powered via 24 VAC or 12 VDC.

Mitsubishi Controls

Description Daily, Weekly, Yearly and Holiday programmable schedule Minimum of five events per day with On/Off,	Monitor	Control	
Occupied/Unoccupied, Mode, Set temperature, and Fan	х	х	
Timed override of Unoccupied settings	Х	Х	
Ability to have different settings for both modes	Х	Х	
actual operational time and power consumption.	Х	х	
Limit the run time of an indoor unit	х	х	
Automatically manage room temperature for heating and cooling	х	х	
Send E-Mail when a system failure has been detected	х	х	
Control and Limit power consumption of external devices	Х	х	
Ability to limit heating and cooling setpoint ranges	x	x	
Ability to lock out operation of the controller	Х	Х	
HTML 5 supported Graphical User Interface	х	Х	
tures may differ based on connected system.			

5.01 OVERVIEW The control system shall consist of a low voltage communication network and a web-based interface. The controls system shall gather data and generate web pages accessible through a conventional web browser on each PC connected to the network. Operators shall be able to perform all normal operator functions through the web browser interface. Furnish energy conservation features such as optimal start, request-based logic, and demand level adjustment of overall system capacity as specified in the sequence. System shall be capable of email generation for remote alarm annunciation. 5.02 ELECTRICAL CHARACTERISTICS General: 1. Controller power and communications shall be via a common non-polar communications bus and shall operate at 30VDC. Wiring: 1. Control wiring shall be installed in a daisy chain configuration from indoor unit to indoor unit, to the BC controller (main and subs, if applicable) and to the outdoor unit. Control wiring to remote controllers shall be run from the indoor unit terminal block to the controller associated with that unit. 2. Control wiring for centralized controllers shall be installed in a daisy chain configuration from outdoor unit to outdoor unit, to the system controllers (centralized controllers and/or integrated web based interface), to the power supply. Wiring type: 1. Wiring shall be 2-conductor (16 AWG), twisted, stranded, shielded wire as defined by the Diamond System Builder output. Network wiring shall be CAT-5 with RJ-45 connection. 5.03 CITY MULTI CONTROLS NETWORK 1. The CITY MULTI Controls Network (CMCN) consists of remote controllers, centralized controllers, and/or integrated web based interface communicating over a high-speed communication bus. The CITY MULTI Controls Network shall support operation monitoring, scheduling, occupancy, error email distribution, personal web browsers, tenant billing, online maintenance support, and integration with Building Management Systems (BMS) using either LonWorks® or BACnet® interfaces. The below figure illustrates a sample CMCN System Configuration. 5.04 CENTRALIZED CONTROLLER (WEB-ENABLED)

Master Centralized Controller:

1. The Master Centralized Controller shall be capable of controlling a maximum of two hundred (200) indoor units across multiple CITY MULTI outdoor units with the use of three expansion controllers. The Master Centralized Controller shall be approximately 11-5/32" x 7-55/64" x 2-17/32" in size and shall be powered with an integrated 100-240 VAC power supply. The Master Centralized Controller shall support system configuration, daily/weekly scheduling, monitoring of operation status, night setback settings, free contact interlock configuration and malfunction monitoring. When being used alone without the expansion controllers, the Master Centralized Controller shall have five basic operation controls which can be applied to an individual indoor unit, a collection of indoor units (up to 50 indoor units), or all indoor units (collective batch operation). This basic set of operation controls for the Master Centralized Controller shall include on/off, operation mode selection (cool, heat, auto (R2/WR2-Series only), dry, setback (R2/WR2-Series only) and fan), temperature setting, fan speed setting, and airflow direction setting. Since the master provides centralized control it shall be able to enable or disable operation of local remote controllers. In terms of scheduling, the Master Centralized Controller shall allow the user to define both daily and weekly schedules (up to 24 scheduled events per day) with operations consisting of ON/OFF, mode selection, temperature setting, air flow (vane) direction, fan speed, and permit/prohibit of remote controllers.

2. All Master Centralized Controllers shall be equipped with two RJ-45 Ethernet ports to support interconnection with a network PC via a closed/direct Local Area Network (LAN) or to a network switch for IP communication to up to three expansion controllers for display of up to two hundred (200) indoor units on the main master centralized controller interface.

3. The Master Centralized Controller shall be capable of performing initial settings via the high-resolution, backlit, color touch panel on the controller or via a PC browser using the initial settings.

4. Standard software functions shall be available so that the building manager can securely log into each master centralized controller via the PC's web browser to support operation monitoring, scheduling, error email, interlocking and online maintenance diagnostics. Additional optional software functions of personal browser for PCs and MACs and Energy shall be available but are not included. The Energy Apportionment function shall require a LIC-Charge software license Expansion Controller:

1. The Expansion Controller shall serve as a standalone centralized controller or as an expansion module to the Master Centralized Controller for the purpose of adding up to 50 indoor units to either the main touch screen interface of the master centralized controller. Up to three (3) expansion controllers can be connected to the master via a local IP network (and their IP addresses assigned on the master) to the master to allow for up to two hundred (200) indoor units to be monitored and controlled from the master interface.

2. The expansion controllers have all of the same capabilities to monitor and control their associated indoor units as the features specified above. Even when connected to the master and configured to display their units on the main controller, the individual indoor units connected to the expansion can still be monitored and controlled from the interface of the expansion. The last command entered will take precedence, whether at the wall controller, the expansion or the master Centralized Controller. Non Touch Screen, Networked Centralized Controller:

1. The Non Touch Screen, Networked Centralized Controller shall be capable of controlling a maximum of 50 indoor units across multiple CITY MULTI outdoor units. The controller shall be approximately 8-1/2"x10" in size and shall be powered by its internal power supply. The controller shall support system configuration, daily/weekly scheduling, monitoring of operation status, free contact interlock configuration and malfunction monitoring. The controller shall have five basic operation controls which can be applied to an individual indoor unit, a group of indoor units (up to 50 indoor units), or all indoor units (collective batch operation). This basic set of operation controls for the controller shall include on/off, operation mode selection (cool, heat, auto (R2/WR2-Series only), dry, temperature setting, fan speed setting, and airflow direction setting. Since the controller provides centralized control it shall be able to enable or disable operation of local remote controllers. In terms of scheduling, the controller shall allow the user to define both daily and weekly schedules with operations consisting of ON/OFF, mode selection, temperature setting, air flow (vane) direction, fan speed, and permit/prohibit of remote controllers.

MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. DESCRIPTION DATE No. 1 FOR REVIEW 8-11-2023 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET **NEWTOWN, CT, 06470** LG & MITSUBISHI GUIDE SPECIFICATIONS - CONTROLS PROJECT NUMBER: #34-2023 7/10/23 DATE: DRAWN BY: LMS CHECKED BY: PGM M-029.00 SCALE: AS NOTED

SECTION 15000 GENERAL CONDITIONS FOR MECHANICAL WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

APPLICABLE REQUIREMENTS OF THE CONDITIONS OF THE CONTRACT ARE INCLUDED THIS SECTION AND APPLY TO ALL WORK AND MATERIAL INCLUDED UNDER THE MECHANICAL SPECIFICATIONS SECTIONS AND/OR DIVISIONS OF THE SPECIFICATIONS

WHERE ITEMS ARE REPEATED IN THIS AND THE ABOVE MENTIONED CONDITIONS, SECTIONS, AND/OR DIVISIONS OF THE SPECIFICATIONS, IT IS INTENDED TO CALL PARTICULAR ATTENTION TO QUALIFY THEM, EXPAND ON THEIR SUPERSEDED OR DELETES ANY PART OF THE INCLUDED SECTIONS, DIVISIONS AND CONDITIONS OF THE SPECIFICATIONS.

1.02 INTENT - GENERAL

IT IS THE INTENT OF THE CONTRACT AND OF THE DRAWINGS AND SPECIFICATIONS TO CALL FOR FINISHED WORK, TESTED, FUNCTIONAL, CODE COMPLIANT AND READY TO USE.

THE CONTRACTOR AGREES TO BIND EVERY SUBCONTRACTOR BY THE TERMS OF THE CONTRACT DOCUMENTS. THE CONTRACT DOCUMENTS SHALL NOT BE CONSTRUED AS CREATING ANY CONTRACTUAL RELATION BETWEEN ANY SUBCONTRACTOR AND THE OWNER.

INCLUDE THE FOLLOWING IN THE WORK, AND THE CONTRACT PRICE:

ANY APPARATUS, APPLIANCES, MATERIAL, LABOR OR SERVICE THERE IS SHOWN ON DRAWINGS, OR NOTED IN THE SPECIFICATIONS.

ANY INCIDENTAL APPARATUS, APPLIANCE, MATERIAL, LABOR OR SERVICE NECESSARY TO MAKE THE WORK COMPLETE IN ALL RESPECTS AND FULLY READY FOR TROUBLE FREE OPERATION, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.

SMALL DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT WHICH ARE.

1.04 WORK NOT INCLUDED IN THIS SECTION

THE FOLLOWING WORK IS SPECIFIED IN OTHER SECTIONS OF THE SPECIFICATIONS:

MASONRY AND CONCRETE FOUNDATION FOR EQUIPMENT

SETTING OF ACCESS DOORS

1.05 DEFINITIONS:

"AS SHOWN", "AS INDICATED" SHALL BE UNDERSTOOD TO MEAN REFERENCE TO INFORMATION OR DIRECTIONS INDICATED OR SHOWN ON THE CONTRACT DRAWINGS OR IN THE SPECIFICATIONS.

"PROVIDE" SHALL BE UNDERSTOOD TO MEAN FURNISH AND INSTALL

1.06 EXAMINATION OF EXISTING CONDITIONS:

VISIT AND EXAMINE THOSE PORTIONS OF THE SITE AND PRESENT BUILDING AFFECTED BY THIS WORK SO AS TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THE WORK. SUBMISSION OF A BID WILL BE CONSTRUED AS EVIDENCE THAT SUCH EXAMINATION HAS BEEN MADE AND LATER CLAIMS FOR LABOR, EQUIPMENT, OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH EXAMINATION BEEN MADE, WILL NOT BE RECOGNIZED.

ALL OF THESE ITEMS ARE TO BE INCLUDED IN THE BID PRICE. NO ALLOWANCES WILL BE MADE DURING THE JOB FOR FAILURE OF THE CONTRACTOR TO HAVE INCLUDED COST ALLOWANCES FOR SAME IN HIS BID PRICE.

1.07 SALVAGE:

UNLESS OTHERWISE NOTED ON THE DRAWINGS OR TAGGED BY THE OWNER AT THE SITE, INACTIVE OR DISCONNECTED MATERIAL ON THE SITE WHICH IS REMOVED IN THE WORK SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED PROMPTLY BY THE CONTRACTOR FROM THE SITE. ALL OTHER MATERIALS WHICH IS TAGGED OR NOTED ON THE DRAWINGS TO BE STORED FOR THE OWNER ON THE SITE SHALL BE REMOVED WITH CARE, PROTECTED FROM DAMAGE AND SHALL REMAIN THE PROPERTY OF THE OWNER.

1.08 CODES, RULES, PERMITS AND FEES:

ALL MATERIALS FURNISHED AND ALL WORK INSTALLED SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF LOCAL UTILITY COMPANIES, FIRE DEPARTMENT, STATE AND LOCAL CODES, AND ALL REQUIREMENTS OF OTHER AUTHORITIES HAVING JURISDICTION.

WHERE CONFLICT OCCURS BETWEEN THE REQUIREMENTS OF THE SPECIFICATIONS AND/OR THE CONTRACT DRAWINGS AND ANY SUCH APPLICABLE LAWS, ORDINANCES, RULES AND REGULATIONS, INCLUDING REQUIREMENTS FOR ADDITIONAL MATERIALS OR APPARATUS, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN ALL WORK AND SHALL BE INSTALLED WITHOUT EXTRA COST TO THE OWNER.

THE CONTRACTOR SHALL GIVE ALL NOTICES, OBTAIN ALL REQUIRED PERMITS, PERFORM ALL TESTS AND PAY FOR ALL LOCAL, STATE AND FEDERAL TAXES, FEES, ROYALTIES AND OTHER COSTS; FILE ALL NECESSARY DRAWINGS AND OBTAIN ALL APPROVALS OF ALL MUNICIPAL AND STATE AUTHORITIES HAVING JURISDICTION; OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION; FURNISH THE OWNER WITH FINAL CERTIFICATES BEFORE FINAL PAYMENT OF THE CONTRACT.

1.09 LAWS AND ORDINANCES

MATERIALS SPECIFIED BY REFERENCE TO A SPECIFIC STANDARD SUCH AS THE UNDERWRITER'S LABORATORIES, AMERICAN NATIONAL STANDARDS INSTITUTE, FEDERAL SPECIFICATIONS, A TRADE ASSOCIATION STANDARD, OR OTHER SIMILAR STANDARD SHALL COMPLY WITH THE REQUIREMENTS IN THE LATEST REVISION THEREOF IN EFFECT AT THE TIME OF BIDDING, EXCEPT AS LIMITED BY TYPE, CLASS OR GRADE, OR MODIFIED IN SUCH REFERENCE.

ALL MATERIALS, EQUIPMENT AND APPARATUS SHALL BE UNDERWRITERS LISTED OR LABELED FOR ALL ITEMS WHERE SUCH LISTING OR LABELING ARE AVAILABLE. ITEMS WHICH ARE NOT UNDERWRITERS LISTED OR LABELED WILL NOT BE ACCEPTABLE IF LABELED OR LISTED EQUIPMENT CAN BE OBTAINED FROM ANOTHER ACCEPTABLE MANUFACTURER. ASSEMBLIES NOT LABELED OR LISTED SHALL BE FURNISHED WITH CERTIFICATION BY THE MANUFACTURER INDICATED THAT THE WIRING COMPLIES WITH U.L SAFETY REQUIREMENTS. EACH COMPONENT OF ASSEMBLY SHALL BE LISTED BY UNDERWRITERS LABORATORIES AS A "RECOGNIZED COMPONENT"

1.11 MATERIALS:

ALL EQUIPMENT AND MATERIALS SHALL BE NEW AND OF FIRST QUALITY, SUITABLE FOR THE PURPOSE INTENDED AND CONDITIONS ENCOUNTERED.

ALL MATERIALS SHALL BE APPLIED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE ACCEPTED MANUFACTURERS.

ALL MATERIALS USED OR INSTALLED SHALL BE FREE OF ANY ASBESTOS CONTENT.

ALL MATERIALS USED OR INSTALLED SHALL BE FREE OF ANY LEAD CONTENT.

THE DRAWINGS ARE BASED ON THE EQUIPMENT AND MATERIALS SPECIFICALLY DESIGNATED AS THE STANDARD. IF IT IS ELECTED TO INSTALL MATERIALS AND EQUIPMENT INCLUDED UNDER OTHER ACCEPTABLE MANUFACTURERS, THE ARCHITECT WILL BE THE SOLE JUDGE OF WHETHER THE PROPOSED SUBSTITUTION IS EQUAL TO OR BETTER THAN THE STANDARD. SUBMIT DRAWINGS FOR REVIEW SHOWINGS ANY CHANGES REQUIRED BY THIS EQUIPMENT OR MATERIALS; AND BE RESPONSIBLE FOR ITS INSTALLATION IN THE ALLOTTED SPACE WITH PROPER CLEARANCE FOR SERVICING AND REPAIRING SAID EQUIPMENT, PLUS ANY ADDITIONAL MATERIALS AND, EQUIPMENT NECESSARY FOR ITS INSTALLATION.

WHERE SUCH ACCEPTABLE DEVIATION REQUIRES DIFFERENT QUANTITY OR ARRANGEMENT OF FOUNDATIONS, SUPPORT, PIPING, WIRING, CONDUIT AND ANY OTHER EQUIPMENT OR ACCESSORIES NORMAL TO THIS EQUIPMENT, FURNISH SAID CHANGES AND ADDITIONS AT NO INCREASE IN CONTRACT PRICE. DEVIATIONS MEAN THE USE OF ANY LISTED ACCEPTABLE MANUFACTURER OTHER THAN THOSE ON WHICH THE DRAWINGS ARE BASED.

1.12 WORKMANSHIP:

ALL WORK SHALL BE PREFORMED IN A NEAT AND WORKMANLIKE MANNER, WITH DUE REGARD FOR GOOD PRACTICE AND BEST FINISHED APPEARANCE.

ANY WORK WHICH DOES NOT COMPLY WITH THE REQUIREMENTS OF THE CONTRACT OR ANY WORK DAMAGED BY REASON OF NEGLECT ON THE PART OF THE CONTRACTOR OR LACK OF PROTECTION TO ACCEPTANCE, SHALL BE REMOVED, RECONSTRUCTED, OR REFINISHED BY THE CONTRACTOR AR HIS EXPENSE TO THE COMPLETE SATISFACTION OF AND WHEN DIRECTED BY THE ARCHITECT. REMOVE ALL DEFECTIVE AND/OR DAMAGE WORK FROM PREMISES.

LOCATE ALL EQUIPMENT WHICH MUST BE SERVICED, OPERATED OR MAINTAINED IN FULLY ACCESSIBLE POSITIONS. THIS SHALL INCLUDE BUT NOT BE LIMITED TO VALVES, TRAPS, CLEANOUTS, MOTORS, CONTROLLERS, JUNCTION BOXES, SWITCHES, DRAIN POINTS, ETC.

1.13 DRAWINGS

DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK REQUIRED. DO NOT SCALE THE DRAWINGS CONSULT THE ARCHITECTURAL DRAWINGS AND DETAILS, AND THE DRAWINGS OF OTHER TRADES, FOR EXACT LOCATION OF EQUIPMENT.

DRAWINGS SHALL BE USED IN LAYOUT OF WORK, CHECK REFERENCE DRAWINGS TO VERIFY SPACES IN WHICH THE WORK WILL BE INSTALLED, MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITIONS APPEAR INADEQUATE, ARCHITECT SHALL BE NOTIFIED BEFORE PROCEEDING WITH INSTALLATION

IF INSTRUCTED BY ENGINEER, MAKE MINOR MODIFICATIONS IN THE LAYOUT AS NEEDED TO PREVENT CONFLICT WITH WORK OF THE TRADES OR FOR PROPER EXECUTION OF THE WORK

THE DRAWINGS ARE SCHEMATIC AND DIAGRAMMATIC.

SYMBOLS AND DIAGRAMS ARE USED TO INDICATE THE VARIOUS ITEMS OF WORK AND THE COMPLETE SYSTEMS, BUT NOT NECESSARILY HAVE DIMENSIONAL SIGNIFICANCE, NEITHER DO THEY NECESSARILY DELINEATE ALL RELATED AND SUBSIDIARY PARTS AND EQUIPMENT.

THE WORK SHALL BE INSTALLED COMPLETE AND READY FOR OPERATION IN CONFORMITY WITH THE INTENT EXPRESSED ON THE DRAWINGS AND IN THE SPECIFICATIONS

COORDINATE THE WORK WITH THE REQUIREMENTS OF THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR DIMENSIONS, LOCATIONS AND CLEARANCES

LOCATION OF ITEMS EXPOSED TO VIEW SHALL BE TAKEN FORM THE ARCHITECTURAL DRAWINGS OR LOCATED AS DIRECTED

LOCATE ALL EOUIPMENT WHICH MUST BE SERVICED. OPERATED OR MAINTAINED IN FULLY ACCESSIBLE POSITIONS. THIS SHALL INCLUDE BUT NOT BE LIMITED TO VALVES. TRAPS, CLEANOUTS. MOTORS, CONTROLLERS, SWITCHGEAR, DRAIN POINTS, ETC. FURNISH ACCESS DOORS AS REQUIRED FOR THIS PURPOSE

1.14 CHASES, CUTTING AND PATCHING

WHEN IT BECOMES NECESSARY TO CUT FINISHED MATERIALS SUBMIT TO THE ENGINEER DRAWINGS SHOWING THE WORK REQUIRED, AND OBTAIN COMMENTS BEFORE DOING SUCH CUTTING.

PROVIDE IN PLACE REQUIRED SLEEVES, FORMS, INSERTS BEFORE NEW WALLS ARE BUILT. THE COST OF CUTTING AND PATCHING OF WALLS. PARTITIONS, CEILING AND FLOORS NECESSARY FOR RECEPTION OF WORK CAUSED BY FAILURE TO PROVIDE OR PROPERLY LOCATE SLEEVES, FORMS, AND INSERTS, OR CAUSED BY INCORRECT LOCATION OF WORK SHALL BE BORNE UNDER THIS SECTION.

CHASES, OPENINGS IN WALLS AND PATCHES WILL BE PROVIDED UNDER THE WORK OF THE OTHER SECTIONS. FURNISH EXACT DIMENSIONS AND LOCATIONS OF THESE OPENINGS TO SUIT THE APPARATUS TO BE USED BEFORE SUCH WALLS ARE BUILT.

NO CUTTING OR ALTERING THE WORK OF OTHER SECTIONS WILL BE PERMITTED WITHOUT THE CONSENT OF THE ARCHITECT.

1.15 DAMAGE TO PROPERTY

RESTORE TO ITS ORIGINAL CONDITION WITHOUT EXTRA PAYMENT ANY OF THE OWNER'S PROPERTY THAT SHALL BECOME DAMAGED DUE TO NEGLIGENCE OF EMPLOYEES OR AGENTS OF THE CONTRACTOR

TAKE PROPER CARE AND PROTECT ALL PORTIONS OF THE WORK UNTIL ITS ACCEPTANCE. ANY PORTIONS OF THE WORK LIABLE TO DAMAGE BY FREEZING. INCLEMENT WEATHER, MISHANDLING, ETC. SHALL BE PROTECTED BY SUBSTANTIAL BOARDING OR COVERING. SUCH PROTECTIVE BOARDING OR COVERING ONLY MAY BE REMOVED PRIOR TO ACCEPTANCE WHEN AUTHORIZED IN WRITING BY THE ARCHITECT.

1.16 CONTRACTOR'S RESPONSIBILITIES:

STUDY THE CONTRACT DRAWINGS AND SPECIFICATIONS WITH REGARD TO THE WORK AS SHOWN AND REQUIRED UNDER THIS DIVISION SO AS TO INSURE ITS COMPLETENESS.

EXAMINE ALL SURFACES AND CONDITIONS TO WHICH THIS WORK IS TO BE ATTACHED OR APPLIED, AND NOTIFY THE ARCHITECT, IN WRITING, IF ANY CONDITIONS OR SURFACES EXIST WHICH THE CONTRACTOR CONSIDERS DETRIMENTAL TO THE PROPER AND EXPEDITIOUS INSTALLATION OF HIS WORK. STARTING OF THE WORK SHALL IMPLY ACCEPTANCE OF THE SURFACES AND CONDITIONS TO PERFORM THE WORK AS SPECIFIED.

VERIFY BY MEASURES AT THE JOB SITE, ALL DIMENSIONS AFFECTING THE WORK. FIELD DIMENSIONS WHICH ARE AT VARIANCE WITH THOSE ON THE APPROVED SHOP DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. THE DECISION REGARDING CORRECTIVE MEASURES SHALL BE OBTAINED BEFORE THE START OF ITEMS AFFECTED.

COOPERATE IN THE COORDINATION AND SCHEDULING OF THE WORK OF THIS SECTION WITH THE WORK OF OTHER SECTIONS SO AS NOT TO DELAY JOB PROGRESS.

1.17 AS-BUILT DRAWINGS

AS WORK PROGRESSES, RECORD ON ONE SET OF MYLAR TRANSPARENCY DRAWINGS ALL CHANGES FROM INSTALLATIONS ORIGINALLY INDICATED. THE RECORD OF THE PROGRESS DRAWINGS SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR. RECORD ALL CHANGES IN WATERPROOF INK OR ELECTRONIC FORMAT.

AT COMPLETION, SUBMIT ABOVE REQUIRED INFORMATION TO THE ARCHITECT FOR APPROVAL. DRAWINGS SHALL BE THE SAME SIZE AND SCALE AS THE CONTRACT DRAWINGS, EXCEPT THAT LARGER SCALE DRAWINGS MAY BE REQUIRED WHERE CLEARANCES ARE CLOSE.

INCLUDE IN THE BIB ALL COSTS OF TRANSPARENCIES AND THE PREPARATION OF THE "AS BUILT" DRAWINGS.

1.18 CERTIFICATES

THE CERTIFICATES AND DOCUMENTS LISTED BELOW ARE REQUIRED FROM THE CONTRACTOR. PREVIOUS THE FINAL PAYMENT, THE CONTRACTOR SHALL DELIVER COPIES OF ALL SUCH CERTIFICATES AND DOCUMENTS TO THE ARCHITECT FOR APPROVAL

ALL TEST DATA SPECIFIED UNDER "TESTS"

SHOP DRAWINGS:

OPERATING AND MAINTENANCE INSTRUCTIONS FOR MECHANICAL EQUIPMENT AND SYSTEMS

APPROVAL BY ALL AUTHORITIES HAVING JURISDICTION.

1.19 TESTS

MAKE ALL TESTS AS REQUIRED BY CODE OR ORDINANCE AND AS HEREIN SPECIFIED. FILE WITH THE ARCHITECT WRITTEN REPORTS IN REPLICABLE FOR ALL SUCH TESTS. 1.20 OPERATING INSTRUCTIONS

UPON COMPLETION OF ALL WORK AND ALL TESTS, CONTRACTORS SHALL FURNISH THE NECESSARY SKILLED LABOR AND HELPERS FOR OPERATING HIS SYSTEM AND EQUIPMENT

DURING THIS PERIOD, INSTRUCT THE OWNER OF HIS REPRESENTATIVE FULLY IN THE OPERATION, ADJUSTMENT AND MAINTENANCE OF ALL EQUIPMENT FURNISHED.

OPERATING INSTRUCTIONS MAY NOT BEGIN UNTIL THE EQUIPMENT HAS BEEN MADE FULLY OPERATIONAL AS DETERMINED BY THE ENGINEER.

1.21 MAINTENANCE MANUALS:

CONTRACTOR SHALL FURNISH TO THE ARCHITECT THREE (3) COMPLETE BOUND SETS OF TYPEWRITTEN OR BLUEPRINTED INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS INCLUDED IN THIS CONTRACT. ALL MANUALS SHALL BE SUBMITTED IN DRAFT, FOR APPROVAL, PRIOR TO FINAL ISSUE, MANUFACTURING ADVERTISING LITERATURE WILL NOT BE ACCEPTABLE; ONLY TECHNICAL BULLETINS WILL BE CONSIDERED FOR THE MAINTENANCE MANUAL.

EACH MANUAL SHALL BE PROVIDED WITH AN INDEX SHEET LISTING THE CONTENTS IN ALPHABETICAL ORDER AND SHALL CONTAIN THE FOLLOWING:

* IDENTIFICATION BY NAME, NUMBER, AND SYSTEM SERVED

- * COMPLETE NAMEPLATE DATA
- * PERFORMANCE CURVES AND DATA
- WIRING DIAGRAM
- MANUFACTURER'S INSTRUCTIONS FOR OPERATION AND MAINTENANCE.

LUBRICATION CHART WITH SCHEDULE FOR LUBRICATION AND TYPE OF LUBRICANT FOR ALL MACHINERY. NOTE IF NO LUBRICANT IS REOUIRED

COMPLETE PARTS LIST WITH NAME AND ADDRESS OF NEAREST PART SUPPLIER. ALSO SUBMIT RECOMMENDATIONS FOR PARTS TO BE STOCKED BY THE OWNER

TYPEWRITTEN OPERATING INSTRUCTION, WITH DESCRIPTION OF ALL SYSTEMS. THESE INSTRUCTIONS SHALL CONTAIN INFORMATION FOR PROPER SETTING OF SWITCHES AND OTHER ITEMS WHICH CONTROL ANY PARTICULAR SYSTEM AND ITS COMPONENTS. TYPEWRITTEN MAINTENANCE INSTRUCTIONS FOR INSPECTIONS AND SERVICE, AND FULL DESCRIPTION OF SUCH MAINTENANCE.

TYPEWRITTEN LIST OF ALL SUCH ITEMS WHICH REQUIRED MAINTENANCE WITH EXACT SERVICE SCHEDULE LISTING THE MONTH OF THE YEAR WHEN SUCH ITEMS SHALL BE INSPECTED AND SERVICED.

TYPEWRITTEN LIST OF CONTRACTORS AND MATERIAL SUPPLIERS INCLUDING NAME, ADDRESS AND TELEPHONE NUMBER.

1.22 MOTOR AND CONTROLLERS

THE WORK OF DIVISION 15 SHALL INCLUDE THE FOLLOWING:

PROVIDE ALL ELECTRIC MOTORS FOR ALL MOTOR DRIVEN EQUIPMENT FURNISHED UNDER DIVISION 15 OF THE SPECIFICATIONS.

FURNISH TO SUBCONTRACTOR FOR DIVISION 16, ALL STARTERS, RELAYS, PILOT LIGHTS, ACCESSORIES, CONTRACTORS, WIRING DIAGRAMS, ETC., REQUIRED FOR PROPER OPERATION AND CONTROL OF MOTORIZED EQUIPMENT, AS SPECIFIED.

PROVIDE ALL TEMPERATURE CONTROL WIRING.

THE WORK OF DIVISION 16 SHALL INCLUDE THE FOLLOWING:

ERECTING, MOUNTING AND WIRING OR STARTERS, CONTROLLERS, AND DISCONNECTS, EXCEPT WHERE SPECIFIED TO BE FACTORY WIRED AND MOUNTED WITH THE EQUIPMENT.

PROVIDE ALL POWER WIRING.

1.23 ELECTRIC MOTORS

CHARACTERISTICS.

ALL MOTORS SHALL BE RATED FOR CONTINUOUS DUTY AND SHALL BE DESIGNED FOR TEMPERATURE RISES NOT EXCEEDING 40 DEGREES C. MOTORS SHALL BE CAPABLE OF WITHSTANDING MOMENTARY OVERLOADS OF FIFTY PERCENT (50%) WITHOUT INJURIOUS HEATING. THEY SHALL OPERATE WITHOUT EXCESSIVE HEATING, FLASHING OR SPARKING UNDER ANY CONDITIONS WITHIN THE SPECIFIED CAPACITY OF LOAD AND SPEED.

ALL MOTORS SHALL BE OF THE PROPER TYPE FOR THEIR DUTY AND SHALL HAVE SUFFICIENT TORQUE TO START AND RUN THE EQUIPMENT TO WHICH THEY ARE CONNECTED. STARTING CURRENTS SHALL NOT EXCEED THE LIMITS IMPOSED BY THE LAWS, RULES AND REGULATIONS OF THE PUBLIC AUTHORITIES HAVING JURISDICTION, OF THE LOCAL AND NATIONAL BOARDS OF FIRE UNDERWRITERS AND OF LOCAL UTILITY COMPANY. ALL MOTORS SHALL HAVE SUFFICIENT HORSEPOWER CAPACITY AND RATED DUTY TO OPERATE THE APPARATUS TO WHICH THEY ARE CONNECTED SO AS TO GIVE SPEED AND PERFORMANCE SPECIFIED, BUT THE HORSEPOWER IN NO CASE BE LESS THAN THAT SPECIFIED OR SHOWN ON THE DRAWINGS.

MOTORS LESS THAN < HORSEPOWER SHALL BE SINGLE PHASE. ALL MOTORS < HORSEPOWER AND LARGER SHALL BE 3 PHASE, OR AS SHOWN ON THE DRAWINGS.

1.24 ELECTRIC MOTOR STARTERS

FURNISH A STARTING DEVICE FOR ALL MOTOR DRIVEN EQUIPMENT SUPPLIED UNDER THE MECHANICAL SUBCONTRACTOR.

FURNISH MANUALLY OPERATED STARTERS FOR ALL MOTORS LESS THAN < HP. WHICH ARE NOT AUTOMATICALLY CONTROLLED. MANUAL CONTROL STARTERS SHALL BE EQUIPPED WITH HEATERS TO PROTECT THE MOTOR.

ALL MAGNETIC STARTERS, EXCEPT THOSE IN PRE-WIRED CONTROL PANELS, SHALL BE FURNISHED WITH REQUIRED CONTROL DEVICES IN COVER. MAGNETIC STARTERS SHALL HAVE THERMAL OVERLOAD AND TIME DELAY LOW VOLTAGE RELEASE RELAY IN ALL THREE PHASES.

PROVIDE A N.O AND N.C AUXILIARY CONTRACT IN EACH STARTER. ALL CONTROL COILS SHALL BE 120V. PROVIDE RESET BUTTON AND HAND OFF AUTOMATIC SWITCH WITH PILOT LIGHT IN COVER.

CARRY OUT THIS REQUIREMENT.

1.25 EXAMINATION OF EXISTING CONDITIONS

VISIT AND EXAMINE THOSE PORTIONS OF THE SITE AFFECTED BY THIS WORK SO AS TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THE WORK BEFORE SUBMITTING PROPOSAL.

SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS FOR LABOR, EQUIPMENT, OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED, WHICH WOULD HAVE BEEN FORESEEN HAD SUCH AND EXAMINATION BEEN MADE, WILL NOT BE RECOGNIZED.

1.26 INTERFERENCES:

1.27 ACCESS DOORS:

FURNISH AND DELIVER TO THE GENERAL CONTRACTOR FOR INSTALLATION BY HIM, HINGED ACCESS DOORS AND FRAMES, SUITABLE FOR FLUSH MOUNTING AS REOUIRED AND AS SPECIFIED, ACCESS SHALL BE PROVIDED IN WALLS, PARTITIONS AND CEILINGS, WHEREVER CONTROL OR SHUT-OFF VALVES OR OTHER EQUIPMENT REQUIRING MAINTENANCE, ADJUSTMENT, SERVICING OR INSPECTION OCCURS IN CONCEALED SPACES. ACCESS DOORS SHALL BE LARGE ENOUGH TO ALLOW SUFFICIENT SPACE IN THE ACCESS FOR PROPER INSPECTION AND SERVICING OF EQUIPMENT.

ACCESS DOORS SHALL BE BUILT TO CONFORM TO AND FINISH FLUSH WITH SURROUNDING MATERIALS.

ACCESS DOORS SHALL HAVE HEAVY STEEL FRAMES, STEEL PLATE DOORS, SUBSTANTIAL DOOR STOPS, CONCEALED BUTT HINGES, BRASS HINGE PINS, SCREWDRIVER OPERATED CATCHES AND SHALL BE MOUNTED FLUSH WITH THE FINISHED SURFACE, WITH NO PROJECTING PARTS. FLOATING, PIVOT, OR LIFT-OUT HINGES WILL NOT BE ACCEPTED, FINISH LIGHT GRAY METAL PRIMER.

APPROPRIATE RATINGS

STRUCTURAL SYSTEM. DRILLING FOR INSERTS SHALL BE KEPT TO A MINIMUM.

WITH BEAM CLAMPS, SUCH SUPPLEMENTARY STEEL KEPT TO A MINIMUM.

ALL MOTORS SHALL BE BUILT IN ACCORDANCE WITH THE LATEST RULES OF THE NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION AND OF THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS AND AS SPECIFIED HEREINAFTER. ALL MOTORS SHALL HAVE NON RADIO INTERFERENCE

MOTOR FOR INDOOR SERVICE SHALL BE OPEN, DRIP PROOF UNLESS SPECIFIED OTHERWISE, MOTORS FOR OUTDOOR SERVICE SHALL BE SPLASH PROOF WITH SEALED, ENCAPSULATED WINDING.

PROVIDE ALL BELT GUARDS FOR ALL BELT DRIVEN EQUIPMENT.

APPROVED MANUFACTURERS: GENERAL ELECTRIC, LOUIS ALLIS, WAGNER, WESTINGHOUSE, ALLIS CHALMERS, ELECTRO-DYNAMIC.

ALL MAGNETIC STARTERS, LINE AND THERMAL SWITCHES SHALL BE OF SAME MAKE AND THE RESPECTIVE SUB CONTRACTOR MUST ARRANGE WITH HIS VARIOUS EQUIPMENT SUPPLIERS TO

ENCLOSURES SHALL BE NEMA I EXCEPT IN OUTDOORS OR DAMP OR WET INTERIOR LOCATIONS WHERE NEMA 111 SHALL BE USED. STARTERS IN HAZARDOUS LOCATIONS SHALL BE EXPLOSION

APPROVED MANUFACTURERS: SQUARE D, ALLEN BRADLEY, ARROW HART, GENERAL ELECTRIC, CUTLER HAMMER, WESTINGHOUSE.

EACH CONTRACTOR AND SUB-CONTRACTOR SHALL CONFER WITH OTHER CONTRACTORS AT THE SITE TO COORDINATE THE WORK WITH THE ARCHITECT'S DRAWINGS, SHOP DRAWINGS OF OTHER TRADES AND JOB CONDITIONS TO THE END THAT INTERFERENCE MAY BE ELIMINATED AND THAT MAXIMUM HEADROOM AND CLEARANCE MAY BE OBTAINED. IN THE EVENT THAT INTERFERENCES DEVELOP, THE ARCHITECT'S DECISION WILL BE FINAL AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR THE MOVING OF PIPING OR EQUIPMENT TO CLEAR SUCH INTERFERENCE.

NO ACCESS DOORS SHALL BE SMALLER THAT 18" x 18"

PROVIDE ALL EQUIPMENT WITH INTEGRAL ACCESS DOORS OR REMOVABLE PANELS SUFFICIENT FOR MAINTENANCE SERVICING AND REPAIR OF THE EQUIPMENT

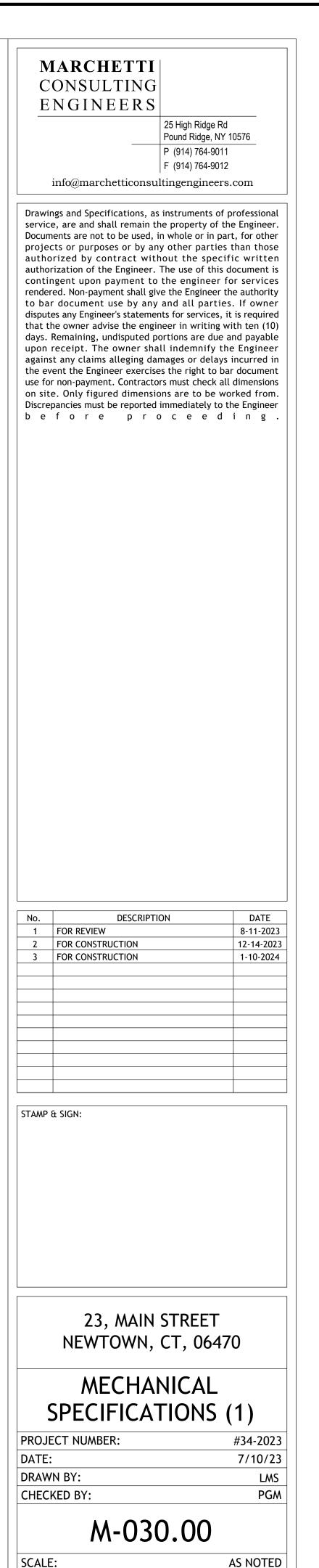
ACCESS DOORS PENETRATING FIRE RATED WALLS OR CEILING SHALL BE U.L. LISTED FOR THE

1.28 SUSPENSION OF PIPING, DUCTWORK AND EQUIPMENT

BEAM CLAMPS OR CONCRETE INSERTS SHALL BE USED TO ATTACH HANGERS TO BUILDING

SUPPLEMENTARY ROLLED STEEL MEMBERS SHALL BE ATTACHED TO BUILDING STRUCTURAL MEMBERS

STRAP IRON, BAILING WIRE AND SIMILAR SUPPORTS WILL NOR BE ACCEPTED.



SCALE:

1.29 IDENTIFICATION OF EQUIPMENT

ALL PRIMARY MECHANICAL EQUIPMENT, PUMPS, FANS, ETC. SHALL BE IDENTIFIED WITH 1/8" THICK MICRATA OR BAKELITE NAMEPLATE HAVING WHITE LETTERS. NAMEPLATES SHALL INCLUDE UNIT NUMBER OF DESIGNATION AND BASIC FUNCTION, I.E "ACUI, BATHROOM/LOCKER ROOM AIR CONDITIONING UNIT"

VALVES FOR MAIN BRANCH LINES, FOR PLUMBING, AIR CONDITIONING, HEATING, ETC. SHALL BE IDENTIFIED WITH 2" DIAMETER DISC, MADE OF 20 GAUGE BRASS OR .64" ALUMINUM. DISCS SHALL BE SECURED WITH A CONTINUOUS 1/8" STEEL RING. LETTERS AND NUMERALS SHALL BE STAMPED HIGH AND FILLED WITH BLACK PAINT, AND FINISHED WITH CLEAR LACQUER.

ALL CONTROLS AND SWITCHES SHALL BE IDENTIFIED WITH 1/8" THICK BLACK MICARTA OR BAKELITE NAMEPLATE, HAVING HIGH WHITE LETTERS AND NUMERALS, AND SHALL BE PROVIDED FOR ALL CONTROLS, CONTROL PANELS, AND STARTING SWITCHES AND SCREWED ON.

VALVES SHALL BE CLEARLY NOTED ON THE "AS BUILT" DRAWINGS AND VALVES LIST, TOGETHER WITH PIPE IDENTIFICATION BAND LIST, SHALL BE FIELD IN OPERATING AND MAINTENANCE BOOKS AS WELL AS BEING MOUNTED IN FRAMED GLASS WHERE DIRECTED BY ARCHITECT OR OWNER.

1.30 IDENTIFICATION OF PIPING SYSTEMS:

ALL SERVICE PIPING WHICH IS ACCESSIBLE FOR MAINTENANCE OPERATIONS (EXCEPT PIPING IN FINISHED SPACES) WILL BE IDENTIFIED WITH SEMI-GRID PLASTIC IDENTIFICATION MARKERS EQUAL TO SETMARK PIPE MARKERS.

DIRECTION OF FLOW ARROWS ARE TO BE INCLUDED ON EACH MARKER, UNLESS OTHERWISE SPECIFIED.

EACH MARKER BACKGROUND IS TO BE APPROPRIATELY COLOR-CODED WITH A CLEARLY PRINTED LEGEND TO IDENTIFY THE CONTENTS OF THE PIPE IN ACCORDANCE WITH THE "SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS" (ANSI A13.1 - 1975)

LOCATIONS FOR PIPE AND ELECTRICAL MARKERS TO BE AS FOLLOWS:

ADJACENT TO EACH VALVE AND FITTING (EXCEPT ON PLUMBING FIXTURES AND EQUIPMENT)

AT EACH BRANCH AND RISER TAKE-OFF

AT EACH PIPE PASSAGE TO LOWER LEVEL

ON ALL HORIZONTAL FIRE-RUNS MARKED 50 FEET

1.31 RELATIONS WITH OTHER TRADES:

CONFER WITH OTHER ENGAGED IN THE CONSTRUCTION OF THE BUILDING WHOSE WORK MIGHT AFFECTED THE INSTALLATION, AND ARRANGE ALL PARTS OF THE WORK AND EQUIPMENT IN PROPER RELATION TO THE WORK AND OF OTHERS, WITH THE BUILDING CONSTRUCTION AND WITH THE ARCHITECTURAL FINISH S THAT IT WILL HARMONIZE IN SERVICE AND ACCEPTANCE IN SERVICE AND APPEARANCE. SPECIAL CARE SHALL BE TAKEN IN THE INSTALLATION OF THE EQUIPMENT, CONDUIT, ETC., WHERE SAME IS CONCEALED TO ASSURE THAT IT DOES NOT PROJECT BEYOND THE FINISHED LINES OF FLOORS, CEILINGS, WALL OR CABINETS.

WORK IS SPECIFIED TO BE FURNISHED COMPLETE UNDER THIS SECTION. WORK WHICH IS REQUIRED TO BE FURNISHED AND ERECTED BY MECHANICS OTHER THAN THOSE DIRECTLY EMPLOYED UNDER THIS SECTION SHALL BE SUBLET TO OTHERS, OR SHALL BE DONE BE SPECIAL MECHANICS EMPLOYED BY THIS CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR THE WORKMANSHIP, EQUIPMENT AND PERFORMANCE OF ALL WORK WHICH IS SUBLET.

IF IT SHOULD BECOME NECESSARY TO REMOVE AND RELOCATE ANY MATERIAL OR EQUIPMENT THAT HAS BEEN INSTALLED WITHOUT PROPER INVESTIGATION AND COORDINATION WITH THE WORK OF OTHER SECTIONS, SUCH MATERIALS OR EQUIPMENT SHALL BE REMOVED AND RELOCATED WITHOUT ADDITIONAL COST TO THE OWNER.

1.32 MAINTENANCE OF EQUIPMENT AND SYSTEM PRIOR TO FINAL ACCEPTANCE.

MAINTAIN ALL EQUIPMENT AND SYSTEMS INSTALLED UNTIL FINAL ACCEPTANCE BY THE ARCHITECT AND OWNER, AND TAKE SUCH MEASURES AS NECESSARY TO INSURE ADEQUATE PROTECTION OF ALL EQUIPMENT AND MATERIALS DURING DELIVERY, STORAGE, INSTALLATION AND SHHUT-DOWN CONDITIONS

THIS RESPONSIBILITY SHALL INCLUDE ALL PROVISIONS REQUIRED TO MEET THE CONDITIONS INCIDENTAL TO THE DELAYS PENDING FINAL TESTS OF SYSTEMS AND EQUIPMENT

AFTER INSTALLATION OF SYSTEMS HAS BEEN COMPLETED. OPERATE THE SYSTEM TO DETERMINE THE CAPABILITY OF THE EQUIPMENT AND CONTROLS TO CONFORM TO THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS PRIOR TO PERFORMANCE TESTING.

EACH MANUFACTURER OF EQUIPMENT SHALL PROVIDE QUALIFIED PERSONNEL TO INSPECT AND APPROVE EQUIPMENT AND TO SUPERVISE THE OPERATING TESTS OF THE EQUIPMENT.

NOTIFY THE ARCHITECT IN ADVANCE OF BEGINNING THE EQUIPMENT AND SYSTEM TEST OPERATION.

EACH PIECE OF EQUIPMENT SHALL BE OPERATED IN ITS SYSTEM AS LONG AS REQUIRED TO PROVIDE PROPER FUNCTIONING

PERFORM AN OPERATING TEST OF EACH COMPLETE SYSTEM FOR TWENTY FOR (24) HOURS CONTINUOUS OPERATION AS A MINIMUM, OR AS LONG AS REQUIRED TO PROVIDE COORDINATION AND PROPER FUNCTIONING OF ALL RELATED SYSTEMS AND CONTROLS

THE OPERATING CRITERIA FOR EACH SHALL BE DETERMINED IN ADVANCE WITH THE ARCHITECTS APPROVAL WHENEVER SEASONAL CONDITIONS WILL NOT PRODUCE A FULL DESIGN LOAD ON ANY EQUIPMENT OR SYSTEM

CERTIFY TO THE OWNER THAT ALL EQUIPMENT IS FUNCTIONING PROPERLY

SHOULD THE APPARATUS FAIL TO MEET THE CONTRACT REQUIREMENTS, ADJUST, REPAIR, OR REPLACE ALL DEFECTIVE OR INOPERATIVE PARTS AND AGAIN CONDUCT THE COMPLETE PERFORMANCE TESTS.

ALL EQUIPMENT FURNISHED, INSTALLED OR CONNECTED UNDER THIS DIVISION SHALL BE INSPECTED FOR PROPER LUBRICATION WHEN CONNECTED AND BEFORE OPERATING OF THE EQUIPMENT BEGUN.

THE CONTRACTOR FOR THE WORK OF THIS DIVISION WILL BE HELD RESPONSIBLE FOR ANY DAMAGE TO EQUIPMENT THAT IS OPERATED WITHOUT HAVING BEEN PROPERLY LUBRICATED.

1.33 GUARANTEES AND SERVICES:

GUARANTEES AND WARRANTIES SHALL BE PROVIDED IN AC CONDITIONS GOVERNING ALL CONTRACTS.

ALL WORKMANSHIP, INSTALLATION, MATERIALS AND EQUIF SERVICED FOR THE GUARANTEE PERIOD AT NO ADDITIONAL

LEAVE ENTIRE SYSTEM INSTALLED UNDER THIS CONTRACT WITHOUT ADDITIONAL CHARGE, REPLACE ANY WORK MAT THE GUARANTEE PERIOD, INCLUDING ALL OTHER WORK DA

NON-DURABLE, EXPENDABLE ITEMS SUCH AS AIR FILTER ME AFTER THE DATE OF ACCEPTANCE

THE GUARANTEE PERIOD SHALL EXTEND AS FOLLOWS

SCOPE OF WORK:

THE CONTRACTOR IS TO PROVIDE DEMOLITION AND CONS HEATING, COOLING AND VENTILATION AND AIR CONDITION

THE DEMOLITION IS TO INCLUDE THE FOLLOWING AND THI TO BE ALL INCLUSIVE OF THE FOLLOWING SYSTEMS:

-BOILERS (2) TWO -CONDENSATE REMOVAL SYSTEM -AIR HANDLERS #1 THRU #15. -EXISTING CHILLED WATER/HOT WATER CONSOLE UNITS -HOT WATER RADIATORS -HOT WATER UNIT HEATERS -AIR COOLED CHILLERS AND PIPING -DISTRIBUTION PUMPS AND PIPING -EXPANSION TANKS -SELECTED DUCTWORK -PIPING, RISERS, VALVES, AND ASSOCIATED HYDRONIC DEV -ELECTRICAL FEEDERS TO CHILLER PLANT -ALL ASSOCIATED CONTROLS RELATED TO HYDRONIC SYST -WALLS AT MEETING ROOM 104

THE CONSTRUCTION WORK IS TO INCLUDE THE FOLLOWIN TO BE ALL INCLUSIVE FOR THE FOLLOWING:

-ALL EXTERNAL HEAT PUMPS AS DETAILED ON PLANS -ALL AIR HANDLERS AS SHOWN ON PLANS -ALL CONSOLE UNITS AT ALL LEVELS -SPLIT SYSTEM UNIT FOR I.T. CLOSET -REFRIGERANT PIPING FROM HEAT PUMPS TO ALL DISTRIBU -AIR TO AIR HEAT RECOVERY UNITS -DUCTWORK WITH ACCESSORIES AS REQUIRED TO INSTALL -MOTORIZED DAMPERS AND VOLUME DAMPERS -OUTDOOR LOUVERS AS SHOWN -REBUILDING OF ALL ELEMENTS THAT ARE DEMOLISHED FO ALL DEMISING WALLS ETC.) -ALL CONTROL ELEMENTS AND SYSTEMS TO ACTIVATE ALL -ANY AND ALL ELEMENTS AND ACCESSORIES FOR A COMPLE AS REQUIRED. -ALL ELECTRICAL PANELS AND WIRING AS SHOWN

SECTION 15750 HVAC INSULATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

APPLICABLE REQUIREMENTS OF THE CONDITIONS OF THE

1.02 GENERAL REQUIREMENTS

MANUFACTURERS: CERTAIN-TEE, ARMSTRONG, OWENS-CO

THERMAL CONDUCTIVITY: MAXIMUM K FACTORS, IN BTU PER HOUR PER SQUARE FOO

TEMPERATURE DIFFERENCE:

DEGREES	.23
0 DEGREES	.25
0 DEGREES	.27
0 DEGREES	.30
50 DEGREES	.33

MEAN TEMPERATURE K VALUE:

FIRE HAZARD RATINGS: RATINGS DETERMINED IN ACCORDANCE WITH UL723 OR AS RATINGS NOT TO EXCEED 25 FOR FLAME SPREAD AND 50 F DEVELOPED. RATING REQUIREMENT APPLIES TO ALL INSUL AND OTHER ACCESSORIES.

MATERIALS: EVERY PACKAGE OR STANDARD CONTAINER OF INSULATION COATING DELIVERED AT THE BUILDING FOR USE AND ALSO MANUFACTURER'S STAMP OR LABEL ATTACHED GIVING NAME DESCRIPTION OF MATERIAL.

INSULATION MUST SHOW NO PHYSICAL CHANGES THAT AD UNDER CONDITIONS OF NORMAL USAGE AT THE INTENDED

ALL ADHESIVES, SEALERS, VAPOR COATINGS, JACKETS, ETC., MUST BE COMPATIBLE WITH THE MATERIALS TO WHICH THEY ARE APPLIED AND MUST NOT CORRODE, SOFTEN OR OTHERWISE ATTACK SUCH MATERIAL IN EITHER THE WET OR DRY STATE.

INSTALLATION:

UNLESS OTHERWISE SPECIFIED HEREIN, THE APPLICATION OF ALL INSULATION MATERIALS, ACCESSORIES AND FINISHES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED RECOMMENDATIONS.

CCORDANCE WITH THE GENERAL	PROVIDE A COMPLETE MOISTURE AND VAPOR SEAL WHENEVER INSULATION TERMINATED AGAINST METAL HANGERS, ANCHORS, AND OTHER PROJECTIONS THROUGH INSULATION ON COLD SURFACES FOR WHICH A VAPOR SEAL IS SPECIFIED.	SUBMIT CONTRO CONTROL MANU INDIVIDUAL MAN
IPMENT SHALL BE MAINTAINED AND AL COST TO THE OWNER	INSULATION AND COATING OR JACKETS SHALL BE CONTINUOUS THROUGH WALL AND FLOOR OPENINGS, EXCEPT AT FIRE DAMPERS.	COMPLETE CON AND WIRING DIA
IN PERFECT WORKING ORDER, AND FERIAL WHICH DEVELOPS DEFECTS WITHIN DAMAGE AS A RESULT OF SUCH DEFECTS.	DO NOT APPLY INSULATION MATERIALS UNTIL ALL SURFACES TO BE COVERED ARE CLEAN AND DRY, ALL FOREIGN MATERIALS, SUCH AS RUST, SCALE, DIRT, ETC., HAS BEEN REMOVED; AND WHERE SPECIFIED SURFACES HAVE BEEN PAINTED. INSULATION TO BE CLEAN AND DRY WHEN INSTALLED AND DURING THE APPLICANT OF ANY FINISH. DO NOT INSTALL PIPE OR DUCT INSULATION BEFORE	CONTROL EQUIF INTERFACED WI DESCRIBED IN T
NEDIA ARE NOT SUBJECT TO REPLACEMENT	COMPLETION AND APPROVAL OF TESTS. PENETRATIONS THROUGHOUT FIRE BARRIERS SHALL BE SEALED WITH UL LISTED FIRESTOP	ACCEPTABLE MA 1.03 GUARANT
	MATERIAL.	AFTER COMPLET THERMOSTATS,
	USE RIGID CALCIUM SILICATE AT THE FLASHING CLAMPING COLLAR FOR RESISTANCE TO CRUSHING.	OPERATING CON
STRUCTION OF THE INING SYSTEM.	 PART 2 - PRODUCTS (NOT APPLICABLE) PART 3 - EXECUTION 	MATERIAL UNDE WORKMANSHIP GUARANTEE BEG
HIS IS NOT INTENDED	3.01 SHEET METAL - EXTERNALLY INSULATED:	1.04 <u>OWNER'S</u>
	EXCEPT AS OTHERWISE SPECIFIED, ALL AIR SUPPLY, RETURN AND FRESH AIR DUCTS SHALL BE EXTERNALLY INSULATED	THE BUILDING C OPERATOR'S MA
	DO NOT INSULATE THE FOLLOWING: INTERNALLY INSULATED DUCTWORK OR SOUND ATTENUATIONS. FLEXIBLE DUCT RUNOUTS.	PROCEDURES TO DESIGNATED RE THESE INSTRUC INSTRUCTIONS S
	CONCEALED ROUND AND / OR RECTANGULAR DUCT INSULATION:	THE AUTOMATIO OF AN OPERATO PROCEDURES TO
VICES TEMS BEING DEMOLISHED	MATERIAL: FLEXIBLE FIBROUS GLASS BLANKET, MINIMUM-POUND DENSITY, 1" THICK, WITH FACTORY APPLIED JACKET	DESIGNATED RE THESE INSTRUC
NG AND IS NOT INTENDED	JACKET: LAMINATE OF 1 MIL ALUMINUM AND HEAVY KRAFT REINFORCED WITH GLASS FIBER SCRIM, WITH 2"	 PART 2 PR PART 3 EX
NG AND IS NOT INTENDED	WIDE SIDE LAP.	<u>3.01</u> <u>SYSTEM</u>
BUTION ELEMENTS	INSTALLATION: FASTEN TO DUCT WITH ADHESIVE SIMILAR TO FOSTER 8520 APPLIED IN 5" WIDE STRIPS ON 12" CENTERS. TIE WITH SOFT ANNEALED WIRE OR OUTWARD CLINCHING STAPLES ON 4" CENTERS DABBED OVER WITH VAPOR BARRIER MASTIC. SEAL ALL JOINTS WITH VAPOR BARRIER TAPE OR LAP STRIP APPLIED WITH VAPOR BARRIER SEALER SIMILAR TO FOSTER 30-35	UPON COMPLET THE SYSTEM AN OPERATION. AN ARCHITECT SHA
L NEW AIR HANDLERS	3.02 SHEET METAL - INTERNALLY INSULATED:	WHOLE OF PAR AND PLACED UN
OR EQUIPMENT ACCESS(AHU-3,	LINE THE FOLLOWING (EXCEPT AS OTHERWISE SHOWN OR SPECIFIED)	
L HVAC EQUIPMENT.	ALL SUPPLY AND EXHAUST AIR DUCTS TWENTY FEET FROM EACH SUPPLY AND EXHAUST FAN. ALL SHEET METAL RETURM AIR DUCTWORK	
LETE WORKING SYSTEM	DO NOT LINE FOLLOWING (EXCEPT AS OTHERWISE SHOWN) EXHAUST FAN DISCHAGE FOR A MINIMUM DISTANCE OF 10'-0"	
	SIZING OF LINES DUCTWORK:	
	SIZES OF LINED DUCTWORK SHOWN ON DRAWINGS ARE NET CLEAR DIMENSIONS INSIDE LINING.	
	LINING FOR LOW PRESSURE DUCTS WITH AIR VELOCITIES UP TO 2000 FDM:	
	MATERIAL: FLEXIBLE FIBROUS GLASS BLANKET WITH BLACK NEOPRENE SURFACE COATING, 1 POUND DENSITY, ONE INCH THICK, MINIMUM NOISE REDUCTION COEFFICIENT OF 0.07 (MOUNTING #6)	
CONTRACT ARE A PART OF THIS SECTION	INSTALLATION: APPLY TO DUCT INTERIOR WITH COATING FACING AIR STREAM USING 100% COVERAGE OF ADHESIVE SIMILAR TO FOSTER 8515. USE ADDITIONAL MECHANICAL FASTENERS AT MAXIMUM 15 INCHES O.C. ON HORIZONTAL DUCTS OVER 12 INCHES WIDE OR 16 INCHES HIGH AND ON VERTICAL DUCT SIDES OVER 12 INCHES DIMENSION, STARTING FASTENERS WITHIN 3" OF LEADING EDGES OF LINING. COAT ALL JOINTS AND EDGES WITH ADHESIVE.	
ORNING	LINING FOR RETURN AIR PLENUMS:	
OT PER DEGREE FAHRENHEIT OF	MATERIAL: SURFACE COATED RIGID BOARD, MINIMUM 3 POUND DENSITY, 2 INCHES THICK.	
	INSULATION: SAME AS FOR LOW VELOCITY DUCTWORK.	
	END OF SECTION	
STME84.		
FOR FUEL CONTRIBUTED AND SMOKE LATION MATERIALS, JACKETS, COATING	SECTION 15900 HVAC AUTOMATIC TEMPERATURE CONTROL	
	• PART 1 GENERAL	
DN, JACKETS, CEMENTS, ADHESIVES AND O ALL SAMPLES CALLED FOR MUST HAVE A	1.01 RELATED DOCUMENTS	
AME OF MANUFACTURER, BRAND AND	APPLICABLE REQUIREMENTS OF THE CONDITIONS OF THE CONTRACT AREA PART OF THIS SECTION.	
DVERSELY AFFECT ITS SERVICE QUALITIES,	1.02 GENERAL REQUIREMENTS	
D USE TEMPERATURE	FURNISH AND INSTALL, READY FOR OPERATION, A DIGITAL AUTOMATIC TEMPERATURE CONTROL SYSTEM. THE SYSTEM IS TO BE INSTALLED BY COMPONENT MECHANICS AND ELECTRICIANS, REGULARLY EMPLOYED BY THE MANUFACTURER OF THE CONTROL SYSTEM, IN A NEAT	

WORKMANLIKE MANNER.

THE CONTROL SYSTEM SHALL BE COMPLETE WITH ALL NECESSARY CONTROL DEVICES,

MENTIONED. CONTROL SYSTEM SHALL BE THE PRODUCT OF ONE MANUFACTURER.

THERMOSTATS, VALVES, MOTORS, RELAYS, SWITCHES, DAMPERS, PANELS, AND ELECTRIC WIRING

TO PROVIDE THE FUNCTIONS DESCRIBED, REGARDLESS OF THE WHETHER OR NOT SPECIFICALLY

ROL DRAWINGS FOR APPROVAL BEFORE FIELD INSTALLATION IS STARTED. ACCEPTABLE UFACTURERS ARE LISTED FOR IDENTIFICATION ONLY, AND ACCEPTANCE OF AND NUFACTURER SHALL ONLY BE GIVEN AFTER THE SUBMISSION AND APPROVAL OF NTROL DRAWINGS. DRAWINGS TO INCLUDE DESCRIPTION OF ALL CONTROL DEVICES IAGRAMS, AND INCLUDE FUNCTIONAL SYSTEM OPERATING DESCRIPTION.

PMENT AND DEVICES FURNISHED WITH PACKAGED MECHANICAL EQUIPMENT SHALL BE ITH AND SUPPLEMENTED BY WORK OF THIS SECTION TO PROVIDE THE FUNCTIONS THE SEQUENCES OF OPERATION.

ANUFACTURERS: DAIKIN, LG, MITSUBISHI

TION OF CONTROL SYSTEM INSTALLATION, REGULATE AND ADJUST ALL , CONTROL VALVES, DAMPER MOTORS, ETC., AND PLACE THEM IN COMPLETE NDITION SUBJECT TO THE APPROVAL OF THE ENGINEER.

SYSTEM HEREIN SPECIFIED SHALL BE FREE FROM DEFECTS IN WORKMANSHIP AND DER NORMAL USE AND SERVICE. ANY EQUIPMENT PROVED TO BE DEFECTIVE IN P OR MATERIAL SHALL BE ADJUSTED, REPAIRED OR REPLACE FREE OF CHARGE. ECOMES EFFECTIVE FROM THE DATE OF ACCEPTANCE.

INSTRUCTION

CONTROL SYSTEMS MANUFACTURER SHALL PROVIDE THREE COPIES OF AN ANUAL DESCRIBING ALL OPERATING AND ROUTINE MAINTENANCE SERVICE TO BE USED WITH THE SYSTEM. THE MANUFACTURER SHALL INSTRUCT THE OWNER'S PRESENTATIVES IN THESE PROCEDURES DURING THE START UP AND TEST PERIOD. CTIONS ARE TO BE CONDUCTED DURING NORMAL WORKING HOURS. THE SHALL CONSIST OF HANDS-ON TRAINING AT THE JOB SITE.

C TEMPERATURE CONTROL SYSTEM MANUFACTURER SHALL PROVIDE THREE COPIES OR'S MANUAL DESCRIBING ALL OPERATING AND ROUTINE MAINTENANCE SERVICE TO BE USED WITH THE SYSTEM. THE MANUFACTURER SHALL INSTRUCT THE OWNER'S PRESENTATIVES IN THESE PROCEDURES DURING THE START-UP AND TEST PERIOD. CTIONS ARE TO BE CONDUCTED DURING NORMAL WORKING HOURS.

RODUCTS (NOT APPLICABLE)

KECUTION

TURN - OVER AND SERVICE:

TION OF THE INSTALLATION, THE CONTROL SYSTEM MANUFACTURER SHALL START UP ND PERFORM ALL NECESSARY TESTING AND RUN DIAGNOSTICS TO ENSURE PROPER ACCEPTANCE TEST IN THE PRESENCE OF THE OWNER'S REPRESENTATIVES AND THE ALL BE PERFORMED. WHEN THE SYSTEM PERFORMANCE IS DEEMED SATISFACTORY IN RT BY THESE OBSERVERS, THE SYSTEM PARTS WILL BE ACCEPTED FOR BENEFICIAL USE INDER WARRANTY.

COl	RCHETTI NSULTING GINEERS	25 High Ridge Rd	
info	@marchetticonsu	Pound Ridge, NY 1 P (914) 764-9011 F (914) 764-9012	
service, an Documents projects of authorized authorized continger rendered. to bar do disputes an that the of days. Rem upon rece against an the event use for nor on site. O Discrepano	and Specifications, as re and shall remain the sare not to be used, in or purposes or by an ed by contract with tion of the Engineer. It upon payment shall give cument use by any my Engineer's statement wher advise the engine and gives the engine the Engineer exercise or payment. Contractor only figured dimension ties must be reported or represent or represent	ne property of the in whole or in part y other parties to nout the specific The use of this do the engineer for ye the Engineer the and all parties the for services, it neer in writing wi ortions are due as all indemnify the mages or delays is es the right to bar rs must check all ons are to be woo immediately to the	e Engineer. t, for other than those ic written ocument is or services e authority . If owner is required th ten (10) nd payable e Engineer incurred in document dimensions rked from.
2 FOI	DESCRIPTI R REVIEW R CONSTRUCTION R CONSTRUCTION	ON	DATE 8-11-2023 12-14-2023 1-10-2024
STAMP & SIG	GN:		
23, MAIN STREET NEWTOWN, CT, 06470			
MECHANICAL SPECIFICATIONS (2)PROJECT NUMBER:#34-2023DATE:7/10/23DRAWN BY:LMSCHECKED BY:PGM			
M-031.00			

SCALE:

SECTION 238129 - VARIABLE-REFRIGERANT-FLOW HVAC SYSTEMS PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: VRF HVAC systems. 1. Indoor, concealed, ceiling-mounted units for ducting.

2. Indoor, concealed, floor-mounted units for ducting.

3. Indoor, exposed, floor-mounted units.

4. Indoor, exposed, wall-mounted units.

5. Indoor, recessed, ceiling-mounted units. 6. Indoor, suspended, ceiling-mounted units.

7. Indoor, dedicated outdoor air ventilation units.

8. Indoor, energy recovery ventilator.

9. Outdoor, air-source heat-pump units. 10. System controls.

11. System refrigerant and oil.

12. System condensate drain piping.

13. System refrigerant piping.

14. Metal hangers and supports. 15. Metal framing systems.

16. Fastener systems.

17. Pipe stands. 18. Outdoor equipment stands.

19. Miscellaneous support materials.

20. Piping and tubing insulation.

21. System control cable. 1.2 DEFINITIONS

A. Heat-Pump System Operation: System capable of operation with all zones in either heating or cooling, but not with simultaneous heating and cooling zones that transfer

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

C. Two-Pipe System Design: One refrigerant vapor line and one refrigerant liquid line connect a single outdoor unit or multiple manifold outdoor units in a single system to associated system HRCUs. One refrigerant liquid line and refrigerant vapor line connect HRCUs to associated indoor units. HRCUs used in two pipe systems act as an intermediate heat exchanger and include diverting valves and gas/liquid separators to move high and low pressure refrigerant between indoor units.

D. VRF: Variable refrigerant flow.

1.3 ACTION SUBMITTALS A. Product Data: For VRF HVAC system components.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for indoor and outdoor units.

2. Include rated capacities, operating characteristics, electrical characteristics, and

furnished specialties and accessories. 3. Include operating performance at design conditions and at extreme maximum

and minimum outdoor ambient conditions. 4. Include description of system controllers, dimensions, features, control interfaces

and connections, power requirements, and connections. 5. Include system operating sequence of operation in narrative form for each unique

indoor- and outdoor-unit control. 6. Include description of control software features.

7. Include total refrigerant required and a comprehensive breakdown of refrigerant required by each system installed.

8. Include refrigerant type and data sheets showing compliance with requirements indicated.

9. For system design software.

10. Indicate location and type of service access.

B. Shop Drawings: For VRF HVAC systems.

1. Include plans, elevations, sections, and mounting details. 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and

size of each field connection. 3. Vibration Isolation Base Details: Detail fabrication including anchorages and

attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.

4. Include diagrams and details of refrigerant piping and tubing showing installation requirements for manufacturer-furnished divided flow fittings.

5. Include diagrams for power, signal, and control wiring.

C. Samples for Initial Selection: For fully and partially exposed indoor units with factory finishes viewable by occupants.

1. Include a Sample for each unique finish with unit identification, detailed description of application, and cross-referenced floor plans showing locations. 1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Plans, elevations, sections, and details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Suspended ceiling components.

2. Structural floors, roofs and associated members to which equipment, piping,

ductwork, cables, and conduit will be attached. 3. Size and location of initial access modules for acoustical tile.

4. Wall-mounted controllers located in finished space showing relationship to light switches, fire-alarm devices, and other installed devices.

5. Size and location of access doors and panels installed behind walls and inaccessible ceilings for products installed behind walls and requiring access. B. Qualification Data:

1. For Installer: Certificate from VRF HVAC system manufacturer certifying that Installer has successfully completed prerequisite training administered by manufacturer for proper installation of systems, including but not limited to, equipment, piping, controls, and accessories indicated and furnished for installation.

a. Retain copies of Installer certificates on-site and make available on request.

2. For VRF HVAC system manufacturer.

3. For VRF HVAC system provider. C. Product Certificates: For VRF HVAC system components.

D. Product Test Reports: Where tests are required, for each product, for tests performed by manufacturer and witnessed by a qualified testing agency.

E. Source quality-control reports

F. Field quality-control reports.

G. Sample Warranties: For manufacturer's warranties. 1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For VRF HVAC systems to include in emergency,

operation, and maintenance manuals.

B. Software and Firmware Operational Documentation: 1. Software operating and upgrade manuals.

2. Program Software Backup: On CD or DVD, USB media, or approved cloud

storage platform, complete with data files.

3. Device address list.

4. Printout of software application and graphic screens.

014000 "Quality Requirements," to design complete and operational VRF HVAC d. Wheels statically and dynamically balanced. 2. Motor: Brushless dc or electronically commutated with permanently lubricated system(s) complying with requirements indicated. bearings 1. Provide system refrigerant calculations. 3. Motor Protection: Integral protection against thermal, overload, and voltage a. Refrigerant concentration limits shall be within allowable limits of ASHRAE fluctuations 15 and governing codes. 4. Speed Settings and Control: Two (low, high), three (low, medium, high), or more b. Indicate compliance with manufacturer's maximum vertical and horizontal than three speed settings or variable speed with a speed range of least 50 travel distances. Prepare a comparison table for each system showing calculated distances compared to manufacturer's maximum allowed percent. 5. Vibration Control: Integral isolation to dampen vibration transmission. distances. F. Filter Assembly: 2. Include a mechanical ventilation system and gas detection system as required to 1. Access: Bottom, side, or rear to accommodate field installation without removing comply with ASHRAE 15 and governing codes. ductwork and to accommodate filter replacement without need for tools. 3. System Refrigerant Piping and Tubing: 2. Efficiency: ASHRAE 52.2, MERV 11 a. Arrangement: Arrange piping to interconnect indoor units and outdoor 3. Media: If more than one filter type is indicated, Contractor has option to choose. unit(s) in compliance with manufacturer requirements and requirements a. Replaceable: Extended surface, panel, or cartridge with antimicrobial indicated. treatment fiber media. b. Routing: Conceal piping above ceilings and behind walls to maximum extent possible. b. Washable: Manufacturer's standard filter with antimicrobial treatment. G. Unit Accessories: c. Sizing: Size piping system, using a software program acceptable to 1. Outdoor Air Ventilation Kit: Connection, motorized damper, and control sized to manufacturer, to provide performance requirements indicated. Consider allow sequence of operation indicated on Drawings. requirements to accommodate future change requirements. 2. Remote Room Temperature Sensor Kit: Wall-mounted, hardwired room 4. System Controls: temperature sensor kit for use in rooms that do not have room temperature a. Network arrangement measurement. b. Network interface with other building systems. H. Unit Controls: c. Product selection. 1. Enclosure: Metal, suitable for indoor locations. d. Sizing. B. Service Access: 2. Factory-Installed Controller: Configurable digital control. 3. Factory-Installed Sensors: 1. Provide and document service access requirements. a. Unit inlet air temperature. 2. Locate equipment, system isolation valves, and other system components that b. Coil entering refrigerant temperature. require service and inspection in easily accessible locations. Avoid locations that c. Coil leaving refrigerant temperature. are difficult to access if possible 4. Field-Customizable I/O Capability: 3. Where serviceable components are installed behind walls and above a. Analog Inputs: Three for use in customizable control strategies. inaccessible ceilings, provide finished assembly with access doors or panels to b. Digital Inputs: Three for use in customizable control strategies. gain access. Properly size the openings to allow for service, removal, and c. Digital Outputs: Three for use in customizable control strategies. replacement. 5. Features and Functions: 4. If less than full and unrestricted access is provided, locate components within an a. Self-diagnostics. 18-inch reach of the finished assembly. b. Time delay 5. Where ladder access is required to service elevated components, provide an c. Auto-restart. installation that provides for sufficient access within ladder manufacturer's written d. External static pressure control. instructions for use. e. Auto operation mode. 6. Comply with OSHA regulations. f. Manual operation mode. C. System Design and Installation Requirements: g. Filter service notification. 1. Design and install systems indicated according to manufacturer's h. Power consumption display. recommendations and written instructions. i. Drain assembly high water level safety shutdown and notification. 2. Where manufacturer's requirements differ from requirements indicated, contact j. Run test switch. Architect for direction. The most stringent requirements should apply unless 6. Communication: Network communication with other indoor and outdoor units. otherwise directed in writing by Architect. 7. Cable and Wiring: Manufacturer's standard with each connection labeled and D. Isolation of Equipment: Provide isolation valves to isolate each indoor unit and outdoor corresponding to a unit-mounted wiring diagram. unit for service, removal, and replacement without interrupting system operation. 8. Field Connection: Manufacturer's standard with each connection labeled and E. System Capacity Ratio: The sum of connected capacity of all indoor units shall be corresponding to a unit-mounted wiring diagram. within the following range of outdoor-unit rated capacity: I. Unit Electrical: 1. Not less than 50 percent. 1. Enclosure: Metal, suitable for indoor locations. 2. Not more than 130 percent. 2. Field Connection: Single point connection to power unit and integral controls. 3. Range acceptable to manufacturer. 3. Disconnecting Means: Factory-mounted circuit breaker or switch. F. System Turndown: Stable operation down to 20 percent of outdoor-unit capacity. 4. Control Transformer: Manufacturer's standard. Coordinate requirements with field G. System Auto Refrigerant Charge: Each system shall have an automatic refrigerant power supply. charge function to ensure the proper amount of refrigerant is installed in system. 5. Wiring: Manufacturer's standard with each connection labeled and corresponding H. Outdoor Conditions: and moving to final installed location. to a unit-mounted wiring diagram. Suitable for outdoor ambient conditions encountered. 6. Raceways: Enclose line voltage wiring in metal raceways. a. Design equipment and supports to withstand wind loads of governing code install damaged products. 2.4 INDOOR, EXPOSED, FLOOR-MOUNTED UNITS and ASCE/SEI 7. A. Description: Factory-assembled and -tested complete unit with components, piping, b. Design equipment and supports to withstand snow and ice loads of wiring, and controls required for mating to piping, power, and controls field governing code and ASCE/SEI 7. connections 2. Maximum System Operating Outdoor Temperature: 105F. B. Cabinet: 3. Minimum System Operating Outdoor Temperature: -10 F. 1. Material: Painted steel, or coated steel frame covered by a plastic cabinet, with I. Sound Performance: Sound levels generated by operating HVAC equipment shall be an architectural acceptable finish suitable for tenant occupancy on exposed within requirements indicated. surfaces. 1. Indoor: Within design guidelines of "2015 ASHRAE HANDBOOK- HVAC 2. Insulation: Manufacturer's standard internal insulation, complying with ASHRAE Applications.' 62.1, to provide thermal resistance and prevent condensation. 2. Outdoor: Within ordinance of governing authorities. 3. Mounting: Manufacturer-designed provisions for field installation. J. Thermal Movements: Allow for controlled thermal movements from ambient, surface, 4. Internal Access: Removable panels of adequate size for field access to internal and system temperature changes. components for inspection, cleaning, service, and replacement. K. Capacities and Characteristics: As indicated on Drawings. C. DX Coil Assembly: 2.3 INDOOR, CONCEALED, CEILING-MOUNTED UNITS FOR DUCTING 1. Coil Casing: Aluminum, galvanized, or stainless steel. A. Description: Factory-assembled and -tested complete unit with components, piping, 2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required wiring, and controls required for mating to ductwork, piping, power, and controls field by performance. connections. 3. Coil Tubes: Copper, of diameter and thickness required by performance. B. Cabinet: 4. Expansion Valve: Electronic modulating type with linear or proportional 1. Material: Galvanized, or, painted steel. characteristics. 2. Insulation: Manufacturer's standard internal insulation, complying with ASHRAE 5. Unit Internal Tubing: Copper tubing with brazed joints. 62.1, to provide thermal resistance and prevent condensation. 6. Unit Internal Tubing Insulation: Manufacturer's standard insulation, of thickness 3. Duct Connections: Extended collar or flange, or designated exterior cabinet to prevent condensation. surface, designed for attaching field-installed ductwork. 7. Field Piping Connections: Manufacturer's standard. 4. Mounting: Manufacturer-designed provisions for field installation. 8. Factory Charge: Dehydrated air or nitrogen. 5. Internal Access: Removable panels or hinged doors of adequate size for field 9. Testing: Factory pressure tested and verified to be without leaks. access to internal components for inspection, cleaning, service, and D. Drain Assembly: replacement. 1. Pan: Non-ferrous material, with bottom sloped to low point drain connection. C. DX Coil Assembly: 2. Condensate Removal: Gravity. 1. Coil Casing: Aluminum, galvanized, or stainless steel. a. If a floor drain is not available at unit, provide unit with field-installed 2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required condensate pump accessory. by performance. 3. Field Piping Connection: Non-ferrous material with threaded NPT. 3. Coil Tubes: Copper, of diameter and thickness required by performance. E. Fan and Motor Assembly: 4. Expansion Valve: Electronic modulating type with linear or proportional 1. Fan(s): characteristics a. Direct-drive arrangement. 5. Unit Internal Tubing: Copper tubing with brazed joints. b. Single or multiple fans connected to a common motor shaft and driven by a 6. Unit Internal Tubing Insulation: Manufacturer's standard insulation, of thickness single motor to prevent condensation. c. Materials: Non-ferrous components or ferrous components with corrosionresistant 7. Field Piping Connections: Manufacturer's standard. finish 8. Factory Charge: Dehydrated air or nitrogen. d. Statically and dynamically balanced. 9. Testing: Factory pressure tested and verified to be without leaks. 2. Motor: Brushless dc or electronically commutated with permanently lubricated D. Drain Assembly: bearings. 1. Pan: Non-ferrous material, with bottom sloped to low point drain connection. 3. Motor Protection: Integral protection against thermal, overload, and voltage 2. Condensate Removal: Unit-mounted pump or other integral lifting mechanism, fluctuations. capable of lifting drain water to an elevation above top of cabinet. 4. Speed Settings and Control: Two (low, high), three (low, medium, high), or more 3. Field Piping Connection: Non-ferrous material with threaded NPT. than three speed settings or variable speed with a speed range of least 50 E. Fan and Motor Assembly: percent. 1. Fan(s): 5. Vibration Control: Integral isolation to dampen vibration transmission. a. Direct-drive arrangement. F. Filter Assembly:

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1.6 MAINTENANCE MATERIAL SUBMITTALS A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. 1. Filters: b. One set(s) for each unit type and unique size of washable filters. 2. Indoor Units: One for each unique size and type installed. 3. Controllers for Indoor Units: One for each unique controller type installed. 1. Nationally recognized manufacturer of VRF HVAC systems and products. continuous period of five years within time of bid. 3. VRF HVAC systems and products that have been successfully tested and in use on at least five completed projects. 4. Having complete published catalog literature, installation, and operation and maintenance manuals for all products intended for use. a. Product research and development. d. Technical support for system installation training, startup, commissioning, and troubleshooting of installations. 1. Authorized representative of, and trained by, VRF HVAC system manufacturer. consecutive years before time of bid. value 4. Staffing resources of competent and experienced full-time employees that are assigned to execute work according to schedule. less than five years after Substantial Completion. necessary to comply with requirements indicated. Include Project-specific written letter, signed by manufacturer's corporate officer, if requested. trained and approved by VRF HVAC system manufacturer. systems, including, but not limited to, equipment, piping, controls, and accessories indicated and furnished for installation. 2. Installer certification shall be valid and current for duration of Project. 3. Retain copies of Installer certificates on-site and make available on request. a. Demonstrated past experience with products being installed for period within five consecutive years before time of bid. scope, and value. manufacturer shall be manufactured in an ISO 9001 and ISO 14001 facility. 1.8 DELIVERY, STORAGE, AND HANDLING A. Deliver and store products in a clean and dry place. B. Comply with manufacturer's written rigging and installation instructions for unloading C. Handle products carefully to prevent damage, breaking, denting, and scoring. Do not damage. construction and remove just prior to operating unit. 2. Cover unit openings before installation to prevent dirt and dust from entering inside of units. If required to remover coverings during unit installation, reapply coverings over openings after unit installation and remove just prior to operating A. Manufacturer's Warranty: Manufacturer agrees to repair or replace equipment and components that fail(s) in materials or workmanship within specified warranty period. 1. Failures include, but are not limited to, the following: weathering and use. Completion. PART 2 - PRODUCTS A. Direct-expansion (DX) VRF HVAC system(s) with variable capacity in response to varying cooling and heating loads. System shall consist of multiple indoor units, outdoor unit(s), piping, controls, and electrical power to make complete operating system(s) complying with requirements indicated. 1. Two-pipe system design. 2. System(s) operation, heat pump, or, heat recovery as indicated on Drawings. 3. Each system with one refrigerant circuit shared by all indoor units connected to B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application. C. AHRI Compliance: System and equipment performance certified according to AHRI 1230 and products listed in AHRI directory. D. ASHRAE Compliance: 1. ASHRAE 15: For safety code for mechanical refrigeration. 2. ASHRAE 62.1: For indoor air quality. 3. ASHRAE 135: For control network protocol with remote communication. 4. ASHRAE/IES 90.1 Compliance: For system and component energy efficiency. 2.2 PERFORMANCE REQUIREMENTS A. Delegated Design: Engage a qualified professional specialist, as defined in Section

a. One set(s) for each unit with replaceable filters. 2. Shipped VRF HVAC systems with similar requirements to those indicated for a 5. Having full-time in-house employees for the following: b. Product and application engineering. c. Product manufacturing, testing, and quality control. e. Owner training. B. Factory-Authorized Service Representative Qualifications: 2. Demonstrated past experience with products being installed for period within five 3. Demonstrated past experience on five projects of similar complexity, scope, and a. Each person assigned to Project shall have demonstrated past experience. 5. Service and maintenance staff assigned to support Project during warranty 6. Product parts inventory to support ongoing system operation for a period of not 7. VRF HVAC system manufacturer's backing to take over execution of Work if C. Installer Qualifications: An entity that employs installers and supervisors who are 1. Each employee shall be certified by manufacturer for proper installation of 4. Each person assigned to Project shall have demonstrated past experience. b. Demonstrated past experience on five projects of similar complexity, D. ISO Compliance: System equipment and components furnished by VRF HVAC system D. Protect products from weather, dirt, dust, water, construction debris, and physical 1. Retain factory-applied coverings on equipment to protect finishes during E. Replace installed products damaged during construction. 1.9 WARRANTY a. Structural failures. b. Faulty operation. c. Deterioration of metals, metal finishes, and other materials beyond normal 2. Warranty Period: a. For Compressor: 10 year(s) from date of Substantial Completion. b. For Parts, Including Controls: Five year(s) from date of Substantial c. For Labor: Five year(s) from date of Substantial Completion. 2.1 SYSTEM DESCRIPTION E. UL Compliance: Comply with UL 1995.

b. Single or multiple fans connected to a common motor shaft and driven by a

c. Fabricated from non-ferrous components or ferrous components with

single motor

corrosion-resistant finish.

F (914) 764-9012 info@marchetticonsultingengineers.com temperature sensor kit for use in rooms that do not have room temperature Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required c. Coil leaving refrigerant temperature. that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document d. External static pressure control. use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. 6. Cable and Wiring: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram. 2. Field Connection: Single point connection to power entire unit and integral 3. Disconnecting Means: Factory-mounted circuit breaker or switch. 3. Mounting: Manufacturer-designed provisions for field installation. 4. Expansion Valve: Electronic modulating type with linear or proportional 6. Unit Internal Tubing Insulation: Manufacturer's standard insulation, of thickness DESCRIPTION 1 FOR REVIEW 2 FOR CONSTRUCTION 3 FOR CONSTRUCTION STAMP & SIGN: 23, MAIN STREET **NEWTOWN, CT, 06470 MECHANICAL** SPECIFICATIONS (3) 6. Cable and Wiring: Manufacturer's standard with each connection labeled and

MARCHETTI CONSULTING

ENGINEERS

25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011

#34-2023 7/10/23

AS NOTED

LMS

PGM

DATE

8-11-2023

12-14-2023

1-10-2024

DRAWN BY: CHECKED BY:

PROJECT NUMBER:

M-032.00

SCALE:

DATE:

2. Condensate Pump: Integral reservoir and control with electrical power connection

I. Unit Controls:

4. Features and Functions: Self-diagnostics, time delay, auto-restart, external static pressure control, , auto operation mode, , manual operation mode, , filter service

5. Communication: Network communication with other indoor units and outdoor unit(s).

corresponding to a unit-mounted wiring diagram. 7. Field Connection: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram.

J. Unit Electrical:

1. Enclosure: Manufacturer's standard, and suitable for indoor locations.

1. Remote Room Temperature Sensor Kit: Wall-mounted, hardwired room

measurement. 2. Condensate Pump: Integral reservoir and control with electrical power connection

through unit power.

I. Unit Controls: 1. Enclosure: Manufacturer's standard, and suitable for indoor locations.

2. Factory-Installed Controller: Configurable digital control. 3. Factory-Installed Sensors:

a. Unit inlet air temperature

b. Coil entering refrigerant temperature.

4. Features and Functions:

a. Self-diagnostics.

b. Time delay.

c. Auto-restart.

e. Auto operation mode.

f. Manual operation mode.

g. Filter service notification h. Power consumption display.

i. Drain assembly high water level safety shutdown and notification.

j. Run test switch. 5. Communication: Network communication with other indoor units and outdoor

unit(s).

corresponding to a unit-mounted wiring diagram. 7. Field Connection: Manufacturer's standard with each connection labeled and

J. Unit Electrical: 1. Enclosure: Manufacturer's standard, and suitable for indoor locations.

controls.

4. Control Transformer: Manufacturer's standard. Coordinate requirements with field power supply.

5. Wiring: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram.

6. Raceways: Enclose line voltage wiring in metal raceways.

2.5 INDOOR, EXPOSED, WALL-MOUNTED UNITS

A. Description: Factory-assembled and -tested complete unit with components, piping, wiring, and controls required for mating to piping, power, and controls field connections.

B. Cabinet:

1. Material: Painted steel, or coated steel frame covered by a plastic cabinet, with an architectural acceptable finish suitable for tenant occupancy on exposed surfaces.

2. Insulation: Manufacturer's standard internal insulation, complying with ASHRAE

62.1, to provide thermal resistance and prevent condensation.

4. Internal Access: Removable panels of adequate size for field access to internal components for inspection, cleaning, service, and replacement.

C. DX Coil Assembly:

1. Coil Casing: Aluminum, galvanized, or stainless steel. 2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.

3. Coil Tubes: Copper, of diameter and thickness required by performance.

characteristics.

5. Unit Internal Tubing: Copper tubing with brazed joints.

to prevent condensation.

7. Field Piping Connections: Manufacturer's standard.

8. Factory Charge: Dehydrated air or nitrogen. 9. Testing: Factory pressure tested and verified to be without leaks.

D. Drain Assembly:

1. Pan: Non-ferrous material, with bottom sloped to low point drain connection.

2. Condensate Removal: Gravity.

a. If a floor drain is not available at unit, provide unit with field-installed

condensate pump accessory. 3. Field Piping Connection: Non-ferrous material with threaded NPT.

E. Fan and Motor Assembly:

1. Fan(s):

a. Direct-drive arrangement.

b. Single or multiple fans connected to a common motor shaft and driven by a single motor

c. Fabricated from non-ferrous components or ferrous components with

corrosion protection finish.

d. Wheels statically and dynamically balanced. 2. Motor: Brushless dc or electronically commutated with permanently lubricated

bearings. 3. Motor Protection: Integral protection against thermal, overload, and voltage

fluctuations. 4. Speed Settings and Control: Two (low, high), three (low, medium, high), or more

than three speed settings or variable speed with a speed range of least 50 percent.

5. Vibration Control: Integral isolation to dampen vibration transmission. F. Filter Assembly:

1. Access: Front, to accommodate filter replacement without the need for tools. 2. Washable Media: Manufacturer's standard filter with antimicrobial treatment. G. Grille Assembly: Manufacturer's standard discharge grille with field-adjustable air

pattern mounted in top of unit cabinet. H. Unit Accessories:

1. Remote Room Temperature Sensor Kit: Wall-mounted, hardwired room

temperature sensor kit for use in rooms that do not have room temperature measurement

through unit power.

1. Access: Front, to accommodate filter replacement without the need for tools.

2. Washable Media: Manufacturer's standard filter with antimicrobial treatment.

pattern mounted in top of unit cabinet.

H. Unit Accessories:

G. Grille Assembly: Manufacturer's standard discharge grille with field-adjustable air

1. Enclosure: Manufacturer's standard, and suitable for indoor locations.

2. Factory-Installed Controller: Configurable digital control. 3. Factory-Installed Sensors: Unit inlet air temperature.

notification,, drain assembly high water level safety shutdown and notification.

2. Field Connection: Single point connection to power entire unit and integral controls.

3. Disconnecting Means: Factory-mounted circuit breaker or switch, complying with NFPA 70.

4. Control Transformer: Manufacturer's standard. Coordinate requirements with field power supply.

5. Wiring: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram. 6. Raceways: Enclose line voltage wiring in metal raceways to comply with NFPA

2.6 INDOOR, DEDICATED OUTDOOR AIR VENTILATION UNITS

A. Description: Factory-assembled and -tested complete unit with components, piping, wiring, and controls required for mating to ductwork, piping, power, and controls field connections.

1. Specially designed for up to 100 percent outdoor air entering unit.

B. Cabinet: 1. Material: Galvanized, or, painted steel.

2. Insulation: Manufacturer's standard internal insulation, complying with ASHRAE

62.1, to provide thermal resistance and prevent condensation.

3. Duct Connections: Extended collar or flange, or designated exterior cabinet surface, designed for attaching field-installed ductwork.

4. Mounting: Manufacturer-designed provisions for field installation.

5. Internal Access: Removable panels or hinged doors of adequate size for field access to internal components for inspection, cleaning, service, and replacement.

C. DX Coil Assembly:

1. Coil Casing: Aluminum, galvanized, or stainless steel.

2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.

3. Coil Tubes: Copper, of diameter and thickness required by performance. 4. Expansion Valve: Electronic modulating type with linear or proportional

characteristics

5. Unit Internal Tubing: Copper tubing with brazed joints.

6. Unit Internal Tubing Insulation: Manufacturer's standard insulation, of thickness to prevent condensation.

7. Field Piping Connections: Manufacturer's standard.

8. Factory Charge: Dehydrated air or nitrogen. 9. Testing: Factory pressure tested and verified to be without leaks.

D. DX Coil Assembly for Reheat Applications: Provide units with a reheat coil where indicated on Drawings.

1. Coil Casing: Aluminum, galvanized, or stainless steel. 2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.

3. Coil Tubes: Copper, of diameter and thickness required by performance.

4. Expansion Valve: Electronic modulating type with linear or proportional characteristics.

5. Unit Internal Tubing: Copper tubing with brazed joints.

6. Unit Internal Tubing Insulation: Manufacturer's standard insulation.

7. Field Piping Connections: Manufacturer's standard.

8. Factory Charge: Dehydrated air or nitrogen. 9. Testing: Factory pressure tested and verified to be without leaks.

E. Drain Assembly:

1. Pan: Non-ferrous material, with bottom sloped to low point drain connection. 2. Condensate Removal: Unit-mounted pump or other integral lifting mechanism,

capable of lifting drain water to an elevation above top of cabinet.

3. Field Piping Connection: Non-ferrous material with threaded NPT.

F. Fan and Motor Assembly:

1. Fan(s): a. Direct-drive arrangement.

b. Single or multiple fans connected to a common motor shaft and driven by a

single motor.

c. Fabricated from non-ferrous components or ferrous components with

corrosion protection finish.

d. Wheels statically and dynamically balanced. 2. Motor: Brushless dc or electronically commutated with permanently lubricated bearings.

3. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.

4. Speed Settings and Control: Two (low, high), three (low, medium, high), or more than three speed settings or variable speed with a speed range of least 50

percent. 5. Vibration Control: Integral isolation to dampen vibration transmission.

G. Filter Assembly:

1. Access: Bottom, side, or rear to accommodate field installation without removing ductwork and to accommodate filter replacement without need for tools.

2. Efficiency: ASHRAE 52.2, MERV 11. 3. Replaceable Media: Extended surface, panel, or cartridge with antimicrobial

treatment fiber media. H. Unit Accessories:

1. Motorized Inlet Damper Kit: Low-leakage damper with spring return electric actuator to fail closed on loss of power. Damper controlled by unit to open when

unit is operating and close when unit off.

I. Unit Controls: 1. Enclosure: Metal, similar to enclosure, and suitable for indoor locations.

2. Factory-Installed Controller: Configurable digital control.

3. Factory-Installed Sensors: Coil entering refrigerant temperature, Unit entering-air relative humidity, Unit leaving-air relative humidity.

4. Field-Customizable I/O Capability: a. Analog Inputs: Three for use in customizable control strategies.

b. Digital Inputs: Three for use in customizable control strategies.

c. Digital Outputs: Three for use in customizable control strategies.

5. Features and Functions: Self-diagnostics, time delay, auto-restart, external static pressure control,, filter service notification,, drain assembly high water level safety shutdown and notification.

6. Communication: Network communication with other indoor units and outdoor 7. Cable and Wiring: Manufacturer's standard with each connection labeled and

corresponding to a unit-mounted wiring diagram.

8. Field Connection: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram. J. Unit Electrical:

1. Enclosure: Metal, similar to enclosure, and suitable for indoor locations.

2. Field Connection: Single point connection to power entire unit and integral controls.

3. Disconnecting Means: Factory-mounted circuit breaker or switch, complying with NFPA 70.

4. Control Transformer: Manufacturer's standard. Coordinate requirements with field power supply

5. Wiring: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram.

6. Raceways: Enclose line voltage wiring in metal raceways to comply with NFPA

2.7 INDOOR, ENERGY RECOVERY VENTILATOR

A. Description: Factory-assembled and -tested complete unit with components, wiring, and controls required for mating to ductwork, power, and controls field connections.

B. Cabinet:

1. Material: Galvanized steel. 2. Insulation: Manufacturer's standard internal insulation, complying with ASHRAE

3. Duct Connections: Extended collar or flange, or designated exterior cabinet

surface, designed for attaching field-installed ductwork.

4. Mounting: Manufacturer-designed provisions for field installation.

5. Internal Access: Removable panels or hinged doors of adequate size for field access to internal components for inspection, cleaning, service, and replacement.

C. Damper Assemblies:

1. Outdoor Air Intake and Exhaust Air Discharge:

a. Low-leakage damper with spring return electric actuator to fail closed on

loss of power. b. Damper controlled by unit to open when unit is operating and close when

unit off.

2. Energy Recovery Heat-Exchanger Bypass:

a. Low leakage damper with electric actuator with integral controls to bypass outdoor air around the energy recovery heat exchanger during times of

favorable weather, and there is no energy-saving benefit to circulate air

across the energy recovery heat exchanger.

D. Fan and Motor Assemblies: Separate fan and motor assemblies for supply and exhaust airstreams with control for equal airflow.

1. Fan(s): a. Direct-drive arrangement.

b. Fabricated from non-ferrous components or ferrous components with

corrosion protection finish.

c. Wheels statically and dynamically balanced.

2. Motor: Brushless dc or electronically commutated with permanently lubricated bearings.

3. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.

4. Speed Settings and Control: Two (low, high), three (low, medium, high), or more than three speed settings or variable speed with a speed range of least 50

percent. 5. Vibration Control: Integral isolation to dampen vibration transmission.

E. Filter Assemblies: Separate filter assemblies for outdoor air and exhaust airstreams

entering energy recovery heat exchanger.

1. Access: To accommodate filter replacement without the need for tools.

2. Efficiency: ASHRAE 52.2, MERV 7.

a. Heater operation interlocked with energy recovery ventilator unit.

b. Heater with integral controls to control outdoor air temperature entering

energy recovery ventilator unit to a temperature set-point determined by

1. Enclosure: Metal, similar to enclosure, and suitable for indoor locations.

2. Factory-Installed Controller: Configurable digital control.

a. Analog Inputs: Three for use in customizable control strategies.

b. Digital Inputs: Three for use in customizable control strategies.

c. Digital Outputs: Three for use in customizable control strategies.

5. Features and Functions: Self-diagnostics, time delay, auto-restart, external static

pressure control,, auto operation through remote signal, , manual operation

6. Communication: Network communication with other indoor units and outdoor

7. Cable and Wiring: Manufacturer's standard with each connection labeled and

8. Field Connection: Manufacturer's standard with each connection labeled and

1. Enclosure: Metal, similar to enclosure, and suitable for indoor locations.

2. Field Connection: Single point connection to power entire unit and integral

3. Disconnecting Means: Factory-mounted circuit breaker or switch, complying with

4. Control Transformer: Manufacturer's standard. Coordinate requirements with field

6. Raceways: Enclose line voltage wiring in metal raceways to comply with NFPA

wiring, and controls required for mating to piping, power, and controls field

1. Specially designed for use in systems with either all heating or all cooling

demands, but not for use in systems with simultaneous heating and cooling.

variable refrigerant system manufacturer for field interconnection to make a

3. All units installed shall be from the same product development generation.

3. Internal Access: Removable panels or hinged doors of adequate size for field

1. One or more positive-displacement, direct-drive and hermetically sealed scroll

compressor(s) with inverter drive and turndown to 15 percent of rated capacity.

single refrigeration circuit that connects multiple indoor units.

1. Galvanized steel and coated with a corrosion-resistant finish.

2. Protection: Integral protection against the following:

2. Mounting: Manufacturer-designed provisions for field installation.

access to internal components for inspection, cleaning, service, and

2. Systems shall consist of one unit, or multiple unit modules that are designed by

A. Description: Factory-assembled and -tested complete unit with components, piping,

3. Replaceable Media: Extended surface, panel, or cartridge with antimicrobial

treatment fiber media. F. Energy Recovery Heat Exchanger:

G. Unit Accessories:

c. Listed and labeled.

3. Factory-Installed Sensors:

H. Unit Controls:

1. Electric Duct Preheater:

1. Total (sensible and latent) energy exchange between outdoor air and exhaust

airstreams with performance indicated on Drawings. 2. Fixed element with no moving parts.

3. AHRI 1060 certified and bearing the AHRI labe1.

energy recovery ventilator unit manufacturer.

a. Unit entering outdoor air temperature.

c. Unit entering exhaust air temperature.

d. Unit leaving exhaust air temperature.

4. Field-Customizable I/O Capability:

mode, , filter service notification.

to a unit-mounted wiring diagram.

C. Compressor and Motor Assembly:

a. High refrigerant pressure.

2.8 OUTDOOR, AIR-SOURCE HEAT-PUMP UNITS

unit(s).

controls.

NFPA 70.

power supply.

connections.

B. Cabinet:

replacement.

b. Low oil level.

c. High oil temperature.

d. Thermal and overload.

I. Unit Electrical:

e. Unit entering outdoor air relative humidity

g. Unit entering exhaust air relative humidity.

corresponding to a unit-mounted wiring diagram.

corresponding to a unit-mounted wiring diagram.

h. Unit leaving exhaust air relative humidity.

f. Unit leaving supply air relative humidity.

b. Unit leaving supply air temperature.

e. Voltage fluctuations. f. Phase failure and phase reversal. g. Short cycling. 3. Speed Control: Variable to automatically maintain refrigerant suction and condensing pressures while varying refrigerant flow to satisfy system cooling and heating loads. 4. Vibration Control: Integral isolation to dampen vibration transmission. 5. Oil management system to ensure safe and proper lubrication over entire operating range. 6. Crankcase heaters with integral control to maintain safe operating temperature. 7. Fusible plug. D. Condenser Coil Assembly: 1. Plate Fin Coils: a. Casing: Aluminum, galvanized, or stainless steel. b. Fins: Aluminum or copper, mechanically bonded to tubes, with arrangement required by performance. c. Tubes: Copper, of diameter and thickness required by performance. location. 2. Coating: Corrosion resistant. 3. Hail Protection: Provide condenser coils with louvers, baffles, or hoods to protect against hail damage. E. Condenser Fan and Motor Assembly: 1. Fan(s): Propeller type. indoor units. a. Direct-drive arrangement. b. Fabricated from non-ferrous components or ferrous components with corrosion protection finish to match performance indicated for condenser coil. c. Statically and dynamically balanced. 2. Fan Guards: Removable safety guards complying with OSHA regulations. If using metal materials, coat with corrosion-resistant coating to match performance indicated for condenser coil. 3. Motor(s): Brushless dc or electronically commutated with permanently lubricated bearings and rated for outdoor duty. 4. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations. 5. Speed Settings and Control: Variable speed with a speed range of least 75 percent. 6. Vibration Control: Integral isolation to dampen vibration transmission. F. Drain Pan: If required by manufacturer's design, provide unit with non-ferrous drain pan with bottom sloped to a low point drain connection. G. Unit Controls: 1. Enclosure: Manufacturer's standard, and suitable for unprotected outdoor locations. 2. Factory-Installed Controller: Configurable digital control. 3. Factory-Installed Sensors: D. Wired Controllers for Indoor Units: a. Refrigerant suction temperature. b. Refrigerant discharge temperature. c. Outdoor air temperature. 4. Temperature Units: Fahrenheit. d. Refrigerant high pressure. e. Refrigerant low pressure. f. Oil level. 4. Features and Functions: Self-diagnostics, time delay, auto-restart, fuse protection, auto operation mode,, night setback control,, run test switch, equalize run time between multiple same components. 5. Communication: Network communication with indoor units and other outdoor 6. Cable and Wiring: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram. 7. Field Connection: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram. H. Unit Electrical: 1. Enclosure: Metal, similar to enclosure, and suitable for unprotected outdoor locations. 2. Field Connection: Single point connection to power entire unit and integral 3. Disconnecting Means: Factory-mounted circuit breaker or switch, complying with NFPA 70. 4. Control Transformer: Manufacturer's standard. Coordinate requirements with field power supply. 5. Wiring: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram. 6. Raceways: Enclose line voltage wiring in metal raceways to comply with NFPA unauthorized users. I. Unit Piping: 1. Unit Tubing: Copper tubing with brazed joints. 2. Unit Tubing Insulation: Manufacturer's standard insulation, of thickness to connections to indoor unit. prevent condensation. 3. Field Piping Connections: Manufacturer's standard. 4. Factory Charge: Dehydrated air or nitrogen. 5. Testing: Factory pressure tested and verified to be without leaks. indoor unit(s). 2.9 SYSTEM CONTROLS A. General Requirements: installation. 1. Network: Indoor units and outdoor units shall include integral controls and connect through a manufacturer-selected control network. 2. Network Communication Protocol: Manufacturer proprietary control communication between interconnected units. 3. Operator Interface:

a. Operators shall interface with system and unit controls through the

5. Wiring: Manufacturer's standard with each connection labeled and corresponding

following: 1) Operator interfaces integral to controllers.

2) Owner-furnished PC connected to central controller(s).

3) Web interface through web browser software.

4) Integration with Building Automation System. b. Users shall be capable of interface with controllers for indoor units control

to extent privileges are enabled. Control features available to users shall include the following:

1) On/off control.

2) Temperature set-point adjustment.

B. VRF HVAC System Operator Software for PC: 1. Software offered by VRF HVAC system manufacturer shall provide system

operators with ability to monitor and control VRF HVAC system(s) from a single dedicated Owner-furnished PC. 2. Software shall provide operator with a graphic user interface to allow monitoring

and control of multiple central controllers from a single device location through point-and-click mouse exchange. 3. Plan views shall show building plans with location of indoor units and

identification superimposed on plans.

4. Controls operation mode of indoor units as individual units, by selected groups of indoor units, or as collection of all indoor units. Operation modes available through central controller shall match those operation modes of controllers for

indoor units. 5. Schedules operation of indoor units as individual units, by selected groups of indoor units, or as collection of all indoor units. Schedules daily, weekly, and

annual events. 6. Changes operating set points of indoor units as individual units, by selected groups of indoor units, or as collection of all indoor units.

7. Optimized start feature to start indoor units before scheduled time to reach temperature set-point at scheduled time based on operating history.

8. Night setback feature to operate indoor units at energy-conserving heating and cooling temperature set-points during unoccupied periods. 9. Supports Multiple Languages: English.

10. Supports Imperial and Metric Temperature Units: Fahrenheit.

11. Displays service notifications and error codes.

12. Monitors and displays up to 3000 item error history and 10000 item operation history for regular reporting and further archiving.

13. Monitors and displays cumulative operating time of indoor units.

14. Able to disable and enable operation of individual controllers for indoor units. 15. Information displayed on individual controllers shall also be available for display. 16. Information displayed for outdoor units, including refrigerant high and low

pressures percent capacity. C. Central Controllers:

1. Centralized control for all indoor and outdoor units from a single central controller

a. Include multiple interconnected controllers as required.

2. Controls operation mode of indoor units as individual units, by selected groups of indoor units, or as collection of all indoor units. Operation modes available through central controller shall match those operation modes of controllers for

3. Schedule operation of indoor units as individual units, by selected groups of indoor units, or as collection of all indoor units.

a. Sets schedule for daily, weekly, and annual events. b. Schedule options available through central controller shall at least include

the schedule options of controllers for indoor units. 4. Changes operating set points of indoor units as individual units, by selected

groups of indoor units, or as collection of all indoor units.

5. Optimized start feature to start indoor units before scheduled time to reach temperature set-point at scheduled time based on operating history. 6. Night setback feature to operate indoor units at energy-conserving heating and

cooling temperature set-points during unoccupied periods. Service diagnostics tool.

8. Able to disable and enable operation of individual controllers for indoor units. 9. Information displayed on individual controllers shall also be available for display through central controller.

10. Information displayed for outdoor units, including refrigerant high and low pressures percent capacity.

11. Multiple RJ-45 ports for direct connection to a local PC and an Ethernet network

12. Operator interface through a backlit, high-resolution color display touch panel and web accessible through standard web browser software.

1. Single controller capable of controlling multiple indoor units as group.

2. Auto Timeout Touch Screen LCD: Timeout duration shall be adjustable.

3. Multiple Language: English.

5. On/Off: Turns indoor unit on or off.

6. Hold: Hold operation settings until hold is released.

7. Operation Mode: Cool, Heat, Auto, Dehumidification, Fan Only, and Setback.

8. Temperature Display: 1-degree increments 9. Temperature Set-Point: Separate set points for Cooling, Heating, and Setback.

Adjustable in 1-degree increments between 70 to 75 dgrees F.

10. Relative Humidity Display: 1 percent increments.

11. Relative Humidity Set-Point: Adjustable in 1 percent increments between 45 to 12. Fan Speed Setting: Select between available options furnished with the unit.

13. Airflow Direction Setting: If applicable to unit, select between available options furnished with the unit

14. Seven-day programmable operating schedule with up to five events per day. Operations shall include On/Off, Operation Mode, and Temperature Set-Point.

15. Auto Off Timer: Operates unit for an adjustable time duration and then turns unit

16. Occupancy detection.

17. Service Notification Display: "Filter" < Insert notifications>.

18. Service Run Tests: Limit use by service personnel to troubleshoot operation. 19. Error Code Notification Display: Used by service personnel to troubleshoot

abnormal operation and equipment failure.

20. User and Service Passwords: Capable of preventing adjustments by

21. Setting stored in nonvolatile memory to ensure that settings are not lost if power

is lost. Battery backup for date and time only. 22. Low-voltage power required for controller shall be powered through non-polar

E. Wireless Controllers for Indoor Units:

1. Wireless Communication:

a. Controller communicates to remote-mounted receiver that is wired to

1) Include receivers with wireless controllers as required to complete

2) Low-voltage power required for receivers shall be powered through

non-polar connections to indoor unit.

b. One wireless controller shall be capable of communicating with one or multiple receivers to control one or multiple indoor units as a group.

2. Controller Battery Life: Three years.

3. Auto Timeout Touch Screen LCD: Timeout duration shall be adjustable.

4. Multiple Language: English.

5. Temperature Units: Fahrenheit. 6. On/Off: Turns indoor unit on or off.

7. Hold: Hold operation settings until hold is released.

8. Operation Mode: Cool, Heat, Auto, Dehumidification, Fan Only, and Setback.

9. Temperature Display: 1-degree increments. 10. Temperature Set-Point: Separate set points for Cooling, Heating, and Setback.

Adjustable in 1-degree increments between 70 to 75 degrees F. 11. Relative Humidity Display: 1 percent increments.

12. Relative Humidity Set-Point: Adjustable in 1 percent increments between 45 to

13. Fan Speed Setting: Select between available options furnished with the unit. 14. Airflow Direction Setting: If applicable to unit, select between available options

furnished with the unit. 15. Seven-day programmable operating schedule with up to five events per day.

Operations shall include On/Off, Operation Mode, and Temperature Set-Point. 16. Auto Off Timer: Operates unit for an adjustable time duration and then turns unit

17. Occupancy detection.

18. Service Run Tests: Limit use by service personnel to troubleshoot operation. 19. Error Code Notification Display: Used by service personnel to troubleshoot

abnormal operation and equipment failure.

20. User and Service Passwords: Capable of preventing adjustments by unauthorized users.

21. Setting stored in non-volatile memory to ensure that settings are not lost if power is lost. Battery for date and time only.

2.10 SYSTEM REFRIGERANT AND OIL



a. One pair, twisted, No. 16 AWG, stranded (19x29) or No. 18 AWG, stranded (19x30) tinned-copper conductors as required by VRF HVAC system manufacturer.

b. PVC insulation.

c. Braided or foil shielded. d. PVC jacket.

- e. Flame Resistance: Comply with UL 1685.
- 2. Plenum-Rated, Paired Cable: NFPA 70, Type CMP.
- a. One pair, twisted, No. 16 AWG, stranded (19x29) or No. 18 AWG, stranded (19x30) tinned-copper conductors as required by VRF HVAC system
- manufacturer.
- b. PVC insulation.
- c. Braided or foil shielded. d. PVC jacket.

e. NFPA 262 includes the standard flame-resistance test criteria in common

- use for cables and conductors. f. Flame Resistance: Comply with NFPA 262.
- C. TIA-485A Network Cabling:
- 1. Standard Cable: NFPA 70, Type CMG.
- a. Paired, two pairs, twisted, No. 22 AWG, stranded (7x30) tinned-copper
- conductors.
- b. PVC insulation c. Unshielded.
- d. PVC jacket.
- e. Flame Resistance: Comply with UL 1685.
- 2. Plenum-Rated Cable: NFPA 70, Type CMP.
- a. Paired, two pairs, No. 22 AWG, stranded (7x30) tinned-copper conductors. b. Fluorinated ethylene propylene insulation. c. Unshielded.
- d. Fluorinated ethylene propylene jacket.
- e. NFPA 262 includes the standard flame-resistance test criteria in common
- use for cables and conductors.
- f. Flame Resistance: NFPA 262.

D. Comply with requirements in Section 260533.13 "Conduits for Electrical Systems" for cable raceways.

2.17 OUTDOOR EQUIPMENT STANDS

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

- 1. [MIRO Industries Inc.]
- 2. [RectorSeal HVAC; a CSW Industrials Company]
- 3. [Rooftop Support Systems; Eberl Iron Works, Inc.]
- 4. < Insert manufacturer's name> B. Description: Individual foot supports with elevated adjustable channel cross bars and clamps/fasteners/bolts for ground or roof-supported outdoor equipment components, without roof membrane penetration, in a prefabricated system that can be modularly
- assembled on-site. C. Foot Material: Rubber or polypropylene.
- D. Rails Material: Hot-dip galvanized carbon steel.
- E. Wind/Sliding Load Resistance: Up to [100 mph] < Insert value > minimum.
- 2.18 MATERIALS
- A. Steel:
- 1. ASTM A36/A36M for carbon structural steel. 2. ASTM A568/A568M for steel sheet.
- B. Galvanized Steel: ASTM A653/A653M.
- C. Aluminum: ASTM B209.
- 2.19 SOURCE QUALITY CONTROL
- A. Factory Tests: Test and inspect factory-assembled equipment.
- B. Equipment will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports for historical record. Submit reports only if requested.
- PART 3 EXECUTION
- 3.1 EXAMINATION
- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of
- the Work. B. Examine products before installation. Reject products that are wet, moisture damaged, or mold damaged
- C. Examine roughing-in for piping and tubing to verify actual locations of connections
- before equipment installation. D. Examine roughing-in for ductwork to verify actual locations of connections before
- equipment installation. E. Examine roughing-in for wiring and conduit to verify actual locations of connections
- before equipment installation.
- F. Examine walls, floors, roofs, and outdoor pads for suitable conditions where equipment will be installed.
- G. Prepare written report, endorsed by Installer, listing conditions detrimental to
- performance of the Work. H. Proceed with installation only after unsatisfactory conditions have been corrected.
- 3.2 EQUIPMENT INSTALLATION, GENERAL
- A. Clearance: 1. Maintain manufacturer's recommended clearances for service and maintenance.
- 2. Maintain clearances required by governing code.
- B. Loose Components: Install components, devices, and accessories furnished by
- manufacturer, with equipment, that are not factory mounted.
- 1. Loose components shall be installed by system Installer under supervision of manufacturer's service representative.
- C. Equipment Restraint Installation: Install equipment with seismic-restraint device. Comply with requirements for seismic-restraint devices specified in Section 230548
- "Vibration and Seismic Controls for HVAC." 3.3 INSTALLATION OF INDOOR UNITS
- A. Install units to be level and plumb while providing a neat and finished appearance.
- B. Unless otherwise required by VRF HVAC system manufacturer, support ceilingmounted units from structure above using threaded rods; minimum rod size of 3/8 inch.
- C. Adjust supports of exposed and recessed units to draw units tight to adjoining surfaces. D. Protect finished surfaces of ceilings, floors, and walls that come in direct contact with units. Refinish or replaced damaged areas after units are installed. E. In rooms with ceilings, conceal piping and tubing, controls, and electrical power serving
- units above ceilings. F. In rooms without ceiling, arrange piping and tubing, controls, and electrical power
- serving units to provide a neat and finished appearance. G. Provide lateral bracing if needed to limit movement of suspended units to not more than 0.25 inch.
- H. For floor- and wall-mounted units that are exposed, conceal piping and tubing, controls, and electrical power serving units within walls.
- I. Floor-mounted units located in mechanical rooms.
- J. Install floor-mounted units on support structure indicated on Drawings. K. Install floor-mounted units on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 033000 "Castin-Place Concrete.
- L. Attachment: Install hardware for proper attachment to supported equipment. M. Grouting: Place grout under equipment supports and make bearing surface smooth.

E. Pipe Stand Installation: E. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and F. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with nuts, washers, and other accessories. weatherproof sealant recommended by insulation manufacturer. Secure jacket with G. Install hangers and supports to allow controlled thermal and seismic movement of stainless steel bands 12 inches o.c. and at end joints. 3.10 INSTALLATION OF DUCT, ACCESSORIES, AND AIR OUTLETS piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units. A. Where installing ductwork adjacent to equipment, allow space for service and H. Install lateral bracing with pipe hangers and supports to prevent swaying. supported equipment. maintenance I. Install building attachments within concrete slabs or attach to structural steel. B. Comply with requirements for metal ducts specified in Section 233113 "Metal Ducts." 1. Install concrete inserts before concrete is placed; fasten inserts to forms and C. Comply with requirements for nonmetal ducts specified in Section 233116 "Nonmetal install reinforcing bars through openings at top of inserts. J. Load Distribution: Install hangers and supports so that piping live and dead loads and D. Comply with requirements for air duct accessories specified in Section 233300 "Air stresses from movement will not be transmitted to connected equipment. Duct Accessories." K. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not E. Comply with requirements for flexible ducts specified in Section 233346 "Flexible exceed maximum pipe deflections allowed by ASME B31.9 for building services piping. Ducts. L. Piping and Tubing Insulation: F. Comply with requirements for air diffusers specified in Section 233713.13 "Air 1. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Diffusers." Shields shall span an arc of 180 degrees. G. Comply with requirements for registers and grilles specified in Section 233713.23 2. Shield Dimensions for Pipe: Not less than the following: "Registers and Grilles." 3.11 ELECTRICAL CONNECTIONS a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick. A. Comply with requirements indicated on Drawings and in applicable Division 26 M. Horizontal-Piping Hangers and Supports: Install the following types: 1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated Sections. or insulated, stationary pipes NPS 1/2 to NPS 30. B. To extent electrical power is required for system equipment, components, and controls, 2. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow and is not indicated on Drawings and addressed in the Specifications, the design for off-center closure for hanger installation before pipe erection. such electrical power shall be delegated to VRF HVAC system provider. 3. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or 1. Delegated design of electrical power to equipment, components and controls, and associated installation shall be included at no additional cost to Owner. contraction. C. Connect field electrical power source to each separate electrical device requiring field 4. Multiple horizontal pipes located indoors may use metal framing systems with with requirements for sleeves specified in Section 230500 "Common Work Results for split clamp attachment for each pipe in lieu if individual clevis hangers. electrical power. Coordinate termination point and connection type with Installer. D. Comply with requirements in Section 260519 "Low-Voltage Electrical Power 5. Pipe stands for horizontal pipes located outdoors. 6. Provide copper-clad hangers and supports for hangers and supports in direct Conductors and Cables" for wiring connections. E. Comply with requirements in Section 260526 "Grounding and Bonding for Electrical contact with copper pipe. 7. On plastic pipe, install pads or cushions on bearing surfaces to prevent hanger Systems" for grounding connections. F. Install nameplate or acrylic label with self-adhesive back for each electrical connection from scratching pipe. indicating electrical equipment designation and circuit number feeding connection. N. Plastic Pipe Hanger and Support Spacing: 1. Nameplate shall be laminated phenolic layers of black with engraved white 1. Space hangers and supports according to pipe manufacturer's written instructions for service conditions. letters. Letters at least 1/2 inch high. 2. Maximum spacing, 5 ft.; minimum rod size, 1/4 inch. 2. Locate nameplate or label where easily visible. O. Vertical-Piping Clamps: Install the following types: G. Comply with requirements in Section 260533.13 "Conduits for Electrical Systems" for 1. Extension Pipe or Riser Clamps (MSS Type 8). raceway selection and installation requirements for conduits as supplemented or 2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): If longer ends are required revised in this Section. H. Comply with requirements in Section 260533.16 "Boxes and Covers for Electrical for riser clamps. P. Support vertical runs at roof, at each floor, and at midpoint intervals between floors, not Systems" for box selection and installation requirements for boxes as supplemented or to exceed 5 ft.. revised in this Section. Q. Comply with MSS SP-69 for pipe-hanger selections and applications that are not I. Comply with requirements in Section 260533.23 "Surface Raceways for Electrical handbooks. Systems" for wireways selection and installation requirements for wireways as specified. R. Use hangers, supports, and attachments with galvanized coatings unless otherwise supplemented or revised in this Section 1. Outlet boxes for cables shall be no smaller than 4 inches square by 1-1/2 inches indicated. S. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to deep with extension ring sized to bring edge of ring to within 1/8 inch of the finished wall surface. achieve indicated slope of pipe. T. Trim excess length of continuous-thread hanger and support rods to 1 inch. 2. Flexible metal conduit shall not be used. U. Hanger-Rod Attachments: Install the following types: J. Comply with TIA-569-D for pull-box sizing and length of conduit and number of bends 1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy between pull points. K. Install manufactured conduit sweeps and long-radius elbows if possible. L. Install metal conduits with grounding bushings and connect with grounding conductor 2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations. to grounding system. 3. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various 3.12 SOFTWARE types of building attachments. 4. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping A. Cybersecurity: 1. Software: installations. a. Coordinate security requirements with Douglas Lord. V. Building Attachments: Install the following types: 1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to b. Ensure that latest stable software release is installed and properly suspend pipe hangers from concrete ceiling. operating. c. Disable or change default passwords to password using a combination of 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with barjoist uppercase and lower letters, numbers, and symbols at least eight construction, to attach to top flange of structural shape. 3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of characters in length. Record passwords and turn over to party responsible for system operation and administration. beams, channels, or angles. 4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of 2. Hardware: a. Coordinate location and access requirements with IT department. beams b. Enable highest level of wireless encryption that is compatible with Owner's 5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large. ICT network. 6. C-Clamps (MSS Type 23): For structural shapes c. Disable dual network connections. 3.13 INSTALLATION OF SYSTEM CONTROL CABLE 7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required A. Comply with NECA 1. tangent to flange edge B. Installation Method: 8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams. 1. Install cables in raceways except as follows: 9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of a. Within equipment and associated control enclosures. steel I-beams for heavy loads 10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of b. In accessible ceiling spaces where open cable installation method may be steel I-beams for heavy loads, with link extensions. c. In gypsum board partitions where cable may be enclosed within wall cavity. 11. Malleable-Beam Clamps with Extension Pieces (MSS Type 30): For attaching to 2. Conceal raceway and cables except in unfinished spaces. structural steel. 12. Welded-Steel Brackets: For support of pipes from below or for suspending from C. General Requirements for Cabling: 1. Comply with TIA-568-C Series of standards. above by using clip and rod. Use one of the following for indicated loads: 2. Comply with BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems." a. Light (MSS Type 31): 750 lb. 3. Terminate all conductors; no cable shall contain unterminated elements. Make b. Medium (MSS Type 32): 1500 lb. terminations only at indicated outlets, terminals, and cross-connect and patch 13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams. 14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is panels 4. Cables may not be spliced and shall be continuous from terminal to terminal. Do required. 15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to not splice cable. 5. Cables serving a common system may be grouped in a common raceway. Install linear horizontal movement where headroom is limited. 3.9 INSTALLATION OF PIPING AND TUBING INSULATION control cable in separate raceway from power wiring. Do not group conductors from different systems or different voltages. A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to 6. Secure and support cables at intervals not exceeding 30 inches and not more eliminate openings in insulation that allow passage of air to surface being insulated. than 6 inches from cabinets, boxes, fittings, outlets, racks, frames, and terminals. Installation to maintain a continuous vapor barrier. 7. Bundle, lace, and train conductors to terminal points without exceeding B. Insulation Installation on Pipe Fittings and Elbows: manufacturer's limitations on bending radii, but not less than radii specified in 1. Install mitered sections of pipe insulation. BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems." Install lacing bars 2. Secure insulation materials and seal seams with manufacturer's recommended and distribution spools. adhesive to eliminate openings in insulation that allow passage of air to surface 8. Do not install bruised, kinked, scored, deformed, or abraded cable. Remove and being insulated. discard cable if damaged during installation and replace it with new cable. C. Insulation Installation on Valves and Pipe Specialties: 9. Cold-Weather Installation: Bring cable to room temperature before dereeling. Do 1. Install preformed valve covers manufactured of same material as pipe insulation not use heat lamps for heating. when available. 10. Pulling Cable: Comply with BICSI ITSIMM, Ch. 5, "Copper Structured Cabling 2. When preformed valve covers are unavailable, install cut sections of pipe and Systems." Monitor cable pull tensions. sheet insulation to valve body. Arrange insulation to permit access to packing 11. Support: Do not allow cables to lie on removable ceiling tiles or access panels. and to allow valve operation without disturbing insulation. 12. Secure: Fasten securely in place with hardware specifically designed and 3. Secure insulation to valves and specialties and seal seams with manufacturer's

3.4 INSTALLATION OF OUTDOOR UNITS A. Install units to be level and plumb while providing a neat and finished appearance. B. Pad-Mounted Installations: Install outdoor units on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete." 1. Attachment: Install anchor bolts to elevations required for proper attachment to 2. Grouting: Place grout under equipment supports and make bearing surface 3.5 GENERAL REQUIREMENTS FOR PIPING INSTALLATION A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping and tubing systems. Install piping and tubing as indicated unless deviations to layout are approved on coordination drawings. B. Install piping and tubing in concealed locations unless otherwise indicated and except in equipment rooms and service areas. C. Install piping and tubing at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise. D. Install piping and tubing above accessible ceilings to allow sufficient space for ceiling panel removal. E. Install piping and tubing to permit valve servicing. F. Install piping and tubing at indicated slopes. G. Install piping and tubing free of sags. H. Install fittings for changes in direction and branch connections. I. Install piping and tubing to allow application of insulation. J. Install groups of pipes and tubing parallel to each other, spaced to permit applying insulation with service access between insulated piping and tubing. K. Install sleeves for piping and tubing penetrations of walls, ceilings, and floors. Comply HVAC " L. Install escutcheons for piping and tubing penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 230500 "Common Work Results for HVAC. 3.6 INSTALLATION OF SYSTEM CONDENSATE DRAIN PIPING A. General Requirements for Drain Piping and Tubing: 1. Install a union in piping at each threaded unit connection. 2. Install an adjustable stainless steel hose clamp with adjustable gear operator on unit hose connections. Tighten clamp to provide a leak-free installation. 3. If required for unit installation, provide a trap assembly in drain piping to prevent air circulated through unit from passing through drain piping. Comply with more stringent of the following: a. Manufacturer's requirements. b. Governing codes. c. In the absence of requirements, comply with requirements of ASHRAE 4. Extend drain piping from units with drain connections to drain receptors as indicated on Drawings. If not indicated on Drawings, terminate drain connection at nearest accessible location that is not exposed to view by occupants. 5. Provide each 90-degree change in direction with a Y- or T-fitting. Install a threaded plug connection in the dormant side of fitting or future use as a service cleanout. B. Gravity Drains: 1. Slope piping from unit connection toward drain termination at a constant slope of not less than one percent. C. Pumped Drains: 1. If unit condensate pump or lift mechanism is not included with an integral check valve, install a full-size check valve in each branch pipe near unit connection to prevent backflow into unit. 3.7 INSTALLATION OF REFRIGERANT PIPING A. Refrigerant Tubing Kits: 1. Unroll and straighten tubing to suit installation. Deviations in straightness of exposed tubing shall be unnoticeable to observer. 2. Support tubing using hangers and supports indicated at intervals not to exceed 5 ft.. Minimum rod size, 1/4 inch. 3. Prepare tubing ends and make mating connections to provide a pressure tight and leak-free installation B. Install refrigerant piping according to ASHRAE 15 and governing codes. C. Select system components with pressure rating equal to or greater than system operating pressure. D. Install piping as short and direct as possible, with a minimum number of joints and fittings. E. Arrange piping to allow inspection and service of equipment. Install valves and specialties in accessible locations to allow for service and inspection. Install access doors or panels as specified in Section 083113 "Access Doors and Frames" if valves or equipment requiring maintenance is concealed behind finished surfaces. F. Install refrigerant piping and tubing in protective conduit where installed belowground. G. Install refrigerant piping and tubing in rigid or flexible conduit in locations where exposed to mechanical damage. H. Unless otherwise required by VRF HVAC system manufacturer, slope refrigerant piping and tubing as follows: 1. Install horizontal hot-gas discharge piping and tubing with a uniform slope downward away from compressor 2. Install horizontal suction lines with a uniform slope downward to compressor. 3. Install traps to entrain oil in vertical runs. 4. Liquid lines may be installed level. I. When brazing, remove or protect components that could be damaged by heat. J. Before installation, clean piping, tubing, and fittings to cleanliness level required by VRF HVAC system manufacturer. K. Joint Construction: 1. Ream ends of tubes and remove burrs. 2. Remove scale, slag, dirt, and debris from inside and outside of tube and fittings before assembly 3. Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" a. Use Type BCuP (copper-phosphorus) alloy for joining copper fittings with copper tubing. b. Use Type BAg (cadmium-free silver) alloy for joining copper with bronze. 3.8 INSTALLATION OF METAL HANGERS AND SUPPORTS A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure. B. Metal Framing System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled metal framing systems. C. Comply with MFMA-103 for metal framing system selections and applications that are not specified.

D. Fastener System Installation:

operating manual.

1. Install powder-actuated fasteners, for use in lightweight concrete or concrete

manufacturer. Install fasteners according to powder-actuated tool manufacturer's

2. Use powder-actuated fasteners or mechanical-expansion anchors instead of

slabs less than 4 inches thick, in concrete after concrete is placed and

building attachments where required in concrete construction.

completely cured. Use operators that are licensed by powder-actuated tool

recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated. D. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints; for horizontal applications. Seal with manufacturer's recommended

adhesive. 1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

installed so as to not damage cables.

13. Provide strain relief. 14. Keep runs short. Allow extra length for connecting to terminals.

15. Do not bend cables in a radius less than 10 times the cable OD.

16. Use sleeves or grommets to protect cables from vibration at points where they pass around sharp corners and through penetrations.

Equipment.'

connections.

installed.

the visit.

beneficial.

following:

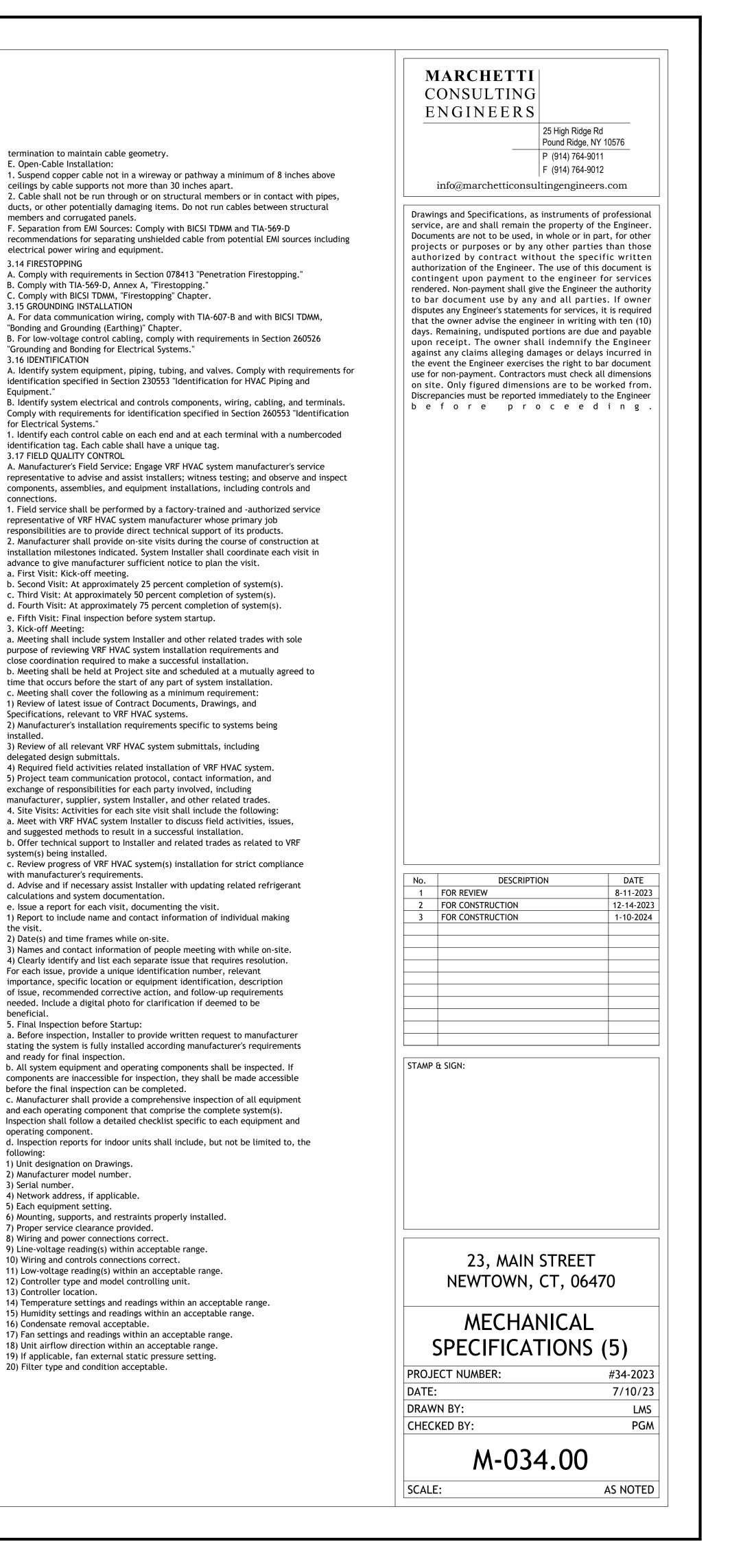
3) Serial number.

17. Ground wire shall be copper, and grounding methods shall comply with IEEE C2. Demonstrate ground resistance.

D. Balanced Twisted-Pair Cable Installation:

1. Comply with TIA-568-C.2.

2. Do not untwist balanced twisted-pair cables more than 1/2 inch at the point of



1) Unit designation on Drawings.

2) Manufacturer model number.

4) Network address, if applicable.

7) Proper service clearance provided.

12) Condensate removal acceptable.

1) Unit designation on Drawings.

Manufacturer model number.

4) Network address, if applicable.

7) Proper service clearance provided.

16) Condensate removal acceptable.

24) Ductwork properly connected.

technical support during inspection.

26) Remarks.

service representative:

retest until no leaks exist.

controls and equipment.

and requirements indicated

not less than 600 psig, using .

18) Fan external static pressure setting.

19) Filter type and condition acceptable.

20) Noise level within an acceptable range.

8) Wiring and power connections correct.

Wiring and controls connections correct.

12) Controller type and model controlling unit.

5) Each equipment setting.

13) Controller location.

8) Wiring and power connections correct.

Wiring and controls connections correct.

13) Noise level within an acceptable range.

include, but not be limited to, the following:

5) Each equipment setting.

26) Remarks.

3) Serial number.

following:

16) Remarks.

Serial number.

24) If applicable, ductwork properly connected.

22) Refrigerant piping properly connected and insulated.

25) If applicable, external interlocks properly connected.

6) Mounting, supports, and restraints properly installed.

9) Line-voltage reading(s) within acceptable range.

11) Low-voltage reading(s) within an acceptable range.

14) Refrigerant piping properly connected and insulated.

6) Mounting, supports, and restraints properly installed.

11) Low-voltage reading(s) within an acceptable range.

14) Temperature settings and readings within an acceptable range.

15) Humidity settings and readings within an acceptable range.

17) Fan settings and readings within an acceptable range.

21) Refrigerant piping properly connected and insulated.

23) Automatic dampers properly installed and operating.

25) If applicable, external interlocks properly connected.

step, the result, and any corrective action required.

resolved and systems are deemed ready for startup.

confirm proper motor rotation and unit operation.

C. Refrigerant Tubing Positive Pressure Testing:

changes in ambient temperature are acceptable.

c. Detailed description of extent of tubing tested.

name, phone number, and e-mail address.

manufacturer's requirements and are ready for startup.

22) Condensate drain piping properly connected and insulated.

h. Installer shall correct observed deficiencies found by the inspection.

i. Upon completing the on-site inspection, manufacturer shall provide a

written report with complete documentation describing each inspection

the same visit, provide additional visits, as required, until deficiencies are

9) Line-voltage reading(s) within acceptable range.

15) Condensate drain piping properly connected and insulated.

23) Condensate drain piping properly connected and insulated.

i. Test pressure at end of test. j. Outdoor temperature at end of test. k. Remarks: 5. Submit test reports for Project record. 6. Upon successful completion of evacuation testing, system shall be charged with e. Inspection reports for outdoor units shall include, but not be limited to, the refrigerant. E. System Refrigerant Charge: 1. Using information collected from the refrigerant tubing evacuation testing, system Installer shall consult variable refrigerant system manufacturer to determine the correct system refrigerant charge. 2. Installer shall charge system following VRF HVAC system manufacturer's written instructions. 3. System refrigerant charging shall be witnessed by system manufacturer's representative. 4. Total refrigerant charge shall be recorded and permanently displayed at the system's outdoor unit. F. Prepare test and inspection reports. 3.18 STARTUP SERVICE A. Engage a VRF HVAC system manufacturer's service representative to perform system(s) startup service. 1. Service representative shall be a factory-trained and -authorized service representative of VRF HVAC system manufacturer. 2. Complete startup service of each separate system. f. Inspection reports for indoor, dedicated outdoor air ventilation units shall 3. Complete system startup service according to manufacturer's written instructions. B. Startup checks shall include, but not be limited to, the following: 1. Check control communications of equipment and each operating component in system(s). 2. Check each indoor unit's response to demand for cooling and heating. 3. Check each indoor unit's response to changes in airflow settings. 4. Check sound levels of each indoor and outdoor unit. C. Installer shall accompany manufacturer's service representative during startup service and provide manufacturer's service representative with requested documentation and technical support during startup service. 1. Installer shall correct deficiencies found during startup service for reverification. D. System Operation Report: 1. After completion of startup service, manufacturer shall issue a report for each separate system. 2. Report shall include complete documentation describing each startup check, the result, and any corrective action required. 3. Manufacturer shall electronically record not less than two hours of continuous operation of each system and submit with report for historical reference. a. All available system operating parameters shall be included in the information submitted. 3.19 ADJUSTING A. Adjust equipment and components to function smoothly, and lubricate as recommended by manufacturer. B. Adjust initial temperature and humidity set points. Adjust initial airflow settings and discharge airflow patterns. C. Set field-adjustable switches and circuit-breaker trip ranges according to VRF HVAC system manufacturer's written instructions, and as indicated. D. Occupancy Adjustments: When requested within 12 months from date of Substantial g. Installer shall provide manufacturer with the requested documentation and Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose. 3.20 PROTECTION A. Protect products from moisture and water damage. Remove and replace products that are wet, moisture damaged, or mold damaged. . If corrective action is required by Installer that cannot be completed during B. Protect equipment from physical damage. Replace equipment with physical damage that cannot be repaired to new condition. Observable surface imperfections shall be grounds for removal and replacement. k. Final report shall indicate the system(s) inspected are installed according to C. Protect equipment from electrical damage. Replace equipment suffering electrical B. Perform the following tests and inspections with the assistance of manufacturer's D. Cover and seal openings of equipment to keep inside of equipment clean. Do not remove covers until finish work is complete. 3.21 MAINTENANCE SERVICE A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by manufacturer's authorized service representative. Include two service visits for preventive maintenance, repair or required for proper equipment and system operation. Parts and supplies shall be 4. Test and adjust controls and safeties. Replace damaged and malfunctioning manufacturer's authorized replacement parts and supplies. 3.22 SOFTWARE SERVICE AGREEMENT 1. Comply with more stringent of VRF HVAC system manufacturer's requirements include software support for two years. 2. After completion of tubing installation, pressurize tubing systems to a test pressure of not less than 1.5 times VRF HVAC system operating pressure, but revised licenses for using software. 1. Upgrade Notice: At least 30 days to allow Owner to schedule and access the uninterrupted period of 24 hours. Allowance for pressure changes attributed to system and to upgrade computer equipment if necessary. 3.23 DEMONSTRATION a. Name of person starting test, company name, phone number, and e-mail B. Instructor: 1. Instructor shall be factory trained and certified by VRF HVAC system manufacturer with current training on the system(s), equipment, and controls that are installed. 2. Instructor's credentials shall be submitted for review by Owner before scheduling training. 3. Instructor(s) primary job responsibility shall be Owner training. 4. Instructor(s) shall have not less than three years of training experience with VRF HVAC system manufacturer and past training experience on at least three projects of comparable size and complexity. C. Schedule and Duration: 1. Schedule training with Owner at least 20 business days before first training 2. Training shall occur before Owner occupancy. 3. Training shall be held at mutually agreed date and time during normal business hours. shall allow time for one-hour lunch period and 15-minute break after every two hours of training.

3. Successful testing shall maintain a test pressure for a continuous and

4. Prepare test report to record the following information for each test:

address

name, phone number, and e-mail address.

d. Date and time at start of test.

e. Test pressure at start of test.

g. Name of person ending test, company name, phone number & e-mail address.

f. Outdoor temperature at start of test.

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters. 2. Leak Test: After installation, charge system and test for leaks. Repair leaks and 3. Operational Test: After electrical circuitry has been energized, start units to

h. Date and time at end of test.

replacement of worn or defective components, lubrication, cleaning, and adjusting as

A. Technical Support: Beginning at Substantial Completion, service agreement shall

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

A. Engage a VRF HVAC system manufacturer's factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain entire system.

4. Each training day shall not exceed eight hours of training. Daily training schedule

5. Perform not less than eight total hours of training.

D. Location: Owner shall provide a suitable on-site location to host classroom training.

E. Training Attendees: Assume three people. F. Training Attendance: For record purposes, document training attendees at the start of

each new training session. Record attendee's name, signature, phone number, and email address G. Training Format: Individual training modules shall include classroom training followed

by hands-on field demonstration and training. H. Training Materials: Provide training materials in electronic format to each attendee. 1. Include instructional videos showing general operation and maintenance that are coordinated with operation and maintenance manuals.

e. Test pressure at start of test. f. Outdoor temperature at start of test.

address.

g. Name of person ending test, company name, phone number, and e-mail address

3. Successful testing shall maintain a test pressure for a continuous and

4. Prepare test report to record the following information for each test:

b. Name of manufacturer's service representative witnessing test, company

h. Date and time at end of test.

d. Date and time at start of test.

i. Test pressure at end of test. j. Outdoor temperature at end of test.

k. Remarks:

5. Submit test reports for Project record.

D. Refrigerant Tubing Evacuation Testing:

1. Comply with more stringent of VRF HVAC system manufacturer's requirements

and requirements indicated.

2. After completion of tubing positive-pressure testing, evacuate tubing systems to a pressure of 500 microns.

uninterrupted period of one hour(s) with no change.

a. Name of person starting test, company name, phone number, and e-mail

b. Name of manufacturer's service representative witnessing test, company

c. Detailed description of extent of tubing tested.

2. Video record each classroom training session and submit an electronic copy to Owner before requesting Owner acceptance of training. I. Acceptance: Obtain Owner written acceptance that training is complete and requirements indicated have been satisfied.

SECTION 230800 - COMMISSIONING OF HVAC

PART 1 - GENERAL 1.1 SUMMARY

A. Section includes Cx process requirements for the following HVAC systems,

assemblies, and equipment:

1. Energy supply systems.

2. Heat generation systems.

3. Cooling generation systems. 4. Central-station air-handling systems.

5. Heating and cooling terminal and unitary equipment.

6. HVAC controls.

7. TAB verification.

B. Related Requirements:

1. Section 019113 "General Commissioning Requirements" for general Cx process requirements and CxA responsibilities. 1.2 DEFINITIONS

A. BAS: Building automation system.

B. Cx: Commissioning, as defined in Section 019113 "General Commissioning

Requirements." C. CxA: Commissioning Authority, as defined in Section 019113 "General Commissioning

Requirements." D. "Systems," "Assemblies," "Subsystems," "Equipment," and "Components": Where

these terms are used together or separately, they mean "as-built" systems, assemblies,

subsystems, equipment, and components. E. TAB: Testing, adjusting, and balancing.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For BAS, HVAC testing technician.

B. Construction Checklists:

1. Cx plan, including material, installation, and performance construction checklists for systems, assemblies, subsystems, equipment, and components relating to

BAS, and, HVAC to be part of the Cx process and in accordance with

requirements in Section 019113 "General Commissioning Requirements and

ASHRAE 202." C. Test Equipment and Instruments: For all test equipment and instruments to be used in

conducting Cx tests by Div. 23 Subcontractor, provide the following: 1. Equipment/instrument identification number.

2. Planned Cx application or use.

3. Manufacturer, make, model, and serial number. 4. Calibration history, including certificates from agencies that calibrate the

equipment and instrumentation

5. Equipment manufacturers' proprietary instrumentation and tools. For each

instrument or tool, identify the following: a. Instrument or tool identification number

b. Equipment schedule designation of equipment for which the instrument or

tool is required. c. Manufacturer, make, model, and serial number.

d. Calibration history, including certificates from agencies that calibrate the

instrument or tool, where appropriate.

1.4 OUALITY ASSURANCE

A. BAS Testing Technician Qualifications: Technicians performing BAS Construction Checklist verification tests, Construction Checklist verification test demonstrations, Cx tests, and Cx test demonstrations are to have the following minimum qualifications: 1. Journey level or equivalent skill level with knowledge of BAS, HVAC, electrical

concepts, and building operations. 2. Minimum three years' experience installing, servicing, and operating systems

manufactured by approved manufacturer. 3. International Society of Automation (ISA)-Certified Control Systems Technician (CCST) Level I.

B. HVAC Testing Technician Qualifications: Technicians to perform HVAC Construction Checklist verification tests, Construction Checklist verification test demonstrations, Cx tests, and Cx test demonstrations shall have the following minimum qualifications: 1. Journey level or equivalent skill level; vocational school four-year-program graduate or an Associate's degree in mechanical systems, air conditioning, or similar field. Degree may be offset by three years' experience in servicing mechanical systems in the HVAC industry. Generally, required knowledge includes HVAC systems, electrical concepts, building operations, and application

and use of tools and instrumentation to measure performance of HVAC equipment, assemblies, and systems.

2. Minimum three years' experience that is to include installing, servicing, and

operating systems manufactured by approved manufacturer. C. Testing Equipment and Instrumentation Quality and Calibration:

1. Capable of testing and measuring performance within the specified acceptance criteria.

2. Be calibrated at manufacturer's recommended intervals with current calibration tags permanently affixed to the instrument being used. 3. Be maintained in good repair and operating condition throughout duration of use on Project.

4. Be recalibrated/repaired if dropped or damaged in any way since last calibrated. D. Proprietary Test Instrumentation and Tools:

1. Equipment Manufacturer's Proprietary Instrumentation and Tools: For installed equipment included in the Cx process, test instrumentation and tools manufactured or prescribed by equipment manufacturer to service, calibrate,

adjust, repair, or otherwise work on its equipment or required as a condition of equipment warranty, shall comply with the following: a. Be calibrated by manufacturer with current calibration tags permanently affixed.

b. Include a separate list of proprietary test instrumentation and tools in

operation and maintenance manuals.

2. HVAC proprietary test instrumentation and tools become property of Owner at the time of Substantial Completion. PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 Cx PROCESS

A. Perform Cx process in accordance with Section 019113 "General Commissioning Requirements" for BAS, and, HVAC and in accordance with the following: 1. ASHRAE 202.

2. Commissioning standards acceptable to the authority having jurisdiction.

3.2 CONSTRUCTION CHECKLISTS

A. Preliminary detailed construction checklists are to be prepared under Section 019113 "General Commissioning Requirements" for each BAS, and, HVAC system, assembly, subsystem, equipment, and component required to be commissioned, as detailed in IgCC and ASHRAE 202. Contractor performs the following:

1. Review BAS, and, HVAC preliminary construction checklists and provide written

of receipt. 3. When review comments have been resolved, the CxA will provide final construction checklists marked "Approved for Use, (date)." 4. Use only construction checklists marked "Approved for Use, (date)" When performing tests. Mark construction checklists in the appropriate place as indicated Project events are completed, and provide pertinent details and other information.

2. Return preliminary Construction Checklist with review comments within 10 days

B. Prepare preliminary detailed construction checklists for each BAS, and, HVAC system, assembly, subsystem, equipment, and component required to be commissioned, as detailed in ASHRAE 202.

1. Submit preliminary construction checklists to CxA and Designer for review. 2. When review comments have been resolved, the CxA will provide final

construction checklists marked "Approved for Use, (date)." 3. Use only construction checklists, marked "Approved for Use, (date)" when performing tests. Mark construction checklists in the appropriate place, as indicated Project events are completed and provide pertinent details and other

information. C. Systems required to be commissioned under IgCC:

- 1. Heating, ventilating, air-conditioning, and refrigeration systems (mechanical and/or passive) and associated controls.
- 2. Energy and building management and demand-control systems.
- D. Additional systems required to be commissioned:
- 1. Heat generation systems, including the following: a. Heat Pumps.
- 2. Cooling generation systems, including the following:
- a. Direct-expansion refrigeration systems.

comments on checklist items where appropriate

b. Heat Pumps.

3. Air-handling systems, including the following: a. Supply, return, and exhaust air fans, motors, and drives.

b. Automatic and gravity dampers.

c. Heating and cooling devices. d. Humidification and dehumidification devices.

e. Air filters.

f. Hangers and supports

g. Interlock between air-handling system and fire/smoke alarm system. 4. Air duct systems, including the following:

a. Duct systems.

b. Air-duct accessories, including volume dampers, fire and smoke dampers, turning vanes, sound attenuators, and flexible connectors.

c. Duct-mounted access doors and panels.

d. Hangers and supports.

5. Refrigerant piping, including the following: a. Refrigerant piping, fittings, and specialties.

b. Refrigerant charge.

c. Sleeves and sleeve seals. d. Meters and gauges.

e. General-duty and specialty valves.

f. Hangers and supports.

6. Heating and cooling terminal and unitary equipment, including the following: a. Unit heaters.

b. Fan-coil units.

c. Electric heating.

d. Unitary heating and cooling equipment. 7. Vibration isolation systems.

8. Controls and instrumentation, including the following:

a. Energy monitoring and recording system.

D. Controllers and sensors.

c. Automatic control valves, dampers, and actuators. d. Control interface with fans, pumps, dampers, and other equipment and

A. Certify that HVAC systems, subsystems, and equipment have been installed,

and approved submittals. Certify that all sensors are operating within specified

submitted, discrepancies corrected, and corrective work approved.

A. Perform tests using design conditions, whenever possible.

and settings to normal operating conditions.

documentation, and schedule seasonal tests.

3.5 Cx TESTS COMMON TO HVAC SYSTEMS

compliance with acceptance criteria.

accuracy and all systems are set to and maintaining set points as required by the

D. Set systems, subsystems, and equipment into operating mode to be tested in

accordance with approved test procedures (e.g., normal shutdown, normal auto

1. Simulated conditions may, with approval of Architect, be imposed using an

artificial load when it is impractical to test under design conditions. Before

simulating conditions, calibrate testing instruments. Provide equipment to

simulate loads. Set simulated conditions as directed by CxA, and document

2. Cx test procedures may direct that set points be altered when simulating

3. Cx test procedures may direct that sensor values be altered with a signal

generator when design or simulating conditions and altering set points are

A. Measure capacities and effectiveness of systems, assemblies, subsystems,

position, normal manual position, unoccupied cycle, emergency power, and alarm

simulated conditions and methods of simulation. After tests, return configurations

B. If tests cannot be completed because of a deficiency outside the scope of the HVAC

system, document the deficiency and report it to Architect. After deficiencies are

C. If seasonal testing is specified, complete appropriate initial performance tests and

equipment, and components, including operational and control functions, to verify

B. Test systems, assemblies, subsystems, equipment, and components for operating

dampers

control.

C. Certify that TAB procedures have been completed and that TAB reports have been

calibrated, and started and that they are operating in accordance with the Contract

B. Certify that HVAC instrumentation and control systems have been completed and

calibrated, point-to-point checkout has been successfully completed, and systems are

operating in accordance with their design sequence of operation, Contract Documents,

e. Demand-control systems.

9. TAB Verification:

a. Airflow.

10. Documentation:

a. Duct and plenum insulation.

3.3 Cx TESTING PREPARATION

Documents and approved submittals.

b. HVAC piping insulation.

design documents.

3.4 Cx TEST CONDITIONS

conditions is impractical.

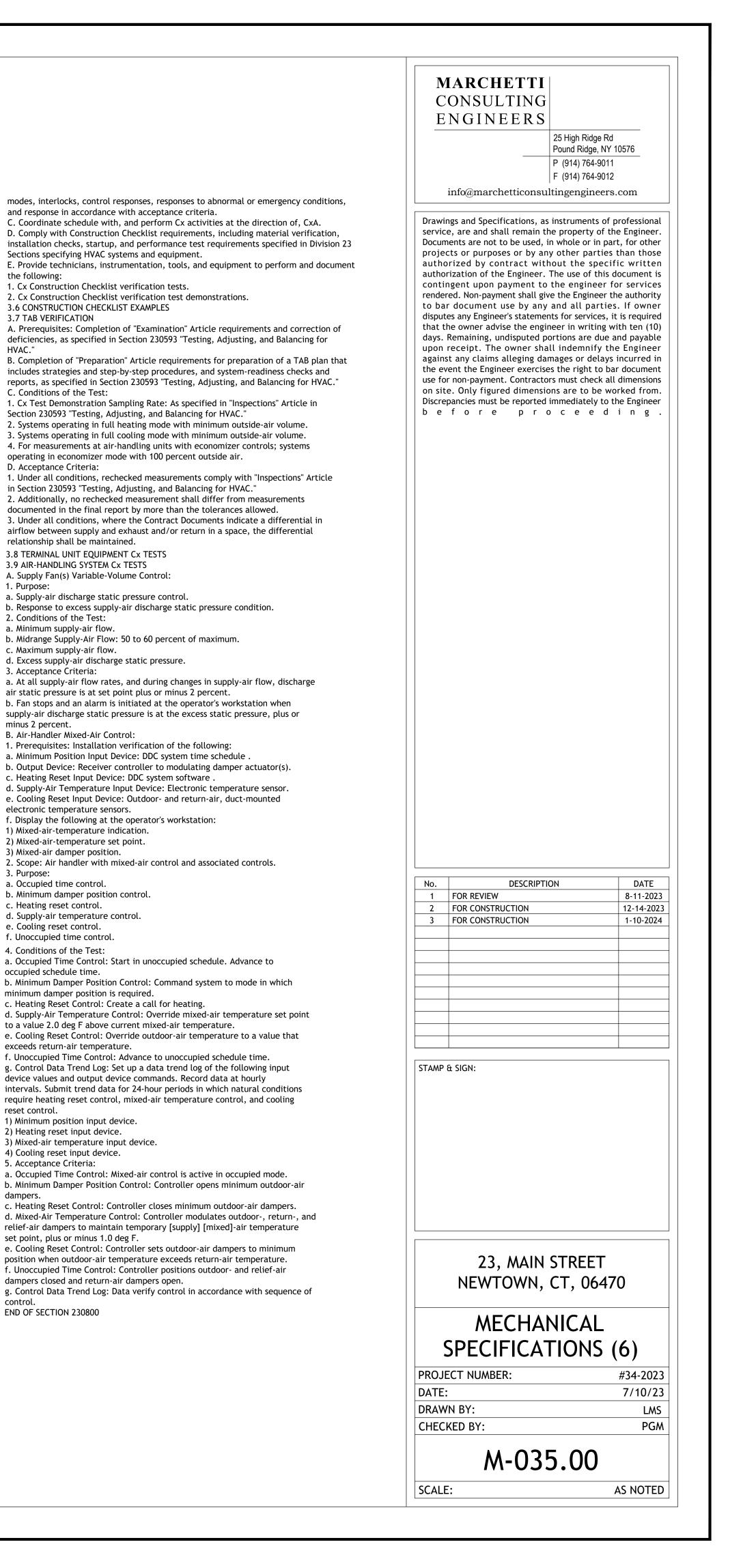
resolved, reschedule tests.

conditions)

impractical.

a. Mechanical systems manuals.

b. Documentation of required commissioning. 11. Mechanical insulation, including the following:



SECTION 15990 TESTING, ADJUSTING, AND BALANCING

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- A. TESTING, ADJUSTMENT, AND BALANCING OF AIR SYSTEMS.
- B. TESTING, ADJUSTMENT, AND BALANCING OF HYDRONIC SYSTEMS.
- 1.2 REFERENCES
- A. SMACNA HVAC SYSTEMS TESTING, ADJUSTING, AND BALANCING.

PART 2 EXECUTION

2.1 EXAMINATION

- A. VERIFY THAT SYSTEMS ARE COMPLETE AND OPERABLE BEFORE
- COMMENCING WORK. ENSURE THE FOLLOWING CONDITIONS: 1. SYSTEMS ARE STARTED AND OPERATING IN A SAFE AND NORMAL CONDITION.
- TEMPERATURE CONTROL SYSTEMS ARE INSTALLED COMPLETE AND OPERABLE.
- PROPER THERMAL OVERLOAD PROTECTION IS IN PLACE FOR ELECTRICAL EQUIPMENT.
- 4. DUCT SYSTEMS ARE CLEAN OF DEBRIS. 5. FANS ARE ROTATING CORRECTLY.
- 6. FIRE AND VOLUME DAMPERS ARE IN PLACE AND OPEN.

B. SUBMIT FIELD REPORTS. REPORT DEFECTS AND DEFICIENCIES NOTED DURING PERFORMANCE OF SERVICES WHICH PREVENT SYSTEM BALANCE.

C. BEGINNING OF WORK MEANS ACCEPTANCE OF EXISTING CONDITIONS.

2.2 INSTALLATION TOLERANCES

A. AIR HANDLING SYSTEMS: ADJUST TO WITHIN PLUS OR MINUS 5 PERCENT OF DESIGN FOR SUPPLY SYSTEMS AND PLUS OR MINUS 10 PERCENT OF DESIGN FOR RETURN AND EXHAUST SYSTEMS. B. AIR OUTLETS AND INLETS: ADJUST TOTAL TO WITHIN PLUS 10 PERCENT AND MINUS 5 PERCENT OF DESIGN TO SPACE. ADJUST OUTLETS AND INLETS IN SPACE TO WITHIN PLUS OR MINUS 10 PERCENT OF DESIGN.

C. HYDEONIC SYSTEMS: ADJUST TO WITH PLUS OR MINUS 10 PERCENT OF DESIGN.

2.3 ADJUSTING

A. ENSURE RECORDED DATA REPRESENTS ACTUAL MEASURED OR OBSERVED CONDITIONS. B. PERMANENTLY MARK SETTINGS OF VALVES, DAMPERS, AND OTHER ADJUSTMENT DEVICES

ALLOWING SETTINGS TO BE RESTORED. SET AND LOCAL MEMORY STOPS. C. AFTER ADJUSTMENT, TAKE MEASUREMENTS TO VERIFY BALANCE HAS NOT BEEN DISRUPTED OR THAT SUCH DISRUPTION HAS BEEN RECTIFIED.

D. LEAVE SYSTEMS IN PROPER WORKING ORDER, REPLACING BELT GUARDS, CLOSING ACCESS DOORS, CLOSING DOORS TO ELECTRICAL SWITCH BOXES, AND RESTORING THERMOSTATS TO

SPECIFIED SETTINGS. E. AT FINAL INSPECTION, RECHECK RANDOM SELECTIONS OF DATA RECORDED IN REPORT. RECHECK POINTS OR AREAS AS SELECTED AND WITNESSED BY OWNER.

F. CHECK AND ADJUST SYSTEMS APPROXIMATELY SIX MONTHS AFTER FINAL ACCEPTANCE AND SUBMIT REPORT.

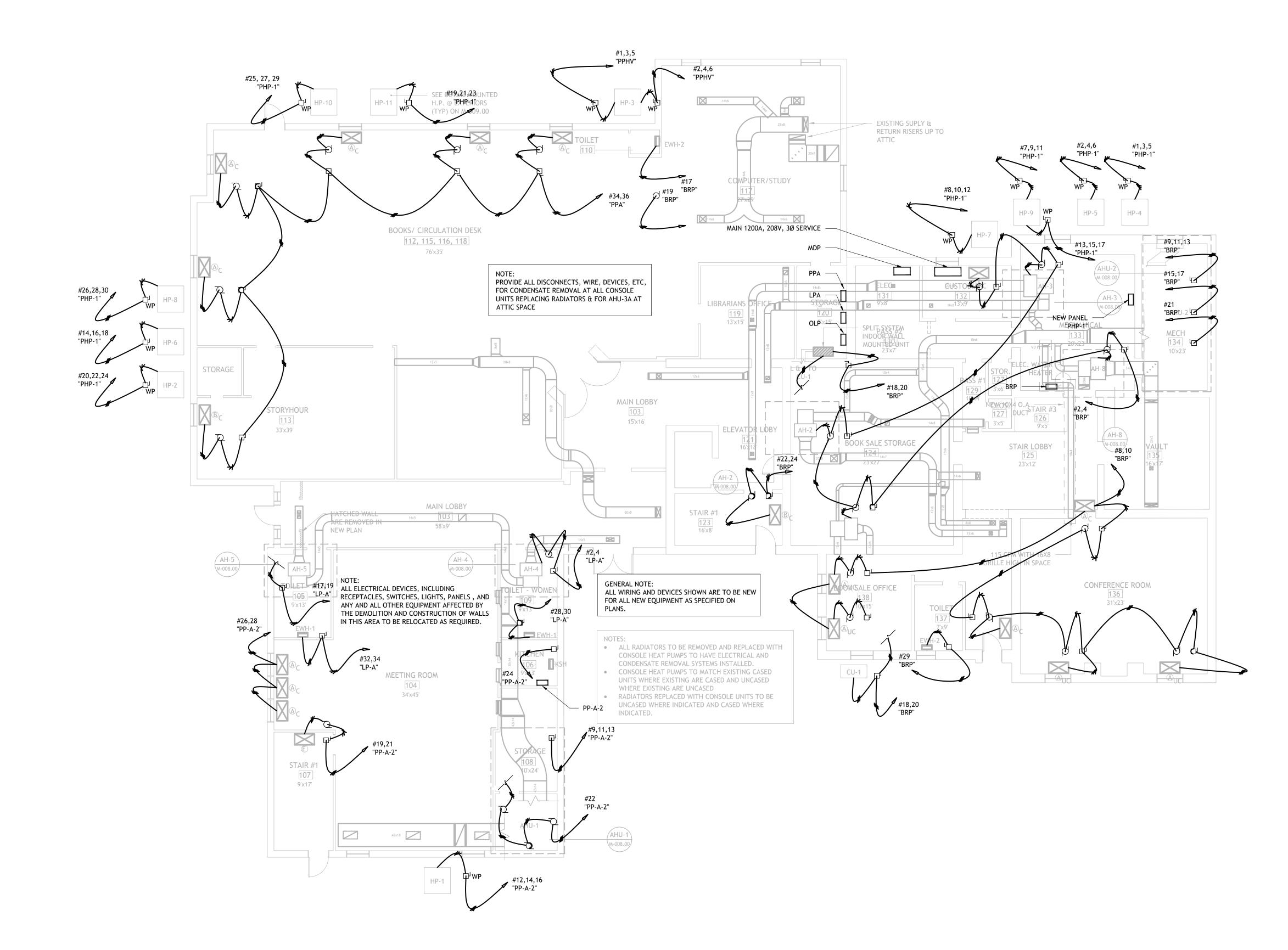
2.4 AIR SYSTEM PROCEDURE

A. MAKE AIR QUALITY MEASUREMENTS IN DUCTS BY PITOT TUBE TRAVERSE OF ENTIRE CROSS SECTIONAL AREA OF DUCT.

B. MEASURE AIR QUANTITIES AT AIR INLETS AND OUTLETS.

END OF SECTION

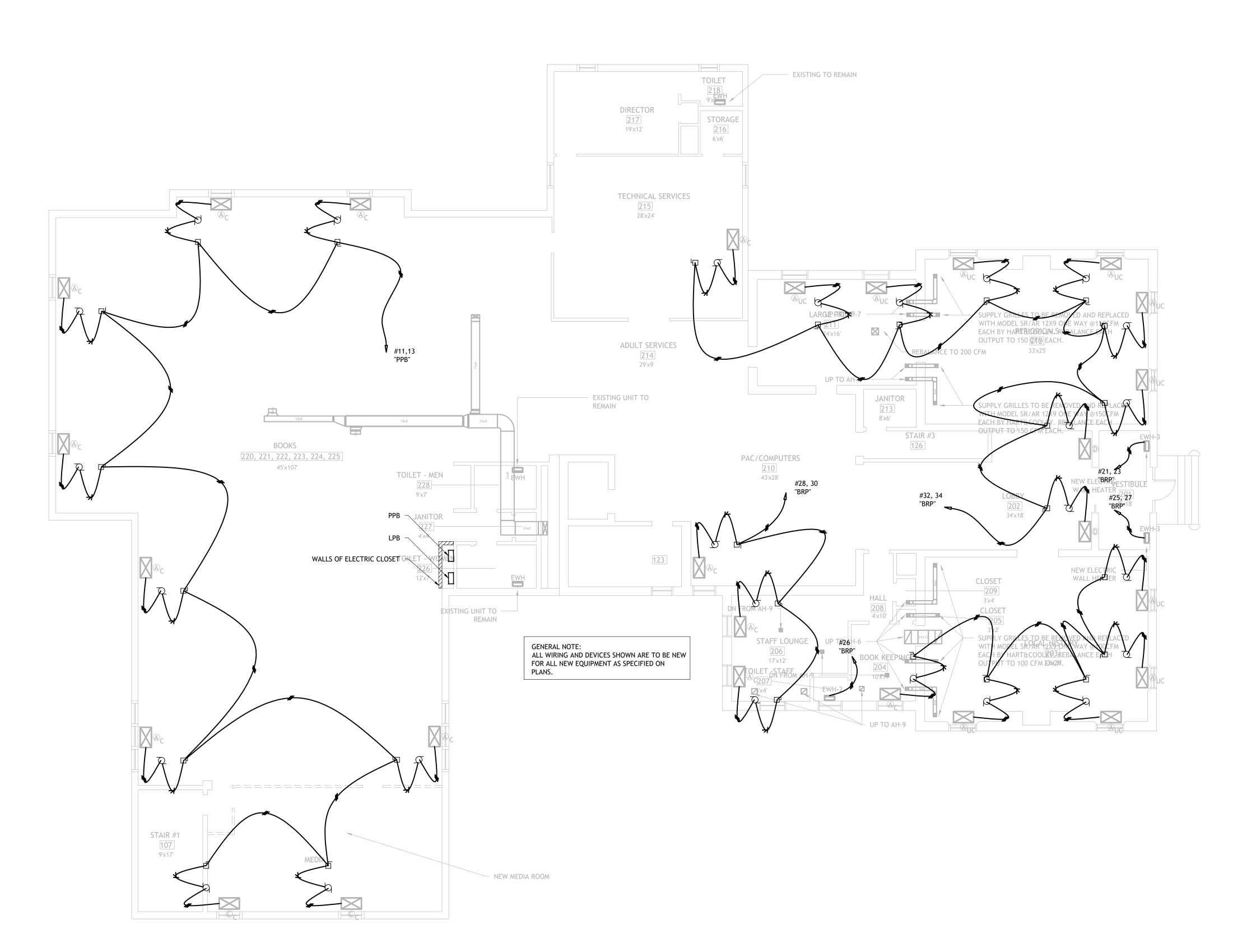
MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. No.1FOR REVIEW DESCRIPTION DATE 8-11-2023 2 FOR CONSTRUCTION 12-14-2023 3 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 MECHANICAL SPECIFICATIONS (7) PROJECT NUMBER: #34-2023 7/10/23 DATE: DRAWN BY: LMS CHECKED BY: PGM M-036.00 SCALE: AS NOTED



LOWER LEVEL ELECTRICAL PLAN

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

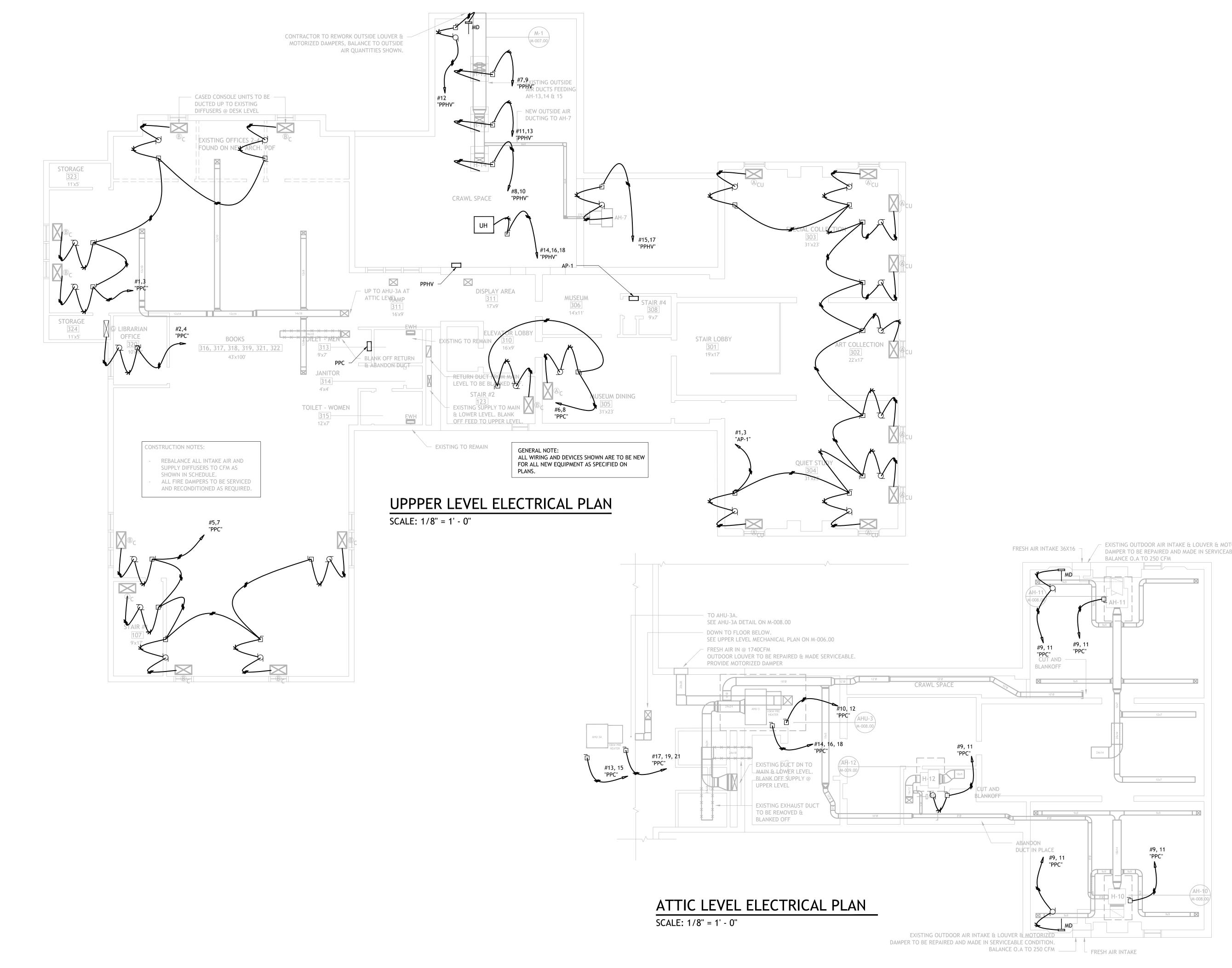
MARCI	IFTTI	
CONSU	LTING	
ENGIN	25 Hi	gh Ridge Rd
	P (91	d Ridge, NY 10576 I4) 764-9011
info@mar	F (9' chetticonsultinge	14) 764-9012 engineers.com
		uments of professional
service, are and s Documents are no	hall remain the pro t to be used, in who	perty of the Engineer. De or in part, for other
authorized by c	ontract without	er parties than those the specific written se of this document is
contingent upon rendered. Non-pay	payment to the e ment shall give the	engineer for services Engineer the authority
disputes any Engin	eer's statements for	all parties. If owner services, it is required n writing with ten (10)
upon receipt. Th	e owner shall ind	s are due and payable lemnify the Engineer s or delays incurred in
the event the Eng	ineer exercises the ent. Contractors mu	right to bar document st check all dimensions
Discrepancies mus	t be reported imme	e to be worked from. diately to the Engineer <u>e e d i n g</u>
ELI	ECTRICAL L	EGEND
\$	SINGLE POLE SV 3 WAY SWITCH	NITCH
JB	JUNCTION BOX	
#x PP-1	BRANCH CIRCUI	г
	EMERGENCY LIG	
<u></u>	SINGLE RECEPT	
		ACLE
\	DEDICATED REC	
₽ GFI	GROUND FAULT	INTERRUPT RECEPT
	DISCONNECT	
	MOTOR (FRACTI	
	WEATHER PROO MOTORIZED DAN	
	ELECTRICAL ME	TED
	DISTRIBUTION P	
	ELECTRICAL PA	NEL
CU AL	COPPER ALUMINUM	
AFF	ABOVE FINISHE	D FLOOR
No. 1 FOR CONST		DATE 12-14-2023
2 FOR CONST	RUCTION	1-10-2024
STAMP & SIGN:		
23	, MAIN STI	REET
NEW	TOWN, CT	, 06470
	OWER L	FVFI
		L PLAIN #34-2023
DATE:		DATE
DRAWN BY: CHECKED BY:		EF PGM
L C	-001.	OO
SCALE:		
JUALE:		AS NOTED



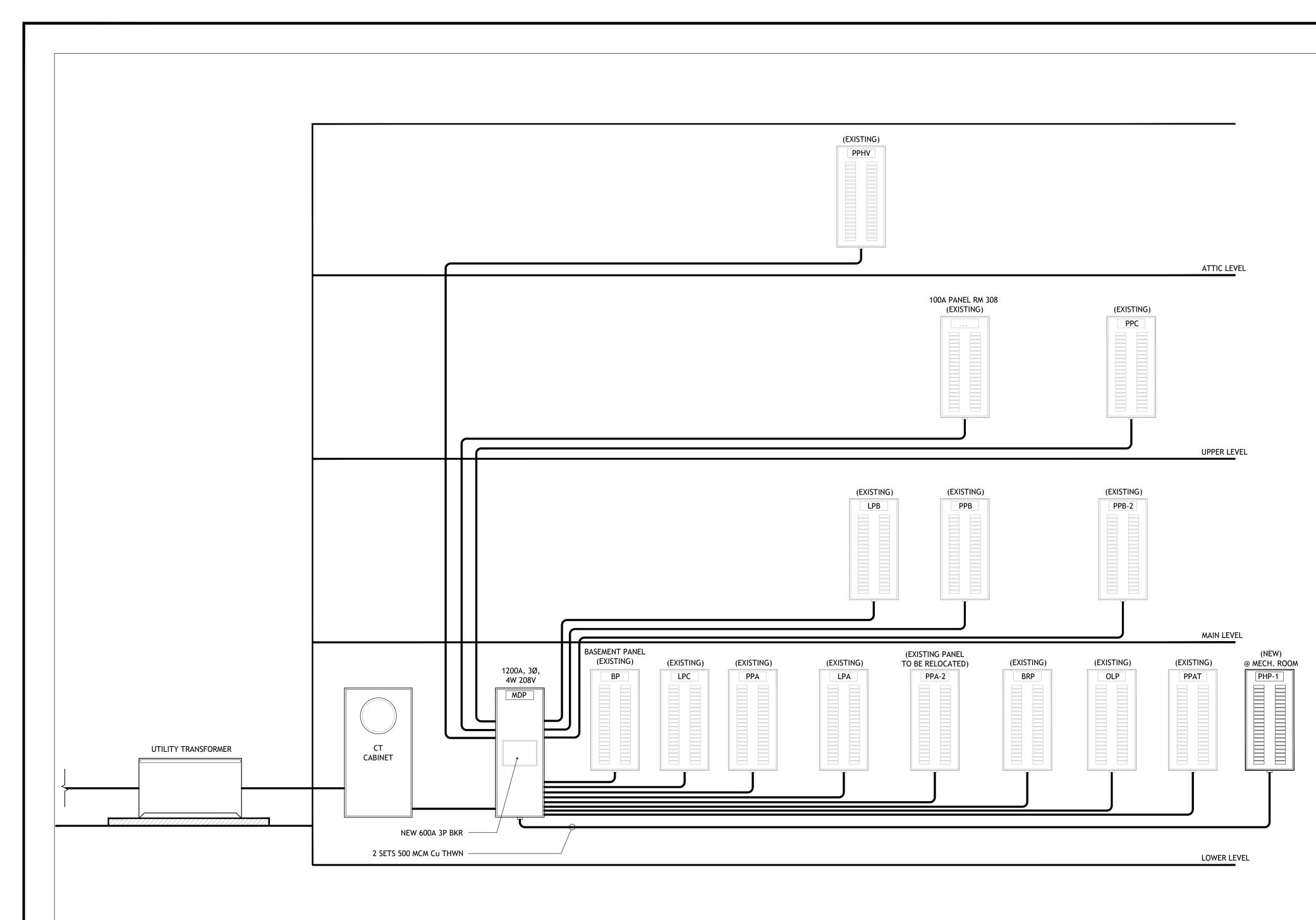
MAIN LEVEL ELECTRICAL PLAN

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

ervice, are and shall remain the property of the Enginee couments are not to be used, in whole or in part, for oth rojects or purposes or by any other parties than thos uthorized by contract without the specific writte uthorized by contract without the specific writte isputes any Engineer's statements for services, it is require hat the owner advise the engineer in writing with ten (1) ass. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Enginee gainst any claims alleging damages or delays incurred he event the Engineer exercises the right to bar document se for non-payment. Contractors must check all dimension isite. Only figured dimensions are to be worked fron iscrepancies must be reported immediately to the Enginee se for non-payment. Contractors must check all dimension isite. Only figured dimensions are to be worked fron isite. Only figure	CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914)764-9011 F (914)764-9011 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of profession exocuments are not to be used, in whole or in part, for oth rojects or purposes or by any other parties than those outhorized by contract without the specific writte uthorization of the Engineer. The use of this document isontingent upon payment to the engineer for service, endered. Non-payment shall give the Engineer the authorit o bar document use by any and all parties. If owner insputes any Engineer's statements for services, it is require hat the owner advise the engineer in writing with ten (11 aps. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Engineer gainst any claims alleging damages or delays incurred pays. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Engineer set for on-payment. Contractors must check all dimension isste. Only figured dimensions are to be worked fron isste. Only figured dimensions are to be worked from isste. Only figured dimensions are to be worked from isste. Only figured dimensions are to be worked to be isste. Only figured dimension isste. Only fis	CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of profession revice, are and shall remain the property of the Enginee bocuments are not to be used, in whole or in part, for othe contents are not to be used, in whole or in part, for othe norigects or purposes or by any other parties than tho authorized by contract without the specific writte authorization of the Engineer. The use of this document to bar document use by any and all parties. If owner isputes any Engineer's statements for services, it is require that the owner advise the engineer for service rendered. Non-payment shall give the Engineer that the owner advise the engineer in writing with ten (1) days. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred the event the Engineer exercises the right to bar documer use for non-payment. Contractors must check all dimension on site. Only figured dimensions are to be worked from postcrepancies must be reported immediately to the Enginee the event the Engineer exercises the right to bar documer use for on e proceed to mediately to the Enginee the event the Engineer exercises the right to bar postcrepancies must be reported immediately to the Enginee the event the Engineer exercises the right to bar postcrepancies must be reported immediately to the Enginee the event the Engineer exercises the right to bar postcrepancies must be reported immediately to the Enginee the event the Engineer exercises the right to bar postcrepancies must be reported immediately to the Engineer postcrepancies must be reported immediately to the Engineer postcrepancies must be reported immediately to the Enginer postcrepancies must be apposite to the contract postcrepancies			
ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com rawings and Specifications, as instruments of profession orive, are and shall remain the property of the Engineer ocuments are not to be used, in whole or in part, for oth rojects or purposes or by any other parties than thos on thorized by contract without the specific writte uthorization of the Engineer. The use of this document use by any and all parties. If owner on the pone payment to the engineer for services, endered. Non-payment shall give the Engineer de authori o bar document use by any and all parties. If owner spatis any claims alleging damages or delays incurred ys. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Engineer gainst any claims alleging damages or delays incurred spatis any claims alleging damages or delays incurred spatis any claims alleging damages or delays incurred spatis any claims alleging damages or delays incurred pays. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Engineer iscepancies must be reported immediately to the Engineer se for on-payment. Contractors must check all dimension iste. Only figured dimensions are to be worked from iscrepancies must be reported immediately to the Engineer be DELECTRICAL LEGEND \$ SINGLE POLE SWITCH \$ SINGLE POLE SWITCH \$ SINGLE POLE SWITCH \$ SINGLE RECEPTACLE OUTLET \$ DUPLEX RECEPTACLE \$ OUDPLEX RECEPTACLE \$ QUADRUPLEX RECEPTACLE \$ ONTOR (FRACTIONAL HP) \$ DISCONNECT \$ DESCRIPTION <	ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914)764-9011 F (914)764-9012 info@marchetticonsultingengineers.com trawings and Specifications, as instruments of profession bocuments are not to be used, in whole or in part, for oth rojects or purposes or by any other parties than those to current use by contract without the specific writte uthorization of the Engineer. The use of this document on tignet upon payment to the engineer for service, rendered. Non-payment shall give the Engineer the authorit o bar document use by any and all parties. If owner algans any claims alleging damages or delays incurred upays. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Engineer is for on-payment. Contractors must check all dimension is the Only figured dimensions are to be worked for iscrepancies must be reported immediately to the Engineer is for on-payment. Contractors must check all dimension is the. Only figured dimensions are to be worked for iscrepancies must be reported immediately to the Engineer is the Only figured dimensions are to be worked for iscrepancies must be reported immediately to the Engineer is for on-payment. Contractors must check all dimension is the. Only figured dimensions are to be worked for iscrepancies must be reported immediately to the Engineer is the Only figured dimensions are to be worked for iscrepancies must be reported intervention is the Only figured dimensions are to be worked for iscrepancies must be reported immediately to the Engineer is of one reported immediately to the Engineer is down and the property of the Engineer is down and the	ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of profession bocuments are not to be used, in whole or in part, for other projects or purposes or by any other parties than those outhorized by contract without the specific writte uthorization of the Engineer. The use of this document is putporized by contract without the specific writte uthorizing on payment to the engineer for service, rendered. Non-payment shall give the Engineer the authorit to bar document use by any and all parties. If own is putporized portions are due and payabi ippor receipt. The owner shall indemnify the Engineer has the owner advise the engineer in writing with ten (11 days. Remaining, undisputed portions are due and payabi ippon receipt. The owner shall indemnify the Engineer is for on-payment. Contractors must check all dimension is the Only figured dimensions are to be worked from bis repancies must be reported immediately to the Engineer is for on-payment. Contractors must check all dimension is the Only figured dimensions are to be worked from bis constance on the proteon of the Engineer is for on-payment. Contractors must check all dimension is the Only figured dimensions are to be worked from bis constance on the proteon of the engineer is for a recept a current of the engineer is for on the proteon of the engineer is for a single Receptact outlet is down for (Fractional HP) is public and for a single Receptact outlet is for construction is the report is for construction is the only is the for outlet is for construction is the only is the for outlet is for construction is the only is the for outlet is for construction is the only is the for outlet is the for construction is the only is the for outlet is for outlet is out			
Pound Ridge, NY 10576 P (914)764-9011 F (914)764-9012 info@marchetticonsultingengineers.com Trawings and Specifications, as instruments of profession ervice, are and shall remain the property of the Enginee couments are not to be used, in whole or in part, for oth rojects or purposes or by any other parties than thos uthorized by contract without the specific written ontingent upon payment. The use of this document ontingent upon payment to the engineer the authori o bar document use by any and all parties. If own isputes any Engineer's statements for services, it is require that the owner advise the engineer in writing with the (11 ays. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Engineer gainst any claims alleging damages or delays incurred he event the Engineer exercises the right to bar documes for non-payment. Sontractors must check all dimension as ite. Only figured dimensions are to be worked from iscrepancies must be reported immediately to the Enginee for on-payment. Contractors must check all dimension as ite. Only figured dimensions are to be worked from iscrepancies must be reported immediately to the Enginee for on-payment. Contractors must check all dimension as ite. Only figured dimensions are to be worked from iscrepancies must be reported immediately to the Enginee for on-payment. Contractors must check all dimension as ite. Only figured dimensions are to be worked from iscrepancies must be reported immediately to the Enginee for on-payment. Contractors must check all dimension are due and payab for the Enginee for on-pays for any figured immediately to the Engineer for service, it is require for service, it is require for service for on-pays for any figured immediately to the Engineer for service for on-pays for any figure dimensions are to be worked from the for the Engineer for the Engine	Pound Ridge, NY 10576 P (914)764-9011 F (914)764-9012 info@marchetticonsultingengincers.com wawings and Specifications, as instruments of profession ervice, are and shall remain the property of the Enginee focuments are not to be used, in whole or in part, for oth orbigets or purposes or by any other parties than thos unthorized by contract without the specific writte unthorized by contract without the specific writte unthorized by contract without the specific writte unthorized by contract writhout the specific writte unthorized by contract writhout the specific writte unthorized by any and all parties. If owner hat the owner advise the engineer in writing with ten (11 lays. Remaining, undisputed portions are due and payab por receipt. The owner shall indemnify the Enginee gainst any claims alleging damages or delays incurred be event the Engineer exercises the right to bar docume the ergineer success the right to bar	Pound Ridge, NY 10576 P (914)764-9011 F (914)764-9012 Drawings and Specifications, as instruments of profession rervice, are and shall remain the property of the Enginee occuments are not to be used, in whole or in part, for oth projects or purposes or by any other parties than those reprices or purposes or by any other parties than those inspute any Engineer's tauthout the specific writte huthorization of the Engineer. The use of this document iso bar document use by any and all parties. If owner document use by any and all parties. If owner insputes any Engineer's tauthout insputes any Engineer's tauthorization pon receipt. The owner shall indemnify the Engineer gainst any claims alleging damages or delays incurred that the owner advise the engineer in writing with ten (11 lays. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Engineer se for on-payment. Contractors must check all dimension in site. Only figured dimensions are to be worked from Discrepancies must be reported immediately to the Engineer se for on-payment. Contractors must check all dimension in site. Only figured dimensions are to be worked from Discrepancies must be reported immediately to the Engineer se for on-payment. Contractors must check all dimension in site. Only figured dimensions are to be worked from Discrepancies must be reported immediately to the Engineer be DUNCTION BOX Image: figure the advice dimension are to be worked from Discrepancies must be reported immediately to the Engineer be DUPLEX RECEPTACLE OUTLET Image: figure the advice dimension provide dimension are to be downed from Disconnect Image: figure the advice dimension provide dimension are to be downed dimension provide dimension are to be downed dimension provide dimension are to be downed d			
P (914) 764-9011 info@marchetticonsultingengineers.com rawings and Specifications, as instruments of profession ervice, are and shall remain the property of the Enginee ocuments are not to be used, in whole or in part, for oth optimized by contract without the specific writte uthorized by contract without the specific writte other Engineer. The use of this document on bar document use by any and all parties. If own isputes any Engineer's statements for services, it is require ob ar document use by any and all parties. If own isputes any Engineer's statements for services, it is require effort and all give the Engineer the authoriting with ten (11 ays. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Engineer effort on-payment. Contractors must check all dimension n site. Only figured dimensions are to be worked from isterencies must be reported immediately to the Engineer effort of engineer product EXERCEPTACL B SINGLE POLE SWITCH Image SINGLE POLE SWITCH Image SINGLE POLE SWITCH Image SINGLE RECEPTACLE OUTLET Image SINGLE RECEPTACLE OUTLET	P (914) 764-9011 info@marchetticonsultingengincers.com vawings and Specifications, as instruments of profession ervice, are and shall remain the property of the Enginee bouments are not to be used, in whole or in part, for othe uthorized by contract without the specific writte contingent upon payment to the engineer for service, info@marchetticon ob ard occument use by any and all parties. If owner observed.Non-payment shall give the Engineer info@instructors isputes any Engineer's statements for services, it is require ob ard occument use by any and all parties. If owner signes any Laims alleging damages or delays incurred he event the Engineer exercises the right to bar document isputes any Engineer's statements for service, it is require ef on c e p r o c c e d in n g single Pole SwiTCH isputes must be reported immediately to the Engineer ef on c e e d in n g single Pole SwiTCH ispute gint any claims alleging damages or delays incurred fee e f o c e e d in n g single Pole SwiTCH ispute and immediately to the Engineer fee of e proc c e e d in n g single Pole SwiTCH <td>P (914)764-9011 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of profession revice, are and shall remain the property of the Enginee bocuments are not to be used, in whole or in part, for othe contingent upon payment to the engineer for service cendered, Non-payment shall give the Engineer the authorition of the Engineer. The use of this document contingent upon payment to the engineer in writing with ten (11 days. Remaining, undisputed portions are due and payablypon receipt. The owner shall indemnify the Engineer paginst any claims alleging damages or delays incurred the owner advise the engineer in writing with ten (11 days. Remaining, undisputed portions are due and payablypon receipt. The owner shall indemnify the Engineer signist any claims alleging damages or delays incurred disputes any Engineer's statements for services, it is require so or e p r o c c e d in n g site. Only figured dimensions are to be worked from provide dimensions are to be worked from provide dimensions generative from BOX Image SingLe PoLE SWITCH single ReceptacLe Output: Extremet ReceptacLe Output: Extremet ReceptacLe Output: Extremet ReceptacLe</td> <td></td> <td></td> <td>10576</td>	P (914)764-9011 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of profession revice, are and shall remain the property of the Enginee bocuments are not to be used, in whole or in part, for othe contingent upon payment to the engineer for service cendered, Non-payment shall give the Engineer the authorition of the Engineer. The use of this document contingent upon payment to the engineer in writing with ten (11 days. Remaining, undisputed portions are due and payablypon receipt. The owner shall indemnify the Engineer paginst any claims alleging damages or delays incurred the owner advise the engineer in writing with ten (11 days. Remaining, undisputed portions are due and payablypon receipt. The owner shall indemnify the Engineer signist any claims alleging damages or delays incurred disputes any Engineer's statements for services, it is require so or e p r o c c e d in n g site. Only figured dimensions are to be worked from provide dimensions are to be worked from provide dimensions generative from BOX Image SingLe PoLE SWITCH single ReceptacLe Output: Extremet ReceptacLe Output: Extremet ReceptacLe Output: Extremet ReceptacLe			10576
info@marchetticonsultingengineers.com rawings and Specifications, as instruments of profession ocuments are not to be used, in whole or in part, for othe rojects or purposes or by any other parties than thos rojects or purposes or by any other parties than thos rojects or purposes or by any other parties than thos indered. Non-payment shall give the Engineer for service, indered. Non-payment shall give the Engineer for services redered. Non-payment shall give the Engineer is reducing that the owner advise the engineer in writing with ten (11 ays. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Engineer gainst any claims alleging damages or delays incurred gainst any claims alleging damages or delays incurred the event the Engineer exercises the right to bar documer se for non-payment. Contractors must check all dimension in site. Only figured dimensions are to be worked fror inscrepancies must be reported immediately to the Engineer set or non-payment. Contractors must check all dimension in site. Only figured dimensions are to be worked fror inscrepancies must be reported immediately to the Engineer set or non-payment. Contractors must check all dimension in site. Only figured dimensions are to be worked fror inscrepancies must be reported immediately to the Engineer set or non-payment. Contractors must check all dimension in site. Only figured dimensions are to be worked fror inscrepancies must be reported immediately to the Engineer set or non-payment. Contractors must check all dimension in site. Only figured dimensions are to be worked fror inscrepancies must be reported immediately to the Engineer set or non-payment. Contractors must check all dimension in the dimension are to be worked fror inscrepancies dimensions are to be worked fror inscrepancies dimensions are to be worked from inscrepancies dimension are to be worked from inscrepancies dinter difference dimension are to be worked from inscr	info@marchetticonsultingengineers.com	info@marchetticonsultingengineers.com Travings and Specifications, as instruments of profession projects or purposes or by any other parties than thos projects or purposes or by any other parties than thos projects or purposes or by any other parties than thos projects or purposes or by any other parties than thos projects or purposes or by any other parties than the sontingent upon payment to the engineer for service, it is require that the owner advise the engineer in writing with ten (11 fays. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Engineer sagainst any claims alleging damages or delays incurred the event the Engineer exercises the right to bar document use to non-payment. Contractors must check all dimension on site. Only figured dimensions are to be worked fro por receipt the ported immediately to the Engineer be ef or receipted immediately to the Engineer be efformed by any and all parties. ELECTRICAL LEGEND S SINGLE POLE SWITCH S JUNCTION BOX ###################################		P (914) 764-9011	10370
rawings and Specifications, as instruments of profession ervice, are and shall remain the property of the Enginee evices are and shall remain the property of the Enginee evices or purposes or by any other parties than tho uthorized by contract without the specific writte uthorization of the Engineer. The use of this document ontingent upon payment to the engineer for service, it is require obar document use by any and all parties. If own isputes any Engineer's statements for services, it is require that the owner advise the engineer in writing with the (1 ays. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Engineer e for on-payment. Contractors must check all dimension n site. Only figured dimensions are to be worked fror iscrepancies must be reported immediately to the Engineer e for on-payment. Contractors must check all dimension n site. Only figured dimensions are to be worked fror iscrepancies must be reported immediately to the Engineer e for on-payment. Contractors must check all dimension n site. Only figured dimensions are to be worked fror iscrepancies must be reported immediately to the Engineer e for on-payment. Contractors must check all dimension n site. Only figured dimensions are to be worked fror iscrepancies must be reported immediately to the Engineer e for on-payment. Contractors must check all dimension n site. Only figured dimensions are to be worked fror iscrepancies must be reported.	Prawings and Specifications, as instruments of profession ervice, are and shall remain the property of the Engineer locuments are not to be used, in whole or in part, for oth projects or purposes or by any other parties than those uthorized by contract without the specific writte uthorization of the Engineer. The use of this document use by any and all parties. If owner disputes any Engineer's statements for services, it is require that the owner advise the engineer in writing with the 1(1) lays. Remaining, undisputed portions are due and payable pon receipt. The owner shall indemnify the Engineer the Engineer the engineer in writing with the 1(1) lays. Remaining, undisputed portions are due and payable pon receipt. The owner shall indemnify the Engineer see for on-payment. Contractors must check all dimension on site. Only figured dimensions are to be worked from iscrepancies must be reported immediately to the Engineer effect on the produce of the sector of the engineer in the sector of the engineer is a surgery switch. \$\$ SINGLE POLE SWITCH \$\$ 3 WAY SWITCH \$\$ 3 WAY SWITCH \$\$ 3 WAY SWITCH \$\$ \$\$ SINGLE RECEPTACLE OUTLET \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$	Drawings and Specifications, as instruments of profession Drawings and Specifications, as instruments of profession Drawings and Specifications, as instruments of the Engineer Decuments are not to be used, in whole or in part, for oth Drawings and Specifications, as instruments of profession Data document use by any other parties than those Data document use by any and all parties. If owner Discompariment Sont meriting with the 1(1) Day Comment Contractors must check all dimension Discompariment Sont mactors Single Pole Switch \$3 3 wary Switch Discompariment Sont mactors \$\$ Single Receptacle Outlet \$\$ Single Receptacle \$\$ Juncti	info@marc		.com
ervice, are and shall remain the property of the Enginee couments are not to be used, in whole or in part, for oth rojects or purposes or by any other parties than thos uthorized by contract without the specific writte uthorized by contract without the specific writte isputes any Engineer's statements for services, it is require hat the owner advise the engineer in writing with ten (1) ass. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Enginee gainst any claims alleging damages or delays incurred he event the Engineer exercises the right to bar document se for non-payment. Contractors must check all dimension isite. Only figured dimensions are to be worked fron iscrepancies must be reported immediately to the Enginee se for non-payment. Contractors must check all dimension isite. Only figured dimensions are to be worked fron isite. Only figure	ervice, are and shall remain the property of the Enginee bocuments are not to be used, in whole or in part, for othe rojects or purposes or by any other parties than thos inuthorized by contract without the specific writte contingent upon payment to the engineer for service endered. Non-payment shall give the Engineer the authorit isourent use by any and all parties. If owne tisputes any Engineer's statements for services, it is require hat the owner advise the engineer in writing with ten (11 ays. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Enginee regainst any claims alleging damages or delays incurred he event the Engineer exercises the right to bar document see for non-payment. Contractors must check all dimension is fite. Only figured dimensions are to be worked from posterepancies must be reported immediately to the Enginee set for one-poyment. Contractors must check all dimension is site. Only figured dimensions are to be worked from posterepancies must be reported immediately to the Enginee set for one-poyment. Contractors must check all dimension posterepancies must be reported immediately to the Enginee set for one-poyment. Contractors must check all dimension posterepancies must be reported immediately to the Enginee set for one-poyment. Contractors must check all dimension posterepancies must be reported immediately to the Enginee set for one-poyment. Contractors must check all dimension posterepancies must be reported immediately to the Enginee set for one-poyment and all posteres in the engineer for set for one-poyment and all posteres in the engineer for set for one-poyment and all posteres in the engineer for set for one-poyment and all posteres in the engineer for set for one-poyment and all posteres in the engineer for set for one-poyment and all posteres in the engineer for set for the engineer for set for the engineer for set for the engineer f	ervice, are and shall remain the property of the Enginee bocuments are not to be used, in whole or in part, for othe rojects or purposes or by any other parties than thos inuthorized by contract without the specific writte contingent upon payment to the engineer for service endered. Non-payment shall give the Engineer the authorit isourent use by any and all parties. If owne tisputes any Engineer's statements for services, it is require hat the owner advise the engineer in writing with ten (11 ays. Remaining, undisputed portions are due and payab pon receipt. The owner shall indemnify the Enginee regainst any claims alleging damages or delays incurred he event the Engineer exercises the right to bar document see for non-payment. Contractors must check all dimension is fite. Only figured dimensions are to be worked from posterepancies must be reported immediately to the Enginee set for one-poyment. Contractors must check all dimension is site. Only figured dimensions are to be worked from posterepancies must be reported immediately to the Enginee set for one-poyment. Contractors must check all dimension posterepancies must be reported immediately to the Enginee set for one-poyment. Contractors must check all dimension posterepancies must be reported immediately to the Enginee set for one-poyment. Contractors must check all dimension posterepancies must be reported immediately to the Enginee set for one-poyment. Contractors must check all dimension posterepancies must be reported immediately to the Enginee set for one-poyment and all posteres in the engineer for set for one-poyment and all posteres in the engineer for set for one-poyment and all posteres in the engineer for set for one-poyment and all posteres in the engineer for set for one-poyment and all posteres in the engineer for set for one-poyment and all posteres in the engineer for set for the engineer for set for the engineer for set for the engineer f			
e f o r e d i ng ELECTRICAL LEGEND \$ 3 SINGLE POLE SWITCH \$ 3 3 WAY SWITCH JB JUNCTION BOX IB JUNCTION BOX IB JUNCTION BOX IB JUNCTION BOX IB BRANCH CIRCUIT IB EXIT LIGHT FIXTURE ID SINGLE RECEPTACLE OUTLET ID QUADRUPLEX RECEPTACLE OUTLET ID DUPLEX RECEPTACLE ID QUADRUPLEX RECEPTACLE ID GROUND FAULT INTERRUPT RECEPT ID DISCONNECT ID DISCONNECT ID MOTOR (FRACTIONAL HP) ID WP WEATHER PROOF DISCONNECT IMD MOTORIZED DAMPER IDP DISTRIBUTION PANEL IDP DISTRIBUTION PANEL IDP DISTRIBUTION PANEL IDP DISTRIBUTION 12-14-20 AL ALUMINUM AFF ABOVE FINISHED FLOOR ID ID <td< td=""><td>Proceeding Single Pole Switch \$3 3 WAY SWITCH JB JUNCTION BOX IB RANCH CIRCUIT IB EXIT LIGHT FIXTURE IS SINGLE RECEPTACLE OUTLET IC QUADRUPLEX RECEPTACLE OUTLET IC QUADRUPLEX RECEPTACLE IC MOTOR (FRACTIONAL HP) IC MOTORIZED DAMPER IC MOTORIZED DAMPER IC DP ID DISTRIBUTION PANEL IC CU COPPER AL AL ALUMINUM AFF ABOVE FINISHED FLOOR <</td><td>e f o r e p r o c e e d i n g ELECTRICAL LEGEND \$ SINGLE POLE SWITCH \$3 3 WAY SWITCH JB JUNCTION BOX #X PP.1 BRANCH CIRCUIT *** PP.1 BRANCH CIRCUIT *** EMERGENCY LIGHT *** EXIT LIGHT FIXTURE • SINGLE RECEPTACLE OUTLET • DUPLEX RECEPTACLE OUTLET • DUPLEX RECEPTACLE • DUSCONNECT • MOTOR (FRACTIONAL HP) • We WEATHER PROOF DISCONNECT • MOTORIZED DAMPER • ELECTRICAL METER • DP • DISTRIBUTION PANEL • ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED</td><td>Documents are not projects or purpo authorized by co authorization of t contingent upon endered. Non-pay to bar document disputes any Engin hat the owner ad days. Remaining, upon receipt. The gainst any claim he event the Enginese use for non-payme</td><td>to be used, in whole or in par- poses or by any other parties ontract without the specif he Engineer. The use of this of payment to the engineer for ment shall give the Engineer the t use by any and all parties eer's statements for services, in vise the engineer in writing we undisputed portions are due as he owner shall indemnify the s alleging damages or delays ineer exercises the right to ba out. Contractors must check all</td><td>t, for othe than those ic writte document or service ne authories. If owner t is require tith ten (10 and payab e Enginee incurred r documen dimension</td></td<>	Proceeding Single Pole Switch \$3 3 WAY SWITCH JB JUNCTION BOX IB RANCH CIRCUIT IB EXIT LIGHT FIXTURE IS SINGLE RECEPTACLE OUTLET IC QUADRUPLEX RECEPTACLE OUTLET IC QUADRUPLEX RECEPTACLE IC MOTOR (FRACTIONAL HP) IC MOTORIZED DAMPER IC MOTORIZED DAMPER IC DP ID DISTRIBUTION PANEL IC CU COPPER AL AL ALUMINUM AFF ABOVE FINISHED FLOOR <	e f o r e p r o c e e d i n g ELECTRICAL LEGEND \$ SINGLE POLE SWITCH \$3 3 WAY SWITCH JB JUNCTION BOX #X PP.1 BRANCH CIRCUIT *** PP.1 BRANCH CIRCUIT *** EMERGENCY LIGHT *** EXIT LIGHT FIXTURE • SINGLE RECEPTACLE OUTLET • DUPLEX RECEPTACLE OUTLET • DUPLEX RECEPTACLE • DUSCONNECT • MOTOR (FRACTIONAL HP) • We WEATHER PROOF DISCONNECT • MOTORIZED DAMPER • ELECTRICAL METER • DP • DISTRIBUTION PANEL • ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED	Documents are not projects or purpo authorized by co authorization of t contingent upon endered. Non-pay to bar document disputes any Engin hat the owner ad days. Remaining, upon receipt. The gainst any claim he event the Enginese use for non-payme	to be used, in whole or in par- poses or by any other parties ontract without the specif he Engineer. The use of this of payment to the engineer for ment shall give the Engineer the t use by any and all parties eer's statements for services, in vise the engineer in writing we undisputed portions are due as he owner shall indemnify the s alleging damages or delays ineer exercises the right to ba out. Contractors must check all	t, for othe than those ic writte document or service ne authories. If owner t is require tith ten (10 and payab e Enginee incurred r documen dimension
\$ SINGLE POLE SWITCH \$3 3 WAY SWITCH JUNCTION BOX #* BRANCH CIRCUIT #* DUPLEX RECEPTACLE OUTLET # QUADRUPLEX RECEPTACLE OUTLET # QUADRUPLEX RECEPTACLE OUTLET # QUADRUPLEX RECEPTACLE # GROUND FAULT INTERRUPT RECEPT # MOTOR (FRACTIONAL HP) # WP # WEATHER PROOF DISCONNECT # MOTORIZED DAMPER # ELECTRICAL METER # DP DISTRIBUTION PANEL CU COPP	\$ SINGLE POLE SWITCH \$3 3 WAY SWITCH JUNCTION BOX Image: Pole Structure Image: Pole Pole Structure Image: Pole Pole Structure Image: Pole Pole Pole Pole Pole Pole Pole Pole	\$ SINGLE POLE SWITCH \$3 3 WAY SWITCH JUNCTION BOX Image: Pole Structure Image: Pole Pole Structure Image: Pole Pole Structure Image: Pole Pole Pole Pole Pole Pole Pole Pole		t be reported immediately to t	
\$3 3 WAY SWITCH JB JUNCTION BOX	\$3 3 WAY SWITCH JB JUNCTION BOX Image: PP-1 BRANCH CIRCUIT Image: PP-1 DISCONNECT Image: PR-1 BROTOR (FRACTIONAL HP) Image: PR-1 MOTOR (FRACTIONAL HP) Image: PR-1 MOTORIZED DAMPER Image: PR-1 DP Image: PR-1 DISTRIBUTION PANEL Image: PR-1 ALUMINUM AFF ABOVE FINISHED FLOOR Image: PR-1 DESCRIPTION 12-14-20 Image: PR-1 Image: PR-1 Image: PR-1 Image: PR-1	\$3 3 WAY SWITCH JB JUNCTION BOX	ELF	ECTRICAL LEGEND)
JB JUNCTION BOX	JUNCTION BOX	JUNCTION BOX		SINGLE POLE SWITCH	
#x PP-1 BRANCH CIRCUIT Image: Second Structure EMERGENCY LIGHT Image: Single Receptable outlet Single Receptable outlet Image: Single Receptable outlet DUPLEX RECEPTABLE Image: Single Receptable outlet DEDICATED RECEPTABLE Image: Single Receptable outlet DEDICATED RECEPTABLE Image: Single Receptable outlet Image: Single Receptable outlet Image: Single Receptable outlet DEDICATED RECEPTABLE Image: Single Receptable outlet Image: Single Receptable outlet Image: Single	#x PP-1 BRANCH CIRCUIT Image: Second structure EMERGENCY LIGHT Image: Single Receptable outlet Single Receptable outlet Image: Single Receptable outlet DUPLEX RECEPTABLE Image: Single Receptable outlet OUADRUPLEX RECEPTABLE Image: Single Receptable outlet DUPLEX RECEPTABLE Image: Single Receptable outlet OUADRUPLEX RECEPTABLE Image: Single Receptable outlet DEDICATED RECEPTABLE Image: Single Receptable outlet OUDEX RECEPTABLE Image: Single Receptable outlet DEDICATED RECEPTABLE Image: Single Receptable outlet OUTLET Image: Single Receptable outlet DEDICATED RECEPTABLE Image: Single Receptable outlet OUTLET Image: Single Receptable outlet <t< td=""><td>#x PP-1 BRANCH CIRCUIT Image: Second structure EMERGENCY LIGHT Image: Single Receptable outlet Single Receptable outlet Image: Single Receptable outlet DUPLEX RECEPTABLE Image: Single Receptable outlet OUADRUPLEX RECEPTABLE Image: Single Receptable outlet DUPLEX RECEPTABLE Image: Single Receptable outlet OUADRUPLEX RECEPTABLE Image: Single Receptable outlet DEDICATED RECEPTABLE Image: Single Receptable outlet OUDEX RECEPTABLE Image: Single Receptable outlet DEDICATED RECEPTABLE Image: Single Receptable outlet OUTLET Image: Single Receptable outlet DEDICATED RECEPTABLE Image: Single Receptable outlet OUTLET Image: Single Receptable outlet <t< td=""><td></td><td></td><td></td></t<></td></t<>	#x PP-1 BRANCH CIRCUIT Image: Second structure EMERGENCY LIGHT Image: Single Receptable outlet Single Receptable outlet Image: Single Receptable outlet DUPLEX RECEPTABLE Image: Single Receptable outlet OUADRUPLEX RECEPTABLE Image: Single Receptable outlet DUPLEX RECEPTABLE Image: Single Receptable outlet OUADRUPLEX RECEPTABLE Image: Single Receptable outlet DEDICATED RECEPTABLE Image: Single Receptable outlet OUDEX RECEPTABLE Image: Single Receptable outlet DEDICATED RECEPTABLE Image: Single Receptable outlet OUTLET Image: Single Receptable outlet DEDICATED RECEPTABLE Image: Single Receptable outlet OUTLET Image: Single Receptable outlet <t< td=""><td></td><td></td><td></td></t<>			
PP-1 BRANCH CIRCUIT EMERGENCY LIGHT EXIT LIGHT FIXTURE SINGLE RECEPTACLE OUTLET DUPLEX RECEPTACLE OUTLET DUPLEX RECEPTACLE DUPLEX RECEPTACLE OUADRUPLEX RECEPTACLE DEDICATED RECEPTACLE GFI GROUND FAULT INTERRUPT RECEPT O DISCONNECT O/ MOTOR (FRACTIONAL HP) IVP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER O ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION 12-14-20 I FOR CONSTRUCTION 12-14-20 I FOR CONSTRUCTION 12-14-20 I FOR CONSTRUCTION 12-14-20 I FOR CONSTRUCTION 12-14-20 I I I I I I I I I I I I I I I I I I I I	PP-1 BRANCH CIRCUIT EMERGENCY LIGHT EXIT LIGHT FIXTURE SINGLE RECEPTACLE OUTLET DUPLEX RECEPTACLE OUTLET DUPLEX RECEPTACLE DUPLEX RECEPTACLE OUADRUPLEX RECEPTACLE DEDICATED RECEPTACLE GFI GROUND FAULT INTERRUPT RECEPT O DISCONNECT O/ MOTOR (FRACTIONAL HP) IVP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER IVP ELECTRICAL METER IVP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION 12-14-20 I FOR CONSTRUCTION 12-14-20 I FOR CONSTRUCTION 12-14-20 I FOR CONSTRUCTION 12-14-20 I ION ION I FOR CONSTRUCTION 12-14-20 I ION ION ION I ION ION ION I ION ION ION I ION ION ION	PP-1 BRANCH CIRCUIT EMERGENCY LIGHT EXIT LIGHT FIXTURE SINGLE RECEPTACLE OUTLET DUPLEX RECEPTACLE OUTLET DUPLEX RECEPTACLE DUPLEX RECEPTACLE OUADRUPLEX RECEPTACLE DEDICATED RECEPTACLE GFI GROUND FAULT INTERRUPT RECEPT O DISCONNECT O/ MOTOR (FRACTIONAL HP) IVP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER IVP ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION 12-14-20 I FOR CONSTRUCTION 12-14-20 I FOR CONSTRUCTION 12-14-20 I FOR CONSTRUCTION 12-14-20 I ION ION I FOR CONSTRUCTION 12-14-20 I ION ION			
Image: Single Receptable outlet Image: Single Receptable outlet <td>Image: Single Receptable outlet Image: Single Receptable outlet<td>Image: Single Receptable outlet Image: Single Receptable outlet<td>PP-1</td><td></td><td></td></td></td>	Image: Single Receptable outlet Image: Single Receptable outlet <td>Image: Single Receptable outlet Image: Single Receptable outlet<td>PP-1</td><td></td><td></td></td>	Image: Single Receptable outlet Image: Single Receptable outlet <td>PP-1</td> <td></td> <td></td>	PP-1		
→ SINGLE RECEPTACLE OUTLET → DUPLEX RECEPTACLE ↓ QUADRUPLEX RECEPTACLE OUTLET → DEDICATED RECEPTACLE ↓ DISCONNECT ↓ DISCONNECT ↓ MOTOR (FRACTIONAL HP) ↓ WP ₩P WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER ↓ DISTRIBUTION PANEL ↓ ELECTRICAL PANEL ↓ CU CU COPPER △L ALUMINUM △FF ABOVE FINISHED FLOOR ↓ O ↓ O ↓ O ↓ O ↓<	→ SINGLE RECEPTACLE OUTLET → DUPLEX RECEPTACLE ↓ QUADRUPLEX RECEPTACLE OUTLET ↓ DEDICATED RECEPTACLE ↓ DISCONNECT ↓ DISCONNECT ↓ MOTOR (FRACTIONAL HP) ↓ WP ₩ WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER ↓ DISTRIBUTION PANEL ↓ ELECTRICAL PANEL ↓ CU CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR № I ↓ I ↓ I ↓ I ↓ </td <td>→ SINGLE RECEPTACLE OUTLET → DUPLEX RECEPTACLE ↓ QUADRUPLEX RECEPTACLE OUTLET ↓ DEDICATED RECEPTACLE ↓ DISCONNECT ↓ DISCONNECT ↓ MOTOR (FRACTIONAL HP) ↓ WP ₩ WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER ↓ DISTRIBUTION PANEL ↓ ELECTRICAL PANEL ↓ CU CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR № I ↓ I ↓ I ↓ I ↓<!--</td--><td></td><td></td><td></td></td>	→ SINGLE RECEPTACLE OUTLET → DUPLEX RECEPTACLE ↓ QUADRUPLEX RECEPTACLE OUTLET ↓ DEDICATED RECEPTACLE ↓ DISCONNECT ↓ DISCONNECT ↓ MOTOR (FRACTIONAL HP) ↓ WP ₩ WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER ↓ DISTRIBUTION PANEL ↓ ELECTRICAL PANEL ↓ CU CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR № I ↓ I ↓ I ↓ I ↓ </td <td></td> <td></td> <td></td>			
					_ET
DEDICATED RECEPTACLE GFI GROUND FAULT INTERRUPT RECEPT DISCONNECT MOTOR (FRACTIONAL HP) WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR Motor Construction 12-14-20 I FOR CONSTRUCTION I FOR CONSTRUCTION I FOR CONSTRUCTION I I <t< td=""><td>DEDICATED RECEPTACLE GFI GROUND FAULT INTERRUPT RECEPT DISCONNECT MOTOR (FRACTIONAL HP) WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR 40. DESCRIPTION DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1 IOR CONSTRUCTION</td><td>DEDICATED RECEPTACLE GFI GROUND FAULT INTERRUPT RECEPT DISCONNECT MOTOR (FRACTIONAL HP) WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR 40. DESCRIPTION DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1 IOR CONSTRUCTION</td><td>-</td><td></td><td></td></t<>	DEDICATED RECEPTACLE GFI GROUND FAULT INTERRUPT RECEPT DISCONNECT MOTOR (FRACTIONAL HP) WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR 40. DESCRIPTION DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1 IOR CONSTRUCTION	DEDICATED RECEPTACLE GFI GROUND FAULT INTERRUPT RECEPT DISCONNECT MOTOR (FRACTIONAL HP) WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR 40. DESCRIPTION DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1 IOR CONSTRUCTION	-		
GFI GROUND FAULT INTERRUPT RECEPT □ DISCONNECT ○ MOTOR (FRACTIONAL HP) □ WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 12-14-20 AL ALUMINUM 11-10-200 AFF ABOVE FINISHED FLOOR 12-14-20 A OP Intervention I FOR CONSTRUCTION 12-14-20 I ION CONSTRUCTION 10-10-200 I ION CONSTRUCTION 10-10-200 I ION CONSTRUCTION ION CONSTRUCTION I ION CONSTRUCTION ION CONSTRUCTION </td <td>GFI GROUND FAULT INTERRUPT RECEPT □ DISCONNECT ○ MOTOR (FRACTIONAL HP) □ WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION 12-14-20 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-20 AL ALUMINUM 1-10-20 AFF ABOVE FINISHED FLOOR 12-14-20 A OP 12-14-20 1 FOR CONSTRUCTION 12-14-20 1 FOR CONSTRUCTION 1-10-20 1 I I I I I I I I I I I I I I I I I I I I I I I I<td>GFI GROUND FAULT INTERRUPT RECEPT □ DISCONNECT ○ MOTOR (FRACTIONAL HP) □ WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 12-14-20 AL ALUMINUM 1-10-202 AFF ABOVE FINISHED FLOOR 12-14-20 A Image: Image:</td><td>\</td><td>QUADRUPLEX RECEPTACLE</td><td>OUTLET</td></td>	GFI GROUND FAULT INTERRUPT RECEPT □ DISCONNECT ○ MOTOR (FRACTIONAL HP) □ WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION 12-14-20 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-20 AL ALUMINUM 1-10-20 AFF ABOVE FINISHED FLOOR 12-14-20 A OP 12-14-20 1 FOR CONSTRUCTION 12-14-20 1 FOR CONSTRUCTION 1-10-20 1 I I I I I I I I I I I I I I I I I I I I I I I I <td>GFI GROUND FAULT INTERRUPT RECEPT □ DISCONNECT ○ MOTOR (FRACTIONAL HP) □ WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 12-14-20 AL ALUMINUM 1-10-202 AFF ABOVE FINISHED FLOOR 12-14-20 A Image: Image:</td> <td>\</td> <td>QUADRUPLEX RECEPTACLE</td> <td>OUTLET</td>	GFI GROUND FAULT INTERRUPT RECEPT □ DISCONNECT ○ MOTOR (FRACTIONAL HP) □ WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 12-14-20 AL ALUMINUM 1-10-202 AFF ABOVE FINISHED FLOOR 12-14-20 A Image:	\	QUADRUPLEX RECEPTACLE	OUTLET
Image: Bround FAULT INTERROPT RECEPT Image: Brown Br	Image: Bround FAULT INTERRUPT RECEPT Image: Brown Brown Brown Bround FAULT INTERRUPT RECEPT Image: Brown Bro	Image: Bround FAULT INTERRUPT RECEPT Image: Brown Brown Brown Bround FAULT INTERRUPT RECEPT Image: Brown Bro	-	DEDICATED RECEPTACLE	
Image: Construction of the second of the	Image: Construction of the second of the	Image: Construction of the second of the		GROUND FAULT INTERRUP	T RECEPT
WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR NOT CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 12-14-20 A ADDITION 12-14-20 A AL ALUMINUM AFF ABOVE FINISHED FLOOR 1-10-200 A FOR CONSTRUCTION 12-14-20 A ADDITE ADDITE A ADDITE ADDITE A ADOVE FINISHED FLOOR ADDITE A ADDITE ADDITE A ADDITE ADDITE A ADOVE FINISHED FLOOR ADDITE A ADDITE	WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-200 1 Image: Complement of the second secon	WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-200 1 Image: Complement of the second secon		DISCONNECT	
WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR NOT CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 12-14-20 A ADDITION 12-14-20 A AL ALUMINUM AFF ABOVE FINISHED FLOOR 1-10-200 A FOR CONSTRUCTION 12-14-20 A ADDITE ADDITE A ADDITE ADDITE A ADOVE FINISHED FLOOR ADDITE A ADDITE ADDITE A ADDITE ADDITE A ADOVE FINISHED FLOOR ADDITE A ADDITE	WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-200 1 Image: Complement of the second secon	WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-200 1 Image: Complement of the second secon		MOTOR (FRACTIONAL HP)	
Image: Second Description Image: Second Description	Image: Second Description Image: Second Description	Image: Second Description Image: Second Description			ECT
DP DISTRIBUTION PANEL ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-200 1 Image: Complex state	DP DISTRIBUTION PANEL ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-200 1 Image: Complex state	DP DISTRIBUTION PANEL ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-200 1 Image: Complex state	 MD	MOTORIZED DAMPER	
DP DISTRIBUTION PANEL ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-200 1 FOR CONSTRUCTION 1-10-200 1 Image: Compton in the second in t	DP DISTRIBUTION PANEL ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-202 A A A A A A A A A AFF ABOVE FINISHED FLOOR DATE No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-202 A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A	DP DISTRIBUTION PANEL ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-202 A A A A A A A A A AFF ABOVE FINISHED FLOOR DATE No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-202 A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A			
ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-200 1 Image: Comparison of the state of the sta	ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-202 - - - - - <	ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-202 - - - - - <			
CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-20 1 Image: Additional and the second and	CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-202 3	CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-202 3			
AFF ABOVE FINISHED FLOOR AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-200 2 FOR CONSTRUCTION 1-10-200 3 3 3 4 3 3 5 3 3 6 3 3 7 3 3 6 3 3 7 3 3 8 3 3 9 3 3 9 3 3 9 3 3 10 3 3 11 3 3 12 3 3 13 3 3 14 3 3 15 3 3 16 3 3 17 3 3 18 3 3 19 3 3 10 3 3 10 </td <td>AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-202 2 FOR CONSTRUCTION 1-10-202 2 Image: Construction image: Const</td> <td>AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-202 2 FOR CONSTRUCTION 1-10-202 2 Image: Construction image: Const</td> <td></td> <td></td> <td></td>	AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-202 2 FOR CONSTRUCTION 1-10-202 2 Image: Construction image: Const	AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-202 2 FOR CONSTRUCTION 1-10-202 2 Image: Construction image: Const			
No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-20 2 Image: Construction 1-10-20 3 Image: Construction 1-10-20 4 Image: Const	No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-20 2 Image: Construction 1-10-20 3 Image: Construction 1-10-20 4 Image: Const	No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-20 2 Image: Construction 1-10-20 3 Image: Construction 1-10-20 4 Image: Const	CU		
1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-20 2 Image: Construction 1-10-20 2 Image: Construction 1-10-20 2 Image: Construction 1-10-20 2 Image: Construction 1-10-20 3 Image: Construction 1-10-20 4 Image: Construction 1-10-20 4 Image: Construction 1-10-20 4 Image: Construction 1-10-20 4 Image: Construction 1-10-20 5 Image: Construction 1-10-20 6 Image: Construction 1-10-20 7 Image: Co	1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-20 2 Image: Construction 1-10-20 2 Image: Construction 1-10-20 2 Image: Construction 1-10-20 2 Image: Construction 1-10-20 3 Image: Construction 1-10-20 4 Image: Construction 1-10-20 5 Image: Construction 1-10-20 6 Image: Construction 1-10-20 7 Image: Co	1 FOR CONSTRUCTION 12-14-20 2 FOR CONSTRUCTION 1-10-20 2 Image: Construction 1-10-20 2 Image: Construction 1-10-20 2 Image: Construction 1-10-20 2 Image: Construction 1-10-20 3 Image: Construction 1-10-20 4 Image: Construction 1-10-20 5 Image: Construction 1-10-20 6 Image: Construction 1-10-20 7 Image: Co		ALUMINUM	
2 FOR CONSTRUCTION 1-10-200	2 FOR CONSTRUCTION 1-10-202 2	2 FOR CONSTRUCTION 1-10-202 2	AL		
AMP & SIGN:	AMP & SIGN:	AMP & SIGN:	AL AFF	ABOVE FINISHED FLOOR DESCRIPTION	
AMP & SIGN:	TAMP & SIGN:	AMP & SIGN:	AL AFF No. 1 FOR CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
	TAMP & SIGN:	TAMP & SIGN:	AL AFF No. 1 FOR CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
	AMP & SIGN:	AMP & SIGN:	AL AFF No. 1 FOR CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
	AMP & SIGN:	AMP & SIGN:	AL AFF No. 1 FOR CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
	AMP & SIGN:	AMP & SIGN:	AL AFF No. 1 FOR CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
AMP & SIGN	TAMP & SIGN:	AMP & SIGN:	AL AFF No. 1 FOR CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
			AL AFF No. 1 FOR CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
			AL AFF No. 1 FOR CONST 2 FOR CONST 2 OF CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
			AL AFF No. 1 FOR CONST 2 FOR CONST 2 OF CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
			AL AFF No. 1 FOR CONST 2 FOR CONST 2 OF CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
			AL AFF No. 1 FOR CONST 2 FOR CONST 2 OF CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
			AL AFF No. 1 FOR CONST 2 FOR CONST 2 OF CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
			AL AFF No. 1 FOR CONST 2 FOR CONST 2 OF CONST	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
			AL AFF No. 1 FOR CONST 2 FOR CONST 4 4 4 4 4 5 7 4 5 7 4 5 7 4 5 5 7 4 5 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	12-14-20
23, MAIN STREET	, , , , , , , , , , , , , , , , , , ,	·	AL AFF No. 1 FOR CONST 2 FOR CONST 4 4 4 4 4 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	
23, MAIN STREET NEWTOWN, CT, 06470	, ,	, ,	AL AFF No. 1 FOR CONST 2 FOR CONST 4 4 4 4 4 4 4 4 4 4 4 4 4	ABOVE FINISHED FLOOR DESCRIPTION RUCTION	
NEWTOWN, CT, 06470	NEWTOWN, CT, 06470	NEWTOWN, CT, 06470	AL AFF 1 FOR CONST 2 FOR CONST 2 FOR CONST 4 J 4 J 4 J 4 J 4 J 4 J 4 J 4 J	ABOVE FINISHED FLOOR DESCRIPTION RUCTION RUCTION	
NEWTOWN, CT, 06470	NEWTOWN, CT, 06470	NEWTOWN, CT, 06470	AL AFF No. 1 FOR CONST 2 FOR CONST 2 FOR CONST 4 4 4 4 4 4 4 4 4 4 4 4 4	ABOVE FINISHED FLOOR DESCRIPTION RUCTION RUCTION ABOVE FINISHED FLOOR	12-14-20 12-14-20 1-10-20 1
NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN	AL AFF No. 1 FOR CONST 2 FOR CONST 2 FOR CONST 4 4 4 4 4 4 4 4 4 4 4 4 4	ABOVE FINISHED FLOOR DESCRIPTION RUCT	12-14-20 1-10-20 1-
NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202	AL AFF 1 FOR CONST 2 FOR CONST 2 FOR CONST 4	ABOVE FINISHED FLOOR DESCRIPTION RUCT	12-14-20 1-10-20 1-10-20 70 70 #34-20
NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DAT	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DAT	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DAT	AL AFF No. 1 FOR CONST 2 FOR CONST 2 FOR CONST 4 4 4 4 4 4 4 4 4 4 4 4 4	ABOVE FINISHED FLOOR DESCRIPTION RUCT	12-14-20 1-10-20 1-10-20 70 70 4N #34-20 DAT
NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DAT RAWN BY: E	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DAT RAWN BY: E	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DAT RAWN BY: E	AL AFF NO. 1 FOR CONST 2 FOR CONST 2 FOR CONST 4 J 4 J 4 J 4 J 4 J 4 J 4 J 4 J	ABOVE FINISHED FLOOR DESCRIPTION RUCT	12-14-20 1-10-20 1-10-20 70 70 70 70 70 70 70 70 70 7
NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DAT RAWN BY: E HECKED BY: PG	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DAT RAWN BY: E HECKED BY: PG	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DAT RAWN BY: E HECKED BY: PG	AL AFF No. 1 FOR CONST 2 FOR CONST 2 FOR CONST 4 4 4 4 4 5 7 4 4 5 7 4 7 4 7 4 7 7 7 7 7 7 7 7 7 7 7 7 7	ABOVE FINISHED FLOOR DESCRIPTION RUCT	12-14-20 1-10-20 1-10-20 70 70 70 70 70 70 70 70 70 7
NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DAT RAWN BY: E	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DAT RAWN BY: E HECKED BY: PG	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DAT RAWN BY: E HECKED BY: PG	AL AFF NO. 1 FOR CONST 2 FOR CONST 2 FOR CONST 4 4 4 4 4 4 4 4 4 4 4 4 4	ABOVE FINISHED FLOOR DESCRIPTION RUCT	12-14-20 1-10-20 1-10-20 70 70 70 70 70 70 70 70 70 7
NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DATE:	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DATE:	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-202 ATE: DATE:	AL AFF AFF AFF AFF AFF AFF AFF A	ABOVE FINISHED FLOOR DESCRIPTION RUCT	12-14-20 1-10-20 1-10-20 70 70 70 70 70 70 70 70 70 7
NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-20 ATE: DA RAWN BY: HECKED BY: PC E-002.00	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-20 ATE: DA RAWN BY: HECKED BY: PC E-002.00	NEWTOWN, CT, 06470 MAIN LEVEL ELECTRICAL PLAN ROJECT NUMBER: #34-20 ATE: DA RAWN BY: HECKED BY: PC E-002.00	AL AFF AG. 1 FOR CONST 2 FOR CONST 2 FOR CONST 4 J 4 J 4 J 4 J 4 J 4 J 4 J 4 J	ABOVE FINISHED FLOOR DESCRIPTION RUCT	12-14-20 12-14-20 1-10-20 1



]
	MARCI		
	CONSU ENGIN		
		25 High Ridge F	
		Pound Ridge, N P (914) 764-90	Y 10576
		F (914) 764-90	12
		chetticonsultingenginee	
	service, are and s	cifications, as instruments o hall remain the property of	the Engineer.
	projects or purpo	t to be used, in whole or in p oses or by any other partie ontract without the spee	es than those
	authorization of t contingent upon	he Engineer. The use of this payment to the engineer	s document is for services
	to bar document	ment shall give the Engineer t use by any and all parti eer's statements for services	es. If owner
	that the owner ad	lvise the engineer in writing undisputed portions are due	with ten (10)
	upon receipt. Th against any claim	ne owner shall indemnify is alleging damages or delay	the Engineer ys incurred in
	use for non-payme	ineer exercises the right to ent. Contractors must check ured dimensions are to be	all dimensions
		t be reported immediately to	the Engineer
		ECTRICAL LEGEN	D
	\$	SINGLE POLE SWITCH	
	\$3 JB	3 WAY SWITCH JUNCTION BOX	
	#x PP-1	BRANCH CIRCUIT	
		EMERGENCY LIGHT	
		EXIT LIGHT FIXTURE	
		SINGLE RECEPTACLE OU DUPLEX RECEPTACLE	
	+	QUADRUPLEX RECEPTAC	LE OUTLET
	GFI		
			IPI RECEPT
		DISCONNECT	
		MOTOR (FRACTIONAL HE	
		WEATHER PROOF DISCOM	
		ELECTRICAL METER	
		ELECTRICAL PANEL	
	CU	COPPER	
	AL AFF	ALUMINUM ABOVE FINISHED FLOOR	
IVER & MOTORIZED I SERVICEABLE CONDITION.	No.	DESCRIPTION	DATE
	1 FOR CONST 2 FOR CONST	RUCTION	12-14-2023 1-10-2024
	STAMP & SIGN:		
		, MAIN STREET	
	NEW	TOWN, CT, 064	70
	UPPER	& ATTIC L	EVEL
		CTRICAL PL	-
			-\ \ #34-2023
10	DATE:		DATE
	DRAWN BY: CHECKED BY:		EF PGM
		000 00	
	E	-003.00	
	SCALE:		AS NOTED



1 I '		TAGE 120/208V 25 225A		MLO 🗌 MCB 🔀			BR Per	P BUSS			FACE A STING)	AOUNTED)	KW PHASE 3 WIRE 4		
CKT #	POLES	DESIGNATION	WIRE	LOAD	BREAKER SIZE		Â		BREAKER		AD	WIRE	DESIGNATION	POLES	CKT #
1						[]		+	<u>۲</u>	0 83	2	#12 AWG	AH-1, 2, 3, 8 & CONSOLE A	2	2
3								+	<u>-</u> ا	. 83	32	#12 AWG		-	4
5						[]		$+ + \frown$	۲						6
7	3	PRE HEATER AHU-2	#8 AWG	3333	40	[]	-+	$+ \uparrow \uparrow$	<u>۲</u>	0 30	0	#12 AWG	CONSOLE UNITS A	2	8
9	-		#8 AWG	3333	-	[]		+	۱ -	· 30	0	#12 AWG		-	10
11	-		#8 AWG	3333	-		\square	+	<u>2</u>	0 80	0	#12 AWG	AHU-2	2	12
13	2	AHU-2	#12 AWG	800	20	$\left \mathbf{n} \right $	+	+	۰ I	· 80	0	#12 AWG		-	14
15	-		#12 AWG	800	-		++	\square	۲						16
17	1	EWH-2 AT RM 110	#12 AWG	1500	20	$[\frown]$	\square	+	۲				SPLIT SYSTEM AND CU-1	2	18
19	1	MOTORIZED DAMPERS	#12 AWG	1200	20	$[\frown]$		\square	۲					-	20
21	2	EWH-3 AT VESTIBULE	#12 AWG	863.2	20			\square	<u>۲</u>	0 30	0	#12 AWG	CONSOLE UNIT B	2	22
23	-		#12 AWG	863.2	20			+	<u>۱</u>	- 30	0	#12 AWG		-	24
25	2	EWH-3 AT VESTIBULE	#12 AWG	863.2	20			+	<u>2</u>	0 150	00	#12 AWG	EWH-2 AT RM 204	1	26
27	-		#12 AWG	863.2	20	$[\frown]$		+	<u> </u>	0 30	0	#12 AWG	CONSOLE UNITS A	2	28
29	1	EWH-2 AT RM 137	#12 AWG	1500	20	$[\frown]$	\square	+ -	۰ -	- 30	0	#12 AWG		-	30
31							-	$+ \uparrow \uparrow$	<u> </u>	0 70	0	#12 AWG	CONSOLE UNITS A & D	2	32
33	1							+ -	<u>ا</u>	· 70	0	#12 AWG		-	34
35							++	\mp	<u>۱</u>						36
37					l		+	+ -	<u>۲</u>						38
39							-++	\mp	<u> </u>						40
41	1								<u> </u>						42

NOTE:

ALL HEATING / COOLING ELEMENTS IN THE HVAC SYSTEM TO BE REMOVED AND/OR REPLACED FOR NEW HEAT PUMP SYSTEM.
 REMOVE BREAKERS SERVING HYDRONIC HEATING/COOLING SYSTEM & PROVIDE NEW BREAKERS FOR HEAT PUMP COMPONENTS.

		LTAGE 120/208V PS 225A		MLO 🗌 MCB 🔀		Р					SURFACI (EXISTIN	E MOUNTED IG)	KW PHASE 3 WIRE 4		
CKT #	POLES	DESIGNATION	WIRE	LOAD	BREAKER SIZE	N	Â	з с][]	G	BREAKER SIZE	LOAD	WIRE	DESIGNATION	POLES	CKT #
1	3	HEAT PUMP # 3	#4 AWG	6000	70		+		\sim	70	6000	#4 AWG	HEAT PUMP # 3	3	2
3	-		#4 AWG	6000	-		—	—	\sim	-	6000	#4 AWG		-	4
5	-		#4 AWG	6000	-	\sim		+	\sim	-	6000	#4 AWG		-	6
7	2	AH-13	#12 AWG	400	20	\sim	+	_		20	400	#12 AWG	AH-14	2	8
9	-		#12 AWG	400	-	$\overline{}$	+	+		1	400	#12 AWG		-	10
1	2	AH-15	#12 AWG	400	20	$\overline{}$		+	\sim	20	1200	#12 AWG	MOTORIZED DAMPERS	1	12
3	-		#12 AWG	400	-	\sim	╉	_		40	3312	#8 AWG	UNIT HEATER AHT-1	3	14
15	2	AH-7	#12 AWG	600	20	$\overline{}$		+	\sim	1	3312	#8 AWG		-	16
7	-		#12 AWG	600	-	$\overline{\mathbf{A}}$		+	\sim	-	3312	#8 AWG		-	18
9						$\overline{\mathbf{A}}$	┥								20
1						\sim	+	-	\uparrow						22
23						\sim		+	\sim						24
23 25 27 29						\sim	+		$\uparrow \uparrow$						26
27						\sim	+	+	\uparrow						28
29						\sim			\sim						30
1							+								32
3							\square	+	\sim						34
5															36
7									\sim						38
9							\square	\pm							40
1									$\overline{\mathbf{h}}$						42

NOTE: ALL HEATING / COOLING ELEMENTS IN THE HVAC SYSTEM TO BE REMOVED AND/OR REPLACED FOR NEW HEAT PUMP SYSTEM.

																						K/W			_
		DLTAGE)8V				MLO [P)/	۸		EXISTING	3					E 3		
	A٨	NPS	••••	. 225	A					мсв [≤ L	COI											4		
									-				PEI		022									_	
CKT #	POLES			DES	IGN	ΙΑΤΙΟ	Л		WIRE	LOAD	BREAKER SIZE		Â	вс ПГ	G []	BREAKER SIZE	LOAD	WIRE		DE	SIGNA	ΓΙΟΝ		POLES	CKT #
1			ΕX	ISTIN	۱G .	TO R	REMAII	N					H	+	$\uparrow \uparrow$				E	EXIST	ING TO	REMAIN	1		2
3				"		"	"	п						+	$\uparrow \uparrow$				п	"					4
5			1	"		"	"							╈	$+ \sim$					"			"		6
7				"		"	"						$\left \right $		$\uparrow \uparrow$					"					8
9			1	"		"	"					[]		+	$+ \sim$					"					10
11				"		"	"	п						┼┼	$+ \sim$					"					12
13				"		"	"						$\left \right $		\uparrow					"					14
15				"		"	"	п						$\mathbf{+}$	\uparrow					"					16
17		1		"		"	"	п				\sim		┼┼	$\uparrow \uparrow$					"					18
19				"		"	"	п					┢		\uparrow					"					20
21				"		"	"	п				\neg	\square	\mathbf{H}	$\neg \uparrow$				"	"		"	"		22
23			1	"		"	п	п					++	┼┼	$\uparrow \uparrow$				"	"	"	"	"		24
25				"		"	"	п					$\left \right $	+	$\uparrow \uparrow$					"			"		26
27	'		1	"		"	п	п				$[\frown$	\square	+	$\uparrow \uparrow$				"	"	"	"	"		28
29			1	"		"	п	п					++	┼┼	\uparrow				"	"	"	"	"		30
31		1		"		"	п	п				[]			+				п	"	"	п	п		32
33				"		"	п						H	+	$\uparrow \uparrow$	20	800	#12 AWG		CON	SOLE L	JNITS A		2	34
35				"		"	п	п					\square	┼┼	$+ \uparrow$	-	800	#12 AWG	п	"	"	"	"	-	36
37		1		"		"	п	п				[]			+										38
39				"		"	п						H	+	$\uparrow \uparrow$										40
41				"		"	"	п					H	┼┼	$\uparrow \land$										42

NOTE: ALL HEATING / COOLING ELEMENTS IN THE HVAC SYSTEM TO BE REMOVED AND/OR REPLACED FOR NEW HEAT PUMP SYSTEM.

		LTAGE 120/208V PS 225A		MLO 🗌 MCB 🔀		PF cop						E MOUNTED POLES	Р	W HASE 3 /IRE 4		
CKT #	POLES	DESIGNATION	WIRE	LOAD	BREAKER SIZE	Ň	Â		G	BREAKER SIZE	LOAD	WIRE	DESIGNATION		POLES	CKT #
1		EXISTING TO REMAIN						+	$ \frown $				EXISTING TO REA	AAIN	\top	2
3							\rightarrow	┯							Τ	4
5							+	╈							Τ	6
7								—	$ \frown $							8
9	3	AHU-1 (REUSE EXISTING)		2400	30		+	+	$ \frown $							10
11	-			2400	-	$\overline{\gamma}$		+		60	5640	#4 AWG	DELETE EXISTING REPLA	ACE W/HP-1	3	12
13	-			2400	-		+	—	$ \frown $	-	5640	#4 AWG			-	14
15	2	EXISTING HWH TO REMAIN				$\overline{\gamma}$	\rightarrow	_	Ч	-	5640	#4 AWG			-	16
17	-							+	\sim	20	188	#12 AWG	A UNITS IN RM 10	94 (3)	2	18
19	2	UNIT E	#12 AWG	65	20			_		-	188	#12 AWG			-	20
21	-		#12 AWG	65	-				\sim	20	1600	#12 AWG	ALL MOTORIZED DAMPER	RS IN RM 104	1	22
23		EXISTING							\sim	20	1500	#12 AWG	KICK SPACE HEA	TER	1	24
25						$\overline{\gamma}$	+			20	104	#12 AWG	3 CONSOLE A	1	2	
27							+		$\overline{\mathbf{h}}$	-	104	#12 AWG			-	
29								+	$\overline{\mathbf{h}}$							30

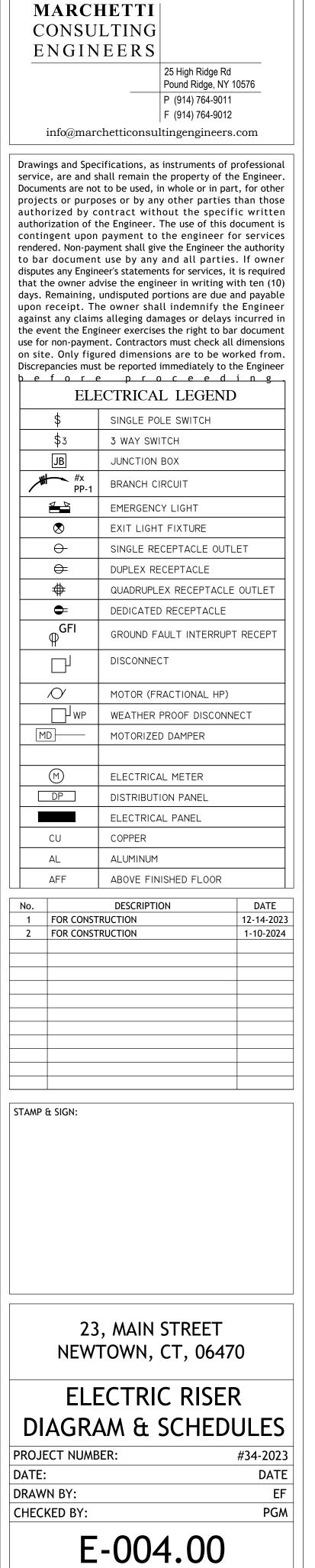
NOTE: ALL HEATING / COOLING ELEMENTS IN THE HVAC SYSTEM TO BE REMOVED AND/OR REPLACED FOR NEW HEAT PUMP SYSTEM.

	GGE 120/208V				MLO 🗌 MCB 🔀			_ P /	-		EXISTING	3				PHAS	3 4		
POLES	DESIGNATIO	N		WIRE	LOAD	BREAKER SIZE		A B C	G]	BREAKER SIZE	LOAD	WIRE		DESI	GNATI	ON		POLES	
	EXISTING						$\overline{\gamma}$	+	$\neg \uparrow$					E	XISTIN	G			
		"					거	┽╋┤	$\uparrow \frown$				"			"			T
;		п							$\neg \uparrow$				"	"		"	п		
7		н						+					"	"		"	п		T
		"	н				거		$\neg \uparrow$				"			"	п		Τ
		"	п						$\neg \uparrow$				"	"	"	"	п		T
3			н						$\uparrow \uparrow$				"			"	н		T
5		"	н						$\neg \uparrow$				"	"		"	п		T
7 2	AH-1, AH-	2		#12 AWG	930	20			\uparrow				п			"	п		
9 -				#12 AWG	930	-	\sim	+ + +	\uparrow				"						T
1							\sim	╶┼╺╋╶┤	$\uparrow \uparrow$										
3							\sim		$+ \uparrow$	20	1560	#12 AWG			I-4, A⊦			2	
5							\sim		$+ \uparrow$	-	1560	#12 AWG	"			"	"	-	
7							\sim		$+ \uparrow$	25	2000	#10 AWG			I-1 RM	109		2	
)									\pm	-	2000	#10 AWG	"		"	"	"	-	I
									\pm	25	2000	#10 AWG			I-1 RM			2	
3							$ \rightarrow $	╧╋╡	\pm	-	2000	#10 AWG	"	"	"		"	-	
5							<u></u>	╧┼┼┥	\pm										
'							<u></u>		\pm										I
									\pm										
							$^+$	┥┤┥	$\pm \uparrow$										

NOTE: ALL HEATING / COOLING ELEMENTS IN THE HVAC SYSTEM TO BE REMOVED AND/OR REPLACED FOR NEW HEAT PUMP SYSTEM.

		LTAGE. PS							MLO 🗌 MCB 🔁		-		D_1 BUSS			URFACE EW	E MOUNTED				PHAS	17 E 3 4	7.2	
CKT #	POLES			DES	SIGNATIO	Л		WIRE	LOAD	BREAKER SIZE	n 	Âβ	β	RFAKFR	SIZE	LOAD	WIRE		DES	SIGNATI	ЛС		POLES	CKT #
1	3				HP-4			#4 AWG	5200	70			+	7	70	7200	#4 AWG			HP-5			3	2
3	-		"	"	"	п	"	#4 AWG	5200	-		\rightarrow	++	7	-	7200	#4 AWG	"	"	"	"	"	-	4
5	-		"	"	"		"	#4 AWG	5200	-			+		-	7200	#4 AWG		"	"		"	-	6
7	3				HP-9			#4 AWG	6000	70			\square	7	70	6000	#4 AWG			HP-7			3	8
9	-			"	"	п	"	#4 AWG	6000	-			$+ \mathbf{P}$	7	-	6000	#4 AWG	"	"	"	"	"	-	10
11	-			"	"		"	#4 AWG	6000	-			+		-	6000	#4 AWG		"	"		"	-	12
13	3				HP-9			#4 AWG	6000	70			\square	<u> </u>	60	5000	#4 AWG			HP-6			3	14
15	-		"	"	"	"	"	#4 AWG	6000	-		++	++		-	5000	#4 AWG	"	"	"	"	"	1-	16
17	-			"	"		"	#4 AWG	6000	-			$+ + \cdot$		-	5000	#4 AWG		"	"		"	-	18
19	3				HP-11			#4 AWG	6480	70			\square	7	70	6000	#4 AWG			HP-2			3	20
21	-		"	"	"	"	"	#4 AWG	6480	-			++		-	6000	#4 AWG	"	"	"	"	"	-	22
23	-		"	"	"		"	#4 AWG	6480	-		\square	$+ + \cdot$	7	-	6000	#4 AWG	"	"	"		"	1-	24
25	3				HP-10			#4 AWG	5200	70		+	++	7	70	6000	#4 AWG			HP-8			3	26
27	-		"	"	"	"	"	#4 AWG	5200	-			++	7	-	6000	#4 AWG	"	"	"	"	"	-	28
29	-		"	"	"	"	"	#4 AWG	5200	-		\square	+	2	-	6000	#4 AWG	"	"	"	"	"	1-	30
31													+	7										32
33													+ + -	7										34
35													+	7										36
37													+	2										38
39													++	7										40
41													+ + -	2									\top	42

NOTE: ALL HEATING / COOLING ELEMENTS IN THE HVAC SYSTEM TO BE REMOVED AND/OR REPLACED FOR NEW HEAT PUMP SYSTEM.



SCALE:

		LTAGE 120/208V PS 100A		MLO 🗌 MCB ⊵		COP)_ R BU	-			e mounted Poles	KW PHASE 3 WIRE 4		
CKT #	POLES	DESIGNATION	WIRE	LOAD	BREAKER SIZE	N	Â[вс	G	BREAKER SIZE	LOAD	WIRE	DESIGNATION	POLES	CKT #
1	2	CONSOLE UNITS	#12 AWG	500	20		╈		$\uparrow \uparrow$					\square	2
3	-		#12 AWG	500	-		—	+	$\uparrow \frown$					\square	4
5						Ч		$\left \right $	\uparrow						6
7						\sim	-		$\uparrow \uparrow$						8
9						\sim			$\uparrow \uparrow$						10
11						\sim			$+ \uparrow$						12
13							+		$+ \uparrow$						14
15									$+ \sim$						16
17	_								┢╯						18
19									+						20
21									┢╌						22
23							\pm		$+ \uparrow$						24
25							+		$\uparrow \uparrow$						26 28
27							-		$\uparrow \uparrow$						28
29									$\uparrow \uparrow$						30

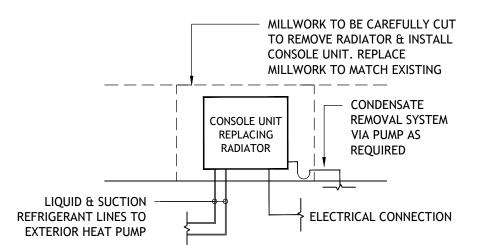
NOTE: ALL HEATING / COOLING ELEMENTS IN THE HVAC SYSTEM TO BE REMOVED AND/OR REPLACED FOR NEW HEAT PUMP SYSTEM.

		DLTAGE 120/208V NPS 225A		MLO 🗌 MCB 🔀	_	F COPI		-	5		EXISTINC (AT UPP)	G ER FLOOR CLO	KW PHASE 3 ISET) WIRE 4
CKT #	POLES	DESIGNATION	WIRE	LOAD	BREAKER SIZE	Ň	Â₿	Ċ	G	BREAKER SIZE	LOAD	WIRE	DESIGNATION SI TO
1	2	B UNITS	#12 AWG	400	20	$\overline{\gamma}$	++		\sim	20	200	#12 AWG	UNIT SERVICING RM 320 2 2
3	-		#12 AWG	400	-		++			-	200	#12 AWG	······································
5	2	B UNITS	#12 AWG	500	20	$\overline{\gamma}$		++		20	400	#12 AWG	CONSOLE UNIT 2 6
7	-		#12 AWG	500	-		+			-	400	#12 AWG	
9	2	H-10, H-11, H-12	#12 AWG	967	20			++		20	725	#12 AWG	AHU-3 2 1
11	-		#12 AWG	967	-	$\overline{\gamma}$		+		-	725	#12 AWG	- 1
13	2	AHU-3A	#12 AWG	725	20		+			40	3333	#8 AWG	10KW PRE HEATER 3 1
15	-		#12 AWG	725	-		++			-	3333	#8 AWG	······································
17	3	10KW PRE HEATER	#8 AWG	3333	40			++		-	3333	#8 AWG	
19	-		#8 AWG	3333	-		+						2
21	-		#8 AWG	3333	-			++					2
23								+					2 2 2 2
25							+	++					2 2 3
27								++					2
29								+					
31							╉┼	++	\neg				3
33						-		++					3
35							++	++	\neg				3
37									\neg				3
39							++						4
41						-7	++	++	$\overline{}$				4

NOTE: ALL HEATING / COOLING ELEMENTS IN THE HVAC SYSTEM TO BE REMOVED AND/OR REPLACED FOR NEW HEAT PUMP SYSTEM.

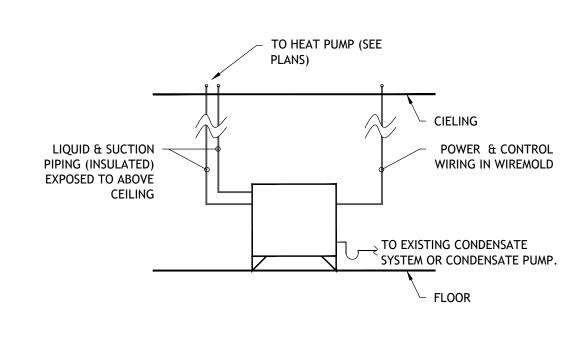
		TAGE 120/208V 25 150A		MLO 🗌 MCB 🔀		F COPI		Р В вus			URFACE	E MOUNTED G)	KW PHASE 3 WIRE 4		
CKT #	POLES	DESIGNATION	WIRE	LOAD	BREAKER SIZE	N 	ÂĔ	зс][]	G D	BKEAKEK SIZE	LOAD	WIRE	DESIGNATION	POLES	CKT #
1						\sim									2
3						\sim			-^-						4
5						\sim									6
7						\sim									8
9						\sim									10
11	2	CONSOLE UNITS A	#12 AWG	470	20	\sim			~						12
13	-		#12 AWG	470	-										14
15															16 18
17						\sim			\sim						18
19						\sim									20
21									-						22
23						\sim									24
25						\sim									22 24 26 28
27						-									28
29						\sim			\sim						30 32 34
31						-			\sim						32
33															
35						-^		I							36 38
37						-7-									38
39															40
41						-		$+ \top$							42

NOTE: ALL HEATING / COOLING ELEMENTS IN THE HVAC SYSTEM TO BE REMOVED AND/OR REPLACED FOR NEW HEAT PUMP SYSTEM.





SCALE: NTS

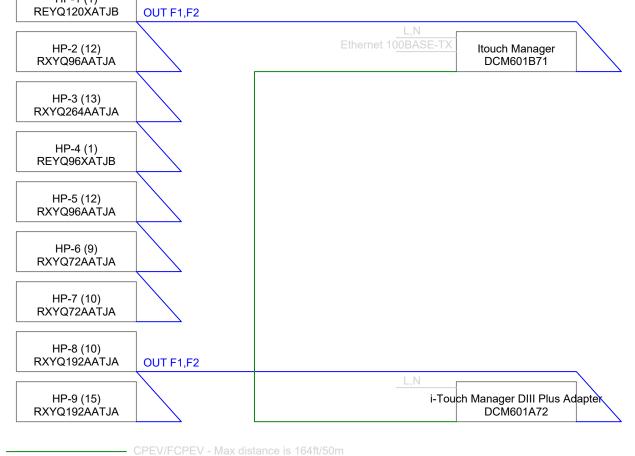


CONSOLE HEAT PUMP DETAIL @ LOWER LEVEL

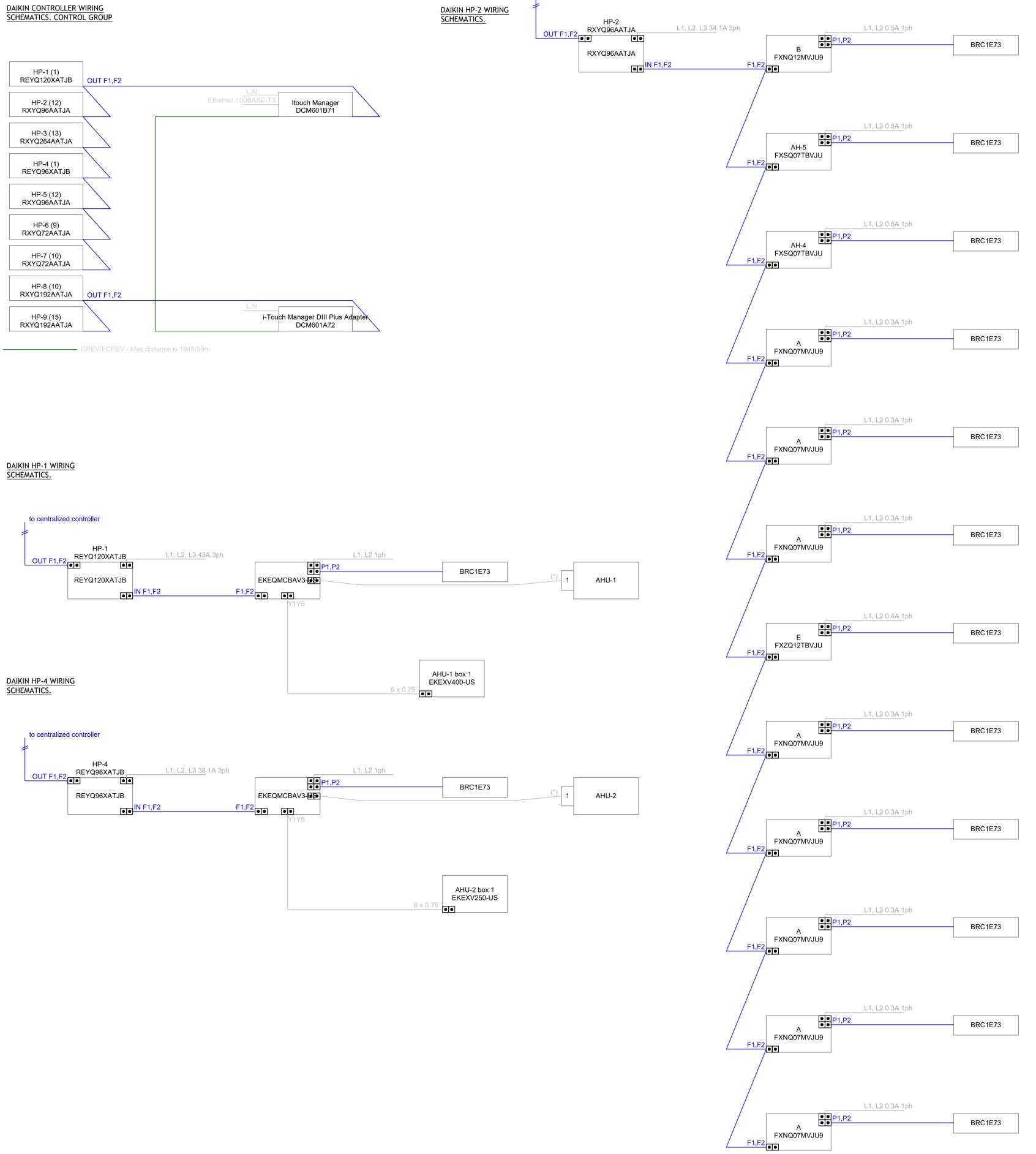
SCALE: NTS

MARCI CONSU	LTING		
ENGIN		25 High Ridge Rd Pound Ridge, NY 1 P (914) 764-9011	0576
info@mar	chetticonsu	F (914) 764-9012 Itingengineers.	com
Drawings and Spe			
service, are and s Documents are no projects or purp authorized by c	t to be used, i oses or by an	n whole or in part y other parties f	t, for other than those
contingent upon	payment to	The use of this d the engineer fo e the Engineer th	or services
to bar documen disputes any Engir	t use by any neer's statemer	and all parties nts for services, it	. If owner is required
days. Remaining,	undisputed p	neer in writing wi ortions are due a ll indemnify the	nd payable
against any claim the event the Eng	ns alleging dan gineer exercise	mages or delays i es the right to bar	incurred in document
on site. Only figu	ured dimensio	rs must check all ons are to be wo immediately to th	rked from.
<u>efor</u> ELI	•	<u>ceed</u> LLEGEND	-
\$	SINGLE PC	LE SWITCH	
\$3	3 WAY SW		
JB #**	JUNCTION BRANCH C		
PP-1	EMERGENO	CY LIGHT	
8	EXIT LIGH		
		CEPTACLE OUTL	ET
€		EX RECEPTACLE	OUTLET
● = GFI	DEDICATE	O RECEPTACLE	
φ		AULT INTERRUPT	RECEPT
	DISCONNE		
		RACTIONAL HP)	=CT
MD	MOTORIZE		
	ELECTRIC4 DISTRIBUT	ION PANEL	
	ELECTRICA	AL PANEL	
CU	COPPER ALUMINUM		
AFF		IISHED FLOOR	
No. 1 FOR CONST		ON	DATE 12-14-2023
2 FOR CONST			1-10-2024
TAMP & SIGN:			
22	. MAIN	STREET	
		CT, 0647	0
		CHEDU	LES
		ETAILS	
ROJECT NUME ATE:	BER:		#34-2023 DATE
RAWN BY:			EF
HECKED BY:			PGM
E	-00!	5.00	
CALE:			AS NOTED

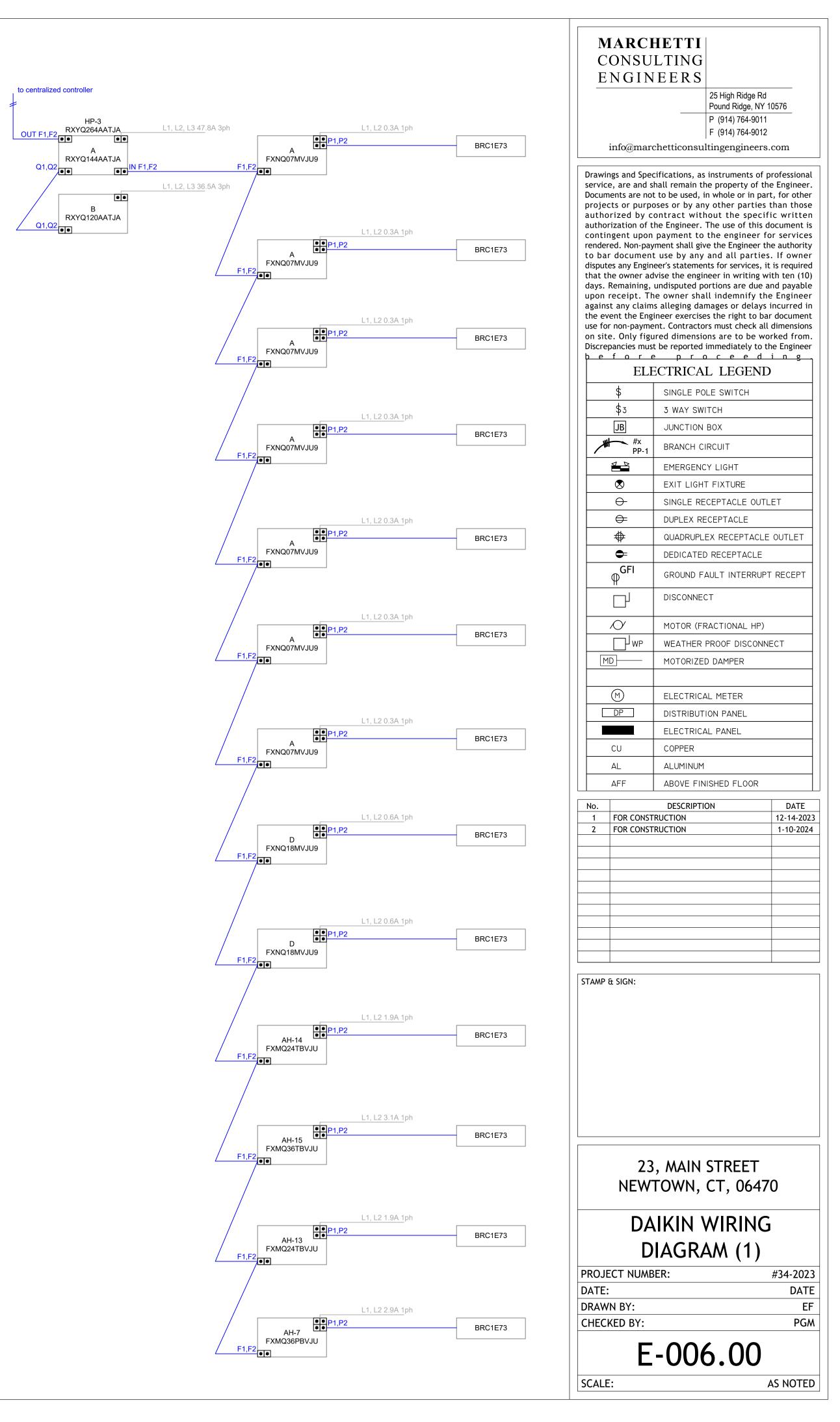
to centralized controller DAIKIN HP-2 WIRING SCHEMATICS. UUT F1,F2

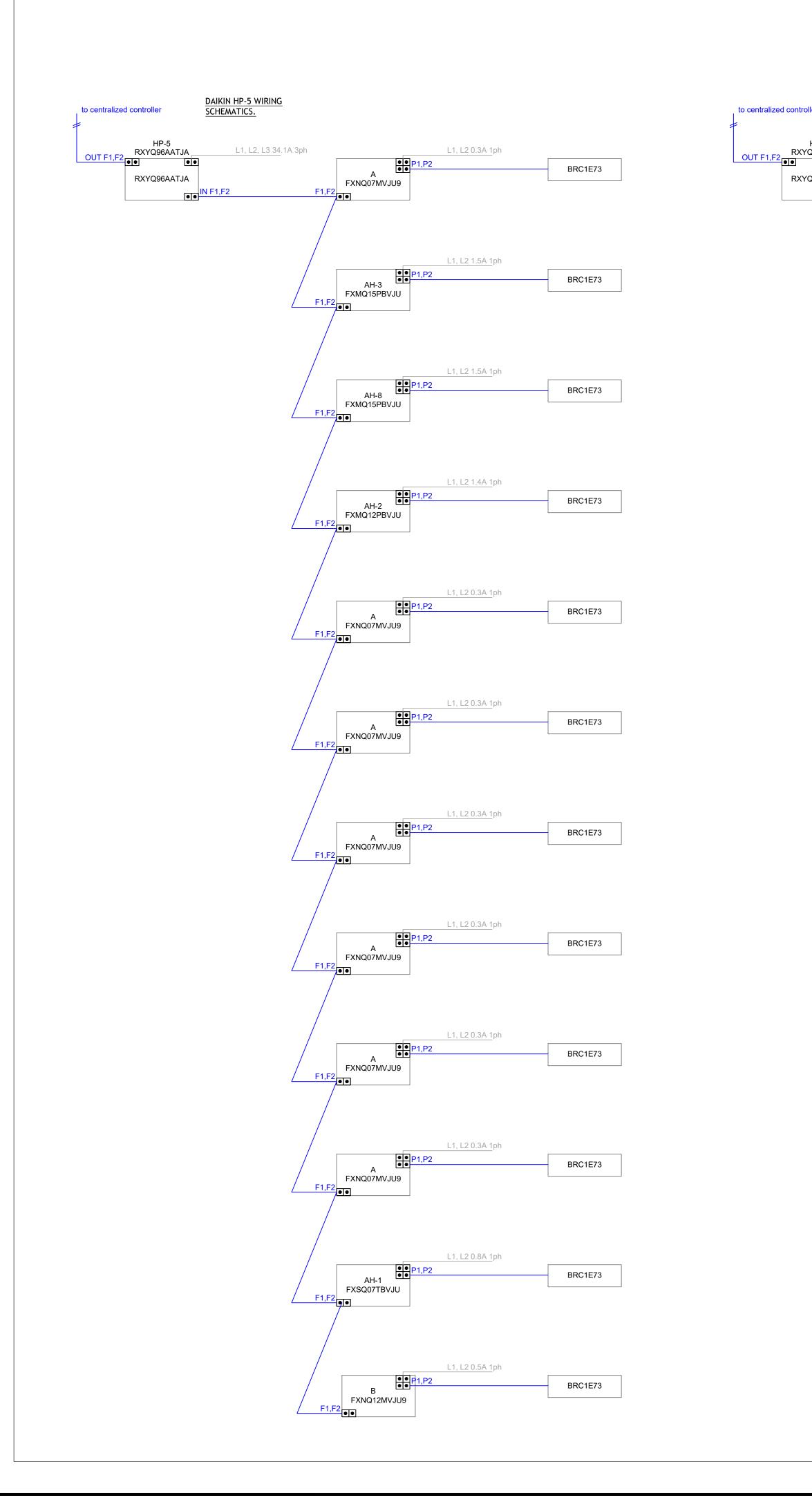


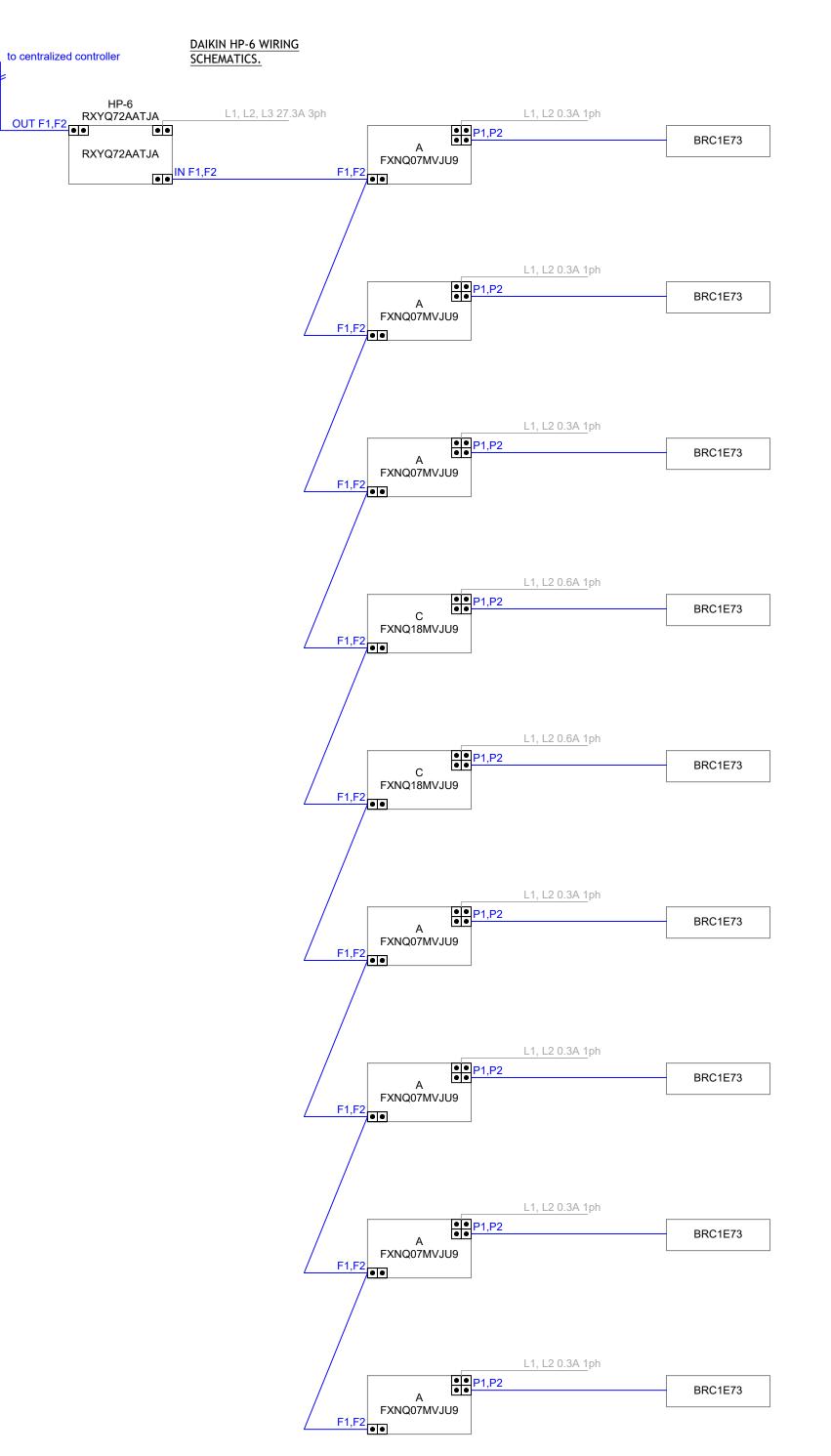
DAIKIN HP-1 WIRING

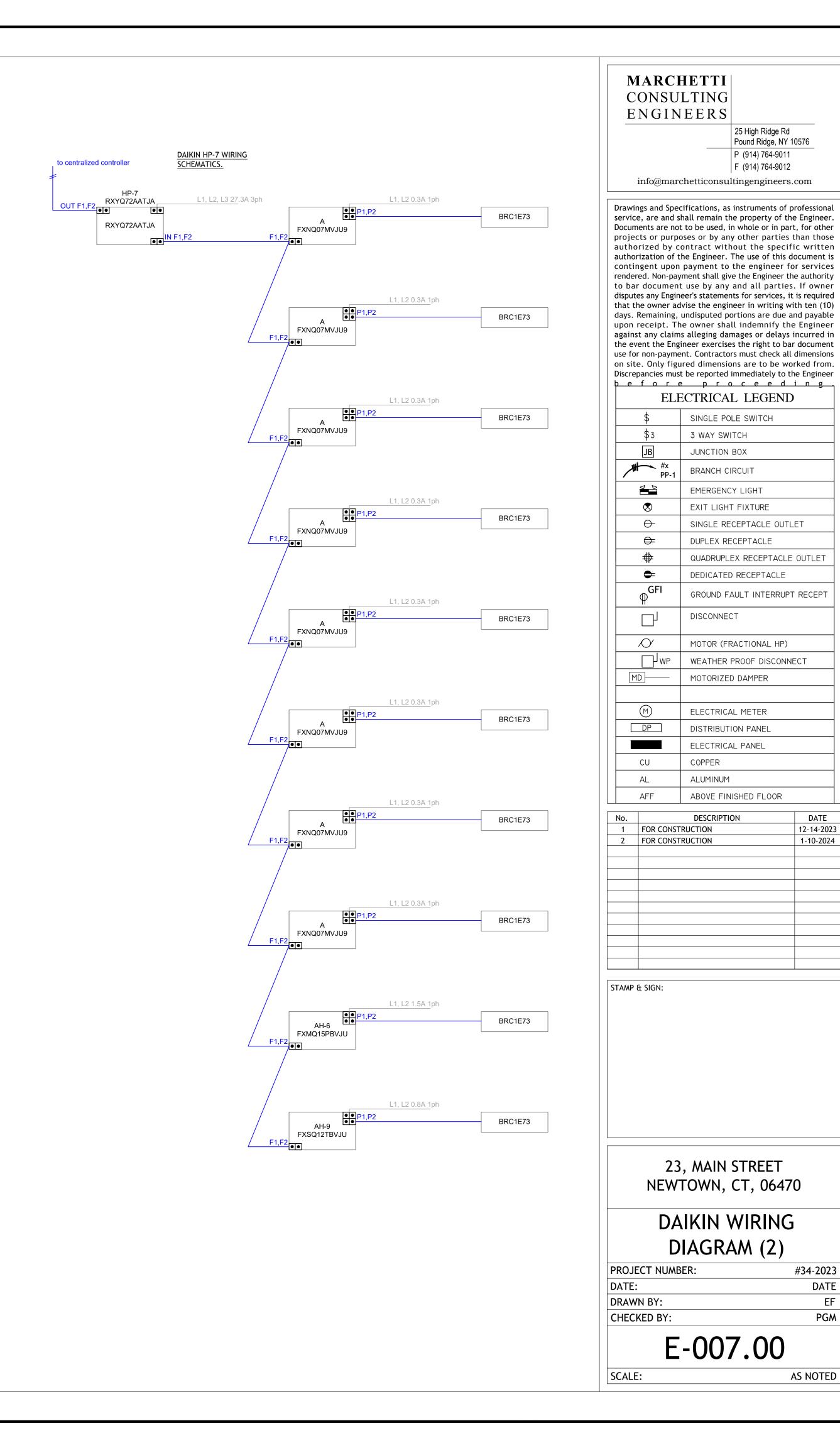


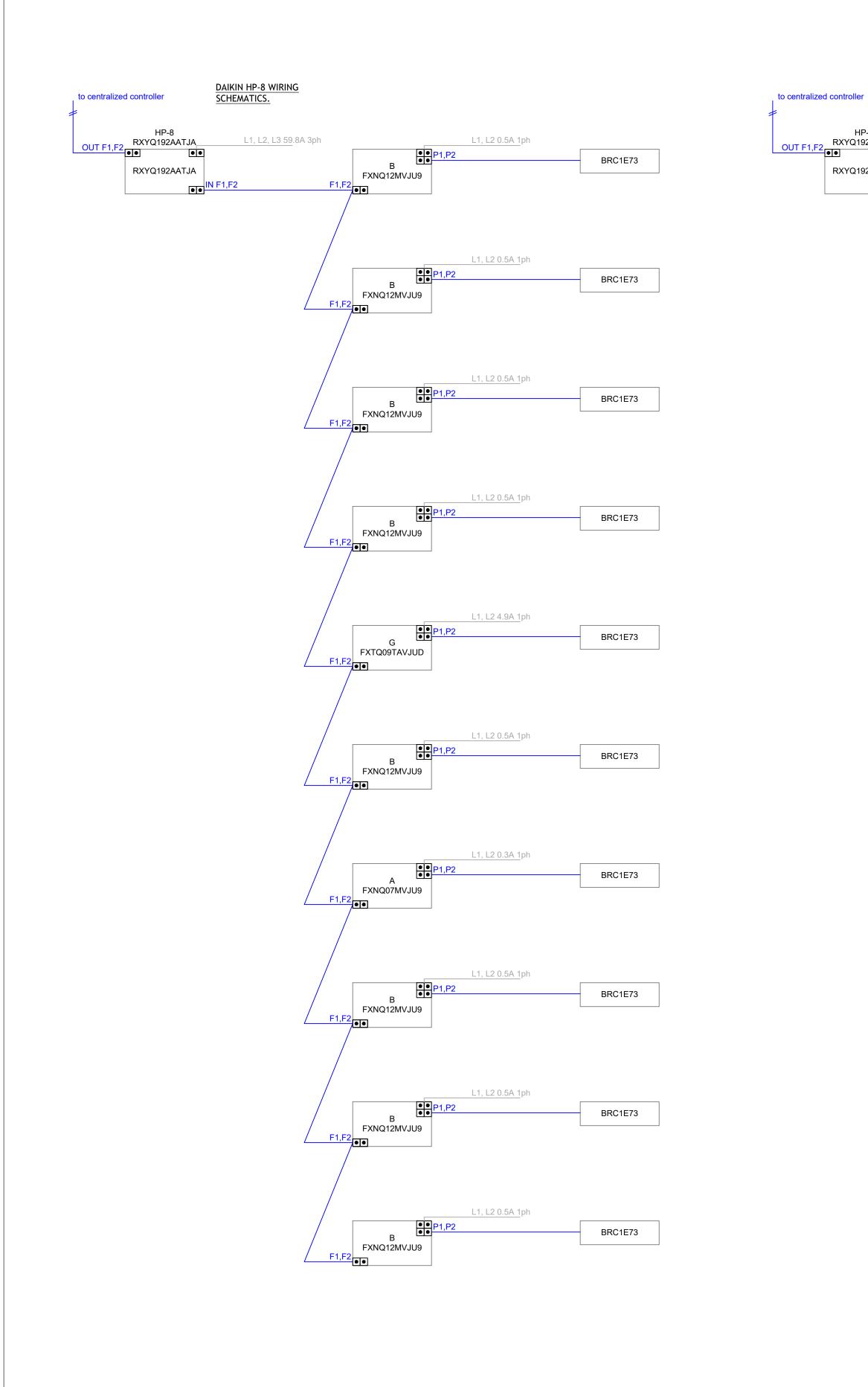
DAIKIN HP-3 WIRING SCHEMATICS.

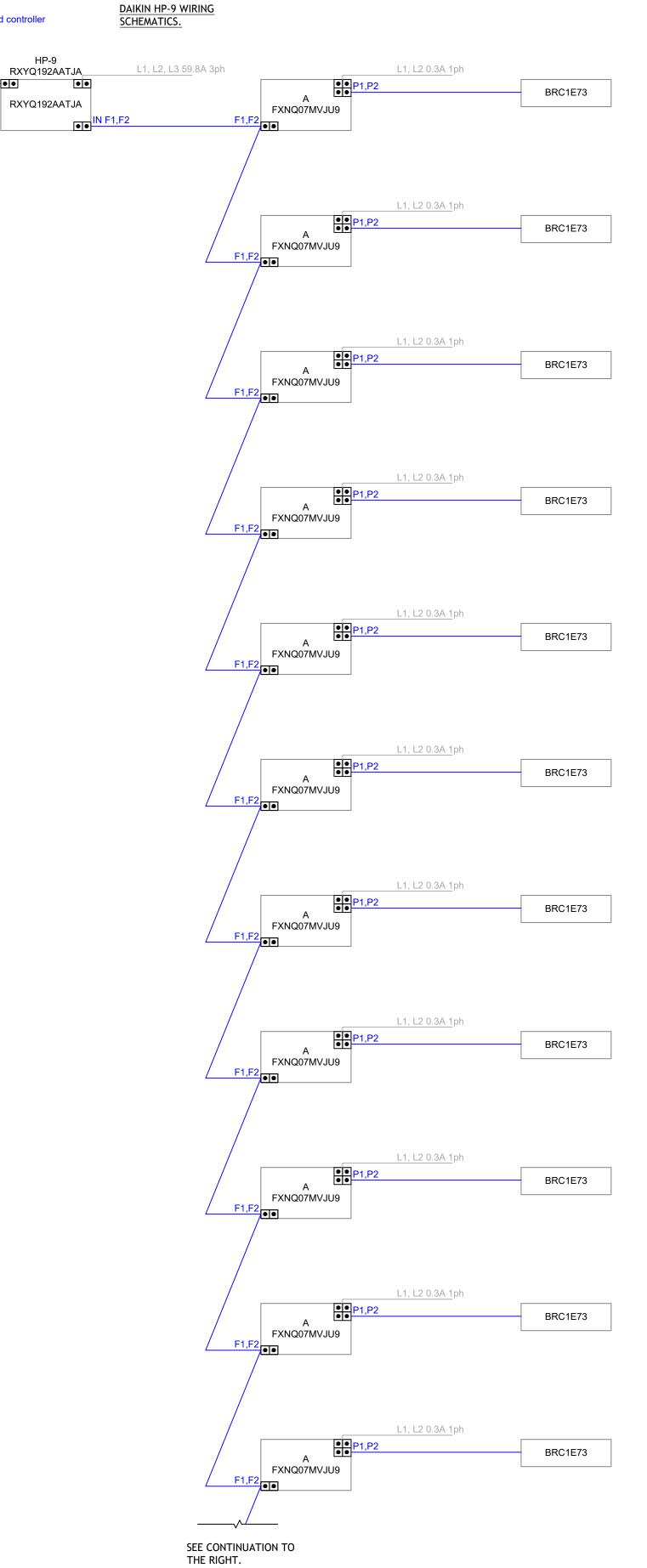


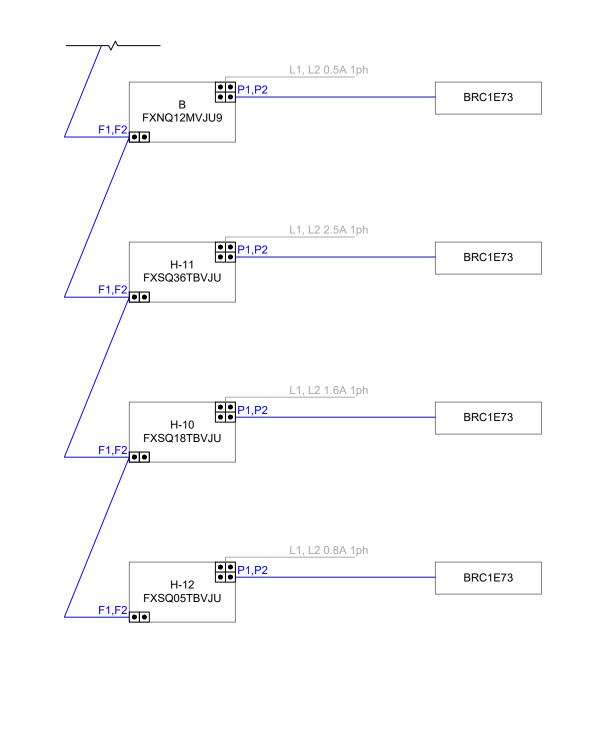




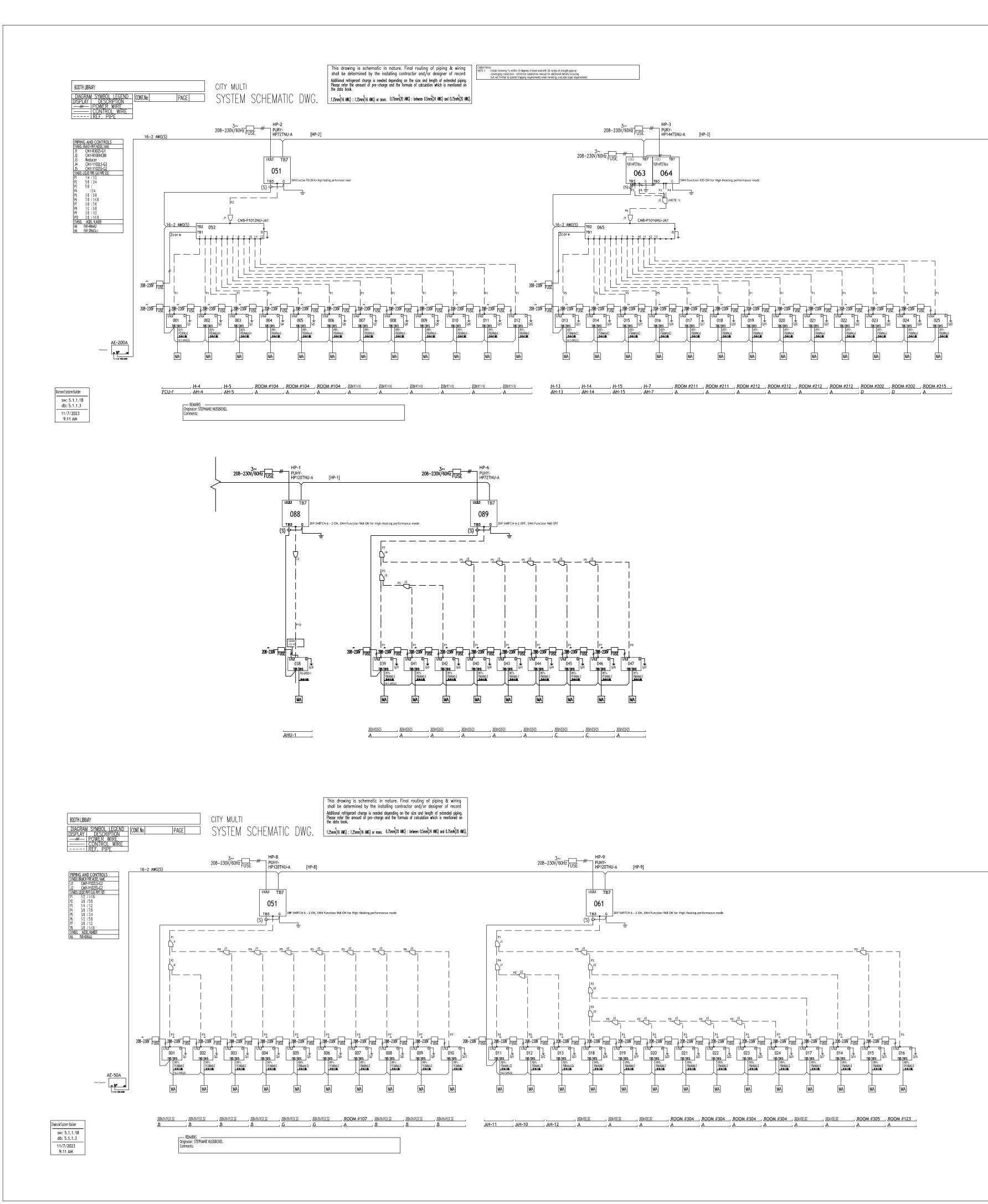


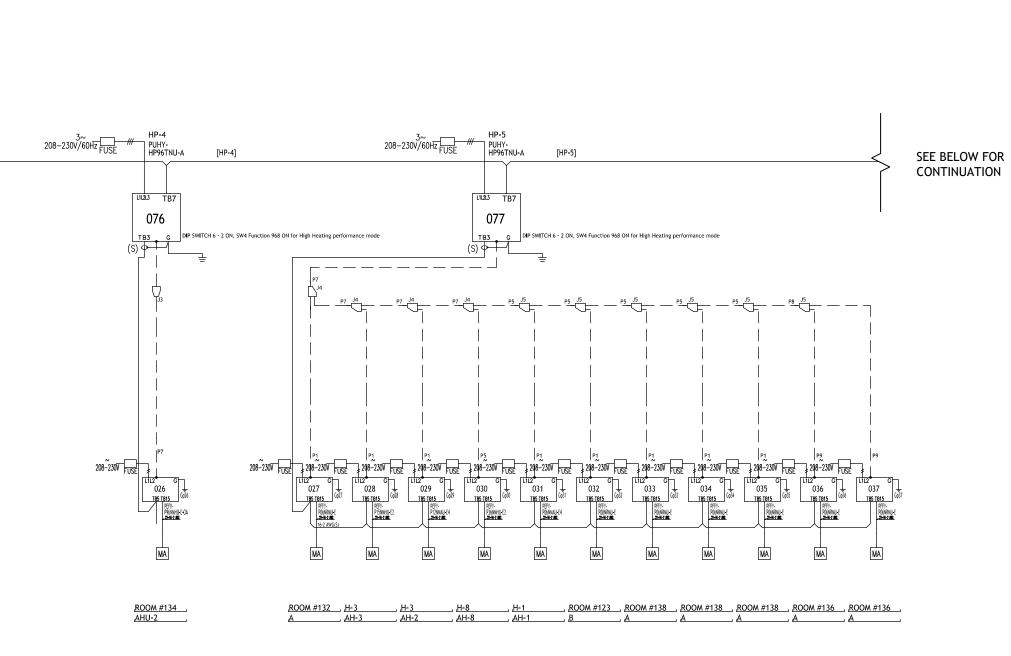


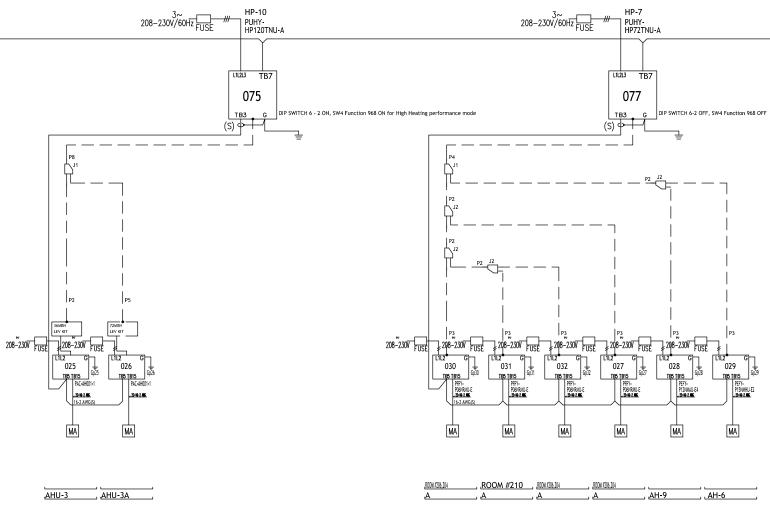


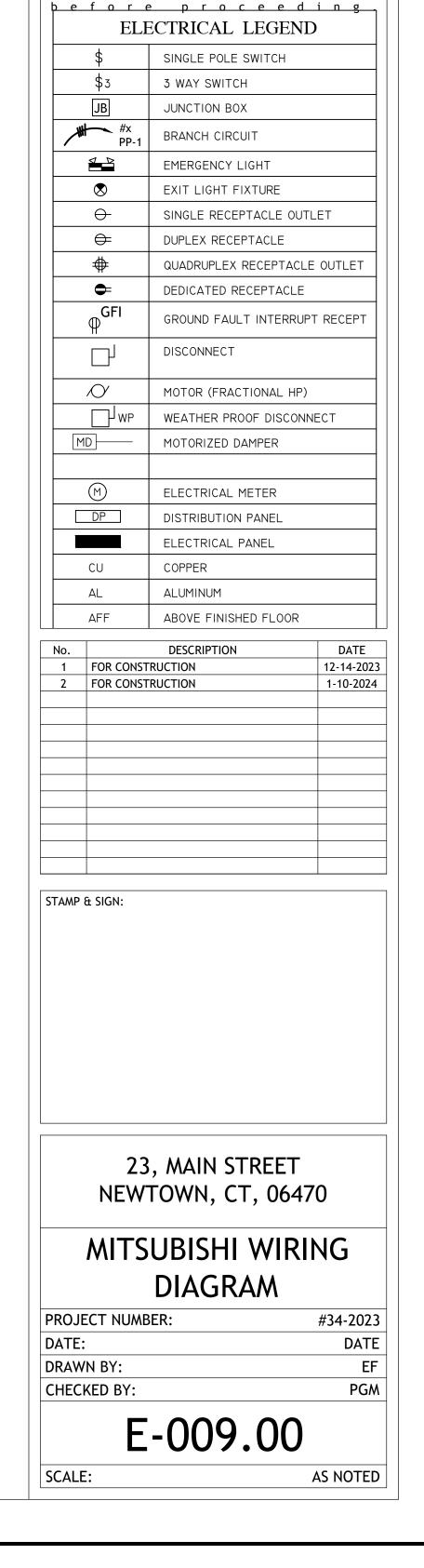


ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professi rervice, are and shall remain the property of the Engineor the specific writhout the specific writhout the specific writhout by contract. without the specific writhout the specific writhout by and document use by any and all parties. If ow protected in Engineer the authout the oblar docum isputes any Engineer's statements for services, it is require the the owner advise the engineer in writing with ten days. Remaining, undisputed portions are due and pay provide the Engineer exercises the right to bar docum ispainst any claims alleging damages or delays incurre the event the Engineer exercises the right to bar docum ispector nor payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked fr Discrepancies must be reported immediately to the Engin portecipit must be proved andifference portecipit must be portecas and the propere
Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professi process or purposes or by any other parties than th uthorization of the Engineer. The use of this document contingent upon payment to the engineer for serv endered. Non-payment shall give the Engineer the authorization of the Engineer's statements for services, it is required. Non-payment shall give the Engineer the authorized portions are due and pay upon receipt. The owner shall indemnify the Engine the event the Engineer exercises the right to bar docum ser for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked fr Discrepancies must be reported immediately to the Engine the event the Engineer exercises the right to bar docum ser for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked fr Discrepancies must be reported immediately to the Engin the event the Engineer exercises the right to bar docum ser for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked fr Discrepancies must be reported immediately to the Engin the event the Engineer exercises the right to bar docum ser for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked fr Discrepancies must be reported immediately to the Engin the event the Engineer exercises the right to bar docum ser for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked fr Discrepancies must be reported immediately to the Engin the event the Engineer exercises the right to bar docum ser for non-payment. Contractors must check all dimensions of the event the Engineer to cortere dimensions are to be worked fr DisconNECT
F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professi- bervice, are and shall remain the property of the Engin Documents are not to be used, in whole or in part, for or orojects or purposes or by any other parties than the authorization of the Engineer. The use of this document contingent upon payment to the engineer the author iso bar document use by any and all parties. If ow fisputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten days. Remaining, undisputed portions are due and pay upon receipt. The owner shall indemnify the Engin against any claims alleging damages or delays incurre the event the Engineer exercises the right to bar docun set for on-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked fr Discrepancies must be reported immediately to the Engin e f or reperind or contractors must check all dimensions on site. Only figured dimensions are to be worked fr Discrepancies must be reported immediately to the Engin e f or reperind contractors must check all dimensions on site. Only figured dimensions are to be worked fr Discrepancies must be reported immediately to the Engin e f or reperind contractors must check all dimension of the former exercises the right to bar docun set for on-payment. Contractors must check all dimension e f or reperind contract exercises the right of the Engin e f or reperind contract exercises the right of the Engin dual dual dual dual dual dual dual dual
Drawings and Specifications, as instruments of professiservice, are and shall remain the property of the Engine Documents are not to be used, in whole or in part, for o projects or purposes or by any other parties than th authorization of the Engineer. The use of this documents contingent upon payment to the engineer for service wendered. Non-payment shall give the Engineer for service or document use by any and all parties. If ow disputes any Engineer's statements for services, it is requi- that the owner advise the engineer in writing with ten days. Remaining, undisputed portions are due and pay upon receipt. The owner shall indemnify the Enging gainst any claims alleging damages or delays incurre- the event the Engineer exercises the right to bar docum use for non-payment. Contractors must check all dimens on site. Only figured dimensions are to be worked fr Discrepancies must be reported immediately to the Engin or f o r e p r o c e e d i n ELECTRICAL LEGEND \$ SINGLE POLE SWITCH \$3 3 WAY SWITCH D JUNCTION BOX #x PP-1 BRANCH CIRCUIT #x PP-1 BRANCH CIRCUIT @ EXIT LIGHT FIXTURE @ EXIT LIGHT FIXTURE @ SINGLE RECEPTACLE OUTLET @ QUADRUPLEX RECEPTACLE @ QUADRUPLEX RECEPTACLE @ GROUND FAULT INTERRUPT RECEIND @ MOTOR (FRACTIONAL HP) DP DISCINNECT MD
ervice, are and shall remain the property of the Engin bocuments are not to be used, in whole or in part, for o projects or purposes or by any other parties than the iuthorization of the Engineer. The use of this document iontingent upon payment to the engineer for servi- endered. Non-payment shall give the Engineer the author b ab a document use by any and all parties. If ow lisputes any Engineer's statements for services, it is requ- hat the owner advise the engineer in writing with ten lays. Remaining, undisputed portions are due and pay- ipon receipt. The owner shall indemnify the Engin- gainst any claims alleging damages or delays incurre he event the Engineer exercises the right to bar docum- use for non-payment. Contractors must check all dimens on site. Only figured dimensions are to be worked for biscrepancies must be reported immediately to the Engin- e for ne proceed in mediately to the Engin- ter for ne proceed in the second second second so receipt. The owner shall indemnify the Engin- be event the Engineer exercises the right to bar docum- use for non-payment. Contractors must check all dimens on site. Only figured dimensions are to be worked for biscrepancies must be reported immediately to the Engin- e for ne proceed in networks and second
Image: Construction of the sector of the
GFI GROUND FAULT INTERRUPT RECEI D DISCONNECT MOTOR (FRACTIONAL HP) MOTOR (FRACTIONAL HP) WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR O. DESCRIPTION DATA 1 FOR CONSTRUCTION 12-14-
Image: Weight of the second
Image: Construction of the second
WP WEATHER PROOF DISCONNECT MD MOTORIZED DAMPER MO ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DA 1 FOR CONSTRUCTION 12-14-
MD MOTORIZED DAMPER MD ELECTRICAL METER DP DISTRIBUTION PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DA 1 FOR CONSTRUCTION 12-14-
DP DISTRIBUTION PANEL ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR
DP DISTRIBUTION PANEL DP DISTRIBUTION PANEL ELECTRICAL PANEL CU CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATA 1 FOR CONSTRUCTION 12-14-
ELECTRICAL PANEL CU COPPER AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DATE 1 FOR CONSTRUCTION 12-14-
AL ALUMINUM AFF ABOVE FINISHED FLOOR No. DESCRIPTION DA 1 FOR CONSTRUCTION 12-14
AFF ABOVE FINISHED FLOOR No. DESCRIPTION DA 1 FOR CONSTRUCTION 12-14
1 FOR CONSTRUCTION 12-14









MARCHETTI

CONSULTING

ENGINEERS

25 High Ridge Rd

F (914) 764-9012

info@marchetticonsultingengineers.com

Drawings and Specifications, as instruments of professional

service, are and shall remain the property of the Engineer.

Documents are not to be used, in whole or in part, for other

projects or purposes or by any other parties than those

authorized by contract without the specific written

authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services

rendered. Non-payment shall give the Engineer the authority

to bar document use by any and all parties. If owner

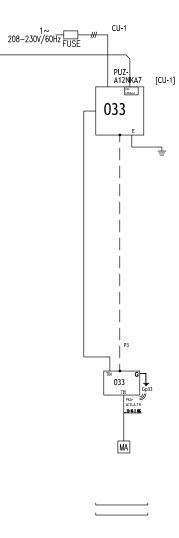
disputes any Engineer's statements for services, it is required

that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document

use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from.

Discrepancies must be reported immediately to the Engineer

Pound Ridge, NY 10576 P (914) 764-9011



GENERAL CONDITIONS FOR ELECTRICAL WORK

1. Applicable requirements of the Conditions of the Contract are included in this Section and apply to all work and material

included under other specification sections and/or divisions of the Specifications.

2. It is the intent of the Contract and of the Drawings and Specifications to call for finished work, tested, functional, code

compliant and ready to use. All work under this section to be in conformance with the National Electrical Code, 2020 Edition and State of Connecticut Supplements and all other codes and ordinances which may apply.

3. Include the following in the Work, and in the Contract price: * Demolition as described on the drawings and as required by the project.

* Any incidental apparatus, appliance, material, labor or service necessary to make the work complete in all respects and fully

ready for trouble-free operation, even if not particularly shown or specified. * Small details not usually shown or specified, but which are necessary for the proper and complete installation and operation of the work.

* All tests, permits, inspections, approvals, and Certificates of Occupancy, required by City and State Authorities. 4. Provide materials, labor, equipment and services necessary to provide all work of the Electrical Division as shown on the drawi as specified, and as required by job conditions including but not limited to the following:

* New Distribution panel(s), circuit breakers, etc. as shown on the drawings and as required by project. * Safety switches

* General and Emergency lighting and switching

* Power and branch circuitry * Power feeders to equipment as installed by others

* Convenience and Special receptacles

* Data and Communication outlets as required by project

* Grounding in accordance with the NEC and as required by job conditions * Control wiring as required under the Mechanical and Plumbing Sections

5. Work not included in this section:

* Setting of access doors

* Cutting and patching * Finish painting

6. Visit and examine those portions of the site affected by this work so as to become familiar with existing conditions and difficulties that will attend the execution of the work. Submission of a bid will be construed as evidence that such examination been made and later claims for labor, equipment, or materials required because of difficulties encountered which could have been foreseen had such examination been made, will not be recognized. Coordinate phasing with Architect and The Library. 7. All materials furnished and all work installed shall comply with all applicable requirements of local Utility Companies, Fire Department, State and Local Codes, and all requirements of other authorities having jurisdiction.

8. Where conflict occurs between the requirements of the Specifications and/or the Contract Drawings and any such applicable laws, ordinances, rules and regulations, including requirements for additional materials or apparatus, the more stringent require ments shall govern all work and shall be installed without extra cost to the Owner.

9. The Contractor shall give all notices, obtain all required permits, perform all tests, and pay for all local, state and federal taxes, fees, royalties and other costs; file all necessary Drawings and obtain all approvals of all municipal and state aut horities having jurisdiction; obtain all required Certificates of Inspection; furnish the Owner with final certificates before fin payment of the Contract. 10. All local and state laws and regulations, the American With Disabilities Act, O.S.H.A., and National Fire Protection

Association. Standards governing or relating to any portion of this work are hereby made a part of these specifications. Responsibility for compliance to their provisions is included. 11. Inform the Architect of any work or materials which violate any of the applicable laws and regulations before proceeding with

the work. 12. Materials specified by reference to a specific standard such as the Underwriter s Laboratories, American National Standards Institute, Federal Specifications, a trade association standard, or other similar standard shall comply with the requirements in

the latest revision thereof in effect at the time of bidding, except as limited by type, class or grade, or modified in such reference. 13. All materials, equipment and apparatus shall be Underwriters Listed or Labeled for all items where such listing or labeling ar

available. 14. All equipment and materials shall be new and of first quality, suitable for the purpose intended and conditions encountered. 15. All materials shall be applied in accordance with the recommendations of the accepted manufacturers.

16. All materials used or installed shall be free of any asbestos or lead content.

17. The drawings are based on the equipment and materials specifically designated as the standard. If it is elected to install materials and equipment included under other acceptable manufacturers, the Architect will be the sole judge of whether the proposed substitution is equal to or better than the standard. Submit drawings for review showing any changes required by this equipment or materials; and be responsible for its installation in the allotted space with proper clearance for servicing and repairing said equipment, plus any additional materials and equipment necessary for its installation.

18. Where such acceptable deviation requires different quantity or arrangement of foundations, support, piping, wiring, conduit, and any other equipment or accessories normal to this equipment, furnish said changes and additions at no increase in contract price. Deviations mean the use of any listed acceptable manufacturer other than those on which the drawings are based. 19. All work shall be performed in a neat and workmanlike manner, with due regard for good practice and best finished appearance.

20. Locate all equipment which must be serviced, operated or maintained in fully accessible positions. This shall include but not be limited to motors, controllers, junction boxes, switches, etc. 21. Drawings are diagrammatic and indicate the general arrangement of systems and work required. Do not scale the drawings.

Consult the Architectural Drawings and details, and the drawings of other trades, for exact location of equipment. 22. If instructed by the Architect, make minor modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.

23. Chases, openings in walls and patches will be provided under the work of other Sections. Furnish exact dimensions and

locations of these openings to suit the apparatus to be used before such walls are buil 24. As work progresses, record on one set of drawings all changes from the installations originally indicated.

The record of the progress drawings shall be the responsibility of each Contractor. Record all changes in waterproof ink. 25. At completion, submit above required information to the Architect for approval. Drawings shall be the same size and scale as the contract drawings, except that larger scale drawings may be required where clearances are close.

26. Include in the Bid all costs of transparencies and the preparation of the as-built drawings. 27. Make all tests as required by Code or Ordinance and as herein specified. File with the Architect written reports in

triplicate for all such tests. 28. Upon completion of all work and all tests, Contractor shall furnish the necessary skilled labor and helpers for operating his

system and equipment 29. During this period, instruct the Owner or his representative fully in the operation, adjustment and maintenance of all

equipment furnished. 30. Operating instructions may not begin until the equipment has been made fully operational as determined by the Architect. 31. Contractor shall furnish to the Architect three (3) complete bound sets of typewritten or blueprinted instructions for operating and maintaining all systems included in this contract. All manuals shall be submitted in draft, for approval, prior to final issue. Manufacturing advertising literature will not be acceptable; only technical bulletins will be considered for the maintenance manual.

electrical connections. galvanized steel. * Feeders

* Security * Panelboards provided under this Work.

* Fire Alarm

2. All building feeders shall be Type THW or THHN.

5. Fixture wire shall be Type TFF.

interval

32. Contractor shall provide temporary light and power as required for construction. The temporary service shall provide power and lighting throughout the construction period.

33. The Contractor shall provide and maintain lights and power to prevent damage or injury and shall illuminate all hazardous area for the duration of the project. 34. Whenever the work under the Electrical sections and the Mechanical sections interconnect, the Electrical Contractor shall coordinate the work and insure that all interconnections are properly provided. It shall be the responsibility of the Mechanical Contractor to provide the Electrical Contractor with wiring diagrams for all equipment, systems, and apparatus requiring

35. Each Contractor shall furnish detailed advance information regarding all his requirements related to work under other Division and/or Sections. He shall furnish sizes, accurate data, and locations of any and all pads, pits, chases, sleeves, and slo ts through floor slabs, walls, foundations ceilings, roof, and other special openings required for which he shall be responsible. 36. The Contractor shall clean all equipment, fixtures, and accessories installed by him, removing all dust, plaster, cement, paint, markings, stickers, rust stains and other foreign matter or discolorations. He shall also clean such dust, etc., from the work of others or the property of the Owner when caused by his employees. 37. Sleeves shall be installed around piping and conduits passing through partitions, ceilings or other building construction.

Sleeves shall be installed with approved packing between sleeves and elements to provide for tight closure. Sleeves shall be of 38. Provide all temperature control wiring and starter interlock wiring.

39. Mount and connect starters, except where specified to be factory wired and mounted on the equipment.

40. All new electrical conduits for the following systems (including conduit above hung ceilings) shall be identified with semirigid identification markers equal to Setmark electrical markers as manufactured by Seton Name Plate Company.

41. Each marker background is to be color-coded with a clearly printed legend to identify the conductor. Size of markers and size of lettering to generally conform with the Scheme for Identification of Piping Systems (ANSI A13,1). 42. Locations for electrical markers to be as follows:

* On all horizontal runs marked 50 feet apart maximum

43. Attachment of hangers to building structure may be accomplished by the following methods: * Beam clamps attached to building structural members.

* Supplementary rolled steel members attached to building structural members with beam clamps. Such supplementary steel shall be

* Concrete inserts in areas of solid concrete slab without metal deck. * Strap iron, baling wire, and similar supports are unacceptable.

44. Maintain all equipment and systems installed until final acceptance by the Owner, and take such measures as necessary to insure adequate protection of all equipment and materials during delivery, storage, installation and shut-down conditions. This responsibility shall include all provisions required to meet the conditions incidental to the delays pending final tests of system equipment. After installation of systems has been completed, operate them to determine the capability of the equipment and control conform to the requirements of the drawings and specifications prior to performance testing. 45. Each manufacturer of equipment shall provide qualified personnel to inspect and approve equipment and to supervise the

start-up and operating tests of the equipment. 46. Notify the Architect in advance of commencing operation.

47. Perform an operating test of each complete system for twenty-four (24) hours continuous operation as a minimum, or as long as required to prove coordination and proper functioning of all related controls and components. Certify to the Owner in writing that all equipment is functioning properly. Should the apparatus fail to meet the contract requirements, adjust, repair, or repl ace all defective or inoperative parts and again conduct the complete performance tests. 48. Guarantees and warranties shall be provided in accordance with the General Conditions governing all Contracts.

49. All workmanship, installation, materials and equipment shall be maintained and serviced for the guarantee period at no additional cost to the Owner.

50. Leave entire system installed under this Contract in perfect working order, and, without additional charge, replace any work or material which develops defects within one year from the date of acceptance. 51. Final payment will be approved only after completion of all tests, after receipt of all the required certificates and document and after completion of all contract requirements.

BASIC MATERIALS & METHODS

1. All conductors shall be copper (or aluminum where indicated) and shall be UL rated for operation at 600 VAC.

3. All branch circuit power wiring shall be Type TW or THHN at the Contractor s option.

4. In high ambient temperature locations, Type THHN shall be used.

6. Color identification shall be uniform and continuous throughout. 7. No wire smaller than #12 AWG shall be used for any power or lighting wiring. Where circuit length to first outlet exceeds 75 feet, #10 AWG shall be used. #14 shall be used for control wiring. 8. Wires #8 B. & S. gauge and larger shall be stranded; smaller wire sizes shall be solid.

9. All wire shall have size, grade of insulation, voltage, and manufacturer s name permanently marked on outer covering at regular

10. All wire delivered in complete coils or reels with identifying size and insulation tags. 11. Rigid Galvanized Steel Conduit and/or wire mold shall be used for all services not concealed by construction. Make all connections with thread couplings. Provide fiber bushings with double lock nuts at exposed end connections. 12. Electric Metallic Tubing (EMT), threadless thin wall conduit, with compression fittings, UL labeled, ANSI C 80.3, galvanized

may be used for branch circuits in masonry partitions, furred ceilings, and exposed dry locations, feeders above grade. 13. Metal Clad Cable (ACT), single strip style, galvanized may be used for branch circuits in hollow partitions, and in furred ceiling where permissible by N.E.C. and local regulations. 14. Sealtight Cable shall be used for final connections to motors, conduit not over 18 long. Provide a separate ground

conductor from panelboard when using sealtight conduit. 15. All conduits shall be installed concealed in walls or in the suspended ceilings where construction conditions permit. 16. Exposed conduit shall be run parallel or normal to outside walls and exposed structural system in a workmanlike manner. 17. Raceways shall be run straight and true with uniform offsets and symmetrical to other paralleled conduits. 18. During construction, all unfinished runs of conduits shall be capped until ready for installation of conductors. 19. Furnish #14 fish wire in each empty raceway in which permanent wiring is not installed under these specifications. 20. Securely fasten to place all hangers on not more than 5 centers.

21. Support horizontal and vertical runs with one hole malleable straps, clampbacks, inserts or other suitable devices with suitable bolts, expansion shields, beam clamps or special brackets for mounting to building structure.

unless galvanized. Perforated straps for support of conduits will not be permitted. necessarv.

splice chambers as far as practicable. 26. Where feeders consisting of more than one conductor per phase leg pass through pull boxes or panels, each conductor on one phase shall be grouped together with conductors of other two phases to reduce reactance effect. 27. Use solderless, pressure type connections for all control wiring terminations of wire to devices. For power and lighting wiring terminations to fixture leads, circuiting shall be with connections made by solderless, screw type connectors. 28. All other connection shall be made by solderless, bolted pressure type connectors including wire sizes larger than #8. 29. Outlet boxes shall be 4 trade size, at least 1 1/2 deep and of sufficient size and depth to accommodate the devices noted. boxes shall be of galvanized steel.

30. Boxes shall be firmly secured to walls, beams, studs, and in no case shall be dependent on the conduit for support. 31. All unused knockouts shall remain closed. 32. Boxes shall have plaster rings to bring box openings flush with finish wall. Provide 3/16" oversize covers in a style and color as selected by the Architect.

readings shall be not less than recommended by the National Electric Code.

37. Panel directories shall be typewritten and placed behind clear plastic as provided on inside of panel doors. 38. All branch circuit wires and all feeders shall be permanently tagged at the panel connections with Brady markers as approved 39. All switches, outlet receptacles, and other wiring devices used on this project shall be Decora specification grade devices unless otherwise noted. All devices throughout the project shall be 20 ampere rating. All outlets shall have an extra grounding terminal solidly grounded to the raceway system. All wiring devices shall be submitted for approval.

40. Approved Manufacturers: Wiring devices, switches and pilot lights: General Electric, Arrow Hart, Bryant, Pass & Seymour, Harvey Hubbell, Leviton. 41. Disconnect switches shall be standard duty 240 volt as required, Square D, General Electric, Westinghouse. In addition to the

disconnect switch at control location, each motor out of sight of control location shall be provided with a disconnect swi tch located adjacent to the motor. 42. All electrical systems and equipment shall be grounded as herein specified, as shown on the Drawings, and in accordance with

N.E.C. Article 250. 43. All motor power branch circuits shall contain a separate, colored equipment ground wire connected to the equipment ground terminal or enclosure and to the panelboard or motor controller equipment ground bus. The drawings do not necessarily indicate a

ground wire in the plan designation. 44. All conduits entering a switchgear, panelboard, motor starter, circuit breaker, or disconnect enclosure shall be provided with a grounding type bushing or locknut, with a #12 AWG wire running to each from the equipment ground bus or enclosure. 45. All clamps, connectors, etc., used for grounding shall be approved for their use. 46. Connect system components mechanically and electrically to provide an independent return path to the grounding electrode

47. Approved manufacturers of equipment, circuit breakers, etc. are: Square D, General Electric, Westinghouse. 48. Short-circuit interrupting capacity shall conform with Utility established AIC and be the same as specified for panelboard circuit breakers

50. All fuses shall be of the same manufacturer, and shall be furnished and installed by the Electrical Contractor in all cutouts, panels, switches, and where shown on the Contract Drawings. Fuses shall be manufactured by Bussman or Chase-Shawmut. 51. All circuits between 150 and 400 amperes, except where otherwise shown on the drawings, shall be protected by current limiting fuses with fault current capability up to 100,000 amperes symmetrical. Fuses shall be Bussman Limitron, Type KTN-R. 52. All circuits, 125 amperes or less, except where otherwise shown on the drawings, shall be protected by dual-element current limiting fuses, listed by Underwriters Laboratories, to interrupt fault currents of up to 100,000 amperes symmetrical. In addition, these fuses must hold 500% of rated current for a minimum of ten (10) seconds, and provide thermal protection against poor contact conditions. Fuses shall be Bussman Low-Peak fuses, Type LPN-R. 53. Furnish and install all lighting fixtures shown. Install each fixture properly and safely. Furnish and erect hangers, rods, mounting brackets, supports, frames and other equipment required. Provide hanging chains, hold-down clips, fixture tents and other necessities as may be required by the local authorities. 54. Furnish lighting fixtures complete with auxiliary hangers required for the proper, safe and distortion-free installation in the various ceiling constructions in which they appear. Determine ceiling types from Architectural Drawings. 55. Install surface mounted lighting fixtures plumb and at a height from the floor as specified on the drawings. In cases where conditions make this impractical, refer to the Architect for a decision. 56. Provide empty conduit with drag line from all telephone/data/television outlets to termination area(s) as determined by the

Building Architect and Owner. 57. The Contractor shall furnish and install components as described herein and as indicated on the drawings, to conform to all state and local codes

22. Hangers shall be of durable materials suitable for the application. All parts shall be painted two coats oil paint,

23. Conductors shall not be drawn into conduits until all work which may cause cable damage is complete. 24. Provide sufficient slack at terminations to make proper connections. Use only approved cable lubricants and only where

25. Feeder cables shall be continuous from origin to panel termination without running splices in intermediate pull boxes or

33. Furnish and install all junction or pull boxes as required to suit building conditions. 34. All circuits shall be tested for short circuits, open circuits, and grounds. Megger tests shall be made on all circuits and

35. Circuits shall be so connected to the panelboards that the total load is distributed as nearly as possible, equally between each line and neutral. 10% shall be considered as a reasonable and allowable unbalance. Branch circuits shall be balanced on the panelboards, and feeder loads in turn, balanced on the main distribution panel. Reasonable load tests shall be arranged to verify load balance if requested by the Owner. Submit balance test data with as-built drawings.

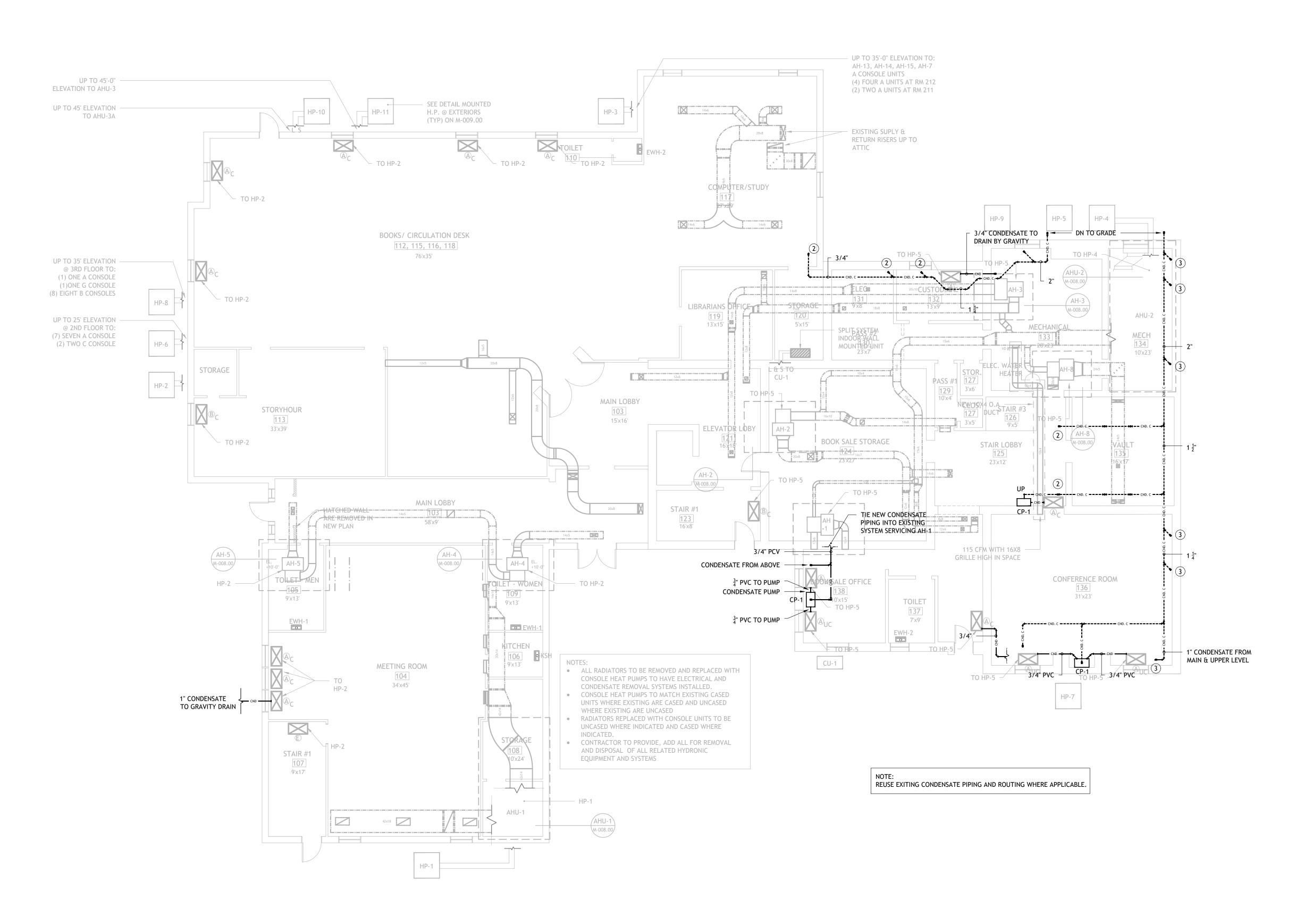
36. All safety switches, starters, circuit breakers, panelboards, and other electrical apparatus shall be permanently and neatly identified and clearly legible. All characters shall be in a sharply contrasting color to the background surface. All pertinent equipment shall have Arc Flash labeling in accordance with N.E.C., Article 110.16.

49. Breakers shall be by the same manufacturer as the panelboards.

MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer <u>pefore proceeding</u> ELECTRICAL LEGEND SINGLE POLE SWITCH \$3 3 WAY SWITCH JUNCTION BOX #x BRANCH CIRCUIT PP-1 EMERGENCY LIGHT \otimes EXIT LIGHT FIXTURE Θ SINGLE RECEPTACLE OUTLET DUPLEX RECEPTACLE Ð - ⊕ QUADRUPLEX RECEPTACLE OUTLET **e** DEDICATED RECEPTACLE GFI GROUND FAULT INTERRUPT RECEPT DISCONNECT Ń MOTOR (FRACTIONAL HP) WP WEATHER PROOF DISCONNECT MD -MOTORIZED DAMPER (M) ELECTRICAL METER DP DISTRIBUTION PANEL ELECTRICAL PANEL COPPER CU ALUMINUM AL ABOVE FINISHED FLOOR AFF DESCRIPTION DATE No. 1 FOR CONSTRUCTION 12-14-2023 2 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET **NEWTOWN, CT, 06470** ELECTRICAL **SPECIFICATIONS** PROJECT NUMBER: #34-2023 DATE DATE: DRAWN BY: EF CHECKED BY: PGM

E-010.00

SCALE:

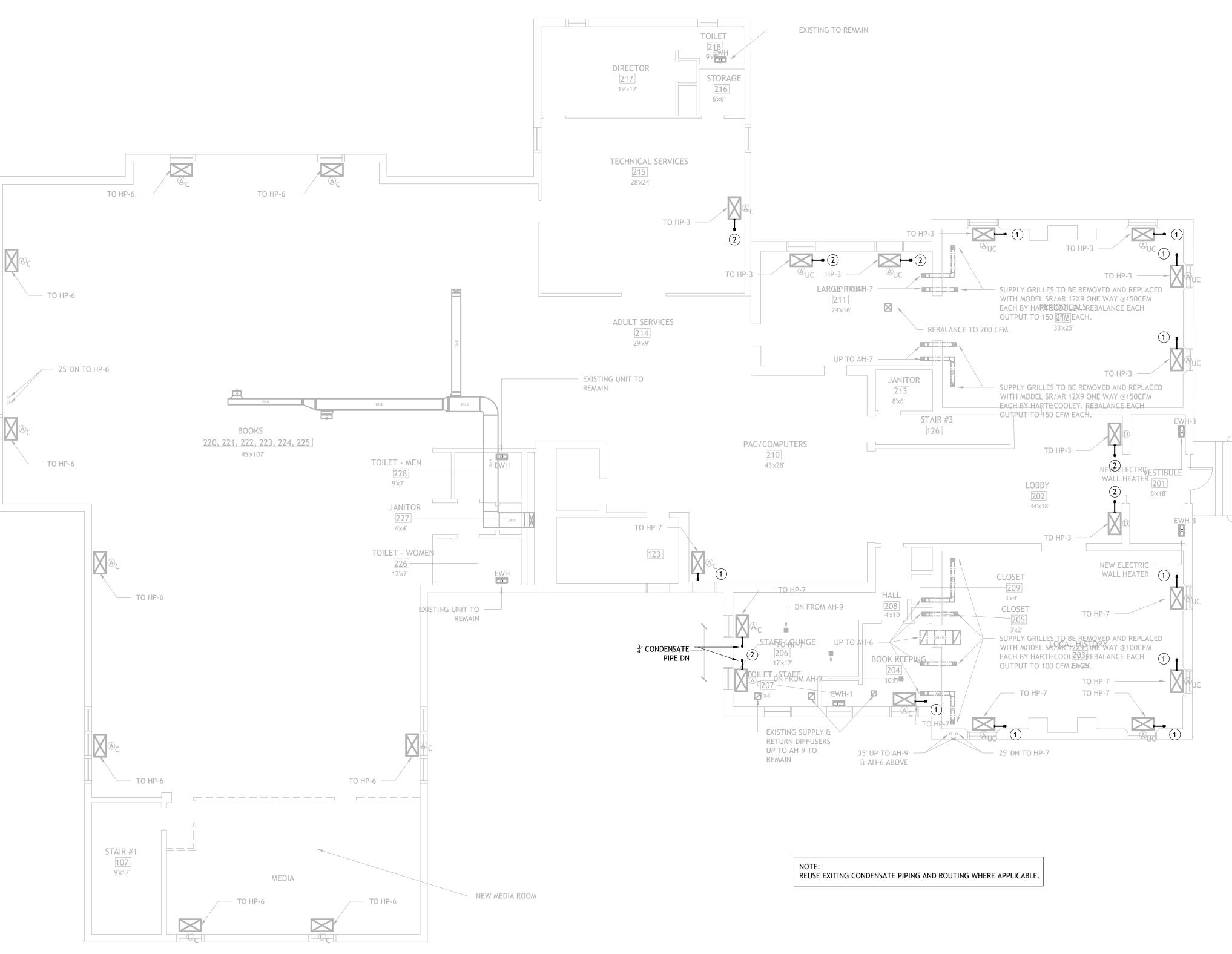


LOWER LEVEL PLUMBING PLAN

SCALE: 1/8 = 1' - 0"

CONDENSATE PUMP SCHEDULE							
UNIT	MODEL	MFG	GPH	V	HP	PHASE	COMMENTS
CP-1	VCMA-15	LITTLE GIANT	65	115	<u>1</u> 50	1	PROVIDE WHERE INDICATED IN PLANS WITH ALL REQUIRED PIPING

MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. PLUMBING LEGEND ►-----CND. C ------ CONDENSATE LINE AT CEILING CND CND CONDENSATE LINE AT FLOOR CP-1 CONDENSATE PUMP AT FLOOR (1)TIE CONDENSATE FOR CONSOLE UNIT INTO VERTICAL RISER FROM UPPER LEVEL & DN TO LOWER LEVEL CEILING (TYP). 2 PENETRATE FLOOR AT MAIN OR UPPER LEVEL AND DN TO LOWER LEVEL CEILING. $(\mathbf{3})$ CONDENSATE FROM UPPER AND MAIN LEVEL TO LOWER LEVEL CEILING. DESCRIPTION DATE No. 1 FOR CONSTRUCTION 12-14-2023 2 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 LOWER LEVEL PLUMBING PLAN PROJECT NUMBER: #34-2023 DATE: DATE EF DRAWN BY: CHECKED BY: PGM P-001.00 SCALE: AS NOTED

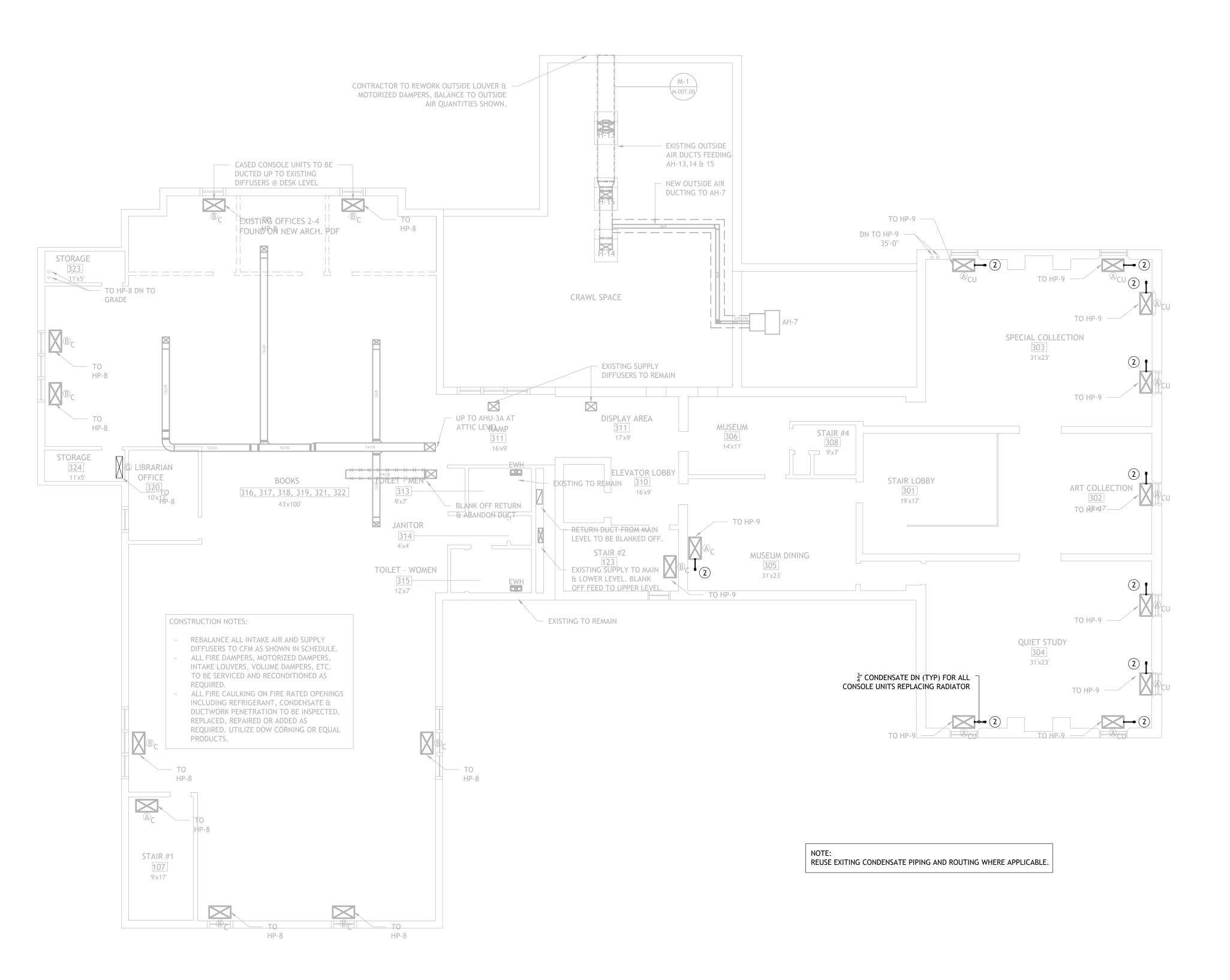


MAIN LEVEL PLUMBING PLAN

SCALE: 1/8 = 1' - 0"

CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. PLUMBING LEGEND CONDENSATE LINE AT CEILING CND CND CONDENSATE LINE AT FLOOR CP-1 CONDENSATE PUMP AT FLOOR (1)TIE CONDENSATE FOR CONSOLE UNIT INTO VERTICAL RISER FROM UPPER LEVEL & DN TO LOWER LEVEL CEILING (TYP). 2 PENETRATE FLOOR AT MAIN OR UPPER LEVEL AND DN TO LOWER LEVEL CEILING. $(\mathbf{3})$ CONDENSATE FROM UPPER AND MAIN LEVEL TO LOWER LEVEL CEILING. DESCRIPTION DATE No. 1 FOR CONSTRUCTION 12-14-2023 2 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 MAIN LEVEL PLUMBING PLAN #34-2023 PROJECT NUMBER: DATE: DATE DRAWN BY: EF CHECKED BY: PGM P-002.00 SCALE: AS NOTED

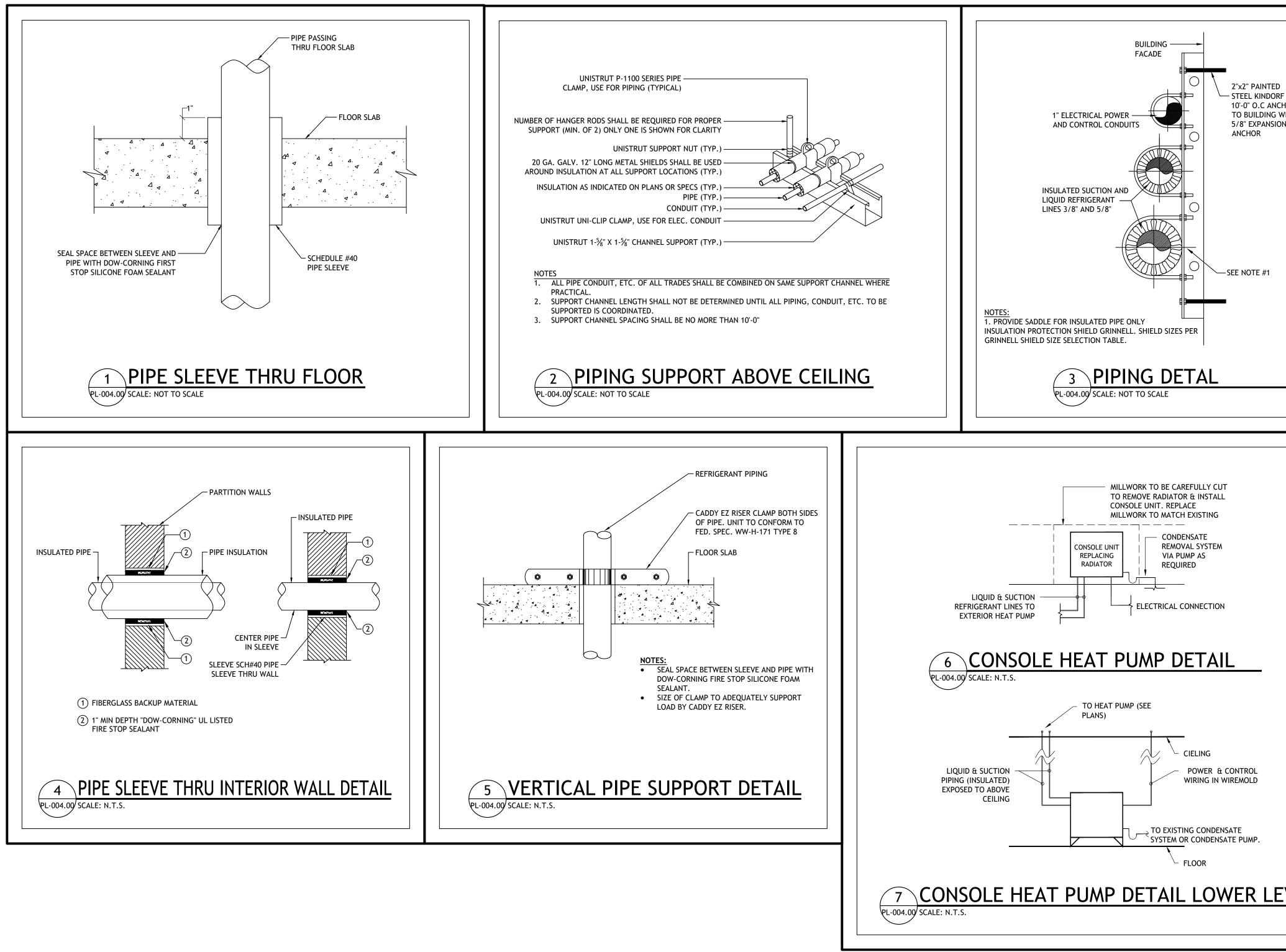
MARCHETTI



UPPER LEVEL PLUMBING PLAN

SCALE: 1/8 = 1' - 0"

MARCHET		
CONSULTIN ENGINEER		e Rd
_	Pound Ridge P (914) 764- F (914) 764-	, NY 10576 9011
info@marchettico		
Drawings and Specification service, are and shall rema Documents are not to be us projects or purposes or b authorized by contract authorization of the Engine contingent upon paymen rendered. Non-payment sha to bar document use by disputes any Engineer's stat that the owner advise the days. Remaining, undisput upon receipt. The owner against any claims allegin the event the Engineer exe use for non-payment. Contr on site. Only figured dime Discrepancies must be repo b e f o r e p	ain the property of ed, in whole or in y any other par without the sp eer. The use of t t to the engine any and all par ements for servic engineer in writi ed portions are of shall indemnif g damages or de crcises the right t factors must chec ensions are to b	of the Engineer. In part, for other ties than those recific written his document is er for services er the authority rties. If owner es, it is required ng with ten (10) due and payable y the Engineer lays incurred in o bar document k all dimensions e worked from.
PLUMBIN	NG LEGEND	
► CND. C	CONDENSATE L	INE AT CEILING
۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰	CONDENSATE LI	NE AT FLOOR
CP-1	CONDENSATE P	UMP AT FLOOR
	TIE CONDENSAT UNIT INTO VERT FROM UPPER LE LOWER LEVEL C	VEL & DN TO
2	PENETRATE FLC UPPER LEVEL AI LOWER LEVEL C	ND DN TO
3	CONDENSATE FF AND MAIN LEVE LEVEL CEILING.	
	RIPTION	DATE
1 FOR CONSTRUCTION 2 FOR CONSTRUCTION		12-14-2023 1-10-2024
STAMP & SIGN:		
23, MA NEWTOW	IN STREE N, CT, 06	
UPPE	ER LEVE	EL
PLUME PROJECT NUMBER:	BING PL	_AN #34-2023
DATE: DRAWN BY:		DATE EF
CHECKED BY:		PGM
P-0	03.00)



MARCHETTI CONSULTING ENGINEERS 25 High Ridge Rd Pound Ridge, NY 10576 P (914) 764-9011 F (914) 764-9012 info@marchetticonsultingengineers.com Drawings and Specifications, as instruments of professional service, are and shall remain the property of the Engineer. Documents are not to be used, in whole or in part, for other projects or purposes or by any other parties than those authorized by contract without the specific written authorization of the Engineer. The use of this document is contingent upon payment to the engineer for services rendered. Non-payment shall give the Engineer the authority to bar document use by any and all parties. If owner disputes any Engineer's statements for services, it is required that the owner advise the engineer in writing with ten (10) days. Remaining, undisputed portions are due and payable upon receipt. The owner shall indemnify the Engineer against any claims alleging damages or delays incurred in the event the Engineer exercises the right to bar document use for non-payment. Contractors must check all dimensions on site. Only figured dimensions are to be worked from. Discrepancies must be reported immediately to the Engineer before proceeding. PLUMBING LEGEND ►----- CND. C ------ CONDENSATE LINE AT CEILING CONDENSATE LINE AT FLOOR CP-1 CONDENSATE PUMP AT FLOOR (1)TIE CONDENSATE FOR CONSOLE UNIT INTO VERTICAL RISER FROM UPPER LEVEL & DN TO LOWER LEVEL CEILING (TYP). (2)PENETRATE FLOOR AT MAIN OR UPPER LEVEL AND DN TO LOWER LEVEL CEILING. (3) CONDENSATE FROM UPPER AND MAIN LEVEL TO LOWER LEVEL CEILING. DESCRIPTION DATE No. 1 FOR CONSTRUCTION 12-14-2023 2 FOR CONSTRUCTION 1-10-2024 STAMP & SIGN: 23, MAIN STREET NEWTOWN, CT, 06470 PLUMBING DETAILS PROJECT NUMBER: #34-2023 DATE: DATE DRAWN BY: EF PGM CHECKED BY: P-004.00 SCALE: AS NOTED

F @ CHOR WITH DN			
		_	
<u>EVEL</u>			
	I		

PLUMBING SPECIFICATIONS:

GENERAL CONDITIONS

• WORK INCLUDED: PROVIDE MATERIALS, LABOR, EQUIPMENT AND SERVICES NECESSARY TO DEMOLISH EXISTING PLUMBING SYSTEMS, FURNISH, DELIVER, AND INSTALL ALL MECHANICAL WORK AS SHOWN ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY JOB CONDITIONS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

PLUMBING

• PROVIDE A COMPLETE CONDENSATE PIPING SYSTEM FOR ALL AIR HANDLERS AND CONSOLE UNITS. SERVICE AND REUSE EXISTING CONDENSATE PIPING SYSTEM AND COMPONENTS WHERE APPLICABLE.

RELATED WORK PERFORMED BY OTHERS:

- FINISH PAINTING OF ALL ITEMS SPECIFIED UNDER THIS SECTION UNLESS OTHERWISE NOTED
 CUTTING AND PATCHING
- ELECTRICAL WIRING

SHOP DRAWINGS:

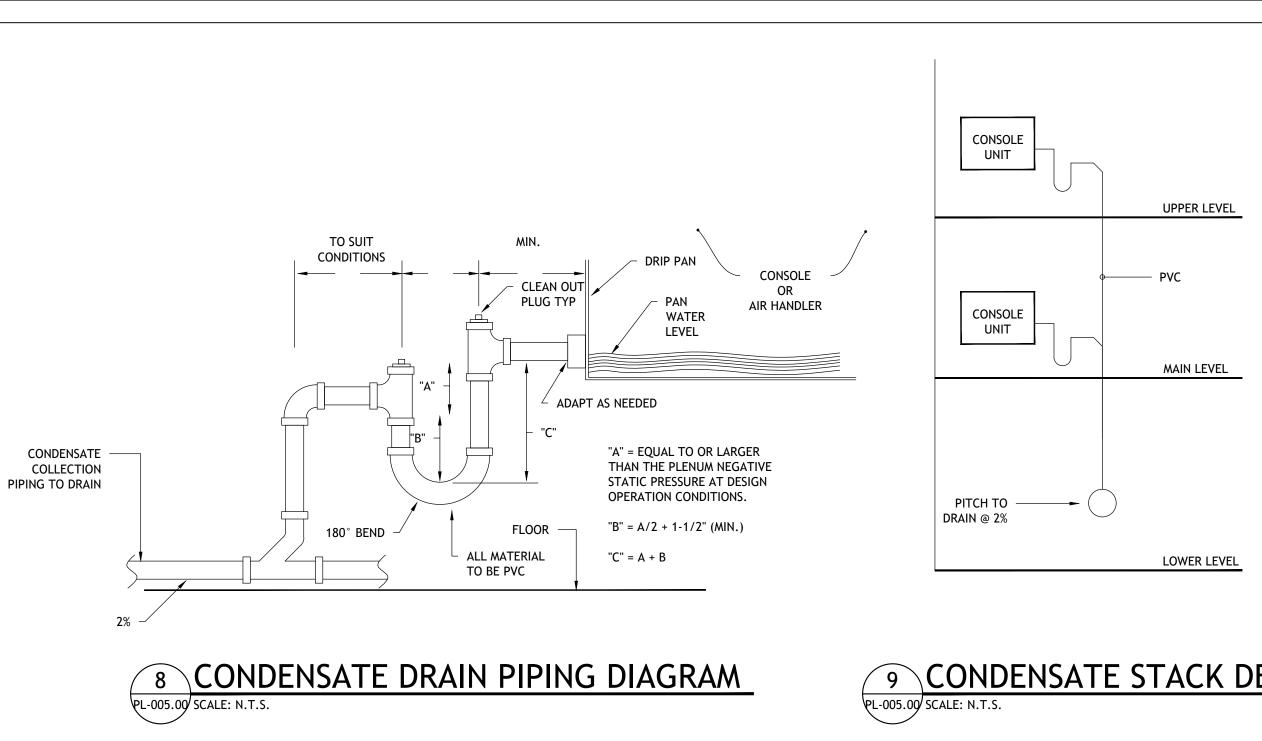
SHOP DRAWINGS SHALL BE SUBMITTED ON THE FOLLOWING ITEMS. IT IS THE INTENT OF THESE SPECIFICATIONS THAT SUBMITTALS BE REVIEWED PRIOR TO ORDERING OR INSTALLING EQUIPMENT.

PLUMBING:

- PENETRATIONSPIPES AND FITTINGS
- PIPE ROUTING
- MECHANICAL SYSTEM LAYOUTS INDICATED ARE GENERALLY DIAGRAMMATIC, AND LOCATION OF OUTLETS AND EQUIPMENT ARE APPROXIMATE. EXACT ROUTING OF PIPES, DUCTS AND EQUIPMENT SHALL BE GOVERNED BY STRUCTURAL CONDITIONS AND WORK OF OTHER TRADES. THIS SHALL NOT BE CONSTRUCTED TO PERMIT REDESIGNING THE MECHANICAL SYSTEMS.
- EXAMINE THE NEW STRUCTURAL, ARCHITECTURAL, PLUMBING, HEATING, VENTILATING, AIR CONDITIONING AND ELECTRICAL PLANS AND BE FAMILIAR WITH ALL CONDITIONS THAT WILL AFFECT THE MECHANICAL WORK. COORDINATE ALL PHASES OF THE MECHANICAL WORK OTHER TRADES.
- INSTALLATION OF THE VARIOUS MECHANICAL SYSTEMS, EQUIPMENT, AND FIXTURES SHALL COMPLETE WITH ALL ACCESSORIES NECESSARY FOR PROPER OPERATION. ALL EQUIPMENT AND FIXTURES SHALL BE PROPERLY TESTED AND ADJUSTED AND IN WORK ORDER.
- ALL WORK SHALL BE IN ACCORDANCE WITH THE BOCA PLUMBING CODE, LOCAL UTILITY COMPANY REQUIREMENTS AND ALL OTHER APPLICABLE CODES.
- CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO STARTING WORK. REFER PROBLEMATIC CONDITIONS TO ENGINEER.
- PROVIDE REQUIRED SUPPORTS AND HANGERS FOR PIPING FIXTURES AND EQUIPMENT SO LOADING WILL NOT EXCEED ALLOWABLE LOADINGS OF STRUCTURE.
- PROVIDE ESCUTCHEONS, THREADED OR HELD IN PLACE WITH THREADED PART OR SET SCREW ON PIPING AND FIXTURE SUPPORTS PROTRUDING FROM WALL OR FLOOR AND ON VISIBLE CONNECTIONS TO FIXTURES
- USE SPACING DEVICES TO SUPPORT AND STABILIZE PIPING
- SECURE AND PAY COSTS OF PERMITS, CERTIFICATED, LICENSES INSPECTIONS AND APPROVALS
- OBTAIN CERTIFICATE OF APPROVAL FROM RESPONSIBLE BUILDING OFFICIAL
- SUPPLY TWO COPIES OF A WARRANTY COUNTERSIGNED AND GUARANTEED BY CONTRACTOR, STATING THAT IMPERFECT SYSTEM OPERATION AND ALL DEFECTS IN LABOR AND MATERIALS OF PLUMBING WORK WILL BE REPAIRED WITHOUT COST TO OWNER FOR A PERIOD OF ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION AND STATING THAT ALL PLUMBING EQUIPMENT HAS BEEN FULLY SERVICED AND LEFT IN PROPER OPERATING CONDITION.
- GUARANTEE THAT SERVICING WILL BE PROVIDED WITHOUT COST DURING GUARANTEE PERIOD
- FLUSH PIPING PRIOR TO TESTING TO REMOVE FOREIGN MATERIALS WHICH MAY HAVE ENTERED DURING COURSE OF INSTALLATION.
- PLUMBERS WORK SHALL END 5'-0" AWAY FROM EXTERIOR FOUNDATION AND SITE CONTRACTORS WORK SHALL BEGIN AT THAT POINT EXCEPT AS PREVIOUSLY NOTED.
- PROVIDE SEISMIC BRACING AND SUPPORTS FOR ALL PIPING AND EQUIPMENT PER BUILDING CODE

PLUMBING:

- ALL HORIZONTAL DRAINAGE PIPING SHALL BE RUN IN PRACTICAL ALIGNMENT AND AT A UNIFORM PITCH OF 1/4" PER FOOT. WHERE POSSIBLE, BUT IN NO CASSES LESS THAT 1/8" PER FOOT.
- ALL CHANCES IN DIRECTION SHALL BE MADE BY THE APPROPRIATE USE OF LONG RADIUS FITTINGS, EXCEPT THAT SHORT RADIUS TEE-WYE FITTINGS MAY BE USED ON VERTICAL STACKS.
- FILL ALL VOID SPACES BETWEEN PIPING AND WALLS, FLOORS, PARTITIONS, ETC. WITH DOW 36548 RTV SILICONE FOAM, OR WITH MINERAL WOOL SEALED WITH FIRE TESTED AND APPROVED ELECTROMETRIC CAULKING MATERIALS. THE MATERIAL SHALL COMPLY WITH NFPA CODES AND RATED FOR SURFACES PENETRATED
- ALL NEW DRAINAGE PIPING SHALL HAVE ALL NECESSARY OPENINGS PLUGGED TO PERMIT THE ENTIRE SYSTEM TO BE FILLED WITH WATER, THE SYSTEM SHALL HOLD THIS LEVEL FOR ONE HOUR WITHOUT SHOWING A VERTICAL DROP.
- ALL PLUMBING PIPING SHALL BE INSTALLED AND SUPPORTED IN ACCORDANCE WITH THE LATEST EDITION OF THE CONNECTICUT STATE SEISMIC CODE.



ETAIL	

MARCHET CONSULTIN	IG	
ENGINEER	25 High Ridge Rd	
_	Pound Ridge, NY P (914) 764-9011	10576
info@monchattion	F (914) 764-9012	
	nsultingengineers	
Drawings and Specification service, are and shall rema Documents are not to be us projects or purposes or b authorized by contract authorization of the Engine contingent upon paymen rendered. Non-payment sha to bar document use by disputes any Engineer's state that the owner advise the days. Remaining, undispute upon receipt. The owner against any claims alleging the event the Engineer exe use for non-payment. Contr on site. Only figured dime Discrepancies must be repor b e f o r e p	ain the property of the ed, in whole or in par y any other parties without the specified eer. The use of this of t to the engineer full give the Engineer the any and all parties ements for services, in engineer in writing we ed portions are due at shall indemnify the g damages or delays process the right to base factors must check all ensions are to be woo	e Engineer. t, for other than those ic written locument is or services he authority c. If owner t is required ith ten (10) hd payable e Engineer incurred in r document dimensions orked from.
► CND. C	CONDENSATE LINE A	AT CEILING
	CONDENSATE PUMP	
	CONDENSATE PUMP	AT LUUK
	TIE CONDENSATE FO UNIT INTO VERTICAL FROM UPPER LEVEL LOWER LEVEL CEILIN	. RISER & DN TO
2	PENETRATE FLOOR A UPPER LEVEL AND D LOWER LEVEL CEILIN	N TO
(3)	CONDENSATE FROM AND MAIN LEVEL TO	
	LEVEL CEILING.	
No. DESCR 1 FOR CONSTRUCTION 2 FOR CONSTRUCTION	RIPTION	DATE 12-14-2023 1-10-2024
STAMP & SIGN:		
NEWTOWI		
NEWTOWI PLUMBING SP DE PROJECT NUMBER:	N, CT, 0647 PECIFICATIO	DNS & #34-2023
NEWTOWI PLUMBING SP DE	N, CT, 0647 PECIFICATIO	DNS &
NEWTOWN PLUMBING SP DE PROJECT NUMBER: DATE:	N, CT, 0647 PECIFICATIO	DNS & #34-2023 DATE
NEWTOWN PLUMBING SP DE PROJECT NUMBER: DATE: DRAWN BY: CHECKED BY:	N, CT, 0647 PECIFICATIO	DNS & #34-2023 DATE EF